Planning and Zoning Department
616 Germantown Pike, Lafayette Hill, PA 19444-1821
484-594-2625
www.whitemarshTWP.org

Subdivision and Land Development Cover Page for SLD # 14-21
Project Name: KRE Acquisition Corp.
Address: 401/433 Washington Street
Date: May 31, 2022
Status: Final Plans; Under Review

Updates:
Zoning Compliance Review Letter - June 15, 2022
Traffic Impact Study June 22, 2022
Emergency Action Plan - received July 1, 2022
Township Engineer Review Letter - July 6, 2022
Applicant's Responses to Zoning Review Letter & Architectural Exhibits - July 13, 2022
Fire Marshal Memo - July 11, 2022
Zoning Ordinance Compliance Review - Reply to Applicants Response - July 18, 2022
Waiver Request Letter - July 21, 2022
Township Engineer Response Letter - July 22, 2022

OWNER'S CERTIFICATION
SPECTRUM-C LLC a Pennsylvania limited liability company

By: _____
Name:
Title:

Commonwealth of Pennsylvania
: ss
COUNTY OF MONTGOMERY **AND NOW**, THIS _____ DAY OF _____ 20__, BEFORE ME, THE UNDERSIGNED NOTARY, PERSONALLY APPEARED _____ WHO ACKNOWLEDGED HIMSELF TO BE THE _____ OF SPECTRUM-C LLC, THE SOLE GENERAL PARTNER OF SPECTRUM-C LLC A PENNSYLVANIA LIMITED LIABILITY COMPANY AND HE, AS SUCH _____ BEING AUTHORIZED TO DO SO, EXECUTED THE FOREGOING INSTRUMENT FOR THE PURPOSES THEREIN CONTAINED.**IN WITNESS WHEREOF,** I HEREUNDER SET MY HAND AND OFFICIAL SEAL.
_____ _____
Notary Public My commission expires:

OWNER'S CERTIFICATION
SPECTRUM-C LLC, a Pennsylvania limited liability company

By: _____
Name:
Title:

Commonwealth of Pennsylvania
: ss
WE, THE OWNERS OF THE LAND INVOLVING THE ACCOMPANYING PLANS. BEING DULY SWORN ACCORDING TO LAW, DEPOSE AND SAY THAT WE ARE THE SOLE OWNERS OR ARE THE AUTHORIZED OFFICERS OF THE CORPORATION THAT IS THE SOLE OWNERS OF THIS PROPERTY IN PEACEFUL POSSESSION OF IT, AND THAT THERE ARE NO SUITS PENDING AFFECTING THE TITLE OF THE SAME, AND THAT WE ACKNOWLEDGE AND ENDORSE THE ACCOMPANYING PLANS AND THAT WE PROPOSE THE ATTACHED RECORD PLAN FOR RECORDING (AS APPLICABLE), AFTER RECEIVING ALL REQUIRED MUNICIPAL APPROVALS. **IN WITNESS WHEREOF,** I hereunder set my hand and official seal.
_____ _____
Notary Public My commission expires:

PLAN PREPARER'S STATEMENTS

I, _____, A REGISTERED SURVEYOR OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY
THAT THE PLAN, PREPARED FROM A FIELD SURVEY ON _____, 20____ CORRECTLY REPRESENTS THE PROPERTY BOUNDARY OF THE PROPOSED SUBDIVISION OR LAND DEVELOPMENT.

_____ _____
DATE REGISTERED SURVEYOR'S SIGNATURE

I, _____, A LICENSED PROFESSIONAL ENGINEER OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY THAT THE ACCOMPANYING APPLICATION, PLANS, AND SUPPORTING DOCUMENTATION ARE TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

_____ _____
DATE LICENSED ENGINEER'S SIGNATURE

MUNICIPAL APPROVAL / REVIEW BLOCK
REVIEWED BY THE CONSHOHOCKEN BOROUGH ENGINEER THIS _____ DAY OF_____, 20____.

_____ _____
CONSHOHOCKEN BOROUGH ENGINEER SIGNATURE

APPROVED BY THE BOROUGH OF CONSHOHOCKEN THIS _____ DAY OF _____, 20____.

_____ _____
BOROUGH COUNCIL PRESIDENT SIGNATURE

_____ _____
BOROUGH SECRETARY SIGNATURE

REVIEWED BY THE WHITEMARSH TOWNSHIP ENGINEER THIS _____ DAY OF_____, 20____.

_____ _____
WHITEMARSH TOWNSHIP ENGINEER SIGNATURE

APPROVED BY THE TOWNSHIP OF WHITEMARSH THIS _____ DAY OF _____, 20____.

_____ _____
WHITEMARSH TOWNSHIP MANAGER SIGNATURE

MCPC NO. 21-0327-002

PROCESSED and REVIEWED. A report has been prepared by the Montgomery County Planning Commission in accordance with the Municipalities Planning Code.

Certified this date _____

_____
For The Director

MONTGOMERY COUNTY PLANNING COMMISSION

RECORDER OF DEEDS

RECORDED IN THE OFFICE FOR THE RECORDING OF DEEDS IN AND FOR COUNTY OF MONTGOMERY, AT NORRISTOWN, PA, IN PLAN BOOK _____, PAGE NO. _____ ON _____, 20____.

PRELIMINARY /FINAL LAND DEVELOPMENT PLANS

FOR

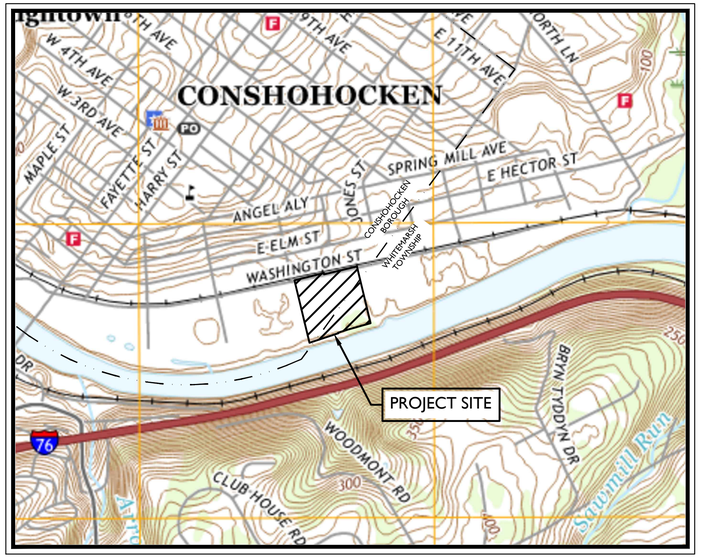
KRE ACQUISITION CORP.

401/433 WASHINGTON STREET APARTMENTS

401 & 433 WASHINGTON STREET

CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY, PENNSYLVANIA



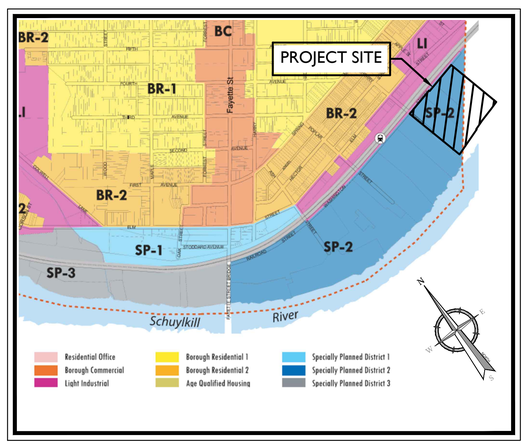
N W E S

800 0 800

LOCATION MAP

SOURCE: NORRISTOWN, PA USGS MAP

SCALE : 1" = 800'

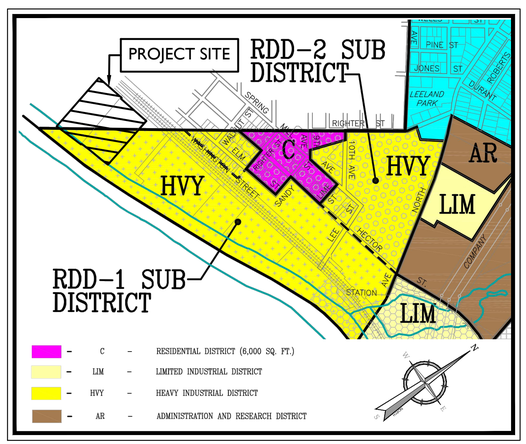


ZONING MAP

SOURCE: CONSHOHOCKEN BOROUGH

800 0 800

SCALE : 1" = 800'



ZONING MAP

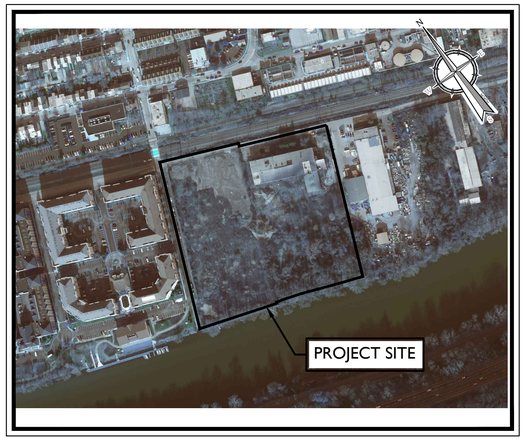
SOURCE: WHITEMARSH TOWNSHIP

800 0 800

SCALE : 1" = 800'

INDEX OF SHEETS

SHT. No.	DESCRIPTION	LATEST REVISION
1*	COVER SHEET	5/20/2022
2*	GENERAL NOTES	5/20/2022
3	EXISTING RESOURCE AND SITE ANALYSIS PLAN	5/20/2022
4	EXISTING CONDITIONS AND DEMOLITION PLAN	5/20/2022
5*	DIMENSION PLAN	5/20/2022
6	STRIPING AND SIGNAGE PLAN	5/20/2022
7	RIVERFRONT ACCESS, RECREATION AND OPEN SPACE PLAN	5/20/2022
8-9*	PROPOSED EASEMENTS PLAN	5/20/2022
10	GRADING PLAN	5/20/2022
11	UTILITY PLANS	5/20/2022
12	PIPE & STRUCTURE CHARTS	5/20/2022
13-15	PROFILES	5/20/2022
16	ROAD PROFILES & SECTIONS	5/20/2022
17	TRUCK TURNING PLAN	5/20/2022
18-27	CONSTRUCTION DETAILS	5/20/2022
28-29	ADA GRADING PLAN	5/20/2022
30	EXISTING TREE SURVEY PLAN	5/20/2022
31-41	LANDSCAPING & LIGHTING PLANS (BY OTHERS)	5/20/2022
	ADDITIONAL SETS	
E1-E7	EROSION AND SEDIMENT POLLUTION CONTROL PLANS	5/6/2022
P1-P7*	POST-CONSTRUCTION STORMWATER MANAGEMENT PLANS	5/6/2022
GP1	GP 4 PERMIT PLAN	
	* SHEETS TO BE RECORDED	



AERIAL MAP

SOURCE: PASDA IMAGERY NAVIGATOR

300 0 300

SCALE : 1" = 300'

OWNER:
SPECTRUM-C LLC
47 WHITNEY STREET
WESTPORT, CT, 06880

APPLICANT/EQUITABLE OWNER:
KRE ACQUISITION CORP.
520 US HWY 22
PO BOX 6872
BRIDGEWATER, NJ 08807

WAIVERS & VARIANCES

WAIVERS GRANTED WITHIN CONSHOHOCKEN BOROUGH: SETTLEMENT AGREEMENT: OCTOBER 22, 2014

SECTION 22-404.1.A-	A WAIVER FROM THE CONSTRUCTION OF ALLEYS IN A RESIDENTIAL DEVELOPMENT.
SECTION 22-404.2.A -	A WAIVER FROM THE PROHIBITION OF DRIVEWAYS IN A FRONT YARD SETBACK.
SECTION 22-404.2.F-	A WAIVER TO ALLOW FOR MORE THAN TWO DRIVEWAYS PER PROPERTY TRACT.
SECTION 22-405.1.C -	A WAIVER FROM THE REQUIREMENT OF MINIMUM 15 FEET WIDTH FOR SIDEWALKS.
SECTION 22-419.1 -	A WAIVER FROM INSTALLING MONUMENTS ON REAR PROPERTY CORNER.
SECTION 22-804.4.A.(7) -	A WAIVER FOR DENYING AREA DEDICATED TO THE BOROUGH TO BE USED IN CALCULATING DENSITY.

WAIVERS REQUESTED WITHIN CONSHOHOCKEN BOROUGH:

SECTION 22-405.1.E -	CROSSWALKS SHALL NOT BE LESS THAN 10 FEET WIDE.

WAIVERS GRANTED WITHIN WHITEMARSH TOWNSHIP, RESOLUTION 2022-_____, APRIL 14, 2022 :

SECTION 105-39.A -	A WAIVER FOR THE REQUIREMENT THAT ALL PARKING AREAS SHALL HAVE AT LEAST ONE TREE OR TWO-AND-ONE-HALF-INCHES MINIMUM CALIPER FOR EVERY TWO PARKING SPACES PROVIDED.
SECTION 105-52 -	A WAIVER FOR THE REQUIREMENT TO PROVIDE A 50-FOOT BUFFER YARD.
SECTION 55-3.D -	A WAIVER FOR THE REQUIREMENT THAT NO MORE THAN FIFTY PERCENT (50%) OF TREES ON A LOT BE REMOVED.
SECTION 55-4.B.(6)(f)[1][2]&[3] -	A WAIVER FROM THE REQUIREMENT THAT REPLACEMENT TREES INSTALLED BY APPLICANT BE SUBJECT TO CERTAIN MAXIMUM PERMISSIBLE PERCENTAGES FOR FLOWERING TREES, EVERGREEN TREES, SHRUBS AND GROUND COVERS.

VARIANCES GRANTED WITHIN CONSHOHOCKEN BOROUGH: SETTLEMENT AGREEMENT: OCTOBER 22, 2014

SECTION 27-1511.8.E. -	VARIANCE TO ALLOW UNDERGROUND PARKING BE WITHOUT PLANTINGS.
SECTION 27-1505.B(3) -	VARIANCE TO ALLOW SIDEWALKS, PLANTED VERGE, AND LANDSCAPING ALONG THE NORTHERN SIDE OF HORIZONTAL DRIVE TO BE BROKEN UP BY INGRESS/EGRESS POINTS.
SECTION 27-2007.I -	VARIANCE TO ALLOW TWO (2) ADDITIONAL ACCESS WAYS ON WASHINGTON STREET.

VARIANCES REQUESTED WITHIN CONSHOHOCKEN BOROUGH:

SECTION 27-1511.8.A.(1) -	VARIANCE TO ALLOW PARKING IN 401 WASHINGTON STREET TO BE LESS THAN THE REQUIRED MINIMUM.

VARIANCES & SPECIAL EXCEPTIONS GRANTED BY WHITEMARSH TOWNSHIP ZHB: RESOLUTION #2021-48: NOVEMBER 15, 2021

SECTION 116-165 -	VARIANCE TO PERMIT NON-RESIDENTIAL STRUCTURES IN THE FLOODPLAIN CONSERVATION DISTRICT.
SECTION 116-166.A(3) -	SPECIAL EXCEPTION TO PERMIT A STORMWATER RETENTION BASIN WITHIN FLOODWAY.
SECTION 116-166.B(3) -	SPECIAL EXCEPTION TO PERMIT UTILITIES, PUBLIC FACILITIES, AND IMPROVEMENTS SUCH AS STREETS, TRANSMISSION LINES, PIPELINES, WATER LINES AND SIMILAR USES IN THE FLOODWAY FRINGE.
SECTION 116-260 -	VARIANCE TO PERMIT CLEARING OF VEGETATION, INSTALLATION OF PARKING LOTS, ROADS, DRIVEWAYS, FENCES AND STORMWATER BASINS WITHIN RIPARIAN BUFFER CORRIDOR CONSERVATION DISTRICT.
SECTION 116-281.A(9) -	VARIANCE TO PERMIT A 125' WIDE AREA OF RIVERFRONT LAND OFFERED FOR DEDICATION TO BE INCLUDED IN THE MAXIMUM BUILDING AND IMPERVIOUS GROUND COVER CALCULATIONS.

Colliers Engineering & Design
www.colliersengineering.com

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Doing Business as MASER CONSULTING

811 PROTECT YOURSELF
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Know what's below. Call before you dig. 20210843125 & 20210843126
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION
1	12/1/22	MD	REVISED PER BOROUGH OF CONSHOHOCKEN REVIEW LETTERS DATED 1/7/2022.
2	2/23/22	MCJ	REVISED PER EMAILS WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/22/2022.
3	5/20/22	JJW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL C. RICHARD ROSEBERRY ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

PRELIMINARY/FINAL LAND DEVELOPMENT PLANS

FOR

401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

Colliers Engineering & Design
LEHIGH VALLEY
941 Marcon Boulevard, Suite 801
Allentown, PA 18109
Phone: 610.868.4201
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

PROJECT NUMBER: 14000908C
DRAWING NAME: C-COVER

SHEET TITLE: COVER SHEET

SHEET NUMBER: 1 of 41

2016\14000908C\Engineering\Site Plans\C-COVER.dwg|C-01 COVER By: MDB|5/5

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

1. PROPERTY IDENTIFICATION - BEING KNOWN AS TAX PARID:
   401 WASHINGTON: (CONSHOHOCKEN BOROUGH) 05001904007 DEED BOOK: 6221 PG: 02635
   (WHITEMARSH TOWNSHIP) 65001904007 DEED BOOK: 6221 PG: 02635
   433 WASHINGTON: (CONSHOHOCKEN BOROUGH) 05001908003 DEED BOOK: 6221 PG: 02635
   (WHITEMARSH TOWNSHIP) 65001268012 DEED BOOK: 6221 PG: 02635
   AS SHOWN IN THE CURRENT OFFICIAL TAX MAPS OF THE BOROUGH OF CONSHOHOCKEN AND WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA. ADDRESS FOR THE SITE IS 401/433 WASHINGTON STREET.
2. THE SUBJECT PROPERTIES ARE LOCATED IN THE SPECIALLY PLANNED TWO (SP-2) ZONING DISTRICT/FLOODPLAIN CONSERVATION DISTRICT (CONSHOHOCKEN BOROUGH) AND THE HEAVY INDUSTRIAL (HVY)/RIVERFRONT DEVELOPMENT (RDD-1) SUB DISTRICT/FLOODPLAIN CONSERVATION OVERLAY DISTRICT/RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT (WHITEMARSH TOWNSHIP) . THE PROPOSED USE OF THE SUBJECT PROPERTIES IS MULTI-FAMILY RESIDENTIAL APARTMENTS AND IS PERMITTED BY RIGHT IN THE SPECIALLY PLANNED TWO (SP-2) ZONING DISTRICT (CONSHOHOCKEN BOROUGH) AND PERMITTED BY RIGHT IN THE RIVERFRONT DEVELOPMENT DISTRICT (RDD-1) (WHITEMARSH TOWNSHIP).
3. OWNER:
   SPECTRUM-C LLC
   47 WHITNEY STREET
   WESTPORT, CT, 06880
4. APPLICANT/EQUITABLE OWNER:
   KRE ACQUISITION CORP.
   520 US HWY 22
   PO BOX 6872
   BRIDGEWATER, NJ 08807
   P: (908) 725-8100
5. STATEMENT OF INTENT - THE PROPOSED USE IS MULTI-FAMILY RESIDENTIAL. EACH PROPOSED APARTMENT BUILDING IS FOUR FLOORS OVER AT-GRADE PARKING.
6. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON WAS OBTAINED FROM FIELD SURVEY PERFORMED ON APRIL 7, 2021 AND PREPARED BY VALLEY LAND SERVICES, LLC., PLAN DATED APRIL 26, 2021 AND LAST REVISED MARCH 28, 2022.
7. DEED REFERENCE - DEED BOOK 6221 PAGE 02635
8. MAP REFERENCES -
   A. A MAP ENTITLED: "ALTA/NSPS LAND TITLE SURVEY" PREPARED BY VALLEY LAND SERVICES, LLC, DATED APRIL 26, 2021, LAST REVISED JUNE 16, 2021.
9. THIS PLAN WAS PREPARED WITH THE BENEFIT OF A TITLE REPORT. ISSUED BY FIRST AMERICAN TITLE INSURANCE COMPANY, COMMITMENT NO. PAFA20-5471 GD, DATED APRIL 6, 2021. THIS PROPERTY MAY BE SUBJECT TO RESTRICTIONS, COVENANTS AND/OR EASEMENTS, WRITTEN OR IMPLIED AS THEY APPEAR WITHIN THE TITLE REPORT AS FOLLOWS
   A. CONDITIONS AS IN DEED BOOK 2702 PAGE 415 AND DEED BOOK 2818 PAGE 327. (AS TO PREMISES "A"), -PLOTTED ON SURVEY,
   B. CONTRACTUAL CONSENT OF LANDOWNER AS IN DEED BOOK 4722 PAGE 407. (AS TO PREMISES "A"), -NOT PLOTTED ON SURVEY, BLANKET IN NATURE.
   C. RIGHT OF WAY GRANTED TO PHILADELPHIA SUBURBAN WATER COMPANY AS IN DEED BOOK 1957 PAGE 563. (AS TO PREMISES "A") - NOT PLOTTED ON SURVEY, BLANKET IN NATURE.
   D. RIGHT OF WAY GRANTED TO PHILADELPHIA ELECTRIC COMPANY AS IN DEED BOOK 4702 PAGE 1122.
   (AS TO PREMISES "A"), - NOT PLOTTED ON SURVEY, BLANKET IN NATURE.
   E. INTENTIONALLY OMITTED, - NOT PLOTTED IN SURVEY, BLANKET IN NATURE.
   F. POSSIBLE RIGHTS OF THE UNITED STATES OF AMERICA, THE COMMONWEALTH OF PENNSYLVANIA, THE PUBLIC AND OTHER RIPARIAN OWNERS BETWEEN HIGH AND LOW WATER MARKS OF THE SCHUYLKILL RIVER. (AS TO PREMISES "A"), - NOT PLOTTED ON SURVEY, NO DOCUMENTATION PROVIDED.
   G. SUBJECT TO THE LAWS AND AUTHORITY OF THE FEDERAL AND STATE GOVERNMENT, THEIR POLITICAL SUBDIVISIONS AND AGENCIES, TO REGULATE COMMERCE AND NAVIGATION OVER PART OF THE PREMISES EXTENDING BEYOND THE HIGH WATER MARK OF THE SCHUYLKILL RIVER AND TO EXERT GOVERNMENTAL TITLE AND OWNERSHIP IN THE AREA LYING BEYOND THE ORIGINAL LOW WATER MARK. (AS TO PREMISES "A"), - NOT PLOTTED ON SURVEY, NO DOCUMENTATION PROVIDED.
   H. RESERVATIONS AND CONDITIONS AS IN DEED BOOK 2820 PAGE 189. (AS TO PREMISES "B"), - PLOTTED ON SURVEY.
   I. RIGHT OF WAY GRANTED TO THE PHILADELPHIA ELECTRIC COMPANY AS IN DEED BOOKS 3632 PAGE 80. (AS TO PREMISES "B"), - NOT PLOTTED ON SURVEY, BLANKET IN NATURE.
   J. CONDITIONS, NOTES, ULTIMATE WIDENING OF WASHINGTON STREET, BUILDING SETBACK LINES, VARIOUS FENCES PARKING SPACES, INLETS, PIPES, GRAVEL DRIVES, ETC. AS SHOWN ON PLAN BOOK A-55 PAGE 488. (AS TO PREMISES "B"), - NOT PLOTTED ON SURVEY, DOCUMENT ILLEGIBLE.
   K. CONDITIONS AND RESTRICTIONS AS IN DEED BOOK 5342 PAGE 2085; AMENDMENT THERETO TERMINATING RESIDENTIAL DEED RESTRICTIONS AND GRANTOR'S RIGHT OF ACCESS AS IN DEED BOOK 5601 PAGE 365. (AS TO PREMISES "B"), - NOT PLOTTED ON SURVEY, BLANKET IN NATURE.
10. THE EXISTENCE OF ANY UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE SURVEY.
11. TOPOGRAPHIC INFORMATION SHOWN HEREON WAS TAKEN FROM GROUND SURVEY PERFORMED BY VALLEY LAND SERVICES, LLC. THE LOCATION OF ALL UNDERGROUND UTILITIES AS SHOWN HEREON ARE APPROXIMATE AND ARE BASED ON VISIBLE SURFACE STRUCTURES AND ANY UTILITY MAPS PROVIDED BY UTILITY COMPANIES REFERENCED HEREON.
12. EXISTING SITE TOPOGRAPHIC INFORMATION AS SHOWN HEREON IS BASED UPON NAVD 88.
13. BENCHMARKS: MAG NAIL, ELEV. 57.31. ALONG CHERRY STREET TOWARD MIDDLE OF WESTERN PROPERTY LINE.
14. CONCRETE MONUMENTS, PK NAILS, AND IRON PINS SHALL BE SET UPON APPROVAL OF THIS PLAN PRIOR TO RECORDING, AS NEEDED.
15. ZONE DATA:

CONSHOHOCKEN BOROUGH ZONING DATA:

401 WASHINGTON STREET

SPECIALLY PLANNED DISTRICT TWO (SP-2)

ITEM	ZONING ORDINANCE	PERMITTED	PROPOSED
SPECIALLY PLANNED DISTRICT TWO			
MINIMUM LOT AREA	27-1511.1.	3 ACRES	4.97 ACRES (NET)
MINIMUM LOT WIDTH	27-1511.2.A.	100 FEET	338.60 FEET
MINIMUM LOT DEPTH	27-1511.2.B.	100 FEET	671.68 FEET
MAXIMUM IMPERVIOUS COVERAGE	27-1511.3.A.	70%	69.99% (TOTAL SITE)
MAXIMUM FLOOR AREA RATIO (FAR)	27-1511.3.D.	1.5	1.5
MINIMUM FLOOR AREA (ONE BEDROOM)	27-1511.4.	700 SF	>700 SF
MINIMUM FLOOR AREA (TWO BEDROOM)	27-1511.4.	900 SF	>900 SF
MINIMUM FLOOR AREA (THREE BEDROOM)	27-1511.4.	1,100 SF	>1,100 SF
MAXIMUM BUILDING HEIGHT	27-1511.5.B.	85 FEET	65 FEET(b)
BUILDING SETBACK FROM ULTIMATE RIGHT-OF-WAY/PROPERTY LINE	27-1511.6.B.(1)	15 FEET	15.02 FEET
PARKING SETBACK FROM ULTIMATE RIGHT-OF-WAY	27-1511.6.B.(1)	15 FEET	15.02 FEET
MINIMUM BUILDING SEPARATION	27-1511.6.C.	30 FEET/75 FEET (a)	80 FEET

(a) 75 FEET WITH SURFACE PARKING BETWEEN BUILDINGS.
(b) EACH BUILDING CONTAINS FOUR (4) HABITABLE RESIDENTIAL STORIES THAT ARE LOCATED ABOVE ONE STORY OF OPEN PODIUM PARKING.

433 WASHINGTON STREET

SPECIALLY PLANNED DISTRICT TWO (SP-2)

ITEM	ZONING ORDINANCE	PERMITTED	PROPOSED
SPECIALLY PLANNED DISTRICT TWO			
MINIMUM LOT AREA	27-1511.1.	3 ACRES	5.69 ACRES (NET)
MINIMUM LOT WIDTH	27-1511.2.A.	100 FEET	375.74 FEET
MINIMUM LOT DEPTH	27-1511.2.B.	100 FEET	651.54 FEET
MAXIMUM IMPERVIOUS COVERAGE	27-1511.3.A.	70%	69.99% (TOTAL SITE)
MAXIMUM FLOOR AREA RATIO (FAR)	27-1511.3.D.	1.5	1.5
MINIMUM FLOOR AREA (ONE BEDROOM)	27-1511.4.	700 SF	>700 SF
MINIMUM FLOOR AREA (TWO BEDROOM)	27-1511.4.	900 SF	>900 SF
MAXIMUM BUILDING HEIGHT	27-1511.5.B.	85 FEET	65 FEET (b)
BUILDING SETBACK FROM ULTIMATE RIGHT-OF-WAY/PROPERTY LINE	27-1511.6.B.(1)	15 FEET	15.05 FEET
PARKING SETBACK FROM ULTIMATE RIGHT-OF-WAY	27-1511.6.B.(1)	15 FEET	15.05 FEET
MINIMUM BUILDING SEPARATION	27-1511.6.C.	30 FEET/75 FEET	80 FEET (a)

(a) 75 FEET WITH SURFACE PARKING BETWEEN BUILDINGS.
(b) EACH BUILDING CONTAINS FOUR (4) HABITABLE RESIDENTIAL STORIES THAT ARE LOCATED ABOVE ONE STORY OF OPEN PODIUM PARKING.

WHITEMARSH TOWNSHIP ZONING DATA:

HEAVY INDUSTRIAL DISTRICT (HVY) WITH RDD-1 SUB DISTRICT

ITEM	ZONING ORDINANCE	PERMITTED	PROPOSED
RIVERFRONT DEVELOPMENT DISTRICT ONE			
MINIMUM LOT AREA	116-281.A.(1)	3 ACRES	2.91 ACRES (TOTAL SITE 5.69 AC)
MINIMUM LOT WIDTH AT BUILDING SETBACK	116-281.A.(2)	200 FEET	375.74 FEET
BUILDING SETBACKS	116-281.A.(3)(a)	20 FEET	84.96 FEET
MINIMUM PARKING SETBACK	116-281.A.(4)	15 FEET	15.95 FEET
MAXIMUM BUILDING COVERAGE	116-281.A.(5)	40%	29.57% (TOTAL SITE)
MAXIMUM DENSITY	116-281.A.(6)	30 UNITS/ACRE	20.62 UNITS PER ACRE (a)
MAXIMUM BUILDING HEIGHT	116-281.A.(7)	4 STORIES	4 STORIES (b)
IMPERVIOUS COVER	116-148.B.(1)	75%	69.99% (TOTAL SITE)

(a) 60 UNITS ARE LOCATED IN THE WHITEMARSH TOWNSHIP PORTION OF 433 WASHINGTON STREET. WITH THE WHITEMARSH TOWNSHIP PORTION OF THE LOT MEASURING 2.91 ACRES.
(b) EACH BUILDING CONTAINS FOUR (4) HABITABLE RESIDENTIAL STORIES THAT ARE LOCATED ABOVE ONE STORY OF OPEN PODIUM PARKING.

16. PARKING CALCULATIONS:

	NUMBER OF UNITS	REQUIRED PARKING*	PROVIDED PARKING	COMPACT ALLOWED**	COMPACT PROVIDED	ADA PARKING REQUIRED	ADA PARKING PROVIDED***	ELECTRIC VEHICLE PROVIDED****
401 WASHINGTON ST. (CONSHOHOCKEN)	322	386.40	332	116	67	7	8	0
433 WASHINGTON ST. (CONSHOHOCKEN)	216	259.20	269	94	98	6	8	0
433 WASHINGTON ST. (WHITEMARSH)	60	90	144	0	0	3	-	18
TOTAL	598	736	745	210	165	16	16	18

* REQUIRED PARKING: 1.2 SPACES PER DWELLING UNIT IN CONSHOHOCKEN & 1.5 SPACES PER DWELLING UNIT IN WHITEMARSH
** COMPACT SPACES: 35% OF TOTAL ALLOWED IN CONSHOHOCKEN & 0% OF TOTAL ALLOWED IN WHITEMARSH
*** ADA REQUIRES 2% OF TOTAL SPACES
**** ELECTRIC VEHICLES 5 SPACES REQUIRED FOR PARKING FACILITIES THAT CONTAIN AT LEAST 50 BUT NOT MORE THAN 100 OFF-STREET PARKING SPACES. ONE ADDITIONAL SPACE REQUIRED FOR EVERY 50 SPACES OVER 100 OFF-STREET PARKING SPACES

~ THE PARKING ALONG CHERRY STREET WAS MODIFIED FROM PARALLEL SPACES TO PERPENDICULAR SPACES. THIS MODIFICATION INCREASED THE EXISTING PARKING FROM 23 SPACES TO 38 SPACES. THE 15 ADDITIONAL SPACES ARE INCLUDED IN THE TOTAL PARKING FOR 401 WASHINGTON INCREASING THE SITE FROM 317 TO 332 TOTAL SPACES, WHICH IS LESS THAN THE REQUIRED AMOUNT OF 386 SPACES.

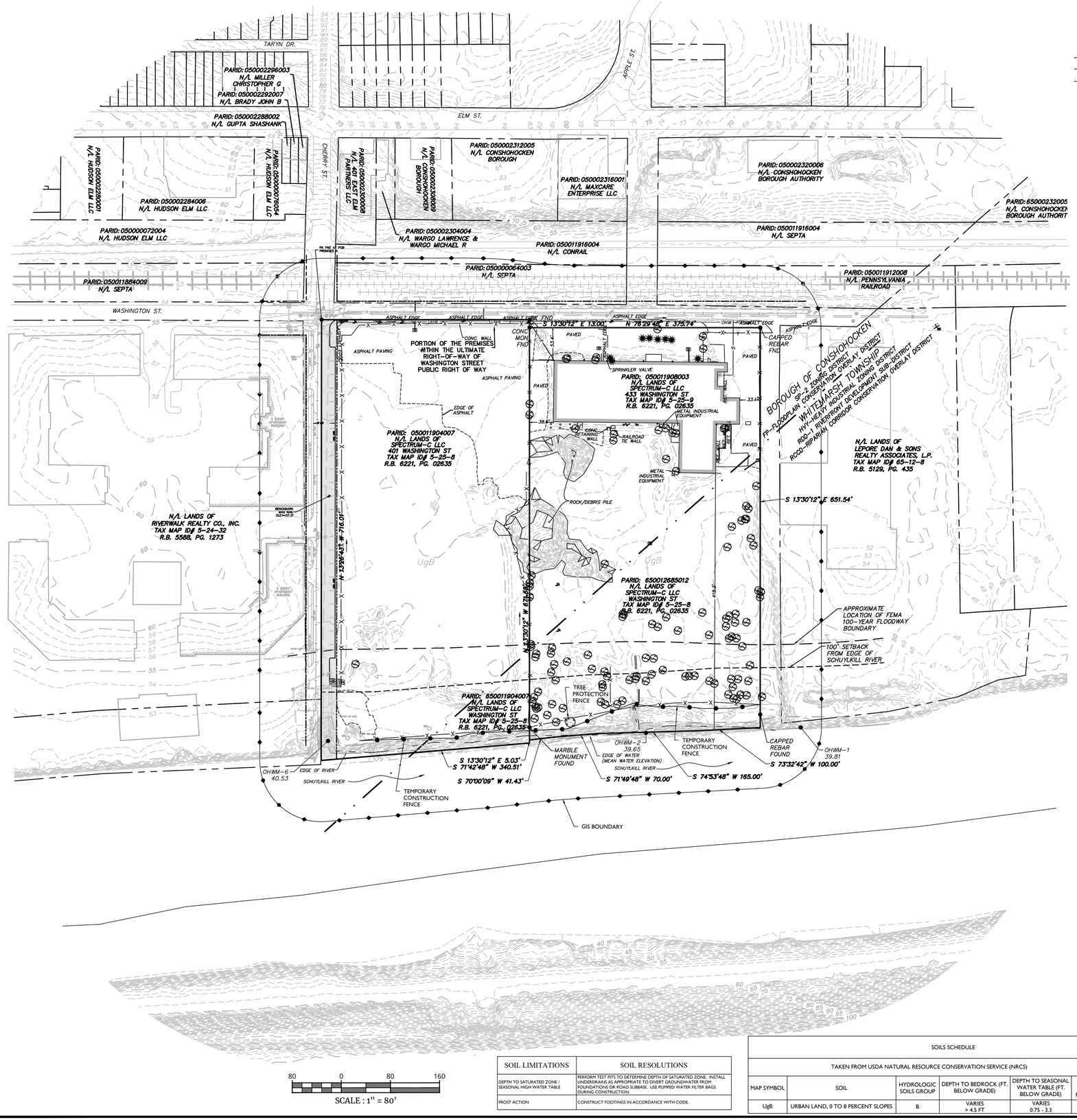
17. THE PRESENT AND PROPOSED SOURCE OF POTABLE WATER IS PROVIDED BY AQUA PENNSYLVANIA. SANITARY SEWER SERVICE WILL BE CONNECTED INTO THE EXISTING WHITEMARSH TOWNSHIP SEWER AUTHORITY'S SANITARY SEWER MAIN RUNNING UNDERNEATH WASHINGTON STREET.
18. FRESHWATER WETLAND DELINEATION LETTER REPORT COMPLETED BY COLLIERS ENGINEERING & DESIGN NOTES THAT NO WETLANDS WERE OBSERVED ON SITE.
19. BY GRAPHICAL REPRESENTATION ONLY THIS PROPERTY IS LOCATED IN FLOOD HAZARD ZONE AE AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 42091C0358G WHICH HAS AN EFFECTIVE DATE OF MARCH 2, 2016 AND IS IN A SPECIAL FLOOD HAZARD AREA. NO FIELD SURVEYING WAS PERFORMED TO DETERMINE THIS ZONE. THE FEMA CALCULATED 100-YEAR FLOOD ELEVATION FOR THIS PROJECT IS 60.5 FEET (NAVD 88) IN ACCORDANCE FIRM MAP NUMBER 42091C0358G DATED MARCH 2, 2016.
20. ALL SOILS ON SITE WERE TAKEN FROM THE NRCS WEB SOIL SURVEY.
21. THE SITE IS UNDERLAIN BY THE OLIGOCLASEMICA SCHIST OF THE WISSAHICKON FORMATION AND THE IMPURE LIMESTONE AND DOLOMITE OF THE CONESTOGA FORMATION.
22. THE PROPOSED DEVELOPMENT IS WITHIN THE LOWER SCHUYLKILL RIVER WATERSHED, WHICH DOES NOT HAVE AN APPROVED ACT 167 PLAN.
23. NO TOPSOIL SHALL BE REMOVED FROM THE SITE UNLESS AUTHORIZED BY WHITEMARSH TOWNSHIP, CONSHOHOCKEN BOROUGH, AND/OR MCCD. PERMANENT REMOVAL OF TOPSOIL FROM LAND WITHIN CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP IS PROHIBITED. NO TOPSOIL SHALL BE USED AS SPOIL.
24. EXCESS CONSTRUCTION WASTE AND DEBRIS SHALL BE REMOVED FROM THE SITE AT THE COMPLETION OF THE PROJECT. UNDER NO CIRCUMSTANCES SHALL SUCH MATERIAL BE ALLOWED TO BE BURIED OR USED AS BACKFILL MATERIAL.
25. MATERIALS, WORKMANSHIP, AND CONSTRUCTION FOR THE SITE IMPROVEMENTS SHOWN HEREON SHALL BE IN ACCORDANCE WITH:
   A. PENNSYLVANIA DEPARTMENT OF TRANSPORTATION "SPECIFICATIONS PUBLICATION 408", 2020; AS SUPPLEMENTED.
   B. CURRENT PREVAILING MUNICIPAL, COUNTY, AND/OR STATE AGENCY SPECIFICATIONS, STANDARDS, CONDITIONS, AND REQUIREMENTS.
   C. CURRENT PREVAILING UTILITY COMPANY/AUTHORITY SPECIFICATIONS, STANDARDS, AND REQUIREMENTS.
   D. CURRENT MANUFACTURER SPECIFICATIONS, STANDARDS, AND REQUIREMENTS.
26. APPROVAL OF THIS PLAN DOES NOT GUARANTEE PERMIT ISSUANCE FOR SEWAGE DISPOSAL.
27. UTILITY RELOCATIONS SHOWN HEREON, IF ANY, ARE FOR INFORMATIONAL PURPOSES ONLY AND MAY NOT REPRESENT ALL REQUIRED UTILITY RELOCATIONS. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING AND/OR COORDINATING ALL REQUIRED UTILITY RELOCATIONS IN COOPERATION WITH THE RESPECTIVE UTILITY COMPANY/ AUTHORITIES.
28. PROPER PIPE COVERAGE SHALL BE MAINTAINED DURING ALL PHASES OF CONSTRUCTION. PIPE LENGTHS SHOWN HEREON ARE FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
29. TRAFFIC SIGNAGE AND STRIPING SHALL CORRESPOND TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
30. THIS IS A SITE DEVELOPMENT PLAN AND UNLESS SPECIFICALLY NOTED ELSEWHERE HEREON, IS NOT A SURVEY.
31. ALL STRUCTURES SHALL CONFORM TO THE APPROVED BULK ZONING REQUIREMENTS.
32. DO NOT SCALE DRAWINGS AS THEY PERTAIN TO ADJACENT AND SURROUNDING PHYSICAL CONDITIONS, BUILDINGS, STRUCTURES, ETC. THEY ARE SCHEMATIC ONLY, EXCEPT WHERE DIMENSIONS ARE SHOWN THERETO.
33. THIS SET OF PLANS HAS BEEN PREPARED FOR THE PURPOSES OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL APPROVALS REQUIRED HAVE BEEN OBTAINED, ALL CONDITIONS OF APPROVAL HAVE BEEN SATISFIED AND THE DRAWINGS HAVE BEEN STAMPED "ISSUED FOR CONSTRUCTION". THIS SHALL INCLUDE APPROVAL OF ALL CATALOG CUTS, SHOP DRAWINGS AND/OR DESIGN CALCULATIONS AS REQUIRED BY THE PROJECT OWNER AND/OR MUNICIPAL ENGINEER.
34. EXISTING UTILITY INFORMATION SHOWN HEREON HAS BEEN COLLECTED FROM VARIOUS SOURCES AND IS NOT GUARANTEED AS TO ACCURACY OR COMPLETENESS. THE CONTRACTOR SHALL VERIFY ALL INFORMATION TO HIS SATISFACTION PRIOR TO EXCAVATION. WHERE EXISTING UTILITIES ARE TO BE CROSSED BY PROPOSED CONSTRUCTIONS, TEST PITS SHALL BE DUG BY THE CONTRACTOR PRIOR TO CONSTRUCTION TO ASCERTAIN EXISTING INVERTS, MATERIALS, AND SIZES. TEST PIT INFORMATION SHALL BE GIVEN TO THE ENGINEER PRIOR TO CONSTRUCTION TO PERMIT ADJUSTMENTS AS REQUIRED TO AVOID CONFLICTS. THE CONTRACTOR SHALL NOTIFY THE UNDERSIGNED PROFESSIONAL IMMEDIATELY IF ANY FIELD CONDITIONS ENCOUNTERED DIFFER MATERIALLY FROM THOSE REPRESENTED HEREON. SUCH CONDITIONS COULD RENDER THE DESIGNS HEREON INAPPROPRIATE OR INEFFECTIVE.
35. THE CONTRACTOR IS RESPONSIBLE FOR PROJECT SAFETY, INCLUDING PROVISION OF ALL APPROPRIATE SAFETY DEVICES AND TRAINING REQUIRED.
36. STORMWATER FACILITIES SHALL BE OWNED AND MAINTAINED BY THE PROPERTY OWNER IN PERPETUITY. THE PROPERTY OWNER SHALL PROVIDE A BLANKET STORMWATER ACCESS EASEMENT TO THE BOROUGH AND TOWNSHIP FOR THE PURPOSE OF ACCESS TO THE STORMWATER FACILITIES. IF, IN THE JUDGEMENT OF THE BOROUGH AND/OR TOWNSHIP ENGINEERS, THE OWNER HAS FAILED BY MAINTAIN THE STORMWATER FACILITIES IN SUCH A MANNER AS TO ENSURE THEIR PROPER FUNCTIONING, THE BOROUGH AND/OR TOWNSHIP AFTER PROVIDING A WRITTEN NOTICE SHALL HAVE THE RIGHT TO ENTER UPON THE LANDS OF THE OWNER AND TO MAKE ANY REPAIRS AS MAY BE NECESSARY TO THE STORMWATER FACILITIES TO ENSURE THAT SUCH FACILITIES FUNCTION AND PERFORM IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS. ANY AND ALL COSTS INCURRED BY THE BOROUGH AND/OR TOWNSHIP FOR SUCH REPAIRS AND/OR MAINTENANCE SHALL BE PAID IN FULL BY THE OWNER. A LIEN OR LIENS MAY BE PLACED AGAINST THE PROPERTY IF THE OWNER FAILS TO REMIT PAYMENT WITHIN SIXTY (60) DAYS.
37. DRAINAGE EASEMENTS, IF ANY, MAY NOT BE ALTERED WITHOUT THE WRITTEN PERMISSION OF THE TOWNSHIP/BOROUGH ENGINEER. NO OBSTRUCTIONS SUCH AS PLANTED BERMS OR FENCES MAY BE INSTALLED IN THE DRAINAGE EASEMENT AREAS WITHOUT SUFFICIENT PROVISION FOR THE PASSAGE OF STORMWATER, AND ANY SUCH PROPOSED PROVISION SHALL BE APPROVED IN WRITING BY THE TOWNSHIP/ BOROUGH ENGINEER.
38. STORMWATER BMPS ARE FIXTURES THAT CAN BE ALTERED OR REMOVED ONLY AFTER APPROVAL BY WHITEMARSH TOWNSHIP AND/OR CONSHOHOCKEN BOROUGH.

_____ _____
DATE OWNER/APPLICANT

39. ALL ROADWAYS, CURBS, PARKING LOTS, SANITARY SEWERS, STORM SEWERS, STORMWATER MANAGEMENT DEVICES, AND APPURTENANCES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS AND TO THE STANDARDS AND SPECIFICATIONS OF WHITEMARSH TOWNSHIP, CONSHOHOCKEN BOROUGH, AND THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION.
40. THE DEVELOPER SHALL BE RESPONSIBLE FOR PROVIDING ALL PAVEMENT MARKINGS, STREET SIGNS, TRAFFIC DIRECTIONAL AND CONTROL SIGNS SHOWN ON THIS PLAN IN ACCORDANCE WITH THE WHITEMARSH TOWNSHIP AND CONSHOHOCKEN BOROUGH STANDARDS. ALL SIGNAGE SHALL BE CONSISTENT WITH EXISTING SIGNAGE WITHIN WHITEMARSH TOWNSHIP AND CONSHOHOCKEN BOROUGH.
41. CONTRACTOR(S) SHALL RECEIVE A COPY OF THE APPROVED EROSION & SEDIMENTATION CONTROL PLANS.
42. WHITEMARSH TOWNSHIP AND CONSHOHOCKEN BOROUGH SHALL NOT BE RESPONSIBLE FOR THE MAINTENANCE OF ANY AREA NOT DEDICATED TO THE MUNICIPALITY.
43. OFFERS OF DEDICATION ARE SUBJECT TO ACCEPTANCE BY THE BOARD OF SUPERVISORS.
44. THERE SHALL BE NO CHANGES OR DEVIATION FROM THESE PLANS UNLESS APPROVED BY THE ENGINEER. SUCH PLAN CHANGES, SHOULD THEY BECOME NECESSARY, ARE SUBJECT TO THE WHITEMARSH TOWNSHIP AND CONSHOHOCKEN BOROUGH ORDINANCES.
45. THE CONTRACTOR SHALL NOTIFY ALL APPROPRIATE UTILITIES AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO THE START OF ANY CONSTRUCTION. ALL UTILITIES HAVE BEEN IDENTIFIED BASED ON THE BEST AVAILABLE INFORMATION AND LISTED ON THESE PLANS IN ACCORDANCE WITH ACT 287 REQUIREMENTS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF EXISTING UTILITIES AND ALL EFFORTS SHALL BE UNDERTAKEN TO PROTECT EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE TO UTILITIES BY THE CONTRACTOR SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE. RESTORATION OF ALL EXISTING SURFACE IMPROVEMENTS DAMAGED OR ALTERED DURING CONSTRUCTION, INCLUDING LANDSCAPING, SHALL ALSO BE THE RESPONSIBILITY OF THE CONTRACTOR.
46. THE CONTRACTOR SHALL MAKE PROVISIONS FOR MAINTAINING THE SAFE FLOW OF TRAFFIC DURING CONSTRUCTION WITHIN THE EXISTING ROAD RIGHTS-OF-WAY WHILE ENTERING AND LEAVING THE SITE.
47. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS RELATIVE TO THE CONSTRUCTION PROPOSED ON THE PLANS.
48. ENGINEERING PERMITS: PRIOR TO ANY WORK WITHIN THE RIGHT OF WAY, PERMITS MUST BE OBTAINED FROM THE TOWNSHIP.
49. BY SUBMISSION OF THESE PLANS, THE ENGINEER ON RECORD CERTIFIES THAT THESE PLANS ARE IN COMPLETE COMPLIANCE WITH THE WHITEMARSH TOWNSHIP AND CONSHOHOCKEN BOROUGH STORMWATER MANAGEMENT ORDINANCE.
50. THIS LAND DEVELOPMENT PLAN WAS PREPARED IN ACCORDANCE WITH REQUIREMENTS ESTABLISHED IN THE WHITEMARSH TOWNSHIP AND CONSHOHOCKEN BOROUGH SUBDIVISION AND LAND DEVELOPMENT ORDINANCE AND THE ZONING ORDINANCE OF WHITEMARSH TOWNSHIP AND CONSHOHOCKEN BOROUGH.
51. ALL CROSSWALKS, STOP BARS, ARROWS, AND "ONLY"S WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE HOT THERMOPLASTIC.
52. ALL SHEETS INCLUDED IN THIS LAND DEVELOPMENT PLAN SET ARE TO BE CONSIDERED AS IF RECORDED WITH THE RECORD PLAN.
53. THERE SHALL BE A PRE CONSTRUCTION CONFERENCE AND INSPECTION WITH THE WHITEMARSH TOWNSHIP SHADE TREE COMMISSION PRIOR TO START OF CONSTRUCTION. AFTER THE INSPECTION IS COMPLETE, THE SHADE TREE COMMISSION SHALL NOTIFY WHITEMARSH TOWNSHIP IN WRITING. UPON WHITEMARSH TOWNSHIP APPROVAL, DEMOLITION, GRADING AND CONSTRUCTION MAY PROCEED.
54. POOLS SHALL BE ENTIRELY ENCLOSED WITH A FENCE NOT LESS THAN FOUR FEET IN HEIGHT.
55. 10.67 ACRES IS THE SUM OF THE NET LOT AREA OF 401 WASHINGTON STREET (4.97 ACRES) AND 433 WASHINGTON STREET (5.69 ACRES).
56. ALL ELECTRIC, TELEPHONE, AND COMMUNICATION SERVICE FACILITIES, BOTH MAIN AND SERVICE LINES, SHALL BE PROVIDED BY UNDERGROUND CABLES, INSTALLED IN ACCORDANCE WITH THE PREVAILING STANDARDS AND PRACTICES OF THE UTILITY AND OTHER COMPANIES PROVIDING SUCH SERVICE.
57. COMPACT PARKING SPACES IN CONSHOHOCKEN BOROUGH EXCEED THE MINIMUM REQUIRED DIMENSION OF 7.75' X 16' AND ARE LABELED ON THE OVERALL SITE PLAN. ALL OTHER CONVENTIONAL PARKING SPACE SIZES ARE SHOWN ON THE OVERALL SITE PLAN. ALL HANDICAP ACCESSIBLE (ADA) SPACES ARE VAN ACCESSIBLE.
58. PROPOSED CURB ALONG WASHINGTON STREET SHALL BE 6" HIGH BELGIAN BLOCK CURB. PROPOSED CURB INTERIOR TO SITE SHALL BE VERTICAL CONCRETE CURB, UNLESS OTHERWISE NOTED.
59. UNDER NO CIRCUMSTANCES SHALL CHLORINATED SWIMMING POOL DISCHARGE BE DIRECTED TO THE RIVER OR TO ANY PIPING SYSTEM THAT DISCHARGES TO THE RIVER.
60. THE MINIMUM FLOOR AREA PER DWELLING UNIT WILL BE IN CONFORMANCE WITH 27-1511.4.A. & B.
61. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH PENNDOT PUBLICATION 408 AND CONSHOHOCKEN BOROUGH CONSTRUCTION STANDARDS.
62. THESE PLANS CONFORM WITH THE CONSHOHOCKEN BOROUGH FLOODPLAIN ORDINANCE.
63. THE PROPOSED BRICK SIDEWALK ALONG WASHINGTON STREET SHALL BE CONSISTENT IN APPEARANCE WITH ADJACENT WASHINGTON STREET DEVELOPMENT.
64. MAINTENANCE OF BICYCLE LANE PAVEMENT MARKING ALONG CHERRY ROAD SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER.
65. ALL PROPOSED OPEN SPACE WILL BE DEED RESTRICTED FROM FUTURE DEVELOPMENT.
66. PER CONSHOHOCKEN CODE 22-404.3.D CONCRETE WHEEL STOPS SHALL BE PROVIDED ON ALL PARKING SPACES WHICH ARE NOT UNDER THE BUILDINGS. SO THAT "NO PART OF ANY PARKED VEHICLE WILL EXTEND BEYOND THE BOUNDARIES OF THE PARKING LOT."
67. PURSUANT TO 27-1504.D.(3)(A), (B), AND (C), THERE SHALL BE RIVERFRONT ACCESS VIA EASEMENT OR PUBLIC RIGHT-OF-WAY.
68. OPEN SPACE IS PROHIBITED FROM FURTHER DEVELOPMENT BASED ON THIS PLAN.
69. RECREATION AREA IS TO BE OFFERED FOR DEDICATION TO CONSHOHOCKEN BOROUGH.
70. PERMISSION SHALL BE GRANTED FOR EXTENSION OF THE 26' WIDE EMERGENCY ACCESS EASEMENT PARALLEL TO THE RIVER AT SUCH TIME AS CONSTRUCTION OF SAID EASEMENT IS TO BE PERFORMED.
71. THE RIGHT-OF-WAY FOR THE PROPOSED PUBLIC ACCESS SHALL BE OFFERED FOR DEDICATION TO THE TOWNSHIP. IF THE AREA IS NOT ACCEPTED FOR DEDICATION, AN EASEMENT FOR PUBLIC USE MUST BE PROVIDED ALONG WITH MAINTENANCE AGREEMENTS ACCEPTABLE TO THE TOWNSHIP. IF THE AREA IS ACCEPTED FOR DEDICATION, MAINTENANCE RESPONSIBILITIES FOR STORMWATER COLLECTION AND CONVEYANCE FACILITIES SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER.
72. AN AS-BUILT SURVEY SHALL BE COMPLETED AND SUBMITTED TO THE BOROUGH OF CONSHOHOCKEN AND WHITEMARSH TOWNSHIP IN BOTH PAPER AND DIGITAL CADD FORMATS.
73. THIS SET OF PLANS IS NOT DEPICTING ENVIRONMENTAL CONDITIONS OR A CERTIFICATION/ WARRANTY REGARDING THE PRESENCE OR ABSENCE OF ENVIRONMENTALLY IMPACTED SITE CONDITIONS. MASER CONSULTING HAS PERFORMED NO EXPLORATORY OR TESTING SERVICES, INTERPRETATIONS, CONCLUSIONS, OR OTHER SITE ENVIRONMENTAL SERVICES RELATED TO THE DETERMINATION OF THE POTENTIAL FOR CHEMICAL, TOXIC, RADIOACTIVE, OR OTHER TYPE OF CONTAMINANTS AFFECTING THE PROPERTY AND THE UNDERSIGNED PROFESSIONAL IS NOT QUALIFIED TO DETERMINE THE EXISTENCE OF THE SAME. SHOULD ENVIRONMENTAL CONTAMINATION OR WASTE BE DISCOVERED, THE OWNER AND CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LAWS AND REGULATIONS.
74. GARBAGE WILL BE COLLECTED IN THE PARKING GARAGE. DUMPSTER WILL BE BROUGHT OUT OF THE PARKING GARAGE FOR THE GARBAGE TRUCKS TO COLLECT.
75. THESE GENERAL NOTES APPLY TO ALL SHEETS IN THE SET.

FLOOD PROOFING NOTES:

1. ALL COMPONENTS OF THIS PROJECT WILL BE FLOOD PROOFED IN ACCORDANCE WITH THE UNITED STATES ARMY CORPS OF ENGINEERS PAMPHLET EP 1165-2-314 DATED 12/95, AS AMENDED, "FLOOD PROOFING REGULATIONS".
2. NO STRUCTURE SHALL BE LOCATED, RELOCATED, RECONSTRUCTED, ENLARGED, OR STRUCTURALLY ALTERED EXCEPT IN FULL COMPLIANCE WITH THE TERMS AND PROVISIONS OF ARTICLE XXII AND ANY OTHER APPLICABLE ORDINANCES AND REGULATIONS WHICH APPLY TO USES WITHIN



DEMO LEGEND

- T.B.R. — EXISTING FEATURE TO BE REMOVED
- TREE TO BE REMOVED
- TP-1 — TEST PIT & ID
- TEMPORARY CONSTRUCTION FENCE
- TREE PROTECTION FENCE
- BOUNDARY BETWEEN PHYSICAL SURVEY AREA AND GIS DATA AREA

ORDINARY HIGH WATER MARK ELEVATIONS	
DESIGNATION	ELEVATION (FT)*
OHWM-1	39.81
OHWM-2	39.65
OHWM-6	40.53
AVERAGE OHWM	40.00

* NAVD 88

GEOTECHNICAL INVESTIGATION SUMMARY DATA:

- EXISTING MISCELLANEOUS FILL
- ENHANCED SUBSURFACE WEATHERING
- EVIDENCE OF POTENTIAL SINKHOLE ACTIVITY
- COMPRESSIBLE SOIL STRATA
- SHALLOW DEPTHS TO GROUND WATER

PER DAVID BLACKMORE & ASSOCIATES REPORT OF GEOTECHNICAL EXPLORATION FOR SITE DATED MAY 28, 2013

EXCERPT FROM DBA REPORT OF GEOTECHNICAL EXPLORATION RELATING TO THE PRESENCE OF LIMESTONE BEDROCK

...IT SHALL BE NOTED THAT THE SUBJECT SITE IS UNDERLAIN BY CARBONATE GEOLOGIC FORMATION WHICH IS SUBJECT TO DISSOLUTION ACTIVITY AND THE SUBSEQUENT DEVELOPMENT OF KARST FEATURES, SUBSOIL EROSION AND THE FORMATION OF SINKHOLES. DISTURBANCE AND/OR ALTERATION OF EXISTING SITE DRAINAGE PATTERNS MAY RESULT IN AN INCREASE IN SUBSOIL EROSION AND SINKHOLE FORMATION.

LEGEND

- TRAVERSE LINE, CENTER LINE OR BASELINE (12+00 PI 13+00)
- RIGHT OF WAY LINE
- PROPERTY LINE
- EDGE OF PAVEMENT (FACE)
- CURB LINE (D.C. BACK)
- DEPRESSED CURB
- CHAIN FENCE
- WETLAND LINE
- MUNICIPAL BOUNDARY
- TREELINE
- ELECTRICAL MANHOLE
- WATER MANHOLE
- TELEPHONE MANHOLE
- UNMARKED MANHOLE
- SANITARY MANHOLE
- DRAINAGE MANHOLE
- MAJOR CONTOUR
- MINOR CONTOUR
- SPOT ELEVATION
- TOP OF CURB ELEV.
- BOTTOM OF CURB ELEV.
- U/G CABLE TV LINE
- U/G FIBER OPTIC LINE
- U/G TELEPHONE LINE
- U/G ELECTRIC LINE
- OVERHEAD WIRE
- WATER MAIN
- GAS MAIN
- SAN. SEWER LATERAL
- SAN. SEWER MAIN
- STORM PIPE
- WETLAND MARKER
- TREE
- ROADWAY SIGNS
- TRAFFIC FLOW
- MAILBOX
- TRAFFIC SIGNAL POLE
- POLE MOUNTED LIGHT
- UTILITY POLE
- GUY WIRE
- TRANSFORMER
- FDC FIRE DEPT. CONNECTION
- FIRE HYDRANT
- WV WATER VALVE
- GV GAS VALVE
- CO SANITARY CLEANOUT
- CONCRETE MONUMENT
- CAPPED REBAR/IRON PIPE
- STORM INLET TYPE 'C'
- STORM INLET TYPE 'M'
- FLARED END SECTION
- HEADWALL

ABBREVIATIONS

D.C. = DEPRESSED CURB	FF = FINISH FLOOR	MHWL = MEAN HIGH WATERLINE
BC = BOTTOM OF CURB	UV = UNKNOWN VALVE	MLWL = MEAN LOW WATERLINE
TC = TOP OF CURB	MH = MANHOLE	
BOL = BOLLARD	DEP. = DEPRESSED	
GRT = GRATE	CL = CENTERLINE	TW = TOP OF WALL
MB = MAILBOX	PM = PARKING METER	BW = BOTTOM WALL

DEMOLITION NOTES:

1. ALL DEMOLITION ACTIVITIES ARE TO BE PERFORMED IN STRICT ADHERENCE TO ALL FEDERAL STATE AND LOCAL REGULATIONS.
2. CONDUCT DEMOLITION SERVICES IN SUCH A MANNER TO INSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, SIDEWALKS, AND OTHER ADJACENT FACILITIES. DO NOT CLOSE OR OBSTRUCT STREETS, SIDEWALKS, OR OTHER OCCUPIED FACILITIES WITHOUT PRIOR WRITTEN PERMISSION OF OWNER AND ANY APPLICABLE GOVERNMENTAL AUTHORITIES. PROVIDE ALTERNATE ROUTES AROUND CLOSED OR OBSTRUCTED TRAFFIC WAYS, IF REQUIRED BY APPLICABLE GOVERNMENTAL REGULATIONS.
3. USE WATERING, TEMPORARY ENCLOSURES AND OTHER SUITABLE METHODS, AS NECESSARY TO LIMIT THE AMOUNT OF DUST AND DIRT RISING AND SCATTERING IN THE AIR. CLEAN ADJACENT STRUCTURES AND IMPROVEMENTS OF ALL DUST AND DEBRIS CAUSED BY THE DEMOLITION OPERATIONS. RETURN ALL ADJACENT AREAS TO THE CONDITIONS EXISTING PRIOR TO THE START OF WORK.
4. ACCOMPLISH AND PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE UNAUTHORIZED ENTRY OF PERSONS AT ANY TIME.
5. COMPLETELY FILL BELOW GRADE AREAS AND VOIDS RESULTING FROM THE DEMOLITION OF STRUCTURES AND FOUNDATIONS WITH SOIL MATERIALS CONSISTING OF STONE, GRAVEL AND SAND, FREE FROM DEBRIS, TRASH, FROZEN MATERIALS, ROOTS, AND OTHER ORGANIC MATTER. STONES USED WILL NOT BE LARGER THAN 6 INCHES IN DIMENSION. MATERIAL FROM DEMOLITION MAY NOT BE USED AS FILL. PRIOR TO PLACEMENT OF FILL MATERIALS, UNDERTAKE ALL NECESSARY ACTION IN ORDER TO INSURE THAT AREAS TO BE FILLED ARE FREE OF STANDING WATER, FROST, FROZEN MATERIAL, TRASH, AND DEBRIS. PLACE FILL MATERIALS IN HORIZONTAL LAYERS NOT EXCEEDING 6 INCHES IN LOOSE DEPTH AND COMPACT EACH LAYER AT PLACEMENT TO 95% OPTIMUM DENSITY. GRADE THE SURFACE TO MEET ADJACENT CONTOURS AND TO PROVIDE SURFACE DRAINAGE.
6. REMOVE FROM THE DESIGNATED SITE, AT THE EARLIEST POSSIBLE TIME, ALL DEBRIS, RUBBISH, SALVAGEABLE ITEMS, HAZARDOUS AND COMBUSTIBLE SERVICES. REMOVED MATERIALS MAY NOT BE STORED, SOLD, OR BURNED ON THE SITE. REMOVAL OF HAZARDOUS AND COMBUSTIBLE MATERIALS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE PROCEDURES AS AUTHORIZED BY THE FIRE DEPARTMENT OR OTHER APPROPRIATE REGULATORY AGENCIES AND AUTHORITIES.
7. BEFORE THE COMMENCEMENT OF THE DESIGNATED DEMOLITION, MARK FOR POSITION ALL UTILITIES AND PROTECT ALL ACTIVE LINES. CLEARLY IDENTIFY BEFORE THE COMMENCEMENT OF DEMOLITION SERVICES THE REQUIRED INTERRUPTION OF ACTIVE SYSTEMS THAT MAY AFFECT OTHER PARTIES, AND NOTIFY ALL APPLICABLE UTILITY COMPANIES TO INSURE THE CONTINUATION OF SERVICE.
8. THIS DEMOLITION PLAN IS INTENDED TO IDENTIFY THOSE EXISTING CONDITIONS WHICH ARE TO BE REMOVED. IT IS NOT INTENDED TO PROVIDE DIRECTION OTHER THAN THAT ALL PROCEDURES ARE TO BE IN ACCORDANCE WITH STATE, FEDERAL, LOCAL, AND JURISDICTIONAL REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS NECESSARY.
9. EXISTING STORMSEWER PIPES AND STRUCTURES ARE TO REMAIN UNLESS MARKED AS TO BE REMOVED. IF THE CONDITION OF THE STORMSEWER STRUCTURE OR PIPE IS QUESTIONABLE, CONTACT THE OWNER'S REPRESENTATIVE/ENGINEER TO EVALUATE IF A REPLACEMENT IS REQUIRED.
10. ALL EXISTING WATERLINES FROM THE FORMER FACILITY SHALL BE LOCATED DURING CONSTRUCTION BY THE CONTRACTOR. THE EXISTING WATER LINES SHALL BE EVALUATED AND BE REMOVED OR REPLACED AS NECESSARY.
11. 4-FOOT HIGH ORANGE CONSTRUCTION FENCING FOR TREE PROTECTION SHALL BE INSTALLED AND MAINTAINED AT THE ENTIRE LIMIT OF DISTURBANCE ALONG THE SOUTH PROPERTY LINE.
12. THE CONTRACTOR SHALL FIELD-VERIFY THE LOCATION OF EXISTING BUILDING SANITARY SEWER LATERALS. LATERALS THAT ARE TO BE ABANDONED / REMOVED SHALL BE CAPPED AT THE MAIN.
13. BUILDING REMOVAL INCLUDES SELECTIVE REMOVAL OF BUILDING FOUNDATIONS.
14. PREVENT DEBRIS FROM ENTERING THE STORM WATER MANAGEMENT SYSTEM OR THE SCHUYLKILL RIVER.
15. BORING LOCATIONS SHOWN ON THIS PLAN ARE DETAILED IN A GEOTECHNICAL INVESTIGATION REPORT PREPARED BY DAVID BLACKMORE & ASSOCIATES DATED MAY 28, 2013.
16. ORDINARY HIGH WATER MARKS (OHWM-1, OHWM-2, AND OHWM-6) WERE SET IN THE FIELD BY MARATHON ON JANUARY 21, 2016.
17. THE DEMOLITION CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCEMENT OF OPERATIONS INCLUDING, BUT NOT LIMITED TO, A DEMOLITION PERMIT FROM THE BOROUGH OF CONSHOHOCKEN.
18. OWNER ASSUMES NO RESPONSIBILITY FOR ACTUAL CONDITION OF BUILDING.
19. THE DEMOLITION CONTRACTOR IS RESPONSIBLE FOR THE LAWFUL REMOVAL, TRANSPORTATION AND DISPOSAL OF ALL RETIRED BUILDING DEBRIS. RETIRED BUILDING DEBRIS SHALL NOT BE STOCKPILED ON SITE.
20. ALL ASBESTOS-CONTAINING BUILDING MATERIAL, FRIABLE OR NON-FRIABLE, THAT COULD BE RENDERED FRIABLE BY DEMOLITION SHALL BE REMOVED BY THE DEMOLITION CONTRACTOR OR UNDER THE DIRECTION OF THE DEMOLITION CONTRACTOR PRIOR TO DEMOLITION.
21. THE DEMOLITION CONTRACTOR IS RESPONSIBLE FOR TERMINATING ALL UTILITY SERVICES AND/OR FOR CONTACTING THE UTILITY OWNER TO TERMINATE THEIR UTILITY SERVICE.
22. IT IS THE RESPONSIBILITY OF THE DEMOLITION CONTRACTOR TO COMMUNICATE WITH EACH UTILITY SERVICE PROVIDER AS TO THEIR POLICY AND PRACTICE FOR TERMINATING SERVICES, INCLUDING BUT NOT LIMITED TO, WHO IS AUTHORIZED TO PERFORM THE WORK, GUIDELINES AND SPECIFICATIONS FOR THE UTILITY TERMINATION TASK, AND THE REQUIRED PAPERWORK, OVERSIGHT AND INSPECTION(S). THE DEMOLITION CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE OWNER DOCUMENTATION OF THE SAME.
23. ALL DISCONNECTED SERVICES WILL HAVE HAZARDOUS ELEMENTS ASSOCIATED WITH THEM. THE DEMOLITION CONTRACTOR AND HIS SUBCONTRACTOR(S) SHALL SEEK THE NECESSARY GUIDANCE AND TAKE ALL NECESSARY PRECAUTIONS TO RENDER DISCONNECTIONS AND/OR TERMINATIONS 'SEALED' AND SAFE.
24. DEMOLITION CONTRACTOR(S) SHALL EMPLOY PRACTICES AND GUIDELINES OUTLINED BY THE SPECIFIC DISCIPLINE OF THE UTILITY BEING DISCONNECTED.
25. CONSULT PROFESSIONALS AND/OR THE UTILITY COMPANY REPRESENTATIVES SHOULD THERE BE ANY QUESTION AS TO THE PROPER PROCEDURE TO MAKE A DISCONNECTION AND/OR ABANDON (TEMPORARILY OR PERMANENTLY, AS THE SITUATION DICTATES) A UTILITY SERVICE.
26. THE LOCATION OF ALL UNDERGROUND UTILITIES ARE NOT SHOWN. CONTRACTORS SHOULD CONTACT THE PENNSYLVANIA ONE-CALL SYSTEM OR EMPLOY A PRIVATE UNDERGROUND UTILITY LOCATING COMPANY TO ENSURE THAT ALL UNDERGROUND UTILITIES ARE LOCATED PRIOR TO EXCAVATION SO THAT DEMOLITION CAN PROCEED SAFELY.
27. ALL EXISTING UNDERGROUND UTILITIES SHALL BE COMPLETELY EXCAVATED AND REMOVED UNLESS OTHERWISE NOTED ON THE PLANS OR IN CONTRACT.
28. ALL EXCAVATIONS SHALL BE BACKFILLED WITH CLEAN FILL, DEVOID OF ORGANIC OR FROZEN MATERIAL AND DEVOID OF ROCKS GREATER THAN 6 INCHES IN DIAMETER, IN A MAXIMUM HEIGHT OF EIGHT- INCH (8") LIFTS AND COMPACTED TO NOT LESS THAN NINETY- FIVE (95%) PERCENT OF THE MAXIMUM MODIFIED DRY DENSITY, ASTM D 1557-91.
29. CONTACT OWNER IF THERE IS ANY QUESTION ABOUT THE SCOPE OF DEMOLITION WORK.
30. PROTECTIVE FENCING TO BE PLACED AROUND TREES TO REMAIN ON THE PROPERTY PRIOR TO CONSTRUCTION.

SOIL LIMITATIONS	SOIL RESOLUTIONS
DEPTH TO SATURATED ZONE / SEASONAL HIGH WATER TABLE	PERFORM TEST PITS TO DETERMINE DEPTH OF SATURATED ZONE. INSTALL UNDERDRAINS AS APPROPRIATE TO DIVERT GROUNDWATER FROM FOUNDATIONS OR ROAD SUBBASE. USE PUMPED WATER FILTER BAGS DURING CONSTRUCTION.
FROST ACTION	CONSTRUCT FOOTINGS IN ACCORDANCE WITH CODE.

SOILS SCHEDULE

TAKEN FROM USDA NATURAL RESOURCE CONSERVATION SERVICE (NRCS)

MAP SYMBOL	SOIL	HYDROLOGIC SOILS GROUP	DEPTH TO BEDROCK (FT. BELOW GRADE)	DEPTH TO SEASONAL WATER TABLE (FT. BELOW GRADE)	FLOOD HAZARD POTENTIAL	HYDRIC/ HYDRIC COMPONENT
UgB	URBAN LAND, 0 TO 8 PERCENT SLOPES	B	VARIES > 4.5 FT	VARIES 0.75 - 3.3	NONE	NONE

REV	DATE	DRAWN BY	DESCRIPTION
1	12/1/22	MD	REVISED PER COMMENTS FROM CONSHOHOCKEN REVIEW LETTERS DATED 1/7/2022.
2	2/3/22	MG	REVISED PER EMAILS WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/22/2022.
3	5/20/22	JJW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.

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REGISTERED PROFESSIONAL
C. RICHARD ROSEBERRY
ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
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PRELIMINARY/FINAL LAND DEVELOPMENT PLANS

FOR

401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

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941 Marcon Boulevard, Suite 801
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

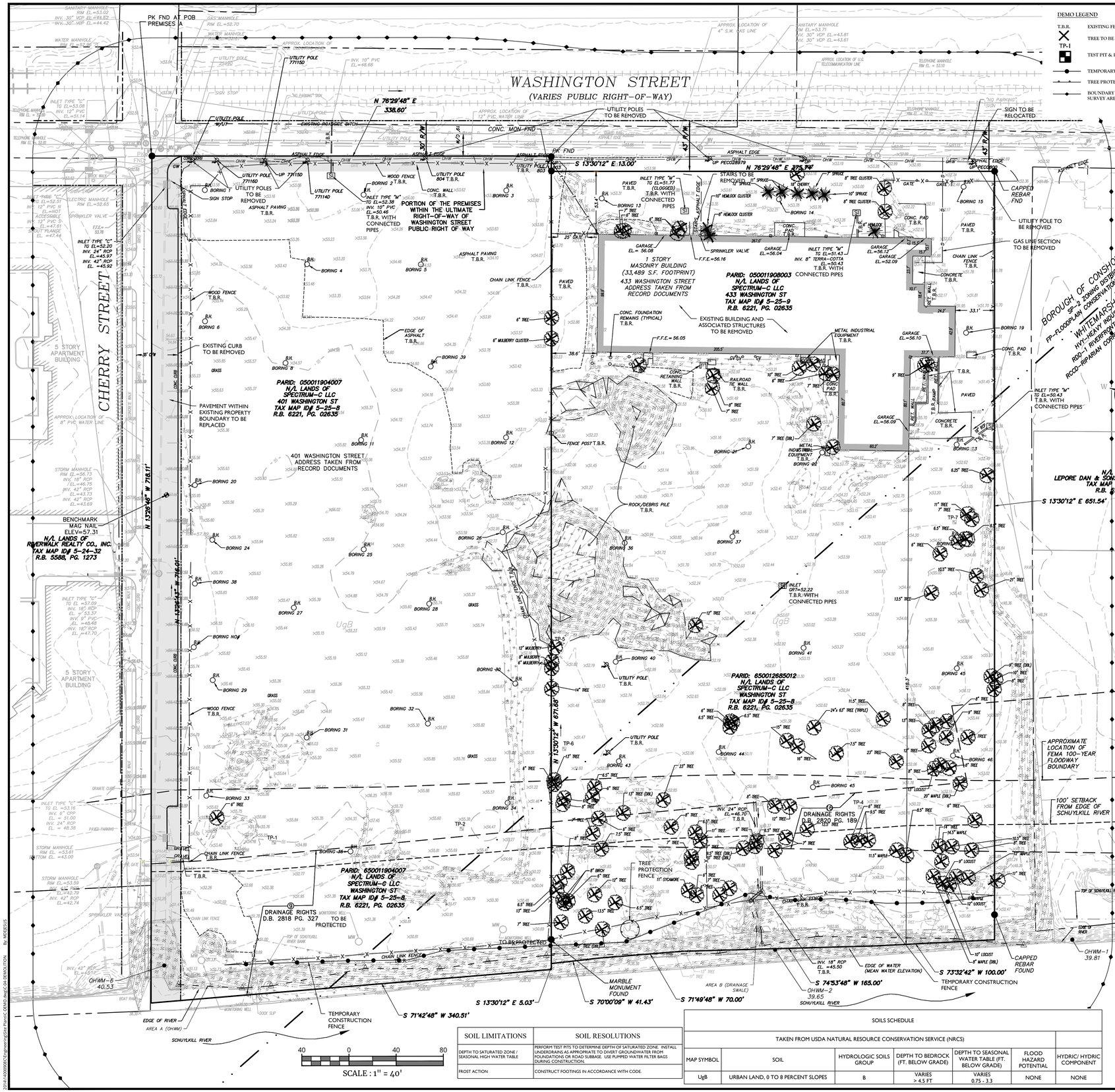
PROJECT NUMBER: 14000908C
DRAWING NAME: C-DEMO

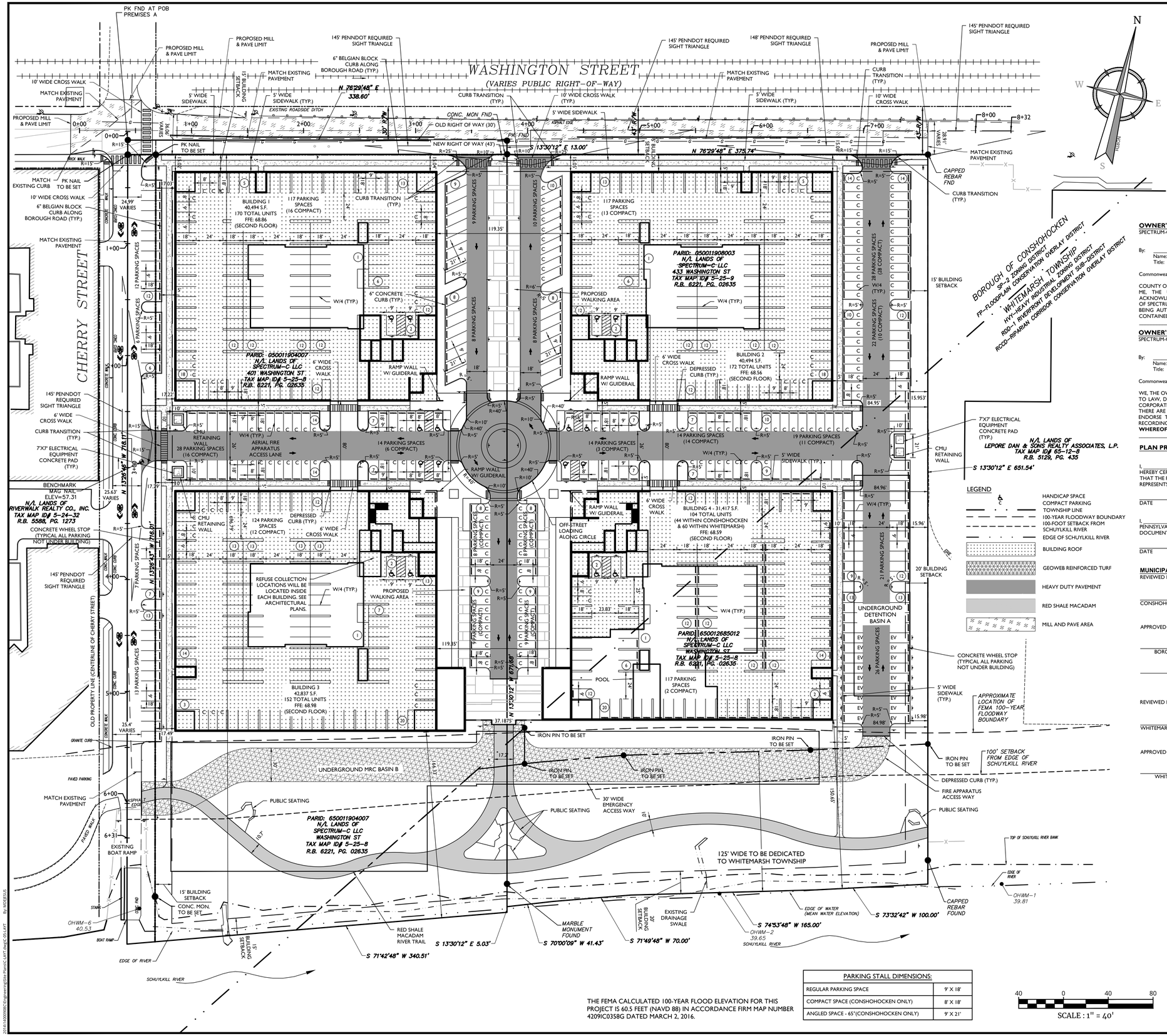
SHEET TITLE: EXISTING RESOURCE AND SITE ANALYSIS PLAN

SHEET NUMBER: 3 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C\Engineering\Site Plans\C-DEMO.dwg|C-03 DEMOLITION By: MDEJESUS


WASHINGTON STREET
(VARIES PUBLIC RIGHT-OF-WAY)
CHERRY STREET
N 76°29'48" E 338.60'
S 13°30'12" E 13.00'
N 76°29'48" E 873.74'
N 13°30'12" W 671.68'
N 13°26'43" W 718.11'
S 13°30'12" E 651.54'
S 73°32'42" W 100.00'
S 74°53'48" W 165.00'
S 71°49'48" W 70.00'
S 70°00'09" W 41.43'
S 71°42'48" W 340.51'
S 13°30'12" E 5.03'
PK FND AT POB PREMISES A
PK FND
CONC. MON-FND
CAPPED REBAR FND
UTILITY POLE TO BE REMOVED
GAS LINE SECTION TO BE REMOVED
SIGN TO BE RELOCATED
UTILITY POLES TO BE REMOVED
PORTION OF THE PREMISES WITHIN THE ULTIMATE RIGHT-OF-WAY OF WASHINGTON STREET PUBLIC RIGHT OF WAY
1 STORY MASONRY BUILDING (33,489 S.F. FOOTPRINT)
433 WASHINGTON STREET ADDRESS TAKEN FROM RECORD DOCUMENTS
PARID: 050011908003
N/L LANDS OF SPECTRUM-C LLC
433 WASHINGTON ST
TAX MAP ID# 5-25-9
R.B. 6221, PG. 02635
EXISTING BUILDING AND ASSOCIATED STRUCTURES TO BE REMOVED
401 WASHINGTON STREET ADDRESS TAKEN FROM RECORD DOCUMENTS
PARID: 050011904007
N/L LANDS OF SPECTRUM-C LLC
401 WASHINGTON ST
TAX MAP ID# 5-25-8
R.B. 6221, PG. 02635
PARID: 050012685012
N/L LANDS OF SPECTRUM-C LLC
WASHINGTON ST
TAX MAP ID# 5-25-8
R.B. 6221, PG. 02635
DRAINAGE RIGHTS D.B. 2818 PG. 327 TO BE PROTECTED
DRAINAGE RIGHTS D.B. 2820 PG. 189
TREE PROTECTION FENCE
TO BE PROTECTED
EXISTING CURB TO BE REMOVED
PAVEMENT WITHIN EXISTING PROPERTY BOUNDARY TO BE REPLACED
BENCHMARK MAG NAIL ELEV=57.31
N/A LANDS OF RIVERWALK REALTY CO., INC. TAX MAP ID# 5-24-32 R.B. 5588, PG. 1273
N/A LANDS OF LEPORE DAN & SONS REALTY ASSOCIATES, L.P. TAX MAP ID# 65-12-8 R.B. 3129, PG. 435
BOROUGH OF CONSHOHOCKEN FP-FLOODPLAIN CONSERVATION OVERLAY DISTRICT
WHITEMARSH TOWNSHIP SP-1 ZONING DISTRICT HVI-HEAVY INDUSTRIAL ZONING DISTRICT RDD-1 RIVERFRONT DEVELOPMENT SUB-DISTRICT RCOD-RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT
APPROXIMATE LOCATION OF FEMA 100-YEAR FLOODWAY BOUNDARY
100' SETBACK FROM EDGE OF SCHUYLKILL RIVER
TOP OF SCHUYLKILL RIVER BANK
EDGE OF RIVER
OHWM-1 39.81
OHWM-2 39.65
OHWM-6 40.53
EDGE OF WATER (MEAN WATER ELEVATION)
SCHUYLKILL RIVER
AREA A (OHWM)
AREA B (DRAINAGE SWALE)
TEMPORARY CONSTRUCTION FENCE
MARBLE MONUMENT FOUND
CAPPED REBAR FOUND
INLET TYPE "M" TO EL=50.43 T.B.R. WITH CONNECTED PIPES
INLET TYPE "C" TO EL=52.20 INV. 24" RCP EL.=45.97 INV. 42" RCP EL. =45.92
INLET TYPE "C" TO EL=57.09 INV. 18" RCP EL. = 53.37 INV. 8" PVC EL. =46.48 INV. 18" RCP EL. =47.70
INLET TYPE "C" TO EL=53.08 INV. 12" PVC EL.=51.14
INLET TYPE "C" TO EL=53.16 INV. 6" CMP EL. = 51.00 INV. 24" RCP EL. = 48.38
INLET TYPE "C" TO EL=52.38 INV. 10" PVC EL.=50.41
INLET TYPE "M" TO EL=51.77 (CLOGGED) T.B.R. WITH CONNECTED PIPES
INLET TYPE "M" TO EL=51.43 T.B.R. WITH CONNECTED PIPES
INV. 8" TERRA-COTTA EL.=50.43
INV. 24" RCP EL.=48.70
INV. 18" RCP EL. =45.50 T.B.R.
5 STORY APARTMENT BUILDING
5 STORY APARTMENT BUILDING
1 STORY MASONRY BUILDING
GARAGE EL.= 56.08
GARAGE EL.=56.12
GARAGE EL.=52.09
GARAGE EL.=56.10
GARAGE EL.=56.05
F.F.E.=56.16
F.F.E.= 56.05
SPRINKLER VALVE
STAIRS TO BE REMOVED
CONC. PAD T.B.R.
CONC. RETAINING WALL T.B.R.
CONC. FOUNDATION REMAINS (TYPICAL) T.B.R.
METAL INDUSTRIAL EQUIPMENT T.B.R.
RAILROAD TIE WALL T.B.R.
CHAIN LINK FENCE T.B.R.
WOOD FENCE T.B.R.
FENCE POST T.B.R.
ROCK/DEBRIS PILE T.B.R.
UTILITY POLE T.B.R.
PAVED T.B.R.
ASPHALT PAVING T.B.R.
CONCRETE T.B.R.
EDGE OF ASPHALT T.B.R.
GRAVEL T.B.R.
GRASS
ASPHALT EDGE
CONC. CURB
STORM MANHOLE RIM EL.=56.73 INV. 18" RCP EL.=46.73 INV. 42" RCP EL.=43.73 INV. 42" RCP EL.=43.63
STORM MANHOLE RIM EL.=53.59 INV. 42" RCP EL.=42.74
STORM MANHOLE RIM EL.=53.63 INV. 42" RCP EL.=43.63
SANITARY MANHOLE RIM EL.=53.70 INV. 30" VCP EL.=44.62 INV. 30" VCP EL.=44.42
SANITARY MANHOLE RIM EL.=53.71 INV. 30" VCP EL.=43.81 INV. 30" VCP EL.=43.61
WATER MANHOLE RIM EL.=52.70
WATER MANHOLE RIM EL.=53.20
TELEPHONE MANHOLE RIM EL.=52.51
TELEPHONE MANHOLE RIM EL.=53.10
ELECTRIC MANHOLE RIM EL.=52.65
GAS MANHOLE RIM EL.=52.60
UTILITY POLE 771150
UTILITY POLE 771160
UTILITY POLE 771140
UTILITY POLE 604 T.B.R.
UTILITY POLE 798
UTILITY POLE 802
UTILITY POLE 803
UTILITY POLE 804
UTILITY POLE 805
UTILITY POLE 806
UTILITY POLE 807
UTILITY POLE 808
UTILITY POLE 809
UTILITY POLE 810
UTILITY POLE 811
UTILITY POLE 812
UTILITY POLE 813
UTILITY POLE 814
UTILITY POLE



MCPC NO. 21-0327-002

PROCESSED and REVIEWED. A report has been prepared by the Montgomery County Planning Commission in accordance with the Municipalities Planning Code.

Certified this date _____

_____
For The Director

MONTGOMERY COUNTY PLANNING COMMISSION

RECORDER OF DEEDS

RECORDED IN THE OFFICE FOR THE RECORDING OF DEEDS IN AND FOR COUNTY OF MONTGOMERY, AT NORRISTOWN, PA, IN PLAN BOOK _____, PAGE NO. _____ ON _____, 20____.

OWNER'S CERTIFICATION

SPECTRUM-C LLC a Pennsylvania limited liability company

By: _____
Name:
Title:

Commonwealth of Pennsylvania

: ss

COUNTY OF MONTGOMERY

AND NOW, THIS _____ DAY OF _____, 20___ BEFORE ME, THE UNDERSIGNED NOTARY, PERSONALLY APPEARED _____ WHO ACKNOWLEDGED HIMSELF TO BE THE _____ OF SPECTRUM-C LLC, THE SOLE GENERAL PARTNER OF SPECTRUM-C LLC A PENNSYLVANIA LIMITED LIABILITY COMPANY AND HE, AS SUCH _____ BEING AUTHORIZED TO DO SO, EXECUTED THE FOREGOING INSTRUMENT FOR THE PURPOSES THEREIN CONTAINED. **IN WITNESS WHEREOF,** I hereunder set my hand and official seal.

_____ _____
Notary Public My commission expires:

OWNER'S CERTIFICATION

SPECTRUM-C LLC, a Pennsylvania limited liability company

By: _____
Name:
Title:

Commonwealth of Pennsylvania

: ss

WE, THE OWNERS OF THE LAND INVOLVING THE ACCOMPANYING PLANS, BEING DULY SWORN ACCORDING TO LAW, DEPOSE AND SAY THAT WE ARE THE SOLE OWNERS OR ARE THE AUTHORIZED OFFICERS OF THE CORPORATION THAT IS THE SOLE OWNERS OF THIS PROPERTY IN PEACEFUL POSSESSION OF IT, AND THAT THERE ARE NO SUITS PENDING AFFECTING THE TITLE OF THE SAME, AND THAT WE ACKNOWLEDGE AND ENDORSE THE ACCOMPANYING PLANS AND THAT WE PROPOSE THE ATTACHED RECORD PLAN FOR RECORDING (AS APPLICABLE), AFTER RECEIVING ALL REQUIRED MUNICIPAL APPROVALS. **IN WITNESS WHEREOF,** I hereunder set my hand and official seal.

_____ _____
Notary Public My commission expires:

PLAN PREPARER'S STATEMENTS

I, _____, A REGISTERED SURVEYOR OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY
THAT THE PLAN, PREPARED FROM A FIELD SURVEY ON _____, 20____ CORRECTLY REPRESENTS THE PROPERTY BOUNDARY OF THE PROPOSED SUBDIVISION OR LAND DEVELOPMENT.

_____ _____
DATE REGISTERED SURVEYOR'S SIGNATURE

I, _____, A LICENSED PROFESSIONAL ENGINEER OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY THAT THE ACCOMPANYING APPLICATION, PLANS, AND SUPPORTING DOCUMENTATION ARE TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

_____ _____
DATE LICENSED ENGINEER'S SIGNATURE

MUNICIPAL APPROVAL / REVIEW BLOCK

REVIEWED BY THE CONSHOHOCKEN BOROUGH ENGINEER THIS _____ DAY OF _____, 20____.

_____ _____
CONSHOHOCKEN BOROUGH ENGINEER SIGNATURE

APPROVED BY THE BOROUGH OF CONSHOHOCKEN THIS _____ DAY OF _____, 20____.

_____ _____
BOROUGH COUNCIL PRESIDENT SIGNATURE

_____ _____
BOROUGH SECRETARY SIGNATURE

REVIEWED BY THE WHITEMARSH TOWNSHIP ENGINEER THIS _____ DAY OF _____, 20____.

_____ _____
WHITEMARSH TOWNSHIP ENGINEER SIGNATURE

APPROVED BY THE TOWNSHIP OF WHITEMARSH THIS _____ DAY OF _____, 20____.

_____ _____
WHITEMARSH TOWNSHIP MANAGER SIGNATURE

LEGEND

- HANDICAP SPACE
- COMPACT PARKING
- TOWNSHIP LINE
- 100-YEAR FLOODWAY BOUNDARY
- 100-FOOT SETBACK FROM SCHUYLKILL RIVER
- EDGE OF SCHUYLKILL RIVER
- BUILDING ROOF
- GEOWEB REINFORCED TURF
- HEAVY DUTY PAVEMENT
- RED SHALE MACADAM
- MILL AND PAVE AREA

PARKING STALL DIMENSIONS:	
REGULAR PARKING SPACE	9' X 18'
COMPACT SPACE (CONSHOHOCKEN ONLY)	8' X 18'
ANGLED SPACE - 65°(CONSHOHOCKEN ONLY)	9' X 21'

THE FEMA CALCULATED 100-YEAR FLOOD ELEVATION FOR THIS PROJECT IS 60.5 FEET (NAVD 88) IN ACCORDANCE FIRM MAP NUMBER 42091C0358G DATED MARCH 2, 2016.

40 0 40 80
SCALE : 1" = 40'

LEGEND

EXISTING		PROPOSED
12+00 PI 13+00	TRAVERSE LINE, CENTER LINE OR BASELINE (LABEL AS SUCH)	12+00 13+00
	RIGHT OF WAY LINE	
	PROPERTY LINE	
	EDGE OF PAVEMENT	
FACE BACK	CURB	FACE BACK
	DEPRESSED CURB	
	SIDEWALK	
X X	FENCES	X X
	TREELINE	
	ROADWAY SIGNS	
	WETLAND LINE	
	MUNICIPAL BOUNDARY LINE	
	STALL COUNT	10
	ADA ACCESSIBLE STALL	
	DEPRESSED CURB AND ADA RAMP	HC
	DIRECTION OF TRAFFIC FLOW	

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Know what's below. Call before you dig. 20210843125 & 20210843126
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION
1	12/1/22	MD	REVISED PER BOROUGH OF CONSHOHOCKEN REVIEW LETTERS DATED 11/7/2022.
2	2/23/22	MG	REVISED PER EMAILS WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/22/2022.
3	5/20/22	JJW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

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FOR

401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
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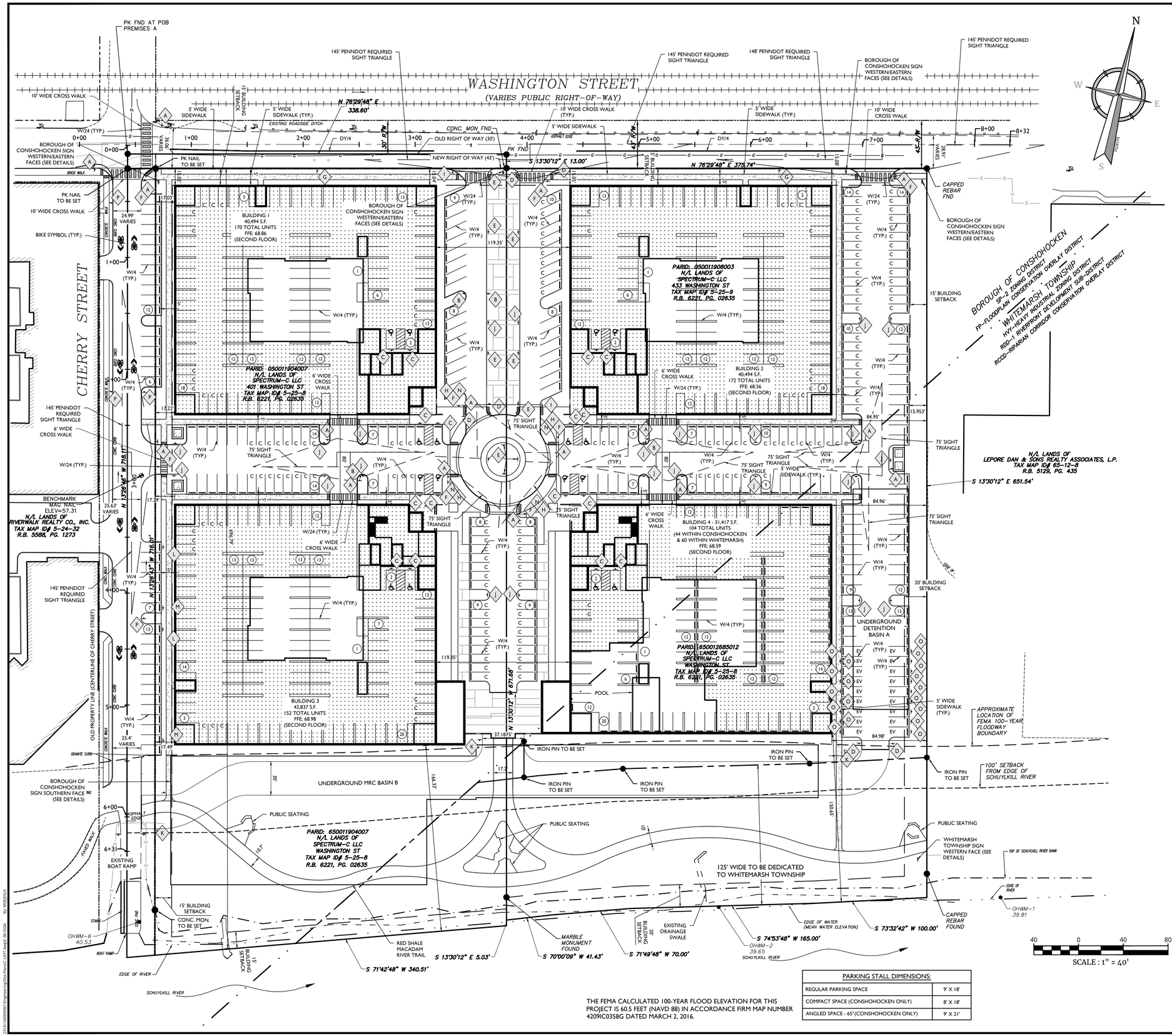
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR
PROJECT NUMBER: 14000908C		DRAWING NAME: C-LAYT	

SHEET TITLE:
DIMENSION PLAN

SHEET NUMBER:
5 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

20140400908C\Engineering\Site Plan\C-LAYT.dwg\C-05-LAYT By:MDEISUS



SIGN LEGEND

SYMBOL	QUANTITY	DESCRIPTION	SIZE (IN)
A	16	'STOP' (R1-1) SIGN	30" X 30"
B	4	CIRCULATION (W2-6) SIGN, 'TRAFFIC CIRCLE' (W16-12P) SIGN AND 'AHEAD' (W16-9P) SIGN	30" X 30" 24" X 18" 24" X 12"
C	16	'RESERVED PARKING' (R7-8) AND 'VAN ACCESSIBLE' (R7-8P) SIGNS	12" X 18" 12" X 6"
D	6	'DO NOT ENTER' (R5-1) SIGN	30" X 30"
E	10	'ONE WAY' (R6-1R) SIGN	36" x 12"
F	8	'STOP FOR PEDESTRIANS' (R1-6A) SIGN	12" x 36"
G	2	'NO PARKING ANY TIME' (R7-1) SIGN	12" x 18"
H	4	'ALL TRAFFICE MUST TURN RIGHT' (R3-7-1R) SIGN	30" x 30"
I	2	'ONE WAY' (R6-1L) SIGN	36" x 12"
J	23	'NO PARKING - FIRE LANE' SIGN	12" x 18"
K	3	'FIRE APPARATUS ACCESS ROAD ENTRANCE' SIGN	12" x 18"
L	2	'PUBLIC PARKING' RIGHT	18" x 18"
M	2	'PUBLIC PARKING' LEFT	18" x 18"
N	4	ROUNDABOUT CIRCULATION (PLAQUE) (R6-5P)	30" x 30"
O	6	'NO PARKING EXCEPT FOR ELECTRIC VEHICLE CHARGING' (R7-111)	12" x 18"
P	4	BIKE LANE SIGN (R3-17)	24" x 18"

LEGEND

- HANDICAP SPACE
- COMPACT PARKING
- TOWNSHIP LINE
- 100-YEAR FLOODWAY BOUNDARY
- 100-FOOT SETBACK FROM SCHUYLKILL RIVER
- EDGE OF SCHUYLKILL RIVER
- BUILDING ROOF

LEGEND

EXISTING		PROPOSED
12+00 PI 13+00	TRAVERSE LINE, CENTER LINE OR BASELINE (LABEL AS SUCH)	12+00 13+00
	RIGHT OF WAY LINE	
	PROPERTY LINE	
	EDGE OF PAVEMENT	
FACE / BACK	CURB	FACE / BACK
	DEPRESSED CURB	
	SIDEWALK	
	FENCES	
	TREELINE	
	ROADWAY SIGNS	
	WETLAND LINE	
	MUNICIPAL BOUNDARY LINE	
	STALL COUNT	(10)
	ADA ACCESSIBLE STALL	
	DEPRESSED CURB AND ADA RAMP	HC
	DIRECTION OF TRAFFIC FLOW	

PARKING STALL DIMENSIONS:

REGULAR PARKING SPACE	9' X 18'
COMPACT SPACE (CONSHOHOCKEN ONLY)	8' X 18'
ANGLED SPACE - 65°(CONSHOHOCKEN ONLY)	9' X 21'

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REV	DATE	DRAWN BY	DESCRIPTION
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2	2/23/22	MG	REVISED PER EMAILS WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/22/2022.
3	5/20/22	JW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.

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COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
C. RICHARD ROSEBERRY
ENGINEER No. 46162

C. Richard Roseberry
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FOR

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

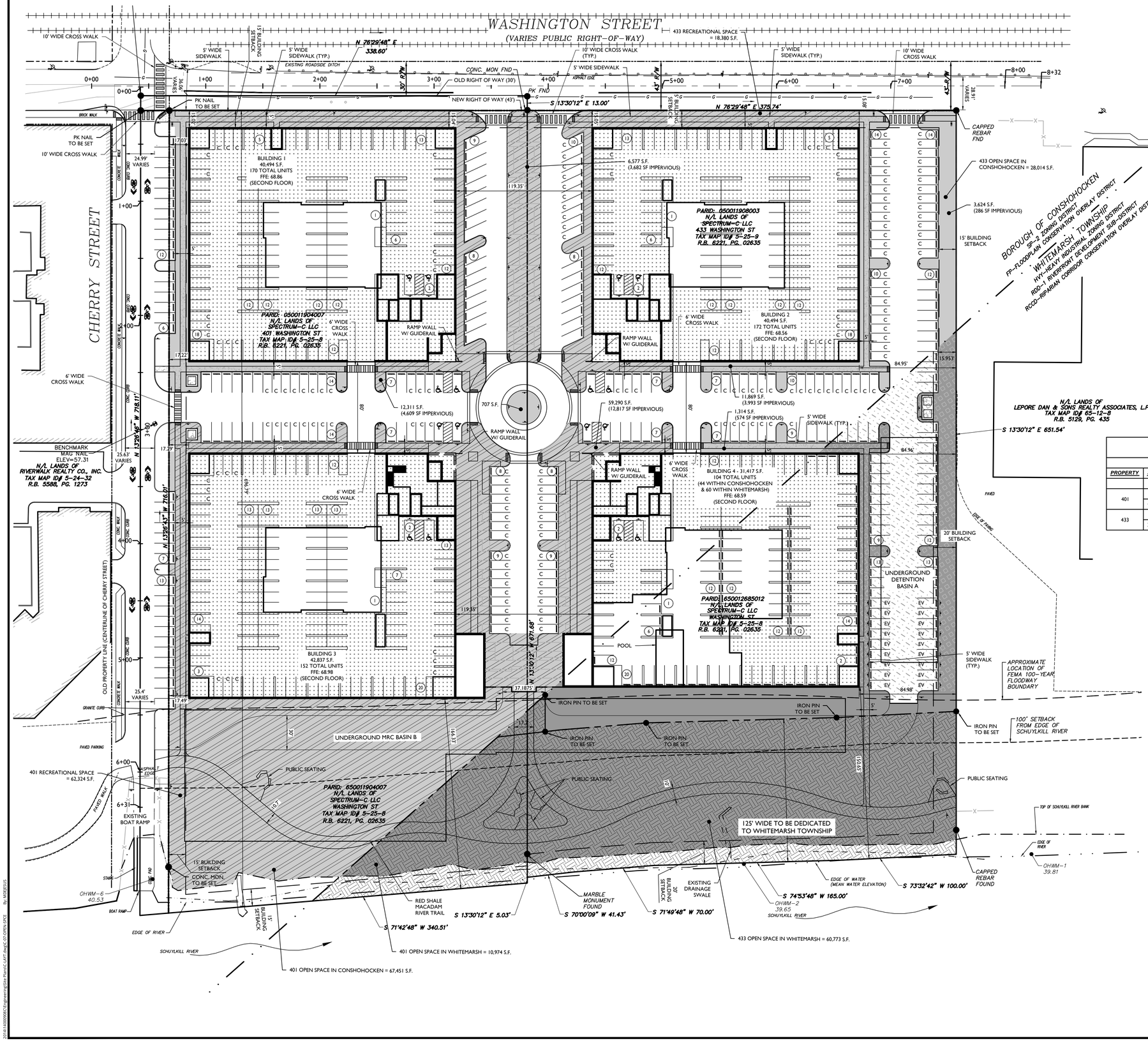
PROJECT NUMBER: 14000908C
DRAWING NAME: C-LAYT

SHEET TITLE:
STRIPING AND SIGNAGE PLAN

SHEET NUMBER:
6 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C\Engineering\Site Plan\C-LAYT.dwg\C-06-SIGN By: MDEEVES



PUBLIC AMENITIES

WHITEMARSH TOWNSHIP 116-283.B.(10)

RECREATION AREA	63710 SF
RIVER TRAIL	8037 SF
TOTAL	71747 SF

AREA OF AMENITIES	71747 SF
PERCENT OF LOT AREA	15.45%

THE LOT AREA OF 401 WASHINGTON IS 216,558 SF AND THE LOT AREA FOR 433 WASHINGTON STREET IS 247,906 SF. TOTAL = 464,464 SF.

N
W
E
S

RECREATIONAL SPACE 22-804			
PROPERTY	***ITEM***	***REQUIRED***	***PROPOSED***
401	RECREATIONAL SPACE	>10%	28.77%(a)
	RECREATIONAL SPACE AREA	0.50 ACRES	1.43 ACRES
433	RECREATIONAL SPACE	>10%	13.55%(b)
	RECREATIONAL SPACE AREA	0.31 ACRES	0.42 ACRES

(a) THE TOTAL AREA OF 401 SITUATED WITHIN CONSHOHOCKEN BOROUGH IS 4.97 ACRES.
(b) THE TOTAL AREA OF 433 SITUATED WITHIN CONSHOHOCKEN BOROUGH IS 3.10 ACRES.

WHITEMARSH OPEN SPACE ANALYSIS

PROPERTY	***ITEM***	***REQUIRED***	***PROPOSED***
401	OPEN SPACE	≥0%	75.76% (a)
	OPEN SPACE AREA	0 ACRES	0.25 ACRES
433	OPEN SPACE	≥0%	54.05% (b)
	OPEN SPACE AREA	0 ACRES	1.40 ACRES
TOTAL PROPERTY	OPEN SPACE	≥0%	56.51% (c)
	OPEN SPACE AREA	0 ACRES	1.65 ACRES

(a) THE TOTAL AREA OF 401 SITUATED WITHIN WHITEMARSH TOWNSHIP IS 0.33 ACRES.
(b) THE TOTAL AREA OF 433 SITUATED WITHIN WHITEMARSH TOWNSHIP IS 2.59 ACRES.
(c) THE TOTAL AREA OF 401 & 433 (THE PROPERTIES) IS 10.66 ACRES. THE TOTAL AREA OF THE PROPERTIES SITUATED IN WHITEMARSH TOWNSHIP IS 2.92 ACRES.

CONSHOHOCKEN BOROUGH OPEN SPACE AND RECREATIONAL SPACE ANALYSIS

OPEN SPACE 27-1504.D.

PROPERTY	***SITE AREA***	***REQUIRED***	***PROPOSED***		
		OPEN SPACE AREA	OPEN SPACE AREA	IMPERVIOUS COVER	% IMPERVIOUS
401	216,558 SF	>15%	31.39%	10,051 SF	14.74%
	4.97 ACRES (a)	0.75 ACRES	1.56 ACRES	0.23 ACRES	
433	135,118 SF	>15%	20.65%	13,379 SF	48.44%
	3.10 ACRES (b)	0.47 ACRES	0.64 ACRES	0.31 ACRES	

LEGEND

- HANDICAP SPACE
- COMPACT PARKING
- TOWNSHIP LINE
- 100-YEAR FLOODWAY BOUNDARY
- 100-FOOT SETBACK FROM SCHUYLKILL RIVER
- EDGE OF SCHUYLKILL RIVER
- BUILDING ROOF
- 125' WIDE TO BE DEDICATED TO WHITEMARSH TOWNSHIP
- WHITEMARSH OPEN SPACE
- CONSHOHOCKEN OPEN SPACE
- CONSHOHOCKEN REQUIRED PASSIVE RECREATION SPACE
- WHITEMARSH TOWNSHIP PARKING LOT FACILITY
- WHITEMARSH TOWNSHIP PARKING LOT FACILITY DEVOTED LANDSCAPING

LEGEND

EXISTING		PROPOSED
	TRAVERSE LINE, CENTER LINE OR BASELINE (LABEL AS SUCH)	12+00 — 13+00
	RIGHT OF WAY LINE	
	PROPERTY LINE	
	EDGE OF PAVEMENT	
FACE / BACK	CURB	FACE / BACK
	DEPRESSED CURB	
	SIDEWALK	
X — X	FENCES	X — X
	TREELINE	
	ROADWAY SIGNS	
	WETLAND LINE	
	MUNICIPAL BOUNDARY LINE	
	STALL COUNT	(10)
	ADA ACCESSIBLE STALL	P / P V
	DEPRESSED CURB AND ADA RAMP	HC
	DIRECTION OF TRAFFIC FLOW	

40 0 40 80
SCALE : 1" = 40'

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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20210843125 & 20210843126
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REV	DATE	DRAWN BY	DESCRIPTION
1	12/1/22	MD	REVISED PER BOROUGH OF CONSHOHOCKEN REVIEW LETTERS DATED 1/7/2022.
2	2/23/22	MG	REVISED PER EMAILS WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/22/2022.
3	5/20/22	JW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL
C. RICHARD ROSEBERRY
ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

PRELIMINARY/FINAL LAND DEVELOPMENT PLANS

FOR

401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

Colliers Engineering & Design
LEHIGH VALLEY
941 Marcon Boulevard, Suite 801
Allentown, PA 18109
Phone: 610.868.4201
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

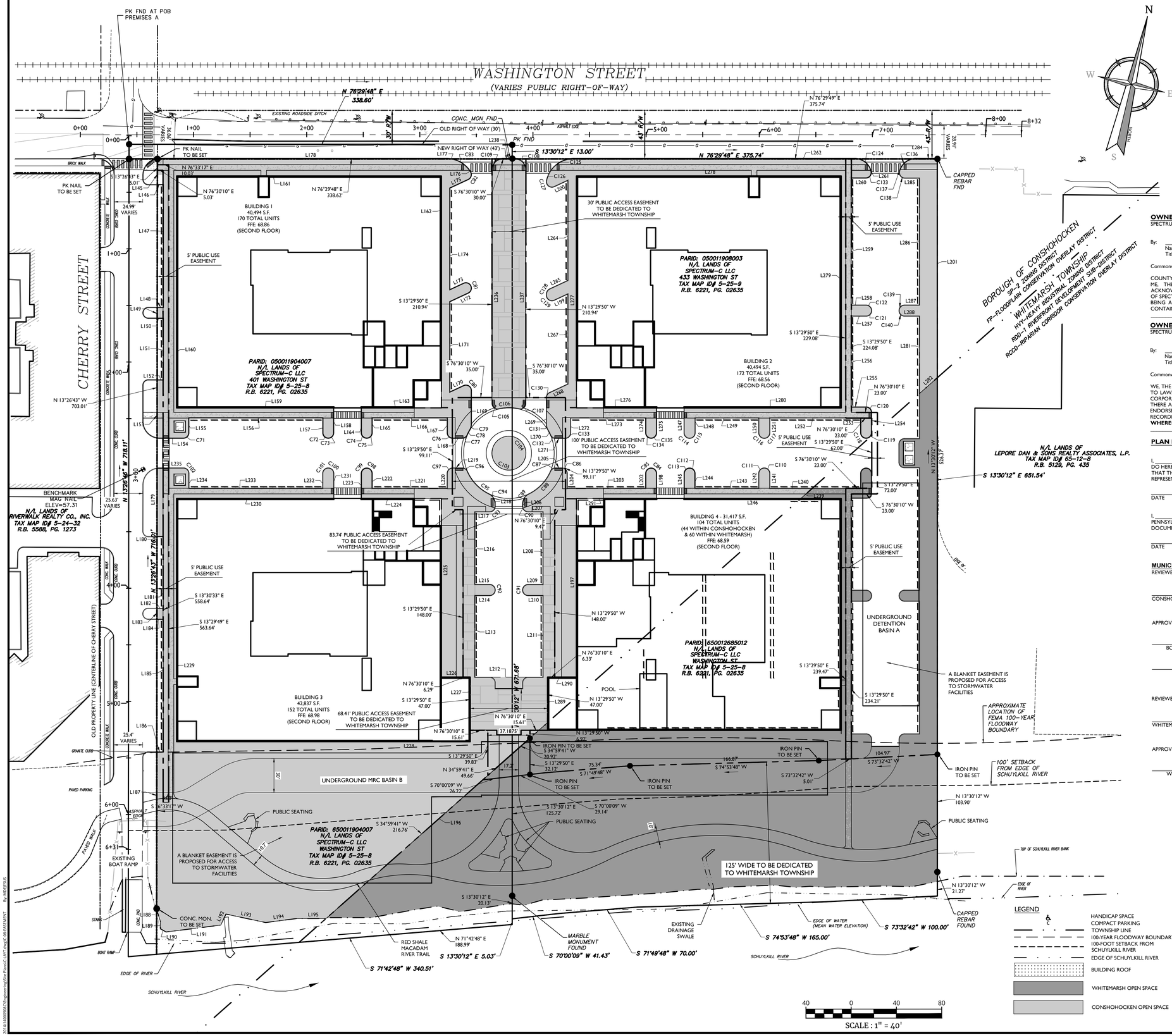
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

PROJECT NUMBER: 14000908C
DRAWING NAME: C-LAYT

SHEET TITLE: RIVERFRONT ACCESS, RECREATION, AND OPEN SPACE PLAN

SHEET NUMBER: 7 of 41

2014\14000908C\Engineering\Site Plans\C-LAYT.dwg|C-07-OPEN-SPCE By: MJR|EGUS



MCPC NO. 21-0327-002

PROCESSED and REVIEWED. A report has been prepared by the Montgomery County Planning Commission in accordance with the Municipalities Planning Code.

Certified this date _____

_____
For The Director

MONTGOMERY COUNTY PLANNING COMMISSION

RECORDER OF DEEDS

RECORDED IN THE OFFICE FOR THE RECORDING OF DEEDS IN AND FOR COUNTY OF MONTGOMERY, AT NORRISTOWN, PA, IN PLAN BOOK _____, PAGE NO._____ ON _____, 20____.

OWNER'S CERTIFICATION

SPECTRUM-C LLC a Pennsylvania limited liability company

By: _____
Name:
Title:

Commonwealth of Pennsylvania
: ss
COUNTY OF MONTGOMERY

AND NOW, THIS _____ DAY OF _____ 20__, BEFORE ME, THE UNDERSIGNED NOTARY, PERSONALLY APPEARED _____ WHO ACKNOWLEDGED HIMSELF TO BE THE _____ OF SPECTRUM-C LLC, THE SOLE GENERAL PARTNER OF SPECTRUM-C LLC A PENNSYLVANIA LIMITED LIABILITY COMPANY AND HE, AS SUCH _____ BEING AUTHORIZED TO DO SO, EXECUTED THE FOREGOING INSTRUMENT FOR THE PURPOSES THEREIN CONTAINED. **IN WITNESS WHEREOF,** I hereunder set my hand and official seal.

_____ _____ Notary Public My commission expires:

OWNER'S CERTIFICATION

SPECTRUM-C LLC, a Pennsylvania limited liability company

By: _____
Name:
Title:

Commonwealth of Pennsylvania
: ss

WE, THE OWNERS OF THE LAND INVOLVING THE ACCOMPANYING PLANS, BEING DULY SWORN ACCORDING TO LAW, DEPOSE AND SAY THAT WE ARE THE SOLE OWNERS OR ARE THE AUTHORIZED OFFICERS OF THE CORPORATION THAT IS THE SOLE OWNERS OF THIS PROPERTY IN PEACEFUL POSSESSION OF IT, AND THAT THERE ARE NO SUITS PENDING AFFECTING THE TITLE OF THE SAME, AND THAT WE ACKNOWLEDGE AND ENDORSE THE ACCOMPANYING PLANS AND THAT WE PROPOSE THE ATTACHED RECORD PLAN FOR RECORDING (AS APPLICABLE), AFTER RECEIVING ALL REQUIRED MUNICIPAL APPROVALS. **IN WITNESS WHEREOF,** I hereunder set my hand and official seal.

_____ _____ Notary Public My commission expires:

PLAN PREPARER'S STATEMENTS

I, _____, A REGISTERED SURVEYOR OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY THAT THE PLAN, PREPARED FROM A FIELD SURVEY ON _____, 20____ CORRECTLY REPRESENTS THE PROPERTY BOUNDARY OF THE PROPOSED SUBDIVISION OR LAND DEVELOPMENT.

_____ _____
DATE REGISTERED SURVEYOR'S SIGNATURE

I, _____, A LICENSED PROFESSIONAL ENGINEER OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY THAT THE ACCOMPANYING APPLICATION, PLANS, AND SUPPORTING DOCUMENTATION ARE TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

_____ _____
DATE LICENSED ENGINEER'S SIGNATURE

MUNICIPAL APPROVAL / REVIEW BLOCK

REVIEWED BY THE CONSHOHOCKEN BOROUGH ENGINEER THIS _____ DAY OF_____, 20____.

_____ _____
CONSHOHOCKEN BOROUGH ENGINEER SIGNATURE

APPROVED BY THE BOROUGH OF CONSHOHOCKEN THIS _____ DAY OF _____, 20____.

_____ _____
BOROUGH COUNCIL PRESIDENT SIGNATURE

_____ _____
BOROUGH SECRETARY SIGNATURE

REVIEWED BY THE WHITEMARSH TOWNSHIP ENGINEER THIS _____ DAY OF_____, 20____.

_____ _____
WHITEMARSH TOWNSHIP ENGINEER SIGNATURE

APPROVED BY THE TOWNSHIP OF WHITEMARSH THIS _____ DAY OF _____, 20____.

_____ _____
WHITEMARSH TOWNSHIP MANAGER SIGNATURE

LEGEND

EXISTING		PROPOSED
12+00 PI 13+00	TRAVERSE LINE, CENTER LINE OR BASELINE (LABEL AS SUCH)	12+00 13+00
	RIGHT OF WAY LINE	
	PROPERTY LINE	
	EDGE OF PAVEMENT	
FACE / BACK	CURB	FACE / BACK
	DEPRESSED CURB	
	SIDEWALK	
X X	FENCES	X X
	TREELINE	
	ROADWAY SIGNS	
	WETLAND LINE	
	MUNICIPAL BOUNDARY LINE	
(10)	STALL COUNT	(10)
P	ADA ACCESSIBLE STALL	P V
HC	DEPRESSED CURB AND ADA RAMP	HC
	DIRECTION OF TRAFFIC FLOW	

LEGEND

- HANDICAP SPACE / COMPACT PARKING
- TOWNSHIP LINE
- 100-YEAR FLOODWAY BOUNDARY
- 100-FOOT SETBACK FROM SCHUYLKILL RIVER
- EDGE OF SCHUYLKILL RIVER
- BUILDING ROOF
- WHITEMARSH OPEN SPACE
- CONSHOHOCKEN OPEN SPACE

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REGISTERED PROFESSIONAL
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

PROJECT NUMBER: 14000908C
DRAWING NAME: C-LAYT

SHEET TITLE:
PROPOSED EASEMENTS PLAN

SHEET NUMBER:
8 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C\Engineering\Site Plans\C-LAYT.dwg,C-08 EASEMENT By: MDEJESUS

LINE DATA		
SEGMENT	DIRECTION	LENGTH
L145	S 13° 29' 50" E	22.52'
L146	N 76° 30' 10" E	5.02'
L147	S 13° 29' 50" E	108.50'
L148	S 76° 30' 10" W	5.14'
L149	S 13° 26' 52" E	10.00'
L150	N 76° 30' 10" E	5.15'
L151	S 13° 29' 50" E	54.50'
L152	S 76° 30' 10" W	5.20'
L153	S 13° 26' 45" E	51.50'
L154	N 76° 30' 10" E	23.24'
L155	N 13° 29' 50" W	13.00'
L156	N 76° 30' 10" E	118.00'
L157	S 13° 29' 50" E	13.00'
L158	N 13° 29' 50" W	22.00'
L159	S 76° 30' 10" W	139.00'
L160	N 13° 29' 50" W	205.00'
L161	N 76° 30' 10" E	234.00'
L162	S 13° 29' 50" E	180.30'
L163	S 76° 30' 10" W	71.00'
L164	S 13° 29' 50" E	22.00'

LINE DATA		
SEGMENT	DIRECTION	LENGTH
L165	N 13° 29' 50" W	13.00'
L166	N 76° 30' 10" E	66.00'
L167	S 13° 29' 50" E	13.00'
L168	N 76° 31' 11" E	8.43'
L169	N 13° 29' 50" W	14.49'
L170	S 51° 30' 10" W	13.15'
L171	N 13° 29' 50" W	69.07'
L172	N 51° 30' 10" E	17.81'
L173	S 51° 30' 10" W	13.15'
L174	N 13° 29' 50" W	89.37'
L175	N 51° 30' 10" E	17.80'
L176	N 46° 50' 09" W	1.35'
L177	S 76° 29' 48" W	2.92'
L178	S 76° 29' 48" W	258.45'
L179	S 13° 26' 44" E	60.50'
L180	N 76° 33' 17" E	5.32'
L181	S 13° 29' 50" E	63.50'
L182	S 76° 30' 10" W	5.38'
L183	S 13° 26' 43" E	10.00'
L184	N 76° 30' 10" E	5.39'

LINE DATA		
SEGMENT	DIRECTION	LENGTH
L185	S 13° 29' 50" E	117.00'
L186	S 76° 30' 10" W	5.49'
L187	S 13° 29' 56" E	10.67'
L188	S 31° 35' 17" E	10.41'
L189	S 15° 40' 29" E	6.94'
L190	S 72° 52' 15" E	5.53'
L191	N 69° 17' 49" E	48.87'
L192	N 11° 18' 16" E	10.71'
L193	N 88° 31' 39" E	35.90'
L194	N 69° 06' 44" E	27.38'
L195	N 76° 28' 40" E	24.76'
L196	N 34° 59' 41" E	261.08'
L197	N 13° 29' 50" W	158.00'
L198	N 13° 29' 50" W	22.00'
L199	N 51° 30' 10" E	13.15'
L200	N 51° 30' 10" E	13.15'
L201	N 13° 30' 13" W	184.00'
L202	S 13° 29' 50" E	13.00'
L203	S 76° 30' 10" W	69.00'
L204	N 13° 29' 50" W	13.00'

CURVE DATA				
SEGMENT	RADIUS	LENGTH	DELTA	CHORD
C71	5.00'	7.85'	90° 00' 00"	N 31° 30' 10" E 7.07'
C72	5.00'	7.85'	90° 00' 00"	S 58° 29' 50" E 7.07'
C73	5.00'	7.85'	90° 00' 00"	N 31° 30' 10" E 7.07'
C74	5.00'	7.85'	90° 00' 00"	S 58° 29' 50" E 7.07'
C75	5.00'	7.85'	90° 00' 01"	N 31° 30' 11" E 7.07'
C76	5.00'	7.85'	89° 59' 00"	S 58° 29' 20" E 7.07'
C77	5.00'	5.80'	66° 25' 19"	N 43° 17' 31" E 5.48'
C78	40.00'	4.96'	7° 06' 19"	N 13° 38' 01" E 4.96'
C79	10.00'	5.36'	30° 41' 00"	N 1° 50' 40" E 5.29'
C80	5.00'	10.03'	114° 59' 14"	N 71° 00' 13" W 8.43'
C81	5.00'	15.71'	180° 00' 00"	N 38° 29' 50" W 10.00'
C82	5.00'	8.45'	96° 47' 15"	N 3° 06' 33" E 7.48'
C83	25.00'	18.30'	41° 56' 43"	N 69° 21' 35" W 17.90'
C84	5.00'	7.75'	88° 45' 22"	N 57° 52' 31" W 6.99'
C85	5.00'	7.96'	91° 14' 38"	S 32° 07' 29" W 7.15'
C86	5.00'	6.29'	72° 04' 15"	N 49° 31' 57" W 5.88'
C87	5.00'	5.80'	66° 25' 19"	S 43° 17' 31" W 5.48'
C88	40.00'	28.15'	40° 19' 05"	S 30° 14' 24" W 27.57'
C89	10.00'	11.15'	63° 53' 46"	S 18° 27' 03" W 10.58'
C90	5.00'	7.85'	90° 00' 00"	S 58° 29' 50" E 7.07'

CURVE DATA				
SEGMENT	RADIUS	LENGTH	DELTA	CHORD
C91	5.00'	15.71'	180° 00' 00"	S 13° 29' 50" E 10.00'
C92	5.00'	15.71'	180° 00' 00"	N 13° 29' 50" W 10.00'
C93	5.00'	7.85'	90° 00' 00"	N 31° 30' 10" E 7.07'
C94	10.00'	11.15'	63° 53' 46"	N 45° 26' 43" W 10.58'
C95	40.00'	28.15'	40° 19' 05"	N 57° 14' 04" W 27.57'
C96	5.00'	5.80'	66° 25' 19"	N 70° 17' 10" W 5.48'
C97	5.00'	7.85'	90° 00' 00"	S 31° 30' 10" W 7.07'
C98	5.00'	7.85'	90° 00' 00"	N 58° 29' 50" W 7.07'
C99	5.00'	7.85'	90° 00' 00"	S 31° 30' 10" W 7.07'
C100	5.00'	7.85'	90° 00' 00"	N 58° 29' 50" W 7.07'
C101	5.00'	7.85'	90° 00' 00"	S 31° 30' 10" W 7.07'
C102	5.00'	7.85'	90° 00' 00"	N 58° 29' 50" W 7.07'
C103	15.00'	47.12'	180° 00' 00"	N 73° 57' 11" E 30.00'
C104	15.00'	47.12'	180° 00' 00"	N 73° 57' 11" E 30.00'
C105	5.03'	9.47'	107° 52' 58"	S 62° 13' 36" E 8.13'
C106	40.00'	17.93'	25° 40' 45"	N 76° 30' 10" E 17.78'
C107	5.00'	8.97'	102° 50' 23"	N 37° 55' 21" E 7.82'
C108	10.00'	15.71'	90° 00' 22"	N 58° 30' 01" W 14.14'
C109	10.00'	15.71'	89° 59' 38"	S 31° 29' 59" W 14.14'
C110	5.00'	7.85'	90° 00' 00"	N 58° 29' 50" W 7.07'

LINE DATA		
SEGMENT	DIRECTION	LENGTH
L205	S 76° 30' 10" W	5.43'
L206	S 13° 29' 50" E	2.10'
L207	N 76° 30' 10" E	13.00'
L208	S 13° 29' 50" E	40.00'
L209	S 76° 30' 10" W	13.00'
L210	N 76° 30' 10" E	13.00'
L211	S 13° 29' 50" E	72.00'
L212	S 76° 30' 10" W	60.00'
L213	N 13° 29' 50" W	72.00'
L214	N 76° 30' 10" E	13.00'
L215	S 76° 30' 10" W	13.00'
L216	N 13° 29' 50" W	40.00'
L217	N 76° 30' 10" E	13.00'
L218	N 13° 29' 50" W	2.10'
L219	S 76° 30' 10" W	7.04'
L220	S 13° 29' 50" E	13.00'
L221	S 76° 30' 10" W	66.00'
L222	N 13° 29' 50" W	13.00'
L223	S 13° 29' 50" E	22.00'
L224	N 76° 30' 10" E	71.00'

LINE DATA		
SEGMENT	DIRECTION	LENGTH
L225	S 13° 29' 50" E	158.00'
L226	N 76° 30' 10" E	25.47'
L227	S 13° 29' 50" E	57.00'
L228	S 76° 30' 10" W	259.47'
L229	N 13° 29' 50" W	215.00'
L230	N 76° 30' 10" E	139.00'
L231	N 13° 29' 50" W	22.00'
L232	S 13° 29' 50" E	13.00'
L233	S 76° 30' 10" W	118.00'
L234	N 13° 29' 50" W	13.00'
L235	S 76° 30' 10" W	23.27'
L236	S 13° 29' 50" E	205.68'
L237	N 13° 29' 50" W	206.17'
L238	S 76° 29' 48" W	10.00'
L239	N 34° 59' 41" E	13.58'
L240	S 76° 30' 10" W	37.55'
L241	N 13° 29' 50" W	13.00'
L242	S 13° 29' 50" E	13.00'
L243	S 76° 30' 10" W	56.00'
L244	N 13° 29' 50" W	13.00'

LINE DATA		
SEGMENT	DIRECTION	LENGTH
L245	S 13° 29' 50" E	22.00'
L246	N 76° 30' 12" E	103.38'
L247	S 13° 29' 50" E	22.00'
L248	N 13° 29' 50" W	13.00'
L249	N 76° 30' 10" E	56.00'
L250	S 13° 29' 50" E	13.00'
L251	N 13° 29' 50" W	13.00'
L252	N 76° 30' 10" E	80.00'
L253	S 13° 27' 20" E	13.00'
L254	N 13° 29' 50" W	18.00'
L255	S 76° 30' 10" W	13.00'
L256	N 13° 29' 50" W	80.00'
L257	N 76° 30' 10" E	13.00'
L258	S 76° 30' 10" W	13.00'
L259	N 13° 29' 50" W	112.00'
L260	N 76° 30' 10" E	12.73'
L261	N 28° 28' 30" W	0.88'
L262	S 76° 29' 48" W	258.05'
L264	S 13° 29' 50" E	88.27'
L265	S 51° 30' 10" W	17.94'

CURVE DATA				
SEGMENT	RADIUS	LENGTH	DELTA	CHORD
C111	5.00'	7.85'	90° 00' 00"	S 31° 30' 10" W 7.07'
C112	5.00'	7.85'	90° 00' 00"	N 58° 29' 50" W 7.07'
C113	5.00'	7.85'	90° 00' 00"	S 31° 30' 10" W 7.07'
C114	5.00'	7.85'	90° 00' 00"	S 58° 29' 50" E 7.07'
C115	5.00'	7.85'	90° 00' 00"	N 31° 30' 10" E 7.07'
C116	5.00'	7.85'	90° 00' 00"	S 58° 29' 50" E 7.07'
C117	5.00'	7.85'	90° 00' 00"	N 31° 30' 10" E 7.07'
C118	5.00'	7.31'	83° 46' 54"	S 55° 23' 38" E 6.68'
C119	5.00'	7.85'	89° 59' 20"	N 31° 29' 50" E 7.07'
C120	5.00'	7.85'	89° 59' 57"	N 58° 29' 50" W 7.07'
C121	5.00'	7.85'	90° 00' 00"	N 31° 30' 10" E 7.07'
C122	5.00'	7.85'	90° 00' 00"	N 58° 29' 50" W 7.07'
C123	5.00'	9.01'	103° 17' 49"	N 24° 51' 15" E 7.84'
C124	15.00'	9.21'	35° 09' 58"	N 69° 23' 47" W 9.06'
C125	25.00'	11.52'	26° 24' 34"	S 50° 14' 29" W 11.42'
C126	25.00'	4.45'	10° 12' 00"	S 3° 59' 38" W 4.44'
C127	5.00'	11.12'	127° 23' 28"	S 64° 48' 06" E 8.96'
C128	5.71'	6.60'	66° 15' 15"	S 12° 57' 04" W 6.24'
C129	5.00'	10.04'	115° 00' 00"	S 70° 59' 50" E 8.43'
C130	5.00'	5.67'	65° 00' 00"	S 19° 00' 10" W 5.37'

CURVE DATA				
SEGMENT	RADIUS	LENGTH	DELTA	CHORD
C131	10.00'	5.36'	30° 40' 59"	S 28° 50' 19" E 5.29'
C132	5.00'	5.80'	66° 25' 19"	S 70° 17' 10" E 5.48'
C133	5.00'	7.85'	90° 00' 00"	N 31° 30' 10" E 7.07'
C134	5.00'	7.85'	90° 00' 00"	S 58° 29' 50" E 7.07'
C135	5.00'	7.85'	90° 00' 00"	N 31° 30' 10" E 7.07'
C136	15.00'	14.16'	54° 04' 33"	S 33° 00' 43" W 13.64'
C137	15.00'	1.62'	6° 10' 27"	S 2° 53' 13" W 1.62'
C138	5.00'	9.01'	103° 17' 49"	S 51° 50' 55" E 7.84'
C139	5.00'	15.71'	180° 00' 00"	S 13° 29' 50" E 10.00'
C140	5.00'	15.71'	180° 00' 00"	S 13° 29' 50" E 10.00'

LINE DATA		
SEGMENT	DIRECTION	LENGTH
L267	S 13° 29' 50" E	79.44'
L268	S 51° 30' 10" W	17.81'
L269	S 13° 29' 50" E	23.59'
L270	S 40° 37' 41" E	4.96'
L271	N 76° 30' 10" E	8.43'
L272	N 13° 29' 50" W	13.00'
L273	N 76° 30' 10" E	66.00'
L274	S 13° 29' 50" E	13.00'
L275	N 13° 29' 50" W	22.00'
L276	S 76° 29' 58" W	71.00'
L277	N 13° 29' 50" W	205.00'
L278	N 76° 30' 10" E	234.00'
L279	S 13° 29' 50" E	205.00'
L280	S 76° 30' 10" W	139.00'
L281	S 13° 29' 50" E	68.42'
L282	N 34° 59' 41" E	21.30'
L284	S 76° 29' 48" W	23.18'
L285	N 76° 30' 10" E	12.73'
L286	S 13° 29' 50" E	112.00'
L287	S 76° 30' 10" W	13.00'

LINE DATA		
SEGMENT	DIRECTION	LENGTH
L288	N 76° 30' 10" E	13.00'
L289	N 13° 29' 50" W	40.11'
L290	N 76° 30' 10" E	25.47'
L291	N 76° 30' 13" E	71.00'

MCPC NO. 21-0327-002

PROCESSED and REVIEWED. A report has been prepared by the Montgomery County Planning Commission in accordance with the Municipalities Planning Code.

Certified this date _____

_____
For The Director

MONTGOMERY COUNTY PLANNING COMMISSION

RECORDER OF DEEDS

RECORDED IN THE OFFICE FOR THE RECORDING OF DEEDS IN AND FOR COUNTY OF MONTGOMERY, AT NORRISTOWN, PA, IN PLAN BOOK _____, PAGE NO. _____ ON _____, 20____.

OWNER'S CERTIFICATION

SPECTRUM-C LLC a Pennsylvania limited liability company

By: _____
Name:
Title:

Commonwealth of Pennsylvania

: ss

COUNTY OF MONTGOMERY

AND NOW, THIS _____ DAY OF _____ 20___ BEFORE ME, THE UNDERSIGNED NOTARY, PERSONALLY APPEARED _____ WHO ACKNOWLEDGED HIMSELF TO BE THE _____ OF SPECTRUM-C LLC, THE SOLE GENERAL PARTNER OF SPECTRUM-C LLC A PENNSYLVANIA LIMITED LIABILITY COMPANY AND HE, AS SUCH _____ BEING AUTHORIZED TO DO SO, EXECUTED THE FOREGOING INSTRUMENT FOR THE PURPOSES THEREIN CONTAINED. **IN WITNESS WHEREOF,** I hereunder set my hand and official seal.

_____ _____
Notary Public My commission expires:

OWNER'S CERTIFICATION

SPECTRUM-C LLC, a Pennsylvania limited liability company

By: _____
Name:
Title:

Commonwealth of Pennsylvania

: ss

WE, THE OWNERS OF THE LAND INVOLVING THE ACCOMPANYING PLANS, BEING DULY SWORN ACCORDING TO LAW, DEPOSE AND SAY THAT WE ARE THE SOLE OWNERS OR ARE THE AUTHORIZED OFFICERS OF THE CORPORATION THAT IS THE SOLE OWNERS OF THIS PROPERTY IN PEACEFUL POSSESSION OF IT, AND THAT THERE ARE NO SUITS PENDING AFFECTING THE TITLE OF THE SAME, AND THAT WE ACKNOWLEDGE AND ENDORSE THE ACCOMPANYING PLANS AND THAT WE PROPOSE THE ATTACHED RECORD PLAN FOR RECORDING (AS APPLICABLE), AFTER RECEIVING ALL REQUIRED MUNICIPAL APPROVALS. **IN WITNESS WHEREOF,** I hereunder set my hand and official seal.

_____ _____
Notary Public My commission expires:

PLAN PREPARER'S STATEMENTS

I, _____, A REGISTERED SURVEYOR OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY
THAT THE PLAN, PREPARED FROM A FIELD SURVEY ON _____, 20____ CORRECTLY REPRESENTS THE PROPERTY BOUNDARY OF THE PROPOSED SUBDIVISION OR LAND DEVELOPMENT.

_____ _____
DATE REGISTERED SURVEYOR'S SIGNATURE

I, _____, A LICENSED PROFESSIONAL ENGINEER OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY THAT THE ACCOMPANYING APPLICATION, PLANS, AND SUPPORTING DOCUMENTATION ARE TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

_____ _____
DATE LICENSED ENGINEER'S SIGNATURE

MUNICIPAL APPROVAL / REVIEW BLOCK

REVIEWED BY THE CONSHOHOCKEN BOROUGH ENGINEER THIS _____ DAY OF_____, 20____.

_____ _____
CONSHOHOCKEN BOROUGH ENGINEER SIGNATURE

APPROVED BY THE BOROUGH OF CONSHOHOCKEN THIS _____ DAY OF _____, 20____.

_____ _____
BOROUGH COUNCIL PRESIDENT SIGNATURE

_____ _____
BOROUGH SECRETARY SIGNATURE

REVIEWED BY THE WHITEMARSH TOWNSHIP ENGINEER THIS _____ DAY OF_____, 20____.

_____ _____
WHITEMARSH TOWNSHIP ENGINEER SIGNATURE

APPROVED BY THE TOWNSHIP OF WHITEMARSH THIS _____ DAY OF _____, 20____.

_____ _____
WHITEMARSH TOWNSHIP MANAGER SIGNATURE

Colliers Engineering & Design

www.colliersengineering.com

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION
1	12/1/22	MD	REVISED PER BOROUGH OF CONSHOHOCKEN REVIEW LETTERS DATED 1/7/2022.
2	2/23/22	MG	REVISED PER EMAILS WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/22/2022.
3	5/20/22	JJW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — C. RICHARD ROSEBERRY — ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

PRELIMINARY/FINAL LAND DEVELOPMENT PLANS

FOR

401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

Colliers Engineering & Design
LEHIGH VALLEY
941 Marcon Boulevard, Suite 801
Allentown, PA 18109
Phone: 610.868.4201
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

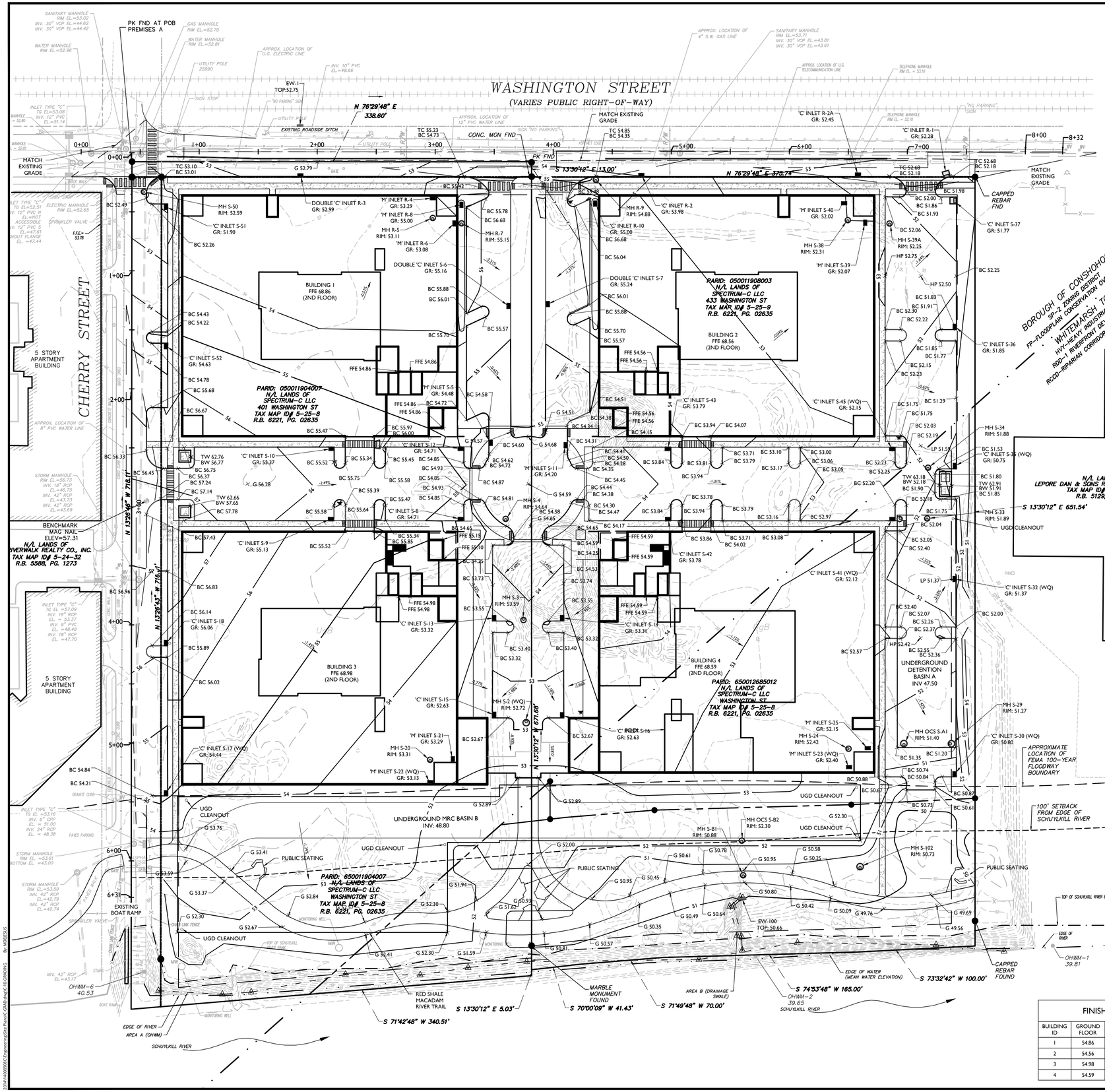
PROJECT NUMBER: 14000908C
DRAWING NAME: C-LAYT

SHEET TITLE:
PROPOSED EASEMENTS PLAN

SHEET NUMBER:
9 of 41

2014\14000908C\Engineering\Site Plans\C-LAYT.dwg By: MKISIELIUS

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.


WASHINGTON STREET
(VARIES PUBLIC RIGHT-OF-WAY)
CHERRY STREET
N 76°29'48" E 338.60'
S 13°30'42" E 13.00'
N 76°29'48" E 375.74'
N 13°30'12" W 671.68'
N 13°26'43" W 716.41'
S 13°30'12" E 5.03'
S 71°42'48" W 340.51'
S 70°00'09" W 41.43'
S 71°49'48" W 70.00'
S 74°53'48" W 165.00'
S 73°32'42" W 100.00'
S 13°30'12" E 651.54'
PK FND AT POB PREMISES A
PK FND
CONC. MON FND
CAPPED REBAR FND
MATCH EXISTING GRADE
5 STORY APARTMENT BUILDING
BUILDING 1 FFE 68.86 (2ND FLOOR)
BUILDING 2 FFE 68.56 (2ND FLOOR)
BUILDING 3 FFE 68.98 (2ND FLOOR)
BUILDING 4 FFE 68.59 (2ND FLOOR)
PARID: 050011904007 N/L LANDS OF SPECTRUM-C LLC 401 WASHINGTON ST TAX MAP ID# 5-25-8 R.B. 6221, PG. 02635
PARID: 050011908003 N/L LANDS OF SPECTRUM-C LLC 433 WASHINGTON ST TAX MAR ID# 5-25-9 R.B. 6221, PG. 02635
PARID: 650012685012 N/L LANDS OF SPECTRUM-C LLC WASHINGTON ST TAX MAP ID# 5-25-8 R.B. 6221, PG. 02635
N/L LANDS OF RIVERWALK REALTY CO., INC. TAX MAP ID# 5-24-32 R.B. 5588, PG. 1273
N/L LANDS OF LEPORE DAN & SONS REALTY ASSOCIATES, L.P. TAX MAP ID# 65-12-8 R.B. 5129, PG. 435
BOROUGH OF CONSHOHOCKEN SF-2 ZONING DISTRICT FP-FLOODPLAIN CONSERVATION OVERLAY DISTRICT
WHITEMARSH TOWNSHIP HVY-HEAVY INDUSTRIAL ZONING DISTRICT RDD-1 RIVERFRONT DEVELOPMENT SUB-DISTRICT RCOD-RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT
APPROXIMATE LOCATION OF FEMA 100-YEAR FLOODWAY BOUNDARY
100' SETBACK FROM EDGE OF SCHUYLKILL RIVER
UNDERGROUND MRC BASIN B INV: 48.80
UNDERGROUND DETENTION BASIN A INV 47.50
EXISTING BOAT RAMP
RED SHALE MACADAM RIVER TRAIL
MARBLE MONUMENT FOUND
CAPPED REBAR FOUND
EDGE OF WATER (MEAN WATER ELEVATION)
AREA A (OHWM)
AREA B (DRAINAGE SWALE)
SCHUYLKILL RIVER
OHWM-6 40.53
OHWM-2 39.65
OHWM-1 39.81
BENCHMARK MAG NAIL ELEV=57.31
DOUBLE 'C' INLET R-3 GR: 52.99
'C' INLET S-51 GR: 51.90
'M' INLET R-4 GR: 53.29
'M' INLET R-8 GR: 55.00
'M' INLET R-6 GR: 53.08
DOUBLE 'C' INLET S-6 GR: 55.16
'C' INLET S-52 GR: 54.63
'M' INLET S-5 GR: 54.48
'C' INLET S-12 GR: 54.71
'C' INLET S-10 GR: 55.37
'C' INLET S-8 GR: 54.71
'C' INLET S-9 GR: 55.13
'C' INLET S-18 GR: 56.06
'C' INLET S-15 GR: 52.63
'M' INLET S-21 GR: 53.29
'C' INLET S-17 (WQ) GR: 54.44
'M' INLET S-22 (WQ) GR: 53.13
'C' INLET R-9 GR: 53.98
'C' INLET R-10 GR: 55.00
DOUBLE 'C' INLET S-7 GR: 55.24
'M' INLET S-11 GR: 54.20
'C' INLET S-43 GR: 53.79
'C' INLET S-42 GR: 53.78
'C' INLET S-41 (WQ) GR: 52.12
'C' INLET S-16 GR: 52.63
'M' INLET S-25 GR: 52.15
'M' INLET S-23 (WQ) GR: 52.40
'C' INLET R-2A GR: 52.45
'C' INLET R-1 GR: 52.28
'M' INLET S-40 GR: 52.02
'M' INLET S-39 GR: 52.07
'C' INLET S-45 (WQ) GR: 52.15
'C' INLET S-36 GR: 51.85
'C' INLET S-37 GR: 51.77
'C' INLET S-30 (WQ) GR: 50.80
'C' INLET S-32 (WQ) GR: 51.37
MH S-50 RIM: 52.59
MH R-5 RIM: 53.11
MH R-7 RIM: 55.15
MH S-20 RIM: 53.31
MH S-3 RIM: 53.59
MH S-2 (WQ) RIM: 52.72
MH R-9 RIM: 54.88
MH S-38 RIM: 52.31
MH S-39A RIM: 52.25
MH S-34 RIM: 51.88
MH S-33 RIM: 51.89
MH S-29 RIM: 51.27
MH OCS S-A1 RIM: 51.40
MH S-24 RIM: 52.42
MH S-23 (WQ) RIM: 52.40
MH S-81 RIM: 50.88
MH OCS S-B2 RIM: 52.30
MH S-102 RIM: 50.73
MH S-4 RIM: 54.64
TW 62.76 BW 56.77
TW 62.66 BW 57.65
TW 63.18 BW 52.18
TW 62.91 BW 51.91
LP 51.37
LP 51.53
UGD CLEANOUT
PUBLIC SEATING
TOP OF SCHUYLKILL RIVER BANK
EDGE OF RIVER
EW-1 TOP: 52.75
EW-100 TOP: 50.66
MATCH EXISTING GRADE
TELEPHONE MANHOLE RIM EL. = 52.10
APPROX. LOCATION OF 4" S.W. GAS LINE
APPROX. LOCATION OF U.G. TELECOMMUNICATION LINE
SANITARY MANHOLE RIM EL.=53.71 INV. 30" VCP EL.=43.81 INV. 30" VCP EL.=43.61
APPROX. LOCATION OF U.G. ELECTRIC LINE
APPROX. LOCATION OF 12" PVC WATER LINE
APPROX. LOCATION OF 8" PVC WATER LINE
EXISTING ROADSIDE DITCH
"NO PARKING" SIGN
SIGN "NO PARKING"
STOP SIGN
UTILITY POLE 259910
GAS MANHOLE RIM EL.=52.70
WATER MANHOLE RIM EL.=52.81
WATER MANHOLE RIM EL.=52.96
SANITARY MANHOLE RIM EL.=53.02 INV. 30" VCP EL.=44.62 INV. 30" VCP EL.=44.42
INV. 10" PVC EL.=45.66
INLET TYPE "C" TO EL.=53.08 INV. 12" FCP EL.=51.14
INLET TYPE "C" TO EL.=52.51 N 12" PVC N EL.=NOT ACCESSIBLE S 12" PVC S EL.=47.61 INVLET FLANGE EL.=47.44
ELECTRIC MANHOLE RIM EL.=52.65
SPRINKLER VALVE
FFE= 53.78
INLET TYPE "C" TO EL.=53.16 INV. 6" CPP EL.= 51.00 INV. 24" RCP EL.= 48.38
STORM MANHOLE RIM EL.=53.61 BOTTOM EL.=43.00
STORM MANHOLE RIM EL.=53.59 INV. 42" RCP EL.=42.79 INV. 42" RCP EL.=42.74
INV. 42" RCP EL.=43.17
INLET TYPE "C" TO EL.=57.09 INV. 18" RCP EL.= 53.37 INV. 9" PVC EL.=48.48 INV. 18" RCP EL.=47.70
BUILDING 5 FFE 68.86 (2ND FLOOR)
BUILDING 6 FFE 68.56 (2ND FLOOR)
BUILDING 7 FFE 68.98 (2ND FLOOR)
BUILDING 8 FFE 68.59 (2ND FLOOR)
5 STORY APARTMENT BUILDING
5 STORY APARTMENT BUILDING
UNDERGROUND DETENTION BASIN B INV 47.50
UNDERGROUND DETENTION BASIN C INV 47.50
UNDERGROUND DETENTION BASIN D INV 47.50
UNDERGROUND DETENTION BASIN E INV 47.50
UNDERGROUND DETENTION BASIN F INV 47.50
UNDERGROUND DETENTION BASIN G INV 47.50
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UNDERGROUND DETENTION BASIN I INV 47.50
UNDERGROUND DETENTION BASIN J INV 47.50
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UNDERGROUND DETENTION BASIN L INV 47.50
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UNDERGROUND DETENTION BASIN N INV 47.50
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UNDERGROUND DETENTION BASIN Q INV 47.50
UNDERGROUND DETENTION BASIN R INV 47.50
UNDERGROUND DETENTION BASIN S INV 47.50
UNDERGROUND DETENTION BASIN T INV 47.50
UNDERGROUND DETENTION BASIN U INV 47.50
UNDERGROUND DETENTION BASIN V INV 47.50
UNDERGROUND DETENTION BASIN W INV 47.50
UNDERGROUND DETENTION BASIN X INV 47.50
UNDERGROUND DETENTION BASIN Y INV 47.50
UNDERGROUND DETENTION BASIN Z INV 47.50
UNDERGROUND DETENTION BASIN AA INV 47.50
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UNDERGROUND DETENTION BASIN AC INV 47.50
UNDERGROUND DETENTION BASIN AD INV 47.50
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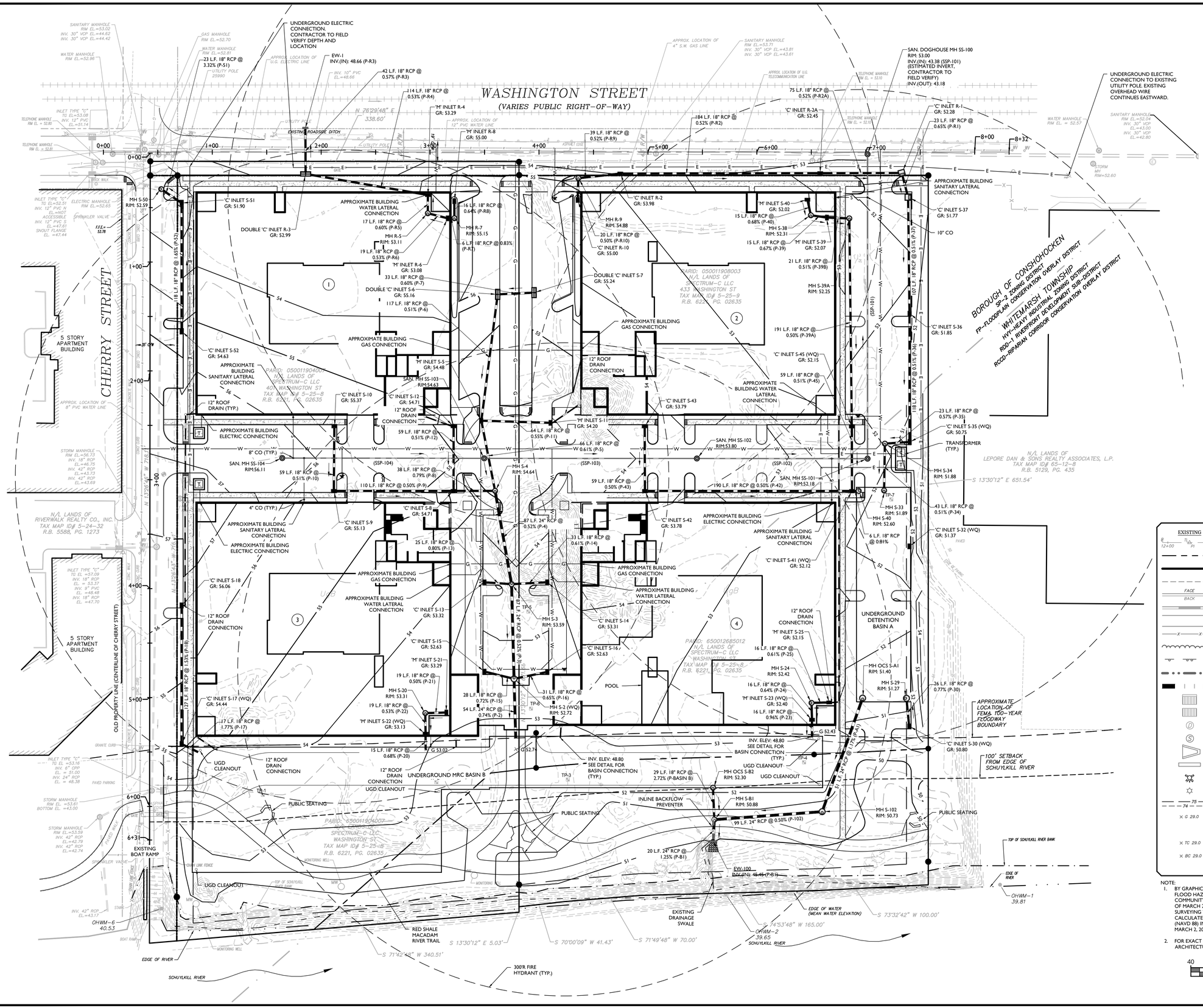

LEGEND

EXISTING		PROPOSED
12+00 PI 13+00	TRAVERSE LINE, CENTER LINE OR BASELINE (LABEL AS SUCH)	12+00 13+00
	RIGHT OF WAY LINE	
	PROPERTY LINE	
	EDGE OF PAVEMENT	
FACE / BACK	CURB	FACE / BACK
	DEPRESSED CURB	
	SIDEWALK	
X X	FENCES	X X
	TREELINE	
	ROADWAY SIGNS	
	WETLAND LINE	
	MUNICIPAL BOUNDARY LINE	
	'C' INLET	
	'M' INLET	
D	STORM MANHOLE	D
S	SANITARY MANHOLE	S
	FLARED END SECTION	
	HEADWALL	
	HYDRANT	
	POLE MOUNTED LIGHT	
75 / 74	CONTOURS	75 / 74
× G 29.0	SPOT ELEVATION	× G 29.0
	DIRECTION OF OVERLAND FLOW	
× TC 29.0	TOP OF CURB ELEVATION	× TC 29.0
× BC 29.0	BOTTOM OF CURB ELEVATION	× BC 29.0
	TOP OF DEPRESSED CURB ELEVATION	× TDC 29.0

NOTE:
1. BY GRAPHICAL REPRESENTATION ONLY THIS PROPERTY IS LOCATED IN FLOOD HAZARD ZONE AE AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 42091C0358G WHICH HAS AN EFFECTIVE DATE OF MARCH 2, 2016 AND IS IN A SPECIAL FLOOD HAZARD AREA. NO FIELD SURVEYING WAS PERFORMED TO DETERMINE THIS ZONE. THE FEMA CALCULATED 100-YEAR FLOOD ELEVATION FOR THIS PROJECT IS 60.5 FEET (NAVD 88) IN ACCORDANCE FIRM MAP NUMBER 42091C0358G DATED MARCH 2, 2016.
2. FOR EXACT BUILDING UTILITY TIE-IN LOCATIONS, SEE THE ARCHITECTURAL PLANS.

40 0 40 80

SCALE : 1" = 40'

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

20141400908\CE\Engineering\Site Plans\C-UTIL.dwg\C-11-UTILITY By: MDSEELYS

Colliers Engineering & Design

www.colliersengineering.com

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Doing Business as MASER CONSULTING

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ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE
Know what's below. Call before you dig. 20210843125 & 20210843126
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION
1	12/1/22	MD	REVISED PER BOROUGH OF CONSHOHOCKEN REVIEW LETTERS DATED 1/7/2022.
2	2/23/22	MKJ	REVISED PER EMAILS WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/22/2022.
3	5/20/22	JJW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL C. RICHARD ROSEBERRY ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

PRELIMINARY/FINAL LAND DEVELOPMENT PLANS

FOR

401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

Colliers Engineering & Design
LEHIGH VALLEY
941 Marcon Boulevard, Suite 801
Allentown, PA 18109
Phone: 610.868.4201
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

PROJECT NUMBER: 14000908C
DRAWING NAME: C-UTIL

SHEET TITLE: UTILITY PLAN

SHEET NUMBER: 11 of 41

Proposed Storm Network Structure Table

Structure I.D.	Description	Rim/Grate	Pipes (In)	Inverts (In)	Pipes (Out)	Inverts (Out)
EW-1	60 in. x 18 in. x 60 in. CONC. HW	52.75	18" RCP	48.66		
EW-100	84 in. x 18 in. x 60 in. CONC. HW	50.66	24" RCP	45.45		
R-1	60 in. x 60 in. 'C' INLET	52.28	18" RCP	49.45	18" RCP	49.25
R-2	24 in. x 45 in. 'C' INLET	53.98	18" RCP	51.00	18" RCP	50.80
R-2A	24 in. x 45 in. 'C' INLET	52.45	18" RCP	49.84	18" RCP	49.84
R-3	24 in. x 45 in. 'C' INLET	52.99	18" RCP	49.05	18" RCP	48.90
R-4	24 in. x 45 in. 'M' INLET	53.29	18" RCP	49.85	18" RCP	49.65
R-5	48 in. dia. CYLINDER MH	53.11	18" RCP	50.15	18" RCP	49.95
R-6	24 in. x 45 in. 'M' INLET	53.08	18" RCP	50.25	18" RCP	50.25
R-7	48 in. dia. CYLINDER MH	55.15	18" RCP	50.50	18" RCP	50.30
R-8	24 in. x 45 in. 'M' INLET	55.00			18" RCP	50.60
R-9	48 in. dia. CYLINDER MH	54.88	18" RCP	51.40	18" RCP	51.20
R-10	24 in. x 45 in. 'C' INLET	55.00			18" RCP	51.50
S-2 (WQ)	60 in. dia. CYLINDER MH	52.72	24" RCP 18" RCP 18" RCP	49.40 49.40 49.40	24" RCP	49.20
S-3	48 in. dia. CYLINDER MH	53.59	24" RCP 18" RCP 18" RCP	50.05 50.05 50.05	24" RCP	49.85
S-4	48 in. dia. CYLINDER MH	54.64	18" RCP 18" RCP	51.00 50.80	24" RCP	50.50
S-5	24 in. x 45 in. 'M' INLET	54.48	18" RCP 18" RCP	51.60 51.60	18" RCP	51.40
S-6	24 in. x 45 in. 'C' INLET	55.16	18" RCP	52.35	18" RCP	52.20
S-7	24 in. x 45 in. 'C' INLET	55.24			18" RCP	52.55
S-8	24 in. x 45 in. 'C' INLET	54.71	18" RCP 18" RCP	51.30 51.30	18" RCP	51.10
S-9	24 in. x 45 in. 'C' INLET	55.13	18" RCP	52.05	18" RCP	51.85
S-10	24 in. x 45 in. 'C' INLET	55.37			18" RCP	52.35
S-11	24 in. x 45 in. 'M' INLET	54.20			18" RCP	51.95
S-12	24 in. x 45 in. 'C' INLET	54.71			18" RCP	51.60
S-13	24 in. x 45 in. 'C' INLET	53.32			18" RCP	50.25
S-14	24 in. x 45 in. 'C' INLET	53.31			18" RCP	50.25
S-15	24 in. x 45 in. 'C' INLET	52.63			18" RCP	49.60
S-16	24 in. x 45 in. 'C' INLET	52.63			18" RCP	49.60
S-17 (WQ)	24 in. x 45 in. 'C' INLET	54.44	18" RCP	49.30	18" RCP	49.10
S-18	24 in. x 45 in. 'C' INLET	56.06			18" RCP	51.25
S-20	48 in. dia. CYLINDER MH	53.31	18" RCP	49.50	18" RCP	49.30
S-21	24 in. x 45 in. 'M' INLET	53.29			18" RCP	49.60
S-22 (WQ)	24 in. x 45 in. 'M' INLET	53.13	18" RCP	49.20	18" RCP	48.90
S-23 (WQ)	24 in. x 45 in. 'M' INLET	52.40	18" RCP	49.15	18" RCP	48.95
S-24	48 in. dia. CYLINDER MH	52.42	18" RCP	49.45	18" RCP	49.25
S-25	24 in. x 45 in. 'M' INLET	52.15			18" RCP	49.55
S-29	60 in. dia. CYLINDER MH	51.27	18" RCP	47.90		
S-30 (WQ)	24 in. x 45 in. 'C' INLET	50.80			18" RCP	48.10
S-32 (WQ)	24 in. x 45 in. 'C' INLET	51.37				
S-33	48 in. dia. CYLINDER MH	51.89	18" RCP	47.60		
S-34	48 in. dia. CYLINDER MH	51.88	18" RCP	47.82	18" RCP	47.82
S-35 (WQ)	24 in. x 45 in. 'C' INLET	50.75	18" RCP	47.95	18" RCP	47.95
S-36	24 in. x 45 in. 'C' INLET	51.85	18" RCP	48.55	18" RCP	48.55
S-37	60 in. x 60 in. 'C' INLET	51.77	18" RCP	49.10	18" RCP	49.10
S-38	48 in. dia. CYLINDER MH	52.31	18" RCP	49.05	18" RCP	49.00
S-39	24 in. x 45 in. 'M' INLET	52.07	18" RCP	48.90	18" RCP	48.95
S-39A	48 in. dia. CYLINDER MH	52.25	18" RCP	48.85	18" RCP	48.85
S-40	24 in. x 45 in. 'M' INLET	52.02			18" RCP	49.15
S-40	48 in. dia. CYLINDER MH	52.60	18" RCP	47.60		
S-41 (WQ)	24 in. x 45 in. 'C' INLET	52.12	18" RCP 18" RCP	47.75 47.60	18" RCP	47.65
S-42	24 in. x 45 in. 'C' INLET	53.78	18" RCP	48.90	18" RCP	48.70
S-43	24 in. x 45 in. 'C' INLET	53.79			18" RCP	49.20
S-45 (WQ)	24 in. x 45 in. 'C' INLET	52.15	18" RCP	47.90	18" RCP	47.90
S-50	48 in. dia. CYLINDER MH	52.59	18" RCP	47.70		
S-51	24 in. x 45 in. 'C' INLET	51.90	18" RCP	48.65	18" RCP	48.45

Proposed Storm Network Structure Table

Structure I.D.	Description	Rim/Grate	Pipes (In)	Inverts (In)	Pipes (Out)	Inverts (Out)
S-52	24 in. x 45 in. 'C' INLET	54.63			18" RCP	50.60
S-102	60 in. dia. CYLINDER MH	50.73	24" RCP	46.30	24" RCP	46.30
S-A1	60 in. dia. CYLINDER MH	51.40			24" RCP	47.60
S-B1	48 in. dia. CYLINDER MH	50.88	18" RCP 24" RCP	48.00 45.80	24" RCP	45.70
S-B2	48 in. dia. CYLINDER MH	52.30			18" RCP	48.80

Proposed Storm Network Pipe Table

Pipe I.D.	Description	Length	Invert Up	Invert Dn	Slope
P-2	24"RCP	54'	49.20	48.80	0.74%
P-3	24"RCP	87'	49.85	49.40	0.52%
P-4	24"RCP	87'	50.50	50.05	0.52%
P-5	18"RCP	66'	51.40	51.00	0.61%
P-6	18"RCP	117'	52.20	51.60	0.51%
P-7	18"RCP	33'	52.55	52.35	0.60%
P-8	18"RCP	38'	51.10	50.80	0.79%
P-9	18"RCP	110'	51.85	51.30	0.50%
P-10	18"RCP	59'	52.35	52.05	0.51%
P-11	18"RCP	64'	51.95	51.60	0.55%
P-12	18"RCP	59'	51.60	51.30	0.51%
P-13	18"RCP	25'	50.25	50.05	0.80%
P-14	18"RCP	33'	50.25	50.05	0.61%
P-15	18"RCP	28'	49.60	49.40	0.72%
P-16	18"RCP	31'	49.60	49.40	0.65%
P-17	18"RCP	17'	49.10	48.80	1.77%
P-18	18"RCP	127'	51.25	49.30	1.53%
P-20	18"RCP	15'	48.90	48.80	0.68%
P-21	18"RCP	19'	49.60	49.50	0.50%
P-22	18"RCP	19'	49.20	49.30	0.53%
P-23	18"RCP	16'	48.95	48.80	0.96%
P-24	18"RCP	16'	49.25	49.15	0.64%
P-25	18"RCP	16'	49.55	49.45	0.61%
P-30	18"RCP	26'	48.10	47.90	0.77%
P-34	18"RCP	43'	47.82	47.60	0.51%
P-35	18"RCP	23'	47.95	47.82	0.57%
P-36	18"RCP	118'	48.55	47.95	0.51%
P-37	18"RCP	107'	49.10	48.55	0.51%
P-39	18"RCP	15'	48.90	49.00	0.67%
P-39A	18"RCP	191'	48.85	47.90	0.50%
P-39B	18"RCP	21'	48.95	48.85	0.51%
P-40	18"RCP	15'	49.15	49.05	0.68%
P-41	18"RCP	6'	47.65	47.60	0.81%
P-42	18"RCP	190'	48.70	47.75	0.50%
P-43	18"RCP	59'	49.20	48.90	0.50%
P-45	18"RCP	59'	47.90	47.60	0.51%
P-51	18"RCP	23'	48.45	47.70	3.32%
P-52	18"RCP	118'	50.60	48.65	1.65%
P-102	24"RCP	99'	46.30	45.80	0.50%
P-A1	24"RCP	111'	47.60	46.30	1.17%
P-B1	24"RCP	20'	45.70	45.45	1.25%
P-BASIN B	18"RCP	29'	48.80	48.00	2.72%
P-R1	18"RCP	23'	49.25	49.10	0.65%
P-R2	18"RCP	184'	50.80	49.84	0.52%
P-R2A	18"RCP	75'	49.84	49.45	0.52%
P-R3	18"RCP	42'	48.90	48.66	0.57%
P-R4	18"RCP	114'	49.65	49.05	0.53%
P-R5	18"RCP	17'	49.95	49.85	0.60%
P-R6	18"RCP	19'	50.25	50.15	0.53%
P-R7	18"RCP	6'	50.30	50.25	0.83%

Proposed Storm Network Pipe Table

Pipe I.D.	Description	Length	Invert Up	Invert Dn	Slope
P-R8	18"RCP	16'	50.60	50.50	0.64%
P-R9	18"RCP	39'	51.20	51.00	0.52%
P-R10	18"RCP	20'	51.50	51.40	0.50%

Proposed Sanitary Sewer Structure Table

Structure I.D.	Description	Rim/Grate	Pipes (In)	Inverts (In)	Pipes (Out)	Inverts (Out)
SS-100	48 in. dia. CONED MH	53.00	10" SAN. PVC	43.38	30" SAN. VCP	43.18
SS-101	48 in. dia. CONED MH	52.18	8" SAN. PVC	45.00	10" SAN. PVC	44.80
SS-102	48 in. dia. CYLINDER MH	53.80	8" SAN. PVC	45.90	8" SAN. PVC	45.80
SS-103	48 in. dia. CONED MH	54.63	8" SAN. PVC	47.00	8" SAN. PVC	46.90
SS-104	48 in. dia. CONED MH	56.11			8" SAN. PVC	47.95

Proposed Sanitary Sewer Pipe Table

Pipe I.D.	Description	Length	Invert Up	Invert Dn	Slope
SSP-101	10"SAN. PVC	280'	43.38	44.80	0.51%
SSP-102	8"SAN. PVC	157'	45.00	45.80	0.51%
SSP-103	8"SAN. PVC	195'	45.90	46.90	0.51%
SSP-104	8"SAN. PVC	185'	47.00	47.95	0.51%

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REV	DATE	DRAWN BY	DESCRIPTION
1	12/1/22	MD	REVISED PER BOROUGH OF CONSHOHOCKEN REVIEW LETTERS DATED 1/7/2022.
2	2/23/22	MKJ	REVISED PER EMAILS WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/22/2022.
3	5/20/22	JJW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
C. RICHARD ROSEBERRY
ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
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PRELIMINARY/FINAL LAND DEVELOPMENT PLANS

FOR

401/433 WASHINGTON STREET APARTMENTS

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PENNSYLVANIA

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PROJECT NUMBER: 14000908C
DRAWING NAME: C-UTIL

SHEET TITLE:
PIPE AND STRUCTURE CHARTS

SHEET NUMBER:
12 of 41

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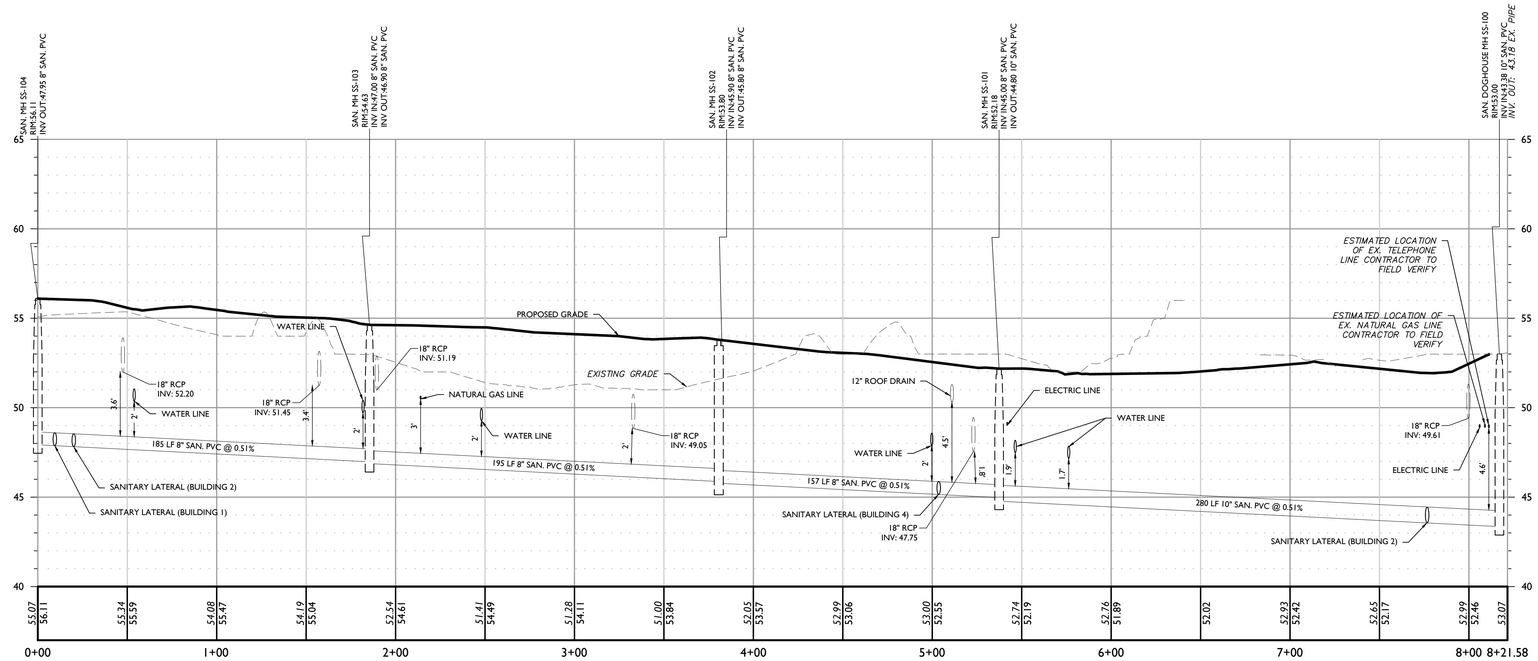
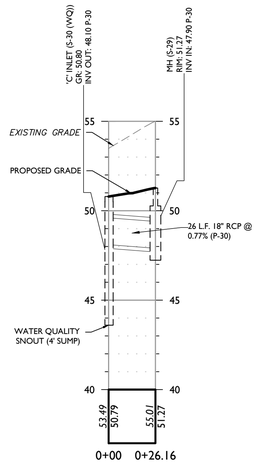
2014\14000908C\Engineering\Site Plans\C-UTIL.dwg|C-12 UTILITY By: MDBESUS



PROFILE OF MH SS-104 TO MH SS-100
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



PROFILE OF INLET S-30 TO BASIN A (MH S-29)
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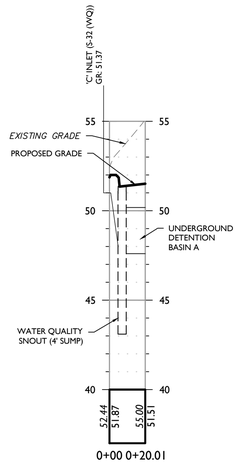

PROFILE OF MH SS-104 TO MH SS-100
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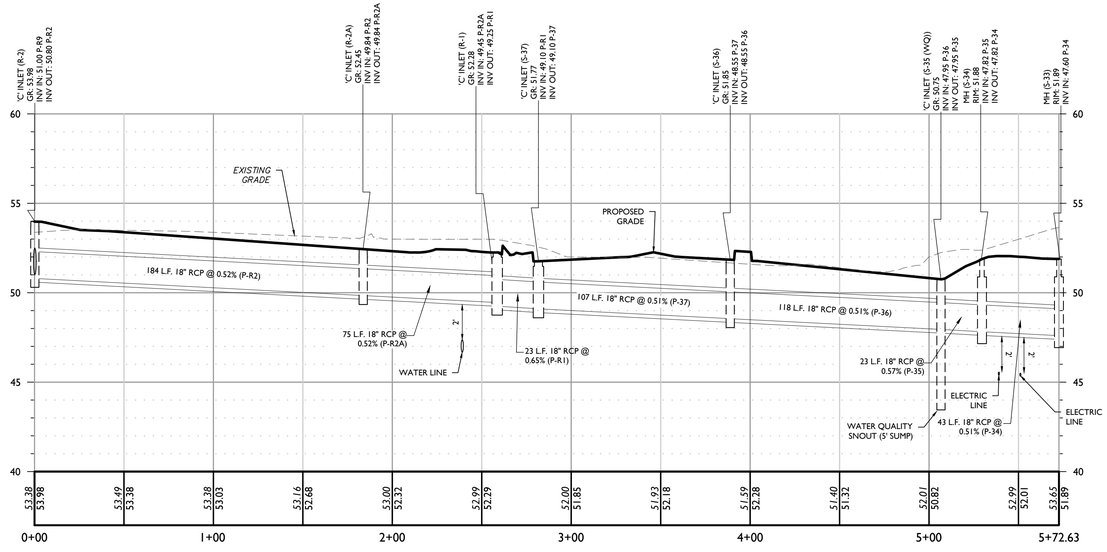

PROFILE OF INLET R-2 TO BASIN A (MH S-33)
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'

4 0 4 8
SCALE : 1" = 4'
VERTICAL

40 0 40 80
SCALE : 1" = 40'
HORIZONTAL

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C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
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14000908C	C-PROF		

SHEET TITLE:
PROFILES

SHEET NUMBER:
13 of 41

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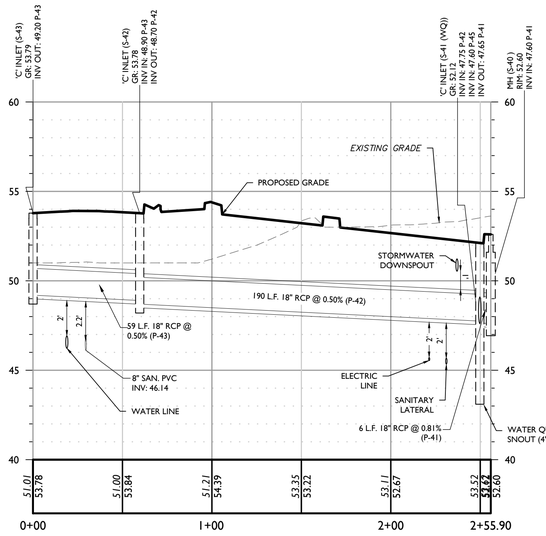
2016\14000908\Engineering\Site Plans\C-PROF.dwg\C-13-PROFILES By: MDB|EJUS



PROFILE OF INLET S-43 TO BASIN A (MH S-20)
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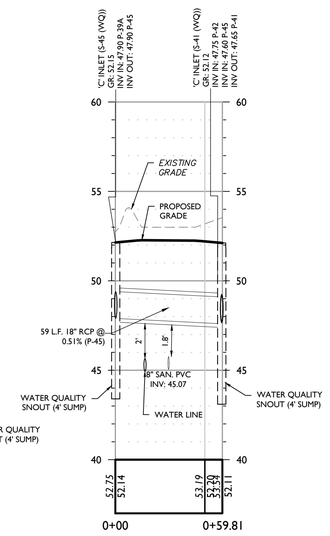
VERTICAL : 1" = 4'



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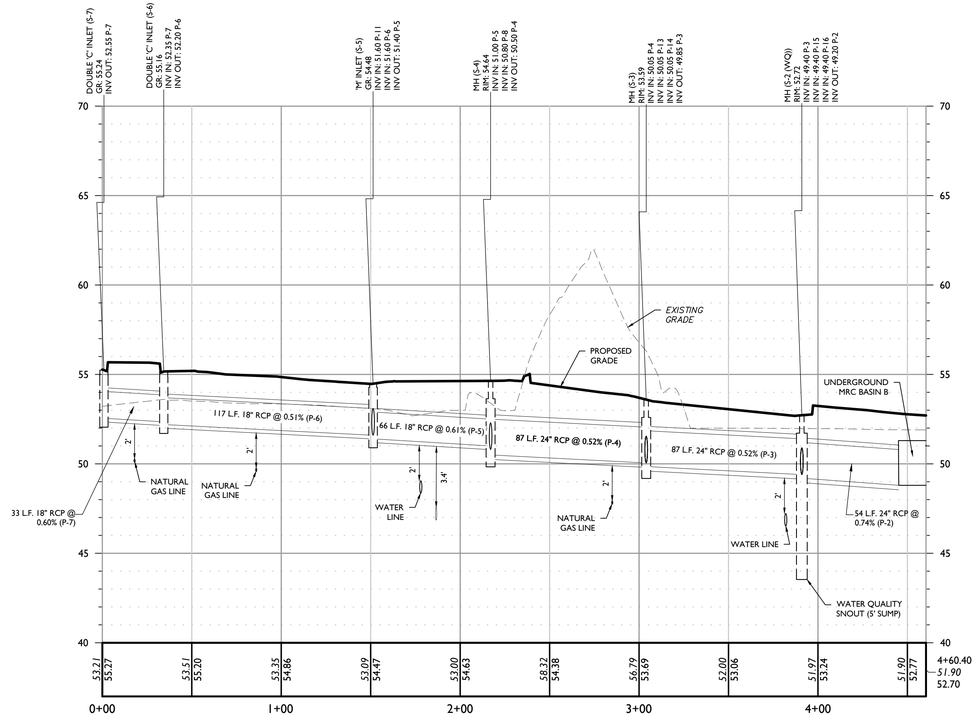

PROFILE OF INLET S-7 TO BASIN B
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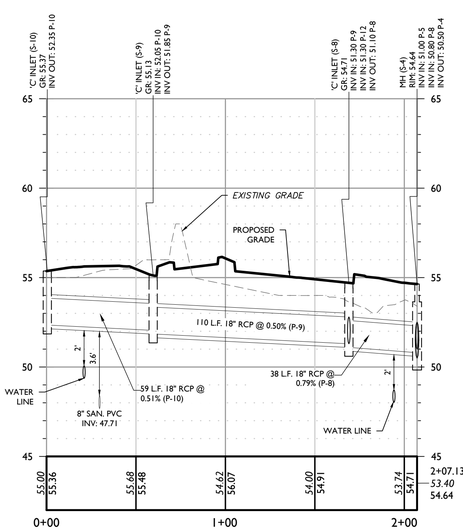

PROFILE OF INLET S-10 TO MH S-4
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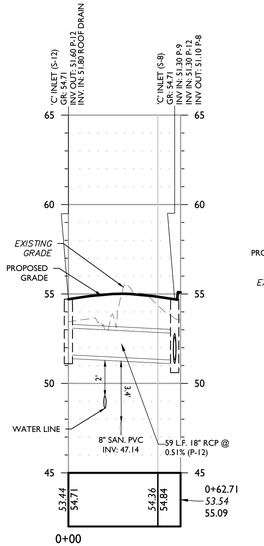
VERTICAL : 1" = 4'



PROFILE OF INLET S-12 TO INLET S-8
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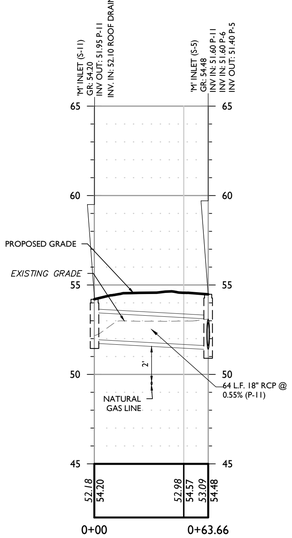
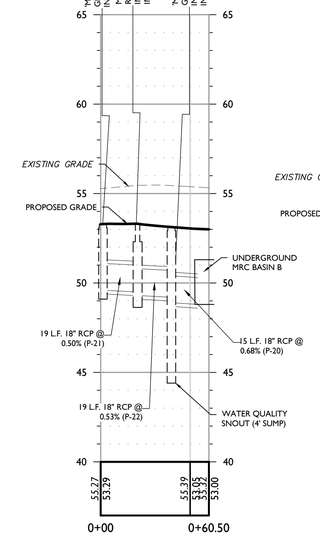


PROFILE OF INLET S-11 TO INLET S-5
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



PROFILE OF INLET S-21 TO BASIN B
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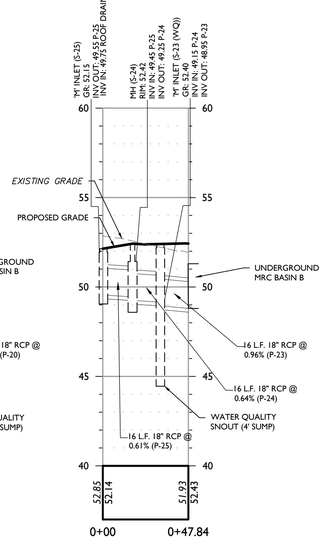
VERTICAL : 1" = 4'



PROFILE OF INLET S-25 TO BASIN B
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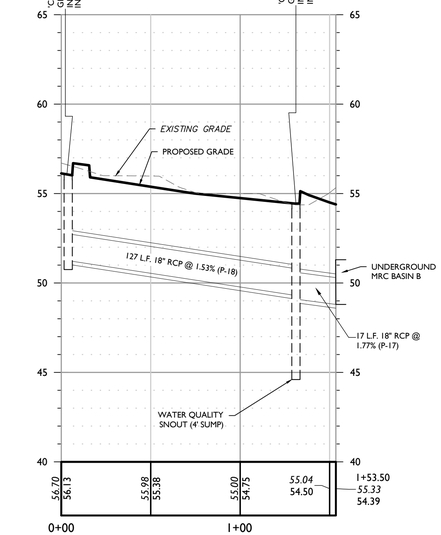

PROFILE OF S-18 TO BASIN B
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'

4 0 4 8
SCALE : 1" = 4'
VERTICAL

40 0 40 80
SCALE : 1" = 40'
HORIZONTAL

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REGISTERED PROFESSIONAL
C. RICHARD ROSEBERRY
ENGINEER No. 46162

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PROJECT NUMBER: 14000908C
DRAWING NAME: C-PROF

SHEET TITLE: PROFILES

SHEET NUMBER: 14 of 41

2014\14000908C\Engineering\Site Plans\C-PROF.dwg|C-14 PROFILES By: MD@EJSJS

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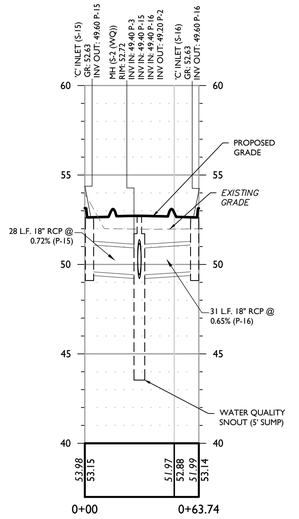

PROFILE OF INLET S-16 TO INLET S-15
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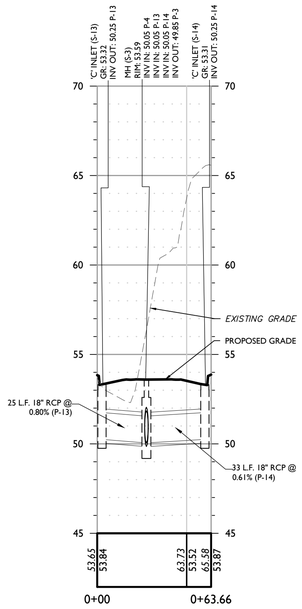
VERTICAL : 1" = 4'



PROFILE OF INLET S-14 TO INLET S-13
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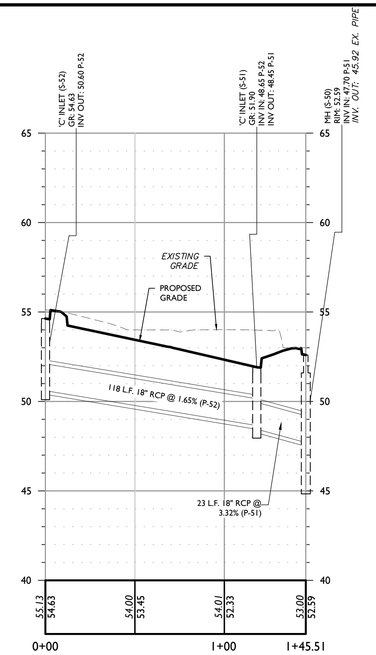

PROFILE OF INLET S-52 TO MH S-50
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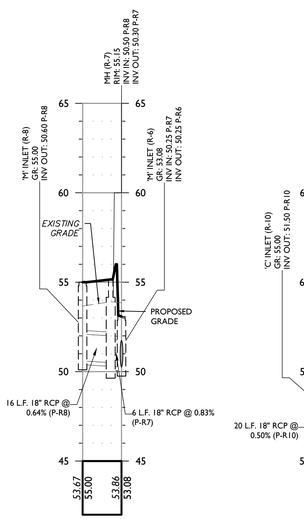

PROFILE OF INLET R-8 TO INLET R-6
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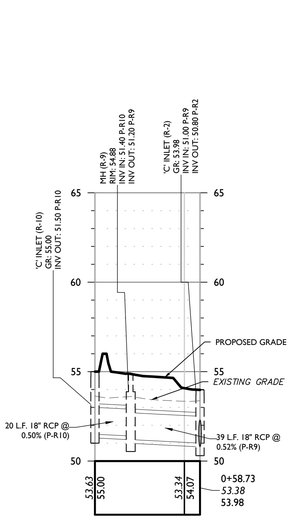
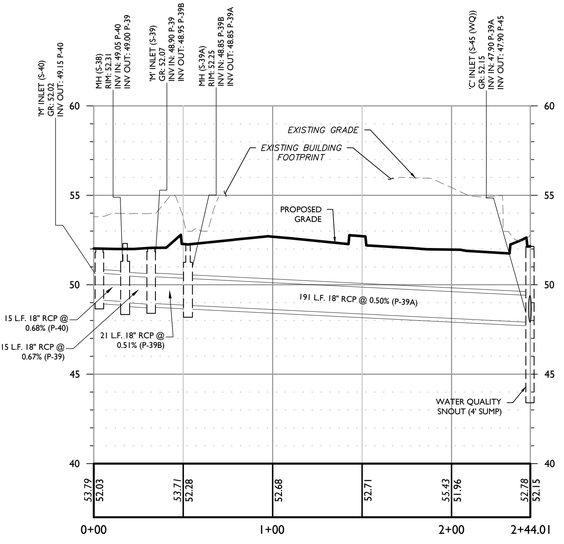
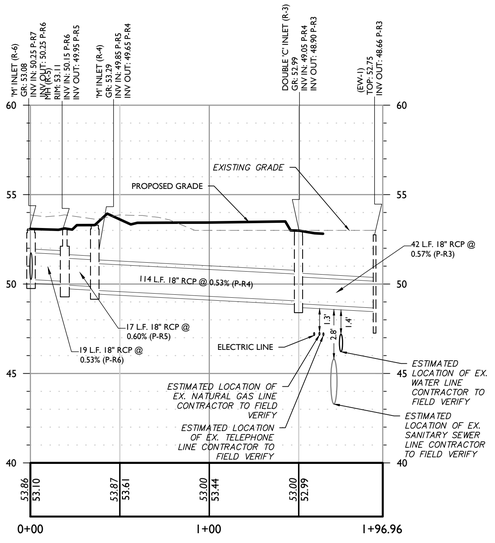


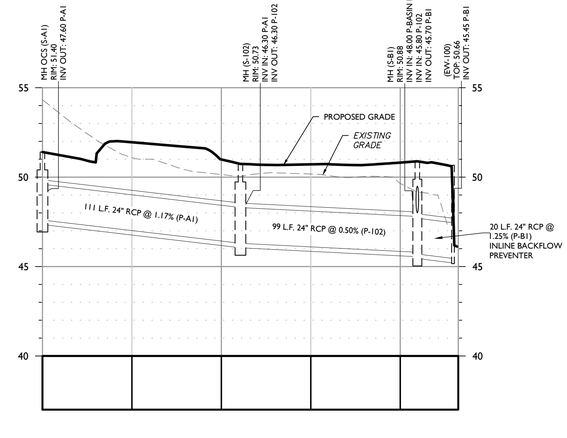
PROFILE OF INLET R-10 TO INLET R-2
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



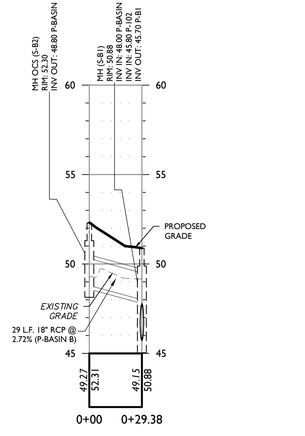
PROFILE OF INLET S-40 TO INLET S-45
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



PROFILE OF INLET R-6 TO EXISTING ROADSIDE DITCH
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



PROFILE OF MH S-A1 TO EW-100
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



PROFILE OF MH OCS S-B2 TO MH S-B1
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'

4 0 4 8
SCALE : 1" = 4'
VERTICAL

40 0 40 80
SCALE : 1" = 40'
HORIZONTAL

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1	12/1/22	MD	REVISED PER BOROUGH OF CONSHOHOCKEN REVIEW LETTERS DATED 1/7/2022.
2	2/23/22	MCJ	REVISED PER EMAILS WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/22/2022.
3	5/20/22	JJW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
C. RICHARD ROSEBERRY
ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

PRELIMINARY/FINAL LAND DEVELOPMENT PLANS
FOR
401/433 WASHINGTON STREET APARTMENTS
401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

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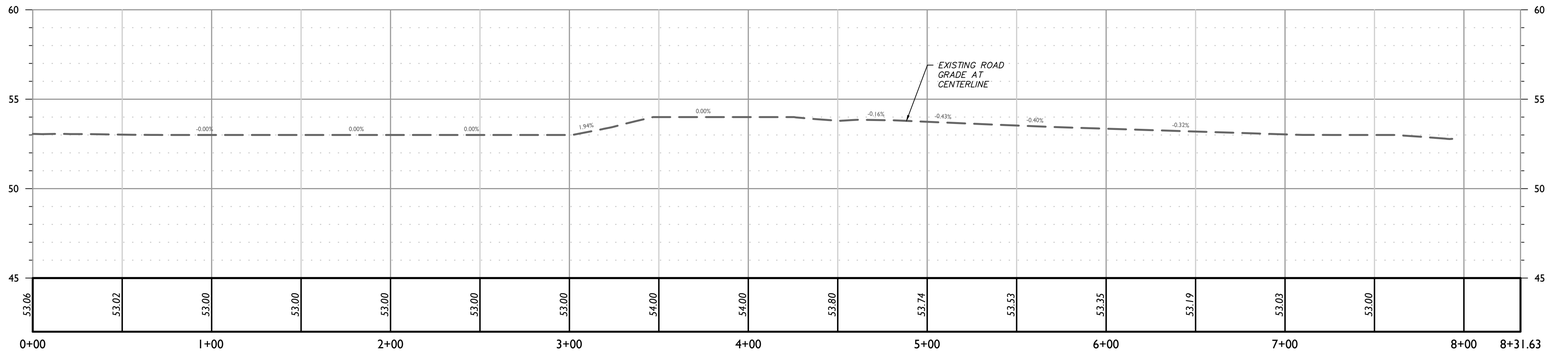
AS SHOWN	10/29/21	MD	CRR
PROJECT NUMBER:	DRAWING NAME:		
14000908C	C-PROF		

SHEET TITLE: PROFILES

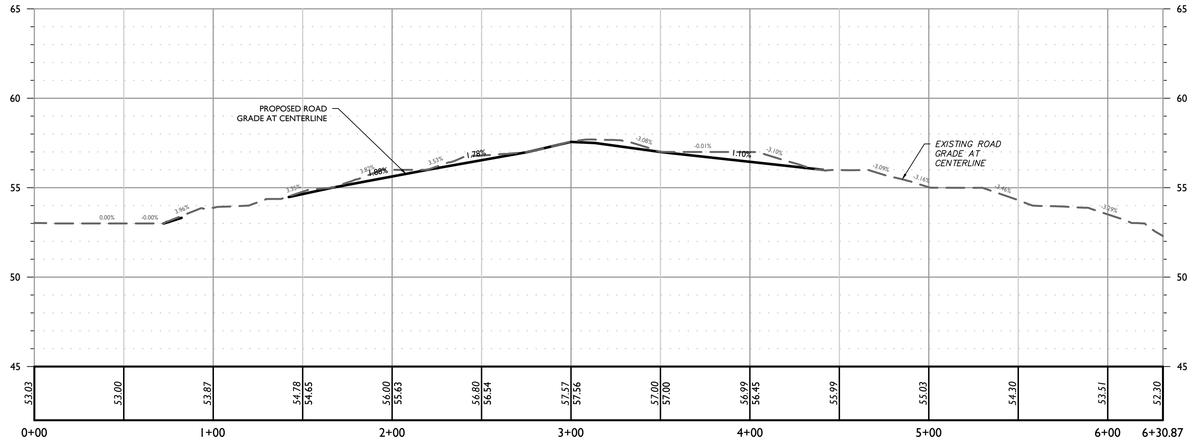
SHEET NUMBER: 15 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2016\14000908C\Engineering\Site Plans\C-PROF.dwg\C-15-PROFILES By: MDS|EJUS



PROFILE OF WASHINGTON STREET
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



PROFILE OF CHERRY STREET
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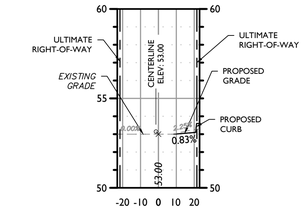
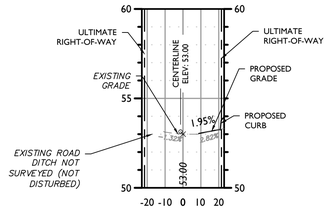
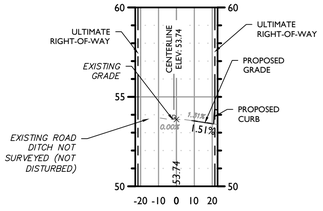
VERTICAL : 1" = 4'



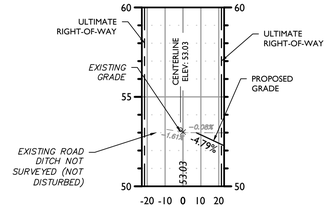
CROSS SECTION OF WASHINGTON STREET
STATION: 1+00
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



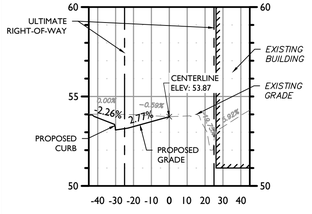
CROSS SECTION OF WASHINGTON STREET
STATION: 3+00
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



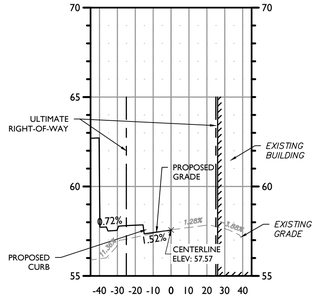
CROSS SECTION OF WASHINGTON STREET
STATION: 5+00
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



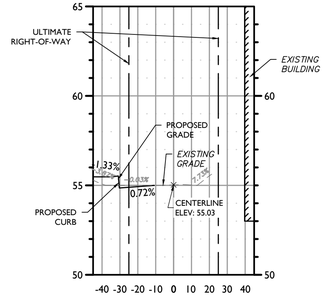
CROSS SECTION OF WASHINGTON STREET
STATION: 7+00
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



CROSS SECTION OF CHERRY STREET
STATION: 1+00
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



CROSS SECTION OF CHERRY STREET
STATION: 3+00
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



CROSS SECTION OF CHERRY STREET
STATION: 5+00
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'

4 0 4 8
SCALE : 1" = 4'
VERTICAL

40 0 40 80
SCALE : 1" = 40'
HORIZONTAL

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908\C\Engineering\Site Plans\C-ROAD PROF.dwg\C-16 LAYOUT By: MDEJESUS

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3	5/20/22	JJW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL C. RICHARD ROSEBERRY ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

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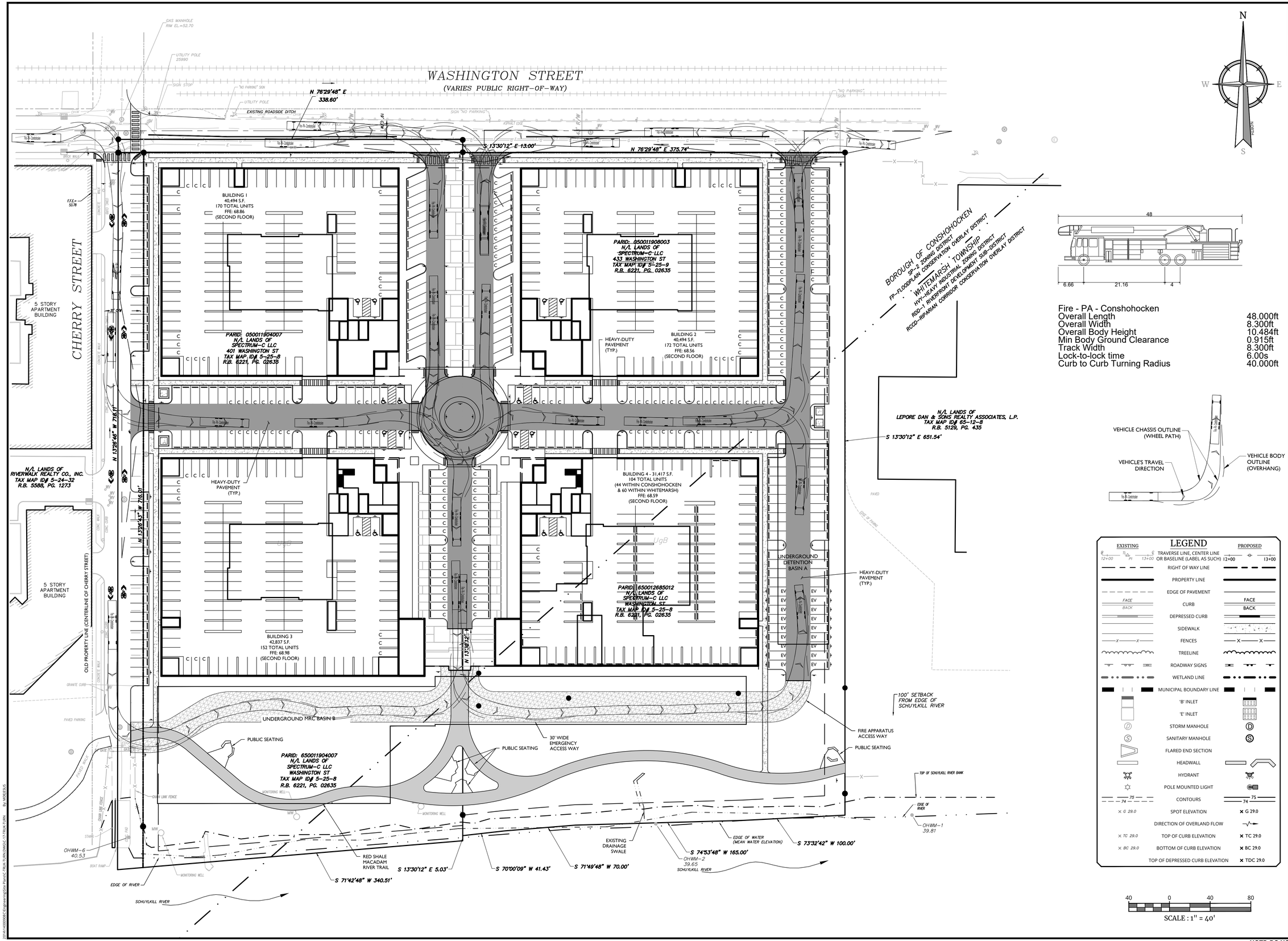
AS SHOWN	10/29/21	MD	CRR
PROJECT NUMBER:	DRAWING NAME:		
14000908C	C-ROAD-PROF		

SHEET TITLE:
ROAD PROFILES & SECTIONS

SHEET NUMBER:
16 of 41



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C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
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AS SHOWN	10/29/21	MD	CRR

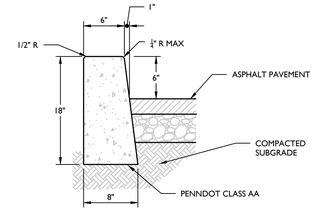
PROJECT NUMBER:	DRAWING NAME:
14000908C	C-TRUK-TURN

SHEET TITLE:
TRUCK TURNING PLAN

SHEET NUMBER:
17 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C\Engineering\Site Plans\C-TRUK-TURN.DWG\C-17-TRUK-TURN By: MDB[EDJ]5

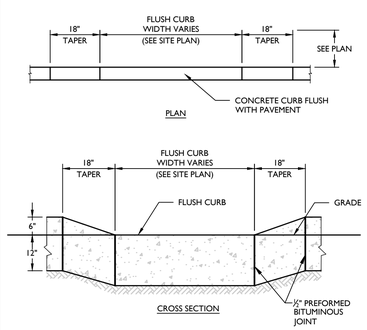


NOTES:

1. PREFORMED BITUMINOUS FIBER TRAVERSE JOINTS, 1/2" THICK AT 20' MAX. INTERVALS ALONG THE CURB.
2. PROVIDE CONTRACTION JOINTS (2" DEEP X ⅛" WIDE) 4'-0" MIN TO 10'-0" MAX INTERVALS.

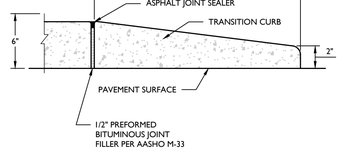
CONCRETE CURB (ASPHALT PAVEMENT) DETAIL

NOT TO SCALE MCPA-SITE-CURB-1000 05/01/18



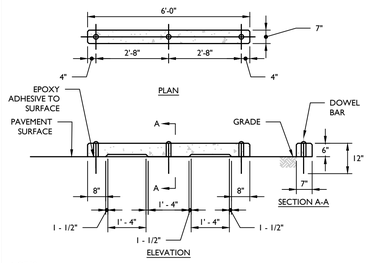
CONCRETE FLUSH CURB DETAIL

NOT TO SCALE MCPA-SITE-CURB-1500 05/01/18



CURB TAPER DETAIL

NOT TO SCALE MCPA-SITE-CURB-2100 05/01/18

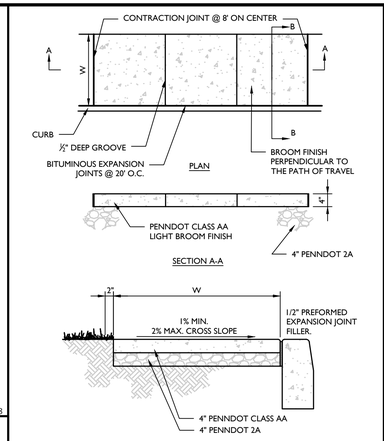


NOTES:

1. CONCRETE SHALL BE PENNDOT CLASS AA.
2. UNIT TO BE PINNED TO SURFACE WITH (3) 5/8" DIA. GALVANIZED STEEL RODS, 12" MINIMUM LENGTH.
3. ALL BEVELS TO BE 1/2", ALL ANGLES TO BE 45°

PRECAST CONCRETE BUMPER CURB WHEEL STOP (FOR CARS) DETAIL

NOT TO SCALE MCPA-SITE-CURB-2301 05/01/18

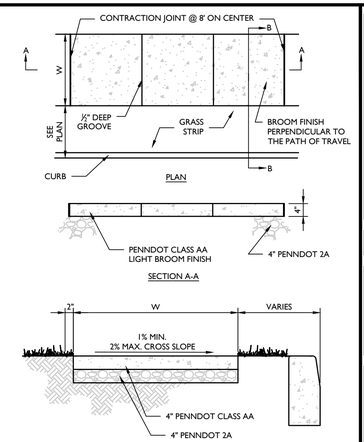


NOTES:

1. ½" EXPANSION JOINT FILLER INSTALLED BETWEEN THE CURB AND CONCRETE SIDEWALK AT 10' MAXIMUM SPACING, RECESS TO ¼" FROM THE TOP OF SIDEWALK.
2. ½" CONTRACTION JOINTS INSTALLED AT AN INTERVAL 24 TO 30 TIMES THE THICKNESS OF THE SLAB, TO A DEPTH OF ¼ OF THE THICKNESS OF THE SLAB, RECESS TO ½" FROM THE TOP OF SIDEWALK, FOR THE FULL WIDTH OF THE SIDEWALK. SCORE A ¼" GROOVED JOINT HALF WAY BETWEEN THE CONTRACTION JOINTS.
3. JOINT FILLER SHALL CONFORM TO AASHTO M-33. SURFACE OF CONCRETE SHALL BE BROOM FINISH. ROUND EDGES USING AN EDGING TOOL WITH A ½" RADIUS.
4. CONCRETE SIDEWALK SHALL BE CONSTRUCTED PER THE LATEST ADA REQUIREMENTS.

CONCRETE SIDEWALK (NEXT TO CURB) DETAIL

NOT TO SCALE MCPA-SITE-PVMT-1900 12/01/20

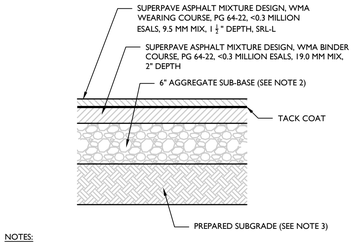


NOTES:

1. ½" CONTRACTION JOINTS INSTALLED AT AN INTERVAL 24 TO 30 TIMES THE THICKNESS OF THE SLAB, TO A DEPTH OF ¼ OF THE THICKNESS OF THE SLAB, RECESS TO ½" FROM THE TOP OF SIDEWALK, FOR THE FULL WIDTH OF THE SIDEWALK. SCORE A ¼" GROOVED JOINT HALF WAY BETWEEN THE CONTRACTION JOINTS.
2. JOINT FILLER SHALL CONFORM TO AASHTO M-33. SURFACE OF CONCRETE SHALL BE BROOM FINISH. ROUND EDGES USING AN EDGING TOOL WITH A ½" RADIUS.
3. CONCRETE SIDEWALK SHALL BE CONSTRUCTED PER THE LATEST ADA REQUIREMENTS.

CONCRETE SIDEWALK (NEXT TO GRASS) DETAIL

NOT TO SCALE MCPA-SITE-PVMT-1901 12/01/20

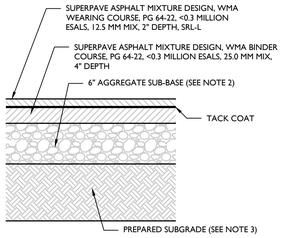


NOTES:

1. PENNDOT APPROVED ASPHALT MIX DESIGN
2. AGGREGATE BASE TO BE PENNDOT TYPE 2A CONFORMING TO PENNDOT PUBLICATIONS 408
3. SUBGRADE TO BE COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY, AS DETERMINED BY THE MODIFIED PROCTOR TEST, ASTM D 1557, AND SHALL CONSIST OF LOAD-BEARING FILL OR EXISTING STRATUM. A MATERIALS CAPABLE OF ACHIEVING A CBR VALUE OF 5. THE MOISTURE CONTENT OF THE MATERIAL SHOULD ALSO BE MAINTAINED WITHIN +/- 2 PERCENT OF THE OPTIMUM MOISTURE CONTENT.

LIGHT-DUTY PAVEMENT DETAIL

NOT TO SCALE MCPA-SITE-PVMT-1000 05/01/18

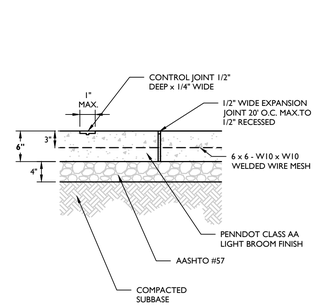


NOTES:

1. PENNDOT APPROVED ASPHALT MIX DESIGN
2. AGGREGATE BASE TO BE PENNDOT TYPE 2A CONFORMING TO PENNDOT PUBLICATIONS 408
3. SUBGRADE TO BE COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY, AS DETERMINED BY THE MODIFIED PROCTOR TEST, ASTM D 1557, AND SHALL CONSIST OF LOAD-BEARING FILL OR EXISTING STRATUM A MATERIALS CAPABLE OF ACHIEVING A CBR VALUE OF 5. THE MOISTURE CONTENT OF THE MATERIAL SHOULD ALSO BE MAINTAINED WITHIN +/- 2 PERCENT OF THE OPTIMUM MOISTURE CONTENT.

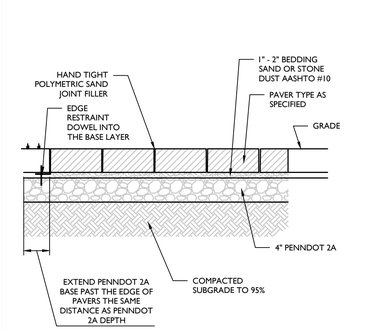
HEAVY-DUTY PAVEMENT DETAIL

NOT TO SCALE MCPA-SITE-PVMT-1100 05/01/18



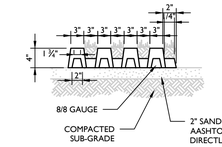
CONCRETE PAVEMENT DETAIL

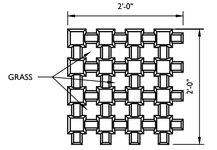
NOT TO SCALE MCPA-SITE-PVMT-1600 05/01/18



TYPICAL STANDARD PAVER SECTION DETAIL

NOT TO SCALE MCPA-SITE-PVMT-2500 05/01/18



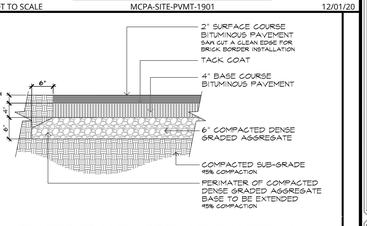


NOTES:

1. PAVERS SHALL BE MANUFACTURED BY **HASTINGS PAVEMENT CO.**, INC., FABRICATED WITH 6"x6" X 8/8 GAUGE STEEL MESH, AND 5,000 PSI CONCRETE OR APPROVED EQUAL.
2. SETTING BED FOR PAVERS SHALL BE EITHER UNDISTURBED EARTH OR FILL COMPACTED TO 95% MAXIMUM DRY DENSITY AS DETERMINED BY THE MODIFIED PROCTOR TEST ASTM D-1557-64 + (PLUS 4% OR MINUS 2% OPTIMUM MOISTURE). REMOVE FROM THE SETTING BED, ROCK OR OTHER MATERIALS WHICH WOULD CREATE UNEVEN BEARING. PLACE TOPSOIL, SAND, OR STONE DUST IN A 2" COMPACTED LAYER TO PRESENT A TRUE AND EVEN GRADE OVER ENTIRE AREA TO RECEIVE PAVER. SET PAVERS AND LINE UP TO ABUT.
3. THOROUGHLY MIX LIME, FERTILIZER AND OTHER ADDITIVES PER LOCAL SOIL CONSERVATION REQUIREMENTS WITH THE TOPSOIL AND SPREAD LOOSELY TO FILL VOIDS IN PAVERS. WATER WITH A MIST SPRAY TO SETTLE. ADD ADDITIONAL TOPSOIL MIX TO BRING THE TOPSOIL FLUSH WITH TOP OF THE PAVER.
4. ADD SEED MIX AS PER LOCAL SOIL CONSERVATION DISTRICT AND PROJECT LANDSCAPING REQUIREMENTS AND APPLY SEED AT SLIGHTLY LESS THAN NORMAL RATE, AND MULCH. WHEN GRASS IS 2 1/2" HIGH, CUT TO 1 3/4".

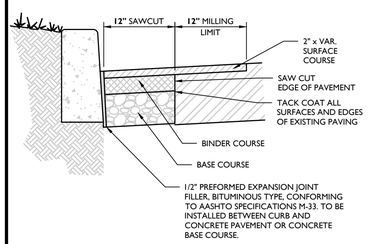
GRASS PAVERS (FOR EMERGENCY ACCESS DRIVE) DETAIL

NOT TO SCALE MCPA-SITE-PVMT-2400 05/01/18



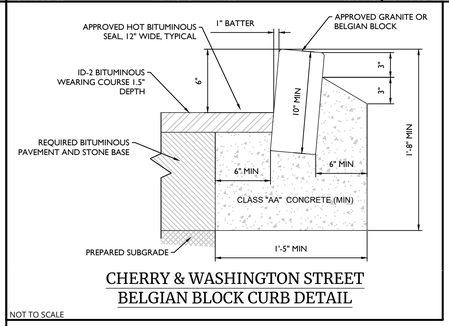
WATERFRONT ASPHALT WALKWAY

NOT TO SCALE



SAWCUT AND PAVEMENT RESTORATION DETAIL

NOT TO SCALE MCPA-SITE-PVMT-2600 05/01/18



CHERRY & WASHINGTON STREET BELGIAN BLOCK CURB DETAIL

NOT TO SCALE

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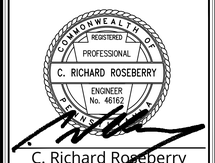
REV	DATE	DRAWN BY	DESCRIPTION
1	1/21/22	MD	REVISED PER BOROUGH OF CONSHOHOCKEN REVIEW LETTERS DATED 1/7/2022.
2	2/23/22	MD	REVISED PER EMAILS WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/22/2022.
3	5/20/22	JJW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.



C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

PRELIMINARY/FINAL LAND DEVELOPMENT PLANS

FOR

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

PROJECT NUMBER:	DRAWING NAME:
14000908C	C-DTLS

SHEET TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: 18 of 41

2014\14000908C\Engineering\Site Plans\C-DTLS.dwg|C-18 DETAILS By: MDEBEVIS

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

30" x 30"

COLORS:
LEGEND = WHITE (RETROREFLECTIVE)
BACKGROUND = RED (RETROREFLECTIVE)

R1-1 SIGN DETAIL

NOT TO SCALE | MCCM-SIGN-REGU-R1-1 | 12/01/20

12" x 36"

COLORS:
LEGEND = BLACK
BACKGROUND = YELLOW (RETROREFLECTIVE)
STOP SYMBOL = RED (RETROREFLECTIVE)

R1-6A SIGN DETAIL

NOT TO SCALE | MCCM-SIGN-REGU-R1-6A | 07/01/21

24" x 30"

COLORS:
LEGEND = BLACK
BACKGROUND = WHITE (RETROREFLECTIVE)

R2-1 SIGN DETAIL

NOT TO SCALE | MCCM-SIGN-REGU-R2-1 | 12/01/20

30" x 30"

COLORS:
LEGEND = WHITE (RETROREFLECTIVE)
CIRCLE BACKGROUND = RED (RETROREFLECTIVE)

R5-1 SIGN DETAIL

NOT TO SCALE | MCCM-SIGN-REGU-R5-1 | 12/01/20

36" x 12"

COLORS:
LEGEND = BLACK
BACKGROUND = BLACK
ARROW = WHITE (RETROREFLECTIVE)

R6-1R SIGN DETAIL

NOT TO SCALE | MCCM-SIGN-REGU-R6-1 | 12/01/20

12" x 18"

COLORS:
LEGEND = RED (RETROREFLECTIVE)
BACKGROUND = WHITE (RETROREFLECTIVE)

R7-1X SIGN DETAIL

NOT TO SCALE | MCCM-SIGN-REGU-R7-1 | 07/01/21

12" x 18"

COLORS:
LEGEND = GREEN (RETROREFLECTIVE)
HANDICAP SYMBOL= BLUE (RETROREFLECTIVE)
BACKGROUND = WHITE (RETROREFLECTIVE)

R7-8B SIGN DETAIL

NOT TO SCALE | MCCM-SIGN-REGU-R7-8 | 07/01/21

18" x 9"

COLORS:
LEGEND = GREEN (RETROREFLECTIVE)
BACKGROUND = WHITE (RETROREFLECTIVE)

R7-8P SIGN DETAIL

NOT TO SCALE | MCCM-SIGN-REGU-R7-8P | 07/01/21

24" x 18"

COLORS:
LEGEND = BLACK
BACKGROUND = YELLOW (RETROREFLECTIVE)

W16-12P SIGN DETAIL

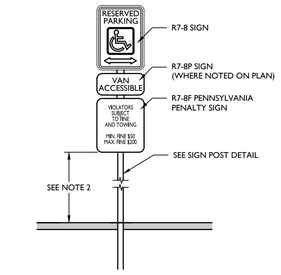
NOT TO SCALE | MCCM-SIGN-WARN-W16-12P | 12/01/20

24" x 12"

COLORS:
LEGEND = BLACK
BACKGROUND = YELLOW (RETROREFLECTIVE)

W16-9P SIGN DETAIL

NOT TO SCALE | MCCM-SIGN-WARN-W16-9P | 07/01/21



NOTES:

1. INSTALL SIGN WHERE NOTED ON PLAN.
2. THE BOTTOM OF THE LOWEST SIGN SHALL BE MOUNTED 60" ABOVE THE PARKING LOT OR SIDEWALK SURFACE WHEN THE SIGN IS PARALLEL TO THE SIDEWALK AND 72" ABOVE THE PARKING LOT OR SIDEWALK WHEN THE SIGN IS PERPENDICULAR TO THE SIDEWALK.

ACCESSIBLE PARKING SIGN DETAIL

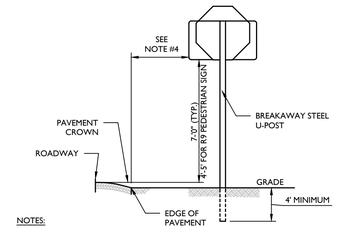
NOT TO SCALE | MCPA-SITE-MRKG-1900 | 05/01/18

30" x 30"

COLORS:
LEGEND = BLACK
BACKGROUND = WHITE (RETROREFLECTIVE)

R6-5P- ROUNDABOUT CIRCULATION SIGN

NOT TO SCALE | R-6-5P CIRCULATION SIGN | 12/01/20



NOTES:

1. ALL POSTS SHALL BE OF ADEQUATE LENGTH TO MEET THE REQUIREMENTS FOR ERECTION, AS STATED IN THE CURRENT MANUAL ON "UNIFORM TRAFFIC CONTROL DEVICES" FOR STREETS AND HIGHWAYS.
2. ALL POSTS SHALL BE EMBEDDED 4' MINIMUM.
3. ALL POSTS TO BE BREAKAWAY STEEL U-POSTS IN CONFORMANCE WITH CURRENT ASTM SPECIFICATION A123 AND PADOT STANDARDS.
4. IN AREAS WITHOUT CURBING, THE OUTER EDGE OF SIGN TO BE 2'-0" MINIMUM TO 12'-0" MAXIMUM FROM EDGE OF CURB, AS DIRECTED.

SINGLE POST SIGN MOUNTING DETAIL

NOT TO SCALE | MCPA-SITE-MRKG-2001 | 05/01/18

30" x 30"

COLORS:
LEGEND = BLACK
BACKGROUND = WHITE (RETROREFLECTIVE)

R3-7R SIGN DETAIL

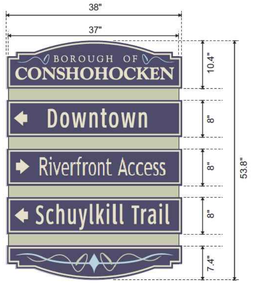
NOT TO SCALE | MCCM-SIGN-REGU-R3-7 | 12/01/20

36" x 12"

COLORS:
LEGEND = BLACK
BACKGROUND = BLACK
ARROW = WHITE (RETROREFLECTIVE)

R6-1L SIGN DETAIL

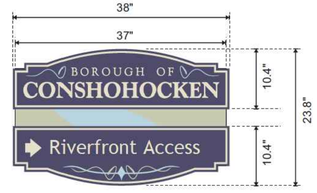
NOT TO SCALE | MCCM-SIGN-REGU-R6-1 | 12/01/20



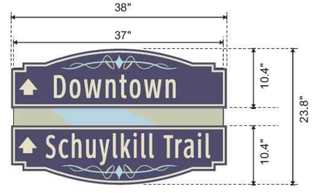
WESTERN FACE (NTS)

EASTERN FACE (NTS)

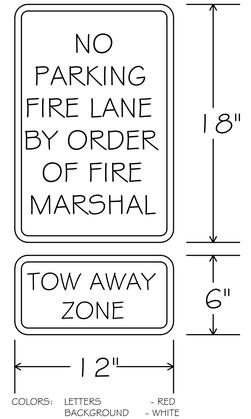
EASTERN FACE (NTS)



WESTERN FACE (NTS)

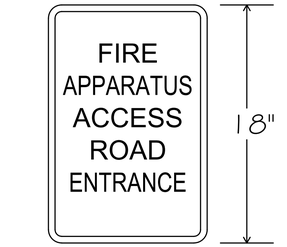


SOUTHERN FACE (NTS)



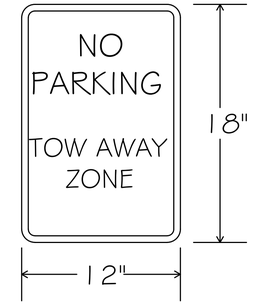
COLORS: LETTERS - RED
BACKGROUND - WHITE

"NO PARKING - FIRE LANE" SIGN (NTS)



COLORS: LETTERS - RED
BACKGROUND - WHITE

FIRE APPARATUS ENTRANCE SIGN (NTS)



COLORS: LETTERS - RED
BACKGROUND - WHITE

"NO PARKING - TOW AWAY ZONE" SIGN (NTS)

REV	DATE	DRAWN BY	DESCRIPTION
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REGISTERED PROFESSIONAL
C. RICHARD ROSEBERRY
ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

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FOR

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PROJECT NUMBER: 14000908C
DRAWING NAME: C-DTLS

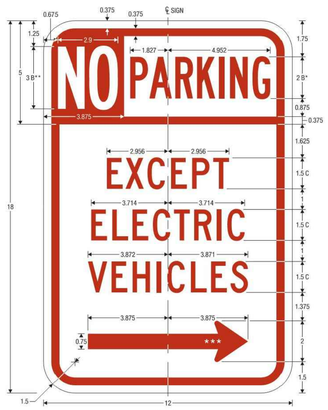
SHEET TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: 19 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C\Engineering\Site Plans\C-DTLS.dwg|C-19-DETAILS By: MDEBSYS

R7-111
Issued: 6/17/2013



R7-111
NO PARKING EXCEPT ELECTRIC VEHICLES

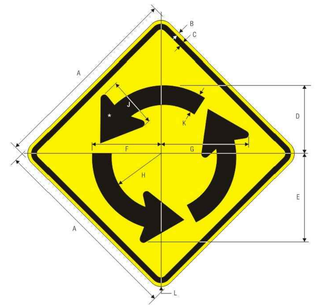
UPPER LEFT SECTION
COLORS: LEGEND, BORDER — WHITE (RETROREFLECTIVE)
BACKGROUND — RED (RETROREFLECTIVE)

UPPER RIGHT SECTION
COLORS: LEGEND, BORDER — RED (RETROREFLECTIVE)
BACKGROUND — WHITE (RETROREFLECTIVE)

★ Reduce character spacing 40%.
★★ Reduce character spacing 60%.
★★★ Type D Arrow.

LOWER SECTION
COLORS: LEGEND, BORDER — RED (RETROREFLECTIVE)
BACKGROUND — WHITE (RETROREFLECTIVE)

Memorandum 6/17/2013 - 1



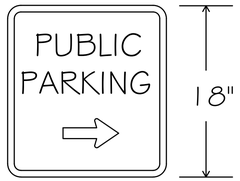
W2-6
CIRCULAR INTERSECTION

*See page 6-36 for symbol design.

A	B	C	D	E	F	G	H	J	K	L
24	.375	.625	8.406	10.808	8.406	10.848	6.028	6.18	2.378	1.5
30	.5	.75	10.487	13.490	10.487	13.570	7.549	7.725	2.938	1.875
36	.625	.875	12.569	16172	12.569	16.292	9.043	9.27	3.526	2.25
48	.75	1.25	16.812	21.616	16.812	21.696	12.056	12.36	4.756	3

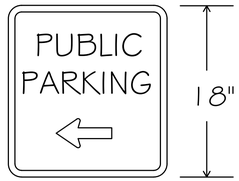
COLORS: SYMBOL — BLACK
BACKGROUND— YELLOW (RETROREFLECTIVE)

2-19



COLORS: LETTERS - RED
BACKGROUND - WHITE
DIRECTION ARROW TO RIGHT OR LEFT

"PUBLIC PARKING" RIGHT SIGN
(NTS)



COLORS: LETTERS - RED
BACKGROUND - WHITE
DIRECTION ARROW TO RIGHT OR LEFT

"PUBLIC PARKING" LEFT SIGN
(NTS)

24" x 18"

COLORS:
LEGEND = BLACK
BACKGROUND = WHITE (RETROREFLECTIVE)

R3-17 SIGN DETAIL

NOT TO SCALE MCCM-SIGN-REGU-R3-17 07/01/21

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

PROJECT NUMBER: 14000908C
DRAWING NAME: C-DTLS

SHEET TITLE: CONSTRUCTION DETAILS

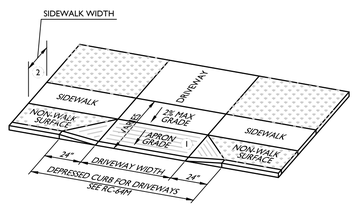
SHEET NUMBER: 20 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

ADA GENERAL NOTES

MCPA-SITE-HADA-1700 12/01/20

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTIONS 350, 409, 630, 676, 694, AND 695.
2. PROVIDE EXPANSION JOINT MATERIAL1/2" THICK WHERE CURB RAMP ADJOINS ANY RIGID PAVEMENT, SIDEWALK OR STRUCTURE WITH THE TOP OF JOINT FILLER FLUSH WITH ADJACENT CONCRETE SURFACE.
3. CONSTRUCT CURB RAMPS WITH A MINIMUM 4'-0" X 4'-0" CLEAR SPACE BEYOND THE CURB FACE, WITHIN THE WIDTH OF THE CROSSWALK AND WHOLLY OUTSIDE THE PARALLEL VEHICLE TRAVEL LANE. SEE SHEET 7 FOR CROSSWALK DETAILS.
4. SEAL JOINTS WITH AN APPROVED SEALING MATERIAL.
5. PROVIDE SLIP RESISTANT TEXTURE ON CURB RAMP BY COARSE BROOMING TRANSVERSE TO THE SLOPE OF THE RAMP. EXTEND TEXTURE THE FULL WIDTH AND LENGTH OF THE CURB RAMP INCLUDING SIDE FLARES.
6. MODIFY CONSTRUCTION DETAILS TO ADAPT DIMENSIONS TO EXISTING CURB HEIGHTS WHERE THE CURB IS LESS THAN THE STANDARD 8" HEIGHT.
7. CURB RAMP AND SIDE FLARE LENGTHS ARE VARIABLE AND BASED ON CURB HEIGHT AND THE SIDEWALK SLOPE.
8. TO AVOID CHASING GRADE INDEFINITELY WHEN TRAVERSING THE HEIGHT OF CURB, RAMP LENGTH NOT TO EXCEED 15'-0". ADJUST RAMP SLOPE AS NEEDED TO PROVIDE ACCESS TO THE MAXIMUM EXTENT FEASIBLE.
9. NON-WALK AREA IS AN OBSTRUCTED OR GRASS/NON-PAVED AREA ADJACENT TO THE PEDESTRIAN ACCESS ROUTE THAT IS NOT USED BY THE PEDESTRIAN FOR ACCESS.
10. THE DETAILS DEPICT PEDESTRIAN PUSHBUTTON POLES TO ILLUSTRATE THE RECOMMENDED PLACEMENT OF PEDESTRIAN PUSHBUTTONS. FOR ALTERATION PROJECTS, PROVIDE ACCESS TO EXISTING PEDESTRIAN PUSHBUTTONS TO THE MAXIMUM EXTENT FEASIBLE. INSTALL PEDESTRIAN PUSHBUTTON STUB POLES, WHERE APPLICABLE, SO AS NOT TO CREATE PEDESTRIAN OBSTRUCTIONS.
11. SEE TC-8803 FOR ADDITIONAL PEDESTRIAN PUSHBUTTON DETAILS NOT SHOWN.
12. ALIGN DETECTABLE WARNING SURFACE TRUNCATED DOMES ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF THE RAMP AND PERPENDICULAR TO CURB. SEE "DETECTABLE WARNING SURFACE (DWS) ON CURVED SURFACE" DETAIL FOR INSTALLATIONS ALONG CURVED SURFACES, IF APPLICABLE.
13. PROVIDE DETECTABLE WARNING SURFACES (DWS) 24" MINIMUM (IN THE DIRECTION OF PEDESTRIAN TRAVEL) ACROSS FULL WIDTH OF RAMP AT THE GRADE BREAK NEAR STREET EDGE. PROVIDE DWS THAT CONTRAST VISUALLY WITH ADJACENT WALKWAY SURFACES, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT FOR THE FULL WIDTH OF RAMP IN ACCORDANCE WITH LOCAL REQUIREMENTS.
14. FOR NEW CONSTRUCTION, DO NOT EXCEED 2.00% CROSS SLOPE ON THE CURB RAMP OR PEDESTRIAN ACCESS ROUTE.
15. FOR NEW CONSTRUCTION AND ALTERATIONS, CONSTRUCT CURB RAMP AND FLARE SLOPES WITH THE FLATTEST SLOPE POSSIBLE. THE SLOPES INDICATED IN THE DETAILS SHOW THE MAX SLOPE ALLOWABLE. SLOPES THAT EXCEED THOSE INDICATED IN THE DETAILS, OR CONTRACT DOCUMENTS AS APPLICABLE, WILL NOT BE ACCEPTED AND WILL BE RECONSTRUCTED.
16. CONSTRUCT SIDEWALKS AT A LONGITUDINAL SLOPE NOT TO EXCEED 5.00%. FOR ROADWAY PROFILE SLOPES THAT EXCEED 5.00%, CONSTRUCT PARALLEL SIDEWALKS ADJACENT TO ROADWAY AT A LONGITUDINAL SLOPE NOT TO EXCEED ROADWAY PROFILE SLOPE.
17. THE CHANGE IN GRADE AT THE BOTTOM OF THE CURB RAMP AND ADJOINING ROAD SURFACE IS NOT TO EXCEED AN ALGEBRAIC DIFFERENCE OF 13.33%. THE COUNTER SLOPE OF THE GUTTER OR ROAD AT THE FOOT OF A CURB RAMP, TURNING SPACE OR BLENDED TRANSITION IS NOT TO EXCEED 5.00%. SEE "CHANGE OF GRADE LIMITATIONS" DETAIL, IF APPLICABLE.
18. THE CONSTRUCTION STANDARDS DEPICTED ARE MOST APPROPRIATE FOR NEW CONSTRUCTION. ALL CONSTRUCTION MUST MEET THE STANDARDS CONTAINED HEREIN UNLESS OTHERWISE NOTED OR DIRECTED.
19. ALL SLOPES ARE MEASURED WITH RESPECT TO A LEVEL PLANE. THEREFORE, THE LENGTH OF RAMP IS NOT SOLELY DEPENDANT ON THE HEIGHT OF CURB. (FOR EXAMPLE, A 6" CURB DOES NOT NECESSARILY MEAN A RAMP LENGTH OF 6'-0" FOR A 12:1 SLOPE.
20. SIDEWALK WIDTH MAY BE REDUCED TO 4'-0", WHEN PASSING AREAS 5'-0" X 5'-0" ARE PROVIDED EVERY 200'.
21. THE TRAVEL LANE IS DEFINED BY THE OUTSIDE EDGE OF THE WHITE PAVEMENT MARKING LINE. IF A WHITE PAVEMENT MARKING LINE DOES NOT EXIST, THE TRAVEL LANE IS DEFINED BY THE CONTRACT DOCUMENTS.
22. CONSTRUCT FLUSH CURB FOR CURB RAMPS FLUSH TO ADJACENT ROADWAY. GRADE EDGE OF ROAD ELEVATIONS AT THE FLOW LINE TO ENSURE POSITIVE DRAINAGE AND PREVENT PONDING. FOR LEVEL TURNING SPACES BEHIND FLUSH CURB, ADJUST SLOPES TO PROVIDE POSITIVE DRAINAGE. AT THE JOINT BETWEEN FLUSH CURB AND ROADWAYS, REMOVE EXCESS JOINT SEALER AND COVER THE SEALED AREA WITH A LIGHT APPLICATION OF DRY SAND.
23. CHEEK WALLS ARE PERMITTED WHEN ADJACENT TO NON-WALK AREAS OR ELEVATION DIFFERENCES CANNOT BE ACCOMMODATED BY FLARES OR GRADING. GRADE GRASS AREAS OR OTHER NON-WALK AREAS AT 3:1 OR FLATTER. DO NOT INSTALL CHEEK WALLS THAT INTERSECT THE PEDESTRIAN PATH.
24. CONSTRUCT TOP OF PLAIN CEMENT CONCRETE FLUSH CURB TO BE FLUSH WITH ADJACENT SURFACES (RAMPS, SIDEWALKS, FLARES).
25. FOR CURB RAMPS THAT LEAD TO A SINGLE CROSSWALK, THE RAMP (EXCLUDING FLARES) TO BE FULLY INSIDE OF MARKED CROSSWALK LINES.
26. A 4'-0" MAXIMUM DIGITAL DISPLAY LEVEL WILL BE USED TO VERIFY THE SLOPES OF CURB RAMPS AND SIDEWALKS.
27. INSTALL DUMMY JOINTS WHERE RAMPS, TURNING SPACES, FLARES, AND SIDEWALKS ABUT.
28. CONSTRUCT FLUSH CURB SLOPE TO MATCH ROADWAY PROFILE AND HAVE A FLUSH CONNECTION. TRANSITION CURB RAMP CROSS SLOPE TO MATCH ROADWAY PROFILE AS GRADUALLY AS POSSIBLE. DO NOT EXCEED 3.00% PER 1'-0" CROSS SLOPE RATE OF CHANGE WHEN TRANSITIONING TO ROADWAY PROFILE.
29. DO NOT SCORE OR MAKE GROOVES ON SLOPED SURFACES. LINES SHOWN ON DETAILS ARE FOR ILLUSTRATION ONLY. SEE NOTE 5.
30. CONTRACTOR MUST PREPARE SHOP DRAWINGS OF EACH CURB RAMP FOR SUBMISSION AND APPROVAL OF THE UNDERSIGNED PROFESSIONAL AND THE MUNICIPAL, COUNTY, STATE OR OTHER AGENCY'S ENGINEER HAVING JURISDICTION. DEVIATIONS FROM THE CURB RAMP DETAILS REQUIRE WRITTEN APPROVAL OF THE UNDERSIGNED PROFESSIONAL AND THE MUNICIPAL, COUNTY, STATE OR OTHER AGENCY'S ENGINEER HAVING JURISDICTION.
31. ACCESSIBLE RAMPS:
    - A. ON-SITE RAMP OR CURB RAMPS MUST BE INSTALLED IN CONFORMANCE WITH THE CURRENT UNITED STATES STANDARDS FOR ACCESSIBLE DESIGN AS PUBLISHED BY THE UNITED STATES DEPARTMENT OF JUSTICE AND MUST ALSO MEET OTHER APPLICABLE LOCAL AND STATE REQUIREMENTS IN EFFECT AT THE DATE OF CONSTRUCTION.
    - B. PUBLIC RIGHT OF WAY ACCESSIBLE OR CURB RAMPS MUST BE INSTALLED PURSUANT WITH THE CURRENT UNITED STATES ACCESS BOARD "ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY" (PROWAG).
32. CURB RAMP SLOPE AS CONSTRUCTED IN THE DIRECTION OF TRAVEL CANNOT EXCEED 12H:1V. RAMP SLOPES OF 14H:1V ARE THE PREFERRED SLOPE TO MAINTAIN A LEVEL OF CONSTRUCTION TOLERANCE. MINIMUM CURB RAMP CROSS-SLOPE IS TO BE 0.50%. MAXIMUM CANNOT EXCEED 2.00%.
33. CURB RAMP SIDE FLARE SLOPES ARE TO BE 14H:1V DESIRABLE, 12H:1V MAXIMUM, BUT MAY BE 10H:1V UPON APPROVAL OF THE ENGINEER. WHERE SIDE FLARES ARE NOT REQUIRED, PROVIDE AN 18" CURB TAPER TO THE FLUSH CURB PER THE DETAIL.
34. LANDING AREA AT THE TOP AND BOTTOM OF THE CURB RAMP (AKA. CLEAR OR TURNING SPACE) MUST BE KEPT CLEAR OF OBSTRUCTIONS. THE LANDING AREA IS TO BE 4' X 4' MINIMUM AND MATCH THE WIDTH OF THE CURB RAMP. INCREASED THE DEPTH OF MINIMUM LANDING AREA TO 5 FEET IF CONSTRAINED AT THE BACK OF THE SIDEWALK.
35. THE LANDING AREA MUST HAVE AN ABSOLUTE MINIMUM SLOPE OF 0.5% AND A MAXIMUM SLOPE OF 2%, WHEREAS 1.0% TO 1.5% IS THE DESIRED DESIGN SLOPE IN THE DIRECTION OF TRAVEL AND FOR THE CROSS SLOPE.
36. SIDEWALK CROSS SLOPE MUST BE A MINIMUM OF 1% AND MAXIMUM 2%, WHEREAS 1.5% IS THE DESIRED DESIGN CROSS SLOPE. SIDEWALK BEYOND LANDING AREA MUST HAVE A MINIMUM 1% TO MAXIMUM 5% OF LONGITUDINAL SLOPE IN THE DIRECTION OF TRAVEL, AND A 1% TO 2% MAX. CROSS SLOPE.
37. FLUSH CURB AT CURB RAMP MUST BE MINIMUM 4' WIDE AND FLUSH WITH PAVEMENT. THE SEGMENT OF FLUSH CURB MUST BE MADE WITH CONCRETE CURB REGARDLESS OF THE CURB MATERIAL USED THROUGHOUT THE SITE.
38. GUTTER SLOPE THE ALONG CURB RAMP MUST MAINTAIN POSITIVE DRAINAGE WITH A 1.0 % TO 1.5% GUTTER SLOPE PREFERRED, WHEREAS 0.5% AS THE ABSOLUTE MINIMUM AND 2.0% IS MAXIMUM ALONG THE LENGTH OF THE FLUSH CURB.
39. CROSSWALKS AND PAVEMENT MARKINGS MUST BE INSTALLED AS DENOTED ON SITE PLAN. CURB RAMP MUST BE WHOLLY CONTAINED WITHIN THE CROSSWALK CROSSING.
40. THE RAMP SURFACE MUST HAVE A SLIP RESISTANT, BROOM FINISH PERPENDICULAR TO THE PATH OF TRAVEL.
41. CONCRETE EXPANSION JOINTS MUST HAVE A FIRM SURFACE WITH ¼" BEVELED CONCRETE EDGES. THE JOINT SURFACE SHALL NOT BE MORE THAN ¼" BELOW THE ADJOINING CONCRETE SURFACE.
42. DETECTABLE WARNING SURFACES ARE TO BE PROVIDED AT CURB RAMPS, BLENDED TRANSITION AT PEDESTRIAN STREET CROSSINGS AND PEDESTRIAN REFUGE ISLANDS WHEN THOSE ARE WITHIN THE PUBLIC RIGHT-OF-WAY, AND WHERE AS SHOWN ON THE PLANS.

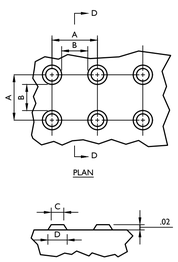


NOTES:

1. 8.00% MAX CHANGE IN GRADE BETWEEN ROAD SURFACE AND DRIVEWAY.
2. MINIMUM SIDEWALK WIDTH 5'-0". SIDEWALK WIDTH MAY BE REDUCED TO 4'-0", WHEN PASSING AREAS 5'-0" X 5'-0" ARE PROVIDED EVERY 200'.

TYPE 1 DRIVEWAY APRON DETAIL

NOT TO SCALE MCPA-SITE-HADA-1002 05/01/18



TRUNCATED DOME DIMENSIONS		
DIM	MIN mm (inch)	MAX mm (inch)
A	1.6"	2.4"
B	0.65"	1.5"
C	NOTE 1	NOTE 1
D	0.9"	1.4"

NOTES:

1. THE "C" DIMENSION IS 50% TO 65% OF THE "D" DIMENSION.

DETECTABLE WARNING SURFACE (DWS) TRUNCATED DOME DETAIL

NOT TO SCALE MCPA-SITE-HADA-1601 05/01/18

ADA INSTRUCTIONS TO CONTRACTOR

MCPA-SITE-HADA-1800 12/01/20

1. CONTRACTOR MUST EXERCISE APPROPRIATE CARE AND PRECISION IN CONSTRUCTION OF ADA (HANDICAPPED) ACCESSIBLE COMPONENTS FOR THE SITE/PROJECT. THESE COMPONENTS, AS CONSTRUCTED, MUST COMPLY WITH THE LATEST FEDERAL ADA STANDARDS FOR ACCESSIBLE DESIGN, AND CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY MUST COMPLY WITH THE LATEST FEDERAL PROPOSED "ASSESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY" (PROWAG).
2. FINISHED SURFACES ALONG THE ACCESSIBLE ROUTE OF TRAVEL FROM PARKING SPACE, PUBLIC TRANSPORTATION, PEDESTRIAN ACCESS, INTER-BUILDING ACCESS, TO POINTS OF ACCESSIBLE BUILDING ENTRANCE/EGRESS, MUST COMPLY WITH THESE ADA CODE REQUIREMENTS AND ANY SUPPLEMENTAL STATE REQUIREMENTS. THESE INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

(NOTE: THIS LIST IS NOT INTENDED TO CAPTURE EVERY APPLICABLE FEDERAL, STATE AND LOCAL RULE AND REGULATION. THE CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH THE LAW, WHETHER OR NOT STATED SPECIFICALLY HEREIN):

A. PARKING SPACES AND PARKING AISLES - SLOPE MUST NOT EXCEED 1:48 (1/4" PER FOOT OR NORMALLY 2.0%) IN ANY DIRECTION.

B. CURB RAMPS- SLOPES MUST NOT EXCEED 1:12 (8.3%).

C. LANDINGS

- i. LANDINGS AT CURB RAMPS - MUST BE 4 FT. MIN., X 4 FT. MIN. AND ARE TO BE INCREASED TO 5 FEET WHERE THE LANDING SPACE (TURNING SPACE) IS CONSTRAINED AT THE BACK OF THE SIDEWALK.
- ii. LANDINGS AT RAMPS - MUST BE 5 FT MIN. IN THE DIRECTION OF TRAVEL AND BE PROVIDED AT EACH END OF THE RAMP, MUST PROVIDE POSITIVE DRAINAGE (1 % MIN.), AND MUST NOT EXCEED 1:48 (1/4" PER FOOT OR NORMALLY 2.0%) IN ANY DIRECTION. WHEN LANDING IS ALSO A TURNING SPACE, IT MUST BE A MINIMUM 5 FT X 5 FT.
- iii. LANDINGS AT DOORWAYS - SEE NOTE F BELOW.

D. PATH OF TRAVEL ALONG ON-SITE ACCESSIBLE ROUTE - MUST PROVIDE A 36 INCH (EXCLUDING THE CURB) OR GREATER UNOBSTRUCTED WIDTH OF TRAVEL, (CAR OVERHANGS MUST NOT REDUCE THIS MINIMUM WIDTH). IN A PUBLIC RIGHT-OF-WAY, THE MINIMUM WIDTH EXCLUDING THE CURB IS 4 FT. THE SLOPE MUST BE NO GREATER THAN 1:20 (5.0%) IN THE DIRECTION OF TRAVEL AND MUST NOT EXCEED 1:48 (1/4" PER FOOT OR NORMALLY 2.0%) IN CROSS SLOPE.

E. WHERE PATH OF TRAVEL WILL BE GREATER THAN 1:20 (5.0%), AN ADA RAMP, WITH A MAXIMUM SLOPE OF 1:12 (8.3%), FOR A MAXIMUM RISE OF 30 INCHES, MUST BE PROVIDED. THE RAMP MUST HAVE A MINIMUM, CLEAR WIDTH OF 36 INCHES, HAVE ADA HAND RAILS AND LANDINGS (MIN. 5 FT. LONG IN THE DIRECTION OF TRAVEL) ON EACH END THAT ARE SLOPED A MIN. 1 % AND NO MORE THAN 1:48 (1/4" PER FOOT OR NOMINALLY 2.0%) FOR POSITIVE DRAINAGE.

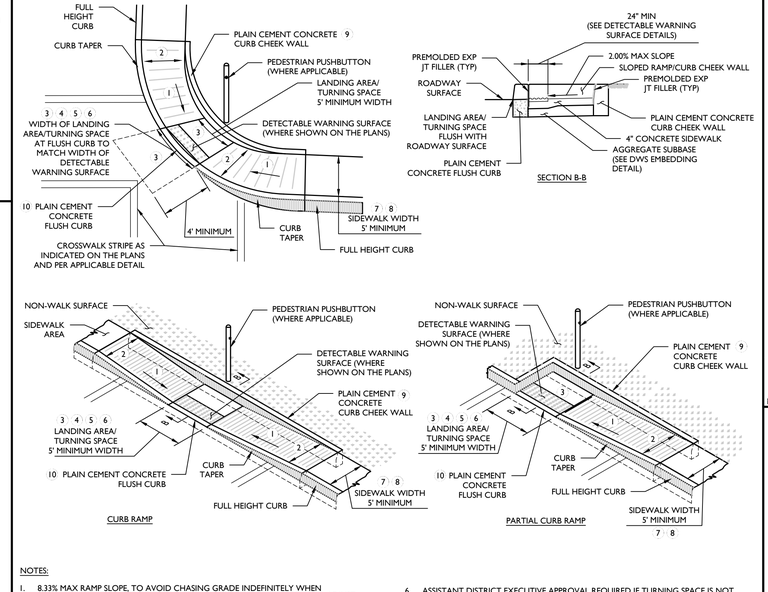
F. EXTERIOR DOORWAYS - MUST HAVE A "LEVEL" LANDING AREA ON THE EXTERIOR SIDE OF THE DOOR THAT IS SLOPED NO MORE THAN 1:48 (1/4" PER FOOT OR NORMALLY 2.0%) FOR POSITIVE DRAINAGE. THIS LANDING AREA IS GENERALLY 5 FT X 5 FT, EXCEPT WHERE OTHERWISE PERMITTED BY ADA STANDARDS. (SEE APPLICABLE CODE SECTIONS).

3. IT IS RECOMMENDED THAT THE CONTRACTOR REVIEW THE INTENDED CONSTRUCTION WITH THE LOCAL BUILDING CODE OFFICIAL, INCLUDING WHETHER OR NOT FALL PROTECTION IS REQUIRED.
4. IT IS RECOMMENDED THAT THE CONTRACTOR CHECK THE SLOPE OF FORMWORK FOR COMPLIANCE WITH ADA STANDARDS PRIOR TO POURING CONCRETE.

DETECTABLE WARNING SURFACE (DWS) NOTES

MCPA-SITE-HADA-1602 12/01/20

1. THE DETECTABLE WARNING SURFACE IS TO BE MANUFACTURED MATS THAT ARE EMBEDDED AND CAST-IN-PLACE IN THE CONCRETE.
2. IN LIEU OF A CAST IN PLACE DETECTABLE WARNING SURFACE, THE CONTRACTOR MAY UTILIZE A SURFACE APPLIED DETECTABLE WARNING SURFACE WITH PRIOR APPROVAL OF THE UNDERSIGNED ENGINEER AND PRIOR TO POURING OF THE CONCRETE RAMP.
3. THE CONTRACTOR MUST SUBMIT TO THE ENGINEER FOR APPROVAL A SHOP DRAWING OF THE DETECTABLE WARNING SURFACE PRIOR TO CONSTRUCTION.
4. THE CONTRACTOR MUST PROVIDE A MANUFACTURER CERTIFICATION THAT THE DETECTABLE WARNING SURFACE COMPLIES WITH THE CURRENT ADA STANDARDS FOR ACCESSIBLE DESIGN AS PUBLISHED BY THE DEPARTMENT OF JUSTICE AND THE ADA STANDARDS AS SUPPORTED BY THE UNITED STATES ACCESS BOARD, AND THE STATE AND/OR LOCAL ADA STANDARDS.
5. COLOR MUST BE AS APPROVED BY THE LOCAL JURISDICTION PRIOR TO INSTALLATION. DETECTABLE WARNING SURFACES MUST CONTRAST VISUALLY WITH ADJACENT WALKING SURFACES EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT. ALTERNATIVE COLOR MAY BE USED PROVIDED SUCH COLOR COMPLIES WITH CURRENT ADA STANDARDS.
6. DETECTABLE WARNINGS ARE TO CONSIST OF A SURFACE OF TRUNCATED DOMES.
7. TRUNCATED DOMES IN A DETECTABLE WARNING SURFACE MUST HAVE A BASE DIAMETER OF 0.9 INCH (23 mm) MINIMUM AND 1.4 INCHES (36 mm) MAXIMUM, A TOP DIAMETER OF 50 PERCENT OF THE BASE DIAMETER MINIMUM TO 65 PERCENT OF THE BASE DIAMETER MAXIMUM, AND A HEIGHT OF 0.2 INCH (5.1 mm).
8. TRUNCATED DOMES IN DETECTABLE WARNING SURFACE MUST HAVE A CENTER-TO-CENTER SPACING OF 1.6 INCHES (41 mm) MINIMUM AND 2.4 INCHES (61 mm) MAXIMUM, AND A BASE-TO-BASE SPACING OF 0.65 INCH (17 mm) MINIMUM, MEASURED BETWEEN THE MOST ADJACENT DOMES ON A SQUARE GRID.
9. SOME DETECTABLE WARNING PRODUCTS REQUIRE A CONCRETE BORDER FOR PROPER INSTALLATION. WHERE REQUIRED BY THE MANUFACTURER, THE CONCRETE BORDER MUST NOT EXCEED 2 INCHES (51 mm).
10. DETECTABLE WARNING SURFACES ARE NOT BE PLACED ON PAVING OR EXPANSION JOINTS AT CURB RAMPS. THE ROWS OF TRUNCATED DOMES IN DETECTABLE WARNING SURFACES ARE TO BE ALIGNED PERPENDICULAR TO THE GRADE BREAK BETWEEN THE RAMP RUN AND THE STREET SO PEDESTRIANS WHO USE WHEELCHAIRS CAN "TRACK" BETWEEN THE DOMES.
11. ON PERPENDICULAR CURB RAMPS, DETECTABLE WARNING SURFACES ARE TO BE PLACED AS FOLLOWS:
    - a. WHERE THE ENDS OF THE BOTTOM GRADE BREAK ARE IN FRONT OF THE BACK OF CURB, DETECTABLE WARNING SURFACES ARE TO BE PLACED AT THE BACK OF CURB.
    - b. WHERE THE ENDS OF THE BOTTOM GRADE BREAK ARE BEHIND THE BACK OF CURB AND THE DISTANCE FROM EITHER END OF THE BOTTOM GRADE BREAK TO THE BACK OF CURB IS 5.0 FT OR LESS, DETECTABLE WARNING SURFACES ARE TO BE PLACED ON THE RAMP RUN WITHIN ONE DOME SPACING OF THE BOTTOM GRADE BREAK.
    - c. WHERE THE ENDS OF THE BOTTOM GRADE BREAK ARE BEHIND THE BACK OF CURB AND THE DISTANCE FROM EITHER END OF THE BOTTOM GRADE BREAK TO THE BACK OF CURB IS MORE THAN 5.0 FT, DETECTABLE WARNING SURFACES ARE TO BE PLACED ON THE LOWER LANDING AT THE BACK OF CURB.
12. ON PARALLEL CURB RAMPS, DETECTABLE WARNING SURFACES ARE TO BE PLACED ON THE TURNING SPACE AT THE FLUSH TRANSITION BETWEEN THE STREET AND SIDEWALKS.
13. ON BLENDED TRANSITIONS, DETECTABLE WARNING SURFACES ARE TO BE PLACED AT THE BACK OF CURB. WHERE RAISED PEDESTRIAN STREET CROSSINGS, DEPRESSED CORNERS OR OTHER LEVEL PEDESTRIAN STREET CROSSINGS ARE PROVIDED, DETECTABLE WARNING SURFACES ARE TO BE PLACED AT THE FLUSH TRANSITION BETWEEN THE STREET AND THE SIDEWALK.

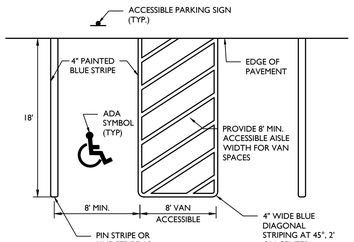


NOTES:

1. 8.33% MAX RAMP SLOPE, TO AVOID CHASING GRADE INDEFINITELY WHEN TRAVERSING THE HEIGHT OF CURB, RAMP LENGTH NOT TO EXCEED 15'-0". ADJUST RAMP SLOPE AS NEEDED TO PROVIDE ACCESS TO THE MAXIMUM EXTENT FEASIBLE.
2. SLOPE: ZERO ± 2.00%
3. CURB RAMPS REQUIRE A 4' x 4' MINIMUM LANDING AREA/TURNING SPACE WITH A MAXIMUM CROSS SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SEE DETAILS FOR LOCATIONS AND DIMENSIONS.
4. LANDING AREA AT THE TOP AND BOTTOM OF THE CURB RAMP (AKA. CLEAR OR TURNING SPACE) MUST BE KEPT CLEAR OF OBSTRUCTIONS. THE LANDING AREA IS TO BE 4' X 4' MINIMUM AND MATCH THE WIDTH OF THE CURB RAMP. INCREASED THE DEPTH OF MINIMUM LANDING AREA TO 5 FEET IF CONSTRAINED AT THE BACK OF THE SIDEWALK.
5. THE LANDING AREA MUST HAVE AN ABSOLUTE MINIMUM SLOPE OF 0.5% AND A MAXIMUM SLOPE OF 2%, WHEREAS 1.0% TO 1.5% IS THE DESIRED DESIGN SLOPE IN THE DIRECTION OF TRAVEL AND FOR THE CROSS SLOPE.
6. ASSISTANT DISTRICT EXECUTIVE APPROVAL REQUIRED IF TURNING SPACE IS NOT ENTIRELY ON SIDEWALK.
7. SIDEWALK CROSS SLOPE MUST BE A MINIMUM OF 1% AND MAXIMUM 2%, WHEREAS 1.5% IS THE DESIRED DESIGN CROSS SLOPE. SIDEWALK BEYOND LANDING AREA MUST HAVE A MINIMUM 1% TO MAXIMUM 5% OF LONGITUDINAL SLOPE IN THE DIRECTION OF TRAVEL, AND A 1% TO 2% MAX. CROSS SLOPE.
8. SIDEWALK WIDTH MAY BE REDUCED TO 4'-0", WHEN PASSING AREAS 5'-0" X 5'-0" ARE PROVIDED EVERY 200'.
9. CHEEK WALLS ARE PERMITTED WHEN ADJACENT TO NON-WALK AREAS OR ELEVATION DIFFERENCES CANNOT BE ACCOMMODATED BY FLARES OR GRADING. GRADE GRASS AREAS OR OTHER NON-WALK AREAS AT 3:1 OR FLATTER. DO NOT INSTALL CHEEK WALLS THAT INTERSECT THE PEDESTRIAN PATH.
10. GUTTER SLOPE THE ALONG CURB RAMP MUST MAINTAIN POSITIVE DRAINAGE WITH A 1.0 % TO 1.5% GUTTER SLOPE PREFERRED, WHEREAS 0.5% AS THE ABSOLUTE MINIMUM AND 2.0% IS MAXIMUM ALONG THE LENGTH OF THE FLUSH CURB.

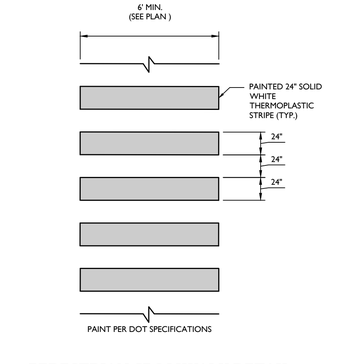
TYPE 2 CURB RAMP DETAIL

NOT TO SCALE MCPA-SITE-HADA-1100 12/01/20



ACCESSIBLE PARKING STALL DETAIL

NOT TO SCALE MCPA-SITE-MRKG-1600 05/01/18

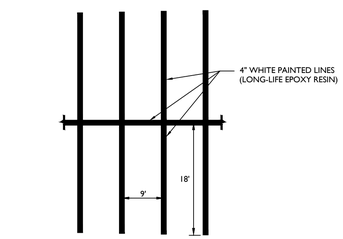


PEDESTRIAN CROSSWALK DETAIL

NOT TO SCALE MCPA-SITE-MRKG-1400 05/01/18

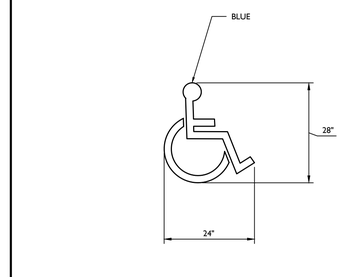
TYPICAL INTERSECTION MARKINGS WITH CROSSWALK DETAIL

NOT TO SCALE MCPA-SITE-MRKG-1500 05/01/18



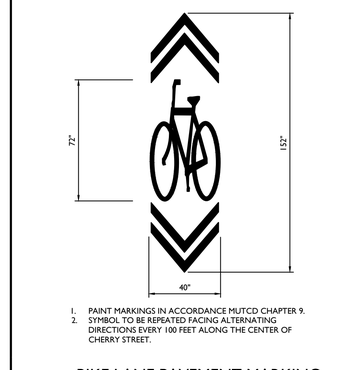
TYPICAL PARKING STALL DETAIL

NOT TO SCALE MCPA-SITE-MRKG-1000 05/01/18



ADA SYMBOL DETAIL

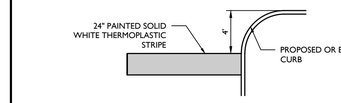
NOT TO SCALE MCPA-SITE-MRKG-1800 05/01/18



1. PAINT MARKINGS IN ACCORDANCE MUTCD CHAPTER 9.
2. SYMBOL TO BE REPEATED FACING ALTERNATING DIRECTIONS EVERY 100 FEET ALONG THE CENTER OF CHERRY STREET.

BIKE LANE PAVEMENT MARKING

NOT TO SCALE



TYPICAL STOP BAR DETAIL

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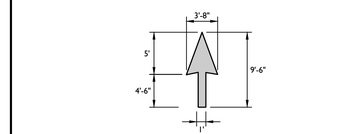

WHITE STRAIGHT PAVEMENT ARROW DETAIL

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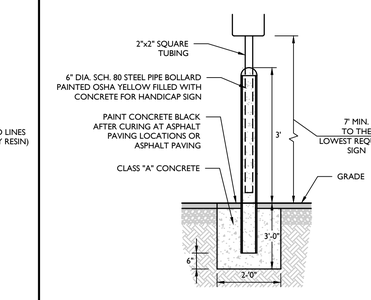

BOLLARD MOUNTED SIGN DETAIL

NOT TO SCALE MCPA-SITE-MRKG-2000 05/01/18

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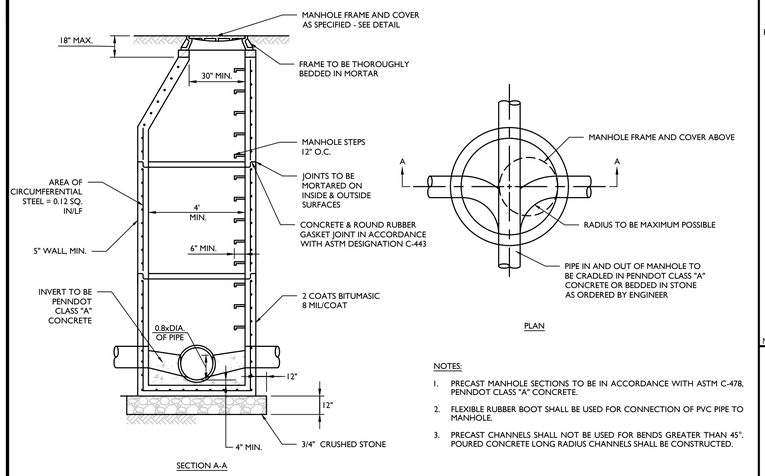
REV	DATE	DRAWN BY	DESCRIPTION
1	1/21/22	MD	REVISED PER BOROUGH OF CONSHOHOCKEN REVIEW LETTERS DATED 1/7/2022.
2	2/23/22	MKJ	REVISED PER EMAILS WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/22/2022.
3	5/20/22	JJW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL C. RICHARD ROSEBERRY EN

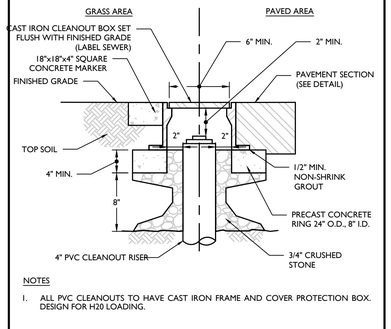


NOTES:

1. PRECAST MANHOLE SECTIONS TO BE IN ACCORDANCE WITH ASTM C-478, PENNDOT CLASS "A" CONCRETE.
2. FLEXIBLE RUBBER BOOT SHALL BE USED FOR CONNECTION OF PVC PIPE TO MANHOLE.
3. PRECAST CHANNELS SHALL NOT BE USED FOR BENDS GREATER THAN 45°. POURED CONCRETE LONG RADIUS CHANNELS SHALL BE CONSTRUCTED.

SANITARY PRECAST MANHOLE DETAIL

NOT TO SCALE | MCPA-UTIL-SSWR-1000 | 05/01/18

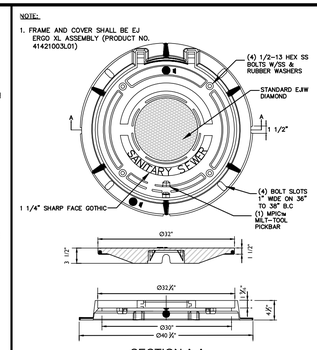


NOTES

1. ALL PVC CLEANOUTS TO HAVE CAST IRON FRAME AND COVER PROTECTION BOX. DESIGN FOR H20 LOADING.

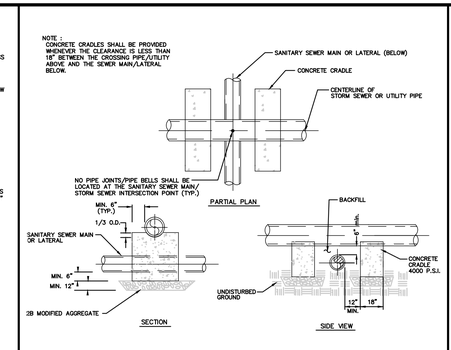
CLEANOUT PROTECTION BOX DETAIL

NOT TO SCALE | MCPA-UTIL-SSWR-1600 | 05/01/18



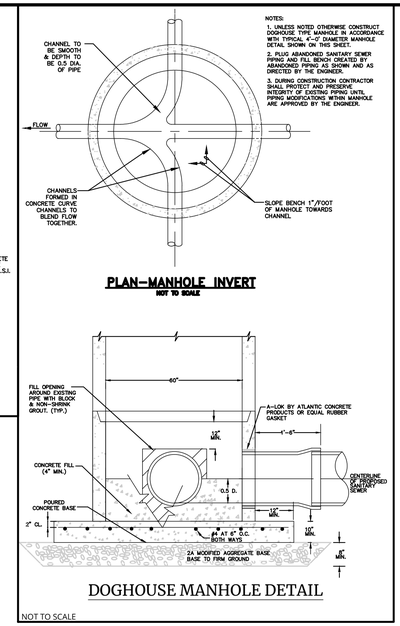
SECTION A-A
SANITARY WATERTIGHT MANHOLE FRAME COVER DETAIL

NOT TO SCALE



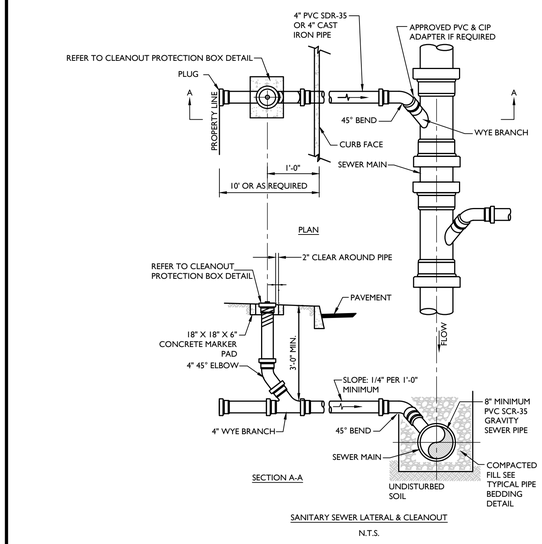
CONCRETE CRADLE DETAIL

NOT TO SCALE



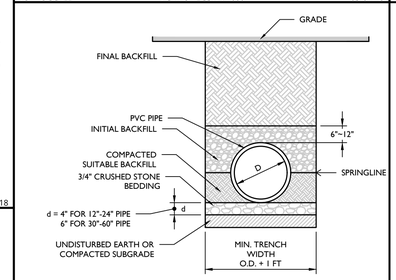
DOGHOUSE MANHOLE DETAIL

NOT TO SCALE



SANITARY SEWER LATERAL & CLEANOUT DETAIL

NOT TO SCALE | MCPA-UTIL-SSWR-1700 | 05/01/18

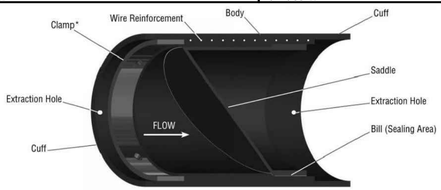


NOTES:

1. ALL PVC GRAVITY PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321.
2. GRAVITY SANITARY PIPE SHALL BE PVC SDR 35 PER ASTM D3034 OR AS REQUIRED BY THE GOVERNING AUTHORITY.

PVC SANITARY PIPE BEDDING (GRAVITY) DETAIL

NOT TO SCALE | MCPA-UTIL-SSWR-2602 | 05/01/18



*Clamps are installed in the upstream or downstream cuff, depending upon the application.

CheckMates® can be made for any pipe I.D. Built to fit in sizes from 3" to 78".

Flange shape and bolt pattern can be customized. Flangeless thimble inserts are available.

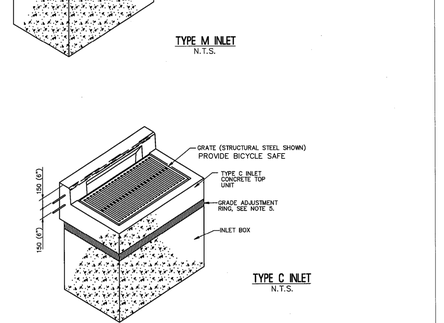
	NOMINAL PIPE SIZE I.D.		CHECKMATE® VALVE OVERALL LENGTH*		NUMBER OF CLAMPS	CUFF DEPTH		BACK PRESSURE RATING**		WEIGHT	
	Inches	Millimeters	Inches	Millimeters		Inches	Millimeters	Feet	Meters	lbs	Kg
Low Profile	3	75	5.1	130	1	1.5	38	5	1.5	1.5	0.7
	4	100	7.9	201	1	1.5	38	5	1.5	1.5	0.7
Standard Thickness	3	75	5.1	130	1	1.5	38	85	26.0	3	1.4
	4	100	7.9	201	1	1.5	38	85	26.0	3	1.5
	5	125	9.5	241	1	1.5	38	83	25.3	4	2
	6	150	11.0	279	1	2.0	51	83	25.3	9	4
	7	175	12.8	325	1	2.0	51	79	24.1	11	5
	8	200	15.2	386	1	2.0	51	79	24.1	13	6
	9	225	15.4	391	1	2.0	51	75	22.9	17	8
	10	250	16.1	409	1	2.0	51	71	21.6	20	10
	12	300	19.8	503	1	2.0	51	68	20.1	37	17
	14	350	25.6	655	1	4.0	102	64	20.0	110	50
	16	400	28.6	726	1	4.0	102	60	18.3	133	52
	18	450	31.0	787	1	4.0	102	56	17.1	143	65
	20	500	42.1	1068	2	8.0	203	53	16.2	223	102
	24	600	47.5	1207	2	8.0	203	45	13.7	304	137
	30	750	54.9	1395	2	8.0	203	38	11.6	500	227
	36	900	62.3	1582	2	8.0	203	30	9.1	828	376
	42	1050	70.6	1793	2	8.0	203	26	7.9	1423	646
	48	1200	79.0	2007	2	8.0	203	23	7.0	1801	817
	54	1350	86.4	2195	2	8.0	203	17	5.2	2790	1225
	60	1500	96.8	2459	2	9.0	229	15	4.6	3315	1504
	72	1800	119.0	3023	3	12.0	305	13	4.0	6100	2767
	78	1950	119.0	3023	3	12.0	305	13	4.0	7000	3176

*Shorter lengths available. **Back pressure measured from pipe invert. Higher back pressure ratings available. Consult factory.

"CHECKMATE ULTRAFLEX" INLINE BACKFLOW CHECK VALVE

NOT TO SCALE

ADOPTED MAY 2009
LAST REVISED MARCH 2015



NOTES:

1. PRECAST INLET STRUCTURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH PENNDOT STANDARD DETAIL FOR ROADWAY CONSTRUCTION RC-45M AND RC-46M.
2. ALL INLETS SHALL BE FINISHED WITH CONCRETE FLOW CHANNELS IN THE BASE.
3. INLET TOP UNITS SHALL BE SET TO GRADE AND ADJUSTED TO MATCH THE ROADWAY PROFILE SLOPE.
4. STORMWATER INLETS ASSOCIATED WITH NEW CONSTRUCTION SHALL HAVE 8" TOP UNITS AND BE SET 2.5" BELOW FINISHED GUTTERLINE GRADE PER DETAIL – 19 OF THESE TYPICAL DEATILS.

DETAIL – 18
TYPICAL DETAILS
BOROUGH OF CONSHOHOCKEN
MONTGOMERY COUNTY, PENNSYLVANIA

INLET ASSEMBLIES

NOT TO SCALE

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REV	DATE	DRAWN BY	DESCRIPTION
1	12/1/22	MD	REVISED PER BOROUGH OF CONSHOHOCKEN REVIEW LETTERS DATED 1/7/2022.
2	2/23/22	MD	REVISED PER EMAILS WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/22/2022.
3	5/20/22	JMV/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL
C. RICHARD ROSEBERRY
ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
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PRELIMINARY/FINAL LAND DEVELOPMENT PLANS

FOR

401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH
& WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

Colliers Engineering & Design
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941 Marcon Boulevard, Suite 801
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

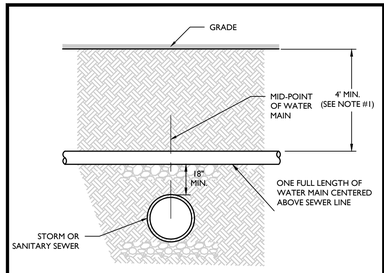
PROJECT NUMBER: 14000908C
DRAWING NAME: C-DTLS

SHEET TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: 22 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

20140400908C\Engineering\Site Plans\C-DTLS.dwg\C-22-DETAILS By: MROESIUS



NOTES:

1. WATER MAIN MAY CROSS ABOVE OBSTRUCTION IF 4' MINIMUM COVER IS MAINTAINED ABOVE THE WATER MAIN TO FINISH GRADE AND 18" MINIMUM VERTICAL SEPARATION IS OBTAINED.

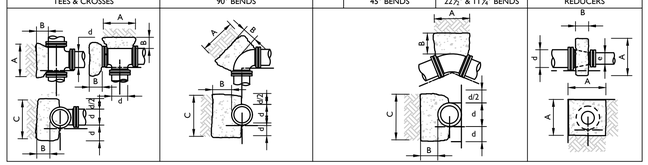
WATER CROSSING OVER SEWER DETAIL

NOT TO SCALE | MCPA-UTIL-WATR-1301 | 05/01/18

MINIMUM SIZE OF CONCRETE THRUST BLOCKS

d	A	B	C	d	A	B	C	d	A	B	C	A	B	C	d x e	A	B
6"	2' - 0"	8"	1' - 3"	6"	2' - 6"	8"	1' - 3"	6"	1' - 6"	6"	1' - 3"	1' - 6"	8"	1' - 3"	6" x 4"	1' - 6"	1' - 0"
8"	2' - 6"	8"	1' - 6"	8"	3' - 0"	8"	1' - 6"	8"	1' - 6"	8"	1' - 9"	1' - 6"	8"	1' - 9"	8" x 4"	2' - 0"	1' - 0"
10"	3' - 0"	10"	2' - 0"	10"	3' - 6"	10"	2' - 0"	10"	2' - 3"	10"	2' - 0"	1' - 6"	10"	2' - 0"	10" x 6"	2' - 4"	1' - 3"
12"	3' - 6"	10"	2' - 6"	12"	3' - 9"	10"	2' - 9"	12"	2' - 6"	10"	2' - 6"	1' - 6"	10"	2' - 6"	10" x 8"	2' - 4"	1' - 6"

TEES & CROSSES | 90° BENDS | 45° BENDS | 22½° & 11¼° BENDS | REDUCERS

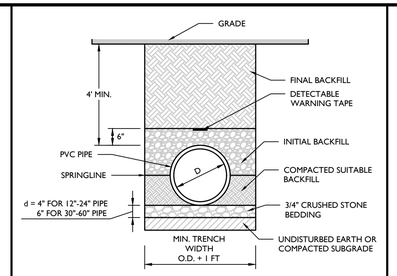


NOTES:

1. ALL HORIZONTAL BENDS SHALL HAVE CONCRETE THRUST BLOCKS WITH MINIMUM BEARING AREAS AGAINST UNDISTURBED SOIL AND NO JOINT SHALL BE COVERED WITH CONCRETE.
2. BEARING AREAS ARE BASED UPON UNDISTURBED SOIL WITH A MINIMUM BEARING CAPACITY OF 0.5 TONS PER SQUARE FOOT. FOR A LESSER SOIL BEARING CAPACITY THESE AREAS SHALL BE INCREASED ACCORDINGLY.
3. THRUST BLOCKS SHALL BE POURED DIRECTLY AGAINST TRENCH WALLS AND SHALL BE PENNDOT CLASS "A" CONCRETE.
4. DETAILS FOR SUPPORTS AND BRACING FOR VERTICAL BENDS FOR 12" DIAMETER OR LARGER SHALL BE APPROVED BY THE AUTHORITY PRIOR TO CONSTRUCTION.

THRUST BLOCKS DETAIL

NOT TO SCALE | MCPA-UTIL-WATR-1400 | 05/01/18

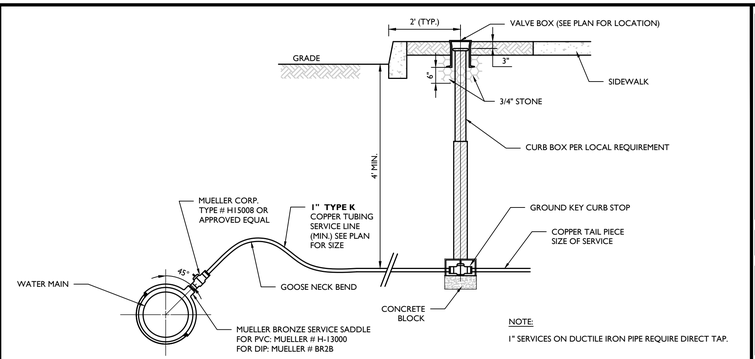


NOTES:

1. ALL PVC WATER PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ANSI/AWWA C605.
2. WATER MAIN SHALL BE PRESSURE **CLASS 165 DR 25** PVC PIPE PER AWWA C900-16 OR AS REQUIRED BY THE GOVERNING AUTHORITIES.

PVC WATER PIPE BEDDING DETAIL

NOT TO SCALE | MCPA-UTIL-WATR-1910 | 04/01/20

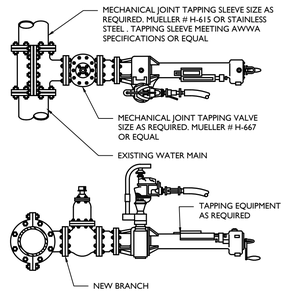


NOTE:

1" SERVICES ON DUCTILE IRON PIPE REQUIRE DIRECT TAP.

HOUSE WATER SERVICE CONNECTION DETAIL

NOT TO SCALE | MCPA-UTIL-WATR-1100 | 05/01/18

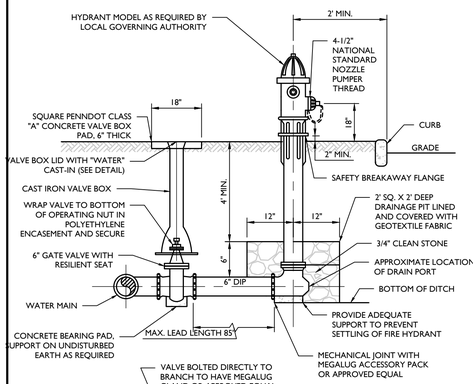


NOTES:

1. WET TAP VALVE CAN BE INSTALLED IN EITHER VERTICAL OR HORIZONTAL POSITION.
2. CONTRACTOR SHALL VERIFY DEPTH OF BURY, MATERIAL, DIAMETER (O.D.) AND OPERATING PRESSURE OF EXISTING WATER MAIN PRIOR TO ORDERING OF WET TAP UNIT.

WET TAP DETAIL

NOT TO SCALE | MCPA-UTIL-WATR-1200 | 05/01/18

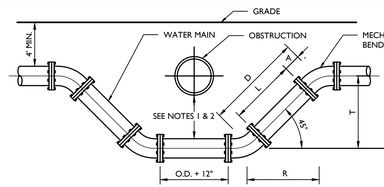


NOTES:

1. HYDRANT SHALL BE **T.W.W. STANDARD U.S. PIPE METROPOLITAN 250 DRY-BARREL** TRAFFIC MODEL DESIGN WITH THE FOLLOWING SPECIFICATION.
   A. SAFETY COUPLED STANDPIPE.
   B. 6" MECHANICAL JOINT INLET CONNECTION
   C. TWO 2-1/2" NATIONAL STANDARD THREAD HOSE NOZZLES.
   D. ONE 4-1/2" NATIONAL STANDARD THREAD STEAMER NOZZLE, FACING THE ROAD.
   E. HYDRANT OPERATORS AND HYDRANT NOZZLE CAP NUTS SHALL BE IN ACCORDANCE WITH AWWA/ANSI STANDARD C502.
   F. HYDRANT HOSE CAPS SHALL BE ATTACHED BY MEANS OF CHAINS.
   G. HYDRANT BARRELS SHALL BE PAINTED - **RED**, BONNETS - **YELLOW**, AND NOZZLE CAPS - **BLACK** TO INDICATE THE AVAILABLE FIRE FLOW OR AS IN ACCORDANCE WITH THE LOCAL REQUIREMENTS.
   H. HYDRANTS SHALL OPEN COUNTER CLOCKWISE.
2. STANDPIPE (BREAK-AWAY) COUPLING SHALL NOT EXCEED A MAXIMUM OF 5 INCHES FROM THE TOP OF THE CURB TO THE BOTTOM OF COUPLING.
3. THE DRAIN VALVE SHALL BE CLEAR OF ANY OBSTRUCTIONS, AND 3/4" CLEAN GRAVEL BE PLACED FROM THE BOTTOM OF THE HYDRANT TO A POINT 6" ABOVE THE HYDRANT LATERAL PIPE.
4. THRUST BLOCKS SHALL BE MADE OF PENNDOT CLASS "A" CONCRETE. PROVIDED BEHIND THE HYDRANT SHOE.
5. BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH THE LOCAL JURISDICTION.
6. GATE VALVE SHALL BE **T.W.W. 6" U.S. PIPE METROSEAL 250 R/S** (RESILIENT SEALED) MECHANICAL JOINT END (RIGHT HAND).
7. WATER LATERAL SHALL BE 6" DUCTILE IRON CEMENT LINED CLASS 52 PIPE.
8. TIE ROD SHALL BE 3/4" DIAMETER TIE ROD WITH EYE BOLTS - TWO REQUIRED (SIDE VIEW SHOWN). RESTRAIN ALL JOINTS ON HYDRANT TEE, VALVE, AND HYDRANT LEAD.
9. HYDRANT TEE SHALL BE U.S. PIPE CATALOG #U-592 TRIM-TYTE DUCTILE IRON, MECHANICAL JOINT OR AN T.W.W. APPROVED SUBSTITUTE.

FIRE HYDRANT (VALVE IN GRASS) DETAIL

NOT TO SCALE | MCPA-UTIL-WATR-1000 | 05/01/18



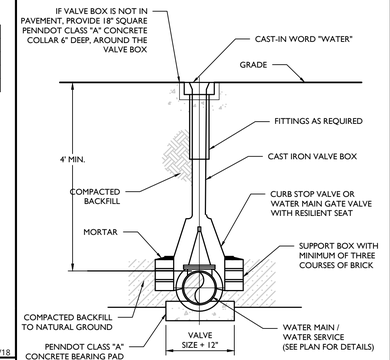
MECHANICAL JOINTS			
ANGLE	D =	R =	L =
45°	T x 1.414	T x 1.000	D-2A
22.5°	T x 2.613	T x 2.414	D-2A
11.25°	T x 5.126	T x 5.027	D-2A

NOTES:

1. WATER MAIN MAY CROSS ABOVE OBSTRUCTION IF **4'** MINIMUM COVER IS MAINTAINED ABOVE THE WATER MAIN AND FINISH GRADE.
2. MINIMUM VERTICAL SEPARATION BETWEEN SANITARY OR STORM SEWER TO WATER MAIN SHALL BE 18" IF THE HORIZONTAL SEPARATION IS LESS THAN 10'. BETWEEN WATER MAIN AND OTHER UTILITIES, THE MINIMUM VERTICAL SEPARATION SHALL BE 12".
3. WATER MAIN SHALL BE SIZE AND MATERIAL SPECIFIED ON THE PLAN, WITH MECHANICAL JOINT OR PUSH-ON AND ALL FITTINGS BE CAST IRON MECHANICALLY JOINT.
4. OFFSETS MAY BE SUBSTITUTED FOR A "T" OF UP TO 24" IF APPROVED BY THE ENGINEER.
5. CONCRETE THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS OR OTHER POINTS OF PIPE DIRECTION CHANGE.
6. TIE RODS SHALL BE UTILIZED TO RESTRAIN PIPE JOINTS IF THRUST BLOCK IS NOT USED. DETAILS OF THE TIE ROD ASSEMBLY SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. TIE RODS SHALL BE SUFFICIENT TO RESTRAIN THE THRUST DEVELOPED AT 100 PSI WORKING PRESSURE. MEGALUG RESTRAINT ALSO ACCEPTABLE IN PLACE OF TIE RODS.

WATER CROSSING UNDER UTILITY DETAIL

NOT TO SCALE | MCPA-UTIL-WATR-1300 | 05/01/18



NOTES:

1. VALVE BOX SHOULD HAVE EXTENSION IF WATER MAIN OR SERVICE IS PLACED DEEPER THAN 5 FEET.
2. CURB STOP VALVE BOX SHALL BE MUELLER EXTENSION TYPE WITH ARCH PATTERN BASE, OR APPROVED EQUAL.
3. WATER MAIN VALVE BOX SHALL BE SCREW TYPE ADJUSTABLE MODE. **FIGURE # 4905-22 AS MANUFACTURED BY BINGHAM & TAYLOR OR APPROVED EQUAL.**

WATER VALVE BOX DETAIL

NOT TO SCALE | MCPA-UTIL-WATR-1600 | 05/01/18

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REV	DATE	DRAWN BY	DESCRIPTION
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3	5/20/22	JJW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL C. RICHARD ROSEBERRY ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

PRELIMINARY/FINAL LAND DEVELOPMENT PLANS

FOR

401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
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MONTGOMERY COUNTY
PENNSYLVANIA

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AS SHOWN	10/29/21	MD	CRR

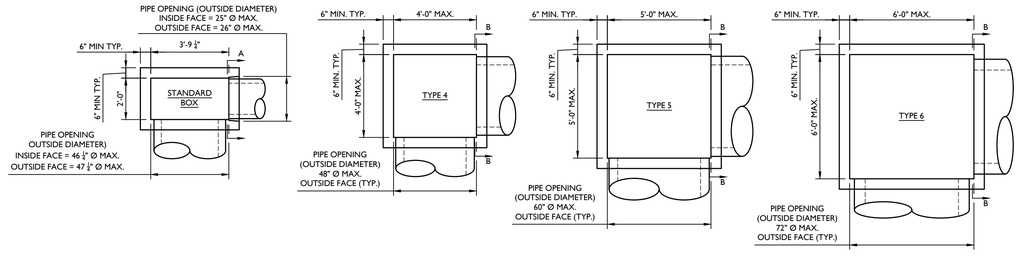
PROJECT NUMBER: 14000908C | DRAWING NAME: C-DTLS

SHEET TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: 23 of 41

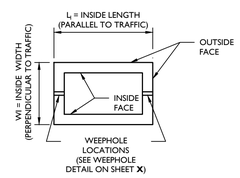
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C\Engineering\Site Plans\C-DTLS.dwg|C-23 DETAILS By: MDJEB5JS

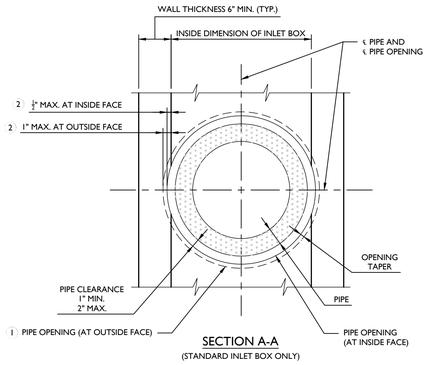


PLAN - INLET BOXES

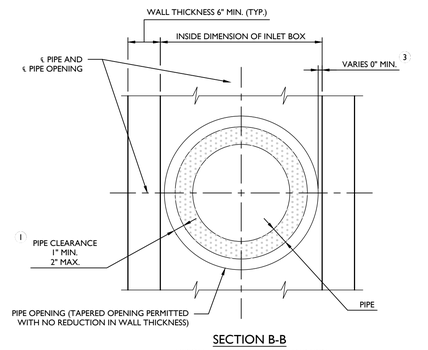
LEGEND:
OUTSIDE FACE - OUTSIDE FACE OF INLET BOX WALL
INSIDE FACE - INSIDE FACE OF INLET BOX WALL



SCHEMATIC - INLET BOX



SECTION A-A
(STANDARD INLET BOX ONLY)

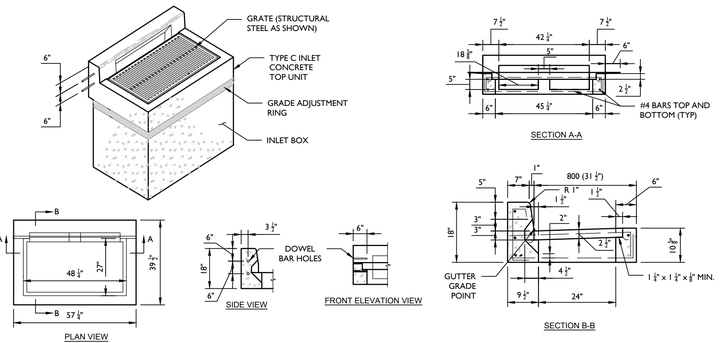


SECTION B-B
(TYPICAL ALL TYPES EXCEPT STANDARD)

LEGEND:
1 OUTSIDE DIAMETER OF PIPE TO PIPE OPENING
2 REDUCTION IN WALL THICKNESS DIMENSION
3 INSIDE FACE OF BOX WALL TO OUTSIDE DIAMETER OF PIPE OPENING

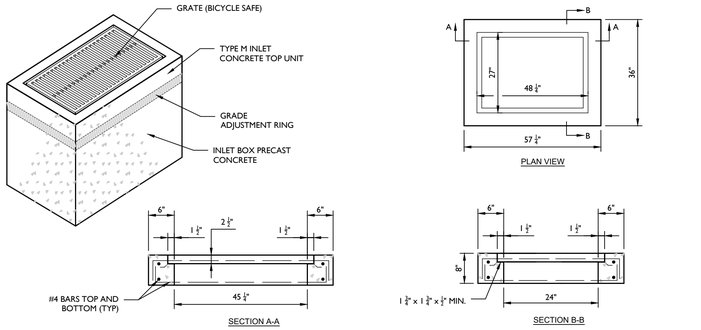
INLET BOXES DETAIL

NOT TO SCALE — MCPA-UTIL-STRM-1001 — 05/01/18



TYPE "C" INLET DETAIL

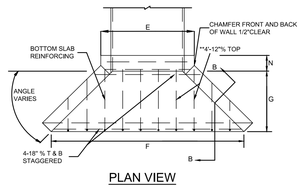
NOT TO SCALE — MCPA-UTIL-STRM-1200 — 05/01/18



TYPE "M" INLET DETAIL

NOT TO SCALE — MCPA-UTIL-STRM-1300 — 05/01/18

EXPOSED EDGES TO BE CHAMFERED 1" x 1"

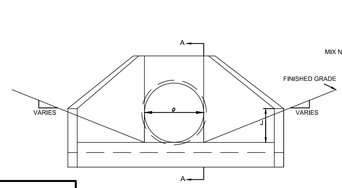


PLAN VIEW

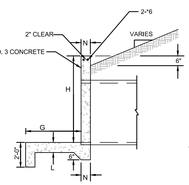
D	E	F	G	H	J	K	L	N	R	VOL.CY.
18"	3'-0"	7'-6"	3'-0"	3'-0"	2'-0"	8"	8"	8"	#5-12"%	1.70
21"	3'-4"	7'-9"		3'-3"	2'-0"					1.80
24"	3'-8"	8'-0"	3'-0"	3'-6"	2'-0"	8"	8"	8"	#5-12"%	1.90
27"	3'-11"	8'-3"		3'-9"	2'-0"					2.00
30"	4'-2"	8'-6"	3'-0"	4'-0"	2'-1"	8"	8"	10"	#5-12"%	2.85
36"	4'-8"	10'-0"	3'-6"	4'-6"	2'-3"	8"	10"	10"	#5-12"%	3.15
42"	5'-3"	11'-6"	4'-0"	5'-0"	2'-9"	8"	10"	10"	#5-12"%	3.87
48"	5'-10"	13'-0"	4'-6"	5'-6"	3'-0"	8"	10"	12"	#5-12"%	5.08
54"	6'-5"	14'-6"	5'-0"	6'-0"	3'-3"	9"	12"	12"	#5-12"%	6.50
60"	7'-0"	16'-0"	5'-6"	6'-6"	3'-6"	9"	12"	12"	#5-8"%	7.98
66"	7'-7"	17'-6"	6'-0"	7'-0"	3'-9"	9"	12"	14"	#5-8"%	9.14
72"	8'-2"	19'-0"	6'-6"	7'-6"	4'-3"	9"	12"	14"	#5-8"%	11.10

* BASED ON 2:1 CHANNEL SIDE SLOPES AND 45° ANGLE

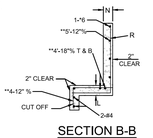
NOTE:
HEADWALL TO BE PARALLEL TO OF ROADWAY UNLESS OTHERWISE NOTED IN CONTRACT DRAWINGS



FRONT ELEVATION

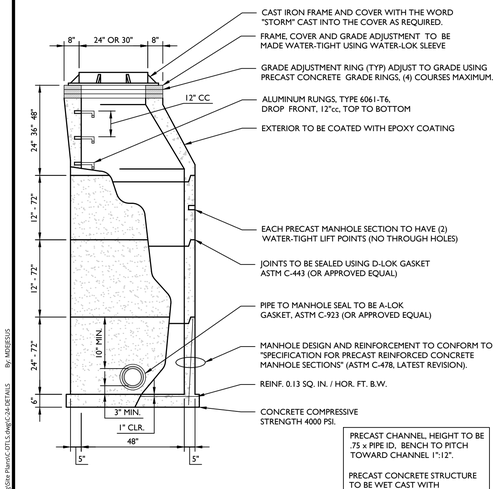


SECTION A-A



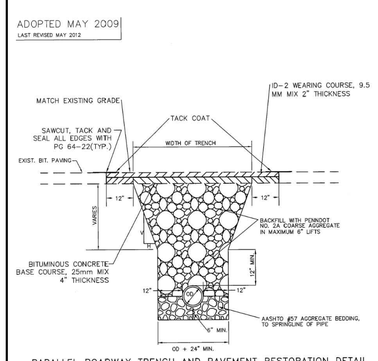
SECTION B-B

STANDARD DRAINAGE DETAILS TYPE "A" HEADWALL CIRCULAR PIPE
NOT TO SCALE



48" DIAMETER STORM MANHOLE DETAIL

NOT TO SCALE — MCPA-UTIL-STRM-1600 — 06/01/19



PARALLEL ROADWAY TRENCH AND PAVEMENT RESTORATION DETAIL (BITUMINOUS CONCRETE)
N.T.S.

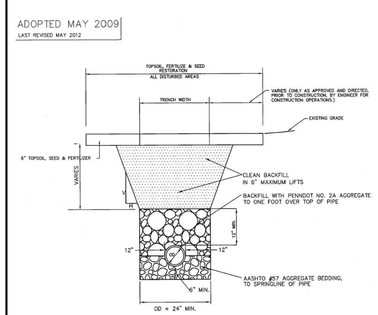
NOTE:
1. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO MINIMIZE WIDTH OF TRENCH.
2. 3/4H:1V (MAX SLOPE) FOR TRENCHES UP TO 8 FEET IN DEPTH.
3. TRENCHES IN EXCESS OF 8 FEET SHALL BE SHORED OR STEPPED PER SSHA STANDARDS.
4. FOR UTILITY LATERAL TRENCH RESTORATION SEE DETAIL-13
5. RESTORATIONS ON STATE HIGHWAYS REQUIRE PENNDOT APPROVAL.
6. TRENCHES SHALL BE PUMPED THROUGH A FILTER BAG.

SPECIAL NOTE:
1. SEE DETAIL 15 FOR RESURFACING REQUIREMENTS FOR STREETS PAVED WITHIN FIVE (5) YEARS.
2. SEE DETAIL 16 FOR THE LATERAL AND SERVICE TRENCH DETAIL.

DETAIL – 12
TYPICAL DETAILS
BOROUGH OF CONSHOHOCKEN
MONTGOMERY COUNTY, PENNSYLVANIA

TRENCH RESTORATION AND BACKFILL FOR PAVED AREAS

NOT TO SCALE



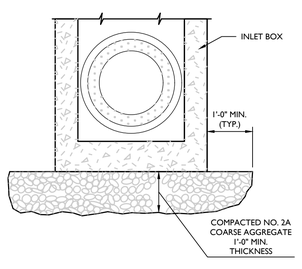
TYPICAL TRENCH DETAIL FOR GRASSED AREA
N.T.S.

NOTE:
1. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO MINIMIZE WIDTH OF TRENCH.
2. 3/4H:1V (MAX SLOPE) FOR TRENCHES UP TO 8 FEET IN DEPTH.
3. TRENCHES IN EXCESS OF 8 FEET SHALL BE SHORED OR STEPPED PER SSHA STANDARDS.
4. TRENCHES SHALL BE PUMPED THROUGH A FILTER BAG.

DETAIL – 14
TYPICAL DETAILS
BOROUGH OF CONSHOHOCKEN
MONTGOMERY COUNTY, PENNSYLVANIA

TRENCH RESTORATION AND BACKFILL FOR NON-PAVED AREAS

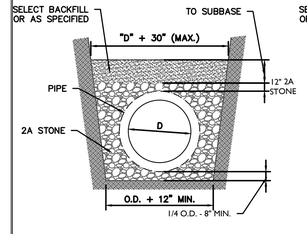
NOT TO SCALE



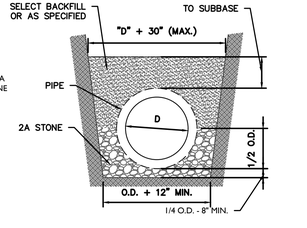
NOTES:
STANDARD INLET BOXES SHOWN, PROVIDE TOP SLABS FOR OTHER INLET BOX TYPES.
PROVIDE GRADE ADJUSTMENT RINGS WHEN REQUIRED.
COST OF NO. 2A COARSE AGGREGATE IS INCIDENTAL TO THE INLET BOX.

INLET BOX SUB-BASE PREPARATION DETAIL

NOT TO SCALE — MCPA-UTIL-STRM-1100 — 05/01/18



HDPE PIPE BEDDING
N.T.S.



CLASS "C" RCP PIPE BEDDING
N.T.S.

Colliers
Engineering & Design
www.colliersengineering.com

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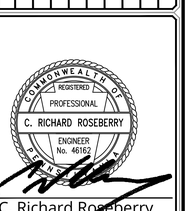
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION
1	12/1/22	MD	REVISED PER BOROUGH OF CONSHOHOCKEN REVIEW LETTERS DATED 1/7/2022.
2	2/23/22	MCJ	REVISED PER EMAILS WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/22/2022.
3	5/20/22	JJW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.



C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

PRELIMINARY/FINAL LAND DEVELOPMENT PLANS
FOR
401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

Colliers Engineering & Design
LEHIGH VALLEY
941 Marcon Boulevard, Suite 801
Allentown, PA 18109
Phone: 610.868.4201
COLLIERS ENGINEERING & DESIGN, INC.
DOING BUSINESS AS MASER CONSULTING

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

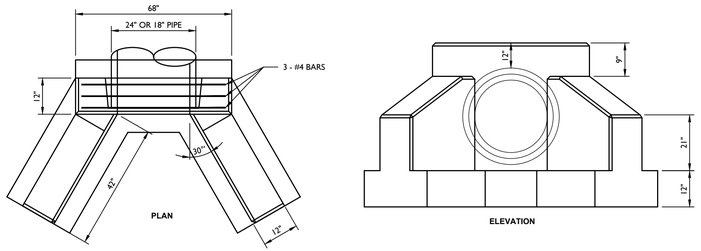
PROJECT NUMBER: 14000908C
DRAWING NAME: C-DTLS

SHEET TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: 24 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C\Engineering\Site Plans\C-DTLS.dwg\C-24-DETAILS By: MDESEUS



NOTE:

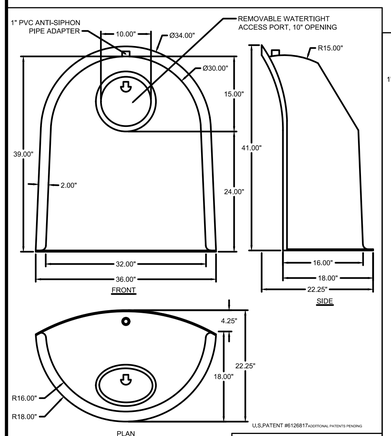
1. PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATIONS AS OUTLINED IN PENNDOT PUBLICATION 408, SECTION 605.
2. PROVIDE REINFORCEMENT IN ACCORDANCE WITH PENNDOT PUBLICATION 408, SECTION 709.
3. USE CLASS A CONCRETE OR BETTER.

2 : 1 EMBANKMENT SLOPES

PIPE DIAMETER	SKEW ∠ = 90° TO 60° - 0 = 30°			SKEW ∠ = 55° - 0 = 35°			SKEW ∠ = 50° - 0 = 40°			SKEW ∠ = 45° - 0 = 45°			SKEW ∠ = 40° - 0 = 50°			SKEW ∠ = 30° - 0 = 60°			SKEW ∠ = 20° - 0 = 70°			SKEW ∠ = 10° - 0 = 80°				
D D.W.	L D.W.	ℓ	W1	L D.W.	ℓ	W1	L D.W.	ℓ	W1	L D.W.	ℓ	W1	L D.W.	ℓ	W1	L D.W.	ℓ	W1	L D.W.	ℓ	W1	L D.W.	ℓ	W1	W2	A D.W.
(IN).	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(FT.)	(IN.)
36	5.8	0	4.6	6.0	0.33	4.9	6.2	0.5	5.2	6.5	0.67	5.7	7.0	0.75	6.2	8.3	1.33	8.0	11.1	1.75	11.7	19.6	5.0	23.0	4.6	12
42	6.3	0	5.8	6.6	0.33	6.1	6.9	0.5	6.5	7.3	0.67	7.1	7.8	0.75	7.8	9.3	1.33	10.0	12.5	1.75	14.6	22.5	5.0	28.8	5.8	12
48	6.9	0	6.9	7.2	0.33	7.3	7.5	0.5	7.8	8.0	0.67	8.5	8.5	0.75	9.4	10.3	1.33	12.0	14.0	1.75	17.5	25.3	5.0	34.6	6.9	12
54	7.5	0	8.0	7.8	0.33	8.5	8.2	0.5	9.1	8.7	0.67	9.9	9.3	0.75	10.9	11.3	1.33	14.0	15.5	1.75	20.5	28.2	5.0	40.3	8.0	12
60	8.1	0	9.2	8.4	0.33	9.8	8.8	0.5	10.4	9.4	0.67	11.3	10.1	0.75	12.5	12.3	1.33	16.0	16.9	1.75	23.4	31.1	5.0	46.0	9.2	15
72	9.2	0	11.5	9.6	0.33	12.2	10.1	0.5	13.0	10.8	0.67	14.1	11.7	0.75	15.6	14.3	1.33	20.0	19.8	1.75	29.2	36.9	5.0	57.6	11.5	15

TYPE D-W END WALL DETAIL

NOT TO SCALE MCPA-UTIL-STRM-1700 05/01/18

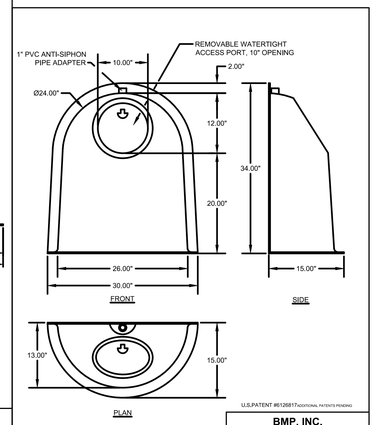


U.S.PATENT #6126817(ADDITIONAL PATENTS PENDING)

DESIGNED TO FIT 60"-72" DIAM. STRUCTURES RECOMMENDED MIN. SUMP DEPTH 2.5 TO 3X OUTLET PIPE I.D.

BMP, INC.
53 MT. ARCHER ROAD, LYME, CT. 06371
(800) 504-8008 FAX: (860)434-3195

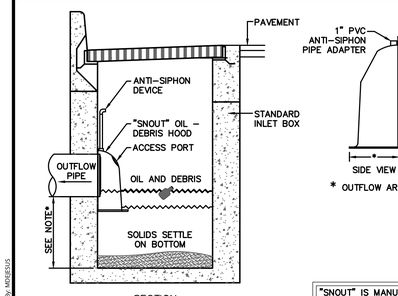
DESCRIPTION	DATE	SCALE
30R SNOUT OIL & DEBRIS STOP	10/04/99	NONE
	DRAWING NUMBER	
	30R	



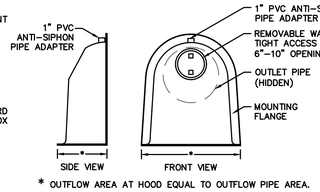
U.S.PATENT #6126817(ADDITIONAL PATENTS PENDING)

BMP, INC.
53 MT. ARCHER ROAD, LYME, CT. 06371
(800) 504-8008 FAX: (860)434-3195

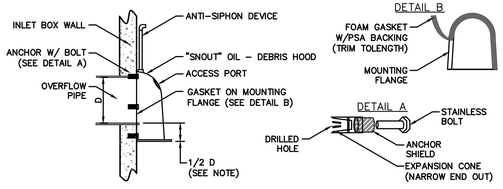
DESCRIPTION	DATE	SCALE
24F SNOUT OIL & DEBRIS STOP	09/20/99	NONE
	DRAWING NUMBER	
	24F	



SECTION



* OUTFLOW AREA AT HOOD EQUAL TO OUTFLOW PIPE AREA.



OIL - DEBRIS HOOD

"SNOUT" IS MANUFACTURED BY AND AVAILABLE THROUGH:
BEST MANAGEMENT PRODUCTS, INC.
53 MT. ARCHER RD.
LYME, CT 06371
PHONE (860) 434-0277 * FAX (860) 434-8195
E-MAIL: duran@bestmp.com * WEBSITE: www.bestmp.com

* NOTE- SUMP DEPTH OF 36" MIN. FOR < OR= 12" DIAM. OUTLET. FOR OUTLETS >OR= 15", DEPTH = 2.5-3X DIAM.

SNOUT BMP CONSTRUCTION SEQUENCE:

1. STABILIZE ALL CONTRIBUTING AREAS BEFORE INSTALLING AND CONNECTING PIPES TO THESE INLETS.
2. FOLLOW MANUFACTURER'S GUIDELINES FOR INSTALLATION. DO NOT USE SNOUTS DURING CONSTRUCTION UNLESS PRODUCT IS DESIGNED PRIMARILY FOR SEDIMENT REMOVAL.

SNOUT BMP MANUFACTURER'S INSTALLATION INSTRUCTIONS:

1. CENTER THE SNOUT® DIRECTLY OVER THE EXIT PIPE SO THAT THE ENTIRE PIPE IS COVERED AND SO THAT THE LOWER EDGE OF THE HOOD IS AT LEAST 1/2 THE PIPE DIAMETER BELOW THE LOWEST INSIDE POINT OF THE PIPE (DEEPER IS EVEN BETTER.)
2. DRILL * EQUALLY SPACED 7/16" HOLES THROUGH THE SNOUT® FLANGE. (*NUMBER OF HOLES VARY DEPENDING ON SIZE OF SNOUT®.)
3. MARK AND DRILL CATCH BASIN AND INSTALL THE TAMP-IN LEAD ANCHORS.
   - 3.1. DRILL A 3/4"HOLE INTO THE BASE MATERIAL TO THE REQUIRED DEPTH (APPROXIMATELY 1-1/4" DEEP.)
   - 3.2. BLOW THE HOLE CLEAN OF DUST AND OTHER MATERIAL.
   - 3.3. INSERT THE ANCHOR INTO THE HOLE. NARROW END OF CONE MUST POINT OUT. LEAD SHIELD SLIDES OVER CONE.
   - 3.4. POSITION THE SETTING TOOL OR A 9/16 SOCKET AGAINST THE ANCHOR OUTER CONE. (THE OUTER RIM OF THE TOOL OR SOCKET SHOULD SEAT ONTO THE LEAD SHIELD RIM.) SET THE ANCHOR BY DRIVING THE LEAD SLEEVE OVER THE CONE USING SEVERAL SHARP HAMMER BLOWS. BE SURE THE ANCHOR IS AT THE REQUIRED EMBEDMENT DEPTH (FLUSH OR SLIGHTLY BELOW FACE OF CONCRETE)
4. ATTACH THE VENT PIPE ADAPTER IN THE PRE-DRILLED HOLE IN THE TOP OF THE SNOUT® USING THE 2 FLAT O RING GASKETS AND PVC LOCK-NUT SUPPLIED IN THE KIT. INSTALL WITH FEMALE SLIP ADAPTER UP AND A WASHER ON EACH SIDE OF THE SNOUT® SHELL. TIGHTEN LOCK-NUT HAND TIGHT.
5. REMOVE PSA BACKING AND WITH FIRM PRESSURE, ATTACH GASKET STRIP(S) TO BACK OF FLANGE AND TRIM EXCESS.
6. ATTACH THE SNOUT® TO THE CATCH BASIN WALL WITH 3/8" DIAMETER STAINLESS STEEL BOLTS IN LEAD EXPANSION ANCHORS. DO NOT OVER TIGHTEN; 10-15 FOOT-POUNDS SHOULD BE SUFFICIENT.
7. CUT THE ANTI-SIPHON VENT STACK TO LENGTH AND ATTACH TO HOOD AT SLIP ADAPTER WITH PVC CEMENT.
8. ATTACH 90 DEGREE FITTING TO VENT STACK WITH PVC CEMENT. ENSURE THAT FITTING OPENING IS ACCESSIBLE FOR MAINTENANCE AND INSPECTION.

SNOUT INLET - OPERATION AND MAINTENANCE PROCEDURES

A. INSPECTION:
1. INSPECT INLET MONTHLY FOR THE FIRST YEAR AFTER THE SITE HAS BEEN STABILIZED.
2. AFTER EACH MAJOR STORM EVENT, INSPECT INLET IMMEDIATELY, IF SEDIMENT HAS ACCUMULATED TO AND WITHIN ONE (1) FOOT BELOW THE OUTFALL ELEVATION, PERFORM CLEANING AS NECESSARY.
3. ANNUALLY INSPECT THE "SNOUT" HOOD, THE ANTI-SIPHON DEVISE AND THE ACCESS HATCH FOR ANY CRACKED OR DAMAGED PARTS, REPLACE ALL DAMAGED COMPONENTS IMMEDIATELY.

B. CLEANING:
1. REMOVE ALL SOLID DEBRIS FROM THE INLET, A MINIMUM OF EVERY SIX (6) MONTH OR WHEN THE SEDIMENT IS TO AND WITHIN ONE (1) FOOT BELOW THE OUTFALL ELEVATION.
2. WHEN THERE HAS BEEN A SPILL OR INCIDENT THAT CAUSES A LARGER THAN NORMAL ACCUMULATION OF POLLUTANTS, REMOVE ALL SOLID DEBRIS FROM THE INLET.
3. USE A VACUUM TRUCK TO REMOVE ALL SOLIDS IN THE BOTTOM OF THE STRUCTURE.
4. DISPOSE OF ALL COLLECTED WASTES PER THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION REQUIREMENTS.
5. FLUSH THE ANTI-SIPHON DEVISE ON THE "SNOUT" HOOD OR GENTLY CLEAR WITH A FLEXIBLE WIRE ONCE A YEAR.
6. OPEN AND CLOSE THE ACCESS PORT ON THE "SNOUT" HOOD ONCE A YEAR AND CLEAR ANY OBSTRUCTIONS.

"SNOUT" INLET

NOT TO SCALE

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REV	DATE	DRAWN BY	DESCRIPTION
1	12/1/22	MD	REVISED PER BOROUGH OF CONSHOHOCKEN REVIEW LETTERS DATED 1/7/2022.
2	2/23/22	MKJ	REVISED PER EMAILS WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/22/2022.
3	5/20/22	JJW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL C. RICHARD ROSEBERRY ENGINEER No. 46162
C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

PRELIMINARY/FINAL LAND DEVELOPMENT PLANS

FOR

401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

Colliers Engineering & Design
LEHIGH VALLEY
941 Marcon Boulevard, Suite 801
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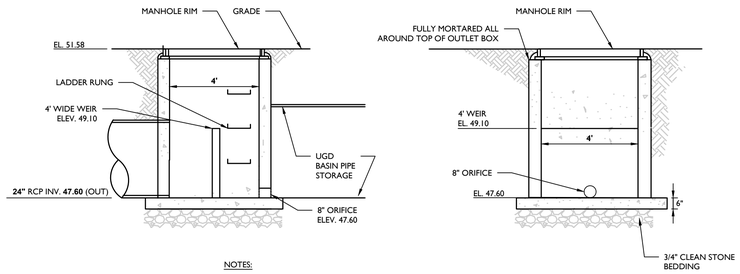
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR
PROJECT NUMBER:	DRAWING NAME:		
14000908C	C-DTLS		

SHEET TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: 25 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C\Engineering\Site Plans\C-DTLS.dwg|C-25 DETAILS By: MDESEUS

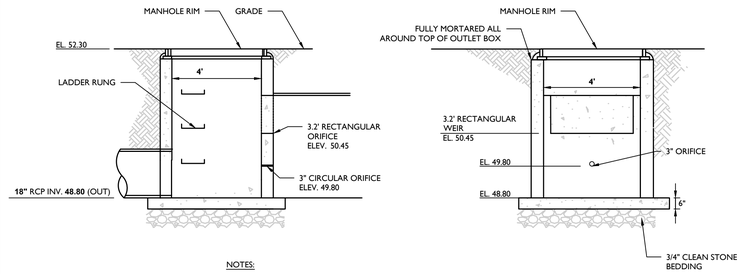


NOTES:

1. CONTRACTOR TO SUBMIT SHOP DRAWING FOR REVIEW AND APPROVAL.
2. ALL CONCRETE TO BE CLASS "A".

OUTLET CONTROL STRUCTURE UGD BASIN A S-A1 DETAIL (SINGLE CHAMBER)

NOT TO SCALE MCPA-UTIL-STMW-1600 05/01/18

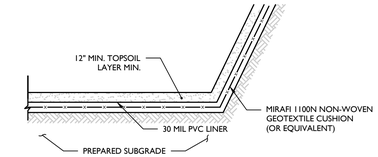


NOTES:

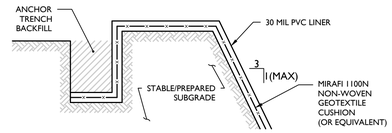
1. CONTRACTOR TO SUBMIT SHOP DRAWING FOR REVIEW AND APPROVAL.
2. ALL CONCRETE TO BE CLASS "A".

OUTLET CONTROL STRUCTURE MRC BASIN B S-B2 DETAIL (SINGLE CHAMBER)

NOT TO SCALE MCPA-UTIL-STMW-1600 05/01/18



30 MIL PVC LINER SECTION DETAIL



STANDARD ANCHOR TRENCH DETAIL

ANCHOR TRENCH NOTES:

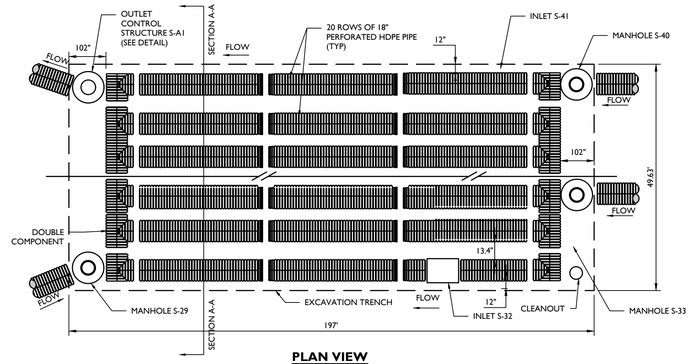
1. EXCAVATE ANCHOR TRENCH TO THE MINIMUM DIMENSIONS SHOWN. SUITABLE EXCAVATION SPOILS SHALL BE PROTECTED FROM WEATHER EVENTS, WHEN INTENDED FOR ANCHOR TRENCH BACKFILL.
2. NON-WOVEN GEOTEXTILE CUSHION AND PVC LINER SHALL FULLY EXTEND ACROSS THE BASE OF THE ANCHOR TRENCH.
3. ANCHOR TRENCH BACKFILL SHALL CONSIST OF SUITABLE BACKFILL MATERIALS WHICH ARE FREE OF LARGE GRAVEL, COBBLES (OR COARSER) MATERIALS THAT MAY DAMAGE THE LINER.
4. BACKFILL MATERIALS SHALL BE PLACED IN CONTROLLED AND COMPACTED LIFTS.

30 MIL PVC LINER SECTION DETAIL NOTES:

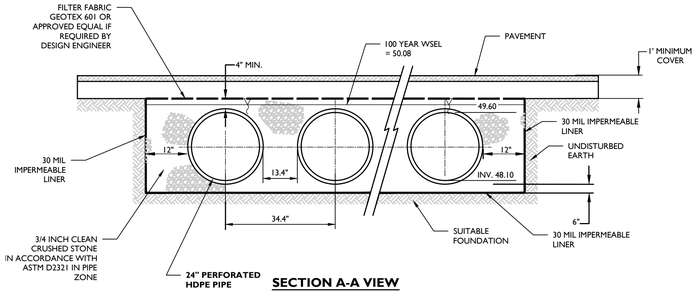
1. BASIN EXCAVATION, SUBGRADE PREPARATION, AND LINER INSTALLATION SHALL BE PERFORMED UNDER THE OBSERVATION OF A QUALIFIED GEOTECHNICAL ENGINEER OR ENGINEER'S REPRESENTATIVE.
2. PRIOR TO BASIN EXCAVATION, THE CONTRACTOR SHALL SUBMIT A NARRATIVE SUMMARIZING THE INSTALLER'S PROJECT EXPERIENCE, KEY PERSONNEL, MATERIAL SPECIFICATION SHEETS, PANEL LAYOUT CONFIGURATION, NON-DESTRUCTIVE TESTING, QUALITY CONTROL PROCEDURES, AND TYPICAL DETAILS (I.E. BATTONING, ETC.). LINER SYSTEM INSTALLATION SHALL BE PERFORMED IN ACCORDANCE WITH THE APPROVED SUBMITTAL.
3. AFTER FINE-GRADING, THE EXPOSED SUBGRADE SHALL BE COMPACTED WITH A SMOOTH DRUM ROLLER. SOFT AREAS DELINEATED BY THIS PROCESS SHALL BE CONDITIONED IN PLACE OR REMOVED AND REPLACED WITH LOAD BEARING FILL.
4. THE PREPARED SUBGRADE SHALL BE SMOOTH, DRY, STABLE, AND FREE OF COBBLES (OR COARSER ROCK FRAGMENTS).
5. THE NON-WOVEN GEOTEXTILE CUSHION (10 OZ. MIN) AND PVC LINER PANELS SHOULD BE DEPLOYED IN ACCORDANCE WITH THE APPROVED PANEL CONFIGURATION LAYOUT. GEOTEXTILE AND PVC PANELS SHOULD BE ORIENTED PERPENDICULAR TO THE ANCHOR TRENCH. MINIMIZE PVC PANEL JOINTS TO THE EXTENT POSSIBLE. BUTT JOINTS LOCATED ON THE BASIN SLOPE AND ORIENTED PARRELLEL TO THE ANCHOR TRENCH ARE NOT PERMITTED.
6. THE LINER INSTALLER SHALL PERFORM NON-DESTRUCTIVE TESTING OF ALL FIELD SEAMS IN ACCORDANCE WITH THE APPROVED LINER SUBMITTAL. AT A MINIMUM, NON-DESTRUCTIVE TESTING SHALL INCLUDE VISUAL OBSERVATION AND AIR LANCE TESTING.
7. TOPSOIL (COVER SOIL) SHALL BE FREE OF GRAVEL OR OTHER DEBRIS WHICH MAY DAMAGE THE PVC LINER. OTHERWISE, INSTALL A NON-WOVEN GEOTEXTILE CUSHION (10 OZ. MIN) OVERTOP OF THE PVC LINER PRIOR TO COVER SOIL PLACEMENT.
8. COVER SOIL SHALL BE PLACED BY OVER-BURDENING THE LINER BY 2 TO 3 FEET, AND SPREADING WITH LOW GROUND PRESSURE EQUIPMENT FROM THE BASIN BOTTOM UP-SLOPE TO MITIGATE OVERSTRESSING.

30 MIL POLYPROPYLENE POND LINER SECTION DETAIL

NOT TO SCALE 3/21/19



PLAN VIEW



SECTION A-A VIEW

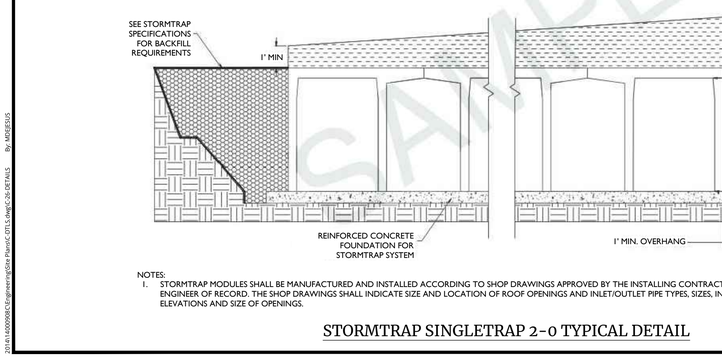
UNDERGROUND HDPE SYSTEM NOTES:

1. ALL REFERENCES TO CLASS I OR II MATERIAL ARE PER ASTM D2321 "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION.
2. ALL RETENTION AND DETENTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, LATEST EDITION AND THE MANUFACTURER'S PUBLISHED INSTALLATION GUIDELINES.
3. MEASURES SHOULD BE TAKEN TO PREVENT THE MIGRATION OF NATIVE FINES INTO THE BACKFILL MATERIAL, WHEN REQUIRED. SEE ASTM D2321.
4. FILTER FABRIC: A GEOTEXTILE FABRIC MAY BE USEDAS SPECIFIED BY THE ENGINEER TO PREVENT THE MIGRATION OF FINES FROM THE NATIVE SOIL INTO THE SELECT BACKFILL MATERIAL.
5. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
6. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I OR II. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" FOR 4"-24" PIPES; 6" FOR 30"-60" PIPES.
7. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I OR II INTHE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
8. MINIMUM COVER: MINIMUM COVER OVER ALL RETNETION/DETENTION SYSTEMS IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER IS 12" UP TO 36" DIAMETER PIPE AND 24" OF COVER FOR 42" - 60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

UNDERGROUND DETENTION BASIN A STAGE STORAGE	
ELEVATION (FEET)	STORAGE (ACRE-FEET)
47.60	0.000
48.00	0.036
48.50	0.086
49.00	0.159
49.50	0.231
50.00	0.279
50.18	0.296

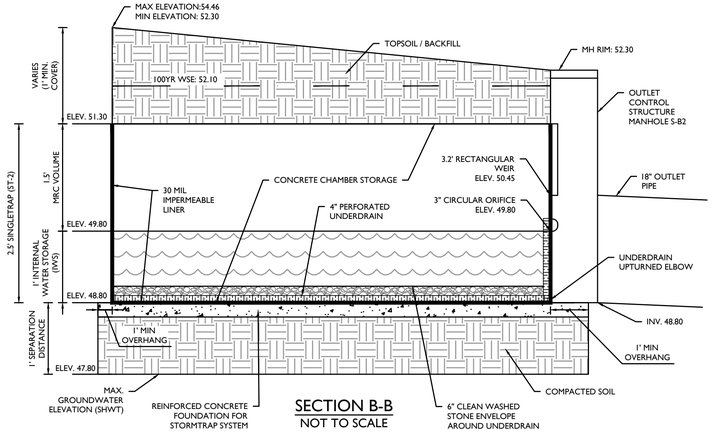
UNDERGROUND DETENTION BASIN A (CLOSED SYSTEM) DETAIL

NOT TO SCALE MCPA-UTIL-STMW-1300 05/01/18



UNDERGROUND SYSTEM NOTES :

1. USE 2'-0" DEEP STORMTRAP SINGLETRAP REINFORCED CONCRETE STRUCTURES OR AN EQUIVALENT FOR THE UNDERGROUND SYSTEM.
2. STORMTRAP STORAGE PROVIDED: 2.696 AF
   UNIT HEADROOM: 2'-6" SINGLETRAP (ST-2)
   UNIT QUANTITY: 250 TOTAL PIECES
3. STORMTRAP MODULES SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER OF RECORD. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/OUTLET PIPE TYPES, SIZES, INVERT ELEVATIONS, AND SIZES OF OPENINGS.
4. COVER RANGE: MIN. 1.00', MAX. 10.00'
5. ALL DIMENSIONS AND SOIL CONDITIONS, INCLUDING BUT NOT LIMITED TO GROUNDWATER AND SOIL BEARING CAPACITY ARE REQUIRED TO BE VERIFIED IN THE FIELD BY OTHERS PRIOR TO STORMTRAP INSTALLATION.
6. CONTRACTORS RESPONSIBILITY TO ENSURE CONSISTENCY/ACCURACY TO FINAL ENGINEER OF RECORD PLAN SET
7. STORMTRAP SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C891, STANDARD FOR INSTALLATION OF UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES.
8. IT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO ENSURE THAT PROPER/ ADEQUATE EQUIPMENT IS USED TO SET/ INSTALL THE MODULES.
9. STORMTRAP MODULES SHALL BE PLACED ON A LEVEL CONCRETE FOUNDATION WITH A 1'-0" OVERHANG ON ALL SIDES THAT SHALL BE POURED IN PLACE BY INSTALLING CONTRACTOR. A QUALIFIED GEOTECHNICAL ENGINEER WILL BE EMPLOYED, BY OWNER, TO PROVIDE ASSISTANCE I N EVALUATING THE EXISTI NG SOIL CONDITIONS. TO ENSURE THAT THE SOIL BEARING PRESSURE MEET OR EXCEED THE STRUCTURAL DESIGN LOADING CRITERIA AS SPECIFIED.
10. THE FILL PLACED AROUND THE STORMTRAP MODULES MUST BE DEPOSITED ON BOTH SIDES AT THE SAME TIME AND TO APPROXIMATELY THE SAME ELEVATION. AT NO TIME SHALL THE FILL BEHIND ONE SIDE WALL BE MORE THAN 2'-0" HIGHER THAN THE FILL ON THE OPPOSITE SIDE. BACKFILL SHALL EITHER BE COMPACTED AND/OR VIBRATED TO ENSURE THAT BACKFILL AGGREGATE/STONE MATERIAL IS WELL SEATED AND PROPERLY INTERLOCKED. CARE SHALL BE TAKEN TO PREVENT ANY WEDGING ACTION AGAINST THE STRUCTURE. AND ALL SLOPES WITHIN THE AREA TO BE BACKFILLED MUST BE STEPPED OR SERRATED TO PREVENT WEDGING ACTION. CARE SHALL ALSO BE TAKEN AS NOT TO DISRUPT THE JOINT WRAP FROM THE JOINT DURING THE BACKFILL PROCESS. BACKFILL MATERIAL SHALL BE CLEAN, CRUSHED, ANGULAR NO. 5 (AASHTO M43) AGGREGATE. IF NATIVE EARTH IS SUSCEPTIBLE TO MIGRATION, CONFIRM WITH GEOTECHNICAL ENGINEER AND PROVIDE PROTECTION AS REQUIRED.
11. DURING PLACEMENT OF MATERIAL OVERTOP THE SYSTEM, AT NO TIME SHALL MACHINERY BE USED OVERTOP THAT EXCEEDS THE DESIGN LIMITATIONS OF THE SYSTEM. WHEN PLACEMENT OF MATERIAL OVERTOP, MATERIAL SHALL BE PLACED SUCH THAT THE DIRECTION OF PLACEMENT IS PARALLEL WITH THE OVERALL LONGITUDINAL DIRECTION OF THE SYSTEM WHENEVER POSSIBLE.
12. THE FILL PLACED OVERTOP THE SYSTEM SHALL BE PLACED AT A MINIMUM OF 6" LIFTS. AT NO TIME SHALL MACHINERY OR VEHICLES GREATER THAN THE DESIGN HS20 LOADING CRITERIA TRAVEL OVERTOP THE SYSTEM WITHOUT THE MINIMUM DESIGN COVERAGE. IF TRAVEL IS NECESSARY OVERTOP THE SYSTEM PRIOR TO ACHIEVING THE MINIMUM DESIGN COVER, IT MAY BE NECESSARY TO REDUCE THE ULTIMATE LOAD/BURDEN OF THE OPERATING MACHINERY SO AS TO NOT EXCEED THE DESIGN CAPACITY OF THE SYSTEM. IN SOME CASES, IN ORDER TO ACHIEVE REQUIRED COMPACTION, HAND COMPACTION MAY BE NECESSARY IN ORDER TO NOT EXCEED THE ALLOTTED DESIGN LOADING.
13. REFER TO PENNDOT PUBLICATION 408 SECTION 610 FOR SPECIFICATIONS OF UNDERDRAINS.



UNDERGROUND MRC BASIN B DETAIL

NOT TO SCALE 05/01/18

STORMTRAP SYSTEM INFORMATION

WATER STORAGE PROVIDED: 2.696 ACRE-FT

UNIT HEADROOM: 2'-6" SINGLETRAP (ST-2)

UNIT QUANTITY: 250 TOTAL PIECES

NOTES:

1. STORMTRAP MODULES SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER OF RECORD. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/OUTLET PIPE TYPES, SIZES, INVERT ELEVATIONS AND SIZE OF OPENINGS.

STORMTRAP SINGLETRAP 2-0 TYPICAL DETAIL

UNDERGROUND MRC BASIN B STAGE STORAGE	
ELEVATION (FEET)	STORAGE (ACRE-FEET)
48.80	0.000
49.00	0.172
49.50	0.601
50.00	1.030
50.50	1.459
51.00	1.716
51.50	1.912
52.00	2.402
52.30	2.696

UNDERGROUND DETENTION BASINS BMP CONSTRUCTION SEQUENCE:

1. INSTALL ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS.
2. PREPARE SITE FOR EXCAVATION AND/OR EMBANKMENT CONSTRUCTION
   2.a. ALL EXISTING VEGETATION SHOULD REMAIN IF FEASIBLE AND SHOULD ONLY BE REMOVED IF NECESSARY FOR CONSTRUCTION.
   2.b. CARE SHOULD BE TAKEN TO PREVENT COMPACTION OF THE BASIN BOTTOM.
   2.c. IF EXCAVATION IS REQUIRED, CLEAR THE AREA TO BE EXCAVATED OF ALL VEGETATION. REMOVE ALL TREE ROOTS, ROCKS, AND BOULDERS ONLY IN EXCAVATION AREA.
3. EXCAVATE BOTTOM OF BASIN TO DESIRED ELEVATION (IF NECESSARY).
4. INSTALL SURROUNDING EMBANKMENTS AND INLET AND OUTLET CONTROL STRUCTURES.
5. INSTALL UNDERGROUND DETENTION FACILITIES PER MANUFACTURER STANDARDS. COMPACT AROUND INLET AND OUTLET STRUCTURES.
6. APPLY AND GRADE TOPSOIL.
7. SEED, PLANT AND MULCH ACCORDING TO SEEDING SPECIFICATIONS.

SAMPLE

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-	-	-	-
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-	-	-	-
-	-	-	-
-	-	-	-

COMMONWEALTH OF PENNSYLVANIA
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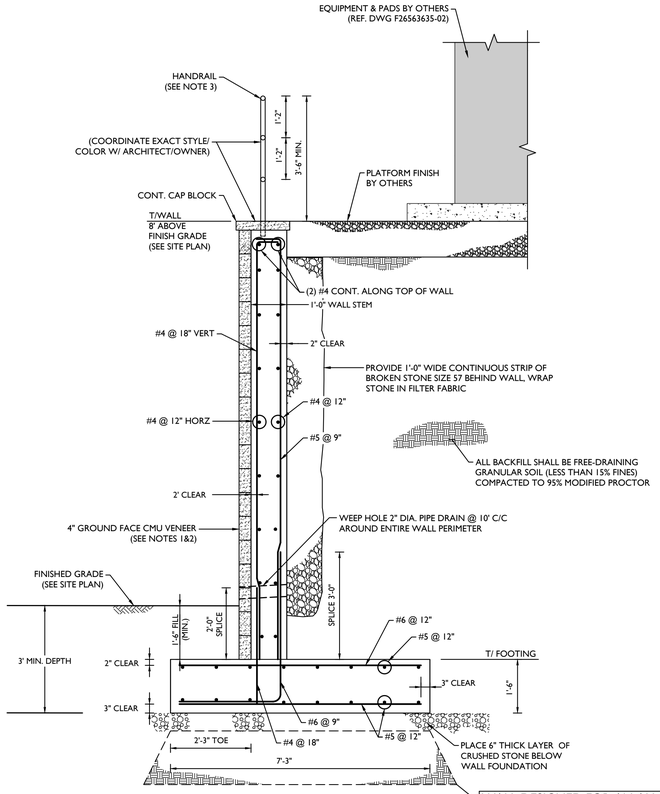
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR
PROJECT NUMBER: 14000908C		DRAWING NAME: C-DTLS	

SHEET TITLE:
CONSTRUCTION DETAILS

SHEET NUMBER:
26 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

20184\14000908C\Engineering\Site Plans\C-DTLS.dwg\C-26 DETAILS By: MDEJESUS



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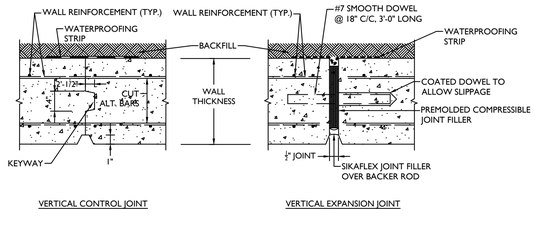
RETAINING WALL TYP. SECTION

SCALE: 1/2" = 1'-0"

NOTES:

1. BRICK TO BE WESTBROOK BLOCK GROUND FACE CMU GF303 TO MATCH BUILDING FACADE. COORDINATE EXACT CMU WITH ARCHITECT.
2. SECURE CMU TO WALL W/ GALVANIZED BRICK TIES AT 16" CENTERS (VERTICAL & HORIZONTAL). FILL VOID SOLID WITH GROUT. PROVIDE CONTROL JOINTS IN CMU AT 20' C/C MAX, MATCHING CONCRETE JOINT LOCATIONS.
3. CORE INTO TOP OF CONCRETE WALL MIN. 5" OR PROVIDE BASE PLATE. SUBMIT SHOP DRAWINGS FOR APPROVAL. (COORDINATE GATE ACCESS W/ OWNER).



1
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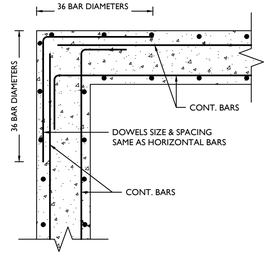
RETAINING WALL JOINTS

SCALE: N.T.S.

NOTES:

1. INSTALL VERTICAL CONTROL JOINTS AT 20' CENTERS (MAX.) AND VERTICAL EXPANSION JOINTS AT 60' CENTERS (MAX.).
2. CONCRETE FOOTINGS DO NOT REQUIRE JOINTS.



2
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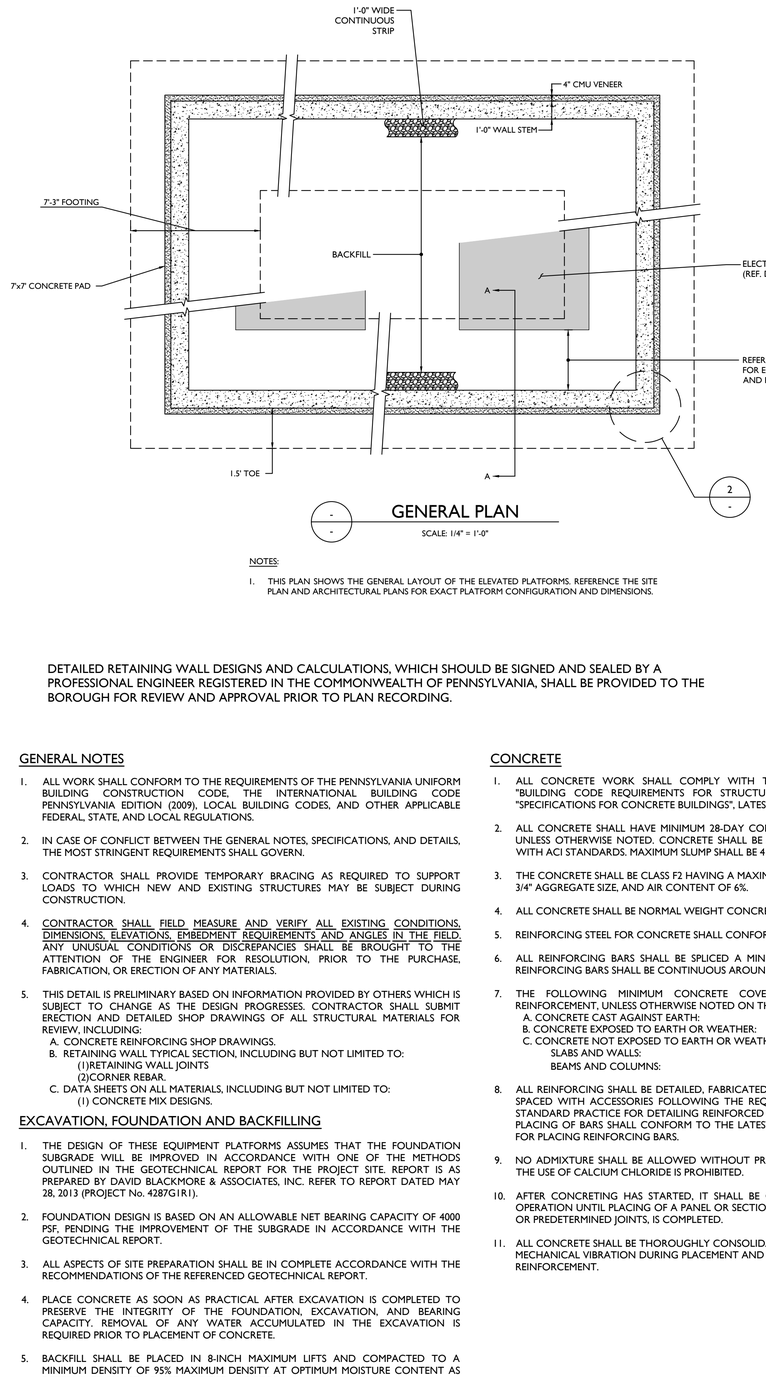
CORNER REBAR DETAIL

SCALE: N.T.S.



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GENERAL PLAN

SCALE: 1/4" = 1'-0"

NOTES:

1. THIS PLAN SHOWS THE GENERAL LAYOUT OF THE ELEVATED PLATFORMS. REFERENCE THE SITE PLAN AND ARCHITECTURAL PLANS FOR EXACT PLATFORM CONFIGURATION AND DIMENSIONS.

DETAILED RETAINING WALL DESIGNS AND CALCULATIONS, WHICH SHOULD BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF PENNSYLVANIA, SHALL BE PROVIDED TO THE BOROUGH FOR REVIEW AND APPROVAL PRIOR TO PLAN RECORDING.

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE PENNSYLVANIA UNIFORM BUILDING CONSTRUCTION CODE. THE INTERNATIONAL BUILDING CODE PENNSYLVANIA EDITION (2009), LOCAL BUILDING CODES, AND OTHER APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
2. IN CASE OF CONFLICT BETWEEN THE GENERAL NOTES, SPECIFICATIONS, AND DETAILS, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN.
3. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AS REQUIRED TO SUPPORT LOADS TO WHICH NEW AND EXISTING STRUCTURES MAY BE SUBJECT DURING CONSTRUCTION.
4. CONTRACTOR SHALL FIELD MEASURE AND VERIFY ALL EXISTING CONDITIONS, DIMENSIONS, ELEVATIONS, EMBEDMENT REQUIREMENTS AND ANGLES IN THE FIELD. ANY UNUSUAL CONDITIONS OR DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION, PRIOR TO THE PURCHASE, FABRICATION, OR ERECTION OF ANY MATERIALS.
5. THIS DETAIL IS PRELIMINARY BASED ON INFORMATION PROVIDED BY OTHERS WHICH IS SUBJECT TO CHANGE AS THE DESIGN PROGRESSES. CONTRACTOR SHALL SUBMIT ERECTION AND DETAILED SHOP DRAWINGS OF ALL STRUCTURAL MATERIALS FOR REVIEW, INCLUDING:
   A. CONCRETE REINFORCING SHOP DRAWINGS.
   B. RETAINING WALL TYPICAL SECTION, INCLUDING BUT NOT LIMITED TO:
      (1)RETAINING WALL JOINTS
      (2)CORNER REBAR.
   C. DATA SHEETS ON ALL MATERIALS, INCLUDING BUT NOT LIMITED TO:
      (1) CONCRETE MIX DESIGNS.

EXCAVATION, FOUNDATION AND BACKFILLING

1. THE DESIGN OF THESE EQUIPMENT PLATFORMS ASSUMES THAT THE FOUNDATION SUBGRADE WILL BE IMPROVED IN ACCORDANCE WITH ONE OF THE METHODS OUTLINED IN THE GEOTECHNICAL REPORT FOR THE PROJECT SITE. REPORT IS AS PREPARED BY DAVID BLACKMORE & ASSOCIATES, INC. REFER TO REPORT DATED MAY 28, 2013 (PROJECT No. 4287G1R1).
2. FOUNDATION DESIGN IS BASED ON AN ALLOWABLE NET BEARING CAPACITY OF 4000 PSF, PENDING THE IMPROVEMENT OF THE SUBGRADE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.
3. ALL ASPECTS OF SITE PREPARATION SHALL BE IN COMPLETE ACCORDANCE WITH THE RECOMMENDATIONS OF THE REFERENCED GEOTECHNICAL REPORT.
4. PLACE CONCRETE AS SOON AS PRACTICAL AFTER EXCAVATION IS COMPLETED TO PRESERVE THE INTEGRITY OF THE FOUNDATION, EXCAVATION, AND BEARING CAPACITY. REMOVAL OF ANY WATER ACCUMULATED IN THE EXCAVATION IS REQUIRED PRIOR TO PLACEMENT OF CONCRETE.
5. BACKFILL SHALL BE PLACED IN 8-INCH MAXIMUM LIFTS AND COMPACTED TO A MINIMUM DENSITY OF 95% MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D1557 MODIFIED PROCTOR.
6. BACKFILL SHALL CONSIST OF NON-EXPANSIVE, FREE-DRAINING, WELL GRADED SAND AND GRAVEL, FREE OF DEBRIS AND ORGANIC MATERIAL.
7. ALL EXCAVATIONS AND BACKFILL OPERATIONS SHALL CONFORM WITH CURRENT OSHA REQUIREMENTS AND STANDARDS. CONTRACTOR WILL BE RESPONSIBLE FOR SAFEGUARDING AND PROTECTING ALL EXCAVATIONS AND EXISTING STRUCTURES OR IMPROVEMENTS DURING CONSTRUCTION BY PROPER METHODS, WHICH MAY INCLUDE BRACING OR SHORING.
8. THE DESIGN AND OPERATION OF THE GROUNDWATER CONTROLS DURING CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

CONCRETE

1. ALL CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENTS OF ACI 318, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", AND ACI 301, "SPECIFICATIONS FOR CONCRETE BUILDINGS", LATEST EDITIONS.
2. ALL CONCRETE SHALL HAVE MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI, UNLESS OTHERWISE NOTED. CONCRETE SHALL BE AIR-ENTRAINED IN ACCORDANCE WITH ACI STANDARDS. MAXIMUM SLUMP SHALL BE 4 INCHES.
3. THE CONCRETE SHALL BE CLASS F2 HAVING A MAXIMUM WATER/CEMENT RATIO OF .45, 3/4" AGGREGATE SIZE, AND AIR CONTENT OF 6%.
4. ALL CONCRETE SHALL BE NORMAL WEIGHT CONCRETE, 145-150 PCF±.
5. REINFORCING STEEL FOR CONCRETE SHALL CONFORM WITH ASTM A615, GR 60.
6. ALL REINFORCING BARS SHALL BE SPLICED A MINIMUM OF 40 BAR DIAMETERS. ALL REINFORCING BARS SHALL BE CONTINUOUS AROUND CORNERS.
7. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED OVER REINFORCEMENT, UNLESS OTHERWISE NOTED ON THE DRAWINGS:
   A. CONCRETE CAST AGAINST EARTH: 3 INCHES
   B. CONCRETE EXPOSED TO EARTH OR WEATHER: 2 INCHES
   C. CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
      SLABS AND WALLS: 1 INCH
      BEAMS AND COLUMNS: 1½ INCHES
8. ALL REINFORCING SHALL BE DETAILED, FABRICATED, AND SUPPORTED IN FORMS AND SPACED WITH ACCESSORIES FOLLOWING THE REQUIREMENTS OF THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315. PLACING OF BARS SHALL CONFORM TO THE LATEST CRSI RECOMMENDED PRACTICES FOR PLACING REINFORCING BARS.
9. NO ADMIXTURE SHALL BE ALLOWED WITHOUT PRIOR APPROVAL OF THE ENGINEER. THE USE OF CALCIUM CHLORIDE IS PROHIBITED.
10. AFTER CONCRETING HAS STARTED, IT SHALL BE CARRIED ON AS A CONTINUOUS OPERATION UNTIL PLACING OF A PANEL OR SECTION, AS DEFINED BY ITS BOUNDARIES OR PREDETERMINED JOINTS, IS COMPLETED.
11. ALL CONCRETE SHALL BE THOROUGHLY CONSOLIDATED BY SUITABLE MEANS SUCH AS MECHANICAL VIBRATION DURING PLACEMENT AND THOROUGHLY WORKED AROUND REINFORCEMENT.

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1	12/1/22	MD	REVISED PER BOROUGH OF CONSHOHOCKEN REVIEW LETTERS DATED 1/7/2022.
2	2/23/22	MD	REVISED PER EMAILS WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/22/2022.
3	5/20/22	JW/ MD	REVISED PER WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH REVIEW LETTERS.

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No. 46162

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FOR
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WASHINGTON
STREET
APARTMENTS

401 & 403 WASHINGTON
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CONSHOHOCKEN BOROUGH
& WHITEMARSH TOWNSHIP
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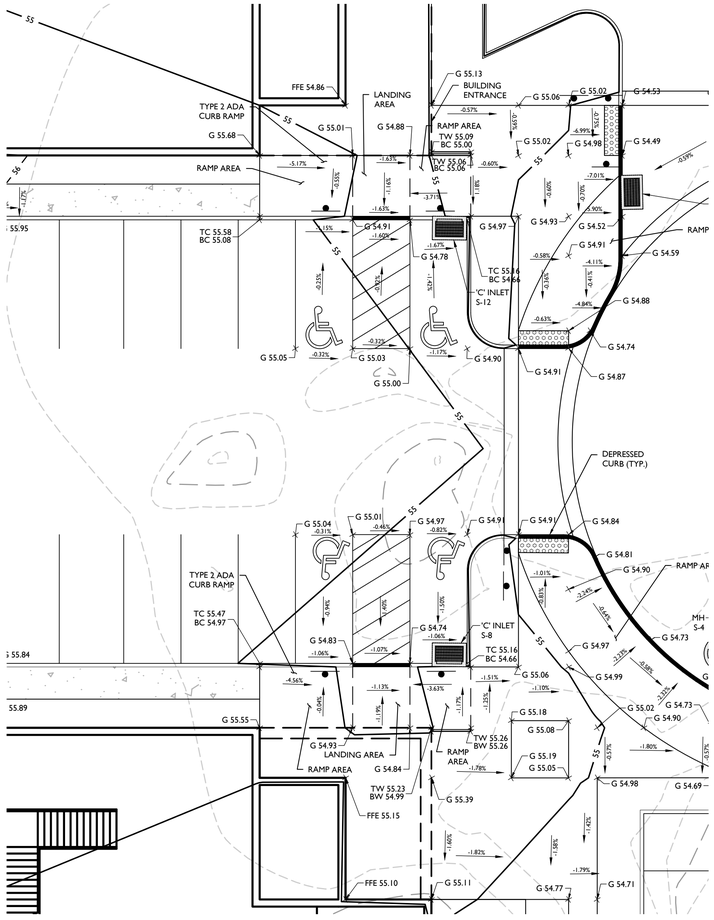
PROJECT NUMBER: 14000908C
DRAWING NAME: C-DTLS

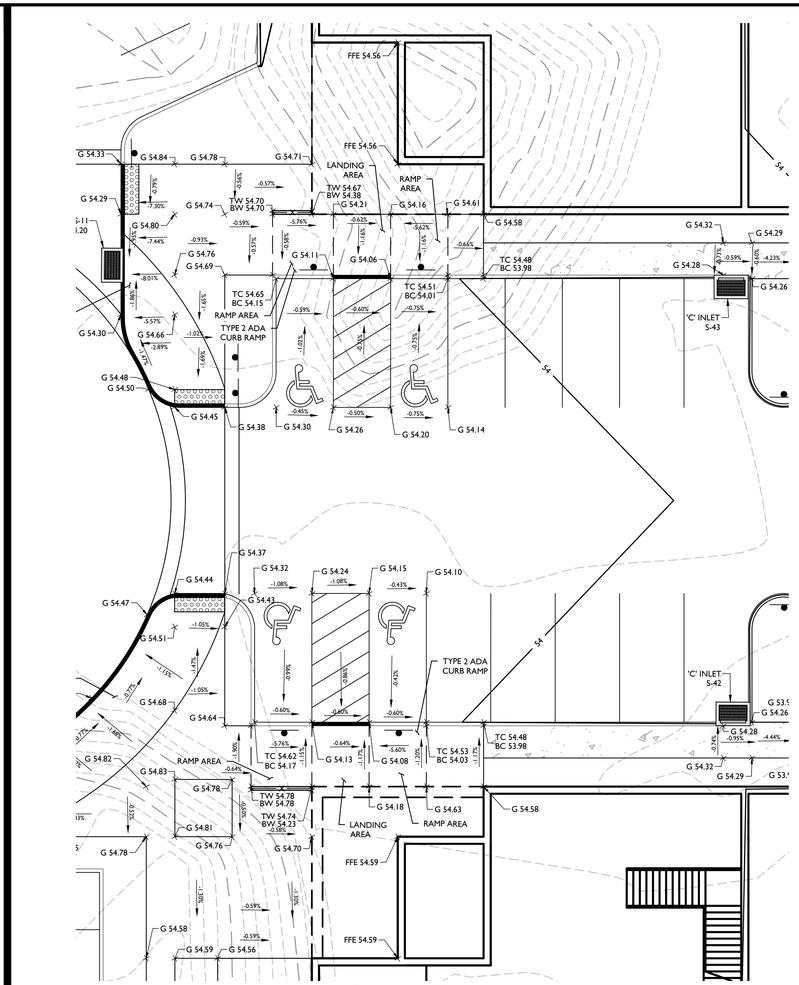
SHEET TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: 27 of 41

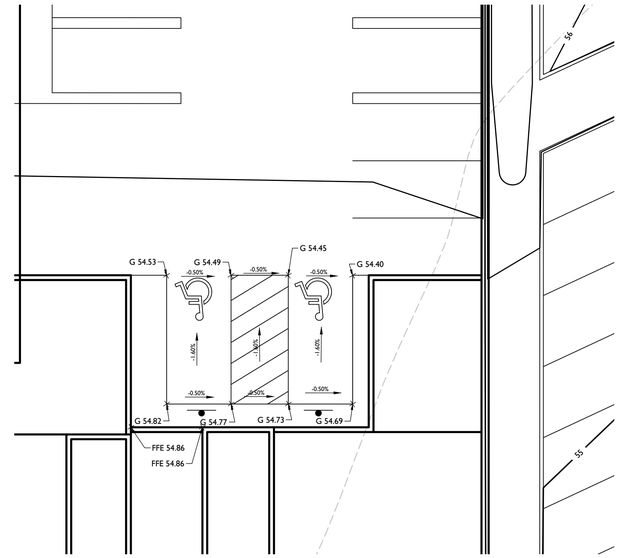
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



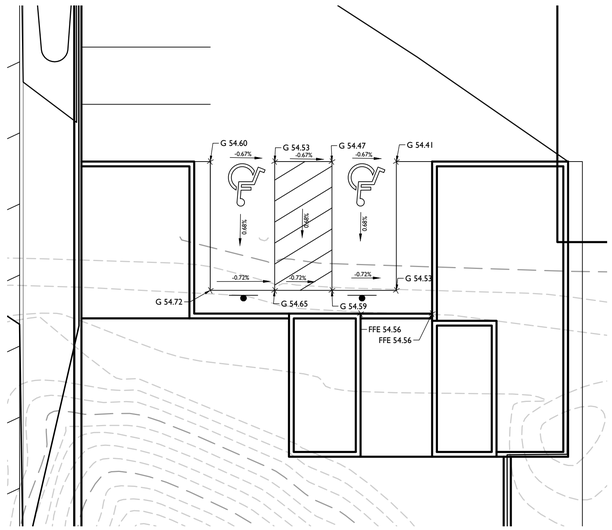
ADA PARKING AREA #1
BETWEEN BUILDINGS 1 & 3



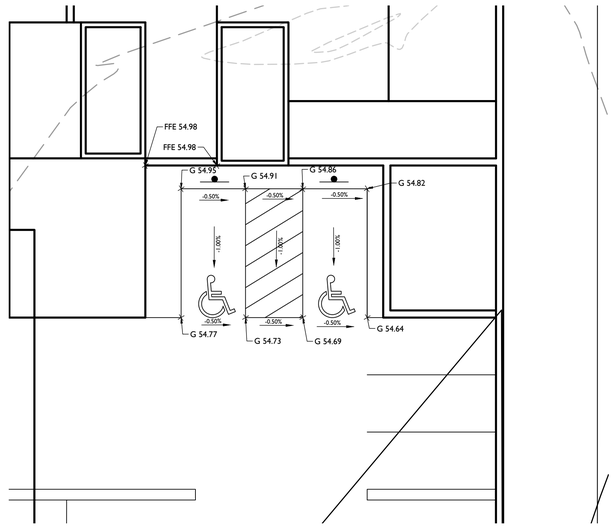
ADA PARKING AREA #2
BETWEEN BUILDINGS 2 & 4



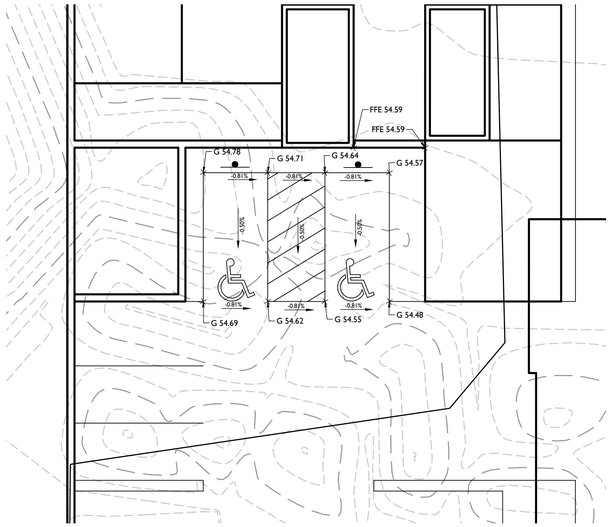
ADA PARKING AREA #3
BUILDING 1 GARAGE



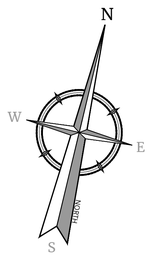
ADA PARKING AREA #4
BUILDING 2 GARAGE



ADA PARKING AREA #5
BUILDING 3 GARAGE



ADA PARKING AREA #6
BUILDING 4 GARAGE



10 0 10 20

SCALE : 1" = 10'

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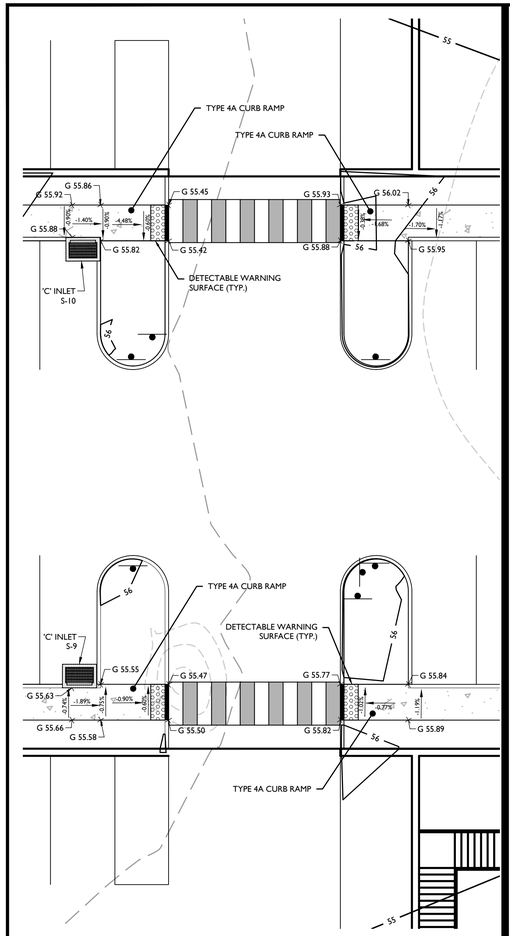
DRAWING NAME: C-GRAD-HADA

SHEET TITLE: ADA GRADING PLAN

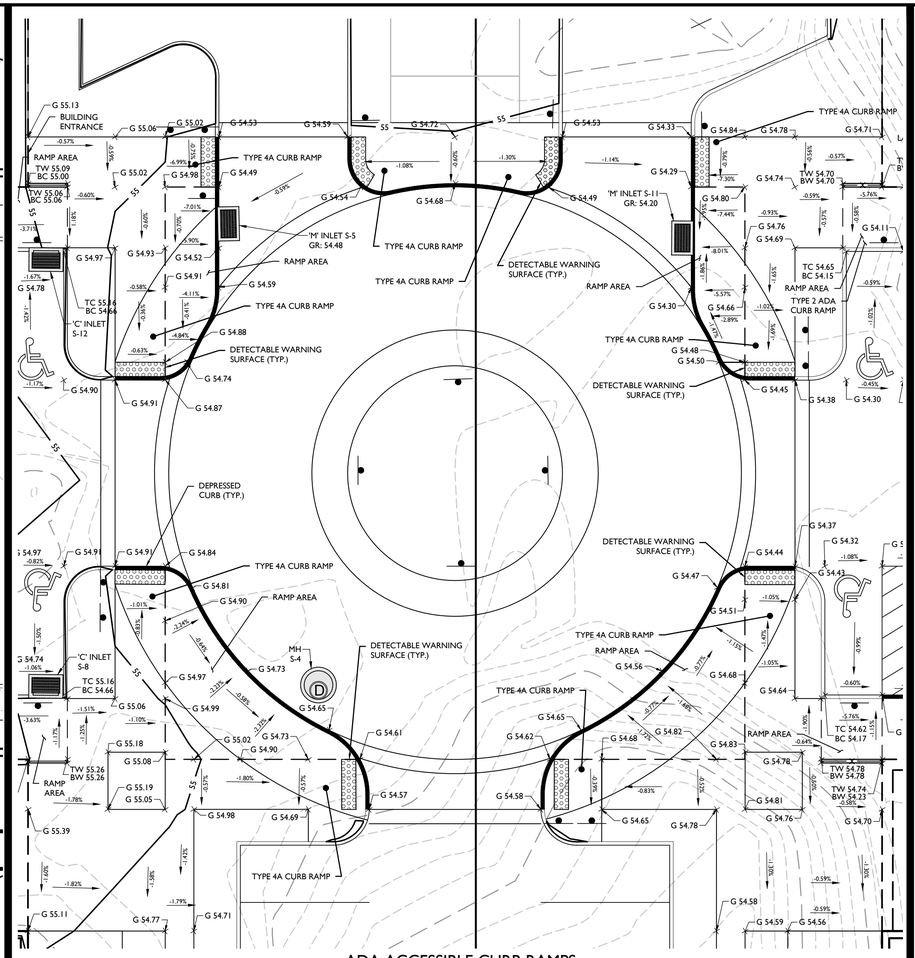
SHEET NUMBER: 28 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

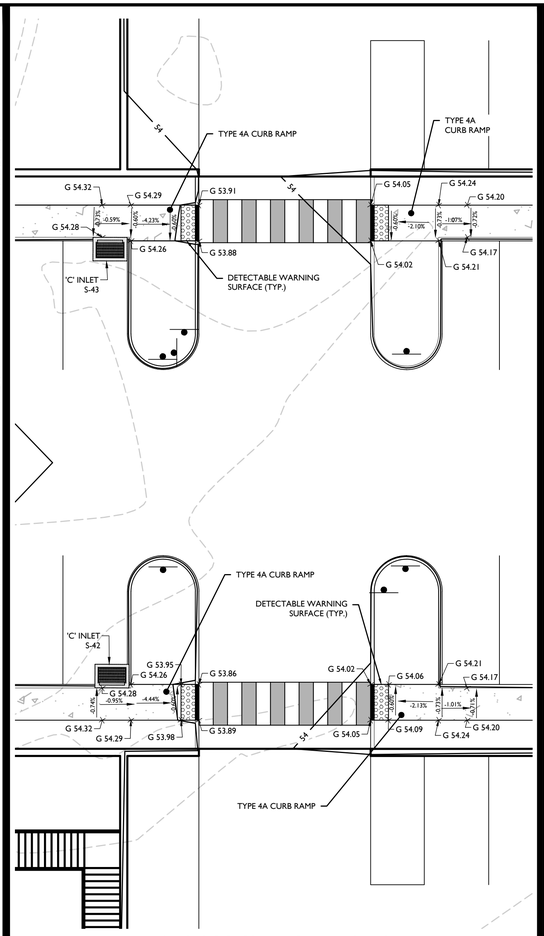
2014\14000908C\Engineering\Site Plans\C-GRAD-HADA.dwg|C-28-ADA By: MDJESUS



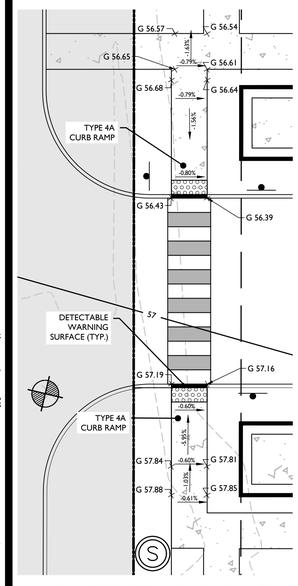
ADA ACCESSIBLE CURB RAMPS
BETWEEN BUILDINGS 1 & 3



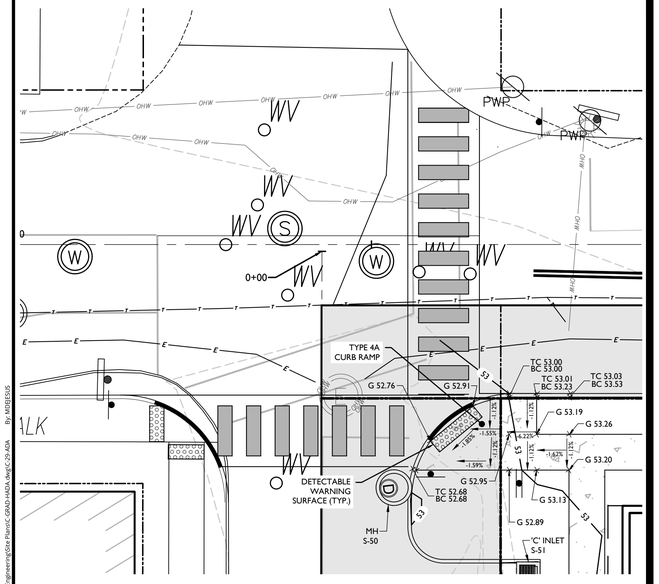
ADA ACCESSIBLE CURB RAMPS
TRAFFIC CIRCLE



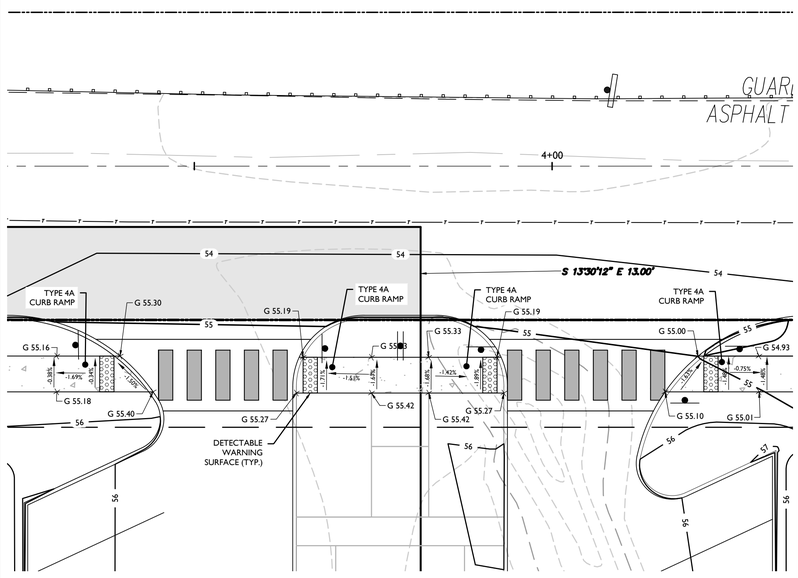
ADA ACCESSIBLE CURB RAMPS
BETWEEN BUILDINGS 2 & 4



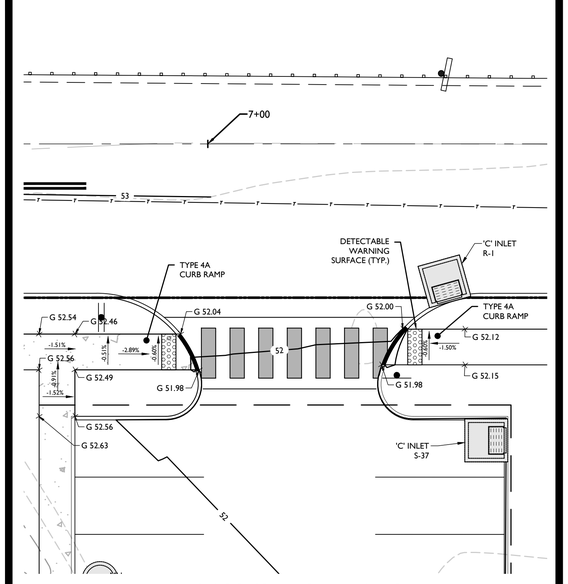
ADA ACCESSIBLE CURB RAMPS
DRIVEWAY TO CHERRY STREET



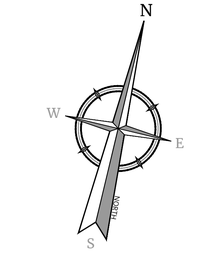
ADA ACCESSIBLE CURB RAMPS
WASHINGTON STREET AND CHERRY STREET INTERSECTION



ADA ACCESSIBLE CURB RAMPS
CENTER DRIVEWAYS TO WASHINGTON STREET



ADA ACCESSIBLE CURB RAMPS
EASTERN DRIVEWAY TO WASHINGTON STREET



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DRAWING NAME: C-GRAD-HADA

SHEET TITLE: ADA GRADING PLAN

SHEET NUMBER: 29 of 41

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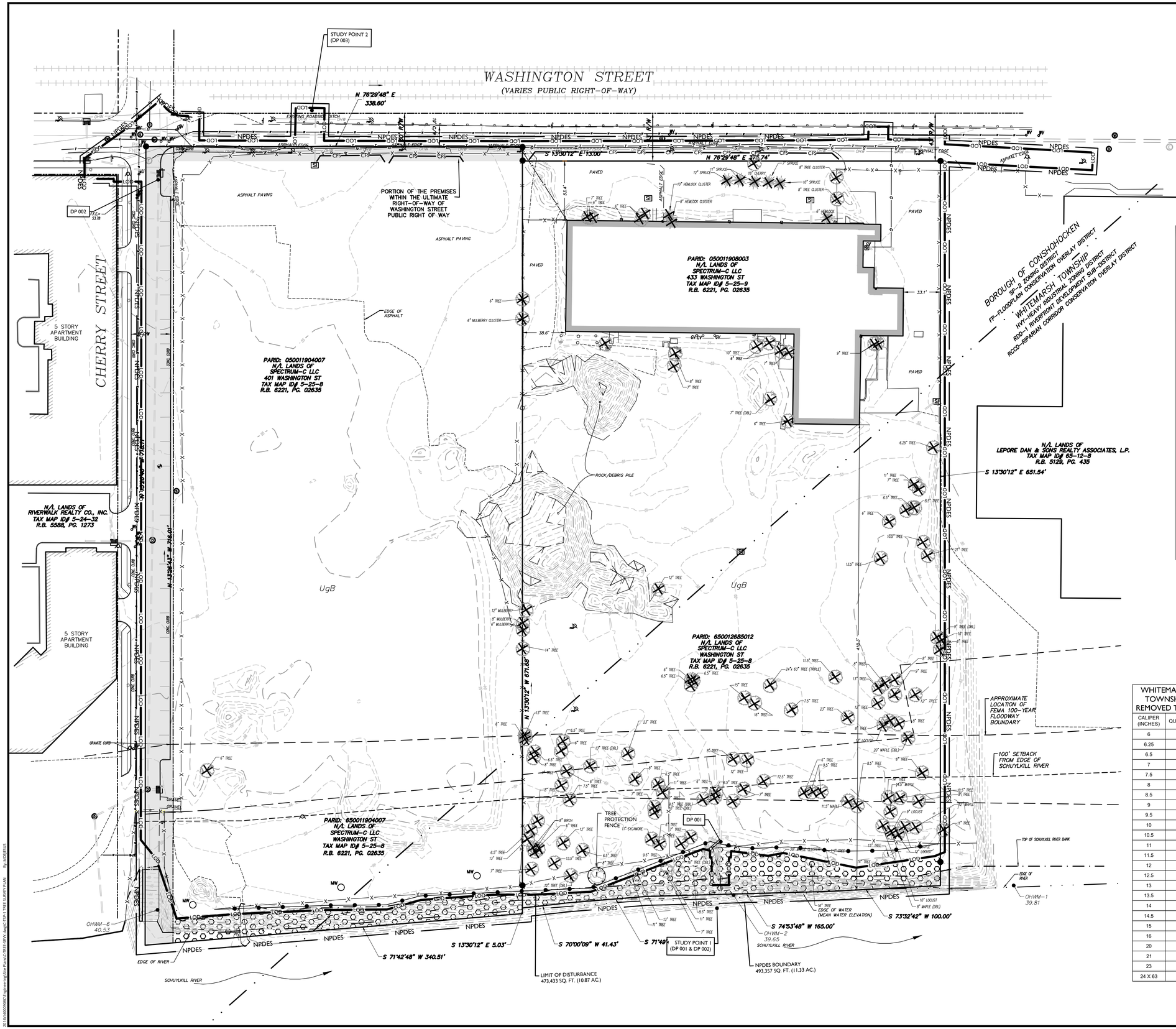

LEGEND

- TRAVERSE LINE, CENTER LINE OR BASELINE
- RIGHT OF WAY LINE
- PROPERTY LINE
- EDGE OF PAVEMENT
- CURB LINE
- DEPRESSED CURB
- CHAIN FENCE
- WETLAND LINE
- MUNICIPAL BOUNDARY
- TREELINE
- ELECTRICAL MANHOLE
- WATER MANHOLE
- TELEPHONE MANHOLE
- UNMARKED MANHOLE
- SANITARY MANHOLE
- DRAINAGE MANHOLE
- MAJOR CONTOUR
- MINOR CONTOUR
- SPOT ELEVATION
- TOP OF CURB ELEV.
- BOTTOM OF CURB ELEV.
- U/G CABLE TV LINE
- U/G FIBER OPTIC LINE
- U/G TELEPHONE LINE
- U/G ELECTRIC LINE
- OVERHEAD WIRE
- WATER MAIN
- GAS MAIN
- SAN. SEWER LATERAL
- SAN. SEWER MAIN
- STORM PIPE
- WETLAND MARKER
- TREE
- ROADWAY SIGNS
- TRAFFIC FLOW
- MAILBOX
- TRAFFIC SIGNAL POLE
- POLE MOUNTED LIGHT
- UTILITY POLE
- GUY WIRE
- TRANSFORMER
- FIRE DEPT. CONNECTION
- FIRE HYDRANT
- WATER VALVE
- GAS VALVE
- SANITARY CLEANOUT
- CONCRETE MONUMENT
- CAPPED REBAR/IRON PIPE
- STORM INLET TYPE 'C'
- STORM INLET TYPE 'M'
- FLARED END SECTION
- HEADWALL

ABBREVIATIONS

D.C. = DEPRESSED CURB	FF = FINISH FLOOR	MHWL = MEAN HIGH WATERLINE
BC = BOTTOM OF CURB	UV = UNKNOWN VALVE	MLWL = MEAN LOW WATERLINE
TC = TOP OF CURB	MH = MANHOLE	TW = TOP OF WALL
BOL = BOLLARD	DEP. = DEPRESSED	BW = BOTTOM WALL
GRT = GRATE	CL = CENTERLINE	
MB = MAILBOX	PM = PARKING METER	

LEGEND

- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO REMAIN
- NPDES — NPDES BOUNDARY
- LOD — LOD BOUNDARY
- UNDISTURBED AREA

WHITEMARSH TOWNSHIP REMOVED TREES

CALIPER (INCHES)	QUANTITY
6	10
6.25	1
6.5	10
7	8
7.5	1
8	13
8.5	2
9	3
9.5	3
10	2
10.5	2
11	5
11.5	2
12	7
12.5	1
13	4
13.5	2
14	1
14.5	1
15	1
16	1
20	1
21	1
23	2
24 X 63	1

BOROUGH OF CONSHOHOCKEN REMOVED TREES

CALIPER (INCHES)	QUANTITY
6	13
7	5
8	5
9	2
10	3
11	2
12	3
13	1
14	1
18	1

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PROJECT NUMBER:	DRAWING NAME:
14000908C	C-TREE-SRVY

SHEET TITLE:
EXISTING TREE SURVEY PLAN

SHEET NUMBER:
30 of 41

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C\Engineering\Site Plans\C-TREE-SRVY.dwg|C-TSP-1 TREE SURVEY PLAN By: MDEDS15

WHITEMARSH TOWNSHIP - LANDSCAPE REQUIREMENTS

CHAPTER 55: TREE PROTECTION STANDARDS

PART 3: APPLICABILITY

SECTION	DESCRIPTION	REQUIRED	PROPOSED
§ 55-3.(D).	**TREE REMOVAL - THE REMOVAL OF MORE THAN 50% OF THE TREES ON ANY LOT SHALL NOT BE PERMITTED UNDER ANY CIRCUMSTANCES UNLESS EXPRESSLY PERMITTED BY THE TERMS OF THIS CODE.** 97 TOTAL TREES OF 6" CAL. OR GREATER / 85 BEING REMOVED = 87.63%	< 50% OF TREES	87.63%

PART 4: TREE PRESERVATION, PROTECTION AND REPLACEMENT

SECTION	DESCRIPTION	REQUIRED	PROPOSED
§ 55-4.(B).4.	**TREE CREDITS** APPROVED PRESERVED TREES AROUND THE PERIMETER OF THE PROPERTY MAY OFFSET THE CLASS A BUFFER REQUIREMENTS FOR THAT SITE	NO CLASS "A" BUFFER REQUIREMENTS	
§ 55-4.(B)(6)(a)	**TREE REPLACEMENT - TOTAL CALIPER OF REPLACEMENT TREES, MEASURED AT SIX INCHES ABOVE THE GROUND LINE, SHALL EQUAL OR EXCEED THE DBH OF THE TREE REMOVED.** EXISTING 6" CALIPER OR LARGER TREES TO BE REMOVED = 85 Trees (Total 962 Caliper Inches) (Note: Refer to Civil Engineer's plans for Tree Survey and Removal Plan)	**320 Replacement Trees at min. 3" cal.** (962 caliper inches)	**Replacement Trees Credited toward Requirement: 197** **31** Replacement Trees credited under § 55-4.(B)(6)(f)[1] **64** Replacement Trees credited under § 55-4.(B)(6)(f)[2] **32** Replacement Trees credited under § 55-4.(B)(6)(f)[3] **70** Proposed Shade Trees (Mix of sizes at 3", 4", 5" and 6" caliper)
§ 55-4.(B)(6)(d)	**IF THE SHADE TREE COMMISSION DETERMINES THAT THERE IS NOT SUFFICIENT AREA ON THE DEVELOPMENT SITE FOR THE PLACEMENT OF ALL REPLACEMENT TREES, A PERCENTAGE OF THE REPLACEMENT TREES THAT CAN BE PLANTED ON THE DEVELOPMENT SITE WILL BE INCREASED IN CALIPER SIZE FROM THE THREE-INCH MINIMUM IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:** 123 TREES NOT ACCOMMODATED ON-SITE - UPSIZED TREES PER § 55-4.(B)(6)(d) SCHEDULE LINE: "**MORE THAN 100**" REPLACEMENT TREES THAT CANNOT BE PLANTED ON-SITE		**CALIPER SIZES OF REPLACEMENT TREES TO BE PLANTED ON-SITE** 6 Replacement Trees at 3" caliper (10%) 28 Replacement Trees at 4" caliper (40%) 18 Replacement Trees at 5" caliper (25%) 18 Replacement Trees at 6" caliper (25%) TOTAL: 70 PROPOSED SHADE TREES
§ 55-4.(B)(6)(f)[1]	**A MAXIMUM OF 30% OF THE REPLACEMENT TREES MAY BE REPLACED WITH ORNAMENTAL/FLOWERING TREES OR EVERGREEN TREES AT A RATIO OF TWO FLOWERING OR TWO EVERGREEN TREES PER REQUIRED THREE-INCH-CALIPER SHADE TREE.** 320 Replacement Trees x 30% = 96 Trees 22 Flowering Trees = 41 Evergreen trees (in excess of buffer requirement) = 63/2 = 31.5 Replacement Trees		31 Replacement Trees Credited
§ 55-4.(B)(6)(f)[2]	**A MAXIMUM OF 20% OF THE REPLACEMENT TREES MAY BE REPLACED AS SHRUBS WITH A MINIMUM SIZE OF 24 INCHES IN HEIGHT AT A RATIO OF SIX SHRUBS PER REQUIRED THREE-INCH-CALIPER SHADE TREE.** 320 Replacement Trees x 20% = 64 Trees 393 Shrubs proposed / 6 = 65.5 Replacement Trees		64 Replacement Trees Credited
§ 55-4.(B)(6)(f)[3]	**A MAXIMUM OF 10% OF THE REPLACEMENT TREES MAY BE REPLACED AS GROUNDCOVER AT A RATIO OF 40 PLANTS TO ONE THREE-INCH-CALIPER SHADE TREE. THE MINIMUM SIZE OF THE GROUNDCOVER WILL BE A ONE-GALLON CONTAINER.** 320 Replacement Trees x 10% = 32 Trees 1305 Groundcover Plants proposed / 40 = 32.6 Replacement Trees		32 Replacement Trees Credited

CHAPTER 105: SUBDIVISION AND LAND DEVELOPMENT

PART 5: DESIGN STANDARDS

SECTION	DESCRIPTION	REQUIRED	PROPOSED
§ 105-39.(A).	**PARKING LOT LANDSCAPING - (1) 2.5" CALIPER MINIMUM SHADE TREE PER 2 PARKING SPACES** (TOTAL PARKING SPOTS = 55 / 2 = REQUIRED TREES NOTES: DOES NOT INCLUDE COVERED PARKING	28	19*
§ 105-39 (C)	**PARKING LOT LANDSCAPING - MINIMUM OF 10% OF ANY PARKING FACILITY OVER 2,000 SF IN GROSS AREA SHALL BE DEVOTED TO LANDSCAPING, INCLUSIVE OF TREES.** TOTAL AREA OF PARKING LOT: 16,766 SF REQUIRED LANDSCAPE AREA: 16,766 x 10% = 1,676.6 SF	1,677 SF	4,750 SF
§ 105-52	**BUFFER YARDS - EASTERN PROPERTY LINE - CLASS "B" BUFFER REQUIRED PLANTING** CLASS "B" BUFFER REQUIRED ALONG EASTERN PROPERTY LINE LENGTH OF PARKING AREA IN WHITEMARSH: 320 FEET / 3 = 107 PLANTS REQ. (NOTE: EXCLUDES PROPERTY BOUNDARY IN RIVERWALK DEDICATION AREA)	HEDGE AT 3' O.C. 107	6' HT. EVERGREEN TREES AT 30" O.C. 127

CHAPTER 116: ZONING

ARTICLE 21: HVY - HEAVY INDUSTRIAL DISTRICT

ARTICLE 37: RIVERFRONT DEVELOPMENT OVERLAY DISTRICT (RDD-1)

SECTION	DESCRIPTION	REQUIRED	PROPOSED
§ 116-283.(C).a.	**PARKING LOT SCREENING - PARKING LOTS CONSISTING OF (20) VEHICLES OR MORE, SHALL BE SCREENED FROM VIEW BY BUILDINGS ON THE SITE OR BY INCORPORATING DECORATIVE WALLS, FENCES, LANDSCAPING OR A COMBINATION THEREOF.**	NOT APPLICABLE TO THIS SITE	
§ 116-284.(A).3.	**TRAIL LANDSCAPE - (1) 2.5" CALIPER MINIMUM TREE FOR EVERY 50 L.F. OF TRAIL** TRAIL LENGTH: 1,050 LF. / 50 = 21 TREES REQUIRED	21	21

*Waiver requested to reduce requirement by 9 shade trees due to site constraints.

NOTE: Above Compliance Chart represents compliance based upon available information. Applicant will work with the Township Shade Tree Commission and their Arborist to ascertain the health of the existing trees in order to determine the final number of replacement trees required, to the satisfaction of the Township.

BOROUGH OF CONSHOHOCKEN - LANDSCAPE REQUIREMENTS

CHAPER 27: ZONING

PART 15: SPECIALLY PLANNED DISTRICTS ONE & TWO (SP-1 & SP-2)

SECTION	DESCRIPTION	REQUIRED	PROPOSED
§ 27-1506.(B).1.	**STREET TREES: (1) 2.5" CALIPER MIN. SHADE TREE PER 40 LF OF ROADWAY**		
	WASHINGTON STREET (714 LF / 40 LF = 18 REQUIRED TREES)	18	SATISFIED BY MEETING
	CHERRY STREET (591 LF / 40 LF = 15 REQUIRED TREES)	15	§ 22-4214
§ 27-1506.(B).3.	**PARKING LOT TREES: (1) 2.5" CALIPER MIN. SHADE TREE PER 48 PARKING SPACES**		
	PARKING LOT TREES (TOTAL PARKING SPOTS = 245 / 48 = REQUIRED TREES)	6	31
	NOTE: DOES NOT INCLUDE COVERED PARKING)		
§ 27-1506.(B).4.	**BUILDING LANDSCAPING: ALL BUILDING SHALL BE LANDSCAPED WITH A COMBINATION OF EVERGREEN AND DECIDUOUS TREES AND SHRUBS TO BE USED AS FOUNDATION PLANTING (i.e. PLANTINGS TO BE INSTALLED IN PROXIMITY TO THE FAÇADE).**	QUANTITY NOT SPECIFIED	WE COMPLY

PART 20: OFF-STREET PARKING & LOADING

SECTION	DESCRIPTION	REQUIRED	PROPOSED
§ 27-2007.(F).1.	**PARKING LOT SCREENING ADJOINING RESIDENTIAL PROPERTY - A DENSE, CONTINUOUS, EVERGREEN SCREEN AT LEAST 6' (FEET) IN HEIGHT.**	NOT APPLICABLE - SITE DOES NOT ADJOIN RESIDENTIAL ZONED PROPERTY	
§ 27-2007.(F).2.	**PARKING LOT SCREENING ADJOINING PUBLIC RIGHT-OF-WAY - A CONTINUOUS, EVERGREEN HEDGING A MINIMUM OF 4' (FEET) IN HEIGHT.** EVERGREEN TREE SCREEN PLANTING PROVIDED	Qty. not Specified	8'-10' HEIGHT
§ 27-2007.(J).	**PARKING LOT SHADE TREES - (1) 3.5" CALIPER SHADE TREE PER 10 PARKING SPACES** PARKING LOT TREES (TOTAL PARKING SPOTS = 245 / 10 = REQUIRED TREES) NOTES: 1. SATISFIED BY MEETING § 27-1506.(B).3. 2. DOES NOT INCLUDE COVERED PARKING)	25	31

CHAPER 22: SUBDIVISION AND LAND DEVELOPMENT

PART 4: DESIGN STANDARDS

SECTION	DESCRIPTION	REQUIRED	PROPOSED
§ 22-4202	**TREE PRESERVATION - (1) ONE 3.5" CAL MIN. REPLACEMENT TREE PER 6" CAL. OR LARGER TREE REMOVED** EXISTING 6" CALIPER OR LARGER TREES TO BE REMOVED = 35 ((27) DECIDUOUS + (8) EVERGREEN)	44	67
§ 22-4214	**STREET SHADE TREES - (1) TREE PER 30 LF OF ROADWAY**		
	WASHINGTON STREET (714 LF)	24	24
	CHERRY STREET (591 LF)	20	20
§ 22-4215	**SCREEN PLANTING REQUIREMENTS - MULTI-FAMILY OR NON-RESIDENTIAL USE SHALL BE SCREENED AS NECESSARY. MINIMUM OF 6' HEIGHT AT TIME OF PLANTING.** EVERGREEN TREE SCREEN PLANTING PROVIDED	MINUMUM 6' HT SCREEN	8'-10' HEIGHT

WHITEMARSH TOWNSHIP - TREE REMOVAL LIST

TREE CALIPER SIZE	QUANTITY	CALIPER OF TREES REMOVED
6	10	60
6.25	1	6.25
6.5	10	65
7	8	56
7.5	1	7.5
8	13	104
8.5	2	17
9	3	27
9.5	3	28.5
10	2	20
10.5	2	21
11	5	55
11.5	2	23
12	7	84
12.5	1	12.5
13	4	52
13.5	2	27
14	1	14
14.5	1	14.5
15	1	15
16	1	16
20	1	20
21	1	21
23	2	46
149.75	1	149.75
Totals:	**85**	**962**

NOTE: EXISTING TREES SHOWN ON TREE SURVEY PROPOSED TO REMAIN: 12

PLANT TOTALS BY CATAGORY - WHITEMARSH:	
SHADE TREES:	121
EVERGREEN TREES:	144
ORNAMENTAL TREES:	22
SHRUBS:	483
GROUND COVER:	1,260

MASTER PLANT SCHEDULE WHITEMARSH TOWNSHIP

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AN2	9	Acer rubrum 'Red Sunset' / Red Sunset Maple	4"-4.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
AN3	6	Acer rubrum 'Red Sunset' / Red Sunset Maple	5"-5.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
AN4	6	Acer rubrum 'Red Sunset' / Red Sunset Maple	6"-6.5"	15`-17`		B&B	Full Specimens, Headed to 7`
AR	7	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
GP	22	Ginkgo biloba 'Princeton Sentry' / Princeton Sentry Maidenhair Tree	2"-2.5" cal.				
LR	5	Liquidambar styraciflua `Rotundiloba` TM / Round-Lobed Sweet Gum	3-3.5" cal.	14`-16`		B&B	Full Specimens, Headed to 7`
NS	3	Nyssa sylvatica / Sour Gum	4"-4.5" cal.	14`-16`		B&B	Full Specimens, Headed to 7`
PAB	8	Platanus x acerifolia 'Bloodgood' / Bloodgood London Plane Tree	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QB	3	Quercus bicolor / Swamp White Oak	3"-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QB2	6	Quercus bicolor / Swamp White Oak	4"-4.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QB3	6	Quercus bicolor / Swamp White Oak	5"-5.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
QB4	6	Quercus bicolor / Swamp White Oak	6"-6.5"	15`-17`		B&B	Full Specimens, Headed to 7`
QP	12	Quercus palustris / Pin Oak	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QP2	10	Quercus palustris / Pin Oak	4"-4.5" cal.	13`-15`		B&B	Full Specimens, Headed to 7`
QP3	6	Quercus palustris / Pin Oak	5"-5.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
QP4	6	Quercus palustris / Pin Oak	6"-6.5"	15`-17`		B&B	Full Specimens, Headed to 7`
EVERGREEN TREES	**QTY**	**BOTANICAL / COMMON NAME**	**CAL**	**HT.**	**SPRD.**	**CONT**	**COMMENTS**
JVB	9	Juniperus virginiana 'Brodie' / Eastern Red Cedar 'Brodie'	-	8`-10`		B&B	Full, uniform specimens, branched to the ground
PA	8	Picea abies / Norway Spruce	-	8`-10`		B&B	Heavy, well formed specimens
PM	5	Picea mariana / Black Spruce	-	8`-10`		B&B	Heavy, well formed specimens
TS	127	Thuja occidentalis 'Smaragd' / Emerald Green Arborvitae	-	6`-8`		B&B	Heavy, well formed specimens
ORNAMENTAL TREES	**QTY**	**BOTANICAL / COMMON NAME**	**CAL**	**HT.**	**SPRD.**	**CONT**	**COMMENTS**
BN3	11	Betula nigra / River Birch Multi-Trunk	3.5-4" cal.	16`-18`		B&B	Full Specimens, 3 trunk minimum
CC3	3	Cercis canadensis / Eastern Redbud	3-3.5" cal.			B&B	Full Specimens
MV	8	Magnolia virginiana / Sweet Bay	-	8`-10`		B&B	Heavy, Multi-stemmed specimens, Min. 1.5" Cane Dia.
SHRUBS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT.**	**SPRD.**	**CONT.**	**COMMENTS**
AMV	24	Aronia melanocarpa `Viking` / Viking Black Chokeberry	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
CAR	80	Clethra alnifolia `Rosea` / Pink Summersweet	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
CSB	13	Cornus stolonifera 'Baileyi' / Bailey's Red-osier Dogwood	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
HQ	12	Hydrangea quercifolia `Snow Queen` / Snow Queen Oakleaf Hydrangea	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
IT	44	Itea virginica `Sprich` TM / Little Henry Virginia Sweetspire	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
IVR	28	Ilex verticillata `Red Sprite` / Red Sprite Winterberry	-	2`-2.5`		#5 Cont	Full Plants, 2.5` O.C.
LB	33	Lindera benzoin / Spicebush	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
MP	12	Morella pensylvanica / Northern Bayberry	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
PLO3	17	Prunus laurocerasus `Otto Luyken` / Otto Luyken Laurel	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
PLS	15	Prunus laurocerasus `Schipkaensis` / Schipka Laurel	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
POS	13	Physocarpus opulifolius `Snowfall` / Snowfall Ninebark	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
RAG	43	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	-	2`-2.5`		#5 cont.	Full Plants, 2` O.C.
RTL	26	Rhus typhina laciniata / Velvet Sumac	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
RXR	16	Rosa x `Radrazz` / Knock Out Shrub Rose	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
TM	89	Trachelospermum jasminoides 'Madison' / Madison Confederate Jasmine	-	2`-2.25`		#7 Can	Full Plants, 3` O.C.
VDM	18	Viburnum plicatum tomentosum `Mariesii` / Mariesii Double File Viburnum	-	2`-2.5`		#5 cont.	Full Plants, 3` O.C.
GROUND COVERS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT**	**SPRD.**	**CONT.**	**COMMENTS**
CP	274	Carex pensylvanica / Pennsylvania Sedge	-			1 Gal.	Full Plants, 18" O.C.
HS	151	Hosta sieboldiana `Elegans` / Elegans Plantain Lily	-			2 Gal.	Full Plants, 18" O.C.
JC	48	Juniperus conferta / Shore Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
JS	18	Juniperus chinensis var. sargentii / Sargent Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
LC	189	Lobelia cardinalis / Cardinal Flower	-			2 Gal.	Full Plants, 18" O.C.
LMB	368	Liriope muscari `Big Blue` / Big Blue Lilyturf	-			1 Gal.	Full Plants, 18" O.C.
PS	177	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-			2 Gal.	Full Plants, 24" O.C.
SH	35	Sporobolus heterolepis / Prairie Dropseed	-			2 Gal.	Full Plants, 18" O.C.

PLANT TOTALS BY CATAGORY - CONSHOHOCKEN:	
SHADE TREES:	102
EVERGREEN TREES:	84
ORNAMENTAL TREES:	32
SHRUBS:	1,444
GROUND COVER:	6,588

MASTER PLANT SCHEDULE CONSHOHOCKEN BOROUGH

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AR	27	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
GP	27	Ginkgo biloba 'Princeton Sentry' / Princeton Sentry Maidenhair Tree	2"-2.5" cal.				
GT	17	Gleditsia triacanthos f. inermis / Thornless Honey Locust	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
NS	3	Nyssa sylvatica / Sour Gum	4"-4.5" cal.	14`-16`		B&B	Full Specimens, Headed to 7`
PAB	6	Platanus x acerifolia 'Bloodgood' / Bloodgood London Plane Tree	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QP	3	Quercus palustris / Pin Oak	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
TCG	19	Tilia cordata `Greenspire` / Greenspire Littleleaf Linden	3-3.5" cal.	13`-15`		B&B	Full Specimens, Headed to 7`
EVERGREEN TREES	**QTY**	**BOTANICAL / COMMON NAME**	**CAL**	**HT.**	**SPRD.**	**CONT**	**COMMENTS**
JVB	3	Juniperus virginiana 'Brodie' / Eastern Red Cedar 'Brodie'	-	8`-10`		B&B	Full, uniform specimens, branched to the ground
PA	3	Picea abies / Norway Spruce	-	8`-10`		B&B	Heavy, well formed specimens
PM	4	Picea mariana / Black Spruce	-	8`-10`		B&B	Heavy, well formed specimens
TS	74	Thuja occidentalis 'Smaragd' / Emerald Green Arborvitae	-	6`-8`		B&B	Heavy, well formed specimens
ORNAMENTAL TREES	**QTY**	**BOTANICAL / COMMON NAME**	**CAL**	**HT.**	**SPRD.**	**CONT**	**COMMENTS**
AM	3	Amelanchier canadensis / Shadblow Serviceberry Multitrunk	-	8`-10`		B&B	Heavy, Multi-stemmed specimens, Min. 1.5" Cane Dia.
CE	3	Cercis canadensis / Eastern Redbud Multi-trunk	2-2.5" cal.			B&B	Full Specimens
PSK	26	Prunus serrulata `Kwanzan` / Kwanzan Japanese Flowering Cherry	2-2.5" cal.	10`-12`		B&B	Full Specimens
SHRUBS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT.**	**SPRD.**	**CONT.**	**COMMENTS**
AGL	64	Abelia x grandiflora `Litte Richard` / Little Richard Abelia	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
AMV	9	Aronia melanocarpa `Viking` / Viking Black Chokeberry	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
CAR	89	Clethra alnifolia `Rosea` / Pink Summersweet	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
CSB	14	Cornus stolonifera 'Baileyi' / Bailey's Red-osier Dogwood	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
HME	91	Hydrangea macrophylla `Endless Summer` TM / Endless Summer Hydrangea	-	2`-2.5`		#5 cont.	Full Plants, 3` O.C.
HQP	75	Hydrangea quercifolia `Pee Wee` / Pee Wee Oakleaf Hydrangea	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
IG	14	Ilex crenata `Green Lustre` / Green Luster Japanese Holly	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
IT	83	Itea virginica `Sprich` TM / Little Henry Virginia Sweetspire	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
IVR	18	Ilex verticillata `Red Sprite` / Red Sprite Winterberry	-	2`-2.5`		#5 Cont	Full Plants, 2.5` O.C.
LB	11	Lindera benzoin / Spicebush	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
MP	15	Morella pensylvanica / Northern Bayberry	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
PLS	11	Prunus laurocerasus `Schipkaensis` / Schipka Laurel	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
POS	11	Physocarpus opulifolius `Snowfall` / Snowfall Ninebark	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
PVS	85	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-	2.5`-3`		2 Gal.	Full Plants, 24" O.C.
RAG	176	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	-	2`-2.5`		#5 cont.	Full Plants, 2` O.C.
RXR	131	Rosa x `Radrazz` / Knock Out Shrub Rose	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
TM	487	Trachelospermum jasminoides 'Madison' / Madison Confederate Jasmine	-	2`-2.25`		#7 Can	Full Plants, 3` O.C.
SHRUB AREAS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT.**	**SPRD.**	**CONT.**	**COMMENTS**
IMC	274	Ilex x meserveae `China Girl` TM / China Girl Holly	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
GROUND COVERS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT**	**SPRD.**	**CONT.**	**COMMENTS**
BGB	138	Bouteloua gracilis `Blonde Ambition` / Blonde Ambition Blue Grama	-			2 Gal.	Full Plants, 18" O.C.
CAK	163	Calamagrostis x acutiflora `Karl Foerster` / Feather Reed Grass	-			2 Gal.	Full Plants, 18" O.C.
CP	447	Carex pensylvanica / Pennsylvania Sedge	-			1 Gal.	Full Plants, 18" O.C.
HM	245	Hakonechloa macra / Japanese Forest Grass	-			2 Gal.	Full Plants, 18" O.C.
JC	163	Juniperus conferta / Shore Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
JS	245	Juniperus chinensis var. sargentii / Sargent Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
LMB	4,803	Liriope muscari `Big Blue` / Big Blue Lilyturf	-			1 Gal.	Full Plants, 18" O.C.
NT	83	Nassella tenuissima / Texas Needle Grass	-			2 Gal.	Full Plants, 18" O.C.
PS	40	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-			2 Gal.	Full Plants, 24" O.C.

Landscape Compliance Charts and Schedules

401 Washington
Conshohocken Borough & Whitemarsh Township, PA

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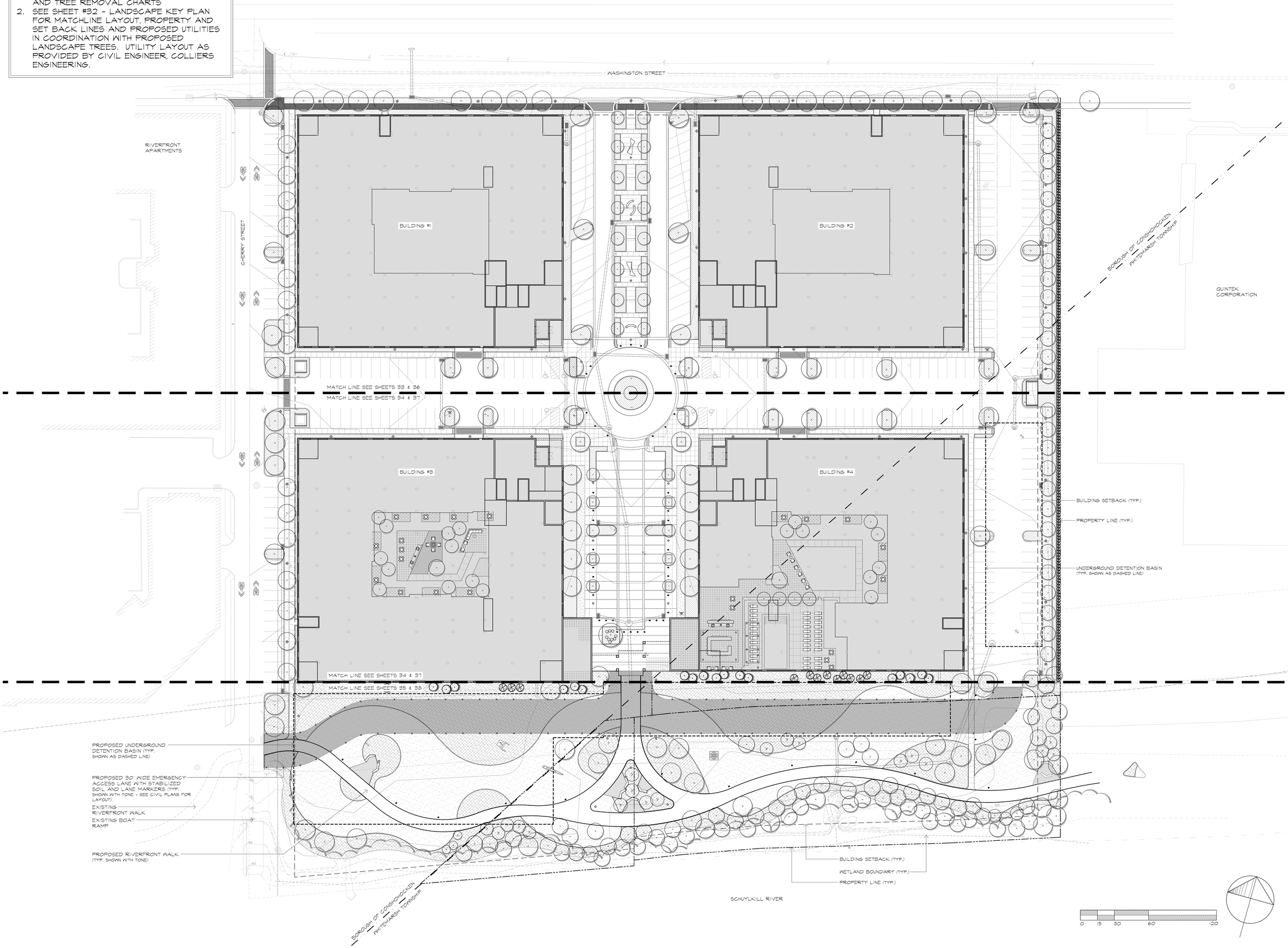
PA REGISTERED LANDSCAPE ARCHITECT #LA007236

NO.	DATE	REVISION
2	5/20/2022	REV.PER REVIEW COMMENTS
1	3/31/2022	REV.PER UPDATED TREE SURVEY

SCALE: AS NOTED
DATE: 02-24-2022 JOB NO.: 21-167

DRAWING NO.
31 of 41

NOTES:
1. SEE SHEET #31 - "LANDSCAPE COMPLIANCE CHARTS" FOR LANDSCAPE REQUIREMENT AND TREE REMOVAL CHARTS
2. SEE SHEET #32 - LANDSCAPE KEY PLAN FOR MATCHLINE LAYOUT, PROPERTY AND SET BACK LINES AND PROPOSED UTILITIES IN COORDINATION WITH PROPOSED LANDSCAPE TREES. UTILITY LAYOUT AS PROVIDED BY CIVIL ENGINEER, COLLIERS ENGINEERING.



Landscape Key Plan

401 Washington

Conshohocken Borough & Whitemarsh Township, PA

MBC
MELILLO-BAUER-CARMAN
LANDSCAPE ARCHITECTURE
200 Union Avenue, Brielle, NJ 08730
295 Newark Avenue, Jersey City, NJ 07302
732-528-0664
www.mbcla.design
NJCA No. 21AH00001700

THOMAS B. BAUER
PA REGISTERED LANDSCAPE ARCHITECT
#000723E

NO.	DATE	REVISION
2	5/20/2022	REV PER REVIEW COMMENTS
1	3/31/2022	REV PER UPDATED TREE SURVEY

SCALE:

DATE: 02-24-2022 JOB NO.: 21-167

DRAWING NO.

32 of 41

NOTES:
1. SEE SHEET #31 - "LANDSCAPE COMPLIANCE CHARTS" FOR LANDSCAPE REQUIREMENT AND TREE REMOVAL CHARTS
2. SEE SHEET #32 - LANDSCAPE KEY PLAN FOR MATCHLINE LAYOUT, PROPERTY AND SET BACK LINES AND PROPOSED UTILITIES IN COORDINATION WITH PROPOSED LANDSCAPE TREES. UTILITY LAYOUT AS PROVIDED BY CIVIL ENGINEER, COLLIERS ENGINEERING.

PLANT SCHEDULE CONSHOHOCKEN BOROUGH L-101 LANDSCAPE SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AR	12	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
GP	19	Ginkgo biloba 'Princeton Sentry' / Princeton Sentry Maidenhair Tree	2"-2.5" cal.				
GT	6	Gleditsia triacanthos f. inermis / Thornless Honey Locust	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
PAB	3	Platanus x acerifolia 'Bloodgood' / Bloodgood London Plane Tree	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
TCG	19	Tilia cordata `Greenspire` / Greenspire Littleleaf Linden	3-3.5" cal.	13`-15`		B&B	Full Specimens, Headed to 7`

EVERGREEN TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
TS	74	Thuja occidentalis 'Smaragd' / Emerald Green Arborvitae	-	6`-8`		B&B	Heavy, well formed specimens

ORNAMENTAL TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
CE	1	Cercis canadensis / Eastern Redbud Multi-trunk	2-2.5" cal.			B&B	Full Specimens
PSK	16	Prunus serrulata `Kwanzan` / Kwanzan Japanese Flowering Cherry	2-2.5" cal.	10`-12`		B&B	Full Specimens

SHRUBS	QTY	BOTANICAL / COMMON NAME	CAL.	HT.	SPRD.	CONT.	COMMENTS
AGL	42	Abelia x grandiflora `Litte Richard` / Little Richard Abelia	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
CAR	80	Clethra alnifolia `Rosea` / Pink Summersweet	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
HME	71	Hydrangea macrophylla `Endless Summer` TM / Endless Summer Hydrangea	-	2`-2.5`		#5 cont.	Full Plants, 3` O.C.
HQP	36	Hydrangea quercifolia `Pee Wee` / Pee Wee Oakleaf Hydrangea	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
IG	14	Ilex crenata `Green Lustre` / Green Luster Japanese Holly	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
IT	56	Itea virginica `Sprich` TM / Little Henry Virginia Sweetspire	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
IVR	9	Ilex verticillata `Red Sprite` / Red Sprite Winterberry	-	2`-2.5`		#5 Cont	Full Plants, 2.5` O.C.
POS	38	Physocarpus opulifolius `Snowfall` / Snowfall Ninebark	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
PVS	85	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-	2.5`-3`		2 Gal.	Full Plants, 24" O.C.
RAG	115	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	-	2`-2.5`		#5 cont.	Full Plants, 2` O.C.
RXR	86	Rosa x `Radrazz` / Knock Out Shrub Rose	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
TM	290	Trachelospermum jasminoides 'Madison' / Madison Confederate Jasmine	-	2`-2.25`		#7 Can	Full Plants, 3` O.C.

GROUND COVERS	QTY	BOTANICAL / COMMON NAME	CAL.	HT	SPRD.	CONT.	COMMENTS
BGB	138	Bouteloua gracilis `Blonde Ambition` / Blonde Ambition Blue Grama	-			2 Gal.	Full Plants, 18" O.C.
CAK	85	Calamagrostis x acutiflora `Karl Foerster` / Feather Reed Grass	-			2 Gal.	Full Plants, 18" O.C.
CP	101	Carex pensylvanica / Pennsylvania Sedge	-			1 Gal.	Full Plants, 18" O.C.
HM	202	Hakonechloa macra / Japanese Forest Grass	-			2 Gal.	Full Plants, 18" O.C.
JC	116	Juniperus conferta / Shore Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
JS	220	Juniperus chinensis var. sargentii / Sargent Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
LMB	3,215	Liriope muscari `Big Blue` / Big Blue Lilyturf	-			1 Gal.	Full Plants, 18" O.C.
NT	83	Nassella tenuissima / Texas Needle Grass	-			2 Gal.	Full Plants, 18" O.C.
SH	269	Sporobolus heterolepis / Prairie Dropseed	-			2 Gal.	Full Plants, 18" O.C.

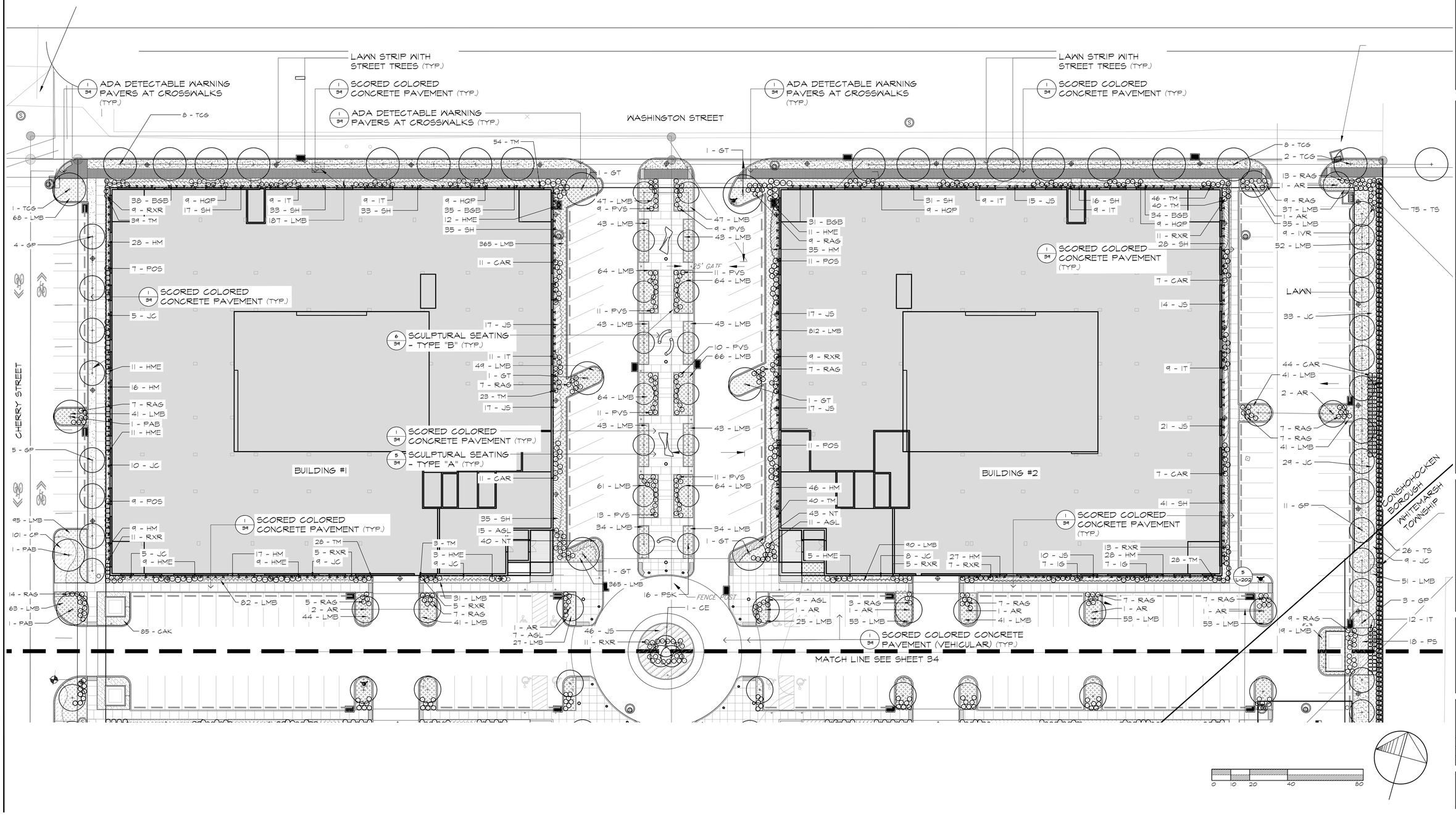
PLANT SCHEDULE WHITEMARSH TOWNSHIP L-101 LANDSCAPE SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
GP	3	Ginkgo biloba 'Princeton Sentry' / Princeton Sentry Maidenhair Tree	2"-2.5" cal.				

EVERGREEN TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
TS	26	Thuja occidentalis 'Smaragd' / Emerald Green Arborvitae	-	6`-8`		B&B	Heavy, well formed specimens

SHRUBS	QTY	BOTANICAL / COMMON NAME	CAL.	HT.	SPRD.	CONT.	COMMENTS
IT	12	Itea virginica `Sprich` TM / Little Henry Virginia Sweetspire	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
RAG	9	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	-	2`-2.5`		#5 cont.	Full Plants, 2` O.C.

GROUND COVERS	QTY	BOTANICAL / COMMON NAME	CAL.	HT	SPRD.	CONT.	COMMENTS
JC	9	Juniperus conferta / Shore Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
LMB	87	Liriope muscari `Big Blue` / Big Blue Lilyturf	-			1 Gal.	Full Plants, 18" O.C.
PS	18	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-			2 Gal.	Full Plants, 24" O.C.



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COMMONWEALTH OF PENNSYLVANIA
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PA REGISTERED LANDSCAPE ARCHITECT
#LA001724

NO.	DATE	REVISION
2	5/20/2022	REV. PER REVIEW COMMENTS
1	5/31/2022	REV. PER UPDATED TREE SURVEY

SCALE: 1" = 20'-0"
DATE: 02-24-2022 JOB NO.: 21-167

DRAWING NO.
33 of 41

NOTES:
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AmenityDeck_Plant List

KEY	QTY	BOTANICAL NAME	COMMON NAME	CAL.	HT.	SPRD.	ROOT	COMMENTS
		TREES						
BN		Betula nigra 'Heritage'	Heritage River Birch		10'-12'		B&B	Full Specimens, 3 Trunk Minimum
CC		Cercis canadensis "Forest Pansy"	Forest Pansy Eastern Redbud	2.5"-3"			B&B	Full Specimens, Single Stem
LM		Lagerstroemia indica x fauriei 'Muskogee'	Muskogee Crape Myrtle		10'-12'		B&B	Full Specimens, 3 Trunk Minimum
		SHRUBS						
CHP		Cephalotaxus harringtonia 'Prostrata	Prostrata Plum Yew		18"-24"		#5 Can	Full Plants, 2' O.C.
JS		Juniperus sargenti	Sargent Juniper			18"-24"	#3 Can	Full Plants, 2' O.C.
RRS		Rosa ragosa 'Snow Pavement'	Snow Pavement Japanese Shore Rose		18"-24"		#3 Can	Full Plants, 2.5' O.C.
RA		Rhus aromatica 'Gro-Lo'	Fragrant Sumac		24"		#3 Can	Native, Full Plants, 2' O.C.
		PERENNIALS, GROUNDCOVER & ORNAMENTAL GRASSES						
AH		Amsonia hubrichtii	Arkansas Amsonia				3 Gal.	Full Plants, 18" O.C.
CAK		Calamagrostis arund. 'Karl Foerster'	K. F. Feather Reed Grass				3 Gal.	Full Plants, 2' O.C.
HO		Helleborus Orientalis 'Ro.zl Heritage'	Ro.zl Heritage Lenten Rose				2 Gal.	Full Plants, 18" O.C.
EAB		Eh.mus arenarius 'Blue Dune'	Blue Dune Lime Grass				3 Gal.	Full Plants, 18" O.C.
IS		Iris sibirica 'Caesar's Brother'	Purple Siberian Iris				2 Gal.	Full Plants, 18" O.C.
LS		Liriope spicata	Creeping Liriope		12"		1 Gal.	Adapted, Full Plants, 12" O.C.
PVS		Panicum virgatum 'Shenandoah'	Shenandoah Switchgrass				3 Gal.	Full Plants, 2' O.C.

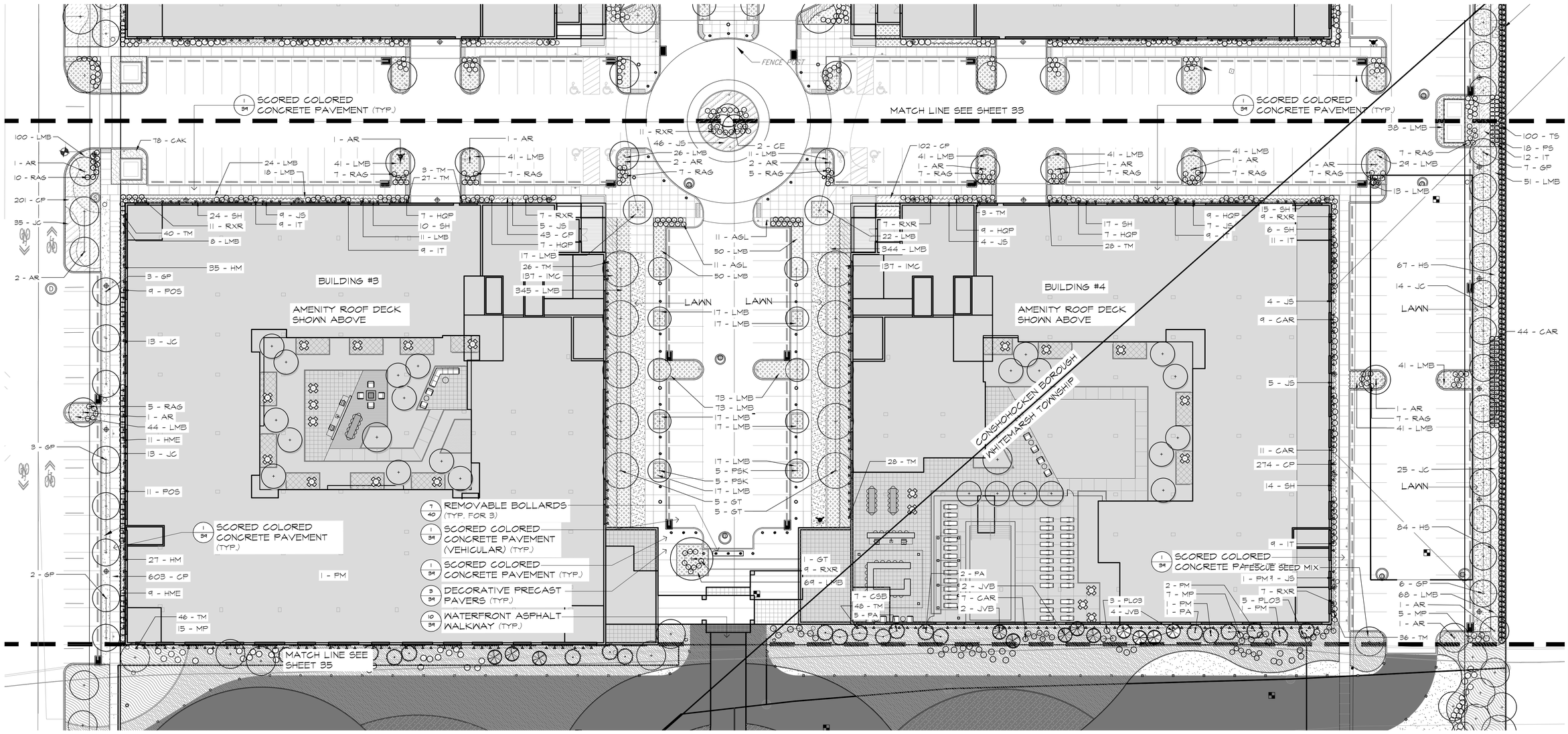
NOTE:
PROPOSED PLANTING SHALL INCLUDE BUT NOT BE LIMITED TO THE ABOVE LISTED VARIETIES.

PLANT SCHEDULE CONSHOHOCKEN BOROUGH L-102 LANDSCAPE SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AR	13	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
GP	8	Ginkgo biloba 'Princeton Sentry' / Princeton Sentry Maidenhair Tree	2"-2.5" cal.				
GT	11	Gleditsia triacanthos f. inermis / Thornless Honey Locust	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QP	1	Quercus palustris / Pin Oak	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
ORNAMENTAL TREES	**QTY**	**BOTANICAL / COMMON NAME**	**CAL**	**HT.**	**SPRD.**	**CONT**	**COMMENTS**
CE	2	Cercis canadensis / Eastern Redbud Multi-trunk	2-2.5" cal.			B&B	Full Specimens
PSK	10	Prunus serrulata `Kwanzan` / Kwanzan Japanese Flowering Cherry	2-2.5" cal.	10`-12`		B&B	Full Specimens
SHRUBS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT.**	**SPRD.**	**CONT.**	**COMMENTS**
AGL	22	Abelia x grandiflora `Litte Richard` / Little Richard Abelia	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
CSB	1	Cornus stolonifera 'Baileyi' / Bailey's Red-osier Dogwood	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
HME	20	Hydrangea macrophylla `Endless Summer` TM / Endless Summer Hydrangea	-	2`-2.5`		#5 cont.	Full Plants, 3` O.C.
HQP	39	Hydrangea quercifolia `Pee Wee` / Pee Wee Oakleaf Hydrangea	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
IT	27	Itea virginica `Sprich` TM / Little Henry Virginia Sweetspire	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
POS	20	Physocarpus opulifolius `Snowfall` / Snowfall Ninebark	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
RAG	61	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	-	2`-2.5`		#5 cont.	Full Plants, 2` O.C.
RXR	45	Rosa x `Radrazz` / Knock Out Shrub Rose	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
TM	151	Trachelospermum jasminoides 'Madison' / Madison Confederate Jasmine	-	2`-2.25`		#7 Can	Full Plants, 3` O.C.
SHRUB AREAS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT.**	**SPRD.**	**CONT.**	**COMMENTS**
IMC	274	Ilex x meserveae `China Girl` TM / China Girl Holly	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
GROUND COVERS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT**	**SPRD.**	**CONT.**	**COMMENTS**
CAK	78	Calamagrostis x acutiflora `Karl Foerster` / Feather Reed Grass	-			2 Gal.	Full Plants, 18" O.C.
CP	346	Carex pensylvanica / Pennsylvania Sedge	-			1 Gal.	Full Plants, 18" O.C.
HM	43	Hakonechloa macra / Japanese Forest Grass	-			2 Gal.	Full Plants, 18" O.C.
JC	56	Juniperus conferta / Shore Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
JS	25	Juniperus chinensis var. sargentii / Sargent Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
LMB	1,588	Liriope muscari `Big Blue` / Big Blue Lilyturf	-			1 Gal.	Full Plants, 18" O.C.
SH	51	Sporobolus heterolepis / Prairie Dropseed	-			2 Gal.	Full Plants, 18" O.C.

PLANT SCHEDULE WHITEMARSH TOWNSHIP L-102 LANDSCAPE SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AR	4	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
GP	13	Ginkgo biloba 'Princeton Sentry' / Princeton Sentry Maidenhair Tree	2"-2.5" cal.				
QP	1	Quercus palustris / Pin Oak	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
EVERGREEN TREES	**QTY**	**BOTANICAL / COMMON NAME**	**CAL**	**HT.**	**SPRD.**	**CONT**	**COMMENTS**
JVB	9	Juniperus virginiana 'Brodie' / Eastern Red Cedar 'Brodie'	-	8`-10`		B&B	Full, uniform specimens, branched to the ground
PA	8	Picea abies / Norway Spruce	-	8`-10`		B&B	Heavy, well formed specimens
PM	5	Picea mariana / Black Spruce	-	8`-10`		B&B	Heavy, well formed specimens
TS	101	Thuja occidentalis 'Smaragd' / Emerald Green Arborvitae	-	6`-8`		B&B	Heavy, well formed specimens
SHRUBS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT.**	**SPRD.**	**CONT.**	**COMMENTS**
CAR	71	Clethra alnifolia `Rosea` / Pink Summersweet	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
CSB	6	Cornus stolonifera 'Baileyi' / Bailey's Red-osier Dogwood	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
IT	32	Itea virginica `Sprich` TM / Little Henry Virginia Sweetspire	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
MP	12	Morella pensylvanica / Northern Bayberry	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
PLO3	8	Prunus laurocerasus `Otto Luyken` / Otto Luyken Laurel	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
RAG	28	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	-	2`-2.5`		#5 cont.	Full Plants, 2` O.C.
RXR	16	Rosa x `Radrazz` / Knock Out Shrub Rose	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
TM	89	Trachelospermum jasminoides 'Madison' / Madison Confederate Jasmine	-	2`-2.25`		#7 Can	Full Plants, 3` O.C.
GROUND COVERS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT**	**SPRD.**	**CONT.**	**COMMENTS**
CP	274	Carex pensylvanica / Pennsylvania Sedge	-			1 Gal.	Full Plants, 18" O.C.
HS	151	Hosta sieboldiana `Elegans` / Elegans Plantain Lily	-			2 Gal.	Full Plants, 18" O.C.
JC	39	Juniperus conferta / Shore Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
JS	18	Juniperus chinensis var. sargentii / Sargent Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
LMB	281	Liriope muscari `Big Blue` / Big Blue Lilyturf	-			1 Gal.	Full Plants, 18" O.C.
PS	36	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-			2 Gal.	Full Plants, 24" O.C.
SH	35	Sporobolus heterolepis / Prairie Dropseed	-			2 Gal.	Full Plants, 18" O.C.



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SCALE: 1" = 20'-0"
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DRAWING NO.
34 of 41

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PLANT SCHEDULE CONSHOHOCKEN BOROUGH L-103 LANDSCAPE SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AR	2	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
NS	3	Nyssa sylvatica / Sour Gum	4"-4.5" cal.	14`-16`		B&B	Full Specimens, Headed to 7`
PAB	3	Platanus x acerifolia 'Bloodgood' / Bloodgood London Plane Tree	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QP	2	Quercus palustris / Pin Oak	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`

EVERGREEN TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
JVB	3	Juniperus virginiana 'Brodie' / Eastern Red Cedar 'Brodie'	-	8`-10`		B&B	Full, uniform specimens, branched to the ground
PA	3	Picea abies / Norway Spruce	-	8`-10`		B&B	Heavy, well formed specimens
PM	4	Picea mariana / Black Spruce	-	8`-10`		B&B	Heavy, well formed specimens

ORNAMENTAL TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AM	3	Amelanchier canadensis / Shadblow Serviceberry Multitrunk	-	8`-10`		B&B	Heavy, Multi-stemmed specimens, Min. 1.5" Cane Dia.

SHRUBS	QTY	BOTANICAL / COMMON NAME	CAL.	HT.	SPRD.	CONT.	COMMENTS
AMV	9	Aronia melanocarpa `Viking` / Viking Black Chokeberry	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
CAR	9	Clethra alnifolia `Rosea` / Pink Summersweet	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
CSB	13	Cornus stolonifera 'Baileyi' / Bailey's Red-osier Dogwood	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
IVR	9	Ilex verticillata `Red Sprite` / Red Sprite Winterberry	-	2`-2.5`		#5 Cont	Full Plants, 2.5` O.C.
LB	11	Lindera benzoin / Spicebush	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
MP	15	Morella pensylvanica / Northern Bayberry	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
PLS	11	Prunus laurocerasus `Schipkaensis` / Schipka Laurel	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
POS	13	Physocarpus opulifolius `Snowfall` / Snowfall Ninebark	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
TM	46	Trachelospermum jasminoides 'Madison' / Madison Confederate Jasmine	-	2`-2.25`		#7 Can	Full Plants, 3` O.C.

GROUND COVERS	QTY	BOTANICAL / COMMON NAME	CAL.	HT	SPRD.	CONT.	COMMENTS
PS	43	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-			2 Gal.	Full Plants, 24" O.C.

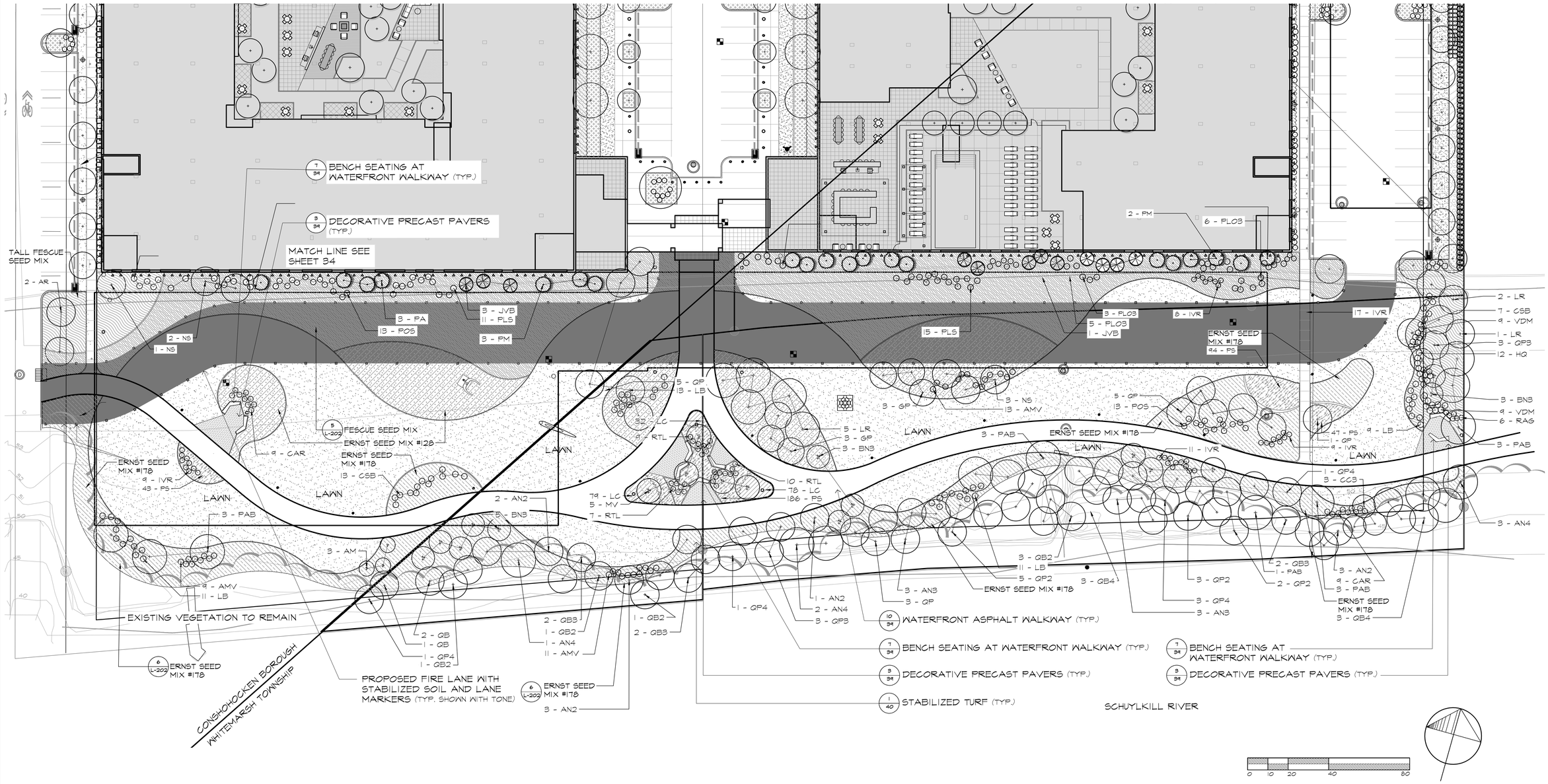
PLANT SCHEDULE WHITEMARSH TOWNSHIP L-103 LANDSCAPE SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AN2	9	Acer rubrum 'Red Sunset' / Red Sunset Maple	4"-4.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
AN3	6	Acer rubrum 'Red Sunset' / Red Sunset Maple	5"-5.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
AN4	6	Acer rubrum 'Red Sunset' / Red Sunset Maple	6"-6.5"	15`-17`		B&B	Full Specimens, Headed to 7`
AR	3	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
GP	6	Ginkgo biloba 'Princeton Sentry' / Princeton Sentry Maidenhair Tree	2"-2.5" cal.				
LR	5	Liquidambar styraciflua `Rotundiloba` TM / Round-Lobed Sweet Gum	3-3.5" cal.	14`-16`		B&B	Full Specimens, Headed to 7`
NS	3	Nyssa sylvatica / Sour Gum	4"-4.5" cal.	14`-16`		B&B	Full Specimens, Headed to 7`
PAB	8	Platanus x acerifolia 'Bloodgood' / Bloodgood London Plane Tree	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QB	3	Quercus bicolor / Swamp White Oak	3"-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QB2	6	Quercus bicolor / Swamp White Oak	4"-4.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QB3	6	Quercus bicolor / Swamp White Oak	5"-5.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
QB4	6	Quercus bicolor / Swamp White Oak	6"-6.5"	15`-17`		B&B	Full Specimens, Headed to 7`
QP	11	Quercus palustris / Pin Oak	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QP2	10	Quercus palustris / Pin Oak	4"-4.5" cal.	13`-15`		B&B	Full Specimens, Headed to 7`
QP3	6	Quercus palustris / Pin Oak	5"-5.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
QP4	6	Quercus palustris / Pin Oak	6"-6.5"	15`-17`		B&B	Full Specimens, Headed to 7`

ORNAMENTAL TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
BN3	11	Betula nigra / River Birch Multi-Trunk	3.5-4" cal.	16`-18`		B&B	Full Specimens, 3 trunk minimum
CC3	3	Cercis canadensis / Eastern Redbud	3-3.5" cal.			B&B	Full Specimens
MV	8	Magnolia virginiana / Sweet Bay	-	8`-10`		B&B	Heavy, Multi-stemmed specimens, Min. 1.5" Cane I

SHRUBS	QTY	BOTANICAL / COMMON NAME	CAL.	HT.	SPRD.	CONT.	COMMENTS
AMV	24	Aronia melanocarpa `Viking` / Viking Black Chokeberry	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
CAR	9	Clethra alnifolia `Rosea` / Pink Summersweet	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
CSB	7	Cornus stolonifera 'Baileyi' / Bailey's Red-osier Dogwood	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
HQ	12	Hydrangea quercifolia `Snow Queen` / Snow Queen Oakleaf Hydrangea	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
IVR	28	Ilex verticillata `Red Sprite` / Red Sprite Winterberry	-	2`-2.5`		#5 Cont	Full Plants, 2.5` O.C.
LB	33	Lindera benzoin / Spicebush	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
PLO3	9	Prunus laurocerasus `Otto Luyken` / Otto Luyken Laurel	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
PLS	15	Prunus laurocerasus `Schipkaensis` / Schipka Laurel	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
POS	13	Physocarpus opulifolius `Snowfall` / Snowfall Ninebark	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
RAG	6	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	-	2`-2.5`		#5 cont.	Full Plants, 2` O.C.
RTL	26	Rhus typhina laciniata / Velvet Sumac	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
VDM	18	Viburnum plicatum tomentosum `Mariesii` / Mariesii Double File Viburnum	-	2`-2.5`		#5 cont.	Full Plants, 3` O.C.

GROUND COVERS	QTY	BOTANICAL / COMMON NAME	CAL.	HT	SPRD.	CONT.	COMMENTS
LC	189	Lobelia cardinalis / Cardinal Flower	-			2 Gal.	Full Plants, 18" O.C.
PS	141	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-			2 Gal.	Full Plants, 24" O.C.



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PA REGISTERED LANDSCAPE ARCHITECT #600072.E

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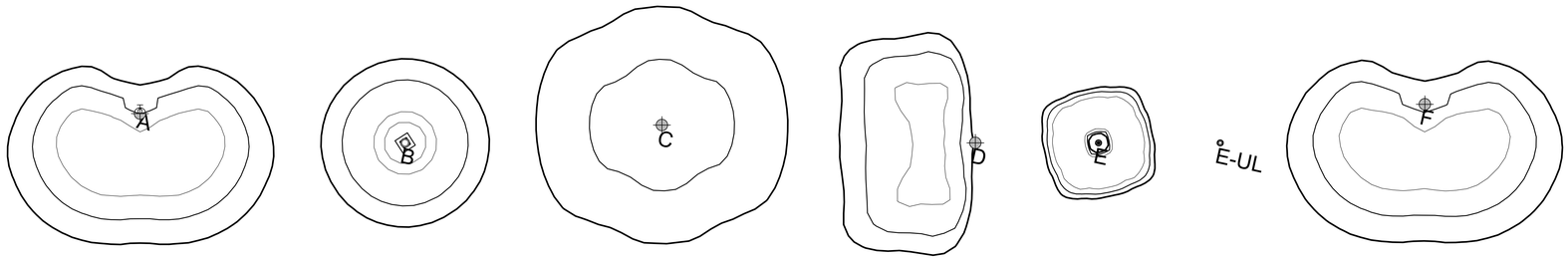
SCALE: 1" = 20'-0"

DATE: 02-24-2022 JOB NO.: 21-167

DRAWING NO.

35 of 41



LIGHT FIXTURE "A": POLE / BUILDING MOUNTED SITE LIGHT
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "B": LIGHT COLUMN SITE LIGHT
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "C": LANDSCAPE POLE MOUNTED SITE LIGHT
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LIGHT FIXTURE "D": LANDSCAPE POLE MOUNTED SITE LIGHT
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "E": LANDSCAPE BOLLARD LIGHT
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LIGHT FIXTURE "E-UL": LANDSCAPE BOLLARD (NON-LIT)
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "F": LANDSCAPE POLE MOUNTED SITE LIGHT
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NOTES:
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1/36 LIGHT ISOLUX PATTERNS
SCALE: AS NOTED

OVERALL LIGHTING SCHEDULE

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
OFFSITE	Illuminance	Fc	0.05	1.8	0.0	N.A.	N.A.
ONSITE ROADWAY AND SIDWALK	Illuminance	Fc	1.02	6.2	0.0	N.A.	N.A.
RIVER WALKWAY	Illuminance	Fc	0.34	4.1	0.0	N.A.	N.A.

Diversified NJ Luminaire Schedule

Qty	Type	Arrangement	Symbol	Manufacturer	Light Fixture	CCT	Lum. Lumens	LLF	Lum. Watts	Pole / Bracket	Mounting AFG (FT)
32	A	Single		KIM LIGHTNG	URZ0-96L-30-3K8-3-VOLTS-WB-COLOR-R56	3000k	3369	0.880	28.2	WALL MOUNTED @ 13' AFG	13
14	B	Single		WE-EF USA	115-1780 300-0949 VOLTS COLOR R56	3000K	2031	0.880	20	13' COLUM LIGHT	13, 15
10	C	Single		Kim Lighting	FM URZ0 24L-25 3K8 9W VOLTS FMA4 COLOR R56	3000K	2879	0.880	25	PRA13-4188-FM-COLOR-R56	13, 15
10	D	Single		Kim Lighting	FM URZ0 24L-25 3K8 4W VOLTS FMA4 COLOR R56	3000K	1809	0.880	26	PRA13-4188-FM-COLOR-R56	15
17	E	Single		KIM LIGHTNG	PATR CT NU-5 12L-020 3K7 44IRB-S20 COLOR VOLTS R56	3000k	1841	0.880	21.73	LIGHTED IMPACT RATED BOLLARD AT 44" AFG	3.5, 3.6
36	E-UL	Single		KIM LIGHTNG	PATR CT NU-5 12L-020 3K7 44IRB-B COLOR VOLTS R56	3000k	1841	0.010	0	NON LIT IMPACT RATED BOLLARD AT 44" AFG REMOVABLE WHERE NEEDED	3.5, 3.6
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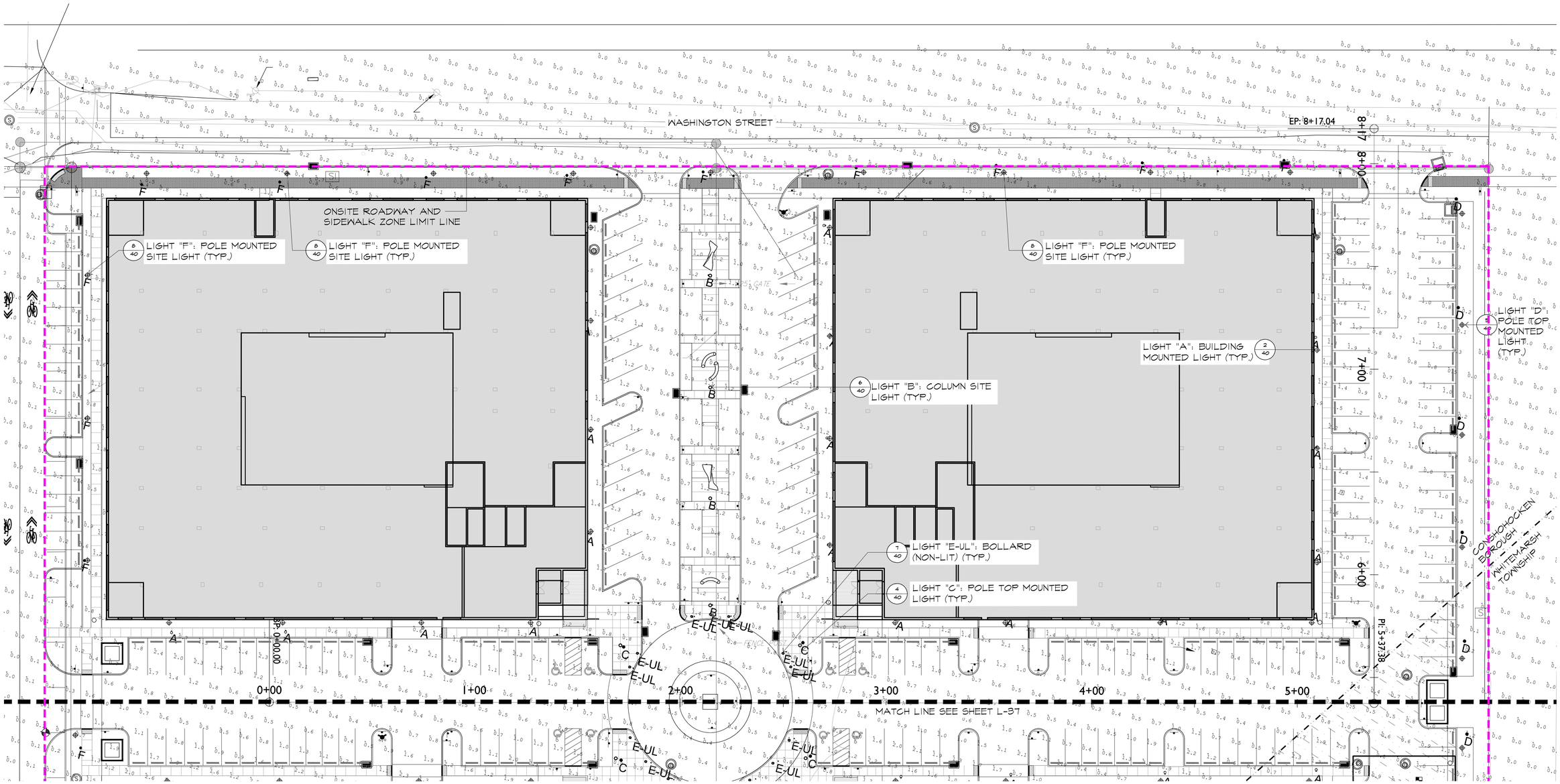

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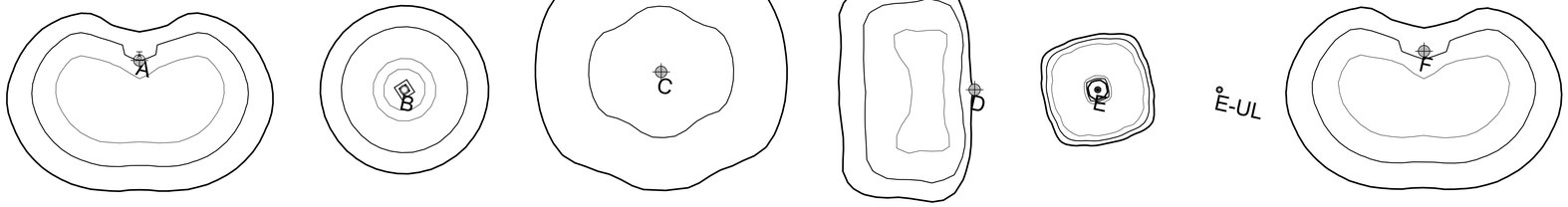

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1/36 LIGHT ISOLUX PATTERNS
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36	E-UL	Single		KIM LIGHTING	PA7R CT NU-5 12L-020 3K7 44RB-B COLOR VOLTS R56	3000k	1841	0.010	0	NON LIT IMPACT RATED BOLLARD AT 44" AFG REMOVABLE WHERE NEEDED	3.5, 3.6
16	F	Single		KIM LIGHTING	FM UR20-96L-30-3K8-3-VOLTS-WB-COLOR-R56	3000k	3369	0.880	28.2	PRA13-4188-FM-COLOR-R56	13

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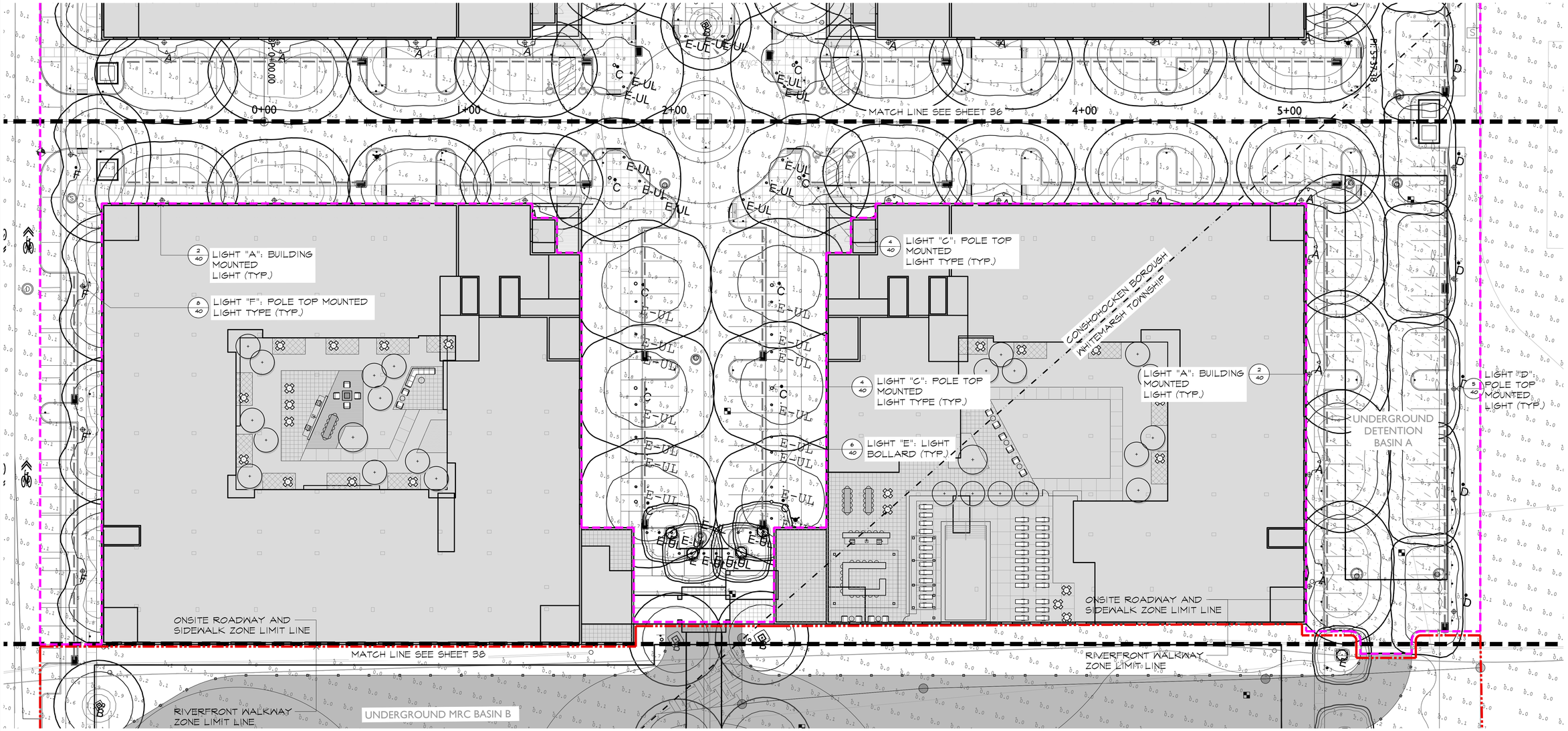

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MBC
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LANDSCAPE ARCHITECTURE
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295 Newark Avenue, Jersey City, NJ 07302
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NJCA No. 21MH00001700

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#LA000723E

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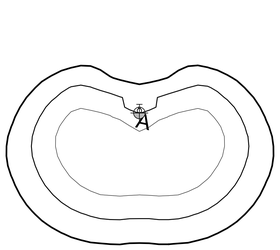

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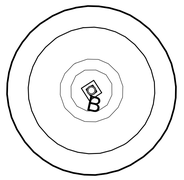

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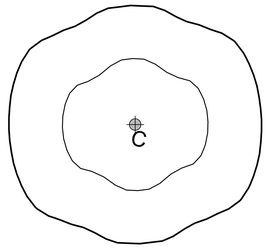

LIGHT FIXTURE "C": LANDSCAPE POLE MOUNTED SITE LIGHT
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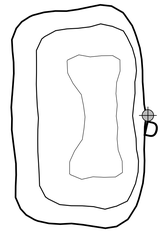

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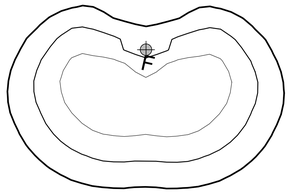

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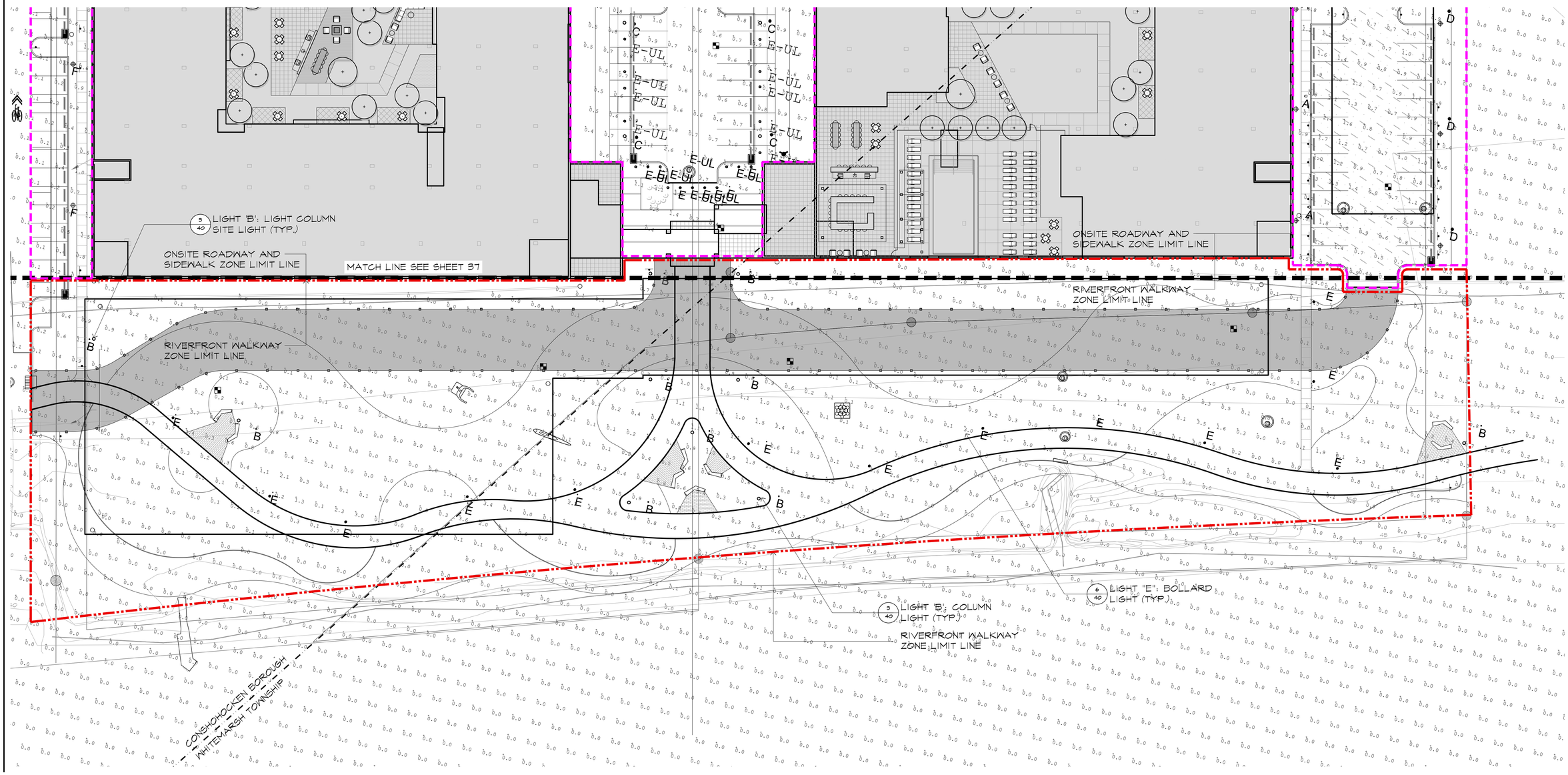

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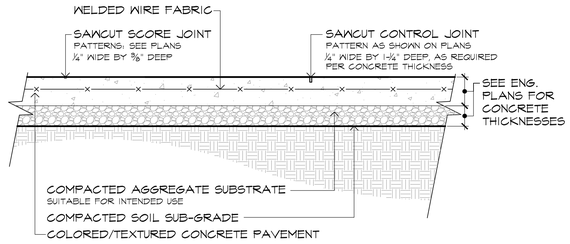
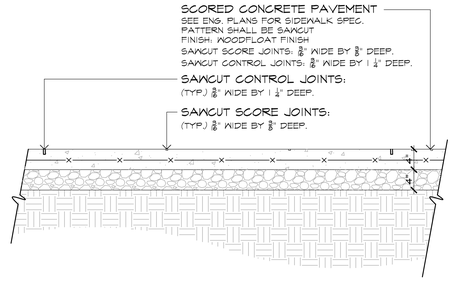
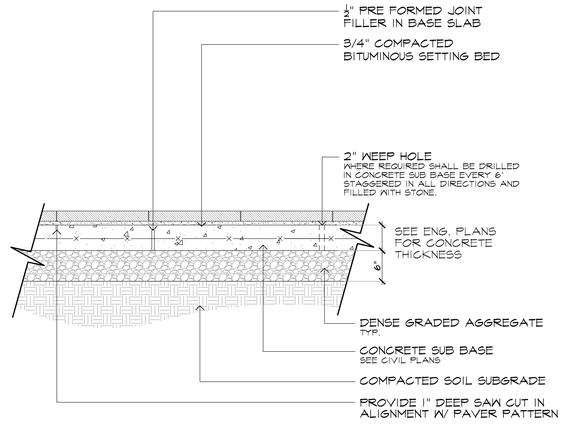


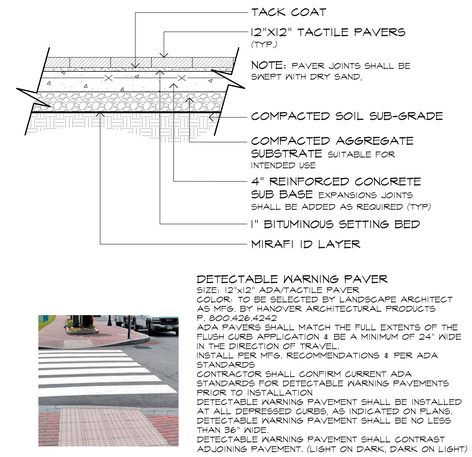
1 / 39 DETAIL: COLORED SCORED CONCRETE PAVEMENT 1"=1'-0"



2 / 39 DETAIL: COLORED SCORED CONCRETE PAVEMENT 1"=1'-0"

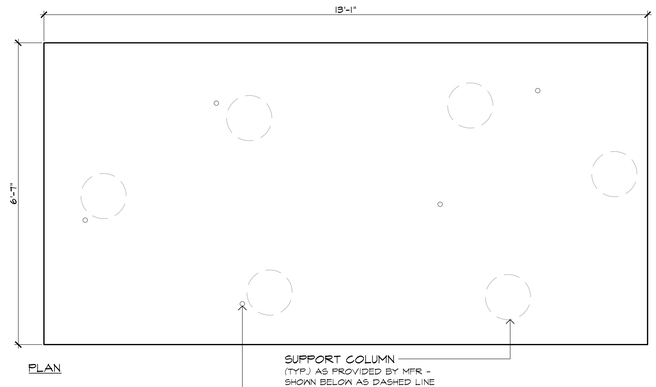


3 / 39 DETAIL: DECORATIVE PRECAST CONCRETE PAVERS 1"=1'-0"

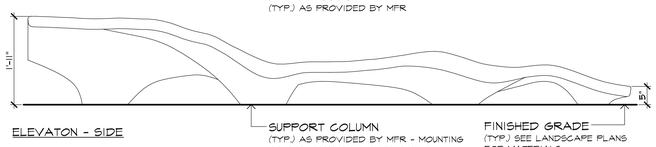


DETECTABLE WARNING PAVER
SIZE: 12"x12" ADA/TACTILE PAVER
COLOR: TO BE SELECTED BY LANDSCAPE ARCHITECT
AS MFG. BY HANOVER ARCHITECTURAL PRODUCTS
P. 800.426.4242
ADA PAVERS SHALL MATCH THE FULL EXTENTS OF THE FLUSH CURB APPLICATION & BE A MINIMUM OF 24" WIDE IN THE DIRECTION OF TRAVEL.
INSTALL PER MFG. RECOMMENDATIONS & PER ADA STANDARDS
CONTRACTOR SHALL CONFIRM CURRENT ADA STANDARDS FOR DETECTABLE WARNING PAVEMENTS PRIOR TO INSTALLATION
DETECTABLE WARNING PAVEMENT SHALL BE INSTALLED AT ALL DEPRESSED CURBS, AS INDICATED ON PLANS.
DETECTABLE WARNING PAVEMENT SHALL BE NO LESS THAN 36" WIDE.
DETECTABLE WARNING PAVEMENT SHALL CONTRAST ADJOINING PAVEMENT. (LIGHT ON DARK, DARK ON LIGHT)

4 / 39 DETAIL: ADA DECTABLE WARNING PAVERS 1"=1'-0"



PLAN

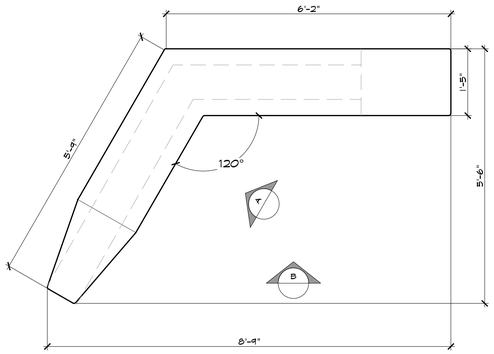


ELEVATON - SIDE

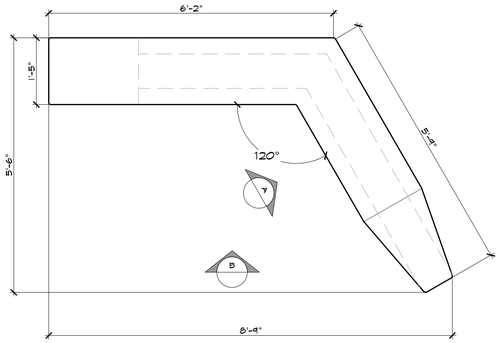
PRODUCT PHOTO

SCULPTURAL SEATING - TYPE "A":
MODEL: LUNGO MARE MODULE "A"
MOUNTING: SURFACE
COLOR: TO BE SELECTED BY L.A.
FINISH: TO BE SELECTED BY L.A.
AS MFG. BY
ESCOFET / LANDSCAPE FORMS, INC.
P. 800.521.2546 | WWW.LANDSCAPEFORMS.COM
(OR APPROVED EQUAL)

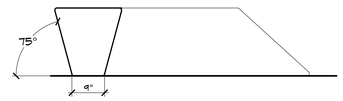
5 / 39 DETAIL: SCULPTURAL SEATING - TYPE "A" 3/4"=1'-0"



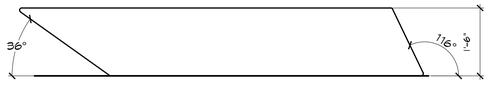
PLAN - RIGHT



PLAN - LEFT



ELEVATION "A"
(TYP.) MIRRORED FOR LEFT AND RIGHT UNITS

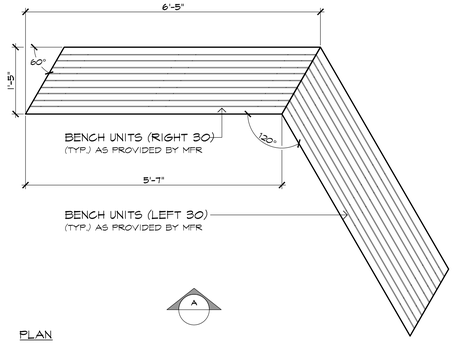


ELEVATION "B"
(TYP.) MIRRORED FOR LEFT AND RIGHT UNITS

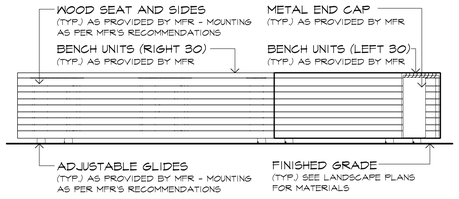
PRODUCT PHOTO

SCULPTURAL SEATING - TYPE "B":
MODEL: MILENIO (ANGLED LEFT AND RIGHT UNITS
MOUNTING: SURFACE
COLOR: TO BE SELECTED BY L.A.
FINISH: TO BE SELECTED BY L.A.
AS MFG. BY
ESCOFET / LANDSCAPE FORMS, INC.
P. 800.521.2546 | WWW.LANDSCAPEFORMS.COM
(OR APPROVED EQUAL)

6 / 39 DETAIL: SCULPTURAL SEATING - TYPE "B" 3/4"=1'-0"



PLAN



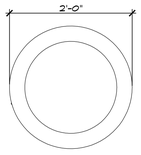
ELEVATION

PRODUCT PHOTO

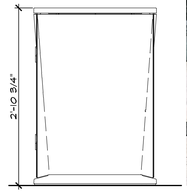
WATERFRONT SEATING:
MODEL: PARALLEL 42
(LEFT 30 AND RIGHT 30 UNITS)
MOUNTING: SURFACE
COLOR: TO BE SELECTED BY L.A.
FINISH: TO BE SELECTED BY L.A.
AS MFG. BY
ESCOFET / LANDSCAPE FORMS, INC.
P. 800.521.2546 | WWW.LANDSCAPEFORMS.COM
(OR APPROVED EQUAL)

7 / 39 DETAIL: BENCH SEATING AT WATERFRONT WALKWAY 3/4"=1'-0"

PRODUCT PHOTO:
LOCK DETAIL



TOP VIEW



SIDE VIEW

PRODUCT PHOTO

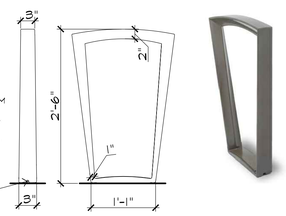
TRASH / RECYCLE RECEPTACLES
MODEL: AUSTIN
COLOR: TO BE SELECTED BY L.A.
MFG BY: LANDSCAPE FORMS, INC.
P: 1 800.521.2546
7800 E. MICHIGAN AVE.,
KALAMAZOO, MI 49048

8 / 39 DETAIL: TRASH / RECYCLE RECEPTACLES 1"=1'-0"

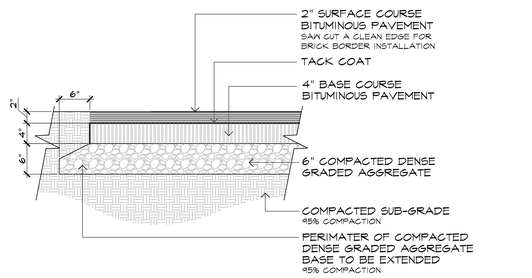
BIKE RACK
MODEL: EMERSON
SURFACE MOUNT
AS MFG. BY LANDSCAPE FORMS, INC.
P. 800.430.6204 |
WWW.LANDSCAPEFORMS.COM
(OR APPROVED EQUAL)

NOTES:
1. UNIT MUST BE ANCHORED - MINIMUM 4" CONCRETE SLAB
2. BIKE RACKS SHALL BE INSTALLED PER MFG. SPECIFICATIONS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND SAMPLES FOR APPROVAL PRIOR TO CONSTRUCTION.

SET SCREW FOR SECURING COVER PLATE



9 / 39 DETAIL: BIKE RACK 1"=1'-0"



10 / 39 DETAIL: WATERFRONT ASPHALT WALKWAY 1"=1'-0"

Site Details

401 Washington
Conshohocken Borough & Whitemarsh Township, PA

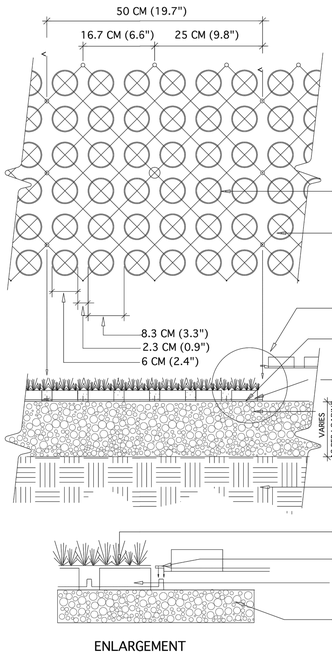
MBC
MELILLO-BAUER-CARMAN
LANDSCAPE ARCHITECTURE
200 Union Avenue Belle, NJ 08730
295 Newark Avenue Jersey City, NJ 07302
732-528-0664
www.mbcla.design
NJCA No. 21MH00001700

THOMAS B. BAUER
COMMONWEALTH OF PENNSYLVANIA
LANDSCAPE ARCHITECT
PA REGISTERED LANDSCAPE ARCHITECT #600723E

NO.	DATE	REVISION
2	5/20/2022	REV.PER REVIEW COMMENTS
1	3/31/2022	REV.PER UPDATED TREE SURVEY

SCALE: AS SHOWN
DATE: 02-24-2022 JOB NO.: 21-167

DRAWING NO.
39 of 41



SPECIFICATIONS

UNIT SIZE - 50 CM X 50 CM X 2.5 CM OR 1 M X 1 M X 2.5 CM
(20" X 20" X 1" OR 40" X 40" X 1")
AVAILABLE IN 9 STANDARD ROLL SIZES

UNIT WEIGHT - 510 GRAMS (18 OZ.)
OR 2.0 KG (4.5 POUNDS)
STRENGTH - 1121 KG/CM²(15,940 PSI)

COLOR - BLACK

RESIN - 100% RECYCLED HDPE

PLAN

GRASSPAVE2 SQUARES

ADJACENT GRASSPAVE2 UNITS

SEE ENLARGEMENT BELOW

HYDROGROW MIX BELOW RING
SUPPLIED FREE BY MANUFACTURER

RINGS FILLED WITH CONCRETE SAND (CLEAN, SHARP SAND)

COMPACTED SANDY GRAVEL ROAD BASE
95% MODIFIED PROCTOR DENSITY
- 6 INCHES TO 12 INCHES
(DEPTH OF BASE COURSE TO BE
DETERMINED BY ON-SITE ENGINEER)
– SEE FULL TECHNICAL SPECIFICATIONS FOR COMPOSITION

COMPACTED SUBGRADE,

SECTION

TOP OF GRASS ROOT MASS 6 MM
(1/4") ABOVE TOP OF RING

GRASSPAVE2 ATTACH WITH
SNAP-FIT FASTENERS

RINGS FILLED WITH CONCRETE SAND (CLEAN, SHARP SAND)

COMPACTED SANDY GRAVEL
BASE COURSE
– SEE FULL TECHNICAL SPECIFICATIONS FOR COMPOSITION

ENLARGEMENT

NOTE: GRASS/PLANT TYPES SHALL BE SPECIFIED BY A LANDSCAPE ARCHITECT OR LANDSCAPE DESIGNER.

TYPICAL GRASSPAVE2 DETAIL

1
1 OF 1

CHOOSE THIS PRODUCT FOR REINFORCING GRASS WEARING SURFACES

NOT TO SCALE

Invisible Structures, Inc.
GPDET18.DWG

NOTE:
RINGS TO BE FILLED WITH CONCRETE SAND
& LOAM MIX
- 80% SAND
- 20% LOAM
COMPACTED GRAVEL COMPOSITION
- 1 PART SAND
- 2 PARTS STONE
- STONE TO BE ¾" PLUS FINES
GRASS PAVERS TO BE PLANTED WITH FINE FESCUE SOD
SEE DETAIL 2/L-400 FOR SOD INSTALLATION GUIDELINES

16265 E. 33RD DR., SUITE 20
AURORA, COLORADO 80011
800-233-1510 OR 303-233-8383
FAX: 800-233-1522 OR
303-233-8282
www.invisiblestructures.com
rev. 1/18

1/40 DETAIL: STABILIZED LAWN
NOT TO SCALE

(A) BUILDING MOUNTED AREA LIGHT
MODEL: OURO - UR20 SERIES
MODEL #: UR20-96L-30-3K8-3-VOLTS-NB-COLOR-R56
FINISH: (BMT) BLACK MATTE TEXTURED
TEMPERATURE: 3000K
MOUNTING TYPE: WALL BRACKET
MOUNTING HT.: 13' AFG
AS MFG. BY
KIM LIGHTING
P: 626-968-5666
WWW.HUBBELL.COM/KIMLIGHTING/

INSTALL PER MFG. RECOMMENDATIONS

(OR APPROVED EQUAL)

2/40 DETAIL: LIGHTING "TYPE "A" - WALL MOUNTED AREA LIGHT
NOT TO SCALE

(B) COLUMN LIGHT
MODEL: LTM 400 - 115-1780
MODEL #: 115-1780-300-0949-VOLTS-COLOR-R56
FINISH: (RAL9005) BLACK
TEMPERATURE: 3000K
MOUNTING TYPE: COLUMN LIGHT 13'
MOUNTING HT.: 15'
FIXTURE HT.: 9.6'
AS MFG. BY
NE-EF LIGHTING USA LLC
P: 724-742-0030
WWW.NE-EF.COM

INSTALL PER MFG. RECOMMENDATIONS

(OR APPROVED EQUAL)

3/40 DETAIL: LIGHTING TYPE "B" - LIGHT COLUMN
NOT TO SCALE

(C) POLE MOUNTED AREA LIGHT
MODEL: OURO - UR20 SERIES
MODEL #: FM UR20-24L-25-3K8-5W-VOLTS-FM44-COLOR-R56
FINISH: (BMT) BLACK MATTE TEXTURED
TEMPERATURE: 3000K
MOUNTING TYPE: PRA13-4188-FM-COLOR-R56
MOUNTING HT.: 13' + 15' (SEE PLAN FOR LOCATIONS)
AS MFG. BY
KIM LIGHTING
P: 626-968-5666
WWW.HUBBELL.COM/KIMLIGHTING/

INSTALL PER MFG. RECOMMENDATIONS

(OR APPROVED EQUAL)

4/40 DETAIL: LIGHTING "TYPE "C" - POLE MOUNTED AREA LIGHT
NOT TO SCALE

(D) POLE MOUNTED AREA LIGHT
MODEL: OURO - UR20 SERIES
MODEL #: FM UR20-24L-25-3K8-4W-VOLTS-FM44-COLOR-R56
FINISH: (BMT) BLACK MATTE TEXTURED
TEMPERATURE: 3000K
MOUNTING TYPE: PRA13-4188-FM-COLOR-R56
MOUNTING HT.: 15'
AS MFG. BY
KIM LIGHTING
P: 626-968-5666
WWW.HUBBELL.COM/KIMLIGHTING/

INSTALL PER MFG. RECOMMENDATIONS

(OR APPROVED EQUAL)

5/40 DETAIL: LIGHTING "TYPE "D" - POLE MOUNTED AREA LIGHT
NOT TO SCALE

(E) BOLLARD LIGHT
MODEL: PAVILION
MODEL #: PATR-GT-NU-5-12L-020-3KT-44IRB-S20-COLOR-VOLTS-R56
FINISH: (BMT) BLACK MATTE TEXTURED
TEMPERATURE: 3000K
MOUNTING TYPE: IMPACT RATED BOLLARD
BOLLARD HT.: 44" AFG
AS MFG. BY
KIM LIGHTING
P: 626-968-5666
WWW.HUBBELL.COM/KIMLIGHTING/

INSTALL PER MFG. RECOMMENDATIONS

(OR APPROVED EQUAL)

6/40 DETAIL: LIGHTING "TYPE "E" - BOLLARD LIGHT
NOT TO SCALE

(E-UL) BOLLARD - UN-LIT
MODEL: PAVILION
MODEL #: PATR-GT-NU-5-12L-020-3KT-44IRB-B-COLOR-VOLTS-R56
FINISH: (BMT) BLACK MATTE TEXTURED
TEMPERATURE: N/A
MOUNTING TYPE: IMPACT RATED BOLLARD
BOLLARD HT.: 44" AFG
AS MFG. BY
KIM LIGHTING
P: 626-968-5666
WWW.HUBBELL.COM/KIMLIGHTING/

INSTALL PER MFG. RECOMMENDATIONS

(OR APPROVED EQUAL)

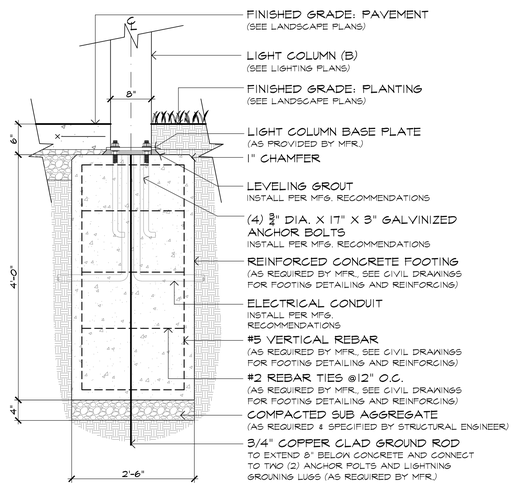
7/40 DETAIL: LIGHTING "TYPE "E-UL" - BOLLARD (UN-LIT)
NOT TO SCALE

(F) POLE MOUNTED AREA LIGHT
MODEL: OURO - UR20 SERIES
MODEL #: FM UR20-96L-30-3K8-3-VOLTS-NB-COLOR-R56
FINISH: (BMT) BLACK MATTE TEXTURED
TEMPERATURE: 3000K
MOUNTING TYPE: PRA13-4188-FM-COLOR-R56
MOUNTING HT.: 13'
AS MFG. BY
KIM LIGHTING
P: 626-968-5666
WWW.HUBBELL.COM/KIMLIGHTING/

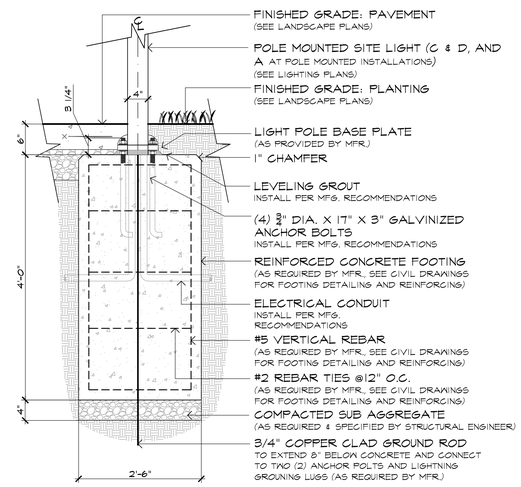
INSTALL PER MFG. RECOMMENDATIONS

(OR APPROVED EQUAL)

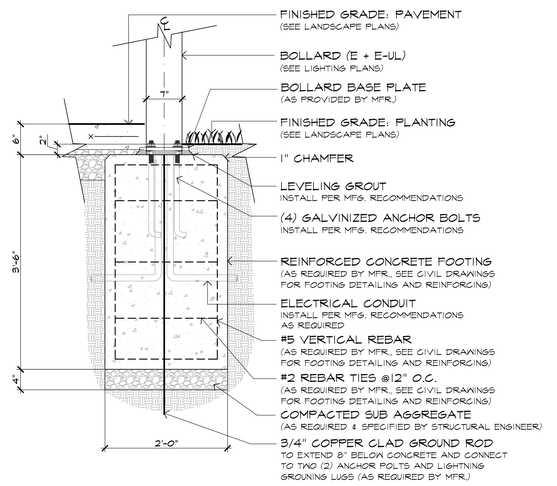
8/40 DETAIL: LIGHTING "TYPE "F" - POLE MOUNTED AREA LIGHT
NOT TO SCALE



9/40 DETAIL: COLUMN LIGHT TYPE "B" FOOTING DETAIL
SCALE: 1"=1'-0"



10/40 DETAIL: POLE MOUNTED SITE LIGHT TYPES "C + D" FOOTING DETAIL
SCALE: 1"=1'-0"



11/40 DETAIL: LIGHT AND UNLIT BOLLARD TYPES "E + E-UL" FOOTING DETAIL
SCALE: 1"=1'-0"

Site Details

401 Washington
Conshohocken Borough & Whitemarsh Township, PA

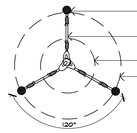
MBC
MELILLO-BAUER-CARMAN
LANDSCAPE ARCHITECTURE
200 Union Avenue
Belle, NJ
08730
295 Newark Avenue
Jersey City, NJ
07302
732-528-0664
www.mbcla.design
NJCA No. 21MH00001700

THOMAS B. BAUER
PA REGISTERED LANDSCAPE ARCHITECT
#LA007235E

NO.	DATE	REVISION
2	5/20/2022	REV.PER REVIEW COMMENTS
1	3/31/2022	REV.PER UPDATED TREE SURVEY

SCALE: AS SHOWN
DATE: 02-24-2022 JOB NO.: 21-167

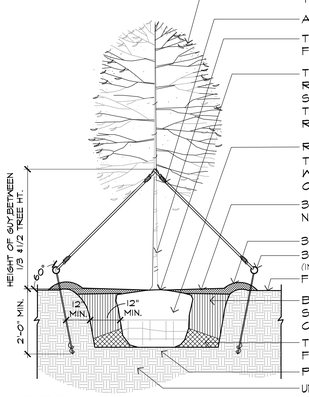
DRAWING NO.
40 of 41



30" ARBOR TIE STEEL EYE STAKES
(INSTALL PER MFG. SPECIFICATIONS)
ARBOR TIE
(INSTALL AND TIE PER MFG. SPECIFICATIONS)
TREE BALL
TREE PIT

NOTES:
-DISTANCE OF STAKES APPROXIMATELY EQUAL TO HEIGHT OF ATTACHMENT.
-WHEN PLANTING ON SLOPES, PLACE SINGLE STAKE DOWNHILL, AND TWO STAKES UPHILL.

PLAN



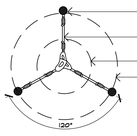
PRUNE DAMAGED AND CONFLICTING BRANCHES MAINTAINING NORMAL TREE SHAPE. NEVER CUT CENTRAL TRUNK OR LEADER AND DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.
ARBOR TIE
TREE WRAP - WRAP TREE WITH BREATHABLE FABRIC FROM TRUNK FLARE TO THE FIRST BRANCH. SECURE WITH BIO-DEGRADABLE TAPE
THE TRUNK FLARE OF EACH TREE SHALL BE VISIBLE AT THE TOP OF THE ROOT BALL. IF NURSERY GRADE IS ABOVE THE FLARE THE CONTRACTOR SHALL CAREFULLY EXCAVATE THE TOP OF THE ROOT BALL TO EXPOSE THE TRUNK FLARE. TREES WHOSE TRUNK FLARE IS NOT VISIBLE SHALL BE REJECTED. DO NOT COVER THE THE TOP OF THE ROOT BALL WITH SOIL.
REMOVE ALL ROPE FROM TRUNK AND TOP OF BALL. REMOVE BURLAP FROM THE TOP (HALF) ½ OF THE ROOT BALL. WHEN A WIRE BASKET IS PRESENT THE WIRE BASKET SHALL BE REMOVED FROM THE TOP HALF OF THE ROOT BALL OR AS MUCH AS POSSIBLE TO PRESERVE THE INTEGRITY OF THE ROOT BALL.
3" SHREDDED HARDWOOD BARK MULCH, UNIFORMLY SPREAD. MULCH SHALL NOT BE IN CONTACT WITH THE TRUNK OF THE TREE
3" SAUCER RIM
30" ARBOR TIE STEEL EYE STAKE, 3 PER TREE
(INSTALL PER MFG. SPECIFICATIONS)
FINISH GRADE
BACKFILL MIXTURE, SHALL BE A THOROUGHLY MIXED BLEND OF TOPSOIL & SOIL AMENDMENTS. AMENDMENTS SHALL BE ADDED AS RECOMMENDED BY A CERTIFIED SOIL TEST. AIR POCKETS SHALL REMOVED FROM BACKFILL.
TAMP SOIL AROUND ROOT BALL BASE FIRMLY TO PREVENT THE ROOT BALL FROM SHIFTING.
PLACE ROOT BALL ON UNEXCAVATED OR TAMPED SOIL.
UNDISTURBED GRADE

SECTION

NOTES:
-CONTRACTOR SHALL PARTIALLY FILL WITH WATER A REPRESENTATIVE NUMBER OF PITS IN EACH AREA OF THE PROJECT PRIOR TO PLANTING TO DETERMINE IF THERE IS ADEQUATE PERCOLATION. IF PIT DOESN'T PERCOLATE, MEASURES MUST BE TAKEN TO ASSURE PROPER DRAINAGE BEFORE PLANTING.
-CONTRACTOR SHALL REMOVE STAKING, GUYING AND WRAP AT END OF GUARANTEE PERIOD. ALL PLANTING MUST BE GUARANTEED FOR ONE FULL GROWING SEASON FROM THE TIME OF FINAL ACCEPTANCE BY THE OWNER OR GOVERNING AUTHORITY.
-ON ALL FALL PLANTINGS THE CONTRACTOR SHALL WRAP THE TREES SPECIFIED BY THE LANDSCAPE ARCHITECT (ACER spp.) FROM THE TRUNK FLARE TO THE FIRST BRANCH. TREE WRAP SHALL BE REMOVED BY APRIL 1. TREE WRAP SHALL BE BREATHABLE AND AS APPROVED BY THE LANDSCAPE ARCHITECT.
-TREE WRAP SHALL BE INSTALLED AT THE TIME OF PLANTING AND BE REMOVED AS DIRECTED BY THE LANDSCAPE ARCHITECT.
-TREE WRAP SHALL BE REMOVED NO LATER THAN 12 MONTHS AFTER PLANTING.
-TREES WHOSE NORTH ORIENTATION IS NOT CHANGED FROM THE NURSERY DO NOT NEED TO BE WRAPPED UNLESS OTHERWISE DIRECTED BY THE LANDSCAPE ARCHITECT.
-GUYS ON MULTI-STEM TREES TO BE MADE ON HEAVIEST BRANCHES OF PLANT.

1/41 DETAIL: 3" CALIPER OR MORE DECIDUOUS TREE PLANTING

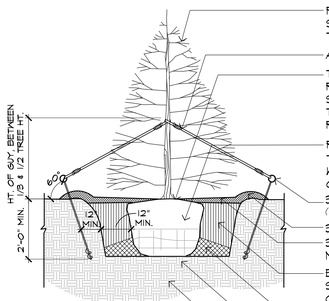
NOT TO SCALE



30" ARBOR TIE STEEL EYE STAKES
(INSTALL PER MFG. SPECIFICATIONS)
ARBOR TIE
(INSTALL AND TIE PER MFG. SPECIFICATIONS)
TREE BALL
TREE PIT

NOTES:
-DISTANCE OF STAKES APPROXIMATELY EQUAL TO HEIGHT OF ATTACHMENT.
-WHEN PLANTING ON SLOPES, PLACE SINGLE STAKE DOWNHILL, AND TWO STAKES UPHILL.

PLAN



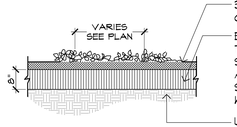
PRUNE DAMAGED AND CONFLICTING BRANCHES MAINTAINING NORMAL TREE SHAPE. NEVER CUT CENTRAL TRUNK OR LEADER AND DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.
ARBOR TIE
THE TRUNK FLARE OF EACH TREE SHALL BE VISIBLE AT THE TOP OF THE ROOT BALL. IF NURSERY GRADE IS ABOVE THE FLARE THE CONTRACTOR SHALL CAREFULLY EXCAVATE THE TOP OF THE ROOT BALL TO EXPOSE THE TRUNK FLARE. TREES WHOSE TRUNK FLARE IS NOT VISIBLE SHALL BE REJECTED. DO NOT COVER THE THE TOP OF THE ROOT BALL WITH SOIL.
REMOVE ALL ROPE FROM TRUNK AND TOP OF BALL. REMOVE BURLAP FROM THE TOP (HALF) ½ OF THE ROOT BALL. WHEN A WIRE BASKET IS PRESENT THE WIRE BASKET SHALL BE REMOVED FROM THE TOP HALF OF THE ROOT BALL OR AS MUCH AS POSSIBLE TO PRESERVE THE INTEGRITY OF THE ROOT BALL.
30" ARBOR TIE STEEL EYE STAKE, 3 PER TREE
(INSTALL PER MFG. SPECIFICATIONS)
3" SAUCER RIM
3" SHREDDED HARDWOOD BARK MULCH, UNIFORMLY SPREAD. MULCH SHALL NOT BE IN CONTACT WITH THE TRUNK OF THE TREE
BACKFILL MIXTURE, SHALL BE A THOROUGHLY MIXED BLEND OF TOPSOIL & SOIL AMENDMENTS. AMENDMENTS SHALL BE ADDED AS RECOMMENDED BY A CERTIFIED SOIL TEST. AIR POCKETS SHALL REMOVED FROM THE BACKFILL.
TAMP SOIL AROUND ROOT BALL BASE FIRMLY TO PREVENT THE ROOT BALL FROM SHIFTING.
PLACE ROOT BALL ON UNEXCAVATED OR TAMPED SOIL.
UNDISTURBED GRADE

SECTION

NOTES:
-CONTRACTOR SHALL PARTIALLY FILL WITH WATER A REPRESENTATIVE NUMBER OF PITS IN EACH AREA OF THE PROJECT PRIOR TO PLANTING TO DETERMINE IF THERE IS ADEQUATE PERCOLATION. IF PIT DOESN'T PERCOLATE, MEASURES MUST BE TAKEN TO ASSURE PROPER DRAINAGE BEFORE PLANTING.
-CONTRACTOR SHALL REMOVE STAKING, GUYING AND WRAP AT THE END OF THE GUARANTEE PERIOD.
-ALL PLANTING MUST BE GUARANTEED FOR TWO FULL GROWING SEASONS FROM THE TIME OF FINAL ACCEPTANCE BY TOWNSHIP LANDSCAPE ARCHITECT.

2/41 DETAIL: EVERGREEN TREE PLANTING

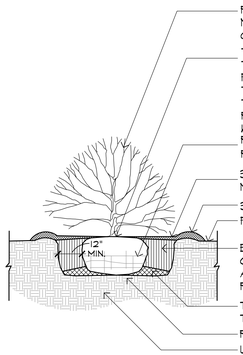
NOT TO SCALE



3" SHREDDED HARDWOOD BARK MULCH COVERING ENTIRE PLANTING BED.
BACKFILL MIXTURE, SHALL BE A THOROUGHLY MIXED BLEND OF TOPSOIL & SOIL AMENDMENTS. AMENDMENTS SHALL BE ADDED AS RECOMMENDED BY A CERTIFIED SOIL TEST. BACKFILL SHALL BE WATERED WHILE PLANTING TO ELIMINATE AIR POCKETS.
UNDISTURBED SUBGRADE

3/41 DETAIL: PERENNIAL PLANTING

NOT TO SCALE

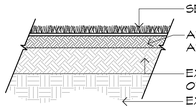


PRUNE DAMAGED AND CONFLICTING BRANCHES MAINTAINING NORMAL SHRUB SHAPE. DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.
THE TRUNK FLARE OF EACH SHRUB SHALL BE VISIBLE AT THE TOP OF THE ROOT BALL. IF NURSERY GRADE IS ABOVE THE FLARE THE CONTRACTOR SHALL CAREFULLY EXCAVATE THE TOP OF THE ROOT BALL TO EXPOSE THE TRUNK FLARE. TREES WHOSE TRUNK FLARE IS NOT VISIBLE SHALL BE REJECTED. DO NOT COVER THE THE TOP OF THE ROOT BALL WITH SOIL.
REMOVE ALL ROPE FROM TRUNK AND TOP OF BALL.
REMOVE BURLAP FROM THE TOP (HALF) ½ OF THE ROOT BALL.
3" SHREDDED HARDWOOD BARK MULCH, UNIFORMLY SPREAD. MULCH SHALL NOT BE IN CONTACT WITH THE TRUNK OF THE SHRUB.
3" SAUCER RIM
FINISH GRADE
BACKFILL MIXTURE SHALL BE A THOROUGHLY MIXED BLEND OF SOIL & TOPSOIL AMENDMENTS. AMENDMENTS SHALL BE ADDED AS RECOMMENDED BY A CERTIFIED SOIL TEST. AIR POCKETS SHALL REMOVED FROM THE BACKFILL.
TAMP SOIL AROUND ROOT BALL BASE FIRMLY TO PREVENT THE ROOT BALL FROM SHIFTING.
PLACE ROOT BALL ON UNEXCAVATED OR TAMPED SOIL.
UNDISTURBED GRADE

4/41 DETAIL: SHRUB PLANTING

NOT TO SCALE

SHOWY NORTHEAST NATIVE WILDFLOWER & GRASS MIX ERNMX-153
AS MFG. BY:
ERNST CONSERVATION SEEDS, INC.
8884 MERCER PIKE,
MEADVILLE PA 16335
PHONE: (800) 873-3321



1. CLEAR THE SITE OF ALL BUILDING MATERIALS (WOOD, CEMENT, BRICK, ETC.) AS WELL AS ANY BURIED STUMPS, ROCKS, STONES OR OTHER DEBRIS THAT IS LARGER THAN 2-3" DIAMETER.
2. APPLY A NONSELECTIVE HERBICIDE IF WEEDS ARE A PROBLEM. FOLLOW MANUFACTURERS RECOMMENDATIONS IN REGARDS TO SEED APPLICATION TIME FRAME.
2. ROUGH GRADE THE ENTIRE AREA TO ELIMINATE ANY DRAINAGE PROBLEMS ON THE PROPERTY. THIS WOULD INCLUDE SLOPING THE GRADE AWAY FROM BUILDING FOUNDATIONS.
3. INITIAL TILLING, TO A DEPTH OF AT LEAST 4", SHOULD BE COMPLETED PRIOR TO ADDING ANY TOPSOIL OR SOIL AMENDMENTS. TILLING SHALL BE PERFORMED TO ALLEVIATE SOIL COMPACTION, PERMIT BONDING OF TOPSOIL TO THE SUBSOIL AND IMPROVE OVERALL ROOT PENETRATION.
4. ADD TOPSOIL TO ACHIEVE A TOTAL DEPTH OF 4-6" AFTER ROLLING. ALL TOPSOIL, BOTH NEWLY FURNISHED AND STOCKPILED (IF ANY), SHALL BE NATURAL TOPSOIL, SANDY LOAM FREE FROM SUBSOIL, AND OBTAINED FROM AN AREA WHICH HAS NEVER BEEN STRIPPED. TOPSOIL SHALL BE OF UNIFORM QUALITY, FREE FROM HARD CLODS, STIFF CLAY, HARD PAN, STONES LARGER THAN 1/2", LIME, CEMENT, ASHES, SLAG, CONCRETE, TAR RESIDUES, TARRED PAPER, BOARDS, CHIPS, STICKS OR ANY OTHER UNDESIRABLE MATERIAL. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST. TOPSOIL SHALL NOT BE PLACED WHILE FROZEN OR EXCESSIVELY WET THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEED BED PREPARATION.
5. TOP SOIL SHALL BE TESTED BY CERTIFIED SOIL TESTING LABORATORY. TOPSOIL TEST RESULTS SHALL INCLUDE RECOMMENDATIONS FOR TOPSOIL AMENDMENTS AND FERTILIZER RATES IN ORDER TO ENSURE A PROPER GROWTH MEDIUM FOR SEED MIX OR SOD.
7. FINISH GRADE THE ENTIRE SITE ACCORDING TO GRADING PLANS AND ROLL THE AREAS WITH LAWN ROLLER 1/3 FULL OF WATER TO REVEAL LOW SPOTS THAT SHOULD BE FILLED TO MATCH SURROUNDING GRADE. IF TIME PERMITS ALLOW THE AREA TO SETTLE FURTHER BY APPLYING IRRIGATION WATER.

NOTES:
- FINAL LIMITS OF SEEDED ZONES TO BE LAID OUT IN THE FIELD UNDER THE DIRECTION OF THE PROJECT LANDSCAPE ARCHITECT.
- CONTRACTOR SHALL SUBMIT SEED SPECIFICATION TO LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
- INSTALL PER MFG. RECOMMENDATIONS
- CONTRACTOR SHALL CONTACT SEED SUPPLIER PRIOR TO APPLICATION TO VERIFY APPROPRIATE APPLICATION TIMING FOR THE SPECIFIED SEED MIX PER SEASONAL CONDITIONS. GENERAL SEEDING PERIOD IS AUGUST 21ST TILL SEPTEMBER 21ST.
- IRRIGATION/SUPPLEMENTAL WATER SHALL BE PROVIDED AT INSTALLATION.
- ALL SEEDED AREAS MUST BE KEPT CONSTANTLY MOIST TO PROMOTE GERMINATION.
- ALL AREAS THAT HAVE BEEN DISTURBED DURING CONSTRUCTION SHALL BE SEEDED OR SODDED TO REESTABLISH PLANT MATERIAL.

LAWN

ATHLETIC FIELD MIX

30.0% FESTUCA ARUNDINACEA, FAWN (TALL FESCUE, FAWN)
30.0% LOLIUM PERENNE, 'CONFETTI III' (PERENNIAL RYEGRASS, 'CONFETTI III' (TURF TYPE))
15.0% POA PRATENSIS, 'SELIKAY' (KENTUCKY BLUEGRASS, 'SELIKAY')
15.0% POA PRATENSIS, APPALACHIAN (KENTUCKY BLUEGRASS, APPALACHIAN)
10.0% LOLIUM MULTIFLORUM (ANNUAL RYEGRASS)

ITEM NUMBER: ERNMX-106
HEIGHT: 1.0 - 4.0 FT
SEEDING RATE: 75-150 LB PER ACRE, OR 3-5 LB PER 1,000 SQ FT
MAINTENANCE MOWING: SHALL BE MAINTAINED AS TURF GRASS LAWN.
AS SUPPLIED BY
ERNST CONSERVATION SEEDS, INC.,
9006 MERCER PIKE, MEADVILLE, PA 16335,
800-873 3321.

5/41 DETAIL: SOD / SEED LAWN

NOT TO SCALE

TOPSOIL NOTES:
-TESTING FOR ALL SITE TOPSOIL SHALL BE DONE PRIOR TO PLANTING AND SHALL BE CONDUCTED BY A CERTIFIED SOIL TESTING LABORATORY.
-TOPSOIL TEST RESULTS SHALL INCLUDE RECOMMENDATIONS FOR TOPSOIL AMENDMENTS AND FERTILIZER RATES IN ORDER TO ENSURE A PROPER GROWTH MEDIUM FOR SEED MIX AND SOD.
-TOPSOIL SHALL CONTAIN AT LEAST 3% ORGANIC MATTER DETERMINED BY LOSS ON IGNITION OF MOISTURE FREE SAMPLES. THE ACIDITY RANGE SHALL BE pH 5.0 TO 7.0 INCLUSIVE.
THE MECHANICAL ANALYSIS OF THE SOIL SHALL BE:
-ALL TOPSOIL, BOTH NEWLY FURNISHED AND STOCKPILED (IF ANY), SHALL BE NATURAL TOPSOIL, SANDY LOAM FREE FROM SUBSOIL, AND OBTAINED FROM AN AREA WHICH HAS NEVER BEEN STRIPPED. TOPSOIL SHALL BE OF UNIFORM QUALITY, FREE FROM HARD CLODS, STIFF CLAY, HARD PAN, STONES LARGER THAN 1/2", LIME, CEMENT, ASHES, SLAG, CONCRETE, TAR RESIDUES, TARRED PAPER, BOARDS, CHIPS, STICKS OR ANY OTHER UNDESIRABLE MATERIAL.
-SUBMIT RESULTS TO THE ENGINEER AND LANDSCAPE ARCHITECT.

PASSING	RETAINED	PERCENTAGE
1" SCREEN	.....	100%
1" SCREEN	1/4" SCREEN (GRAVEL NOT MORE THAN)	3%
1/4" SCREEN	#100 USS SIEVE (COURSE, MEDIUM & FINE SAND)	40% - 60%
#100 USS SIEVE	(VERY FINE SAND, SILT AND CLAY IN EQUAL PROPORTION)	40% - 60%

IRRIGATION NOTES:
1. ALL PLANTED AREAS AND LAWN SHALL BE IRRIGATED, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PROVIDING IRRIGATION LAYOUT DETAILS, ETC. PRIOR TO CONSTRUCTION.
2. PLANTER WALLS SHALL BE SLEEVED TO MINIMIZE PENETRATIONS THROUGH PLANTER BOTTOMS FOR IRRIGATION LINES.
3. IRRIGATION LINES SHALL BE RUN WITHIN PLANTING AREAS.
4. IRRIGATION REQUIREMENTS - MEP PLANS SHALL INCLUDE A 1 INCH IRRIGATION EXCLUSIVE WATER METER AND A 1 INCH REDUCED-PRESSURE BACK FLOW PREVENTION DEVICE WITH A 1 INCH ISOLATION SHUT-OFF IMMEDIATELY DOWNSTREAM OF THE BACKFLOW PREVENTER AND A 1 INCH DRAIN IN THE PIPE TO REMOVE WATER IN THE LINE.
5. THE IRRIGATION SYSTEM WILL REQUIRE 55 PSI DYNAMIC PRESSURE AT A MAXIMUM FLOW RATE OF 20-25PM AT THE IRRIGATION CONTRACTORS POINT OF CONNECTION OUTSIDE OF THE BUILDING AT THE STREETSCAPE LEVEL.
6. THE POINT OF CONNECTION SHALL BE A COPPER PIPE STUBBED OUT OF THE BUILDING INTO THE PLANTING MEDIA. ONE STUB OUT SHALL BE PROVIDED WITH MALE PIPE THREADS. THIS ALLOWS THE IRRIGATION CONTRACTOR TO THREAD A GATE VALVE TO THE COPPER PIPE OUTSIDE OF THE BUILDING. A PINTERIZATION POINT SHALL BE INSTALLED BY THE IRRIGATION CONTRACTOR IMMEDIATELY DOWNSTREAM OF THE COPPER STUB.
7. A DEDICATED 10 AMP, 120-VOLT CIRCUIT WILL BE REQUIRED TO OPERATE THE IRRIGATION CONTROLLER. THE IRRIGATION CONTROLLER WILL NEED TO BE MOUNTED WITHIN A MECHANICAL ROOM. AN APPROXIMATELY 18 INCH X 18 INCH SQUARE WALL SPACE IS REQUIRED AND NEEDS TO BE PROPERLY GROUNDED. A 1.5 INCH ELECTRICAL CONDUIT TO BE USED FOR THE 24-VOLT IRRIGATION CONTROL WIRES WILL BE NEEDED TO BE ROUTED FROM THE IRRIGATION CONTROLLER AND STUBBED OUT OF THE BUILDING TO THE LOCATION OF THE WATER SUPPLY STUB OUT AT THE STREETSCAPE.

FESCUE SEED MIX

30.0% FESTUCA RUBRA (CREEPING RED FESCUE)
25.0% POA PRATENSIS, 'SELIKAY' (KENTUCKY BLUEGRASS, 'SELIKAY')
25.0% POA PRATENSIS, APPALACHIAN (KENTUCKY BLUEGRASS, APPALACHIAN)
10.0% LOLIUM MULTIFLORUM (ANNUAL RYEGRASS)
10.0% LOLIUM PERENNE, 'CONFETTI III' (PERENNIAL RYEGRASS, 'CONFETTI III' (TURF TYPE))

NOTES:
SEEDING RATE:100-200 LBS/ACRE
RECOMMENDED SEEDING PERIOD:
MARCH 15 TO JUNE 1/
AUGUST 1 TO OCTOBER 15
MAINTENANCE MOWING: ANNUALLY IN DECEMBER.
AS SUPPLIED BY ERNST CONSERVATION SEEDS, INC., 9006 MERCER PIKE, MEADVILLE, PA 16335, 800-873 3321
IF FESCUE SEED AREAS DO NOT THRIVE WITHIN 2 YEARS AN ALTERNATIVE GROUNDCOVER PLANTING WILL BE PROVIDED.

SEED MIX 128:

SEASONALLY FLOODED WILDLIFE FOOD MIX:

21.5% PANICUM CLANDESTINUM, TIOGA (DEERTONGUE, TIOGA)
20.0% ELYMUS VIRGINICUS, MADISON-NY ECOTYPE (VIRGINIA WILDRYE, MADISON-NY ECOTYPE)
16.6% ANDROPOGON GERARDII, 'NIAGARA' (BIG BLUESTEM, 'NIAGARA')
15.0% ECHINOCHLOA CRUSGALLI VAR. FRUMENTACEA (JAPANESE MILLET)
10.0% CAREX VULPINOIDEA, PA ECOTYPE (FOX SEDGE, PA ECOTYPE)
8.0% PANICUM VIRGATUM, 'SHANNEI' (SWITCHGRASS, 'SHANNEI')
4.0% CHAMAECRISTA FASCICULATA, PA ECOTYPE (PARTRIDGE PEA, PA ECOTYPE)
1.5% VERBENA HASTATA, PA ECOTYPE (BLUE VERVAIN, PA ECOTYPE)
1.0% HELIOPSIS HELIANTHOIDES, PA ECOTYPE (OXEYE SUNFLOWER, PA ECOTYPE)
1.0% JUNCUS EFFUSUS (SOFT RUSH)
0.8% AGROSTIS PERENNANS, ALBANY PINE BUSH-NY ECOTYPE (AUTUMN BENTGRASS, ALBANY PINE BUSH-NY ECOTYPE)
0.1% ASCLEPIAS INCARNATA, PA ECOTYPE (SWAMP MILKWEED, PA ECOTYPE)
0.1% ASTER NOVAE-ANGLIAE, PA ECOTYPE (NEW ENGLAND ASTER, PA ECOTYPE)
0.1% EUPATORIUM FISTULOSUM, PA ECOTYPE (JOE PYE WEED, PA ECOTYPE)
0.1% EUPATORIUM PERFOLIATUM, PA ECOTYPE (BONESET, PA ECOTYPE)
0.1% MONARDA FISTULOSA, FORT INDIANTOWN GAP-PA ECOTYPE (WILD BERGAMOT, FORT INDIANTOWN GAP-PA ECOTYPE)
0.1% PYCNANTHEMUM TENUIFOLIUM (NARROWLEAF MOUNTAINMINT)

ITEM NUMBER: ERNMX-128
PRODUCT CATEGORIES:
WET MEADOWS & WETLANDS, WILDLIFE HABITAT & FOOD PLOTS
HEIGHT: 0.3 -1.0 FT
SEEDING RATE: 20 LB PER ACRE, OR 1/2 LB PER 1,000 SQ FT WITH A COVER CROP. FOR A COVER CROP USE ONE OF THE FOLLOWING: GRAIN RYE (1 SEP TO 30 APR; 30 LBS/ACRE), JAPANESE MILLET (1 MAY TO 31 AUG; 10 LBS/ACRE), OR BARNYARD GRASS (1 MAY TO 31 AUG; 10 LBS/ACRE).
AS SUPPLIED BY
ERNSTSEED.COM
SALES@ERNSTSEED.COM
1-800-873-3321

NOTES:
FESTUCA RUBRA/ CREEPING RED FESCUE SHALL BE ADDED TO MIX AT A SEEDING RATE OF 8LBS. PER ACRE.
ITEM NUMBER:FESRUBOI
AS SUPPLIED BY
ERNSTSEED.COM
SALES@ERNSTSEED.COM
1-800-873-3321

NOTES
- FINAL LIMITS OF SEEDED ZONES TO BE LAID OUT IN THE FIELD UNDER THE DIRECTION OF THE PROJECT LANDSCAPE ARCHITECT.
- CONTRACTOR SHALL CONTACT SEED SUPPLIER PRIOR TO APPLICATION TO VERIFY APPROPRIATE APPLICATION TIMING FOR THE SPECIFIED SEED MIX PER SEASONAL CONDITIONS. GENERAL SEEDING PERIOD IS AUGUST 21ST TILL SEPTEMBER 21ST.
- CONTRACTOR SHALL SUBMIT ANTICIPATED SEED APPLICATION/PREPARATION PROCEDURE TO LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO SEED APPLICATION/PREPARATION.
- INSTALL PER MFG. RECOMMENDATIONS
- IRRIGATION/SUPPLEMENTAL WATER SHALL BE PROVIDED TO ESTABLISH SEED MIX AT INSTALLATION.
- ALL SEEDED AREAS MUST BE KEPT CONSTANTLY MOIST TO PROMOTE GERMINATION.
- SEEDED AREAS SHALL BE MOWED AS DESIRED. MOWING SHALL BE DONE ONCE PER YEAR IN DECEMBER.
- SEED MIXES TO BE APPLIED PER MFG. RECOMMENDATIONS

6/41 DETAIL: SEED MIX & INSTALLATION

NOT TO SCALE

TALL FESCUE SEED MIX

34.0% FESTUCA ARUNDINACEA, 'FIRECRACKER SLS' (TALL FESCUE, 'FIRECRACKER SLS' (TURF TYPE))
33.0% FESTUCA ARUNDINACEA, 'VALKYRIE LS' (TALL FESCUE, 'VALKYRIE LS' (TURF TYPE))
33.0% FESTUCA ARUNDINACEA, 'COCHISE III' (TALL FESCUE, 'COCHISE III' (TURF TYPE))

NOTES:
SEEDING RATE:7-10 LBS/1,000 SQ FT
RECOMMENDED SEEDING PERIOD:
MARCH 15 TO JUNE 1/
AUGUST 1 TO OCTOBER 15
MAINTENANCE MOWING: ANNUALLY IN DECEMBER.
AS SUPPLIED BY ERNST CONSERVATION SEEDS, INC., 9006 MERCER PIKE, MEADVILLE, PA 16335, 800-873 3321
IF FESCUE SEED AREAS DO NOT THRIVE WITHIN 2 YEARS AN ALTERNATIVE GROUNDCOVER PLANTING WILL BE PROVIDED.

SEED MIX 178:

RIPARIAN BUFFER MIX

27.1% ANDROPOGON GERARDII, 'NIAGARA' (BIG BLUESTEM, 'NIAGARA')
27.0% SORGHASTRUM NUTANS, WI ECOTYPE (INDIANGRASS, WI ECOTYPE)
20.0% ELYMUS VIRGINICUS, PA ECOTYPE (VIRGINIA WILDRYE, PA ECOTYPE)
14.0% PANICUM VIRGATUM, 'CARTHAGE', NC ECOTYPE (SWITCHGRASS, 'CARTHAGE', NC ECOTYPE)
3.0% RUDBECKIA HIRTA (BLACKEYED SUSAN)
2.0% ASCLEPIAS INCARNATA, PA ECOTYPE (SWAMP MILKWEED, PA ECOTYPE)
2.0% VERBENA HASTATA, PA ECOTYPE (BLUE VERVAIN, PA ECOTYPE)
1.0% EUPATORIUM PERFOLIATUM, PA ECOTYPE (BONESET, PA ECOTYPE)
1.0% HELENIUM AUTUMNALE, PA ECOTYPE (COMMON SNEEZEWEED, PA ECOTYPE)
0.1% ASTER NOVAE-ANGLIAE, PA ECOTYPE (NEW ENGLAND ASTER, PA ECOTYPE)
0.1% ASTER UMBELLATUS, PA ECOTYPE (FLAT TOPPED WHITE ASTER, PA ECOTYPE)
0.1% ZIZIA AUREA, PA ECOTYPE (GOLDEN ALEXANDERS, PA ECOTYPE)
0.5% MONARDA FISTULOSA, FORT INDIANTOWN GAP-PA ECOTYPE (WILD BERGAMOT, FORT INDIANTOWN GAP-PA ECOTYPE)
0.3% SOLIDAGO RUGOSA, PA ECOTYPE (WRINKLELEAF GOLDENROD, PA ECOTYPE)

ITEM NUMBER: ERNMX-178
PRODUCT CATEGORIES:
RIPARIAN SITES
HEIGHT: 1.0 -4.0 FT
SEEDING RATE: 20 LB PER ACRE WITH A COVER CROP AT 30 LB PER ACRE (DRY SITES - GRAIN OATS, JAN 1-AUG 1; OR, GRAIN RYE, AUG 1-JAN 1; MOIST SITES - GRAIN RYE YEAR-ROUND)
AS SUPPLIED BY
ERNSTSEED.COM
SALES@ERNSTSEED.COM
1-800-873-3321

NOTES:
FINAL LIMITS OF SEED MIX TO BE ADJUSTED IN FIELD BASED ON OBSERVED CONDITIONS OF BASIN HYDROLOGY.

PLANT NOTES:

1. THE CONTRACTOR SHALL FURNISH QUANTITIES NECESSARY TO COMPLETE THE PLANTING AS SHOWN ON THE PLANTING PLANS.
A. ALL PLANTS SHALL EQUAL OR EXCEED MEASUREMENTS SPECIFIED IN THE PLANT LIST WHICH ARE THE MINIMUM ACCEPTABLE.
B. PLANTS SHALL BE MEASURED BEFORE PRUNING. NECESSARY PRUNING SHALL BE PERFORMED AFTER THE PLANT IS UNTIED AND PRIOR TO INSTALLATION. LANDSCAPE ARCHITECT SHALL BE NOTIFIED OF ANY MAJOR PRUNING REQUIREMENTS DUE TO DAMAGE. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT ANY PLANT MATERIAL THAT NEEDS SIGNIFICANT PRUNING DUE TO DAMAGE FROM SHIPMENT OR HANDLING.
C. WHERE FORMAL ARRANGEMENTS OR CONSECUTIVE ORDER OF TREES OR SHRUBS IS SHOWN, STOCK SHALL BE SELECTED FOR UNIFORM HEIGHT AND SPREAD AND LABELED BY NUMBER TO ASSURE SYMMETRY IN PLANTING.
2. WHERE ALL PLANT MATERIAL HAS BEEN SELECTED AND PRE-TAGGED BY THE LANDSCAPE CONTRACTOR, THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED IN ORDER TO SCHEDULE HIS NURSERY INSPECTION WITH A MINIMUM OF 5 DAYS ADVANCE NOTICE.
A. THE CONTRACTOR SHALL ACCOMPANY THE LANDSCAPE ARCHITECT ON ALL INSPECTIONS.
B. THE CONTRACTOR SHALL HAVE SUFFICIENT ALTERNATE CHOICES TO PREVENT LOSS OF TIME IN THE EVENT THAT SOME TREES FAIL TO MEET THE APPROVAL OF THE LANDSCAPE ARCHITECT.
C. ALL TREES MUST BE APPROVED IN THE FIELD BY THE LANDSCAPE ARCHITECT BEFORE DIGGING BEGINS.
3. LOCATIONS OF PLANT MATERIAL SHOWN ON PLANS ARE APPROXIMATE. FINAL LOCATIONS WILL VARY FROM PLAN AND SHALL BE DETERMINED IN THE FIELD UNDER THE DIRECTION OF THE LANDSCAPE ARCHITECT.
A. CONTRACTOR SHALL PROVIDE PRE-MARKED, COLOR-CODED FLAGS FOR ALL SHADE TREES, EVERGREEN TREES AND FLOWERING TREES.
B. LANDSCAPE ARCHITECT SHALL PLACE THE COLOR-CODED FLAGS TO INDICATE PLANT LOCATIONS.
C. CONTRACTOR SHALL PLACE TREES ABOVE GROUND IN ACCORDANCE WITH THE FLAGGED LOCATION. THE LANDSCAPE ARCHITECT MAY REQUEST THE CONTRACTOR TO MOVE, TURN OR RELOCATE THE PLANT MATERIAL AT THIS TIME. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR PRE-DIG TREE PITS.
D. UPON FINAL APPROVAL BY THE LANDSCAPE ARCHITECT OF TREE PLACEMENT, CONTRACTOR SHALL PAINT A CIRCLE AROUND THE BALL OF THE TREE, MOVE TREE AND EXCAVATE TREE PIT.
4. PLANTS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY; HAVE NORMAL GROWTH HABITS; WELL DEVELOPED BRANCHES; DENSELY FOLIATED; VIGOROUS ROOT SYSTEMS; BE FREE FROM DEFECTS AND INJURIES AND COMPLY WITH ANY SPECIAL INSTRUCTIONS NOTED WITHIN THE PLANT LIST.
5. PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THIS IS NOT POSSIBLE, THE CONTRACTOR SHALL PROTECT PLANT STOCK WHICH HAS NOT BEEN PLANTED. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY.
6. QUALITY, BRANCHING AND SIZE OF PLANTS, INCLUDING ROOT SIZE, SHALL BE IN ACCORDANCE WITH "AMERICAN STANDARDS FOR NURSERY STOCK" ANSI Z60.1-2014 (OR MOST RECENT EDITION) AS PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION.
7. B&B PLANTS SHALL BE HANDLED FROM THE BOTTOM OF THE ROOT BALL ONLY. PLANTS WITH BROKEN, SPLIT OR DAMAGED ROOT BALLS SHALL BE REJECTED.
8. ALL PLANTING BEDS SHALL BE MULCHED TO A DEPTH OF 3-4 INCHES WITH SHREDDED HARDWOOD BARK MULCH. MULCH SHOULD NOT COME INTO CONTACT WITH THE ROOT COLLAR OF TREES OR SHRUBS. THE TOP OF THE ROOT BALL FOR ALL B&B PLANTS SHALL BE EXCAVATED TO EXPOSE THE ROOT FLARE. THE ROOT FLARE SHALL BE AT THE TOP OF THE BALL AND PLANTED LEVEL OR 1" ABOVE FINISHED GRADE. ALL BEDLINES SHALL BE CUT FOUR INCHES DEEP INTO A "V" SHAPED GROOVE TO PROVIDE A WELL DEFINED EDGE. THE LAYOUT OF ALL BEDLINES SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT ON-SITE PRIOR T

EROSION AND SEDIMENT POLLUTION CONTROL PLANS

FOR

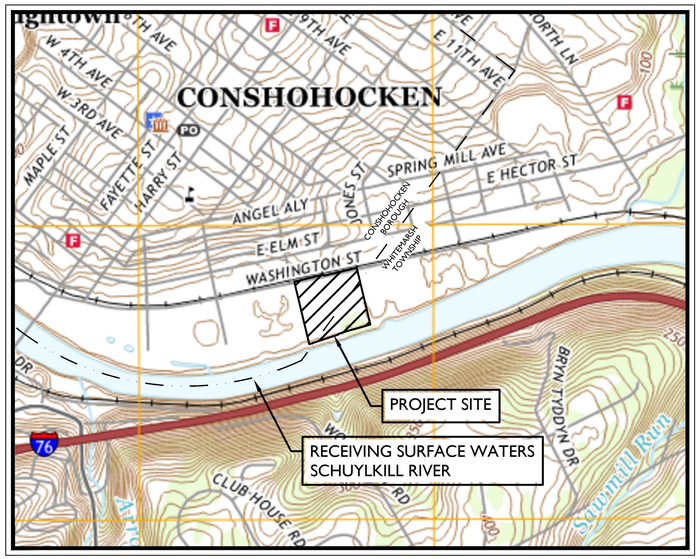
KRE ACQUISITION CORP.

401/433 WASHINGTON STREET APARTMENTS

401 & 433 WASHINGTON STREET

CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY, PENNSYLVANIA



LOCATION MAP

SOURCE: NORRISTOWN, PA USGS MAP

CERTIFICATION

DEP CERTIFICATION NOTE:

I DO HEREBY CERTIFY, PURSUANT TO THE PENALTIES OF 18 PA. C.S.A., SECTION 4904, TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THAT THE INFORMATION CONTAINED IN THE ACCOMPANYING PLANS, SPECIFICATIONS, AND REPORTS HAVE BEEN PREPARED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE. IS TRUE AND CORRECT, AND IS IN CONFORMANCE WITH CHAPTER 102 OF THE RULES AND REGULATIONS OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

ENGINEER — DATE 5/26/2022

PLAN PREPARER: C. RICHARD ROSEBERRY
PHONE: 610-868-4201
THIS PLAN SHALL BE USED FOR EROSION AND SEDIMENT POLLUTION CONTROL PURPOSES ONLY.

INDEX OF SHEETS

SHT. No.	DESCRIPTION	LATEST REVISION
E1	E&SPC COVER SHEET	
E2	E&SPC DEMOLITION PLAN	
E3	E&SPC PLAN	
E4	E&SPC DRAINAGE AREA MAP	
E5 - E7	E&SPC DETAILS	

20140160008\Engineering\E&SPC-SESC-CVER.dwg\C3D LAYOUT By: MSIEBERS

GENERAL INFORMATION

1. PROPERTY IDENTIFICATION - BEING KNOWN AS TAX PARID:
   401 WASHINGTON: (CONSHOHOCKEN BOROUGH) 050011904007 DEED BOOK: 6221 PG: 02635
   (WHITEMARSH TOWNSHIP) 650011904007 DEED BOOK: 6221 PG: 02635
   433 WASHINGTON: (CONSHOHOCKEN BOROUGH) 050011908003 DEED BOOK: 6221 PG: 02635
   (WHITEMARSH TOWNSHIP) 650012685012 DEED BOOK: 6221 PG: 02635
   AS SHOWN IN THE CURRENT OFFICIAL TAX MAPS OF THE BOROUGH OF CONSHOHOCKEN AND WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA. ADDRESS FOR THE SITE IS 401/433 WASHINGTON STREET.
2. THE SUBJECT PROPERTIES ARE LOCATED IN THE SPECIALLY PLANNED TWO (SP-2) ZONING DISTRICT/FLOODPLAIN CONSERVATION DISTRICT (CONSHOHOCKEN BOROUGH) AND THE HEAVY INDUSTRIAL (HVY)/RIVERFRONT DEVELOPMENT (RDD-1) SUB DISTRICT/FLOODPLAIN CONSERVATION OVERLAY DISTRICT/RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT (WHITEMARSH TOWNSHIP) . THE PROPOSED USE OF THE SUBJECT PROPERTIES IS MULTI-FAMILY RESIDENTIAL APARTMENTS AND IS PERMITTED BY RIGHT IN THE SPECIALLY PLANNED TWO (SP-2) ZONING DISTRICT (CONSHOHOCKEN BOROUGH) AND PERMITTED BY RIGHT IN THE RIVERFRONT DEVELOPMENT DISTRICT (RDD-1) (WHITEMARSH TOWNSHIP).
3. OWNER:
   SPECTRUM-C LLC
   47 WHITNEY STREET
   WESTPORT, CT, 06880
4. APPLICANT/EQUITABLE OWNER:
   KRE ACQUISITION CORP.
   520 US HWY 22
   PO BOX 6872
   BRIDGEWATER, NJ 08807
   P: (908) 725-8100
5. STATEMENT OF INTENT - THE PROPOSED USE IS MULTI-FAMILY RESIDENTIAL. EACH PROPOSED APARTMENT BUILDING IS FOUR FLOORS OVER AT-GRADE PARKING.
6. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON WAS OBTAINED FROM FIELD SURVEY PERFORMED ON APRIL 7, 2021 AND PREPARED BY VALLEY LAND SERVICES, LLC., PLAN DATED APRIL 26, 2021 AND LAST REVISED MAY 7, 2021.
7. DEED REFERENCE - DEED BOOK 2702 PAGE 415 AND DEED BOOK 2818 PAGE 327
   DEED BOOK 2820 PAGE 189
8. MAP REFERENCES -
   A. A MAP ENTITLED: "ALTA/NSPS LAND TITLE SURVEY" PREPARED BY VALLEY LAND SERVICES, LLC, DATED APRIL 26, 2021, LAST REVISED JUNE 16, 2021.
9. THE EXISTENCE OF ANY UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE SURVEY.
10. TOPOGRAPHIC INFORMATION SHOWN HEREON WAS TAKEN FROM GROUND SURVEY PERFORMED BY VALLEY LAND SERVICES, LLC. THE LOCATION OF ALL UNDERGROUND UTILITIES AS SHOWN HEREON ARE APPROXIMATE AND ARE BASED ON VISIBLE SURFACE STRUCTURES AND ANY UTILITY MAPS PROVIDED BY UTILITY COMPANIES REFERENCED HEREON.
11. EXISTING SITE TOPOGRAPHIC INFORMATION AS SHOWN HEREON IS BASED UPON NAVD 88.
12. BENCHMARKS: ⌖ MAG NAIL, ELEV. 57.31
13. ZONE DATA:

CONSHOHOCKEN BOROUGH ZONING DATA:

401 WASHINGTON STREET

SPECIALLY PLANNED DISTRICT TWO (SP-2)

ITEM	ZONING ORDINANCE	PERMITTED	PROPOSED
SPECIALLY PLANNED DISTRICT TWO			
MINIMUM LOT AREA	27-1511.1.	3 ACRES	4.97 ACRES (NET)
MINIMUM LOT WIDTH	27-1511.2.A.	100 FEET	338.60 FEET
MINIMUM LOT DEPTH	27-1511.2.B.	100 FEET	671.68 FEET
MAXIMUM IMPERVIOUS COVERAGE	27-1511.3.A.	70%	69.73% (TOTAL SITE)
MAXIMUM FLOOR AREA RATIO (FAR)	27-1511.3.D.	1.5	1.5
MINIMUM FLOOR AREA (ONE BEDROOM)	27-1511.4.	700 SF	>700 SF
MINIMUM FLOOR AREA (TWO BEDROOM)	27-1511.4.	900 SF	>900 SF
MINIMUM FLOOR AREA (THREE BEDROOM)	27-1511.4.	1,100 SF	>1,100 SF
MAXIMUM BUILDING HEIGHT	27-1511.5.B.	85 FEET	65 FEET(b)
BUILDING SETBACK FROM ULTIMATE RIGHT-OF-WAY/PROPERTY LINE	27-1511.6.B.(1)	15 FEET	15.02 FEET
PARKING SETBACK FROM ULTIMATE RIGHT-OF-WAY	27-1511.6.B.(1)	15 FEET	15.02 FEET
MINIMUM BUILDING SEPARATION	27-1511.6.C.	30 FEET/75 FEET (a)	80 FEET

(a) 75 FEET WITH SURFACE PARKING BETWEEN BUILDINGS.
(b) EACH BUILDING CONTAINS FOUR (4) HABITABLE RESIDENTIAL STORIES THAT ARE LOCATED ABOVE ONE STORY OF OPEN PODIUM PARKING.

433 WASHINGTON STREET

SPECIALLY PLANNED DISTRICT TWO (SP-2)

ITEM	ZONING ORDINANCE	PERMITTED	PROPOSED
SPECIALLY PLANNED DISTRICT TWO			
MINIMUM LOT AREA	27-1511.1.	3 ACRES	5.69 ACRES (NET)
MINIMUM LOT WIDTH	27-1511.2.A.	100 FEET	375.74 FEET
MINIMUM LOT DEPTH	27-1511.2.B.	100 FEET	651.54 FEET
MAXIMUM IMPERVIOUS COVERAGE	27-1511.3.A.	70%	69.73% (TOTAL SITE)
MAXIMUM FLOOR AREA RATIO (FAR)	27-1511.3.D.	1.5	1.5
MINIMUM FLOOR AREA (ONE BEDROOM)	27-1511.4.	700 SF	>700 SF
MINIMUM FLOOR AREA (TWO BEDROOM)	27-1511.4.	900 SF	>900 SF
MAXIMUM BUILDING HEIGHT	27-1511.5.B.	85 FEET	65 FEET (b)
BUILDING SETBACK FROM ULTIMATE RIGHT-OF-WAY/PROPERTY LINE	27-1511.6.B.(1)	15 FEET	15.05 FEET
PARKING SETBACK FROM ULTIMATE RIGHT-OF-WAY	27-1511.6.B.(1)	15 FEET	15.05 FEET
MINIMUM BUILDING SEPARATION	27-1511.6.C.	30 FEET/75 FEET	80 FEET (a)

(a) 75 FEET WITH SURFACE PARKING BETWEEN BUILDINGS.
(b) EACH BUILDING CONTAINS FOUR (4) HABITABLE RESIDENTIAL STORIES THAT ARE LOCATED ABOVE ONE STORY OF OPEN PODIUM PARKING.

WHITEMARSH TOWNSHIP ZONING DATA:

HEAVY INDUSTRIAL DISTRICT (HVY) WITH RDD-1 SUB DISTRICT

ITEM	ZONING ORDINANCE	PERMITTED	PROPOSED
RIVERFRONT DEVELOPMENT DISTRICT ONE			
MINIMUM LOT AREA	116-281.A.(1)	3 ACRES	2.91 ACRES
MINIMUM LOT WIDTH AT BUILDING SETBACK	116-281.A.(2)	200 FEET	375.74 FEET
BUILDING SETBACKS	116-281.A.(3)(a)	20 FEET	84.96 FEET
MINIMUM PARKING SETBACK	116-281.A.(4)	15 FEET	15.95 FEET
MAXIMUM BUILDING COVERAGE	116-281.A.(5)	40%	29.57% (TOTAL SITE)
MAXIMUM DENSITY	116-281.A.(6)	30 UNITS/ACRE	20.62 UNITS PER ACRE (a)
MAXIMUM BUILDING HEIGHT	116-281.A.(7)	4 STORIES	4 STORIES (b)
IMPERVIOUS COVER	116-148.B.(1)	75%	69.73% (TOTAL SITE)

(a) 60 UNITS ARE LOCATED IN THE WHITEMARSH TOWNSHIP PORTION OF 433 WASHINGTON STREET. WITH THE WHITEMARSH TOWNSHIP PORTION OF THE LOT MEASURING 2.91 ACRES.
(b) EACH BUILDING CONTAINS FOUR (4) HABITABLE RESIDENTIAL STORIES THAT ARE LOCATED ABOVE ONE STORY OF OPEN PODIUM PARKING.

14. PARKING CALCULATIONS:

	NUMBER OF UNITS	REQUIRED PARKING*	PROVIDED PARKING	COMPACT ALLOWED**	COMPACT PROVIDED	ADA PARKING PROVIDED***
401 WASHINGTON ST. (CONSHOHOCKEN)	322	386.4	342	120	67	8
433 WASHINGTON ST. (CONSHOHOCKEN)	216	259.2	268	94	98	8
433 WASHINGTON ST. (WHITEMARSH)	60	105.0	141	0	0	-
	598	751	751	214	165	16

* REQUIRED PARKING: 1.2 SPACES PER DWELLING UNIT IN CONSHOHOCKEN & 1.75 SPACES PER DWELLING UNIT IN WHITEMARSH
** COMPACT SPACES:35% OF TOTAL ALLOWED IN CONSHOHOCKEN & 0% OF TOTAL ALLOWED IN WHITEMARSH

*** ADA REQUIRES 2% OF TOTAL SPACES

~ THE PARKING ALONG CHERRY STREET WAS MODIFIED FROM PARALLEL SPACES TO PERPENDICULAR SPACES. THIS MODIFICATION INCREASED THE EXISTING PARKING FROM 23 SPACES TO 48 SPACES. THE 25 ADDITIONAL SPACES ARE INCLUDED IN THE TOTAL PARKING FOR 401 WASHINGTON INCREASING THE SITE FROM 317 TO 342 TOTAL SPACES, WHICH IS LESS THAN THE REQUIRED AMOUNT OF 386 SPACES.

15. POTABLE WATER SERVICE WILL BE BY EXISTING PUBLIC WATER SUPPLY AND SANITARY SEWER SERVICE WILL BE BY PUBLIC SEWAGE.
16. THERE ARE NO WETLANDS ON SITE.
17. BY GRAPHICAL REPRESENTATION ONLY THIS PROPERTY IS LOCATED IN FLOOD HAZARD ZONE AE AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 42091C0358G WHICH HAS AN EFFECTIVE DATE OF MARCH 2, 2016 AND IS IN A SPECIAL FLOOD HAZARD AREA. NO FIELD SURVEYING WAS PERFORMED TO DETERMINE THIS ZONE. THE FEMA CALCULATED 100-YEAR FLOOD ELEVATION FOR THIS PROJECT IS 60.5 FEET (NAVD 88) IN ACCORDANCE FIRM MAP NUMBER 42091C0358G DATED MARCH 2, 2016.
18. ALL SOILS ON SITE WERE TAKEN FROM THE NRCS WEB SOIL SURVEY.
19. THE SITE IS UNDERLAIN BY THE OLIGOCLASEMICA SCHIST OF THE WISSAHICKON FORMATION AND THE IMPURE LIMESTONE AND DOLOMITE OF THE CONESTOGA FORMATION.
20. THE PROPOSED DEVELOPMENT IS WITHIN THE LOWER SCHUYLKILL RIVER WATERSHED, WHICH DOES NOT HAVE AN APPROVED ACT 167 PLAN.
21. NO TOPSOIL SHALL BE REMOVED FROM THE SITE UNLESS AUTHORIZED BY WHITEMARSH TOWNSHIP, CONSHOHOCKEN BOROUGH, AND/OR MCCD. PERMANENT REMOVAL OF TOPSOIL FROM LAND WITHIN CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP IS PROHIBITED. NO TOPSOIL SHALL BE USED AS SPOIL.
22. EXCESS CONSTRUCTION WASTE AND DEBRIS SHALL BE REMOVED FROM THE SITE AT THE COMPLETION OF THE PROJECT. UNDER NO CIRCUMSTANCES SHALL SUCH MATERIAL BE ALLOWED TO BE BURIED OR USED AS BACKFILL MATERIAL.
23. MATERIALS, WORKMANSHIP, AND CONSTRUCTION FOR THE SITE IMPROVEMENTS SHOWN HEREON SHALL BE IN ACCORDANCE WITH:
   A. PENNSYLVANIA DEPARTMENT OF TRANSPORTATION "SPECIFICATIONS PUBLICATION 408", 2020; AS SUPPLEMENTED.
   B. CURRENT PREVAILING MUNICIPAL, COUNTY, AND/OR STATE AGENCY SPECIFICATIONS, STANDARDS, CONDITIONS, AND REQUIREMENTS.
   C. CURRENT PREVAILING UTILITY COMPANY/AUTHORITY SPECIFICATIONS, STANDARDS, AND REQUIREMENTS.
   D. CURRENT MANUFACTURER SPECIFICATIONS, STANDARDS, AND REQUIREMENTS.
24. PROPER PIPE COVERAGE SHALL BE MAINTAINED DURING ALL PHASES OF CONSTRUCTION. PIPE LENGTHS SHOWN HEREON ARE FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
25. THIS IS A SITE DEVELOPMENT PLAN AND UNLESS SPECIFICALLY NOTED ELSEWHERE HEREON, IS NOT A SURVEY.
26. ALL ELECTRIC, TELEPHONE, AND COMMUNICATION SERVICE FACILITIES, BOTH MAIN AND SERVICE LINES, SHALL BE PROVIDED BY UNDERGROUND CABLES, INSTALLED IN ACCORDANCE WITH THE PREVAILING STANDARDS AND PRACTICES OF THE UTILITY AND OTHER COMPANIES PROVIDING SUCH SERVICE.
27. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH PENNDOT PUBLICATION 408 AND CONSHOHOCKEN BOROUGH CONSTRUCTION STANDARDS.
28. THIS SET OF PLANS IS NOT DEPICTING ENVIRONMENTAL CONDITIONS OR A CERTIFICATION/ WARRANTY REGARDING THE PRESENCE OR ABSENCE OF ENVIRONMENTALLY IMPACTED SITE CONDITIONS. MASER CONSULTING HAS PERFORMED NO EXPLORATORY OR TESTING SERVICES, INTERPRETATIONS, CONCLUSIONS, OR OTHER SITE ENVIRONMENTAL SERVICES RELATED TO THE DETERMINATION OF THE POTENTIAL FOR CHEMICAL, TOXIC, RADIOACTIVE, OR OTHER TYPE OF CONTAMINANTS AFFECTING THE PROPERTY AND THE UNDERSIGNED PROFESSIONAL IS NOT QUALIFIED TO DETERMINE THE EXISTENCE OF THE SAME. SHOULD ENVIRONMENTAL CONTAMINATION OR WASTE BE DISCOVERED, THE OWNER AND CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LAWS AND REGULATIONS.
29. THESE GENERAL NOTES APPLY TO ALL SHEETS IN THE SET.

UTILITY NOTES

1. EXISTING UTILITY INFORMATION SHOWN HEREON HAS BEEN COLLECTED FROM VARIOUS SOURCES AND IS NOT GUARANTEED AS TO ACCURACY OR COMPLETENESS. THE CONTRACTOR SHALL VERIFY ALL INFORMATION TO HIS SATISFACTION PRIOR TO EXCAVATION. WHERE EXISTING UTILITIES ARE TO BE CROSSED BY PROPOSED CONSTRUCTIONS, TEST PITS SHALL BE DUG BY THE CONTRACTOR PRIOR TO CONSTRUCTION TO ASCERTAIN EXISTING INVERTS, MATERIALS, AND SIZES. TEST PIT INFORMATION SHALL BE GIVEN TO THE ENGINEER PRIOR TO CONSTRUCTION TO PERMIT ADJUSTMENTS AS REQUIRED TO AVOID CONFLICTS. THE CONTRACTOR SHALL NOTIFY THE UNDER SIGNED PROFESSIONAL IMMEDIATELY IF ANY FIELD CONDITIONS ENCOUNTERED DIFFER MATERIALLY FROM THOSE REPRESENTED HEREON. SUCH CONDITIONS COULD RENDER THE DESIGNS HEREON INAPPROPRIATE OR INEFFECTIVE.
2. UTILITY RELOCATIONS SHOWN HEREON, IF ANY, ARE FOR INFORMATIONAL PURPOSES ONLY AND MAY NOT REPRESENT ALL REQUIRED UTILITY RELOCATIONS. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING AND/OR COORDINATING ALL REQUIRED UTILITY RELOCATIONS IN COOPERATION WITH THE RESPECTIVE UTILITY COMPANY/AUTHORITIES.
3. STORM SEWERS SHALL BE ADS N-12 HIGH DENSITY POLYETHYLENE PIPE (HDPEP), AS NOTED ON THE PLAN, OR APPROVED EQUAL. PROPER PIPE COVERAGE SHALL BE MAINTAINED DURING ALL PHASES OF CONSTRUCTION. PIPE LENGTHS SHOWN HEREON ARE FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
4. CONTRACTOR IS RESPONSIBLE TO DETERMINE WHEN SPECIAL OR OVERSIZED DRAINAGE STRUCTURES ARE REQUIRED. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR ALL SPECIAL (OVERSIZED) DRAINAGE STRUCTURES TO THE TOWNSHIP ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
5. WATER SERVICE TO BE PROVIDED FROM THE EXISTING WATER MAIN LINE ON WASHINGTON STREET, OWNED AND OPERATED BY AQUA PENNSYLVANIA. PROPOSED WATER MAIN EXTENSIONS AND FIRE HYDRANT LOCATIONS ARE SUBJECT TO MUNICIPAL REVIEW AND APPROVAL, ACCORDING TO THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION REGULATIONS, AMERICAN WATERWORKS ASSOCIATION STANDARDS. PIPE MATERIALS SHALL BE CEMENT LINED DUCTILE IRON PIPE, CLASS 52, WITH ASPHALTIC EPOXY TYPE COATING OR HIGH DENSITY POLYETHYLENE (HDPE) SDR-11 PIPE AS NOTED ON THE PLANS. WATER MAINS SHALL BE INSTALLED TO PROVIDE A MINIMUM 4 FEET OF COVER FROM THE TOP OF PIPE TO THE PROPOSED GRADE.
6. SANITARY SEWER SERVICE SHALL BE PROVIDED BY GRAVITY CONNECTION TO EXISTING SEWER MAIN ON WASHINGTON STREET, OWNED AND OPERATED BY THE BOROUGH OF CONSHOHOCKEN AUTHORITY. PROPOSED SEWER MAIN EXTENSIONS AND MANHOLE LOCATIONS ARE SUBJECT TO MUNICIPAL REVIEW AND APPROVAL, ACCORDING TO PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION REGULATIONS. PIPE MATERIALS SHALL BE PVC SDR-26, EXCEPT AS NOTED OTHERWISE ON THE PLANS. EXCEPT WHERE SHALLOWER DEPTHS ARE PERMITTED BY THE MUNICIPALITY OR UTILITY AUTHORITY, SEWER LINES, INCLUDING FORCE MAINS AND LATERALS, SHALL BE INSTALLED TO PROVIDE A MINIMUM 5 FEET OF COVER FROM THE TOP OF PIPE TO PROPOSED GRADE.
7. ALL WATER MAINS SHOULD BE SEPARATED FROM SANITARY SEWER AND INDUSTRIAL DISCHARGE LINES BY A MINIMUM HORIZONTAL DISTANCE OF 10 FEET. IF SUCH HORIZONTAL SEPARATION IS NOT POSSIBLE, THE WATER AND SEWER LINES SHALL BE IN SEPARATE TRENCHES (STEP TRENCHES ARE PROHIBITED) WITH THE TOP OF THE SEWER LINE AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER MAIN OR WITH SUCH SEPARATION EXPRESSLY APPROVED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
8. AT THE CROSSINGS OF SEWER LINES AND WATER MAINS, THE TOP OF THE SEWER LINES SHALL BE AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER MAIN (SEWER SERVICE LATERALS ARE NOT SUBJECT TO THIS REQUIREMENT). IF SUCH VERTICAL SEPARATION IS NOT POSSIBLE, THE SEWER LINE SHALL BE OF WATERTIGHT CONSTRUCTION (THAT IS DUCTILE IRON PIPE WITH MECHANICAL RESTRAINT JOINTS), WITH WATERTIGHT JOINTS THAT IS A MINIMUM OF 10 FEET FROM THE WATER MAIN. CONTRACTOR SHALL USE TRANSITION COUPLING, POWER SEAL MODEL #3501 OR EQUIVALENT AT DIP/PVC JOINTS.
9. GAS, ELECTRIC, LIGHTING, CABLE TELEVISION, AND ELECTRICAL SERVICE PLANS, IF REQUIRED, SHALL BE PREPARED BY THE RESPECTIVE UTILITY COMPANIES THAT SERVICE THE AREA PRIOR TO SITE CONSTRUCTION AND SHALL BE INSTALLED PER ORDINANCE OR LOCAL UTILITY COMPANIES REQUIREMENTS.
10. TELEPHONE, ELECTRIC, AND GAS LINES WILL BE INSTALLED UNDERGROUND. CROSSINGS OF PROPOSED PAVEMENTS WILL BE INSTALLED PRIOR TO THE CONSTRUCTION OF PAVEMENT BASE COURSE.
11. STORMWATER INTERCONNECTIONS WITH THE SANITARY SEWER SYSTEM SHALL NOT BE PERMITTED.
12. APPROVAL OF THESE PLANS DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT OF WASTEWATER COLLECTION, CONVEYANCE, OR TREATMENT CAPACITY.
13. THE ENTIRETY OF THE ROOF AREAS OF THE PROPOSED APARTMENT BUILDINGS SHALL BE DIRECTED TO THE UNDERGROUND DETENTION BASIN B.
14. NO PERSON SHALL PLACE ANY STRUCTURE, FILL, LANDSCAPING OR VEGETATION INTO A STORMWATER BMP, WHICH WOULD LIMIT OR ALTER THE FUNCTIONING OF THE BMP.
15. ANY ALTERATION TO THE STORMWATER BMPs SHALL NOT BE PERMITTED UNLESS AUTHORIZED BY THE CONSHOHOCKEN BOROUGH AND WHITEMARSH TOWNSHIP ENGINEER AND MONTGOMERY COUNTY CONSERVATION DISTRICT.

THESE GENERAL NOTES SHALL APPLY TO ALL SHEETS IN THIS SET.

THIS SITE ULTIMATELY FLOWS TO THE SCHUYLKILL RIVER, WHICH IS PART OF THE SCHUYLKILL RIVER WATERSHED. THE PENNSYLVANIA CODE, TITLE 25, CHAPTER 93, WATER QUALITY STANDARDS ASSIGNS THE SCHUYLKILL RIVER A WATER QUALITY DESIGNATION OF WARM WATER FISHERY, MIGRATORY FISHES (WWF, MF).

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REV	DATE	DRAWN BY	DESCRIPTION

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — C. RICHARD ROSEBERRY — ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

EROSION AND SEDIMENT POLLUTION CONTROL PLANS
FOR
401/433 WASHINGTON STREET APARTMENTS
401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

Colliers Engineering & Design
LEHIGH VALLEY
941 Marcon Boulevard, Suite 801
Allentown, PA 18109
Phone: 610.868.4201
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

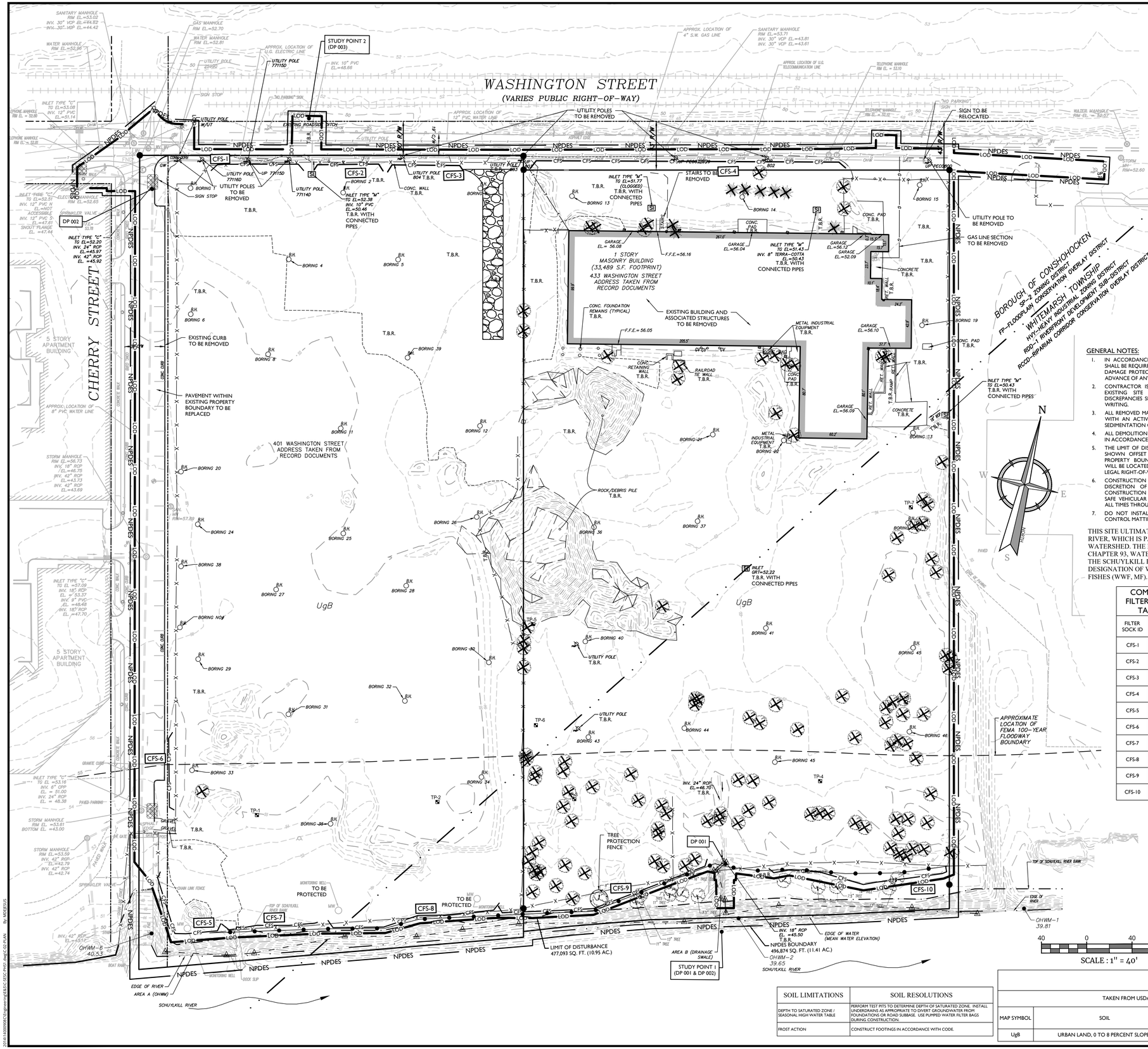
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	5/6/2022	SF	CRR

PROJECT NUMBER: 14000908C
DRAWING NAME: C-SESC-CVER

SHEET TITLE: EROSION AND SEDIMENT POLLUTION CONTROL COVER SHEET

SHEET NUMBER: E1 of E7

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



TEST BORING TABLE

BORING ID	G.W. DEPTH (FT)	BORING ID	G.W. DEPTH (FT)
1	7.2	24	8.8
2	7.1	25	7.8
3	7.3	26	6.2
4	7.4	27	9.7
5	6.7	28	7.2
6	9.3	29	7.3
7	7.3	30	7.3
8	7.5	31	6.4
9	8.4	32	9.2
10	8.8	33	8.9
11	7.7	34	5.8
12	7.4	35	6.1
13	6.1	36	4.2
14	5.6	37	4.4
15	5.5	38	6.2
16	4.6	39	7.3
17	4.8	40	4.8
18	6.5	41	7.3
19	5.3	42	9.3
20	5.4	43	4.5
21	4.2	44	4.3
22	4.8	45	5.5
23	4.8	46	7.8

*FROM GEOTECHNICAL EXPLORATION REPORT DATED MAY 28, 2013 PREPARED BY DAVID BLACKMORE AND ASSOCIATES INC.

TEST PIT TABLE

TEST PIT ID	TEST PIT DEPTH (IN)
TP-1	75.00
TP-2	51.75
TP-3	33.00
TP-4	48.00
TP-5	33.00
TP-6	28.30
TP-7	44.80
TP-8	74.50

*FROM STORMWATER INFILTRATION TESTING SUMMARARY DATED MAY 30, 2014 PREPARED BY MASER CONSULTING.

ENVIRONMENTAL NOTE:

THIS SET OF PLANS IS NOT DEPICTING ENVIRONMENTAL CONDITIONS OR A CERTIFICATION/WARRANTY REGARDING THE PRESENCE OR ABSENCE OF ENVIRONMENTALLY IMPACTED SITE CONDITIONS. COLLIERS ENGINEERING & DESIGN HAS PERFORMED NO EXPLORATORY OR TESTING SERVICES, INTERPRETATIONS, CONCLUSIONS, OR OTHER SITE ENVIRONMENTAL SERVICES RELATED TO THE DETERMINATION OF THE POTENTIAL FOR CHEMICAL, TOXIC, RADIOACTIVE, OR OTHER TYPE OF CONTAMINANTS AFFECTING THE PROPERTY AND THE UNDERSIGNED PROFESSIONAL IS NOT QUALIFIED TO DETERMINE THE EXISTENCE OF SAME. SHOULD ENVIRONMENTAL CONTAMINATION OR WASTE BE DISCOVERED, THE OWNER AND CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LAWS AND REGULATIONS.

- THE LIMIT OF DISTURBANCE AND NPDES BOUNDARIES ARE SHOWN OFFSET FROM OBJECTS AND OUTSIDE OF THE PROPERTY BOUNDARY FOR CLARITY. DISTURBANCE WILL BE LOCATED WITHIN THE PROPERTY BOUNDARY AND LEGAL RIGHT-OF-WAY OF WASHINGTON STREET AND CHERRY STREET.
- CONSTRUCTION FENCE TO BE INSTALLED AT THE DISCRETION OF THE CONSTRUCTION MANAGER. THE CONSTRUCTION FENCE MUST BE INSTALLED TO MAINTAIN SAFE VEHICULAR AND PEDESTRIAN TRAFFIC PATTERNS AT ALL TIMES THROUGHOUT CONSTRUCTION.
- DO NOT INSTALL COMPOST FILTER SOCKS ON EROSION CONTROL MATTING.

DEMO LEGEND

T.B.R.	EXISTING FEATURE TO BE REMOVED
X	TREE TO BE REMOVED
	TEST PIT & ID
	TEST BORING & ID
	TEMPORARY CONSTRUCTION FENCE

GENERAL NOTES:

1. IN ACCORDANCE WITH STATE LAW, THE CONTRACTOR SHALL BE REQUIRED TO CALL THE PENNSYLVANIA ONE CALL DAMAGE PROTECTION SYSTEM FOR UTILITY MARK OUT IN ADVANCE OF ANY EXCAVATION.
2. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING SITE IMPROVEMENTS AND UTILITIES. ALL DISCREPANCIES SHALL BE IDENTIFIED TO THE ENGINEER IN WRITTING.
3. ALL REMOVED MATERIAL MUST BE TRANSPORTED TO A SITE WITH AN ACTIVE NPDES PERMIT OR ACTIVE EROSION & SEDIMENTATION CONTROL PLAN.
4. ALL DEMOLITION DEBRIS TO BE REMOVED BY CONTRACTOR IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
5. THE LIMIT OF DISTURBANCE AND NPDES BOUNDARIES ARE SHOWN OFFSET FROM OBJECTS AND OUTSIDE OF THE PROPERTY BOUNDARY FOR CLARITY. ALL DISTURBANCE WILL BE LOCATED WITHIN THE PROPERTY BOUNDARY AND LEGAL RIGHT-OF-WAY OF WINDSOR DRIVE.
6. CONSTRUCTION FENCE TO BE INSTALLED AT THE DISCRETION OF THE CONSTRUCTION MANAGER. THE CONSTRUCTION FENCE MUST BE INSTALLED TO MAINTAIN SAFE VEHICULAR AND PEDESTRIAN TRAFFIC PATTERNS AT ALL TIMES THROUGHOUT CONSTRUCTION.
7. DO NOT INSTALL COMPOST FILTER SOCKS ON EROSION CONTROL MATTING.

THIS SITE ULTIMATELY FLOWS TO THE SCHUYLKILL RIVER, WHICH IS PART OF THE SCHUYLKILL RIVER WATERSHED. THE PENNSYLVANIA CODE, TITLE 25, CHAPTER 93, WATER QUALITY STANDARDS ASSIGNS THE SCHUYLKILL RIVER A WATER QUALITY DESIGNATION OF WARM WATER FISHERY, MIGRATORY FISHES (WWF, MF).

EROSION CONTROL LEGEND

	PROPOSED
NPDES BOUNDARY	NPDES
LIMIT OF DISTURBANCE	LOD
COMPOST FILTER SOCK	CFS
ROCK CONSTRUCTION ENTRANCE AND LABEL	CE
TOPSOIL STOCKPILE & 24" CFS	TS
INLET PROTECTION	

COMPOST FILTER SOCK TABLE

FILTER SOCK ID	FILTER SOCK SIZE
CFS-1	18"
CFS-2	18"
CFS-3	18"
CFS-4	18"
CFS-5	18"
CFS-6	18"
CFS-7	18"
CFS-8	18"
CFS-9	18"
CFS-10	18"

LEGEND

TRAVERSE LINE, CENTER LINE OR BASELINE	WETLAND MARKER
RIGHT OF WAY LINE	TREE
PROPERTY LINE	ROADWAY SIGNS
EDGE OF PAVEMENT	TRAFFIC FLOW
CURB LINE	MAILBOX
DEPRESSED CURB	TRAFFIC SIGNAL POLE
CHAIN FENCE	POLE MOUNTED LIGHT
WETLAND LINE	UTILITY POLE
MUNICIPAL BOUNDARY	GUY WIRE
TREELINE	TRANSFORMER
ELECTRICAL MANHOLE	FIRE DEPT. CONNECTION
WATER MANHOLE	FIRE HYDRANT
TELEPHONE MANHOLE	WATER VALVE
UNMARKED MANHOLE	GAS VALVE
SANITARY MANHOLE	SANITARY CLEANOUT
DRAINAGE MANHOLE	CONCRETE MONUMENT
MAJOR CONTOUR	CAPPED REBAR/IRON PIPE
MINOR CONTOUR	STORM INLET TYPE "C"
SPOT ELEVATION	STORM INLET TYPE "M"
TOP OF CURB ELEV.	FLARED END SECTION
BOTTOM OF CURB ELEV.	HEADWALL
U/G CABLE TV LINE	
U/G FIBER OPTIC LINE	
U/G TELEPHONE LINE	
U/G ELECTRIC LINE	
OVERHEAD WIRE	
WATER MAIN	
GAS MAIN	
SAN. SEWER LATERAL	
SAN. SEWER MAIN	
STORM PIPE	

ABBREVIATIONS

D.C. = DEPRESSED CURB	FF = FINISH FLOOR	MHWL = MEAN HIGH WATERLINE	
BC = BOTTOM OF CURB	UV = UNKNOWN VALVE	MLWL = MEAN LOW WATERLINE	
TC = TOP OF CURB	MH = MANHOLE	TW = TOP OF WALL	
BOL = BOLLARD	DEP. = DEPRESSED	BW = BOTTOM WALL	
GRT = GRATE	CL = CENTERLINE		
MB = MAILBOX	PM = PARKING METER		

SOIL LIMITATIONS	SOIL RESOLUTIONS
DEPTH TO SATURATED ZONE / SEASONAL HIGH WATER TABLE	PERFORM TEST PITS TO DETERMINE DEPTH OF SATURATED ZONE. INSTALL UNDERDRAINS AS APPROPRIATE TO DIVERT GROUNDWATER FROM FOUNDATIONS OR ROAD SUBBASE. USE PUMPED WATER FILTER BAGS DURING CONSTRUCTION.
FROST ACTION	CONSTRUCT FOOTINGS IN ACCORDANCE WITH CODE.

SOILS SCHEDULE

TAKEN FROM USDA NATURAL RESOURCE CONSERVATION SERVICE (NRCS)

MAP SYMBOL	SOIL	HYDROLOGIC SOILS GROUP	DEPTH TO BEDROCK (FT. BELOW GRADE)	DEPTH TO SEASONAL WATER TABLE (FT. BELOW GRADE)	FLOOD HAZARD POTENTIAL	HYDRIC/ HYDRIC COMPONENT
UgB	URBAN LAND, 0 TO 8 PERCENT SLOPES	B	VARIES > 4.5 FT	VARIES 0.75 - 3.3	NONE	NONE

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
C. RICHARD ROSEBERRY
ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

EROSION AND SEDIMENT POLLUTION CONTROL PLANS
FOR
401/433 WASHINGTON STREET APARTMENTS
401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	5/6/2022	SF	CRR

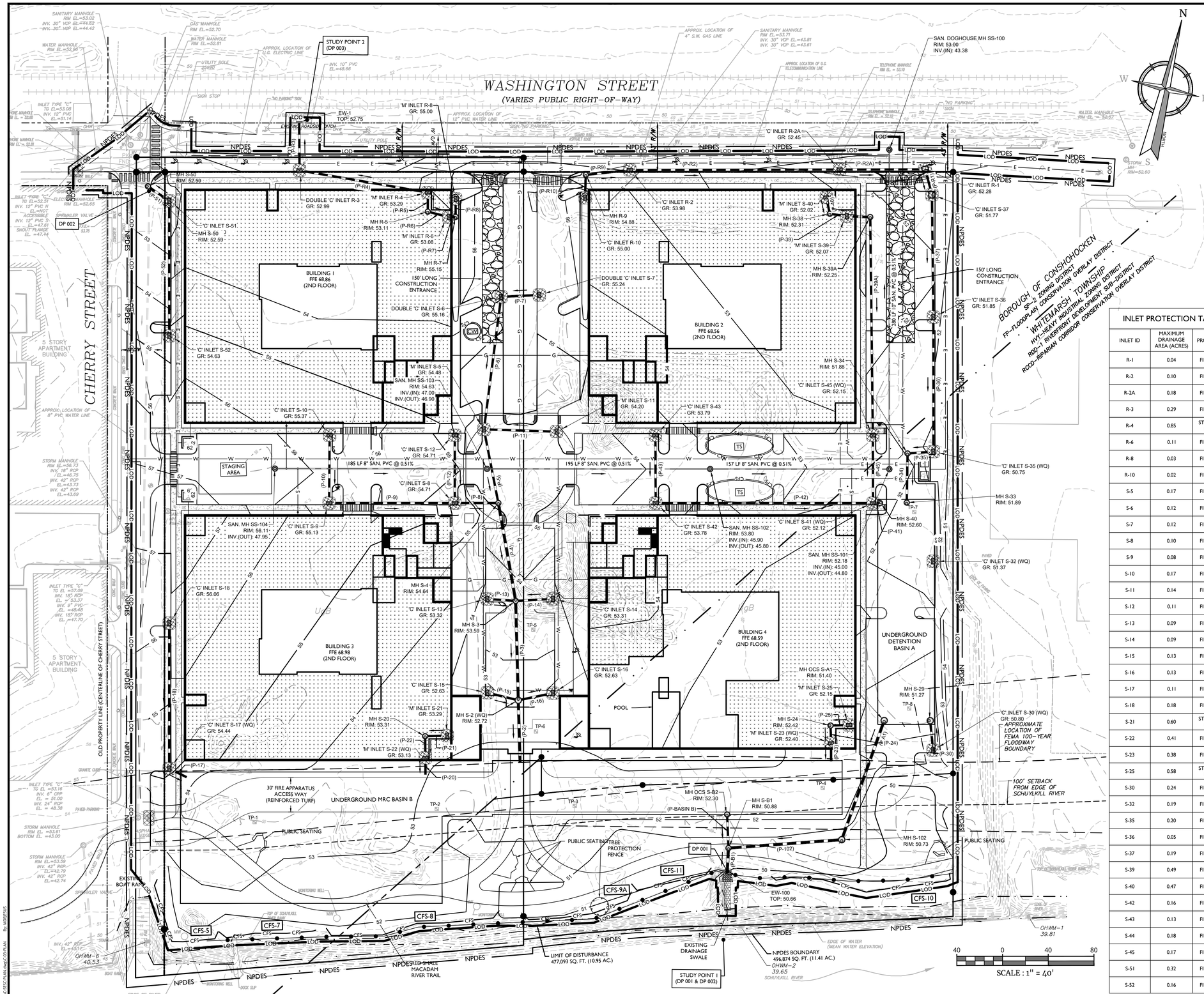
PROJECT NUMBER: 14000908C
DRAWING NAME: C-SESC-PHS1

SHEET TITLE:
EROSION AND SEDIMENT POLLUTION CONTROL DEMOLITION PLAN

SHEET NUMBER:
E2 of E7

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

20141400908C\Engineering\E&SPC-SESC-PHS1.dwg|C-SD-PLAN By: MDEBESIS



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- DO NOT INSTALL COMPOST FILTER SOCKS ON EROSION CONTROL MATTING.

COMPOST FILTER SOCK TABLE

FILTER SOCK ID	FILTER SOCK SIZE
CFS-1	18"
CFS-2	18"
CFS-3	18"
CFS-4	18"
CFS-5	18"
CFS-7	18"
CFS-8	18"
CFS-9A	18"
CFS-10	18"
CFS-11	18"

EROSION CONTROL LEGEND

	PROPOSED
NPDES BOUNDARY	NPDES
LIMIT OF DISTURBANCE	LOD
COMPOST FILTER SOCK	CFS
ROCK CONSTRUCTION ENTRANCE AND LABEL	CE
TOPSOIL STOCKPILE & 24" CFS	TS
INLET PROTECTION	
SOIL EROSION MATTING NAG: SC250	
ROCK APRON	

INLET PROTECTION TABLE

INLET ID	MAXIMUM DRAINAGE AREA (ACRES)	INLET PROTECTION TYPE
R-1	0.04	FILTER BAG
R-2	0.10	FILTER BAG
R-2A	0.18	FILTER BAG
R-3	0.29	FILTER BAG
R-4	0.85	STONE AND BLOCK
R-6	0.11	FILTER BAG
R-8	0.03	FILTER BAG
R-10	0.02	FILTER BAG
S-5	0.17	FILTER BAG
S-6	0.12	FILTER BAG
S-7	0.12	FILTER BAG
S-8	0.10	FILTER BAG
S-9	0.08	FILTER BAG
S-10	0.17	FILTER BAG
S-11	0.14	FILTER BAG
S-12	0.11	FILTER BAG
S-13	0.09	FILTER BAG
S-14	0.09	FILTER BAG
S-15	0.13	FILTER BAG
S-16	0.13	FILTER BAG
S-17	0.11	FILTER BAG
S-18	0.18	FILTER BAG
S-21	0.60	STONE AND BLOCK
S-22	0.41	FILTER BAG
S-23	0.38	FILTER BAG
S-25	0.58	STONE AND BLOCK
S-30	0.24	FILTER BAG
S-32	0.19	FILTER BAG
S-35	0.20	FILTER BAG
S-36	0.05	FILTER BAG
S-37	0.19	FILTER BAG
S-39	0.49	FILTER BAG
S-40	0.47	FILTER BAG
S-42	0.16	FILTER BAG
S-43	0.13	FILTER BAG
S-44	0.18	FILTER BAG
S-45	0.17	FILTER BAG
S-51	0.32	FILTER BAG
S-52	0.16	FILTER BAG

GENERAL NOTES:

1. IN ACCORDANCE WITH STATE LAW, THE CONTRACTOR SHALL BE REQUIRED TO CALL THE PENNSYLVANIA ONE CALL DAMAGE PROTECTION SYSTEM FOR UTILITY MARK OUT IN ADVANCE OF ANY EXCAVATION.
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7. DO NOT INSTALL COMPOST FILTER SOCKS ON EROSION CONTROL MATTING.
8. BY GRAPHICAL REPRESENTATION ONLY THIS PROPERTY IS LOCATED IN FLOOD HAZARD ZONE AE AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 42091C0358G WHICH HAS AN EFFECTIVE DATE OF MARCH 2, 2016 AND IS IN A SPECIAL FLOOD HAZARD AREA. NO FIELD SURVEYING WAS PERFORMED TO DETERMINE THIS ZONE. THE FEMA CALCULATED 100-YEAR FLOOD ELEVATION FOR THIS PROJECT IS 60.5 FEET (NAVD 88) IN ACCORDANCE FIRM MAP NUMBER 42091C0358G DATED MARCH 2, 2016.
9. ALL INLETS DENOTED WITH "(WQ)" SHALL HAVE SNOUTS.

LEGEND

EXISTING		PROPOSED
12+00 PI 13+00	TRAVERSE LINE, CENTER LINE OR BASELINE (LABEL AS SUCH)	12+00 13+00
	RIGHT OF WAY LINE	
	PROPERTY LINE	
	EDGE OF PAVEMENT	
FACE / BACK	CURB	FACE / BACK
	DEPRESSED CURB	
	SIDEWALK	
X X	FENCES	X X
	TREELINE	
	ROADWAY SIGNS	
	WETLAND LINE	
	MUNICIPAL BOUNDARY LINE	
	'C' INLET	
	'M' INLET	
(P)	STORM MANHOLE	(D)
(S)	SANITARY MANHOLE	(S)
	FLARED END SECTION	
	HEADWALL	
	HYDRANT	
	POLE MOUNTED LIGHT	
75 74	CONTOURS	75 74
× G 29.0	SPOT ELEVATION	× G 29.0
	DIRECTION OF OVERLAND FLOW	
× TC 29.0	TOP OF CURB ELEVATION	× TC 29.0
× BC 29.0	BOTTOM OF CURB ELEVATION	× BC 29.0
	TOP OF DEPRESSED CURB ELEVATION	× TDC 29.0
CATV	CABLE TV CONDUIT	CATV
W	WATER MAIN	W
G	GAS MAIN	G
T	TELEPHONE CONDUIT	T
E	ELECTRIC CONDUIT	E
	SANITARY PIPE	
	STORM PIPE	
	PROPOSED BUILDING	

ENVIRONMENTAL NOTE:
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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DESCRIPTION	DRAWN BY	DATE

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL C. RICHARD ROSEBERRY ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

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FOR
401/433 WASHINGTON STREET APARTMENTS

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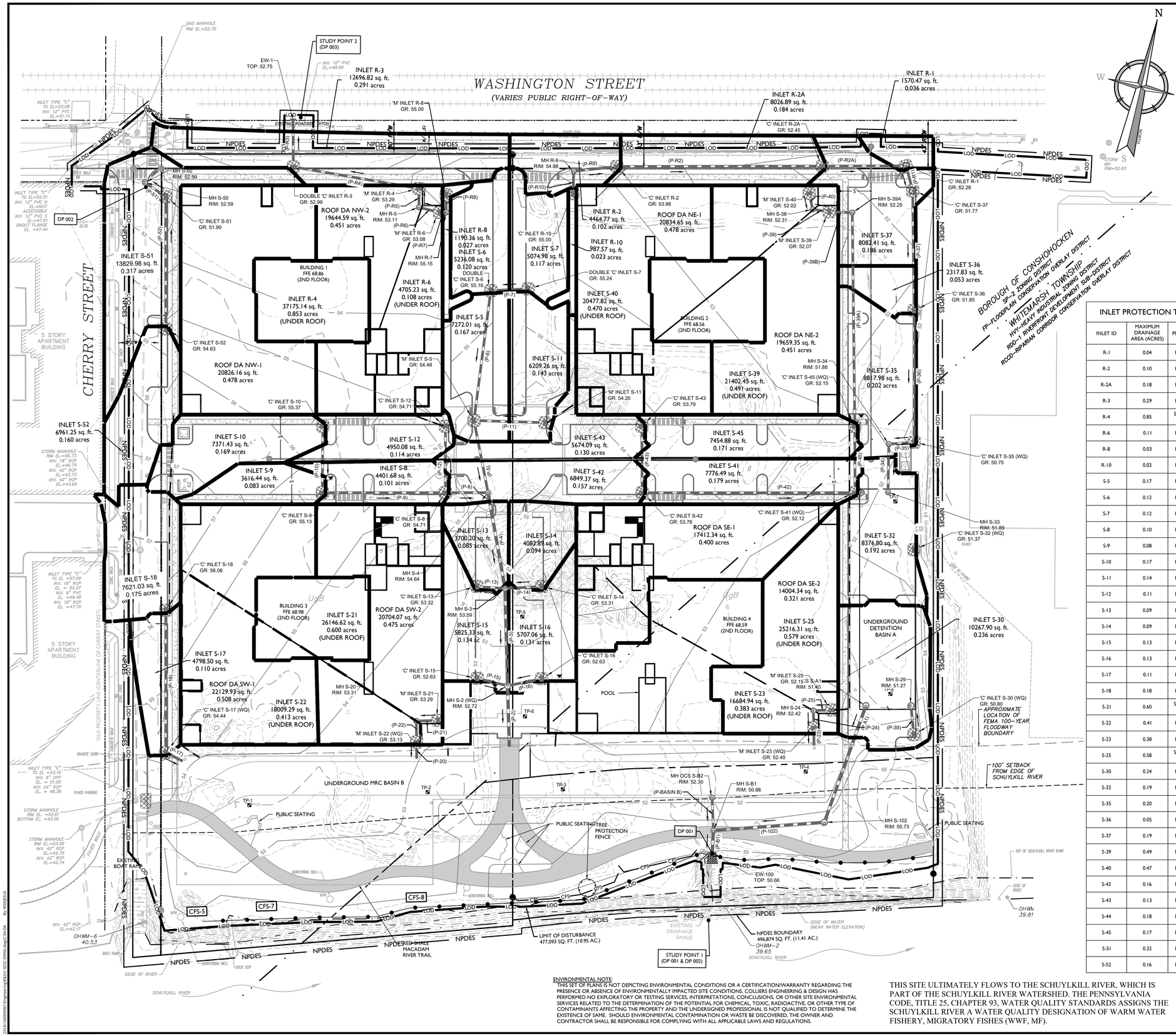
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	5/6/2022	SF	CRR

PROJECT NUMBER: 14000908C
DRAWING NAME: C-SESC-PLAN

SHEET TITLE:
EROSION AND SEDIMENT POLLUTION CONTROL PLAN

SHEET NUMBER:
E3 of E7

20140400908C\Engineering\E&SC-SESC-PLAN.dwg|C-03-PLAN By: MDS|EJS



COMPOST FILTER SOCK TABLE	
FILTER SOCK ID	FILTER SOCK SIZE
CFS-1	18"
CFS-2	18"
CFS-3	18"
CFS-4	18"
CFS-5	18"
CFS-6	18"
CFS-7	18"
CFS-8	18"
CFS-9A	18"
CFS-10	18"
CFS-11	18"

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- DO NOT INSTALL COMPOST FILTER SOCKS ON EROSION CONTROL MATTING.

EROSION CONTROL LEGEND

PROPOSED

- NPDES BOUNDARY — NPDES
- LIMIT OF DISTURBANCE — LOD
- COMPOST FILTER SOCK — CFS
- ROCK CONSTRUCTION ENTRANCE AND LABEL — CE
- TOPSOIL STOCKPILE & 24" CFS — TS
- INLET PROTECTION
- INLET DRAINAGE AREA BOUNDARY

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INLET PROTECTION TABLE		
INLET ID	MAXIMUM DRAINAGE AREA (ACRES)	INLET PROTECTION TYPE
R-1	0.04	FILTER BAG
R-2	0.10	FILTER BAG
R-2A	0.18	FILTER BAG
R-3	0.29	FILTER BAG
R-4	0.85	STONE AND BLOCK
R-6	0.11	FILTER BAG
R-8	0.03	FILTER BAG
R-10	0.02	FILTER BAG
S-5	0.17	FILTER BAG
S-6	0.12	FILTER BAG
S-7	0.12	FILTER BAG
S-8	0.10	FILTER BAG
S-9	0.08	FILTER BAG
S-10	0.17	FILTER BAG
S-11	0.14	FILTER BAG
S-12	0.11	FILTER BAG
S-13	0.09	FILTER BAG
S-14	0.09	FILTER BAG
S-15	0.13	FILTER BAG
S-16	0.13	FILTER BAG
S-17	0.11	FILTER BAG
S-18	0.18	FILTER BAG
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S-35	0.20	FILTER BAG
S-36	0.05	FILTER BAG
S-37	0.19	FILTER BAG
S-39	0.49	FILTER BAG
S-40	0.47	FILTER BAG
S-42	0.16	FILTER BAG
S-43	0.13	FILTER BAG
S-44	0.18	FILTER BAG
S-45	0.17	FILTER BAG
S-51	0.32	FILTER BAG
S-52	0.16	FILTER BAG

LEGEND

EXISTING		PROPOSED
12+00	TRAVERSE LINE, CENTER LINE OR BASELINE (LABEL AS SUCH)	13+00
	RIGHT OF WAY LINE	
	PROPERTY LINE	
	EDGE OF PAVEMENT	
FACE / BACK	CURB	FACE / BACK
	DEPRESSED CURB	
	SIDEWALK	
X — X	FENCES	X — X
	TREELINE	
	ROADWAY SIGNS	
	WETLAND LINE	
	MUNICIPAL BOUNDARY LINE	
	'C' INLET	
	'M' INLET	
	STORM MANHOLE	D
	SANITARY MANHOLE	S
	FLARED END SECTION	
	HEADWALL	
	HYDRANT	
	POLE MOUNTED LIGHT	
75 / 74	CONTOURS	75 / 74
× G 29.0	SPOT ELEVATION	× G 29.0
	DIRECTION OF OVERLAND FLOW	
× TC 29.0	TOP OF CURB ELEVATION	× TC 29.0
× BC 29.0	BOTTOM OF CURB ELEVATION	× BC 29.0
	TOP OF DEPRESSED CURB ELEVATION	× TDC 29.0
CATV	CABLE TV CONDUIT	CATV
W	WATER MAIN	W
G	GAS MAIN	G
T	TELEPHONE CONDUIT	T
E	ELECTRIC CONDUIT	E
	SANITARY PIPE	
	STORM PIPE	

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40 0 40 80
SCALE : 1" = 40'

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REV	DESCRIPTION	DRAWN BY	DATE

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	5/6/2022	SF	CRR

PROJECT NUMBER: 14000908C
DRAWING NAME: C-SESC-DRNG

SHEET TITLE: E&SPC DRAINAGE AREA MAP

SHEET NUMBER: E4 of E7

20141400908\Civil\engineering\E&SPC-SESC-DRNG.dwg|C-04.0A By: MDEBEVIS

STANDARD EROSION AND SEDIMENT CONTROL NOTES

1) ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.

2) AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRE-CONSTRUCTION MEETING.

3) AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.

4) ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.

5) AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.

6) CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.

7) AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.

8) TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAP(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIGHTS SHALL NOT EXCEED 35 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER.

9) IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR THE REGIONAL OFFICE OF THE DEPARTMENT.

10) ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1, AND 287.1 ET. SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THIS SITE.

11) RECYCLING AND DISPOSAL OF MATERIALS: OPERATOR/PERMITTEE SHALL INSURE THAT PROPER MECHANISMS ARE IN PLACE TO CONTROL WASTE MATERIALS. CONSTRUCTION WASTES INCLUDE, BUT ARE NOT LIMITED TO, EXCESS SOIL MATERIALS, BUILDING MATERIALS, CONCRETE WASH WATER, SANITARY WASTES, ETC. THAT COULD ADVERSELY IMPACT WATER QUALITY. MEASURES SHOULD BE PLANNED AND IMPLEMENTED FOR HOUSEKEEPING, MATERIALS MANAGEMENT, AND LITTER CONTROL. WHEREVER POSSIBLE, RECYCLING OF EXCESS MATERIALS IS PREFERRED RATHER THAN DISPOSAL. OFF-SITE TRANSPORT OF MATERIALS REQUIRES THAT THE RECEIVING FACILITY HAVE ITS OWN APPROVED, ACTIVE PERMIT TO RECEIVE SUCH MATERIALS.

12) ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED.

13) THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE PROPERTY OWNER FOR ANY FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL TESTING.

14) ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS. ALL PUMPING OF SEDIMENT LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP, SUCH AS A PUMPED WATER FILTER BAG DISCHARGING OVER NON-DISTURBED AREAS.

15) VEHICLES AND EQUIPMENT MAY NEITHER ENTER DIRECTLY NOR EXIT DIRECTLY FROM THE SITE ONTO WINDSOR DRIVE. VEHICLES AND EQUIPMENT MAY ONLY ENTER AND EXIT THE CONSTRUCTION SITE VIA A STABILIZED ROCK CONSTRUCTION ENTRANCE.

16) UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS SHALL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. THE OPERATOR WILL MAINTAIN AND MAKE AVAILABLE TO THE COUNTY CONSERVATION DISTRICT COMPLETE, WRITTEN INSPECTION LOGS OF ALL THOSE PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING AND RENETTING MUST BE PERFORMED IMMEDIATELY. IF THE E&S BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.

17) A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.

18) SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORK DAY AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEPT INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER.

19) ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS. SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WETLANDS, FLOODPLAINS OR DRAINAGE SWALES AND IMMEDIATELY STABILIZED, OR PLACED IN TOPSOIL STOCKPILES.

20) AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES - 6 TO 12 INCHES ON COMPACTED SOILS - PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILL OUTSLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.

21) ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.

22) ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS.

23) FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.

24) FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.

25) FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.

26) SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.

27) ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.

28) IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL DISTURBED AREAS. DURING NON-GERMINATING MONTHS, MULCH OR OTHER PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN 1 YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS.

29) PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL SLOPES SHALL BE CAPABLE OF RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR MOTHER MOVEMENTS.

30) EROSION AND SEDIMENT BMPS MUST BE CONSTRUCTED, STABILIZED, AND FUNCTIONAL BEFORE SITE DISTURBANCE BEGINS WITHIN THE TRIBUTARY AREAS OF THOSE BMPS. E&S BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT.

31) UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPS.

32) AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMPS MUST BE REMOVED OR CONVERTED TO PERMANENT POST CONSTRUCTION STORMWATER MANAGEMENT BMPS. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE BMPS SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVERSIONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON.

33) UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT TO SCHEDULE A FINAL INSPECTION.

34) FAILURE TO CORRECTLY INSTALL E&S BMPS, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE OR FAILURE TO TAKE IMMEDIATE CORRECTIVE ACTION TO RESOLVE FAILURE OF E&S BMPS MAY RESULT IN ADMINISTRATIVE, CIVIL, AND/OR CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS DEFINED IN SECTION 602 OF THE CLEAN STREAMS LAW. THEE LEAN STREAMS LAW PROVIDES FOR UP TO $10,000 PER DAY IN CIVIL PENALTIES, UP TO $10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO $25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION.

35) IN THE EVENT OF SINKHOLE DISCOVERY A PROFESSIONAL GEOLOGIST OR ENGINEER WILL BE CONTACTED CONCERNING MITIGATION. ADDITIONALLY, THE COUNTY CONSERVATION DISTRICT WILL BE MADE AWARE OF THE SINKHOLE DISCOVERY IMMEDIATELY.

36) THE OPERATOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED.

37) THE CONTRACTOR IS ADVISED TO BECOME THOROUGHLY FAMILIAR WITH THE PROVISIONS OF THE APPENDIX 64, EROSION CONTROL RULES AND REGULATIONS, TITLE 25, PART I, DEPARTMENT OF ENVIRONMENTAL PROTECTION, SUBPART C, PROTECTION OF NATURAL RESOURCES, ARTICLE III, WATER RESOURCES, CHAPTER 102, EROSION CONTROL.

38) STRAW MULCH SHALL BE APPLIED IN LONG STRANDS, NOT CHOPPED OR FINELY BROKEN.

39) CONCRETE WASH WATER SHALL BE HANDLED IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS. IN NO CASE SHALL IT BE ALLOWED TO ENTER ANY SURFACE WATERS OR GROUNDWATER SYSTEMS.

40) EROSION CONTROL MATTING SHALL BE INSTALLED ON ALL SLOPES 3H:1V OR STEEPER. WITHIN 50 FEET OF A SURFACE WATER AND ON ALL OTHER DISTURBED AREAS SPECIFIED ON THE PLAN MAPS AND/OR DETAIL SHEETS.

CONSTRUCTION SEQUENCE NOTES:

1. ALL WORK IS TO OCCUR WITHIN THE LIMIT OF DISTURBANCE BOUNDARIES AS INDICATED ON THE PLAN. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.
2. CONSTRUCT ALL DRAINAGE APPURTENANCES FROM DOWNSTREAM TO UPSTREAM UNLESS OTHERWISE NOTED.
3. LIMIT TREE REMOVAL TO ONLY WHAT IS REQUIRED FOR CONSTRUCTION.
4. UPON REACHING FINAL GRADE, AREAS TO BE STABILIZED BY VEGETATION MUST NOT EXCEED 15,000 SQUARE FEET WITHOUT BEING STABILIZED.
5. THE SITE MUST BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION WHEN A TEMPORARY CESSATION OF EARTH DISTURBANCE ACTIVITIES EXCEEDS 4 DAYS. DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE WHICH WILL BE REACTIVATED WITHIN ONE YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN ONE YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS.
6. STABILIZE SLOPES, CHANNELS, DITCHES, AND OTHER DISTURBED AREAS AS THEY REACH FINAL GRADE. ROUND CUT AND FILL SLOPES SUCH THAT RUNOFF IS DIRECTED AWAY FROM THE INTERSECTION OF THE CONSTRUCTED SLOPE AND THE EXISTING GRADE.
7. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING, AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE CONSTRUCTION SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.

CONSTRUCTION SEQUENCE:

ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. DEVIATION FROM THIS SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.

1. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL COUNTY CONSERVATION DISTRICT TO AN ONSITE PRE-CONSTRUCTION MEETING.
2. ALL EXISTING UTILITIES SHOWN ON THE PLAN ARE SHOWN AT APPROXIMATE LOCATIONS. THE ENGINEER DOES NOT GUARANTEE ALL EXISTING UTILITIES ON SITE ARE SHOWN ON THE PLAN. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE OF ALL UTILITIES AND TO CALL THE PENNSYLVANIA ONE CALL SYSTEM (1-800-242-1776) AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES OR EXPANDING INTO A PREVIOUSLY UNMARKED AREA.

SITE WORK:

1. INSTALL WESTERN ROCK CONSTRUCTION ENTRANCE, CLEAR AND GRUB AS NEEDED.
2. INSTALL INLET FILTER BAGS IN EXISTING INLETS ALONG CHERRY STREET, AND COMPOST FILTER SOCKS 1 THROUGH 10. COMPOST FILTER SOCKS SHALL BE INSTALLED PARALLEL TO EXISTING CONTOURS OR CONSTRUCTED LEVEL ALIGNMENTS. CLEAR AND GRUB AS NEEDED FOR THE INSTALLATION OF THE COMPOST FILTER SOCKS. NOTE: ADDITIONAL COMPOST FILTER SOCKS SHALL BE INSTALLED DOWNGRADE OF ANY DISTURBANCE AREAS AS NEEDED. ALL EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSTALLED IN ACCORDANCE WITH THEIR RESPECTIVE DETAIL AND IN WORKING ORDER PRIOR TO DISTURBING AN AREA.
3. REMOVE WOODED AREAS, DEBRIS PILES, UTILITIES, AND ALL ITEMS LISTED AS TO BE REMOVED WITHIN THE SITE, AS SHOWN ON THE DEMOLITION PLAN, EXCEPT FOR THE EXISTING STORM PIPE AND INLET ALONG WASHINGTON STREET WHICH WILL BE REMOVED IN STEP 9. THE EXISTING UTILITY POLES ALONG THE SOUTHERN SIDE OF WASHINGTON STREET WILL BE REMOVED PRIOR TO THE INSTALLATION OF THE PROPOSED ELECTRIC LINES IN STEP 7. ELECTRIC SERVICE MUST BE MAINTAINED FOR PROPERTIES THAT ARE CURRENTLY SERVICED THROUGH THESE LINES, OVERHEAD WIRES MAY NEED TO BE RELOCATED IN ORDER TO ACCOMMODATE CONSTRUCTION VEHICLES.
4. INSTALL EASTERN CONSTRUCTION ENTRANCE.
5. ESTABLISH STOCKPILES, STAGING AREA, AND CONCRETE WASHOUT LOCATION AND PLACE DOWNSLOPE COMPOST FILTER SOCKS. ENSURE THAT COMPOST FILTER SOCKS ARE LOCATED DOWNSLOPE OF THE TOPSOIL STOCKPILES AT ALL TIMES.
6. ROUGH GRADE SITE AND BUILDING PADS. ROUGH GRADE DRIVEWAYS, AISLES, CONCRETE PATIOS, PARKING LOTS, AS WELL AS CHERRY STREET AND WASHINGTON STREET WIDENING. REPLACE COMPOST FILTER SOCKS 9 AND 10 WITH COMPOST FILTER SOCKS 9A AND 10A RESPECTIVELY. REMOVED COMPOST FILTER SOCK 6. IMMEDIATELY STABILIZE ANY STEEP SLOPES WITH EROSION CONTROL MATTING. DO NOT PLACE EROSION CONTROL MATTING ON OR UNDER COMPOST FILTER SOCKS. ADJUST COMPOST FILTER SOCKS AS NEEDED TO FIT PROPOSED IMPROVEMENTS. NOTE: ADDITIONAL COMPOST FILTER SOCKS SHALL BE INSTALLED DOWNGRADE OF ANY DISTURBANCE AREAS AS NEEDED.
7. CONSTRUCT THE BUILDING PAD INCLUDING THE INSTALLATION AND/OR REPLACEMENT OF UTILITY SERVICE CONNECTIONS FOR ELECTRIC, GAS, WATER, AND SANITARY, AS SHOWN ON THE PLANS. REMOVE EXISTING UTILITY POLES AND ASSOCIATED OVERHEAD WIRES PRIOR TO INSTILLATION OF UNDERGROUND ELECTRIC LINES ALONG WASHINGTON STREET. INSTALL WATER LINES AND HYDRANTS. INSTALL SANITARY SEWER SYSTEM FROM DOWNSTREAM TO UPSTREAM, STARTING FROM THE TIE-IN TO THE EXISTING SANITARY MAIN AT MANHOLE SS-100 TO MANHOLE SS-104. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY. ALL OPEN TRENCHES MUST BE PROTECTED. WATER WHICH ACCUMULATES IN THE OPEN TRENCH SHALL BE COMPLETELY REMOVED BY FILTER BAG PUMPING, BEFORE PIPE OR CONDUIT PLACEMENT AND/OR BACKFILLING BEGINS. THIS STEP SHALL BE DONE CONCURRENTLY WITH STEPS 8 AND 9.
8. CONSTRUCT UNDERGROUND DETENTION BASIN B AND OUTLET CONTROL STRUCTURE. INSTALL OUTFALL STORMSEWER SYSTEM, STARTING AT EW-100 AND WORKING UPSLOPE TO OUTLET CONTROL STRUCTURE S-B2. CONSTRUCT UNDERGROUND DETENTION BASIN A AND OUTLET CONTROL STRUCTURE. INSTALL OUTFALL STORMSEWER SYSTEM, STARTING AT MH S-81 AND WORKING UPSLOPE TO OUTLET CONTROL STRUCTURE MH S-A1. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY. ALL OPEN TRENCHES MUST BE PROTECTED. WATER WHICH ACCUMULATES IN THE OPEN TRENCH SHALL BE COMPLETELY REMOVED BY FILTER BAG PUMPING, BEFORE PIPE PLACEMENT AND/OR BACKFILLING BEGINS. THIS STEP SHALL BE DONE CONCURRENTLY WITH STEPS 7 AND 9.
9. INSTALL THE PROPOSED STORMSEWER SYSTEM, WORKING FROM DOWNSTREAM TO UPSTREAM, FROM PIPE P-2 TO INLET S-7, FROM PIPE P-23 TO INLET S-25, FROM MH S-2 TO INLET S-16 AND INLET S-15, FROM MH S-3 TO INLET S-13 AND INLET S-14, FROM MH S-4 TO INLET S-10, FROM INLET S-8 TO INLET S-12, FROM INLET S-5 TO INLET S-11, FROM PIPE P-17 TO INLET S-18, AND FROM PIPE S-20 TO INLET S-21. FROM MH S-29 TO INLET S-30, INLET S-32, FROM MH S-33 TO INLET R-10, FROM INLET S-41 TO INLET S-43, FROM MH S-44 TO INLET S-40, AND FROM MH S-50 TO INLET S-52. REMOVE EXISTING TYPE 'M' INLET AND ASSOCIATED 10" PVC PIPE ACROSS WASHINGTON STREET AND INSTALL STORMSEWER SYSTEM FROM EW-1 TO INLET R-8. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY. ALL OPEN TRENCHES MUST BE PROTECTED. WATER WHICH ACCUMULATES IN THE OPEN TRENCH SHALL BE COMPLETELY REMOVED BY FILTER BAG PUMPING, BEFORE PIPE PLACEMENT AND/OR BACKFILLING BEGINS. IMMEDIATELY AFTER INSTALLING EACH INLET, INLET PROTECTION MUST BE PLACED AS APPLICABLE. THIS STEP SHALL BE DONE CONCURRENTLY WITH STEPS 7 AND 8.
10. PLACE SUBGRADE FOR THE DRIVEWAYS, AISLES, PARKING LOTS, AND ROAD WIDENING IN ACCORDANCE WITH THE PLAN DETAILS. INSTALL CURBING, DIRECTING STORMWATER TO THE PROPOSED INLETS. REMOVE COMPOST FILTER SOCKS AS NEEDED TO FIT PROPOSED IMPROVEMENTS.
11. FINALIZE GRADING IN ALL LAWN AREAS.
12. INSTALL PROPOSED SIDEWALKS AND ADA RAMPS.
13. INSTALL PROPOSED TREES AND OTHER PLANTINGS.
14. COMPLETE PAVING OF SITE IN ACCORDANCE WITH THE PLAN DETAILS. ONCE PAVING IS COMPLETED, ADD PAVEMENT MARKINGS.

FINAL SITE PREPARATION:

1. UNTIL THE SITE IS STABILIZED ALL EROSION AND SEDIMENTATION CONTROLS MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENTATION CONTROLS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK; INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, RE-GRADING, RESEEDING, RE-MULCHING, AND RE-NETTING, MUST BE PERFORMED IMMEDIATELY. CONTACT THE COUNTY CONSERVATION DISTRICT PRIOR TO REMOVING TEMPORARY E&S BMPS.
2. UPON ACHIEVING A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OVER THE ENTIRE VEGETATED TRIBUTARY AREA, ANY OF THE REMAINING TEMPORARY E&S CONTROLS SHOULD BE REMOVED, INCLUDING COMPOST FILTER SOCKS AND INLET PROTECTION. ALL AREAS DISTURBED DURING THE REMOVAL PROCESS SHOULD BE IMMEDIATELY STABILIZED WITH PERMANENT SEEDING, AS INDICATED ON THE PLANS.
3. THE PERMITTEE SHALL SUBMIT A NOTICE OF TERMINATION TO THE COUNTY CONSERVATION DISTRICT ONCE SITE WORK IS COMPLETED.

PREPARATION OF AREAS TO BE TOPSOILED

GRADE THE AREAS TO BE COVERED BY TOPSOIL USING ACCEPTABLE METHODS, LOOSEN SOIL TO A MINIMUM DEPTH OF 2 INCHES, BEFORE PLACING THE TOPSOIL. REMOVE STONES AND OTHER FOREIGN MATERIAL 2 INCHES OR LARGER IN DIMENSION. REMOVE AND SATISFACTORILY DISPOSE OF UNSUITABLE AND SURPLUS MATERIAL

E&S PLAN - PLANNING AND DESIGN - SECTION 102.4(B)(4)

1. E&S PLAN MINIMIZES THE EXTENT AND DURATION OF THE EARTH DISTURBANCE ACTIVITY.
2. E&S PLAN MAXIMIZES PROTECTION OF EXISTING DRAINAGE FEATURES AND VEGETATION.
3. E&S PLAN MINIMIZES SOIL COMPACTION.
4. E&S PLAN UTILIZES OTHER MEASURES OR CONTROLS THAT PREVENT OR MINIMIZE GENERATION OF INCREASED STORMWATER RUNOFF.

MEASURES PROVIDED TO MINIMIZE THERMAL IMPACTS

RUNOFF WILL BE CAPTURED AND DIRECTED TO SUBSURFACE UNDERDRAINS. RUNOFF FROM PAVED AREAS OF THE PROJECT DISCHARGE THROUGH BURIED PIPE, THEREBY CREATING AMPLE OPPORTUNITY FOR COOLING PRIOR TO REACHING THE SURFACE WATERS. THE MAJORITY OF THE DISTURBED SITE WILL DISCHARGE INTO THE UNDERGROUND DETENTION FACILITIES. AS SUCH, THE PROJECT WILL NOT HAVE AN ADVERSE IMPACT ON THE NATURAL TEMPERATURES OF THE RECEIVING WATERS.

SEEDING AND SOIL SUPPLEMENTS

THE FOLLOWING SPECIFICATIONS ARE IN ACCORDANCE WITH PENNDOT PUBLICATION 408, SECTION 804.

TEMPORARY SEED MIXTURES

SEED TYPE	% BY WEIGHT	PURITY	MAX. WEED SEED
(PENNDOT FORMULA E)			
ANNUAL RYEGRASS	100	95%	0.10%

APPLY SEED AT A RATE OF 10 LBS. PER 1,000 SY.
APPLY STRAW MULCH (SEE MULCH APPLICATION RATES TABLE)
SEEDING SEASON DATES: MARCH 15 TO OCTOBER 15

PERMANENT SEED MIXTURES

SEED TYPE	% BY WEIGHT	PURITY	MAX. WEED SEED
(PENNDOT FORMULA B)			
PERENNIAL RYEGRASS MIXTURE *	20	97%	0.10%
(LOLIUM PERENNE)			
CREEPING RED FESCUE	30	97%	0.10%
KENTUCKY BLUEGRASS MIXTURE **	50	97%	0.15%
(POA PRATENSIS)			

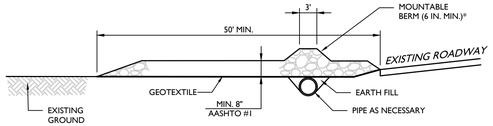
APPLY SEED AT A RATE OF 42 LBS. PER 1,000 SY.
APPLY STRAW OR HAY MULCH (SEE MULCH APPLICATION RATES TABLE).
APPLY PULVERIZED AGRICULTURAL LIMESTONE AT A RATE OF 2 TONS/ACRE UNLESS TESTING HAS BEEN PERFORMED.
APPLY 10-20-20 ANALYSIS COMMERCIAL FERTILIZER AT A RATE OF 678 LBS./ACRE UNLESS TESTING HAS BEEN PERFORMED.
SEEDING SEASON DATES: MARCH 15 TO JUNE 1; AUGUST 1 TO OCTOBER 15
APPLY FLEXTERRA FGM (OR EQUAL) ACCORDING TO MANUFACTURER'S SPECIFICATIONS.

* A COMBINATION OF IMPROVED CERTIFIED VARIETIES WITH NO ONE VARIETY EXCEEDING 50% OF THE TOTAL RYEGRASS COMPONENT.
** A COMBINATION OF IMPROVED CERTIFIED VARIETIES WITH NO ONE VARIETY EXCEEDING 50% OF THE TOTAL BLUEGRASS COMPONENT.

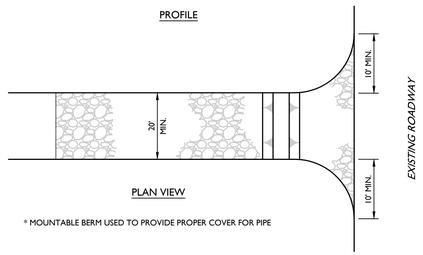
PERMANENT SEED MIXTURES ON STEEP SLOPES (SLOPES EXCEEDING 3:1)

SEED TYPE	% BY WEIGHT	PURITY	MAX. WEED SEED
(PENNDOT FORMULA L)			
HARD FESCUE	55	97%	0.10%
(FESTUCA LONGIFOLIA***)			
CREEPING RED FESCUE	35	97%	0.10%
(FESTUCA RUBRA)			
ANNUAL RYEGRASS			
(LOLIUM MULTIFLORUM)	10	95%	0.10%

APPLY SEED AT A RATE OF 48 LBS / 1,000 SY.
MULCH WITH MULCH CONTROL NETTING OR EROSION CONTROL BLANKETS MUST BE INSTALLED.
APPLY PULVERIZED AGRICULTURAL LIMEST



PROFILE



PLAN VIEW

* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE

NOTES:

1. REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.
2. RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.
3. MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED, PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.
4. MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

STANDARD CONSTRUCTION DETAIL # 3-1
ROCK CONSTRUCTION ENTRANCE

NOT TO SCALE | MCPA-SOIL-EROS-1000 | 05/01/18

TABLE 4.1 COMPOST SOCK FABRIC MINIMUM SPECIFICATIONS

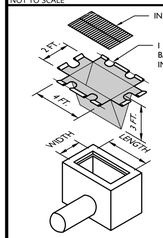
Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photo-degradable	Photo-degradable	Bio- degradable	Photo-degradable	Photo-degradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years
Two-ply Systems					
Inner Containment Netting	HDPE biaxial net				
	Continuously wound				
	Fusion-welded junctures				
	3/4" x 3/4" Max. aperture size				
Outer Filtration Mesh	Composite Polypropylene Fabric (Woven layer and non-woven fleece mechanically fused via needle punch)				
	3/16" Max. aperture size				
Sock fabrics composed of burlap may be used on projects lasting 6 months or less.					

TABLE 4.2 COMPOST STANDARDS

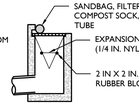
Organic Matter Content	25% - 100% (dry weight basis)
Organic Portion	Fibrous and elongated
pH	5.5-8.5
Moisture Content	30%-60%
Particle Size	30% - 50% pass through ⅜" sieve
Soluble Salt Concentration	5.0 dS/m (mmhos/cm) Maximum

STANDARD CONSTRUCTION TABLE # 4 -1 & 4 -2

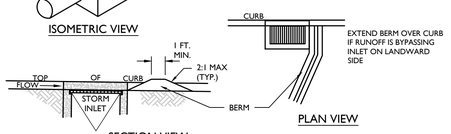
NOT TO SCALE | MCPA-SOIL-EROS-1700 | 05/01/18



ISOMETRIC VIEW



INSTALLATION DETAIL



PLAN VIEW

SECTION VIEW

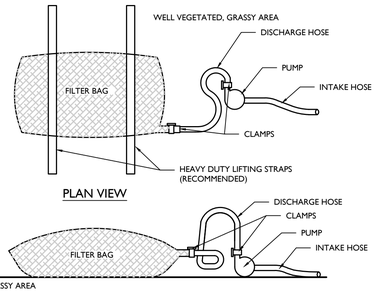
NOTES:

1. MAXIMUM DRAINAGE AREA = 1/2 ACRE.
2. INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.
3. ROLLED EARTHEN BERM SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. SIX INCH MINIMUM HEIGHT ASPHALT BERM SHALL BE MAINTAINED UNTIL ROADWAY SURFACE RECEIVES FINAL COAT.
4. AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS, A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.
5. INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE OF ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.
6. DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

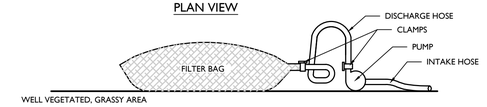
STANDARD CONSTRUCTION DETAIL # 4-15
FILTER BAG INLET PROTECTION - TYPE C INLET

NOT TO SCALE | MCPA-SOIL-EROS-2400 | 05/01/18

INSPECTION: INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT.
MAINTENANCE: BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET.
REPAIR: DAMAGED OR CLOGGED BAGS SHALL BE REPLACED.



PLAN VIEW



ELEVATION VIEW

NOTES:

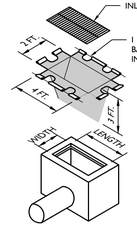
1. LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	80 SIEVE

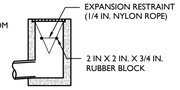
2. A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.
3. BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%. FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.
4. NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.
5. THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.
6. THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.
7. FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

STANDARD CONSTRUCTION DETAIL # 3-16
PUMPED WATER FILTER BAG

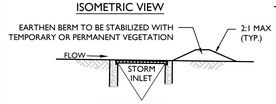
NOT TO SCALE | MCPA-SOIL-EROS-1400 | 05/01/18



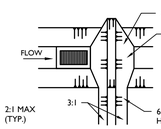
ISOMETRIC VIEW



INSTALLATION DETAIL



SECTION VIEW



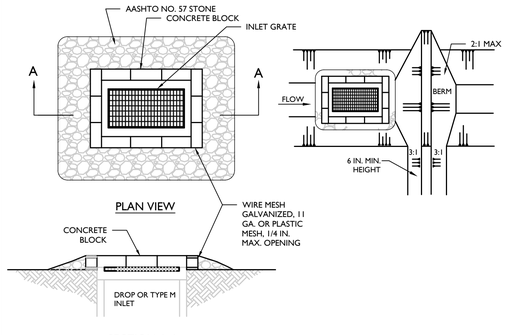
PLAN VIEW

NOTES:

1. MAXIMUM DRAINAGE AREA = 1/2 ACRE.
2. INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.
3. ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMAIN PERMANENTLY.
4. AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS., A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.
5. INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE OF ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.
6. DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

STANDARD CONSTRUCTION DETAIL # 4-16
FILTER BAG INLET PROTECTION - TYPE M INLET

NOT TO SCALE | MCPA-SOIL-EROS-2401 | 05/01/18



PLAN VIEW

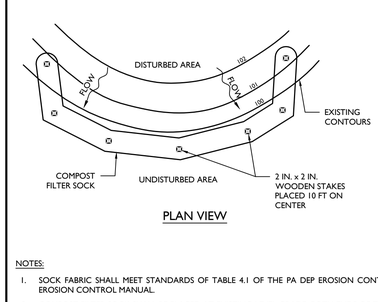
SECTION A-A

NOTES:

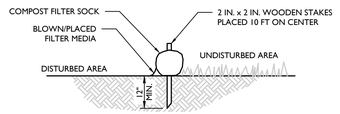
1. MAXIMUM DRAINAGE AREA =1 ACRE.
2. INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS NOT LOCATED AT A LOW POINT.
3. ROLLED EARTHEN BERM IN ROADWAY SHALL BE PROVIDED AND MAINTAINED IMMEDIATELY DOWN GRADIENT OF THE PROTECTED INLET UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR TO REMAIN PERMANENTLY.
4. TOP OF BLOCK SHALL BE AT LEAST 6 INCHES BELOW ADJACENT ROADS IF PONDED WATER WOULD POSE A SAFETY HAZARD TO TRAFFIC.
5. SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE HEIGHT OF THE STONE. DAMAGED OR CLOGGED INSTALLATIONS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.
6. FOR SYSTEMS DISCHARGING TO HQ OR EV SURFACE WATER, A 6 INCH THICK COMPOST LAYER SHALL BE SECURELY ANCHORED ON OUTSIDE AND OVER TOP OF STONE. COMPOST SHALL MEET THE STANDARDS IN TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.

STANDARD CONSTRUCTION DETAIL # 4-18
STONE AND CONCRETE BLOCK INLET PROTECTION - TYPE M INLET

NOT TO SCALE | MCPA-SOIL-EROS-2403 | 05/01/18



PLAN VIEW



SECTION

NOTES:

1. SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.
2. COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.
3. TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.
4. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.
5. COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
6. BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
7. UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

INSPECTION: COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT.
MAINTENANCE: ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE ABOVEGROUND HEIGHT OF THE SOCK AND DISPOSED OF IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.
REPAIR: DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

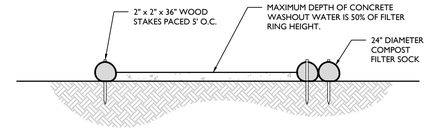
STANDARD CONSTRUCTION DETAIL # 4-1
COMPOST FILTER SOCK

NOT TO SCALE | MCPA-SOIL-EROS-1600 | 05/01/18

NOTES:

1. CONCRETE WASHOUTS ARE REQUIRED ON ALL CONSTRUCTION SITES INVOLVING CONCRETE AND STUCCO USE:
2. THE CONTRACTOR SHALL REQUIRE ALL CONCRETE DRIVERS TO UTILIZE THE CONCRETE WASHOUTS ONSITE.
3. WASHOUT FACILITIES SHALL BE LOCATED AT LEAST 50 FEET AWAY FROM STORM SEWER DRAIN INLETS, GUTTERS, OPEN DITCHES, AND WATER COURSES.
4. APPROPRIATE STONE SHOULD COVER PATHS TO CONCRETE WASHOUT.
5. THE NUMBER OF CONCRETE WASHOUTS DEPENDS ON THE EXPECTED DEMAND FOR STORAGE CAPACITY. LARGE SITES WITH EXTENSIVE CONCRETE WORK SHALL BE PLACED AT MULTIPLE LOCATIONS FOR USE BY CONCRETE TRUCK DRIVERS.
6. CONCRETE WASHOUT AREAS SHALL BE IDENTIFIED BY POSTING SIGNS ONSITE.
7. CONCRETE WASHOUTS ARE TO BE INSPECTED DAILY BY THE CONTRACTOR FOR LEAKS OR TEARS IN PLASTIC LINER.
8. REMOVE AND DISPOSE OF ALL MATERIAL WHEN THE WASHOUT HAS BEEN FILLED TO 75% CAPACITY.
9. PRIOR TO ANY RAINFALL ALL CONCRETE WASHOUTS ARE TO BE CLEANED OUT OR COVERED.
10. ONCE THE MATERIAL HAS BEEN CLEANED OUT OF THE CONCRETE WASHOUT FACILITY, THE FACILITY MUST BE INSPECTED FOR REPAIR, RECONSTRUCTION OR REPLACEMENT. ALL PLASTIC LINING SHALL BE REMOVED AND REPLACED.
11. PRE-FABRICATED OR ONSITE FABRICATED CONCRETE WASHOUTS MAY BE USED.
12. OPTIONS FOR ONSITE CONCRETE WASHOUTS:
    A. DIG A PIT AND LINE WITH 10 MIL PLASTIC SHEETING.
    B. CREATE AN ABOVE-GROUND STRUCTURE FROM STRAW BALES OR SANDBAGS, WITH 10 MIL PLASTIC LINING.

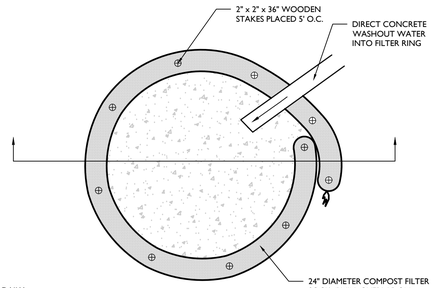
INSPECTION: ALL CONCRETE WASHOUT FACILITIES SHOULD BE INSPECTED DAILY.
MAINTENANCE: ACCUMULATED MATERIALS SHOULD BE REMOVED WHEN THEY REACH 75% CAPACITY.
REPAIR: DAMAGED OR LEAKING WASHOUTS SHOULD BE DEACTIVATED AND REPAIRED OR REPLACED IMMEDIATELY.



SECTION

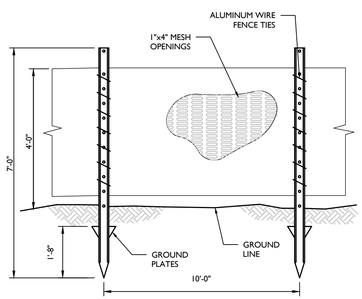
NOTES:

1. INSTALL ON FLAT GRADE FOR OPTIMUM PERFORMANCE.
2. 18" DIAMETER FILTER SOCK MAY BE STACKED ONTO DOUBLE 24" DIAMETER SOCKS IN PYRAMIDAL CONFIGURATION FOR ADDED HEIGHT.



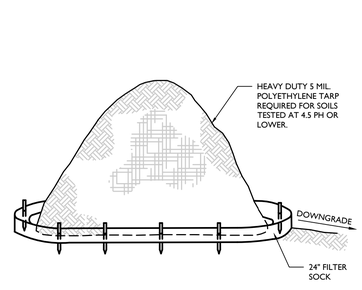
CONCRETE WASHOUT DETAIL

NOT TO SCALE | MCPA-SOIL-EROS-1800 | 12/01/20



ORANGE CONSTRUCTION FENCE DETAIL

NOT TO SCALE | MCPA-SOIL-EROS-2100 | 05/01/18



NOTES:

1. ALL STOCKPILES SHALL NOT TO BE LOCATED WITHIN 50 FEET OF A FLOODPLAIN, SLOPE, ROADWAY OR DRAINAGE FACILITY.

TOPSOIL STOCKPILE WITH FILTER SOCK DETAIL

NOT TO SCALE | MCPA-SOIL-EROS-2201 | 05/01/18

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REV	DATE	DRAWN BY	DESCRIPTION

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — C. RICHARD ROSEBERRY — ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

EROSION AND SEDIMENT POLLUTION CONTROL PLANS
FOR
401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

Colliers Engineering & Design
LEHIGH VALLEY
941 Marcon Boulevard, Suite 801
Allentown, PA 18109
Phone: 610.868.4201
COLLIERS ENGINEERING & DESIGN, INC.
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	5/6/2022	SF	CRR

PROJECT NUMBER: 140009080
DRAWING NAME: C-SESC-DTLS

SHEET TITLE: EROSION AND SEDIMENT POLLUTION CONTROL DETAILS

SHEET NUMBER: E6 of E7

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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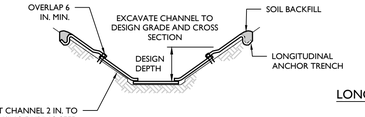
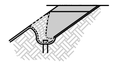
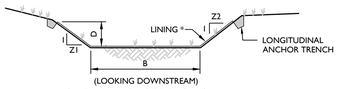
INTERMITTENT CHECK SLOT



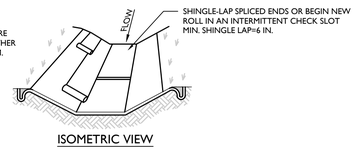


LONGITUDINAL ANCHOR TRENCH

PREPARE SOIL AND APPLY SEED BEFORE INSTALLING BLANKETS, MATS, OR OTHER TEMPORARY CHANNEL LINER SYSTEM.



CHANNEL CROSS-SECTION



ISOMETRIC VIEW

* SEE MANUFACTURER'S LINING INSTALLATION DETAIL FOR STAPLE PATTERNS, VEGETATIVE STABILIZATION FOR SOIL AMENDMENTS, SEED MIXTURES AND MULCHING INFORMATION

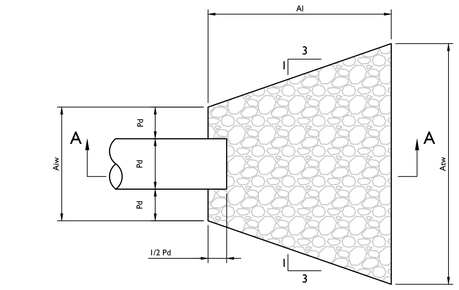
CHANNEL NO.	STATIONS	BOTTOM WIDTH B (FT)	DEPTH D (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	LINING *
EXISTING SWALE	0+00 - 25+00	2	2	6	1	1	SC250

NOTES:

1. ANCHOR TRENCHES SHALL BE INSTALLED AT BEGINNING AND END OF CHANNEL IN THE SAME MANNER AS LONGITUDINAL ANCHOR TRENCHES.
2. CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. CHANNEL SHALL BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 25% AT ANY LOCATION. SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO CHANNEL WITHOUT FURTHER DAMAGE. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.
3. NO MORE THAN ONE THIRD OF THE SHOOT (GRASS LEAF) SHALL BE REMOVED IN ANY MOWING. GRASS HEIGHT SHALL BE MAINTAINED BETWEEN 2 AND 3 INCHES UNLESS OTHERWISE SPECIFIED. EXCESS VEGETATION SHALL BE REMOVED FROM PERMANENT CHANNELS TO ENSURE SUFFICIENT CHANNEL CAPACITY.

STANDARD CONSTRUCTION DETAIL # 6-1
VEGETATED CHANNEL

NOT TO SCALE | MCPA-SOIL-EROS-2600 | 05/01/18



OUTLET NO.	PIPE DIA Pd (IN)	RIPRAP		APRON		
		SIZE R-_	THICK. Rt (IN)	LENGTH Al (FT)	INITIAL WIDTH Aiw (FT)	TERMINAL WIDTH Atw (FT)
E-100	24	4	18	9	6	9.6

NOTES:

1. ALL APRONS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN. TERMINAL WIDTHS SHALL BE ADJUSTED AS NECESSARY TO MATCH RECEIVING CHANNELS.
2. ALL APRONS SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT. DISPLACED RIPRAP WITHIN THE APRON SHALL BE REPLACED IMMEDIATELY.
3. EXTEND RIPRAP ON BACK SIDE OF APRON TO AT LEAST 1/2 DEPTH OF PIPE ON BOTH SIDES TO PREVENT SCOUR AROUND THE PIPE.

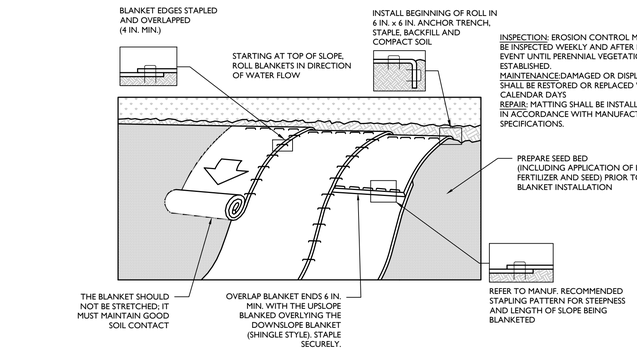
INSPECTION: INSPECT ROCK APRONS WEEKLY AND AFTER EACH RUNOFF EVENT.

MAINTENANCE: ROCK APRONS SHALL BE MAINTAINED AT THE APPROVED DESIGN THICKNESS AND DIMENSIONS. SEDIMENT AND DEBRIS SHALL BE REMOVED FROM THE ROCK APRONS

REPAIR: ADD ROCK AS NECESSARY TO RESTORE THE ROCK APRON TO THE APPROVED DESIGN SPECIFICATIONS.

STANDARD CONSTRUCTION DETAIL # 9-2
RIPRAP APRON AT PIPE OUTLET NO FLARED ENDWALL

NOT TO SCALE | MCPA-SOIL-EROS-4401 | 05/01/18



INSPECTION: EROSION CONTROL MATTING SHOULD BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED.
MAINTENANCE:DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS
REPAIR: MATTING SHALL BE INSTALLED AND STAPLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

NOTES:

1. SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.
2. PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.
3. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.
4. BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.
5. THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
6. BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

STANDARD CONSTRUCTION DETAIL # 11-1
EROSION CONTROL BLANKET INSTALLATION

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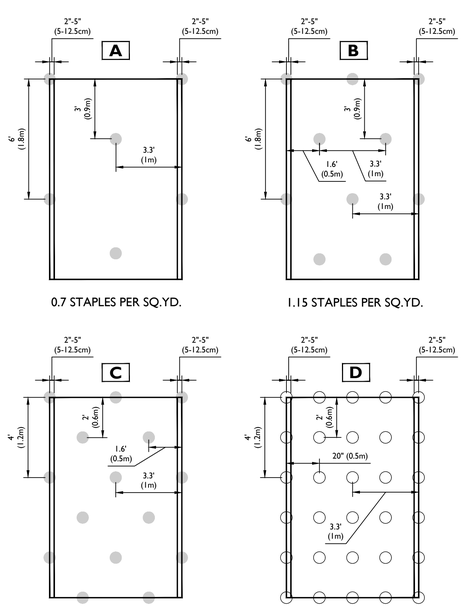

STAPLE PATTERN GUIDE

- 4:1 SLOPES (A)
- 3:1 SLOPES (B)
- 2:1 SLOPES (C)
- 1:1 & STEEPER SLOPES (D)
- MEDIUM/HIGH FLOW CHANNEL (D)
- HIGH FLOW CHANNEL AND SHORELINE (E)

NOTES:

* USE ECMDS ® FOR MORE ACCURATE STAPLE PATTERN SELECTION.

5401 St. Wendel - Cynthiana Rd.
Poseyville, IN 47633
PH: 800-722-2040
www.nagreen.com

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STAPLE PATTERN FOR EROSION CONTROL MATTING DETAIL

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REV	DATE	DRAWN BY	DESCRIPTION

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
C. RICHARD ROSEBERRY
ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
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FOR
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	5/6/2022	SF	CRR

PROJECT NUMBER:	DRAWING NAME:
140009080	C-SESC-DTLS

SHEET TITLE:
EROSION AND SEDIMENT POLLUTION CONTROL DETAILS

SHEET NUMBER:
E7 of E7

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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POST-CONSTRUCTION STORMWATER MANAGEMENT PLANS

FOR

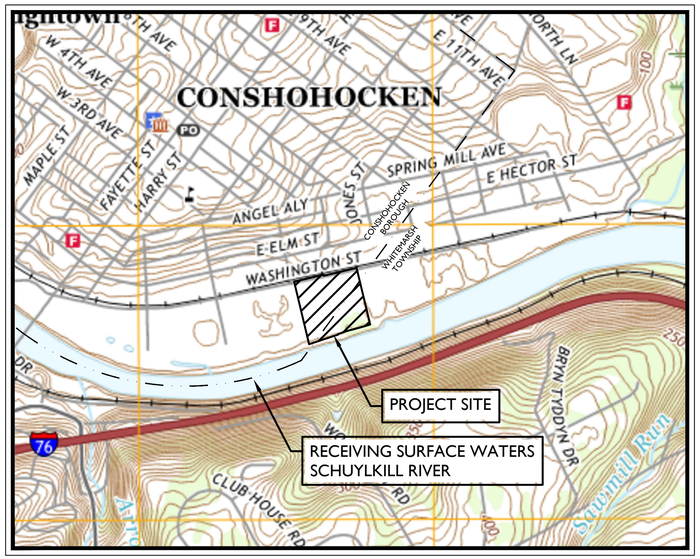
KRE ACQUISITION CORP.

401/433 WASHINGTON STREET APARTMENTS

401 & 433 WASHINGTON STREET

CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY, PENNSYLVANIA



LOCATION MAP

SOURCE: NORRISTOWN, PA USGS MAP

CERTIFICATION

DEP CERTIFICATION NOTE:

I DO HEREBY CERTIFY, PURSUANT TO THE PENALTIES OF 18 PA. C.S.A., SECTION 4904, TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THAT THE INFORMATION CONTAINED IN THE ACCOMPANYING PLANS, SPECIFICATIONS, AND REPORTS HAVE BEEN PREPARED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE. IS TRUE AND CORRECT, AND IS IN CONFORMANCE WITH CHAPTER 102 OF THE RULES AND REGULATIONS OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

ENGINEER — DATE: 5/26/2022

PLAN PREPARER: C. RICHARD ROSEBERRY
PHONE: 610-868-4201
THIS PLAN SHALL BE USED FOR POST-CONSTRUCTION STORMWATER MANAGEMENT PURPOSES ONLY.

INDEX OF SHEETS

SHT. No.	DESCRIPTION	LATEST REVISION
P1	PCSM COVER SHEET	
P2	PCSM EXISTING CONDITIONS PLAN	
P3	PCSM PLAN	
P4	PCSM DRAINAGE AREA MAP	
P5 - P7	PCSM DETAILS	

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GENERAL INFORMATION

1. PROPERTY IDENTIFICATION - BEING KNOWN AS TAX PARID:
   401 WASHINGTON: (CONSHOHOCKEN BOROUGH) 050011904007 DEED BOOK: 6221 PG: 02635
   (WHITEMARSH TOWNSHIP) 650011904007 DEED BOOK: 6221 PG: 02635
   433 WASHINGTON: (CONSHOHOCKEN BOROUGH) 050011908003 DEED BOOK: 6221 PG: 02635
   (WHITEMARSH TOWNSHIP) 650012685012 DEED BOOK: 6221 PG: 02635
   AS SHOWN IN THE CURRENT OFFICIAL TAX MAPS OF THE BOROUGH OF CONSHOHOCKEN AND WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA. ADDRESS FOR THE SITE IS 401/433 WASHINGTON STREET.
2. THE SUBJECT PROPERTIES ARE LOCATED IN THE SPECIALLY PLANNED TWO (SP-2) ZONING DISTRICT/FLOODPLAIN CONSERVATION DISTRICT (CONSHOHOCKEN BOROUGH) AND THE HEAVY INDUSTRIAL (HVY)/RIVERFRONT DEVELOPMENT (RDD-1) SUB DISTRICT/FLOODPLAIN CONSERVATION OVERLAY DISTRICT/RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT (WHITEMARSH TOWNSHIP) . THE PROPOSED USE OF THE SUBJECT PROPERTIES IS MULTI-FAMILY RESIDENTIAL APARTMENTS AND IS PERMITTED BY RIGHT IN THE SPECIALLY PLANNED TWO (SP-2) ZONING DISTRICT (CONSHOHOCKEN BOROUGH) AND PERMITTED BY RIGHT IN THE RIVERFRONT DEVELOPMENT DISTRICT (RDD-1) (WHITEMARSH TOWNSHIP).
3. OWNER:
   SPECTRUM-C LLC
   47 WHITNEY STREET
   WESTPORT, CT, 06880
4. APPLICANT/EQUITABLE OWNER:
   KRE ACQUISITION CORP.
   520 US HWY 22
   PO BOX 6872
   BRIDGEWATER, NJ 08807
   P: (908) 725-8100
5. STATEMENT OF INTENT - THE PROPOSED USE IS MULTI-FAMILY RESIDENTIAL. EACH PROPOSED APARTMENT BUILDING IS FOUR FLOORS OVER AT-GRADE PARKING.
6. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON WAS OBTAINED FROM FIELD SURVEY PERFORMED ON APRIL 7, 2021 AND PREPARED BY VALLEY LAND SERVICES, LLC., PLAN DATED APRIL 26, 2021 AND LAST REVISED MAY 7, 2021.
7. DEED REFERENCE - DEED BOOK 2702 PAGE 415 AND DEED BOOK 2818 PAGE 327
   DEED BOOK 2820 PAGE 189
8. MAP REFERENCES -
   A. A MAP ENTITLED: "ALTA/NSPS LAND TITLE SURVEY" PREPARED BY VALLEY LAND SERVICES, LLC, DATED APRIL 26, 2021, LAST REVISED JUNE 16, 2021.
9. THE EXISTENCE OF ANY UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE SURVEY.
10. TOPOGRAPHIC INFORMATION SHOWN HEREON WAS TAKEN FROM GROUND SURVEY PERFORMED BY VALLEY LAND SERVICES, LLC. THE LOCATION OF ALL UNDERGROUND UTILITIES AS SHOWN HEREON ARE APPROXIMATE AND ARE BASED ON VISIBLE SURFACE STRUCTURES AND ANY UTILITY MAPS PROVIDED BY UTILITY COMPANIES REFERENCED HEREON.
11. EXISTING SITE TOPOGRAPHIC INFORMATION AS SHOWN HEREON IS BASED UPON NAVD 88.
12. BENCHMARKS: MAG NAIL, ELEV. 57.31
13. ZONE DATA:

CONSHOHOCKEN BOROUGH ZONING DATA:

401 WASHINGTON STREET

SPECIALLY PLANNED DISTRICT TWO (SP-2)

ITEM	ZONING ORDINANCE	PERMITTED	PROPOSED
SPECIALLY PLANNED DISTRICT TWO			
MINIMUM LOT AREA	27-1511.1.	3 ACRES	4.97 ACRES (NET)
MINIMUM LOT WIDTH	27-1511.2.A.	100 FEET	338.60 FEET
MINIMUM LOT DEPTH	27-1511.2.B.	100 FEET	671.68 FEET
MAXIMUM IMPERVIOUS COVERAGE	27-1511.3.A.	70%	69.73% (TOTAL SITE)
MAXIMUM FLOOR AREA RATIO (FAR)	27-1511.3.D.	1.5	1.5
MINIMUM FLOOR AREA (ONE BEDROOM)	27-1511.4.	700 SF	>700 SF
MINIMUM FLOOR AREA (TWO BEDROOM)	27-1511.4.	900 SF	>900 SF
MINIMUM FLOOR AREA (THREE BEDROOM)	27-1511.4.	1,100 SF	>1,100 SF
MAXIMUM BUILDING HEIGHT	27-1511.5.B.	85 FEET	65 FEET(b)
BUILDING SETBACK FROM ULTIMATE RIGHT-OF-WAY/PROPERTY LINE	27-1511.6.B.(1)	15 FEET	15.02 FEET
PARKING SETBACK FROM ULTIMATE RIGHT-OF-WAY	27-1511.6.B.(1)	15 FEET	15.02 FEET
MINIMUM BUILDING SEPARATION	27-1511.6.C.	30 FEET/75 FEET (a)	80 FEET

(a) 75 FEET WITH SURFACE PARKING BETWEEN BUILDINGS.
(b) EACH BUILDING CONTAINS FOUR (4) HABITABLE RESIDENTIAL STORIES THAT ARE LOCATED ABOVE ONE STORY OF OPEN PODIUM PARKING.

433 WASHINGTON STREET

SPECIALLY PLANNED DISTRICT TWO (SP-2)

ITEM	ZONING ORDINANCE	PERMITTED	PROPOSED
SPECIALLY PLANNED DISTRICT TWO			
MINIMUM LOT AREA	27-1511.1.	3 ACRES	5.69 ACRES (NET)
MINIMUM LOT WIDTH	27-1511.2.A.	100 FEET	375.74 FEET
MINIMUM LOT DEPTH	27-1511.2.B.	100 FEET	651.54 FEET
MAXIMUM IMPERVIOUS COVERAGE	27-1511.3.A.	70%	69.73% (TOTAL SITE)
MAXIMUM FLOOR AREA RATIO (FAR)	27-1511.3.D.	1.5	1.5
MINIMUM FLOOR AREA (ONE BEDROOM)	27-1511.4.	700 SF	>700 SF
MINIMUM FLOOR AREA (TWO BEDROOM)	27-1511.4.	900 SF	>900 SF
MAXIMUM BUILDING HEIGHT	27-1511.5.B.	85 FEET	65 FEET (b)
BUILDING SETBACK FROM ULTIMATE RIGHT-OF-WAY/PROPERTY LINE	27-1511.6.B.(1)	15 FEET	15.05 FEET
PARKING SETBACK FROM ULTIMATE RIGHT-OF-WAY	27-1511.6.B.(1)	15 FEET	15.05 FEET
MINIMUM BUILDING SEPARATION	27-1511.6.C.	30 FEET/75 FEET	80 FEET (a)

(a) 75 FEET WITH SURFACE PARKING BETWEEN BUILDINGS.
(b) EACH BUILDING CONTAINS FOUR (4) HABITABLE RESIDENTIAL STORIES THAT ARE LOCATED ABOVE ONE STORY OF OPEN PODIUM PARKING.

WHITEMARSH TOWNSHIP ZONING DATA:

HEAVY INDUSTRIAL DISTRICT (HVY) WITH RDD-1 SUB DISTRICT

ITEM	ZONING ORDINANCE	PERMITTED	PROPOSED
RIVERFRONT DEVELOPMENT DISTRICT ONE			
MINIMUM LOT AREA	116-281.A.(1)	3 ACRES	2.91 ACRES
MINIMUM LOT WIDTH AT BUILDING SETBACK	116-281.A.(2)	200 FEET	375.74 FEET
BUILDING SETBACKS	116-281.A.(3)(a)	20 FEET	84.96 FEET
MINIMUM PARKING SETBACK	116-281.A.(4)	15 FEET	15.95 FEET
MAXIMUM BUILDING COVERAGE	116-281.A.(5)	40%	29.57% (TOTAL SITE)
MAXIMUM DENSITY	116-281.A.(6)	30 UNITS/ACRE	20.62 UNITS PER ACRE (a)
MAXIMUM BUILDING HEIGHT	116-281.A.(7)	4 STORIES	4 STORIES (b)
IMPERVIOUS COVER	116-148.B.(1)	75%	69.73% (TOTAL SITE)

(a) 60 UNITS ARE LOCATED IN THE WHITEMARSH TOWNSHIP PORTION OF 433 WASHINGTON STREET. WITH THE WHITEMARSH TOWNSHIP PORTION OF THE LOT MEASURING 2.91 ACRES.
(b) EACH BUILDING CONTAINS FOUR (4) HABITABLE RESIDENTIAL STORIES THAT ARE LOCATED ABOVE ONE STORY OF OPEN PODIUM PARKING.

14. PARKING CALCULATIONS:

	NUMBER OF UNITS	REQUIRED PARKING*	PROVIDED PARKING	COMPACT ALLOWED**	COMPACT PROVIDED	ADA PARKING PROVIDED***
401 WASHINGTON ST. (CONSHOHOCKEN)	322	386.4	342	120	67	8
433 WASHINGTON ST. (CONSHOHOCKEN)	216	259.2	268	94	98	8
433 WASHINGTON ST. (WHITEMARSH)	60	105.0	141	0	0	-
	598	751	751	214	165	16

* REQUIRED PARKING: 1.2 SPACES PER DWELLING UNIT IN CONSHOHOCKEN & 1.75 SPACES PER DWELLING UNIT IN WHITEMARSH
** COMPACT SPACES:35% OF TOTAL ALLOWED IN CONSHOHOCKEN & 0% OF TOTAL ALLOWED IN WHITEMARSH
*** ADA REQUIRES 2% OF TOTAL SPACES
~ THE PARKING ALONG CHERRY STREET WAS MODIFIED FROM PARALLEL SPACES TO PERPENDICULAR SPACES. THIS MODIFICATION INCREASED THE EXISTING PARKING FROM 23 SPACES TO 48 SPACES. THE 25 ADDITIONAL SPACES ARE INCLUDED IN THE TOTAL PARKING FOR 401 WASHINGTON INCREASING THE SITE FROM 317 TO 342 TOTAL SPACES, WHICH IS LESS THAN THE REQUIRED AMOUNT OF 386 SPACES.

15. POTABLE WATER SERVICE WILL BE BY EXISTING PUBLIC WATER SUPPLY AND SANITARY SEWER SERVICE WILL BE BY PUBLIC SEWAGE.
16. THERE ARE NO WETLANDS ON SITE.
17. BY GRAPHICAL REPRESENTATION ONLY THIS PROPERTY IS LOCATED IN FLOOD HAZARD ZONE AE AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 42091C0358G WHICH HAS AN EFFECTIVE DATE OF MARCH 2, 2016 AND IS IN A SPECIAL FLOOD HAZARD AREA. NO FIELD SURVEYING WAS PERFORMED TO DETERMINE THIS ZONE. THE FEMA CALCULATED 100-YEAR FLOOD ELEVATION FOR THIS PROJECT IS 60.5 FEET (NAVD 88) IN ACCORDANCE FIRM MAP NUMBER 42091C0358G DATED MARCH 2, 2016.
18. ALL SOILS ON SITE WERE TAKEN FROM THE NRCS WEB SOIL SURVEY.
19. THE SITE IS UNDERLAIN BY THE OLIGOCLASEMICA SCHIST OF THE WISSAHICKON FORMATION AND THE IMPURE LIMESTONE AND DOLOMITE OF THE CONESTOGA FORMATION.
20. THE PROPOSED DEVELOPMENT IS WITHIN THE LOWER SCHUYLKILL RIVER WATERSHED, WHICH DOES NOT HAVE AN APPROVED ACT 167 PLAN.
21. NO TOPSOIL SHALL BE REMOVED FROM THE SITE UNLESS AUTHORIZED BY WHITEMARSH TOWNSHIP, CONSHOHOCKEN BOROUGH, AND/OR MCCD. PERMANENT REMOVAL OF TOPSOIL FROM LAND WITHIN CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP IS PROHIBITED. NO TOPSOIL SHALL BE USED AS SPOIL.
22. EXCESS CONSTRUCTION WASTE AND DEBRIS SHALL BE REMOVED FROM THE SITE AT THE COMPLETION OF THE PROJECT. UNDER NO CIRCUMSTANCES SHALL SUCH MATERIAL BE ALLOWED TO BE BURIED OR USED AS BACKFILL MATERIAL.
23. MATERIALS, WORKMANSHIP, AND CONSTRUCTION FOR THE SITE IMPROVEMENTS SHOWN HEREON SHALL BE IN ACCORDANCE WITH:
   A. PENNSYLVANIA DEPARTMENT OF TRANSPORTATION "SPECIFICATIONS PUBLICATION 408", 2020; AS SUPPLEMENTED.
   B. CURRENT PREVAILING MUNICIPAL, COUNTY, AND/OR STATE AGENCY SPECIFICATIONS, STANDARDS, CONDITIONS, AND REQUIREMENTS.
   C. CURRENT PREVAILING UTILITY COMPANY/AUTHORITY SPECIFICATIONS, STANDARDS, AND REQUIREMENTS.
   D. CURRENT MANUFACTURER SPECIFICATIONS, STANDARDS, AND REQUIREMENTS.
24. PROPER PIPE COVERAGE SHALL BE MAINTAINED DURING ALL PHASES OF CONSTRUCTION. PIPE LENGTHS SHOWN HEREON ARE FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
25. THIS IS A SITE DEVELOPMENT PLAN AND UNLESS SPECIFICALLY NOTED ELSEWHERE HEREON, IS NOT A SURVEY.
26. ALL ELECTRIC, TELEPHONE, AND COMMUNICATION SERVICE FACILITIES, BOTH MAIN AND SERVICE LINES, SHALL BE PROVIDED BY UNDERGROUND CABLES, INSTALLED IN ACCORDANCE WITH THE PREVAILING STANDARDS AND PRACTICES OF THE UTILITY AND OTHER COMPANIES PROVIDING SUCH SERVICE.
27. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH PENNDOT PUBLICATION 408 AND CONSHOHOCKEN BOROUGH CONSTRUCTION STANDARDS.
28. THIS SET OF PLANS IS NOT DEPICTING ENVIRONMENTAL CONDITIONS OR A CERTIFICATION/ WARRANTY REGARDING THE PRESENCE OR ABSENCE OF ENVIRONMENTALLY IMPACTED SITE CONDITIONS. MASER CONSULTING HAS PERFORMED NO EXPLORATORY OR TESTING SERVICES, INTERPRETATIONS, CONCLUSIONS, OR OTHER SITE ENVIRONMENTAL SERVICES RELATED TO THE DETERMINATION OF THE POTENTIAL FOR CHEMICAL, TOXIC, RADIOACTIVE, OR OTHER TYPE OF CONTAMINANTS AFFECTING THE PROPERTY AND THE UNDERSIGNED PROFESSIONAL IS NOT QUALIFIED TO DETERMINE THE EXISTENCE OF THE SAME. SHOULD ENVIRONMENTAL CONTAMINATION OR WASTE BE DISCOVERED, THE OWNER AND CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LAWS AND REGULATIONS.
29. THESE GENERAL NOTES APPLY TO ALL SHEETS IN THE SET.

UTILITY NOTES

1. EXISTING UTILITY INFORMATION SHOWN HEREON HAS BEEN COLLECTED FROM VARIOUS SOURCES AND IS NOT GUARANTEED AS TO ACCURACY OR COMPLETENESS. THE CONTRACTOR SHALL VERIFY ALL INFORMATION TO HIS SATISFACTION PRIOR TO EXCAVATION. WHERE EXISTING UTILITIES ARE TO BE CROSSED BY PROPOSED CONSTRUCTIONS, TEST PITS SHALL BE DUG BY THE CONTRACTOR PRIOR TO CONSTRUCTION TO ASCERTAIN EXISTING INVERTS, MATERIALS, AND SIZES. TEST PIT INFORMATION SHALL BE GIVEN TO THE ENGINEER PRIOR TO CONSTRUCTION TO PERMIT ADJUSTMENTS AS REQUIRED TO AVOID CONFLICTS. THE CONTRACTOR SHALL NOTIFY THE UNDER SIGNED PROFESSIONAL IMMEDIATELY IF ANY FIELD CONDITIONS ENCOUNTERED DIFFER MATERIALLY FROM THOSE REPRESENTED HEREON. SUCH CONDITIONS COULD RENDER THE DESIGNS HEREON INAPPROPRIATE OR INEFFECTIVE.
2. UTILITY RELOCATIONS SHOWN HEREON, IF ANY, ARE FOR INFORMATIONAL PURPOSES ONLY AND MAY NOT REPRESENT ALL REQUIRED UTILITY RELOCATIONS. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING AND/OR COORDINATING ALL REQUIRED UTILITY RELOCATIONS IN COOPERATION WITH THE RESPECTIVE UTILITY COMPANY/AUTHORITIES.
3. STORM SEWERS SHALL BE ADS N-12 HIGH DENSITY POLYETHYLENE PIPE (HDPEP), AS NOTED ON THE PLAN, OR APPROVED EQUAL. PROPER PIPE COVERAGE SHALL BE MAINTAINED DURING ALL PHASES OF CONSTRUCTION. PIPE LENGTHS SHOWN HEREON ARE FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
4. CONTRACTOR IS RESPONSIBLE TO DETERMINE WHEN SPECIAL OR OVERSIZED DRAINAGE STRUCTURES ARE REQUIRED. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR ALL SPECIAL (OVERSIZED) DRAINAGE STRUCTURES TO THE TOWNSHIP ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
5. WATER SERVICE TO BE PROVIDED FROM THE EXISTING WATER MAIN LINE ON WASHINGTON STREET, OWNED AND OPERATED BY AQUA PENNSYLVANIA. PROPOSED WATER MAIN EXTENSIONS AND FIRE HYDRANT LOCATIONS ARE SUBJECT TO MUNICIPAL REVIEW AND APPROVAL, ACCORDING TO THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION REGULATIONS, AMERICAN WATERWORKS ASSOCIATION STANDARDS. PIPE MATERIALS SHALL BE CEMENT LINED DUCTILE IRON PIPE, CLASS 52, WITH ASPHALTIC EPOXY TYPE COATING OR HIGH DENSITY POLYETHYLENE (HDPE) SDR-11 PIPE AS NOTED ON THE PLANS. WATER MAINS SHALL BE INSTALLED TO PROVIDE A MINIMUM 4 FEET OF COVER FROM THE TOP OF PIPE TO THE PROPOSED GRADE.
6. SANITARY SEWER SERVICE SHALL BE PROVIDED BY GRAVITY CONNECTION TO EXISTING SEWER MAIN ON WASHINGTON STREET, OWNED AND OPERATED BY THE BOROUGH OF CONSHOHOCKEN AUTHORITY. PROPOSED SEWER MAIN EXTENSIONS AND MANHOLE LOCATIONS ARE SUBJECT TO MUNICIPAL REVIEW AND APPROVAL, ACCORDING TO PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION REGULATIONS. PIPE MATERIALS SHALL BE PVC SDR-26, EXCEPT AS NOTED OTHERWISE ON THE PLANS. EXCEPT WHERE SHALLOWER DEPTHS ARE PERMITTED BY THE MUNICIPALITY OR UTILITY AUTHORITY, SEWER LINES, INCLUDING FORCE MAINS AND LATERALS, SHALL BE INSTALLED TO PROVIDE A MINIMUM 5 FEET OF COVER FROM THE TOP OF PIPE TO PROPOSED GRADE.
7. ALL WATER MAINS SHOULD BE SEPARATED FROM SANITARY SEWER AND INDUSTRIAL DISCHARGE LINES BY A MINIMUM HORIZONTAL DISTANCE OF 10 FEET. IF SUCH HORIZONTAL SEPARATION IS NOT POSSIBLE, THE WATER AND SEWER LINES SHALL BE IN SEPARATE TRENCHES (STEP TRENCHES ARE PROHIBITED) WITH THE TOP OF THE SEWER LINE AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER MAIN OR WITH SUCH SEPARATION EXPRESSLY APPROVED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
8. AT THE CROSSINGS OF SEWER LINES AND WATER MAINS, THE TOP OF THE SEWER LINES SHALL BE AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER MAIN (SEWER SERVICE LATERALS ARE NOT SUBJECT TO THIS REQUIREMENT). IF SUCH VERTICAL SEPARATION IS NOT POSSIBLE, THE SEWER LINE SHALL BE OF WATERTIGHT CONSTRUCTION (THAT IS DUCTILE IRON PIPE WITH MECHANICAL RESTRAINT JOINTS), WITH WATERTIGHT JOINTS THAT IS A MINIMUM OF 10 FEET FROM THE WATER MAIN. CONTRACTOR SHALL USE TRANSITION COUPLING, POWER SEAL MODEL #3501 OR EQUIVALENT AT DIP/PVC JOINTS.
9. GAS, ELECTRIC, LIGHTING, CABLE TELEVISION, AND ELECTRICAL SERVICE PLANS, IF REQUIRED, SHALL BE PREPARED BY THE RESPECTIVE UTILITY COMPANIES THAT SERVICE THE AREA PRIOR TO SITE CONSTRUCTION AND SHALL BE INSTALLED PER ORDINANCE OR LOCAL UTILITY COMPANIES REQUIREMENTS.
10. TELEPHONE, ELECTRIC, AND GAS LINES WILL BE INSTALLED UNDERGROUND. CROSSINGS OF PROPOSED PAVEMENTS WILL BE INSTALLED PRIOR TO THE CONSTRUCTION OF PAVEMENT BASE COURSE.
11. STORMWATER INTERCONNECTIONS WITH THE SANITARY SEWER SYSTEM SHALL NOT BE PERMITTED.
12. APPROVAL OF THESE PLANS DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT OF WASTEWATER COLLECTION, CONVEYANCE, OR TREATMENT CAPACITY.
13. THE ENTIRETY OF THE ROOF AREAS OF THE PROPOSED APARTMENT BUILDINGS SHALL BE DIRECTED TO THE UNDERGROUND DETENTION BASIN B.
14. NO PERSON SHALL PLACE ANY STRUCTURE, FILL, LANDSCAPING OR VEGETATION INTO A STORMWATER BMP, WHICH WOULD LIMIT OR ALTER THE FUNCTIONING OF THE BMP.
15. ANY ALTERATION TO THE STORMWATER BMPs SHALL NOT BE PERMITTED UNLESS AUTHORIZED BY THE CONSHOHOCKEN BOROUGH AND WHITEMARSH TOWNSHIP ENGINEER AND MONTGOMERY COUNTY CONSERVATION DISTRICT.

THESE GENERAL NOTES SHALL APPLY TO ALL SHEETS IN THIS SET.

UTILITY CONTACTS

UTILITY CONTACTS:

COMPANY: CONSHOHOCKEN BOROUGH AUTHORITY
ADDRESS: 601 E ELM ST
CONSHOHOCKEN, PA 19428
PHONE: 610-828-0979

COMPANY: WHITEMARSH TOWNSHIP AUTHORITY
ADDRESS: 10 E. CHURCH STREET
BETHLEHEM, PA 18018
CONTACT: ROBERT TAYLOR
PHONE: 484-344-5230

COMPANY: COMCAST
ADDRESS: 1701 JOHN F. KENNEDY BOULEVARD
PHILADELPHIA, PA 19103
CONTACT: RYAN MADONNA
PHONE: 800-391-3000

COMPANY: AQUA AMERICA
ADDRESS: 700 W. SPROUL ROAD
SPRINGFIELD, PA 19064
PHONE: 877-987-2782

COMPANY: PECO
ADDRESS: 2301 MARKET STREET
PHILADELPHIA, PA 19101
PHONE: 800-494-4000

AGENCY CONTACTS

MONTGOMERY COUNTY CONSERVATION DISTRICT
143 LEVEL ROAD
COLLEGEVILLE, PA 19426
PHONE: (610) -489-4506

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHEASTERN REGIONAL OFFICE
2 E. MAIN ST.
NORRISTOWN, PA 19401
PHONE: (484) 250-5900

STANDARD PCSM NOTES

PCSM CONSTRUCTION STAGING/CRITICAL STAGES OF IMPLEMENTATION:

A LICENSED PROFESSIONAL OR A DESIGNEE MUST BE PRESENT ONSITE AND BE RESPONSIBLE DURING CRITICAL STAGES OF CONSTRUCTION. SPECIFIC CRITICAL STAGES ARE INCLUDED LATER IN THE PLAN SET.

OPERATIONS AND MAINTENANCE PLAN:

THE BMPS INDICATED ON THE PCSM PLANS RESIDING WITHIN THE PROJECT SITE WILL BE MAINTAINED BY THE DEVELOPER/RESPONSIBLE PARTY.

SPECIFIC OPERATIONS & MAINTENANCE PROCEDURES FOR EACH BMP ARE INCLUDED LATER IN THE PLAN SET.

RESPONSIBLE PARTY:

THE ONSITE STORMWATER BMPS WILL BE OWNED, OPERATED, AND MAINTAINED BY:

KRE ACQUISITION CORP.

520 US HWY 22

PO BOX 6872

BRIDGEWATER, NJ 08807

THIS SITE ULTIMATELY FLOWS TO THE SCHUYLKILL RIVER, WHICH IS PART OF THE SCHUYLKILL RIVER WATERSHED. THE PENNSYLVANIA CODE, TITLE 25, CHAPTER 93, WATER QUALITY STANDARDS ASSIGNS THE SCHUYLKILL RIVER A WATER QUALITY DESIGNATION OF WARM WATER FISHERY, MIGRATORY FISHES (WWF, MF).

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REV	DATE	DRAWN BY	DESCRIPTION

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — C. RICHARD ROSEBERRY — ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

POST-CONSTRUCTION STORMWATER MANAGEMENT PLANS
FOR
401/433 WASHINGTON STREET APARTMENTS
401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

Colliers Engineering & Design
LEHIGH VALLEY
941 Marcon Boulevard, Suite 801
Allentown, PA 18109
Phone: 610.868.4201
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

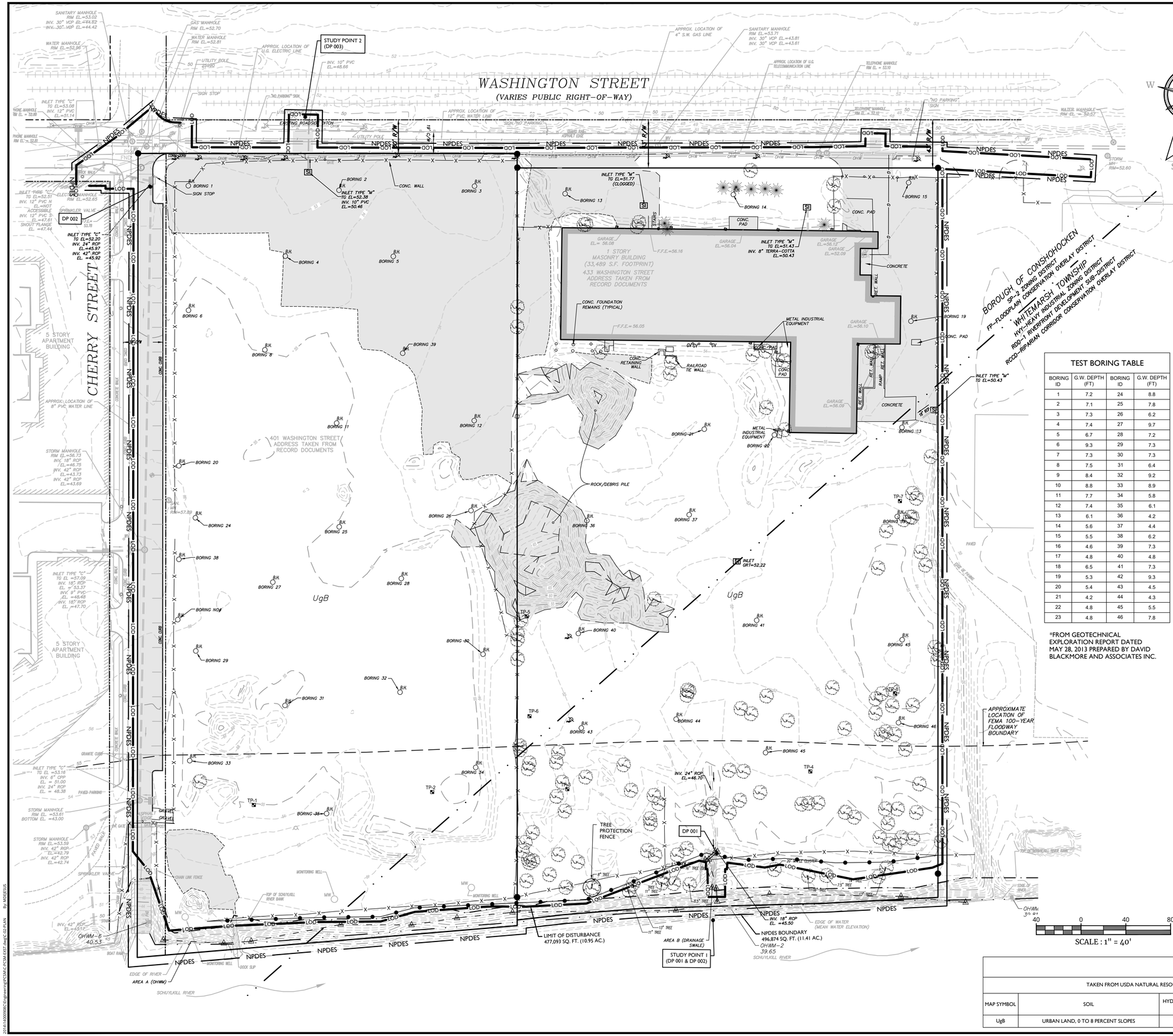
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	5/6/2022	MD	CRR

PROJECT NUMBER: 14000908C
DRAWING NAME: C-PCSM-CVER

SHEET TITLE: PCSM COVER SHEET

SHEET NUMBER: P1 of P7

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



TEST PIT TABLE	
TEST PIT ID	TEST PIT DEPTH (IN)
TP-1	75.00
TP-2	51.75
TP-3	33.00
TP-4	48.00
TP-5	33.00
TP-6	28.30
TP-7	44.80
TP-8	74.50

*FROM STORMWATER INFILTRATION TESTING SUMMARY DATED MAY 30, 2014 PREPARED BY MASER CONSULTING.

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ENVIRONMENTAL NOTE:
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TEST BORING TABLE			
BORING ID	G.W. DEPTH (FT)	BORING ID	G.W. DEPTH (FT)
1	7.2	24	8.8
2	7.1	25	7.8
3	7.3	26	6.2
4	7.4	27	9.7
5	6.7	28	7.2
6	9.3	29	7.3
7	7.3	30	7.3
8	7.5	31	6.4
9	8.4	32	9.2
10	8.8	33	8.9
11	7.7	34	5.8
12	7.4	35	6.1
13	6.1	36	4.2
14	5.6	37	4.4
15	5.5	38	6.2
16	4.6	39	7.3
17	4.8	40	4.8
18	6.5	41	7.3
19	5.3	42	9.3
20	5.4	43	4.5
21	4.2	44	4.3
22	4.8	45	5.5
23	4.8	46	7.8

*FROM GEOTECHNICAL EXPLORATION REPORT DATED MAY 28, 2013 PREPARED BY DAVID BLACKMORE AND ASSOCIATES INC.

PCSM LEGEND

	PROPOSED
EXISTING STORM PIPE	
LIMIT OF DISTURBANCE	LOD
NPDES BOUNDARY	NPDES
PRE-PROJECT IMPERVIOUS SURFACES	
TEST PIT & ID	TP-1
TEST BORING & ID	B.H.

LEGEND

TRAVERSE LINE, CENTER LINE OR BASELINE	WETLAND MARKER
RIGHT OF WAY LINE	TREE
PROPERTY LINE	ROADWAY SIGNS
EDGE OF PAVEMENT	TRAFFIC FLOW
CURB LINE	MAILBOX
DEPRESSED CURB	TRAFFIC SIGNAL POLE
CHAIN FENCE	POLE MOUNTED LIGHT
WETLAND LINE	UTILITY POLE
MUNICIPAL BOUNDARY	GUY WIRE
TREELINE	TRANSFORMER
ELECTRICAL MANHOLE	FIRE DEPT. CONNECTION
WATER MANHOLE	FIRE HYDRANT
TELEPHONE MANHOLE	WATER VALVE
UNMARKED MANHOLE	GAS VALVE
SANITARY MANHOLE	SANITARY CLEANOUT
DRAINAGE MANHOLE	CONCRETE MONUMENT
MAJOR CONTOUR	CAPPED REBAR/IRON PIPE
MINOR CONTOUR	STORM INLET TYPE 'C'
SPOT ELEVATION	STORM INLET TYPE 'M'
TOP OF CURB ELEV.	FLARED END SECTION
BOTTOM OF CURB ELEV.	HEADWALL
U/G CABLE TV LINE	
U/G FIBER OPTIC LINE	
U/G TELEPHONE LINE	
U/G ELECTRIC LINE	
OVERHEAD WIRE	
WATER MAIN	
GAS MAIN	
SAN. SEWER LATERAL	
SAN. SEWER MAIN	
STORM PIPE	

ABBREVIATIONS

D.C. = DEPRESSED CURB	FF = FINISH FLOOR	MHWL = MEAN HIGH WATERLINE
BC = BOTTOM OF CURB	UV = UNKNOWN VALVE	MLWL = MEAN LOW WATERLINE
TC = TOP OF CURB	MH = MANHOLE	TW = TOP OF WALL
BOL = BOLLARD	DEP. = DEPRESSED	BW = BOTTOM WALL
GRT = GRATE	CL = CENTERLINE	
MB = MAILBOX	PM = PARKING METER	

SOIL LIMITATIONS	SOIL RESOLUTIONS
DEPTH TO STATURATED ZONE / SEASONAL HIGH WATER TABLE	PERFORM TEST PITS TO DETERMINE DEPTH OF SATURATED ZONE. INSTALL UNDERDRAINS AS APPROPRIATE TO DIVERT GROUNDWATER FROM FOUNDATIONS OR ROAD SUBBASE. USE PUMPED WATER FILTER BAGS DURING CONSTRUCTION.
FROST ACTION	CONSTRUCT FOOTINGS IN ACCORDANCE WITH CODE.

SOILS SCHEDULE

TAKEN FROM USDA NATURAL RESOURCE CONSERVATION SERVICE (NRCS)

MAP SYMBOL	SOIL	HYDROLOGIC SOILS GROUP	DEPTH TO BEDROCK (FT. BELOW GRADE)	DEPTH TO SEASONAL WATER TABLE (FT. BELOW GRADE)	FLOOD HAZARD POTENTIAL	HYDRIC/ HYDRIC COMPONENT
UgB	URBAN LAND, 0 TO 8 PERCENT SLOPES	B	VARIES > 4.5 FT	VARIES 0.75 - 3.3	NONE	NONE

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C. Richard Roseberry
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LICENSE NUMBER PE046162R
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401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

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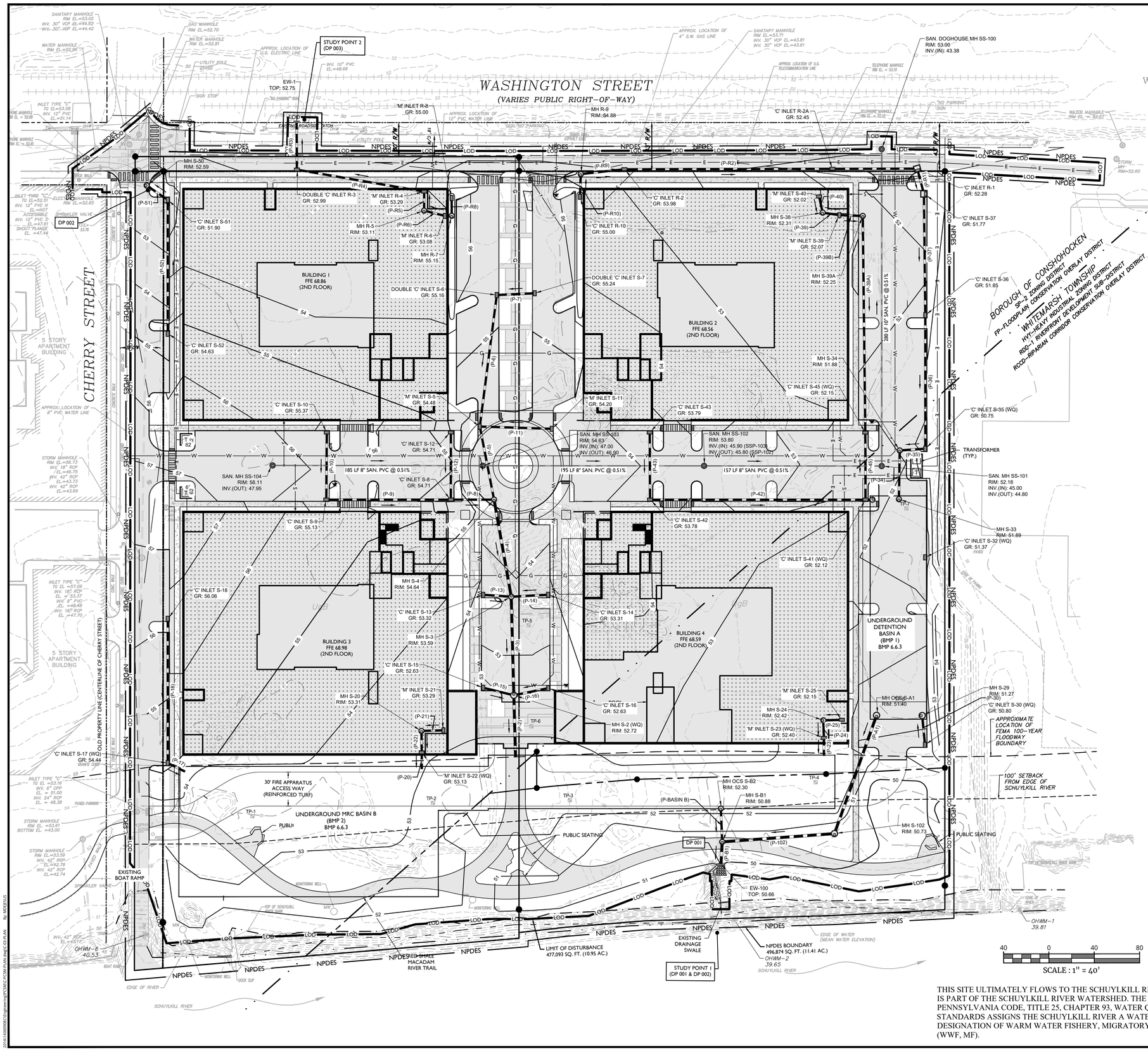
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	5/6/2022	MD	CRR

PROJECT NUMBER: 14000908C
DRAWING NAME: C-PCSM-EXST

SHEET TITLE: PCSM EXISTING CONDITIONS PLAN

SHEET NUMBER: P2 of P7

20140140000908C\Engineering\PCSM\C-PCSM-EXST.dwg\C-02-PLAN By: MTISSEUS



GENERAL NOTE:
BY GRAPHICAL REPRESENTATION ONLY THIS PROPERTY IS LOCATED IN FLOOD HAZARD ZONE AE AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 42091C0358G WHICH HAS AN EFFECTIVE DATE OF MARCH 2, 2016 AND IS IN A SPECIAL FLOOD HAZARD AREA. NO FIELD SURVEYING WAS PERFORMED TO DETERMINE THIS ZONE. THE FEMA CALCULATED 100-YEAR FLOOD ELEVATION FOR THIS PROJECT IS 60.5 FEET (NAVD 88) IN ACCORDANCE FIRM MAP NUMBER 42091C0358G DATED MARCH 2, 2016.

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PCSM LEGEND

	PROPOSED
EXISTING STORM PIPE	
LIMIT OF DISTURBANCE	LOD
NPDES BOUNDARY	NPDES
POST-PROJECT IMPERVIOUS SURFACES	
TEST PIT & ID	TP-1
TEST BORING & ID	B-R
SOIL EROSION MATTING NAG- SC250	

LEGEND

EXISTING		PROPOSED
12+00 PI 13+00	TRAVERSE LINE, CENTER LINE OR BASELINE (LABEL AS SUCH)	12+00 PI 13+00
	RIGHT OF WAY LINE	
	PROPERTY LINE	
	EDGE OF PAVEMENT	
FACE / BACK	CURB	FACE / BACK
	DEPRESSED CURB	
	SIDEWALK	
X X	FENCES	X X
	TREELINE	
	ROADWAY SIGNS	
	WETLAND LINE	
	MUNICIPAL BOUNDARY LINE	
	'C' INLET	
	'M' INLET	
D	STORM MANHOLE	D
S	SANITARY MANHOLE	S
	FLARED END SECTION	
	HEADWALL	
	HYDRANT	
	POLE MOUNTED LIGHT	
75 / 74	CONTOURS	75 / 74
× G 29.0	SPOT ELEVATION	× G 29.0
	DIRECTION OF OVERLAND FLOW	
× TC 29.0	TOP OF CURB ELEVATION	× TC 29.0
× BC 29.0	BOTTOM OF CURB ELEVATION	× BC 29.0
	TOP OF DEPRESSED CURB ELEVATION	× TDC 29.0
CATV	CABLE TV CONDUIT	CATV
W	WATER MAIN	W
G	GAS MAIN	G
T	TELEPHONE CONDUIT	T
E	ELECTRIC CONDUIT	E
	SANITARY PIPE	
	STORM PIPE	
	PROPOSED BUILDING	

40 0 40 80
SCALE : 1" = 40'

THIS SITE ULTIMATELY FLOWS TO THE SCHUYLKILL RIVER, WHICH IS PART OF THE SCHUYLKILL RIVER WATERSHED. THE PENNSYLVANIA CODE, TITLE 25, CHAPTER 93, WATER QUALITY STANDARDS ASSIGNS THE SCHUYLKILL RIVER A WATER QUALITY DESIGNATION OF WARM WATER FISHERY, MIGRATORY FISHES (WWF, MF).

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	5/6/2022	MD	CRR

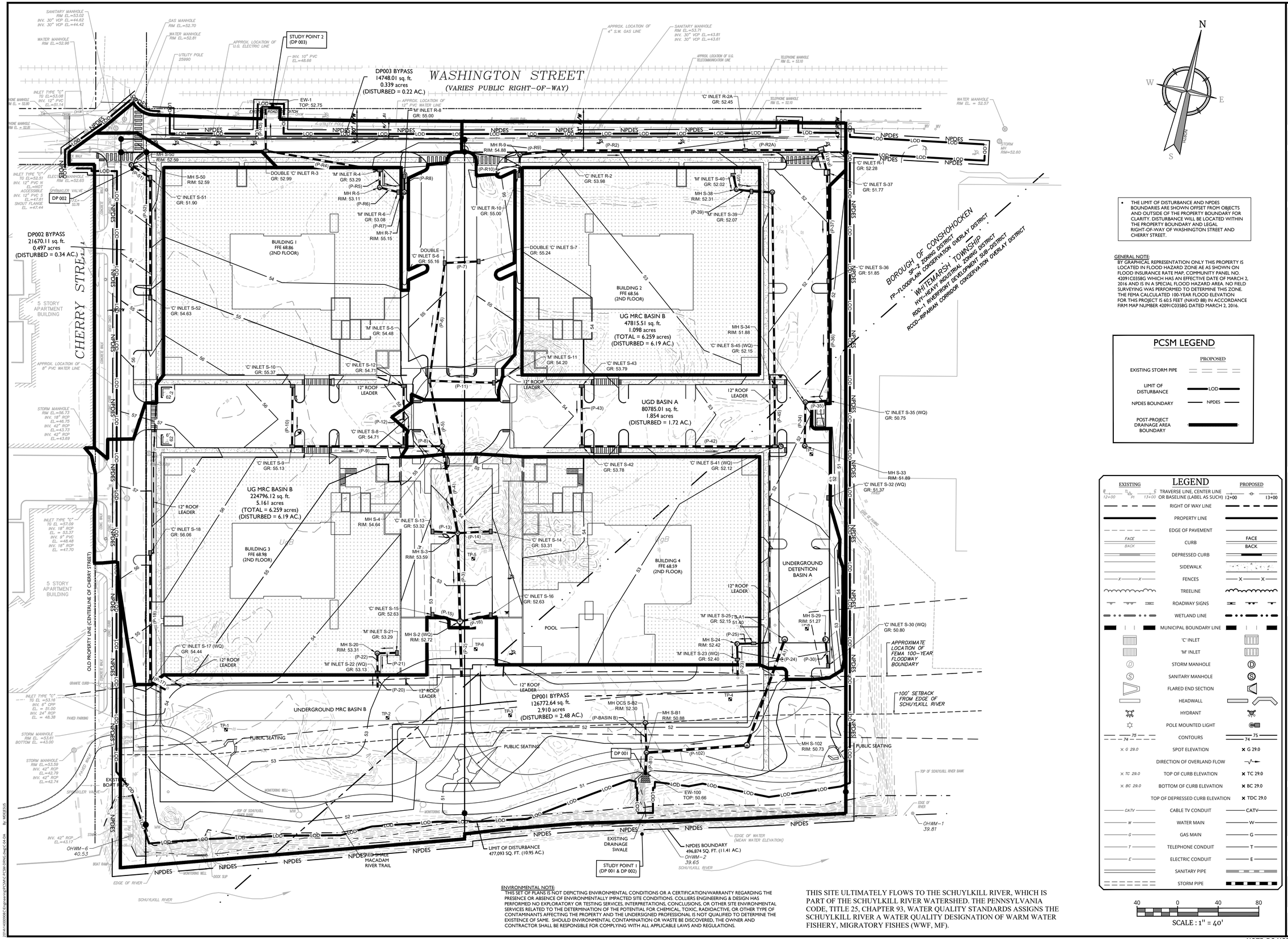
PROJECT NUMBER: 14000908C
DRAWING NAME: C-PCSM-PLAN

SHEET TITLE: PCSM PLAN

SHEET NUMBER: P3 of P7

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C\Engineering\PCSM\C-PCSM-PLAN.dwg|C-03-PLAN By: MDSESUS


WASHINGTON STREET
(VARIES PUBLIC RIGHT-OF-WAY)
CHERRY STREET
DP003 BYPASS
14748.01 sq. ft.
0.339 acres
(DISTURBED = 0.22 AC.)
DP002 BYPASS
21670.11 sq. ft.
0.497 acres
(DISTURBED = 0.34 AC.)
DP002
DP001 BYPASS
126772.64 sq. ft.
2.910 acres
(DISTURBED = 2.48 AC.)
DP 001
STUDY POINT 2
(DP 003)
STUDY POINT 1
(DP 001 & DP 002)
BUILDING 1
FFE 68.86
(2ND FLOOR)
BUILDING 2
FFE 68.56
(2ND FLOOR)
BUILDING 3
FFE 68.98
(2ND FLOOR)
BUILDING 4
FFE 68.59
(2ND FLOOR)
5 STORY
APARTMENT
BUILDING
UG MRC BASIN B
47815.51 sq. ft.
1.098 acres
(TOTAL = 6.259 acres)
(DISTURBED = 6.19 AC.)
UGD BASIN A
80785.01 sq. ft.
1.854 acres
(DISTURBED = 1.72 AC.)
UG MRC BASIN B
224796.12 sq. ft.
5.161 acres
(TOTAL = 6.259 acres)
(DISTURBED = 6.19 AC.)
UNDERGROUND MRC BASIN B
UNDERGROUND
DETENTION
BASIN A
POOL
PUBLIC SEATING
EXIST. BOAT RAMP
BOAT RAMP
MACADAM
RIVER TRAIL
EXISTING
DRAINAGE
SWALE
LIMIT OF DISTURBANCE
477,093 SQ. FT. (10.95 AC.)
NPDES BOUNDARY
496,874 SQ. FT. (11.41 AC.)
OHWM-2
39.65
SCHUYLKILL RIVER
OHWM-1
39.81
OHWM-6
40.53
EDGE OF WATER
(MEAN WATER ELEVATION)
TOP OF SCHUYLKILL RIVER BANK
EDGE OF RIVER
APPROXIMATE
LOCATION OF
FEMA 100-YEAR
FLOODWAY
BOUNDARY
100' SETBACK
FROM EDGE OF
SCHUYLKILL RIVER
OLD PROPERTY LINE (CENTERLINE OF CHERRY STREET)
BOROUGH OF CONSHOHOCKEN
SF-2 ZONING DISTRICT
FP-FLOODPLAIN CONSERVATION OVERLAY DISTRICT
WHITEMARSH TOWNSHIP
HVY-HEAVY INDUSTRIAL ZONING DISTRICT
RDD-1 RIVERFRONT DEVELOPMENT SUB-DISTRICT
RCCD-RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT
EW-1
TOP: 52.75
EW-100
TOP: 50.66
MH S-50
RIM: 52.59
MH S-51
RIM: 52.59
MH S-52
RIM: 52.59
MH S-4
RIM: 54.64
MH S-3
RIM: 53.59
MH S-2 (WQ)
RIM: 52.72
MH S-20
RIM: 53.31
MH S-22 (WQ)
GR: 53.13
MH R-4
GR: 53.29
MH R-5
RIM: 53.11
MH R-6
GR: 53.08
MH R-7
RIM: 55.15
MH R-8
GR: 55.00
MH R-9
RIM: 54.88
MH S-40
GR: 52.02
MH S-38
RIM: 52.31
MH S-39
GR: 52.07
MH S-34
RIM: 51.88
MH S-45 (WQ)
GR: 52.15
MH S-33
RIM: 51.89
MH S-32 (WQ)
GR: 51.37
MH S-29
RIM: 51.27
MH S-24
RIM: 52.42
MH S-23 (WQ)
GR: 52.40
MH OCS S-B2
RIM: 52.30
MH S-B1
RIM: 50.88
MH S-102
RIM: 50.73
DOUBLE 'C' INLET R-3
GR: 52.99
DOUBLE 'C' INLET S-6
GR: 55.16
DOUBLE 'C' INLET S-7
GR: 55.24
'C' INLET R-2A
GR: 52.45
'C' INLET R-1
GR: 52.28
'C' INLET R-2
GR: 53.98
'C' INLET R-10
GR: 55.00
'C' INLET S-51
GR: 51.90
'C' INLET S-52
GR: 54.63
'C' INLET S-10
GR: 55.37
'C' INLET S-12
GR: 54.71
'C' INLET S-8
GR: 54.71
'C' INLET S-9
GR: 55.13
'C' INLET S-18
GR: 56.06
'C' INLET S-13
GR: 53.32
'C' INLET S-14
GR: 53.31
'C' INLET S-15
GR: 52.63
'C' INLET S-16
GR: 52.63
'C' INLET S-17 (WQ)
GR: 54.44
'C' INLET S-42
GR: 53.78
'C' INLET S-41 (WQ)
GR: 52.12
'C' INLET S-43
GR: 53.79
'C' INLET S-35 (WQ)
GR: 50.75
'C' INLET S-36
GR: 51.85
'C' INLET S-37
GR: 51.77
'C' INLET S-30 (WQ)
GR: 50.80
'M' INLET S-5
GR: 54.48
'M' INLET S-11
GR: 54.20
'M' INLET S-21
GR: 53.29
'M' INLET S-22 (WQ)
GR: 53.13
'M' INLET S-23 (WQ)
GR: 52.40
'M' INLET S-25
GR: 52.15
12" ROOF LEADER
DOUBLE 'C' INLET R-3
GR: 52.99
DOUBLE 'C' INLET S-6
GR: 55.16
DOUBLE 'C' INLET S-7
GR: 55.24
'C' INLET R-2A
GR: 52.45
'C' INLET R-1
GR: 52.28
'C' INLET R-2
GR: 53.98
'C' INLET R-10
GR: 55.00
'C' INLET S-51
GR: 51.90
'C' INLET S-52
GR: 54.63
'C' INLET S-10
GR: 55.37
'C' INLET S-12
GR: 54.71
'C' INLET S-8
GR: 54.71
'C' INLET S-9
GR: 55.13
'C' INLET S-18
GR: 56.06
'C' INLET S-13
GR: 53.32
'C' INLET S-14
GR: 53.31
'C' INLET S-15
GR: 52.63
'C' INLET S-16
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'C' INLET S-17 (WQ)
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'C' INLET S-30 (WQ)
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12" ROOF LEADER
DOUBLE 'C' INLET R-3
GR: 52.99
'M' INLET R-4
GR: 53.29
'M' INLET R-6
GR: 53.08
'M' INLET R-8
GR: 55.00
'M' INLET S-40
GR: 52.02
'M' INLET S-39
GR: 52.07
'C' INLET S-45 (WQ)
GR: 52.15
'C' INLET S-32 (WQ)
GR: 51.37
'C' INLET S-30 (WQ)
GR: 50.80
'C' INLET S-35 (WQ)
GR: 50.75
'C' INLET S-36
GR: 51.85
'C' INLET S-37
GR: 51.77
'C' INLET S-41 (WQ)
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'C' INLET R-2A
GR: 52.45
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GR: 52.28
'C' INLET R-2
GR: 53.98
'C' INLET R-10
GR: 55.00
'C' INLET S-51
GR: 51.90
'C' INLET S-52
GR: 54.63
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GR: 55.37
'C' INLET S-12
GR: 54.71
'C' INLET S-8
GR: 54.71
'C' INLET S-9
GR: 55.13
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GR: 56.06
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GR: 53.32
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GR: 55.00
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GR: 52.02
'M' INLET S-39
GR: 52.07
'C' INLET S-45 (WQ)
GR: 52.15
'C' INLET S-32 (WQ)
GR: 51.37
'C' INLET S-30 (WQ)
GR: 50.80
'C' INLET S-35 (WQ)
GR: 50.75
'C' INLET S-36
GR: 51.85
'C' INLET S-37
GR: 51.77
MH S-50
RIM: 52.59
MH S-51
RIM: 52.59
MH S-52
RIM: 52.59
MH S-4
RIM: 54.64
MH S-3
RIM: 53.59
MH S-2 (WQ)
RIM: 52.72
MH S-20
RIM: 53.31
MH S-22 (WQ)
GR: 53.13
MH R-4
GR: 53.29
MH R-5
RIM: 53.11
MH R-6
GR: 53.08
MH R-7
RIM: 55.15
MH R-8
GR: 55.00
MH R-9
RIM: 54.88
MH S-40
GR: 52.02
MH S-38
RIM: 52.31
MH S-39
GR: 52.07
MH S-34
RIM: 51.88
MH S-45 (WQ)
GR: 52.15
MH S-33
RIM: 51.89
MH S-32 (WQ)
GR: 51.37
MH S-29
RIM: 51.27
MH S-24
RIM: 52.42
MH S-23 (WQ)
GR: 52.40
MH OCS S-B2
RIM: 52.30
MH S-B1
RIM: 50.88
MH S-102
RIM: 50.73
12" ROOF LEADER
12" ROOF LEADER
12" ROOF LEADER

POST-CONSTRUCTION STORMWATER MANAGEMENT GENERAL NOTES

1. FOR THE PURPOSES OF THIS PLAN, "BMP" REFERS TO A PROPOSED PCSM BEST MANAGEMENT PRACTICE.
2. DO NOT STOCKPILE EQUIPMENT, SOIL, OR MACHINERY WITHIN THE AREA OF AN INFILTRATION BMP.
3. DO NOT COMPACT INFILTRATION BMP SOIL BEDS DURING CONSTRUCTION. PROHIBIT ALL HEAVY EQUIPMENT FROM THE FLOOR AREA AND MINIMIZE ALL OTHER TRAFFIC. WHERE POSSIBLE, PERFORM WORK FROM THE PERIMETER OF THE BMP TO AVOID EXCESSIVE SOIL COMPACTION WITHIN THE LEVEL EARTH AREAS OF THE BMP.
4. A COMPLETE AND SITE SPECIFIC CONSTRUCTION SEQUENCE INCLUDING THE CONSTRUCTION OF ALL BMPS CAN BE FOUND ON THE EROSION AND SEDIMENT POLLUTION CONTROL PLANS.
5. THE PERMITTEE MUST PROVIDE ENGINEERING CONSTRUCTION OVERSIGHT FOR THE PROPOSED STORMWATER BMPS.
6. BEFORE INITIATING ANY REVISIONS TO THE APPROVED PCSM PLANS OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED PCSM PLAN, THE CONTRACTOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE MONTGOMERY COUNTY CONSERVATION DISTRICT AND/OR PADEP.
7. ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1, AND 287.1 ET. SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THIS SITE.
8. IN THE EVENT OF SINKHOLE DISCOVERY A PROFESSIONAL GEOLOGIST OR ENGINEER MUST BE CONTACTED CONCERNING MITIGATION. ADDITIONALLY, THE MONTGOMERY COUNTY CONSERVATION DISTRICT MUST BE MADE AWARE OF THE SINKHOLE DISCOVERY IMMEDIATELY.
9. THE CONTRACTOR SHALL ASSURE THAT THE APPROVED POST-CONSTRUCTION STORMWATER MANAGEMENT PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED.
10. PCSM PLAN HAS BEEN DESIGNED TO MINIMIZE IMPERVIOUS AREAS. IMPERVIOUS AREAS WILL BE LIMITED TO ROADWAY MAINTENANCE AND IMPROVEMENT AREAS, AND PERVIOUS AREAS WILL BE RESTORED IN OTHER AREAS WITHIN THE LIMIT OF DISTURBANCE.
11. PCSM PLAN HAS BEEN DESIGNED TO MAXIMIZE THE PROTECTION OF EXISTING DRAINAGE FEATURES AND EXISTING VEGETATION. THE PROPOSED DEVELOPMENT MAINTAINS THE GENERAL DRAINAGE PATTERN, VOLUME, AND RATE OF RUNOFF TO THE SURFACE WATER DISCHARGE. EXISTING VEGETATION IS PROTECTED BY RESTRICTING DISTURBED AREA.
12. PCSM PLAN HAS BEEN DESIGNED TO MINIMIZE LAND CLEARING AND GRADING. EARTH DISTURBANCE IS LIMITED ONLY TO AREAS OF PROPOSED IMPROVEMENTS. DISTURBED AREAS ARE TO BE STABILIZED IMMEDIATELY AFTER GRADING AND/OR IMPROVEMENTS ARE COMPLETED.
13. THE PCSM PLAN MINIMIZES SOIL COMPACTION. USE OF EXISTING ROADWAYS AND STABILIZED AREAS AND CONTROL OF DISTURBED AREAS FOR THE PLANNED IMPROVEMENTS LIMIT THE IMPACT OF SOIL COMPACTION.
14. PCSM PLAN UTILIZES STRUCTURAL AND NON-STRUCTURAL BMPS THAT PREVENT OR MINIMIZE CHANGES IN STORMWATER RUNOFF. SITE BMPS PREVENT OR MINIMIZE CHANGES IN STORMWATER RUNOFF BY CONTROLLING VOLUME AND PEAK RATE RUNOFF FROM THE SITE.
15. THE PCSM PLANS ARE SEPARATE FROM THE EROSION AND SEDIMENT POLLUTION CONTROL (E&SPC) PLANS, ARE CONSISTENT WITH THE E&SPC PLANS, AND ARE THE FINAL PLANS FOR CONSTRUCTION.
16. A SEALER WILL BE USED IN ALL INLETS LOCATED WTIHIN GRASSED AREAS AND WITHIN AREAS OF PCSM BMPS.

PCSM REQUIREMENTS

PCSM REPORTING AND RECORDKEEPING. THE PCSM PLAN, INSPECTION REPORTS AND MONITORING RECORDS MUST BE AVAILABLE FOR REVIEW AND INSPECTION BY PADEP OR THE CONSERVATION DISTRICT.

RESPONSIBLE PARTY & OWNER:

THE STORMWATER BMPS IN THE PROJECT SITE WILL BE OWNED, OPERATED, AND MAINTAINED BY:

KRE ACQUISITION CORP.
520 US HWY 22
PO BOX 6872
BRIDGEWATER, NJ 08807

LICENSED PROFESSIONAL OVERSIGHT OF CRITICAL STAGES. A LICENSED PROFESSIONAL OR A DESIGNEE MUST BE PRESENT ONSITE AND BE RESPONSIBLE DURING CRITICAL STAGES OF PCSM BMP IMPLEMENTATION OF THE APPROVED PCSM PLAN. FOR THE PURPOSES OF THIS PCSM PLAN, THE CRITICAL STAGES ARE CONSIDERED TO BE:

CRITICAL STAGES OF CONSTRUCTION - LICENSED PROFESSIONAL TO BE PRESENT ON SITE	
1	PRE-CONSTRUCTION MEETING TO BE HELD PRIOR TO THE START OF CONSTRUCTION ACTIVITIES.
2	INSTALLATION OF ALL UNDERGROUND DETENTION FACILITY, IMPERMEABLE LINER, AND OUTLET CONTROL STRUCTURES
3	INSPECTION PRIOR TO REMOVAL OF E&S CONTROLS.
4	FINAL INSPECTION AT PROJECT COMPLETION.

FINAL CERTIFICATION. THE PERMITTEE MUST INCLUDE WITH THE NOTICE OF TERMINATION "RECORD DRAWINGS" WITH A FINAL CERTIFICATION STATEMENT FROM A LICENSED PROFESSIONAL, WHICH READS AS FOLLOWS, OR AS THE CURRENT STANDARD READS:

"I (NAME) DO HEREBY CERTIFY PURSUANT TO THE PENALTIES OF 18 PA.C.S.A. CHAPTER 4904 TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THAT THE ACCOMPANYING RECORD DRAWINGS ACCURATELY REFLECT THE AS-BUILT CONDITIONS, ARE TRUE AND CORRECT, AND ARE IN CONFORMANCE WITH CHAPTER 102 OF THE RULES AND REGULATIONS OF PADEP OF ENVIRONMENTAL PROTECTION AND THAT THE PROJECT SITE WAS CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PCSM PLAN, ALL APPROVED PLAN CHANGES AND ACCEPTED CONSTRUCTION PRACTICES."

(1) THE PERMITTEE MUST RETAIN A COPY OF THE RECORD DRAWINGS AS A PART OF THE APPROVED PCSM PLAN.

(2) THE PERMITTEE MUST PROVIDE A COPY OF THE RECORD DRAWINGS AS A PART OF THE APPROVED PCSM PLAN TO THE PERSONS OR ENTITIES IDENTIFIED IN THIS SECTION AS BEING RESPONSIBLE FOR THE LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMPS.

PCSM LONG TERM OPERATIONS AND MAINTENANCE REQUIREMENTS

UNTIL THE PERMITTEE OR CO-PERMITTEE HAS RECEIVED WRITTEN APPROVAL OF A NOTICE OF TERMINATION, THE PERMITTEE OR CO-PERMITTEE WILL REMAIN RESPONSIBLE FOR COMPLIANCE WITH THE PERMIT TERMS AND CONDITIONS INCLUDING LONG-TERM OPERATION AND MAINTENANCE OF ALL PCSM BMPS ON THE PROJECT SITE AND IS RESPONSIBLE FOR VIOLATIONS OCCURRING ON THE PROJECT SITE. PADEP AND/OR THE CONSERVATION DISTRICT WILL CONDUCT A FINAL INSPECTION AND APPROVE OR DENY THE NOTICE OF TERMINATION WITHIN 30 DAYS.

THE PERMITTEE OR CO-PERMITTEE IS RESPONSIBLE FOR LONG-TERM OPERATION AND MAINTENANCE OF PCSM BMPS UNLESS A DIFFERENT PERSON OR ENTITY IS IDENTIFIED IN THE NOTICE OF TERMINATION AND HAS AGREED TO LONG-TERM OPERATION AND MAINTENANCE OF PCSM BMPS.

FOR ANY PROPERTY CONTAINING A PCSM BMP, THE PERMITTEE OR CO-PERMITTEE SHALL RECORD AN INSTRUMENT WITH THE RECORDER OF DEEDS WHICH WILL ASSURE DISCLOSURE OF THE PCSM BMP AND THE RELATED OBLIGATIONS IN THE ORDINARY COURSE OF A TITLE SEARCH OF THE SUBJECT PROPERTY. THE RECORDED INSTRUMENT MUST IDENTIFY THE PCSM BMP, PROVIDE FOR NECESSARY ACCESS RELATED TO LONG-TERM OPERATION AND MAINTENANCE FOR PCSM BMPS AND PROVIDE NOTICE THAT THE RESPONSIBILITY FOR LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMP IS A COVENANT THAT RUNS WITH THE LAND THAT IS BINDING UPON AND ENFORCEABLE BY SUBSEQUENT GRANTEES, AND PROVIDE PROOF OF FILING WITH THE NOTICE OF TERMINATION UNDER § 102.7(B)(5) (RELATING TO PERMIT TERMINATION).

THE PERSON RESPONSIBLE FOR PERFORMING LONG-TERM OPERATION AND MAINTENANCE MAY ENTER INTO AN AGREEMENT WITH ANOTHER PERSON INCLUDING A CONSERVATION DISTRICT, NONPROFIT ORGANIZATION, MUNICIPALITY, AUTHORITY, PRIVATE CORPORATION OR OTHER PERSON, TO TRANSFER THE RESPONSIBILITY FOR PCSM BMPS OR TO PERFORM LONG-TERM OPERATION AND MAINTENANCE AND PROVIDE NOTICE THEREOF TO THE DEPARTMENT.

A PERMITTEE OR CO-PERMITTEE THAT FAILS TO TRANSFER LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMP OR OTHERWISE FAILS TO COMPLY WITH THIS REQUIREMENT SHALL REMAIN JOINTLY AND SEVERALLY RESPONSIBLE WITH THE LANDOWNER FOR LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMPS LOCATED ON THE PROPERTY.

OPERATION AND MAINTENANCE FOR PCSM BMPS

OWNERSHIP OF THE PERMANENT BMPS INDICATED ON THE PCSM PLANS RESIDES WITHIN THE PROPERTY BOUNDARY FOR THE SUBJECT LOTS. THE OPERATIONS AND MAINTENANCE OF THESE BMPS WILL BECOME THE RESPONSIBILITY OF THE PROPERTY OWNER OR THEIR DESIGNEE. THIS OPERATION AND MAINTENANCE PLAN IS BASED ON CHAPTER 6 OF THE *PENNSYLVANIA STORMWATER BEST MANAGEMENT PRACTICES MANUAL AND SECTIONS 7 AND 8 OF THE PENNSYLVANIA HANDBOOK OF BEST MANAGEMENT PRACTICES FOR DEVELOPING AREAS.*

FOLLOWING THIS OPERATION AND MAINTENANCE PLAN WILL ALLOW THE BMPS TO FUNCTION PROPERLY. EACH BMP MUST BE INSPECTED ANNUALLY (UNLESS OTHERWISE NOTED) AND AFTER ANY MAJOR RUNOFF EVENTS, AS INDICATED.

LIMIT VEHICULAR OPERATION OVER THE BMPS TO AVOID COMPACTION OF THE SOILS OR AGGREGATE MATERIAL. TAKE CARE TO AVOID EXCESSIVE COMPACTION WHEN ACCESS IS REQUIRED. WHEN PERFORMING MAINTENANCE ACTIVITIES IN BMPS, OPERATE EQUIPMENT WITHOUT ENTERING THE FLOOR AREA, OR USE LIGHTWEIGHT, LOW GROUND PRESSURE, TRACK MOUNTED EQUIPMENT.

BMP MINIMUM INSPECTION CHECKLIST

- EXCESSIVE EROSION OR SEDIMENTATION
- UNSTABLE SIDE SLOPES AND EMBANKMENTS
- SEEPAGE THROUGH OUTSIDE FACE OF EMBANKMENTS
- CRACKING OR SETTLING
- SINKHOLES
- ANIMAL BURROWING
- DETERIORATION OF VEGETATION
- INVASIVE PLANT GROWTH
- SLUGGISH DRAINING
- ALGAE, STAGNANT POOLS, OR NOXIOUS ODORS
- RUTS, WASHOUTS, BULGES, SLIDES, SLOUGHS, SCARPS, OR SLUMPS
- RIP-RAP DISPLACEMENT OR FAILURE
- CRACKS OR RUST ON PIPING
- OBSTRUCTIONS BY TRASH AND DEBRIS
- SIGNS OF VANDALISM

IF DURING OPERATION, A SIGN OF FAILURE IS NOTED DURING INSPECTION, CORRECTIVE ACTION MUST BE COMPLETED BASED ON THE TYPE OF PROBLEM OBSERVED.

SEDIMENT REMOVAL

SEDIMENT MAY ACCUMULATE OVER TIME WITHIN BMPS AND STORM SEWER INLETS. THE DISTURBED AREAS OF THE BMPS MUST BE STABILIZED IMMEDIATELY. SEDIMENT ACCUMULATION IN STORM SEWER INLETS AND MANHOLES MUST BE REMOVED AND PROPERLY DISPOSED OF IN ACCORDANCE WITH PADEP REGULATIONS. SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WETLANDS, FLOODPLAINS OR DRAINAGE SWALES. THE SEDIMENT DISPOSAL AREA MUST BE STABILIZED IMMEDIATELY. ANY POTENTIALLY HAZARDOUS ACCUMULATIONS REMOVED FROM SUCH STRUCTURES MUST BE PROPERLY DISPOSED OF IN ACCORDANCE WITH PADEP REGULATIONS.

TERRESTRIAL VEGETATION MAINTENANCE

VEGETATIVE COVER MUST BE MOWED AT LEAST TWICE ANNUALLY, ALLOWING THE DEVELOPMENT OF THICK STANDS OF TALL GRASS AND OTHER PLANT VEGETATION.

INSPECT THE SEEDED AREAS AFTER ONE (1) YEAR. IF AN AREA HAS LESS THAN A UNIFORM 70 PERCENT VEGETATIVE PERENNIAL COVER, REEVALUATE THE CHOICE OF PLANT MATERIALS AND THE QUANTITIES OF SOILS SUPPLEMENTS USED. PREPARE THE SEEDBED AND REESTABLISH SEEDING. IF THE SEASON PREVENTS RE-SOWING, APPLY MULCH OR EROSION CONTROL MATTING FOR TEMPORARY STABILIZATION AND SEED THE AREA AS SOON AS PRACTICAL.

SPILLS

IN THE EVENT OF A SPILL, IMMEDIATELY INSPECT THE DOWNGRADIENT BMP(S) FOR CONTAMINATION. REMOVE AND PROPERLY DISPOSE OF SPILLED SUBSTANCES AND CONTAMINATED SOIL/MATERIALS. RESTORE THE AFFECTED BMP(S).

ALL RESTORATION AND REMEDIATION PROCEDURES FOR A SPILL FROM MATERIALS STORED ONSITE MUST COMPLY WITH THE MEASURES LISTED IN PENNSYLVANIA'S CLEAN STREAMS LAW.

UNDERGROUND DETENTION BASINS (PADEP BMP 6.6.3)

INSPECT THE UNDERGROUND DETENTION BASINS FOUR TIMES PER YEAR OR AS OFTEN AS FUTURE POLICIES ON STORMWATER BMP INSPECTIONS DICTATE::

1. ALL BASIN STRUCTURES (INCLUDING PIPES, STONE, TRASH RACKS, OUTLETS STRUCTURES, AND INLETS) EXPECTED TO RECEIVE AND/OR TRAP DEBRIS AND SEDIMENT SHOULD BE INSPECTED FOR CLOGGING AND EXCESSIVE DEBRIS AND SEDIMENT ACCUMULATION.
2. SEDIMENT REMOVAL SHOULD BE CONDUCTED WHEN THE BASIN IS COMPLETELY DRY. SEDIMENT SHOULD BE DISPOSED OF PROPERLY AND ONCE SEDIMENT IS REMOVED, DISTURBED AREAS NEED TO BE IMMEDIATELY STABILIZED AND REVEGETATED.
3. VACUUMING OF THE SYSTEM MAY BE REQUIRED.
4. PAVED AREAS AT EACH INLET DISCHARGING INTO THE UNDERGROUND DETENTION SYSTEM SHOULD BE INSPECTED FOR SEDIMENT, CLOGGIN, AND PONDED WATER.
5. WATER SHOULD NOT BE PRESENT WITHIN THE UNDERGROUND DETENTION BASIN A 24-48 HOURS AFTER A RAINFALL EVENT. WATER SHOULD NOT BE PRESENT WITHIN THE MRC UNDERGROUND DETENTION BASIN B 7 DAYS AFTER A RAINFALL EVENT. IF WATER IS PRESENT AFTER THIS TIME, A DESIGN PROFESSIONAL SHOULD BE CONSULTED TO EVALUATE THE UNDERGROUND DETENTION BASIN.

WATER QUALITY INLETS (PADEP BMP 6.6.4)

INSPECT THE INLET MONTHLY FOR THE FIRST YEAR AFTER THE SITE HAS BEEN STABLIZED.

1. AFTER EACH MAJOR STORM EVENT, INSPECT INLET IMMEDIATELY, IF SEDIMENT HAS ACCUMULATED TO AND WITHIN (1) FOOT BELOW THE OUTFALL ELEVATION, PERFORM CLEANING AS NECESSARY.
2. ANNUALLY INSPECT THE "SNOUT" HOOD, THE ANTI-SIPHON DEVICE AND THE ACCESS HATCH FOR ANY CRACKED OR DAMAGED PARTS, REPLACE ALL DAMAGED COMPONENTS IMMEDIATELY.
3. REMOVE ALL SOLID DEBRIS FORM THE INLET, A MINMUM OF EVERY SIX (6) MONTHS OR WHEN THE SEDIMENT IS TO AND WITHIN ONE (1) FOOT BELOW THE OUTFALL ELEVATION.
4. WHEN THERE HAS BEEN A SPILL OR INCIDENT THAT CAUSES A LARGER THAN NORMAL ACCUMULATION OF POLLUTANTS, REMOVE ALL SOLID DEBRIS FROM THE INLET.
5. USE A VACUUM TRUCK TO REMOVE ALL SOLIDS IN THE BOTTOM OF THE STRUCTURE.
6. DISPOSE OF ALL COLLECTED WASTES PER THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION REQUIREMENTS.
7. FLUSH THE ANTI-SIPHON DEVISE ON THE SNOUT HOOD OR GENTLY CLEAR WITH A FLEXIBLE WIRE ONCE A YEAR.

OPEN AND CLOSE THE ACCESS PORT ON THE SNOUT HOOD ONCE A YEAR AND CLEAR ANY OBSTRUCTIONS.

ROCK APRONS

ADD ROCK AS NECESSARY TO RESTORE THE ROCK APRON TO THE APPROVED DESIGN SPECIFICATIONS.

SEEDING AND SOIL SUPPLEMENTS

THE FOLLOWING SPECIFICATIONS ARE IN ACCORDANCE WITH PENNDOT PUBLICATION 408, SECTION 804.

TEMPORARY SEED MIXTURES

SEED TYPE (PENNDOT FORMULA E)	% BY WEIGHT	PURITY	MAX. WEED SEED
ANNUAL RYEGRASS	100	95%	0.10%

APPLY SEED AT A RATE OF 10 LBS. PER 1,000 SY.
APPLY STRAW MULCH (SEE MULCH APPLICATION RATES TABLE)
SEEDING SEASON DATES: MARCH 15 TO OCTOBER 15

PERMANENT SEED MIXTURES

SEED TYPE (PENNDOT FORMULA B)	% BY WEIGHT	PURITY	MAX. WEED SEED
PERENNIAL RYEGRASS MIXTURE * (LOLIUM PERENNE)	20	97%	0.10%
CREEPING RED FESCUE	30	97%	0.10%
KENTUCKY BLUEGRASS MIXTURE ** (POA PRATENSIS)	50	97%	0.15%

APPLY SEED AT A RATE OF 42 LBS. PER 1,000 SY.
APPLY STRAW OR HAY MULCH (SEE MULCH APPLICATION RATES TABLE).
APPLY PULVERIZED AGRICULTURAL LIMESTONE AT A RATE OF 2 TONS/ACRE UNLESS TESTING HAS BEEN PERFORMED.
APPLY 10-20-20 ANALYSIS COMMERCIAL FERTILIZER AT A RATE OF 678 LBS./ACRE UNLESS TESTING HAS BEEN PERFORMED.
SEEDING SEASON DATES: MARCH 15 TO JUNE 1; AUGUST 1 TO OCTOBER 15
APPLY FLEXTERRA FGM (OR EQUAL) ACCORDING TO MANUFACTURER'S SPECIFICATIONS.

* A COMBINATION OF IMPROVED CERTIFIED VARIETIES WITH NO ONE VARIETY EXCEEDING 50% OF THE TOTAL RYEGRASS COMPONENT.
** A COMBINATION OF IMPROVED CERTIFIED VARIETIES WITH NO ONE VARIETY EXCEEDING 50% OF THE TOTAL BLUEGRASS COMPONENT.

PERMANENT SEED MIXTURES ON STEEP SLOPES (SLOPES EXCEEDING 3:1)

SEED TYPE (PENNDOT FORMULA L)	% BY WEIGHT	PURITY	MAX. WEED SEED
HARD FESCUE (FESTUCA LONGIFOLIA***)	55	97%	0.10%
CREEPING RED FESCUE (FESTUCA RUBRA)	35	97%	0.10%
ANNUAL RYEGRASS (LOLIUM MULTIFLORUM)	10	95%	0.10%

APPLY SEED AT A RATE OF 48 LBS / 1,000 SY.
MULCH WITH MULCH CONTROL NETTING OR EROSION CONTROL BLANKETS MUST BE INSTALLED.
APPLY PULVERIZED AGRICULTURAL LIMESTONE AT A RATE OF 2 TONS/ACRE UNLESS TESTING HAS BEEN PERFORMED.
APPLY 10-20-20 ANALYSIS COMMERCIAL FERTILIZER AT A RATE OF 678 LBS./ACRE UNLESS TESTING HAS BEEN PERFORMED.
SEEDING SEASON DATES: MARCH 15 TO JUNE 1; AUGUST 1 TO OCTOBER 15

*** A COMBINATION OF IMPROVED CERTIFIED VARIETIES WITH NO ONE VARIETY EXCEEDING 50% OF THE TOTAL HARD FESCUE COMPONENT.

MULCH TYPE	MULCH APPLICATION RATE			
	APPLICATION RATE (MIN)			NOTES
	PER ACRE	PER 1,000 SF	PER 1,000 SY	
STRAW	3 TONS	18 LB	160 LB	EITHER WHEAT OR OAT STRAW, FREE OF WEEDS, NOT CHOPPED OR FINELY BROKEN
HAY	3 TONS	18 LB	160 LB	TIMOTHY, MIXED CLOVER AND TIMOTHY OR OTHER NATIVE FORAGE GRASSES

PREPARATION OF AREAS TO BE TOPSOILED

GRADE THE AREAS TO BE COVERED BY TOPSOIL USING ACCEPTABLE METHODS, LOOSEN SOIL TO A MINIMUM DEPTH OF 2 INCHES. BEFORE PLACING THE TOPSOIL. REMOVE STONES AND OTHER FOREIGN MATERIAL 2 INCHES OR LARGER IN DIMENSION. REMOVE AND SATISFACTORILY DISPOSE OF UNSUITABLE AND SURPLUS MATERIAL

MEASURES PROVIDED TO MINIMIZE THERMAL IMPACTS

ALL RUNOFF FROM THE ROOF AREAS WILL BE CAPTURED AND DIRECTED TO SUBSURFACE UNDERDRAINS. RUNOFF FROM PAVED AREAS OF THE PROJECT DISCHARGE THROUGH BURIED PIPE. THEREBY CREATING AMPLE OPPORTUNITY FOR COOLING PRIOR TO REACHING THE SURFACE WATERS. THE MAJORITY OF THE SITE WILL BE DIRECTED TO UNDERGROUND DETENTION FACILITIES WHICH WILL PROVIDE ADDITIONAL TIME FOR WATER TO COOL. AS SUCH, THE PROJECT WILL NOT HAVE AN ADVERSE IMPACT ON THE NATURAL TEMPERATURES OF THE RECEIVING WATERS.

RECYCLING OR DISPOSAL OF MATERIALS

THE CONTRACTOR SHALL REMOVE FROM THE SITE, RECYCLE, OR DISPOSE OF ALL BUILDING MATERIALS AND WASTES IN ACCORDANCE WITH PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROCTECTION'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA CODE 260.1 ET SEQ., 271.1 ET SEQ., AND 287.1 ET SEQ. THE CONTRACTOR SHALL NOT LEGALLY BURY, DUMP OR DISCHARGE ANY BUILDING MATERIAL OR WASTES AT THE SITE.

PROCEDURE FOR MANAGING SOIL, GROUNDWATER, AND OTHER POTENTIALLY CONTAMINATED MATERIALS GENERATED OR EXPOSED DURING CONSTRUCTION AND FOR THE REUSE AND/OR OFF-SITE DISPOSAL OF GENERATED MATERIALS

1. ANY EXCAVATED SOIL WHICH IS CONFIRMED TO BE CONTAMINATED AT CONCENTRATIONS WHICH EXCEED THE PADEP CLEAN FILL STANDARDS FOR RESIDENCES SHOULD BE DISPOSED OFF-SITE AT A PERMITTED FACILITY. DISPOSAL MANIFESTS SHOULD BE MAINTAINED. EXCAVATED SOILS SHOULD BE PLACED IMMEDIATELY INTO TRUCKS FOR OFF-SITE DISPOSAL. SOIL AWAITING OFF-SITE DISPOSAL SHALL BE PLACED ON AND COVERED BY POLYETHYLENE SHEETING.
2. IF THE SITE WILL NEED TO IMPORT OR EXPORT MATERIAL FROM THE SITE, THE RESPONSIBILITY FOR PERFORMING ENVIRONMENTAL DUE DILIGENCE AND DETERMINATION OF CLEAN FILL WILL REST WITH THE CONTRACTOR.
3. IF THE FILL MAY HAVE BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE, IT MUST BE TESTED TO DETERMINE IF IT QUALIFIES AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL".
4. FILL MATERIAL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH THE DEPARTMENT'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 35 PA CODE CHAPTERS 287 RESIDUAL WASTE MANAGEMENT OR 271 MUNICIPAL WASTE MANAGEMENT, WHICHEVER IS APPLICABLE. THIS REGULATIONS ARE AVAILABLE ON-LINE AT WWW.PACODE.COM .

STORMSEWER PIPE TRENCH EXCAVATION NOTES

1. LIMIT ADVANCED CLEARING AND GRUBBING OPERATIONS TO A DISTANCE EQUAL TO TWO TIMES THE LENGTH OF PIPE INSTALLATION THAT CAN BE COMPLETED IN ONE DAY.
2. WORK CREWS AND EQUIPMENT FOR TRENCHING, PLACEMENT OF PIPE, PLUG CONSTRUCTION AND BACKFILLING WILL BE SELF CONTAINED AND SEPARATE FROM CLEARING AND GRUBBING AND SITE RESTORATION AND STABILIZATION OPERATIONS.
3. ALL SOIL EXCAVATED FROM THE TRENCH WILL BE PLACED ON THE UPHILL SIDE OF THE TRENCH.
4. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT, PLUG INSTALLATION AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY.
5. WATER WHICH ACCUMULATES IN THE OPEN TRENCH WILL BE COMPLETELY REMOVED BY PUMPING BEFORE PIPE PLACEMENT AND / OR BACKFILLING BEGINS. WATER REMOVED FROM THE TRENCH SHALL BE PUMPED THROUGH A FILTRATION DEVICE.
6. ON THE DAY FOLLOWING PIPE PLACEMENT AND TRENCH BACKFILLING, THE DISTURBED AREA WILL BE GRADED TO FINAL CONTOURS AND IMMEDIATELY STABILIZED.

CONSTRUCTION SEQUENCE NOTES:

1. ALL WORK IS TO OCCUR WITHIN THE LIMIT OF DISTURBANCE BOUNDARIES AS INDICATED ON THE PLAN. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.
2. CONSTRUCT ALL DRAINAGE APPURTENANCES FROM DOWNSTREAM TO UPSTREAM UNLESS OTHERWISE NOTED.
3. LIMIT TREE REMOVAL TO ONLY WHAT IS REQUIRED FOR CONSTRUCTION.
4. UPON REACHING FINAL GRADE, AREAS TO BE STABILIZED BY VEGETATION MUST NOT EXCEED 15,000 SQUARE FEET WITHOUT BEING STABILIZED.
5. THE SITE MUST BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION WHEN A TEMPORARY CESSATION OF EARTH DISTURBANCE ACTIVITIES EXCEEDS 4 DAYS. DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE WHICH WILL BE REACTIVATED WITHIN ONE YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN ONE YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS.
6. STABILIZE SLOPES, CHANNELS, DITCHES, AND OTHER DISTURBED AREAS AS THEY REACH FINAL GRADE. ROUND CUT AND FILL SLOPES SUCH THAT RUNOFF IS DIRECTED AWAY FROM THE INTERSECTION OF THE CONSTRUCTED SLOPE AND THE EXISTING GRADE.
7. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING, AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE CONSTRUCTION SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.

CONSTRUCTION SEQUENCE:

ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. DEVIATION FROM THIS SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.

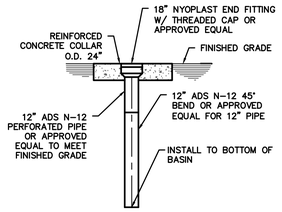
1. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL COUNTY CONSERVATION DISTRICT TO AN ONSITE PRE-CONSTRUCTION MEETING.
2. ALL EXISTING UTILITIES SHOWN ON THE PLAN ARE SHOWN AT APPROXIMATE LOCATIONS. THE ENGINEER DOES NOT GUARANTEE ALL EXISTING UTILITIES ON SITE ARE SHOWN ON THE PLAN. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE OF ALL UTILITIES AND TO CALL THE PENNSYLVANIA ONE CALL SYSTEM (1-800-242-1776) AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES OR EXPANDING INTO A PREVIOUSLY UNMARKED AREA.

SITE WORK:

1. INSTALL WESTERN ROCK CONSTRUCTION ENTRANCE, CLEAR AND GRUB AS NEEDED.
2. INSTALL INLET FILTER BAGS IN EXISTING INLETS ALONG CHERRY STREET, AND COMPOST FILTER SOCKS 1 THROUGH 10. COMPOST FILTER SOCKS SHALL BE INSTALLED PARALLEL TO EXISTING CONTOURS OR CONSTRUCTED LEVEL ALIGNMENTS. CLEAR AND GRUB AS NEEDED FOR THE INSTALLATION OF THE COMPOST FILTER SOCKS. NOTE: ADDITIONAL COMPOST FILTER SOCKS SHALL BE INSTALLED DOWNGRADE OF ANY DISTURBANCE AREAS AS NEEDED. ALL EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSTALLED IN ACCORDANCE WITH THEIR RESPECTIVE DETAIL AND IN WORKING ORDER PRIOR TO DISTURBING AN AREA.
3. REMOVE WOODED AREAS, DEBRIS PILES, UTILITIES, AND ALL ITEMS LISTED AS TO BE REMOVED WITHIN THE SITE, AS SHOWN ON THE DEMOLITION PLAN, EXCEPT FOR THE EXISTING STORM PIPE AND INLET ALONG WASHINGTON STREET WHICH WILL BE REMOVED IN STEP 9. THE EXISTING UTILITY POLES ALONG THE SOUTHERN SIDE OF WASHINGTON STREET WILL BE REMOVED PRIOR TO THE INSTALLATION OF THE PROPOSED ELECTRIC LINES IN STEP 7. ELECTRIC SERVICE MUST BE MAINTAINED FOR PROPERTIES THAT ARE CURRENTLY SERVICED THROUGH THESE LINES, OVERHEAD WIRES MAY NEED TO BE RELOCATED IN ORDER TO ACCOMMODATE CONSTRUCTION VEHICLES.
4. INSTALL EASTERN CONSTRUCTION ENTRANCE.
5. ESTABLISH STOCKPILES, STAGING AREA, AND CONCRETE WASHOUT LOCATION AND PLACE DOWNSLOPE COMPOST FILTER SOCKS. ENSURE THAT COMPOST FILTER SOCKS ARE LOCATED DOWNSLOPE OF THE TOPSOIL STOCKPILES AT ALL TIMES.
6. ROUGH GRADE SITE AND BUILDING PADS. ROU

Proposed Storm Network Structure Table

Structure I.D.	Description	Rim/Grate	Pipes (In)	Inverts (In)	Pipes (Out)	Inverts (Out)
S-38	48 in. dia. CYLINDER MH	52.31	18" RCP	49.05	18" RCP	49.00
S-39	24 in. x 45 in. 'M' INLET	52.07	18" RCP	48.90	18" RCP	48.95
S-39A	48 in. dia. CYLINDER MH	52.25	18" RCP	48.85	18" RCP	48.85
S-40	24 in. x 45 in. 'M' INLET	52.02			18" RCP	49.15
S-40	48 in. dia. CYLINDER MH	52.60	18" RCP	47.60		
S-41 (WQ)	24 in. x 45 in. 'C' INLET	52.12	18" RCP 18" RCP	47.75 47.60	18" RCP	47.65
S-42	24 in. x 45 in. 'C' INLET	53.78	18" RCP	48.90	18" RCP	48.70
S-43	24 in. x 45 in. 'C' INLET	53.79			18" RCP	49.20
S-45 (WQ)	24 in. x 45 in. 'C' INLET	52.15	18" RCP	47.90	18" RCP	47.90
S-50	48 in. dia. CYLINDER MH	52.59	18" RCP	47.70		
S-51	24 in. x 45 in. 'C' INLET	51.90	18" RCP	48.65	18" RCP	48.45
S-52	24 in. x 45 in. 'C' INLET	54.63			18" RCP	50.60
S-102	60 in. dia. CYLINDER MH	50.73	24" RCP	46.30	24" RCP	46.30
S-A1	60 in. dia. CYLINDER MH	51.40			24" RCP	47.60
S-B1	48 in. dia. CYLINDER MH	50.88	18" RCP 24" RCP	48.00 45.80	24" RCP	45.70
S-B2	48 in. dia. CYLINDER MH	52.30			18" RCP	48.80



INSPECTION PORT
N.T.S.

Proposed Storm Network Structure Table

Structure I.D.	Description	Rim/Grate	Pipes (In)	Inverts (In)	Pipes (Out)	Inverts (Out)
EW-1	60 in. x 18 in. x 60 in. CONC. HW	52.75	18" RCP	48.66		
EW-100	84 in. x 18 in. x 60 in. CONC. HW	50.66	24" RCP	45.45		
R-1	60 in. x 60 in. 'C' INLET	52.28	18" RCP	49.45	18" RCP	49.25
R-2	24 in. x 45 in. 'C' INLET	53.98	18" RCP	51.00	18" RCP	50.80
R-2A	24 in. x 45 in. 'C' INLET	52.45	18" RCP	49.84	18" RCP	49.84
R-3	24 in. x 45 in. 'C' INLET	52.99	18" RCP	49.05	18" RCP	48.90
R-4	24 in. x 45 in. 'M' INLET	53.29	18" RCP	49.85	18" RCP	49.65
R-5	48 in. dia. CYLINDER MH	53.11	18" RCP	50.15	18" RCP	49.95
R-6	24 in. x 45 in. 'M' INLET	53.08	18" RCP	50.25	18" RCP	50.25
R-7	48 in. dia. CYLINDER MH	55.15	18" RCP	50.50	18" RCP	50.30
R-8	24 in. x 45 in. 'M' INLET	55.00			18" RCP	50.60
R-9	48 in. dia. CYLINDER MH	54.88	18" RCP	51.40	18" RCP	51.20
R-10	24 in. x 45 in. 'C' INLET	55.00			18" RCP	51.50
S-2 (WQ)	60 in. dia. CYLINDER MH	52.72	24" RCP 18" RCP 18" RCP	49.40 49.40 49.40	24" RCP	49.20
S-3	48 in. dia. CYLINDER MH	53.59	24" RCP 18" RCP 18" RCP	50.05 50.05 50.05	24" RCP	49.85
S-4	48 in. dia. CYLINDER MH	54.64	18" RCP 18" RCP	51.00 50.80	24" RCP	50.50
S-5	24 in. x 45 in. 'M' INLET	54.48	18" RCP 18" RCP	51.60 51.60	18" RCP	51.40
S-6	24 in. x 45 in. 'C' INLET	55.16	18" RCP	52.35	18" RCP	52.20
S-7	24 in. x 45 in. 'C' INLET	55.24			18" RCP	52.55
S-8	24 in. x 45 in. 'C' INLET	54.71	18" RCP 18" RCP	51.30 51.30	18" RCP	51.10
S-9	24 in. x 45 in. 'C' INLET	55.13	18" RCP	52.05	18" RCP	51.85
S-10	24 in. x 45 in. 'C' INLET	55.37			18" RCP	52.35

Proposed Storm Network Structure Table

Structure I.D.	Description	Rim/Grate	Pipes (In)	Inverts (In)	Pipes (Out)	Inverts (Out)
S-11	24 in. x 45 in. 'M' INLET	54.20			18" RCP	51.95
S-12	24 in. x 45 in. 'C' INLET	54.71			18" RCP	51.60
S-13	24 in. x 45 in. 'C' INLET	53.32			18" RCP	50.25
S-14	24 in. x 45 in. 'C' INLET	53.31			18" RCP	50.25
S-15	24 in. x 45 in. 'C' INLET	52.63			18" RCP	49.60
S-16	24 in. x 45 in. 'C' INLET	52.63			18" RCP	49.60
S-17 (WQ)	24 in. x 45 in. 'C' INLET	54.44	18" RCP	49.30	18" RCP	49.10
S-18	24 in. x 45 in. 'C' INLET	56.06			18" RCP	51.25
S-20	48 in. dia. CYLINDER MH	53.31	18" RCP	49.50	18" RCP	49.30
S-21	24 in. x 45 in. 'M' INLET	53.29			18" RCP	49.60
S-22 (WQ)	24 in. x 45 in. 'M' INLET	53.13	18" RCP	49.20	18" RCP	48.90
S-23 (WQ)	24 in. x 45 in. 'M' INLET	52.40	18" RCP	49.15	18" RCP	48.95
S-24	48 in. dia. CYLINDER MH	52.42	18" RCP	49.45	18" RCP	49.25
S-25	24 in. x 45 in. 'M' INLET	52.15			18" RCP	49.55
S-29	60 in. dia. CYLINDER MH	51.27	18" RCP	47.90		
S-30 (WQ)	24 in. x 45 in. 'C' INLET	50.80			18" RCP	48.10
S-32 (WQ)	24 in. x 45 in. 'C' INLET	51.37				
S-33	48 in. dia. CYLINDER MH	51.89	18" RCP	47.60		
S-34	48 in. dia. CYLINDER MH	51.88	18" RCP	47.82	18" RCP	47.82
S-35 (WQ)	24 in. x 45 in. 'C' INLET	50.75	18" RCP	47.95	18" RCP	47.95
S-36	24 in. x 45 in. 'C' INLET	51.85	18" RCP	48.55	18" RCP	48.55
S-37	60 in. x 60 in. 'C' INLET	51.77	18" RCP	49.10	18" RCP	49.10

Proposed Storm Network Pipe Table

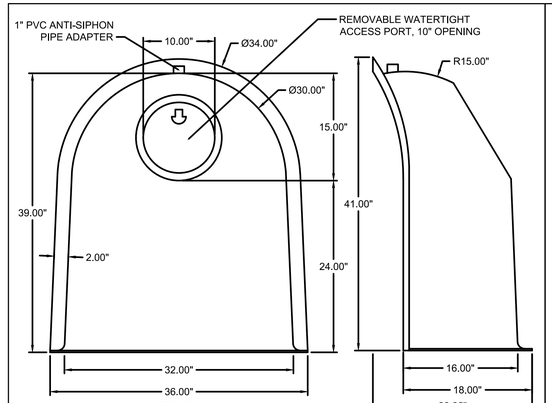
Pipe I.D.	Description	Length	Invert Up	Invert Dn	Slope
P-2	24"RCP	54'	49.20	48.80	0.74%
P-3	24"RCP	87'	49.85	49.40	0.52%
P-4	24"RCP	87'	50.50	50.05	0.52%
P-5	18"RCP	66'	51.40	51.00	0.61%
P-6	18"RCP	117'	52.20	51.60	0.51%
P-7	18"RCP	33'	52.55	52.35	0.60%
P-8	18"RCP	38'	51.10	50.80	0.79%
P-9	18"RCP	110'	51.85	51.30	0.50%
P-10	18"RCP	59'	52.35	52.05	0.51%
P-11	18"RCP	64'	51.95	51.60	0.55%
P-12	18"RCP	59'	51.60	51.30	0.51%
P-13	18"RCP	25'	50.25	50.05	0.80%
P-14	18"RCP	33'	50.25	50.05	0.61%
P-15	18"RCP	28'	49.60	49.40	0.72%
P-16	18"RCP	31'	49.60	49.40	0.65%
P-17	18"RCP	17'	49.10	48.80	1.77%
P-18	18"RCP	127'	51.25	49.30	1.53%
P-20	18"RCP	15'	48.90	48.80	0.68%
P-21	18"RCP	19'	49.60	49.50	0.50%
P-22	18"RCP	19'	49.20	49.30	0.53%

Proposed Storm Network Pipe Table

Pipe I.D.	Description	Length	Invert Up	Invert Dn	Slope
P-23	18"RCP	16'	48.95	48.80	0.96%
P-24	18"RCP	16'	49.25	49.15	0.64%
P-25	18"RCP	16'	49.55	49.45	0.61%
P-30	18"RCP	26'	48.10	47.90	0.77%
P-34	18"RCP	43'	47.82	47.60	0.51%
P-35	18"RCP	23'	47.95	47.82	0.57%
P-36	18"RCP	118'	48.55	47.95	0.51%
P-37	18"RCP	107'	49.10	48.55	0.51%
P-39	18"RCP	15'	48.90	49.00	0.67%
P-39A	18"RCP	191'	48.85	47.90	0.50%
P-39B	18"RCP	21'	48.95	48.85	0.51%
P-40	18"RCP	15'	49.15	49.05	0.68%
P-41	18"RCP	6'	47.65	47.60	0.81%
P-42	18"RCP	190'	48.70	47.75	0.50%
P-43	18"RCP	59'	49.20	48.90	0.50%
P-45	18"RCP	59'	47.90	47.60	0.51%
P-51	18"RCP	23'	48.45	47.70	3.32%
P-52	18"RCP	118'	50.60	48.65	1.65%
P-102	24"RCP	99'	46.30	45.80	0.50%
P-A1	24"RCP	111'	47.60	46.30	1.17%

Proposed Storm Network Pipe Table

Pipe I.D.	Description	Length	Invert Up	Invert Dn	Slope
P-B1	24"RCP	20'	45.70	45.45	1.25%
P-BASIN B	18"RCP	29'	48.80	48.00	2.72%
P-R1	18"RCP	23'	49.25	49.10	0.65%
P-R2	18"RCP	184'	50.80	49.84	0.52%
P-R2A	18"RCP	75'	49.84	49.45	0.52%
P-R3	18"RCP	42'	48.90	48.66	0.57%
P-R4	18"RCP	114'	49.65	49.05	0.53%
P-R5	18"RCP	17'	49.95	49.85	0.60%
P-R6	18"RCP	19'	50.25	50.15	0.53%
P-R7	18"RCP	6'	50.30	50.25	0.83%
P-R8	18"RCP	16'	50.60	50.50	0.64%
P-R9	18"RCP	39'	51.20	51.00	0.52%
P-R10	18"RCP	20'	51.50	51.40	0.50%

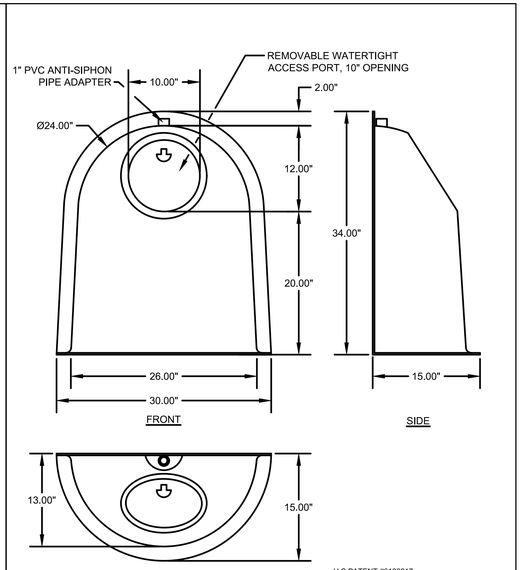


U.S.PATENT #6126817ADDITIONAL PATENTS PENDING

DESIGNED TO FIT 60"–72" DIAM. STRUCTURES RECOMMENDED MIN. SUMP DEPTH 2.5 TO 3X OUTLET PIPE I.D.

BMP, INC.
53 MT. ARCHER ROAD, LYME, CT. 06371
(800) 504-8008 FAX: (860)434-3195

DESCRIPTION	DATE	SCALE
30R SNOUT OIL & DEBRIS STOP	10/04/99	NONE
	DRAWING NUMBER	
	3OR	



U.S.PATENT #6126817ADDITIONAL PATENTS PENDING

BMP, INC.
53 MT. ARCHER ROAD, LYME, CT. 06371
(800) 504-8008 FAX: (860)434-3195

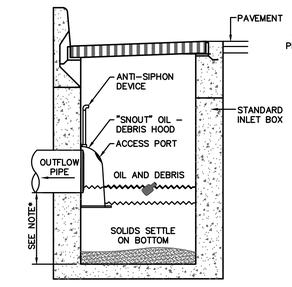
DESCRIPTION	DATE	SCALE
24F SNOUT OIL & DEBRIS STOP	09/20/99	NONE
	DRAWING NUMBER	
	24F	

SNOUT BMP CONSTRUCTION SEQUENCE:

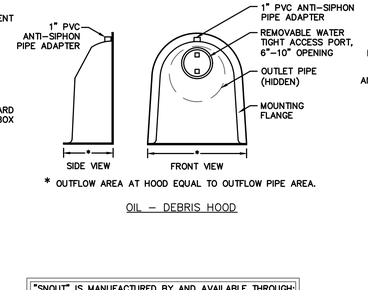
1. STABILIZE ALL CONTRIBUTING AREAS BEFORE INSTALLING AND CONNECTING PIPES TO THESE INLETS.
2. FOLLOW MANUFACTURER'S GUIDELINES FOR INSTALLATION. DO NOT USE SNOUTS DURING CONSTRUCTION UNLESS PRODUCT IS DESIGNED PRIMARILY FOR SEDIMENT REMOVAL.

SNOUT BMP MANUFACTURER'S INSTALLATION INSTRUCTIONS:

1. CENTER THE SNOUT® DIRECTLY OVER THE EXIT PIPE SO THAT THE ENTIRE PIPE IS COVERED AND SO THAT THE LOWER EDGE OF THE HOOD IS AT LEAST 1/2 THE PIPE DIAMETER BELOW THE LOWEST INSIDE POINT OF THE PIPE (DEEPER IS EVEN BETTER.)
2. DRILL * EQUALLY SPACED 7/16" HOLES THROUGH THE SNOUT® FLANGE. (*NUMBER OF HOLES VARY DEPENDING ON SIZE OF SNOUT®.)
3. MARK AND DRILL CATCH BASIN AND INSTALL THE TAMP-IN LEAD ANCHORS.
   - 3.1. DRILL A 3/4"HOLE INTO THE BASE MATERIAL TO THE REQUIRED DEPTH (APPROXIMATELY 1-1/4" DEEP.)
   - 3.2. BLOW THE HOLE CLEAN OF DUST AND OTHER MATERIAL.
   - 3.3. INSERT THE ANCHOR INTO THE HOLE. NARROW END OF CONE MUST POINT OUT. LEAD SHIELD SLIDES OVER CONE.
   - 3.4. POSITION THE SETTING TOOL OR A 9/16 SOCKET AGAINST THE ANCHOR OUTER CONE. (THE OUTER RIM OF THE TOOL OR SOCKET SHOULD SEAT ONTO THE LEAD SHIELD RIM.) SET THE ANCHOR BY DRIVING THE LEAD SLEEVE OVER THE CONE USING SEVERAL SHARP HAMMER BLOWS. BE SURE THE ANCHOR IS AT THE REQUIRED EMBEDMENT DEPTH (FLUSH OR SLIGHTLY BELOW FACE OF CONCRETE)
4. ATTACH THE VENT PIPE ADAPTER IN THE PRE-DRILLED HOLE IN THE TOP OF THE SNOUT® USING THE 2 FLAT O RING GASKETS AND PVC LOCK-NUT SUPPLIED IN THE KIT. INSTALL WITH FEMALE SLIP ADAPTER UP AND A WASHER ON EACH SIDE OF THE SNOUT® SHELL. TIGHTEN LOCK-NUT HAND TIGHT.
5. REMOVE PSA BACKING AND WITH FIRM PRESSURE, ATTACH GASKET STRIP(S) TO BACK OF FLANGE AND TRIM EXCESS.
6. ATTACH THE SNOUT® TO THE CATCH BASIN WALL WITH 3/8" DIAMETER STAINLESS STEEL BOLTS IN LEAD EXPANSION ANCHORS. DO NOT OVER TIGHTEN; 10-15 FOOT-POUNDS SHOULD BE SUFFICIENT.
7. CUT THE ANTI-SIPHON VENT STACK TO LENGTH AND ATTACH TO HOOD AT SLIP ADAPTER WITH PVC CEMENT.
8. ATTACH 90 DEGREE FITTING TO VENT STACK WITH PVC CEMENT. ENSURE THAT FITTING OPENING IS ACCESSIBLE FOR MAINTENANCE AND INSPECTION.



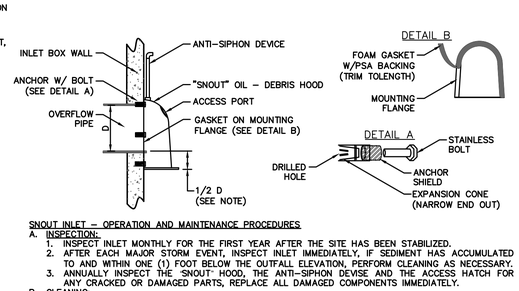
* NOTE– SUMP DEPTH OF 36" MIN. FOR < OR= 12" DIAM. OUTLET, FOR OUTLETS >OR= 15", DEPTH = 2.5–3X DIAM.



* OUTFLOW AREA AT HOOD EQUAL TO OUTFLOW PIPE AREA.

OIL – DEBRIS HOOD

"SNOUT" IS MANUFACTURED BY AND AVAILABLE THROUGH:
BEST MANAGEMENT PRODUCTS, INC.
53 MT. ARCHER RD.
LYME, CT 06371
PHONE (860) 434–0277 * FAX (860) 434–8195
E–MAIL: duran@bestmp.com * WEBSITE: www.bestmp.com



SNOUT INLET – OPERATION AND MAINTENANCE PROCEDURES

A. INSPECTION:
   1. INSPECT INLET MONTHLY FOR THE FIRST YEAR AFTER THE SITE HAS BEEN STABILIZED.
   2. AFTER EACH MAJOR STORM EVENT, INSPECT INLET IMMEDIATELY, IF SEDIMENT HAS ACCUMULATED TO AND WITHIN ONE (1) FOOT BELOW THE OUTFALL ELEVATION, PERFORM CLEANING AS NECESSARY.
   3. ANNUALLY INSPECT THE "SNOUT" HOOD, THE ANTI–SIPHON DEVISE AND THE ACCESS HATCH FOR ANY CRACKED OR DAMAGED PARTS, REPLACE ALL DAMAGED COMPONENTS IMMEDIATELY.

B. CLEANING:
   1. REMOVE ALL SOLID DEBRIS FROM THE INLET, A MINIMUM OF EVERY SIX (6) MONTH OR WHEN THE SEDIMENT IS TO AND WITHIN ONE (1) FOOT BELOW THE OUTFALL ELEVATION.
   2. WHEN THERE HAS BEEN A SPILL OR INCIDENT THAT CAUSES A LARGER THAN NORMAL ACCUMULATION OF POLLUTANTS, REMOVE ALL SOLID DEBRIS FROM THE INLET.
   3. USE A VACUUM TRUCK TO REMOVE ALL SOLIDS IN THE BOTTOM OF THE STRUCTURE.
   4. DISPOSE OF ALL COLLECTED WASTES PER THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION REQUIREMENTS.
   5. FLUSH THE ANTI–SIPHON DEVISE ON THE "SNOUT" HOOD OR GENTLY CLEAR WITH A FLEXIBLE WIRE ONCE A YEAR.
   6. OPEN AND CLOSE THE ACCESS PORT ON THE "SNOUT" HOOD ONCE A YEAR AND CLEAR ANY OBSTRUCTIONS.

"SNOUT" INLET
NOT TO SCALE

Colliers Engineering & Design
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C. RICHARD ROSEBERRY
ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

POST–CONSTRUCTION STORMWATER MANAGEMENT PLANS
FOR
401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

Colliers Engineering & Design
LEHIGH VALLEY
941 Marcon Boulevard, Suite 801
Allentown, PA 18109
Phone: 610.868.4201
COLLIERS ENGINEERING & DESIGN, INC.
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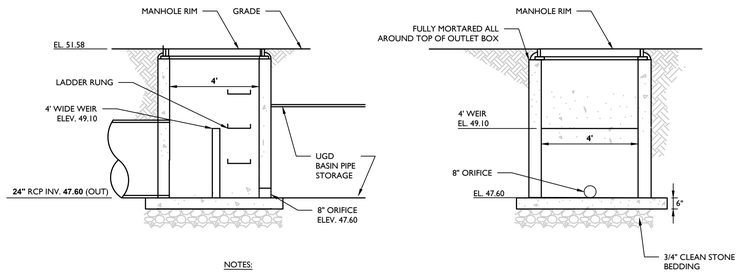
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	5/6/2022	MD	CRR
PROJECT NUMBER:	DRAWING NAME:		
14000908C	C-PCSM-DTLS		

SHEET TITLE: PCSM DETAILS

SHEET NUMBER: P6 of P7

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

20140140009908C\Engineering\PCSM\C-PCSM-DTLS.dwg|C-06-DETAILS By: MDBEIGIS

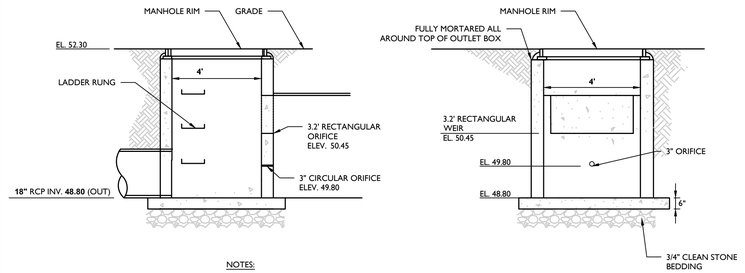


NOTES:

1. CONTRACTOR TO SUBMIT SHOP DRAWING FOR REVIEW AND APPROVAL.
2. ALL CONCRETE TO BE CLASS "A".

OUTLET CONTROL STRUCTURE UGD BASIN A S-A1 DETAIL (SINGLE CHAMBER)

NOT TO SCALE MCPA-UTIL-STMW-1600 05/01/18

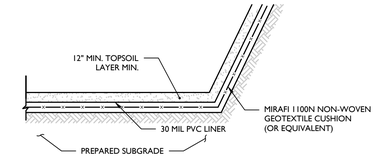


NOTES:

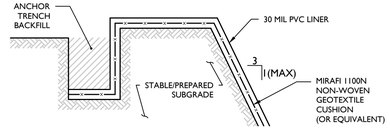
1. CONTRACTOR TO SUBMIT SHOP DRAWING FOR REVIEW AND APPROVAL.
2. ALL CONCRETE TO BE CLASS "A".

OUTLET CONTROL STRUCTURE MRC BASIN B S-B2 DETAIL (SINGLE CHAMBER)

NOT TO SCALE MCPA-UTIL-STMW-1600 05/01/18



30 MIL PVC LINER SECTION DETAIL



STANDARD ANCHOR TRENCH DETAIL

ANCHOR TRENCH NOTES:

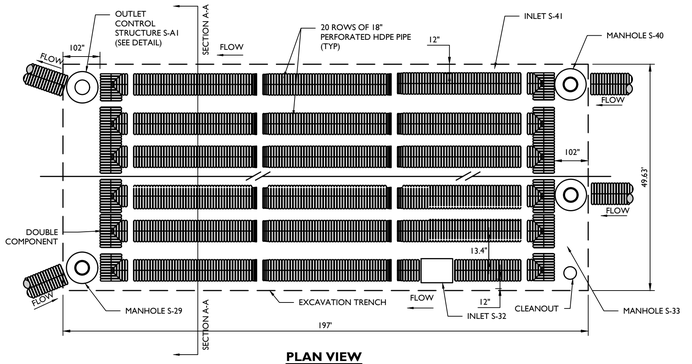
1. EXCAVATE ANCHOR TRENCH TO THE MINIMUM DIMENSIONS SHOWN. SUITABLE EXCAVATION SPOILS SHALL BE PROTECTED FROM WEATHER EVENTS, WHEN INTENDED FOR ANCHOR TRENCH BACKFILL.
2. NON-WOVEN GEOTEXTILE CUSHION AND PVC LINER SHALL FULLY EXTEND ACROSS THE BASE OF THE ANCHOR TRENCH.
3. ANCHOR TRENCH BACKFILL SHALL CONSIST OF SUITABLE BACKFILL MATERIALS WHICH ARE FREE OF LARGE GRAVEL, COBBLES (OR COARSER) MATERIALS THAT MAY DAMAGE THE LINER.
4. BACKFILL MATERIALS SHALL BE PLACED IN CONTROLLED AND COMPACTED LIFTS.

30 MIL PVC LINER SECTION DETAIL NOTES:

1. BASIN EXCAVATION, SUBGRADE PREPARATION, AND LINER INSTALLATION SHALL BE PERFORMED UNDER THE OBSERVATION OF A QUALIFIED GEOTECHNICAL ENGINEER OR ENGINEER'S REPRESENTATIVE.
2. PRIOR TO BASIN EXCAVATION, THE CONTRACTOR SHALL SUBMIT A NARRATIVE SUMMARIZING THE INSTALLER'S PROJECT EXPERIENCE, KEY PERSONNEL, MATERIAL SPECIFICATION SHEETS, PANEL LAYOUT CONFIGURATION, NON-DESTRUCTIVE TESTING, QUALITY CONTROL PROCEDURES, AND TYPICAL DETAILS (I.E. BATTONING, ETC.). LINER SYSTEM INSTALLATION SHALL BE PERFORMED IN ACCORDANCE WITH THE APPROVED SUBMITTAL.
3. AFTER FINE-GRADING, THE EXPOSED SUBGRADE SHALL BE COMPACTED WITH A SMOOTH DRUM ROLLER. SOFT AREAS DELINEATED BY THIS PROCESS SHALL BE CONDITIONED IN PLACE OR REMOVED AND REPLACED WITH LOAD BEARING FILL.
4. THE PREPARED SUBGRADE SHALL BE SMOOTH, DRY, STABLE, AND FREE OF COBBLES (OR COARSER ROCK FRAGMENTS).
5. THE NON-WOVEN GEOTEXTILE CUSHION (10 OZ. MIN) AND PVC LINER PANELS SHOULD BE DEPLOYED IN ACCORDANCE WITH THE APPROVED PANEL CONFIGURATION LAYOUT. GEOTEXTILE AND PVC PANELS SHOULD BE ORIENTED PERPENDICULAR TO THE ANCHOR TRENCH. MINIMIZE PVC PANEL JOINTS TO THE EXTENT POSSIBLE. BUTT JOINTS LOCATED ON THE BASIN SLOPE AND ORIENTED PARRELLEL TO THE ANCHOR TRENCH ARE NOT PERMITED.
6. THE LINER INSTALLER SHALL PERFORM NON-DESTRUCTIVE TESTING OF ALL FIELD SEAMS IN ACCORDANCE WITH THE APPROVED LINER SUBMITTAL. AT A MINIMUM, NON-DESTRUCTIVE TESTING SHALL INCLUDE VISUAL OBSERVATION AND AIR LANCE TESTING.
7. TOPSOIL (COVER SOIL) SHALL BE FREE OF GRAVEL OR OTHER DEBRIS WHICH MAY DAMAGE THE PVC LINER. OTHERWISE, INSTALL A NON-WOVEN GEOTEXTILE CUSHION (10 OZ. MIN) OVERTOP OF THE PVC LINER PRIOR TO COVER SOIL PLACEMENT.
8. COVER SOIL SHALL BE PLACED BY OVER-BURDENING THE LINER BY 2 TO 3 FEET, AND SPREADING WITH LOW GROUND PRESSURE EQUIPMENT FROM THE BASIN BOTTOM UP-SLOPE TO MITIGATE OVERSTRESSING.

30 MIL POLYPROPYLENE POND LINER SECTION DETAIL

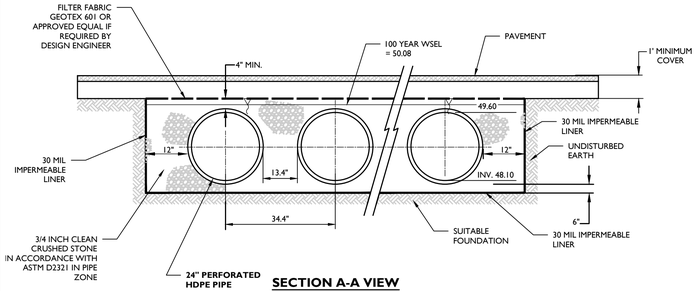
NOT TO SCALE 3/21/19



PLAN VIEW

UNDERGROUND HDPE SYSTEM NOTES:

1. ALL REFERENCES TO CLASS I OR II MATERIAL ARE PER ASTM D2321 "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION.
2. ALL RETENTION AND DETENTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, LATEST EDITION AND THE MANUFACTURER'S PUBLISHED INSTALLATION GUIDELINES.
3. MEASURES SHOULD BE TAKEN TO PREVENT THE MIGRATION OF NATIVE FINES INTO THE BACKFILL MATERIAL, WHEN REQUIRED. SEE ASTM D2321.
4. FILTER FABRIC: A GEOTEXTILE FABRIC MAY BE USEDAS SPECIFIED BY THE ENGINEER TO PREVENT THE MIGRATION OF FINES FROM THE NATIVE SOIL INTO THE SELECT BACKFILL MATERIAL.
5. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
6. BEDDING: SUITABLE MATERIAL SHALL BE CLASS IOR II. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" FOR 4"-24" PIPES; 6" FOR 30"-60" PIPES.
7. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I OR II INTHE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
8. MINIMUM COVER: MINIMUM COVER OVER ALL RETNETION/DETENTION SYSTEMS IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER IS 12" UP TO 36" DIAMETER PIPE AND 24" OF COVER FOR 42" - 60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

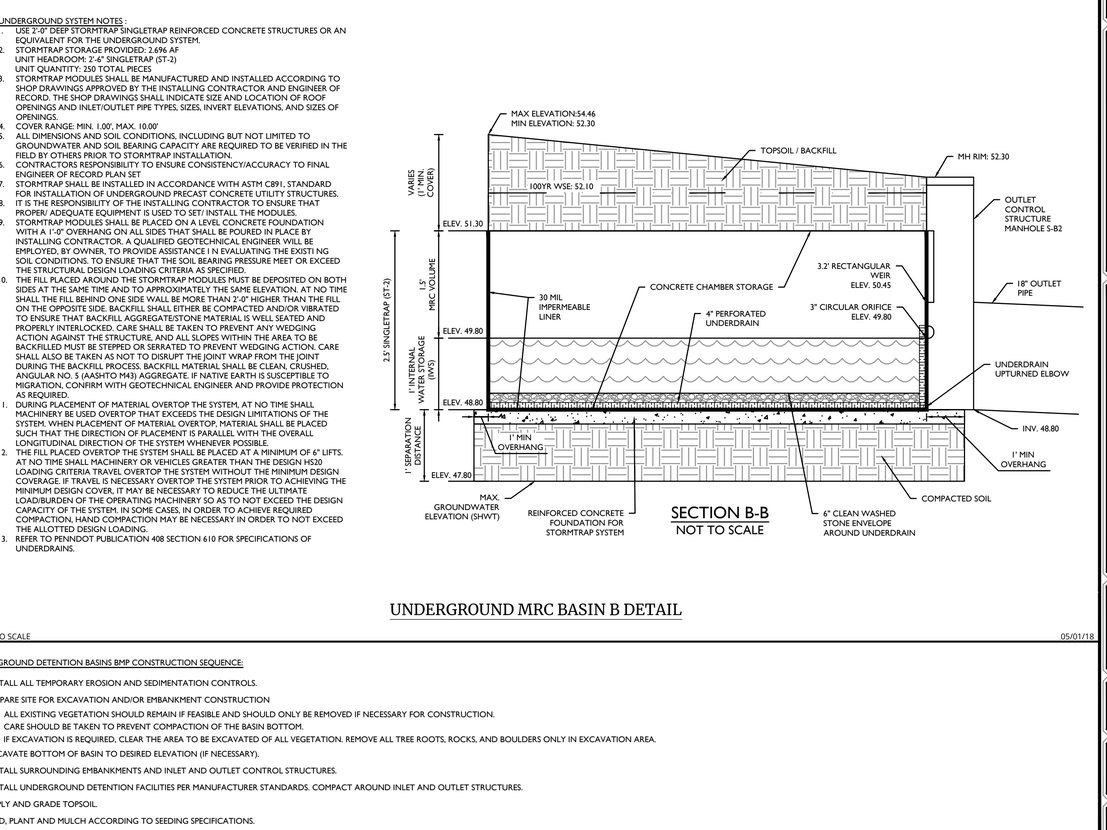


SECTION A-A VIEW

UNDERGROUND DETENTION BASIN A (CLOSED SYSTEM) DETAIL

NOT TO SCALE MCPA-UTIL-STMW-1300 05/01/18

UNDERGROUND DETENTION BASIN A STAGE STORAGE	
ELEVATION (FEET)	STORAGE (ACRE-FEET)
47.60	0.000
48.00	0.036
48.50	0.086
49.00	0.159
49.50	0.231
50.00	0.279
50.18	0.296



UNDERGROUND SYSTEM NOTES :

1. USE 2'-0" DEEP STORMTRAP SINGLETRAP REINFORCED CONCRETE STRUCTURES OR AN EQUIVALENT FOR THE UNDERGROUND SYSTEM.
2. STORMTRAP STORAGE PROVIDED: 2.696 AF
   UNIT HEADROOM: 2'-6" SINGLETRAP (ST-2)
   UNIT QUANTITY: 250 TOTAL PIECES
3. STORMTRAP MODULES SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER OF RECORD. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/OUTLET PIPE TYPES, SIZES, INVERT ELEVATIONS, AND SIZES OF OPENINGS.
4. COVER RANGE: MIN. 1.00', MAX. 10.00'
5. ALL DIMENSIONS AND SOIL CONDITIONS, INCLUDING BUT NOT LIMITED TO GROUNDWATER AND SOIL BEARING CAPACITY ARE REQUIRED TO BE VERIFIED IN THE FIELD BY OTHERS PRIOR TO STORMTRAP INSTALLATION.
6. CONTRACTORS RESPONSIBILITY TO ENSURE CONSISTENCY/ACCURACY TO FINAL ENGINEER OF RECORD PLAN SET
7. STORMTRAP SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C891, STANDARD FOR INSTALLATION OF UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES.
8. IT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO ENSURE THAT PROPER/ ADEQUATE EQUIPMENT IS USED TO SET/ INSTALL THE MODULES.
9. STORMTRAP MODULES SHALL BE PLACED ON A LEVEL CONCRETE FOUNDATION WITH A 1'-0" OVERHANG ON ALL SIDES THAT SHALL BE POURED IN PLACE BY INSTALLING CONTRACTOR. A QUALIFIED GEOTECHNICAL ENGINEER WILL BE EMPLOYED, BY OWNER, TO PROVIDE ASSISTANCE I N EVALUATING THE EXISTI NG SOIL CONDITIONS. TO ENSURE THAT THE SOIL BEARING PRESSURE MEET OR EXCEED THE STRUCTURAL DESIGN LOADING CRITERIA AS SPECIFIED.
10. THE FILL PLACED AROUND THE STORMTRAP MODULES MUST BE DEPOSITED ON BOTH SIDES AT THE SAME TIME AND TO APPROXIMATELY THE SAME ELEVATION. AT NO TIME SHALL THE FILL BEHIND ONE SIDE WALL BE MORE THAN 2'-0" HIGHER THAN THE FILL ON THE OPPOSITE SIDE. BACKFILL SHALL EITHER BE COMPACTED AND/OR VIBRATED TO ENSURE THAT BACKFILL AGGREGATE/STONE MATERIAL IS WELL SEATED AND PROPERLY INTERLOCKED. CARE SHALL BE TAKEN TO PREVENT ANY WEDGING ACTION AGAINST THE STRUCTURE. AND ALL SLOPES WITHIN THE AREA TO BE BACKFILLED MUST BE STEPPED OR SERRATED TO PREVENT WEDGING ACTION. CARE SHALL ALSO BE TAKEN AS NOT TO DISRUPT THE JOINT WRAP FROM THE JOINT DURING THE BACKFILL PROCESS. BACKFILL MATERIAL SHALL BE CLEAN, CRUSHED, ANGULAR NO. 5 (AASHTO M43) AGGREGATE. IF NATIVE EARTH IS SUSCEPTIBLE TO MIGRATION, CONFIRM WITH GEOTECHNICAL ENGINEER AND PROVIDE PROTECTION AS REQUIRED.
11. DURING PLACEMENT OF MATERIAL OVERTOP THE SYSTEM, AT NO TIME SHALL MACHINERY BE USED OVERTOP THAT EXCEEDS THE DESIGN LIMITATIONS OF THE SYSTEM. WHEN PLACEMENT OF MATERIAL OVERTOP, MATERIAL SHALL BE PLACED SUCH THAT THE DIRECTION OF PLACEMENT IS PARALLEL WITH THE OVERALL LONGITUDINAL DIRECTION OF THE SYSTEM WHENEVER POSSIBLE.
12. THE FILL PLACED OVERTOP THE SYSTEM SHALL BE PLACED AT A MINIMUM OF 6" LIFTS. AT NO TIME SHALL MACHINERY OR VEHICLES GREATER THAN THE DESIGN HS20 LOADING CRITERIA TRAVEL OVERTOP THE SYSTEM WITHOUT THE MINIMUM DESIGN COVERAGE. IF TRAVEL IS NECESSARY OVERTOP THE SYSTEM PRIOR TO ACHIEVING THE MINIMUM DESIGN COVER, IT MAY BE NECESSARY TO REDUCE THE ULTIMATE LOAD/BURDEN OF THE OPERATING MACHINERY SO AS TO NOT EXCEED THE DESIGN CAPACITY OF THE SYSTEM. IN SOME CASES, IN ORDER TO ACHIEVE REQUIRED COMPACTION, HAND COMPACTION MAY BE NECESSARY IN ORDER TO NOT EXCEED THE ALLOTTED DESIGN LOADING.
13. REFER TO PENNDOT PUBLICATION 408 SECTION 610 FOR SPECIFICATIONS OF UNDERDRAINS.

SECTION B-B NOT TO SCALE

UNDERGROUND MRC BASIN B DETAIL

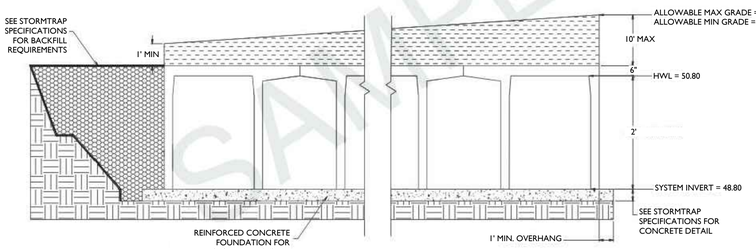
NOT TO SCALE 05/01/18

STORMTRAP SYSTEM INFORMATION

WATER STORAGE PROVIDED: 2.696 ACRE-FT

UNIT HEADROOM: 2'-6" SINGLETRAP (ST-2)

UNIT QUANTITY: 250 TOTAL PIECES



NOTES:

1. STORMTRAP MODULES SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER OF RECORD. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/OUTLET PIPE TYPES, SIZES, INVERT ELEVATIONS AND SIZE OF OPENINGS.

STORMTRAP SINGLETRAP 2-0 TYPICAL DETAIL

UNDERGROUND MRC BASIN B STAGE STORAGE	
ELEVATION (FEET)	STORAGE (ACRE-FEET)
48.80	0.000
49.00	0.172
49.50	0.601
50.00	1.030
50.50	1.459
51.00	1.716
51.50	1.912
52.00	2.402
52.30	2.696

UNDERGROUND DETENTION BASINS BMP CONSTRUCTION SEQUENCE:

1. INSTALL ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS.
2. PREPARE SITE FOR EXCAVATION AND/OR EMBANKMENT CONSTRUCTION
   2.a. ALL EXISTING VEGETATION SHOULD REMAIN IF FEASIBLE AND SHOULD ONLY BE REMOVED IF NECESSARY FOR CONSTRUCTION.
   2.b. CARE SHOULD BE TAKEN TO PREVENT COMPACTION OF THE BASIN BOTTOM.
   2.c. IF EXCAVATION IS REQUIRED, CLEAR THE AREA TO BE EXCAVATED OF ALL VEGETATION. REMOVE ALL TREE ROOTS, ROCKS, AND BOULDERS ONLY IN EXCAVATION AREA.
3. EXCAVATE BOTTOM OF BASIN TO DESIRED ELEVATION (IF NECESSARY).
4. INSTALL SURROUNDING EMBANKMENTS AND INLET AND OUTLET CONTROL STRUCTURES.
5. INSTALL UNDERGROUND DETENTION FACILITIES PER MANUFACTURER STANDARDS. COMPACT AROUND INLET AND OUTLET STRUCTURES.
6. APPLY AND GRADE TOPSOIL.
7. SEED, PLANT AND MULCH ACCORDING TO SEEDING SPECIFICATIONS.

SAMPLE

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REV	DATE	DRAWN BY	DESCRIPTION

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
C. RICHARD ROSEBERRY
ENGINEER No. 46162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

POST-CONSTRUCTION STORMWATER MANAGEMENT PLANS FOR 401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

Colliers Engineering & Design
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	5/6/2022	MD	CRR

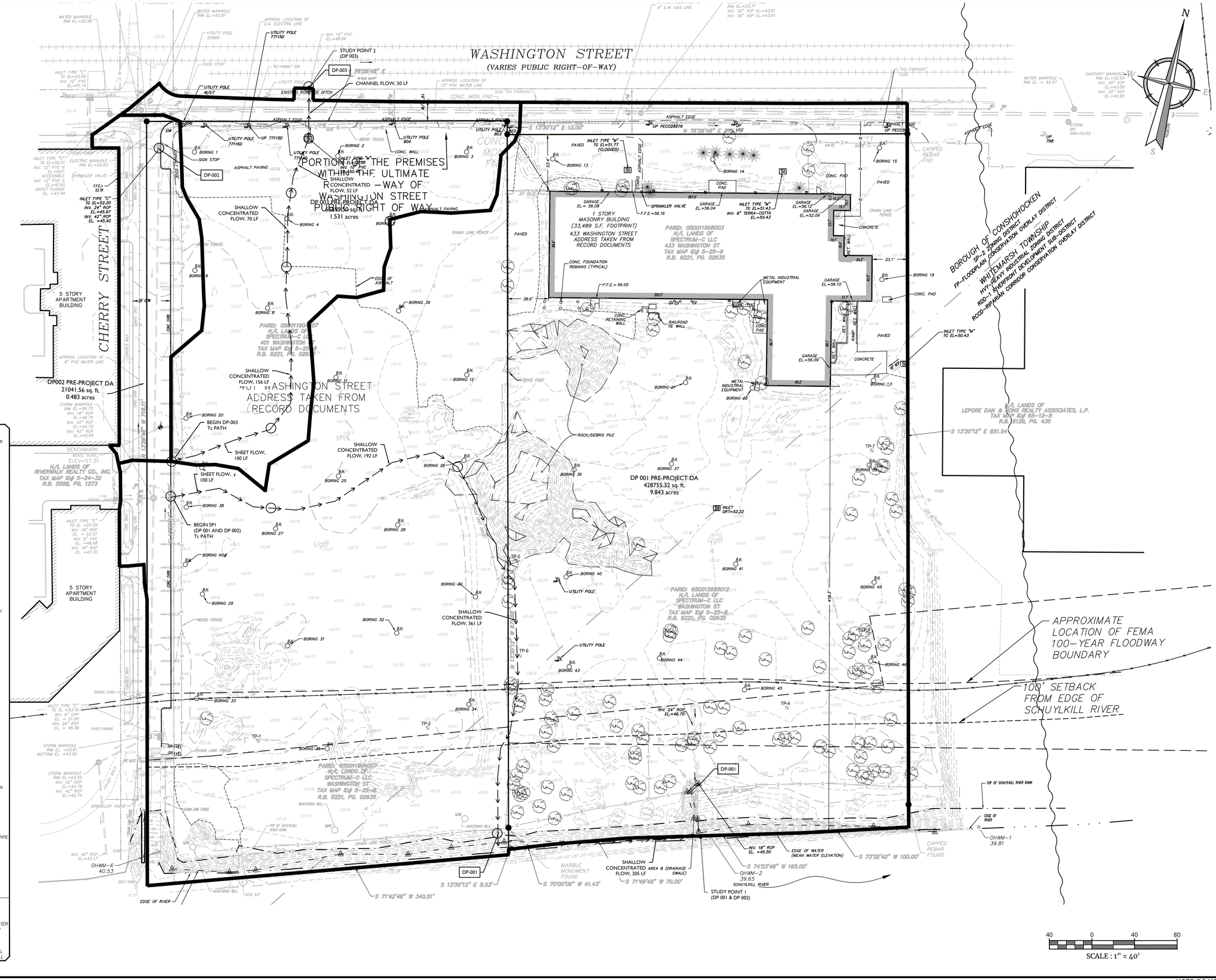
PROJECT NUMBER: 14000908C
DRAWING NAME: C-PCSM-DTLS

SHEET TITLE: PCSM DETAILS

SHEET NUMBER: P7 of P7

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

20181400908C\Engineering\PCSM\C-PCSM-DTLS.dwg|C-07-DETAILS By: MDBEGUS



LEGEND

- EXISTING DRAINAGE AREA BOUNDARY
- TRAVERSE LINE, CENTER LINE OR BASELINE
- RIGHT OF WAY LINE
- PROPERTY LINE
- EDGE OF PAVEMENT
- CURB LINE
- DEPRESSED CURB
- CHAIN FENCE
- WETLAND LINE
- MUNICIPAL BOUNDARY
- TREELINE
- ELECTRICAL MANHOLE
- WATER MANHOLE
- TELEPHONE MANHOLE
- UNMARKED MANHOLE
- SANITARY MANHOLE
- DRAINAGE MANHOLE
- MAJOR CONTOUR
- MINOR CONTOUR
- SPOT ELEVATION
- TOP OF CURB ELEV.
- BOTTOM OF CURB ELEV.
- U/G CABLE TV LINE
- U/G FIBER OPTIC LINE
- U/G TELEPHONE LINE
- U/G ELECTRIC LINE
- OVERHEAD WIRE
- WATER MAIN
- GAS MAIN
- SAN. SEWER LATERAL
- SAN. SEWER MAIN
- STORM PIPE
- WETLAND MARKER
- TREE
- ROADWAY SIGNS
- TRAFFIC FLOW
- MAILBOX
- TRAFFIC SIGNAL POLE
- POLE MOUNTED LIGHT
- UTILITY POLE
- GUY WIRE
- TRANSFORMER
- FIRE DEPT. CONNECTION
- FIRE HYDRANT
- WATER VALVE
- GAS VALVE
- SANITARY CLEANOUT
- CONCRETE MONUMENT
- CAPPED REBAR/IRON PIPE
- STORM INLET TYPE 'C'
- STORM INLET TYPE 'M'
- FLARED END SECTION
- HEADWALL

ABBREVIATIONS

D.C.	= DEPRESSED CURB	DEP.	= DEPRESSED
BC	= BOTTOM OF CURB	CL	= CENTERLINE
TC	= TOP OF CURB	PM	= PARKING METER
BOL	= BOLLARD	MHWL	= MEAN HIGH WATERLINE
GRT	= GRATE	MLWL	= MEAN LOW WATERLINE
MB	= MAILBOX		
FF	= FINISH FLOOR		
UV	= UNKNOWN VALVE	TW	= TOP OF WALL
MH	= MANHOLE	BW	= BOTTOM WALL

20161400908\CE\Engineering\Drainage Maps\C-DRNG.dwg\C-01 EXIST. DRAINAGE MAP By: MDSEIUS

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1	1/21/22	MD	REVISED PER BOROUGH OF CONSHOHOCKEN REVIEW LETTERS DATED 1/7/2022.

DRAINAGE AREA MAPS

FOR

401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

PROJECT NUMBER: 14000908C
DRAWING NAME: C-DRNG

SHEET TITLE: EXISTING DRAINAGE MAP

SHEET NUMBER: 1 of 3

WASHINGTON STREET
(VARIES PUBLIC RIGHT-OF-WAY)

CHERRY STREET

OLD PROPERTY LINE (CENTERLINE OF CHERRY STREET)

DP002 BYPASS
21670.11 sq. ft.
0.497 acres
(DISTURBED = 0.34 AC.)

DP003 BYPASS
14748.01 sq. ft.
0.339 acres
(DISTURBED = 0.22 AC.)

DP001 BYPASS
126772.64 sq. ft.
2.910 acres
(DISTURBED = 2.48 AC.)

UG MRC BASIN B
47815.51 sq. ft.
1.098 acres
(TOTAL = 6.259 acres)
(DISTURBED = 6.19 AC.)

UG MRC BASIN B
224796.12 sq. ft.
5.161 acres
(TOTAL = 6.259 acres)
(DISTURBED = 6.19 AC.)

UGD BASIN A
80785.01 sq. ft.
1.854 acres
(DISTURBED = 1.72 AC.)

UNDERGROUND MRC BASIN B
POST-PROJECT SP1 BYPASS
Tc = 27 MIN.

UNDERGROUND DETENTION BASIN A

BUILDING 1
FFE 68.86
(2ND FLOOR)

BUILDING 2
FFE 68.56
(2ND FLOOR)

BUILDING 3
FFE 68.99
(2ND FLOOR)

BUILDING 4
FFE 68.59
(2ND FLOOR)

5 STORY APARTMENT BUILDING

5 STORY APARTMENT BUILDING

DISCHARGE POINT DP 002

DISCHARGE POINT DP 001

EXISTING BOAT RAMP

EXISTING DRAINAGE SWALE "AREA B" (DRAINAGE SWALE)

STUDY POINT 1
(DP 001 & DP 002)

STUDY POINT 2
(DP 003)

EXISTING ROADSIDE DITCH

POST-PROJECT TO SP2 (DP 003)
Tc = 6 MIN.

POST-PROJECT TO BASIN A
Tc = 6 MIN.

POST-PROJECT TO BASIN B
Tc = 6 MIN.

SHALLOW CONCENTRATED FLOW, 95 LF

SHEET FLOW, 100 LF

CHANNEL FLOW, 40 LF

CHANNEL FLOW, 280 LF

CHANNEL FLOW, 270 LF

CHANNEL FLOW, 170 LF

CHANNEL FLOW, 240 LF

SHEET FLOW, 40 LF

SHEET FLOW, 60 LF

SHALLOW CONCENTRATED FLOW, 155 LF

SHALLOW CONCENTRATED FLOW, 30 LF

SHALLOW CONCENTRATED FLOW, 35 LF

SHALLOW CONCENTRATED FLOW, 80 LF

SHALLOW CONCENTRATED FLOW, 145 LF

PUBLIC SEATING

RED SHALE MACADAM RIVER TRAIL

BOROUGH OF CONSHOHOCKEN
SP-2 ZONING DISTRICT
FP-FLOODPLAIN CONSERVATION OVERLAY DISTRICT

WHITEMARSH TOWNSHIP
HVY-HEAVY INDUSTRIAL ZONING DISTRICT
RDD-RIVERFRONT DEVELOPMENT SUB-DISTRICT
RCOD-RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT

APPROXIMATE LOCATION OF FEMA 100-YEAR FLOODWAY BOUNDARY

100' SETBACK FROM EDGE OF SCHUYLKILL RIVER

OHWM-1
39.81

OHWM-2
39.65
SCHUYLKILL RIVER

OHWM-6
40.53

EDGE OF WATER
(MEAN WATER ELEVATION)

EDGE OF RIVER

TOP OF SCHUYLKILL RIVER BANK

BENCHMARK
MAG NAIL
ELEV=57.31

PROPOSED DRAINAGE AREA BOUNDARY

LEGEND

EXISTING		PROPOSED
12+00 PI 13+00	TRAVERSE LINE, CENTER LINE OR BASELINE (LABEL AS SUCH)	12+00 13+00
	RIGHT OF WAY LINE	
	PROPERTY LINE	
	EDGE OF PAVEMENT	
FACE / BACK	CURB	FACE / BACK
	DEPRESSED CURB	
	SIDEWALK	
X X	FENCES	X X
	TREELINE	
	ROADWAY SIGNS	
	WETLAND LINE	
	MUNICIPAL BOUNDARY LINE	
	'C' INLET	
	'M' INLET	
Ⓟ	STORM MANHOLE	Ⓓ
Ⓢ	SANITARY MANHOLE	Ⓢ
	FLARED END SECTION	
	HEADWALL	
	HYDRANT	
	POLE MOUNTED LIGHT	
75 / 74	CONTOURS	75 / 74
× G 29.0	SPOT ELEVATION	× G 29.0
	DIRECTION OF OVERLAND FLOW	
× TC 29.0	TOP OF CURB ELEVATION	× TC 29.0
× BC 29.0	BOTTOM OF CURB ELEVATION	× BC 29.0
	TOP OF DEPRESSED CURB ELEVATION	× TDC 29.0
CATV	CABLE TV CONDUIT	CATV
W	WATER MAIN	W
G	GAS MAIN	G
T	TELEPHONE CONDUIT	T
E	ELECTRIC CONDUIT	E
	SANITARY PIPE	
	STORM PIPE	

40 0 40 80
SCALE : 1" = 40'

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

20181400908C\Engineering\Drainage Maps\C-DRNG\Dwg\C-02-PROP. DRAINAGE MAP By:MDEISIS

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DRAINAGE AREA MAPS

FOR

401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
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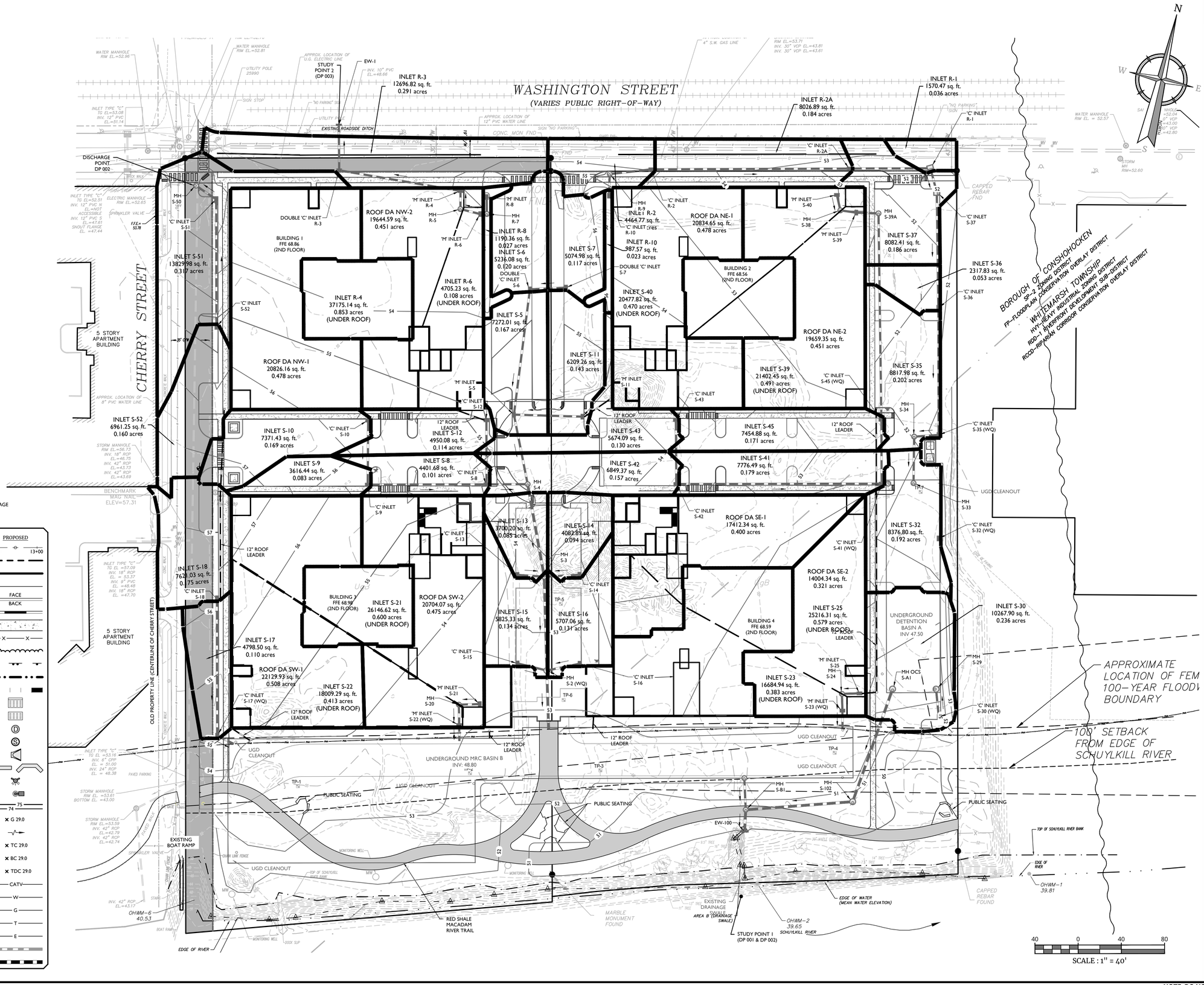
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

PROJECT NUMBER: 14000908C
DRAWING NAME: C-DRNG

SHEET TITLE: PROPOSED DRAINAGE MAP

SHEET NUMBER: 2 of 3



LEGEND

EXISTING		PROPOSED
12+00 PI 13+00	TRAVERSE LINE, CENTER LINE OR BASELINE (LABEL AS SUCH)	12+00 13+00
	RIGHT OF WAY LINE	
	PROPERTY LINE	
	EDGE OF PAVEMENT	
FACE / BACK	CURB	FACE / BACK
	DEPRESSED CURB	
	SIDEWALK	
X X	FENCES	X X
	TREELINE	
	ROADWAY SIGNS	
	WETLAND LINE	
	MUNICIPAL BOUNDARY LINE	
	'C' INLET	
	'M' INLET	
D	STORM MANHOLE	D
S	SANITARY MANHOLE	S
	FLARED END SECTION	
	HEADWALL	
	HYDRANT	
	POLE MOUNTED LIGHT	
75 / 74	CONTOURS	75 / 74
× G 29.0	SPOT ELEVATION	× G 29.0
	DIRECTION OF OVERLAND FLOW	
× TC 29.0	TOP OF CURB ELEVATION	× TC 29.0
× BC 29.0	BOTTOM OF CURB ELEVATION	× BC 29.0
	TOP OF DEPRESSED CURB ELEVATION	× TDC 29.0
CATV	CABLE TV CONDUIT	CATV
W	WATER MAIN	W
G	GAS MAIN	G
T	TELEPHONE CONDUIT	T
E	ELECTRIC CONDUIT	E
	SANITARY PIPE	
	STORM PIPE	

PROPOSED INLET DRAINAGE AREA BOUNDARY

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DRAINAGE AREA MAPS

FOR

401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
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PENNSYLVANIA

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

PROJECT NUMBER: 14000908C
DRAWING NAME: C-DRNG

SHEET TITLE: INLET DRAINAGE MAP

SHEET NUMBER: 3 of 3

By: MDEBSJS
20140140000908C\Engineering\Drainage Maps\C-DRNG.dwg\C-03 INLET DRAINAGE MAP

WHITEMARSH TOWNSHIP - LANDSCAPE REQUIREMENTS

CHAPTER 55: TREE PROTECTION STANDARDS

PART 3: APPLICABILITY

SECTION	DESCRIPTION	REQUIRED	PROPOSED
§ 55-3.(D).	**TREE REMOVAL - THE REMOVAL OF MORE THAN 50% OF THE TREES ON ANY LOT SHALL NOT BE PERMITTED UNDER ANY CIRCUMSTANCES UNLESS EXPRESSLY PERMITTED BY THE TERMS OF THIS CODE.** 97 TOTAL TREES OF 6" CAL. OR GREATER / 85 BEING REMOVED = 87.63%	< 50% OF TREES	87.63%

PART 4: TREE PRESERVATION, PROTECTION AND REPLACEMENT

SECTION	DESCRIPTION	REQUIRED	PROPOSED
§ 55-4.(B).4.	**TREE CREDITS** APPROVED PRESERVED TREES AROUND THE PERIMETER OF THE PROPERTY MAY OFFSET THE CLASS A BUFFER REQUIREMENTS FOR THAT SITE	NO CLASS "A" BUFFER REQUIREMENTS	
§ 55-4.(B)(6)(a)	**TREE REPLACEMENT - TOTAL CALIPER OF REPLACEMENT TREES, MEASURED AT SIX INCHES ABOVE THE GROUND LINE, SHALL EQUAL OR EXCEED THE DBH OF THE TREE REMOVED.** EXISTING 6" CALIPER OR LARGER TREES TO BE REMOVED = 85 Trees (Total 962 Caliper Inches) (Note: Refer to Civil Engineer's plans for Tree Survey and Removal Plan)	**320 Replacement Trees at min. 3" cal.** (962 caliper inches)	**Replacement Trees Credited toward Requirement: 197** **31** Replacement Trees credited under § 55-4.(B)(6)(f)[1] **64** Replacement Trees credited under § 55-4.(B)(6)(f)[2] **32** Replacement Trees credited under § 55-4.(B)(6)(f)[3] **70** Proposed Shade Trees (Mix of sizes at 3", 4", 5" and 6" caliper)
§ 55-4.(B)(6)(d)	**IF THE SHADE TREE COMMISSION DETERMINES THAT THERE IS NOT SUFFICIENT AREA ON THE DEVELOPMENT SITE FOR THE PLACEMENT OF ALL REPLACEMENT TREES, A PERCENTAGE OF THE REPLACEMENT TREES THAT CAN BE PLANTED ON THE DEVELOPMENT SITE WILL BE INCREASED IN CALIPER SIZE FROM THE THREE-INCH MINIMUM IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:** 123 TREES NOT ACCOMMODATED ON-SITE - UPSIZED TREES PER § 55-4.(B)(6)(d) SCHEDULE LINE: "**MORE THAN 100**" REPLACEMENT TREES THAT CANNOT BE PLANTED ON-SITE		**CALIPER SIZES OF REPLACEMENT TREES TO BE PLANTED ON-SITE** 6 Replacement Trees at 3" caliper (10%) 28 Replacement Trees at 4" caliper (40%) 18 Replacement Trees at 5" caliper (25%) 18 Replacement Trees at 6" caliper (25%) TOTAL: 70 PROPOSED SHADE TREES
§ 55-4.(B)(6)(f)[1]	**A MAXIMUM OF 30% OF THE REPLACEMENT TREES MAY BE REPLACED WITH ORNAMENTAL/FLOWERING TREES OR EVERGREEN TREES AT A RATIO OF TWO FLOWERING OR TWO EVERGREEN TREES PER REQUIRED THREE-INCH-CALIPER SHADE TREE.** 320 Replacement Trees x 30% = 96 Trees 22 Flowering Trees = 41 Evergreen trees (in excess of buffer requirement) = 63/2 = 31.5 Replacement Trees		31 Replacement Trees Credited
§ 55-4.(B)(6)(f)[2]	**A MAXIMUM OF 20% OF THE REPLACEMENT TREES MAY BE REPLACED AS SHRUBS WITH A MINIMUM SIZE OF 24 INCHES IN HEIGHT AT A RATIO OF SIX SHRUBS PER REQUIRED THREE-INCH-CALIPER SHADE TREE.** 320 Replacement Trees x 20% = 64 Trees 393 Shrubs proposed / 6 = 65.5 Replacement Trees		64 Replacement Trees Credited
§ 55-4.(B)(6)(f)[3]	**A MAXIMUM OF 10% OF THE REPLACEMENT TREES MAY BE REPLACED AS GROUNDCOVER AT A RATIO OF 40 PLANTS TO ONE THREE-INCH-CALIPER SHADE TREE. THE MINIMUM SIZE OF THE GROUNDCOVER WILL BE A ONE-GALLON CONTAINER.** 320 Replacement Trees x 10% = 32 Trees 1305 Groundcover Plants proposed / 40 = 32.6 Replacement Trees		32 Replacement Trees Credited

CHAPTER 105: SUBDIVISION AND LAND DEVELOPMENT

PART 5: DESIGN STANDARDS

SECTION	DESCRIPTION	REQUIRED	PROPOSED
§ 105-39.(A).	**PARKING LOT LANDSCAPING - (1) 2.5" CALIPER MINIMUM SHADE TREE PER 2 PARKING SPACES** (TOTAL PARKING SPOTS = 55 / 2 = REQUIRED TREES NOTES: DOES NOT INCLUDE COVERED PARKING	28	19*
§ 105-39 (C)	**PARKING LOT LANDSCAPING - MINIMUM OF 10% OF ANY PARKING FACILITY OVER 2,000 SF IN GROSS AREA SHALL BE DEVOTED TO LANDSCAPING, INCLUSIVE OF TREES.** TOTAL AREA OF PARKING LOT: 16,766 SF REQUIRED LANDSCAPE AREA: 16,766 x 10% = 1,676.6 SF	1,677 SF	4,750 SF
§ 105-52	**BUFFER YARDS - EASTERN PROPERTY LINE - CLASS "B" BUFFER REQUIRED PLANTING** CLASS "B" BUFFER REQUIRED ALONG EASTERN PROPERTY LINE LENGTH OF PARKING AREA IN WHITEMARSH: 320 FEET / 3 = 107 PLANTS REQ. (NOTE: EXCLUDES PROPERTY BOUNDARY IN RIVERWALK DEDICATION AREA)	HEDGE AT 3' O.C. 107	6' HT. EVERGREEN TREES AT 30" O.C. 127

CHAPTER 116: ZONING

ARTICLE 21: HVY - HEAVY INDUSTRIAL DISTRICT

ARTICLE 37: RIVERFRONT DEVELOPMENT OVERLAY DISTRICT (RDD-1)

SECTION	DESCRIPTION	REQUIRED	PROPOSED
§ 116-283.(C).a.	**PARKING LOT SCREENING - PARKING LOTS CONSISTING OF (20) VEHICLES OR MORE, SHALL BE SCREENED FROM VIEW BY BUILDINGS ON THE SITE OR BY INCORPORATING DECORATIVE WALLS, FENCES, LANDSCAPING OR A COMBINATION THEREOF.**	NOT APPLICABLE TO THIS SITE	
§ 116-284.(A).3.	**TRAIL LANDSCAPE - (1) 2.5" CALIPER MINIMUM TREE FOR EVERY 50 L.F. OF TRAIL** TRAIL LENGTH: 1,050 LF. / 50 = 21 TREES REQUIRED	21	21

*Waiver requested to reduce requirement by 9 shade trees due to site constraints.

NOTE: Above Compliance Chart represents compliance based upon available information. Applicant will work with the Township Shade Tree Commission and their Arborist to ascertain the health of the existing trees in order to determine the final number of replacement trees required, to the satisfaction of the Township.

BOROUGH OF CONSHOHOCKEN - LANDSCAPE REQUIREMENTS

CHAPER 27: ZONING

PART 15: SPECIALLY PLANNED DISTRICTS ONE & TWO (SP-1 & SP-2)

SECTION	DESCRIPTION	REQUIRED	PROPOSED
§ 27-1506.(B).1.	**STREET TREES: (1) 2.5" CALIPER MIN. SHADE TREE PER 40 LF OF ROADWAY**		
	WASHINGTON STREET (714 LF / 40 LF = 18 REQUIRED TREES)	18	SATISFIED BY MEETING
	CHERRY STREET (591 LF / 40 LF = 15 REQUIRED TREES)	15	§ 22-4214
§ 27-1506.(B).3.	**PARKING LOT TREES: (1) 2.5" CALIPER MIN. SHADE TREE PER 48 PARKING SPACES**		
	PARKING LOT TREES (TOTAL PARKING SPOTS = 245 / 48 = REQUIRED TREES)	6	31
	NOTE: DOES NOT INCLUDE COVERED PARKING)		
§ 27-1506.(B).4.	**BUILDING LANDSCAPING: ALL BUILDING SHALL BE LANDSCAPED WITH A COMBINATION OF EVERGREEN AND DECIDUOUS TREES AND SHRUBS TO BE USED AS FOUNDATION PLANTING (i.e. PLANTINGS TO BE INSTALLED IN PROXIMITY TO THE FAÇADE).**	QUANTITY NOT SPECIFIED	WE COMPLY

PART 20: OFF-STREET PARKING & LOADING

SECTION	DESCRIPTION	REQUIRED	PROPOSED
§ 27-2007.(F).1.	**PARKING LOT SCREENING ADJOINING RESIDENTIAL PROPERTY - A DENSE, CONTINUOUS, EVERGREEN SCREEN AT LEAST 6' (FEET) IN HEIGHT.**	NOT APPLICABLE - SITE DOES NOT ADJOIN RESIDENTIAL ZONED PROPERTY	
§ 27-2007.(F).2.	**PARKING LOT SCREENING ADJOINING PUBLIC RIGHT-OF-WAY - A CONTINUOUS, EVERGREEN HEDGING A MINIMUM OF 4' (FEET) IN HEIGHT.** EVERGREEN TREE SCREEN PLANTING PROVIDED	Qty. not Specified	8'-10' HEIGHT
§ 27-2007.(J).	**PARKING LOT SHADE TREES - (1) 3.5" CALIPER SHADE TREE PER 10 PARKING SPACES** PARKING LOT TREES (TOTAL PARKING SPOTS = 245 / 10 = REQUIRED TREES) NOTES: 1. SATISFIED BY MEETING § 27-1506.(B).3. 2. DOES NOT INCLUDE COVERED PARKING)	25	31

CHAPER 22: SUBDIVISION AND LAND DEVELOPMENT

PART 4: DESIGN STANDARDS

SECTION	DESCRIPTION	REQUIRED	PROPOSED
§ 22-4202	**TREE PRESERVATION - (1) ONE 3.5" CAL MIN. REPLACEMENT TREE PER 6" CAL. OR LARGER TREE REMOVED** EXISTING 6" CALIPER OR LARGER TREES TO BE REMOVED = 35 ((27) DECIDUOUS + (8) EVERGREEN)	44	67
§ 22-4214	**STREET SHADE TREES - (1) TREE PER 30 LF OF ROADWAY**		
	WASHINGTON STREET (714 LF)	24	24
	CHERRY STREET (591 LF)	20	20
§ 22-4215	**SCREEN PLANTING REQUIREMENTS - MULTI-FAMILY OR NON-RESIDENTIAL USE SHALL BE SCREENED AS NECESSARY. MINIMUM OF 6' HEIGHT AT TIME OF PLANTING.** EVERGREEN TREE SCREEN PLANTING PROVIDED	MINUMUM 6' HT SCREEN	8'-10' HEIGHT

WHITEMARSH TOWNSHIP - TREE REMOVAL LIST

TREE CALIPER SIZE	QUANTITY	CALIPER OF TREES REMOVED
6	10	60
6.25	1	6.25
6.5	10	65
7	8	56
7.5	1	7.5
8	13	104
8.5	2	17
9	3	27
9.5	3	28.5
10	2	20
10.5	2	21
11	5	55
11.5	2	23
12	7	84
12.5	1	12.5
13	4	52
13.5	2	27
14	1	14
14.5	1	14.5
15	1	15
16	1	16
20	1	20
21	1	21
23	2	46
149.75	1	149.75
Totals:	**85**	**962**

NOTE: EXISTING TREES SHOWN ON TREE SURVEY PROPOSED TO REMAIN: 12

PLANT TOTALS BY CATAGORY - WHITEMARSH:	
SHADE TREES:	121
EVERGREEN TREES:	144
ORNAMENTAL TREES:	22
SHRUBS:	483
GROUND COVER:	1,260

MASTER PLANT SCHEDULE WHITEMARSH TOWNSHIP

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AN2	9	Acer rubrum 'Red Sunset' / Red Sunset Maple	4"-4.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
AN3	6	Acer rubrum 'Red Sunset' / Red Sunset Maple	5"-5.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
AN4	6	Acer rubrum 'Red Sunset' / Red Sunset Maple	6"-6.5"	15`-17`		B&B	Full Specimens, Headed to 7`
AR	7	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
GP	22	Ginkgo biloba 'Princeton Sentry' / Princeton Sentry Maidenhair Tree	2"-2.5" cal.				
LR	5	Liquidambar styraciflua `Rotundiloba` TM / Round-Lobed Sweet Gum	3-3.5" cal.	14`-16`		B&B	Full Specimens, Headed to 7`
NS	3	Nyssa sylvatica / Sour Gum	4"-4.5" cal.	14`-16`		B&B	Full Specimens, Headed to 7`
PAB	8	Platanus x acerifolia 'Bloodgood' / Bloodgood London Plane Tree	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QB	3	Quercus bicolor / Swamp White Oak	3"-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QB2	6	Quercus bicolor / Swamp White Oak	4"-4.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QB3	6	Quercus bicolor / Swamp White Oak	5"-5.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
QB4	6	Quercus bicolor / Swamp White Oak	6"-6.5"	15`-17`		B&B	Full Specimens, Headed to 7`
QP	12	Quercus palustris / Pin Oak	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QP2	10	Quercus palustris / Pin Oak	4"-4.5" cal.	13`-15`		B&B	Full Specimens, Headed to 7`
QP3	6	Quercus palustris / Pin Oak	5"-5.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
QP4	6	Quercus palustris / Pin Oak	6"-6.5"	15`-17`		B&B	Full Specimens, Headed to 7`
EVERGREEN TREES	**QTY**	**BOTANICAL / COMMON NAME**	**CAL**	**HT.**	**SPRD.**	**CONT**	**COMMENTS**
JVB	9	Juniperus virginiana 'Brodie' / Eastern Red Cedar 'Brodie'	-	8`-10`		B&B	Full, uniform specimens, branched to the ground
PA	8	Picea abies / Norway Spruce	-	8`-10`		B&B	Heavy, well formed specimens
PM	5	Picea mariana / Black Spruce	-	8`-10`		B&B	Heavy, well formed specimens
TS	127	Thuja occidentalis 'Smaragd' / Emerald Green Arborvitae	-	6`-8`		B&B	Heavy, well formed specimens
ORNAMENTAL TREES	**QTY**	**BOTANICAL / COMMON NAME**	**CAL**	**HT.**	**SPRD.**	**CONT**	**COMMENTS**
BN3	11	Betula nigra / River Birch Multi-Trunk	3.5-4" cal.	16`-18`		B&B	Full Specimens, 3 trunk minimum
CC3	3	Cercis canadensis / Eastern Redbud	3-3.5" cal.			B&B	Full Specimens
MV	8	Magnolia virginiana / Sweet Bay	-	8`-10`		B&B	Heavy, Multi-stemmed specimens, Min. 1.5" Cane Dia.
SHRUBS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT.**	**SPRD.**	**CONT.**	**COMMENTS**
AMV	24	Aronia melanocarpa `Viking` / Viking Black Chokeberry	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
CAR	80	Clethra alnifolia `Rosea` / Pink Summersweet	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
CSB	13	Cornus stolonifera 'Baileyi' / Bailey's Red-osier Dogwood	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
HQ	12	Hydrangea quercifolia `Snow Queen` / Snow Queen Oakleaf Hydrangea	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
IT	44	Itea virginica `Sprich` TM / Little Henry Virginia Sweetspire	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
IVR	28	Ilex verticillata `Red Sprite` / Red Sprite Winterberry	-	2`-2.5`		#5 Cont	Full Plants, 2.5` O.C.
LB	33	Lindera benzoin / Spicebush	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
MP	12	Morella pensylvanica / Northern Bayberry	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
PLO3	17	Prunus laurocerasus `Otto Luyken` / Otto Luyken Laurel	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
PLS	15	Prunus laurocerasus `Schipkaensis` / Schipka Laurel	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
POS	13	Physocarpus opulifolius `Snowfall` / Snowfall Ninebark	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
RAG	43	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	-	2`-2.5`		#5 cont.	Full Plants, 2` O.C.
RTL	26	Rhus typhina laciniata / Velvet Sumac	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
RXR	16	Rosa x `Radrazz` / Knock Out Shrub Rose	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
TM	89	Trachelospermum jasminoides 'Madison' / Madison Confederate Jasmine	-	2`-2.25`		#7 Can	Full Plants, 3` O.C.
VDM	18	Viburnum plicatum tomentosum `Mariesii` / Mariesii Double File Viburnum	-	2`-2.5`		#5 cont.	Full Plants, 3` O.C.
GROUND COVERS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT**	**SPRD.**	**CONT.**	**COMMENTS**
CP	274	Carex pensylvanica / Pennsylvania Sedge	-			1 Gal.	Full Plants, 18" O.C.
HS	151	Hosta sieboldiana `Elegans` / Elegans Plantain Lily	-			2 Gal.	Full Plants, 18" O.C.
JC	48	Juniperus conferta / Shore Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
JS	18	Juniperus chinensis var. sargentii / Sargent Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
LC	189	Lobelia cardinalis / Cardinal Flower	-			2 Gal.	Full Plants, 18" O.C.
LMB	368	Liriope muscari `Big Blue` / Big Blue Lilyturf	-			1 Gal.	Full Plants, 18" O.C.
PS	177	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-			2 Gal.	Full Plants, 24" O.C.
SH	35	Sporobolus heterolepis / Prairie Dropseed	-			2 Gal.	Full Plants, 18" O.C.

PLANT TOTALS BY CATAGORY - CONSHOHOCKEN:	
SHADE TREES:	102
EVERGREEN TREES:	84
ORNAMENTAL TREES:	32
SHRUBS:	1,444
GROUND COVER:	6,588

MASTER PLANT SCHEDULE CONSHOHOCKEN BOROUGH

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AR	27	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
GP	27	Ginkgo biloba 'Princeton Sentry' / Princeton Sentry Maidenhair Tree	2"-2.5" cal.				
GT	17	Gleditsia triacanthos f. inermis / Thornless Honey Locust	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
NS	3	Nyssa sylvatica / Sour Gum	4"-4.5" cal.	14`-16`		B&B	Full Specimens, Headed to 7`
PAB	6	Platanus x acerifolia 'Bloodgood' / Bloodgood London Plane Tree	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QP	3	Quercus palustris / Pin Oak	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
TCG	19	Tilia cordata `Greenspire` / Greenspire Littleleaf Linden	3-3.5" cal.	13`-15`		B&B	Full Specimens, Headed to 7`
EVERGREEN TREES	**QTY**	**BOTANICAL / COMMON NAME**	**CAL**	**HT.**	**SPRD.**	**CONT**	**COMMENTS**
JVB	3	Juniperus virginiana 'Brodie' / Eastern Red Cedar 'Brodie'	-	8`-10`		B&B	Full, uniform specimens, branched to the ground
PA	3	Picea abies / Norway Spruce	-	8`-10`		B&B	Heavy, well formed specimens
PM	4	Picea mariana / Black Spruce	-	8`-10`		B&B	Heavy, well formed specimens
TS	74	Thuja occidentalis 'Smaragd' / Emerald Green Arborvitae	-	6`-8`		B&B	Heavy, well formed specimens
ORNAMENTAL TREES	**QTY**	**BOTANICAL / COMMON NAME**	**CAL**	**HT.**	**SPRD.**	**CONT**	**COMMENTS**
AM	3	Amelanchier canadensis / Shadblow Serviceberry Multitrunk	-	8`-10`		B&B	Heavy, Multi-stemmed specimens, Min. 1.5" Cane Dia.
CE	3	Cercis canadensis / Eastern Redbud Multi-trunk	2-2.5" cal.			B&B	Full Specimens
PSK	26	Prunus serrulata `Kwanzan` / Kwanzan Japanese Flowering Cherry	2-2.5" cal.	10`-12`		B&B	Full Specimens
SHRUBS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT.**	**SPRD.**	**CONT.**	**COMMENTS**
AGL	64	Abelia x grandiflora `Litte Richard` / Little Richard Abelia	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
AMV	9	Aronia melanocarpa `Viking` / Viking Black Chokeberry	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
CAR	89	Clethra alnifolia `Rosea` / Pink Summersweet	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
CSB	14	Cornus stolonifera 'Baileyi' / Bailey's Red-osier Dogwood	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
HME	91	Hydrangea macrophylla `Endless Summer` TM / Endless Summer Hydrangea	-	2`-2.5`		#5 cont.	Full Plants, 3` O.C.
HQP	75	Hydrangea quercifolia `Pee Wee` / Pee Wee Oakleaf Hydrangea	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
IG	14	Ilex crenata `Green Lustre` / Green Luster Japanese Holly	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
IT	83	Itea virginica `Sprich` TM / Little Henry Virginia Sweetspire	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
IVR	18	Ilex verticillata `Red Sprite` / Red Sprite Winterberry	-	2`-2.5`		#5 Cont	Full Plants, 2.5` O.C.
LB	11	Lindera benzoin / Spicebush	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
MP	15	Morella pensylvanica / Northern Bayberry	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
PLS	11	Prunus laurocerasus `Schipkaensis` / Schipka Laurel	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
POS	11	Physocarpus opulifolius `Snowfall` / Snowfall Ninebark	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
PVS	85	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-	2.5`-3`		2 Gal.	Full Plants, 24" O.C.
RAG	176	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	-	2`-2.5`		#5 cont.	Full Plants, 2` O.C.
RXR	131	Rosa x `Radrazz` / Knock Out Shrub Rose	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
TM	487	Trachelospermum jasminoides 'Madison' / Madison Confederate Jasmine	-	2`-2.25`		#7 Can	Full Plants, 3` O.C.
SHRUB AREAS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT.**	**SPRD.**	**CONT.**	**COMMENTS**
IMC	274	Ilex x meserveae `China Girl` TM / China Girl Holly	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
GROUND COVERS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT**	**SPRD.**	**CONT.**	**COMMENTS**
BGB	138	Bouteloua gracilis `Blonde Ambition` / Blonde Ambition Blue Grama	-			2 Gal.	Full Plants, 18" O.C.
CAK	163	Calamagrostis x acutiflora `Karl Foerster` / Feather Reed Grass	-			2 Gal.	Full Plants, 18" O.C.
CP	447	Carex pensylvanica / Pennsylvania Sedge	-			1 Gal.	Full Plants, 18" O.C.
HM	245	Hakonechloa macra / Japanese Forest Grass	-			2 Gal.	Full Plants, 18" O.C.
JC	163	Juniperus conferta / Shore Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
JS	245	Juniperus chinensis var. sargentii / Sargent Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
LMB	4,803	Liriope muscari `Big Blue` / Big Blue Lilyturf	-			1 Gal.	Full Plants, 18" O.C.
NT	83	Nassella tenuissima / Texas Needle Grass	-			2 Gal.	Full Plants, 18" O.C.
PS	40	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-			2 Gal.	Full Plants, 24" O.C.

Landscape Compliance Charts and Schedules

401 Washington
Conshohocken Borough & Whitemarsh Township, PA

MBC
MELILLO-BAUER-CARMAN
LANDSCAPE ARCHITECTURE
200 Union Avenue, Belle, NJ 08730
295 Newark Avenue, Jersey City, NJ 07302
732-528-0664
www.mbcla.design
NJCA No. 21MH00001700

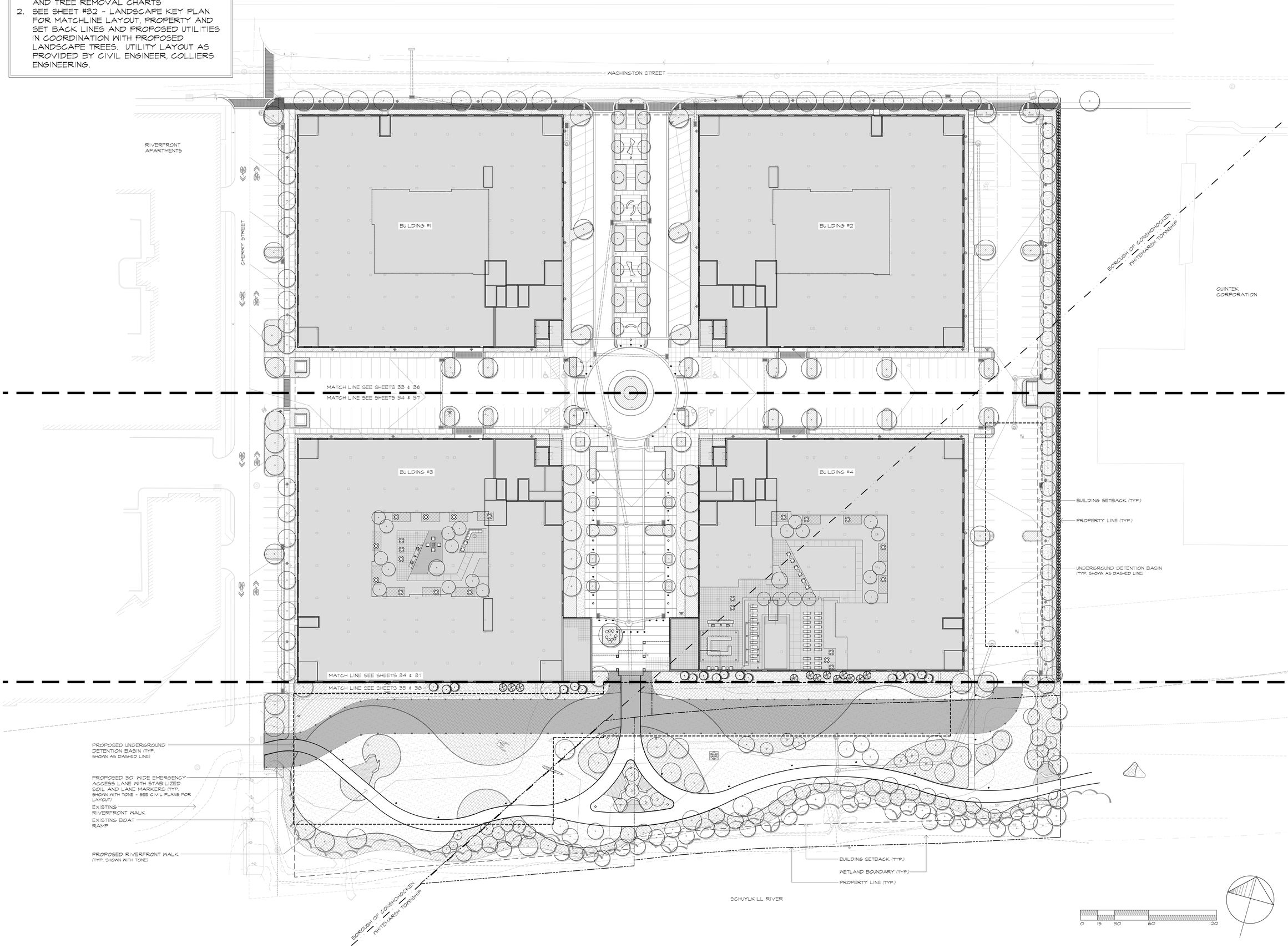
THOMAS B. BAUER
PA REGISTERED LANDSCAPE ARCHITECT #LA007236

NO.	DATE	REVISION
2	5/20/2022	REV.PER REVIEW COMMENTS
1	3/31/2022	REV.PER UPDATED TREE SURVEY

SCALE: AS NOTED
DATE: 02-24-2022 JOB NO.: 21-167

DRAWING NO.
31 of 41

NOTES:
1. SEE SHEET #31 - "LANDSCAPE COMPLIANCE CHARTS" FOR LANDSCAPE REQUIREMENT AND TREE REMOVAL CHARTS
2. SEE SHEET #32 - LANDSCAPE KEY PLAN FOR MATCHLINE LAYOUT, PROPERTY AND SET BACK LINES AND PROPOSED UTILITIES IN COORDINATION WITH PROPOSED LANDSCAPE TREES. UTILITY LAYOUT AS PROVIDED BY CIVIL ENGINEER, COLLIERS ENGINEERING.



Landscape Key Plan

401 Washington

Conshohocken Borough & Whitemarsh Township, PA

MBC
MELILLO-BAUER-CARMAN
LANDSCAPE ARCHITECTURE
200 Union Avenue, Brielle, NJ 08730
295 Newark Avenue, Jersey City, NJ 07302
732-528-0664
www.mbcla.design
NJCA No. 21AH00001700

THOMAS B. BAUER
PA REGISTERED LANDSCAPE ARCHITECT
#000723E

NO.	DATE	REVISION
2	5/20/2022	REV PER REVIEW COMMENTS
1	3/31/2022	REV PER UPDATED TREE SURVEY

SCALE:

DATE: 02-24-2022 JOB NO.: 21-167

DRAWING NO.

32 of 41

NOTES:
1. SEE SHEET #31 - "LANDSCAPE COMPLIANCE CHARTS" FOR LANDSCAPE REQUIREMENT AND TREE REMOVAL CHARTS
2. SEE SHEET #32 - LANDSCAPE KEY PLAN FOR MATCHLINE LAYOUT, PROPERTY AND SET BACK LINES AND PROPOSED UTILITIES IN COORDINATION WITH PROPOSED LANDSCAPE TREES. UTILITY LAYOUT AS PROVIDED BY CIVIL ENGINEER, COLLIERS ENGINEERING.

PLANT SCHEDULE CONSHOHOCKEN BOROUGH L-101 LANDSCAPE SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AR	12	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
GP	19	Ginkgo biloba 'Princeton Sentry' / Princeton Sentry Maidenhair Tree	2"-2.5" cal.				
GT	6	Gleditsia triacanthos f. inermis / Thornless Honey Locust	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
PAB	3	Platanus x acerifolia 'Bloodgood' / Bloodgood London Plane Tree	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
TCG	19	Tilia cordata `Greenspire` / Greenspire Littleleaf Linden	3-3.5" cal.	13`-15`		B&B	Full Specimens, Headed to 7`

EVERGREEN TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
TS	74	Thuja occidentalis 'Smaragd' / Emerald Green Arborvitae	-	6`-8`		B&B	Heavy, well formed specimens

ORNAMENTAL TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
CE	1	Cercis canadensis / Eastern Redbud Multi-trunk	2-2.5" cal.			B&B	Full Specimens
PSK	16	Prunus serrulata `Kwanzan` / Kwanzan Japanese Flowering Cherry	2-2.5" cal.	10`-12`		B&B	Full Specimens

SHRUBS	QTY	BOTANICAL / COMMON NAME	CAL.	HT.	SPRD.	CONT.	COMMENTS
AGL	42	Abelia x grandiflora `Litte Richard` / Little Richard Abelia	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
CAR	80	Clethra alnifolia `Rosea` / Pink Summersweet	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
HME	71	Hydrangea macrophylla `Endless Summer` TM / Endless Summer Hydrangea	-	2`-2.5`		#5 cont.	Full Plants, 3` O.C.
HQP	36	Hydrangea quercifolia `Pee Wee` / Pee Wee Oakleaf Hydrangea	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
IG	14	Ilex crenata `Green Lustre` / Green Luster Japanese Holly	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
IT	56	Itea virginica `Sprich` TM / Little Henry Virginia Sweetspire	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
IVR	9	Ilex verticillata `Red Sprite` / Red Sprite Winterberry	-	2`-2.5`		#5 Cont	Full Plants, 2.5` O.C.
POS	38	Physocarpus opulifolius `Snowfall` / Snowfall Ninebark	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
PVS	85	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-	2.5`-3`		2 Gal.	Full Plants, 24" O.C.
RAG	115	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	-	2`-2.5`		#5 cont.	Full Plants, 2` O.C.
RXR	86	Rosa x `Radrazz` / Knock Out Shrub Rose	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
TM	290	Trachelospermum jasminoides 'Madison' / Madison Confederate Jasmine	-	2`-2.25`		#7 Can	Full Plants, 3` O.C.

GROUND COVERS	QTY	BOTANICAL / COMMON NAME	CAL.	HT	SPRD.	CONT.	COMMENTS
BGB	138	Bouteloua gracilis `Blonde Ambition` / Blonde Ambition Blue Grama	-			2 Gal.	Full Plants, 18" O.C.
CAK	85	Calamagrostis x acutiflora `Karl Foerster` / Feather Reed Grass	-			2 Gal.	Full Plants, 18" O.C.
CP	101	Carex pensylvanica / Pennsylvania Sedge	-			1 Gal.	Full Plants, 18" O.C.
HM	202	Hakonechloa macra / Japanese Forest Grass	-			2 Gal.	Full Plants, 18" O.C.
JC	116	Juniperus conferta / Shore Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
JS	220	Juniperus chinensis var. sargentii / Sargent Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
LMB	3,215	Liriope muscari `Big Blue` / Big Blue Lilyturf	-			1 Gal.	Full Plants, 18" O.C.
NT	83	Nassella tenuissima / Texas Needle Grass	-			2 Gal.	Full Plants, 18" O.C.
SH	269	Sporobolus heterolepis / Prairie Dropseed	-			2 Gal.	Full Plants, 18" O.C.

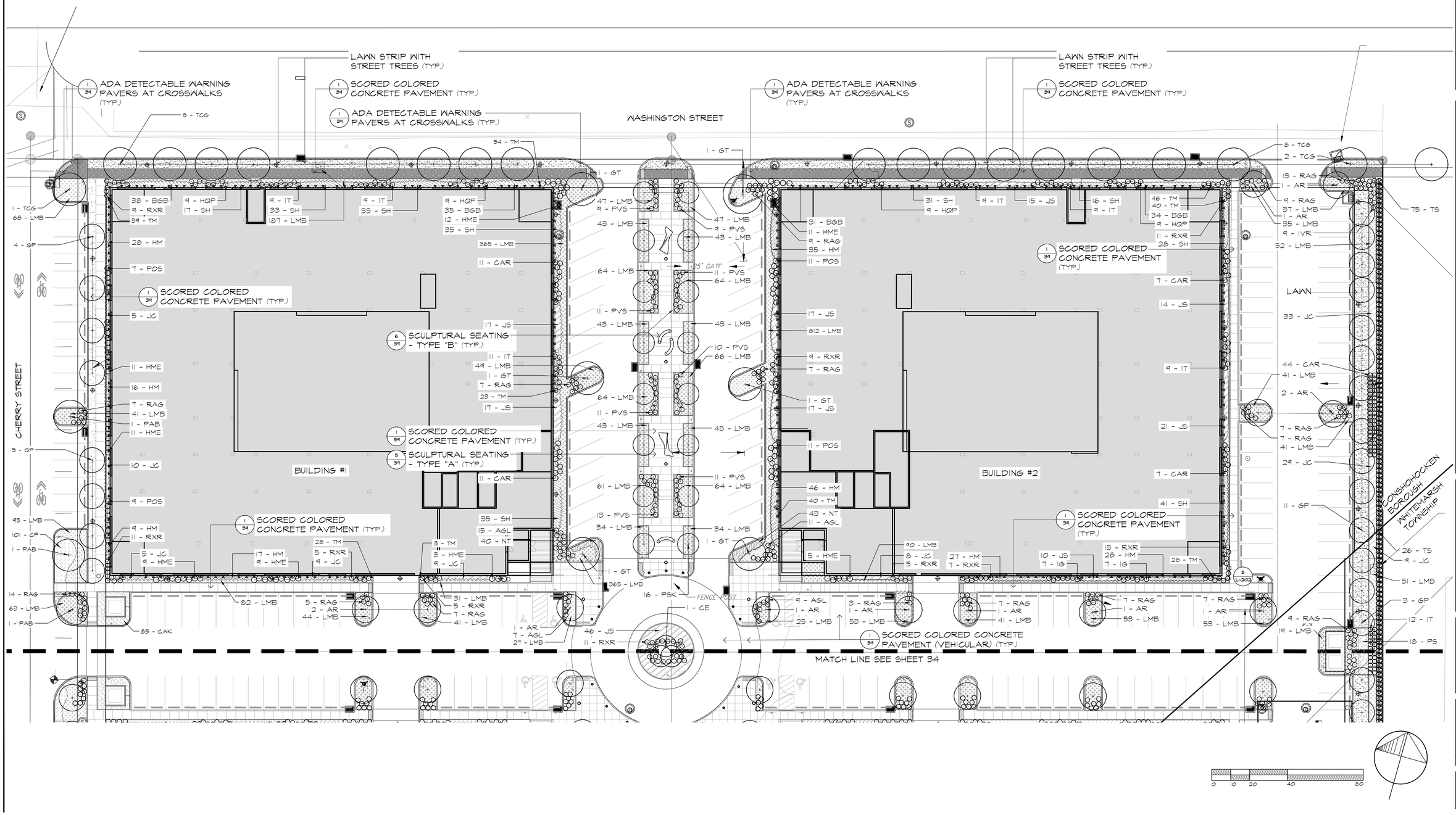
PLANT SCHEDULE WHITEMARSH TOWNSHIP L-101 LANDSCAPE SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
GP	3	Ginkgo biloba 'Princeton Sentry' / Princeton Sentry Maidenhair Tree	2"-2.5" cal.				

EVERGREEN TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
TS	26	Thuja occidentalis 'Smaragd' / Emerald Green Arborvitae	-	6`-8`		B&B	Heavy, well formed specimens

SHRUBS	QTY	BOTANICAL / COMMON NAME	CAL.	HT.	SPRD.	CONT.	COMMENTS
IT	12	Itea virginica `Sprich` TM / Little Henry Virginia Sweetspire	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
RAG	9	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	-	2`-2.5`		#5 cont.	Full Plants, 2` O.C.

GROUND COVERS	QTY	BOTANICAL / COMMON NAME	CAL.	HT	SPRD.	CONT.	COMMENTS
JC	9	Juniperus conferta / Shore Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
LMB	87	Liriope muscari `Big Blue` / Big Blue Lilyturf	-			1 Gal.	Full Plants, 18" O.C.
PS	18	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-			2 Gal.	Full Plants, 24" O.C.



Landscape Plan

401 Washington
Conshohocken Borough & Whitemarsh Township, PA

MBC
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LANDSCAPE ARCHITECTURE
200 Union Avenue, Belle, NJ 08730
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NJCA No. 21MH00001700

THOMAS B. BAUER
COMMONWEALTH OF PENNSYLVANIA
REGISTERED LANDSCAPE ARCHITECT
PA REGISTERED LANDSCAPE ARCHITECT
#LA001724

NO.	DATE	REVISION
2	5/20/2022	REV. PER REVIEW COMMENTS
1	5/31/2022	REV. PER UPDATED TREE SURVEY

SCALE: 1" = 20'-0"
DATE: 02-24-2022 JOB NO.: 21-167

DRAWING NO.
33 of 41

NOTES:
1. SEE SHEET #31 - "LANDSCAPE COMPLIANCE CHARTS" FOR LANDSCAPE REQUIREMENT AND TREE REMOVAL CHARTS
2. SEE SHEET #32 - LANDSCAPE KEY PLAN FOR MATCHLINE LAYOUT, PROPERTY AND SET BACK LINES AND PROPOSED UTILITIES IN COORDINATION WITH PROPOSED LANDSCAPE TREES. UTILITY LAYOUT AS PROVIDED BY CIVIL ENGINEER, COLLIERS ENGINEERING.

AmenityDeck_Plant List

KEY	QTY	BOTANICAL NAME	COMMON NAME	CAL.	HT.	SPRD.	ROOT	COMMENTS
		TREES						
BN		Betula nigra 'Heritage'	Heritage River Birch		10'-12'		B&B	Full Specimens, 3 Trunk Minimum
CC		Cercis canadensis "Forest Pansy"	Forest Pansy Eastern Redbud	2.5"-3"			B&B	Full Specimens, Single Stem
LM		Lagerstroemia indica x fauriei 'Muskogee'	Muskogee Crape Myrtle		10'-12'		B&B	Full Specimens, 3 Trunk Minimum
		SHRUBS						
CHP		Cephalotaxus harringtonia 'Prostrata	Prostrata Plum Yew		18"-24"		#5 Can	Full Plants, 2' O.C.
JS		Juniperus sargenti	Sargent Juniper			18"-24"	#3 Can	Full Plants, 2' O.C.
RRS		Rosa ragosa 'Snow Pavement'	Snow Pavement Japanese Shore Rose		18"-24"		#3 Can	Full Plants, 2.5' O.C.
RA		Rhus aromatica 'Gro-Lo'	Fragrant Sumac		24"		#3 Can	Native, Full Plants, 2' O.C.
		PERENNIALS, GROUNDCOVER & ORNAMENTAL GRASSES						
AH		Amsonia hubrichtii	Arkansas Amsonia				3 Gal.	Full Plants, 18" O.C.
CAK		Calamagrostis arund. 'Karl Foerster'	K. F. Feather Reed Grass				3 Gal.	Full Plants, 2' O.C.
HO		Helleborus Orientalis 'Ro.zl Heritage'	Ro.zl Heritage Lenten Rose				2 Gal.	Full Plants, 18" O.C.
EAB		Eh.mus arenarius 'Blue Dune'	Blue Dune Lime Grass				3 Gal.	Full Plants, 18" O.C.
IS		Iris sibirica 'Caesar's Brother'	Purple Siberian Iris				2 Gal.	Full Plants, 18" O.C.
LS		Liriope spicata	Creeping Liriope		12"		1 Gal.	Adapted, Full Plants, 12" O.C.
PVS		Panicum virgatum 'Shenandoah'	Shenandoah Switchgrass				3 Gal.	Full Plants, 2' O.C.

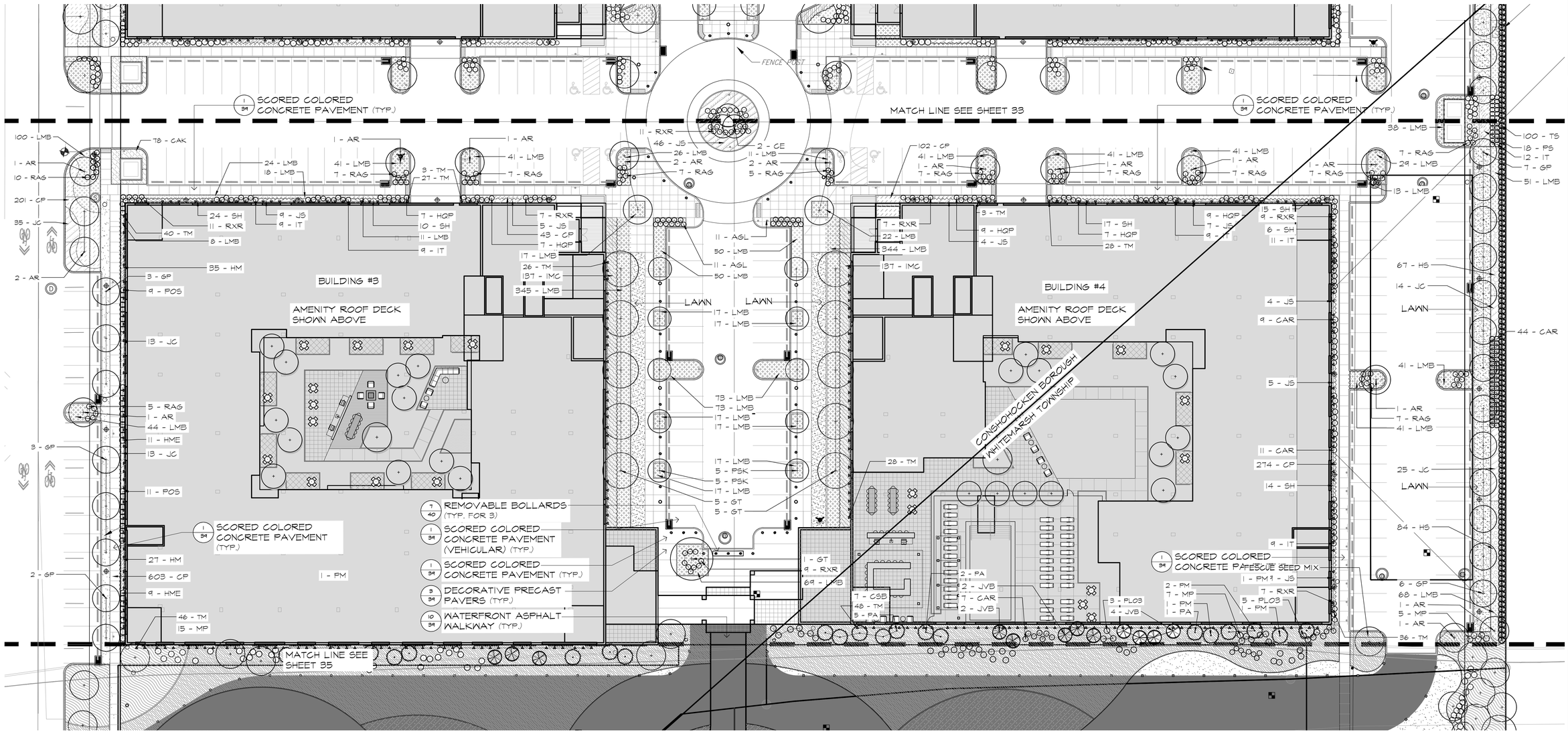
NOTE:
PROPOSED PLANTING SHALL INCLUDE BUT NOT BE LIMITED TO THE ABOVE LISTED VARIETIES.

PLANT SCHEDULE CONSHOHOCKEN BOROUGH L-102 LANDSCAPE SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AR	13	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
GP	8	Ginkgo biloba 'Princeton Sentry' / Princeton Sentry Maidenhair Tree	2"-2.5" cal.				
GT	11	Gleditsia triacanthos f. inermis / Thornless Honey Locust	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QP	1	Quercus palustris / Pin Oak	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
ORNAMENTAL TREES	**QTY**	**BOTANICAL / COMMON NAME**	**CAL**	**HT.**	**SPRD.**	**CONT**	**COMMENTS**
CE	2	Cercis canadensis / Eastern Redbud Multi-trunk	2-2.5" cal.			B&B	Full Specimens
PSK	10	Prunus serrulata `Kwanzan` / Kwanzan Japanese Flowering Cherry	2-2.5" cal.	10`-12`		B&B	Full Specimens
SHRUBS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT.**	**SPRD.**	**CONT.**	**COMMENTS**
AGL	22	Abelia x grandiflora `Litte Richard` / Little Richard Abelia	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
CSB	1	Cornus stolonifera 'Baileyi' / Bailey's Red-osier Dogwood	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
HME	20	Hydrangea macrophylla `Endless Summer` TM / Endless Summer Hydrangea	-	2`-2.5`		#5 cont.	Full Plants, 3` O.C.
HQP	39	Hydrangea quercifolia `Pee Wee` / Pee Wee Oakleaf Hydrangea	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
IT	27	Itea virginica `Sprich` TM / Little Henry Virginia Sweetspire	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
POS	20	Physocarpus opulifolius `Snowfall` / Snowfall Ninebark	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
RAG	61	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	-	2`-2.5`		#5 cont.	Full Plants, 2` O.C.
RXR	45	Rosa x `Radrazz` / Knock Out Shrub Rose	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
TM	151	Trachelospermum jasminoides 'Madison' / Madison Confederate Jasmine	-	2`-2.25`		#7 Can	Full Plants, 3` O.C.
SHRUB AREAS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT.**	**SPRD.**	**CONT.**	**COMMENTS**
IMC	274	Ilex x meserveae `China Girl` TM / China Girl Holly	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
GROUND COVERS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT**	**SPRD.**	**CONT.**	**COMMENTS**
CAK	78	Calamagrostis x acutiflora `Karl Foerster` / Feather Reed Grass	-			2 Gal.	Full Plants, 18" O.C.
CP	346	Carex pensylvanica / Pennsylvania Sedge	-			1 Gal.	Full Plants, 18" O.C.
HM	43	Hakonechloa macra / Japanese Forest Grass	-			2 Gal.	Full Plants, 18" O.C.
JC	56	Juniperus conferta / Shore Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
JS	25	Juniperus chinensis var. sargentii / Sargent Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
LMB	1,588	Liriope muscari `Big Blue` / Big Blue Lilyturf	-			1 Gal.	Full Plants, 18" O.C.
SH	51	Sporobolus heterolepis / Prairie Dropseed	-			2 Gal.	Full Plants, 18" O.C.

PLANT SCHEDULE WHITEMARSH TOWNSHIP L-102 LANDSCAPE SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AR	4	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
GP	13	Ginkgo biloba 'Princeton Sentry' / Princeton Sentry Maidenhair Tree	2"-2.5" cal.				
QP	1	Quercus palustris / Pin Oak	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
EVERGREEN TREES	**QTY**	**BOTANICAL / COMMON NAME**	**CAL**	**HT.**	**SPRD.**	**CONT**	**COMMENTS**
JVB	9	Juniperus virginiana 'Brodie' / Eastern Red Cedar 'Brodie'	-	8`-10`		B&B	Full, uniform specimens, branched to the ground
PA	8	Picea abies / Norway Spruce	-	8`-10`		B&B	Heavy, well formed specimens
PM	5	Picea mariana / Black Spruce	-	8`-10`		B&B	Heavy, well formed specimens
TS	101	Thuja occidentalis 'Smaragd' / Emerald Green Arborvitae	-	6`-8`		B&B	Heavy, well formed specimens
SHRUBS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT.**	**SPRD.**	**CONT.**	**COMMENTS**
CAR	71	Clethra alnifolia `Rosea` / Pink Summersweet	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
CSB	6	Cornus stolonifera 'Baileyi' / Bailey's Red-osier Dogwood	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
IT	32	Itea virginica `Sprich` TM / Little Henry Virginia Sweetspire	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
MP	12	Morella pensylvanica / Northern Bayberry	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
PLO3	8	Prunus laurocerasus `Otto Luyken` / Otto Luyken Laurel	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
RAG	28	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	-	2`-2.5`		#5 cont.	Full Plants, 2` O.C.
RXR	16	Rosa x `Radrazz` / Knock Out Shrub Rose	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
TM	89	Trachelospermum jasminoides 'Madison' / Madison Confederate Jasmine	-	2`-2.25`		#7 Can	Full Plants, 3` O.C.
GROUND COVERS	**QTY**	**BOTANICAL / COMMON NAME**	**CAL.**	**HT**	**SPRD.**	**CONT.**	**COMMENTS**
CP	274	Carex pensylvanica / Pennsylvania Sedge	-			1 Gal.	Full Plants, 18" O.C.
HS	151	Hosta sieboldiana `Elegans` / Elegans Plantain Lily	-			2 Gal.	Full Plants, 18" O.C.
JC	39	Juniperus conferta / Shore Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
JS	18	Juniperus chinensis var. sargentii / Sargent Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
LMB	281	Liriope muscari `Big Blue` / Big Blue Lilyturf	-			1 Gal.	Full Plants, 18" O.C.
PS	36	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-			2 Gal.	Full Plants, 24" O.C.
SH	35	Sporobolus heterolepis / Prairie Dropseed	-			2 Gal.	Full Plants, 18" O.C.



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401 Washington
Conshohocken Borough & Whitemarsh Township, PA

Landscape Plan

MBC
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LANDSCAPE ARCHITECTURE
200 Union Avenue, Belville, NJ 08730
295 Newark Avenue, Jersey City, NJ 07302
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THOMAS B. BAUER
COMMONWEALTH OF PENNSYLVANIA
REGISTERED LANDSCAPE ARCHITECT
PA REGISTERED LANDSCAPE ARCHITECT
RA007236

NO.	DATE	REVISION
2	5/20/2022	REV PER REVIEW COMMENTS
1	3/31/2022	REV PER UPDATED TREE SURVEY

SCALE: 1" = 20'-0"
DATE: 02-24-2022 JOB NO.: 21-167

DRAWING NO.
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NOTES:

1. SEE SHEET #31 - "LANDSCAPE COMPLIANCE CHARTS" FOR LANDSCAPE REQUIREMENT AND TREE REMOVAL CHARTS
2. SEE SHEET #32 - LANDSCAPE KEY PLAN FOR MATCHLINE LAYOUT, PROPERTY AND SET BACK LINES AND PROPOSED UTILITIES IN COORDINATION WITH PROPOSED LANDSCAPE TREES. UTILITY LAYOUT AS PROVIDED BY CIVIL ENGINEER, COLLIERS ENGINEERING.

PLANT SCHEDULE CONSHOHOCKEN BOROUGH L-103 LANDSCAPE SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AR	2	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
NS	3	Nyssa sylvatica / Sour Gum	4"-4.5" cal.	14`-16`		B&B	Full Specimens, Headed to 7`
PAB	3	Platanus x acerifolia 'Bloodgood' / Bloodgood London Plane Tree	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QP	2	Quercus palustris / Pin Oak	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`

EVERGREEN TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
JVB	3	Juniperus virginiana 'Brodie' / Eastern Red Cedar 'Brodie'	-	8`-10`		B&B	Full, uniform specimens, branched to the ground
PA	3	Picea abies / Norway Spruce	-	8`-10`		B&B	Heavy, well formed specimens
PM	4	Picea mariana / Black Spruce	-	8`-10`		B&B	Heavy, well formed specimens

ORNAMENTAL TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AM	3	Amelanchier canadensis / Shadblow Serviceberry Multitrunk	-	8`-10`		B&B	Heavy, Multi-stemmed specimens, Min. 1.5" Cane Dia.

SHRUBS	QTY	BOTANICAL / COMMON NAME	CAL.	HT.	SPRD.	CONT.	COMMENTS
AMV	9	Aronia melanocarpa `Viking` / Viking Black Chokeberry	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
CAR	9	Clethra alnifolia `Rosea` / Pink Summersweet	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
CSB	13	Cornus stolonifera 'Baileyi' / Bailey's Red-osier Dogwood	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
IVR	9	Ilex verticillata `Red Sprite` / Red Sprite Winterberry	-	2`-2.5`		#5 Cont	Full Plants, 2.5` O.C.
LB	11	Lindera benzoin / Spicebush	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
MP	15	Morella pensylvanica / Northern Bayberry	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
PLS	11	Prunus laurocerasus `Schipkaensis` / Schipka Laurel	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
POS	13	Physocarpus opulifolius `Snowfall` / Snowfall Ninebark	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
TM	46	Trachelospermum jasminoides 'Madison' / Madison Confederate Jasmine	-	2`-2.25`		#7 Can	Full Plants, 3` O.C.

GROUND COVERS	QTY	BOTANICAL / COMMON NAME	CAL.	HT	SPRD.	CONT.	COMMENTS
PS	43	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-			2 Gal.	Full Plants, 24" O.C.

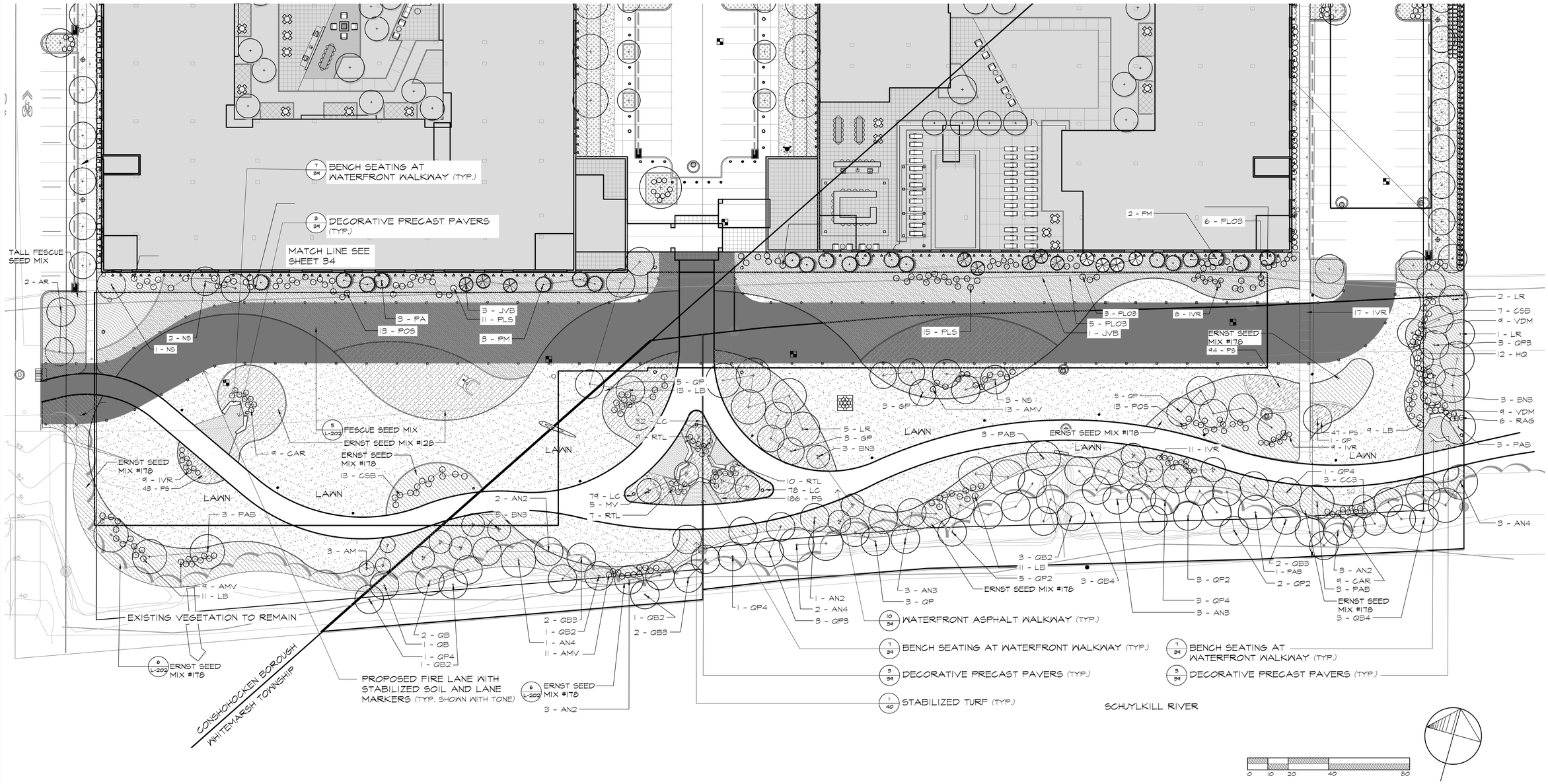
PLANT SCHEDULE WHITEMARSH TOWNSHIP L-103 LANDSCAPE SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AN2	9	Acer rubrum 'Red Sunset' / Red Sunset Maple	4"-4.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
AN3	6	Acer rubrum 'Red Sunset' / Red Sunset Maple	5"-5.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
AN4	6	Acer rubrum 'Red Sunset' / Red Sunset Maple	6"-6.5"	15`-17`		B&B	Full Specimens, Headed to 7`
AR	3	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
GP	6	Ginkgo biloba 'Princeton Sentry' / Princeton Sentry Maidenhair Tree	2"-2.5" cal.				
LR	5	Liquidambar styraciflua `Rotundiloba` TM / Round-Lobed Sweet Gum	3-3.5" cal.	14`-16`		B&B	Full Specimens, Headed to 7`
NS	3	Nyssa sylvatica / Sour Gum	4"-4.5" cal.	14`-16`		B&B	Full Specimens, Headed to 7`
PAB	8	Platanus x acerifolia 'Bloodgood' / Bloodgood London Plane Tree	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QB	3	Quercus bicolor / Swamp White Oak	3"-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QB2	6	Quercus bicolor / Swamp White Oak	4"-4.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QB3	6	Quercus bicolor / Swamp White Oak	5"-5.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
QB4	6	Quercus bicolor / Swamp White Oak	6"-6.5"	15`-17`		B&B	Full Specimens, Headed to 7`
QP	11	Quercus palustris / Pin Oak	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
QP2	10	Quercus palustris / Pin Oak	4"-4.5" cal.	13`-15`		B&B	Full Specimens, Headed to 7`
QP3	6	Quercus palustris / Pin Oak	5"-5.5" cal.	15`-17`		B&B	Full Specimens, Headed to 7`
QP4	6	Quercus palustris / Pin Oak	6"-6.5"	15`-17`		B&B	Full Specimens, Headed to 7`

ORNAMENTAL TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
BN3	11	Betula nigra / River Birch Multi-Trunk	3.5-4" cal.	16`-18`		B&B	Full Specimens, 3 trunk minimum
CC3	3	Cercis canadensis / Eastern Redbud	3-3.5" cal.			B&B	Full Specimens
MV	8	Magnolia virginiana / Sweet Bay	-	8`-10`		B&B	Heavy, Multi-stemmed specimens, Min. 1.5" Cane I

SHRUBS	QTY	BOTANICAL / COMMON NAME	CAL.	HT.	SPRD.	CONT.	COMMENTS
AMV	24	Aronia melanocarpa `Viking` / Viking Black Chokeberry	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
CAR	9	Clethra alnifolia `Rosea` / Pink Summersweet	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
CSB	7	Cornus stolonifera 'Baileyi' / Bailey's Red-osier Dogwood	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
HQ	12	Hydrangea quercifolia `Snow Queen` / Snow Queen Oakleaf Hydrangea	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
IVR	28	Ilex verticillata `Red Sprite` / Red Sprite Winterberry	-	2`-2.5`		#5 Cont	Full Plants, 2.5` O.C.
LB	33	Lindera benzoin / Spicebush	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
PLO3	9	Prunus laurocerasus `Otto Luyken` / Otto Luyken Laurel	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
PLS	15	Prunus laurocerasus `Schipkaensis` / Schipka Laurel	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
POS	13	Physocarpus opulifolius `Snowfall` / Snowfall Ninebark	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
RAG	6	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	-	2`-2.5`		#5 cont.	Full Plants, 2` O.C.
RTL	26	Rhus typhina laciniata / Velvet Sumac	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
VDM	18	Viburnum plicatum tomentosum `Mariesii` / Mariesii Double File Viburnum	-	2`-2.5`		#5 cont.	Full Plants, 3` O.C.

GROUND COVERS	QTY	BOTANICAL / COMMON NAME	CAL.	HT	SPRD.	CONT.	COMMENTS
LC	189	Lobelia cardinalis / Cardinal Flower	-			2 Gal.	Full Plants, 18" O.C.
PS	141	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-			2 Gal.	Full Plants, 24" O.C.



Landscape Plan

401 Washington

Conshohocken Borough & Whitemarsh Township, PA

MBC
MELILLO-BAUER-CARMAN
LANDSCAPE ARCHITECTURE
200 Union Avenue, Belelle, NJ 08730
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NJCA No. 21MH00001700

THOMAS B. BAUER
COMMONWEALTH OF PENNSYLVANIA
REGISTERED LANDSCAPE ARCHITECT
PA REGISTERED LANDSCAPE ARCHITECT #600072.E

NO.	DATE	REVISION
2	5/20/2022	REV PER REVIEW COMMENTS
1	3/31/2022	REV PER UPDATED TREE SURVEY

SCALE: 1" = 20'-0"

DATE: 02-24-2022 JOB NO.: 21-167

DRAWING NO.

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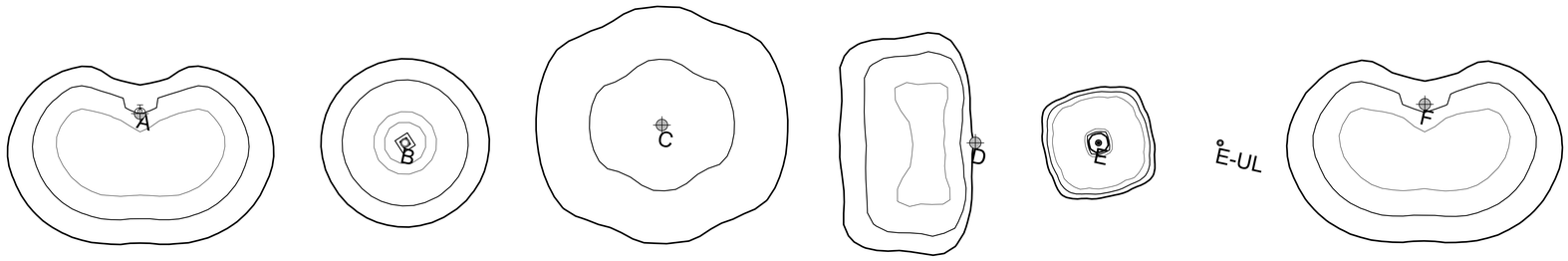


LIGHT FIXTURE "A": POLE / BUILDING MOUNTED SITE LIGHT
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "B": LIGHT COLUMN SITE LIGHT
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "C": LANDSCAPE POLE MOUNTED SITE LIGHT
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "D": LANDSCAPE POLE MOUNTED SITE LIGHT
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "E": LANDSCAPE BOLLARD LIGHT
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "E-UL": LANDSCAPE BOLLARD (NON-LIT)
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "F": LANDSCAPE POLE MOUNTED SITE LIGHT
SCALE: 1/16" = 1'-0"

NOTES:
1. SEE SHEET #31 - "LANDSCAPE COMPLIANCE CHARTS" FOR LANDSCAPE REQUIREMENT AND TREE REMOVAL CHARTS
2. SEE SHEET #32 - LANDSCAPE KEY PLAN FOR MATCHLINE LAYOUT, PROPERTY AND SET BACK LINES AND PROPOSED UTILITIES IN COORDINATION WITH PROPOSED LANDSCAPE TREES. UTILITY LAYOUT AS PROVIDED BY CIVIL ENGINEER, COLLIERS ENGINEERING.

1/36 LIGHT ISOLUX PATTERNS
SCALE: AS NOTED

OVERALL LIGHTING SCHEDULE

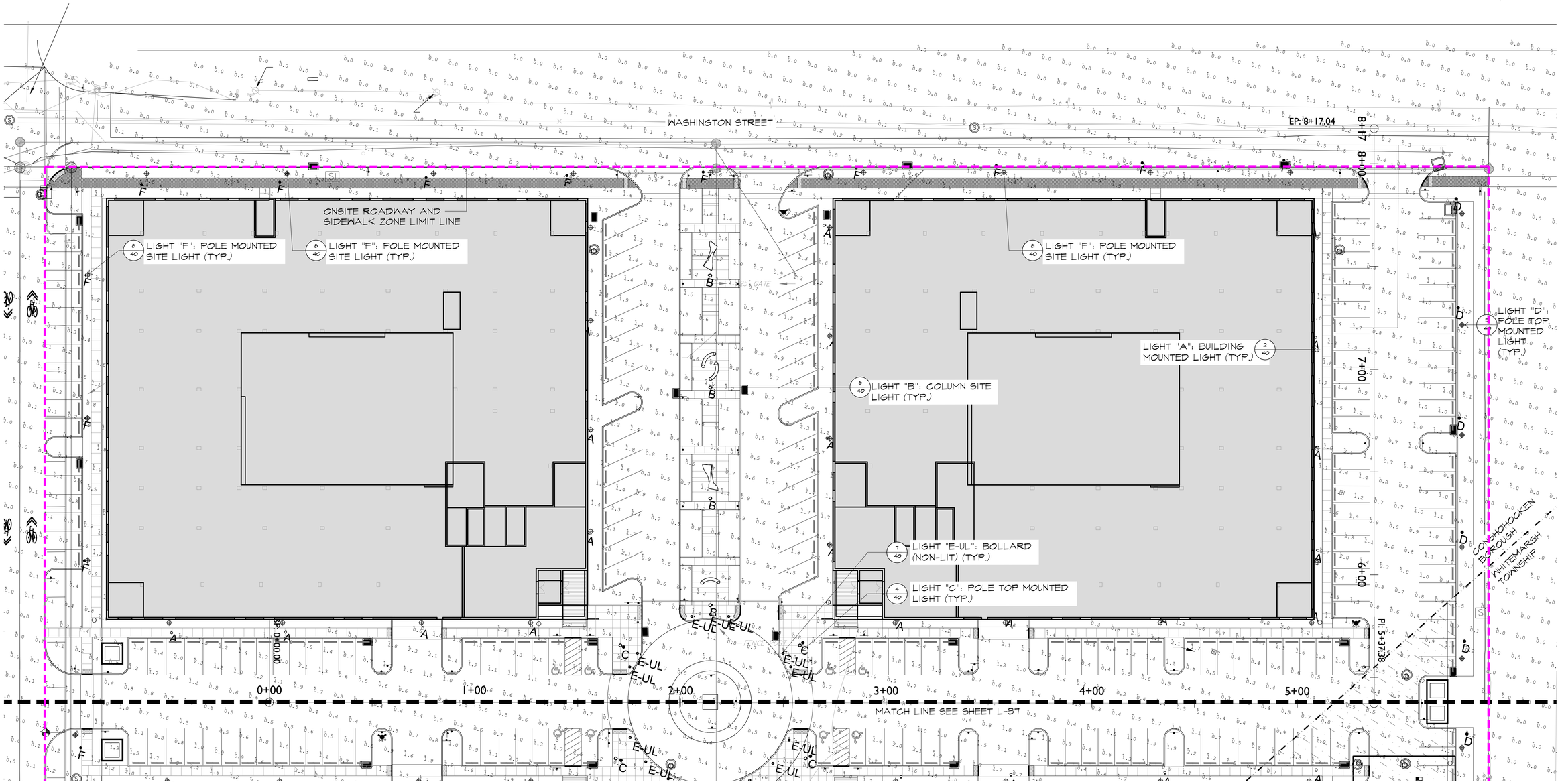
Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
OFFSITE	Illuminance	Fc	0.05	1.8	0.0	N.A.	N.A.
ONSITE ROADWAY AND SIDWALK	Illuminance	Fc	1.02	6.2	0.0	N.A.	N.A.
RIVER WALKWAY	Illuminance	Fc	0.34	4.1	0.0	N.A.	N.A.

Diversified NJ Luminaire Schedule

Qty	Type	Arrangement	Symbol	Manufacturer	Light Fixture	CCT	Lum. Lumens	LLF	Lum. Watts	Pole / Bracket	Mounting AFG (FT)
32	A	Single		KIM LIGHTNG	URZ0-96L-30-3K8-3-VOLTS-WB-COLOR-R56	3000k	3369	0.880	28.2	WALL MOUNTED @ 13' AFG	13
14	B	Single		WE-EF USA	115-1780 300-0949 VOLTS COLOR R56	3000K	2031	0.880	20	13' COLUM LIGHT	13, 15
10	C	Single		Kim Lighting	FM URZ0 24L-25 3K8 9W VOLTS FMA4 COLOR R56	3000K	2879	0.880	25	PRA13-4188-FM-COLOR-R56	13, 15
10	D	Single		Kim Lighting	FM URZ0 24L-25 3K8 4W VOLTS FMA4 COLOR R56	3000K	1809	0.880	26	PRA13-4188-FM-COLOR-R56	15
17	E	Single		KIM LIGHTNG	PATR CT NU-5 12L-020 3K7 44IRB-S20 COLOR VOLTS R56	3000k	1841	0.880	21.73	LIGHTED IMPACT RATED BOLLARD AT 44" AFG	3.5, 3.6
36	E-UL	Single		KIM LIGHTNG	PATR CT NU-5 12L-020 3K7 44IRB-B COLOR VOLTS R56	3000k	1841	0.010	0	NON LIT IMPACT RATED BOLLARD AT 44" AFG REMOVABLE WHERE NEEDED	3.5, 3.6
16	F	Single		KIM LIGHTNG	FM URZ0-96L-30-3K8-3-VOLTS-WB-COLOR-R56	3000K	3369	0.880	28.2	PRA13-4188-FM-COLOR-R56	13

0 10 20 40 80



Lighting Plan

401 Washington

Conshohocken Borough & Whitemarsh Township, PA

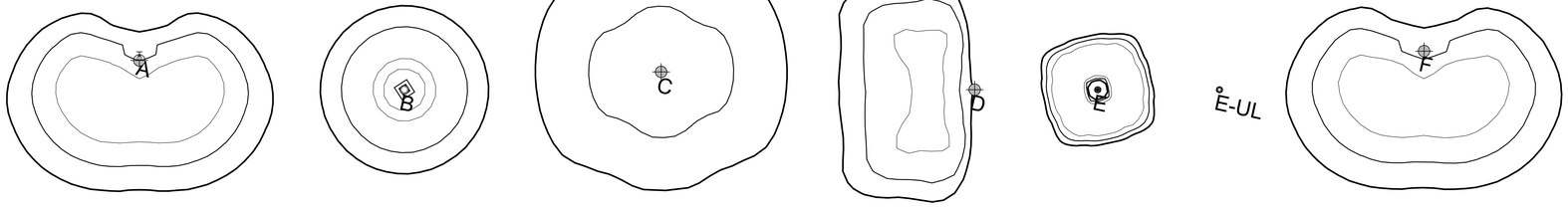
MBC
MELILLO-BAUER-CARMAN
LANDSCAPE ARCHITECTURE
200 Union Avenue, Belalle, NJ 08730
295 Newark Avenue, Jersey City, NJ 07302
732-528-0664
www.mbcla.design
NJCA No. 21MH00001700

THOMAS B. BAUER
PA REGISTERED LANDSCAPE ARCHITECT
#LA002725E

NO.	DATE	REVISION
2	5/20/2022	REV.PER REVIEW COMMENTS
1	3/31/2022	REV.PER UPDATED TREE SURVEY

SCALE: 1" = 20'-0"
DATE: 02-24-2022 JOB NO.: 21-167

DRAWING NO.
36 of 41



LIGHT FIXTURE "A": POLE / BUILDING MOUNTED SITE LIGHT
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "B": LIGHT COLUMN SITE LIGHT
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "C": LANDSCAPE POLE MOUNTED SITE LIGHT
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "D": LANDSCAPE POLE MOUNTED SITE LIGHT
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "E": LANDSCAPE BOLLARD LIGHT
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "E-UL": LANDSCAPE BOLLARD (NON-LIT)
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "F": LANDSCAPE POLE MOUNTED SITE LIGHT
SCALE: 1/16" = 1'-0"

NOTES:
1. SEE SHEET #31 - "LANDSCAPE COMPLIANCE CHARTS" FOR LANDSCAPE REQUIREMENT AND TREE REMOVAL CHARTS
2. SEE SHEET #32 - LANDSCAPE KEY PLAN FOR MATCHLINE LAYOUT, PROPERTY AND SET BACK LINES AND PROPOSED UTILITIES IN COORDINATION WITH PROPOSED LANDSCAPE TREES. UTILITY LAYOUT AS PROVIDED BY CIVIL ENGINEER, COLLIERS ENGINEERING.

1/36 LIGHT ISOLUX PATTERNS
SCALE: AS NOTED

OVERALL LIGHTING SCHEDULE

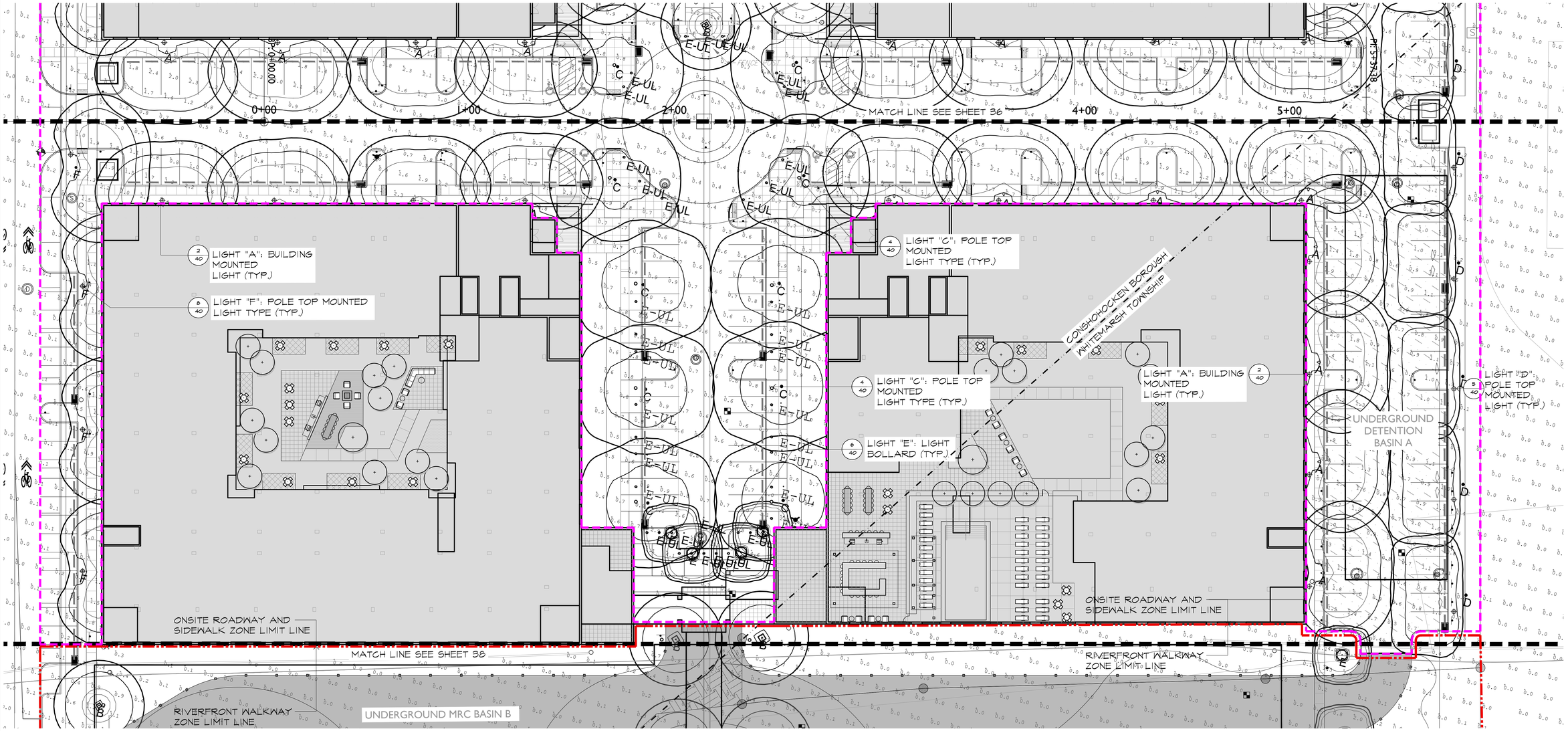
Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
OFFSITE	Illuminance	Fc	0.05	1.8	0.0	N.A.	N.A.
ONSITE ROADWAY AND SIDWALK	Illuminance	Fc	1.02	6.2	0.0	N.A.	N.A.
RIVER WALKWAY	Illuminance	Fc	0.34	4.1	0.0	N.A.	N.A.

Diversified NJ Luminaire Schedule

Qty	Type	Arrangement	Symbol	Manufacturer	Light Fixture	CCT	Lum. Lumens	LLF	Lum. Watts	Pole / Bracket	Mounting AFG (FT)
32	A	Single		KIM LIGHTING	URO9-96L-30-3K6-3-VOLTS-WB-COLOR-R56	3000k	3369	0.880	28.2	WALL MOUNTED @ 13' AFG	13
14	B	Single		WE-EF USA	115-1780 300-0949 VOLTS COLOR R56	3000K	2031	0.880	20	13' COLUM LIGHT	13, 15
10	C	Single		Kim Lighting	FM UR20 24L-25 3K8 9W VOLTS FM44 COLOR R56	3000K	2879	0.880	25	PRA13-4188-FM-COLOR-R56	13, 15
10	D	Single		Kim Lighting	FM UR20 24L-25 3K8 4W VOLTS FM44 COLOR R56	3000K	1809	0.880	26	PRA13-4188-FM-COLOR-R56	15
17	E	Single		KIM LIGHTING	PA7R CT NU-5 12L-020 3K7 44RB-S20 COLOR VOLTS R56	3000k	1841	0.880	21.73	LIGHTED IMPACT RATED BOLLARD AT 44" AFG	3.5, 3.6
36	E-UL	Single		KIM LIGHTING	PA7R CT NU-5 12L-020 3K7 44RB-B COLOR VOLTS R56	3000k	1841	0.010	0	NON LIT IMPACT RATED BOLLARD AT 44" AFG REMOVABLE WHERE NEEDED	3.5, 3.6
16	F	Single		KIM LIGHTING	FM UR20-96L-30-3K8-3-VOLTS-WB-COLOR-R56	3000k	3369	0.880	28.2	PRA13-4188-FM-COLOR-R56	13

0 10 20 40 80



Lighting Plan

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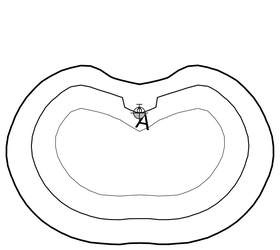
#LA000723E

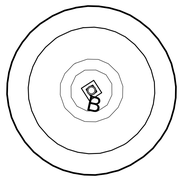
NO.	DATE	REVISION
2	5/20/2022	REV PER REVIEW COMMENTS
1	3/31/2022	REV PER UPDATED TREE SURVEY

SCALE: 1" = 20'-0"
DATE: 02-24-2022 JOB NO.: 21-167

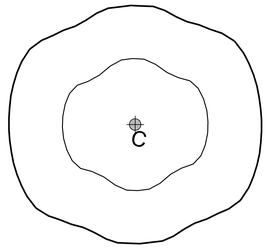
DRAWING NO.
37 of 41



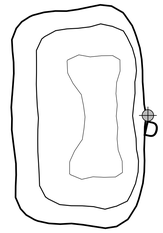
LIGHT FIXTURE "A": POLE / BUILDING MOUNTED SITE LIGHT
SCALE: 1/16" = 1'-0"



LIGHT FIXTURE "B": LIGHT COLUMN SITE LIGHT
SCALE: 1/16" = 1'-0"



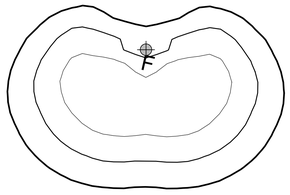
LIGHT FIXTURE "C": LANDSCAPE POLE MOUNTED SITE LIGHT
SCALE: 1/16" = 1'-0"



LIGHT FIXTURE "D": LANDSCAPE POLE MOUNTED SITE LIGHT
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "E": LANDSCAPE BOLLARD LIGHT
SCALE: 1/16" = 1'-0"

LIGHT FIXTURE "E-UL": LANDSCAPE BOLLARD (NON-LIT)
SCALE: 1/16" = 1'-0"



LIGHT FIXTURE "F": LANDSCAPE POLE MOUNTED SITE LIGHT
SCALE: 1/16" = 1'-0"

NOTES:
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1/36 LIGHT ISOLUX PATTERNS
SCALE: AS NOTED

OVERALL LIGHTING SCHEDULE

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
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RIVER WALKWAY	Illuminance	Fc	0.34	4.1	0.0	N.A.	N.A.

Diversified NJ Luminaire Schedule

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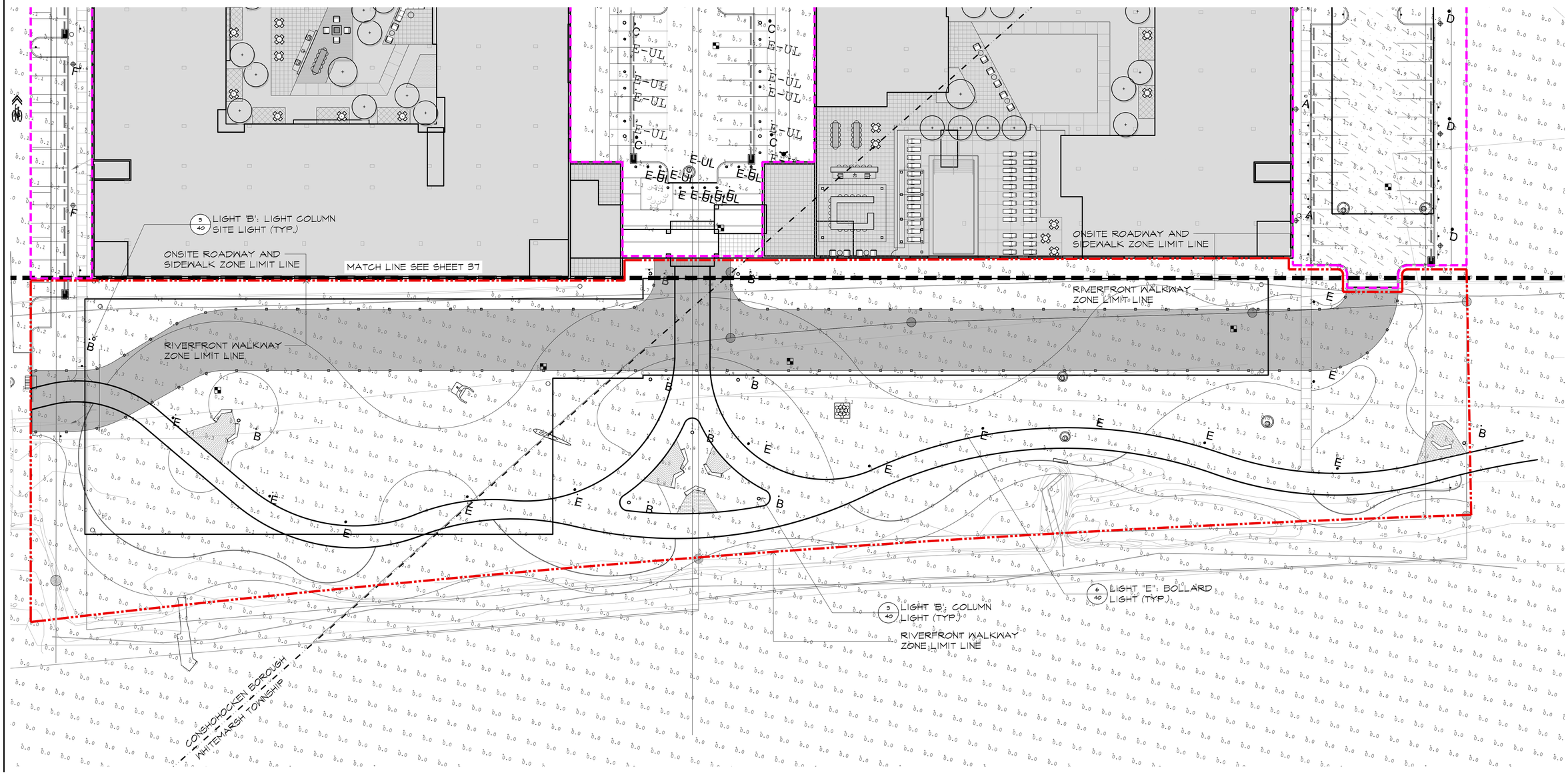
36	E-UL	Single		KIM LIGHTING	PA7R CT NU-5 12L-020 3K7 44IRB-B COLOR VOLTS R56	3000k	1841	0.010	0	NON LIT IMPACT RATED BOLLARD AT 44" AFG REMOVABLE WHERE NEEDED	3.5, 3.6
16	F	Single		KIM LIGHTING	FM UR20-96L-30-3K8-3-VOLTS-WB-COLOR-R56	3000k	3369	0.880	28.2	PRA13-4188-FM-COLOR-R56	13

0 10 20 40 80



Lighting Plan

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REGISTERED LANDSCAPE ARCHITECT
PA REGISTERED LANDSCAPE ARCHITECT
RA007125E

NO.	DATE	REVISION
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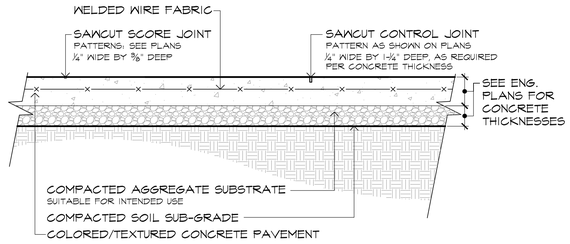
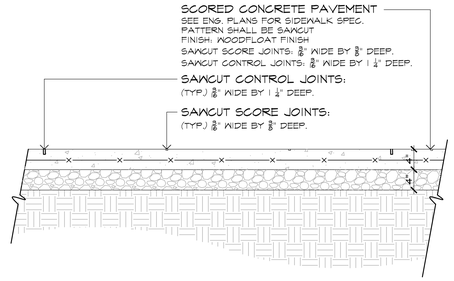
1	3/31/2022	REV PER UPDATED TREE SURVEY

SCALE: 1" = 20'-0"
DATE: 02-24-2022 JOB NO.: 21-167

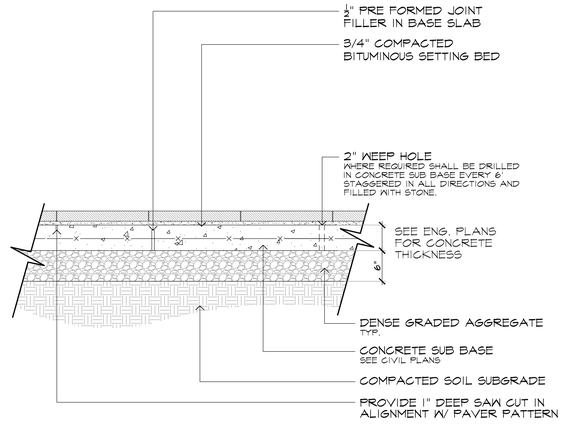
DRAWING NO.
38 of 41



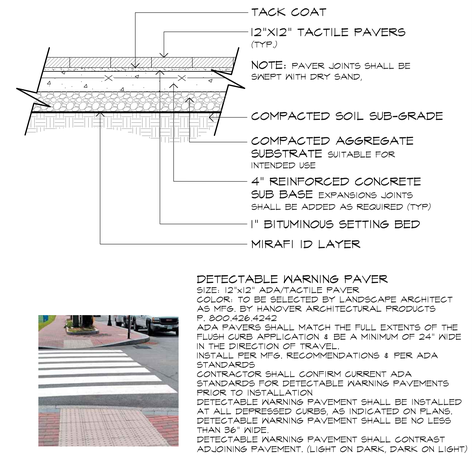
1 / 39 DETAIL: COLORED SCORED CONCRETE PAVEMENT 1"=1'-0"



2 / 39 DETAIL: COLORED SCORED CONCRETE PAVEMENT 1"=1'-0"

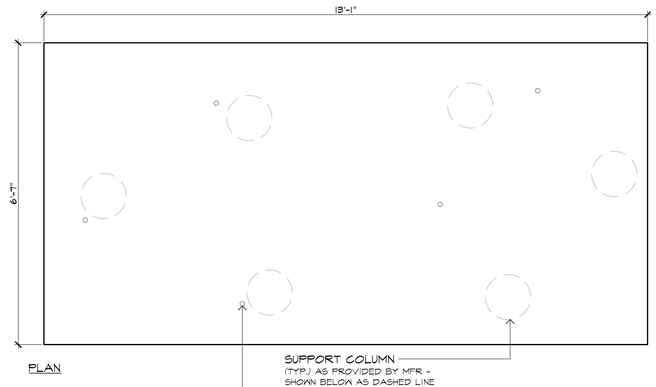


3 / 39 DETAIL: DECORATIVE PRECAST CONCRETE PAVERS 1"=1'-0"

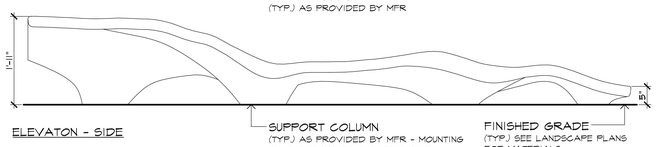


DETECTABLE WARNING PAVER
SIZE: 12"x12" ADA/TACTILE PAVER
COLOR: TO BE SELECTED BY LANDSCAPE ARCHITECT
AS MFG. BY HANOVER ARCHITECTURAL PRODUCTS
P. 800.426.4242
ADA PAVERS SHALL MATCH THE FULL EXTENTS OF THE FLUSH CURB APPLICATION & BE A MINIMUM OF 24" WIDE IN THE DIRECTION OF TRAVEL.
INSTALL PER MFG. RECOMMENDATIONS & PER ADA STANDARDS
CONTRACTOR SHALL CONFIRM CURRENT ADA STANDARDS FOR DETECTABLE WARNING PAVEMENTS PRIOR TO INSTALLATION
DETECTABLE WARNING PAVEMENT SHALL BE INSTALLED AT ALL DEPRESSED CURBS, AS INDICATED ON PLANS.
DETECTABLE WARNING PAVEMENT SHALL BE NO LESS THAN 36" WIDE.
DETECTABLE WARNING PAVEMENT SHALL CONTRAST ADJOINING PAVEMENT. (LIGHT ON DARK, DARK ON LIGHT)

4 / 39 DETAIL: ADA DECTABLE WARNING PAVERS 1"=1'-0"



PLAN

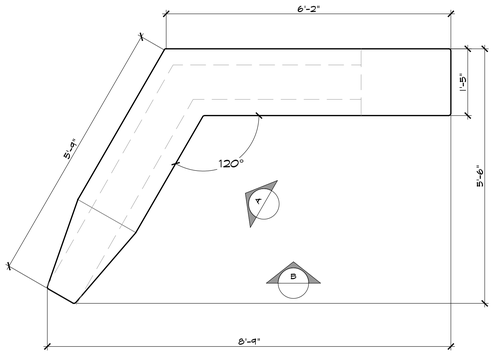


ELEVATON - SIDE

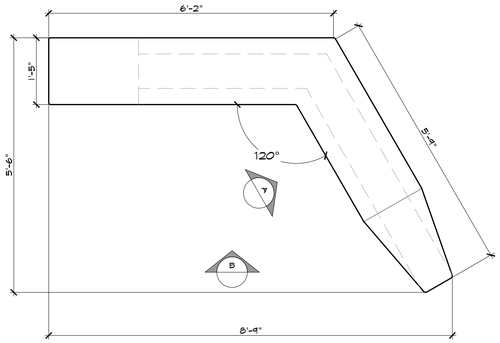
PRODUCT PHOTO

SCULPTURAL SEATING - TYPE "A":
MODEL: LUNGO MARE MODULE "A"
MOUNTING: SURFACE
COLOR: TO BE SELECTED BY L.A.
FINISH: TO BE SELECTED BY L.A.
AS MFG. BY
ESCOFET / LANDSCAPE FORMS, INC.
P. 800.521.2546 | WWW.LANDSCAPEFORMS.COM
(OR APPROVED EQUAL)

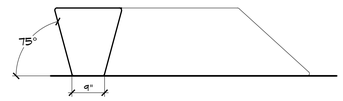
5 / 39 DETAIL: SCULPTURAL SEATING - TYPE "A" 3/4"=1'-0"



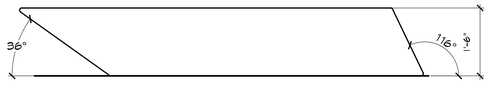
PLAN - RIGHT



PLAN - LEFT



ELEVATION "A"
(TYP.) MIRRORED FOR LEFT AND RIGHT UNITS

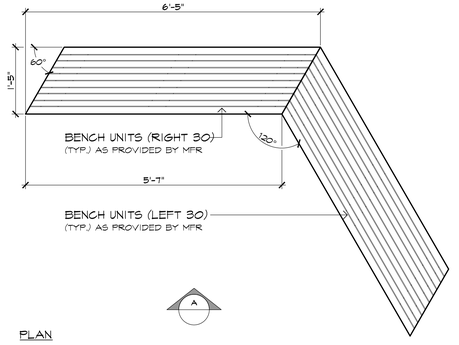


ELEVATION "B"
(TYP.) MIRRORED FOR LEFT AND RIGHT UNITS

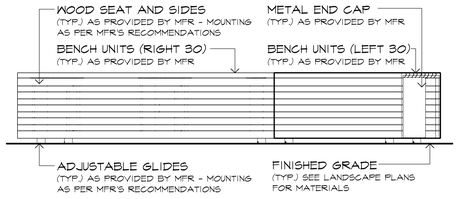
PRODUCT PHOTO

SCULPTURAL SEATING - TYPE "B":
MODEL: MILENIO (ANGLED LEFT AND RIGHT UNITS
MOUNTING: SURFACE
COLOR: TO BE SELECTED BY L.A.
FINISH: TO BE SELECTED BY L.A.
AS MFG. BY
ESCOFET / LANDSCAPE FORMS, INC.
P. 800.521.2546 | WWW.LANDSCAPEFORMS.COM
(OR APPROVED EQUAL)

6 / 39 DETAIL: SCULPTURAL SEATING - TYPE "B" 3/4"=1'-0"



PLAN



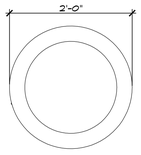
ELEVATION

PRODUCT PHOTO

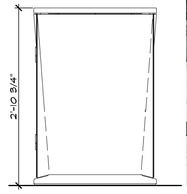
WATERFRONT SEATING:
MODEL: PARALLEL 42
(LEFT 30 AND RIGHT 30 UNITS)
MOUNTING: SURFACE
COLOR: TO BE SELECTED BY L.A.
FINISH: TO BE SELECTED BY L.A.
AS MFG. BY
ESCOFET / LANDSCAPE FORMS, INC.
P. 800.521.2546 | WWW.LANDSCAPEFORMS.COM
(OR APPROVED EQUAL)

7 / 39 DETAIL: BENCH SEATING AT WATERFRONT WALKWAY 3/4"=1'-0"

PRODUCT PHOTO:
LOCK DETAIL



TOP VIEW



SIDE VIEW

PRODUCT PHOTO

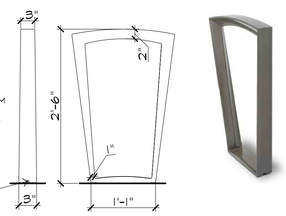
TRASH / RECYCLE RECEPTACLES
MODEL: AUSTIN
COLOR: TO BE SELECTED BY L.A.
MFG BY: LANDSCAPE FORMS, INC.
P: 1 800.521.2546
7800 E. MICHIGAN AVE.,
KALAMAZOO, MI 49048

8 / 39 DETAIL: TRASH / RECYCLE RECEPTACLES 1"=1'-0"

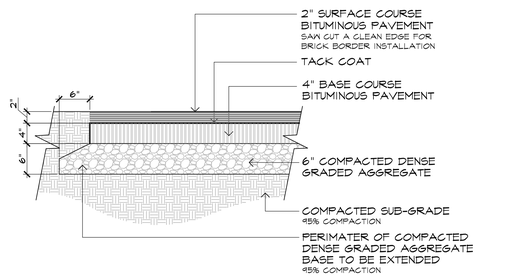
BIKE RACK
MODEL: EMERSON
SURFACE MOUNT
AS MFG. BY LANDSCAPE FORMS, INC.
P. 800.430.6204 |
WWW.LANDSCAPEFORMS.COM
(OR APPROVED EQUAL)

NOTES:
1. UNIT MUST BE ANCHORED - MINIMUM 4" CONCRETE SLAB
2. BIKE RACKS SHALL BE INSTALLED PER MFG. SPECIFICATIONS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND SAMPLES FOR APPROVAL PRIOR TO CONSTRUCTION.

SET SCREW FOR SECURING COVER PLATE



9 / 39 DETAIL: BIKE RACK 1"=1'-0"



10 / 39 DETAIL: WATERFRONT ASPHALT WALKWAY 1"=1'-0"

Site Details

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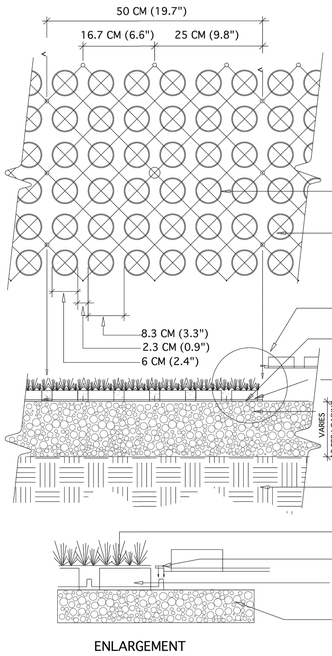
NO.	DATE	REVISION
2	5/20/2022	REV.PER REVIEW COMMENTS
1	3/31/2022	REV.PER UPDATED TREE SURVEY

SCALE: AS SHOWN
DATE: 02-24-2022 JOB NO.: 21-167

DRAWING NO.
39 of 41



SPECIFICATIONS

UNIT SIZE - 50 CM X 50 CM X 2.5 CM OR 1 M X 1 M X 2.5 CM
(20" X 20" X 1" OR 40" X 40" X 1")
AVAILABLE IN 9 STANDARD ROLL SIZES

UNIT WEIGHT - 510 GRAMS (18 OZ.)
OR 2.0 KG (4.5 POUNDS)
STRENGTH - 1121 KG/CM²(15,940 PSI)

COLOR - BLACK

RESIN - 100% RECYCLED HDPE

PLAN

GRASSPAVE2 SQUARES

ADJACENT GRASSPAVE2 UNITS

SEE ENLARGEMENT BELOW

HYDROGROW MIX BELOW RING
SUPPLIED FREE BY MANUFACTURER

RINGS FILLED WITH CONCRETE SAND (CLEAN, SHARP SAND)

COMPACTED SANDY GRAVEL ROAD BASE
95% MODIFIED PROCTOR DENSITY
- 6 INCHES TO 12 INCHES
(DEPTH OF BASE COURSE TO BE
DETERMINED BY ON-SITE ENGINEER)
– SEE FULL TECHNICAL SPECIFICATIONS FOR COMPOSITION

COMPACTED SUBGRADE,

SECTION

TOP OF GRASS ROOT MASS 6 MM
(1/4") ABOVE TOP OF RING

GRASSPAVE2 ATTACH WITH
SNAP-FIT FASTENERS

RINGS FILLED WITH CONCRETE SAND (CLEAN, SHARP SAND)

COMPACTED SANDY GRAVEL
BASE COURSE
– SEE FULL TECHNICAL SPECIFICATIONS FOR COMPOSITION

ENLARGEMENT

NOTE: GRASS/PLANT TYPES SHALL BE SPECIFIED BY A LANDSCAPE ARCHITECT OR LANDSCAPE DESIGNER.

TYPICAL GRASSPAVE2 DETAIL

1
1 OF 1

CHOOSE THIS PRODUCT FOR REINFORCING GRASS WEARING SURFACES

NOT TO SCALE

Invisible Structures, Inc.
GPDET18.DWG

NOTE:
RINGS TO BE FILLED WITH CONCRETE SAND
& LOAM MIX
- 80% SAND
- 20% LOAM
COMPACTED GRAVEL COMPOSITION
- 1 PART SAND
- 2 PARTS STONE
- STONE TO BE ¾" PLUS FINES
GRASS PAVERS TO BE PLANTED WITH FINE FESCUE SOD
SEE DETAIL 2/L-400 FOR SOD INSTALLATION GUIDELINES

16265 E. 33RD DR., SUITE 20
AURORA, COLORADO 80011
800-233-1510 OR 303-233-8383
FAX: 800-233-1522 OR
303-233-8282
www.invisiblestructures.com
rev. 1/18

1/40 DETAIL: STABILIZED LAWN
NOT TO SCALE

(A) BUILDING MOUNTED AREA LIGHT
MODEL: OURO - UR20 SERIES
MODEL #: UR20-96L-30-3K8-3-VOLTS-NB-COLOR-R56
FINISH: (BMT) BLACK MATTE TEXTURED
TEMPERATURE: 3000K
MOUNTING TYPE: WALL BRACKET
MOUNTING HT.: 13' AFG
AS MFG. BY
KIM LIGHTING
P: 626-968-5666
WWW.HUBBELL.COM/KIMLIGHTING/

INSTALL PER MFG. RECOMMENDATIONS

(OR APPROVED EQUAL)

2/40 DETAIL: LIGHTING "TYPE "A" - WALL MOUNTED AREA LIGHT
NOT TO SCALE

(B) COLUMN LIGHT
MODEL: LTM 400 - 115-1780
MODEL #: 115-1780-300-0949-VOLTS-COLOR-R56
FINISH: (RAL9005) BLACK
TEMPERATURE: 3000K
MOUNTING TYPE: COLUMN LIGHT 13'
MOUNTING HT.: 15'
FIXTURE HT.: 9.6'
AS MFG. BY
NE-EF LIGHTING USA LLC
P: 724-742-0030
WWW.NE-EF.COM

INSTALL PER MFG. RECOMMENDATIONS

(OR APPROVED EQUAL)

3/40 DETAIL: LIGHTING TYPE "B" - LIGHT COLUMN
NOT TO SCALE

(C) POLE MOUNTED AREA LIGHT
MODEL: OURO - UR20 SERIES
MODEL #: FM UR20-24L-25-3K8-5W-VOLTS-FM44-COLOR-R56
FINISH: (BMT) BLACK MATTE TEXTURED
TEMPERATURE: 3000K
MOUNTING TYPE: PRA13-4188-FM-COLOR-R56
MOUNTING HT.: 13' + 15' (SEE PLAN FOR LOCATIONS)
AS MFG. BY
KIM LIGHTING
P: 626-968-5666
WWW.HUBBELL.COM/KIMLIGHTING/

INSTALL PER MFG. RECOMMENDATIONS

(OR APPROVED EQUAL)

4/40 DETAIL: LIGHTING "TYPE "C" - POLE MOUNTED AREA LIGHT
NOT TO SCALE

(D) POLE MOUNTED AREA LIGHT
MODEL: OURO - UR20 SERIES
MODEL #: FM UR20-24L-25-3K8-4W-VOLTS-FM44-COLOR-R56
FINISH: (BMT) BLACK MATTE TEXTURED
TEMPERATURE: 3000K
MOUNTING TYPE: PRA13-4188-FM-COLOR-R56
MOUNTING HT.: 15'
AS MFG. BY
KIM LIGHTING
P: 626-968-5666
WWW.HUBBELL.COM/KIMLIGHTING/

INSTALL PER MFG. RECOMMENDATIONS

(OR APPROVED EQUAL)

5/40 DETAIL: LIGHTING "TYPE "D" - POLE MOUNTED AREA LIGHT
NOT TO SCALE

(E) BOLLARD LIGHT
MODEL: PAVILION
MODEL #: PATR-GT-NU-5-12L-020-3KT-44IRB-S20-COLOR-VOLTS-R56
FINISH: (BMT) BLACK MATTE TEXTURED
TEMPERATURE: 3000K
MOUNTING TYPE: IMPACT RATED BOLLARD
BOLLARD HT.: 44" AFG
AS MFG. BY
KIM LIGHTING
P: 626-968-5666
WWW.HUBBELL.COM/KIMLIGHTING/

INSTALL PER MFG. RECOMMENDATIONS

(OR APPROVED EQUAL)

6/40 DETAIL: LIGHTING "TYPE "E" - BOLLARD LIGHT
NOT TO SCALE

(E-UL) BOLLARD - UN-LIT
MODEL: PAVILION
MODEL #: PATR-GT-NU-5-12L-020-3KT-44IRB-B-COLOR-VOLTS-R56
FINISH: (BMT) BLACK MATTE TEXTURED
TEMPERATURE: N/A
MOUNTING TYPE: IMPACT RATED BOLLARD
BOLLARD HT.: 44" AFG
AS MFG. BY
KIM LIGHTING
P: 626-968-5666
WWW.HUBBELL.COM/KIMLIGHTING/

INSTALL PER MFG. RECOMMENDATIONS

(OR APPROVED EQUAL)

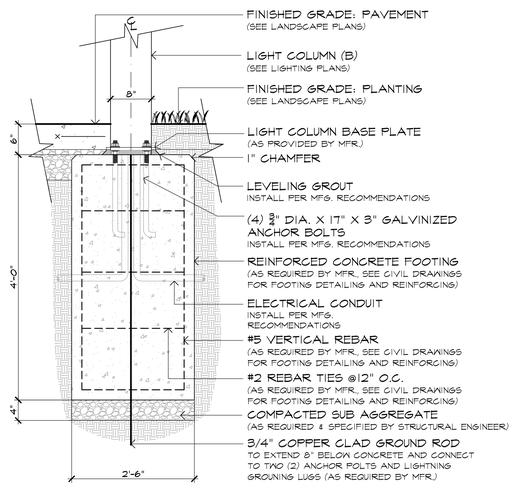
7/40 DETAIL: LIGHTING "TYPE "E-UL" - BOLLARD (UN-LIT)
NOT TO SCALE

(F) POLE MOUNTED AREA LIGHT
MODEL: OURO - UR20 SERIES
MODEL #: FM UR20-96L-30-3K8-3-VOLTS-NB-COLOR-R56
FINISH: (BMT) BLACK MATTE TEXTURED
TEMPERATURE: 3000K
MOUNTING TYPE: PRA13-4188-FM-COLOR-R56
MOUNTING HT.: 13'
AS MFG. BY
KIM LIGHTING
P: 626-968-5666
WWW.HUBBELL.COM/KIMLIGHTING/

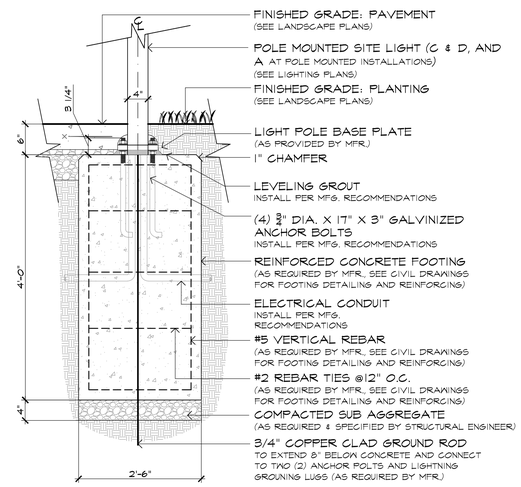
INSTALL PER MFG. RECOMMENDATIONS

(OR APPROVED EQUAL)

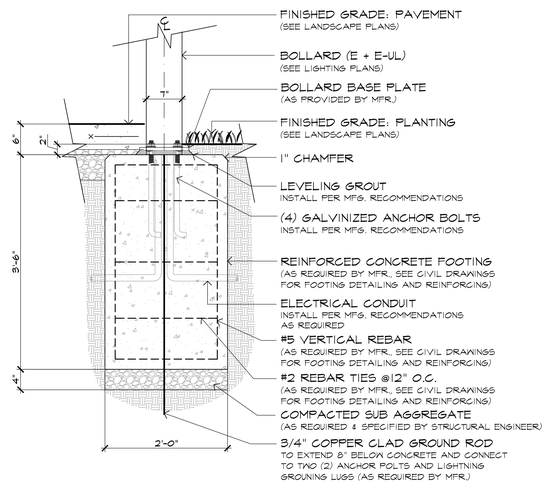
8/40 DETAIL: LIGHTING "TYPE "F" - POLE MOUNTED AREA LIGHT
NOT TO SCALE



9/40 DETAIL: COLUMN LIGHT TYPE "B" FOOTING DETAIL
SCALE: 1"=1'-0"



10/40 DETAIL: POLE MOUNTED SITE LIGHT TYPES "C + D" FOOTING DETAIL
SCALE: 1"=1'-0"



11/40 DETAIL: LIGHT AND UNLIT BOLLARD TYPES "E + E-UL" FOOTING DETAIL
SCALE: 1"=1'-0"

Site Details

401 Washington
Conshohocken Borough & Whitemarsh Township, PA

MBC
MELILLO-BAUER-CARMAN
LANDSCAPE ARCHITECTURE
200 Union Avenue
Belle, NJ
08730
295 Newark Avenue
Jersey City, NJ
07302
732-528-0664
www.mbcla.design
NJCA No. 21MH00001700

THOMAS B. BAUER
PA REGISTERED LANDSCAPE ARCHITECT
#LA007235E

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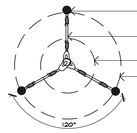
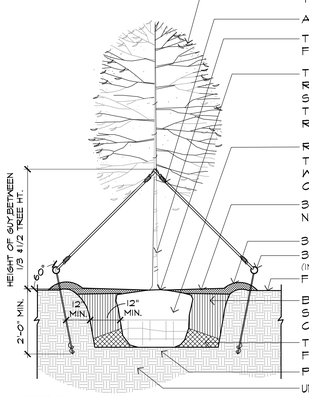


30" ARBOR TIE STEEL EYE STAKES
(INSTALL PER MFG. SPECIFICATIONS)
ARBOR TIE
(INSTALL AND TIE PER MFG. SPECIFICATIONS)
TREE BALL
TREE PIT

NOTES:
-DISTANCE OF STAKES APPROXIMATELY EQUAL TO HEIGHT OF ATTACHMENT.
-WHEN PLANTING ON SLOPES, PLACE SINGLE STAKE DOWNHILL, AND TWO STAKES UPHILL.

PLAN



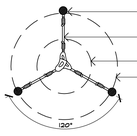
PRUNE DAMAGED AND CONFLICTING BRANCHES MAINTAINING NORMAL TREE SHAPE. NEVER CUT CENTRAL TRUNK OR LEADER AND DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.
ARBOR TIE
TREE WRAP - WRAP TREE WITH BREATHABLE FABRIC FROM TRUNK FLARE TO THE FIRST BRANCH. SECURE WITH BIO-DEGRADABLE TAPE
THE TRUNK FLARE OF EACH TREE SHALL BE VISIBLE AT THE TOP OF THE ROOT BALL. IF NURSERY GRADE IS ABOVE THE FLARE THE CONTRACTOR SHALL CAREFULLY EXCAVATE THE TOP OF THE ROOT BALL TO EXPOSE THE TRUNK FLARE. TREES WHOSE TRUNK FLARE IS NOT VISIBLE SHALL BE REJECTED. DO NOT COVER THE THE TOP OF THE ROOT BALL WITH SOIL.
REMOVE ALL ROPE FROM TRUNK AND TOP OF BALL. REMOVE BURLAP FROM THE TOP (HALF) ½ OF THE ROOT BALL. WHEN A WIRE BASKET IS PRESENT THE WIRE BASKET SHALL BE REMOVED FROM THE TOP HALF OF THE ROOT BALL OR AS MUCH AS POSSIBLE TO PRESERVE THE INTEGRITY OF THE ROOT BALL.
3" SHREDDED HARDWOOD BARK MULCH, UNIFORMLY SPREAD. MULCH SHALL NOT BE IN CONTACT WITH THE TRUNK OF THE TREE
3" SAUCER RIM
30" ARBOR TIE STEEL EYE STAKE, 3 PER TREE
(INSTALL PER MFG. SPECIFICATIONS)
FINISH GRADE
BACKFILL MIXTURE, SHALL BE A THOROUGHLY MIXED BLEND OF TOPSOIL & SOIL AMENDMENTS. AMENDMENTS SHALL BE ADDED AS RECOMMENDED BY A CERTIFIED SOIL TEST. AIR POCKETS SHALL REMOVED FROM BACKFILL.
TAMP SOIL AROUND ROOT BALL BASE FIRMLY TO PREVENT THE ROOT BALL FROM SHIFTING.
PLACE ROOT BALL ON UNEXCAVATED OR TAMPED SOIL.
UNDISTURBED GRADE

SECTION

NOTES:
-CONTRACTOR SHALL PARTIALLY FILL WITH WATER A REPRESENTATIVE NUMBER OF PITS IN EACH AREA OF THE PROJECT PRIOR TO PLANTING TO DETERMINE IF THERE IS ADEQUATE PERCOLATION. IF PIT DOESN'T PERCOLATE, MEASURES MUST BE TAKEN TO ASSURE PROPER DRAINAGE BEFORE PLANTING.
-CONTRACTOR SHALL REMOVE STAKING, GUYING AND WRAP AT END OF GUARANTEE PERIOD. ALL PLANTING MUST BE GUARANTEED FOR ONE FULL GROWING SEASON FROM THE TIME OF FINAL ACCEPTANCE BY THE OWNER OR GOVERNING AUTHORITY.
-ON ALL FALL PLANTINGS THE CONTRACTOR SHALL WRAP THE TREES SPECIFIED BY THE LANDSCAPE ARCHITECT (ACER spp.) FROM THE TRUNK FLARE TO THE FIRST BRANCH. TREE WRAP SHALL BE REMOVED BY APRIL 1. TREE WRAP SHALL BE BREATHABLE AND AS APPROVED BY THE LANDSCAPE ARCHITECT.
-TREE WRAP SHALL BE INSTALLED AT THE TIME OF PLANTING AND BE REMOVED AS DIRECTED BY THE LANDSCAPE ARCHITECT.
-TREE WRAP SHALL BE REMOVED NO LATER THAN 12 MONTHS AFTER PLANTING.
-TREES WHOSE NORTH ORIENTATION IS NOT CHANGED FROM THE NURSERY DO NOT NEED TO BE WRAPPED UNLESS OTHERWISE DIRECTED BY THE LANDSCAPE ARCHITECT.
-GUYS ON MULTI-STEM TREES TO BE MADE ON HEAVIEST BRANCHES OF PLANT.

1/41 DETAIL: 3" CALIPER OR MORE DECIDUOUS TREE PLANTING

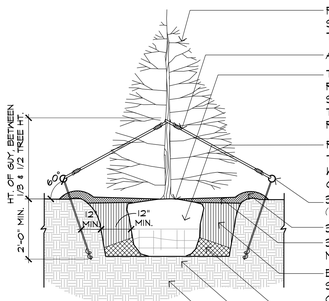
NOT TO SCALE



30" ARBOR TIE STEEL EYE STAKES
(INSTALL PER MFG. SPECIFICATIONS)
ARBOR TIE
(INSTALL AND TIE PER MFG. SPECIFICATIONS)
TREE BALL
TREE PIT

NOTES:
-DISTANCE OF STAKES APPROXIMATELY EQUAL TO HEIGHT OF ATTACHMENT.
-WHEN PLANTING ON SLOPES, PLACE SINGLE STAKE DOWNHILL, AND TWO STAKES UPHILL.

PLAN



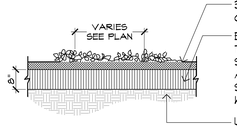
PRUNE DAMAGED AND CONFLICTING BRANCHES MAINTAINING NORMAL TREE SHAPE. NEVER CUT CENTRAL TRUNK OR LEADER AND DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.
ARBOR TIE
THE TRUNK FLARE OF EACH TREE SHALL BE VISIBLE AT THE TOP OF THE ROOT BALL. IF NURSERY GRADE IS ABOVE THE FLARE THE CONTRACTOR SHALL CAREFULLY EXCAVATE THE TOP OF THE ROOT BALL TO EXPOSE THE TRUNK FLARE. TREES WHOSE TRUNK FLARE IS NOT VISIBLE SHALL BE REJECTED. DO NOT COVER THE THE TOP OF THE ROOT BALL WITH SOIL.
REMOVE ALL ROPE FROM TRUNK AND TOP OF BALL. REMOVE BURLAP FROM THE TOP (HALF) ½ OF THE ROOT BALL. WHEN A WIRE BASKET IS PRESENT THE WIRE BASKET SHALL BE REMOVED FROM THE TOP HALF OF THE ROOT BALL OR AS MUCH AS POSSIBLE TO PRESERVE THE INTEGRITY OF THE ROOT BALL.
30" ARBOR TIE STEEL EYE STAKE, 3 PER TREE
(INSTALL PER MFG. SPECIFICATIONS)
3" SAUCER RIM
3" SHREDDED HARDWOOD BARK MULCH, UNIFORMLY SPREAD. MULCH SHALL NOT BE IN CONTACT WITH THE TRUNK OF THE TREE
BACKFILL MIXTURE, SHALL BE A THOROUGHLY MIXED BLEND OF TOPSOIL & SOIL AMENDMENTS. AMENDMENTS SHALL BE ADDED AS RECOMMENDED BY A CERTIFIED SOIL TEST. AIR POCKETS SHALL REMOVED FROM THE BACKFILL.
TAMP SOIL AROUND ROOT BALL BASE FIRMLY TO PREVENT THE ROOT BALL FROM SHIFTING.
PLACE ROOT BALL ON UNEXCAVATED OR TAMPED SOIL.
UNDISTURBED GRADE

SECTION

NOTES:
-CONTRACTOR SHALL PARTIALLY FILL WITH WATER A REPRESENTATIVE NUMBER OF PITS IN EACH AREA OF THE PROJECT PRIOR TO PLANTING TO DETERMINE IF THERE IS ADEQUATE PERCOLATION. IF PIT DOESN'T PERCOLATE, MEASURES MUST BE TAKEN TO ASSURE PROPER DRAINAGE BEFORE PLANTING.
-CONTRACTOR SHALL REMOVE STAKING, GUYING AND WRAP AT THE END OF THE GUARANTEE PERIOD.
-ALL PLANTING MUST BE GUARANTEED FOR TWO FULL GROWING SEASONS FROM THE TIME OF FINAL ACCEPTANCE BY TOWNSHIP LANDSCAPE ARCHITECT.

2/41 DETAIL: EVERGREEN TREE PLANTING

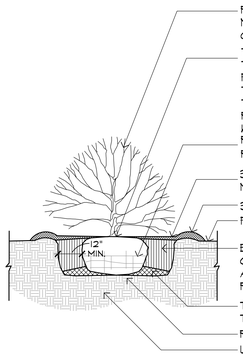
NOT TO SCALE



3" SHREDDED HARDWOOD BARK MULCH COVERING ENTIRE PLANTING BED.
BACKFILL MIXTURE, SHALL BE A THOROUGHLY MIXED BLEND OF TOPSOIL & SOIL AMENDMENTS. AMENDMENTS SHALL BE ADDED AS RECOMMENDED BY A CERTIFIED SOIL TEST. BACKFILL SHALL BE WATERED WHILE PLANTING TO ELIMINATE AIR POCKETS.
UNDISTURBED SUBGRADE

3/41 DETAIL: PERENNIAL PLANTING

NOT TO SCALE

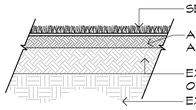


PRUNE DAMAGED AND CONFLICTING BRANCHES MAINTAINING NORMAL SHRUB SHAPE. DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.
THE TRUNK FLARE OF EACH SHRUB SHALL BE VISIBLE AT THE TOP OF THE ROOT BALL. IF NURSERY GRADE IS ABOVE THE FLARE THE CONTRACTOR SHALL CAREFULLY EXCAVATE THE TOP OF THE ROOT BALL TO EXPOSE THE TRUNK FLARE. TREES WHOSE TRUNK FLARE IS NOT VISIBLE SHALL BE REJECTED. DO NOT COVER THE THE TOP OF THE ROOT BALL WITH SOIL.
REMOVE ALL ROPE FROM TRUNK AND TOP OF BALL.
REMOVE BURLAP FROM THE TOP (HALF) ½ OF THE ROOT BALL.
3" SHREDDED HARDWOOD BARK MULCH, UNIFORMLY SPREAD. MULCH SHALL NOT BE IN CONTACT WITH THE TRUNK OF THE SHRUB.
3" SAUCER RIM
FINISH GRADE
BACKFILL MIXTURE SHALL BE A THOROUGHLY MIXED BLEND OF SOIL & TOPSOIL AMENDMENTS. AMENDMENTS SHALL BE ADDED AS RECOMMENDED BY A CERTIFIED SOIL TEST. AIR POCKETS SHALL REMOVED FROM THE BACKFILL.
TAMP SOIL AROUND ROOT BALL BASE FIRMLY TO PREVENT THE ROOT BALL FROM SHIFTING.
PLACE ROOT BALL ON UNEXCAVATED OR TAMPED SOIL.
UNDISTURBED GRADE

4/41 DETAIL: SHRUB PLANTING

NOT TO SCALE

SHOWY NORTHEAST NATIVE WILDFLOWER & GRASS MIX ERNMX-153
AS MFG. BY:
ERNST CONSERVATION SEEDS, INC.
8884 MERCER PIKE,
MEADVILLE PA 16335
PHONE: (800) 873-3321



1. CLEAR THE SITE OF ALL BUILDING MATERIALS (WOOD, CEMENT, BRICK, ETC.) AS WELL AS ANY BURIED STUMPS, ROCKS, STONES OR OTHER DEBRIS THAT IS LARGER THAN 2-3" DIAMETER.
2. APPLY A NONSELECTIVE HERBICIDE IF WEEDS ARE A PROBLEM. FOLLOW MANUFACTURERS RECOMMENDATIONS IN REGARDS TO SEED APPLICATION TIME FRAME.
2. ROUGH GRADE THE ENTIRE AREA TO ELIMINATE ANY DRAINAGE PROBLEMS ON THE PROPERTY. THIS WOULD INCLUDE SLOPING THE GRADE AWAY FROM BUILDING FOUNDATIONS.
3. INITIAL TILLING, TO A DEPTH OF AT LEAST 4", SHOULD BE COMPLETED PRIOR TO ADDING ANY TOPSOIL OR SOIL AMENDMENTS. TILLING SHALL BE PERFORMED TO ALLEVIATE SOIL COMPACTION, PERMIT BONDING OF TOPSOIL TO THE SUBSOIL AND IMPROVE OVERALL ROOT PENETRATION.
4. ADD TOPSOIL TO ACHIEVE A TOTAL DEPTH OF 4-6" AFTER ROLLING. ALL TOPSOIL, BOTH NEWLY FURNISHED AND STOCKPILED (IF ANY), SHALL BE NATURAL TOPSOIL, SANDY LOAM FREE FROM SUBSOIL, AND OBTAINED FROM AN AREA WHICH HAS NEVER BEEN STRIPPED. TOPSOIL SHALL BE OF UNIFORM QUALITY, FREE FROM HARD CLODS, STIFF CLAY, HARD PAN, STONES LARGER THAN 1/2", LIME, CEMENT, ASHES, SLAG, CONCRETE, TAR RESIDUES, TARRED PAPER, BOARDS, CHIPS, STICKS OR ANY OTHER UNDESIRABLE MATERIAL. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST. TOPSOIL SHALL NOT BE PLACED WHILE FROZEN OR EXCESSIVELY WET THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEED BED PREPARATION.
5. TOP SOIL SHALL BE TESTED BY CERTIFIED SOIL TESTING LABORATORY. TOPSOIL TEST RESULTS SHALL INCLUDE RECOMMENDATIONS FOR TOPSOIL AMENDMENTS AND FERTILIZER RATES IN ORDER TO ENSURE A PROPER GROWTH MEDIUM FOR SEED MIX OR SOD.
7. FINISH GRADE THE ENTIRE SITE ACCORDING TO GRADING PLANS AND ROLL THE AREAS WITH LAWN ROLLER 1/3 FULL OF WATER TO REVEAL LOW SPOTS THAT SHOULD BE FILLED TO MATCH SURROUNDING GRADE. IF TIME PERMITS ALLOW THE AREA TO SETTLE FURTHER BY APPLYING IRRIGATION WATER.

NOTES:
- FINAL LIMITS OF SEEDED ZONES TO BE LAID OUT IN THE FIELD UNDER THE DIRECTION OF THE PROJECT LANDSCAPE ARCHITECT.
- CONTRACTOR SHALL SUBMIT SEED SPECIFICATION TO LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
- INSTALL PER MFG. RECOMMENDATIONS
- CONTRACTOR SHALL CONTACT SEED SUPPLIER PRIOR TO APPLICATION TO VERIFY APPROPRIATE APPLICATION TIMING FOR THE SPECIFIED SEED MIX PER SEASONAL CONDITIONS. GENERAL SEEDING PERIOD IS AUGUST 21ST TILL SEPTEMBER 21ST.
- IRRIGATION/SUPPLEMENTAL WATER SHALL BE PROVIDED AT INSTALLATION.
- ALL SEEDED AREAS MUST BE KEPT CONSTANTLY MOIST TO PROMOTE GERMINATION.
- ALL AREAS THAT HAVE BEEN DISTURBED DURING CONSTRUCTION SHALL BE SEEDED OR SODDED TO REESTABLISH PLANT MATERIAL.

LAWN

ATHLETIC FIELD MIX

30.0% FESTUCA ARUNDINACEA, FAWN (TALL FESCUE, FAWN)
30.0% LOLIUM PERENNE, 'CONFETTI III' (PERENNIAL RYEGRASS, 'CONFETTI III' (TURF TYPE))
15.0% POA PRATENSIS, 'SELIKAY' (KENTUCKY BLUEGRASS, 'SELIKAY')
15.0% POA PRATENSIS, APPALACHIAN (KENTUCKY BLUEGRASS, APPALACHIAN)
10.0% LOLIUM MULTIFLORUM (ANNUAL RYEGRASS)

ITEM NUMBER: ERNMX-106
HEIGHT: 1.0 - 4.0 FT
SEEDING RATE: 75-150 LB PER ACRE, OR 3-5 LB PER 1,000 SQ FT
MAINTENANCE MOWING: SHALL BE MAINTAINED AS TURF GRASS LAWN.
AS SUPPLIED BY
ERNST CONSERVATION SEEDS, INC.,
9006 MERCER PIKE, MEADVILLE, PA 16335,
800-873 3321.

5/41 DETAIL: SOD / SEED LAWN

NOT TO SCALE

TOPSOIL NOTES:
-TESTING FOR ALL SITE TOPSOIL SHALL BE DONE PRIOR TO PLANTING AND SHALL BE CONDUCTED BY A CERTIFIED SOIL TESTING LABORATORY.
-TOPSOIL TEST RESULTS SHALL INCLUDE RECOMMENDATIONS FOR TOPSOIL AMENDMENTS AND FERTILIZER RATES IN ORDER TO ENSURE A PROPER GROWTH MEDIUM FOR SEED MIX AND SOD.
-TOPSOIL SHALL CONTAIN AT LEAST 3% ORGANIC MATTER DETERMINED BY LOSS ON IGNITION OF MOISTURE FREE SAMPLES. THE ACIDITY RANGE SHALL BE pH 5.0 TO 7.0 INCLUSIVE.
THE MECHANICAL ANALYSIS OF THE SOIL SHALL BE:
-ALL TOPSOIL, BOTH NEWLY FURNISHED AND STOCKPILED (IF ANY), SHALL BE NATURAL TOPSOIL, SANDY LOAM FREE FROM SUBSOIL, AND OBTAINED FROM AN AREA WHICH HAS NEVER BEEN STRIPPED. TOPSOIL SHALL BE OF UNIFORM QUALITY, FREE FROM HARD CLODS, STIFF CLAY, HARD PAN, STONES LARGER THAN 1/2", LIME, CEMENT, ASHES, SLAG, CONCRETE, TAR RESIDUES, TARRED PAPER, BOARDS, CHIPS, STICKS OR ANY OTHER UNDESIRABLE MATERIAL.
-SUBMIT RESULTS TO THE ENGINEER AND LANDSCAPE ARCHITECT.

PASSING	RETAINED	PERCENTAGE
1" SCREEN	.....	100%
1" SCREEN	1/4" SCREEN (GRAVEL NOT MORE THAN)	3%
1/4" SCREEN	#100 USS SIEVE (COURSE, MEDIUM & FINE SAND)	40% - 60%
#100 USS SIEVE	(VERY FINE SAND, SILT AND CLAY IN EQUAL PROPORTION)	40% - 60%

IRRIGATION NOTES:
1. ALL PLANTED AREAS AND LAWN SHALL BE IRRIGATED, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PROVIDING IRRIGATION LAYOUT DETAILS, ETC. PRIOR TO CONSTRUCTION.
2. PLANTER WALLS SHALL BE SLEEVED TO MINIMIZE PENETRATIONS THROUGH PLANTER BOTTOMS FOR IRRIGATION LINES.
3. IRRIGATION LINES SHALL BE RUN WITHIN PLANTING AREAS.
4. IRRIGATION REQUIREMENTS - MEP PLANS SHALL INCLUDE A 1 INCH IRRIGATION EXCLUSIVE WATER METER AND A 1 INCH REDUCED-PRESSURE BACK FLOW PREVENTION DEVICE WITH A 1 INCH ISOLATION SHUT-OFF IMMEDIATELY DOWNSTREAM OF THE BACKFLOW PREVENTER AND A 1 INCH DRAIN IN THE PIPE TO REMOVE WATER IN THE LINE.
5. THE IRRIGATION SYSTEM WILL REQUIRE 55 PSI DYNAMIC PRESSURE AT A MAXIMUM FLOW RATE OF 20-25PM AT THE IRRIGATION CONTRACTORS POINT OF CONNECTION OUTSIDE OF THE BUILDING AT THE STREETSCAPE LEVEL.
6. THE POINT OF CONNECTION SHALL BE A COPPER PIPE STUBBED OUT OF THE BUILDING INTO THE PLANTING MEDIA. ONE STUB OUT SHALL BE PROVIDED WITH MALE PIPE THREADS. THIS ALLOWS THE IRRIGATION CONTRACTOR TO THREAD A GATE VALVE TO THE COPPER PIPE OUTSIDE OF THE BUILDING. A PINTERIZATION POINT SHALL BE INSTALLED BY THE IRRIGATION CONTRACTOR IMMEDIATELY DOWNSTREAM OF THE COPPER STUB.
7. A DEDICATED 10 AMP, 120-VOLT CIRCUIT WILL BE REQUIRED TO OPERATE THE IRRIGATION CONTROLLER. THE IRRIGATION CONTROLLER WILL NEED TO BE MOUNTED WITHIN A MECHANICAL ROOM. AN APPROXIMATELY 18 INCH X 18 INCH SQUARE WALL SPACE IS REQUIRED AND NEEDS TO BE PROPERLY GROUNDED. A 1.5 INCH ELECTRICAL CONDUIT TO BE USED FOR THE 24-VOLT IRRIGATION CONTROL WIRES WILL BE NEEDED TO BE ROUTED FROM THE IRRIGATION CONTROLLER AND STUBBED OUT OF THE BUILDING TO THE LOCATION OF THE WATER SUPPLY STUB OUT AT THE STREETSCAPE.

FESCUE SEED MIX

30.0% FESTUCA RUBRA (CREEPING RED FESCUE)
25.0% POA PRATENSIS, 'SELIKAY' (KENTUCKY BLUEGRASS, 'SELIKAY')
25.0% POA PRATENSIS, APPALACHIAN (KENTUCKY BLUEGRASS, APPALACHIAN)
10.0% LOLIUM MULTIFLORUM (ANNUAL RYEGRASS)
10.0% LOLIUM PERENNE, 'CONFETTI III' (PERENNIAL RYEGRASS, 'CONFETTI III' (TURF TYPE))

NOTES:
SEEDING RATE:100-200 LBS/ACRE
RECOMMENDED SEEDING PERIOD:
MARCH 15 TO JUNE 1/
AUGUST 1 TO OCTOBER 15
MAINTENANCE MOWING: ANNUALLY IN DECEMBER.
AS SUPPLIED BY ERNST CONSERVATION SEEDS, INC., 9006 MERCER PIKE, MEADVILLE, PA 16335, 800-873 3321
IF FESCUE SEED AREAS DO NOT THRIVE WITHIN 2 YEARS AN ALTERNATIVE GROUNDCOVER PLANTING WILL BE PROVIDED.

SEED MIX 128:

SEASONALLY FLOODED WILDLIFE FOOD MIX:

21.5% PANICUM CLANDESTINUM, TIOGA (DEERTONGUE, TIOGA)
20.0% ELYMUS VIRGINICUS, MADISON-NY ECOTYPE (VIRGINIA WILDRYE, MADISON-NY ECOTYPE)
16.6% ANDROPOGON GERARDII, 'NIAGARA' (BIG BLUESTEM, 'NIAGARA')
15.0% ECHINOCHLOA CRUSGALLI VAR. FRUMENTACEA (JAPANESE MILLET)
10.0% CAREX VULPINOIDEA, PA ECOTYPE (FOX SEDGE, PA ECOTYPE)
8.0% PANICUM VIRGATUM, 'SHANNEI' (SWITCHGRASS, 'SHANNEI')
4.0% CHAMAECRISTA FASCICULATA, PA ECOTYPE (PARTRIDGE PEA, PA ECOTYPE)
1.5% VERBENA HASTATA, PA ECOTYPE (BLUE VERVAIN, PA ECOTYPE)
1.0% HELIOPSIS HELIANTHOIDES, PA ECOTYPE (OXEYE SUNFLOWER, PA ECOTYPE)
1.0% JUNCUS EFFUSUS (SOFT RUSH)
0.8% AGROSTIS PERENNANS, ALBANY PINE BUSH-NY ECOTYPE (AUTUMN BENTGRASS, ALBANY PINE BUSH-NY ECOTYPE)
0.1% ASCLEPIAS INCARNATA, PA ECOTYPE (SWAMP MILKWEED, PA ECOTYPE)
0.1% ASTER NOVAE-ANGLIAE, PA ECOTYPE (NEW ENGLAND ASTER, PA ECOTYPE)
0.1% EUPATORIUM FISTULOSUM, PA ECOTYPE (JOE PYE WEED, PA ECOTYPE)
0.1% EUPATORIUM PERFOLIATUM, PA ECOTYPE (BONESET, PA ECOTYPE)
0.1% MONARDA FISTULOSA, FORT INDIANTOWN GAP-PA ECOTYPE (WILD BERGAMOT, FORT INDIANTOWN GAP-PA ECOTYPE)
0.1% PYCNANTHEMUM TENUIFOLIUM (NARROWLEAF MOUNTAINMINT)

ITEM NUMBER: ERNMX-128
PRODUCT CATEGORIES:
WET MEADOWS & WETLANDS, WILDLIFE HABITAT & FOOD PLOTS
HEIGHT: 0.3 -1.0 FT
SEEDING RATE: 20 LB PER ACRE, OR 1/2 LB PER 1,000 SQ FT WITH A COVER CROP. FOR A COVER CROP USE ONE OF THE FOLLOWING: GRAIN RYE (1 SEP TO 30 APR; 30 LBS/ACRE), JAPANESE MILLET (1 MAY TO 31 AUG; 10 LBS/ACRE), OR BARNYARD GRASS (1 MAY TO 31 AUG; 10 LBS/ACRE).
AS SUPPLIED BY
ERNSTSEED.COM
SALES@ERNSTSEED.COM
1-800-873-3321

NOTES:
FESTUCA RUBRA/ CREEPING RED FESCUE SHALL BE ADDED TO MIX AT A SEEDING RATE OF 8LBS. PER ACRE.
ITEM NUMBER:FESRUBOI
AS SUPPLIED BY
ERNSTSEED.COM
SALES@ERNSTSEED.COM
1-800-873-3321

NOTES
- FINAL LIMITS OF SEEDED ZONES TO BE LAID OUT IN THE FIELD UNDER THE DIRECTION OF THE PROJECT LANDSCAPE ARCHITECT.
- CONTRACTOR SHALL CONTACT SEED SUPPLIER PRIOR TO APPLICATION TO VERIFY APPROPRIATE APPLICATION TIMING FOR THE SPECIFIED SEED MIX PER SEASONAL CONDITIONS. GENERAL SEEDING PERIOD IS AUGUST 21ST TILL SEPTEMBER 21ST.
- CONTRACTOR SHALL SUBMIT ANTICIPATED SEED APPLICATION/PREPARATION PROCEDURE TO LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO SEED APPLICATION/PREPARATION.
- INSTALL PER MFG. RECOMMENDATIONS
- IRRIGATION/SUPPLEMENTAL WATER SHALL BE PROVIDED TO ESTABLISH SEED MIX AT INSTALLATION.
- ALL SEEDED AREAS MUST BE KEPT CONSTANTLY MOIST TO PROMOTE GERMINATION.
- SEEDED AREAS SHALL BE MOWED AS DESIRED. MOWING SHALL BE DONE ONCE PER YEAR IN DECEMBER.
- SEED MIXES TO BE APPLIED PER MFG. RECOMMENDATIONS

6/41 DETAIL: SEED MIX & INSTALLATION

NOT TO SCALE

TALL FESCUE SEED MIX

34.0% FESTUCA ARUNDINACEA, 'FIRECRACKER SLS' (TALL FESCUE, 'FIRECRACKER SLS' (TURF TYPE))
33.0% FESTUCA ARUNDINACEA, 'VALKYRIE LS' (TALL FESCUE, 'VALKYRIE LS' (TURF TYPE))
33.0% FESTUCA ARUNDINACEA, 'COCHISE III' (TALL FESCUE, 'COCHISE III' (TURF TYPE))

NOTES:
SEEDING RATE:7-10 LBS/1,000 SQ FT
RECOMMENDED SEEDING PERIOD:
MARCH 15 TO JUNE 1/
AUGUST 1 TO OCTOBER 15
MAINTENANCE MOWING: ANNUALLY IN DECEMBER.
AS SUPPLIED BY ERNST CONSERVATION SEEDS, INC., 9006 MERCER PIKE, MEADVILLE, PA 16335, 800-873 3321
IF FESCUE SEED AREAS DO NOT THRIVE WITHIN 2 YEARS AN ALTERNATIVE GROUNDCOVER PLANTING WILL BE PROVIDED.

SEED MIX 178:

RIPARIAN BUFFER MIX

27.1% ANDROPOGON GERARDII, 'NIAGARA' (BIG BLUESTEM, 'NIAGARA')
27.0% SORGHASTRUM NUTANS, WI ECOTYPE (INDIANGRASS, WI ECOTYPE)
20.0% ELYMUS VIRGINICUS, PA ECOTYPE (VIRGINIA WILDRYE, PA ECOTYPE)
14.0% PANICUM VIRGATUM, 'CARTHAGE', NC ECOTYPE (SWITCHGRASS, 'CARTHAGE', NC ECOTYPE)
3.0% RUDBECKIA HIRTA (BLACKEYED SUSAN)
2.0% ASCLEPIAS INCARNATA, PA ECOTYPE (SWAMP MILKWEED, PA ECOTYPE)
2.0% VERBENA HASTATA, PA ECOTYPE (BLUE VERVAIN, PA ECOTYPE)
1.0% EUPATORIUM PERFOLIATUM, PA ECOTYPE (BONESET, PA ECOTYPE)
1.0% HELENIUM AUTUMNALE, PA ECOTYPE (COMMON SNEEZEWEED, PA ECOTYPE)
0.1% ASTER NOVAE-ANGLIAE, PA ECOTYPE (NEW ENGLAND ASTER, PA ECOTYPE)
0.1% ASTER UMBELLATUS, PA ECOTYPE (FLAT TOPPED WHITE ASTER, PA ECOTYPE)
0.1% ZIZIA AUREA, PA ECOTYPE (GOLDEN ALEXANDERS, PA ECOTYPE)
0.5% MONARDA FISTULOSA, FORT INDIANTOWN GAP-PA ECOTYPE (WILD BERGAMOT, FORT INDIANTOWN GAP-PA ECOTYPE)
0.3% SOLIDAGO RUGOSA, PA ECOTYPE (WRINKLELEAF GOLDENROD, PA ECOTYPE)

ITEM NUMBER: ERNMX-178
PRODUCT CATEGORIES:
RIPARIAN SITES
HEIGHT: 1.0 -4.0 FT
SEEDING RATE: 20 LB PER ACRE WITH A COVER CROP AT 30 LB PER ACRE (DRY SITES - GRAIN OATS, JAN 1-AUG 1; OR, GRAIN RYE, AUG 1-JAN 1; MOIST SITES - GRAIN RYE YEAR-ROUND)
AS SUPPLIED BY
ERNSTSEED.COM
SALES@ERNSTSEED.COM
1-800-873-3321

NOTES:
FINAL LIMITS OF SEED MIX TO BE ADJUSTED IN FIELD BASED ON OBSERVED CONDITIONS OF BASIN HYDROLOGY.

PLANT NOTES:

1. THE CONTRACTOR SHALL FURNISH QUANTITIES NECESSARY TO COMPLETE THE PLANTING AS SHOWN ON THE PLANTING PLANS.
A. ALL PLANTS SHALL EQUAL OR EXCEED MEASUREMENTS SPECIFIED IN THE PLANT LIST WHICH ARE THE MINIMUM ACCEPTABLE.
B. PLANTS SHALL BE MEASURED BEFORE PRUNING. NECESSARY PRUNING SHALL BE PERFORMED AFTER THE PLANT IS UNTIED AND PRIOR TO INSTALLATION. LANDSCAPE ARCHITECT SHALL BE NOTIFIED OF ANY MAJOR PRUNING REQUIREMENTS DUE TO DAMAGE. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT ANY PLANT MATERIAL THAT NEEDS SIGNIFICANT PRUNING DUE TO DAMAGE FROM SHIPMENT OR HANDLING.
C. WHERE FORMAL ARRANGEMENTS OR CONSECUTIVE ORDER OF TREES OR SHRUBS IS SHOWN, STOCK SHALL BE SELECTED FOR UNIFORM HEIGHT AND SPREAD AND LABELED BY NUMBER TO ASSURE SYMMETRY IN PLANTING.
2. WHERE ALL PLANT MATERIAL HAS BEEN SELECTED AND PRE-TAGGED BY THE LANDSCAPE CONTRACTOR, THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED IN ORDER TO SCHEDULE HIS NURSERY INSPECTION WITH A MINIMUM OF 5 DAYS ADVANCE NOTICE.
A. THE CONTRACTOR SHALL ACCOMPANY THE LANDSCAPE ARCHITECT ON ALL INSPECTIONS.
B. THE CONTRACTOR SHALL HAVE SUFFICIENT ALTERNATE CHOICES TO PREVENT LOSS OF TIME IN THE EVENT THAT SOME TREES FAIL TO MEET THE APPROVAL OF THE LANDSCAPE ARCHITECT.
C. ALL TREES MUST BE APPROVED IN THE FIELD BY THE LANDSCAPE ARCHITECT BEFORE DIGGING BEGINS.
3. LOCATIONS OF PLANT MATERIAL SHOWN ON PLANS ARE APPROXIMATE. FINAL LOCATIONS WILL VARY FROM PLAN AND SHALL BE DETERMINED IN THE FIELD UNDER THE DIRECTION OF THE LANDSCAPE ARCHITECT.
A. CONTRACTOR SHALL PROVIDE PRE-MARKED, COLOR-CODED FLAGS FOR ALL SHADE TREES, EVERGREEN TREES AND FLOWERING TREES.
B. LANDSCAPE ARCHITECT SHALL PLACE THE COLOR-CODED FLAGS TO INDICATE PLANT LOCATIONS.
C. CONTRACTOR SHALL PLACE TREES ABOVE GROUND IN ACCORDANCE WITH THE FLAGGED LOCATION. THE LANDSCAPE ARCHITECT MAY REQUEST THE CONTRACTOR TO MOVE, TURN OR RELOCATE THE PLANT MATERIAL AT THIS TIME. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR PRE-DIG TREE PITS.
D. UPON FINAL APPROVAL BY THE LANDSCAPE ARCHITECT OF TREE PLACEMENT, CONTRACTOR SHALL PAINT A CIRCLE AROUND THE BALL OF THE TREE, MOVE TREE AND EXCAVATE TREE PIT.
4. PLANTS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY; HAVE NORMAL GROWTH HABITS; WELL DEVELOPED BRANCHES; DENSELY FOLIATED; VIGOROUS ROOT SYSTEMS; BE FREE FROM DEFECTS AND INJURIES AND COMPLY WITH ANY SPECIAL INSTRUCTIONS NOTED WITHIN THE PLANT LIST.
5. PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THIS IS NOT POSSIBLE, THE CONTRACTOR SHALL PROTECT PLANT STOCK WHICH HAS NOT BEEN PLANTED. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY.
6. QUALITY, BRANCHING AND SIZE OF PLANTS, INCLUDING ROOT SIZE, SHALL BE IN ACCORDANCE WITH "AMERICAN STANDARDS FOR NURSERY STOCK" ANSI Z60.1-2014 (OR MOST RECENT EDITION) AS PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION.
7. B&B PLANTS SHALL BE HANDLED FROM THE BOTTOM OF THE ROOT BALL ONLY. PLANTS WITH BROKEN, SPLIT OR DAMAGED ROOT BALLS SHALL BE REJECTED.
8. ALL PLANTING BEDS SHALL BE MULCHED TO A DEPTH OF 3-4 INCHES WITH SHREDDED HARDWOOD BARK MULCH. MULCH SHOULD NOT COME INTO CONTACT WITH THE ROOT COLLAR OF TREES OR SHRUBS. THE TOP OF THE ROOT BALL FOR ALL B&B PLANTS SHALL BE EXCAVATED TO EXPOSE THE ROOT FLARE. THE ROOT FLARE SHALL BE AT THE TOP OF THE BALL AND PLANTED LEVEL OR 1" ABOVE FINISHED GRADE. ALL BEDLINES SHALL BE CUT FOUR INCHES DEEP INTO A "V" SHAPED GROOVE TO PROVIDE A WELL DEFINED EDGE. THE LAYOUT OF ALL BEDLINES SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT ON-SITE PRIOR T

WHITEMARSH TOWNSHIP
SUBDIVISION and/or LAND DEVELOPMENT APPLICATION

The applicant, or applicant's authorized agent, for the Township to accept submission of the application, must complete each Application item and each Application Submission Checklist item.

Application Type: (check one)
☐ Minor Subdivision ☐ Minor Land Development
☐ Major Subdivision ☒ Major Land Development
☐ Land Development Waiver

Plan Type:
☐ Sketch ☐ Preliminary ☒ Final

RECEIVED
MAY 31 2022
WHITEMARSH TOWNSHIP
ZONING & ENGINEERING

INSERT "N/A" FOR NOT APPLICABLE WHERE APPROPRIATE

Name of Subdivision/Land Development: 401/433 Washington Street Apartments

Location of Subdivision/Land Development: 401 & 433 Washington Street
(Primary Access Roadway Name)

Between: Cherry Street (Roadway Name) and Lee Street (Roadway Name)

Number of Parcels: 2 **Block Number(s):** _____ **Unit Number(s):** _____

Parcel Number(s): 050011904007 & 050011908003

Acreage: 10.66 **Total Lots Proposed:** 2 **Zoning District:** SP-2, FP

Water Service Proposed: ☐ Public ☐ Private Sewer Service Proposed: ☐ Public ☐ Private

Applicant Name: KRE Acquisition Corp **Contact Name:** _____

Phone #: 908-725-8100 Fax #: N/A Email: nchrismer@thekregroup.com

Address: 520 US Highway 22, PO Box 6872, Bridgewater, NJ 08807

Owner of Record Name (If Different): Spectrum-C LLC

Phone #: 212-687-9555 Fax #: N/A Email: sshivalkar@spectrumgp.com

Address: 47 Whitney Street, Westport, CT 06880

Engineer Name: C. Richard Roseberry **Firm Name:** Colliers Engineering & Design

Phone #: 484 240 8129 Fax #: N/A Email: richard.roseberry@colliersengineering.com

Address: 941 Marcon Blvd., Suite 801, Allentown, PA 18109

Fees and plans showing all public improvements are submitted with this application. Any additional plan information required by the Township Engineer will be submitted to the Director of Planning and Zoning for distribution. The undersigned applicant agrees to comply with all the provisions of Chapter 105 of the Code of the Township of Whitemarsh, as amended, and agrees to obtain all necessary permits in connection with the proposed subdivision and/or land development.

Whitemarsh Township employees, or township-authorized agents, are hereby granted permission to enter upon the land, if necessary, for site inspections.

Original preliminary and/or original final subdivision and/or land development applications submitted by 4:00pm on the last business day of the month will be reviewed by the Whitemarsh Township Planning Commission at a regular meeting two (2) months following the date of submission or other appropriate meeting date depending upon the results of Township reviews.

I hereby certify, as the undersigned applicant, that I am familiar with the provisions of: [1] Chapter 105, "Subdivision and Land Development", [2] Chapter 58, "Grading, Erosion Control, Stormwater Management and Best Management Practices", and [3] Chapter 55, "Tree Protection Standards" of the Code of the Township of Whitemarsh, as amended, and, to the best of my knowledge and belief, this application and the submitted plans conform to those provisions.

Date of Submission: _____

Signature: _____

(Original Signature must be submitted)

Printed Name: Jeremy Kaplan

I, (name) Jeremy Kaplan **(title)** Vice President of

(entity submitting application) KRE Acquisition Corp. do hereby affirm

that I am authorized by the applicant to affix my signature to this application.

Date: 5/20/22 Signature: _____

(Original Signature must be submitted)

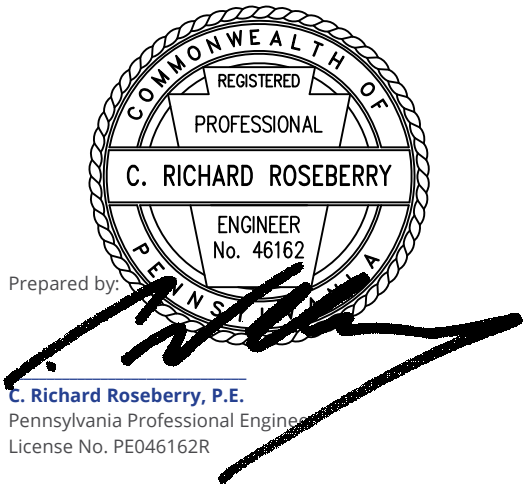
Colliers
Engineering
& Design

Post-Construction Stormwater Management Report

May 2022

401/403 Washington Street Apartments

401 & 433 Washington Street
Conshohocken Borough & Whitemarsh Township
Montgomery County, Pennsylvania



Prepared for:

KRE Acquisition Corp.
520 U.S. Highway 22
P.O. Box 6872
Bridgewater, NJ 08807

Prepared by:

C. Richard Roseberry, P.E.
Pennsylvania Professional Engineer
License No. PE046162R

Colliers Engineering & Design
941 Marcon Boulevard
Allentown, Pennsylvania 18109
Main: 877 627 3772
Colliersengineering.com

Project No. 14000908C

Maser Consulting is now Colliers Engineering & Design

Colliers Engineering & Design

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Colliers Engineering & Design

Executive Summary

This report was prepared to demonstrate the competency of the proposed Post-Construction Stormwater Management (PCSM) design for the 401/403 Washington Street Apartments project located in the Township of Whitemarsh and the Borough of Conshohocken, Montgomery County, Pennsylvania.

As part of the National Pollution Discharge Elimination System (NPDES) permit, the project is required to provide a PCSM plan and report. The Pennsylvania Department of Environmental Protection issued the Pennsylvania Stormwater Best Management Practices Manual as guidance for the completion of the PCSM design. Through the use of recommended Best Management Practices (BMPs), the environmental effects from this project were reduced. The project PCSM goal is to adequately and safely recreate, as closely as possible, the pre-project conditions in the post-project condition. This PCSM Plan was designed to eliminate (wherever possible) or minimize point source discharge to surface waters, preserve the integrity of stream channels, and protect the physical, biological, and chemical qualities of the receiving surface water.

The calculations presented in this report demonstrate that the designed facilities meet the project PCSM goals and sufficiently address the state's, county's and municipalities' regulatory requirements.

1.0 Introduction

As part of the NPDES permit, the project is required to provide a PCSM Plan and Report. The Pennsylvania Department of Environmental Protection (PADEP) issued the Pennsylvania Stormwater Best Management Practices Manual (BMP Manual) as guidance for the completion of the PCSM design. The proposed plans incorporate guidelines and calculation methodologies from the BMP Manual. The purpose of the BMP Manual is "to ensure effective stormwater management, to minimize the adverse impacts of stormwater on ground water and surface water resources, and to support and sustain the social, economic, and environmental quality of the Commonwealth." The three primary interests involved include:

- Stream channel erosion and flooding resulting from increases in flow rate and volume;
- Water quality impacts to streams and groundwater aquifers from particulates, floatables, and hydrocarbons; and
- Thermal impact on streams caused by heat transfer from pavement to runoff and loss of riparian buffer vegetation.

Through the use of recommended BMPs, the environmental effects are reduced. The above concerns can be addressed through the implementation of BMPs that decrease runoff volume, promote, extend detention times, and reduce release rates. The project PCSM goal is to adequately and safely recreate, as closely as possible, the pre-project condition in the post-project condition. This PCSM Plan was designed to eliminate (wherever possible) or minimize point source discharges to surface waters, preserve the integrity of stream channels, and protect the physical, biological, and chemical qualities of the receiving surface water.

1.1 Project Information

KRE Acquisition Corp. proposes improvements to the site, including a 598 unit residential apartment complex in four buildings with ground-level parking, subsurface stormwater management facilities, and other typical site appurtenances. Two (2) driveways are proposed along Washington Street and one (1) driveway is proposed along Cherry Street, with additional emergency access from Cherry Street. The entire site is located within the 100-year FEMA delineated floodplain of the Schuylkill River and a portion of the site lies within the delineated floodway.

The past land use includes:

Past 5 Years Land Use

Both tracts are currently vacant. The property contains a building and building remnants as well as parking lots of former industrial uses. The property also contains associated utilities and trees.

Past 50 Years Land Use

The properties functioned as industrial uses since the 1800s. The 401 Washington Street site was formerly owned and occupied by C&D Battery. The building was demolished in the early 2000s. The 433 Washington Street site was former owned and occupied by Hale Pump.

Due to the former industrial uses, the site is part of the PADEP Act 2 program for onsite soil contaminants.

Approximately 10.95± acres will be disturbed as part of the project. The project is located within the Specially Planned Two (SP-2) Zoning District with the Floodplain Conservation District Overlay in the Borough of Conshohocken and the Heavy Industrial District (HVY) with the Riverfront Development District One (RDD-1) Overlay, Riparian Corridor Conservation District (RCCD), Steep Slopes (SS) Overlay District and the Floodplain Conservation Overlay District (FLPL) in Whitemarsh Township. The proposed use is permitted by right in both municipalities, however grading and utility work in the floodway required approval by Conditional Use in Conshohocken Borough and by Special Exception in Whitemarsh Township. The site will be served by public water and sewer.

The site is bound by Washington Street to the north, the Schuylkill River to the south, an industrial property to the east, and Cherry Street to the west, see Appendix A for the project location maps.

1.2 Pre-Project Conditions

This site is located in the Schuylkill River Watershed. The site is generally sloped towards the south, with the majority of stormwater flowing directly to the Schuylkill River. The Pennsylvania Code, Title 25, Chapter 93, Water Quality Standards assigns the Schuylkill River a water quality designation of Warm Water Fishery, Migratory Fishes (WWF, MF).

Pre-project cover areas and drainage boundaries were based on topographical survey, site visits, aerial photographs, and USGS mapping. The site is flat with a portion of the storm runoff being collected by roof drains and storm inlets, which are generally conveyed from north to south. There is a small section of the site that drains to the north towards the railroad tracks and also into the stormsewer system underneath Washington Street. The remainder of the site's runoff is discharged to the Schuylkill River via overland flow.

Due to the past industrial uses, the site in the pre-project condition is considered partially impervious, with the exception of overgrown areas behind the existing buildings and parking area.

This analysis will evaluate the pre-project and post-project flow from the proposed development areas of the site to a study point. Two study points have been established for analysis: the first (SP-1) is a point within the Schuylkill River where the majority of the site's runoff discharges at; the second (SP-2) is a point within the roadside drainage ditch on the north side of Washington Street. Study Point 1 (SP 1) encompasses two discharge points, DP 001 and DP 002, which both ultimately discharge to Schuylkill River south of the site.

1.3 Post-Project Conditions

The site was analyzed at two (2) study points to examine the effects of development with cover type changes, detention, and low-impact development features. The study points are located at the same locations of the existing study points, as described above.

The proposed construction will be reducing impervious cover to the greatest extent possible through placement of lawn areas. The proposed BMPs include but are not limited to: re-vegetate disturbed

areas, underground detention basin, snouts, and a Managed Released Concept (MRC) underground basin. The basins discharge to the proposed stormsewer which discharges to the Schuylkill River at the currently existing discharge point. Post-project flow paths will follow pre-project flow paths and no additional discharge points will be added as part of this development.

The proposed impervious cover includes the proposed multi-unit residential buildings, sidewalks, and necessary roadway improvements. The post-project pervious cover is assumed in the calculations to be lawn, except in areas where the existing trees are to remain.

2.0 Soils

Soil mapping and properties including depths, slopes, and limitations for the calculations presented in this report, were obtained from the NRCS Web Soil Survey. Project soil locations is shown on the plan drawings, and a summary of the soils as well as a copy of the NRCS Web Soil Survey map are included in Appendix B. The NRCS Web Soil Survey soils found within the site area are listed below in Table 3.1:

Table 3.1 NRCS Web Soil Survey Results

Soil Code	Soil Description	Hydrologic Soil Group
UgB	Urban land, 0 to 8 percent slopes	B

The site is located within an urban industrial center for over 150 years and as such, the site soils are comprised of mixed fill material with no definite homogenous characteristics. The site is also part of the PADEP Act 2 program for onsite soil contaminants, therefore the installation of a soil (minimum of 1' depth) or impervious cap will be included as part of the site construction.

2.1 Karst Geology

A specific karst hazard assessment was not developed for this site. There are no known sinkholes onsite or within 1,500 feet of the site. Copies of the karst features and sinkhole maps are included in Appendix I.

2.2 Infiltration and Geotechnical Testing

Due to various factors including shallow bedrock, Act 2 contamination, existing buildings on the site, and lack of suitable area for infiltration, the use of the Manage Release Concept was selected to mitigate volume increases instead of infiltration. The onsite subsurface findings including various test pits and boring holes are located in Appendix J.

3.0 Regulations

The PCSM plan has been prepared utilizing the following standards:

- Municipal Ordinances – Borough of Conshohocken and Whitemarsh Township, various dates

- PADEP Erosion and Sediment Pollution Control Program Manual, Pennsylvania Department of Environmental Protection, March 2012
- Pennsylvania Stormwater Best Management Practices Manual, Final Draft, Pennsylvania Department of Environmental Protection, December 2006

Several of the above regulations address similar tasks but have different criteria that conflict with one another. In such cases, all of the criteria were evaluated to determine how to achieve the best overall compliance with all of the regulatory documents. The project criteria used included the following:

- Tributary Cover is based on actual field conditions, topographic survey data, and aerial mapping.

- Land Use Coefficients and Curve Numbers are consistent with the normal practices of the Whitemarsh Township and Conshohocken Borough Stormwater Management Ordinances, and Urban Hydrology for Small Watersheds, Technical Release 55 (TR-55), and were merged into a project specific list, which is included in **Appendix C**.

- Rainfall Depths and Intensities follow the NOAA Atlas 14 data shown in **Appendix D**. Rainfall intensity curves consistent with the normal practices of the Whitemarsh Township and Conshohocken Borough Stormwater Management Ordinances, were utilized in the rainfall runoff analysis.

- Channel Design uses criteria from the Erosion and Sediment Pollution Control Program Manual.

- Storm Sewer and Inlet Design adhere to criteria found in the Whitemarsh Township and Conshohocken Borough Municipal Codes. The Rational Method was used for the analysis of stormwater systems and stormwater runoff rates. Pipes were analyzed using the Hydraflow Storm Sewers Extension for AutoCAD Civil 3D computer analysis program.

- Detention Basin Routings use the SCS Segmental approach for the time of concentration. Routings were performed using the Modified Puls Routing methodology with the SCS TR-20 method used for the development of inflow hydrographs in the program HydroCAD Version 10.

3.1 Act 167

Montgomery County completed Act 167 Stormwater Management Plans for 10 of its 17 watersheds and is considering completing one county wide plan to complete the remaining watershed plans and update the existing ones. The project is located within the Schuylkill Watershed for which a plan has not been completed; therefore, more stringent management is not required above the Pennsylvania Stormwater Management Act 167 and all post-project design storms were reduced to rates below the pre-project condition.

3.2 Erosion and Sediment Pollution Control

This project will be submitted to the Montgomery County Conservation District (MCCD) for the required Erosion and Sediment Pollution Controls (E&SPC) approval as required by the Pennsylvania Clean Stream Law and regulations from Chapter 102. Applicable E&SPC design calculations for permanent features are included in Appendix H. The E&SPC construction sequence, on the E&SPC plans, includes the construction sequence for PCSM BMP installations for the project.

3.3 Pennsylvania Department of Environmental Protection

PADEP's PCSM plan goal is to control rate, volume, and water quality of runoff from a project by maximizing volume reduction technologies, minimizing point source discharges to surface waters, preserving stream channel integrity, and protecting the physical, biological, and chemical qualities of the receiving surface water. PADEP created several worksheets to help the designer assess the effectiveness of the design, shown in Appendix E. The PADEP PCSM Worksheets will be discussed in more detail later in this report.

4.0 Proposed PCSM BMPs

The proposed structural BMPs for this project include:

1. Dry-Extended Detention Facility – Underground Detention Basin A was designed for peak rate reduction only. This facility increases the time it takes water to reach the discharge point by slowly releasing the runoff. Sizing of the concrete outlet structure was determined such that township release rate requirements were met. Upstream snouts will function as pre-treatment for this basin. This facility will be constructed of 16 rows each of 24" HDPE perforated pipes at 197 feet in length. The project is located on a site with known contaminated soils, therefore this facility was not designed for infiltration and is wrapped with a 30 mil liner to prevent it from occurring. This permanent BMP enhances not only ground water recharge, but removes large and small particulates, providing excellent water quality (BMP 6.6.3).

2. Managed Release Concept Basin - Underground MRC Basin B was designed to assist in peak rate reduction and volume management through the outlet design with Management Release Concept (MRC) approach. Upstream snouts will function as pre-treatment for this basin. This facility will be constructed as a concrete chamber. The project is located on a site with known contaminated soils, therefore this facility was not designed for infiltration and is wrapped with a 30 mil liner to prevent it from occurring. This permanent BMP enhances not only ground water recharge, but removes large and small particulates, providing excellent water quality (BMP 6.6.3).

The stormwater runoff conveyed into the subsurface detention facilities will be collected from the proposed building roof drains and various Type 'C' and 'M' inlets within the parking areas. This runoff will receive water quality treatment prior to discharge into the detention facilities and will be considered as clean water.

Manage Release Concept Design Standards:

- Runoff Capture – All runoff entering the underground basins will be pre-treated by water quality snout inlets to remove large and small particulates prior to entering the basins.
- Release Rate for the 1.2-inch/2-hour Storm – The MRC facility will have the release rate of 0.01 cfs for the 1.2-inch/2-hour storm event. Refer to MRC worksheet.
- Internal Water Storage – 12" of IWS has been provided. As stated above, all runoff convey into the underground basins are deemed as clean water from the roof drains.
- Peak Flow Attenuation for the 2-year/24-hour Event – The project drainage area release rate of 2-year/24-hour storm event in post development condition is lower than the project drainage area release of 1-year/24-hour storm event in pre-development condition. Refer to Appendix F – Release Rate Calculations.
- Stormwater BMP Manual – MRC is being incorporated into one of the two subsurface detention facilities.
- MRC BMP Selection – Non-vegetated MRC (Subsurface Detention Structure) is being proposed for the project.
- Pre-Development Site Characterization and Assessment of Soil and Geology – As described above, infiltration testing was elected not to be performed due to proximity of underground basins to the buildings and their parking structures. Closed systems are proposed.
- Separation Distance – A 1 foot separation from seasonal high water table has been provided.
- Ponding Depth and Drawdown Time – Design criteria has been incorporated. Refer to MRC worksheets.
- Soil Media – Soil media has not been provided as the proposed MRC is a subsurface detention structure.
- Underdrain Design – Perforated underdrains are provided at the MRC invert with an upturned elbow to provide 12" of internal water storage at the OCS.
- Discharge Flow Path – Runoff discharges from the subsurface detention facility will be conveyed through the proposed storm sewer network prior to discharge into the Schuylkill River.
- Antidegradation Requirements – Runoff discharges from the subsurface detention facility will be conveyed through the proposed storm sewer network prior to discharge into the Schuylkill River. The underground detention time will allow time for the water to cool prior to discharging to the surface water.
- The PADEP Managed Release Concept (MRC) Design Summary sheets are included in Appendix E.

3. Mechanical Water Quality Filter – The discharge pipes into the underground detention facilities will drain through snouts to treat the stormwater prior to being discharged into the facilities. This structure is not recognized as a DEP BMP, but it can be used in combination with other facilities.

The aforementioned BMPs were designed in accordance with PADEP policies. Specific BMP locations are on the included plans.

5.0 Peak Rate Analysis

This project was designed to fulfill the PADEP Peak Rate Control Guidelines, which limit the post-project peak flow rates to the pre-project peak flow rates for applicable storm events.

The project site is located within the Schuylkill River Watershed which does not have an approved Act 167 plan, therefore no additional release rate restrictions are required. For both analysis points, post-project flow rates shall not exceed the pre-project flow rates for 1-, 2-, 5-, 10-, 25-, 50-, and 100-year design frequency storms.

Since the TR-55 methodology is used, the SCS Segmental methodology is used to calculate the time of concentration. A time of concentration was calculated for each subarea. Time of concentration calculations can be found as part of the release rate calculations completed using HydroCAD, see Appendix F for the pre-project and post-project calculations. The post-project flow rate is reduced to less than the pre-project flow rate in all design storms.

6.0 Volume Management

This project as a whole was designed to fulfill the PADEP Volume Control Guideline 1, which limits the post-project runoff volume to the pre-project runoff volume for the 2-year, 24-hour storm event. The two ways to mitigate the project runoff volume are through the use of non-structural and structural BMPs. The proposed structural BMPs and their PADEP BMP IDs were listed previously in the Proposed PCSM BMPs section of this report.

6.1 Non-Structural BMP Credits

PADEP PCSM Volume Worksheet calculates the volume credits that can be taken for utilizing non-structural BMPs in the planning process for any project. At this time, credits were not taken for non-structural BMPs. All of the PADEP PCSM Worksheets can be found in Appendix E.

6.2 Required Infiltration Volume

The 'Volume Management' DEP PCSM Spreadsheet calculations were completed to determine the change in runoff volume for the 2-year, 24-hour design storm event from the pre-project condition to the post-project condition.

6.3 Provided Infiltration Volume

The 'Volume Management' DEP PCSM Spreadsheet tabulates the tributary area to the proposed structural BMPs and the storage volume of the proposed BMPs. Since infiltration is not possible, this project includes the use of a managed release concept (MRC) underground detention basin to account for the difference between the 2-year pre-project volume and the 2-year post-project volume. This MRC basin will mitigate for all the additional imperious surfaces while also assisting in rate reduction. The PADEP Managed Release Concept (MRC) Design Summary sheets are included in Appendix E.

7.0 Water Quality Calculations

This project as a whole was designed to adequately address the PADEP Water Quality Control Guideline, which requires a the post-project releases of total suspended solids (TSS) and total phosphorous (TP), and nitrates (NO3) do not exceed the pre-project releases. Through the use of structural BMPs, the post-project pollutant loading can be reduced. The proposed Structural BMPs were listed previously in the Proposed PCSM BMPs section of this report.

7.1 Required Water Quality Reductions

In order to reduce the pollutant loading in the post-project condition, permanent BMPs were purposefully placed to intercept disturbed runoff. These proposed BMPs were listed previously in the report. The project was designed to use proposed BMPs in series. As such, the drainage areas to each BMP may overlap, but the actual footprint of the BMPs do not overlap and volumes to each BMP are only counted once.

The PADEP PCSM Quality Worksheet calculates the total pollutants reaching each individual BMP and the total pollutant reductions based on the BMP removal efficiencies. After each BMP is calculated, a sum of the total pollutant reductions achieved by all BMPs was determined. Although there are multiple proposed BMPs, the water quality BMPs used for calculation purposes include: MRC underground basin and underground basin. Snouts are used for pre-treatment of stormwater prior to discharging to the underground detention basins, but the snouts do not provide additional water quality credit.

The proposed project meets all three of the PADEP PCSM Quality Worksheet required pollutant load reductions. The project post development water quality pollutants loads are less than the pre-development water quality pollutants loads for all three required pollutants.

All of the PADEP PCSM Worksheets can be found in Appendix E. Water quality calculations for each water quality BMP are also shown in Appendix E.

8.0 Operations and Maintenance for PCSM BMPs

The operation and maintenance of the permanent PCSM BMPs located onsite will become the responsibility of the owner by way of the recorded plans. The owner must sign an Operation and Maintenance Agreement based on the Operation and Maintenance Plan as described in detail on the PCSM plans.

9.0 Anti-Degradation Analysis

All runoff from the roof areas will be captured and directed to subsurface underdrains. Runoff from paved areas of the project discharge through buried pipe, thereby creating ample opportunity for cooling prior to reaching the surface waters. Most of the site will be directed to underground detention facilities which will provide additional time for water to cool. As such, the project will not have an adverse impact on the natural temperatures of the receiving surface waters.

The site is within 150' of the Schuylkill River but the receiving watercourse is not within a special protection watershed. As such, riparian buffers have not been incorporated into the PCSM design. Therefore, no earthmoving restriction near the watercourse is proposed. The watercourse is protected from sediment runoff by BMPs during construction as indicated on the plans.

10.0 PCSM Plan Set

Post-Construction Stormwater Management Plan drawings have been submitted concurrently with this report.

11.0 Conclusion

The project meets PCSM requirements by addressing three key measures used by PADEP to gauge the potential impacts from a proposed project including:

1. Peak Rate Mitigation – Peak Rate Mitigation reduces the post-project release rates to levels less than the pre-project release rates, thus reducing the potential for accelerated erosion to areas located downstream of the project and reducing the potential for downstream flooding.
2. Volume Reduction – Volume Reduction lessens the effects of construction by reducing the post-project runoff volume through the use of an MRC BMP. Since this site located in a known contaminated soils area, infiltration is not proposed on the site.
3. Water Quality Control – Water Quality Controls are used to achieve pollutant loading reductions, in order to protect the existing surface waters and preserve natural habitats.

Through the use of recommended BMPs that improve water quality and reduce release rates, the environmental effects from this project were reduced. This PCSM Plan was designed to eliminate (wherever possible) or minimize point source discharges to surface waters, preserve the integrity of existing stream channels, and protect the physical, biological, and chemical qualities of the receiving surface water. The calculations presented in this report demonstrate that the designed facilities sufficiently balance the multiple regulatory requirements.

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References

• Subdivision and Land Development Ordinances (SALDO), Borough of Conshohocken and Whitemarsh Township, various dates.

• Zoning Ordinances, Borough of Conshohocken and Whitemarsh Township, various dates.

• Stormwater Management Ordinances, Borough of Conshohocken and Whitemarsh Township, various dates.

• PADEP Erosion and Sediment Pollution Control Program Manual (E&S Manual), Pennsylvania Department of Environmental Protection, March 2012.

• Pennsylvania Stormwater Best Management Practices Manual, Final Draft, Pennsylvania Department of Environmental Protection, December 2006.

• NRCS Web Soil Survey, United States Department of Agriculture, November 2021.

• PA Code, Title 25, Environmental Protection, Commonwealth of Pennsylvania

• PENNDOT Publication 13M, Design Manual, Part 2, Highway Design (DM-2), Pennsylvania Department of Transportation, August 2009

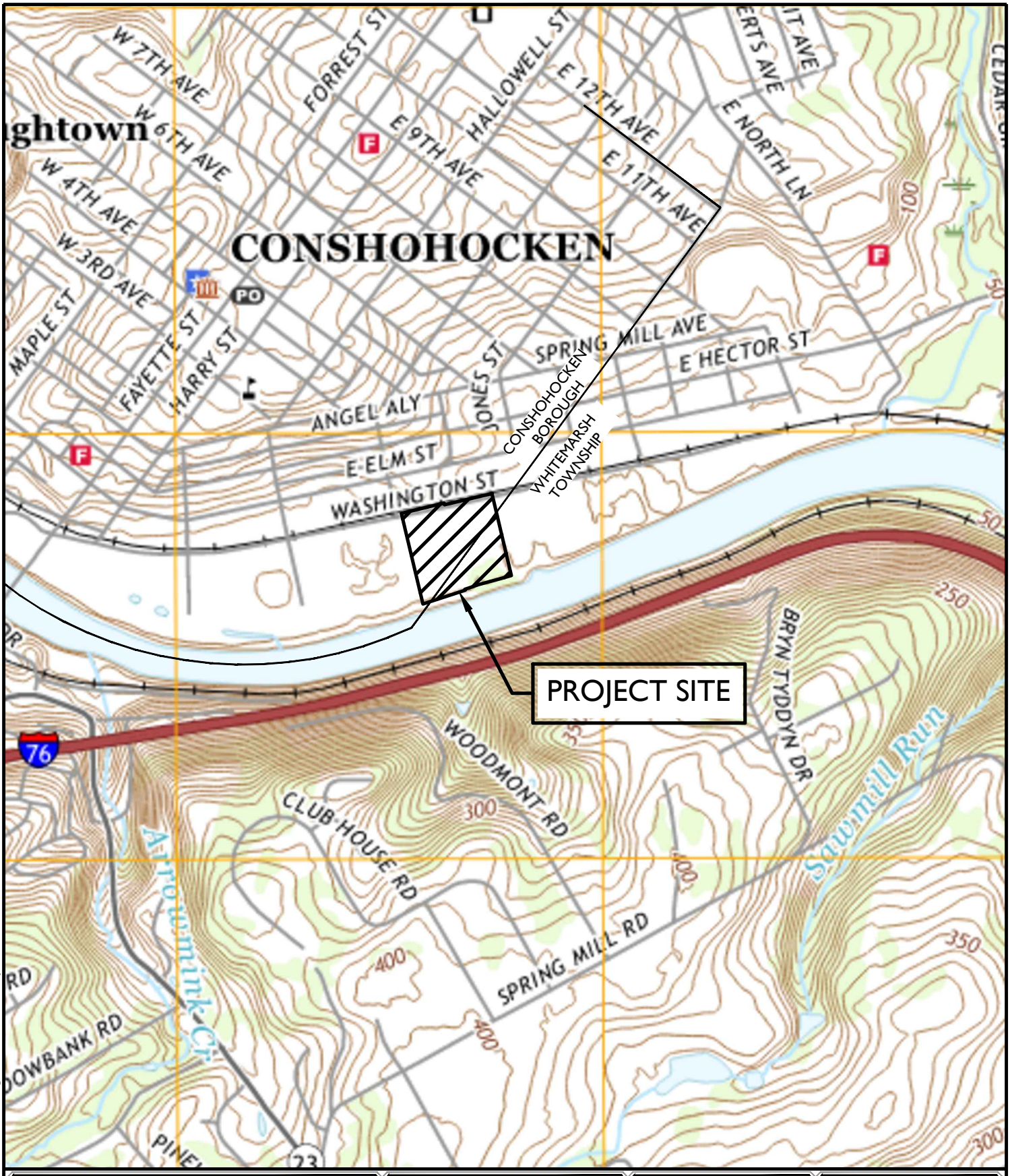
• PENNDOT Publication 584, PENNDOT Drainage Manual (PDM), Pennsylvania Department of Transportation, December 2010

• PENNDOT Publication 72M, Roadway Construction Standards, Pennsylvania Department of Transportation, June 10, 2013

• Urban Hydrology for Small Watersheds, Technical Release 55 (TR-55), United States Department of Agriculture, June 1986

• PA Code, Title 25, Environmental Protection, Commonwealth of Pennsylvania

Appendix A | Project Location Maps



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PRELIMINARY/FINAL
LAND DEVELOPMENT PLANS
FOR

401/433 WASHINGTON STREET APARTMENTS

CONSHOHOCKEN BOROUGH
AND WHITEMARSH
TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

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ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/2/2021	MD	CRR

PROJECT NUMBER:	DRAWING NAME:
14000908C	C-EXBT-USGS

SHEET TITLE: USGS MAP

SHEET NUMBER: A - 3 of 12

1 of 1

2014\14000908C\Engineering\Exhibits\C-EXBT-USGS.dwg\C-XX-EXHIBIT By: MDEJESUS

AERIAL MAP
E Hector St
3059
Apple St
Jones St
E Elm St
E Elm St
E Elm St
Schuylkill River Trail
Cherry St
Washington St
Washington St
Schuylkill River Trail
Washington St
Washington St
SITE
Schuylkill River
Schuylkill River
Schuylkill Expy
76
N
800 ft
Google Earth

6/2019 AERIAL
Legend
Schuylkill River
Google Earth
A - 6 of 12
N
800 ft

5/2016 AERIAL
Legend
Schuylkill River
A - 7 of 12
N
800 ft
Google Earth

10/2011 AERIAL
Legend
Schuylkill River
Google Earth
A - 8 of 12
N
800 ft

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 18. **Horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov/.

BASE MAP SOURCE: Road centerlines were obtained in digital spatial data format from the Delaware Valley Regional Planning Commission. County and township/borough boundaries were downloaded from the Pennsylvania Spatial Data Access website. 2002 and 2005 digital orthophotographs were provided by the Delaware Valley Regional Planning Commission. Streamlines were digitized based on the orthophotos. Adjustments were made to specific base map features to align them to 1"=200' scale orthophotos.

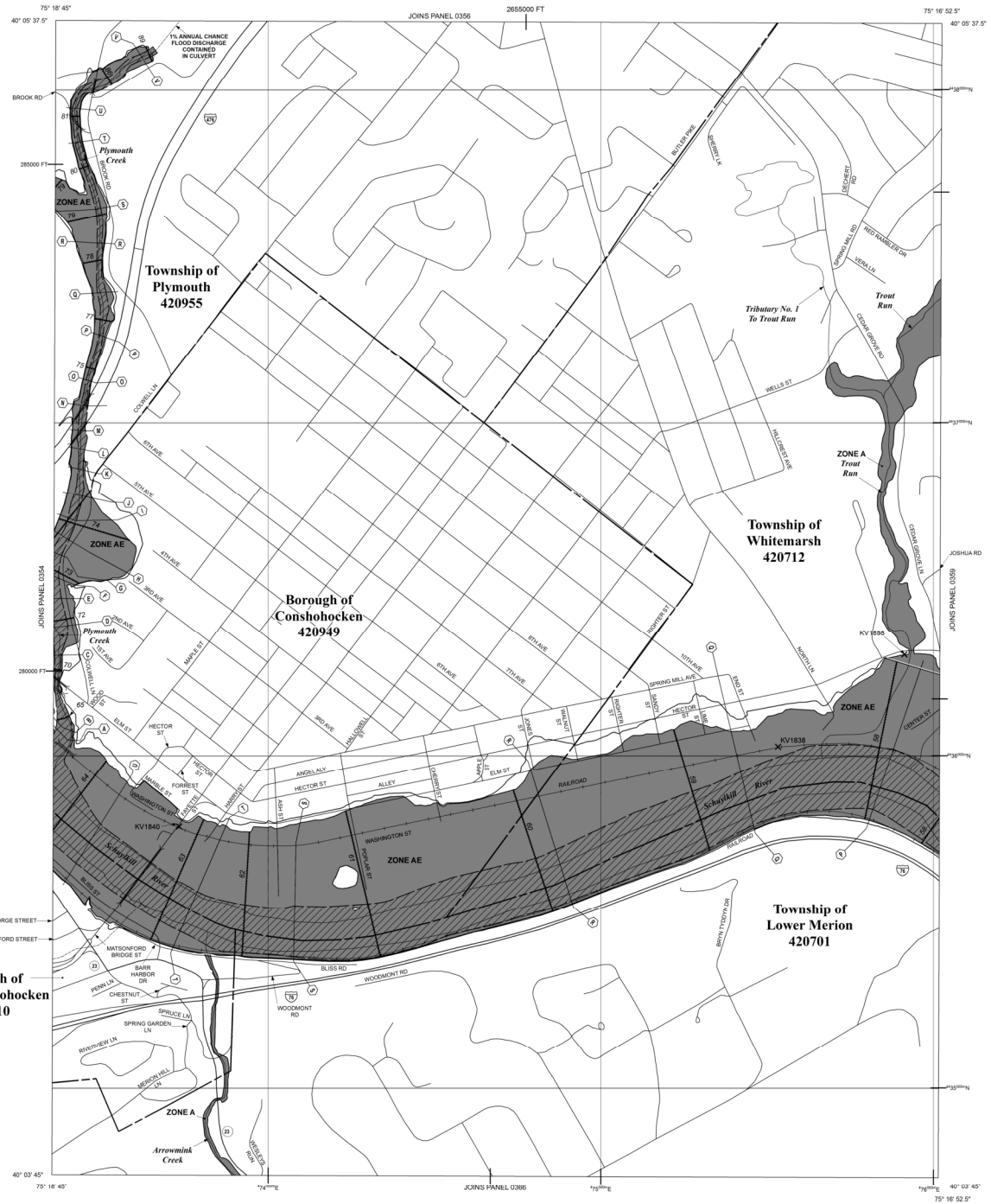
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

	Bridge
	Culvert
A A	Cross section line
23 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4276000 M	1000-meter Universal Transverse Mercator grid values, zone 18
600000 FT	5000-foot grid ticks: Pennsylvania State Plane (South) coordinate system (FIPSZONE 3702), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

DECEMBER 19, 1996

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
MARCH 2, 1998 APRIL 21, 1999 AUGUST 9, 1999 OCTOBER 19, 2001
MARCH 2, 2016 - to add, change and delete Special Flood Hazard Areas; to reflect updated topographic information; to change, add Base Flood Elevations; and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0358G

FIRM
FLOOD INSURANCE RATE MAP

MONTGOMERY COUNTY, PENNSYLVANIA
(ALL JURISDICTIONS)

PANEL 358 OF 451

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CONSHOHOCKEN, BOR OF	420949	0358	G
LOWER MERION, TWP OF	420701	0358	G
PLYMOUTH, TWP OF	420900	0358	G
WHITEMARSH, TWP OF	420712	0358	G
WEST CONSHOHOCKEN, BOR OF	420710	0358	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
42091C0358G

MAP REVISED
MARCH 2, 2016

Federal Emergency Management Agency

Appendix B | Soil Maps and Data

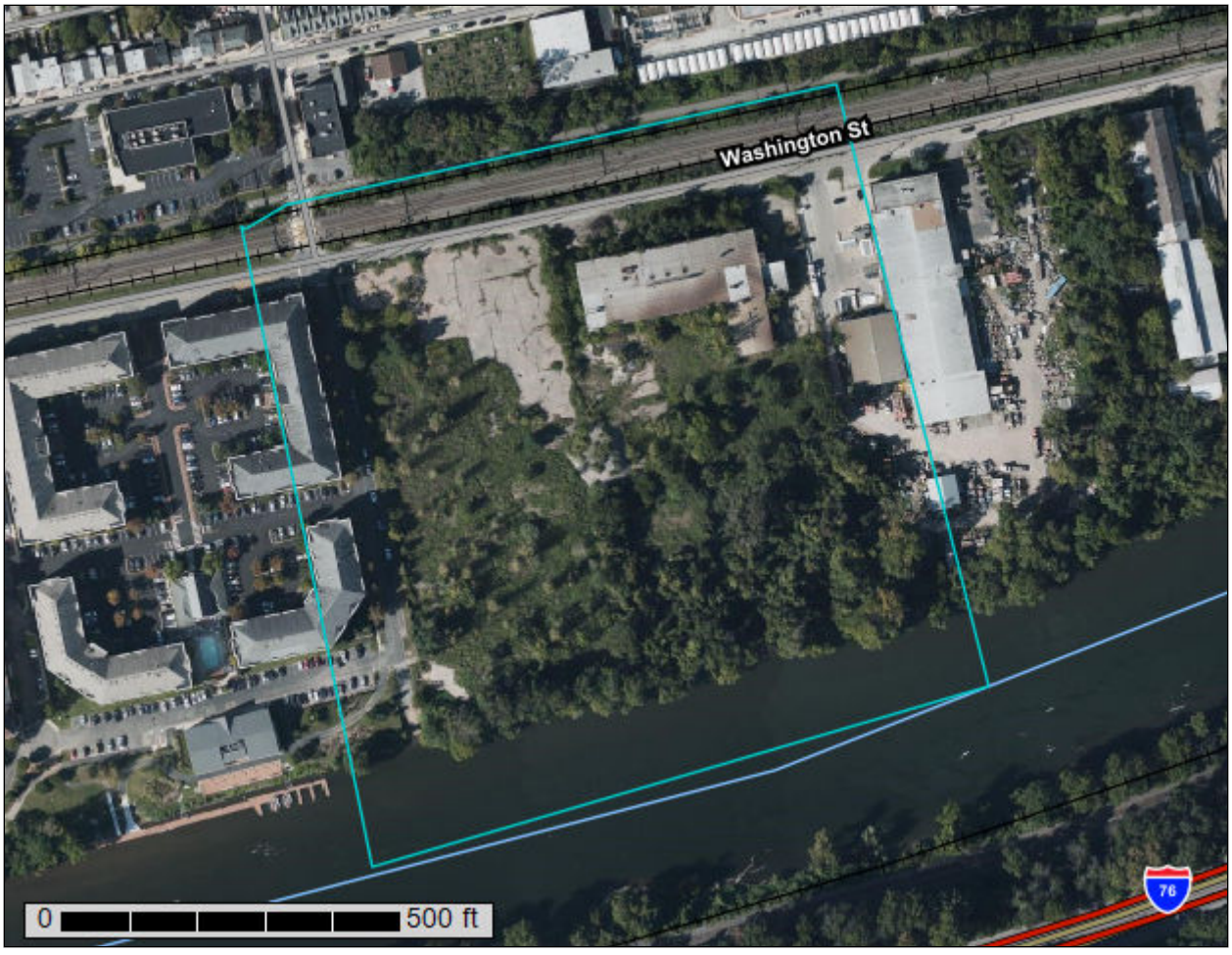
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Montgomery County, Pennsylvania



November 18, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

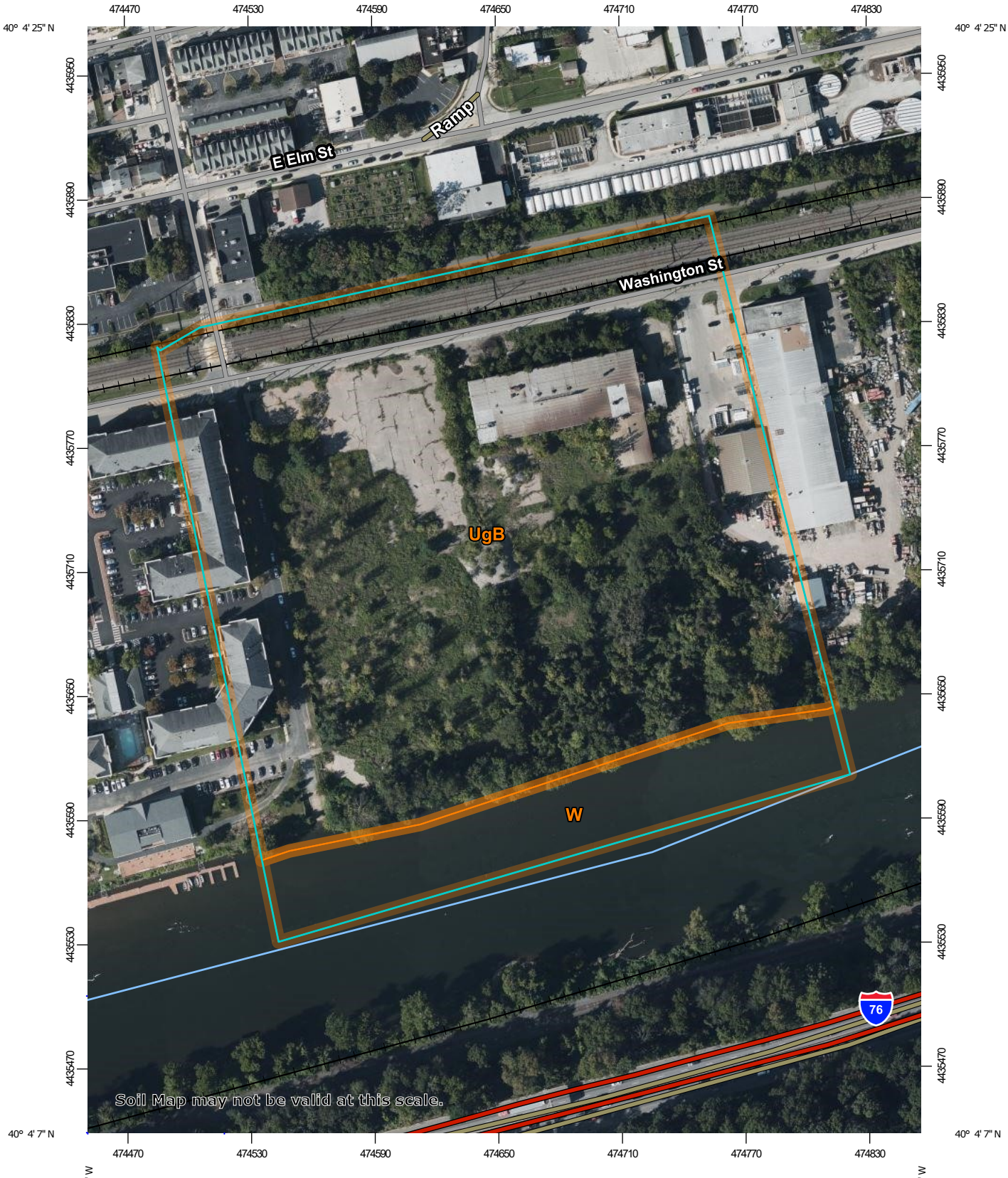
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



Map Scale: 1:2,610 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Montgomery County, Pennsylvania
Survey Area Data: Version 16, Sep 1, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 21, 2020—Oct 6, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
UgB	Urban land, 0 to 8 percent slopes	17.4	86.6%
W	Water	2.7	13.4%
Totals for Area of Interest		**20.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Montgomery County, Pennsylvania

UgB—Urban land, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2dtyq
Elevation: 800 to 1,500 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Pavement, buildings and other artifically covered areas human transported material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Udorthents, unstable fill

Percent of map unit: 10 percent
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: 1nnv3
Mean annual precipitation: 36 to 50 inches
Mean annual air temperature: 46 to 59 degrees F
Frost-free period: 120 to 214 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Parent material: Rivers streams ponds

Properties and qualities

Runoff class: Negligible
Frequency of ponding: Frequent

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Appendix C | Runoff Coefficients and Curve Numbers

Runoff Curve Numbers and Percent Imperviousness Values*

Cover Description	Average Percent Impervious Area	Curve Numbers for Hydrologic Soil Group			
Open space (lawns, parks, golf courses, cemeteries, etc.):					
Good condition (grass cover greater than 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads: paved, curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved, open ditches (including right-of-way)		83	89	92	93
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential district by average lot size:					
1/8 acre or less (townhouses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
½ acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Woods		30	55	70	77
Agriculture		Refer to Table 2-2b in source document (TR55) by crop type and treatment.			

*Source Soil Conservation Service Technical Release No. 55, Second Edition, June 1986.

Table 2-2c Runoff curve numbers for other agricultural lands [1/]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2/]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3/]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4/]	48	65	73
Woods—grass combination (orchard or tree farm). [5/]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6/]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 [4/]	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

1 Average runoff condition, and $I_a = 0.2S$.

2 *Poor:* <50%) ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.

3 *Poor*: <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.

4 Actual curve number is less than 30; use CN = 30 for runoff computations.

5 CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

6 *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

2. The coefficient of roughness, "n", shall be as follows unless otherwise approved by the Township Engineer.

Material/Ground Cover	**Roughness Coefficient "D"**
Concrete pipe	.012
Corrugated steel pipe	see table below
Vitrified clay pipe	.012
Cast iron pipe	.013
Brick sewer	.015
Asphalt pavement	.015
Concrete pavement	.014
Grass swales	.040
Earth	.020
Gravel	.020
Rock	.035
Cultivated areas	.030 to .050
Dense Brush	.070 to .140
Dense woods with little undergrowth	.100 to .150
Streams	
Some grass and weeds, little brush	.030 to .035
Dense growth of weeds	.035 to .050
Some weeds, heavy brush on banks	.050 to .070

Values of Coefficient of Roughness (n)
for Standard Corrugated Steel Pipe
(Manning's Formula)

Corrugations	Helical						
	1 ½" x 1/4"				2 2/3" x 1 2/3"		
	8"	10"	12"	18"	24"	36"	48"
Unpaved	.012	.014	.011	.014	.016	.019	.020
25% paved					.015	.017	.020
Fully paved					.012	.012	.012

Corrugations	Helical					
	3" x 1"					
	36"	48"	54"	60"	66"	72"
Unpaved	.021	.023	.023	.024	.025	.026
25% paved	.019	.020	.020	.021	.022	.022
Fully paved	.012	.012	.012	.012	.011	.012

Appendix D | Rainfall Depths and Intensities

NOAA Atlas 14, Volume 2, Version 3
Location name: Conshohocken, Pennsylvania, USA*
Latitude: 40.072°, Longitude: -75.2987°
Elevation: 53.9 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.347** (0.318-0.378)	**0.412** (0.379-0.450)	**0.485** (0.444-0.528)	**0.535** (0.489-0.583)	**0.596** (0.542-0.649)	**0.637** (0.576-0.695)	**0.678** (0.611-0.741)	**0.714** (0.639-0.782)	**0.755** (0.670-0.831)	**0.786** (0.692-0.869)
10-min	**0.554** (0.509-0.604)	**0.660** (0.606-0.720)	**0.776** (0.710-0.845)	**0.856** (0.783-0.933)	**0.950** (0.864-1.03)	**1.01** (0.918-1.11)	**1.08** (0.971-1.18)	**1.13** (1.01-1.24)	**1.19** (1.06-1.31)	**1.24** (1.09-1.37)
15-min	**0.692** (0.636-0.755)	**0.829** (0.762-0.905)	**0.982** (0.899-1.07)	**1.08** (0.990-1.18)	**1.20** (1.10-1.31)	**1.29** (1.16-1.40)	**1.36** (1.23-1.49)	**1.43** (1.28-1.56)	**1.50** (1.33-1.65)	**1.55** (1.37-1.72)
30-min	**0.949** (0.872-1.03)	**1.15** (1.05-1.25)	**1.40** (1.28-1.52)	**1.57** (1.44-1.71)	**1.78** (1.62-1.94)	**1.94** (1.75-2.11)	**2.09** (1.88-2.28)	**2.22** (1.99-2.43)	**2.39** (2.12-2.63)	**2.52** (2.21-2.78)
60-min	**1.18** (1.09-1.29)	**1.44** (1.32-1.57)	**1.79** (1.64-1.95)	**2.04** (1.87-2.23)	**2.37** (2.16-2.59)	**2.62** (2.37-2.86)	**2.87** (2.59-3.14)	**3.12** (2.79-3.41)	**3.43** (3.05-3.78)	**3.67** (3.23-4.06)
2-hr	**1.42** (1.29-1.55)	**1.72** (1.57-1.89)	**2.15** (1.96-2.35)	**2.48** (2.25-2.71)	**2.91** (2.63-3.18)	**3.25** (2.92-3.56)	**3.60** (3.21-3.94)	**3.94** (3.49-4.32)	**4.41** (3.86-4.85)	**4.76** (4.13-5.26)
3-hr	**1.55** (1.42-1.70)	**1.88** (1.72-2.07)	**2.36** (2.15-2.59)	**2.72** (2.47-2.98)	**3.21** (2.90-3.52)	**3.59** (3.22-3.94)	**3.99** (3.55-4.37)	**4.39** (3.87-4.82)	**4.92** (4.29-5.44)	**5.35** (4.61-5.92)
6-hr	**1.94** (1.78-2.13)	**2.35** (2.15-2.58)	**2.93** (2.67-3.22)	**3.40** (3.09-3.72)	**4.05** (3.66-4.44)	**4.59** (4.10-5.03)	**5.15** (4.57-5.65)	**5.74** (5.03-6.31)	**6.57** (5.66-7.26)	**7.25** (6.15-8.04)
12-hr	**2.36** (2.16-2.61)	**2.85** (2.61-3.15)	**3.58** (3.27-3.95)	**4.18** (3.80-4.61)	**5.07** (4.55-5.57)	**5.81** (5.17-6.38)	**6.62** (5.82-7.28)	**7.49** (6.49-8.27)	**8.77** (7.44-9.73)	**9.84** (8.20-11.0)
24-hr	**2.73** (2.51-2.97)	**3.28** (3.02-3.59)	**4.12** (3.79-4.50)	**4.82** (4.42-5.26)	**5.83** (5.31-6.34)	**6.68** (6.06-7.26)	**7.60** (6.85-8.25)	**8.60** (7.69-9.32)	**10.0** (8.89-10.9)	**11.2** (9.85-12.2)
2-day	**3.15** (2.88-3.44)	**3.80** (3.48-4.15)	**4.78** (4.38-5.22)	**5.57** (5.09-6.08)	**6.71** (6.10-7.30)	**7.64** (6.93-8.32)	**8.64** (7.78-9.40)	**9.71** (8.69-10.6)	**11.2** (9.96-12.2)	**12.5** (11.0-13.6)
3-day	**3.32** (3.05-3.63)	**4.00** (3.68-4.37)	**5.02** (4.60-5.48)	**5.84** (5.35-6.37)	**7.01** (6.39-7.63)	**7.98** (7.25-8.68)	**9.00** (8.13-9.80)	**10.1** (9.06-11.0)	**11.7** (10.4-12.7)	**12.9** (11.4-14.1)
4-day	**3.49** (3.22-3.82)	**4.21** (3.87-4.60)	**5.26** (4.83-5.74)	**6.11** (5.61-6.66)	**7.31** (6.68-7.96)	**8.31** (7.56-9.04)	**9.36** (8.48-10.2)	**10.5** (9.44-11.4)	**12.1** (10.8-13.2)	**13.4** (11.8-14.6)
7-day	**4.08** (3.79-4.44)	**4.90** (4.54-5.33)	**6.05** (5.60-6.59)	**7.00** (6.47-7.61)	**8.36** (7.69-9.08)	**9.48** (8.68-10.3)	**10.7** (9.71-11.6)	**11.9** (10.8-12.9)	**13.7** (12.3-14.9)	**15.2** (13.5-16.5)
10-day	**4.65** (4.33-5.02)	**5.55** (5.17-6.00)	**6.77** (6.29-7.31)	**7.75** (7.19-8.37)	**9.11** (8.42-9.83)	**10.2** (9.41-11.0)	**11.3** (10.4-12.2)	**12.5** (11.4-13.5)	**14.2** (12.9-15.3)	**15.5** (14.0-16.8)
20-day	**6.29** (5.90-6.72)	**7.46** (7.00-7.97)	**8.90** (8.35-9.51)	**10.0** (9.40-10.7)	**11.6** (10.8-12.3)	**12.7** (11.9-13.6)	**13.9** (13.0-14.9)	**15.2** (14.0-16.2)	**16.8** (15.5-18.0)	**18.0** (16.5-19.3)
30-day	**7.84** (7.41-8.28)	**9.23** (8.73-9.76)	**10.8** (10.2-11.4)	**12.0** (11.3-12.6)	**13.5** (12.7-14.3)	**14.7** (13.8-15.5)	**15.8** (14.9-16.8)	**17.0** (15.9-18.0)	**18.5** (17.2-19.6)	**19.6** (18.2-20.8)
45-day	**9.96** (9.47-10.5)	**11.7** (11.1-12.3)	**13.5** (12.8-14.2)	**14.8** (14.0-15.5)	**16.4** (15.6-17.3)	**17.7** (16.7-18.6)	**18.9** (17.8-19.8)	**20.0** (18.8-21.0)	**21.3** (20.1-22.5)	**22.3** (20.9-23.6)
60-day	**11.9** (11.4-12.5)	**14.0** (13.3-14.7)	**16.0** (15.2-16.8)	**17.4** (16.6-18.3)	**19.3** (18.3-20.2)	**20.6** (19.6-21.6)	**21.8** (20.7-22.9)	**23.0** (21.8-24.2)	**24.4** (23.1-25.7)	**25.4** (24.0-26.8)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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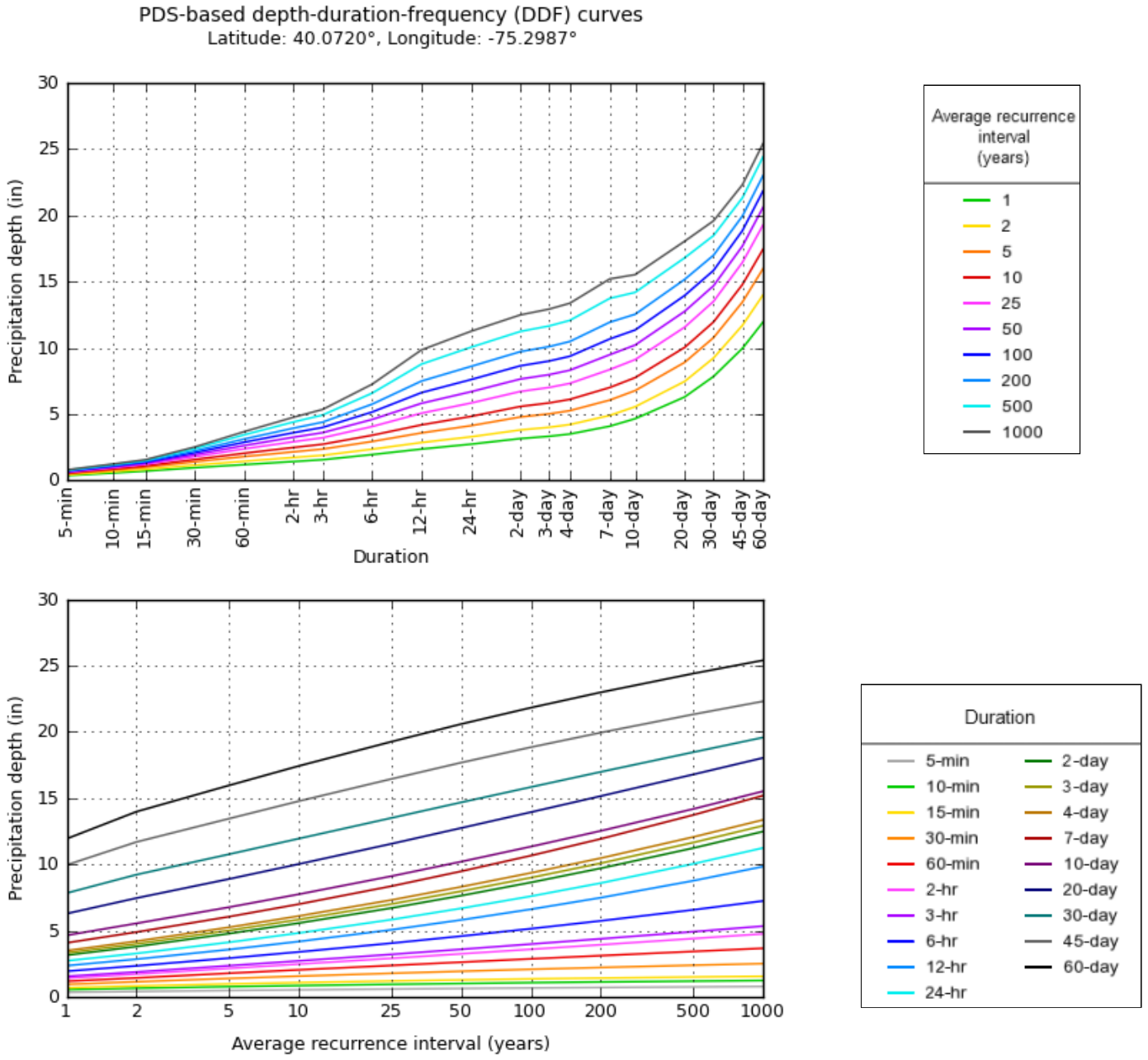
PF graphical



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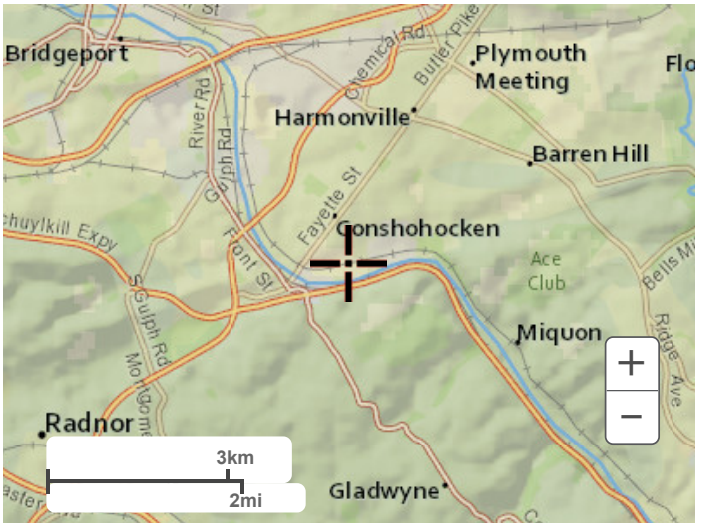
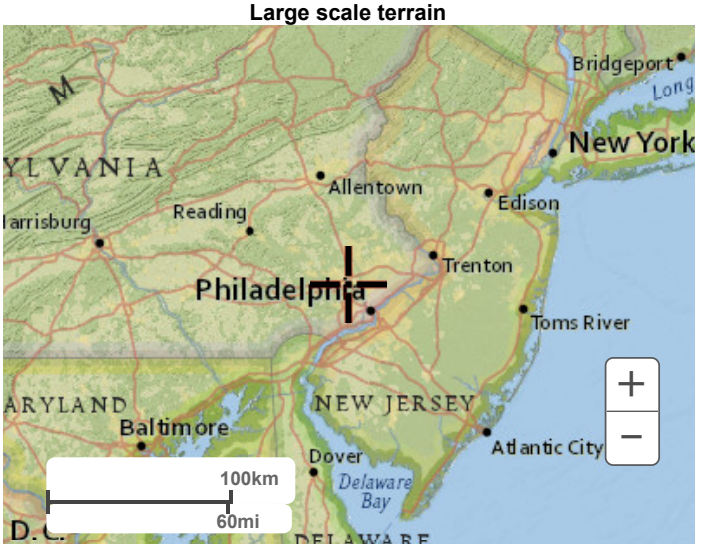
Maps & aerials

Small scale terrain



Large scale terrain



Large scale map

Large scale aerial

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Disclaimer

Rainfall Time-Depth Curves

Subsection: Time-Depth Curve
Label: NOAA PP, Conshohocken PA
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time-Depth Curve: 1-YR	
Label	1-YR
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	1 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.00	0.00	0.01	0.01	0.01
0.500	0.01	0.02	0.02	0.02	0.03
1.000	0.03	0.03	0.04	0.04	0.04
1.500	0.05	0.05	0.05	0.06	0.06
2.000	0.06	0.07	0.07	0.07	0.08
2.500	0.08	0.08	0.09	0.09	0.09
3.000	0.10	0.10	0.10	0.11	0.11
3.500	0.11	0.12	0.12	0.13	0.13
4.000	0.13	0.14	0.14	0.15	0.15
4.500	0.15	0.16	0.16	0.17	0.17
5.000	0.17	0.18	0.18	0.19	0.19
5.500	0.19	0.20	0.20	0.21	0.21
6.000	0.22	0.22	0.23	0.23	0.24
6.500	0.24	0.25	0.25	0.26	0.26
7.000	0.27	0.27	0.28	0.28	0.29
7.500	0.30	0.30	0.31	0.31	0.32
8.000	0.33	0.33	0.34	0.35	0.35
8.500	0.36	0.37	0.38	0.38	0.39
9.000	0.40	0.41	0.42	0.42	0.43
9.500	0.44	0.45	0.46	0.47	0.49
10.000	0.50	0.51	0.52	0.54	0.55
10.500	0.56	0.58	0.59	0.61	0.63
11.000	0.66	0.68	0.71	0.74	0.77
11.500	0.81	0.86	0.92	1.00	1.11
12.000	1.30	1.62	1.73	1.81	1.87
12.500	1.92	1.96	1.99	2.02	2.05
13.000	2.07	2.10	2.12	2.14	2.15
13.500	2.17	2.18	2.19	2.21	2.22
14.000	2.23	2.24	2.26	2.27	2.28
14.500	2.29	2.30	2.31	2.31	2.32
15.000	2.33	2.34	2.35	2.35	2.36
15.500	2.37	2.38	2.38	2.39	2.40
16.000	2.40	2.41	2.42	2.42	2.43
16.500	2.43	2.44	2.45	2.45	2.46
17.000	2.46	2.47	2.47	2.48	2.48
17.500	2.49	2.49	2.50	2.50	2.51
18.000	2.51	2.52	2.52	2.53	2.53
18.500	2.54	2.54	2.54	2.55	2.55
19.000	2.56	2.56	2.56	2.57	2.57
19.500	2.58	2.58	2.58	2.59	2.59

Rainfall Time-Depth Curves

Subsection: Time-Depth Curve
Label: NOAA PP, Conshohocken PA
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
20.000	2.60	2.60	2.60	2.61	2.61
20.500	2.62	2.62	2.62	2.63	2.63
21.000	2.63	2.64	2.64	2.64	2.65
21.500	2.65	2.65	2.66	2.66	2.66
22.000	2.67	2.67	2.67	2.68	2.68
22.500	2.68	2.69	2.69	2.69	2.70
23.000	2.70	2.70	2.71	2.71	2.71
23.500	2.72	2.72	2.72	2.72	2.73
24.000	2.73	(N/A)	(N/A)	(N/A)	(N/A)

Rainfall Time-Depth Curves

Subsection: Time-Depth Curve
Label: NOAA PP, Conshohocken PA
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Time-Depth Curve: 2-YR	
Label	2-YR
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	2 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.00	0.00	0.01	0.01	0.01
0.500	0.02	0.02	0.03	0.03	0.03
1.000	0.04	0.04	0.04	0.05	0.05
1.500	0.05	0.06	0.06	0.07	0.07
2.000	0.07	0.08	0.08	0.09	0.09
2.500	0.09	0.10	0.10	0.11	0.11
3.000	0.12	0.12	0.12	0.13	0.13
3.500	0.14	0.14	0.15	0.15	0.16
4.000	0.16	0.17	0.17	0.17	0.18
4.500	0.18	0.19	0.19	0.20	0.20
5.000	0.21	0.21	0.22	0.22	0.23
5.500	0.23	0.24	0.24	0.25	0.25
6.000	0.26	0.27	0.27	0.28	0.28
6.500	0.29	0.29	0.30	0.31	0.31
7.000	0.32	0.33	0.33	0.34	0.35
7.500	0.35	0.36	0.37	0.38	0.39
8.000	0.39	0.40	0.41	0.42	0.43
8.500	0.43	0.44	0.45	0.46	0.47
9.000	0.48	0.49	0.50	0.51	0.52
9.500	0.53	0.54	0.56	0.57	0.58
10.000	0.60	0.61	0.63	0.64	0.66
10.500	0.68	0.69	0.71	0.74	0.76
11.000	0.79	0.82	0.85	0.89	0.93
11.500	0.97	1.04	1.11	1.20	1.33
12.000	1.56	1.95	2.08	2.17	2.24
12.500	2.31	2.35	2.39	2.43	2.46
13.000	2.49	2.52	2.54	2.57	2.59
13.500	2.60	2.62	2.64	2.65	2.67
14.000	2.68	2.70	2.71	2.72	2.74
14.500	2.75	2.76	2.77	2.78	2.79
15.000	2.80	2.81	2.82	2.83	2.84
15.500	2.85	2.85	2.86	2.87	2.88
16.000	2.89	2.89	2.90	2.91	2.92
16.500	2.93	2.93	2.94	2.95	2.95
17.000	2.96	2.97	2.97	2.98	2.99
17.500	2.99	3.00	3.00	3.01	3.01
18.000	3.02	3.03	3.03	3.04	3.04
18.500	3.05	3.05	3.06	3.06	3.07
19.000	3.07	3.08	3.08	3.09	3.09
19.500	3.10	3.10	3.11	3.11	3.11

Rainfall Time-Depth Curves

Subsection: Time-Depth Curve
Label: NOAA PP, Conshohocken PA
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
20.000	3.12	3.12	3.13	3.13	3.14
20.500	3.14	3.15	3.15	3.16	3.16
21.000	3.16	3.17	3.17	3.18	3.18
21.500	3.19	3.19	3.19	3.20	3.20
22.000	3.21	3.21	3.21	3.22	3.22
22.500	3.23	3.23	3.23	3.24	3.24
23.000	3.24	3.25	3.25	3.25	3.26
23.500	3.26	3.27	3.27	3.27	3.28
24.000	3.28	(N/A)	(N/A)	(N/A)	(N/A)

Rainfall Time-Depth Curves

Subsection: Time-Depth Curve
Label: NOAA PP, Conshohocken PA
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Time-Depth Curve: 5-YR	
Label	5-YR
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	5 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.00	0.01	0.01	0.01	0.02
0.500	0.02	0.03	0.03	0.04	0.04
1.000	0.05	0.05	0.05	0.06	0.06
1.500	0.07	0.07	0.08	0.08	0.09
2.000	0.09	0.10	0.10	0.11	0.11
2.500	0.12	0.12	0.13	0.13	0.14
3.000	0.15	0.15	0.16	0.16	0.17
3.500	0.17	0.18	0.18	0.19	0.20
4.000	0.20	0.21	0.21	0.22	0.23
4.500	0.23	0.24	0.24	0.25	0.26
5.000	0.26	0.27	0.27	0.28	0.29
5.500	0.29	0.30	0.31	0.31	0.32
6.000	0.33	0.33	0.34	0.35	0.35
6.500	0.36	0.37	0.38	0.39	0.39
7.000	0.40	0.41	0.42	0.43	0.44
7.500	0.45	0.46	0.46	0.47	0.48
8.000	0.49	0.50	0.51	0.52	0.54
8.500	0.55	0.56	0.57	0.58	0.59
9.000	0.60	0.61	0.63	0.64	0.65
9.500	0.67	0.68	0.70	0.72	0.73
10.000	0.75	0.77	0.79	0.81	0.83
10.500	0.85	0.87	0.90	0.93	0.96
11.000	0.99	1.03	1.07	1.11	1.16
11.500	1.22	1.30	1.39	1.51	1.68
12.000	1.96	2.45	2.61	2.73	2.82
12.500	2.90	2.96	3.01	3.05	3.10
13.000	3.13	3.17	3.20	3.22	3.25
13.500	3.27	3.29	3.31	3.33	3.35
14.000	3.37	3.39	3.41	3.42	3.44
14.500	3.45	3.47	3.48	3.50	3.51
15.000	3.52	3.53	3.54	3.55	3.57
15.500	3.58	3.59	3.60	3.61	3.62
16.000	3.63	3.64	3.65	3.66	3.67
16.500	3.68	3.69	3.69	3.70	3.71
17.000	3.72	3.73	3.74	3.74	3.75
17.500	3.76	3.77	3.77	3.78	3.79
18.000	3.80	3.80	3.81	3.82	3.82
18.500	3.83	3.83	3.84	3.85	3.85
19.000	3.86	3.87	3.87	3.88	3.88
19.500	3.89	3.90	3.90	3.91	3.91

Rainfall Time-Depth Curves

Subsection: Time-Depth Curve
Label: NOAA PP, Conshohocken PA
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
20.000	3.92	3.93	3.93	3.94	3.94
20.500	3.95	3.95	3.96	3.97	3.97
21.000	3.98	3.98	3.99	3.99	4.00
21.500	4.00	4.01	4.01	4.02	4.02
22.000	4.03	4.03	4.04	4.04	4.05
22.500	4.05	4.06	4.06	4.07	4.07
23.000	4.08	4.08	4.09	4.09	4.10
23.500	4.10	4.10	4.11	4.11	4.12
24.000	4.12	(N/A)	(N/A)	(N/A)	(N/A)

Rainfall Time-Depth Curves

Subsection: Time-Depth Curve
Label: NOAA PP, Conshohocken PA
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Time-Depth Curve: 10-YR	
Label	10-YR
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.00	0.01	0.01	0.02	0.02
0.500	0.03	0.03	0.04	0.04	0.05
1.000	0.05	0.06	0.06	0.07	0.07
1.500	0.08	0.09	0.09	0.10	0.10
2.000	0.11	0.11	0.12	0.13	0.13
2.500	0.14	0.15	0.15	0.16	0.16
3.000	0.17	0.18	0.18	0.19	0.20
3.500	0.20	0.21	0.22	0.22	0.23
4.000	0.24	0.24	0.25	0.26	0.26
4.500	0.27	0.28	0.28	0.29	0.30
5.000	0.31	0.31	0.32	0.33	0.34
5.500	0.34	0.35	0.36	0.37	0.37
6.000	0.38	0.39	0.40	0.41	0.41
6.500	0.42	0.43	0.44	0.45	0.46
7.000	0.47	0.48	0.49	0.50	0.51
7.500	0.52	0.53	0.54	0.55	0.57
8.000	0.58	0.59	0.60	0.61	0.63
8.500	0.64	0.65	0.66	0.68	0.69
9.000	0.70	0.72	0.73	0.75	0.77
9.500	0.78	0.80	0.82	0.84	0.86
10.000	0.88	0.90	0.92	0.95	0.97
10.500	0.99	1.02	1.05	1.08	1.12
11.000	1.16	1.20	1.25	1.30	1.36
11.500	1.42	1.52	1.62	1.76	1.96
12.000	2.30	2.86	3.06	3.20	3.30
12.500	3.40	3.46	3.52	3.57	3.62
13.000	3.66	3.70	3.74	3.77	3.80
13.500	3.83	3.85	3.87	3.90	3.92
14.000	3.94	3.96	3.98	4.00	4.02
14.500	4.04	4.05	4.07	4.09	4.10
15.000	4.12	4.13	4.14	4.16	4.17
15.500	4.18	4.19	4.21	4.22	4.23
16.000	4.24	4.25	4.27	4.28	4.29
16.500	4.30	4.31	4.32	4.33	4.34
17.000	4.35	4.36	4.37	4.38	4.39
17.500	4.40	4.41	4.41	4.42	4.43
18.000	4.44	4.45	4.45	4.46	4.47
18.500	4.48	4.48	4.49	4.50	4.51
19.000	4.51	4.52	4.53	4.54	4.54
19.500	4.55	4.56	4.56	4.57	4.58

Rainfall Time-Depth Curves

Subsection: Time-Depth Curve
Label: NOAA PP, Conshohocken PA
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
20.000	4.58	4.59	4.60	4.60	4.61
20.500	4.62	4.62	4.63	4.64	4.64
21.000	4.65	4.66	4.66	4.67	4.67
21.500	4.68	4.69	4.69	4.70	4.71
22.000	4.71	4.72	4.72	4.73	4.73
22.500	4.74	4.75	4.75	4.76	4.76
23.000	4.77	4.77	4.78	4.78	4.79
23.500	4.79	4.80	4.80	4.81	4.81
24.000	4.82	(N/A)	(N/A)	(N/A)	(N/A)

Rainfall Time-Depth Curves

Subsection: Time-Depth Curve
Label: NOAA PP, Conshohocken PA
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Time-Depth Curve: 25-YR	
Label	25-YR
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	25 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.00	0.01	0.01	0.02	0.03
0.500	0.03	0.04	0.04	0.05	0.06
1.000	0.06	0.07	0.08	0.08	0.09
1.500	0.10	0.10	0.11	0.12	0.12
2.000	0.13	0.14	0.15	0.15	0.16
2.500	0.17	0.18	0.18	0.19	0.20
3.000	0.21	0.21	0.22	0.23	0.24
3.500	0.24	0.25	0.26	0.27	0.28
4.000	0.29	0.29	0.30	0.31	0.32
4.500	0.33	0.34	0.34	0.35	0.36
5.000	0.37	0.38	0.39	0.40	0.41
5.500	0.42	0.42	0.43	0.44	0.45
6.000	0.46	0.47	0.48	0.49	0.50
6.500	0.51	0.52	0.53	0.55	0.56
7.000	0.57	0.58	0.59	0.61	0.62
7.500	0.63	0.64	0.66	0.67	0.68
8.000	0.70	0.71	0.73	0.74	0.76
8.500	0.77	0.79	0.80	0.82	0.84
9.000	0.85	0.87	0.89	0.91	0.93
9.500	0.95	0.97	0.99	1.01	1.04
10.000	1.06	1.09	1.12	1.14	1.17
10.500	1.20	1.23	1.27	1.31	1.35
11.000	1.40	1.45	1.51	1.58	1.65
11.500	1.72	1.84	1.96	2.13	2.37
12.000	2.78	3.46	3.70	3.87	3.99
12.500	4.11	4.18	4.25	4.32	4.38
13.000	4.43	4.48	4.52	4.56	4.60
13.500	4.63	4.66	4.69	4.71	4.74
14.000	4.77	4.79	4.82	4.84	4.86
14.500	4.88	4.90	4.92	4.94	4.96
15.000	4.98	4.99	5.01	5.03	5.04
15.500	5.06	5.07	5.09	5.10	5.12
16.000	5.13	5.15	5.16	5.17	5.19
16.500	5.20	5.21	5.22	5.24	5.25
17.000	5.26	5.27	5.28	5.30	5.31
17.500	5.32	5.33	5.34	5.35	5.36
18.000	5.37	5.38	5.39	5.40	5.41
18.500	5.41	5.42	5.43	5.44	5.45
19.000	5.46	5.47	5.48	5.49	5.49
19.500	5.50	5.51	5.52	5.53	5.54

Rainfall Time-Depth Curves

Subsection: Time-Depth Curve
Label: NOAA PP, Conshohocken PA
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
20.000	5.54	5.55	5.56	5.57	5.58
20.500	5.59	5.59	5.60	5.61	5.62
21.000	5.62	5.63	5.64	5.65	5.65
21.500	5.66	5.67	5.68	5.68	5.69
22.000	5.70	5.71	5.71	5.72	5.73
22.500	5.73	5.74	5.75	5.75	5.76
23.000	5.77	5.77	5.78	5.79	5.79
23.500	5.80	5.80	5.81	5.82	5.82
24.000	5.83	(N/A)	(N/A)	(N/A)	(N/A)

Rainfall Time-Depth Curves

Subsection: Time-Depth Curve
Label: NOAA PP, Conshohocken PA
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Time-Depth Curve: 50-YR	
Label	50-YR
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	50 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.00	0.01	0.02	0.02	0.03
0.500	0.04	0.04	0.05	0.06	0.07
1.000	0.07	0.08	0.09	0.10	0.10
1.500	0.11	0.12	0.13	0.13	0.14
2.000	0.15	0.16	0.17	0.18	0.18
2.500	0.19	0.20	0.21	0.22	0.23
3.000	0.24	0.24	0.25	0.26	0.27
3.500	0.28	0.29	0.30	0.31	0.32
4.000	0.33	0.34	0.35	0.36	0.37
4.500	0.38	0.38	0.39	0.40	0.41
5.000	0.42	0.44	0.45	0.46	0.47
5.500	0.48	0.49	0.50	0.51	0.52
6.000	0.53	0.54	0.55	0.56	0.58
6.500	0.59	0.60	0.61	0.62	0.64
7.000	0.65	0.67	0.68	0.69	0.71
7.500	0.72	0.74	0.75	0.77	0.78
8.000	0.80	0.82	0.83	0.85	0.87
8.500	0.88	0.90	0.92	0.94	0.96
9.000	0.98	1.00	1.02	1.04	1.06
9.500	1.08	1.11	1.13	1.16	1.19
10.000	1.22	1.25	1.28	1.31	1.34
10.500	1.38	1.41	1.46	1.50	1.55
11.000	1.60	1.66	1.73	1.81	1.89
11.500	1.97	2.11	2.25	2.45	2.72
12.000	3.18	3.96	4.23	4.43	4.57
12.500	4.71	4.79	4.87	4.95	5.02
13.000	5.08	5.13	5.18	5.22	5.27
13.500	5.30	5.34	5.37	5.40	5.43
14.000	5.46	5.49	5.52	5.55	5.57
14.500	5.60	5.62	5.64	5.66	5.68
15.000	5.70	5.72	5.74	5.76	5.78
15.500	5.80	5.81	5.83	5.85	5.86
16.000	5.88	5.90	5.91	5.93	5.94
16.500	5.96	5.97	5.99	6.00	6.01
17.000	6.03	6.04	6.06	6.07	6.08
17.500	6.09	6.10	6.12	6.13	6.14
18.000	6.15	6.16	6.17	6.18	6.19
18.500	6.20	6.21	6.22	6.23	6.24
19.000	6.26	6.27	6.28	6.29	6.30
19.500	6.30	6.31	6.32	6.33	6.34

Rainfall Time-Depth Curves

Subsection: Time-Depth Curve
Label: NOAA PP, Conshohocken PA
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
20.000	6.35	6.36	6.37	6.38	6.39
20.500	6.40	6.41	6.42	6.43	6.44
21.000	6.44	6.45	6.46	6.47	6.48
21.500	6.49	6.50	6.50	6.51	6.52
22.000	6.53	6.54	6.55	6.55	6.56
22.500	6.57	6.58	6.58	6.59	6.60
23.000	6.61	6.61	6.62	6.63	6.64
23.500	6.64	6.65	6.66	6.66	6.67
24.000	6.68	(N/A)	(N/A)	(N/A)	(N/A)

Rainfall Time-Depth Curves

Subsection: Time-Depth Curve
Label: NOAA PP, Conshohocken PA
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Time-Depth Curve: 100-YR	
Label	100-YR
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.00	0.01	0.02	0.03	0.03
0.500	0.04	0.05	0.06	0.07	0.07
1.000	0.08	0.09	0.10	0.11	0.12
1.500	0.13	0.14	0.14	0.15	0.16
2.000	0.17	0.18	0.19	0.20	0.21
2.500	0.22	0.23	0.24	0.25	0.26
3.000	0.27	0.28	0.29	0.30	0.31
3.500	0.32	0.33	0.34	0.35	0.36
4.000	0.37	0.38	0.39	0.40	0.42
4.500	0.43	0.44	0.45	0.46	0.47
5.000	0.48	0.49	0.51	0.52	0.53
5.500	0.54	0.55	0.57	0.58	0.59
6.000	0.60	0.61	0.63	0.64	0.65
6.500	0.67	0.68	0.70	0.71	0.73
7.000	0.74	0.76	0.77	0.79	0.81
7.500	0.82	0.84	0.86	0.87	0.89
8.000	0.91	0.93	0.95	0.97	0.99
8.500	1.01	1.03	1.05	1.07	1.09
9.000	1.11	1.13	1.16	1.18	1.21
9.500	1.23	1.26	1.29	1.32	1.35
10.000	1.39	1.42	1.45	1.49	1.53
10.500	1.57	1.61	1.66	1.71	1.76
11.000	1.82	1.89	1.97	2.05	2.15
11.500	2.25	2.40	2.56	2.78	3.09
12.000	3.62	4.51	4.82	5.04	5.20
12.500	5.35	5.45	5.55	5.63	5.71
13.000	5.78	5.84	5.89	5.94	5.99
13.500	6.03	6.07	6.11	6.15	6.18
14.000	6.21	6.25	6.28	6.31	6.34
14.500	6.37	6.39	6.42	6.44	6.47
15.000	6.49	6.51	6.53	6.55	6.57
15.500	6.59	6.61	6.63	6.65	6.67
16.000	6.69	6.71	6.73	6.74	6.76
16.500	6.78	6.79	6.81	6.83	6.84
17.000	6.86	6.87	6.89	6.90	6.92
17.500	6.93	6.95	6.96	6.97	6.99
18.000	7.00	7.01	7.02	7.03	7.05
18.500	7.06	7.07	7.08	7.09	7.11
19.000	7.12	7.13	7.14	7.15	7.16
19.500	7.17	7.18	7.20	7.21	7.22

Rainfall Time-Depth Curves

Subsection: Time-Depth Curve
Label: NOAA PP, Conshohocken PA
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
20.000	7.23	7.24	7.25	7.26	7.27
20.500	7.28	7.29	7.30	7.31	7.32
21.000	7.33	7.34	7.35	7.36	7.37
21.500	7.38	7.39	7.40	7.41	7.42
22.000	7.43	7.44	7.45	7.46	7.46
22.500	7.47	7.48	7.49	7.50	7.51
23.000	7.52	7.53	7.53	7.54	7.55
23.500	7.56	7.57	7.57	7.58	7.59
24.000	7.60	(N/A)	(N/A)	(N/A)	(N/A)

Appendix E | PADEP Spreadsheets

General Information

Instructions | *General* | Volume | Rate | Quality

Project Name: **401-433 Washington Street Apartments**

Application Type: **Individual NPDES Application**

County: **Montgomery**

Municipality: **Whitemarsh Township**

Project Type: **Multi-Family Housing**

(●) New Project ( ) Minor / Major Amendment

Area: **11.19** acres
(In Watershed)

Total Earth Disturbance: **10.73** acres
(In Watershed)

No. of Post-Construction Discharge Points: **2**

Start DP Numbering at: **001**

Discharge Point (DP) No.	Drainage Area (DA) (acres)	Earth Disturbance in DA (acres)	Existing Impervious in DA (acres)	Proposed Impervious in DA (acres)	Receiving Waters	Ch. 93 Class	Structural BMP(s)
001	7.91	7.91	1.83	7.32	Schuylkill River	WWF, MF	Yes
002	0.00	0.00	0.00	0.00	Discharge to MS4, Schuylkill River	WWF, MF	No
Undetained Areas	3.28	2.82	0.27	0.39	Schuylkill River	WWF, MF	
Totals:	**11.19**	**10.73**	**2.1**	**7.71**			

Volume Management

Project: 401-433 Washington Street Apartments

Instructions | General | *Volume* | Rate | Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): **3.28** inches

Alternative 2-Year / 24-Hour Storm Event [ ] inches

Alternative Source: [ ]

Pre-Construction Conditions: *No. Rows:* **3**

☐ *Exempt from Meadow in Good Condition* ☑ *Automatically Calculate CN, Ia, Runoff and Volume*

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Pervious as Meadow	7.45	B	58	1.448	0.37	10,001
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	1.67	B	98	0.041	3.05	18,472
Impervious as Meadow	0.42	B	58	1.448	0.37	564
TOTAL (ACRES):	**9.54**				**TOTAL (CF):**	**29,037**

Post-Construction Conditions: *No. Rows:* **2**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	3.02	B	61	1.279	0.48	5,230
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	7.71	B	98	0.041	3.05	85,283
TOTAL (ACRES):	**10.73**				**TOTAL (CF):**	**90,513**

NET CHANGE IN VOLUME TO MANAGE (CF): **61,476**

Non-Structural BMP Volume Credits:

☐ Tree Planting Credit

☐ Other (attach calculations):

Structural BMP Volume Credits: *No. Structural BMPs:* **2** *Start BMP Numbering at:* **1**

DP No.	BMP No.	BMP Name	MRC?	Discharge	Incremental BMP DA (acres)	Volume Routed to BMP (CF)	Infiltration / Vegetated Area (SF)	Infiltration Rate (in/hr)	Infiltration Period (hrs)	Vegeta-ted?	Media Depth (ft)	Storage Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
001	1	Dry Extended Detention Basin	-	Off-Site	1.72	16,597	0	0.00		No		6,490		
001	2	Dry Extended Detention Basin	Y	Off-Site	6.19	65,432	0	0.00		No		65,432		
											Totals:			

INFILTRATION & ET CREDITS (CF):	
MANAGED RELEASE CREDIT (CF):	**65,432**
NET CHANGE IN VOLUME TO MANAGE (CF):	**61,476**
TOTAL CREDITS (CF):	**65,432**

VOLUME REQUIREMENT SATISFIED

Rate Control

Project: 401-433 Washington Street Apartments

Instructions | General | Volume | *Rate* | Quality

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):	**3.28**	Alternative 2-Year 24-Hour Storm Event (in):	
NOAA 10-Year 24-Hour Storm Event (in):	**4.82**	Alternative 10-Year 24-Hour Storm Event (in):	
NOAA 50-Year 24-Hour Storm Event (in):	**6.67**	Alternative 50-Year 24-Hour Storm Event (in):	
NOAA 100-Year 24-Hour Storm Event (in):	**7.58**	Alternative 100-Year 24-Hour Storm Event (in):	

☑ **Report Summary of Peak Rates Only**

Attach model input and output data or other calculations to support the rates reported below.

	Peak Discharge Rates (cfs)			
	Pre-Construction	**Post-Construction**	**Net Change**	
2-Year Storm:	**7.64**	**4.27**	**-3.37**	***Rate Control Satisfied***
10-Year Storm:	**18.15**	**18.12**	**-0.03**	***Rate Control Satisfied***
50-Year Storm:	**32.68**	**31.15**	**-1.53**	***Rate Control Satisfied***
100-Year Storm:	**40.24**	**36.22**	**-4.02**	***Rate Control Satisfied***

Water Quality

Project: 401-433 Washington Street Apartments

PRINT

Instructions | General | Volume | Rate | *Quality*

Pre-Construction Pollutant Loads:

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Pervious as Meadow	Grassland/Herbaceous	7.45	B	10,001	48.8	0.22	2.30	30.47	0.14	1.44
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	1.67	B	18,472	65.0	0.29	2.05	74.98	0.33	2.36
Impervious as Meadow	Grassland/Herbaceous	0.42	B	564	48.8	0.22	2.30	1.72	0.01	0.08
	TOTAL (ACRES):	**9.54**					**TOTALS:**	**107.17**	**0.48**	**3.88**

Post-Construction Pollutant Loads (without BMPs):

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	3.02	B	5,230	78.0	0.25	1.25	25.47	0.08	0.41
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	7.71	B	85,283	65.0	0.29	2.05	346.14	1.54	10.92

TOTAL (ACRES):	**10.73**	**TOTALS:**	**371.62**	**1.63**	**11.33**

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS):	**264.45**	**1.15**	**7.44**

☐ **Characterize Undetained Areas (for Untreated Stormwater)**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)

Non-Structural BMP Water Quality Credits:

☐ Pervious Undetained Area Credit

☐ Other (attach calculations)

Structural BMP Water Quality Credits:

☑ *Use default BMP Outflows and Median BMP Outflow Concentrations*

DP No.	BMP No.	BMP Name	MRC?	BMP DA (acres)	Vol. Routed to BMP (CF)	Inf. & ET Credits (CF)	Capture & Buffer Credits (CF)	Outflow (CF)	Outflow Conc. (mg/L)			Pollutant Loads (lbs)		
									TSS	TP	TN	TSS	TP	TN
001	1	Dry Extended Detention Basin	-	1.72	16,597			16,597	22.00	0.19	1.22	22.80	0.20	1.26
001	2	Dry Extended Detention Basin	Y	6.19	65,432			65,432	-	-	-	-	-	-

	TSS	TP	TN
POLLUTANT LOADS FROM STRUCTURAL BMP (TREATED) OUTFLOWS (LBS):	**22.80**	**0.20**	**1.26**
POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):	**34.83**	**0.15**	**1.06**
NON-STRUCTURAL BMP WATER QUALITY CREDITS (LBS):			
NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):	**57.63**	**0.35**	**2.33**
POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):	**107.17**	**0.48**	**3.88**

CERTIFICATION

I certify under penalty of law and subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities) that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify that the structure, function, and calculations contained in this spreadsheet have not been modified in comparison to the spreadsheet DEP has posted to its website or, if modifications were made, an explanation of the modifications made is attached to this spreadsheet.

C. Richard Roseberry	5/6/2022
Spreadsheet User Name	Date

General Information

Instructions | *General* | Volume | Rate | Quality

Project Name: **401-433 Washington Street Apartments**

Application Type: **Individual NPDES Application**

County: **Montgomery**

Municipality: **Whitemarsh Township**

Project Type: **Multi-Family Housing**

(●) New Project ( ) Minor / Major Amendment

Area: **0.22** acres
(In Watershed)

Total Earth Disturbance: **0.22** acres
(In Watershed)

No. of Post-Construction Discharge Points: **1**

Start DP Numbering at: **003**

Discharge Point (DP) No.	Drainage Area (DA) (acres)	Earth Disturbance in DA (acres)	Existing Impervious in DA (acres)	Proposed Impervious in DA (acres)	Receiving Waters	Ch. 93 Class	Structural BMP(s)
003	0.00	0.00	0.00	0.00	Schuylkill River	WWF, MF	No
Undetained Areas	0.22	0.22	0.20	0.19	Schuylkill River	WWF, MF	
Totals:	**0.22**	**0.22**	**0.2**	**0.19**			

PROJECT SITE MEETS SMALL SITE EXCEPTION - RATE WORKSHEET NOT REQUIRED

Volume Management

Project: 401-433 Washington Street Apartments

Instructions | General | *Volume* | Rate | Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): **3.28** inches

Alternative 2-Year / 24-Hour Storm Event [ ] inches

Alternative Source: [ ]

Pre-Construction Conditions: *No. Rows:* **3**

☐ *Exempt from Meadow in Good Condition* ☑ *Automatically Calculate CN, Ia, Runoff and Volume*

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Pervious as Meadow	0.80	B	58	1.448	0.37	1,074
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.49	B	98	0.041	3.05	5,420
Impervious as Meadow	0.12	B	58	1.448	0.37	161
TOTAL (ACRES):	**1.41**				**TOTAL (CF):**	**6,655**

Post-Construction Conditions: *No. Rows:* **2**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.03	B	61	1.279	0.48	52
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.19	B	98	0.041	3.05	2,102
TOTAL (ACRES):	**0.22**				**TOTAL (CF):**	**2,154**

NET CHANGE IN VOLUME TO MANAGE (CF): **-4,501**

Non-Structural BMP Volume Credits:

☐ Tree Planting Credit

☐ Other (attach calculations):

Structural BMP Volume Credits: *No. Structural BMPs:* *Start BMP Numbering at:*

DP No.	BMP No.	BMP Name	MRC?	Discharge	Incremental BMP DA (acres)	Volume Routed to BMP (CF)	Infiltration / Vegetated Area (SF)	Infiltration Rate (in/hr)	Infiltration Period (hrs)	Vegeta-ted?	Media Depth (ft)	Storage Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
												Totals:		

INFILTRATION & ET CREDITS (CF):

NET CHANGE IN VOLUME TO MANAGE (CF): **-4,501**

TOTAL CREDITS (CF):

Rate Control

Project: 401-433 Washington Street Apartments

Instructions | General | Volume | *Rate* | Quality

SMALL SITE EXCEPTION SATISFIED: RATE CONTROL NOT REQUIRED

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):	**3.28**	Alternative 2-Year 24-Hour Storm Event (in):	
NOAA 10-Year 24-Hour Storm Event (in):	**4.82**	Alternative 10-Year 24-Hour Storm Event (in):	
NOAA 50-Year 24-Hour Storm Event (in):	**6.67**	Alternative 50-Year 24-Hour Storm Event (in):	
NOAA 100-Year 24-Hour Storm Event (in):	**7.58**	Alternative 100-Year 24-Hour Storm Event (in):	

☑ **Report Summary of Peak Rates Only**

Attach model input and output data or other calculations to support the rates reported below.

	Peak Discharge Rates (cfs)			
	Pre-Construction	**Post-Construction**	**Net Change**	
2-Year Storm:	**2.35**	**1.27**	**-1.08**	***Rate Control Satisfied***
10-Year Storm:	**4.58**	**2.04**	**-2.54**	***Rate Control Satisfied***
50-Year Storm:	**7.45**	**2.95**	**-4.50**	***Rate Control Satisfied***
100-Year Storm:	**8.89**	**3.40**	**-5.49**	***Rate Control Satisfied***

DP No.	BMP No.	BMP Name	MRC?	Inflow to BMP (cfs)				Outflow from BMP (cfs)			
				2-yr	10-yr	50-yr	100-yr	2-yr	10-yr	50-yr	100-yr

Water Quality

Project: 401-433 Washington Street Apartments

PRINT

Instructions | General | Volume | Rate | *Quality*

Pre-Construction Pollutant Loads:

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Pervious as Meadow	Grassland/Herbaceous	0.80	B	1,074	48.8	0.22	2.30	3.27	0.01	0.15
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	0.49	B	5,420	65.0	0.29	2.05	22.00	0.10	0.69
Impervious as Meadow	Grassland/Herbaceous	0.12	B	161	48.8	0.22	2.30	0.49	0.00	0.02
	TOTAL (ACRES):	**1.41**					**TOTALS:**	**25.76**	**0.12**	**0.87**

Post-Construction Pollutant Loads (without BMPs):

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	0.03	B	52	78.0	0.25	1.25	0.25	0.00	0.00
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	0.19	B	2,102	65.0	0.29	2.05	8.53	0.04	0.27

TOTAL (ACRES):	**0.22**	**TOTALS:**	**8.78**	**0.04**	**0.27**

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS):	**0.00**	**0.00**	**0.00**

☐ **Characterize Undetained Areas (for Untreated Stormwater)**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)

Non-Structural BMP Water Quality Credits:

☐ Pervious Undetained Area Credit

☐ Other (attach calculations)

Structural BMP Water Quality Credits:

☑ *Use default BMP Outflows and Median BMP Outflow Concentrations*

DP No.	BMP No.	BMP Name	MRC?	BMP DA (acres)	Vol. Routed to BMP (CF)	Inf. & ET Credits (CF)	Capture & Buffer Credits (CF)	Outflow (CF)	Outflow Conc. (mg/L)			Pollutant Loads (lbs)		
									TSS	TP	TN	TSS	TP	TN

	TSS	TP	TN
POLLUTANT LOADS FROM STRUCTURAL BMP (TREATED) OUTFLOWS (LBS):	**0.00**	**0.00**	**0.00**
POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):	**8.78**	**0.04**	**0.27**
NON-STRUCTURAL BMP WATER QUALITY CREDITS (LBS):			
NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):	**8.78**	**0.04**	**0.27**
POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):	**25.76**	**0.12**	**0.87**

WATER QUALITY REQUIREMENT SATISFIED

CERTIFICATION

I certify under penalty of law and subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities) that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify that the structure, function, and calculations contained in this spreadsheet have not been modified in comparison to the spreadsheet DEP has posted to its website or, if modifications were made, an explanation of the modifications made is attached to this spreadsheet.

C. Richard Roseberry	5/6/2022
Spreadsheet User Name	Date

Modified Worksheet 4. Runoff Volume for 2-YR Storm Event to MRC Basin B

PROJECT: **401-433 WASHINGTON STREET APARTMENTS**
Drainage Area:
2-Year Rainfall: **3.28** **in**

Total Site Area: 6.26 **acres**
Protected Site Area: 0.07 **acres**
Managed Area 6.19 **acres**

Cover Type/Condition	Soil Type	Area (sf)	Area (ac)	CN	S	Ia (0.2*S)	Q Runoff[1] (in)	Runoff Volume[2] (ft^3)
Impervious	B	255,177	5.86	98	0.20	0.04	3.05	64,857
Lawn	B	14,375	0.33	61	6.39	1.28	0.48	575
TOTAL:		**269,552**	**6.19**					**65,432**

2-Year Volume (ft3):	**65,432**

2-Year Volume Increase = Developed Conditions Runoff Volume - Existing Conditions Runoff Volume

1. Runoff (in) = $Q = (P - 0.2S)^2 / (P + 0.8S)$ where
   P = 2-Year Rainfall (in)
   S = (1000/ CN)-10

2. Runoff Volume (CF) = Q x Area x 1/12
   Q = Runoff (in)
   Area = Land use area (sq. ft)

Note: Runoff Volume must be calculated for EACH land use type/condition and HSGI.
The use of a weighted CN value for volume calculations is not acceptable.

Runoff volume calculation only accounts for drainage areas within the limit of disturbance.

Modified Worksheet 4. Runoff Volume for 2-YR Storm Event to Underground Detention Basin A

PROJECT: **401-433 WASHINGTON STREET APARTMENTS**
Drainage Area:
2-Year Rainfall: **3.28** **in**

Total Site Area: 1.85 **acres**
Protected Site Area: 0.13 **acres**
Managed Area 1.72 **acres**

Cover Type/Condition	Soil Type	Area (sf)	Area (ac)	CN	S	Ia (0.2*S)	Q Runoff[1] (in)	Runoff Volume[2] (ft^3)
Impervious	B	63,476	1.46	98	0.20	0.04	3.05	16,133
Lawn	B	11,604	0.27	61	6.39	1.28	0.48	464
TOTAL:		**75,080**	**1.72**					**16,597**

2-Year Volume (ft3):	**16,597**

2-Year Volume Increase = Developed Conditions Runoff Volume - Existing Conditions Runoff Volume

1. Runoff (in) = $Q = (P - 0.2S)^2 / (P + 0.8S)$ where
   P = 2-Year Rainfall (in)
   S = (1000/ CN)-10

2. Runoff Volume (CF) = Q x Area x 1/12
   Q = Runoff (in)
   Area = Land use area (sq. ft)

Note: Runoff Volume must be calculated for EACH land use type/condition and HSGI.
The use of a weighted CN value for volume calculations is not acceptable.

Runoff volume calculation only accounts for drainage areas within the limit of disturbance.

Appendix F | Release Rate Calculations

STUDY POINT 1 (DP 001 AND DP 002)

SUB-WATERSHED AREA INFORMATION:

	CN	AREA (AC)	Tc
PRE-PROJECT AREA SP 1:	70	10.33	26 MIN

* Tc PATH SHOWN ON PLANS

PRE-PROJECT FLOW RATES:

DETERMINE THE PRE-PROJECT ALLOWABLE RELEASE RATES. CALCULATE FLOW RATES USING SUB-WATERSHED AREA CN, TC, AND A IN HYDROCAD. ALLOWABLE RELEASE RATES ARE FROM THE BOROUGH OF CONSHOHOCKEN STORMWATER MANAGEMENT ORDINANCE. RAINFALL DEPTHS ARE FROM NOAA.

		PRE FLOW RATE	RELEASE RATE	ALLOWABLE FLOW
Q_1	=	4.52 CFS	100%	4.52 CFS
Q_2	=	7.64 CFS	--	4.52 CFS
Q_{10}	=	18.15 CFS	100%	18.15 CFS
Q_{50}	=	32.68 CFS	100%	32.68 CFS
Q_{100}	=	40.24 CFS	100%	40.24 CFS

** POST-PROJECT 2-YR STORM PEAK FLOW SHALL NOT EXCEED THE PRE-PROJECT 1-YR STORM PEAK FLOW.

CALCULATION NOTES:

1) THE STUDY POINT IS IN THE SCHUYLKILL RIVER.

2) ALL SOILS ARE 'B' SOILS.

STUDY POINT 1 (DP 001 AND DP 002)

SUB-WATERSHED AREA INFORMATION:

	CN	AREA (AC)	Tc	
POST TO UGD BASIN A AREA:	92	1.85	6 MIN	(MINIMUM Tc)
POST TO MRC BASIN B AREA:	96	6.26	6 MIN	(MINIMUM Tc)
BASIN BYPASS AREA:	70	3.41	27 MIN	
TOTAL SUB-WATERSHED AREA:		11.52		

* Tc PATH SHOWN ON PLANS

POST-PROJECT WITHOUT DETENTION FLOW RATE:

DETERMINE THE POST DEVELOPMENT FLOW RATES WITHOUT DETENTION. CALCULATE FLOW RATES USING SUB-WATERSHED AREA CN, Tc, AND A IN HYDROCAD. RAINFALL DEPTHS ARE FROM NOAA.

		POST TO UGD BASIN A	POST TO MRC BASIN B	BASIN BYPASS
		POST FLOW RATES	POST FLOW RATES	POST FLOW RATES
Q_1	=	5.85 CFS	22.45 CFS	1.47 CFS
Q_2	=	7.35 CFS	27.39 CFS	2.47 CFS
Q_{10}	=	11.50 CFS	41.09 CFS	5.90 CFS
Q_{50}	=	16.43 CFS	57.42 CFS	10.62 CFS
Q_{100}	=	18.83 CFS	65.42 CFS	13.08 CFS

POST-PROJECT WITH DETENTION FLOW RATE:

DETERMINE THE POST-PROJECT FLOW RATES WITH DETENTION. CALCULATE FLOW RATES USING SUB-WATERSHED AREA CN, Tc, AND A IN HYDROCAD. RAINFALL DEPTHS ARE FROM PENNDOT PUB 584, CHAPTER 7, APPENDIX A.

		BASIN A OUTFLOW		BASIN B OUTFLOW		BASIN BYPASS POST FLOW RATES		TOTAL RELEASED	TOTAL POST ALLOWABLE
Q_1	=	1.47 CFS	+	0.22 CFS	+	1.47 CFS	=	3.02 CFS	4.52 CFS
Q_2	=	1.66 CFS	+	0.68 CFS	+	2.47 CFS	=	4.27 CFS	4.52 CFS
Q_{10}	=	4.03 CFS	+	8.95 CFS	+	5.90 CFS	=	18.12 CFS	18.15 CFS
Q_{50}	=	10.99 CFS	+	12.89 CFS	+	10.62 CFS	=	31.15 CFS	32.68 CFS
Q_{100}	=	14.18 CFS	+	13.58 CFS	+	13.08 CFS	=	36.22 CFS	40.24 CFS

THE TOTAL RELEASED IS BASED ON THE ADDITION OF BASIN OUTFLOW & BASIN BYPASS FLOW HYDROGRAPHS AND NOT AN ADDITION OF THE PEAK FLOW RATES. THE TOTAL RELEASED FOR THE 2-YEAR THROUGH 100-YEAR STORMS IS LESS THAN THE TOTAL POST ALLOWABLE. THE POST-PROJECT 2-YEAR FLOW IS LESS THAN THE PRE-PROJECT 1-YEAR FLOW.

CALCULATION NOTES:

1) THE STUDY POINT IS IN THE SCHUYLKILL RIVER.

2) ALL SOILS ARE 'B' SOILS.

STUDY POINT 2 (DP 003)

SUB-WATERSHED AREA INFORMATION:

	CN	AREA (AC)	Tc	
PRE-PROJECT AREA SP 2:	78	1.53	18 MIN	
POST-PROJECT AREA SP 2:	91	0.32	6 MIN	(MINIMUM Tc)

* Tc PATHS SHOWN ON PLANS

PRE-PROJECT WITHOUT DETENTION FLOW RATE:

DETERMINE THE PRE DEVELOPMENT FLOW RATES. CALCULATE FLOW RATES USING SUB-WATERSHED AREA CN, Tc, AND A IN HYDROCAD. RAINFALL DEPTHS ARE FROM NOAA.

		PRE FLOW RATES	ALLOWABLE FLOW
Q_2	=	2.35 CFS	2.35 CFS
Q_{10}	=	4.58 CFS	4.58 CFS
Q_{50}	=	7.45 CFS	7.45 CFS
Q_{100}	=	8.89 CFS	8.89 CFS

POST-PROJECT WITHOUT DETENTION FLOW RATE:

DETERMINE THE POST DEVELOPMENT FLOW RATES. CALCULATE FLOW RATES USING SUB-WATERSHED AREA CN, Tc, AND A IN HYDROCAD. RAINFALL DEPTHS ARE FROM NOAA.

		POST FLOW RATES	ALLOWABLE FLOW
Q_2	=	1.27 CFS	2.35 CFS
Q_{10}	=	2.04 CFS	4.58 CFS
Q_{50}	=	2.95 CFS	7.45 CFS
Q_{100}	=	3.40 CFS	8.89 CFS

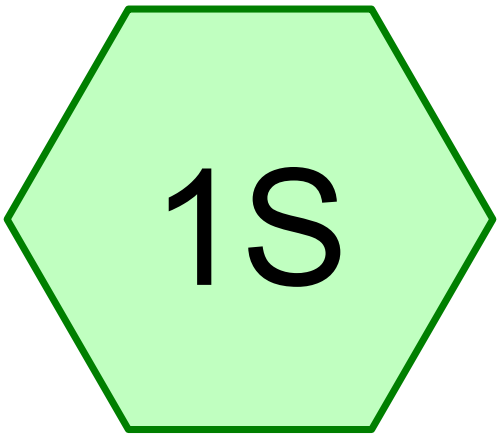
THE TOTAL RELEASED FOR THE 2-YEAR THROUGH 100-YEAR STORMS IS LESS THAN THE TOTAL POST ALLOWABLE.

CALCULATION NOTES:

1) THE STUDY POINT IS IN THE ROADSIDE DITCH ON THE NORTH SIDE OF WASHINGTON STREET.

2) ALL SOILS ARE 'B' SOILS.

Study Point 1: Pre-Project Release Rate Calculations



Pre-Project

Subcat Reach Pond Link

Routing Diagram for Pre Project SP1
Prepared by Colliers Engineering & Design, Printed 3/3/2022
HydroCAD® 10.10-6a s/n 08841 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.49	98	(1S)
7.84	61	(1S)
10.33	**70**	**TOTAL AREA**

Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Project Runoff Area=10.33 ac 24.10% Impervious Runoff Depth=0.57"
Flow Length=858' Tc=25.9 min CN=70 Runoff=4.52 cfs 0.490 af

Total Runoff Area = 10.33 ac Runoff Volume = 0.490 af Average Runoff Depth = 0.57"
75.90% Pervious = 7.84 ac 24.10% Impervious = 2.49 ac

Summary for Subcatchment 1S: Pre-Project

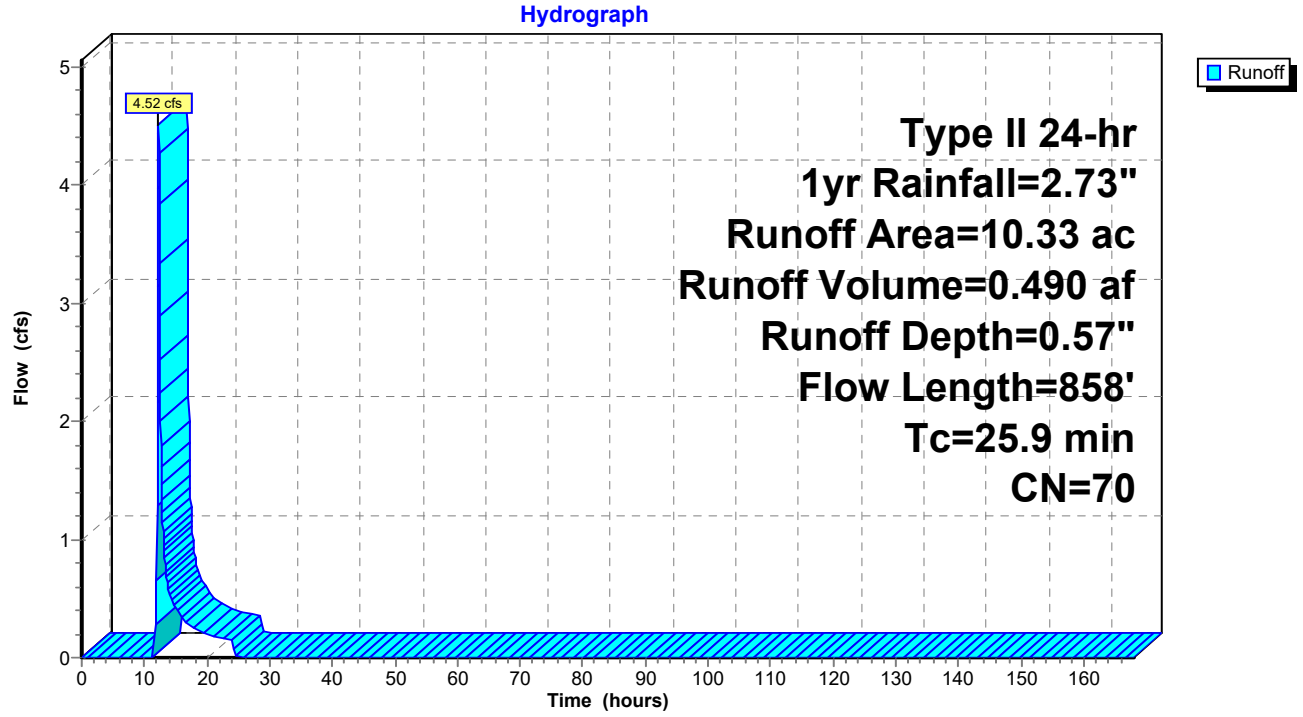
Runoff = 4.52 cfs @ 12.24 hrs, Volume= 0.490 af, Depth= 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 1yr Rainfall=2.73"

	Area (ac)	CN	Description
*	2.49	98	
*	7.84	61	
	10.33	70	Weighted Average
	7.84		75.90% Pervious Area
	2.49		24.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0170	0.11		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
1.8	192	0.0120	1.76		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
6.8	361	0.0030	0.88		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
2.3	205	0.0100	1.50		**Shallow Concentrated Flow, Schuylkill River** Grassed Waterway Kv= 15.0 fps
25.9	858	Total			

Subcatchment 1S: Pre-Project



Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Project Runoff Area=10.33 ac 24.10% Impervious Runoff Depth=0.88"
Flow Length=858' Tc=25.9 min CN=70 Runoff=7.64 cfs 0.753 af

Total Runoff Area = 10.33 ac Runoff Volume = 0.753 af Average Runoff Depth = 0.88"
75.90% Pervious = 7.84 ac 24.10% Impervious = 2.49 ac

Summary for Subcatchment 1S: Pre-Project

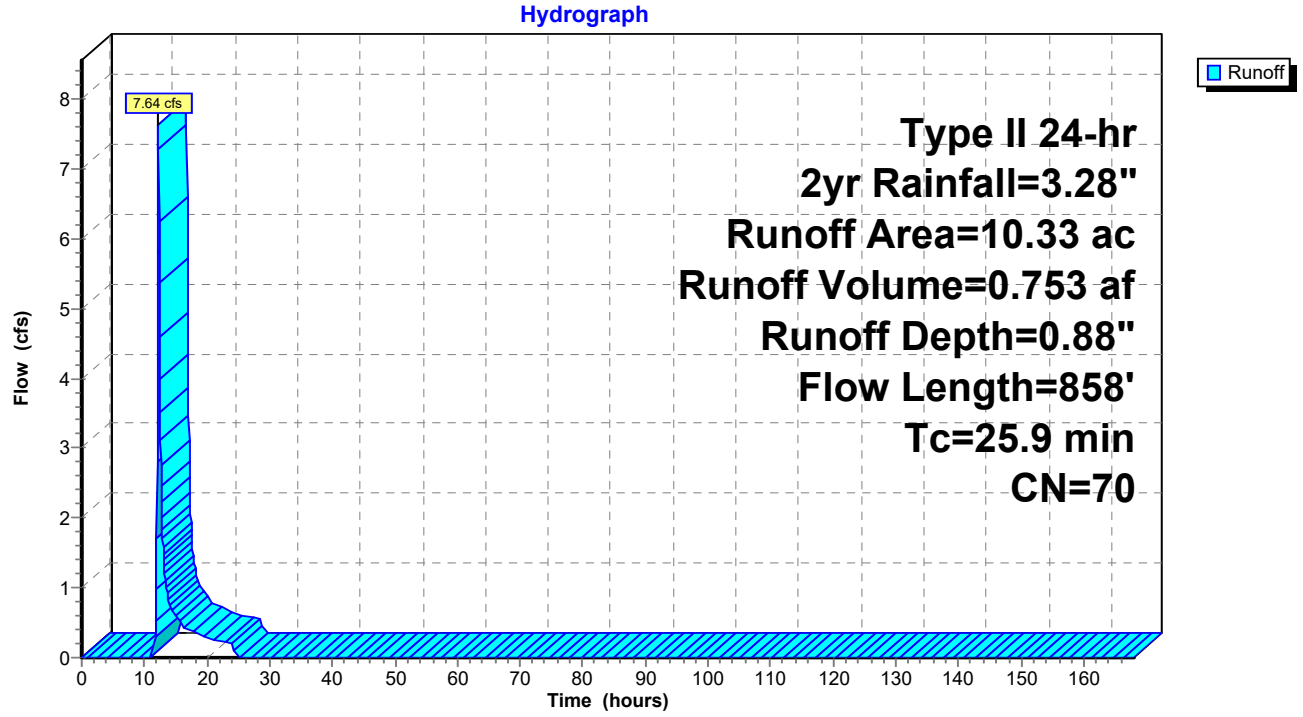
Runoff = 7.64 cfs @ 12.22 hrs, Volume= 0.753 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 2yr Rainfall=3.28"

	Area (ac)	CN	Description
*	2.49	98	
*	7.84	61	
	10.33	70	Weighted Average
	7.84		75.90% Pervious Area
	2.49		24.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0170	0.11		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
1.8	192	0.0120	1.76		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
6.8	361	0.0030	0.88		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
2.3	205	0.0100	1.50		**Shallow Concentrated Flow, Schuylkill River** Grassed Waterway Kv= 15.0 fps
25.9	858	Total			

Subcatchment 1S: Pre-Project



Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Project Runoff Area=10.33 ac 24.10% Impervious Runoff Depth=1.90"
Flow Length=858' Tc=25.9 min CN=70 Runoff=18.15 cfs 1.639 af

Total Runoff Area = 10.33 ac Runoff Volume = 1.639 af Average Runoff Depth = 1.90"
75.90% Pervious = 7.84 ac 24.10% Impervious = 2.49 ac

Summary for Subcatchment 1S: Pre-Project

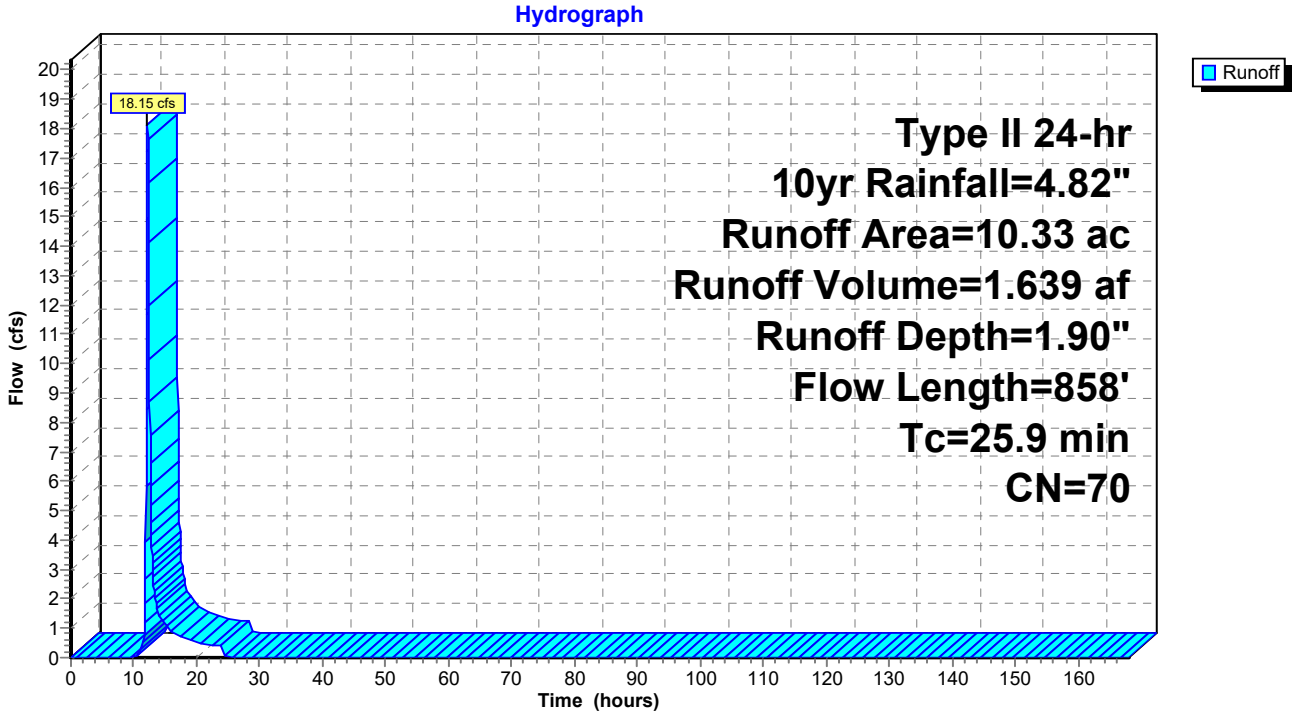
Runoff = 18.15 cfs @ 12.21 hrs, Volume= 1.639 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=4.82"

	Area (ac)	CN	Description
*	2.49	98	
*	7.84	61	
	10.33	70	Weighted Average
	7.84		75.90% Pervious Area
	2.49		24.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0170	0.11		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
1.8	192	0.0120	1.76		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
6.8	361	0.0030	0.88		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
2.3	205	0.0100	1.50		**Shallow Concentrated Flow, Schuylkill River** Grassed Waterway Kv= 15.0 fps
25.9	858	Total			

Subcatchment 1S: Pre-Project



Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Project Runoff Area=10.33 ac 24.10% Impervious Runoff Depth=3.35"
Flow Length=858' Tc=25.9 min CN=70 Runoff=32.68 cfs 2.880 af

Total Runoff Area = 10.33 ac Runoff Volume = 2.880 af Average Runoff Depth = 3.35"
75.90% Pervious = 7.84 ac 24.10% Impervious = 2.49 ac

Summary for Subcatchment 1S: Pre-Project

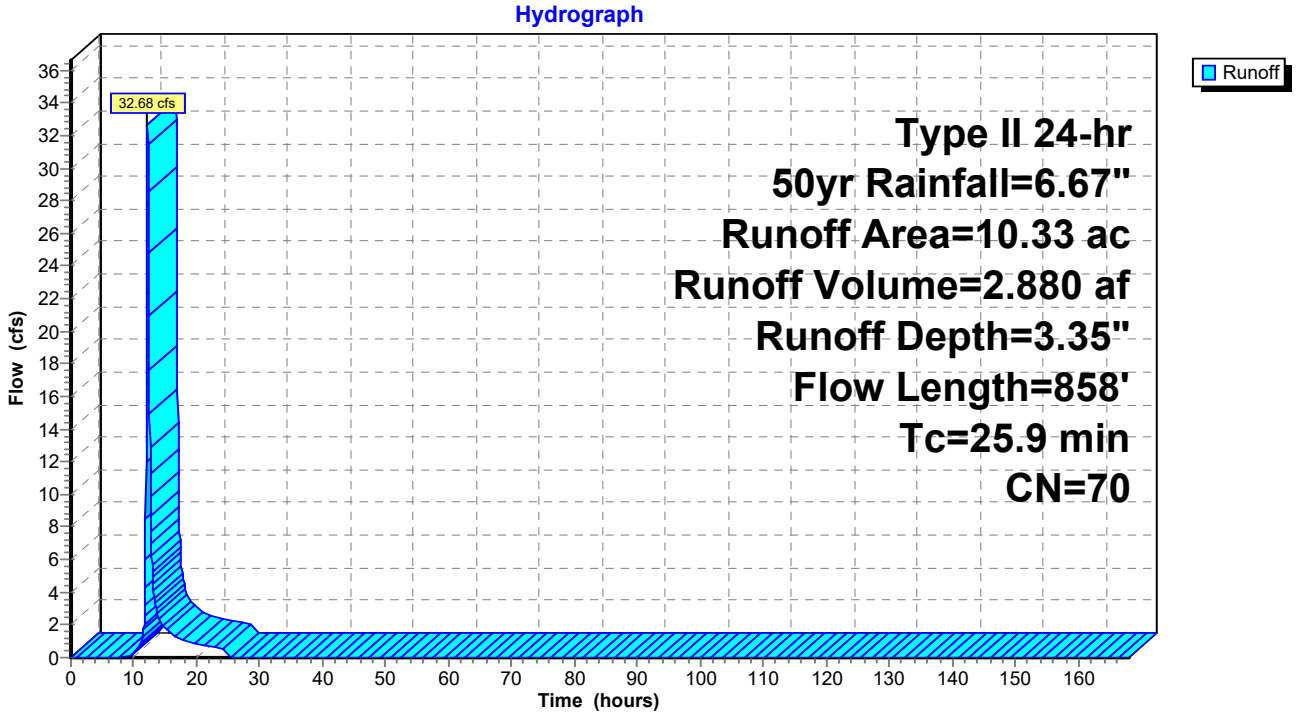
Runoff = 32.68 cfs @ 12.20 hrs, Volume= 2.880 af, Depth= 3.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 50yr Rainfall=6.67"

	Area (ac)	CN	Description
*	2.49	98	
*	7.84	61	
	10.33	70	Weighted Average
	7.84		75.90% Pervious Area
	2.49		24.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0170	0.11		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
1.8	192	0.0120	1.76		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
6.8	361	0.0030	0.88		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
2.3	205	0.0100	1.50		**Shallow Concentrated Flow, Schuylkill River** Grassed Waterway Kv= 15.0 fps
25.9	858	Total			

Subcatchment 1S: Pre-Project



Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Project Runoff Area=10.33 ac 24.10% Impervious Runoff Depth=4.11"
Flow Length=858' Tc=25.9 min CN=70 Runoff=40.24 cfs 3.534 af

Total Runoff Area = 10.33 ac Runoff Volume = 3.534 af Average Runoff Depth = 4.11"
75.90% Pervious = 7.84 ac 24.10% Impervious = 2.49 ac

Summary for Subcatchment 1S: Pre-Project

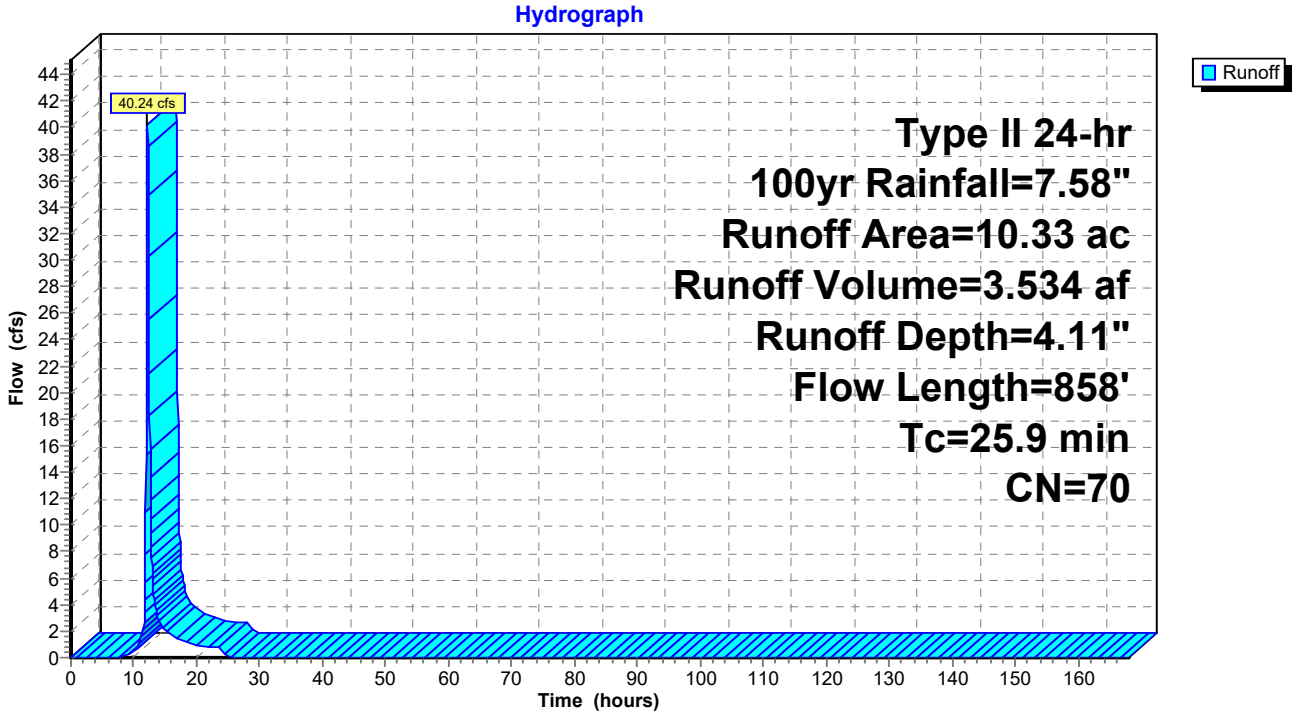
Runoff = 40.24 cfs @ 12.20 hrs, Volume= 3.534 af, Depth= 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=7.58"

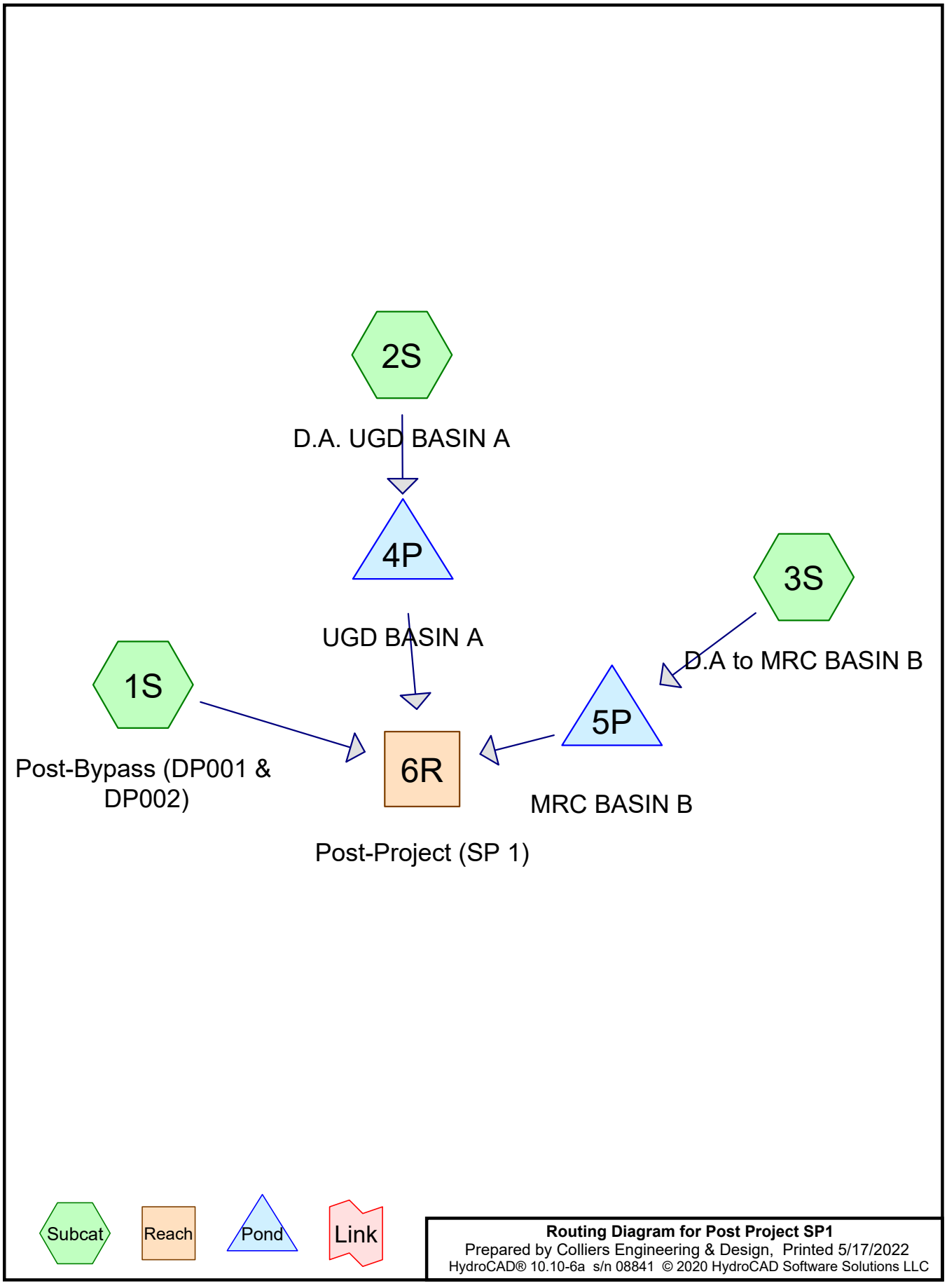
	Area (ac)	CN	Description
*	2.49	98	
*	7.84	61	
	10.33	70	Weighted Average
	7.84		75.90% Pervious Area
	2.49		24.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0170	0.11		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
1.8	192	0.0120	1.76		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
6.8	361	0.0030	0.88		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
2.3	205	0.0100	1.50		**Shallow Concentrated Flow, Schuylkill River** Grassed Waterway Kv= 15.0 fps
25.9	858	Total			

Subcatchment 1S: Pre-Project



Study Point 1: Post-Project Release Rate Calculations



Routing Diagram for Post Project SP1
Prepared by Colliers Engineering & Design, Printed 5/17/2022
HydroCAD® 10.10-6a s/n 08841 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.59	61	(1S)
0.82	98	(1S)
0.63	61	>75% Grass cover, Good, HSG B (2S, 3S)
5.92	98	Paved Parking, HSG B (3S)
1.56	98	Paved parking, HSG B (2S)
11.52	**88**	**TOTAL AREA**

Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Post-Bypass (DP001 & Runoff Area=3.41 ac 24.05% Impervious Runoff Depth=0.57"
Flow Length=545' Tc=26.6 min CN=70 Runoff=1.47 cfs 0.162 af

Subcatchment2S: D.A. UGD BASIN A Runoff Area=1.85 ac 84.32% Impervious Runoff Depth=1.91"
Flow Length=645' Tc=6.0 min CN=92 Runoff=5.85 cfs 0.294 af

Subcatchment3S: D.A to MRC BASIN B Runoff Area=6.26 ac 94.57% Impervious Runoff Depth=2.29"
Flow Length=645' Tc=6.0 min CN=96 Runoff=22.45 cfs 1.193 af

Pond 4P: UGD BASIN A Peak Elev=48.69' Storage=0.114 af Inflow=5.85 cfs 0.294 af
Outflow=1.47 cfs 0.294 af

Pond 5P: MRC BASIN B Peak Elev=50.48' Storage=1.439 af Inflow=22.45 cfs 1.193 af
Outflow=0.22 cfs 0.730 af

Reach 6R: Post-Project (SP 1) Inflow=3.02 cfs 1.185 af
Outflow=3.02 cfs 1.185 af

Total Runoff Area = 11.52 ac Runoff Volume = 1.649 af Average Runoff Depth = 1.72"
27.95% Pervious = 3.22 ac 72.05% Impervious = 8.30 ac

Summary for Subcatchment 1S: Post-Bypass (DP001 & DP002)

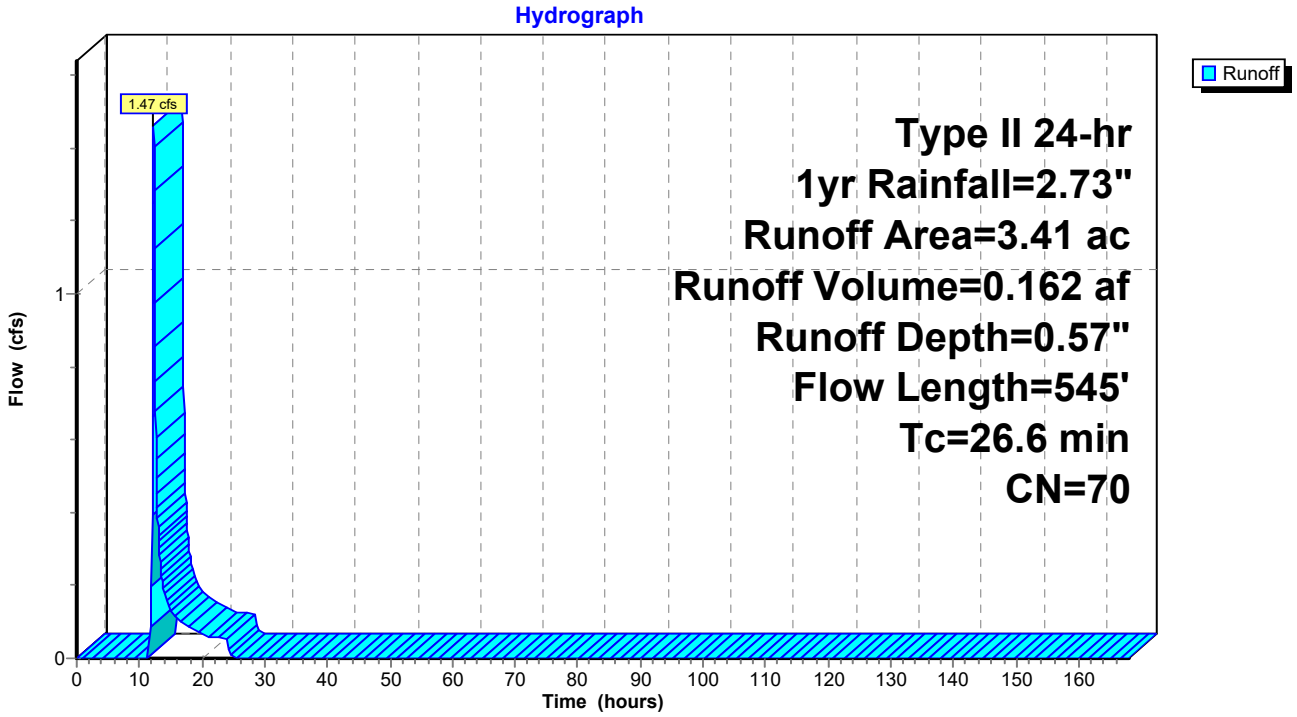
Runoff = 1.47 cfs @ 12.25 hrs, Volume= 0.162 af, Depth= 0.57"
Routed to Reach 6R : Post-Project (SP 1)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 1yr Rainfall=2.73"

	Area (ac)	CN	Description
*	2.59	61	
*	0.82	98	
	3.41	70	Weighted Average
	2.59		75.95% Pervious Area
	0.82		24.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	40	0.0500	0.14		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
16.3	60	0.0050	0.06		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
2.3	155	0.0050	1.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.2	35	0.0300	3.52		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.9	80	0.0050	1.44		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
2.1	145	0.0050	1.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.1	30	0.3300	9.25		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
26.6	545	Total			

Subcatchment 1S: Post-Bypass (DP001 & DP002)



Summary for Subcatchment 2S: D.A. UGD BASIN A

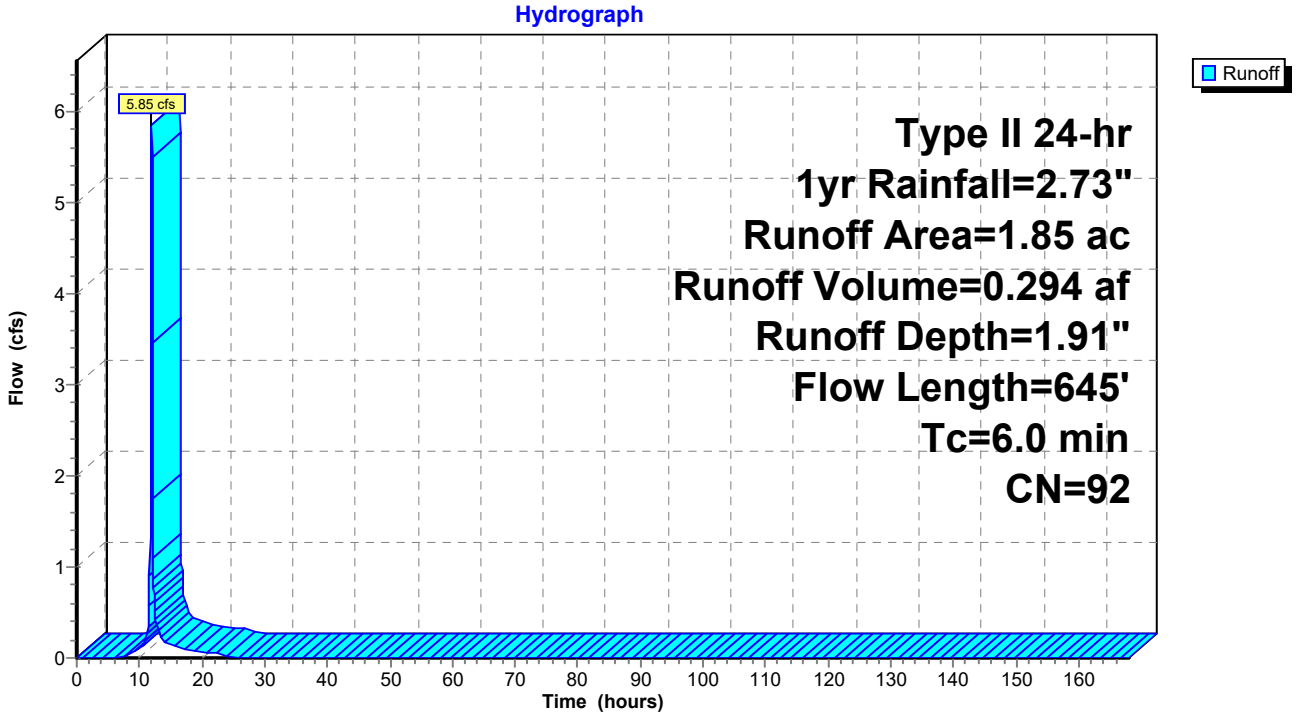
Runoff = 5.85 cfs @ 11.97 hrs, Volume= 0.294 af, Depth= 1.91"
Routed to Pond 4P : UGD BASIN A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 1yr Rainfall=2.73"

Area (ac)	CN	Description
1.56	98	Paved parking, HSG B
0.29	61	>75% Grass cover, Good, HSG B
1.85	92	Weighted Average
0.29		15.68% Pervious Area
1.56		84.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	95	0.0100	1.04		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.28"
0.9	280	0.0100	5.22	9.40	**Channel Flow, 18" Pipe (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
1.2	270	0.0050	3.69	6.65	**Channel Flow, 18" Pipe (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
3.6	645	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S: D.A. UGD BASIN A



Summary for Subcatchment 3S: D.A to MRC BASIN B

[47] Hint: Peak is 338% of capacity of segment #3
[47] Hint: Peak is 239% of capacity of segment #4
[47] Hint: Peak is 166% of capacity of segment #5

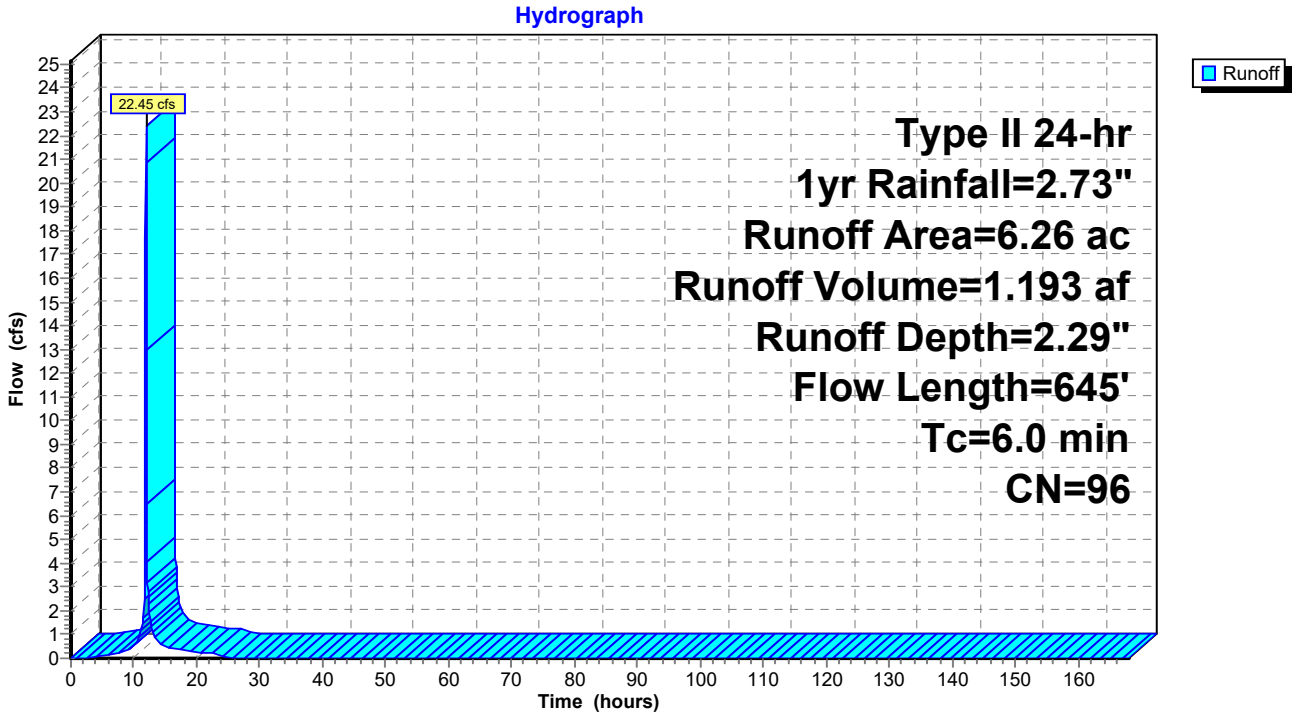
Runoff = 22.45 cfs @ 11.96 hrs, Volume= 1.193 af, Depth= 2.29"
Routed to Pond 5P : MRC BASIN B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 1yr Rainfall=2.73"

	Area (ac)	CN	Description
*	0.34	61	>75% Grass cover, Good, HSG B
*	5.92	98	Paved Parking, HSG B
	6.26	96	Weighted Average
	0.34		5.43% Pervious Area
	5.92		94.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.06		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.28"
0.8	95	0.0100	2.03		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.8	170	0.0050	3.69	6.65	**Channel Flow, Pipe Flow (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
0.1	40	0.0100	5.22	9.40	**Channel Flow, Pipe Flow (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
0.9	240	0.0050	4.37	13.53	**Channel Flow, Pipe Flow (Channel Flow)** Area= 3.1 sf Perim= 6.3' r= 0.49' n= 0.015
4.2	645	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 3S: D.A to MRC BASIN B



Summary for Pond 4P: UGD BASIN A

Inflow Area = 1.85 ac, 84.32% Impervious, Inflow Depth = 1.91" for 1yr event
Inflow = 5.85 cfs @ 11.97 hrs, Volume= 0.294 af
Outflow = 1.47 cfs @ 12.12 hrs, Volume= 0.294 af, Atten= 75%, Lag= 9.4 min
Primary = 1.47 cfs @ 12.12 hrs, Volume= 0.294 af
Routed to Reach 6R : Post-Project (SP 1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Peak Elev= 48.69' @ 12.12 hrs Surf.Area= 0.22 ac Storage= 0.114 af

Plug-Flow detention time= 85.7 min calculated for 0.294 af (100% of inflow)
Center-of-Mass det. time= 87.3 min (887.8 - 800.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	47.60'	0.169 af	**49.63'W x 197.00'L x 2.58'H Field A** 0.580 af Overall - 0.156 af Embedded = 0.424 af x 40.0% Voids
#2A	48.10'	0.126 af	**ADS N-12 18"** x 153 Inside #1 Inside= 18.2"W x 18.2"H => 1.80 sf x 20.00'L = 36.0 cf Outside= 21.0"W x 21.0"H => 2.23 sf x 20.00'L = 44.5 cf 153 Chambers in 17 Rows
		0.296 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	47.60'	**24.0" Round Culvert** L= 127.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 47.60' / 46.30' S= 0.0102 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	47.60'	**8.0" Vert. Circular Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	49.15'	**4.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)

Primary OutFlow Max=1.46 cfs @ 12.12 hrs HW=48.69' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.46 cfs of 6.22 cfs potential flow)
  ├─**2=Circular Orifice** (Orifice Controls 1.46 cfs @ 4.19 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: UGD BASIN A - Chamber Wizard Field A

Chamber Model = ADS N-12 18" (ADS N-12® Pipe)
Inside= 18.2"W x 18.2"H => 1.80 sf x 20.00'L = 36.0 cf
Outside= 21.0"W x 21.0"H => 2.23 sf x 20.00'L = 44.5 cf

21.0" Wide + 13.4" Spacing = 34.4" C-C Row Spacing

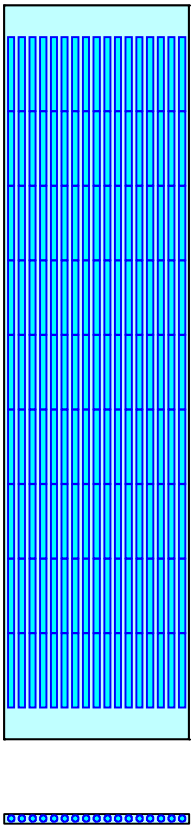
9 Chambers/Row x 20.00' Long = 180.00' Row Length +102.0" End Stone x 2 = 197.00' Base Length
17 Rows x 21.0" Wide + 13.4" Spacing x 16 + 12.0" Side Stone x 2 = 49.63' Base Width
6.0" Stone Base + 21.0" Chamber Height + 4.0" Stone Cover = 2.58' Field Height

153 Chambers x 36.0 cf = 5,508.0 cf Chamber Storage
153 Chambers x 44.5 cf = 6,809.5 cf Displacement

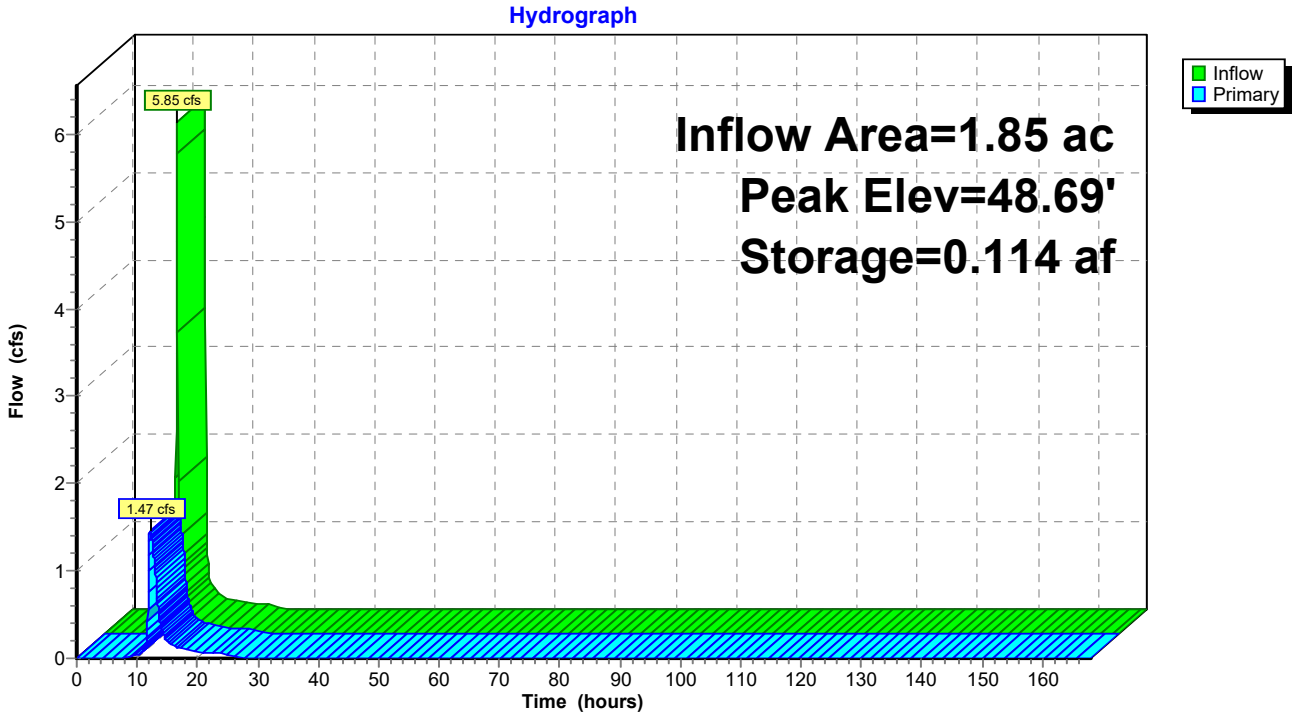
25,260.9 cf Field - 6,809.5 cf Chambers = 18,451.4 cf Stone x 40.0% Voids = 7,380.5 cf Stone Storage

Chamber Storage + Stone Storage = 12,888.6 cf = 0.296 af
Overall Storage Efficiency = 51.0%
Overall System Size = 197.00' x 49.63' x 2.58'

153 Chambers
935.6 cy Field
683.4 cy Stone



Pond 4P: UGD BASIN A



Stage-Discharge for Pond 4P: UGD BASIN A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
47.60	0.00	48.64	1.41	49.68	7.27
47.62	0.00	48.66	1.43	49.70	7.57
47.64	0.01	48.68	1.45	49.72	7.88
47.66	0.01	48.70	1.47	49.74	8.19
47.68	0.02	48.72	1.49	49.76	8.50
47.70	0.04	48.74	1.51	49.78	8.82
47.72	0.05	48.76	1.53	49.80	9.15
47.74	0.07	48.78	1.55	49.82	9.48
47.76	0.09	48.80	1.56	49.84	9.82
47.78	0.11	48.82	1.58	49.86	10.16
47.80	0.13	48.84	1.60	49.88	10.50
47.82	0.16	48.86	1.62	49.90	10.85
47.84	0.19	48.88	1.64	49.92	11.21
47.86	0.22	48.90	1.65	49.94	11.57
47.88	0.25	48.92	1.67	49.96	11.93
47.90	0.28	48.94	1.69	49.98	12.30
47.92	0.32	48.96	1.70	50.00	12.67
47.94	0.36	48.98	1.72	50.02	13.04
47.96	0.39	49.00	1.74	50.04	13.42
47.98	0.43	49.02	1.75	50.06	13.81
48.00	0.47	49.04	1.77	50.08	14.19
48.02	0.51	49.06	1.78	50.10	14.59
48.04	0.55	49.08	1.80	50.12	14.98
48.06	0.59	49.10	1.82	50.14	15.38
48.08	0.63	49.12	1.83	50.16	15.78
48.10	0.68	49.14	1.85	50.18	**16.19**
48.12	0.72	49.16	1.87		
48.14	0.76	49.18	1.94		
48.16	0.80	49.20	2.04		
48.18	0.84	49.22	2.15		
48.20	0.87	49.24	2.27		
48.22	0.91	49.26	2.41		
48.24	0.94	49.28	2.56		
48.26	0.96	49.30	2.72		
48.28	0.99	49.32	2.90		
48.30	1.02	49.34	3.08		
48.32	1.05	49.36	3.27		
48.34	1.07	49.38	3.46		
48.36	1.10	49.40	3.67		
48.38	1.12	49.42	3.88		
48.40	1.15	49.44	4.11		
48.42	1.17	49.46	4.33		
48.44	1.20	49.48	4.57		
48.46	1.22	49.50	4.81		
48.48	1.24	49.52	5.06		
48.50	1.27	49.54	5.32		
48.52	1.29	49.56	5.58		
48.54	1.31	49.58	5.84		
48.56	1.33	49.60	6.12		
48.58	1.35	49.62	6.40		
48.60	1.37	49.64	6.68		
48.62	1.39	49.66	6.97		

Stage-Area-Storage for Pond 4P: UGD BASIN A

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
47.60	0.000	48.64	0.106	49.68	0.252
47.62	0.002	48.66	0.109	49.70	0.254
47.64	0.004	48.68	0.111	49.72	0.256
47.66	0.005	48.70	0.114	49.74	0.258
47.68	0.007	48.72	0.117	49.76	0.259
47.70	0.009	48.74	0.120	49.78	0.260
47.72	0.011	48.76	0.123	49.80	0.262
47.74	0.013	48.78	0.126	49.82	0.263
47.76	0.014	48.80	0.129	49.84	0.265
47.78	0.016	48.82	0.132	49.86	0.267
47.80	0.018	48.84	0.135	49.88	0.269
47.82	0.020	48.86	0.138	49.90	0.270
47.84	0.022	48.88	0.141	49.92	0.272
47.86	0.023	48.90	0.144	49.94	0.274
47.88	0.025	48.92	0.147	49.96	0.276
47.90	0.027	48.94	0.150	49.98	0.278
47.92	0.029	48.96	0.153	50.00	0.279
47.94	0.031	48.98	0.156	50.02	0.281
47.96	0.032	49.00	0.159	50.04	0.283
47.98	0.034	49.02	0.162	50.06	0.285
48.00	0.036	49.04	0.165	50.08	0.287
48.02	0.038	49.06	0.168	50.10	0.288
48.04	0.040	49.08	0.171	50.12	0.290
48.06	0.041	49.10	0.174	50.14	0.292
48.08	0.043	49.12	0.177	50.16	0.294
48.10	0.045	49.14	0.180	50.18	**0.296**
48.12	0.047	49.16	0.183		
48.14	0.048	49.18	0.186		
48.16	0.050	49.20	0.189		
48.18	0.051	49.22	0.192		
48.20	0.052	49.24	0.195		
48.22	0.054	49.26	0.198		
48.24	0.055	49.28	0.201		
48.26	0.057	49.30	0.204		
48.28	0.059	49.32	0.206		
48.30	0.062	49.34	0.209		
48.32	0.064	49.36	0.212		
48.34	0.066	49.38	0.215		
48.36	0.068	49.40	0.218		
48.38	0.071	49.42	0.220		
48.40	0.073	49.44	0.223		
48.42	0.076	49.46	0.226		
48.44	0.078	49.48	0.228		
48.46	0.081	49.50	0.231		
48.48	0.084	49.52	0.234		
48.50	0.086	49.54	0.236		
48.52	0.089	49.56	0.239		
48.54	0.092	49.58	0.241		
48.56	0.094	49.60	0.244		
48.58	0.097	49.62	0.246		
48.60	0.100	49.64	0.248		
48.62	0.103	49.66	0.250		

Summary for Pond 5P: MRC BASIN B

Inflow Area = 6.26 ac, 94.57% Impervious, Inflow Depth = 2.29" for 1yr event
Inflow = 22.45 cfs @ 11.96 hrs, Volume= 1.193 af
Outflow = 0.22 cfs @ 20.07 hrs, Volume= 0.730 af, Atten= 99%, Lag= 486.7 min
Primary = 0.22 cfs @ 20.07 hrs, Volume= 0.730 af
Routed to Reach 6R : Post-Project (SP 1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Starting Elev= 49.30' Surf.Area= 0.98 ac Storage= 0.429 af
Peak Elev= 50.48' @ 20.07 hrs Surf.Area= 0.98 ac Storage= 1.439 af (1.010 af above start)

Plug-Flow detention time= 3,670.2 min calculated for 0.301 af (25% of inflow)
Center-of-Mass det. time= 1,933.4 min (2,708.7 - 775.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	48.80'	0.000 af	**47.23'W x 305.83'L x 2.50'H East Field** 0.829 af Overall - 0.829 af Embedded = 0.000 af x 40.0% Voids
#2A	48.80'	0.582 af	**StormTrap ST2 SingleTrap 2-0** x 76 Inside #1 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 76 Chambers in 4 Rows 33.92' x 292.52' Core + 6.66' Border = 47.23' x 305.83' System
#3C	48.80'	0.000 af	**115.06'W x 228.85'L x 2.50'H West Field** 1.511 af Overall - 1.511 af Embedded = 0.000 af x 40.0% Voids
#4C	48.80'	1.066 af	**StormTrap ST2 SingleTrap 2-0** x 168 Inside #3 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 168 Chambers in 12 Rows 101.75' x 215.54' Core + 6.66' Border = 115.06' x 228.85' System
#5D	48.80'	0.000 af	**38.75'W x 44.10'L x 2.50'H Center Field** 0.098 af Overall - 0.098 af Embedded = 0.000 af x 40.0% Voids
#6D	48.80'	0.068 af	**StormTrap ST2 SingleTrap 2-0** x 6 Inside #5 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 6 Chambers in 3 Rows 25.44' x 30.79' Core + 6.66' Border = 38.75' x 44.10' System
#7	51.30'	0.980 af	**Topsoil/Backfill (Prismatic)** Listed below (Recalc)
		2.696 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
51.30	0.98	0.000	0.000
52.30	0.98	0.980	0.980

Device	Routing	Invert	Outlet Devices
#1	Primary	48.80'	**18.0" Round Culvert** L= 29.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.80' / 48.00' S= 0.0272 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	49.80'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.45'	**3.2' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.22 cfs @ 20.07 hrs HW=50.48' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.22 cfs of 8.19 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 0.18 cfs @ 3.58 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 0.05 cfs @ 0.53 fps)

Pond 5P: MRC BASIN B - Chamber Wizard East Field

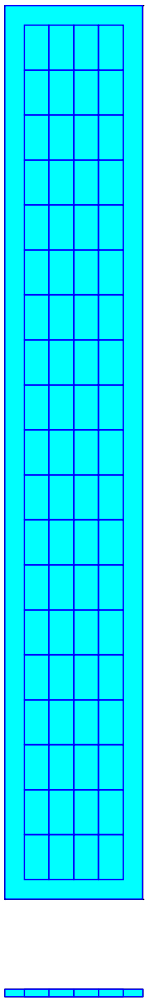
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

19 Chambers/Row x 15.40' Long = 292.52' Row Length +79.9" Border x 2 = 305.83' Base Length
4 Rows x 101.7" Wide + 79.9" Side Border x 2 = 47.23' Base Width
30.0" Chamber Height = 2.50' Field Height

76 Chambers x 231.7 cf + 7,732.9 cf Border = 25,339.9 cf Chamber Storage
76 Chambers x 326.4 cf + 11,307.3 cf Border = 36,110.6 cf Displacement

Chamber Storage = 25,339.9 cf = 0.582 af
Overall Storage Efficiency = 70.2%
Overall System Size = 305.83' x 47.23' x 2.50'

76 Chambers (plus border)
1,337.4 cy Field



Pond 5P: MRC BASIN B - Chamber Wizard West Field

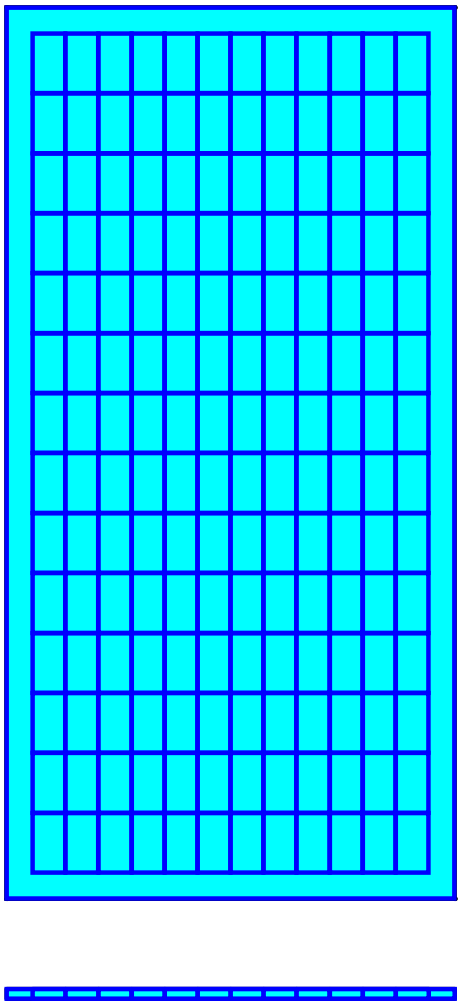
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

14 Chambers/Row x 15.40' Long = 215.54' Row Length +79.9" Border x 2 = 228.85' Base Length
12 Rows x 101.7" Wide + 79.9" Side Border x 2 = 115.06' Base Width
30.0" Chamber Height = 2.50' Field Height

168 Chambers x 231.7 cf + 7,524.7 cf Border = 46,445.4 cf Chamber Storage
168 Chambers x 326.4 cf + 11,002.9 cf Border = 65,831.3 cf Displacement

Chamber Storage = 46,445.4 cf = 1.066 af
Overall Storage Efficiency = 70.6%
Overall System Size = 228.85' x 115.06' x 2.50'

168 Chambers (plus border)
2,438.2 cy Field



Pond 5P: MRC BASIN B - Chamber Wizard Center Field

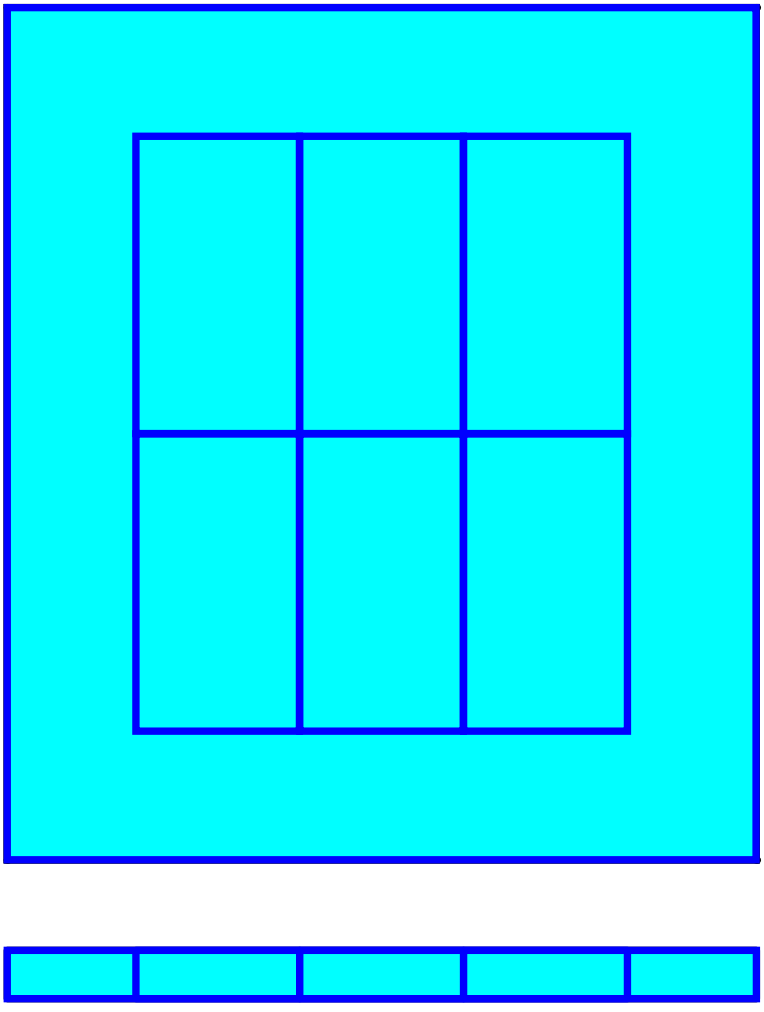
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

2 Chambers/Row x 15.40' Long = 30.79' Row Length +79.9" Border x 2 = 44.10' Base Length
3 Rows x 101.7" Wide + 79.9" Side Border x 2 = 38.75' Base Width
30.0" Chamber Height = 2.50' Field Height

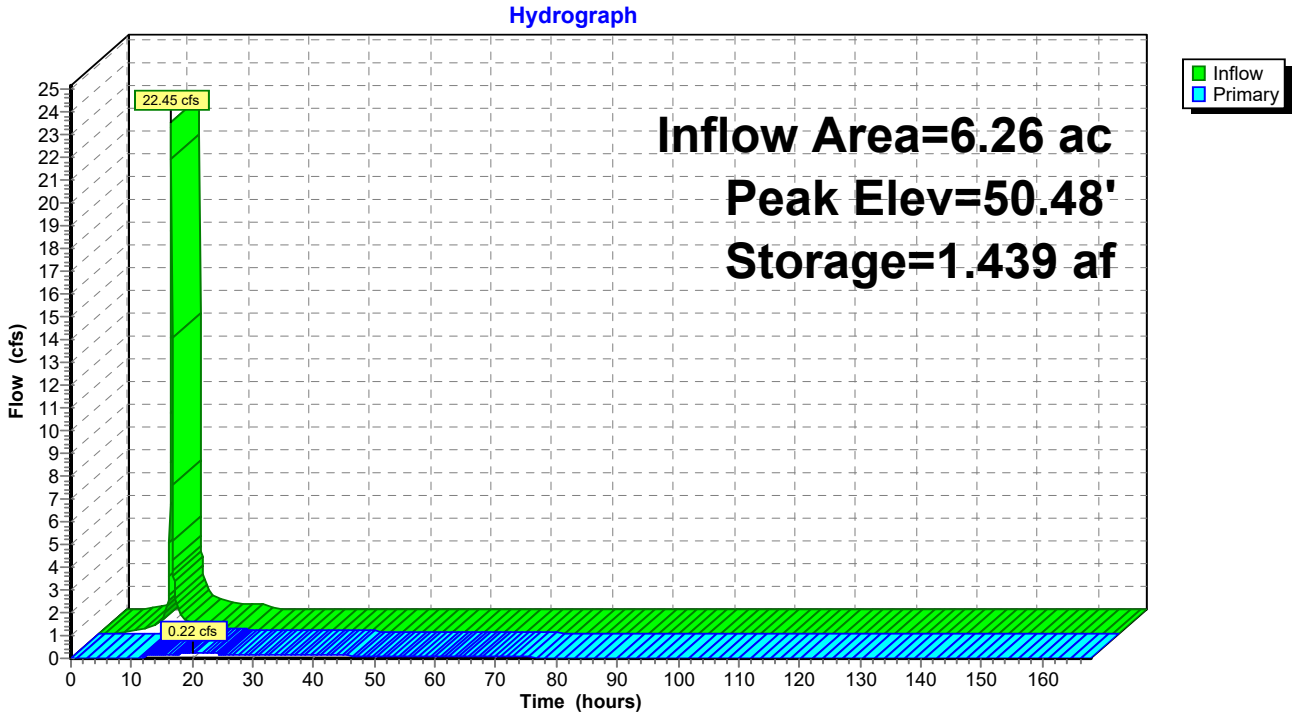
6 Chambers x 231.7 cf + 1,582.8 cf Border = 2,972.8 cf Chamber Storage
6 Chambers x 326.4 cf + 2,314.4 cf Border = 4,272.6 cf Displacement

Chamber Storage = 2,972.8 cf = 0.068 af
Overall Storage Efficiency = 69.6%
Overall System Size = 44.10' x 38.75' x 2.50'

6 Chambers (plus border)
158.2 cy Field



Pond 5P: MRC BASIN B



Stage-Discharge for Pond 5P: MRC BASIN B

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
48.80	0.00	49.84	0.00	50.88	3.10	51.92	13.10
48.82	0.00	49.86	0.01	50.90	3.30	51.94	13.15
48.84	0.00	49.88	0.01	50.92	3.51	51.96	13.21
48.86	0.00	49.90	0.02	50.94	3.72	51.98	13.26
48.88	0.00	49.92	0.03	50.96	3.93	52.00	13.32
48.90	0.00	49.94	0.04	50.98	4.15	52.02	13.37
48.92	0.00	49.96	0.05	51.00	4.37	52.04	13.43
48.94	0.00	49.98	0.05	51.02	4.59	52.06	13.48
48.96	0.00	50.00	0.06	51.04	4.82	52.08	13.53
48.98	0.00	50.02	0.07	51.06	5.05	52.10	13.59
49.00	0.00	50.04	0.08	51.08	5.28	52.12	13.64
49.02	0.00	50.06	0.09	51.10	5.52	52.14	13.69
49.04	0.00	50.08	0.09	51.12	5.76	52.16	13.75
49.06	0.00	50.10	0.10	51.14	6.00	52.18	13.80
49.08	0.00	50.12	0.10	51.16	6.25	52.20	13.85
49.10	0.00	50.14	0.11	51.18	6.49	52.22	13.90
49.12	0.00	50.16	0.11	51.20	6.74	52.24	13.96
49.14	0.00	50.18	0.12	51.22	7.00	52.26	14.01
49.16	0.00	50.20	0.12	51.24	7.26	52.28	14.06
49.18	0.00	50.22	0.13	51.26	7.52	52.30	**14.11**
49.20	0.00	50.24	0.13	51.28	7.78		
49.22	0.00	50.26	0.14	51.30	8.04		
49.24	0.00	50.28	0.14	51.32	8.31		
49.26	0.00	50.30	0.14	51.34	8.58		
49.28	0.00	50.32	0.15	51.36	8.85		
49.30	0.00	50.34	0.15	51.38	9.12		
49.32	0.00	50.36	0.16	51.40	9.40		
49.34	0.00	50.38	0.16	51.42	9.68		
49.36	0.00	50.40	0.16	51.44	9.96		
49.38	0.00	50.42	0.17	51.46	10.24		
49.40	0.00	50.44	0.17	51.48	10.53		
49.42	0.00	50.46	0.18	51.50	10.82		
49.44	0.00	50.48	0.23	51.52	11.11		
49.46	0.00	50.50	0.30	51.54	11.40		
49.48	0.00	50.52	0.38	51.56	11.69		
49.50	0.00	50.54	0.47	51.58	11.99		
49.52	0.00	50.56	0.57	51.60	12.18		
49.54	0.00	50.58	0.68	51.62	12.24		
49.56	0.00	50.60	0.80	51.64	12.30		
49.58	0.00	50.62	0.92	51.66	12.36		
49.60	0.00	50.64	1.06	51.68	12.42		
49.62	0.00	50.66	1.20	51.70	12.48		
49.64	0.00	50.68	1.34	51.72	12.53		
49.66	0.00	50.70	1.50	51.74	12.59		
49.68	0.00	50.72	1.65	51.76	12.65		
49.70	0.00	50.74	1.82	51.78	12.71		
49.72	0.00	50.76	1.99	51.80	12.76		
49.74	0.00	50.78	2.16	51.82	12.82		
49.76	0.00	50.80	2.34	51.84	12.88		
49.78	0.00	50.82	2.52	51.86	12.93		
49.80	0.00	50.84	2.71	51.88	12.99		
49.82	0.00	50.86	2.91	51.90	13.04		

Stage-Area-Storage for Pond 5P: MRC BASIN B

Elevation (feet)	Storage (acre-feet)
48.80	0.000
48.85	0.043
48.90	0.086
48.95	0.129
49.00	0.172
49.05	0.215
49.10	0.257
49.15	0.300
49.20	0.343
49.25	0.386
49.30	0.429
49.35	0.472
49.40	0.515
49.45	0.558
49.50	0.601
49.55	0.644
49.60	0.686
49.65	0.729
49.70	0.772
49.75	0.815
49.80	0.858
49.85	0.901
49.90	0.944
49.95	0.987
50.00	1.030
50.05	1.073
50.10	1.116
50.15	1.158
50.20	1.201
50.25	1.244
50.30	1.287
50.35	1.330
50.40	1.373
50.45	1.416
50.50	1.459
50.55	1.502
50.60	1.545
50.65	1.587
50.70	1.630
50.75	1.673
50.80	1.716
50.85	1.716
50.90	1.716
50.95	1.716
51.00	1.716
51.05	1.716
51.10	1.716
51.15	1.716
51.20	1.716
51.25	1.716
51.30	1.716
51.35	1.765
51.40	1.814
51.45	1.863
51.50	1.912
51.55	1.961
51.60	2.010
51.65	2.059
51.70	2.108
51.75	2.157
51.80	2.206
51.85	2.255
51.90	2.304
51.95	2.353
52.00	2.402
52.05	2.451
52.10	2.500
52.15	2.549
52.20	2.598
52.25	2.647
52.30	**2.696**

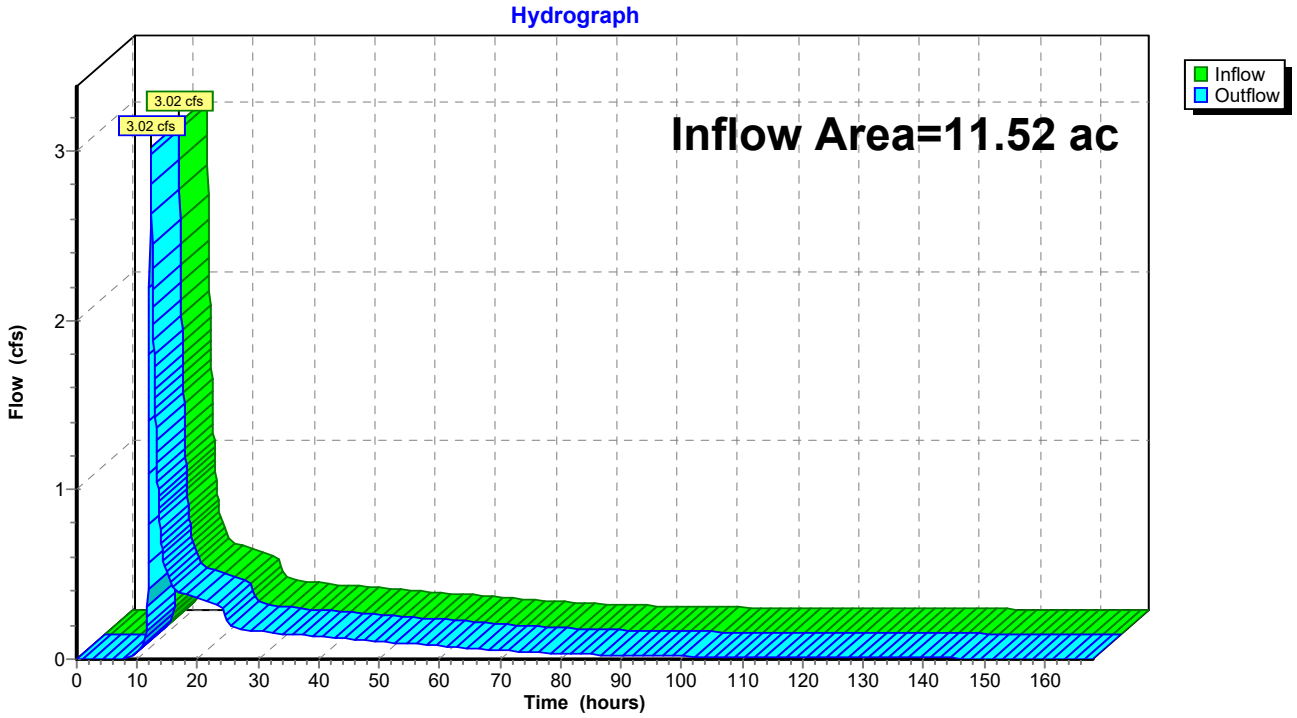
Summary for Reach 6R: Post-Project (SP 1)

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 11.52 ac, 72.05% Impervious, Inflow Depth > 1.23" for 1yr event
Inflow = 3.02 cfs @ 12.24 hrs, Volume= 1.185 af
Outflow = 3.02 cfs @ 12.24 hrs, Volume= 1.185 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs

Reach 6R: Post-Project (SP 1)



Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Post-Bypass (DP001 & Runoff Area=3.41 ac 24.05% Impervious Runoff Depth=0.88"
Flow Length=545' Tc=26.6 min CN=70 Runoff=2.47 cfs 0.249 af

Subcatchment2S: D.A. UGD BASIN A Runoff Area=1.85 ac 84.32% Impervious Runoff Depth=2.43"
Flow Length=645' Tc=6.0 min CN=92 Runoff=7.35 cfs 0.374 af

Subcatchment3S: D.A to MRC BASIN B Runoff Area=6.26 ac 94.57% Impervious Runoff Depth=2.83"
Flow Length=645' Tc=6.0 min CN=96 Runoff=27.39 cfs 1.475 af

Pond 4P: UGD BASIN A Peak Elev=48.90' Storage=0.145 af Inflow=7.35 cfs 0.374 af
Outflow=1.66 cfs 0.374 af

Pond 5P: MRC BASIN B Peak Elev=50.58' Storage=1.528 af Inflow=27.39 cfs 1.475 af
Outflow=0.68 cfs 1.012 af

Reach 6R: Post-Project (SP 1) Inflow=4.27 cfs 1.634 af
Outflow=4.27 cfs 1.634 af

Total Runoff Area = 11.52 ac Runoff Volume = 2.098 af Average Runoff Depth = 2.19"
27.95% Pervious = 3.22 ac 72.05% Impervious = 8.30 ac

Summary for Subcatchment 1S: Post-Bypass (DP001 & DP002)

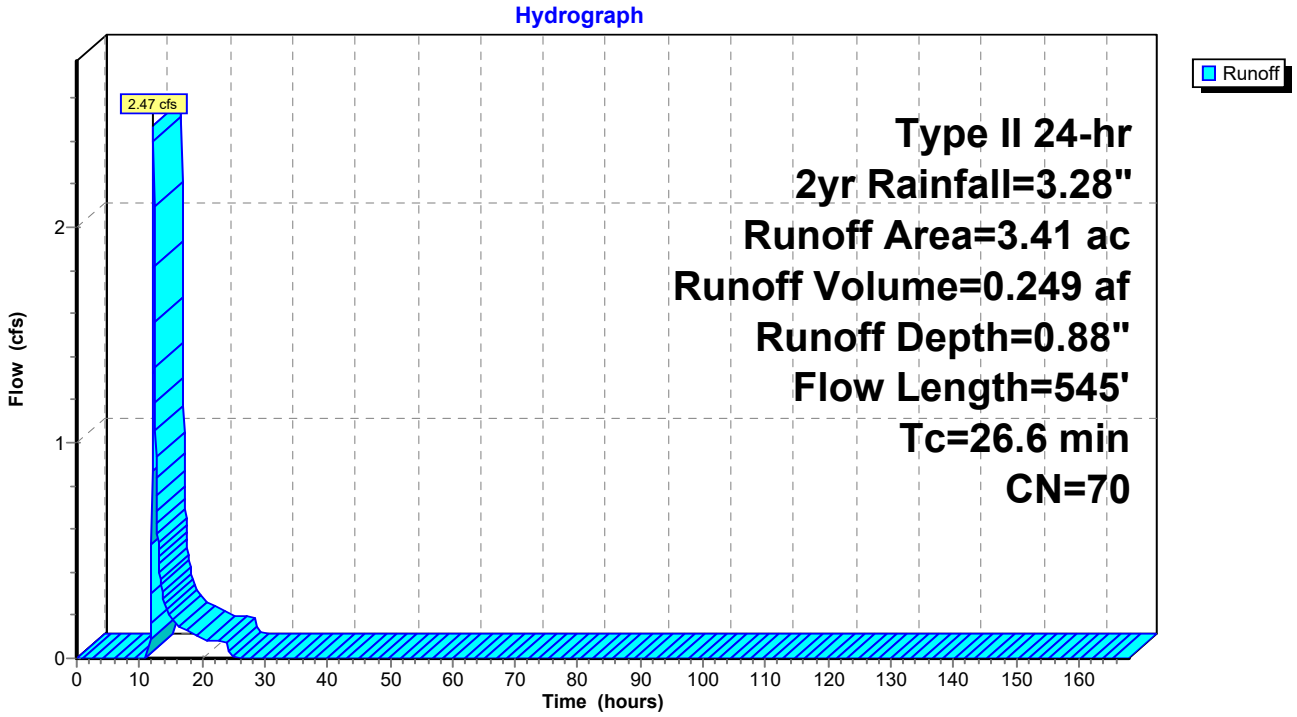
Runoff = 2.47 cfs @ 12.23 hrs, Volume= 0.249 af, Depth= 0.88"
Routed to Reach 6R : Post-Project (SP 1)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 2yr Rainfall=3.28"

	Area (ac)	CN	Description
*	2.59	61	
*	0.82	98	
	3.41	70	Weighted Average
	2.59		75.95% Pervious Area
	0.82		24.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	40	0.0500	0.14		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
16.3	60	0.0050	0.06		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
2.3	155	0.0050	1.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.2	35	0.0300	3.52		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.9	80	0.0050	1.44		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
2.1	145	0.0050	1.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.1	30	0.3300	9.25		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
26.6	545	Total			

Subcatchment 1S: Post-Bypass (DP001 & DP002)



Summary for Subcatchment 2S: D.A. UGD BASIN A

[47] Hint: Peak is 111% of capacity of segment #3

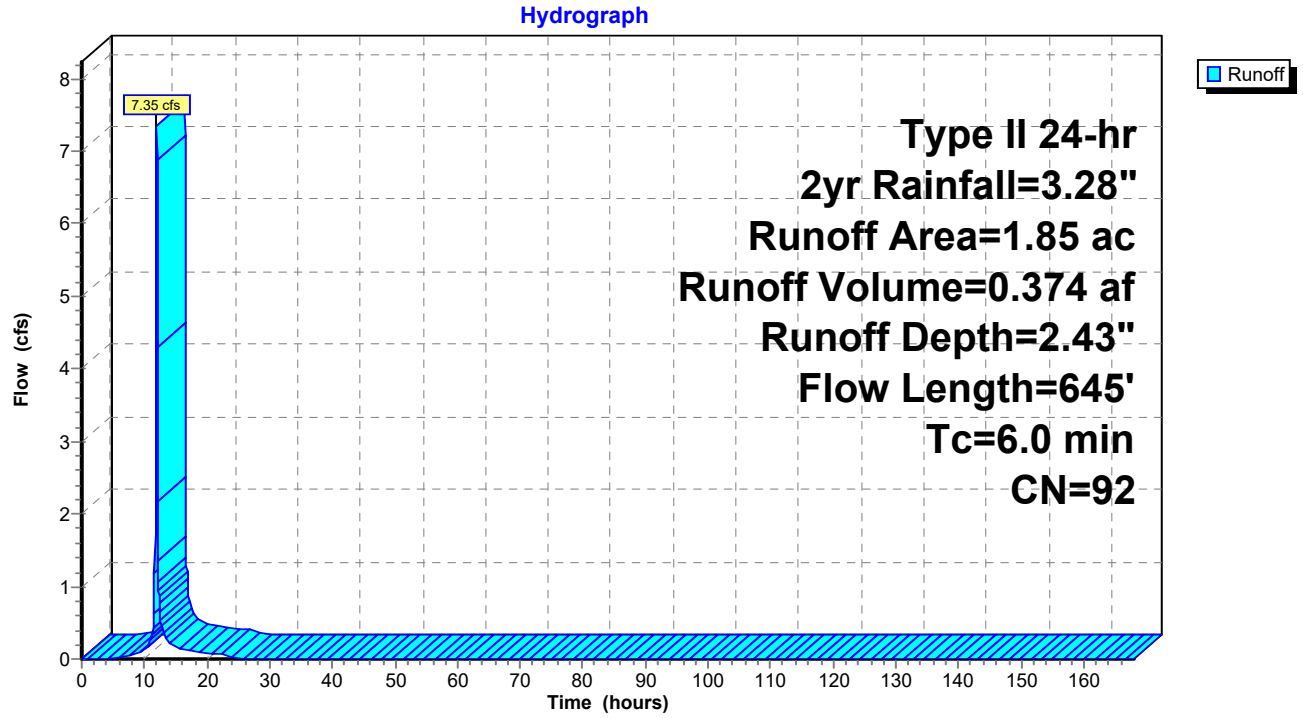
Runoff = 7.35 cfs @ 11.97 hrs, Volume= 0.374 af, Depth= 2.43"
Routed to Pond 4P : UGD BASIN A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 2yr Rainfall=3.28"

Area (ac)	CN	Description
1.56	98	Paved parking, HSG B
0.29	61	>75% Grass cover, Good, HSG B
1.85	92	Weighted Average
0.29		15.68% Pervious Area
1.56		84.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	95	0.0100	1.04		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.28"
0.9	280	0.0100	5.22	9.40	**Channel Flow, 18" Pipe (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
1.2	270	0.0050	3.69	6.65	**Channel Flow, 18" Pipe (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
3.6	645	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S: D.A. UGD BASIN A



Summary for Subcatchment 3S: D.A to MRC BASIN B

[47] Hint: Peak is 412% of capacity of segment #3
[47] Hint: Peak is 291% of capacity of segment #4
[47] Hint: Peak is 202% of capacity of segment #5

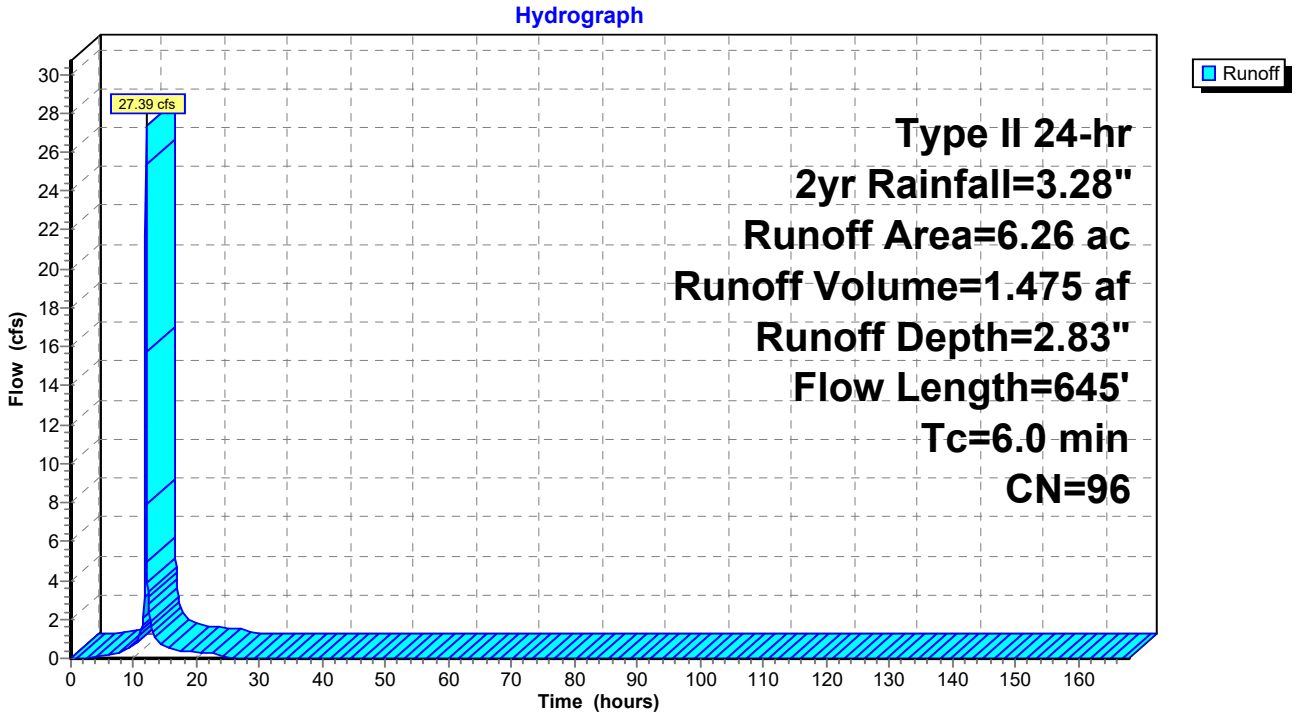
Runoff = 27.39 cfs @ 11.96 hrs, Volume= 1.475 af, Depth= 2.83"
Routed to Pond 5P : MRC BASIN B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 2yr Rainfall=3.28"

	Area (ac)	CN	Description
*	0.34	61	>75% Grass cover, Good, HSG B
*	5.92	98	Paved Parking, HSG B
	6.26	96	Weighted Average
	0.34		5.43% Pervious Area
	5.92		94.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.06		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.28"
0.8	95	0.0100	2.03		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.8	170	0.0050	3.69	6.65	**Channel Flow, Pipe Flow (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
0.1	40	0.0100	5.22	9.40	**Channel Flow, Pipe Flow (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
0.9	240	0.0050	4.37	13.53	**Channel Flow, Pipe Flow (Channel Flow)** Area= 3.1 sf Perim= 6.3' r= 0.49' n= 0.015
4.2	645	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 3S: D.A to MRC BASIN B



Summary for Pond 4P: UGD BASIN A

Inflow Area = 1.85 ac, 84.32% Impervious, Inflow Depth = 2.43" for 2yr event
Inflow = 7.35 cfs @ 11.97 hrs, Volume= 0.374 af
Outflow = 1.66 cfs @ 12.14 hrs, Volume= 0.374 af, Atten= 77%, Lag= 10.2 min
Primary = 1.66 cfs @ 12.14 hrs, Volume= 0.374 af
Routed to Reach 6R : Post-Project (SP 1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Peak Elev= 48.90' @ 12.14 hrs Surf.Area= 0.22 ac Storage= 0.145 af

Plug-Flow detention time= 80.9 min calculated for 0.374 af (100% of inflow)
Center-of-Mass det. time= 82.5 min (876.2 - 793.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	47.60'	0.169 af	**49.63'W x 197.00'L x 2.58'H Field A** 0.580 af Overall - 0.156 af Embedded = 0.424 af x 40.0% Voids
#2A	48.10'	0.126 af	**ADS N-12 18"** x 153 Inside #1 Inside= 18.2"W x 18.2"H => 1.80 sf x 20.00'L = 36.0 cf Outside= 21.0"W x 21.0"H => 2.23 sf x 20.00'L = 44.5 cf 153 Chambers in 17 Rows
		0.296 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	47.60'	**24.0" Round Culvert** L= 127.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 47.60' / 46.30' S= 0.0102 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	47.60'	**8.0" Vert. Circular Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	49.15'	**4.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)

Primary OutFlow Max=1.66 cfs @ 12.14 hrs HW=48.90' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.66 cfs of 8.42 cfs potential flow)
├**2=Circular Orifice** (Orifice Controls 1.66 cfs @ 4.74 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: UGD BASIN A - Chamber Wizard Field A

Chamber Model = ADS N-12 18" (ADS N-12® Pipe)
Inside= 18.2"W x 18.2"H => 1.80 sf x 20.00'L = 36.0 cf
Outside= 21.0"W x 21.0"H => 2.23 sf x 20.00'L = 44.5 cf

21.0" Wide + 13.4" Spacing = 34.4" C-C Row Spacing

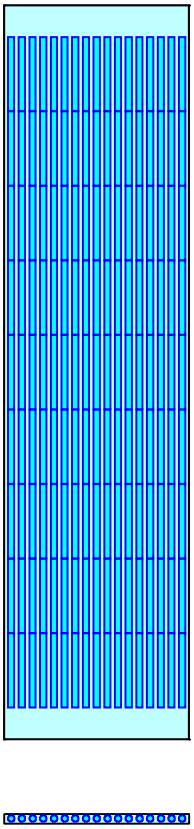
9 Chambers/Row x 20.00' Long = 180.00' Row Length +102.0" End Stone x 2 = 197.00' Base Length
17 Rows x 21.0" Wide + 13.4" Spacing x 16 + 12.0" Side Stone x 2 = 49.63' Base Width
6.0" Stone Base + 21.0" Chamber Height + 4.0" Stone Cover = 2.58' Field Height

153 Chambers x 36.0 cf = 5,508.0 cf Chamber Storage
153 Chambers x 44.5 cf = 6,809.5 cf Displacement

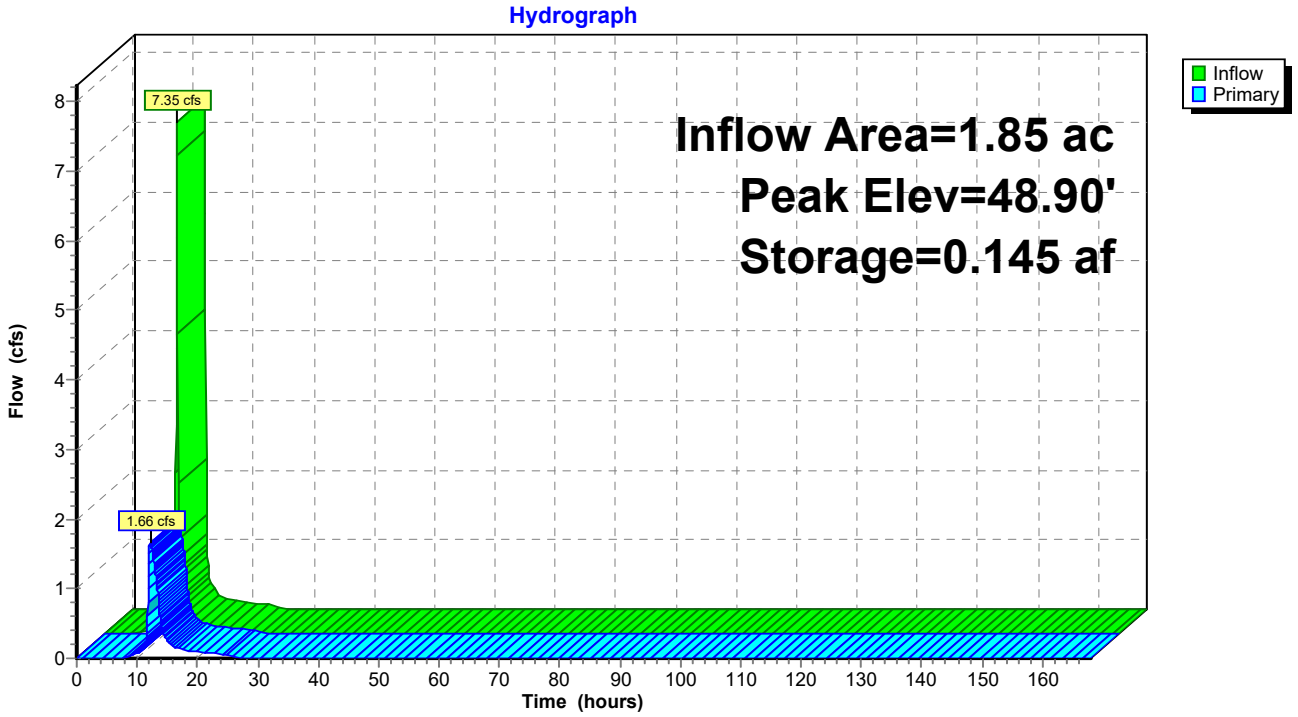
25,260.9 cf Field - 6,809.5 cf Chambers = 18,451.4 cf Stone x 40.0% Voids = 7,380.5 cf Stone Storage

Chamber Storage + Stone Storage = 12,888.6 cf = 0.296 af
Overall Storage Efficiency = 51.0%
Overall System Size = 197.00' x 49.63' x 2.58'

153 Chambers
935.6 cy Field
683.4 cy Stone



Pond 4P: UGD BASIN A



Stage-Discharge for Pond 4P: UGD BASIN A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
47.60	0.00	48.64	1.41	49.68	7.27
47.62	0.00	48.66	1.43	49.70	7.57
47.64	0.01	48.68	1.45	49.72	7.88
47.66	0.01	48.70	1.47	49.74	8.19
47.68	0.02	48.72	1.49	49.76	8.50
47.70	0.04	48.74	1.51	49.78	8.82
47.72	0.05	48.76	1.53	49.80	9.15
47.74	0.07	48.78	1.55	49.82	9.48
47.76	0.09	48.80	1.56	49.84	9.82
47.78	0.11	48.82	1.58	49.86	10.16
47.80	0.13	48.84	1.60	49.88	10.50
47.82	0.16	48.86	1.62	49.90	10.85
47.84	0.19	48.88	1.64	49.92	11.21
47.86	0.22	48.90	1.65	49.94	11.57
47.88	0.25	48.92	1.67	49.96	11.93
47.90	0.28	48.94	1.69	49.98	12.30
47.92	0.32	48.96	1.70	50.00	12.67
47.94	0.36	48.98	1.72	50.02	13.04
47.96	0.39	49.00	1.74	50.04	13.42
47.98	0.43	49.02	1.75	50.06	13.81
48.00	0.47	49.04	1.77	50.08	14.19
48.02	0.51	49.06	1.78	50.10	14.59
48.04	0.55	49.08	1.80	50.12	14.98
48.06	0.59	49.10	1.82	50.14	15.38
48.08	0.63	49.12	1.83	50.16	15.78
48.10	0.68	49.14	1.85	50.18	**16.19**
48.12	0.72	49.16	1.87		
48.14	0.76	49.18	1.94		
48.16	0.80	49.20	2.04		
48.18	0.84	49.22	2.15		
48.20	0.87	49.24	2.27		
48.22	0.91	49.26	2.41		
48.24	0.94	49.28	2.56		
48.26	0.96	49.30	2.72		
48.28	0.99	49.32	2.90		
48.30	1.02	49.34	3.08		
48.32	1.05	49.36	3.27		
48.34	1.07	49.38	3.46		
48.36	1.10	49.40	3.67		
48.38	1.12	49.42	3.88		
48.40	1.15	49.44	4.11		
48.42	1.17	49.46	4.33		
48.44	1.20	49.48	4.57		
48.46	1.22	49.50	4.81		
48.48	1.24	49.52	5.06		
48.50	1.27	49.54	5.32		
48.52	1.29	49.56	5.58		
48.54	1.31	49.58	5.84		
48.56	1.33	49.60	6.12		
48.58	1.35	49.62	6.40		
48.60	1.37	49.64	6.68		
48.62	1.39	49.66	6.97		

Stage-Area-Storage for Pond 4P: UGD BASIN A

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
47.60	0.000	48.64	0.106	49.68	0.252
47.62	0.002	48.66	0.109	49.70	0.254
47.64	0.004	48.68	0.111	49.72	0.256
47.66	0.005	48.70	0.114	49.74	0.258
47.68	0.007	48.72	0.117	49.76	0.259
47.70	0.009	48.74	0.120	49.78	0.260
47.72	0.011	48.76	0.123	49.80	0.262
47.74	0.013	48.78	0.126	49.82	0.263
47.76	0.014	48.80	0.129	49.84	0.265
47.78	0.016	48.82	0.132	49.86	0.267
47.80	0.018	48.84	0.135	49.88	0.269
47.82	0.020	48.86	0.138	49.90	0.270
47.84	0.022	48.88	0.141	49.92	0.272
47.86	0.023	48.90	0.144	49.94	0.274
47.88	0.025	48.92	0.147	49.96	0.276
47.90	0.027	48.94	0.150	49.98	0.278
47.92	0.029	48.96	0.153	50.00	0.279
47.94	0.031	48.98	0.156	50.02	0.281
47.96	0.032	49.00	0.159	50.04	0.283
47.98	0.034	49.02	0.162	50.06	0.285
48.00	0.036	49.04	0.165	50.08	0.287
48.02	0.038	49.06	0.168	50.10	0.288
48.04	0.040	49.08	0.171	50.12	0.290
48.06	0.041	49.10	0.174	50.14	0.292
48.08	0.043	49.12	0.177	50.16	0.294
48.10	0.045	49.14	0.180	50.18	**0.296**
48.12	0.047	49.16	0.183		
48.14	0.048	49.18	0.186		
48.16	0.050	49.20	0.189		
48.18	0.051	49.22	0.192		
48.20	0.052	49.24	0.195		
48.22	0.054	49.26	0.198		
48.24	0.055	49.28	0.201		
48.26	0.057	49.30	0.204		
48.28	0.059	49.32	0.206		
48.30	0.062	49.34	0.209		
48.32	0.064	49.36	0.212		
48.34	0.066	49.38	0.215		
48.36	0.068	49.40	0.218		
48.38	0.071	49.42	0.220		
48.40	0.073	49.44	0.223		
48.42	0.076	49.46	0.226		
48.44	0.078	49.48	0.228		
48.46	0.081	49.50	0.231		
48.48	0.084	49.52	0.234		
48.50	0.086	49.54	0.236		
48.52	0.089	49.56	0.239		
48.54	0.092	49.58	0.241		
48.56	0.094	49.60	0.244		
48.58	0.097	49.62	0.246		
48.60	0.100	49.64	0.248		
48.62	0.103	49.66	0.250		

Summary for Pond 5P: MRC BASIN B

Inflow Area = 6.26 ac, 94.57% Impervious, Inflow Depth = 2.83" for 2yr event
Inflow = 27.39 cfs @ 11.96 hrs, Volume= 1.475 af
Outflow = 0.68 cfs @ 14.58 hrs, Volume= 1.012 af, Atten= 98%, Lag= 157.3 min
Primary = 0.68 cfs @ 14.58 hrs, Volume= 1.012 af
Routed to Reach 6R : Post-Project (SP 1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Starting Elev= 49.30' Surf.Area= 0.98 ac Storage= 0.429 af
Peak Elev= 50.58' @ 14.58 hrs Surf.Area= 0.98 ac Storage= 1.528 af (1.099 af above start)

Plug-Flow detention time= 2,548.3 min calculated for 0.583 af (39% of inflow)
Center-of-Mass det. time= 1,498.8 min (2,268.6 - 769.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	48.80'	0.000 af	**47.23'W x 305.83'L x 2.50'H East Field** 0.829 af Overall - 0.829 af Embedded = 0.000 af x 40.0% Voids
#2A	48.80'	0.582 af	**StormTrap ST2 SingleTrap 2-0** x 76 Inside #1 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 76 Chambers in 4 Rows 33.92' x 292.52' Core + 6.66' Border = 47.23' x 305.83' System
#3C	48.80'	0.000 af	**115.06'W x 228.85'L x 2.50'H West Field** 1.511 af Overall - 1.511 af Embedded = 0.000 af x 40.0% Voids
#4C	48.80'	1.066 af	**StormTrap ST2 SingleTrap 2-0** x 168 Inside #3 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 168 Chambers in 12 Rows 101.75' x 215.54' Core + 6.66' Border = 115.06' x 228.85' System
#5D	48.80'	0.000 af	**38.75'W x 44.10'L x 2.50'H Center Field** 0.098 af Overall - 0.098 af Embedded = 0.000 af x 40.0% Voids
#6D	48.80'	0.068 af	**StormTrap ST2 SingleTrap 2-0** x 6 Inside #5 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 6 Chambers in 3 Rows 25.44' x 30.79' Core + 6.66' Border = 38.75' x 44.10' System
#7	51.30'	0.980 af	**Topsoil/Backfill (Prismatic)** Listed below (Recalc)
		2.696 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
51.30	0.98	0.000	0.000
52.30	0.98	0.980	0.980

Device	Routing	Invert	Outlet Devices
#1	Primary	48.80'	**18.0" Round Culvert** L= 29.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.80' / 48.00' S= 0.0272 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	49.80'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.45'	**3.2' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.68 cfs @ 14.58 hrs HW=50.58' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.68 cfs of 8.64 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 0.19 cfs @ 3.90 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 0.49 cfs @ 1.18 fps)

Pond 5P: MRC BASIN B - Chamber Wizard East Field

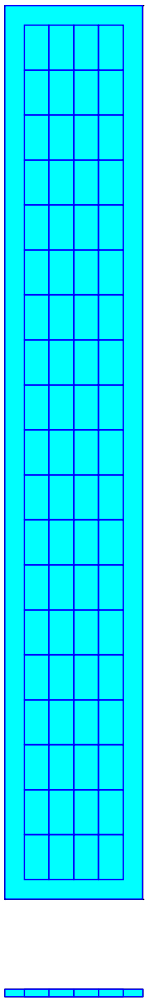
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

19 Chambers/Row x 15.40' Long = 292.52' Row Length +79.9" Border x 2 = 305.83' Base Length
4 Rows x 101.7" Wide + 79.9" Side Border x 2 = 47.23' Base Width
30.0" Chamber Height = 2.50' Field Height

76 Chambers x 231.7 cf + 7,732.9 cf Border = 25,339.9 cf Chamber Storage
76 Chambers x 326.4 cf + 11,307.3 cf Border = 36,110.6 cf Displacement

Chamber Storage = 25,339.9 cf = 0.582 af
Overall Storage Efficiency = 70.2%
Overall System Size = 305.83' x 47.23' x 2.50'

76 Chambers (plus border)
1,337.4 cy Field



Pond 5P: MRC BASIN B - Chamber Wizard West Field

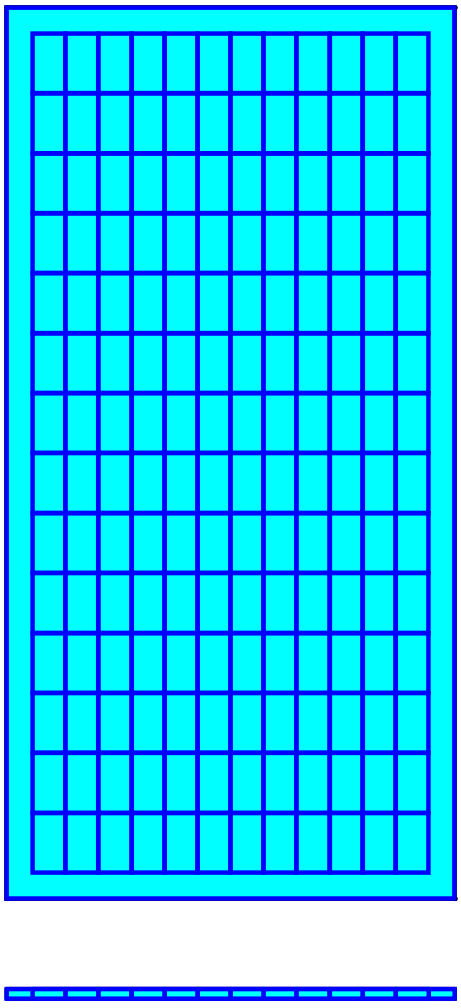
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

14 Chambers/Row x 15.40' Long = 215.54' Row Length +79.9" Border x 2 = 228.85' Base Length
12 Rows x 101.7" Wide + 79.9" Side Border x 2 = 115.06' Base Width
30.0" Chamber Height = 2.50' Field Height

168 Chambers x 231.7 cf + 7,524.7 cf Border = 46,445.4 cf Chamber Storage
168 Chambers x 326.4 cf + 11,002.9 cf Border = 65,831.3 cf Displacement

Chamber Storage = 46,445.4 cf = 1.066 af
Overall Storage Efficiency = 70.6%
Overall System Size = 228.85' x 115.06' x 2.50'

168 Chambers (plus border)
2,438.2 cy Field



Pond 5P: MRC BASIN B - Chamber Wizard Center Field

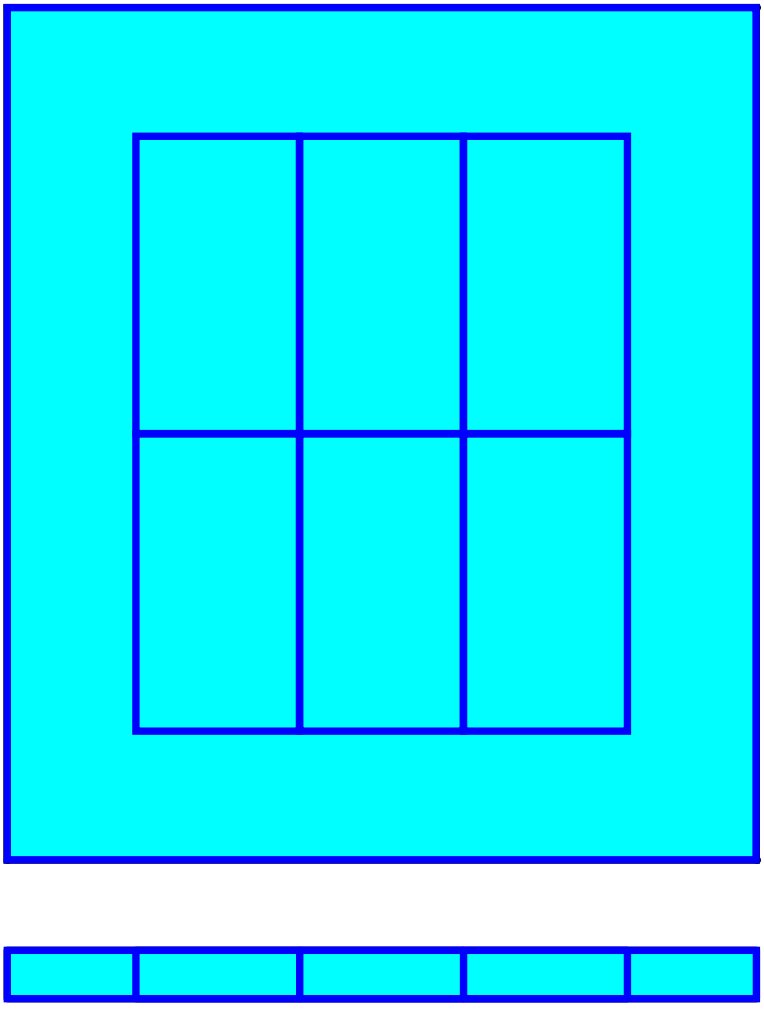
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

2 Chambers/Row x 15.40' Long = 30.79' Row Length +79.9" Border x 2 = 44.10' Base Length
3 Rows x 101.7" Wide + 79.9" Side Border x 2 = 38.75' Base Width
30.0" Chamber Height = 2.50' Field Height

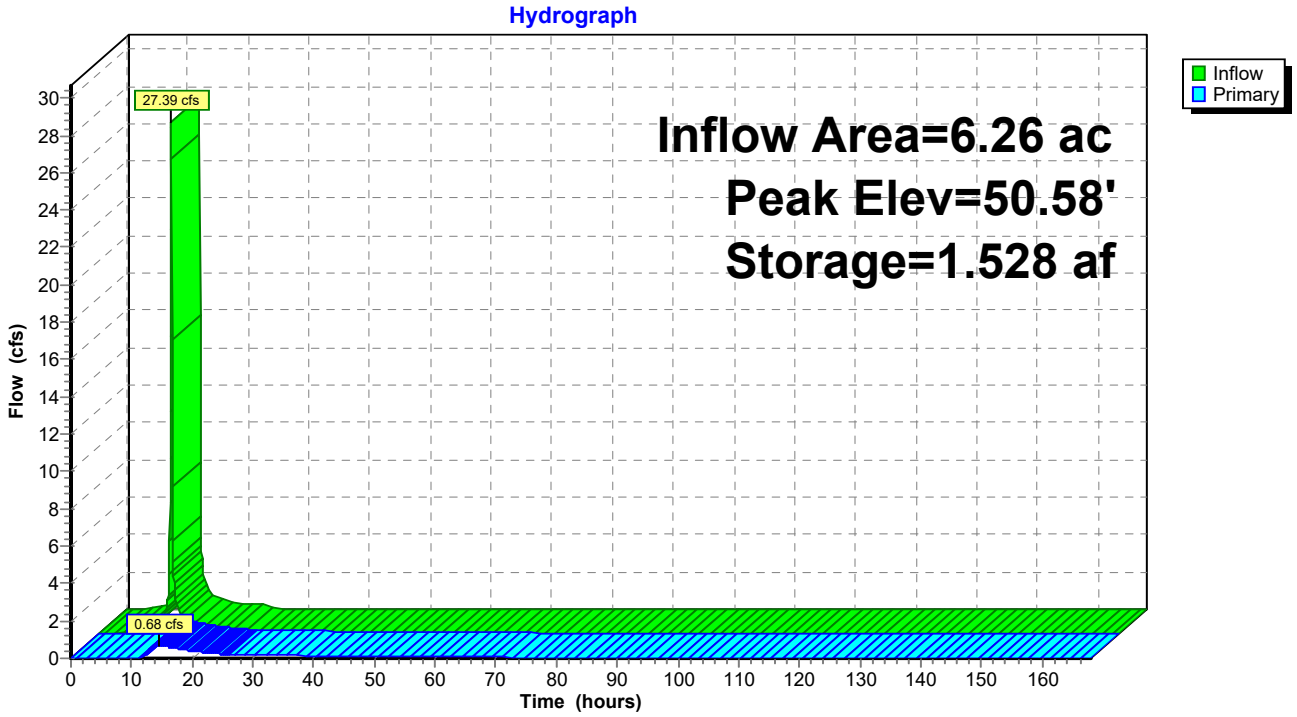
6 Chambers x 231.7 cf + 1,582.8 cf Border = 2,972.8 cf Chamber Storage
6 Chambers x 326.4 cf + 2,314.4 cf Border = 4,272.6 cf Displacement

Chamber Storage = 2,972.8 cf = 0.068 af
Overall Storage Efficiency = 69.6%
Overall System Size = 44.10' x 38.75' x 2.50'

6 Chambers (plus border)
158.2 cy Field



Pond 5P: MRC BASIN B



Stage-Discharge for Pond 5P: MRC BASIN B

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
48.80	0.00	49.84	0.00	50.88	3.10	51.92	13.10
48.82	0.00	49.86	0.01	50.90	3.30	51.94	13.15
48.84	0.00	49.88	0.01	50.92	3.51	51.96	13.21
48.86	0.00	49.90	0.02	50.94	3.72	51.98	13.26
48.88	0.00	49.92	0.03	50.96	3.93	52.00	13.32
48.90	0.00	49.94	0.04	50.98	4.15	52.02	13.37
48.92	0.00	49.96	0.05	51.00	4.37	52.04	13.43
48.94	0.00	49.98	0.05	51.02	4.59	52.06	13.48
48.96	0.00	50.00	0.06	51.04	4.82	52.08	13.53
48.98	0.00	50.02	0.07	51.06	5.05	52.10	13.59
49.00	0.00	50.04	0.08	51.08	5.28	52.12	13.64
49.02	0.00	50.06	0.09	51.10	5.52	52.14	13.69
49.04	0.00	50.08	0.09	51.12	5.76	52.16	13.75
49.06	0.00	50.10	0.10	51.14	6.00	52.18	13.80
49.08	0.00	50.12	0.10	51.16	6.25	52.20	13.85
49.10	0.00	50.14	0.11	51.18	6.49	52.22	13.90
49.12	0.00	50.16	0.11	51.20	6.74	52.24	13.96
49.14	0.00	50.18	0.12	51.22	7.00	52.26	14.01
49.16	0.00	50.20	0.12	51.24	7.26	52.28	14.06
49.18	0.00	50.22	0.13	51.26	7.52	52.30	**14.11**
49.20	0.00	50.24	0.13	51.28	7.78		
49.22	0.00	50.26	0.14	51.30	8.04		
49.24	0.00	50.28	0.14	51.32	8.31		
49.26	0.00	50.30	0.14	51.34	8.58		
49.28	0.00	50.32	0.15	51.36	8.85		
49.30	0.00	50.34	0.15	51.38	9.12		
49.32	0.00	50.36	0.16	51.40	9.40		
49.34	0.00	50.38	0.16	51.42	9.68		
49.36	0.00	50.40	0.16	51.44	9.96		
49.38	0.00	50.42	0.17	51.46	10.24		
49.40	0.00	50.44	0.17	51.48	10.53		
49.42	0.00	50.46	0.18	51.50	10.82		
49.44	0.00	50.48	0.23	51.52	11.11		
49.46	0.00	50.50	0.30	51.54	11.40		
49.48	0.00	50.52	0.38	51.56	11.69		
49.50	0.00	50.54	0.47	51.58	11.99		
49.52	0.00	50.56	0.57	51.60	12.18		
49.54	0.00	50.58	0.68	51.62	12.24		
49.56	0.00	50.60	0.80	51.64	12.30		
49.58	0.00	50.62	0.92	51.66	12.36		
49.60	0.00	50.64	1.06	51.68	12.42		
49.62	0.00	50.66	1.20	51.70	12.48		
49.64	0.00	50.68	1.34	51.72	12.53		
49.66	0.00	50.70	1.50	51.74	12.59		
49.68	0.00	50.72	1.65	51.76	12.65		
49.70	0.00	50.74	1.82	51.78	12.71		
49.72	0.00	50.76	1.99	51.80	12.76		
49.74	0.00	50.78	2.16	51.82	12.82		
49.76	0.00	50.80	2.34	51.84	12.88		
49.78	0.00	50.82	2.52	51.86	12.93		
49.80	0.00	50.84	2.71	51.88	12.99		
49.82	0.00	50.86	2.91	51.90	13.04		

Stage-Area-Storage for Pond 5P: MRC BASIN B

Elevation (feet)	Storage (acre-feet)
48.80	0.000
48.85	0.043
48.90	0.086
48.95	0.129
49.00	0.172
49.05	0.215
49.10	0.257
49.15	0.300
49.20	0.343
49.25	0.386
49.30	0.429
49.35	0.472
49.40	0.515
49.45	0.558
49.50	0.601
49.55	0.644
49.60	0.686
49.65	0.729
49.70	0.772
49.75	0.815
49.80	0.858
49.85	0.901
49.90	0.944
49.95	0.987
50.00	1.030
50.05	1.073
50.10	1.116
50.15	1.158
50.20	1.201
50.25	1.244
50.30	1.287
50.35	1.330
50.40	1.373
50.45	1.416
50.50	1.459
50.55	1.502
50.60	1.545
50.65	1.587
50.70	1.630
50.75	1.673
50.80	1.716
50.85	1.716
50.90	1.716
50.95	1.716
51.00	1.716
51.05	1.716
51.10	1.716
51.15	1.716
51.20	1.716
51.25	1.716
51.30	1.716
51.35	1.765
51.40	1.814
51.45	1.863
51.50	1.912
51.55	1.961
51.60	2.010
51.65	2.059
51.70	2.108
51.75	2.157
51.80	2.206
51.85	2.255
51.90	2.304
51.95	2.353
52.00	2.402
52.05	2.451
52.10	2.500
52.15	2.549
52.20	2.598
52.25	2.647
52.30	**2.696**

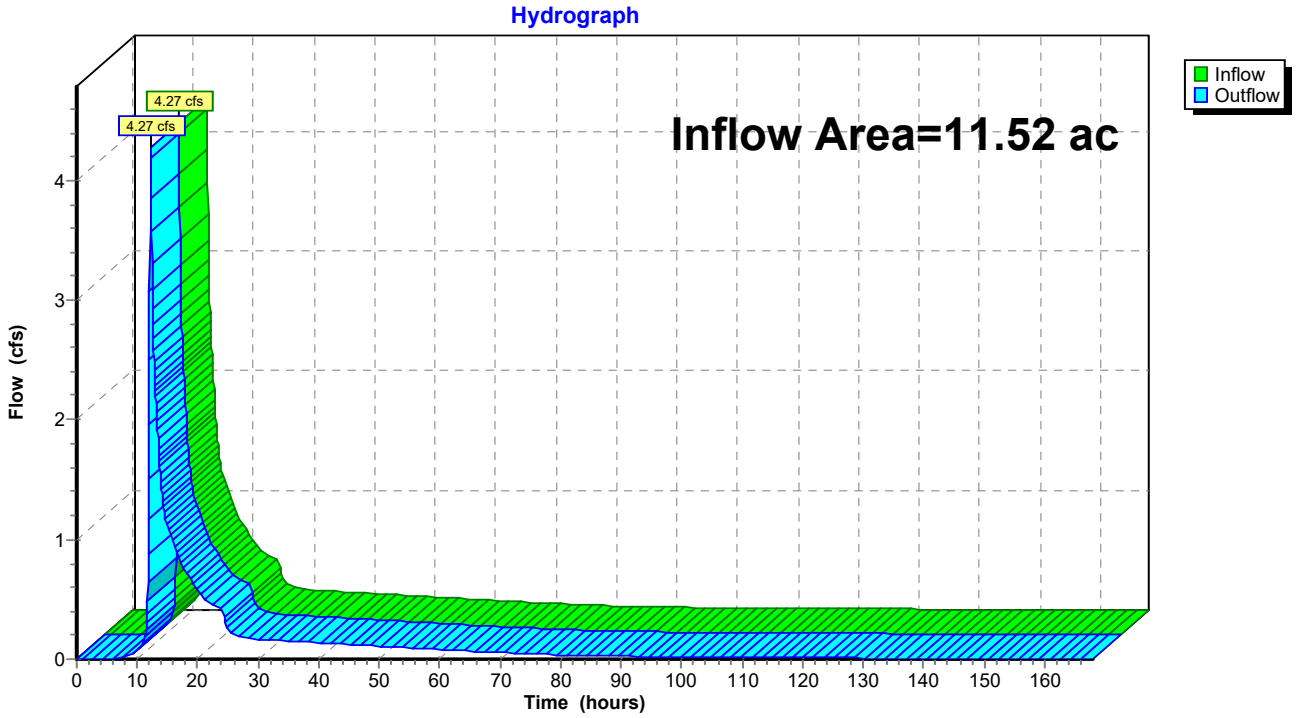
Summary for Reach 6R: Post-Project (SP 1)

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 11.52 ac, 72.05% Impervious, Inflow Depth > 1.70" for 2yr event
Inflow = 4.27 cfs @ 12.23 hrs, Volume= 1.634 af
Outflow = 4.27 cfs @ 12.23 hrs, Volume= 1.634 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs

Reach 6R: Post-Project (SP 1)



Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Post-Bypass (DP001 & Runoff Area=3.41 ac 24.05% Impervious Runoff Depth=1.90"
Flow Length=545' Tc=26.6 min CN=70 Runoff=5.90 cfs 0.541 af

Subcatchment2S: D.A. UGD BASIN A Runoff Area=1.85 ac 84.32% Impervious Runoff Depth=3.91"
Flow Length=645' Tc=6.0 min CN=92 Runoff=11.50 cfs 0.603 af

Subcatchment3S: D.A to MRC BASIN B Runoff Area=6.26 ac 94.57% Impervious Runoff Depth=4.35"
Flow Length=645' Tc=6.0 min CN=96 Runoff=41.09 cfs 2.271 af

Pond 4P: UGD BASIN A Peak Elev=49.43' Storage=0.222 af Inflow=11.50 cfs 0.603 af
Outflow=4.03 cfs 0.603 af

Pond 5P: MRC BASIN B Peak Elev=51.37' Storage=1.782 af Inflow=41.09 cfs 2.271 af
Outflow=8.95 cfs 1.807 af

Reach 6R: Post-Project (SP 1) Inflow=18.12 cfs 2.952 af
Outflow=18.12 cfs 2.952 af

Total Runoff Area = 11.52 ac Runoff Volume = 3.416 af Average Runoff Depth = 3.56"
27.95% Pervious = 3.22 ac 72.05% Impervious = 8.30 ac

Summary for Subcatchment 1S: Post-Bypass (DP001 & DP002)

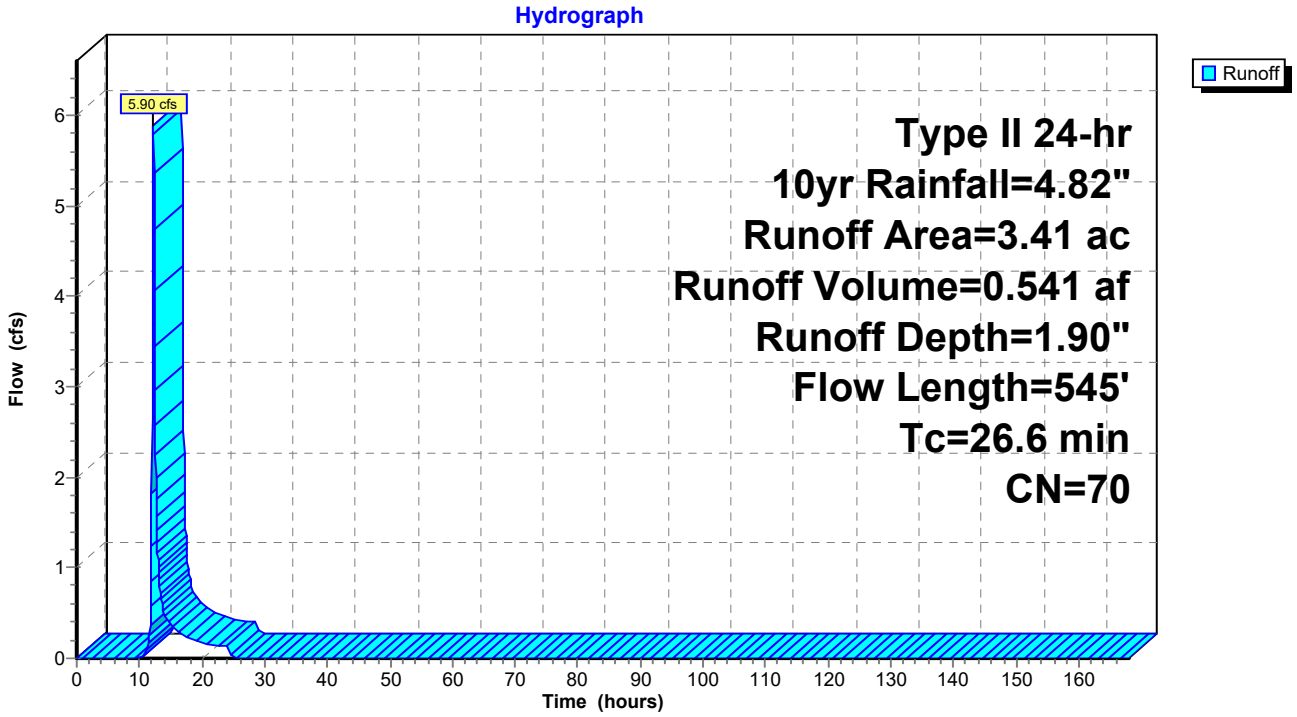
Runoff = 5.90 cfs @ 12.22 hrs, Volume= 0.541 af, Depth= 1.90"
Routed to Reach 6R : Post-Project (SP 1)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=4.82"

	Area (ac)	CN	Description
*	2.59	61	
*	0.82	98	
	3.41	70	Weighted Average
	2.59		75.95% Pervious Area
	0.82		24.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	40	0.0500	0.14		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
16.3	60	0.0050	0.06		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
2.3	155	0.0050	1.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.2	35	0.0300	3.52		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.9	80	0.0050	1.44		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
2.1	145	0.0050	1.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.1	30	0.3300	9.25		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
26.6	545	Total			

Subcatchment 1S: Post-Bypass (DP001 & DP002)



Summary for Subcatchment 2S: D.A. UGD BASIN A

[47] Hint: Peak is 122% of capacity of segment #2
[47] Hint: Peak is 173% of capacity of segment #3

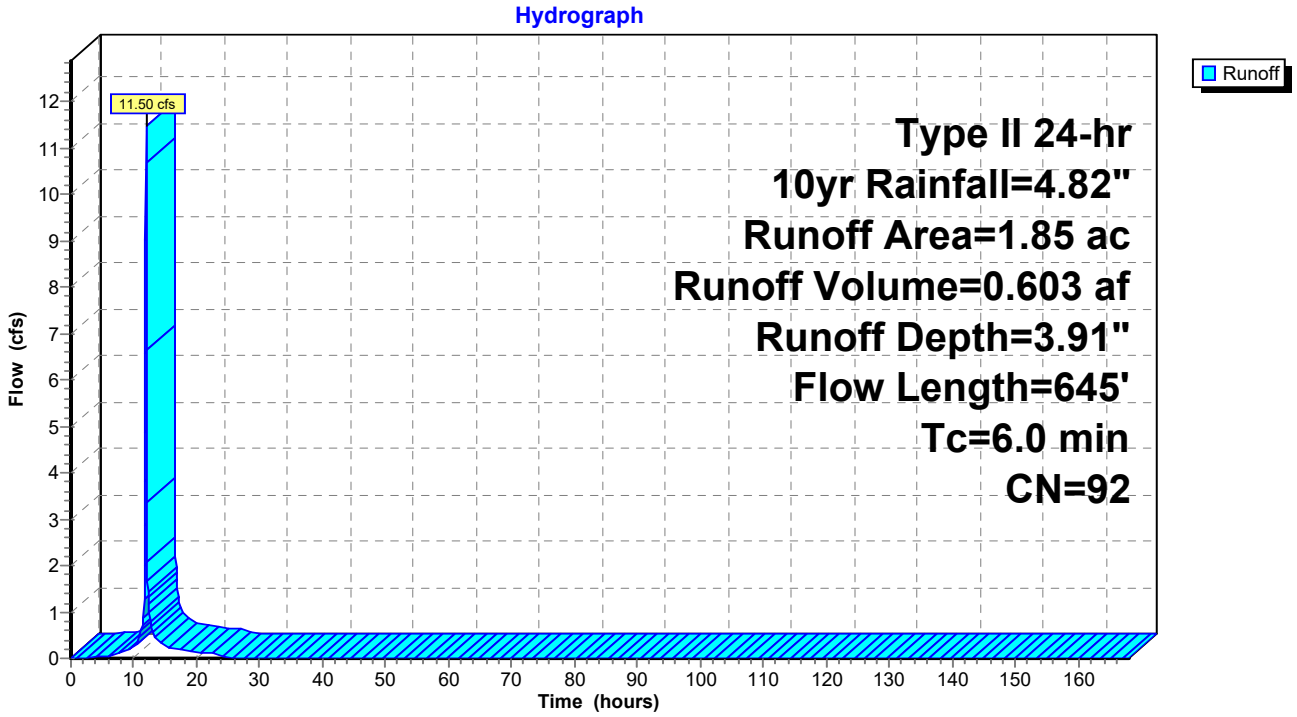
Runoff = 11.50 cfs @ 11.96 hrs, Volume= 0.603 af, Depth= 3.91"
Routed to Pond 4P : UGD BASIN A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=4.82"

Area (ac)	CN	Description
1.56	98	Paved parking, HSG B
0.29	61	>75% Grass cover, Good, HSG B
1.85	92	Weighted Average
0.29		15.68% Pervious Area
1.56		84.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	95	0.0100	1.04		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.28"
0.9	280	0.0100	5.22	9.40	**Channel Flow, 18" Pipe (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
1.2	270	0.0050	3.69	6.65	**Channel Flow, 18" Pipe (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
3.6	645	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S: D.A. UGD BASIN A



Summary for Subcatchment 3S: D.A to MRC BASIN B

[47] Hint: Peak is 618% of capacity of segment #3
[47] Hint: Peak is 437% of capacity of segment #4
[47] Hint: Peak is 304% of capacity of segment #5

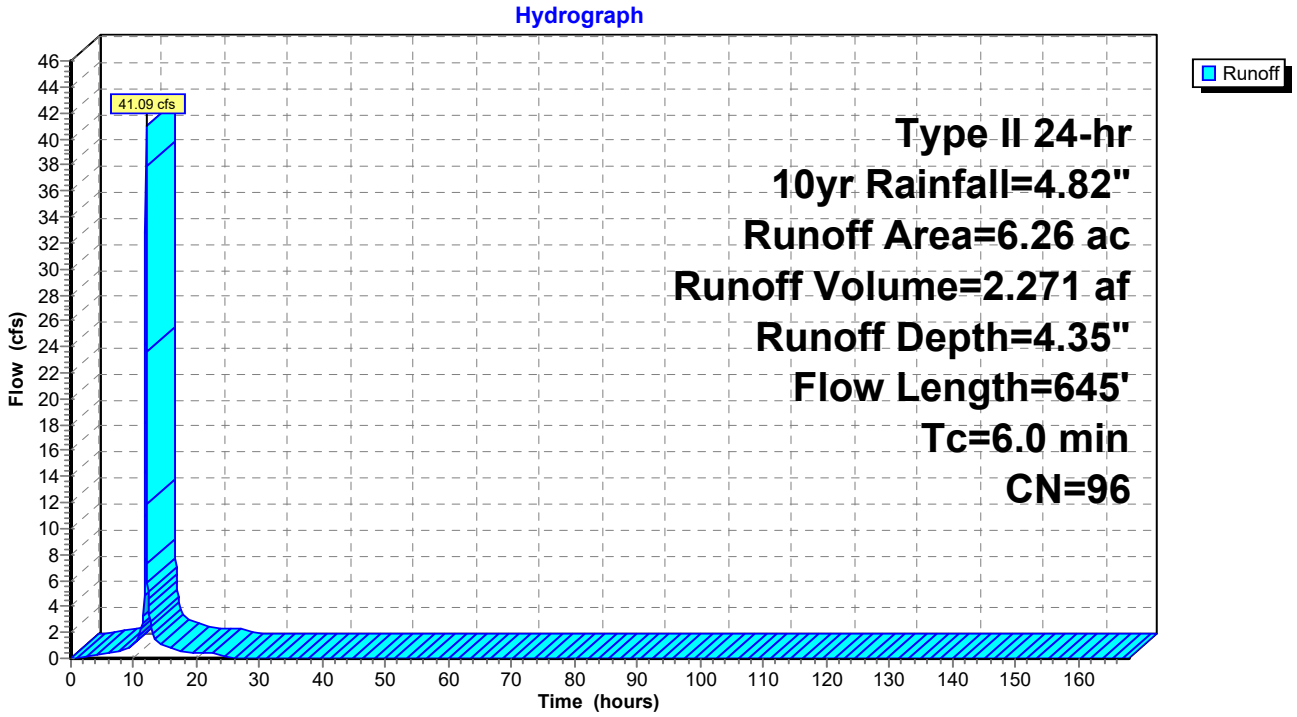
Runoff = 41.09 cfs @ 11.96 hrs, Volume= 2.271 af, Depth= 4.35"
Routed to Pond 5P : MRC BASIN B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=4.82"

	Area (ac)	CN	Description
*	0.34	61	>75% Grass cover, Good, HSG B
*	5.92	98	Paved Parking, HSG B
	6.26	96	Weighted Average
	0.34		5.43% Pervious Area
	5.92		94.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.06		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.28"
0.8	95	0.0100	2.03		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.8	170	0.0050	3.69	6.65	**Channel Flow, Pipe Flow (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
0.1	40	0.0100	5.22	9.40	**Channel Flow, Pipe Flow (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
0.9	240	0.0050	4.37	13.53	**Channel Flow, Pipe Flow (Channel Flow)** Area= 3.1 sf Perim= 6.3' r= 0.49' n= 0.015
4.2	645	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 3S: D.A to MRC BASIN B



Summary for Pond 4P: UGD BASIN A

Inflow Area = 1.85 ac, 84.32% Impervious, Inflow Depth = 3.91" for 10yr event
Inflow = 11.50 cfs @ 11.96 hrs, Volume= 0.603 af
Outflow = 4.03 cfs @ 12.10 hrs, Volume= 0.603 af, Atten= 65%, Lag= 8.2 min
Primary = 4.03 cfs @ 12.10 hrs, Volume= 0.603 af
Routed to Reach 6R : Post-Project (SP 1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Peak Elev= 49.43' @ 12.10 hrs Surf.Area= 0.22 ac Storage= 0.222 af

Plug-Flow detention time= 73.4 min calculated for 0.603 af (100% of inflow)
Center-of-Mass det. time= 73.0 min (853.5 - 780.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	47.60'	0.169 af	**49.63'W x 197.00'L x 2.58'H Field A** 0.580 af Overall - 0.156 af Embedded = 0.424 af x 40.0% Voids
#2A	48.10'	0.126 af	**ADS N-12 18"** x 153 Inside #1 Inside= 18.2"W x 18.2"H => 1.80 sf x 20.00'L = 36.0 cf Outside= 21.0"W x 21.0"H => 2.23 sf x 20.00'L = 44.5 cf 153 Chambers in 17 Rows
		0.296 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	47.60'	**24.0" Round Culvert** L= 127.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 47.60' / 46.30' S= 0.0102 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	47.60'	**8.0" Vert. Circular Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	49.15'	**4.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)

Primary OutFlow Max=4.02 cfs @ 12.10 hrs HW=49.43' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Passes 4.02 cfs of 13.90 cfs potential flow)
↑**2=Circular Orifice** (Orifice Controls 2.06 cfs @ 5.90 fps)
3=Sharp-Crested Rectangular Weir (Weir Controls 1.96 cfs @ 1.74 fps)

Pond 4P: UGD BASIN A - Chamber Wizard Field A

Chamber Model = ADS N-12 18" (ADS N-12® Pipe)
Inside= 18.2"W x 18.2"H => 1.80 sf x 20.00'L = 36.0 cf
Outside= 21.0"W x 21.0"H => 2.23 sf x 20.00'L = 44.5 cf

21.0" Wide + 13.4" Spacing = 34.4" C-C Row Spacing

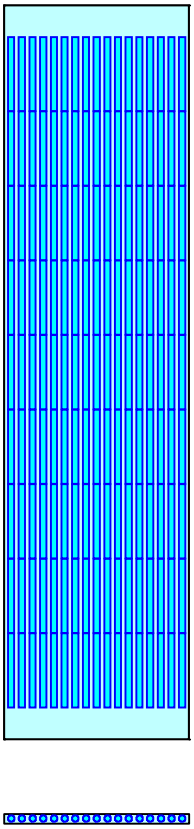
9 Chambers/Row x 20.00' Long = 180.00' Row Length +102.0" End Stone x 2 = 197.00' Base Length
17 Rows x 21.0" Wide + 13.4" Spacing x 16 + 12.0" Side Stone x 2 = 49.63' Base Width
6.0" Stone Base + 21.0" Chamber Height + 4.0" Stone Cover = 2.58' Field Height

153 Chambers x 36.0 cf = 5,508.0 cf Chamber Storage
153 Chambers x 44.5 cf = 6,809.5 cf Displacement

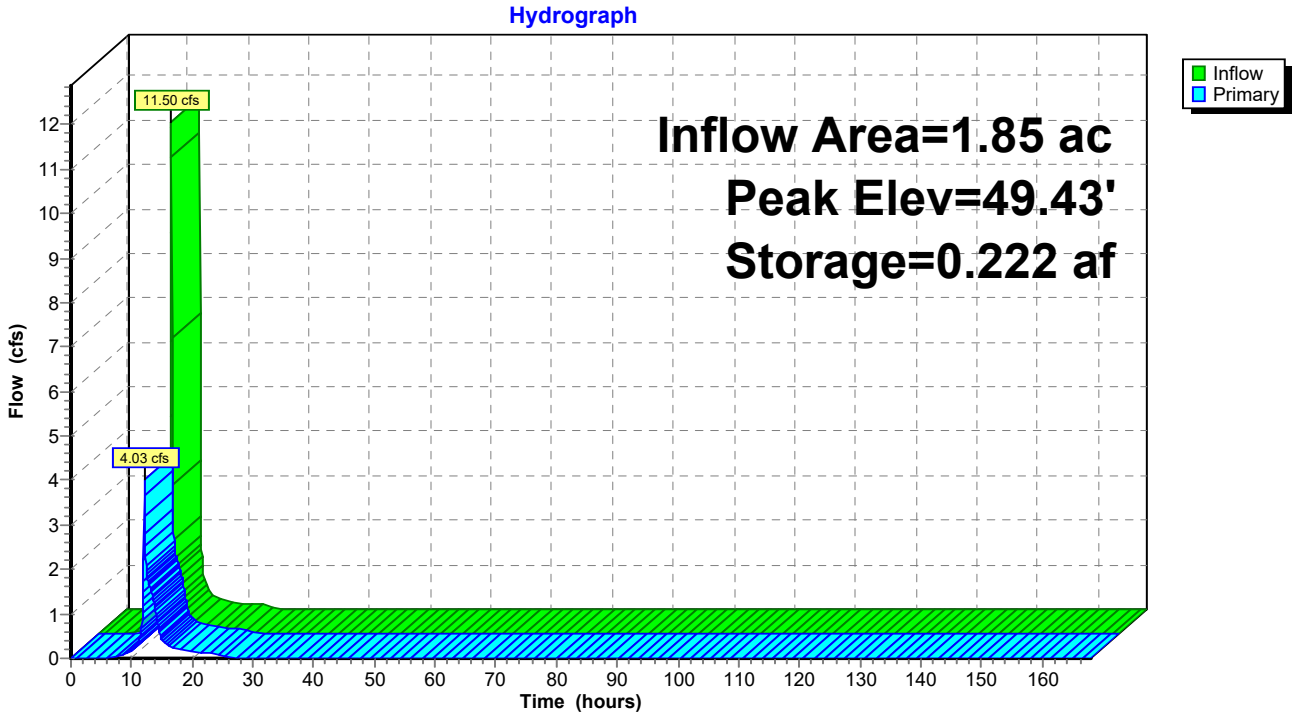
25,260.9 cf Field - 6,809.5 cf Chambers = 18,451.4 cf Stone x 40.0% Voids = 7,380.5 cf Stone Storage

Chamber Storage + Stone Storage = 12,888.6 cf = 0.296 af
Overall Storage Efficiency = 51.0%
Overall System Size = 197.00' x 49.63' x 2.58'

153 Chambers
935.6 cy Field
683.4 cy Stone



Pond 4P: UGD BASIN A



Stage-Discharge for Pond 4P: UGD BASIN A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
47.60	0.00	48.64	1.41	49.68	7.27
47.62	0.00	48.66	1.43	49.70	7.57
47.64	0.01	48.68	1.45	49.72	7.88
47.66	0.01	48.70	1.47	49.74	8.19
47.68	0.02	48.72	1.49	49.76	8.50
47.70	0.04	48.74	1.51	49.78	8.82
47.72	0.05	48.76	1.53	49.80	9.15
47.74	0.07	48.78	1.55	49.82	9.48
47.76	0.09	48.80	1.56	49.84	9.82
47.78	0.11	48.82	1.58	49.86	10.16
47.80	0.13	48.84	1.60	49.88	10.50
47.82	0.16	48.86	1.62	49.90	10.85
47.84	0.19	48.88	1.64	49.92	11.21
47.86	0.22	48.90	1.65	49.94	11.57
47.88	0.25	48.92	1.67	49.96	11.93
47.90	0.28	48.94	1.69	49.98	12.30
47.92	0.32	48.96	1.70	50.00	12.67
47.94	0.36	48.98	1.72	50.02	13.04
47.96	0.39	49.00	1.74	50.04	13.42
47.98	0.43	49.02	1.75	50.06	13.81
48.00	0.47	49.04	1.77	50.08	14.19
48.02	0.51	49.06	1.78	50.10	14.59
48.04	0.55	49.08	1.80	50.12	14.98
48.06	0.59	49.10	1.82	50.14	15.38
48.08	0.63	49.12	1.83	50.16	15.78
48.10	0.68	49.14	1.85	50.18	**16.19**
48.12	0.72	49.16	1.87		
48.14	0.76	49.18	1.94		
48.16	0.80	49.20	2.04		
48.18	0.84	49.22	2.15		
48.20	0.87	49.24	2.27		
48.22	0.91	49.26	2.41		
48.24	0.94	49.28	2.56		
48.26	0.96	49.30	2.72		
48.28	0.99	49.32	2.90		
48.30	1.02	49.34	3.08		
48.32	1.05	49.36	3.27		
48.34	1.07	49.38	3.46		
48.36	1.10	49.40	3.67		
48.38	1.12	49.42	3.88		
48.40	1.15	49.44	4.11		
48.42	1.17	49.46	4.33		
48.44	1.20	49.48	4.57		
48.46	1.22	49.50	4.81		
48.48	1.24	49.52	5.06		
48.50	1.27	49.54	5.32		
48.52	1.29	49.56	5.58		
48.54	1.31	49.58	5.84		
48.56	1.33	49.60	6.12		
48.58	1.35	49.62	6.40		
48.60	1.37	49.64	6.68		
48.62	1.39	49.66	6.97		

Stage-Area-Storage for Pond 4P: UGD BASIN A

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
47.60	0.000	48.64	0.106	49.68	0.252
47.62	0.002	48.66	0.109	49.70	0.254
47.64	0.004	48.68	0.111	49.72	0.256
47.66	0.005	48.70	0.114	49.74	0.258
47.68	0.007	48.72	0.117	49.76	0.259
47.70	0.009	48.74	0.120	49.78	0.260
47.72	0.011	48.76	0.123	49.80	0.262
47.74	0.013	48.78	0.126	49.82	0.263
47.76	0.014	48.80	0.129	49.84	0.265
47.78	0.016	48.82	0.132	49.86	0.267
47.80	0.018	48.84	0.135	49.88	0.269
47.82	0.020	48.86	0.138	49.90	0.270
47.84	0.022	48.88	0.141	49.92	0.272
47.86	0.023	48.90	0.144	49.94	0.274
47.88	0.025	48.92	0.147	49.96	0.276
47.90	0.027	48.94	0.150	49.98	0.278
47.92	0.029	48.96	0.153	50.00	0.279
47.94	0.031	48.98	0.156	50.02	0.281
47.96	0.032	49.00	0.159	50.04	0.283
47.98	0.034	49.02	0.162	50.06	0.285
48.00	0.036	49.04	0.165	50.08	0.287
48.02	0.038	49.06	0.168	50.10	0.288
48.04	0.040	49.08	0.171	50.12	0.290
48.06	0.041	49.10	0.174	50.14	0.292
48.08	0.043	49.12	0.177	50.16	0.294
48.10	0.045	49.14	0.180	50.18	**0.296**
48.12	0.047	49.16	0.183		
48.14	0.048	49.18	0.186		
48.16	0.050	49.20	0.189		
48.18	0.051	49.22	0.192		
48.20	0.052	49.24	0.195		
48.22	0.054	49.26	0.198		
48.24	0.055	49.28	0.201		
48.26	0.057	49.30	0.204		
48.28	0.059	49.32	0.206		
48.30	0.062	49.34	0.209		
48.32	0.064	49.36	0.212		
48.34	0.066	49.38	0.215		
48.36	0.068	49.40	0.218		
48.38	0.071	49.42	0.220		
48.40	0.073	49.44	0.223		
48.42	0.076	49.46	0.226		
48.44	0.078	49.48	0.228		
48.46	0.081	49.50	0.231		
48.48	0.084	49.52	0.234		
48.50	0.086	49.54	0.236		
48.52	0.089	49.56	0.239		
48.54	0.092	49.58	0.241		
48.56	0.094	49.60	0.244		
48.58	0.097	49.62	0.246		
48.60	0.100	49.64	0.248		
48.62	0.103	49.66	0.250		

Summary for Pond 5P: MRC BASIN B

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

Inflow Area = 6.26 ac, 94.57% Impervious, Inflow Depth = 4.35" for 10yr event
Inflow = 41.09 cfs @ 11.96 hrs, Volume= 2.271 af
Outflow = 8.95 cfs @ 12.14 hrs, Volume= 1.807 af, Atten= 78%, Lag= 10.4 min
Primary = 8.95 cfs @ 12.14 hrs, Volume= 1.807 af
Routed to Reach 6R : Post-Project (SP 1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Starting Elev= 49.30' Surf.Area= 0.98 ac Storage= 0.429 af
Peak Elev= 51.37' @ 12.14 hrs Surf.Area= 1.96 ac Storage= 1.782 af (1.353 af above start)

Plug-Flow detention time= 1,300.7 min calculated for 1.378 af (61% of inflow)
Center-of-Mass det. time= 908.6 min (1,668.1 - 759.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	48.80'	0.000 af	**47.23'W x 305.83'L x 2.50'H East Field** 0.829 af Overall - 0.829 af Embedded = 0.000 af x 40.0% Voids
#2A	48.80'	0.582 af	**StormTrap ST2 SingleTrap 2-0** x 76 Inside #1 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 76 Chambers in 4 Rows 33.92' x 292.52' Core + 6.66' Border = 47.23' x 305.83' System
#3C	48.80'	0.000 af	**115.06'W x 228.85'L x 2.50'H West Field** 1.511 af Overall - 1.511 af Embedded = 0.000 af x 40.0% Voids
#4C	48.80'	1.066 af	**StormTrap ST2 SingleTrap 2-0** x 168 Inside #3 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 168 Chambers in 12 Rows 101.75' x 215.54' Core + 6.66' Border = 115.06' x 228.85' System
#5D	48.80'	0.000 af	**38.75'W x 44.10'L x 2.50'H Center Field** 0.098 af Overall - 0.098 af Embedded = 0.000 af x 40.0% Voids
#6D	48.80'	0.068 af	**StormTrap ST2 SingleTrap 2-0** x 6 Inside #5 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 6 Chambers in 3 Rows 25.44' x 30.79' Core + 6.66' Border = 38.75' x 44.10' System
#7	51.30'	0.980 af	**Topsoil/Backfill (Prismatic)** Listed below (Recalc)
		2.696 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
51.30	0.98	0.000	0.000
52.30	0.98	0.980	0.980

Device	Routing	Invert	Outlet Devices
#1	Primary	48.80'	**18.0" Round Culvert** L= 29.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.80' / 48.00' S= 0.0272 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	49.80'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.45'	**3.2' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=8.93 cfs @ 12.14 hrs HW=51.37' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 8.93 cfs of 11.47 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 0.28 cfs @ 5.78 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 8.65 cfs @ 3.13 fps)

Pond 5P: MRC BASIN B - Chamber Wizard East Field

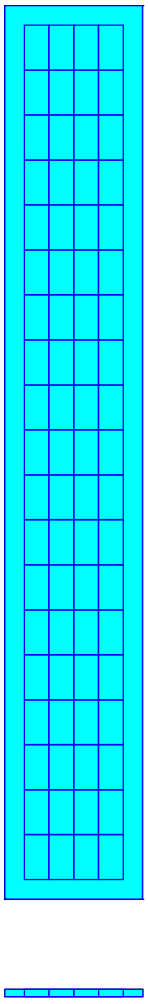
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

19 Chambers/Row x 15.40' Long = 292.52' Row Length +79.9" Border x 2 = 305.83' Base Length
4 Rows x 101.7" Wide + 79.9" Side Border x 2 = 47.23' Base Width
30.0" Chamber Height = 2.50' Field Height

76 Chambers x 231.7 cf + 7,732.9 cf Border = 25,339.9 cf Chamber Storage
76 Chambers x 326.4 cf + 11,307.3 cf Border = 36,110.6 cf Displacement

Chamber Storage = 25,339.9 cf = 0.582 af
Overall Storage Efficiency = 70.2%
Overall System Size = 305.83' x 47.23' x 2.50'

76 Chambers (plus border)
1,337.4 cy Field



Pond 5P: MRC BASIN B - Chamber Wizard West Field

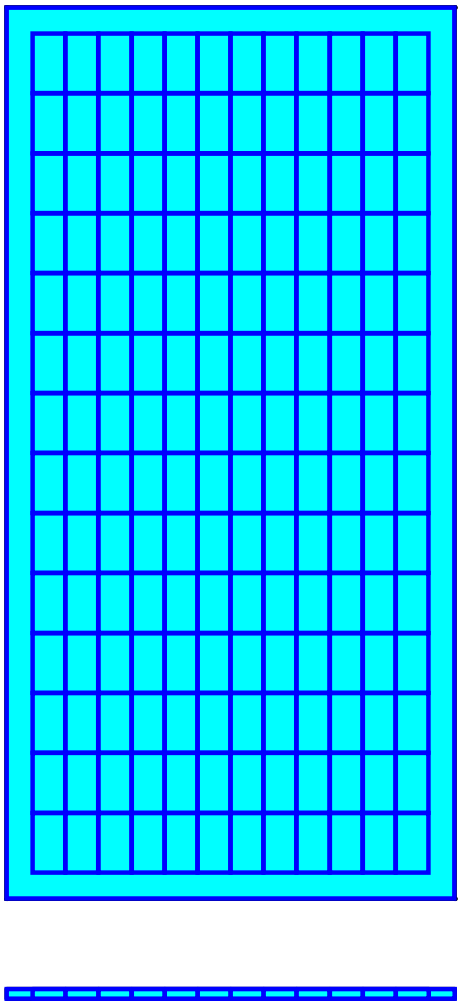
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

14 Chambers/Row x 15.40' Long = 215.54' Row Length +79.9" Border x 2 = 228.85' Base Length
12 Rows x 101.7" Wide + 79.9" Side Border x 2 = 115.06' Base Width
30.0" Chamber Height = 2.50' Field Height

168 Chambers x 231.7 cf + 7,524.7 cf Border = 46,445.4 cf Chamber Storage
168 Chambers x 326.4 cf + 11,002.9 cf Border = 65,831.3 cf Displacement

Chamber Storage = 46,445.4 cf = 1.066 af
Overall Storage Efficiency = 70.6%
Overall System Size = 228.85' x 115.06' x 2.50'

168 Chambers (plus border)
2,438.2 cy Field



Pond 5P: MRC BASIN B - Chamber Wizard Center Field

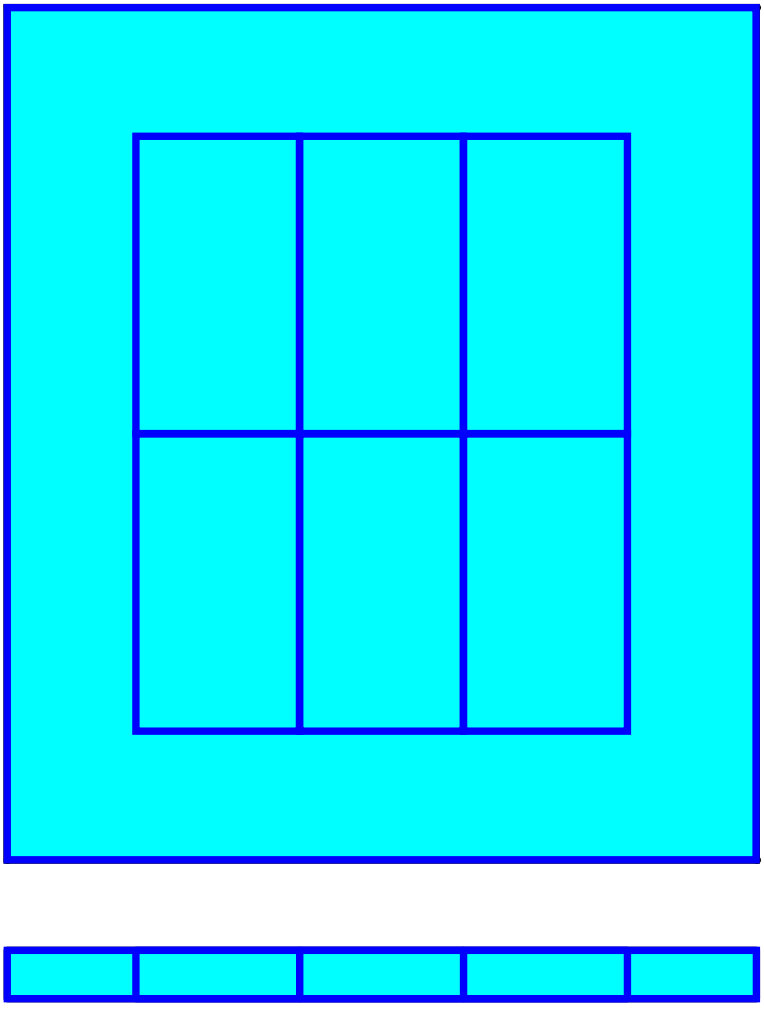
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

2 Chambers/Row x 15.40' Long = 30.79' Row Length +79.9" Border x 2 = 44.10' Base Length
3 Rows x 101.7" Wide + 79.9" Side Border x 2 = 38.75' Base Width
30.0" Chamber Height = 2.50' Field Height

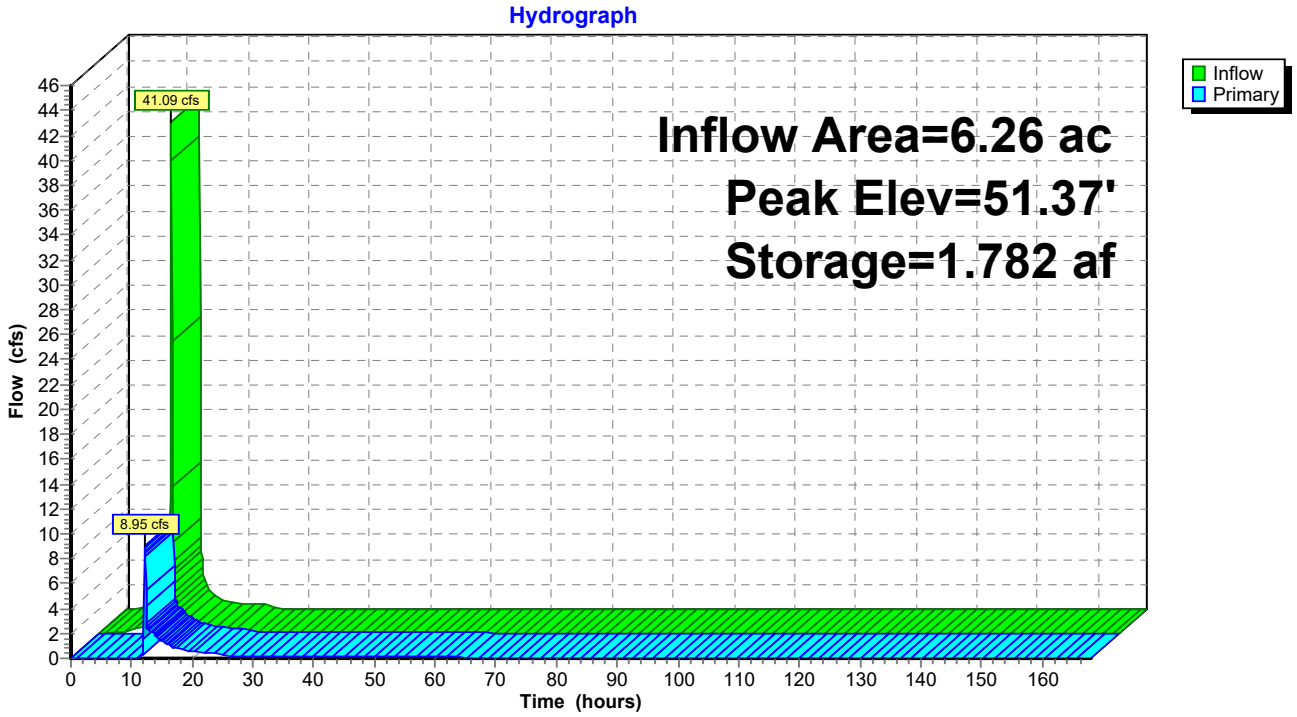
6 Chambers x 231.7 cf + 1,582.8 cf Border = 2,972.8 cf Chamber Storage
6 Chambers x 326.4 cf + 2,314.4 cf Border = 4,272.6 cf Displacement

Chamber Storage = 2,972.8 cf = 0.068 af
Overall Storage Efficiency = 69.6%
Overall System Size = 44.10' x 38.75' x 2.50'

6 Chambers (plus border)
158.2 cy Field



Pond 5P: MRC BASIN B



Stage-Discharge for Pond 5P: MRC BASIN B

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
48.80	0.00	49.84	0.00	50.88	3.10	51.92	13.10
48.82	0.00	49.86	0.01	50.90	3.30	51.94	13.15
48.84	0.00	49.88	0.01	50.92	3.51	51.96	13.21
48.86	0.00	49.90	0.02	50.94	3.72	51.98	13.26
48.88	0.00	49.92	0.03	50.96	3.93	52.00	13.32
48.90	0.00	49.94	0.04	50.98	4.15	52.02	13.37
48.92	0.00	49.96	0.05	51.00	4.37	52.04	13.43
48.94	0.00	49.98	0.05	51.02	4.59	52.06	13.48
48.96	0.00	50.00	0.06	51.04	4.82	52.08	13.53
48.98	0.00	50.02	0.07	51.06	5.05	52.10	13.59
49.00	0.00	50.04	0.08	51.08	5.28	52.12	13.64
49.02	0.00	50.06	0.09	51.10	5.52	52.14	13.69
49.04	0.00	50.08	0.09	51.12	5.76	52.16	13.75
49.06	0.00	50.10	0.10	51.14	6.00	52.18	13.80
49.08	0.00	50.12	0.10	51.16	6.25	52.20	13.85
49.10	0.00	50.14	0.11	51.18	6.49	52.22	13.90
49.12	0.00	50.16	0.11	51.20	6.74	52.24	13.96
49.14	0.00	50.18	0.12	51.22	7.00	52.26	14.01
49.16	0.00	50.20	0.12	51.24	7.26	52.28	14.06
49.18	0.00	50.22	0.13	51.26	7.52	52.30	**14.11**
49.20	0.00	50.24	0.13	51.28	7.78		
49.22	0.00	50.26	0.14	51.30	8.04		
49.24	0.00	50.28	0.14	51.32	8.31		
49.26	0.00	50.30	0.14	51.34	8.58		
49.28	0.00	50.32	0.15	51.36	8.85		
49.30	0.00	50.34	0.15	51.38	9.12		
49.32	0.00	50.36	0.16	51.40	9.40		
49.34	0.00	50.38	0.16	51.42	9.68		
49.36	0.00	50.40	0.16	51.44	9.96		
49.38	0.00	50.42	0.17	51.46	10.24		
49.40	0.00	50.44	0.17	51.48	10.53		
49.42	0.00	50.46	0.18	51.50	10.82		
49.44	0.00	50.48	0.23	51.52	11.11		
49.46	0.00	50.50	0.30	51.54	11.40		
49.48	0.00	50.52	0.38	51.56	11.69		
49.50	0.00	50.54	0.47	51.58	11.99		
49.52	0.00	50.56	0.57	51.60	12.18		
49.54	0.00	50.58	0.68	51.62	12.24		
49.56	0.00	50.60	0.80	51.64	12.30		
49.58	0.00	50.62	0.92	51.66	12.36		
49.60	0.00	50.64	1.06	51.68	12.42		
49.62	0.00	50.66	1.20	51.70	12.48		
49.64	0.00	50.68	1.34	51.72	12.53		
49.66	0.00	50.70	1.50	51.74	12.59		
49.68	0.00	50.72	1.65	51.76	12.65		
49.70	0.00	50.74	1.82	51.78	12.71		
49.72	0.00	50.76	1.99	51.80	12.76		
49.74	0.00	50.78	2.16	51.82	12.82		
49.76	0.00	50.80	2.34	51.84	12.88		
49.78	0.00	50.82	2.52	51.86	12.93		
49.80	0.00	50.84	2.71	51.88	12.99		
49.82	0.00	50.86	2.91	51.90	13.04		

Stage-Area-Storage for Pond 5P: MRC BASIN B

Elevation (feet)	Storage (acre-feet)
48.80	0.000
48.85	0.043
48.90	0.086
48.95	0.129
49.00	0.172
49.05	0.215
49.10	0.257
49.15	0.300
49.20	0.343
49.25	0.386
49.30	0.429
49.35	0.472
49.40	0.515
49.45	0.558
49.50	0.601
49.55	0.644
49.60	0.686
49.65	0.729
49.70	0.772
49.75	0.815
49.80	0.858
49.85	0.901
49.90	0.944
49.95	0.987
50.00	1.030
50.05	1.073
50.10	1.116
50.15	1.158
50.20	1.201
50.25	1.244
50.30	1.287
50.35	1.330
50.40	1.373
50.45	1.416
50.50	1.459
50.55	1.502
50.60	1.545
50.65	1.587
50.70	1.630
50.75	1.673
50.80	1.716
50.85	1.716
50.90	1.716
50.95	1.716
51.00	1.716
51.05	1.716
51.10	1.716
51.15	1.716
51.20	1.716
51.25	1.716
51.30	1.716
51.35	1.765
51.40	1.814
51.45	1.863
51.50	1.912
51.55	1.961
51.60	2.010
51.65	2.059
51.70	2.108
51.75	2.157
51.80	2.206
51.85	2.255
51.90	2.304
51.95	2.353
52.00	2.402
52.05	2.451
52.10	2.500
52.15	2.549
52.20	2.598
52.25	2.647
52.30	**2.696**

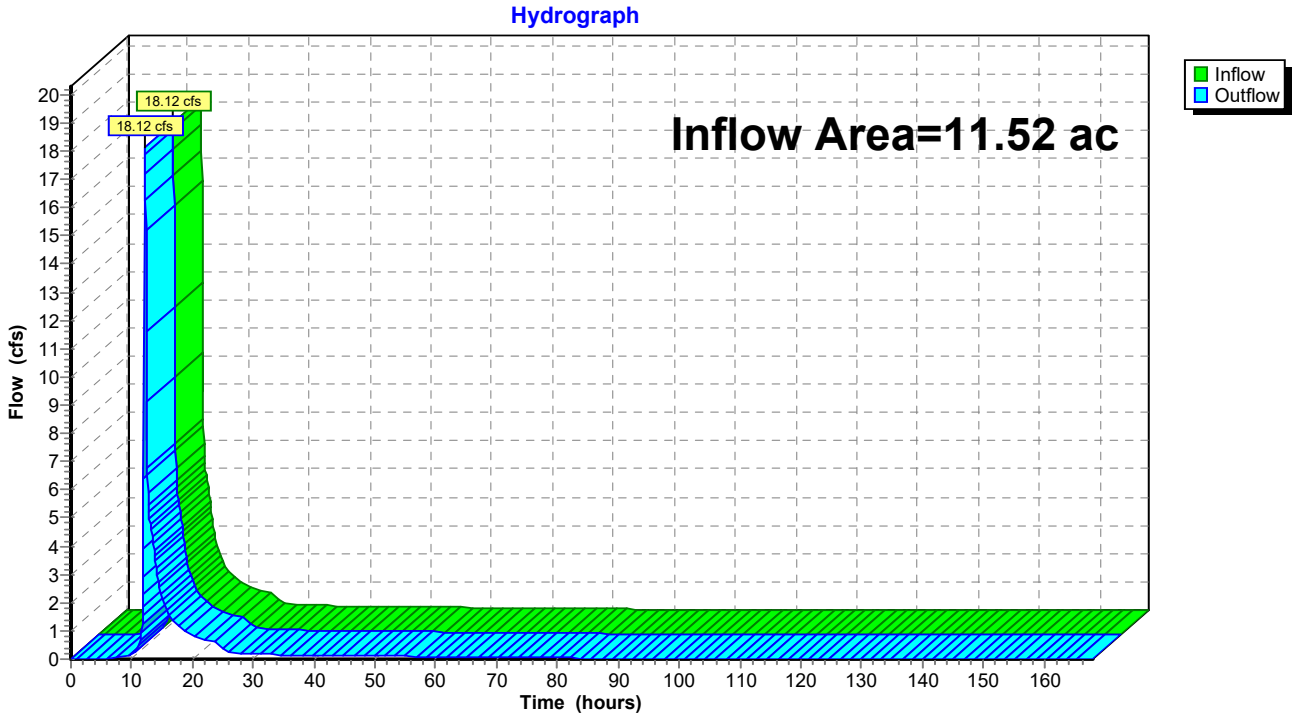
Summary for Reach 6R: Post-Project (SP 1)

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 11.52 ac, 72.05% Impervious, Inflow Depth > 3.07" for 10yr event
Inflow = 18.12 cfs @ 12.16 hrs, Volume= 2.952 af
Outflow = 18.12 cfs @ 12.16 hrs, Volume= 2.952 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs

Reach 6R: Post-Project (SP 1)



Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Post-Bypass (DP001 & Runoff Area=3.41 ac 24.05% Impervious Runoff Depth=3.35"
Flow Length=545' Tc=26.6 min CN=70 Runoff=10.62 cfs 0.951 af

Subcatchment2S: D.A. UGD BASIN A Runoff Area=1.85 ac 84.32% Impervious Runoff Depth=5.73"
Flow Length=645' Tc=6.0 min CN=92 Runoff=16.43 cfs 0.883 af

Subcatchment3S: D.A to MRC BASIN B Runoff Area=6.26 ac 94.57% Impervious Runoff Depth=6.19"
Flow Length=645' Tc=6.0 min CN=96 Runoff=57.42 cfs 3.232 af

Pond 4P: UGD BASIN A Peak Elev=49.91' Storage=0.271 af Inflow=16.43 cfs 0.883 af
Outflow=10.99 cfs 0.883 af

Pond 5P: MRC BASIN B Peak Elev=51.85' Storage=2.251 af Inflow=57.42 cfs 3.232 af
Outflow=12.89 cfs 2.768 af

Reach 6R: Post-Project (SP 1) Inflow=31.15 cfs 4.602 af
Outflow=31.15 cfs 4.602 af

Total Runoff Area = 11.52 ac Runoff Volume = 5.066 af Average Runoff Depth = 5.28"
27.95% Pervious = 3.22 ac 72.05% Impervious = 8.30 ac

Summary for Subcatchment 1S: Post-Bypass (DP001 & DP002)

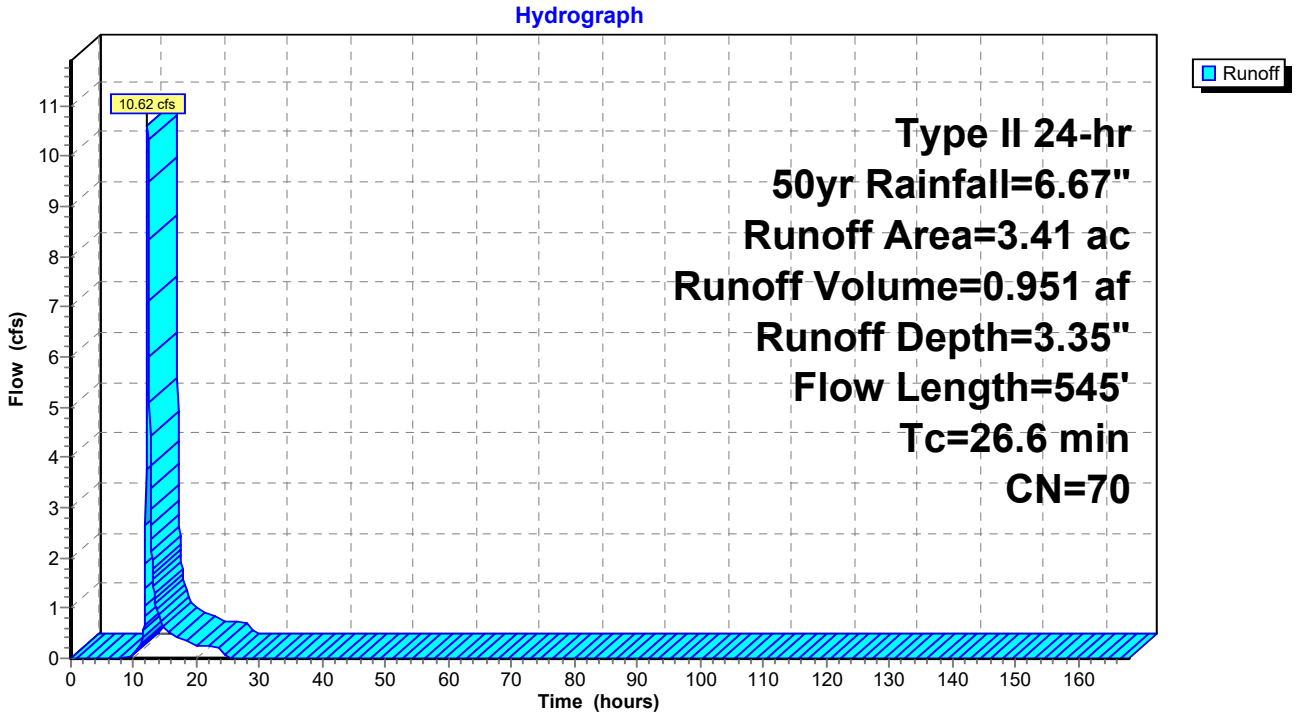
Runoff = 10.62 cfs @ 12.21 hrs, Volume= 0.951 af, Depth= 3.35"
Routed to Reach 6R : Post-Project (SP 1)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 50yr Rainfall=6.67"

	Area (ac)	CN	Description
*	2.59	61	
*	0.82	98	
	3.41	70	Weighted Average
	2.59		75.95% Pervious Area
	0.82		24.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	40	0.0500	0.14		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
16.3	60	0.0050	0.06		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
2.3	155	0.0050	1.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.2	35	0.0300	3.52		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.9	80	0.0050	1.44		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
2.1	145	0.0050	1.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.1	30	0.3300	9.25		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
26.6	545	Total			

Subcatchment 1S: Post-Bypass (DP001 & DP002)



Summary for Subcatchment 2S: D.A. UGD BASIN A

[47] Hint: Peak is 175% of capacity of segment #2
[47] Hint: Peak is 247% of capacity of segment #3

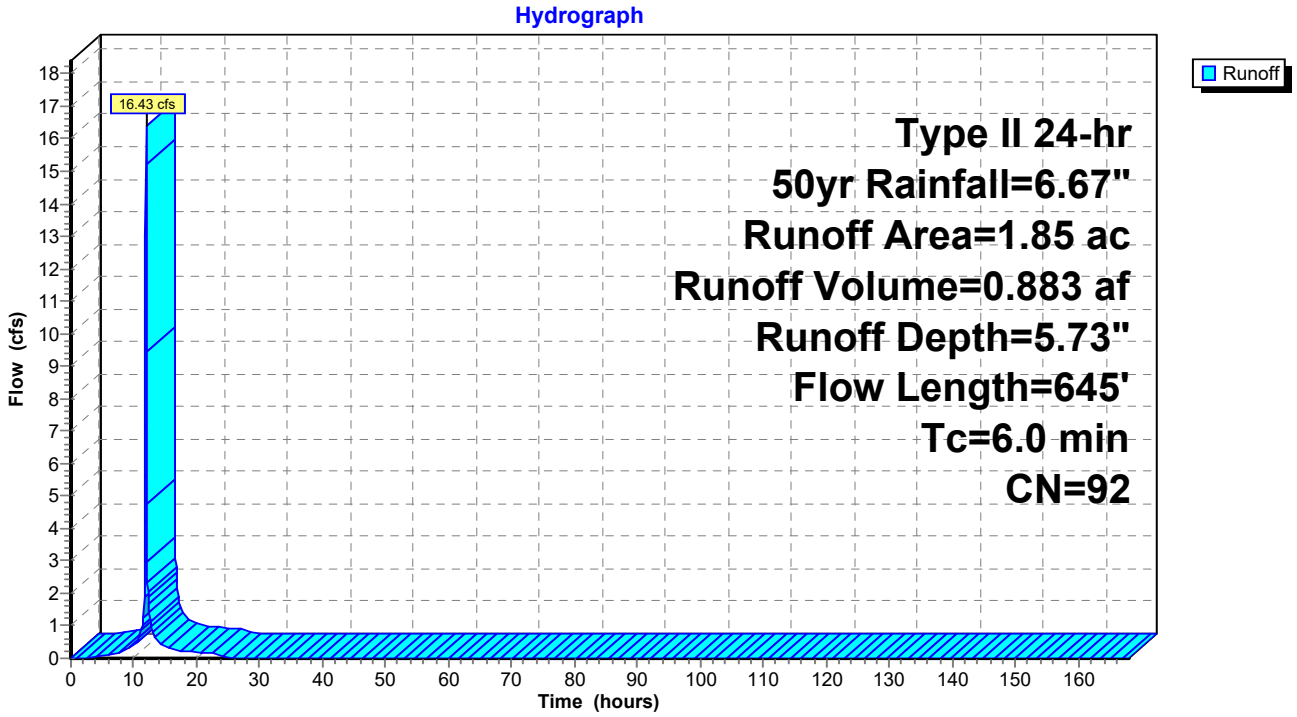
Runoff = 16.43 cfs @ 11.96 hrs, Volume= 0.883 af, Depth= 5.73"
Routed to Pond 4P : UGD BASIN A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 50yr Rainfall=6.67"

Area (ac)	CN	Description
1.56	98	Paved parking, HSG B
0.29	61	>75% Grass cover, Good, HSG B
1.85	92	Weighted Average
0.29		15.68% Pervious Area
1.56		84.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	95	0.0100	1.04		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.28"
0.9	280	0.0100	5.22	9.40	**Channel Flow, 18" Pipe (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
1.2	270	0.0050	3.69	6.65	**Channel Flow, 18" Pipe (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
3.6	645	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S: D.A. UGD BASIN A



Summary for Subcatchment 3S: D.A to MRC BASIN B

[47] Hint: Peak is 863% of capacity of segment #3
[47] Hint: Peak is 611% of capacity of segment #4
[47] Hint: Peak is 424% of capacity of segment #5

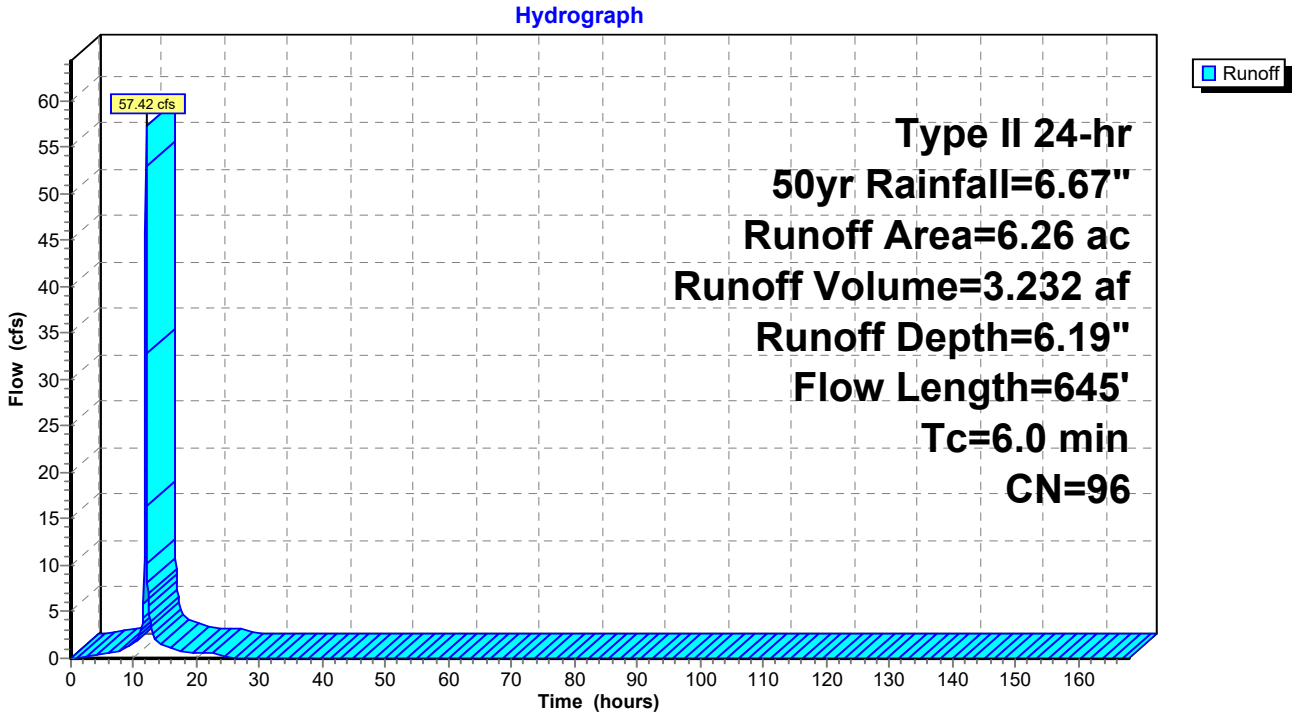
Runoff = 57.42 cfs @ 11.96 hrs, Volume= 3.232 af, Depth= 6.19"
Routed to Pond 5P : MRC BASIN B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 50yr Rainfall=6.67"

	Area (ac)	CN	Description
*	0.34	61	>75% Grass cover, Good, HSG B
*	5.92	98	Paved Parking, HSG B
	6.26	96	Weighted Average
	0.34		5.43% Pervious Area
	5.92		94.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.06		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.28"
0.8	95	0.0100	2.03		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.8	170	0.0050	3.69	6.65	**Channel Flow, Pipe Flow (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
0.1	40	0.0100	5.22	9.40	**Channel Flow, Pipe Flow (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
0.9	240	0.0050	4.37	13.53	**Channel Flow, Pipe Flow (Channel Flow)** Area= 3.1 sf Perim= 6.3' r= 0.49' n= 0.015
4.2	645	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 3S: D.A to MRC BASIN B



Summary for Pond 4P: UGD BASIN A

Inflow Area = 1.85 ac, 84.32% Impervious, Inflow Depth = 5.73" for 50yr event
Inflow = 16.43 cfs @ 11.96 hrs, Volume= 0.883 af
Outflow = 10.99 cfs @ 12.05 hrs, Volume= 0.883 af, Atten= 33%, Lag= 5.1 min
Primary = 10.99 cfs @ 12.05 hrs, Volume= 0.883 af
Routed to Reach 6R : Post-Project (SP 1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Peak Elev= 49.91' @ 12.05 hrs Surf.Area= 0.22 ac Storage= 0.271 af

Plug-Flow detention time= 59.5 min calculated for 0.883 af (100% of inflow)
Center-of-Mass det. time= 60.8 min (831.4 - 770.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	47.60'	0.169 af	**49.63'W x 197.00'L x 2.58'H Field A** 0.580 af Overall - 0.156 af Embedded = 0.424 af x 40.0% Voids
#2A	48.10'	0.126 af	**ADS N-12 18"** x 153 Inside #1 Inside= 18.2"W x 18.2"H => 1.80 sf x 20.00'L = 36.0 cf Outside= 21.0"W x 21.0"H => 2.23 sf x 20.00'L = 44.5 cf 153 Chambers in 17 Rows
		0.296 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	47.60'	**24.0" Round Culvert** L= 127.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 47.60' / 46.30' S= 0.0102 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	47.60'	**8.0" Vert. Circular Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	49.15'	**4.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)

Primary OutFlow Max=10.90 cfs @ 12.05 hrs HW=49.90' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 10.90 cfs of 17.27 cfs potential flow)
  ├─**2=Circular Orifice** (Orifice Controls 2.36 cfs @ 6.76 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 8.54 cfs @ 2.84 fps)

Pond 4P: UGD BASIN A - Chamber Wizard Field A

Chamber Model = ADS N-12 18" (ADS N-12® Pipe)
Inside= 18.2"W x 18.2"H => 1.80 sf x 20.00'L = 36.0 cf
Outside= 21.0"W x 21.0"H => 2.23 sf x 20.00'L = 44.5 cf

21.0" Wide + 13.4" Spacing = 34.4" C-C Row Spacing

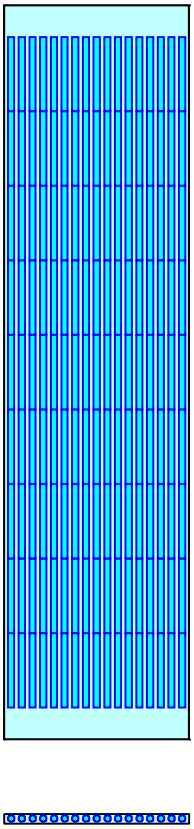
9 Chambers/Row x 20.00' Long = 180.00' Row Length +102.0" End Stone x 2 = 197.00' Base Length
17 Rows x 21.0" Wide + 13.4" Spacing x 16 + 12.0" Side Stone x 2 = 49.63' Base Width
6.0" Stone Base + 21.0" Chamber Height + 4.0" Stone Cover = 2.58' Field Height

153 Chambers x 36.0 cf = 5,508.0 cf Chamber Storage
153 Chambers x 44.5 cf = 6,809.5 cf Displacement

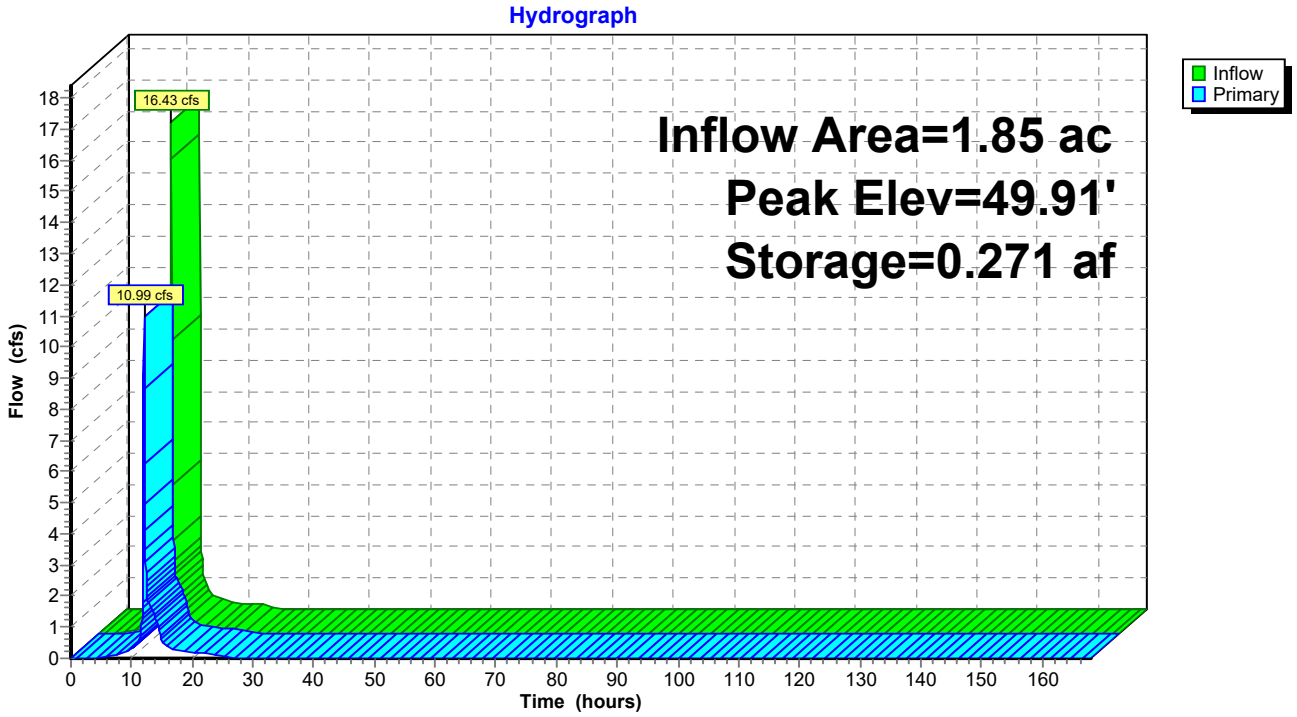
25,260.9 cf Field - 6,809.5 cf Chambers = 18,451.4 cf Stone x 40.0% Voids = 7,380.5 cf Stone Storage

Chamber Storage + Stone Storage = 12,888.6 cf = 0.296 af
Overall Storage Efficiency = 51.0%
Overall System Size = 197.00' x 49.63' x 2.58'

153 Chambers
935.6 cy Field
683.4 cy Stone



Pond 4P: UGD BASIN A



Stage-Discharge for Pond 4P: UGD BASIN A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
47.60	0.00	48.64	1.41	49.68	7.27
47.62	0.00	48.66	1.43	49.70	7.57
47.64	0.01	48.68	1.45	49.72	7.88
47.66	0.01	48.70	1.47	49.74	8.19
47.68	0.02	48.72	1.49	49.76	8.50
47.70	0.04	48.74	1.51	49.78	8.82
47.72	0.05	48.76	1.53	49.80	9.15
47.74	0.07	48.78	1.55	49.82	9.48
47.76	0.09	48.80	1.56	49.84	9.82
47.78	0.11	48.82	1.58	49.86	10.16
47.80	0.13	48.84	1.60	49.88	10.50
47.82	0.16	48.86	1.62	49.90	10.85
47.84	0.19	48.88	1.64	49.92	11.21
47.86	0.22	48.90	1.65	49.94	11.57
47.88	0.25	48.92	1.67	49.96	11.93
47.90	0.28	48.94	1.69	49.98	12.30
47.92	0.32	48.96	1.70	50.00	12.67
47.94	0.36	48.98	1.72	50.02	13.04
47.96	0.39	49.00	1.74	50.04	13.42
47.98	0.43	49.02	1.75	50.06	13.81
48.00	0.47	49.04	1.77	50.08	14.19
48.02	0.51	49.06	1.78	50.10	14.59
48.04	0.55	49.08	1.80	50.12	14.98
48.06	0.59	49.10	1.82	50.14	15.38
48.08	0.63	49.12	1.83	50.16	15.78
48.10	0.68	49.14	1.85	50.18	**16.19**
48.12	0.72	49.16	1.87		
48.14	0.76	49.18	1.94		
48.16	0.80	49.20	2.04		
48.18	0.84	49.22	2.15		
48.20	0.87	49.24	2.27		
48.22	0.91	49.26	2.41		
48.24	0.94	49.28	2.56		
48.26	0.96	49.30	2.72		
48.28	0.99	49.32	2.90		
48.30	1.02	49.34	3.08		
48.32	1.05	49.36	3.27		
48.34	1.07	49.38	3.46		
48.36	1.10	49.40	3.67		
48.38	1.12	49.42	3.88		
48.40	1.15	49.44	4.11		
48.42	1.17	49.46	4.33		
48.44	1.20	49.48	4.57		
48.46	1.22	49.50	4.81		
48.48	1.24	49.52	5.06		
48.50	1.27	49.54	5.32		
48.52	1.29	49.56	5.58		
48.54	1.31	49.58	5.84		
48.56	1.33	49.60	6.12		
48.58	1.35	49.62	6.40		
48.60	1.37	49.64	6.68		
48.62	1.39	49.66	6.97		

Stage-Area-Storage for Pond 4P: UGD BASIN A

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
47.60	0.000	48.64	0.106	49.68	0.252
47.62	0.002	48.66	0.109	49.70	0.254
47.64	0.004	48.68	0.111	49.72	0.256
47.66	0.005	48.70	0.114	49.74	0.258
47.68	0.007	48.72	0.117	49.76	0.259
47.70	0.009	48.74	0.120	49.78	0.260
47.72	0.011	48.76	0.123	49.80	0.262
47.74	0.013	48.78	0.126	49.82	0.263
47.76	0.014	48.80	0.129	49.84	0.265
47.78	0.016	48.82	0.132	49.86	0.267
47.80	0.018	48.84	0.135	49.88	0.269
47.82	0.020	48.86	0.138	49.90	0.270
47.84	0.022	48.88	0.141	49.92	0.272
47.86	0.023	48.90	0.144	49.94	0.274
47.88	0.025	48.92	0.147	49.96	0.276
47.90	0.027	48.94	0.150	49.98	0.278
47.92	0.029	48.96	0.153	50.00	0.279
47.94	0.031	48.98	0.156	50.02	0.281
47.96	0.032	49.00	0.159	50.04	0.283
47.98	0.034	49.02	0.162	50.06	0.285
48.00	0.036	49.04	0.165	50.08	0.287
48.02	0.038	49.06	0.168	50.10	0.288
48.04	0.040	49.08	0.171	50.12	0.290
48.06	0.041	49.10	0.174	50.14	0.292
48.08	0.043	49.12	0.177	50.16	0.294
48.10	0.045	49.14	0.180	50.18	**0.296**
48.12	0.047	49.16	0.183		
48.14	0.048	49.18	0.186		
48.16	0.050	49.20	0.189		
48.18	0.051	49.22	0.192		
48.20	0.052	49.24	0.195		
48.22	0.054	49.26	0.198		
48.24	0.055	49.28	0.201		
48.26	0.057	49.30	0.204		
48.28	0.059	49.32	0.206		
48.30	0.062	49.34	0.209		
48.32	0.064	49.36	0.212		
48.34	0.066	49.38	0.215		
48.36	0.068	49.40	0.218		
48.38	0.071	49.42	0.220		
48.40	0.073	49.44	0.223		
48.42	0.076	49.46	0.226		
48.44	0.078	49.48	0.228		
48.46	0.081	49.50	0.231		
48.48	0.084	49.52	0.234		
48.50	0.086	49.54	0.236		
48.52	0.089	49.56	0.239		
48.54	0.092	49.58	0.241		
48.56	0.094	49.60	0.244		
48.58	0.097	49.62	0.246		
48.60	0.100	49.64	0.248		
48.62	0.103	49.66	0.250		

Summary for Pond 5P: MRC BASIN B

Inflow Area = 6.26 ac, 94.57% Impervious, Inflow Depth = 6.19" for 50yr event
Inflow = 57.42 cfs @ 11.96 hrs, Volume= 3.232 af
Outflow = 12.89 cfs @ 12.13 hrs, Volume= 2.768 af, Atten= 78%, Lag= 10.1 min
Primary = 12.89 cfs @ 12.13 hrs, Volume= 2.768 af
Routed to Reach 6R : Post-Project (SP 1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Starting Elev= 49.30' Surf.Area= 0.98 ac Storage= 0.429 af
Peak Elev= 51.85' @ 12.13 hrs Surf.Area= 1.96 ac Storage= 2.251 af (1.822 af above start)

Plug-Flow detention time= 846.4 min calculated for 2.338 af (72% of inflow)
Center-of-Mass det. time= 634.1 min (1,386.2 - 752.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	48.80'	0.000 af	**47.23'W x 305.83'L x 2.50'H East Field** 0.829 af Overall - 0.829 af Embedded = 0.000 af x 40.0% Voids
#2A	48.80'	0.582 af	**StormTrap ST2 SingleTrap 2-0** x 76 Inside #1 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 76 Chambers in 4 Rows 33.92' x 292.52' Core + 6.66' Border = 47.23' x 305.83' System
#3C	48.80'	0.000 af	**115.06'W x 228.85'L x 2.50'H West Field** 1.511 af Overall - 1.511 af Embedded = 0.000 af x 40.0% Voids
#4C	48.80'	1.066 af	**StormTrap ST2 SingleTrap 2-0** x 168 Inside #3 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 168 Chambers in 12 Rows 101.75' x 215.54' Core + 6.66' Border = 115.06' x 228.85' System
#5D	48.80'	0.000 af	**38.75'W x 44.10'L x 2.50'H Center Field** 0.098 af Overall - 0.098 af Embedded = 0.000 af x 40.0% Voids
#6D	48.80'	0.068 af	**StormTrap ST2 SingleTrap 2-0** x 6 Inside #5 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 6 Chambers in 3 Rows 25.44' x 30.79' Core + 6.66' Border = 38.75' x 44.10' System
#7	51.30'	0.980 af	**Topsoil/Backfill (Prismatic)** Listed below (Recalc)
		2.696 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
51.30	0.98	0.000	0.000
52.30	0.98	0.980	0.980

Device	Routing	Invert	Outlet Devices
#1	Primary	48.80'	**18.0" Round Culvert** L= 29.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.80' / 48.00' S= 0.0272 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	49.80'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.45'	**3.2' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=12.89 cfs @ 12.13 hrs HW=51.84' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 12.89 cfs @ 7.29 fps)
  ├─**2=Orifice** (Passes < 0.33 cfs potential flow)
  └─**3=Sharp-Crested Rectangular Weir** (Passes < 15.72 cfs potential flow)

Pond 5P: MRC BASIN B - Chamber Wizard East Field

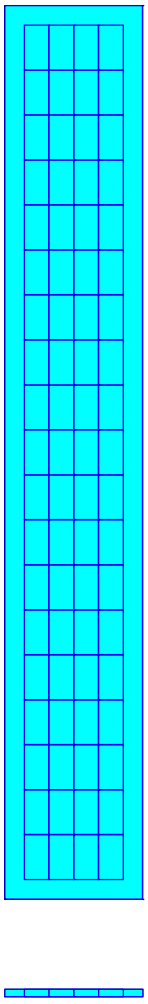
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

19 Chambers/Row x 15.40' Long = 292.52' Row Length +79.9" Border x 2 = 305.83' Base Length
4 Rows x 101.7" Wide + 79.9" Side Border x 2 = 47.23' Base Width
30.0" Chamber Height = 2.50' Field Height

76 Chambers x 231.7 cf + 7,732.9 cf Border = 25,339.9 cf Chamber Storage
76 Chambers x 326.4 cf + 11,307.3 cf Border = 36,110.6 cf Displacement

Chamber Storage = 25,339.9 cf = 0.582 af
Overall Storage Efficiency = 70.2%
Overall System Size = 305.83' x 47.23' x 2.50'

76 Chambers (plus border)
1,337.4 cy Field



Pond 5P: MRC BASIN B - Chamber Wizard West Field

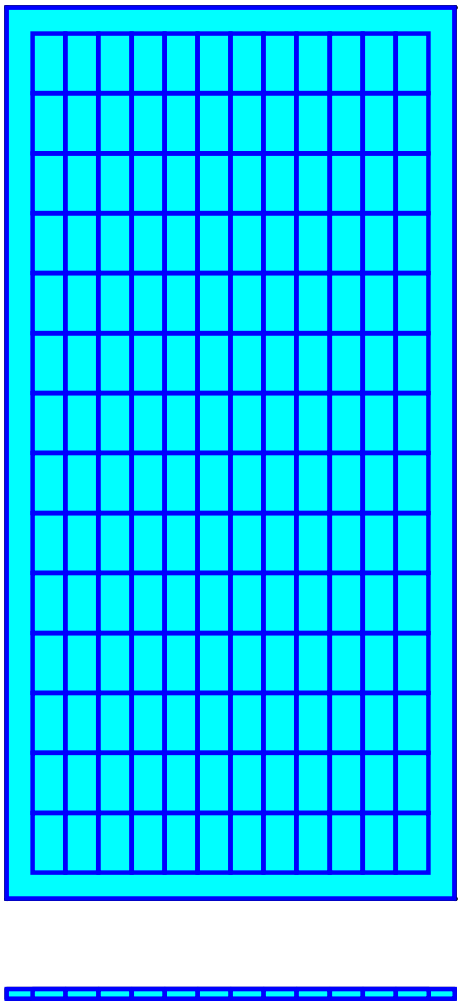
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

14 Chambers/Row x 15.40' Long = 215.54' Row Length +79.9" Border x 2 = 228.85' Base Length
12 Rows x 101.7" Wide + 79.9" Side Border x 2 = 115.06' Base Width
30.0" Chamber Height = 2.50' Field Height

168 Chambers x 231.7 cf + 7,524.7 cf Border = 46,445.4 cf Chamber Storage
168 Chambers x 326.4 cf + 11,002.9 cf Border = 65,831.3 cf Displacement

Chamber Storage = 46,445.4 cf = 1.066 af
Overall Storage Efficiency = 70.6%
Overall System Size = 228.85' x 115.06' x 2.50'

168 Chambers (plus border)
2,438.2 cy Field



Pond 5P: MRC BASIN B - Chamber Wizard Center Field

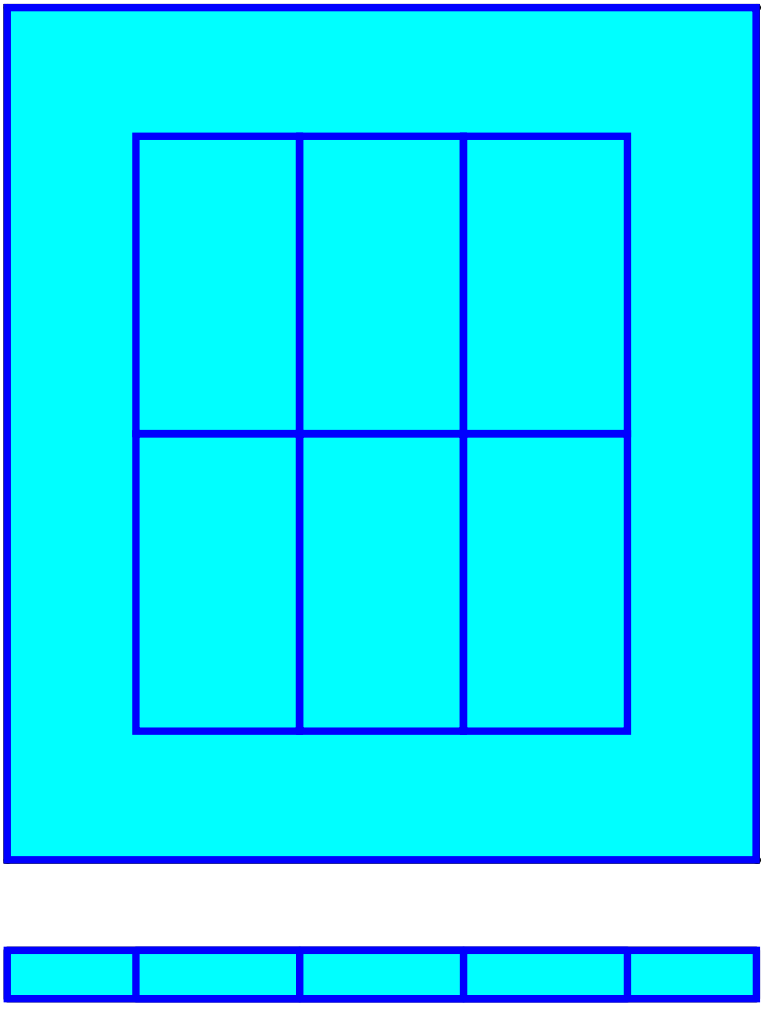
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

2 Chambers/Row x 15.40' Long = 30.79' Row Length +79.9" Border x 2 = 44.10' Base Length
3 Rows x 101.7" Wide + 79.9" Side Border x 2 = 38.75' Base Width
30.0" Chamber Height = 2.50' Field Height

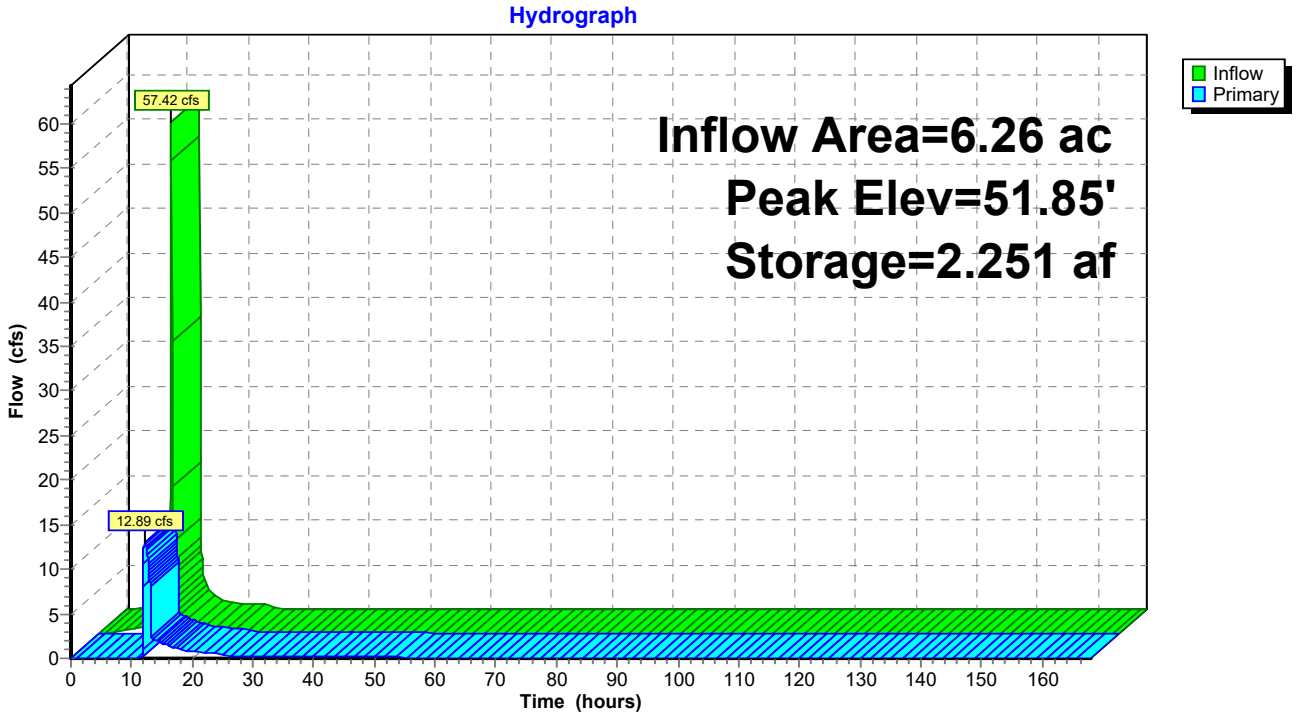
6 Chambers x 231.7 cf + 1,582.8 cf Border = 2,972.8 cf Chamber Storage
6 Chambers x 326.4 cf + 2,314.4 cf Border = 4,272.6 cf Displacement

Chamber Storage = 2,972.8 cf = 0.068 af
Overall Storage Efficiency = 69.6%
Overall System Size = 44.10' x 38.75' x 2.50'

6 Chambers (plus border)
158.2 cy Field



Pond 5P: MRC BASIN B



Stage-Discharge for Pond 5P: MRC BASIN B

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
48.80	0.00	49.84	0.00	50.88	3.10	51.92	13.10
48.82	0.00	49.86	0.01	50.90	3.30	51.94	13.15
48.84	0.00	49.88	0.01	50.92	3.51	51.96	13.21
48.86	0.00	49.90	0.02	50.94	3.72	51.98	13.26
48.88	0.00	49.92	0.03	50.96	3.93	52.00	13.32
48.90	0.00	49.94	0.04	50.98	4.15	52.02	13.37
48.92	0.00	49.96	0.05	51.00	4.37	52.04	13.43
48.94	0.00	49.98	0.05	51.02	4.59	52.06	13.48
48.96	0.00	50.00	0.06	51.04	4.82	52.08	13.53
48.98	0.00	50.02	0.07	51.06	5.05	52.10	13.59
49.00	0.00	50.04	0.08	51.08	5.28	52.12	13.64
49.02	0.00	50.06	0.09	51.10	5.52	52.14	13.69
49.04	0.00	50.08	0.09	51.12	5.76	52.16	13.75
49.06	0.00	50.10	0.10	51.14	6.00	52.18	13.80
49.08	0.00	50.12	0.10	51.16	6.25	52.20	13.85
49.10	0.00	50.14	0.11	51.18	6.49	52.22	13.90
49.12	0.00	50.16	0.11	51.20	6.74	52.24	13.96
49.14	0.00	50.18	0.12	51.22	7.00	52.26	14.01
49.16	0.00	50.20	0.12	51.24	7.26	52.28	14.06
49.18	0.00	50.22	0.13	51.26	7.52	52.30	**14.11**
49.20	0.00	50.24	0.13	51.28	7.78		
49.22	0.00	50.26	0.14	51.30	8.04		
49.24	0.00	50.28	0.14	51.32	8.31		
49.26	0.00	50.30	0.14	51.34	8.58		
49.28	0.00	50.32	0.15	51.36	8.85		
49.30	0.00	50.34	0.15	51.38	9.12		
49.32	0.00	50.36	0.16	51.40	9.40		
49.34	0.00	50.38	0.16	51.42	9.68		
49.36	0.00	50.40	0.16	51.44	9.96		
49.38	0.00	50.42	0.17	51.46	10.24		
49.40	0.00	50.44	0.17	51.48	10.53		
49.42	0.00	50.46	0.18	51.50	10.82		
49.44	0.00	50.48	0.23	51.52	11.11		
49.46	0.00	50.50	0.30	51.54	11.40		
49.48	0.00	50.52	0.38	51.56	11.69		
49.50	0.00	50.54	0.47	51.58	11.99		
49.52	0.00	50.56	0.57	51.60	12.18		
49.54	0.00	50.58	0.68	51.62	12.24		
49.56	0.00	50.60	0.80	51.64	12.30		
49.58	0.00	50.62	0.92	51.66	12.36		
49.60	0.00	50.64	1.06	51.68	12.42		
49.62	0.00	50.66	1.20	51.70	12.48		
49.64	0.00	50.68	1.34	51.72	12.53		
49.66	0.00	50.70	1.50	51.74	12.59		
49.68	0.00	50.72	1.65	51.76	12.65		
49.70	0.00	50.74	1.82	51.78	12.71		
49.72	0.00	50.76	1.99	51.80	12.76		
49.74	0.00	50.78	2.16	51.82	12.82		
49.76	0.00	50.80	2.34	51.84	12.88		
49.78	0.00	50.82	2.52	51.86	12.93		
49.80	0.00	50.84	2.71	51.88	12.99		
49.82	0.00	50.86	2.91	51.90	13.04		

Stage-Area-Storage for Pond 5P: MRC BASIN B

Elevation (feet)	Storage (acre-feet)
48.80	0.000
48.85	0.043
48.90	0.086
48.95	0.129
49.00	0.172
49.05	0.215
49.10	0.257
49.15	0.300
49.20	0.343
49.25	0.386
49.30	0.429
49.35	0.472
49.40	0.515
49.45	0.558
49.50	0.601
49.55	0.644
49.60	0.686
49.65	0.729
49.70	0.772
49.75	0.815
49.80	0.858
49.85	0.901
49.90	0.944
49.95	0.987
50.00	1.030
50.05	1.073
50.10	1.116
50.15	1.158
50.20	1.201
50.25	1.244
50.30	1.287
50.35	1.330
50.40	1.373
50.45	1.416
50.50	1.459
50.55	1.502
50.60	1.545
50.65	1.587
50.70	1.630
50.75	1.673
50.80	1.716
50.85	1.716
50.90	1.716
50.95	1.716
51.00	1.716
51.05	1.716
51.10	1.716
51.15	1.716
51.20	1.716
51.25	1.716
51.30	1.716
51.35	1.765
51.40	1.814
51.45	1.863
51.50	1.912
51.55	1.961
51.60	2.010
51.65	2.059
51.70	2.108
51.75	2.157
51.80	2.206
51.85	2.255
51.90	2.304
51.95	2.353
52.00	2.402
52.05	2.451
52.10	2.500
52.15	2.549
52.20	2.598
52.25	2.647
52.30	**2.696**

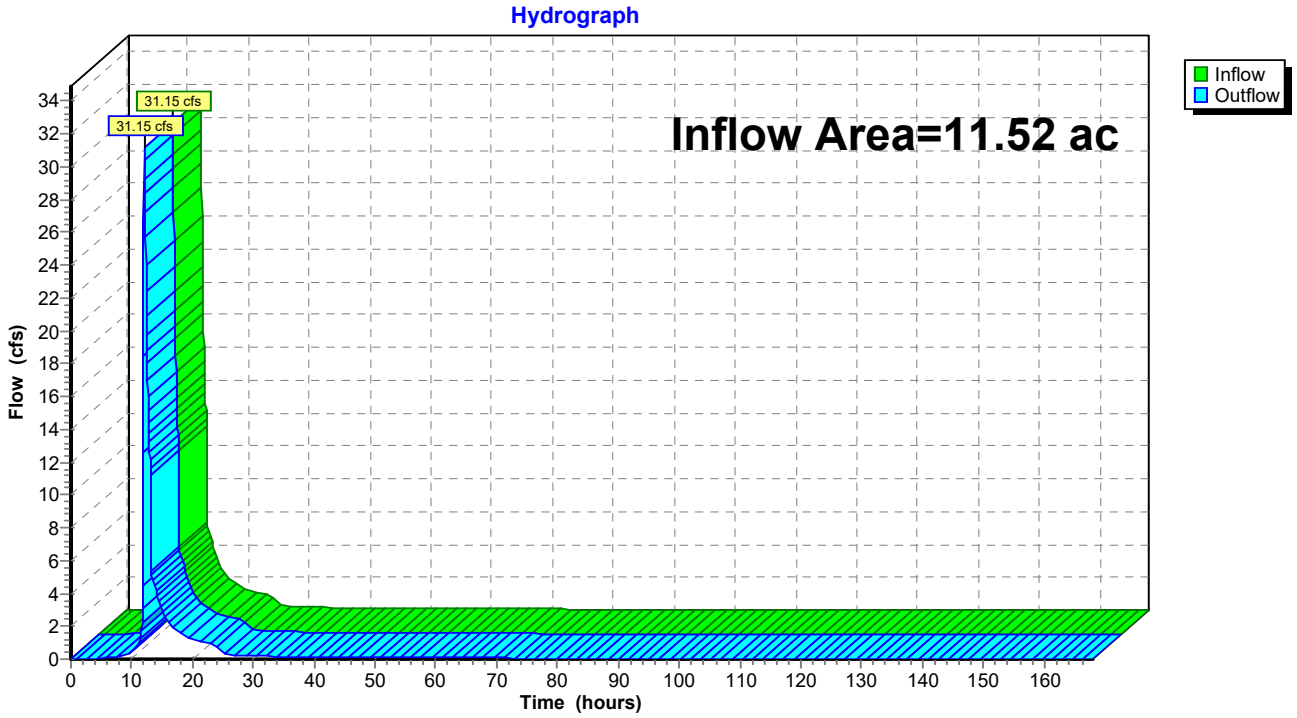
Summary for Reach 6R: Post-Project (SP 1)

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 11.52 ac, 72.05% Impervious, Inflow Depth > 4.79" for 50yr event
Inflow = 31.15 cfs @ 12.07 hrs, Volume= 4.602 af
Outflow = 31.15 cfs @ 12.07 hrs, Volume= 4.602 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs

Reach 6R: Post-Project (SP 1)



Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Post-Bypass (DP001 & Runoff Area=3.41 ac 24.05% Impervious Runoff Depth=4.11"
Flow Length=545' Tc=26.6 min CN=70 Runoff=13.08 cfs 1.167 af

Subcatchment2S: D.A. UGD BASIN A Runoff Area=1.85 ac 84.32% Impervious Runoff Depth=6.63"
Flow Length=645' Tc=6.0 min CN=92 Runoff=18.83 cfs 1.022 af

Subcatchment3S: D.A to MRC BASIN B Runoff Area=6.26 ac 94.57% Impervious Runoff Depth=7.10"
Flow Length=645' Tc=6.0 min CN=96 Runoff=65.42 cfs 3.705 af

Pond 4P: UGD BASIN A Peak Elev=50.08' Storage=0.287 af Inflow=18.83 cfs 1.022 af
Outflow=14.18 cfs 1.022 af

Pond 5P: MRC BASIN B Peak Elev=52.10' Storage=2.499 af Inflow=65.42 cfs 3.705 af
Outflow=13.58 cfs 3.241 af

Reach 6R: Post-Project (SP 1) Inflow=36.22 cfs 5.429 af
Outflow=36.22 cfs 5.429 af

Total Runoff Area = 11.52 ac Runoff Volume = 5.893 af Average Runoff Depth = 6.14"
27.95% Pervious = 3.22 ac 72.05% Impervious = 8.30 ac

Summary for Subcatchment 1S: Post-Bypass (DP001 & DP002)

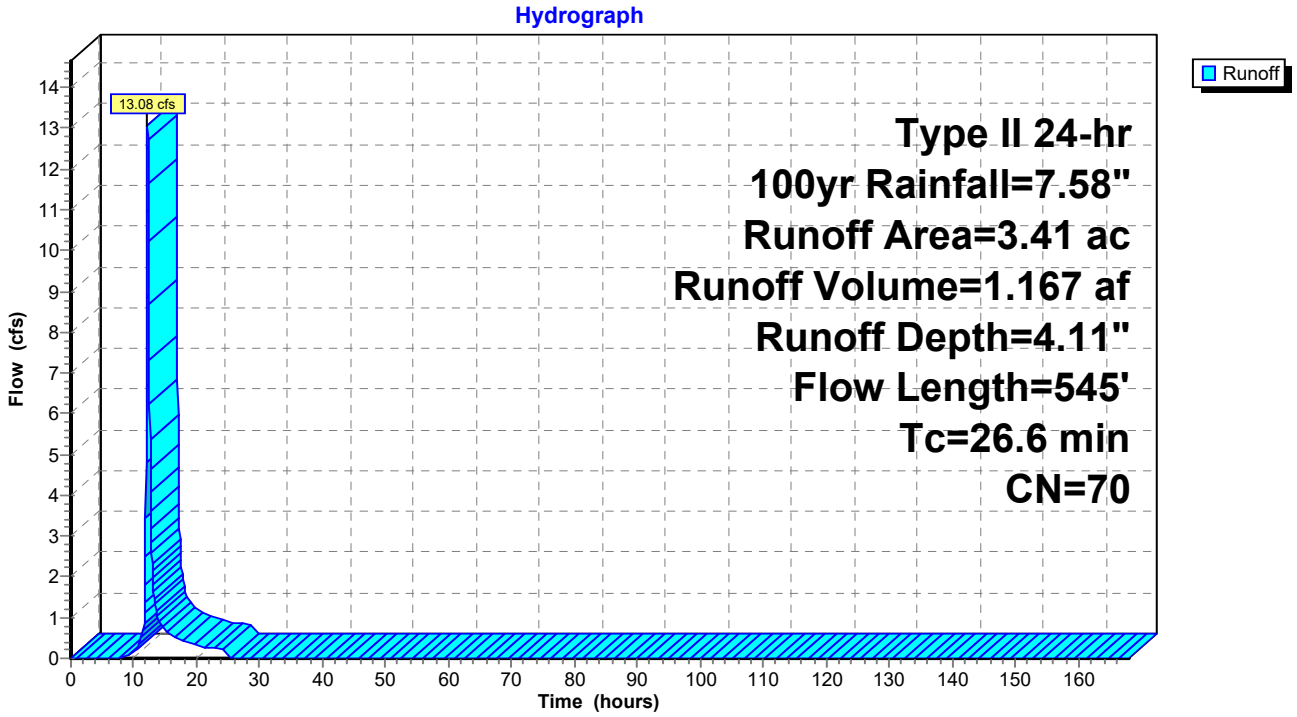
Runoff = 13.08 cfs @ 12.21 hrs, Volume= 1.167 af, Depth= 4.11"
Routed to Reach 6R : Post-Project (SP 1)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=7.58"

	Area (ac)	CN	Description
*	2.59	61	
*	0.82	98	
	3.41	70	Weighted Average
	2.59		75.95% Pervious Area
	0.82		24.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	40	0.0500	0.14		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
16.3	60	0.0050	0.06		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
2.3	155	0.0050	1.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.2	35	0.0300	3.52		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.9	80	0.0050	1.44		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
2.1	145	0.0050	1.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.1	30	0.3300	9.25		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
26.6	545	Total			

Subcatchment 1S: Post-Bypass (DP001 & DP002)



Summary for Subcatchment 2S: D.A. UGD BASIN A

[47] Hint: Peak is 200% of capacity of segment #2
[47] Hint: Peak is 283% of capacity of segment #3

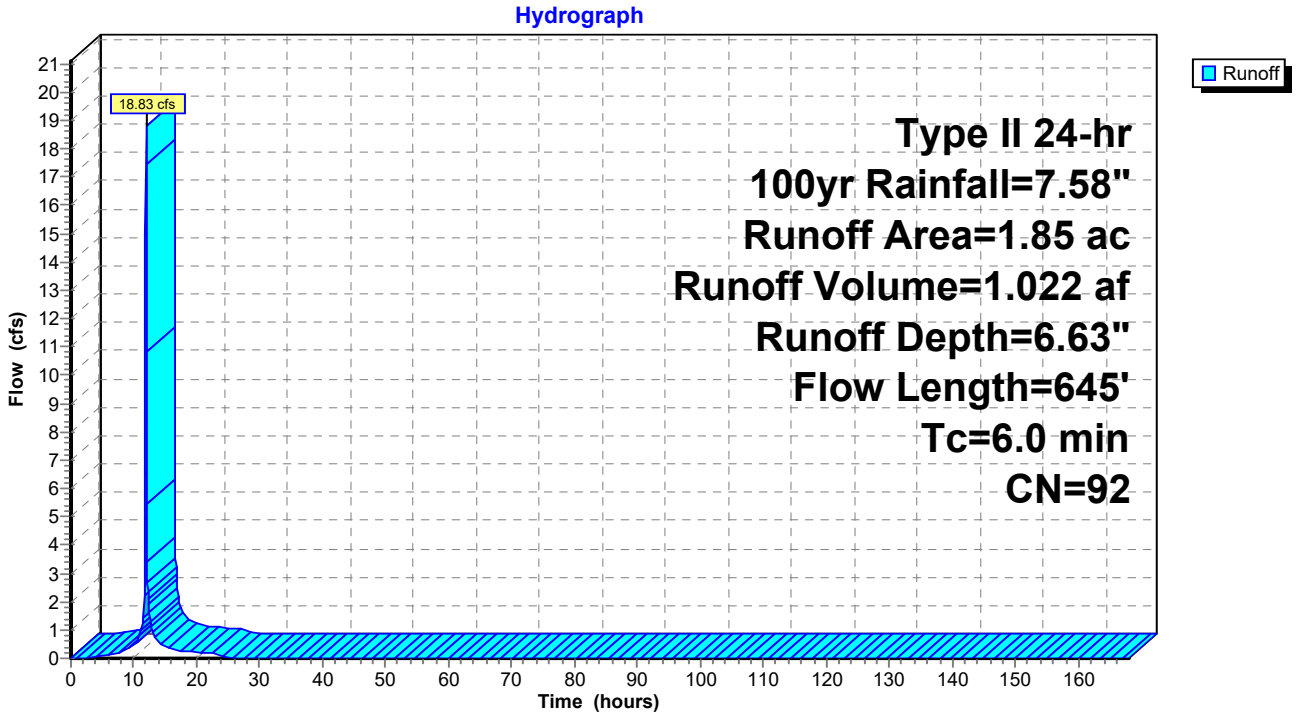
Runoff = 18.83 cfs @ 11.96 hrs, Volume= 1.022 af, Depth= 6.63"
Routed to Pond 4P : UGD BASIN A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=7.58"

Area (ac)	CN	Description
1.56	98	Paved parking, HSG B
0.29	61	>75% Grass cover, Good, HSG B
1.85	92	Weighted Average
0.29		15.68% Pervious Area
1.56		84.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	95	0.0100	1.04		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.28"
0.9	280	0.0100	5.22	9.40	**Channel Flow, 18" Pipe (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
1.2	270	0.0050	3.69	6.65	**Channel Flow, 18" Pipe (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
3.6	645	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S: D.A. UGD BASIN A



Summary for Subcatchment 3S: D.A to MRC BASIN B

[47] Hint: Peak is 984% of capacity of segment #3
[47] Hint: Peak is 696% of capacity of segment #4
[47] Hint: Peak is 483% of capacity of segment #5

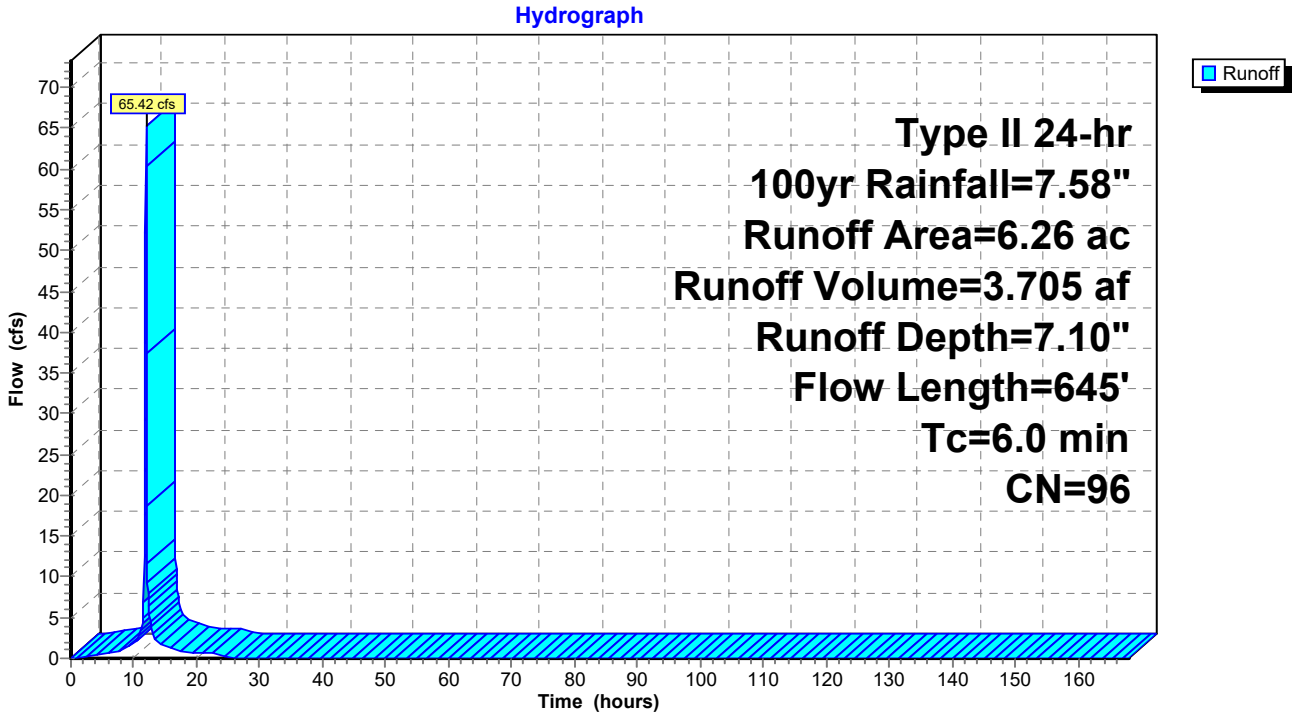
Runoff = 65.42 cfs @ 11.96 hrs, Volume= 3.705 af, Depth= 7.10"
Routed to Pond 5P : MRC BASIN B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=7.58"

	Area (ac)	CN	Description
*	0.34	61	>75% Grass cover, Good, HSG B
*	5.92	98	Paved Parking, HSG B
	6.26	96	Weighted Average
	0.34		5.43% Pervious Area
	5.92		94.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.06		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.28"
0.8	95	0.0100	2.03		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.8	170	0.0050	3.69	6.65	**Channel Flow, Pipe Flow (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
0.1	40	0.0100	5.22	9.40	**Channel Flow, Pipe Flow (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
0.9	240	0.0050	4.37	13.53	**Channel Flow, Pipe Flow (Channel Flow)** Area= 3.1 sf Perim= 6.3' r= 0.49' n= 0.015
4.2	645	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 3S: D.A to MRC BASIN B



Summary for Pond 4P: UGD BASIN A

Inflow Area = 1.85 ac, 84.32% Impervious, Inflow Depth = 6.63" for 100yr event
Inflow = 18.83 cfs @ 11.96 hrs, Volume= 1.022 af
Outflow = 14.18 cfs @ 12.03 hrs, Volume= 1.022 af, Atten= 25%, Lag= 4.1 min
Primary = 14.18 cfs @ 12.03 hrs, Volume= 1.022 af
Routed to Reach 6R : Post-Project (SP 1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Peak Elev= 50.08' @ 12.03 hrs Surf.Area= 0.22 ac Storage= 0.287 af

Plug-Flow detention time= 57.2 min calculated for 1.022 af (100% of inflow)
Center-of-Mass det. time= 56.7 min (823.7 - 766.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	47.60'	0.169 af	**49.63'W x 197.00'L x 2.58'H Field A** 0.580 af Overall - 0.156 af Embedded = 0.424 af x 40.0% Voids
#2A	48.10'	0.126 af	**ADS N-12 18"** x 153 Inside #1 Inside= 18.2"W x 18.2"H => 1.80 sf x 20.00'L = 36.0 cf Outside= 21.0"W x 21.0"H => 2.23 sf x 20.00'L = 44.5 cf 153 Chambers in 17 Rows
		0.296 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	47.60'	**24.0" Round Culvert** L= 127.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 47.60' / 46.30' S= 0.0102 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	47.60'	**8.0" Vert. Circular Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	49.15'	**4.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)

Primary OutFlow Max=13.73 cfs @ 12.03 hrs HW=50.06' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 13.73 cfs of 18.25 cfs potential flow)
  ├─**2=Circular Orifice** (Orifice Controls 2.45 cfs @ 7.02 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 11.28 cfs @ 3.11 fps)

Pond 4P: UGD BASIN A - Chamber Wizard Field A

Chamber Model = ADS N-12 18" (ADS N-12® Pipe)
Inside= 18.2"W x 18.2"H => 1.80 sf x 20.00'L = 36.0 cf
Outside= 21.0"W x 21.0"H => 2.23 sf x 20.00'L = 44.5 cf

21.0" Wide + 13.4" Spacing = 34.4" C-C Row Spacing

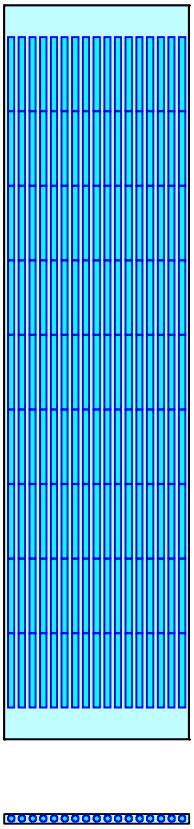
9 Chambers/Row x 20.00' Long = 180.00' Row Length +102.0" End Stone x 2 = 197.00' Base Length
17 Rows x 21.0" Wide + 13.4" Spacing x 16 + 12.0" Side Stone x 2 = 49.63' Base Width
6.0" Stone Base + 21.0" Chamber Height + 4.0" Stone Cover = 2.58' Field Height

153 Chambers x 36.0 cf = 5,508.0 cf Chamber Storage
153 Chambers x 44.5 cf = 6,809.5 cf Displacement

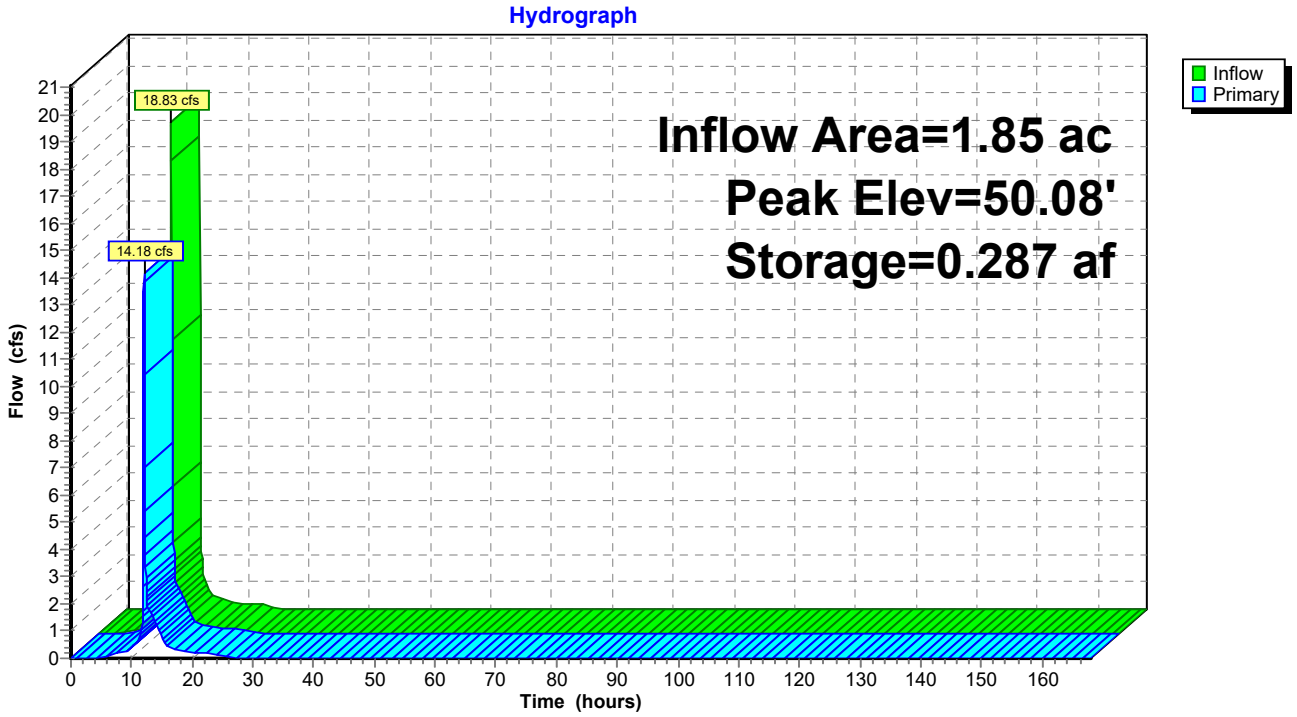
25,260.9 cf Field - 6,809.5 cf Chambers = 18,451.4 cf Stone x 40.0% Voids = 7,380.5 cf Stone Storage

Chamber Storage + Stone Storage = 12,888.6 cf = 0.296 af
Overall Storage Efficiency = 51.0%
Overall System Size = 197.00' x 49.63' x 2.58'

153 Chambers
935.6 cy Field
683.4 cy Stone



Pond 4P: UGD BASIN A



Stage-Discharge for Pond 4P: UGD BASIN A

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
47.60	0.00	48.64	1.41	49.68	7.27
47.62	0.00	48.66	1.43	49.70	7.57
47.64	0.01	48.68	1.45	49.72	7.88
47.66	0.01	48.70	1.47	49.74	8.19
47.68	0.02	48.72	1.49	49.76	8.50
47.70	0.04	48.74	1.51	49.78	8.82
47.72	0.05	48.76	1.53	49.80	9.15
47.74	0.07	48.78	1.55	49.82	9.48
47.76	0.09	48.80	1.56	49.84	9.82
47.78	0.11	48.82	1.58	49.86	10.16
47.80	0.13	48.84	1.60	49.88	10.50
47.82	0.16	48.86	1.62	49.90	10.85
47.84	0.19	48.88	1.64	49.92	11.21
47.86	0.22	48.90	1.65	49.94	11.57
47.88	0.25	48.92	1.67	49.96	11.93
47.90	0.28	48.94	1.69	49.98	12.30
47.92	0.32	48.96	1.70	50.00	12.67
47.94	0.36	48.98	1.72	50.02	13.04
47.96	0.39	49.00	1.74	50.04	13.42
47.98	0.43	49.02	1.75	50.06	13.81
48.00	0.47	49.04	1.77	50.08	14.19
48.02	0.51	49.06	1.78	50.10	14.59
48.04	0.55	49.08	1.80	50.12	14.98
48.06	0.59	49.10	1.82	50.14	15.38
48.08	0.63	49.12	1.83	50.16	15.78
48.10	0.68	49.14	1.85	50.18	**16.19**
48.12	0.72	49.16	1.87		
48.14	0.76	49.18	1.94		
48.16	0.80	49.20	2.04		
48.18	0.84	49.22	2.15		
48.20	0.87	49.24	2.27		
48.22	0.91	49.26	2.41		
48.24	0.94	49.28	2.56		
48.26	0.96	49.30	2.72		
48.28	0.99	49.32	2.90		
48.30	1.02	49.34	3.08		
48.32	1.05	49.36	3.27		
48.34	1.07	49.38	3.46		
48.36	1.10	49.40	3.67		
48.38	1.12	49.42	3.88		
48.40	1.15	49.44	4.11		
48.42	1.17	49.46	4.33		
48.44	1.20	49.48	4.57		
48.46	1.22	49.50	4.81		
48.48	1.24	49.52	5.06		
48.50	1.27	49.54	5.32		
48.52	1.29	49.56	5.58		
48.54	1.31	49.58	5.84		
48.56	1.33	49.60	6.12		
48.58	1.35	49.62	6.40		
48.60	1.37	49.64	6.68		
48.62	1.39	49.66	6.97		

Stage-Area-Storage for Pond 4P: UGD BASIN A

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
47.60	0.000	48.64	0.106	49.68	0.252
47.62	0.002	48.66	0.109	49.70	0.254
47.64	0.004	48.68	0.111	49.72	0.256
47.66	0.005	48.70	0.114	49.74	0.258
47.68	0.007	48.72	0.117	49.76	0.259
47.70	0.009	48.74	0.120	49.78	0.260
47.72	0.011	48.76	0.123	49.80	0.262
47.74	0.013	48.78	0.126	49.82	0.263
47.76	0.014	48.80	0.129	49.84	0.265
47.78	0.016	48.82	0.132	49.86	0.267
47.80	0.018	48.84	0.135	49.88	0.269
47.82	0.020	48.86	0.138	49.90	0.270
47.84	0.022	48.88	0.141	49.92	0.272
47.86	0.023	48.90	0.144	49.94	0.274
47.88	0.025	48.92	0.147	49.96	0.276
47.90	0.027	48.94	0.150	49.98	0.278
47.92	0.029	48.96	0.153	50.00	0.279
47.94	0.031	48.98	0.156	50.02	0.281
47.96	0.032	49.00	0.159	50.04	0.283
47.98	0.034	49.02	0.162	50.06	0.285
48.00	0.036	49.04	0.165	50.08	0.287
48.02	0.038	49.06	0.168	50.10	0.288
48.04	0.040	49.08	0.171	50.12	0.290
48.06	0.041	49.10	0.174	50.14	0.292
48.08	0.043	49.12	0.177	50.16	0.294
48.10	0.045	49.14	0.180	50.18	**0.296**
48.12	0.047	49.16	0.183		
48.14	0.048	49.18	0.186		
48.16	0.050	49.20	0.189		
48.18	0.051	49.22	0.192		
48.20	0.052	49.24	0.195		
48.22	0.054	49.26	0.198		
48.24	0.055	49.28	0.201		
48.26	0.057	49.30	0.204		
48.28	0.059	49.32	0.206		
48.30	0.062	49.34	0.209		
48.32	0.064	49.36	0.212		
48.34	0.066	49.38	0.215		
48.36	0.068	49.40	0.218		
48.38	0.071	49.42	0.220		
48.40	0.073	49.44	0.223		
48.42	0.076	49.46	0.226		
48.44	0.078	49.48	0.228		
48.46	0.081	49.50	0.231		
48.48	0.084	49.52	0.234		
48.50	0.086	49.54	0.236		
48.52	0.089	49.56	0.239		
48.54	0.092	49.58	0.241		
48.56	0.094	49.60	0.244		
48.58	0.097	49.62	0.246		
48.60	0.100	49.64	0.248		
48.62	0.103	49.66	0.250		

Summary for Pond 5P: MRC BASIN B

Inflow Area = 6.26 ac, 94.57% Impervious, Inflow Depth = 7.10" for 100yr event
Inflow = 65.42 cfs @ 11.96 hrs, Volume= 3.705 af
Outflow = 13.58 cfs @ 12.14 hrs, Volume= 3.241 af, Atten= 79%, Lag= 10.8 min
Primary = 13.58 cfs @ 12.14 hrs, Volume= 3.241 af
Routed to Reach 6R : Post-Project (SP 1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Starting Elev= 49.30' Surf.Area= 0.98 ac Storage= 0.429 af
Peak Elev= 52.10' @ 12.14 hrs Surf.Area= 1.96 ac Storage= 2.499 af (2.070 af above start)

Plug-Flow detention time= 736.2 min calculated for 2.811 af (76% of inflow)
Center-of-Mass det. time= 560.5 min (1,309.9 - 749.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	48.80'	0.000 af	**47.23'W x 305.83'L x 2.50'H East Field** 0.829 af Overall - 0.829 af Embedded = 0.000 af x 40.0% Voids
#2A	48.80'	0.582 af	**StormTrap ST2 SingleTrap 2-0** x 76 Inside #1 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 76 Chambers in 4 Rows 33.92' x 292.52' Core + 6.66' Border = 47.23' x 305.83' System
#3C	48.80'	0.000 af	**115.06'W x 228.85'L x 2.50'H West Field** 1.511 af Overall - 1.511 af Embedded = 0.000 af x 40.0% Voids
#4C	48.80'	1.066 af	**StormTrap ST2 SingleTrap 2-0** x 168 Inside #3 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 168 Chambers in 12 Rows 101.75' x 215.54' Core + 6.66' Border = 115.06' x 228.85' System
#5D	48.80'	0.000 af	**38.75'W x 44.10'L x 2.50'H Center Field** 0.098 af Overall - 0.098 af Embedded = 0.000 af x 40.0% Voids
#6D	48.80'	0.068 af	**StormTrap ST2 SingleTrap 2-0** x 6 Inside #5 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 6 Chambers in 3 Rows 25.44' x 30.79' Core + 6.66' Border = 38.75' x 44.10' System
#7	51.30'	0.980 af	**Topsoil/Backfill (Prismatic)** Listed below (Recalc)
		2.696 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
51.30	0.98	0.000	0.000
52.30	0.98	0.980	0.980

Device	Routing	Invert	Outlet Devices
#1	Primary	48.80'	**18.0" Round Culvert** L= 29.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.80' / 48.00' S= 0.0272 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	49.80'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.45'	**3.2' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=13.58 cfs @ 12.14 hrs HW=52.10' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 13.58 cfs @ 7.68 fps)
  ├─**2=Orifice** (Passes < 0.35 cfs potential flow)
  └─**3=Sharp-Crested Rectangular Weir** (Passes < 19.84 cfs potential flow)

Pond 5P: MRC BASIN B - Chamber Wizard East Field

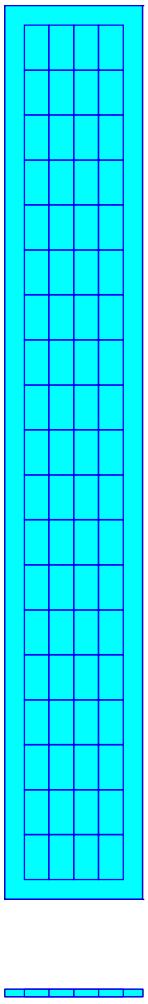
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

19 Chambers/Row x 15.40' Long = 292.52' Row Length +79.9" Border x 2 = 305.83' Base Length
4 Rows x 101.7" Wide + 79.9" Side Border x 2 = 47.23' Base Width
30.0" Chamber Height = 2.50' Field Height

76 Chambers x 231.7 cf + 7,732.9 cf Border = 25,339.9 cf Chamber Storage
76 Chambers x 326.4 cf + 11,307.3 cf Border = 36,110.6 cf Displacement

Chamber Storage = 25,339.9 cf = 0.582 af
Overall Storage Efficiency = 70.2%
Overall System Size = 305.83' x 47.23' x 2.50'

76 Chambers (plus border)
1,337.4 cy Field



Pond 5P: MRC BASIN B - Chamber Wizard West Field

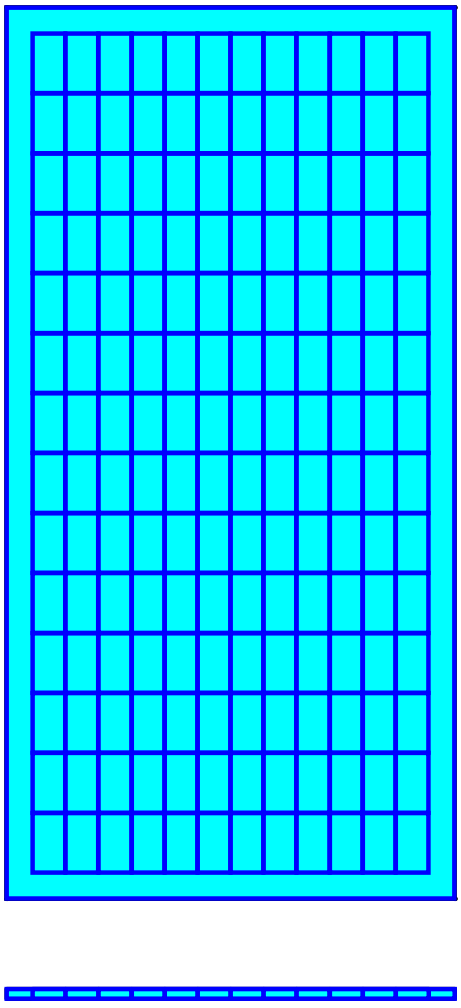
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

14 Chambers/Row x 15.40' Long = 215.54' Row Length +79.9" Border x 2 = 228.85' Base Length
12 Rows x 101.7" Wide + 79.9" Side Border x 2 = 115.06' Base Width
30.0" Chamber Height = 2.50' Field Height

168 Chambers x 231.7 cf + 7,524.7 cf Border = 46,445.4 cf Chamber Storage
168 Chambers x 326.4 cf + 11,002.9 cf Border = 65,831.3 cf Displacement

Chamber Storage = 46,445.4 cf = 1.066 af
Overall Storage Efficiency = 70.6%
Overall System Size = 228.85' x 115.06' x 2.50'

168 Chambers (plus border)
2,438.2 cy Field



Pond 5P: MRC BASIN B - Chamber Wizard Center Field

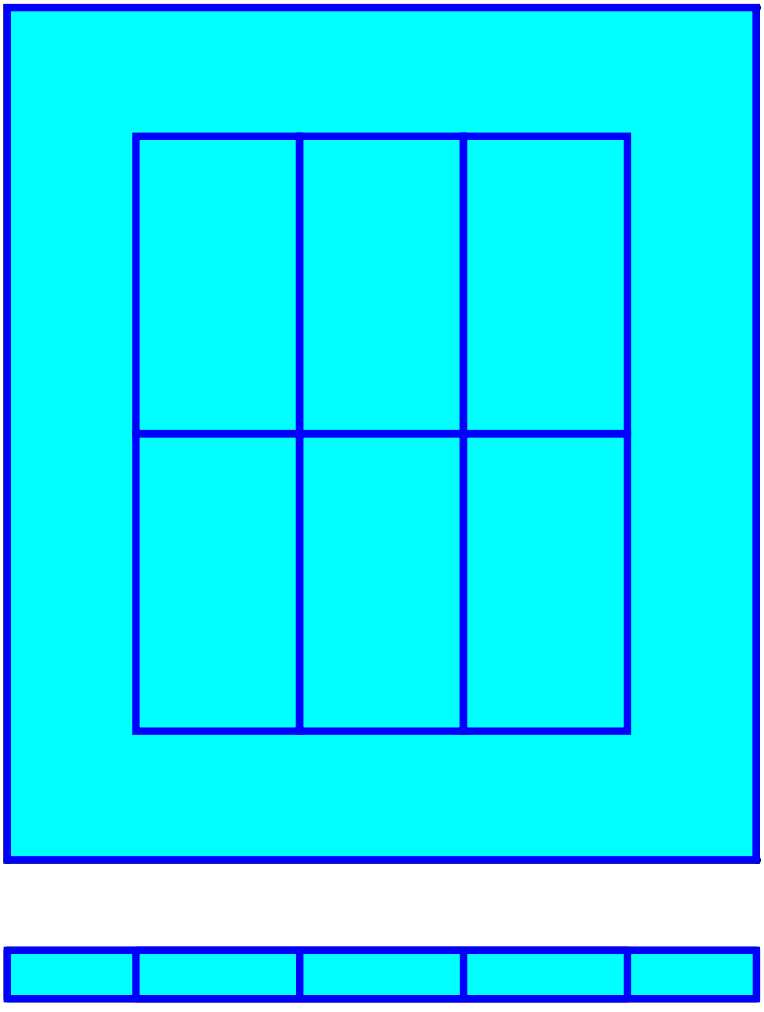
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

2 Chambers/Row x 15.40' Long = 30.79' Row Length +79.9" Border x 2 = 44.10' Base Length
3 Rows x 101.7" Wide + 79.9" Side Border x 2 = 38.75' Base Width
30.0" Chamber Height = 2.50' Field Height

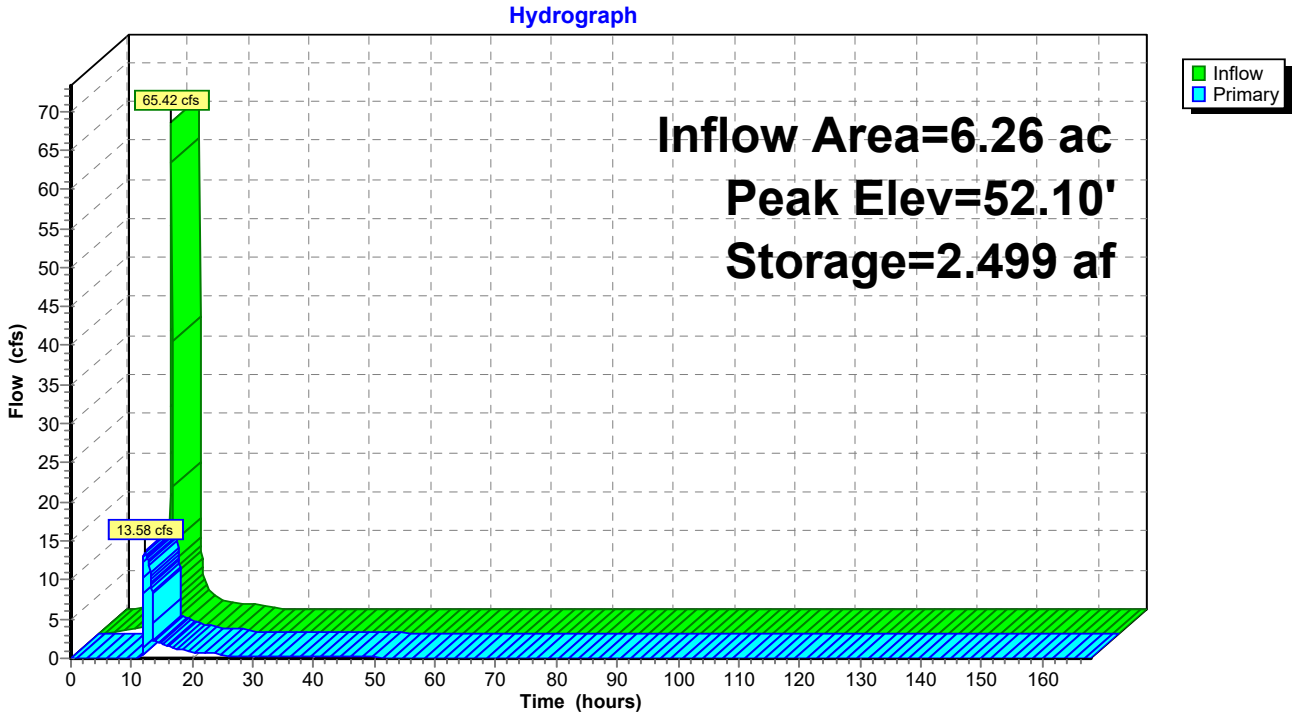
6 Chambers x 231.7 cf + 1,582.8 cf Border = 2,972.8 cf Chamber Storage
6 Chambers x 326.4 cf + 2,314.4 cf Border = 4,272.6 cf Displacement

Chamber Storage = 2,972.8 cf = 0.068 af
Overall Storage Efficiency = 69.6%
Overall System Size = 44.10' x 38.75' x 2.50'

6 Chambers (plus border)
158.2 cy Field



Pond 5P: MRC BASIN B



Stage-Discharge for Pond 5P: MRC BASIN B

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
48.80	0.00	49.84	0.00	50.88	3.10	51.92	13.10
48.82	0.00	49.86	0.01	50.90	3.30	51.94	13.15
48.84	0.00	49.88	0.01	50.92	3.51	51.96	13.21
48.86	0.00	49.90	0.02	50.94	3.72	51.98	13.26
48.88	0.00	49.92	0.03	50.96	3.93	52.00	13.32
48.90	0.00	49.94	0.04	50.98	4.15	52.02	13.37
48.92	0.00	49.96	0.05	51.00	4.37	52.04	13.43
48.94	0.00	49.98	0.05	51.02	4.59	52.06	13.48
48.96	0.00	50.00	0.06	51.04	4.82	52.08	13.53
48.98	0.00	50.02	0.07	51.06	5.05	52.10	13.59
49.00	0.00	50.04	0.08	51.08	5.28	52.12	13.64
49.02	0.00	50.06	0.09	51.10	5.52	52.14	13.69
49.04	0.00	50.08	0.09	51.12	5.76	52.16	13.75
49.06	0.00	50.10	0.10	51.14	6.00	52.18	13.80
49.08	0.00	50.12	0.10	51.16	6.25	52.20	13.85
49.10	0.00	50.14	0.11	51.18	6.49	52.22	13.90
49.12	0.00	50.16	0.11	51.20	6.74	52.24	13.96
49.14	0.00	50.18	0.12	51.22	7.00	52.26	14.01
49.16	0.00	50.20	0.12	51.24	7.26	52.28	14.06
49.18	0.00	50.22	0.13	51.26	7.52	52.30	**14.11**
49.20	0.00	50.24	0.13	51.28	7.78		
49.22	0.00	50.26	0.14	51.30	8.04		
49.24	0.00	50.28	0.14	51.32	8.31		
49.26	0.00	50.30	0.14	51.34	8.58		
49.28	0.00	50.32	0.15	51.36	8.85		
49.30	0.00	50.34	0.15	51.38	9.12		
49.32	0.00	50.36	0.16	51.40	9.40		
49.34	0.00	50.38	0.16	51.42	9.68		
49.36	0.00	50.40	0.16	51.44	9.96		
49.38	0.00	50.42	0.17	51.46	10.24		
49.40	0.00	50.44	0.17	51.48	10.53		
49.42	0.00	50.46	0.18	51.50	10.82		
49.44	0.00	50.48	0.23	51.52	11.11		
49.46	0.00	50.50	0.30	51.54	11.40		
49.48	0.00	50.52	0.38	51.56	11.69		
49.50	0.00	50.54	0.47	51.58	11.99		
49.52	0.00	50.56	0.57	51.60	12.18		
49.54	0.00	50.58	0.68	51.62	12.24		
49.56	0.00	50.60	0.80	51.64	12.30		
49.58	0.00	50.62	0.92	51.66	12.36		
49.60	0.00	50.64	1.06	51.68	12.42		
49.62	0.00	50.66	1.20	51.70	12.48		
49.64	0.00	50.68	1.34	51.72	12.53		
49.66	0.00	50.70	1.50	51.74	12.59		
49.68	0.00	50.72	1.65	51.76	12.65		
49.70	0.00	50.74	1.82	51.78	12.71		
49.72	0.00	50.76	1.99	51.80	12.76		
49.74	0.00	50.78	2.16	51.82	12.82		
49.76	0.00	50.80	2.34	51.84	12.88		
49.78	0.00	50.82	2.52	51.86	12.93		
49.80	0.00	50.84	2.71	51.88	12.99		
49.82	0.00	50.86	2.91	51.90	13.04		

Stage-Area-Storage for Pond 5P: MRC BASIN B

Elevation (feet)	Storage (acre-feet)
48.80	0.000
48.85	0.043
48.90	0.086
48.95	0.129
49.00	0.172
49.05	0.215
49.10	0.257
49.15	0.300
49.20	0.343
49.25	0.386
49.30	0.429
49.35	0.472
49.40	0.515
49.45	0.558
49.50	0.601
49.55	0.644
49.60	0.686
49.65	0.729
49.70	0.772
49.75	0.815
49.80	0.858
49.85	0.901
49.90	0.944
49.95	0.987
50.00	1.030
50.05	1.073
50.10	1.116
50.15	1.158
50.20	1.201
50.25	1.244
50.30	1.287
50.35	1.330
50.40	1.373
50.45	1.416
50.50	1.459
50.55	1.502
50.60	1.545
50.65	1.587
50.70	1.630
50.75	1.673
50.80	1.716
50.85	1.716
50.90	1.716
50.95	1.716
51.00	1.716
51.05	1.716
51.10	1.716
51.15	1.716
51.20	1.716
51.25	1.716
51.30	1.716
51.35	1.765
51.40	1.814
51.45	1.863
51.50	1.912
51.55	1.961
51.60	2.010
51.65	2.059
51.70	2.108
51.75	2.157
51.80	2.206
51.85	2.255
51.90	2.304
51.95	2.353
52.00	2.402
52.05	2.451
52.10	2.500
52.15	2.549
52.20	2.598
52.25	2.647
52.30	**2.696**

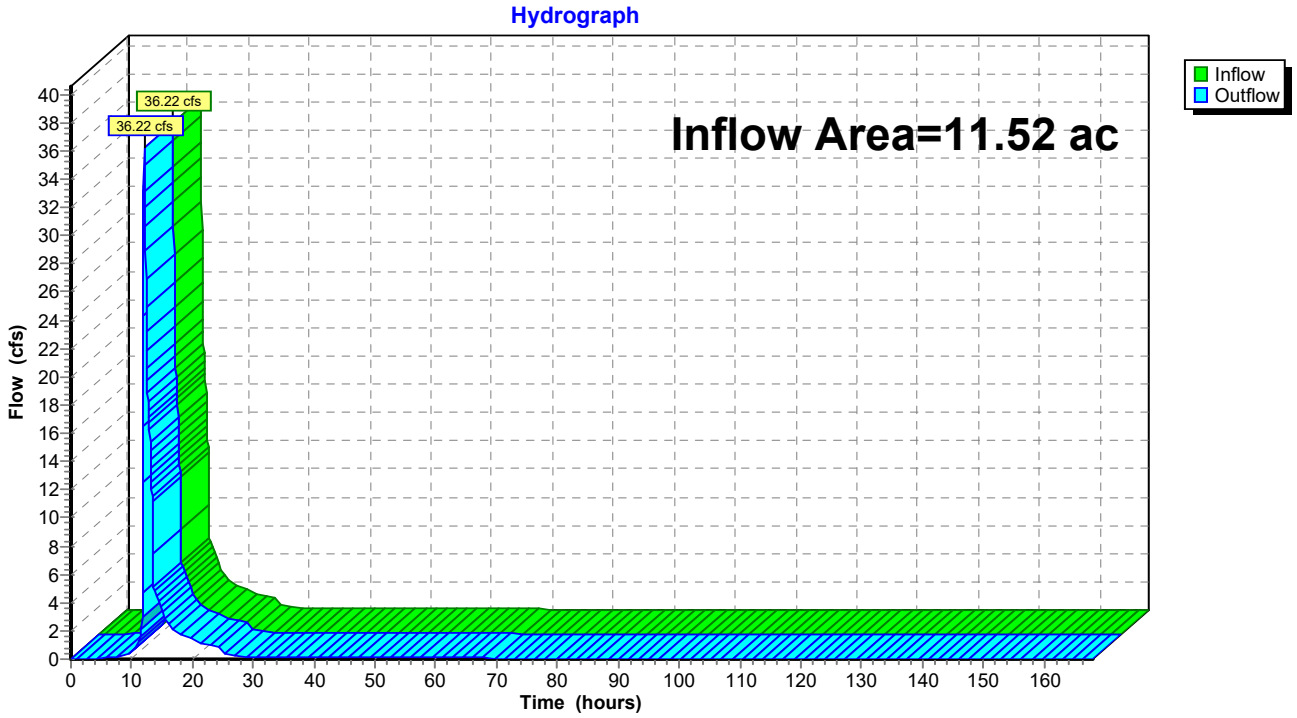
Summary for Reach 6R: Post-Project (SP 1)

[40] Hint: Not Described (Outflow=Inflow)

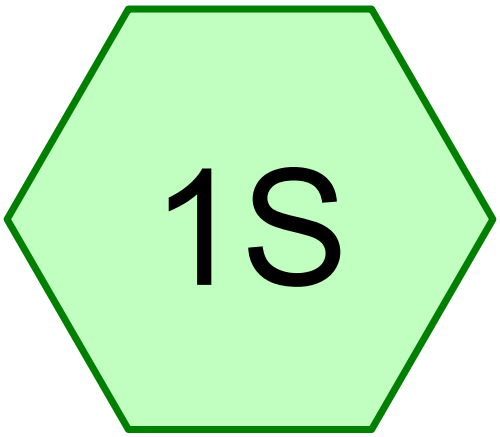
Inflow Area = 11.52 ac, 72.05% Impervious, Inflow Depth = 5.66" for 100yr event
Inflow = 36.22 cfs @ 12.06 hrs, Volume= 5.429 af
Outflow = 36.22 cfs @ 12.06 hrs, Volume= 5.429 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs

Reach 6R: Post-Project (SP 1)



Study Point 2: Pre-Project Release Rate Calculations



Pre-Project

Subcat Reach Pond Link

Routing Diagram for Pre Project SP2
Prepared by Colliers Engineering & Design, Printed 3/3/2022
HydroCAD® 10.10-6a s/n 08841 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.69	98	(1S)
0.84	61	(1S)
1.53	**78**	**TOTAL AREA**

Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Project Runoff Area=1.53 ac 45.10% Impervious Runoff Depth=1.33"
Flow Length=428' Tc=18.1 min CN=78 Runoff=2.35 cfs 0.170 af

Total Runoff Area = 1.53 ac Runoff Volume = 0.170 af Average Runoff Depth = 1.33"
54.90% Pervious = 0.84 ac 45.10% Impervious = 0.69 ac

Summary for Subcatchment 1S: Pre-Project

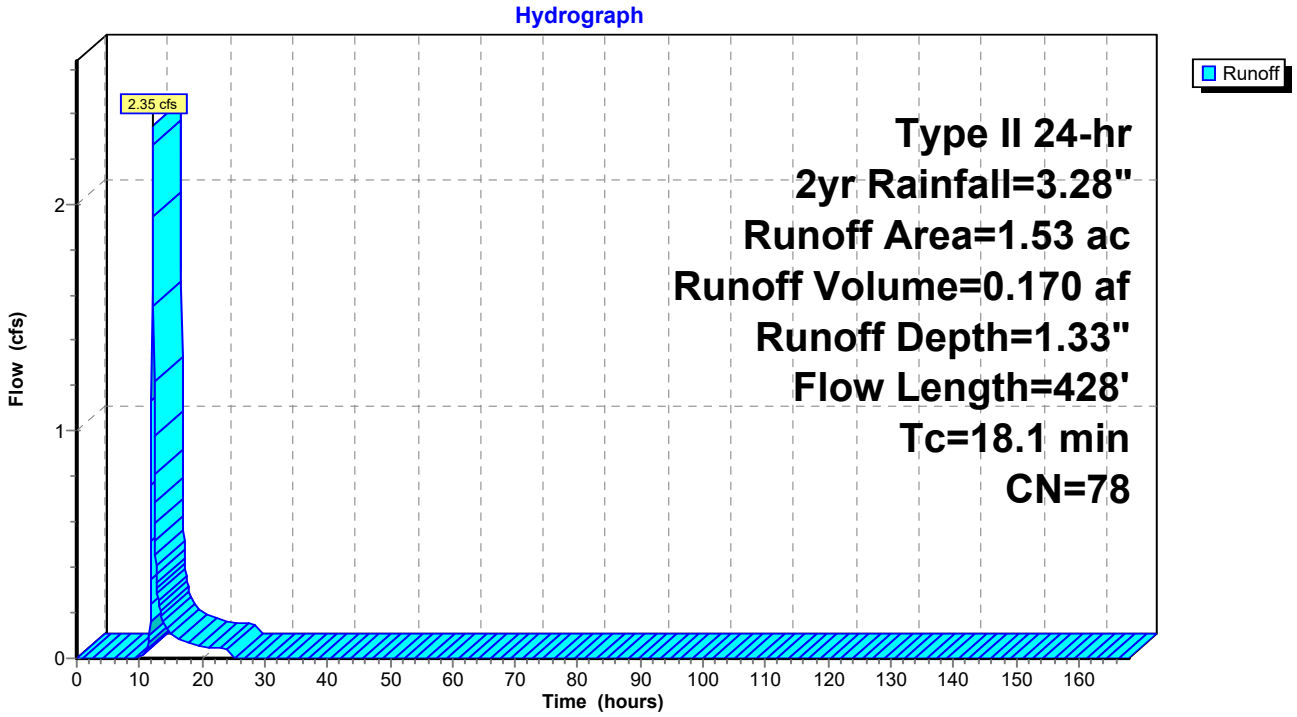
Runoff = 2.35 cfs @ 12.11 hrs, Volume= 0.170 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 2yr Rainfall=3.28"

	Area (ac)	CN	Description
*	0.69	98	
*	0.84	61	
	1.53	78	Weighted Average
	0.84		54.90% Pervious Area
	0.69		45.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0170	0.11		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
1.8	156	0.0080	1.44		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.5	70	0.0120	2.22		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.7	52	0.0040	1.28		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.1	50	0.0360	10.61	6.36	**Channel Flow, Channel Flow (Pipe)** Area= 0.6 sf Perim= 2.6' r= 0.23' n= 0.010
18.1	428	Total			

Subcatchment 1S: Pre-Project



Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Project Runoff Area=1.53 ac 45.10% Impervious Runoff Depth=2.56"
Flow Length=428' Tc=18.1 min CN=78 Runoff=4.58 cfs 0.326 af

Total Runoff Area = 1.53 ac Runoff Volume = 0.326 af Average Runoff Depth = 2.56"
54.90% Pervious = 0.84 ac 45.10% Impervious = 0.69 ac

Summary for Subcatchment 1S: Pre-Project

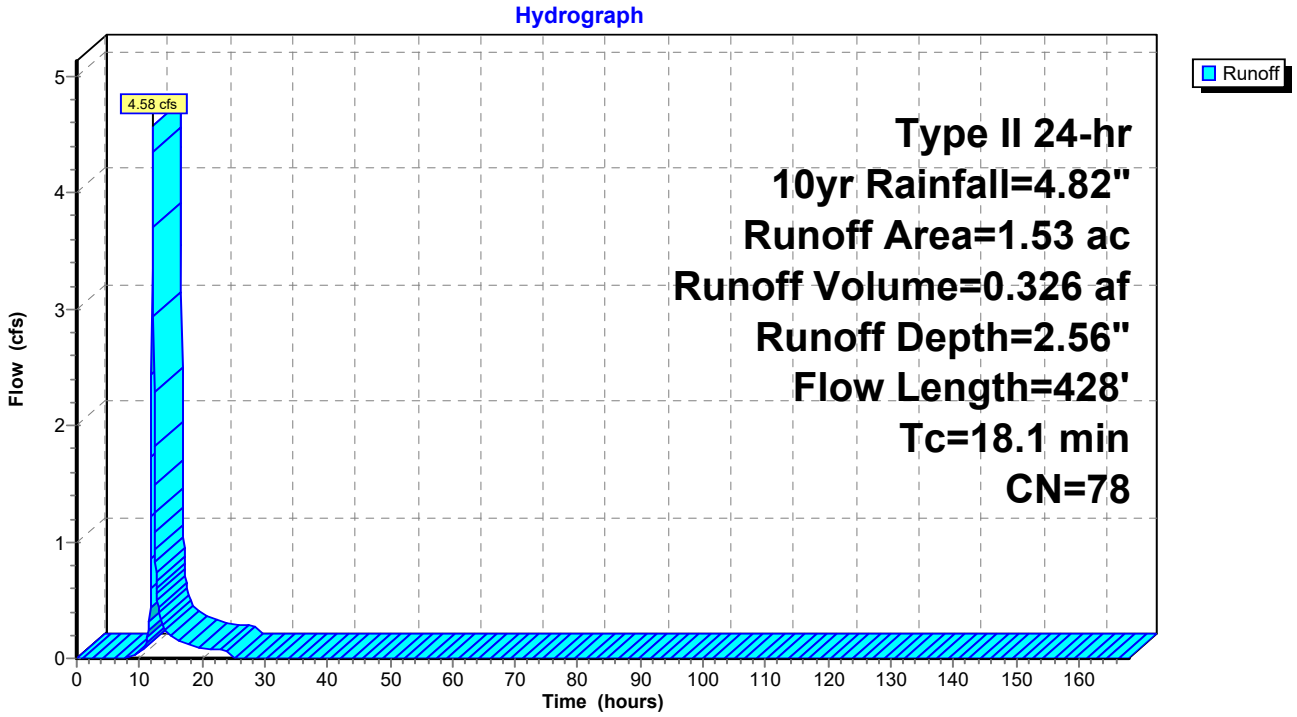
Runoff = 4.58 cfs @ 12.11 hrs, Volume= 0.326 af, Depth= 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=4.82"

	Area (ac)	CN	Description
*	0.69	98	
*	0.84	61	
	1.53	78	Weighted Average
	0.84		54.90% Pervious Area
	0.69		45.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0170	0.11		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
1.8	156	0.0080	1.44		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.5	70	0.0120	2.22		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.7	52	0.0040	1.28		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.1	50	0.0360	10.61	6.36	**Channel Flow, Channel Flow (Pipe)** Area= 0.6 sf Perim= 2.6' r= 0.23' n= 0.010
18.1	428	Total			

Subcatchment 1S: Pre-Project



Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Project Runoff Area=1.53 ac 45.10% Impervious Runoff Depth=4.18"
Flow Length=428' Tc=18.1 min CN=78 Runoff=7.45 cfs 0.533 af

Total Runoff Area = 1.53 ac Runoff Volume = 0.533 af Average Runoff Depth = 4.18"
54.90% Pervious = 0.84 ac 45.10% Impervious = 0.69 ac

Summary for Subcatchment 1S: Pre-Project

[47] Hint: Peak is 117% of capacity of segment #5

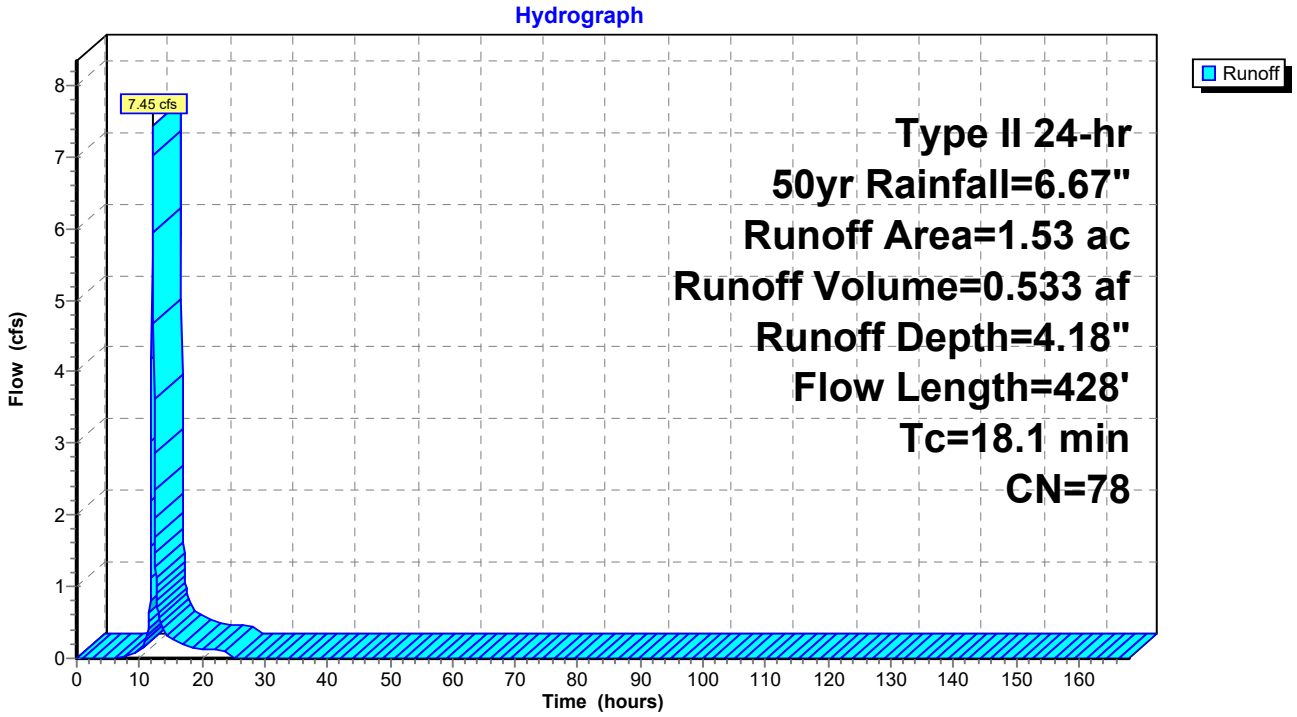
Runoff = 7.45 cfs @ 12.10 hrs, Volume= 0.533 af, Depth= 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 50yr Rainfall=6.67"

	Area (ac)	CN	Description
*	0.69	98	
*	0.84	61	
	1.53	78	Weighted Average
	0.84		54.90% Pervious Area
	0.69		45.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0170	0.11		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
1.8	156	0.0080	1.44		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.5	70	0.0120	2.22		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.7	52	0.0040	1.28		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.1	50	0.0360	10.61	6.36	**Channel Flow, Channel Flow (Pipe)** Area= 0.6 sf Perim= 2.6' r= 0.23' n= 0.010
18.1	428	Total			

Subcatchment 1S: Pre-Project



Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Project Runoff Area=1.53 ac 45.10% Impervious Runoff Depth=5.00"
Flow Length=428' Tc=18.1 min CN=78 Runoff=8.89 cfs 0.638 af

Total Runoff Area = 1.53 ac Runoff Volume = 0.638 af Average Runoff Depth = 5.00"
54.90% Pervious = 0.84 ac 45.10% Impervious = 0.69 ac

Summary for Subcatchment 1S: Pre-Project

[47] Hint: Peak is 140% of capacity of segment #5

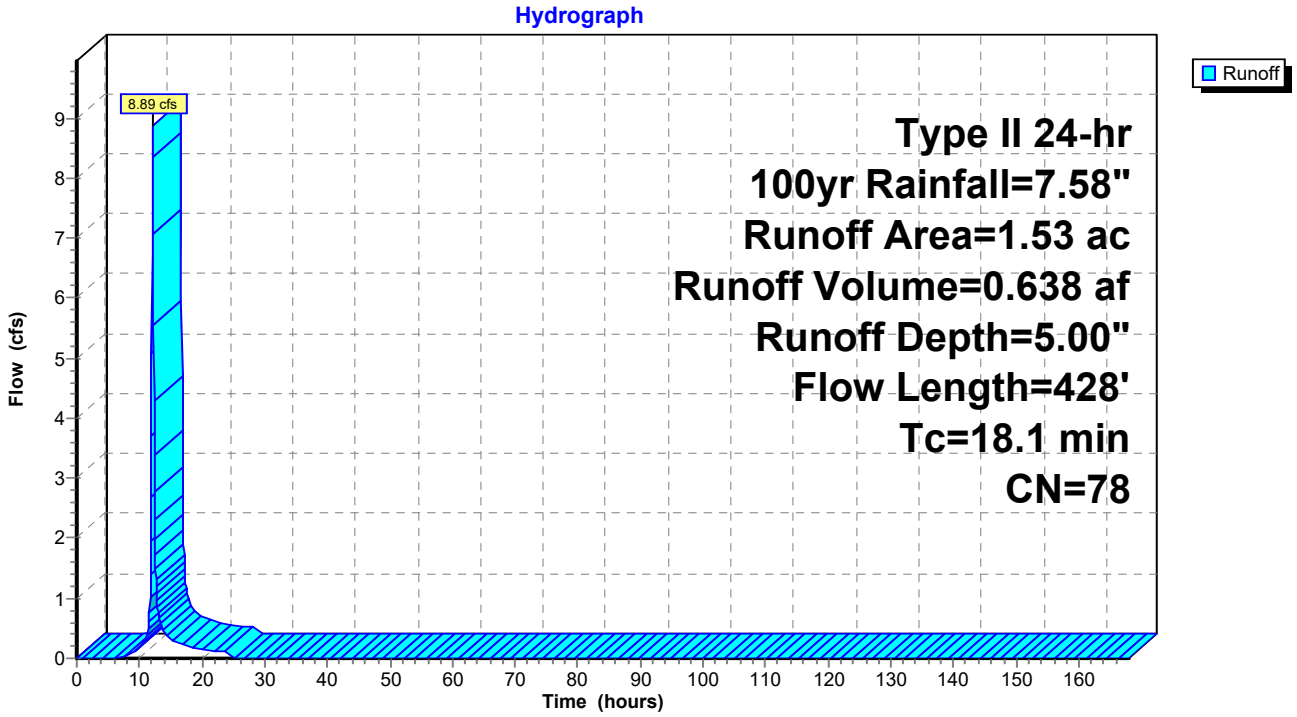
Runoff = 8.89 cfs @ 12.10 hrs, Volume= 0.638 af, Depth= 5.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=7.58"

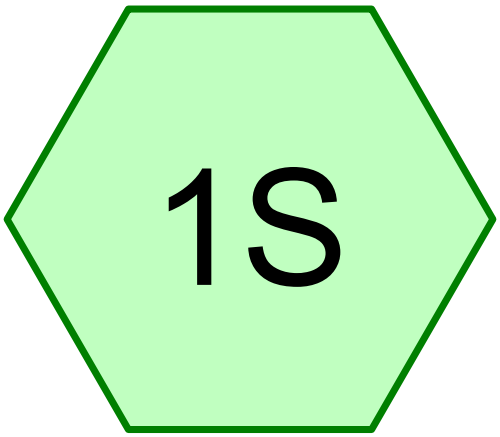
	Area (ac)	CN	Description
*	0.69	98	
*	0.84	61	
	1.53	78	Weighted Average
	0.84		54.90% Pervious Area
	0.69		45.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0170	0.11		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.28"
1.8	156	0.0080	1.44		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.5	70	0.0120	2.22		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.7	52	0.0040	1.28		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.1	50	0.0360	10.61	6.36	**Channel Flow, Channel Flow (Pipe)** Area= 0.6 sf Perim= 2.6' r= 0.23' n= 0.010
18.1	428	Total			

Subcatchment 1S: Pre-Project



Study Point 2: Post-Project Release Rate Calculations



Post-Project

Subcat Reach Pond Link

Routing Diagram for Post Project SP2
Prepared by Colliers Engineering & Design, Printed 3/3/2022
HydroCAD® 10.10-6a s/n 08841 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.27	98	(1S)
0.07	61	(1S)
0.34	**90**	**TOTAL AREA**

Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Post-Project Runoff Area=0.34 ac 79.41% Impervious Runoff Depth=2.24"
Tc=6.0 min CN=90 Runoff=1.27 cfs 0.064 af

Total Runoff Area = 0.34 ac Runoff Volume = 0.064 af Average Runoff Depth = 2.24"
20.59% Pervious = 0.07 ac 79.41% Impervious = 0.27 ac

Summary for Subcatchment 1S: Post-Project

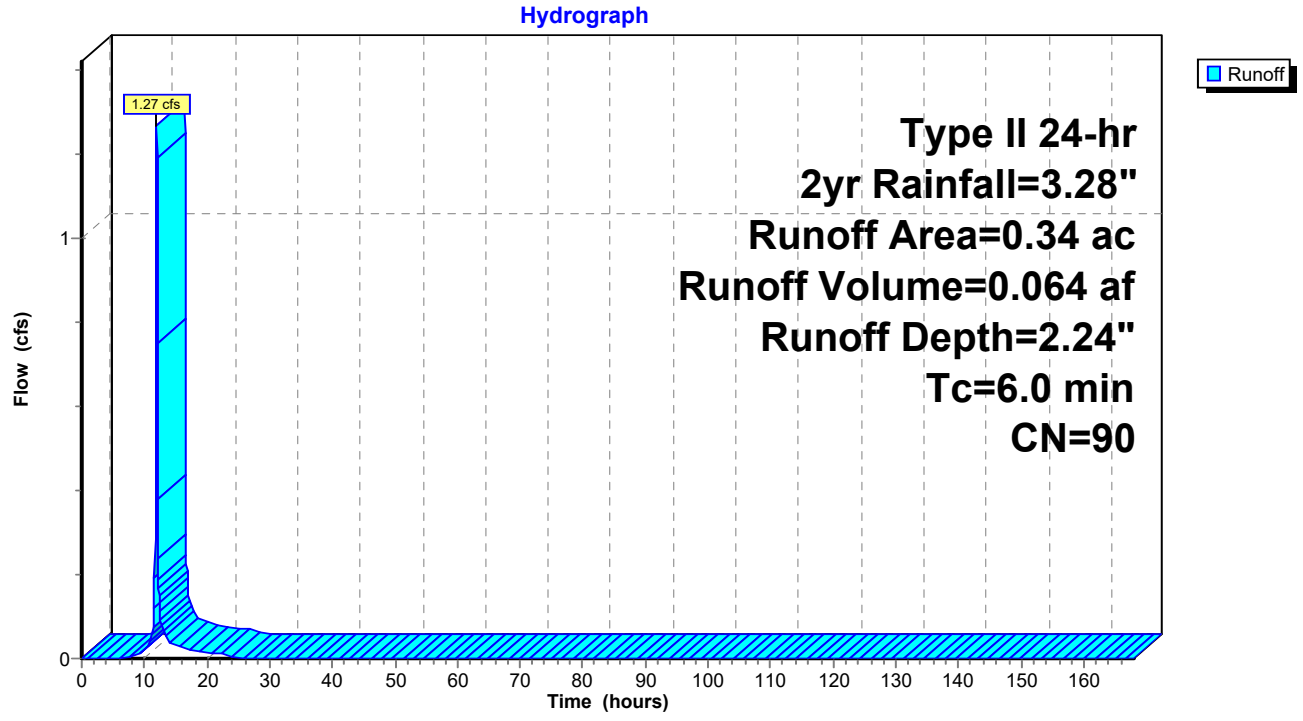
Runoff = 1.27 cfs @ 11.97 hrs, Volume= 0.064 af, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 2yr Rainfall=3.28"

	Area (ac)	CN	Description
*	0.27	98	
*	0.07	61	
	0.34	90	Weighted Average
	0.07		20.59% Pervious Area
	0.27		79.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Time of Concentration**

Subcatchment 1S: Post-Project



Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Post-Project Runoff Area=0.34 ac 79.41% Impervious Runoff Depth=3.70"
Tc=6.0 min CN=90 Runoff=2.04 cfs 0.105 af

Total Runoff Area = 0.34 ac Runoff Volume = 0.105 af Average Runoff Depth = 3.70"
20.59% Pervious = 0.07 ac 79.41% Impervious = 0.27 ac

Summary for Subcatchment 1S: Post-Project

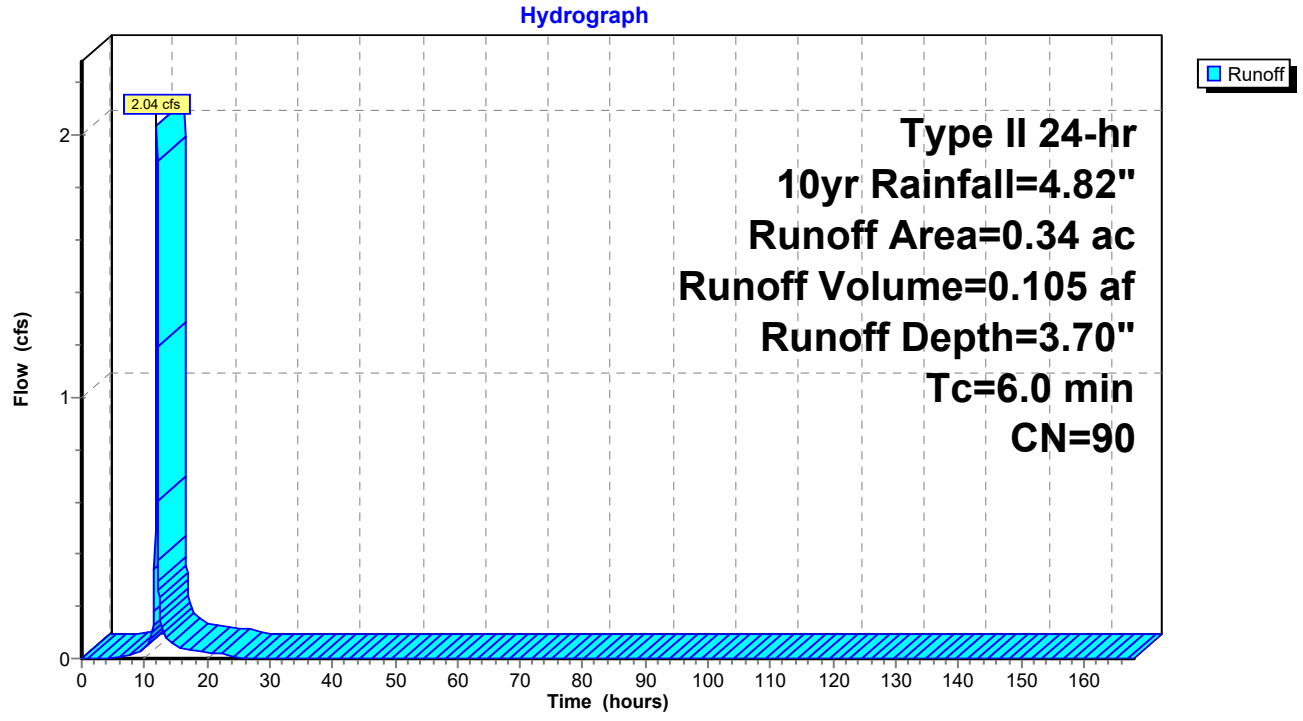
Runoff = 2.04 cfs @ 11.96 hrs, Volume= 0.105 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=4.82"

	Area (ac)	CN	Description
*	0.27	98	
*	0.07	61	
	0.34	90	Weighted Average
	0.07		20.59% Pervious Area
	0.27		79.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Time of Concentration**

Subcatchment 1S: Post-Project



Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Post-Project Runoff Area=0.34 ac 79.41% Impervious Runoff Depth=5.50"
Tc=6.0 min CN=90 Runoff=2.95 cfs 0.156 af

Total Runoff Area = 0.34 ac Runoff Volume = 0.156 af Average Runoff Depth = 5.50"
20.59% Pervious = 0.07 ac 79.41% Impervious = 0.27 ac

Summary for Subcatchment 1S: Post-Project

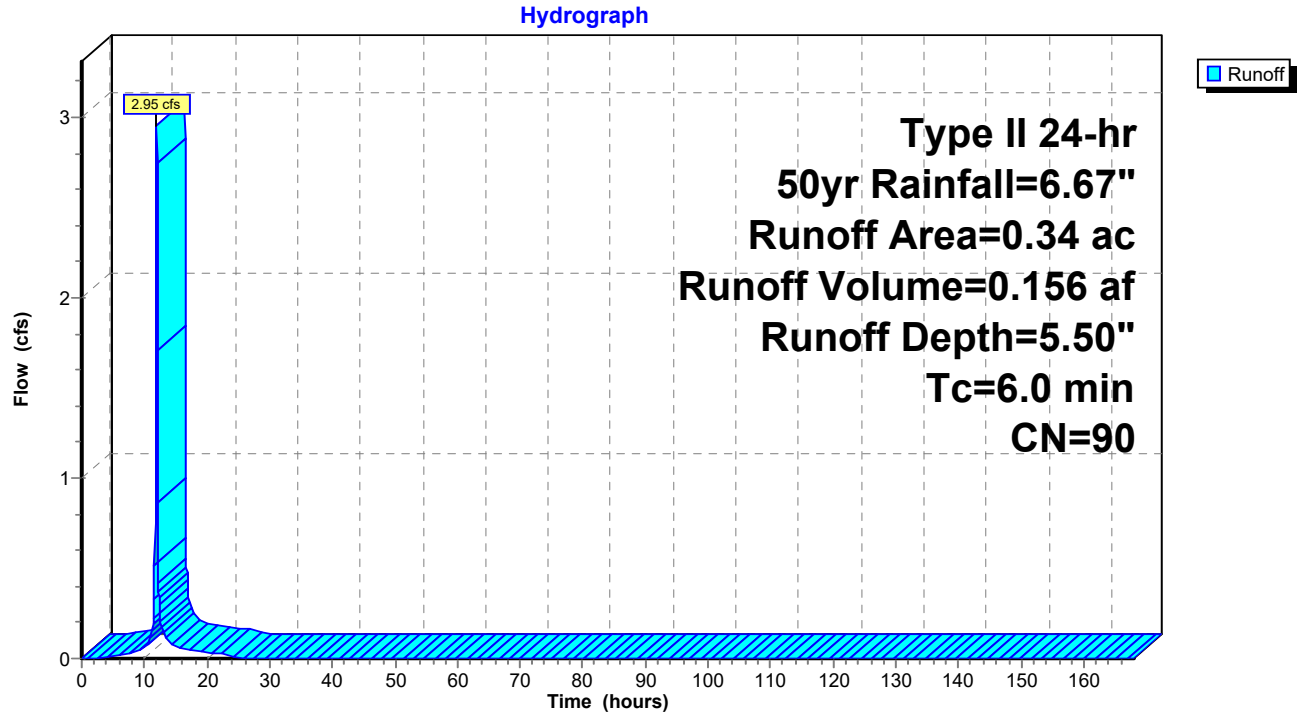
Runoff = 2.95 cfs @ 11.96 hrs, Volume= 0.156 af, Depth= 5.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 50yr Rainfall=6.67"

	Area (ac)	CN	Description
*	0.27	98	
*	0.07	61	
	0.34	90	Weighted Average
	0.07		20.59% Pervious Area
	0.27		79.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Time of Concentration**

Subcatchment 1S: Post-Project



Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Post-Project Runoff Area=0.34 ac 79.41% Impervious Runoff Depth=6.39"
Tc=6.0 min CN=90 Runoff=3.40 cfs 0.181 af

Total Runoff Area = 0.34 ac Runoff Volume = 0.181 af Average Runoff Depth = 6.39"
20.59% Pervious = 0.07 ac 79.41% Impervious = 0.27 ac

Summary for Subcatchment 1S: Post-Project

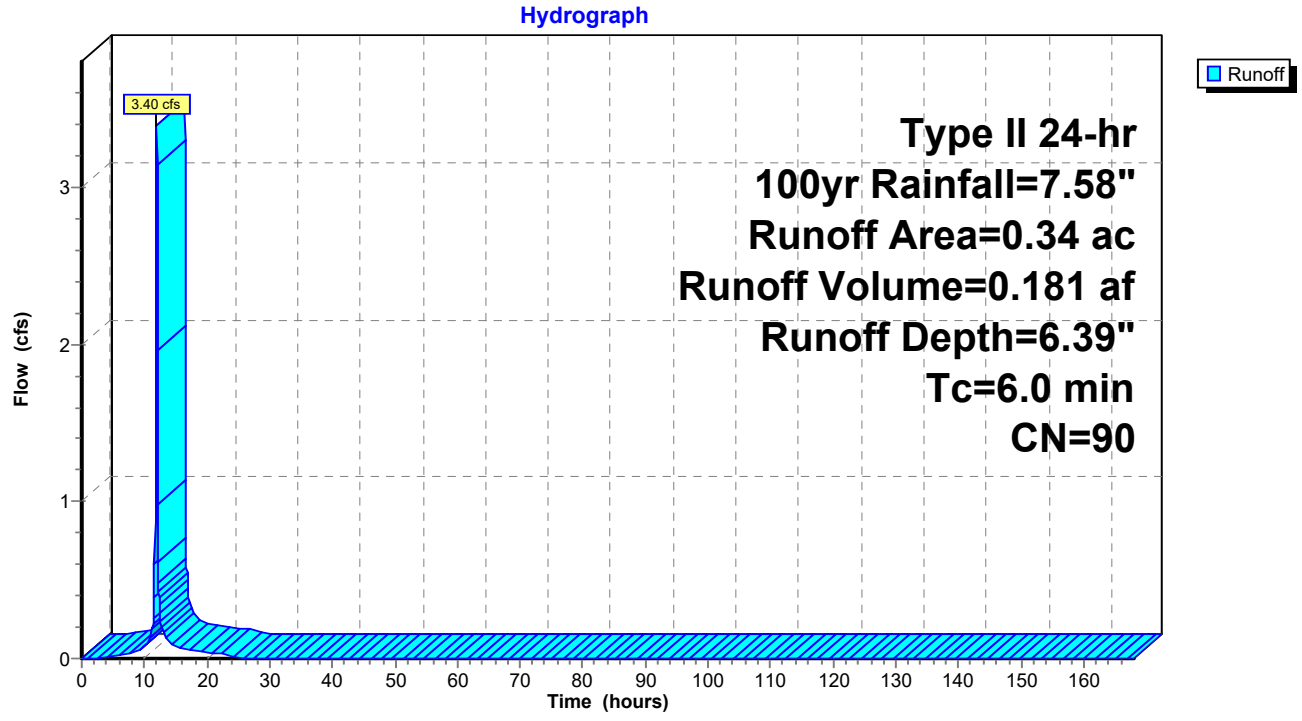
Runoff = 3.40 cfs @ 11.96 hrs, Volume= 0.181 af, Depth= 6.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=7.58"

	Area (ac)	CN	Description
*	0.27	98	
*	0.07	61	
	0.34	90	Weighted Average
	0.07		20.59% Pervious Area
	0.27		79.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Time of Concentration**

Subcatchment 1S: Post-Project



MRC BMP DESIGN CALCULATIONS

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

MANAGED RELEASE CONCEPT (MRC) DESIGN SUMMARY

Complete One Design Summary Sheet for Each BMP Designed for MRC

GENERAL INFORMATION

Applicant Name:	**KRE Group**	Project Name:	**401-433 Washington Street Apartments**
Applicant Address:	**520 US HWY 22, PO Box 6872**	Municipality:	**Whitemarsh Township**
City, State, Zip:	Bridgewater, NJ 08807	County:	**Montgomery County**

Permit Type: ☐ NPDES PAG-02 ☒ NPDES IP ☐ ESCGP ☐ ESP

	Pre-Development	Post-Development	Change
Impervious Area (acres):	2.1	7.71	+ 5.61

MRC BMP INFORMATION

MRC BMP Type: **Underground Concrete Chamber** Stormwater BMP Manual Section: **BMP 6.6.3**

Will the BMP Include Vegetation? ☐ Yes ☒ No

If Yes, Identify Proposed Vegetation:

For Non-Vegetated BMPs Will There Be Pre- or Post-Treatment? ☒ Yes (Pre-) ☐ Yes (Post-) ☐ No

If Yes, Identify Proposed Pre- or Post-Treatment: **Water Quality Filter- SNOUT**

Name of Surface Water to Receive MRC BMP Discharges: **Schuylkill River**

Designated Use of Surface Water: **WWF, MF** Existing Use of Surface Water (if different): **Not listed**

Is the Surface Water Impaired? ☒ Yes ☐ No

If Yes, Identify Cause(s): **Source Unknown - Polychlorinated Biphenyls (PCBS). Agriculture - cause unknown; Urban runoff/storm sewers - cause unknown; Municipal point source discharges - cause unknown.**

Will the BMP have an impermeable liner? ☒ Yes ☐ No

If Yes, explain why a liner is proposed: **Within Floodway**

BMP Media Description: **Topsoil:compost (2:1 Mixture)**

Are Any Deviations from MRC Design Standards Proposed? ☐ Yes ☒ No

If Yes, Identify Deviations:

MRC BMP DESIGN VALUES AND STANDARDS

Parameter	Design Value	Design Standard
Actual Contributing Impervious Area to BMP (acres)	**5.92**	
Equivalent Contributing Impervious Area to BMP (acres)	**5.86**	
Total Drainage Area to BMP (acres)	**6.26**	
MRC BMP Release Rate (cfs)	**0.06**	*No greater than 0.01 cfs / acre of equivalent contributing impervious*
Underdrain Outflow Rate During 1.2-Inch/2-Hour Storm (cfs)	**0.01**	*<= MRC BMP Release Rate (cfs)*
Maximum Storm Event Routed to MRC BMP	**100yr**	

MRC BMP Design Summary
Revised, August 25, 2020

Parameter	Design Value	Design Standard
BMP Footprint Area (ft^2)	**42,485**	
Bottom BMP Elevation (Native Soils) (ft)	**48.80**	
2-Yr/24-Hr Storm Ponding Depth (ft)	**1.78**	*1 ft (recommended) (2 ft max)*
Maximum Ponding Depth (ft)	**3.30**	*4 ft (max)*
Overflow Bypass Elevation (ft)	**N/A**	
Media Depth (ft)	**N/A**	*2 ft (min) – 4 ft (max)*
Media Void Space (%)	**N/A**	
Internal Water Storage (IWS) Depth (ft)	**1**	*1 ft recommended*
Top of IWS Elevation (ft)	**49.80**	
Underdrain Pipe Diameter (in)	**4**	
Underdrain Orifice Diameter (in)	**1**	
Underdrain Outlet Elevation (ft)	**49.80**	
IWS Available for Routing (%)	**50**	*50% max*
Separation Distance (Groundwater) (ft)	**1**	*1 ft (min) (2 ft recommended)*
Infiltration Rate (in/hr)	**N/A**	
Volume of Overflow During 1.2-Inch/2-Hour Storm (cf)	**0**	*0 (No overflow allowed)*
1-Yr/24-Hr **Pre**-Development Peak Rate (cfs)	**4.52**	
2-Yr/24-Hr **Post**-Development Peak Rate (cfs)	**4.27**	*1-Yr/24-Hr Pre-Development Peak Rate (or per approved Act 167 Plan)*
10-Yr/24-Hr **Post**-Development Peak Rate (cfs)	**18.12**	*10-Yr/24-Hr Pre-Development Peak Rate*
50-Yr/24-Hr **Post**-Development Peak Rate (cfs)	**31.15**	*50-Yr/24-Hr Pre-Development Peak Rate*
100-Yr/24-Hr **Post**-Development Peak Rate (cfs)	**36.22**	*100-Yr/24-Hr Pre-Development Peak Rate*
Total 2-Yr/24-Hr Runoff Volume Managed by BMP (cf)	**65,432**	
Ponding Time @ 2-Yr/24-Hr Storm (hrs)	**147.50**	*72 hrs (surface), 7 days (underground)*
Ponding Time @ 10-Yr/24-Hr Storm (hrs)	**148.50**	*72 hrs (surface), 7 days (underground)*
Ponding Time @ 50-Yr/24-Hr Storm (hrs)	**149.50**	*72 hrs (surface), 7 days (underground)*
Ponding Time @ 100-Yr/24-Hr Storm (hrs)	**149.50**	*72 hrs (surface), 7 days (underground)*

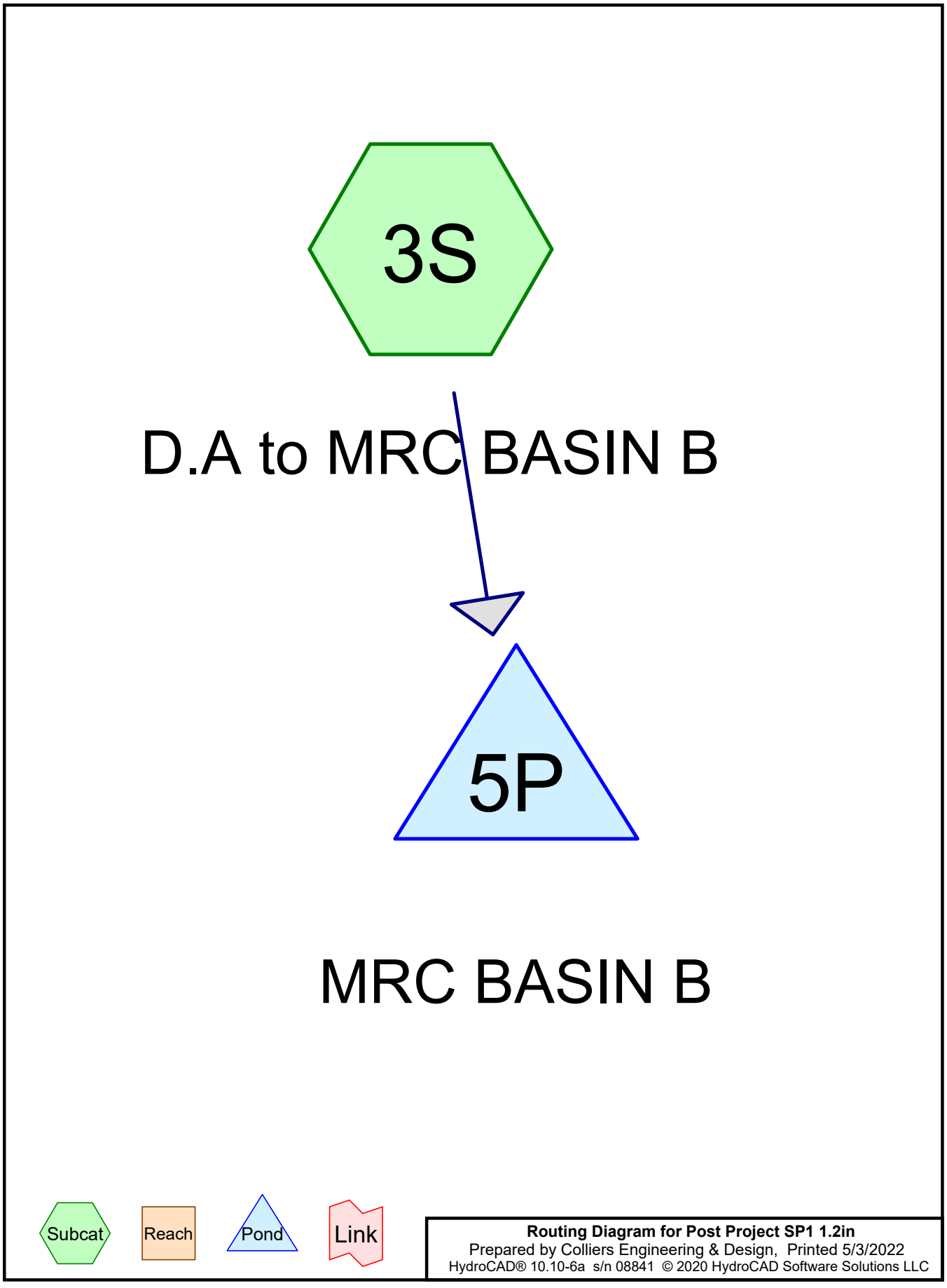
C. Richard Roseberry, P.E.
Licensed P.E. Name

Licensed P.E. Signature

PE046162R
License No.

5/16/2022
Date

Licensed Professional's Seal



Routing Diagram for Post Project SP1 1.2in
Prepared by Colliers Engineering & Design, Printed 5/3/2022
HydroCAD® 10.10-6a s/n 08841 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.34	61	>75% Grass cover, Good, HSG B (3S)
5.92	98	Paved Parking, HSG B (3S)
6.26	**96**	**TOTAL AREA**

Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment3S: D.A to MRC BASIN B Runoff Area=6.26 ac 94.57% Impervious Runoff Depth=0.93"
Flow Length=645' Tc=6.0 min CN=WQ Runoff=29.09 cfs 0.486 af

Pond 5P: MRC BASIN B Peak Elev=49.87' Storage=0.915 af Inflow=29.09 cfs 0.486 af
Outflow=0.01 cfs 0.040 af

Total Runoff Area = 6.26 ac Runoff Volume = 0.486 af Average Runoff Depth = 0.93"
5.43% Pervious = 0.34 ac 94.57% Impervious = 5.92 ac

Summary for Subcatchment 3S: D.A to MRC BASIN B

[47] Hint: Peak is 438% of capacity of segment #3
[47] Hint: Peak is 309% of capacity of segment #4
[47] Hint: Peak is 215% of capacity of segment #5

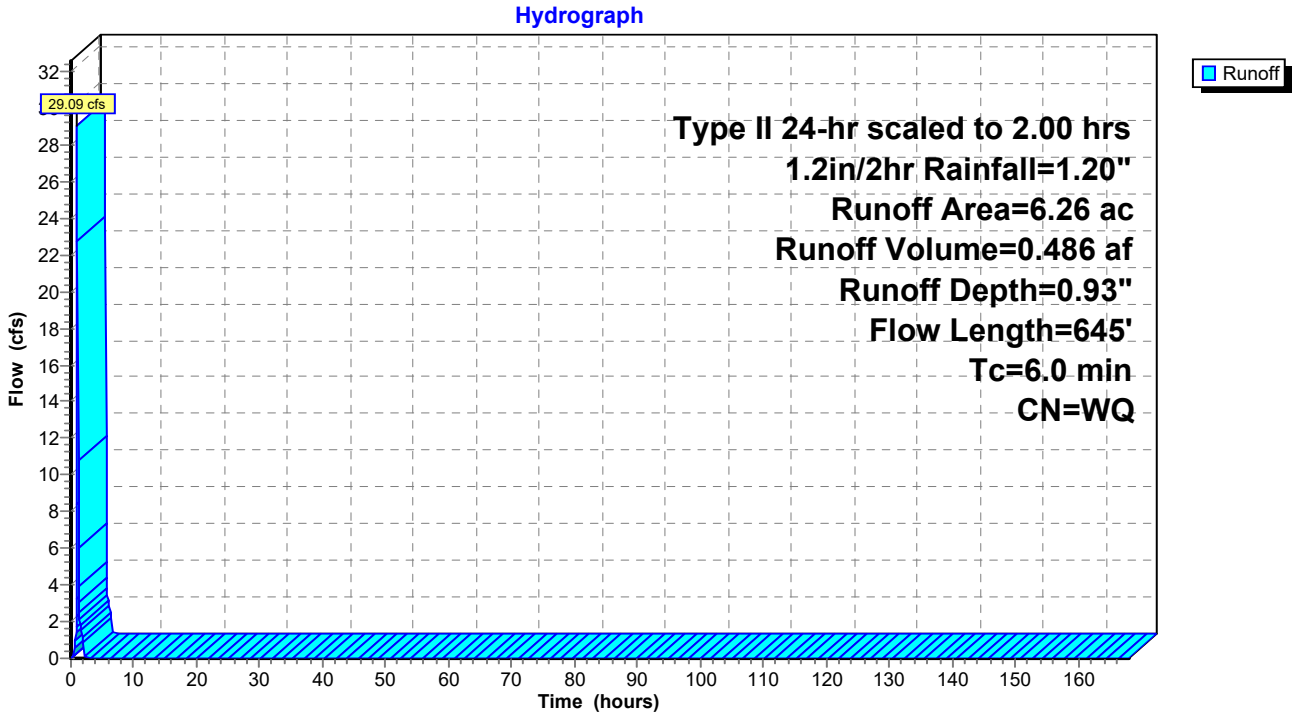
Runoff = 29.09 cfs @ 1.06 hrs, Volume= 0.486 af, Depth= 0.93"
Routed to Pond 5P : MRC BASIN B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr scaled to 2.00 hrs 1.2in/2hr Rainfall=1.20"

	Area (ac)	CN	Description
*	0.34	61	>75% Grass cover, Good, HSG B
*	5.92	98	Paved Parking, HSG B
	6.26		Weighted Average
	0.34	61	5.43% Pervious Area
	5.92	98	94.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.06		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.28"
0.8	95	0.0100	2.03		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.8	170	0.0050	3.69	6.65	**Channel Flow, Pipe Flow (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
0.1	40	0.0100	5.22	9.40	**Channel Flow, Pipe Flow (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
0.9	240	0.0050	4.37	13.53	**Channel Flow, Pipe Flow (Channel Flow)** Area= 3.1 sf Perim= 6.3' r= 0.49' n= 0.015
4.2	645	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 3S: D.A to MRC BASIN B



Summary for Pond 5P: MRC BASIN B

Inflow Area = 6.26 ac, 94.57% Impervious, Inflow Depth = 0.93" for 1.2in/2hr event
Inflow = 29.09 cfs @ 1.06 hrs, Volume= 0.486 af
Outflow = 0.01 cfs @ 2.26 hrs, Volume= 0.040 af, Atten= 100%, Lag= 71.6 min
Primary = 0.01 cfs @ 2.26 hrs, Volume= 0.040 af
Routed to nonexistent node 6R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Starting Elev= 49.30' Surf.Area= 0.98 ac Storage= 0.429 af
Peak Elev= 49.87' @ 2.26 hrs Surf.Area= 0.98 ac Storage= 0.915 af (0.486 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 3,167.1 min (3,237.1 - 70.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	48.80'	0.000 af	**47.23'W x 305.83'L x 2.50'H East Field** 0.829 af Overall - 0.829 af Embedded = 0.000 af x 40.0% Voids
#2A	48.80'	0.582 af	**StormTrap ST2 SingleTrap 2-0** x 76 Inside #1 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 76 Chambers in 4 Rows 33.92' x 292.52' Core + 6.66' Border = 47.23' x 305.83' System
#3C	48.80'	0.000 af	**115.06'W x 228.85'L x 2.50'H West Field** 1.511 af Overall - 1.511 af Embedded = 0.000 af x 40.0% Voids
#4C	48.80'	1.066 af	**StormTrap ST2 SingleTrap 2-0** x 168 Inside #3 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 168 Chambers in 12 Rows 101.75' x 215.54' Core + 6.66' Border = 115.06' x 228.85' System
#5D	48.80'	0.000 af	**38.75'W x 44.10'L x 2.50'H Center Field** 0.098 af Overall - 0.098 af Embedded = 0.000 af x 40.0% Voids
#6D	48.80'	0.068 af	**StormTrap ST2 SingleTrap 2-0** x 6 Inside #5 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 6 Chambers in 3 Rows 25.44' x 30.79' Core + 6.66' Border = 38.75' x 44.10' System
#7	51.30'	0.980 af	**Topsoil/Backfill (Prismatic)** Listed below (Recalc)
		2.696 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
51.30	0.98	0.000	0.000
52.30	0.98	0.980	0.980

Device	Routing	Invert	Outlet Devices
#1	Primary	48.80'	**18.0" Round Culvert** L= 29.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.80' / 48.00' S= 0.0272 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	49.80'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.45'	**3.2' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.01 cfs @ 2.26 hrs HW=49.87' (Free Discharge)
└**1=Culvert** (Passes 0.01 cfs of 4.72 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 0.01 cfs @ 0.88 fps)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 5P: MRC BASIN B - Chamber Wizard East Field

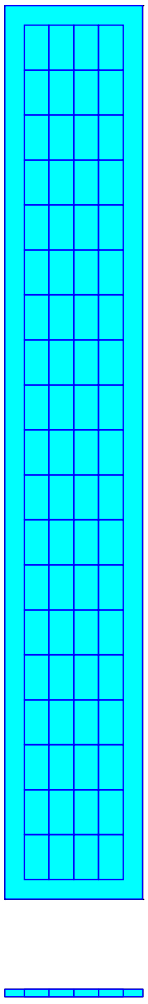
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

19 Chambers/Row x 15.40' Long = 292.52' Row Length +79.9" Border x 2 = 305.83' Base Length
4 Rows x 101.7" Wide + 79.9" Side Border x 2 = 47.23' Base Width
30.0" Chamber Height = 2.50' Field Height

76 Chambers x 231.7 cf + 7,732.9 cf Border = 25,339.9 cf Chamber Storage
76 Chambers x 326.4 cf + 11,307.3 cf Border = 36,110.6 cf Displacement

Chamber Storage = 25,339.9 cf = 0.582 af
Overall Storage Efficiency = 70.2%
Overall System Size = 305.83' x 47.23' x 2.50'

76 Chambers (plus border)
1,337.4 cy Field



Pond 5P: MRC BASIN B - Chamber Wizard West Field

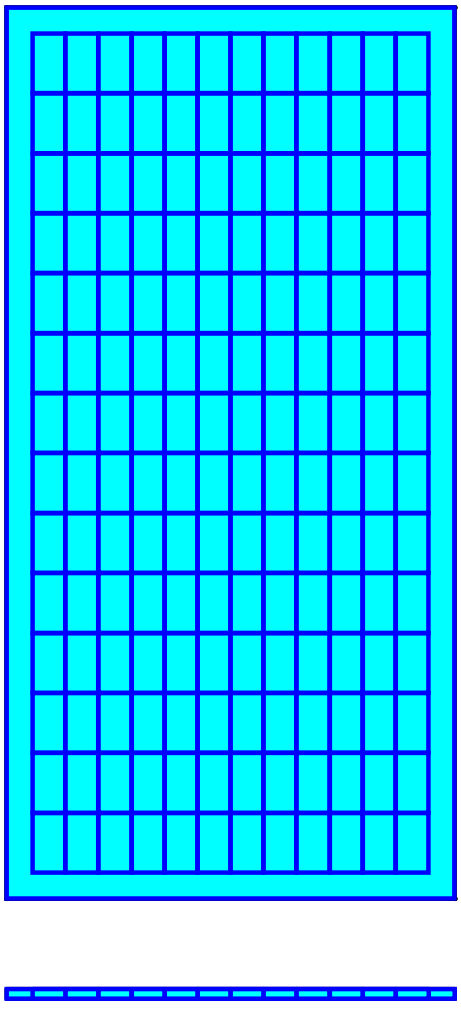
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

14 Chambers/Row x 15.40' Long = 215.54' Row Length +79.9" Border x 2 = 228.85' Base Length
12 Rows x 101.7" Wide + 79.9" Side Border x 2 = 115.06' Base Width
30.0" Chamber Height = 2.50' Field Height

168 Chambers x 231.7 cf + 7,524.7 cf Border = 46,445.4 cf Chamber Storage
168 Chambers x 326.4 cf + 11,002.9 cf Border = 65,831.3 cf Displacement

Chamber Storage = 46,445.4 cf = 1.066 af
Overall Storage Efficiency = 70.6%
Overall System Size = 228.85' x 115.06' x 2.50'

168 Chambers (plus border)
2,438.2 cy Field



Pond 5P: MRC BASIN B - Chamber Wizard Center Field

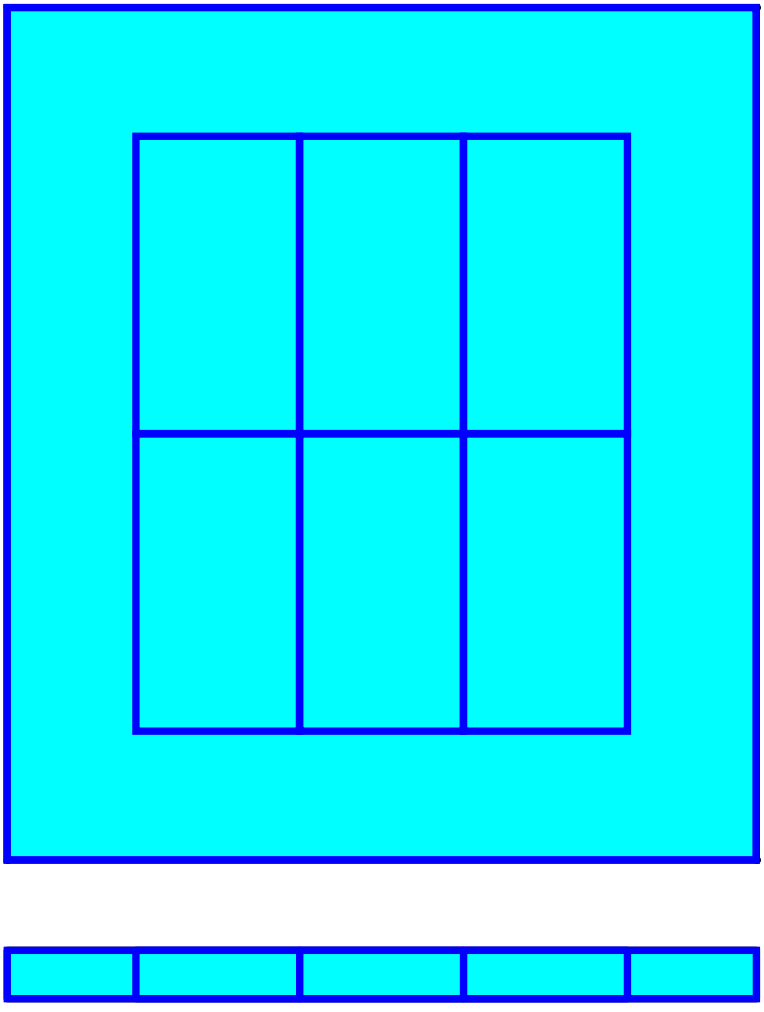
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

2 Chambers/Row x 15.40' Long = 30.79' Row Length +79.9" Border x 2 = 44.10' Base Length
3 Rows x 101.7" Wide + 79.9" Side Border x 2 = 38.75' Base Width
30.0" Chamber Height = 2.50' Field Height

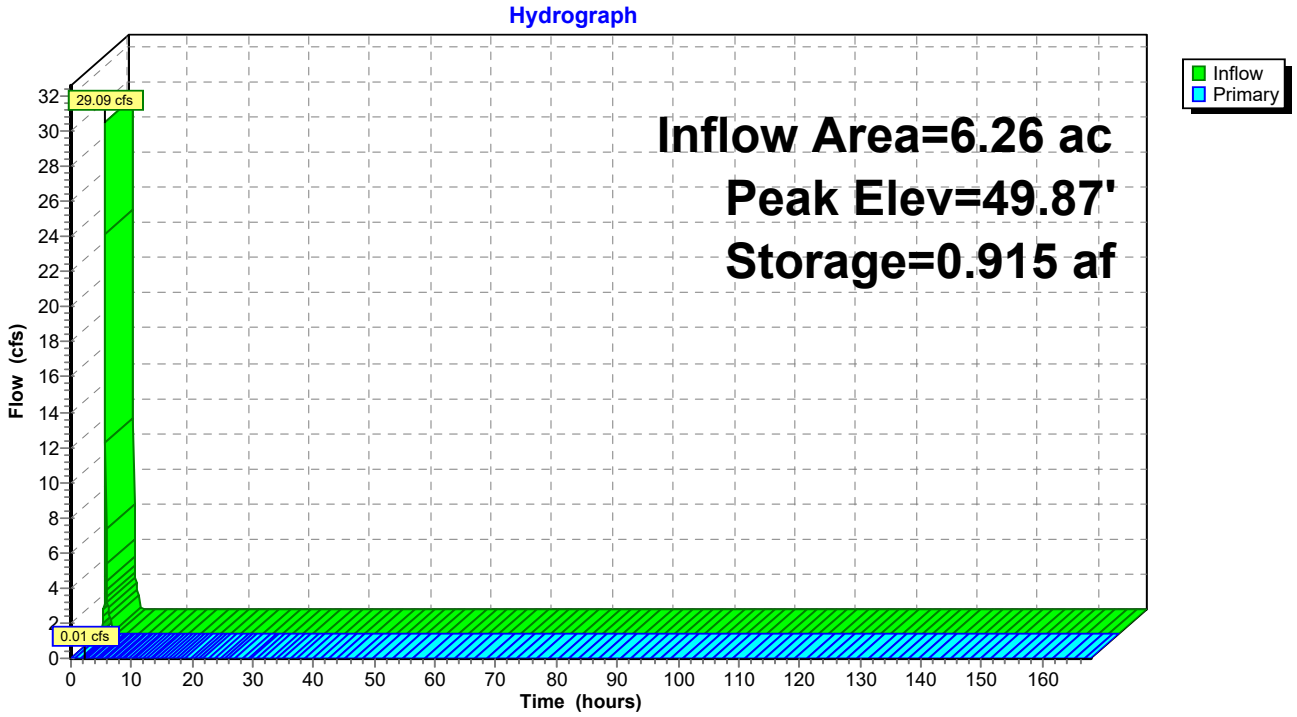
6 Chambers x 231.7 cf + 1,582.8 cf Border = 2,972.8 cf Chamber Storage
6 Chambers x 326.4 cf + 2,314.4 cf Border = 4,272.6 cf Displacement

Chamber Storage = 2,972.8 cf = 0.068 af
Overall Storage Efficiency = 69.6%
Overall System Size = 44.10' x 38.75' x 2.50'

6 Chambers (plus border)
158.2 cy Field



Pond 5P: MRC BASIN B



Stage-Discharge for Pond 5P: MRC BASIN B

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
48.80	0.00	49.84	0.00	50.88	3.10	51.92	13.10
48.82	0.00	49.86	0.01	50.90	3.30	51.94	13.15
48.84	0.00	49.88	0.01	50.92	3.51	51.96	13.21
48.86	0.00	49.90	0.02	50.94	3.72	51.98	13.26
48.88	0.00	49.92	0.03	50.96	3.93	52.00	13.32
48.90	0.00	49.94	0.04	50.98	4.15	52.02	13.37
48.92	0.00	49.96	0.05	51.00	4.37	52.04	13.43
48.94	0.00	49.98	0.05	51.02	4.59	52.06	13.48
48.96	0.00	50.00	0.06	51.04	4.82	52.08	13.53
48.98	0.00	50.02	0.07	51.06	5.05	52.10	13.59
49.00	0.00	50.04	0.08	51.08	5.28	52.12	13.64
49.02	0.00	50.06	0.09	51.10	5.52	52.14	13.69
49.04	0.00	50.08	0.09	51.12	5.76	52.16	13.75
49.06	0.00	50.10	0.10	51.14	6.00	52.18	13.80
49.08	0.00	50.12	0.10	51.16	6.25	52.20	13.85
49.10	0.00	50.14	0.11	51.18	6.49	52.22	13.90
49.12	0.00	50.16	0.11	51.20	6.74	52.24	13.96
49.14	0.00	50.18	0.12	51.22	7.00	52.26	14.01
49.16	0.00	50.20	0.12	51.24	7.26	52.28	14.06
49.18	0.00	50.22	0.13	51.26	7.52	52.30	**14.11**
49.20	0.00	50.24	0.13	51.28	7.78		
49.22	0.00	50.26	0.14	51.30	8.04		
49.24	0.00	50.28	0.14	51.32	8.31		
49.26	0.00	50.30	0.14	51.34	8.58		
49.28	0.00	50.32	0.15	51.36	8.85		
49.30	0.00	50.34	0.15	51.38	9.12		
49.32	0.00	50.36	0.16	51.40	9.40		
49.34	0.00	50.38	0.16	51.42	9.68		
49.36	0.00	50.40	0.16	51.44	9.96		
49.38	0.00	50.42	0.17	51.46	10.24		
49.40	0.00	50.44	0.17	51.48	10.53		
49.42	0.00	50.46	0.18	51.50	10.82		
49.44	0.00	50.48	0.23	51.52	11.11		
49.46	0.00	50.50	0.30	51.54	11.40		
49.48	0.00	50.52	0.38	51.56	11.69		
49.50	0.00	50.54	0.47	51.58	11.99		
49.52	0.00	50.56	0.57	51.60	12.18		
49.54	0.00	50.58	0.68	51.62	12.24		
49.56	0.00	50.60	0.80	51.64	12.30		
49.58	0.00	50.62	0.92	51.66	12.36		
49.60	0.00	50.64	1.06	51.68	12.42		
49.62	0.00	50.66	1.20	51.70	12.48		
49.64	0.00	50.68	1.34	51.72	12.53		
49.66	0.00	50.70	1.50	51.74	12.59		
49.68	0.00	50.72	1.65	51.76	12.65		
49.70	0.00	50.74	1.82	51.78	12.71		
49.72	0.00	50.76	1.99	51.80	12.76		
49.74	0.00	50.78	2.16	51.82	12.82		
49.76	0.00	50.80	2.34	51.84	12.88		
49.78	0.00	50.82	2.52	51.86	12.93		
49.80	0.00	50.84	2.71	51.88	12.99		
49.82	0.00	50.86	2.91	51.90	13.04		

Stage-Area-Storage for Pond 5P: MRC BASIN B

Elevation (feet)	Storage (acre-feet)
48.80	0.000
48.85	0.043
48.90	0.086
48.95	0.129
49.00	0.172
49.05	0.215
49.10	0.257
49.15	0.300
49.20	0.343
49.25	0.386
49.30	0.429
49.35	0.472
49.40	0.515
49.45	0.558
49.50	0.601
49.55	0.644
49.60	0.686
49.65	0.729
49.70	0.772
49.75	0.815
49.80	0.858
49.85	0.901
49.90	0.944
49.95	0.987
50.00	1.030
50.05	1.073
50.10	1.116
50.15	1.158
50.20	1.201
50.25	1.244
50.30	1.287
50.35	1.330
50.40	1.373
50.45	1.416
50.50	1.459
50.55	1.502
50.60	1.545
50.65	1.587
50.70	1.630
50.75	1.673
50.80	1.716
50.85	1.716
50.90	1.716
50.95	1.716
51.00	1.716
51.05	1.716
51.10	1.716
51.15	1.716
51.20	1.716
51.25	1.716
51.30	1.716
51.35	1.765
51.40	1.814
51.45	1.863
51.50	1.912
51.55	1.961
51.60	2.010
51.65	2.059
51.70	2.108
51.75	2.157
51.80	2.206
51.85	2.255
51.90	2.304
51.95	2.353
52.00	2.402
52.05	2.451
52.10	2.500
52.15	2.549
52.20	2.598
52.25	2.647
52.30	**2.696**

Equivalent Contributing Impervious Area to BMP (acres)

Per Managed Release Concept Design Standards Note 2: To obtain the equivalent impervious area being managed by a MRC BMP, determine the total volume of runoff generated during the 1.2-inch/2-hour event from all pervious and impervious areas contributing to the MRC and divide by 0.0833 feet. See Modified Worksheet 4 for runoff volume calculation to the MRC Basin B during the 1.2-inch/2-hour storm event.

$$= \frac{\text{Total Volume of 1.2in/2 hr Storm Inflow (cubic feet)}}{0.0833\ feet * 43560\ square\ feet\ /acre}$$

$$= \frac{21259\ \text{(cubic feet)}}{0.0833\ feet * 43560\ square\ feet\ /acre}$$

= 5.86 acres

Modified Worksheet 4. Runoff Volume for 1.2/2-HR Storm Event to MRC Basin B

PROJECT: **401-433 WASHINGTON STREET APARTMENTS**
Drainage Area:
2-hr Rainfall: **1.20** **in**

Total Site Area: 6.26 **acres**
Protected Site Area: 0.00 **acres**
Managed Area 6.26 **acres**

Cover Type/Condition	Soil Type	Area (sf)	Area (ac)	CN	S	Ia (0.2*S)	Q Runoff[1] (in)	Runoff Volume[2] (ft^3)
Impervious	B	257,686	5.92	98	0.20	0.04	0.99	21,259
Lawn	B	14,926	0.34	61	6.39	1.28	0.00	0
TOTAL:		272,612	6.26					**21,259**

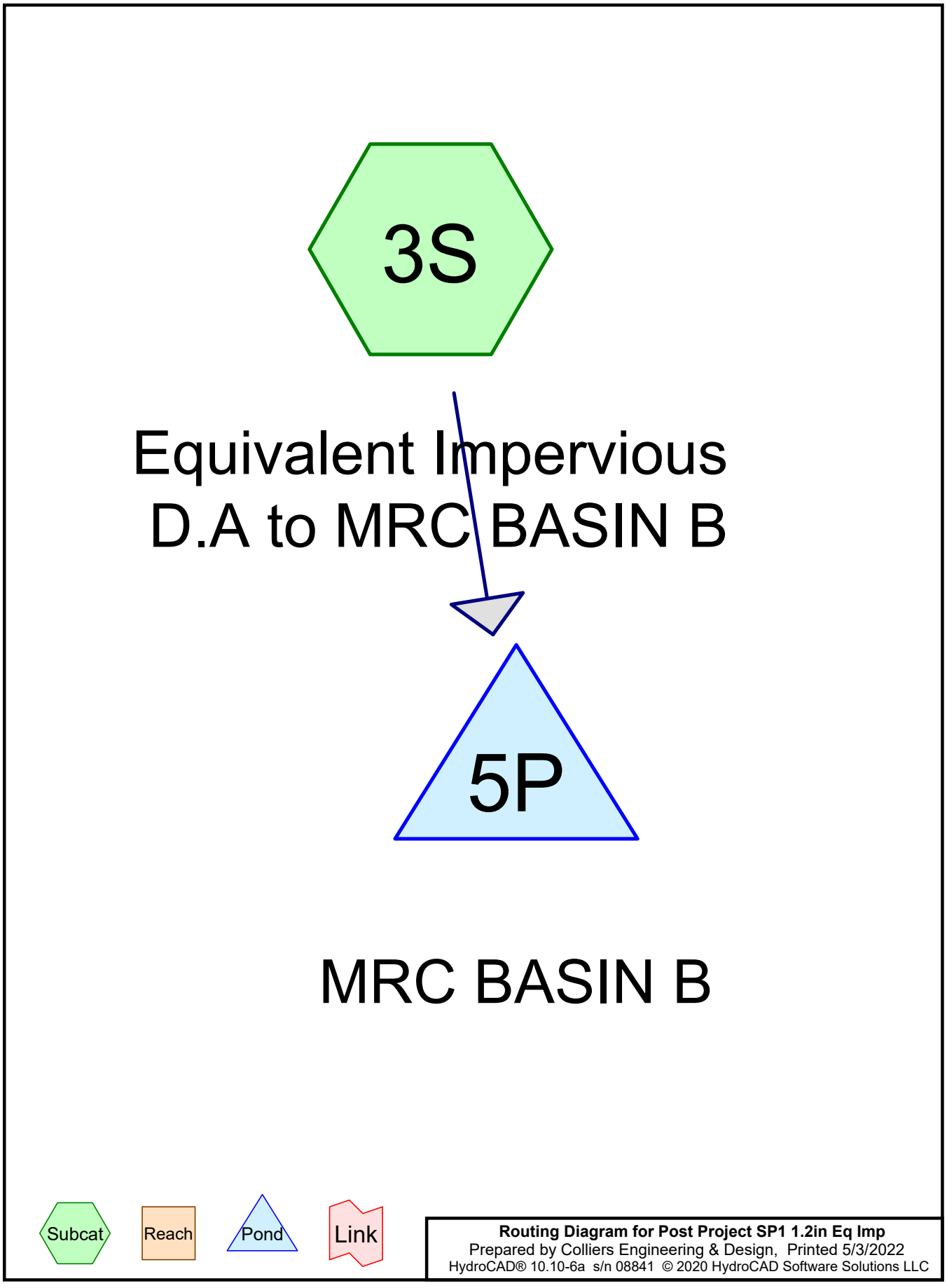
2-Year Volume (ft3):	**21,259**

2-Year Volume Increase = Developed Conditions Runoff Volume - Existing Conditions Runoff Volume

1. Runoff (in) = $Q = (P - 0.2S)^2 / (P + 0.8S)$ where
   P = 2-hr Rainfall (in)
   S = (1000/ CN)-10

2. Runoff Volume (CF) = Q x Area x 1/12
   Q = Runoff (in)
   Area = Land use area (sq. ft)

Note: Runoff Volume must be calculated for EACH land use type/condition and HSGI.
The use of a weighted CN value for volume calculations is not acceptable.


3S
Equivalent Impervious
D.A to MRC BASIN B
5P
MRC BASIN B
Subcat
Reach
Pond
Link
Routing Diagram for Post Project SP1 1.2in Eq Imp
Prepared by Colliers Engineering & Design, Printed 5/3/2022
HydroCAD® 10.10-6a s/n 08841 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.86	98	Paved Parking, HSG B (3S)
5.86	**98**	**TOTAL AREA**

Time span=0.00-168.00 hrs, dt=0.05 hrs, 3361 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment3S: Equivalent Impervious Runoff Area=5.86 ac 100.00% Impervious Runoff Depth=0.99"
Flow Length=645' Tc=6.0 min CN=98 Runoff=28.80 cfs 0.481 af

Pond 5P: MRC BASIN B Peak Elev=49.86' Storage=0.910 af Inflow=28.80 cfs 0.481 af
Outflow=0.01 cfs 0.036 af

Total Runoff Area = 5.86 ac Runoff Volume = 0.481 af Average Runoff Depth = 0.99"
0.00% Pervious = 0.00 ac 100.00% Impervious = 5.86 ac

Summary for Subcatchment 3S: Equivalent Impervious D.A to MRC BASIN B

[47] Hint: Peak is 433% of capacity of segment #3
[47] Hint: Peak is 306% of capacity of segment #4
[47] Hint: Peak is 213% of capacity of segment #5

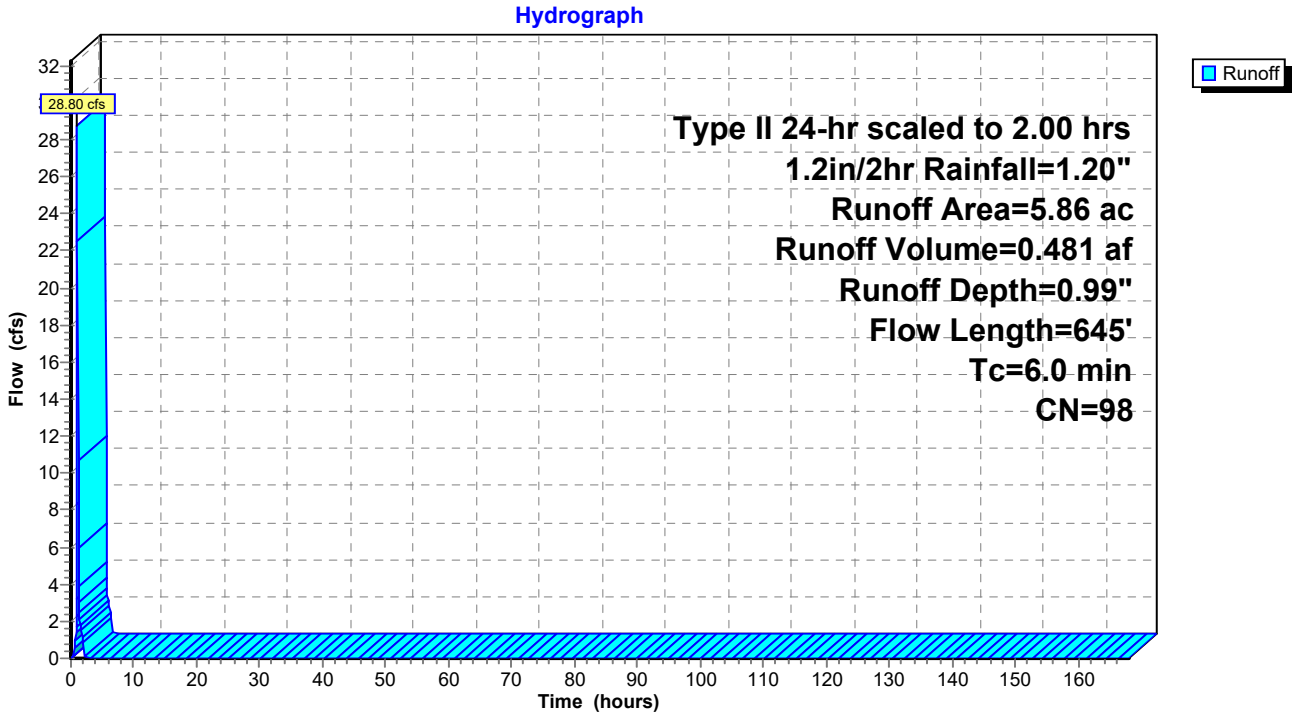
Runoff = 28.80 cfs @ 1.06 hrs, Volume= 0.481 af, Depth= 0.99"
Routed to Pond 5P : MRC BASIN B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Type II 24-hr scaled to 2.00 hrs 1.2in/2hr Rainfall=1.20"

	Area (ac)	CN	Description
*	5.86	98	Paved Parking, HSG B
	5.86	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.06		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.28"
0.8	95	0.0100	2.03		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.8	170	0.0050	3.69	6.65	**Channel Flow, Pipe Flow (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
0.1	40	0.0100	5.22	9.40	**Channel Flow, Pipe Flow (Channel Flow)** Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.015
0.9	240	0.0050	4.37	13.53	**Channel Flow, Pipe Flow (Channel Flow)** Area= 3.1 sf Perim= 6.3' r= 0.49' n= 0.015
4.2	645	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 3S: Equivalent Impervious D.A to MRC BASIN B



Summary for Pond 5P: MRC BASIN B

Inflow Area = 5.86 ac,100.00% Impervious, Inflow Depth = 0.99" for 1.2in/2hr event
Inflow = 28.80 cfs @ 1.06 hrs, Volume= 0.481 af
Outflow = 0.01 cfs @ 2.26 hrs, Volume= 0.036 af, Atten= 100%, Lag= 71.9 min
Primary = 0.01 cfs @ 2.26 hrs, Volume= 0.036 af
Routed to nonexistent node 6R

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs
Starting Elev= 49.30' Surf.Area= 0.98 ac Storage= 0.429 af
Peak Elev= 49.86' @ 2.26 hrs Surf.Area= 0.98 ac Storage= 0.910 af (0.481 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 3,250.8 min (3,320.8 - 70.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	48.80'	0.000 af	**47.23'W x 305.83'L x 2.50'H East Field** 0.829 af Overall - 0.829 af Embedded = 0.000 af x 40.0% Voids
#2A	48.80'	0.582 af	**StormTrap ST2 SingleTrap 2-0** x 76 Inside #1 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 76 Chambers in 4 Rows 33.92' x 292.52' Core + 6.66' Border = 47.23' x 305.83' System
#3C	48.80'	0.000 af	**115.06'W x 228.85'L x 2.50'H West Field** 1.511 af Overall - 1.511 af Embedded = 0.000 af x 40.0% Voids
#4C	48.80'	1.066 af	**StormTrap ST2 SingleTrap 2-0** x 168 Inside #3 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 168 Chambers in 12 Rows 101.75' x 215.54' Core + 6.66' Border = 115.06' x 228.85' System
#5D	48.80'	0.000 af	**38.75'W x 44.10'L x 2.50'H Center Field** 0.098 af Overall - 0.098 af Embedded = 0.000 af x 40.0% Voids
#6D	48.80'	0.068 af	**StormTrap ST2 SingleTrap 2-0** x 6 Inside #5 Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf 6 Chambers in 3 Rows 25.44' x 30.79' Core + 6.66' Border = 38.75' x 44.10' System
#7	51.30'	0.980 af	**Topsoil/Backfill (Prismatic)** Listed below (Recalc)
		2.696 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
51.30	0.98	0.000	0.000
52.30	0.98	0.980	0.980

Device	Routing	Invert	Outlet Devices
#1	Primary	48.80'	**18.0" Round Culvert** L= 29.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 48.80' / 48.00' S= 0.0272 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	49.80'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.45'	**3.2' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.01 cfs @ 2.26 hrs HW=49.86' (Free Discharge)
└**1=Culvert** (Passes 0.01 cfs of 4.68 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 0.01 cfs @ 0.84 fps)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 5P: MRC BASIN B - Chamber Wizard East Field

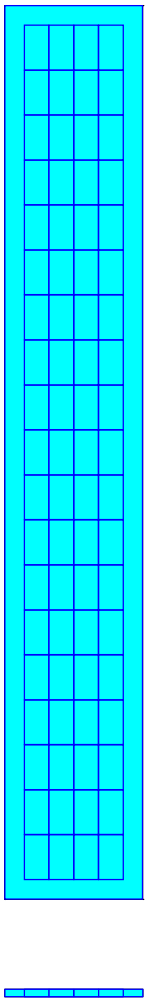
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

19 Chambers/Row x 15.40' Long = 292.52' Row Length +79.9" Border x 2 = 305.83' Base Length
4 Rows x 101.7" Wide + 79.9" Side Border x 2 = 47.23' Base Width
30.0" Chamber Height = 2.50' Field Height

76 Chambers x 231.7 cf + 7,732.9 cf Border = 25,339.9 cf Chamber Storage
76 Chambers x 326.4 cf + 11,307.3 cf Border = 36,110.6 cf Displacement

Chamber Storage = 25,339.9 cf = 0.582 af
Overall Storage Efficiency = 70.2%
Overall System Size = 305.83' x 47.23' x 2.50'

76 Chambers (plus border)
1,337.4 cy Field



Pond 5P: MRC BASIN B - Chamber Wizard West Field

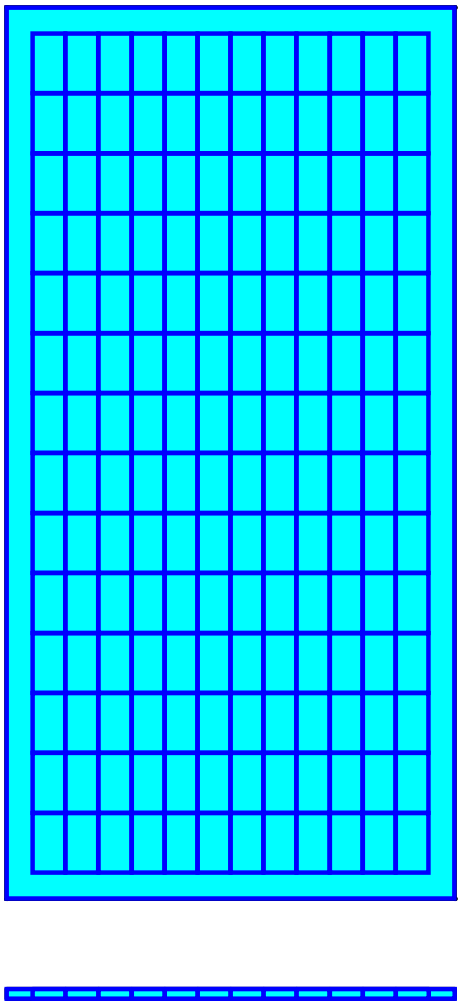
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

14 Chambers/Row x 15.40' Long = 215.54' Row Length +79.9" Border x 2 = 228.85' Base Length
12 Rows x 101.7" Wide + 79.9" Side Border x 2 = 115.06' Base Width
30.0" Chamber Height = 2.50' Field Height

168 Chambers x 231.7 cf + 7,524.7 cf Border = 46,445.4 cf Chamber Storage
168 Chambers x 326.4 cf + 11,002.9 cf Border = 65,831.3 cf Displacement

Chamber Storage = 46,445.4 cf = 1.066 af
Overall Storage Efficiency = 70.6%
Overall System Size = 228.85' x 115.06' x 2.50'

168 Chambers (plus border)
2,438.2 cy Field



Pond 5P: MRC BASIN B - Chamber Wizard Center Field

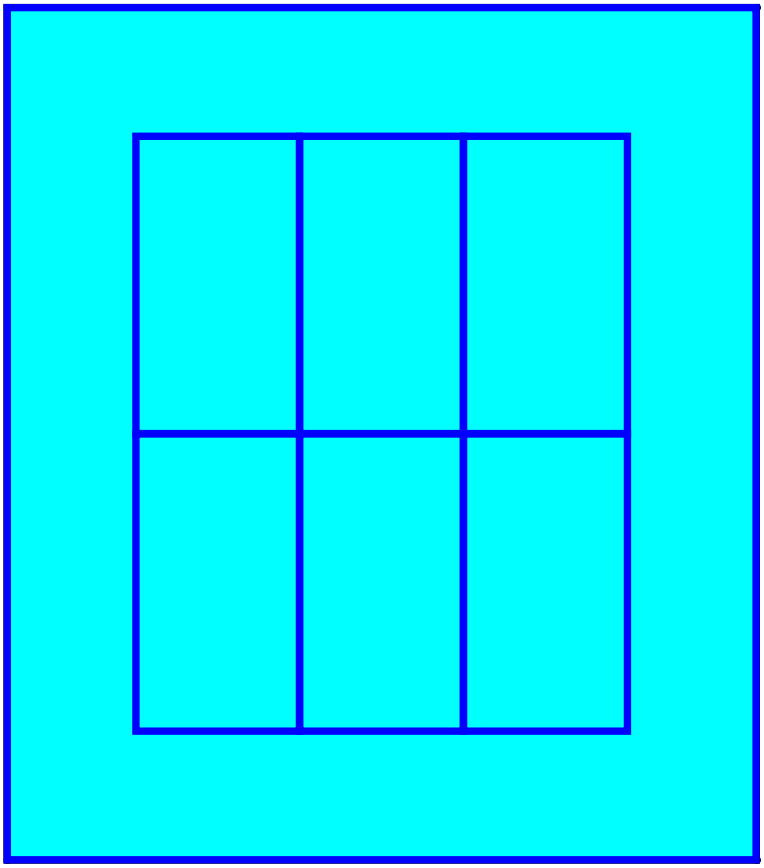
Chamber Model = StormTrap ST2 SingleTrap 2-0 (StormTrap ST2 SingleTrap® Type II+IV)
Inside= 101.7"W x 24.0"H => 15.05 sf x 15.40'L = 231.7 cf
Outside= 101.7"W x 30.0"H => 21.20 sf x 15.40'L = 326.4 cf

2 Chambers/Row x 15.40' Long = 30.79' Row Length +79.9" Border x 2 = 44.10' Base Length
3 Rows x 101.7" Wide + 79.9" Side Border x 2 = 38.75' Base Width
30.0" Chamber Height = 2.50' Field Height

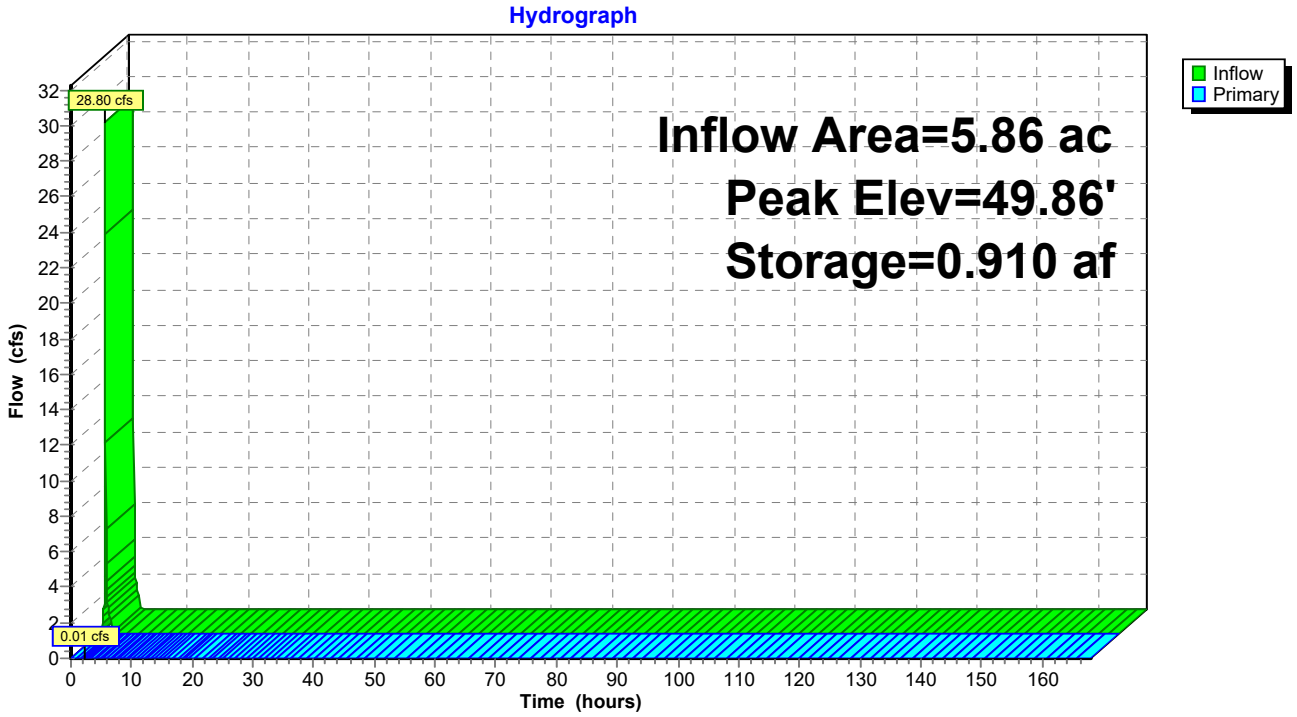
6 Chambers x 231.7 cf + 1,582.8 cf Border = 2,972.8 cf Chamber Storage
6 Chambers x 326.4 cf + 2,314.4 cf Border = 4,272.6 cf Displacement

Chamber Storage = 2,972.8 cf = 0.068 af
Overall Storage Efficiency = 69.6%
Overall System Size = 44.10' x 38.75' x 2.50'

6 Chambers (plus border)
158.2 cy Field



Pond 5P: MRC BASIN B



Stage-Discharge for Pond 5P: MRC BASIN B

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
48.80	0.00	49.84	0.00	50.88	3.10	51.92	13.10
48.82	0.00	49.86	0.01	50.90	3.30	51.94	13.15
48.84	0.00	49.88	0.01	50.92	3.51	51.96	13.21
48.86	0.00	49.90	0.02	50.94	3.72	51.98	13.26
48.88	0.00	49.92	0.03	50.96	3.93	52.00	13.32
48.90	0.00	49.94	0.04	50.98	4.15	52.02	13.37
48.92	0.00	49.96	0.05	51.00	4.37	52.04	13.43
48.94	0.00	49.98	0.05	51.02	4.59	52.06	13.48
48.96	0.00	50.00	0.06	51.04	4.82	52.08	13.53
48.98	0.00	50.02	0.07	51.06	5.05	52.10	13.59
49.00	0.00	50.04	0.08	51.08	5.28	52.12	13.64
49.02	0.00	50.06	0.09	51.10	5.52	52.14	13.69
49.04	0.00	50.08	0.09	51.12	5.76	52.16	13.75
49.06	0.00	50.10	0.10	51.14	6.00	52.18	13.80
49.08	0.00	50.12	0.10	51.16	6.25	52.20	13.85
49.10	0.00	50.14	0.11	51.18	6.49	52.22	13.90
49.12	0.00	50.16	0.11	51.20	6.74	52.24	13.96
49.14	0.00	50.18	0.12	51.22	7.00	52.26	14.01
49.16	0.00	50.20	0.12	51.24	7.26	52.28	14.06
49.18	0.00	50.22	0.13	51.26	7.52	52.30	**14.11**
49.20	0.00	50.24	0.13	51.28	7.78		
49.22	0.00	50.26	0.14	51.30	8.04		
49.24	0.00	50.28	0.14	51.32	8.31		
49.26	0.00	50.30	0.14	51.34	8.58		
49.28	0.00	50.32	0.15	51.36	8.85		
49.30	0.00	50.34	0.15	51.38	9.12		
49.32	0.00	50.36	0.16	51.40	9.40		
49.34	0.00	50.38	0.16	51.42	9.68		
49.36	0.00	50.40	0.16	51.44	9.96		
49.38	0.00	50.42	0.17	51.46	10.24		
49.40	0.00	50.44	0.17	51.48	10.53		
49.42	0.00	50.46	0.18	51.50	10.82		
49.44	0.00	50.48	0.23	51.52	11.11		
49.46	0.00	50.50	0.30	51.54	11.40		
49.48	0.00	50.52	0.38	51.56	11.69		
49.50	0.00	50.54	0.47	51.58	11.99		
49.52	0.00	50.56	0.57	51.60	12.18		
49.54	0.00	50.58	0.68	51.62	12.24		
49.56	0.00	50.60	0.80	51.64	12.30		
49.58	0.00	50.62	0.92	51.66	12.36		
49.60	0.00	50.64	1.06	51.68	12.42		
49.62	0.00	50.66	1.20	51.70	12.48		
49.64	0.00	50.68	1.34	51.72	12.53		
49.66	0.00	50.70	1.50	51.74	12.59		
49.68	0.00	50.72	1.65	51.76	12.65		
49.70	0.00	50.74	1.82	51.78	12.71		
49.72	0.00	50.76	1.99	51.80	12.76		
49.74	0.00	50.78	2.16	51.82	12.82		
49.76	0.00	50.80	2.34	51.84	12.88		
49.78	0.00	50.82	2.52	51.86	12.93		
49.80	0.00	50.84	2.71	51.88	12.99		
49.82	0.00	50.86	2.91	51.90	13.04		

Stage-Area-Storage for Pond 5P: MRC BASIN B

Elevation (feet)	Storage (acre-feet)
48.80	0.000
48.85	0.043
48.90	0.086
48.95	0.129
49.00	0.172
49.05	0.215
49.10	0.257
49.15	0.300
49.20	0.343
49.25	0.386
49.30	0.429
49.35	0.472
49.40	0.515
49.45	0.558
49.50	0.601
49.55	0.644
49.60	0.686
49.65	0.729
49.70	0.772
49.75	0.815
49.80	0.858
49.85	0.901
49.90	0.944
49.95	0.987
50.00	1.030
50.05	1.073
50.10	1.116
50.15	1.158
50.20	1.201
50.25	1.244
50.30	1.287
50.35	1.330
50.40	1.373
50.45	1.416
50.50	1.459
50.55	1.502
50.60	1.545
50.65	1.587
50.70	1.630
50.75	1.673
50.80	1.716
50.85	1.716
50.90	1.716
50.95	1.716
51.00	1.716
51.05	1.716
51.10	1.716
51.15	1.716
51.20	1.716
51.25	1.716
51.30	1.716
51.35	1.765
51.40	1.814
51.45	1.863
51.50	1.912
51.55	1.961
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51.70	2.108
51.75	2.157
51.80	2.206
51.85	2.255
51.90	2.304
51.95	2.353
52.00	2.402
52.05	2.451
52.10	2.500
52.15	2.549
52.20	2.598
52.25	2.647
52.30	**2.696**

MRC BMP DRAWDOWN CALCULATIONS

Hydrograph for Pond 5P: MRC BASIN B

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.429	49.30	0.00
0.50	0.00	0.429	49.30	0.00
1.00	0.00	0.429	49.30	0.00
1.50	0.00	0.429	49.30	0.00
2.00	0.00	0.429	49.30	0.00
2.50	0.01	0.429	49.30	0.00
3.00	0.03	0.430	49.30	0.00
3.50	0.05	0.432	49.30	0.00
4.00	0.08	0.434	49.31	0.00
4.50	0.10	0.438	49.31	0.00
5.00	0.13	0.443	49.32	0.00
5.50	0.16	0.449	49.32	0.00
6.00	0.19	0.456	49.33	0.00
6.50	0.21	0.464	49.34	0.00
7.00	0.24	0.473	49.35	0.00
7.50	0.27	0.484	49.36	0.00
8.00	0.30	0.496	49.38	0.00
8.50	0.38	0.510	49.39	0.00
9.00	0.47	0.527	49.41	0.00
9.50	0.51	0.548	49.44	0.00
10.00	0.63	0.571	49.47	0.00
10.50	0.85	0.601	49.50	0.00
11.00	1.20	0.643	49.55	0.00
11.50	**2.04**	0.708	49.63	0.00
12.00	**25.38**	1.192	50.19	0.12
12.50	2.19	1.436	50.47	0.21
13.00	1.33	1.489	50.54	0.45
13.50	1.01	1.515	50.57	0.60
14.00	0.79	1.526	50.58	0.67
14.50	0.69	**1.528**	**50.58**	**0.68**
15.00	0.62	**1.527**	**50.58**	**0.68**
15.50	0.55	1.524	50.58	0.65
16.00	0.48	1.519	50.57	0.62
16.50	0.45	1.513	50.56	0.58
17.00	0.42	1.508	50.56	0.55
17.50	0.40	1.502	50.55	0.52
18.00	0.37	1.497	50.54	0.49
18.50	0.35	1.493	50.54	0.46
19.00	0.32	1.488	50.53	0.44
19.50	0.30	1.483	50.53	0.41
20.00	0.27	1.478	50.52	0.39
20.50	0.26	1.474	50.52	0.36
21.00	0.26	1.470	50.51	0.34
21.50	0.25	1.466	50.51	0.33
22.00	0.25	1.463	50.51	0.32
22.50	0.24	1.460	50.50	0.30
23.00	0.24	1.458	50.50	0.29
23.50	0.23	1.456	50.50	0.28
24.00	0.23	1.454	50.49	0.27
24.50	0.00	1.445	50.48	0.24
25.00	0.00	1.435	50.47	0.21
25.50	0.00	1.427	50.46	0.19

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
26.00	0.00	1.420	50.45	0.18
26.50	0.00	1.413	50.45	0.17
27.00	0.00	1.406	50.44	0.17
27.50	0.00	1.399	50.43	0.17
28.00	0.00	1.392	50.42	0.17
28.50	0.00	1.385	50.41	0.17
29.00	0.00	1.378	50.41	0.16
29.50	0.00	1.371	50.40	0.16
30.00	0.00	1.365	50.39	0.16
30.50	0.00	1.358	50.38	0.16
31.00	0.00	1.351	50.37	0.16
31.50	0.00	1.345	50.37	0.16
32.00	0.00	1.338	50.36	0.16
32.50	0.00	1.332	50.35	0.15
33.00	0.00	1.326	50.34	0.15
33.50	0.00	1.319	50.34	0.15
34.00	0.00	1.313	50.33	0.15
34.50	0.00	1.307	50.32	0.15
35.00	0.00	1.301	50.32	0.15
35.50	0.00	1.295	50.31	0.15
36.00	0.00	1.289	50.30	0.15
36.50	0.00	1.283	50.29	0.14
37.00	0.00	1.277	50.29	0.14
37.50	0.00	1.271	50.28	0.14
38.00	0.00	1.265	50.27	0.14
38.50	0.00	1.259	50.27	0.14
39.00	0.00	1.254	50.26	0.14
39.50	0.00	1.248	50.25	0.14
40.00	0.00	1.242	50.25	0.13
40.50	0.00	1.237	50.24	0.13
41.00	0.00	1.231	50.24	0.13
41.50	0.00	1.226	50.23	0.13
42.00	0.00	1.221	50.22	0.13
42.50	0.00	1.215	50.22	0.13
43.00	0.00	1.210	50.21	0.13
43.50	0.00	1.205	50.20	0.12
44.00	0.00	1.200	50.20	0.12
44.50	0.00	1.195	50.19	0.12
45.00	0.00	1.190	50.19	0.12
45.50	0.00	1.185	50.18	0.12
46.00	0.00	1.180	50.17	0.12
46.50	0.00	1.175	50.17	0.12
47.00	0.00	1.170	50.16	0.12
47.50	0.00	1.165	50.16	0.11
48.00	0.00	1.161	50.15	0.11
48.50	0.00	1.156	50.15	0.11
49.00	0.00	1.152	50.14	0.11
49.50	0.00	1.147	50.14	0.11
50.00	0.00	1.143	50.13	0.11
50.50	0.00	1.138	50.13	0.11
51.00	0.00	1.134	50.12	0.10
51.50	0.00	1.130	50.12	0.10

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
52.00	0.00	1.125	50.11	0.10
52.50	0.00	1.121	50.11	0.10
53.00	0.00	1.117	50.10	0.10
53.50	0.00	1.113	50.10	0.10
54.00	0.00	1.109	50.09	0.10
54.50	0.00	1.105	50.09	0.10
55.00	0.00	1.101	50.08	0.09
55.50	0.00	1.097	50.08	0.09
56.00	0.00	1.093	50.07	0.09
56.50	0.00	1.090	50.07	0.09
57.00	0.00	1.086	50.07	0.09
57.50	0.00	1.082	50.06	0.09
58.00	0.00	1.079	50.06	0.09
58.50	0.00	1.075	50.05	0.08
59.00	0.00	1.072	50.05	0.08
59.50	0.00	1.068	50.04	0.08
60.00	0.00	1.065	50.04	0.08
60.50	0.00	1.062	50.04	0.08
61.00	0.00	1.058	50.03	0.08
61.50	0.00	1.055	50.03	0.08
62.00	0.00	1.052	50.03	0.08
62.50	0.00	1.049	50.02	0.07
63.00	0.00	1.046	50.02	0.07
63.50	0.00	1.043	50.02	0.07
64.00	0.00	1.040	50.01	0.07
64.50	0.00	1.037	50.01	0.07
65.00	0.00	1.034	50.01	0.07
65.50	0.00	1.032	50.00	0.07
66.00	0.00	1.029	50.00	0.06
66.50	0.00	1.026	50.00	0.06
67.00	0.00	1.024	49.99	0.06
67.50	0.00	1.021	49.99	0.06
68.00	0.00	1.019	49.99	0.06
68.50	0.00	1.017	49.98	0.06
69.00	0.00	1.014	49.98	0.06
69.50	0.00	1.012	49.98	0.05
70.00	0.00	1.010	49.98	0.05
70.50	0.00	1.008	49.97	0.05
71.00	0.00	1.005	49.97	0.05
71.50	0.00	1.003	49.97	0.05
72.00	0.00	1.001	49.97	0.05
72.50	0.00	0.999	49.96	0.05
73.00	0.00	0.997	49.96	0.05
73.50	0.00	0.996	49.96	0.05
74.00	0.00	0.994	49.96	0.04
74.50	0.00	0.992	49.96	0.04
75.00	0.00	0.990	49.95	0.04
75.50	0.00	0.988	49.95	0.04
76.00	0.00	0.987	49.95	0.04
76.50	0.00	0.985	49.95	0.04
77.00	0.00	0.983	49.95	0.04
77.50	0.00	0.982	49.94	0.04

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
78.00	0.00	0.980	49.94	0.04
78.50	0.00	0.979	49.94	0.04
79.00	0.00	0.977	49.94	0.04
79.50	0.00	0.976	49.94	0.03
80.00	0.00	0.974	49.94	0.03
80.50	0.00	0.973	49.93	0.03
81.00	0.00	0.972	49.93	0.03
81.50	0.00	0.970	49.93	0.03
82.00	0.00	0.969	49.93	0.03
82.50	0.00	0.968	49.93	0.03
83.00	0.00	0.966	49.93	0.03
83.50	0.00	0.965	49.92	0.03
84.00	0.00	0.964	49.92	0.03
84.50	0.00	0.963	49.92	0.03
85.00	0.00	0.962	49.92	0.03
85.50	0.00	0.961	49.92	0.03
86.00	0.00	0.959	49.92	0.03
86.50	0.00	0.958	49.92	0.03
87.00	0.00	0.957	49.92	0.03
87.50	0.00	0.956	49.91	0.03
88.00	0.00	0.955	49.91	0.02
88.50	0.00	0.954	49.91	0.02
89.00	0.00	0.953	49.91	0.02
89.50	0.00	0.952	49.91	0.02
90.00	0.00	0.951	49.91	0.02
90.50	0.00	0.950	49.91	0.02
91.00	0.00	0.949	49.91	0.02
91.50	0.00	0.948	49.91	0.02
92.00	0.00	0.948	49.90	0.02
92.50	0.00	0.947	49.90	0.02
93.00	0.00	0.946	49.90	0.02
93.50	0.00	0.945	49.90	0.02
94.00	0.00	0.944	49.90	0.02
94.50	0.00	0.943	49.90	0.02
95.00	0.00	0.943	49.90	0.02
95.50	0.00	0.942	49.90	0.02
96.00	0.00	0.941	49.90	0.02
96.50	0.00	0.940	49.90	0.02
97.00	0.00	0.940	49.89	0.02
97.50	0.00	0.939	49.89	0.02
98.00	0.00	0.938	49.89	0.02
98.50	0.00	0.937	49.89	0.02
99.00	0.00	0.937	49.89	0.02
99.50	0.00	0.936	49.89	0.02
100.00	0.00	0.935	49.89	0.02
100.50	0.00	0.935	49.89	0.02
101.00	0.00	0.934	49.89	0.02
101.50	0.00	0.933	49.89	0.02
102.00	0.00	0.933	49.89	0.02
102.50	0.00	0.932	49.89	0.02
103.00	0.00	0.931	49.89	0.01
103.50	0.00	0.931	49.88	0.01

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
104.00	0.00	0.930	49.88	0.01
104.50	0.00	0.930	49.88	0.01
105.00	0.00	0.929	49.88	0.01
105.50	0.00	0.929	49.88	0.01
106.00	0.00	0.928	49.88	0.01
106.50	0.00	0.927	49.88	0.01
107.00	0.00	0.927	49.88	0.01
107.50	0.00	0.926	49.88	0.01
108.00	0.00	0.926	49.88	0.01
108.50	0.00	0.925	49.88	0.01
109.00	0.00	0.925	49.88	0.01
109.50	0.00	0.924	49.88	0.01
110.00	0.00	0.924	49.88	0.01
110.50	0.00	0.923	49.88	0.01
111.00	0.00	0.923	49.88	0.01
111.50	0.00	0.922	49.87	0.01
112.00	0.00	0.922	49.87	0.01
112.50	0.00	0.921	49.87	0.01
113.00	0.00	0.921	49.87	0.01
113.50	0.00	0.920	49.87	0.01
114.00	0.00	0.920	49.87	0.01
114.50	0.00	0.920	49.87	0.01
115.00	0.00	0.919	49.87	0.01
115.50	0.00	0.919	49.87	0.01
116.00	0.00	0.918	49.87	0.01
116.50	0.00	0.918	49.87	0.01
117.00	0.00	0.917	49.87	0.01
117.50	0.00	0.917	49.87	0.01
118.00	0.00	0.917	49.87	0.01
118.50	0.00	0.916	49.87	0.01
119.00	0.00	0.916	49.87	0.01
119.50	0.00	0.915	49.87	0.01
120.00	0.00	0.915	49.87	0.01
120.50	0.00	0.915	49.87	0.01
121.00	0.00	0.914	49.87	0.01
121.50	0.00	0.914	49.87	0.01
122.00	0.00	0.914	49.86	0.01
122.50	0.00	0.913	49.86	0.01
123.00	0.00	0.913	49.86	0.01
123.50	0.00	0.913	49.86	0.01
124.00	0.00	0.912	49.86	0.01
124.50	0.00	0.912	49.86	0.01
125.00	0.00	0.912	49.86	0.01
125.50	0.00	0.911	49.86	0.01
126.00	0.00	0.911	49.86	0.01
126.50	0.00	0.911	49.86	0.01
127.00	0.00	0.910	49.86	0.01
127.50	0.00	0.910	49.86	0.01
128.00	0.00	0.910	49.86	0.01
128.50	0.00	0.909	49.86	0.01
129.00	0.00	0.909	49.86	0.01
129.50	0.00	0.909	49.86	0.01

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
130.00	0.00	0.908	49.86	0.01
130.50	0.00	0.908	49.86	0.01
131.00	0.00	0.908	49.86	0.01
131.50	0.00	0.907	49.86	0.01
132.00	0.00	0.907	49.86	0.01
132.50	0.00	0.907	49.86	0.01
133.00	0.00	0.907	49.86	0.01
133.50	0.00	0.906	49.86	0.01
134.00	0.00	0.906	49.86	0.01
134.50	0.00	0.906	49.86	0.01
135.00	0.00	0.906	49.86	0.01
135.50	0.00	0.905	49.85	0.01
136.00	0.00	0.905	49.85	0.01
136.50	0.00	0.905	49.85	0.01
137.00	0.00	0.904	49.85	0.01
137.50	0.00	0.904	49.85	0.01
138.00	0.00	0.904	49.85	0.01
138.50	0.00	0.904	49.85	0.01
139.00	0.00	0.903	49.85	0.01
139.50	0.00	0.903	49.85	0.01
140.00	0.00	0.903	49.85	0.01
140.50	0.00	0.903	49.85	0.01
141.00	0.00	0.903	49.85	0.01
141.50	0.00	0.902	49.85	0.01
142.00	0.00	0.902	49.85	0.01
142.50	0.00	0.902	49.85	0.01
143.00	0.00	0.902	49.85	0.01
143.50	0.00	0.901	49.85	0.01
144.00	0.00	0.901	49.85	0.01
144.50	0.00	0.901	49.85	0.01
145.00	0.00	0.901	49.85	0.01
145.50	0.00	0.900	49.85	0.01
146.00	0.00	0.900	49.85	0.01
146.50	0.00	0.900	49.85	0.01
147.00	0.00	0.900	49.85	0.01
147.50	0.00	0.900	49.85	0.00
148.00	0.00	0.899	49.85	0.00
148.50	0.00	0.899	49.85	0.00
149.00	0.00	0.899	49.85	0.00
149.50	0.00	0.899	49.85	0.00
150.00	0.00	0.899	49.85	0.00
150.50	0.00	0.898	49.85	0.00
151.00	0.00	0.898	49.85	0.00
151.50	0.00	0.898	49.85	0.00
152.00	0.00	0.898	49.85	0.00
152.50	0.00	0.898	49.85	0.00
153.00	0.00	0.897	49.85	0.00
153.50	0.00	0.897	49.85	0.00
154.00	0.00	0.897	49.85	0.00
154.50	0.00	0.897	49.85	0.00
155.00	0.00	0.897	49.85	0.00
155.50	0.00	0.897	49.84	0.00

Hydrograph for Pond 5P: MRC BASIN B

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.429	49.30	0.00
0.50	0.00	0.429	49.30	0.00
1.00	0.00	0.429	49.30	0.00
1.50	0.00	0.429	49.30	0.00
2.00	0.03	0.429	49.30	0.00
2.50	0.07	0.432	49.30	0.00
3.00	0.11	0.435	49.31	0.00
3.50	0.15	0.441	49.31	0.00
4.00	0.19	0.448	49.32	0.00
4.50	0.23	0.456	49.33	0.00
5.00	0.27	0.467	49.34	0.00
5.50	0.31	0.479	49.36	0.00
6.00	0.36	0.493	49.37	0.00
6.50	0.40	0.508	49.39	0.00
7.00	0.44	0.525	49.41	0.00
7.50	0.48	0.545	49.43	0.00
8.00	0.52	0.565	49.46	0.00
8.50	0.64	0.589	49.49	0.00
9.00	0.79	0.619	49.52	0.00
9.50	0.84	0.653	49.56	0.00
10.00	1.03	0.690	49.60	0.00
10.50	1.36	0.739	49.66	0.00
11.00	1.90	0.806	49.74	0.00
11.50	**3.16**	0.908	49.86	0.01
12.00	**37.99**	**1.635**	**50.71**	**1.54**
12.50	3.25	**1.716**	**50.99**	**4.27**
13.00	1.98	1.713	50.80	2.30
13.50	1.49	1.692	50.77	2.09
14.00	1.17	1.666	50.74	1.83
14.50	1.03	1.640	50.71	1.59
15.00	0.92	1.619	50.69	1.40
15.50	0.82	1.601	50.67	1.24
16.00	0.71	1.584	50.65	1.10
16.50	0.66	1.570	50.63	0.98
17.00	0.63	1.558	50.62	0.89
17.50	0.59	1.547	50.60	0.82
18.00	0.55	1.539	50.59	0.75
18.50	0.51	1.531	50.58	0.70
19.00	0.48	1.523	50.57	0.65
19.50	0.44	1.516	50.57	0.60
20.00	0.40	1.509	50.56	0.56
20.50	0.39	1.503	50.55	0.52
21.00	0.38	1.498	50.55	0.49
21.50	0.37	1.494	50.54	0.47
22.00	0.36	1.490	50.54	0.45
22.50	0.36	1.487	50.53	0.43
23.00	0.35	1.484	50.53	0.41
23.50	0.34	1.481	50.53	0.40
24.00	0.33	1.479	50.52	0.39
24.50	0.00	1.466	50.51	0.33
25.00	0.00	1.454	50.49	0.28
25.50	0.00	1.443	50.48	0.24

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
26.00	0.00	1.434	50.47	0.21
26.50	0.00	1.426	50.46	0.19
27.00	0.00	1.419	50.45	0.17
27.50	0.00	1.412	50.44	0.17
28.00	0.00	1.405	50.44	0.17
28.50	0.00	1.398	50.43	0.17
29.00	0.00	1.391	50.42	0.17
29.50	0.00	1.384	50.41	0.17
30.00	0.00	1.377	50.40	0.16
30.50	0.00	1.370	50.40	0.16
31.00	0.00	1.364	50.39	0.16
31.50	0.00	1.357	50.38	0.16
32.00	0.00	1.350	50.37	0.16
32.50	0.00	1.344	50.37	0.16
33.00	0.00	1.337	50.36	0.16
33.50	0.00	1.331	50.35	0.15
34.00	0.00	1.325	50.34	0.15
34.50	0.00	1.318	50.34	0.15
35.00	0.00	1.312	50.33	0.15
35.50	0.00	1.306	50.32	0.15
36.00	0.00	1.300	50.31	0.15
36.50	0.00	1.294	50.31	0.15
37.00	0.00	1.288	50.30	0.14
37.50	0.00	1.282	50.29	0.14
38.00	0.00	1.276	50.29	0.14
38.50	0.00	1.270	50.28	0.14
39.00	0.00	1.264	50.27	0.14
39.50	0.00	1.259	50.27	0.14
40.00	0.00	1.253	50.26	0.14
40.50	0.00	1.247	50.25	0.14
41.00	0.00	1.242	50.25	0.13
41.50	0.00	1.236	50.24	0.13
42.00	0.00	1.231	50.23	0.13
42.50	0.00	1.225	50.23	0.13
43.00	0.00	1.220	50.22	0.13
43.50	0.00	1.215	50.22	0.13
44.00	0.00	1.209	50.21	0.13
44.50	0.00	1.204	50.20	0.12
45.00	0.00	1.199	50.20	0.12
45.50	0.00	1.194	50.19	0.12
46.00	0.00	1.189	50.19	0.12
46.50	0.00	1.184	50.18	0.12
47.00	0.00	1.179	50.17	0.12
47.50	0.00	1.174	50.17	0.12
48.00	0.00	1.170	50.16	0.12
48.50	0.00	1.165	50.16	0.11
49.00	0.00	1.160	50.15	0.11
49.50	0.00	1.156	50.15	0.11
50.00	0.00	1.151	50.14	0.11
50.50	0.00	1.146	50.14	0.11
51.00	0.00	1.142	50.13	0.11
51.50	0.00	1.138	50.13	0.11

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
52.00	0.00	1.133	50.12	0.10
52.50	0.00	1.129	50.12	0.10
53.00	0.00	1.125	50.11	0.10
53.50	0.00	1.121	50.11	0.10
54.00	0.00	1.116	50.10	0.10
54.50	0.00	1.112	50.10	0.10
55.00	0.00	1.108	50.09	0.10
55.50	0.00	1.104	50.09	0.10
56.00	0.00	1.100	50.08	0.09
56.50	0.00	1.097	50.08	0.09
57.00	0.00	1.093	50.07	0.09
57.50	0.00	1.089	50.07	0.09
58.00	0.00	1.085	50.06	0.09
58.50	0.00	1.082	50.06	0.09
59.00	0.00	1.078	50.06	0.09
59.50	0.00	1.075	50.05	0.08
60.00	0.00	1.071	50.05	0.08
60.50	0.00	1.068	50.04	0.08
61.00	0.00	1.064	50.04	0.08
61.50	0.00	1.061	50.04	0.08
62.00	0.00	1.058	50.03	0.08
62.50	0.00	1.055	50.03	0.08
63.00	0.00	1.052	50.03	0.08
63.50	0.00	1.048	50.02	0.07
64.00	0.00	1.045	50.02	0.07
64.50	0.00	1.042	50.01	0.07
65.00	0.00	1.040	50.01	0.07
65.50	0.00	1.037	50.01	0.07
66.00	0.00	1.034	50.00	0.07
66.50	0.00	1.031	50.00	0.06
67.00	0.00	1.029	50.00	0.06
67.50	0.00	1.026	50.00	0.06
68.00	0.00	1.023	49.99	0.06
68.50	0.00	1.021	49.99	0.06
69.00	0.00	1.019	49.99	0.06
69.50	0.00	1.016	49.98	0.06
70.00	0.00	1.014	49.98	0.06
70.50	0.00	1.012	49.98	0.05
71.00	0.00	1.009	49.98	0.05
71.50	0.00	1.007	49.97	0.05
72.00	0.00	1.005	49.97	0.05
72.50	0.00	1.003	49.97	0.05
73.00	0.00	1.001	49.97	0.05
73.50	0.00	0.999	49.96	0.05
74.00	0.00	0.997	49.96	0.05
74.50	0.00	0.995	49.96	0.05
75.00	0.00	0.993	49.96	0.04
75.50	0.00	0.992	49.96	0.04
76.00	0.00	0.990	49.95	0.04
76.50	0.00	0.988	49.95	0.04
77.00	0.00	0.986	49.95	0.04
77.50	0.00	0.985	49.95	0.04

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
78.00	0.00	0.983	49.95	0.04
78.50	0.00	0.982	49.94	0.04
79.00	0.00	0.980	49.94	0.04
79.50	0.00	0.979	49.94	0.04
80.00	0.00	0.977	49.94	0.04
80.50	0.00	0.976	49.94	0.03
81.00	0.00	0.974	49.94	0.03
81.50	0.00	0.973	49.93	0.03
82.00	0.00	0.971	49.93	0.03
82.50	0.00	0.970	49.93	0.03
83.00	0.00	0.969	49.93	0.03
83.50	0.00	0.968	49.93	0.03
84.00	0.00	0.966	49.93	0.03
84.50	0.00	0.965	49.92	0.03
85.00	0.00	0.964	49.92	0.03
85.50	0.00	0.963	49.92	0.03
86.00	0.00	0.962	49.92	0.03
86.50	0.00	0.960	49.92	0.03
87.00	0.00	0.959	49.92	0.03
87.50	0.00	0.958	49.92	0.03
88.00	0.00	0.957	49.92	0.03
88.50	0.00	0.956	49.91	0.03
89.00	0.00	0.955	49.91	0.02
89.50	0.00	0.954	49.91	0.02
90.00	0.00	0.953	49.91	0.02
90.50	0.00	0.952	49.91	0.02
91.00	0.00	0.951	49.91	0.02
91.50	0.00	0.950	49.91	0.02
92.00	0.00	0.949	49.91	0.02
92.50	0.00	0.948	49.91	0.02
93.00	0.00	0.947	49.90	0.02
93.50	0.00	0.947	49.90	0.02
94.00	0.00	0.946	49.90	0.02
94.50	0.00	0.945	49.90	0.02
95.00	0.00	0.944	49.90	0.02
95.50	0.00	0.943	49.90	0.02
96.00	0.00	0.942	49.90	0.02
96.50	0.00	0.942	49.90	0.02
97.00	0.00	0.941	49.90	0.02
97.50	0.00	0.940	49.90	0.02
98.00	0.00	0.939	49.89	0.02
98.50	0.00	0.939	49.89	0.02
99.00	0.00	0.938	49.89	0.02
99.50	0.00	0.937	49.89	0.02
100.00	0.00	0.937	49.89	0.02
100.50	0.00	0.936	49.89	0.02
101.00	0.00	0.935	49.89	0.02
101.50	0.00	0.935	49.89	0.02
102.00	0.00	0.934	49.89	0.02
102.50	0.00	0.933	49.89	0.02
103.00	0.00	0.933	49.89	0.02
103.50	0.00	0.932	49.89	0.02

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
104.00	0.00	0.931	49.89	0.01
104.50	0.00	0.931	49.88	0.01
105.00	0.00	0.930	49.88	0.01
105.50	0.00	0.930	49.88	0.01
106.00	0.00	0.929	49.88	0.01
106.50	0.00	0.928	49.88	0.01
107.00	0.00	0.928	49.88	0.01
107.50	0.00	0.927	49.88	0.01
108.00	0.00	0.927	49.88	0.01
108.50	0.00	0.926	49.88	0.01
109.00	0.00	0.926	49.88	0.01
109.50	0.00	0.925	49.88	0.01
110.00	0.00	0.925	49.88	0.01
110.50	0.00	0.924	49.88	0.01
111.00	0.00	0.924	49.88	0.01
111.50	0.00	0.923	49.88	0.01
112.00	0.00	0.923	49.88	0.01
112.50	0.00	0.922	49.87	0.01
113.00	0.00	0.922	49.87	0.01
113.50	0.00	0.921	49.87	0.01
114.00	0.00	0.921	49.87	0.01
114.50	0.00	0.920	49.87	0.01
115.00	0.00	0.920	49.87	0.01
115.50	0.00	0.919	49.87	0.01
116.00	0.00	0.919	49.87	0.01
116.50	0.00	0.919	49.87	0.01
117.00	0.00	0.918	49.87	0.01
117.50	0.00	0.918	49.87	0.01
118.00	0.00	0.917	49.87	0.01
118.50	0.00	0.917	49.87	0.01
119.00	0.00	0.917	49.87	0.01
119.50	0.00	0.916	49.87	0.01
120.00	0.00	0.916	49.87	0.01
120.50	0.00	0.915	49.87	0.01
121.00	0.00	0.915	49.87	0.01
121.50	0.00	0.915	49.87	0.01
122.00	0.00	0.914	49.87	0.01
122.50	0.00	0.914	49.87	0.01
123.00	0.00	0.914	49.86	0.01
123.50	0.00	0.913	49.86	0.01
124.00	0.00	0.913	49.86	0.01
124.50	0.00	0.912	49.86	0.01
125.00	0.00	0.912	49.86	0.01
125.50	0.00	0.912	49.86	0.01
126.00	0.00	0.911	49.86	0.01
126.50	0.00	0.911	49.86	0.01
127.00	0.00	0.911	49.86	0.01
127.50	0.00	0.910	49.86	0.01
128.00	0.00	0.910	49.86	0.01
128.50	0.00	0.910	49.86	0.01
129.00	0.00	0.910	49.86	0.01
129.50	0.00	0.909	49.86	0.01

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
130.00	0.00	0.909	49.86	0.01
130.50	0.00	0.909	49.86	0.01
131.00	0.00	0.908	49.86	0.01
131.50	0.00	0.908	49.86	0.01
132.00	0.00	0.908	49.86	0.01
132.50	0.00	0.907	49.86	0.01
133.00	0.00	0.907	49.86	0.01
133.50	0.00	0.907	49.86	0.01
134.00	0.00	0.907	49.86	0.01
134.50	0.00	0.906	49.86	0.01
135.00	0.00	0.906	49.86	0.01
135.50	0.00	0.906	49.86	0.01
136.00	0.00	0.905	49.86	0.01
136.50	0.00	0.905	49.85	0.01
137.00	0.00	0.905	49.85	0.01
137.50	0.00	0.905	49.85	0.01
138.00	0.00	0.904	49.85	0.01
138.50	0.00	0.904	49.85	0.01
139.00	0.00	0.904	49.85	0.01
139.50	0.00	0.904	49.85	0.01
140.00	0.00	0.903	49.85	0.01
140.50	0.00	0.903	49.85	0.01
141.00	0.00	0.903	49.85	0.01
141.50	0.00	0.903	49.85	0.01
142.00	0.00	0.902	49.85	0.01
142.50	0.00	0.902	49.85	0.01
143.00	0.00	0.902	49.85	0.01
143.50	0.00	0.902	49.85	0.01
144.00	0.00	0.902	49.85	0.01
144.50	0.00	0.901	49.85	0.01
145.00	0.00	0.901	49.85	0.01
145.50	0.00	0.901	49.85	0.01
146.00	0.00	0.901	49.85	0.01
146.50	0.00	0.900	49.85	0.01
147.00	0.00	0.900	49.85	0.01
147.50	0.00	0.900	49.85	0.01
148.00	0.00	0.900	49.85	0.01
148.50	0.00	0.900	49.85	0.00
149.00	0.00	0.899	49.85	0.00
149.50	0.00	0.899	49.85	0.00
150.00	0.00	0.899	49.85	0.00
150.50	0.00	0.899	49.85	0.00
151.00	0.00	0.899	49.85	0.00
151.50	0.00	0.898	49.85	0.00
152.00	0.00	0.898	49.85	0.00
152.50	0.00	0.898	49.85	0.00
153.00	0.00	0.898	49.85	0.00
153.50	0.00	0.898	49.85	0.00
154.00	0.00	0.897	49.85	0.00
154.50	0.00	0.897	49.85	0.00
155.00	0.00	0.897	49.85	0.00
155.50	0.00	0.897	49.85	0.00

Hydrograph for Pond 5P: MRC BASIN B

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.429	49.30	0.00
0.50	0.00	0.429	49.30	0.00
1.00	0.00	0.429	49.30	0.00
1.50	0.04	0.429	49.30	0.00
2.00	0.11	0.433	49.30	0.00
2.50	0.18	0.439	49.31	0.00
3.00	0.24	0.447	49.32	0.00
3.50	0.29	0.458	49.33	0.00
4.00	0.34	0.471	49.35	0.00
4.50	0.40	0.486	49.37	0.00
5.00	0.46	0.504	49.39	0.00
5.50	0.51	0.524	49.41	0.00
6.00	0.57	0.547	49.44	0.00
6.50	0.63	0.571	49.47	0.00
7.00	0.68	0.599	49.50	0.00
7.50	0.74	0.628	49.53	0.00
8.00	0.79	0.660	49.57	0.00
8.50	0.97	0.695	49.61	0.00
9.00	1.17	0.740	49.66	0.00
9.50	1.23	0.790	49.72	0.00
10.00	1.50	0.845	49.78	0.00
10.50	1.96	0.916	49.87	0.01
11.00	2.73	1.011	49.98	0.05
11.50	**4.50**	1.153	50.14	0.11
12.00	**53.01**	**2.073**	**51.66**	**12.37**
12.50	4.52	**2.071**	**51.66**	**12.37**
13.00	2.76	1.767	51.35	8.75
13.50	2.08	1.709	50.79	2.27
14.00	1.63	1.694	50.77	2.11
14.50	1.43	1.674	50.75	1.91
15.00	1.28	1.655	50.73	1.72
15.50	1.14	1.637	50.71	1.56
16.00	0.99	1.620	50.69	1.40
16.50	0.92	1.604	50.67	1.27
17.00	0.87	1.591	50.65	1.16
17.50	0.82	1.580	50.64	1.07
18.00	0.76	1.570	50.63	0.99
18.50	0.71	1.562	50.62	0.92
19.00	0.66	1.553	50.61	0.86
19.50	0.61	1.545	50.60	0.80
20.00	0.55	1.537	50.59	0.74
20.50	0.54	1.530	50.58	0.69
21.00	0.53	1.524	50.58	0.66
21.50	0.52	1.519	50.57	0.62
22.00	0.51	1.515	50.57	0.60
22.50	0.49	1.511	50.56	0.58
23.00	0.48	1.508	50.56	0.56
23.50	0.47	1.506	50.55	0.54
24.00	0.46	1.503	50.55	0.52
24.50	0.00	1.487	50.53	0.43
25.00	0.00	1.471	50.51	0.35
25.50	0.00	1.457	50.50	0.29

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
26.00	0.00	1.446	50.49	0.25
26.50	0.00	1.437	50.47	0.22
27.00	0.00	1.428	50.46	0.19
27.50	0.00	1.421	50.46	0.18
28.00	0.00	1.414	50.45	0.17
28.50	0.00	1.407	50.44	0.17
29.00	0.00	1.400	50.43	0.17
29.50	0.00	1.393	50.42	0.17
30.00	0.00	1.386	50.42	0.17
30.50	0.00	1.379	50.41	0.16
31.00	0.00	1.372	50.40	0.16
31.50	0.00	1.366	50.39	0.16
32.00	0.00	1.359	50.38	0.16
32.50	0.00	1.352	50.38	0.16
33.00	0.00	1.346	50.37	0.16
33.50	0.00	1.339	50.36	0.16
34.00	0.00	1.333	50.35	0.15
34.50	0.00	1.327	50.35	0.15
35.00	0.00	1.320	50.34	0.15
35.50	0.00	1.314	50.33	0.15
36.00	0.00	1.308	50.32	0.15
36.50	0.00	1.302	50.32	0.15
37.00	0.00	1.296	50.31	0.15
37.50	0.00	1.290	50.30	0.15
38.00	0.00	1.284	50.30	0.14
38.50	0.00	1.278	50.29	0.14
39.00	0.00	1.272	50.28	0.14
39.50	0.00	1.266	50.28	0.14
40.00	0.00	1.260	50.27	0.14
40.50	0.00	1.255	50.26	0.14
41.00	0.00	1.249	50.26	0.14
41.50	0.00	1.243	50.25	0.13
42.00	0.00	1.238	50.24	0.13
42.50	0.00	1.232	50.24	0.13
43.00	0.00	1.227	50.23	0.13
43.50	0.00	1.222	50.22	0.13
44.00	0.00	1.216	50.22	0.13
44.50	0.00	1.211	50.21	0.13
45.00	0.00	1.206	50.21	0.13
45.50	0.00	1.201	50.20	0.12
46.00	0.00	1.196	50.19	0.12
46.50	0.00	1.191	50.19	0.12
47.00	0.00	1.186	50.18	0.12
47.50	0.00	1.181	50.18	0.12
48.00	0.00	1.176	50.17	0.12
48.50	0.00	1.171	50.16	0.12
49.00	0.00	1.166	50.16	0.11
49.50	0.00	1.162	50.15	0.11
50.00	0.00	1.157	50.15	0.11
50.50	0.00	1.152	50.14	0.11
51.00	0.00	1.148	50.14	0.11
51.50	0.00	1.143	50.13	0.11

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
52.00	0.00	1.139	50.13	0.11
52.50	0.00	1.135	50.12	0.10
53.00	0.00	1.130	50.12	0.10
53.50	0.00	1.126	50.11	0.10
54.00	0.00	1.122	50.11	0.10
54.50	0.00	1.118	50.10	0.10
55.00	0.00	1.114	50.10	0.10
55.50	0.00	1.110	50.09	0.10
56.00	0.00	1.106	50.09	0.10
56.50	0.00	1.102	50.08	0.09
57.00	0.00	1.098	50.08	0.09
57.50	0.00	1.094	50.07	0.09
58.00	0.00	1.090	50.07	0.09
58.50	0.00	1.087	50.07	0.09
59.00	0.00	1.083	50.06	0.09
59.50	0.00	1.079	50.06	0.09
60.00	0.00	1.076	50.05	0.08
60.50	0.00	1.072	50.05	0.08
61.00	0.00	1.069	50.05	0.08
61.50	0.00	1.066	50.04	0.08
62.00	0.00	1.062	50.04	0.08
62.50	0.00	1.059	50.03	0.08
63.00	0.00	1.056	50.03	0.08
63.50	0.00	1.053	50.03	0.08
64.00	0.00	1.049	50.02	0.07
64.50	0.00	1.046	50.02	0.07
65.00	0.00	1.043	50.02	0.07
65.50	0.00	1.040	50.01	0.07
66.00	0.00	1.038	50.01	0.07
66.50	0.00	1.035	50.01	0.07
67.00	0.00	1.032	50.00	0.07
67.50	0.00	1.029	50.00	0.06
68.00	0.00	1.027	50.00	0.06
68.50	0.00	1.024	49.99	0.06
69.00	0.00	1.022	49.99	0.06
69.50	0.00	1.019	49.99	0.06
70.00	0.00	1.017	49.99	0.06
70.50	0.00	1.015	49.98	0.06
71.00	0.00	1.012	49.98	0.05
71.50	0.00	1.010	49.98	0.05
72.00	0.00	1.008	49.97	0.05
72.50	0.00	1.006	49.97	0.05
73.00	0.00	1.004	49.97	0.05
73.50	0.00	1.002	49.97	0.05
74.00	0.00	1.000	49.96	0.05
74.50	0.00	0.998	49.96	0.05
75.00	0.00	0.996	49.96	0.05
75.50	0.00	0.994	49.96	0.04
76.00	0.00	0.992	49.96	0.04
76.50	0.00	0.990	49.95	0.04
77.00	0.00	0.989	49.95	0.04
77.50	0.00	0.987	49.95	0.04

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
78.00	0.00	0.985	49.95	0.04
78.50	0.00	0.984	49.95	0.04
79.00	0.00	0.982	49.94	0.04
79.50	0.00	0.981	49.94	0.04
80.00	0.00	0.979	49.94	0.04
80.50	0.00	0.978	49.94	0.04
81.00	0.00	0.976	49.94	0.03
81.50	0.00	0.975	49.94	0.03
82.00	0.00	0.973	49.93	0.03
82.50	0.00	0.972	49.93	0.03
83.00	0.00	0.971	49.93	0.03
83.50	0.00	0.969	49.93	0.03
84.00	0.00	0.968	49.93	0.03
84.50	0.00	0.967	49.93	0.03
85.00	0.00	0.965	49.93	0.03
85.50	0.00	0.964	49.92	0.03
86.00	0.00	0.963	49.92	0.03
86.50	0.00	0.962	49.92	0.03
87.00	0.00	0.961	49.92	0.03
87.50	0.00	0.960	49.92	0.03
88.00	0.00	0.959	49.92	0.03
88.50	0.00	0.957	49.92	0.03
89.00	0.00	0.956	49.91	0.03
89.50	0.00	0.955	49.91	0.02
90.00	0.00	0.954	49.91	0.02
90.50	0.00	0.953	49.91	0.02
91.00	0.00	0.952	49.91	0.02
91.50	0.00	0.951	49.91	0.02
92.00	0.00	0.950	49.91	0.02
92.50	0.00	0.950	49.91	0.02
93.00	0.00	0.949	49.91	0.02
93.50	0.00	0.948	49.90	0.02
94.00	0.00	0.947	49.90	0.02
94.50	0.00	0.946	49.90	0.02
95.00	0.00	0.945	49.90	0.02
95.50	0.00	0.944	49.90	0.02
96.00	0.00	0.944	49.90	0.02
96.50	0.00	0.943	49.90	0.02
97.00	0.00	0.942	49.90	0.02
97.50	0.00	0.941	49.90	0.02
98.00	0.00	0.940	49.90	0.02
98.50	0.00	0.940	49.90	0.02
99.00	0.00	0.939	49.89	0.02
99.50	0.00	0.938	49.89	0.02
100.00	0.00	0.937	49.89	0.02
100.50	0.00	0.937	49.89	0.02
101.00	0.00	0.936	49.89	0.02
101.50	0.00	0.935	49.89	0.02
102.00	0.00	0.935	49.89	0.02
102.50	0.00	0.934	49.89	0.02
103.00	0.00	0.933	49.89	0.02
103.50	0.00	0.933	49.89	0.02

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
104.00	0.00	0.932	49.89	0.02
104.50	0.00	0.932	49.89	0.01
105.00	0.00	0.931	49.88	0.01
105.50	0.00	0.930	49.88	0.01
106.00	0.00	0.930	49.88	0.01
106.50	0.00	0.929	49.88	0.01
107.00	0.00	0.929	49.88	0.01
107.50	0.00	0.928	49.88	0.01
108.00	0.00	0.927	49.88	0.01
108.50	0.00	0.927	49.88	0.01
109.00	0.00	0.926	49.88	0.01
109.50	0.00	0.926	49.88	0.01
110.00	0.00	0.925	49.88	0.01
110.50	0.00	0.925	49.88	0.01
111.00	0.00	0.924	49.88	0.01
111.50	0.00	0.924	49.88	0.01
112.00	0.00	0.923	49.88	0.01
112.50	0.00	0.923	49.88	0.01
113.00	0.00	0.922	49.87	0.01
113.50	0.00	0.922	49.87	0.01
114.00	0.00	0.921	49.87	0.01
114.50	0.00	0.921	49.87	0.01
115.00	0.00	0.921	49.87	0.01
115.50	0.00	0.920	49.87	0.01
116.00	0.00	0.920	49.87	0.01
116.50	0.00	0.919	49.87	0.01
117.00	0.00	0.919	49.87	0.01
117.50	0.00	0.918	49.87	0.01
118.00	0.00	0.918	49.87	0.01
118.50	0.00	0.918	49.87	0.01
119.00	0.00	0.917	49.87	0.01
119.50	0.00	0.917	49.87	0.01
120.00	0.00	0.916	49.87	0.01
120.50	0.00	0.916	49.87	0.01
121.00	0.00	0.916	49.87	0.01
121.50	0.00	0.915	49.87	0.01
122.00	0.00	0.915	49.87	0.01
122.50	0.00	0.914	49.87	0.01
123.00	0.00	0.914	49.87	0.01
123.50	0.00	0.914	49.86	0.01
124.00	0.00	0.913	49.86	0.01
124.50	0.00	0.913	49.86	0.01
125.00	0.00	0.913	49.86	0.01
125.50	0.00	0.912	49.86	0.01
126.00	0.00	0.912	49.86	0.01
126.50	0.00	0.912	49.86	0.01
127.00	0.00	0.911	49.86	0.01
127.50	0.00	0.911	49.86	0.01
128.00	0.00	0.911	49.86	0.01
128.50	0.00	0.910	49.86	0.01
129.00	0.00	0.910	49.86	0.01
129.50	0.00	0.910	49.86	0.01

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
130.00	0.00	0.909	49.86	0.01
130.50	0.00	0.909	49.86	0.01
131.00	0.00	0.909	49.86	0.01
131.50	0.00	0.908	49.86	0.01
132.00	0.00	0.908	49.86	0.01
132.50	0.00	0.908	49.86	0.01
133.00	0.00	0.908	49.86	0.01
133.50	0.00	0.907	49.86	0.01
134.00	0.00	0.907	49.86	0.01
134.50	0.00	0.907	49.86	0.01
135.00	0.00	0.906	49.86	0.01
135.50	0.00	0.906	49.86	0.01
136.00	0.00	0.906	49.86	0.01
136.50	0.00	0.906	49.86	0.01
137.00	0.00	0.905	49.86	0.01
137.50	0.00	0.905	49.85	0.01
138.00	0.00	0.905	49.85	0.01
138.50	0.00	0.905	49.85	0.01
139.00	0.00	0.904	49.85	0.01
139.50	0.00	0.904	49.85	0.01
140.00	0.00	0.904	49.85	0.01
140.50	0.00	0.904	49.85	0.01
141.00	0.00	0.903	49.85	0.01
141.50	0.00	0.903	49.85	0.01
142.00	0.00	0.903	49.85	0.01
142.50	0.00	0.903	49.85	0.01
143.00	0.00	0.902	49.85	0.01
143.50	0.00	0.902	49.85	0.01
144.00	0.00	0.902	49.85	0.01
144.50	0.00	0.902	49.85	0.01
145.00	0.00	0.901	49.85	0.01
145.50	0.00	0.901	49.85	0.01
146.00	0.00	0.901	49.85	0.01
146.50	0.00	0.901	49.85	0.01
147.00	0.00	0.901	49.85	0.01
147.50	0.00	0.900	49.85	0.01
148.00	0.00	0.900	49.85	0.01
148.50	0.00	0.900	49.85	0.01
149.00	0.00	0.900	49.85	0.01
149.50	0.00	0.899	49.85	0.00
150.00	0.00	0.899	49.85	0.00
150.50	0.00	0.899	49.85	0.00
151.00	0.00	0.899	49.85	0.00
151.50	0.00	0.899	49.85	0.00
152.00	0.00	0.898	49.85	0.00
152.50	0.00	0.898	49.85	0.00
153.00	0.00	0.898	49.85	0.00
153.50	0.00	0.898	49.85	0.00
154.00	0.00	0.898	49.85	0.00
154.50	0.00	0.898	49.85	0.00
155.00	0.00	0.897	49.85	0.00
155.50	0.00	0.897	49.85	0.00

Hydrograph for Pond 5P: MRC BASIN B

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.429	49.30	0.00
0.50	0.00	0.429	49.30	0.00
1.00	0.00	0.429	49.30	0.00
1.50	0.07	0.430	49.30	0.00
2.00	0.16	0.435	49.31	0.00
2.50	0.24	0.443	49.32	0.00
3.00	0.31	0.455	49.33	0.00
3.50	0.37	0.468	49.35	0.00
4.00	0.42	0.485	49.36	0.00
4.50	0.49	0.503	49.39	0.00
5.00	0.55	0.525	49.41	0.00
5.50	0.62	0.549	49.44	0.00
6.00	0.68	0.576	49.47	0.00
6.50	0.74	0.605	49.51	0.00
7.00	0.80	0.637	49.54	0.00
7.50	0.86	0.672	49.58	0.00
8.00	0.92	0.708	49.63	0.00
8.50	1.12	0.750	49.67	0.00
9.00	1.36	0.802	49.73	0.00
9.50	1.42	0.860	49.80	0.00
10.00	1.73	0.923	49.88	0.01
10.50	2.26	1.004	49.97	0.05
11.00	3.13	1.111	50.10	0.10
11.50	**5.16**	1.274	50.28	0.14
12.00	**60.38**	**2.284**	**51.88**	**12.99**
12.50	5.15	**2.325**	**51.92**	**13.10**
13.00	3.13	1.965	51.55	11.60
13.50	2.36	1.712	50.79	2.29
14.00	1.85	1.705	50.79	2.22
14.50	1.63	1.687	50.77	2.04
15.00	1.46	1.670	50.75	1.87
15.50	1.29	1.653	50.73	1.71
16.00	1.13	1.636	50.71	1.55
16.50	1.05	1.620	50.69	1.40
17.00	0.99	1.607	50.67	1.29
17.50	0.93	1.595	50.66	1.19
18.00	0.87	1.585	50.65	1.10
18.50	0.81	1.576	50.64	1.03
19.00	0.75	1.567	50.63	0.96
19.50	0.69	1.558	50.62	0.90
20.00	0.63	1.550	50.61	0.83
20.50	0.61	1.542	50.60	0.78
21.00	0.60	1.536	50.59	0.73
21.50	0.59	1.531	50.58	0.70
22.00	0.57	1.526	50.58	0.67
22.50	0.56	1.523	50.57	0.65
23.00	0.55	1.519	50.57	0.63
23.50	0.54	1.516	50.57	0.61
24.00	0.53	1.514	50.56	0.59
24.50	0.00	1.496	50.54	0.48
25.00	0.00	1.478	50.52	0.38
25.50	0.00	1.463	50.51	0.32

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
26.00	0.00	1.451	50.49	0.27
26.50	0.00	1.441	50.48	0.23
27.00	0.00	1.432	50.47	0.20
27.50	0.00	1.424	50.46	0.18
28.00	0.00	1.417	50.45	0.17
28.50	0.00	1.410	50.44	0.17
29.00	0.00	1.403	50.44	0.17
29.50	0.00	1.396	50.43	0.17
30.00	0.00	1.389	50.42	0.17
30.50	0.00	1.382	50.41	0.16
31.00	0.00	1.376	50.40	0.16
31.50	0.00	1.369	50.40	0.16
32.00	0.00	1.362	50.39	0.16
32.50	0.00	1.356	50.38	0.16
33.00	0.00	1.349	50.37	0.16
33.50	0.00	1.343	50.36	0.16
34.00	0.00	1.336	50.36	0.16
34.50	0.00	1.330	50.35	0.15
35.00	0.00	1.323	50.34	0.15
35.50	0.00	1.317	50.33	0.15
36.00	0.00	1.311	50.33	0.15
36.50	0.00	1.305	50.32	0.15
37.00	0.00	1.299	50.31	0.15
37.50	0.00	1.292	50.31	0.15
38.00	0.00	1.286	50.30	0.14
38.50	0.00	1.281	50.29	0.14
39.00	0.00	1.275	50.29	0.14
39.50	0.00	1.269	50.28	0.14
40.00	0.00	1.263	50.27	0.14
40.50	0.00	1.257	50.27	0.14
41.00	0.00	1.252	50.26	0.14
41.50	0.00	1.246	50.25	0.14
42.00	0.00	1.240	50.25	0.13
42.50	0.00	1.235	50.24	0.13
43.00	0.00	1.230	50.23	0.13
43.50	0.00	1.224	50.23	0.13
44.00	0.00	1.219	50.22	0.13
44.50	0.00	1.214	50.21	0.13
45.00	0.00	1.208	50.21	0.13
45.50	0.00	1.203	50.20	0.12
46.00	0.00	1.198	50.20	0.12
46.50	0.00	1.193	50.19	0.12
47.00	0.00	1.188	50.18	0.12
47.50	0.00	1.183	50.18	0.12
48.00	0.00	1.178	50.17	0.12
48.50	0.00	1.173	50.17	0.12
49.00	0.00	1.169	50.16	0.11
49.50	0.00	1.164	50.16	0.11
50.00	0.00	1.159	50.15	0.11
50.50	0.00	1.155	50.15	0.11
51.00	0.00	1.150	50.14	0.11
51.50	0.00	1.145	50.13	0.11

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
52.00	0.00	1.141	50.13	0.11
52.50	0.00	1.137	50.12	0.11
53.00	0.00	1.132	50.12	0.10
53.50	0.00	1.128	50.11	0.10
54.00	0.00	1.124	50.11	0.10
54.50	0.00	1.120	50.10	0.10
55.00	0.00	1.116	50.10	0.10
55.50	0.00	1.111	50.10	0.10
56.00	0.00	1.107	50.09	0.10
56.50	0.00	1.104	50.09	0.09
57.00	0.00	1.100	50.08	0.09
57.50	0.00	1.096	50.08	0.09
58.00	0.00	1.092	50.07	0.09
58.50	0.00	1.088	50.07	0.09
59.00	0.00	1.085	50.06	0.09
59.50	0.00	1.081	50.06	0.09
60.00	0.00	1.077	50.06	0.09
60.50	0.00	1.074	50.05	0.08
61.00	0.00	1.071	50.05	0.08
61.50	0.00	1.067	50.04	0.08
62.00	0.00	1.064	50.04	0.08
62.50	0.00	1.060	50.04	0.08
63.00	0.00	1.057	50.03	0.08
63.50	0.00	1.054	50.03	0.08
64.00	0.00	1.051	50.02	0.07
64.50	0.00	1.048	50.02	0.07
65.00	0.00	1.045	50.02	0.07
65.50	0.00	1.042	50.01	0.07
66.00	0.00	1.039	50.01	0.07
66.50	0.00	1.036	50.01	0.07
67.00	0.00	1.033	50.00	0.07
67.50	0.00	1.031	50.00	0.06
68.00	0.00	1.028	50.00	0.06
68.50	0.00	1.025	50.00	0.06
69.00	0.00	1.023	49.99	0.06
69.50	0.00	1.020	49.99	0.06
70.00	0.00	1.018	49.99	0.06
70.50	0.00	1.016	49.98	0.06
71.00	0.00	1.013	49.98	0.06
71.50	0.00	1.011	49.98	0.05
72.00	0.00	1.009	49.98	0.05
72.50	0.00	1.007	49.97	0.05
73.00	0.00	1.005	49.97	0.05
73.50	0.00	1.003	49.97	0.05
74.00	0.00	1.001	49.97	0.05
74.50	0.00	0.999	49.96	0.05
75.00	0.00	0.997	49.96	0.05
75.50	0.00	0.995	49.96	0.04
76.00	0.00	0.993	49.96	0.04
76.50	0.00	0.991	49.96	0.04
77.00	0.00	0.989	49.95	0.04
77.50	0.00	0.988	49.95	0.04

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
78.00	0.00	0.986	49.95	0.04
78.50	0.00	0.984	49.95	0.04
79.00	0.00	0.983	49.95	0.04
79.50	0.00	0.981	49.94	0.04
80.00	0.00	0.980	49.94	0.04
80.50	0.00	0.978	49.94	0.04
81.00	0.00	0.977	49.94	0.04
81.50	0.00	0.975	49.94	0.03
82.00	0.00	0.974	49.93	0.03
82.50	0.00	0.973	49.93	0.03
83.00	0.00	0.971	49.93	0.03
83.50	0.00	0.970	49.93	0.03
84.00	0.00	0.969	49.93	0.03
84.50	0.00	0.967	49.93	0.03
85.00	0.00	0.966	49.93	0.03
85.50	0.00	0.965	49.92	0.03
86.00	0.00	0.964	49.92	0.03
86.50	0.00	0.962	49.92	0.03
87.00	0.00	0.961	49.92	0.03
87.50	0.00	0.960	49.92	0.03
88.00	0.00	0.959	49.92	0.03
88.50	0.00	0.958	49.92	0.03
89.00	0.00	0.957	49.92	0.03
89.50	0.00	0.956	49.91	0.03
90.00	0.00	0.955	49.91	0.02
90.50	0.00	0.954	49.91	0.02
91.00	0.00	0.953	49.91	0.02
91.50	0.00	0.952	49.91	0.02
92.00	0.00	0.951	49.91	0.02
92.50	0.00	0.950	49.91	0.02
93.00	0.00	0.949	49.91	0.02
93.50	0.00	0.948	49.90	0.02
94.00	0.00	0.947	49.90	0.02
94.50	0.00	0.946	49.90	0.02
95.00	0.00	0.946	49.90	0.02
95.50	0.00	0.945	49.90	0.02
96.00	0.00	0.944	49.90	0.02
96.50	0.00	0.943	49.90	0.02
97.00	0.00	0.942	49.90	0.02
97.50	0.00	0.942	49.90	0.02
98.00	0.00	0.941	49.90	0.02
98.50	0.00	0.940	49.90	0.02
99.00	0.00	0.939	49.89	0.02
99.50	0.00	0.939	49.89	0.02
100.00	0.00	0.938	49.89	0.02
100.50	0.00	0.937	49.89	0.02
101.00	0.00	0.936	49.89	0.02
101.50	0.00	0.936	49.89	0.02
102.00	0.00	0.935	49.89	0.02
102.50	0.00	0.934	49.89	0.02
103.00	0.00	0.934	49.89	0.02
103.50	0.00	0.933	49.89	0.02

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
104.00	0.00	0.932	49.89	0.02
104.50	0.00	0.932	49.89	0.01
105.00	0.00	0.931	49.89	0.01
105.50	0.00	0.931	49.88	0.01
106.00	0.00	0.930	49.88	0.01
106.50	0.00	0.929	49.88	0.01
107.00	0.00	0.929	49.88	0.01
107.50	0.00	0.928	49.88	0.01
108.00	0.00	0.928	49.88	0.01
108.50	0.00	0.927	49.88	0.01
109.00	0.00	0.927	49.88	0.01
109.50	0.00	0.926	49.88	0.01
110.00	0.00	0.926	49.88	0.01
110.50	0.00	0.925	49.88	0.01
111.00	0.00	0.925	49.88	0.01
111.50	0.00	0.924	49.88	0.01
112.00	0.00	0.924	49.88	0.01
112.50	0.00	0.923	49.88	0.01
113.00	0.00	0.923	49.88	0.01
113.50	0.00	0.922	49.87	0.01
114.00	0.00	0.922	49.87	0.01
114.50	0.00	0.921	49.87	0.01
115.00	0.00	0.921	49.87	0.01
115.50	0.00	0.920	49.87	0.01
116.00	0.00	0.920	49.87	0.01
116.50	0.00	0.919	49.87	0.01
117.00	0.00	0.919	49.87	0.01
117.50	0.00	0.919	49.87	0.01
118.00	0.00	0.918	49.87	0.01
118.50	0.00	0.918	49.87	0.01
119.00	0.00	0.917	49.87	0.01
119.50	0.00	0.917	49.87	0.01
120.00	0.00	0.916	49.87	0.01
120.50	0.00	0.916	49.87	0.01
121.00	0.00	0.916	49.87	0.01
121.50	0.00	0.915	49.87	0.01
122.00	0.00	0.915	49.87	0.01
122.50	0.00	0.915	49.87	0.01
123.00	0.00	0.914	49.87	0.01
123.50	0.00	0.914	49.86	0.01
124.00	0.00	0.913	49.86	0.01
124.50	0.00	0.913	49.86	0.01
125.00	0.00	0.913	49.86	0.01
125.50	0.00	0.912	49.86	0.01
126.00	0.00	0.912	49.86	0.01
126.50	0.00	0.912	49.86	0.01
127.00	0.00	0.911	49.86	0.01
127.50	0.00	0.911	49.86	0.01
128.00	0.00	0.911	49.86	0.01
128.50	0.00	0.910	49.86	0.01
129.00	0.00	0.910	49.86	0.01
129.50	0.00	0.910	49.86	0.01

Hydrograph for Pond 5P: MRC BASIN B (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
130.00	0.00	0.909	49.86	0.01
130.50	0.00	0.909	49.86	0.01
131.00	0.00	0.909	49.86	0.01
131.50	0.00	0.909	49.86	0.01
132.00	0.00	0.908	49.86	0.01
132.50	0.00	0.908	49.86	0.01
133.00	0.00	0.908	49.86	0.01
133.50	0.00	0.907	49.86	0.01
134.00	0.00	0.907	49.86	0.01
134.50	0.00	0.907	49.86	0.01
135.00	0.00	0.907	49.86	0.01
135.50	0.00	0.906	49.86	0.01
136.00	0.00	0.906	49.86	0.01
136.50	0.00	0.906	49.86	0.01
137.00	0.00	0.905	49.86	0.01
137.50	0.00	0.905	49.85	0.01
138.00	0.00	0.905	49.85	0.01
138.50	0.00	0.905	49.85	0.01
139.00	0.00	0.904	49.85	0.01
139.50	0.00	0.904	49.85	0.01
140.00	0.00	0.904	49.85	0.01
140.50	0.00	0.904	49.85	0.01
141.00	0.00	0.903	49.85	0.01
141.50	0.00	0.903	49.85	0.01
142.00	0.00	0.903	49.85	0.01
142.50	0.00	0.903	49.85	0.01
143.00	0.00	0.902	49.85	0.01
143.50	0.00	0.902	49.85	0.01
144.00	0.00	0.902	49.85	0.01
144.50	0.00	0.902	49.85	0.01
145.00	0.00	0.902	49.85	0.01
145.50	0.00	0.901	49.85	0.01
146.00	0.00	0.901	49.85	0.01
146.50	0.00	0.901	49.85	0.01
147.00	0.00	0.901	49.85	0.01
147.50	0.00	0.900	49.85	0.01
148.00	0.00	0.900	49.85	0.01
148.50	0.00	0.900	49.85	0.01
149.00	0.00	0.900	49.85	0.01
149.50	0.00	0.900	49.85	0.00
150.00	0.00	0.899	49.85	0.00
150.50	0.00	0.899	49.85	0.00
151.00	0.00	0.899	49.85	0.00
151.50	0.00	0.899	49.85	0.00
152.00	0.00	0.899	49.85	0.00
152.50	0.00	0.898	49.85	0.00
153.00	0.00	0.898	49.85	0.00
153.50	0.00	0.898	49.85	0.00
154.00	0.00	0.898	49.85	0.00
154.50	0.00	0.898	49.85	0.00
155.00	0.00	0.897	49.85	0.00
155.50	0.00	0.897	49.85	0.00

Appendix G | Stormsewer Design

Underdrain Capacity Calculations

Underdrains specifications shall conform to PennDOT 408 Section 610.

Underdrain shall have a minimum of 1.34 cubic feet (10 gallons) per minute per linear foot of pipe.

1.34 cf/minute/ft = 0.02 cfs/ft

There is 579 ft of linear pipe along the longest length of the MRC bed.

Total flow rate to underdrain is then, 0.02 cfs/ft * 589 ft = 11.78 cfs.

Per MRC BMP Concept note 11, Section 6.4.7 of the Stormwater BMP Manual should be used for lateral spacing of multiple underdrains. The maximum **10' lateral spacing** was used for the MRC BMP.

Colliers Engineering & Design

Project Name:	401/433 WASHINGTON STREET APARTMENTS		
Project No.:	14000908C	Date:	1/6/2022
Prepared By:	JJW	Checked By:	MD

STORMWATER MANAGEMENT CALCULATIONS

Proposed Inlets - Post-Project

S-5

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.11	x	0.85	0.95	=	0.09	0.10
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.06	x	0.15	0.19	=	0.01	0.01
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.17**					**0.10**	**0.12**
					CW		=	**0.60**	**0.68**

S-6

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.09	x	0.85	0.95	=	0.08	0.09
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.03	x	0.15	0.19	=	0.00	0.01
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.12**					**0.08**	**0.09**
					CW		=	**0.68**	**0.76**

S-7

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.08	x	0.85	0.95	=	0.07	0.08
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.04	x	0.15	0.19	=	0.01	0.01
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.12**					**0.07**	**0.08**
					CW		=	**0.62**	**0.70**

S-8

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.09	x	0.85	0.95	=	0.08	0.09
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.01	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.10**					**0.08**	**0.09**
					CW		=	**0.78**	**0.87**

S-9

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.07	x	0.85	0.95	=	0.06	0.07
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.01	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.08**					**0.06**	**0.07**
					CW		=	**0.76**	**0.86**

S-10

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.14	x	0.85	0.95	=	0.12	0.13
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.03	x	0.15	0.19	=	0.00	0.01
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.17**					**0.12**	**0.14**
					CW		=	**0.73**	**0.82**

S-11

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.10	x	0.85	0.95	=	0.09	0.10
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.04	x	0.15	0.19	=	0.01	0.01
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.14**					**0.09**	**0.10**
					CW		=	**0.65**	**0.73**

Roof DA NW-2 (to S-12)

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.45	x	0.85	0.95	=	0.38	0.43
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.45**					**0.38**	**0.43**
					CW		=	**0.85**	**0.95**

S-12

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.10	x 0.85		0.95	=	0.09	0.10
B	2-6%	=	0.00	x 0.86		0.96	=	0.00	0.00
B	+6%	=	0.00	x 0.87		0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.01	x 0.15		0.19	=	0.00	0.00
B	2-6%	=	0.00	x 0.20		0.25	=	0.00	0.00
B	+6%	=	0.00	x 0.24		0.30	=	0.00	0.00
	TOTAL	=	**0.11**					**0.09**	**0.10**
					CW		=	**0.79**	**0.88**

S-13

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.07	x 0.85		0.95	=	0.06	0.07
B	2-6%	=	0.00	x 0.86		0.96	=	0.00	0.00
B	+6%	=	0.00	x 0.87		0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.02	x 0.15		0.19	=	0.00	0.00
B	2-6%	=	0.00	x 0.20		0.25	=	0.00	0.00
B	+6%	=	0.00	x 0.24		0.30	=	0.00	0.00
	TOTAL	=	**0.09**					**0.06**	**0.07**
					CW		=	**0.69**	**0.78**

S-14

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.05	x 0.85		0.95	=	0.04	0.05
B	2-6%	=	0.00	x 0.86		0.96	=	0.00	0.00
B	+6%	=	0.00	x 0.87		0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.04	x 0.15		0.19	=	0.01	0.01
B	2-6%	=	0.00	x 0.20		0.25	=	0.00	0.00
B	+6%	=	0.00	x 0.24		0.30	=	0.00	0.00
	TOTAL	=	**0.09**					**0.05**	**0.06**
					CW		=	**0.54**	**0.61**

S-15

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.05	x 0.85		0.95	=	0.04	0.05
B	2-6%	=	0.00	x 0.86		0.96	=	0.00	0.00
B	+6%	=	0.00	x 0.87		0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.08	x 0.15		0.19	=	0.01	0.02
B	2-6%	=	0.00	x 0.20		0.25	=	0.00	0.00
B	+6%	=	0.00	x 0.24		0.30	=	0.00	0.00
	TOTAL	=	**0.13**					**0.05**	**0.06**
					CW		=	**0.42**	**0.48**

S-16

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.06	x 0.85		0.95	=	0.05	0.06
B	2-6%	=	0.00	x 0.86		0.96	=	0.00	0.00
B	+6%	=	0.00	x 0.87		0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.07	x 0.15		0.19	=	0.01	0.01
B	2-6%	=	0.00	x 0.20		0.25	=	0.00	0.00
B	+6%	=	0.00	x 0.24		0.30	=	0.00	0.00
	TOTAL	=	**0.13**					**0.06**	**0.07**
					CW		=	**0.47**	**0.54**

S-17

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.09	x 0.85		0.95	=	0.08	0.09
B	2-6%	=	0.00	x 0.86		0.96	=	0.00	0.00
B	+6%	=	0.00	x 0.87		0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.02	x 0.15		0.19	=	0.00	0.00
B	2-6%	=	0.00	x 0.20		0.25	=	0.00	0.00
B	+6%	=	0.00	x 0.24		0.30	=	0.00	0.00
	TOTAL	=	**0.11**					**0.08**	**0.09**
					CW		=	**0.72**	**0.81**

S-18

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.15	x 0.85		0.95	=	0.13	0.14
B	2-6%	=	0.00	x 0.86		0.96	=	0.00	0.00
B	+6%	=	0.00	x 0.87		0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.03	x 0.15		0.19	=	0.00	0.01
B	2-6%	=	0.00	x 0.20		0.25	=	0.00	0.00
B	+6%	=	0.00	x 0.24		0.30	=	0.00	0.00
	TOTAL	=	**0.18**					**0.13**	**0.15**
					CW		=	**0.73**	**0.82**

Roof DA NW-1 (to S-18)

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.48	x 0.85		0.95	=	0.41	0.46
B	2-6%	=	0.00	x 0.86		0.96	=	0.00	0.00
B	+6%	=	0.00	x 0.87		0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x 0.15		0.19	=	0.00	0.00
B	2-6%	=	0.00	x 0.20		0.25	=	0.00	0.00
B	+6%	=	0.00	x 0.24		0.30	=	0.00	0.00
	TOTAL	=	**0.48**					**0.41**	**0.46**
					CW		=	**0.85**	**0.95**

S-21

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.60	x 0.85		0.95	=	0.51	0.57
B	2-6%	=	0.00	x 0.86		0.96	=	0.00	0.00
B	+6%	=	0.00	x 0.87		0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x 0.15		0.19	=	0.00	0.00
B	2-6%	=	0.00	x 0.20		0.25	=	0.00	0.00
B	+6%	=	0.00	x 0.24		0.30	=	0.00	0.00
	TOTAL	=	**0.60**					**0.51**	**0.57**
					CW		=	**0.85**	**0.95**

S-22

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.41	x 0.85		0.95	=	0.35	0.39
B	2-6%	=	0.00	x 0.86		0.96	=	0.00	0.00
B	+6%	=	0.00	x 0.87		0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x 0.15		0.19	=	0.00	0.00
B	2-6%	=	0.00	x 0.20		0.25	=	0.00	0.00
B	+6%	=	0.00	x 0.24		0.30	=	0.00	0.00
	TOTAL	=	**0.41**					**0.35**	**0.39**
					CW		=	**0.85**	**0.95**

Roof DA SW-1 (to MRC BASIN B)

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.51	x	0.85	0.95	=	0.43	0.48
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.51**					**0.43**	**0.48**
					CW		=	**0.85**	**0.95**

Roof DA SW-2 (TO MRC BASIN B)

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.48	x	0.85	0.95	=	0.41	0.46
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.48**					**0.41**	**0.46**
					CW		=	**0.85**	**0.95**

Roof DA SE-1 (TO MRC BASIN B)

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.40	x	0.85	0.95	=	0.34	0.38
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.40**					**0.34**	**0.38**
					CW		=	**0.85**	**0.95**

Roof DA SE-2 (to S-25)

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.32	x	0.85	0.95	=	0.27	0.30
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.32**					**0.27**	**0.30**
					CW		=	**0.85**	**0.95**

Roof DA NE-1 (to S-11)

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.48	x	0.85	0.95	=	0.41	0.46
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.48**					**0.41**	**0.46**
					CW		=	**0.85**	**0.95**

Roof DA NE-2 (to S-25)

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.45	x	0.85	0.95	=	0.38	0.43
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.45**					**0.38**	**0.43**
					CW		=	**0.85**	**0.95**

S-23

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.38	x	0.85	0.95	=	0.32	0.36
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.38**					**0.32**	**0.36**
					CW		=	**0.85**	**0.95**

S-25

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.58	x	0.85	0.95	=	0.49	0.55
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.58**					**0.49**	**0.55**
					CW		=	**0.85**	**0.95**

S-30

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.00	x	0.85	0.95	=	0.00	0.00
B	2-6%	=	0.20	x	0.86	0.96	=	0.17	0.19
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.04	x	0.20	0.25	=	0.01	0.01
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.24**					**0.18**	**0.20**
					CW		=	**0.75**	**0.84**

S-32

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.17	x	0.85	0.95	=	0.14	0.16
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.02	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.19**					**0.15**	**0.17**
					CW		=	**0.78**	**0.87**

S-35

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.18	x	0.85	0.95	=	0.15	0.17
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.02	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.20**					**0.16**	**0.17**
					CW		=	**0.78**	**0.87**

S-36

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.05	x	0.85	0.95	=	0.04	0.05
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.05**					**0.04**	**0.05**
					CW		=	**0.85**	**0.95**

S-37

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.16	x	0.85	0.95	=	0.14	0.15
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.03	x	0.15	0.19	=	0.00	0.01
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.19**					**0.14**	**0.16**
					CW		=	**0.74**	**0.83**

S-39

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.49	x	0.85	0.95	=	0.42	0.47
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.49**					**0.42**	**0.47**
					CW		=	**0.85**	**0.95**

S-40

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.47	x	0.85	0.95	=	0.40	0.45
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.47**					**0.40**	**0.45**
					CW		=	**0.85**	**0.95**

S-41

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.16	x	0.85	0.95	=	0.14	0.15
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.02	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.18**					**0.14**	**0.16**
					CW		=	**0.77**	**0.87**

S-42

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.13	x	0.85	0.95	=	0.11	0.12
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.03	x	0.15	0.19	=	0.00	0.01
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.16**					**0.12**	**0.13**
					CW		=	**0.72**	**0.81**

S-43

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.11	x	0.85	0.95	=	0.09	0.10
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.02	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.13**					**0.10**	**0.11**
					CW		=	**0.74**	**0.83**

S-45

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.15	x	0.85	0.95	=	0.13	0.14
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.02	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.17**					**0.13**	**0.15**
					CW		=	**0.77**	**0.86**

R-1

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.04	x	0.85	0.95	=	0.03	0.04
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.04**					**0.03**	**0.04**
					CW		=	**0.85**	**0.95**

R-2

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.08	x	0.85	0.95	=	0.07	0.08
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.02	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.10**					**0.07**	**0.08**
					CW		=	**0.71**	**0.80**

R-3

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.26	x	0.85	0.95	=	0.22	0.25
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.03	x	0.15	0.19	=	0.00	0.01
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.29**					**0.23**	**0.25**
					CW		=	**0.78**	**0.87**

R-4

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.85	x	0.85	0.95	=	0.72	0.81
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.85**					**0.72**	**0.81**
					CW		=	**0.85**	**0.95**

R-6

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.11	x	0.85	0.95	=	0.09	0.10
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.11**					**0.09**	**0.10**
					CW		=	**0.85**	**0.95**

S-51

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.23	x	0.85	0.95	=	0.20	0.22
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.09	x	0.15	0.19	=	0.01	0.02
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.32**					**0.21**	**0.24**
					CW		=	**0.65**	**0.74**

S-52

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.13	x	0.85	0.95	=	0.11	0.12
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.03	x	0.15	0.19	=	0.00	0.01
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.16**					**0.12**	**0.13**
					CW		=	**0.72**	**0.81**

R-2A

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.14	x	0.85	0.95	=	0.12	0.13
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.04	x	0.15	0.19	=	0.01	0.01
B	2-6%	=	0.00	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.18**					**0.13**	**0.14**
					CW		=	**0.69**	**0.78**

R-8

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.00	x	0.85	0.95	=	0.00	0.00
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.03	x	0.20	0.25	=	0.01	0.01
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.03**					**0.01**	**0.01**
					CW		=	**0.20**	**0.25**

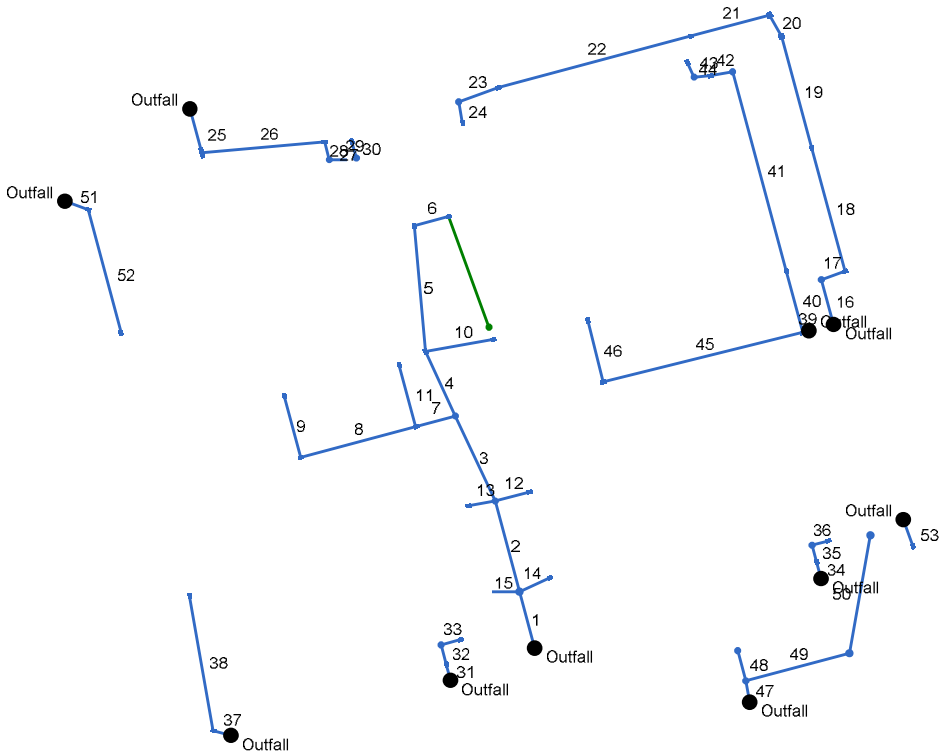
R-10

SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.00	x	0.85	0.95	=	0.00	0.00
B	2-6%	=	0.00	x	0.86	0.96	=	0.00	0.00
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.02	x	0.20	0.25	=	0.00	0.01
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.02**					**0.00**	**0.01**
					CW		=	**0.20**	**0.25**

NOTE:
INLETS R-4, R-6, S-21, S-22, S-23, S-25, S-39, AND S-40 ARE UNDER THE PROPOSED ROOFS. STORMWATER WILL BE INTERCEPTED BY THE ROOFS AND MINIMAL FLOW WILL REACH THE INLETS. AS SUCH, THE HYDROFLOW CALCULATIONS DO NOT ACCOUNT FOR THE FLOW TO THESE INLETS, SINCE THE FLOWS WILL BE MANAGED THROUGH THE ROOF DRAIN SYSTEM.

10-YEAR CALCULATIONS
PROPOSED NETWORK

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: 10yr.stm	Number of lines: 53	Date: 5/20/2022

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	54	-105	MH	0.00	0.00	0.00	5.0	48.80	0.74	49.20	24	Cir	0.015	0.99	52.72	P-2
2	1	87	0	MH	0.00	0.00	0.00	5.0	49.40	0.52	49.85	24	Cir	0.015	1.00	53.59	P-3
3	2	87	-10	MH	0.00	0.00	0.00	5.0	50.05	0.52	50.50	24	Cir	0.015	0.99	54.64	P-4
4	3	66	0	Grate	0.00	0.17	0.60	5.0	51.00	0.61	51.40	18	Cir	0.015	1.50	54.48	P-5
5	4	117	20	Comb	0.00	0.12	0.68	5.0	51.60	0.51	52.20	18	Cir	0.015	1.48	55.16	P-6
6	5	33	80	Comb	0.00	0.12	0.62	5.0	52.35	0.61	52.55	18	Cir	0.015	1.00	55.24	P-7
7	3	38	-80	Comb	0.00	0.10	0.78	5.0	50.80	0.79	51.10	18	Cir	0.015	1.50	54.71	P-8
8	7	110	0	Comb	0.00	0.08	0.76	5.0	51.30	0.50	51.85	18	Cir	0.015	1.50	55.13	P-9
9	8	59	90	Comb	0.00	0.17	0.73	5.0	52.05	0.51	52.35	18	Cir	0.015	1.00	55.37	P-10
10	4	64	105	Grate	0.00	0.14	0.65	5.0	51.60	0.55	51.95	18	Cir	0.015	1.00	54.20	P-11
11	7	59	90	Comb	0.00	0.11	0.79	5.0	51.30	0.51	51.60	18	Cir	0.015	1.00	54.71	P-12
12	2	33	90	Comb	0.00	0.09	0.54	5.0	50.05	0.61	50.25	18	Cir	0.015	1.00	53.31	P-14
13	2	25	-85	Comb	0.00	0.09	0.69	5.0	50.05	0.80	50.25	18	Cir	0.015	1.00	53.32	P-13
14	1	31	80	Comb	0.00	0.13	0.47	5.0	49.40	0.65	49.60	18	Cir	0.015	1.00	52.63	P-16
15	1	28	-75	Comb	0.00	0.13	0.42	5.0	49.40	0.71	49.60	18	Cir	0.015	1.00	52.63	P-15
16	End	43	-105	MH	0.00	0.00	0.00	5.0	47.60	0.51	47.82	18	Cir	0.015	1.00	51.88	P-34
17	16	23	85	Comb	0.00	0.20	0.78	5.0	47.82	0.57	47.95	18	Cir	0.015	1.50	50.75	P-35
18	17	118	-85	Comb	0.00	0.05	0.85	5.0	47.95	0.51	48.55	18	Cir	0.015	0.50	51.85	P-36
19	18	107	0	Comb	0.00	0.19	0.74	5.0	48.55	0.51	49.10	18	Cir	0.015	0.50	51.77	P-37
20	19	23	-15	Comb	0.00	0.04	0.85	5.0	49.10	0.65	49.25	18	Cir	0.015	1.46	52.28	P-R1
21	20	75	-75	Comb	0.00	0.18	0.69	5.0	49.45	0.52	49.84	18	Cir	0.015	0.50	52.45	P-R2A
22	21	184	0	Comb	0.00	0.10	0.71	5.0	49.84	0.52	50.80	18	Cir	0.015	0.50	53.98	P-R2
23	22	39	-5	MH	0.00	0.00	0.00	5.0	51.00	0.51	51.20	18	Cir	0.015	0.99	54.88	P-R9

Project File: 10yr.stm | Number of lines: 53 | Date: 5/20/2022

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
24	23	20	-80	Comb	0.00	0.02	0.20	5.0	51.40	0.50	51.50	18	Cir	0.015	1.00	55.00	P-R10
25	End	42	75	Comb	0.00	0.29	0.78	5.0	48.66	0.57	48.90	18	Cir	0.015	1.48	52.99	P-R3
26	25	114	-80	Grate	0.01	0.00	0.00	5.0	49.05	0.53	49.65	18	Cir	0.015	1.48	53.29	P-R4
27	26	17	80	MH	0.00	0.00	0.00	5.0	49.85	0.59	49.95	18	Cir	0.015	0.97	53.11	P-R5
28	27	19	-75	Grate	0.01	0.00	0.00	5.0	50.15	0.53	50.25	18	Cir	0.015	0.50	53.08	P-R6
29	28	6	-15	MH	0.00	0.00	0.00	5.0	50.25	0.83	50.30	18	Cir	0.015	1.00	55.15	P-R7
30	29	16	-90	Grate	0.00	0.03	0.20	5.0	50.50	0.62	50.60	18	Cir	0.015	1.00	55.00	P-R8
31	End	15	-105	Grate	0.01	0.00	0.00	5.0	48.80	0.67	48.90	18	Cir	0.015	0.50	53.13	P-20
32	31	19	0	MH	0.00	0.00	0.00	5.0	49.20	0.53	49.30	18	Cir	0.015	1.00	53.31	P-22
33	32	19	90	Grate	0.01	0.00	0.00	5.0	49.50	0.53	49.60	18	Cir	0.015	1.00	53.29	P-21
34	End	16	-105	Grate	0.01	0.00	0.00	5.0	48.80	0.94	48.95	18	Cir	0.015	0.50	52.40	P-23
35	34	16	0	MH	0.00	0.00	0.00	5.0	49.15	0.62	49.25	18	Cir	0.015	1.00	52.42	P-24
36	35	16	90	Grate	0.01	0.00	0.00	5.0	49.45	0.62	49.55	18	Cir	0.015	1.00	52.15	P-25
37	End	17	-165	Comb	0.00	0.11	0.72	5.0	48.80	1.76	49.10	18	Cir	0.015	1.38	54.44	P-17
38	37	127	65	Comb	0.00	0.18	0.73	5.0	49.30	1.54	51.25	18	Cir	0.015	1.00	56.06	P-18
39	End	6	165	Comb	0.00	0.18	0.77	5.0	47.60	0.83	47.65	18	Cir	0.015	1.50	52.12	P-41
40	39	59	90	Comb	0.00	0.17	0.77	5.0	47.60	0.51	47.90	18	Cir	0.015	0.50	52.15	P-45
41	40	191	0	MH	0.00	0.00	0.00	5.0	47.90	0.50	48.85	18	Cir	0.015	1.00	52.25	P-39A
42	41	21	-85	Grate	0.00	0.00	0.00	5.0	48.85	0.48	48.95	18	Cir	0.015	0.50	52.07	P-39B
43	42	15	5	MH	0.00	0.00	0.00	5.0	48.90	0.67	49.00	18	Cir	0.015	0.95	52.31	P-39
44	43	15	70	Grate	0.01	0.00	0.00	5.0	49.05	0.67	49.15	18	Cir	0.015	1.00	52.02	P-40
45	39	190	1	Comb	0.00	0.16	0.72	5.0	47.75	0.50	48.70	18	Cir	0.015	1.50	53.78	P-42
46	45	59	90	Comb	0.00	0.13	0.74	5.0	48.90	0.51	49.20	18	Cir	0.015	1.00	53.79	P-43

Project File: 10yr.stm | Number of lines: 53 | Date: 5/20/2022

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
47	End	20	-100	MH	0.00	0.00	0.00	5.0	45.45	1.25	45.70	24	Cir	0.015	1.00	50.88	P-B1
48	47	29	-5	MH	8.95	0.00	0.00	5.0	48.00	2.76	48.80	18	Cir	0.015	1.00	52.30	P-BASIN B
49	47	99	85	MH	0.00	0.00	0.00	5.0	45.80	0.51	46.30	24	Cir	0.015	0.92	50.73	P-102
50	49	111	-65	MH	4.03	0.00	0.00	5.0	46.30	1.17	47.60	24	Cir	0.015	1.00	51.40	P-A1
51	End	23	20	Comb	0.00	0.32	0.65	5.0	47.70	3.26	48.45	18	Cir	0.015	1.27	51.90	P-51
52	51	118	55	Comb	0.00	0.16	0.72	5.0	48.65	1.65	50.60	18	Cir	0.015	1.00	54.63	P-52
53	End	26	70	Comb	0.00	0.24	0.75	5.0	47.90	0.77	48.10	18	Cir	0.015	1.00	50.80	P-30

Project File: 10yr.stm | Number of lines: 53 | Date: 5/20/2022

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	S-2 (WQ)	Manhole	52.72	Cir	5.00	5.00	24	Cir	49.20	24 18 18	Cir Cir Cir	49.40 49.40 49.40
2	S-3	Manhole	53.59	Cir	4.00	4.00	24	Cir	49.85	24 18 18	Cir Cir Cir	50.05 50.05 50.05
3	S-4	Manhole	54.64	Cir	4.00	4.00	24	Cir	50.50	18 18	Cir Cir	51.00 50.80
4	S-5	Grate	54.48	Rect	4.77	3.27	18	Cir	51.40	18 18	Cir Cir	51.60 51.60
5	S-6	Combination	55.16	Rect	4.77	3.27	18	Cir	52.20	18	Cir	52.35
6	S-7	Combination	55.24	Rect	4.77	3.27	18	Cir	52.55			
7	S-8	Combination	54.71	Rect	4.77	3.27	18	Cir	51.10	18 18	Cir Cir	51.30 51.30
8	S-9	Combination	55.13	Rect	4.77	3.27	18	Cir	51.85	18	Cir	52.05
9	S-10	Combination	55.37	Rect	4.77	3.27	18	Cir	52.35			
10	S-11	Grate	54.20	Rect	4.77	3.27	18	Cir	51.95			
11	S-12	Combination	54.71	Rect	4.77	3.27	18	Cir	51.60			
12	S-14	Combination	53.31	Rect	4.77	3.27	18	Cir	50.25			
13	S-13	Combination	53.32	Rect	4.77	3.27	18	Cir	50.25			
14	S-16	Combination	52.63	Rect	4.77	3.27	18	Cir	49.60			
15	S-15	Combination	52.63	Rect	4.77	3.27	18	Cir	49.60			
16	S-34	Manhole	51.88	Cir	4.00	4.00	18	Cir	47.82	18	Cir	47.82
17	S-35 (WQ)	Combination	50.75	Rect	4.77	3.27	18	Cir	47.95	18	Cir	47.95
18	S-36	Combination	51.85	Rect	4.77	3.27	18	Cir	48.55	18	Cir	48.55
19	S-37	Combination	51.77	Rect	5.00	5.00	18	Cir	49.10	18	Cir	49.10

Project File: 10yr.stm | Number of Structures: 53 | Run Date: 5/20/2022

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
20	R-1	Combination	52.28	Rect	5.00	5.00	18	Cir	49.25	18	Cir	49.45
21	R-2A	Combination	52.45	Rect	4.77	3.27	18	Cir	49.84	18	Cir	49.84
22	R-2	Combination	53.98	Rect	4.77	3.27	18	Cir	50.80	18	Cir	51.00
23	R-9	Manhole	54.88	Cir	4.00	4.00	18	Cir	51.20	18	Cir	51.40
24	R-10	Combination	55.00	Rect	4.77	3.27	18	Cir	51.50			
25	R-3	Combination	52.99	Rect	9.54	3.27	18	Cir	48.90	18	Cir	49.05
26	R-4	Grate	53.29	Rect	4.77	3.27	18	Cir	49.65	18	Cir	49.85
27	R-5	Manhole	53.11	Cir	4.00	4.00	18	Cir	49.95	18	Cir	50.15
28	R-6	Grate	53.08	Rect	4.77	3.27	18	Cir	50.25	18	Cir	50.25
29	R-7	Manhole	55.15	Cir	4.00	4.00	18	Cir	50.30	18	Cir	50.50
30	R-8	Grate	55.00	Rect	4.77	3.27	18	Cir	50.60			
31	S-22 (WQ)	Grate	53.13	Rect	4.77	3.27	18	Cir	48.90	18	Cir	49.20
32	S-20	Manhole	53.31	Cir	4.00	4.00	18	Cir	49.30	18	Cir	49.50
33	S-21	Grate	53.29	Rect	4.77	3.27	18	Cir	49.60			
34	S-23 (WQ)	Grate	52.40	Rect	4.77	3.27	18	Cir	48.95	18	Cir	49.15
35	S-24	Manhole	52.42	Cir	4.00	4.00	18	Cir	49.25	18	Cir	49.45
36	S-25	Grate	52.15	Rect	4.77	3.27	18	Cir	49.55			
37	S-17 (WQ)	Combination	54.44	Rect	4.77	3.27	18	Cir	49.10	18	Cir	49.30
38	S-18	Combination	56.06	Rect	4.77	3.27	18	Cir	51.25			
39	S-41 (WQ)	Combination	52.12	Rect	4.77	3.27	18	Cir	47.65	18 18	Cir Cir	47.60 47.75
40	S-45 (WQ)	Combination	52.15	Rect	4.77	3.27	18	Cir	47.90	18	Cir	47.90
41	S-39A	Manhole	52.25	Cir	4.00	4.00	18	Cir	48.85	18	Cir	48.85

Project File: 10yr.stm | Number of Structures: 53 | Run Date: 5/20/2022

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
42	S-39	Grate	52.07	Rect	4.77	3.27	18	Cir	48.95	18	Cir	48.90
43	S-38	Manhole	52.31	Cir	4.00	4.00	18	Cir	49.00	18	Cir	49.05
44	S-40	Grate	52.02	Rect	4.77	3.27	18	Cir	49.15			
45	S-42	Combination	53.78	Rect	4.77	3.27	18	Cir	48.70	18	Cir	48.90
46	S-43	Combination	53.79	Rect	4.77	3.27	18	Cir	49.20			
47	S-B1	Manhole	50.88	Cir	4.00	4.00	24	Cir	45.70	18 24	Cir Cir	48.00 45.80
48	S-B2	Manhole	52.30	Cir	4.00	4.00	18	Cir	48.80			
49	S-102	Manhole	50.73	Cir	5.00	5.00	24	Cir	46.30	24	Cir	46.30
50	S-A1	Manhole	51.40	Cir	5.00	5.00	24	Cir	47.60			
51	S-51	Combination	51.90	Rect	4.77	3.27	18	Cir	48.45	18	Cir	48.65
52	S-52	Combination	54.63	Rect	4.77	3.27	18	Cir	50.60			
53	S-30 (WQ)	Combination	50.80	Rect	4.77	3.27	18	Cir	48.10			

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	P-2	5.18	24	Cir	54	48.80	49.20	0.741	49.56	50.00	n/a	50.00	End	Manhole
2	P-3	4.65	24	Cir	87	49.40	49.85	0.517	50.19	50.64	0.25	50.89	1	Manhole
3	P-4	4.13	24	Cir	87	50.05	50.50	0.517	50.89	51.22	0.26	51.47	2	Manhole
4	P-5	2.12	18	Cir	66	51.00	51.40	0.606	51.56	51.96	0.28	52.25	3	Grate
5	P-6	1.05	18	Cir	117	51.60	52.20	0.513	52.25	52.59	0.20	52.78	4	Combination
6	P-7	0.54	18	Cir	33	52.35	52.55	0.606	52.78	52.84	0.08	52.92	5	Combination
7	P-8	2.16	18	Cir	38	50.80	51.10	0.789	51.47	51.65	n/a	51.65 j	3	Combination
8	P-9	1.24	18	Cir	110	51.30	51.85	0.500	51.75	52.30	0.18	52.48	7	Combination
9	P-10	0.90	18	Cir	59	52.05	52.35	0.508	52.48	52.71	0.12	52.83	8	Combination
10	P-11	0.66	18	Cir	64	51.60	51.95	0.547	52.25	52.31	0.06	52.38	4	Grate
11	P-12	0.63	18	Cir	59	51.30	51.60	0.508	51.65	51.90	0.10	52.00	7	Combination
12	P-14	0.35	18	Cir	33	50.05	50.25	0.606	50.89	50.89	0.00	50.90	2	Combination
13	P-13	0.45	18	Cir	25	50.05	50.25	0.800	50.89	50.50	n/a	50.50	2	Combination
14	P-16	0.44	18	Cir	31	49.40	49.60	0.645	50.00	50.01	0.02	50.03	1	Combination
15	P-15	0.40	18	Cir	28	49.40	49.60	0.714	50.00	49.83	n/a	49.83	1	Combination
16	P-34	1.16	18	Cir	43	47.60	47.82	0.512	48.03	48.25	0.12	48.37	End	Manhole
17	P-35	1.16	18	Cir	23	47.82	47.95	0.565	48.37	48.40	0.16	48.56	16	Combination
18	P-36	0.85	18	Cir	118	47.95	48.55	0.508	48.56	48.90	0.06	48.96	17	Combination
19	P-37	0.77	18	Cir	107	48.55	49.10	0.514	48.96	49.43	n/a	49.49 j	18	Combination
20	P-R1	0.49	18	Cir	23	49.10	49.25	0.652	49.49	49.52	0.12	49.63	19	Combination
21	P-R2A	0.42	18	Cir	75	49.45	49.84	0.520	49.71	50.10	0.03	50.13	20	Combination
22	P-R2	0.17	18	Cir	184	49.84	50.80	0.522	50.13	50.95	0.03	50.95	21	Combination
23	P-R9	0.02	18	Cir	39	51.00	51.20	0.513	51.06	51.25	0.01	51.26	22	Manhole
24	P-R10	0.03	18	Cir	20	51.40	51.50	0.500	51.47	51.57	0.01	51.59	23	Combination

Project File: 10yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Return period = 10 Yrs. ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
25	P-R3	0.44	18	Cir	42	48.66	48.90	0.571	48.92	49.16	0.11	49.27	End	Combination
26	P-R4	0.04	18	Cir	114	49.05	49.65	0.526	49.27	49.72	n/a	49.76 j	25	Grate
27	P-R5	0.03	18	Cir	17	49.85	49.95	0.588	49.92	50.02	0.02	50.04	26	Manhole
28	P-R6	0.04	18	Cir	19	50.15	50.25	0.526	50.23	50.33	n/a	50.34 j	27	Grate
29	P-R7	0.03	18	Cir	6	50.25	50.30	0.833	50.34	50.37	n/a	50.39 j	28	Manhole
30	P-R8	0.04	18	Cir	16	50.50	50.60	0.625	50.58	50.68	0.02	50.70	29	Grate
31	P-20	0.02	18	Cir	15	48.80	48.90	0.667	49.30	49.30	0.00	49.30	End	Grate
32	P-22	0.01	18	Cir	19	49.20	49.30	0.526	49.30	49.34	0.01	49.35	31	Manhole
33	P-21	0.01	18	Cir	19	49.50	49.60	0.526	49.54	49.64	0.01	49.65	32	Grate
34	P-23	0.02	18	Cir	16	48.80	48.95	0.938	49.30	49.30	0.00	49.30	End	Grate
35	P-24	0.01	18	Cir	16	49.15	49.25	0.625	49.30	49.31	0.00	49.31	34	Manhole
36	P-25	0.01	18	Cir	16	49.45	49.55	0.625	49.49	49.59	0.01	49.60	35	Grate
37	P-17	1.32	18	Cir	17	48.80	49.10	1.765	49.30	49.53	n/a	49.53 j	End	Combination
38	P-18	0.95	18	Cir	127	49.30	51.25	1.535	49.59	51.61	0.13	51.61	37	Combination
39	P-41	0.19	18	Cir	6	47.60	47.65	0.833	47.76	47.81	0.08	47.81	End	Combination
40	P-45	0.06	18	Cir	59	47.60	47.90	0.508	47.81	47.99	0.01	48.01	39	Combination
41	P-39A	0.01	18	Cir	191	47.90	48.85	0.497	48.01	48.89	0.01	48.90	40	Manhole
42	P-39B	0.01	18	Cir	21	48.85	48.95	0.476	48.90	48.99	0.00	49.00	41	Grate
43	P-39	0.01	18	Cir	15	48.90	49.00	0.667	49.00	49.04	0.01	49.05	42	Manhole
44	P-40	0.01	18	Cir	15	49.05	49.15	0.667	49.09	49.19	0.01	49.20	43	Grate
45	P-42	1.39	18	Cir	190	47.75	48.70	0.500	48.22	49.17	0.20	49.37	39	Combination
46	P-43	0.70	18	Cir	59	48.90	49.20	0.508	49.37	49.52	0.10	49.62	45	Combination
47	P-B1	12.98	24	Cir	20	45.45	45.70	1.250	46.56	47.00	n/a	47.00	End	Manhole
48	P-BASIN B	8.95	18	Cir	29	48.00	48.80	2.759	48.83	49.96	n/a	49.96	47	Manhole

Project File: 10yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Return period = 10 Yrs. ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
49	P-102	4.03	24	Cir	99	45.80	46.30	0.505	47.00	47.11	0.17	47.27	47	Manhole
50	P-A1	4.03	24	Cir	111	46.30	47.60	1.171	47.27	48.30	n/a	48.30 j	49	Manhole
51	P-51	2.01	18	Cir	23	47.70	48.45	3.261	48.05	48.98	0.25	48.98	End	Combination
52	P-52	0.83	18	Cir	118	48.65	50.60	1.653	48.98	50.94	0.12	50.94	51	Combination
53	P-30	1.30	18	Cir	26	47.90	48.10	0.769	48.31	48.53	0.15	48.53	End	Combination

Project File: 10yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Return period = 10 Yrs. ; j - Line contains hyd. jump.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	54	0.00	1.45	0.00	0.00	0.93	5.0	12.4	5.6	5.18	16.87	4.56	24	0.74	48.80	49.20	49.56	50.00	52.85	52.72	P-2
2	1	87	0.00	1.19	0.00	0.00	0.81	5.0	11.6	5.7	4.65	14.10	4.02	24	0.52	49.40	49.85	50.19	50.64	52.72	53.59	P-3
3	2	87	0.00	1.01	0.00	0.00	0.70	5.0	10.7	5.9	4.13	14.10	3.68	24	0.52	50.05	50.50	50.89	51.22	53.59	54.64	P-4
4	3	66	0.17	0.55	0.60	0.10	0.35	5.0	9.9	6.1	2.12	7.09	3.49	18	0.61	51.00	51.40	51.56	51.96	54.64	54.48	P-5
5	4	117	0.12	0.24	0.68	0.08	0.16	5.0	6.8	6.7	1.05	6.52	2.18	18	0.51	51.60	52.20	52.25	52.59	54.48	55.16	P-6
6	5	33	0.12	0.12	0.62	0.07	0.07	5.0	5.0	7.2	0.54	7.09	1.78	18	0.61	52.35	52.55	52.78	52.84	55.16	55.24	P-7
7	3	38	0.10	0.46	0.78	0.08	0.35	5.0	9.4	6.2	2.16	8.09	3.22	18	0.79	50.80	51.10	51.47	51.65	54.64	54.71	P-8
8	7	110	0.08	0.25	0.76	0.06	0.18	5.0	6.9	6.7	1.24	6.44	2.81	18	0.50	51.30	51.85	51.75	52.30	54.71	55.13	P-9
9	8	59	0.17	0.17	0.73	0.12	0.12	5.0	5.0	7.2	0.90	6.49	2.47	18	0.51	52.05	52.35	52.48	52.71	55.13	55.37	P-10
10	4	64	0.14	0.14	0.65	0.09	0.09	5.0	5.0	7.2	0.66	6.73	1.45	18	0.55	51.60	51.95	52.25	52.31	54.48	54.20	P-11
11	7	59	0.11	0.11	0.79	0.09	0.09	5.0	5.0	7.2	0.63	6.49	2.25	18	0.51	51.30	51.60	51.65	51.90	54.71	54.71	P-12
12	2	33	0.09	0.09	0.54	0.05	0.05	5.0	5.0	7.2	0.35	7.09	0.41	18	0.61	50.05	50.25	50.89	50.89	53.59	53.31	P-14
13	2	25	0.09	0.09	0.69	0.06	0.06	5.0	5.0	7.2	0.45	8.14	1.40	18	0.80	50.05	50.25	50.89	50.50	53.59	53.32	P-13
14	1	31	0.13	0.13	0.47	0.06	0.06	5.0	5.0	7.2	0.44	7.31	0.91	18	0.65	49.40	49.60	50.00	50.01	52.72	52.63	P-16
15	1	28	0.13	0.13	0.42	0.05	0.05	5.0	5.0	7.2	0.40	7.69	1.44	18	0.71	49.40	49.60	50.00	49.83	52.72	52.63	P-15
16	End	43	0.00	0.78	0.00	0.00	0.57	5.0	80.1	2.0	1.16	6.51	2.77	18	0.51	47.60	47.82	48.03	48.25	51.89	51.88	P-34
17	16	23	0.20	0.78	0.78	0.16	0.57	5.0	79.9	2.0	1.16	6.84	2.31	18	0.57	47.82	47.95	48.37	48.40	51.88	50.75	P-35
18	17	118	0.05	0.58	0.85	0.04	0.42	5.0	78.6	2.0	0.85	6.49	2.02	18	0.51	47.95	48.55	48.56	48.90	50.75	51.85	P-36
19	18	107	0.19	0.53	0.74	0.14	0.37	5.0	77.4	2.1	0.77	6.52	2.35	18	0.51	48.55	49.10	48.96	49.43	51.85	51.77	P-37
20	19	23	0.04	0.34	0.85	0.03	0.23	5.0	76.9	2.1	0.49	7.35	1.80	18	0.65	49.10	49.25	49.49	49.52	51.77	52.28	P-R1
21	20	75	0.18	0.30	0.69	0.12	0.20	5.0	75.3	2.1	0.42	6.56	2.09	18	0.52	49.45	49.84	49.71	50.10	52.28	52.45	P-R2A
22	21	184	0.10	0.12	0.71	0.07	0.08	5.0	65.2	2.3	0.17	6.57	1.28	18	0.52	49.84	50.80	50.13	50.95	52.45	53.98	P-R2

Project File: 10yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES:Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
23	22	39	0.00	0.02	0.00	0.00	0.00	5.0	25.3	4.1	0.02	6.52	0.78	18	0.51	51.00	51.20	51.06	51.25	53.98	54.88	P-R9
24	23	20	0.02	0.02	0.20	0.00	0.00	5.0	5.0	7.2	0.03	6.44	0.91	18	0.50	51.40	51.50	51.47	51.57	54.88	55.00	P-R10
25	End	42	0.29	0.32	0.78	0.23	0.23	5.0	93.3	1.8	0.44	6.88	2.18	18	0.57	48.66	48.90	48.92	49.16	52.75	52.99	P-R3
26	25	114	0.00	0.03	0.00	0.00	0.01	5.0	39.9	3.2	0.04	6.60	0.73	18	0.53	49.05	49.65	49.27	49.72	52.99	53.29	P-R4
27	26	17	0.00	0.03	0.00	0.00	0.01	5.0	30.5	3.7	0.03	6.98	1.00	18	0.59	49.85	49.95	49.92	50.02	53.29	53.11	P-R5
28	27	19	0.00	0.03	0.00	0.00	0.01	5.0	19.9	4.6	0.04	6.60	1.02	18	0.53	50.15	50.25	50.23	50.33	53.11	53.08	P-R6
29	28	6	0.00	0.03	0.00	0.00	0.01	5.0	15.9	5.1	0.03	8.31	0.93	18	0.83	50.25	50.30	50.34	50.37	53.08	55.15	P-R7
30	29	16	0.03	0.03	0.20	0.01	0.01	5.0	5.0	7.2	0.04	7.19	1.13	18	0.62	50.50	50.60	50.58	50.68	55.15	55.00	P-R8
31	End	15	0.00	0.00	0.00	0.00	0.00	5.0	116.9	0.0	0.02	7.43	0.05	18	0.67	48.80	48.90	49.30	49.30	52.98	53.13	P-20
32	31	19	0.00	0.00	0.00	0.00	0.00	5.0	61.0	0.0	0.01	6.60	0.44	18	0.53	49.20	49.30	49.30	49.34	53.13	53.31	P-22
33	32	19	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	6.60	0.68	18	0.53	49.50	49.60	49.54	49.64	53.31	53.29	P-21
34	End	16	0.00	0.00	0.00	0.00	0.00	5.0	99.2	0.0	0.02	8.81	0.05	18	0.94	48.80	48.95	49.30	49.30	52.71	52.40	P-23
35	34	16	0.00	0.00	0.00	0.00	0.00	5.0	52.1	0.0	0.01	7.19	0.27	18	0.62	49.15	49.25	49.30	49.31	52.40	52.42	P-24
36	35	16	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	7.19	0.71	18	0.62	49.45	49.55	49.49	49.59	52.42	52.15	P-25
37	End	17	0.11	0.29	0.72	0.08	0.21	5.0	8.9	6.3	1.32	12.09	2.85	18	1.76	48.80	49.10	49.30	49.53	52.40	54.44	P-17
38	37	127	0.18	0.18	0.73	0.13	0.13	5.0	5.0	7.2	0.95	11.28	3.38	18	1.54	49.30	51.25	49.59	51.61	54.44	56.06	P-18
39	End	6	0.18	0.64	0.77	0.14	0.48	5.0	719.7	0.4	0.19	8.31	1.88	18	0.83	47.60	47.65	47.76	47.81	52.60	52.12	P-41
40	39	59	0.17	0.17	0.77	0.13	0.13	5.0	717.7	0.4	0.06	6.49	0.83	18	0.51	47.60	47.90	47.81	47.99	52.12	52.15	P-45
41	40	191	0.00	0.00	0.00	0.00	0.00	5.0	155.2	0.0	0.01	6.42	0.49	18	0.50	47.90	48.85	48.01	48.89	52.15	52.25	P-39A
42	41	21	0.00	0.00	0.00	0.00	0.00	5.0	93.4	0.0	0.01	6.28	0.64	18	0.48	48.85	48.95	48.90	48.99	52.25	52.07	P-39B
43	42	15	0.00	0.00	0.00	0.00	0.00	5.0	49.2	0.0	0.01	7.43	0.47	18	0.67	48.90	49.00	49.00	49.04	52.07	52.31	P-39
44	43	15	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	7.43	0.74	18	0.67	49.05	49.15	49.09	49.19	52.31	52.02	P-40

Project File: 10yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES:Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
45	39	190	0.16	0.29	0.72	0.12	0.21	5.0	7.5	6.6	1.39	6.44	2.91	18	0.50	47.75	48.70	48.22	49.17	52.12	53.78	P-42
46	45	59	0.13	0.13	0.74	0.10	0.10	5.0	5.0	7.2	0.70	6.49	2.00	18	0.51	48.90	49.20	49.37	49.52	53.78	53.79	P-43
47	End	20	0.00	0.00	0.00	0.00	0.00	5.0	7.7	0.0	12.98	21.92	6.65	24	1.25	45.45	45.70	46.56	47.00	50.66	50.88	P-B1
48	47	29	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	8.95	15.12	7.52	18	2.76	48.00	48.80	48.83	49.96	50.88	52.30	P-BASIN B
49	47	99	0.00	0.00	0.00	0.00	0.00	5.0	6.4	0.0	4.03	13.93	2.73	24	0.51	45.80	46.30	47.00	47.11	50.88	50.73	P-102
50	49	111	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	4.03	21.21	3.37	24	1.17	46.30	47.60	47.27	48.30	50.73	51.40	P-A1
51	End	23	0.32	0.48	0.65	0.21	0.32	5.0	9.2	6.2	2.01	16.43	4.93	18	3.26	47.70	48.45	48.05	48.98	52.59	51.90	P-51
52	51	118	0.16	0.16	0.72	0.12	0.12	5.0	5.0	7.2	0.83	11.70	2.81	18	1.65	48.65	50.60	48.98	50.94	51.90	54.63	P-52
53	End	26	0.24	0.24	0.75	0.18	0.18	5.0	5.0	7.2	1.30	7.98	3.23	18	0.77	47.90	48.10	48.31	48.53	51.27	50.80	P-30

Project File: 10yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES:Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	S-2 (WQ)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	S-3	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
3	S-4	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
4	S-5	0.74	0.26	1.00	0.00	Grate	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.13	8.80	0.13	8.80	0.0	Off
5	S-6	0.59	0.00	0.33	0.26	Comb	6.0	3.52	0.00	4.02	2.25	0.010	1.00	0.010	0.010	0.012	0.08	8.20	0.06	6.04	0.0	4
6	S-7	0.54	0.00	0.31	0.23	Comb	6.0	3.52	0.00	4.02	2.25	0.010	1.00	0.010	0.010	0.012	0.08	7.92	0.06	5.77	0.0	10
7	S-8	0.56	0.00	0.56	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.09	5.75	0.09	5.75	0.0	Off
8	S-9	0.44	0.00	0.44	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.07	4.95	0.07	4.95	0.0	Off
9	S-10	0.90	0.00	0.90	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.11	7.65	0.11	7.65	0.0	Off
10	S-11	0.66	0.23	0.89	0.00	Grate	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.12	8.23	0.12	8.23	0.0	Off
11	S-12	0.63	0.00	0.63	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.09	6.15	0.09	6.15	0.0	Off
12	S-14	0.35	0.00	0.35	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.06	6.25	0.06	6.25	0.0	Off
13	S-13	0.45	0.00	0.45	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.07	7.27	0.07	7.27	0.0	Off
14	S-16	0.44	0.00	0.44	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.07	7.19	0.07	7.19	0.0	Off
15	S-15	0.40	0.00	0.40	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.07	6.71	0.07	6.71	0.0	Off
16	S-34	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
17	S-35 (WQ)	1.13	0.00	1.13	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.13	8.83	0.13	8.83	0.0	Off
18	S-36	0.31	0.00	0.31	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.06	5.76	0.06	5.76	0.0	Off
19	S-37	1.02	0.00	1.02	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.12	12.16	0.12	12.16	0.0	Off
20	R-1	0.25	0.44	0.37	0.32	Comb	6.0	3.52	0.00	4.02	2.25	0.010	1.00	0.010	0.010	0.012	0.09	8.67	0.07	6.51	0.0	Off
21	R-2A	0.90	0.22	0.68	0.44	Comb	6.0	3.52	0.00	4.02	2.25	0.010	1.00	0.020	0.020	0.012	0.14	6.75	0.10	4.76	0.0	20
22	R-2	0.51	0.00	0.30	0.22	Comb	6.0	3.52	0.00	4.02	2.25	0.010	1.00	0.010	0.010	0.012	0.08	7.78	0.06	5.64	0.0	21
23	R-9	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: 10yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Inlet N-Values = 0.016; Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
24	R-10	0.03	0.00	0.03	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	2.00	0.010	0.010	0.000	0.02	2.13	0.02	2.13	0.0	Off
25	R-3	1.64	0.00	1.64	0.00	Comb	6.0	8.04	15.08	8.04	2.25	Sag	1.00	0.015	0.015	0.000	0.13	8.75	0.13	8.75	0.0	Off
26	R-4	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
27	R-5	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
28	R-6	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
29	R-7	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
30	R-8	0.04	0.00	0.04	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	2.00	0.010	0.010	0.000	0.03	2.55	0.03	2.55	0.0	Off
31	S-22 (WQ)	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	2.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
32	S-20	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
33	S-21	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
34	S-23 (WQ)	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
35	S-24	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
36	S-25	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
37	S-17 (WQ)	0.57	0.00	0.57	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.09	5.81	0.09	5.81	0.0	Off
38	S-18	0.95	0.00	0.95	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.12	7.93	0.12	7.93	0.0	Off
39	S-41 (WQ)	1.00	0.00	1.00	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	2.00	0.015	0.015	0.000	0.13	8.70	0.13	8.70	0.0	Off
40	S-45 (WQ)	0.95	0.00	0.95	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.12	7.91	0.12	7.91	0.0	Off
41	S-39A	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
42	S-39	0.00	0.00	0.00	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	2.00	0.010	0.010	0.000	0.00	0.00	0.00	0.00	0.0	Off
43	S-38	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
44	S-40	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
45	S-42	0.83	0.00	0.83	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.11	7.31	0.11	7.31	0.0	Off
46	S-43	0.70	0.00	0.70	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.10	6.54	0.10	6.54	0.0	Off

Project File: 10yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Inlet N-Values = 0.016; Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
47	S-B1	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
48	S-B2	8.95*	0.00	0.00	8.95	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
49	S-102	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
50	S-A1	4.03*	0.00	0.00	4.03	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
51	S-51	1.51	0.00	1.51	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.16	10.59	0.16	10.59	0.0	Off
52	S-52	0.83	0.00	0.83	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.11	7.31	0.11	7.31	0.0	Off
53	S-30 (WQ)	1.30	0.00	1.30	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.020	0.020	0.000	0.15	7.38	0.15	7.38	0.0	Off

Project File: 10yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Inlet N-Values = 0.016; Intensity = 88.24 / (Inlet time + 15.50) ^ 0.83; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	24	5.18	48.80	49.56	0.76	1.10	4.72	0.30	49.86	0.000	54	49.20	50.00	0.80**	1.18	4.40	0.30	50.30	0.000	0.000	n/a	0.99	n/a
2	24	4.65	49.40	50.19	0.79*	1.16	4.02	0.25	50.44	0.517	87	49.85	50.64	0.79	1.16	4.02	0.25	50.89	0.514	0.515	0.448	1.00	0.25
3	24	4.13	50.05	50.89	0.84	1.00	3.29	0.17	51.06	0.324	87	50.50	51.22	0.72**	1.01	4.08	0.26	51.48	0.585	0.455	0.396	0.99	0.26
4	18	2.12	51.00	51.56	0.56*	0.61	3.50	0.19	51.75	0.605	66	51.40	51.96	0.56	0.61	3.49	0.19	52.15	0.602	0.603	0.398	1.50	0.28
5	18	1.05	51.60	52.25	0.65	0.36	1.44	0.03	52.28	0.089	117	52.20	52.59	0.39**	0.36	2.93	0.13	52.72	0.637	0.363	0.425	1.48	0.20
6	18	0.54	52.35	52.78	0.43	0.42	1.27	0.03	52.81	0.106	33	52.55	52.84	0.29	0.24	2.29	0.08	52.92	0.553	0.330	0.109	1.00	0.08
7	18	2.16	50.80	51.47	0.67	0.59	2.80	0.21	51.68	0.000	38	51.10	51.65 j	0.55**	0.59	3.64	0.21	51.86	0.000	0.000	n/a	1.50	n/a
8	18	1.24	51.30	51.75	0.45*	0.44	2.81	0.12	51.87	0.500	110	51.85	52.30	0.45	0.44	2.81	0.12	52.42	0.498	0.499	0.549	1.50	0.18
9	18	0.90	52.05	52.48	0.43	0.32	2.14	0.07	52.55	0.300	59	52.35	52.71	0.36**	0.32	2.80	0.12	52.83	0.639	0.469	0.277	1.00	0.12
10	18	0.66	51.60	52.25	0.65	0.73	0.90	0.01	52.26	0.035	64	51.95	52.31	0.36	0.33	1.99	0.06	52.38	0.317	0.176	0.113	1.00	0.06
11	18	0.63	51.30	51.65	0.35	0.24	1.97	0.06	51.71	0.320	59	51.60	51.90	0.30**	0.25	2.53	0.10	52.00	0.648	0.484	0.286	1.00	0.10
12	18	0.35	50.05	50.89	0.84	1.02	0.34	0.00	50.89	0.004	33	50.25	50.89	0.64	0.72	0.49	0.00	50.90	0.010	0.007	0.002	1.00	0.00
13	18	0.45	50.05	50.89	0.84	0.19	0.44	0.09	50.98	0.000	25	50.25	50.50	0.25**	0.19	2.35	0.09	50.58	0.000	0.000	n/a	1.00	n/a
14	18	0.44	49.40	50.00	0.60	0.66	0.67	0.01	50.01	0.021	31	49.60	50.01	0.41	0.39	1.15	0.02	50.03	0.092	0.057	0.018	1.00	0.02
15	18	0.40	49.40	50.00	0.60	0.17	0.60	0.08	50.08	0.000	28	49.60	49.83	0.23**	0.17	2.27	0.08	49.91	0.000	0.000	n/a	1.00	n/a
16	18	1.16	47.60	48.03	0.43	0.42	2.77	0.12	48.15	0.504	43	47.82	48.25	0.43	0.42	2.78	0.12	48.37	0.510	0.507	0.218	1.00	0.12
17	18	1.16	47.82	48.37	0.55	0.59	1.98	0.06	48.43	0.199	23	47.95	48.40	0.45	0.44	2.63	0.11	48.50	0.438	0.319	0.073	1.50	0.16
18	18	0.85	47.95	48.56	0.61	0.31	1.27	0.03	48.58	0.074	118	48.55	48.90	0.35**	0.31	2.76	0.12	49.02	0.641	0.357	0.422	0.50	0.06
19	18	0.77	48.55	48.96	0.41	0.28	2.01	0.06	49.02	0.283	107	49.10	49.43 j	0.33**	0.29	2.69	0.11	49.54	0.643	0.463	0.495	0.50	0.06
20	18	0.49	49.10	49.49	0.39	0.36	1.35	0.03	49.51	0.135	23	49.25	49.52	0.27	0.22	2.26	0.08	49.60	0.578	0.356	0.082	1.46	0.12
21	18	0.42	49.45	49.71	0.26*	0.20	2.08	0.07	49.77	0.518	75	49.84	50.10	0.26	0.20	2.10	0.07	50.16	0.530	0.524	0.393	0.50	0.03
22	18	0.17	49.84	50.13	0.29	0.10	0.73	0.01	50.14	0.055	184	50.80	50.95	0.15**	0.10	1.84	0.05	51.01	0.769	0.412	n/a	0.50	0.03

Project File: 10yr.stm | Number of lines: 53 | Run Date: 5/20/2022

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
23	18	0.02	51.00	51.06	0.06*	0.02	0.78	0.01	51.06	0.510	39	51.20	51.25	0.05**	0.02	0.79	0.01	51.26	0.539	0.525	0.205	0.99	0.01
24	18	0.03	51.40	51.47	0.07*	0.03	0.91	0.01	51.49	0.497	20	51.50	51.57	0.07	0.03	0.91	0.01	51.59	0.492	0.494	0.099	1.00	0.01
25	18	0.44	48.66	48.92	0.26	0.20	2.16	0.07	48.99	0.551	42	48.90	49.16	0.26	0.20	2.19	0.07	49.23	0.578	0.565	0.237	1.48	0.11
26	18	0.04	49.05	49.27	0.22	0.03	0.25	0.00	49.27	0.009	114	49.65	49.72 j	0.07**	0.03	1.21	0.02	49.75	0.855	0.432	0.492	1.48	0.03
27	18	0.03	49.85	49.92	0.07*	0.03	1.00	0.02	49.94	0.583	17	49.95	50.02	0.07**	0.03	1.01	0.02	50.04	0.594	0.588	0.100	0.97	0.02
28	18	0.04	50.15	50.23	0.08*	0.03	1.01	0.02	50.25	0.525	19	50.25	50.33 j	0.08**	0.04	1.02	0.02	50.35	0.544	0.534	0.102	0.50	0.01
29	18	0.03	50.25	50.34	0.09	0.03	0.72	0.01	50.35	0.239	6	50.30	50.37 j	0.07**	0.03	1.14	0.02	50.39	0.883	0.561	0.034	1.00	0.02
30	18	0.04	50.50	50.58	0.08*	0.03	1.12	0.02	50.60	0.624	16	50.60	50.68	0.08**	0.04	1.13	0.02	50.70	0.646	0.635	0.102	1.00	0.02
31	18	0.02	48.80	49.30	0.50	0.52	0.04	0.00	49.30	0.000	15	48.90	49.30	0.40	0.38	0.05	0.00	49.30	0.000	0.000	0.000	0.50	0.00
32	18	0.01	49.20	49.30	0.10	0.01	0.20	0.00	49.30	0.016	19	49.30	49.34	0.04**	0.01	0.68	0.01	49.35	0.531	0.274	0.052	1.00	0.01
33	18	0.01	49.50	49.54	0.04*	0.01	0.67	0.01	49.55	0.525	19	49.60	49.64	0.04**	0.01	0.68	0.01	49.65	0.531	0.528	0.100	1.00	0.01
34	18	0.02	48.80	49.30	0.50	0.52	0.04	0.00	49.30	0.000	16	48.95	49.30	0.35	0.31	0.06	0.00	49.30	0.000	0.000	0.000	0.50	0.00
35	18	0.01	49.15	49.30	0.15	0.09	0.11	0.00	49.30	0.003	16	49.25	49.31	0.06	0.02	0.44	0.00	49.31	0.150	0.077	0.012	1.00	0.00
36	18	0.01	49.45	49.49	0.04*	0.01	0.71	0.01	49.50	0.618	16	49.55	49.59	0.04**	0.01	0.71	0.01	49.60	0.602	0.610	0.098	1.00	0.01
37	18	1.32	48.80	49.30	0.50	0.42	2.56	0.15	49.45	0.000	17	49.10	49.53 j	0.43**	0.42	3.15	0.15	49.68	0.000	0.000	n/a	1.38	0.21
38	18	0.95	49.30	49.59	0.29*	0.25	3.88	0.13	49.72	0.000	127	51.25	51.61	0.36**	0.33	2.88	0.13	51.74	0.000	0.000	n/a	1.00	0.13
39	18	0.19	47.60	47.76	0.16	0.10	1.88	0.05	47.81	0.000	6	47.65	47.81	0.16**	0.10	1.88	0.05	47.86	0.000	0.000	n/a	1.50	0.08
40	18	0.06	47.60	47.81	0.21	0.04	0.39	0.00	47.81	0.024	59	47.90	47.99	0.09**	0.05	1.28	0.03	48.02	0.692	0.358	0.211	0.50	0.01
41	18	0.01	47.90	48.01	0.11	0.01	0.18	0.00	48.01	0.012	191	48.85	48.89	0.04**	0.01	0.81	0.01	48.90	0.887	0.449	0.858	1.00	0.01
42	18	0.01	48.85	48.90	0.05	0.01	0.57	0.01	48.90	0.326	21	48.95	48.99	0.04**	0.01	0.71	0.01	49.00	0.602	0.464	0.098	0.50	0.00
43	18	0.01	48.90	49.00	0.10	0.01	0.21	0.00	49.00	0.018	15	49.00	49.04	0.04**	0.01	0.74	0.01	49.05	0.684	0.351	0.053	0.95	0.01
44	18	0.01	49.05	49.09	0.04*	0.01	0.73	0.01	49.10	0.666	15	49.15	49.19	0.04**	0.01	0.74	0.01	49.20	0.684	0.675	0.101	1.00	0.01

Project File: 10yr.stm | Number of lines: 53 | Run Date: 5/20/2022

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

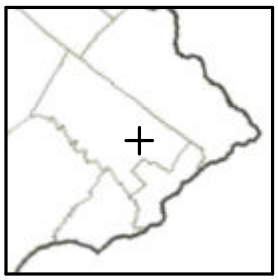
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
45	18	1.39	47.75	48.22	0.47*	0.48	2.90	0.13	48.36	0.499	190	48.70	49.17	0.47	0.48	2.92	0.13	49.30	0.504	0.502	0.953	1.50	0.20
46	18	0.70	48.90	49.37	0.47	0.26	1.47	0.03	49.40	0.128	59	49.20	49.52	0.32**	0.27	2.54	0.10	49.62	0.596	0.362	0.214	1.00	0.10
47	24	12.98	45.45	46.56	1.11*	1.79	7.27	0.57	47.12	0.000	20	45.70	47.00	1.30**	2.15	6.03	0.57	47.56	0.000	0.000	n/a	1.00	n/a
48	18	8.95	48.00	48.83	0.83*	1.00	8.91	0.58	49.41	0.000	29	48.80	49.96	1.16**	1.46	6.12	0.58	50.54	0.000	0.000	n/a	1.00	n/a
49	24	4.03	45.80	47.00	1.20	1.96	2.06	0.07	47.06	0.095	99	46.30	47.11	0.81	1.18	3.40	0.18	47.29	0.363	0.229	0.227	0.92	0.17
50	24	4.03	46.30	47.27	0.97	0.99	2.66	0.26	47.53	0.000	111	47.60	48.30 j	0.70**	0.99	4.08	0.26	48.56	0.000	0.000	n/a	1.00	n/a
51	18	2.01	47.70	48.05	0.35*	0.32	6.29	0.20	48.25	0.000	23	48.45	48.98	0.53**	0.56	3.56	0.20	49.18	0.000	0.000	n/a	1.27	0.25
52	18	0.83	48.65	48.98	0.33	0.29	2.84	0.12	49.10	0.000	118	50.60	50.94	0.34**	0.30	2.78	0.12	51.06	0.000	0.000	n/a	1.00	0.12
53	18	1.30	47.90	48.31	0.41*	0.39	3.33	0.15	48.46	0.000	26	48.10	48.53	0.43**	0.41	3.14	0.15	48.68	0.000	0.000	n/a	1.00	0.15

Project File: 10yr.stm | Number of lines: 53 | Run Date: 5/20/2022

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

25 - YEAR CALCULATIONS
PROPOSED NETWORK

Rational Formula Hydrograph
Publication 584 Intensity Calculation



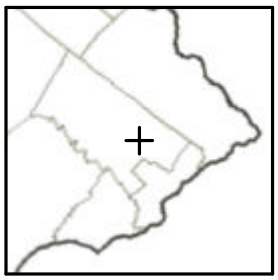
Project Location

25 Year Storm at Roof NE-1 (to S-11)
Time of Concentration: 5 min.
Drainage Area: 0.4800 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.590	0.590	1.742	0.795
0.167	0.377	0.968	3.128	1.426
0.250	**0.247**	**1.215**	**7.086**	**3.231**
0.333	0.195	1.410	4.525	2.064
0.417	0.261	1.671	2.968	1.353
0.500	0.145	1.816	2.342	1.068
0.583	0.126	1.942	1.516	0.691
0.667	0.111	2.054	1.336	0.609
0.750	0.099	2.153	1.191	0.543
0.833	0.089	2.242	1.070	0.488
0.917	0.081	2.323	0.968	0.441
1.000	0.073	2.396	0.880	0.401
1.083	0.067	2.463	0.804	0.367
1.167	0.061	2.524	0.737	0.336
1.250	0.057	2.581	0.678	0.309
1.333	0.052	2.633	0.626	0.285
1.417	0.048	2.681	0.579	0.264
1.500	0.045	2.726	0.536	0.245
1.583	0.042	2.767	0.498	0.227
1.667	0.039	2.806	0.463	0.211
1.750	0.036	2.842	0.431	0.197
1.833	0.034	2.876	0.402	0.183
1.917	0.031	2.907	0.376	0.171
2.000	0.029	2.936	0.351	0.160
2.083	0.018	2.954	0.216	0.098

Publication 584 Intensity Calculation

Rational Formula Hydrograph
Publication 584 Intensity Calculation



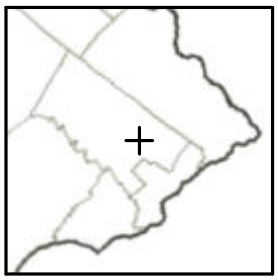
Project Location

25 Year Storm at Roof NE-2 (to S-25)
Time of Concentration: 5 min.
Drainage Area: 0.4500 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.590	0.590	1.742	0.745
0.167	0.377	0.968	3.128	1.337
0.250	**0.247**	**1.215**	**7.086**	**3.029**
0.333	0.195	1.410	4.525	1.935
0.417	0.261	1.671	2.968	1.269
0.500	0.145	1.816	2.342	1.001
0.583	0.126	1.942	1.516	0.648
0.667	0.111	2.054	1.336	0.571
0.750	0.099	2.153	1.191	0.509
0.833	0.089	2.242	1.070	0.457
0.917	0.081	2.323	0.968	0.414
1.000	0.073	2.396	0.880	0.376
1.083	0.067	2.463	0.804	0.344
1.167	0.061	2.524	0.737	0.315
1.250	0.057	2.581	0.678	0.290
1.333	0.052	2.633	0.626	0.268
1.417	0.048	2.681	0.579	0.247
1.500	0.045	2.726	0.536	0.229
1.583	0.042	2.767	0.498	0.213
1.667	0.039	2.806	0.463	0.198
1.750	0.036	2.842	0.431	0.184
1.833	0.034	2.876	0.402	0.172
1.917	0.031	2.907	0.376	0.161
2.000	0.029	2.936	0.351	0.150
2.083	0.018	2.954	0.216	0.092

Publication 584 Intensity Calculation

Rational Formula Hydrograph
Publication 584 Intensity Calculation



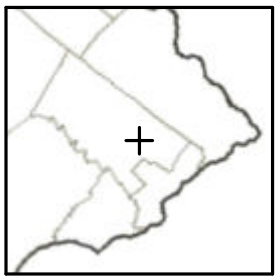
Project Location

25 Year Storm at Roof NW-1 (to S-18)
Time of Concentration: 5 min.
Drainage Area: 0.4800 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.590	0.590	1.742	0.795
0.167	0.377	0.968	3.128	1.426
0.250	**0.247**	**1.215**	**7.086**	**3.231**
0.333	0.195	1.410	4.525	2.064
0.417	0.261	1.671	2.968	1.353
0.500	0.145	1.816	2.342	1.068
0.583	0.126	1.942	1.516	0.691
0.667	0.111	2.054	1.336	0.609
0.750	0.099	2.153	1.191	0.543
0.833	0.089	2.242	1.070	0.488
0.917	0.081	2.323	0.968	0.441
1.000	0.073	2.396	0.880	0.401
1.083	0.067	2.463	0.804	0.367
1.167	0.061	2.524	0.737	0.336
1.250	0.057	2.581	0.678	0.309
1.333	0.052	2.633	0.626	0.285
1.417	0.048	2.681	0.579	0.264
1.500	0.045	2.726	0.536	0.245
1.583	0.042	2.767	0.498	0.227
1.667	0.039	2.806	0.463	0.211
1.750	0.036	2.842	0.431	0.197
1.833	0.034	2.876	0.402	0.183
1.917	0.031	2.907	0.376	0.171
2.000	0.029	2.936	0.351	0.160
2.083	0.018	2.954	0.216	0.098

Publication 584 Intensity Calculation

Rational Formula Hydrograph
Publication 584 Intensity Calculation



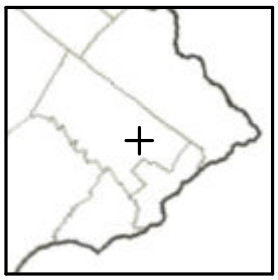
Project Location

25 Year Storm at Roof NW-2 (to S-12)
Time of Concentration: 5 min.
Drainage Area: 0.4500 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.590	0.590	1.742	0.745
0.167	0.377	0.968	3.128	1.337
0.250	**0.247**	**1.215**	**7.086**	**3.029**
0.333	0.195	1.410	4.525	1.935
0.417	0.261	1.671	2.968	1.269
0.500	0.145	1.816	2.342	1.001
0.583	0.126	1.942	1.516	0.648
0.667	0.111	2.054	1.336	0.571
0.750	0.099	2.153	1.191	0.509
0.833	0.089	2.242	1.070	0.457
0.917	0.081	2.323	0.968	0.414
1.000	0.073	2.396	0.880	0.376
1.083	0.067	2.463	0.804	0.344
1.167	0.061	2.524	0.737	0.315
1.250	0.057	2.581	0.678	0.290
1.333	0.052	2.633	0.626	0.268
1.417	0.048	2.681	0.579	0.247
1.500	0.045	2.726	0.536	0.229
1.583	0.042	2.767	0.498	0.213
1.667	0.039	2.806	0.463	0.198
1.750	0.036	2.842	0.431	0.184
1.833	0.034	2.876	0.402	0.172
1.917	0.031	2.907	0.376	0.161
2.000	0.029	2.936	0.351	0.150
2.083	0.018	2.954	0.216	0.092

Publication 584 Intensity Calculation

Rational Formula Hydrograph
Publication 584 Intensity Calculation



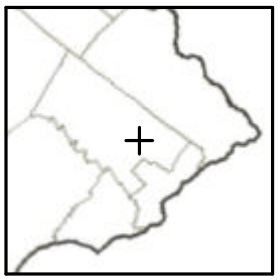
Project Location

25 Year Storm at Roof SE-1 (to MRC Basin B)
Time of Concentration: 5 min.
Drainage Area: 0.4000 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.590	0.590	1.742	0.662
0.167	0.377	0.968	3.128	1.189
0.250	**0.247**	**1.215**	**7.086**	**2.693**
0.333	0.195	1.410	4.525	1.720
0.417	0.261	1.671	2.968	1.128
0.500	0.145	1.816	2.342	0.890
0.583	0.126	1.942	1.516	0.576
0.667	0.111	2.054	1.336	0.508
0.750	0.099	2.153	1.191	0.453
0.833	0.089	2.242	1.070	0.407
0.917	0.081	2.323	0.968	0.368
1.000	0.073	2.396	0.880	0.334
1.083	0.067	2.463	0.804	0.305
1.167	0.061	2.524	0.737	0.280
1.250	0.057	2.581	0.678	0.258
1.333	0.052	2.633	0.626	0.238
1.417	0.048	2.681	0.579	0.220
1.500	0.045	2.726	0.536	0.204
1.583	0.042	2.767	0.498	0.189
1.667	0.039	2.806	0.463	0.176
1.750	0.036	2.842	0.431	0.164
1.833	0.034	2.876	0.402	0.153
1.917	0.031	2.907	0.376	0.143
2.000	0.029	2.936	0.351	0.133
2.083	0.018	2.954	0.216	0.082

Publication 584 Intensity Calculation

Rational Formula Hydrograph
Publication 584 Intensity Calculation



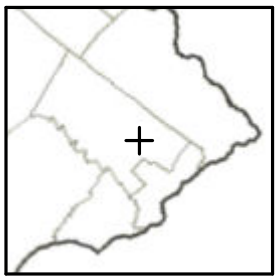
Project Location

25 Year Storm at Roof SE-2 (to S-25)
Time of Concentration: 5 min.
Drainage Area: 0.3200 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.590	0.590	1.742	0.530
0.167	0.377	0.968	3.128	0.951
0.250	**0.247**	**1.215**	**7.086**	**2.154**
0.333	0.195	1.410	4.525	1.376
0.417	0.261	1.671	2.968	0.902
0.500	0.145	1.816	2.342	0.712
0.583	0.126	1.942	1.516	0.461
0.667	0.111	2.054	1.336	0.406
0.750	0.099	2.153	1.191	0.362
0.833	0.089	2.242	1.070	0.325
0.917	0.081	2.323	0.968	0.294
1.000	0.073	2.396	0.880	0.268
1.083	0.067	2.463	0.804	0.244
1.167	0.061	2.524	0.737	0.224
1.250	0.057	2.581	0.678	0.206
1.333	0.052	2.633	0.626	0.190
1.417	0.048	2.681	0.579	0.176
1.500	0.045	2.726	0.536	0.163
1.583	0.042	2.767	0.498	0.151
1.667	0.039	2.806	0.463	0.141
1.750	0.036	2.842	0.431	0.131
1.833	0.034	2.876	0.402	0.122
1.917	0.031	2.907	0.376	0.114
2.000	0.029	2.936	0.351	0.107
2.083	0.018	2.954	0.216	0.066

Publication 584 Intensity Calculation

Rational Formula Hydrograph
Publication 584 Intensity Calculation



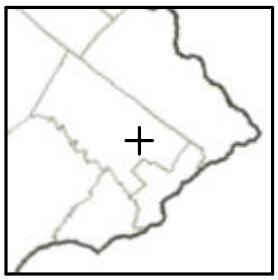
Project Location

25 Year Storm at Roof SW-1 (to MRC Basin B)
Time of Concentration: 5 min.
Drainage Area: 0.5100 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.590	0.590	1.742	0.844
0.167	0.377	0.968	3.128	1.515
0.250	**0.247**	**1.215**	**7.086**	**3.433**
0.333	0.195	1.410	4.525	2.193
0.417	0.261	1.671	2.968	1.438
0.500	0.145	1.816	2.342	1.134
0.583	0.126	1.942	1.516	0.734
0.667	0.111	2.054	1.336	0.648
0.750	0.099	2.153	1.191	0.577
0.833	0.089	2.242	1.070	0.518
0.917	0.081	2.323	0.968	0.469
1.000	0.073	2.396	0.880	0.426
1.083	0.067	2.463	0.804	0.389
1.167	0.061	2.524	0.737	0.357
1.250	0.057	2.581	0.678	0.329
1.333	0.052	2.633	0.626	0.303
1.417	0.048	2.681	0.579	0.280
1.500	0.045	2.726	0.536	0.260
1.583	0.042	2.767	0.498	0.241
1.667	0.039	2.806	0.463	0.224
1.750	0.036	2.842	0.431	0.209
1.833	0.034	2.876	0.402	0.195
1.917	0.031	2.907	0.376	0.182
2.000	0.029	2.936	0.351	0.170
2.083	0.018	2.954	0.216	0.104

Publication 584 Intensity Calculation

Rational Formula Hydrograph
Publication 584 Intensity Calculation



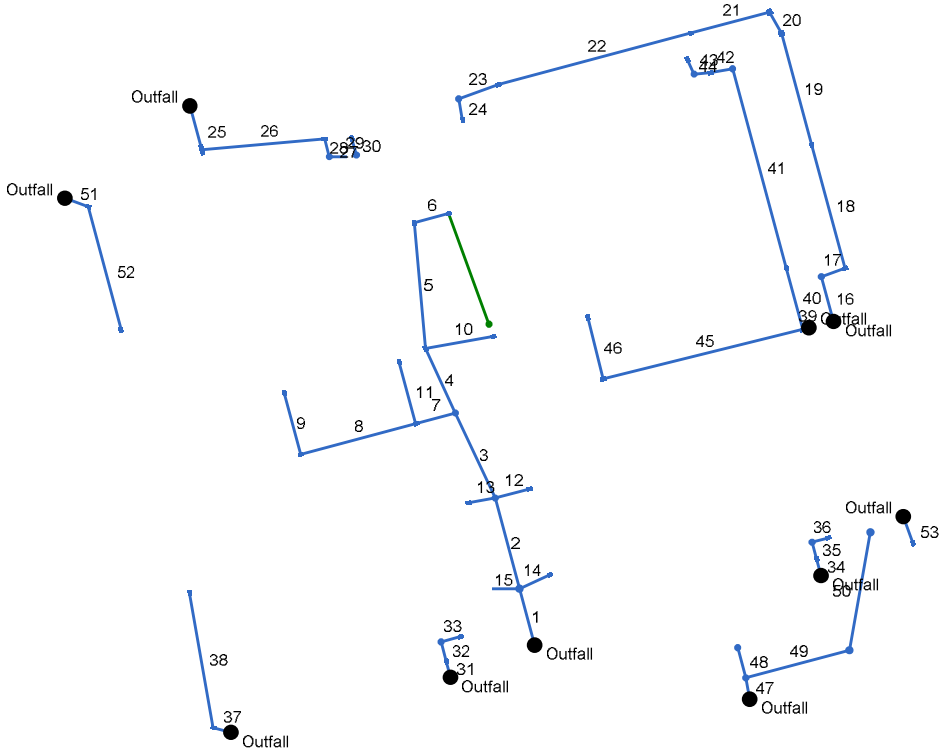
Project Location

25 Year Storm at Roof SW-2 (to MRC Basin B)
Time of Concentration: 5 min.
Drainage Area: 0.4800 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.590	0.590	1.742	0.795
0.167	0.377	0.968	3.128	1.426
0.250	**0.247**	**1.215**	**7.086**	**3.231**
0.333	0.195	1.410	4.525	2.064
0.417	0.261	1.671	2.968	1.353
0.500	0.145	1.816	2.342	1.068
0.583	0.126	1.942	1.516	0.691
0.667	0.111	2.054	1.336	0.609
0.750	0.099	2.153	1.191	0.543
0.833	0.089	2.242	1.070	0.488
0.917	0.081	2.323	0.968	0.441
1.000	0.073	2.396	0.880	0.401
1.083	0.067	2.463	0.804	0.367
1.167	0.061	2.524	0.737	0.336
1.250	0.057	2.581	0.678	0.309
1.333	0.052	2.633	0.626	0.285
1.417	0.048	2.681	0.579	0.264
1.500	0.045	2.726	0.536	0.245
1.583	0.042	2.767	0.498	0.227
1.667	0.039	2.806	0.463	0.211
1.750	0.036	2.842	0.431	0.197
1.833	0.034	2.876	0.402	0.183
1.917	0.031	2.907	0.376	0.171
2.000	0.029	2.936	0.351	0.160
2.083	0.018	2.954	0.216	0.098

Publication 584 Intensity Calculation

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: 25yr.stm	Number of lines: 53	Date: 5/20/2022

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	54	-105	MH	0.00	0.00	0.00	5.0	48.80	0.74	49.20	24	Cir	0.015	0.99	52.72	P-2
2	1	87	0	MH	0.00	0.00	0.00	5.0	49.40	0.52	49.85	24	Cir	0.015	1.00	53.59	P-3
3	2	87	-10	MH	0.00	0.00	0.00	5.0	50.05	0.52	50.50	24	Cir	0.015	0.99	54.64	P-4
4	3	66	0	Grate	0.00	0.17	0.68	5.0	51.00	0.61	51.40	18	Cir	0.015	1.50	54.48	P-5
5	4	117	20	Comb	0.00	0.12	0.76	5.0	51.60	0.51	52.20	18	Cir	0.015	1.48	55.16	P-6
6	5	33	80	Comb	0.00	0.12	0.70	5.0	52.35	0.61	52.55	18	Cir	0.015	1.00	55.24	P-7
7	3	38	-80	Comb	0.00	0.10	0.87	5.0	50.80	0.79	51.10	18	Cir	0.015	1.50	54.71	P-8
8	7	110	0	Comb	0.00	0.08	0.86	5.0	51.30	0.50	51.85	18	Cir	0.015	1.50	55.13	P-9
9	8	59	90	Comb	0.00	0.17	0.82	5.0	52.05	0.51	52.35	18	Cir	0.015	1.00	55.37	P-10
10	4	64	105	Grate	3.23	0.14	0.73	5.0	51.60	0.55	51.95	18	Cir	0.015	1.00	54.20	P-11
11	7	59	90	Comb	3.03	0.11	0.88	5.0	51.30	0.51	51.60	18	Cir	0.015	1.00	54.71	P-12
12	2	33	90	Comb	0.00	0.09	0.61	5.0	50.05	0.61	50.25	18	Cir	0.015	1.00	53.31	P-14
13	2	25	-85	Comb	0.00	0.09	0.78	5.0	50.05	0.80	50.25	18	Cir	0.015	1.00	53.32	P-13
14	1	31	80	Comb	0.00	0.13	0.54	5.0	49.40	0.65	49.60	18	Cir	0.015	1.00	52.63	P-16
15	1	28	-75	Comb	0.00	0.13	0.48	5.0	49.40	0.71	49.60	18	Cir	0.015	1.00	52.63	P-15
16	End	43	-105	MH	0.00	0.00	0.00	5.0	47.60	0.51	47.82	18	Cir	0.015	1.00	51.88	P-34
17	16	23	85	Comb	0.00	0.20	0.87	5.0	47.82	0.57	47.95	18	Cir	0.015	1.50	50.75	P-35
18	17	118	-85	Comb	0.00	0.05	0.95	5.0	47.95	0.51	48.55	18	Cir	0.015	0.50	51.85	P-36
19	18	107	0	Comb	0.00	0.19	0.83	5.0	48.55	0.51	49.10	18	Cir	0.015	0.50	51.77	P-37
20	19	23	-15	Comb	0.00	0.04	0.95	5.0	49.10	0.65	49.25	18	Cir	0.015	1.46	52.28	P-R1
21	20	75	-75	Comb	0.00	0.18	0.78	5.0	49.45	0.52	49.84	18	Cir	0.015	0.50	52.45	P-R2A
22	21	184	0	Comb	0.00	0.10	0.80	5.0	49.84	0.52	50.80	18	Cir	0.015	0.50	53.98	P-R2
23	22	39	-5	MH	0.00	0.00	0.00	5.0	51.00	0.51	51.20	18	Cir	0.015	0.99	54.88	P-R9

Project File: 25yr.stm | Number of lines: 53 | Date: 5/20/2022

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
24	23	20	-80	Comb	0.00	0.02	0.25	5.0	51.40	0.50	51.50	18	Cir	0.015	1.00	55.00	P-R10
25	End	42	75	Comb	0.00	0.29	0.87	5.0	48.66	0.57	48.90	18	Cir	0.015	1.48	52.99	P-R3
26	25	114	-80	Grate	0.01	0.00	0.00	5.0	49.05	0.53	49.65	18	Cir	0.015	1.48	53.29	P-R4
27	26	17	80	MH	0.00	0.00	0.00	5.0	49.85	0.59	49.95	18	Cir	0.015	0.97	53.11	P-R5
28	27	19	-75	Grate	0.01	0.00	0.00	5.0	50.15	0.53	50.25	18	Cir	0.015	0.50	53.08	P-R6
29	28	6	-15	MH	0.00	0.00	0.00	5.0	50.25	0.83	50.30	18	Cir	0.015	1.00	55.15	P-R7
30	29	16	-90	Grate	0.00	0.03	0.25	5.0	50.50	0.62	50.60	18	Cir	0.015	1.00	55.00	P-R8
31	End	15	-105	Grate	0.01	0.00	0.00	5.0	48.80	0.67	48.90	18	Cir	0.015	0.50	53.13	P-20
32	31	19	0	MH	0.00	0.00	0.00	5.0	49.20	0.53	49.30	18	Cir	0.015	1.00	53.31	P-22
33	32	19	90	Grate	0.01	0.00	0.00	5.0	49.50	0.53	49.60	18	Cir	0.015	1.00	53.29	P-21
34	End	16	-105	Grate	0.01	0.00	0.00	5.0	48.80	0.94	48.95	18	Cir	0.015	0.50	52.40	P-23
35	34	16	0	MH	0.00	0.00	0.00	5.0	49.15	0.62	49.25	18	Cir	0.015	1.00	52.42	P-24
36	35	16	90	Grate	5.18	0.00	0.00	5.0	49.45	0.62	49.55	18	Cir	0.015	1.00	52.15	P-25
37	End	17	-165	Comb	0.00	0.11	0.81	5.0	48.80	1.76	49.10	18	Cir	0.015	1.38	54.44	P-17
38	37	127	65	Comb	0.00	0.18	0.82	5.0	49.30	1.54	51.25	18	Cir	0.015	1.00	56.06	P-18
39	End	6	165	Comb	0.00	0.18	0.87	5.0	47.60	0.83	47.65	18	Cir	0.015	1.50	52.12	P-41
40	39	59	90	Comb	0.00	0.17	0.86	5.0	47.60	0.51	47.90	18	Cir	0.015	0.50	52.15	P-45
41	40	191	0	MH	0.00	0.00	0.00	5.0	47.90	0.50	48.85	18	Cir	0.015	1.00	52.25	P-39A
42	41	21	-85	Grate	0.00	0.00	0.00	5.0	48.85	0.48	48.95	18	Cir	0.015	0.50	52.07	P-39B
43	42	15	5	MH	0.00	0.00	0.00	5.0	48.90	0.67	49.00	18	Cir	0.015	0.95	52.31	P-39
44	43	15	70	Grate	0.01	0.00	0.00	5.0	49.05	0.67	49.15	18	Cir	0.015	1.00	52.02	P-40
45	39	190	1	Comb	0.00	0.16	0.81	5.0	47.75	0.50	48.70	18	Cir	0.015	1.50	53.78	P-42
46	45	59	90	Comb	0.00	0.13	0.83	5.0	48.90	0.51	49.20	18	Cir	0.015	1.00	53.79	P-43

Project File: 25yr.stm | Number of lines: 53 | Date: 5/20/2022

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
47	End	20	-100	MH	0.00	0.00	0.00	5.0	45.45	1.25	45.70	24	Cir	0.015	1.00	50.88	P-B1
48	47	29	-5	MH	9.62	0.00	0.00	5.0	48.00	2.76	48.80	18	Cir	0.015	1.00	52.30	P-BASIN B
49	47	99	85	MH	0.00	0.00	0.00	5.0	45.80	0.51	46.30	24	Cir	0.015	0.92	50.73	P-102
50	49	111	-65	MH	10.99	0.00	0.00	5.0	46.30	1.17	47.60	24	Cir	0.015	1.00	51.40	P-A1
51	End	23	20	Comb	0.00	0.32	0.74	5.0	47.70	3.26	48.45	18	Cir	0.015	1.27	51.90	P-51
52	51	118	55	Comb	0.00	0.16	0.81	5.0	48.65	1.65	50.60	18	Cir	0.015	1.00	54.63	P-52
53	End	26	70	Comb	0.00	0.24	0.84	5.0	47.90	0.77	48.10	18	Cir	0.015	1.00	50.80	P-30

Project File: 25yr.stm | Number of lines: 53 | Date: 5/20/2022

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	S-2 (WQ)	Manhole	52.72	Cir	5.00	5.00	24	Cir	49.20	24 18 18	Cir Cir Cir	49.40 49.40 49.40
2	S-3	Manhole	53.59	Cir	4.00	4.00	24	Cir	49.85	24 18 18	Cir Cir Cir	50.05 50.05 50.05
3	S-4	Manhole	54.64	Cir	4.00	4.00	24	Cir	50.50	18 18	Cir Cir	51.00 50.80
4	S-5	Grate	54.48	Rect	4.77	3.27	18	Cir	51.40	18 18	Cir Cir	51.60 51.60
5	S-6	Combination	55.16	Rect	4.77	3.27	18	Cir	52.20	18	Cir	52.35
6	S-7	Combination	55.24	Rect	4.77	3.27	18	Cir	52.55			
7	S-8	Combination	54.71	Rect	4.77	3.27	18	Cir	51.10	18 18	Cir Cir	51.30 51.30
8	S-9	Combination	55.13	Rect	4.77	3.27	18	Cir	51.85	18	Cir	52.05
9	S-10	Combination	55.37	Rect	4.77	3.27	18	Cir	52.35			
10	S-11	Grate	54.20	Rect	4.77	3.27	18	Cir	51.95			
11	S-12	Combination	54.71	Rect	4.77	3.27	18	Cir	51.60			
12	S-14	Combination	53.31	Rect	4.77	3.27	18	Cir	50.25			
13	S-13	Combination	53.32	Rect	4.77	3.27	18	Cir	50.25			
14	S-16	Combination	52.63	Rect	4.77	3.27	18	Cir	49.60			
15	S-15	Combination	52.63	Rect	4.77	3.27	18	Cir	49.60			
16	S-34	Manhole	51.88	Cir	4.00	4.00	18	Cir	47.82	18	Cir	47.82
17	S-35 (WQ)	Combination	50.75	Rect	4.77	3.27	18	Cir	47.95	18	Cir	47.95
18	S-36	Combination	51.85	Rect	4.77	3.27	18	Cir	48.55	18	Cir	48.55
19	S-37	Combination	51.77	Rect	5.00	5.00	18	Cir	49.10	18	Cir	49.10

Project File: 25yr.stm | Number of Structures: 53 | Run Date: 5/20/2022

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
20	R-1	Combination	52.28	Rect	5.00	5.00	18	Cir	49.25	18	Cir	49.45
21	R-2A	Combination	52.45	Rect	4.77	3.27	18	Cir	49.84	18	Cir	49.84
22	R-2	Combination	53.98	Rect	4.77	3.27	18	Cir	50.80	18	Cir	51.00
23	R-9	Manhole	54.88	Cir	4.00	4.00	18	Cir	51.20	18	Cir	51.40
24	R-10	Combination	55.00	Rect	4.77	3.27	18	Cir	51.50			
25	R-3	Combination	52.99	Rect	9.54	3.27	18	Cir	48.90	18	Cir	49.05
26	R-4	Grate	53.29	Rect	4.77	3.27	18	Cir	49.65	18	Cir	49.85
27	R-5	Manhole	53.11	Cir	4.00	4.00	18	Cir	49.95	18	Cir	50.15
28	R-6	Grate	53.08	Rect	4.77	3.27	18	Cir	50.25	18	Cir	50.25
29	R-7	Manhole	55.15	Cir	4.00	4.00	18	Cir	50.30	18	Cir	50.50
30	R-8	Grate	55.00	Rect	4.77	3.27	18	Cir	50.60			
31	S-22 (WQ)	Grate	53.13	Rect	4.77	3.27	18	Cir	48.90	18	Cir	49.20
32	S-20	Manhole	53.31	Cir	4.00	4.00	18	Cir	49.30	18	Cir	49.50
33	S-21	Grate	53.29	Rect	4.77	3.27	18	Cir	49.60			
34	S-23 (WQ)	Grate	52.40	Rect	4.77	3.27	18	Cir	48.95	18	Cir	49.15
35	S-24	Manhole	52.42	Cir	4.00	4.00	18	Cir	49.25	18	Cir	49.45
36	S-25	Grate	52.15	Rect	4.77	3.27	18	Cir	49.55			
37	S-17 (WQ)	Combination	54.44	Rect	4.77	3.27	18	Cir	49.10	18	Cir	49.30
38	S-18	Combination	56.06	Rect	4.77	3.27	18	Cir	51.25			
39	S-41 (WQ)	Combination	52.12	Rect	4.77	3.27	18	Cir	47.65	18 18	Cir Cir	47.60 47.75
40	S-45 (WQ)	Combination	52.15	Rect	4.77	3.27	18	Cir	47.90	18	Cir	47.90
41	S-39A	Manhole	52.25	Cir	4.00	4.00	18	Cir	48.85	18	Cir	48.85

Project File: 25yr.stm | Number of Structures: 53 | Run Date: 5/20/2022

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
42	S-39	Grate	52.07	Rect	4.77	3.27	18	Cir	48.95	18	Cir	48.90
43	S-38	Manhole	52.31	Cir	4.00	4.00	18	Cir	49.00	18	Cir	49.05
44	S-40	Grate	52.02	Rect	4.77	3.27	18	Cir	49.15			
45	S-42	Combination	53.78	Rect	4.77	3.27	18	Cir	48.70	18	Cir	48.90
46	S-43	Combination	53.79	Rect	4.77	3.27	18	Cir	49.20			
47	S-B1	Manhole	50.88	Cir	4.00	4.00	24	Cir	45.70	18 24	Cir Cir	48.00 45.80
48	S-B2	Manhole	52.30	Cir	4.00	4.00	18	Cir	48.80			
49	S-102	Manhole	50.73	Cir	5.00	5.00	24	Cir	46.30	24	Cir	46.30
50	S-A1	Manhole	51.40	Cir	5.00	5.00	24	Cir	47.60			
51	S-51	Combination	51.90	Rect	4.77	3.27	18	Cir	48.45	18	Cir	48.65
52	S-52	Combination	54.63	Rect	4.77	3.27	18	Cir	50.60			
53	S-30 (WQ)	Combination	50.80	Rect	4.77	3.27	18	Cir	48.10			

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	P-2	13.54	24	Cir	54	48.80	49.20	0.741	50.12	50.58	0.53	51.11	End	Manhole
2	P-3	12.69	24	Cir	87	49.40	49.85	0.517	51.11	51.43	0.35	51.78	1	Manhole
3	P-4	11.87	24	Cir	87	50.05	50.50	0.517	51.78	52.05	0.32	52.37	2	Manhole
4	P-5	6.07	18	Cir	66	51.00	51.40	0.606	52.37	52.60	0.37	52.97	3	Grate
5	P-6	1.37	18	Cir	117	51.60	52.20	0.513	52.97	53.00	0.05	53.05	4	Combination
6	P-7	0.69	18	Cir	33	52.35	52.55	0.606	53.05	53.05	0.03	53.08	5	Combination
7	P-8	5.89	18	Cir	38	50.80	51.10	0.789	52.37	52.50	0.27	52.78	3	Combination
8	P-9	1.62	18	Cir	110	51.30	51.85	0.500	52.78	52.81	0.04	52.85	7	Combination
9	P-10	1.15	18	Cir	59	52.05	52.35	0.508	52.85	52.89	0.06	52.95	8	Combination
10	P-11	4.07	18	Cir	64	51.60	51.95	0.547	52.97	53.07	0.13	53.20	4	Grate
11	P-12	3.83	18	Cir	59	51.30	51.60	0.508	52.78	52.86	0.09	52.95	7	Combination
12	P-14	0.45	18	Cir	33	50.05	50.25	0.606	51.78*	51.78*	0.00	51.78	2	Combination
13	P-13	0.58	18	Cir	25	50.05	50.25	0.800	51.78*	51.78*	0.00	51.78	2	Combination
14	P-16	0.58	18	Cir	31	49.40	49.60	0.645	51.11*	51.11*	0.00	51.11	1	Combination
15	P-15	0.51	18	Cir	28	49.40	49.60	0.714	51.11*	51.11*	0.00	51.11	1	Combination
16	P-34	1.89	18	Cir	43	47.60	47.82	0.512	48.12	48.40	0.14	48.54	End	Manhole
17	P-35	1.90	18	Cir	23	47.82	47.95	0.565	48.54	48.56	0.18	48.74	16	Combination
18	P-36	1.40	18	Cir	118	47.95	48.55	0.508	48.74	49.01	0.07	49.08	17	Combination
19	P-37	1.27	18	Cir	107	48.55	49.10	0.514	49.08	49.52	0.07	49.60	18	Combination
20	P-R1	0.80	18	Cir	23	49.10	49.25	0.652	49.60	49.61	0.13	49.75	19	Combination
21	P-R2A	0.69	18	Cir	75	49.45	49.84	0.520	49.78	50.17	0.04	50.21	20	Combination
22	P-R2	0.29	18	Cir	184	49.84	50.80	0.522	50.21	51.00	0.03	51.00	21	Combination
23	P-R9	0.03	18	Cir	39	51.00	51.20	0.513	51.07	51.27	0.01	51.28	22	Manhole
24	P-R10	0.04	18	Cir	20	51.40	51.50	0.500	51.49	51.59	0.02	51.60	23	Combination

Project File: 25yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown).

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
25	P-R3	0.69	18	Cir	42	48.66	48.90	0.571	48.97	49.23	0.13	49.36	End	Combination
26	P-R4	0.05	18	Cir	114	49.05	49.65	0.526	49.36	49.74	0.04	49.77	25	Grate
27	P-R5	0.05	18	Cir	17	49.85	49.95	0.588	49.94	50.04	0.02	50.06	26	Manhole
28	P-R6	0.05	18	Cir	19	50.15	50.25	0.526	50.25	50.35	0.01	50.36	27	Grate
29	P-R7	0.05	18	Cir	6	50.25	50.30	0.833	50.36	50.38	n/a	50.41 j	28	Manhole
30	P-R8	0.06	18	Cir	16	50.50	50.60	0.625	50.60	50.70	0.02	50.72	29	Grate
31	P-20	0.02	18	Cir	15	48.80	48.90	0.667	49.30	49.30	0.00	49.30	End	Grate
32	P-22	0.01	18	Cir	19	49.20	49.30	0.526	49.30	49.34	0.01	49.35	31	Manhole
33	P-21	0.01	18	Cir	19	49.50	49.60	0.526	49.54	49.64	0.01	49.65	32	Grate
34	P-23	5.19	18	Cir	16	48.80	48.95	0.938	49.63	49.83	n/a	49.83	End	Grate
35	P-24	5.18	18	Cir	16	49.15	49.25	0.625	50.09	50.19	0.31	50.50	34	Manhole
36	P-25	5.18	18	Cir	16	49.45	49.55	0.625	50.50	50.55	0.26	50.82	35	Grate
37	P-17	1.75	18	Cir	17	48.80	49.10	1.765	49.30	49.60	n/a	49.60 j	End	Combination
38	P-18	1.22	18	Cir	127	49.30	51.25	1.535	49.63	51.66	0.15	51.66	37	Combination
39	P-41	0.25	18	Cir	6	47.60	47.65	0.833	47.78	47.84	n/a	47.84	End	Combination
40	P-45	0.08	18	Cir	59	47.60	47.90	0.508	47.84	48.01	0.01	48.02	39	Combination
41	P-39A	0.01	18	Cir	191	47.90	48.85	0.497	48.02	48.89	0.01	48.90	40	Manhole
42	P-39B	0.01	18	Cir	21	48.85	48.95	0.476	48.90	48.99	0.00	49.00	41	Grate
43	P-39	0.01	18	Cir	15	48.90	49.00	0.667	49.00	49.04	0.01	49.05	42	Manhole
44	P-40	0.01	18	Cir	15	49.05	49.15	0.667	49.09	49.19	0.01	49.20	43	Grate
45	P-42	1.82	18	Cir	190	47.75	48.70	0.500	48.30	49.25	0.23	49.48	39	Combination
46	P-43	0.89	18	Cir	59	48.90	49.20	0.508	49.48	49.58	0.10	49.68	45	Combination
47	P-B1	20.61	24	Cir	20	45.45	45.70	1.250	47.18	47.33	n/a	47.33	End	Manhole
48	P-BASIN B	9.62	18	Cir	29	48.00	48.80	2.759	48.87	50.00	n/a	50.00	47	Manhole

Project File: 25yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
49	P-102	10.99	24	Cir	99	45.80	46.30	0.505	47.33	47.67	0.33	48.00	47	Manhole
50	P-A1	10.99	24	Cir	111	46.30	47.60	1.171	48.00	48.79	n/a	48.79 j	49	Manhole
51	P-51	2.69	18	Cir	23	47.70	48.45	3.261	48.11	49.07	n/a	49.07	End	Combination
52	P-52	1.07	18	Cir	118	48.65	50.60	1.653	49.07	50.99	n/a	50.99 j	51	Combination
53	P-30	1.66	18	Cir	26	47.90	48.10	0.769	48.36	48.58	n/a	48.58	End	Combination

Project File: 25yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	54	0.00	1.45	0.00	0.00	1.04	5.0	9.8	7.0	13.54	16.87	6.00	24	0.74	48.80	49.20	50.12	50.58	52.85	52.72	P-2
2	1	87	0.00	1.19	0.00	0.00	0.91	5.0	9.5	7.1	12.69	14.10	4.61	24	0.52	49.40	49.85	51.11	51.43	52.72	53.59	P-3
3	2	87	0.00	1.01	0.00	0.00	0.79	5.0	9.1	7.1	11.87	14.10	4.33	24	0.52	50.05	50.50	51.78	52.05	53.59	54.64	P-4
4	3	66	0.17	0.55	0.68	0.12	0.39	5.0	8.8	7.2	6.07	7.09	3.80	18	0.61	51.00	51.40	52.37	52.60	54.64	54.48	P-5
5	4	117	0.12	0.24	0.76	0.09	0.18	5.0	6.4	7.8	1.37	6.52	1.12	18	0.51	51.60	52.20	52.97	53.00	54.48	55.16	P-6
6	5	33	0.12	0.12	0.70	0.08	0.08	5.0	5.0	8.2	0.69	7.09	1.09	18	0.61	52.35	52.55	53.05	53.05	55.16	55.24	P-7
7	3	38	0.10	0.46	0.87	0.09	0.39	5.0	8.4	7.3	5.89	8.09	3.38	18	0.79	50.80	51.10	52.37	52.50	54.64	54.71	P-8
8	7	110	0.08	0.25	0.86	0.07	0.21	5.0	6.5	7.8	1.62	6.44	1.14	18	0.50	51.30	51.85	52.78	52.81	54.71	55.13	P-9
9	8	59	0.17	0.17	0.82	0.14	0.14	5.0	5.0	8.2	1.15	6.49	1.60	18	0.51	52.05	52.35	52.85	52.89	55.13	55.37	P-10
10	4	64	0.14	0.14	0.73	0.10	0.10	5.0	5.0	8.2	4.07	6.73	2.65	18	0.55	51.60	51.95	52.97	53.07	54.48	54.20	P-11
11	7	59	0.11	0.11	0.88	0.10	0.10	5.0	5.0	8.2	3.83	6.49	2.29	18	0.51	51.30	51.60	52.78	52.86	54.71	54.71	P-12
12	2	33	0.09	0.09	0.61	0.05	0.05	5.0	5.0	8.2	0.45	7.09	0.26	18	0.61	50.05	50.25	51.78	51.78	53.59	53.31	P-14
13	2	25	0.09	0.09	0.78	0.07	0.07	5.0	5.0	8.2	0.58	8.14	0.33	18	0.80	50.05	50.25	51.78	51.78	53.59	53.32	P-13
14	1	31	0.13	0.13	0.54	0.07	0.07	5.0	5.0	8.2	0.58	7.31	0.33	18	0.65	49.40	49.60	51.11	51.11	52.72	52.63	P-16
15	1	28	0.13	0.13	0.48	0.06	0.06	5.0	5.0	8.2	0.51	7.69	0.29	18	0.71	49.40	49.60	51.11	51.11	52.72	52.63	P-15
16	End	43	0.00	0.78	0.00	0.00	0.64	5.0	58.8	2.9	1.89	6.51	3.24	18	0.51	47.60	47.82	48.12	48.40	51.89	51.88	P-34
17	16	23	0.20	0.78	0.87	0.17	0.64	5.0	58.6	3.0	1.90	6.84	2.53	18	0.57	47.82	47.95	48.54	48.56	51.88	50.75	P-35
18	17	118	0.05	0.58	0.95	0.05	0.47	5.0	57.6	3.0	1.40	6.49	2.26	18	0.51	47.95	48.55	48.74	49.01	50.75	51.85	P-36
19	18	107	0.19	0.53	0.83	0.16	0.42	5.0	56.7	3.0	1.27	6.52	2.68	18	0.51	48.55	49.10	49.08	49.52	51.85	51.77	P-37
20	19	23	0.04	0.34	0.95	0.04	0.26	5.0	56.3	3.0	0.80	7.35	1.98	18	0.65	49.10	49.25	49.60	49.61	51.77	52.28	P-R1
21	20	75	0.18	0.30	0.78	0.14	0.23	5.0	55.1	3.1	0.69	6.56	2.40	18	0.52	49.45	49.84	49.78	50.17	52.28	52.45	P-R2A
22	21	184	0.10	0.12	0.80	0.08	0.09	5.0	47.3	3.4	0.29	6.57	1.46	18	0.52	49.84	50.80	50.21	51.00	52.45	53.98	P-R2

Project File: 25yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES:Intensity = 102.61 / (Inlet time + 16.50) ^ 0.82; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
23	22	39	0.00	0.02	0.00	0.00	0.01	5.0	19.3	5.4	0.03	6.52	0.90	18	0.51	51.00	51.20	51.07	51.27	53.98	54.88	P-R9
24	23	20	0.02	0.02	0.25	0.01	0.01	5.0	5.0	8.2	0.04	6.44	1.02	18	0.50	51.40	51.50	51.49	51.59	54.88	55.00	P-R10
25	End	42	0.29	0.32	0.87	0.25	0.26	5.0	71.7	2.6	0.69	6.88	2.49	18	0.57	48.66	48.90	48.97	49.23	52.75	52.99	P-R3
26	25	114	0.00	0.03	0.00	0.00	0.01	5.0	30.3	4.4	0.05	6.60	0.72	18	0.53	49.05	49.65	49.36	49.74	52.99	53.29	P-R4
27	26	17	0.00	0.03	0.00	0.00	0.01	5.0	23.3	5.0	0.05	6.98	1.13	18	0.59	49.85	49.95	49.94	50.04	53.29	53.11	P-R5
28	27	19	0.00	0.03	0.00	0.00	0.01	5.0	15.5	6.0	0.05	6.60	1.14	18	0.53	50.15	50.25	50.25	50.35	53.11	53.08	P-R6
29	28	6	0.00	0.03	0.00	0.00	0.01	5.0	12.6	6.4	0.05	8.31	1.07	18	0.83	50.25	50.30	50.36	50.38	53.08	55.15	P-R7
30	29	16	0.03	0.03	0.25	0.01	0.01	5.0	5.0	8.2	0.06	7.19	1.25	18	0.62	50.50	50.60	50.60	50.70	55.15	55.00	P-R8
31	End	15	0.00	0.00	0.00	0.00	0.00	5.0	116.9	0.0	0.02	7.43	0.05	18	0.67	48.80	48.90	49.30	49.30	52.98	53.13	P-20
32	31	19	0.00	0.00	0.00	0.00	0.00	5.0	61.0	0.0	0.01	6.60	0.44	18	0.53	49.20	49.30	49.30	49.34	53.13	53.31	P-22
33	32	19	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	6.60	0.68	18	0.53	49.50	49.60	49.54	49.64	53.31	53.29	P-21
34	End	16	0.00	0.00	0.00	0.00	0.00	5.0	5.2	0.0	5.19	8.81	5.01	18	0.94	48.80	48.95	49.63	49.83	52.71	52.40	P-23
35	34	16	0.00	0.00	0.00	0.00	0.00	5.0	5.1	0.0	5.18	7.19	4.43	18	0.62	49.15	49.25	50.09	50.19	52.40	52.42	P-24
36	35	16	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	5.18	7.19	4.03	18	0.62	49.45	49.55	50.50	50.55	52.42	52.15	P-25
37	End	17	0.11	0.29	0.81	0.09	0.24	5.0	8.1	7.4	1.75	12.09	3.41	18	1.76	48.80	49.10	49.30	49.60	52.40	54.44	P-17
38	37	127	0.18	0.18	0.82	0.15	0.15	5.0	5.0	8.2	1.22	11.28	3.63	18	1.54	49.30	51.25	49.63	51.66	54.44	56.06	P-18
39	End	6	0.18	0.64	0.87	0.16	0.54	5.0	719.3	0.5	0.25	8.31	2.07	18	0.83	47.60	47.65	47.78	47.84	52.60	52.12	P-41
40	39	59	0.17	0.17	0.86	0.15	0.15	5.0	717.7	0.5	0.08	6.49	0.88	18	0.51	47.60	47.90	47.84	48.01	52.12	52.15	P-45
41	40	191	0.00	0.00	0.00	0.00	0.00	5.0	155.2	0.0	0.01	6.42	0.48	18	0.50	47.90	48.85	48.02	48.89	52.15	52.25	P-39A
42	41	21	0.00	0.00	0.00	0.00	0.00	5.0	93.4	0.0	0.01	6.28	0.64	18	0.48	48.85	48.95	48.90	48.99	52.25	52.07	P-39B
43	42	15	0.00	0.00	0.00	0.00	0.00	5.0	49.2	0.0	0.01	7.43	0.47	18	0.67	48.90	49.00	49.00	49.04	52.07	52.31	P-39
44	43	15	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	7.43	0.74	18	0.67	49.05	49.15	49.09	49.19	52.31	52.02	P-40

Project File: 25yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES:Intensity = 102.61 / (Inlet time + 16.50) ^ 0.82; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
45	39	190	0.16	0.29	0.81	0.13	0.24	5.0	7.0	7.7	1.82	6.44	3.13	18	0.50	47.75	48.70	48.30	49.25	52.12	53.78	P-42
46	45	59	0.13	0.13	0.83	0.11	0.11	5.0	5.0	8.2	0.89	6.49	1.98	18	0.51	48.90	49.20	49.48	49.58	53.78	53.79	P-43
47	End	20	0.00	0.00	0.00	0.00	0.00	5.0	6.0	0.0	20.61	21.92	7.33	24	1.25	45.45	45.70	47.18	47.33	50.66	50.88	P-B1
48	47	29	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	9.62	15.12	7.71	18	2.76	48.00	48.80	48.87	50.00	50.88	52.30	P-BASIN B
49	47	99	0.00	0.00	0.00	0.00	0.00	5.0	5.5	0.0	10.99	13.93	4.53	24	0.51	45.80	46.30	47.33	47.67	50.88	50.73	P-102
50	49	111	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	10.99	21.21	4.76	24	1.17	46.30	47.60	48.00	48.79	50.73	51.40	P-A1
51	End	23	0.32	0.48	0.74	0.24	0.37	5.0	8.3	7.3	2.69	16.43	5.37	18	3.26	47.70	48.45	48.11	49.07	52.59	51.90	P-51
52	51	118	0.16	0.16	0.81	0.13	0.13	5.0	5.0	8.2	1.07	11.70	2.80	18	1.65	48.65	50.60	49.07	50.99	51.90	54.63	P-52
53	End	26	0.24	0.24	0.84	0.20	0.20	5.0	5.0	8.2	1.66	7.98	3.47	18	0.77	47.90	48.10	48.36	48.58	51.27	50.80	P-30

Project File: 25yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES:Intensity = 102.61 / (Inlet time + 16.50) ^ 0.82; Return period =Yrs. 25 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	S-2 (WQ)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	S-3	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
3	S-4	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
4	S-5	0.95	0.36	1.31	0.00	Grate	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.15	10.32	0.15	10.32	0.0	Off
5	S-6	0.75	0.00	0.39	0.36	Comb	6.0	3.52	0.00	4.02	2.25	0.010	1.00	0.010	0.010	0.012	0.09	8.97	0.07	6.80	0.0	4
6	S-7	0.69	0.00	0.37	0.32	Comb	6.0	3.52	0.00	4.02	2.25	0.010	1.00	0.010	0.010	0.012	0.09	8.70	0.07	6.53	0.0	10
7	S-8	0.72	0.00	0.72	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.10	6.66	0.10	6.66	0.0	Off
8	S-9	0.57	0.00	0.57	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.09	5.77	0.09	5.77	0.0	Off
9	S-10	1.15	0.00	1.15	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.13	8.93	0.13	8.93	0.0	Off
10	S-11	4.07*	0.32	4.40	0.00	Grate	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.33	21.73	0.33	21.73	0.0	Off
11	S-12	3.83*	0.00	3.83	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.29	19.31	0.29	19.31	0.0	Off
12	S-14	0.45	0.00	0.45	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.07	7.30	0.07	7.30	0.0	Off
13	S-13	0.58	0.00	0.58	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.09	8.51	0.09	8.51	0.0	Off
14	S-16	0.58	0.00	0.58	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.09	8.51	0.09	8.51	0.0	Off
15	S-15	0.51	0.00	0.51	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.08	7.91	0.08	7.91	0.0	Off
16	S-34	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
17	S-35 (WQ)	1.44	0.00	1.44	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.15	10.28	0.15	10.28	0.0	Off
18	S-36	0.39	0.00	0.39	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.07	6.68	0.07	6.68	0.0	Off
19	S-37	1.30	0.00	1.30	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.14	14.24	0.14	14.24	0.0	Off
20	R-1	0.31	0.63	0.47	0.48	Comb	6.0	3.52	0.00	4.02	2.25	0.010	1.00	0.010	0.010	0.012	0.10	9.77	0.08	7.58	0.0	Off
21	R-2A	1.16	0.30	0.83	0.63	Comb	6.0	3.52	0.00	4.02	2.25	0.010	1.00	0.020	0.020	0.012	0.15	7.46	0.11	5.45	0.0	20
22	R-2	0.66	0.00	0.36	0.30	Comb	6.0	3.52	0.00	4.02	2.25	0.010	1.00	0.010	0.010	0.012	0.09	8.54	0.06	6.38	0.0	21
23	R-9	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: 25yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Inlet N-Values = 0.016; Intensity = 102.61 / (Inlet time + 16.50) ^ 0.82; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
24	R-10	0.04	0.00	0.04	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	2.00	0.010	0.010	0.000	0.02	2.38	0.02	2.38	0.0	Off
25	R-3	2.08	0.00	2.08	0.00	Comb	6.0	8.04	15.08	8.04	2.25	Sag	1.00	0.015	0.015	0.000	0.15	10.18	0.15	10.18	0.0	Off
26	R-4	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
27	R-5	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
28	R-6	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
29	R-7	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
30	R-8	0.06	0.00	0.06	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	2.00	0.010	0.010	0.000	0.03	2.92	0.03	2.92	0.0	Off
31	S-22 (WQ)	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	2.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
32	S-20	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
33	S-21	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
34	S-23 (WQ)	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
35	S-24	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
36	S-25	5.18*	0.00	5.18	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.36	35.61	0.36	35.61	0.0	Off
37	S-17 (WQ)	0.73	0.00	0.73	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.10	6.76	0.10	6.76	0.0	Off
38	S-18	1.22	0.00	1.22	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.14	9.26	0.14	9.26	0.0	Off
39	S-41 (WQ)	1.29	0.00	1.29	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	2.00	0.015	0.015	0.000	0.15	10.11	0.15	10.11	0.0	Off
40	S-45 (WQ)	1.21	0.00	1.21	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.14	9.21	0.14	9.21	0.0	Off
41	S-39A	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
42	S-39	0.00	0.00	0.00	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	2.00	0.010	0.010	0.000	0.00	0.00	0.00	0.00	0.0	Off
43	S-38	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
44	S-40	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
45	S-42	1.07	0.00	1.07	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.13	8.53	0.13	8.53	0.0	Off
46	S-43	0.89	0.00	0.89	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.11	7.61	0.11	7.61	0.0	Off

Project File: 25yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Inlet N-Values = 0.016; Intensity = 102.61 / (Inlet time + 16.50) ^ 0.82; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
47	S-B1	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
48	S-B2	9.62*	0.00	0.00	9.62	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
49	S-102	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
50	S-A1	10.99*	0.00	0.00	10.99	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
51	S-51	1.95	0.00	1.95	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.19	12.51	0.19	12.51	0.0	Off
52	S-52	1.07	0.00	1.07	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.13	8.53	0.13	8.53	0.0	Off
53	S-30 (WQ)	1.66	0.00	1.66	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.020	0.020	0.000	0.17	8.59	0.17	8.59	0.0	Off

Project File: 25yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Inlet N-Values = 0.016; Intensity = 102.61 / (Inlet time + 16.50) ^ 0.82; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	24	13.54	48.80	50.12	1.32	2.21	6.14	0.59	50.71	0.793	54	49.20	50.58	1.38	2.31	5.86	0.53	51.11	0.707	0.750	0.405	0.99	0.53
2	24	12.69	49.40	51.11	1.71	2.86	4.44	0.31	51.41	0.392	87	49.85	51.43	1.58	2.66	4.78	0.35	51.78	0.452	0.422	0.367	1.00	0.35
3	24	11.87	50.05	51.78	1.73	2.89	4.11	0.26	52.04	0.337	87	50.50	52.05	1.55	2.61	4.55	0.32	52.37	0.411	0.374	0.325	0.99	0.32
4	18	6.07	51.00	52.37	1.37	1.69	3.59	0.20	52.57	0.388	66	51.40	52.60	1.20	1.51	4.01	0.25	52.85	0.466	0.427	0.282	1.50	0.37
5	18	1.37	51.60	52.97	1.37	1.69	0.81	0.01	52.98	0.020	117	52.20	53.00	0.80	0.96	1.42	0.03	53.04	0.072	0.046	0.054	1.48	0.05
6	18	0.69	52.35	53.05	0.70	0.81	0.86	0.01	53.06	0.029	33	52.55	53.05	0.50	0.52	1.33	0.03	53.08	0.098	0.063	0.021	1.00	0.03
7	18	5.89	50.80	52.37	1.50	1.77	3.34	0.17	52.54	0.420	38	51.10	52.50	1.40	1.72	3.43	0.18	52.69	0.362	0.391	0.149	1.50	0.27
8	18	1.62	51.30	52.78	1.48	1.76	0.92	0.01	52.79	0.029	110	51.85	52.81	0.96	1.19	1.36	0.03	52.84	0.058	0.044	0.048	1.50	0.04
9	18	1.15	52.05	52.85	0.80	0.96	1.19	0.02	52.88	0.051	59	52.35	52.89	0.54	0.57	2.01	0.06	52.95	0.209	0.130	0.077	1.00	0.06
10	18	4.07	51.60	52.97	1.37	1.69	2.40	0.09	53.06	0.174	64	51.95	53.07	1.12	1.41	2.89	0.13	53.20	0.246	0.210	0.134	1.00	0.13
11	18	3.83	51.30	52.78	1.48	1.76	2.17	0.07	52.85	0.161	59	51.60	52.86	1.26	1.58	2.42	0.09	52.95	0.170	0.165	0.098	1.00	0.09
12	18	0.45	50.05	51.78	1.50	1.77	0.26	0.00	51.78	0.002	33	50.25	51.78	1.50	1.77	0.26	0.00	51.78	0.002	0.002	0.001	1.00	0.00
13	18	0.58	50.05	51.78	1.50	1.77	0.33	0.00	51.78	0.004	25	50.25	51.78	1.50	1.77	0.33	0.00	51.78	0.004	0.004	0.001	1.00	0.00
14	18	0.58	49.40	51.11	1.50	1.77	0.33	0.00	51.11	0.004	31	49.60	51.11	1.50	1.77	0.33	0.00	51.11	0.004	0.004	0.001	1.00	0.00
15	18	0.51	49.40	51.11	1.50	1.77	0.29	0.00	51.11	0.003	28	49.60	51.11	1.50	1.77	0.29	0.00	51.11	0.003	0.003	0.001	1.00	0.00
16	18	1.89	47.60	48.12	0.52	0.54	3.48	0.19	48.31	0.649	43	47.82	48.40	0.58	0.63	3.01	0.14	48.54	0.434	0.541	0.233	1.00	0.14
17	18	1.90	47.82	48.54	0.72	0.84	2.26	0.08	48.62	0.200	23	47.95	48.56	0.61	0.68	2.79	0.12	48.68	0.354	0.277	0.064	1.50	0.18
18	18	1.40	47.95	48.74	0.79	0.95	1.47	0.03	48.78	0.078	118	48.55	49.01	0.46	0.46	3.04	0.14	49.15	0.566	0.322	0.380	0.50	0.07
19	18	1.27	48.55	49.08	0.53	0.41	2.26	0.08	49.16	0.268	107	49.10	49.52	0.42**	0.41	3.09	0.15	49.67	0.636	0.452	0.484	0.50	0.07
20	18	0.80	49.10	49.60	0.50	0.51	1.55	0.04	49.64	0.135	23	49.25	49.61	0.36	0.33	2.41	0.09	49.70	0.462	0.299	0.069	1.46	0.13
21	18	0.69	49.45	49.78	0.33*	0.29	2.41	0.09	49.87	0.519	75	49.84	50.17	0.33	0.29	2.40	0.09	50.26	0.513	0.516	0.387	0.50	0.04
22	18	0.29	49.84	50.21	0.37	0.14	0.83	0.01	50.23	0.053	184	50.80	51.00	0.20**	0.14	2.09	0.07	51.07	0.724	0.388	n/a	0.50	0.03

Project File: 25yr.stm | Number of lines: 53 | Run Date: 5/20/2022

Notes: * Normal depth assumed; ** Critical depth. ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
23	18	0.03	51.00	51.07	0.07*	0.03	0.90	0.01	51.08	0.508	39	51.20	51.27	0.07	0.03	0.89	0.01	51.28	0.494	0.501	0.195	0.99	0.01
24	18	0.04	51.40	51.49	0.09*	0.04	1.02	0.02	51.50	0.498	20	51.50	51.59	0.09	0.04	1.02	0.02	51.60	0.498	0.498	0.100	1.00	0.02
25	18	0.69	48.66	48.97	0.31	0.26	2.62	0.11	49.08	0.660	42	48.90	49.23	0.33	0.29	2.37	0.09	49.32	0.494	0.577	0.242	1.48	0.13
26	18	0.05	49.05	49.36	0.31	0.04	0.20	0.00	49.36	0.004	114	49.65	49.74	0.09**	0.04	1.23	0.02	49.76	0.695	0.350	0.399	1.48	0.04
27	18	0.05	49.85	49.94	0.09*	0.04	1.12	0.02	49.96	0.586	17	49.95	50.04	0.09**	0.04	1.13	0.02	50.06	0.591	0.588	0.100	0.97	0.02
28	18	0.05	50.15	50.25	0.10*	0.05	1.13	0.02	50.27	0.525	19	50.25	50.35	0.10	0.05	1.14	0.02	50.37	0.542	0.534	0.101	0.50	0.01
29	18	0.05	50.25	50.36	0.11	0.04	0.87	0.01	50.37	0.275	6	50.30	50.38 j	0.08**	0.04	1.28	0.03	50.41	0.832	0.554	0.033	1.00	0.03
30	18	0.06	50.50	50.60	0.10*	0.04	1.25	0.02	50.62	0.621	16	50.60	50.70	0.10**	0.05	1.26	0.02	50.72	0.636	0.628	0.101	1.00	0.02
31	18	0.02	48.80	49.30	0.50	0.52	0.04	0.00	49.30	0.000	15	48.90	49.30	0.40	0.38	0.05	0.00	49.30	0.000	0.000	0.000	0.50	0.00
32	18	0.01	49.20	49.30	0.10	0.01	0.20	0.00	49.30	0.016	19	49.30	49.34	0.04**	0.01	0.68	0.01	49.35	0.531	0.274	0.052	1.00	0.01
33	18	0.01	49.50	49.54	0.04*	0.01	0.67	0.01	49.55	0.525	19	49.60	49.64	0.04**	0.01	0.68	0.01	49.65	0.531	0.528	0.100	1.00	0.01
34	18	5.19	48.80	49.63	0.83	1.00	5.17	0.36	49.99	0.000	16	48.95	49.83	0.88**	1.07	4.84	0.36	50.19	0.000	0.000	n/a	0.50	n/a
35	18	5.18	49.15	50.09	0.94*	1.17	4.43	0.31	50.40	0.625	16	49.25	50.19	0.94	1.17	4.44	0.31	50.50	0.627	0.626	0.100	1.00	0.31
36	18	5.18	49.45	50.50	1.05	1.32	3.93	0.24	50.74	0.465	16	49.55	50.55	1.00	1.25	4.13	0.26	50.82	0.524	0.494	0.079	1.00	0.26
37	18	1.75	48.80	49.30	0.50	0.51	3.39	0.18	49.48	0.000	17	49.10	49.60 j	0.50**	0.51	3.42	0.18	49.78	0.000	0.000	n/a	1.38	0.25
38	18	1.22	49.30	49.63	0.33*	0.29	4.17	0.15	49.78	0.000	127	51.25	51.66	0.41**	0.39	3.08	0.15	51.81	0.000	0.000	n/a	1.00	0.15
39	18	0.25	47.60	47.78	0.18*	0.12	2.11	0.06	47.84	0.000	6	47.65	47.84	0.19**	0.13	2.02	0.06	47.90	0.000	0.000	n/a	1.50	n/a
40	18	0.08	47.60	47.84	0.24	0.05	0.43	0.00	47.84	0.025	59	47.90	48.01	0.11**	0.06	1.33	0.03	48.04	0.629	0.327	0.193	0.50	0.01
41	18	0.01	47.90	48.02	0.12	0.01	0.15	0.00	48.02	0.007	191	48.85	48.89	0.04**	0.01	0.81	0.01	48.90	0.887	0.447	0.853	1.00	0.01
42	18	0.01	48.85	48.90	0.05	0.01	0.57	0.01	48.90	0.326	21	48.95	48.99	0.04**	0.01	0.71	0.01	49.00	0.602	0.464	0.098	0.50	0.00
43	18	0.01	48.90	49.00	0.10	0.01	0.21	0.00	49.00	0.018	15	49.00	49.04	0.04**	0.01	0.74	0.01	49.05	0.684	0.351	0.053	0.95	0.01
44	18	0.01	49.05	49.09	0.04*	0.01	0.73	0.01	49.10	0.666	15	49.15	49.19	0.04**	0.01	0.74	0.01	49.20	0.684	0.675	0.101	1.00	0.01

Project File: 25yr.stm | Number of lines: 53 | Run Date: 5/20/2022

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

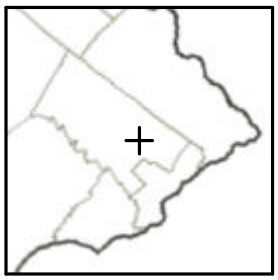
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
45	18	1.82	47.75	48.30	0.55*	0.58	3.13	0.15	48.45	0.500	190	48.70	49.25	0.55	0.58	3.13	0.15	49.40	0.497	0.498	0.947	1.50	0.23
46	18	0.89	48.90	49.48	0.58	0.62	1.43	0.03	49.51	0.098	59	49.20	49.58	0.38	0.35	2.53	0.10	49.68	0.483	0.291	0.172	1.00	0.10
47	24	20.61	45.45	47.18	1.73	2.74	7.14	0.88	48.06	0.000	20	45.70	47.33	1.63**	2.74	7.53	0.88	48.21	0.000	0.000	n/a	1.00	n/a
48	18	9.62	48.00	48.87	0.87*	1.06	9.06	0.63	49.50	0.000	29	48.80	50.00	1.20**	1.51	6.37	0.63	50.63	0.000	0.000	n/a	1.00	n/a
49	24	10.99	45.80	47.33	1.53	2.57	4.27	0.28	47.61	0.363	99	46.30	47.67	1.37	2.29	4.79	0.36	48.03	0.475	0.419	0.415	0.92	0.33
50	24	10.99	46.30	48.00	1.70	1.94	3.86	0.50	48.50	0.000	111	47.60	48.79 j	1.19**	1.94	5.65	0.50	49.28	0.000	0.000	n/a	1.00	n/a
51	18	2.69	47.70	48.11	0.41*	0.39	6.85	0.24	48.35	0.000	23	48.45	49.07	0.62**	0.69	3.89	0.24	49.31	0.000	0.000	n/a	1.27	n/a
52	18	1.07	48.65	49.07	0.42	0.36	2.62	0.14	49.21	0.000	118	50.60	50.99 j	0.39**	0.36	2.97	0.14	51.12	0.000	0.000	n/a	1.00	n/a
53	18	1.66	47.90	48.36	0.46*	0.47	3.57	0.18	48.54	0.000	26	48.10	48.58	0.48**	0.49	3.37	0.18	48.76	0.000	0.000	n/a	1.00	n/a

Project File: 25yr.stm | Number of lines: 53 | Run Date: 5/20/2022

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

100-YEAR CALCULATIONS
PROPOSED NETWORK

Rational Formula Hydrograph
Publication 584 Intensity Calculation



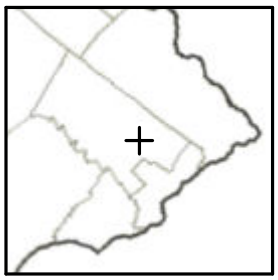
Project Location

100 Year Storm at Roof NE-1 (to S-11)
Time of Concentration: 5 min.
Drainage Area: 0.4800 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.710	0.710	2.467	1.125
0.167	0.443	1.154	4.154	1.894
0.250	**0.298**	**1.452**	**8.523**	**3.887**
0.333	0.244	1.696	5.321	2.426
0.417	0.206	1.901	3.578	1.632
0.500	0.177	2.078	2.924	1.333
0.583	0.156	2.234	2.128	0.970
0.667	0.138	2.372	1.868	0.852
0.750	0.124	2.497	1.661	0.757
0.833	0.113	2.610	1.493	0.681
0.917	0.103	2.713	1.355	0.618
1.000	0.095	2.808	1.239	0.565
1.083	0.088	2.896	1.140	0.520
1.167	0.082	2.978	1.055	0.481
1.250	0.076	3.054	0.982	0.448
1.333	0.072	3.126	0.918	0.419
1.417	0.068	3.194	0.862	0.393
1.500	0.346	3.540	0.812	0.370
1.583	0.066	3.606	0.797	0.363
1.667	0.063	3.669	0.757	0.345
1.750	0.060	3.730	0.722	0.329
1.833	0.057	3.787	0.689	0.314
1.917	0.055	3.842	0.660	0.301
2.000	0.053	3.895	0.633	0.288
2.083	0.048	3.943	0.576	0.263

Publication 584 Intensity Calculation

Rational Formula Hydrograph
Publication 584 Intensity Calculation



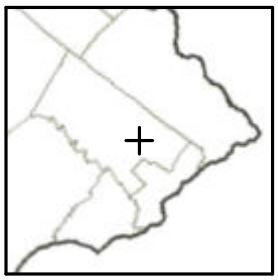
Project Location

100 Year Storm at Roof NE-2 (to S-25)
Time of Concentration: 5 min.
Drainage Area: 0.4500 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.710	0.710	2.467	1.054
0.167	0.443	1.154	4.154	1.776
0.250	**0.298**	**1.452**	**8.523**	**3.644**
0.333	0.244	1.696	5.321	2.275
0.417	0.206	1.901	3.578	1.530
0.500	0.177	2.078	2.924	1.250
0.583	0.156	2.234	2.128	0.910
0.667	0.138	2.372	1.868	0.798
0.750	0.124	2.497	1.661	0.710
0.833	0.113	2.610	1.493	0.638
0.917	0.103	2.713	1.355	0.579
1.000	0.095	2.808	1.239	0.530
1.083	0.088	2.896	1.140	0.487
1.167	0.082	2.978	1.055	0.451
1.250	0.076	3.054	0.982	0.420
1.333	0.072	3.126	0.918	0.392
1.417	0.068	3.194	0.862	0.368
1.500	0.346	3.540	0.812	0.347
1.583	0.066	3.606	0.797	0.341
1.667	0.063	3.669	0.757	0.324
1.750	0.060	3.730	0.722	0.308
1.833	0.057	3.787	0.689	0.295
1.917	0.055	3.842	0.660	0.282
2.000	0.053	3.895	0.633	0.270
2.083	0.048	3.943	0.576	0.246

Publication 584 Intensity Calculation

Rational Formula Hydrograph
Publication 584 Intensity Calculation



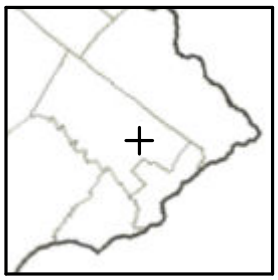
Project Location

100 Year Storm at Roof NW-1 (to S-18)
Time of Concentration: 5 min.
Drainage Area: 0.4800 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.710	0.710	2.467	1.125
0.167	0.443	1.154	4.154	1.894
0.250	**0.298**	**1.452**	**8.523**	**3.887**
0.333	0.244	1.696	5.321	2.426
0.417	0.206	1.901	3.578	1.632
0.500	0.177	2.078	2.924	1.333
0.583	0.156	2.234	2.128	0.970
0.667	0.138	2.372	1.868	0.852
0.750	0.124	2.497	1.661	0.757
0.833	0.113	2.610	1.493	0.681
0.917	0.103	2.713	1.355	0.618
1.000	0.095	2.808	1.239	0.565
1.083	0.088	2.896	1.140	0.520
1.167	0.082	2.978	1.055	0.481
1.250	0.076	3.054	0.982	0.448
1.333	0.072	3.126	0.918	0.419
1.417	0.068	3.194	0.862	0.393
1.500	0.346	3.540	0.812	0.370
1.583	0.066	3.606	0.797	0.363
1.667	0.063	3.669	0.757	0.345
1.750	0.060	3.730	0.722	0.329
1.833	0.057	3.787	0.689	0.314
1.917	0.055	3.842	0.660	0.301
2.000	0.053	3.895	0.633	0.288
2.083	0.048	3.943	0.576	0.263

Publication 584 Intensity Calculation

Rational Formula Hydrograph
Publication 584 Intensity Calculation



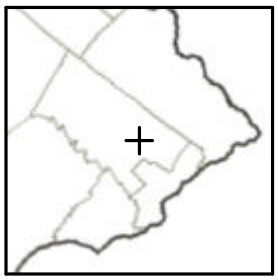
Project Location

100 Year Storm at Roof NW-2 (to S-12)
Time of Concentration: 5 min.
Drainage Area: 0.4500 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.710	0.710	2.467	1.054
0.167	0.443	1.154	4.154	1.776
0.250	**0.298**	**1.452**	**8.523**	**3.644**
0.333	0.244	1.696	5.321	2.275
0.417	0.206	1.901	3.578	1.530
0.500	0.177	2.078	2.924	1.250
0.583	0.156	2.234	2.128	0.910
0.667	0.138	2.372	1.868	0.798
0.750	0.124	2.497	1.661	0.710
0.833	0.113	2.610	1.493	0.638
0.917	0.103	2.713	1.355	0.579
1.000	0.095	2.808	1.239	0.530
1.083	0.088	2.896	1.140	0.487
1.167	0.082	2.978	1.055	0.451
1.250	0.076	3.054	0.982	0.420
1.333	0.072	3.126	0.918	0.392
1.417	0.068	3.194	0.862	0.368
1.500	0.346	3.540	0.812	0.347
1.583	0.066	3.606	0.797	0.341
1.667	0.063	3.669	0.757	0.324
1.750	0.060	3.730	0.722	0.308
1.833	0.057	3.787	0.689	0.295
1.917	0.055	3.842	0.660	0.282
2.000	0.053	3.895	0.633	0.270
2.083	0.048	3.943	0.576	0.246

Publication 584 Intensity Calculation

Rational Formula Hydrograph
Publication 584 Intensity Calculation



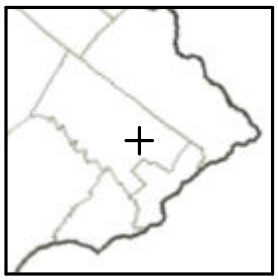
Project Location

100 Year Storm at Roof SE-1 (to MRC Basin B)
Time of Concentration: 5 min.
Drainage Area: 0.4000 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.710	0.710	2.467	0.937
0.167	0.443	1.154	4.154	1.578
0.250	**0.298**	**1.452**	**8.523**	**3.239**
0.333	0.244	1.696	5.321	2.022
0.417	0.206	1.901	3.578	1.360
0.500	0.177	2.078	2.924	1.111
0.583	0.156	2.234	2.128	0.809
0.667	0.138	2.372	1.868	0.710
0.750	0.124	2.497	1.661	0.631
0.833	0.113	2.610	1.493	0.567
0.917	0.103	2.713	1.355	0.515
1.000	0.095	2.808	1.239	0.471
1.083	0.088	2.896	1.140	0.433
1.167	0.082	2.978	1.055	0.401
1.250	0.076	3.054	0.982	0.373
1.333	0.072	3.126	0.918	0.349
1.417	0.068	3.194	0.862	0.327
1.500	0.346	3.540	0.812	0.308
1.583	0.066	3.606	0.797	0.303
1.667	0.063	3.669	0.757	0.288
1.750	0.060	3.730	0.722	0.274
1.833	0.057	3.787	0.689	0.262
1.917	0.055	3.842	0.660	0.251
2.000	0.053	3.895	0.633	0.240
2.083	0.048	3.943	0.576	0.219

Publication 584 Intensity Calculation

Rational Formula Hydrograph
Publication 584 Intensity Calculation



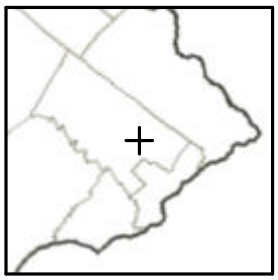
Project Location

100 Year Storm at Roof SE-2 (to S-25)
Time of Concentration: 5 min.
Drainage Area: 0.3200 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.710	0.710	2.467	0.750
0.167	0.443	1.154	4.154	1.263
0.250	**0.298**	**1.452**	**8.523**	**2.591**
0.333	0.244	1.696	5.321	1.618
0.417	0.206	1.901	3.578	1.088
0.500	0.177	2.078	2.924	0.889
0.583	0.156	2.234	2.128	0.647
0.667	0.138	2.372	1.868	0.568
0.750	0.124	2.497	1.661	0.505
0.833	0.113	2.610	1.493	0.454
0.917	0.103	2.713	1.355	0.412
1.000	0.095	2.808	1.239	0.377
1.083	0.088	2.896	1.140	0.347
1.167	0.082	2.978	1.055	0.321
1.250	0.076	3.054	0.982	0.299
1.333	0.072	3.126	0.918	0.279
1.417	0.068	3.194	0.862	0.262
1.500	0.346	3.540	0.812	0.247
1.583	0.066	3.606	0.797	0.242
1.667	0.063	3.669	0.757	0.230
1.750	0.060	3.730	0.722	0.219
1.833	0.057	3.787	0.689	0.210
1.917	0.055	3.842	0.660	0.201
2.000	0.053	3.895	0.633	0.192
2.083	0.048	3.943	0.576	0.175

Publication 584 Intensity Calculation

Rational Formula Hydrograph
Publication 584 Intensity Calculation



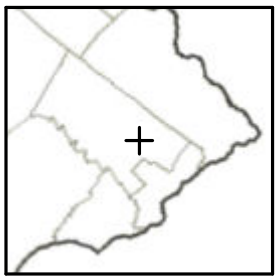
Project Location

100 Year Storm at Roof SW-1 (to MRC Basin B)
Time of Concentration: 5 min.
Drainage Area: 0.5100 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.710	0.710	2.467	1.195
0.167	0.443	1.154	4.154	2.013
0.250	**0.298**	**1.452**	**8.523**	**4.130**
0.333	0.244	1.696	5.321	2.578
0.417	0.206	1.901	3.578	1.734
0.500	0.177	2.078	2.924	1.417
0.583	0.156	2.234	2.128	1.031
0.667	0.138	2.372	1.868	0.905
0.750	0.124	2.497	1.661	0.805
0.833	0.113	2.610	1.493	0.724
0.917	0.103	2.713	1.355	0.656
1.000	0.095	2.808	1.239	0.600
1.083	0.088	2.896	1.140	0.552
1.167	0.082	2.978	1.055	0.511
1.250	0.076	3.054	0.982	0.476
1.333	0.072	3.126	0.918	0.445
1.417	0.068	3.194	0.862	0.417
1.500	0.346	3.540	0.812	0.393
1.583	0.066	3.606	0.797	0.386
1.667	0.063	3.669	0.757	0.367
1.750	0.060	3.730	0.722	0.350
1.833	0.057	3.787	0.689	0.334
1.917	0.055	3.842	0.660	0.320
2.000	0.053	3.895	0.633	0.306
2.083	0.048	3.943	0.576	0.279

Publication 584 Intensity Calculation

Rational Formula Hydrograph
Publication 584 Intensity Calculation



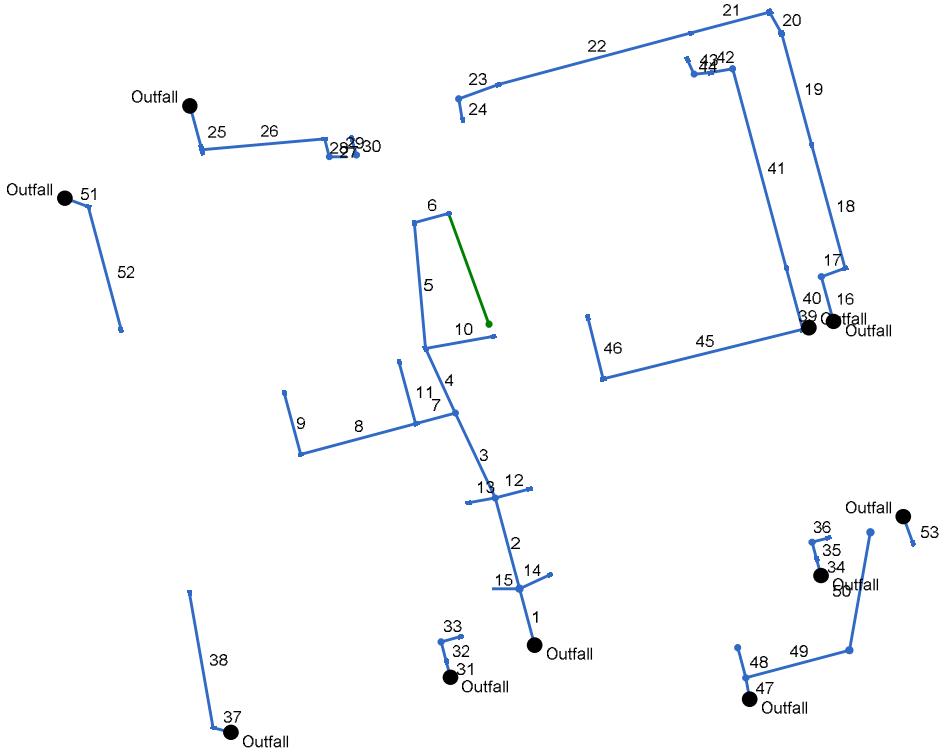
Project Location

100 Year Storm at Roof SW-2 (to MRC Basin B)
Time of Concentration: 5 min.
Drainage Area: 0.4800 acres.
Weighted 'C' Factor: 0.9500
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.710	0.710	2.467	1.125
0.167	0.443	1.154	4.154	1.894
0.250	**0.298**	**1.452**	**8.523**	**3.887**
0.333	0.244	1.696	5.321	2.426
0.417	0.206	1.901	3.578	1.632
0.500	0.177	2.078	2.924	1.333
0.583	0.156	2.234	2.128	0.970
0.667	0.138	2.372	1.868	0.852
0.750	0.124	2.497	1.661	0.757
0.833	0.113	2.610	1.493	0.681
0.917	0.103	2.713	1.355	0.618
1.000	0.095	2.808	1.239	0.565
1.083	0.088	2.896	1.140	0.520
1.167	0.082	2.978	1.055	0.481
1.250	0.076	3.054	0.982	0.448
1.333	0.072	3.126	0.918	0.419
1.417	0.068	3.194	0.862	0.393
1.500	0.346	3.540	0.812	0.370
1.583	0.066	3.606	0.797	0.363
1.667	0.063	3.669	0.757	0.345
1.750	0.060	3.730	0.722	0.329
1.833	0.057	3.787	0.689	0.314
1.917	0.055	3.842	0.660	0.301
2.000	0.053	3.895	0.633	0.288
2.083	0.048	3.943	0.576	0.263

Publication 584 Intensity Calculation

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: 100yr.stm	Number of lines: 53	Date: 5/20/2022

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	54	-105	MH	0.00	0.00	0.00	5.0	48.80	0.74	49.20	24	Cir	0.015	0.99	52.72	P-2
2	1	87	0	MH	0.00	0.00	0.00	5.0	49.40	0.52	49.85	24	Cir	0.015	1.00	53.59	P-3
3	2	87	-10	MH	0.00	0.00	0.00	5.0	50.05	0.52	50.50	24	Cir	0.015	0.99	54.64	P-4
4	3	66	0	Grate	0.00	0.17	0.68	5.0	51.00	0.61	51.40	18	Cir	0.015	1.50	54.48	P-5
5	4	117	20	Comb	0.00	0.12	0.76	5.0	51.60	0.51	52.20	18	Cir	0.015	1.48	55.16	P-6
6	5	33	80	Comb	0.00	0.12	0.70	5.0	52.35	0.61	52.55	18	Cir	0.015	1.00	55.24	P-7
7	3	38	-80	Comb	0.00	0.10	0.87	5.0	50.80	0.79	51.10	18	Cir	0.015	1.50	54.71	P-8
8	7	110	0	Comb	0.00	0.08	0.86	5.0	51.30	0.50	51.85	18	Cir	0.015	1.50	55.13	P-9
9	8	59	90	Comb	0.00	0.17	0.82	5.0	52.05	0.51	52.35	18	Cir	0.015	1.00	55.37	P-10
10	4	64	105	Grate	3.89	0.14	0.73	5.0	51.60	0.55	51.95	18	Cir	0.015	1.00	54.20	P-11
11	7	59	90	Comb	3.64	0.11	0.88	5.0	51.30	0.51	51.60	18	Cir	0.015	1.00	54.71	P-12
12	2	33	90	Comb	0.00	0.09	0.61	5.0	50.05	0.61	50.25	18	Cir	0.015	1.00	53.31	P-14
13	2	25	-85	Comb	0.00	0.09	0.78	5.0	50.05	0.80	50.25	18	Cir	0.015	1.00	53.32	P-13
14	1	31	80	Comb	0.00	0.13	0.54	5.0	49.40	0.65	49.60	18	Cir	0.015	1.00	52.63	P-16
15	1	28	-75	Comb	0.00	0.13	0.48	5.0	49.40	0.71	49.60	18	Cir	0.015	1.00	52.63	P-15
16	End	43	-105	MH	0.00	0.00	0.00	5.0	47.60	0.51	47.82	18	Cir	0.015	1.00	51.88	P-34
17	16	23	85	Comb	0.00	0.20	0.87	5.0	47.82	0.57	47.95	18	Cir	0.015	1.50	50.75	P-35
18	17	118	-85	Comb	0.00	0.05	0.95	5.0	47.95	0.51	48.55	18	Cir	0.015	0.50	51.85	P-36
19	18	107	0	Comb	0.00	0.19	0.83	5.0	48.55	0.51	49.10	18	Cir	0.015	0.50	51.77	P-37
20	19	23	-15	Comb	0.00	0.04	0.95	5.0	49.10	0.65	49.25	18	Cir	0.015	1.46	52.28	P-R1
21	20	75	-75	Comb	0.00	0.18	0.78	5.0	49.45	0.52	49.84	18	Cir	0.015	0.50	52.45	P-R2A
22	21	184	0	Comb	0.00	0.10	0.80	5.0	49.84	0.52	50.80	18	Cir	0.015	0.50	53.98	P-R2
23	22	39	-5	MH	0.00	0.00	0.00	5.0	51.00	0.51	51.20	18	Cir	0.015	0.99	54.88	P-R9

Project File: 100yr.stm | Number of lines: 53 | Date: 5/20/2022

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
24	23	20	-80	Comb	0.00	0.02	0.25	5.0	51.40	0.50	51.50	18	Cir	0.015	1.00	55.00	P-R10
25	End	42	75	Comb	0.00	0.29	0.87	5.0	48.66	0.57	48.90	18	Cir	0.015	1.48	52.99	P-R3
26	25	114	-80	Grate	0.01	0.00	0.00	5.0	49.05	0.53	49.65	18	Cir	0.015	1.48	53.29	P-R4
27	26	17	80	MH	0.00	0.00	0.00	5.0	49.85	0.59	49.95	18	Cir	0.015	0.97	53.11	P-R5
28	27	19	-75	Grate	0.01	0.00	0.00	5.0	50.15	0.53	50.25	18	Cir	0.015	0.50	53.08	P-R6
29	28	6	-15	MH	0.00	0.00	0.00	5.0	50.25	0.83	50.30	18	Cir	0.015	1.00	55.15	P-R7
30	29	16	-90	Grate	0.00	0.03	0.25	5.0	50.50	0.62	50.60	18	Cir	0.015	1.00	55.00	P-R8
31	End	15	-105	Grate	0.01	0.00	0.00	5.0	48.80	0.67	48.90	18	Cir	0.015	0.50	53.13	P-20
32	31	19	0	MH	0.00	0.00	0.00	5.0	49.20	0.53	49.30	18	Cir	0.015	1.00	53.31	P-22
33	32	19	90	Grate	0.01	0.00	0.00	5.0	49.50	0.53	49.60	18	Cir	0.015	1.00	53.29	P-21
34	End	16	-105	Grate	0.01	0.00	0.00	5.0	48.80	0.94	48.95	18	Cir	0.015	0.50	52.40	P-23
35	34	16	0	MH	0.00	0.00	0.00	5.0	49.15	0.62	49.25	18	Cir	0.015	1.00	52.42	P-24
36	35	16	90	Grate	6.23	0.00	0.00	5.0	49.45	0.62	49.55	18	Cir	0.015	1.00	52.15	P-25
37	End	17	-165	Comb	0.00	0.11	0.81	5.0	48.80	1.76	49.10	18	Cir	0.015	1.38	54.44	P-17
38	37	127	65	Comb	0.00	0.18	0.82	5.0	49.30	1.54	51.25	18	Cir	0.015	1.00	56.06	P-18
39	End	6	165	Comb	0.00	0.18	0.87	5.0	47.60	0.83	47.65	18	Cir	0.015	1.50	52.12	P-41
40	39	59	90	Comb	0.00	0.17	0.86	5.0	47.60	0.51	47.90	18	Cir	0.015	0.50	52.15	P-45
41	40	191	0	MH	0.00	0.00	0.00	5.0	47.90	0.50	48.85	18	Cir	0.015	1.00	52.25	P-39A
42	41	21	-85	Grate	0.00	0.00	0.00	5.0	48.85	0.48	48.95	18	Cir	0.015	0.50	52.07	P-39B
43	42	15	5	MH	0.00	0.00	0.00	5.0	48.90	0.67	49.00	18	Cir	0.015	0.95	52.31	P-39
44	43	15	70	Grate	0.01	0.00	0.00	5.0	49.05	0.67	49.15	18	Cir	0.015	1.00	52.02	P-40
45	39	190	1	Comb	0.00	0.16	0.81	5.0	47.75	0.50	48.70	18	Cir	0.015	1.50	53.78	P-42
46	45	59	90	Comb	0.00	0.13	0.83	5.0	48.90	0.51	49.20	18	Cir	0.015	1.00	53.79	P-43

Project File: 100yr.stm | Number of lines: 53 | Date: 5/20/2022

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
47	End	20	-100	MH	0.00	0.00	0.00	5.0	45.45	1.25	45.70	24	Cir	0.015	1.00	50.88	P-B1
48	47	29	-5	MH	13.58	0.00	0.00	5.0	48.00	2.76	48.80	18	Cir	0.015	1.00	52.30	P-BASIN B
49	47	99	85	MH	0.00	0.00	0.00	5.0	45.80	0.51	46.30	24	Cir	0.015	0.92	50.73	P-102
50	49	111	-65	MH	14.18	0.00	0.00	5.0	46.30	1.17	47.60	24	Cir	0.015	1.00	51.40	P-A1
51	End	23	20	Comb	0.00	0.32	0.74	5.0	47.70	3.26	48.45	18	Cir	0.015	1.27	51.90	P-51
52	51	118	55	Comb	0.00	0.16	0.81	5.0	48.65	1.65	50.60	18	Cir	0.015	1.00	54.63	P-52
53	End	26	70	Comb	0.00	0.24	0.84	5.0	47.90	0.77	48.10	18	Cir	0.015	1.00	50.80	P-30

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	S-2 (WQ)	Manhole	52.72	Cir	5.00	5.00	24	Cir	49.20	24 18 18	Cir Cir Cir	49.40 49.40 49.40
2	S-3	Manhole	53.59	Cir	4.00	4.00	24	Cir	49.85	24 18 18	Cir Cir Cir	50.05 50.05 50.05
3	S-4	Manhole	54.64	Cir	4.00	4.00	24	Cir	50.50	18 18	Cir Cir	51.00 50.80
4	S-5	Grate	54.48	Rect	4.77	3.27	18	Cir	51.40	18 18	Cir Cir	51.60 51.60
5	S-6	Combination	55.16	Rect	4.77	3.27	18	Cir	52.20	18	Cir	52.35
6	S-7	Combination	55.24	Rect	4.77	3.27	18	Cir	52.55			
7	S-8	Combination	54.71	Rect	4.77	3.27	18	Cir	51.10	18 18	Cir Cir	51.30 51.30
8	S-9	Combination	55.13	Rect	4.77	3.27	18	Cir	51.85	18	Cir	52.05
9	S-10	Combination	55.37	Rect	4.77	3.27	18	Cir	52.35			
10	S-11	Grate	54.20	Rect	4.77	3.27	18	Cir	51.95			
11	S-12	Combination	54.71	Rect	4.77	3.27	18	Cir	51.60			
12	S-14	Combination	53.31	Rect	4.77	3.27	18	Cir	50.25			
13	S-13	Combination	53.32	Rect	4.77	3.27	18	Cir	50.25			
14	S-16	Combination	52.63	Rect	4.77	3.27	18	Cir	49.60			
15	S-15	Combination	52.63	Rect	4.77	3.27	18	Cir	49.60			
16	S-34	Manhole	51.88	Cir	4.00	4.00	18	Cir	47.82	18	Cir	47.82
17	S-35 (WQ)	Combination	50.75	Rect	4.77	3.27	18	Cir	47.95	18	Cir	47.95
18	S-36	Combination	51.85	Rect	4.77	3.27	18	Cir	48.55	18	Cir	48.55
19	S-37	Combination	51.77	Rect	5.00	5.00	18	Cir	49.10	18	Cir	49.10

Project File: 100yr.stm | Number of Structures: 53 | Run Date: 5/20/2022

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
20	R-1	Combination	52.28	Rect	5.00	5.00	18	Cir	49.25	18	Cir	49.45
21	R-2A	Combination	52.45	Rect	4.77	3.27	18	Cir	49.84	18	Cir	49.84
22	R-2	Combination	53.98	Rect	4.77	3.27	18	Cir	50.80	18	Cir	51.00
23	R-9	Manhole	54.88	Cir	4.00	4.00	18	Cir	51.20	18	Cir	51.40
24	R-10	Combination	55.00	Rect	4.77	3.27	18	Cir	51.50			
25	R-3	Combination	52.99	Rect	9.54	3.27	18	Cir	48.90	18	Cir	49.05
26	R-4	Grate	53.29	Rect	4.77	3.27	18	Cir	49.65	18	Cir	49.85
27	R-5	Manhole	53.11	Cir	4.00	4.00	18	Cir	49.95	18	Cir	50.15
28	R-6	Grate	53.08	Rect	4.77	3.27	18	Cir	50.25	18	Cir	50.25
29	R-7	Manhole	55.15	Cir	4.00	4.00	18	Cir	50.30	18	Cir	50.50
30	R-8	Grate	55.00	Rect	4.77	3.27	18	Cir	50.60			
31	S-22 (WQ)	Grate	53.13	Rect	4.77	3.27	18	Cir	48.90	18	Cir	49.20
32	S-20	Manhole	53.31	Cir	4.00	4.00	18	Cir	49.30	18	Cir	49.50
33	S-21	Grate	53.29	Rect	4.77	3.27	18	Cir	49.60			
34	S-23 (WQ)	Grate	52.40	Rect	4.77	3.27	18	Cir	48.95	18	Cir	49.15
35	S-24	Manhole	52.42	Cir	4.00	4.00	18	Cir	49.25	18	Cir	49.45
36	S-25	Grate	52.15	Rect	4.77	3.27	18	Cir	49.55			
37	S-17 (WQ)	Combination	54.44	Rect	4.77	3.27	18	Cir	49.10	18	Cir	49.30
38	S-18	Combination	56.06	Rect	4.77	3.27	18	Cir	51.25			
39	S-41 (WQ)	Combination	52.12	Rect	4.77	3.27	18	Cir	47.65	18 18	Cir Cir	47.60 47.75
40	S-45 (WQ)	Combination	52.15	Rect	4.77	3.27	18	Cir	47.90	18	Cir	47.90
41	S-39A	Manhole	52.25	Cir	4.00	4.00	18	Cir	48.85	18	Cir	48.85

Project File: 100yr.stm | Number of Structures: 53 | Run Date: 5/20/2022

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
42	S-39	Grate	52.07	Rect	4.77	3.27	18	Cir	48.95	18	Cir	48.90
43	S-38	Manhole	52.31	Cir	4.00	4.00	18	Cir	49.00	18	Cir	49.05
44	S-40	Grate	52.02	Rect	4.77	3.27	18	Cir	49.15			
45	S-42	Combination	53.78	Rect	4.77	3.27	18	Cir	48.70	18	Cir	48.90
46	S-43	Combination	53.79	Rect	4.77	3.27	18	Cir	49.20			
47	S-B1	Manhole	50.88	Cir	4.00	4.00	24	Cir	45.70	18 24	Cir Cir	48.00 45.80
48	S-B2	Manhole	52.30	Cir	4.00	4.00	18	Cir	48.80			
49	S-102	Manhole	50.73	Cir	5.00	5.00	24	Cir	46.30	24	Cir	46.30
50	S-A1	Manhole	51.40	Cir	5.00	5.00	24	Cir	47.60			
51	S-51	Combination	51.90	Rect	4.77	3.27	18	Cir	48.45	18	Cir	48.65
52	S-52	Combination	54.63	Rect	4.77	3.27	18	Cir	50.60			
53	S-30 (WQ)	Combination	50.80	Rect	4.77	3.27	18	Cir	48.10			

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	P-2	16.50	24	Cir	54	48.80	49.20	0.741	50.26	50.84	0.55	51.39	End	Manhole
2	P-3	15.43	24	Cir	87	49.40	49.85	0.517	51.40*	51.94*	0.38	52.31	1	Manhole
3	P-4	14.41	24	Cir	87	50.05	50.50	0.517	52.31*	52.78*	0.32	53.11	2	Manhole
4	P-5	7.36	18	Cir	66	51.00	51.40	0.606	53.11*	53.54*	0.40	53.95	3	Grate
5	P-6	1.65	18	Cir	117	51.60	52.20	0.513	53.95*	53.98*	0.02	54.00	4	Combination
6	P-7	0.83	18	Cir	33	52.35	52.55	0.606	54.00	54.01	0.00	54.01	5	Combination
7	P-8	7.14	18	Cir	38	50.80	51.10	0.789	53.11*	53.34*	0.38	53.72	3	Combination
8	P-9	1.96	18	Cir	110	51.30	51.85	0.500	53.72*	53.77*	0.03	53.80	7	Combination
9	P-10	1.37	18	Cir	59	52.05	52.35	0.508	53.80	53.82	0.01	53.82	8	Combination
10	P-11	4.89	18	Cir	64	51.60	51.95	0.547	53.95*	54.13*	0.12	54.25	4	Grate
11	P-12	4.59	18	Cir	59	51.30	51.60	0.508	53.72*	53.87*	0.10	53.98	7	Combination
12	P-14	0.54	18	Cir	33	50.05	50.25	0.606	52.31*	52.32*	0.00	52.32	2	Combination
13	P-13	0.69	18	Cir	25	50.05	50.25	0.800	52.31*	52.32*	0.00	52.32	2	Combination
14	P-16	0.69	18	Cir	31	49.40	49.60	0.645	51.39*	51.39*	0.00	51.39	1	Combination
15	P-15	0.61	18	Cir	28	49.40	49.60	0.714	51.39*	51.39*	0.00	51.39	1	Combination
16	P-34	2.59	18	Cir	43	47.60	47.82	0.512	48.21	48.51	0.16	48.68	End	Manhole
17	P-35	2.59	18	Cir	23	47.82	47.95	0.565	48.68	48.70	0.20	48.90	16	Combination
18	P-36	1.91	18	Cir	118	47.95	48.55	0.508	48.90	49.12	0.08	49.19	17	Combination
19	P-37	1.73	18	Cir	107	48.55	49.10	0.514	49.19	49.60	n/a	49.69 j	18	Combination
20	P-R1	1.09	18	Cir	23	49.10	49.25	0.652	49.69	49.70	0.14	49.83	19	Combination
21	P-R2A	0.94	18	Cir	75	49.45	49.84	0.520	49.83	50.22	0.05	50.28	20	Combination
22	P-R2	0.39	18	Cir	184	49.84	50.80	0.522	50.28	51.03	n/a	51.03 j	21	Combination
23	P-R9	0.03	18	Cir	39	51.00	51.20	0.513	51.08	51.28	0.01	51.29	22	Manhole
24	P-R10	0.05	18	Cir	20	51.40	51.50	0.500	51.49	51.59	0.02	51.61	23	Combination

Project File: 100yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Return period = 100 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
25	P-R3	0.93	18	Cir	42	48.66	48.90	0.571	49.02	49.29	0.15	49.44	End	Combination
26	P-R4	0.06	18	Cir	114	49.05	49.65	0.526	49.44	49.75	0.03	49.79	25	Grate
27	P-R5	0.06	18	Cir	17	49.85	49.95	0.588	49.95	50.05	n/a	50.07 j	26	Manhole
28	P-R6	0.07	18	Cir	19	50.15	50.25	0.526	50.26	50.36	0.01	50.37	27	Grate
29	P-R7	0.06	18	Cir	6	50.25	50.30	0.833	50.37	50.39	n/a	50.42 j	28	Manhole
30	P-R8	0.07	18	Cir	16	50.50	50.60	0.625	50.61	50.71	0.03	50.73	29	Grate
31	P-20	0.02	18	Cir	15	48.80	48.90	0.667	49.30	49.30	0.00	49.30	End	Grate
32	P-22	0.01	18	Cir	19	49.20	49.30	0.526	49.30	49.34	0.01	49.35	31	Manhole
33	P-21	0.01	18	Cir	19	49.50	49.60	0.526	49.54	49.64	0.01	49.65	32	Grate
34	P-23	6.24	18	Cir	16	48.80	48.95	0.938	49.73	49.91	0.21	49.91	End	Grate
35	P-24	6.23	18	Cir	16	49.15	49.25	0.625	50.23	50.33	0.33	50.65	34	Manhole
36	P-25	6.23	18	Cir	16	49.45	49.55	0.625	50.65	50.72	0.28	51.00	35	Grate
37	P-17	2.13	18	Cir	17	48.80	49.10	1.765	49.30	49.65	0.28	49.65	End	Combination
38	P-18	1.45	18	Cir	127	49.30	51.25	1.535	49.66	51.70	n/a	51.70	37	Combination
39	P-41	0.32	18	Cir	6	47.60	47.65	0.833	47.80	47.86	n/a	47.86	End	Combination
40	P-45	0.09	18	Cir	59	47.60	47.90	0.508	47.86	48.02	0.02	48.04	39	Combination
41	P-39A	0.01	18	Cir	191	47.90	48.85	0.497	48.04	48.89	0.01	48.90	40	Manhole
42	P-39B	0.01	18	Cir	21	48.85	48.95	0.476	48.90	48.99	0.00	49.00	41	Grate
43	P-39	0.01	18	Cir	15	48.90	49.00	0.667	49.00	49.04	0.01	49.05	42	Manhole
44	P-40	0.01	18	Cir	15	49.05	49.15	0.667	49.09	49.19	0.01	49.20	43	Grate
45	P-42	2.21	18	Cir	190	47.75	48.70	0.500	48.36	49.30	0.26	49.56	39	Combination
46	P-43	1.06	18	Cir	59	48.90	49.20	0.508	49.56	49.64	0.09	49.73	45	Combination
47	P-B1	27.76	24	Cir	20	45.45	45.70	1.250	47.27*	47.76*	1.21	48.98	End	Manhole
48	P-BASIN B	13.58	18	Cir	29	48.00	48.80	2.759	49.11	50.17	n/a	50.17	47	Manhole

Project File: 100yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Return period = 100 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
49	P-102	14.18	24	Cir	99	45.80	46.30	0.505	48.98*	49.49*	0.29	49.79	47	Manhole
50	P-A1	14.18	24	Cir	111	46.30	47.60	1.171	49.79*	50.37*	0.32	50.68	49	Manhole
51	P-51	3.28	18	Cir	23	47.70	48.45	3.261	48.15	49.14	0.34	49.14	End	Combination
52	P-52	1.27	18	Cir	118	48.65	50.60	1.653	49.14	51.02	n/a	51.02 j	51	Combination
53	P-30	1.98	18	Cir	26	47.90	48.10	0.769	48.41	48.63	n/a	48.63	End	Combination

Project File: 100yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Return period = 100 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	54	0.00	1.45	0.00	0.00	1.04	5.0	9.0	8.6	16.50	16.87	6.35	24	0.74	48.80	49.20	50.26	50.84	52.85	52.72	P-2
2	1	87	0.00	1.19	0.00	0.00	0.91	5.0	8.7	8.7	15.43	14.10	4.91	24	0.52	49.40	49.85	51.40	51.94	52.72	53.59	P-3
3	2	87	0.00	1.01	0.00	0.00	0.79	5.0	8.4	8.8	14.41	14.10	4.59	24	0.52	50.05	50.50	52.31	52.78	53.59	54.64	P-4
4	3	66	0.17	0.55	0.68	0.12	0.39	5.0	8.2	8.8	7.36	7.09	4.17	18	0.61	51.00	51.40	53.11	53.54	54.64	54.48	P-5
5	4	117	0.12	0.24	0.76	0.09	0.18	5.0	6.2	9.4	1.65	6.52	0.94	18	0.51	51.60	52.20	53.95	53.98	54.48	55.16	P-6
6	5	33	0.12	0.12	0.70	0.08	0.08	5.0	5.0	9.8	0.83	7.09	0.47	18	0.61	52.35	52.55	54.00	54.01	55.16	55.24	P-7
7	3	38	0.10	0.46	0.87	0.09	0.39	5.0	7.9	8.9	7.14	8.09	4.04	18	0.79	50.80	51.10	53.11	53.34	54.64	54.71	P-8
8	7	110	0.08	0.25	0.86	0.07	0.21	5.0	6.3	9.4	1.96	6.44	1.11	18	0.50	51.30	51.85	53.72	53.77	54.71	55.13	P-9
9	8	59	0.17	0.17	0.82	0.14	0.14	5.0	5.0	9.8	1.37	6.49	0.78	18	0.51	52.05	52.35	53.80	53.82	55.13	55.37	P-10
10	4	64	0.14	0.14	0.73	0.10	0.10	5.0	5.0	9.8	4.89	6.73	2.77	18	0.55	51.60	51.95	53.95	54.13	54.48	54.20	P-11
11	7	59	0.11	0.11	0.88	0.10	0.10	5.0	5.0	9.8	4.59	6.49	2.60	18	0.51	51.30	51.60	53.72	53.87	54.71	54.71	P-12
12	2	33	0.09	0.09	0.61	0.05	0.05	5.0	5.0	9.8	0.54	7.09	0.31	18	0.61	50.05	50.25	52.31	52.32	53.59	53.31	P-14
13	2	25	0.09	0.09	0.78	0.07	0.07	5.0	5.0	9.8	0.69	8.14	0.39	18	0.80	50.05	50.25	52.31	52.32	53.59	53.32	P-13
14	1	31	0.13	0.13	0.54	0.07	0.07	5.0	5.0	9.8	0.69	7.31	0.39	18	0.65	49.40	49.60	51.39	51.39	52.72	52.63	P-16
15	1	28	0.13	0.13	0.48	0.06	0.06	5.0	5.0	9.8	0.61	7.69	0.35	18	0.71	49.40	49.60	51.39	51.39	52.72	52.63	P-15
16	End	43	0.00	0.78	0.00	0.00	0.64	5.0	50.1	4.0	2.59	6.51	3.55	18	0.51	47.60	47.82	48.21	48.51	51.89	51.88	P-34
17	16	23	0.20	0.78	0.87	0.17	0.64	5.0	50.0	4.0	2.59	6.84	2.72	18	0.57	47.82	47.95	48.68	48.70	51.88	50.75	P-35
18	17	118	0.05	0.58	0.95	0.05	0.47	5.0	49.1	4.1	1.91	6.49	2.37	18	0.51	47.95	48.55	48.90	49.12	50.75	51.85	P-36
19	18	107	0.19	0.53	0.83	0.16	0.42	5.0	48.3	4.1	1.73	6.52	2.89	18	0.51	48.55	49.10	49.19	49.60	51.85	51.77	P-37
20	19	23	0.04	0.34	0.95	0.04	0.26	5.0	48.0	4.1	1.09	7.35	2.08	18	0.65	49.10	49.25	49.69	49.70	51.77	52.28	P-R1
21	20	75	0.18	0.30	0.78	0.14	0.23	5.0	47.0	4.2	0.94	6.56	2.64	18	0.52	49.45	49.84	49.83	50.22	52.28	52.45	P-R2A
22	21	184	0.10	0.12	0.80	0.08	0.09	5.0	40.4	4.6	0.39	6.57	1.58	18	0.52	49.84	50.80	50.28	51.03	52.45	53.98	P-R2

Project File: 100yr.stm

Number of lines: 53

Run Date: 5/20/2022

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
23	22	39	0.00	0.02	0.00	0.00	0.01	5.0	17.0	7.0	0.03	6.52	0.97	18	0.51	51.00	51.20	51.08	51.28	53.98	54.88	P-R9
24	23	20	0.02	0.02	0.25	0.01	0.01	5.0	5.0	9.8	0.05	6.44	1.08	18	0.50	51.40	51.50	51.49	51.59	54.88	55.00	P-R10
25	End	42	0.29	0.32	0.87	0.25	0.26	5.0	62.7	3.5	0.93	6.88	2.73	18	0.57	48.66	48.90	49.02	49.29	52.75	52.99	P-R3
26	25	114	0.00	0.03	0.00	0.00	0.01	5.0	26.5	5.7	0.06	6.60	0.70	18	0.53	49.05	49.65	49.44	49.75	52.99	53.29	P-R4
27	26	17	0.00	0.03	0.00	0.00	0.01	5.0	20.5	6.4	0.06	6.98	1.20	18	0.59	49.85	49.95	49.95	50.05	53.29	53.11	P-R5
28	27	19	0.00	0.03	0.00	0.00	0.01	5.0	13.8	7.5	0.07	6.60	1.21	18	0.53	50.15	50.25	50.26	50.36	53.11	53.08	P-R6
29	28	6	0.00	0.03	0.00	0.00	0.01	5.0	11.4	8.0	0.06	8.31	1.15	18	0.83	50.25	50.30	50.37	50.39	53.08	55.15	P-R7
30	29	16	0.03	0.03	0.25	0.01	0.01	5.0	5.0	9.8	0.07	7.19	1.32	18	0.62	50.50	50.60	50.61	50.71	55.15	55.00	P-R8
31	End	15	0.00	0.00	0.00	0.00	0.00	5.0	116.9	0.0	0.02	7.43	0.05	18	0.67	48.80	48.90	49.30	49.30	52.98	53.13	P-20
32	31	19	0.00	0.00	0.00	0.00	0.00	5.0	61.0	0.0	0.01	6.60	0.44	18	0.53	49.20	49.30	49.30	49.34	53.13	53.31	P-22
33	32	19	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	6.60	0.68	18	0.53	49.50	49.60	49.54	49.64	53.31	53.29	P-21
34	End	16	0.00	0.00	0.00	0.00	0.00	5.0	5.2	0.0	6.24	8.81	5.30	18	0.94	48.80	48.95	49.73	49.91	52.71	52.40	P-23
35	34	16	0.00	0.00	0.00	0.00	0.00	5.0	5.1	0.0	6.23	7.19	4.58	18	0.62	49.15	49.25	50.23	50.33	52.40	52.42	P-24
36	35	16	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	6.23	7.19	4.15	18	0.62	49.45	49.55	50.65	50.72	52.42	52.15	P-25
37	End	17	0.11	0.29	0.81	0.09	0.24	5.0	7.6	9.0	2.13	12.09	3.88	18	1.76	48.80	49.10	49.30	49.65	52.40	54.44	P-17
38	37	127	0.18	0.18	0.82	0.15	0.15	5.0	5.0	9.8	1.45	11.28	3.81	18	1.54	49.30	51.25	49.66	51.70	54.44	56.06	P-18
39	End	6	0.18	0.64	0.87	0.16	0.54	5.0	719.0	0.6	0.32	8.31	2.20	18	0.83	47.60	47.65	47.80	47.86	52.60	52.12	P-41
40	39	59	0.17	0.17	0.86	0.15	0.15	5.0	717.7	0.6	0.09	6.49	0.94	18	0.51	47.60	47.90	47.86	48.02	52.12	52.15	P-45
41	40	191	0.00	0.00	0.00	0.00	0.00	5.0	155.2	0.0	0.01	6.42	0.47	18	0.50	47.90	48.85	48.04	48.89	52.15	52.25	P-39A
42	41	21	0.00	0.00	0.00	0.00	0.00	5.0	93.4	0.0	0.01	6.28	0.64	18	0.48	48.85	48.95	48.90	48.99	52.25	52.07	P-39B
43	42	15	0.00	0.00	0.00	0.00	0.00	5.0	49.2	0.0	0.01	7.43	0.47	18	0.67	48.90	49.00	49.00	49.04	52.07	52.31	P-39
44	43	15	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	7.43	0.74	18	0.67	49.05	49.15	49.09	49.19	52.31	52.02	P-40

Project File: 100yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
45	39	190	0.16	0.29	0.81	0.13	0.24	5.0	6.6	9.3	2.21	6.44	3.30	18	0.50	47.75	48.70	48.36	49.30	52.12	53.78	P-42
46	45	59	0.13	0.13	0.83	0.11	0.11	5.0	5.0	9.8	1.06	6.49	1.94	18	0.51	48.90	49.20	49.56	49.64	53.78	53.79	P-43
47	End	20	0.00	0.00	0.00	0.00	0.00	5.0	5.8	0.0	27.76	21.92	9.04	24	1.25	45.45	45.70	47.27	47.76	50.66	50.88	P-B1
48	47	29	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	13.58	15.12	8.85	18	2.76	48.00	48.80	49.11	50.17	50.88	52.30	P-BASIN B
49	47	99	0.00	0.00	0.00	0.00	0.00	5.0	5.4	0.0	14.18	13.93	4.51	24	0.51	45.80	46.30	48.98	49.49	50.88	50.73	P-102
50	49	111	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	14.18	21.21	4.51	24	1.17	46.30	47.60	49.79	50.37	50.73	51.40	P-A1
51	End	23	0.32	0.48	0.74	0.24	0.37	5.0	7.7	9.0	3.28	16.43	5.70	18	3.26	47.70	48.45	48.15	49.14	52.59	51.90	P-51
52	51	118	0.16	0.16	0.81	0.13	0.13	5.0	5.0	9.8	1.27	11.70	2.83	18	1.65	48.65	50.60	49.14	51.02	51.90	54.63	P-52
53	End	26	0.24	0.24	0.84	0.20	0.20	5.0	5.0	9.8	1.98	7.98	3.65	18	0.77	47.90	48.10	48.41	48.63	51.27	50.80	P-30

Project File: 100yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	S-2 (WQ)	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	S-3	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
3	S-4	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
4	S-5	1.14	0.45	1.58	0.00	Grate	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.17	11.56	0.17	11.56	0.0	Off
5	S-6	0.90	0.00	0.45	0.45	Comb	6.0	3.52	0.00	4.02	2.25	0.010	1.00	0.010	0.010	0.012	0.10	9.59	0.07	7.39	0.0	4
6	S-7	0.83	0.00	0.42	0.40	Comb	6.0	3.52	0.00	4.02	2.25	0.010	1.00	0.010	0.010	0.012	0.09	9.29	0.07	7.11	0.0	10
7	S-8	0.86	0.00	0.86	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.11	7.43	0.11	7.43	0.0	Off
8	S-9	0.68	0.00	0.68	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.10	6.43	0.10	6.43	0.0	Off
9	S-10	1.37	0.00	1.37	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.15	9.99	0.15	9.99	0.0	Off
10	S-11	4.89*	0.40	5.30	0.00	Grate	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.37	24.47	0.37	24.47	0.0	Off
11	S-12	4.59*	0.00	4.59	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.33	21.73	0.33	21.73	0.0	Off
12	S-14	0.54	0.00	0.54	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.08	8.15	0.08	8.15	0.0	Off
13	S-13	0.69	0.00	0.69	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.10	9.51	0.10	9.51	0.0	Off
14	S-16	0.69	0.00	0.69	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.10	9.51	0.10	9.51	0.0	Off
15	S-15	0.61	0.00	0.61	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.09	8.83	0.09	8.83	0.0	Off
16	S-34	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
17	S-35 (WQ)	1.71	0.00	1.71	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.17	11.49	0.17	11.49	0.0	Off
18	S-36	0.47	0.00	0.47	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.07	7.44	0.07	7.44	0.0	Off
19	S-37	1.55	0.00	1.55	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.16	15.94	0.16	15.94	0.0	Off
20	R-1	0.37	0.81	0.55	0.63	Comb	6.0	3.52	0.00	4.02	2.25	0.010	1.00	0.010	0.010	0.012	0.11	10.62	0.08	8.41	0.0	Off
21	R-2A	1.38	0.38	0.95	0.81	Comb	6.0	3.52	0.00	4.02	2.25	0.010	1.00	0.020	0.020	0.012	0.16	8.00	0.12	5.97	0.0	20
22	R-2	0.79	0.00	0.41	0.38	Comb	6.0	3.52	0.00	4.02	2.25	0.010	1.00	0.010	0.010	0.012	0.09	9.13	0.07	6.94	0.0	21
23	R-9	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: 100yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Inlet N-Values = 0.016; Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
24	R-10	0.05	0.00	0.05	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	2.00	0.010	0.010	0.000	0.03	2.55	0.03	2.55	0.0	Off
25	R-3	2.48	0.00	2.48	0.00	Comb	6.0	8.04	15.08	8.04	2.25	Sag	1.00	0.015	0.015	0.000	0.17	11.39	0.17	11.39	0.0	Off
26	R-4	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
27	R-5	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
28	R-6	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
29	R-7	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
30	R-8	0.07	0.00	0.07	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	2.00	0.010	0.010	0.000	0.03	3.15	0.03	3.15	0.0	Off
31	S-22 (WQ)	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	2.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
32	S-20	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
33	S-21	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
34	S-23 (WQ)	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
35	S-24	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
36	S-25	6.23*	0.00	6.23	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.40	40.13	0.40	40.13	0.0	Off
37	S-17 (WQ)	0.88	0.00	0.88	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.11	7.54	0.11	7.54	0.0	Off
38	S-18	1.45	0.00	1.45	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.16	10.35	0.16	10.35	0.0	Off
39	S-41 (WQ)	1.54	0.00	1.54	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	2.00	0.015	0.015	0.000	0.17	11.25	0.17	11.25	0.0	Off
40	S-45 (WQ)	1.44	0.00	1.44	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.15	10.29	0.15	10.29	0.0	Off
41	S-39A	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
42	S-39	0.00	0.00	0.00	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	2.00	0.010	0.010	0.000	0.00	0.00	0.00	0.00	0.0	Off
43	S-38	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
44	S-40	0.01*	0.00	0.01	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.01	1.07	0.01	1.07	0.0	Off
45	S-42	1.27	0.00	1.27	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.14	9.53	0.14	9.53	0.0	Off
46	S-43	1.06	0.00	1.06	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.13	8.49	0.13	8.49	0.0	Off

Project File: 100yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Inlet N-Values = 0.016; Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
47	S-B1	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
48	S-B2	13.58*	0.00	0.00	13.58	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
49	S-102	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
50	S-A1	14.18*	0.00	0.00	14.18	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
51	S-51	2.33	0.00	2.33	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.21	14.00	0.21	14.00	0.0	Off
52	S-52	1.27	0.00	1.27	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.14	9.53	0.14	9.53	0.0	Off
53	S-30 (WQ)	1.98	0.00	1.98	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.020	0.020	0.000	0.19	9.60	0.19	9.60	0.0	Off

Project File: 100yr.stm | Number of lines: 53 | Run Date: 5/20/2022

NOTES: Inlet N-Values = 0.016; Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	24	16.50	48.80	50.26	1.46	2.46	6.70	0.70	50.96	0.904	54	49.20	50.84	1.64	2.75	5.99	0.56	51.40	0.710	0.807	0.436	0.99	0.55
2	24	15.43	49.40	51.40	2.00*	3.14	4.91	0.38	51.78	0.620	87	49.85	51.94	2.00	3.14	4.91	0.38	52.31	0.620	0.620	0.539	1.00	0.38
3	24	14.41	50.05	52.31	2.00	3.14	4.59	0.33	52.64	0.541	87	50.50	52.78	2.00	3.14	4.59	0.33	53.11	0.540	0.540	0.470	0.99	0.32
4	18	7.36	51.00	53.11	1.50	1.77	4.17	0.27	53.38	0.655	66	51.40	53.54	1.50	1.77	4.17	0.27	53.81	0.654	0.654	0.432	1.50	0.40
5	18	1.65	51.60	53.95	1.50	1.77	0.94	0.01	53.96	0.033	117	52.20	53.98	1.50	1.77	0.94	0.01	54.00	0.033	0.033	0.039	1.48	0.02
6	18	0.83	52.35	54.00	1.50	1.77	0.47	0.00	54.01	0.008	33	52.55	54.01	1.46	1.75	0.47	0.00	54.01	0.007	0.008	0.003	1.00	0.00
7	18	7.14	50.80	53.11	1.50	1.77	4.04	0.25	53.36	0.615	38	51.10	53.34	1.50	1.77	4.04	0.25	53.60	0.615	0.615	0.234	1.50	0.38
8	18	1.96	51.30	53.72	1.50	1.77	1.11	0.02	53.74	0.046	110	51.85	53.77	1.50	1.77	1.11	0.02	53.79	0.046	0.046	0.051	1.50	0.03
9	18	1.37	52.05	53.80	1.50	1.77	0.78	0.01	53.81	0.023	59	52.35	53.82	1.47	1.76	0.78	0.01	53.82	0.020	0.021	0.013	1.00	0.01
10	18	4.89	51.60	53.95	1.50	1.77	2.77	0.12	54.06	0.289	64	51.95	54.13	1.50	1.77	2.77	0.12	54.25	0.289	0.289	0.185	1.00	0.12
11	18	4.59	51.30	53.72	1.50	1.77	2.60	0.11	53.83	0.255	59	51.60	53.87	1.50	1.77	2.60	0.10	53.98	0.255	0.255	0.150	1.00	0.10
12	18	0.54	50.05	52.31	1.50	1.77	0.31	0.00	52.32	0.004	33	50.25	52.32	1.50	1.77	0.31	0.00	52.32	0.004	0.004	0.001	1.00	0.00
13	18	0.69	50.05	52.31	1.50	1.77	0.39	0.00	52.32	0.006	25	50.25	52.32	1.50	1.77	0.39	0.00	52.32	0.006	0.006	0.001	1.00	0.00
14	18	0.69	49.40	51.39	1.50	1.77	0.39	0.00	51.39	0.006	31	49.60	51.39	1.50	1.77	0.39	0.00	51.39	0.006	0.006	0.002	1.00	0.00
15	18	0.61	49.40	51.39	1.50	1.77	0.35	0.00	51.39	0.005	28	49.60	51.39	1.50	1.77	0.35	0.00	51.39	0.005	0.005	0.001	1.00	0.00
16	18	2.59	47.60	48.21	0.61*	0.67	3.84	0.23	48.44	0.673	43	47.82	48.51	0.69	0.80	3.25	0.16	48.68	0.429	0.551	0.237	1.00	0.16
17	18	2.59	47.82	48.68	0.86	1.04	2.49	0.10	48.77	0.210	23	47.95	48.70	0.75	0.88	2.94	0.13	48.83	0.328	0.269	0.062	1.50	0.20
18	18	1.91	47.95	48.90	0.95	1.18	1.62	0.04	48.94	0.083	118	48.55	49.12	0.57	0.61	3.12	0.15	49.27	0.478	0.280	0.331	0.50	0.08
19	18	1.73	48.55	49.19	0.64	0.51	2.40	0.09	49.28	0.249	107	49.10	49.60 j	0.50**	0.51	3.37	0.18	49.78	0.639	0.444	0.475	0.50	0.09
20	18	1.09	49.10	49.69	0.59	0.64	1.70	0.04	49.73	0.136	23	49.25	49.70	0.45	0.44	2.47	0.09	49.79	0.385	0.261	0.060	1.46	0.14
21	18	0.94	49.45	49.83	0.38*	0.36	2.64	0.11	49.94	0.519	75	49.84	50.22	0.38	0.36	2.64	0.11	50.33	0.519	0.519	0.389	0.50	0.05
22	18	0.39	49.84	50.28	0.44	0.17	0.90	0.01	50.29	0.052	184	50.80	51.03 j	0.23**	0.17	2.26	0.08	51.11	0.704	0.378	n/a	0.50	n/a

Project File: 100yr.stm | Number of lines: 53 | Run Date: 5/20/2022

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
23	18	0.03	51.00	51.08	0.08*	0.04	0.98	0.01	51.09	0.510	39	51.20	51.28	0.08	0.04	0.97	0.01	51.29	0.496	0.503	0.196	0.99	0.01
24	18	0.05	51.40	51.49	0.09*	0.05	1.07	0.02	51.51	0.497	20	51.50	51.59	0.09	0.05	1.08	0.02	51.61	0.501	0.499	0.100	1.00	0.02
25	18	0.93	48.66	49.02	0.36*	0.32	2.86	0.13	49.15	0.661	42	48.90	49.29	0.38	0.36	2.59	0.10	49.39	0.502	0.581	0.244	1.48	0.15
26	18	0.06	49.05	49.44	0.39	0.04	0.17	0.00	49.44	0.002	114	49.65	49.75	0.10**	0.05	1.23	0.02	49.77	0.586	0.294	0.335	1.48	0.03
27	18	0.06	49.85	49.95	0.10*	0.04	1.20	0.02	49.97	0.587	17	49.95	50.05 j	0.10**	0.05	1.20	0.02	50.07	0.587	0.587	0.100	0.97	0.02
28	18	0.07	50.15	50.26	0.11*	0.06	1.20	0.02	50.28	0.524	19	50.25	50.36	0.11	0.05	1.21	0.02	50.38	0.540	0.532	0.101	0.50	0.01
29	18	0.06	50.25	50.37	0.12	0.04	0.94	0.01	50.38	0.287	6	50.30	50.39 j	0.09**	0.04	1.36	0.03	50.42	0.810	0.549	0.033	1.00	0.03
30	18	0.07	50.50	50.61	0.11*	0.05	1.31	0.03	50.63	0.621	16	50.60	50.71	0.11**	0.06	1.32	0.03	50.73	0.630	0.626	0.100	1.00	0.03
31	18	0.02	48.80	49.30	0.50	0.52	0.04	0.00	49.30	0.000	15	48.90	49.30	0.40	0.38	0.05	0.00	49.30	0.000	0.000	0.000	0.50	0.00
32	18	0.01	49.20	49.30	0.10	0.01	0.20	0.00	49.30	0.016	19	49.30	49.34	0.04**	0.01	0.68	0.01	49.35	0.531	0.274	0.052	1.00	0.01
33	18	0.01	49.50	49.54	0.04*	0.01	0.67	0.01	49.55	0.525	19	49.60	49.64	0.04**	0.01	0.68	0.01	49.65	0.531	0.528	0.100	1.00	0.01
34	18	6.24	48.80	49.73	0.93*	1.15	5.41	0.42	50.15	0.000	16	48.95	49.91	0.96**	1.20	5.20	0.42	50.33	0.000	0.000	n/a	0.50	0.21
35	18	6.23	49.15	50.23	1.08*	1.36	4.58	0.33	50.55	0.625	16	49.25	50.33	1.08	1.36	4.58	0.33	50.65	0.623	0.624	0.100	1.00	0.33
36	18	6.23	49.45	50.65	1.20	1.52	4.09	0.26	50.92	0.487	16	49.55	50.72	1.17	1.48	4.21	0.28	51.00	0.517	0.502	0.080	1.00	0.28
37	18	2.13	48.80	49.30	0.50	0.52	4.13	0.20	49.50	0.000	17	49.10	49.65	0.55**	0.59	3.62	0.20	49.85	0.000	0.000	n/a	1.38	0.28
38	18	1.45	49.30	49.66	0.36*	0.33	4.39	0.16	49.83	0.000	127	51.25	51.70	0.45**	0.45	3.24	0.16	51.86	0.000	0.000	n/a	1.00	n/a
39	18	0.32	47.60	47.80	0.20*	0.14	2.26	0.07	47.87	0.000	6	47.65	47.86	0.21**	0.15	2.15	0.07	47.93	0.000	0.000	n/a	1.50	n/a
40	18	0.09	47.60	47.86	0.26	0.06	0.46	0.00	47.86	0.025	59	47.90	48.02	0.12**	0.07	1.41	0.03	48.05	0.619	0.322	0.190	0.50	0.02
41	18	0.01	47.90	48.04	0.14	0.01	0.13	0.00	48.04	0.004	191	48.85	48.89	0.04**	0.01	0.81	0.01	48.90	0.887	0.445	0.851	1.00	0.01
42	18	0.01	48.85	48.90	0.05	0.01	0.57	0.01	48.90	0.326	21	48.95	48.99	0.04**	0.01	0.71	0.01	49.00	0.602	0.464	0.098	0.50	0.00
43	18	0.01	48.90	49.00	0.10	0.01	0.21	0.00	49.00	0.018	15	49.00	49.04	0.04**	0.01	0.74	0.01	49.05	0.684	0.351	0.053	0.95	0.01
44	18	0.01	49.05	49.09	0.04*	0.01	0.73	0.01	49.10	0.666	15	49.15	49.19	0.04**	0.01	0.74	0.01	49.20	0.684	0.675	0.101	1.00	0.01

Project File: 100yr.stm | Number of lines: 53 | Run Date: 5/20/2022

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
45	18	2.21	47.75	48.36	0.61*	0.67	3.30	0.17	48.53	0.499	190	48.70	49.30	0.60	0.67	3.31	0.17	49.47	0.504	0.502	0.953	1.50	0.26
46	18	1.06	48.90	49.56	0.66	0.75	1.42	0.03	49.59	0.085	59	49.20	49.64	0.44	0.43	2.47	0.09	49.73	0.394	0.240	0.141	1.00	0.09
47	24	27.76	45.45	47.27	1.82*	3.00	9.24	1.33	48.60	1.750	20	45.70	47.76	2.00	3.14	8.84	1.21	48.98	2.006	1.878	0.376	1.00	1.21
48	18	13.58	48.00	49.11	1.11*	1.40	9.68	1.00	50.11	0.000	29	48.80	50.17	1.37**	1.69	8.03	1.00	51.17	0.000	0.000	n/a	1.00	n/a
49	24	14.18	45.80	48.98	2.00	3.14	4.51	0.32	49.29	0.524	99	46.30	49.49	2.00	3.14	4.51	0.32	49.81	0.523	0.523	0.518	0.92	0.29
50	24	14.18	46.30	49.79	2.00	3.14	4.51	0.32	50.10	0.524	111	47.60	50.37	2.00	3.14	4.51	0.32	50.68	0.523	0.523	0.581	1.00	0.32
51	18	3.28	47.70	48.15	0.45*	0.45	7.25	0.27	48.42	0.000	23	48.45	49.14	0.69**	0.79	4.14	0.27	49.41	0.000	0.000	n/a	1.27	0.34
52	18	1.27	48.65	49.14	0.49	0.41	2.54	0.15	49.29	0.000	118	50.60	51.02 j	0.42**	0.41	3.12	0.15	51.17	0.000	0.000	n/a	1.00	0.15
53	18	1.98	47.90	48.41	0.51*	0.53	3.75	0.20	48.61	0.000	26	48.10	48.63	0.53**	0.56	3.55	0.20	48.83	0.000	0.000	n/a	1.00	n/a

Project File: 100yr.stm | Number of lines: 53 | Run Date: 5/20/2022

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Appendix H | Permanent Erosion and Sediment Control BMPs

STANDARD E&S WORKSHEET #21
Temporary and Permanent Vegetative Stabilization Specifications

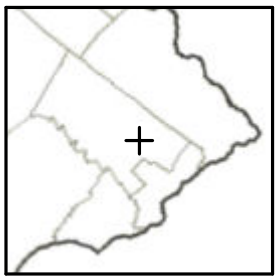
PROJECT NAME: 401/433 WASHINGTON STREET APARTMENTS
LOCATION: MONTGOMERY COUNTY, PA
PREPARED BY: MD DATE: 3/8/2021
CHECKED BY: DATE:

SPECIFICATIONS: The Department recommends the use of the Penn State publication, "Erosion Control and Conservation Plantings on Noncropland," as the standard to use for the selection of species, seed specifications, mixtures, liming and fertilizing, time of seeding, and seeding methods. Specifications for these items may also be obtained from PennDOT's Publication # 408, Section 804 or by contacting the applicable county conservation district. Upon selection of a reference, that reference should be used to provide all specifications for seeding, mulching, and soil amendments. The following specification will be used for this project:

(TEMPORARY)	*SPECIES:	PENNDOT FORMULA E	
	% PURE LIVE SEED:	95	%
	APPLICATION RATE:	10	LB./1000 SQ. YD
	FERTILIZER TYPE:	N/A	(10-10-10)
	FERTILIZER APPL. RATE:	N/A	LB./ACRE
	LIMING RATE:	N/A	T./ACRE
	MULCH TYPE:	HAY	
	MULCHING RATE:	3	T./ACRE
	SEEDING SEASON DATES:	MARCH 15 - OCTOBER 15	
(PERMANENT)	TOPSOIL PLACEMENT DEPTH:	4	IN.
	*SPECIES:	PENNDOT FORMULA B	
	% PURE LIVE SEED:	97	%
	APPLICATION RATE:	44	LB./1000 SQ. YD
	FERTILIZER TYPE:	COMMERCIAL	(10-20-20)
	FERTILIZER APPL. RATE:	678	LB./ACRE
	LIMING RATE:	2	T./ACRE
	MULCH TYPE:	STRAW	
	MULCHING RATE:	3	T./ACRE
	ANCHOR MATERIAL:	WOOD FIBER	
	ANCHORING METHOD:	MULCH BINDER	
	RATE OF ANCHOR MATERIAL APPL.:	775	LB./ACRE
	SEEDING SEASON DATES:	MARCH 15 - JUNE 1 & AUGUST 1 - OCTOBER 15	
(PERMANENT-STEEP SLOPES)			
	TOPSOIL PLACEMENT DEPTH:	4	IN.
	*SPECIES:	PENNDOT FORMULA L	
	% PURE LIVE SEED:	97	%
	APPLICATION RATE:	48	LB./1000 SQ. YD
	FERTILIZER TYPE:	COMMERCIAL	(10-20-20)
	FERTILIZER APPL. RATE:	678	LB./ACRE
	LIMING RATE:	2	T./ACRE
	MULCH TYPE:	STRAW	
	MULCHING RATE:	3	T./ACRE
	ANCHOR MATERIAL:	WOOD FIBER	
	ANCHORING METHOD:	MULCH BINDER	
	RATE OF ANCHOR MATERIAL APPL.:	775	LB./ACRE
	SEEDING SEASON DATES:	MARCH 15 - JUNE 1 & AUGUST 1 - OCTOBER 15	

***If more than one species is used, indicate application rate for each species.**
Note: This worksheet should be added to the plan drawings.

Rational Formula Hydrograph
Publication 584 Intensity Calculation



Project Location

10 Year Storm at Pre DA to Exising Swale
Time of Concentration: 5 min.
Drainage Area: 1.3500 acres.
Weighted 'C' Factor: 0.2200
Map X Coordinate=9630
Map Y Coordinate=5055

Time (min)	Rainfall Incr. (inches)	Rainfall Total (inches)	Rainfall Intensity (in/hr)	Flow (cfs)
0.000	0.000	0.000	0.000	0.000
0.083	0.550	0.550	1.451	0.431
0.167	0.297	0.847	3.234	0.960
0.250	**0.269**	**1.117**	**6.603**	**1.961**
0.333	0.172	1.289	3.562	1.058
0.417	0.142	1.431	2.069	0.614
0.500	0.121	1.552	1.706	0.507
0.583	0.105	1.657	1.259	0.374
0.667	0.092	1.749	1.108	0.329
0.750	0.082	1.831	0.985	0.293
0.833	0.074	1.905	0.883	0.262
0.917	0.066	1.971	0.795	0.236
1.000	0.060	2.031	0.720	0.214
1.083	0.055	2.086	0.655	0.194
1.167	0.050	2.136	0.597	0.177
1.250	0.045	2.181	0.546	0.162
1.333	0.042	2.223	0.500	0.148
1.417	0.038	2.261	0.458	0.136
1.500	0.035	2.296	0.421	0.125
1.583	0.032	2.328	0.387	0.115
1.667	0.030	2.358	0.355	0.106
1.750	0.027	2.385	0.327	0.097
1.833	0.025	2.410	0.301	0.089
1.917	0.023	2.433	0.285	0.085
2.000	0.021	2.454	0.276	0.082
2.083	0.024	2.478	0.254	0.075

Publication 584 Intensity Calculation

POST-PROJECT

STANDARD E&S WORKSHEET #11
Channel Design Data

PROJECT NAME: 401/433 Washington Street
LOCATION: MONTGOMERY COUNTY
PREPARED BY: MD DATE: 5/3/2022
CHECKED BY: DATE:

CHANNEL OR CHANNEL SECTION		EX SWALE	EX SWALE		
TEMPORARY OR PERMANENT?	**(T OR P)**	T	P		
DESIGN STORM	**(2, 5, OR 10 YR)**	10	10		
ACRES	**(AC)**	-	-		
MULTIPLIER	**(1.6, 2.25, OR 2.75)[1]**	-	-		
Q_r (REQUIRED CAPACITY)	**(CFS)**	12.7	12.7		
Q (CALCULATED AT FLOW DEPTH d)	**(CFS)**	12.7	12.7		
PROTECTIVE LINING[2]		SC250	SC250		
n (MANNING'S COEFFICIENT)[2]		0.027	0.027		
V_a (ALLOWABLE VELOCITY)	**(FPS)**	9.5	15.0		
V (CALCULATED AT FLOW DEPTH d)	**(FPS)**	14.0	14.0		
τ_a (MAX ALLOWABLE SHEAR STRESS)	**(LB/FT^2)**	2.50	8.00		
τ_d (CALC'D SHEAR STRESS AT FLOW DEPTH d)	**(LB/FT^2)**	7.84	7.84		
CHANNEL BOTTOM WIDTH	**(FT)**	2	2		
CHANNEL SIDE SLOPES	**(H:V)**	1	1		
		1	1		
D (TOTAL DEPTH)	**(FT)**	2	2		
CHANNEL TOP WIDTH @ D	**(FT)**	6.0	6.0		
d (CALCULATED FLOW DEPTH)	**(FT)**	0.38	0.38		
CHANNEL TOP WIDTH @ FLOW DEPTH d	**(FT)**	2.8	2.8		
BOTTOM WIDTH : FLOW DEPTH RATIO	**(12:1 MAX)**	5.3	5.3		
d_{50} STONE SIZE	**(IN)**	-	-		
A (CROSS-SECTIONAL AREA)	**(SQ. FT.)**	0.91	0.91		
R (HYDRAULIC RADIUS)		0.29	0.29		
S (BED SLOPE)[3]	**(FT/FT)**	0.330	0.330		
S_c (CRITICAL SLOPE)	**(FT/FT)**	0.018	0.018		
.7S_c	**(FT/FT)**	0.012	0.012		
1.3S_c	**(FT/FT)**	0.023	0.023		
STABLE FLOW?	**(Y/N)**	Y	Y		
FREEBOARD BASED ON UNSTABLE FLOW	**(FT)**	N/A	N/A		
FREEBOARD BASED ON STABLE FLOW	**(FT)**	0.5	0.5		
MINIMUM REQUIRED FREEBOARD[4]	**(FT)**	0.5	0.5		
DESIGN METHOD FOR PROTECTIVE LINING[5] PERMISSIBLE VELOCITY (V) OR SHEAR STRESS (S)		S	S		

1. Use 1.6 for Temporary Channels; 2.25 for Temporary Channels in Special Protection (HQ or EV) Watersheds; 2.75 for Permanent Channels. For Rational Method, enter "N/A" and attach Worksheets 9 and 10. For TR-55 enter "N/A" and attach appropriate Worksheets.
2. Adjust "n" value for changes in channel liner and flow depth. For vegetated channels, provide data for manufactured linings without vegetation and with vegetation in separate columns.
3. Slopes may not be averaged.
4. Minimum Freeboard is 0.5 ft. or ¼ Total Channel Depth, whichever is greater.
5. Permissible velocity lining design method is not acceptable for channels with a bed slope of 10% or greater. Shear stress lining design method is required for channels with a bed slope of 10% or greater. Shear stress lining design method may be used for any channel bed slope.

PRE-PROJECT

STANDARD E&S WORKSHEET #11
Channel Design Data

PROJECT NAME: 401/433 Washington Street
LOCATION: MONTGOMERY COUNTY
PREPARED BY: MD DATE: 5/3/2022
CHECKED BY: DATE:

CHANNEL OR CHANNEL SECTION		EX SWALE			
TEMPORARY OR PERMANENT?	**(T OR P)**	P			
DESIGN STORM	**(2, 5, OR 10 YR)**	10			
ACRES	**(AC)**	-			
MULTIPLIER	**(1.6, 2.25, OR 2.75)[1]**	-			
Q_r (REQUIRED CAPACITY)	**(CFS)**	2.0			
Q (CALCULATED AT FLOW DEPTH d)	**(CFS)**	2.0			
PROTECTIVE LINING[2]		GRASS			
n (MANNING'S COEFFICIENT)[2]		0.031			
V_a (ALLOWABLE VELOCITY)	**(FPS)**	4.0			
V (CALCULATED AT FLOW DEPTH d)	**(FPS)**	6.8			
τ_a (MAX ALLOWABLE SHEAR STRESS)	**(LB/FT^2)**	1.00			
τ_d (CALC'D SHEAR STRESS AT FLOW DEPTH d)	**(LB/FT^2)**	2.83			
CHANNEL BOTTOM WIDTH	**(FT)**	2			
CHANNEL SIDE SLOPES	**(H:V)**	1			
		1			
D (TOTAL DEPTH)	**(FT)**	2			
CHANNEL TOP WIDTH @ D	**(FT)**	6.0			
d (CALCULATED FLOW DEPTH)	**(FT)**	0.14			
CHANNEL TOP WIDTH @ FLOW DEPTH d	**(FT)**	2.3			
BOTTOM WIDTH : FLOW DEPTH RATIO	**(12:1 MAX)**	14.6			
d_{50} STONE SIZE	**(IN)**	-			
A (CROSS-SECTIONAL AREA)	**(SQ. FT.)**	0.29			
R (HYDRAULIC RADIUS)		0.12			
S (BED SLOPE)[3]	**(FT/FT)**	0.330			
S_c (CRITICAL SLOPE)	**(FT/FT)**	0.029			
.7S_c	**(FT/FT)**	0.021			
1.3S_c	**(FT/FT)**	0.038			
STABLE FLOW?	**(Y/N)**	Y			
FREEBOARD BASED ON UNSTABLE FLOW	**(FT)**	N/A			
FREEBOARD BASED ON STABLE FLOW	**(FT)**	0.5			
MINIMUM REQUIRED FREEBOARD[4]	**(FT)**	0.5			
DESIGN METHOD FOR PROTECTIVE LINING[5] PERMISSIBLE VELOCITY (V) OR SHEAR STRESS (S)		S			

1. Use 1.6 for Temporary Channels; 2.25 for Temporary Channels in Special Protection (HQ or EV) Watersheds; 2.75 for Permanent Channels. For Rational Method, enter "N/A" and attach Worksheets 9 and 10. For TR-55 enter "N/A" and attach appropriate Worksheets.
2. Adjust "n" value for changes in channel liner and flow depth. For vegetated channels, provide data for manufactured linings without vegetation and with vegetation in separate columns.
3. Slopes may not be averaged.
4. Minimum Freeboard is 0.5 ft. or ¼ Total Channel Depth, whichever is greater.
5. Permissible velocity lining design method is not acceptable for channels with a bed slope of 10% or greater. Shear stress lining design method is required for channels with a bed slope of 10% or greater. Shear stress lining design method may be used for any channel bed slope.

ROLLMAX™
ROLLED EROSION CONTROL

Specification Sheet – VMax® SC250® Turf Reinforcement Mat

DESCRIPTION

The composite turf reinforcement mat (C-TRM) shall be a machine-produced mat of 70% straw and 30% coconut fiber matrix incorporated into permanent three-dimensional turf reinforcement matting. The matrix shall be evenly distributed across the entire width of the matting and stitch bonded between a heavy duty UV stabilized nettings with 0.50 x 0.50 inch (1.27 x 1.27 cm) openings, an ultra heavy UV stabilized, dramatically corrugated (crimped) intermediate netting with 0.5 x 0.5 inch (1.27 x 1.27 cm) openings, and covered by an heavy duty UV stabilized nettings with 0.50 x 0.50 inch (1.27 x 1.27 cm) openings. The middle corrugated netting shall form prominent closely spaced ridges across the entire width of the mat. The three nettings shall be stitched together on 1.50 inch (3.81cm) centers with UV stabilized polypropylene thread to form permanent three-dimensional turf reinforcement matting. All mats shall be manufactured with a colored thread stitched along both outer edges as an overlap guide for adjacent mats.

The SC250 shall meet Type 5A, 5B, and 5C specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) FP-03 Section 713.18

Material Content		
Matrix	70% Straw Fiber	0.35 lb/sq yd (0.19 kg/sm)
	30% Coconut Fiber	0.15 lbs/sq yd (0.08 kg/sm)
Netting	Top and Bottom, UV-Stabilized Polypropylene	5 lb/1000 sq ft (2.44 kg/100 sm)
	Middle, Corrugated UV-Stabilized Polypropylene	24 lb/1000 sf (11.7 kg/100 sm)
Thread	Polypropylene, UV Stable	

Standard Roll Sizes	
Width	6.5 ft (2.0 m)
Length	55.5 ft (16.9 m)
Weight ± 10%	34 lbs (15.42 kg)
Area	40 sq yd (33.4 sm)

Index Property	Test Method	Typical
Thickness	ASTM D6525	0.62 in. (15.75 mm)
Resiliency	ASTM 6524	95.2%
Density	ASTM D792	0.891 g/cm^3
Mass/Unit Area	ASTM 6566	16.13 oz/sy (548 g/sm)
UV Stability	ASTM D4355/ 1000 HR	100%
Porosity	ECTC Guidelines	99%
Stiffness	ASTM D1388	222.65 oz-in.
Light Penetration	ASTM D6567	4.1%
Tensile Strength – MD	ASTM D6818	709 lbs/ft (10.51 kN/m)
Elongation – MD	ASTM D6818	23.9%
Tensile Strength – TD	ASTM D6818	712 lbs/ft (10.56 kN/m)
Elongation – TD	ASTM D6818	36.9%
Biomass Improvement	ASTM D7322	441%

Design Permissible Shear Stress		
	Short Duration	**Long Duration**
Phase 1: Unvegetated	3.0 psf (144 Pa)	2.5 psf (120 Pa)
Phase 2: Partially Veg.	8.0 psf (383 Pa)	8.0 psf (383 Pa)
Phase 3: Fully Veg.	10.0 psf (480 Pa)	8.0 psf (383 Pa)
Unvegetated Velocity	9.5 fps (2.9 m/s)	
Vegetated Velocity	15 fps (4.6 m/s)	

Slope Design Data: C Factors

	Slope Gradients (S)		
Slope Length (L)	≤ 3:1	3:1 – 2.1	≥ 2:1
≤ 20 ft (6 m)	0.0010	0.0209	0.0507
20-50 ft	0.0081	0.0266	0.0574
≥ 50 ft (15.2 m)	0.0455	0.0555	0.081

Roughness Coefficients – Unveg.

Flow Depth	Manning's n
≤ 0.50 ft (0.15 m)	0.040
0.50 – 2.0 ft	0.040-0.012
≥ 2.0 ft (0.60 m)	0.011

Tensar®

NORTH AMERICAN GREEN®

Tensar International Corporation
2500 Northwinds Parkway
Suite 500
Alpharetta, GA 30009
800-TENSAR-1
tensarcorp.com

Tensar International Corporation warrants that at the time of delivery the product furnished hereunder shall conform to the specification stated herein. Any other warranty including merchantability and fitness for a particular purpose, are hereby executed. If the product does not meet specifications on this page and Tensar is notified prior to installation, Tensar will replace the product at no cost to the customer. **This product specification supersedes all prior specifications for the product described above and is not applicable to any products shipped prior to January 1, 2012.**

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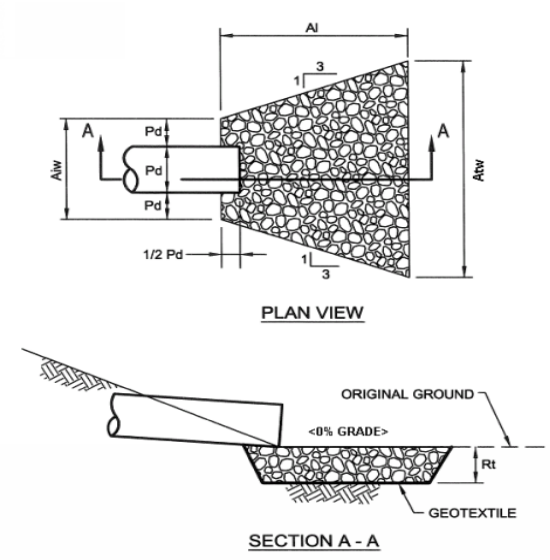
STANDARD E&S WORKSHEET #20
Riprap Apron Outlet Protection

PROJECT NAME: 401/433 WASHINGTON STREET APARTMENTS
LOCATION: MONTGOMERY COUNTY
PREPARED BY: MD **DATE:** 5/3/2022
CHECKED BY: **DATE:**



NO.	PIPE DIA. Do (in.)	TAIL WATER COND. (Max or Min)	MAN. "n" FOR PIPE	PIPE SLOPE (FT/FT)	Q (CFS)	V* (FPS)	RIPRAP SIZE	Rt (in)	Al (ft)	Aiw (ft)	Atw (ft)
E-100	24	MAX	0.015	0.013	12.71	8.69	R-4	18	9	6	9.60

***: The anticipated velocity (V) should not exceed the maximum permissible shown in Table 6.6 for the proposed riprap protection. Adjust for less than full pipe flow. Use Manning's equation to calculate velocity for pipe slopes ≥ 0.05 ft/ft.**
****: Rock apron for swales limited to channel dimensions.**

PIPE FULL FLOW CAPACITY CALCULATIONS:

DETERMINE THE PIPE FULL FLOW CAPACITY OF THE OUTLET PIPES REQUIRING RIPRAP OUTLET PROTECTION, USING THE E&S MANUAL, CHAPTER 9. FOR PIPES WITH SLOPES LESS THAN 5%.

$$Q_f = \frac{0.464}{n} \times D^{8/3} \times S^{1/2}$$

Q_f = FULL FLOW CAPACITY
Q_d = 10-YEAR DESIGN FLOW CAPACITY

EW-100:

n	=	0.015	
D	=	2	FT
S	=	0.0134	FT/FT
Q_d	=	12.71	CFS
Q_f	=	22.74	CFS
Q_d/Q_f	=	0.56	LESS THAN FULL FLOW

PIPE FULL FLOW VELOCITY CALCULATIONS:

DETERMINE THE FULL FLOW CAPACITY OF THE OUTLET PIPES REQUIRING OUTLET PROTECTION USING THE E&S MANUAL, CHAPTER 9.

$$V_f = \frac{Q_f}{A}$$

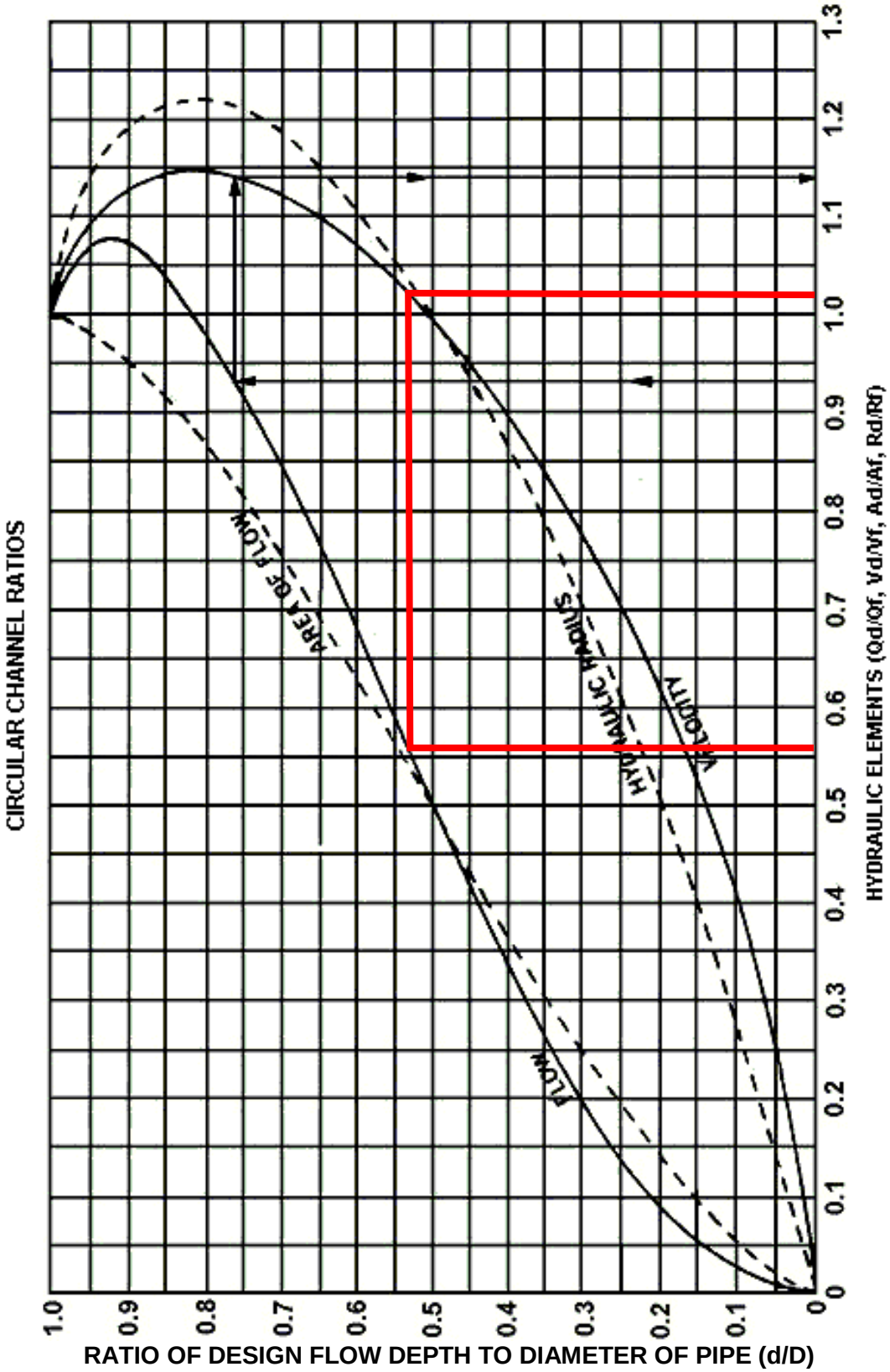
V_f = FULL FLOW VELOCITY
V_r = VELOCITY RATIO FROM FIGURE 9.1
V_d = DESIGN VELOCITY

EW-100:

D	=	2	FT
A	=	3.14	FT^2
Q_f	=	22.74	CFS
V_f	=	7.24	FT/S
V_r	=	1.20	
V_d	=	8.69	FT/S

RIP-RAP SIZE = R-4

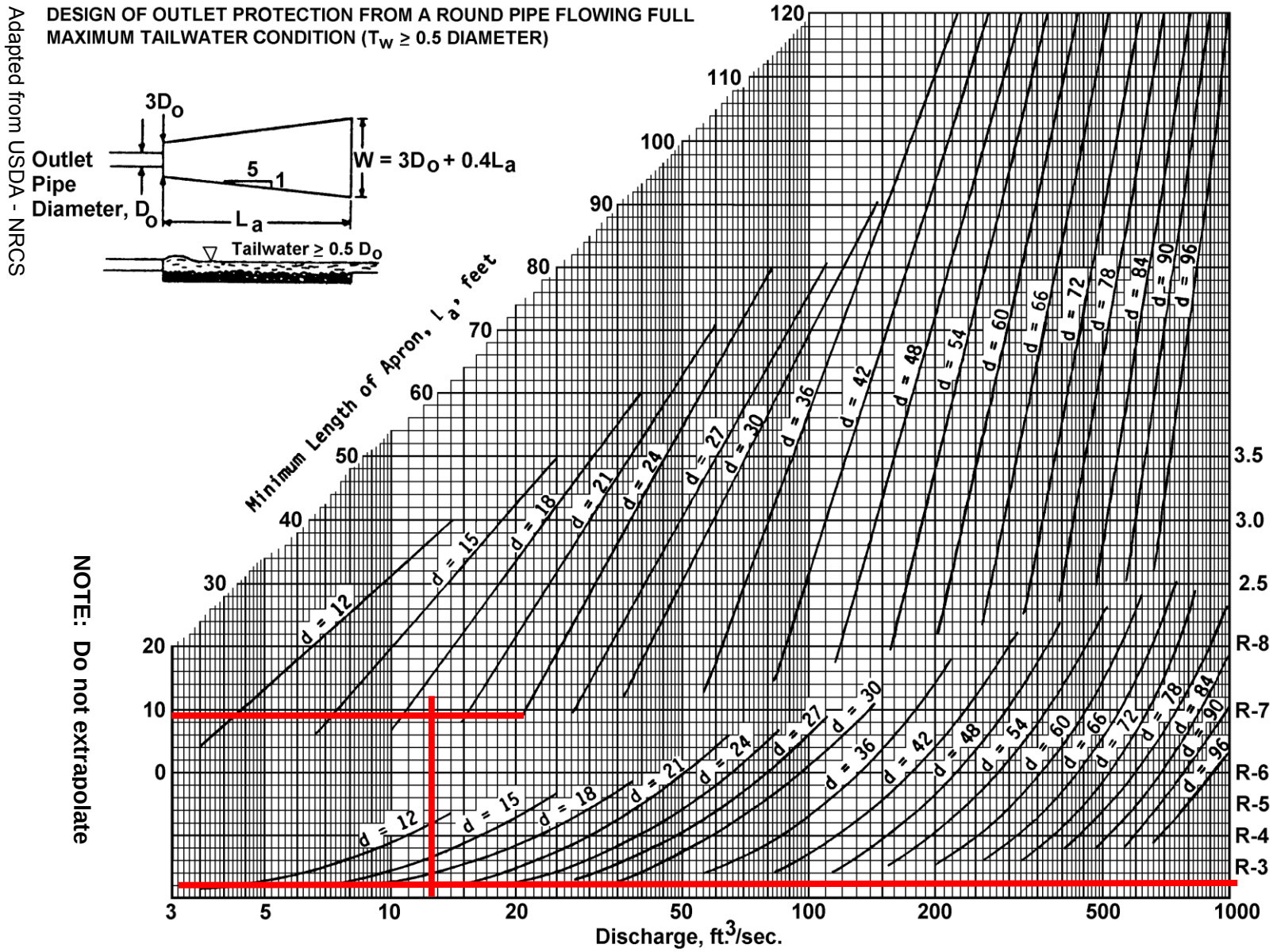
FIGURE 9.1
Velocity Adjustment Nomograph for Less Than Full Pipe Flow



Adapted from *Design and Construction of Sanitary and Storm Sewers,* p. 87, ASCE, 1969

Do not use this nomograph to determine "equivalent pipe sizes" for discharges (Q_d) that do not intersect curves corresponding to proposed pipe sizes on Figures 9.3 and 9.4.

FES EW-100 (24" RCP)
Q10 = 12.71 cfs



*For discharge velocities exceeding Maximum Allowable for Riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

FIGURE 9.4
Riprap Apron Design, Maximum Tailwater Condition

La = 9 feet
W = 9.6 feet
Rock Size = R-4

Colliers Engineering & Design

Appendix I | Karst Features & Sinkhole Maps

Karst Map

11/30/2021

1:18,056

0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA,

Colliers Engineering & Design

Appendix J | Geotechnical Report

TEST BORING LOG B-1/IT-1

Project Information

Project Name: 401-403 Wahsington Avenue
Project Location: Conshohocken, PA
Project Number: 14000908A

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Environmental Scientists

190 Brodhead Road
Suite 210
Bethlehem, PA 18017
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www.maserconsulting.com

Depth (ft)	Sample Number / Depths Below Surface (ft)	Standard Penetration Test Results 0-6"	6-12"	12-18"	18-24"	"N" Value (bpf)	Visual Description / Comments	Elev. (ft)
0	S - 1	4	10	12	18	**22**	.2 ft Topsoil	55.8
	0' - 2'	Sample Recovery =			14		2 ft Medium compact gray/brown fine to coarse sandy GRAVEL, trace silt (FILL)	
	S - 2	19	19	17	16	**36**		
	2' - 4'	Sample Recovery =			16		Medium compact to compact gray and light brown fine to coarse sandy GRAVEL, trace silt. Stone and Quartz fragments. (FILL)	
	S - 3	14	15	15	14	**30**		
	4' - 6'	Sample Recovery =			12			
	S - 4	10	11	15	14	**26**		
	6' - 8'	Sample Recovery =			12		*Auger grinding 6'-8'	
	S - 5	10	3	2	2	**5**	8.5 ft	
	8' - 10'	Sample Recovery =			1.5			
10	S - 6	2	2	4	5	**6**		45.8
	10' - 12'	Sample Recovery =			24		Medium moist dark brown SILT and CLAY, little to trace fine sand. (Alluvial Soil)	
	S - 7	4	4	4	7	**8**		
	12' - 14'	Sample Recovery =			24		14 ft	
	S - 8	22	26	50/5		**76/11**		
	14' - 16'	Sample Recovery =			24		16 ft Very compact wet fine to coarse sandy GRAVEL, trace to little silt. (Alluvial Soil)	
20							End of boring at 16 feet.	35.8
30								25.8
40								15.8

Location Information

Elevation (ft):	55.8
Latitude:	
Longitude:	
Comments:	

Groundwater Data (ft)

Encountered (ft):	9.56
Elevation (ft):	46.24
At Completion (ft):	
Time = 2 hrs (ft):	
ESHWT (ft):	

General Information

Maser Representative:	GJL
Project Manager:	P. Gauffreau
Contractor:	F. M. & W. Drilling
Driller:	Kevin Ryan
Drilling Equipment:	Truck Mounted Drill Rig
Drilling Method:	Hollow Stem Auger
Sampling Method:	2-inch O.D. Split Spoon
Date Started:	May 22, 2014
Date Completed:	May 22, 2014

Comments:

TEST BORING LOG B-2/IT-2

Project Information

Project Name: 401-403 Wahsington Avenue
Project Location: Conshohocken, PA
Project Number: 14000908A

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Depth (ft)	Sample Number / Depths Below Surface (ft)	Standard Penetration Test Results 0-6"	6-12"	12-18"	18-24"	"N" Value (bpf)	Visual Description / Comments	Elev. (ft)
0	S - 1	2	3	5	5	**8**		55.5
	0' - 2'	Sample Recovery =			10		.5 ft Topsoil	
	S - 2	4	5	5	6	**10**	Loose brown fine to coarse sandy SILT, little(+)gravel, little to trace clay. (Fill)	
	2' - 4'	Sample Recovery =			8			
	S - 3	4	4	3	3	**7**	5 ft	
	4' - 6'	Sample Recovery =			14		Loose moist to wet black silty fine to medium SAND, little to trace clay. (Fill)	
	S - 4	3	2	2	2	**4**		
	6' - 8'	Sample Recovery =			20		8.5ft	
	S - 5	1	1	1	2	**2**		
	8' - 10'	Sample Recovery =			24		10 ft Very soft to soft moist to wet black SILT and CLAY, trace to little fine to medium sand with root material. (Organic Silt)	
10								45.5
							End of boring at 10 feet.	
20								35.5
30								25.5
40								15.5

Location Information

Elevation (ft):	55.5
Latitude:	
Longitude:	
Comments:	

Groundwater Data (ft)

Encountered (ft):	7.71
Elevation (ft):	47.79
At Completion (ft):	
Time = 2 hrs (ft):	
ESHWT (ft):	

General Information

Maser Representative:	GJL
Project Manager:	P. Gauffreau
Contractor:	F. M. & W. Drilling
Driller:	Kevin Ryan
Drilling Equipment:	Truck Mounted Drill Rig
Drilling Method:	Hollow Stem Auger
Sampling Method:	2-inch O.D. Split Spoon
Date Started:	May 22, 2014
Date Completed:	May 22, 2014

Comments:

TEST BORING LOG B-3/IT-3

Project Information

Project Name: 401-403 Wahsington Avenue
Project Location: Conshohocken, PA
Project Number: 14000908A

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Depth (ft)	Sample Number / Depths Below Surface (ft)	Standard Penetration Test Results 0-6"	6-12"	12-18"	18-24"	"N" Value (bpf)	Visual Description / Comments	Elev. (ft)
0	S - 1	2	3	4	5	**7**	.5 ft Topsoil	52.5
	0' - 2'	Sample Recovery =			8		2.5 ft Loose dark brown/black silty fine to medium SAND, trace gravel. Occasional orange discoloration. (Fill)	
	S - 2	2	2	2	2	**4**		
	2' - 4'	Sample Recovery =			18			
	S - 3	2	2	2	2	**4**	Soft moist brown and black clayey SILT, little fine sand, trace gravel with root material. (Organic Silt)	
	4' - 6'	Sample Recovery =			24		6 ft Few seams of fine to medium Sand	
	S - 4	WHO	1	0	1	**1**		
	6' - 8'	Sample Recovery =			24		8 ft Very soft wet brown CLAY and SILT, trace fine sand. (Organic Silt/Alluvial Soil)	
	S - 5	3	4	7	9	**11**		
	8' - 10'	Sample Recovery =			20		10 ft Stiff moist brown CLAY and SILT, trace fine sand (Alluvial Soil)	
10								42.5
							End of boring at 10 feet.	
20								32.5
30								22.5
40								12.5

Location Information

Elevation (ft):	52.5
Latitude:	
Longitude:	
Comments:	

Groundwater Data (ft)

Encountered (ft):	4.67
Elevation (ft):	47.83
At Completion (ft):	
Time = 2 hrs (ft):	
ESHWT (ft):	

General Information

Maser Representative:	GJL
Project Manager:	P. Gauffreau
Contractor:	F. M. & W. Drilling
Driller:	Kevin Ryan
Drilling Equipment:	Truck Mounted Drill Rig
Drilling Method:	Hollow Stem Auger
Sampling Method:	2-inch O.D. Split Spoon
Date Started:	May 23, 2014
Date Completed:	May 23, 2014

Comments:

TEST BORING LOG B-4/IT-4

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Project Information

Project Name: 401-403 Wahsington Avenue
Project Location: Conshohocken, PA
Project Number: 14000908A

Depth (ft)	Sample Number / Depths Below Surface (ft)	Standard Penetration Test Results 0-6"	6-12"	12-18"	18-24"	"N" Value (bpf)	Visual Description / Comments	Elev. (ft)
0	S - 1	1	2	3	2	**5**	.5 ft Topsoil	51.5
	0' - 2'	Sample Recovery =			8			
	S - 2	2	3	2	2	**5**	Loose dark brown silty fine to coarse SAND, little gravel, trace clay.	
	2' - 4'	Sample Recovery =			16		3.5 ft (Urban Fill)	
	S - 3	6	4	2	2	**6**		
	4' - 6'	Sample Recovery =			20		Loose brown and black fine to medium sandy SILT, trace(+) clay with root material.	
	S - 4	2	2	3	5	**5**	6.5 ft (Organic Silt)	
	6' - 8'	Sample Recovery =			18		8 ft Medium brown SILT and CLAY, little fine to medium sand, trace fine to medium gravel with root/plant material	
10							(Organic Silt)	41.5
							End of boring at 8 feet.	
20								31.5
30								21.5
40								11.5

Location Information

Elevation (ft):	51.5
Latitude:	
Longitude:	
Comments:	

Groundwater Data (ft)

Encountered (ft):	6.33
Elevation (ft):	45.17
At Completion (ft):	
Time = 2 hrs (ft):	
ESHWT (ft):	

General Information

Maser Representative:	GJL
Project Manager:	P. Gauffreau
Contractor:	F. M. & W. Drilling
Driller:	Kevin Ryan
Drilling Equipment:	Truck Mounted Drill Rig
Drilling Method:	Hollow Stem Auger
Sampling Method:	2-inch O.D. Split Spoon
Date Started:	May 23, 2014
Date Completed:	May 23, 2014

Comments:

TEST BORING LOG B-5/IT-5

Project Information

Project Name: 401-403 Wahsington Avenue
Project Location: Conshohocken, PA
Project Number: 14000908A

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Depth (ft)	Sample Number / Depths Below Surface (ft)	Standard Penetration Test Results 0-6"	6-12"	12-18"	18-24"	"N" Value (bpf)	Visual Description / Comments	Elev. (ft)
0	S - 1	4	4	7	8	**11**	.2 ft Topsoil	51.5
	0' - 2'	Sample Recovery =			10		Medium compact dark brown/black fine to coarse sandy GRAVEL, trace to little silt. Slag/Brick debris. (Urban Fill)	
	S - 2	7	9	6	5	**15**	4 ft * auger grinding 1.5 - 3.5 ft	
	2' - 4'	Sample Recovery =			8			
	S - 3	3	2	2	3	**4**	6 ft Loose dark brown moist to wet silty fine to coarse SAND, trace to little gravel, trace to little clay with plant/root material. (Burried Topsoil)	
	4' - 6'	Sample Recovery =			12			
	S - 4	1	1	3	7	**4**	7.5 ft Soft moist brown silty CLAY, trace fine sand, trace fine to medium gravel. (Alluvial Soil)	
	6' - 8'	Sample Recovery =			18			
	S - 5	16	5	5	5	**10**		
	8' - 10'	Sample Recovery =			24			
10	S - 6	5	22	50/2		**72/8**	10.5 ft 11.2 ft Loose moist to wet brown fine to coarse sandy GRAVEL, trace to little silt. (Alluvial Soil)	41.5
	10' - 12'	Sample Recovery =			24		Very compact wet brown fine to coarse sandy GRAVEL, trace to little silt. (Alluvial Soil)	
20								31.5
30								21.5
40								11.5

End of boring at 11.2 feet.

Location Information

Elevation (ft):	51.5
Latitude:	
Longitude:	
Comments:	

Groundwater Data (ft)

Encountered (ft):	4.75
Elevation (ft):	46.75
At Completion (ft):	
Time = 2 hrs (ft):	
ESHWT (ft):	

General Information

Maser Representative:	GJL
Project Manager:	P. Gauffreau
Contractor:	F. M. & W. Drilling
Driller:	Kevin Ryan
Drilling Equipment:	Truck Mounted Drill Rig
Drilling Method:	Hollow Stem Auger
Sampling Method:	2-inch O.D. Split Spoon
Date Started:	May 23, 2014
Date Completed:	May 23, 2014

Comments:

TEST BORING LOG B-6/IT-6

Project Information

Project Name: 401-403 Wahsington Avenue
Project Location: Conshohocken, PA
Project Number: 14000908A

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Depth (ft)	Sample Number / Depths Below Surface (ft)	Standard Penetration Test Results 0-6"	6-12"	12-18"	18-24"	"N" Value (bpf)	Visual Description / Comments	Elev. (ft)
0	S - 1	3	5	7	7	**12**	.25 ft Topsoil	51.5
	0' - 2'	Sample Recovery =			10		Loose to medium compact moist dark brown/black gravelly fine to coarse SAND, little silt. Brick, concrete and coal/slag debris.	
	S - 2	3	3	2	3	**5**		
	2' - 4'	Sample Recovery =			6		4 ft Occasional Layers of sandy silt. (Urban Fill)	
	S - 3	1	1	1	2	**2**		
	4' - 6'	Sample Recovery =			4		6 ft Loose moist black and brown silty fine to coarse SAND, trace to little fine gravel, trace clay with plant material. (Fill/Organics)	
	S - 4	1	1	2	2	**3**		
	6' - 8'	Sample Recovery =			22			
	S - 5	2	3	20	30	**23**	9 ft Soft moist silty CLAY, trace fine sand.	
	8' - 10'	Sample Recovery =			24		10 ft (Alluvial Soil)	
10								41.5
							Compact moist brown gravelly fine to coarse SAND, trace to little silt (Alluvial Soil)	
							End of boring at 10 feet.	
20								31.5
								10 ft
30								21.5
40								11.5

Location Information

Elevation (ft):	51.5
Latitude:	
Longitude:	
Comments:	

Groundwater Data (ft)

Encountered (ft):	4.5
Elevation (ft):	46.9
At Completion (ft):	
Time = 2 hrs (ft):	
ESHWT (ft):	

General Information

Maser Representative:	GJL
Project Manager:	P. Gauffreau
Contractor:	F. M. & W. Drilling
Driller:	Kevin Ryan
Drilling Equipment:	Truck Mounted Drill Rig
Drilling Method:	Hollow Stem Auger
Sampling Method:	2-inch O.D. Split Spoon
Date Started:	May 23, 2014
Date Completed:	May 23, 2014

Comments:

TEST BORING LOG B-7/IT-7

Project Information

Project Name: 401-403 Wahsington Avenue
Project Location: Conshohocken, PA
Project Number: 14000908A

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Depth (ft)	Sample Number / Depths Below Surface (ft)	Standard Penetration Test Results 0-6"	6-12"	12-18"	18-24"	"N" Value (bpf)	Visual Description / Comments	Elev. (ft)
0	S - 1	1	2	3	3	**5**	Topsoil	53.5
	0' - 2'	Sample Recovery =			12		.5 ft	
	S - 2	11	10	7	5	**17**	Loose to Medium compact moist black silty fine to medium SAND, trace to littlegravel.	
	2' - 4'	Sample Recovery =			20		4 ft	
	S - 3	3	3	2	1	**5**	Loose moist black fine to medium sandy SILT, little clay. (Alluvial Soil)	
	4' - 6'	Sample Recovery =			20		7 ft	
	S - 4	1	1	1	2	**2**	Soft moist to wet brown fine to medium SAND and CLAY, little silt, trace gravel.	
	6' - 8'	Sample Recovery =			24		9 ft	
	S - 5	1	1	2	5	**3**	Loose wet brown silty fine to coarse(-) SAND, little to trace clay, trace gravel. (Alluvial Soil)	
	8' - 10'	Sample Recovery =			24		12.5 ft	
10	S - 6	2	3	2	2	**5**	Medium compact wet brown fine to coarse sandy GRAVEL, trace silt. (Alluvial Soil)	43.5
	10' - 12'	Sample Recovery =			24		14 ft	
	S - 7	4	9	16	18	**25**	End of boring at 14 feet.	
	12' - 14'	Sample Recovery =			18			
20								33.5
30								23.5
40								13.5

Location Information

Elevation (ft):	53.5
Latitude:	
Longitude:	
Comments:	

Groundwater Data (ft)

Encountered (ft):	6
Elevation (ft):	47.5
At Completion (ft):	
Time = 2 hrs (ft):	
ESHWT (ft):	

General Information

Maser Representative:	GJL
Project Manager:	P. Gauffreau
Contractor:	F. M. & W. Drilling
Driller:	Kevin Ryan
Drilling Equipment:	Truck Mounted Drill Rig
Drilling Method:	Hollow Stem Auger
Sampling Method:	2-inch O.D. Split Spoon
Date Started:	May 22, 2014
Date Completed:	May 22, 2014

Comments:

TEST BORING LOG B-8/IT-8

Project Information

Project Name: 401-403 Wahsington Avenue
Project Location: Conshohocken, PA
Project Number: 14000908A

MASER CONSULTING P.A.

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Planners
Surveyors
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Depth (ft)	Sample Number / Depths Below Surface (ft)	Standard Penetration Test Results 0-6"	6-12"	12-18"	18-24"	"N" Value (bpf)	Visual Description / Comments	Elev. (ft)
0	S - 1	2	3	4	5	**7**	.33 ft Topsoil	55.8
	0' - 2'	Sample Recovery =			8		2 ft Loose black and brown silty fine to coarse SAND,	
	S - 2	3	6	8	11	**14**	Medium compact moist black/brown silty fine to medium SAND, trace to little gravel, trace clay. Brick/Stone debris and discolorations.	
	2' - 4'	Sample Recovery =			10			
	S - 3	8	6	5	5	**11**		
	4' - 6'	Sample Recovery =			8		6 ft (Urban Fill)	
	S - 4	2	3	3	3	**6**	Loose moist to wet black and brown silty fine to coarse SAND, trace gravel.	
	6' - 8'	Sample Recovery =			12			
	S - 5	2	2	2	2	**4**		
	8' - 10'	Sample Recovery =			4		10 ft (Fill)	
10	S - 6	2	2	1	2	**3**	Soft moist to wet brown CLAY and SILT, little fine sand.	45.8
	10' - 12'	Sample Recovery =			6		(Alluvial Soil)	
	S - 7	3	5	18	45	**23**	13 ft	
	12' - 14'	Sample Recovery =			24		Compact to very compact moist brown fine to coarse sandy GRAVEL, little silt.	
	S - 8	30	50/3			**50/3**	14.75 ft	
	14' - 16'	Sample Recovery =			5			
							End of boring at 16 feet.	
20								35.8
30								25.8
40								15.8

Location Information

Elevation (ft):	55.8
Latitude:	
Longitude:	
Comments:	

Groundwater Data (ft)

Encountered (ft):	9.15
Elevation (ft):	46.65
At Completion (ft):	
Time = 2 hrs (ft):	
ESHWT (ft):	

General Information

Maser Representative:	GJL
Project Manager:	P. Gauffreau
Contractor:	F. M. & W. Drilling
Driller:	Kevin Ryan
Drilling Equipment:	Truck Mounted Drill Rig
Drilling Method:	Hollow Stem Auger
Sampling Method:	2-inch O.D. Split Spoon
Date Started:	May 22, 2014
Date Completed:	May 22, 2014

Comments:

DBA
DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

REPORT OF GEOTECHNICAL EXPLORATION

PROPOSED RESIDENCE STRUCTURES
401 AND 433 WASHINGTON STREET PARCELS
CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

PREPARED FOR

O'NEILL PROPERTIES GROUP
2701 RENAISSANCE BOULDEVARD
4TH FLOOR
KING OF PRUSSIA, PA 19406

PROJECT 4287G1R1
MAY 28, 2013

DAVID BLACKMORE AND ASSOCIATES, INC.
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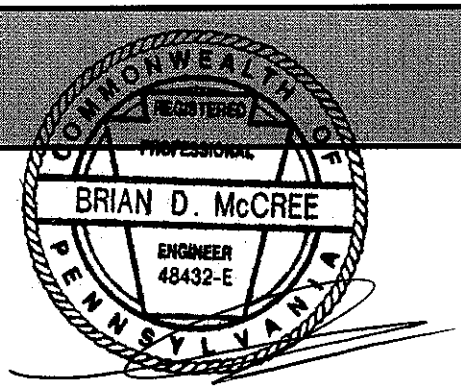

Mr. Brian D. McCree, PE
Vice President

Matthew Uhrig, EIT
Geotechnical Engineer

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APPENDIX

GENERAL CONSTRUCTION GUIDELINES FOR CARBONATE GEOLOGY
SOIL PARTICLE SIZE ANALYSIS RESULTS
SOIL PLASTIC AND LIQUID LIMIT TEST RESULTS
TEST BORING LOGS
BORING LOCATION PLAN

EXECUTIVE SUMMARY

Purpose

This exploration was completed to evaluate the subsurface conditions and their effect upon the proposed site development. This exploration focused on the proposed multi-unit residential structures and related paved parking and driveway facilities located on the southeastern corner of Washington and Cherry Streets in Conshohocken Borough, Montgomery County, PA.

Scope

A total of forty-six (46) borings were completed at the subject site. The test borings were drilled to depths of up to approximately 48 feet or to auger refusal on schist and/or limestone bedrock within the proposed footprints of the four (4) proposed structures. The test locations were determined and field located using a parking plan prepared by Niles Bolton Associates numbered A2.01, dated September 16, 2008. Site design was underway during the implementation of our exploration. Therefore, final site design may vary from the preliminary design used to complete this exploration. A copy of the plan used for our exploration which has been annotated with our test boring locations is included in the appendix of this report.

Findings

The pertinent findings of the exploration of the subject site include the following:

- Existing miscellaneous fill
- Enhanced subsurface weathering
- Evidence of potential sinkhole activity
- Compressible soil strata (organic silts)
- Shallow depths to groundwater

Existing miscellaneous fill consisting of a loose mixture of brown, orange brown and black fine sand and cinders with rock fragments and miscellaneous construction debris including brick, cinders/slag, boulders, and occasional concrete fragments (Stratum IMF) was encountered across the site. These materials extend to depths ranging from 3.3 feet to 12.3 feet below existing grade with an average depth of approximately 7.5 feet. The lowest elevation to which this fill stratum was encountered was 42.4 feet in boring B36, located at the northwest corner of Building 400. At the base of the fill stratum, an intermittent 0.75 to 3.50 foot-thick layer of black and gray **organic silt** was encountered. The existing fill is underlain by a soft to very soft layer of sandy clay. This stratum transitions to a dense sand and gravel layer (Stratum III). This stratum is underlain by either weathered limestone (Stratum IVA) or weathered schist (Stratum IVB). Loose to very loose conditions were encountered intermittently at the base of Stratum III, predominately in areas where it is underlain by weathered limestone. Additionally, the presence of enhanced weathering, evidenced by loose to voided zones, was encountered in portions of Stratum IVA. Both **limestone and schist bedrock** were encountered across the site. The contact between the two geologic formations is mapped as occurring at the south end of the subject site. The depth at which bedrock encountered ranges from 20.7 feet to over 48.0 feet below existing grade. The highest elevation at which bedrock was encountered was 31.6 feet at boring B3

located at the northeast corner of Building 100. **Groundwater** was encountered across the site at relatively shallow depths from existing grade. The groundwater table elevation is estimated to range from 45.9 feet to 48.9 feet. Based on regional topography and the direction of river flow the groundwater flow direction is likely in a southeasterly direction.

In addition the Geotechnical difficulties encountered during our investigation, the surface fill soils and native soils encountered at the groundwater interface (vadose zone) are suspected to have been environmentally impacted during the site's industrial use history. The determination of contamination level, extent, and impact to the proposed development is beyond the scope of our investigation. However, limiting the creation of spoils has factored into the determination of the most suitable foundation alternative for the subject property.

Recommendations

In order to overcome the site conditions encountered, several foundation support alternatives have been evaluated including deep dynamic compaction (DDC), auger cast-in-place piles, driven steel piles, drilled piers, and shallow foundation supported via improved subgrade. Considering the relatively lightly loaded structures proposed and the highly variable depths to suitable deep foundation bearing strata, the use of a shallow foundation supported on an improved subgrade is in DBA's opinion the most suitable alternative. For additional information, see Section 7.2 – Foundations.

As discussed above, zones of enhanced weathering characterized by loose and/or voided conditions were encountered intermittently within lower portions Stratum III (fine to medium sands with gravel) and upper portions of Stratum IVA (weathered limestone). In order to use one of these shallow foundation alternatives discussed above, the implementation of a compaction grouting program will be required in order to improve the strength within these portions of the subsurface profile. In order to better define the areas requiring compaction grout treatment DBA recommends implementing a geophysical survey consisting of Multiple Analysis of Surface Waves (MASW) across the proposed building footprint areas. This survey shall be targeted to defining areas of reduced soil stiffness at depths consistent with Strata III and IV. The results of this survey will assist in the development of a compaction grouting program including grouting depths, locations, cutoff pressure and grout mix requirements. This survey could also potentially be used to obtain site specific shear velocity data for verifying seismic site class.

Additionally, it shall be noted that the subject site is underlain by a carbonate geologic formation which is subject to dissolution activity and the subsequent development of karst features, subsoil erosion, and the formation of sinkholes. Disturbance and/or alteration of the existing site drainage patterns may result in an increase in subsoil erosion and sinkhole formation. This risk is considered to be limited due to the presence of a relatively shallow groundwater table which limits the downward movement of stormwater runoff and subsequent sinkhole development. However, DBA has included guidelines for minimizing the risk of

sinkhole development during construction in the appendix of this report. These guidelines are entitled "Construction Guidelines for Carbonate Geology."

1. INTRODUCTION

David Blackmore and Associates, Inc. (DBA) has completed the geotechnical exploration of the subject site in accordance with our Proposal 4287G1P1, dated June 19, 2012. This exploration was completed to evaluate the existing subsurface conditions and their effect upon the proposed site development. Specifically, DBA has provided recommendations regarding the following:

- Foundation support of the structure and slabs, including soil bearing pressures, bearing elevations, foundation design recommendations and anticipated settlement for shallow foundations,
- Subgrade improvement alternatives for the implementation of a shallow foundation system,
- Depth to and management of groundwater for design of structures and pavements, if encountered
- Relative elevations of surface and subsurface features,
- Fill and compaction criteria,
- Pavements and floor slabs,
- Lateral earth pressures for retaining walls, and
- General Geotechnical related construction procedures.

The following section (2. PROPOSED CONSTRUCTION) summarizes the information available to DBA regarding the proposed site development. This report has been prepared based on the proposed construction. Changes to the proposed construction may require alterations to this report or additional investigative work. DBA should be notified of significant changes to the proposed construction.

2. PROPOSED CONSTRUCTION

The proposed construction consists of four (4) residential structures to be used for a combination of townhomes, condominiums and apartments. Buildings 100 and 300 are located at the north end of the site and are to consist of five (5) stories. The footprint area of each of these buildings is approximately 38,000 SF. Buildings 200 and 400 are located at the south half of the site and are to consist of four (4) stories. The footprint area of each of these buildings is approximately 43,700 SF. The

buildings are to consist of wood frame supported on an elevated deck, with on-grade parking beneath the deck. The parking elevation of Buildings 100, 200, and 300 is proposed to be 55.0 feet; the parking elevation of Building 400 is proposed to be 54.5 feet. Anticipated maximum column loads are not available at this time. However, based on the proposed construction the maximum anticipated column loads are estimated to be in the range of 250 kips. This loading has been used to develop the recommendations included herein. DBA shall be notified of any significant increase to column loads.

3. GEOTECHNICAL EXPLORATION

A total of forty-six (46) borings were completed at the subject site. The test borings were drilled to depths of up to approximately 48 feet or to auger refusal on schist or limestone bedrock within the proposed footprints of the four (4) proposed structures.

The test locations were located in the field by DBA personnel using a Parking Plan prepared by Niles Bolton Associates numbered A2.01, dated September 16, 2008. The test borings were drilled by our subcontractor, **The Corcoran Drilling Company**, under the direction of DBA personnel.

All test boring logs and a test boring location plan are included in the appendix of this report.

4. GEOTECHNICAL BACKGROUND

4.1 SITE DESCRIPTION

The subject site is located on the southeast corner of the intersection of Washington and Cherry Streets in Conshohocken Borough and Whitemarsh Township, Montgomery County, Pennsylvania. The parcel is bounded to the south by the Schuylkill River, to the West by the Millennium Residential development, and to the east by existing industrialized development.

An abandoned industrial warehouse building takes up a majority of the northeastern quadrant of the parcel. The building is a single story steel framed structure that is scheduled for demolition. The bulk of the western half of the parcel formerly contained an industrial building that was demolished within the past 10 years as development of the neighboring properties was completed. Two (2) large stock piles of crushed concrete material, presumably from the demolition of this structure, are stored at the center of the subject site. The asphalt of the paved parking area of the former structure remains in place, covering a majority of the northwestern quadrant of the site. The southernmost portion of the site is covered with stone, scattered brush, and woodland. The property has a history of industrial use which in turn has left the surface of the development area covered with miscellaneous construction/demolition related debris fill.

A photocopy of the USGS Topographical Map, Norristown Quadrangle, indicating the site is included as Figure I.

4.2 GEOLOGY

Available geological sources indicate the site is underlain by the oligoclase-mica schist of the Wissahickon Formation and the impure limestone and dolomite of the Conestoga Formation. These formations can be described as follows:

> *Conestoga Formation (OCc):* This formation consists of a medium gray, impure limestone having black, graphitic shale partings. This formation includes micaceous limestone, phyllite and alternating limestone and dolomite. The total thickness is unknown but is at least 300 feet thick. This formation is variably weathered (impure layers weather to a higher relief) resulting in large irregularly shaped limestone fragments and extensive variation in rock surface. The interface between soil and bedrock is characterized by pinnacles in most places.
>
> *Wissahickon Formation, oligoclase-mica schist (Xw):* This formation consists mainly of quartz feldspar and muscovite and is excessively

micaceous. It is moderately resistant to weathering and is often highly weathered to moderate depths.

The contact between these formations is mapped in a southwest – northeast direction crossing the southern end of the site. Test drilling confirms the presence of both formations beneath the site with extensive intermingling being discovered.

A photocopy of the USGS Geological Map of the Norristown Quadrangle indicating the site is included as Figure II.

4.3 SOILS

Soil records indicate the site soils are of the Madeland Series, schist and gneiss materials. The specific on-site variation is described below:

> *Madeland, Schist and Gneiss Materials (MdB):* This land type is the result of altering and mixing soils formed in material weathered from schist and gneiss. Earthmoving during development has removed or altered the characteristics of the original soils to the extent that classification and description of soil properties is not practical.

A photocopy of the soil mapping created using the National Cooperative Soil Survey website developed by the USDA's Natural Resources Conservation Service indicating the site is included as Figure III.

5. LABORATORY TESTING

Representative soil samples taken during the field exploration were tested in DBA's laboratory for basic engineering properties. The laboratory testing consisted of classification of soil samples for engineering purposes. The laboratory testing included Particle Size Analysis (ASTM D442), Plastic and Liquid Limits (ASTM D4318), and Natural Moisture Content (ASTM D2216). The Unified Soil Classification System (USCS) was used to assign group symbols and group names to the soils tested.

A summary of the test results is provided in Table I. A photocopy of the particle size analysis results and the plastic and liquid limit analysis results are included in the appendix of this report.

6. SUBSURFACE CONDITIONS

The results of the drilling program, with the exception of the variable depth to bedrock, revealed a fairly consistent subsurface profile. The following strata, beneath 8 to 10 inches of asphalt and/or modified stone or 2 to 6 inches of topsoil, can describe a typical soil profile.

Stratum IMF: 1.0' to 10.0' thick; MISCELLANEOUS FILL consisting of a mixture of brown, orange brown and black fine sand and cinders with rock fragments and miscellaneous debris including brick, cinders/slag, boulders, and occasional concrete fragments. This stratum is considered to be variable in density with SPR[1] values ranging from 1 B/F to 16 B/F. This stratum was encountered in each boring completed.

Organic Silt: 0.75' to 3.50' thick; Black and gray organic silt. This stratum was encountered at the base of the fill stratum in borings B15, B25, B26, B27 through B30, B32 through B36, B38, B39, and B43. Laboratory testing of representative samples of this organic silt resulted in organic contents ranging from 1.40 to 23.43 percent.

Stratum II: 0.5' to 7.75' thick; Brown, orange brown, and reddish brown sandy lean clay with some rock fragments. This stratum is considered to be very soft to stiff with SPR values ranging from 1 B/F to 41 B/F. The average SPR value is 8.4 B/F. This stratum was encountered in borings B2 through B10, B13 through B19, B21 through B25, B27 through B35, B37, B39 through B43, B45 and B46.

Stratum III: 0.6' to 38.8' thick; Brown and orange brown fine to medium sand with rock fragments, pebbles and occasional boulders. Localized deposits of increased silt content were encountered at the base of this stratum. This stratum is considered to be generally very dense with localized loose zones encountered within the lower portion of this stratum, particularly where it is underlain by weathered limestone (Stratum IVA). SPR values of this Stratum range from 1 B/F to 50 blows per 1" of penetration. The average SPR value for this stratum is 36.3 B/F. This stratum was encountered in each of the test borings completed.

[1] SPR = is the Standard Penetration Resistance or number of blows required of a 140 pound hammer dropping 30", to drive a 2" OD split spoon sampler one foot.

Stratum IVA: 0.58' to 25.0' thick; Variegated weathered and decomposed limestone consisting of tan and brown fine sand and silt with limestone fragments. This stratum is generally dense to very dense; however, soft/loose zones were encountered within the upper portion of this stratum which is indicative of enhanced weathering and/or dissolution activity. SPR values of this Stratum range from 1 blow per 24 inches of penetration to 50 blows with no penetration. The enhanced weathered zones were noted in borings B11, B21, B22, B23, B25, and B26. The average SPR value for this stratum is 43.2 B/F. This stratum was encountered in 20 of the 46 borings completed. Refer to the test boring location plan for the delineation of area in which this stratum was encountered.

Stratum IVB: 0.25' to 19.5' thick; Orange brown, brown, and gray weathered schist. This stratum is considered to be moderately dense to very dense with SPR values ranging from 13 B/F to 50 blows per inch of penetration. This stratum was encountered in 21 of the 46 borings completed. Refer to the test boring location plan for delineation of the area in which this stratum was encountered.

Bedrock: Both schist and limestone bedrock were encountered with the proposed development area. The depth to bedrock is highly variable with depths to bedrock ranging from 20.7 feet to over 48.8 feet below existing grade. Note: historical test drilling in this vicinity has indicated bedrock depths of over 100 feet are possible. For additional information regarding depths at which bedrock was encountered and relative elevations, see Table IIA –Approximate Rock and Fill Elevations.

Groundwater[2]: Groundwater was encountered in each boring completed across the site at depths ranging from 4.2' to 9.3' below existing grade. The groundwater table elevation is estimated to range from 45.9 feet to 48.9 feet. Based on regional topography and the direction of river flow the groundwater flow direction is anticipated to be in a southeasterly direction.

7. GEOTECHNICAL ANALYSIS AND RECOMMENDATIONS

The results of our exploration indicate the presence of the following subsurface conditions:

- Existing miscellaneous fill
- Enhanced subsurface weathering
- Evidence of potential sinkhole activity
- Compressible soil strata (organic silt)
- Shallow depths to groundwater

[2] The groundwater information provided is based on conditions encountered during the drilling program. Seasonal fluctuations in the groundwater table are to be expected.

Existing miscellaneous fill consisting of a loose mixture of brown, orange brown and black fine sand and cinders with rock fragments and miscellaneous debris including brick, cinders/slag, boulders, and occasional concrete fragments (Stratum IMF) was encountered across the site. These materials extend to depths ranging from 3.3 feet to 12.3 feet below existing grade with an average depth of approximately 7.5 feet. The lowest elevation to which this fill stratum was encountered was 42.4 feet in boring B36, located at the northwest corner of Building 400. At the base of the fill stratum an intermittent 0.75 to 3.50 foot-thick layer of black and gray **organic silt** was encountered. Laboratory testing of representative samples of this organic silt resulted in organic contents ranging from 1.40 to 23.43 percent. This material is underlain by a layer of soft to very soft sandy clay (Stratum II). This stratum transitions to a dense sand and gravel layer (Stratum III). This stratum is underlain by either weathered limestone (Stratum IVA) or weathered schist (Stratum IVB). Loose to very loose conditions were encountered intermittently at the base of Stratum III, predominately in areas where it is underlain by weathered limestone. Additionally, the presence of enhanced weathering, evidenced by loose to voided zones, was encountered in portions of Stratum IVA. See Table III for the location and depths at which this soft condition was encountered. It appears that these conditions were encountered most notably at the contact between the two geologic formations underlying the site.

Both **limestone and schist bedrock** were encountered across the site. The contact between the two geologic formations is generally at the south end of the subject site. The depth at which bedrock was encountered ranges from 20.7 feet to over 48.0 feet below existing grade. The highest elevation at which bedrock was encountered was 31.6 feet at boring B3, located at the northeast corner of Building 100. **Groundwater** was encountered across the site at depths ranging from 45.9 feet to 48.9 feet.

The existing fill soils and organic silt (Stratum IMF) and portions of the clayey silt (Stratum II) are considered to be inadequate for foundation and/or slab support. In order to overcome the site conditions encountered, several foundation support alternatives have been evaluated, including deep dynamic compaction (DDC), deep foundation alternatives, and shallow foundations supported on an improved subgrade via soil replacement operation or the use of rammed aggregate piers. Considering the relatively lightly loaded structures proposed, the highly variable depths to suitable deep foundation bearing strata, and the presence of high groundwater, the use of a shallow foundation supported on an improved subgrade is in DBA's opinion the most suitable alternative. See Section 7.2 – Foundations for additional information.

As discussed above, zones of enhanced weathering characterized by loose and/or voided conditions were encountered intermittently within the lower portion of Stratum III and upper portion of Stratum IV. In order to use a shallow foundation system on an improved subgrade via soil replacement or the use of rammed aggregate piers, the implementation of a compaction grouting program will be required in order to improve the strength within these portions of the soil profile. Ten (10) of the forty-six (46) borings completed encountered zones of enhanced subsurface weathering. These locations roughly coincide with the contacts between the weathered limestone stratum and the weathered schist stratum. In order to better define the areas requiring compaction grout treatment DBA recommends implementing a geophysical survey consisting of Multiple Analysis of Surface Waves (MASW) across the proposed building footprint areas. This survey shall be targeted to defining areas of reduced soil stiffness at depths consistent with Strata III and IV. The results of this survey will assist in the development of a compaction grouting program including grouting depths, locations, cutoff pressure, and grout

mix requirements. This survey could also potentially be used to obtain site specific shear velocity data for verifying seismic site class (see Section 7.2.3).

In addition to the geotechnical difficulties encountered during our investigation, the surface fill soils and native soils encountered at the groundwater interface (vadose zone) are suspected to have been environmentally impacted during the site's industrial use history. The determination of contamination level, extent, and impact to the proposed development is beyond the scope of our investigation. However, limitation of the creation of spoils has factored into the determination of the most suitable foundation alternative for the subject property.

It shall be noted that the subject site is underlain by a carbonate geologic formation which is subject to dissolution activity and the subsequent development of karst features, subsoil erosion, and the formation of sinkholes. Disturbance and/or alteration of the existing site drainage patterns may result in an increase in subsoil erosion and sinkhole formation. This risk is considered to be limited due to the presence of a relatively shallow groundwater table which limits the downward movement of surface infiltration and subsequent sinkhole development. However, DBA has included guidelines entitled "Construction Guidelines for Carbonate Geology" for minimizing the risk of sinkhole development during construction in the appendix of this report.

7.1 SITE PREPARATION

All deleterious materials including topsoil, root mass, trees and vegetation, asphalt and other materials determined in the field by the Geotechnical Engineer to be unsuitable shall be removed from all structural areas (buildings, pavements, and walkways) prior to placement of *structural fill.*

Recycling of the asphalt of the former paved parking areas and underlying stone can be accomplished on site if the asphalt is milled to a maximum 1 inch particle size and the material is used in the upper fill zones of pavement areas

only. This fill is not suitable for other structural areas. Recycling of concrete foundations and slabs of the existing warehouse structure can also be accomplished on-site if the concrete is adequately crushed. Note: although not encountered in test drilling, it is unknown whether the foundations of the demolished building on the west portion of the site were removed during the demolition process. Therefore, these obstructions may be encountered during construction, and shall be removed from beneath the proposed building footprints. On-site crushing shall be completed until the nominal maximum size of 1 inch is achieved. Such material may be used as *structural fill* provided it meets the criteria set forth in Section 7.6 - Fill and Compaction Criteria. **It is essential that only concrete material be used as structural fill as mixture with other demolition debris such as clay brick and wood will render the crushed concrete unsuitable for use as structural fill.**

7.1.1 COMPACTION GROUTING

In order to use one of the shallow foundation alternatives provided below (soil replacement or rammed aggregate piers), compaction grouting will be required in order to improve the strength of portions in the lower zones of Stratum III (fine to medium sands with gravel) and portions of the upper zone of Stratum IVA (weathered limestone). As discussed above, zones of enhanced weathering characterized by loose and/or voided conditions were encountered within borings B5, B6, B11, B13, B16, B27, B20, B25, B26, B40, and B41. See Table III for information to the depths and elevations at which these conditions were encountered at each boring location. These locations roughly coincide with the contacts between the weathered limestone stratum and the weathered schist stratum. In order to better define the areas requiring compaction grout treatment DBA recommends implementing a geophysical survey consisting of Multiple Analysis of Surface Waves (MASW)

across the proposed building footprint areas. This survey shall be targeted to defining areas of reduced soil stiffness at depths consistent with Strata III and IV. The results of this survey will assist in the development of a compaction grouting program including grouting depths, locations, cutoff pressure, and grout mix requirements.

7.2 FOUNDATIONS

Once the compaction grouting program described in Section 7.1.1 is complete, a shallow foundation system can be used for support of the proposed structures, provided that the existing miscellaneous fill and organic soils beneath the foundation are improved or replaced. The replacement alternative involves excavating and replacing Stratum IMF and soft portions of Stratum II. This alternate can be completed by any experienced excavator using standard equipment. The improvement alternative involves the use of a series of Rammed Aggregate Piers. Rammed Aggregate Piers are 30 to 36 inch diameter compacted stone piers that are backfilled with stone compacted in lifts using the ramming action of a modified hydraulic hammer installed on a standard trackhoe. Due to the reduced volume of generated spoils, Rammed Aggregate piers may be a cost effective alternate to soil replacement. Specific recommendations for both alternatives are provided in the following sections.

7.2.1 SHALLOW FOUNDATIONS VIA SOIL REPLACEMENT

All existing fill soils of Stratum IF and Stratum IMF, organic silts encountered below the existing fill, and any loose/soft soils of Stratum II are to be removed from beneath the proposed foundation areas and replaced with *structural fill* meeting the criteria provided in Section 7.6 – Fill and Compaction Criteria and/or flowable fill with a compressive strength between 50 and 250 psi. This replacement is to extend up to 2 times the width of the proposed foundation. Due to the shallow depth to groundwater,

portions of these excavations (particularly along the south end of the property) will likely extend below the groundwater surface. Therefore, these excavations must be completed in uniform sections not exceeding 10' in any direction. As each section is excavated, the exposed subgrade shall immediately be covered with a minimum of 18 inches of open graded 4" ballast (AASHTO #1) prior to beginning the subsequent section. Considering that these excavations are not anticipated to extend more that 1 to 2 feet below the groundwater table and provided these excavations are limited in size and that stone is placed immediately upon excavation the need for dewatering is expected to be limited. However, due to the relatively permeable condition of the underlying sand and gravel layer, Stratum III, dewatering of deeper excavations may be required. It is anticipated that such dewatering could be accomplished through the excavating and pumping from sump pits adjacent to the work area.

Once the foundation replacement procedure is completed, the building subgrade area is to be proofrolled using a heavy (minimum 15-ton) vibratory smooth drum roller to delineate soft areas which may require stabilization for slab support via removal and replacement.

The shallow foundation system shall be designed for a maximum soil bearing capacity of 4.0 KSF on *structural fill* and/or low strength flowable fill (maximum 250 psi compressive strength). All foundation bearing surfaces are to be evaluated by the Geotechnical Engineer and all loose and/or soft conditions are to be repaired to the satisfaction of the Geotechnical Engineer. Due to the presence of underlying carbonate geology across a majority of the site which is susceptible to sinkhole activity, it is recommended that the exterior perimeter foundations be designed as a soil supported grade beam

capable of temporarily spanning up to 15 feet of unsupported length to allow for the repair of potential bearing loss due to sinkhole formation.

If the column loads are to be revised during a re-design of the structure than the bearing capacity may have to be subsequently modified. DBA shall be notified of any signification changes in this regard.

Exterior foundation or foundations in unheated areas shall be provided a minimum of 36" compacted soil cover above the footing bottom for frost protection.

7.2.2 SHALLOW FOUNDATIONS VIA RAMMED AGGREGATE PIERS

Due to the nature of the existing miscellaneous fill material, it may be environmentally impacted.[3] Therefore, alternatives to soil removal and replacement targeted to limiting the amount of spoils generated may be considered. The recommended alternative is the use of rammed aggregate piers to increase the strength of the existing fill material and underlying soft/organic silts and clays. The rammed aggregate pier subgrade improvement technique involves drilling 30 to 36 inch diameter holes through Stratum IF beneath the proposed shallow foundation system areas. At the base of these holes open graded clean stone (AASHTO #57) is placed and compacted in lifts not exceeding 12 inches (loose thickness) to stabilize the bottom and to create the bottom bulb. Subsequent stone lifts are to consist of modified stone (PADOT 2A) placed and compacted in lifts not exceeding 12 inches (loose thickness). Specific densification procedures and open graded stone base thickness, required to achieve bottom stabilization, are site specific and shall be determined through test installation and verified through modulus load testing. During production installation,

[3] The determination of the environmental condition of this fill, extent, and the associated impact to the proposed development is beyond the scope of our exploration.

elements are to be installed using the procedure verified by modulus load testing to be adequate. In addition, bottom stabilization tests and dynamic cone penetrometer testing of stone shaft of selected Rammed Aggregate Piers is to be completed at the direction of the Geotechnical Engineer.

Considering that the proposed rammed aggregate pier bottom elevation may be at or below the groundwater surface at some locations, drilling shall not extend to full depth until stone is available for immediate placement into the pier hole. Open graded stone is to be used until the pier extends above the water table by at least 1 foot. If necessary, dewatering through pumping from adjacent sump pits may be required to install Geopier elements.

The existing fill material is generally in a loose condition and is subject to side collapse during drilling and stone compaction. Minor side collapse and associated stone contamination may be handled through removal and replacement at the direction of the Geotechnical Engineer. However, in the event of significant and continued side collapse the use of steel casing may be required. It is anticipated that such conditions can be evaluated during the test installation program so that the contractor can be prepared for conditions during production installation. As an alternative to the use of steel casing, a displacement technique (such as Impact Piers[4]) can be used to install the rammed aggregate piers. This alternative stone pier installation method would also further reduce the volume of generated spoils.

The individual Rammed Aggregate Pier elements as described above are expected to support 10 kips each[5]. The shallow foundation system shall be designed for a maximum allowable composite bearing pressure of 6.0 KSF on

[4] Impact Piers are a propriatary method of stone pier installation developed by GeoStructures, Inc.

[5] Actual support capacities as dictated by predicted settlement falling within acceptable range are to be determined during modulus load testing

Geopiers and improved matrix soils between Rammed Aggregate Pier provided the composite area consists of not less than 55% pier elements. All foundation bearing surfaces are to be evaluated by the Geotechnical Engineer and all loose and/or soft conditions are to be repaired to the satisfaction of the Geotechnical Engineer.

7.2.3 SEISMIC SITE COEFFICIENT

The site classification procedure for seismic design set forth in Chapter 20 of ASCE 7 was used in accordance with Section 1613.3.2 of the International Building Code (IBC 2012 edition) to determine the seismic class of the subject site. The existing soil profile and test drilling data indicates a classification of Site Class D, which shall be used in the design of the proposed structure for seismic load resistance.

An MASW survey, as described above in Section 7.1.1, could also potentially be used to obtain site specific shear velocity data for verifying seismic site class (see Section 7.2.3).

7.3 SLAB ON-GRADE

The on-grade parking elevations for Buildings 100, 200, and 300 are proposed to be 55.0 feet; the parking elevation for Building 400 is proposed to be 54.5 feet. Therefore, the placement of up to 4.5 feet of fill and cuts of up to 1.1 feet will be required to achieve parking grade elevation.

The existing fill material of Stratum IF and IMF material is anticipated to be suitable for slab support, provided it is densified through proofrolling via a heavy (minimum 15-ton static weight) smooth drum roller operation. Prior to the placement of any fill, the exposed slab subgrade areas shall be proofrolled to detect the presence of loose or soft zones. This proofrolling operation shall be performed under the supervision of the Geotechnical Engineer. Proofrolling of

the subgrade shall also be performed in any cut areas when the required grades have been achieved and immediately prior to pouring floor slabs. Loose or soft zones detected during the proofrolling operation shall be repaired to the satisfaction of the Geotechnical Engineer.

Based on the soil type encountered, standard penetration testing of the existing slab subgrade, and provided that all structural fill will be placed in accordance with the fill and compaction criteria set forth is Section 7.6, an estimated modulus of subgrade reaction of 150 psi/inch may be used for the design of slab sections. Should an increased modulus of subgrade reaction be required for the proposed design it is recommended that field or laboratory testing be completed to establish specific modulus values.

All slab subgrade areas shall be evaluated by the Geotechnical Engineer prior to pouring the slab so that repair can be completed. It is recommended that the slab be poured under roof during periods of harsh weather.

A smooth drum roller shall be made available to seal the subgrade in the event of predicted precipitation.

7.4 BACKFILL OF FOUNDATION AND UTILITY TRENCHES

All foundation and utility trenches shall be backfilled with *structural fill*, under the supervision of a Geotechnical Engineer (Refer to Section 7.6, Fill and Compaction Criteria). Utility trenches less than 10 feet deep will likely be within existing miscellaneous fill material which contains various obstructions including construction related debris associated with the historic industrial use of the property. Utilities installed at depths over 6 feet below existing grades will likely encounter groundwater. Due to these conditions, utility trench subgrade areas may require stabilization to provide necessary support for utility lines. It is recommended that utility trenches be evaluated by a Geotechnical Engineer prior to installing and backfilling utilities.

7.5 PAVEMENTS AND WALKWAYS

Pavement and sidewalk areas shall be prepared in a manner similar to the slab on-grade areas. A minimum of 8 inches of crushed aggregate base shall be used beneath exterior pavements due to the frost heave potential of the subgrade soils. The pavement subgrade shall be graded to drain water from beneath the pavement system to prevent ponding and subsequent pumping of silty subgrade soils.

For pavement design a preliminary estimated California Bearing Ratio (CBR) Value of 5.0 may be used for stabilized subgrade areas consisting of the existing fill soils of Strata IF and IMF or Structural fill selected and placed in accordance with the Section 7.6 of this report. Should anticipated heavy duty pavement requirements or other project conditions require final site specific CBR values DBA can complete field and/or laboratory CBR testing of proposed subgrade soils at the client's request.

7.6 FILL AND COMPACTION CRITERIA

Fill supporting slabs, pavements, and foundations is considered herein to be *structural fill*. *Structural fill* shall be placed on an approved, proofrolled, nonyielding, level subgrade, in lifts not exceeding 8 inches (loose thickness), unless otherwise directed by the Geotechnical Engineer. *Structural fill* shall be maintained nominally at *Optimum Moisture Content* (ASTM D-698) and uniformly compacted to the percentages of *Maximum Dry Density* (ASTM D-698) provided in Table III - Compaction Criteria.

Suitable *structural fill* shall consist of clean soils without deleterious inclusions. On-site soils identified as Stratum IMF (miscellaneous fill), including the organic material encountered at the base of the fill stratum, are not acceptable for use as structural fill, due to the miscellaneous content, potential contamination, and/or the saturated condition. The sands and gravels

of Stratum III, drier portions of Stratum II, and the weathered/decomposed rock of Stratum IVA and IVB would be suitable for use as *structural fill* if given the opportunity to dry. However, considering that these soils are below the groundwater table and are in a saturated condition, extensive aeration and drying would be required which is best accomplished in the summer months.

Borrow fill shall be clean well-graded soils with good strength characteristics with a maximum particle size of 3 inches and containing not more than 20% silt/clay (by weight). Samples of on-site or borrow sources of fill shall be submitted to the Geotechnical Engineer for testing at least 1 week before use on site. A minimum of 65 lbs. or two (2) five-gallon buckets is required for testing.

7.7 LATERAL EARTH PRESSURES - RETAINING WALLS

The retaining/loading dock walls of the structure, if proposed, should be designed for an at rest condition (Ko). The foundations and walls must be fully drained to relieve potential hydrostatic pressure. A foundation/wall drainage system is recommended. Soil backfill around the basement walls shall be well compacted and should consist of granular soils to prevent the trapping of water.

Retaining walls outside the structure which are free to rotate should be similarly designed except with an active earth pressure as opposed to Ko condition. Soil parameters used to establish the effective fluid pressures (excluding hydrostatic loads) and some addition parameters which may be used in the design of a retaining wall system are summarized in the following table:

SOIL PROPERTIES FOR DETERMINATION OF LATERAL LOADS

Parameter	Stratum II	Stratum III
Angle of Internal Friction, ϕ	28 degrees	34 degrees
Moist unit weight, γ_m	120 pcf	128 pcf
Active Earth Pressure Coefficient, K_a	0.36	0.28
Passive Earth Pressure Coefficient, K_p	2.77	3.57
At Rest Earth Pressure Coefficient, K_o	0.53	0.43
Soil/Mass concrete interface friction Angle, δ	22 degrees	24 degrees

8. QUALITY CONTROL

This report was prepared to provide design criteria for the design team. DBA assumes that Geotechnical and Construction Quality Control Services will be provided in order to implement the recommendations provided herein and to identify unanticipated or changed conditions. The Geotechnical Engineer's representative should review the consistency and texture of the exposed soils with the conditions encountered by this exploration as described herein. Since localized loose and yielding subgrade conditions may be encountered between test locations, provisions for the undercutting and subsequent replacement of these materials should be anticipated in the construction documents. The environmental quality of the subgrade soils was not reviewed as part of this evaluation. All materials generated by grading and excavation shall be managed in accordance with regulatory requirements.

DBA can provide a contract for Geotechnical and Construction Quality Control Services (Special Inspections), as required. A pre-work meeting with the design professionals, contractors, and the Geotechnical Engineer is strongly recommended.

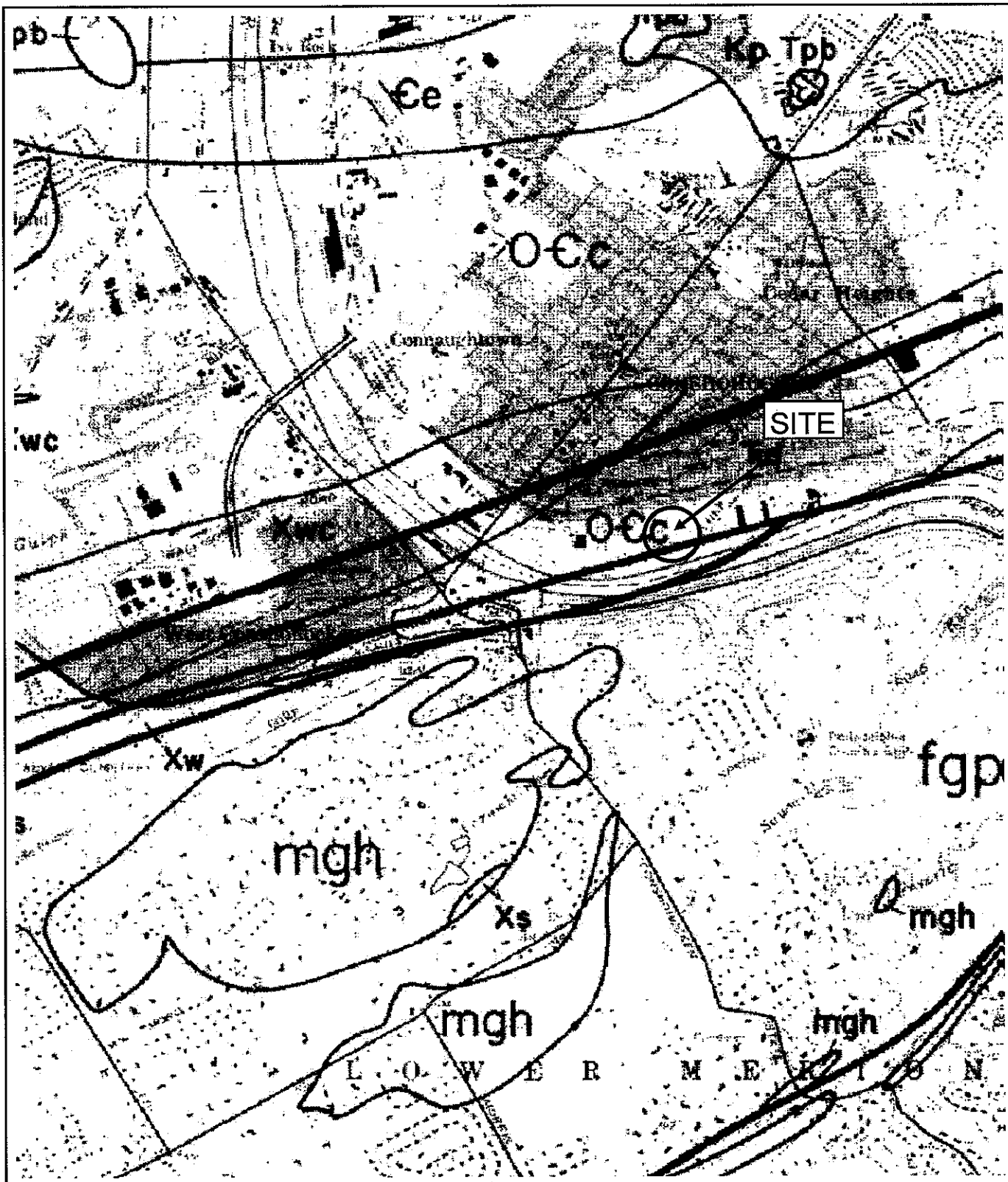
9. LIMITATIONS

Services performed by DBA, including the Geotechnical Exploration, report, and any subsequent construction monitoring have been or will be conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. No other warranty or guarantee is indicated or intended in this report or any opinion, document or otherwise stated.

The recommendations included herein are based on the conditions encountered by the test borings performed at the subject site. It is noted that, although soil quality has been inferred from the interpolation of the site sampling data, subsurface conditions beyond the test borings are in fact, unknown. As a result, these recommendations may require modifications based on the conditions encountered and exposed during construction excavation. Should any conditions encountered during construction differ from those described in the report, this office should be notified immediately in order to review and possibly modify the recommendations included in this report.

FIGURES AND TABLES

GEOTECHNICAL & ENVIRONMENTAL ENGINEERS	**Project 4287G1**
DAVID BLACKMORE & ASSOC., INC.	**Figure I**
3335 West Ridge Pike	**SITE LOCATION & TOPOGRAPHY**
Pottstown, Pennsylvania 19464	U.S.G.S. 7.5 Minute Topographic Quadrangle
Telephone: (610) 495-6255 FAX: (610) 495-7353	Norristown Quadrangle



KEY

Xw- Wissahickon Formation, oligoclase-mica schist

Occ - Conestoga formation, impure limestone

GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

DAVID BLACKMORE & ASSOC., INC.

3335 West Ridge Pike

Pottstown, Pennsylvania 19464

Telephone: (610) 495-6255 FAX: (610) 495-7353

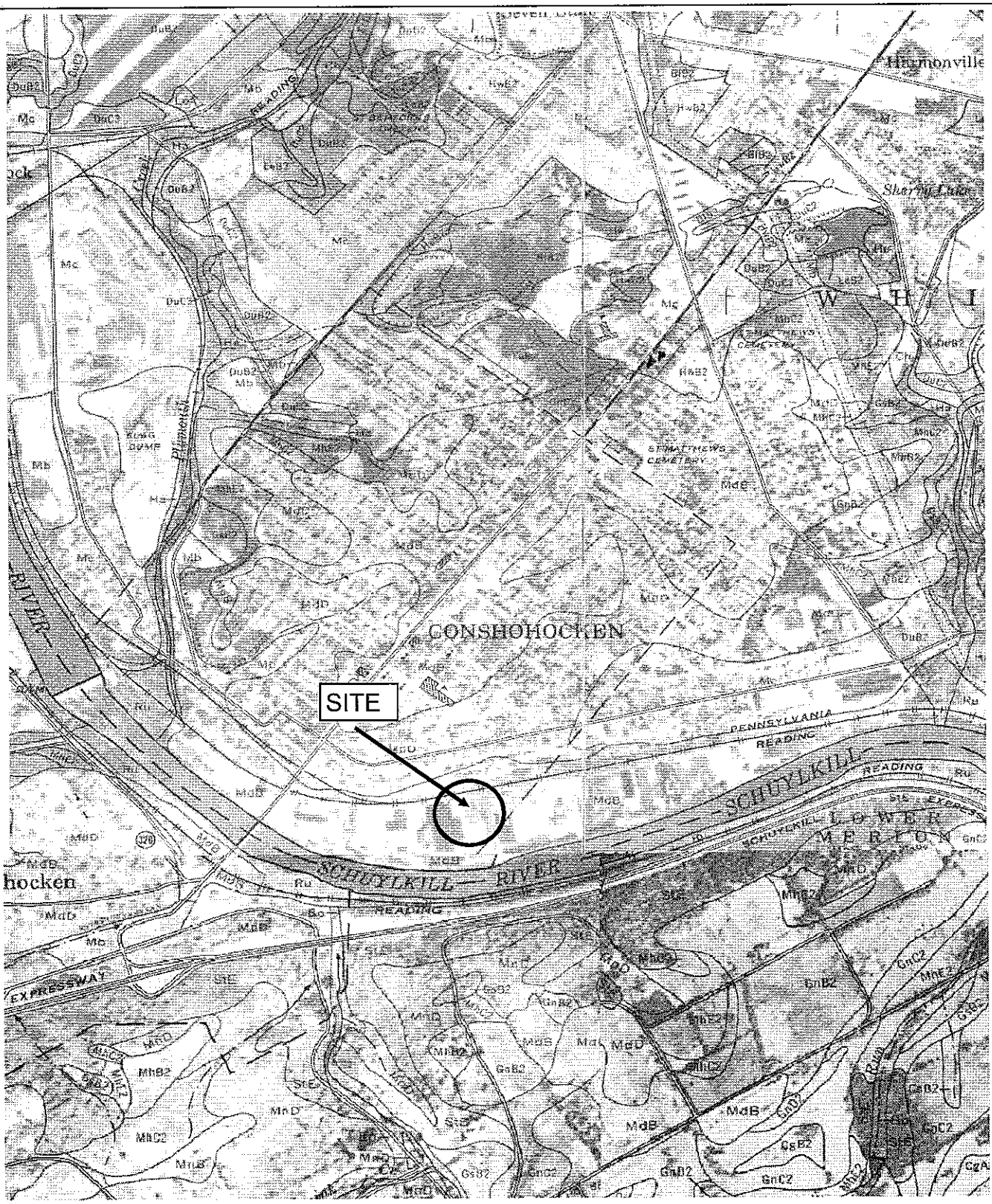
Project 4287G1

Figure II

SITE GEOLOGY

USGS Geologic Quadrangle Maps of PA

Norristown Quadrangle



KEY

MdB - Madeland Schist and Gneiss Materials

GEOTECHNICAL & ENVIRONMENTAL ENGINEERS
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Project 4287G1

Figure III

Soils

Soil Survey for Montgomery County, PA
Portions of Sheets 56, 60 and 61

TABLE I
LABORATORY TEST RESULTS

BORING #	B2	B6	B14	B15	B21	B21
SAMPLE #	S-4	S-8 S-9	S-4 S-5	S-5	S-2	S-11 S-12
DEPTH	8'-10'	20'-22' 22'-24'	8'-10' 10'-12'	10'-12'	4'-6'	34'-36' 36'-38'
STRATUM	II	III	III	II	II	IVA
NMC* (%)	12.8	16.7 7.9	19.6 11.4	21.2	17.1	21.9 23.0

* NMC = Natural Moisture Content

SOIL PARTICLE SIZE DISTRIBUTION

SIEVE #	PERCENT PASSING BY WEIGHT					
1 ½"	100.0	100.0	100.0	100.0	100.0	100.0
3/4"	100.0	91.6	88.4	100.0	100.0	100.0
3/8"	86.6	74.4	83.7	100.0	100.0	100.0
4	77.1	59.5	80.6	100.0	99.5	94.9
10	64.5	45.5	76.8	99.1	97.7	86.1
40	50.0	19.0	70.6	94.4	89.2	71.0
100	41.5	8.1	36.5	71.9	51.1	53.8
200	36.1	5.7	27.1	60.1	40.5	38.6

ATTERBERG LIMIT ANALYSIS

LL*	29	N/A	N/A	35	25	N/A
PL*	19	N/A	N/A	18	16	N/A
PI*	10	N/A	N/A	17	9	N/A

* LL = Liquid Limit; PL = Plastic Limit; PI = Plasticity Index

USCS CLASSIFICATION

Eng. Class.	SC	SP-SM	SM	CL	SC	SM
Descr.	Orange brown clayey sand with gravel	Orange brown poorly graded sand w/ silt and gravel	Orange brown silty sand with gravel	Orange brown sandy lean clay	Reddish brown clayey sand	Brown silty sand

TABLE I (CONT'D)
LABORATORY TEST RESULTS

BORING #	B24	B25	B29	B35
SAMPLE #	S-9 S-10	S-6 S-7	S-9	S-4 S-5
DEPTH	25'-32'	12'-13'4" 15-15'11"	25'-27'	8'-10' 10'-12'
STRATUM	III	III	IVB	II
NMC* (%)	26.4 19.2	7.9 13.0	12.0	19.5 20.9

* NMC = Natural Moisture Content

SOIL PARTICLE SIZE DISTRIBUTION

SIEVE #	PERCENT PASSING BY WEIGHT			
1 ½"	100.0	100.0	100.0	100.0
3/4"	100.0	100.0	100.0	100.0
3/8"	100.0	73.3	91.1	100.0
4	97.8	56.7	81.6	99.1
10	92.5	44.1	61.4	98.4
40	76.4	23.4	41.8	96.3
100	59.5	13.1	32.1	82.2
200	46.4	10.8	26.0	72.2

ATTERBERG LIMIT ANALYSIS

LL*	N/A	N/A	N/A	28
PL*	N/A	N/A	N/A	17
PI*	N/A	N/A	N/A	11

* LL = Liquid Limit; PL = Plastic Limit; PI = Plasticity Index

USCS CLASSIFICATION

Eng. Class.	SM	SP-SM	SM	CL
Descr.	Yellow brown silty sand	Reddish brown poorly graded sand w/ silt and gravel	Pale brown silty sand with gravel	Reddish brown lean clay with sand

TABLE I (CONT'D)
LABORATORY TEST RESULTS

BORING #	B15	B26	B33	B34	B38	B43
SAMPLE #	S-4	S-3	S-4	S-4	S-3	S-5
DEPTH	10'-11'9"	40'-42'	42'-44'	44'-46'	48'-50'	8'-10'
STRATUM	Organic Silt	Organic Silt	Organic Silt	Organic Silt	Organic Silt	Organic Silt
NMC* (%)	20.01	42.82	28.54	38.94	68.35	22.75
ORG** (%)	1.40	5.37	2.67	9.75	23.43	3.06

* NMC = Natural Moisture Content

** ORG = Organic Silt Content

TABLE IIA
APPROXIMATE ROCK and FILL ELEVATIONS

Boring Number	Surface Elevation	Depth to Bottom of Existing Fill	Bottom of Fill Elevation	Depth to Dense Weathered Rock[1]	Dense Weathered Rock Elevation	Depth to Bedrock[2]	Bedrock Elevation
B1	53.8 feet	8.3 feet	45.5 feet	>38.0 feet	<15.8 feet	>38.0 feet	<15.8 feet
B2	53.0 feet	8.5 feet	44.5 feet	20.8 feet	32.3 feet	23.9 feet	29.1 feet
B3	53.9 feet	6.0 feet	47.9 feet	19.9 feet	34.0 feet	22.3 feet	31.6 feet
B4	53.7 feet	5.8 feet	47.9 feet	35.8 feet	17.8 feet	>35.8 feet	<17.8 feet
B5	54.7 feet	6.3 feet	48.4 feet	28.5 feet	26.2 feet	31.6 feet	23.2 feet
B6	55.6 feet	7.6 feet	48.0 feet	>37.0 feet	<18.6 feet	>37.0 feet	<18.6 feet
B7	54.0 feet	6.0 feet	48.0 feet	>37.0 feet	<17.0 feet	>37.0 feet	<17.0 feet
B8	54.7 feet	6.7 feet	48.0 feet	>37.0 feet	<17.7 feet	>37.0 feet	<17.7 feet
B9	54.8 feet	7.2 feet	47.6 feet	36.8 feet	18.0 feet	>36.8 feet	<18.0 feet
B10	55.8 feet	8.2 feet	47.6 feet	>37.0 feet	<18.8 feet	>37.0 feet	<18.8 feet
B11	55.7 feet	7.7 feet	48.0 feet	31.0 feet	24.7 feet	31.6 feet	24.1 feet
B12	53.3 feet	7.5 feet	48.2 feet	>37.0 feet	<18.7 feet	>37.0 feet	<18.7 feet
B13	53.5 feet	3.5 feet	50.0 feet	19.5 feet	34.0 feet	22.3 feet	31.1 feet
B14	53.1 feet	6.5 feet	46.6 feet	19.0 feet	31.7 feet	21.8 feet	31.7 feet
B15	52.4 feet	8.0 feet	44.4 feet	23.0 feet	29.4 feet	27.8 feet	24.6 feet
B16	52.6 feet	3.3 feet	49.3 feet	24.3 feet	28.3 feet	31.7 feet	20.9 feet
B17	52.2 feet	5.3 feet	46.9 feet	29.0 feet	23.2 feet	34.4 feet	17.8 feet
B18	53.0 feet	5.8 feet	47.2 feet	>37.0 feet	<16.0 feet	>37.0 feet	<16.0 feet
B19	51.8 feet	5.3 feet	46.5 feet	>37.0 feet	<14.8 feet	>37.0 feet	<14.8 feet
B20	51.7 feet	6.3 feet	45.4 feet	>37.0 feet	<14.7 feet	>37.0 feet	<14.7 feet
B21	50.6 feet	3.5 feet	47.1 feet	>44.0 feet	<6.6 feet	>44.0 feet	<6.6 feet
B22	52.4 feet	4.3 feet	48.1 feet	>36.0 feet	<16.4 feet	>36.0 feet	<16.4 feet
B23	52.0 feet	4.5 feet	47.5 feet	>36.0 feet	<16.0 feet	>36.0 feet	<16.0 feet
B24	56.3 feet	9.5 feet	46.8 feet	36.4 feet	19.9 feet	>36.4 feet	<19.9 feet
B25	55.3 feet	9.2 feet	46.1 feet	39.9 feet	15.4 feet	>39.9 feet	<15.4 feet
B26	53.0 feet	8.3 feet	44.7 feet	>45.0 feet	<8.0 feet	>45.0 feet	<8.0 feet
B27	55.8 feet	9.8 feet	46.0 feet	33.5 feet	22.3 feet	>35.1 feet	<20.7 feet

[1] As determined by drilling difficulty and Standard Penetration Resistance data.
[2] As determined by auger refusal.

TABLE IIA (cont'd)
APPROXIMATE ROCK and FILL ELEVATIONS

Boring Number	Surface Elevation	Depth to Bottom of Existing Fill	Bottom of Fill Elevation	Depth to Dense Weathered Rock[3]	Dense Weathered Rock Elevation	Depth to Bedrock[4]	Bedrock Elevation
B28	56.1 feet	12.3 feet	43.8 feet	25.5 feet	30.6 feet	32.7 feet	23.5 feet
B29	55.8 feet	10.6 feet	45.2 feet	31.0 feet	24.8 feet	>36.8 feet	<19.0 feet
B30	53.9 feet	9.4 feet	44.5 feet	18.0 feet	35.9 feet	>35.2 feet	<18.8 feet
B31	55.2 feet	10.0 feet	45.2 feet	29.5 feet	25.7 feet	31.4 feet	23.8 feet
B32	56.1 feet	12.3 feet	43.8 feet	20.3 feet	35.8 feet	26.5 feet	29.6 feet
B33	55.9 feet	7.0 feet	48.9 feet	21.5 feet	34.4 feet	>34.1 feet	<21.8 feet
B34	54.0 feet	9.5 feet	44.5 feet	22.0 feet	32.0 feet	>34.2 feet	<19.8 feet
B35	53.3 feet	8.5 feet	44.8 feet	22.5 feet	32.8 feet	>35.2 feet	<18.1 feet
B36	50.9 feet	8.2 feet	42.4 feet	27.0 feet	23.9 feet	29.2 feet	21.7 feet
B37	51.3 feet	4.0 feet	47.3 feet	19.3 feet	32.0 feet	20.7 feet	30.6 feet
B38	53.3 feet	8.3 feet	45.0 feet	31.5 feet	21.8 feet	33.7 feet	19.6 feet
B39	54.6 feet	7.3 feet	47.3 feet	>37.0 feet	<17.6 feet	>37.0 feet	<17.6 feet
B40	53.0 feet	6.3 feet	46.7 feet	48.8 feet	4.2 feet	>48.8 feet	<4.2 feet
B41	53.0 feet	9.5 feet	43.5 feet	>45.0 feet	<8.0 feet	>45.0 feet	<8.0 feet
B42	55.4 feet	10.3 feet	45.1 feet	23.0 feet	32.4 feet	28.2 feet	27.2 feet
B43	52.0 feet	7.8 feet	44.2 feet	19.5 feet	32.5 feet	23.2 feet	28.8 feet
B44	50.8 feet	7.3 feet	43.5 feet	17.0 feet	33.8 feet	27.8 feet	23.0 feet
B45	51.9 feet	5.3 feet	46.6 feet	18.5 feet	33.4 feet	32.8 feet	19.1 feet
B46	54.4 feet	8.3 feet	46.1 feet	22.5 feet	31.9 feet	>35.2 feet	<19.2 feet

NOTES:
Surface elevations at each boring location were determined in the field using an elevation of 58.06 feet for the storm manhole located in Washington Street provided on a parking plan prepared by Niles Bolton Associates numbered A2.01, dated September 16, 2008.

[3] As determined by drilling difficulty and Standard Penetration Resistance data.
[4] As determined by auger refusal.

TABLE IIB
APPROXIMATE GROUNDWATER ELEVATIONS

Boring Number	Surface Elevation	Depth to Groundwater	Groundwater Elevation[5]
B1	53.8 feet	7.2 feet	46.6 feet
B2	53.0 feet	7.1 feet	45.9 feet
B3	53.9 feet	7.3 feet	46.6 feet
B4	53.7 feet	7.4 feet	46.3 feet
B5	54.7 feet	6.7 feet	48.0 feet
B6	55.6 feet	9.3 feet	46.3 feet
B7	54.0 feet	7.3 feet	46.7 feet
B8	54.7 feet	7.5 feet	47.2 feet
B9	54.8 feet	8.4 feet	46.4 feet
B10	55.8 feet	8.8 feet	47.0 feet
B11	55.7 feet	7.7 feet	48.0 feet
B12	53.3 feet	7.4 feet	45.9 feet
B13	53.5 feet	6.1 feet	47.4 feet
B14	53.1 feet	5.6 feet	47.5 feet
B15	52.4 feet	5.5 feet	46.9 feet
B16	52.6 feet	4.6 feet	48.0 feet
B17	52.2 feet	4.8 feet	47.4 feet
B18	53.0 feet	6.5 feet	46.5 feet
B19	51.8 feet	5.3 feet	46.5 feet
B20	51.7 feet	5.4 feet	46.3 feet
B21	50.6 feet	4.2 feet	46.4 feet
B22	52.4 feet	4.8 feet	47.6 feet
B23	52.0 feet	4.8 feet	47.2 feet
B24	56.3 feet	8.8 feet	47.5 feet
B25	55.3 feet	7.8 feet	47.5 feet
B26	53.0 feet	6.2 feet	46.8 feet
B27	55.8 feet	9.7 feet	46.1 feet
B28	56.1 feet	7.2 feet	48.9 feet

[5] Groundwater information is based on conditions encountered during the field exploration. Seasonal fluctuation in groundwater elevation shall be expected.

TABLE IIB (cont'd)
APPROXIMATE GROUNDWATER ELEVATIONS

Boring Number	Surface Elevation	Depth to Groundwater	Groundwater Elevation[6]
B29	55.8 feet	7.3 feet	48.5 feet
B30	53.9 feet	7.3 feet	46.7 feet
B31	55.2 feet	6.4 feet	48.8 feet
B32	56.1 feet	9.2 feet	46.9 feet
B33	55.9 feet	8.9 feet	47.0 feet
B34	54.0 feet	5.8 feet	48.2 feet
B35	53.3 feet	6.1 feet	47.2 feet
B36	51.0 feet	4.2 feet	46.8 feet
B37	51.3 feet	4.4 feet	46.9 feet
B38	53.3 feet	6.2 feet	47.1 feet
B39	54.6 feet	7.3 feet	47.3 feet
B40	53.0 feet	4.8 feet	48.2 feet
B41	53.0 feet	7.3 feet	45.7 feet
B42	55.4 feet	9.3 feet	46.1 feet
B43	52.0 feet	4.5 feet	47.5 feet
B44	50.8 feet	4.3 feet	46.5 feet
B45	52.0 feet	5.5 feet	46.5 feet
B46	54.4 feet	7.8 feet	46.6 feet

[6] Groundwater information is based on conditions encountered during the field exploration. Seasonal fluctuation in groundwater elevation shall be expected.

TABLE III
APPROXIMATE DEPTHS TO ENHANCED WEATHERED ZONES OF STRATUM III AND/OR IV

Boring Number	Surface Elevation	Depth to Soft Condition	Soft Condition Elevation
B5	54.7 feet	25.0 feet	29.7 feet
B6	55.6 feet	20.0 feet	35.6 feet
B11	55.7 feet	25.0 feet	30.7 feet
B13	53.5 feet	10.0 feet	43.5feet
B16	52.6 feet	19.0 feet	33.6 feet
B17	52.2 feet	15.0 feet	37.2 feet
B25	55.3 feet	35.0 feet	20.3 feet
B26	53.0 feet	15.0 feet 33.0 feet	38.0 feet 20.0 feet
B40	53.0 feet	30.0 feet	23.0 feet
B41	53.0 feet	29.0 feet	24.0 feet

TABLE IV
COMPACTION CRITERIA

LOCATION	PERCENT COMPACTION (ASTM-D698)
Foundations	98%
Floor Slabs	98%
Pavements	95%
Berms(non structural)	93%

APPENDIX

GENERAL CONSTRUCTION GUIDELINES FOR CARBONATE GEOLOGY

Areas underlain by carbonate geologic formations are subject to dissolution activity and the subsequent development of karst features, subsoil erosion, and sinkhole formations. Any disturbance of the natural conditions at a site tends to alter the existing surface drainage patterns which can result in an increase in subsoil erosion and sinkhole activity. The following construction practices will provide general guidelines for minimizing impact to the underlying carbonate formation.

1. Care must be taken to prevent collection and drainage of surface water into excavated or low-lying areas of the site during the construction of roadways, ramps, or structures. This may be accomplished by constructing earthen berms, dikes, or diversion ditches around open excavations or otherwise preventing the collection and ponding of surface water in low-lying areas.

Typically, excavations should not be made during periods of predicted precipitation. Excavations should be backfilled as soon as is practical, especially considering weekends or extended periods of inactivity.

2. The soil layer above a zone of dissolution activity is usually soft and wet and it is important to locate these areas whenever possible. If embankment fill is to be placed in suspected areas of sinkhole activity, the subgrade shall be proof-rolled and all "soft" areas suitably replaced and compacted prior to the construction of the embankment. If the area is to be excavated, proof-rolling shall be done using a roller of suitable weight (generally in excess of 15 tons).

3. Soft areas must be removed and replaced with clean soil, compacted in layers not to exceed 8 inches in thickness. All compacted soil must be placed to a density as determined by the Standard Proctor Test Method (ASTM-698).

4. The bottom of all excavations in carbonate areas should be inspected for soft or unusually moist conditions. A visual inspection of the excavated bearing surface, together with soundings or probes of the soil at regular intervals, is recommended. Any soft or unusually moist soil should be further excavated and a determination made of the extent of the problem. Remedial measures should then be adopted as necessary.

5. The low points of swales, basins or drainage ditches are particularly vulnerable to subsoil erosion during periods of heavy rainfall and runoff. The same is true of outlet locations for drainage pipes. Consideration should be given to lining such areas with impermeable liners, instead of stone rip-rap, in order to prevent infiltration.

6. The placement of fill material in carbonate areas will reduce the overall potential for subsoil erosion and sink hole development. Excavation should be kept to a practical minimum in carbonate areas.

7. Blasting for the excavation and removal of rock in cut areas should be undertaken with extreme caution and only when absolutely necessary. Where blasting is required,

it should be done so as to minimize the disturbance to the underlying rock and/or soil strata.

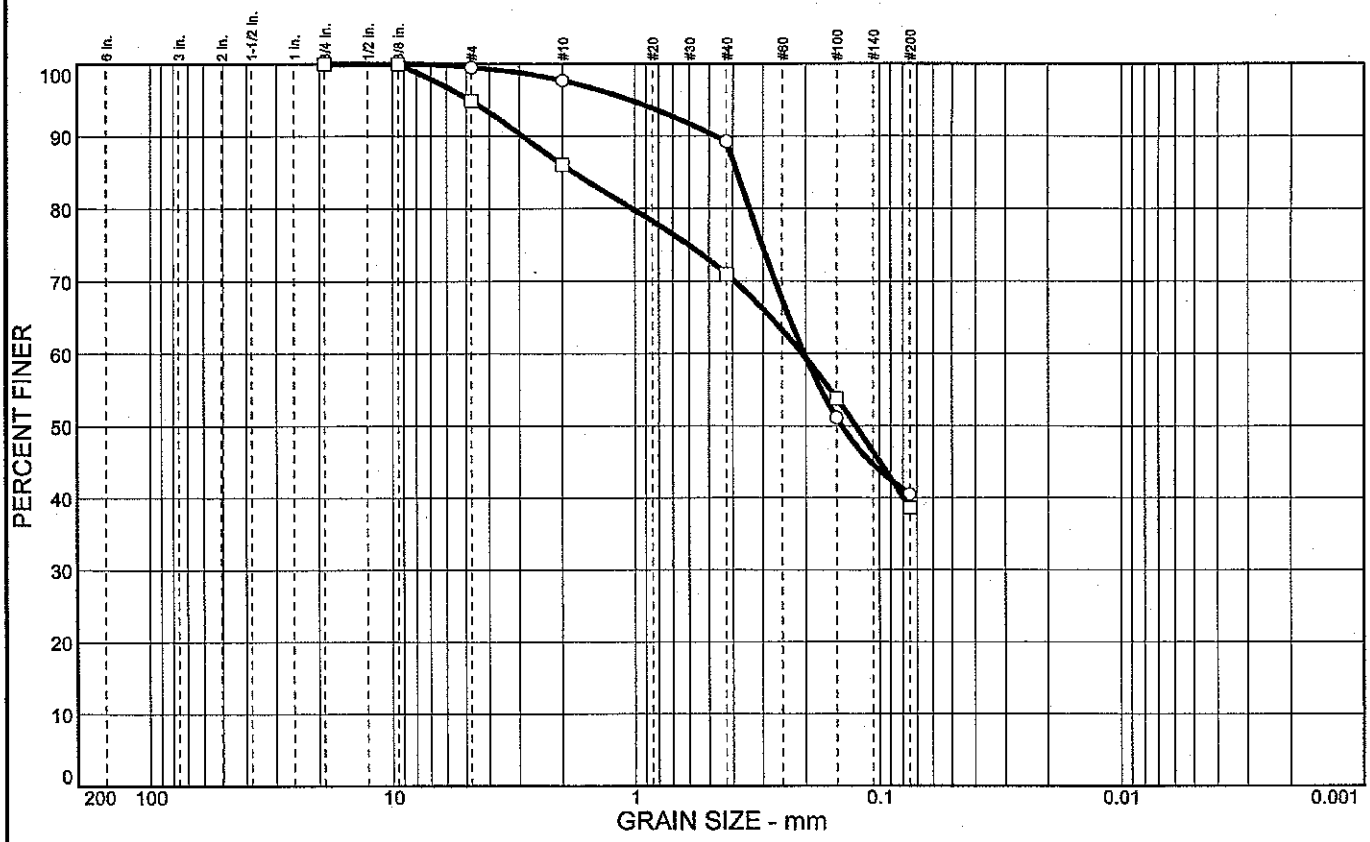
8. Water from roof drains or other drainage systems should be collected and conveyed away from structures to prevent infiltration near foundations. This is extremely important and an often overlooked detail which results in the formation of numerous sinkholes at or below the building foundation.

9. Subsoil erosion or sinkhole development that occurs during the construction of a project should be corrected as quickly as possible under the supervision of a qualified geotechnical engineer.

Please note that the above guidelines are general procedures and do not represent construction specifications for any particular site. Every situation regarding carbonate geology must be evaluated individually including footing excavations, rock blasting, soft spot evaluation, and/or sinkhole repair. Construction/remediation recommendations for sites located in carbonate geology should be made by a qualified geotechnical engineer with follow-up quality control services.

SOIL PARTICLE SIZE ANALYSIS RESULTS

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○		0.5	59.0	40.5		SC	A-4(0)	16	25
□		5.1	56.3	38.6		SM	A-4(0)		

SIEVE inches size	PERCENT FINER ○	PERCENT FINER □
.75	100.0	100.0
.375	100.0	100.0
GRAIN SIZE		
D_{60}	0.204	0.208
D_{30}		
D_{10}		
COEFFICIENTS		
C_c		
C_u		

SIEVE number size	PERCENT FINER ○	PERCENT FINER □
#4	99.5	94.9
#10	97.7	86.1
#40	89.2	71.0
#100	51.1	53.8
#200	40.5	38.6

SOIL DESCRIPTION

○ Reddish brown Clayey sand

□ Brown Silty sand

REMARKS:

○ NMC B21/S2-17.1%.

□ NMC B21/S11-21.9%, B21/S12-23.0%. N/P

○ Source: B21 Sample No.: S2 Elev./Depth: 4'-6'

□ Source: B21 Sample No.: S11&S12 Elev./Depth: 34'-38'

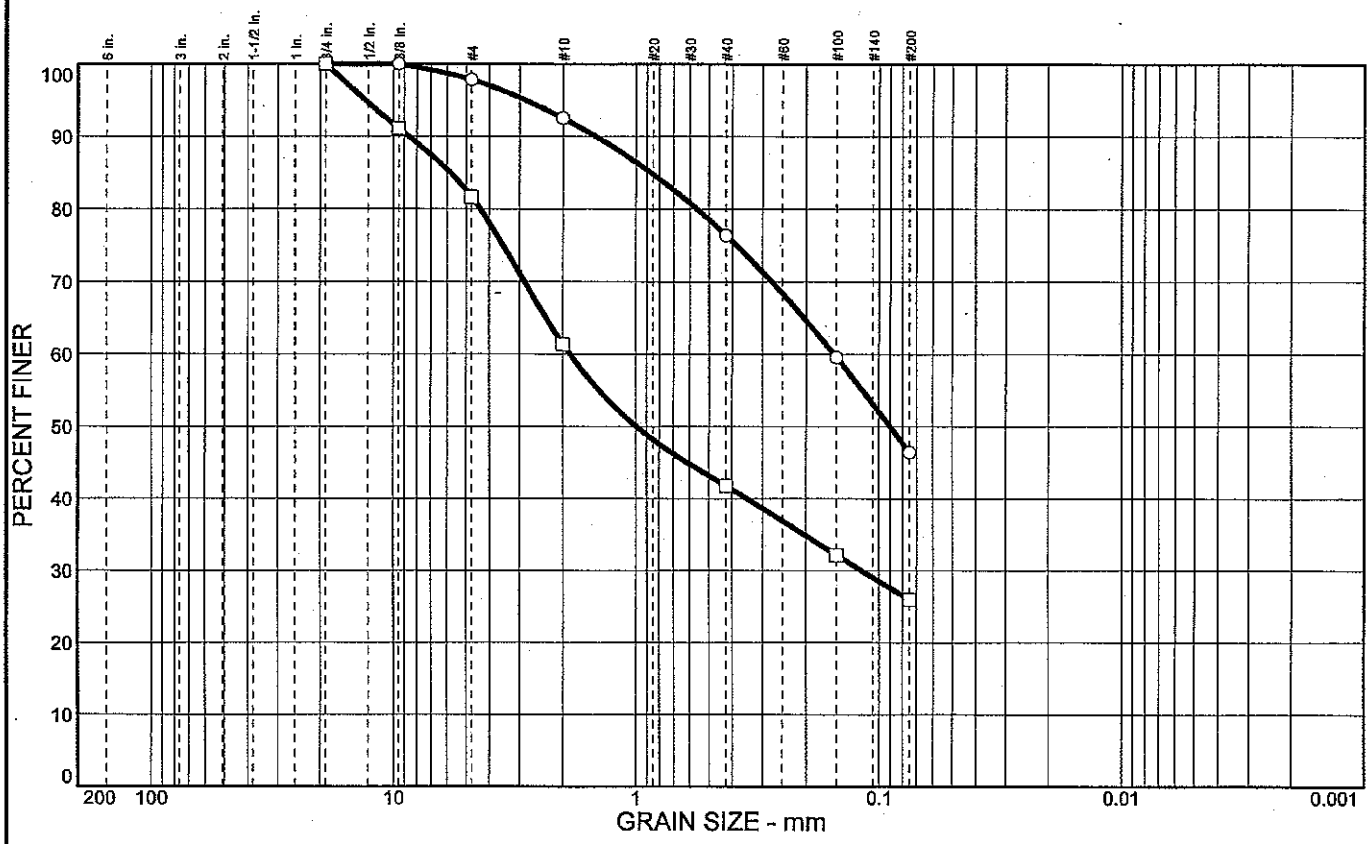
DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Client: O'Neill Properties

Project: 401 & 433 Washington Street

Project No.: 4287G1 Plate

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○		2.2	51.4	46.4		SM	A-4(0)		
□		18.4	55.7	25.9		SM	A-2-4(0)		

SIEVE inches size	PERCENT FINER ○	□
.75	100.0	100.0
.375	100.0	91.1
GRAIN SIZE		
D_{60}	0.154	1.88
D_{30}		0.119
D_{10}		
COEFFICIENTS		
C_C		
C_U		

SIEVE number size	PERCENT FINER ○	□
#4	97.8	81.6
#10	92.5	61.4
#40	76.4	41.8
#100	59.5	32.1
#200	46.4	26.0

SOIL DESCRIPTION

○ Yellow Brown Silty sand

□ Pale brown Silty sand with gravel

REMARKS:

○ NMC B24/S9-26.4%, B24/S10-19.2%. Not Plastic.

□ NMC B29/S9-12.0%.

○ Source: B24 Sample No.: S9&S10 Elev./Depth: 25'-32'

□ Source: B29 Sample No.: S9 Elev./Depth: 25'-27'

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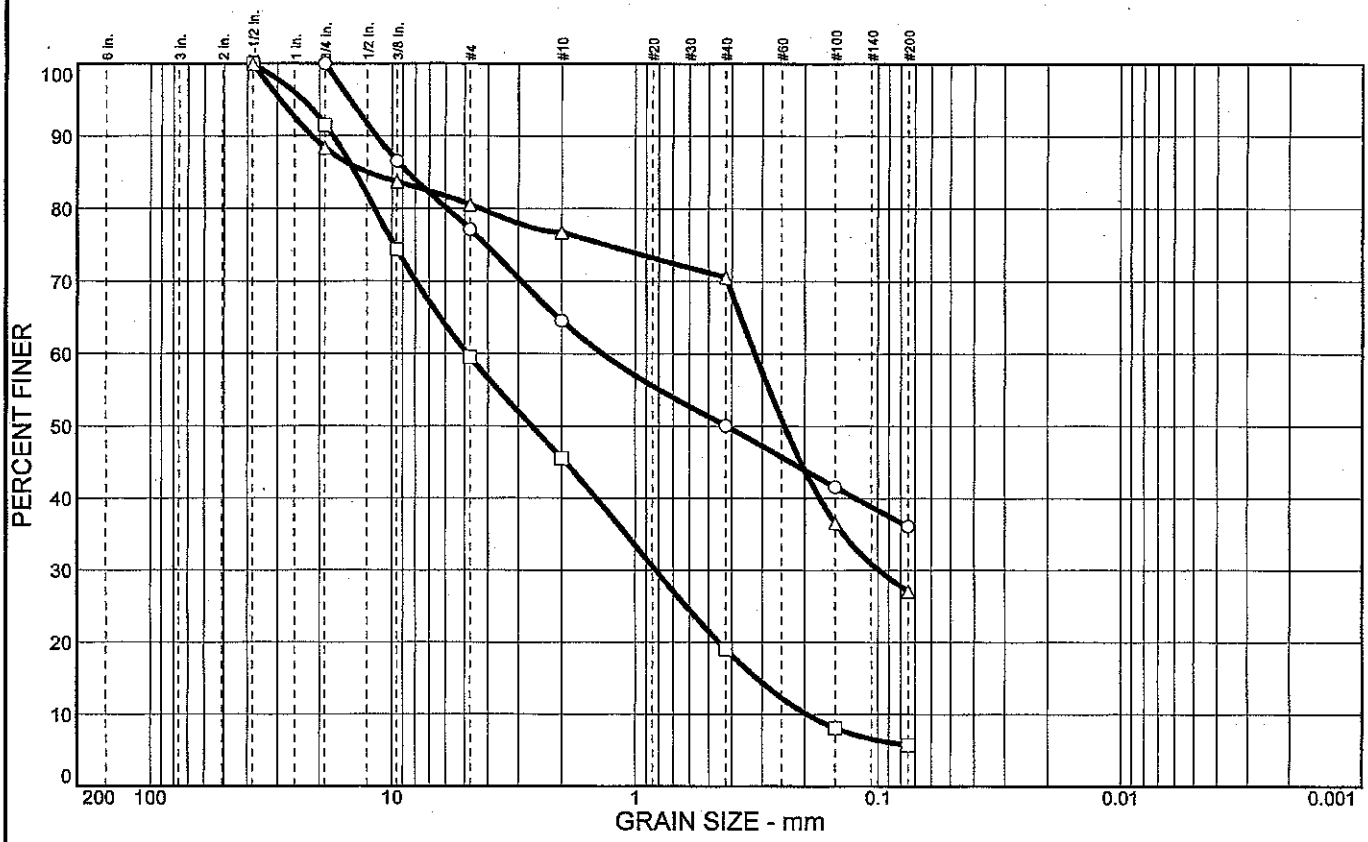
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Client: O'Neill Properties

Project: 401 & 433 Washington Street

Project No.: 4287G1 Plate

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○		22.9	41.0	36.1		SC	A-4(0)	19	29
□		40.5	53.8	5.7		SP-SM	A-1-a		
△		19.4	53.5	27.1		SM	A-2-4(0)		

SIEVE inches size	PERCENT FINER ○	□	△
1.5		100.0	100.0
.75	100.0	91.6	88.4
.375	86.6	74.4	83.7
GRAIN SIZE			
D_{60}	1.36	4.88	0.322
D_{30}		0.826	0.0990
D_{10}		0.196	
COEFFICIENTS			
C_c		0.71	
C_u		24.84	

SIEVE number size	PERCENT FINER ○	□	△
#4	77.1	59.5	80.6
#10	64.5	45.5	76.8
#40	50.0	19.0	70.6
#100	41.5	8.1	36.5
#200	36.1	5.7	27.1

SOIL DESCRIPTION

○ Orange-brown Clayey sand with gravel

□ Orange-brown Poorly graded sand with silt and gravel

△ Orange-brown Silty sand with gravel

REMARKS:

○ NMC B2/S4-12.8%.

□ NMC B6/S8-16.7%, B6/S9-7.9%. N/P

△ NMC B14/S4-19.6%, B14/S5-11.4%. N/P

○ Source: B2 Sample No.: S4 Elev./Depth: 8'-10'

□ Source: B6 Sample No.: S8&S9 Elev./Depth: 20'-24'

△ Source: B14 Sample No.: S4&S5 Elev./Depth: 8'-12'

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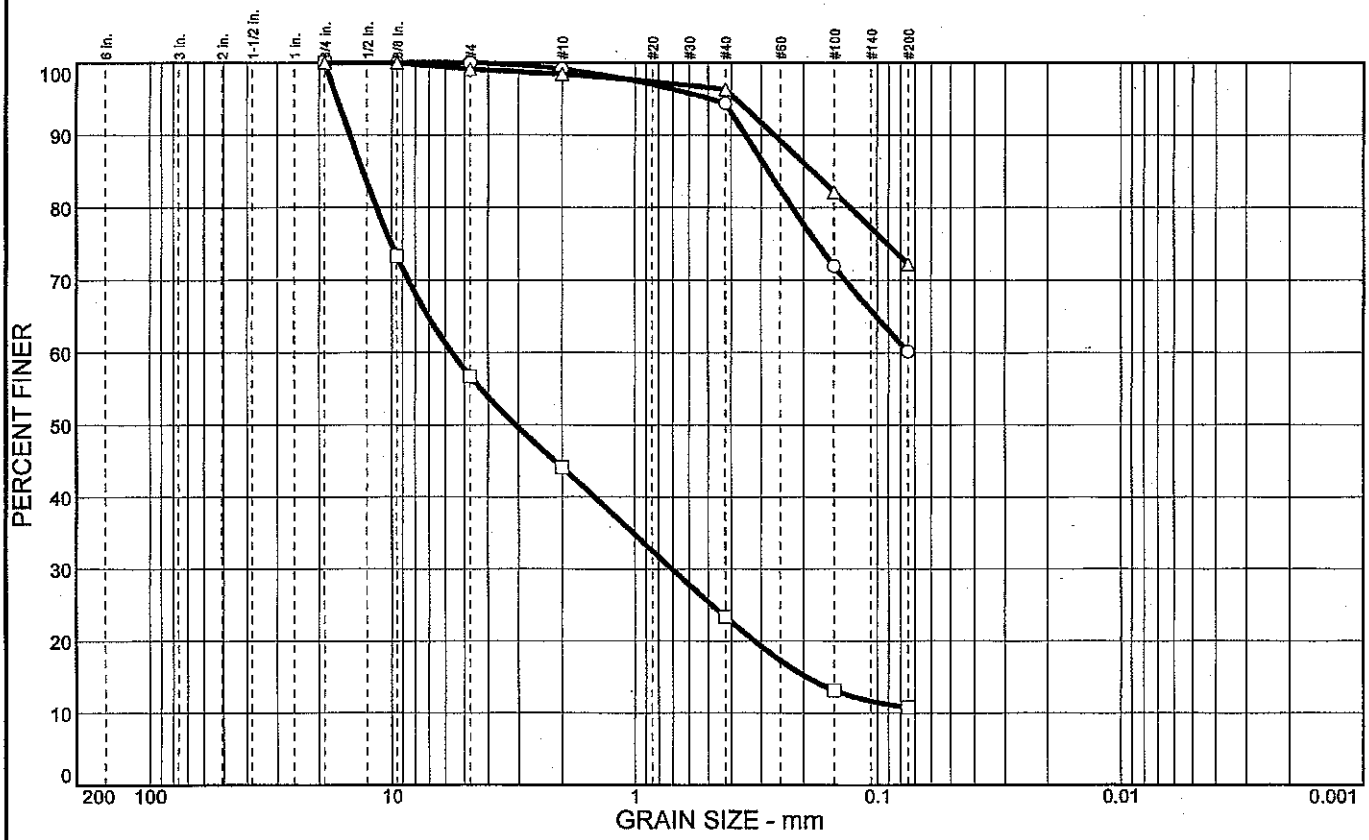
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Client: O'Neill Properties

Project: 401 & 433 Washington Street

Project No.: 4287G1 Plate

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% + 3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			39.9	60.1		CL	A-4(0)	18	35
□		43.3	45.9	10.8		SP-SM	A-1-a		
△		0.9	26.9	72.2		CL	A-4(0)	17	28

SIEVE Inches size	PERCENT FINER ○	□	△
.75	100.0	100.0	100.0
.375	100.0	73.3	100.0
	GRAIN SIZE		
D_{60}		5.65	
D_{30}		0.708	
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○	□	△
#4	100.0	56.7	99.1
#10	99.1	44.1	98.4
#40	94.4	23.4	96.3
#100	71.9	13.1	82.2
#200	60.1	10.8	72.2

SOIL DESCRIPTION

○ Orange-brown Sandy lean clay

□ Reddish brown Poorly graded sand with silt and gravel

△ Reddish brown Lean clay with sand

REMARKS:

○ NMC B15/S5-21.2%.

□ NMC B25/S6-7.9%, B25/S7-13.0%. N/P

△ NMC B35/S4-19.5%, B35/S5-20.9%.

○ Source: B15 Sample No.: S5 Elev./Depth: 10'-12'

□ Source: B25 Sample No.: S6&S7 Elev./Depth: 12'-15'11"

△ Source: B35 Sample No.: S4&S5 Elev./Depth: 8'-12'

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GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

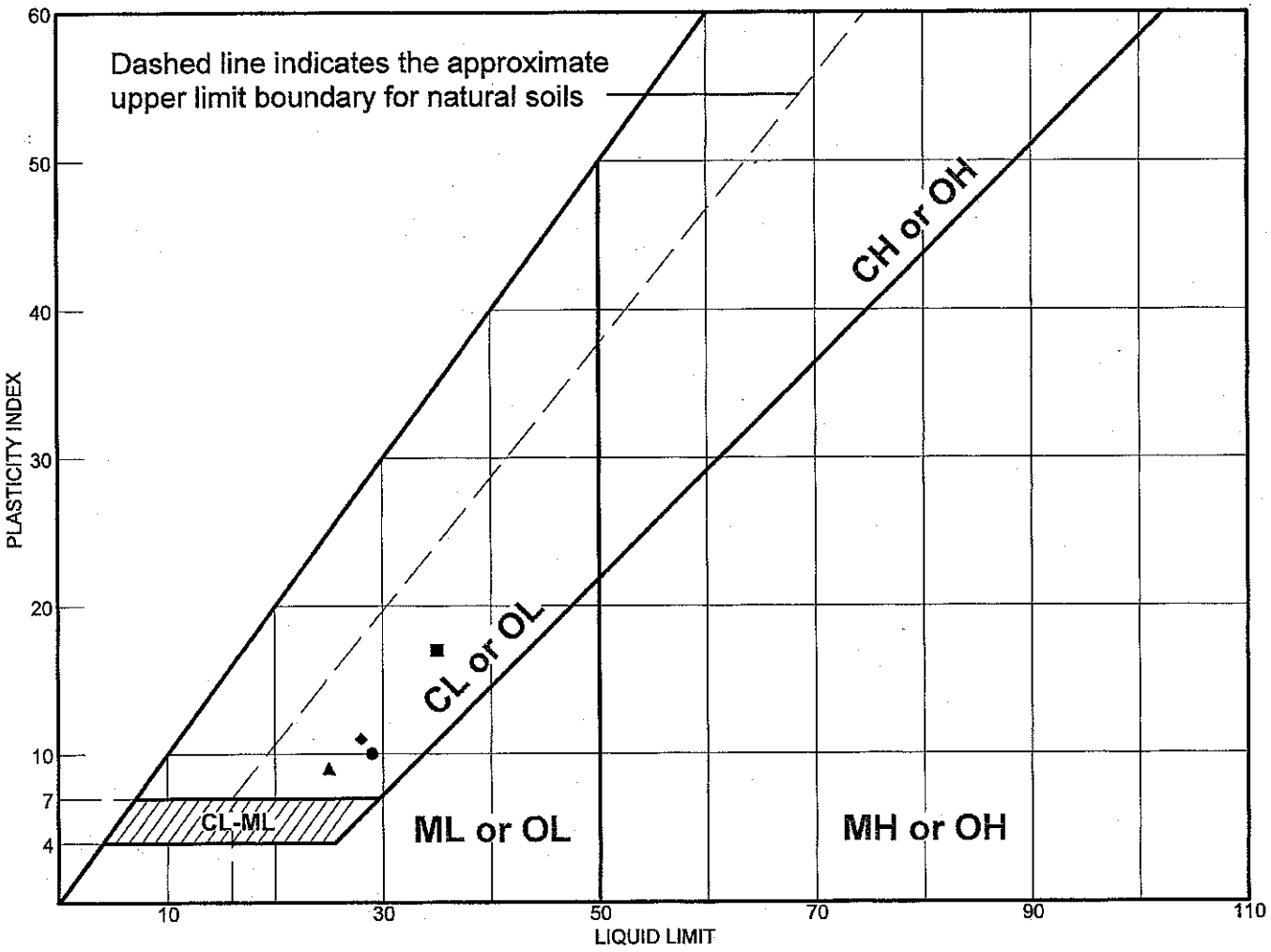
Client: O'Neill Properties

Project: 401 & 433 Washington Street

Project No.: 4287G1 Plate

SOIL PLASTIC AND LIQUID LIMIT TEST RESULTS

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Orange-brown Clayey sand with gravel	29	19	10	50.0	36.1	SC
■	Orange-brown Sandy lean clay	35	18	17	94.4	60.1	CL
▲	Reddish brown Clayey sand	25	16	9	89.2	40.5	SC
◆	Reddish brown Lean clay with sand	28	17	11	96.3	72.2	CL

Project No. 4287G1 **Client:** O'Neill Properties

Project: 401 & 433 Washington Street

● **Source:** B2	**Sample No.:** S4	**Elev./Depth:** 8'-10'
■ **Source:** B15	**Sample No.:** S5	**Elev./Depth:** 10'-12'
▲ **Source:** B21	**Sample No.:** S2	**Elev./Depth:** 4'-6'
◆ **Source:** B35	**Sample No.:** S4&S5	**Elev./Depth:** 8'-12'

Remarks:

- ● NMC B2/S4-12.8%.
- ■ NMC B15/S5-21.2%.
- ▲ NMC B21/S2-17.1%.
- ◆ NMC B35/S4-19.5%, B35/S5-20.9%.

DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

Plate

TEST BORING LOGS

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

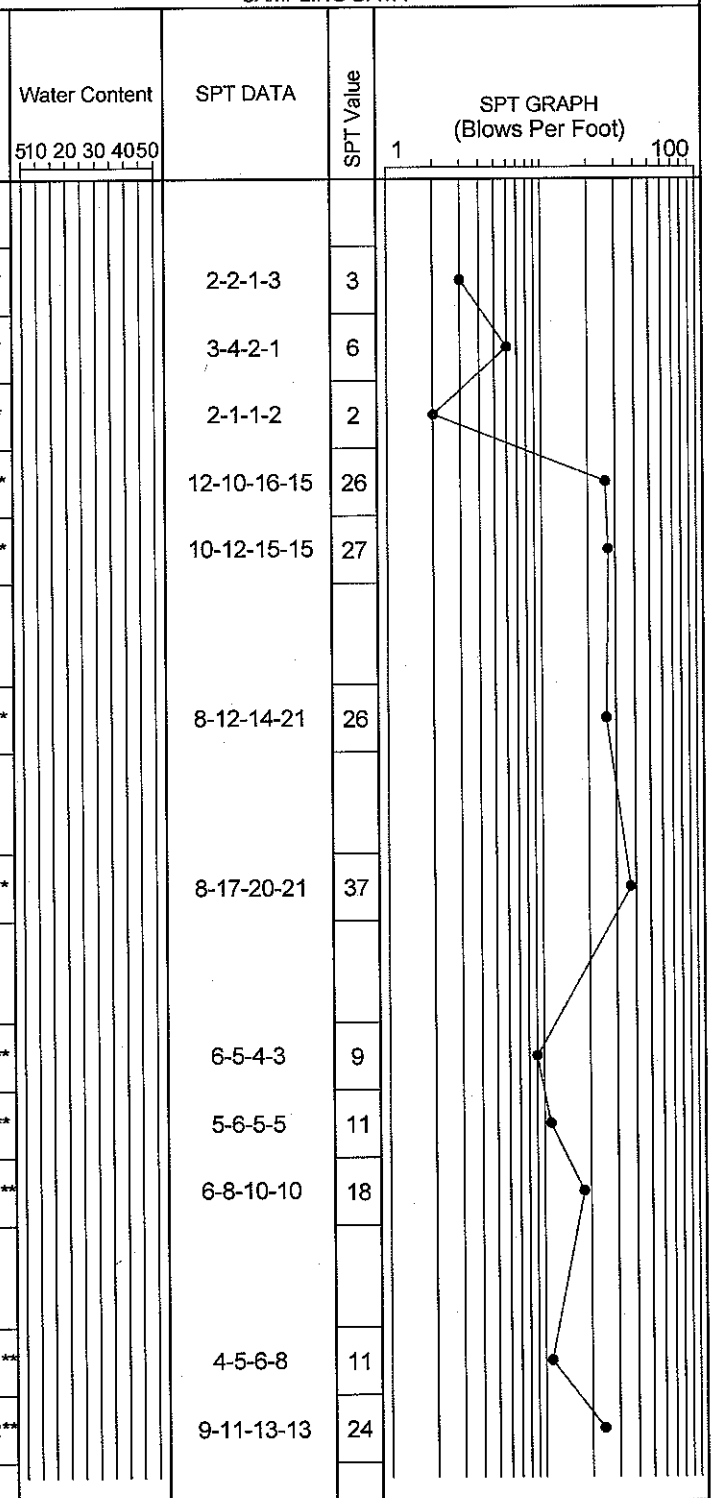
Boring Number : B1

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 34'
Drilling Method #2: 2" OD Split Spoon Sampler from 34' to 38'

Project Number : 4287G1
Date Drilled : 12/12/12
Inspected by : MTU
Boring Depth: 38.0'
Ground Surface Elevation (ft msl) : 53.83'
Water Level - Immediate (ft bgs) : 7.75'
Water Level -Static (ft bgs): 7.17' (6 hours)

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Asphalt (4")					
			Modified Stone (4")	1.75	52.08			
			Stratum IMF FILL consisting of orange brown fine sand and silt with rock fragments			S-1*	2-2-1-3	3
						S-2*	3-4-2-1	6
	▼		FILL consisting of black and orange brown fine sand, trace of silt, coal, some slag			S-3*	2-1-1-2	2
				8.25	45.58			
				9.17	44.66	S-4**	12-10-16-15	26
			Stratum III Orange brown fine sand, occasional pebbles			S-5**	10-12-15-15	27
			Orange brown fine to medium sand with rock fragments, pebbles, occasional boulders			S-6**	8-12-14-21	26
						S-7**	8-17-20-21	37
				23.50	30.33			
			Orange brown fine sand, some silt with occasional limestone fragments			S-8**	6-5-4-3	9
						S-9**	5-6-5-5	11
						S-10**	6-8-10-10	18
			Notes: * very moist **wet					
			Very hard, choppy augering from 22.50' to 23.50'.			S-11**	4-5-6-8	11
						S-12**	9-11-13-13	24
				38.00	15.83			
			Boring Terminated					



The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Boring Number : B2

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 23'11"
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 12/19/12
Inspected by : MTU
Boring Depth: 23.92'
Ground Surface Elevation (ft msl) : 53.01'
Water Level - Immediate (ft bgs) : 7.08'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	Water Content 5 10 20 30 40 50	SPT DATA	SPT Value	SPT GRAPH (Blows Per Foot) 1 100
			Asphalt (4")							
1.0			Modified Stone (6")							
2.0			Stratum IMF							
3.0			FILL consisting of black fine sand, coal, some slag			S-1*		1-2-2-2	4	
4.0				4.25	48.76					
5.0			FILL consisting of orange brown fine sand and silt with some rock fragments			S-2*		2-2-3-3	5	
6.0										
7.0	▼					S-3*		2-2-2-3	4	
8.0				8.50	44.51					
9.0			Stratum II			S-4*		3-6-10-11	16	
10.0			Brown and orange brown mottled fine sand and silt with occasional rock fragments	10.33	42.68					
11.0						S-5**		9-9-9-12	18	
12.0			Stratum III							
13.0			Reddish brown fine to medium sand with rock fragments, pebbles, occasional boulders							
14.0										
15.0										
16.0						S-6**		5-8-9-8	17	
17.0										
18.0										
19.0										
20.0				20.42	32.59	S-7**		36-50/3"	100	
21.0			Stratum IVA							
22.0			Gray, brown and tan weathered limestone							
23.0										
24.0				23.92	29.09					
25.0			Auger Refusal on Limestone Bedrock							
26.0			***Notes:*** * very moist ** wet							
27.0			Very hard augering from 20.75'.							
28.0										

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Boring Number : B3

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 22'4"
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 12/12/12
Inspected by : MTU
Boring Depth: 22.33'
Ground Surface Elevation (ft msl) : 53.88'
Water Level - Immediate (ft bgs) : 7.42'
Water Level -Static (ft bgs): 7.33' (3 hrs.)

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Asphalt (4")					
			Modified Stone (3")					
			Stratum IMF FILL consisting of black fine sand, coal, brick, some slag			S-1*	3-3-5-4	8
						S-2*	4-7-7-5	14
				5.50	48.38			
			FILL consisting of orange brown fine sand and silt with rock fragments	6.00	47.88	S-3*	2-2-2-2	4
			Stratum II Reddish brown fine sand and silt	7.67	46.21	S-4**	3-3-3-3	6
			Stratum III Reddish brown fine sand, trace of silt with occasional pebbles	11.33	42.55	S-5**	2-2-5-7	7
			Orange brown fine to medium sand with rock fragments and pebbles			S-6**	5-4-3-8	7
						S-7**	22-33-34-37	67
				17.00	36.88			
			Stratum IVA Gray and brown weathered limestone			S-8**	41-50/4"	100
			Notes: ** very moist* ***wet* *Very hard, smooth augering from 19.92'.*	22.33	31.55			
			Auger Refusal on Limestone Bedrock					

SPT GRAPH (Blows Per Foot): 1 – 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Geotechnical & Environmental Engineers
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www.dbaengineering.com

Boring Number : B4

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 35'10"

Project Number : 4287G1
Date Drilled : 12/17/2012
Inspected by : MTU
Boring Depth: 35.83'
Ground Surface Elevation (ft msl) : 53.67'
Water Level - Immediate (ft bgs) : 7.42'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value
			Asphalt (4")					
			Modified Stone (5")					
			Stratum IMF FILL consisting of black fine sand, coal, some slag			S-1*	1-2-1-2	3
						S-2*	1-1-2-2	3
				5.75	47.92			
			Stratum II Orange brown and grey discolored fine sand and silt	6.58	47.09	S-3*	2-2-1-2	3
			Reddish brown fine sand and silt			S-4**	3-4-22-24	26
			Stratum III Reddish brown fine to medium sand with rock fragments and pebbles			S-5*	19-23-26-31	49
						S-6*	5-16-15-18	31
				21.50	32.17	S-7*	12-8-5-7	13
			Orange brown fine sand and silt	24.00	29.67			
			Stratum IVA Orange brown, tan, and gray weathered phyllitic limestone			S-8**	11-12-15-28	27
			Notes: ** wet* ***moist* *Samples S-2 and S-3 had fuel odor.*			S-9	13-16-18-20	34
				35.83	17.84	S-10	44-50/4"	100
			Spoon Refusal on Dense Weathered Limestone					

SPT GRAPH (Blows Per Foot): 1 – 100

Water Content: 5 10 20 30 40 50

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B5

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 31'7"
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 12/11/2012
Inspected by : MTU
Boring Depth: 31.58'
Ground Surface Elevation (ft msl) : 54.74'
Water Level - Immediate (ft bgs) : 7.50'
Water Level -Static (ft bgs): 6.67' (24 hrs.)

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Asphalt (4")					
			Modified Stone (4")					
			Stratum IMF FILL consisting or black fine sand, some silt with some slag, coal			S-1*	6-2-2-10	4
						S-2*	11-6-9-8	15
				6.25	48.49			
	▼		Stratum II Reddish brown fine sand and silt			S-3**	3-2-1-2	3
				8.75	45.99	S-4*	2-7-22-24	29
			Stratum III Reddish brown fine sand, some silt and medium sand with rock fragments and pebbles	10.33	44.41	S-5***	22-23-24-28	47
			Reddish brown fine to medium sand with rock fragments and pebbles			S-6***	10-10-11-21	21
						S-7***	5-6-7-9	13
			Notes: ** moist* *** very moist* **** wet* *First attempt, augers bending at 23'. Second attempt, 10 feet towards B9, augered to 25' and resumed sampling.* *Hard augering from 28.5'.*			S-8***	2-1-1-3	2
				27.75	26.99	S-9***	5-22-50/5"	100
			Stratum IVA Orange brown, brown and gray weathered limestone			S-10	50/1" NR	100
				31.58	23.16			
			Auger Refusal on limestone bedrock					

SPT GRAPH (Blows Per Foot) 1 — 100

Water Content 5 10 20 30 40 50

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Boring Number : B6

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 37'

Project Number : 4287G1
Date Drilled : 12/18/2012
Inspected by : MTU
Boring Depth: 37.0'
Ground Surface Elevation (ft msl) : 55.58'
Water Level - Immediate (ft bgs) : 9.25'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
0.0			Topsoil (3")					
			Stratum IMF FILL consisting of black fine sand, some slag, coal			S-1*	2-3-3-3	6
						S-2*	3-5-4-4	9
				7.58	48.00	S-3*	3-4-5-2	9
	▼		Stratum II Reddish brown fine sand and silt			S-4**	2-3-3-3	6
				11.75	43.83	S-5**	2-2-4-16	6
			Stratum III Reddish brown fine to medium sand with rock fragments and pebbles			S-6***	29-34-33-30	67
						S-7***	16-18-21-23	39
						S-8***	1/12"-1/12"	1
			Notes: ** moist* ***very moist* ****wet*			S-9***	4-9-10-10	19
						S-10***	11-12-13-17	25
				28.00	27.58			
			Stratum IVB Orange brown, tan and gray weathered quartz schist			S-11	8-14-15-15	29
						S-12	13-11-14-17	25
				37.00	18.58			
			Boring Terminated					

SAMPLING DATA: Water Content (5 10 20 30 40 50); SPT GRAPH (Blows Per Foot) (1 – 100)

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B7

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 37'

Project Number : 4287G1
Date Drilled : 12/11/2012
Inspected by : MTU
Boring Depth: 37.0'
Ground Surface Elevation (ft msl) : 54.02'
Water Level - Immediate (ft bgs) : 7.50'
Water Level -Static (ft bgs): 7.25' (8 hrs)

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Asphalt (4")					
			Modified Stone (4")					
			Stratum IMF FILL consisting of black and orange brown fine sand, some silt, clay, and coal	6.00	48.02	S-1*	5-7-3-4	10
						S-2*	5-5-6-5	11
	▼		Stratum II Orange brown and reddish brown fine sand and silt	9.67	44.35	S-3**	3-2-2-2	4
						S-4***	1-1-3-19	4
			Stratum III Orange brown fine to medium sand with rock fragments and pebbles	19.00	35.02	S-5***	18-23-20-22	43
						S-6***	13-25-34-36	59
			Orange brown, gray and tan fine sand and silt with limestone fragments			S-7*	13-12-14-16	26
						S-8*	7-8-14-16	22
						S-9**	3-4-5-7	9
						S-10**	6-6-8-9	14
						S-11**	5-13-26-30	39
			Boring Terminated	37.00	17.02			

Notes:
** moist*
*** very moist*
**** wet*

Fairly hard, choppy augering from 14.0' to 18.50'.

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B8

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 37'

Project Number : 4287G1
Date Drilled : 12/18/2012
Inspected by : MTU
Boring Depth: 37.0'
Ground Surface Elevation (ft msl) : 54.68'
Water Level - Immediate (ft bgs) : 7.50'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
0.0			Topsoil (4")					
			Stratum IMF FILL consisting of black and orange brown fine sand, some slag, coal, and brick			S-1*	2-3-4-4	7
						S-2*	5-7-5-4	12
				6.67	48.01	S-3**	3-2-1-2	3
	▼		Stratum II Reddish brown fine sand and silt, trace of clay	9.00	45.68	S-4***	2-2-2-3	4
			Stratum III Reddish brown fine sand, some silt	12.00	42.68	S-5***	1-1-4-6	5
			Reddish brown fine to medium sand with rock fragments, pebbles			S-6***	26-31-35-38	66
						S-7***	50/4"	100
						S-8***	26-27-29-29	56
				23.00	31.68			
			Orange brown and tan fine sand and silt, some gray and white residual weathered limestone			S-9**	11-15-16-29	31
			Notes: ** moist* *** very moist* **** wet* *Very hard, choppy augering through boulders from 14.5' to 17.5'.*			S-10**	10-12-13-19	25
				37.00	17.68	S-11**	11-11-16-18	27
			Boring Terminated					

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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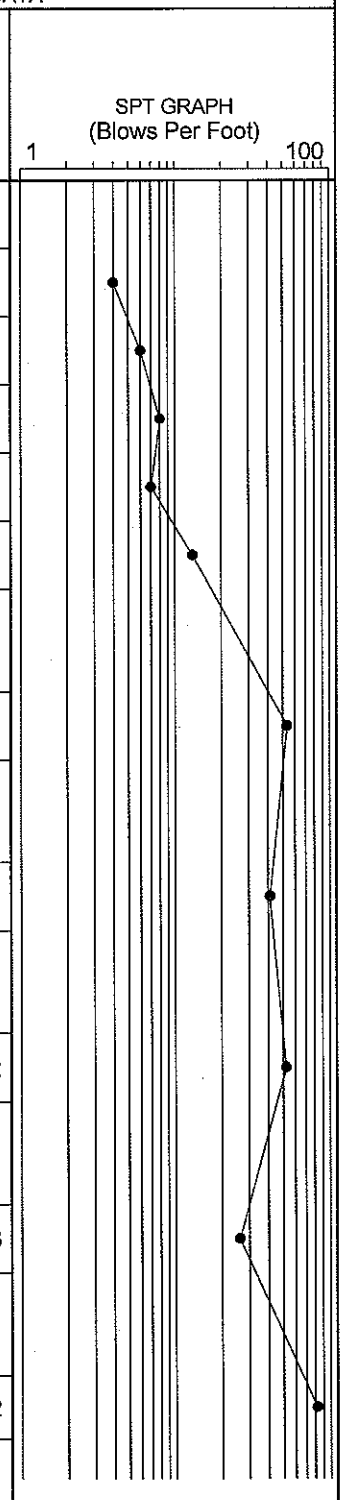
Boring Number : B9

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 36'10"

Project Number : 4287G1
Date Drilled : 12/17/2012
Inspected by : MTU
Boring Depth: 36.83'
Ground Surface Elevation (ft msl) : 54.83'
Water Level - Immediate (ft bgs) : 8.42'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Asphalt (4")					
			Modified Stone (5")					
			Stratum IMF FILL consisting of black and orange brown fine sand, some slag, coal			S-1	1-2-2-2	4
						S-2	2-2-4-3	6
				7.17	47.66	S-3	2-2-6-7	8
	▼		Stratum II Reddish brown fine sand and silt			S-4	3-2-5-3	7
				11.33	43.50	S-5	2-3-10-27	13
			Stratum III Reddish brown and orange brown fine to medium sand with rock fragments and pebbles			S-6	12-25-28-30	53
				23.00	31.83	S-7	23-24-17-19	41
			Stratum IVB Orange brown, tan and gray weathered quartz schist			S-8	24-25-27-30	52
			Notes: *Samples S-1 through S-3 and S-8 were moist.* *Samples S-4 and S-5 were wet.* *Samples S-9 and S-10 were very moist.*			S-9	9-10-16-17	26
				36.83	18.00	S-10	21-38-44-50/4"	82
			Spoon Refusal on dense weathered schist					



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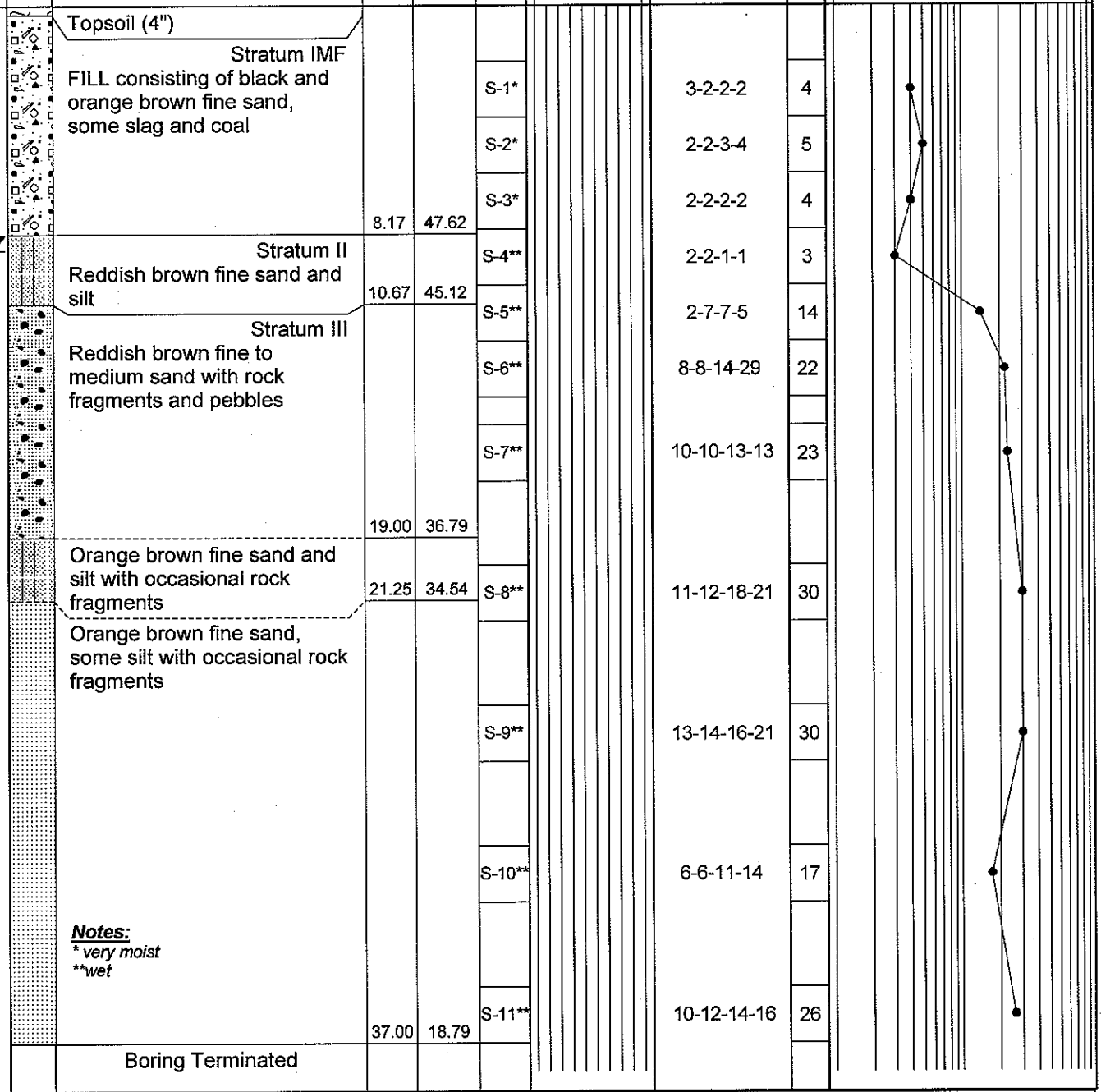
Boring Number : B10

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 37'

Project Number : 4287G1
Date Drilled : 12/18/2012
Inspected by : MTU
Boring Depth: 37.00'
Ground Surface Elevation (ft msl) : 55.79'
Water Level - Immediate (ft bgs) : 8.75'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
0.0			Topsoil (4")					
			Stratum IMF FILL consisting of black and orange brown fine sand, some slag and coal			S-1*	3-2-2-2	4
						S-2*	2-2-3-4	5
						S-3*	2-2-2-2	4
				8.17	47.62			
	▼		Stratum II Reddish brown fine sand and silt			S-4**	2-2-1-1	3
				10.67	45.12	S-5**	2-7-7-5	14
			Stratum III Reddish brown fine to medium sand with rock fragments and pebbles			S-6**	8-8-14-29	22
						S-7**	10-10-13-13	23
				19.00	36.79			
			Orange brown fine sand and silt with occasional rock fragments	21.25	34.54	S-8**	11-12-18-21	30
			Orange brown fine sand, some silt with occasional rock fragments			S-9**	13-14-16-21	30
						S-10**	6-6-11-14	17
			Notes: ** very moist* ***wet*					
				37.00	18.79	S-11**	10-12-14-16	26
			Boring Terminated					



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Boring Number : B11

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 31'7"
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 12/17/2012
Inspected by : MTU
Boring Depth: 31.58'
Ground Surface Elevation (ft msl) : 55.67'
Water Level - Immediate (ft bgs) : 7.67'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value
0.0			Stratum IMF FILL consisting of brown fine sand and silt with rock fragments	2.00	53.67			
3.0			FILL consisting of black fine sand, some slag, and coal			S-1*	1-2-3-3	5
5.0						S-2*	5-4-5-5	9
7.0	▼			7.67	48.00	S-3*	8-9-5-2	14
8.0			Stratum III Reddish brown fine sand, some silt			S-4*	2-1-2-2	3
11.0				11.25	44.42	S-5*	3-4-11-28	15
12.0			Reddish brown and orange brown fine to medium sand with rock fragments, pebbles					
15.0						S-6*	13-14-12-13	26
17.0			***Notes:*** ** wet* *Hard augering from 31.0'.*					
20.0						S-7*	15-17-15-8	32
22.0				23.00	32.67			
23.0			Stratum IVA Orange brown, brown, and gray weathered limestone					
26.0						S-8*	1-1-1/12"	1
28.0						S-9*	1/24"	1
30.0						S-10*	1/12"-8-50/5"	100
31.0				31.58	24.09			
32.0			Auger Refusal on limestone bedrock					
33.0								

SAMPLING DATA: Water Content (5 10 20 30 40 50)

SAMPLING DATA: SPT GRAPH (Blows Per Foot) (1 – 100)

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B12

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 37'
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 12/12/2012
Inspected by : MTU
Boring Depth: 37.0'
Ground Surface Elevation (ft msl) : 53.33'
Water Level - Immediate (ft bgs) : 7.50'
Water Level -Static (ft bgs): 7.42' (15 min.)

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Blacktop (4")					
			Modified Stone (4")					
			Stratum IMF			S-1*	2-2-2-2	4
			FILL consisting of black fine sand with some slag, coal, brick, some silt			S-2*	4-6-4-3	10
	▼			7.50	48.17	S-3*	1-1-8-5	9
			Stratum III	9.00	46.67	S-4*	3-4-8-15	12
			Orange brown fine sand					
			Orange brown fine to medium sand with rock fragments, pebbles			S-5*	7-16-21-23	37
				14.75	40.92			
			Grey and brown weathered limestone			S-6*	50/5"	100
						S-7*	50/2" N.R.	100
				23.00	32.67			
			Orange brown, brown, and gray fine sand and silt			S-8*	9-11-27-18	38
				29.00	26.67			
			Orange brown and brown micaceous fine sand and silt			S-9*	4-5-6-9	11
			Notes: ** moist* *** wet*					
			Very hard augering from 14' to 14'9".					
			Hard augering from 14'9" to 23'			S-10*	6-7-7-13	14
				37.00	18.67			
			Boring Terminated					

SPT GRAPH (Blows Per Foot) — Water Content — 5 10 20 30 40 50 — 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B13

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 22'4"
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 12/28/2012
Inspected by : MTU
Boring Depth: 22.33'
Ground Surface Elevation (ft msl) : 53.47'
Water Level - Immediate (ft bgs) : 6.08'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Blacktop (4")	0.83	52.64			
			Modified Stone (6")					
			Stratum IMF FILL consisting of dark brown fine sand and silt with some rock fragments	3.50	49.97	S-1*	2-3-3-3	6
			Stratum II Reddish brown fine sand and silt			S-2*	2-2-2-2	4
	▼					S-3	2-4-5-9	9
				7.83	45.64			
			Stratum III Reddish brown fine sand with occasional rock fragments	8.67	44.80	S-4	10-16-16-12	32
			Reddish brown fine sand, some medium sand with some rock fragments, pebbles	10.00	43.47	S-5	1-1-2-2	3
			Orange brown fine sand, some silt	12.25	41.22	S-6	15-17-19-36	36
			Reddish brown fine to medium sand with rock fragments, pebbles					
						S-7	13-15-18-23	33
			Notes: ** very moist* *Very hard augering from 19.50'.*					
				19.50	33.97			
			Stratum IVA Gray and brown weathered limestone			S-8	50/1" NR	100
				22.33	31.14			
			Auger Refusal on limestone bedrock					

SAMPLING DATA: Water Content (5 10 20 30 40 50); SPT GRAPH (Blows Per Foot) (1 – 100)

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B14

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 21'9"
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 12/28/2012
Inspected by : MTU
Boring Depth: 21.75'
Ground Surface Elevation (ft msl) : 53.14'
Water Level - Immediate (ft bgs) : 5.58'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Topsoil (6")					
			Stratum IMF Brown and dark brown fine sand and silt with some rock fragments, occasional boulders			S-1*	3-2-2-4	4
						S-2*	5-4-2-2	6
				6.50	46.97			
			Stratum II Reddish brown fine sand and silt	7.75	45.72	S-3**	2-4-4-5	8
			Stratum III Reddish brown fine sand			S-4**	2-3-2-2	5
						S-5**	3-4-5-13	9
				11.75	41.72			
			Reddish brown fine sand, some medium sand with rock fragments and pebbles			S-6**	12-14-15-13	29
				14.50	38.97			
			Orange brown fine to medium sand with rock fragments, pebbles			S-7**	10-9-10-12	19
				19.00	34.47			
			Stratum IVA Gray and brown weathered limestone			S-8	50/0" NR	100
				21.75	31.72			
			Auger Refusal on limestone bedrock					

Notes:
** moist*
***wet*

Very hard augering from 19.0'.

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B15

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 27.75'
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 12/30/2012
Inspected by : MTU
Boring Depth: 27.75'
Ground Surface Elevation (ft msl) : 52.36'
Water Level - Immediate (ft bgs) : 5.50'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	Water Content (5 10 20 30 40 50)	SPT DATA	SPT Value	SPT GRAPH (Blows Per Foot) (1 – 100)
			Asphalt (4")							
			Modified Stone (5")							
			Stratum IMF FILL consisting of brown, dark brown, orange brown and grey fine sand and silt with loose fine sand, some organic silt, trace of coal			S-1*		2-2-2-2	4	
						S-2*		2-3-2-2	5	
	▼			6.17	46.19					
			Reddish brown slightly organic silt			S-3*		2-3-2-3	5	
				8.00	44.36					
			Stratum II Orange brown and grey mottled fine sand and silt, trace of clay	9.33	43.03	S-4*		3-5-6-9	11	
						S-5*		6-7-5-6	12	
			Grey, orange brown and reddish brown mottled fine sand and silty clay	13.50	38.86					
			Stratum III Reddish brown and brown fine to medium sand with rock fragments, pebbles			S-6		4-5-4-3 N.R.	9	
						S-7**		1-2-13-19	15	
						S-8**		24-28-33-36	61	
				23.00	29.36					
			Stratum IVA Grey and brown weathered limestone			S-9**		51-50/4"	100	
				27.75	24.61					
			Auger Refusal							

Notes:
** very moist*
*** wet*

Hard augering from 23'.
Very hard augering from 26'.

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B16

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 31'8"
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 12/28/2012
Inspected by : MTU
Boring Depth: 31.67'
Ground Surface Elevation (ft msl) : 52.59'
Water Level - Immediate (ft bgs) : 4.58'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	Water Content 5 10 20 30 40 50	SPT DATA	SPT Value	SPT GRAPH (Blows Per Foot) 1 100
			Asphalt (4")							
			Modified Stone (5")							
			Stratum IMF FILL consisting of brown fine sand and silt with some rock fragments	3.25	49.34	S-1*		2-2-3-2	5	
						S-2*		2-3-3-5	6	
			Stratum II Reddish brown fine sand and silt, occasional rock fragments, some clay	7.17	45.42	S-3**		4-5-6-12	11	
			Stratum III Reddish brown fine to medium sand with rock fragments, pebbles			S-4**		9-8-5-3	13	
						S-5**		4-6-8-13	14	
						S-6**		10-15-16-15	31	
						S-7**		6-5-4-4	9	
			Notes: ** very moist* ***wet* *Very hard augering from 24.25'.*			S-8**		3-3-3-3	6	
						S-9**		4-2-2-2	4	
						S-10**		2-2-3-5	5	
				23.33	29.26	S-11**		21-39-50/3"	100	
			Stratum IVA Gray and brown weathered limestone							
						S-12		50/1" NR	100	
				31.67	20.92					
			Auger Refusal on limestone bedrock							

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B17

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 34'
Drilling Method #2: 2" OD Split spoon sampler from 34' to 34'5"

Project Number : 4287G1
Date Drilled : 12/30/2012
Inspected by : MTU
Boring Depth: 34.42'
Ground Surface Elevation (ft msl) : 52.20'
Water Level - Immediate (ft bgs) : 4.83'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	Water Content (5 10 20 30 40 50)	SPT DATA	SPT Value	SPT GRAPH (Blows Per Foot) (1 – 100)
			Asphalt (4")							
			Modified Stone (6")	0.83	61.31					
1.0			Stratum IMF							
2.0			FILL consisting of brown and orange brown fine sand and silt with rock fragments							
3.0				3.25	58.89	S-1*		3-2-2-2	4	
4.0			Dark gray discolored fine sand and silt with some coal							
5.0	▼			5.25	56.89	S-2*		2-2-2-2	4	
6.0			Stratum II Reddish brown fine sand and silt	6.75	55.39					
7.0			Stratum III Reddish brown fine sand with some rock fragments, pebbles	7.83	54.31	S-3**		12-13-14-13	27	
8.0										
9.0			Reddish brown fine to medium sand with rock fragments and pebbles			S-4**		11-12-12-11	24	
10.0										
11.0						S-5**		8-7-5-6	12	
12.0										
13.0										
14.0			***Notes:*** ** very moist* ***wet* *Samples S-1 and S-2 had fuel odor.*							
15.0										
16.0						S-6**		3-3-2-4	5	
17.0										
18.0						S-7**		3-3-1/12"	3	
19.0										

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Boring Number : B17

Sheet 2 of 2

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 34'
Drilling Method #2: 2" OD Split spoon sampler from 34' to 34'5"

Project Number : 4287G1
Date Drilled : 12/30/2012
Inspected by : MTU
Boring Depth: 34.42'
Ground Surface Elevation (ft msl) : 52.20'
Water Level - Immediate (ft bgs) : 4.83'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value	SAMPLING DATA: SPT GRAPH (Blows Per Foot)
							5 10 20 30 40 50			1 — 100
20.0				20.00	42.14	S-8**		2-10-19-27	29	
21.0			Orange brown fine sand with some rock fragments, some silt							
22.0										
23.0				23.00	39.14					
24.0			Stratum IVA Gray and brown weathered limestone							
25.0						S-9**		17-18-21-26	39	
26.0										
27.0										
28.0										
29.0						S-10**		50/4"	100	
30.0										
31.0										
32.0										
33.0										
34.0				34.42	27.72	S-11**		50/5"	100	
35.0			Auger Refusal on limestone bedrock							
36.0										
37.0										
38.0										

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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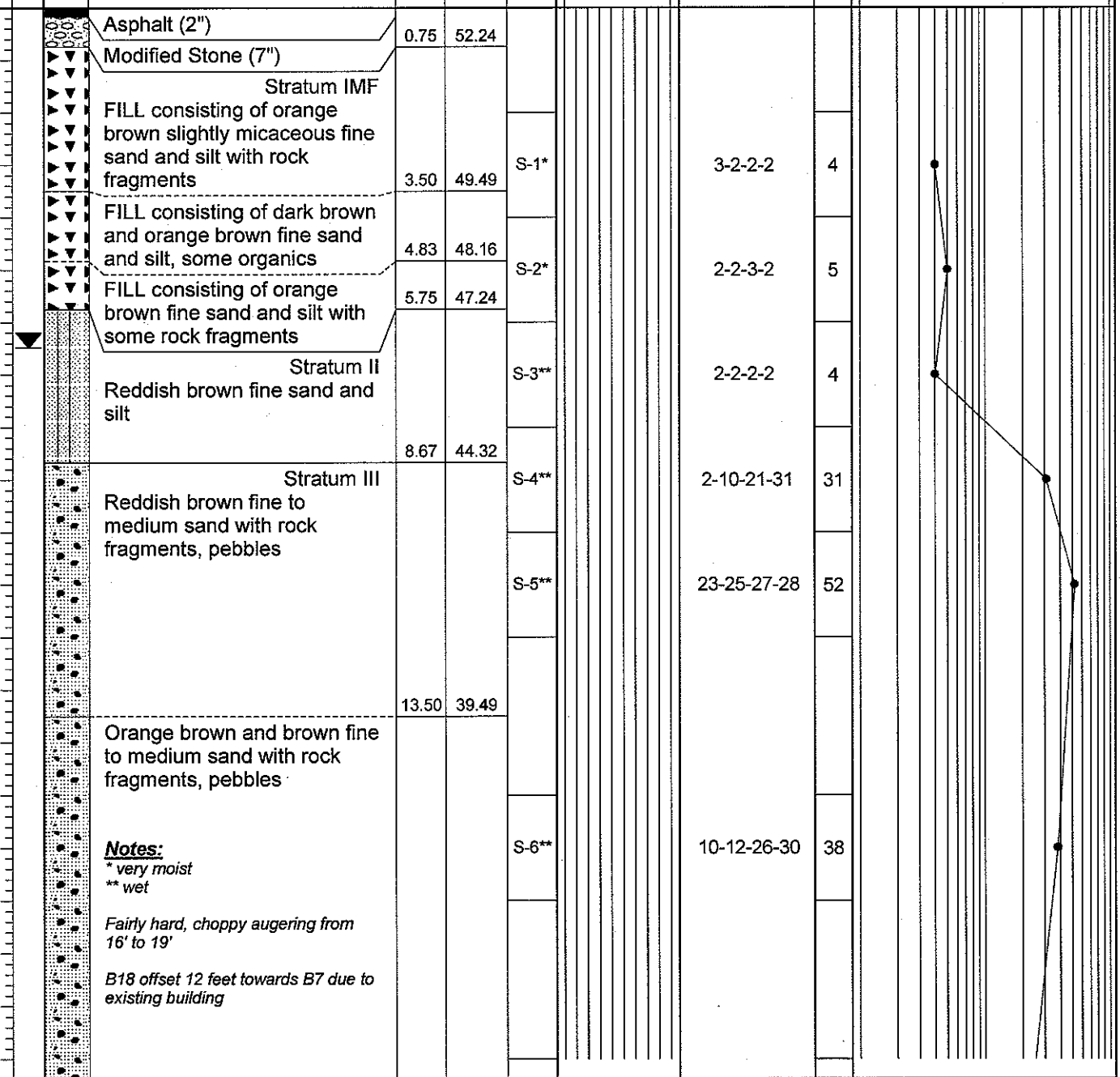
Boring Number : B18

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 37'

Project Number : 4287G1
Date Drilled : 12/24/2012
Inspected by : MTU
Boring Depth: 37.0'
Ground Surface Elevation (ft msl) : 52.99'
Water Level - Immediate (ft bgs) : 6.50'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Asphalt (2")	0.75	52.24			
			Modified Stone (7")					
			Stratum IMF FILL consisting of orange brown slightly micaceous fine sand and silt with rock fragments	3.50	49.49	S-1*	3-2-2-2	4
			FILL consisting of dark brown and orange brown fine sand and silt, some organics	4.83	48.16	S-2*	2-2-3-2	5
			FILL consisting of orange brown fine sand and silt with some rock fragments	5.75	47.24			
			Stratum II Reddish brown fine sand and silt	8.67	44.32	S-3**	2-2-2-2	4
			Stratum III Reddish brown fine to medium sand with rock fragments, pebbles	13.50	39.49	S-4**	2-10-21-31	31
						S-5**	23-25-27-28	52
			Orange brown and brown fine to medium sand with rock fragments, pebbles			S-6**	10-12-26-30	38



Notes:
** very moist*
*** wet*

Fairly hard, choppy augering from 16' to 19'

B18 offset 12 feet towards B7 due to existing building

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B18

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 37'

Project Number : 4287G1
Date Drilled : 12/24/2012
Inspected by : MTU
Boring Depth: 37.0'
Ground Surface Elevation (ft msl) : 52.99'
Water Level - Immediate (ft bgs) : 6.50'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value	SAMPLING DATA: SPT GRAPH (Blows Per Foot)
21.0						S-7**		12-12-10-9	22	
22.0										
23.0				23.00	29.99					
24.0			Stratum IVB Multi-colored weathered quartz schist							
25.0										
26.0						S-8**		14-21-31-35	52	
27.0										
28.0										
29.0										
30.0										
31.0						S-9		8-9-10-10	19	
32.0										
33.0										
34.0										
35.0										
36.0						S-10		8-8-12-11	20	
37.0				37.00	15.99					
38.0			Boring Terminated							
39.0										
40.0										

Water Content: 5 10 20 30 40 50
SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B19

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 37'

Project Number : 4287G1
Date Drilled : 1/2/2013
Inspected by : MTU
Boring Depth: 37.0'
Ground Surface Elevation (ft msl) : 51.82'
Water Level - Immediate (ft bgs) : 5.33'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value	SAMPLING DATA: SPT GRAPH (Blows Per Foot)
							5 10 20 30 40 50			1 — 100
0.0			Asphalt (4")	0.83	50.99					
1.0			Modified Stone (6")							
2.0			Stratum IMF FILL consisting of orange brown and brown fine sand and silt with rock fragments			S-1*		1-2-2-2	4	
3.0				3.17	48.65					
4.0			FILL consisting of black organic silt with some coal			S-2*		2-2-3-2	5	
5.0	▼			5.33	46.49					
6.0			Stratum II Reddish brown fine sand and silt			S-3*		2-2-3-6	5	
7.0										
8.0				8.17	43.65					
9.0			Stratum III Reddish brown fine to medium sand with rock fragments, pebbles			S-4*		12-13-21-31	34	
10.0										
11.0						S-5**		17-10-12-20	22	
12.0										
13.0										
14.0										
15.0										
16.0			***Notes:*** ** very moist* *** wet* **** moist*			S-6**		19-20-21-23	41	
17.0										
18.0										
19.0										
20.0				20.50	31.32					
21.0			Stratum IVA Orange brown, brown and grey weathered phyllitic limestone			S-7***		11-13-15-16	28	
22.0										
23.0										

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B19

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 37'

Project Number : 4287G1
Date Drilled : 1/2/2013
Inspected by : MTU
Boring Depth: 37.0'
Ground Surface Elevation (ft msl) : 51.82'
Water Level - Immediate (ft bgs) : 5.33'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value	SAMPLING DATA: SPT GRAPH (Blows Per Foot)
24.0							5 10 20 30 40 50			1 100
25.0										
26.0						S-8***		10-12-21-22	33	
27.0										
28.0										
29.0										
30.0										
31.0						S-9***		9-10-11-13	21	
32.0										
33.0										
34.0										
35.0										
36.0						S-10***		14-18-21-32	39	
37.0			Boring Terminated	37.00	14.82					
38.0										
39.0										
40.0										
41.0										
42.0										
43.0										
44.0										
45.0										
46.0										

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B20

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 37'

Project Number : 4287G1
Date Drilled : 12/21/2012
Inspected by : MTU
Boring Depth: 37.0'
Ground Surface Elevation (ft msl) : 51.20'
Water Level - Immediate (ft bgs) : 5.42'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
1.0			Concrete rubble (4")					
2.0			Modified Stone (8")					
3.0			Stratum IMF	3.42	47.78	S-1*	4-2-3-3	5
4.0			FILL consisting of orange brown and brown fine sand, some silt with rock fragments			S-2*	4-3-3-3	6
5.0	▼							
6.0				6.33	44.87	S-3*	2-1-2-2	3
7.0			FILL consisting of black fine sand, some slag, coal					
8.0								
9.0			Stratum III	9.25	41.95	S-4*	3-5-14-23	19
10.0			Reddish brown fine sand, occasional pebbles					
11.0			Reddish brown fine to medium sand with rock fragments, pebbles			S-5*	19-20-21-23	41
12.0								
13.0								
14.0								
15.0								
16.0						S-6*	18-30-26-29	56
17.0				17.50	33.70			
18.0			Stratum IVB					
19.0			Multi-colored weathered quartz schist					
20.0								
21.0						S-7**	11-14-15-17	29
22.0								
23.0								
24.0								
25.0								
26.0						S-8**	6-14-17-26	31
27.0								
28.0								
29.0								
30.0								
31.0						S-9**	8-10-11-11	21
32.0								
33.0								
34.0								
35.0								
36.0						S-10**	9-12-12-16	24
37.0				37.00	14.20			
			Boring Terminated					

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

Notes:
** wet*
*** very moist*

Fairly hard, choppy augering from 15'6" to 17'6"

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B21

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 30'
Drilling Method #2: 2" OD Split spoon sampler from 30' to 44'

Project Number : 4287G1
Date Drilled : 1/3/2013
Inspected by : MTU
Boring Depth: 44.00'
Ground Surface Elevation (ft msl) : 50.64'
Water Level - Immediate (ft bgs) : 4.17'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Stratum IMF FILL consisting of brown fine sand and silt with rock fragments	2.50	48.14			
			FILL consisting of black fine sand and silt	3.50	47.14	S-1*	2-2-1-2	3
	▼					S-2*	2-3-4-4	7
			Stratum II Reddish brown fine sand and silt	6.25	44.39			
			Stratum III Reddish brown fine sand			S-3*	4-4-6-6	10
				8.67	41.97	S-4**	7-16-27-31	43
			Brown and black fine to medium sand with rock fragments, pebbles	11.00	39.64	S-5**	31-32-35-36	67
			Orange brown fine to medium sand with rock fragments, pebbles, occasional boulders ***Notes:*** ** very moist* *** wet* *Hard, choppy augering from 19' to 22'*			S-6**	9-16-27-28	43
						S-7	50/3" N.R.	100
				22.00	28.64			
			Orange brown fine sand and silt with occasional limestone fragments	25.67	24.97			
			Stratum IVA Orange brown, brown, and grey weathered limestone			S-8**	7-33-35-21	68

Water Content: 5 10 20 30 40 50
SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B21

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 30'
Drilling Method #2: 2" OD Split spoon sampler from 30' to 44'

Project Number : 4287G1
Date Drilled : 1/3/2013
Inspected by : MTU
Boring Depth: 44.00'
Ground Surface Elevation (ft msl) : 50.64'
Water Level - Immediate (ft bgs) : 4.17'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value
30.0								
31.0						S-9**	10-13-9-6	22
32.0								
33.0						S-10	4-3-2-3 N.R.	5
34.0								
35.0						S-11**	3-5-5-9	10
36.0								
37.0						S-12**	5-10-11-6	21
38.0								
39.0						S-13**	5-12-7-7	19
40.0								
41.0						S-14**	5-4-2-6	6
42.0								
43.0						S-15**	4-14-31-38	45
44.0				44.00	6.64			
45.0			Boring Terminated					
46.0								
47.0								
48.0								
49.0								
50.0								
51.0								
52.0								
53.0								
54.0								
55.0								
56.0								
57.0								
58.0								

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B22

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 30'
Drilling Method #2: 2" OD Split spoon sampler from 30' to 36'

Project Number : 4287G1
Date Drilled : 1/2/2013
Inspected by : MTU
Boring Depth: 36.00'
Ground Surface Elevation (ft msl) : 52.39'
Water Level - Immediate (ft bgs) : 4.75'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
0			Topsoil with rock fragments (4")					
			Stratum IMF FILL consisting of brown fine sand and silt with rock fragments	2.50	49.89	S-1*	1-2-1-1	3
			FILL consisting of black fine sand, some organic silt	4.25	48.14	S-2**	1-1-1-2	2
			Stratum II Reddish brown fine sand and silt	6.50	45.89	S-3**	1-2-3-3	5
			Stratum III Reddish brown fine sand, some silt	9.33	43.06	S-4**	4-5-7-17	12
			Brown fine to medium sand with rock fragments, pebbles	13.50	38.89	S-5**	20-21-24-32	45
			Orange brown fine to medium sand with rock fragments, pebbles			S-6**	20-27-30-31	57
			Notes: ** very moist* *** wet* *Fairly hard to hard, choppy augering from 21'3" to 23'*			S-7**	28-42-50/3"	100

Water Content: 5 10 20 30 40 50
SPT GRAPH (Blows Per Foot): 1 – 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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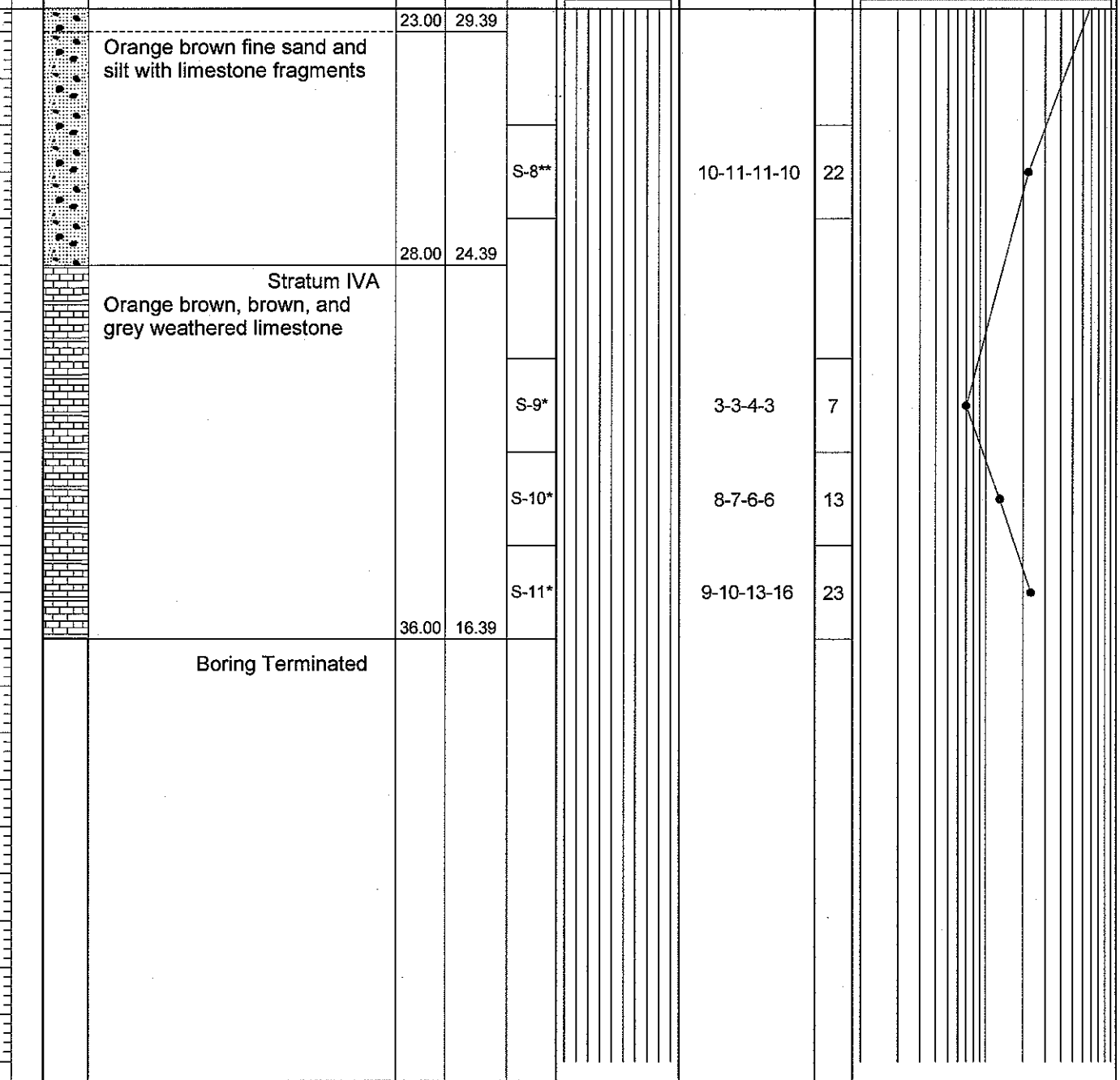
Boring Number : B22

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 30'
Drilling Method #2: 2" OD Split spoon sampler from 30' to 36'

Project Number : 4287G1
Date Drilled : 1/2/2013
Inspected by : MTU
Boring Depth: 36.00'
Ground Surface Elevation (ft msl) : 52.39'
Water Level - Immediate (ft bgs) : 4.75'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value
				23.00	29.39			
23.0			Orange brown fine sand and silt with limestone fragments					
24.0								
25.0								
26.0						S-8**	10-11-11-10	22
27.0								
28.0				28.00	24.39			
29.0			Stratum IVA Orange brown, brown, and grey weathered limestone					
30.0								
31.0						S-9*	3-3-4-3	7
32.0								
33.0						S-10*	8-7-6-6	13
34.0								
35.0						S-11*	9-10-13-16	23
36.0				36.00	16.39			
37.0			Boring Terminated					
38.0								
39.0								
40.0								
41.0								
42.0								
43.0								
44.0								
45.0								



The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B23

Sheet 1 of 2

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 30'
Drilling Method #2: 2" OD Split spoon sampler from 30' to 36'

Project Number : 4287G1
Date Drilled : 1/2/2013
Inspected by : MTU
Boring Depth: 36.00'
Ground Surface Elevation (ft msl) : 51.97'
Water Level - Immediate (ft bgs) : 4.83'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Stratum IMF FILL consisting of brown fine sand and silt with rock fragments					
				3.00	48.97	S-1*	2-2-2-2	4
			FILL consisting of black organic silt, some coal					
	▼			4.50	47.47	S-2*	2-3-3-5	6
			Stratum II Reddish brown fine sand and silt	5.25	46.72			
			Stratum III Reddish brown fine sand, some silt			S-3*	5-6-5-5	11
				8.17	43.80			
			Reddish brown fine sand, occasional rock fragments	9.25	42.72	S-4*	15-16-28-36	44
			Reddish brown fine sand, some medium sand with rock fragments, pebbles			S-5**	29-34-50/4"	100
				11.50	40.47			
			Orange brown fine to medium sand with rock fragments, pebbles, occasional boulders			S-6**	50/5"	100
						S-7**	21-28-30-34	58

Water Content: 5 10 20 30 40 50
SPT GRAPH (Blows Per Foot): 1 — 100

Notes:
** very moist*
*** wet*

Hard augering from 11'6" to 13'6"

Fairly hard augering from 15'6" to 22'6"

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B23

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 30'
Drilling Method #2: 2" OD Split spoon sampler from 30' to 36'

Project Number : 4287G1
Date Drilled : 1/2/2013
Inspected by : MTU
Boring Depth: 36.00'
Ground Surface Elevation (ft msl) : 51.97'
Water Level - Immediate (ft bgs) : 4.83'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (5 10 20 30 40 50)	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value	SAMPLING DATA: SPT GRAPH (Blows Per Foot) (1 – 100)
25.0										
26.0						S-8**		14-19-20-19	39	
27.0										
28.0				28.00	23.97					
29.0			Stratum IVA Orange brown, tan, and grey weathered phyllitic limestone							
30.0										
31.0						S-9*		2-3-3-4	6	
32.0										
33.0						S-10*		4-5-6-8	11	
34.0										
35.0						S-11*		12-13-14-23	27	
36.0				36.00	15.97					
37.0			Boring Terminated							
38.0										
39.0										
40.0										
41.0										
42.0										
43.0										
44.0										
45.0										
46.0										
47.0										
48.0										

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B24

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 36.42'

Project Number : 4287G1
Date Drilled : 12/27/2012
Inspected by : MTU
Boring Depth: 36.42'
Ground Surface Elevation (ft msl) : 56.29'
Water Level - Immediate (ft bgs) : 8.83'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SPT DATA	SPT Value
0.0			Stratum IMF FILL consisting of brown fine sand with rock fragments, boulders	3.00	53.29	S-1*	2-1-1-2	2
3.0			FILL consisting of black fine sand, some slag, coal, some brick			S-2*	1-1-1-2	2
5.0						S-3*	2-2-2-1	4
7.0						S-4*	2-2-3-3	5
9.0	▼			9.50	46.79	S-5*	3-3-5-12	8
10.0			Stratum II Reddish brown fine sand and silt	11.58	44.71	S-6**	38-50/4"	100
12.0			Stratum III Reddish brown fine sand, some medium sand with rock fragments, pebbles	14.00	42.29	S-7*	30-32-50/4"	100
14.0			Orange brown fine to medium sand with rock fragments, pebbles					
16.0								
18.0								
20.0								

SPT GRAPH (Blows Per Foot): 1 – 100; Water Content: 5 10 20 30 40 50

Notes:
** wet*
*** moist*

Hard choppy augering from 12'6" to 18'6" and from 21' to 22'6"

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B24

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 36.42'

Project Number : 4287G1
Date Drilled : 12/27/2012
Inspected by : MTU
Boring Depth: 36.42'
Ground Surface Elevation (ft msl) : 56.29'
Water Level - Immediate (ft bgs) : 8.83'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (5 10 20 30 40 50)	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value	SAMPLING DATA: SPT GRAPH (Blows Per Foot) (1 – 100)
21.0						S-8*		48-50/4"	100	
22.0				22.50	33.79					
23.0			Orange brown and tan fine sand and silt							
24.0										
25.0										
26.0						S-9*		8-9-16-28	25	
27.0										
28.0										
29.0										
30.0										
31.0						S-10**		10-12-27-41	39	
32.0										
33.0										
34.0										
35.0										
36.0				36.17	20.12	S-11**		21-32-50/5"	100	
37.0			Stratum IVB Orange brown and brown weathered quartz schist							
38.0			Spoon Refusal on dense weathered schist							
39.0										
40.0										

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B25

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 39.92'

Project Number : 4287G1
Date Drilled : 12/24/2012
Inspected by : MTU
Boring Depth: 39.92'
Ground Surface Elevation (ft msl) : 55.33'
Water Level - Immediate (ft bgs) : 7.75'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Topsoil with rock fragments (3")					
			Stratum IMF FILL consisting of brown and orange brown fine sand with rock fragments	3.00	52.33	S-1*	2-3-4-4	7
			FILL consisting of fine sand, some slag, coal, some silt			S-2*	2-3-3-3	6
				7.00	48.33	S-3**	3-3-3-3	6
			Grey organic silt			S-4*	3-4-5-4	9
			Stratum II Reddish brown fine sand and silt	11.33	44.00	S-5*	2-2-4-21	6
			Stratum III Reddish brown fine sand, some medium sand with rock fragments	14.00	41.33	S-6**	24-39-50/4"	100
			Orange brown fine to medium sand with rock fragments, pebbles			S-7**	35-50/5"	100
				19.00	36.33			
			Orange brown fine sand and silt	21.25	34.08	S-8	11-20-34-38	54
			Stratum IVA Multi-colored weathered phyllitic limestone					

Water Content: 5 10 20 30 40 50
SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B25

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 39.92'

Project Number : 4287G1
Date Drilled : 12/24/2012
Inspected by : MTU
Boring Depth: 39.92'
Ground Surface Elevation (ft msl) : 55.33'
Water Level - Immediate (ft bgs) : 7.75'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (5 10 20 30 40 50)	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value	SAMPLING DATA: SPT GRAPH (Blows Per Foot) (1 – 100)
26.0						S-9*		17-25-11-50/4"	36	
27.0										
28.0										
29.0										
30.0										
31.0						S-10*		9-11-13-16	24	
32.0										
33.0										
34.0										
35.0										
36.0						S-11		1/12"-1/12" N.R.	1	
37.0										
38.0						S-12		2-3-5-10	8	
39.0						S-13		23-50/5"	100	
40.0				39.92	15.41					
41.0			Boring Terminated							
42.0										
43.0										
44.0										
45.0										
46.0										
47.0										
48.0										
49.0										
50.0										

Notes:
** very moist*
*** wet*

Fairly hard, choppy augering from 13'

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B26

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 29'
Drilling Method #2: 2" OD Split spoon sampler from 29' to 45'

Project Number : 4287G1
Date Drilled : 12/19/2012
Inspected by : MTU
Boring Depth: 45.00'
Ground Surface Elevation (ft msl) : 52.97'
Water Level - Immediate (ft bgs) : 6.17'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Stratum IMF	1.00	51.97			
1.0			FILL consisting of black fine sand with rock fragments, brick, concrete, boulders					
2.0								
3.0			Concrete			S-1*	2-1-1-1	2
4.0			FILL consisting of black fine sand, some slag, coal					
5.0						S-2*	1-1-1-2	2
6.0	▼			6.00	46.97			
7.0			Reddish brown and grey slightly organic silt			S-3*	1/12"-1-3	1
8.0				8.25	44.72			
9.0			Stratum III			S-4*	4-4-5-8	9
10.0			Reddish brown and orange brown fine sand and silt	10.17	42.80			
11.0			Reddish brown fine to medium sand with rock fragments, pebbles			S-5**	12-15-17-24	32
12.0								
13.0								
14.0				14.00	38.97			
15.0			Orange brown fine sand and silt with occasional rock fragments					
16.0						S-6**	1/24"	1
17.0								
18.0						S-7**	1-2-8-9	10
19.0								
20.0				20.00	32.97	S-8**	8-11-10-8	21
21.0			Stratum IVA Grey and brown weathered limestone					
22.0								
23.0								
24.0								
25.0						S-9**	11-12-13-12	25
26.0								
27.0								

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B26

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 29'
Drilling Method #2: 2" OD Split spoon sampler from 29' to 45'

Project Number : 4287G1
Date Drilled : 12/19/2012
Inspected by : MTU
Boring Depth: 45.00'
Ground Surface Elevation (ft msl) : 52.97'
Water Level - Immediate (ft bgs) : 6.17'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (5 10 20 30 40 50)	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value	SAMPLING DATA: SPT GRAPH (Blows Per Foot) (1 – 100)
28.0										
29.0										
30.0						S-10**		2-2-4-5	6	
31.0										
32.0						S-11**		5-7-6-6	13	
33.0										
34.0						S-12**		2-1-1/12"	1	
35.0										
36.0										
37.0						S-13**		1/48"	1	
38.0										
39.0										
40.0						S-14**		2-2-6-3	8	
41.0										
42.0						S-15**		1/12"-1/18"	1	
43.0										
44.0						S-16**		6-28-33-35	61	
45.0				45.00	7.97					
46.0			Boring Terminated							
47.0										
48.0										
49.0										
50.0										
51.0										
52.0										
53.0										
54.0										

Notes:
** very moist*
*** wet*

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B27

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 35.08'

Project Number : 4287G1
Date Drilled : 12/24/2012
Inspected by : MTU
Boring Depth: 35.08'
Ground Surface Elevation (ft msl) : 55.80'
Water Level - Immediate (ft bgs) : 9.67'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Top soil with rock fragments, concrete (4")					
			Stratum IMF	3.00	52.80			
			FILL consisting of concrete boulders, brick, some brown fine sand			S-1*	2-3-2-2	5
			Concrete			S-2*	2-2-1-1	3
			FILL consisting of black fine sand, cinders, some slag, coal, some brick	8.17	47.63	S-3*	2-1-1-2	2
	▼		Grey organic silt	9.75	46.05	S-4*	5-6-6-5	12
			Stratum II	12.67	43.13	S-5*	5-14-35-42	49
			Reddish brown fine sand and silt					
			Stratum III			S-6*	12-15-21-24	36
			Reddish brown fine sand, some medium sand with rock fragments	18.00	37.80			
			Orange brown fine to medium sand with rock fragments, pebbles, occasional boulders			S-7**	35-41-50/5"	100
			Stratum IVB	23.50	32.30			
			Orange brown, brown, and grey weatehred quartz schist			S-8**	6-9-12-13	21
			Notes: ** very moist* *** wet* *Fairly hard choppy augering from 19' to 23'6"* *Hard augering from 33'6"* *Very hard augering from 34'6"*			S-9**	5-6-7-8	13
			Boring Terminated	35.08	20.72	S-10	50/1" N.R.	100

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

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Boring Number : B28

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 32.67'
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 12/20/2012
Inspected by : MTU
Boring Depth: 32.67'
Ground Surface Elevation (ft msl) : 56.12'
Water Level - Immediate (ft bgs) : 7.17'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	Water Content 5 10 20 30 40 50	SPT DATA	SPT Value	SPT GRAPH (Blows Per Foot) 1 100
			Topsoil with rock fragments (3")							
			Stratum IMF FILL consisting of orange brown fine sand and silt with rock fragments, slag	3.00	53.12	S-1*		2-3-4-4	7	
						S-2*		4-4-6-7	10	
			FILL consisting of black and orange brown fine sand, some slag, coal			S-3*		5-6-5-3	11	
				8.50	47.62	S-4**		2-3-2-1	5	
			Reddish brown and brown organic silt with roots			S-5**		2-2-2-2	4	
				12.25	43.87					
			Stratum II Reddish brown fine sand and silt	13.25	42.87	S-6*		2-8-16-40	24	
				14.50	41.62					
			Stratum III Reddish brown fine sand, some medium sand with occasional rock fragments			S-7***		13-22-21-19	43	
			Reddish brown fine to medium sand with rock fragments, pebbles	21.00	35.12	S-8**		9-13-8-16	21	
			Stratum IVA Orange brown, tan, and grey weathered limestone			S-9		50/5"	100	
						S-10		50/1" N.R.	100	
				32.67	23.45					
			Auger Refusal on limestone bedrock							

Notes:
** moist*
*** very moist*
**** wet*

Hard augering from 25'6"

Very hard augering from 29'6"

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Boring Number : B29

Sheet 1 of 2

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 36.75'

Project Number : 4287G1
Date Drilled : 12/27/2012
Inspected by : MTU
Boring Depth: 36.75'
Ground Surface Elevation (ft msl) : 55.78'
Water Level - Immediate (ft bgs) : 7.33'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value	SAMPLING DATA: SPT GRAPH (Blows Per Foot)
			Stratum IMF FILL consisting of dark brown fine sand with rock fragments, some boulders				5 10 20 30 40 50			1 100
				3.00	52.78	S-1*		2-3-2-2	5	
			FILL consisting of black and orange brown fine sand, some slag, coal, cinders			S-2*		3-3-2-1	5	
						S-3**		1-1-1-1	2	
				8.17	47.61	S-4*		1/12"-1-2	1	
			Grey organic silt	10.17	45.61					
			Reddish brown slightly organic silt	10.58	45.20	S-5*		2-3-3-4	6	
				11.25	44.53					
			Stratum II Reddish brown fine sand and silt	12.67	43.11	S-6*		9-29-42-54	71	
			Orange brown fine sand and silt, some clay							
			Stratum III Reddish brown fine sand, some medium sand with rock fragments, pebbles	14.50	41.28	S-7**		50/5"	100	
			Orange brown fine to medium sand with rock fragments, pebbles							

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Boring Number : B29

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 36.75'

Project Number : 4287G1
Date Drilled : 12/27/2012
Inspected by : MTU
Boring Depth: 36.75'
Ground Surface Elevation (ft msl) : 55.78'
Water Level - Immediate (ft bgs) : 7.33'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value	SAMPLING DATA: SPT GRAPH (Blows Per Foot)
20.0							5 10 20 30 40 50			1 100
21.0						S-8**		29-32-39-44	71	
22.0										
23.0				23.00	32.78					
24.0			Stratum IVB Multi-colored weathered schist							
25.0										
26.0						S-9*		14-15-19-32	34	
27.0										
28.0										
29.0			***Notes:*** ** very moist* *** wet*							
30.0			*Hard augering from 14'3" to 16'6"*			S-10		29-50/5"	100	
31.0			*Hard augering from 31' to 32'6"*							
32.0										
33.0										
34.0										
35.0										
36.0						S-11		17-20-44-50/3"	64	
37.0				36.75	19.03					
38.0			Boring Terminated							

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Boring Number : B30

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 35.17'

Project Number : 4287G1
Date Drilled : 12/20/2012
Inspected by : MTU
Boring Depth: 35.17'
Ground Surface Elevation (ft msl) : 53.91'
Water Level - Immediate (ft bgs) : 7.25'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Topsoil (4")					
			Stratum IMF FILL consisting of orange brown fine sand and silt with some slag, rock fragments, coal, brick			S-1*	2-2-3-2	5
						S-2*	2-2-2-2	4
	▼			7.00	46.91	S-3*	3-2-2-2	4
			Brown and reddish brown organic silt			S-4*	2-2-4-4	6
				9.43	44.48			
			Stratum II	10.25	43.66			
			Reddish brown fine sand and silt, some clay			S-5**	13-26-32-36	58
			Stratum III Reddish brown fine to medium sand with rock fragments, pebbles			S-6***	18-23-32-34	55
				18.00	35.91			
			Stratum IV Multi-colored weathered schist			S-7	50/5"	100
						S-8	50/4"	100
			Notes: ** very moist* *** moist* **** wet* *Hard augering from 18'*			S-9	50/2" N.R.	100
				35.17	18.74	S-10	50/2" N.R.	100
			Boring Terminated					

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B31

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 31.42'
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 12/21/2012
Inspected by : MTU
Boring Depth: 31.42'
Ground Surface Elevation (ft msl) : 55.18'
Water Level - Immediate (ft bgs) : 6.42'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Brown fine sand with rock fragments					
				3.00	52.18	S-1*	2-3-4-5	7
			Stratum IMF FILL consisting of black fine sand with some slag, coal fragments and coal dirt			S-2*	6-4-3-3	7
	▼					S-3*	2-2-3-3	5
						S-4*	2-2-2-3	4
				10.00	45.18			
			Stratum II Reddish brown fine sand and silt			S-5	1/12"-1-2 N.R.	1
				12.67	42.51	S-6*	1-12-22-35	34
			Stratum III Reddish brown fine to medium sand with rock fragments, pebbles, occasional boulders			S-7	50/1" N.R.	100
				21.00	34.18	S-8**	8-6-13-15	19
			Stratum IVB Multi-colored weathered schist			S-9*	11-16-19-21	35
			Notes: ** wet* *** very moist* *Very hard choppy augering from 14'6" to 15'9"* *Very hard augering from 29'6"*			S-10	50/2" N.R.	100
				31.42	23.76			
			Auger Refusal on schist bedrock					

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B32

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 26.50'
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 12/19/2012
Inspected by : MTU
Boring Depth: 26.50'
Ground Surface Elevation (ft msl) : 56.12'
Water Level - Immediate (ft bgs) : 9.17'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Topsoil (3")					
			Stratum IMF FILL consisting of orange brown fine sand and silt, some clay with pebbles	3.00	53.12	S-1*	2-2-3-3	5
			FILL consisting of black and orange brown fine sand, some slag, coal, brick			S-2*	3-3-4-2	7
						S-3*	3-3-3-3	6
	▼					S-4*	3-3-2-2	5
			Brown and reddish brown slightly organic silt with some roots	9.50	46.62	S-5*	2-1-2-1	3
			Stratum II Orange brown and reddish brown fine sand and silt, trace of clay	12.25	43.87	S-6*	2-4-7-23	11
			Stratum III Reddish brown fine to medium sand with rock fragments, pebbles	13.75	42.37	S-7*	42-50/5"	100
			Stratum IVB Multi-colored weathered phyllite	18.00	38.12	S-8	16-31-50/4"	100
			Notes: ** very moist* *Hard augering from 20'4"*			S-9	50/2" N.R.	100
			Auger Refusal on schist bedrock	26.50	29.62			

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B33

Sheet 1 of 2

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 34'
Drilling Method #2: 2" OD Split spoon sampler from 34' to 34.08'

Project Number : 4287G1
Date Drilled : 12/27/2012
Inspected by : MTU
Boring Depth: 34.08'
Ground Surface Elevation (ft msl) : 55.90'
Water Level - Immediate (ft bgs) : 8.92'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Stratum IMF FILL consisting of concrete fragments and boulders with rock fragments, fine sand					
				3.50	52.40	S-1*	3-2-2-2	4
			FILL consisting of black fine sand, some slag, coal, cinders, brick			S-2*	2-2-1-1	3
				7.00	48.90	S-3*	1/12"-1/12"	1
			Reddish brown and brown slightly organic silt			S-4*	1/12"-1/12"	1
				10.50	45.40	S-5**	1-2-2-2	4
			Stratum II Reddish brown fine sand and silt, trace of clay	12.25	43.65	S-6*	3-3-6-6	9
			Orange brown fine sand and silt, some clay	14.00	41.90	S-7**	18-42-50/4"	100
			Orange brown fine sand and silt, some clay with some rock fragments and pebbles	17.00	38.90			
			Stratum III Orange brown fine to medium sand with rock fragments, pebbles	20.00	35.90	S-8	23-16-13-22	29
			Stratum IVB Multi-colored weathered schist			S-9	50/3"	100

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B33

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 34'
Drilling Method #2: 2" OD Split spoon sampler from 34' to 34.08'

Project Number : 4287G1
Date Drilled : 12/27/2012
Inspected by : MTU
Boring Depth: 34.08'
Ground Surface Elevation (ft msl) : 55.90'
Water Level - Immediate (ft bgs) : 8.92'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value
29.0						S-10	50/2" N.R.	100
34.0				34.08	21.82	S-11	50/1" N.R.	100
			Boring Terminated					

Water Content: 5 10 20 30 40 50
SPT GRAPH (Blows Per Foot): 1 — 100

Notes:
** very moist*
*** wet*

Very hard augering from 21'6" to 23'

Hard augering from 23'

Very hard augering from 31'

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B34

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 34'
Drilling Method #2: 2" OD Split spoon sampler from 34' to 34.17'

Project Number : 4287G1
Date Drilled : 12/21/2012
Inspected by : MTU
Boring Depth: 34.17'
Ground Surface Elevation (ft msl) : 54.04'
Water Level - Immediate (ft bgs) : 5.75'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Topsoil (4")					
			Stratum IMF FILL consisting of orange brown fine sand and silt with some rock fragments	3.50	50.54	S-1*	1-2-3-2	5
	▼		FILL consisting of black fine sand, some slag, coal fragments and coal dirt, some wood			S-2*	2-2-2-2	4
						S-3*	1-2-3-2	5
				8.25	45.79			
			Brown and reddish brown organic silt with roots	9.50	44.54	S-4*	2-2-2-3	4
			Stratum II Orange brown fine sand and silt, some clay			S-5*	2-3-4-6	7
						S-6*	5-8-10-10	18
				14.25	39.79			
			Stratum III Reddish brown fine sand, some medium sand with rock fragments			S-7*	29-37-41-46	78
				17.50	36.54			
			Reddish brown fine to medium sand with rock fragments, pebbles			S-8**	24-27-28-30	55
				22.00	32.04			
			Stratum IVB Multi-colored weathered schist			S-9	50/3"	100

Water Content: 5 10 20 30 40 50
SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B34

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 34'
Drilling Method #2: 2" OD Split spoon sampler from 34' to 34.17'

Project Number : 4287G1
Date Drilled : 12/21/2012
Inspected by : MTU
Boring Depth: 34.17'
Ground Surface Elevation (ft msl) : 54.04'
Water Level - Immediate (ft bgs) : 5.75'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: Water Content (5 10 20 30 40 50)	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value	SAMPLING DATA: SPT GRAPH (Blows Per Foot) (1 – 100)
26.0										
27.0										
28.0										
29.0						S-10		50/2"	100	
30.0								N.R.		
31.0										
32.0										
33.0										
34.0				34.17	19.87	S-11		50/2"	100	
35.0			Boring Terminated					N.R.		
36.0										
37.0										
38.0										
39.0										
40.0										
41.0										
42.0										
43.0										
44.0										
45.0										
46.0										
47.0										
48.0										
49.0										
50.0										

Notes:
** very moist*
*** wet*

Hard augering from 22'

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B35

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 35.17'

Project Number : 4287G1
Date Drilled : 12/20/2012
Inspected by : MTU
Boring Depth: 35.17'
Ground Surface Elevation (ft msl) : 53.31'
Water Level - Immediate (ft bgs) : 6.08'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Topsoil (4")					
			Stratum IMF FILL consisting of brown and orange brown fine sand and silt with rock fragments	3.00	50.31	S-1*	2-2-2-2	4
			FILL consisting of black fine sand, some slag, coal			S-2*	2-2-7-6	9
				7.00	46.31	S-3*	6-4-2-2	6
			Reddish brown and brown slightly organic fine sand and silt	8.50	44.81	S-4*	3-6-6-7	12
			Stratum II Reddish brown fine sand and silt, some clay			S-5*	5-8-8-11	16
				12.17	41.14	S-6	20-46-50/3"	100
			Stratum III Reddish brown fine sand, some medium sand with rock fragments	14.50	38.81			
			Reddish brown fine to medium sand with rock fragments, pebbles			S-7**	13-16-21-24	37

Water Content: 5 10 20 30 40 50
SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B35

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 35.17'

Project Number : 4287G1
Date Drilled : 12/20/2012
Inspected by : MTU
Boring Depth: 35.17'
Ground Surface Elevation (ft msl) : 53.31'
Water Level - Immediate (ft bgs) : 6.08'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value
19.0								
20.0				20.50	32.81			
21.0			Stratum IVB Multi-colored weathered phyllite			S-8*	15-18-39-49	57
22.0								
23.0								
24.0								
25.0						S-9	50/2" N.R.	100
26.0								
27.0								
28.0								
29.0								
30.0						S-10	50/1" N.R.	100
31.0								
32.0			***Notes:*** ** very moist* *** wet*					
33.0			*Hard augering from 22'6"*					
34.0								
35.0				35.17	18.14	S-11	50/2" N.R.	100
36.0			Boring Terminated					

SAMPLING DATA: Water Content (5 10 20 30 40 50)
SAMPLING DATA: SPT GRAPH (Blows Per Foot) (1 – 100)

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B36

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 29.17'
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 1/8/2013
Inspected by : MTU
Boring Depth: 29.17'
Ground Surface Elevation (ft msl) : 50.93'
Water Level - Immediate (ft bgs) : 4.17'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	Water Content	SPT DATA	SPT Value
			LITHOLOGY			SAMPLING DATA			
1.0			Topsoil with rock fragments (2")						
2.0			Stratum IMF						
3.0			FILL consisting of orange brown, brown and black fine sand and silt with rock fragments			S-1*		1-3-4-5	7
4.0	▼			4.50	46.43				
5.0				5.75	45.18	S-2**		4-3-3-2	6
6.0			FILL consisting of black and some slag, cinders, coal						
7.0						S-3**		2-3-3-4	6
8.0			Reddish brown and brown organic silt	8.17	42.76				
9.0			Stratum III			S-4*		15-22-18-26	40
10.0			Reddish brown fine to medium sand with rock fragments, pebbles						
11.0						S-5**		23-16-15-19	31
12.0									
13.0									
14.0									
15.0						S-6		50/2"	100
16.0				16.00	34.93			N.R.	
17.0			Stratum IVB						
18.0			Multi-colored weathered quartz schist						
19.0									
20.0									
21.0						S-7*		8-22-31-43	53
22.0			***Notes:*** ** very moist* *** wet*						
23.0			*Hard choppy augering from 12'6" to 15'9"*						
24.0									
25.0			*Hard augering from 27'*						
26.0			*Very hard augering from 29'*			S-8*		10-16-38-50/4"	54
27.0									
28.0									
29.0				29.17	21.76				
30.0			Auger Refusal on schist bedrock						

SPT GRAPH (Blows Per Foot) 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B37

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 20.67'
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 1/8/2013
Inspected by : MTU
Boring Depth: 20.67'
Ground Surface Elevation (ft msl) : 65.08'
Water Level - Immediate (ft bgs) : 4.42'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Topsoil with rock fragments (5")					
			Stratum IF FILL consisting of brown and orange brown fine sand and silt with rock fragmets	3.00 4.00	62.08 61.08	S-1*	2-2-2-2	4
			Stratum IMF FILL consisting of black slag, coal, occasional rock fragments	7.33	57.75	S-2*	1-1-1-1	2
			Stratum II Reddish brown fine sand and silt			S-3*	2-2-7-11	9
			Stratum III Reddish brown fine to medium sand with rock fragments, pebbles, occasional boulders	14.00	51.08	S-4**	12-13-18-21	31
						S-5**	46-50/2"	100
			Orange brown fine sand, trace of silt with some small pebbles	19.25	45.83	S-6*	14-17-29-53	46
			Stratum IVB Multi-colored weathered schist	20.67	44.41	S-7	50/1" N.R.	100
			Auger Refusal					

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

Notes:
** very moist*
*** wet*

Hard, choppy augering from 10'3" to 14'

Very hard augering from 19'3".

First attempt auger refusal at 20'8".

Second attempt 10 feet towards B21. Very hard augering from 20'. Auger refusal at 21'7".

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Boring Number : B38

Sheet 1 of 2

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 33.67'
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 1/4/2013
Inspected by : MTU
Boring Depth: 33.67'
Ground Surface Elevation (ft msl) : 53.29'
Water Level - Immediate (ft bgs) : 6.17'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value
0			Topsoil (3")					
			Stratum IMF FILL consisting of brown fine sand and silt with some rock fragments	3.25	50.04	S-1*	3-2-2-3	4
			FILL consisting of black fine sand, coal dirt, some orange brown fine sand, coal, cinders			S-2*	4-4-3-3	7
	▼			6.17	47.12			
			Black organic silt			S-3**	1/12"-1/12"	1
				8.33	44.96			
			Stratum III Reddish brown fine to medium sand with rock fragments, pebbles			S-4**	2-8-9-8	17
						S-5***	10-14-19-24	33
						S-6***	28-43-50/3"	100

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

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Boring Number : B38

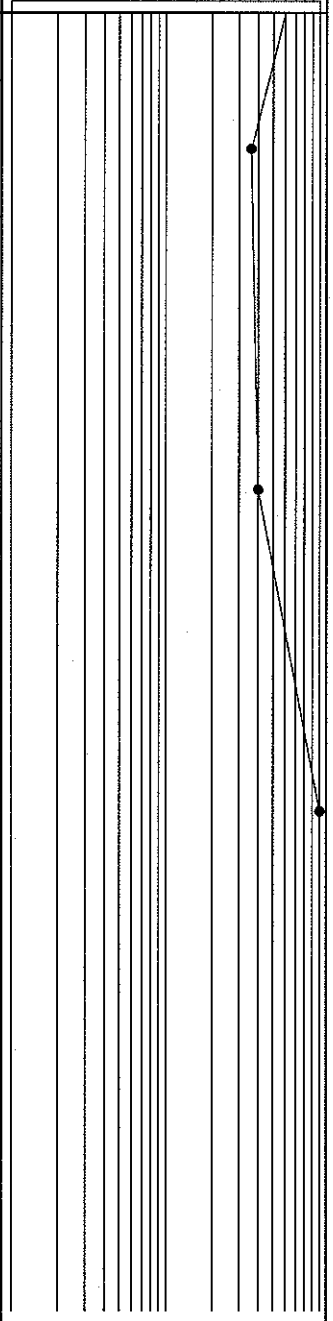
Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 33.67'
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 1/4/2013
Inspected by : MTU
Boring Depth: 33.67'
Ground Surface Elevation (ft msl) : 53.29'
Water Level - Immediate (ft bgs) : 6.17'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value
20.0								
21.0				21.00	32.29	S-7***	13-16-20-21	36
22.0			Stratum IVA Orange brown, brown and grey weathered limestone					
23.0								
24.0								
25.0								
26.0						S-8***	8-8-32-21	40
27.0								
28.0								
29.0								
30.0								
31.0						S-9***	18-31-50/5"	100
32.0								
33.0				33.67	19.62			
34.0			Auger Refusal on limestone bedrock					
35.0								
36.0								
37.0								
38.0								

SAMPLING DATA: Water Content (5 10 20 30 40 50)

SAMPLING DATA: SPT GRAPH (Blows Per Foot) (1 – 100)



Notes:
** moist*
*** very moist*
**** wet*

Hard augering from 31'6"

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B39

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 25'
Drilling Method #2: 2" OD Split spoon sampler from 25' to 37'

Project Number : 4287G1
Date Drilled : 1/4/2013
Inspected by : MTU
Boring Depth: 37.00'
Ground Surface Elevation (ft msl) : 54.61'
Water Level - Immediate (ft bgs) : 7.33'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Topsoil (3")					
			Stratum IMF FILL consisting of brown and dark brown fine sand and silt with rock fragments	3.00	51.61	S-1	2-3-4-3	7
			FILL consisting of black fine sand and silt wtih coal dirt, some brick and orange brown fine sand			S-2	4-4-5-4	9
				6.50	48.11			
			Reddish brown slightly organic silt	7.25	47.36	S-3	2-2-2-2	4
			Stratum II Reddish brown fine sand and silt			S-4	2-2-3-6	5
				9.83	44.78			
			Stratum III Reddish brown fine sand, some silt with occasional pebbles	10.50	44.11	S-5	9-16-17-17	33
			Orange brown fine to medium sand with rock fragments, pebbles, occasional boulders			S-6	50/2" N.R.	100
				18.50	36.11			
			Stratum IVB Multi-colored weathered schist					

Water Content: 5 10 20 30 40 50
SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B39

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 25'
Drilling Method #2: 2" OD Split spoon sampler from 25' to 37'

Project Number : 4287G1
Date Drilled : 1/4/2013
Inspected by : MTU
Boring Depth: 37.00'
Ground Surface Elevation (ft msl) : 54.61'
Water Level - Immediate (ft bgs) : 7.33'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value
21.0						S-7	7-7-13-14	20
22.0								
23.0								
24.0								
25.0								
26.0				26.00	28.61	S-8	5-5-3-11	8
27.0			Stratum IVA Grey and tan pinnacled weathered limestone					
28.0						S-9	11-12-6-6 N.R.	18
29.0								
30.0			***Notes:***			S-10	6-7-6-5	13
31.0			*Samples S-1 and S-2 were moist. Samples S-3 and S-4 were very moist. Samples S-5, S-8, and S-10 through S-13 were wet.*					
32.0						S-11	7-8-7-3	15
33.0			*The spoon bent on pinnacled limestone during sampling for S-9. Cleaned out spoon, straightened it a bit and drove it continuously from 29' to 37'. Bent again.*					
34.0						S-12	2-9-10-13	19
35.0			*Very hard, choppy augering from 14'6" to 18'6"*					
36.0						S-13	13-16-31-46	47
37.0				37.00	17.61			
38.0			Boring Terminated					
39.0								
40.0								

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B40

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 30'
Drilling Method #2: 2" OD Split spoon sampler from 30' to 48.83'

Project Number : 4287G1
Date Drilled : 1/8/2013
Inspected by : MTU
Boring Depth: 48.83'
Ground Surface Elevation (ft msl) : 52.97'
Water Level - Immediate (ft bgs) : 4.75'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value
			Topsoil (3")					
			Stratum IMF FILL consisting of orange brown and brown fine sand and silt with rock fragments, brick	6.25	46.72	S-1*	3-2-2-1	4
						S-2*	2-2-3-3	5
						S-3**	1-1-1-2	2
			Stratum II Brown fine sand and silt	9.50	43.47	S-4**	2-3-3-8	6
						S-5**	24-31-50/5"	100
			Stratum III Orange brown fine to medium sand with rock fragments, pebbles			S-6**	44-27-38-54	65
				19.00	33.97			
			Orange brown fine sand and silt and fine sand layers with some phyllitic limestone fragments			S-7*	11-15-16-14	31
						S-8*	8-20-28-37	48
						S-9*	1/12"-1-1 N.R.	1
						S-10*	7-10-11-5	21
						S-11*	5-4-6-5	10
						S-12*	5-5-4-4	9
						S-13*	5-6-6-7	12
						S-14*	5-5-5-5	10
						S-15*	4-4-3-4	7
						S-16*	3-3-2-2	5
				47.00	5.97	S-17*	3-4-4-4	8
			Stratum IVA Grey and orange brown weathered limestone	48.83	4.14	S-18*	23-50/4"	100
			Spoon Refusal on dense weathered limestone					

Notes:
** very moist*
*** wet*

Hard augering from 11'6" to 14'6"

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B41

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 25'
Drilling Method #2: 2" OD Split spoon sampler from 25' to 45'

Project Number : 4287G1
Date Drilled : 1/7/2013
Inspected by : MTU
Boring Depth: 45.00'
Ground Surface Elevation (ft msl) : 52.96'
Water Level - Immediate (ft bgs) : 7.25'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	Water Content (5 10 20 30 40 50)	SPT DATA	SPT Value	SPT GRAPH (Blows Per Foot) (1 – 100)
			Topsoil (3")							
			Stratum IMF FILL consisting of brown and dark brown fine sand and silt with some occasional rock fragments	2.75	50.21	S-1		2-2-3-4	5	
			FILL consisting of black coal dirt with silt			S-2		3-4-4-4	8	
						S-3		3-2-1-1	3	
				9.50	43.46	S-4		1-2-3-4	5	
			Stratum II Reddish brown fine sand and silt	10.00	42.96	S-5		16-24-30-44	54	
			Stratum III Reddish brown fine sand, some medium sand with rock fragments, pebbles	14.00	38.96					
			Orange brown and reddish brown fine to medium sand with rock fragments, pebbles, boulders			S-6		11-22-27-50/3"	49	
						S-7		50/4"	100	

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
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Boring Number : B41

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 25'
Drilling Method #2: 2" OD Split spoon sampler from 25' to 45'

Project Number : 4287G1
Date Drilled : 1/7/2013
Inspected by : MTU
Boring Depth: 45.00'
Ground Surface Elevation (ft msl) : 52.96'
Water Level - Immediate (ft bgs) : 7.25'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value
				23.50	29.46			
24.0			Orange brown fine sand with limestone fragments					
25.0								
26.0						S-8	3-2-2-1	4
27.0								
28.0						S-9	1-2-6-4	8
29.0								
30.0						S-10	1/12"-1-1 N.R.	1
31.0								
32.0						S-11	1/12"-1/12" N.R.	1
33.0			***Notes:***					
34.0			*Samples S-1 through S-4 were moist. Sample S-5 was very moist. Samples S-6 through S-9 and S-12 through S-17 were wet.*			S-12	3-3-2-2	5
35.0								
36.0			*No recovery for S10 & S11. Drove spoon from 33' to 43' and a spoon at 43'*			S-13	2-3-2-1	5
37.0								
38.0			*Hard and choppy augering through boulders from 17' to 23'6"*			S-14	2-1-1-2	2
39.0								
40.0						S-15	1-2-3-1	5
41.0								
42.0						S-16	6-7-8-19	15
43.0			Stratum IVA	42.75	10.21			
44.0			Grey and orange brown weathered limestone			S-17	16-17-24-27	41
45.0				45.00	7.96			
46.0			Boring Terminated					

Water Content: 5 10 20 30 40 50
SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B42

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 28.17'
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 1/4/2013
Inspected by : MTU
Boring Depth: 28.17'
Ground Surface Elevation (ft msl) : 55.38'
Water Level - Immediate (ft bgs) : 9.25'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Topsoil (4")					
			Stratum IMF FILL consisting of brown and orange brown fine sand and silt with some rock fragments, coal dirt	2.50	52.88	S-1*	3-4-5-9	9
						S-2**	5-6-10-6	16
			FILL consisting of black coal dirt with some orange brown fine sand, some silt, occasional rock fragments			S-3**	4-3-4-4	7
	▼					S-4**	4-2-2-3	4
				10.33	45.05			
			Stratum II Reddish brown fine sand and silt	12.33	43.05	S-5***	1-2-2-2	4
			Reddish brown fine sand with clayey silt	13.33	42.05	S-6***	4-11-30-41	41
			Stratum III Reddish brown fine sand and silt, some medium sand with rock fragments, pebbles	18.00	37.38	S-7*	18-23-25-28	48
			Orange brown fine to medium sand with rock fragments, pebbles	21.00	34.38	S-8	9-13-16-23	29
			Stratum IVB Orange brown, brown and grey weathered schist			S-9	50/2" N.R.	100
				28.17	27.21			
			Auger Refusal on schist bedrock					

Notes:
** moist*
*** very moist*
**** wet*

Hard augering from 23'

Very hard augering from 26'

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B43

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 23.17'
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 1/7/2013
Inspected by : MTU
Boring Depth: 23.17'
Ground Surface Elevation (ft msl) : 52.01'
Water Level - Immediate (ft bgs) : 4.50'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			Topsoil (4")					
			Stratum IMF FILL consisting of brown fine sand and silt with rock fragments	3.00	49.01	S-1*	2-2-3-3	5
			FILL consisting of black coal with silt	5.25	46.76	S-2*	3-2-1-1	3
			Reddish brown and brown organic silt, roots	7.75	44.26	S-3*	1-1-1-6	2
			Stratum II Reddish brown fine sand and clayey silt	10.33	41.68	S-4*	6-9-9-13	18
			Stratum III Reddish brown fine to medium sand with rock fragments, pebbles	14.00	38.01	S-5**	8-10-16-24	26
			Reddish brown fine to medium sand, occasional rock fragments	17.33	34.68	S-6**	3-2-2-2	4
			Reddish brown fine to medium sand wtih rock fragments, pebbles	18.25	33.76	S-7	4-11-21-24	32
			Stratum IVB Multi-colored weathered schist	23.17	28.84	S-8	50/2" N.R.	100
			Auger Refusal on schist bedrock					

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

Notes:
** very moist*
*** wet*

Hard, choppy augering from 12' to 14'

Hard, smooth augering from 19'6"

Very hard augering from 20'6"

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B44

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 27.83'
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 1/7/2013
Inspected by : MTU
Boring Depth: 27.83'
Ground Surface Elevation (ft msl) : 50.75'
Water Level - Immediate (ft bgs) : 4.33'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SAMPLING DATA: SPT DATA	SAMPLING DATA: SPT Value
1.0			Topsoil (4")					
			Stratum IMF	1.50	49.25			
2.0			FILL consisting of brown fine sand and silt, occasional rock fragments					
3.0						S-1*	2-3-3-3	6
4.0	▼		FILL consisting of black coal with silt					
5.0						S-2*	2-3-2-2	5
6.0				6.25	44.50			
7.0			Reddish brown and brown organic silt, occasional rock fragments	7.33	43.42	S-3*	1-1-9-8	10
8.0								
9.0			Stratum III			S-4**	6-5-5-6	10
10.0			Brown fine sand with rock fragments	10.00	40.75			
11.0			Brown organic silt with roots			S-5**	3-7-3-2	9
12.0				12.42	38.33			
13.0			Stratum III			S-6**	6-39-50/5"	100
14.0			Reddish brown fine sand, some medium sand with rock fragments, pebbles, occasional boulders					
15.0						S-7***	35-50/5"	100
16.0				16.25	34.50			
17.0			Orange brown fine to medium sand wtih rock fragments, pebbles	17.00	33.75			
18.0								
19.0			Stratum IVB					
20.0			Multi-colored weathered schist			S-8	50/4"	100
21.0								
22.0								
23.0			***Notes:***					
24.0			** very moist*					
25.0			*** wet*			S-9	50/1"	100
26.0			*Hard, choppy augering from 13' to 17'*				N.R.	
27.0			*Hard, smooth augering from 17'*					
			Very hard augering from 26'	27.83	22.92			
28.0			Auger Refusal on schist bedrock					
29.0								

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Boring Number : B45

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 32.83'
Drilling Method #2:

Project Number : 4287G1
Date Drilled : 1/3/2013
Inspected by : MTU
Boring Depth: 32.83'
Ground Surface Elevation (ft msl) : 51.92'
Water Level - Immediate (ft bgs) : 5.50'
Water Level -Static (ft bgs):

DEPTH BELOW	WATER LEVEL	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SPT DATA	SPT Value
0			Topsoil (5")					
			Stratum IMF FILL consisting of black coal dirt with roots			S-1*	1-2-3-3	5
				4.50	47.42			
			FILL consisting of brown and orange brown fine sand with some slag, rock fragments	5.25	46.67	S-2**	2-3-8-3	11
			Stratum II Reddish brown fine sand and silt	8.17	43.75	S-3***	2-1-2-2	3
			Reddish brown fine sand and clayey silt			S-4**	4-6-7-10	13
						S-5**	10-14-17-22	31
				13.00	38.92			
			Stratum III Reddish brown fine to medium sand with rock fragments, pebbles			S-6***	22-28-38-40	66
				18.50	33.42			
			Stratum IVB Orange brown, brown, and grey weathered schist			S-7	50/2" N.R	100
						S-8	50/1" N.R.	100
						S-9	50/1" N.R.	100
				32.83	19.09			
			Auger Refusal					

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

Notes:
** moist*
*** very moist*
**** wet*

Hard augering from 18'6"

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

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Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Boring Number : B46

Sheet 1 of 1

Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 35'
Drilling Method #2: 2" OD Split spoon sampler from 35' to 35.17'

Project Number : 4287G1
Date Drilled : 1/3/2013
Inspected by : MTU
Boring Depth: 35.17'
Ground Surface Elevation (ft msl) : 54.44'
Water Level - Immediate (ft bgs) : 7.75'
Water Level -Static (ft bgs):

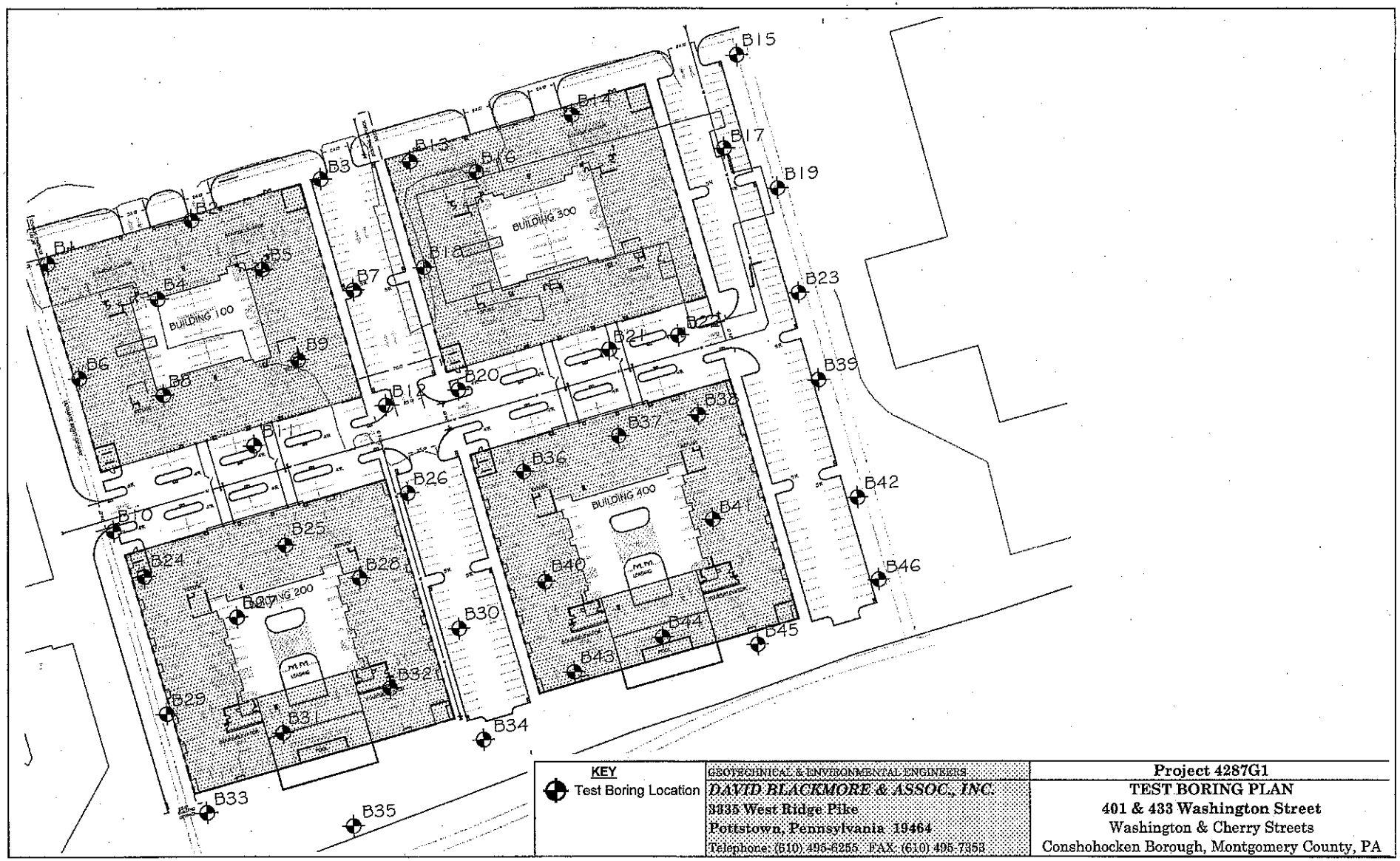
DEPTH BELOW	WATER LEVEL	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
1.0			Topsoil (5")					
2.0			Stratum IMF FILL consisting of coal with some orange brown fine sand and silt			S-1*	2-3-4-6	7
3.0								
4.0						S-2*	4-3-4-6	7
5.0								
6.0						S-3*	3-2-2-3	4
7.0	▼							
8.0				8.25	46.19			
9.0			Stratum II Reddish brown fine sand and silt			S-4**	3-2-2-2	4
10.0				10.33	44.11			
11.0			Reddish brown fine sand and clayey silt			S-5**	2-3-6-7	9
12.0				12.67	41.77			
13.0			Stratum III Reddish brown fine sand, some medium sand and silt wtih rock fragments, pebbles			S-6**	6-18-23-28	41
14.0								
15.0						S-7***	33-50/3"	100
16.0								
17.0								
18.0								
19.0								
20.0				20.58	33.86			
21.0			Stratum IVB Multi-colored weathered schist			S-8	6-9-28-53	37
22.0								
23.0								
24.0								
25.0						S-9	50/2" N.R.	100
26.0			***Notes:*** ** moist* *** very moist* **** wet*					
27.0								
28.0								
29.0			*Fairly hard choppy augering from 13'6" to 16'9"*					
30.0						S-10	50/3" N.R.	100
31.0			*Very hard augering from 16'9" to 19'*					
32.0								
33.0			*Hard augering from 22'6"*					
34.0								
35.0				35.17	19.27	S-11	50/2" N.R.	100
36.0			Boring Terminated					

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

TEST BORING LOCATION PLAN



KEY	GEOTECHNICAL & ENVIRONMENTAL ENGINEERS	Project 4287G1
Test Boring Location	*DAVID BLACKMORE & ASSOC., INC.*	TEST BORING PLAN
	3335 West Ridge Pike	401 & 433 Washington Street
	Pottstown, Pennsylvania 19464	Washington & Cherry Streets
	Telephone: (610) 495-6255 FAX: (610) 495-7353	Conshohocken Borough, Montgomery County, PA

331 Newman Springs Road
Suite 203
Red Bank, NJ 07701-5699
Main: 877 627 3772

Colliers
Engineering & Design

VIA Email
March 4, 2022

Noah Chrismer
KRE Group
520 US Hwy 22
PO Box 6872
Bridgewater, NJ 08807

Freshwater Wetland Delineation Letter Report
401& 433 Washington Street
Conshohocken Borough/Whitemarsh Township, Montgomery County, PA
Colliers Engineering & Design Project No. 14000908C

Dear Mr. Chrismer:

This letter report describes the results of the wetland and water delineation performed by Colliers Engineering & Design for the referenced subject property. In the Commonwealth of Pennsylvania, wetlands and waters are typically regulated by the Pennsylvania Department of Environmental Protection (PADEP) pursuant to Chapter 105 of the Dam Safety and Waterway Management Rules and by the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

Site Location and Description

The subject property is approximately 5.421 acres and located in Conshohocken and Whitemarsh Townships, Montgomery County, Pennsylvania. The property appears on the Norristown Quadrangle of the U.S. Geological Survey Map and has frontage along the southern side of Washington Street between Cherry Street and Lee Street. The subject property is currently developed with a vacant industrial building and is located on the northern bank of the Schuylkill River, as shown on the Aerial Map (Figure 1). Photographs of the site and delineated areas are included in Appendix B.

Background Information

The following background sources of information were reviewed to determine the potential for wetlands and waters on the project site:

1. **USGS Quadrangle** - The subject property appears on the Norristown, PA Quadrangle of the U.S. Geological Survey (USGS) Map (Figure 2). The USGS Map depicts the property as undeveloped land. The Schuylkill River is depicted south of the property and Washington Street is depicted north of the property.

2. **Soil Survey** – The Natural Resource Conservation Service (NRCS) Soil Survey (Figure 3) indicates the property is underlain by one (1) soil map unit which is listed below with its corresponding drainage class:

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- UgB- Urban land, 0 to 8 % slopes -No drainage class listed

3. **Federal Wetlands Map** – The United States Fish and Wildlife Service (USFWS) Wetlands Mapper (Figure 4) did not depict wetlands on the property. The Schuylkill River is depicted along the property's southern boundary.

Site Inspection

Colliers Engineering & Design performed a site visit on April 5, 2021. No wetlands were observed; however, the following non-wetland waters were delineated:

Area A

This area is comprised of the Schuylkill River is located along the southern property boundary. This portion of the Schuylkill River is considered non-tidal. There were no wetlands observed within or along the fringe of the River at this location; therefore, the extent of jurisdiction of the river corresponds to the ordinary high-water mark. The ordinary high-water mark generally corresponds to flag points A1 to A5 shown on the attached Preliminary Survey.

Area B

This area is comprised of a drainage ditch/swale that appears to be associated with a stormwater discharge in the southern portion of the property. The ditch/swale directly discharges to the Schuylkill River. This area was delineated as flag points B1 to B7 as shown on the attached Preliminary Survey.

The drainage ditch/swale exhibited surface water runoff at the time of site reconnaissance; however, this feature is not considered to be a wetland as hydrophytic vegetation or hydric soils were not observed. The non-wetland ditch/swale delineated within Area B appears to have formed or been constructed in uplands in response to stormwater discharge and runoff and should not be regulated by the PADEP or USACE.

Navigable Water Nexus

The Schuylkill River is a traditionally navigable water and is therefore a water of the U.S. pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

There were no jurisdictional wetlands or waters that abutted or were tributary to the River. The ditch/swale delineated as Area B (flag points B1 to B7) is considered to be a non-jurisdictional drainage feature.

Summary

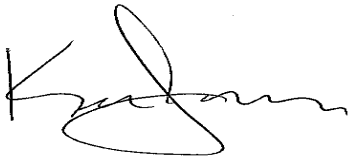
Based on a review of background information and a site visit, two non-wetland waters were delineated and are referred to herein as Area A and Area B. Area A consisted of the Schuylkill River and is a traditionally navigable water that will be regulated by the PADEP and the USACE. The Schuylkill River did not contain wetlands at this location. Area B consisted of a non-wetland

ditch/swale that formed or was constructed in uplands and should not be regulated by the PADEP or USACE. The limits of delineated wetlands or water features are shown on the Preliminary Survey prepared by Valley Land Services (Appendix C).

To obtain a formal determination as to the location and jurisdictional status of wetlands and waters on the subject property, a request for a jurisdictional determination would need to be prepared and submitted to the USACE.

Should you have any questions in regard to the enclosed, or require additional information, please contact me by email at kevin.jamieson@colliersengineering.com or telephone at (732) 383-1950.

Sincerely,
Colliers Engineering & Design, Inc.
(DBA Maser Consulting)



Kevin Jamieson, PWS
Principal Associate, Natural Resources

KJ/AY/smk
Appendices:
Appendix A – Site Location Maps
Appendix B – Photographs
Appendix C – Preliminary Survey

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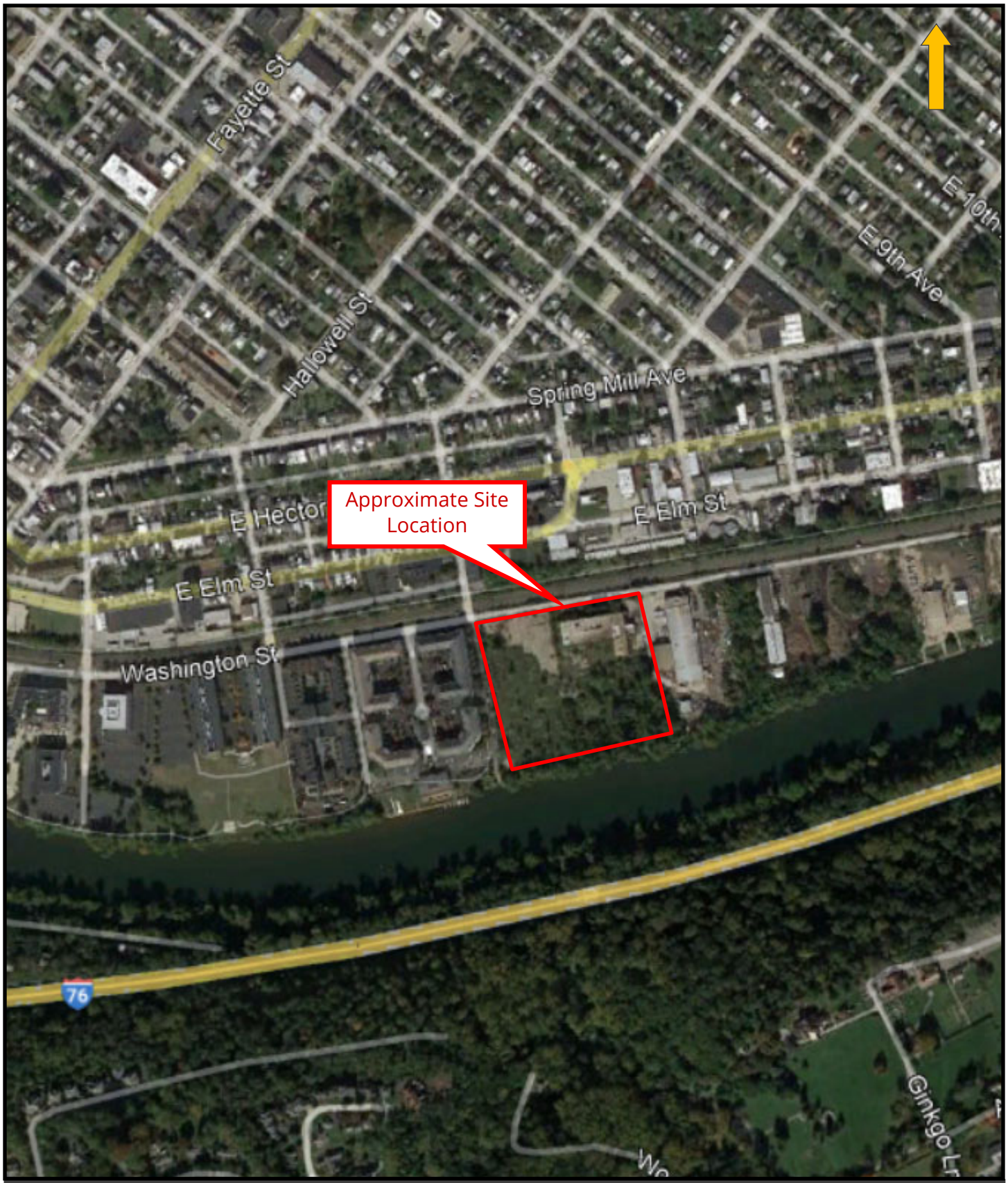
Appendix

Appendix A | Site Location Maps



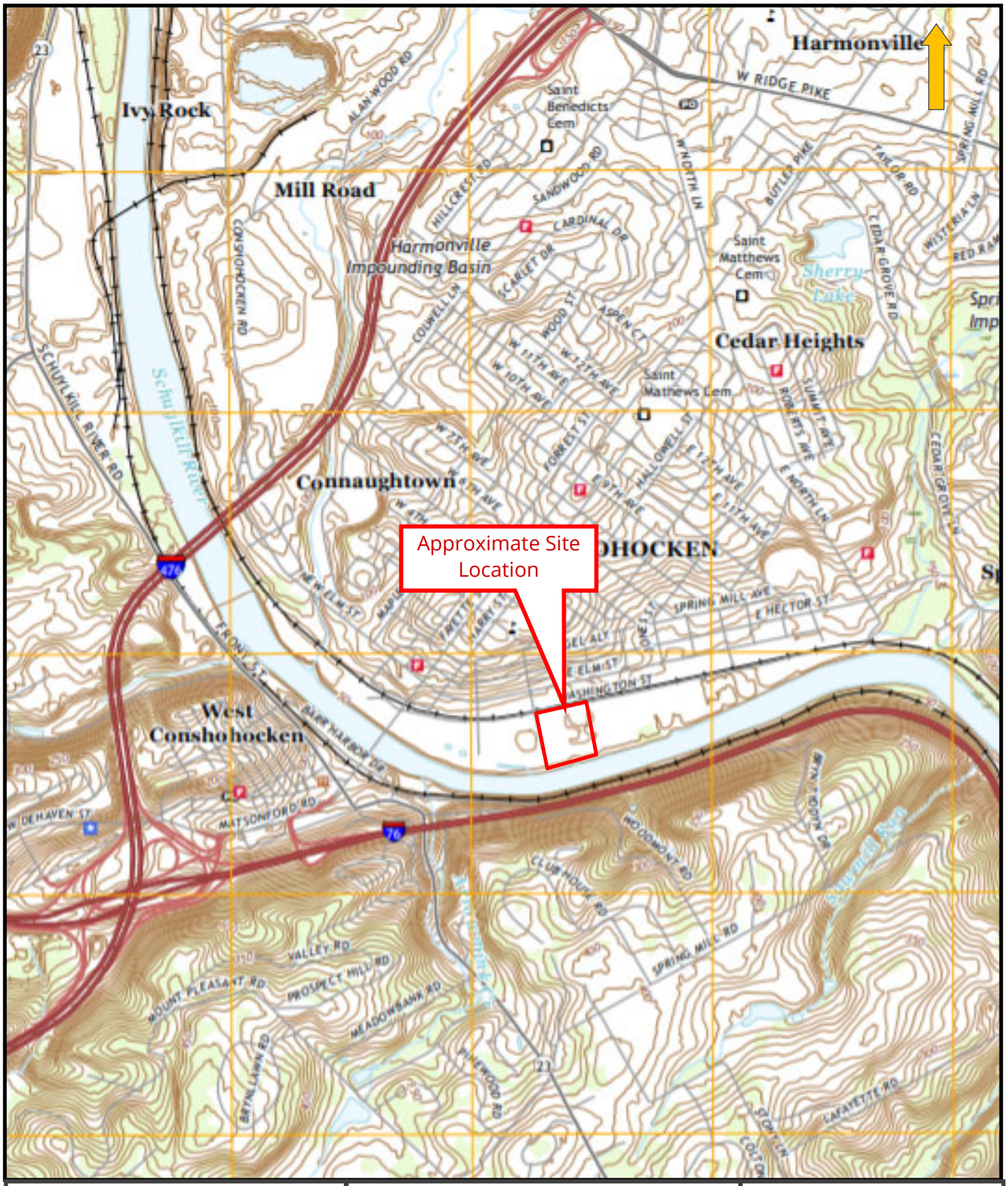
Colliers Engineering & Design
Corporate Headquarters
331 Newman Springs Road Suite 203 Red Bank
New Jersey 07701
T: 732 704 5180
F: 732-383-1980

Figure 1: Aerial Photograph
401& 433 Washington Street
Conshohocken Borough/Whitemarsh Township, Montgomery County, PA
Source: Google Earth

Scale: Not to Scale

Date: March 2, 2022

CED Project No. 14000908C



Colliers Engineering & Design

Corporate Headquarters
331 Newman Springs Road Suite 203 Red Bank
New Jersey 07701
T: 732 704 5180
F: 732-383-1980

Figure 2: USGS Map

401 & 433 Washington Street

Conshohocken Borough/Whitemarsh Township, Montgomery County, PA

Source: U.S. Geological Survey

Scale: Not to Scale

Date: March 2, 2022

CED Project No. 14000908C

Colliers Engineering & Design

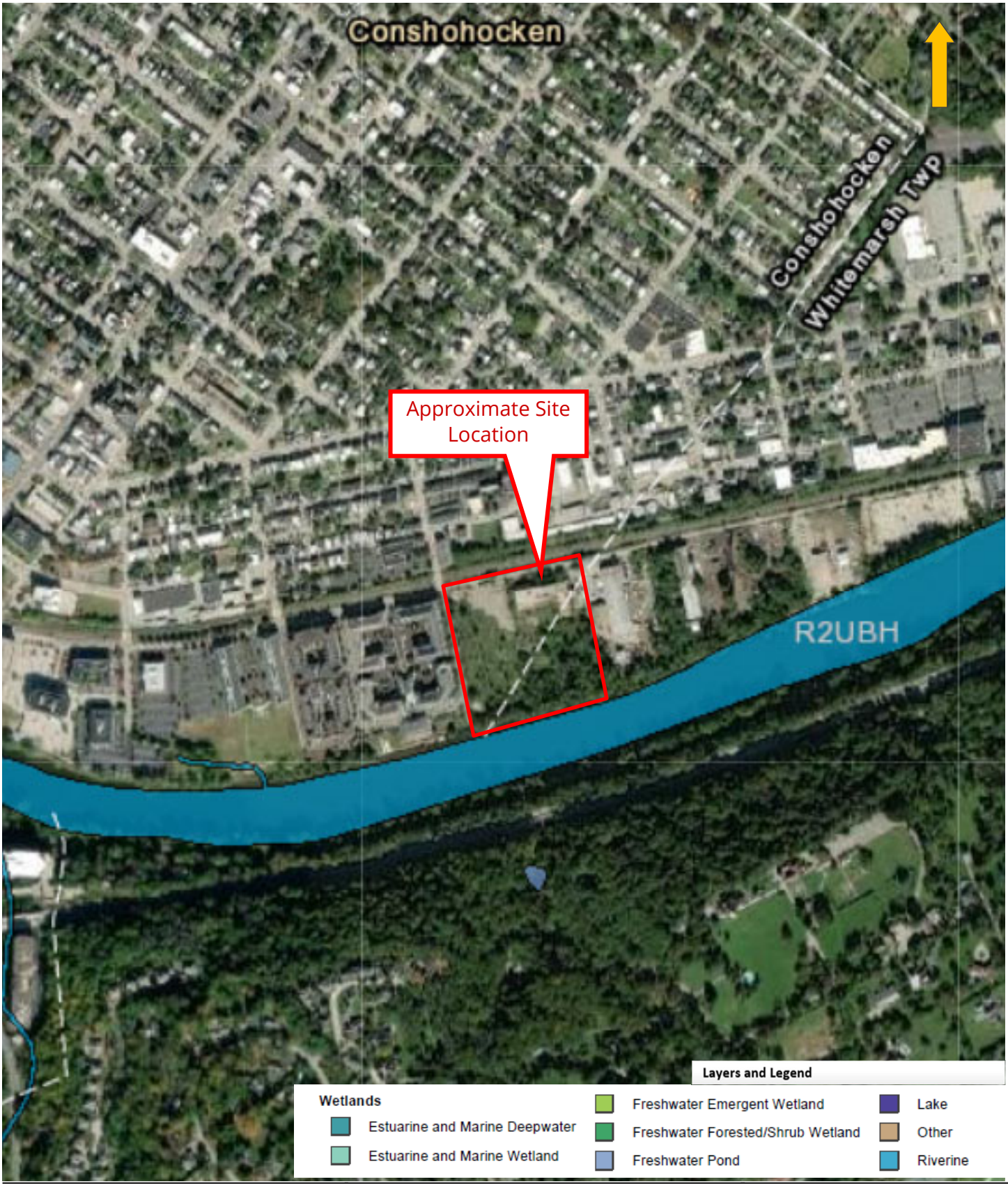
Corporate Headquarters
331 Newman Springs Road Suite 203 Red Bank
New Jersey 07701
T: 732 704 5180
F: 732-383-1980

Figure 3: Soil Survey Map
401& 433 Washington Street
Conshohocken Borough/Whitemarsh Township, Montgomery County, PA
Source: Web Soil Survey

Scale: Not to Scale

Date: March 2, 2022

CED Project No. 14000908C



Colliers Engineering & Design

Corporate Headquarters
331 Newman Springs Road Suite 203 Red Bank
New Jersey 07701
T: 732 704 5180
F: 732-383-1980

Figure 4: National Wetlands Inventory Map
401& 433 Washington Street
Conshohocken Borough/Whitemarsh Township,
Montgomery County, PA
Source: U.S. Fish and Wildlife Service

Scale: Not to Scale

Date: March 2, 2022

CED Project No. 14000908C

Colliers Engineering & Design

Appendix

Appendix B | Photographs

Site Photographs

401& 433 Washington Street

Conshohocken Borough/Whitemarsh Township,

Montgomery County, PA

Project No. 14000908C

Photo #1 – Typical conditions of the northern portion of the subject property.

Site Photographs

401& 433 Washington Street

Conshohocken Borough/Whitemarsh Township,

Montgomery County, PA

Project No. 14000908C

Photo #2: Typical conditions of the northern portion of the subject property.

Site Photographs

401& 433 Washington Street

Conshohocken Borough/Whitemarsh Township,

Montgomery County, PA

Project No. 14000908C

Photo #3: Typical conditions of the northern portion of the subject property.

Site Photographs

401& 433 Washington Street

Conshohocken Borough/Whitemarsh Township,

Montgomery County, PA

Project No. 14000908C

Photo #4: Typical conditions of the north eastern portion of the subject property.

Site Photographs

401& 433 Washington Street

Conshohocken Borough/Whitemarsh Township,

Montgomery County, PA

Project No. 14000908C

Photo #5: Patch of early-successional growth in the southern portion of the subject property.

Site Photographs

401& 433 Washington Street

Conshohocken Borough/Whitemarsh Township,

Montgomery County, PA

Project No. 14000908C

Photo #6: Typical condition in the southern portion of the subject property.

Site Photographs

401& 433 Washington Street

Conshohocken Borough/Whitemarsh Township,

Montgomery County, PA

Project No. 14000908C

Photo #7: Area A, along Schuylkill River, looking upstream.

Site Photographs

401& 433 Washington Street

Conshohocken Borough/Whitemarsh Township,

Montgomery County, PA

Project No. 14000908C

Photo #8: Area A, along Schuylkill River, looking downstream.

Site Photographs

401& 433 Washington Street

Conshohocken Borough/Whitemarsh Township,

Montgomery County, PA

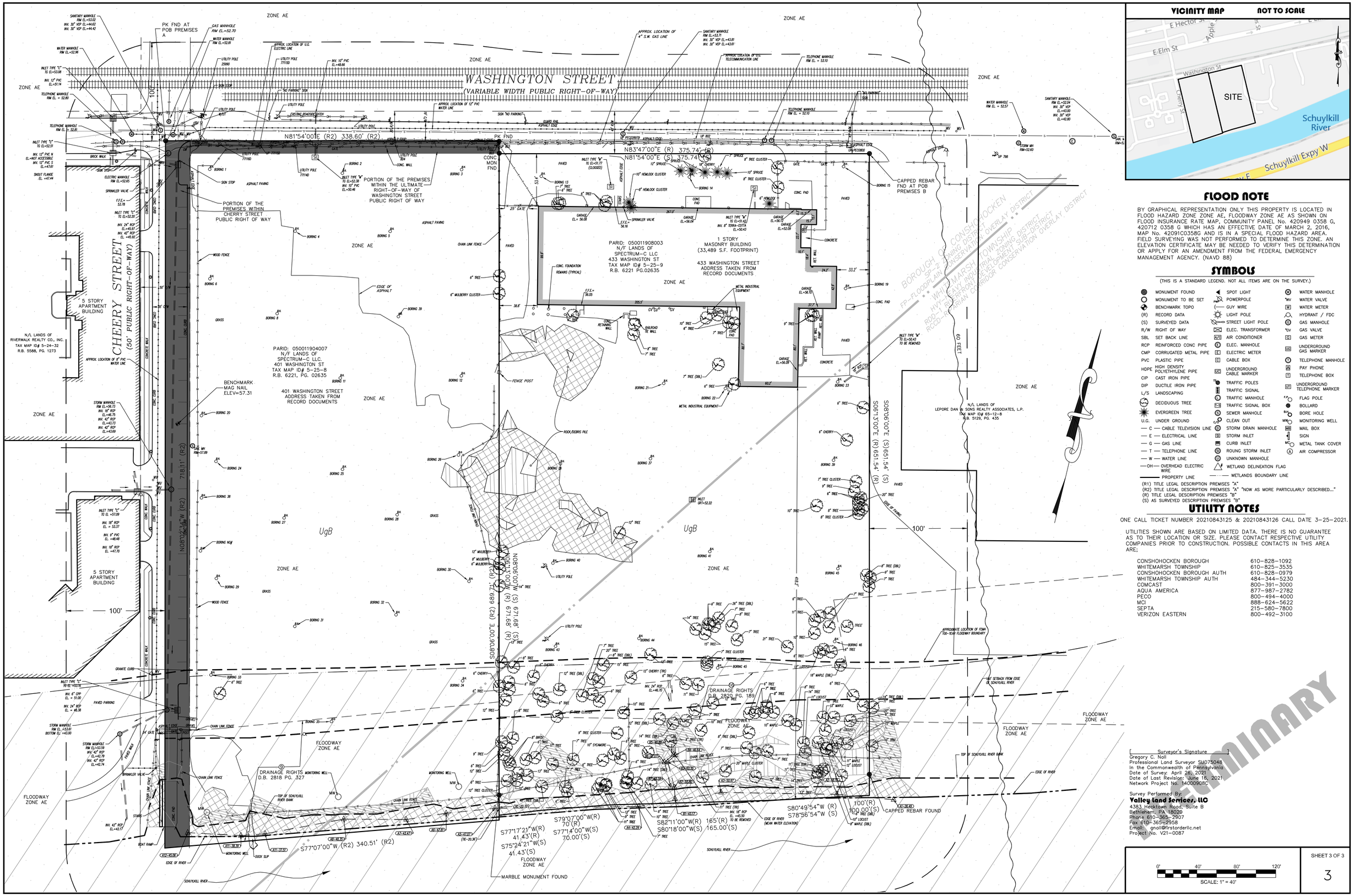
Project No. 14000908C

Photo #9: Area B, along drainage ditch / swale, looking downstream.

Colliers
Engineering
& Design

Appendix

Appendix C | Preliminary Survey



VICINITY MAP NOT TO SCALE

FLOOD NOTE

BY GRAPHICAL REPRESENTATION ONLY THIS PROPERTY IS LOCATED IN FLOOD HAZARD ZONE ZONE AE, FLOODWAY ZONE AE AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY PANEL No. 420949 0358 G, 420712 0358 G WHICH HAS AN EFFECTIVE DATE OF MARCH 2, 2016, MAP No. 42091C0358G AND IS IN A SPECIAL FLOOD HAZARD AREA. FIELD SURVEYING WAS NOT PERFORMED TO DETERMINE THIS ZONE, AN ELEVATION CERTIFICATE MAY BE NEEDED TO VERIFY THIS DETERMINATION OR APPLY FOR AN AMENDMENT FROM THE FEDERAL EMERGENCY MANAGEMENT AGENCY. (NAVD 88)

SYMBOLS

(THIS IS A STANDARD LEGEND. NOT ALL ITEMS ARE ON THE SURVEY.)

- MONUMENT FOUND
- MONUMENT TO BE SET
- BENCHMARK TOPO
- (R) RECORD DATA
- (S) SURVEYED DATA
- R/W RIGHT OF WAY
- SBL SET BACK LINE
- RCP REINFORCED CONC PIPE
- CMP CORRUGATED METAL PIPE
- PVC PLASTIC PIPE
- HDPE HIGH DENSITY POLYETHYLENE PIPE
- CIP CAST IRON PIPE
- DIP DUCTILE IRON PIPE
- L/S LANDSCAPING
- DECIDUOUS TREE
- EVERGREEN TREE
- U.G. UNDER GROUND
- — C — CABLE TELEVISION LINE
- — E — ELECTRICAL LINE
- — G — GAS LINE
- — T — TELEPHONE LINE
- — W — WATER LINE
- —OH— OVERHEAD ELECTRIC WIRE
- PROPERTY LINE
- SPOT LIGHT
- POWERPOLE
- GUY WIRE
- LIGHT POLE
- STREET LIGHT POLE
- ELEC. TRANSFORMER
- AIR CONDITIONER
- ELEC. MANHOLE
- ELECTRIC METER
- CABLE BOX
- UNDERGROUND CABLE MARKER
- TRAFFIC POLES
- TRAFFIC SIGNAL
- TRAFFIC MANHOLE
- TRAFFIC SIGNAL BOX
- SEWER MANHOLE
- CLEAN OUT
- STORM DRAIN MANHOLE
- STORM INLET
- CURB INLET
- ROUNG STORM INLET
- UNKNOWN MANHOLE
- WETLAND DELINEATION FLAG
- WETLANDS BOUNDARY LINE
- WATER MANHOLE
- WATER VALVE
- WATER METER
- HYDRANT / FDC
- GAS MANHOLE
- GAS VALVE
- GAS METER
- UNDERGROUND GAS MARKER
- TELEPHONE MANHOLE
- PAY PHONE
- TELEPHONE BOX
- UNDERGROUND TELEPHONE MARKER
- FLAG POLE
- BOLLARD
- BORE HOLE
- MONITORING WELL
- MAIL BOX
- SIGN
- METAL TANK COVER
- AIR COMPRESSOR

(R1) TITLE LEGAL DESCRIPTION PREMISES "A"
(R2) TITLE LEGAL DESCRIPTION PREMISES "A" "NOW AS MORE PARTICULARLY DESCRIBED..."
(R) TITLE LEGAL DESCRIPTION PREMISES "B"
(S) AS SURVEYED DESCRIPTION PREMISES "B"

UTILITY NOTES

ONE CALL TICKET NUMBER 20210843125 & 20210843126 CALL DATE 3-25-2021.

UTILITIES SHOWN ARE BASED ON LIMITED DATA. THERE IS NO GUARANTEE AS TO THEIR LOCATION OR SIZE. PLEASE CONTACT RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION. POSSIBLE CONTACTS IN THIS AREA ARE;

CONSHOHOCKEN BOROUGH	610-828-1092
WHITEMARSH TOWNSHIP	610-825-3535
CONSHOHOCKEN BOROUGH AUTH	610-828-0979
WHITEMARSH TOWNSHIP AUTH	484-344-5230
COMCAST	800-391-3000
AQUA AMERICA	877-987-2782
PECO	800-494-4000
MCI	888-624-5622
SEPTA	215-580-7800
VERIZON EASTERN	800-492-3100

PRELIMINARY

[Surveyor's Signature]
Gregory C. Noll
Professional Land Surveyor SU075048
In the Commonwealth of Pennsylvania
Date of Survey: April 26, 2021
Date of Last Revision: June 16, 2021
Network Project No. 14000908C

Survey Performed By:
Valley land Services, LLC
4383 Hecktown Road, Suite B
Bethlehem, PA 18020
Phone 610-365-2907
Fax 610-365-2958
Email: gnoll@firstorderllc.net
Project No. V21-0087

0' 40' 80' 120'
SCALE: 1" = 40'

Ebert Engineering, Inc.
Water and Wastewater Engineering

July 20, 2021

Terry Fedorchak
Borough of Conshohocken Authority
601 East Elm Street
Conshohocken, PA 19428

Subject: 401 & 433 Washington Street Apartment Complex
Re: Letter of Serviceability
EE, Inc. No.: 070-073

Dear Mr. Fedorchak:

As requested, on the behalf of the Borough of Conshohocken Authority, Ebert Engineering, Inc. (EE, Inc.) has conducted a review of the sanitary sewer flow estimate for the proposed 401 & 433 Apartment Complex located along Washington Street at the intersection of Cherry Street in Conshohocken Borough, Pennsylvania. It is noted that the developer of the proposed apartment complex is in their due-diligence phase and is requesting if the Borough of Conshohocken Authority's wastewater treatment plant has sufficient capacity to service their proposed project.

The development site is proposed to be located at 401 and 433 Washington Street. Project improvements are proposing to construct four (4) multi story buildings containing a total of 598 apartment units. Of the 598 apartment units, 72 units are located within Whitemarsh Township.

The applicant's engineer requested a letter of serviceability based upon a concept plan and a letter dated July 7, 2021. The letter estimated the flow to be 54,240 gallons per day based upon a rate of 400 gpd/ edu. The Borough of Conshohocken Authority in its Rules and Regulations defines the flow per apartment unit to be equal to 262.5 gpd. The proposed project will require 156,975 gpd (598 apartments x 262.5 gpd / apartment) for the apartment use. If there are any additional uses in the building then there may be additional capacity that must be purchased for those uses in accordance with the Rules and Regulations of the Authority.

EE, Inc. has reviewed the proposed sewage flows and have determined that the Borough of Conshohocken Authority has both Conveyance and Treatment capacity to serve the proposed project. Conveyance capacity can be provided through a connection to the existing thirty (30) inch sanitary sewer main located on Washington Street and treatment can be provided through available treatment capacity at the Authority's wastewater treatment plant.

The Authority has existing conveyance and treatment capacity at this time to service the proposed apartment project without creating an existing or proposed hydraulic or organic overload for the next five years. Capacity is not guaranteed until it is purchased from the Authority through the payment of tapping fees at the then current amount.

It is noted that since this project proposes over 250 EDUs that the PA DEP will require the submission and approval of both a Sewage Facilities Planning Module and a Water Quality Management Permit for the conveyance system to the existing sanitary sewer main. The Authority will need to review and

approve both applications prior to submission to the PA DEP. The Borough of Conshohocken must also review and approve the PA DEP Sewage Facilities Planning Module.

Should you have any questions concerning the above, please feel free to contact me.

Very truly yours,

Frederick E. Ebert
President

Cc: Stephanie Cecco, Borough of Conshohocken
Brittany Rogers, Borough of Conshohocken
Ray Sokolowski, Borough of Conshohocken
Karen MacNair, Borough of Conshohocken Engineer
Lauren Gallagher, Esq., Authority Solicitor
Michael Peters, Esq., Borough of Conshohocken Solicitor
Nicole Galio, Colliers Engineering & Design

		Catalog Number: LXEM4-40VL-RFA-EDU Notes:	**Type:** **P** PHI19-132955

Columbia LIGHTING

LXEM

Enclosed and Gasketed Fiberglass Extreme Environment / LED

createchange

PROJECT INFORMATION

Project Name

Type

Catalog No.

Date

FEATURES

- LED Enclosed and Gasketed
- Long life 60,000 hour LEDs at L80 for reduced maintenance
- Four LED color choices and 80 CRI
- IP66 all sizes when ordered with standard polyacetal (POM) latches
- IP65 all sizes, IP67 4' and 8'
- Available in 2', 4', or 8' lengths
- NEMA 4X housing
- Fiberglass housing with F1 weatherability rating, standard
- Smooth housing for easy cleaning
- Gasket is non-porous to ensure seal
- Impact modified acrylic lens equivalent to 100% DR
- Wide range of lens selections
- Lens firmly secured with tamper resistance ready polyacetal (POM) latches
- Stainless steel latching optional
- ControlScope® compatible
- Drivers include minimum 2.5kV surge protection
- UL Sanitation Certified per NSF Standards
- Removable gear tray electrical access for modular replaceability
- Emergency battery pack installed, optional on most models
- -20°C up to +50°C ambient operation; see table provided for details
- DLC® (DesignLights Consortium) Qualified, with some Premium Qualified configurations - see www.designlights.org
- Includes surface mounting brackets
- Occupancy and/or daylight sensing accessories available
- Five year warranty

CONSTRUCTION

Housing is formed from UL 5VA fiberglass. F1 weatherability rating, suitable for indoor or outdoor use with respect to exposure to UV light. Pour-in-place non-porous gasketing assures seal. LED affixed to removable heat sinked gear tray. 14 Latches per 8', 8 per 4', 6 per 2'. Latches are provided tamper resistance ready, tamper resistant screws by others. Latches are standard polyacetal (POM), optional in stainless steel. Access openings are provided for electrical connection.

SHIELDING

Lineal ribbed frosted acrylic lens impact modified equivalent to 100% DR; modification adds flexibility to reduce impact breakage compared to standard acrylic formulations. Optional ribbed polycarbonate lens or deep acrylic. All lenses available in clear or frost.

FINISH

White painted parts are treated with a five-stage phosphate bonding process and finished with high reflectance baked enamel.

ELECTRICAL

Long-life LEDs are rated for 60,000 hours at L80 lumen maintenance. Extra High Lumen packages (XL) rated L70 at 60,000 hours. Driver options include fixed output for on/off function, step dimming[6] (high/low/off) or continuous 0-10V dimming. QR code label affixed to housing for easy traceability.

MOUNTING

Use flexible conduit only.

CERTIFICATION

All luminaires are built to UL 1598 and 2108 standards, and bear appropriate CSA labels. Ingress protection IP65 and IP67 standard. UL Sanitation Certified per NSF Standards. Wet location labeling is standard. Emergency-equipped fixtures built to UL 924. DLC® (DesignLights Consortium) Qualified, with some Premium Qualified configurations. Please refer to the DLC website for specific product qualifications at www.designlights.org.

WARRANTY

Five year warranty (Terms and Conditions Apply).

ORDERING INFORMATION

EXAMPLE LXEM4-35HL-RFA-EDU

LXEM – – – – –

MODEL
- **LXEM** LED Enclosed and Gasketed

SIZE
- **2** 2'[1,2,3,4]
- **4** 4'
- **8** 8'

COLOR TEMP
- **30** 3000K
- **35** 3500K
- **40** 4000K
- **50** 5000K

LUMEN OUTPUT
- **VW** Very Low Watt
- **LW** Low Watt
- **ML** Medium Lumen
- **HL** High Lumen
- **VL** Very High Lumen
- **XL** Xtra High Lumen[2]

SHIELDING
- **RFA** Ribbed Frosted Acrylic
- **RA** Ribbed Clear Acrylic[11]
- **DFA** Deep Frosted Acrylic
- **DCA** Deep Clear Acrylic[11]
- **RFP** Ribbed Frosted Polycarbonate[5]
- **RP** Ribbed Clear Polycarbonate[5,11]

DRIVER
- **E** Fixed Output
- **ESD** Step Dimming[6]
- **ED** 0-10V Dimming
- **ED1** 0-10V 1% Dimming[6]

VOLTAGE
- **U** 120V-277V
- **347** 347V

OPTIONS
- **GLR** Fast Blow Fuse
- **SSL** Stainless Steel Tamper Resistance Ready Latches
- **TP** Tamper Proof Latches
- **ELL14** Emergency Battery Pack Installed, 1400 Lumens[3,6,7]
- **F3C8W** 3 Wire 8' Wet Cord
- **F3C15W** 3 Wire 15' Wet Cord
- **F4C8W** 4 Wire 8' Wet Cord
- **F4C15W** 4 Wire 15' Wet Cord
- **F5C8W** 5 Wire 8' Wet Cord
- **F5C15W** 5 Wire 15' Wet Cord
- **F6C6W** 6 Wire 6' Wet Cord
- **SWH** Single Wet Hub ½" NPT Hub
- **DWH** Dual Wet Hub ½" NPT Hub
- **ZRE** ControlScope® compatible[7,9]

ACCESSORIES (ORDER SEPARATELY)
- **XEDPM** Dual Pendant Brackets (pendant by others)[8]
- **XEHC** Chain Hanger Kit (Includes 14" Chain)
- **XE45MB** 45° Mounting Bracket[10]
- **XE45MBSS** 45° Stainless Steel Mounting Bracket[10]

SENSOR KITS (Order Separately)
All sensor kits include Occupancy & Daylight.
Daylight activation requires setting of dip-switches on site.

	Catalog #	# Relays	Lens Type	Voltage	Wet Label
120V/ 277V	OS1360WLK	1	360°	120/277	Yes
	OS2360WLK	2	360°	120/277	Yes
	OS1AWLK	1	Aisle	120/277	Yes
	OS2AWLK	2	Aisle	120/277	Yes

[1] VL and XL not available in 2' size.
[2] Not available with battery pack.
[3] Not available with XL lumen package.
[4] Not available with VL lumen package.
[5] 2' and 4' only. 8' not available.
[6] See table for availability.
[7] Not available in 347V.
[8] Requires 3/8" OD threaded rod by others.
[9] Registered trademark of Daintree Networks, used by permission.
[10] 2 required for 8' fixture.
[11] Clear lenses (RA, DCA and RP) may cause noticeable light patterns on lit surfaces. See ies files for exact distribution.

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701 Millennium Blvd. Greenville, SC 29607 / Tel **864.678.1000** / Website **www.columbialighting.com**

HUBBELL Lighting

		Catalog Number: LXEM4-40VL-RFA-EDU Notes:	Type: P PHI19-132955

Columbia LIGHTING

LXEM

Enclosed and Gasketed Fiberglass Extreme Environment / LED

PHOTOMETRIC DATA

Test# **17905** Test Date **10/13/2016**

LUMINAIRE DATA

Luminaire	**LXEM4-50ML-RFA-EDU** **LXEM LED Enclosed and Gasketed, Extreme Environment** **7" x 51" LED with frosted ribbed acrylic lens**
Ballast	**XI040C110V054BST1**
Ballast Factor	**1.00**
Lamp	**LED**
Fixture Lumens	**5306**
Watts	**42.00**
Mounting	**Surface**
Shielding Angle	**0° = 90 90° = 90**
Spacing Criterion	**0° = 1.24 90° = 1.40**
Luminous Opening in Feet	**Length: 4.00** **Width: 0.54** **Height: 0.17**

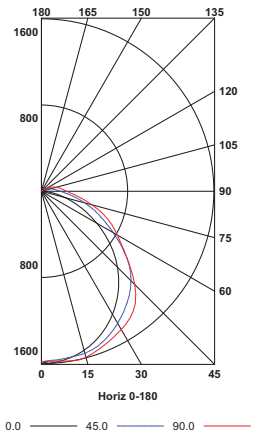
ZONAL LUMEN SUMMARY

Zone	Lumens	% Lamp	% Fixt.
0-30	1268	23.9	23.9
0-40	2105	39.7	39.7
0-60	3766	71.0	71.0
0-90	5025	94.7	94.7
0-180	5306	100.0	100.0

ENERGY DATA

Total Luminaire Efficiency	**100%**
Total Lumens per Watt	**126**
ANSI/IESNA RP-1-2004 Compliance	**Noncompliant**
Comparative Yearly Lighting Energy Cost per 1000 Lumens	**$1.90 based on 3000 hrs. and $0.08 per KWH**

INDOOR CANDELA PLOT



Test# **17989** Test Date **10/10/2016**

LUMINAIRE DATA

Luminaire	**LXEM4-40HL-DFA-EDU** **LXEM LED Enclosed and Gasketed, Extreme Environment** **7" x 51" LED with deep frosted acrylic lens**
Ballast	**XI054C150V054BST1**
Ballast Factor	**1.00**
Lamp	**LED**
Fixture Lumens	**6525**
Watts	**47.30**
Mounting	**Surface**
Shielding Angle	**0° = 90 90° = 90**
Spacing Criterion	**0° = 1.25 90° = 1.28**
Luminous Opening in Feet	**Length: 4.00** **Width: 0.54** **Height: 0.29**

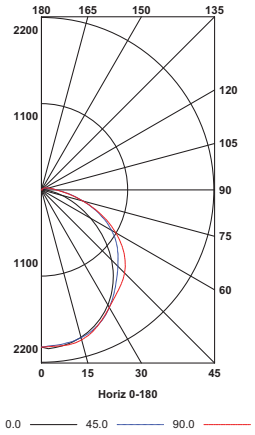
ZONAL LUMEN SUMMARY

Zone	Lumens	% Lamp	% Fixt.
0-30	1583	24.3	24.3
0-40	2594	39.8	39.8
0-60	4661	71.4	71.4
0-90	6235	95.6	95.6
0-180	6525	100.0	100.0

ENERGY DATA

Total Luminaire Efficiency	**100%**
Total Lumens per Watt	**138**
ANSI/IESNA RP-1-2004 Compliance	**Noncompliant**
Comparative Yearly Lighting Energy Cost per 1000 Lumens	**$1.73 based on 3000 hrs. and $0.08 per KWH**

INDOOR CANDELA PLOT



Test# **18012** Test Date **10/18/2016**

LUMINAIRE DATA

Luminaire	**LXEM4-50XL-RA-EDU** **LXEM LED Enclosed and Gasketed, Extreme Environment** **7" x 51" LED with ribbed clear acrylic lens**
Ballast	**XI040C110V054BST1**
Ballast Factor	**1.00**
Lamp	**LED**
Fixture Lumens	**10607**
Watts	**91.40**
Mounting	**Surface**
Shielding Angle	**0° = 90 90° = 90**
Spacing Criterion	**0° = 1.21 90° = 1.38**
Luminous Opening in Feet	**Length: 4.00** **Width: 0.54** **Height: 0.17**

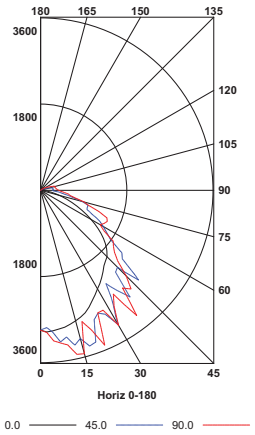
ZONAL LUMEN SUMMARY

Zone	Lumens	% Lamp	% Fixt.
0-30	2547	24.0	24.0
0-40	4252	40.1	40.1
0-60	7643	72.1	72.1
0-90	10073	95.0	95.0
0-180	10607	100.0	100.0

ENERGY DATA

Total Luminaire Efficiency	**100%**
Total Lumens per Watt	**116**
ANSI/IESNA RP-1-2004 Compliance	**Noncompliant**
Comparative Yearly Lighting Energy Cost per 1000 Lumens	**$2.05 based on 3000 hrs. and $0.08 per KWH**

INDOOR CANDELA PLOT



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HUBBELL Lighting

Columbia LIGHTING

LXEM

Enclosed and Gasketed Fiberglass Extreme Environment / LED

Driver Availability							
LENGTH	**OUTPUT**	**NOMINAL LUMEN RANGE**	**ESD Available**	**ED1 Available**	**347v Available**	**347 with ESD Available**	**347 with ED1 Available**
2'	VW	2,145 - 2,708	Y	Y	Y	N/A	Y
	LW	2,738 - 3,529	Y	Y	Y	N/A	Y
	ML	3,862 - 4,921	Y	Y	Y	N/A	Y
	HL	4,254 - 5,416	Y	Y	Y	N/A	Y
4'	VW	2,802 - 3,433	Y	Y	Y	N/A	Y
	LW	3,726 - 4,922	Y	Y	Y	N/A	Y
	ML	4,533 - 5,646	Y	Y	Y	N/A	Y
	HL	5,449 - 6,763	Y	Y	Y	N/A	Y
	VL	7,086 - 8,415	Y	Y	Y	N/A	N/A
	XL	9,059 - 11,237	N/A	Y	Y	N/A	N/A
8'	VW	6,078 - 6,866	Y	Y	Y	N/A	Y
	LW	8,095 - 9,276	Y	Y	Y	N/A	Y
	ML	9,844 - 11,293	Y	Y	Y	N/A	Y
	HL	11,851 - 13,525	Y	Y	Y	N/A	Y
	VL	14,747 - 16,830	Y	Y	Y	N/A	N/A
	XL	19,558 - 22,473	N/A	Y	Y	N/A	N/A

MAX. AMBIENT OPERATING TEMP.							
LENGTH	**OUTPUT**	**NOMINAL LUMEN RANGE**	**WATTS**	**LPW**	**MAX AMBIENT OPERATING TEMPERATURE (C°) (UNIVERSAL VOLTAGE)**	**ELL14 (WITH UNIVERSAL VOLTAGE)**	**347v**
2'	VW	2,145 - 2,708	21	102 - 130	40	NA	35
	LW	2,738 - 3,529	26	105 - 135	40	NA	35
	ML	3,862 - 4,921	39	100 - 128	40	NA	35
	HL	4,254 - 5,416	44	97 - 123	35	NA	30
4'	VW	2,802 - 3,433	25	114 - 141	50	45	45
	LW	3,726 - 4,922	33	112 - 139	50	45	45
	ML	4,533 - 5,646	42	108 - 134	50	45	45
	HL	5,449 - 6,763	47	115 - 143	45	45	35
	VL	7,086 - 8,415	62	115 - 136	40	40	35
	XL	9,059 - 11,237	92	99 - 123	30	NA	25
8'	VW	6,078 - 6,866	49	124-141	50	45	45
	LW	8,095 - 9,276	67	122 - 139	50	45	45
	ML	9,844 - 11,293	84	117 - 134	50	45	45
	HL	11,851 - 13,525	95	125 - 143	45	45	35
	VL	14,747 - 16,830	123	120 - 136	40	40	35
	XL	19,558 - 22,473	183	107 - 123	30	NA	25

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Columbia LIGHTING

LXEM

Enclosed and Gasketed Fiberglass Extreme Environment / LED

	LXEM PREDICTED LIFE				LUMEN MAINTENENCE		
	LENGTH	**OUTPUT**	**NOMINAL LUMEN RANGE**	**AMBIENT OPERATING TEMPERATURE (C°)**	**L70**	**L80**	**L90**
CALCULATED HOURS	**2'**	VW	2,145 - 2,708	25	393,000	245,000	115,000
				40	207,000	128,000	58,000
		LW	2,738 - 3,529	25	393,000	245,000	115,000
				40	207,000	128,000	58,000
		ML	3,862 - 4,921	25	282,000	174,000	79,000
				40	207,000	128,000	58,000
		HL	4,254 - 5,416	25	232,000	143,000	65,000
				35	175,000	105,000	42,000
	4'	VW	2,802 - 3,433	25	322,000	198,000	90,000
				50	257,000	159,000	72,000
		LW	3,726 - 4,922	25	322,000	198,000	90,000
				50	257,000	159,000	72,000
		ML	4,533 - 5,646	25	322,000	198,000	90,000
				50	257,000	159,000	72,000
		HL	5,449 - 6,763	25	322,000	198,000	90,000
				45	282,000	174,000	79,000
		VL	7,086 - 8,415	25	322,000	198,000	90,000
				40	228,000	140,000	63,000
		XL	9,059 - 11,237	25	266,000	164,000	74,000
				30	240,000	148,000	67,000
	8'	VW	6,078 - 6,866	25	322,000	198,000	90,000
				50	257,000	159,000	72,000
		LW	8,095 - 9,276	25	322,000	198,000	90,000
				50	257,000	159,000	72,000
		ML	9,844 - 11,293	25	322,000	198,000	90,000
				50	257,000	159,000	72,000
		HL	11,851 - 13,525	25	322,000	198,000	90,000
				45	282,000	174,000	79,000
		VL	14,747 - 16,830	25	322,000	198,000	90,000
				40	228,000	140,000	63,000
		XL	19,558 - 22,473	25	266,000	164,000	74,000
				30	240,000	148,000	67,000

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PRODUCT AVAILABILITY

Lumen Package	Output	Color	Lens	Lumens	Watts	LPW	Max Ambient Operating Temp
LXEM2-30VW-RFP-EDU	Very Low Watt	30K	RFP	2,145	21.1	101.6	40°C
LXEM2-30VW-RA-EDU			RA	2,365	20.8	113.7	40°C
LXEM2-30VW-RP-EDU			RP	2,373	20.8	114.1	40°C
LXEM2-30VW-RFA-EDU			RFA	2,448	20.8	117.7	40°C
LXEM2-30VW-DFA-EDU			DFA	2,467	20.8	118.6	40°C
LXEM2-30VW-DCA-EDU			DCA	2,512	20.8	120.8	40°C
LXEM2-35VW-RFP-EDU		35K	RFP	2,217	21.1	105.1	40°C
LXEM2-35VW-RA-EDU			RA	2,446	20.8	117.6	40°C
LXEM2-35VW-RP-EDU			RP	2,454	20.8	118.0	40°C
LXEM2-35VW-RFA-EDU			RFA	2,531	20.8	121.7	40°C
LXEM2-35VW-DFA-EDU			DFA	2,551	20.8	122.6	40°C
LXEM2-35VW-DCA-EDU			DCA	2,598	20.8	124.9	40°C
LXEM2-40VW-RFP-EDU		40K	RFP	2,252	21.1	106.7	40°C
LXEM2-40VW-RA-EDU			RA	2,484	20.8	119.4	40°C
LXEM2-40VW-RP-EDU			RP	2,492	20.8	119.8	40°C
LXEM2-40VW-RFA-EDU			RFA	2,571	20.8	123.6	40°C
LXEM2-40VW-DFA-EDU			DFA	2,590	20.8	124.5	40°C
LXEM2-40VW-DCA-EDU			DCA	2,638	20.8	126.8	40°C
LXEM2-50VW-RFP-EDU		50K	RFP	2,312	21.1	109.6	40°C
LXEM2-50VW-RA-EDU			RA	2,550	20.8	122.6	40°C
LXEM2-50VW-RP-EDU			RP	2,558	20.8	123.0	40°C
LXEM2-50VW-RFA-EDU			RFA	2,639	20.8	126.9	40°C
LXEM2-50VW-DFA-EDU			DFA	2,659	20.8	127.8	40°C
LXEM2-50VW-DCA-EDU			DCA	2,708	20.8	130.2	40°C
LXEM2-30LW-RFP-EDU	Low Watt	30K	RFP	2,738	26.0	105.3	40°C
LXEM2-30LW-RP-EDU			RP	3,049	26.1	116.8	40°C
LXEM2-30LW-RA-EDU			RA	3,144	26.0	120.9	40°C
LXEM2-30LW-RFA-EDU			RFA	3,180	26.2	121.4	40°C
LXEM2-30LW-DFA-EDU			DFA	3,239	26.1	124.1	40°C
LXEM2-30LW-DCA-EDU			DCA	3,273	26.1	125.4	40°C
LXEM2-35LW-RFP-EDU		35K	RFP	2,831	26.0	108.9	40°C
LXEM2-35LW-RP-EDU			RP	3,153	26.1	120.8	40°C
LXEM2-35LW-RA-EDU			RA	3,251	26.0	125.0	40°C
LXEM2-35LW-RFA-EDU			RFA	3,289	26.2	125.5	40°C
LXEM2-35LW-DFA-EDU			DFA	3,349	26.1	128.3	40°C
LXEM2-35LW-DCA-EDU			DCA	3,385	26.1	129.7	40°C
LXEM2-40LW-RFP-EDU		40K	RFP	2,875	26.0	110.6	40°C
LXEM2-40LW-RP-EDU			RP	3,202	26.1	122.7	40°C
LXEM2-40LW-RA-EDU			RA	3,302	26.0	127.0	40°C
LXEM2-40LW-RFA-EDU			RFA	3,339	26.2	127.5	40°C
LXEM2-40LW-DFA-EDU			DFA	3,401	26.1	130.3	40°C
LXEM2-40LW-DCA-EDU			DCA	3,437	26.1	131.7	40°C
LXEM2-50LW-RFP-EDU		50K	RFP	2,951	26.0	113.5	40°C
LXEM2-50LW-RP-EDU			RP	3,287	26.1	125.9	40°C

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LXEM

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PRODUCT AVAILABILITY

Lumen Package	Output	Color	Lens	Lumens	Watts	LPW	Max Ambient Operating Temp
LXEM2-50LW-RA-EDU	Low Watt	50K	RA	3,390	26.0	130.4	40°C
LXEM2-50LW-RFA-EDU			RFA	3,428	26.2	130.9	40°C
LXEM2-50LW-DFA-EDU			DFA	3,492	26.1	133.8	40°C
LXEM2-50LW-DCA-EDU			DCA	3,529	26.1	135.2	40°C
LXEM2-30ML-RFP-EDU	Medium Lumen	30K	RFP	3,862	38.5	100.3	40°C
LXEM2-30ML-RP-EDU			RP	4,228	38.5	109.8	40°C
LXEM2-30ML-RFA-EDU			RFA	4,343	38.5	112.8	40°C
LXEM2-30ML-RA-EDU			RA	4,446	38.5	115.5	40°C
LXEM2-30ML-DFA-EDU			DFA	4,526	38.5	117.5	40°C
LXEM2-30ML-DCA-EDU			DCA	4,565	38.5	118.6	40°C
LXEM2-35ML-RFP-EDU		35K	RFP	3,993	38.5	103.7	40°C
LXEM2-35ML-RP-EDU			RP	4,371	38.5	113.5	40°C
LXEM2-35ML-RFA-EDU			RFA	4,490	38.5	116.6	40°C
LXEM2-35ML-RA-EDU			RA	4,597	38.5	119.4	40°C
LXEM2-35ML-DFA-EDU			DFA	4,680	38.5	121.5	40°C
LXEM2-35ML-DCA-EDU			DCA	4,720	38.5	122.6	40°C
LXEM2-40ML-RFP-EDU		40K	RFP	4,055	38.5	105.3	40°C
LXEM2-40ML-RP-EDU			RP	4,439	38.5	115.3	40°C
LXEM2-40ML-RFA-EDU			RFA	4,560	38.5	118.4	40°C
LXEM2-40ML-RA-EDU			RA	4,668	38.5	121.3	40°C
LXEM2-40ML-DFA-EDU			DFA	4,752	38.5	123.4	40°C
LXEM2-40ML-DCA-EDU			DCA	4,793	38.5	124.5	40°C
LXEM2-50ML-RFP-EDU		50K	RFP	4,163	38.5	108.1	40°C
LXEM2-50ML-RP-EDU			RP	4,558	38.5	118.4	40°C
LXEM2-50ML-RFA-EDU			RFA	4,682	38.5	121.6	40°C
LXEM2-50ML-RA-EDU			RA	4,793	38.5	124.5	40°C
LXEM2-50ML-DFA-EDU			DFA	4,879	38.5	126.7	40°C
LXEM2-50ML-DCA-EDU			DCA	4,921	38.5	127.8	40°C
LXEM2-30HL-RFP-EDU	High Lumen	30K	RFP	4,254	44.1	96.5	35°C
LXEM2-30HL-RP-EDU			RP	4,700	44.1	106.6	35°C
LXEM2-30HL-RA-EDU			RA	4,868	44.1	110.4	35°C
LXEM2-30HL-RFA-EDU			RFA	4,874	44.1	110.5	35°C
LXEM2-30HL-DFA-EDU			DFA	5,008	44.1	113.6	35°C
LXEM2-30HL-DCA-EDU			DCA	5,024	44.1	113.9	35°C
LXEM2-35HL-RFP-EDU		35K	RFP	4,399	44.1	99.7	35°C
LXEM2-35HL-RP-EDU			RP	4,860	44.1	110.2	35°C
LXEM2-35HL-RA-EDU			RA	5,033	44.1	114.1	35°C
LXEM2-35HL-RFA-EDU			RFA	5,040	44.1	114.3	35°C
LXEM2-35HL-DFA-EDU			DFA	5,179	44.1	117.4	35°C
LXEM2-35HL-DCA-EDU			DCA	5,195	44.1	117.8	35°C
LXEM2-40HL-RFP-EDU		40K	RFP	4,467	44.1	101.3	35°C
LXEM2-40HL-RP-EDU			RP	4,935	44.1	111.9	35°C
LXEM2-40HL-RA-EDU			RA	5,111	44.1	115.9	35°C
LXEM2-40HL-RFA-EDU			RFA	5,117	44.1	116.0	35°C

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LXEM

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PRODUCT AVAILABILITY

Lumen Package	Output	Color	Lens	Lumens	Watts	LPW	Max Ambient Operating Temp
LXEM2-40HL-DFA-EDU	High Lumen	40K	DFA	5,259	44.1	119.2	35°C
LXEM2-40HL-DCA-EDU			DCA	5,275	44.1	119.6	35°C
LXEM2-50HL-RFP-EDU		50K	RFP	4,586	44.1	104.0	35°C
LXEM2-50HL-RP-EDU			RP	5,066	44.1	114.9	35°C
LXEM2-50HL-RA-EDU			RA	5,248	44.1	119.0	35°C
LXEM2-50HL-RFA-EDU			RFA	5,254	44.1	119.1	35°C
LXEM2-50HL-DFA-EDU			DFA	5,399	44.1	122.4	35°C
LXEM2-50HL-DCA-EDU			DCA	5,416	44.1	122.8	35°C
LXEM4-30VW-RFP-EDU	Very Low Watt	30K	RFP	2,802	24.5	114.4	50°C
LXEM4-30VW-RP-EDU			RP	2,938	24.4	120.4	50°C
LXEM4-30VW-RA-EDU			RA	3,039	24.4	124.6	50°C
LXEM4-30VW-RFA-EDU			RFA	3,048	24.5	124.4	50°C
LXEM4-30VW-DCA-EDU			DCA	3,180	24.4	130.3	50°C
LXEM4-30VW-DFA-EDU			DFA	3,184	24.4	130.5	50°C
LXEM4-35VW-RFP-EDU		35K	RFP	2,897	24.5	118.2	50°C
LXEM4-35VW-RP-EDU			RP	3,038	24.4	124.5	50°C
LXEM4-35VW-RA-EDU			RA	3,143	24.4	128.8	50°C
LXEM4-35VW-RFA-EDU			RFA	3,151	24.5	128.6	50°C
LXEM4-35VW-DCA-EDU			DCA	3,288	24.4	134.8	50°C
LXEM4-35VW-DFA-EDU			DFA	3,293	24.4	134.9	50°C
LXEM4-40VW-RFP-EDU		40K	RFP	2,942	24.5	120.1	50°C
LXEM4-40VW-RP-EDU			RP	3,085	24.4	126.4	50°C
LXEM4-40VW-RA-EDU			RA	3,191	24.4	130.8	50°C
LXEM4-40VW-RFA-EDU			RFA	3,200	24.5	130.6	50°C
LXEM4-40VW-DCA-EDU			DCA	3,339	24.4	136.8	50°C
LXEM4-40VW-DFA-EDU			DFA	3,344	24.4	137.0	50°C
LXEM4-50VW-RFP-EDU		50K	RFP	3,020	24.5	123.3	50°C
LXEM4-50VW-RP-EDU			RP	3,168	24.4	129.8	50°C
LXEM4-50VW-RA-EDU			RA	3,276	24.4	134.3	50°C
LXEM4-50VW-RFA-EDU			RFA	3,285	24.5	134.1	50°C
LXEM4-50VW-DCA-EDU			DCA	3,428	24.4	140.5	50°C
LXEM4-50VW-DFA-EDU			DFA	3,433	24.4	140.7	50°C
LXEM4-30LW-RFP-EDU	Low Watt	30K	RFP	3,726	33.3	111.9	50°C
LXEM4-30LW-RP-EDU			RP	3,872	33.3	116.3	50°C
LXEM4-30LW-RFA-EDU			RFA	4,048	33.3	121.5	50°C
LXEM4-30LW-RA-EDU			RA	4,054	33.3	121.8	50°C
LXEM4-30LW-DFA-EDU			DFA	4,241	33.3	127.4	50°C
LXEM4-30LW-DCA-EDU			DCA	4,303	33.3	129.2	50°C
LXEM4-35LW-RFP-EDU		35K	RFP	3,853	33.3	115.7	50°C
LXEM4-35LW-RP-EDU			RP	4,004	33.3	120.2	50°C
LXEM4-35LW-RFA-EDU			RFA	4,185	33.3	125.7	50°C
LXEM4-35LW-RA-EDU			RA	4,192	33.3	125.9	50°C
LXEM4-35LW-DFA-EDU			DFA	4,385	33.3	131.7	50°C
LXEM4-35LW-DCA-EDU			DCA	4,449	33.3	133.6	50°C

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LXEM

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PRODUCT AVAILABILITY

Lumen Package	Output	Color	Lens	Lumens	Watts	LPW	Max Ambient Operating Temp
LXEM4-40LW-RFP-EDU	Low Watt	40K	RFP	3,912	33.3	117.5	50°C
LXEM4-40LW-RP-EDU			RP	4,066	33.3	122.1	50°C
LXEM4-40LW-RFA-EDU			RFA	4,250	33.3	127.6	50°C
LXEM4-40LW-RA-EDU			RA	4,257	33.3	127.8	50°C
LXEM4-40LW-DFA-EDU			DFA	4,453	33.3	133.7	50°C
LXEM4-40LW-DCA-EDU			DCA	4,518	33.3	135.7	50°C
LXEM4-50LW-RFP-EDU		50K	RFP	4,017	33.3	120.6	50°C
LXEM4-50LW-RP-EDU			RP	4,174	33.3	125.3	50°C
LXEM4-50LW-RFA-EDU			RFA	4,363	33.3	131.0	50°C
LXEM4-50LW-RA-EDU			RA	4,371	33.3	131.3	50°C
LXEM4-50LW-DFA-EDU			DFA	4,572	33.3	137.3	50°C
LXEM4-50LW-DCA-EDU			DCA	4,638	33.3	139.3	50°C
LXEM4-30ML-RFP-EDU	Medium Lumen	30K	RFP	4,533	41.9	108.2	50°C
LXEM4-30ML-RP-EDU			RP	4,714	41.9	112.5	50°C
LXEM4-30ML-RFA-EDU			RFA	4,922	42.0	117.2	50°C
LXEM4-30ML-RA-EDU			RA	4,924	42.0	117.2	50°C
LXEM4-30ML-DFA-EDU			DFA	5,160	42.0	122.9	50°C
LXEM4-30ML-DCA-EDU			DCA	5,238	42.0	124.7	50°C
LXEM4-35ML-RFP-EDU		35K	RFP	4,688	41.9	111.9	50°C
LXEM4-35ML-RP-EDU			RP	4,875	41.9	116.3	50°C
LXEM4-35ML-RFA-EDU			RFA	5,089	42.0	121.2	50°C
LXEM4-35ML-RA-EDU			RA	5,091	42.0	121.2	50°C
LXEM4-35ML-DFA-EDU			DFA	5,336	42.0	127.0	50°C
LXEM4-35ML-DCA-EDU			DCA	5,416	42.0	128.9	50°C
LXEM4-40ML-RFP-EDU		40K	RFP	4,760	41.9	113.6	50°C
LXEM4-40ML-RP-EDU			RP	4,950	41.9	118.1	50°C
LXEM4-40ML-RFA-EDU			RFA	5,168	42.0	123.1	50°C
LXEM4-40ML-RA-EDU			RA	5,170	42.0	123.1	50°C
LXEM4-40ML-DFA-EDU			DFA	5,418	42.0	129.0	50°C
LXEM4-40ML-DCA-EDU			DCA	5,500	42.0	130.9	50°C
LXEM4-50ML-RFP-EDU		50K	RFP	4,887	41.9	116.6	50°C
LXEM4-50ML-RP-EDU			RP	5,082	41.9	121.3	50°C
LXEM4-50ML-RFA-EDU			RFA	5,306	42.0	126.3	50°C
LXEM4-50ML-RA-EDU			RA	5,308	42.0	126.4	50°C
LXEM4-50ML-DFA-EDU			DFA	5,563	42.0	132.4	50°C
LXEM4-50ML-DCA-EDU			DCA	5,646	42.0	134.4	50°C
LXEM4-30HL-RFP-EDU	High Lumen	30K	RFP	5,449	47.4	115.0	45°C
LXEM4-30HL-RP-EDU			RP	5,648	47.2	119.7	45°C
LXEM4-30HL-RFA-EDU			RFA	5,926	47.4	125.0	45°C
LXEM4-30HL-RA-EDU			RA	5,932	47.3	125.4	45°C
LXEM4-30HL-DFA-EDU			DFA	6,214	47.3	131.4	45°C
LXEM4-30HL-DCA-EDU			DCA	6,273	47.4	132.4	45°C
LXEM4-35HL-RFP-EDU		35K	RFP	5,634	47.4	118.9	45°C
LXEM4-35HL-RP-EDU			RP	5,840	47.2	123.7	45°C

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PRODUCT AVAILABILITY

Lumen Package	Output	Color	Lens	Lumens	Watts	LPW	Max Ambient Operating Temp
LXEM4-35HL-RFA-EDU	High Lumen	35K	RFA	6,127	47.4	129.3	45°C
LXEM4-35HL-RA-EDU			RA	6,133	47.3	129.7	45°C
LXEM4-35HL-DFA-EDU			DFA	6,425	47.3	135.8	45°C
LXEM4-35HL-DCA-EDU			DCA	6,487	47.4	136.9	45°C
LXEM4-40HL-RFP-EDU		40K	RFP	5,721	47.4	120.7	45°C
LXEM4-40HL-RP-EDU			RP	5,931	47.2	125.7	45°C
LXEM4-40HL-RFA-EDU			RFA	6,222	47.4	131.3	45°C
LXEM4-40HL-RA-EDU			RA	6,228	47.3	131.7	45°C
LXEM4-40HL-DFA-EDU			DFA	6,525	47.3	137.9	45°C
LXEM4-40HL-DCA-EDU			DCA	6,587	47.4	139.0	45°C
LXEM4-50HL-RFP-EDU		50K	RFP	5,874	47.4	123.9	45°C
LXEM4-50HL-RP-EDU			RP	6,089	47.2	129.0	45°C
LXEM4-50HL-RFA-EDU			RFA	6,388	47.4	134.8	45°C
LXEM4-50HL-RA-EDU			RA	6,394	47.3	135.2	45°C
LXEM4-50HL-DFA-EDU			DFA	6,699	47.3	141.6	45°C
LXEM4-50HL-DCA-EDU			DCA	6,763	47.4	142.7	45°C
LXEM4-30VL-RP-EDU	Very High Lumen	30K	RP	7,086	61.6	115.0	40°C
LXEM4-30VL-RA-EDU			RA	7,373	61.7	119.5	40°C
LXEM4-30VL-RFP-EDU			RFP	7,388	61.6	119.9	40°C
LXEM4-30VL-RFA-EDU			RFA	7,395	61.6	120.0	40°C
LXEM4-30VL-DFA-EDU			DFA	7,756	61.7	125.7	40°C
LXEM4-30VL-DCA-EDU			DCA	7,806	61.7	126.5	40°C
LXEM4-35VL-RP-EDU		35K	RP	7,327	61.6	118.9	40°C
LXEM4-35VL-RA-EDU			RA	7,624	61.7	123.6	40°C
LXEM4-35VL-RFP-EDU			RFP	7,639	61.6	124.0	40°C
LXEM4-35VL-RFA-EDU			RFA	7,646	61.6	124.1	40°C
LXEM4-35VL-DFA-EDU			DFA	8,020	61.7	130.0	40°C
LXEM4-35VL-DCA-EDU			DCA	8,072	61.7	130.8	40°C
LXEM4-40VL-RP-EDU		40K	RP	7,440	61.6	120.8	40°C
LXEM4-40VL-RA-EDU			RA	7,742	61.7	125.5	40°C
LXEM4-40VL-RFP-EDU			RFP	7,757	61.6	125.9	40°C
LXEM4-40VL-RFA-EDU			RFA	7,764	61.6	126.0	40°C
LXEM4-40VL-DFA-EDU			DFA	8,144	61.7	132.0	40°C
LXEM4-40VL-DCA-EDU			DCA	8,197	61.7	132.8	40°C
LXEM4-50VL-RP-EDU		50K	RP	7,639	61.6	124.0	40°C
LXEM4-50VL-RA-EDU			RA	7,948	61.7	128.8	40°C
LXEM4-50VL-RFP-EDU			RFP	7,964	61.6	129.3	40°C
LXEM4-50VL-RFA-EDU			RFA	7,971	61.6	129.4	40°C
LXEM4-50VL-DFA-EDU			DFA	8,361	61.7	135.5	40°C
LXEM4-50VL-DCA-EDU			DCA	8,415	61.7	136.4	40°C
LXEM4-30XL-RFP-EDU	Xtra High Lumen	30K	RFP	9,059	91.3	99.2	30°C
LXEM4-30XL-RP-EDU			RP	9,448	91.2	103.6	30°C
LXEM4-30XL-RFA-EDU			RFA	9,779	91.2	107.2	30°C
LXEM4-30XL-RA-EDU			RA	9,839	91.4	107.7	30°C

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HUBBELL Lighting

Columbia LIGHTING

LXEM

Enclosed and Gasketed Fiberglass Extreme Environment / LED

PRODUCT AVAILABILITY

Lumen Package	Output	Color	Lens	Lumens	Watts	LPW	Max Ambient Operating Temp
LXEM4-30XL-DFA-EDU	Xtra High Lumen	30K	DFA	10,358	91.4	113.3	30°C
LXEM4-30XL-DCA-EDU			DCA	10,424	91.5	113.9	30°C
LXEM4-35XL-RFP-EDU		35K	RFP	9,367	91.3	102.6	30°C
LXEM4-35XL-RP-EDU			RP	9,769	91.2	107.1	30°C
LXEM4-35XL-RFA-EDU			RFA	10,111	91.2	110.9	30°C
LXEM4-35XL-RA-EDU			RA	10,174	91.4	111.3	30°C
LXEM4-35XL-DFA-EDU			DFA	10,710	91.4	117.2	30°C
LXEM4-35XL-DCA-EDU			DCA	10,778	91.5	117.8	30°C
LXEM4-40XL-RFP-EDU		40K	RFP	9,512	91.3	104.2	30°C
LXEM4-40XL-RP-EDU			RP	9,920	91.2	108.8	30°C
LXEM4-40XL-RFA-EDU			RFA	10,268	91.2	112.6	30°C
LXEM4-40XL-RA-EDU			RA	10,331	91.4	113.0	30°C
LXEM4-40XL-DFA-EDU			DFA	10,876	91.4	119.0	30°C
LXEM4-40XL-DCA-EDU			DCA	10,945	91.5	119.6	30°C
LXEM4-50XL-RFP-EDU		50K	RFP	9,765	91.3	107.0	30°C
LXEM4-50XL-RP-EDU			RP	10,184	91.2	111.7	30°C
LXEM4-50XL-RFA-EDU			RFA	10,542	91.2	115.6	30°C
LXEM4-50XL-RA-EDU			RA	10,607	91.4	116.0	30°C
LXEM4-50XL-DFA-EDU			DFA	11,166	91.4	122.2	30°C
LXEM4-50XL-DCA-EDU			DCA	11,237	91.5	122.8	30°C
LXEM8-30VW-RA-EDU	Very Low Watt	30K	RA	6,078	48.8	124.6	50°C
LXEM8-30VW-RFA-EDU			RFA	6,096	49.0	124.4	50°C
LXEM8-30VW-DCA-EDU			DCA	6,360	48.8	130.3	50°C
LXEM8-30VW-DFA-EDU			DFA	6,369	48.8	130.5	50°C
LXEM8-35VW-RA-EDU		35K	RA	6,285	48.8	128.8	50°C
LXEM8-35VW-RFA-EDU			RFA	6,303	49.0	128.6	50°C
LXEM8-35VW-DCA-EDU			DCA	6,576	48.8	134.8	50°C
LXEM8-35VW-DFA-EDU			DFA	6,585	48.8	134.9	50°C
LXEM8-40VW-RA-EDU		40K	RA	6,382	48.8	130.8	50°C
LXEM8-40VW-RFA-EDU			RFA	6,400	49.0	130.6	50°C
LXEM8-40VW-DCA-EDU			DCA	6,678	48.8	136.8	50°C
LXEM8-40VW-DFA-EDU			DFA	6,687	48.8	137.0	50°C
LXEM8-50VW-RA-EDU		50K	RA	6,553	48.8	134.3	50°C
LXEM8-50VW-RFA-EDU			RFA	6,571	49.0	134.1	50°C
LXEM8-50VW-DCA-EDU			DCA	6,856	48.8	140.5	50°C
LXEM8-50VW-DFA-EDU			DFA	6,866	48.8	140.7	50°C
LXEM8-30LW-RFA-EDU	Low Watt	30K	RFA	8,095	66.6	121.5	50°C
LXEM8-30LW-RA-EDU			RA	8,109	66.6	121.8	50°C
LXEM8-30LW-DFA-EDU			DFA	8,482	66.6	127.4	50°C
LXEM8-30LW-DCA-EDU			DCA	8,605	66.6	129.2	50°C
LXEM8-35LW-RFA-EDU		35K	RFA	8,370	66.6	125.7	50°C
LXEM8-35LW-RA-EDU			RA	8,385	66.6	125.9	50°C
LXEM8-35LW-DFA-EDU			DFA	8,770	66.6	131.7	50°C
LXEM8-35LW-DCA-EDU			DCA	8,898	66.6	133.6	50°C

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HUBBELL Lighting

Columbia LIGHTING

LXEM

Enclosed and Gasketed Fiberglass Extreme Environment / LED

PRODUCT AVAILABILITY

Lumen Package	Output	Color	Lens	Lumens	Watts	LPW	Max Ambient Operating Temp
LXEM8-40LW-RFA-EDU	Low Watt	40K	RFA	8,500	66.6	127.6	50°C
LXEM8-40LW-RA-EDU			RA	8,514	66.6	127.8	50°C
LXEM8-40LW-DFA-EDU			DFA	8,906	66.6	133.7	50°C
LXEM8-40LW-DCA-EDU			DCA	9,035	66.6	135.7	50°C
LXEM8-50LW-RFA-EDU		50K	RFA	8,727	66.6	131.0	50°C
LXEM8-50LW-RA-EDU			RA	8,741	66.6	131.3	50°C
LXEM8-50LW-DFA-EDU			DFA	9,143	66.6	137.3	50°C
LXEM8-50LW-DCA-EDU			DCA	9,276	66.6	139.3	50°C
LXEM8-30ML-RFA-EDU	Medium Lumen	30K	RFA	9,844	84.0	117.2	50°C
LXEM8-30ML-RA-EDU			RA	9,847	84.0	117.2	50°C
LXEM8-30ML-DFA-EDU			DFA	10,320	84.0	122.9	50°C
LXEM8-30ML-DCA-EDU			DCA	10,476	84.0	124.7	50°C
LXEM8-35ML-RFA-EDU		35K	RFA	10,179	84.0	121.2	50°C
LXEM8-35ML-RA-EDU			RA	10,182	84.0	121.2	50°C
LXEM8-35ML-DFA-EDU			DFA	10,671	84.0	127.0	50°C
LXEM8-35ML-DCA-EDU			DCA	10,832	84.0	128.9	50°C
LXEM8-40ML-RFA-EDU		40K	RFA	10,336	84.0	123.1	50°C
LXEM8-40ML-RA-EDU			RA	10,340	84.0	123.1	50°C
LXEM8-40ML-DFA-EDU			DFA	10,836	84.0	129.0	50°C
LXEM8-40ML-DCA-EDU			DCA	10,999	84.0	130.9	50°C
LXEM8-50ML-RFA-EDU		50K	RFA	10,612	84.0	126.3	50°C
LXEM8-50ML-RA-EDU			RA	10,616	84.0	126.4	50°C
LXEM8-50ML-DFA-EDU			DFA	11,125	84.0	132.4	50°C
LXEM8-50ML-DCA-EDU			DCA	11,293	84.0	134.4	50°C
LXEM8-30HL-RFA-EDU	High Lumen	30K	RFA	11,851	94.8	125.0	45°C
LXEM8-30HL-RA-EDU			RA	11,863	94.6	125.4	45°C
LXEM8-30HL-DFA-EDU			DFA	12,428	94.6	131.4	45°C
LXEM8-30HL-DCA-EDU			DCA	12,547	94.8	132.4	45°C
LXEM8-35HL-RFA-EDU		35K	RFA	12,254	94.8	129.3	45°C
LXEM8-35HL-RA-EDU			RA	12,267	94.6	129.7	45°C
LXEM8-35HL-DFA-EDU			DFA	12,851	94.6	135.8	45°C
LXEM8-35HL-DCA-EDU			DCA	12,973	94.8	136.9	45°C
LXEM8-40HL-RFA-EDU		40K	RFA	12,444	94.8	131.3	45°C
LXEM8-40HL-RA-EDU			RA	12,456	94.6	131.7	45°C
LXEM8-40HL-DFA-EDU			DFA	13,049	94.6	137.9	45°C
LXEM8-40HL-DCA-EDU			DCA	13,174	94.8	139.0	45°C
LXEM8-50HL-RFA-EDU		50K	RFA	12,776	94.8	134.8	45°C
LXEM8-50HL-RA-EDU			RA	12,789	94.6	135.2	45°C
LXEM8-50HL-DFA-EDU			DFA	13,397	94.6	141.6	45°C
LXEM8-50HL-DCA-EDU			DCA	13,525	94.8	142.7	45°C
LXEM8-30VL-RA-EDU	Very High Lumen	30K	RA	14,747	123.4	119.5	40°C
LXEM8-30VL-RFA-EDU			RFA	14,789	123.2	120.0	40°C
LXEM8-30VL-DFA-EDU			DFA	15,512	123.4	125.7	40°C
LXEM8-30VL-DCA-EDU			DCA	15,613	123.4	126.5	40°C

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HUBBELL Lighting

Columbia LIGHTING

LXEM

Enclosed and Gasketed Fiberglass Extreme Environment / LED

PRODUCT AVAILABILITY

Lumen Package	Output	Color	Lens	Lumens	Watts	LPW	Max Ambient Operating Temp
LXEM8-35VL-RA-EDU	Very High	35K	RA	15,248	123.4	123.6	40°C
LXEM8-35VL-RFA-EDU			RFA	15,292	123.2	124.1	40°C
LXEM8-35VL-DFA-EDU			DFA	16,040	123.4	130.0	40°C
LXEM8-35VL-DCA-EDU			DCA	16,143	123.4	130.8	40°C
LXEM8-40VL-RA-EDU		40K	RA	15,484	123.4	125.5	40°C
LXEM8-40VL-RFA-EDU			RFA	15,529	123.2	126.0	40°C
LXEM8-40VL-DFA-EDU			DFA	16,288	123.4	132.0	40°C
LXEM8-40VL-DCA-EDU			DCA	16,393	123.4	132.8	40°C
LXEM8-50VL-RA-EDU		50K	RA	15,897	123.4	128.8	40°C
LXEM8-50VL-RFA-EDU			RFA	15,943	123.2	129.4	40°C
LXEM8-50VL-DFA-EDU			DFA	16,722	123.4	135.5	40°C
LXEM8-50VL-DCA-EDU			DCA	16,830	123.4	136.4	40°C
LXEM8-30XL-RFA-EDU	Xtra High Lumen	30K	RFA	19,558	182.4	107.2	30°C
LXEM8-30XL-RA-EDU			RA	19,678	182.8	107.7	30°C
LXEM8-30XL-DFA-EDU			DFA	20,716	182.8	113.3	30°C
LXEM8-30XL-DCA-EDU			DCA	20,847	183.0	113.9	30°C
LXEM8-35XL-RFA-EDU		35K	RFA	20,223	182.4	110.9	30°C
LXEM8-35XL-RA-EDU			RA	20,348	182.8	111.3	30°C
LXEM8-35XL-DFA-EDU			DFA	21,420	182.8	117.2	30°C
LXEM8-35XL-DCA-EDU			DCA	21,556	183.0	117.8	30°C
LXEM8-40XL-RFA-EDU		40K	RFA	20,536	182.4	112.6	30°C
LXEM8-40XL-RA-EDU			RA	20,662	182.8	113.0	30°C
LXEM8-40XL-DFA-EDU			DFA	21,752	182.8	119.0	30°C
LXEM8-40XL-DCA-EDU			DCA	21,889	183.0	119.6	30°C
LXEM8-50XL-RFA-EDU		50K	RFA	21,083	182.4	115.6	30°C
LXEM8-50XL-RA-EDU			RA	21,213	182.8	116.0	30°C
LXEM8-50XL-DFA-EDU			DFA	22,332	182.8	122.2	30°C
LXEM8-50XL-DCA-EDU			DCA	22,473	183.0	122.8	30°C

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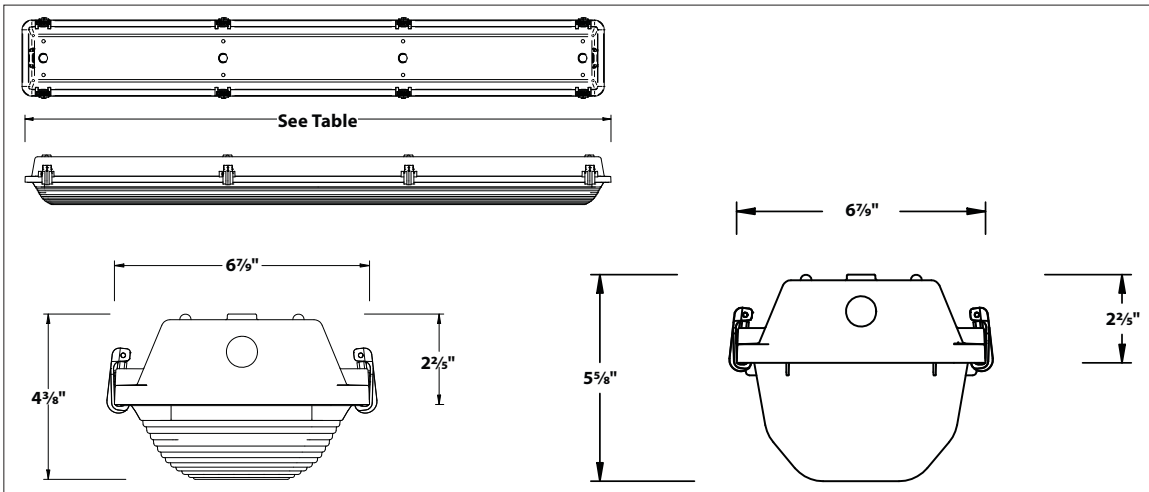
DIMENSIONAL DATA



LXEM LENGTH DIMENSIONS

SIZE	LENS	LENGTH	SIZE	LENS	LENGTH	SIZE	LENS	LENGTH
2'	RFA	27⅔"	4'	RFA	51⅓"	8'	RFA	100"
	RA	27⅔"		RA	51⅓"		RA	N/A
	DFA	27⅔"		DFA	51⅓"		DFA	100"
	DCA	27⅔"		DCA	51⅓"		DCA	100"
	RFP	27⅔"		RFP	51⅓"		RFP	N/A
	RP	27⅔"		RP	51⅓"		RP	N/A

NOTE: All dimensions are in inches; dimensions and specifications are subject to change without notice. Please consult factory or check sample for verification.

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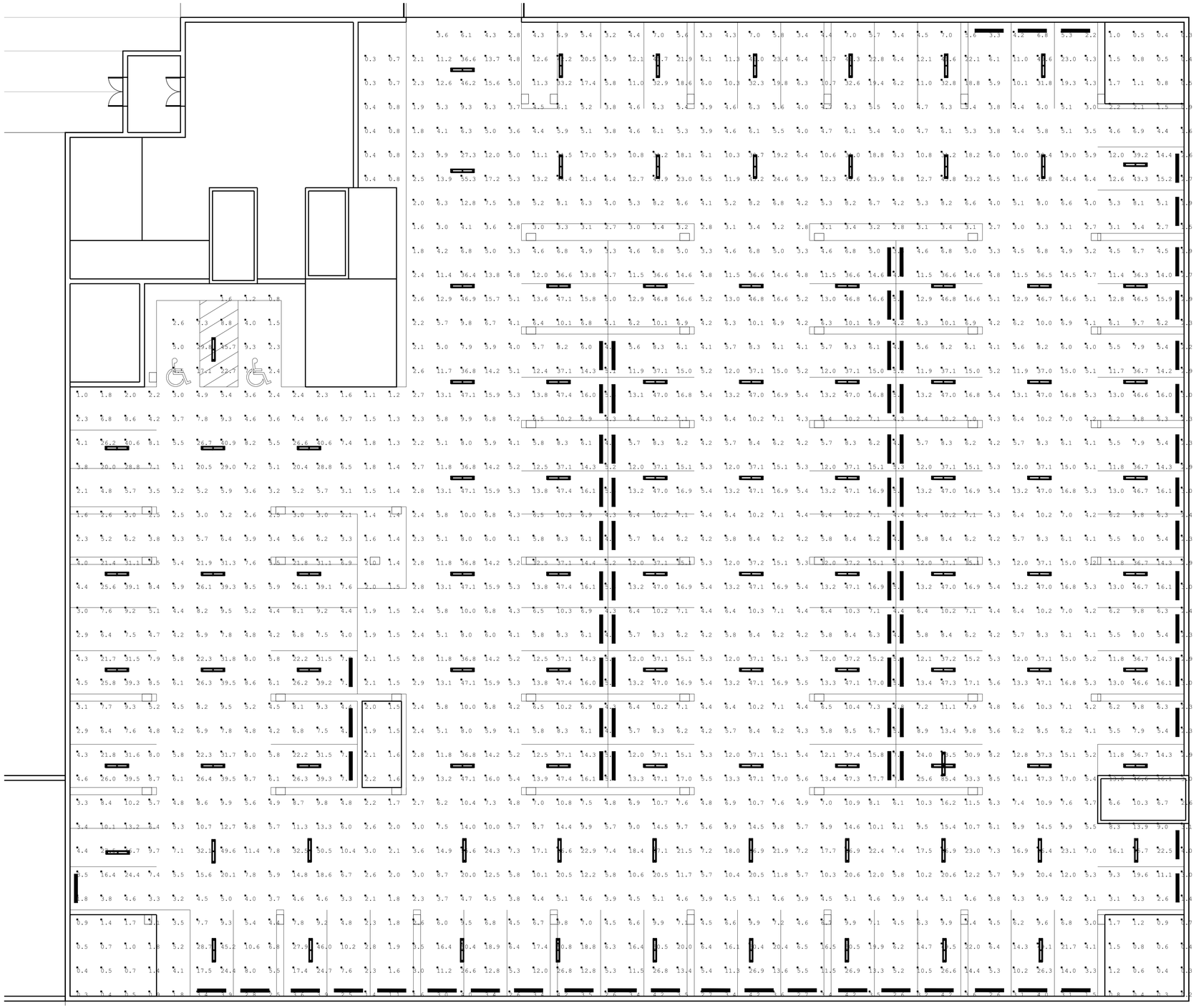

*LIGHTING FIXTURE TO BE MOUNTED APPROXIMATELY 11 FT ABOVE FINISHED FLOOR. GARAGE SCREENED OPENING HEIGHT AT APPROXIMATELY 10 FT.

(THESE DRAWINGS ARE FOR CONCEPTUAL USE ONLY)

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Room 2 Workplane	Illuminance	Fc	31.11	85.4	0.92	33.85	107.00

Luminaire Schedule

Symbol	Label	Description	Tag	LLF	Total Watts	Mounting Height
	F	LXEM4-40HL-RFA-EDU		0.880	4597.8	8

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KRE Conshohocken
401/433 Washington street

Project Number: 21033P
Client: KRE Conshohocken
Drawing Number: 01 of 01
Date: 05/20/22

TYPICAL GROUND FLOOR PLAN GARAGE LIGHTING LAYOUT

BARTONPARTNERS
urban design + architecture + interiors

Contact
610.930.2800
www.bartonpartners.com

Norristown
700 E. Main St. Suite 301
Norristown, PA 19401

Philadelphia
1524 Delancey St. 3rd Floor
Philadelphia, PA 19102

May 11, 2021

Nicole Galio
Colliers Engineering & Design
Allentown, PA

Re: Water Availability
401-433 Washington St
Conshohocken Boro, Montgomery County

In response to your request, this letter will serve as confirmation that the above referenced property is situated within Aqua Pennsylvania Inc. service territory.

Domestic and fire water service is available to this property and will be provided in accordance with Aqua Pennsylvania, Inc. Rules and Regulations. For further details, visit www.aquaamerica.com.

With regard to our capacity for domestic and fire service for this area, flow data information can be obtained upon written request to Lisa Thomas of our Control Center at LATHOMAS@AQUAAMERICA.COM. Include the address with town or township and the nearest intersecting street.

Should you have any further questions or need to request an application for service, contact me at (610) 541-4160 or dlciotti@aquaamerica.com.

Regards,

Deanna L. Ciotti
Special Services Coordinator-New Business Applications
Aqua Pennsylvania, Inc
700 W Sproul Rd
Springfield, PA 19064
O: 610.541.4160

401 & 403 Washington St

Green Garage Screen

05.23.2022

Prepared by:

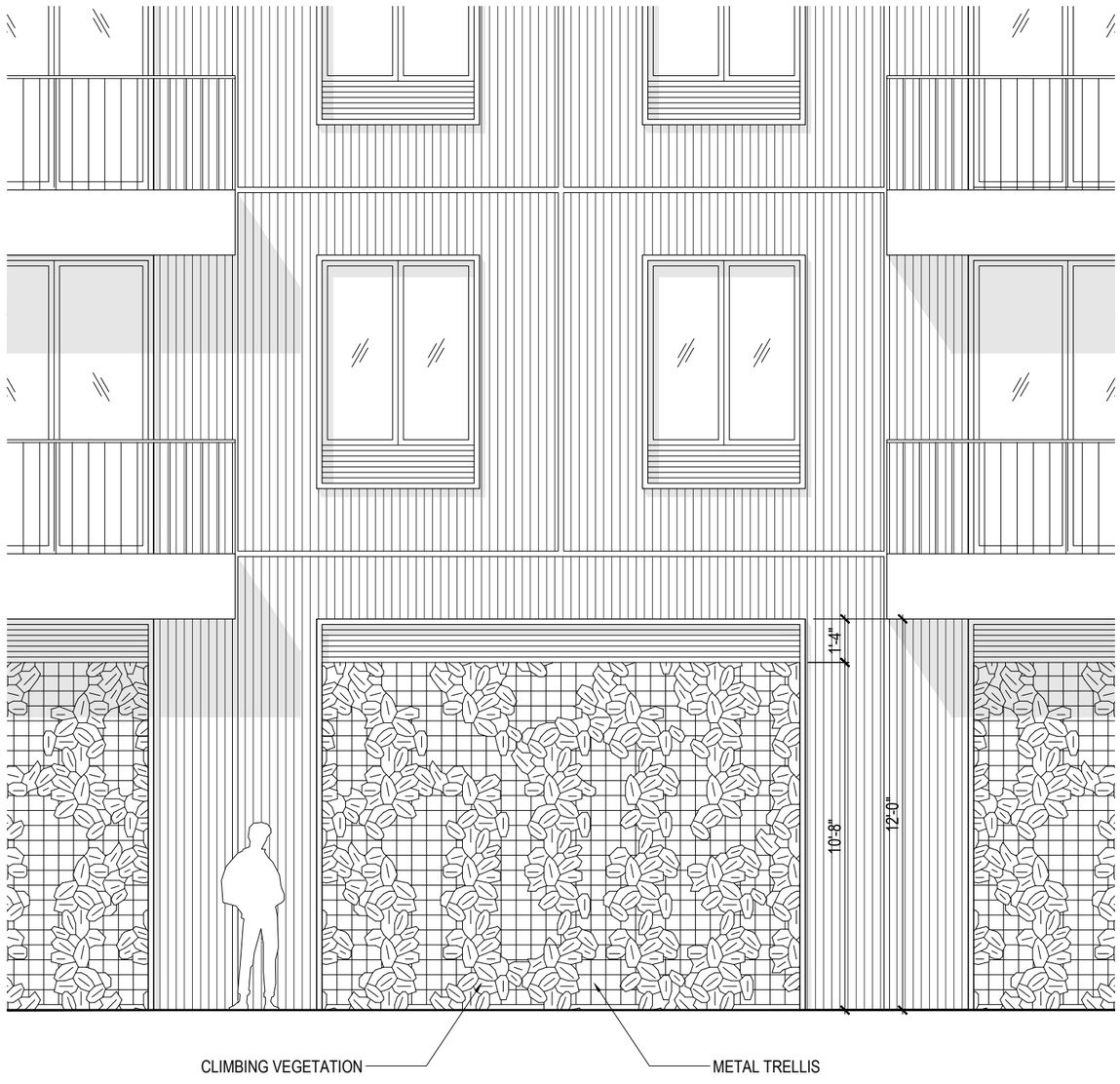
Major

BARTONPARTNERS
urban design + architecture

Prepared for:

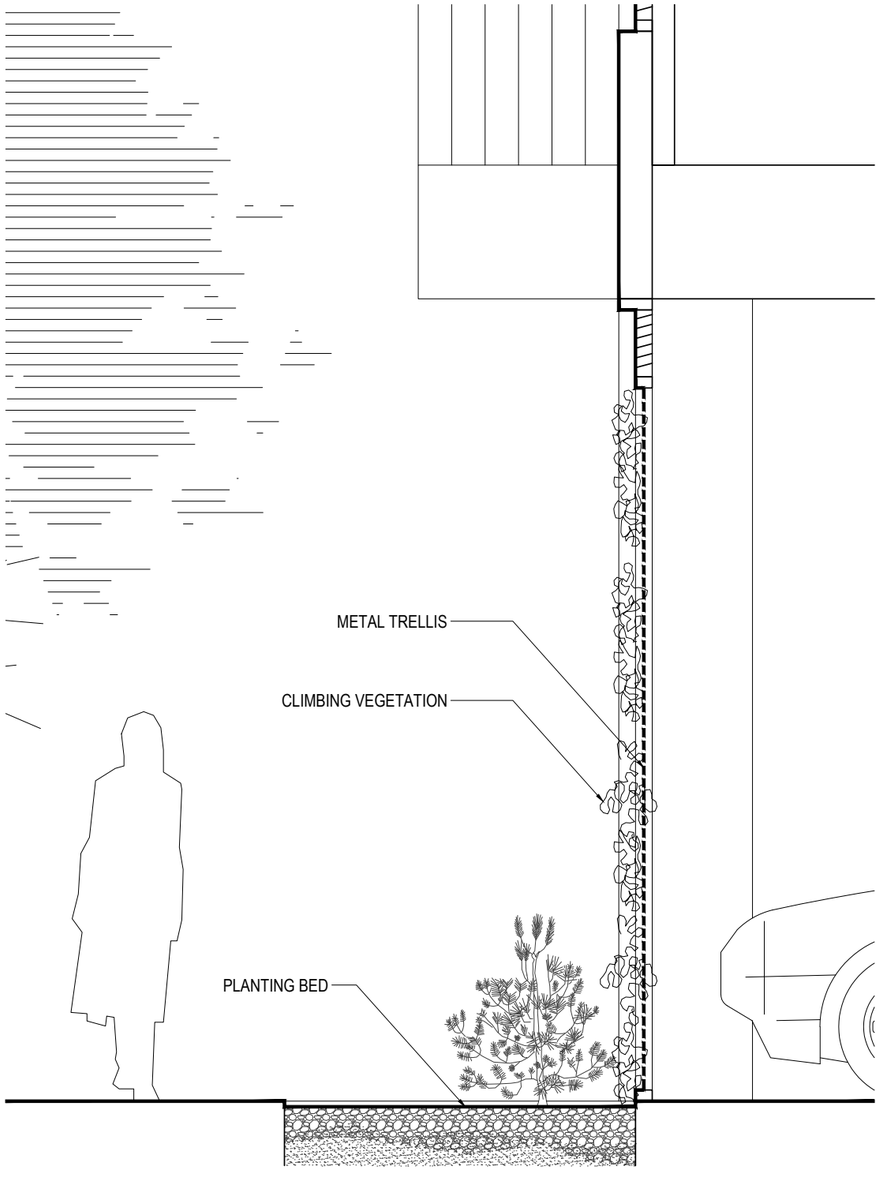
KRE
Kushner Real Estate Group

Disclaimer: Work contained in these documents prepared by Major Architecture D.P.C. is preliminary in nature and is subject to further review for compliance with applicable codes, rules, laws and requirements of authorities having jurisdiction over the Project. Major is not responsible for the accuracy and completeness of these documents furnished to the Client or third parties and therefore shall have no liability for claims arising out of use of these documents.



2 GARAGE GREEN SCREEN ELEVATION

Scale: 1/4" = 1'-0"



1 GARAGE GREEN SCREEN SECTION

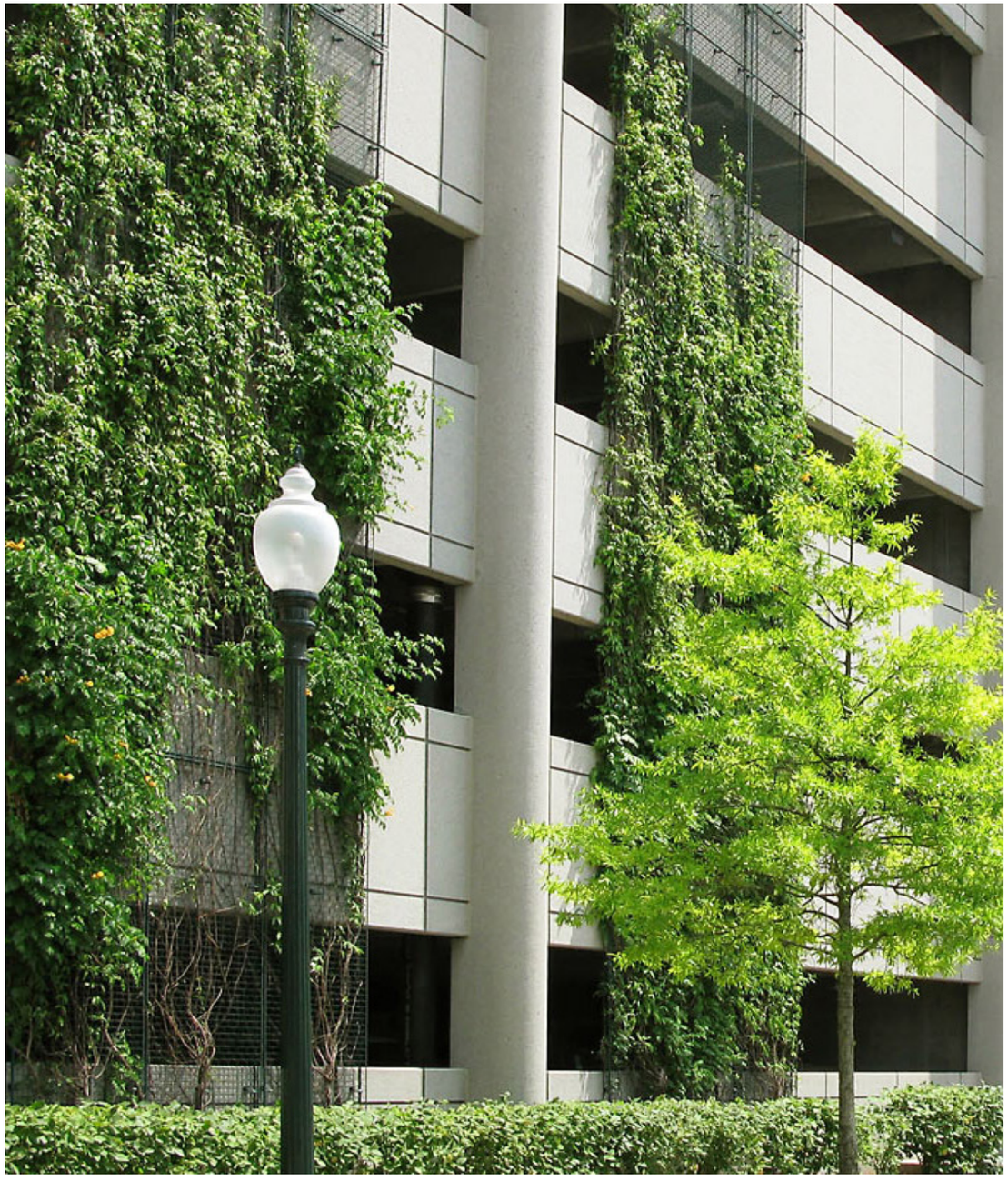
Scale: 1/2" = 1'-0"

View from Washinton St

Major

Facade Precedents
Green Screen Over Parking

401 & 403 Washingtons St



Major

Facade Precedents
Green Screen Over Parking

401 & 403 Washingtons St

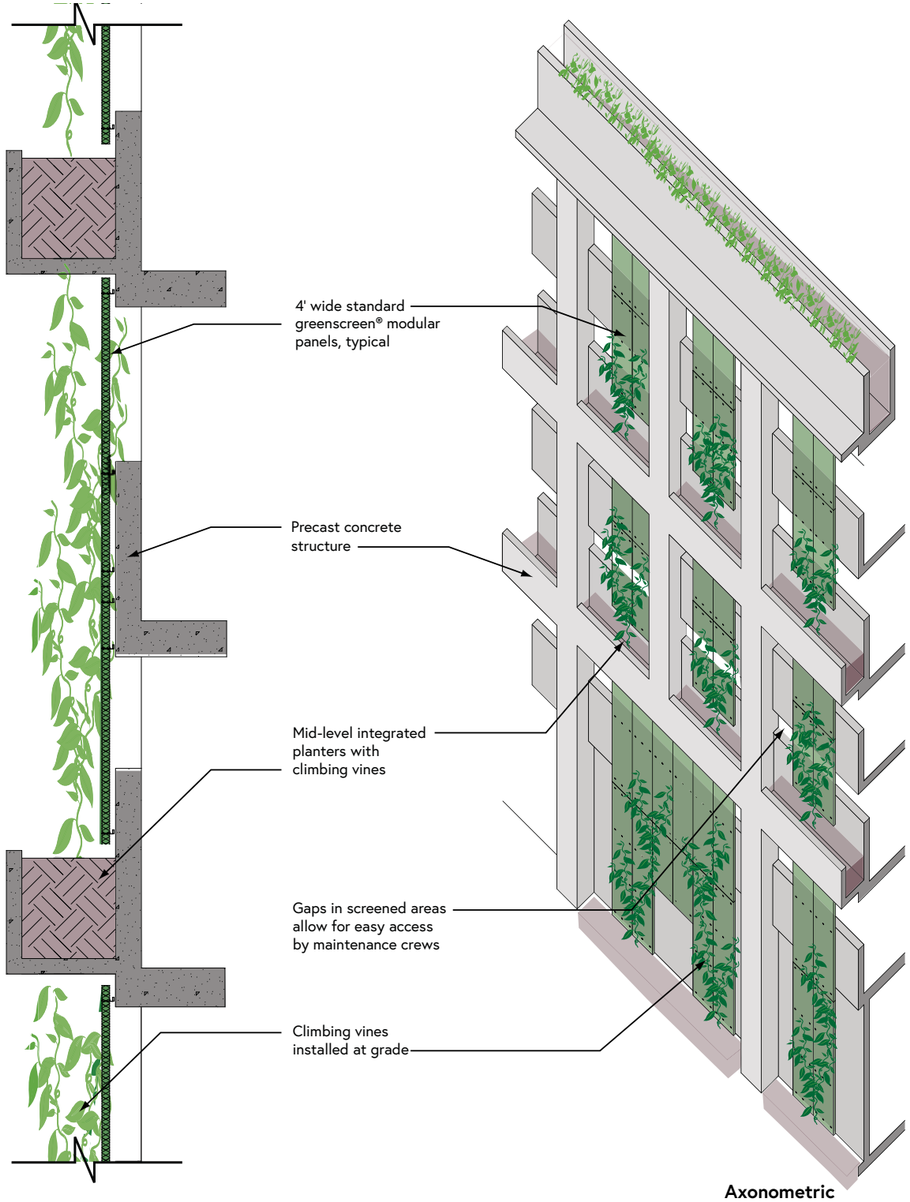
Major

Facade Precedents
Green Screen Over Parking

401 & 403 Washingtons St

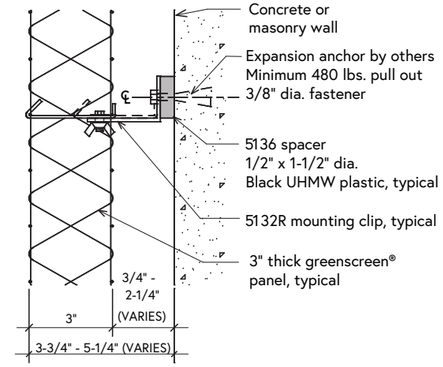
3 Parking Structure Green Façade Details

Integrated Planters

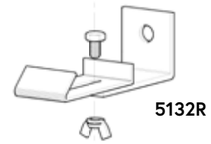


Enlarged Section Detail

Axonometric



FACE OF PANEL TO FACE OF WALL



5132R

ELEVATED PLANTER CONSIDERATIONS

When considering elevated planters, keep in mind the following for best results:

- Integrate planters into the design and structure of the façade from the beginning of the design process
- Allow for maintenance access from the interior of the garage
- Planter will require irrigation and drainage
- Vines will typically grow 3 to 5 times the depth of the soil. For a 2' deep planter, vines could be expected to grow 6' to 10' tall. For a 3' deep planter, vines could be expected to reach a height of 9' to 15'

Project: Seminole Casino Coconut Creek, FL • Architect: Friedmutter Group • Contractor: Moss Anderson

Thank you!

Major

Major Architecture DPC
1 Whitehall Street, 14th Floor
New York, NY 10004
www.itsmajor.com

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Suite 801
Allentown, Pennsylvania 18109
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May 27, 2022

Borough of Conshohocken
Attn: Tim Gunning, Fire Marshal
Borough Hall
400 Fayette Street, Suite 200
Conshohocken, PA 19428

401/433 Washington Street Apartments
Colliers Engineering & Design Project No. 14000908C

Dear Mr. Gunning,

Colliers Engineering & Design is in receipt of your letter dated January 7, 2022, and offers the following responses:

1. Fire department apparatus access way in rear of building is located too far away from building. The requirement for fire department access way in the rear is a minimum of 15 feet from the building and a maximum of 30 feet from the building. The plan shall be revised to comply with this requirement.

   The emergency access way has been shifted north to meet the requirements of the fire department, see Sheet 5.

2. Provide a plan for the existing poles along the south side of Washington Street. Photo of existing poles attached.

   Existing utilities poles are shown and labeled on Sheet 4. Existing utility poles to be removed are also labeled on Sheet 4. A note is on the Utility plan that indicates the existing electric along Washington Street will be placed underground.

If you have any questions please feel free to contact me at 484-240-8129 or richard.roseberry@colliersengineering.com.

Sincerely,

Colliers Engineering & Design, Inc.
(DBA Maser Consulting)

C. Richard Roseberry, P.E., AICP
Regional Manager

\\maserconsulting.com\bex\Projects\2014\14000908C\Correspondence\OUT\220524_CRR_Fire Marshal Response Letter.docx

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May 27, 2022

Krista Heinrich, P.E.
Gilmore & Associates, Inc.
65 East Butler Avenue, Suite 100
New Britain, PA 18901

401/433 Washington Street Apartments
Colliers Engineering & Design Project No. 14000908C

Dear Ms. Heinrich,

Colliers Engineering & Design, Inc. is in receipt of your letter dated February 21, 2022, and offers the following responses:

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

6. 105-21(A)(3) Each sheet shall be numbered and shall show its relationship to the total number of sheets. The following plans were submitted separately, and must be incorporated into the plan set:
    - Existing Tree Survey Plan (TSP-1)
    - Erosion and Sediment Control Plans E1-E5
    - PCMS Plans P1-P6
    - Landscape Plans (10 Sheets)

    The cover sheet was revised to incorporate all sets into the plan except for the Erosion and Sediment Control Plans and PCSM Plans due to requirement by the Montgomery County Conservation District to provide separate and detached plan sets. These plans are still listed on the cover sheet as additional sets.

7. 105-21(B)(1)(n) This section of the ordinance requires the plans to show existing principal buildings (and their respective uses), and driveways on the adjacent peripheral strip: sewers lines, storm drain, culverts, bridges, utility easements, quarries, railroads, and other significant man-made features within 500 feet of and within the site, including properties across the street.

    A GIS data line is shown to delineate the surveyed information and the information that was brought in via GIS data on sheet 3 (Existing Resource and Site Analysis Plan) which depicts all features up to 500 feet from property line.

8. 105-21(b)(2)(e) The Record plan must be revised to list the lowest floor elevation and/or the elevation to which the structure would be floodproofed.

    Sheet 5 shows the finished floor elevations for all buildings- lists lowest occupied floor (2nd floor), not the garage elevations.

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9. 105-21(B)(4) The plans appear to show a minor disturbance to 'Wetlands B'. It appears that the Limit of Disturbance could be modified so that all existing wetlands are outside of its boundary.

   The current wetland report indicated that no wetlands are present onsite, see attached Wetland Report. All wetland lines were removed from the plans.

10. 105-21(B)(10)(a) The applicant shall submit a letter from the appropriate municipal authority indicating the availability of public sanitary sewer facilities.

    The will serve letter from Borough of Conshohocken Authority is included in this resubmission.

11. 105-21(B)(10)(b) The application shall submit a letter from the appropriate municipal authority indicating the availability of central water supply.

    The will serve letter from Aqua is included in this resubmission.

12. 105-21(B)(12) A map showing the location of the proposed subdivision within its neighborhood context shall be submitted.

    A copy of the aerial map is included in the resubmission.

13. 105-21(B)(10) An Existing Resources and Site Analysis Plan (ERSAP) shall be prepared and shall provide a comprehensive analysis of existing conditions, both on the proposed development tract and within 500 feet of the tract boundaries. Conditions beyond the tract boundaries may be described on the basis of existing published data available from governmental agencies and from aerial photographs.

    A GIS data line is shown to delineate the surveyed information and the information that was brought in via GIS data on sheet 3 (Existing Resource and Site Analysis Plan) which depicts all features up to 500 feet from property line.

14. 105-21(B)(15) A Preliminary Resource and Impact Conservation Plan (the "Preliminary Impact Plan") shall be prepared for all Major Subdivision and Land Development applications to categorize the impacts of the proposed activities and physical alterations on those resources shown on the ERSAP. All proposed improvements, including but not necessarily limited to grading, fill, streets, buildings, utilities, and stormwater management facilities, as proposed in the other Preliminary Plan documents, shall be taken into account in preparing the Preliminary Impact Plan, which shall clearly demonstrate that the applicant has minimized site disturbance to the greatest extent practicable.

    The information is provided on Sheet 3 of the plan set.

15. 105-21(B)(17)(e) The applicant shall submit a Community Association Document consistent with the requirements of this section of the ordinance.

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There will be no Community Documents since the project is a rental community.

16. 105-21(B)(18) The applicant shall submit a 'Preliminary Common Open Space Ownership and Management Plan' consistent with the requirements of this section of the ordinance.

    The Common Open Space Ownership and Management Plan will be included in the Community Association Documents.

17. 105-26(E) The applicant must provide evidence in sufficient detail to demonstrate that there are no environmental concerns related to previous uses of the site. The Project Narrative indicates the site is part of the PADEP Act 2 program for onsite soil contaminants.

    The applicant is currently proceeding with the Act 2 process. Once approved, the remediation plan will be submitted to the Township.

18. 105-26(E) Section 2.1 of the Post-Construction Stormwater Management Report indicates that the site is not located within an area that is prone to sinkholes; which is not consistent with the soil evaluation, and must be revised.

    The Post-Construction Stormwater Management Report was revised to remove this statement.

19. 105-38(W) Section 116-282(E) of the Zoning Ordinance states that residential uses shall not be subject to the overflow parking requirements of Chapter 105, Subdivision and Land Development §105-38W.

    No response required.

20. 105-39(C) A minimum of 10% of any parking lot facility over 2,000 square feet in gross area shall be devoted to landscaping, inclusive of required trees. The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance.

    The plans show the required minimum of 10% of parking are dedicated to landscaping.

    A compliance chart has been added to the plans, Sheet L-001.

21. 10-40, 105-50(C)(2) The plans must be revised to include adequate space, if required, for off-street loading. The plans must be revised to indicate the proposed method of garbage collection and provisions must be made to provide for deliveries and moving trucks.

    The plans show adequate off-street loading around the center circle/round about. General Note 74 on the notes sheet explains the method of garbage collection.

22. 105-47 Additional grading information shall be added to the plans in sufficient detail to clarify the proposed longitudinal and cross slopes for the pedestrian pathways. ADA complaint curb ramps with DWS must be provided where the sidewalk meets the drive aisle at the end of a 9-space parking area adjacent the Southeast building corner.

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ADA grading plans (sheets 28-29) show detailed grading for ADA spaces, ramps, sidewalks and drive aisles.

23. 105-47(K) In areas zoned Riverfront Development District, in the RDD-1 subdistrict, public riverfront access, perpendicular to the river, is required for all properties that have access to the river, and shall be subject to the following:
    - A right-of-way of at least 25 feet in width shall be offered for dedication to the Township. If the area is not accepted for dedication, an easement for public use must be provided along with maintenance agreements acceptable to the Township.
    - There must be at least one access to the river. Access points must be located no more than 500 feet apart.
    - A red shale macadam pathway with a minimum of 10 feet in width shall be provided and separated from any vehicular traffic.
    - At least one seating area shall be provided along each access.
    - Lighting fixtures shall be installed along the pathway and shall be of a style as approved by the Board of Supervisors.
    - The access shall contain appropriate signage to direct pedestrians to the river in accordance with Chapter 116, Zoning, §116-286B(5).

    Sheet 8 shows all easements proposed on site including a public access easement. There are three public access point located along Washington Street. The red shale macadam is depicted on sheet 5.

24. 105-50(F) Outdoor collection stations shall be provided for garbage and trash removal when individual collection is not made and indoor storage is not provided. Collection stations shall be located so as to be separated adequately from habitable buildings to avoid being offensive, but at the same time be convenient for both collectors and residents and shall be adequately screened and landscaped.

    All collection stations proposed are internal to the buildings at the garage level. No outdoor collection stations are being proposed.

25. 105-52 Buffer yards are required between land developments to soften visual impacts, to screen glare, and to create a visual barrier between conflicting land uses. The plans must be revised to provide a table detailing the buffer yard requirements, in accordance with Section 105-52.B as well as the actual buffers provided. All landscaping plans are subject to the review and approval of the Shade Tree Commission.

    A Compliance Chart has been added to the plans, Sheet L-001. The Whitemarsh Shade Tree Commission and its Arborist have received and approved the plans.

26. 105-52(B)(2) This section of the ordinance requires that all buffers shall have a minimum width of 50 feet. The Board of Supervisors may permit an alternative planting option which shall have a screening capability equal to or greater than any of the available options. The

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applicant should provide evidence in sufficient detail to the Board of Supervisors in order to demonstrate that sufficient screening will be provided.

A Compliance Chart has been added to the plans, Sheet L-001. The Whitemarsh Shade Tree Commission and its Arborist have reviewed and approved the plans.

27. 105-53(D) This section of the ordinance requires the dedication of land in the amount of 10% of the total Site Area for Park and/or Recreational use. The applicant has the option of offering a fee in lieu of dedicating actual land area and can also provide a combination of a fee in lieu and dedication of land. All offers of land and/or fees in lieu of dedication must meet the requirements of this section of the ordinance.

    The plans show a 125' wide recreation area to be dedicated. See sheet 7.

28. 105-53(D)(1)(c) If actual land area is offered, the applicant is advised that this section of the ordinance states that no more than 25% of the minimum land area required for park and recreation land may consist of floodplain or riparian corridor buffer areas, wetlands or areas with slopes in excess of 8%.

    This comment is not applicable, since a fee in lieu will be provided.

29. 105-53(D)(1)(g) If actual land area is offered, the applicant is advised that this section of the ordinance states that the land area required for park and recreation land may not be used in calculating density.

    This comment is not applicable, since a fee in lieu will be provided.

30. 105-73 Grading of the trail in the area of the contour line representing an elevation of 51 should be revised to eliminate potential for ponding.

    Spots grades are shown on sheet 10 to show there is no low spots and minimal risk to ponding.

31. 105-76 The applicant must obtain a letter of approval from the Township Fire Marshal in order to ensure that adequate fire protection is provided.

    The applicant has worked extensively with the Fire Marshal (Nick Weaver) and previously addressed his comments.

32. 105-78 The applicant must obtain the approval of the Whitemarsh Township Authority with regard to proposed sanitary sewerage facilities.

    We are working with the Whitemarsh Township Authority in order to receive their approval.

33. 105-78(C), 105-79 All preliminary plan submission shall include a completed sewage facilities planning module (the planning module) for land development provided by DEP.

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The Act 537 planning approval was previously issued and we have confirmed with the DEP that it does not expire. A copy of this approval is included in our resubmission.

34. 105-81 All electric, telephone and communication service facilities, both main and service lines, shall be provided by underground cables, installed in accordance with the prevailing standards and practices of the utility and other companies providing such services. Such facilities shall be located or constructed so as to eliminate the possibility of flood damage. Final plans shall show locations of all utilities and shall be coordinated with landscaping.

    All electric, telephone and communication service facilities consist of underground cables and has been coordinated with the landscaping plan.

35. 105-83(E) No Removal of a tree shall be permitted unless the applicant obtains a recommendation from the Shade Tree Commission based on a tree survey and removal plan submitted in accordance with Chapter 55 of the Whitemarsh Township Code.

    Approval has been received from the Shade Tree Commission.

36. 105-89 The developer shall enter into a written agreement with the Township in the manner and form approved by the Solicitor wherein the developer shall agree, to construct or cause to be constructed at his own expense all proposed improvement shown on the approved land development plan, all in strict accordance with the standards and specification of the Township and within the time specified in said agreement, and to deposit with the Township financial security in an amount sufficient to cover the costs of all subdivision or land development improvements, including both public and private improvements.

    This agreement will be generated as a condition of Final Plan approval.

CHAPTER 55 – TREE PROTECTION STANDARDS

37. 55-4(A)(2) We defer to the Township Arborist whether there is sufficient cover provided for the trees proposed in the parking islands above underground Basin A.

    The Township Arborist reviewed the plans as part of the shade tree application and had no comments on this issue.

38. 55-4(A)(3) The landscaping plan should be revised to include a schedule listing each Landscaping code requirement, and the quantity, species and size of each planning provided to meet those requirements.

    A compliance chart has been added to the plans, Sheet L-001. A comprehensive list of the planting in Whitemarsh Township has also been added to Sheet L-001.

39. 55-4(A)(4) The tree survey plan shall be reviewed by the Shade Tree Commission in a public meeting.

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The Whitemarsh Shade Tree Commission and its Arborist have received and approved the plans.

40. 55-4(B)(1) The plans must be revised to include provisions for tree protection to preserve healthy trees and shrubs on site in accordance with this section of the ordinance. A note must be added to the plans requiring protective fencing to be placed around trees on the property prior to construction. Protective fencing must be shown on the plans, including the Erosion & Sedimentation Control Plan, in the areas where it will be required.

    Note #30 was added to Sheets 3 and 4, which states protective fencing is required to be placed around trees to remain on the property prior to construction.

41. 55-4(B)(6)(a) This section of the ordinance requires that tree determined to be living and healthy with a DBH of 6 inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new shade trees of a type approved by the Township with a trunk diameter of not less than 3 inches in caliper. The total caliper of replacement trees, measure at 6 inches above the ground line, shall equal or exceed the BDH of the tree removed.

    The Township Arborist performed a sight visit to evaluate tree health. Our current plans reflect the revisions requested by them.

42. 55-4(B)(6(c) Replacement trees shall be planted in addition to the trees required by planting requirements otherwise set forth in the Subdivision and Land Development Code.

    Noted.

GRADING, EROSION CONTROL, STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES ORDINANCE:

43. 58-4(B)(2)(I) The plans appear to show the Limit of Disturbance extending over the property line onto the property at 501 Washington Street, which must be revised.

    For clarity, the limit of disturbance is offset by 4' as noted at the bottom of the E&S and PCSM plans. The actual disturbance will not extend beyond the 401/433 Washington Street property boundaries into the 501 Washington Street property.

44. 58-4(B)(2)(p) The plan must be revised to show the size, location and construction details of all existing and proposed storm drainage facilities. The following must be addressed:
    - The 'Volume Results' on Page 380 of the PCSWM Report indicates 14 barrels, which does not appear to be consistent with the plan view.
    - The information presented on the Post-Construction Stormwater Management Plans differ from the information provided on the Construction Details plan, Sheet 21, of the land development plans. All plans and Post-Construction Stormwater Management Report shall be revised for consistency.

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- The calculations must be revised to utilize an "n" factor of 0.015 where required.
- Clarification must be provided regarding whether underground detention basin A is proposed to be lined with filter fabric, per the Underground Detention Basin A (Closed System) Detail provided on the PCSM Details plan, Sheet P5, or a 30 mil impermeable liner as referenced in Section 4.0 of the Post-Construction Stormwater Management Report.
- The Outlet Control Structure Details provided on the PCSM Details plan, Sheet P5 do not appear to be consistent with the same on Plan Sheet 21.
- The stormwater management calculations must be revised to address tailwater from the River at EW-100. A flap gate, or similar, should be considered at this location.

A label was added to detention basin A to note the number of rows. The land development plans and PCSM plans are revised to be consistent. The calculations have been revised to utilize an "n" factor of 0.015 and underground detention basin A detail has been revised to be lined with 30 mil impermeable liner. An inline backflow preventer has been added to the pipe upstream of EW-100.

45. 58-4(B)(2)(q) Item #2 under Site Work in the Construction Sequence must be revised to include installation of tree protection fencing.

    Item #2 is revised to include the installation of tree protection fencing.

46. 58-4(B)(3) The proposed topsoil stockpile area must be relocated outside of the floodway.

    The topsoil stockpiles were relocated to an area outside of the floodway.

47. 58-4(D)(1) Since the limit of disturbance is greater than one acre, the applicant must obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Pennsylvania Department of Environmental Protection. Once obtained, a copy must be submitted to the Township.

    We received completeness comments from the MCCD, and we are in the process of revising the NPDES plans and permit application.

48. 58-5(B)(4) A statement, signed by the landowner, acknowledging that the stormwater BMPs are fixtures that can be altered or removed only after approval by the Township shall be added to the plans.

    A signature block is shown on the General Notes Sheet, see Note #38, to acknowledge the stormwater BMP's are fixtures that can be altered or removed only after approval by the Township.

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49. 58-8(H) All easements must be documented in the form of an easement agreement, approved by the Township Solicitor and recorded at the Recorder of Deeds for Montgomery County.

    All easements will be documented and approved by Township Solicitor as part of the final plan approval.

50. 58-11(G)(1), 58-11 (H)(1) The property owner shall sign an operations and maintenance agreement with the Township addressing stormwater BMPs that are to be privately owned. The plans indicate that the lot owner is responsible for the "Ownership and Maintenance" of the BMPs. The operation and maintenance agreement shall be subject to review and approval of the Township.

    This will be completed as a final plan condition.

RESOLUTION 2004-8:

51. I(B)(4)(k) Edges of slopes shall be a minimum of five feet from property lines or right of way lines.

    The edge of slopes shown on sheet 10 are a minimum of five feet from property line.

52. I(C)(1)(b) The retaining wall detailed on Plan Sheet 22, must be shown in plan view or the detail must be removed. If proposed, detailed plans and calculations, including all factors of safety, for all of the proposed retaining walls that are prepared, signed and sealed by a professional engineer licensed in the Commonwealth of Pennsylvania must be submitted to the Township for review. Constructible details and elevation views of all proposed retaining walls as well as the top and bottom of wall elevations must be added to the plans.

    The retaining walls are shown on sheet 10 with top of wall (TW) and bottom of wall (BW) elevations called out.

53. I(C)(5) Fills shall not encroach on natural watercourses, floodways, floodway fringes, constructed channels, or on wetlands unless permitted by the Army Corps of Engineers, the Pennsylvania Department of Environmental Protection, and the Township.

    A cut/fill report is attached showing there is no fill within the watercourse, floodway fringes, constructed channels, or wetlands. See sheet 2 of Land Development plans for 100-year floodplain encroachment table.

54. I(C)(6) Fills placed adjacent to natural watercourses, floodways, floodway fringes, constructed channels, or wetlands shall have suitable protection against erosion and during periods of flooding, where approved by the Army Corps of Engineers, the Pennsylvania Department of Environmental Protection, and the Township.

    All required regulatory agency reviews and permits will be obtained.

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55. II(B)(16) The applicant must submit legal descriptions for any proposed rights-of-way, easements, or lands to be offered for dedication.

    Legal descriptions of proposed rights-of-way, easements and lands to be dedicated will be submitted as part of the Final Plan submission.

56. II(C)(1) All earth disturbance activities shall limit the rate of stormwater runoff so that no greater runoff is permitted from any point on the site than that of the site at its maximum development potential in its natural condition of the same frequency storm, except where deemed necessary by the Township Engineer. Where farm, field, or disturbed earth is the existing condition, meadow shall be used as the starting basis for such calculations, regardless of the actual conditions.

    These calculations are included in our NPDES permit application and are included in the PCSM report, see Appendix F.

57. II(D)(13) Energy dissipaters and/or level spreaders shall be installed at points where pipes or drainage ways drain to or from basins. Energy dissipaters shall comply with criteria in the Erosion and Sediment Control Manual, published by the Pennsylvania Department of Environmental Protection or the Engineering Field Manual for Conservation Practices, SCS. Energy dissipating device calculations shall be submitted to the Township

    Energy dissipaters are shown on sheet 10. Rock apron calculations are included in the PCSM report, Appendix H, starting at page 11.

58. II(F)(3)(d), (4)[d] The Geotechnical investigation showed water elevations for boring numbers B17. B19, B23, B39, and B46 would fall within proposed underground detention basin A. The applicant's engineer must be address groundwater displacement and buoyancy considerations for Basin A.

    Underground detention basin A was raised above the water elevation.

ADDITIONAL COMMENTS

59. The proposed improvements will require the applicant to obtain Chapter 105 Water Obstruction and Encroachment General Permit , administered by the Pennsylvania Department of Environmental Protection (PADEP) Bureau of Waterways Engineering and Wetlands. Once obtained, the permit must be submitted to the Township.

    A Chapter 105 General Permit will be obtained for the replacement of the existing stormwater discharge pipe culvert. Once the permit is received, a copy will be provided to the Township.

60. The applicant should revise the 'Borough of Conshohocken Sign Western Face" sign at the Southeast corner of the site, to indicate Whitemarsh Township, instead of Borough of Conshohocken.

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The borough of Conshohocken sign was revised to "Whitemarsh Township", see Sheet 6.

Sincerely,

Colliers Engineering & Design, Inc.
(DBA Maser Consulting)

C. Richard Roseberry, P.E., AICP
Regional Manager

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Colliers
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May 27, 2022

Charles L. Guttenplan, AICP
Director of Planning and Zoning/Zoning Officer
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444-1821

401/433 Washington Street Apartments
Colliers Engineering & Design Project No. 14000908C

Dear Mr. Guttenplan,

Colliers Engineering & Design, Inc. is in receipt of your letter dated February 18, 2022, and offers the following responses:

1. §116-24.D.(3) All accessory uses and structures combined shall cover no more than 30% of the area of the required rear yard or in the case of a principal building set back farther than the minimum depth of the required rear yard, no more than 30% of the area contained between the rear lot line and the rear principal building plane, as defined herein. A calculation should be added to the plans.

   All accessory uses and structures combine for a total of 13.01% as shown on Sheet 2, Accessory Uses Coverage Table,

2. §116-28.A.(2) The applicant shall furnish a letter from the appropriate authority indicating the availability and supply of water for the proposed project to the Zoning Officer.

   The will serve letter from Aqua is included in this resubmission.

3. §116-29 The applicant must obtain the approval of the Whitemarsh Township Authority with regard to proposed sanitary sewer facilities.

   The will serve letter from Borough of Conshohocken Authority is included in this resubmission.

4. §116-33.2, §116-279 In those areas of Whitemarsh Township where an overlay district applies, should the use of an underlying district be utilized, underlying requirements shall apply and for a use in the overlay, the overlay district requirements apply. Therefore, for the purposes of this review, it was assumed that the requirements of the Riverfront Development (Overlay) District (RDD-1 sub-district) are applicable.

   Noted.

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5. §116-164.B. Prior to undertaking any alteration of any watercourse within the Township, a permit shall be obtained from the Pennsylvania Department of Environmental Protection, Dams and Encroachment Division and notification of the proposed alteration or relocation shall be given to all affected adjacent municipalities. Copies of such notifications shall be forwarded to both the Federal Insurance Administration and the Pennsylvania Department of Community Affairs.

   A Chapter 105 General Permit will be obtained for the replacement of the existing stormwater discharge pipe culvert. Once the permit is received, a copy will be provided to the Township.

6. §116-164.C, §116-165.A. In the Floodplain Conservation District, no development shall be permitted except where the effect of such development on flood heights is fully offset by accompanying improvements which have been approved by all appropriate local, state and federal authorities as required.

   The cut/fill calculations on Sheet 2 show that the site has a net cut condition. There will be no impact to the flood heights, because no storage area is lost with this development.

7. §116-165 The Zoning Hearing Board is case ZHB# 2021-48, on November 15, 2021 granted the applciant a variance to permit non-residential structres within the Floodplain Conservation District.

   No response required.

8. §116-166.A.(3) The Zoning Hearing Board in case ZHB# 2021-48, on November 15, 2021 grated the applicant a special exception to permi a stormwater retention basin within the floodway.

   No response required.

9. §116-166.B.(3) The Zoning Hearing Board in case ZHB# 2021-48, on November 15, 2021 granted the applicant a special exception to permit utilities and public facilities and improvements, such as streets, transmission lines, pipelines, and other similar or related uses to be located in the floodway fringe.

   No response required.

10. §116-166.C Any new construction must be in full complaince with the 44 CFR 60.3(a) through (d) of the National Flood Insurance Program regulations. These regulations require that all new construction and substantial improvement of structures within Zones AE are required to have the lowest floor elevated 1 ½ feet above the base flood level or, together with attendant utility and sanitary facilities, be designed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water and

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with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. A registerd professional engineer or architect shall develop and/or review structural design, specifications, and plans for the construction, and shall certify that the design and methods of construction are in accordance with accepted standards of practice.

The Borough of Conshohocken requires a minimum of 24 inches above the base flood elevation, see Flood Proofing Note #9 on Sheet 2.

11. §116-184.F All parking shall conform to the requirments of the Whitemarsh Township Fire Prevention Code as acted and amended. The applicant must obtain approval from the Whitemarsh Township Fire Marshal. (See enclosed memo date January 13, 2022.)

    The Township Fire Marshal did not have any comments.

12. §116-187 The plans must be revised to include adequate space, if required, for off-street loading. The plans must be revised to indicate the proposed method of garbage collection and provisions must be made to provide for deliveries and moving trucks.

    Off-street loading is provided around the central roundabout. There is proposed spaced to allow loading and unloading of vehicles.

13. §116-188.3 Electric Vehicle (EV) charging stations shall be required for all new parking areas. Five electric vehicle charging stations are required for parking facilities that contain at least 50 but not more than 100 off-street parking spaces. One additional electric vehicle charging station shall be provided for every 50 spaces over 100 off-street parking spaces. A mimumum of 50% of all required EV charging stations shall be ADA-accessible. Each electric vehicle charging station must include signage identifying spaces as “no Parking Except for Electric Vehicle Charging.” Days and hours of operation shall be included if time limits or tow-away provisions are to be enforced.

    Electric Vehicle spaces were provided and shown on sheets 5 and 6. Signs indicating required language are shown on sheet 6.

14. §116-204.A The modification, alteration, repair, reconstruction, or improvements of any kind to a structure and/or use located in the Floodplain Conservation District to an extent or amount of less than 50% of its market value shall be elevated and/or floodproofed to the greatest extent possible. The plans must be revised to demonstrate compliance with the requirements of this section of the ordinance.

    Note #19 and #20 were added to Sheet 10 to address this comment.

15. §116-205, §116-208, §116-209, §116-210, §116-283.A.(7), §116-286 These sections of the ordinance describe signs which are permitted in the districts on which the subject property is located. The plans must be revised to include details for all proposed signs to be installed

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as part of the design, in order to demostrate compliance with these sections of the ordinance, unless signs are to be handled later through a permit application.

The applicant should revise the 'Borough of Conshohocken Sign Western Face' sign at the Southeast corner of the site, to indicate Whitemarsh Township, instead of Borough of Conshohocken. All signs in the RDD district must be approved by the Board of Supervisors.

The borough of Conshohocken sign was revised to "Whitemarsh Township", see Sheet 6.

16. §116-260 The Zoning Hearing Board in Case ZHB# 2021-48, on November 15, 2021, granted the applicant a variance to permit clearing of vegetation, installation of parking lots, roads, driveways, fences and stormwater basins within the Riparian Corridor Conservation District.

    No response required.

17. §116-264.A Reestablishment of forest cover and woodland habitat shall be required consistent with the requirements of the landscape regulations of the Subdivision and Land Development Ordinance.

    Our proposed landscaping plan is in accordance with the Shade Tree Commissions review of the proposed design.

18. §116-279.B.(3) If a structure is otherwise permitted by the virtue of the requirements of the RDD, relief from the Zoning Hearing Board from the provisions of Article XXXV – Riparian Corridor Conservation District shall not be required, provided approval is recommended to the Board of Supervisors by the Township Engineer. The Township Engineer has no engineering objection to the location of the structures within the Riparian Corridor Conservation District.

    No response required.

19. §116-281 The Whitemarsh Township Zoning Data Table must be revised to indicate the total lot area, in addition to the area that is within Whitemarsh Township (2.91 Ac.)

    The Whitemarsh Township zoning table was revised, see Sheet 2.

20. §116-281.A.(7)(a) The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, which states that no portion of the parking garage shall be visible from the riverfront access and open space is required by §116-284 herein.

    All ground floor parking program facing the riverfront will be shielded from view using metal screen façade panels with natural climbing vines, as well as a variety of plantings along the building perimeter at grade. Please refer to the precedent images and product specification provided for design intent.

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21. §116-281.A.(9) The Zoning Hearing Board in case ZHB#2021-48, on November 15, 2021, granted the applicant a variance to permit a 125' wide area of riverfront land offered for dedication to be included in the maximum building and impervious ground cover calculations. The plans note that this area will be offered for dedication; please note that any offers of dedication are subject to acceptance by the Board of Supervisors.

    The dedication note was added as note 43 in sheet 2 of the Land Development plans.

22. §116-282.A The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, which states that parking structures, whether freestanding or integral with other uses in the same building, shall have another permitted first floor use on any portion of the structure visible from any streets, required pathways, or riverfront access or suitable architectural treatment shall be provided. Details must be provided for the proposed Green Living Wall Screen shown on the architectural plans.

    Please refer to the attached example for precedent imagery and product specifications for the green planted metal screen wall being proposed at all ground floor elevations adjacent to parking program.

23. §116-282.F Parking may be permitted in the floodplain and riparian corridor in the RDD without relief from the Zoning Hearing Board from the provisions of Article XXII, Floodplain Conservation District, and Article XXXV, Riparian Corridor Conservation District, provided that a parking evacuation plan is provided by the applicant and is approved by the Board of Supervisors. See related 'Additional Comment' at the end of this review.

    An Emergency Management Plan will be provided prior to final approval.

24. §116-283.A This section of the ordinance establishes minimum architectural design standards to be used within the Riverfront Development Overlay District. Additional details must be provided on the architectural plans to determine compliance with all specific provisions of this section.

    (1) Variations in rooflines shall be used to screen HVAC, telecommunications, utility or other similar equipment and to provide interest and reduce the scale of large buildings. Roofs should provide a variety of vertical dimensions. Multiplaned and intersecting rooflines are encouraged. Flat-roofed designs are discouraged. However, if utilized, then flat roofs shall include architecture/details such as cornices, decorative facings and arches to provide interest to the roofline. Additionally, all roof types should have at least one of the following features:

    (a) Overhanging eaves of at least three feet;

    (b) Sloping roofs with an average slope of between three to one and one to one that do not exceed the average height of the supporting walls; or

    (c) Three or more roof slope planes.

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The proposed design utilizes numerous architectural techniques including recessed façade bays, building corner stepbacks, varying fenestration sizes, balconies, and façade material changes in order to break the mass of the project and provide visual interest across the length of the façade and roofline. The project will comply with all roof equipment shielded from pedestrian view by way of equipment placement or physical screening.

(2) Specific permitted dominant materials. Each development should be of a single, unified architectural style. The exterior building skin shall be composed of one dominant facing material and not more than two additional materials. The dominant material shall comprise 60% or greater of each building elevation, with the exception of any side that is hidden or otherwise cannot be viewed from an abutting street or from the riverfront. The requirements for dominant building materials herein shall also be applicable to freestanding parking structures and parking structures attached to another principal building.

(a) Dominant exterior materials may include:

[1] Wood (to also include fiber-cement exterior siding with wood texture and finish or equivalent).

[2] Brick.

[3] Stone, or stone veneer (cultured stone or equivalent).

[4] Concrete masonry unit (CMU). CMU is allowed only as split face block or block molded with a textured surface.

[5] Architectural precast concrete panels.

[6] Glass, warm and cool tones.

[7] Stucco and synthetic stucco.

(b) Dominant exterior materials may not include:

[1] Aluminum siding.

[2] Vinyl siding.

[3] Smooth-faced CMU.

[4] Tilt-up concrete panels.

[5] Glass, highly reflective/mirrored.

The project façade is designed as a unified style with the dominate façade material proposed as corrugated metal panels, which will provide a rich texture and depth of

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shadow to the façade. Feature moments at the façade corners will be highlighted using wood or fiber-cement board cladding.

(3) Architectural style of the development shall be designed to avoid the massive scale and uniform impersonal appearances of a big box structure through facade ornamentation, building offsets, window treatments, variation in rooflines, entry treatments and upgraded building materials. The focus should be on varying the spaces among groups of buildings to avoid creating a walled corridor of long, unbroken rows of buildings along a setback, or a monotonous pattern of buildings across a site. Facades should be divided into increments through the use of architectural features such as bay windows, offsets, recesses and other devices that break or minimize scale. Strong vertical and horizontal reveals, offsets and three-dimensional details between surface planes should be incorporated into building design to create shadow lines and to further break up flat surfaces.

Please refer to our response for item (1).

(4) Building facades greater than 100 feet in length, including separate buildings that are attached, shall incorporate one or more architectural features over at least 20% of the length of the facade. There shall be no uninterrupted length of facade that exceeds 100 feet. These requirements shall also be applicable to freestanding parking structures and parking structures attached to another principal building.

No uninterrupted length of façade is greater than 100' through the use of multiple façade recesses. Facades are further broken down through the introduction of balconies.

(5) Building facades greater than 250 feet in length, including separate buildings that are attached, shall incorporate setbacks of at least 20 feet over at least 50% of the length of the facade. When approved as a conditional use in accordance with § 116-37, one building facade of parallel building facades on separate unattached buildings in which both facades are greater than 250 feet in length and no greater than an average of 90 feet apart may be set back 20 feet along 50% of the facade, provided that the other facade contains some compensatory embellishment such as facade ornamentation, window treatments, recesses, height differential or other devices to break or minimize the scale of the facade; and/or where a facade is parallel to a railroad, the twenty-foot setback shall be at least 35% of the length of the facade, with a minimum length of 80 feet. In addition, when said buildings contain only one story, they shall include facades that appear to be two stories in height and have architectural features that complement those of the ground floor. Sixty percent of facades of said buildings which face a street or the riverfront shall be two stories in height or appear to be two stories in height, and all buildings proposed on corner locations shall be or appear to be two stories. When a corner location does not contain a building, a compatible architectural feature shall be provided at the corner and be of a height similar to a two-story facade.

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[Amended 8-14-2008 by Ord. No. 857]

No building façade is greater than 234' in length.

(6) All ground-mounted exposed HVAC units or other utility equipment shall be screened from view. This shall be accomplished through the use of masonry walls and landscaping.

For any ground-mounted exposed equipment within the project, we will comply with the screening requirements.

25. §116-283.A.(6) All ground-mounted utility equipment, including the proposed electrical equipment shall be screened from view. This shall be accomplished through the use of masonry walls and landscaping.

    All utility equipment is screened with masonry/retaining walls as shown on sheet 5 and sheet 9. For any ground-mounted exposed equipment within the project, we will comply with the screening requirements through enclosure or landscape.

26. §116-283.C The landscape plans must be revised in order to demonstrate compliance with the specific landscaping and screening requirements referenced in this section of the ordinance. The landscape plans must be approved by the Shade Tree Commission.

    A Compliance Chart has been added to the plans, Sheet L-001.

27. §116-283.D.(1) For all developments the following elements shall be included to create a pedestrian oriented development:
    a. Lighting along all street frontages with lighting fixtures to be of a style as approved by the Board of Supervisors.
       There is not 'Street Frontage' in Whitemarsh Township.
    b. Benches, trash receptacles, bicycle racks and other street furniture in a style approved by the Board of Supervisors.
       The Landscape Plans comply.
    c. Wide sidewalks and other pedestrian amenities, landscaping, shade trees.
       The Landscape Plans comply.
    d. A variety of pavement materials for street surfaces and sidewalks.
       The Landscape Plans comply.
    e. Planting strips, located between the curb and sidewalk.
       Planting strips are provided within the central pedestrian core.

28. §116-284.B The width of the riverfront area may be reduced to no less than 125 feet, provided at least one public amenity is provided for buildings four stories or less. We note public seating in this area; the applicant needs to explain if this is intended to be the public amenity and how it meets the requirements of this section.

    Testimony was previously provided regarding the public amenities

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29. §116-284.D Public riverfront access is required in accordance with Chapter 105, Subdivision and Land Development §105-47.K.

    Public riverfront access is included through the center walkway and an easement to the Borough of Conshohocken will be provided in this area.

30. §116-287.B.(2) The applicant must submit architectural plans, which include elevations and sections to indicate how the proposed building will affect views to the river and across the river to the hills and ridges. The architectural plan set submitted does not include any details concerning views.

    Perpendicular views to river from all Whitemarsh properties are not impacted or obstructed by this project.

31. §116-287.B.(5) The applicant must submit a Traffic Impact Study (TIS) in order to demonstrate compliance with the requirements of this section of the Ordinance.

    The TIS will be provided under separate cover.

32. While a parking evacuation plan is required by § 116-282.F., the Zoning Hearing Board in its decision in case ZHB #2021-48, imposed certain conditions. Among those, the Zoning Hearing Board requires the applicant to develop and submit an Emergency Action Plan which will, among other things, detail how residents are to be evacuated in an emergency. Those conditions further require that the Plan detail how transportation is to be provided to off-site parking in the event residents' vehicles need to be moved in an emergency event, and that at least one employee live on the premises and have the responsibility for facilitating the implementation of the Emergency Action Plan. All of the relief granted by the Zoning Hearing Board in this case, and all conditions imposed, must be added to the plans.

    An Emergency Management Plan will be provided prior to final approval.

Sincerely,

Colliers Engineering & Design, Inc.
(DBA Maser Consulting)

C. Richard Roseberry, P.E., AICP
Regional Manager

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pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

July 16, 2015

Mr. Richard J. Manfredi, Manager
Conshohocken Borough
1 West First Avenue, Suite 200
Conshohocken, PA 19428

Mr. Richard Mellor, Manager
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444

Re: Act 537, Sewage Facilities Planning
401/433 Washington Street Development
DEP CODE No. 1-46006-084-3J
APD ID No. 875273, AUTH ID 1081108
Conshohocken Borough
Montgomery County
DEP CODE 1-46960-301-3J
APS ID No. 875274, AUTH ID No. 1081109
Whitemarsh Township
Montgomery County

Dear Messrs. Manfredi and Mellor:

The Department of Environmental Protection (DEP) has reviewed the proposed Official Plan revision for the above-referenced project. The project proposes the construction of 598 luxury apartment units in 4 buildings. Each pair of apartment buildings will feature amenities including a clubhouse, a swimming pool, tenant services, and a rental office. The proposed development is located at 401 and 433 Washington Street in Conshohocken Borough and Whitemarsh Township, Montgomery County. This plan revision is approved.

This project will be connected to the Conshohocken Borough Authority collection system and will generate 157,762.5 gallons of sewage per day to be treated at the Conshohocken Borough Authority Wastewater Treatment Facility.

The property owner must secure a Clean Streams Law permit from DEP for the construction and operation of the proposed gravity sewage collection system.

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa. C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P.O. Box 8457, Harrisburg, PA 17105-8457, 717.787.3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800.654.5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of

written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on audiotape from the Secretary to the Board at 717.787.3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST REACH THE BOARD WITHIN 30 DAYS. YOU DO NOT NEED A LAWYER TO FILE AN APPEAL WITH THE BOARD.

IMPORTANT LEGAL RIGHTS ARE AT STAKE, HOWEVER, SO YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD (717.787.3483) FOR MORE INFORMATION.

If you have any questions or concerns, please contact Ms. Kelly A. Sweeney at 484.250.5182.

Sincerely,

Jenifer Fields, P.E.
Regional Manager
Clean Water

cc: Montgomery County Health Department
Montgomery County Planning Commission
Montgomery Conservation District
Ms. Gabor – O'Neill Properties Group
Mr. Minervini – Right Angle Engineering, LP
Conshohocken Borough Authority
Planning Section
Re30 (GJE15CLW)197-2

AERIAL MAP
E Hector St
3059
Apple St
Jones St
E Elm St
E Elm St
E Elm St
Schuylkill River Trail
Schuylkill River Trail
Cherry St
Washington St
Washington St
Washington St
Washington St
SITE
Schuylkill River
Schuylkill River
Schuylkill Expy
76
N
800 ft
Google Earth

UPDATES

Whitemarsh TOWNSHIP
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BOARD of SUPERVISORS
Laura Boyle Nester – Chair
Fran McCusker – Vice Chair
Vincent Manuele
Jacy Toll
Patrice Turenne

Richard L. Mellor, Jr.
Township Manager

June 15, 2022

KRE Acquisition Corp.
c/o Noah Chrismer
520 US Highway 22
P.O. Box 6872
Bridgewater, NJ 08807

RE: SLD#14-21 / 401 & 433 Washington Street, Conshohocken, PA
Final Major Land Development – 598 Unit Apartment Building
Zoning Ordinance Compliance Review Letter

Dear Mr. Chrismer:

Please accept this review of the Zoning Ordinance Compliance issues for the Final Plan for the Whitemarsh Township portion of your above referenced land development. Plan submissions we reviewed include a land development plan set prepared by Colliers Engineering & Design, dated October 29, 2021 with revisions dated February 23, 2022 and May 2, 2022; Landscape and Lighting plans by Melillo-Bauer-Carman also dated December 3, 2021 with revisions noted on March 31, 2022 and May 20, 2022. An architectural set by Barton Partners dated December 3, 2021 with no noted revisions was used in the prior review. No updated architectural plans were included in the current submission.

A response letter to the February 18, 2022 Whitemarsh Township Zoning Compliance Review Letter was received from Colliers Engineering & Design, dated May 27, 2022. The following items are outstanding issues that were not adequately addressed in the response or the updated plans (comment numbers are the same as in the original review letter):

11. §116-184.F. **Original Comment 11:** All parking shall conform to the requirements of the Whitemarsh Township Fire Prevention Code as acted and amended. The applicant must obtain approval from the Whitemarsh Township Fire Marshal. (See enclosed memo dated January 13, 2022.)

Response: The Fire Marshal will submit an updated review.

13. §116-188.3. **Original Comment 13:** Electric Vehicle (EV) charging stations shall be required for all new parking areas. Five electric vehicle charging stations are required for parking facilities that contain at least 50 but not more than 100 off-street parking spaces. One additional electric vehicle charging station shall be provided for every 50 spaces over 100 off-street parking spaces. A minimum of 50% of all required EV charging stations shall be ADA-accessible. Each electric vehicle charging station must include signage identifying spaces as "No Parking Except for Electric Vehicle Charging." Days and hours of operation shall be included if time limits or tow-away provisions are to be enforced.

Response: Electric Vehicle spaces are provided and shown on Sheets 5 and 6. Signs

indicating required language are shown on Sheet 6.

Outstanding issue: While the current plan shows an adequate number of electric vehicle charging spaces, there is a requirement for a portion of the spaces to be ADA-accessible. Given that the required number of EV spaces is 5, and that a minimum of 50% of the required EV stations must be ADA-accessible, there should be 3 ADA-accessible EV spaces. This should be indicated on the plans.

15. §116-205., §116-208., §116-209., §116-210., §116-283.A.(7), §116-286.

Original Comment 15: These sections of the ordinance describe signs which are permitted in the districts on which the subject property is located. The plans must be revised to include details for all proposed signs to be installed as part of the design, in order to demonstrate compliance with these sections of the ordinance, unless signs are to be handled later through a permit application.
The applicant should revise the 'Borough of Conshohocken Sign Western Face" sign at the Southeast corner of the site, to indicate Whitemarsh Township, instead of Borough of Conshohocken. All signs in the RDD district must be approved by the Board of Supervisors.

Response: The Borough of Conshohocken sign was revised to "Whitemarsh Township", see Sheet 6.

Outstanding Issue: The issue with the sign described above has been addressed. Design details of other signs are still needed to confirm compliance with these sections so that they can be approved by the Board of Supervisors as part of the Final Plan approval.

20. §116-281.A.(7)(a)

Original Comment 20: The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, which states that no portion of the parking garage shall be visible from the riverfront access and open space as required by § 116-284 herein.

Response: All ground floor parking program facing the riverfront will be shielded from view using metal screen façade panels with natural climbing vines, as well as a variety of plantings along the building perimeter at grade. Please refer to the precedent images and product specification provided for design intent.

Outstanding Issue: The metal screen façade panels with climbing vines appears to be an acceptable solution, though one that will require a high degree of maintenance.

22. §116-282.A.

Original Comment 22: The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, which states that parking structures, whether freestanding or integral with other uses in the same building, shall have another permitted first floor use on any portion of the structure visible from any streets, required pathways, or riverfront access or suitable architectural treatment shall be provided. Details must be provided for the proposed Green Living Wall Screen shown on the architectural plans.

Response: Please refer to the attached example for precedent imagery and product specifications for the green planted metal screen wall being proposed at all ground floor elevations adjacent to parking program.

Outstanding Issue: See 'Outstanding Issue' in comment #20 above.

24. §116-283.A. **Original Comment 24:** This section of the ordinance establishes minimum architectural design standards to be used within the Riverfront Development Overlay District. Additional details must be provided on the architectural plans to determine compliance with all specific provisions of this section.

Response: §116-283.A.1. The proposed design utilizes numerous architectural techniques including recessed façade bays, building corner setbacks, varying fenestration sizes, balconies, and façade material changes in order to break the mass of the project and provide visual interest across the length of the façade and roofline. The project will comply with all roof equipment shielded from pedestrian view by way of equipment placement or physical screening.

Outstanding issue: Updated architectural renderings are needed to assess compliance with this section.

Response: §116-283.A.2. The project façade is designed as a unified style with the dominant façade material proposed as corrugated metal panels which will provide a right texture and depth of shadow to the façade. Feature moments at the façade corners will be highlighted using wood or fiber-cement board cladding.

Outstanding issue: Corrugated metal panels are not listed as a permitted dominant façade material in this section.

Response: §116-283.A.3. Refer to response for item [§116-283.A.](1).

Outstanding issue: While the design may comply with this section, up-to-date architectural renderings are needed to assess compliance.

Response: §116-283.A.4. No uninterrupted length of façade is greater than 100' through the use of multiple façade recesses. Facades are further broken down through the introduction of balconies.

Outstanding issue: While the design may comply with this section, up-to-date architectural renderings are needed to assess compliance.

Response: §116-283.A.6. For any ground mounted exposed equipment within the project, we will comply with the screening requirements.

Outstanding issue: The plan does indicate screening with a wall. However, given the location of the development in the floodplain, there needs to be appropriate floodproofing or elevation to comply with all relevant ordinance requirements. These need to be reviewed and approved by the Township Engineer/Floodplain Administrator.

25. §116-283.A.(6) **Original Comment 25:** All ground-mounted utility equipment, including the proposed electrical equipment shall be screened from view. This shall be accomplished through the use of masonry walls and landscaping.

Response: All utility equipment is screened with masonry/retaining walls as shown on sheet 5 and sheet 9 [correction: sheet 10]. For any ground-mounted exposed equipment within the project, we will comply with the screening requirements through enclosure or landscape.

Outstanding issue: The plan does indicate screening with a wall. However, given the location of the development in the floodplain, there needs to be appropriate floodproofing or elevation to comply with all relevant ordinance requirements. These need to be reviewed and approved by the Township Engineer/Floodplain Administrator.

28. §116-284.B. **Original Comment 28:** The width of the riverfront area may be reduced to no less than 125 feet, provided at least one public amenity is provided for buildings four stories or less. We note public seating in this area; the applicant needs to explain if this is intended to be the public amenity and how it meets the requirements of this section.

Response: Testimony was provided regarding the public amenities.

Outstanding issue: Please reiterate what these will be.

29. §116-284.D. **Original Comment 29:** Public riverfront access is required in accordance with Chapter 105, Subdivision and Land Development § 105-47.K.

Response: Public riverfront access is included through the center walkway and an easement to the Borough of Conshohocken will be provided in this area.

Outstanding Issue: Assessing compliance with this section is unclear due to the existence of the multiple public pedestrian access paths in Conshohocken. However, to improve public access to the river on the east side of the development, we recommend at a minimum that a crosswalk be added connecting the sidewalk that runs along the east face of the two east buildings, spanning the East-West internal road. This improves safety for pedestrians walking to the waterfront along the east side of the property.

31. §116-287.B.(5) **Original Comment 31:** The applicant must submit a Traffic Impact Study (TIS) in order to demonstrate compliance with the requirements of this section of the Ordinance.

Response: The TIS will be provided under a separate cover.

Outstanding Issue: Since this was not submitted with the final plans, it must be submitted and reviewed before final plan approval can be recommended.

Additional Comment

32. While a parking evacuation plan is required by §116-282.F., the Zoning Hearing Board in its decision in case ZHB #2021-48, imposed certain conditions. Among those, the Zoning Hearing Board requires the applicant to develop and submit an Emergency Action Plan which will, among other things, detail how residents are to be evacuated in an emergency. Those conditions further require that the Plan detail how transportation is to be provided to off-site parking in the event residents' vehicles need to be moved in an emergency event, and that at least one employee live on the premises and have the responsibility for facilitating the implementation of the Emergency Action Plan.

    Response: An emergency action plan will be provided prior to final approval.

    Outstanding Issue: As with the TIS, until the emergency action plan is submitted and reviewed, we cannot recommend final plan approval.

Should you have any questions, please do not hesitate to contact me.

Very truly yours,

Charles L. Guttenplan, AICP
Director of Planning and Zoning/Zoning Officer

cc: Richard L. Mellor, Jr., Township Manager
Sean Halbom, Township Assistant Manager
Robert A. Sztubinski, B.C.O., Director of Building and Codes
Nick Weaver, Fire Marshal
Sean P. Kilkenny, Esq., Township Solicitor
Krista Heinrich, P.E., Township Engineer
Stephanie Cecco, Conshohocken Borough Manager
Spectrum-C, LLC, Property Owner
C. Richard Roseberry, Colliers Engineering & Design, Applicant's Engineer
Joseph M. Blackburn, Esq. & Edward F. Murphy, Esq., Applicant's Attorneys

McMAHON
a Bowman company

Transportation Impact Study for 401 & 433 Washington Street

Whitemarsh Township and Conshohocken Borough, Montgomery County, PA

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
SANDY A. KOZA
ENGINEER
PE059911

Sandy A. Koza, P.E., PTOE
PA PE License Number PE059911

Prepared by
McMahon a Bowman Company
425 Commerce Drive, Suite 200
Fort Washington, PA 19034
215.283.9444

Prepared for
KRE Acquisition Corp

June 22, 2022

McMahon Project Number 822547.11

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Executive Summary

The KRE Acquisition Corp proposes to construct a multi-family residential community at 401 & 433 Washington Street in in both Conshohocken Borough and Whitemarsh Township, Montgomery County, PA (see **Figure 1**). The parcel is proposed to be developed to provide 598 multi-family apartments (of which 60 units are located in Whitemarsh Township) in a multi-story building, where parking will be provided on the first floor of the building. Three accesses are proposed, which are all located within Conshohocken Borough. Access to the site is proposed to be provided via two unsignalized, full-movement driveways along Washington Street to the east of Cherry Street and one along Cherry Street to the south of Washington Street. A schematic of the latest site plan, prepared by Colliers Engineering & Design, is shown in **Figure 2**.

The scope of this transportation impact study is based on the Township guidelines in *Section 105-21.B.(9) of the Subdivision and Land Development Ordinance*. The purpose of this transportation impact study is to evaluate the traffic impacts of the proposed development. The scope of this study includes an evaluation of the existing weekday morning and weekday afternoon peak hours, as well as the future 2024 build-out year, both without and with the development at the following study intersections, which are in Conshohocken Borough and Whitemarsh Township as noted below:

- Elm Street (S.R. 3058) and Harry Street *(Conshohocken Borough);*
- Elm Street (S.R. 3058) and Ash Street *(Conshohocken Borough);*
- Elm Street and Cherry Street *(Conshohocken Borough);*
- Washington Street and Ash Street *(Conshohocken Borough);*
- Washington Street and Poplar Street *(Conshohocken Borough);*
- Washington Street and Cherry Street *(Conshohocken Borough);*
- Washington Street and Western Site Access *(Conshohocken Borough);*
- Washington Street and Eastern Site Access *(Conshohocken Borough);*
- Hector Street (S.R. 3058) and Spring Mill Avenue / Lee Street (*Whitemarsh Township); and*
- Hector Street and (S.R. 3058) Station Avenue / North Lane (S.R. 3015) (*Whitemarsh Township).*

The evaluation of traffic conditions associated with the proposed development reveals the following findings and conclusions:

- **Trip Generation** – The trip generation characteristics for the development is based on data from the Institute of Transportation Engineers' publication entitled *Trip Generation, 11th Edition*, for similar uses. The proposed apartment complex is anticipated to generate 2,806 total trips (inbound and outbound) on a typical weekday, of which approximately 252 and 234 total trips (inbound and outbound) are expected to be generated during the weekday morning and weekday afternoon peak hours, respectively.

  The trip generation methodology utilized for the analysis of the study intersections is conservative, since it is based on data that was Not Close to Rail when the site is centrally located between two regional rail stations, the area type was based on general urban/suburban when it is consistent with ITE's definition for a dense multi-use urban, and no reductions have been taken to account for residents who would utilize the nearby public transit facilities for commuting, those that may stay at home to telework, or those that may walk or bicycle to work.

- **Site Access Recommendations** – The following recommendations have been made regarding the design of the three site access intersections that are all located within Conshohocken Borough:

Western Washington Street Access

- Provide one 18-foot-wide ingress lane and one 18-foot-wide egress lane for the access that will be separated by a 28-foot wide median
- Provide stop-control on the egress access approach to Washington Street
- Provide a minimum intersection radius of 25 feet for right-in and right-out movements and a minimum intersection radius of 10 feet for left-in and left-out movements, which should be designed based upon the largest vehicle anticipated to utilize the site
- Provide ADA compliant ramps and crosswalks for the sidewalk

Eastern Washington Street Access

- Provide a minimum curbed cartway width of 24 feet that will allow for one ingress lane and one egress lane for the access
- Provide stop-control on the egress access approach to Washington Street
- Provide a minimum intersection radius of 15 feet, which should be designed based upon the largest vehicle anticipated to utilize the site
- Provide ADA compliant ramps and crosswalks for the sidewalk

Cherry Street Access

- Provide a minimum curbed cartway width of 26 feet that will allow for one ingress lane and one egress lane for the access
- Provide stop-control on the egress access approach to Cherry Street
- Provide a minimum intersection radius of 15 feet, which should be designed based upon the largest vehicle anticipated to utilize the site
- Provide ADA compliant ramps and crosswalks for the sidewalk

- **Washington Street (Conshohocken Borough)** – In conjunction with the development of the site, the Washington Street frontage will be widened to provide a consistent 30-foot wide cartway with a single travel lane in each direction along with sidewalk. A multiuse trail will then be provided along the Riverfront linking the site to the adjacent trail system to the east.

- **Cherry Street (Conshohocken Borough)** – A 24-foot wide cartway will be provided to the south of Washington Street. The existing parallel parking spaces will be removed and replaced with thirty-right (38) perpendicular parking spaces.

- **Capacity/Level-of-Service Results for Off-Site Intersections** – The study intersections were evaluated to determine the operational characteristics under existing and future build-out year (2024) without- and with-development conditions. The two study area intersections within Whitemarsh Township operate at LOS C or better overall during both peak hours and for both development scenarios and as a result, no mitigation measures are recommended. The other study area intersections within Conshohocken Borough operate at LOS D or better overall during both peak hours and for both development scenarios and as a result, no mitigation measures are recommended.

The traffic analyses contained herein reveals that safe and efficient access to and from the proposed development can be provided and that site-generated traffic can be accommodated at the off-site study area intersections.

Existing Transportation Settings and Conditions

The proposed development is at 401 and 433 Washington Street in Whitemarsh Township and Conshohocken Borough, Montgomery County, Pennsylvania (see **Figure 1**). The existing roadways and intersections in the vicinity of the site, which comprise the study area roadway network, are described in this section.

Roadway Characteristics

The study area roadway network and characteristics are summarized below in **Table 1**.

Table 1. Existing Roadway Characteristics

Roadway Name	Average Daily Traffic Volumes (vehicles per day)	Roadway Classification		Travel Lanes (per direction)	Posted Speed Limit (mph)
		Roadway Typology (1)	PennDOT/ Township (2)		
Elm Street (S.R. 3058)	4,793 (3)	Neighborhood Collector	Urban – Minor Collector	1 to 2	25
Ash Street	n/a	Local	Local	1	25
Cherry Street	1,242 (3)	Local	Local	1	25
Washington Street	n/a	Local	Local	1	25
Poplar Street	382 (3)	Local	Local	1	25
Hector Street (S.R. 3058)	9,115 (3)	Community Collector	Urban – Major Collector	1	25
North Lane (S.R. 3015)	4,097 (4)	Neighborhood Collector	Urban – Minor Collector	1	25
Station Avenue	n/a	Local	Local	1	25

(1) Based on Table 1.2 – Roadway Typologies in the PennDOT *Publication 13M, Design Manual Part 2*.
(2) Based on the roadway classifications provided on PennDOT's Traffic Information Repository (TIRe) website.
(3) Based on automatic traffic recorder counts conducted on February 3, 2022.
(4) Based on traffic data from PennDOT's Traffic Information Repository (TIRe) website.

The following key intersections in the vicinity of the site comprise the study area:

- Elm Street (S.R. 3058) and Harry Street *(Conshohocken Borough);*
- Elm Street (S.R. 3058) and Ash Street *(Conshohocken Borough);*
- Elm Street and Cherry Street *(Conshohocken Borough);*
- Washington Street and Ash Street *(Conshohocken Borough);*
- Washington Street and Poplar Street *(Conshohocken Borough);*
- Washington Street and Cherry Street *(Conshohocken Borough);*
- Washington Street and Western Site Access *(Conshohocken Borough);*
- Washington Street and Eastern Site Access *(Conshohocken Borough);*
- Hector Street (S.R. 3058) and Spring Mill Avenue / Lee Street (*Whitemarsh Township); and*
- Hector Street and (S.R. 3058) Station Avenue / North Lane (S.R. 3015) (*Whitemarsh Township).*

The existing characteristics of the study intersections, including photographs, field sketches, and signal permit plans are provided in **Appendix A**.

Area Transit Services

The site is located approximately one-half mile to the east of the Conshohocken Regional Rail Station and one mile to the west of the Spring Mill Regional Rail Station, which area both along SEPTA's Manayunk/Norristown Regional Rail Line. SEPTA Bus Route 97 also provides service along Elm Street and Hector Street with stops provided at the intersections of Cherry Street with both Elm Street and Hector Street. Both bus stops are also within one-half mile of the site.

Pedestrian-Bicycle Facilities

Sidewalk is provided on both sides of Hector Street, Elm Street, Harry Street, Ash Street, and North Lane (S.R. 3015) through the study area. Sidewalk is provided on the east side of Lee Street and the west side of Spring Mill Avenue. Sidewalk is also provided on the south side of Washington Street to the west of Cherry Street. The site is also within walking distance to the Schuylkill River Trail, which is located between Washington Street and Elm Street. The Washington Street sidewalk connects the site to the Conshohocken Regional Rail Station to the east, while the Schuylkill River Trail connects the site to the Spring Mill Regional Rail Station to the west.

With the development of the site, a sidewalk will be provided along the south side of Washington Street along the site frontage. Additionally, a multiuse trail will also be provided along the Schuylkill River frontage on the south side of the building that will connect to the existing trail to the west and will terminate at the parcel boundary to the east, where it will be extended by other parcels as they are developed.

Traffic Count Data

Daily traffic counts for North Lane (S.R. 3015) were obtained from PennDOT's Traffic Information Repository (TIRe) website, which are provided in **Appendix B** and referenced in Table 1. Daily traffic counts were conducted in February 2022 during a typical weekday (i.e., Tuesday, Wednesday, or Thursday) along Cherry Street, Poplar Street, and Hector Street (S.R. 3058) to collect traffic volumes, vehicle classifications, and travel speeds. The automatic traffic count worksheets are provided in Appendix B.

Manual turning movement traffic counts, were conducted in February 2022 during the weekday morning (7:00 AM to 9:00 AM) and weekday afternoon (4:00 PM to 6:00 PM) peak periods. The results of these traffic counts are tabulated by 15-minute intervals in **Appendix C**. The four highest consecutive 15-minute peak intervals during these traffic count periods constitute the peak hours that are the basis of this traffic analysis.

The resultant peak hour traffic volumes are depicted in **Figure 3A** for the weekday morning and weekday afternoon peak hours. The traffic volumes in Figure 3A were then analyzed to determine the existing operating conditions, and the results of this analysis are shown in **Figure 3B.** Specific details regarding the analysis results and traffic operations are provided later in this report.

Site Characteristics

This section presents the details regarding the proposed site, including the incremental increase in traffic volumes generated by the development during the peak hours and the distribution of site traffic to the study area roadways, as well as the proposed site access configuration, traffic control, and sight distance requirements.

Trip Generation

Traffic volumes generated by the proposed development were prepared based on trip generation data compiled from numerous studies contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 11th Edition*. **Table 2 and 3** presents the anticipated vehicular trip generation characteristics and trips associated with the proposed 598-unit multifamily apartment complex, which is based on the equations for Land Use Code 221: Multifamily Housing (Mid-Rise) using a location code of general suburban/urban areas according to ITE. The trip generation characteristics are also shown for this same land use code using a location code for dense multi-use urban for Not Close to Rail Transit and Close to Rail Transit.

Table 2. Trip Generation Methodology for Land Use Code 221: Multifamily Housing (Mid-Rise)

ITE Area	ITE Transit Option	Daily	Weekday Morning Adjacent Street Peak Hour		Weekday Afternoon Adjacent Street Peak Hour	
			Method	Enter/Exit	Method	Enter / Exit
Urban/ Suburban	Not Close to Rail Transit	T = 4.77(X) - 46.46	T = 0.44(X) - 11.61	23% / 77%	T = 0.39(X) + 0.34	61% / 39%
Urban/ Suburban	Close to Rail Transit	T = 4.75(X)	T = 0.31(X) + 1.06	56% / 44%	T = 0.29(X) - 0.09	43% / 57%
Dense Multi-Use Urban	Not Close to Rail Transit	T = 2.93 (X)	T = 0.25(X) + 5.35	15% / 85%	T = 0.29(X) – 6.26	73% / 27%
Dense Multi-Use Urban	Close to Rail Transit	T = 2.93 (X)	T = 0.25 (X)	15% / 85%	T = 0.24 (X) +2.00	74% / 26%

Where X = Independent Variable (units) and T = Trips

Table 3. Vehicular Trip Generation Characteristics for 598 dwelling units

ITE Area	ITE Transit Option	Daily	Weekday Morning Adjacent Street Peak Hour			Weekday Afternoon Adjacent Street Peak Hour		
			In	Out	Total	In	Out	Total
Urban/Suburban	Not Close to Rail Transit	2,806	58	194	252	142	92	234
Urban/Suburban	Close to Rail Transit	2,841 (2)	107	84	191	74	99	173
Dense Multi-Use Urban	Not Close to Rail Transit	1,752	23	132	155	122	45	167
Dense Multi-Use Urban	Close to Rail Transit	1,202 (3)	22	128	150	108	38	146

(1) Based on the equations for ITE Land Use Code 221 for Multifamily Housing (Mid-Rise) from the *Trip Generation Manual, 11th Edition* for sites that are Close to and Not Close to Rail Transit.
(2) Based on two studies in the *Trip Generation Manual.*
(3) Based on one study in the *Trip Generation Manual.*

Based on American Community Survey (2015-2019) data, approximately 9 percent of commuters along the east side of Conshohocken Borough and the Schuylkill River waterfront in both Conshohocken Borough and

Whitemarsh Township utilize public transit. These areas represent residents who live near the two SEPTA Regional Rail stations. This type of area is more representative of the dense multi-use urban area as defined by ITE than the general urban/suburban area. The analysis of the study area intersections was based upon the most conservative methodology from Table 3, which is conservative for the following reasons:

- Based on data for Not Close to Rail when the site is centrally located between two regional rail stations
- Based on the area type general urban/suburban and the area is more inline with ITE's definition for a dense multi-use urban area since the area has good pedestrian and bicycle connectivity, has convenient and frequent transit (both bus and rail), is located in a well-developed urban area outside a major metropolitan area and the overall area includes a mix of office, retail, residential, hotel, and other commercial uses.
- No reductions have been taken to account for residents who would utilize the nearby public transit facilities for commuting, those that may stay at home to telework, or those that may walk or bicycle to work.

Trip Distribution and Assignment

Site-generated traffic will approach and depart the site via different routes depending on factors such as the existing traffic patterns, location of major roadways, and the location of the development's site access. The overall trip distribution pattern was based on the existing turning movement pattern associated with vehicles turning into and out of Ash Street, Poplar Street, and Cherry Street to access the residential developments located along Washington Street between Poplar Street and Cherry Street.

The distribution percentages for the anticipated directions of approach and departure and traffic assignment percentages are illustrated in **Figures 4A and 4B** for two scenarios, without a connection to Lee Street to the east and with a connection to Lee Street, which should be provided with the completion of the 901 Washington Street development project. Application of the percentages illustrated in Figures 4A and 4B to the peak hour trips contained in Table 3 for the not close to transit scenario then provides an estimate of site traffic to be added to the study area. The site-generated traffic is then illustrated in **Figure 4C and 4D** for the weekday morning and weekday afternoon peak hours for the two scenarios, respectively.

Site Access Configuration and Traffic Control

Access to the site is proposed via three new intersections, which are all located within Conshohocken Borough. Access to the site is proposed via two new, full-movement unsignalized driveways located along Washington Street, which will be widened along the site frontage to provide a consistent 30-foot cartway. The accesses along Washington Street will be located approximately 350 and 675 feet to the east of Cherry Street. A third unsignalized, full-movement access will also be provided along Cherry Street approximately 280 feet south of Washington Street. Since the Cherry Street access is along the section of roadway that terminates approximately 600 feet to the south of Washington Street an analysis of the Cherry Street access has not been completed. The recommendations for the proposed access designs, including auxiliary turn lanes, traffic control, and geometric design, were based on industry accepted criteria and guidelines.

The need for separate left- and/or right-turn lanes along Washington Street was based on the current PennDOT guidelines in accordance with *Publication 46, Chapter 11 – Traffic Studies* for the with-development volumes with the completion of the Washington Street extension to Lee Street. **Table 4** summarizes the results of the auxiliary turn lane warrants for the two site access intersections along Washington Street, while copies of the worksheets are provided in **Appendix D.**

Table 4 – Turn Lane Warrant Summary

Washington Street Access	Auxiliary Lane Warrant	Warrant Satisfied? (1)	Required Lane Length (1)	Proposed Lane Length
Western	Eastbound Right	No	n/a	n/a
	Westbound Left	No	n/a	n/a
Eastern	Eastbound Right	No	n/a	n/a
	Westbound Left	No	n/a	n/a

(1) Based on PennDOT Publication 46, *Traffic Engineering Manual*, Chapter 11.16

Additionally, the geometric design of the proposed site accesses was preliminarily evaluated based on guidelines contained in the *Pennsylvania Code, Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads*, as well as local PennDOT District policies. Based on the results of this evaluation, the following access configurations and traffic controls are recommended, subject to the detailed engineering:

Western Washington Street Access (Conshohocken Borough)
- Provide one 18-foot-wide ingress lane and one 18-foot-wide egress lane for the access that will be separated by a 28-foot wide median
- Provide stop-control on the egress access approach to Washington Street
- Provide a minimum intersection radius of 25 feet for right-in and right-out movements and a minimum intersection radius of 10 feet for left-in and left-out movements, which should be designed based upon the largest vehicle anticipated to utilize the site
- Provide ADA compliant ramps and crosswalks for the sidewalk

Eastern Washington Street Access (Conshohocken Borough)
- Provide a minimum curbed cartway width of 24 feet that will allow for one ingress lane and one egress lane for the access
- Provide stop-control on the egress access approach to Washington Street
- Provide a minimum intersection radius of 15 feet, which should be designed based upon the largest vehicle anticipated to utilize the site
- Provide ADA compliant ramps and crosswalks for the sidewalk

Cherry Street Access (Conshohocken Borough)
- Provide a minimum curbed cartway width of 26 feet that will allow for one ingress lane and one egress lane for the access
- Provide stop-control on the egress access approach to Cherry Street
- Provide a minimum intersection radius of 15 feet, which should be designed based upon the largest vehicle anticipated to utilize the site
- Provide ADA compliant ramps and crosswalks for the sidewalk

Sight Distance

Sight distance field measurements and an evaluation were performed at the proposed access intersections along Washington Street and Cherry Street, which are all located in Conshohocken Borough. Generally, the travel speed, roadway grades and profiles, and the number of travel lanes play a role in determining if safe sight distances are available for egress and ingress at the proposed accesses. The existing sight distances at the proposed access intersection were measured and compared to PennDOT's sight distance requirements. These sight distance

requirements are contained in *Pennsylvania Code, Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads*.

Table 5 summarizes the available sight distance measurements, as well as PennDOT's sight distance requirements at the proposed access locations. As can be seen, the existing available sight distances at the site access intersections are anticipated to meet PennDOT's desirable sight distance criteria, as well as the Township's intersection sight distance criteria with completion of the widening of Washington Street and maintenance of the vegetation proposed to be installed along the widened street. The actual available sight distances should be verified during detailed engineering of the site accesses.

Table 5. Sight Distance Evaluation
Western Washington Street Access (Conshohocken Borough)

Movement	Direction	Posted Speed (mph)	Approximate Grade	Township [1] (feet)	PennDOT Requirements (feet)		Available Sight Distance (feet)
					Desirable [1]	Minimum [2]	
Exiting	Looking Left	25	-1.0%	400	250	164	500+
	Looking Right	25	+1.0%	400	195	160	500+
Left turn Entering	Looking Ahead	25	-1.0%	400	190	164	500+
	From the Rear	25	+1.0%	400	n/a	160	500+

Eastern Washington Street Access (Conshohocken Borough)

Movement	Direction	Posted Speed (mph)	Approximate Grade	Township [1] (feet)	PennDOT Requirements (feet)		Available Sight Distance (feet)
					Desirable [1]	Minimum [2]	
Exiting	Looking Left	25	-1.0%	400	250	164	500+
	Looking Right	25	+1.0%	400	195	160	500+
Left turn Entering	Looking Ahead	25	-1.0%	400	190	164	500+
	From the Rear	25	+1.0%	400	n/a	160	500+

Cherry Street Access (Conshohocken Borough)

Movement	Direction	Posted Speed (mph)	Approximate Grade	Township [1] (feet)	PennDOT Requirements (feet)		Available Sight Distance (feet)
					Desirable [1]	Minimum [2]	
Exiting	Looking Left	25	-1.0%	400	250	164	400+
	Looking Right	25	+1.0%	400	195	160	300 [4]
Left turn Entering	Looking Ahead	25	-1.0%	400	190	164	320 [4]
	From the Rear	25	+1.0%	400	n/a	160	400+

(1) Based on § 105-37 (B) of the Whitemarsh Township ordinance.
(2) Based on the desirable sight distance requirements contained in the *Pennsylvania Code, Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads* and the posted speed limit, unless otherwise noted.
(3) Based on the safe stopping sight distance requirements contained in the *PennDOT Publication 13M, Chapter 2.17(F).*
(4) End of Cherry Street.

Future Traffic Conditions

This section presents the future build-out year 2024, both without and with the proposed development, which is anticipated to be completed and occupied by 2024. The future 2024 build-out year without-development traffic volumes were estimated by increasing the existing 2022 traffic volumes to account for regional growth, as described below. The incremental increase due to the anticipated trip generation for the site was then added, resulting in the future 2024 build-out year with-development traffic volumes.

Regional Traffic Growth

To account for regional traffic growth, the existing traffic volumes were increased by an annual traffic growth rate of 0.33 percent per year compounded for two years to 2024, or 0.66 percent total to 2024. This growth rate is consistent with the traffic growth rate recommended by the PennDOT Bureau of Planning and Research *Growth Factors for August 2021 and July 2022* for similar, Urban Non-Interstate roadways in Montgomery County.

Local Traffic Growth

To account for local traffic growth, other land development projects were identified in surrounding municipalities. The existing traffic volumes were also increased to include the traffic to be generated by nearby approved developments in the vicinity of 401 and 433 Washington Street. Specifically, the following projects within Whitemarsh Township and Conshohocken Borough were included:

- *901 Washington Street (Whitemarsh Township):* Development of 75 townhomes with access via the extension of Washington Street and Lee Street through the David Bridal parcel to the east.

- *601 Washington Street (Whitemarsh Township):* Development of 270 apartments to the west of the site, which will result in the extension of Washington Street to the east of Cherry Street.

- *Millennium Apartments (Conshohocken Borough):* Development of 305 apartments located along the south side of Washington Street between Ash Street and Harry Street.

Information regarding these nearby developments is provided in **Appendix E.** It is noted that the trip generation for 901 and 406 Washington Street are also based on the Multifamily Housing (Mid-Rise) with the Not Close to Transit Option. As with 401 and 433 Washington Street, the trip generation for these two uses is then conservative since no transit reduction has been applied. The trip generation for the Millennium Apartments is based on the study that was approved by Conshohocken Borough and does include a transit reduction; however, as of the date of this study, Conshohocken Borough has not granted any approvals for the project.

Planned Roadway Improvements

As part of the 901 and 601 Washington Street residential developments, Washington Street will also be widened along their frontage to provide a continuous 30-foot wide cartway width with a single lane of travel in each direction. As part of the 901 Washington Street project, an extension of Washington Street to Lee Street is also planned. For the purposes of this traffic study, future conditions were analyzed both without and with this extension of Washington Street to Lee Street.

Future Traffic Volumes

The total background growth and nearby development traffic volumes were then added to the existing 2022 traffic volumes, resulting in the future 2024 without-development traffic volumes. Next, the site generated traffic volumes, as shown in Figures 4C and 4D, were added to the future 2024 without-development traffic volumes, resulting in the future 2024 with-development traffic volumes for the without and with completion of the Lee Street connection. Detailed traffic volume projections are provided in **Appendix F.**

The resultant future 2024 peak hour traffic volumes without development are illustrated in **Figure 5A and 5B** with and without the completion to Lee Street, respectively. The future 2024 with-development peak hour traffic volumes are illustrated in **Figures 5C and 5D** without and with completion of the Lee Street connection, respectively. These traffic volumes were then analyzed to determine the future 2024 without and with development traffic operating conditions, and the results of this analysis are shown in **Figures 5E through 5H.**

Capacity/Level-of-Service Results

The peak hour traffic volumes were analyzed to determine the existing and future traffic operating conditions, both without and with the proposed development, in accordance with the standard techniques contained in the current *Highway Capacity Manual (6th Edition)* for both signalized and unsignalized intersections. The HCM 6th Edition Methodology within Synchro 10.3 (build 151, rev. 0) traffic analysis software was utilized in the traffic analyses. These standard capacity/level-of-service analysis techniques, which calculate total control delay, are described in **Appendix G** for both signalized and unsignalized intersections, as well as the correlation between average total control delay and the respective level-of-service (LOS) criteria for each intersection type.

The following procedures and assumptions were utilized for the analysis, which includes those from PennDOT's *Policies and Procedures for Transportation Impact Studies Related to Highway Occupancy Permit Plans:*

- For signalized intersections, the Pennsylvania base saturation flow rate (Exhibit 10-9) and Pennsylvania traffic signal control calibration parameters (Exhibit 10-10) outlined in PennDOT's *Publication 46, Traffic Engineering Manual*, were used.

- For unsignalized intersections, the base critical headways at TWSC intersections (Exhibit 10-11) and base follow-up headways at TWSC intersections (Exhibit 10-12) outlined in PennDOT's *Publication 46, Traffic Engineering Manual*, were used.

- The four-legged, unsignalized intersections of Washington Street with Ash Street, Poplar Street, and Cherry Street were analyzed using SimTraffic as these intersections have stop-controlled along three of the four approaches. The southbound approaches operate at free-flow conditions to prevent vehicles from stopping on the regional rail tracks, since there is not adequate sight distance for vehicles on the approach to view vehicles on the other three approaches from the north side of the tracks. The stop bar provided on the southbound approaches is only utilized when a train is crossing the tracks. This type of stop-control is not supported by the HCM methodology.

The existing, future build-out year 2024 traffic conditions, both without and with the proposed development, are summarized in Figures 3B and 5E through 5H, respectively while the detailed capacity/level-of-service analysis worksheets are provided in **Appendices I, J, and K.** As illustrated in Figures 3B, 5E, 5F, 5G, and 5H, with the development of the proposed site, the study intersections will satisfy PennDOT's level-of-service criteria, which would not require any mitigation measures. **Table 6** below summarizes the overall levels of service for the study intersections. The detailed results of the level-of-service analysis and the 95th percentile queues are contained in the matrices provided in **Tables 7 and 8**, respectively, for the study area intersections

Per *§105-21.B.(9)(d)[3](b)* of the Whitemarsh Township ordinance, roadways and/or intersections experiencing LOS E or F conditions are considered congested locations and *§105-21.B(9)(d)[6](a)* requires mitigation measures be implemented for streets and/or intersections operating at LOS D or worse conditions. The two study area intersections within Whitemarsh Township operate at LOS C or better overall during both peak hours and for both development scenarios and as a result, no mitigation measures are recommended.

Mitigation would be required during the weekday afternoon peak hour for the Without Washington Street Extension scenario, which is in Conshohocken Borough, since the drop from LOS C to D is over 10 seconds at the intersection of Elm Street and Ash Street; however, there are no feasible improvements that can be completed, and site traffic could divert to Elm Street and Harry Street to access Washington Street. The other study area intersections within Conshohocken Borough operate at LOS D or better overall during both peak hours and for both development scenarios and as a result, no mitigation measures are recommended.

Table 6. Mitigation Summary by Intersection

Weekday Morning Peak Hour

Intersection (Jurisdiction)	Without Washington Street Extension			With Washington Street Extension			Requires Mitigation [1]
	Overall Level-of-Service (Delay in Seconds)		Delay Increase	Overall Level-of-Service (Delay in Seconds)		Delay Increase	
	Without Development	With Development		Without Development	With Development		
Elm Street and Harry Street (Conshohocken Borough)	B (11.1)	B (11.0)	n/a	B (11.1)	B (11.0)	n/a	No
Elm Street and Ash Street (Conshohocken Borough)	B (13.4)	C (19.7)	6.3	C (15.8)	D (19.6)	3.8	No
Elm Street and Cherry Street (Conshohocken Borough)	B (10.3)	B (10.6)	n/a	A (9.9)	A (10.0)	n/a	No
Washington Street and Ash Street (Conshohocken Borough)	A (4.4)	A (5.5)	n/a	A (4.7)	A (5.3)	n/a	No
Washington Street and Poplar Street (Conshohocken Borough)	A (5.0)	A (6.6)	n/a	A (5.1)	A (6.1)	n/a	No
Washington Street and Cherry Street (Conshohocken Borough)	A (4.6)	A (5.1)	n/a	A (4.9)	A (5.1)	n/a	No
Hector Street and Spring Mill Avenue/Lee Street (Whitemarsh Township)	A (1.2)	A (1.2)	n/a	A (1.8)	A (2.5)	n/a	No
Hector Street and Station Avenue/ North Lane (Whitemarsh Township)	C (24.6)	C (25.5)	n/a	C (24.7)	C (25.5)	n/a	No

Weekday Afternoon Peak Hour

Intersection (Jurisdiction)	Without Washington Street Extension			With Washington Street Extension			Requires Mitigation [1]
	Overall Level-of-Service (Delay in Seconds)		Delay Increase	Overall Level-of-Service (Delay in Seconds)		Delay Increase	
	Without Development	With Development		Without Development	With Development		
Elm Street and Harry Street (Conshohocken Borough)	B (12.7)	B (12.7)	n/a	B (12.7)	B (12.7)	n/a	No
Elm Street and Ash Street (Conshohocken Borough)	C (18.8)	D (30.6)	11.8	C (23.9)	D (30.9)	7.0	Yes: Without Extension Only
Elm Street and Cherry Street (Conshohocken Borough)	B (14.2)	B (15.2)	n/a	B (12.9)	B (13.9)	1.0	No
Washington Street and Ash Street (Conshohocken Borough)	A (3.8)	A (4.0)	n/a	A (3.7)	A (4.0)	n/a	No
Washington Street and Poplar Street (Conshohocken Borough)	A (4.9)	A (5.4)	n/a	A (5.0)	A (5.4)	n/a	No
Washington Street and Cherry Street (Conshohocken Borough)	A (3.9)	A (4.4)	n/a	A (4.1)	A (4.5)	n/a	No
Hector Street and Spring Mill Avenue/Lee Street (Whitemarsh Township)	A (1.5)	A (1.5)	n/a	A (2.2)	A (2.9)	n/a	No
Hector Street and Station Avenue/ North Lane (Whitemarsh Township)	C (27.3)	C (27.8)	n/a	C (27.3)	C (27.8)	n/a	No

(1) Based on Whitemarsh Township criteria for intersections located within the Township and PennDOT criteria for intersections in Conshohocken Borough or that involve state highways.

Conclusions and Recommendations

The evaluation of traffic conditions associated with the proposed development reveals the following findings and conclusions:

- **Trip Generation** – The trip generation characteristics for the development is based on data from the Institute of Transportation Engineers' publication entitled *Trip Generation, 11th Edition*, for similar uses. The proposed apartment complex is anticipated 2,806 total trips (inbound and outbound) on a typical weekday, of which approximately 252 and 234 total trips (inbound and outbound) are expected to be generated during the weekday morning and weekday afternoon peak hours, respectively.

  The trip generation methodology utilized for the analysis of the study intersections is conservative, since it is based on data that was Not Close to Rail when the site is centrally located between two regional rail stations, the area type was based on general urban/suburban when it is consistent with ITE's definition for a dense multi-use urban, and no reductions have been taken to account for residents who would utilize the nearby public transit facilities for commuting, those that may stay at home to telework, or those that may walk or bicycle to work.

- **Site Access Recommendation**s – The following recommendations have been made regarding the design of the three site access intersection, which are all located in Conshohocken Borough:

  Western Washington Street Access
  - Provide one 18-foot-wide ingress lane and one 18-foot-wide egress lane for the access that will be separated by a 28-foot wide median
  - Provide stop-control on the egress access approach to Washington Street
  - Provide a minimum intersection radius of 25 feet for right-in and right-out movements and a minimum intersection radius of 10 feet for left-in and left-out movements, which should be designed based upon the largest vehicle anticipated to utilize the site
  - Provide ADA compliant ramps and crosswalks for the sidewalk

  Eastern Washington Street Access
  - Provide a minimum curbed cartway width of 24 feet that will allow for one ingress lane and one egress lane for the access
  - Provide stop-control on the egress access approach to Washington Street
  - Provide a minimum intersection radius of 15 feet, which should be designed based upon the largest vehicle anticipated to utilize the site
  - Provide ADA compliant ramps and crosswalks for the sidewalk

  Cherry Street Access
  - Provide a minimum curbed cartway width of 26 feet that will allow for one ingress lane and one egress lane for the access
  - Provide stop-control on the egress access approach to Cherry Street
  - Provide a minimum intersection radius of 15 feet, which should be designed based upon the largest vehicle anticipated to utilize the site
  - Provide ADA compliant ramps and crosswalks for the sidewalk

- **Washington Street (Conshohocken Borough)** – In conjunction with the development of the site, the Washington Street frontage will be widened to provide a consistent 30-foot wide cartway with a

single travel lane in each direction along with sidewalk. A multiuse trail will then be provided along the Riverfront linking the site to the adjacent trail system to the east.

- **Cherry Street (Conshohocken Borough)**– A 24-foot wide cartway will be provided to the south of Washington Street. The existing parallel parking spaces will be removed and replaced with thirty-right (38) perpendicular parking spaces.

- **Capacity/Level-of-Service Results for Off-Site Intersections** – The study intersections were evaluated to determine the operational characteristics under existing and future build-out year (2024) without- and with-development conditions. The two study area intersections within Whitemarsh Township operate at LOS C or better overall during both peak hours and for both development scenarios and as a result, no mitigation measures are recommended. The other study area intersections within Conshohocken Borough operate at LOS D or better overall during both peak hours and for both development scenarios and as a result, no mitigation measures are recommended.

The traffic analyses contained herein reveals that safe and efficient access to and from the proposed development can be provided and that site-generated traffic can be accommodated at the off-site study area intersections.

Table 7 - Level of Service Matrices

1. Elm Street and Harry Street (Conshohocken Borough)

Time Period			Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year			2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition			Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Elm Street	EB	Thru	A 6.2	A 7.2	A 7.4	A 7.2	A 7.4	A 8.9	A 9.9	B 10.4	A 9.9	B 10.4
		Thru/ Right	A 6.3	A 7.4	A 7.5	A 7.4	A 7.5	A 9.0	A 9.9	B 10.4	A 9.9	B 10.4
	WB	Left	A	A	A	A	A	A	A	A	A	A
		Thru	5.3	6.8	8.1	6.8	8.1	7.8	8.6	9.2	8.6	9.2
Harry Street	NB	Left	C	C	C	C	C	C	C	C	C	C
		Right	26.3	25.7	25.7	25.7	25.7	23.3	23.1	23.1	23.1	23.1
	SB	Left	B 18.2	B 17.0	B 17.1	B 17.0	B 17.1	B 14.2	B 13.8	B 13.9	B 13.8	B 13.9
		Thru	C	C	C	C	C	B	B	B	B	B
		Right	22.6	20.8	20.8	20.8	20.8	17.1	16.5	16.5	16.5	16.5
Overall			B 10.9	B 11.1	B 11.0	B 11.1	B 11.0	B 12.7	B 12.7	B 12.7	B 12.7	B 12.7

Table 7 - Level of Service Matrices

2. Elm Street and Ash Street (Conshohocken Borough)

Time Period			Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year			2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition			Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Elm Street	EB	Left	B	C	C	C	C	C	C	E	C	E
		Thru	13.0	15.5	21.6	15.5	21.5	17.8	24.4	45.0	24.4	45.0
		Right	A 7.2	A 7.9	A 8.7	A 7.9	A 8.7	A 7.4	A 8.1	A 8.9	A 8.1	A 8.9
Ash Street	NB	Left	A	B	C	B	C	A	B	B	B	B
		Thru	9.6	12.0	20.1	12.0	20.0	10.0	11.6	14.2	11.5	14.2
		Right										
Overall			B 11.6	B 13.4	C 19.7	C 15.8	C 19.6	C 15.1	C 18.8	D 30.6	C 23.9	D 30.9

Table 7 - Level of Service Matrices

3. Elm Street and Cherry Street (Conshohocken Borough)

Time Period		Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition		Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Elm Street	EB Thru	B	B	B	B	B	B	B	B	B	B
	EB Right	10.3	11.0	10.5	10.4	10.5	13.3	14.9	17.6	14.0	15.1
Cherry Street	NB Right	A	A	A	A	A	A	A	A	A	A
		7.5	7.8	7.5	7.5	7.5	8.0	8.3	8.7	8.0	8.1
	SB Left	A	A	A	A	A	A	A	A	A	A
	SB Thru	8.8	9.0	8.7	8.7	8.7	9.0	9.3	9.9	8.9	9.0
Overall		A	B	B	A	A	B	B	B	B	B
		9.8	10.3	10.6	9.9	10.0	12.2	14.2	15.2	12.9	13.9

Table 7 - Level of Service Matrices

4. Washington Street and Ash Street (Conshohocken Borough)

Time Period			Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year			2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition			Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Washington Street	EB	Left	A	A	A	A	A	A	A	A	A	A
		Thru										
		Right	4.2	4.1	4.3	4.4	4.2	5.1	5.6	6.1	5.5	5.9
	WB	Left	A	A	A	A	A	A	A	A	A	A
			4.9	4.8	4.8	4.9	5.1	0.0	6.3	7.4	5.2	5.0
		Thru	A	A	A	A	A	A	A	A	A	A
		Right	5.0	5.4	6.6	5.8	6.3	4.8	5.1	5.6	5.1	5.6
Ash Street	NB	Left	A	A	A	A	A	A	A	A	A	A
		Thru										
		Right	5.2	4.7	5.0	4.9	5.2	5.1	5.8	6.5	5.3	5.6
	SB	Left	A	A	A	A	A	A	A	A	A	A
		Thru										
		Right	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4
Overall			A	A	A	A	A	A	A	A	A	A
			4.1	4.4	5.5	4.7	5.3	3.7	3.8	4.0	3.7	4.0

Table 7 - Level of Service Matrices

5. Washington Street and Poplar Street (Conshohocken Borough)

Time Period			Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year			2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition			Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Washington Street	EB	Left	A	A	A	A	A	A	A	A	A	A
		Thru										
		Right	4.4	4.3	5.0	4.4	4.8	5.3	5.3	6.1	5.4	6.0
	WB	Left	A	A	A	A	A	A	A	A	A	A
		Thru										
		Right	5.5	5.8	7.5	6.0	7.0	5.5	6.4	7.3	6.2	7.3
Poplar Street	NB	Left	A	A	A	A	A	A	A	A	A	A
		Thru										
		Right	4.6	5.1	6.1	5.1	5.6	4.5	4.6	5.1	4.8	5.0
	SB	Left	A	A	A	A	A	A	A	A	A	A
		Thru										
		Right	0.1	0.1	0.3	0.2	0.3	0.1	0.2	0.3	0.2	0.2
Overall			A	A	A	A	A	A	A	A	A	A
			4.8	5.0	6.6	5.1	6.1	4.9	4.9	5.4	5.0	5.4

Table 7 - Level of Service Matrices

6. Washington Street and Cherry Street (Conshohocken Borough)

Time Period			Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year			2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition			Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Washington Street	EB	Left	A	A	A	A	A	A	A	A	A	A
		Thru										
		Right	4.8	5.3	6.1	5.4	5.9	3.7	5.3	5.2	4.4	5.2
	WB	Left	A	A	A	A	A	A	A	A	A	A
		Thru										
		Right	1.3	6.4	5.5	6.5	5.4	4.8	5.6	5.9	5.8	5.9
Poplar Street	NB	Left	A	A	A	A	A	A	A	A	A	A
		Thru										
		Right	5.4	5.3	6.9	6.1	6.6	5.7	5.6	6.2	6.1	5.6
	SB	Left	A	A	A	A	A	A	A	A	A	A
		Thru										
		Right	1.6	1.7	1.7	1.6	1.4	1.6	1.4	1.5	1.2	1.0
Overall			A	A	A	A	A	A	A	A	A	A
			3.0	4.6	5.1	4.9	5.1	3.3	3.9	4.4	4.1	4.5

Table 7 - Level of Service Matrices

7. Washington Street and Western Site Access (Conshohocken Borough)

Time Period		Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Design Year		2024 Build-Out Year without Washington Street Extension	2024 Build-Out Year With Washington Street Extension	2024 Build-Out Year without Washington Street Extension	2024 Build-Out Year With Washington Street Extension
Development Condition		w/Dev	w/Dev	w/Dev	w/Dev
Washington Street	EB Thru / Right	(1)	(1)	(1)	(1)
	WB Left	A	A	A	A
	WB Thru	0.0	0.3	0.0	1.1
Western Site Access	NB Left	B	A	B	A
	NB Right	10.6	9.5	10.0	9.8
Overall		A 2.1	A 2.4	A 0.9	A 1.4

(1) Movement operates at free-flow conditions.

Table 7 - Level of Service Matrices

8. Washington Street and Eastern Site Access (Conshohocken Borough)

Time Period		Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Design Year		2024 Build-Out Year without Washington Street Extension	2024 Build-Out Year With Washington Street Extension	2024 Build-Out Year without Washington Street Extension	2024 Build-Out Year With Washington Street Extension
Development Condition		w/Dev	w/Dev	w/Dev	w/Dev
Washington Street	EB Thru	(1)	(1)	(1)	(1)
	EB Right				
	WB Left	A	A	A	A
	WB Thru	0.0	0.4	0.0	1.2
Eastern Site Access	NB Left	A	A	A	A
	NB Right	9.9	9.3	9.4	9.5
Overall		A	A	A	A
		2.6	2.7	1.1	1.7

(1) Movement operates at free-flow conditions.

Table 7 - Level of Service Matrices

10. Hector Street and Spring Mill Avenue/Lee Street (Whitemarsh Township)

Time Period			Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year			2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition			Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Hector Street	EB	Left	A	A	A	A	A	A	A	A	A	A
		Thru										
		Right	0.0	0.0	0.0	0.0	0.0	9.1	9.2	9.4	9.1	0.0
	WB	Left	A	A	A	A	A	A	A	A	A	A
		Thru										
		Right	0.4	0.4	0.4	0.9	1.1	0.2	0.2	0.2	0.9	1.5
Lee Street	NB	Left	C	C	C	C	B	C	C	C	A	C
		Thru										
		Right	16.9	21.1	22.9	15.3	14.6	17.1	18.3	19.3	10.0	16.2
Spring Mill Avenue	SB	Left	C	C	C	C	C	C	C	C	C	D
		Thru										
		Right	20.7	19.4	20.7	19.5	22.3	18.8	20.2	21.6	22.4	27.0
Overall			A	A	A	A	A	A	A	A	A	A
			1.2	1.2	1.2	1.8	2.5	1.5	1.5	1.5	2.2	2.9

Table 7 - Level of Service Matrices

11. Hector Street and North Lane/Station Avenue (Whitemarsh Township)

Time Period			Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year			2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition			Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Hector Street	EB	Left	B 11.7	B 11.9	B 12.3	B 12.0	B 12.3	B 12.4	B 12.6	B 12.8	B 12.6	B 12.8
		Thru	B	B	B	B	B	B	B	B	B	B
		Right	13.2	13.8	14.4	13.8	14.4	18.6	19.3	19.8	19.3	19.8
	WB	Left	B 16.9	B 16.9	B 16.9	B 16.9	B 16.9	B 19.3	B 19.5	B 19.7	B 19.5	B 19.7
		Thru	C	C	C	C	C	C	C	C	C	C
		Right	25.4	25.9	28.0	26.0	27.9	23.3	24.4	25.4	24.4	25.4
Station Avenue	NB	Left	D	D	D	D	D	C	C	C	C	C
		Thru										
		Right	43.0	43.0	43.0	43.0	43.0	34.3	34.2	34.2	34.2	34.2
North Lane	SB	Left	E	E	E	E	E	E	E	E	E	E
		Thru										
		Right	57.1	56.9	57.0	56.8	57.3	62.4	63.1	63.3	63.1	63.3
Overall			C 24.6	C 24.6	C 25.5	C 24.7	C 25.5	C 26.7	C 27.3	C 27.8	C 27.3	C 27.8

Table 8 - 95th Percentile Queue Matrices (feet)

1. Elm Street and Harry Street (Conshohocken Borough)

Time Period			Current Storage [1]	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year				2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition				Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Elm Street	EB	Thru	*250'*	73	90	98	90	98	88	113	135	113	135
		Thru/ Right	*250'*	73	90	98	90	98	93	113	140	118	140
	WB	Left	*500'*	30	68	125	68	125	38	58	83	58	83
		Thru											
Harry Street	NB	Left	*200'*	40	60	60	60	60	100	108	108	108	108
		Right											
	SB	Left	*200'*	25	25	25	25	25	25	25	25	25	25
		Thru	200'	128	120	120	120	120	100	98	98	98	98
		Right											

(1) Distance to adjacent signalized or stop controlled intersections shown in italics.

Table 8 - 95th Percentile Queue Matrices (feet)

2. Elm Street and Ash Street (Conshohocken Borough)

Time Period			Current Storage [1]	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year				2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition				Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Elm Street	EB	Left	*500'*	75	95	140	95	140	138	195	328	195	328
		Thru											
		Right	*500'*	25	25	25	25	25	25	25	25	25	25
Ash Street	NB	Left	*290'*	25	50	138	50	138	25	38	65	38	65
		Thru											
		Right											

(1) Distance to adjacent signalized or stop controlled intersections shown in italics.

Table 8 - 95th Percentile Queue Matrices (feet)

3. Elm Street and Cherry Street (Conshohocken Borough)

Time Period		Current Storage [1]	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year			2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition			Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Elm Street	EB Thru	*800'*	53	60	68	55	60	100	120	150	113	130
	EB Right											
Cherry Street	NB Right	*325'*	25	25	25	25	25	25	25	25	25	25
	SB Left	*250'*	25	25	25	25	25	25	25	25	25	25
	SB Thru											

(1) Distance to adjacent signalized or stop controlled intersections shown in italics.

Table 8 - 95th Percentile Queue Matrices (feet)

4. Washington Street and Ash Street (Conshohocken Borough)

Time Period			Current Storage [1]	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year				2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition				Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Washington Street	EB	Left / Thru / Right	*650'*	30	33	32	31	31	36	41	43	44	43
	WB	Left	*800'*	24	29	25	29	28	6	25	23	22	24
		Thru / Right	*800'*	59	69	93	76	81	56	63	71	61	70
Ash Street	NB	Left / Thru / Right	600'	22	48	48	47	48	46	49	51	47	49
	SB	Left / Thru / Right	*290'*	0	3	8	7	0	0	3	0	0	0

(1) Distance to adjacent signalized or stop controlled intersections shown in italics.

Table 8 - 95th Percentile Queue Matrices (feet)

5. Washington Street and Poplar Street (Conshohocken Borough)

Time Period			Current Storage [1]	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year				2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition				Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Washington Street	EB	Left	*810'*	34	44	46	45	50	54	57	68	56	72
		Thru											
		Right											
	WB	Left	*854'*	69	72	109	77	98	51	60	68	59	71
		Thru											
		Right											
Poplar Street	NB	Left	270'	40	44	53	50	46	35	40	42	40	41
		Thru											
		Right											
	SB	Left	*260'*	0	4	8	6	4	0	6	4	5	4
		Thru											
		Right											

(1) Distance to adjacent signalized or stop controlled intersections shown in italics.

Table 8 - 95th Percentile Queue Matrices (feet)

6. Washington Street and Cherry Street (Conshohocken Borough)

Time Period			Current Storage [1]	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year				2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition				Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Washington Street	EB	Left	*850'*	43	42	49	46	52	49	57	72	62	78
		Thru											
		Right											
	WB	Left	*1000' +*	47	115	172	107	160	46	62	77	65	68
		Thru											
		Right											
Cherry Street	NB	Left	530'	46	44	54	46	54	38	35	50	39	47
		Thru											
		Right											
	SB	Left	*330'*	0	10	13	11	10	0	4	7	0	3
		Thru											
		Right											

(1) Distance to adjacent signalized or stop controlled intersections shown in italics.

Table 8 - 95th Percentile Queue Matrices (feet)

7. Washington Street and Western Site Access (Conshohocken Borough)

Time Period		Current Storage [1]	Future Storage [2]	Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Design Year				2024 Build-Out Year without Washington Street Extension	2024 Build-Out Year With Washington Street Extension	2024 Build-Out Year without Washington Street Extension	2024 Build-Out Year With Washington Street Extension
Development Condition				w/Dev	w/Dev	w/Dev	w/Dev
Washington Street	EB Thru	*1000'+*		(3)	(3)	(3)	(3)
	EB Right						
	WB Left	*1000' +*		0	0	0	0
	WB Thru						
Western Site Access	NB Left		300'	25	25	25	25
	NB Right						

(1) Distance to adjacent signalized or stop controlled intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

(3) Movement operates at free-flow conditions.

Table 8 - 95th Percentile Queue Matrices (feet)

8. Washington Street and Eastern Site Access (Conshohocken Borough)

Time Period				Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Design Year		Current Storage [1]	Future Storage [2]	2024 Build-Out Year without Washington Street Extension	2024 Build-Out Year With Washington Street Extension	2024 Build-Out Year without Washington Street Extension	2024 Build-Out Year With Washington Street Extension
Development Condition				w/Dev	w/Dev	w/Dev	w/Dev
Washington Street	EB Thru	*1000' +*		(3)	(3)	(3)	(3)
	EB Right						
	WB Left	*1000' +*		0	0	0	25
	WB Thru						
Eastern Site Access	NB Left		300'	25	25	25	25
	NB Right						

(1) Distance to adjacent signalized or stop controlled intersections shown in italics.

Table 8 - 95th Percentile Queue Matrices (feet)

10. Hector Street and Spring Mill Avenue/Lee Street (Whitemarsh Township)

Time Period			Current Storage [1]	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year				2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition				Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Hector Street	EB	Left	*1000' +*	0	0	0	0	0	0	0	0	0	0
		Thru											
		Right											
	WB	Left	*780'*	25	25	25	25	25	0	0	0	25	25
		Thru											
		Right											
Lee Street	NB	Left	*1000' +*	25	25	25	25	25	25	25	25	25	25
		Thru											
		Right											
Spring Mill Avenue	SB	Left	*250'*	25	25	25	25	25	25	25	25	25	25
		Thru											
		Right											

(1) Distance to adjacent signalized or stop controlled intersections shown in italics.

Table 8 - 95th Percentile Queue Matrices (feet)

11. Hector Street and North Lane/Station Avenue (Whitemarsh Township)

Time Period				Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
Design Year			Current Storage [1]	2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension		2022	2024 Build-Out Year without Washington Street Extension		2024 Build-Out Year With Washington Street Extension	
Development Condition				Existing	w/o Dev	w/Dev	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev	w/o Dev	w/Dev
Hector Street	EB	Left	150'	46	50	53	50	53	39	40	42	41	43
		Thru Right	*780'*	216	242	271	242	271	407	430	448	430	448
	WB	Left	90'	25	25	25	25	25	25	25	25	25	25
		Thru Right	*1000' +*	443	462	478	462	475	308	338	368	338	368
Station Avenue	NB	Left Thru Right	*560'*	45	45	45	45	45	47	47	47	47	47
North Lane	SB	Left Thru Right	*1000' +*	154	154	157	155	157	211	217	221	217	221

(1) Distance to adjacent signalized or stop controlled intersections shown in italics.

FIGURE 1

Site Location Map

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH,
MONTGOMERY COUNTY, PA

McMAHON
a **Bowman** company

\\ftwfs\mcm\eng\THEKRGR\822547-401-433 Washington Street\Traffic\TIS#1\Graphics\Figure 1.dwg

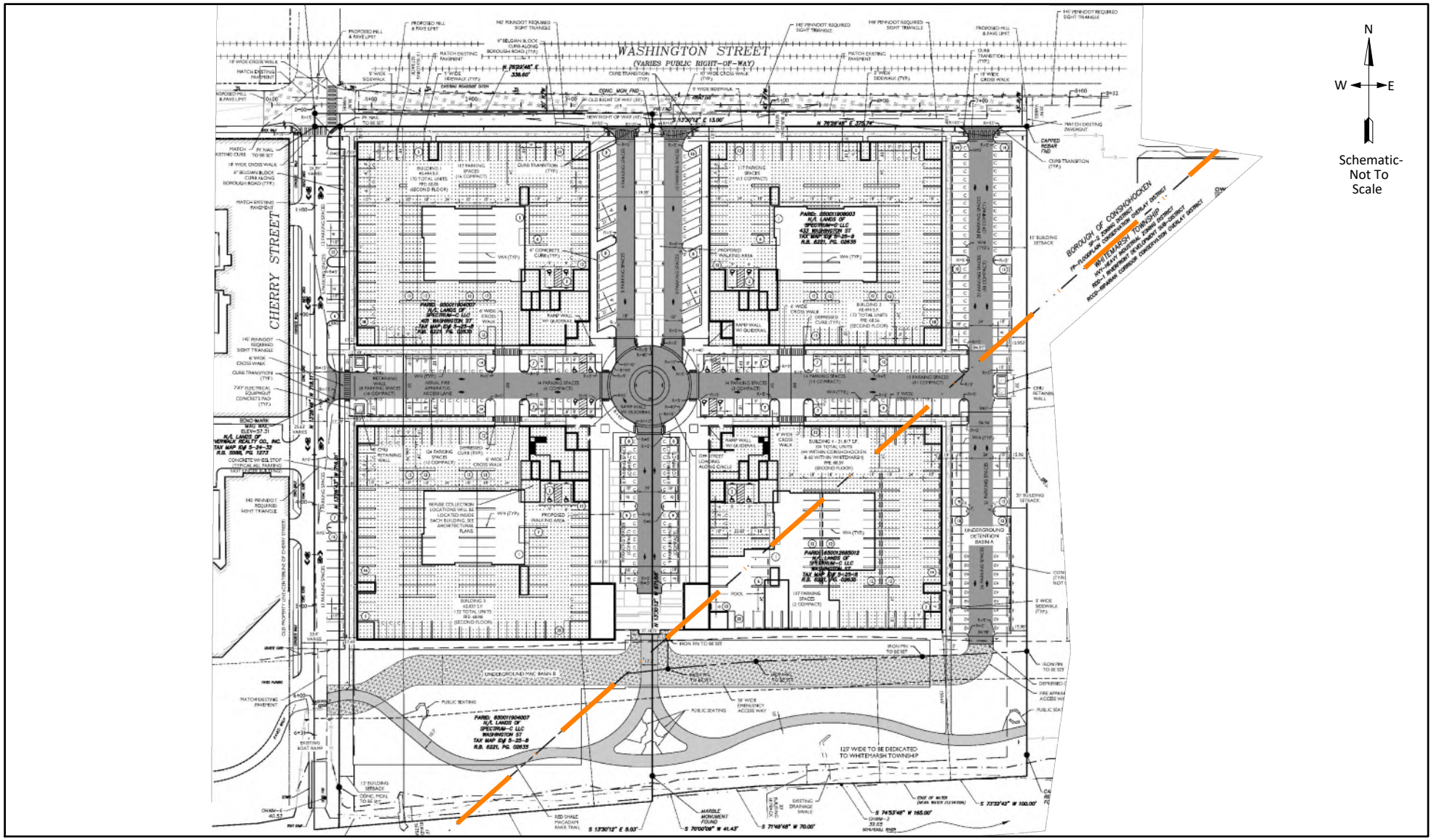

FIGURE 2

Site Plan (prepared by Colliers Engineering and Design)

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

McMAHON
a **Bowman** company

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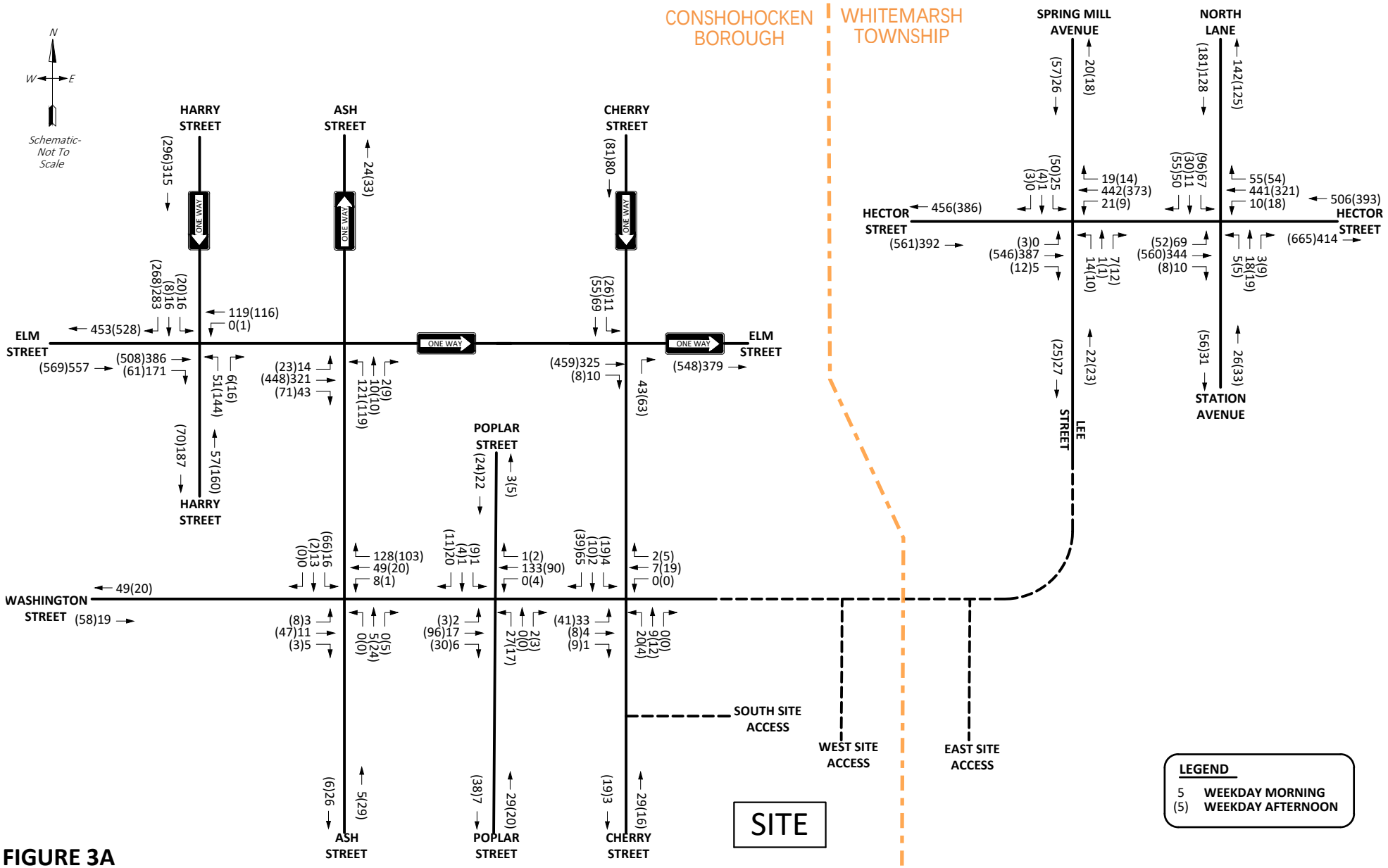

FIGURE 3A

2021 Existing Peak Hour Traffic Volumes

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

McMAHON
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\\ftwfs\mcm\eng\THEKRGR\822547-401-433 Washington Street\Traffic\TIS#1\Graphics\Figure 3A.dwg

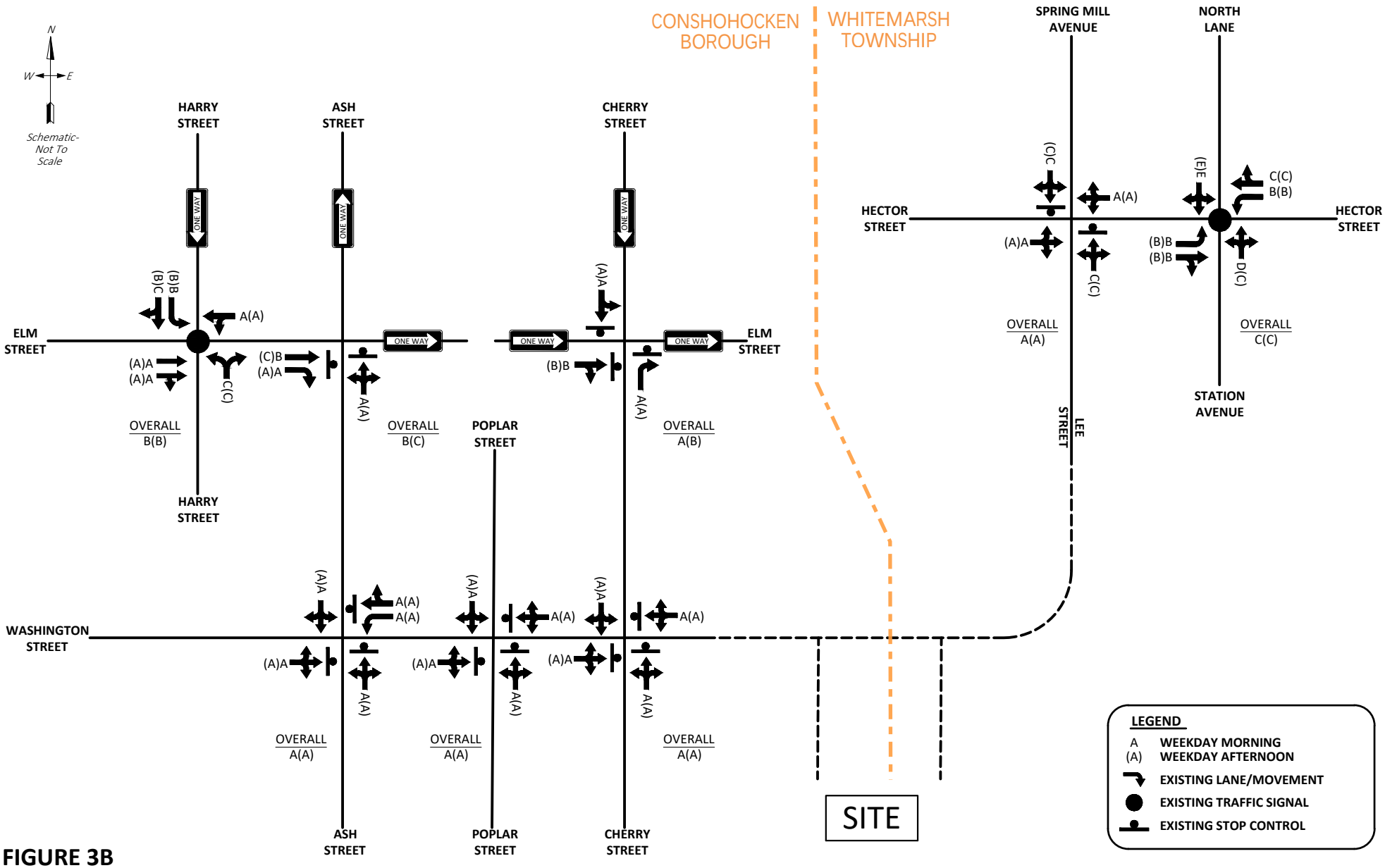

FIGURE 3B

2022 Existing Peak Hour Levels of Service

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH,
MONTGOMERY COUNTY, PA

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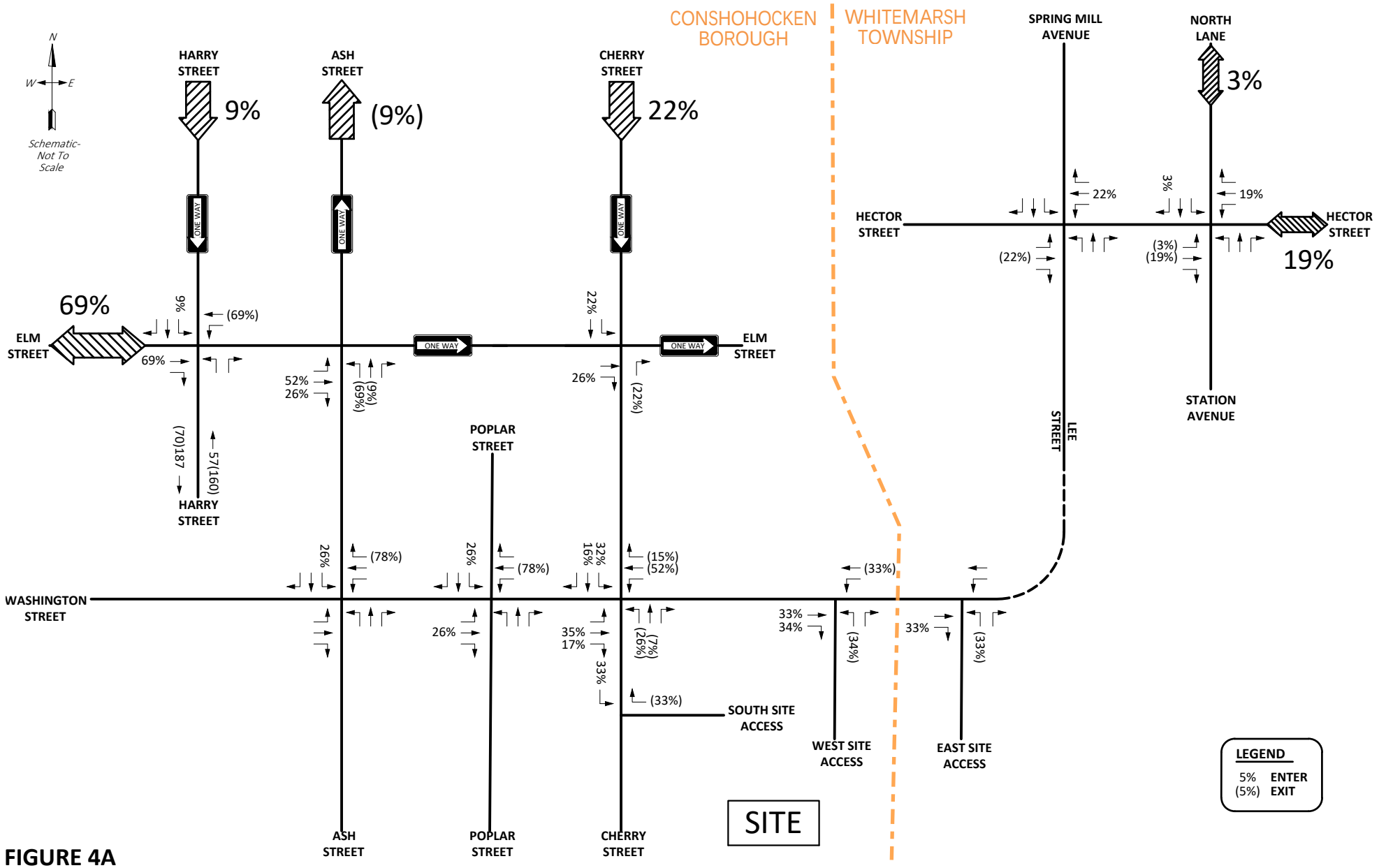

FIGURE 4A
Site Trip Distribution without Washington Street Extension

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

McMAHON
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\\ftwfs\mcm\eng\THEKRGR\822547-401-433 Washington Street\Traffic\TIS#1\Graphics\Figure 4A.dwg

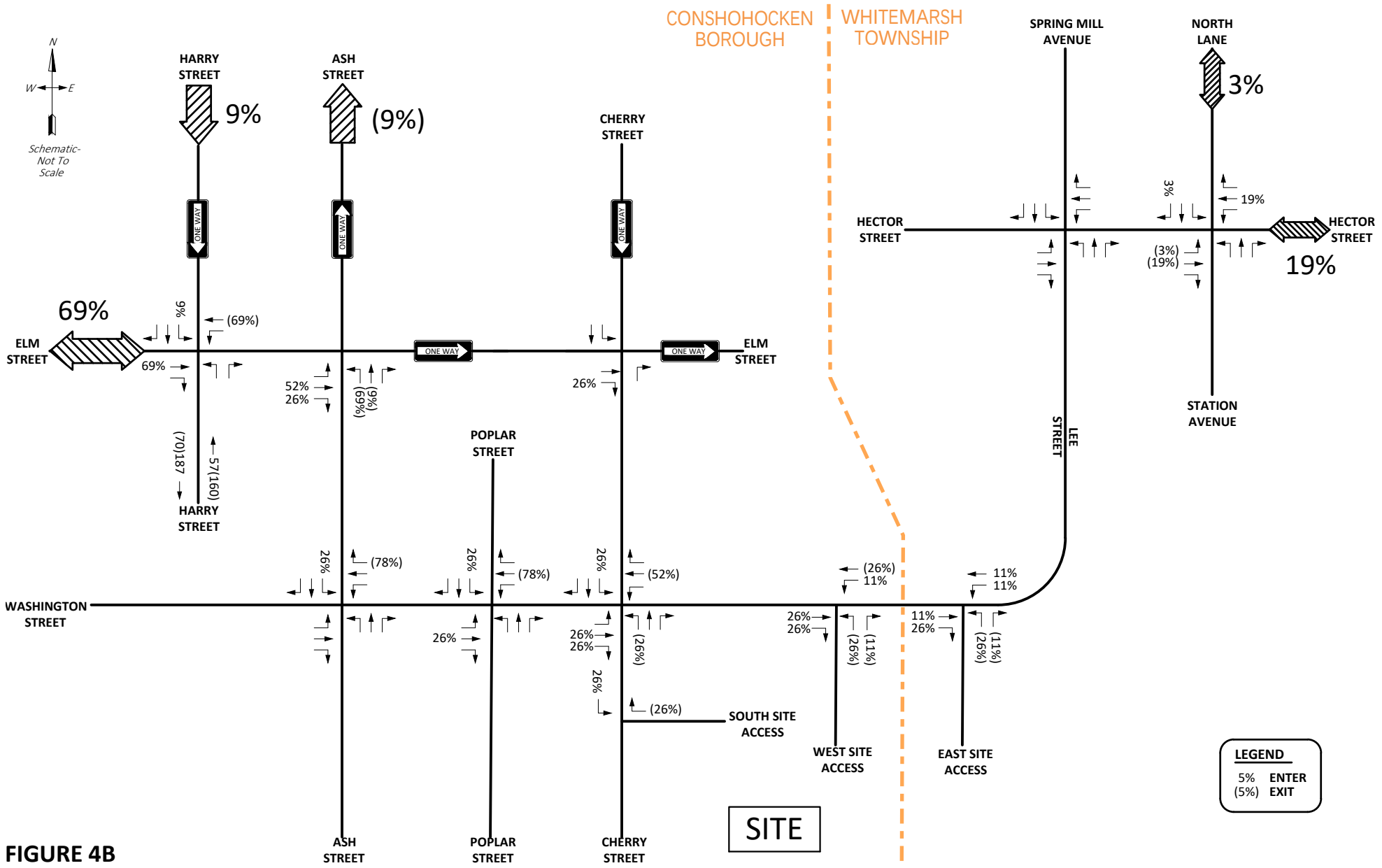

FIGURE 4B

Site Trip Distribution with Washington Street Extension

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

McMAHON
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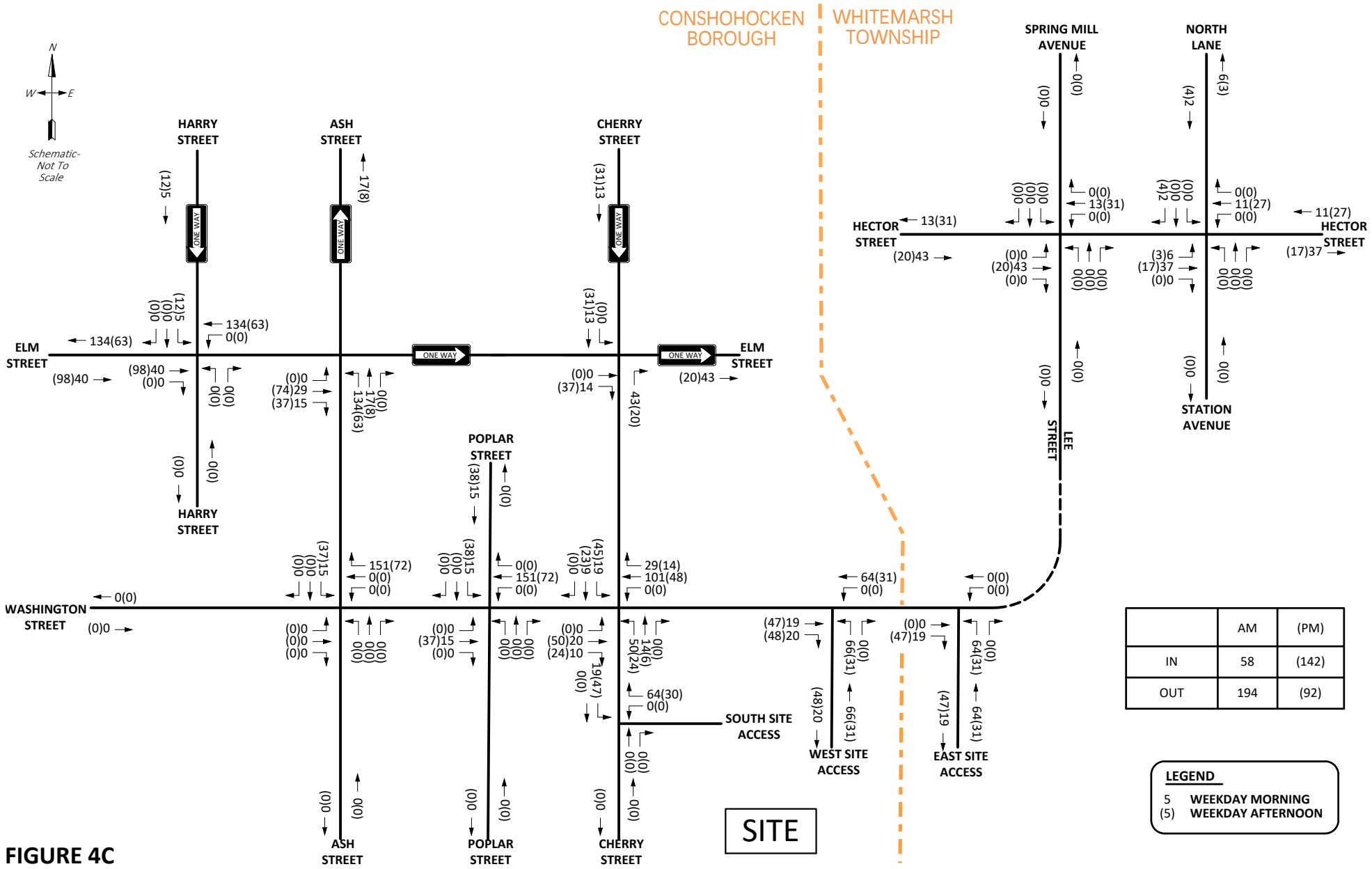


	AM	(PM)
IN	58	(142)
OUT	194	(92)

LEGEND

5 WEEKDAY MORNING
(5) WEEKDAY AFTERNOON

FIGURE 4C

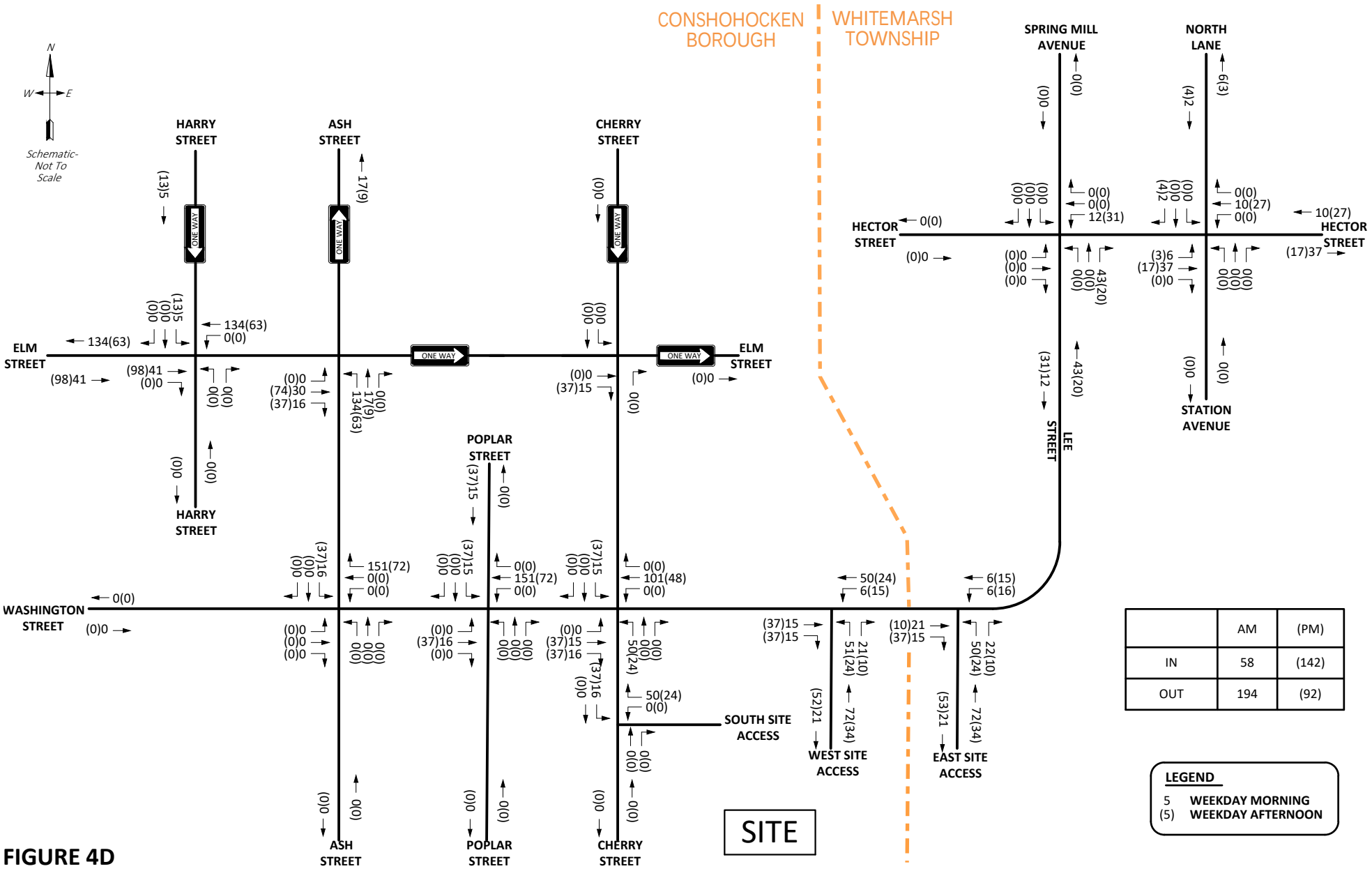
Site Trip Assignment without Washington Street Extension

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

McMAHON
a Bowman company

\\ftwfs\mcm\eng\THEKRGR\822547-401-433 Washington Street\Traffic\TIS#1\Graphics\Figure 4C.dwg



	AM	(PM)
IN	58	(142)
OUT	194	(92)

LEGEND

5 WEEKDAY MORNING
(5) WEEKDAY AFTERNOON

FIGURE 4D

Site Trip Assignment with Washington Street Extension

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

McMAHON
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\\ftwfs\mcm\eng\THEKRGR\822547-401-433 Washington Street\Traffic\TIS#1\Graphics\Figure 4D.dwg

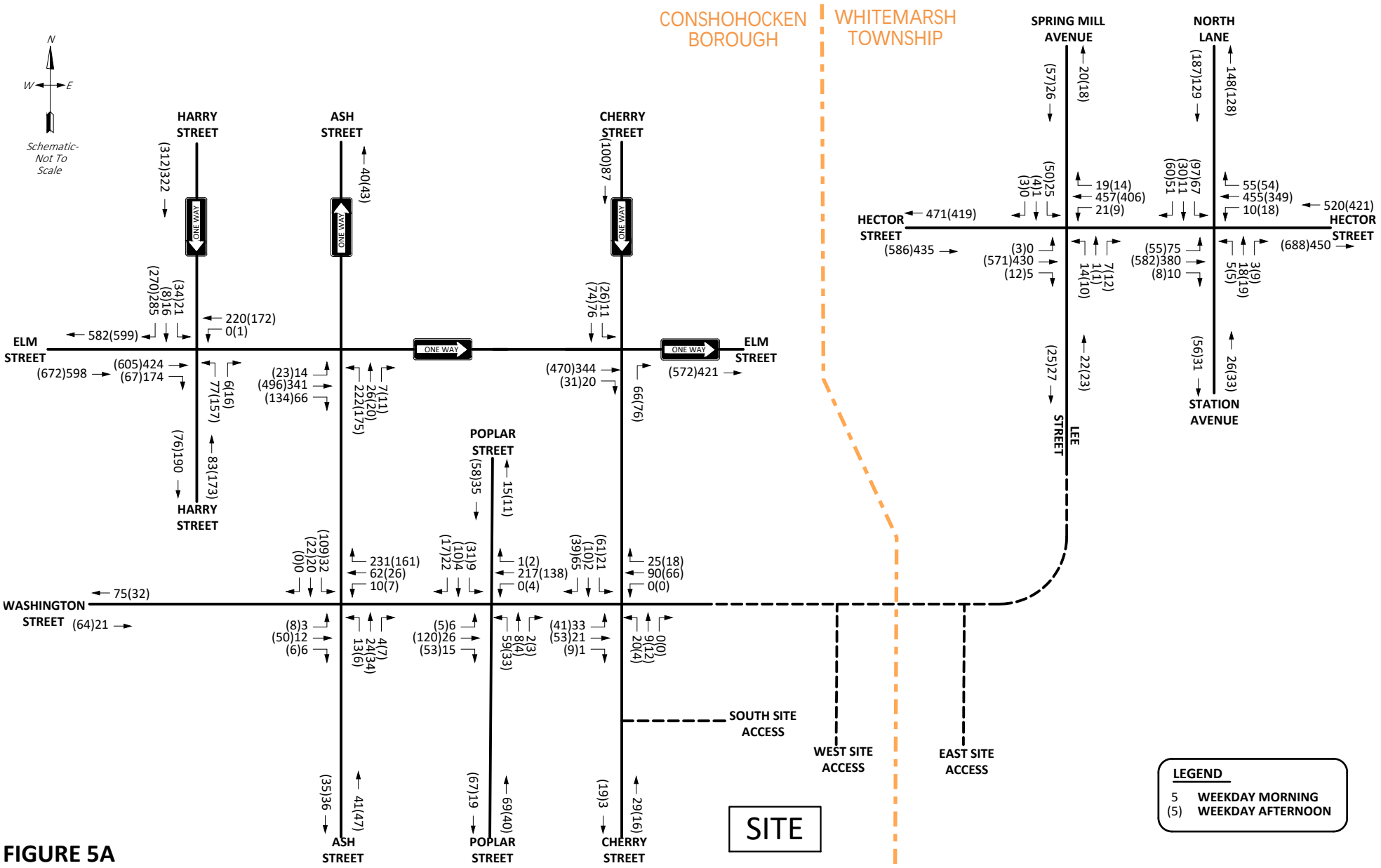

FIGURE 5A

2024 Future without Development Peak Hour Traffic Volumes without Washington Street Extension

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH,
MONTGOMERY COUNTY, PA

McMAHON
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\\ftwfs\mcm\eng\THEKRGR\822547-401-433 Washington Street\Traffic\TIS#1\Graphics\Figure 5A.dwg

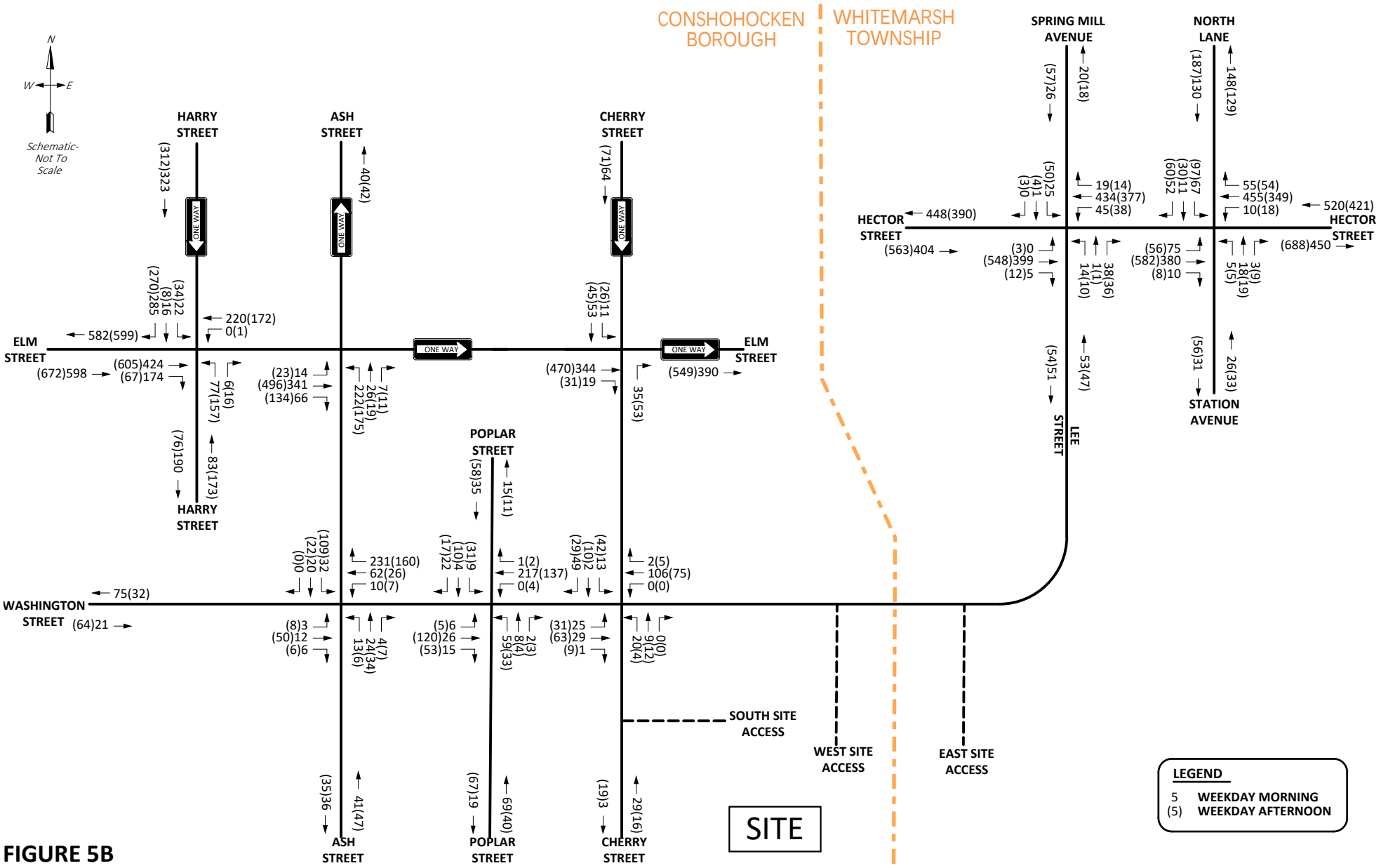

FIGURE 5B

2024 Future without Development Peak Hour Traffic Volumes with Washington Street Extension

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH,
MONTGOMERY COUNTY, PA

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\\ftwfs\mcm\eng\THEKRGR\822547-401-433 Washington Street\Traffic\TIS#1\Graphics\Figure 5B.dwg

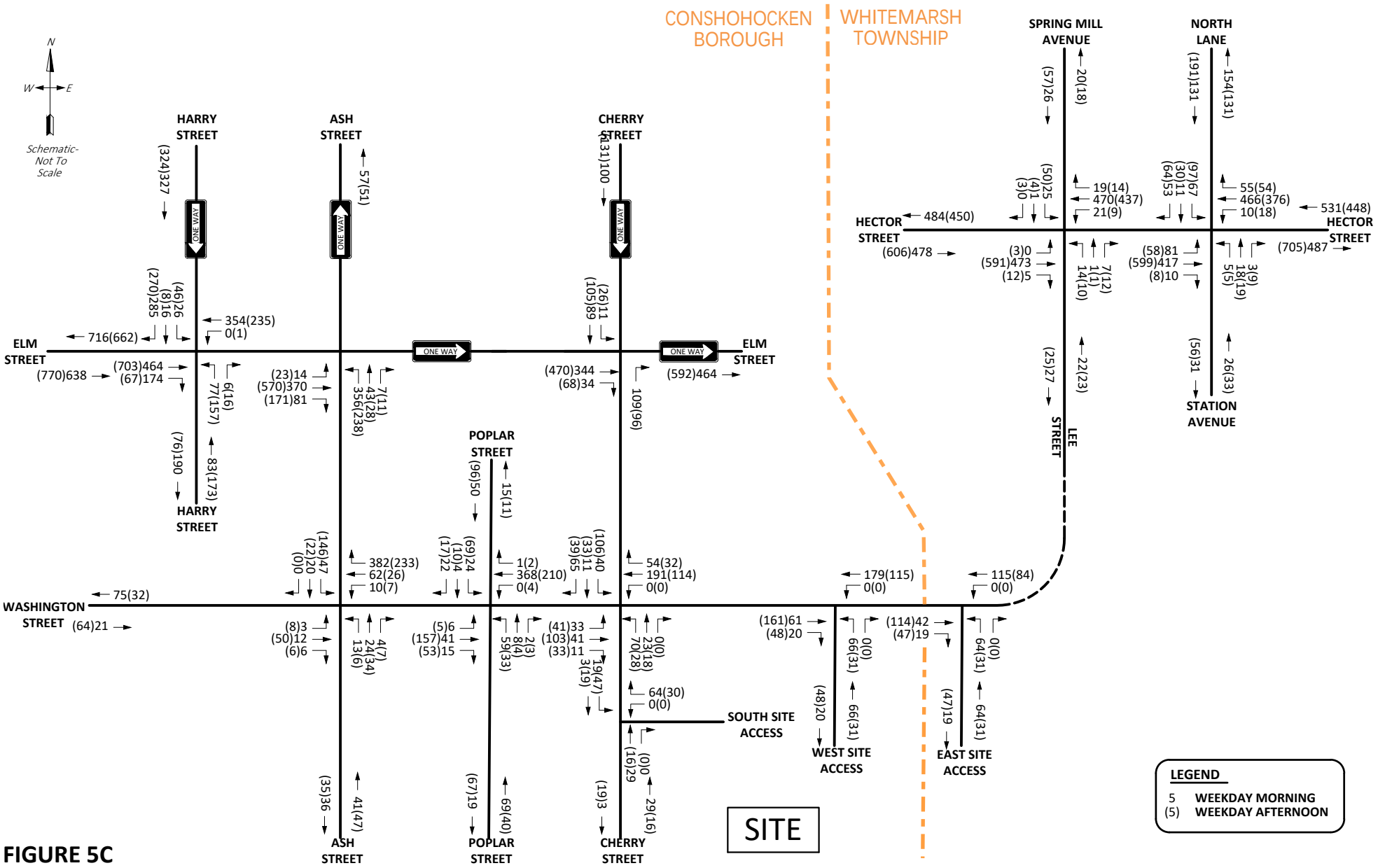

FIGURE 5C

2024 Future with Development Peak Hour Traffic Volumes without Washington Street Extension

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH,
MONTGOMERY COUNTY, PA

McMAHON
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\\ftwfs\mcm\eng\THEKRGR\822547-401-433 Washington Street\Traffic\TIS#1\Graphics\Figure 5C.dwg

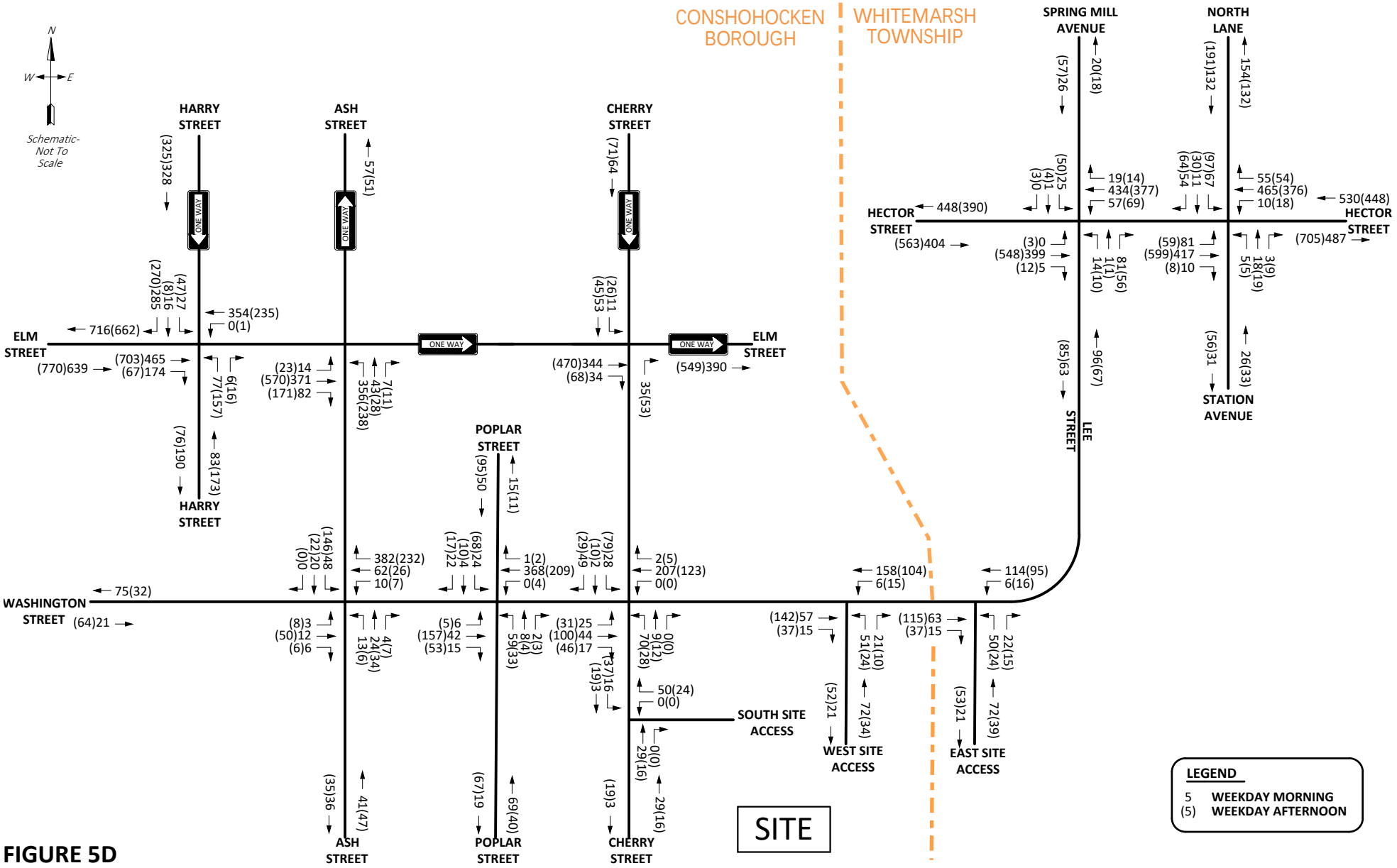

FIGURE 5D

2024 Future with Development Peak Hour Traffic Volumes with Washington Street Extension

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH,
MONTGOMERY COUNTY, PA

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\\ftwfs\mcm\eng\THEKRGR\822547-401-433 Washington Street\Traffic\TIS#1\Graphics\Figure 5D.dwg

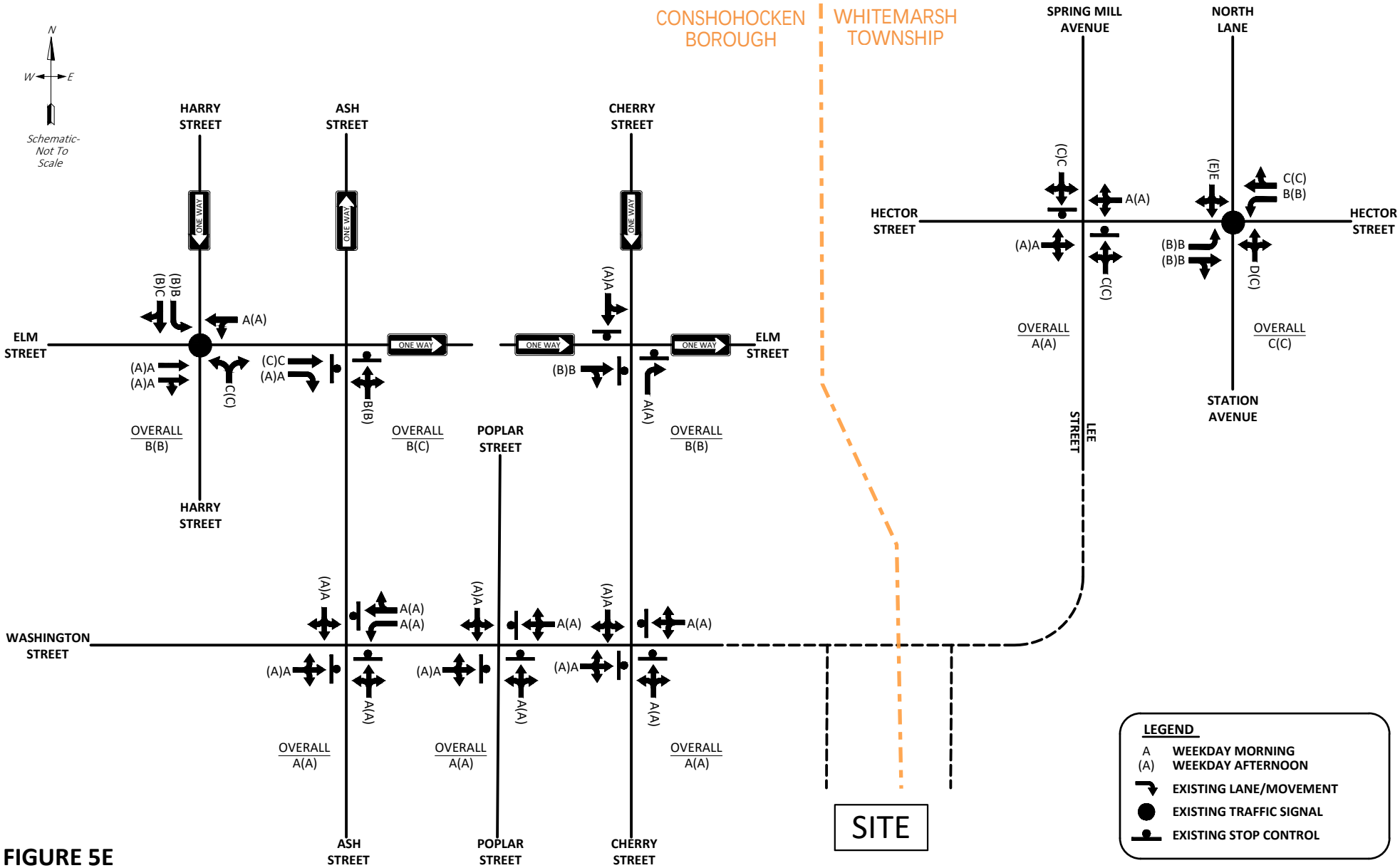

FIGURE 5E

2024 Future without Development Peak Hour Levels of Service without Washington Street Extension

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH,
MONTGOMERY COUNTY, PA

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\\ftwfs\mcm\eng\THEKRGR\822547-401-433 Washington Street\Traffic\TIS#1\Graphics\Figure 5E.dwg

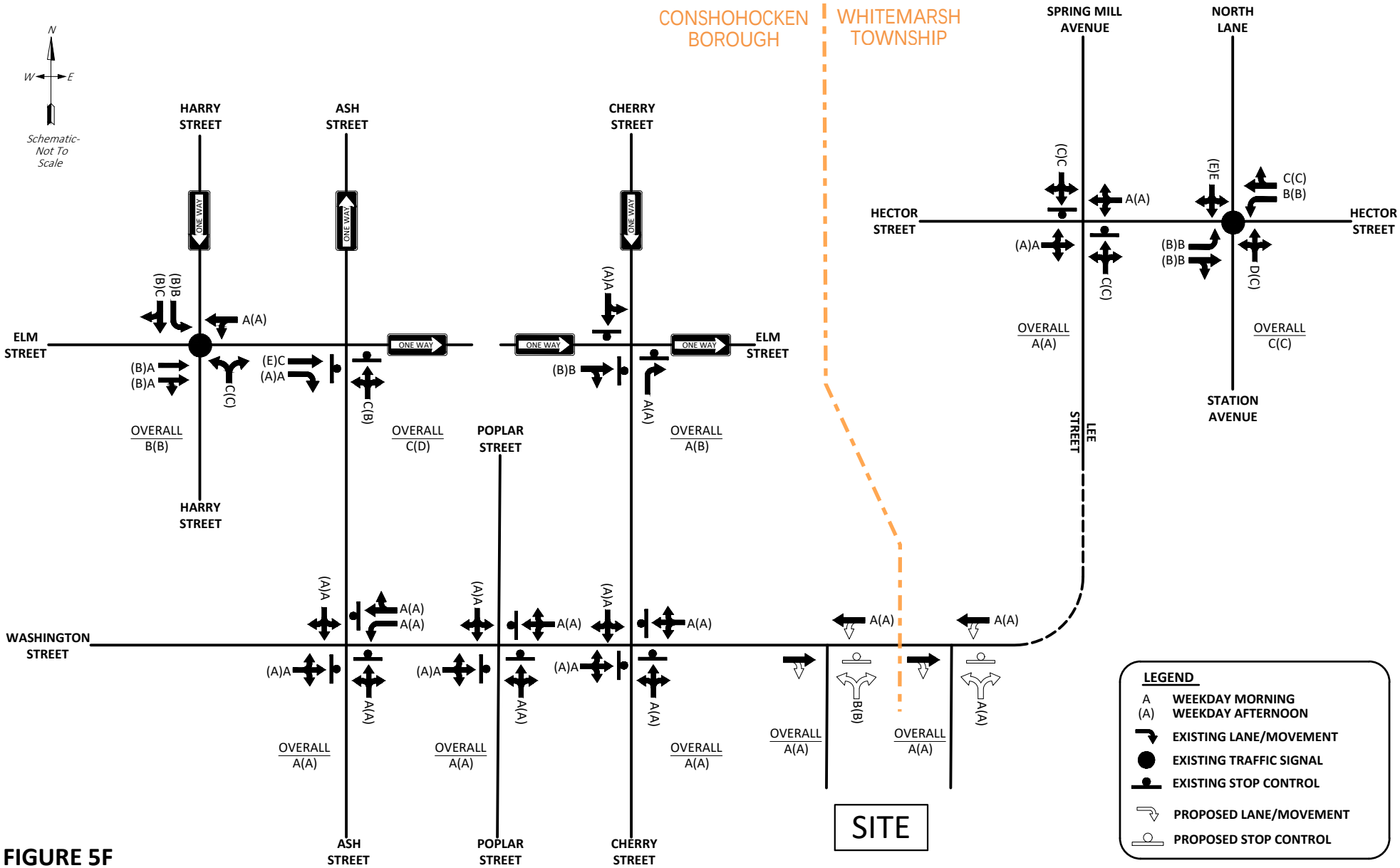

FIGURE 5F

2024 Future with Development Peak Hour Levels of Service without Washington Street Extension

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH,
MONTGOMERY COUNTY, PA

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\\ftwfs\mcm\eng\THEKRGR\822547-401-433 Washington Street\Traffic\TIS#1\Graphics\Figure 5F.dwg

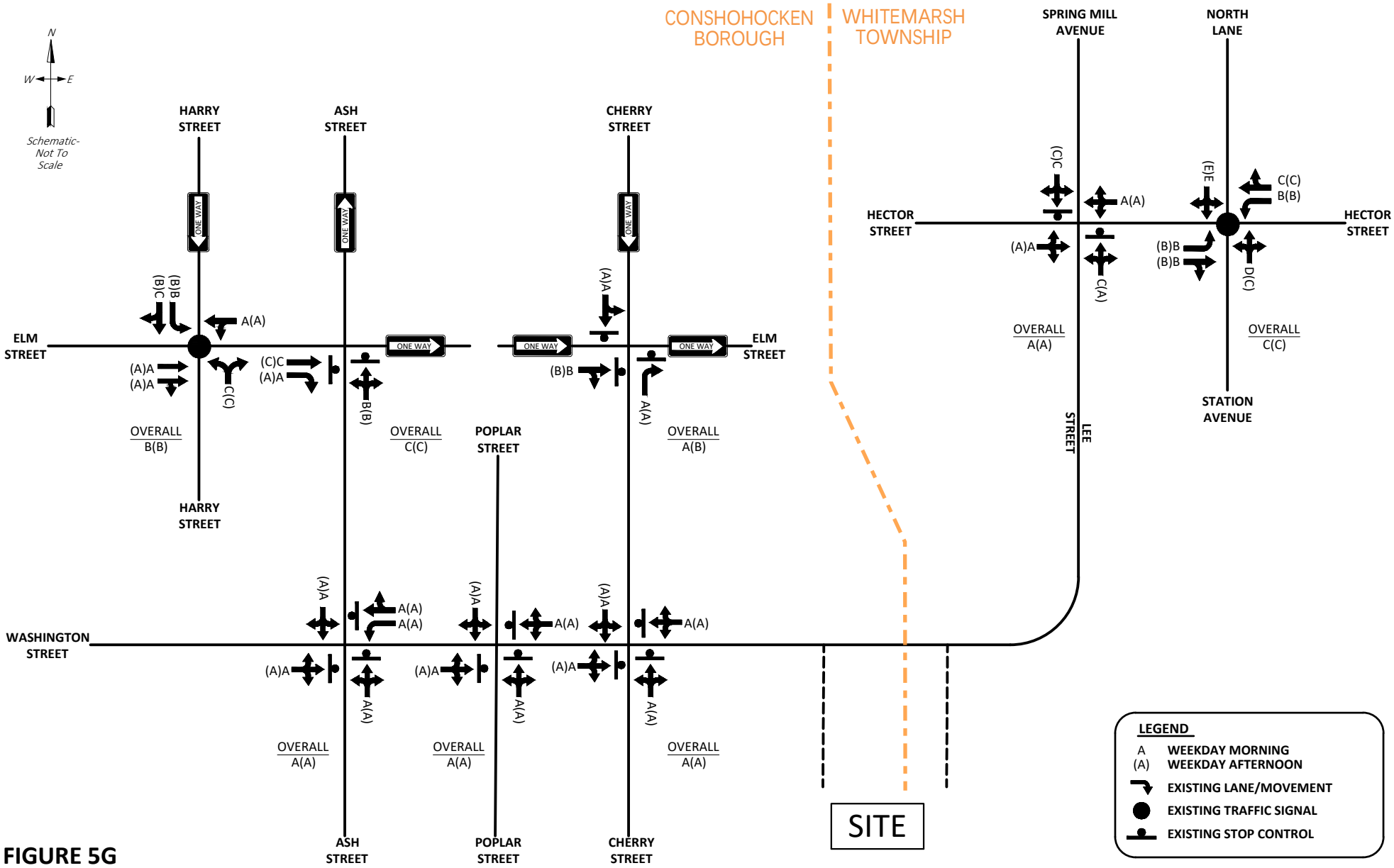

FIGURE 5G

2024 Future without Development Peak Hour Levels of Service with Washington Street Extension

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH,
MONTGOMERY COUNTY, PA

McMAHON
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\\ftwfs\mcm\eng\THEKRGR\822547-401-433 Washington Street\Traffic\TIS#1\Graphics\Figure 5G.dwg

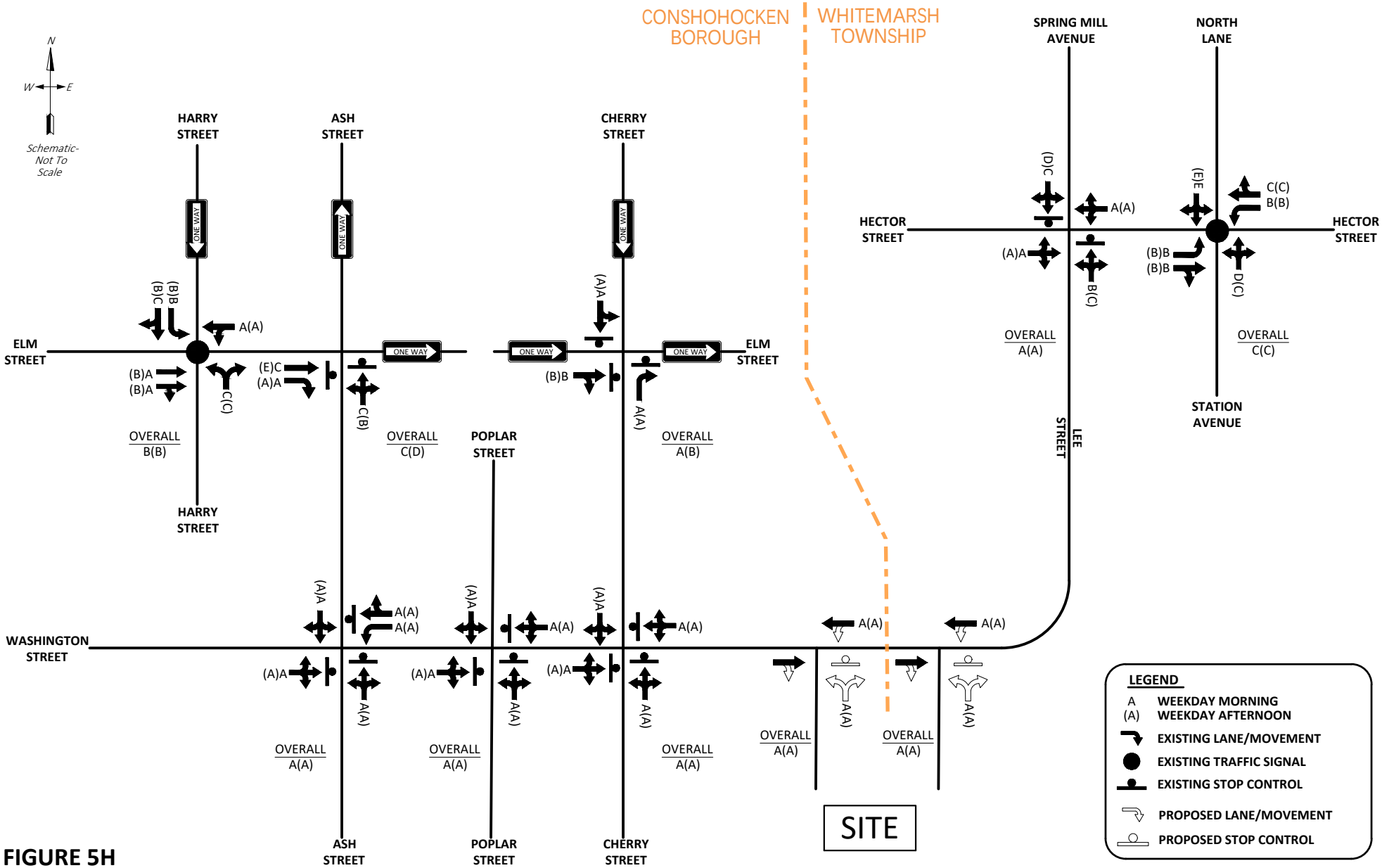

FIGURE 5H

2024 Future with Development Peak Hour Levels of Service with Washington Street Extension

401 & 433 WASHINGTON STREET

WHITEMARSH TOWNSHIP & CONSHOHOCKEN BOROUGH,
MONTGOMERY COUNTY, PA

McMAHON
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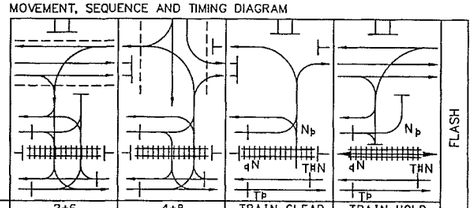
\\ftwfs\mcm\eng\THEKRGR\822547-401-433 Washington Street\Traffic\TIS#1\Graphics\Figure 5H.dwg

Appendix A

Intersection Inventory

MOVEMENT, SEQUENCE AND TIMING DIAGRAM



PHASE	2+6				4+8				TRAIN CLEAR			TRAIN HOLD			FLASH
INTERVAL / SIGNALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1,2,3	G	G	Y	R	R	R	R	R	R	R	R	G	Y	R	R
4,5	G	G	Y	R	R	R	R	R	R	R	R	G	Y	Y	R
6	R	R	R	R	G	G	Y	R	G	Y	R	R	R	R	R
7	R	R	R	R	G	G	Y	R	G	Y	R	R	R	R	R
8,9	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R
10,11	M	FH	H	H	H	H	H	H	H	H	H	H	H	H	OUT
12,13	M	FH	H	H	H	H	H	H	H	H	H	H	H	H	OUT
14,15	H	H	H	H	M	FH	H	H	H	H	H	H	H	H	OUT
16,17	H	H	H	H	M	FH	H	H	H	H	H	H	H	H	OUT
SIGNS N,T	②	②	②	②	②	②	②	②	ON	ON	ON	ON	ON	ON	
SIGN G	③	③	③	③	③	③	③	③	ON	ON	ON	ON	ON	ON	

SELECTIVE CLEAR

FIXED			4	2		4	2	6	40①	3	2	**	4	2	
MINIMUM	15				3										
PASSAGE	≠				≠										
MAX. 1	25				20										
PEDESTRIAN*	7	13			7	20									
MEMORY	SVR				NL										

REFER TO SYSTEM PERMIT #1-0085 FOR ADAPTIVE OPERATION

- UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE "H" SYMBOL AT ALL TIMES
- ** FOR DURATION OF TRAIN PRE-EMPTION
- PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL

- SIGNAL SHALL BE EQUIPPED WITH ACCESSIBLE PEDESTRIAN SIGNALS (APS) WITH THE FOLLOWING FEATURES:
  - ADA COMPLIANT PUSHBUTTON WITH LATCHING LED INDICATOR AND TONE.
  - A TACTILE DIRECTIONAL ARROW ALIGNED PARALLEL TO THE CROSSING AND WHICH VIBRATES DURING THE WALK INDICATION.
  - DURATION OF 0.15 SECONDS AND REPEAT AT 1 SECOND INTERVALS, SHALL BE INTENSITY REPONSIVE TO AMBIENT SOUND, AND AUDIBLE FROM 6 TO 12 FEET FROM THE PUSHBUTTON.
  - ACTUATION OF THE PEDESTRIAN PUSHBUTTON SHALL BE ACCOMPANIED BY THE SPEECH MESSAGE "WAIT" WHEN THE WALK INTERVAL IS NOT TIMING.
  - THE WALK INDICATION SHALL BE THE SPEECH WALK MESSAGE: "[STREET NAME]. WALK SIGN IS ON TO CROSS [STREET NAME]."
  - UPON TRAIN PRE-EMPTION, THE FOLLOWING VERBAL MESSAGE IS TO BE ANNOUNCED VIA THE PUSHBUTTON SPEAKERS: "TRAIN APPROACHING NEARBY."

≠ PHASE PASSAGE CALCULATED BY TRAFFIC ADAPTIVE PROCESSOR

• PHASE SEQUENCE SELECTED BY TRAFFIC ADAPTIVE PROCESSOR

• TRAFFIC ADAPTIVE SYSTEM TO OPERATE WITH PEDESTRIAN MODULE

OPERATION NOTES

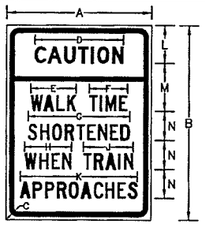
① TRAIN CLEAR PHASE TO HOLD GREEN FOR 5 SECONDS AFTER GATE DOWN RAILROAD INTERCONNECT CIRCUIT CLOSES TO REDUCE THE LIKELIHOOD OF QUEUE STOPPING ON TRACKS.

② LED BLANK OUT TURN PROHIBITION SIGNS N & T TO OPERATE WITH LOOP DETECTORS 11, 12, 13 & 14 ON 2 SECOND DELAY TO REDUCE THE LIKELIHOOD OF QUEUE STOPPING ON TRACKS. "TRAIN" MESSAGE PORTION OF SIGNS N & T TO ILLUMINATE ONLY WHEN TRAIN IS APPROACHING.

③ LED BLANK OUT TRAIN SIGN G TO ILLUMINATE ONLY WHEN TRAIN IS APPROACHING.

SIGN TABULATION

SYMBOL	SERIES	SIZE	DESCRIPTION
A	R10-3E(L)	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER SIGN
B	D3-4	84"x24"	SINGLE-LINE OVERHEAD STREET NAME SIGN - "E Elm St"
C	D3-4	90"x24"	SINGLE-LINE OVERHEAD STREET NAME SIGN - "Harry St"
D	R3-5R	30"x36"	RIGHT TURN SIGN
E	R3-6LS	30"x36"	OPTIONAL LEFT TURN SIGN
F	R5-1	30"x30"	DO NOT ENTER SIGN
G	W10-7	30"x30"	LIGHT RAIL TRANSIT APPROACHING SIGN - BLANK OUT
J	R3-2	30"x30"	NO LEFT TURN SIGN
K	R6-7	24"x30"	END ONE WAY SIGN
L	W4-4BP	30"x15"	ONCOMING TRAFFIC DOES NOT STOP
M	R1-1	30"x30"	STOP SIGN
N	R3-1	29"x39"	NO RIGHT TURN (TRAIN) SIGN - BLANK OUT
P	R8-8	24"x30"	DO NOT STOP ON TRACKS SIGN
R	R15-1	48"x9"	RAILROAD CROSSING SIGN
S	R15-2	48"x9"	TRACK SIGN "2 TRACKS"
T	R3-2	29"x39"	NO LEFT TURN (TRAIN) SIGN - BLANK OUT
U	R3-1	30"x30"	NO RIGHT TURN SIGN
V	W6-3	30"x30"	TWO WAY TRAFFIC SIGN
W	SPECIAL	9"x12"	CAUTION-WALK TIME SHORTENED WHEN TRAIN APPROACHES
X	R10-3E(L)	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER SIGN
Y	R7-3-1	12"x18"	NO PARKING HERE TO CORNER
Z	R3-8A(L-SR)	30"x30"	LANE USE CONTROL (TWO LANES) SIGN
AA	R10-11	24"x30"	NO TURN ON RED
BB	R10-20AP	24"x24"	MON. - FRI.; 7-9 AM; 4-7 PM
CC	R6-1L	36"x12"	HORIZONTAL LEFT ONE-WAY SIGN
DD	R6-1R	36"x12"	HORIZONTAL RIGHT ONE-WAY SIGN
EE	W16-9P	24"x12"	AHEAD PLAQUE



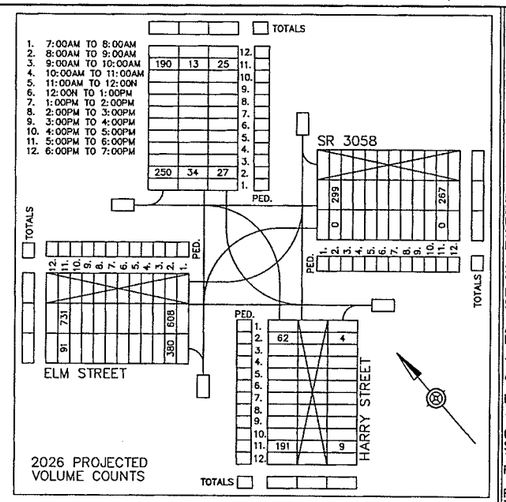
LEGEND AND BORDER	BLACK	NON-REFLECTORIZED
BACKGROUND (TOP)	YELLOW	REFLECTORIZED
BACKGROUND (BOTTOM)	WHITE	REFLECTORIZED

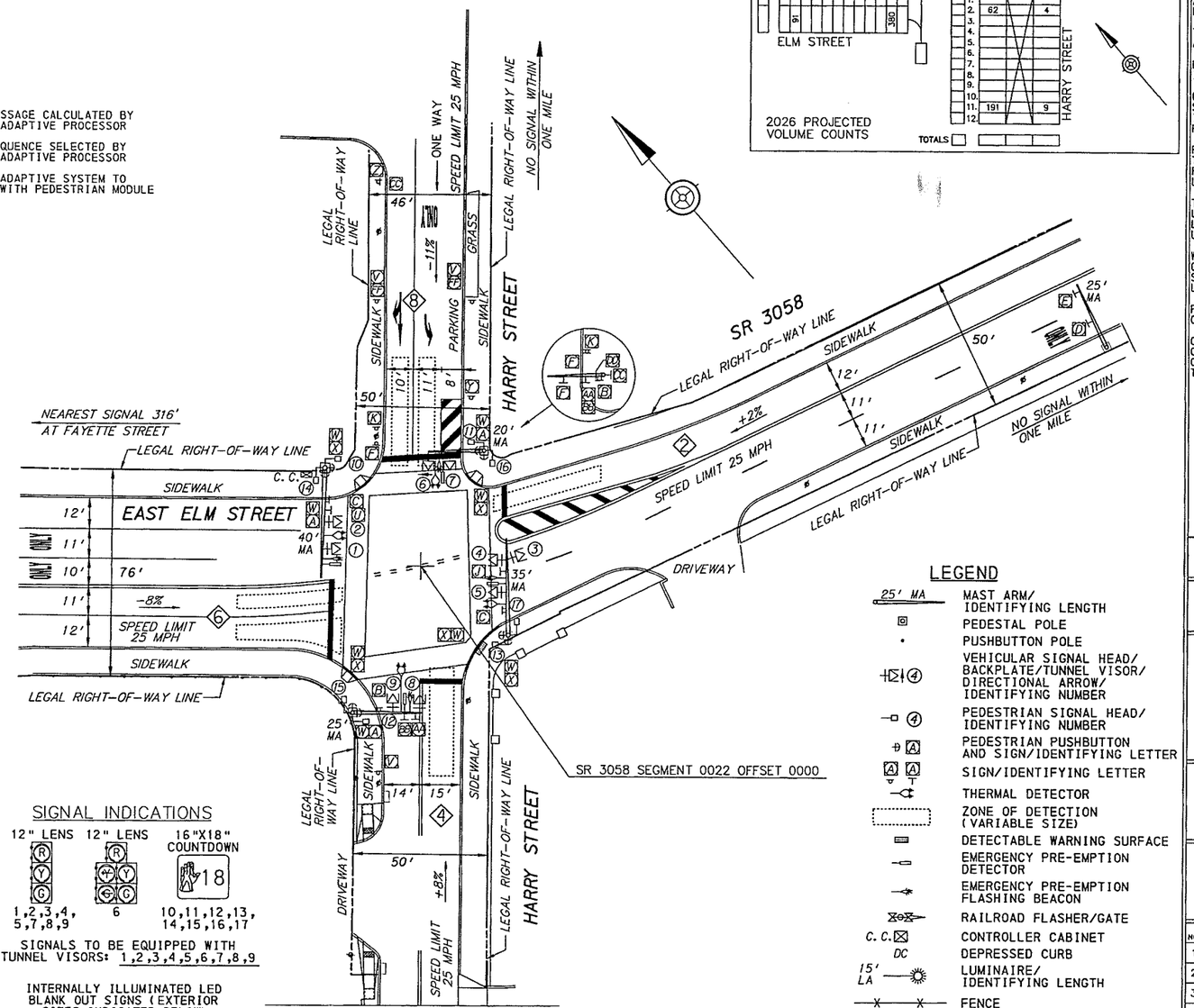
SIGN SIZE	DIMENSIONS												
	A	B	C	D	E	F	G	H	J	K	L	M	N
9X12	9.00	12.00	0.75	5.50	2.80	2.40	6.30	2.90	3.10	7.30	2.30	3.05	1.75

SIGN SIZE	SERIES BY LINE					MARGIN	BORDER
	1	2	3	4	5		
9X12	D	C	C	C	C	0.1875	0.3125

ALL DIMENSIONS IN INCHES SIGN NOT TO SCALE

SIGN W SPECIAL 9"X12"





SIGNAL INDICATIONS

12" LENS 12" LENS 16"X18" COUNTDOWN

1,2,3,4, 5,7,8,9 — 6 — 10,11,12,13, 14,15,16,17

SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS: 1,2,3,4,5,6,7,8,9

INTERNALLY ILLUMINATED LED BLANK OUT SIGNS (EXTERIOR SIZES INDICATED BELOW)

30"X30" G — TRAIN 29"X39" W — TRAIN 29"X39" J

LEGEND

- 25' MA — MAST ARM/ IDENTIFYING LENGTH
- PEDESTAL POLE
- PUSHBUTTON POLE
- VEHICULAR SIGNAL HEAD/ BACKPLATE/TUNNEL VISOR/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER
- PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- PEDESTRIAN PUSHBUTTON AND SIGN/IDENTIFYING LETTER
- SIGN/IDENTIFYING LETTER
- THERMAL DETECTOR
- ZONE OF DETECTION (VARIABLE SIZE)
- DETECTABLE WARNING SURFACE
- EMERGENCY PRE-EMPTION DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- RAILROAD FLASHER/GATE
- C.C. — CONTROLLER CABINET
- DC — DEPRESSED CURB
- 15' LA — LUMINAIRE/ IDENTIFYING LENGTH
- FENCE
- GUIDE RAIL
- UTILITY POLE
- PHASE NUMBER

0 25 50 FEET

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SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

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CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

SYSTEM PERMIT # 1-0085

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY

MUNICIPALITY: CONSHOHOCKEN BOROUGH

INTERSECTION: E ELM STREET (SR 3058) AND HARRY STREET

REVIEWED:

MUNICIPAL OFFICIAL — DATE 10/1/19

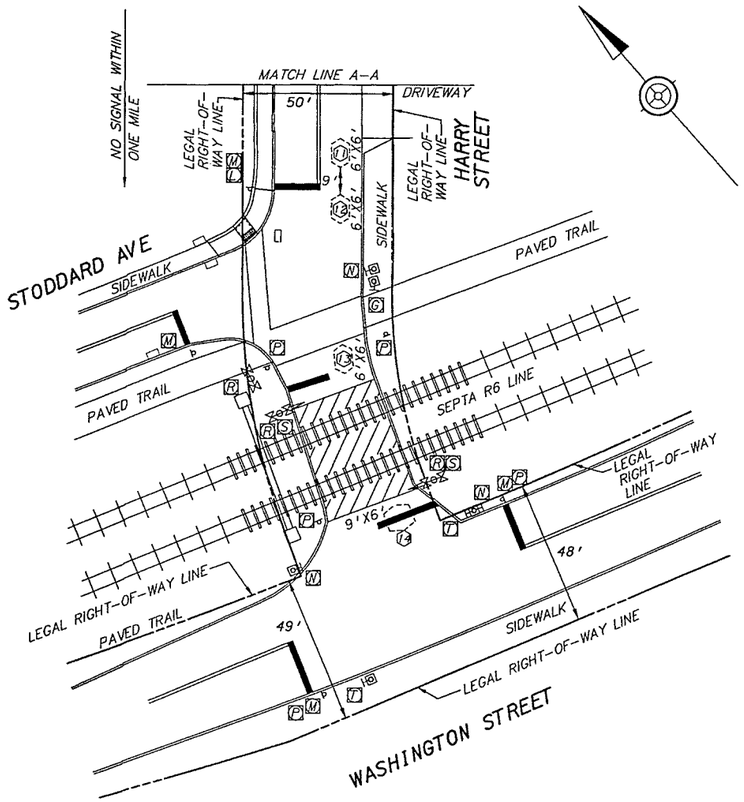
RECOMMENDED:

MARK L KRAY — 5-5-04

LOUIS R BELMONTE, DISTRICT TRAFFIC ENGINEER — 5-17-04

NO.	REVISION	DES./ REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	RELOCATE SE MAST ARM/ TIMING CHANGES	MCM / BJD	11/1/07	LUTZ	11/2/07	ABP	11/3/07
2	ADDITION OF TURNING LANE FOR SOUTHBOUND HARRY STREET, MAX 1 DURING NIGHT, ADD INTCR, PED TIMES	PWH / TFB	7/21/10	DLA	8/26/10	ABP	9/7/10
3	ECMS-96218 ADD ADAPTIVE, ETHERNET COMMUNICATIONS & COUNTDOWNS	PA / KPL	06/27/18	DLA	06/28/18	ABP	06/28/18
4	NEW ATC CABINET, LED RR SIGNS, QUEUE LOOPS, ADD UPS, RR TEST SWITCH, APS	TPD	09/12/19	KPL	10/6/19	DLA	10/9/19
5							
6							
7							
8							

SHEET 2 OF 3 | PERMIT # 64-3238 | FILE # 3238



TRAIN PRE-EMPTION NOTES

WARNING!

HIGHWAY-RAIL GRADE CROSSING WARNING SYSTEM AND HIGHWAY TRAFFIC SIGNALS ARE INTERCONNECTED.

BEFORE MODIFICATION IS MADE TO ANY OPERATION WHICH CONNECTS TO OR CONTROLS THE TIMING OF AN ACTIVE RAILROAD WARNING SYTEM AND/OR TIMING AND PHASING OF TRAFFIC SIGNAL THE APPROPROIATE PARTY(IES) SHALL BE NOTIFIED, AND, IF NECESSARY, A JOINT INSPECTION CONDUCTED.

U.S. DOT/AAR CROSSING NUMBER: 592688K

1. HIGHWAY AGENCY: PENNDOT
   PHONE NUMBER: 610-205-6700
2. RAILROAD: SEPTA
   PHONE NUMBER: 215-580-8668
3. OTHER: CONSHOHOCKEN BOROUGH
   PHONE NUMBER: 610-828-1092

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL TRANSIT ADMINISTRATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

PRE-EMPTION PRIORITY LOGIC

PRE-EMPT 1 → TRAIN PRE-EMPTION

PRE-EMPT 2 → EMERGENCY VEHICLE PRE-EMPTION

INTERCONNECTION CIRCUITS

AVP OR AP - DUAL SINGLE BREAK, SUPERVISION
XR - DUAL SINGLE BREAK, NO SUPERVISION
GD - DUAL SINGLE BREAK
(DUAL-TWO INDEPENDANT TRAFFIC SIGNALS ARE INTERCONNECTED TO THE RAILROAD WARNING SYSTEM)

SPECIAL NOTE FOR INTERCONNECTION CIRCUITS

THIS WARNING SYSTEM IS INTERCONNECTED TO TWO INDEPENDENT HIGHWAY TRAFFIC SIGNALS. ONE TRAFFIC SIGNAL IS LOCATED AT THE INTERSECTION OF ELM STREET AND HARRY STREET AND ONE TRAFFIC SIGNAL IS LOCATED AT FAYETTE STREET AND ELM STREET. MAXIMUM TRAIN TIMETABLE SPEED IS 40 MPH.

THIS REQUIRES TWO ELECTRICALLY INDEPENDENT AND ISOLATED INTERCONNECTION CIRCUITS. IT DOES NOT REQUIRE INDEPENDENT RELAYS, JUST INDEPENDENT CONTACT SETS. BECAUSE BOTH SIGNALIZED INTERSECTIONS WITH FULL RAILROAD PRE-EMPTION ARE LOCATED NORTH OF THE GRADE CROSSING, ONLY ONE GATE DOWN RELAY IS REQUIRED (FOR THE NORTHBOUND GATE). GATE DOWN CIRCUIT TO CLOSE WHEN GATE IS LOWERED TO WITHIN FIVE DEGREES OF HORIZONTAL OR TRAIN OCCUPIES ISLAND.

THE FOLLOWING TERMINALS SHALL BE PROVIDED IN THE INTERCONNECTION JUNCTION BOX ON THE SIDE OF THE INSTRUMENT HOUSE (PREFERRED) OR AS PROVIDED BY THE RAILROAD STANDARDS FOR THE TERMINATION OF THE TRAFFIC SIGNAL INTERCONNECTION CABLES:

ELM & HARRY	FAYETTE & ELM
AP-FRONT	AP-FRONT
AP-BACK	AP-BACK
AP-HEEL	AP-HEEL
XR-FRONT	XR-FRONT
XR-HEEL	XR-HEEL
GD-FRONT	GD-FRONT
GD-HEEL	GD-HEEL

RAILROAD PRE-EMPTION PARAMETERS (SECONDS)

	DESCRIPTION	VALUE
MWT	MINIMUM WARNING TIME	30
APT	ADVANCE PRE-EMPTION TIME	32
MAXIMUM PRE-EMPTION TIME		62

TRAFFIC SIGNAL NOTES FOR TRAIN PRE-EMPTION:

- THE TRAFFIC SIGNAL CONTROLLER IS TO BE INTERCONNECTED WITH THE RAILROAD CROSSING DEVICES. UPON ACTIVATION OF TRAIN PREEMPTION, THE TRAFFIC SIGNAL CONTROLLER IS TO PROVIDE THE TRAIN CLEAR AND TRAIN HOLD PHASES AS SHOWN. THE TRAFFIC SIGNAL CONTROLLER IS TO BE EQUIPPED WITH RAILROAD TEST SWITCH PANEL CONNECTED TO RAILROAD CIRCUITS AS IDENTIFIED ABOVE.
- THE SIGNALS, WHEN ACTIVATED BY A TRAIN, SHALL TRUNCATE ALL GREEN INDICATIONS TO A VALUE OF 5 SECONDS, FOLLOWED BY SELECTIVE CLEARANCES DEPENDENT UPON THE PHASE IN WHICH THE PRE-EMPTION OCCURS, FOLLOWED BY TRAIN CLEAR.
- THE SIGNALS, WHEN ACTIVATED BY A TRAIN, SHALL TIMEOUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY TRAIN CLEAR.
- IF SIGNALS HAVE BEEN ACTUATED BY EMERGENCY PRE-EMPTION AND THE SIGNAL IS PRE-EMPTED BY A TRAIN, THE EMERGENCY PRE-EMPTION PHASE SHALL TERMINATE IMMEDIATELY, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES, BEFORE GOING INTO TRAIN PRE-EMPTION.
- IF THE SIGNALS, WHEN ACTIVATED BY TRAIN PRE-EMPTION, ARE FLASHING, ALL SIGNALS SHALL REMAIN FLASHING AND SIGNS "G", "N" & "T" SHALL BE ILLUMINATED.
- IF SIGNALS HAVE BEEN ACTUATED BY PEDESTRIAN PUSH BUTTONS, AND THE SIGNAL IS PRE-EMPTED BY A TRAIN, THE "WAN" INTERVAL SHALL TERMINATE IMMEDIATELY, FOLLOWED BY THE "FLASHING HAND" INDICATION, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCE BEFORE GOING INTO TRAIN PRE-EMPTION. THE "FLASHING HAND" TIME FOR ALL PHASES IS TO BE TRUNCATED TO A VALUE OF 11 SECONDS AND BE ENTIRELY CONTAINED WITHIN THE VEHICULAR GREEN INTERVAL ONLY.
- UPON COMPLETION OF TRAIN HOLD, IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 1 SHALL FOLLOW.
- SIGNS "G", "N" & "T" TO ILLUMINATE IMMEDIATELY UPON ENTERING TRAIN CLEAR SELECTIVE CLEARANCE AND TRAIN PRE-EMPTION PHASES WHEN ACTIVATED BY TRAIN PRE-EMPTION (START OF APT) AND SHOW DARK UPON DEACTIVATION OF RAILROAD LIGHTS/GATES (XR CIRCUIT CLOSED). SIGNS "N" & "T" ALSO OPERATE UPON ACTUATION OF LOOP 11, 12 & 13 ON 2 SECOND DELAY. "TRAIN" MESSAGE PORTION OF SIGNS "N" & "T" TO ILLUMINATE ONLY UPON ACTIVATION OF RAILROAD LIGHTS/GATES (XR CIRCUIT OPEN) AND SHOW DARK UPON DEACTIVATION OF RAILROAD LIGHTS/GATES (XR CIRCUIT CLOSED).
- MAXIMUM PRE-EMPTION TIMER PROVIDED. SIGNAL TO TRANSITION TO SOFT ALL-RED FLASH AFTER 10 MINUTES OF RAILROAD PRE-EMPTION. UPON RETURNING TO NORMAL OPERATION, HOLD ALL-RED FLASH FOR 6 SECONDS.
- GATE DOWN TRAIN CIRCUIT TO BE PROVIDED THAT EXTENDS TRAIN CLEAR (TRACK CLEARANCE) PHASE UNTIL GATES ARE DOWN. ABSENCE OF GATE DOWN AFTER TWO MINUTES SHALL INITIATE LATCHING ALL-RED FLASH.
- SUPERVISION FAILURE TO INITIATE NORMAL RAILROAD PRE-EMPTION OPERATION FOLLOWED BY LATCHING ALL-RED FLASH.
- SECOND TRAIN LOGIC PROVIDED.
- RAILROAD PRE-EMPTION ALSO CONNECTED TO FAYETTE STREET AND ELM STREET PERMIT FILE #0913.

EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2			4			6			8		
SIGNALS \ INTERVAL	15	16	17	18	19	20	21	22	23	24	25	26
1,2,3	G	Y ⑥	R ⑥	R	R	R	R	R	R	R	R	R
4,5	R	R	R	R	R	R	G	Y ⑥	R ⑥	R	R	R
6	R	R	R	6 ⑥	Y	R	R	R	R	R	R	R
7	R	R	R	G	Y	R	R	R	R	R	R	R
8,9	R	R	R	R	R	R	R	R	R	G	Y	R
10,11	H	H	H	H	H	H	H	H	H	H	H	H
12,13	H	H	H	H	H	H	H	H	H	H	H	H
14,15	H	H	H	H	H	H	H	H	H	H	H	H
16,17	H	H	H	H	H	H	H	H	H	H	H	H
SIGNS N,T	②	②	②	ON	ON	ON	②	②	②	②	②	②
SIGN G	③	③	③	③	③	③	③	③	③	③	③	③
FIXED	**	4	2	**	3	2	**	4	2	**	4	2

** FOR DURATION OF PRE-EMPTION

NOTE:
IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

⑥ G WHEN RETURNING TO NORMAL OPERATION.

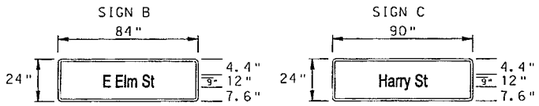
② LED BLANK OUT TURN PROHIBITION SIGNS N & T TO OPERATE WITH LOOP DETECTORS 11, 12, 13 & 14 ON 2 SECOND DELAY TO PREVENT QUEUE FROM BLOCKING TRACKS. "TRAIN" MESSAGE PORTION OF SIGNS N & T TO ILLUMINATE ONLY WHEN TRAIN IS APPROACHING.

③ LED BLANK OUT TRAIN SIGN G TO ILLUMINATE ONLY WHEN TRAIN IS APPROACHING.

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND AND SOUTHBOUND APPROACHES OF HARRY STREET AND THE EASTBOUND AND WESTBOUND APPROACHES OF EAST ELM STREET (SR 3058) WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTION PHASE SHALL FOLLOW. ONLY THOSE PHASES NOT POSING A YELLOW TRAP CONDITION MAY REMAIN GREEN (2) WHEN GOVERNED BY APPROACHING EMERGENCY VEHICLE.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
- IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PED "WALK" (WAN) INTERVAL SHALL TERMINATE IMMEDIATELY AND THE PED "CLEAR" (FLASHING HAND AND COUNTDOWN TIMER) INTERVAL SHALL TIME OUT, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PREEMPTION.
- IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- UPON COMPLETION OF PRE-EMPTION PHASE 2,4,6 OR 8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 1 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.
- LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.

CLEARVIEW 3W
12" UPPER CASE
9" LOWER CASE LETTERS



0 25 50 FEET

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SYSTEM PERMIT # I-0085

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: CONSHOHOCKEN BOROUGH
INTERSECTION: E ELM STREET (SR 3058)
AND HARRY STREET

REVIEWED:

MUNICIPAL OFFICIAL — DATE 10/1/19

RECOMMENDED:

MARK L KRAY — 5-5-04

LOUIS R BELMONTE — 5-17-04
DISTRICT TRAFFIC ENGINEER — DATE

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	RELOCATE SE MAST ARM/ TIMING CHANGES	MCM / BJB	11/1/07	LUTZ	11/2/07	ABP	11/3/07
2	ADDITION OF TURNING LANE FOR SOUTHBOUND HARRY STREET, MAX 1 DURING NIGHT, ADD NTOR, PED TIMES	PWH / TFB	7/21/10	DLA	8/26/10	ABP	9/7/10
3	ECMS-96218 ADD ADAPTIVE, ETHERNET COMMUNICATIONS & COUNTDOWNS	PA / KPL	06/21/18	DLA	06/28/18	ABP	06/28/18
4	NEW ATC CABINET, LED RR SIGNS, QUEUE LOOPS, ADD UPS, RR TEST SWITCH, APS	TPD	09/12/19	K.PL	10/8/19	DLA	10/9/19
5							
6							
7							
8							

SHEET 3 OF 3 | PERMIT 64-3238 | FILE # 3238

MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

PHASE	2+5			2+6			4+8			PED			FLASH
SIGNAL / INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12	
1,2	R	R	R	G	Y	R	R	R	R	R	R	R	Y
3	G①	Y①	R①	G	Y	R	R	R	R	R	R	R	Y
4	G	Y②	R②	G	Y	R	R	R	R	R	R	R	Y
5,6	R	R	R	R	R	R	G	Y	R	R	R	R	R
7,8	R	R	R	R	R	R	G	Y	R	R	R	R	R
9,10	H	H	H	H	H	H	H	H	H	M	FH	H	OFF
11,12	H	H	H	H	H	H	H	H	H	M	FH	H	OFF
13,14,15,16	H	H	H	H	H	H	H	H	H	M	FH	H	OFF

FIXED		4	2		4	2		4	2			
MINIMUM	3			15			3					
PASSAGE	3			**			3					
MAX 1	7			34			12					
PEDESTRIAN ✱										7	12	3
MEMORY	NL			MN			NL				L	

REFER TO SYSTEM PERMIT #1-0225 FOR PROGRAM TIMINGS AND WEEKLY PROGRAM CHART

OPERATION NOTES

① G/⚠ IF FOLLOWED BY 2+6 ② G IF FOLLOWED BY 2+6

✱ UPON PEDESTRIAN ACTUATION, OTHERWISE HAND SYMBOL AT ALL TIMES

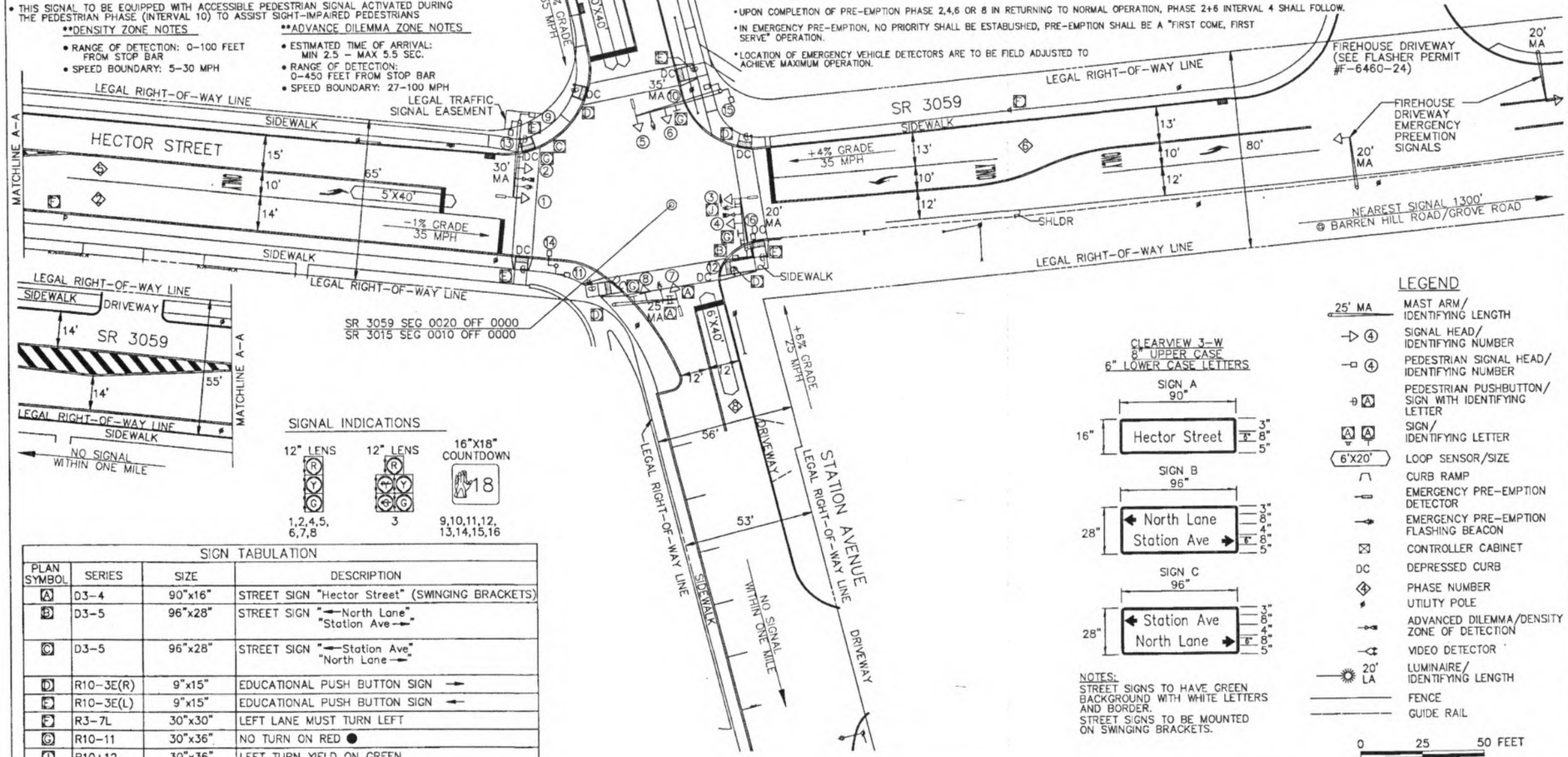
- CONTROLLER TO DWELL IN PHASE 2+6 UNTIL ACTUATED BY PHASE 4+8 OR THE PEDESTRIAN PHASE
- PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL.
- THIS SIGNAL TO BE EQUIPPED WITH ACCESSIBLE PEDESTRIAN SIGNAL ACTIVATED DURING THE PEDESTRIAN PHASE (INTERVAL 10) TO ASSIST SIGHT-IMPAIRED PEDESTRIANS

**DENSITY ZONE NOTES

- RANGE OF DETECTION: 0-100 FEET FROM STOP BAR
- SPEED BOUNDARY: 5-30 MPH

**ADVANCE DILEMMA ZONE NOTES

- ESTIMATED TIME OF ARRIVAL: MIN 2.5 - MAX 5.5 SEC.
- RANGE OF DETECTION: 0-450 FEET FROM STOP BAR
- SPEED BOUNDARY: 27-100 MPH



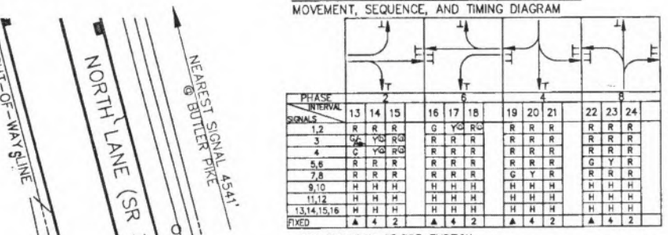
SIGNAL INDICATIONS

SIGN TABULATION

PLAN SYMBOL	SERIES	SIZE	DESCRIPTION
A	D3-4	90"x16"	STREET SIGN "Hector Street" (SWINGING BRACKETS)
B	D3-5	96"x28"	STREET SIGN "←North Lane" "Station Ave→"
C	D3-5	96"x28"	STREET SIGN "←Station Ave" "North Lane→"
D	R10-3E(R)	9"x15"	EDUCATIONAL PUSH BUTTON SIGN →
E	R10-3E(L)	9"x15"	EDUCATIONAL PUSH BUTTON SIGN ←
F	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
G	R10-11	30"x36"	NO TURN ON RED ●
H	R10+12	30"x36"	LEFT TURN YIELD ON GREEN

EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE, AND TIMING DIAGRAM



PHASE / INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12
SIGNALS	13	14	15	16	17	18	19	20	21	22	23	24
1,2	R	R	R	G	Y	R	R	R	R	R	R	R
3	G/⚠	Y	R	R	R	R	R	R	R	R	R	R
4	G	Y	R	R	R	R	R	R	R	R	R	R
5,6	R	R	R	R	R	R	R	R	R	G	Y	R
7,8	R	R	R	R	R	R	G	Y	R	R	R	R
9,10	H	H	H	H	H	H	H	H	H	H	H	H
11,12	H	H	H	H	H	H	H	H	H	H	H	H
13,14,15,16	H	H	H	H	H	H	H	H	H	H	H	H
FIXED	▲	4	2	▲	4	2	▲	4	2	▲	4	2

▲ FOR DURATION OF PRE-EMPTION

NOTE: IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

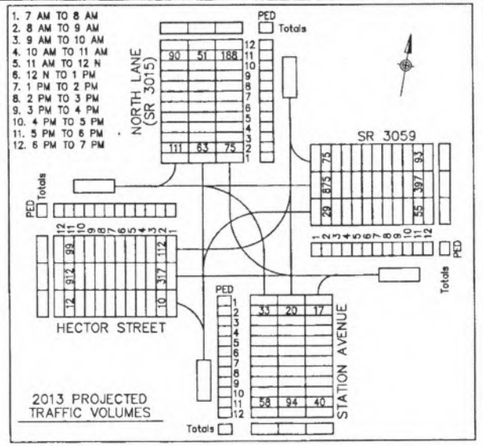
EMERGENCY PRE-EMPTION OPERATION NOTES

ⓐ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION

ⓑ SIGNAL TO INDICATE G/⚠ WHEN RETURNING TO NORMAL OPERATION

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND APPROACH OF STATION AVENUE AND THE SOUTHBOUND APPROACH OF NORTH LANE (SR 3015) AND THE EASTBOUND AND WESTBOUND APPROACHES OF HECTOR STREET (SR 3059) WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTION PHASE SHALL FOLLOW.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
- IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED THE PED "WALK (MAN)" INTERVAL SHALL TERMINATE IMMEDIATELY AND THE PED "CLEAR (FLASHING HAND AND COUNTDOWN TIMER)" INTERVAL SHALL TIME OUT THIS INTERVAL FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PREEMPTION.
- IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- UPON COMPLETION OF PRE-EMPTION PHASE 2,4,6 OR 8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 4 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.
- LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.



LEGEND

- 25' MA — MAST ARM/ IDENTIFYING LENGTH
- ④ — SIGNAL HEAD/ IDENTIFYING NUMBER
- ④ — PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- A — PEDESTRIAN PUSHBUTTON/ SIGN WITH IDENTIFYING LETTER
- A — SIGN/ IDENTIFYING LETTER
- 6'X20' — LOOP SENSOR/SIZE
- CURB RAMP
- EMERGENCY PRE-EMPTION DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- CONTROLLER CABINET
- DC — DEPRESSED CURB
- PHASE NUMBER
- UTILITY POLE
- ADVANCED DILEMMA/DENSITY ZONE OF DETECTION
- VIDEO DETECTOR
- 20' LA — LUMINAIRE/ IDENTIFYING LENGTH
- FENCE
- GUIDE RAIL

0 25 50 FEET

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

SYSTEM PERMIT # 1-0225

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY

MUNICIPALITY: WHITEMARSH TOWNSHIP

INTERSECTION: HECTOR STREET (SR 3059) & NORTH LANE (SR 3015)/STATION AVE

REVIEWED:

DATE

MUNICIPAL OFFICIAL DATE

RECOMMENDED:
MARK L KRAY 05-28-91

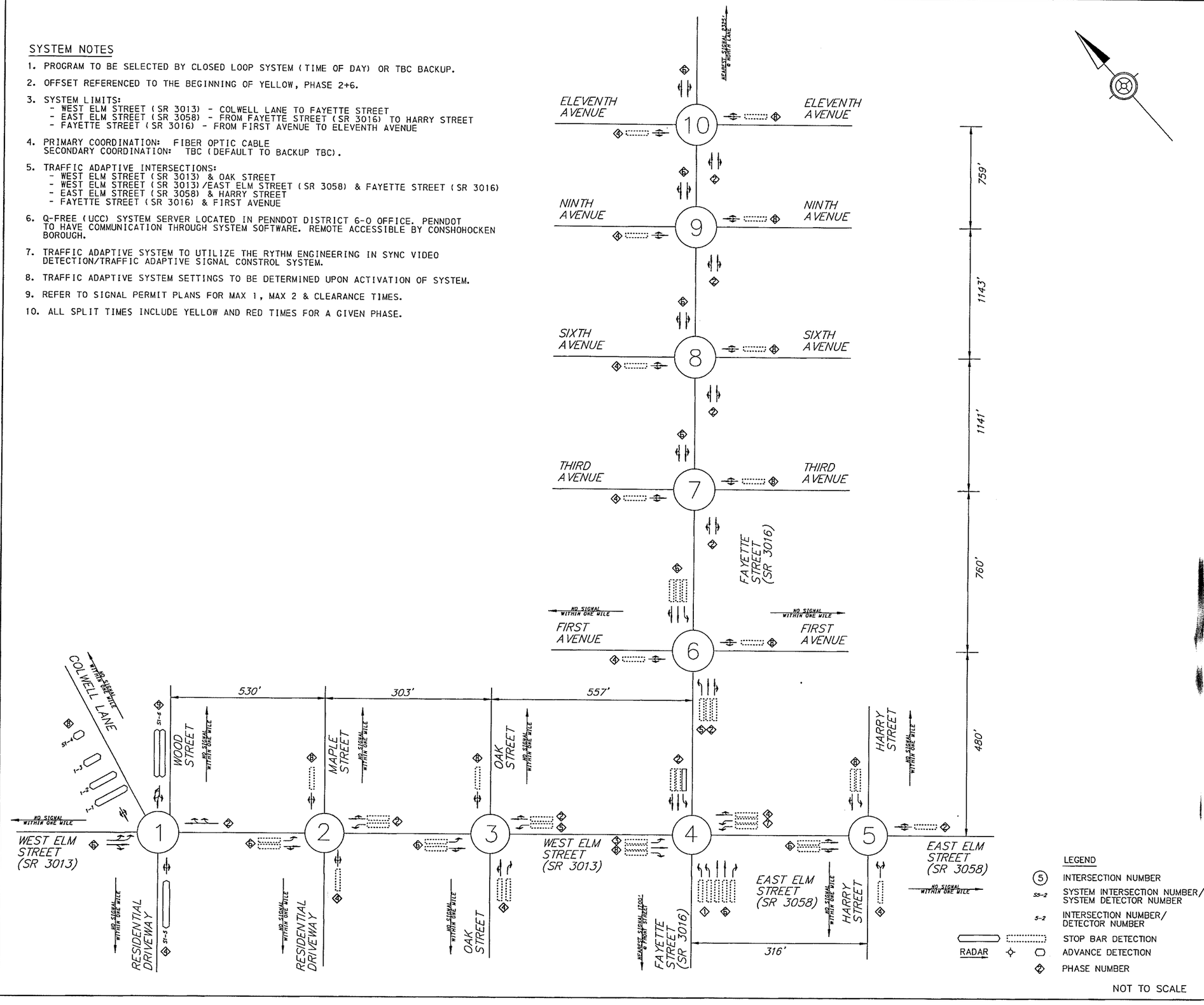
DOUGLAS MAY 05-30-91
DISTRICT TRAFFIC ENGINEER DATE

NO	REVISION	DES/ REVW	DATE	REVW	DATE	RECOM	DATE
1	ADDED NO TURN ON RED 7 AM-7 PM	PAI	09-23-93	MLK	10-01-93	DWM	10-01-93
2	NEW DWG - ADDED PREEMPT	PAI/ CB	10-29-01	MLK	11-02-01	LRB	11-06-01
3	REVISE NW & SW CORNERS; ADD CURB RAMPS, WAVETRONIX, & OSNS; REVISE PRE-EMPTION NOTES; ADD ⑤	TPD		DLA	11/28/11	ABP	11/28/11
4	AS-BUILT	KPL	02/13/15	DLA	3/4/15	dfyett	3/5/15
5							
6							
7							
8							

SHEET 2 OF 2 PERMIT # 64-2732 FILE # 2732

SYSTEM NOTES

1. PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
2. OFFSET REFERENCED TO THE BEGINNING OF YELLOW, PHASE 2+6.
3. SYSTEM LIMITS:
   - WEST ELM STREET (SR 3013) - COLWELL LANE TO FAYETTE STREET
   - EAST ELM STREET (SR 3058) - FROM FAYETTE STREET (SR 3016) TO HARRY STREET
   - FAYETTE STREET (SR 3016) - FROM FIRST AVENUE TO ELEVENTH AVENUE
4. PRIMARY COORDINATION: FIBER OPTIC CABLE
   SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC).
5. TRAFFIC ADAPTIVE INTERSECTIONS:
   - WEST ELM STREET (SR 3013) & OAK STREET
   - WEST ELM STREET (SR 3013)/EAST ELM STREET (SR 3058) & FAYETTE STREET (SR 3016)
   - EAST ELM STREET (SR 3058) & HARRY STREET
   - FAYETTE STREET (SR 3016) & FIRST AVENUE
6. Q-FREE (UCC) SYSTEM SERVER LOCATED IN PENNDOT DISTRICT 6-O OFFICE. PENNDOT TO HAVE COMMUNICATION THROUGH SYSTEM SOFTWARE. REMOTE ACCESSIBLE BY CONSHOHOCKEN BOROUGH.
7. TRAFFIC ADAPTIVE SYSTEM TO UTILIZE THE RYTHM ENGINEERING IN SYNC VIDEO DETECTION/TRAFFIC ADAPTIVE SIGNAL CONSTROL SYSTEM.
8. TRAFFIC ADAPTIVE SYSTEM SETTINGS TO BE DETERMINED UPON ACTIVATION OF SYSTEM.
9. REFER TO SIGNAL PERMIT PLANS FOR MAX 1, MAX 2 & CLEARANCE TIMES.
10. ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.



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FOR CONSTRUCTION AND INSPECTION THE SYSTEM PERMIT SHOULD ALWAYS BE ACCOMPANIED WITH TRAFFIC SIGNAL PERMIT DRAWING.

TEST THE SYSTEM AT LOCAL INTERSECTION LEVEL, SUBSYSTEM LEVEL MASTER CONTROLLER LEVEL AND PERSONAL COMPUTER REMOTE DIAL UP LEVEL.

GATHER THE SYSTEM FAILURE CRITICAL ALARMS REPORT AND ARCHIVE THEM WHERE APPLICABLE.

SET UP PENNDOT DISTRICT 6-O COMPUTER WITH THE SYSTEM DATABASE AND GRAPHICS. MODIFY THE DATABASE AND GRAPHICS FOR SYSTEMS REVISIONS.

ASSIGN LOOP DETECTORS AND PROGRAM THE CONTROLLERS TO GATHER TRAFFIC VOLUMES IN 15 MINUTE INTERVAL, WHERE APPLICABLE.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

OBTAIN POLE ATTACHMENT PERMIT FOR AERIAL FIBER OPTIC INSTALLATION.

MAINTAIN MASTER CONTROLLER COMMUNICATION SUCH AS PHONE DROPS.

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PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-O

COUNTY: MONTGOMERY

MUNICIPALITY: BOROUGH OF CONSHOHOCKEN

INTERSECTION: ELM ST FROM COLWELL LANE TO HARRY ST
& FAYETTE ST FROM ELM ST TO ELEVENTH AVE

REVIEWED:

MUNICIPAL OFFICIAL — DATE 10/1/19

RECOMMENDED:

ASHWIN B PATEL — 03/09/05

LOUIS R BELMONTE — 03/15/05
DISTRICT TRAFFIC ENGINEER — DATE

NO.	REVISION	DES./ REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	INTERSECTION #1 TEMPORARY RETIMING	PWH / TFB		DLA	1/4/10	ABP	1/5/10
2	ECMS-96218 ADD ADAPTIVE & ETHERNET COMMUNICATIONS	PA / KPL	06/27/18	DLA	06/28/18	ABP	06/28/18
3	REVISE PHASING AT #4 & 6, RETIME ALL	TPD	09/12/19	KPL	10/8/19	DLA	10/9/19
4							

SHEET 1 OF 3 — SYSTEM PERMIT # I-0085

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9/11/2019 11:53:14 PM rkearney Traffic Planning and Design, Inc.

WEEKLY TIMING PROGRAMS

CYCLE/SPLIT/OFFSET

PROGRAM 1 = AM PEAK

	INTERSECTIONS	File #	Phase 1	2	3	4	5	6	7	8	9	Cycle (s)	*Offset (s)
1	W. ELM STREET & COLWELL LANE/DRIVEWAY	3014		23		23		23		23	14	60	33
2	W. ELM STREET & MAPLE STREET	0914		34		26		34		26		60	9
7	FAYETTE STREET & THIRD AVENUE	0911		33		27		33		27		60	49
8	FAYETTE STREET & SIXTH AVENUE	0909		34		26		34		26		60	15
9	FAYETTE STREET & NINTH AVENUE	0875		31		29		31		29		60	44
10	FAYETTE STREET & ELEVENTH AVENUE	0876		31		29		31		29		60	44

PROGRAM 2 = LATE AM

	INTERSECTIONS	File #	Phase 1	2	3	4	5	6	7	8	9	Cycle (s)	*Offset (s)
1	W. ELM STREET & COLWELL LANE/DRIVEWAY	3014		–		–		–		–	–	FREE	–
2	W. ELM STREET & MAPLE STREET	0914		34		26		34		26		60	25
7	FAYETTE STREET & THIRD AVENUE	0911		33		27		33		27		60	42
8	FAYETTE STREET & SIXTH AVENUE	0909		34		26		34		26		60	10
9	FAYETTE STREET & NINTH STREET	0875		31		29		31		29		60	48
10	FAYETTE STREET & ELEVENTH STREET	0876		30		30		30		30		60	40

PROGRAM 3 = OFF PEAK

	INTERSECTIONS	File #	Phase 1	2	3	4	5	6	7	8	9	Cycle (s)	*Offset (s)
1	W. ELM STREET & COLWELL LANE/DRIVEWAY	3014		–		–		–		–	–	FREE	–
2	W. ELM STREET & MAPLE STREET	0914		35		25		35		25		60	6
7	FAYETTE STREET & THIRD AVENUE	0911		33		27		33		27		60	51
8	FAYETTE STREET & SIXTH AVENUE	0909		34		26		34		26		60	20
9	FAYETTE STREET & NINTH STREET	0875		31		29		31		29		60	51
10	FAYETTE STREET & ELEVENTH STREET	0876		31		29		31		29		60	20

PROGRAM 4 = EARLY PM

	INTERSECTIONS	File #	Phase 1	2	3	4	5	6	7	8	9	Cycle (s)	*Offset (s)
1	W. ELM STREET & COLWELL LANE/DRIVEWAY	3014		–		–		–		–	–	FREE	–
2	W. ELM STREET & MAPLE STREET	0914		34		26		34		26		60	13
7	FAYETTE STREET & THIRD AVENUE	0911		33		27		33		27		60	47
8	FAYETTE STREET & SIXTH AVENUE	0909		34		26		34		26		60	16
9	FAYETTE STREET & NINTH STREET	0875		31		29		31		29		60	45
10	FAYETTE STREET & ELEVENTH STREET	0876		31		29		31		29		60	48

PROGRAM 5 = PM PEAK

	INTERSECTIONS	File #	Phase 1	2	3	4	5	6	7	8	9	Cycle (s)	*Offset (s)
1	W. ELM STREET & COLWELL LANE/DRIVEWAY	3014		26		20		26		20	14	60	13
2	W. ELM STREET & MAPLE STREET	0914		36		24		36		24		60	4
7	FAYETTE STREET & THIRD AVENUE	0911		33		27		33		27		60	56
8	FAYETTE STREET & SIXTH AVENUE	0909		34		26		34		26		60	20
9	FAYETTE STREET & NINTH STREET	0875		31		29		31		29		60	57
10	FAYETTE STREET & ELEVENTH STREET	0876		31		29		31		29		60	12

*OFFSET REFERENCED TO BEGINNING OF MAIN STREET (2+6) YELLOW INTERVAL

WEEKLY PROGRAM CHART				
EVENT	DAY	TIME	PROGRAM	REMARKS
1	1–7	0000	MAX 1	FREE
2	1–5	0600	1	AM PEAK
3	1–5	0945	2	LATE AM
4	1–5	1130	3	OFF PEAK
5	1–5	1315	4	EARLY PM
6	1–5	1530	5	PM PEAK
7	1–5	2000	3	OFF PEAK
8	1–5	2200	MAX 1	FREE
9	6,7	1000	3	OFF PEAK
10	6,7	2100	MAX 1	FREE

MONDAY = DAY 1
MAX 1/FREE WHERE NOTED IN CYCLE/SPLIT/OFFSET MATRIX

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PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY

MUNICIPALITY: BOROUGH OF CONSHOHOCKEN

INTERSECTION: ELM ST FROM COLWELL LANE TO HARRY ST
& FAYETTE ST FROM ELM ST TO ELEVENTH AVE

REVIEWED:

MUNICIPAL OFFICIAL — DATE 10/1/19

RECOMMENDED:
ASHWIN B PATEL 03/09/05

LOUIS R BELMONTE 03/15/05
DISTRICT TRAFFIC ENGINEER — DATE

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	INTERSECTION #1 TEMPORARY RETIMING	PWH / TFB		DLA	1/4/10	ABP	1/5/10
2	ECMS-96218 ADD ADAPTIVE & ETHERNET COMMUNICATIONS	PA / KPL	06/27/18	DLA	06/28/18	ABP	06/28/18
3	REVISE PHASING AT #4 & 6, RETIME ALL	TPD	09/12/19	KPL	10/8/19	DLA	10/9/19
4							

SHEET 2 OF 3

SYSTEM PERMIT # I-0085

PW$$WORKING$:[pa.kpl.dgn]TEMP0858$VERSION$.DGN;1 $Revision: V8i (08.11.09.443) $ $DateTime: 2019/09/11 15:53:01 PM $ $Author: rkearney $ Traffic Planning and Design, Inc.
9/11/2019 15:53:01 PM rkearney Traffic Planning and Design, Inc.

WEEKLY TRAFFIC ADAPTIVE SETTINGS

CYCLE/SPLIT/OFFSET

CONFIGURATION					TUNNEL DURATION								PERIOD	GLOBAL OFFSET (AT FACILITATOR)		LOCAL OFFSET		TRAVEL TIME TO NEXT INTERSECTION	
		INTERSECTIONS	File #	Facilitator	1	2	3	4	5	6	7	8							
3	I-0085	W. ELM STREET & OAK STREET	1455																
4	I-0085	W. ELM STREET/E. ELM STREET & FAYETTE STREET	0913																
5	I-0085	E. ELM STREET & HARRY STREET	3238																
6	I-0085	FAYETTE STREET & FIRST AVENUE	0912																

CONFIGURATION					TUNNEL DURATION								PERIOD	GLOBAL OFFSET (AT FACILITATOR)		LOCAL OFFSET		TRAVEL TIME TO NEXT INTERSECTION	
		INTERSECTIONS	File #	Facilitator	1	2	3	4	5	6	7	8							
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CONFIGURATION					TUNNEL DURATION								PERIOD	GLOBAL OFFSET (AT FACILITATOR)		LOCAL OFFSET		TRAVEL TIME TO NEXT INTERSECTION	
		INTERSECTIONS	File #	Facilitator	1	2	3	4	5	6	7	8							
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4	I-0085	W. ELM STREET/E. ELM STREET & FAYETTE STREET	0913																
5	I-0085	E. ELM STREET & HARRY STREET	3238																
6	I-0085	FAYETTE STREET & FIRST AVENUE	0912																

ADAPTIVE WEEKLY PROGRAM CHART					
EVENT	DAY	TIME	PERIOD	PROGRAM	REMARKS

MONDAY = DAY 1
TUNNELLESS: UNCOORDINATED ADAPTIVE OPERATION

ADAPTIVE NOTES

1. ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
2. REFER TO SIGNAL PERMIT PLAN FOR MAXIMUM, CLEARANCE AND PED TIMES.
3. GLOBAL OFFSET (AT FACILITATOR): VALUE IN SECONDS THAT OFFSETS A TUNNEL GLOBALLY AT THE FACILITATOR INTERSECTION AS ENTERED IN CentralSync.
4. LOCAL OFFSET: TUNNEL OFFSET AT INTERSECTION AS ENTERED IN CentralSync.
5. TRAVEL TIME TO NEXT INTERSECTION: VALUE FOR TRAVEL TIME OF THE CHOSEN TUNNEL TO THE CORRESPONDING TUNNEL AT THE NEXT INTERSECTION AS ENTERED IN CentralSync MAP VIEW.

BACKUP WEEKLY PROGRAM CHART				
EVENT	DAY	TIME	PROGRAM	REMARKS
1	1-7	0000	MAX 1	FREE
2	1-5	0600	1	AM PEAK
3	1-5	0945	2	LATE AM
4	1-5	1130	3	OFF PEAK
5	1-5	1315	4	EARLY PM
6	1-5	1530	5	PM PEAK
7	1-5	2000	3	OFF PEAK
8	1-5	2200	MAX 1	FREE
9	6,7	1000	3	OFF PEAK
10	6,7	2100	MAX 1	FREE

MONDAY = DAY 1

NOTES

1. ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
2. REFER TO SIGNAL PERMIT PLAN FOR MAXIMUM, CLEARANCE AND PED TIMES.

BACKUP TIMINGS NOTES

1. ALL INTERSECTIONS TO UTILIZE FLOATING FORCE OFF EXCEPT AS NOTED BELOW.
2. INTERSECTION 4 TO UTILIZE FIXED FORCE OFF AND PHASE 3 ON OMITS PHASE 7 AND PHASE 7 ON OMITS PHASE 3.

T.B.C. BACKUP TIMINGS

CYCLE/SPLIT/OFFSET

PROGRAM 1 = AM PEAK			Phase									Cycle (s)	*Offset (s)
	INTERSECTIONS	File #	1	2	3	4	5	6	7	8	9		
3	W. ELM STREET & OAK STREET	1455		37		23	13 (LEAD)	24		23		60	19
4	W. ELM STREET/E. ELM STREET & FAYETTE STREET	0913	25 (LEAD)	45	14 (SPLIT)	36		70	24 (LAG)	12		120	52
5	E. ELM STREET & HARRY STREET	3238		27		33		27		33		60	28
6	FAYETTE STREET & FIRST AVENUE	0912		69		51	17 (LEAD)	52		51		120	57
PROGRAM 2 = LATE AM			Phase									Cycle (s)	*Offset (s)
	INTERSECTIONS	File #	1	2	3	4	5	6	7	8	9		
3	W. ELM STREET & OAK STREET	1455		37		23	14 (LEAD)	23		23		60	0
4	W. ELM STREET/E. ELM STREET & FAYETTE STREET	0913	29 (LEAD)	37	14 (SPLIT)	40		66	28 (LAG)	12		120	0
5	E. ELM STREET & HARRY STREET	3238		26		34		26		34		60	56
6	FAYETTE STREET & FIRST AVENUE	0912		73		47	17 (LEAD)	56		47		120	31
PROGRAM 3 = OFF PEAK			Phase									Cycle (s)	*Offset (s)
	INTERSECTIONS	File #	1	2	3	4	5	6	7	8	9		
3	W. ELM STREET & OAK STREET	1455		37		23	14 (LEAD)	23		23		60	57
4	W. ELM STREET/E. ELM STREET & FAYETTE STREET	0913	26 (LEAD)	41	16 (SPLIT)	37		67	25 (LAG)	12		120	1
5	E. ELM STREET & HARRY STREET	3238		26		34		26		34		60	59
6	FAYETTE STREET & FIRST AVENUE	0912		73		47	15 (LEAD)	58		47		120	13
PROGRAM 4 = EARLY PM			Phase									Cycle (s)	*Offset (s)
	INTERSECTIONS	File #	1	2	3	4	5	6	7	8	9		
3	W. ELM STREET & OAK STREET	1455		41		19	15 (LEAD)	26		19		60	52
4	W. ELM STREET/E. ELM STREET & FAYETTE STREET	0913	30 (LEAD)	37	15 (SPLIT)	38		67	26 (LAG)	12		120	0
5	E. ELM STREET & HARRY STREET	3238		26		34		26		34		60	24
6	FAYETTE STREET & FIRST AVENUE	0912		68		52	17 (LEAD)	51		52		120	13
PROGRAM 5 = PM PEAK			Phase									Cycle (s)	*Offset (s)
	INTERSECTIONS	File #	1	2	3	4	5	6	7	8	9		
3	W. ELM STREET & OAK STREET	1455		37		23	14 (LEAD)	23		23		60	55
4	W. ELM STREET/E. ELM STREET & FAYETTE STREET	0913	27 (LEAD)	38	20 (SPLIT)	35		65	23 (LAG)	12		120	112
5	E. ELM STREET & HARRY STREET	3238		27		33		27		33		60	48
6	FAYETTE STREET & FIRST AVENUE	0912		59		61	13 (LEAD)	46		61		120	1

*OFFSET REFERENCED TO BEGINNING OF MAIN STREET (2+6) YELLOW INTERVAL

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

REFER TO TRAFFIC SIGNAL PERMIT DRAWING FOR INDIVIDUAL INTERSECTION OPERATION, GEOMETRY, PHASING AND CRITICAL TIMES.

FOR CONSTRUCTION AND INSPECTION THE SYSTEM PERMIT SHOULD ALWAYS BE ACCOMPANIED WITH TRAFFIC SIGNAL PERMIT DRAWING.

TEST THE SYSTEM AT LOCAL INTERSECTION LEVEL, SUBSYSTEM LEVEL MASTER CONTROLLER LEVEL AND PERSONAL COMPUTER REMOTE DIAL UP LEVEL.

GATHER THE SYSTEM FAILURE CRITICAL ALARMS REPORT AND ARCHIVE THEM WHERE APPLICABLE.

SET UP PENNDOT DISTRICT 6-0 COMPUTER WITH THE SYSTEM DATABASE AND GRAPHICS. MODIFY THE DATABASE AND GRAPHICS FOR SYSTEMS REVISIONS.

ASSIGN LOOP DETECTORS AND PROGRAM THE CONTROLLERS TO GATHER TRAFFIC VOLUMES IN 15 MINUTE INTERVAL, WHERE APPLICABLE.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

OBTAIN POLE ATTACHMENT PERMIT FOR AERIAL FIBER OPTIC INSTALLATION.

MAINTAIN MASTER CONTROLLER COMMUNICATION SUCH AS PHONE DROPS.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH WAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: BOROUGH OF CONSHOHOCKEN
INTERSECTION: ELM ST FROM COLWELL LANE TO HARRY ST
& FAYETTE ST FROM ELM ST TO ELEVENTH AVE

REVIEWED:

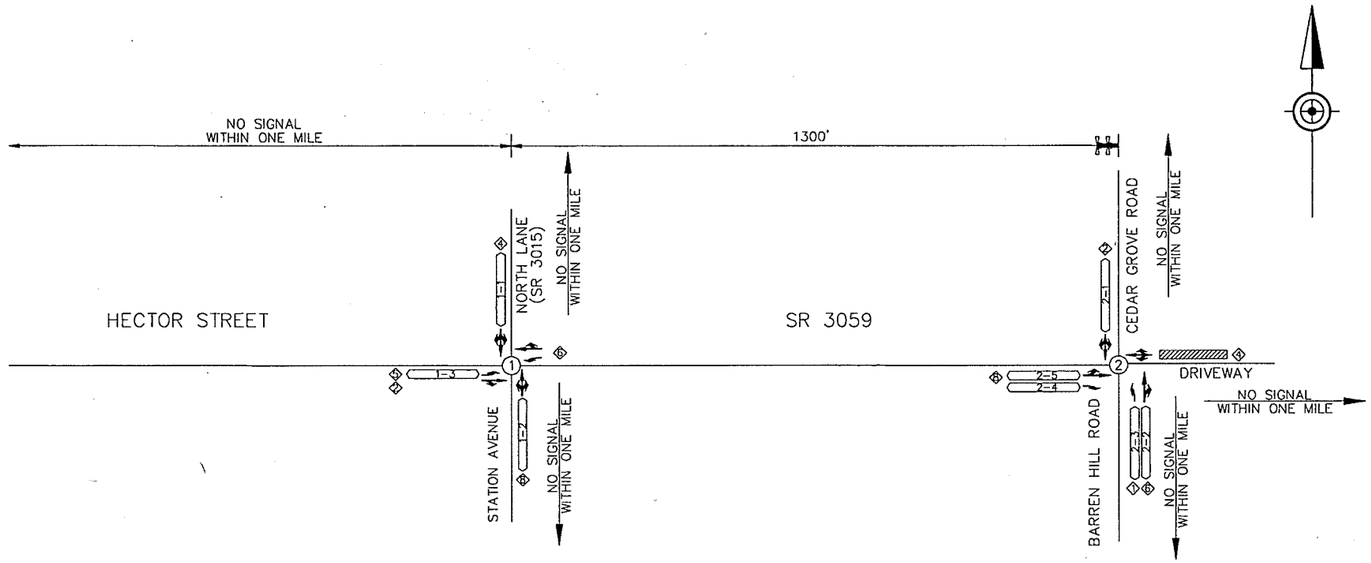
MUNICIPAL OFFICIAL — DATE 10/1/19

RECOMMENDED:
ASHWIN B PATEL — 03/09/05
LOUIS R BELMONTE — 03/15/05
DISTRICT TRAFFIC ENGINEER — DATE

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	INTERSECTION #1 TEMPORARY RETIMING	PWH / TFB		DLA	1/4/10	ABP	1/5/10
2	ECMS-96218 ADD ADAPTIVE & ETHERNET COMMUNICATIONS	PA / KPL	06/27/18	DLA	06/28/18	ABP	06/28/18
3	REVISE PHASING AT #4 & 6, RETIME ALL	TPD	09/12/19	KPL	10/8/19	DLA	10/9/19
4							

SHEET 3 OF 3 — SYSTEM PERMIT # I-0085

pwh\\06BUHRIG\Projects\Penndot\TEDP\08588\03\Design\PLANS\Signals\0003 Conshohocken T03\CADD\Signals\007.System #I-0085.dgn
9/11/2019 11:52:50 PM rkearney Traffic Planning and Design, Inc.



GENERAL NOTES

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CYCLE / SPLIT / OFFSET

	PROGRAM 1= INTERSECTIONS	FILE #	PHASE 1	2	3	4	5	6	7	8	PED	CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
11															
10															
9															
8															
7															
6															
5															
4															
3															
2	HECTOR ST & CEDAR GROVE RD/BARREN HILL RD	2351		49 (SPLIT)		15		56 (SPLIT)		15		120	0		
1	HECTOR ST & NORTH LN/STATION AVE	2732		75		23	13 (LEAD)	62		23	22	120	26		

	PROGRAM 2= INTERSECTIONS	FILE #	PHASE 1	2	3	4	5	6	7	8	PED	CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
11															
10															
9															
8															
7															
6															
5															
4															
3															
2	HECTOR ST & CEDAR GROVE RD/BARREN HILL RD	2351		50 (SPLIT)		40		30 (SPLIT)		40		120	0		
1	HECTOR ST & NORTH LN/STATION AVE	2732		72		26	13 (LEAD)	59		26	22	120	76		

	PROGRAM 3= INTERSECTIONS	FILE #	PHASE 1	2	3	4	5	6	7	8	PED	CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
11															
10															
9															
8															
7															
6															
5															
4															
3															
2															
1															

	PROGRAM 4= INTERSECTIONS	FILE #	PHASE 1	2	3	4	5	6	7	8	PED	CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
11															
10															
9															
8															
7															
6															
5															
4															
3															
2															
1															

Notes:
- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE

SYSTEM NOTES

1. THE SIGNALS ALONG HECTOR STREET AVENUE FROM NORTH LANE/STATION AVENUE TO CEDAR GROVE ROAD/BARREN HILL ROAD ARE TO BE COORDINATED.
2. PROGRAMS TO BE SELECTED BY CLOSED LOOP SYSTEM OR TBC BACKUP.
3. OFFSETS REFERENCED TO THE BEGINNING OF YELLOW (PHASE 2).
4. SYSTEM LIMITS:
   HECTOR STREET (SR 3059) – FROM NORTH LANE/STATION AVENUE TO CEDAR GROVE ROAD/BARREN HILL ROAD
5. PRIMARY COORDINATION: GPS TIMECLOCK
   SECONDARY COORDINATION: TIME BASED COORDINATION (DEFAULT TO BACKUP TBC PROGRAM CHART)
6. CYCLES, SPLITS & OFFSETS ARE IN SECONDS.

WEEKLY/BACKUP PROGRAM CHART

EVENT	▲DAY	TIME	PROGRAM*	REMARKS
1	1-7	0000	MAXIMUM 1	FREE
2	1-5	0500	1	AM PEAK
3	1-5	1000	MAXIMUM 1	FREE
4	1-5	1500	2	PM PEAK
5	1-7	1900	MAXIMUM 1	FREE
6	6,7	1000	MAXIMUM 1	FREE

▲DAY 1 = MONDAY
* MAX / FREE WHERE NOTED IN

LEGEND

- ④ INTERSECTION ADDRESS
- (S#) SYSTEM LOOP/ IDENTIFYING NUMBER
- LOOP SENSOR / INTERSECTION X – LOOP NUMBER Y
- VIDEO DETECTION AREA
- ◇ PHASE NUMBER

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY

MUNICIPALITY: WHITEMARSH TOWNSHIP

INTERSECTION: HECTOR STREET (SR 3059) FROM CEDAR GROVE ROAD/BARREN HILL ROAD TO NORTH LANE (SR 3015)/STATION AVENUE

REVIEWED:

MUNICIPAL OFFICIAL — DATE 11/7/17

RECOMMENDED:
DAVID ADAMS — 11/28/2011

ASHWIN PATEL — 11/28/2011
DISTRICT TRAFFIC ENGINEER — DATE

NO	REVISION	DES/ REVW	DATE	REVW	DATE	RECOM	DATE
1	TIMING ADJ	BURNS	6/29/15	KPL	1/24/18	PLM	1/24/18
2							
3							
4							
5							
6							
7							
8							

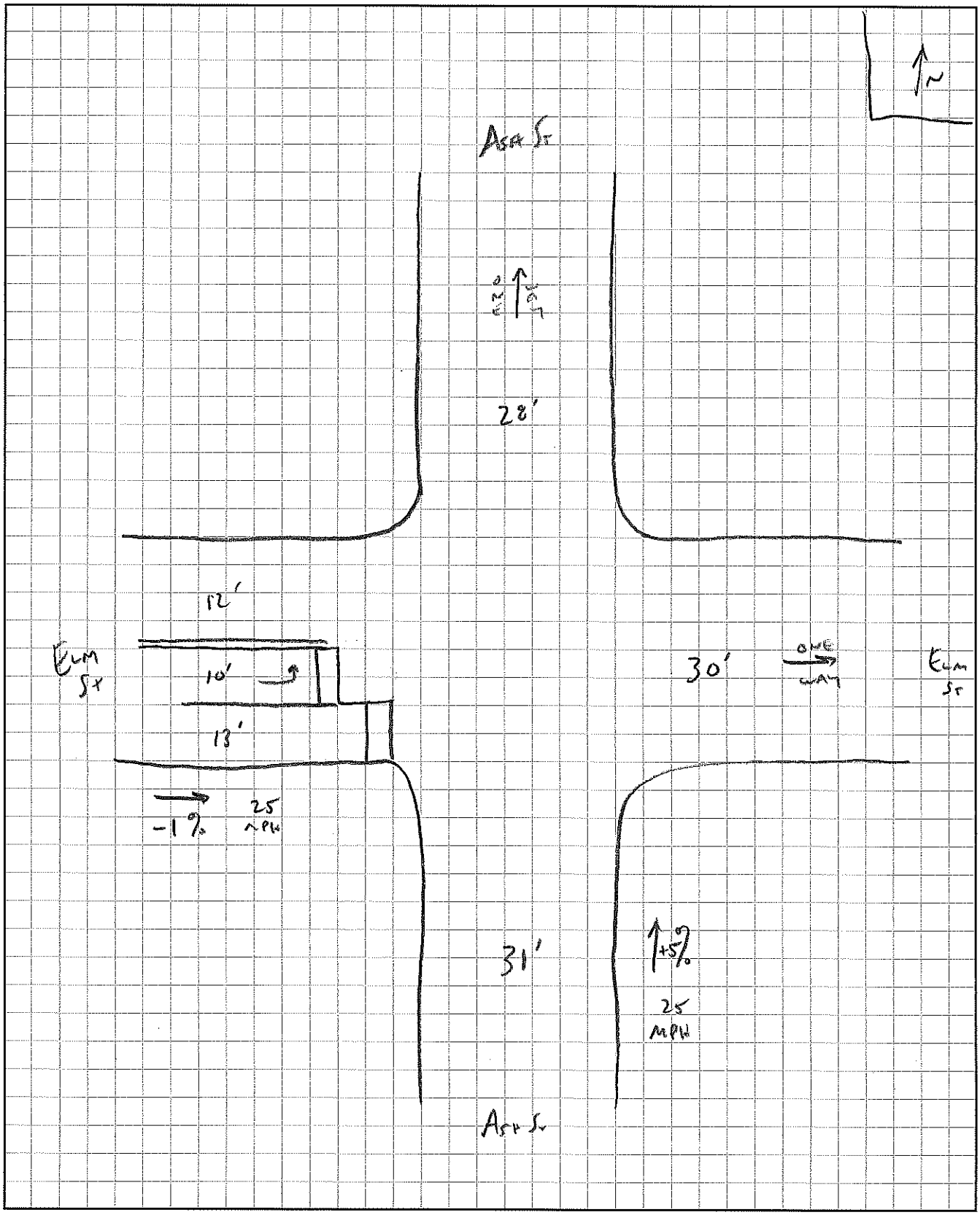
SYSTEM PERMIT # 1-0225

McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

Job _____ McMahon Project No. _____ Sheet _____ of _____

Description 45th St & Elm St Designed By _____ Date _____

Checked By _____ Date _____

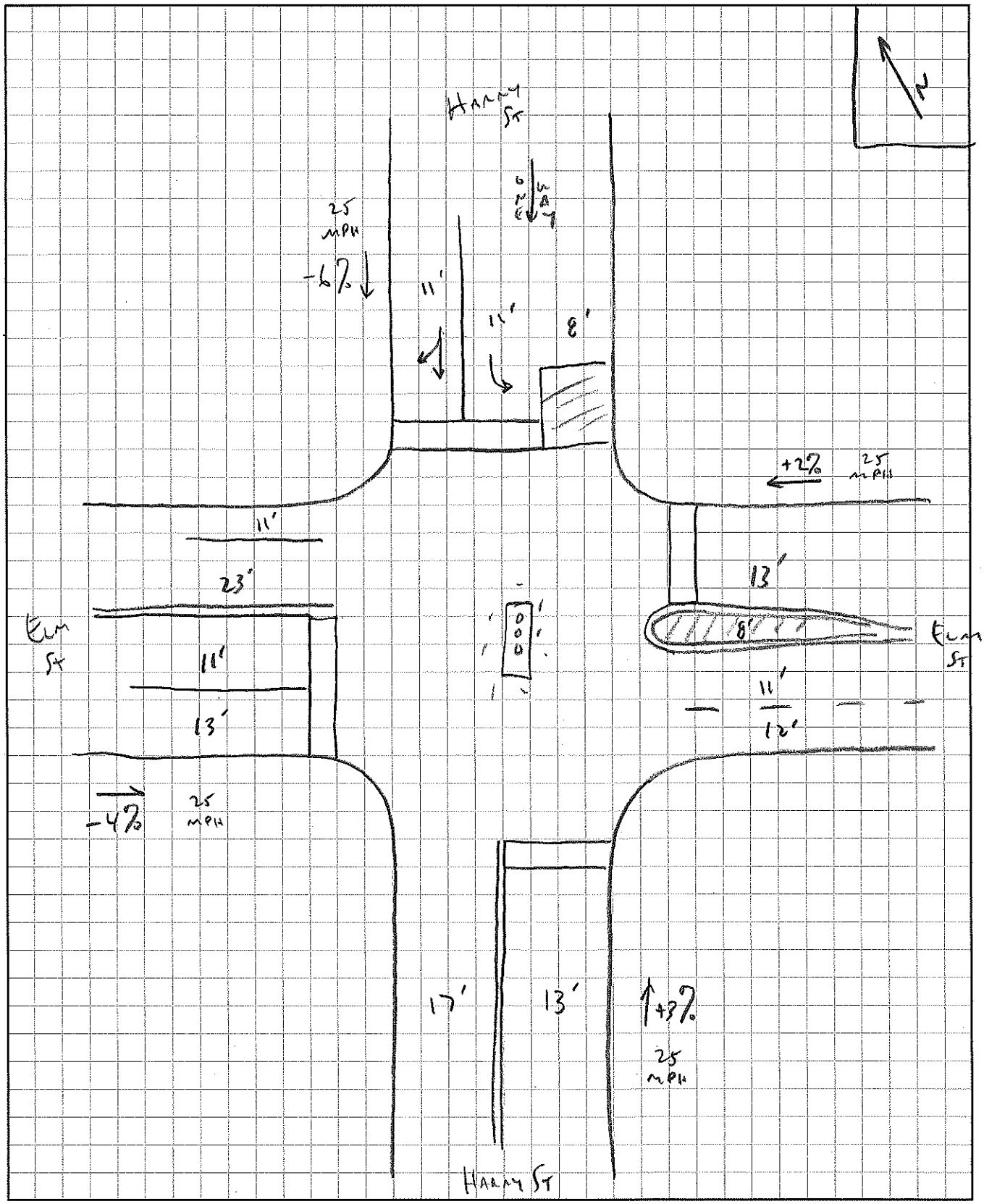


McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

Job _____ McMahon Project No. _____ Sheet _____ of _____

Description HARMY ST & ELM ST Designed By _____ Date _____

Checked By _____ Date _____

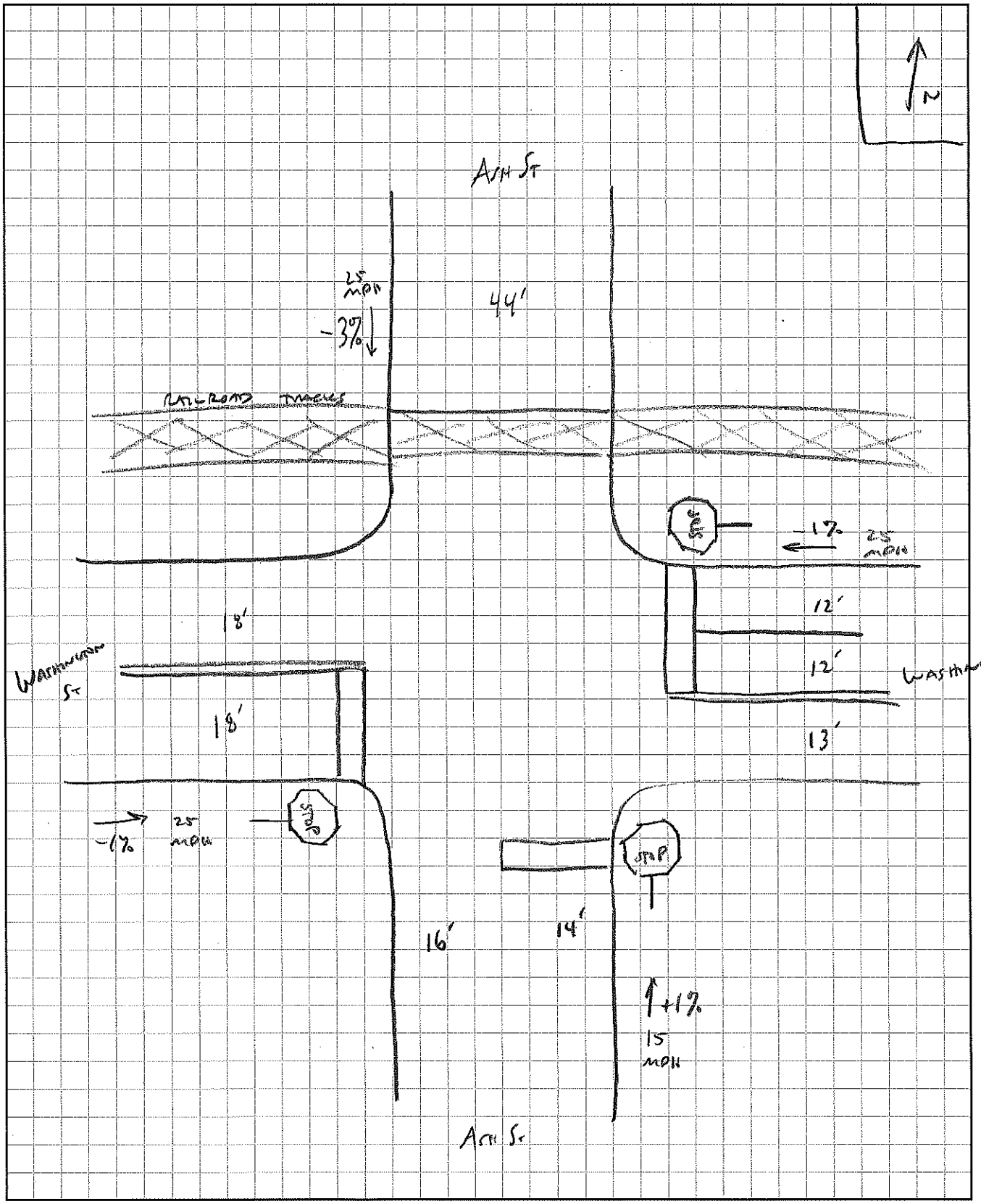


McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

Job _____ McMahon Project No. _____ Sheet _____ of _____

Description WASHINGTON ST + Designed By _____ Date _____

ASH ST Checked By _____ Date _____

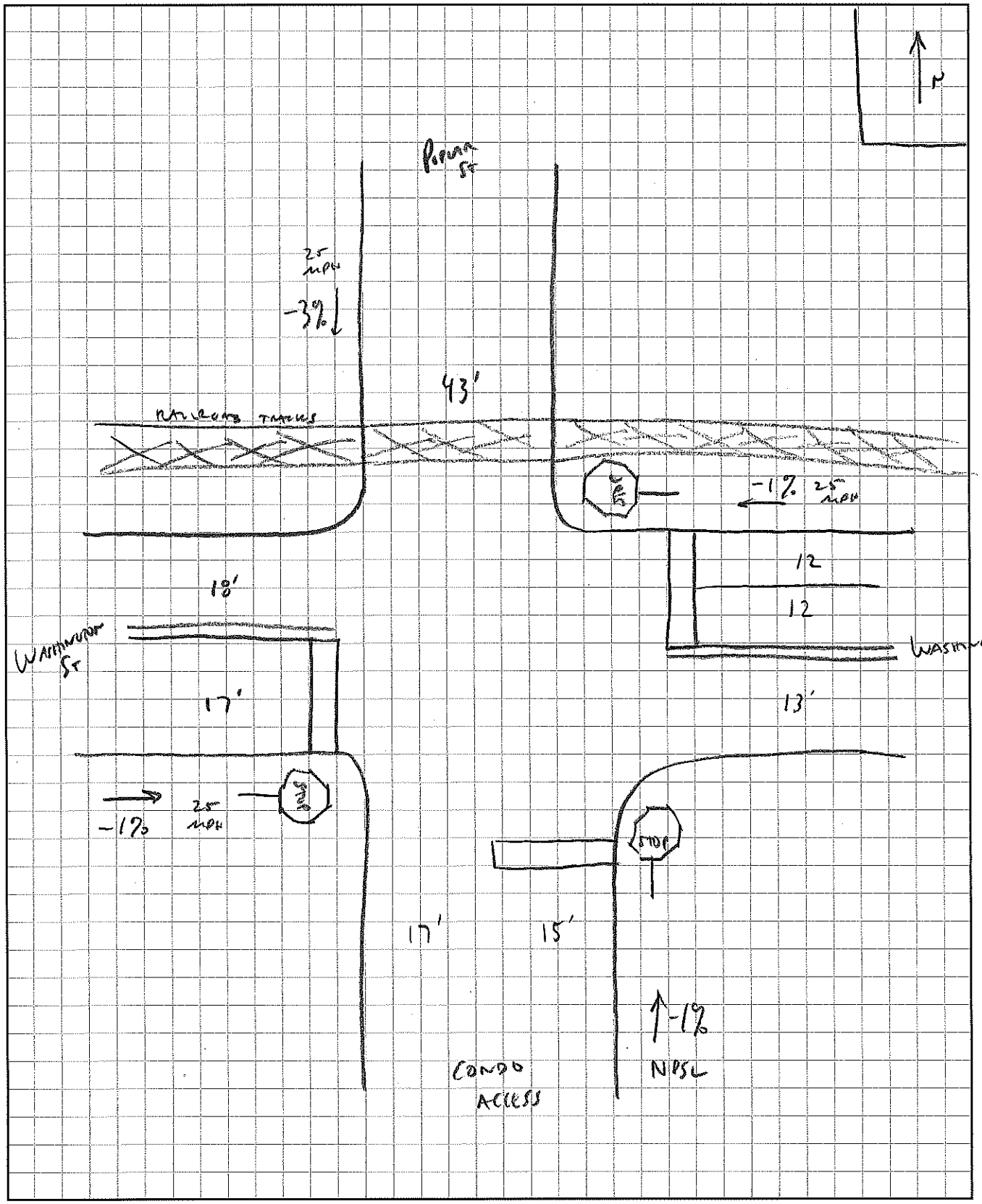


McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

Job _____ McMahon Project No. _____ Sheet _____ of _____

Description WASHINGTON ST + POPLAR ST Designed By _____ Date _____

Checked By _____ Date _____

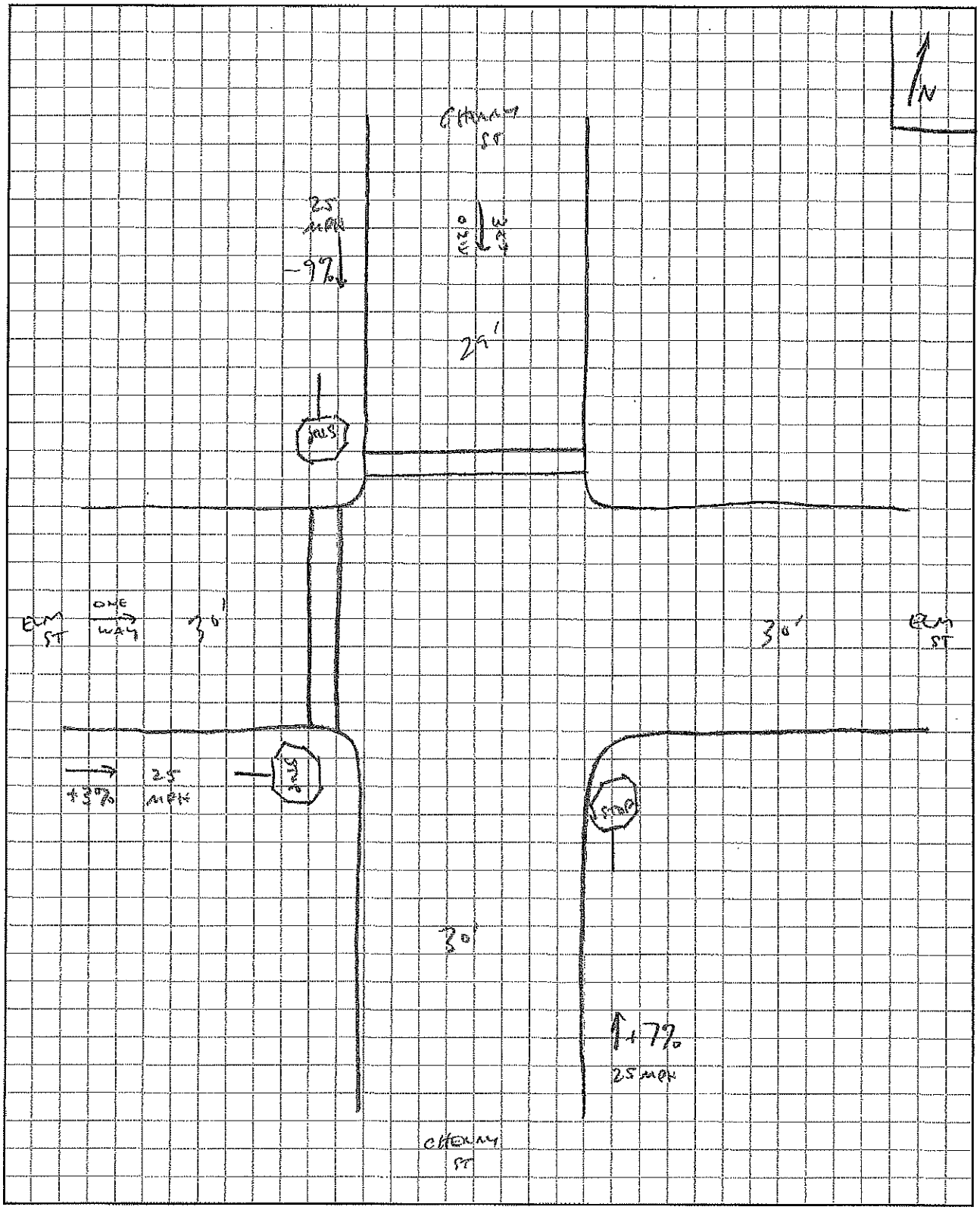


McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

Job _____ McMahon Project No. _____ Sheet 03 of ____

Description ELM STREET + CHERRY STREET Designed By NDB Date _____

Checked By _____ Date _____

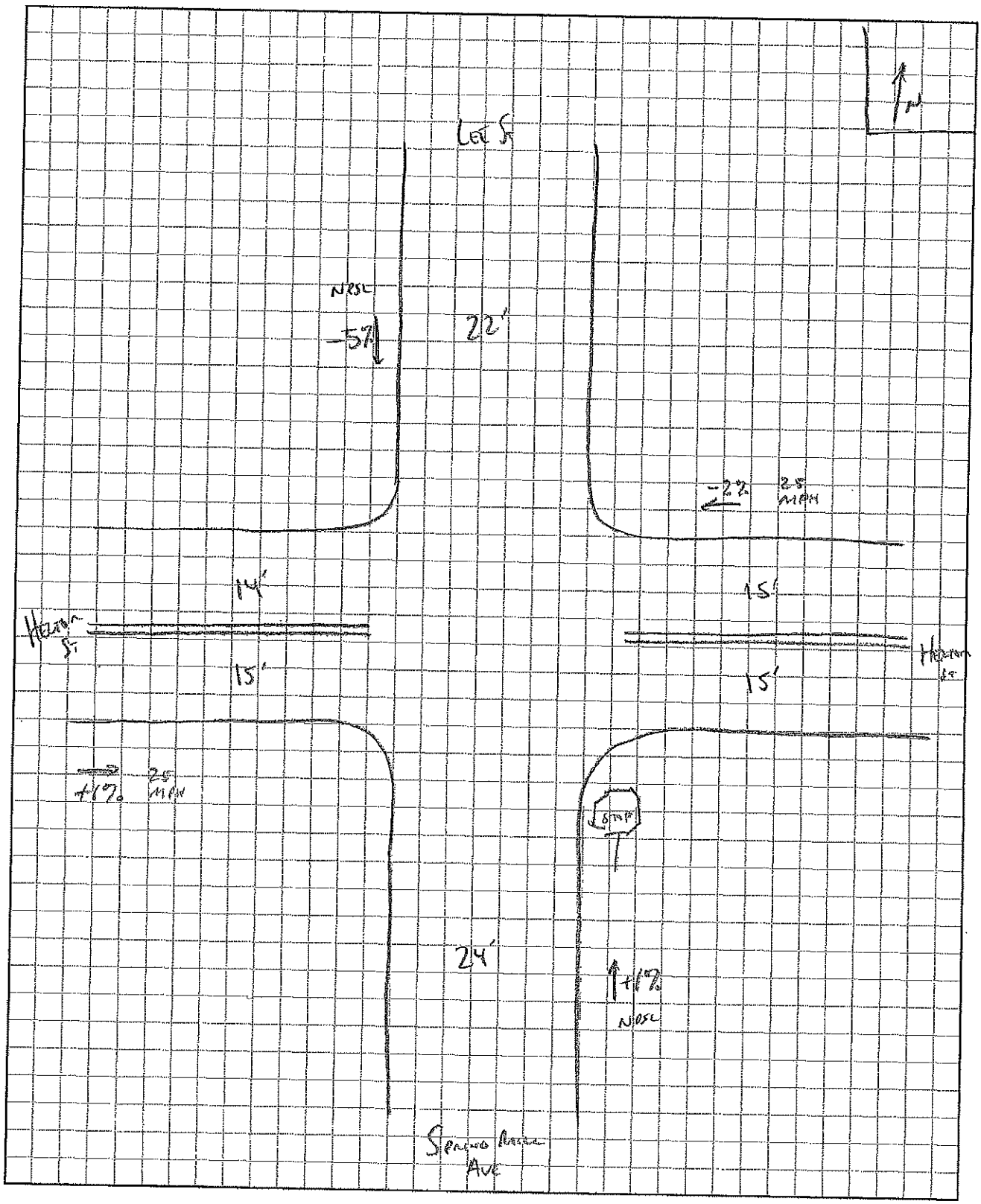


McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

Job _____ McMahon Project No. _____ Sheet 04 of ____

Description Herron St + Spring Mill Ave / Lee St Designed By NOB Date _____

Checked By _____ Date _____

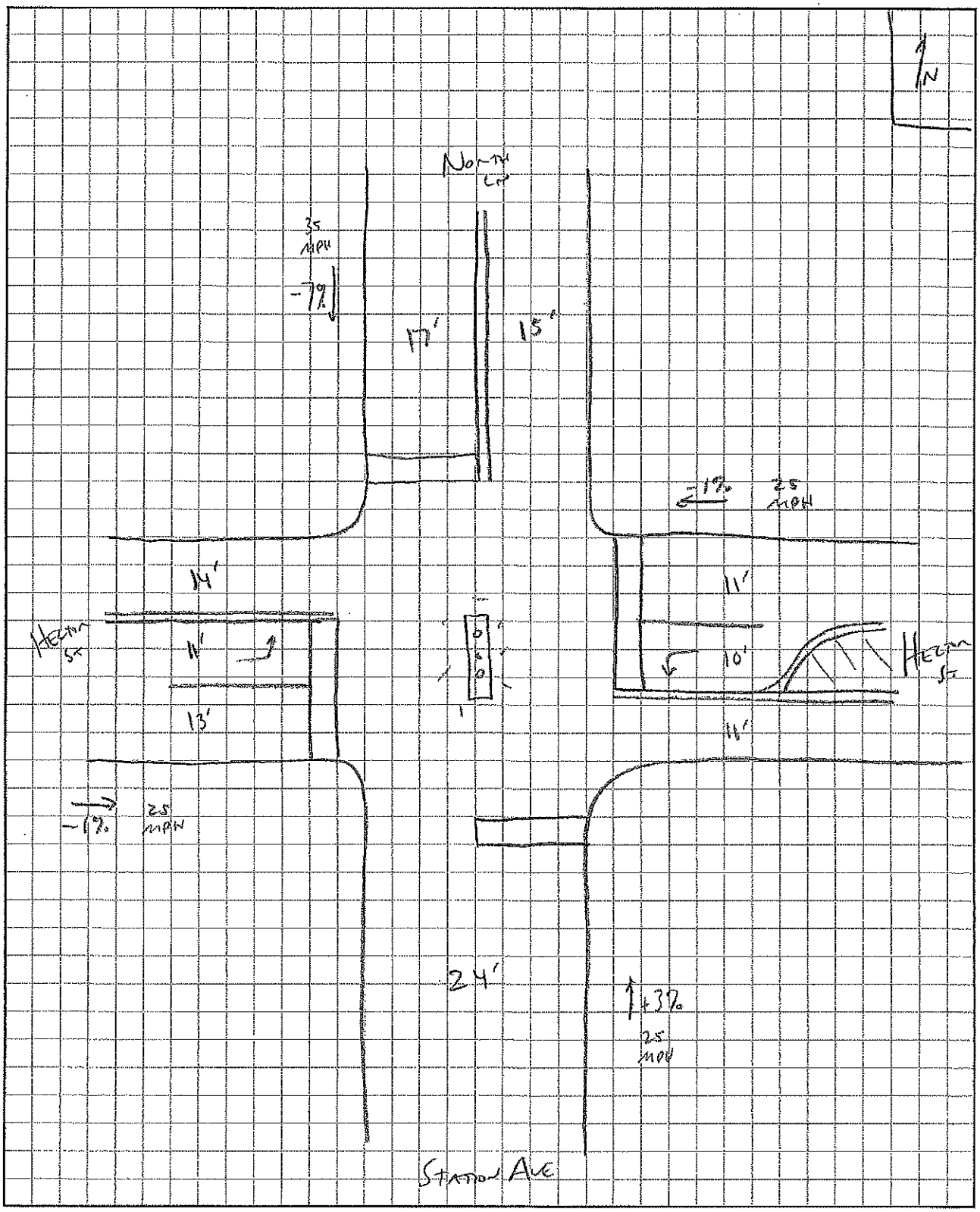


McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

Job _____ McMahon Project No. _____ Sheet 05 of _____

Description Hebron St + Designed By NDS Date _____

North Cir / Station Ave Checked By _____ Date _____

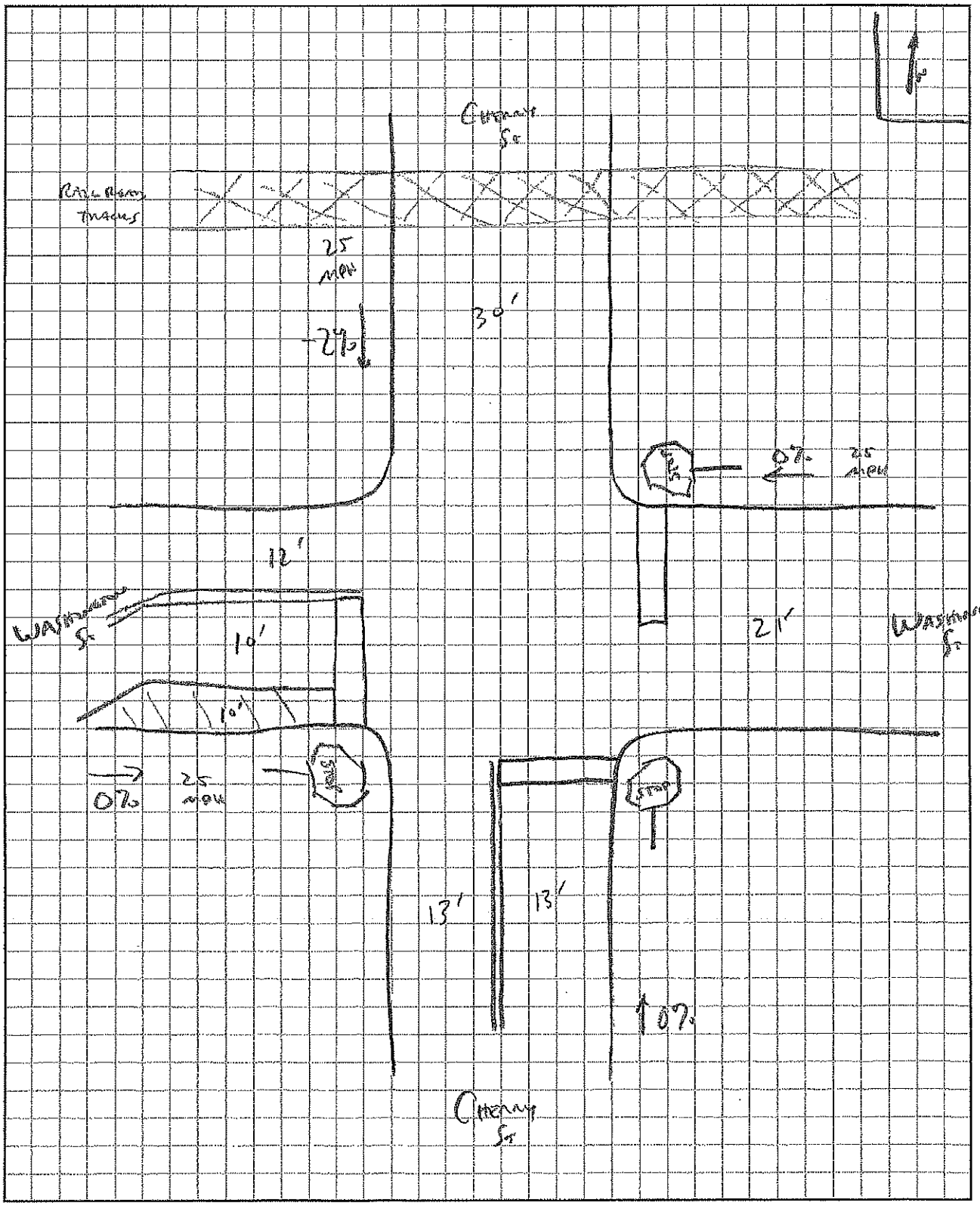


McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

Job _____ McMahon Project No. _____ Sheet 06 of ____

Description WASHINGTON ST + CHERRY ST Designed By MDB Date _____

Checked By _____ Date _____

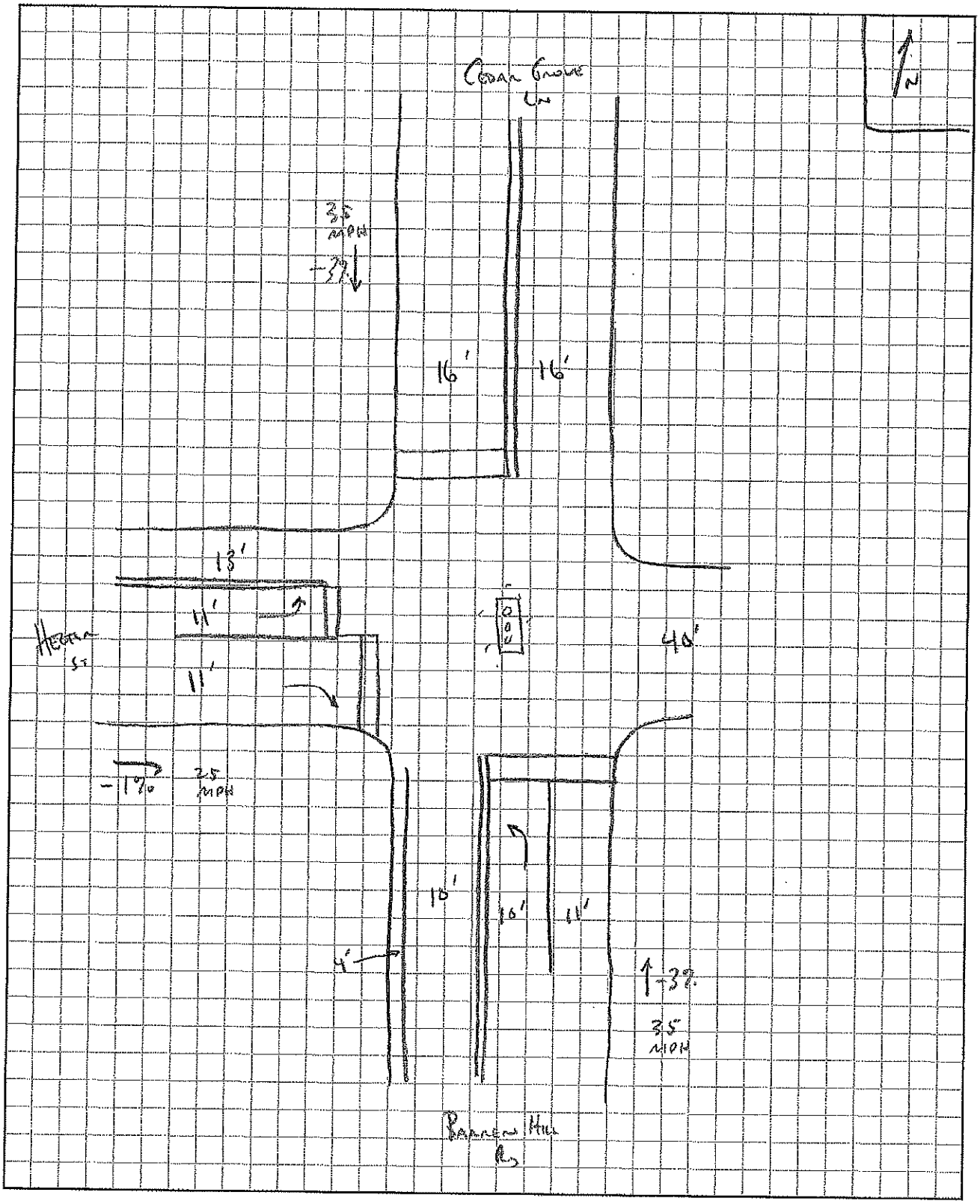


McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

Job _____ McMahon Project No. _____ Sheet _____ of _____

Description Heron St at Cedar Grove Rd + Barren Hill Rd Designed By NDB Date _____

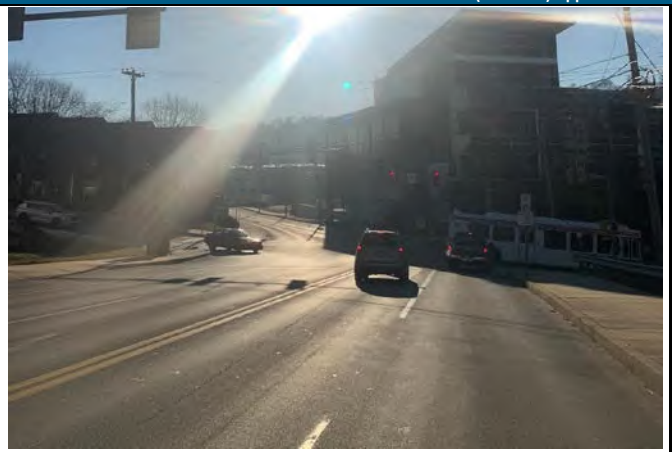
Checked By _____ Date _____



INTERSECTION INVENTORY SUMMARY

Elm Street (S.R. 3058) and Harry Street

Eastbound Elm Street (S.R. 3058) Approach



Lane Geometry

Through
Shared Through/Right

Roadway Classification
Urban – Minor Arterial

Roadway Ownership
State

Posted Speed Limit
25 MPH

Traffic Control
Signalized

Notes

Westbound Elm Street (S.R. 3058) Approach

Lane Geometry

Shared Left/Through

Roadway Classification
Urban – Minor Arterial

Roadway Ownership
State

Posted Speed Limit
25 MPH

Traffic Control
Signalized

Notes

Northbound Harry Street Approach

Lane Geometry

Shared Left/Right

Roadway Classification
Local

Roadway Ownership
Local

Posted Speed Limit
25 MPH

Traffic Control
Signalized

Notes

Southbound Harry Street Approach

Lane Geometry

Left
Through/Right

Roadway Classification
Local

Roadway Ownership
Local

Posted Speed Limit
25 MPH

Traffic Control
Signalized

Notes

INTERSECTION INVENTORY SUMMARY

Elm Street (S.R. 3058) and Ash Street

Eastbound Elm Street (S.R. 3058) Approach

Lane Geometry

Left
Shared Through/Right

Roadway Classification
Urban – Minor Arterial

Roadway Ownership
State

Posted Speed Limit
25 MPH

Traffic Control
Unsignalized

Notes

Northbound Ash Street Approach

Lane Geometry

Shared Left/Through/Right

Roadway Classification
Local

Roadway Ownership
Local

Posted Speed Limit
25 MPH

Traffic Control
Unsignalized

Notes

INTERSECTION INVENTORY SUMMARY

Elm Street (S.R. 3058) and Cherry Street

Eastbound Elm Street (S.R. 3058) Approach

Lane Geometry

Shared Through/Right

Roadway Classification

Urban – Minor Arterial

Roadway Ownership

State

Posted Speed Limit

25 MPH

Traffic Control

Unsignalized

Notes

Northbound Cherry Street Approach

Lane Geometry

Right

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

25 MPH

Traffic Control

Unsignalized

Notes

Southbound Cherry Street Approach

Lane Geometry

Shared Left/Through

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

25 MPH

Traffic Control

Unsignalized

Notes

INTERSECTION INVENTORY SUMMARY

Washington Street and Ash Street

Eastbound Washington Street Approach

Lane Geometry

Shared Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

25 MPH

Traffic Control

Unsignalized

Notes

Westbound Washington Street Approach

Lane Geometry

Left
Shared Through/Right

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

25 MPH

Traffic Control

Unsignalized

Notes

Northbound Ash Street Approach

Lane Geometry

Shared Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

25 MPH

Traffic Control

Unsignalized

Notes

Southbound Ash Street Approach

Lane Geometry

Shared Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

25 MPH

Traffic Control

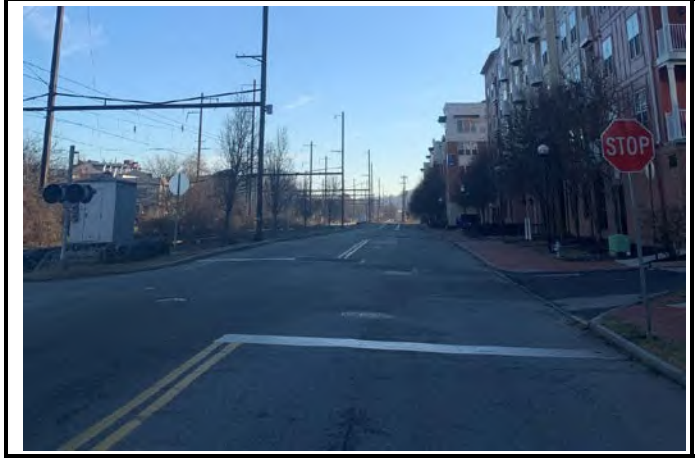
Unsignalized

Notes

INTERSECTION INVENTORY SUMMARY

Washington Street and Poplar Street

Eastbound Washington Street Approach



Lane Geometry

Shared Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

25 MPH

Traffic Control

Unsignalized

Notes

Westbound Washington Street Approach

Lane Geometry

Shared Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

25 MPH

Traffic Control

Unsignalized

Notes

Northbound Poplar Street Approach

Lane Geometry

Shared Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

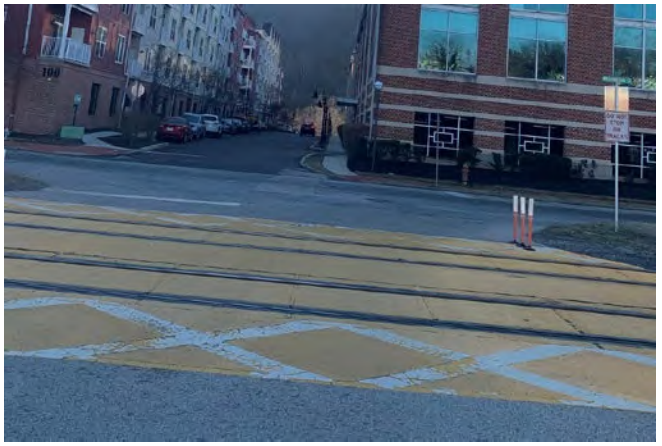
25 MPH

Traffic Control

Unsignalized

Notes

Southbound Poplar Street Approach



Lane Geometry

Shared Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

25 MPH

Traffic Control

Unsignalized

Notes

INTERSECTION INVENTORY SUMMARY

Washington Street and Cherry Street

Eastbound Washington Street Approach

Lane Geometry

Shared Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

25 MPH

Traffic Control

Unsignalized

Notes

Westbound Washington Street Approach

Lane Geometry

Shared Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

25 MPH

Traffic Control

Unsignalized

Notes

Northbound Cherry Street Approach

Lane Geometry

Shared Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

25 MPH

Traffic Control

Unsignalized

Notes

Southbound Cherry Street Approach

Lane Geometry

Shared Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

25 MPH

Traffic Control

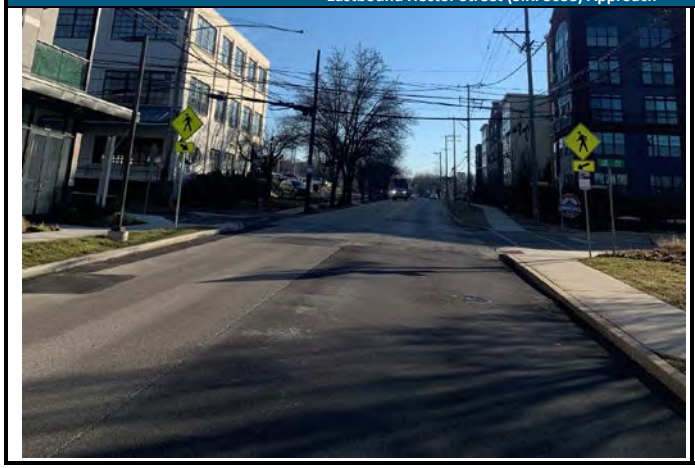
Unsignalized

Notes

INTERSECTION INVENTORY SUMMARY

Hector Street (S.R. 3058) and Spring Mill Avenue/Lee Street

Eastbound Hector Street (S.R. 3058) Approach



Lane Geometry

Shared Left/Through/Right

Roadway Classification

Urban – Minor Arterial

Roadway Ownership

State

Posted Speed Limit

25 MPH

Traffic Control

Unsignalized

Notes

Westbound Hector Street (S.R. 3058) Approach

Lane Geometry

Shared Left/Through/Right

Roadway Classification

Urban – Minor Arterial

Roadway Ownership

State

Posted Speed Limit

25 MPH

Traffic Control

Unsignalized

Notes

Northbound Lee Street Approach

Lane Geometry

Shared Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

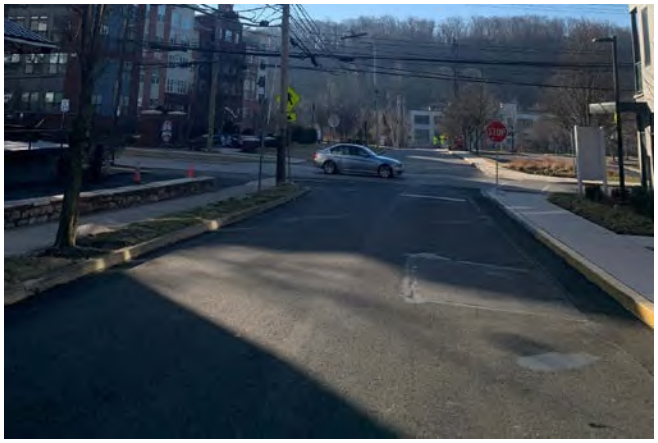
25 MPH

Traffic Control

Unsignalized

Notes

Southbound Lee Street Approach



Lane Geometry

Shared Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Local

Posted Speed Limit

25 MPH

Traffic Control

Unsignalized

Notes

INTERSECTION INVENTORY SUMMARY

Hector Street (S.R. 3058) and Spring Mill Avenue/Lee Street

Eastbound Hector Street (S.R. 3058) Approach

Lane Geometry

Left
SharedThrough/Right

Roadway Classification
Urban – Minor Arterial

Roadway Ownership
State

Posted Speed Limit
25 MPH

Traffic Control
Signalized

Notes

Westbound Hector Street (S.R. 3058) Approach

Lane Geometry

Left
SharedThrough/Right

Roadway Classification
Urban – Minor Arterial

Roadway Ownership
State

Posted Speed Limit
25 MPH

Traffic Control
Signalized

Notes

Northbound Station Avenue Approach

Lane Geometry

Shared Left/Through/Right

Roadway Classification
Local

Roadway Ownership
Local

Posted Speed Limit
25 MPH

Traffic Control
Signalized

Notes

Southbound North Lane (S.R. 3015) Approach

Lane Geometry

Shared Left/Through/Right

Roadway Classification
Urban - Major Collector

Roadway Ownership
State

Posted Speed Limit
25 MPH

Traffic Control
Signalized

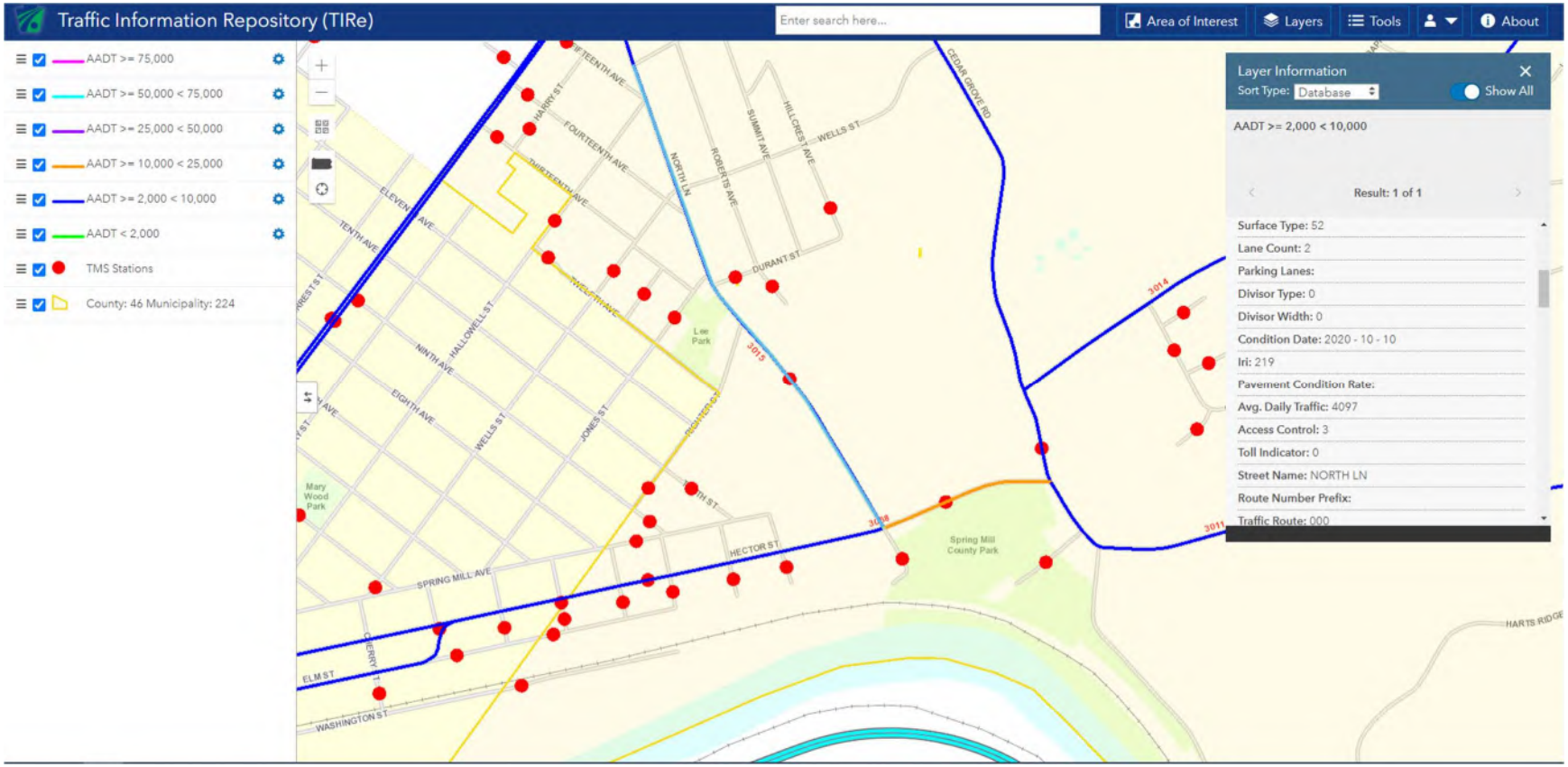
Notes

McMAHON
a Bowman company

Appendix B

Daily Traffic Data

NORTH LANE (S.R. 3015)



Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Cherry St
Location: 100 ft S of Elm St
Counter: 35342

Site Code: 3
Station ID: 3
A to B NB
Latitude: 40' 7262.0000 North
Longitude: 75' 29898.0000 West

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/02/22	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	0	21	4	1	3	0	0	0	0	0	0	0	0	29
13:00	0	16	1	1	3	0	0	0	0	0	0	0	0	21
14:00	2	32	**7**	1	2	0	0	0	0	0	0	0	0	44
15:00	1	25	6	1	2	0	0	0	0	0	0	0	0	35
16:00	1	51	7	**5**	**4**	0	0	0	0	0	0	0	0	68
17:00	**3**	**74**	2	1	4	0	0	0	0	0	0	0	0	**84**
18:00	0	45	3	0	1	0	0	0	0	0	0	0	0	49
19:00	0	39	6	0	2	0	0	0	0	0	0	0	0	47
20:00	0	9	3	0	0	0	0	0	0	0	0	0	0	12
21:00	1	10	0	0	0	0	0	0	0	0	0	0	0	11
22:00	0	10	1	0	0	0	0	0	0	0	0	0	0	11
23:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
Total	8	336	40	10	21	0	0	0	0	0	0	0	0	415
Percent	1.9%	81.0%	9.6%	2.4%	5.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak Vol.														
PM Peak Vol.	17:00 3	17:00 74	14:00 7	16:00 5	16:00 4									17:00 84

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Cherry St
Location: 100 ft S of Elm St
Counter: 35342

Site Code: 3
Station ID: 3
A to B NB
Latitude: 40' 7262.0000 North
Longitude: 75' 29898.0000 West

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/03/22	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
05:00	0	6	0	0	0	0	0	0	0	0	0	0	0	6
06:00	0	19	0	0	0	0	0	0	0	0	0	0	0	19
07:00	0	**39**	**4**	0	2	0	0	0	0	0	0	0	0	**45**
08:00	0	32	4	0	**3**	0	0	0	0	0	0	0	0	39
09:00	**2**	22	4	0	1	0	0	0	0	0	0	0	0	29
10:00	0	14	2	0	1	0	0	0	0	0	0	0	0	17
11:00	1	19	2	0	3	0	0	0	0	0	0	0	0	25
12 PM	1	40	4	0	1	0	0	0	0	0	0	0	0	46
13:00	2	23	1	0	9	0	0	0	0	0	0	0	0	35
14:00	0	14	5	0	2	0	0	0	0	0	0	0	0	21
15:00	0	30	**8**	0	2	0	0	0	0	0	0	0	0	40
16:00	2	46	3	**2**	**10**	0	0	0	0	0	0	0	0	63
17:00	**3**	**56**	3	0	0	0	0	0	0	0	0	0	0	62
18:00	0	36	2	1	4	0	0	0	0	0	0	0	0	43
19:00	1	56	7	0	0	0	**1**	0	0	0	0	0	0	**65**
20:00	0	8	0	0	3	0	0	0	0	0	0	0	0	11
21:00	0	8	0	0	0	0	0	0	0	0	0	0	0	8
22:00	1	9	2	0	0	0	0	0	0	0	0	0	0	12
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Total	13	485	51	3	41	0	1	0	0	0	0	0	0	594
Percent	2.2%	81.6%	8.6%	0.5%	6.9%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	07:00	07:00		08:00									07:00
Vol.	2	39	4		3									45
PM Peak	17:00	17:00	15:00	16:00	16:00		19:00							19:00
Vol.	3	56	8	2	10		1							65

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Cherry St
Location: 100 ft S of Elm St
Counter: 35342

Site Code: 3
Station ID: 3
A to B NB
Latitude: 40' 7262.0000 North
Longitude: 75' 29898.0000 West

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/04/22	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
05:00	0	6	0	0	0	0	0	0	0	0	0	0	0	6
06:00	0	15	1	0	0	0	0	0	0	0	0	0	0	16
07:00	0	**37**	**5**	0	**2**	0	0	0	0	0	0	0	0	**44**
08:00	0	36	0	0	1	0	0	0	0	0	0	0	0	37
09:00	0	23	5	0	0	**1**	0	0	0	0	0	0	0	29
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	0	119	11	0	3	1	0	0	0	0	0	0	0	134
Percent	0.0%	88.8%	8.2%	0.0%	2.2%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak		07:00	07:00		07:00	09:00								07:00
Vol.		37	5		2	1								44
PM Peak														
Vol.														
Grand Total	21	940	102	13	65	1	1	0	0	0	0	0	0	1143
Percent	1.8%	82.2%	8.9%	1.1%	5.7%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Cherry St
Location: 100 ft S of Elm St
Counter: 35342

Site Code: 3
Station ID: 3
A to B NB
Latitude: 40' 7262.0000 North
Longitude: 75' 29898.0000 West

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/02/22	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	0	30	4	0	2	**1**	0	0	0	0	0	0	0	37
13:00	0	27	7	0	**4**	1	0	0	0	0	0	0	0	39
14:00	0	20	5	**1**	3	0	0	**2**	0	0	0	0	0	31
15:00	**1**	36	2	1	4	0	0	0	0	0	0	0	0	44
16:00	1	44	10	1	0	0	0	0	0	0	0	0	0	56
17:00	0	55	**12**	1	4	0	0	0	0	0	0	0	0	**72**
18:00	0	**57**	9	1	2	0	0	0	0	0	0	0	0	69
19:00	1	29	4	1	1	0	0	0	0	0	0	0	0	36
20:00	0	24	4	0	0	0	0	0	0	0	0	0	0	28
21:00	0	13	2	1	2	0	0	0	0	0	0	0	0	18
22:00	0	4	4	0	0	0	0	0	0	0	0	0	0	8
23:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
Total	3	343	64	7	22	2	0	2	0	0	0	0	0	443
Percent	0.7%	77.4%	14.4%	1.6%	5.0%	0.5%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak Vol.														
PM Peak	15:00	18:00	17:00	14:00	13:00	12:00		14:00						17:00
Vol.	1	57	12	1	4	1		2						72

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Cherry St
Location: 100 ft S of Elm St
Counter: 35342

Site Code: 3
Station ID: 3
A to B NB
Latitude: 40' 7262.0000 North
Longitude: 75' 29898.0000 West

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/03/22	0	2	0	0	0	0	0	0	0	0	0	0	0	2
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
06:00	0	13	2	0	3	0	0	0	0	0	0	0	0	18
07:00	**1**	38	6	1	3	0	0	0	0	0	0	0	0	49
08:00	0	**45**	8	1	5	1	0	0	0	0	0	0	0	**60**
09:00	1	30	**15**	**2**	4	0	0	0	0	0	0	0	0	52
10:00	0	14	9	1	**6**	0	0	0	0	0	0	0	0	30
11:00	0	15	8	0	2	**2**	0	0	0	0	0	0	0	27
12 PM	0	37	6	1	**5**	0	0	0	0	0	0	0	0	49
13:00	**1**	20	8	0	3	0	0	0	0	0	0	0	0	32
14:00	0	11	3	1	3	**1**	0	0	0	0	0	0	0	19
15:00	1	21	4	0	0	0	0	**1**	0	0	0	0	0	27
16:00	1	44	**10**	**2**	2	0	0	0	0	0	0	0	0	59
17:00	0	41	5	0	4	0	0	0	0	0	0	0	0	50
18:00	0	**54**	10	0	2	0	0	0	0	0	0	0	0	**66**
19:00	0	31	6	0	0	0	0	0	0	0	0	0	0	37
20:00	0	21	2	0	0	0	0	0	0	0	0	0	0	23
21:00	0	14	2	0	0	0	0	0	0	0	0	0	0	16
22:00	0	13	4	0	0	0	0	0	0	0	0	0	0	17
23:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
Total	5	477	110	9	42	4	0	1	0	0	0	0	0	648
Percent	0.8%	73.6%	17.0%	1.4%	6.5%	0.6%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	09:00	09:00	10:00	11:00								08:00
Vol.	1	45	15	2	6	2								60
PM Peak	13:00	18:00	16:00	16:00	12:00	14:00		15:00						18:00
Vol.	1	54	10	2	5	1		1						66

Tri-State Traffic Data, Inc.
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TSTData.com

Road: Cherry St
Location: 100 ft S of Elm St
Counter: 35342

Site Code: 3
Station ID: 3
A to B NB
Latitude: 40' 7262.0000 North
Longitude: 75' 29898.0000 West

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/04/22	0	3	0	0	0	0	0	0	0	0	0	0	0	3
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	**1**	0	0	0	0	0	0	0	1
05:00	0	3	2	1	0	1	0	0	0	0	0	0	0	7
06:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
07:00	**2**	22	4	**2**	3	0	0	0	0	0	0	0	0	33
08:00	0	**25**	6	1	**4**	0	0	0	0	0	0	0	0	36
09:00	0	25	**11**	1	2	1	0	0	0	0	0	0	0	**40**
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	2	85	24	5	9	3	0	0	0	0	0	0	0	128
Percent	1.6%	66.4%	18.8%	3.9%	7.0%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	09:00	07:00	08:00	04:00								09:00
Vol.	2	25	11	2	4	1								40
PM Peak														
Vol.														
Grand Total	10	905	198	21	73	9	0	3	0	0	0	0	0	1219
Percent	0.8%	74.2%	16.2%	1.7%	6.0%	0.7%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Elm St EB
Location: 155 ft E of Harry St
Counter: 35344

Site Code: 1
Station ID: 1
A to B EB Travel Lane
Latitude: 40' 7215.0000 North
Longitude: 75' 30590.0000 West

EB Travel Lane

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/02/22	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	**2**	82	**36**	**4**	**26**	0	0	0	0	0	0	0	0	**150**
11:00	0	**96**	27	3	21	**1**	0	0	**1**	0	0	0	0	149
12 PM	0	111	29	1	13	**1**	**1**	0	0	0	0	0	0	156
13:00	0	91	34	**5**	**22**	0	0	0	0	0	0	0	0	152
14:00	0	177	48	4	21	0	0	0	0	0	0	0	0	250
15:00	4	176	**57**	5	19	0	1	**3**	0	0	0	0	0	265
16:00	**8**	198	55	4	14	1	0	1	0	0	0	0	0	281
17:00	2	**235**	43	4	12	0	0	0	0	0	0	0	0	**296**
18:00	2	183	43	5	16	0	0	0	0	0	0	0	0	249
19:00	0	104	28	1	8	1	0	0	0	0	0	0	0	142
20:00	0	53	15	0	4	0	0	0	0	0	0	0	0	72
21:00	0	53	14	2	7	0	0	0	0	0	0	0	0	76
22:00	0	3	0	0	4	0	0	0	0	0	0	0	0	7
23:00	0	3	0	0	1	0	0	0	0	0	0	0	0	4
Total	18	1565	429	38	188	4	2	4	1	0	0	0	0	2249
Percent	0.8%	69.6%	19.1%	1.7%	8.4%	0.2%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	10:00	11:00	10:00	10:00	10:00	11:00			11:00					10:00
Vol.	2	96	36	4	26	1			1					150
PM Peak	16:00	17:00	15:00	13:00	13:00	12:00	12:00	15:00						17:00
Vol.	8	235	57	5	22	1	1	3						296

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Elm St EB
Location: 155 ft E of Harry St
Counter: 35344

Site Code: 1
Station ID: 1
A to B EB Travel Lane
Latitude: 40' 7215.0000 North
Longitude: 75' 30590.0000 West

EB Travel Lane

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/03/22	0	1	1	0	0	0	0	0	0	0	0	0	0	2
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	19	10	0	3	0	0	0	0	0	0	0	0	32
06:00	0	29	14	1	7	0	0	0	0	0	0	0	0	51
07:00	0	**133**	**35**	1	16	**1**	0	**1**	0	0	**1**	0	0	**188**
08:00	0	87	28	5	16	1	0	0	0	0	0	0	0	137
09:00	0	114	33	2	18	0	0	1	0	0	0	0	0	168
10:00	0	79	24	**7**	**21**	0	0	1	0	0	0	0	0	132
11:00	**1**	32	11	7	4	0	0	0	0	0	0	0	0	55
12 PM	1	25	8	5	3	0	0	0	0	0	0	0	0	42
13:00	0	84	37	5	19	0	0	0	0	0	0	0	0	145
14:00	2	142	33	5	14	0	0	**1**	0	0	0	0	0	197
15:00	2	169	45	**6**	**21**	0	0	0	0	0	0	0	0	243
16:00	**3**	**207**	**65**	5	15	0	0	1	0	0	0	0	0	**296**
17:00	1	191	57	4	16	0	0	1	0	0	0	0	0	270
18:00	2	124	23	6	7	**1**	0	0	0	0	0	0	0	163
19:00	0	104	28	3	7	0	0	0	0	0	0	0	0	142
20:00	1	64	19	6	5	0	0	0	0	0	0	0	0	95
21:00	0	35	10	3	1	0	0	0	0	0	0	0	0	49
22:00	0	37	5	1	2	0	0	0	0	0	0	0	0	45
23:00	0	24	5	1	0	0	0	0	0	0	0	0	0	30
Total	13	1701	491	73	195	3	0	6	0	0	1	0	0	2483
Percent	0.5%	68.5%	19.8%	2.9%	7.9%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	07:00	07:00	10:00	10:00	07:00		07:00			07:00			07:00
Vol.	1	133	35	7	21	1		1			1			188
PM Peak	16:00	16:00	16:00	15:00	15:00	18:00		14:00						16:00
Vol.	3	207	65	6	21	1		1						296

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Elm St EB
Location: 155 ft E of Harry St
Counter: 35344

Site Code: 1
Station ID: 1
A to B EB Travel Lane
Latitude: 40' 7215.0000 North
Longitude: 75' 30590.0000 West

EB Travel Lane

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/04/22	**1**	11	4	0	1	0	0	0	0	0	0	0	0	17
01:00	0	5	1	0	2	0	0	0	0	0	0	0	0	8
02:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3
03:00	0	3	2	1	1	0	0	0	0	0	0	0	0	7
04:00	0	8	4	0	3	0	0	0	0	0	0	0	0	15
05:00	0	29	11	1	6	0	0	0	0	0	0	0	0	47
06:00	0	28	15	0	9	**1**	0	0	0	0	0	0	0	53
07:00	1	**166**	37	8	17	0	0	**1**	0	0	0	0	0	**230**
08:00	1	142	**45**	**11**	**25**	0	**1**	0	0	0	0	0	0	225
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	3	394	120	21	64	1	1	1	0	0	0	0	0	605
Percent	0.5%	65.1%	19.8%	3.5%	10.6%	0.2%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	00:00	07:00	08:00	08:00	08:00	06:00	08:00	07:00						07:00
Vol.	1	166	45	11	25	1	1	1						230
PM Peak														
Vol.														
Grand Total	34	3660	1040	132	447	8	3	11	1	0	1	0	0	5337
Percent	0.6%	68.6%	19.5%	2.5%	8.4%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Elm St EB
Location: 155 ft E of Harry St
Counter: 35344

Site Code: 1
Station ID: 1
A to B EB Travel Lane
Latitude: 40' 7215.0000 North
Longitude: 75' 30590.0000 West

EB Passing Lane

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/02/22	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	2	**26**	**14**	**3**	2	**2**	0	**2**	0	0	0	0	0	**51**
11:00	**3**	23	14	3	**4**	1	0	1	0	0	0	0	0	49
12 PM	0	35	12	2	3	0	**2**	0	0	0	0	0	0	54
13:00	3	40	12	4	6	0	0	0	**1**	0	0	0	0	66
14:00	3	46	10	**9**	**10**	0	1	0	0	0	0	0	0	79
15:00	2	47	13	1	6	0	0	0	0	0	0	0	0	69
16:00	4	61	14	1	9	0	0	0	0	0	0	0	0	89
17:00	4	64	12	1	3	**1**	0	**1**	0	0	0	0	0	86
18:00	**5**	**84**	**16**	2	7	0	0	0	0	0	0	0	0	**114**
19:00	0	57	5	1	10	0	0	0	0	0	0	0	0	73
20:00	0	39	10	2	4	0	0	0	0	0	0	0	0	55
21:00	1	30	9	2	7	0	0	0	0	0	0	0	0	49
22:00	0	21	2	1	1	0	0	0	0	0	0	0	0	25
23:00	0	7	3	0	1	0	0	0	0	0	0	0	0	11
Total	27	580	146	32	73	4	3	4	1	0	0	0	0	870
Percent	3.1%	66.7%	16.8%	3.7%	8.4%	0.5%	0.3%	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	10:00	10:00	10:00	11:00	10:00		10:00						10:00
Vol.	3	26	14	3	4	2		2						51
PM Peak	18:00	18:00	18:00	14:00	14:00	17:00	12:00	17:00	13:00					18:00
Vol.	5	84	16	9	10	1	2	1	1					114

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Elm St EB
Location: 155 ft E of Harry St
Counter: 35344

Site Code: 1
Station ID: 1
A to B EB Travel Lane
Latitude: 40' 7215.0000 North
Longitude: 75' 30590.0000 West

EB Passing Lane

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/03/22	0	7	1	0	1	0	0	0	0	0	0	0	0	9
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	1	0	0	2	0	0	0	0	0	0	0	0	3
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	5	0	1	0	0	0	0	0	0	0	0	0	6
05:00	1	17	2	0	2	0	0	0	0	0	0	0	0	22
06:00	2	27	8	1	5	0	0	0	0	0	0	0	0	43
07:00	0	**41**	**14**	1	8	**1**	0	0	0	0	0	0	0	**65**
08:00	0	37	11	0	8	0	**1**	0	**1**	0	0	0	0	58
09:00	2	27	6	**5**	6	0	0	0	0	0	0	0	0	46
10:00	2	23	4	1	3	0	0	0	0	0	0	0	0	33
11:00	**4**	36	11	0	**10**	1	0	**2**	0	0	0	0	0	64
12 PM	1	41	11	1	6	0	0	0	0	0	0	0	0	60
13:00	1	37	12	1	8	0	0	0	0	0	0	0	0	59
14:00	3	36	13	1	**12**	**1**	0	0	0	0	0	0	0	66
15:00	2	43	**15**	1	4	1	0	0	0	0	0	0	0	66
16:00	2	50	9	**4**	3	1	0	0	0	0	0	0	0	69
17:00	3	64	14	1	4	0	0	0	0	0	0	0	0	86
18:00	**4**	68	14	1	4	0	0	0	0	0	0	0	0	91
19:00	2	**72**	15	1	5	0	0	0	0	0	0	0	0	**95**
20:00	4	54	13	2	3	0	0	0	0	0	0	0	0	76
21:00	1	32	9	1	5	0	0	0	0	0	0	0	0	48
22:00	1	34	6	1	1	0	0	0	0	0	0	0	0	43
23:00	0	7	3	0	0	0	0	0	0	0	0	0	0	10
Total	35	761	191	24	100	5	1	2	1	0	0	0	0	1120
Percent	3.1%	67.9%	17.1%	2.1%	8.9%	0.4%	0.1%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	07:00	07:00	09:00	11:00	07:00	08:00	11:00	08:00					07:00
Vol.	4	41	14	5	10	1	1	2	1					65
PM Peak	18:00	19:00	15:00	16:00	14:00	14:00								19:00
Vol.	4	72	15	4	12	1								95

Tri-State Traffic Data, Inc.
610-466-1469
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Road: Elm St EB
Location: 155 ft E of Harry St
Counter: 35344

Site Code: 1
Station ID: 1
A to B EB Travel Lane
Latitude: 40' 7215.0000 North
Longitude: 75' 30590.0000 West

EB Passing Lane

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/04/22	1	14	1	0	0	0	0	0	0	0	0	0	0	16
01:00	0	3	2	0	0	0	0	0	0	0	0	0	0	5
02:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
05:00	0	12	1	0	0	0	0	0	0	0	0	0	0	13
06:00	0	17	9	1	4	0	0	0	0	0	0	0	0	31
07:00	**4**	46	**15**	**3**	5	0	**1**	0	0	0	0	0	0	**74**
08:00	2	**48**	8	0	**9**	0	0	0	0	0	0	0	0	67
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	7	147	36	4	18	0	1	0	0	0	0	0	0	213
Percent	3.3%	69.0%	16.9%	1.9%	8.5%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	07:00	07:00	08:00		07:00							07:00
Vol.	4	48	15	3	9		1							74
PM Peak														
Vol.														
Grand Total	69	1488	373	60	191	9	5	6	2	0	0	0	0	2203
Percent	3.1%	67.5%	16.9%	2.7%	8.7%	0.4%	0.2%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Elm St EB
Location: 155 ft E of Harry St
Counter: 35344

Site Code: 1
Station ID: 1
A to B EB Travel Lane
Latitude: 40' 7215.0000 North
Longitude: 75' 30590.0000 West

EB Travel Lane, EB Passing Lane

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/02/22	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	**4**	108	**50**	**7**	**28**	**2**	0	**2**	0	0	0	0	0	**201**
11:00	3	**119**	41	6	25	2	0	1	**1**	0	0	0	0	198
12 PM	0	146	41	3	16	**1**	**3**	0	0	0	0	0	0	210
13:00	3	131	46	9	28	0	0	0	**1**	0	0	0	0	218
14:00	3	223	58	**13**	**31**	0	1	0	0	0	0	0	0	329
15:00	6	223	**70**	6	25	0	1	**3**	0	0	0	0	0	334
16:00	**12**	259	69	5	23	1	0	1	0	0	0	0	0	370
17:00	6	**299**	55	5	15	1	0	1	0	0	0	0	0	**382**
18:00	7	267	59	7	23	0	0	0	0	0	0	0	0	363
19:00	0	161	33	2	18	1	0	0	0	0	0	0	0	215
20:00	0	92	25	2	8	0	0	0	0	0	0	0	0	127
21:00	1	83	23	4	14	0	0	0	0	0	0	0	0	125
22:00	0	24	2	1	5	0	0	0	0	0	0	0	0	32
23:00	0	10	3	0	2	0	0	0	0	0	0	0	0	15
Total	45	2145	575	70	261	8	5	8	2	0	0	0	0	3119
Percent	1.4%	68.8%	18.4%	2.2%	8.4%	0.3%	0.2%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	10:00	11:00	10:00	10:00	10:00	10:00		10:00	11:00					10:00
Vol.	4	119	50	7	28	2		2	1					201
PM Peak	16:00	17:00	15:00	14:00	14:00	12:00	12:00	15:00	13:00					17:00
Vol.	12	299	70	13	31	1	3	3	1					382

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Elm St EB
Location: 155 ft E of Harry St
Counter: 35344

Site Code: 1
Station ID: 1
A to B EB Travel Lane
Latitude: 40' 7215.0000 North
Longitude: 75' 30590.0000 West

EB Travel Lane, EB Passing Lane

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/03/22	0	8	2	0	1	0	0	0	0	0	0	0	0	11
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	1	0	0	2	0	0	0	0	0	0	0	0	3
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	5	0	1	0	0	0	0	0	0	0	0	0	6
05:00	1	36	12	0	5	0	0	0	0	0	0	0	0	54
06:00	2	56	22	2	12	0	0	0	0	0	0	0	0	94
07:00	0	**174**	**49**	2	**24**	**2**	0	1	0	0	**1**	0	0	**253**
08:00	0	124	39	5	24	1	**1**	0	**1**	0	0	0	0	195
09:00	2	141	39	7	24	0	0	1	0	0	0	0	0	214
10:00	2	102	28	**8**	24	0	0	1	0	0	0	0	0	165
11:00	**5**	68	22	7	14	1	0	**2**	0	0	0	0	0	119
12 PM	2	66	19	6	9	0	0	0	0	0	0	0	0	102
13:00	1	121	49	6	**27**	0	0	0	0	0	0	0	0	204
14:00	5	178	46	6	26	**1**	0	**1**	0	0	0	0	0	263
15:00	4	212	60	7	25	1	0	0	0	0	0	0	0	309
16:00	5	**257**	**74**	**9**	18	1	0	1	0	0	0	0	0	**365**
17:00	4	255	71	5	20	0	0	1	0	0	0	0	0	356
18:00	**6**	192	37	7	11	1	0	0	0	0	0	0	0	254
19:00	2	176	43	4	12	0	0	0	0	0	0	0	0	237
20:00	5	118	32	8	8	0	0	0	0	0	0	0	0	171
21:00	1	67	19	4	6	0	0	0	0	0	0	0	0	97
22:00	1	71	11	2	3	0	0	0	0	0	0	0	0	88
23:00	0	31	8	1	0	0	0	0	0	0	0	0	0	40
Total	48	2462	682	97	295	8	1	8	1	0	1	0	0	3603
Percent	1.3%	68.3%	18.9%	2.7%	8.2%	0.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	07:00	07:00	10:00	07:00	07:00	08:00	11:00	08:00		07:00			07:00
Vol.	5	174	49	8	24	2	1	2	1		1			253
PM Peak	18:00	16:00	16:00	16:00	13:00	14:00		14:00						16:00
Vol.	6	257	74	9	27	1		1						365

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Elm St EB
Location: 155 ft E of Harry St
Counter: 35344

Site Code: 1
Station ID: 1
A to B EB Travel Lane
Latitude: 40' 7215.0000 North
Longitude: 75' 30590.0000 West

EB Travel Lane, EB Passing Lane

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/04/22	2	25	5	0	1	0	0	0	0	0	0	0	0	33
01:00	0	8	3	0	2	0	0	0	0	0	0	0	0	13
02:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
03:00	0	4	2	1	1	0	0	0	0	0	0	0	0	8
04:00	0	11	4	0	3	0	0	0	0	0	0	0	0	18
05:00	0	41	12	1	6	0	0	0	0	0	0	0	0	60
06:00	0	45	24	1	13	**1**	0	0	0	0	0	0	0	84
07:00	**5**	**212**	52	**11**	22	0	**1**	**1**	0	0	0	0	0	**304**
08:00	3	190	**53**	11	**34**	0	1	0	0	0	0	0	0	292
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	10	541	156	25	82	1	2	1	0	0	0	0	0	818
Percent	1.2%	66.1%	19.1%	3.1%	10.0%	0.1%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	07:00	08:00	07:00	08:00	06:00	07:00	07:00						07:00
Vol.	5	212	53	11	34	1	1	1						304
PM Peak Vol.														
Grand Total	103	5148	1413	192	638	17	8	17	3	0	1	0	0	7540
Percent	1.4%	68.3%	18.7%	2.5%	8.5%	0.2%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	

Tri-State Traffic Data, Inc.

610-466-1469
TSTData.com

Road: Elm St WB
Location: 155 ft E of Harry St
Counter: 35306

Site Code: 1
Station ID: 1
WB
Latitude: 40' 7215.0000 North
Longitude: 75' 30590.0000 West

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/02/22	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	0	**46**	**8**	**4**	5	0	0	**1**	**1**	0	0	0	0	**65**
11:00	0	45	7	2	**7**	0	0	1	1	0	0	0	0	63
12 PM	0	41	8	**3**	1	0	0	0	0	0	0	0	0	53
13:00	0	46	3	0	3	0	0	**1**	**1**	0	0	0	0	54
14:00	0	50	**14**	0	3	0	0	1	0	0	0	0	0	68
15:00	0	64	9	0	**5**	**1**	0	1	1	0	0	0	0	81
16:00	0	99	9	0	5	0	0	0	0	0	0	0	0	113
17:00	0	**109**	12	0	4	0	0	0	0	0	0	0	0	**125**
18:00	0	80	10	0	3	0	0	0	0	0	0	0	0	93
19:00	0	48	4	0	2	0	0	0	0	0	0	0	0	54
20:00	0	22	4	0	1	0	0	0	0	0	0	0	0	27
21:00	0	17	4	0	1	0	0	0	0	0	0	0	0	22
22:00	0	18	3	0	0	0	0	0	0	0	0	0	0	21
23:00	0	8	1	0	0	0	0	0	0	0	0	0	0	9
Total	0	693	96	9	40	1	0	5	4	0	0	0	0	848
Percent	0.0%	81.7%	11.3%	1.1%	4.7%	0.1%	0.0%	0.6%	0.5%	0.0%	0.0%	0.0%	0.0%	
AM Peak		10:00	10:00	10:00	11:00			10:00	10:00					10:00
Vol.		46	8	4	7			1	1					65
PM Peak		17:00	14:00	12:00	15:00	15:00		13:00	13:00					17:00
Vol.		109	14	3	5	1		1	1					125

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Elm St WB
Location: 155 ft E of Harry St
Counter: 35306

Site Code: 1
Station ID: 1
WB
Latitude: 40' 7215.0000 North
Longitude: 75' 30590.0000 West

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/03/22	0	2	1	0	0	0	0	0	0	0	0	0	0	3
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
05:00	0	18	2	0	3	0	0	0	0	0	0	0	0	23
06:00	0	65	6	0	3	0	0	0	0	0	0	0	0	74
07:00	0	**117**	14	0	**4**	0	0	0	0	0	0	0	0	**135**
08:00	0	73	9	0	3	1	0	0	0	0	0	0	0	86
09:00	0	67	11	0	4	0	0	0	**1**	0	0	0	0	83
10:00	0	43	6	0	2	**2**	0	0	1	0	0	0	0	54
11:00	0	45	**15**	0	2	0	0	**1**	0	0	0	0	0	63
12 PM	0	55	9	0	2	0	0	1	0	0	0	0	0	67
13:00	0	40	11	0	1	0	0	**2**	0	0	0	0	0	54
14:00	**3**	39	13	1	**6**	0	0	1	0	0	0	0	0	63
15:00	0	54	**15**	0	3	0	0	0	0	0	0	0	0	72
16:00	0	66	7	**2**	3	0	0	0	0	0	0	0	0	78
17:00	0	**99**	9	0	4	0	0	0	0	0	0	0	0	**112**
18:00	0	72	12	0	3	0	0	0	0	0	0	0	0	87
19:00	0	58	5	0	1	0	0	0	0	0	0	0	0	64
20:00	0	16	2	0	1	0	0	0	0	0	0	0	0	19
21:00	0	24	2	1	0	0	0	0	0	0	0	0	0	27
22:00	0	15	1	0	0	0	0	0	0	0	0	0	0	16
23:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
Total	3	978	150	4	45	3	0	5	2	0	0	0	0	1190
Percent	0.3%	82.2%	12.6%	0.3%	3.8%	0.3%	0.0%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	
AM Peak		07:00	11:00		07:00	10:00		11:00	09:00					07:00
Vol.		117	15		4	2		1	1					135
PM Peak	14:00	17:00	15:00	16:00	14:00			13:00						17:00
Vol.	3	99	15	2	6			2						112

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Elm St WB
Location: 155 ft E of Harry St
Counter: 35306

Site Code: 1
Station ID: 1
WB
Latitude: 40' 7215.0000 North
Longitude: 75' 30590.0000 West

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/04/22	0	6	0	0	0	0	0	0	0	0	0	0	0	6
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
05:00	0	20	4	0	0	0	0	0	0	0	0	0	0	24
06:00	0	68	5	0	1	0	0	**1**	0	0	0	0	0	75
07:00	0	**99**	8	**1**	**2**	0	0	0	0	0	0	0	0	**110**
08:00	0	71	**11**	0	1	0	0	0	**2**	0	0	0	0	85
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	0	270	28	1	4	0	0	1	2	0	0	0	0	306
Percent	0.0%	88.2%	9.2%	0.3%	1.3%	0.0%	0.0%	0.3%	0.7%	0.0%	0.0%	0.0%	0.0%	
AM Peak		07:00	08:00	07:00	07:00			06:00	08:00					07:00
Vol.		99	11	1	2			1	2					110
PM Peak														
Vol.														
Grand Total	3	1941	274	14	89	4	0	11	8	0	0	0	0	2344
Percent	0.1%	82.8%	11.7%	0.6%	3.8%	0.2%	0.0%	0.5%	0.3%	0.0%	0.0%	0.0%	0.0%	

Tri-State Traffic Data, Inc.

610-466-1469
TSTData.com

Road: Hector St
Location: 80 ft E of Lee St
Counter: 35339

Site Code: 4
Station ID: 4
A to B EB
Latitude: 40' 75394.0000 North
Longitude: 75' 28803.0000 West

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/02/22	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	2	193	52	2	26	2	**1**	0	**1**	0	0	0	0	279
14:00	0	306	68	**3**	**36**	**4**	1	**3**	0	0	0	0	0	421
15:00	4	374	92	3	36	2	1	0	1	0	0	0	0	513
16:00	**6**	**504**	**104**	1	29	2	1	0	0	0	0	0	0	**647**
17:00	1	492	77	1	26	3	0	1	0	0	0	0	0	601
18:00	2	298	56	1	16	0	0	0	0	0	0	0	0	373
19:00	2	181	42	1	13	0	0	1	0	0	0	0	0	240
20:00	0	134	18	1	3	0	0	0	0	0	0	0	0	156
21:00	0	120	20	0	10	0	0	0	0	0	0	0	0	150
22:00	0	70	10	1	1	0	0	0	0	0	0	0	0	82
23:00	0	35	4	1	0	1	0	0	0	0	0	0	0	41
Total	17	2707	543	15	196	14	4	5	2	0	0	0	0	3503
Percent	0.5%	77.3%	15.5%	0.4%	5.6%	0.4%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak Vol.														
PM Peak	16:00	16:00	16:00	14:00	14:00	14:00	13:00	14:00	13:00					16:00
Vol.	6	504	104	3	36	4	1	3	1					647

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Hector St
Location: 80 ft E of Lee St
Counter: 35339

Site Code: 4
Station ID: 4
A to B EB
Latitude: 40' 75394.0000 North
Longitude: 75' 28803.0000 West

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/03/22	0	12	4	0	0	0	0	0	0	0	0	0	0	16
01:00	0	6	2	0	0	0	0	0	0	0	0	0	0	8
02:00	0	2	1	0	1	0	0	0	0	0	0	0	0	4
03:00	0	2	5	0	2	0	0	0	0	0	0	0	0	9
04:00	0	8	2	0	0	1	0	0	0	0	0	0	0	11
05:00	0	30	10	0	2	0	0	0	0	0	0	0	0	42
06:00	0	84	23	2	13	0	0	0	0	0	0	0	0	122
07:00	**7**	**273**	48	3	22	2	0	1	0	0	0	0	0	**356**
08:00	5	246	**52**	5	27	**3**	**1**	**3**	0	0	0	0	0	342
09:00	0	180	43	4	23	1	0	1	1	0	0	0	0	253
10:00	2	127	34	**7**	24	0	0	0	0	0	0	0	0	194
11:00	2	191	42	4	**30**	2	0	0	**2**	0	0	0	0	273
12 PM	0	209	42	2	13	1	0	**3**	0	0	0	0	0	270
13:00	0	180	41	**5**	28	1	0	1	0	0	0	0	0	256
14:00	1	239	63	4	**33**	**3**	0	1	0	0	0	0	0	344
15:00	**6**	325	63	2	28	3	0	2	0	0	0	0	0	429
16:00	5	**449**	**95**	2	17	3	0	0	0	0	0	0	0	**571**
17:00	2	449	66	1	21	2	0	1	0	0	0	0	0	542
18:00	4	297	42	0	15	0	**1**	0	0	0	0	0	0	359
19:00	2	210	34	1	2	0	0	0	0	0	0	0	0	249
20:00	0	144	29	1	7	0	0	0	0	0	0	0	0	181
21:00	0	115	19	0	4	0	0	0	0	0	0	0	0	138
22:00	0	64	9	1	4	0	0	0	0	0	0	0	0	78
23:00	0	21	3	1	1	0	0	0	0	0	0	0	0	26
Total	36	3863	772	45	317	22	2	13	3	0	0	0	0	5073
Percent	0.7%	76.1%	15.2%	0.9%	6.2%	0.4%	0.0%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	07:00	08:00	10:00	11:00	08:00	08:00	08:00	11:00					07:00
Vol.	7	273	52	7	30	3	1	3	2					356
PM Peak	15:00	16:00	16:00	13:00	14:00	14:00	18:00	12:00						16:00
Vol.	6	449	95	5	33	3	1	3						571

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Hector St
Location: 80 ft E of Lee St
Counter: 35339

Site Code: 4
Station ID: 4
A to B EB
Latitude: 40' 75394.0000 North
Longitude: 75' 28803.0000 West

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/04/22	0	14	2	0	0	0	0	0	0	0	0	0	0	16
01:00	0	7	3	0	0	0	0	0	0	0	0	0	0	10
02:00	0	6	2	0	0	0	0	0	0	0	0	0	0	8
03:00	0	4	3	0	1	0	0	0	0	0	0	0	0	8
04:00	0	9	1	1	1	0	0	0	0	0	0	0	0	12
05:00	0	24	10	1	3	0	0	0	0	0	0	0	0	38
06:00	2	86	22	2	14	**3**	0	0	0	0	0	0	0	129
07:00	**4**	**268**	44	2	17	1	0	**2**	0	0	0	0	0	338
08:00	2	261	**54**	**5**	**32**	2	0	0	0	0	0	0	0	**356**
09:00	3	174	36	4	21	2	0	2	0	0	0	0	0	242
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	11	853	177	15	89	8	0	4	0	0	0	0	0	1157
Percent	1.0%	73.7%	15.3%	1.3%	7.7%	0.7%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	07:00	08:00	08:00	08:00	06:00		07:00						08:00
Vol.	4	268	54	5	32	3		2						356
PM Peak														
Vol.														
Grand Total	64	7423	1492	75	602	44	6	22	5	0	0	0	0	9733
Percent	0.7%	76.3%	15.3%	0.8%	6.2%	0.5%	0.1%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Hector St
Location: 80 ft E of Lee St
Counter: 35339

Site Code: 4
Station ID: 4
A to B EB
Latitude: 40' 75394.0000 North
Longitude: 75' 28803.0000 West

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/02/22	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	2	177	39	3	10	1	0	0	0	0	0	0	0	232
14:00	3	192	28	4	8	0	1	1	0	0	0	0	0	237
15:00	5	242	**46**	**6**	**25**	**4**	0	1	0	0	0	0	0	329
16:00	**7**	**323**	29	2	12	4	**2**	0	0	0	0	0	0	**379**
17:00	6	260	37	2	8	0	0	**2**	0	0	0	0	0	315
18:00	3	224	36	1	8	1	0	0	0	0	0	0	0	273
19:00	4	128	12	1	2	0	0	1	0	0	0	0	0	148
20:00	2	81	13	1	0	0	0	0	0	0	0	0	0	97
21:00	0	75	5	1	3	0	0	0	0	0	0	0	0	84
22:00	0	40	8	1	0	0	0	0	0	0	0	0	0	49
23:00	0	20	3	1	1	0	0	0	0	0	0	0	0	25
Total	32	1762	256	23	77	10	3	5	0	0	0	0	0	2168
Percent	1.5%	81.3%	11.8%	1.1%	3.6%	0.5%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak Vol.														
PM Peak	16:00	16:00	15:00	15:00	15:00	15:00	16:00	17:00						16:00
Vol.	7	323	46	6	25	4	2	2						379

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Hector St
Location: 80 ft E of Lee St
Counter: 35339

Site Code: 4
Station ID: 4
A to B EB
Latitude: 40' 75394.0000 North
Longitude: 75' 28803.0000 West

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/03/22	0	6	1	0	0	0	0	0	0	0	0	0	0	7
01:00	0	6	1	0	1	0	0	0	0	0	0	0	0	8
02:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
03:00	0	9	4	0	0	0	0	0	0	0	0	0	0	13
04:00	0	14	5	0	0	1	0	0	0	0	0	0	0	20
05:00	0	55	13	2	2	0	0	0	0	0	0	0	0	72
06:00	0	130	18	1	8	0	0	0	0	0	0	0	0	157
07:00	**5**	255	46	2	12	**3**	0	0	0	0	0	0	0	323
08:00	5	**358**	**65**	**7**	11	3	0	0	0	0	0	0	0	**449**
09:00	0	206	36	3	10	0	0	0	0	0	0	0	0	255
10:00	2	140	24	3	**19**	0	0	0	0	0	0	0	0	188
11:00	0	150	41	1	6	1	**1**	**1**	0	0	0	0	0	201
12 PM	2	192	30	**3**	14	2	0	**1**	0	0	0	0	0	244
13:00	1	174	35	1	13	0	0	0	0	0	0	0	0	224
14:00	3	181	43	3	11	2	0	1	0	0	0	0	0	244
15:00	6	248	**48**	2	**24**	1	**1**	0	0	0	0	0	0	330
16:00	**7**	**286**	37	3	8	1	1	0	0	0	0	0	0	**343**
17:00	3	283	36	1	7	**4**	1	0	0	0	0	0	0	335
18:00	4	214	26	1	3	2	1	0	0	0	0	0	0	251
19:00	3	126	15	1	3	0	0	0	0	0	0	0	0	148
20:00	1	90	7	1	2	0	0	0	0	0	0	0	0	101
21:00	0	65	4	1	1	0	0	0	0	0	0	0	0	71
22:00	0	33	4	1	0	0	0	0	0	0	0	0	0	38
23:00	0	12	2	1	1	0	0	0	0	0	0	0	0	16
Total	42	3237	541	38	156	20	5	3	0	0	0	0	0	4042
Percent	1.0%	80.1%	13.4%	0.9%	3.9%	0.5%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	08:00	08:00	10:00	07:00	11:00	11:00						08:00
Vol.	5	358	65	7	19	3	1	1						449
PM Peak	16:00	16:00	15:00	12:00	15:00	17:00	15:00	12:00						16:00
Vol.	7	286	48	3	24	4	1	1						343

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Hector St
Location: 80 ft E of Lee St
Counter: 35339

Site Code: 4
Station ID: 4
A to B EB
Latitude: 40' 75394.0000 North
Longitude: 75' 28803.0000 West

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/04/22	0	12	0	0	0	0	0	0	0	0	0	0	0	12
01:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
02:00	0	3	4	0	1	0	0	0	0	0	0	0	0	8
03:00	0	7	0	0	0	0	0	0	0	0	0	0	0	7
04:00	0	7	4	0	0	**2**	0	0	0	0	0	0	0	13
05:00	0	53	8	2	2	1	0	0	0	0	0	0	0	66
06:00	1	105	18	0	5	1	0	0	0	0	0	0	0	130
07:00	2	236	39	**4**	4	2	0	0	0	0	0	0	0	287
08:00	**3**	**271**	**45**	3	**9**	0	0	0	0	0	0	0	0	**331**
09:00	2	222	40	2	6	0	0	**1**	0	0	0	0	0	273
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	8	919	159	11	27	6	0	1	0	0	0	0	0	1131
Percent	0.7%	81.3%	14.1%	1.0%	2.4%	0.5%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	08:00	08:00	07:00	08:00	04:00		09:00						08:00
Vol.	3	271	45	4	9	2		1						331
PM Peak Vol.														
Grand Total	82	5918	956	72	260	36	8	9	0	0	0	0	0	7341
Percent	1.1%	80.6%	13.0%	1.0%	3.5%	0.5%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	

Tri-State Traffic Data, Inc.

610-466-1469
TSTData.com

Road: Poplar St
Location: 80 ft S of Elm St
Counter: 37030

Site Code: 2
Station ID: 2
A to B NB
Latitude: 40' 7219.0000 North
Longitude: 75' 30198.0000 West

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/02/22	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 PM	0	4	**1**	0	0	0	0	0	0	0	0	0	0	5
13:00	1	**6**	0	0	0	0	0	0	0	0	0	0	0	7
14:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
15:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
16:00	1	6	1	0	0	**1**	0	0	0	0	0	0	0	**9**
17:00	**2**	3	1	0	0	0	0	0	0	0	0	0	0	6
18:00	1	2	1	0	0	0	0	0	0	0	0	0	0	4
19:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
20:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
21:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
22:00	0	4	1	0	**1**	0	0	0	0	0	0	0	0	6
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	5	43	6	0	1	1	0	0	0	0	0	0	0	56
Percent	8.9%	76.8%	10.7%	0.0%	1.8%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak Vol.														
PM Peak Vol.	17:00 2	13:00 6	12:00 1		22:00 1	16:00 1								16:00 9

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Poplar St
Location: 80 ft S of Elm St
Counter: 37030

Site Code: 2
Station ID: 2
A to B NB
Latitude: 40' 7219.0000 North
Longitude: 75' 30198.0000 West

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/03/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
08:00	0	0	0	0	0	**1**	0	0	0	0	0	0	0	1
09:00	0	**3**	0	0	0	0	0	0	0	0	0	0	0	3
10:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
11:00	0	1	**3**	0	**1**	0	0	0	0	0	0	0	0	**5**
12 PM	0	5	1	0	0	0	0	0	0	0	0	0	0	6
13:00	0	1	**2**	0	**1**	0	0	0	0	0	0	0	0	4
14:00	0	0	1	0	1	**1**	0	0	0	0	0	0	0	3
15:00	0	4	2	0	0	0	0	0	0	0	0	0	0	6
16:00	0	**6**	0	0	1	0	0	0	0	0	0	0	0	**7**
17:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
18:00	0	6	1	0	0	0	0	0	0	0	0	0	0	7
19:00	0	3	0	0	1	0	0	0	0	0	0	0	0	4
20:00	0	1	0	0	1	0	0	0	0	0	0	0	0	2
21:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
22:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	43	12	0	6	2	0	0	0	0	0	0	0	63
Percent	0.0%	68.3%	19.0%	0.0%	9.5%	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak		09:00	11:00		11:00	08:00								11:00
Vol.		3	3		1	1								5
PM Peak		16:00	13:00		13:00	14:00								16:00
Vol.		6	2		1	1								7

Tri-State Traffic Data, Inc.
610-466-1469
TSTData.com

Road: Poplar St
Location: 80 ft S of Elm St
Counter: 37030

Site Code: 2
Station ID: 2
A to B NB
Latitude: 40' 7219.0000 North
Longitude: 75' 30198.0000 West

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/04/22	**1**	1	0	0	0	0	0	0	0	0	0	0	0	2
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	**2**	0	0	0	0	0	0	0	0	0	0	0	2
06:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
07:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
08:00	0	0	**2**	**1**	0	0	0	0	0	0	0	0	0	**3**
09:00	0	1	1	0	**1**	0	0	0	0	0	0	0	0	3
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	1	7	3	1	1	0	0	0	0	0	0	0	0	13
Percent	7.7%	53.8%	23.1%	7.7%	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	00:00	05:00	08:00	08:00	09:00									08:00
Vol.	1	2	2	1	1									3
PM Peak														
Vol.														
Grand Total	6	93	21	1	8	3	0	0	0	0	0	0	0	132
Percent	4.5%	70.5%	15.9%	0.8%	6.1%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

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610-466-1469
TSTData.com

Road: Poplar St
Location: 80 ft S of Elm St
Counter: 37030

Site Code: 2
Station ID: 2
A to B NB
Latitude: 40' 7219.0000 North
Longitude: 75' 30198.0000 West

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/02/22	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	0	**1**	0	0	**1**	0	0	0	0	0	0	0	0	**2**
12 PM	**1**	16	0	0	3	0	0	**1**	0	0	0	0	0	21
13:00	1	16	1	0	4	0	0	0	0	0	0	0	0	22
14:00	0	19	2	0	**8**	0	0	0	0	0	0	0	0	**29**
15:00	0	10	1	0	1	0	0	0	0	0	0	0	0	12
16:00	0	**22**	0	0	3	0	0	0	0	0	0	0	0	25
17:00	1	13	**3**	0	4	0	0	0	0	0	0	0	0	21
18:00	1	20	2	0	2	0	0	0	0	0	0	0	0	25
19:00	0	13	2	0	1	0	0	0	0	0	0	0	0	16
20:00	0	12	1	0	0	0	0	0	0	0	0	0	0	13
21:00	0	5	3	0	1	0	0	0	0	0	0	0	0	9
22:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
23:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3
Total	4	153	16	0	28	0	0	1	0	0	0	0	0	202
Percent	2.0%	75.7%	7.9%	0.0%	13.9%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak		11:00			11:00									11:00
Vol.		1			1									2
PM Peak	12:00	16:00	17:00		14:00			12:00						14:00
Vol.	1	22	3		8			1						29

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Road: Poplar St
Location: 80 ft S of Elm St
Counter: 37030

Site Code: 2
Station ID: 2
A to B NB
Latitude: 40' 7219.0000 North
Longitude: 75' 30198.0000 West

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/03/22	0	0	2	0	0	0	0	0	0	0	0	0	0	2
01:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
05:00	0	4	0	0	1	0	0	0	0	0	0	0	0	5
06:00	**1**	7	3	0	0	0	0	0	0	0	0	0	0	11
07:00	0	19	3	0	1	0	0	0	0	0	0	0	0	23
08:00	0	7	1	0	1	0	0	0	0	0	0	0	0	9
09:00	0	**25**	2	**2**	1	0	0	0	0	0	0	0	0	**30**
10:00	0	12	2	0	**5**	0	0	0	0	0	0	0	0	19
11:00	0	11	**4**	0	4	0	0	0	0	0	0	0	0	19
12 PM	0	16	**4**	**1**	3	0	0	0	0	0	0	0	0	24
13:00	0	9	2	0	4	0	0	0	0	0	0	0	0	15
14:00	0	9	2	0	1	0	0	0	0	0	0	0	0	12
15:00	0	9	0	0	**5**	0	0	0	0	0	0	0	0	14
16:00	0	19	2	1	1	0	0	0	0	0	0	0	0	23
17:00	0	18	3	0	2	0	0	0	0	0	0	0	0	23
18:00	0	**28**	2	1	0	0	0	0	0	0	0	0	0	**31**
19:00	0	23	1	0	2	0	0	0	0	0	0	0	0	26
20:00	0	14	2	0	0	0	0	0	0	0	0	0	0	16
21:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
22:00	0	4	3	0	0	0	0	0	0	0	0	0	0	7
23:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
Total	1	242	40	5	31	0	0	0	0	0	0	0	0	319
Percent	0.3%	75.9%	12.5%	1.6%	9.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	06:00	09:00	11:00	09:00	10:00									09:00
Vol.	1	25	4	2	5									30
PM Peak		18:00	12:00	12:00	15:00									18:00
Vol.		28	4	1	5									31

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Road: Poplar St
Location: 80 ft S of Elm St
Counter: 37030

Site Code: 2
Station ID: 2
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Latitude: 40' 7219.0000 North
Longitude: 75' 30198.0000 West

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
02/04/22	0	2	1	**1**	1	0	0	0	0	0	0	0	0	5
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
06:00	0	6	0	0	0	0	0	0	0	0	0	0	0	6
07:00	0	**20**	**4**	0	**3**	0	0	0	0	0	0	0	0	**27**
08:00	1	11	3	0	0	0	0	0	0	0	0	0	0	15
09:00	**2**	13	3	0	1	0	0	0	0	0	0	0	0	19
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	3	57	11	1	5	0	0	0	0	0	0	0	0	77
Percent	3.9%	74.0%	14.3%	1.3%	6.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	07:00	07:00	00:00	07:00									07:00
Vol.	2	20	4	1	3									27
PM Peak Vol.														
Grand Total	8	452	67	6	64	0	0	1	0	0	0	0	0	598
Percent	1.3%	75.6%	11.2%	1.0%	10.7%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	

McMAHON
a Bowman company

Appendix C

Turning Movement Counts

www.TSTData.com
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Conshohocken, PA
Ash St & Washington St
Thursday, February 3, 2022
Location: 40.071275, -75.304611

Count Name: Ash St & Washington St
Site Code:
Start Date: 02/03/2022

Turning Movement Data

Start Time	Washington St Eastbound						Washington St Westbound						Ash St Northbound						Ash St Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	0	2	0	0	2	2	5	34	0	0	41	0	1	0	0	1	1	5	2	0	0	1	7	51
7:15 AM	1	4	0	0	0	5	4	8	38	0	1	50	0	1	0	0	2	1	4	2	0	0	2	6	62
7:30 AM	1	1	2	0	0	4	1	11	37	0	1	49	0	0	0	0	1	0	5	5	0	0	0	10	63
7:45 AM	1	3	2	0	0	6	2	10	19	0	0	31	0	3	0	0	3	3	3	3	0	0	0	6	46
Hourly Total	3	8	6	0	0	17	9	34	128	0	2	171	0	5	0	0	7	5	17	12	0	0	3	29	222
8:00 AM	0	3	1	0	0	4	1	20	34	0	0	55	0	1	0	0	4	1	4	3	0	0	0	7	67
8:15 AM	1	4	2	0	0	7	2	8	30	0	0	40	1	0	0	0	0	1	8	4	0	0	0	12	60
8:30 AM	0	1	3	0	0	4	1	12	16	0	0	29	0	0	0	0	0	0	2	0	2	0	0	4	37
8:45 AM	1	3	0	0	0	4	0	13	15	0	1	28	0	2	0	0	0	2	4	3	0	0	0	7	41
Hourly Total	2	11	6	0	0	19	4	53	95	0	1	152	1	3	0	0	4	4	18	10	2	0	0	30	205
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	1	9	0	0	0	10	1	4	16	0	0	21	1	8	1	0	0	10	10	1	0	0	0	11	52
4:15 PM	1	17	0	0	0	18	0	1	13	0	1	14	1	4	1	0	0	6	13	0	1	0	1	14	52
4:30 PM	1	11	0	0	0	12	0	3	11	0	0	14	0	5	0	0	0	5	15	1	0	0	0	16	47
4:45 PM	3	8	1	0	0	12	0	5	19	0	0	24	0	4	0	0	0	4	15	1	0	0	0	16	56
Hourly Total	6	45	1	0	0	52	1	13	59	0	1	73	2	21	2	0	0	25	53	3	1	0	1	57	207
5:00 PM	2	18	2	0	0	22	0	5	26	0	0	31	0	11	3	0	0	14	17	0	0	0	0	17	84
5:15 PM	3	10	0	0	0	13	0	5	31	0	0	36	0	5	1	0	1	6	18	1	0	0	0	19	74
5:30 PM	0	11	0	0	0	11	1	5	27	0	0	33	0	4	1	0	1	5	16	0	0	0	0	16	65
5:45 PM	0	16	0	0	0	16	0	4	11	0	2	15	0	2	1	0	0	3	15	0	1	0	0	16	50
Hourly Total	5	55	2	0	0	62	1	19	95	0	2	115	0	22	6	0	2	28	66	1	1	0	0	68	273
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	16	119	15	0	0	150	15	119	377	0	6	511	3	51	8	0	13	62	154	26	4	0	4	184	907
Approach %	10.7	79.3	10.0	0.0	-	-	2.9	23.3	73.8	0.0	-	-	4.8	82.3	12.9	0.0	-	-	83.7	14.1	2.2	0.0	-	-	-
Total %	1.8	13.1	1.7	0.0	-	16.5	1.7	13.1	41.6	0.0	-	56.3	0.3	5.6	0.9	0.0	-	6.8	17.0	2.9	0.4	0.0	-	20.3	-
Lights	16	119	15	0	-	150	15	114	370	0	-	499	3	51	8	0	-	62	152	26	3	0	-	181	892
% Lights	100.0	100.0	100.0	-	-	100.0	100.0	95.8	98.1	-	-	97.7	100.0	100.0	100.0	-	-	100.0	98.7	100.0	75.0	-	-	98.4	98.3
Buses	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.3	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Trucks	0	0	0	0	-	0	0	5	6	0	-	11	0	0	0	0	-	0	2	0	1	0	-	3	14
% Trucks	0.0	0.0	0.0	-	-	0.0	0.0	4.2	1.6	-	-	2.2	0.0	0.0	0.0	-	-	0.0	1.3	0.0	25.0	-	-	1.6	1.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	13	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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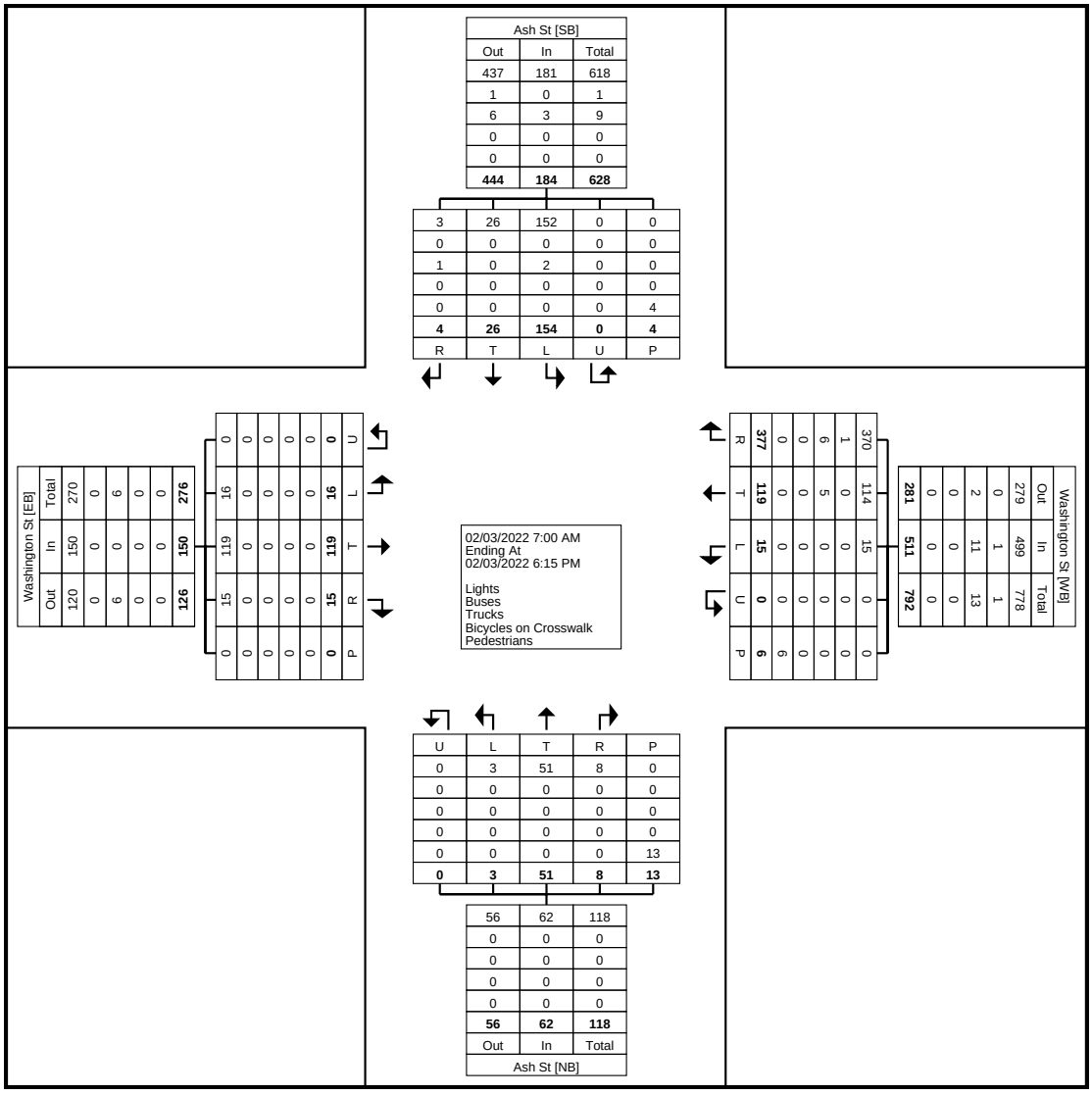
Conshohocken, PA
Ash St & Washington St
Thursday, February 3, 2022
Location: 40.071275, -75.304611

Count Name: Ash St & Washington St
Site Code:
Start Date: 02/03/2022



Turning Movement Data Plot

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Conshohocken, PA
Ash St & Washington St
Thursday, February 3, 2022
Location: 40.071275, -75.304611

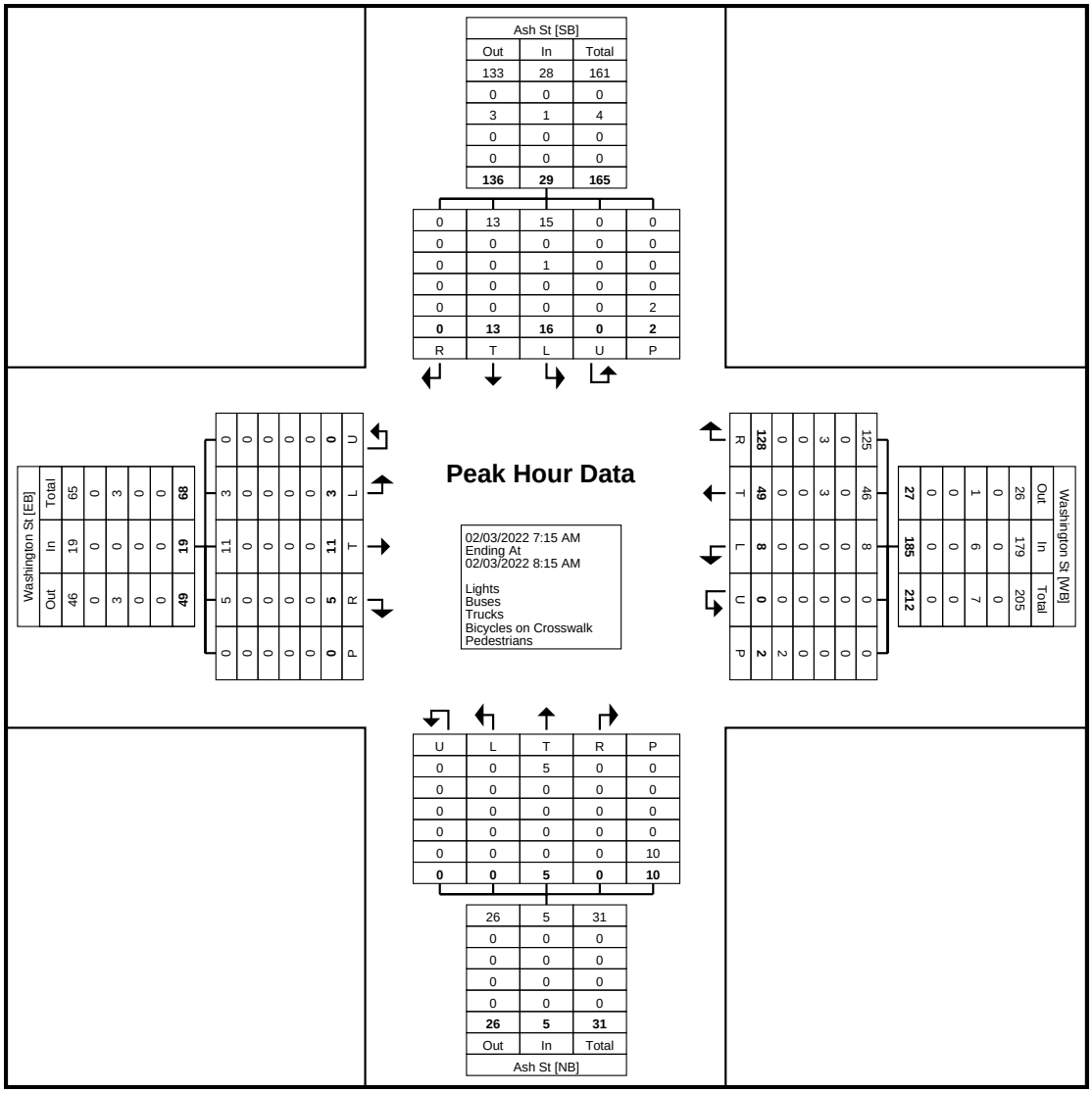
Count Name: Ash St & Washington St
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Washington St Eastbound						Washington St Westbound						Ash St Northbound						Ash St Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:15 AM	1	4	0	0	0	5	4	8	38	0	1	50	0	1	0	0	2	1	4	2	0	0	2	6	62
7:30 AM	1	1	2	0	0	4	1	11	37	0	1	49	0	0	0	0	1	0	5	5	0	0	0	10	63
7:45 AM	1	3	2	0	0	6	2	10	19	0	0	31	0	3	0	0	3	3	3	3	0	0	0	6	46
8:00 AM	0	3	1	0	0	4	1	20	34	0	0	55	0	1	0	0	4	1	4	3	0	0	0	7	67
Total	3	11	5	0	0	19	8	49	128	0	2	185	0	5	0	0	10	5	16	13	0	0	2	29	238
Approach %	15.8	57.9	26.3	0.0	-	-	4.3	26.5	69.2	0.0	-	-	0.0	100.0	0.0	0.0	-	-	55.2	44.8	0.0	0.0	-	-	-
Total %	1.3	4.6	2.1	0.0	-	8.0	3.4	20.6	53.8	0.0	-	77.7	0.0	2.1	0.0	0.0	-	2.1	6.7	5.5	0.0	0.0	-	12.2	-
PHF	0.750	0.688	0.625	0.000	-	0.792	0.500	0.613	0.842	0.000	-	0.841	0.000	0.417	0.000	0.000	-	0.417	0.800	0.650	0.000	0.000	-	0.725	0.888
Lights	3	11	5	0	-	19	8	46	125	0	-	179	0	5	0	0	-	5	15	13	0	0	-	28	231
% Lights	100.0	100.0	100.0	-	-	100.0	100.0	93.9	97.7	-	-	96.8	-	100.0	-	-	-	100.0	93.8	100.0	-	-	-	96.6	97.1
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	0.0	-	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0
Trucks	0	0	0	0	-	0	0	3	3	0	-	6	0	0	0	0	-	0	1	0	0	0	-	1	7
% Trucks	0.0	0.0	0.0	-	-	0.0	0.0	6.1	2.3	-	-	3.2	-	0.0	-	-	-	0.0	6.3	0.0	-	-	-	3.4	2.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	10	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Conshohocken, PA
Ash St & Washington St
Thursday, February 3, 2022
Location: 40.071275, -75.304611

Count Name: Ash St & Washington St
Site Code:
Start Date: 02/03/2022



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Conshohocken, PA
Ash St & Washington St
Thursday, February 3, 2022
Location: 40.071275, -75.304611

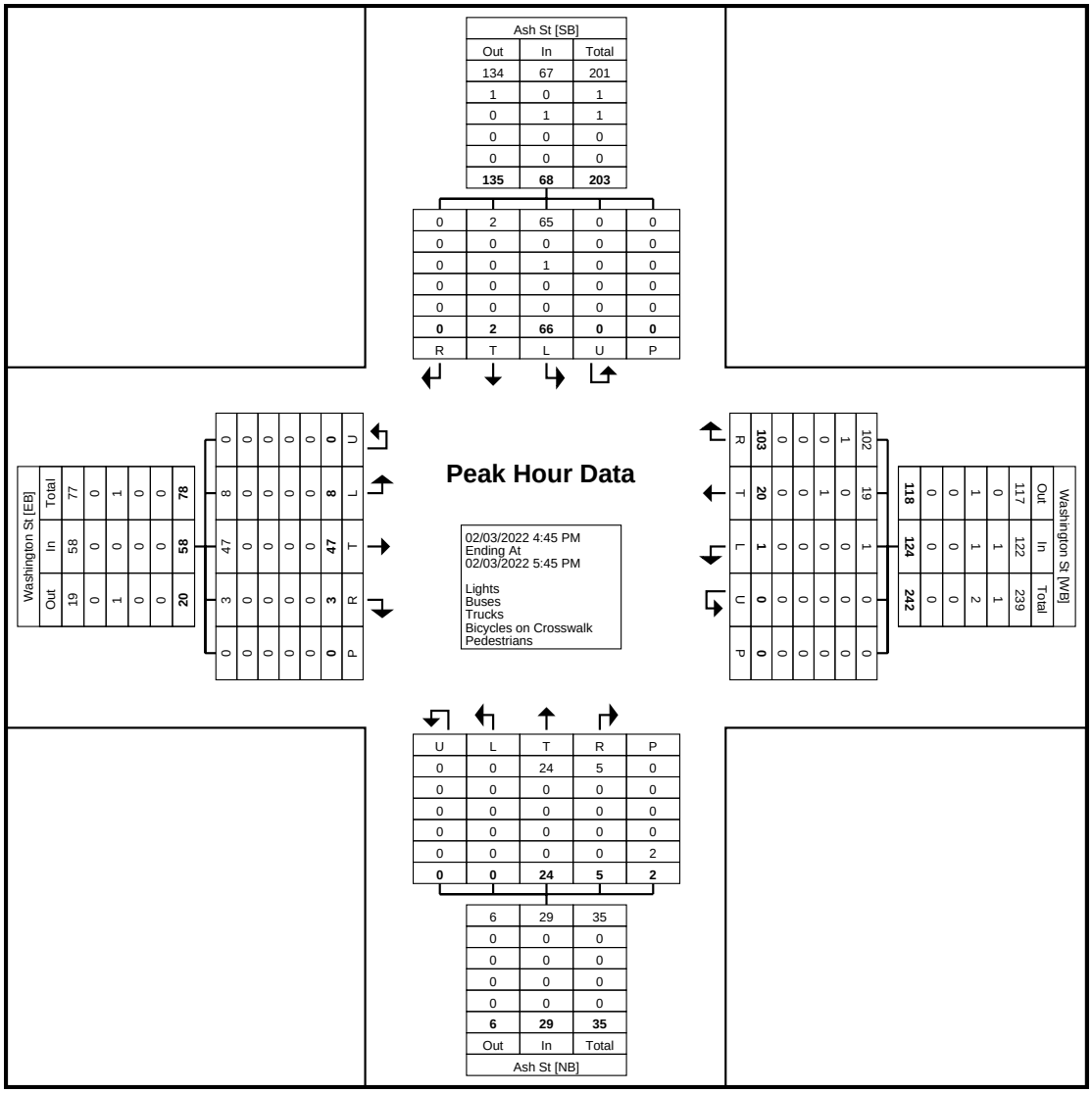
Count Name: Ash St & Washington St
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Washington St Eastbound						Washington St Westbound						Ash St Northbound						Ash St Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:45 PM	3	8	1	0	0	12	0	5	19	0	0	24	0	4	0	0	0	4	15	1	0	0	0	16	56
5:00 PM	2	18	2	0	0	22	0	5	26	0	0	31	0	11	3	0	0	14	17	0	0	0	0	17	84
5:15 PM	3	10	0	0	0	13	0	5	31	0	0	36	0	5	1	0	1	6	18	1	0	0	0	19	74
5:30 PM	0	11	0	0	0	11	1	5	27	0	0	33	0	4	1	0	1	5	16	0	0	0	0	16	65
Total	8	47	3	0	0	58	1	20	103	0	0	124	0	24	5	0	2	29	66	2	0	0	0	68	279
Approach %	13.8	81.0	5.2	0.0	-	-	0.8	16.1	83.1	0.0	-	-	0.0	82.8	17.2	0.0	-	-	97.1	2.9	0.0	0.0	-	-	-
Total %	2.9	16.8	1.1	0.0	-	20.8	0.4	7.2	36.9	0.0	-	44.4	0.0	8.6	1.8	0.0	-	10.4	23.7	0.7	0.0	0.0	-	24.4	-
PHF	0.667	0.653	0.375	0.000	-	0.659	0.250	1.000	0.831	0.000	-	0.861	0.000	0.545	0.417	0.000	-	0.518	0.917	0.500	0.000	0.000	-	0.895	0.830
Lights	8	47	3	0	-	58	1	19	102	0	-	122	0	24	5	0	-	29	65	2	0	0	-	67	276
% Lights	100.0	100.0	100.0	-	-	100.0	100.0	95.0	99.0	-	-	98.4	-	100.0	100.0	-	-	100.0	98.5	100.0	-	-	-	98.5	98.9
Buses	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.0	-	-	0.8	-	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.4
Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1	0	0	0	-	1	2
% Trucks	0.0	0.0	0.0	-	-	0.0	0.0	5.0	0.0	-	-	0.8	-	0.0	0.0	-	-	0.0	1.5	0.0	-	-	-	1.5	0.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Conshohocken, PA
Ash St & Washington St
Thursday, February 3, 2022
Location: 40.071275, -75.304611

Count Name: Ash St & Washington St
Site Code:
Start Date: 02/03/2022



Turning Movement Peak Hour Data Plot (4:45 PM)

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Conshohocken, PA
E Hecktor Ave & Station St
Thursday, February 3, 2022
Location: 40.075814, -75.285625

Count Name: E Hector St & Station Ave
Site Code:
Start Date: 02/03/2022

Turning Movement Data

Start Time	Hector St Eastbound							Hector St Westbound							Station Ave Northbound							Station Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
7:00 AM	12	59	1	0	0	0	72	0	52	6	0	0	0	58	0	1	1	0	0	0	2	0	1	1	0	0	0	2	134
7:15 AM	13	56	2	0	0	3	71	3	67	14	0	0	0	84	1	8	0	0	0	0	9	15	9	6	1	0	0	31	195
7:30 AM	17	95	0	0	0	0	112	1	94	9	0	0	0	104	0	4	0	0	0	0	4	21	1	9	0	0	0	31	251
7:45 AM	13	91	5	0	0	0	109	1	94	16	0	0	0	111	3	2	1	0	0	0	6	20	5	15	2	0	0	42	268
Hourly Total	55	301	8	0	0	3	364	5	307	45	0	0	0	357	4	15	2	0	0	0	21	56	16	31	3	0	0	106	848
8:00 AM	17	78	4	0	0	0	99	7	132	11	0	0	1	150	1	5	0	0	0	0	6	8	0	8	0	0	0	16	271
8:15 AM	22	80	1	0	0	5	103	1	121	19	0	0	1	141	1	7	2	0	0	0	10	18	5	16	0	0	0	39	293
8:30 AM	26	70	1	0	0	1	97	2	77	13	0	0	0	92	1	1	0	0	0	0	2	13	3	11	0	0	1	27	218
8:45 AM	21	57	0	0	0	0	78	1	101	21	0	0	0	123	2	5	1	0	0	0	8	9	2	15	2	0	1	28	237
Hourly Total	86	285	6	0	0	6	377	11	431	64	0	0	2	506	5	18	3	0	0	0	26	48	10	50	2	0	2	110	1019
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	26	127	1	0	0	0	154	3	58	20	1	0	0	82	0	7	0	0	0	0	7	22	2	10	0	0	0	34	277
4:15 PM	12	139	0	0	0	1	151	2	66	10	0	0	2	78	0	1	0	0	0	2	1	24	3	6	0	0	0	33	263
4:30 PM	10	137	1	0	0	0	148	6	107	16	1	0	0	130	1	8	2	0	0	0	11	16	3	15	1	0	0	35	324
4:45 PM	10	145	2	0	0	0	157	4	70	11	0	0	0	85	0	5	0	0	0	0	5	27	6	17	0	0	0	50	297
Hourly Total	58	548	4	0	0	1	610	15	301	57	2	0	2	375	1	21	2	0	0	2	24	89	14	48	1	0	0	152	1161
5:00 PM	16	147	3	0	0	2	166	5	81	20	0	0	0	106	2	3	4	0	0	0	9	27	8	10	0	0	0	45	326
5:15 PM	16	131	2	0	0	2	149	3	63	6	0	0	0	72	2	3	2	1	0	0	8	26	13	12	0	0	0	51	280
5:30 PM	14	118	1	1	0	0	134	5	61	11	0	0	0	77	3	7	0	1	0	0	11	22	5	18	0	0	0	45	267
5:45 PM	14	100	3	0	0	0	117	6	63	8	0	0	0	77	3	6	2	0	0	0	11	15	12	7	1	0	0	35	240
Hourly Total	60	496	9	1	0	4	566	19	268	45	0	0	0	332	10	19	8	2	0	0	39	90	38	47	1	0	0	176	1113
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
Grand Total	259	1630	27	1	0	14	1917	50	1307	211	2	0	4	1570	20	73	15	2	0	2	110	284	78	176	7	0	2	545	4142
Approach %	13.5	85.0	1.4	0.1	0.0	-	-	3.2	83.2	13.4	0.1	0.0	-	-	18.2	66.4	13.6	1.8	0.0	-	-	52.1	14.3	32.3	1.3	0.0	-	-	-
Total %	6.3	39.4	0.7	0.0	0.0	-	46.3	1.2	31.6	5.1	0.0	0.0	-	37.9	0.5	1.8	0.4	0.0	0.0	-	2.7	6.9	1.9	4.2	0.2	0.0	-	13.2	-
Lights	254	1591	26	1	0	-	1872	50	1280	200	2	0	-	1532	20	73	15	2	0	-	110	281	78	171	7	0	-	537	4051
% Lights	98.1	97.6	96.3	100.0	-	-	97.7	100.0	97.9	94.8	100.0	-	-	97.6	100.0	100.0	100.0	100.0	-	-	100.0	98.9	100.0	97.2	100.0	-	-	98.5	97.8
Buses	0	16	0	0	0	-	16	0	11	8	0	0	-	19	0	0	0	0	0	-	0	2	0	4	0	0	-	6	41
% Buses	0.0	1.0	0.0	0.0	-	-	0.8	0.0	0.8	3.8	0.0	-	-	1.2	0.0	0.0	0.0	0.0	-	-	0.0	0.7	0.0	2.3	0.0	-	-	1.1	1.0
Trucks	5	23	1	0	0	-	29	0	16	3	0	0	-	19	0	0	0	0	0	-	0	1	0	1	0	0	-	2	50
% Trucks	1.9	1.4	3.7	0.0	-	-	1.5	0.0	1.2	1.4	0.0	-	-	1.2	0.0	0.0	0.0	0.0	-	-	0.0	0.4	0.0	0.6	0.0	-	-	0.4	1.2
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	14	-	-	-	-	-	-	4	-	-	-	-	-	-	2	-	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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Count Name: E Hactor St & Station Ave
Site Code:
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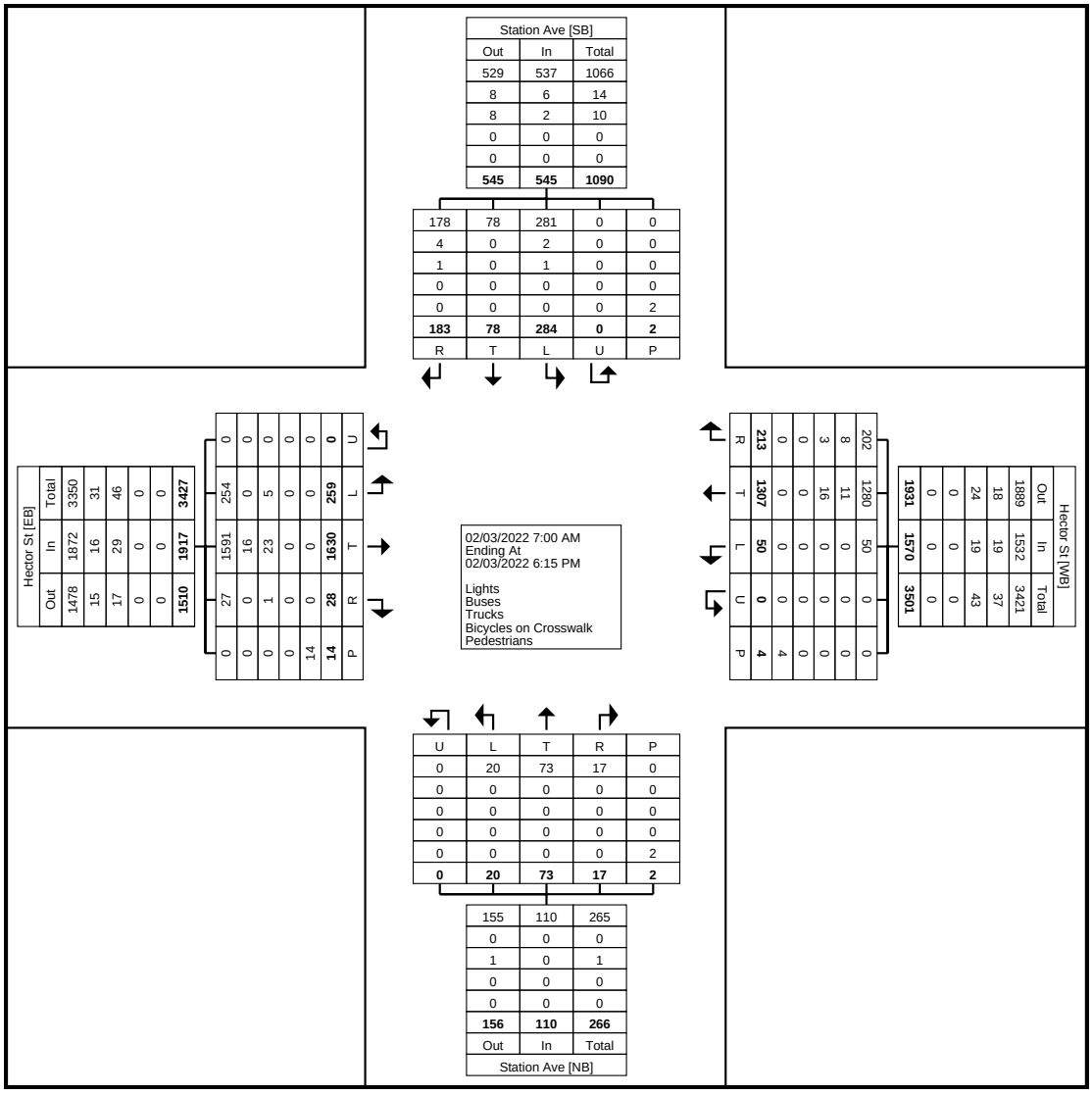

Turning Movement Data Plot

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Conshohocken, PA
E Hecktor Ave & Station St
Thursday, February 3, 2022
Location: 40.075814, -75.285625

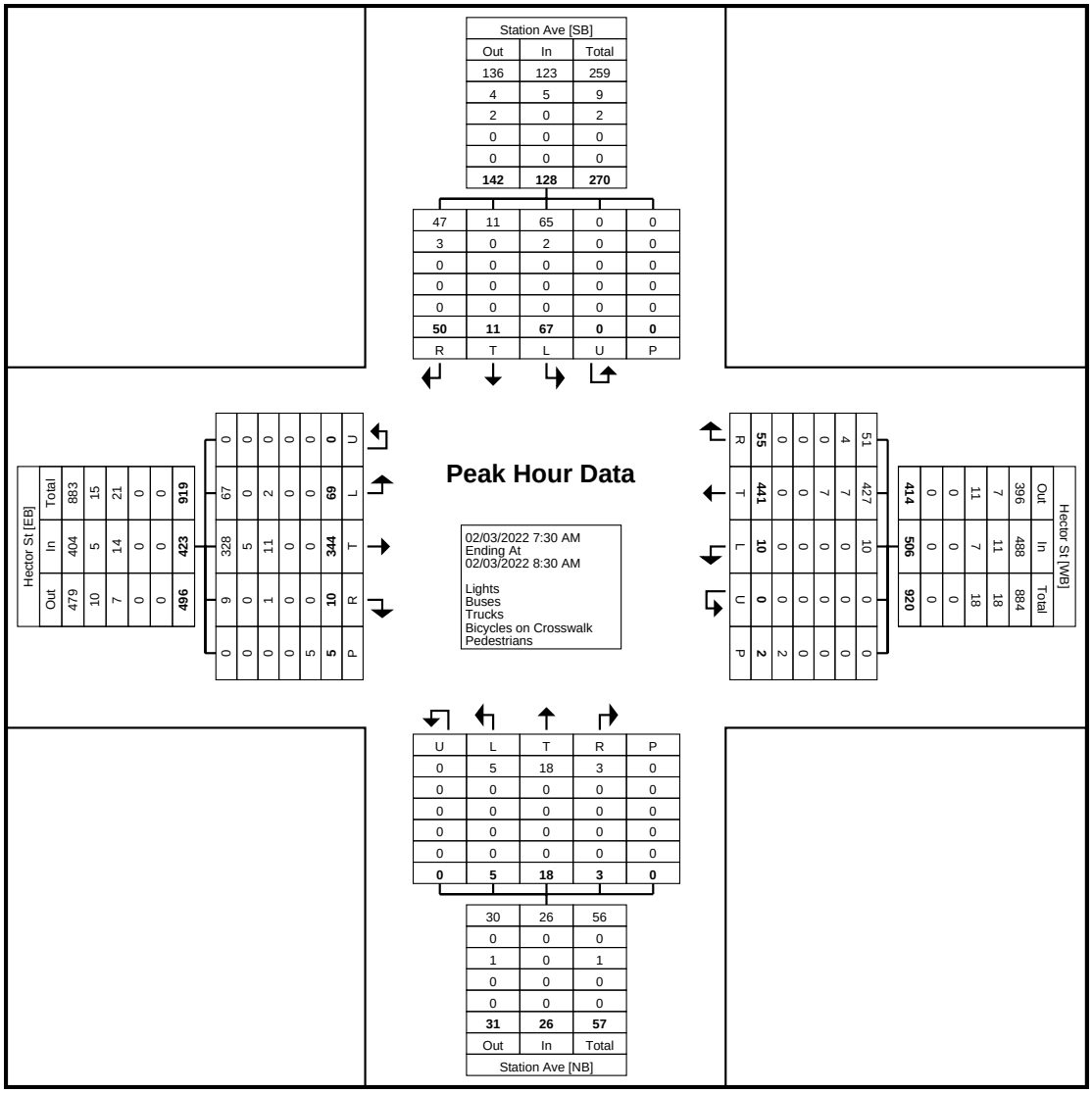
Count Name: E Hector St & Station Ave
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Hector St Eastbound							Hector St Westbound							Station Ave Northbound							Station Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
7:30 AM	17	95	0	0	0	0	112	1	94	9	0	0	0	104	0	4	0	0	0	0	4	21	1	9	0	0	0	31	251
7:45 AM	13	91	5	0	0	0	109	1	94	16	0	0	0	111	3	2	1	0	0	0	6	20	5	15	2	0	0	42	268
8:00 AM	17	78	4	0	0	0	99	7	132	11	0	0	1	150	1	5	0	0	0	0	6	8	0	8	0	0	0	16	271
8:15 AM	22	80	1	0	0	5	103	1	121	19	0	0	1	141	1	7	2	0	0	0	10	18	5	16	0	0	0	39	293
Total	69	344	10	0	0	5	423	10	441	55	0	0	2	506	5	18	3	0	0	0	26	67	11	48	2	0	0	128	1083
Approach %	16.3	81.3	2.4	0.0	0.0	-	-	2.0	87.2	10.9	0.0	0.0	-	-	19.2	69.2	11.5	0.0	0.0	-	-	52.3	8.6	37.5	1.6	0.0	-	-	-
Total %	6.4	31.8	0.9	0.0	0.0	-	39.1	0.9	40.7	5.1	0.0	0.0	-	46.7	0.5	1.7	0.3	0.0	0.0	-	2.4	6.2	1.0	4.4	0.2	0.0	-	11.8	-
PHF	0.784	0.905	0.500	0.000	0.000	-	0.944	0.357	0.835	0.724	0.000	0.000	-	0.843	0.417	0.643	0.375	0.000	0.000	-	0.650	0.798	0.550	0.750	0.250	0.000	-	0.762	0.924
Lights	67	328	9	0	0	-	404	10	427	51	0	0	-	488	5	18	3	0	0	-	26	65	11	45	2	0	-	123	1041
% Lights	97.1	95.3	90.0	-	-	-	95.5	100.0	96.8	92.7	-	-	-	96.4	100.0	100.0	100.0	-	-	-	100.0	97.0	100.0	93.8	100.0	-	-	96.1	96.1
Buses	0	5	0	0	0	-	5	0	7	4	0	0	-	11	0	0	0	0	0	-	0	2	0	3	0	0	-	5	21
% Buses	0.0	1.5	0.0	-	-	-	1.2	0.0	1.6	7.3	-	-	-	2.2	0.0	0.0	0.0	-	-	-	0.0	3.0	0.0	6.3	0.0	-	-	3.9	1.9
Trucks	2	11	1	0	0	-	14	0	7	0	0	0	-	7	0	0	0	0	0	-	0	0	0	0	0	0	-	0	21
% Trucks	2.9	3.2	10.0	-	-	-	3.3	0.0	1.6	0.0	-	-	-	1.4	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	1.9
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	-	5	-	-	-	-	-	-	2	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Conshohocken, PA
E Hecktor Ave & Station St
Thursday, February 3, 2022
Location: 40.075814, -75.285625

Count Name: E Hactor St & Station Ave
Site Code:
Start Date: 02/03/2022



Turning Movement Peak Hour Data Plot (7:30 AM)

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Conshohocken, PA
E Hecktor Ave & Station St
Thursday, February 3, 2022
Location: 40.075814, -75.285625

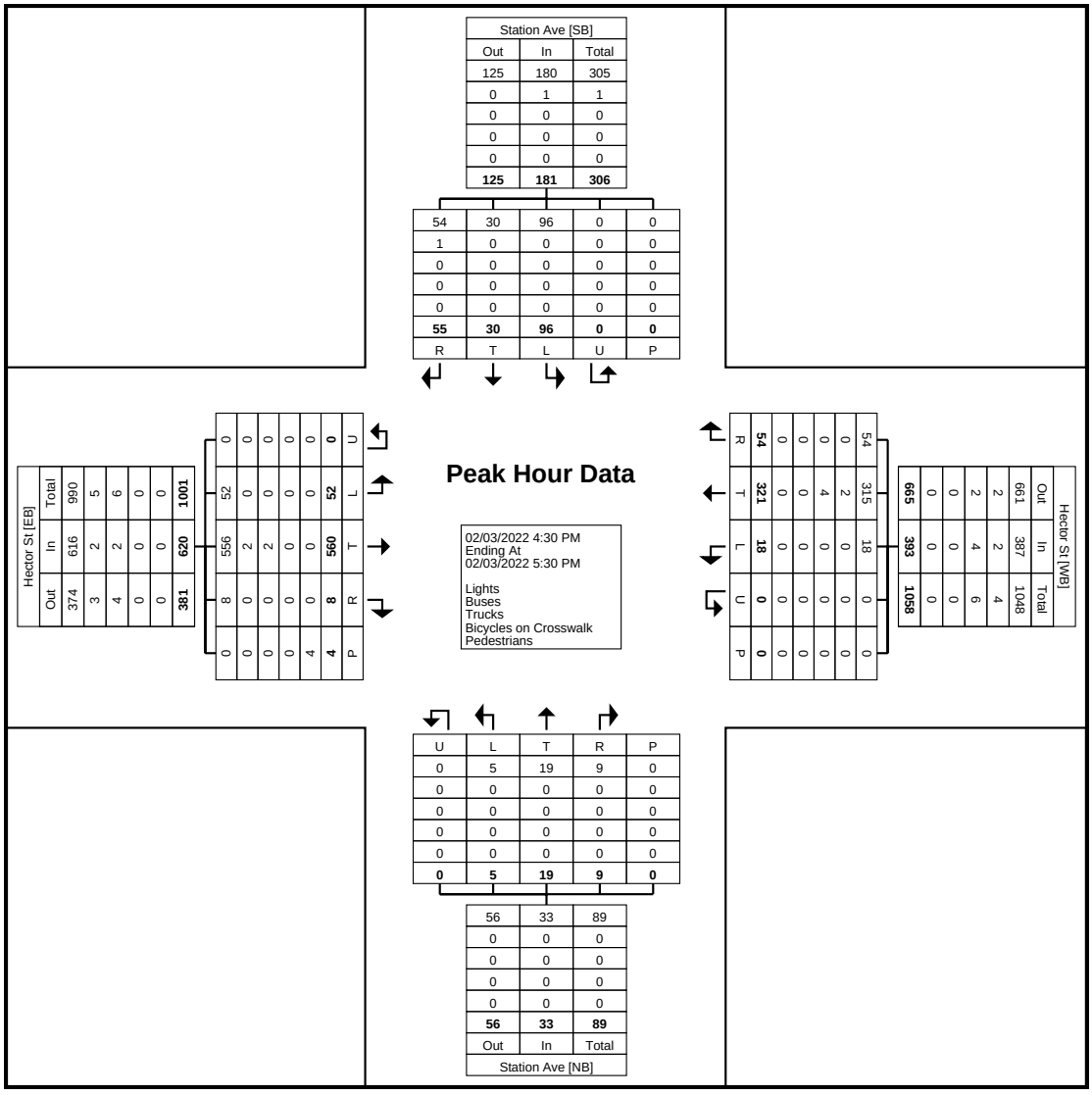
Count Name: E Hector St & Station Ave
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Hector St Eastbound							Hector St Westbound							Station Ave Northbound							Station Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
4:30 PM	10	137	1	0	0	0	148	6	107	16	1	0	0	130	1	8	2	0	0	0	11	16	3	15	1	0	0	35	324
4:45 PM	10	145	2	0	0	0	157	4	70	11	0	0	0	85	0	5	0	0	0	0	5	27	6	17	0	0	0	50	297
5:00 PM	16	147	3	0	0	2	166	5	81	20	0	0	0	106	2	3	4	0	0	0	9	27	8	10	0	0	0	45	326
5:15 PM	16	131	2	0	0	2	149	3	63	6	0	0	0	72	2	3	2	1	0	0	8	26	13	12	0	0	0	51	280
Total	52	560	8	0	0	4	620	18	321	53	1	0	0	393	5	19	8	1	0	0	33	96	30	54	1	0	0	181	1227
Approach %	8.4	90.3	1.3	0.0	0.0	-	-	4.6	81.7	13.5	0.3	0.0	-	-	15.2	57.6	24.2	3.0	0.0	-	-	53.0	16.6	29.8	0.6	0.0	-	-	-
Total %	4.2	45.6	0.7	0.0	0.0	-	50.5	1.5	26.2	4.3	0.1	0.0	-	32.0	0.4	1.5	0.7	0.1	0.0	-	2.7	7.8	2.4	4.4	0.1	0.0	-	14.8	-
PHF	0.813	0.952	0.667	0.000	0.000	-	0.934	0.750	0.750	0.663	0.250	0.000	-	0.756	0.625	0.594	0.500	0.250	0.000	-	0.750	0.889	0.577	0.794	0.250	0.000	-	0.887	0.941
Lights	52	556	8	0	0	-	616	18	315	53	1	0	-	387	5	19	8	1	0	-	33	96	30	53	1	0	-	180	1216
% Lights	100.0	99.3	100.0	-	-	-	99.4	100.0	98.1	100.0	100.0	-	-	98.5	100.0	100.0	100.0	100.0	-	-	100.0	100.0	100.0	98.1	100.0	-	-	99.4	99.1
Buses	0	2	0	0	0	-	2	0	2	0	0	0	-	2	0	0	0	0	0	-	0	0	0	1	0	0	-	1	5
% Buses	0.0	0.4	0.0	-	-	-	0.3	0.0	0.6	0.0	0.0	-	-	0.5	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.9	0.0	-	-	0.6	0.4
Trucks	0	2	0	0	0	-	2	0	4	0	0	0	-	4	0	0	0	0	0	-	0	0	0	0	0	0	-	0	6
% Trucks	0.0	0.4	0.0	-	-	-	0.3	0.0	1.2	0.0	0.0	-	-	1.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.5
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	-	4	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Conshohocken, PA
E Hecktor Ave & Station St
Thursday, February 3, 2022
Location: 40.075814, -75.285625

Count Name: E Hactor St & Station Ave
Site Code:
Start Date: 02/03/2022



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Conshohocken, PA
E Hector St & Lee St
Thursday, February 3, 2022
Location: 40.075352, -75.288345

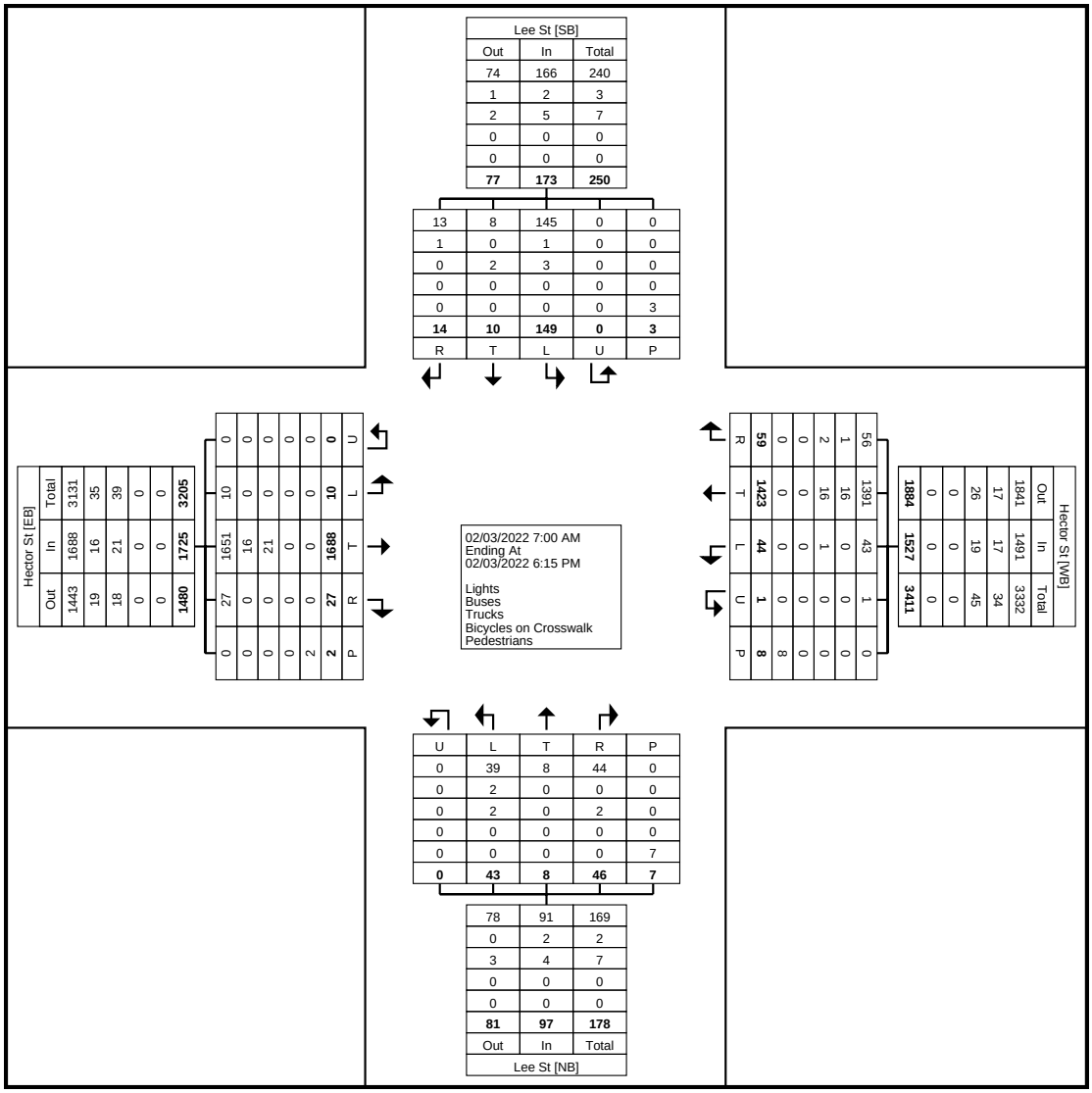
Count Name: E Hector St & Lee St
Site Code:
Start Date: 02/03/2022

Turning Movement Data

Start Time	Hector St Eastbound						Hector St Westbound						Lee St Northbound						Lee St Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	51	1	0	0	52	0	59	0	0	0	59	2	0	4	0	1	6	9	0	2	0	0	11	128
7:15 AM	0	54	1	0	0	55	0	66	1	0	0	67	1	1	3	0	0	5	12	2	0	0	0	14	141
7:30 AM	0	103	3	0	0	106	0	101	5	0	2	106	3	1	1	0	0	5	4	0	0	0	0	4	221
7:45 AM	0	101	0	0	0	101	6	106	3	0	0	115	4	0	2	0	0	6	6	0	0	0	0	6	228
Hourly Total	0	309	5	0	0	314	6	332	9	0	2	347	10	2	10	0	1	22	31	2	2	0	0	35	718
8:00 AM	0	89	0	0	0	89	5	135	4	0	0	144	4	0	3	0	0	7	6	0	0	0	0	6	246
8:15 AM	0	94	2	0	0	96	10	100	7	0	0	117	3	0	1	0	1	4	9	1	0	0	0	10	227
8:30 AM	3	78	3	0	1	84	7	88	4	0	1	99	2	0	5	0	1	7	8	0	0	0	1	8	198
8:45 AM	0	71	2	0	0	73	2	108	4	0	1	114	4	2	2	0	0	8	9	0	2	0	1	11	206
Hourly Total	3	332	7	0	1	342	24	431	19	0	2	474	13	2	11	0	2	26	32	1	2	0	2	35	877
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	1	131	2	0	0	134	1	66	5	0	1	72	2	0	5	0	1	7	9	1	3	0	0	13	226
4:15 PM	1	143	1	0	0	145	2	70	5	0	0	77	1	2	3	0	0	6	10	0	1	0	0	11	239
4:30 PM	1	124	0	0	1	125	1	112	6	0	0	119	2	0	2	0	0	4	12	2	0	0	1	14	262
4:45 PM	2	150	5	0	0	157	2	93	1	1	3	97	2	0	0	0	0	2	10	0	1	0	0	11	267
Hourly Total	5	548	8	0	1	561	6	341	17	1	4	365	7	2	10	0	1	19	41	3	5	0	1	49	994
5:00 PM	0	141	3	0	0	144	1	92	4	0	0	97	2	1	6	0	1	9	16	0	2	0	0	18	268
5:15 PM	0	131	4	0	0	135	4	76	3	0	0	83	4	0	4	0	1	8	12	2	0	0	0	14	240
5:30 PM	2	122	0	0	0	124	1	81	4	0	0	86	4	1	3	0	1	8	10	1	1	0	0	12	230
5:45 PM	0	105	0	0	0	105	2	70	3	0	0	75	3	0	2	0	0	5	7	1	2	0	0	10	195
Hourly Total	2	499	7	0	0	508	8	319	14	0	0	341	13	2	15	0	3	30	45	4	5	0	0	54	933
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	10	1688	27	0	2	1725	44	1423	59	1	8	1527	43	8	46	0	7	97	149	10	14	0	3	173	3522
Approach %	0.6	97.9	1.6	0.0	-	-	2.9	93.2	3.9	0.1	-	-	44.3	8.2	47.4	0.0	-	-	86.1	5.8	8.1	0.0	-	-	-
Total %	0.3	47.9	0.8	0.0	-	49.0	1.2	40.4	1.7	0.0	-	43.4	1.2	0.2	1.3	0.0	-	2.8	4.2	0.3	0.4	0.0	-	4.9	-
Lights	10	1651	27	0	-	1688	43	1391	56	1	-	1491	39	8	44	0	-	91	145	8	13	0	-	166	3436
% Lights	100.0	97.8	100.0	-	-	97.9	97.7	97.8	94.9	100.0	-	97.6	90.7	100.0	95.7	-	-	93.8	97.3	80.0	92.9	-	-	96.0	97.6
Buses	0	16	0	0	-	16	0	16	1	0	-	17	2	0	0	0	-	2	1	0	1	0	-	2	37
% Buses	0.0	0.9	0.0	-	-	0.9	0.0	1.1	1.7	0.0	-	1.1	4.7	0.0	0.0	-	-	2.1	0.7	0.0	7.1	-	-	1.2	1.1
Trucks	0	21	0	0	-	21	1	16	2	0	-	19	2	0	2	0	-	4	3	2	0	0	-	5	49
% Trucks	0.0	1.2	0.0	-	-	1.2	2.3	1.1	3.4	0.0	-	1.2	4.7	0.0	4.3	-	-	4.1	2.0	20.0	0.0	-	-	2.9	1.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	8	-	-	-	-	-	7	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Conshohocken, PA
E Hector St & Lee St
Thursday, February 3, 2022
Location: 40.075352, -75.288345

Count Name: E Hector St & Lee St
Site Code:
Start Date: 02/03/2022



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Conshohocken, PA
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Thursday, February 3, 2022
Location: 40.075352, -75.288345

Count Name: E Hector St & Lee St
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Hector St Eastbound						Hector St Westbound						Lee St Northbound						Lee St Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:30 AM	0	103	3	0	0	106	0	101	5	0	2	106	3	1	1	0	0	5	4	0	0	0	0	4	221
7:45 AM	0	101	0	0	0	101	6	106	3	0	0	115	4	0	2	0	0	6	6	0	0	0	0	6	228
8:00 AM	0	89	0	0	0	89	5	135	4	0	0	144	4	0	3	0	0	7	6	0	0	0	0	6	246
8:15 AM	0	94	2	0	0	96	10	100	7	0	0	117	3	0	1	0	1	4	9	1	0	0	0	10	227
Total	0	387	5	0	0	392	21	442	19	0	2	482	14	1	7	0	1	22	25	1	0	0	0	26	922
Approach %	0.0	98.7	1.3	0.0	-	-	4.4	91.7	3.9	0.0	-	-	63.6	4.5	31.8	0.0	-	-	96.2	3.8	0.0	0.0	-	-	-
Total %	0.0	42.0	0.5	0.0	-	42.5	2.3	47.9	2.1	0.0	-	52.3	1.5	0.1	0.8	0.0	-	2.4	2.7	0.1	0.0	0.0	-	2.8	-
PHF	0.000	0.939	0.417	0.000	-	0.925	0.525	0.819	0.679	0.000	-	0.837	0.875	0.250	0.583	0.000	-	0.786	0.694	0.250	0.000	0.000	-	0.650	0.937
Lights	0	370	5	0	-	375	20	427	17	0	-	464	12	1	6	0	-	19	24	1	0	0	-	25	883
% Lights	-	95.6	100.0	-	-	95.7	95.2	96.6	89.5	-	-	96.3	85.7	100.0	85.7	-	-	86.4	96.0	100.0	-	-	-	96.2	95.8
Buses	0	6	0	0	-	6	0	9	1	0	-	10	0	0	0	0	-	0	0	0	0	0	-	0	16
% Buses	-	1.6	0.0	-	-	1.5	0.0	2.0	5.3	-	-	2.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	1.7
Trucks	0	11	0	0	-	11	1	6	1	0	-	8	2	0	1	0	-	3	1	0	0	0	-	1	23
% Trucks	-	2.8	0.0	-	-	2.8	4.8	1.4	5.3	-	-	1.7	14.3	0.0	14.3	-	-	13.6	4.0	0.0	-	-	-	3.8	2.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Conshohocken, PA
E Hector St & Lee St
Thursday, February 3, 2022
Location: 40.075352, -75.288345

Count Name: E Hector St & Lee St
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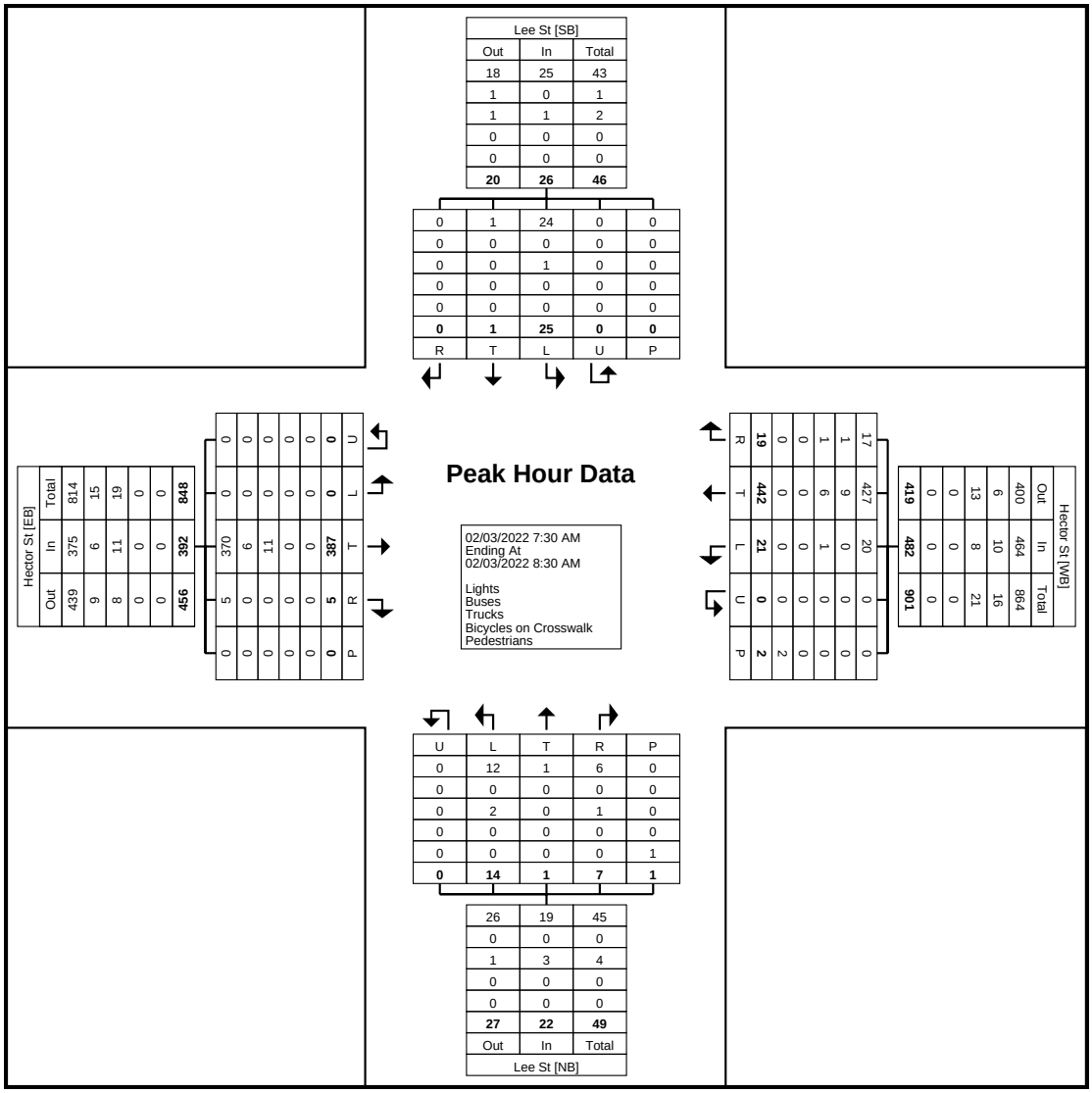

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Location: 40.075352, -75.288345

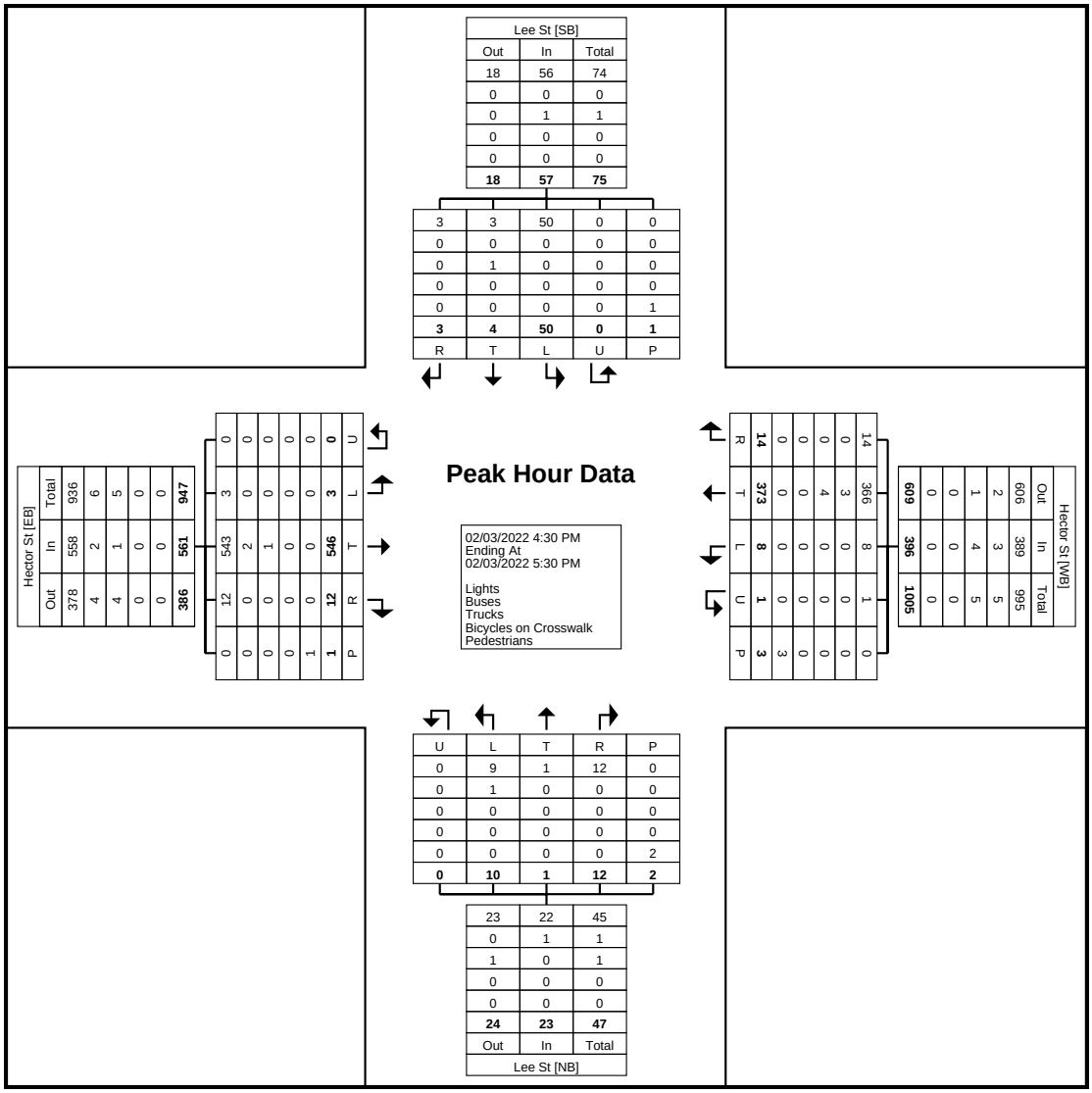
Count Name: E Hector St & Lee St
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Hector St Eastbound						Hector St Westbound						Lee St Northbound						Lee St Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:30 PM	1	124	0	0	1	125	1	112	6	0	0	119	2	0	2	0	0	4	12	2	0	0	1	14	262
4:45 PM	2	150	5	0	0	157	2	93	1	1	3	97	2	0	0	0	0	2	10	0	1	0	0	11	267
5:00 PM	0	141	3	0	0	144	1	92	4	0	0	97	2	1	6	0	1	9	16	0	2	0	0	18	268
5:15 PM	0	131	4	0	0	135	4	76	3	0	0	83	4	0	4	0	1	8	12	2	0	0	0	14	240
Total	3	546	12	0	1	561	8	373	14	1	3	396	10	1	12	0	2	23	50	4	3	0	1	57	1037
Approach %	0.5	97.3	2.1	0.0	-	-	2.0	94.2	3.5	0.3	-	-	43.5	4.3	52.2	0.0	-	-	87.7	7.0	5.3	0.0	-	-	-
Total %	0.3	52.7	1.2	0.0	-	54.1	0.8	36.0	1.4	0.1	-	38.2	1.0	0.1	1.2	0.0	-	2.2	4.8	0.4	0.3	0.0	-	5.5	-
PHF	0.375	0.910	0.600	0.000	-	0.893	0.500	0.833	0.583	0.250	-	0.832	0.625	0.250	0.500	0.000	-	0.639	0.781	0.500	0.375	0.000	-	0.792	0.967
Lights	3	543	12	0	-	558	8	366	14	1	-	389	9	1	12	0	-	22	50	3	3	0	-	56	1025
% Lights	100.0	99.5	100.0	-	-	99.5	100.0	98.1	100.0	100.0	-	98.2	90.0	100.0	100.0	-	-	95.7	100.0	75.0	100.0	-	-	98.2	98.8
Buses	0	2	0	0	-	2	0	3	0	0	-	3	1	0	0	0	-	1	0	0	0	0	-	0	6
% Buses	0.0	0.4	0.0	-	-	0.4	0.0	0.8	0.0	0.0	-	0.8	10.0	0.0	0.0	-	-	4.3	0.0	0.0	0.0	-	-	0.0	0.6
Trucks	0	1	0	0	-	1	0	4	0	0	-	4	0	0	0	0	-	0	0	1	0	0	-	1	6
% Trucks	0.0	0.2	0.0	-	-	0.2	0.0	1.1	0.0	0.0	-	1.0	0.0	0.0	0.0	-	-	0.0	0.0	25.0	0.0	-	-	1.8	0.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Conshohocken, PA
E Hector St & Lee St
Thursday, February 3, 2022
Location: 40.075352, -75.288345

Count Name: E Hector St & Lee St
Site Code:
Start Date: 02/03/2022



Turning Movement Peak Hour Data Plot (4:30 PM)

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Conshohocken, PA
Elm St & Ash St
Thursday, February 3, 2022
Location: 40.072018, -75.304629

Count Name: Elm St & Ash St
Site Code:
Start Date: 02/03/2022

Turning Movement Data

Start Time	Elm St Eastbound						Elm St Westbound						Ash St Northbound						Ash St Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	2	48	7	0	0	57	0	0	1	0	2	1	34	1	0	0	0	35	0	0	0	1	0	1	94
7:15 AM	4	61	7	0	0	72	0	0	0	0	0	0	36	2	1	0	0	39	0	0	0	0	1	0	111
7:30 AM	3	72	13	0	0	88	0	0	0	0	0	0	38	2	0	0	0	40	0	0	0	0	0	0	128
7:45 AM	3	103	10	0	0	116	0	0	0	0	0	0	19	3	2	0	0	24	0	0	0	0	1	0	140
Hourly Total	12	284	37	0	0	333	0	0	1	0	2	1	127	8	3	0	0	138	0	0	0	1	2	1	473
8:00 AM	3	80	6	0	1	89	0	0	0	0	1	0	37	2	0	0	1	39	0	0	0	0	0	0	128
8:15 AM	5	66	14	0	0	85	0	0	0	0	0	0	27	3	0	0	1	30	0	0	0	0	1	0	115
8:30 AM	4	52	4	0	0	60	0	0	0	0	0	0	15	1	0	0	1	16	0	0	0	0	0	0	76
8:45 AM	1	60	8	0	0	69	0	0	0	0	0	0	16	1	1	0	0	18	0	0	0	0	0	0	87
Hourly Total	13	258	32	0	1	303	0	0	0	0	1	0	95	7	1	0	3	103	0	0	0	0	1	0	406
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	6	105	12	0	0	123	0	0	0	0	0	0	21	3	1	0	0	25	0	0	0	0	0	0	148
4:15 PM	3	123	13	0	0	139	0	0	0	0	2	0	18	0	2	0	1	20	0	0	0	0	0	0	159
4:30 PM	1	99	16	0	0	116	0	0	0	0	0	0	16	2	1	0	0	19	0	0	0	0	0	0	135
4:45 PM	4	132	17	0	0	153	0	0	0	0	0	0	21	3	2	0	0	26	0	0	0	0	0	0	179
Hourly Total	14	459	58	0	0	531	0	0	0	0	2	0	76	8	6	0	1	90	0	0	0	0	0	0	621
5:00 PM	2	111	17	0	0	130	0	0	0	0	2	0	32	5	2	0	0	39	0	0	0	0	0	0	169
5:15 PM	11	109	20	0	0	140	0	0	0	0	0	0	36	2	2	0	0	40	0	0	0	0	1	0	180
5:30 PM	6	96	17	0	0	119	0	0	0	0	2	0	30	0	3	0	0	33	0	0	0	0	1	0	152
5:45 PM	7	77	15	0	0	99	0	0	0	0	2	0	14	2	0	0	0	16	0	0	0	0	0	0	115
Hourly Total	26	393	69	0	0	488	0	0	0	0	6	0	112	9	7	0	0	128	0	0	0	0	2	0	616
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	65	1394	196	0	1	1655	0	0	1	0	11	1	410	32	17	0	4	459	0	0	0	1	5	1	2116
Approach %	3.9	84.2	11.8	0.0	-	-	0.0	0.0	100.0	0.0	-	-	89.3	7.0	3.7	0.0	-	-	0.0	0.0	0.0	100.0	-	-	-
Total %	3.1	65.9	9.3	0.0	-	78.2	0.0	0.0	0.0	0.0	-	0.0	19.4	1.5	0.8	0.0	-	21.7	0.0	0.0	0.0	0.0	-	0.0	-
Lights	63	1357	190	0	-	1610	0	0	1	0	-	1	403	32	17	0	-	452	0	0	0	0	-	0	2063
% Lights	96.9	97.3	96.9	-	-	97.3	-	-	100.0	-	-	100.0	98.3	100.0	100.0	-	-	98.5	-	-	-	0.0	-	0.0	97.5
Buses	1	15	0	0	-	16	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	17
% Buses	1.5	1.1	0.0	-	-	1.0	-	-	0.0	-	-	0.0	0.2	0.0	0.0	-	-	0.2	-	-	-	0.0	-	0.0	0.8
Trucks	1	22	6	0	-	29	0	0	0	0	-	0	6	0	0	0	-	6	0	0	0	1	-	1	36
% Trucks	1.5	1.6	3.1	-	-	1.8	-	-	0.0	-	-	0.0	1.5	0.0	0.0	-	-	1.3	-	-	-	100.0	-	100.0	1.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	11	-	-	-	-	-	4	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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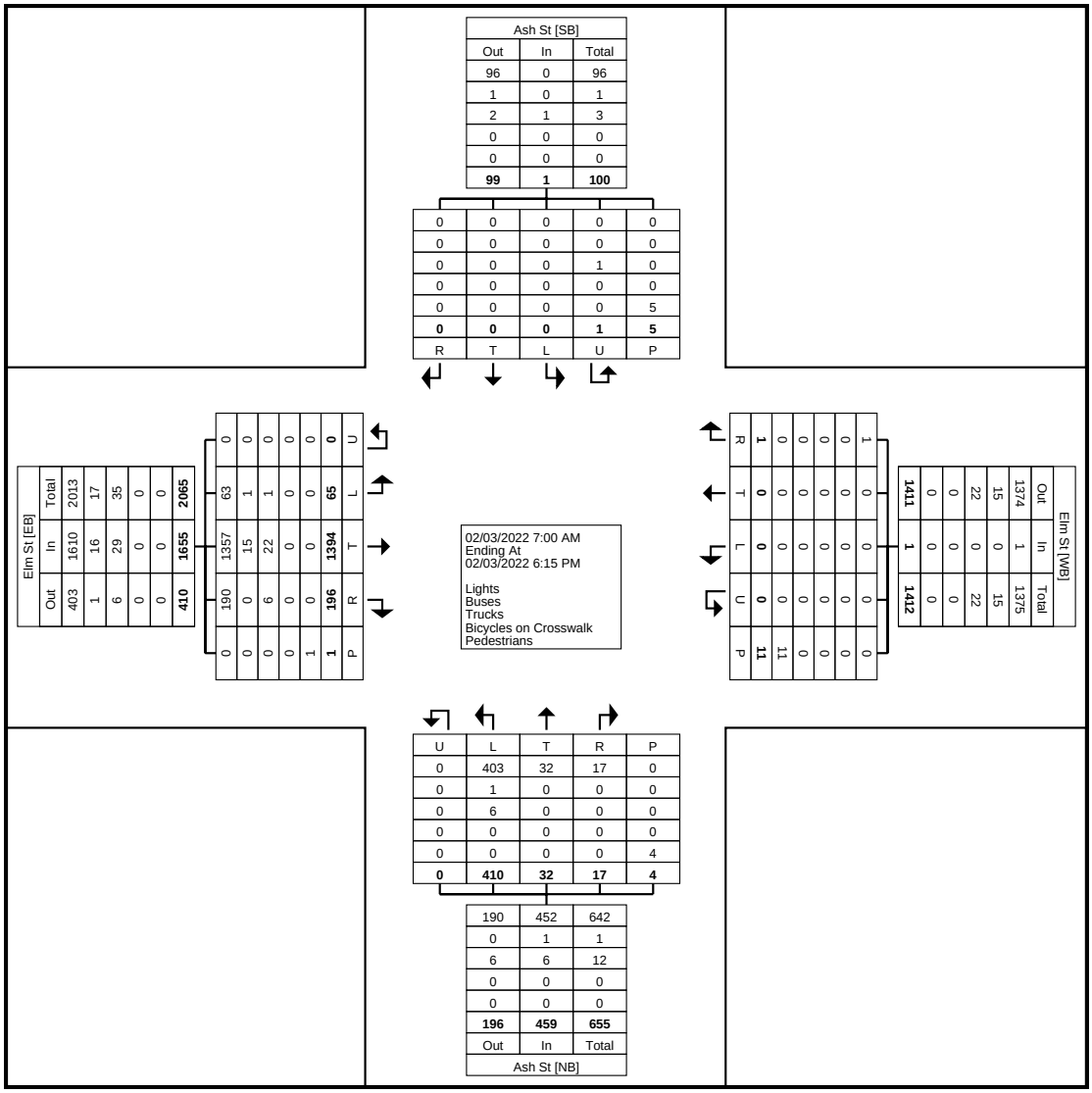
Conshohocken, PA
Elm St & Ash St
Thursday, February 3, 2022
Location: 40.072018, -75.304629

Count Name: Elm St & Ash St
Site Code:
Start Date: 02/03/2022



Turning Movement Data Plot

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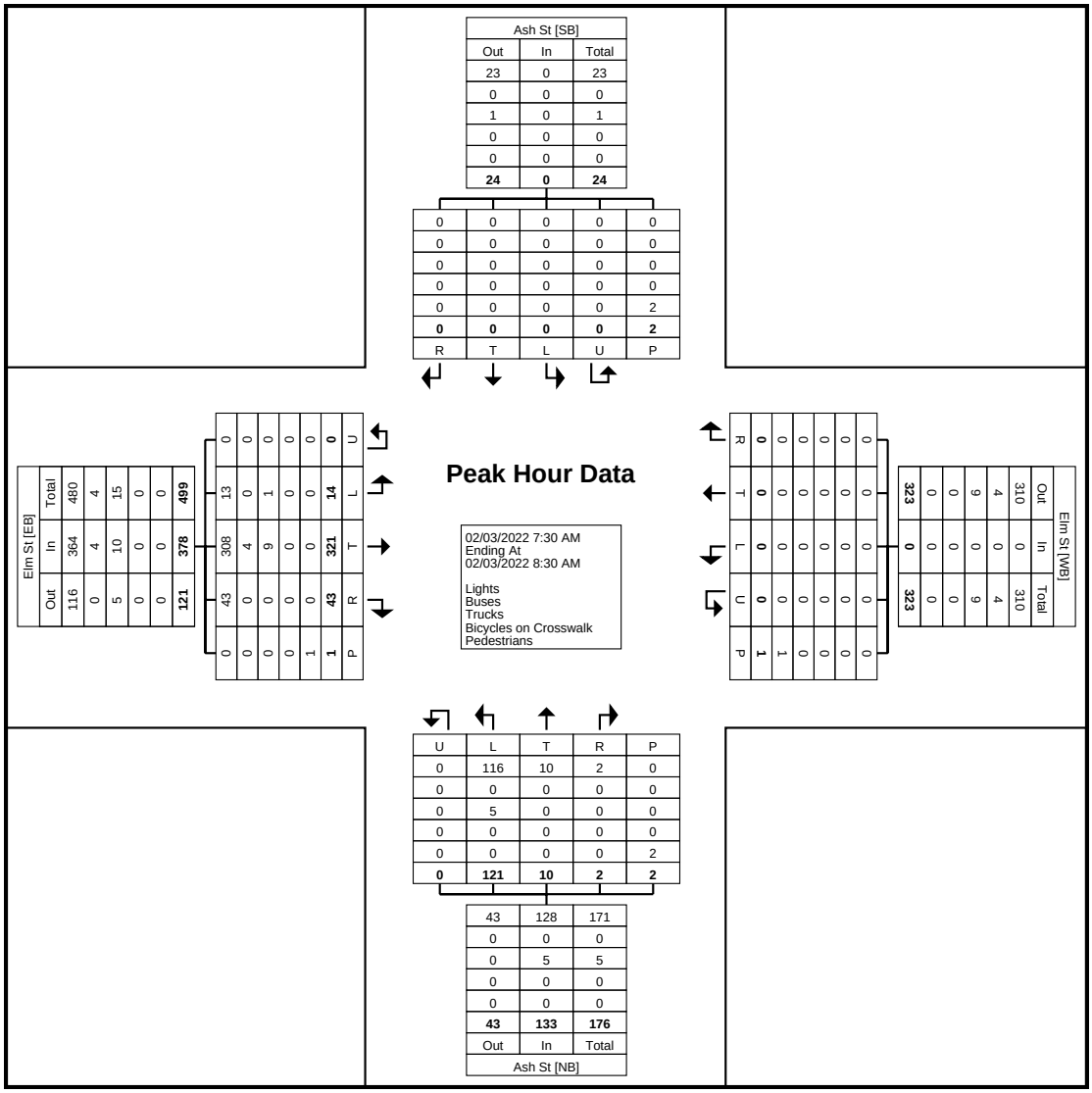
Conshohocken, PA
Elm St & Ash St
Thursday, February 3, 2022
Location: 40.072018, -75.304629

Count Name: Elm St & Ash St
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Elm St Eastbound						Elm St Westbound						Ash St Northbound						Ash St Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:30 AM	3	72	13	0	0	88	0	0	0	0	0	0	38	2	0	0	0	40	0	0	0	0	0	0	128
7:45 AM	3	103	10	0	0	116	0	0	0	0	0	0	19	3	2	0	0	24	0	0	0	0	1	0	140
8:00 AM	3	80	6	0	1	89	0	0	0	0	1	0	37	2	0	0	1	39	0	0	0	0	0	0	128
8:15 AM	5	66	14	0	0	85	0	0	0	0	0	0	27	3	0	0	1	30	0	0	0	0	1	0	115
Total	14	321	43	0	1	378	0	0	0	0	1	0	121	10	2	0	2	133	0	0	0	0	2	0	511
Approach %	3.7	84.9	11.4	0.0	-	-	0.0	0.0	0.0	0.0	-	-	91.0	7.5	1.5	0.0	-	-	0.0	0.0	0.0	0.0	-	-	-
Total %	2.7	62.8	8.4	0.0	-	74.0	0.0	0.0	0.0	0.0	-	0.0	23.7	2.0	0.4	0.0	-	26.0	0.0	0.0	0.0	0.0	-	0.0	-
PHF	0.700	0.779	0.768	0.000	-	0.815	0.000	0.000	0.000	0.000	-	0.000	0.796	0.833	0.250	0.000	-	0.831	0.000	0.000	0.000	0.000	-	0.000	0.913
Lights	13	308	43	0	-	364	0	0	0	0	-	0	116	10	2	0	-	128	0	0	0	0	-	0	492
% Lights	92.9	96.0	100.0	-	-	96.3	-	-	-	-	-	-	95.9	100.0	100.0	-	-	96.2	-	-	-	-	-	-	96.3
Buses	0	4	0	0	-	4	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	4
% Buses	0.0	1.2	0.0	-	-	1.1	-	-	-	-	-	-	0.0	0.0	0.0	-	-	0.0	-	-	-	-	-	-	0.8
Trucks	1	9	0	0	-	10	0	0	0	0	-	0	5	0	0	0	-	5	0	0	0	0	-	0	15
% Trucks	7.1	2.8	0.0	-	-	2.6	-	-	-	-	-	-	4.1	0.0	0.0	-	-	3.8	-	-	-	-	-	-	2.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



Turning Movement Peak Hour Data Plot (7:30 AM)

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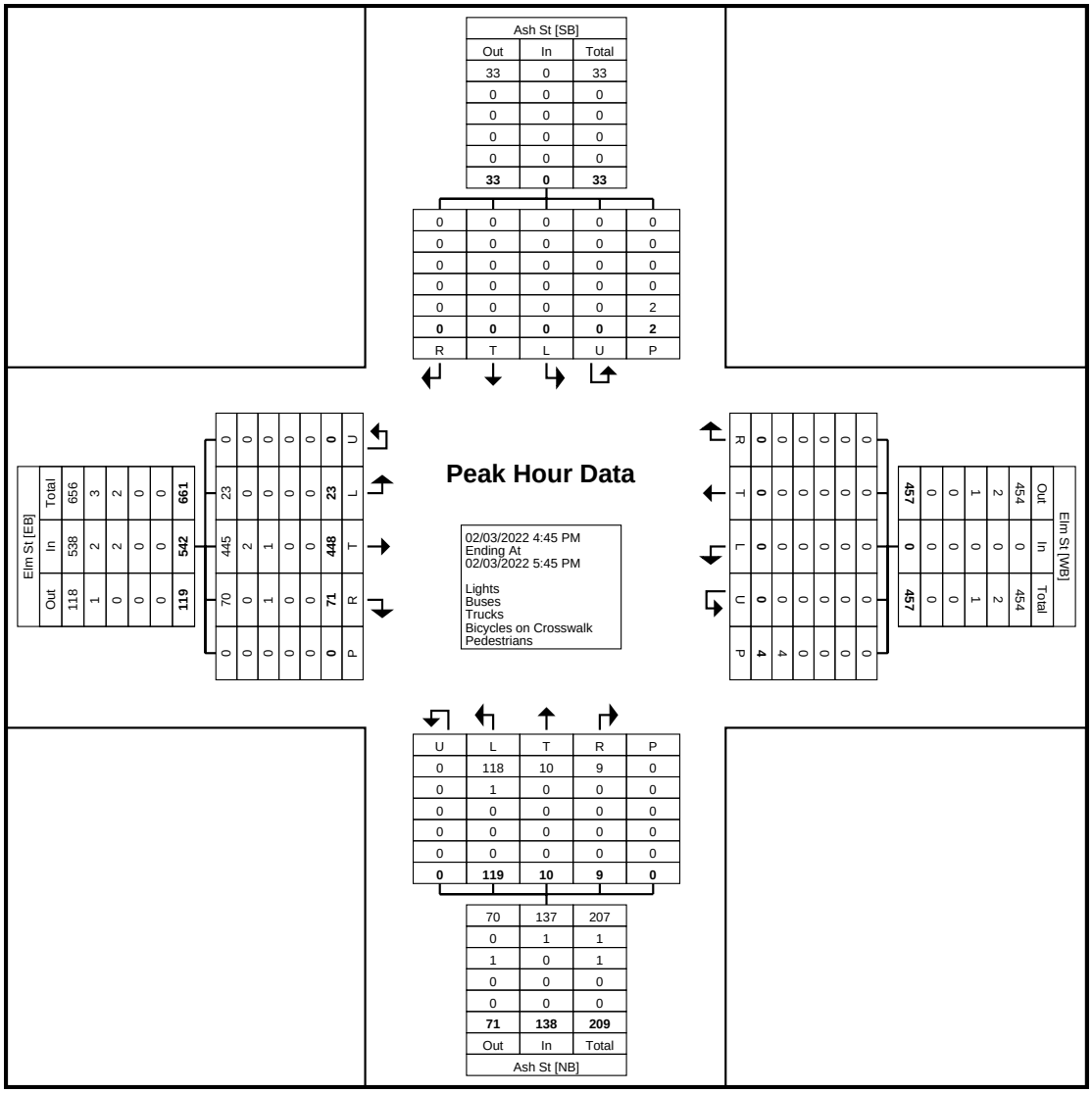
Conshohocken, PA
Elm St & Ash St
Thursday, February 3, 2022
Location: 40.072018, -75.304629

Count Name: Elm St & Ash St
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Elm St Eastbound						Elm St Westbound						Ash St Northbound						Ash St Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:45 PM	4	132	17	0	0	153	0	0	0	0	0	0	21	3	2	0	0	26	0	0	0	0	0	0	179
5:00 PM	2	111	17	0	0	130	0	0	0	0	2	0	32	5	2	0	0	39	0	0	0	0	0	0	169
5:15 PM	11	109	20	0	0	140	0	0	0	0	0	0	36	2	2	0	0	40	0	0	0	0	1	0	180
5:30 PM	6	96	17	0	0	119	0	0	0	0	2	0	30	0	3	0	0	33	0	0	0	0	1	0	152
Total	23	448	71	0	0	542	0	0	0	0	4	0	119	10	9	0	0	138	0	0	0	0	2	0	680
Approach %	4.2	82.7	13.1	0.0	-	-	0.0	0.0	0.0	0.0	-	-	86.2	7.2	6.5	0.0	-	-	0.0	0.0	0.0	0.0	-	-	-
Total %	3.4	65.9	10.4	0.0	-	79.7	0.0	0.0	0.0	0.0	-	0.0	17.5	1.5	1.3	0.0	-	20.3	0.0	0.0	0.0	0.0	-	0.0	-
PHF	0.523	0.848	0.888	0.000	-	0.886	0.000	0.000	0.000	0.000	-	0.000	0.826	0.500	0.750	0.000	-	0.863	0.000	0.000	0.000	0.000	-	0.000	0.944
Lights	23	445	70	0	-	538	0	0	0	0	-	0	118	10	9	0	-	137	0	0	0	0	-	0	675
% Lights	100.0	99.3	98.6	-	-	99.3	-	-	-	-	-	-	99.2	100.0	100.0	-	-	99.3	-	-	-	-	-	-	99.3
Buses	0	2	0	0	-	2	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	3
% Buses	0.0	0.4	0.0	-	-	0.4	-	-	-	-	-	-	0.8	0.0	0.0	-	-	0.7	-	-	-	-	-	-	0.4
Trucks	0	1	1	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	2
% Trucks	0.0	0.2	1.4	-	-	0.4	-	-	-	-	-	-	0.0	0.0	0.0	-	-	0.0	-	-	-	-	-	-	0.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Conshohocken, PA
Elm St & Cherry St
Thursday, February 3, 2022
Location: 40.072904, -75.299049

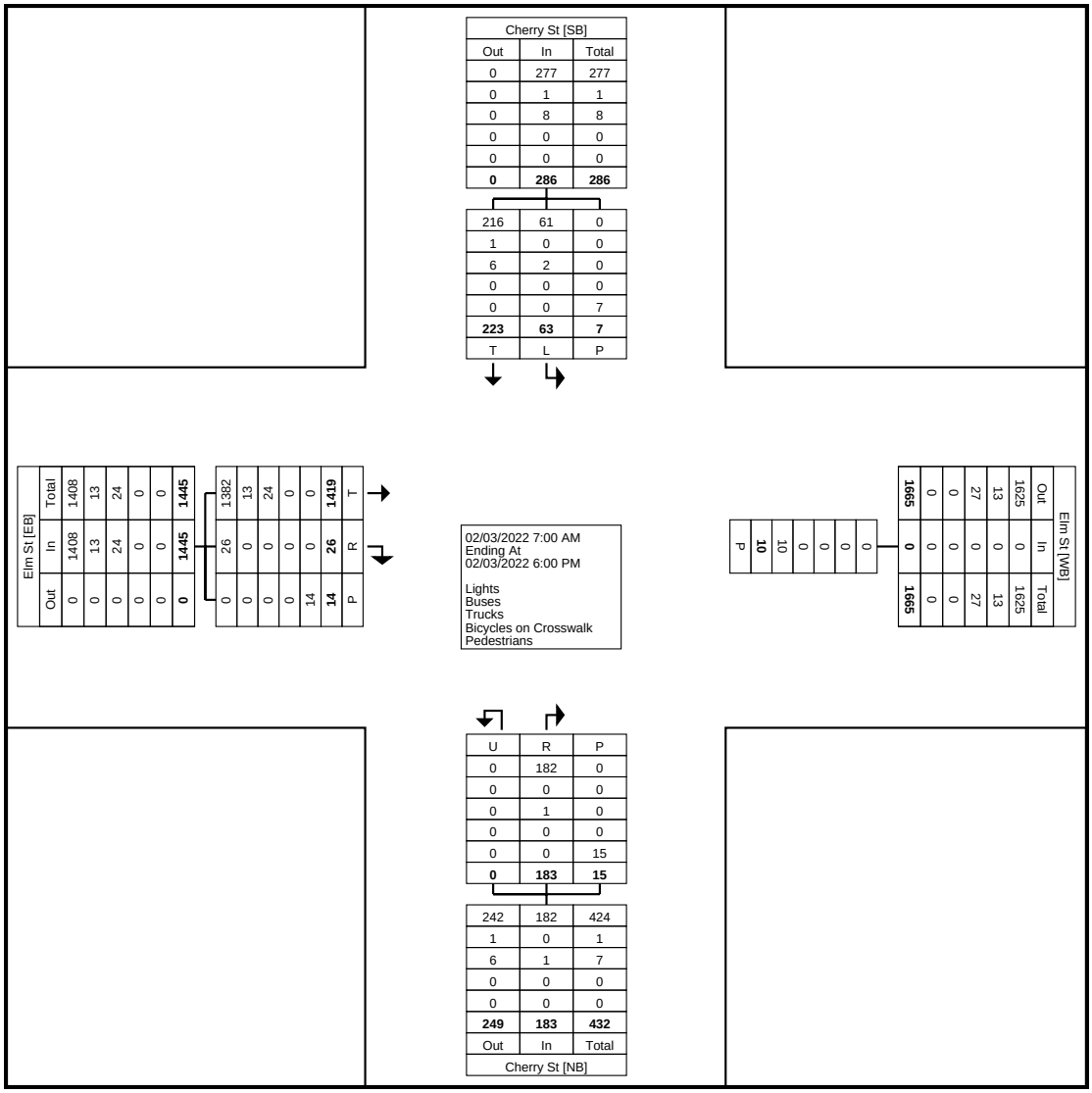
Count Name: Elm St & Cherry St
Site Code:
Start Date: 02/03/2022

Turning Movement Data

Start Time	Elm St Eastbound				Elm St Westbound		Cherry St Northbound				Cherry St Southbound				
	Thru	Right	Peds	App. Total	Peds	App. Total	Right	U-Turn	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
7:00 AM	53	4	0	57	0	0	7	0	0	7	2	6	0	8	72
7:15 AM	53	1	0	54	0	0	10	0	0	10	1	9	0	10	74
7:30 AM	79	4	1	83	2	0	16	0	1	16	2	13	1	15	114
7:45 AM	96	1	0	97	0	0	7	0	0	7	1	15	0	16	120
Hourly Total	281	10	1	291	2	0	40	0	1	40	6	43	1	49	380
8:00 AM	79	2	2	81	1	0	8	0	0	8	5	21	1	26	115
8:15 AM	71	3	2	74	2	0	12	0	2	12	3	20	1	23	109
8:30 AM	53	1	1	54	2	0	6	0	2	6	5	11	0	16	76
8:45 AM	68	0	0	68	1	0	5	0	0	5	6	20	0	26	99
Hourly Total	271	6	5	277	6	0	31	0	4	31	19	72	2	91	399
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	111	1	0	112	0	0	11	0	0	11	2	12	0	14	137
4:15 PM	115	0	0	115	0	0	8	0	0	8	4	9	0	13	136
4:30 PM	101	1	1	102	0	0	19	0	1	19	3	23	1	26	147
4:45 PM	128	2	1	130	0	0	12	0	0	12	6	15	0	21	163
Hourly Total	455	4	2	459	0	0	50	0	1	50	15	59	1	74	583
5:00 PM	111	2	0	113	0	0	24	0	2	24	7	12	0	19	156
5:15 PM	112	0	2	112	0	0	10	0	2	10	2	12	2	14	136
5:30 PM	108	4	2	112	1	0	17	0	3	17	11	16	0	27	156
5:45 PM	81	0	2	81	1	0	11	0	2	11	3	9	1	12	104
Hourly Total	412	6	6	418	2	0	62	0	9	62	23	49	3	72	552
Grand Total	1419	26	14	1445	10	0	183	0	15	183	63	223	7	286	1914
Approach %	98.2	1.8	-	-	-	-	100.0	0.0	-	-	22.0	78.0	-	-	-
Total %	74.1	1.4	-	75.5	-	0.0	9.6	0.0	-	9.6	3.3	11.7	-	14.9	-
Lights	1382	26	-	1408	-	0	182	0	-	182	61	216	-	277	1867
% Lights	97.4	100.0	-	97.4	-	-	99.5	-	-	99.5	96.8	96.9	-	96.9	97.5
Buses	13	0	-	13	-	0	0	0	-	0	0	1	-	1	14
% Buses	0.9	0.0	-	0.9	-	-	0.0	-	-	0.0	0.0	0.4	-	0.3	0.7
Trucks	24	0	-	24	-	0	1	0	-	1	2	6	-	8	33
% Trucks	1.7	0.0	-	1.7	-	-	0.5	-	-	0.5	3.2	2.7	-	2.8	1.7
Bicycles on Crosswalk	-	-	0	-	0	-	-	-	0	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	0.0	-	0.0	-	-	-	0.0	-	-	-	0.0	-	-
Pedestrians	-	-	14	-	10	-	-	-	15	-	-	-	7	-	-
% Pedestrians	-	-	100.0	-	100.0	-	-	-	100.0	-	-	-	100.0	-	-

Conshohocken, PA
Elm St & Cherry St
Thursday, February 3, 2022
Location: 40.072904, -75.299049

Count Name: Elm St & Cherry St
Site Code:
Start Date: 02/03/2022



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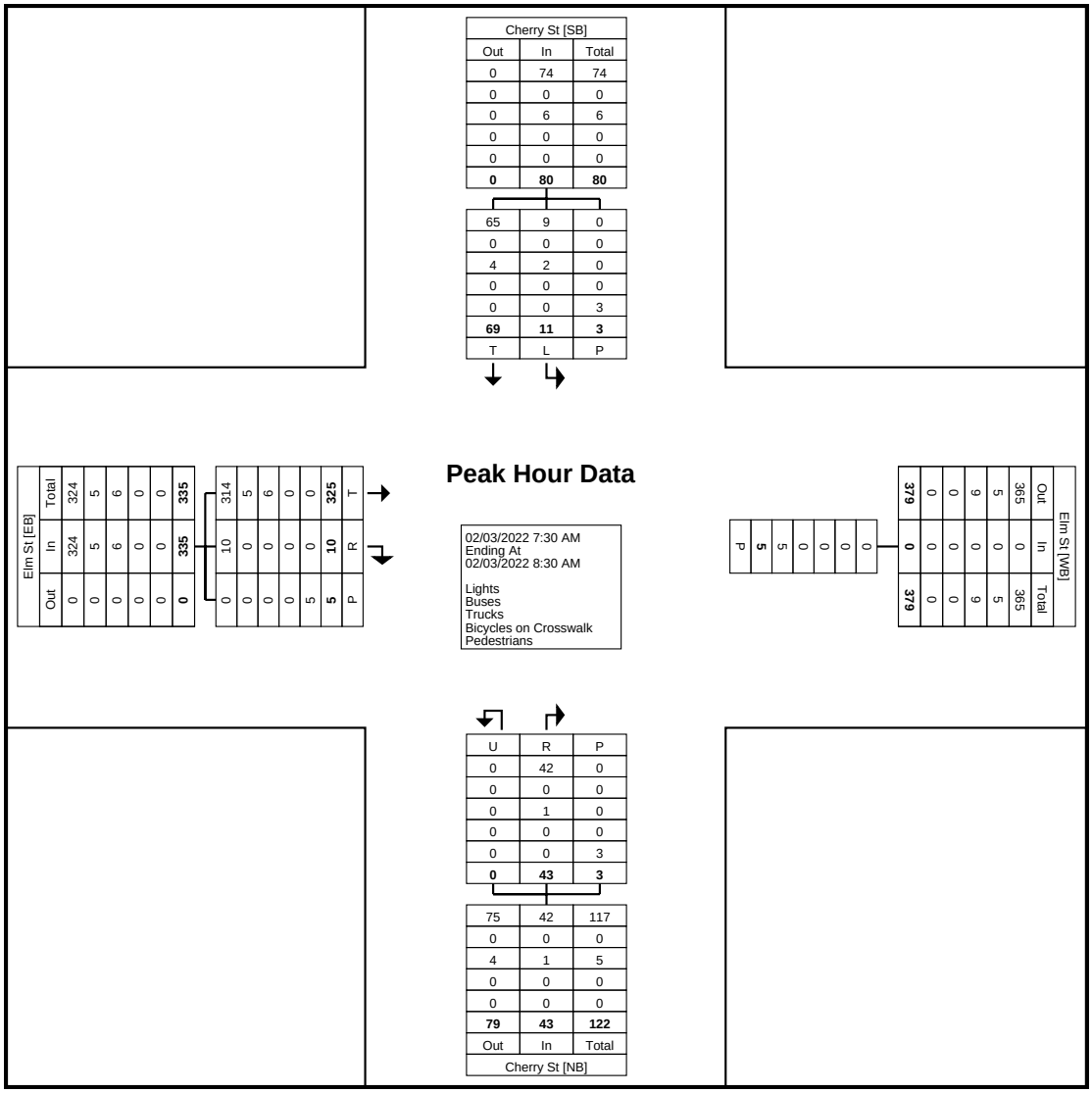
Conshohocken, PA
Elm St & Cherry St
Thursday, February 3, 2022
Location: 40.072904, -75.299049

Count Name: Elm St & Cherry St
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Elm St Eastbound				Elm St Westbound		Cherry St Northbound				Cherry St Southbound				
	Thru	Right	Peds	App. Total	Peds	App. Total	Right	U-Turn	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
7:30 AM	79	4	1	83	2	0	16	0	1	16	2	13	1	15	114
7:45 AM	96	1	0	97	0	0	7	0	0	7	1	15	0	16	120
8:00 AM	79	2	2	81	1	0	8	0	0	8	5	21	1	26	115
8:15 AM	71	3	2	74	2	0	12	0	2	12	3	20	1	23	109
Total	325	10	5	335	5	0	43	0	3	43	11	69	3	80	458
Approach %	97.0	3.0	-	-	-	-	100.0	0.0	-	-	13.8	86.3	-	-	-
Total %	71.0	2.2	-	73.1	-	0.0	9.4	0.0	-	9.4	2.4	15.1	-	17.5	-
PHF	0.846	0.625	-	0.863	-	0.000	0.672	0.000	-	0.672	0.550	0.821	-	0.769	0.954
Lights	314	10	-	324	-	0	42	0	-	42	9	65	-	74	440
% Lights	96.6	100.0	-	96.7	-	-	97.7	-	-	97.7	81.8	94.2	-	92.5	96.1
Buses	5	0	-	5	-	0	0	0	-	0	0	0	-	0	5
% Buses	1.5	0.0	-	1.5	-	-	0.0	-	-	0.0	0.0	0.0	-	0.0	1.1
Trucks	6	0	-	6	-	0	1	0	-	1	2	4	-	6	13
% Trucks	1.8	0.0	-	1.8	-	-	2.3	-	-	2.3	18.2	5.8	-	7.5	2.8
Bicycles on Crosswalk	-	-	0	-	0	-	-	-	0	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	0.0	-	0.0	-	-	-	0.0	-	-	-	0.0	-	-
Pedestrians	-	-	5	-	5	-	-	-	3	-	-	-	3	-	-
% Pedestrians	-	-	100.0	-	100.0	-	-	-	100.0	-	-	-	100.0	-	-



Turning Movement Peak Hour Data Plot (7:30 AM)

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610-466-1469
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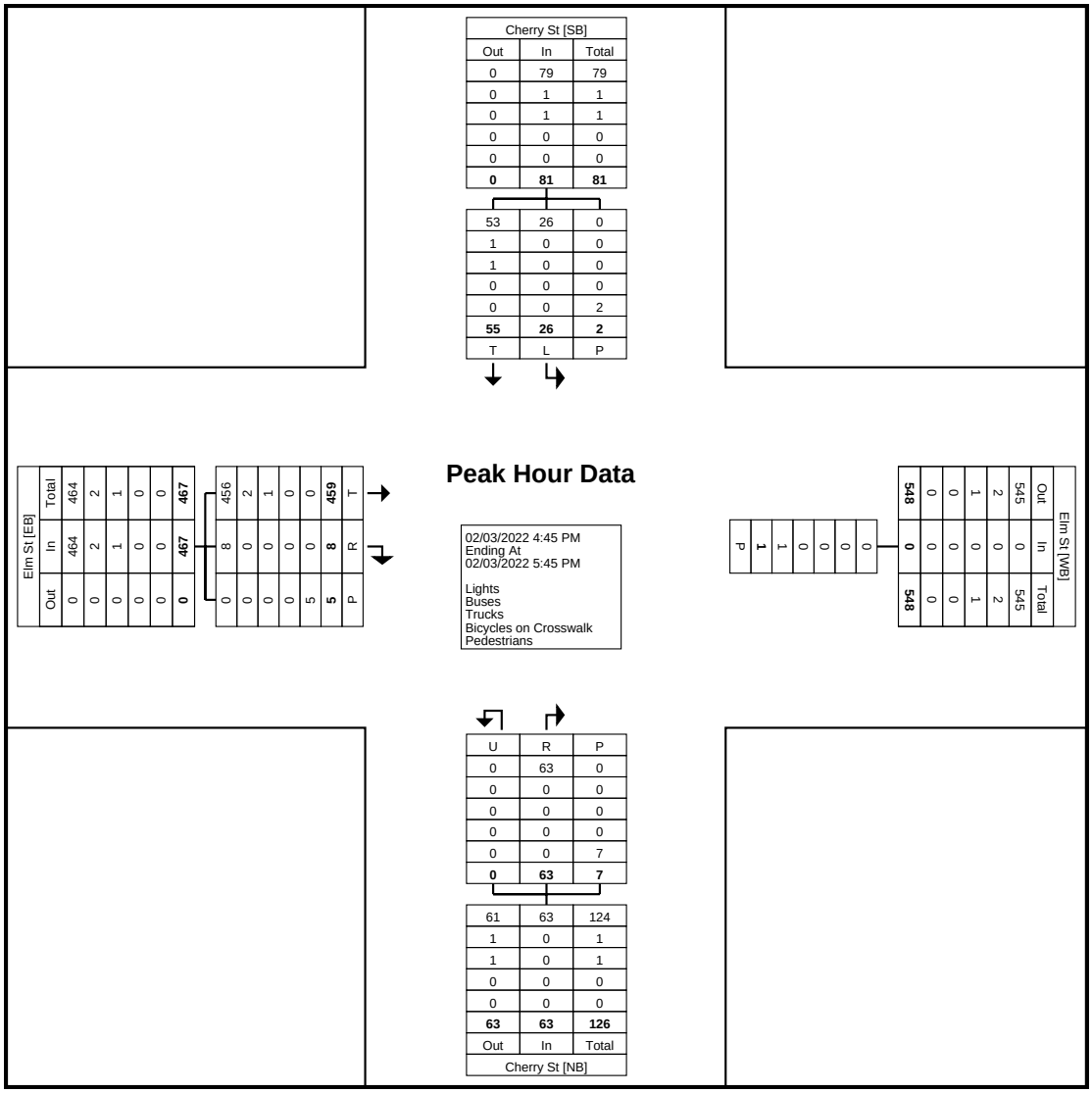
Conshohocken, PA
Elm St & Cherry St
Thursday, February 3, 2022
Location: 40.072904, -75.299049

Count Name: Elm St & Cherry St
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Elm St Eastbound				Elm St Westbound		Cherry St Northbound				Cherry St Southbound				
	Thru	Right	Peds	App. Total	Peds	App. Total	Right	U-Turn	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
4:45 PM	128	2	1	130	0	0	12	0	0	12	6	15	0	21	163
5:00 PM	111	2	0	113	0	0	24	0	2	24	7	12	0	19	156
5:15 PM	112	0	2	112	0	0	10	0	2	10	2	12	2	14	136
5:30 PM	108	4	2	112	1	0	17	0	3	17	11	16	0	27	156
Total	459	8	5	467	1	0	63	0	7	63	26	55	2	81	611
Approach %	98.3	1.7	-	-	-	-	100.0	0.0	-	-	32.1	67.9	-	-	-
Total %	75.1	1.3	-	76.4	-	0.0	10.3	0.0	-	10.3	4.3	9.0	-	13.3	-
PHF	0.896	0.500	-	0.898	-	0.000	0.656	0.000	-	0.656	0.591	0.859	-	0.750	0.937
Lights	456	8	-	464	-	0	63	0	-	63	26	53	-	79	606
% Lights	99.3	100.0	-	99.4	-	-	100.0	-	-	100.0	100.0	96.4	-	97.5	99.2
Buses	2	0	-	2	-	0	0	0	-	0	0	1	-	1	3
% Buses	0.4	0.0	-	0.4	-	-	0.0	-	-	0.0	0.0	1.8	-	1.2	0.5
Trucks	1	0	-	1	-	0	0	0	-	0	0	1	-	1	2
% Trucks	0.2	0.0	-	0.2	-	-	0.0	-	-	0.0	0.0	1.8	-	1.2	0.3
Bicycles on Crosswalk	-	-	0	-	0	-	-	-	0	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	0.0	-	0.0	-	-	-	0.0	-	-	-	0.0	-	-
Pedestrians	-	-	5	-	1	-	-	-	7	-	-	-	2	-	-
% Pedestrians	-	-	100.0	-	100.0	-	-	-	100.0	-	-	-	100.0	-	-



Turning Movement Peak Hour Data Plot (4:45 PM)

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Conshohocken, PA
Elm St & Harry St
Thursday, February 3, 2022
Location: 40.072296, -75.306344

Count Name: Elm St & Harry St
Site Code:
Start Date: 02/03/2022

Turning Movement Data

Start Time	Elm St Eastbound						Elm St Westbound					Harry St Northbound						Harry St Southbound						Int. Total
	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
7:00 AM	58	41	3	2	1	104	0	34	0	0	34	7	2	1	0	0	10	1	4	24	29	0	58	206
7:15 AM	73	26	5	0	0	104	0	37	0	1	37	10	0	1	0	0	11	1	3	44	21	1	69	221
7:30 AM	93	30	5	1	0	129	0	36	0	0	36	10	0	3	0	0	13	0	2	33	29	0	64	242
7:45 AM	112	22	9	1	0	144	0	23	0	0	23	12	2	1	0	0	15	5	5	25	36	2	71	253
Hourly Total	336	119	22	4	1	481	0	130	0	1	130	39	4	6	0	0	49	7	14	126	115	3	262	922
8:00 AM	96	42	19	1	0	158	0	34	0	0	34	17	0	0	0	0	17	4	3	66	34	1	107	316
8:15 AM	85	28	16	1	1	130	0	26	0	1	26	12	0	0	0	1	12	7	6	44	16	2	73	241
8:30 AM	58	29	8	0	1	95	0	14	0	0	14	11	3	0	0	0	14	3	8	35	32	0	78	201
8:45 AM	81	46	7	0	0	134	0	15	0	0	15	4	0	0	0	0	4	1	4	25	35	0	65	218
Hourly Total	320	145	50	2	2	517	0	89	0	1	89	44	3	0	0	1	47	15	21	170	117	3	323	976
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	123	7	3	0	0	133	0	25	0	0	25	30	0	0	0	0	30	1	5	22	16	1	44	232
4:15 PM	127	12	5	0	0	144	1	18	0	2	19	23	3	0	0	1	26	5	2	32	24	0	63	252
4:30 PM	113	6	9	1	0	129	0	19	0	0	19	35	5	1	0	0	41	2	1	42	27	0	72	261
4:45 PM	140	11	5	1	0	157	0	22	0	1	22	38	6	0	0	0	44	4	2	45	26	0	77	300
Hourly Total	503	36	22	2	0	563	1	84	0	3	85	126	14	1	0	1	141	12	10	141	93	1	256	1045
5:00 PM	126	13	7	2	0	148	0	39	0	5	39	37	1	1	0	0	39	6	2	49	16	1	73	299
5:15 PM	129	7	3	0	0	139	1	36	0	0	37	34	1	1	0	0	36	8	3	54	9	0	74	286
5:30 PM	97	8	1	2	0	108	0	34	0	0	34	42	8	0	0	0	50	6	1	35	13	0	55	247
5:45 PM	111	7	5	2	0	125	0	14	1	0	15	21	2	1	0	0	24	9	6	26	21	0	62	226
Hourly Total	463	35	16	6	0	520	1	123	1	5	125	134	12	3	0	0	149	29	12	164	59	1	264	1058
Grand Total	1622	335	110	14	3	2081	2	426	1	10	429	343	33	10	0	2	386	63	57	601	384	8	1105	4001
Approach %	77.9	16.1	5.3	0.7	-	-	0.5	99.3	0.2	-	-	88.9	8.5	2.6	0.0	-	-	5.7	5.2	54.4	34.8	-	-	-
Total %	40.5	8.4	2.7	0.3	-	52.0	0.0	10.6	0.0	-	10.7	8.6	0.8	0.2	0.0	-	9.6	1.6	1.4	15.0	9.6	-	27.6	-
Lights	1574	316	108	14	-	2012	2	420	1	-	423	326	30	9	0	-	365	59	53	588	375	-	1075	3875
% Lights	97.0	94.3	98.2	100.0	-	96.7	100.0	98.6	100.0	-	98.6	95.0	90.9	90.0	-	-	94.6	93.7	93.0	97.8	97.7	-	97.3	96.9
Buses	14	5	1	0	-	20	0	1	0	-	1	2	3	0	0	-	5	1	4	7	3	-	15	41
% Buses	0.9	1.5	0.9	0.0	-	1.0	0.0	0.2	0.0	-	0.2	0.6	9.1	0.0	-	-	1.3	1.6	7.0	1.2	0.8	-	1.4	1.0
Trucks	34	14	1	0	-	49	0	5	0	-	5	15	0	1	0	-	16	3	0	6	6	-	15	85
% Trucks	2.1	4.2	0.9	0.0	-	2.4	0.0	1.2	0.0	-	1.2	4.4	0.0	10.0	-	-	4.1	4.8	0.0	1.0	1.6	-	1.4	2.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	10	-	-	-	-	-	2	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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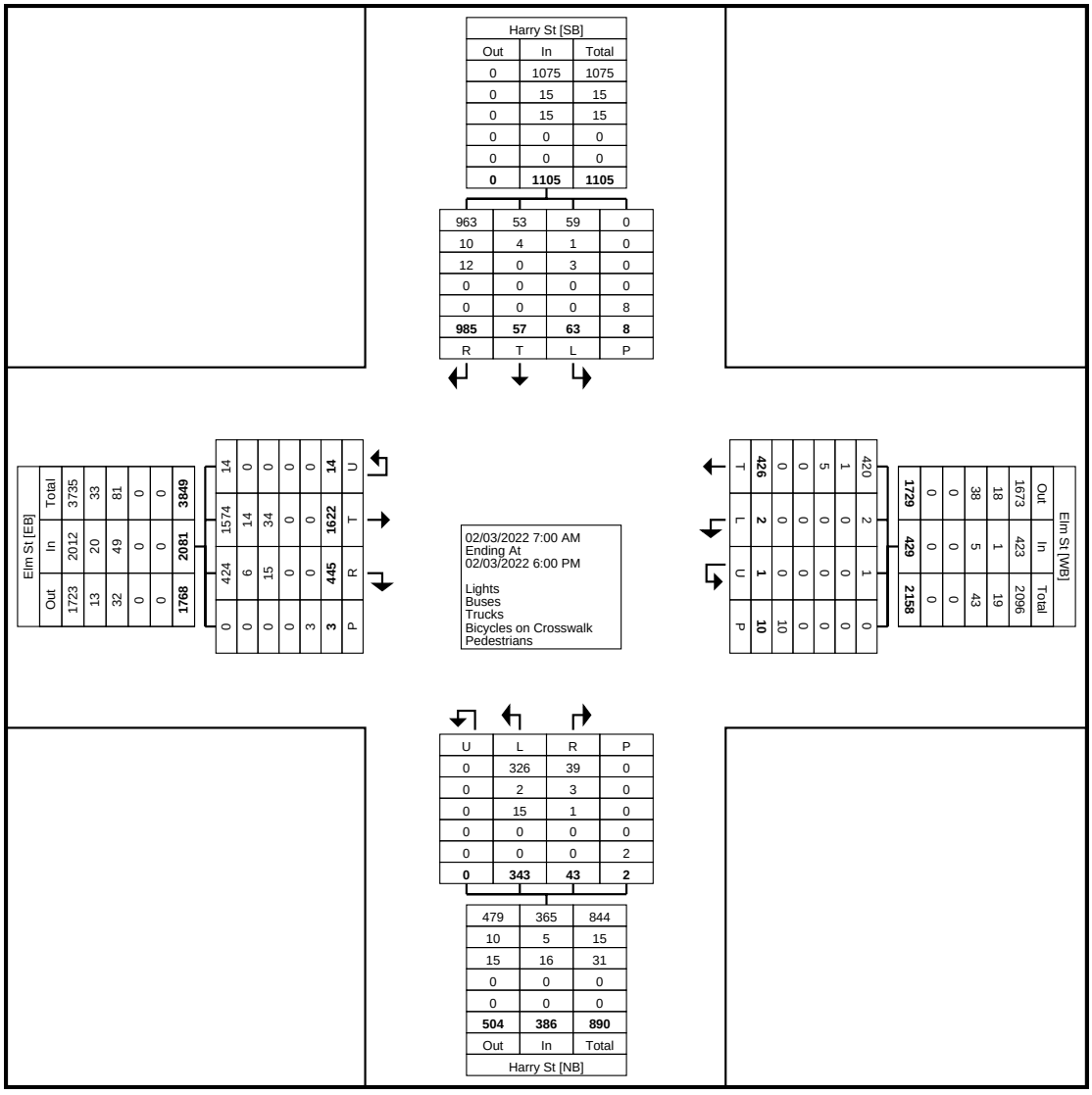
Conshohocken, PA
Elm St & Harry St
Thursday, February 3, 2022
Location: 40.072296, -75.306344

Count Name: Elm St & Harry St
Site Code:
Start Date: 02/03/2022



Turning Movement Data Plot

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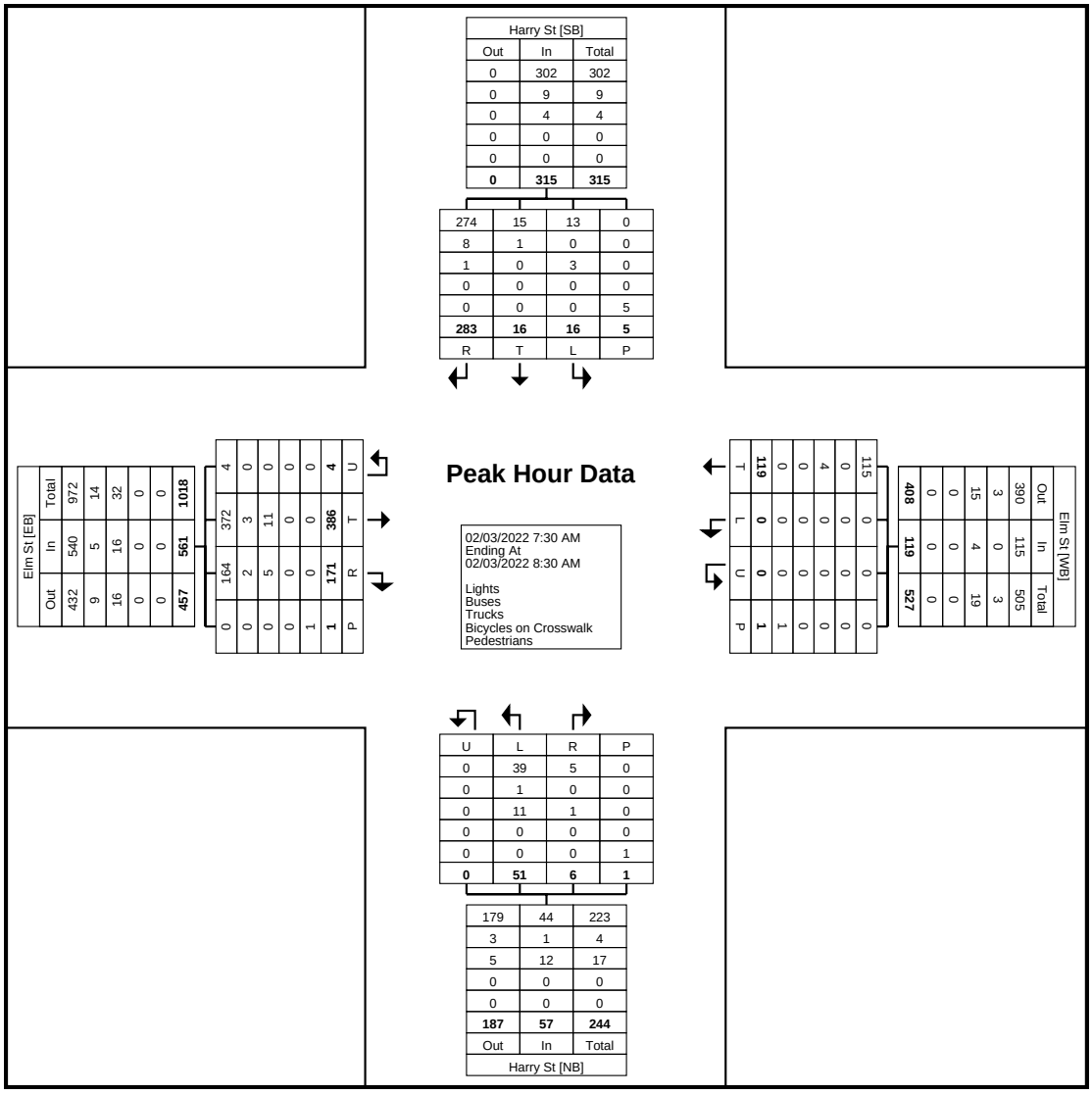
Conshohocken, PA
Elm St & Harry St
Thursday, February 3, 2022
Location: 40.072296, -75.306344

Count Name: Elm St & Harry St
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Elm St Eastbound						Elm St Westbound					Harry St Northbound						Harry St Southbound						Int. Total
	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
7:30 AM	93	30	5	1	0	129	0	36	0	0	36	10	0	3	0	0	13	0	2	33	29	0	64	242
7:45 AM	112	22	9	1	0	144	0	23	0	0	23	12	2	1	0	0	15	5	5	25	36	2	71	253
8:00 AM	96	42	19	1	0	158	0	34	0	0	34	17	0	0	0	0	17	4	3	66	34	1	107	316
8:15 AM	85	28	16	1	1	130	0	26	0	1	26	12	0	0	0	1	12	7	6	44	16	2	73	241
Total	386	122	49	4	1	561	0	119	0	1	119	51	2	4	0	1	57	16	16	168	115	5	315	1052
Approach %	68.8	21.7	8.7	0.7	-	-	0.0	100.0	0.0	-	-	89.5	3.5	7.0	0.0	-	-	5.1	5.1	53.3	36.5	-	-	-
Total %	36.7	11.6	4.7	0.4	-	53.3	0.0	11.3	0.0	-	11.3	4.8	0.2	0.4	0.0	-	5.4	1.5	1.5	16.0	10.9	-	29.9	-
PHF	0.862	0.726	0.645	1.000	-	0.888	0.000	0.826	0.000	-	0.826	0.750	0.250	0.333	0.000	-	0.838	0.571	0.667	0.636	0.799	-	0.736	0.832
Lights	372	116	48	4	-	540	0	115	0	-	115	39	2	3	0	-	44	13	15	162	112	-	302	1001
% Lights	96.4	95.1	98.0	100.0	-	96.3	-	96.6	-	-	96.6	76.5	100.0	75.0	-	-	77.2	81.3	93.8	96.4	97.4	-	95.9	95.2
Buses	3	2	0	0	-	5	0	0	0	-	0	1	0	0	0	-	1	0	1	5	3	-	9	15
% Buses	0.8	1.6	0.0	0.0	-	0.9	-	0.0	-	-	0.0	2.0	0.0	0.0	-	-	1.8	0.0	6.3	3.0	2.6	-	2.9	1.4
Trucks	11	4	1	0	-	16	0	4	0	-	4	11	0	1	0	-	12	3	0	1	0	-	4	36
% Trucks	2.8	3.3	2.0	0.0	-	2.9	-	3.4	-	-	3.4	21.6	0.0	25.0	-	-	21.1	18.8	0.0	0.6	0.0	-	1.3	3.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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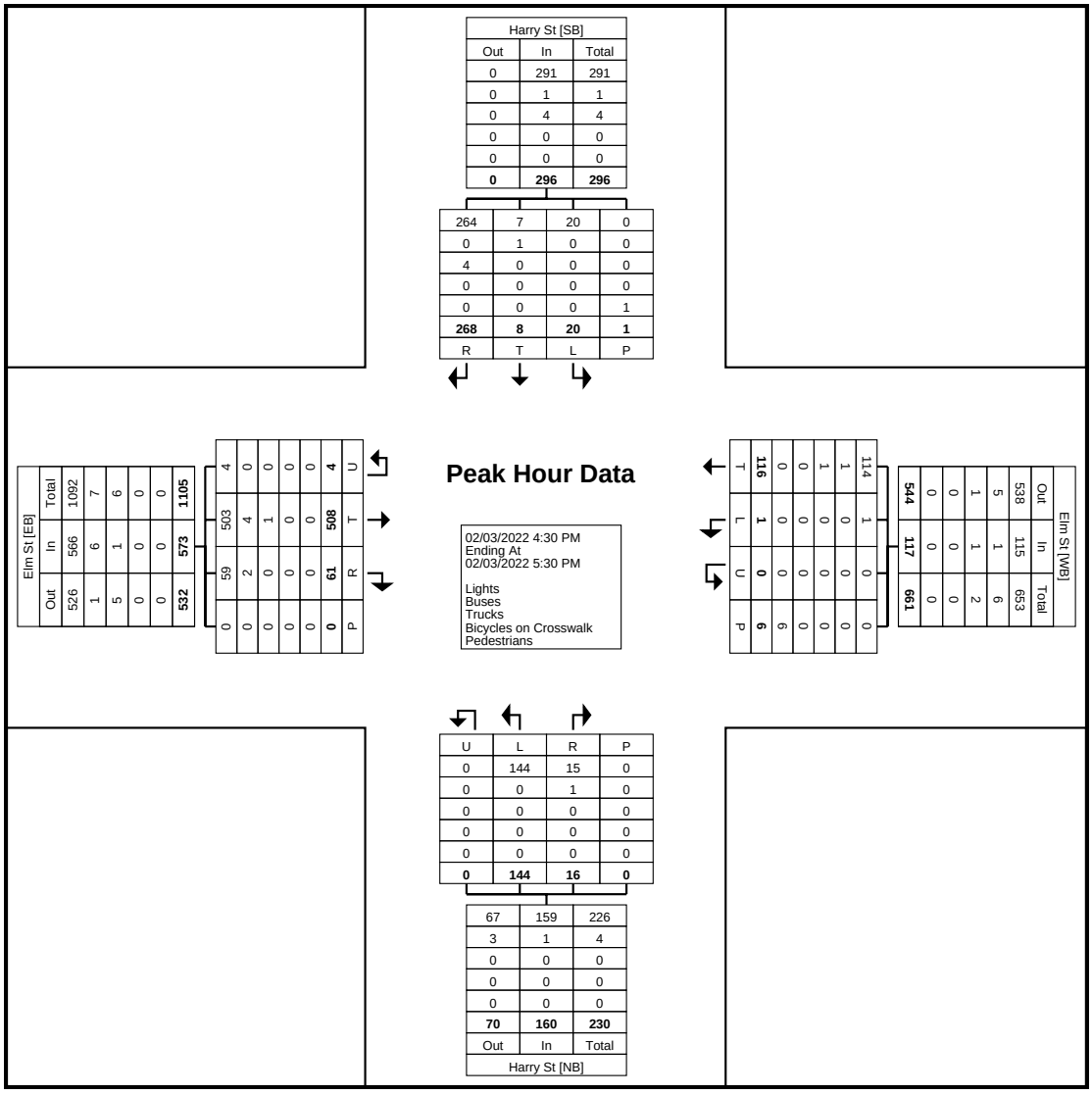
Conshohocken, PA
Elm St & Harry St
Thursday, February 3, 2022
Location: 40.072296, -75.306344

Count Name: Elm St & Harry St
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Elm St Eastbound						Elm St Westbound					Harry St Northbound						Harry St Southbound						Int. Total
	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
4:30 PM	113	6	9	1	0	129	0	19	0	0	19	35	5	1	0	0	41	2	1	42	27	0	72	261
4:45 PM	140	11	5	1	0	157	0	22	0	1	22	38	6	0	0	0	44	4	2	45	26	0	77	300
5:00 PM	126	13	7	2	0	148	0	39	0	5	39	37	1	1	0	0	39	6	2	49	16	1	73	299
5:15 PM	129	7	3	0	0	139	1	36	0	0	37	34	1	1	0	0	36	8	3	54	9	0	74	286
Total	508	37	24	4	0	573	1	116	0	6	117	144	13	3	0	0	160	20	8	190	78	1	296	1146
Approach %	88.7	6.5	4.2	0.7	-	-	0.9	99.1	0.0	-	-	90.0	8.1	1.9	0.0	-	-	6.8	2.7	64.2	26.4	-	-	-
Total %	44.3	3.2	2.1	0.3	-	50.0	0.1	10.1	0.0	-	10.2	12.6	1.1	0.3	0.0	-	14.0	1.7	0.7	16.6	6.8	-	25.8	-
PHF	0.907	0.712	0.667	0.500	-	0.912	0.250	0.744	0.000	-	0.750	0.947	0.542	0.750	0.000	-	0.909	0.625	0.667	0.880	0.722	-	0.961	0.955
Lights	503	36	23	4	-	566	1	114	0	-	115	144	12	3	0	-	159	20	7	187	77	-	291	1131
% Lights	99.0	97.3	95.8	100.0	-	98.8	100.0	98.3	-	-	98.3	100.0	92.3	100.0	-	-	99.4	100.0	87.5	98.4	98.7	-	98.3	98.7
Buses	4	1	1	0	-	6	0	1	0	-	1	0	1	0	0	-	1	0	1	0	0	-	1	9
% Buses	0.8	2.7	4.2	0.0	-	1.0	0.0	0.9	-	-	0.9	0.0	7.7	0.0	-	-	0.6	0.0	12.5	0.0	0.0	-	0.3	0.8
Trucks	1	0	0	0	-	1	0	1	0	-	1	0	0	0	0	-	0	0	0	3	1	-	4	6
% Trucks	0.2	0.0	0.0	0.0	-	0.2	0.0	0.9	-	-	0.9	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.6	1.3	-	1.4	0.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Turning Movement Peak Hour Data Plot (4:30 PM)

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Conshohocken, PA
Washington St & Cherry St
Thursday, February 3, 2022
Location: 40.072106, -75.298835

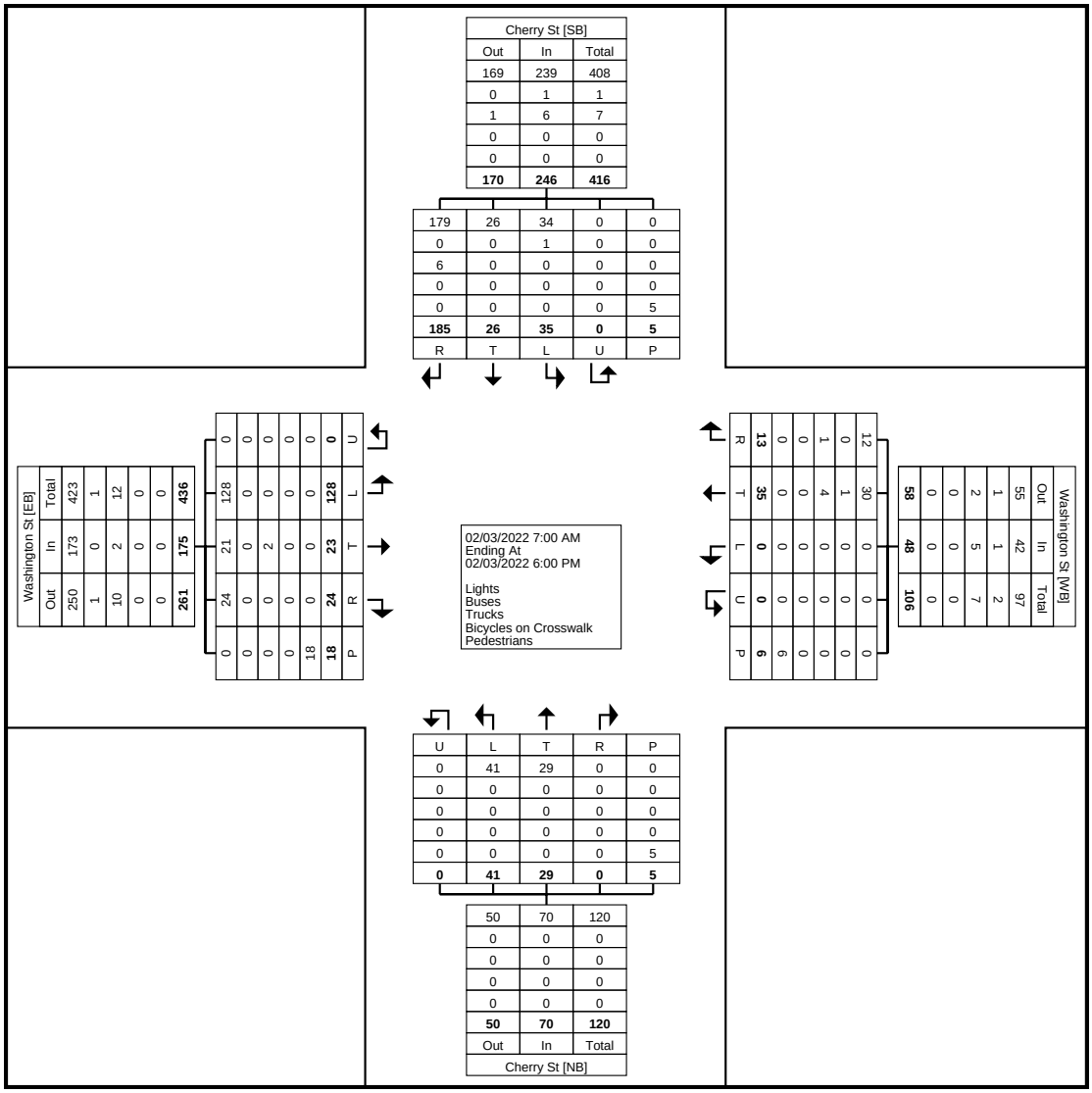
Count Name: Washington St & Cherry St
Site Code:
Start Date: 02/03/2022

Turning Movement Data

Start Time	Washington St Eastbound						Washington St Westbound						Cherry St Northbound						Cherry St Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	7	1	0	0	0	8	0	0	0	0	1	0	2	0	0	0	1	2	1	1	7	0	0	9	19
7:15 AM	8	2	0	0	0	10	0	0	0	0	0	0	5	2	0	0	1	7	2	0	10	0	1	12	29
7:30 AM	14	1	0	0	2	15	0	3	0	0	0	3	7	2	0	0	0	9	2	1	13	0	1	16	43
7:45 AM	6	1	0	0	3	7	0	2	1	0	0	3	3	1	0	0	0	4	1	0	15	0	1	16	30
Hourly Total	35	5	0	0	5	40	0	5	1	0	1	6	17	5	0	0	2	22	6	2	45	0	3	53	121
8:00 AM	4	0	0	0	0	4	0	1	0	0	0	1	5	3	0	0	0	8	0	0	16	0	0	16	29
8:15 AM	9	2	1	0	3	12	0	1	1	0	0	2	5	3	0	0	0	8	1	1	21	0	1	23	45
8:30 AM	5	0	2	0	3	7	0	0	1	0	1	1	5	1	0	0	1	6	0	0	9	0	0	9	23
8:45 AM	4	1	1	0	0	6	0	0	0	0	0	0	2	0	0	0	0	2	2	2	16	0	0	20	28
Hourly Total	22	3	4	0	6	29	0	2	2	0	1	4	17	7	0	0	1	24	3	3	62	0	1	68	125
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	8	1	0	0	0	9	0	4	2	0	0	6	0	0	0	0	0	0	3	1	9	0	0	13	28
4:15 PM	5	0	4	0	0	9	0	1	1	0	0	2	0	0	0	0	0	0	2	3	6	0	0	11	22
4:30 PM	10	2	4	0	2	16	0	1	4	0	1	5	0	3	0	0	0	3	15	1	8	0	0	24	48
4:45 PM	8	2	0	0	2	10	0	2	0	0	0	2	0	3	0	0	0	3	4	3	11	0	0	18	33
Hourly Total	31	5	8	0	4	44	0	8	7	0	1	15	0	6	0	0	0	6	24	8	34	0	0	66	131
5:00 PM	13	3	3	0	1	19	0	6	1	0	1	7	2	4	0	0	0	6	0	2	11	0	0	13	45
5:15 PM	10	1	2	0	1	13	0	10	0	0	1	10	2	2	0	0	1	4	0	4	9	0	0	13	40
5:30 PM	8	1	4	0	0	13	0	3	2	0	1	5	1	5	0	0	1	6	0	5	16	0	0	21	45
5:45 PM	9	5	3	0	1	17	0	1	0	0	0	1	2	0	0	0	0	2	2	2	8	0	1	12	32
Hourly Total	40	10	12	0	3	62	0	20	3	0	3	23	7	11	0	0	2	18	2	13	44	0	1	59	162
Grand Total	128	23	24	0	18	175	0	35	13	0	6	48	41	29	0	0	5	70	35	26	185	0	5	246	539
Approach %	73.1	13.1	13.7	0.0	-	-	0.0	72.9	27.1	0.0	-	-	58.6	41.4	0.0	0.0	-	-	14.2	10.6	75.2	0.0	-	-	-
Total %	23.7	4.3	4.5	0.0	-	32.5	0.0	6.5	2.4	0.0	-	8.9	7.6	5.4	0.0	0.0	-	13.0	6.5	4.8	34.3	0.0	-	45.6	-
Lights	128	21	24	0	-	173	0	30	12	0	-	42	41	29	0	0	-	70	34	26	179	0	-	239	524
% Lights	100.0	91.3	100.0	-	-	98.9	-	85.7	92.3	-	-	87.5	100.0	100.0	-	-	-	100.0	97.1	100.0	96.8	-	-	97.2	97.2
Buses	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1	0	0	0	-	1	2
% Buses	0.0	0.0	0.0	-	-	0.0	-	2.9	0.0	-	-	2.1	0.0	0.0	-	-	-	0.0	2.9	0.0	0.0	-	-	0.4	0.4
Trucks	0	2	0	0	-	2	0	4	1	0	-	5	0	0	0	0	-	0	0	0	6	0	-	6	13
% Trucks	0.0	8.7	0.0	-	-	1.1	-	11.4	7.7	-	-	10.4	0.0	0.0	-	-	-	0.0	0.0	0.0	3.2	-	-	2.4	2.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	18	-	-	-	-	-	6	-	-	-	-	-	5	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Conshohocken, PA
Washington St & Cherry St
Thursday, February 3, 2022
Location: 40.072106, -75.298835

Count Name: Washington St & Cherry St
Site Code:
Start Date: 02/03/2022



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Conshohocken, PA
Washington St & Cherry St
Thursday, February 3, 2022
Location: 40.072106, -75.298835

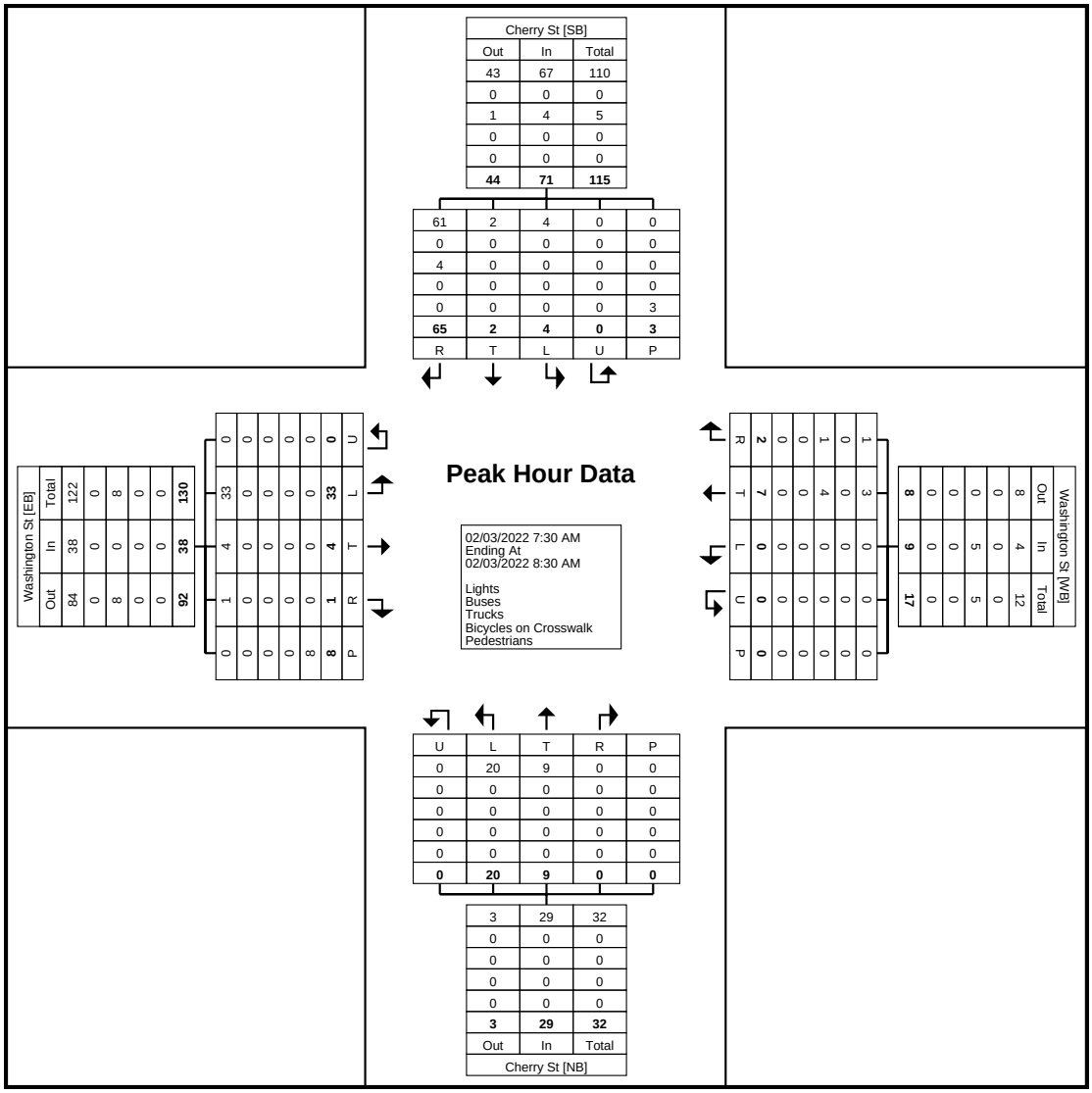
Count Name: Washington St & Cherry St
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Washington St Eastbound						Washington St Westbound						Cherry St Northbound						Cherry St Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:30 AM	14	1	0	0	2	15	0	3	0	0	0	3	7	2	0	0	0	9	2	1	13	0	1	16	43
7:45 AM	6	1	0	0	3	7	0	2	1	0	0	3	3	1	0	0	0	4	1	0	15	0	1	16	30
8:00 AM	4	0	0	0	0	4	0	1	0	0	0	1	5	3	0	0	0	8	0	0	16	0	0	16	29
8:15 AM	9	2	1	0	3	12	0	1	1	0	0	2	5	3	0	0	0	8	1	1	21	0	1	23	45
Total	33	4	1	0	8	38	0	7	2	0	0	9	20	9	0	0	0	29	4	2	65	0	3	71	147
Approach %	86.8	10.5	2.6	0.0	-	-	0.0	77.8	22.2	0.0	-	-	69.0	31.0	0.0	0.0	-	-	5.6	2.8	91.5	0.0	-	-	-
Total %	22.4	2.7	0.7	0.0	-	25.9	0.0	4.8	1.4	0.0	-	6.1	13.6	6.1	0.0	0.0	-	19.7	2.7	1.4	44.2	0.0	-	48.3	-
PHF	0.589	0.500	0.250	0.000	-	0.633	0.000	0.583	0.500	0.000	-	0.750	0.714	0.750	0.000	0.000	-	0.806	0.500	0.500	0.774	0.000	-	0.772	0.817
Lights	33	4	1	0	-	38	0	3	1	0	-	4	20	9	0	0	-	29	4	2	61	0	-	67	138
% Lights	100.0	100.0	100.0	-	-	100.0	-	42.9	50.0	-	-	44.4	100.0	100.0	-	-	-	100.0	100.0	100.0	93.8	-	-	94.4	93.9
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	0	0	0	0	-	0	0	4	1	0	-	5	0	0	0	0	-	0	0	0	4	0	-	4	9
% Trucks	0.0	0.0	0.0	-	-	0.0	-	57.1	50.0	-	-	55.6	0.0	0.0	-	-	-	0.0	0.0	0.0	6.2	-	-	5.6	6.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	8	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Conshohocken, PA
Washington St & Cherry St
Thursday, February 3, 2022
Location: 40.072106, -75.298835

Count Name: Washington St & Cherry St
Site Code:
Start Date: 02/03/2022



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Conshohocken, PA
Washington St & Cherry St
Thursday, February 3, 2022
Location: 40.072106, -75.298835

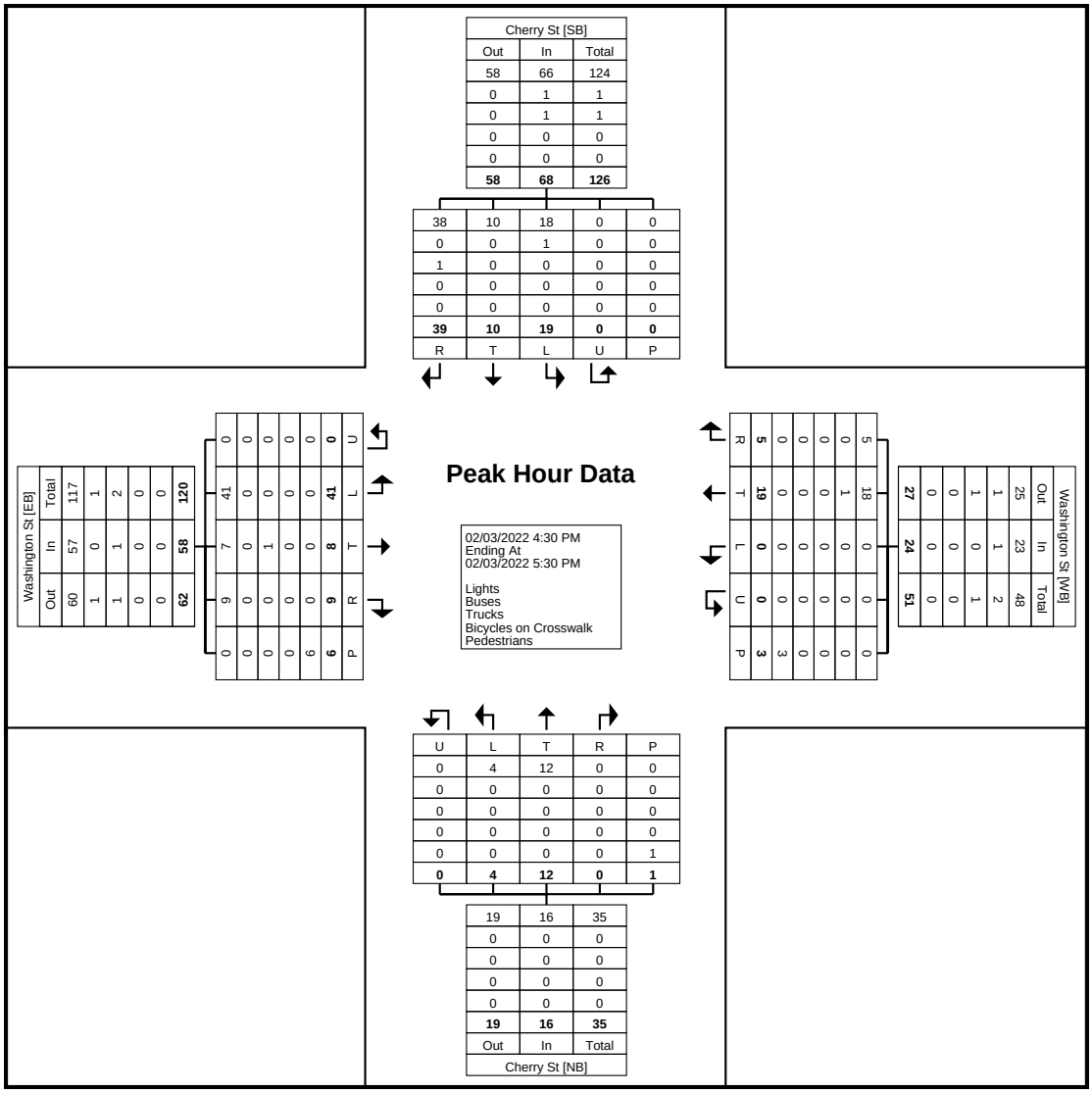
Count Name: Washington St & Cherry St
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Washington St Eastbound						Washington St Westbound						Cherry St Northbound						Cherry St Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:30 PM	10	2	4	0	2	16	0	1	4	0	1	5	0	3	0	0	0	3	15	1	8	0	0	24	48
4:45 PM	8	2	0	0	2	10	0	2	0	0	0	2	0	3	0	0	0	3	4	3	11	0	0	18	33
5:00 PM	13	3	3	0	1	19	0	6	1	0	1	7	2	4	0	0	0	6	0	2	11	0	0	13	45
5:15 PM	10	1	2	0	1	13	0	10	0	0	1	10	2	2	0	0	1	4	0	4	9	0	0	13	40
Total	41	8	9	0	6	58	0	19	5	0	3	24	4	12	0	0	1	16	19	10	39	0	0	68	166
Approach %	70.7	13.8	15.5	0.0	-	-	0.0	79.2	20.8	0.0	-	-	25.0	75.0	0.0	0.0	-	-	27.9	14.7	57.4	0.0	-	-	-
Total %	24.7	4.8	5.4	0.0	-	34.9	0.0	11.4	3.0	0.0	-	14.5	2.4	7.2	0.0	0.0	-	9.6	11.4	6.0	23.5	0.0	-	41.0	-
PHF	0.788	0.667	0.563	0.000	-	0.763	0.000	0.475	0.313	0.000	-	0.600	0.500	0.750	0.000	0.000	-	0.667	0.317	0.625	0.886	0.000	-	0.708	0.865
Lights	41	7	9	0	-	57	0	18	5	0	-	23	4	12	0	0	-	16	18	10	38	0	-	66	162
% Lights	100.0	87.5	100.0	-	-	98.3	-	94.7	100.0	-	-	95.8	100.0	100.0	-	-	-	100.0	94.7	100.0	97.4	-	-	97.1	97.6
Buses	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1	0	0	0	-	1	2
% Buses	0.0	0.0	0.0	-	-	0.0	-	5.3	0.0	-	-	4.2	0.0	0.0	-	-	-	0.0	5.3	0.0	0.0	-	-	1.5	1.2
Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	2
% Trucks	0.0	12.5	0.0	-	-	1.7	-	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	2.6	-	-	1.5	1.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Conshohocken, PA
Washington St & Cherry St
Thursday, February 3, 2022
Location: 40.072106, -75.298835

Count Name: Washington St & Cherry St
Site Code:
Start Date: 02/03/2022



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Conshohocken, PA
Washington St & Poplar St
Thursday, February 3, 2022
Location: 40.071619, -75.301804

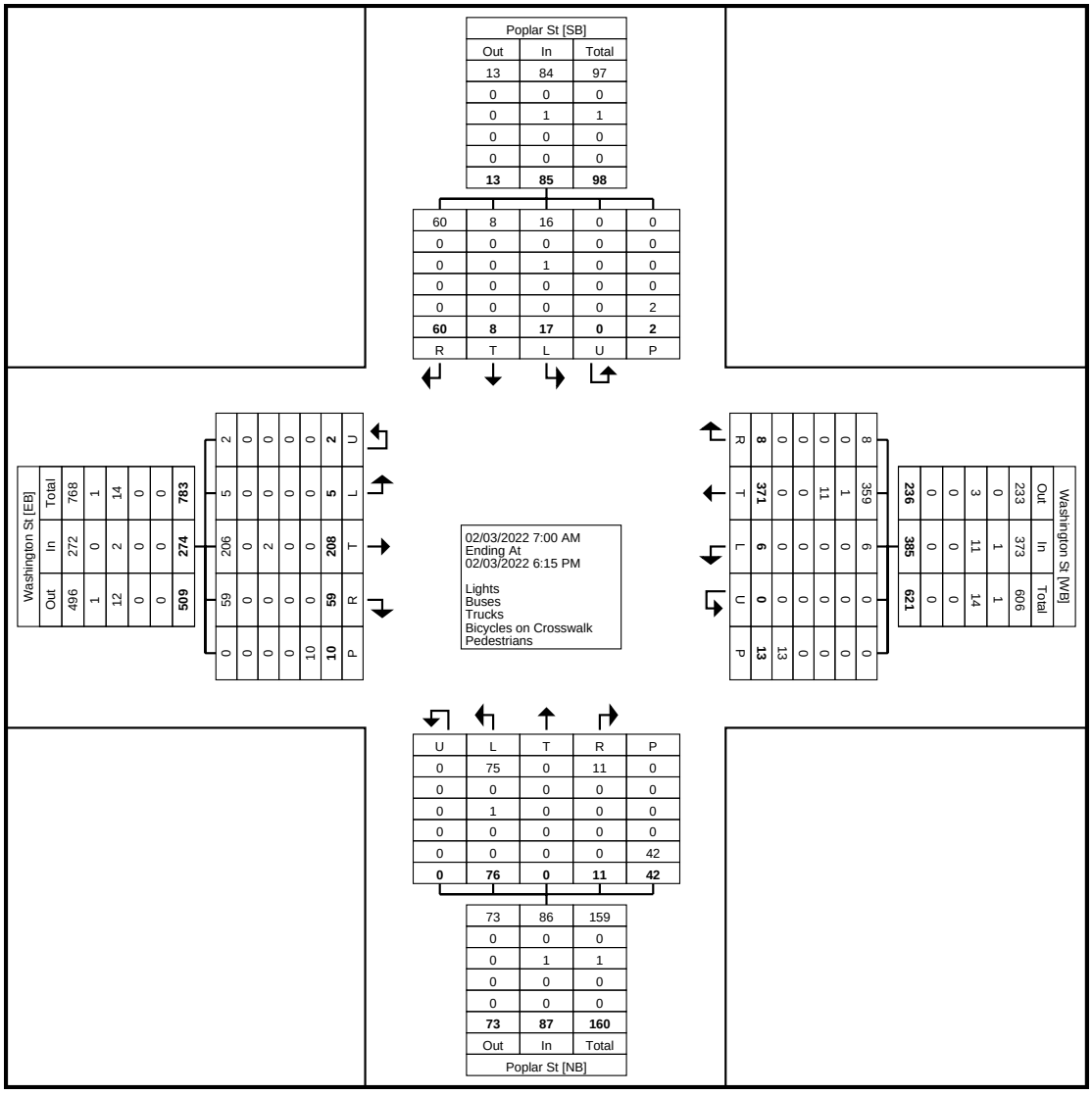
Count Name: Washington St & Poplar St
Site Code:
Start Date: 02/03/2022

Turning Movement Data

Start Time	Washington St Eastbound						Washington St Westbound						Poplar St Northbound						Poplar St Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	2	0	0	0	2	0	27	0	0	3	27	8	0	2	0	4	10	1	0	8	0	1	9	48
7:15 AM	0	7	0	2	0	9	0	32	0	0	0	32	10	0	0	0	2	10	0	0	3	0	1	3	54
7:30 AM	0	3	2	0	0	5	0	35	1	0	1	36	5	0	2	0	3	7	1	0	9	0	0	10	58
7:45 AM	0	4	1	0	0	5	0	24	0	0	3	24	4	0	0	0	2	4	0	0	4	0	0	4	37
Hourly Total	0	16	3	2	0	21	0	118	1	0	7	119	27	0	4	0	11	31	2	0	24	0	2	26	197
8:00 AM	0	3	3	0	4	6	0	42	0	0	0	42	8	0	0	0	5	8	0	1	4	0	0	5	61
8:15 AM	0	8	1	0	0	9	0	31	1	0	1	32	6	0	3	0	1	9	1	0	2	0	0	3	53
8:30 AM	0	4	1	0	0	5	0	22	0	0	0	22	3	0	0	0	1	3	1	0	2	0	0	3	33
8:45 AM	0	5	1	0	0	6	0	24	0	0	1	24	6	0	0	0	0	6	0	0	1	0	0	1	37
Hourly Total	0	20	6	0	4	26	0	119	1	0	2	120	23	0	3	0	7	26	2	1	9	0	0	12	184
9:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	1	14	4	0	2	19	1	14	0	0	1	15	3	0	0	0	5	3	1	0	4	0	0	5	42
4:15 PM	0	25	4	0	2	29	0	7	1	0	0	8	2	0	0	0	4	2	0	1	4	0	0	5	44
4:30 PM	1	20	7	0	0	28	0	8	1	0	1	9	0	0	1	0	2	1	1	0	4	0	0	5	43
4:45 PM	0	17	5	0	0	22	1	15	2	0	0	18	4	0	0	0	3	4	2	2	4	0	0	8	52
Hourly Total	2	76	20	0	4	98	2	44	4	0	2	50	9	0	1	0	14	10	4	3	16	0	0	23	181
5:00 PM	1	26	11	0	0	38	3	20	0	0	0	23	6	0	0	0	1	6	1	0	4	0	0	5	72
5:15 PM	1	20	6	0	1	27	1	32	0	0	0	33	5	0	0	0	3	5	2	0	0	0	0	2	67
5:30 PM	0	22	7	0	0	29	0	28	2	0	0	30	0	0	2	0	1	2	4	1	7	0	0	12	73
5:45 PM	1	28	6	0	1	35	0	10	0	0	0	10	6	0	1	0	5	7	2	3	0	0	0	5	57
Hourly Total	3	96	30	0	2	129	4	90	2	0	0	96	17	0	3	0	10	20	9	4	11	0	0	24	269
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	5	208	59	2	10	274	6	371	8	0	13	385	76	0	11	0	42	87	17	8	60	0	2	85	831
Approach %	1.8	75.9	21.5	0.7	-	-	1.6	96.4	2.1	0.0	-	-	87.4	0.0	12.6	0.0	-	-	20.0	9.4	70.6	0.0	-	-	-
Total %	0.6	25.0	7.1	0.2	-	33.0	0.7	44.6	1.0	0.0	-	46.3	9.1	0.0	1.3	0.0	-	10.5	2.0	1.0	7.2	0.0	-	10.2	-
Lights	5	206	59	2	-	272	6	359	8	0	-	373	75	0	11	0	-	86	16	8	60	0	-	84	815
% Lights	100.0	99.0	100.0	100.0	-	99.3	100.0	96.8	100.0	-	-	96.9	98.7	-	100.0	-	-	98.9	94.1	100.0	100.0	-	-	98.8	98.1
Buses	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Buses	0.0	0.0	0.0	0.0	-	0.0	0.0	0.3	0.0	-	-	0.3	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Trucks	0	2	0	0	-	2	0	11	0	0	-	11	1	0	0	0	-	1	1	0	0	0	-	1	15
% Trucks	0.0	1.0	0.0	0.0	-	0.7	0.0	3.0	0.0	-	-	2.9	1.3	-	0.0	-	-	1.1	5.9	0.0	0.0	-	-	1.2	1.8
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	10	-	-	-	-	-	13	-	-	-	-	-	42	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Conshohocken, PA
Washington St & Poplar St
Thursday, February 3, 2022
Location: 40.071619, -75.301804

Count Name: Washington St & Poplar St
Site Code:
Start Date: 02/03/2022



Turning Movement Data Plot

www.TSTData.com
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Conshohocken, PA
Washington St & Poplar St
Thursday, February 3, 2022
Location: 40.071619, -75.301804

Count Name: Washington St & Poplar St
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Washington St Eastbound						Washington St Westbound						Poplar St Northbound						Poplar St Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:15 AM	0	7	0	2	0	9	0	32	0	0	0	32	10	0	0	0	2	10	0	0	3	0	1	3	54
7:30 AM	0	3	2	0	0	5	0	35	1	0	1	36	5	0	2	0	3	7	1	0	9	0	0	10	58
7:45 AM	0	4	1	0	0	5	0	24	0	0	3	24	4	0	0	0	2	4	0	0	4	0	0	4	37
8:00 AM	0	3	3	0	4	6	0	42	0	0	0	42	8	0	0	0	5	8	0	1	4	0	0	5	61
Total	0	17	6	2	4	25	0	133	1	0	4	134	27	0	2	0	12	29	1	1	20	0	1	22	210
Approach %	0.0	68.0	24.0	8.0	-	-	0.0	99.3	0.7	0.0	-	-	93.1	0.0	6.9	0.0	-	-	4.5	4.5	90.9	0.0	-	-	-
Total %	0.0	8.1	2.9	1.0	-	11.9	0.0	63.3	0.5	0.0	-	63.8	12.9	0.0	1.0	0.0	-	13.8	0.5	0.5	9.5	0.0	-	10.5	-
PHF	0.000	0.607	0.500	0.250	-	0.694	0.000	0.792	0.250	0.000	-	0.798	0.675	0.000	0.250	0.000	-	0.725	0.250	0.250	0.556	0.000	-	0.550	0.861
Lights	0	16	6	2	-	24	0	128	1	0	-	129	26	0	2	0	-	28	1	1	20	0	-	22	203
% Lights	-	94.1	100.0	100.0	-	96.0	-	96.2	100.0	-	-	96.3	96.3	-	100.0	-	-	96.6	100.0	100.0	100.0	-	-	100.0	96.7
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	0	1	0	0	-	1	0	5	0	0	-	5	1	0	0	0	-	1	0	0	0	0	-	0	7
% Trucks	-	5.9	0.0	0.0	-	4.0	-	3.8	0.0	-	-	3.7	3.7	-	0.0	-	-	3.4	0.0	0.0	0.0	-	-	0.0	3.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	4	-	-	-	-	-	12	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Conshohocken, PA
Washington St & Poplar St
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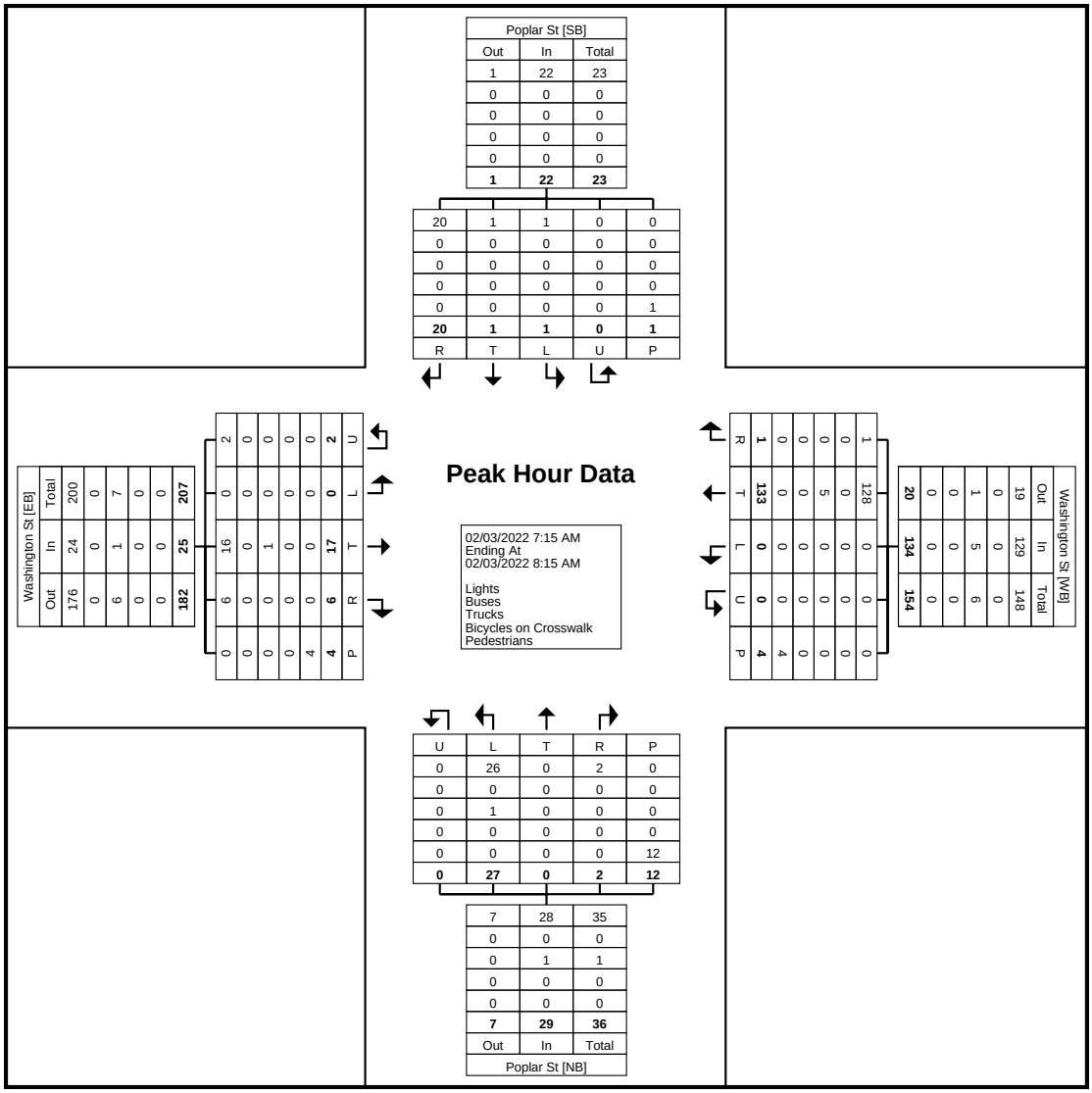

Turning Movement Peak Hour Data Plot (7:15 AM)

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Conshohocken, PA
Washington St & Poplar St
Thursday, February 3, 2022
Location: 40.071619, -75.301804

Count Name: Washington St & Poplar St
Site Code:
Start Date: 02/03/2022

Turning Movement Peak Hour Data (5:00 PM)

Start Time	Washington St Eastbound						Washington St Westbound						Poplar St Northbound						Poplar St Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
5:00 PM	1	26	11	0	0	38	3	20	0	0	0	23	6	0	0	0	1	6	1	0	4	0	0	5	72
5:15 PM	1	20	6	0	1	27	1	32	0	0	0	33	5	0	0	0	3	5	2	0	0	0	0	2	67
5:30 PM	0	22	7	0	0	29	0	28	2	0	0	30	0	0	2	0	1	2	4	1	7	0	0	12	73
5:45 PM	1	28	6	0	1	35	0	10	0	0	0	10	6	0	1	0	5	7	2	3	0	0	0	5	57
Total	3	96	30	0	2	129	4	90	2	0	0	96	17	0	3	0	10	20	9	4	11	0	0	24	269
Approach %	2.3	74.4	23.3	0.0	-	-	4.2	93.8	2.1	0.0	-	-	85.0	0.0	15.0	0.0	-	-	37.5	16.7	45.8	0.0	-	-	-
Total %	1.1	35.7	11.2	0.0	-	48.0	1.5	33.5	0.7	0.0	-	35.7	6.3	0.0	1.1	0.0	-	7.4	3.3	1.5	4.1	0.0	-	8.9	-
PHF	0.750	0.857	0.682	0.000	-	0.849	0.333	0.703	0.250	0.000	-	0.727	0.708	0.000	0.375	0.000	-	0.714	0.563	0.333	0.393	0.000	-	0.500	0.921
Lights	3	95	30	0	-	128	4	88	2	0	-	94	17	0	3	0	-	20	9	4	11	0	-	24	266
% Lights	100.0	99.0	100.0	-	-	99.2	100.0	97.8	100.0	-	-	97.9	100.0	-	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	98.9
Buses	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	1.1	0.0	-	-	1.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.4
Trucks	0	1	0	0	-	1	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	2
% Trucks	0.0	1.0	0.0	-	-	0.8	0.0	1.1	0.0	-	-	1.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	10	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Conshohocken, PA
Washington St & Poplar St
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Count Name: Washington St & Poplar St
Site Code:
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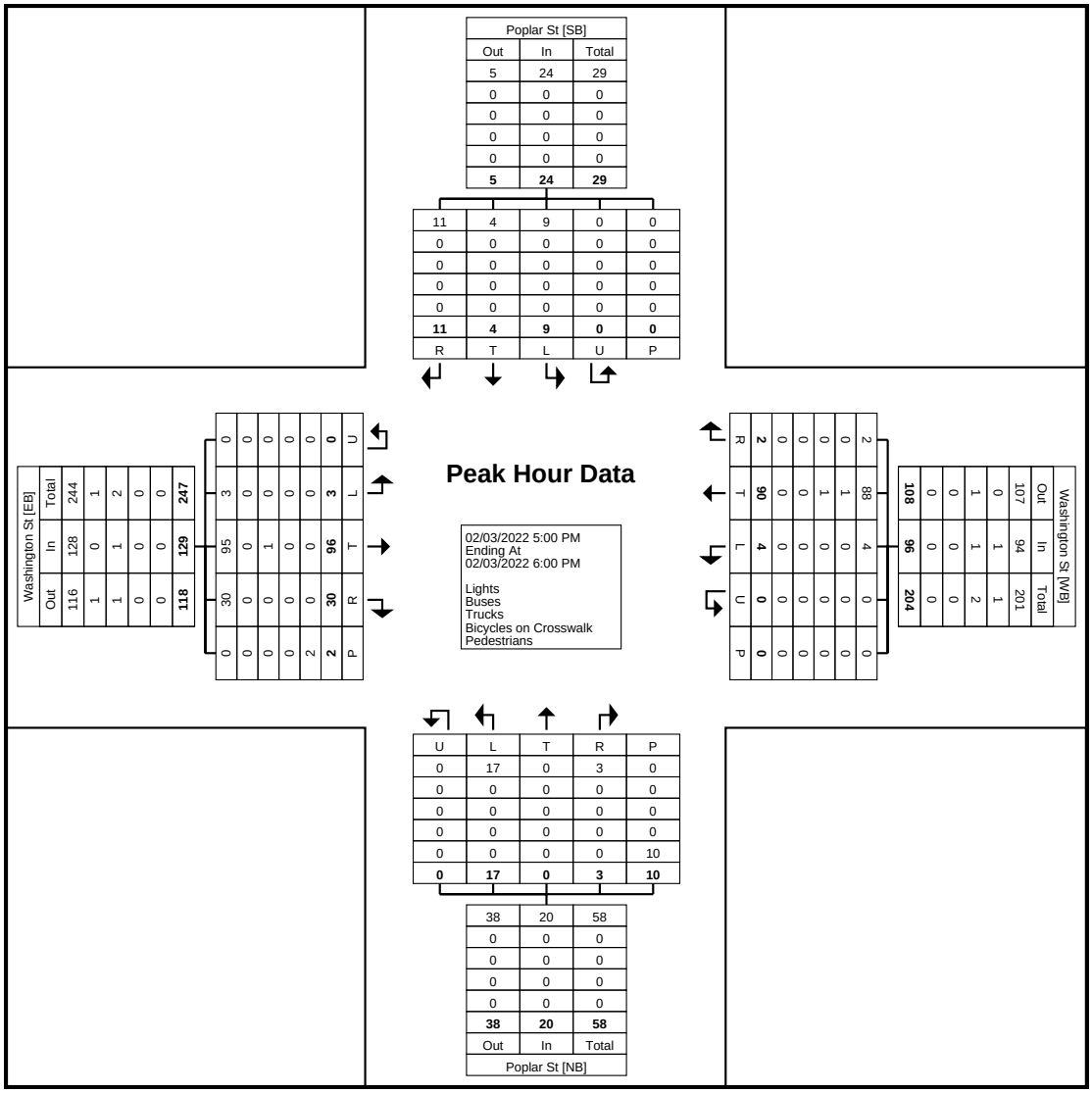


Turning Movement Peak Hour Data Plot (5:00 PM)

McMAHON
a Bowman company

Appendix D

Lane Warrant Worksheets

WITHOUT WASHINGTON STREET EXTENSION

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	6/2/2022
County:	Montgomery County	**Conducted By:**	RSL
PennDOT Engineering District:	6	**Checked By:**	SAK
		Agency/Company Name:	McMahon Associates, Inc.

Intersection & Approach Description: Washington Street and West Site Access

Analysis Period:	2024 Build without Wash St Ext	**Number of Approach Lanes:**	1
Design Hour:	AM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes		2.0%	N/A
	Through	-		2.0%	N/A
	Right				N/A
Opposing	Left				N/A
	Through	-		2.0%	N/A
	Right	Yes		2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left				0
	Through	-	61	2.0%	62
	Right	-	20	2.0%	21

Advancing Volume:	83
Right Turn Volume:	21

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 9

Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	21
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

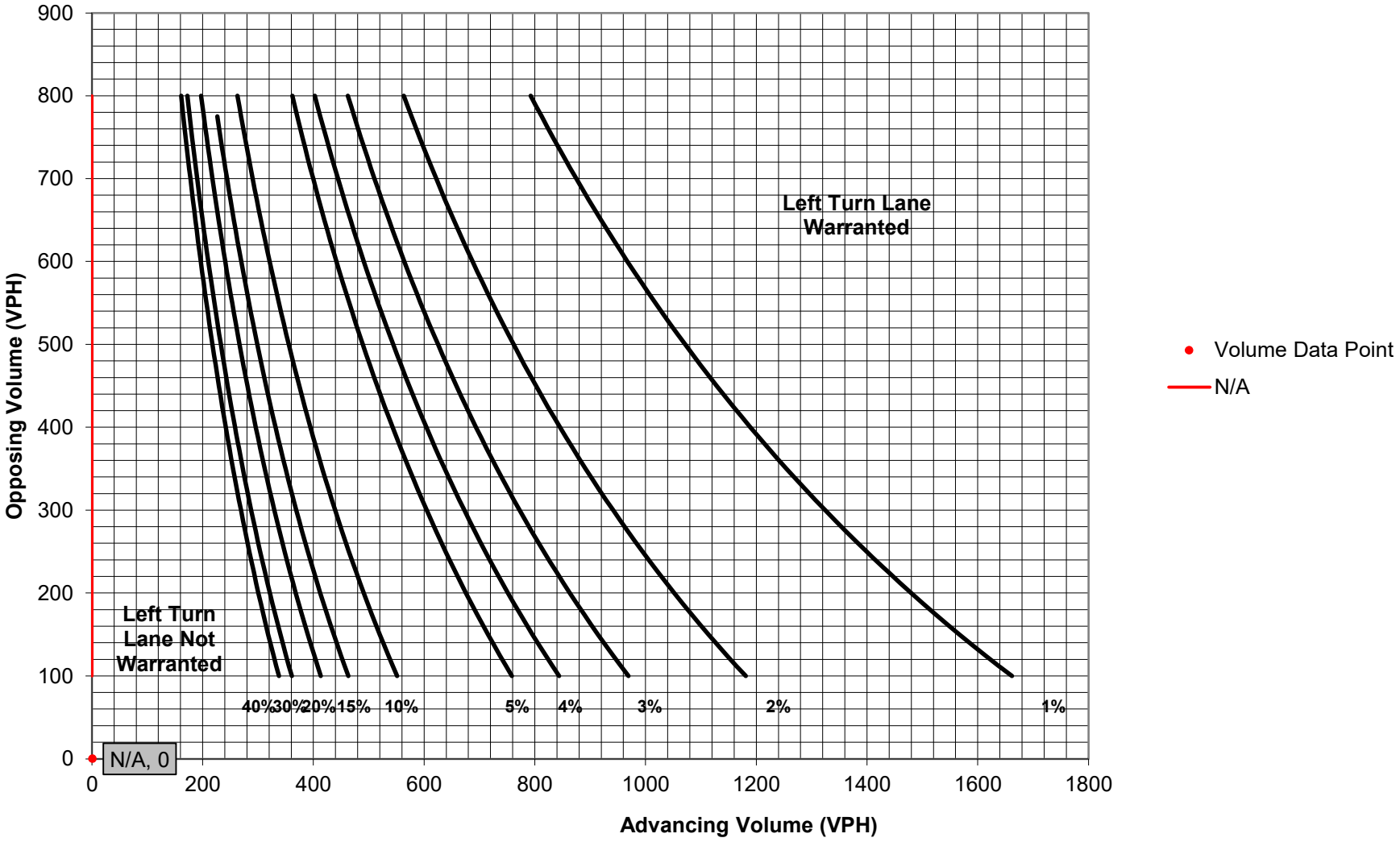
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	6/2/2022
County:	Montgomery County	**Conducted By:**	RSL
PennDOT Engineering District:	6	**Checked By:**	SAK
		Agency/Company Name:	McMahon Associates, Inc.

Intersection & Approach Description: Washington Street and West Site Access

Analysis Period:	2024 Build without Wash St Ext	**Number of Approach Lanes:**	1
Design Hour:	PM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes		2.0%	N/A
	Through	-		2.0%	N/A
	Right				N/A
Opposing	Left				N/A
	Through	-		2.0%	N/A
	Right	Yes		2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left				0
	Through	-	161	2.0%	163
	Right	-	48	2.0%	49

Advancing Volume:	212
Right Turn Volume:	49

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 9

Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	49
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

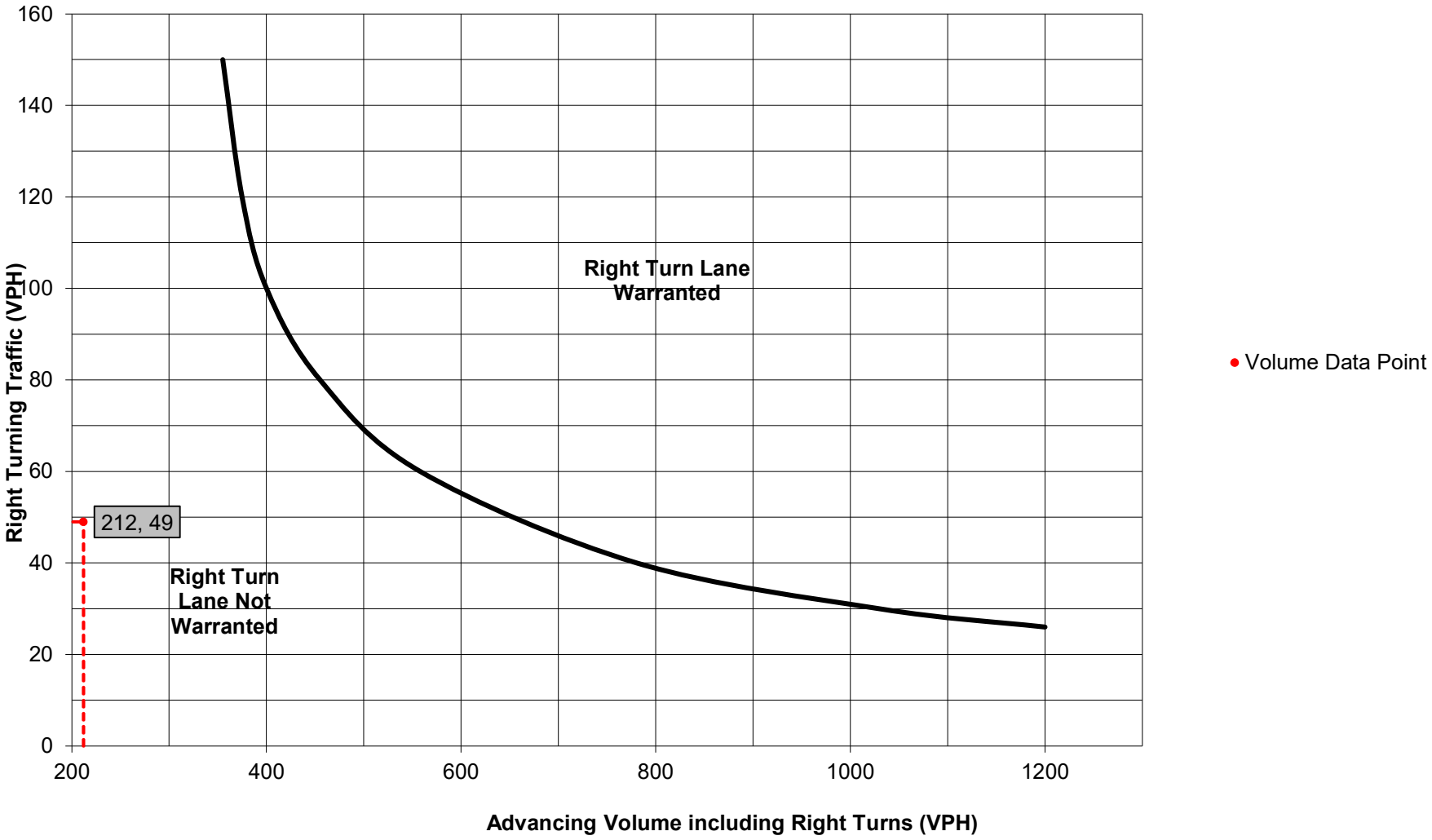
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

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Municipality:	Whitemarsh Township	**Analysis Date:**	6/2/2022
County:	Montgomery County	**Conducted By:**	RSL
PennDOT Engineering District:	6	**Checked By:**	SAK
		Agency/Company Name:	McMahon Associates, Inc.

Intersection & Approach Description: Washington Street and East Site Access

Analysis Period:	2024 Build without Wash St Ext	**Number of Approach Lanes:**	1
Design Hour:	AM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes		2.0%	N/A
	Through	-		2.0%	N/A
	Right				N/A
Opposing	Left				N/A
	Through	-		2.0%	N/A
	Right	Yes		2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left				0
	Through	-	42	2.0%	43
	Right	-	19	2.0%	20

Advancing Volume:	63
Right Turn Volume:	20

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 9

Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	20
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

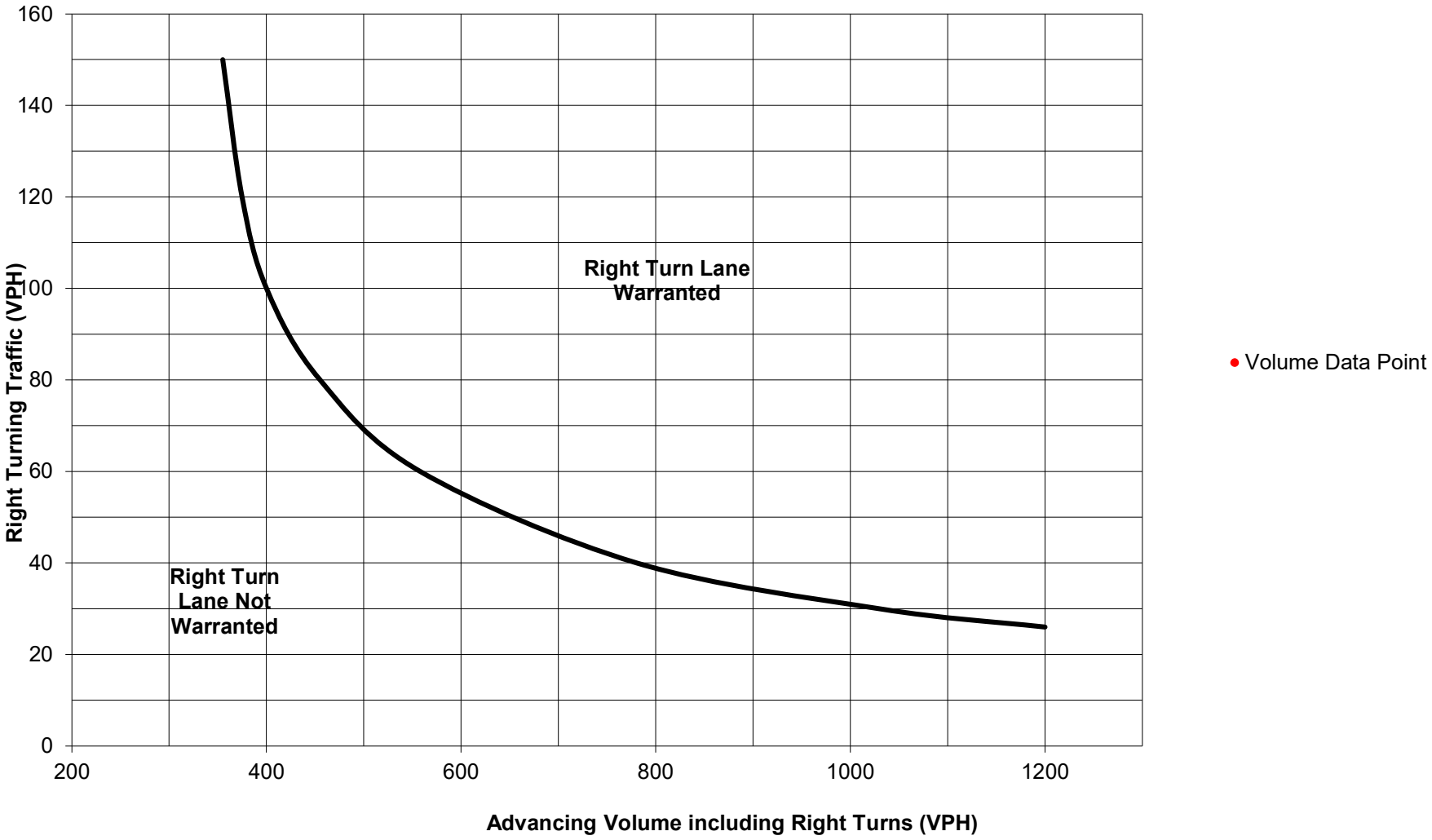
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	6/2/2022
County:	Montgomery County	**Conducted By:**	RSL
PennDOT Engineering District:	6	**Checked By:**	SAK
		Agency/Company Name:	McMahon Associates, Inc.

Intersection & Approach Description: Washington Street and East Site Access

Analysis Period:	2024 Build without Wash St Ext	**Number of Approach Lanes:**	1
Design Hour:	PM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes		2.0%	N/A
	Through	-		2.0%	N/A
	Right				N/A
Opposing	Left				N/A
	Through	-		2.0%	N/A
	Right	Yes		2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left				0
	Through	-	114	2.0%	116
	Right	-	47	2.0%	48

Advancing Volume:	164
Right Turn Volume:	48

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 9

Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	48
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

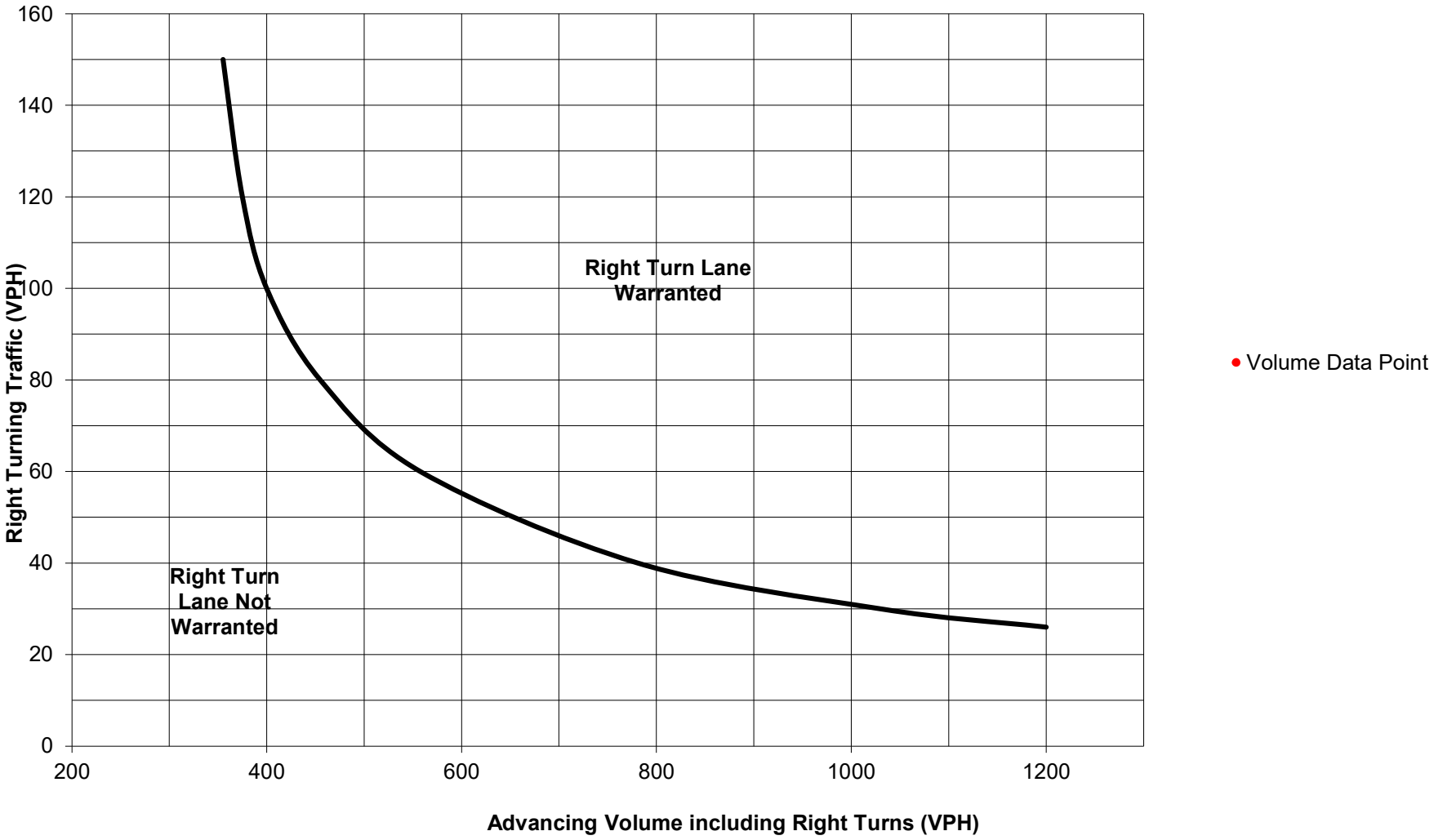
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)



WITH WASHINGTON STREET EXTENSION

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	6/2/2022
County:	Montgomery County	**Conducted By:**	RSL
PennDOT Engineering District:	6	**Checked By:**	SAK
		Agency/Company Name:	McMahon Associates, Inc.

Intersection & Approach Description: Washington Street and West Site Access

Analysis Period:	2024 Build with Wash St Ext	**Number of Approach Lanes:**	1
Design Hour:	AM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	6	2.0%	7
	Through	-	158	2.0%	160
	Right				0
Opposing	Left				0
	Through	-	57	2.0%	58
	Right	Yes	15	2.0%	16

Advancing Volume:	167
Opposing Volume:	74
Left Turn Volume:	7
% Left Turns in Advancing Volume:	4.19%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left				N/A
	Through	-		2.0%	N/A
	Right	-		2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 1

Warrant Met?: No

Right Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	7
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

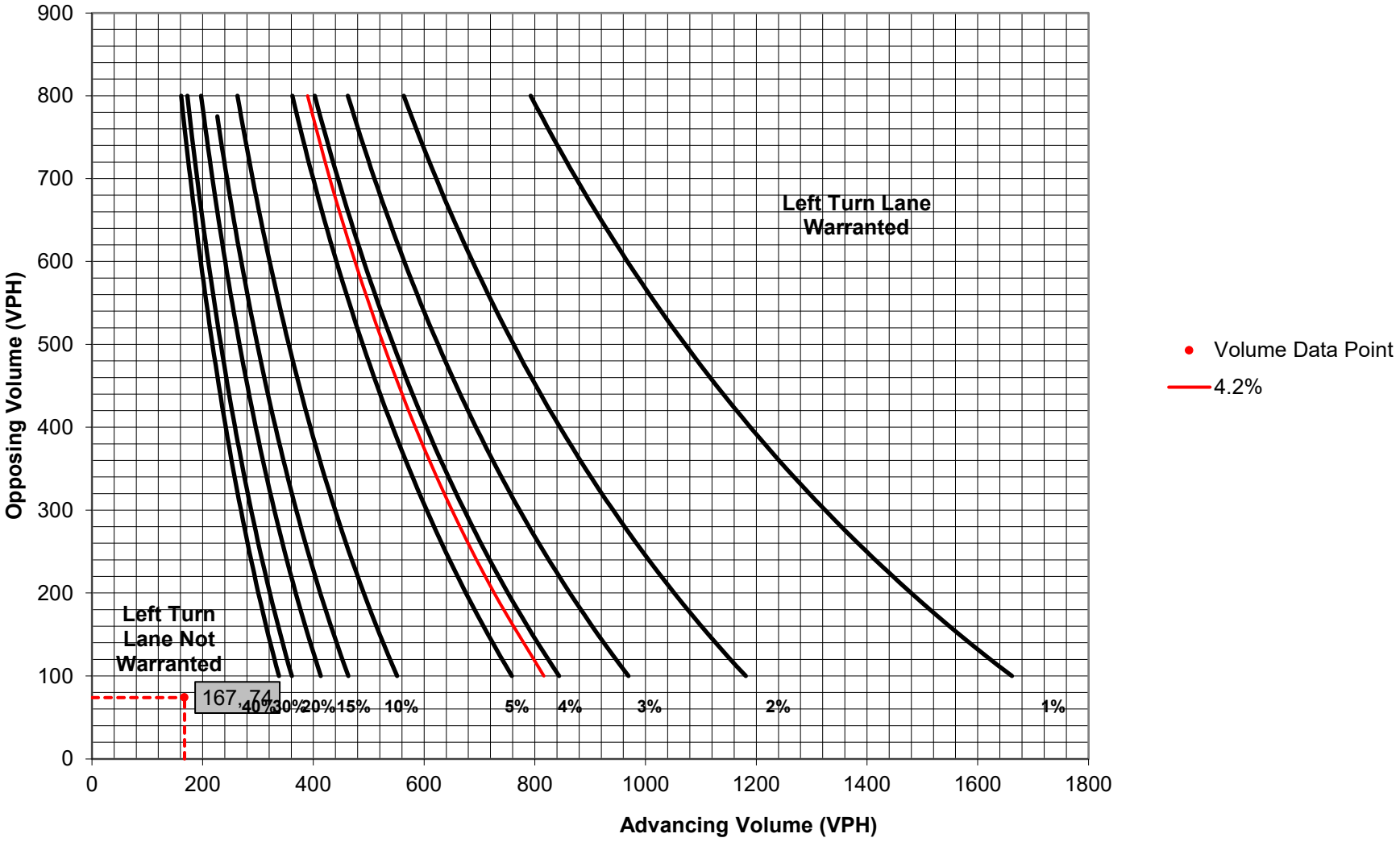
Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	6/2/2022
County:	Montgomery County	**Conducted By:**	RSL
PennDOT Engineering District:	6	**Checked By:**	SAK
		Agency/Company Name:	McMahon Associates, Inc.

Intersection & Approach Description: Washington Street and West Site Access

Analysis Period:	2024 Build with Wash St Ext	**Number of Approach Lanes:**	1
Design Hour:	PM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	15	2.0%	16
	Through	-	104	2.0%	106
	Right				0
Opposing	Left				0
	Through	-	142	2.0%	144
	Right	Yes	37	2.0%	38

Advancing Volume:	122
Opposing Volume:	182
Left Turn Volume:	16
% Left Turns in Advancing Volume:	13.11%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left				N/A
	Through	-		2.0%	N/A
	Right	-		2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 1**

Warrant Met?: **No**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	16
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

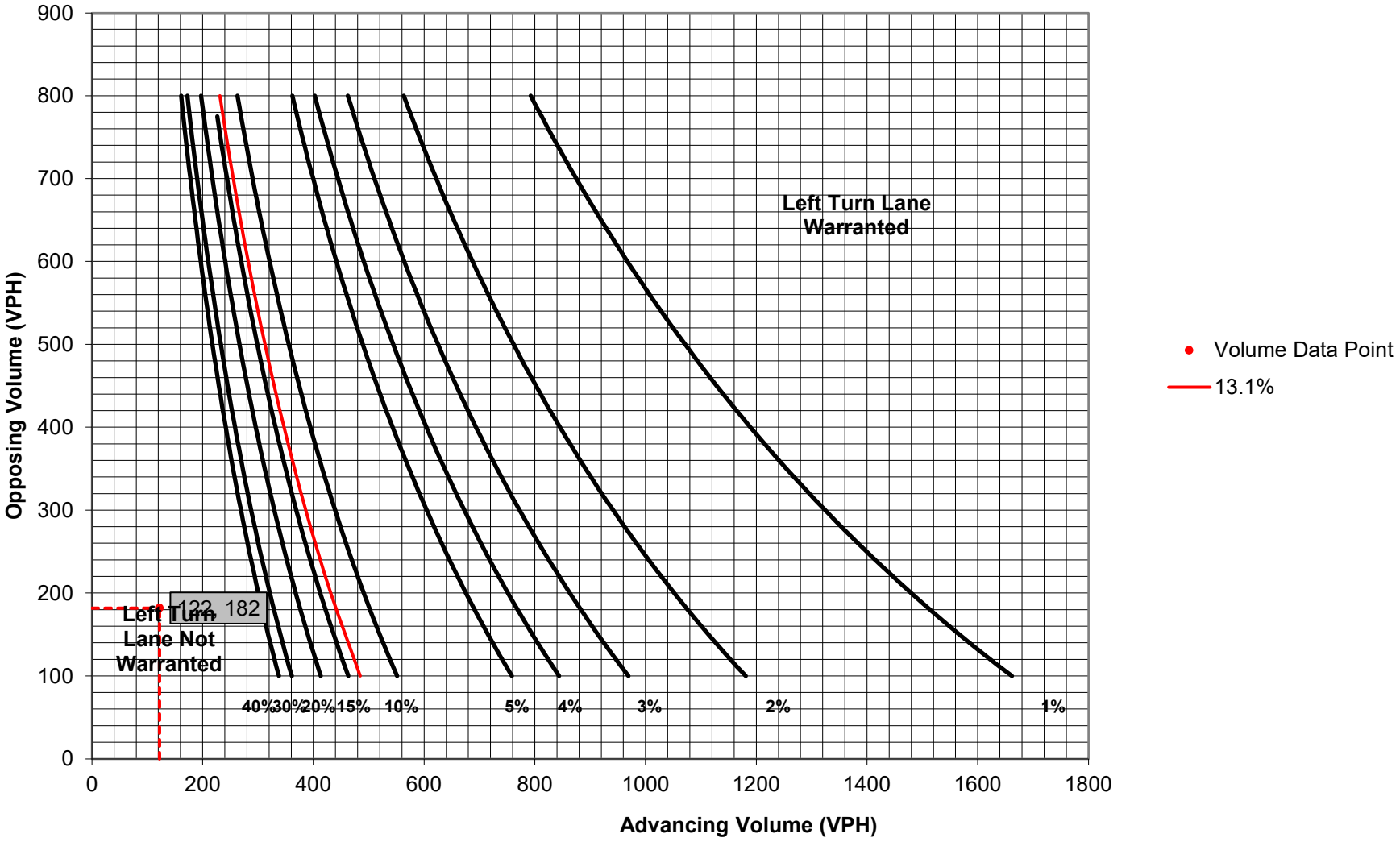
Left Turn Lane Storage Length, Condition A:	**N/A**	**Feet**
Condition B:	**N/A**	**Feet**
Condition C:	**N/A**	**Feet**
Required Left Turn Lane Storage Length:	**N/A**	**Feet**

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	6/2/2022
County:	Montgomery County	**Conducted By:**	RSL
PennDOT Engineering District:	6	**Checked By:**	SAK
		Agency/Company Name:	McMahon Associates, Inc.

Intersection & Approach Description: Washington Street and East Site Access

Analysis Period:	2024 Build with Wash St Ext	**Number of Approach Lanes:**	1
Design Hour:	AM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	6	2.0%	7
	Through	-	114	2.0%	116
	Right				0
Opposing	Left				0
	Through	-	63	2.0%	64
	Right	Yes	15	2.0%	16

Advancing Volume:	123
Opposing Volume:	80
Left Turn Volume:	7
% Left Turns in Advancing Volume:	5.69%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left				N/A
	Through	-		2.0%	N/A
	Right	-		2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 1**

Warrant Met?: **No**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	7
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

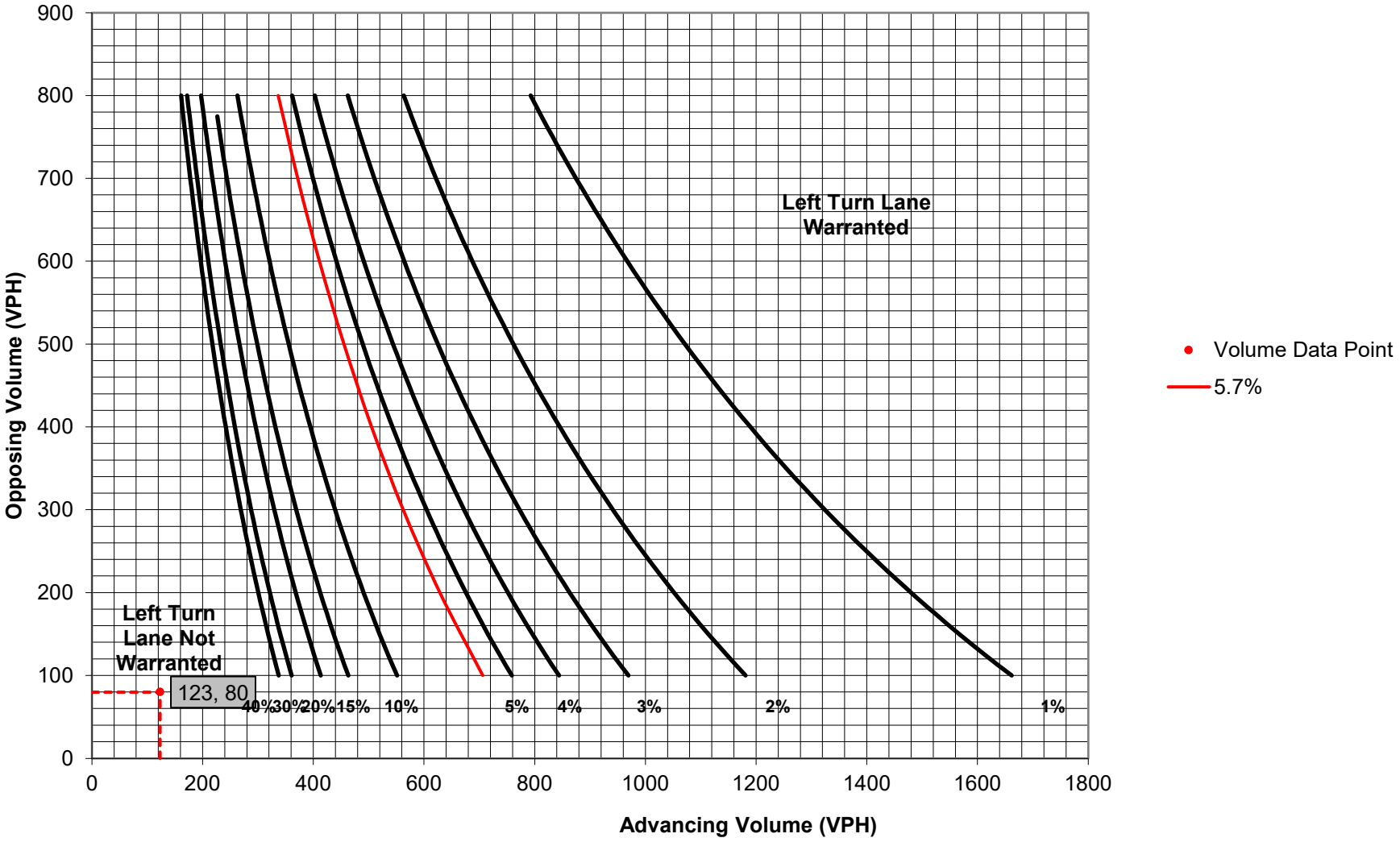
Left Turn Lane Storage Length, Condition A:	**N/A**	**Feet**
Condition B:	**N/A**	**Feet**
Condition C:	**N/A**	**Feet**
Required Left Turn Lane Storage Length:	**N/A**	**Feet**

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	6/2/2022
County:	Montgomery County	**Conducted By:**	RSL
PennDOT Engineering District:	6	**Checked By:**	SAK
		Agency/Company Name:	McMahon Associates, Inc.

Intersection & Approach Description: Washington Street and East Site Access

Analysis Period:	2024 Build with Wash St Ext	**Number of Approach Lanes:**	1
Design Hour:	PM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	16	2.0%	17
	Through	-	95	2.0%	96
	Right				0
Opposing	Left				0
	Through	-	115	2.0%	117
	Right	Yes	37	2.0%	38

Advancing Volume:	113
Opposing Volume:	155
Left Turn Volume:	17
% Left Turns in Advancing Volume:	15.04%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left				N/A
	Through	-		2.0%	N/A
	Right	-		2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 1**

Warrant Met?: **No**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	17
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

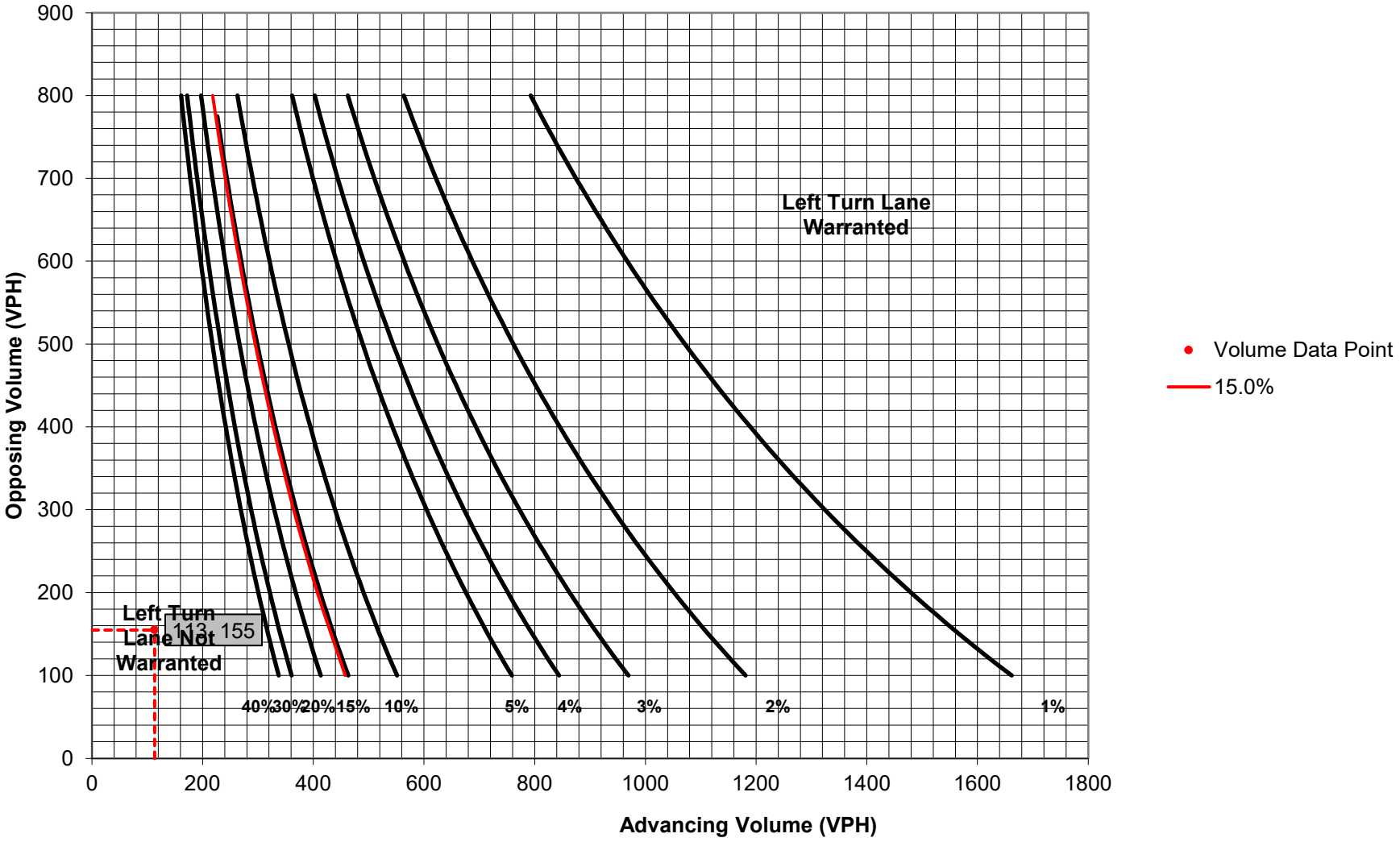
Left Turn Lane Storage Length, Condition A:	**N/A**	**Feet**
Condition B:	**N/A**	**Feet**
Condition C:	**N/A**	**Feet**
Required Left Turn Lane Storage Length:	**N/A**	**Feet**

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



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Appendix E

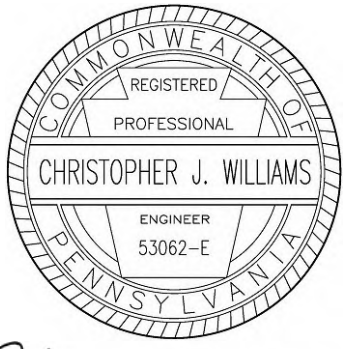
Other Development Information

OTHER DEVELOPMENT TRIP GENERATION

ITE LAND USE CODE		LAND USE NAME			SIZE	TRIP TYPE	DAILY TOTAL	WEEKDAY AM IN	WEEKDAY AM OUT	WEEKDAY AM TOTAL	WEEKDAY PM IN	WEEKDAY PM OUT	WEEKDAY PM TOTAL
215		901 Washington Street			75	Total	521	10	23	33	23	18	41
	Daily	AM	PM	SAT	units	Pass-by	0	0	0	0	0	0	0
Pass-by %	0%	0%	0%	0%		New	521	10	23	33	23	18	41
221		601 Washington Street			270	Total	1,647	24	83	107	64	42	106
	Daily	AM	PM	SAT	units	Pass-by	0	0	0	0	0	0	0
Pass-by %	0%	0%	0%	0%		New	1647	24	83	107	64	42	106
221		Millenium Riverfront			305	Total	1408	28	95	123	72	47	119
	Daily	AM	PM	SAT	units	Pass-by	282	6	19	25	14	9	23
Modal Reduction %	20%	20%	20%	0%		New	1126	22	76	98	58	38	96

Transportation Impact Study for the Millennium Apartments

Conshohocken Borough, Montgomery County, PA



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Exton, PA 19341
610.594.9995

Prepared for
Buccini Pollin Group

March 15, 2021
McMahon Project Number: 821078.11

Site Characteristics

This section presents the details regarding the proposed site, including the incremental increase in traffic volumes generated by the development during the peak hours, and the distribution of site traffic to the study area roadways.

Trip Generation

Traffic volumes generated by the proposed apartment development were prepared based on trip generation data compiled from numerous studies contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 10th Edition*. **Tables 2A and 2B** presents the anticipated vehicular trip generation for the proposed development.

Table 2A. Trip Generation Methodology

Land Use	Land Use Code	Daily	Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
			Method	Enter	Method	Enter
Multifamily Housing (Mid-Rise)	221	T = 5.45(X) - 1.75	Ln(T) = 0.98 Ln(X) - 0.98	26%	Ln(T) = 0.96 Ln(X) - 0.63	61%

X = Independent Variable (units) | Y = Independent Variable (units) | T = Trips

Table 2B. Vehicular Trip Generation

Land Use	Size	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
			In	Out	Total	In	Out	Total
Apartments [1]	305 units	1,661	26	76	102	79	50	129
- Modal Split Reduction [2]		-332	-5	-15	-20	-16	-10	-26
External Vehicle Trips		1,329	21	61	82	63	40	103

(1) ITE Land Use Code 221 for Multifamily Housing (Mid-Rise).

(2) The modal split reduction assumes a fifteen percent reduction for transit and a five percent reduction for pedestrian and bicycle accommodations.

Furthermore, we understand this subject property previously received preliminary approval for 420,000 square feet of office space. As such, **Table 2C** below provides a comparison between the trips generated by the now proposed apartments and the previously approved office use on this site during the weekday daily and weekday commuter peak hours.

FIGURE 1

Site Location Map

MILLENNIUM APARTMENTS

CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

McMAHON

\\extfs\MCM\eng\BUCCIGR\821078 - Millennium\Traffic\Graphics\2021-02 TIS\Figure 1.dwg

FIGURE 2

Site Plan

MILLENNIUM APARTMENTS

CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

McMAHON

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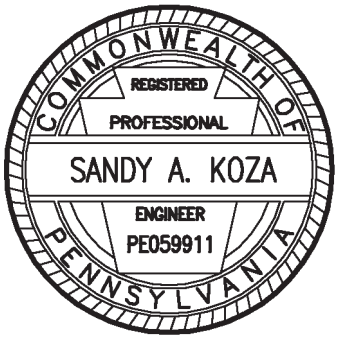
Transportation Impact Study for 601 Washington Street

Whitemarsh Township, Montgomery County, PA



Sandy A. Koza, P.E., PTOE
PA PE License Number PE059911

Prepared by
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425 Commerce Drive, Suite 200
Fort Washington, PA 19034
215.283.9444

Prepared for
601 Washington Street Associates, L.P.

March 2, 2022

McMahon Project Number 818064.12

Site Characteristics

This section presents the details regarding the proposed site, including the incremental increase in traffic volumes generated by the development during the peak hours and the distribution of site traffic to the study area roadways, as well as the proposed site access configuration, traffic control, and sight distance requirements.

Trip Generation

Traffic volumes generated by the proposed development were prepared based on trip generation data compiled from numerous studies contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 11th Edition*. **Table 2 and 3** presents the anticipated vehicular trip generation characteristics and trips associated with the proposed 270-unit multifamily apartment complex, which is based on the equations for Land Use Code 221: Multifamily Housing (Mid-Rise). The option for not close to transit was utilized to be conservative in the estimate of the total trips for the analysis of the study intersections and since the distribution of the entering and exiting traffic seemed to be more inline with the expected pattern of traffic. Table 3 shows the corresponding number of peak hour trips that would be generated based upon using the option for being close to transit.

Table 2. Trip Generation Methodology for Land Use Code 221: Multifamily Housing (Mid-Rise)

Description	Daily	Weekday Morning Adjacent Street Peak Hour		Weekday Afternoon Adjacent Street Peak Hour	
		Method	Enter/Exit	Method	Enter / Exit
Not Close to Rail Transit	T = 4.77(X) - 46.46	T = 0.44(X) - 11.61	23% / 77%	T = 0.39(X) + 0.34	61% / 39%
Close to Rail Transit	T = 4.75(X)	T = 0.31(X) + 1.06	50% / 44%	T = 0.29(X) - 0.09	43% / 57%

Where X = Independent Variable (units) and T = Trips

Table 3. Vehicular Trip Generation Characteristics

Description	Size	Daily	Weekday Morning Adjacent Street Peak Hour			Weekday Afternoon Adjacent Street Peak Hour		
			In	Out	Total	In	Out	Total
Not Close to Rail Transit	270 d.u.	1,241	24	83	107	64	42	106
Close to Rail Transit		1,283 (2)	47	38	85	33	45	78

(1) Based on the equations for ITE Land Use Code 221 for Multifamily Housing (Mid-Rise) from the *Trip Generation Manual, 11th Edition* for sites that are Close to and Not Close to Rail Transit.
(2) Based on two studies.

Based on American Community Survey (2015-2019) data, approximately 9 percent of commuters along the east side of Conshohocken Borough and the Schuylkill River waterfront in both Conshohocken Borough and Whitemarsh Township utilize public transit. These areas represent residents who live near the two SEPTA Regional Rail stations.

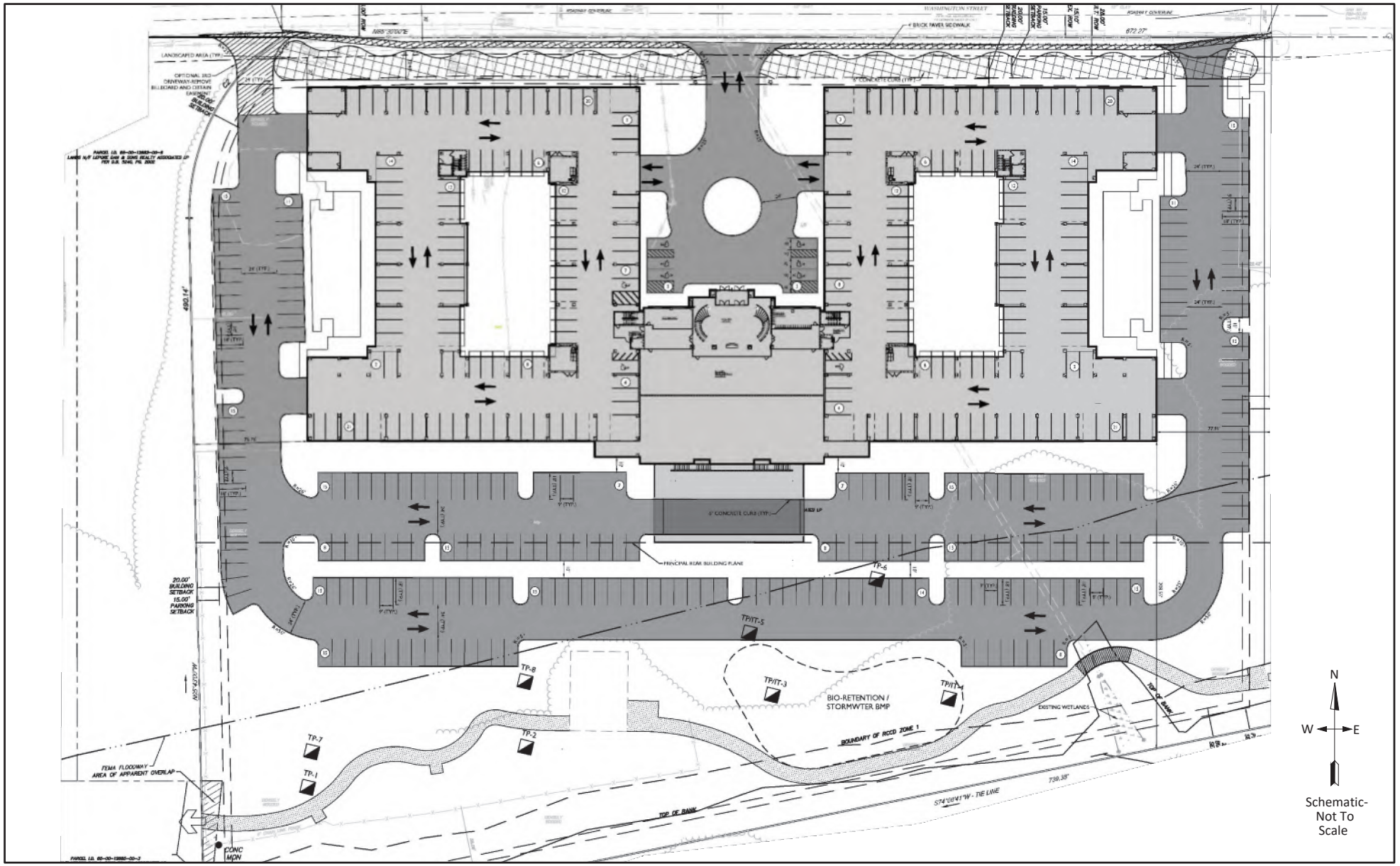

FIGURE 2

Site Plan (Prepared by Maser Consulting, P.A.)

601 WASHINGTON STREET

WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

McMAHON

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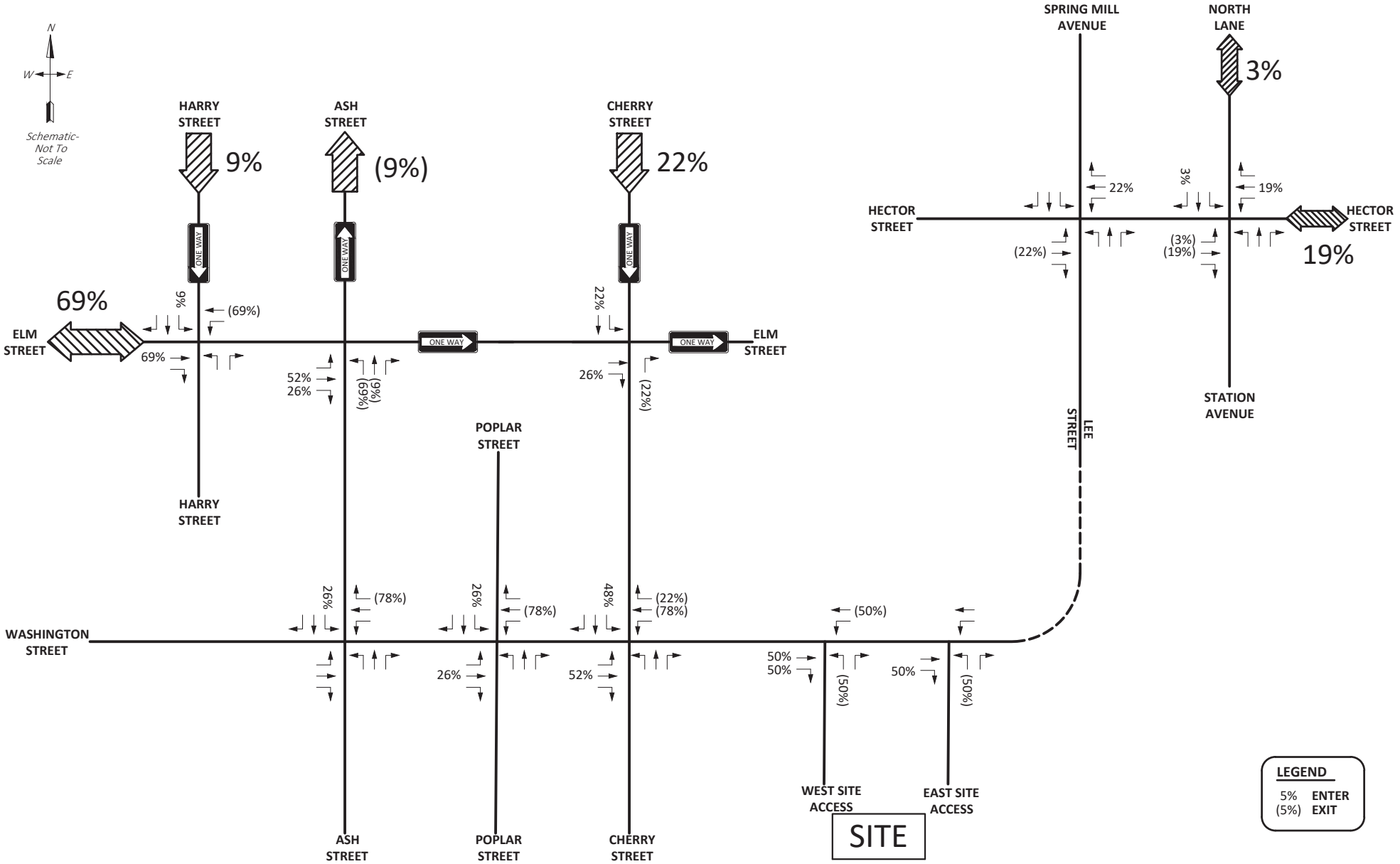


FIGURE 4A

Site Trip Distribution - without Washington Street Extension

601 WASHINGTON STREET

WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

McMAHON

Y:\eng\818064\Traffic\4-TIS #1 (2022)\Graphics\Figure 4A.dwg

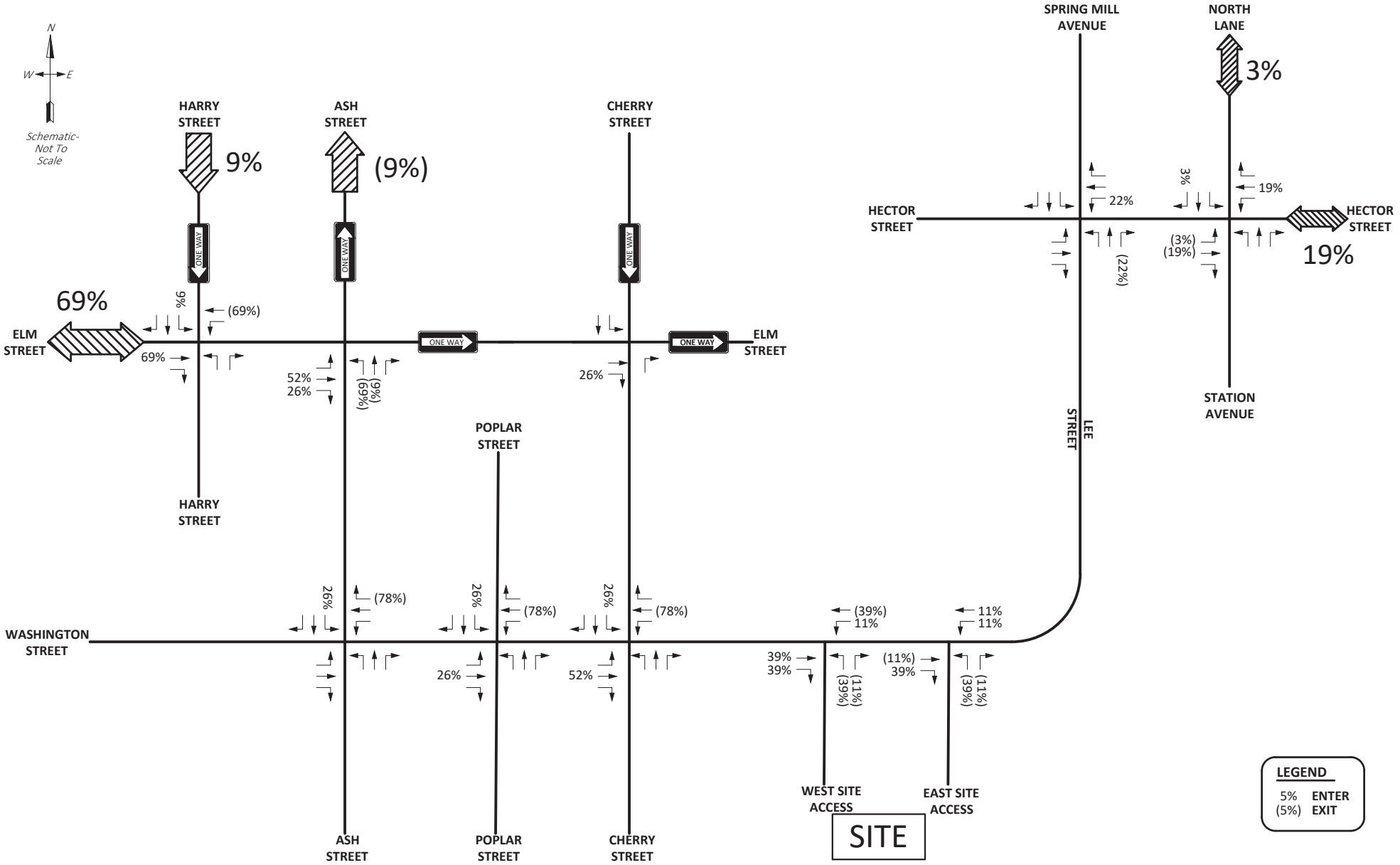


FIGURE 4B

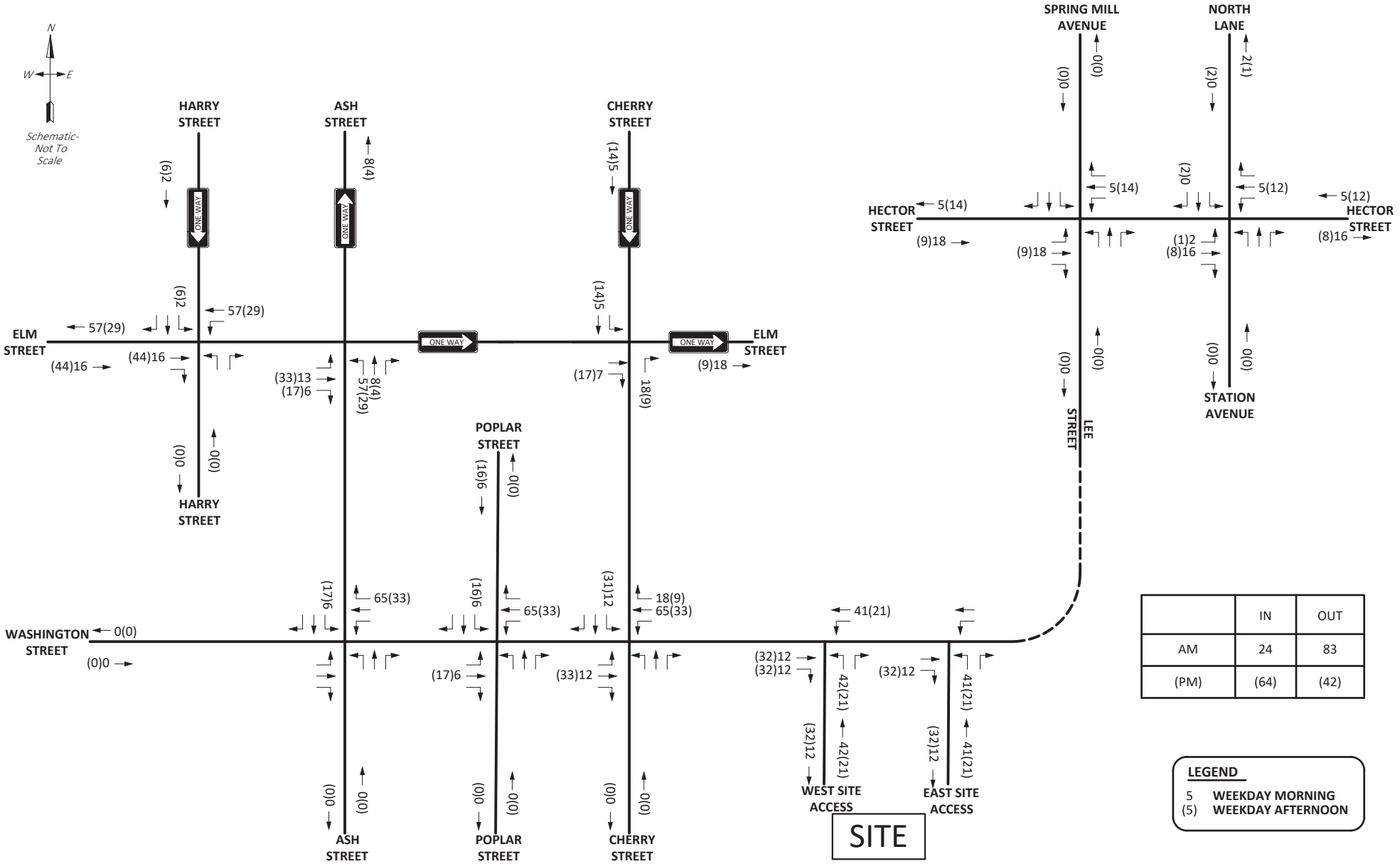
Site Trip Distribution - with Washington Street Extension

601 WASHINGTON STREET

WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

McMAHON

Y:\eng\818064\Traffic\4-TIS #1 (2022)\Graphics\Figure 4B.dwg



	IN	OUT
AM	24	83
(PM)	(64)	(42)

LEGEND

5 WEEKDAY MORNING
(5) WEEKDAY AFTERNOON

FIGURE 4C

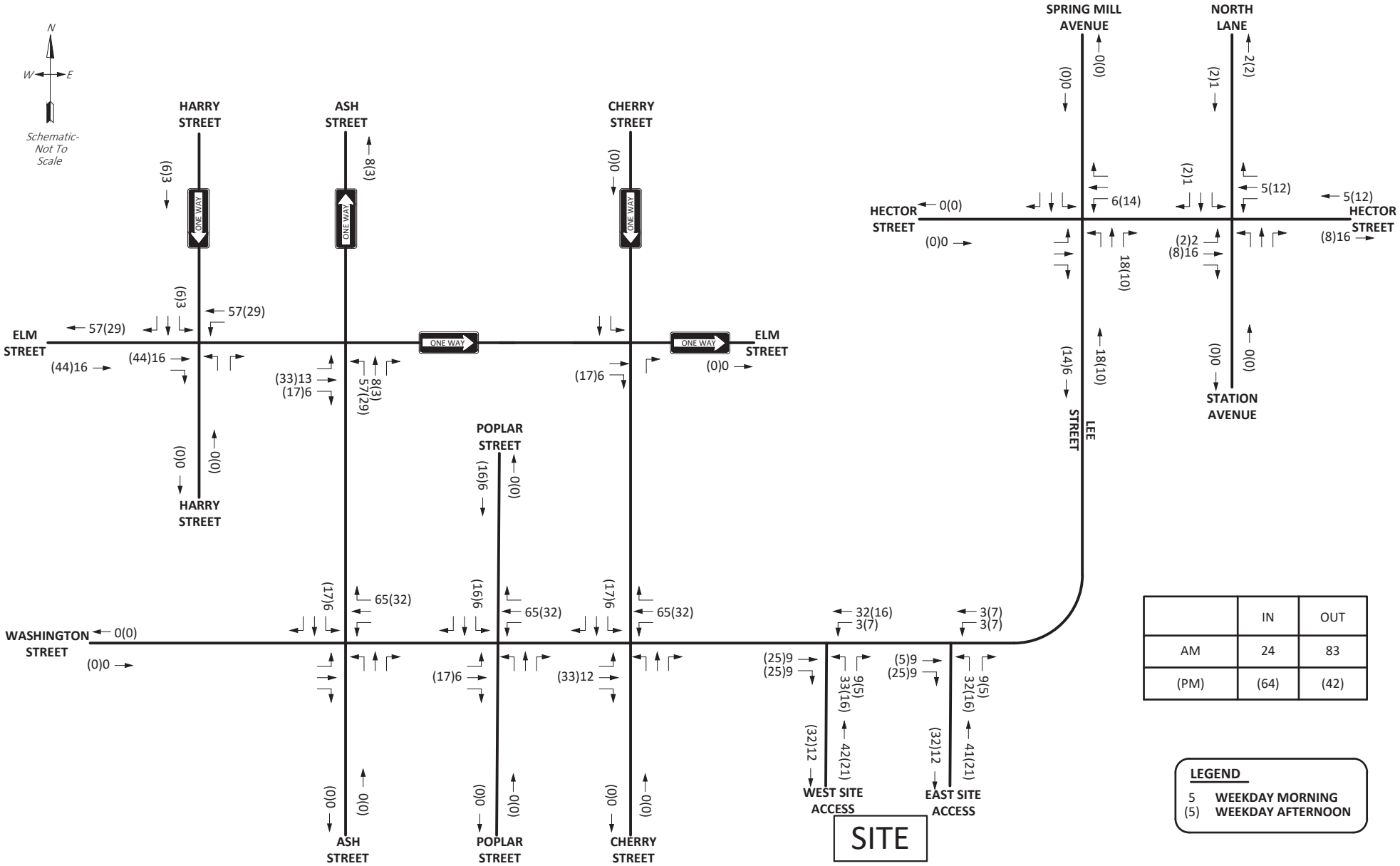
Site Trip Assignment - without Washington Street Extension

601 WASHINGTON STREET

WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

McMAHON

Y:\eng\818064\Traffic\4-TIS #1 (2022)\Graphics\Figure 4C.dwg



	IN	OUT
AM	24	83
(PM)	(64)	(42)

LEGEND

5 WEEKDAY MORNING
(5) WEEKDAY AFTERNOON

FIGURE 4D

Site Trip Assignment - with Washington Street Extension

601 WASHINGTON STREET

WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

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Appendix F

Traffic Volume Projections

WITHOUT WASHINGTON STREET EXTENSION

Harry Street & Elm Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Elm Street			Elm Street			Harry Street			Harry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	386	171	0	119	0	51	0	6	16	16	283
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**386**	**171**	**0**	**119**	**0**	**51**	**0**	**6**	**16**	**16**	**283**
Background Growth to 2024	0.66%	0	3	1	0	1	0	0	0	0	0	0	2
901 Washington Street	DIST IN		69%								9%		
	DIST OUT					(69%)							
	ASSIGN	0	7	0	0	16	0	0	0	0	1	0	0
601 Washington Street	DIST IN		69%								9%		
	DIST OUT					(69%)							
	ASSIGN	0	16	0	0	57	0	0	0	0	2	0	0
Millenium Riverfront	DIST IN		59%	10%							9%		
	DIST OUT					(35%)		(34%)					
	ASSIGN	0	12	2	0	27	0	26	0	0	2	0	0
Total Other Development New Trip Assignments		*0*	*35*	*2*	*0*	*100*	*0*	*26*	*0*	*0*	*5*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**424**	**174**	**0**	**220**	**0**	**77**	**0**	**6**	**21**	**16**	**285**
401 / 433 Washington Street	DIST IN		69%								9%		
	DIST OUT					(69%)							
	ASSIGN	0	40	0	0	134	0	0	0	0	5	0	0
Total New Site Trip Assignment		*0*	*40*	*0*	*0*	*134*	*0*	*0*	*0*	*0*	*5*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**464**	**174**	**0**	**354**	**0**	**77**	**0**	**6**	**26**	**16**	**285**

Harry Street & Elm Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND Elm Street			WESTBOUND Elm Street			NORTHBOUND Harry Street			SOUTHBOUND Harry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	508	61	1	116	0	144	0	16	20	8	268
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**508**	**61**	**1**	**116**	**0**	**144**	**0**	**16**	**20**	**8**	**268**
Background Growth to 2024	0.66%	0	3	0	0	1	0	1	0	0	0	0	2
901 Washington Street	DIST IN		69%								9%		
	DIST OUT					(69%)							
	ASSIGN	0	16	0	0	12	0	0	0	0	2	0	0
601 Washington Street	DIST IN		69%								9%		
	DIST OUT					(69%)							
	ASSIGN	0	44	0	0	29	0	0	0	0	6	0	0
Millenium Riverfront	DIST IN		59%	10%							9%		
	DIST OUT					(35%)		(34%)					
	ASSIGN	0	34	6	0	14	0	12	0	0	6	0	0
Total Other Development New Trip Assignments		*0*	*94*	*6*	*0*	*55*	*0*	*12*	*0*	*0*	*14*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**605**	**67**	**1**	**172**	**0**	**157**	**0**	**16**	**34**	**8**	**270**
401 / 433 Washington Street	DIST IN		69%								9%		
	DIST OUT					(69%)							
	ASSIGN	0	98	0	0	63	0	0	0	0	12	0	0
Total New Site Trip Assignment		*0*	*98*	*0*	*0*	*63*	*0*	*0*	*0*	*0*	*12*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**703**	**67**	**1**	**235**	**0**	**157**	**0**	**16**	**46**	**8**	**270**

Ash Street & Elm Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND Elm Street			WESTBOUND Elm Street			NORTHBOUND Ash Street			SOUTHBOUND Ash Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		14	321	43	0	0	0	121	10	2	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**14**	**321**	**43**	**0**	**0**	**0**	**121**	**10**	**2**	**0**	**0**	**0**
Background Growth to 2024	0.66%	0	2	0	0	0	0	1	0	0	0	0	0
901 Washington Street	DIST IN		52%	26%									
	DIST OUT							(69%)	(9%)				
	ASSIGN	0	5	3	0	0	0	16	2	0	0	0	0
601 Washington Street	DIST IN		52%	26%									
	DIST OUT							(69%)	(9%)				
	ASSIGN	0	13	6	0	0	0	57	8	0	0	0	0
Millenium Riverfront	DIST IN			68%									
	DIST OUT							(35%)	(9%)	(6%)			
	ASSIGN	0	0	14	0	0	0	27	6	5	0	0	0
Total Other Development New Trip Assignments		*0*	*18*	*23*	*0*	*0*	*0*	*100*	*16*	*5*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**14**	**341**	**66**	**0**	**0**	**0**	**222**	**26**	**7**	**0**	**0**	**0**
401 / 433 Washington Street	DIST IN		52%	26%									
	DIST OUT							(69%)	(9%)				
	ASSIGN	0	29	15	0	0	0	134	17	0	0	0	0
Total New Site Trip Assignment		*0*	*29*	*15*	*0*	*0*	*0*	*134*	*17*	*0*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**14**	**370**	**81**	**0**	**0**	**0**	**356**	**43**	**7**	**0**	**0**	**0**

Ash Street & Elm Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND Elm Street			WESTBOUND Elm Street			NORTHBOUND Ash Street			SOUTHBOUND Ash Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		23	448	71	0	0	0	119	10	9	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**23**	**448**	**71**	**0**	**0**	**0**	**119**	**10**	**9**	**0**	**0**	**0**
Background Growth to 2024	0.66%	0	3	0	0	0	0	1	0	0	0	0	0
901 Washington Street	DIST IN		52%	26%									
	DIST OUT							(69%)	(9%)				
	ASSIGN	0	12	6	0	0	0	12	2	0	0	0	0
601 Washington Street	DIST IN		52%	26%									
	DIST OUT							(69%)	(9%)				
	ASSIGN	0	33	17	0	0	0	29	4	0	0	0	0
Millenium Riverfront	DIST IN			68%									
	DIST OUT							(35%)	(9%)	(6%)			
	ASSIGN	0	0	40	0	0	0	14	4	2	0	0	0
Total Other Development New Trip Assignments		*0*	*45*	*63*	*0*	*0*	*0*	*55*	*10*	*2*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**23**	**496**	**134**	**0**	**0**	**0**	**175**	**20**	**11**	**0**	**0**	**0**
401 / 433 Washington Street	DIST IN		52%	26%									
	DIST OUT							(69%)	(9%)				
	ASSIGN	0	74	37	0	0	0	63	8	0	0	0	0
Total New Site Trip Assignment		*0*	*74*	*37*	*0*	*0*	*0*	*63*	*8*	*0*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**23**	**570**	**171**	**0**	**0**	**0**	**238**	**28**	**11**	**0**	**0**	**0**

Cherry Street & Elm Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Elm Street			Elm Street			Cherry Street			Cherry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	325	10	0	0	0	0	0	43	11	69	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**325**	**10**	**0**	**0**	**0**	**0**	**0**	**43**	**11**	**69**	**0**
Background Growth to 2024	0.66%	0	2	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN			26%								22%	
	DIST OUT									(22%)			
	ASSIGN	0	0	3	0	0	0	0	0	5	0	2	0
601 Washington Street	DIST IN			26%								22%	
	DIST OUT									(22%)			
	ASSIGN	0	0	7	0	0	0	0	0	18	0	5	0
Millenium Riverfront	DIST IN												
	DIST OUT		(22%)										
	ASSIGN	0	17	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*17*	*10*	*0*	*0*	*0*	*0*	*0*	*23*	*0*	*7*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**344**	**20**	**0**	**0**	**0**	**0**	**0**	**66**	**11**	**76**	**0**
401 / 433 Washington Street	DIST IN			26%								22%	
	DIST OUT									(22%)			
	ASSIGN	0	0	14	0	0	0	0	0	43	0	13	0
Total New Site Trip Assignment		*0*	*0*	*14*	*0*	*0*	*0*	*0*	*0*	*43*	*0*	*13*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**344**	**34**	**0**	**0**	**0**	**0**	**0**	**109**	**11**	**89**	**0**

Cherry Street & Elm Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND Elm Street			WESTBOUND Elm Street			NORTHBOUND Cherry Street			SOUTHBOUND Cherry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	459	8	0	0	0	0	0	63	26	55	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**459**	**8**	**0**	**0**	**0**	**0**	**0**	**63**	**26**	**55**	**0**
Background Growth to 2024	0.66%	0	3	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN			26%								22%	
	DIST OUT									(22%)			
	ASSIGN	0	0	6	0	0	0	0	0	4	0	5	0
601 Washington Street	DIST IN			26%								22%	
	DIST OUT									(22%)			
	ASSIGN	0	0	17	0	0	0	0	0	9	0	14	0
Millenium Riverfront	DIST IN												
	DIST OUT		(22%)										
	ASSIGN	0	8	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*8*	*23*	*0*	*0*	*0*	*0*	*0*	*13*	*0*	*19*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**470**	**31**	**0**	**0**	**0**	**0**	**0**	**76**	**26**	**74**	**0**
401 / 433 Washington Street	DIST IN			26%								22%	
	DIST OUT									(22%)			
	ASSIGN	0	0	37	0	0	0	0	0	20	0	31	0
Total New Site Trip Assignment		*0*	*0*	*37*	*0*	*0*	*0*	*0*	*0*	*20*	*0*	*31*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**470**	**68**	**0**	**0**	**0**	**0**	**0**	**96**	**26**	**105**	**0**

Ash Street & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND Ash Street			SOUTHBOUND Ash Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		3	11	5	8	49	128	0	5	0	16	13	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**3**	**11**	**5**	**8**	**49**	**128**	**0**	**5**	**0**	**16**	**13**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	1	0	0	0	0	0	0
901 Washington Street	DIST IN										26%		
	DIST OUT						(78%)						
	ASSIGN	0	0	0	0	0	18	0	0	0	3	0	0
601 Washington Street	DIST IN										26%		
	DIST OUT						(78%)						
	ASSIGN	0	0	0	0	0	65	0	0	0	6	0	0
Millenium Riverfront	DIST IN		5%	5%	11%						34%	34%	
	DIST OUT					(17%)	(25%)	(17%)	(25%)	(5%)			
	ASSIGN	0	1	1	2	13	19	13	19	4	7	7	0
Total Other Development New Trip Assignments		*0*	*1*	*1*	*2*	*13*	*102*	*13*	*19*	*4*	*16*	*7*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**3**	**12**	**6**	**10**	**62**	**231**	**13**	**24**	**4**	**32**	**20**	**0**
401 / 433 Washington Street	DIST IN										26%		
	DIST OUT						(78%)						
	ASSIGN	0	0	0	0	0	151	0	0	0	15	0	0
Total New Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*151*	*0*	*0*	*0*	*15*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**3**	**12**	**6**	**10**	**62**	**382**	**13**	**24**	**4**	**47**	**20**	**0**

Ash Street & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND Ash Street			SOUTHBOUND Ash Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		8	47	3	1	20	103	0	24	5	66	2	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**8**	**47**	**3**	**1**	**20**	**103**	**0**	**24**	**5**	**66**	**2**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	1	0	0	0	0	0	0
901 Washington Street	DIST IN										26%		
	DIST OUT						(78%)						
	ASSIGN	0	0	0	0	0	14	0	0	0	6	0	0
601 Washington Street	DIST IN										26%		
	DIST OUT						(78%)						
	ASSIGN	0	0	0	0	0	33	0	0	0	17	0	0
Millenium Riverfront	DIST IN		5%	5%	11%						34%	34%	
	DIST OUT					(17%)	(25%)	(17%)	(25%)	(5%)			
	ASSIGN	0	3	3	6	6	10	6	10	2	20	20	0
Total Other Development New Trip Assignments		*0*	*3*	*3*	*6*	*6*	*57*	*6*	*10*	*2*	*43*	*20*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**8**	**50**	**6**	**7**	**26**	**161**	**6**	**34**	**7**	**109**	**22**	**0**
401 / 433 Washington Street	DIST IN										26%		
	DIST OUT						(78%)						
	ASSIGN	0	0	0	0	0	72	0	0	0	37	0	0
Total New Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*72*	*0*	*0*	*0*	*37*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**8**	**50**	**6**	**7**	**26**	**233**	**6**	**34**	**7**	**146**	**22**	**0**

Poplar Street & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND Poplar Street			SOUTHBOUND Poplar Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		2	17	6	0	133	1	27	0	2	1	1	20
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**2**	**17**	**6**	**0**	**133**	**1**	**27**	**0**	**2**	**1**	**1**	**20**
Background Growth to 2024	0.66%	0	0	0	0	1	0	0	0	0	0	0	0
901 Washington Street	DIST IN		26%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	3	0	0	18	0	0	0	0	2	0	0
601 Washington Street	DIST IN		26%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	6	0	0	65	0	0	0	0	6	0	0
Millenium Riverfront	DIST IN			39%								11%	11%
	DIST OUT	(5%)						(42%)	(11%)				
	ASSIGN	4	0	9	0	0	0	32	8	0	0	3	2
Total Other Development New Trip Assignments		*4*	*9*	*9*	*0*	*83*	*0*	*32*	*8*	*0*	*8*	*3*	*2*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**6**	**26**	**15**	**0**	**217**	**1**	**59**	**8**	**2**	**9**	**4**	**22**
401 / 433 Washington Street	DIST IN		26%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	15	0	0	151	0	0	0	0	15	0	0
Total New Site Trip Assignment		*0*	*15*	*0*	*0*	*151*	*0*	*0*	*0*	*0*	*15*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**6**	**41**	**15**	**0**	**368**	**1**	**59**	**8**	**2**	**24**	**4**	**22**

Poplar Street & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND Poplar Street			SOUTHBOUND Poplar Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		3	96	30	4	90	2	17	0	3	9	4	11
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**3**	**96**	**30**	**4**	**90**	**2**	**17**	**0**	**3**	**9**	**4**	**11**
Background Growth to 2024	0.66%	0	1	0	0	1	0	0	0	0	0	0	0
901 Washington Street	DIST IN		26%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	6	0	0	14	0	0	0	0	6	0	0
601 Washington Street	DIST IN		26%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	17	0	0	33	0	0	0	0	16	0	0
Millenium Riverfront	DIST IN			39%								11%	11%
	DIST OUT	(5%)						(42%)	(11%)				
	ASSIGN	2	0	23	0	0	0	16	4	0	0	6	6
Total Other Development New Trip Assignments		*2*	*23*	*23*	*0*	*47*	*0*	*16*	*4*	*0*	*22*	*6*	*6*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**5**	**120**	**53**	**4**	**138**	**2**	**33**	**4**	**3**	**31**	**10**	**17**
401 / 433 Washington Street	DIST IN		26%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	37	0	0	72	0	0	0	0	38	0	0
Total New Site Trip Assignment		*0*	*37*	*0*	*0*	*72*	*0*	*0*	*0*	*0*	*38*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**5**	**157**	**53**	**4**	**210**	**2**	**33**	**4**	**3**	**69**	**10**	**17**

Cherry Street & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND Cherry Street			SOUTHBOUND Cherry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		33	4	1	0	7	2	20	9	0	4	2	65
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**33**	**4**	**1**	**0**	**7**	**2**	**20**	**9**	**0**	**4**	**2**	**65**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN		52%								48%		
	DIST OUT					(78%)	(22%)						
	ASSIGN	0	5	0	0	18	5	0	0	0	5	0	0
601 Washington Street	DIST IN		52%								48%		
	DIST OUT					(78%)	(22%)						
	ASSIGN	0	12	0	0	65	18	0	0	0	12	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*17*	*0*	*0*	*83*	*23*	*0*	*0*	*0*	*17*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**33**	**21**	**1**	**0**	**90**	**25**	**20**	**9**	**0**	**21**	**2**	**65**
401 / 433 Washington Street	DIST IN		35%	17%							32%	16%	
	DIST OUT					(52%)	(15%)	(26%)	(7%)				
	ASSIGN	0	20	10	0	101	29	50	14	0	19	9	0
Total New Site Trip Assignment		*0*	*20*	*10*	*0*	*101*	*29*	*50*	*14*	*0*	*19*	*9*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**33**	**41**	**11**	**0**	**191**	**54**	**70**	**23**	**0**	**40**	**11**	**65**

Cherry Street & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND Cherry Street			SOUTHBOUND Cherry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		41	8	9	0	19	5	4	12	0	19	10	39
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**41**	**8**	**9**	**0**	**19**	**5**	**4**	**12**	**0**	**19**	**10**	**39**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN		52%								48%		
	DIST OUT					(78%)	(22%)						
	ASSIGN	0	12	0	0	14	4	0	0	0	11	0	0
601 Washington Street	DIST IN		52%								48%		
	DIST OUT					(78%)	(22%)						
	ASSIGN	0	33	0	0	33	9	0	0	0	31	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*45*	*0*	*0*	*47*	*13*	*0*	*0*	*0*	*42*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**41**	**53**	**9**	**0**	**66**	**18**	**4**	**12**	**0**	**61**	**10**	**39**
401 / 433 Washington Street	DIST IN		35%	17%							32%	16%	
	DIST OUT					(52%)	(15%)	(26%)	(7%)				
	ASSIGN	0	50	24	0	48	14	24	6	0	45	23	0
Total New Site Trip Assignment		*0*	*50*	*24*	*0*	*48*	*14*	*24*	*6*	*0*	*45*	*23*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**41**	**103**	**33**	**0**	**114**	**32**	**28**	**18**	**0**	**106**	**33**	**39**

West Site Access & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND West Site Access			SOUTHBOUND West Site Access		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	8	0	0	9	0	0	0	0	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**8**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN		100%										
	DIST OUT					(100%)							
	ASSIGN	0	10	0	0	23	0	0	0	0	0	0	0
601 Washington Street	DIST IN		100%										
	DIST OUT					(100%)							
	ASSIGN	0	24	0	0	83	0	0	0	0	0	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*34*	*0*	*0*	*106*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**42**	**0**	**0**	**115**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
401 / 433 Washington Street	DIST IN		33%	34%									
	DIST OUT					(33%)		(34%)					
	ASSIGN	0	19	20	0	64	0	66	0	0	0	0	0
Total New Site Trip Assignment		*0*	*19*	*20*	*0*	*64*	*0*	*66*	*0*	*0*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**61**	**20**	**0**	**179**	**0**	**66**	**0**	**0**	**0**	**0**	**0**

West Site Access & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND West Site Access			SOUTHBOUND West Site Access		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	27	0	0	24	0	0	0	0	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**27**	**0**	**0**	**24**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN		100%										
	DIST OUT					(100%)							
	ASSIGN	0	23	0	0	18	0	0	0	0	0	0	0
601 Washington Street	DIST IN		100%										
	DIST OUT					(100%)							
	ASSIGN	0	64	0	0	42	0	0	0	0	0	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*87*	*0*	*0*	*60*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**114**	**0**	**0**	**84**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
401 / 433 Washington Street	DIST IN		33%	34%									
	DIST OUT					(33%)		(34%)					
	ASSIGN	0	47	48	0	31	0	31	0	0	0	0	0
Total New Site Trip Assignment		*0*	*47*	*48*	*0*	*31*	*0*	*31*	*0*	*0*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**161**	**48**	**0**	**115**	**0**	**31**	**0**	**0**	**0**	**0**	**0**

East Site Access & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND East Site Access			SOUTHBOUND East Site Access		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	8	0	0	9	0	0	0	0	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**8**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN		100%										
	DIST OUT					(100%)							
	ASSIGN	0	10	0	0	23	0	0	0	0	0	0	0
601 Washington Street	DIST IN		100%										
	DIST OUT					(100%)							
	ASSIGN	0	24	0	0	83	0	0	0	0	0	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*34*	*0*	*0*	*106*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**42**	**0**	**0**	**115**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
401 / 433 Washington Street	DIST IN			33%									
	DIST OUT							(33%)					
	ASSIGN	0	0	19	0	0	0	64	0	0	0	0	0
Total New Site Trip Assignment		*0*	*0*	*19*	*0*	*0*	*0*	*64*	*0*	*0*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**42**	**19**	**0**	**115**	**0**	**64**	**0**	**0**	**0**	**0**	**0**

East Site Access & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND East Site Access			SOUTHBOUND East Site Access		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	27	0	0	24	0	0	0	0	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**27**	**0**	**0**	**24**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN		100%										
	DIST OUT					(100%)							
	ASSIGN	0	23	0	0	18	0	0	0	0	0	0	0
601 Washington Street	DIST IN		100%										
	DIST OUT					(100%)							
	ASSIGN	0	64	0	0	42	0	0	0	0	0	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*87*	*0*	*0*	*60*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**114**	**0**	**0**	**84**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
401 / 433 Washington Street	DIST IN			33%									
	DIST OUT							(33%)					
	ASSIGN	0	0	47	0	0	0	31	0	0	0	0	0
Total New Site Trip Assignment		*0*	*0*	*47*	*0*	*0*	*0*	*31*	*0*	*0*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**114**	**47**	**0**	**84**	**0**	**31**	**0**	**0**	**0**	**0**	**0**

Cherry Street & South Site Access
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		South Site Access			South Site Access			Cherry Street			Cherry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	0	0	0	0	0	0	29	0	0	3	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**29**	**0**	**0**	**3**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
601 Washington Street	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**29**	**0**	**0**	**3**	**0**
401 / 433 Washington Street	DIST IN										33%		
	DIST OUT						(33%)						
	ASSIGN	0	0	0	0	0	64	0	0	0	19	0	0
Total New Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*64*	*0*	*0*	*0*	*19*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**0**	**0**	**0**	**0**	**64**	**0**	**29**	**0**	**19**	**3**	**0**

Cherry Street & South Site Access
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		South Site Access			South Site Access			Cherry Street			Cherry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	0	0	0	0	0	0	16	0	0	19	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**0**	**19**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
601 Washington Street	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**0**	**19**	**0**
401 / 433 Washington Street	DIST IN										33%		
	DIST OUT						(33%)						
	ASSIGN	0	0	0	0	0	30	0	0	0	47	0	0
Total New Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*30*	*0*	*0*	*0*	*47*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**0**	**0**	**0**	**0**	**30**	**0**	**16**	**0**	**47**	**19**	**0**

Lee Street / Spring Mill Avenue & Hector Street

INTERSECTION VOLUME PROJECTION SUMMARY

Weekday 7 AM - 9 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Hector Street			Hector Street			Lee Street			Spring Mill Avenue		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	387	5	21	442	19	14	1	7	25	1	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**387**	**5**	**21**	**442**	**19**	**14**	**1**	**7**	**25**	**1**	**0**
Background Growth to 2024	0.66%	0	3	0	0	3	0	0	0	0	0	0	0
901 Washington Street	DIST IN					22%							
	DIST OUT		(22%)										
	ASSIGN	0	5	0	0	2	0	0	0	0	0	0	0
601 Washington Street	DIST IN					22%							
	DIST OUT		(22%)										
	ASSIGN	0	18	0	0	5	0	0	0	0	0	0	0
Millenium Riverfront	DIST IN					22%							
	DIST OUT		(22%)										
	ASSIGN	0	17	0	0	5	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*40*	*0*	*0*	*12*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**430**	**5**	**21**	**457**	**19**	**14**	**1**	**7**	**25**	**1**	**0**
401 / 433 Washington Street	DIST IN					22%							
	DIST OUT		(22%)										
	ASSIGN	0	43	0	0	13	0	0	0	0	0	0	0
Total New Site Trip Assignment		*0*	*43*	*0*	*0*	*13*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**473**	**5**	**21**	**470**	**19**	**14**	**1**	**7**	**25**	**1**	**0**

Lee Street / Spring Mill Avenue & Hector Street

INTERSECTION VOLUME PROJECTION SUMMARY

Weekday 4 PM - 6 PM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Hector Street			Hector Street			Lee Street			Spring Mill Avenue		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		3	546	12	9	373	14	10	1	12	50	4	3
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**3**	**546**	**12**	**9**	**373**	**14**	**10**	**1**	**12**	**50**	**4**	**3**
Background Growth to 2024	0.66%	0	4	0	0	2	0	0	0	0	0	0	0
901 Washington Street	DIST IN					22%							
	DIST OUT		(22%)										
	ASSIGN	0	4	0	0	5	0	0	0	0	0	0	0
601 Washington Street	DIST IN					22%							
	DIST OUT		(22%)										
	ASSIGN	0	9	0	0	14	0	0	0	0	0	0	0
Millenium Riverfront	DIST IN					22%							
	DIST OUT		(22%)										
	ASSIGN	0	8	0	0	12	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*21*	*0*	*0*	*31*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**3**	**571**	**12**	**9**	**406**	**14**	**10**	**1**	**12**	**50**	**4**	**3**
401 / 433 Washington Street	DIST IN					22%							
	DIST OUT		(22%)										
	ASSIGN	0	20	0	0	31	0	0	0	0	0	0	0
Total New Site Trip Assignment		*0*	*20*	*0*	*0*	*31*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**3**	**591**	**12**	**9**	**437**	**14**	**10**	**1**	**12**	**50**	**4**	**3**

Station Avenue / North Lane & Hector Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Hector Street			Hector Street			Station Avenue			North Lane		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		69	344	10	10	441	55	5	18	3	67	11	50
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**69**	**344**	**10**	**10**	**441**	**55**	**5**	**18**	**3**	**67**	**11**	**50**
Background Growth to 2024	0.66%	0	2	0	0	3	0	0	0	0	0	0	0
	DIST IN					19%							3%
901 Washington Street	DIST OUT	(3%)	(19%)										
	ASSIGN	1	4	0	0	2	0	0	0	0	0	0	0
	DIST IN					19%							3%
601 Washington Street	DIST OUT	(3%)	(19%)										
	ASSIGN	2	16	0	0	5	0	0	0	0	0	0	0
	DIST IN					19%							3%
Millenium Riverfront	DIST OUT	(3%)	(19%)										
	ASSIGN	3	14	0	0	4	0	0	0	0	0	0	1
Total Other Development New Trip Assignments		*6*	*34*	*0*	*0*	*11*	*0*	*0*	*0*	*0*	*0*	*0*	*1*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**75**	**380**	**10**	**10**	**455**	**55**	**5**	**18**	**3**	**67**	**11**	**51**
	DIST IN					19%							3%
401 / 433 Washington Street	DIST OUT	(3%)	(19%)										
	ASSIGN	6	37	0	0	11	0	0	0	0	0	0	2
Total New Site Trip Assignment		*6*	*37*	*0*	*0*	*11*	*0*	*0*	*0*	*0*	*0*	*0*	*2*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**81**	**417**	**10**	**10**	**466**	**55**	**5**	**18**	**3**	**67**	**11**	**53**

Station Avenue / North Lane & Hector Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Hector Street			Hector Street			Station Avenue			North Lane		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		52	560	8	18	321	54	5	19	9	96	30	55
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**52**	**560**	**8**	**18**	**321**	**54**	**5**	**19**	**9**	**96**	**30**	**55**
Background Growth to 2024	0.66%	0	4	0	0	2	0	0	0	0	1	0	0
	DIST IN					19%							3%
901 Washington Street	DIST OUT	(3%)	(19%)										
	ASSIGN	1	3	0	0	4	0	0	0	0	0	0	1
	DIST IN					19%							3%
601 Washington Street	DIST OUT	(3%)	(19%)										
	ASSIGN	1	8	0	0	12	0	0	0	0	0	0	2
	DIST IN					19%							3%
Millenium Riverfront	DIST OUT	(3%)	(19%)										
	ASSIGN	1	7	0	0	10	0	0	0	0	0	0	2
Total Other Development New Trip Assignments		*3*	*18*	*0*	*0*	*26*	*0*	*0*	*0*	*0*	*0*	*0*	*5*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**55**	**582**	**8**	**18**	**349**	**54**	**5**	**19**	**9**	**97**	**30**	**60**
	DIST IN					19%							3%
401 / 433 Washington Street	DIST OUT	(3%)	(19%)										
	ASSIGN	3	17	0	0	27	0	0	0	0	0	0	4
Total New Site Trip Assignment		*3*	*17*	*0*	*0*	*27*	*0*	*0*	*0*	*0*	*0*	*0*	*4*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**58**	**599**	**8**	**18**	**376**	**54**	**5**	**19**	**9**	**97**	**30**	**64**

WITH WASHINGTON STREET EXTENSION

Harry Street & Elm Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Elm Street			Elm Street			Harry Street			Harry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	386	171	0	119	0	51	0	6	16	16	283
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**386**	**171**	**0**	**119**	**0**	**51**	**0**	**6**	**16**	**16**	**283**
Background Growth to 2024	0.66%	0	3	1	0	1	0	0	0	0	0	0	2
901 Washington Street	DIST IN		69%								9%		
	DIST OUT					(69%)							
	ASSIGN	0	7	0	0	16	0	0	0	0	1	0	0
601 Washington Street	DIST IN		69%								9%		
	DIST OUT					(69%)							
	ASSIGN	0	16	0	0	57	0	0	0	0	3	0	0
Millenium Riverfront	DIST IN		59%	10%							9%		
	DIST OUT					(35%)		(34%)					
	ASSIGN	0	12	2	0	27	0	26	0	0	2	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*35*	*2*	*0*	*100*	*0*	*26*	*0*	*0*	*6*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**424**	**174**	**0**	**220**	**0**	**77**	**0**	**6**	**22**	**16**	**285**
401 / 433 Washington Street	DIST IN		69%								9%		
	DIST OUT					(69%)							
	ASSIGN	0	41	0	0	134	0	0	0	0	5	0	0
Total New Site Trip Assignment		*0*	*41*	*0*	*0*	*134*	*0*	*0*	*0*	*0*	*5*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**465**	**174**	**0**	**354**	**0**	**77**	**0**	**6**	**27**	**16**	**285**

Harry Street & Elm Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Elm Street			Elm Street			Harry Street			Harry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	508	61	1	116	0	144	0	16	20	8	268
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**508**	**61**	**1**	**116**	**0**	**144**	**0**	**16**	**20**	**8**	**268**
Background Growth to 2024	0.66%	0	3	0	0	1	0	1	0	0	0	0	2
901 Washington Street	DIST IN		69%								9%		
	DIST OUT					(69%)							
	ASSIGN	0	16	0	0	12	0	0	0	0	2	0	0
601 Washington Street	DIST IN		69%								9%		
	DIST OUT					(69%)							
	ASSIGN	0	44	0	0	29	0	0	0	0	6	0	0
Millenium Riverfront	DIST IN		59%	10%							9%		
	DIST OUT					(35%)		(34%)					
	ASSIGN	0	34	6	0	14	0	12	0	0	6	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*94*	*6*	*0*	*55*	*0*	*12*	*0*	*0*	*14*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**605**	**67**	**1**	**172**	**0**	**157**	**0**	**16**	**34**	**8**	**270**
401 / 433 Washington Street	DIST IN		69%								9%		
	DIST OUT					(69%)							
	ASSIGN	0	98	0	0	63	0	0	0	0	13	0	0
Total New Site Trip Assignment		*0*	*98*	*0*	*0*	*63*	*0*	*0*	*0*	*0*	*13*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**703**	**67**	**1**	**235**	**0**	**157**	**0**	**16**	**47**	**8**	**270**

Ash Street & Elm Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Elm Street			Elm Street			Ash Street			Ash Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		14	321	43	0	0	0	121	10	2	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**14**	**321**	**43**	**0**	**0**	**0**	**121**	**10**	**2**	**0**	**0**	**0**
Background Growth to 2024	0.66%	0	2	0	0	0	0	1	0	0	0	0	0
901 Washington Street	DIST IN		52%	26%									
	DIST OUT							(69%)	(9%)				
	ASSIGN	0	5	3	0	0	0	16	2	0	0	0	0
601 Washington Street	DIST IN		52%	26%									
	DIST OUT							(69%)	(9%)				
	ASSIGN	0	13	6	0	0	0	57	8	0	0	0	0
Millenium Riverfront	DIST IN			68%									
	DIST OUT							(35%)	(9%)	(6%)			
	ASSIGN	0	0	14	0	0	0	27	6	5	0	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*18*	*23*	*0*	*0*	*0*	*100*	*16*	*5*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**14**	**341**	**66**	**0**	**0**	**0**	**222**	**26**	**7**	**0**	**0**	**0**
401 / 433 Washington Street	DIST IN		52%	26%									
	DIST OUT							(69%)	(9%)				
	ASSIGN	0	30	16	0	0	0	134	17	0	0	0	0
Total New Site Trip Assignment		*0*	*30*	*16*	*0*	*0*	*0*	*134*	*17*	*0*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**14**	**371**	**82**	**0**	**0**	**0**	**356**	**43**	**7**	**0**	**0**	**0**

Ash Street & Elm Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND Elm Street			WESTBOUND Elm Street			NORTHBOUND Ash Street			SOUTHBOUND Ash Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		23	448	71	0	0	0	119	10	9	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**23**	**448**	**71**	**0**	**0**	**0**	**119**	**10**	**9**	**0**	**0**	**0**
Background Growth to 2024	0.66%	0	3	0	0	0	0	1	0	0	0	0	0
901 Washington Street	DIST IN		52%	26%									
	DIST OUT							(69%)	(9%)				
	ASSIGN	0	12	6	0	0	0	12	2	0	0	0	0
601 Washington Street	DIST IN		52%	26%									
	DIST OUT							(69%)	(9%)				
	ASSIGN	0	33	17	0	0	0	29	3	0	0	0	0
Millenium Riverfront	DIST IN			68%									
	DIST OUT							(35%)	(9%)	(6%)			
	ASSIGN	0	0	40	0	0	0	14	4	2	0	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*45*	*63*	*0*	*0*	*0*	*55*	*9*	*2*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**23**	**496**	**134**	**0**	**0**	**0**	**175**	**19**	**11**	**0**	**0**	**0**
401 / 433 Washington Street	DIST IN		52%	26%									
	DIST OUT							(69%)	(9%)				
	ASSIGN	0	74	37	0	0	0	63	9	0	0	0	0
Total New Site Trip Assignment		*0*	*74*	*37*	*0*	*0*	*0*	*63*	*9*	*0*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**23**	**570**	**171**	**0**	**0**	**0**	**238**	**28**	**11**	**0**	**0**	**0**

Cherry Street & Elm Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Elm Street			Elm Street			Cherry Street			Cherry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	325	10	0	0	0	0	0	43	11	69	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**325**	**10**	**0**	**0**	**0**	**0**	**0**	**43**	**11**	**69**	**0**
Background Growth to 2024	0.66%	0	2	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN			26%									
	DIST OUT												
	ASSIGN	0	0	3	0	0	0	0	0	0	0	0	0
601 Washington Street	DIST IN			26%									
	DIST OUT												
	ASSIGN	0	0	6	0	0	0	0	0	0	0	0	0
Millenium Riverfront	DIST IN												
	DIST OUT		(22%)										
	ASSIGN	0	17	0	0	0	0	0	0	0	0	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	-8	0	-16	0
Total Other Development New Trip Assignments		*0*	*17*	*9*	*0*	*0*	*0*	*0*	*0*	*-8*	*0*	*-16*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**344**	**19**	**0**	**0**	**0**	**0**	**0**	**35**	**11**	**53**	**0**
401 / 433 Washington Street	DIST IN			26%									
	DIST OUT												
	ASSIGN	0	0	15	0	0	0	0	0	0	0	0	0
Total New Site Trip Assignment		*0*	*0*	*15*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**344**	**34**	**0**	**0**	**0**	**0**	**0**	**35**	**11**	**53**	**0**

Cherry Street & Elm Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Elm Street			Elm Street			Cherry Street			Cherry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	459	8	0	0	0	0	0	63	26	55	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**459**	**8**	**0**	**0**	**0**	**0**	**0**	**63**	**26**	**55**	**0**
Background Growth to 2024	0.66%	0	3	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN			26%									
	DIST OUT												
	ASSIGN	0	0	6	0	0	0	0	0	0	0	0	0
601 Washington Street	DIST IN			26%									
	DIST OUT												
	ASSIGN	0	0	17	0	0	0	0	0	0	0	0	0
Millenium Riverfront	DIST IN												
	DIST OUT		(22%)										
	ASSIGN	0	8	0	0	0	0	0	0	0	0	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	-10	0	-10	0
Total Other Development New Trip Assignments		*0*	*8*	*23*	*0*	*0*	*0*	*0*	*0*	*-10*	*0*	*-10*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**470**	**31**	**0**	**0**	**0**	**0**	**0**	**53**	**26**	**45**	**0**
401 / 433 Washington Street	DIST IN			26%									
	DIST OUT												
	ASSIGN	0	0	37	0	0	0	0	0	0	0	0	0
Total New Site Trip Assignment		*0*	*0*	*37*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**470**	**68**	**0**	**0**	**0**	**0**	**0**	**53**	**26**	**45**	**0**

Ash Street & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND Ash Street			SOUTHBOUND Ash Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		3	11	5	8	49	128	0	5	0	16	13	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**3**	**11**	**5**	**8**	**49**	**128**	**0**	**5**	**0**	**16**	**13**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	1	0	0	0	0	0	0
901 Washington Street	DIST IN										26%		
	DIST OUT						(78%)						
	ASSIGN	0	0	0	0	0	18	0	0	0	3	0	0
601 Washington Street	DIST IN										26%		
	DIST OUT						(78%)						
	ASSIGN	0	0	0	0	0	65	0	0	0	6	0	0
Millenium Riverfront	DIST IN		5%	5%	11%						34%	34%	
	DIST OUT					(17%)	(25%)	(17%)	(25%)	(5%)			
	ASSIGN	0	1	1	2	13	19	13	19	4	7	7	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*1*	*1*	*2*	*13*	*102*	*13*	*19*	*4*	*16*	*7*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**3**	**12**	**6**	**10**	**62**	**231**	**13**	**24**	**4**	**32**	**20**	**0**
401 / 433 Washington Street	DIST IN										26%		
	DIST OUT						(78%)						
	ASSIGN	0	0	0	0	0	151	0	0	0	16	0	0
Total New Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*151*	*0*	*0*	*0*	*16*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**3**	**12**	**6**	**10**	**62**	**382**	**13**	**24**	**4**	**48**	**20**	**0**

Ash Street & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND Ash Street			SOUTHBOUND Ash Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		8	47	3	1	20	103	0	24	5	66	2	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**8**	**47**	**3**	**1**	**20**	**103**	**0**	**24**	**5**	**66**	**2**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	1	0	0	0	0	0	0
901 Washington Street	DIST IN										26%		
	DIST OUT						(78%)						
	ASSIGN	0	0	0	0	0	14	0	0	0	6	0	0
601 Washington Street	DIST IN										26%		
	DIST OUT						(78%)						
	ASSIGN	0	0	0	0	0	32	0	0	0	17	0	0
Millenium Riverfront	DIST IN		5%	5%	11%						34%	34%	
	DIST OUT					(17%)	(25%)	(17%)	(25%)	(5%)			
	ASSIGN	0	3	3	6	6	10	6	10	2	20	20	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*3*	*3*	*6*	*6*	*56*	*6*	*10*	*2*	*43*	*20*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**8**	**50**	**6**	**7**	**26**	**160**	**6**	**34**	**7**	**109**	**22**	**0**
401 / 433 Washington Street	DIST IN										26%		
	DIST OUT						(78%)						
	ASSIGN	0	0	0	0	0	72	0	0	0	37	0	0
Total New Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*72*	*0*	*0*	*0*	*37*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**8**	**50**	**6**	**7**	**26**	**232**	**6**	**34**	**7**	**146**	**22**	**0**

Poplar Street & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND Poplar Street			SOUTHBOUND Poplar Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		2	17	6	0	133	1	27	0	2	1	1	20
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**2**	**17**	**6**	**0**	**133**	**1**	**27**	**0**	**2**	**1**	**1**	**20**
Background Growth to 2024	0.66%	0	0	0	0	1	0	0	0	0	0	0	0
901 Washington Street	DIST IN		26%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	3	0	0	18	0	0	0	0	2	0	0
601 Washington Street	DIST IN		26%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	6	0	0	65	0	0	0	0	6	0	0
Millenium Riverfront	DIST IN			39%								11%	11%
	DIST OUT	(5%)						(42%)	(11%)				
	ASSIGN	4	0	9	0	0	0	32	8	0	0	3	2
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*4*	*9*	*9*	*0*	*83*	*0*	*32*	*8*	*0*	*8*	*3*	*2*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**6**	**26**	**15**	**0**	**217**	**1**	**59**	**8**	**2**	**9**	**4**	**22**
401 / 433 Washington Street	DIST IN		26%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	16	0	0	151	0	0	0	0	15	0	0
Total New Site Trip Assignment		*0*	*16*	*0*	*0*	*151*	*0*	*0*	*0*	*0*	*15*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**6**	**42**	**15**	**0**	**368**	**1**	**59**	**8**	**2**	**24**	**4**	**22**

Poplar Street & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND Poplar Street			SOUTHBOUND Poplar Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		3	96	30	4	90	2	17	0	3	9	4	11
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**3**	**96**	**30**	**4**	**90**	**2**	**17**	**0**	**3**	**9**	**4**	**11**
Background Growth to 2024	0.66%	0	1	0	0	1	0	0	0	0	0	0	0
901 Washington Street	DIST IN		26%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	6	0	0	14	0	0	0	0	6	0	0
601 Washington Street	DIST IN		26%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	17	0	0	32	0	0	0	0	16	0	0
Millenium Riverfront	DIST IN			39%								11%	11%
	DIST OUT	(5%)						(42%)	(11%)				
	ASSIGN	2	0	23	0	0	0	16	4	0	0	6	6
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*2*	*23*	*23*	*0*	*46*	*0*	*16*	*4*	*0*	*22*	*6*	*6*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**5**	**120**	**53**	**4**	**137**	**2**	**33**	**4**	**3**	**31**	**10**	**17**
401 / 433 Washington Street	DIST IN		26%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	37	0	0	72	0	0	0	0	37	0	0
Total New Site Trip Assignment		*0*	*37*	*0*	*0*	*72*	*0*	*0*	*0*	*0*	*37*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**5**	**157**	**53**	**4**	**209**	**2**	**33**	**4**	**3**	**68**	**10**	**17**

Cherry Street & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND Cherry Street			SOUTHBOUND Cherry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		33	4	1	0	7	2	20	9	0	4	2	65
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**33**	**4**	**1**	**0**	**7**	**2**	**20**	**9**	**0**	**4**	**2**	**65**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN		52%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	5	0	0	18	0	0	0	0	3	0	0
601 Washington Street	DIST IN		52%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	12	0	0	65	0	0	0	0	6	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	-8	8	0	0	16	0	0	0	0	0	0	-16
Total Other Development New Trip Assignments		*-8*	*25*	*0*	*0*	*99*	*0*	*0*	*0*	*0*	*9*	*0*	*-16*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**25**	**29**	**1**	**0**	**106**	**2**	**20**	**9**	**0**	**13**	**2**	**49**
401 / 433 Washington Street	DIST IN		26%	26%							26%		
	DIST OUT					(52%)		(26%)					
	ASSIGN	0	15	16	0	101	0	50	0	0	15	0	0
Total New Site Trip Assignment		*0*	*15*	*16*	*0*	*101*	*0*	*50*	*0*	*0*	*15*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**25**	**44**	**17**	**0**	**207**	**2**	**70**	**9**	**0**	**28**	**2**	**49**

Cherry Street & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND Cherry Street			SOUTHBOUND Cherry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		41	8	9	0	19	5	4	12	0	19	10	39
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**41**	**8**	**9**	**0**	**19**	**5**	**4**	**12**	**0**	**19**	**10**	**39**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN		52%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	12	0	0	14	0	0	0	0	6	0	0
601 Washington Street	DIST IN		52%								26%		
	DIST OUT					(78%)							
	ASSIGN	0	33	0	0	32	0	0	0	0	17	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	-10	10	0	0	10	0	0	0	0	0	0	-10
Total Other Development New Trip Assignments		*-10*	*55*	*0*	*0*	*56*	*0*	*0*	*0*	*0*	*23*	*0*	*-10*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**31**	**63**	**9**	**0**	**75**	**5**	**4**	**12**	**0**	**42**	**10**	**29**
401 / 433 Washington Street	DIST IN		26%	26%							26%		
	DIST OUT					(52%)		(26%)					
	ASSIGN	0	37	37	0	48	0	24	0	0	37	0	0
Total New Site Trip Assignment		*0*	*37*	*37*	*0*	*48*	*0*	*24*	*0*	*0*	*37*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**31**	**100**	**46**	**0**	**123**	**5**	**28**	**12**	**0**	**79**	**10**	**29**

West Site Access & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Washington Street			Washington Street			West Site Access			West Site Access		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	8	0	0	9	0	0	0	0	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**8**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN		78%										
	DIST OUT					(78%)							
	ASSIGN	0	8	0	0	18	0	0	0	0	0	0	0
601 Washington Street	DIST IN		78%										
	DIST OUT					(78%)							
	ASSIGN	0	18	0	0	65	0	0	0	0	0	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	8	0	0	16	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*34*	*0*	*0*	*99*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**42**	**0**	**0**	**108**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
401 / 433 Washington Street	DIST IN		26%	26%	11%								
	DIST OUT					(26%)		(26%)		(11%)			
	ASSIGN	0	15	15	6	50	0	51	0	21	0	0	0
Total New Site Trip Assignment		*0*	*15*	*15*	*6*	*50*	*0*	*51*	*0*	*21*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**57**	**15**	**6**	**158**	**0**	**51**	**0**	**21**	**0**	**0**	**0**

West Site Access & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND West Site Access			SOUTHBOUND West Site Access		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	27	0	0	24	0	0	0	0	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**27**	**0**	**0**	**24**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN		78%										
	DIST OUT					(78%)							
	ASSIGN	0	18	0	0	14	0	0	0	0	0	0	0
601 Washington Street	DIST IN		78%										
	DIST OUT					(78%)							
	ASSIGN	0	50	0	0	32	0	0	0	0	0	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	10	0	0	10	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*78*	*0*	*0*	*56*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**105**	**0**	**0**	**80**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
401 / 433 Washington Street	DIST IN		26%	26%	11%								
	DIST OUT					(26%)		(26%)		(11%)			
	ASSIGN	0	37	37	15	24	0	24	0	10	0	0	0
Total New Site Trip Assignment		*0*	*37*	*37*	*15*	*24*	*0*	*24*	*0*	*10*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**142**	**37**	**15**	**104**	**0**	**24**	**0**	**10**	**0**	**0**	**0**

East Site Access & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND East Site Access			SOUTHBOUND East Site Access		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	8	0	0	9	0	0	0	0	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**8**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN		78%										
	DIST OUT					(78%)							
	ASSIGN	0	8	0	0	18	0	0	0	0	0	0	0
601 Washington Street	DIST IN		78%										
	DIST OUT					(78%)							
	ASSIGN	0	18	0	0	65	0	0	0	0	0	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	8	0	0	16	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*34*	*0*	*0*	*99*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**42**	**0**	**0**	**108**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
401 / 433 Washington Street	DIST IN			26%	11%	11%							
	DIST OUT		(11%)					(26%)		(11%)			
	ASSIGN	0	21	15	6	6	0	50	0	22	0	0	0
Total New Site Trip Assignment		*0*	*21*	*15*	*6*	*6*	*0*	*50*	*0*	*22*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**63**	**15**	**6**	**114**	**0**	**50**	**0**	**22**	**0**	**0**	**0**

East Site Access & Washington Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND Washington Street			WESTBOUND Washington Street			NORTHBOUND East Site Access			SOUTHBOUND East Site Access		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	27	0	0	24	0	0	0	0	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**27**	**0**	**0**	**24**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN		78%										
	DIST OUT					(78%)							
	ASSIGN	0	18	0	0	14	0	0	0	0	0	0	0
601 Washington Street	DIST IN		78%										
	DIST OUT					(78%)				(11%)			
	ASSIGN	0	50	0	0	32	0	0	0	5	0	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	10	0	0	10	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*78*	*0*	*0*	*56*	*0*	*0*	*0*	*5*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**105**	**0**	**0**	**80**	**0**	**0**	**0**	**5**	**0**	**0**	**0**
401 / 433 Washington Street	DIST IN			26%	11%	11%							
	DIST OUT		(11%)					(26%)		(11%)			
	ASSIGN	0	10	37	16	15	0	24	0	10	0	0	0
Total New Site Trip Assignment		*0*	*10*	*37*	*16*	*15*	*0*	*24*	*0*	*10*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**115**	**37**	**16**	**95**	**0**	**24**	**0**	**15**	**0**	**0**	**0**

Cherry Street & South Site Access
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		South Site Access			South Site Access			Cherry Street			Cherry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	0	0	0	0	0	0	29	0	0	3	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**29**	**0**	**0**	**3**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
601 Washington Street	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**29**	**0**	**0**	**3**	**0**
401 / 433 Washington Street	DIST IN										26%		
	DIST OUT						(26%)						
	ASSIGN	0	0	0	0	0	50	0	0	0	16	0	0
Total New Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*50*	*0*	*0*	*0*	*16*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**0**	**0**	**0**	**0**	**50**	**0**	**29**	**0**	**16**	**3**	**0**

Cherry Street & South Site Access
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		South Site Access			South Site Access			Cherry Street			Cherry Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	0	0	0	0	0	0	16	0	0	19	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**0**	**19**	**0**
Background Growth to 2024	0.66%	0	0	0	0	0	0	0	0	0	0	0	0
901 Washington Street	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
601 Washington Street	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Millenium Riverfront	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**0**	**19**	**0**
401 / 433 Washington Street	DIST IN										26%		
	DIST OUT						(26%)						
	ASSIGN	0	0	0	0	0	24	0	0	0	37	0	0
Total New Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*24*	*0*	*0*	*0*	*37*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**0**	**0**	**0**	**0**	**24**	**0**	**16**	**0**	**37**	**19**	**0**

Lee Street / Spring Mill Avenue & Hector Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Hector Street			Hector Street			Lee Street			Spring Mill Avenue		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	387	5	21	442	19	14	1	7	25	1	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**0**	**387**	**5**	**21**	**442**	**19**	**14**	**1**	**7**	**25**	**1**	**0**
Background Growth to 2024	0.66%	0	3	0	0	3	0	0	0	0	0	0	0
901 Washington Street	DIST IN				22%								
	DIST OUT									(22%)			
	ASSIGN	0	0	0	2	0	0	0	0	5	0	0	0
601 Washington Street	DIST IN				22%								
	DIST OUT									(22%)			
	ASSIGN	0	0	0	6	0	0	0	0	18	0	0	0
Millenium Riverfront	DIST IN					22%							
	DIST OUT		(22%)										
	ASSIGN	0	17	0	0	5	0	0	0	0	0	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	-8	0	16	-16	0	0	0	8	0	0	0
Total Other Development New Trip Assignments		*0*	*9*	*0*	*24*	*-11*	*0*	*0*	*0*	*31*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**0**	**399**	**5**	**45**	**434**	**19**	**14**	**1**	**38**	**25**	**1**	**0**
401 / 433 Washington Street	DIST IN				22%								
	DIST OUT									(22%)			
	ASSIGN	0	0	0	12	0	0	0	0	43	0	0	0
Total New Site Trip Assignment		*0*	*0*	*0*	*12*	*0*	*0*	*0*	*0*	*43*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**0**	**399**	**5**	**57**	**434**	**19**	**14**	**1**	**81**	**25**	**1**	**0**

Lee Street / Spring Mill Avenue & Hector Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Hector Street			Hector Street			Lee Street			Spring Mill Avenue		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		3	546	12	9	373	14	10	1	12	50	4	3
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**3**	**546**	**12**	**9**	**373**	**14**	**10**	**1**	**12**	**50**	**4**	**3**
Background Growth to 2024	0.66%	0	4	0	0	2	0	0	0	0	0	0	0
901 Washington Street	DIST IN				22%								
	DIST OUT									(22%)			
	ASSIGN	0	0	0	5	0	0	0	0	4	0	0	0
601 Washington Street	DIST IN				22%								
	DIST OUT									(22%)			
	ASSIGN	0	0	0	14	0	0	0	0	10	0	0	0
Millenium Riverfront	DIST IN					22%							
	DIST OUT		(22%)										
	ASSIGN	0	8	0	0	12	0	0	0	0	0	0	0
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	-10	0	10	-10	0	0	0	10	0	0	0
Total Other Development New Trip Assignments		*0*	*-2*	*0*	*29*	*2*	*0*	*0*	*0*	*24*	*0*	*0*	*0*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**3**	**548**	**12**	**38**	**377**	**14**	**10**	**1**	**36**	**50**	**4**	**3**
401 / 433 Washington Street	DIST IN				22%								
	DIST OUT									(22%)			
	ASSIGN	0	0	0	31	0	0	0	0	20	0	0	0
Total New Site Trip Assignment		*0*	*0*	*0*	*31*	*0*	*0*	*0*	*0*	*20*	*0*	*0*	*0*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**3**	**548**	**12**	**69**	**377**	**14**	**10**	**1**	**56**	**50**	**4**	**3**

Station Avenue / North Lane & Hector Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 7 AM - 9 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Hector Street			Hector Street			Station Avenue			North Lane		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		69	344	10	10	441	55	5	18	3	67	11	50
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**69**	**344**	**10**	**10**	**441**	**55**	**5**	**18**	**3**	**67**	**11**	**50**
Background Growth to 2024	0.66%	0	2	0	0	3	0	0	0	0	0	0	0
901 Washington Street	DIST IN					19%							3%
	DIST OUT	(3%)	(19%)										
	ASSIGN	1	4	0	0	2	0	0	0	0	0	0	0
601 Washington Street	DIST IN					19%							3%
	DIST OUT	(3%)	(19%)										
	ASSIGN	2	16	0	0	5	0	0	0	0	0	0	1
Millenium Riverfront	DIST IN					19%							3%
	DIST OUT	(3%)	(19%)										
	ASSIGN	3	14	0	0	4	0	0	0	0	0	0	1
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*6*	*34*	*0*	*0*	*11*	*0*	*0*	*0*	*0*	*0*	*0*	*2*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**75**	**380**	**10**	**10**	**455**	**55**	**5**	**18**	**3**	**67**	**11**	**52**
401 / 433 Washington Street	DIST IN					19%							3%
	DIST OUT	(3%)	(19%)										
	ASSIGN	6	37	0	0	10	0	0	0	0	0	0	2
Total New Site Trip Assignment		*6*	*37*	*0*	*0*	*10*	*0*	*0*	*0*	*0*	*0*	*0*	*2*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**81**	**417**	**10**	**10**	**465**	**55**	**5**	**18**	**3**	**67**	**11**	**54**

Station Avenue / North Lane & Hector Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 4 PM - 6 PM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Hector Street			Hector Street			Station Avenue			North Lane		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		52	560	8	18	321	54	5	19	9	96	30	55
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		**52**	**560**	**8**	**18**	**321**	**54**	**5**	**19**	**9**	**96**	**30**	**55**
Background Growth to 2024	0.66%	0	4	0	0	2	0	0	0	0	1	0	0
901 Washington Street	DIST IN					19%							3%
	DIST OUT	(3%)	(19%)										
	ASSIGN	1	3	0	0	4	0	0	0	0	0	0	1
601 Washington Street	DIST IN					19%							3%
	DIST OUT	(3%)	(19%)										
	ASSIGN	2	8	0	0	12	0	0	0	0	0	0	2
Millenium Riverfront	DIST IN					19%							3%
	DIST OUT	(3%)	(19%)										
	ASSIGN	1	7	0	0	10	0	0	0	0	0	0	2
Washington Street Extension Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		*4*	*18*	*0*	*0*	*26*	*0*	*0*	*0*	*0*	*0*	*0*	*5*
Total Other Development Pass-by Trip Assignments		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITHOUT DEVELOPMENT VOLUMES		**56**	**582**	**8**	**18**	**349**	**54**	**5**	**19**	**9**	**97**	**30**	**60**
401 / 433 Washington Street	DIST IN					19%							3%
	DIST OUT	(3%)	(19%)										
	ASSIGN	3	17	0	0	27	0	0	0	0	0	0	4
Total New Site Trip Assignment		*3*	*17*	*0*	*0*	*27*	*0*	*0*	*0*	*0*	*0*	*0*	*4*
Total Pass-by Site Trip Assignment		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2024 WITH DEVELOPMENT VOLUMES		**59**	**599**	**8**	**18**	**376**	**54**	**5**	**19**	**9**	**97**	**30**	**64**

McMAHON
a Bowman company

Appendix G

Capacity / Level-of-Service Methodology

CAPACITY/LEVEL-OF-SERVICE ANALYSIS METHODOLOGY

The detailed capacity/level-of-service analysis contained in this transportation impact study was performed in accordance with the standard techniques contained in the *Highway Capacity Manual 6th Edition.* By definition, capacity represents "the maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions." The level at which an intersection or a uniform section of a lane or roadway function can be expressed in terms of a level of service. Level of service (LOS) is defined as "a quantitative stratification of a performance measure or measures that represent quality of service, measured on an A-F scale, with LOS A representing the best operating conditions from the traveler's perspective and LOS F the worst."

Stop-Controlled Intersections

At unsignalized stop-controlled intersections, such as two-way stop-controlled (TWSC) or all-way stop-controlled (AWSC), a methodology for evaluating the relative functioning of these intersections is based upon the control delay. For these types of unsignalized intersections, the analysis of the control delay is based upon the following data:

- Number and configuration of lanes on each approach;
- Percentage of heavy vehicles on each approach;
- Demand flow rate for each entering vehicular movement and pedestrian crossing movement;
- Unique geometric factors such as, channelization aspects; two-way left-turn lanes, raised or striped median storage; approach grades, flared approaches on the minor street; and upstream signals within 0.25 miles.

At TWSC intersections, only drivers on the minor street approaches are required to stop before proceeding into the intersection and left-turning drivers from the major street may have to yield to on-coming major street through or right-turning traffic, but are not required to stop in the absence of on-coming traffic. The capacity at stop-controlled legs is based primarily on three factors: the distribution of gaps in the major stream, driver judgment in selecting the gaps, and the follow-up headways required by each driver in a queue.

At AWSC intersections, every vehicle is required to stop at the intersection before proceeding, and as a result, the decision to proceed is a function of the traffic conditions on the other approaches. Each driver proceeds only after determining that no vehicles are currently in the intersection and that it is the driver's turn to proceed. Capacity at an AWSC intersection is described by the saturation headway or time between departures of successive vehicles on a given approach for a particular case assuming a continuous queue; departure headway or the average time between departures of successive vehicles on a given approach accounting for the probability of each possible case; and service time or the average time sent by a vehicle in first position waiting to depart.

At both TWSC and AWSC intersections, the level of service is based upon the control delay, as well as the corresponding volume-to-capacity ratio for each movement/lane group. For TWSC intersections, the level of service is not calculated for major-street approaches or for the intersection as a whole; however, the intersection-wide level of service is calculated for AWSC intersections. The following table provides a summary of the relationship between the level of service, control delay, and volume-to-capacity ratio for TWSC and AWSC intersections.

Control Delay (Sec/Veh)	LOS by Volume-to-Capacity Ratio	
	v/c ≤ 1.0	v/c > 1.0
≤ 10	A	F
> 10 – 15	B	F
> 15 – 25	C	F
> 25 – 35	D	F
> 35 – 50	E	F
> 50	F	F

Signalized Intersections

At three or four-legged signalized intersections, a methodology for evaluating the capacity and quality of service provided to road users traveling through the signalized intersection. For signalized intersections, the level of service can be characterized for the entire intersection, each approach, and each lane group. The level of service is based upon the control delay and volume-to-capacity ratio. The delay quantifies the increase in travel time due to the traffic signal control and is a surrogate measure of driver discomfort and fuel consumption, while the volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group. Input data in determining the delay and volume-to-capacity ratio include:

- Demand flow rate for each entering vehicular movement and pedestrian crossing movement, including right-turn on red volumes and percent of heavy vehicles;
- Initial queue for each lane group;
- Number and configuration of lanes on each approach;
- Type of signal control and phase sequence;
- Allocation of minimum/maximum green times and clearance intervals (Yellow plus All Red phases); and
- Phase recall.

At signalized intersections, the level of service is based upon the control delay, as well as the corresponding volume-to-capacity ratio for each movement/lane group. The following table provides a summary of the relationship between the level of service, control delay, and volume-to-capacity ratio for signalized intersections.

Control Delay (Sec/Veh)	LOS by Volume-to-Capacity Ratio	
	v/c ≤ 1.0	v/c > 1.0
≤ 10	A	F
> 10 – 20	B	F
> 20 – 35	C	F
> 35 – 55	D	F
> 55 – 80	E	F
> 80	F	F

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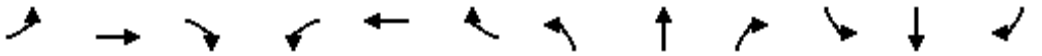
Appendix H

2022 Existing Capacity/Level-of-Service Analysis Worksheets

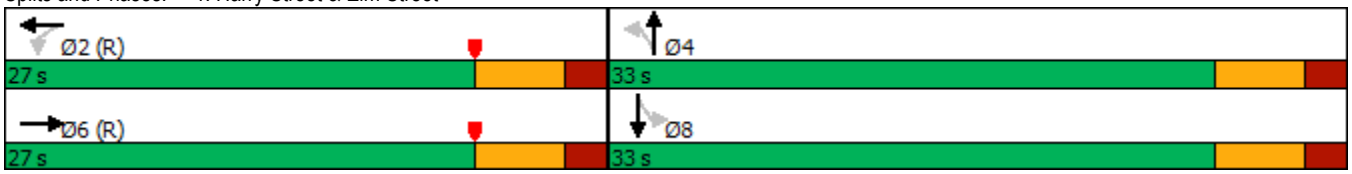


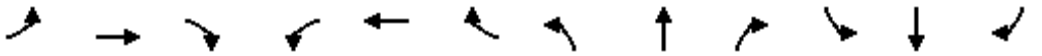
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	386	171	0	119	0	51	0	6	16	16	283
Future Volume (vph)	0	386	171	0	119	0	51	0	6	16	16	283
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		-4%			2%			3%			-6%	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99						1.00		1.00	0.98	
Frt		0.954						0.986			0.858	
Flt Protected								0.957		0.950		
Satd. Flow (prot)	0	3285	0	0	1788	0	0	1391	0	1431	1461	0
Flt Permitted								0.372		0.713		
Satd. Flow (perm)	0	3285	0	0	1788	0	0	540	0	1073	1461	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		133						55			341	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		281			505			298			915	
Travel Time (s)		7.7			13.8			8.1			25.0	
Confl. Peds. (#/hr)	5		1	1		5	1		1	1		1
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	4%	4%	0%	3%	0%	24%	0%	25%	19%	6%	3%
Adj. Flow (vph)	0	465	206	0	143	0	61	0	7	19	19	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	671	0	0	143	0	0	68	0	19	360	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.04	1.04	1.04	1.05	1.05	1.05	1.08	1.08	1.08
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1		1	1		1	1	
Detector Template				Left			Left			Left		
Leading Detector (ft)		37		20	37		20	37		37	37	
Trailing Detector (ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Position(ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Size(ft)		40		20	40		20	40		40	40	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type		NA			NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases				2			4			8		
Detector Phase		6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)		15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)		21.0		26.0	26.0		9.0	9.0		9.0	9.0	
Total Split (s)		27.0		27.0	27.0		33.0	33.0		33.0	33.0	
Total Split (%)		45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Maximum Green (s)		21.0		21.0	21.0		27.0	27.0		27.0	27.0	
Yellow Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode		C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0		13.0	13.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 28 (47%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Harry Street & Elm Street

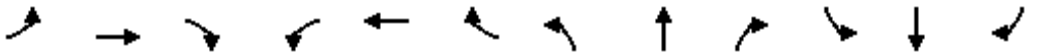




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	386	171	0	119	0	51	0	6	16	16	283
Future Volume (veh/h)	0	386	171	0	119	0	51	0	6	16	16	283
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1968	1968	1849	1805	0	1469	1820	1455	1753	1938	1981
Adj Flow Rate, veh/h	0	465	147	0	143	0	61	0	2	19	19	202
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	4	4	0	3	0	24	0	25	19	6	3
Cap, veh/h	0	1699	533	0	1095	0	225	2	4	476	32	344
Arrive On Green	0.00	0.61	0.59	0.00	0.61	0.00	0.21	0.00	0.21	0.23	0.23	0.21
Sat Flow, veh/h	0	2898	879	0	1805	0	472	9	16	1325	143	1518
Grp Volume(v), veh/h	0	309	303	0	143	0	63	0	0	19	0	221
Grp Sat Flow(s),veh/h/ln	0	1869	1809	0	1805	0	497	0	0	1325	0	1661
Q Serve(g_s), s	0.0	4.7	4.8	0.0	2.0	0.0	3.1	0.0	0.0	0.0	0.0	7.2
Cycle Q Clear(g_c), s	0.0	4.7	4.8	0.0	2.0	0.0	10.3	0.0	0.0	0.5	0.0	7.2
Prop In Lane	0.00		0.49	0.00		0.00	0.97		0.03	1.00		0.91
Lane Grp Cap(c), veh/h	0	1134	1098	0	1095	0	222	0	0	476	0	376
V/C Ratio(X)	0.00	0.27	0.28	0.00	0.13	0.00	0.28	0.00	0.00	0.04	0.00	0.59
Avail Cap(c_a), veh/h	0	1134	1098	0	1095	0	495	0	0	794	0	775
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.6	5.7	0.0	5.0	0.0	25.6	0.0	0.0	18.2	0.0	21.1
Incr Delay (d2), s/veh	0.0	0.6	0.6	0.0	0.2	0.0	0.7	0.0	0.0	0.0	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	2.9	2.9	0.0	1.2	0.0	1.6	0.0	0.0	0.4	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	6.2	6.3	0.0	5.3	0.0	26.3	0.0	0.0	18.2	0.0	22.6
LnGrp LOS	A	A	A	A	A	A	C	A	A	B	A	C
Approach Vol, veh/h		612			143			63			240	
Approach Delay, s/veh		6.2			5.3			26.3			22.2	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		41.4		18.6		41.4		18.6				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		21.0		27.0		21.0		27.0				
Max Q Clear Time (g_c+I1), s		4.5		12.3		7.2		9.2				
Green Ext Time (p_c), s		0.4		0.1		2.1		0.9				

Intersection Summary												
HCM 6th Ctrl Delay			10.9									
HCM 6th LOS			B									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	321	43	0	0	0	121	10	2	0	0	0
Future Volume (vph)	14	321	43	0	0	0	121	10	2	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	16	16	16	16	16	16	16	16	16
Grade (%)		-1%			0%			5%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850					0.998				
Flt Protected		0.998						0.956				
Satd. Flow (prot)	0	1891	1677	0	0	0	0	1933	0	0	0	0
Flt Permitted		0.998						0.956				
Satd. Flow (perm)	0	1891	1677	0	0	0	0	1933	0	0	0	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		505			1606			289			377	
Travel Time (s)		13.8			43.8			7.9			10.3	
Confl. Peds. (#/hr)	2		2	2		2	1		1	1		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	7%	4%	0%	0%	0%	0%	4%	0%	0%	0%	0%	0%
Adj. Flow (vph)	15	353	47	0	0	0	133	11	2	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	368	47	0	0	0	0	146	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	0.95	0.95	0.85	0.85	0.85	0.88	0.88	0.88	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

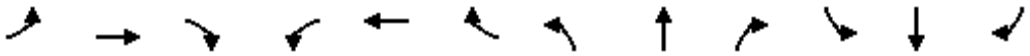
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	321	43	0	0	0	121	10	2	0	0	0
Future Vol, veh/h	14	321	43	0	0	0	121	10	2	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	7	4	0	0	0	0	4	0	0	0	0	0
Mvmt Flow	15	353	47	0	0	0	133	11	2	0	0	0
Number of Lanes	0	1	1	0	0	0	0	1	0	0	0	0

Approach	EB	NB
Opposing Approach		
Opposing Lanes	0	0
Conflicting Approach Left		EB
Conflicting Lanes Left	0	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	12.3	9.6
HCM LOS	B	A

Lane	NBLn1	EBLn1	EBLn2
Vol Left, %	91%	4%	0%
Vol Thru, %	8%	96%	0%
Vol Right, %	2%	0%	100%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	133	335	43
LT Vol	121	14	0
Through Vol	10	321	0
RT Vol	2	0	43
Lane Flow Rate	146	368	47
Geometry Grp	2	7	7
Degree of Util (X)	0.21	0.514	0.056
Departure Headway (Hd)	5.167	5.028	4.253
Convergence, Y/N	Yes	Yes	Yes
Cap	696	718	842
Service Time	3.193	2.755	1.981
HCM Lane V/C Ratio	0.21	0.513	0.056
HCM Control Delay	9.6	13	7.2
HCM Lane LOS	A	B	A
HCM 95th-tile Q	0.8	3	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	325	10	0	0	0	0	0	43	11	69	0
Future Volume (vph)	0	325	10	0	0	0	0	0	43	11	69	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
Grade (%)		3%			0%			7%			-9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996							0.865			
Flt Protected											0.993	
Satd. Flow (prot)	0	2053	0	0	0	0	0	0	1762	0	2075	0
Flt Permitted											0.993	
Satd. Flow (perm)	0	2053	0	0	0	0	0	0	1762	0	2075	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1606			1351			328			394	
Travel Time (s)		43.8			36.8			8.9			10.7	
Confl. Peds. (#/hr)	3		2	2		3	5		5	5		5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	3%	0%	0%	0%	0%	0%	0%	2%	18%	6%	0%
Adj. Flow (vph)	0	342	11	0	0	0	0	0	45	12	73	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	353	0	0	0	0	0	0	45	0	85	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.86	0.86	0.86	0.85	0.85	0.85	0.89	0.89	0.89	0.80	0.80	0.80
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

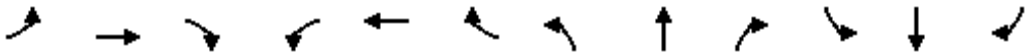
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	325	10	0	0	0	0	0	43	11	69	0
Future Vol, veh/h	0	325	10	0	0	0	0	0	43	11	69	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	3	0	0	0	0	0	0	2	18	6	0
Mvmt Flow	0	342	11	0	0	0	0	0	45	12	73	0
Number of Lanes	0	1	0	0	0	0	0	0	1	0	1	0

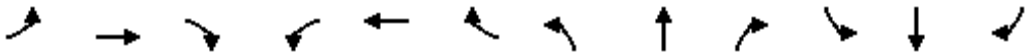
Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	10.3	7.5	8.8
HCM LOS	B	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	0%	14%
Vol Thru, %	0%	97%	86%
Vol Right, %	100%	3%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	43	335	80
LT Vol	0	0	11
Through Vol	0	325	69
RT Vol	43	10	0
Lane Flow Rate	45	353	84
Geometry Grp	1	1	1
Degree of Util (X)	0.053	0.418	0.119
Departure Headway (Hd)	4.246	4.265	5.09
Convergence, Y/N	Yes	Yes	Yes
Cap	843	850	705
Service Time	2.273	2.265	3.114
HCM Lane V/C Ratio	0.053	0.415	0.119
HCM Control Delay	7.5	10.3	8.8
HCM Lane LOS	A	B	A
HCM 95th-tile Q	0.2	2.1	0.4



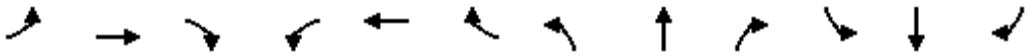
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	11	5	8	49	128	0	5	0	16	13	0
Future Volume (vph)	3	11	5	8	49	128	0	5	0	16	13	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	14	16	16	16
Grade (%)		-1%			-1%			1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.961			0.891							
Flt Protected		0.993		0.950							0.973	
Satd. Flow (prot)	0	2065	0	1814	1650	0	0	2017	0	0	2059	0
Flt Permitted		0.993		0.950							0.973	
Satd. Flow (perm)	0	2065	0	1814	1650	0	0	2017	0	0	2059	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		580			811			633			289	
Travel Time (s)		15.8			22.1			17.3			7.9	
Confl. Peds. (#/hr)	2		10	10		2			2	2		
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	6%	2%	0%	0%	0%	6%	0%	0%
Adj. Flow (vph)	3	12	6	9	55	144	0	6	0	18	15	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	21	0	9	199	0	0	6	0	0	33	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.92	0.92	0.92	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	17	6	0	133	1	27	0	2	1	1	20
Future Volume (vph)	2	17	6	0	133	1	27	0	2	1	1	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	15	15	15	16	16	16
Grade (%)		-1%			-1%			-1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.967			0.999			0.992			0.876	
Flt Protected		0.997						0.955			0.998	
Satd. Flow (prot)	0	2004	0	0	1835	0	0	1918	0	0	1911	0
Flt Permitted		0.997						0.955			0.998	
Satd. Flow (perm)	0	2004	0	0	1835	0	0	1918	0	0	1911	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		811			854			699			191	
Travel Time (s)		22.1			23.3			15.9			5.2	
Confl. Peds. (#/hr)	1		12	12		1	4		4	4		4
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	6%	0%	0%	4%	0%	4%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	20	7	0	155	1	31	0	2	1	1	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	29	0	0	156	0	0	33	0	0	25	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.88	0.88	0.88	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	4	1	0	7	2	20	9	0	4	2	65
Future Volume (vph)	33	4	1	0	7	2	20	9	0	4	2	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	13	13	13	15	15	15
Grade (%)		0%			0%			0%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.975						0.876	
Flt Protected		0.958						0.967			0.997	
Satd. Flow (prot)	0	1694	0	0	1150	0	0	1899	0	0	1747	0
Flt Permitted		0.958						0.967			0.997	
Satd. Flow (perm)	0	1694	0	0	1150	0	0	1899	0	0	1747	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		854			3174			668			328	
Travel Time (s)		23.3			86.6			15.2			8.9	
Confl. Peds. (#/hr)	3					3	8					8
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	0%	0%	57%	50%	0%	0%	0%	0%	0%	6%
Adj. Flow (vph)	40	5	1	0	9	2	24	11	0	5	2	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	46	0	0	11	0	0	35	0	0	86	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	0.96	0.96	0.96	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	2273	2278	2279	2343	2245	2277
Vehs Exited	2287	2262	2250	2340	2255	2280
Starting Vehs	56	39	38	48	53	46
Ending Vehs	42	55	67	51	43	49
Travel Distance (mi)	872	878	874	889	849	872
Travel Time (hr)	48.7	48.9	49.4	51.4	48.1	49.3
Total Delay (hr)	13.7	13.8	14.3	15.4	14.1	14.3
Total Stops	2673	2659	2734	2860	2575	2698
Fuel Used (gal)	35.1	35.1	35.1	36.6	34.6	35.3

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	2273	2278	2279	2343	2245	2277
Vehs Exited	2287	2262	2250	2340	2255	2280
Starting Vehs	56	39	38	48	53	46
Ending Vehs	42	55	67	51	43	49
Travel Distance (mi)	872	878	874	889	849	872
Travel Time (hr)	48.7	48.9	49.4	51.4	48.1	49.3
Total Delay (hr)	13.7	13.8	14.3	15.4	14.1	14.3
Total Stops	2673	2659	2734	2860	2575	2698
Fuel Used (gal)	35.1	35.1	35.1	36.6	34.6	35.3

4: Ash Street & Washington Street Performance by lane

Lane	EB	WB	WB	NB	SB	All
Movements Served	LTR	L	TR	LTR	LTR	
Denied Del/Veh (s)						0.0
Total Del/Veh (s)	4.2	4.9	5.0	5.2	0.2	4.1

5: Poplar Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.1
Total Del/Veh (s)	4.4	5.5	4.6	0.1	4.8

6: Cherry Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	4.8	1.3	5.4	1.6	3.0

Total Zone Performance

Denied Del/Veh (s)	0.1
Total Del/Veh (s)	44.3

Intersection: 4: Ash Street & Washington Street

Movement	EB	WB	WB	NB
Directions Served	LTR	L	TR	LTR
Maximum Queue (ft)	28	28	75	31
Average Queue (ft)	11	6	38	4
95th Queue (ft)	30	24	59	22
Link Distance (ft)	542	740	740	597
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Poplar Street & Washington Street

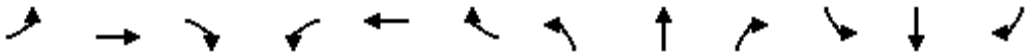
Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	34	69	40
Average Queue (ft)	14	36	17
95th Queue (ft)	35	57	40
Link Distance (ft)	740	791	667
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Cherry Street & Washington Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	43	69	44	6
Average Queue (ft)	23	12	20	0
95th Queue (ft)	43	47	46	4
Link Distance (ft)	791	3111	640	268
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	387	5	21	442	19	14	1	7	25	1	0
Future Volume (vph)	0	387	5	21	442	19	14	1	7	25	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	12	12	12	11	11	11
Grade (%)		1%			-2%			1%			-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.995			0.959				
Flt Protected					0.998			0.968			0.954	
Satd. Flow (prot)	0	1996	0	0	2028	0	0	1548	0	0	1729	0
Flt Permitted					0.998			0.968			0.954	
Satd. Flow (perm)	0	1996	0	0	2028	0	0	1548	0	0	1729	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		736			781			539			303	
Travel Time (s)		20.1			21.3			12.3			6.9	
Confl. Peds. (#/hr)			1	1					2	2		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	4%	0%	5%	3%	10%	14%	0%	14%	4%	0%	0%
Adj. Flow (vph)	0	412	5	22	470	20	15	1	7	27	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	417	0	0	512	0	0	23	0	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.89	0.89	0.89	0.87	0.87	0.87	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

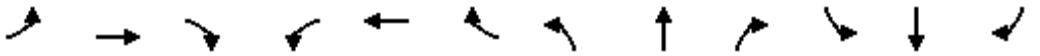
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	387	5	21	442	19	14	1	7	25	1	0
Future Vol, veh/h	0	387	5	21	442	19	14	1	7	25	1	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	-2	-	-	1	-	-	-5	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	4	0	5	3	10	14	0	14	4	0	0
Mvmt Flow	0	412	5	22	470	20	15	1	7	27	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	490	0	0	418	0	0	941	950	418	945	942	480
Stage 1	-	-	-	-	-	-	416	416	-	524	524	-
Stage 2	-	-	-	-	-	-	525	534	-	421	418	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.44	5.7	-	5.14	4.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.44	5.7	-	5.14	4.5	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	814	-	-	863	-	-	271	262	673	269	265	620
Stage 1	-	-	-	-	-	-	675	582	-	701	617	-
Stage 2	-	-	-	-	-	-	579	512	-	780	667	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	814	-	-	862	-	-	263	253	671	257	255	620
Mov Cap-2 Maneuver	-	-	-	-	-	-	263	253	-	257	255	-
Stage 1	-	-	-	-	-	-	674	581	-	701	595	-
Stage 2	-	-	-	-	-	-	558	494	-	768	666	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	16.9	20.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	325	814	-	-	862	-	-	257
HCM Lane V/C Ratio	0.072	-	-	-	0.026	-	-	0.108
HCM Control Delay (s)	16.9	0	-	-	9.3	0	-	20.7
HCM Lane LOS	C	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.4



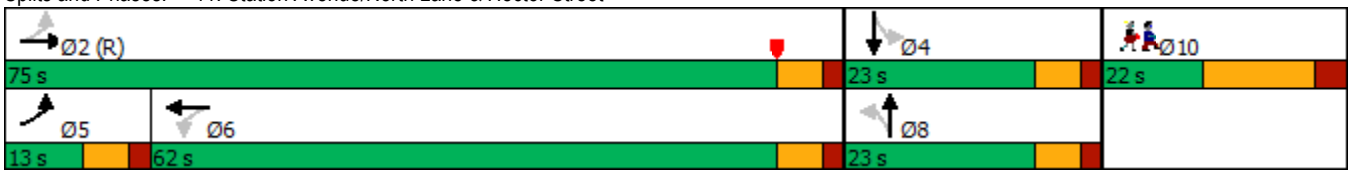
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	344	10	10	441	55	5	18	3	67	11	50
Future Volume (vph)	69	344	10	10	441	55	5	18	3	67	11	50
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	10	11	11	12	12	12	16	16	16
Grade (%)		-1%			-1%			3%			-7%	
Storage Length (ft)	150		0	90		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	70			40			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.98	
Frt		0.996			0.983			0.986			0.948	
Flt Protected	0.950			0.950				0.991			0.974	
Satd. Flow (prot)	1613	1771	0	1604	1662	0	0	1728	0	0	1850	0
Flt Permitted	0.290			0.534				0.947			0.820	
Satd. Flow (perm)	492	1771	0	902	1662	0	0	1648	0	0	1552	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			7			3			22	
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		781			600			343			548	
Travel Time (s)		21.3			16.4			9.4			10.7	
Confl. Peds. (#/hr)							5		2	2		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	10%	0%	3%	7%	0%	0%	0%	3%	0%	6%
Adj. Flow (vph)	75	374	11	11	479	60	5	20	3	73	12	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	75	385	0	11	539	0	0	28	0	0	139	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.02	1.02	1.16	1.11	1.11	1.09	1.09	1.09	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		1	1		1	1	
Detector Template							Left			Left		
Leading Detector (ft)	37	0		0	0		20	37		20	37	
Trailing Detector (ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Position(ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Size(ft)	40	6		20	6		20	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	75.0		62.0	62.0		23.0	23.0		23.0	23.0	

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	36.0
Total Split (s)	22.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	10.8%	62.5%		51.7%	51.7%		19.2%	19.2%		19.2%	19.2%	
Maximum Green (s)	7.0	69.0		56.0	56.0		17.0	17.0		17.0	17.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		Max	Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	73.3	73.3		62.9	62.9			14.7			14.7	
Actuated g/C Ratio	0.61	0.61		0.52	0.52			0.12			0.12	
v/c Ratio	0.20	0.36		0.02	0.62			0.14			0.67	
Control Delay	11.7	13.2		16.9	25.4			43.0			57.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	11.7	13.2		16.9	25.4			43.0			57.1	
LOS	B	B		B	C			D			E	
Approach Delay		13.0			25.2			43.0			57.1	
Approach LOS		B			C			D			E	
Queue Length 50th (ft)	23	141		4	297			17			87	
Queue Length 95th (ft)	46	216		15	443			45			154	
Internal Link Dist (ft)		701			520			263			468	
Turn Bay Length (ft)	150			90								
Base Capacity (vph)	374	1082		472	874			249			251	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.20	0.36		0.02	0.62			0.11			0.55	

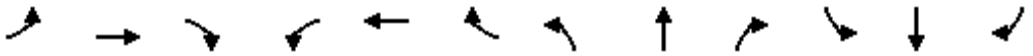
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 26 (22%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 24.6		Intersection LOS: C	
Intersection Capacity Utilization 59.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 11: Station Avenue/North Lane & Hector Street



Lane Group	Ø10
Total Split (%)	18%
Maximum Green (s)	9.0
Yellow Time (s)	10.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	Ped
Walk Time (s)	7.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	7
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

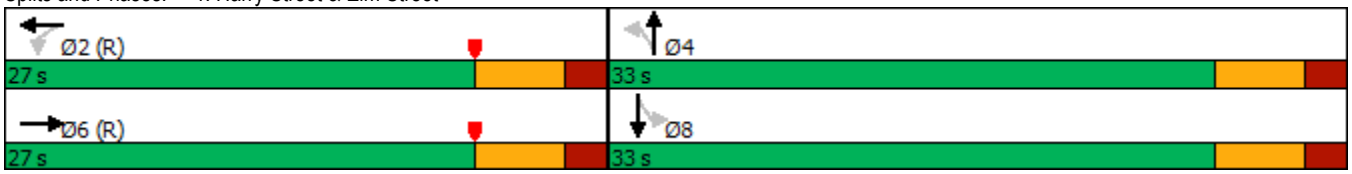


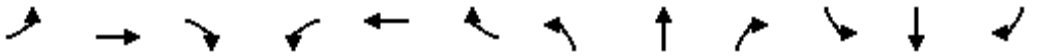
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	508	61	1	116	0	144	0	16	20	8	268
Future Volume (vph)	0	508	61	1	116	0	144	0	16	20	8	268
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		-4%			2%			3%			-6%	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00		1.00		
Frt		0.984						0.986			0.854	
Flt Protected								0.957		0.950		
Satd. Flow (prot)	0	3504	0	0	1806	0	0	1726	0	1703	1496	0
Flt Permitted					0.997			0.407		0.715		
Satd. Flow (perm)	0	3504	0	0	1800	0	0	734	0	1277	1496	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24						55			279	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		281			505			298			915	
Travel Time (s)		7.7			13.8			8.1			25.0	
Confl. Peds. (#/hr)	1					1			6	6		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	3%	0%	2%	0%	0%	8%	0%	0%	13%	2%
Adj. Flow (vph)	0	529	64	1	121	0	150	0	17	21	8	279
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	593	0	0	122	0	0	167	0	21	287	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.04	1.04	1.04	1.05	1.05	1.05	1.08	1.08	1.08
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1		1	1		1	1	
Detector Template				Left			Left			Left		
Leading Detector (ft)		37		20	37		20	37		37	37	
Trailing Detector (ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Position(ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Size(ft)		40		20	40		20	40		40	40	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases				2			4			8		
Detector Phase		6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)		15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)		21.0		26.0	26.0		9.0	9.0		9.0	9.0	
Total Split (s)		27.0		27.0	27.0		33.0	33.0		33.0	33.0	
Total Split (%)		45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Maximum Green (s)		21.0		21.0	21.0		27.0	27.0		27.0	27.0	
Yellow Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode		C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0		13.0	13.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 48 (80%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Harry Street & Elm Street

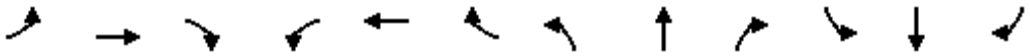




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	508	61	1	116	0	144	0	16	20	8	268
Future Volume (veh/h)	0	508	61	1	116	0	144	0	16	20	8	268
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	2012	1983	1849	1820	0	1820	1703	1820	2024	1839	1995
Adj Flow Rate, veh/h	0	529	39	1	121	0	150	0	14	21	8	198
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	1	3	0	2	0	0	8	0	0	13	2
Cap, veh/h	0	1865	137	61	938	0	318	5	19	677	19	472
Arrive On Green	0.00	0.52	0.50	0.50	0.52	0.00	0.30	0.00	0.30	0.32	0.32	0.30
Sat Flow, veh/h	0	3711	266	2	1815	0	643	16	61	1509	60	1492
Grp Volume(v), veh/h	0	280	288	122	0	0	164	0	0	21	0	206
Grp Sat Flow(s),veh/h/ln	0	1912	1964	1817	0	0	720	0	0	1509	0	1552
Q Serve(g_s), s	0.0	5.0	5.0	0.0	0.0	0.0	8.2	0.0	0.0	0.0	0.0	6.4
Cycle Q Clear(g_c), s	0.0	5.0	5.0	2.1	0.0	0.0	14.6	0.0	0.0	0.5	0.0	6.4
Prop In Lane	0.00		0.14	0.01		0.00	0.91		0.09	1.00		0.96
Lane Grp Cap(c), veh/h	0	988	1015	969	0	0	331	0	0	677	0	492
V/C Ratio(X)	0.00	0.28	0.28	0.13	0.00	0.00	0.50	0.00	0.00	0.03	0.00	0.42
Avail Cap(c_a), veh/h	0	988	1015	969	0	0	494	0	0	903	0	724
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.2	8.3	7.5	0.0	0.0	22.1	0.0	0.0	14.2	0.0	16.6
Incr Delay (d2), s/veh	0.0	0.7	0.7	0.3	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	3.5	3.7	1.5	0.0	0.0	4.0	0.0	0.0	0.3	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	8.9	9.0	7.8	0.0	0.0	23.3	0.0	0.0	14.2	0.0	17.1
LnGrp LOS	A	A	A	A	A	A	C	A	A	B	A	B
Approach Vol, veh/h		568			122			164			227	
Approach Delay, s/veh		8.9			7.8			23.3			16.9	
Approach LOS		A			A			C			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		36.0		24.0		36.0		24.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		21.0		27.0		21.0		27.0				
Max Q Clear Time (g_c+I1), s		4.1		16.6		7.5		8.4				
Green Ext Time (p_c), s		0.3		0.4		1.8		0.8				

Intersection Summary												
HCM 6th Ctrl Delay			12.7									
HCM 6th LOS			B									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	448	71	0	0	0	119	10	9	0	0	0
Future Volume (vph)	23	448	71	0	0	0	119	10	9	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	16	16	16	16	16	16	16	16	16
Grade (%)		-1%			0%			5%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850					0.991				
Flt Protected		0.998						0.959				
Satd. Flow (prot)	0	1951	1661	0	0	0	0	1978	0	0	0	0
Flt Permitted		0.998						0.959				
Satd. Flow (perm)	0	1951	1661	0	0	0	0	1978	0	0	0	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		505			1606			289			377	
Travel Time (s)		13.8			43.8			7.9			10.3	
Confl. Peds. (#/hr)	2					2			4	4		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	477	76	0	0	0	127	11	10	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	501	76	0	0	0	0	148	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	0.95	0.95	0.85	0.85	0.85	0.88	0.88	0.88	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

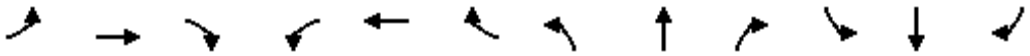
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	15.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	448	71	0	0	0	119	10	9	0	0	0
Future Vol, veh/h	23	448	71	0	0	0	119	10	9	0	0	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	0	1	1	0	0	0	1	0	0	0	0	0
Mvmt Flow	24	477	76	0	0	0	127	11	10	0	0	0
Number of Lanes	0	1	1	0	0	0	0	1	0	0	0	0

Approach	EB	NB
Opposing Approach		
Opposing Lanes	0	0
Conflicting Approach Left		EB
Conflicting Lanes Left	0	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	16.4	10
HCM LOS	C	A

Lane	NBLn1	EBLn1	EBLn2
Vol Left, %	86%	5%	0%
Vol Thru, %	7%	95%	0%
Vol Right, %	7%	0%	100%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	138	471	71
LT Vol	119	23	0
Through Vol	10	448	0
RT Vol	9	0	71
Lane Flow Rate	147	501	76
Geometry Grp	2	7	7
Degree of Util (X)	0.22	0.686	0.088
Departure Headway (Hd)	5.398	4.926	4.216
Convergence, Y/N	Yes	Yes	Yes
Cap	665	732	848
Service Time	3.437	2.659	1.949
HCM Lane V/C Ratio	0.221	0.684	0.09
HCM Control Delay	10	17.8	7.4
HCM Lane LOS	A	C	A
HCM 95th-tile Q	0.8	5.5	0.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	459	8	0	0	0	0	0	63	26	55	0
Future Volume (vph)	0	459	8	0	0	0	0	0	63	26	55	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
Grade (%)		3%			0%			7%			-9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998							0.865			
Flt Protected											0.984	
Satd. Flow (prot)	0	2096	0	0	0	0	0	0	1797	0	2156	0
Flt Permitted											0.984	
Satd. Flow (perm)	0	2096	0	0	0	0	0	0	1797	0	2156	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1606			1351			328			394	
Travel Time (s)		43.8			36.8			8.9			10.7	
Confl. Peds. (#/hr)	2		7	7		2	5		1	1		5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%
Adj. Flow (vph)	0	488	9	0	0	0	0	0	67	28	59	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	497	0	0	0	0	0	0	67	0	87	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.86	0.86	0.86	0.85	0.85	0.85	0.89	0.89	0.89	0.80	0.80	0.80
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

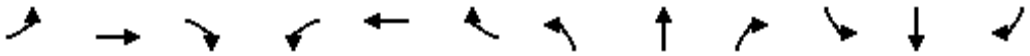
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	12.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	459	8	0	0	0	0	0	63	26	55	0
Future Vol, veh/h	0	459	8	0	0	0	0	0	63	26	55	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	0	1	0	0	0	0	0	0	0	0	4	0
Mvmt Flow	0	488	9	0	0	0	0	0	67	28	59	0
Number of Lanes	0	1	0	0	0	0	0	0	1	0	1	0

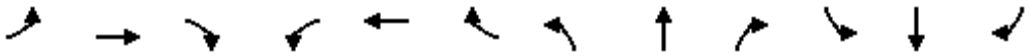
Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	13.3	8	9
HCM LOS	B	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	0%	32%
Vol Thru, %	0%	98%	68%
Vol Right, %	100%	2%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	63	467	81
LT Vol	0	0	26
Through Vol	0	459	55
RT Vol	63	8	0
Lane Flow Rate	67	497	86
Geometry Grp	1	1	1
Degree of Util (X)	0.085	0.591	0.124
Departure Headway (Hd)	4.555	4.283	5.186
Convergence, Y/N	Yes	Yes	Yes
Cap	785	845	690
Service Time	2.592	2.308	3.223
HCM Lane V/C Ratio	0.085	0.588	0.125
HCM Control Delay	8	13.3	9
HCM Lane LOS	A	B	A
HCM 95th-tile Q	0.3	4	0.4



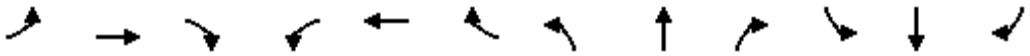
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	47	3	1	20	103	0	24	5	66	2	0
Future Volume (vph)	8	47	3	1	20	103	0	24	5	66	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	14	16	16	16
Grade (%)		-1%			-1%			1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.992			0.874			0.977				
Flt Protected		0.993		0.950							0.953	
Satd. Flow (prot)	0	2132	0	1814	1642	0	0	1970	0	0	2043	0
Flt Permitted		0.993		0.950							0.953	
Satd. Flow (perm)	0	2132	0	1814	1642	0	0	1970	0	0	2043	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		580			811			633			289	
Travel Time (s)		15.8			22.1			17.3			7.9	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	0%	0%	0%	5%	1%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	10	57	4	1	24	124	0	29	6	80	2	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	71	0	1	148	0	0	35	0	0	82	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.92	0.92	0.92	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	96	30	4	90	2	17	0	3	9	4	11
Future Volume (vph)	3	96	30	4	90	2	17	0	3	9	4	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	15	15	15	16	16	16
Grade (%)		-1%			-1%			-1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.968			0.997			0.981			0.938	
Flt Protected		0.999			0.998			0.959			0.981	
Satd. Flow (prot)	0	2077	0	0	1865	0	0	1976	0	0	2011	0
Flt Permitted		0.999			0.998			0.959			0.981	
Satd. Flow (perm)	0	2077	0	0	1865	0	0	1976	0	0	2011	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		811			854			699			191	
Travel Time (s)		22.1			23.3			15.9			5.2	
Confl. Peds. (#/hr)			10	10			2					2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	3	104	33	4	98	2	18	0	3	10	4	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	140	0	0	104	0	0	21	0	0	26	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.88	0.88	0.88	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	8	9	0	19	5	4	12	0	19	10	39
Future Volume (vph)	41	8	9	0	19	5	4	12	0	19	10	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	13	13	13	15	15	15
Grade (%)		0%			0%			0%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.980			0.971						0.922	
Flt Protected		0.966						0.987			0.986	
Satd. Flow (prot)	0	1650	0	0	1716	0	0	1938	0	0	1861	0
Flt Permitted		0.966						0.987			0.986	
Satd. Flow (perm)	0	1650	0	0	1716	0	0	1938	0	0	1861	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		854			3174			668			328	
Travel Time (s)		23.3			86.6			15.2			8.9	
Confl. Peds. (#/hr)			1	1			6		3	3		6
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	13%	0%	0%	5%	0%	0%	0%	0%	5%	0%	3%
Adj. Flow (vph)	47	9	10	0	22	6	5	14	0	22	11	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	66	0	0	28	0	0	19	0	0	78	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	0.96	0.96	0.96	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	2627	2588	2654	2610	2572	2608
Vehs Exited	2646	2586	2653	2597	2585	2612
Starting Vehs	72	64	66	45	75	59
Ending Vehs	53	66	67	58	62	61
Travel Distance (mi)	1072	1064	1076	1066	1061	1068
Travel Time (hr)	63.3	62.3	62.5	61.2	60.8	62.0
Total Delay (hr)	20.6	20.0	19.6	18.8	18.4	19.5
Total Stops	3477	3404	3407	3422	3485	3436
Fuel Used (gal)	44.0	43.5	43.6	43.4	42.7	43.4

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	2627	2588	2654	2610	2572	2608
Vehs Exited	2646	2586	2653	2597	2585	2612
Starting Vehs	72	64	66	45	75	59
Ending Vehs	53	66	67	58	62	61
Travel Distance (mi)	1072	1064	1076	1066	1061	1068
Travel Time (hr)	63.3	62.3	62.5	61.2	60.8	62.0
Total Delay (hr)	20.6	20.0	19.6	18.8	18.4	19.5
Total Stops	3477	3404	3407	3422	3485	3436
Fuel Used (gal)	44.0	43.5	43.6	43.4	42.7	43.4

4: Ash Street & Washington Street Performance by lane

Lane	EB	WB	WB	NB	SB	All
Movements Served	LTR	L	TR	LTR	LTR	
Denied Del/Veh (s)						0.0
Total Del/Veh (s)	5.1		4.8	5.1	0.3	3.7

5: Poplar Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	5.3	5.5	4.5	0.1	4.9

6: Cherry Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	3.7	4.8	5.7	1.6	3.3

Total Zone Performance

Denied Del/Veh (s)	0.1
Total Del/Veh (s)	53.5

Intersection: 4: Ash Street & Washington Street

Movement	EB	WB	WB	NB
Directions Served	LTR	L	TR	LTR
Maximum Queue (ft)	47	11	73	40
Average Queue (ft)	22	0	36	21
95th Queue (ft)	39	6	56	46
Link Distance (ft)	542	740	740	597
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Poplar Street & Washington Street

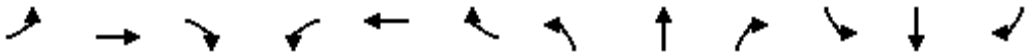
Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	63	59	27
Average Queue (ft)	33	32	14
95th Queue (ft)	54	51	35
Link Distance (ft)	740	791	667
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Cherry Street & Washington Street

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	56	52	31
Average Queue (ft)	27	18	13
95th Queue (ft)	49	46	38
Link Distance (ft)	791	3111	640
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	546	12	9	373	14	10	1	12	50	4	3
Future Volume (vph)	3	546	12	9	373	14	10	1	12	50	4	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	12	12	12	11	11	11
Grade (%)		1%			-2%			1%			-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.995			0.930			0.993	
Flt Protected					0.999			0.979			0.958	
Satd. Flow (prot)	0	2053	0	0	2059	0	0	1650	0	0	1761	0
Flt Permitted					0.999			0.979			0.958	
Satd. Flow (perm)	0	2053	0	0	2059	0	0	1650	0	0	1761	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		736			781			539			303	
Travel Time (s)		20.1			21.3			12.3			6.9	
Confl. Peds. (#/hr)	1		2	2		1	1		3	3		1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	10%	0%	0%	0%	25%	0%
Adj. Flow (vph)	3	563	12	9	385	14	10	1	12	52	4	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	578	0	0	408	0	0	23	0	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.89	0.89	0.89	0.87	0.87	0.87	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

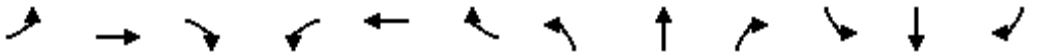
Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	546	12	9	373	14	10	1	12	50	4	3
Future Vol, veh/h	3	546	12	9	373	14	10	1	12	50	4	3
Conflicting Peds, #/hr	1	0	2	2	0	1	1	0	3	3	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	-2	-	-	1	-	-	-5	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	0	2	0	10	0	0	0	25	0
Mvmt Flow	3	563	12	9	385	14	10	1	12	52	4	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	400	0	0	577	0	0	992	995	574	996	994	394
Stage 1	-	-	-	-	-	-	577	577	-	411	411	-
Stage 2	-	-	-	-	-	-	415	418	-	585	583	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.4	6.7	6.3	6.1	5.75	5.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.4	5.7	-	5.1	4.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.4	5.7	-	5.1	4.75	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4.225	3.1
Pot Cap-1 Maneuver	875	-	-	759	-	-	230	233	539	327	295	734
Stage 1	-	-	-	-	-	-	542	489	-	792	624	-
Stage 2	-	-	-	-	-	-	679	580	-	662	545	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	874	-	-	758	-	-	222	228	536	312	288	732
Mov Cap-2 Maneuver	-	-	-	-	-	-	222	228	-	312	288	-
Stage 1	-	-	-	-	-	-	538	486	-	787	614	-
Stage 2	-	-	-	-	-	-	661	571	-	640	541	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	17.1	18.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	320	874	-	-	758	-	-	320
HCM Lane V/C Ratio	0.074	0.004	-	-	0.012	-	-	0.184
HCM Control Delay (s)	17.1	9.1	0	-	9.8	0	-	18.8
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	560	8	18	321	54	5	19	9	96	30	55
Future Volume (vph)	52	560	8	18	321	54	5	19	9	96	30	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	10	11	11	12	12	12	16	16	16
Grade (%)		-1%			-1%			3%			-7%	
Storage Length (ft)	150		0	90		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	70			40			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.99	
Frt		0.998			0.979			0.961			0.959	
Flt Protected	0.950			0.950				0.993			0.974	
Satd. Flow (prot)	1661	1847	0	1604	1683	0	0	1692	0	0	1942	0
Flt Permitted	0.382			0.370				0.955			0.816	
Satd. Flow (perm)	668	1847	0	625	1683	0	0	1626	0	0	1627	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			9			10			16	
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		781			600			343			548	
Travel Time (s)		21.3			16.4			9.4			10.7	
Confl. Peds. (#/hr)							4					4
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	55	596	9	19	341	57	5	20	10	102	32	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	605	0	19	398	0	0	35	0	0	193	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.02	1.02	1.16	1.11	1.11	1.09	1.09	1.09	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		1	1		1	1	
Detector Template							Left			Left		
Leading Detector (ft)	37	0		0	0		20	37		20	37	
Trailing Detector (ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Position(ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Size(ft)	40	6		20	6		20	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	72.0		59.0	59.0		26.0	26.0		26.0	26.0	

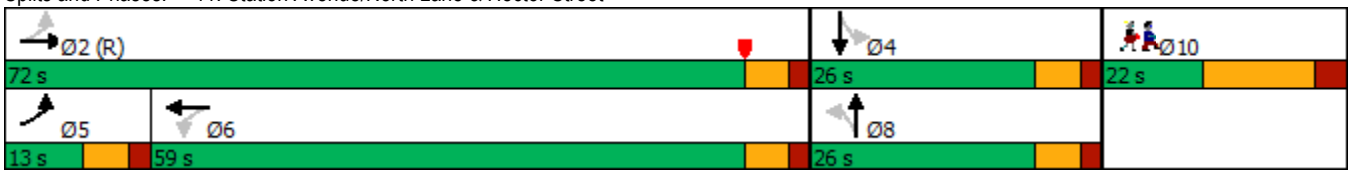
Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	36.0
Total Split (s)	22.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	10.8%	60.0%		49.2%	49.2%		21.7%	21.7%		21.7%	21.7%	
Maximum Green (s)	7.0	66.0		53.0	53.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		Max	Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	70.0	70.0		59.6	59.6			18.0			18.0	
Actuated g/C Ratio	0.58	0.58		0.50	0.50			0.15			0.15	
v/c Ratio	0.12	0.56		0.06	0.47			0.14			0.75	
Control Delay	12.4	18.6		19.3	23.3			34.3			62.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	12.4	18.6		19.3	23.3			34.3			62.4	
LOS	B	B		B	C			C			E	
Approach Delay		18.1			23.1			34.3			62.4	
Approach LOS		B			C			C			E	
Queue Length 50th (ft)	18	283		8	206			17			131	
Queue Length 95th (ft)	39	407		24	308			47			211	
Internal Link Dist (ft)		701			520			263			468	
Turn Bay Length (ft)	150			90								
Base Capacity (vph)	455	1077		310	841			292			297	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.12	0.56		0.06	0.47			0.12			0.65	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 76 (63%), Referenced to phase 2:EBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 26.7 Intersection LOS: C
Intersection Capacity Utilization 71.6% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 11: Station Avenue/North Lane & Hector Street



Lane Group	Ø10
Total Split (%)	18%
Maximum Green (s)	9.0
Yellow Time (s)	10.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	Ped
Walk Time (s)	7.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	4
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

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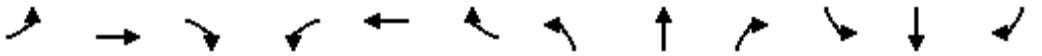
Appendix I

2024 Future without Development Capacity/Level-of-Service Analysis Worksheets

WITHOUT WASHINGTON STREET EXTENSION

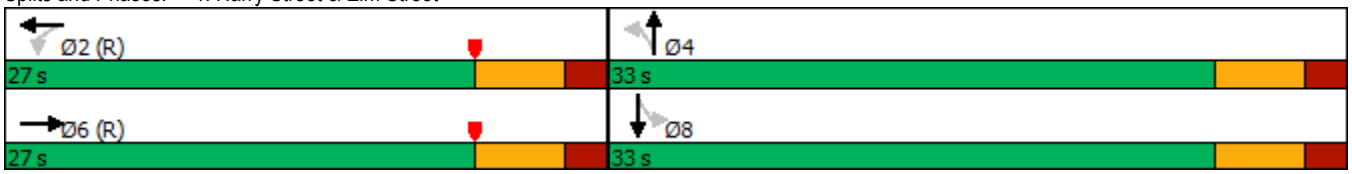


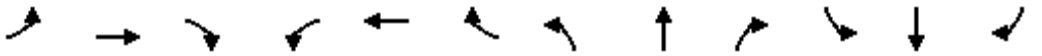
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	424	174	0	220	0	77	0	6	21	16	285
Future Volume (vph)	0	424	174	0	220	0	77	0	6	21	16	285
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		-4%			2%			3%			-6%	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99						1.00		1.00	0.98	
Frt		0.956						0.991			0.858	
Flt Protected								0.956		0.950		
Satd. Flow (prot)	0	3293	0	0	1788	0	0	1398	0	1431	1461	0
Flt Permitted								0.354		0.745		
Satd. Flow (perm)	0	3293	0	0	1788	0	0	517	0	1121	1461	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		118						55			343	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		281			505			298			915	
Travel Time (s)		7.7			13.8			8.1			25.0	
Confl. Peds. (#/hr)	5		1	1		5	1		1	1		1
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	4%	4%	0%	3%	0%	24%	0%	25%	19%	6%	3%
Adj. Flow (vph)	0	511	210	0	265	0	93	0	7	25	19	343
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	721	0	0	265	0	0	100	0	25	362	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.04	1.04	1.04	1.05	1.05	1.05	1.08	1.08	1.08
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1		1	1		1	1	
Detector Template				Left			Left			Left		
Leading Detector (ft)		37		20	37		20	37		37	37	
Trailing Detector (ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Position(ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Size(ft)		40		20	40		20	40		40	40	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type		NA			NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases				2			4			8		
Detector Phase		6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)		15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)		21.0		26.0	26.0		9.0	9.0		9.0	9.0	
Total Split (s)		27.0		27.0	27.0		33.0	33.0		33.0	33.0	
Total Split (%)		45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Maximum Green (s)		21.0		21.0	21.0		27.0	27.0		27.0	27.0	
Yellow Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode		C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0		13.0	13.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 28 (47%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Harry Street & Elm Street

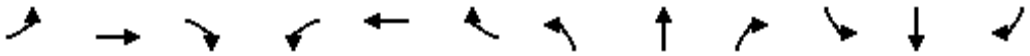




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	424	174	0	220	0	77	0	6	21	16	285
Future Volume (veh/h)	0	424	174	0	220	0	77	0	6	21	16	285
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1968	1968	1849	1805	0	1469	1820	1455	1753	1938	1981
Adj Flow Rate, veh/h	0	511	151	0	265	0	93	0	2	25	19	204
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	4	4	0	3	0	24	0	25	19	6	3
Cap, veh/h	0	1652	486	0	1047	0	261	1	3	520	36	385
Arrive On Green	0.00	0.58	0.56	0.00	0.58	0.00	0.24	0.00	0.24	0.25	0.25	0.24
Sat Flow, veh/h	0	2947	837	0	1805	0	560	5	12	1325	142	1519
Grp Volume(v), veh/h	0	334	328	0	265	0	95	0	0	25	0	223
Grp Sat Flow(s),veh/h/ln	0	1869	1816	0	1805	0	578	0	0	1325	0	1661
Q Serve(g_s), s	0.0	5.5	5.6	0.0	4.3	0.0	4.8	0.0	0.0	0.0	0.0	7.0
Cycle Q Clear(g_c), s	0.0	5.5	5.6	0.0	4.3	0.0	11.8	0.0	0.0	0.7	0.0	7.0
Prop In Lane	0.00		0.46	0.00		0.00	0.98		0.02	1.00		0.91
Lane Grp Cap(c), veh/h	0	1084	1053	0	1047	0	256	0	0	520	0	421
V/C Ratio(X)	0.00	0.31	0.31	0.00	0.25	0.00	0.37	0.00	0.00	0.05	0.00	0.53
Avail Cap(c_a), veh/h	0	1084	1053	0	1047	0	497	0	0	803	0	775
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.4	6.6	0.0	6.2	0.0	24.8	0.0	0.0	17.0	0.0	19.7
Incr Delay (d2), s/veh	0.0	0.7	0.8	0.0	0.6	0.0	0.9	0.0	0.0	0.0	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	3.6	3.6	0.0	2.7	0.0	2.4	0.0	0.0	0.5	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.2	7.4	0.0	6.8	0.0	25.7	0.0	0.0	17.0	0.0	20.8
LnGrp LOS	A	A	A	A	A	A	C	A	A	B	A	C
Approach Vol, veh/h		662			265			95			248	
Approach Delay, s/veh		7.3			6.8			25.7			20.4	
Approach LOS		A			A			C			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	39.8	20.2	39.8	20.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	21.0	27.0	21.0	27.0
Max Q Clear Time (g_c+I1), s	6.8	13.8	8.0	9.0
Green Ext Time (p_c), s	0.8	0.2	2.2	0.9

Intersection Summary	
HCM 6th Ctrl Delay	11.1
HCM 6th LOS	B



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	341	66	0	0	0	222	26	7	0	0	0
Future Volume (vph)	14	341	66	0	0	0	222	26	7	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	16	16	16	16	16	16	16	16	16
Grade (%)		-1%			0%			5%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850					0.996				
Flt Protected		0.998						0.958				
Satd. Flow (prot)	0	1891	1677	0	0	0	0	1936	0	0	0	0
Flt Permitted		0.998						0.958				
Satd. Flow (perm)	0	1891	1677	0	0	0	0	1936	0	0	0	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		505			1606			289			377	
Travel Time (s)		13.8			43.8			7.9			10.3	
Confl. Peds. (#/hr)	2		2	2		2	1		1	1		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	7%	4%	0%	0%	0%	0%	4%	0%	0%	0%	0%	0%
Adj. Flow (vph)	15	375	73	0	0	0	244	29	8	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	390	73	0	0	0	0	281	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	0.95	0.95	0.85	0.85	0.85	0.88	0.88	0.88	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

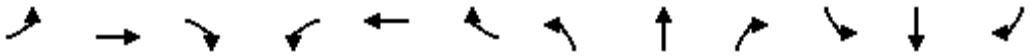
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	341	66	0	0	0	222	26	7	0	0	0
Future Vol, veh/h	14	341	66	0	0	0	222	26	7	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	7	4	0	0	0	0	4	0	0	0	0	0
Mvmt Flow	15	375	73	0	0	0	244	29	8	0	0	0
Number of Lanes	0	1	1	0	0	0	0	1	0	0	0	0

Approach	EB	NB
Opposing Approach		
Opposing Lanes	0	0
Conflicting Approach Left		EB
Conflicting Lanes Left	0	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	14.3	12
HCM LOS	B	B

Lane	NBLn1	EBLn1	EBLn2
Vol Left, %	87%	4%	0%
Vol Thru, %	10%	96%	0%
Vol Right, %	3%	0%	100%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	255	355	66
LT Vol	222	14	0
Through Vol	26	341	0
RT Vol	7	0	66
Lane Flow Rate	280	390	73
Geometry Grp	2	7	7
Degree of Util (X)	0.411	0.584	0.093
Departure Headway (Hd)	5.282	5.391	4.615
Convergence, Y/N	Yes	Yes	Yes
Cap	678	667	771
Service Time	3.336	3.152	2.376
HCM Lane V/C Ratio	0.413	0.585	0.095
HCM Control Delay	12	15.5	7.9
HCM Lane LOS	B	C	A
HCM 95th-tile Q	2	3.8	0.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	344	20	0	0	0	0	0	66	11	76	0
Future Volume (vph)	0	344	20	0	0	0	0	0	66	11	76	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
Grade (%)		3%			0%			7%			-9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.993							0.865			
Flt Protected											0.994	
Satd. Flow (prot)	0	2048	0	0	0	0	0	0	1762	0	2079	0
Flt Permitted											0.994	
Satd. Flow (perm)	0	2048	0	0	0	0	0	0	1762	0	2079	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1606			1351			328			394	
Travel Time (s)		43.8			36.8			8.9			10.7	
Confl. Peds. (#/hr)	3		2	2		3	5		5	5		5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	3%	0%	0%	0%	0%	0%	0%	2%	18%	6%	0%
Adj. Flow (vph)	0	362	21	0	0	0	0	0	69	12	80	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	383	0	0	0	0	0	0	69	0	92	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.86	0.86	0.86	0.85	0.85	0.85	0.89	0.89	0.89	0.80	0.80	0.80
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

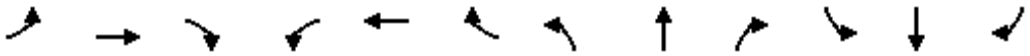
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	344	20	0	0	0	0	0	66	11	76	0
Future Vol, veh/h	0	344	20	0	0	0	0	0	66	11	76	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	3	0	0	0	0	0	0	2	18	6	0
Mvmt Flow	0	362	21	0	0	0	0	0	69	12	80	0
Number of Lanes	0	1	0	0	0	0	0	0	1	0	1	0

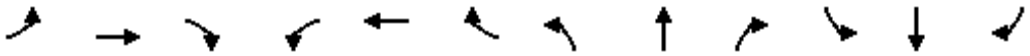
Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	11	7.8	9
HCM LOS	B	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	0%	13%
Vol Thru, %	0%	95%	87%
Vol Right, %	100%	5%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	66	364	87
LT Vol	0	0	11
Through Vol	0	344	76
RT Vol	66	20	0
Lane Flow Rate	69	383	92
Geometry Grp	1	1	1
Degree of Util (X)	0.084	0.459	0.132
Departure Headway (Hd)	4.337	4.312	5.195
Convergence, Y/N	Yes	Yes	Yes
Cap	825	835	691
Service Time	2.369	2.332	3.226
HCM Lane V/C Ratio	0.084	0.459	0.133
HCM Control Delay	7.8	11	9
HCM Lane LOS	A	B	A
HCM 95th-tile Q	0.3	2.4	0.5



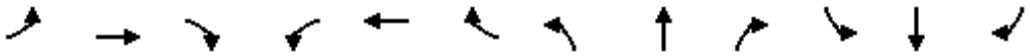
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	12	6	10	62	231	13	24	4	32	20	0
Future Volume (vph)	3	12	6	10	62	231	13	24	4	32	20	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	14	16	16	16
Grade (%)		-1%			-1%			1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.959			0.882			0.988				
Flt Protected		0.994		0.950				0.984			0.970	
Satd. Flow (prot)	0	2063	0	1814	1638	0	0	1960	0	0	2044	0
Flt Permitted		0.994		0.950				0.984			0.970	
Satd. Flow (perm)	0	2063	0	1814	1638	0	0	1960	0	0	2044	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		580			811			633			289	
Travel Time (s)		15.8			22.1			17.3			7.9	
Confl. Peds. (#/hr)	2		10	10		2			2	2		
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	6%	2%	0%	0%	0%	6%	0%	0%
Adj. Flow (vph)	3	13	7	11	70	260	15	27	4	36	22	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	11	330	0	0	46	0	0	58	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.92	0.92	0.92	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	26	15	0	217	1	59	8	2	9	4	22
Future Volume (vph)	6	26	15	0	217	1	59	8	2	9	4	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	15	15	15	16	16	16
Grade (%)		-1%			-1%			-1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.957			0.999			0.997			0.914	
Flt Protected		0.994						0.959			0.988	
Satd. Flow (prot)	0	1992	0	0	1835	0	0	1941	0	0	1974	0
Flt Permitted		0.994						0.959			0.988	
Satd. Flow (perm)	0	1992	0	0	1835	0	0	1941	0	0	1974	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		811			854			699			191	
Travel Time (s)		22.1			23.3			15.9			5.2	
Confl. Peds. (#/hr)	1		12	12		1	4		4	4		4
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	6%	0%	0%	4%	0%	4%	0%	0%	0%	0%	0%
Adj. Flow (vph)	7	30	17	0	252	1	69	9	2	10	5	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	54	0	0	253	0	0	80	0	0	41	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.88	0.88	0.88	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	21	1	0	90	25	20	9	0	21	2	65
Future Volume (vph)	33	21	1	0	90	25	20	9	0	21	2	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	13	13	13	15	15	15
Grade (%)		0%			0%			0%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.971						0.900	
Flt Protected		0.971						0.967			0.988	
Satd. Flow (prot)	0	1718	0	0	1147	0	0	1899	0	0	1797	0
Flt Permitted		0.971						0.967			0.988	
Satd. Flow (perm)	0	1718	0	0	1147	0	0	1899	0	0	1797	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		854			3174			668			328	
Travel Time (s)		23.3			86.6			15.2			8.9	
Confl. Peds. (#/hr)	3					3	8					8
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	0%	0%	57%	50%	0%	0%	0%	0%	0%	6%
Adj. Flow (vph)	40	26	1	0	110	30	24	11	0	26	2	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	67	0	0	140	0	0	35	0	0	107	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	0.96	0.96	0.96	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	2688	2717	2617	2721	2705	2692
Vehs Exited	2702	2694	2618	2724	2706	2688
Starting Vehs	71	50	64	65	68	62
Ending Vehs	57	73	63	62	67	57
Travel Distance (mi)	1049	1070	1031	1098	1089	1067
Travel Time (hr)	58.9	60.9	57.8	61.3	62.3	60.3
Total Delay (hr)	16.6	17.9	16.2	17.1	18.5	17.3
Total Stops	3365	3579	3342	3608	3578	3497
Fuel Used (gal)	42.6	43.5	41.3	43.9	44.4	43.1

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	2688	2717	2617	2721	2705	2692
Vehs Exited	2702	2694	2618	2724	2706	2688
Starting Vehs	71	50	64	65	68	62
Ending Vehs	57	73	63	62	67	57
Travel Distance (mi)	1049	1070	1031	1098	1089	1067
Travel Time (hr)	58.9	60.9	57.8	61.3	62.3	60.3
Total Delay (hr)	16.6	17.9	16.2	17.1	18.5	17.3
Total Stops	3365	3579	3342	3608	3578	3497
Fuel Used (gal)	42.6	43.5	41.3	43.9	44.4	43.1

4: Ash Street & Washington Street Performance by lane

Lane	EB	WB	WB	NB	SB	All
Movements Served	LTR	L	TR	LTR	LTR	
Denied Del/Veh (s)						0.0
Total Del/Veh (s)	4.1	4.8	5.4	4.7	0.3	4.4

5: Poplar Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.1
Total Del/Veh (s)	4.3	5.8	5.1	0.1	5.0

6: Cherry Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.1
Total Del/Veh (s)	5.3	6.4	5.3	1.7	4.6

Total Zone Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	61.0

Intersection: 4: Ash Street & Washington Street

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (ft)	37	28	78	50	4
Average Queue (ft)	12	8	46	23	0
95th Queue (ft)	33	29	69	48	3
Link Distance (ft)	542	740	740	597	211
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Poplar Street & Washington Street

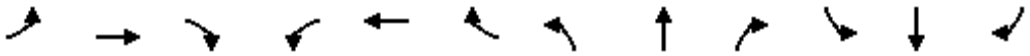
Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	60	82	53	7
Average Queue (ft)	21	45	24	0
95th Queue (ft)	44	72	44	4
Link Distance (ft)	740	791	667	147
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Cherry Street & Washington Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	34	150	41	19
Average Queue (ft)	25	65	18	1
95th Queue (ft)	42	115	44	10
Link Distance (ft)	791	3111	640	268
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	430	5	21	457	19	14	1	7	25	1	0
Future Volume (vph)	0	430	5	21	457	19	14	1	7	25	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	12	12	12	11	11	11
Grade (%)		1%			-2%			1%			-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.995			0.959				
Flt Protected					0.998			0.968			0.954	
Satd. Flow (prot)	0	1998	0	0	2028	0	0	1548	0	0	1729	0
Flt Permitted					0.998			0.968			0.954	
Satd. Flow (perm)	0	1998	0	0	2028	0	0	1548	0	0	1729	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		736			781			539			303	
Travel Time (s)		20.1			21.3			12.3			6.9	
Confl. Peds. (#/hr)			1	1					2	2		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	4%	0%	5%	3%	10%	14%	0%	14%	4%	0%	0%
Adj. Flow (vph)	0	457	5	22	486	20	15	1	7	27	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	462	0	0	528	0	0	23	0	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.89	0.89	0.89	0.87	0.87	0.87	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

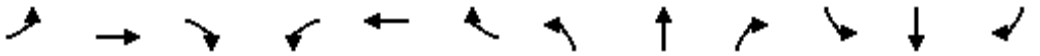
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	430	5	21	457	19	14	1	7	25	1	0
Future Vol, veh/h	0	430	5	21	457	19	14	1	7	25	1	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	-2	-	-	1	-	-	-5	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	4	0	5	3	10	14	0	14	4	0	0
Mvmt Flow	0	457	5	22	486	20	15	1	7	27	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	506	0	0	463	0	0	1002	1011	463	1006	1003	496
Stage 1	-	-	-	-	-	-	461	461	-	540	540	-
Stage 2	-	-	-	-	-	-	541	550	-	466	463	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.44	6.7	6.44	6.14	5.5	5.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.44	5.7	-	5.14	4.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.44	5.7	-	5.14	4.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.626	4	3.426	3.536	4	3.3
Pot Cap-1 Maneuver	1069	-	-	1083	-	-	199	228	568	288	322	619
Stage 1	-	-	-	-	-	-	544	554	-	607	609	-
Stage 2	-	-	-	-	-	-	489	504	-	652	645	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1069	-	-	1082	-	-	194	221	566	276	313	619
Mov Cap-2 Maneuver	-	-	-	-	-	-	194	221	-	276	313	-
Stage 1	-	-	-	-	-	-	543	553	-	607	592	-
Stage 2	-	-	-	-	-	-	474	490	-	641	644	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	21.1	19.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	247	1069	-	-	1082	-	-	277
HCM Lane V/C Ratio	0.095	-	-	-	0.021	-	-	0.1
HCM Control Delay (s)	21.1	0	-	-	8.4	0	-	19.4
HCM Lane LOS	C	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.3



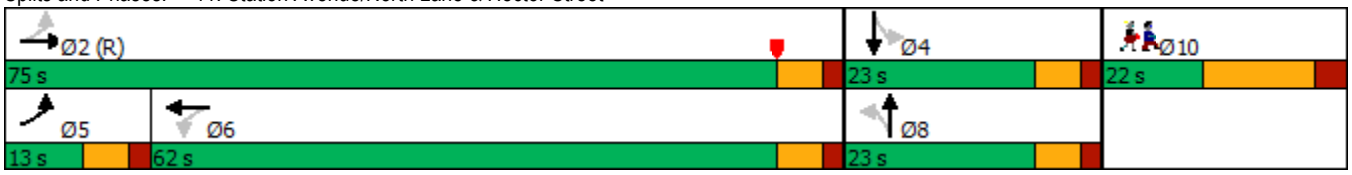
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	380	10	10	455	55	5	18	3	67	11	51
Future Volume (vph)	75	380	10	10	455	55	5	18	3	67	11	51
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	10	11	11	12	12	12	16	16	16
Grade (%)		-1%			-1%			3%			-7%	
Storage Length (ft)	150		0	90		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	70			40			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.98	
Frt		0.996			0.984			0.986			0.947	
Flt Protected	0.950			0.950				0.991			0.975	
Satd. Flow (prot)	1613	1771	0	1604	1664	0	0	1728	0	0	1849	0
Flt Permitted	0.279			0.515				0.946			0.821	
Satd. Flow (perm)	474	1771	0	870	1664	0	0	1646	0	0	1552	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			7			3			23	
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		781			600			343			548	
Travel Time (s)		21.3			16.4			9.4			10.7	
Confl. Peds. (#/hr)							5		2	2		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	10%	0%	3%	7%	0%	0%	0%	3%	0%	6%
Adj. Flow (vph)	82	413	11	11	495	60	5	20	3	73	12	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	424	0	11	555	0	0	28	0	0	140	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.02	1.02	1.16	1.11	1.11	1.09	1.09	1.09	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		1	1		1	1	
Detector Template							Left			Left		
Leading Detector (ft)	37	0		0	0		20	37		20	37	
Trailing Detector (ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Position(ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Size(ft)	40	6		20	6		20	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	75.0		62.0	62.0		23.0	23.0		23.0	23.0	

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	36.0
Total Split (s)	22.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	10.8%	62.5%		51.7%	51.7%		19.2%	19.2%		19.2%	19.2%	
Maximum Green (s)	7.0	69.0		56.0	56.0		17.0	17.0		17.0	17.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		Max	Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	73.3	73.3		62.9	62.9			14.7			14.7	
Actuated g/C Ratio	0.61	0.61		0.52	0.52			0.12			0.12	
v/c Ratio	0.23	0.39		0.02	0.63			0.14			0.67	
Control Delay	11.9	13.8		16.9	25.9			43.0			56.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	11.9	13.8		16.9	25.9			43.0			56.9	
LOS	B	B		B	C			D			E	
Approach Delay		13.5			25.8			43.0			56.9	
Approach LOS		B			C			D			E	
Queue Length 50th (ft)	25	160		4	311			17			87	
Queue Length 95th (ft)	50	242		15	462			45			154	
Internal Link Dist (ft)		701			520			263			468	
Turn Bay Length (ft)	150			90								
Base Capacity (vph)	365	1082		456	875			249			252	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.22	0.39		0.02	0.63			0.11			0.56	

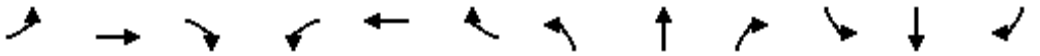
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 26 (22%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 24.6		Intersection LOS: C	
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 11: Station Avenue/North Lane & Hector Street



Lane Group	Ø10
Total Split (%)	18%
Maximum Green (s)	9.0
Yellow Time (s)	10.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	Ped
Walk Time (s)	7.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	7
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

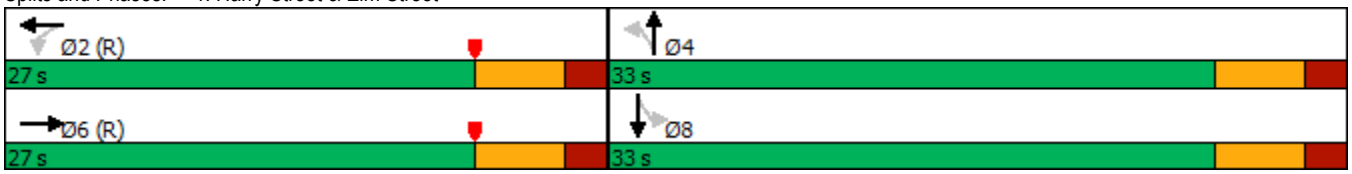


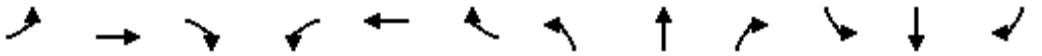
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	605	67	1	172	0	157	0	16	34	8	270
Future Volume (vph)	0	605	67	1	172	0	157	0	16	34	8	270
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		-4%			2%			3%			-6%	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00		1.00		
Frt		0.985						0.987			0.854	
Flt Protected								0.957		0.950		
Satd. Flow (prot)	0	3509	0	0	1805	0	0	1728	0	1703	1496	0
Flt Permitted					0.998			0.422		0.709		
Satd. Flow (perm)	0	3509	0	0	1802	0	0	762	0	1267	1496	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22						55			281	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		281			505			298			915	
Travel Time (s)		7.7			13.8			8.1			25.0	
Confl. Peds. (#/hr)	1					1			6	6		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	3%	0%	2%	0%	0%	8%	0%	0%	13%	2%
Adj. Flow (vph)	0	630	70	1	179	0	164	0	17	35	8	281
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	700	0	0	180	0	0	181	0	35	289	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.04	1.04	1.04	1.05	1.05	1.05	1.08	1.08	1.08
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1		1	1		1	1	
Detector Template				Left			Left			Left		
Leading Detector (ft)		37		20	37		20	37		37	37	
Trailing Detector (ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Position(ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Size(ft)		40		20	40		20	40		40	40	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases				2			4			8		
Detector Phase		6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)		15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)		21.0		26.0	26.0		9.0	9.0		9.0	9.0	
Total Split (s)		27.0		27.0	27.0		33.0	33.0		33.0	33.0	
Total Split (%)		45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Maximum Green (s)		21.0		21.0	21.0		27.0	27.0		27.0	27.0	
Yellow Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode		C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0		13.0	13.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 48 (80%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Harry Street & Elm Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	605	67	1	172	0	157	0	16	34	8	270
Future Volume (veh/h)	0	605	67	1	172	0	157	0	16	34	8	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	2012	1983	1849	1820	0	1820	1703	1820	2024	1839	1995
Adj Flow Rate, veh/h	0	630	45	1	179	0	164	0	14	35	8	200
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	1	3	0	2	0	0	8	0	0	13	2
Cap, veh/h	0	1827	130	61	917	0	332	5	19	702	20	491
Arrive On Green	0.00	0.50	0.49	0.49	0.50	0.00	0.31	0.00	0.31	0.33	0.33	0.31
Sat Flow, veh/h	0	3720	258	1	1816	0	661	14	58	1509	60	1493
Grp Volume(v), veh/h	0	332	343	180	0	0	178	0	0	35	0	208
Grp Sat Flow(s),veh/h/ln	0	1912	1966	1818	0	0	733	0	0	1509	0	1553
Q Serve(g_s), s	0.0	6.3	6.3	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0	6.3
Cycle Q Clear(g_c), s	0.0	6.3	6.3	3.3	0.0	0.0	15.4	0.0	0.0	0.8	0.0	6.3
Prop In Lane	0.00		0.13	0.01		0.00	0.92		0.08	1.00		0.96
Lane Grp Cap(c), veh/h	0	965	992	948	0	0	344	0	0	702	0	510
V/C Ratio(X)	0.00	0.34	0.35	0.19	0.00	0.00	0.52	0.00	0.00	0.05	0.00	0.41
Avail Cap(c_a), veh/h	0	965	992	948	0	0	494	0	0	911	0	725
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.9	9.0	8.2	0.0	0.0	21.8	0.0	0.0	13.8	0.0	16.0
Incr Delay (d2), s/veh	0.0	1.0	1.0	0.4	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	4.5	4.7	2.3	0.0	0.0	4.3	0.0	0.0	0.6	0.0	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.9	9.9	8.6	0.0	0.0	23.1	0.0	0.0	13.8	0.0	16.5
LnGrp LOS	A	A	A	A	A	A	C	A	A	B	A	B
Approach Vol, veh/h		675			180			178			243	
Approach Delay, s/veh		9.9			8.6			23.1			16.2	
Approach LOS		A			A			C			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		35.3		24.7		35.3		24.7				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		21.0		27.0		21.0		27.0				
Max Q Clear Time (g_c+I1), s		5.3		17.4		8.8		8.3				
Green Ext Time (p_c), s		0.5		0.5		2.1		0.9				

Intersection Summary												
HCM 6th Ctrl Delay			12.7									
HCM 6th LOS			B									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	496	134	0	0	0	175	20	11	0	0	0
Future Volume (vph)	23	496	134	0	0	0	175	20	11	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	16	16	16	16	16	16	16	16	16
Grade (%)		-1%			0%			5%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850					0.993				
Flt Protected		0.998						0.959				
Satd. Flow (prot)	0	1951	1661	0	0	0	0	1982	0	0	0	0
Flt Permitted		0.998						0.959				
Satd. Flow (perm)	0	1951	1661	0	0	0	0	1982	0	0	0	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		505			1606			289			377	
Travel Time (s)		13.8			43.8			7.9			10.3	
Confl. Peds. (#/hr)	2					2			4	4		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	528	143	0	0	0	186	21	12	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	552	143	0	0	0	0	219	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	0.95	0.95	0.85	0.85	0.85	0.88	0.88	0.88	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

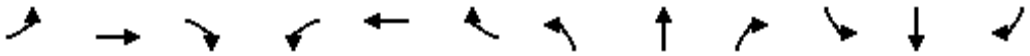
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	18.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	496	134	0	0	0	175	20	11	0	0	0
Future Vol, veh/h	23	496	134	0	0	0	175	20	11	0	0	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	0	1	1	0	0	0	1	0	0	0	0	0
Mvmt Flow	24	528	143	0	0	0	186	21	12	0	0	0
Number of Lanes	0	1	1	0	0	0	0	1	0	0	0	0

Approach	EB	NB
Opposing Approach		
Opposing Lanes	0	0
Conflicting Approach Left		EB
Conflicting Lanes Left	0	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	21.1	11.6
HCM LOS	C	B

Lane	NBLn1	EBLn1	EBLn2
Vol Left, %	85%	4%	0%
Vol Thru, %	10%	96%	0%
Vol Right, %	5%	0%	100%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	206	519	134
LT Vol	175	23	0
Through Vol	20	496	0
RT Vol	11	0	134
Lane Flow Rate	219	552	143
Geometry Grp	2	7	7
Degree of Util (X)	0.341	0.788	0.175
Departure Headway (Hd)	5.597	5.141	4.432
Convergence, Y/N	Yes	Yes	Yes
Cap	640	701	804
Service Time	3.658	2.896	2.187
HCM Lane V/C Ratio	0.342	0.787	0.178
HCM Control Delay	11.6	24.4	8.1
HCM Lane LOS	B	C	A
HCM 95th-tile Q	1.5	7.8	0.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	470	31	0	0	0	0	0	76	26	74	0
Future Volume (vph)	0	470	31	0	0	0	0	0	76	26	74	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
Grade (%)		3%			0%			7%			-9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.992							0.865			
Flt Protected											0.987	
Satd. Flow (prot)	0	2085	0	0	0	0	0	0	1797	0	2157	0
Flt Permitted											0.987	
Satd. Flow (perm)	0	2085	0	0	0	0	0	0	1797	0	2157	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1606			1351			328			394	
Travel Time (s)		43.8			36.8			8.9			10.7	
Confl. Peds. (#/hr)	2		7	7		2	5		1	1		5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%
Adj. Flow (vph)	0	500	33	0	0	0	0	0	81	28	79	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	533	0	0	0	0	0	0	81	0	107	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.86	0.86	0.86	0.85	0.85	0.85	0.89	0.89	0.89	0.80	0.80	0.80
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

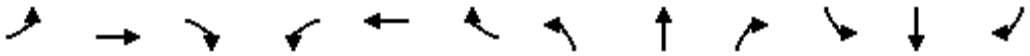
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	13.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	470	31	0	0	0	0	0	76	26	74	0
Future Vol, veh/h	0	470	31	0	0	0	0	0	76	26	74	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	0	1	0	0	0	0	0	0	0	0	4	0
Mvmt Flow	0	500	33	0	0	0	0	0	81	28	79	0
Number of Lanes	0	1	0	0	0	0	0	0	1	0	1	0

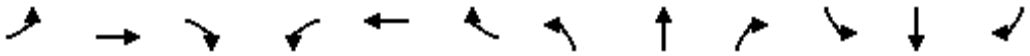
Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	14.9	8.3	9.3
HCM LOS	B	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	0%	26%
Vol Thru, %	0%	94%	74%
Vol Right, %	100%	6%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	76	501	100
LT Vol	0	0	26
Through Vol	0	470	74
RT Vol	76	31	0
Lane Flow Rate	81	533	106
Geometry Grp	1	1	1
Degree of Util (X)	0.105	0.644	0.156
Departure Headway (Hd)	4.68	4.347	5.286
Convergence, Y/N	Yes	Yes	Yes
Cap	762	831	676
Service Time	2.734	2.378	3.339
HCM Lane V/C Ratio	0.106	0.641	0.157
HCM Control Delay	8.3	14.9	9.3
HCM Lane LOS	A	B	A
HCM 95th-tile Q	0.4	4.8	0.6



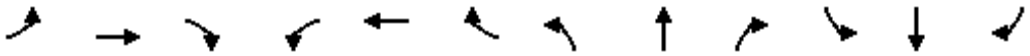
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	50	6	7	26	161	6	34	7	109	22	0
Future Volume (vph)	8	50	6	7	26	161	6	34	7	109	22	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	14	16	16	16
Grade (%)		-1%			-1%			1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.988			0.871			0.981				
Flt Protected		0.994		0.950				0.994			0.960	
Satd. Flow (prot)	0	2125	0	1814	1638	0	0	1966	0	0	2064	0
Flt Permitted		0.994		0.950				0.994			0.960	
Satd. Flow (perm)	0	2125	0	1814	1638	0	0	1966	0	0	2064	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		580			811			633			289	
Travel Time (s)		15.8			22.1			17.3			7.9	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	0%	0%	0%	5%	1%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	10	60	7	8	31	194	7	41	8	131	27	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	77	0	8	225	0	0	56	0	0	158	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.92	0.92	0.92	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	120	53	4	138	2	33	4	3	31	10	17
Future Volume (vph)	5	120	53	4	138	2	33	4	3	31	10	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	15	15	15	16	16	16
Grade (%)		-1%			-1%			-1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.959			0.998			0.991			0.961	
Flt Protected		0.999			0.999			0.960			0.974	
Satd. Flow (prot)	0	2059	0	0	1868	0	0	1998	0	0	2046	0
Flt Permitted		0.999			0.999			0.960			0.974	
Satd. Flow (perm)	0	2059	0	0	1868	0	0	1998	0	0	2046	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		811			854			699			191	
Travel Time (s)		22.1			23.3			15.9			5.2	
Confl. Peds. (#/hr)			10	10			2					2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	130	58	4	150	2	36	4	3	34	11	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	193	0	0	156	0	0	43	0	0	63	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.88	0.88	0.88	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	53	9	0	66	18	4	12	0	61	10	39
Future Volume (vph)	41	53	9	0	66	18	4	12	0	61	10	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	13	13	13	15	15	15
Grade (%)		0%			0%			0%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.989			0.971						0.952	
Flt Protected		0.980						0.987			0.973	
Satd. Flow (prot)	0	1611	0	0	1716	0	0	1938	0	0	1883	0
Flt Permitted		0.980						0.987			0.973	
Satd. Flow (perm)	0	1611	0	0	1716	0	0	1938	0	0	1883	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		854			3174			668			328	
Travel Time (s)		23.3			86.6			15.2			8.9	
Confl. Peds. (#/hr)			1	1			6		3	3		6
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	13%	0%	0%	5%	0%	0%	0%	0%	5%	0%	3%
Adj. Flow (vph)	47	61	10	0	76	21	5	14	0	70	11	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	118	0	0	97	0	0	19	0	0	126	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	0.96	0.96	0.96	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	2944	2894	2870	3055	2913	2937
Vehs Exited	2933	2899	2858	3041	2926	2933
Starting Vehs	65	73	69	69	83	69
Ending Vehs	76	68	81	83	70	72
Travel Distance (mi)	1283	1258	1250	1335	1233	1272
Travel Time (hr)	73.5	72.7	70.4	77.1	71.6	73.0
Total Delay (hr)	22.6	22.4	20.6	23.9	22.3	22.4
Total Stops	4212	4186	4014	4399	4020	4166
Fuel Used (gal)	51.8	50.8	49.8	54.0	50.1	51.3

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	2944	2894	2870	3055	2913	2937
Vehs Exited	2933	2899	2858	3041	2926	2933
Starting Vehs	65	73	69	69	83	69
Ending Vehs	76	68	81	83	70	72
Travel Distance (mi)	1283	1258	1250	1335	1233	1272
Travel Time (hr)	73.5	72.7	70.4	77.1	71.6	73.0
Total Delay (hr)	22.6	22.4	20.6	23.9	22.3	22.4
Total Stops	4212	4186	4014	4399	4020	4166
Fuel Used (gal)	51.8	50.8	49.8	54.0	50.1	51.3

4: Ash Street & Washington Street Performance by lane

Lane	EB	WB	WB	NB	SB	All
Movements Served	LTR	L	TR	LTR	LTR	
Denied Del/Veh (s)						0.0
Total Del/Veh (s)	5.6	6.3	5.1	5.8	0.4	3.8

5: Poplar Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.1
Total Del/Veh (s)	5.3	6.4	4.6	0.2	4.9

6: Cherry Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	4.3	5.6	5.6	1.4	3.9

Total Zone Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	67.1

Intersection: 4: Ash Street & Washington Street

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (ft)	47	28	68	50	4
Average Queue (ft)	22	6	41	24	0
95th Queue (ft)	41	25	63	49	3
Link Distance (ft)	542	740	740	597	211
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Poplar Street & Washington Street

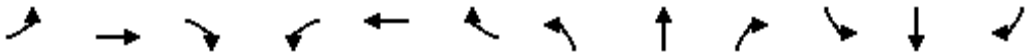
Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	62	70	40	14
Average Queue (ft)	37	39	18	1
95th Queue (ft)	57	60	40	6
Link Distance (ft)	740	791	667	147
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Cherry Street & Washington Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	71	76	31	6
Average Queue (ft)	35	39	11	0
95th Queue (ft)	57	62	35	4
Link Distance (ft)	791	3111	640	268
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	571	12	9	406	14	10	1	12	50	4	3
Future Volume (vph)	3	571	12	9	406	14	10	1	12	50	4	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	12	12	12	11	11	11
Grade (%)		1%			-2%			1%			-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.996			0.930			0.993	
Flt Protected					0.999			0.979			0.958	
Satd. Flow (prot)	0	2053	0	0	2061	0	0	1650	0	0	1761	0
Flt Permitted					0.999			0.979			0.958	
Satd. Flow (perm)	0	2053	0	0	2061	0	0	1650	0	0	1761	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		736			781			539			303	
Travel Time (s)		20.1			21.3			12.3			6.9	
Confl. Peds. (#/hr)	1		2	2		1	1		3	3		1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	10%	0%	0%	0%	25%	0%
Adj. Flow (vph)	3	589	12	9	419	14	10	1	12	52	4	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	604	0	0	442	0	0	23	0	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.89	0.89	0.89	0.87	0.87	0.87	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

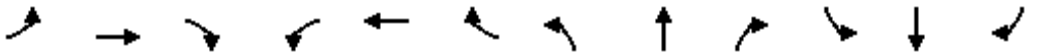
Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	571	12	9	406	14	10	1	12	50	4	3
Future Vol, veh/h	3	571	12	9	406	14	10	1	12	50	4	3
Conflicting Peds, #/hr	1	0	2	2	0	1	1	0	3	3	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	-2	-	-	1	-	-	-5	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	0	2	0	10	0	0	0	25	0
Mvmt Flow	3	589	12	9	419	14	10	1	12	52	4	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	434	0	0	603	0	0	1052	1055	600	1056	1054	428
Stage 1	-	-	-	-	-	-	603	603	-	445	445	-
Stage 2	-	-	-	-	-	-	449	452	-	611	609	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.4	6.7	6.3	6.1	5.75	5.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.4	5.7	-	5.1	4.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.4	5.7	-	5.1	4.75	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4.225	3.1
Pot Cap-1 Maneuver	852	-	-	743	-	-	207	215	520	301	276	705
Stage 1	-	-	-	-	-	-	523	475	-	765	608	-
Stage 2	-	-	-	-	-	-	647	560	-	644	534	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	851	-	-	742	-	-	200	210	517	287	269	704
Mov Cap-2 Maneuver	-	-	-	-	-	-	200	210	-	287	269	-
Stage 1	-	-	-	-	-	-	519	472	-	760	598	-
Stage 2	-	-	-	-	-	-	629	550	-	622	530	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	18.3	20.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	295	851	-	-	742	-	-	295
HCM Lane V/C Ratio	0.08	0.004	-	-	0.013	-	-	0.199
HCM Control Delay (s)	18.3	9.2	0	-	9.9	0	-	20.2
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.7



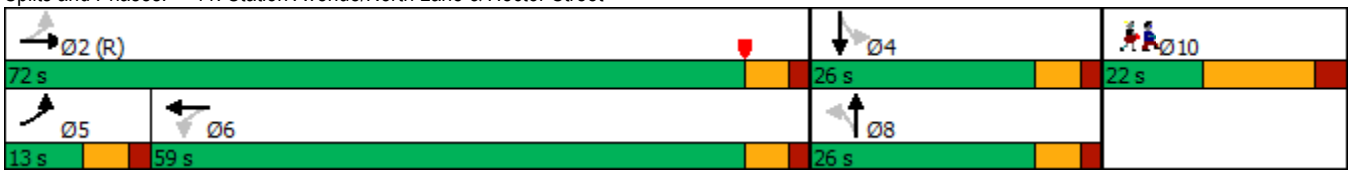
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	582	8	18	349	54	5	19	9	97	30	60
Future Volume (vph)	55	582	8	18	349	54	5	19	9	97	30	60
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	10	11	11	12	12	12	16	16	16
Grade (%)		-1%			-1%			3%			-7%	
Storage Length (ft)	150		0	90		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	70			40			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.99	
Frt		0.998			0.980			0.961			0.957	
Flt Protected	0.950			0.950				0.993			0.975	
Satd. Flow (prot)	1661	1847	0	1604	1685	0	0	1692	0	0	1938	0
Flt Permitted	0.357			0.350				0.953			0.819	
Satd. Flow (perm)	624	1847	0	591	1685	0	0	1622	0	0	1628	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			8			10			17	
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		781			600			343			548	
Travel Time (s)		21.3			16.4			9.4			10.7	
Confl. Peds. (#/hr)							4					4
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	59	619	9	19	371	57	5	20	10	103	32	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	628	0	19	428	0	0	35	0	0	199	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.02	1.02	1.16	1.11	1.11	1.09	1.09	1.09	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		1	1		1	1	
Detector Template							Left			Left		
Leading Detector (ft)	37	0		0	0		20	37		20	37	
Trailing Detector (ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Position(ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Size(ft)	40	6		20	6		20	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	72.0		59.0	59.0		26.0	26.0		26.0	26.0	

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	36.0
Total Split (s)	22.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	10.8%	60.0%		49.2%	49.2%		21.7%	21.7%		21.7%	21.7%	
Maximum Green (s)	7.0	66.0		53.0	53.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		Max	Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	69.8	69.8		59.4	59.4			18.2			18.2	
Actuated g/C Ratio	0.58	0.58		0.50	0.50			0.15			0.15	
v/c Ratio	0.14	0.58		0.07	0.51			0.14			0.76	
Control Delay	12.6	19.3		19.5	24.4			34.2			63.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	12.6	19.3		19.5	24.4			34.2			63.1	
LOS	B	B		B	C			C			E	
Approach Delay		18.7			24.2			34.2			63.1	
Approach LOS		B			C			C			E	
Queue Length 50th (ft)	20	302		8	230			17			135	
Queue Length 95th (ft)	40	430		24	338			47			217	
Internal Link Dist (ft)		701			520			263			468	
Turn Bay Length (ft)	150			90								
Base Capacity (vph)	431	1074		292	838			292			298	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.14	0.58		0.07	0.51			0.12			0.67	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 76 (63%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 27.3		Intersection LOS: C	
Intersection Capacity Utilization 74.6%		ICU Level of Service D	
Analysis Period (min) 15			

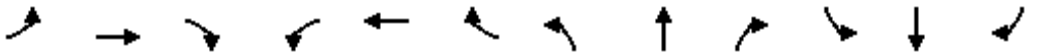
Splits and Phases: 11: Station Avenue/North Lane & Hector Street



Lane Group	Ø10
Total Split (%)	18%
Maximum Green (s)	9.0
Yellow Time (s)	10.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	Ped
Walk Time (s)	7.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	4
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

WITH WASHINGTON STREET EXTENSION

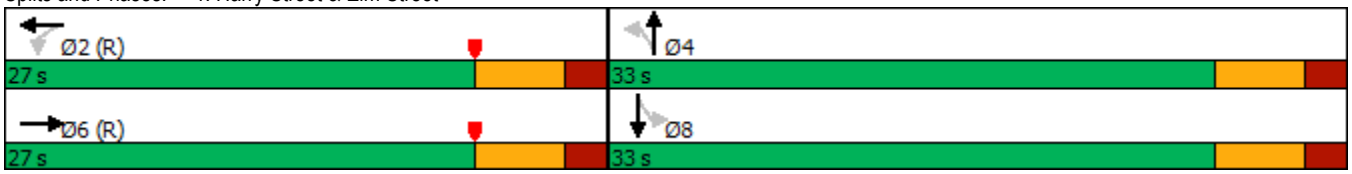


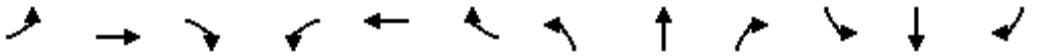
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	424	174	0	220	0	77	0	6	22	16	285
Future Volume (vph)	0	424	174	0	220	0	77	0	6	22	16	285
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		-4%			2%			3%			-6%	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99						1.00		1.00	0.98	
Frt		0.956						0.991			0.858	
Flt Protected								0.956		0.950		
Satd. Flow (prot)	0	3293	0	0	1788	0	0	1398	0	1431	1461	0
Flt Permitted								0.354		0.745		
Satd. Flow (perm)	0	3293	0	0	1788	0	0	517	0	1121	1461	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		118						55			343	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		281			505			298			915	
Travel Time (s)		7.7			13.8			8.1			25.0	
Confl. Peds. (#/hr)	5		1	1		5	1		1	1		1
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	4%	4%	0%	3%	0%	24%	0%	25%	19%	6%	3%
Adj. Flow (vph)	0	511	210	0	265	0	93	0	7	27	19	343
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	721	0	0	265	0	0	100	0	27	362	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.04	1.04	1.04	1.05	1.05	1.05	1.08	1.08	1.08
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1		1	1		1	1	
Detector Template				Left			Left			Left		
Leading Detector (ft)		37		20	37		20	37		37	37	
Trailing Detector (ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Position(ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Size(ft)		40		20	40		20	40		40	40	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type		NA			NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases				2			4			8		
Detector Phase		6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)		15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)		21.0		26.0	26.0		9.0	9.0		9.0	9.0	
Total Split (s)		27.0		27.0	27.0		33.0	33.0		33.0	33.0	
Total Split (%)		45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Maximum Green (s)		21.0		21.0	21.0		27.0	27.0		27.0	27.0	
Yellow Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode		C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0		13.0	13.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 28 (47%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Harry Street & Elm Street

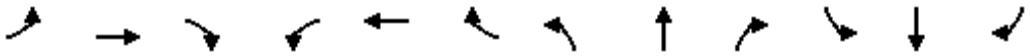




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	424	174	0	220	0	77	0	6	22	16	285
Future Volume (veh/h)	0	424	174	0	220	0	77	0	6	22	16	285
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1968	1968	1849	1805	0	1469	1820	1455	1753	1938	1981
Adj Flow Rate, veh/h	0	511	151	0	265	0	93	0	2	27	19	204
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	4	4	0	3	0	24	0	25	19	6	3
Cap, veh/h	0	1652	486	0	1047	0	261	1	3	520	36	385
Arrive On Green	0.00	0.58	0.56	0.00	0.58	0.00	0.24	0.00	0.24	0.25	0.25	0.24
Sat Flow, veh/h	0	2947	837	0	1805	0	560	5	12	1325	142	1519
Grp Volume(v), veh/h	0	334	328	0	265	0	95	0	0	27	0	223
Grp Sat Flow(s),veh/h/ln	0	1869	1816	0	1805	0	578	0	0	1325	0	1661
Q Serve(g_s), s	0.0	5.5	5.6	0.0	4.3	0.0	4.8	0.0	0.0	0.0	0.0	7.0
Cycle Q Clear(g_c), s	0.0	5.5	5.6	0.0	4.3	0.0	11.8	0.0	0.0	0.7	0.0	7.0
Prop In Lane	0.00		0.46	0.00		0.00	0.98		0.02	1.00		0.91
Lane Grp Cap(c), veh/h	0	1084	1053	0	1047	0	256	0	0	520	0	421
V/C Ratio(X)	0.00	0.31	0.31	0.00	0.25	0.00	0.37	0.00	0.00	0.05	0.00	0.53
Avail Cap(c_a), veh/h	0	1084	1053	0	1047	0	497	0	0	803	0	775
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.4	6.6	0.0	6.2	0.0	24.8	0.0	0.0	17.0	0.0	19.7
Incr Delay (d2), s/veh	0.0	0.7	0.8	0.0	0.6	0.0	0.9	0.0	0.0	0.0	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	3.6	3.6	0.0	2.7	0.0	2.4	0.0	0.0	0.5	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.2	7.4	0.0	6.8	0.0	25.7	0.0	0.0	17.0	0.0	20.8
LnGrp LOS	A	A	A	A	A	A	C	A	A	B	A	C
Approach Vol, veh/h		662			265			95			250	
Approach Delay, s/veh		7.3			6.8			25.7			20.4	
Approach LOS		A			A			C			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	39.8	20.2	39.8	20.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	21.0	27.0	21.0	27.0
Max Q Clear Time (g_c+I1), s	6.8	13.8	8.0	9.0
Green Ext Time (p_c), s	0.8	0.2	2.2	0.9

Intersection Summary	
HCM 6th Ctrl Delay	11.1
HCM 6th LOS	B



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	341	66	0	0	0	222	26	7	0	0	0
Future Volume (vph)	14	341	66	0	0	0	222	26	7	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	16	16	16	16	16	16	16	16	16
Grade (%)		-1%			0%			5%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850					0.996				
Flt Protected		0.998						0.958				
Satd. Flow (prot)	0	1891	1677	0	0	0	0	1936	0	0	0	0
Flt Permitted		0.998						0.958				
Satd. Flow (perm)	0	1891	1677	0	0	0	0	1936	0	0	0	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		505			1606			289			377	
Travel Time (s)		13.8			43.8			7.9			10.3	
Confl. Peds. (#/hr)	2		2	2		2	1		1	1		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	7%	4%	0%	0%	0%	0%	4%	0%	0%	0%	0%	0%
Adj. Flow (vph)	15	375	73	0	0	0	244	29	8	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	390	73	0	0	0	0	281	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	0.95	0.95	0.85	0.85	0.85	0.88	0.88	0.88	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

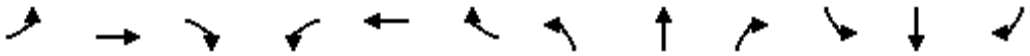
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	341	66	0	0	0	222	26	7	0	0	0
Future Vol, veh/h	14	341	66	0	0	0	222	26	7	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	7	4	0	0	0	0	4	0	0	0	0	0
Mvmt Flow	15	375	73	0	0	0	244	29	8	0	0	0
Number of Lanes	0	1	1	0	0	0	0	1	0	0	0	0

Approach	EB	NB
Opposing Approach		
Opposing Lanes	0	0
Conflicting Approach Left		EB
Conflicting Lanes Left	0	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	14.3	12
HCM LOS	B	B

Lane	NBLn1	EBLn1	EBLn2
Vol Left, %	87%	4%	0%
Vol Thru, %	10%	96%	0%
Vol Right, %	3%	0%	100%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	255	355	66
LT Vol	222	14	0
Through Vol	26	341	0
RT Vol	7	0	66
Lane Flow Rate	280	390	73
Geometry Grp	2	7	7
Degree of Util (X)	0.411	0.584	0.093
Departure Headway (Hd)	5.282	5.391	4.615
Convergence, Y/N	Yes	Yes	Yes
Cap	678	667	771
Service Time	3.336	3.152	2.376
HCM Lane V/C Ratio	0.413	0.585	0.095
HCM Control Delay	12	15.5	7.9
HCM Lane LOS	B	C	A
HCM 95th-tile Q	2	3.8	0.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	344	19	0	0	0	0	0	35	11	53	0
Future Volume (vph)	0	344	19	0	0	0	0	0	35	11	53	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
Grade (%)		3%			0%			7%			-9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.993							0.865			
Flt Protected											0.991	
Satd. Flow (prot)	0	2048	0	0	0	0	0	0	1762	0	2063	0
Flt Permitted											0.991	
Satd. Flow (perm)	0	2048	0	0	0	0	0	0	1762	0	2063	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1606			1351			328			394	
Travel Time (s)		43.8			36.8			8.9			10.7	
Confl. Peds. (#/hr)	3		2	2		3	5		5	5		5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	3%	0%	0%	0%	0%	0%	0%	2%	18%	6%	0%
Adj. Flow (vph)	0	362	20	0	0	0	0	0	37	12	56	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	382	0	0	0	0	0	0	37	0	68	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.86	0.86	0.86	0.85	0.85	0.85	0.89	0.89	0.89	0.80	0.80	0.80
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

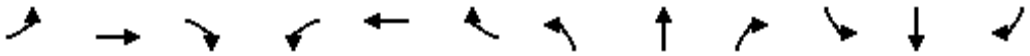
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	344	19	0	0	0	0	0	35	11	53	0
Future Vol, veh/h	0	344	19	0	0	0	0	0	35	11	53	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	3	0	0	0	0	0	0	2	18	6	0
Mvmt Flow	0	362	20	0	0	0	0	0	37	12	56	0
Number of Lanes	0	1	0	0	0	0	0	0	1	0	1	0

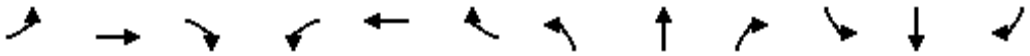
Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	10.4	7.5	8.7
HCM LOS	B	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	0%	17%
Vol Thru, %	0%	95%	83%
Vol Right, %	100%	5%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	35	363	64
LT Vol	0	0	11
Through Vol	0	344	53
RT Vol	35	19	0
Lane Flow Rate	37	382	67
Geometry Grp	1	1	1
Degree of Util (X)	0.044	0.435	0.096
Departure Headway (Hd)	4.281	4.1	5.144
Convergence, Y/N	Yes	Yes	Yes
Cap	841	864	701
Service Time	2.284	2.19	3.146
HCM Lane V/C Ratio	0.044	0.442	0.096
HCM Control Delay	7.5	10.4	8.7
HCM Lane LOS	A	B	A
HCM 95th-tile Q	0.1	2.2	0.3



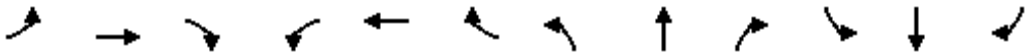
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	12	6	10	62	231	13	24	4	32	20	0
Future Volume (vph)	3	12	6	10	62	231	13	24	4	32	20	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	14	16	16	16
Grade (%)		-1%			-1%			1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.959			0.882			0.988				
Flt Protected		0.994		0.950				0.984			0.970	
Satd. Flow (prot)	0	2063	0	1814	1638	0	0	1960	0	0	2044	0
Flt Permitted		0.994		0.950				0.984			0.970	
Satd. Flow (perm)	0	2063	0	1814	1638	0	0	1960	0	0	2044	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		580			811			633			289	
Travel Time (s)		15.8			22.1			17.3			7.9	
Confl. Peds. (#/hr)	2		10	10		2			2	2		
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	6%	2%	0%	0%	0%	6%	0%	0%
Adj. Flow (vph)	3	13	7	11	70	260	15	27	4	36	22	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	11	330	0	0	46	0	0	58	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.92	0.92	0.92	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	26	15	0	217	1	59	8	2	9	4	22
Future Volume (vph)	6	26	15	0	217	1	59	8	2	9	4	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	15	15	15	16	16	16
Grade (%)		-1%			-1%			-1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.957			0.999			0.997			0.914	
Flt Protected		0.994						0.959			0.988	
Satd. Flow (prot)	0	1992	0	0	1835	0	0	1941	0	0	1974	0
Flt Permitted		0.994						0.959			0.988	
Satd. Flow (perm)	0	1992	0	0	1835	0	0	1941	0	0	1974	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		811			854			699			191	
Travel Time (s)		22.1			23.3			15.9			5.2	
Confl. Peds. (#/hr)	1		12	12		1	4		4	4		4
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	6%	0%	0%	4%	0%	4%	0%	0%	0%	0%	0%
Adj. Flow (vph)	7	30	17	0	252	1	69	9	2	10	5	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	54	0	0	253	0	0	80	0	0	41	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.88	0.88	0.88	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	29	1	0	106	2	20	9	0	13	2	49
Future Volume (vph)	25	29	1	0	106	2	20	9	0	13	2	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	13	13	13	15	15	15
Grade (%)		0%			0%			0%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.998						0.896	
Flt Protected		0.978						0.967			0.990	
Satd. Flow (prot)	0	1731	0	0	1168	0	0	1899	0	0	1790	0
Flt Permitted		0.978						0.967			0.990	
Satd. Flow (perm)	0	1731	0	0	1168	0	0	1899	0	0	1790	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		854			3174			668			328	
Travel Time (s)		23.3			86.6			15.2			8.9	
Confl. Peds. (#/hr)	3					3	8					8
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	0%	0%	57%	50%	0%	0%	0%	0%	0%	6%
Adj. Flow (vph)	30	35	1	0	129	2	24	11	0	16	2	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	66	0	0	131	0	0	35	0	0	78	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	0.96	0.96	0.96	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	2616	2508	2518	2605	2517	2555
Vehs Exited	2620	2495	2528	2596	2512	2552
Starting Vehs	59	46	61	59	59	48
Ending Vehs	55	59	51	68	64	56
Travel Distance (mi)	1058	978	991	1039	1020	1017
Travel Time (hr)	59.8	55.0	56.5	59.0	57.1	57.5
Total Delay (hr)	17.1	15.5	16.4	17.1	16.1	16.4
Total Stops	3537	3262	3306	3413	3380	3379
Fuel Used (gal)	42.8	39.9	40.4	42.3	41.1	41.3

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	2616	2508	2518	2605	2517	2555
Vehs Exited	2620	2495	2528	2596	2512	2552
Starting Vehs	59	46	61	59	59	48
Ending Vehs	55	59	51	68	64	56
Travel Distance (mi)	1058	978	991	1039	1020	1017
Travel Time (hr)	59.8	55.0	56.5	59.0	57.1	57.5
Total Delay (hr)	17.1	15.5	16.4	17.1	16.1	16.4
Total Stops	3537	3262	3306	3413	3380	3379
Fuel Used (gal)	42.8	39.9	40.4	42.3	41.1	41.3

4: Ash Street & Washington Street Performance by lane

Lane	EB	WB	WB	NB	SB	All
Movements Served	LTR	L	TR	LTR	LTR	
Denied Del/Veh (s)						0.0
Total Del/Veh (s)	4.4	4.9	5.8	4.9	0.3	4.7

5: Poplar Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.1
Total Del/Veh (s)	4.4	6.0	5.1	0.2	5.1

6: Cherry Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.1
Total Del/Veh (s)	5.4	6.5	6.1	1.6	4.9

Total Zone Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	57.8

Intersection: 4: Ash Street & Washington Street

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (ft)	36	28	87	45	10
Average Queue (ft)	10	8	49	23	0
95th Queue (ft)	31	29	76	47	7
Link Distance (ft)	542	740	740	597	211
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Poplar Street & Washington Street

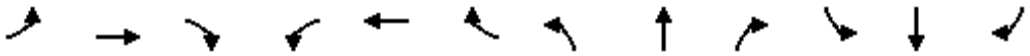
Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	53	99	66	9
Average Queue (ft)	22	48	27	1
95th Queue (ft)	45	77	50	6
Link Distance (ft)	740	791	667	147
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Cherry Street & Washington Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	47	124	40	24
Average Queue (ft)	24	64	22	1
95th Queue (ft)	46	107	46	11
Link Distance (ft)	791	3111	640	268
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	399	5	45	434	19	14	1	38	25	1	0
Future Volume (vph)	0	399	5	45	434	19	14	1	38	25	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	12	12	12	11	11	11
Grade (%)		1%			-2%			1%			-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.995			0.904				
Flt Protected					0.995			0.987			0.954	
Satd. Flow (prot)	0	1996	0	0	2020	0	0	1483	0	0	1729	0
Flt Permitted					0.995			0.987			0.954	
Satd. Flow (perm)	0	1996	0	0	2020	0	0	1483	0	0	1729	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		736			781			539			303	
Travel Time (s)		20.1			21.3			12.3			6.9	
Confl. Peds. (#/hr)			1	1					2	2		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	4%	0%	5%	3%	10%	14%	0%	14%	4%	0%	0%
Adj. Flow (vph)	0	424	5	48	462	20	15	1	40	27	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	429	0	0	530	0	0	56	0	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.89	0.89	0.89	0.87	0.87	0.87	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

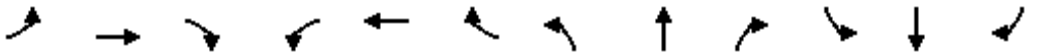
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	399	5	45	434	19	14	1	38	25	1	0
Future Vol, veh/h	0	399	5	45	434	19	14	1	38	25	1	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	-2	-	-	1	-	-	-5	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	4	0	5	3	10	14	0	14	4	0	0
Mvmt Flow	0	424	5	48	462	20	15	1	40	27	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	482	0	0	430	0	0	997	1006	430	1017	998	472
Stage 1	-	-	-	-	-	-	428	428	-	568	568	-
Stage 2	-	-	-	-	-	-	569	578	-	449	430	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.44	6.7	6.44	6.14	5.5	5.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.44	5.7	-	5.14	4.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.44	5.7	-	5.14	4.5	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	819	-	-	854	-	-	225	230	644	314	324	669
Stage 1	-	-	-	-	-	-	663	574	-	669	597	-
Stage 2	-	-	-	-	-	-	545	488	-	758	661	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	819	-	-	853	-	-	211	212	642	275	299	669
Mov Cap-2 Maneuver	-	-	-	-	-	-	211	212	-	275	299	-
Stage 1	-	-	-	-	-	-	662	573	-	669	551	-
Stage 2	-	-	-	-	-	-	502	450	-	707	660	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.9	15.3	19.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	407	819	-	-	853	-	-	276
HCM Lane V/C Ratio	0.139	-	-	-	0.056	-	-	0.1
HCM Control Delay (s)	15.3	0	-	-	9.5	0	-	19.5
HCM Lane LOS	C	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0.2	-	-	0.3



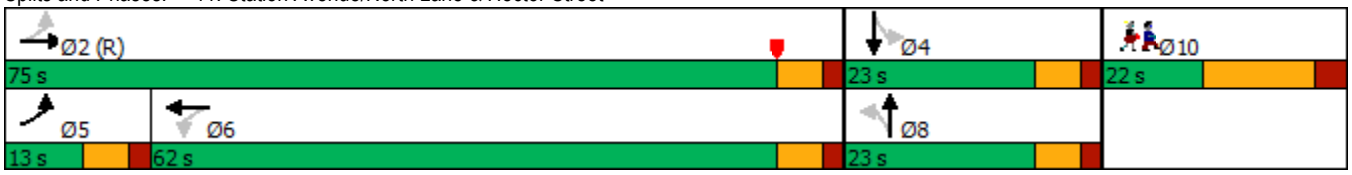
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	380	10	10	455	55	5	18	3	67	11	52
Future Volume (vph)	75	380	10	10	455	55	5	18	3	67	11	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	10	11	11	12	12	12	16	16	16
Grade (%)		-1%			-1%			3%			-7%	
Storage Length (ft)	150		0	90		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	70			40			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.98	
Frt		0.996			0.984			0.986			0.946	
Flt Protected	0.950			0.950				0.991			0.975	
Satd. Flow (prot)	1613	1771	0	1604	1664	0	0	1728	0	0	1846	0
Flt Permitted	0.278			0.515				0.946			0.823	
Satd. Flow (perm)	472	1771	0	870	1664	0	0	1646	0	0	1553	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			7			3			24	
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		781			600			343			548	
Travel Time (s)		21.3			16.4			9.4			10.7	
Confl. Peds. (#/hr)							5		2	2		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	10%	0%	3%	7%	0%	0%	0%	3%	0%	6%
Adj. Flow (vph)	82	413	11	11	495	60	5	20	3	73	12	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	424	0	11	555	0	0	28	0	0	142	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.02	1.02	1.16	1.11	1.11	1.09	1.09	1.09	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		1	1		1	1	
Detector Template							Left			Left		
Leading Detector (ft)	37	0		0	0		20	37		20	37	
Trailing Detector (ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Position(ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Size(ft)	40	6		20	6		20	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	75.0		62.0	62.0		23.0	23.0		23.0	23.0	

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	36.0
Total Split (s)	22.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	10.8%	62.5%		51.7%	51.7%		19.2%	19.2%		19.2%	19.2%	
Maximum Green (s)	7.0	69.0		56.0	56.0		17.0	17.0		17.0	17.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		Max	Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	73.2	73.2		62.8	62.8			14.8			14.8	
Actuated g/C Ratio	0.61	0.61		0.52	0.52			0.12			0.12	
v/c Ratio	0.23	0.39		0.02	0.63			0.14			0.67	
Control Delay	12.0	13.8		16.9	26.0			43.0			56.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	12.0	13.8		16.9	26.0			43.0			56.8	
LOS	B	B		B	C			D			E	
Approach Delay		13.5			25.8			43.0			56.8	
Approach LOS		B			C			D			E	
Queue Length 50th (ft)	25	160		4	311			17			88	
Queue Length 95th (ft)	50	242		15	462			45			155	
Internal Link Dist (ft)		701			520			263			468	
Turn Bay Length (ft)	150			90								
Base Capacity (vph)	364	1081		455	875			249			253	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.23	0.39		0.02	0.63			0.11			0.56	

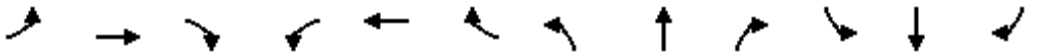
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 26 (22%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 24.7		Intersection LOS: C	
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 11: Station Avenue/North Lane & Hector Street



Lane Group	Ø10
Total Split (%)	18%
Maximum Green (s)	9.0
Yellow Time (s)	10.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	Ped
Walk Time (s)	7.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	7
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

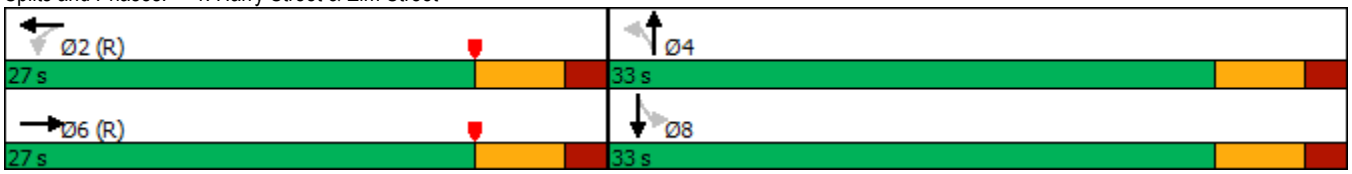


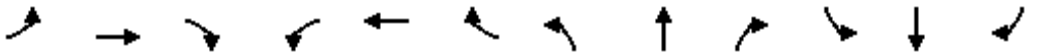
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	605	67	1	172	0	157	0	16	34	8	270
Future Volume (vph)	0	605	67	1	172	0	157	0	16	34	8	270
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		-4%			2%			3%			-6%	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00		1.00		
Frt		0.985						0.987			0.854	
Flt Protected								0.957		0.950		
Satd. Flow (prot)	0	3509	0	0	1805	0	0	1728	0	1703	1496	0
Flt Permitted					0.998			0.422		0.709		
Satd. Flow (perm)	0	3509	0	0	1802	0	0	762	0	1267	1496	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22						55			281	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		281			505			298			915	
Travel Time (s)		7.7			13.8			8.1			25.0	
Confl. Peds. (#/hr)	1					1			6	6		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	3%	0%	2%	0%	0%	8%	0%	0%	13%	2%
Adj. Flow (vph)	0	630	70	1	179	0	164	0	17	35	8	281
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	700	0	0	180	0	0	181	0	35	289	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.04	1.04	1.04	1.05	1.05	1.05	1.08	1.08	1.08
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1		1	1		1	1	
Detector Template				Left			Left			Left		
Leading Detector (ft)		37		20	37		20	37		37	37	
Trailing Detector (ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Position(ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Size(ft)		40		20	40		20	40		40	40	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases				2			4			8		
Detector Phase		6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)		15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)		21.0		26.0	26.0		9.0	9.0		9.0	9.0	
Total Split (s)		27.0		27.0	27.0		33.0	33.0		33.0	33.0	
Total Split (%)		45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Maximum Green (s)		21.0		21.0	21.0		27.0	27.0		27.0	27.0	
Yellow Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode		C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0		13.0	13.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 48 (80%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Harry Street & Elm Street

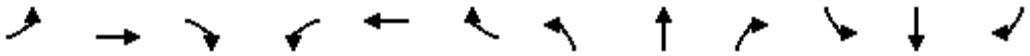




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	605	67	1	172	0	157	0	16	34	8	270
Future Volume (veh/h)	0	605	67	1	172	0	157	0	16	34	8	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	2012	1983	1849	1820	0	1820	1703	1820	2024	1839	1995
Adj Flow Rate, veh/h	0	630	45	1	179	0	164	0	14	35	8	200
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	1	3	0	2	0	0	8	0	0	13	2
Cap, veh/h	0	1827	130	61	917	0	332	5	19	702	20	491
Arrive On Green	0.00	0.50	0.49	0.49	0.50	0.00	0.31	0.00	0.31	0.33	0.33	0.31
Sat Flow, veh/h	0	3720	258	1	1816	0	661	14	58	1509	60	1493
Grp Volume(v), veh/h	0	332	343	180	0	0	178	0	0	35	0	208
Grp Sat Flow(s),veh/h/ln	0	1912	1966	1818	0	0	733	0	0	1509	0	1553
Q Serve(g_s), s	0.0	6.3	6.3	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0	6.3
Cycle Q Clear(g_c), s	0.0	6.3	6.3	3.3	0.0	0.0	15.4	0.0	0.0	0.8	0.0	6.3
Prop In Lane	0.00		0.13	0.01		0.00	0.92		0.08	1.00		0.96
Lane Grp Cap(c), veh/h	0	965	992	948	0	0	344	0	0	702	0	510
V/C Ratio(X)	0.00	0.34	0.35	0.19	0.00	0.00	0.52	0.00	0.00	0.05	0.00	0.41
Avail Cap(c_a), veh/h	0	965	992	948	0	0	494	0	0	911	0	725
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.9	9.0	8.2	0.0	0.0	21.8	0.0	0.0	13.8	0.0	16.0
Incr Delay (d2), s/veh	0.0	1.0	1.0	0.4	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	4.5	4.7	2.3	0.0	0.0	4.3	0.0	0.0	0.6	0.0	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.9	9.9	8.6	0.0	0.0	23.1	0.0	0.0	13.8	0.0	16.5
LnGrp LOS	A	A	A	A	A	A	C	A	A	B	A	B
Approach Vol, veh/h		675			180			178			243	
Approach Delay, s/veh		9.9			8.6			23.1			16.2	
Approach LOS		A			A			C			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		35.3		24.7		35.3		24.7				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		21.0		27.0		21.0		27.0				
Max Q Clear Time (g_c+I1), s		5.3		17.4		8.8		8.3				
Green Ext Time (p_c), s		0.5		0.5		2.1		0.9				

Intersection Summary												
HCM 6th Ctrl Delay			12.7									
HCM 6th LOS			B									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	496	134	0	0	0	175	19	11	0	0	0
Future Volume (vph)	23	496	134	0	0	0	175	19	11	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	16	16	16	16	16	16	16	16	16
Grade (%)		-1%			0%			5%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850					0.993				
Flt Protected		0.998						0.959				
Satd. Flow (prot)	0	1951	1661	0	0	0	0	1982	0	0	0	0
Flt Permitted		0.998						0.959				
Satd. Flow (perm)	0	1951	1661	0	0	0	0	1982	0	0	0	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		505			1606			289			377	
Travel Time (s)		13.8			43.8			7.9			10.3	
Confl. Peds. (#/hr)	2					2			4	4		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	528	143	0	0	0	186	20	12	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	552	143	0	0	0	0	218	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	0.95	0.95	0.85	0.85	0.85	0.88	0.88	0.88	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

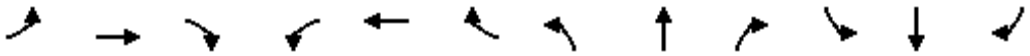
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	18.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	496	134	0	0	0	175	19	11	0	0	0
Future Vol, veh/h	23	496	134	0	0	0	175	19	11	0	0	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	0	1	1	0	0	0	1	0	0	0	0	0
Mvmt Flow	24	528	143	0	0	0	186	20	12	0	0	0
Number of Lanes	0	1	1	0	0	0	0	1	0	0	0	0

Approach	EB	NB
Opposing Approach		
Opposing Lanes	0	0
Conflicting Approach Left		EB
Conflicting Lanes Left	0	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	21.1	11.5
HCM LOS	C	B

Lane	NBLn1	EBLn1	EBLn2
Vol Left, %	85%	4%	0%
Vol Thru, %	9%	96%	0%
Vol Right, %	5%	0%	100%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	205	519	134
LT Vol	175	23	0
Through Vol	19	496	0
RT Vol	11	0	134
Lane Flow Rate	218	552	143
Geometry Grp	2	7	7
Degree of Util (X)	0.339	0.788	0.175
Departure Headway (Hd)	5.597	5.137	4.428
Convergence, Y/N	Yes	Yes	Yes
Cap	639	701	805
Service Time	3.659	2.892	2.183
HCM Lane V/C Ratio	0.341	0.787	0.178
HCM Control Delay	11.5	24.4	8.1
HCM Lane LOS	B	C	A
HCM 95th-tile Q	1.5	7.8	0.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	470	31	0	0	0	0	0	53	26	45	0
Future Volume (vph)	0	470	31	0	0	0	0	0	53	26	45	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
Grade (%)		3%			0%			7%			-9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.992							0.865			
Flt Protected											0.982	
Satd. Flow (prot)	0	2085	0	0	0	0	0	0	1797	0	2155	0
Flt Permitted											0.982	
Satd. Flow (perm)	0	2085	0	0	0	0	0	0	1797	0	2155	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1606			1351			328			394	
Travel Time (s)		43.8			36.8			8.9			10.7	
Confl. Peds. (#/hr)	2		7	7		2	5		1	1		5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%
Adj. Flow (vph)	0	500	33	0	0	0	0	0	56	28	48	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	533	0	0	0	0	0	0	56	0	76	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.86	0.86	0.86	0.85	0.85	0.85	0.89	0.89	0.89	0.80	0.80	0.80
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

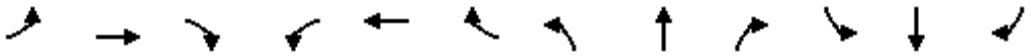
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	12.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	470	31	0	0	0	0	0	53	26	45	0
Future Vol, veh/h	0	470	31	0	0	0	0	0	53	26	45	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	0	1	0	0	0	0	0	0	0	0	4	0
Mvmt Flow	0	500	33	0	0	0	0	0	56	28	48	0
Number of Lanes	0	1	0	0	0	0	0	0	1	0	1	0

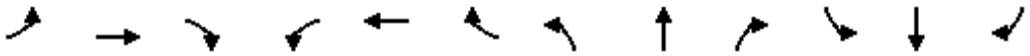
Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	14	8	8.9
HCM LOS	B	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	0%	37%
Vol Thru, %	0%	94%	63%
Vol Right, %	100%	6%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	53	501	71
LT Vol	0	0	26
Through Vol	0	470	45
RT Vol	53	31	0
Lane Flow Rate	56	533	76
Geometry Grp	1	1	1
Degree of Util (X)	0.072	0.623	0.11
Departure Headway (Hd)	4.605	4.209	5.246
Convergence, Y/N	Yes	Yes	Yes
Cap	776	858	683
Service Time	2.642	2.23	3.282
HCM Lane V/C Ratio	0.072	0.621	0.111
HCM Control Delay	8	14	8.9
HCM Lane LOS	A	B	A
HCM 95th-tile Q	0.2	4.5	0.4



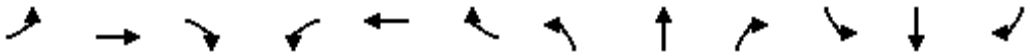
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	50	6	7	26	160	6	34	7	109	22	0
Future Volume (vph)	8	50	6	7	26	160	6	34	7	109	22	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	14	16	16	16
Grade (%)		-1%			-1%			1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.988			0.871			0.981				
Flt Protected		0.994		0.950				0.994			0.960	
Satd. Flow (prot)	0	2125	0	1814	1638	0	0	1966	0	0	2064	0
Flt Permitted		0.994		0.950				0.994			0.960	
Satd. Flow (perm)	0	2125	0	1814	1638	0	0	1966	0	0	2064	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		580			811			633			289	
Travel Time (s)		15.8			22.1			17.3			7.9	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	0%	0%	0%	5%	1%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	10	60	7	8	31	193	7	41	8	131	27	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	77	0	8	224	0	0	56	0	0	158	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.92	0.92	0.92	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	120	53	4	137	2	33	4	3	31	10	17
Future Volume (vph)	5	120	53	4	137	2	33	4	3	31	10	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	15	15	15	16	16	16
Grade (%)		-1%			-1%			-1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.959			0.998			0.991			0.961	
Flt Protected		0.999			0.999			0.960			0.974	
Satd. Flow (prot)	0	2059	0	0	1868	0	0	1998	0	0	2046	0
Flt Permitted		0.999			0.999			0.960			0.974	
Satd. Flow (perm)	0	2059	0	0	1868	0	0	1998	0	0	2046	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		811			854			699			191	
Travel Time (s)		22.1			23.3			15.9			5.2	
Confl. Peds. (#/hr)			10	10			2					2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	130	58	4	149	2	36	4	3	34	11	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	193	0	0	155	0	0	43	0	0	63	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.88	0.88	0.88	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	63	9	0	75	5	4	12	0	42	10	29
Future Volume (vph)	31	63	9	0	75	5	4	12	0	42	10	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	13	13	13	15	15	15
Grade (%)		0%			0%			0%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.989			0.991						0.952	
Flt Protected		0.985						0.987			0.975	
Satd. Flow (prot)	0	1601	0	0	1739	0	0	1938	0	0	1890	0
Flt Permitted		0.985						0.987			0.975	
Satd. Flow (perm)	0	1601	0	0	1739	0	0	1938	0	0	1890	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		854			3174			668			328	
Travel Time (s)		23.3			86.6			15.2			8.9	
Confl. Peds. (#/hr)			1	1			6		3	3		6
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	13%	0%	0%	5%	0%	0%	0%	0%	5%	0%	3%
Adj. Flow (vph)	36	72	10	0	86	6	5	14	0	48	11	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	118	0	0	92	0	0	19	0	0	92	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	0.96	0.96	0.96	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

SimTraffic Simulation Summary
2024 without Dev Weekday PM with Wash Ext

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	2816	2758	2772	2890	2786	2803
Vehs Exited	2794	2767	2776	2886	2784	2801
Starting Vehs	68	67	72	58	70	63
Ending Vehs	90	58	68	62	72	64
Travel Distance (mi)	1237	1195	1212	1265	1232	1228
Travel Time (hr)	71.4	68.9	69.7	73.1	70.3	70.7
Total Delay (hr)	22.1	21.2	21.4	22.8	21.1	21.7
Total Stops	4135	3874	3992	4128	4015	4028
Fuel Used (gal)	50.1	48.6	48.9	51.3	49.3	49.6

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	2816	2758	2772	2890	2786	2803
Vehs Exited	2794	2767	2776	2886	2784	2801
Starting Vehs	68	67	72	58	70	63
Ending Vehs	90	58	68	62	72	64
Travel Distance (mi)	1237	1195	1212	1265	1232	1228
Travel Time (hr)	71.4	68.9	69.7	73.1	70.3	70.7
Total Delay (hr)	22.1	21.2	21.4	22.8	21.1	21.7
Total Stops	4135	3874	3992	4128	4015	4028
Fuel Used (gal)	50.1	48.6	48.9	51.3	49.3	49.6

4: Ash Street & Washington Street Performance by lane

Lane	EB	WB	WB	NB	SB	All
Movements Served	LTR	L	TR	LTR	LTR	
Denied Del/Veh (s)						0.0
Total Del/Veh (s)	5.5	5.2	5.1	5.3	0.4	3.7

5: Poplar Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	5.4	6.2	4.8	0.2	5.0

6: Cherry Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	4.4	5.8	6.1	1.2	4.1

Total Zone Performance

Denied Del/Veh (s)	0.1
Total Del/Veh (s)	65.9

Intersection: 4: Ash Street & Washington Street

Movement	EB	WB	WB	NB
Directions Served	LTR	L	TR	LTR
Maximum Queue (ft)	55	28	71	50
Average Queue (ft)	25	5	40	27
95th Queue (ft)	44	22	61	47
Link Distance (ft)	542	740	740	597
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Poplar Street & Washington Street

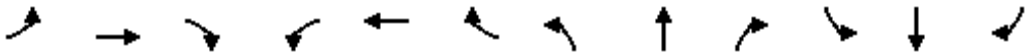
Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	60	75	40	9
Average Queue (ft)	36	37	18	0
95th Queue (ft)	56	59	40	5
Link Distance (ft)	740	791	667	147
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Cherry Street & Washington Street

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	76	74	31
Average Queue (ft)	36	37	14
95th Queue (ft)	62	65	39
Link Distance (ft)	791	3111	640
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	548	12	38	377	14	10	1	36	50	4	3
Future Volume (vph)	3	548	12	38	377	14	10	1	36	50	4	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	12	12	12	11	11	11
Grade (%)		1%			-2%			1%			-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.996			0.896			0.993	
Flt Protected					0.996			0.990			0.958	
Satd. Flow (prot)	0	2053	0	0	2058	0	0	1643	0	0	1761	0
Flt Permitted					0.996			0.990			0.958	
Satd. Flow (perm)	0	2053	0	0	2058	0	0	1643	0	0	1761	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		736			781			539			303	
Travel Time (s)		20.1			21.3			12.3			6.9	
Confl. Peds. (#/hr)	1		2	2		1	1		3	3		1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	10%	0%	0%	0%	25%	0%
Adj. Flow (vph)	3	565	12	39	389	14	10	1	37	52	4	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	580	0	0	442	0	0	48	0	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.89	0.89	0.89	0.87	0.87	0.87	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

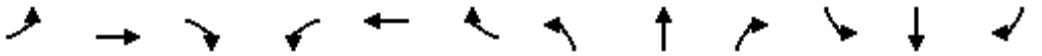
Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	548	12	38	377	14	10	1	36	50	4	3
Future Vol, veh/h	3	548	12	38	377	14	10	1	36	50	4	3
Conflicting Peds, #/hr	1	0	2	2	0	1	1	0	3	3	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	-2	-	-	1	-	-	-5	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	0	2	0	10	0	0	0	25	0
Mvmt Flow	3	565	12	39	389	14	10	1	37	52	4	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	404	0	0	579	0	0	1058	1061	576	1074	1060	398
Stage 1	-	-	-	-	-	-	579	579	-	475	475	-
Stage 2	-	-	-	-	-	-	479	482	-	599	585	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.4	6.7	6.3	6.1	5.75	5.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.4	5.7	-	5.1	4.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.4	5.7	-	5.1	4.75	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4.225	3.1
Pot Cap-1 Maneuver	872	-	-	758	-	-	205	213	538	294	274	730
Stage 1	-	-	-	-	-	-	540	488	-	741	594	-
Stage 2	-	-	-	-	-	-	621	542	-	652	544	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	871	-	-	757	-	-	190	197	535	256	254	728
Mov Cap-2 Maneuver	-	-	-	-	-	-	190	197	-	256	254	-
Stage 1	-	-	-	-	-	-	536	485	-	737	554	-
Stage 2	-	-	-	-	-	-	572	505	-	600	540	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.9	16	22.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	376	871	-	-	757	-	-	265
HCM Lane V/C Ratio	0.129	0.004	-	-	0.052	-	-	0.222
HCM Control Delay (s)	16	9.1	0	-	10	0	-	22.4
HCM Lane LOS	C	A	A	-	B	A	-	C
HCM 95th %tile Q(veh)	0.4	0	-	-	0.2	-	-	0.8



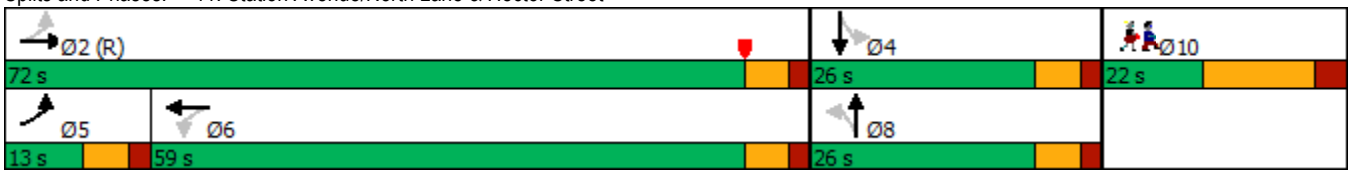
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	582	8	18	349	54	5	19	9	97	30	60
Future Volume (vph)	56	582	8	18	349	54	5	19	9	97	30	60
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	10	11	11	12	12	12	16	16	16
Grade (%)		-1%			-1%			3%			-7%	
Storage Length (ft)	150		0	90		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	70			40			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.99	
Frt		0.998			0.980			0.961			0.957	
Flt Protected	0.950			0.950				0.993			0.975	
Satd. Flow (prot)	1661	1847	0	1604	1685	0	0	1692	0	0	1938	0
Flt Permitted	0.357			0.350				0.953			0.819	
Satd. Flow (perm)	624	1847	0	591	1685	0	0	1622	0	0	1628	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			8			10			17	
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		781			600			343			548	
Travel Time (s)		21.3			16.4			9.4			10.7	
Confl. Peds. (#/hr)							4					4
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	60	619	9	19	371	57	5	20	10	103	32	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	628	0	19	428	0	0	35	0	0	199	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.02	1.02	1.16	1.11	1.11	1.09	1.09	1.09	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		1	1		1	1	
Detector Template							Left			Left		
Leading Detector (ft)	37	0		0	0		20	37		20	37	
Trailing Detector (ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Position(ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Size(ft)	40	6		20	6		20	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	72.0		59.0	59.0		26.0	26.0		26.0	26.0	

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	36.0
Total Split (s)	22.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	10.8%	60.0%		49.2%	49.2%		21.7%	21.7%		21.7%	21.7%	
Maximum Green (s)	7.0	66.0		53.0	53.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		Max	Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	69.8	69.8		59.4	59.4			18.2			18.2	
Actuated g/C Ratio	0.58	0.58		0.50	0.50			0.15			0.15	
v/c Ratio	0.14	0.58		0.07	0.51			0.14			0.76	
Control Delay	12.6	19.3		19.5	24.4			34.2			63.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	12.6	19.3		19.5	24.4			34.2			63.1	
LOS	B	B		B	C			C			E	
Approach Delay		18.7			24.2			34.2			63.1	
Approach LOS		B			C			C			E	
Queue Length 50th (ft)	20	302		8	230			17			135	
Queue Length 95th (ft)	41	430		24	338			47			217	
Internal Link Dist (ft)		701			520			263			468	
Turn Bay Length (ft)	150			90								
Base Capacity (vph)	431	1074		292	838			292			298	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.14	0.58		0.07	0.51			0.12			0.67	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 76 (63%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 27.3		Intersection LOS: C	
Intersection Capacity Utilization 75.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 11: Station Avenue/North Lane & Hector Street



Lane Group	Ø10
Total Split (%)	18%
Maximum Green (s)	9.0
Yellow Time (s)	10.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	Ped
Walk Time (s)	7.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	4
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

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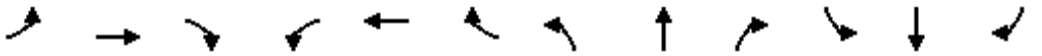
Appendix J

2024 Future with Development Capacity/Level-of-Service Analysis Worksheets

WITHOUT WASHINGTON STREET EXTENSION

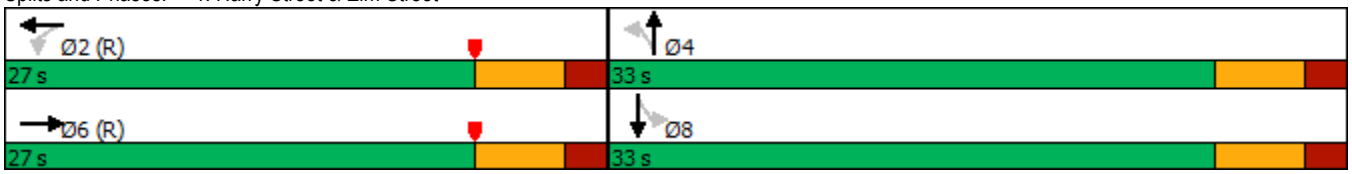


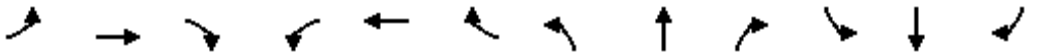
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	464	174	0	354	0	77	0	6	26	16	285
Future Volume (vph)	0	464	174	0	354	0	77	0	6	26	16	285
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		-4%			2%			3%			-6%	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99						1.00		1.00	0.98	
Frt		0.959						0.991			0.858	
Flt Protected								0.956		0.950		
Satd. Flow (prot)	0	3304	0	0	1788	0	0	1398	0	1431	1461	0
Flt Permitted								0.284		0.737		
Satd. Flow (perm)	0	3304	0	0	1788	0	0	415	0	1109	1461	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		102						55			230	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		281			505			298			915	
Travel Time (s)		7.7			13.8			8.1			25.0	
Confl. Peds. (#/hr)	5		1	1		5	1		1	1		1
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	4%	4%	0%	3%	0%	24%	0%	25%	19%	6%	3%
Adj. Flow (vph)	0	559	210	0	427	0	93	0	7	31	19	343
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	769	0	0	427	0	0	100	0	31	362	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.04	1.04	1.04	1.05	1.05	1.05	1.08	1.08	1.08
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1		1	1		1	1	
Detector Template				Left			Left			Left		
Leading Detector (ft)		37		20	37		20	37		37	37	
Trailing Detector (ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Position(ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Size(ft)		40		20	40		20	40		40	40	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type		NA			NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases				2			4			8		
Detector Phase		6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)		15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)		21.0		26.0	26.0		9.0	9.0		9.0	9.0	
Total Split (s)		27.0		27.0	27.0		33.0	33.0		33.0	33.0	
Total Split (%)		45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Maximum Green (s)		21.0		21.0	21.0		27.0	27.0		27.0	27.0	
Yellow Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode		C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0		13.0	13.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 28 (47%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Harry Street & Elm Street

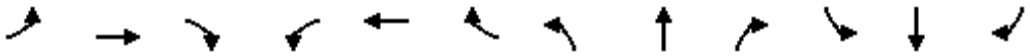




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	464	174	0	354	0	77	0	6	26	16	285
Future Volume (veh/h)	0	464	174	0	354	0	77	0	6	26	16	285
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1968	1968	1849	1805	0	1469	1820	1455	1753	1938	1981
Adj Flow Rate, veh/h	0	559	151	0	427	0	93	0	2	31	19	204
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	4	4	0	3	0	24	0	25	19	6	3
Cap, veh/h	0	1688	455	0	1047	0	261	1	3	521	36	385
Arrive On Green	0.00	0.58	0.56	0.00	0.58	0.00	0.24	0.00	0.24	0.25	0.25	0.24
Sat Flow, veh/h	0	3010	784	0	1805	0	560	5	12	1325	142	1519
Grp Volume(v), veh/h	0	358	352	0	427	0	95	0	0	31	0	223
Grp Sat Flow(s),veh/h/ln	0	1869	1826	0	1805	0	578	0	0	1325	0	1661
Q Serve(g_s), s	0.0	6.0	6.1	0.0	7.8	0.0	4.8	0.0	0.0	0.0	0.0	7.0
Cycle Q Clear(g_c), s	0.0	6.0	6.1	0.0	7.8	0.0	11.8	0.0	0.0	0.8	0.0	7.0
Prop In Lane	0.00		0.43	0.00		0.00	0.98		0.02	1.00		0.91
Lane Grp Cap(c), veh/h	0	1084	1059	0	1047	0	256	0	0	521	0	421
V/C Ratio(X)	0.00	0.33	0.33	0.00	0.41	0.00	0.37	0.00	0.00	0.06	0.00	0.53
Avail Cap(c_a), veh/h	0	1084	1059	0	1047	0	497	0	0	803	0	775
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.6	6.7	0.0	6.9	0.0	24.8	0.0	0.0	17.0	0.0	19.7
Incr Delay (d2), s/veh	0.0	0.8	0.8	0.0	1.2	0.0	0.9	0.0	0.0	0.0	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	3.9	3.9	0.0	5.0	0.0	2.4	0.0	0.0	0.6	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.4	7.5	0.0	8.1	0.0	25.7	0.0	0.0	17.1	0.0	20.8
LnGrp LOS	A	A	A	A	A	A	C	A	A	B	A	C
Approach Vol, veh/h		710			427			95			254	
Approach Delay, s/veh		7.4			8.1			25.7			20.3	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.8		20.2		39.8		20.2				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		21.0		27.0		21.0		27.0				
Max Q Clear Time (g_c+I1), s		10.3		13.8		8.5		9.0				
Green Ext Time (p_c), s		1.2		0.2		2.4		0.9				

Intersection Summary												
HCM 6th Ctrl Delay			11.0									
HCM 6th LOS			B									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	370	81	0	0	0	356	43	7	0	0	0
Future Volume (vph)	14	370	81	0	0	0	356	43	7	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	16	16	16	16	16	16	16	16	16
Grade (%)		-1%			0%			5%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850					0.998				
Flt Protected		0.998						0.958				
Satd. Flow (prot)	0	1892	1677	0	0	0	0	1939	0	0	0	0
Flt Permitted		0.998						0.958				
Satd. Flow (perm)	0	1892	1677	0	0	0	0	1939	0	0	0	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		505			1606			289			377	
Travel Time (s)		13.8			43.8			7.9			10.3	
Confl. Peds. (#/hr)	2		2	2		2	1		1	1		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	7%	4%	0%	0%	0%	0%	4%	0%	0%	0%	0%	0%
Adj. Flow (vph)	15	407	89	0	0	0	391	47	8	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	422	89	0	0	0	0	446	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	0.95	0.95	0.85	0.85	0.85	0.88	0.88	0.88	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

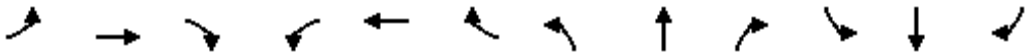
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	19.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	370	81	0	0	0	356	43	7	0	0	0
Future Vol, veh/h	14	370	81	0	0	0	356	43	7	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	7	4	0	0	0	0	4	0	0	0	0	0
Mvmt Flow	15	407	89	0	0	0	391	47	8	0	0	0
Number of Lanes	0	1	1	0	0	0	0	1	0	0	0	0

Approach	EB	NB
Opposing Approach		
Opposing Lanes	0	0
Conflicting Approach Left		EB
Conflicting Lanes Left	0	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	19.3	20
HCM LOS	C	C

Lane	NBLn1	EBLn1	EBLn2
Vol Left, %	88%	4%	0%
Vol Thru, %	11%	96%	0%
Vol Right, %	2%	0%	100%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	406	384	81
LT Vol	356	14	0
Through Vol	43	370	0
RT Vol	7	0	81
Lane Flow Rate	446	422	89
Geometry Grp	2	7	7
Degree of Util (X)	0.69	0.7	0.128
Departure Headway (Hd)	5.568	5.975	5.196
Convergence, Y/N	Yes	Yes	Yes
Cap	651	608	691
Service Time	3.568	3.703	2.924
HCM Lane V/C Ratio	0.685	0.694	0.129
HCM Control Delay	20	21.5	8.7
HCM Lane LOS	C	C	A
HCM 95th-tile Q	5.5	5.6	0.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	344	34	0	0	0	0	0	109	11	89	0
Future Volume (vph)	0	344	34	0	0	0	0	0	109	11	89	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
Grade (%)		3%			0%			7%			-9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.988							0.865			
Flt Protected											0.994	
Satd. Flow (prot)	0	2040	0	0	0	0	0	0	1762	0	2083	0
Flt Permitted											0.994	
Satd. Flow (perm)	0	2040	0	0	0	0	0	0	1762	0	2083	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1606			1351			328			394	
Travel Time (s)		43.8			36.8			8.9			10.7	
Confl. Peds. (#/hr)	3		2	2		3	5		5	5		5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	3%	0%	0%	0%	0%	0%	0%	2%	18%	6%	0%
Adj. Flow (vph)	0	362	36	0	0	0	0	0	115	12	94	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	398	0	0	0	0	0	0	115	0	106	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.86	0.86	0.86	0.85	0.85	0.85	0.89	0.89	0.89	0.80	0.80	0.80
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

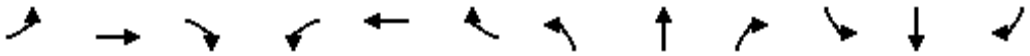
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	344	34	0	0	0	0	0	109	11	89	0
Future Vol, veh/h	0	344	34	0	0	0	0	0	109	11	89	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	3	0	0	0	0	0	0	2	18	6	0
Mvmt Flow	0	362	36	0	0	0	0	0	115	12	94	0
Number of Lanes	0	1	0	0	0	0	0	0	1	0	1	0

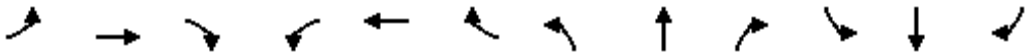
Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	11.7	8.2	9.3
HCM LOS	B	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	0%	11%
Vol Thru, %	0%	91%	89%
Vol Right, %	100%	9%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	109	378	100
LT Vol	0	0	11
Through Vol	0	344	89
RT Vol	109	34	0
Lane Flow Rate	115	398	105
Geometry Grp	1	1	1
Degree of Util (X)	0.141	0.489	0.155
Departure Headway (Hd)	4.411	4.427	5.298
Convergence, Y/N	Yes	Yes	Yes
Cap	810	812	676
Service Time	2.454	2.46	3.343
HCM Lane V/C Ratio	0.142	0.49	0.155
HCM Control Delay	8.2	11.7	9.3
HCM Lane LOS	A	B	A
HCM 95th-tile Q	0.5	2.7	0.5



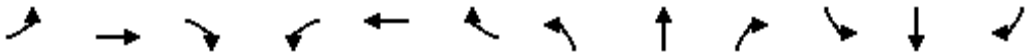
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	12	6	10	62	382	13	24	4	47	20	0
Future Volume (vph)	3	12	6	10	62	382	13	24	4	47	20	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	14	16	16	16
Grade (%)		-1%			-1%			1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.959			0.871			0.988				
Flt Protected		0.994		0.950				0.984			0.966	
Satd. Flow (prot)	0	2063	0	1814	1622	0	0	1960	0	0	2025	0
Flt Permitted		0.994		0.950				0.984			0.966	
Satd. Flow (perm)	0	2063	0	1814	1622	0	0	1960	0	0	2025	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		580			811			633			289	
Travel Time (s)		15.8			22.1			17.3			7.9	
Confl. Peds. (#/hr)	2		10	10		2			2	2		
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	6%	2%	0%	0%	0%	6%	0%	0%
Adj. Flow (vph)	3	13	7	11	70	429	15	27	4	53	22	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	11	499	0	0	46	0	0	75	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.92	0.92	0.92	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	41	15	0	368	1	59	8	2	24	4	22
Future Volume (vph)	6	41	15	0	368	1	59	8	2	24	4	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	15	15	15	16	16	16
Grade (%)		-1%			-1%			-1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.968						0.997			0.941	
Flt Protected		0.995						0.959			0.977	
Satd. Flow (prot)	0	2004	0	0	1836	0	0	1941	0	0	2009	0
Flt Permitted		0.995						0.959			0.977	
Satd. Flow (perm)	0	2004	0	0	1836	0	0	1941	0	0	2009	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		811			854			699			191	
Travel Time (s)		22.1			23.3			15.9			5.2	
Confl. Peds. (#/hr)	1		12	12		1	4		4	4		4
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	6%	0%	0%	4%	0%	4%	0%	0%	0%	0%	0%
Adj. Flow (vph)	7	48	17	0	428	1	69	9	2	28	5	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	72	0	0	429	0	0	80	0	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.88	0.88	0.88	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	41	11	0	191	54	70	23	0	40	11	65
Future Volume (vph)	33	41	11	0	191	54	70	23	0	40	11	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	13	13	13	15	15	15
Grade (%)		0%			0%			0%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.983			0.970						0.924	
Flt Protected		0.981						0.964			0.983	
Satd. Flow (prot)	0	1710	0	0	1146	0	0	1893	0	0	1855	0
Flt Permitted		0.981						0.964			0.983	
Satd. Flow (perm)	0	1710	0	0	1146	0	0	1893	0	0	1855	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		854			340			668			328	
Travel Time (s)		23.3			9.3			15.2			8.9	
Confl. Peds. (#/hr)	3					3	8					8
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	0%	0%	57%	50%	0%	0%	0%	0%	0%	6%
Adj. Flow (vph)	40	50	13	0	233	66	85	28	0	49	13	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	103	0	0	299	0	0	113	0	0	141	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	0.96	0.96	0.96	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3185	3247	3125	3181	3181	3180
Vehs Exited	3177	3237	3139	3160	3171	3174
Starting Vehs	80	66	90	68	69	76
Ending Vehs	88	76	76	89	79	74
Travel Distance (mi)	1235	1282	1205	1223	1224	1234
Travel Time (hr)	70.9	75.0	70.1	71.9	70.6	71.7
Total Delay (hr)	20.8	22.8	21.0	22.1	20.7	21.5
Total Stops	4496	4723	4488	4595	4435	4545
Fuel Used (gal)	50.3	52.7	49.7	50.5	49.9	50.6

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3185	3247	3125	3181	3181	3180
Vehs Exited	3177	3237	3139	3160	3171	3174
Starting Vehs	80	66	90	68	69	76
Ending Vehs	88	76	76	89	79	74
Travel Distance (mi)	1235	1282	1205	1223	1224	1234
Travel Time (hr)	70.9	75.0	70.1	71.9	70.6	71.7
Total Delay (hr)	20.8	22.8	21.0	22.1	20.7	21.5
Total Stops	4496	4723	4488	4595	4435	4545
Fuel Used (gal)	50.3	52.7	49.7	50.5	49.9	50.6

4: Ash Street & Washington Street Performance by lane

Lane	EB	WB	WB	NB	SB	All
Movements Served	LTR	L	TR	LTR	LTR	
Denied Del/Veh (s)						0.0
Total Del/Veh (s)	4.3	4.8	6.6	5.0	0.3	5.5

5: Poplar Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.1
Total Del/Veh (s)	5.0	7.5	6.1	0.3	6.6

6: Cherry Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.2
Total Del/Veh (s)	6.1	5.5	6.9	1.7	5.1

Total Zone Performance

Denied Del/Veh (s)	0.4
Total Del/Veh (s)	39.5

Intersection: 4: Ash Street & Washington Street

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (ft)	28	28	115	54	15
Average Queue (ft)	13	6	63	22	0
95th Queue (ft)	32	25	93	48	8
Link Distance (ft)	542	740	740	597	211
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Poplar Street & Washington Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	58	145	70	19
Average Queue (ft)	25	69	30	1
95th Queue (ft)	46	109	53	8
Link Distance (ft)	740	791	667	147
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Cherry Street & Washington Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	53	194	55	27
Average Queue (ft)	31	107	35	2
95th Queue (ft)	49	172	54	13
Link Distance (ft)	791	275	640	268
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	61	20	0	179	66	0
Future Volume (vph)	61	20	0	179	66	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.967					
Flt Protected					0.950	
Satd. Flow (prot)	1801	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1801	0	0	1863	1770	0
Link Speed (mph)	25			25	30	
Link Distance (ft)	340			332	305	
Travel Time (s)	9.3			9.1	6.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	68	22	0	199	73	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	90	0	0	199	73	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	30	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	61	20	0	179	66	0
Future Vol, veh/h	61	20	0	179	66	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	22	0	199	73	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	90	0	278	79
Stage 1	-	-	-	-	79	-
Stage 2	-	-	-	-	199	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1505	-	712	981
Stage 1	-	-	-	-	944	-
Stage 2	-	-	-	-	835	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1505	-	712	981
Mov Cap-2 Maneuver	-	-	-	-	712	-
Stage 1	-	-	-	-	944	-
Stage 2	-	-	-	-	835	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	712	-	-	1505	-
HCM Lane V/C Ratio	0.103	-	-	-	-
HCM Control Delay (s)	10.6	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	42	19	0	115	64	0
Future Volume (vph)	42	19	0	115	64	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.958					
Flt Protected					0.950	
Satd. Flow (prot)	1785	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1785	0	0	1863	1770	0
Link Speed (mph)	25			25	30	
Link Distance (ft)	332			2502	353	
Travel Time (s)	9.1			68.2	8.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	47	21	0	128	71	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	0	0	128	71	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

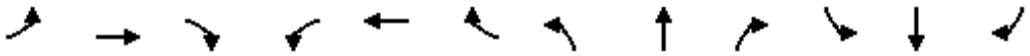
Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	42	19	0	115	64	0
Future Vol, veh/h	42	19	0	115	64	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	21	0	128	71	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	68	0	186	58
Stage 1	-	-	-	-	58	-
Stage 2	-	-	-	-	128	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1533	-	803	1008
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	898	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1533	-	803	1008
Mov Cap-2 Maneuver	-	-	-	-	803	-
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	898	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	803	-	-	1533	-
HCM Lane V/C Ratio	0.089	-	-	-	-
HCM Control Delay (s)	9.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	473	5	21	470	19	14	1	7	25	1	0
Future Volume (vph)	0	473	5	21	470	19	14	1	7	25	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	12	12	12	11	11	11
Grade (%)		1%			-2%			1%			-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.995			0.959				
Flt Protected					0.998			0.968			0.954	
Satd. Flow (prot)	0	1998	0	0	2028	0	0	1548	0	0	1729	0
Flt Permitted					0.998			0.968			0.954	
Satd. Flow (perm)	0	1998	0	0	2028	0	0	1548	0	0	1729	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		736			781			539			303	
Travel Time (s)		20.1			21.3			12.3			6.9	
Confl. Peds. (#/hr)			1	1					2	2		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	4%	0%	5%	3%	10%	14%	0%	14%	4%	0%	0%
Adj. Flow (vph)	0	503	5	22	500	20	15	1	7	27	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	508	0	0	542	0	0	23	0	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.89	0.89	0.89	0.87	0.87	0.87	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

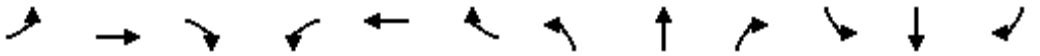
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	473	5	21	470	19	14	1	7	25	1	0
Future Vol, veh/h	0	473	5	21	470	19	14	1	7	25	1	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	-2	-	-	1	-	-	-5	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	4	0	5	3	10	14	0	14	4	0	0
Mvmt Flow	0	503	5	22	500	20	15	1	7	27	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	520	0	0	509	0	0	1062	1071	509	1066	1063	510
Stage 1	-	-	-	-	-	-	507	507	-	554	554	-
Stage 2	-	-	-	-	-	-	555	564	-	512	509	-
Critical Hdwy	4.1	-	-	4.15	-	-	7.44	6.7	6.44	6.14	5.5	5.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.44	5.7	-	5.14	4.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.44	5.7	-	5.14	4.5	-
Follow-up Hdwy	2.2	-	-	2.245	-	-	3.626	4	3.426	3.536	4	3.3
Pot Cap-1 Maneuver	1056	-	-	1041	-	-	180	210	533	267	302	609
Stage 1	-	-	-	-	-	-	512	527	-	599	603	-
Stage 2	-	-	-	-	-	-	480	496	-	624	624	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1056	-	-	1040	-	-	175	203	531	256	293	609
Mov Cap-2 Maneuver	-	-	-	-	-	-	175	203	-	256	293	-
Stage 1	-	-	-	-	-	-	511	526	-	599	585	-
Stage 2	-	-	-	-	-	-	465	481	-	613	623	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	22.9	20.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	224	1056	-	-	1040	-	-	257
HCM Lane V/C Ratio	0.104	-	-	-	0.021	-	-	0.108
HCM Control Delay (s)	22.9	0	-	-	8.5	0	-	20.7
HCM Lane LOS	C	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.4



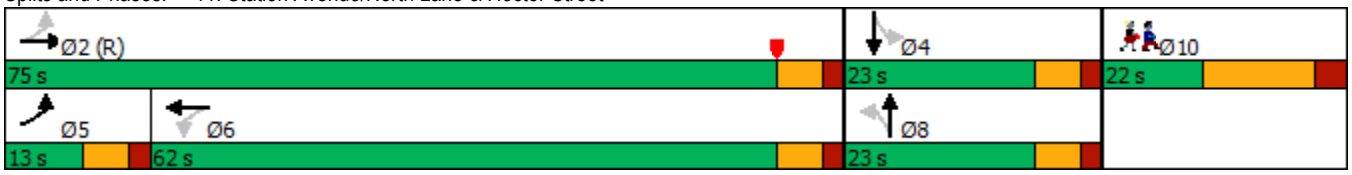
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	417	10	10	466	55	5	18	3	67	11	53
Future Volume (vph)	81	417	10	10	466	55	5	18	3	67	11	53
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	10	11	11	12	12	12	16	16	16
Grade (%)		-1%			-1%			3%			-7%	
Storage Length (ft)	150		0	90		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	70			40			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.98	
Frt		0.996			0.984			0.986			0.945	
Flt Protected	0.950			0.950				0.991			0.975	
Satd. Flow (prot)	1613	1771	0	1604	1664	0	0	1728	0	0	1844	0
Flt Permitted	0.262			0.496				0.945			0.824	
Satd. Flow (perm)	445	1771	0	837	1664	0	0	1644	0	0	1553	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			7			3			24	
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		781			600			343			548	
Travel Time (s)		21.3			16.4			9.4			10.7	
Confl. Peds. (#/hr)							5		2	2		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	10%	0%	3%	7%	0%	0%	0%	3%	0%	6%
Adj. Flow (vph)	88	453	11	11	507	60	5	20	3	73	12	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	464	0	11	567	0	0	28	0	0	143	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.02	1.02	1.16	1.11	1.11	1.09	1.09	1.09	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		1	1		1	1	
Detector Template							Left			Left		
Leading Detector (ft)	37	0		0	0		20	37		20	37	
Trailing Detector (ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Position(ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Size(ft)	40	6		20	6		20	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	75.0		62.0	62.0		23.0	23.0		23.0	23.0	

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	36.0
Total Split (s)	22.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	10.8%	62.5%		51.7%	51.7%		19.2%	19.2%		19.2%	19.2%	
Maximum Green (s)	7.0	69.0		56.0	56.0		17.0	17.0		17.0	17.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		Max	Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	73.2	73.2		60.4	60.4			14.8			14.8	
Actuated g/C Ratio	0.61	0.61		0.50	0.50			0.12			0.12	
v/c Ratio	0.25	0.43		0.03	0.68			0.14			0.67	
Control Delay	12.3	14.4		16.9	28.0			43.0			57.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	12.3	14.4		16.9	28.0			43.0			57.0	
LOS	B	B		B	C			D			E	
Approach Delay		14.1			27.7			43.0			57.0	
Approach LOS		B			C			D			E	
Queue Length 50th (ft)	27	181		4	322			17			88	
Queue Length 95th (ft)	53	271		15	478			45			157	
Internal Link Dist (ft)		701			520			263			468	
Turn Bay Length (ft)	150			90								
Base Capacity (vph)	349	1080		421	840			249			253	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.25	0.43		0.03	0.68			0.11			0.57	

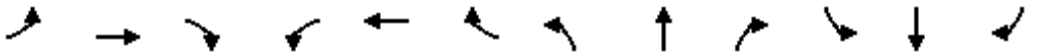
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 26 (22%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 25.5		Intersection LOS: C	
Intersection Capacity Utilization 63.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 11: Station Avenue/North Lane & Hector Street



Lane Group	Ø10
Total Split (%)	18%
Maximum Green (s)	9.0
Yellow Time (s)	10.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	Ped
Walk Time (s)	7.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	7
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

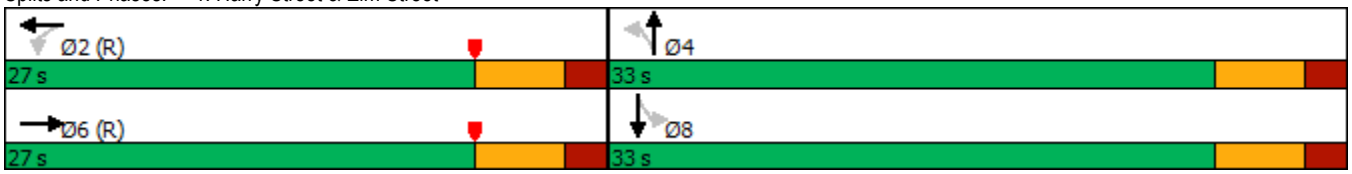


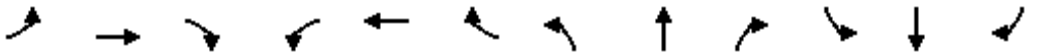
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	703	67	1	235	0	157	0	16	46	8	270
Future Volume (vph)	0	703	67	1	235	0	157	0	16	46	8	270
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		-4%			2%			3%			-6%	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00		1.00		
Frt		0.987						0.987			0.854	
Flt Protected								0.957		0.950		
Satd. Flow (prot)	0	3517	0	0	1805	0	0	1728	0	1703	1496	0
Flt Permitted					0.998			0.422		0.709		
Satd. Flow (perm)	0	3517	0	0	1802	0	0	762	0	1267	1496	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19						55			281	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		281			505			298			915	
Travel Time (s)		7.7			13.8			8.1			25.0	
Confl. Peds. (#/hr)	1					1			6	6		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	3%	0%	2%	0%	0%	8%	0%	0%	13%	2%
Adj. Flow (vph)	0	732	70	1	245	0	164	0	17	48	8	281
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	802	0	0	246	0	0	181	0	48	289	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.04	1.04	1.04	1.05	1.05	1.05	1.08	1.08	1.08
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1		1	1		1	1	
Detector Template				Left			Left			Left		
Leading Detector (ft)		37		20	37		20	37		37	37	
Trailing Detector (ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Position(ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Size(ft)		40		20	40		20	40		40	40	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases				2			4			8		
Detector Phase		6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)		15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)		21.0		26.0	26.0		9.0	9.0		9.0	9.0	
Total Split (s)		27.0		27.0	27.0		33.0	33.0		33.0	33.0	
Total Split (%)		45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Maximum Green (s)		21.0		21.0	21.0		27.0	27.0		27.0	27.0	
Yellow Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode		C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0		13.0	13.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 48 (80%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Harry Street & Elm Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	703	67	1	235	0	157	0	16	46	8	270
Future Volume (veh/h)	0	703	67	1	235	0	157	0	16	46	8	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	2012	1983	1849	1820	0	1820	1703	1820	2024	1839	1995
Adj Flow Rate, veh/h	0	732	45	1	245	0	164	0	14	48	8	200
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	1	3	0	2	0	0	8	0	0	13	2
Cap, veh/h	0	1847	113	61	917	0	333	5	19	702	20	491
Arrive On Green	0.00	0.50	0.49	0.49	0.50	0.00	0.31	0.00	0.31	0.33	0.33	0.31
Sat Flow, veh/h	0	3759	225	1	1817	0	661	14	58	1509	60	1493
Grp Volume(v), veh/h	0	382	395	246	0	0	178	0	0	48	0	208
Grp Sat Flow(s),veh/h/ln	0	1912	1972	1818	0	0	733	0	0	1509	0	1553
Q Serve(g_s), s	0.0	7.4	7.5	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0	6.3
Cycle Q Clear(g_c), s	0.0	7.4	7.5	4.7	0.0	0.0	15.4	0.0	0.0	1.1	0.0	6.3
Prop In Lane	0.00		0.11	0.00		0.00	0.92		0.08	1.00		0.96
Lane Grp Cap(c), veh/h	0	965	995	948	0	0	344	0	0	702	0	510
V/C Ratio(X)	0.00	0.40	0.40	0.26	0.00	0.00	0.52	0.00	0.00	0.07	0.00	0.41
Avail Cap(c_a), veh/h	0	965	995	948	0	0	494	0	0	911	0	725
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.2	9.2	8.5	0.0	0.0	21.8	0.0	0.0	13.9	0.0	16.0
Incr Delay (d2), s/veh	0.0	1.2	1.2	0.7	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	5.4	5.6	3.3	0.0	0.0	4.3	0.0	0.0	0.8	0.0	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	10.4	10.4	9.2	0.0	0.0	23.1	0.0	0.0	13.9	0.0	16.5
LnGrp LOS	A	B	B	A	A	A	C	A	A	B	A	B
Approach Vol, veh/h		777			246			178			256	
Approach Delay, s/veh		10.4			9.2			23.1			16.1	
Approach LOS		B			A			C			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	35.3	24.7	35.3	24.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	21.0	27.0	21.0	27.0
Max Q Clear Time (g_c+I1), s	6.7	17.4	9.9	8.3
Green Ext Time (p_c), s	0.7	0.5	2.4	0.9

Intersection Summary	
HCM 6th Ctrl Delay	12.7
HCM 6th LOS	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	570	171	0	0	0	238	28	11	0	0	0
Future Volume (vph)	23	570	171	0	0	0	238	28	11	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	16	16	16	16	16	16	16	16	16
Grade (%)		-1%			0%			5%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850					0.995				
Flt Protected		0.998						0.959				
Satd. Flow (prot)	0	1950	1661	0	0	0	0	1986	0	0	0	0
Flt Permitted		0.998						0.959				
Satd. Flow (perm)	0	1950	1661	0	0	0	0	1986	0	0	0	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		505			1606			289			377	
Travel Time (s)		13.8			43.8			7.9			10.3	
Confl. Peds. (#/hr)	2					2			4	4		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	606	182	0	0	0	253	30	12	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	630	182	0	0	0	0	295	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	0.95	0.95	0.85	0.85	0.85	0.88	0.88	0.88	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

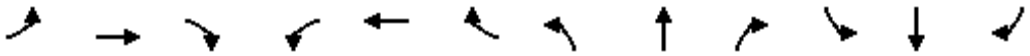
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	30.9
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	570	171	0	0	0	238	28	11	0	0	0
Future Vol, veh/h	23	570	171	0	0	0	238	28	11	0	0	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	0	1	1	0	0	0	1	0	0	0	0	0
Mvmt Flow	24	606	182	0	0	0	253	30	12	0	0	0
Number of Lanes	0	1	1	0	0	0	0	1	0	0	0	0

Approach	EB	NB
Opposing Approach		
Opposing Lanes	0	0
Conflicting Approach Left		EB
Conflicting Lanes Left	0	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	36.9	14.2
HCM LOS	E	B

Lane	NBLn1	EBLn1	EBLn2
Vol Left, %	86%	4%	0%
Vol Thru, %	10%	96%	0%
Vol Right, %	4%	0%	100%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	277	593	171
LT Vol	238	23	0
Through Vol	28	570	0
RT Vol	11	0	171
Lane Flow Rate	295	631	182
Geometry Grp	2	7	7
Degree of Util (X)	0.477	0.942	0.236
Departure Headway (Hd)	5.83	5.375	4.667
Convergence, Y/N	Yes	Yes	Yes
Cap	613	669	760
Service Time	3.922	3.162	2.454
HCM Lane V/C Ratio	0.481	0.943	0.239
HCM Control Delay	14.2	45	8.9
HCM Lane LOS	B	E	A
HCM 95th-tile Q	2.6	13.1	0.9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	470	68	0	0	0	0	0	96	26	105	0
Future Volume (vph)	0	470	68	0	0	0	0	0	96	26	105	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
Grade (%)		3%			0%			7%			-9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.983							0.865			
Flt Protected											0.990	
Satd. Flow (prot)	0	2067	0	0	0	0	0	0	1797	0	2159	0
Flt Permitted											0.990	
Satd. Flow (perm)	0	2067	0	0	0	0	0	0	1797	0	2159	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1606			1351			328			394	
Travel Time (s)		43.8			36.8			8.9			10.7	
Confl. Peds. (#/hr)	2		7	7		2	5		1	1		5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%
Adj. Flow (vph)	0	500	72	0	0	0	0	0	102	28	112	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	572	0	0	0	0	0	0	102	0	140	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.86	0.86	0.86	0.85	0.85	0.85	0.89	0.89	0.89	0.80	0.80	0.80
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

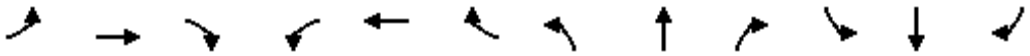
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	15.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	470	68	0	0	0	0	0	96	26	105	0
Future Vol, veh/h	0	470	68	0	0	0	0	0	96	26	105	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	0	1	0	0	0	0	0	0	0	0	4	0
Mvmt Flow	0	500	72	0	0	0	0	0	102	28	112	0
Number of Lanes	0	1	0	0	0	0	0	0	1	0	1	0

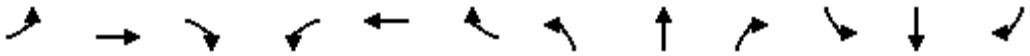
Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	17.6	8.7	9.9
HCM LOS	C	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	0%	20%
Vol Thru, %	0%	87%	80%
Vol Right, %	100%	13%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	96	538	131
LT Vol	0	0	26
Through Vol	0	470	105
RT Vol	96	68	0
Lane Flow Rate	102	572	139
Geometry Grp	1	1	1
Degree of Util (X)	0.137	0.708	0.21
Departure Headway (Hd)	4.843	4.451	5.415
Convergence, Y/N	Yes	Yes	Yes
Cap	732	807	658
Service Time	2.925	2.499	3.492
HCM Lane V/C Ratio	0.139	0.709	0.211
HCM Control Delay	8.7	17.6	9.9
HCM Lane LOS	A	C	A
HCM 95th-tile Q	0.5	6	0.8



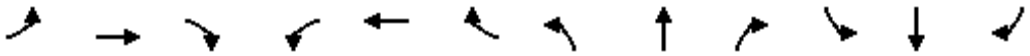
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	50	6	7	26	233	6	34	7	146	22	0
Future Volume (vph)	8	50	6	7	26	233	6	34	7	146	22	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	14	16	16	16
Grade (%)		-1%			-1%			1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.988			0.865			0.981				
Flt Protected		0.994		0.950				0.994			0.958	
Satd. Flow (prot)	0	2125	0	1814	1629	0	0	1966	0	0	2058	0
Flt Permitted		0.994		0.950				0.994			0.958	
Satd. Flow (perm)	0	2125	0	1814	1629	0	0	1966	0	0	2058	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		580			811			633			289	
Travel Time (s)		15.8			22.1			17.3			7.9	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	0%	0%	0%	5%	1%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	10	60	7	8	31	281	7	41	8	176	27	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	77	0	8	312	0	0	56	0	0	203	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.92	0.92	0.92	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	157	53	4	210	2	33	4	3	69	10	17
Future Volume (vph)	5	157	53	4	210	2	33	4	3	69	10	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	15	15	15	16	16	16
Grade (%)		-1%			-1%			-1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.967			0.999			0.991			0.977	
Flt Protected		0.999			0.999			0.960			0.965	
Satd. Flow (prot)	0	2075	0	0	1869	0	0	1998	0	0	2061	0
Flt Permitted		0.999			0.999			0.960			0.965	
Satd. Flow (perm)	0	2075	0	0	1869	0	0	1998	0	0	2061	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		811			854			699			191	
Travel Time (s)		22.1			23.3			15.9			5.2	
Confl. Peds. (#/hr)			10	10			2					2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	171	58	4	228	2	36	4	3	75	11	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	234	0	0	234	0	0	43	0	0	104	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.88	0.88	0.88	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	103	33	0	114	32	28	18	0	106	33	39
Future Volume (vph)	41	103	33	0	114	32	28	18	0	106	33	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	13	13	13	15	15	15
Grade (%)		0%			0%			0%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.975			0.970						0.970	
Flt Protected		0.989						0.971			0.971	
Satd. Flow (prot)	0	1590	0	0	1715	0	0	1906	0	0	1918	0
Flt Permitted		0.989						0.971			0.971	
Satd. Flow (perm)	0	1590	0	0	1715	0	0	1906	0	0	1918	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		854			340			668			328	
Travel Time (s)		23.3			9.3			15.2			8.9	
Confl. Peds. (#/hr)			1	1			6		3	3		6
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	13%	0%	0%	5%	0%	0%	0%	0%	5%	0%	3%
Adj. Flow (vph)	47	118	38	0	131	37	32	21	0	122	38	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	203	0	0	168	0	0	53	0	0	205	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	0.96	0.96	0.96	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3312	3316	3232	3255	3227	3271
Vehs Exited	3296	3290	3219	3231	3224	3253
Starting Vehs	69	81	68	68	85	67
Ending Vehs	85	107	81	92	88	83
Travel Distance (mi)	1456	1403	1407	1391	1393	1410
Travel Time (hr)	85.7	83.4	81.8	80.9	81.2	82.6
Total Delay (hr)	26.9	27.1	25.3	25.0	25.2	25.9
Total Stops	4980	4829	4842	4843	4803	4858
Fuel Used (gal)	59.6	58.0	57.1	56.5	56.9	57.6

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3312	3316	3232	3255	3227	3271
Vehs Exited	3296	3290	3219	3231	3224	3253
Starting Vehs	69	81	68	68	85	67
Ending Vehs	85	107	81	92	88	83
Travel Distance (mi)	1456	1403	1407	1391	1393	1410
Travel Time (hr)	85.7	83.4	81.8	80.9	81.2	82.6
Total Delay (hr)	26.9	27.1	25.3	25.0	25.2	25.9
Total Stops	4980	4829	4842	4843	4803	4858
Fuel Used (gal)	59.6	58.0	57.1	56.5	56.9	57.6

4: Ash Street & Washington Street Performance by lane

Lane	EB	WB	WB	NB	SB	All
Movements Served	LTR	L	TR	LTR	LTR	
Denied Del/Veh (s)						0.0
Total Del/Veh (s)	6.1	7.4	5.6	6.5	0.4	4.0

5: Poplar Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.1
Total Del/Veh (s)	6.1	7.3	5.1	0.3	5.4

6: Cherry Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	5.2	5.9	6.2	1.5	4.4

Total Zone Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	85.6

Intersection: 4: Ash Street & Washington Street

Movement	EB	WB	WB	NB
Directions Served	LTR	L	TR	LTR
Maximum Queue (ft)	47	28	85	58
Average Queue (ft)	23	5	45	27
95th Queue (ft)	43	23	71	51
Link Distance (ft)	542	740	740	597
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Poplar Street & Washington Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	86	81	41	5
Average Queue (ft)	42	42	21	0
95th Queue (ft)	68	68	42	4
Link Distance (ft)	740	791	667	147
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Cherry Street & Washington Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	88	104	54	14
Average Queue (ft)	45	44	26	1
95th Queue (ft)	72	77	50	7
Link Distance (ft)	791	275	640	268
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	161	48	0	115	31	0
Future Volume (vph)	161	48	0	115	31	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.969					
Flt Protected					0.950	
Satd. Flow (prot)	1805	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1805	0	0	1863	1770	0
Link Speed (mph)	25			25	30	
Link Distance (ft)	340			328	334	
Travel Time (s)	9.3			8.9	7.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	179	53	0	128	34	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	232	0	0	128	34	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	30	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	161	48	0	115	31	0
Future Vol, veh/h	161	48	0	115	31	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	179	53	0	128	34	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	232	0	334	206
Stage 1	-	-	-	-	206	-
Stage 2	-	-	-	-	128	-
Critical Hdwy	-	-	4.3	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	1000	-	758	888
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	1043	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1000	-	758	888
Mov Cap-2 Maneuver	-	-	-	-	758	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	1043	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	758	-	-	1000	-
HCM Lane V/C Ratio	0.045	-	-	-	-
HCM Control Delay (s)	10	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	114	47	0	84	31	0
Future Volume (vph)	114	47	0	84	31	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.961					
Flt Protected					0.950	
Satd. Flow (prot)	1790	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1790	0	0	1863	1770	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	328			2506	305	
Travel Time (s)	8.9			68.3	8.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	127	52	0	93	34	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	179	0	0	93	34	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

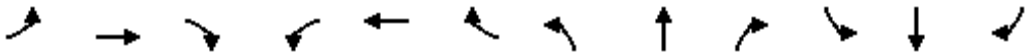
Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	114	47	0	84	31	0
Future Vol, veh/h	114	47	0	84	31	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	127	52	0	93	34	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	179	0	246	153
Stage 1	-	-	-	-	153	-
Stage 2	-	-	-	-	93	-
Critical Hdwy	-	-	4.3	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	1043	-	856	952
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	1084	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1043	-	856	952
Mov Cap-2 Maneuver	-	-	-	-	856	-
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	1084	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	856	-	-	1043	-
HCM Lane V/C Ratio	0.04	-	-	-	-
HCM Control Delay (s)	9.4	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	591	12	9	437	14	10	1	12	50	4	3
Future Volume (vph)	3	591	12	9	437	14	10	1	12	50	4	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	12	12	12	11	11	11
Grade (%)		1%			-2%			1%			-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.996			0.930			0.993	
Flt Protected					0.999			0.979			0.958	
Satd. Flow (prot)	0	2053	0	0	2061	0	0	1650	0	0	1761	0
Flt Permitted					0.999			0.979			0.958	
Satd. Flow (perm)	0	2053	0	0	2061	0	0	1650	0	0	1761	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		736			781			539			303	
Travel Time (s)		20.1			21.3			12.3			6.9	
Confl. Peds. (#/hr)	1		2	2		1	1		3	3		1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	10%	0%	0%	0%	25%	0%
Adj. Flow (vph)	3	609	12	9	451	14	10	1	12	52	4	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	624	0	0	474	0	0	23	0	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.89	0.89	0.89	0.87	0.87	0.87	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

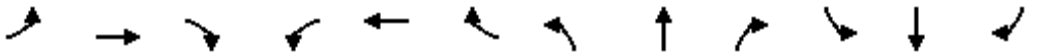
Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	591	12	9	437	14	10	1	12	50	4	3
Future Vol, veh/h	3	591	12	9	437	14	10	1	12	50	4	3
Conflicting Peds, #/hr	1	0	2	2	0	1	1	0	3	3	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	-2	-	-	1	-	-	-5	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	0	2	0	10	0	0	0	25	0
Mvmt Flow	3	609	12	9	451	14	10	1	12	52	4	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	466	0	0	623	0	0	1104	1107	620	1108	1106	460
Stage 1	-	-	-	-	-	-	623	623	-	477	477	-
Stage 2	-	-	-	-	-	-	481	484	-	631	629	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.4	6.7	6.3	6.1	5.75	5.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.4	5.7	-	5.1	4.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.4	5.7	-	5.1	4.75	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4.225	3.1
Pot Cap-1 Maneuver	830	-	-	731	-	-	190	199	506	281	260	679
Stage 1	-	-	-	-	-	-	508	465	-	740	593	-
Stage 2	-	-	-	-	-	-	619	541	-	631	525	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	829	-	-	730	-	-	183	194	503	267	253	678
Mov Cap-2 Maneuver	-	-	-	-	-	-	183	194	-	267	253	-
Stage 1	-	-	-	-	-	-	504	461	-	735	582	-
Stage 2	-	-	-	-	-	-	601	531	-	608	521	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	19.3	21.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	275	829	-	-	730	-	-	275
HCM Lane V/C Ratio	0.086	0.004	-	-	0.013	-	-	0.214
HCM Control Delay (s)	19.3	9.4	0	-	10	0	-	21.6
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.8



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	599	8	18	376	54	5	19	9	97	30	64
Future Volume (vph)	58	599	8	18	376	54	5	19	9	97	30	64
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	10	11	11	12	12	12	16	16	16
Grade (%)		-1%			-1%			3%			-7%	
Storage Length (ft)	150		0	90		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	70			40			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.99	
Frt		0.998			0.981			0.961			0.955	
Flt Protected	0.950			0.950				0.993			0.975	
Satd. Flow (prot)	1661	1847	0	1604	1686	0	0	1692	0	0	1932	0
Flt Permitted	0.333			0.335				0.953			0.822	
Satd. Flow (perm)	582	1847	0	566	1686	0	0	1622	0	0	1629	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			8			10			18	
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		781			600			343			548	
Travel Time (s)		21.3			16.4			9.4			10.7	
Confl. Peds. (#/hr)							4					4
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	62	637	9	19	400	57	5	20	10	103	32	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	646	0	19	457	0	0	35	0	0	203	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.02	1.02	1.16	1.11	1.11	1.09	1.09	1.09	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		1	1		1	1	
Detector Template							Left			Left		
Leading Detector (ft)	37	0		0	0		20	37		20	37	
Trailing Detector (ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Position(ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Size(ft)	40	6		20	6		20	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	72.0		59.0	59.0		26.0	26.0		26.0	26.0	

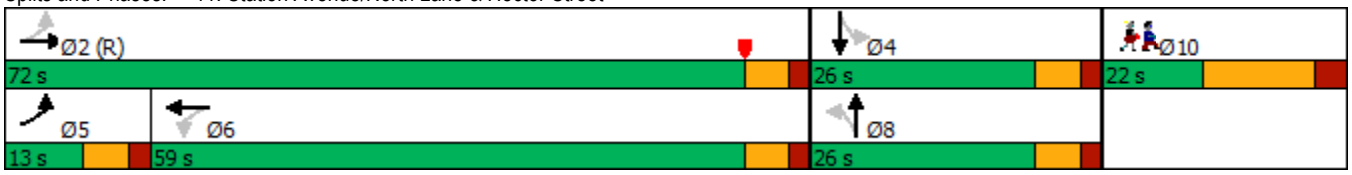
Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	36.0
Total Split (s)	22.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	10.8%	60.0%		49.2%	49.2%		21.7%	21.7%		21.7%	21.7%	
Maximum Green (s)	7.0	66.0		53.0	53.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		Max	Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	69.6	69.6		59.3	59.3			18.4			18.4	
Actuated g/C Ratio	0.58	0.58		0.49	0.49			0.15			0.15	
v/c Ratio	0.15	0.60		0.07	0.55			0.14			0.77	
Control Delay	12.8	19.8		19.7	25.4			34.2			63.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	12.8	19.8		19.7	25.4			34.2			63.3	
LOS	B	B		B	C			C			E	
Approach Delay		19.2			25.1			34.2			63.3	
Approach LOS		B			C			C			E	
Queue Length 50th (ft)	21	317		8	252			17			137	
Queue Length 95th (ft)	42	448		24	368			47			221	
Internal Link Dist (ft)		701			520			263			468	
Turn Bay Length (ft)	150			90								
Base Capacity (vph)	409	1071		279	836			292			299	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.15	0.60		0.07	0.55			0.12			0.68	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 76 (63%), Referenced to phase 2:EBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 27.8 Intersection LOS: C
Intersection Capacity Utilization 77.1% ICU Level of Service D
Analysis Period (min) 15

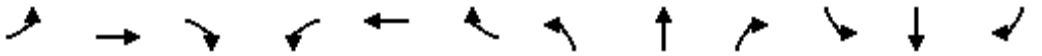
Splits and Phases: 11: Station Avenue/North Lane & Hector Street



Lane Group	Ø10
Total Split (%)	18%
Maximum Green (s)	9.0
Yellow Time (s)	10.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	Ped
Walk Time (s)	7.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	4
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

WITH WASHINGTON STREET EXTENSION

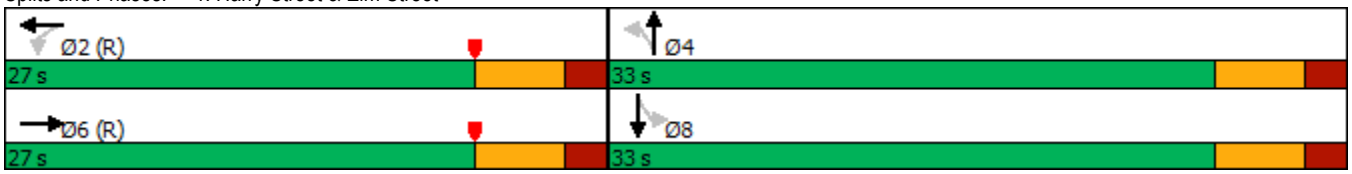


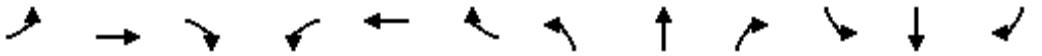
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	465	174	0	354	0	77	0	6	27	16	285
Future Volume (vph)	0	465	174	0	354	0	77	0	6	27	16	285
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		-4%			2%			3%			-6%	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99						1.00		1.00	0.98	
Frt		0.959						0.991			0.858	
Flt Protected								0.956		0.950		
Satd. Flow (prot)	0	3304	0	0	1788	0	0	1398	0	1431	1461	0
Flt Permitted								0.284		0.737		
Satd. Flow (perm)	0	3304	0	0	1788	0	0	415	0	1109	1461	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		102						55			230	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		281			505			298			915	
Travel Time (s)		7.7			13.8			8.1			25.0	
Confl. Peds. (#/hr)	5		1	1		5	1		1	1		1
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	4%	4%	0%	3%	0%	24%	0%	25%	19%	6%	3%
Adj. Flow (vph)	0	560	210	0	427	0	93	0	7	33	19	343
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	770	0	0	427	0	0	100	0	33	362	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.04	1.04	1.04	1.05	1.05	1.05	1.08	1.08	1.08
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1		1	1		1	1	
Detector Template				Left			Left			Left		
Leading Detector (ft)		37		20	37		20	37		37	37	
Trailing Detector (ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Position(ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Size(ft)		40		20	40		20	40		40	40	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type		NA			NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases				2			4			8		
Detector Phase		6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)		15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)		21.0		26.0	26.0		9.0	9.0		9.0	9.0	
Total Split (s)		27.0		27.0	27.0		33.0	33.0		33.0	33.0	
Total Split (%)		45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Maximum Green (s)		21.0		21.0	21.0		27.0	27.0		27.0	27.0	
Yellow Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode		C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0		13.0	13.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 28 (47%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Harry Street & Elm Street

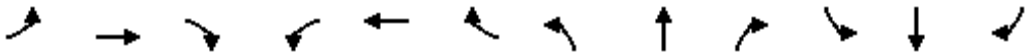




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	465	174	0	354	0	77	0	6	27	16	285
Future Volume (veh/h)	0	465	174	0	354	0	77	0	6	27	16	285
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1968	1968	1849	1805	0	1469	1820	1455	1753	1938	1981
Adj Flow Rate, veh/h	0	560	151	0	427	0	93	0	2	33	19	204
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	4	4	0	3	0	24	0	25	19	6	3
Cap, veh/h	0	1689	454	0	1047	0	261	1	3	521	36	385
Arrive On Green	0.00	0.58	0.56	0.00	0.58	0.00	0.24	0.00	0.24	0.25	0.25	0.24
Sat Flow, veh/h	0	3011	783	0	1805	0	560	5	12	1325	142	1519
Grp Volume(v), veh/h	0	359	352	0	427	0	95	0	0	33	0	223
Grp Sat Flow(s),veh/h/ln	0	1869	1826	0	1805	0	578	0	0	1325	0	1661
Q Serve(g_s), s	0.0	6.0	6.1	0.0	7.8	0.0	4.8	0.0	0.0	0.0	0.0	7.0
Cycle Q Clear(g_c), s	0.0	6.0	6.1	0.0	7.8	0.0	11.8	0.0	0.0	0.9	0.0	7.0
Prop In Lane	0.00		0.43	0.00		0.00	0.98		0.02	1.00		0.91
Lane Grp Cap(c), veh/h	0	1084	1059	0	1047	0	256	0	0	521	0	421
V/C Ratio(X)	0.00	0.33	0.33	0.00	0.41	0.00	0.37	0.00	0.00	0.06	0.00	0.53
Avail Cap(c_a), veh/h	0	1084	1059	0	1047	0	497	0	0	803	0	775
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.6	6.7	0.0	6.9	0.0	24.8	0.0	0.0	17.1	0.0	19.7
Incr Delay (d2), s/veh	0.0	0.8	0.8	0.0	1.2	0.0	0.9	0.0	0.0	0.1	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	3.9	3.9	0.0	5.0	0.0	2.4	0.0	0.0	0.6	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.4	7.5	0.0	8.1	0.0	25.7	0.0	0.0	17.1	0.0	20.8
LnGrp LOS	A	A	A	A	A	A	C	A	A	B	A	C
Approach Vol, veh/h		711			427			95			256	
Approach Delay, s/veh		7.5			8.1			25.7			20.3	
Approach LOS		A			A			C			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	39.8	20.2	39.8	20.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	21.0	27.0	21.0	27.0
Max Q Clear Time (g_c+I1), s	10.3	13.8	8.5	9.0
Green Ext Time (p_c), s	1.2	0.2	2.4	0.9

Intersection Summary	
HCM 6th Ctrl Delay	11.0
HCM 6th LOS	B



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	371	82	0	0	0	356	43	7	0	0	0
Future Volume (vph)	14	371	82	0	0	0	356	43	7	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	16	16	16	16	16	16	16	16	16
Grade (%)		-1%			0%			5%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850					0.998				
Flt Protected		0.998						0.958				
Satd. Flow (prot)	0	1892	1677	0	0	0	0	1939	0	0	0	0
Flt Permitted		0.998						0.958				
Satd. Flow (perm)	0	1892	1677	0	0	0	0	1939	0	0	0	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		505			1606			289			377	
Travel Time (s)		13.8			43.8			7.9			10.3	
Confl. Peds. (#/hr)	2		2	2		2	1		1	1		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	7%	4%	0%	0%	0%	0%	4%	0%	0%	0%	0%	0%
Adj. Flow (vph)	15	408	90	0	0	0	391	47	8	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	423	90	0	0	0	0	446	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	0.95	0.95	0.85	0.85	0.85	0.88	0.88	0.88	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

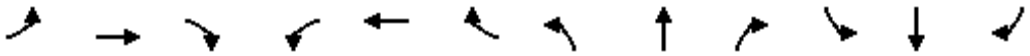
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	19.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	371	82	0	0	0	356	43	7	0	0	0
Future Vol, veh/h	14	371	82	0	0	0	356	43	7	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	7	4	0	0	0	0	4	0	0	0	0	0
Mvmt Flow	15	408	90	0	0	0	391	47	8	0	0	0
Number of Lanes	0	1	1	0	0	0	0	1	0	0	0	0

Approach	EB	NB
Opposing Approach		
Opposing Lanes	0	0
Conflicting Approach Left		EB
Conflicting Lanes Left	0	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	19.3	20.1
HCM LOS	C	C

Lane	NBLn1	EBLn1	EBLn2
Vol Left, %	88%	4%	0%
Vol Thru, %	11%	96%	0%
Vol Right, %	2%	0%	100%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	406	385	82
LT Vol	356	14	0
Through Vol	43	371	0
RT Vol	7	0	82
Lane Flow Rate	446	423	90
Geometry Grp	2	7	7
Degree of Util (X)	0.691	0.702	0.13
Departure Headway (Hd)	5.573	5.975	5.196
Convergence, Y/N	Yes	Yes	Yes
Cap	651	605	690
Service Time	3.573	3.704	2.926
HCM Lane V/C Ratio	0.685	0.699	0.13
HCM Control Delay	20.1	21.6	8.7
HCM Lane LOS	C	C	A
HCM 95th-tile Q	5.5	5.6	0.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	344	34	0	0	0	0	0	35	11	53	0
Future Volume (vph)	0	344	34	0	0	0	0	0	35	11	53	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
Grade (%)		3%			0%			7%			-9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.988							0.865			
Flt Protected											0.991	
Satd. Flow (prot)	0	2040	0	0	0	0	0	0	1762	0	2063	0
Flt Permitted											0.991	
Satd. Flow (perm)	0	2040	0	0	0	0	0	0	1762	0	2063	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1606			1351			328			394	
Travel Time (s)		43.8			36.8			8.9			10.7	
Confl. Peds. (#/hr)	3		2	2		3	5		5	5		5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	3%	0%	0%	0%	0%	0%	0%	2%	18%	6%	0%
Adj. Flow (vph)	0	362	36	0	0	0	0	0	37	12	56	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	398	0	0	0	0	0	0	37	0	68	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.86	0.86	0.86	0.85	0.85	0.85	0.89	0.89	0.89	0.80	0.80	0.80
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

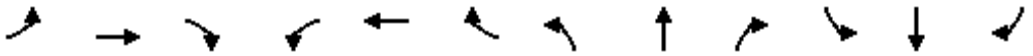
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	344	34	0	0	0	0	0	35	11	53	0
Future Vol, veh/h	0	344	34	0	0	0	0	0	35	11	53	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	3	0	0	0	0	0	0	2	18	6	0
Mvmt Flow	0	362	36	0	0	0	0	0	37	12	56	0
Number of Lanes	0	1	0	0	0	0	0	0	1	0	1	0

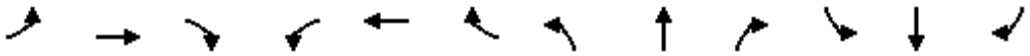
Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	10.5	7.5	8.7
HCM LOS	B	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	0%	17%
Vol Thru, %	0%	91%	83%
Vol Right, %	100%	9%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	35	378	64
LT Vol	0	0	11
Through Vol	0	344	53
RT Vol	35	34	0
Lane Flow Rate	37	398	67
Geometry Grp	1	1	1
Degree of Util (X)	0.044	0.451	0.097
Departure Headway (Hd)	4.313	4.077	5.176
Convergence, Y/N	Yes	Yes	Yes
Cap	834	871	697
Service Time	2.317	2.169	3.178
HCM Lane V/C Ratio	0.044	0.457	0.096
HCM Control Delay	7.5	10.5	8.7
HCM Lane LOS	A	B	A
HCM 95th-tile Q	0.1	2.4	0.3



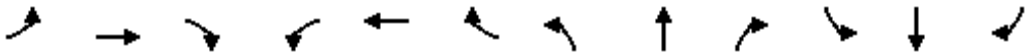
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	12	6	10	62	382	13	24	4	48	20	0
Future Volume (vph)	3	12	6	10	62	382	13	24	4	48	20	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	14	16	16	16
Grade (%)		-1%			-1%			1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.959			0.871			0.988				
Flt Protected		0.994		0.950				0.984			0.966	
Satd. Flow (prot)	0	2063	0	1814	1622	0	0	1960	0	0	2025	0
Flt Permitted		0.994		0.950				0.984			0.966	
Satd. Flow (perm)	0	2063	0	1814	1622	0	0	1960	0	0	2025	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		580			811			633			289	
Travel Time (s)		15.8			22.1			17.3			7.9	
Confl. Peds. (#/hr)	2		10	10		2			2	2		
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	6%	2%	0%	0%	0%	6%	0%	0%
Adj. Flow (vph)	3	13	7	11	70	429	15	27	4	54	22	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	11	499	0	0	46	0	0	76	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.92	0.92	0.92	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	42	15	0	368	1	59	8	2	24	4	22
Future Volume (vph)	6	42	15	0	368	1	59	8	2	24	4	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	15	15	15	16	16	16
Grade (%)		-1%			-1%			-1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.969						0.997			0.941	
Flt Protected		0.995						0.959			0.977	
Satd. Flow (prot)	0	2006	0	0	1836	0	0	1941	0	0	2009	0
Flt Permitted		0.995						0.959			0.977	
Satd. Flow (perm)	0	2006	0	0	1836	0	0	1941	0	0	2009	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		811			854			699			191	
Travel Time (s)		22.1			23.3			15.9			5.2	
Confl. Peds. (#/hr)	1		12	12		1	4		4	4		4
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	6%	0%	0%	4%	0%	4%	0%	0%	0%	0%	0%
Adj. Flow (vph)	7	49	17	0	428	1	69	9	2	28	5	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	73	0	0	429	0	0	80	0	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.88	0.88	0.88	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	44	17	0	207	2	70	9	0	28	2	49
Future Volume (vph)	25	44	17	0	207	2	70	9	0	28	2	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	13	13	13	15	15	15
Grade (%)		0%			0%			0%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.973			0.999						0.916	
Flt Protected		0.986						0.958			0.983	
Satd. Flow (prot)	0	1701	0	0	1169	0	0	1881	0	0	1832	0
Flt Permitted		0.986						0.958			0.983	
Satd. Flow (perm)	0	1701	0	0	1169	0	0	1881	0	0	1832	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		854			340			668			328	
Travel Time (s)		23.3			9.3			15.2			8.9	
Confl. Peds. (#/hr)	3					3	8					8
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	0%	0%	57%	50%	0%	0%	0%	0%	0%	6%
Adj. Flow (vph)	30	54	21	0	252	2	85	11	0	34	2	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	105	0	0	254	0	0	96	0	0	96	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	0.96	0.96	0.96	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

SimTraffic Simulation Summary
2024 with Dev Weekday AM with Wash Ext

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	2944	2995	3034	3011	2989	2994
Vehs Exited	2954	2996	3015	2997	2991	2989
Starting Vehs	75	69	66	64	67	66
Ending Vehs	65	68	85	78	65	67
Travel Distance (mi)	1183	1226	1239	1221	1218	1217
Travel Time (hr)	67.5	70.3	71.4	70.2	69.7	69.8
Total Delay (hr)	19.4	20.2	21.0	20.6	20.0	20.2
Total Stops	4292	4475	4555	4477	4478	4457
Fuel Used (gal)	48.6	49.8	50.4	49.9	49.8	49.7

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	2944	2995	3034	3011	2989	2994
Vehs Exited	2954	2996	3015	2997	2991	2989
Starting Vehs	75	69	66	64	67	66
Ending Vehs	65	68	85	78	65	67
Travel Distance (mi)	1183	1226	1239	1221	1218	1217
Travel Time (hr)	67.5	70.3	71.4	70.2	69.7	69.8
Total Delay (hr)	19.4	20.2	21.0	20.6	20.0	20.2
Total Stops	4292	4475	4555	4477	4478	4457
Fuel Used (gal)	48.6	49.8	50.4	49.9	49.8	49.7

4: Ash Street & Washington Street Performance by lane

Lane	EB	WB	WB	NB	SB	All
Movements Served	LTR	L	TR	LTR	LTR	
Denied Del/Veh (s)						0.0
Total Del/Veh (s)	4.2	5.1	6.3	5.2	0.3	5.3

5: Poplar Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.1
Total Del/Veh (s)	4.8	7.0	5.6	0.3	6.1

6: Cherry Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.2
Total Del/Veh (s)	5.9	5.4	6.6	1.4	5.1

Total Zone Performance

Denied Del/Veh (s)	0.3
Total Del/Veh (s)	36.9

Intersection: 4: Ash Street & Washington Street

Movement	EB	WB	WB	NB
Directions Served	LTR	L	TR	LTR
Maximum Queue (ft)	24	28	95	50
Average Queue (ft)	12	8	57	22
95th Queue (ft)	31	28	81	48
Link Distance (ft)	542	740	740	597
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Poplar Street & Washington Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	62	125	50	7
Average Queue (ft)	27	62	27	0
95th Queue (ft)	50	98	46	4
Link Distance (ft)	740	791	667	147
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Cherry Street & Washington Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	61	196	72	19
Average Queue (ft)	32	94	33	1
95th Queue (ft)	52	160	54	10
Link Distance (ft)	791	275	640	268
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	57	15	6	158	51	21
Future Volume (vph)	57	15	6	158	51	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.971				0.961	
Flt Protected				0.998	0.966	
Satd. Flow (prot)	1809	0	0	1859	1729	0
Flt Permitted				0.998	0.966	
Satd. Flow (perm)	1809	0	0	1859	1729	0
Link Speed (mph)	25			25	30	
Link Distance (ft)	340			332	305	
Travel Time (s)	9.3			9.1	6.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	63	17	7	176	57	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	80	0	0	183	80	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	57	15	6	158	51	21
Future Vol, veh/h	57	15	6	158	51	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	17	7	176	57	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	80	0	262	72
Stage 1	-	-	-	-	72	-
Stage 2	-	-	-	-	190	-
Critical Hdwy	-	-	4.3	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	1127	-	837	1058
Stage 1	-	-	-	-	1109	-
Stage 2	-	-	-	-	975	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1127	-	831	1058
Mov Cap-2 Maneuver	-	-	-	-	831	-
Stage 1	-	-	-	-	1109	-
Stage 2	-	-	-	-	968	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	886	-	-	1127	-
HCM Lane V/C Ratio	0.09	-	-	0.006	-
HCM Control Delay (s)	9.5	-	-	8.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	63	15	6	114	50	22
Future Volume (vph)	63	15	6	114	50	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.974				0.959	
Flt Protected				0.997	0.966	
Satd. Flow (prot)	1814	0	0	1857	1726	0
Flt Permitted				0.997	0.966	
Satd. Flow (perm)	1814	0	0	1857	1726	0
Link Speed (mph)	25			25	30	
Link Distance (ft)	332			2502	353	
Travel Time (s)	9.1			68.2	8.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	70	17	7	127	56	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	0	0	134	80	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

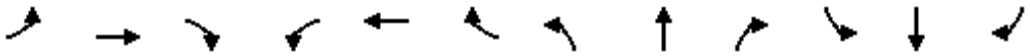
Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	63	15	6	114	50	22
Future Vol, veh/h	63	15	6	114	50	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	70	17	7	127	56	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	87	0	220	79
Stage 1	-	-	-	-	79	-
Stage 2	-	-	-	-	141	-
Critical Hdwy	-	-	4.3	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	1121	-	887	1048
Stage 1	-	-	-	-	1101	-
Stage 2	-	-	-	-	1029	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1121	-	881	1048
Mov Cap-2 Maneuver	-	-	-	-	881	-
Stage 1	-	-	-	-	1101	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	926	-	-	1121	-
HCM Lane V/C Ratio	0.086	-	-	0.006	-
HCM Control Delay (s)	9.3	-	-	8.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	399	5	57	434	19	14	1	81	25	1	0
Future Volume (vph)	0	399	5	57	434	19	14	1	81	25	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	12	12	12	11	11	11
Grade (%)		1%			-2%			1%			-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.995			0.886				
Flt Protected					0.994			0.993			0.954	
Satd. Flow (prot)	0	1996	0	0	2017	0	0	1461	0	0	1729	0
Flt Permitted					0.994			0.993			0.954	
Satd. Flow (perm)	0	1996	0	0	2017	0	0	1461	0	0	1729	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		736			781			539			303	
Travel Time (s)		20.1			21.3			12.3			6.9	
Confl. Peds. (#/hr)			1	1					2	2		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	4%	0%	5%	3%	10%	14%	0%	14%	4%	0%	0%
Adj. Flow (vph)	0	424	5	61	462	20	15	1	86	27	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	429	0	0	543	0	0	102	0	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.89	0.89	0.89	0.87	0.87	0.87	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

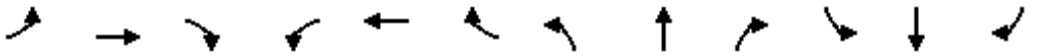
Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	399	5	57	434	19	14	1	81	25	1	0
Future Vol, veh/h	0	399	5	57	434	19	14	1	81	25	1	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	-2	-	-	1	-	-	-5	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	4	0	5	3	10	14	0	14	4	0	0
Mvmt Flow	0	424	5	61	462	20	15	1	86	27	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	482	0	0	430	0	0	1023	1032	430	1066	1024	472
Stage 1	-	-	-	-	-	-	428	428	-	594	594	-
Stage 2	-	-	-	-	-	-	595	604	-	472	430	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.44	6.7	6.44	6.14	5.5	5.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.44	5.7	-	5.14	4.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.44	5.7	-	5.14	4.5	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	819	-	-	854	-	-	215	222	644	294	315	669
Stage 1	-	-	-	-	-	-	663	574	-	652	585	-
Stage 2	-	-	-	-	-	-	525	475	-	740	661	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	819	-	-	853	-	-	198	200	642	234	284	669
Mov Cap-2 Maneuver	-	-	-	-	-	-	198	200	-	234	284	-
Stage 1	-	-	-	-	-	-	662	573	-	652	528	-
Stage 2	-	-	-	-	-	-	473	428	-	638	660	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.1	14.6	22.3
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	476	819	-	-	853	-	-	236
HCM Lane V/C Ratio	0.215	-	-	-	0.071	-	-	0.117
HCM Control Delay (s)	14.6	0	-	-	9.5	0	-	22.3
HCM Lane LOS	B	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	0.8	0	-	-	0.2	-	-	0.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	417	10	10	465	55	5	18	3	67	11	54
Future Volume (vph)	81	417	10	10	465	55	5	18	3	67	11	54
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	10	11	11	12	12	12	16	16	16
Grade (%)		-1%			-1%			3%			-7%	
Storage Length (ft)	150		0	90		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	70			40			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.98	
Frt		0.996			0.984			0.986			0.945	
Flt Protected	0.950			0.950				0.991			0.975	
Satd. Flow (prot)	1613	1771	0	1604	1664	0	0	1728	0	0	1843	0
Flt Permitted	0.264			0.496				0.944			0.825	
Satd. Flow (perm)	448	1771	0	837	1664	0	0	1643	0	0	1554	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			7			3			24	
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		781			600			343			548	
Travel Time (s)		21.3			16.4			9.4			10.7	
Confl. Peds. (#/hr)							5		2	2		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	10%	0%	3%	7%	0%	0%	0%	3%	0%	6%
Adj. Flow (vph)	88	453	11	11	505	60	5	20	3	73	12	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	464	0	11	565	0	0	28	0	0	144	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.02	1.02	1.16	1.11	1.11	1.09	1.09	1.09	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		1	1		1	1	
Detector Template							Left			Left		
Leading Detector (ft)	37	0		0	0		20	37		20	37	
Trailing Detector (ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Position(ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Size(ft)	40	6		20	6		20	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	75.0		62.0	62.0		23.0	23.0		23.0	23.0	

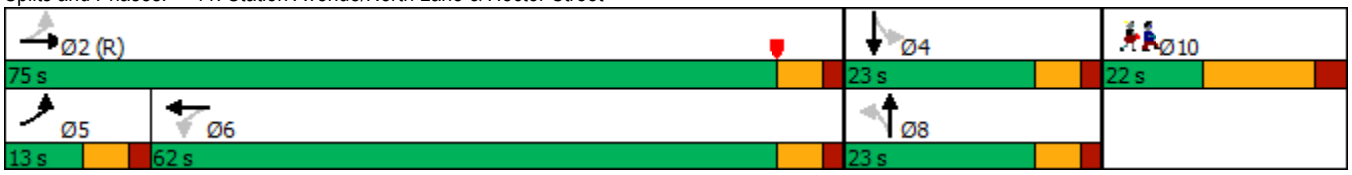
Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	36.0
Total Split (s)	22.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	10.8%	62.5%		51.7%	51.7%		19.2%	19.2%		19.2%	19.2%	
Maximum Green (s)	7.0	69.0		56.0	56.0		17.0	17.0		17.0	17.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		Max	Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	73.2	73.2		60.4	60.4			14.8			14.8	
Actuated g/C Ratio	0.61	0.61		0.50	0.50			0.12			0.12	
v/c Ratio	0.25	0.43		0.03	0.67			0.14			0.68	
Control Delay	12.3	14.4		16.9	27.9			43.0			57.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	12.3	14.4		16.9	27.9			43.0			57.3	
LOS	B	B		B	C			D			E	
Approach Delay		14.1			27.7			43.0			57.3	
Approach LOS		B			C			D			E	
Queue Length 50th (ft)	27	181		4	321			17			89	
Queue Length 95th (ft)	53	271		15	475			45			157	
Internal Link Dist (ft)		701			520			263			468	
Turn Bay Length (ft)	150			90								
Base Capacity (vph)	351	1080		420	840			249			253	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.25	0.43		0.03	0.67			0.11			0.57	

Intersection Summary

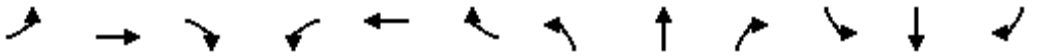
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 26 (22%), Referenced to phase 2:EBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 25.5 Intersection LOS: C
Intersection Capacity Utilization 63.7% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 11: Station Avenue/North Lane & Hector Street



Lane Group	Ø10
Total Split (%)	18%
Maximum Green (s)	9.0
Yellow Time (s)	10.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	Ped
Walk Time (s)	7.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	7
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

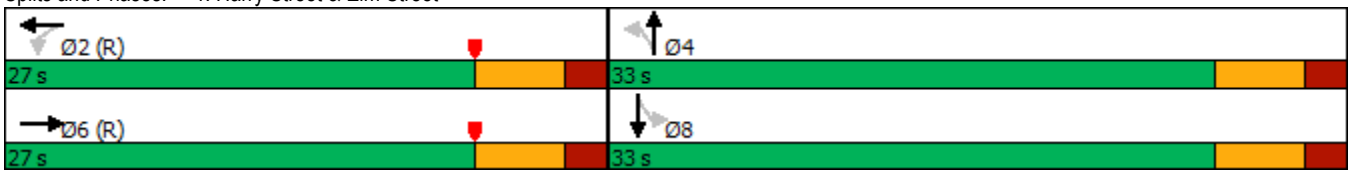


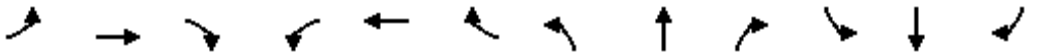
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	703	67	1	235	0	157	0	16	47	8	270
Future Volume (vph)	0	703	67	1	235	0	157	0	16	47	8	270
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		-4%			2%			3%			-6%	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00		1.00		
Frt		0.987						0.987			0.854	
Flt Protected								0.957		0.950		
Satd. Flow (prot)	0	3517	0	0	1805	0	0	1728	0	1703	1496	0
Flt Permitted					0.998			0.422		0.709		
Satd. Flow (perm)	0	3517	0	0	1802	0	0	762	0	1267	1496	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19						55			281	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		281			505			298			915	
Travel Time (s)		7.7			13.8			8.1			25.0	
Confl. Peds. (#/hr)	1					1			6	6		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	3%	0%	2%	0%	0%	8%	0%	0%	13%	2%
Adj. Flow (vph)	0	732	70	1	245	0	164	0	17	49	8	281
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	802	0	0	246	0	0	181	0	49	289	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.04	1.04	1.04	1.05	1.05	1.05	1.08	1.08	1.08
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		1		1	1		1	1		1	1	
Detector Template				Left			Left			Left		
Leading Detector (ft)		37		20	37		20	37		37	37	
Trailing Detector (ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Position(ft)		-3		0	-3		0	-3		-3	-3	
Detector 1 Size(ft)		40		20	40		20	40		40	40	
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases				2			4			8		
Detector Phase		6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)		15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)		21.0		26.0	26.0		9.0	9.0		9.0	9.0	
Total Split (s)		27.0		27.0	27.0		33.0	33.0		33.0	33.0	
Total Split (%)		45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Maximum Green (s)		21.0		21.0	21.0		27.0	27.0		27.0	27.0	
Yellow Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode		C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0		13.0	13.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 48 (80%), Referenced to phase 2:WBTL and 6:EBT, Start of Yellow	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Harry Street & Elm Street

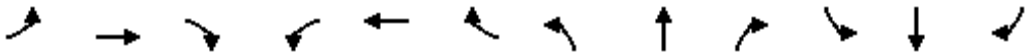




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	703	67	1	235	0	157	0	16	47	8	270
Future Volume (veh/h)	0	703	67	1	235	0	157	0	16	47	8	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	2012	1983	1849	1820	0	1820	1703	1820	2024	1839	1995
Adj Flow Rate, veh/h	0	732	45	1	245	0	164	0	14	49	8	200
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	1	3	0	2	0	0	8	0	0	13	2
Cap, veh/h	0	1847	113	61	917	0	333	5	19	702	20	491
Arrive On Green	0.00	0.50	0.49	0.49	0.50	0.00	0.31	0.00	0.31	0.33	0.33	0.31
Sat Flow, veh/h	0	3759	225	1	1817	0	661	14	58	1509	60	1493
Grp Volume(v), veh/h	0	382	395	246	0	0	178	0	0	49	0	208
Grp Sat Flow(s),veh/h/ln	0	1912	1972	1818	0	0	733	0	0	1509	0	1553
Q Serve(g_s), s	0.0	7.4	7.5	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0	6.3
Cycle Q Clear(g_c), s	0.0	7.4	7.5	4.7	0.0	0.0	15.4	0.0	0.0	1.1	0.0	6.3
Prop In Lane	0.00		0.11	0.00		0.00	0.92		0.08	1.00		0.96
Lane Grp Cap(c), veh/h	0	965	995	948	0	0	344	0	0	702	0	510
V/C Ratio(X)	0.00	0.40	0.40	0.26	0.00	0.00	0.52	0.00	0.00	0.07	0.00	0.41
Avail Cap(c_a), veh/h	0	965	995	948	0	0	494	0	0	911	0	725
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.2	9.2	8.5	0.0	0.0	21.8	0.0	0.0	13.9	0.0	16.0
Incr Delay (d2), s/veh	0.0	1.2	1.2	0.7	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	5.4	5.6	3.3	0.0	0.0	4.3	0.0	0.0	0.8	0.0	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	10.4	10.4	9.2	0.0	0.0	23.1	0.0	0.0	13.9	0.0	16.5
LnGrp LOS	A	B	B	A	A	A	C	A	A	B	A	B
Approach Vol, veh/h		777			246			178			257	
Approach Delay, s/veh		10.4			9.2			23.1			16.0	
Approach LOS		B			A			C			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		35.3		24.7		35.3		24.7				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		21.0		27.0		21.0		27.0				
Max Q Clear Time (g_c+I1), s		6.7		17.4		9.9		8.3				
Green Ext Time (p_c), s		0.7		0.5		2.4		0.9				

Intersection Summary												
HCM 6th Ctrl Delay			12.7									
HCM 6th LOS			B									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	570	171	0	0	0	238	28	11	0	0	0
Future Volume (vph)	23	570	171	0	0	0	238	28	11	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	13	13	16	16	16	16	16	16	16	16	16
Grade (%)		-1%			0%			5%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850					0.995				
Flt Protected		0.998						0.959				
Satd. Flow (prot)	0	1950	1661	0	0	0	0	1986	0	0	0	0
Flt Permitted		0.998						0.959				
Satd. Flow (perm)	0	1950	1661	0	0	0	0	1986	0	0	0	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		505			1606			289			377	
Travel Time (s)		13.8			43.8			7.9			10.3	
Confl. Peds. (#/hr)	2					2			4	4		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	606	182	0	0	0	253	30	12	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	630	182	0	0	0	0	295	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	0.95	0.95	0.85	0.85	0.85	0.88	0.88	0.88	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

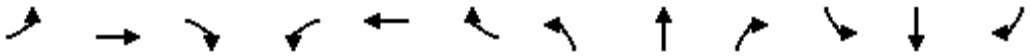
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	30.9
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	570	171	0	0	0	238	28	11	0	0	0
Future Vol, veh/h	23	570	171	0	0	0	238	28	11	0	0	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	0	1	1	0	0	0	1	0	0	0	0	0
Mvmt Flow	24	606	182	0	0	0	253	30	12	0	0	0
Number of Lanes	0	1	1	0	0	0	0	1	0	0	0	0

Approach	EB	NB
Opposing Approach		
Opposing Lanes	0	0
Conflicting Approach Left		EB
Conflicting Lanes Left	0	2
Conflicting Approach Right	NB	
Conflicting Lanes Right	1	0
HCM Control Delay	36.9	14.2
HCM LOS	E	B

Lane	NBLn1	EBLn1	EBLn2
Vol Left, %	86%	4%	0%
Vol Thru, %	10%	96%	0%
Vol Right, %	4%	0%	100%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	277	593	171
LT Vol	238	23	0
Through Vol	28	570	0
RT Vol	11	0	171
Lane Flow Rate	295	631	182
Geometry Grp	2	7	7
Degree of Util (X)	0.477	0.942	0.236
Departure Headway (Hd)	5.83	5.375	4.667
Convergence, Y/N	Yes	Yes	Yes
Cap	613	669	760
Service Time	3.922	3.162	2.454
HCM Lane V/C Ratio	0.481	0.943	0.239
HCM Control Delay	14.2	45	8.9
HCM Lane LOS	B	E	A
HCM 95th-tile Q	2.6	13.1	0.9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	470	68	0	0	0	0	0	53	26	45	0
Future Volume (vph)	0	470	68	0	0	0	0	0	53	26	45	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
Grade (%)		3%			0%			7%			-9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.983							0.865			
Flt Protected											0.982	
Satd. Flow (prot)	0	2067	0	0	0	0	0	0	1797	0	2155	0
Flt Permitted											0.982	
Satd. Flow (perm)	0	2067	0	0	0	0	0	0	1797	0	2155	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1606			1351			328			394	
Travel Time (s)		43.8			36.8			8.9			10.7	
Confl. Peds. (#/hr)	2		7	7		2	5		1	1		5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%
Adj. Flow (vph)	0	500	72	0	0	0	0	0	56	28	48	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	572	0	0	0	0	0	0	56	0	76	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.86	0.86	0.86	0.85	0.85	0.85	0.89	0.89	0.89	0.80	0.80	0.80
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

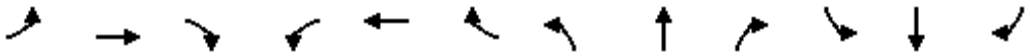
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	13.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	470	68	0	0	0	0	0	53	26	45	0
Future Vol, veh/h	0	470	68	0	0	0	0	0	53	26	45	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	0	1	0	0	0	0	0	0	0	0	4	0
Mvmt Flow	0	500	72	0	0	0	0	0	56	28	48	0
Number of Lanes	0	1	0	0	0	0	0	0	1	0	1	0

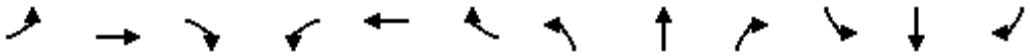
Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	15.1	8.1	9
HCM LOS	C	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	0%	0%	37%
Vol Thru, %	0%	87%	63%
Vol Right, %	100%	13%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	53	538	71
LT Vol	0	0	26
Through Vol	0	470	45
RT Vol	53	68	0
Lane Flow Rate	56	572	76
Geometry Grp	1	1	1
Degree of Util (X)	0.073	0.664	0.112
Departure Headway (Hd)	4.685	4.176	5.326
Convergence, Y/N	Yes	Yes	Yes
Cap	763	864	672
Service Time	2.726	2.197	3.365
HCM Lane V/C Ratio	0.073	0.662	0.113
HCM Control Delay	8.1	15.1	9
HCM Lane LOS	A	C	A
HCM 95th-tile Q	0.2	5.2	0.4



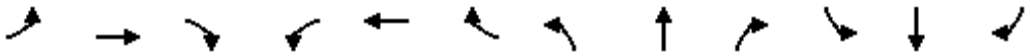
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	50	6	7	26	232	6	34	7	146	22	0
Future Volume (vph)	8	50	6	7	26	232	6	34	7	146	22	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	14	16	16	16
Grade (%)		-1%			-1%			1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.988			0.865			0.981				
Flt Protected		0.994		0.950				0.994			0.958	
Satd. Flow (prot)	0	2125	0	1814	1629	0	0	1966	0	0	2058	0
Flt Permitted		0.994		0.950				0.994			0.958	
Satd. Flow (perm)	0	2125	0	1814	1629	0	0	1966	0	0	2058	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		580			811			633			289	
Travel Time (s)		15.8			22.1			17.3			7.9	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	0%	0%	0%	5%	1%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	10	60	7	8	31	280	7	41	8	176	27	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	77	0	8	311	0	0	56	0	0	203	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.92	0.92	0.92	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	157	53	4	209	2	33	4	3	68	10	17
Future Volume (vph)	5	157	53	4	209	2	33	4	3	68	10	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	15	15	15	16	16	16
Grade (%)		-1%			-1%			-1%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.967			0.999			0.991			0.976	
Flt Protected		0.999			0.999			0.960			0.965	
Satd. Flow (prot)	0	2075	0	0	1869	0	0	1998	0	0	2059	0
Flt Permitted		0.999			0.999			0.960			0.965	
Satd. Flow (perm)	0	2075	0	0	1869	0	0	1998	0	0	2059	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		811			854			699			191	
Travel Time (s)		22.1			23.3			15.9			5.2	
Confl. Peds. (#/hr)			10	10			2					2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	171	58	4	227	2	36	4	3	74	11	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	234	0	0	233	0	0	43	0	0	103	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.84	0.84	0.84	0.99	0.99	0.99	0.88	0.88	0.88	0.83	0.83	0.83
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	100	46	0	123	5	28	12	0	79	10	29
Future Volume (vph)	31	100	46	0	123	5	28	12	0	79	10	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	13	13	13	15	15	15
Grade (%)		0%			0%			0%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.965			0.994						0.967	
Flt Protected		0.991						0.966			0.967	
Satd. Flow (prot)	0	1580	0	0	1742	0	0	1897	0	0	1896	0
Flt Permitted		0.991						0.966			0.967	
Satd. Flow (perm)	0	1580	0	0	1742	0	0	1897	0	0	1896	0
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		854			340			668			328	
Travel Time (s)		23.3			9.3			15.2			8.9	
Confl. Peds. (#/hr)			1	1			6		3	3		6
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	13%	0%	0%	5%	0%	0%	0%	0%	5%	0%	3%
Adj. Flow (vph)	36	115	53	0	141	6	32	14	0	91	11	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	204	0	0	147	0	0	46	0	0	135	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	0.96	0.96	0.96	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3125	3153	3127	3103	3183	3134
Vehs Exited	3121	3143	3116	3111	3187	3137
Starting Vehs	78	75	94	80	93	85
Ending Vehs	82	85	105	72	89	81
Travel Distance (mi)	1409	1429	1410	1403	1439	1418
Travel Time (hr)	82.2	83.5	82.2	82.5	84.5	83.0
Total Delay (hr)	25.5	26.0	25.3	26.1	26.5	25.9
Total Stops	4828	4991	4820	4880	4939	4890
Fuel Used (gal)	57.5	58.9	57.1	57.6	58.6	57.9

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3125	3153	3127	3103	3183	3134
Vehs Exited	3121	3143	3116	3111	3187	3137
Starting Vehs	78	75	94	80	93	85
Ending Vehs	82	85	105	72	89	81
Travel Distance (mi)	1409	1429	1410	1403	1439	1418
Travel Time (hr)	82.2	83.5	82.2	82.5	84.5	83.0
Total Delay (hr)	25.5	26.0	25.3	26.1	26.5	25.9
Total Stops	4828	4991	4820	4880	4939	4890
Fuel Used (gal)	57.5	58.9	57.1	57.6	58.6	57.9

4: Ash Street & Washington Street Performance by lane

Lane	EB	WB	WB	NB	SB	All
Movements Served	LTR	L	TR	LTR	LTR	
Denied Del/Veh (s)						0.0
Total Del/Veh (s)	5.9	5.0	5.6	5.6	0.4	4.0

5: Poplar Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.1
Total Del/Veh (s)	6.0	7.3	5.0	0.2	5.4

6: Cherry Street & Washington Street Performance by lane

Lane	EB	WB	NB	SB	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	5.2	5.9	5.6	1.0	4.5

Total Zone Performance

Denied Del/Veh (s)	0.1
Total Del/Veh (s)	82.9

Intersection: 4: Ash Street & Washington Street

Movement	EB	WB	WB	NB
Directions Served	LTR	L	TR	LTR
Maximum Queue (ft)	47	33	82	57
Average Queue (ft)	23	5	47	23
95th Queue (ft)	43	24	70	49
Link Distance (ft)	542	740	740	597
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Poplar Street & Washington Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	88	84	44	7
Average Queue (ft)	43	45	21	0
95th Queue (ft)	72	71	41	4
Link Distance (ft)	740	791	667	147
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Cherry Street & Washington Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	97	82	49	4
Average Queue (ft)	46	42	22	0
95th Queue (ft)	78	68	47	3
Link Distance (ft)	791	275	640	268
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	142	37	15	104	24	10
Future Volume (vph)	142	37	15	104	24	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.972				0.961	
Flt Protected				0.994	0.966	
Satd. Flow (prot)	1811	0	0	1852	1729	0
Flt Permitted				0.994	0.966	
Satd. Flow (perm)	1811	0	0	1852	1729	0
Link Speed (mph)	25			25	30	
Link Distance (ft)	340			332	334	
Travel Time (s)	9.3			9.1	7.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	158	41	17	116	27	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	199	0	0	133	38	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	142	37	15	104	24	10
Future Vol, veh/h	142	37	15	104	24	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	158	41	17	116	27	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	199	0	329	179
Stage 1	-	-	-	-	179	-
Stage 2	-	-	-	-	150	-
Critical Hdwy	-	-	4.3	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	1027	-	763	920
Stage 1	-	-	-	-	987	-
Stage 2	-	-	-	-	1019	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1027	-	749	920
Mov Cap-2 Maneuver	-	-	-	-	749	-
Stage 1	-	-	-	-	987	-
Stage 2	-	-	-	-	1001	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	792	-	-	1027	-
HCM Lane V/C Ratio	0.048	-	-	0.016	-
HCM Control Delay (s)	9.8	-	-	8.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	115	37	16	95	24	15
Future Volume (vph)	115	37	16	95	24	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.967				0.948	
Flt Protected				0.993	0.970	
Satd. Flow (prot)	1801	0	0	1850	1713	0
Flt Permitted				0.993	0.970	
Satd. Flow (perm)	1801	0	0	1850	1713	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	332			2502	305	
Travel Time (s)	9.1			68.2	8.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	128	41	18	106	27	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	169	0	0	124	44	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

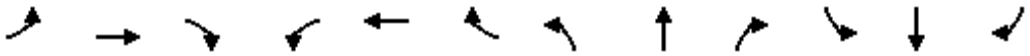
Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	115	37	16	95	24	15
Future Vol, veh/h	115	37	16	95	24	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	128	41	18	106	27	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	169	0	291	149
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	142	-
Critical Hdwy	-	-	4.3	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	1051	-	804	957
Stage 1	-	-	-	-	1020	-
Stage 2	-	-	-	-	1027	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1051	-	790	957
Mov Cap-2 Maneuver	-	-	-	-	790	-
Stage 1	-	-	-	-	1020	-
Stage 2	-	-	-	-	1009	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	847	-	-	1051	-
HCM Lane V/C Ratio	0.051	-	-	0.017	-
HCM Control Delay (s)	9.5	-	-	8.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	548	12	69	377	14	10	1	56	50	4	3
Future Volume (vph)	3	548	12	69	377	14	10	1	56	50	4	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	12	12	12	11	11	11
Grade (%)		1%			-2%			1%			-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.996			0.887			0.993	
Flt Protected					0.993			0.993			0.958	
Satd. Flow (prot)	0	2053	0	0	2054	0	0	1641	0	0	1761	0
Flt Permitted					0.993			0.993			0.958	
Satd. Flow (perm)	0	2053	0	0	2054	0	0	1641	0	0	1761	0
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		736			781			539			303	
Travel Time (s)		20.1			21.3			12.3			6.9	
Confl. Peds. (#/hr)	1		2	2		1	1		3	3		1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	10%	0%	0%	0%	25%	0%
Adj. Flow (vph)	3	565	12	71	389	14	10	1	58	52	4	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	580	0	0	474	0	0	69	0	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.89	0.89	0.89	0.87	0.87	0.87	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

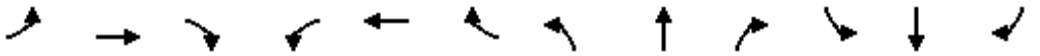
Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	548	12	69	377	14	10	1	56	50	4	3
Future Vol, veh/h	3	548	12	69	377	14	10	1	56	50	4	3
Conflicting Peds, #/hr	1	0	2	2	0	1	1	0	3	3	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	-2	-	-	1	-	-	-5	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	0	2	0	10	0	0	0	25	0
Mvmt Flow	3	565	12	71	389	14	10	1	58	52	4	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	404	0	0	579	0	0	1122	1125	576	1149	1124	398
Stage 1	-	-	-	-	-	-	579	579	-	539	539	-
Stage 2	-	-	-	-	-	-	543	546	-	610	585	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.4	6.7	6.3	6.1	5.75	5.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.4	5.7	-	5.1	4.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.4	5.7	-	5.1	4.75	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4.225	3.1
Pot Cap-1 Maneuver	872	-	-	758	-	-	184	194	538	266	255	730
Stage 1	-	-	-	-	-	-	540	488	-	694	565	-
Stage 2	-	-	-	-	-	-	568	506	-	645	544	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	871	-	-	757	-	-	163	169	535	213	222	728
Mov Cap-2 Maneuver	-	-	-	-	-	-	163	169	-	213	222	-
Stage 1	-	-	-	-	-	-	536	485	-	690	496	-
Stage 2	-	-	-	-	-	-	492	444	-	569	540	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.5	16.2	27
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	390	871	-	-	757	-	-	222
HCM Lane V/C Ratio	0.177	0.004	-	-	0.094	-	-	0.265
HCM Control Delay (s)	16.2	9.1	0	-	10.2	0	-	27
HCM Lane LOS	C	A	A	-	B	A	-	D
HCM 95th %tile Q(veh)	0.6	0	-	-	0.3	-	-	1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	599	8	18	376	54	5	19	9	97	30	64
Future Volume (vph)	59	599	8	18	376	54	5	19	9	97	30	64
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	10	11	11	12	12	12	16	16	16
Grade (%)		-1%			-1%			3%			-7%	
Storage Length (ft)	150		0	90		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	70			40			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								1.00			0.99	
Frt		0.998			0.981			0.961			0.955	
Flt Protected	0.950			0.950				0.993			0.975	
Satd. Flow (prot)	1661	1847	0	1604	1686	0	0	1692	0	0	1932	0
Flt Permitted	0.332			0.335				0.953			0.822	
Satd. Flow (perm)	581	1847	0	566	1686	0	0	1622	0	0	1629	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			8			10			18	
Link Speed (mph)		25			25			25			35	
Link Distance (ft)		781			600			343			548	
Travel Time (s)		21.3			16.4			9.4			10.7	
Confl. Peds. (#/hr)							4					4
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	63	637	9	19	400	57	5	20	10	103	32	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	646	0	19	457	0	0	35	0	0	203	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.02	1.02	1.16	1.11	1.11	1.09	1.09	1.09	0.87	0.87	0.87
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		0	0		1	1		1	1	
Detector Template							Left			Left		
Leading Detector (ft)	37	0		0	0		20	37		20	37	
Trailing Detector (ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Position(ft)	-3	0		0	0		0	-3		0	-3	
Detector 1 Size(ft)	40	6		20	6		20	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	72.0		59.0	59.0		26.0	26.0		26.0	26.0	

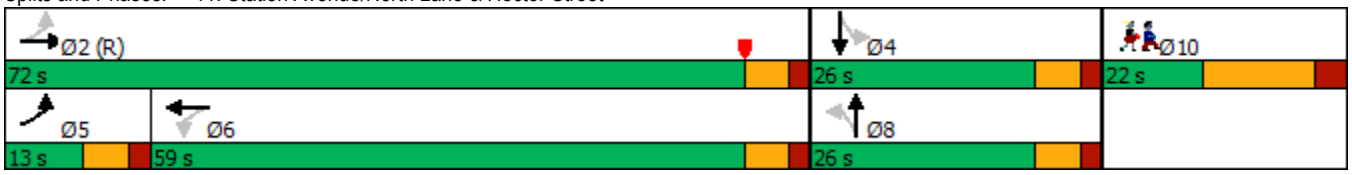
Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	36.0
Total Split (s)	22.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	10.8%	60.0%		49.2%	49.2%		21.7%	21.7%		21.7%	21.7%	
Maximum Green (s)	7.0	66.0		53.0	53.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		Max	Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	69.6	69.6		59.2	59.2			18.4			18.4	
Actuated g/C Ratio	0.58	0.58		0.49	0.49			0.15			0.15	
v/c Ratio	0.16	0.60		0.07	0.55			0.14			0.77	
Control Delay	12.8	19.8		19.7	25.4			34.2			63.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	12.8	19.8		19.7	25.4			34.2			63.3	
LOS	B	B		B	C			C			E	
Approach Delay		19.2			25.1			34.2			63.3	
Approach LOS		B			C			C			E	
Queue Length 50th (ft)	21	317		8	252			17			137	
Queue Length 95th (ft)	43	448		24	368			47			221	
Internal Link Dist (ft)		701			520			263			468	
Turn Bay Length (ft)	150			90								
Base Capacity (vph)	409	1071		279	836			292			299	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.15	0.60		0.07	0.55			0.12			0.68	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 76 (63%), Referenced to phase 2:EBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 27.8 Intersection LOS: C
Intersection Capacity Utilization 77.1% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 11: Station Avenue/North Lane & Hector Street



Lane Group	Ø10
Total Split (%)	18%
Maximum Green (s)	9.0
Yellow Time (s)	10.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	Ped
Walk Time (s)	7.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	4
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

EMERGENCY ACTION PLAN

Washington Street Apartments

401/433 Washington Street

WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

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OVERVIEW

This Emergency Action Plan is prepared for the 401/433 Washington Street apartment complex located at 401/433 Washington Street, Whitemarsh Township, PA. The purpose of the plan is to provide management and occupants with guidelines and actions to respond to many different types of emergencies. The plan is designed to be administered by a building Emergency Coordinator and Crisis Management Team. The plan should be reviewed and modified as needed and practiced at least once a year.

BUILDING LOCATION

The apartment complex consists of four (4), 4-story buildings containing 598 apartment units with an integrated Club House/Amenity Center. The building is adjacent to the Schuylkill River. The United States Postal address is 401/433 Washington Street, Conshohocken, PA 19428. The property phone number is **XXX-XXX-XXXX.** The property's web site is: **www.ToBeDetermined.com.**

HAZARD ANALYSIS

From an operational standpoint, building occupants are subject to the typical interior and external hazards common to this type of structure and building use.

Based upon a review of available information, meetings with municipal and county Emergency Management officials and a review of the site, the following hazards/risks have been determined.

SARA Title III Sites-

Title III of the U.S. Environmental Protection Agency's Superfund Amendments and Reauthorization Act (SARA) and is usually referred to as "SARA Title III". The act provides for the collection of and access to information about the use, storage, production and release of hazardous chemicals, to help inform emergency planners/responders and the public.

Flood

The provided FIRM (Appendix 2 and Appendix 3) for 401/433 Washington shows the property falling within the Special Flood Hazard Area. The elevation of the property is approximately 50' – North American Vertical Datum 1988 (determined by pictometry imagery). The flood height listed on the FIRM for that area is between 60' and 59' for Base Flood Elevation from ground surface for a 1% annual flood chance.

The closest flood gauge to this property is upriver in Norristown. The height of this gauge is listed at 51' – North American Vertical Datum 1988. The highest crest listed at this gauge was in 1972 (Hurricane Agnes) at 25.10' which would compare to 76.10 feet in relation to the listed gauge height. The National Weather Service Advanced Hydrologic Prediction Service webpage for the Norristown gauge (https://water.weather.gov/ahps2/hydrograph.php?wfo=phi&gage=nrsp1&hydro_type=2 [water.weather.gov]) lists the following for Flood Impacts:

> At 17' - *A couple industries along the river begin to have flood problems. Water begins to cover rails in Conshohocken. Septa tracks at Mogees in Plymouth Township begin to flood. Ross Street in Plymouth Township at the Sewer Authority Plant floods under the railroad bridge and bike trail. Flooding also occurs along Diamond Run at Station Road (in Plymouth Township off of Conshohocken Road) due to high and backwater effects.*

Pipeline

The map image provided (Appendix 4) through the National Pipeline Mapping System Public Viewer shows a LNG gas transmission pipeline starting from the PECO LNG plant to Colwell Lane. The PECO LNG plant is approximately 1.3 miles from 601 Washington Street. No other pipelines were identified on the map in that area.

The building's location, however does present the need to emphasize two specific areas.

- Flooding

  Being adjacent to the Schuylkill River, portions of the site are considered in the Federal Emergency Management Agency's 100 –year flood plain. Therefore, the Flooding section of the plan should be expanded accordingly.

- Transportation Incidents

  The site is positioned along the SEPTA Manayunk/Norristown Regional rail line and the Norfolk Southern main freight rail line. Commuter rail passengers and hazardous materials pass by the site day and night and both management and tenants need to be aware of actions in the event of a regional rail train derailment and hazardous materials incident in the vicinity. Therefore, the Hazardous Materials section of this plan should be expanded accordingly.

CONCEPT OF OPERATIONS:

Management shall appoint a ***Crisis Management Team*** for the complex. The Team should consist of management and maintenance personnel, and a tenant representative. Management should designate an ***Emergency Coordinator***, and an ***Alternate.*** The Coordinator and /or Alternate should be available by phone contact 24 hours a day, and within a 15-minute response time.

Upon observation or notification of an emergency condition, ***Emergency Coordinator or Alternate,*** or, if unavailable, ***Senior Management Official*** on duty, will activate the Emergency Action Plan. The ***Emergency Coordinator*** will interface with Emergency Responders until a representative of Building Management is on the scene.

The ***Crisis Management Team*** will report to the building Command Center area, making notifications, and implement the Plan to the extent required.

ORGANIZATION:

Emergency Coordinator and Alternate:

The persons trained as the Emergency Coordinator or Alternate should be available by phone contact at all times. The coordinator and alternate shall be familiar with all sections of this and other emergency plans used by the facility. The coordinators make decisions regarding evacuation and/or shelter in place strategy that will, in their best estimation, promote the safety of residents and employees. The complex manager will be responsible to see that all employees who may function as the Emergency Coordinator maintain a high state of readiness and are familiar with the Emergency Action Guide.

Emergency Coordinator: **To Be Determined.**
Alternate Coordinator: **To Be Determined.**

Crisis Management Team:

A tenant representative and alternate from should be appointed as liaison to the Crisis Management Team. The Team is responsible for implementing the Emergency Action Plan. The Team shall appoint and assign Building Captains and Exit Guards to assist in Evacuations and Sheltering in Place. Persons familiar with the building's mechanical systems should also be represented on the Team.

Building Captains:
The Building should have at least one Building Captain appointed to assist with Evacuation or Shelter-In-Place. The Building Captain should be familiar with occupancies in that building.

Building Captain: **To Be Determined**.

Exit Guards:
Exit Guards should be appointed at each exit to assist in evacuation and prevent any persons from re-entering the building.

Exit Guard: **To Be Determined**

EMERGENCY ACCESS:

A Knox Box or similar approved product shall be made available to provide at grade and above 100-year flood elevation for emergency access by law enforcement, emergency medical or fire department services if deemed necessary. The size, location, and ultimate items to be contained within the repository shall be governed by the Township Emergency Management and Police Department.

COMMAND CENTER:

A Command Center location shall be identified. An alternate location should also be identified. The Command Center shall provide the focal point for receiving reports, requests for assistance, liaison with Township Emergency Responders, disseminating information, directing employees, and facilitating the decision making process. Plans, phone numbers, status displays, communications and equipment should be available to help the Emergency Coordinator deal with a developing emergency. Equipment should include flashlights, radios, batteries, identification vests, etc.

COMMUNICATIONS:

Reliable and effective communications are a critical part of every Emergency Action Plan. Generally, communications between the facility Command Center and the Township will be via telephone.

The facility must maintain a state of vigilance, especially when heavy sustained rains or severe weather are predicted. A NOAA radio monitor with alert device and the Weather Channel shall be obtained, maintained, and monitored at all times.

Internal communications should be via portable radios or cell phones for all key employees. Other means of communications include public address system, messenger, fax machine, dial-up modems, and signs. In the event the public address system is not available the facility should also maintain a portable, handheld bullhorn.

DIRECTION AND CONTROL:

The Emergency Coordinator shall:

- Assess the situation, sound the proper alarm if not already activated, and make appropriate notifications.
- Assemble the Crisis Management Team and Notify Management
- Greet and confer with responding Township Fire, Police, and Emergency Management officials.
- The Emergency Coordinator shall assist first responders with any information needed until a building management representative is on the scene.

Note: The facility manager will maintain a current chain of command list (usually the Crisis Management Team listing) so that there will be a clear understanding of who is in charge in the coordinator's absence.

ADMINISTRATION:

A current copy of this Emergency Action Plan should be maintained in the facility manager's office, or readily available to the Emergency Coordinator and Alternate.

A current copy must also be on file with the Township Emergency Management Coordinator. The Facility Manager will insure that all tenants review and are familiar with the plan annually and that all phone numbers are verified at least every 6 months. A record of changes shall be maintained as an element of this Emergency Action Plan.

EDUCATION / OUTREACH:

It is essential that elements of this plan be provided to ALL TENANTS prior to the occurrence of an emergency. Site maps should be posted at all means of egress. New employee training should include a review of this plan.

Arrange with the Fire Department to provide fire extinguisher training for all employees. Employees who have been properly trained may fight incipient fires with portable fire extinguishers

DRILLS:

Emergency evacuation drills shall be conducted in the occupancy annually, or when required by the fire code official. Drills shall be designed in cooperation with the local authorities. Fire Alarm systems shall be inspected and tested in accordance with applicable Township codes.

Responsibility for the planning and conducting of drills shall be assigned to competent persons designated to exercise leadership. Drills will be held at unexpected times and under varying conditions to simulate the unusual conditions that occur in cases of fire. Prior notification should be given to the fire code official. Records must be maintained of required emergency evacuation drills and should include the following information:

1. Person conducting the drill
2. Date and time of drill
3. Notification method used
4. Staff members on duty and participating
5. Number of occupants evacuated
6. Special conditions simulated
7. Problems encountered
8. Weather conditions during evacuation
9. Time required to accomplish complete evacuation

ACTIVATION

The plan shall be activated upon confirmation of one or more of the following conditions:

- Activation of the fire alarm or sprinkler system
- Severe weather watch
- Notification from an official or recognized source that an external emergency is threatening the facility or the geographic area.
- Internal or external gas leak
- Internal or external bomb, security, or safety threat
- A utility failure that is seriously affecting the facility
- Discretion of Facility Manager or the Emergency Management Coordinator, Police, Fire or EMS Chief or their designee.

NOTIFICATION AND IMPORTANT PHONE NUMBERS

- POLICE, FIRE or MEDICAL EMERGENCY 9-1-1
- Property Management 24 hr. Number
  - 401/33 Washington Street: **(XXX) XXX-XXXX**
  - **TBD**, Property Manager: **(XXX) XXX-XXXX**
  - **TBD**, Maintenance Supervisor: **(XXX) XXX-XXXX**
- Phone numbers for all critical system vendors/contactors:
  - TBD
  - TBD
  - Electrical Contractor, **TBD**
  - Elevator, **TBD**
  - TBD
  - HVAC, **TBD**
  - Plumbing, **TBD**
  - Sprinkler System, **TBD**
- Whitemarsh Township Emergency Services: (610) 825-3535
  - Scott Lynch, EMS Administrator, Fire Marshall (610) 825-3535, ext. 2614
- PECO - Gas or electric emergency call: 1-800-841-4141
- Poison Information Center: 1-800-222-1222

EMERGENCY COORDINATOR CHECKLIST

Upon activation or the Guide, the Emergency Coordinator will:

- Refer to the Emergency Action Guide for the particular emergency
- Establish a Command Center Location
- Start a log of all activities (See attachment)
- Address safety of staff and patrons
- Initiate evacuation form the facility for fires, gas leaks, and/or immediate internal threats to the safety of patrons and employees
- For ALL emergencies, confer with Township police, fire, and Emergency Management officials
- Assemble the Crisis Team
- Consult with Whitemarsh Township Emergency services for the need to evacuate or shelter in place
- Estimate the duration of the emergency and address logistical needs for extended operations if they are anticipated.
- Provide information to guests via signs, PA announcements, etc.
- Provide for safety of all patrons and staff
- Be prepared to conduct damage assessment
- Scale down operations and return to normal as soon as possible

NOTIFY-ME

All residents shall be required to register for Notify-Me emergency alerting system. This shall occur as a function of signing their lease agreement to register for emergency notification necessitating shelter in place or evacuation. The purpose of **Notify Me** is an emergency **notification** system used by Montgomery County and participating municipalities to issue **notifications** to the public. This will assist in orderly and timely evacuations of the 401/433 Washington Street site in the event of an emergency warranting such action.

Further information can be obtained from:

Montgomery County Department of Public Safety
50 Eagleville Road
Eagleville, PA 19403
Office: (610) 631-6500
Fax: (610) 631-6536
http://dps.montcopa.org

To register, go to:

https://www.montcopa.org/List.aspx

and register, selecting “Alert Center” and then “emergency”.

EMERGENCY ACTION GUIDES

- Evacuation
- Shelter-in-Place
- Fire/Explosion/Building Collapse
- Flooding and Severe Weather
- Bomb Threats/Suspicious Mail/Packages
- Hazardous Materials Release
- Utility Emergencies
- Security Incident/Lockdown
- Emergency Maps
- Checklists
    - Employee Responsibilities
        - Coordinator Responsibilities
        - Building Captains
        - Exit Guards
        - Logs

EVACUATION

In the event of an internal emergency that poses an immediate threat to the safety of the facility patrons and staff, an immediate evacuation will be initiated. The individual observing or being made aware of the threat should activate the building's manual fire alarm system as the primary means to quickly evacuate the building. Employees should assist patrons from the building, paying particular attention to those who may need additional assistance, such as the elderly and those with physical disabilities.

When the threat is external to the building, such as a toxic vapor cloud or a severe storm that is developing, the Township Police, Fire or Emergency Management Organization will advise the Emergency Coordinator regarding evacuation. **IT IS CRITICAL THAT ACCURATE CONTACT PHONE NUMBERS BE MAINTAINED.** However, in a rapidly developing crisis, such as a flash flood, the Emergency Coordinator may have to make a decision regarding evacuation or shelter in place.

EVACUATION DOs AND DON'Ts

EVACUATION DO's

- REMAIN CALM
- SHUT DOWN ALL WORK ON EQUIPMENT
- EXIT THE BUILDING AND REPORT TO THE ASSEMBLY AREA
- ADVISE SUPERVISOR OR ANY MISSING CO-WORKERS
- ASSIST INJURED OR DISORIENTED PERSONS TO SAFETY
- FOLLOW INSTRUCTIONS OF SAFETY MONITORS AND EMERGENCY RESPONDERS

EVACUATION DO NOT's

- DON'T PANIC OR RUN
- DON'T RUN
- DON'T USE ELEVATORS
- DON'T RETURN FOR ANYTHING UNTIL "ALL CLEAR" IS GIVEN
- DON'T LEAVE ASSEMBLY AREA UNTIL "ALL CLEAR" IS GIVEN

SHELTER-IN-PLACE

In some instances, you will be asked to Shelter-in-Place. Sheltering is an option that helps protect people from outside exposures such as chemicals, radiation, police activity, or weather.

- Have a predetermined safe room
- Know where your ventilation system controls are and how to turn them off
- Have a Shelter–in-Place kit available
- Follow instructions of authorities regarding actions to be taken (i.e. sealing vents, windows, or staying away from windows and doors,)

Shelter-in-Place Kit

- Plastic Sheeting
- Duct Tape
- Scissors
- Towels and rags for blocking vents and under doors
- Drinking water
- Battery powered radio with emergency alert station taped to side
- Working Flashlight
- Extra Batteries
- Snacks

FIRE/EXPLOSION/BUILDING COLLAPSE

In the event of a fire or smoke condition, employees will take immediate action, following the R-A-C-E procedure as outlined below:

R – Remove those in immediate danger

A – Activate the fire alarm system and call 9-1-

1 C – Confine the fire by closing doors

E – Evacuate patrons and staff via nearest safe emergency exit

- The individual who first encounters a fire or smoke condition will immediately remove those in danger and sound the building's fire alarm if it has not already activated
- Employees have the responsibility of calling 9-1-1 to advise the 9-1-1 operator of the activation of the fire alarm and the location of the fire and/or smoke condition, if known
- After exiting the building, patrons should be directed away from exit doors and the driveway
- The Emergency Coordinator will assemble the Crisis Management Team at a safe location and account for residents and employees
- Residents and employees WILL NOT re-enter the building until authorized by the Fire Marshal

FLOODING AND SEVERE WEATHER

The Apartment Complex is located adjacent to the Schuylkill River and thus may be subject to flooding. Portions of the property are within the FEMA 100-year flood line. While there is no recollection in current history of the river flooding above the retaining walls, this plan will discuss actions to be taken in the event of such flooding.

DEFINITIONS:

Flash Flood or Flood ***Watch*****:**
Flash flooding or flooding is possible in the watch area.

Flash Flood or Flood ***Warning*****:**
Flash flooding or flooding has been reported or is imminent

Urban and Small Stream Advisory:
Flooding of small streams, streets, and low-lying areas is occurring.

Flash Flood or Flood Statement:
Follow-up information regarding a flash flood event.

PROCEDURE:

Monitoring Conditions: The National Weather Service (NWS) in collaboration with the U.S. Geological Survey constantly monitor water levels in the Schuylkill River. These measurements are available real-time online at the NWS web site. When weather conditions warrant, the NWS will issue weather ALERTS which are monitored by County and Local Emergency Management offices. Montgomery County will then issue ALERTS to communities which may be affected by the weather event.

Management officials should register with the county ALERT system to receive these ALERTS by way of e-mail and/or cell phone text messages. As a backup, Management should obtain a NOAA Weather Radio for the management office that will activate anytime a weather alert is issued for the area. During Flood Advisories, Management Should monitor the USGS river gauge web sites noted in this plan.

Restricted Parking in Flood Zones: Vehicle parking areas are located within the FEMA 100-year flood line. The parking lots will be designated by a marked color line on the paved areas and residents advised that parking in this area during a flood emergency will be prohibited, and if not moved within a certain time period after notification, Management will have them towed to a safe area.

Actions: Management will take the following actions according to the National Weather Service preparation levels:

FLOOD WATCH:

1. Charge all walkie-talkies, cell phones and golf cart batteries.

2. Check supply of barricades, orange cones, and yellow caution tape.

3. Alert all Staff to be available to work during the storm. If necessary, have the staff stay overnight at the property. Also, obtain additional cleaning staff. In total, we should have about 10 people.

4. Review Emergency Action Plan will all employees.

FLOOD WARNING:

1. Monitor throughout the storm this website, which provides flooding information:
   a. http://water.weather.gov/ahps2/hydrograph.php?wfo=phi&gage=nrsp1&view=1,1,1,1,1,1,1,1&toggles=10,7,8,2,9,15,6&type=0

2. Place flyers throughout the property, in the elevators, in the building lobbies, consistent with "Exhibit A". Send out a blast e-mail with the same message.

3. Contact 2-3 local towing services to have them available before and during the storm to tow vehicles.
   a. Pat's Towing: 610-279-9018
   b. EVB Towing: 610-828-6522
   c. Janeway Towing: 610-828-1613
   d. Jamison Towing: 610-270-9999

4. Contact **To Be Determined** to place on standby their cleanup crews.
   a. **TBD**: (xxx) xxx-xxxx
   b. **TBD** (xxx) xxx-xxxx

5. Shut down irrigation system and pool pumps.

6. Instruct maintenance to activate the flood preparedness actions listed on the Maintenance Flood Checklist, such as securing outdoor furniture or objects subject to floating or blowing away.

7. Remove all pool umbrellas.

8. Remove the walk off mats in buildings lobbies.

9. Contact local hotels to determine their best rate if we have to do an evacuation.

FLOOD ACTION STAGE: (River Gauge at 10')

1. Establish facility Command Post and advise local officials of the same.

2. One person should be designated the "Facility Commander". This position is responsible for coordinating all staff, maintaining contact with emergency officials, speaking with Corporate, recommending the evacuation, directing towing, etc.

3. Re-send e-mail blast. Include in this e-mail blast any deals we made with local hotels.

4. Advise Residents that they should consider the possibility that flooding may be severe enough to prohibit their ability to safely leave the property.

5. Advise residents that they may become stranded and prohibited by authorities from leaving if the water level rises to an unsafe level.

6. Have any remaining vehicles in flood zone way towed.

7. Constantly monitor ingress and egress to the site and the loop road and keep clear of any obstructions

8. Coordinate any decision to evacuate the site with Whitemarsh Township Office of Emergency Management officials.

9. Staff should be assigned as follows:
    a. Two people in the leasing office to take calls, send e-mail blasts, and comfort residents.
    b. Three maintenance personnel to handle any maintenance issues, direct towing efforts and handle a possible resident evacuation.
    c. Five cleaning personnel to be ready to immediately clean up after the storm. In addition, these people can handle refreshments during the storm and miscellaneous duties.

AFTER THE STORM:

1. Perform damage assessment of the complex and advise Township officials.

2. When determined safe, send out e-mail blast telling all residents the storm is over and they can return.

3. Contact Budget Maintenance to begin cleanup efforts.

4. Clean all building lobbies.

5. Place walk off mats back in the lobbies.

6. Clean, sweep and power wash garages.
7. Clean and sweep parking lots and roadways.
8. Look for missing irrigation lids which could create tripping hazards. Cover with wood until new lids are installed.

REMEMBER…

Even 6 inches of fast-moving water will knock you off your feet and 2 feet will float your car!
NEVER try to walk or drive through swift moving water. If such conditions exist, do not allow guests to drive through the water. Utilize the emergency exit or return to the building until the water recedes.

BOMB THREATS/SUSPICIOUS MAIL/PACKAGES

Bomb threats made against the facility could be received by either telephone or mail. Persons normally answering telephone and/or opening mail should be trained in the proper handling of these incidents.

PROCEDURE:

- Telephone Threats
  - Remain calm
  - Keep the caller on the line as long as possible to obtain as much information as possible
  - Immediately report the threat to the on-duty manager and the Whitemarsh Township Police Department

- Mail Threats
  - Remain calm
  - Save the envelope and its contents
  - Avoid unnecessary handling of the item
  - Immediately report the threat to the on-duty manager and the Whitemarsh Township Police Department

MANAGEMENT RESPONSIBILITIES:

- Upon receipt of a bomb threat, immediate evacuation is warranted

- Deploy staff to assure the complete evacuation is carried out in a calm and orderly manner

- Assemble the Crisis Team

- Designate employees who will assist police with sweep of the building for suspicious packages, include exterior of building in search

- Do not use portable radios

- If a suspicious device is found:
  - Evacuate immediately
  - DO NOT touch the device
  - Residents and staff will remain outside until re-entry is authorized by the Whitemarsh Township Police Department

HAZARDOUS MATERIALS RELEASE

The release of toxic or hazardous materials from a transportation accident may require the activation of the Guide for possible evacuation or shelter in place procedures. Unlike flooding, which will be self-evident, determining the need to evacuate patrons will be determined by Township or State officials based on their assessment of conditions.

If ordered to shelter in place, initiate the following procedures:

- Assemble the Crisis Management Team
- Follow instructions from authorities
- Deploy staff to search exterior for those who may be unaware of danger
- Shut down the HVAC system
- Post shelter-in-place signs and make public address announcements
- Place towels under all exterior doors
- Monitor all communications links
- Notify Township Emergency Management officials of the number of residents and employees sheltered
- Maintain a several hour inventory of essential items for extended operations
- Keep tenants advised of the status of the emergency

UTILITY EMERGENCIES

Every tenant should be aware of what utilities are connected to the facility, where the utility shut offs are located, and what companies supply the utilities. Natural gas and electricity will pose the greatest danger to the facility.

Gas Odor/Leak

- Open the windows.
- Do not turn any electric devises on or off including light switches.
- Follow on-site Evacuation Plan.
- Call 9-1-1 to report the odor/leak.
- Call the gas supplier to report the gas odor/leak.

Electrical Emergency

- Call the electric supplier.
- If there is a power outage to your facility and a transformer is on fire or trees are causing wires to arc call 9-1-1.
- When evacuating the facility be cautious of downed wires – consider any wires on the ground live.

Telephone/Water/Cable

- Be sure to keep current contact numbers on the emergency contact list in case these utilities ever need to be contacted.

SECURITY INCIDENT/LOCKDOWN

Tenants of the building must be aware of the possibility for an unknown person or intruder entering the property/facility. In a situation like this it is important to keep everyone safe and not to put anyone in jeopardy of becoming injured.

The building manager should create a code system that all tenants are aware of to announce an intruder in the facility.

If you are the person that makes the initial contact with an intruder:

- Approach with caution and do not be confrontational.
- Do not make any sudden movements.
- You should ask them normal questions as to what and why they are there.

If you are NOT the person making contact follow these procedures:

- Remain calm
- Call 9-1-1 and report the intruder, give a detailed description of intruder – stay on the line to give any updated information.
- Make an announcement of the code word or phrase.
- Do NOT take heroic actions, it may cause the incident to escalate and injuries to occur especially if a weapon is involved.

EMERGENCY MAPS

Emergency Maps should be posted throughout the facility and include:

- EXIT LOCATIONS.
- FIRE ALARM PULL STATIONS.
- FIRE EXTINGUISHERS.
- MAIN AISLES AND EVACUATION ROUTES.
- ASSEMBLY AREAS.
- EMERGENCY PHONE NUMBERS.
- NAMES OF EVACUATION COORDINATOR & BUILDING CAPTAINS.

EMPLOYEE /TENANT RESPONSIBILITIES

- REGISTER WITH MONTGOMERY COUNTY READY NOTIFY FOR ALERTS
- BE FAMILIAR WITH ALARMS FOR EVACUATION AND SHELTERING.
- KNOW CLOSEST TWO EVACUATION AND ESCAPE ROUTES OR SHELTER AREAS.
- KNOW WHO TO CONTACT IN AN EMERGENCY.
- KNOW LOCATION OF ASSEMBLY AREA.
- KNOW EVACUATION COORDINATOR AND FLOOR CAPTAIN.
- STAY CALM AND EXIT QUICKLY.
- REPORT TO DESIGNATED ASSEMBLY AREA.
- FOLLOW INSTRUCTIONS.
- REPORT ANY EXIT OR ESCAPE OBSTRUCTIONS TO SUPERVISOR.
- IF TRAPPED, GO TO A ROOM WITH A WINDOW AND TELEPHONE FOR HELP IF POSSIBLE.

EVACUATION COORDINATOR:

Make sure all Emergency Plans are current and drilled frequently.

Assign appropriate number of Building Captains and Exit Guards to provide coverage at all times the facility is occupied.

Make sure Captains and Monitors know their responsibilities and assignments

Account for all evacuees. Identify the name and last known location of any missing or unaccounted person and pass information on to the Incident Commander.

BUILDING CAPTAINS:

Ensure the evacuation of your assigned area. Perform a sweep of the area, including restrooms, etc. to ensure all persons have been evacuated. Report the status of the evacuation to the Evacuation Coordinator.

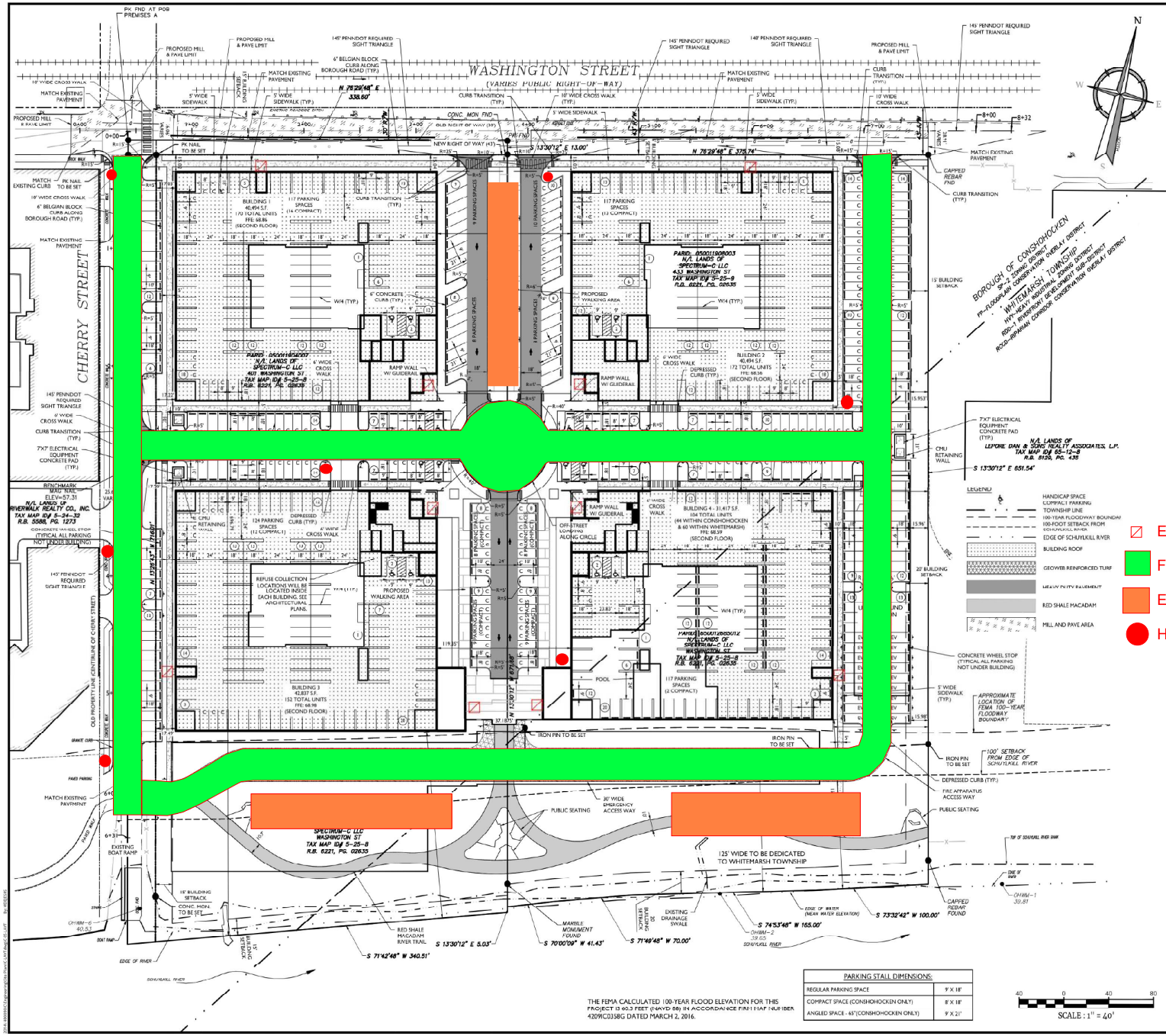
EXIT GUARDS:

Make sure all exits are free from obstructions and provide a direct access to the exterior. Remain outside the exit door and prevent any persons from re-entering the building until the “All Clear” is given.

EMERGENCY ACTION LOG

TIME	EVENT/ACTION TAKEN	BY

APPENDIX 1 EVACUATION ROUTE MAP



PARKING STALL DIMENSIONS:	
REGULAR PARKING SPACE	9' X 18'
COMPACT SPACE (CONSHOHOCKEN ONLY)	8' X 18'
ANGLED SPACE - 65°(CONSHOHOCKEN ONLY)	9' X 21'

THE FEMA CALCULATED 100-YEAR FLOOD ELEVATION FOR THIS PROJECT IS 60.3 FEET (NAVD 88) IN ACCORDANCE FIRM MAP NUMBER 42091C0358G DATED MARCH 2, 2016.

LEGEND

EXISTING		PROPOSED
	RIGHT OF WAY LINE	
	PROPERTY LINE	
	EDGE OF PAVEMENT	
FACE / BACK	CURB	FACE / BACK
	DEPRESSED CURB	
	SIDEWALK	
X—X	FENCES	X—X
	TREELINE	
	ROADWAY SIGNS	
	WETLAND LINE	
	MUNICIPAL BOUNDARY LINE	
	STALL COUNT	(10)
	ADA ACCESSIBLE STALL	
	DEPRESSED CURB AND ADA RAMP	HC
	DIRECTION OF TRAFFIC FLOW	

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Colliers Engineering & Design
www.colliersengineering.com
Doing Business as MASER CONSULTING

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PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATION, TECHNICIANS, OR ANY PERSONS PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE.
811 FROM WHERE'S BELOW. Call before you dig
2021084312S & 20210843126
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION
1	10/2/23	MD	REVISED PER EMAIL WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 10/2/2023
2	2/5/23	JMV/MD	REVISED PER COMMENTS FROM CONSHOHOCKEN REVIEW LETTER DATED 1/17/2023
3	2/5/23	MD	REVISED PER EMAIL WITH WHITEMARSH ASSISTANT TOWNSHIP MANAGER DATED 2/2/2023

PRELIMINARY/FINAL LAND DEVELOPMENT PLANS
FOR
401/433 WASHINGTON STREET APARTMENTS
401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

COMMONWEALTH OF PENNSYLVANIA
C. RICHARD ROSEBERRY
PROFESSIONAL ENGINEER
No. 40162

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

Colliers Engineering & Design
LEHIGH VALLEY
941 Marcon Boulevard, Suite 801
Allentown, PA 18109
Phone: 610.868.4201
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/2/23	MD	CRR
PROJECT NUMBER: 140003080	DRAWING NAME: C-LAYT		

SHEET TITLE: DIMENSION PLAN

SHEET NUMBER: 5 of 41

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

July 6, 2022

Mr. Richard L. Mellor, Jr. - Township Manager
Whitemarsh Township Municipal Building
616 Germantown Pike
Lafayette Hill, PA 19444

RE: Preliminary Plan Review
401/433 Washington Street
Whitemarsh Township, Montgomery County, PA
S/LD # 14-21
Our Project Number 2022-01164

Dear Mr. Mellor:

As requested, we have reviewed plans for the above referenced Preliminary Plan Submission consisting of:

- 41-Sheet Plan prepared by Colliers Engineering & Design and dated October 29, 2021 and last revised May 20, 2022
- Post Construction Stormwater Management (PCSM) plan narrative prepared by Colliers Engineering & Design and dated May, 2022 with no noted revisions.
- Various supporting documents, forms and correspondence enclosed with the application

The property and the proposed improvements are located in both Whitemarsh Township and Conshohocken Borough, and the comments herein refer only to the portions of the site located in Whitemarsh Township. The following comments are offered for your consideration:

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

	Section	Description
1.	105-21(B)(18)	The applicant shall submit a 'Preliminary Common Open Space Ownership and Management Plan' consistent with the requirements of this section of the ordinance.
2.	105-21(B)(9)(d)[6][a]	All streets and/or intersections showing a level of service below C shall be considered deficient, and specific recommendations for the elimination of these problems shall be listed. Deficiencies are noted at the following intersections: a. Ash Street and Elm Street with a delay increase of more than 10 seconds for the eastbound left-turn critical movement. This intersection is located in Conshohocken Borough. Any modifications to the intersection are subject to the review of the Borough or PennDOT. b. North Lane and Hector Street -The North Lane southbound approach operates at LOS E during the AM and PM peak hour. Any recommendations for elimination of these problems should be provided in the study.

	Section	Description
3.	105-21.1(K)(2)	Within the South Transportation Service Area an impact fee in the amount of Two Thousand Five Hundred and Twenty-Nine Dollars ($2,529.00) per anticipated peak hour trip must be provided by the applicant. The proposed development will generate 234 trips during the PM peak hour. 60 units of the 598-unit development will be in Whitemarsh township. Therefore, the traffic impact fee totals $59,376.52 (234 trips x 60 units/598 units x $2,529.00).
4.	105-26(E)	The applicant must provide evidence in sufficient detail to demonstrate that there are no environmental concerns related to previous uses of the site. It is our understanding the applicant is currently proceeding with the Act 2 process and once approved by PADEP, the remediation plan will be submitted to the Township.
5.	105-38	Plan Sheet 6 must be revised to list the quantity of Sign O (6) in the sign legend to reflect the number of signs noted on the plan.
6.	105-38	The applicant's engineer should consider removing sign J from the landscape islands along the parking perimeter.
7.	105-40, 105-50(C)(2)	The applicant has indicated that garbage will be collected within the building(s). The location must be shown, and turning templates for garbage trucks must be provided.
8.	105-47	Additional grading information shall be added to the plans in sufficient detail to clarify the proposed longitudinal and cross slopes for the pedestrian pathways: • Proposed grading (contour lines representing elevation 51 & 52) along the sidewalk at the southeast corner of Building 4 must be revised to provide ADA accessible longitudinal and cross slopes. • Plan Sheets 28 and 29 must be revised to include dimensions at all critical points for all proposed curb ramps and ADA parking spaces to verify accessibility.
9.	105-47(K)(1)	A right-of-way of at least 25 feet in width shall be offered for dedication to the Township. If the area is not accepted for dedication, an easement for public use must be provided along with maintenance agreements acceptable to the Township. Within the portion of the site located in Whitemarsh Township, the plans appear to show one 15±-foot easement and one 10±-foot easement, separated by a parking area. The plan also shows an easement of varying width through the center of the site, predominantly in Conshohocken Borough, labeled as "30' Public Access Easement to be dedicated to Whitemarsh Township". The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance or a waiver must be obtained.
10.	105-47(K)(3)	This section of the ordinance requires public riverfront access, perpendicular to the river, including a red shale macadam pathway with a minimum of 10 feet in width and separated from any vehicular traffic. The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance or a waiver must be obtained.
11.	105-47(K)(4)	This section of the ordinance requires public riverfront access, perpendicular to the river, including at least one seating area along each access. The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance or a waiver must be obtained.

	Section	Description
12.	105-47(K)(5)	This section of the ordinance requires public riverfront access, perpendicular to the river, including appropriate signage to direct pedestrians to the river in accordance with Chapter 116, Zoning, § 116-286B(5). The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance or a waiver must be obtained.
13.	105-52(B)(2)	This section of the ordinance requires that all buffers shall have a minimum width of 50 feet. The Board of Supervisors may permit an alternative planting option which shall have a screening capability equal to or greater than any of the available options. A waiver would be required in order to allow a portion of the proposed buffer along Building 4 to be less than 50 feet wide.
14.	105-53(D)	This section of the ordinance requires the dedication of land in the amount of 10% of the total Site Area for Park and/or Recreational use. The applicant has the option of offering a fee in lieu of dedicating actual land area and can also provide a combination of a fee in lieu and dedication of land. All offers of land and/or fees in lieu of dedication must meet the requirements of this section of the ordinance.
15.	105-53(D)(1)(c)	If actual land area is offered, the applicant is advised that this section of the ordinance states that no more than 25% of the minimum land area required for park and recreation land may consist of floodplain or riparian corridor buffer areas, wetlands or areas with slopes in excess of 8%.
16.	105-53(D)(1)(g)	If actual land area is offered, the applicant is advised that this section of the ordinance states that the land area required for park and recreation land may not be used in calculating density.
17.	105-73	Grading of the trail in the area of the contour line representing an elevation of 51 should be revised to eliminate potential for ponding.
18.	105-78	The applicant must obtain the approval of the Whitemarsh Township Authority with regard to proposed sanitary sewerage facilities.
19.	105-89	The developer shall enter into a written agreement with the Township in the manner and form approved by the Solicitor wherein the developer shall agree, to construct or cause to be constructed at his own expense all proposed improvements shown on the approved land development plan, all in strict accordance with the standards and specifications of the Township and within the time specified in said agreement, and to deposit with the Township financial security in an amount sufficient to cover the cost of all subdivision or land development improvements, including both public and private improvements.

GRADING, EROSION CONTROL, STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES ORDINANCE:

	Section	Description
20.	58-4(B)(2)(p)	The plan must be revised to show the size, location and construction details of all existing and proposed storm drainage facilities. The following must be addressed: • The Stormwater Management (SWM) Report indicates a 4' long weir at elevation 49.15, where Plan Sheet P7 indicates the same to be at elevation 49.10 • The section view in the Detail for Outlet Control Structure S-A1 on Plan Sheet P7 must be revised to call for an 8" orifice within the weir wall, in order to be consistent with the SWM Report.
21.	58-4(B)(2)(q)	Item #2 under Site Work in the Construction Sequence must be revised to include installation of tree protection fencing.
22.	58-4(D)(1)	Since the limit of disturbance is greater than one acre, the applicant must obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Pennsylvania Department of Environmental Protection. Once obtained, a copy must be submitted to the Township.
23.	58-8(H)	All easements must be documented in the form of an easement agreement, approved by the Township Solicitor and recorded at the Recorder of Deeds for Montgomery County.
24.	58-11(G)(1) 58-11(H)(1)	The property owner shall sign an operations and maintenance agreement with the Township addressing stormwater BMPs that are to be privately owned. The plans indicate that the lot owner is responsible for the "Ownership and Maintenance" of the BMPs. The operation and maintenance agreement shall be subject to review and approval of the Township.

RESOLUTION 2004-8:

	Section	Description
25.	I(C)(5), I(C)(6)	Fills placed in or adjacent to natural watercourses, floodways, floodway fringes, constructed channels, or wetlands shall have suitable protection against erosion during periods of flooding, where approved by the Army Corps of Engineers, the Pennsylvania Department of Environmental Protection.
26.	II(B)(16)	The applicant must submit legal descriptions for any proposed rights-of-way, easements, or lands to be offered for dedication.

ADDITIONAL COMMENTS

27. The proposed improvements will require the applicant to obtain a Chapter 105 Water Obstruction and Encroachment General Permit, administered by the Pennsylvania Department of Environmental Protection (PADEP) Bureau of Waterways Engineering and Wetlands. Once obtained, the permit must be submitted to the Township.

28. The plans must be revised to include a construction detail for the proposed 'Whitemarsh Township Sign Western Face". Please note, the details for the Conshohocken Borough wayfinding signage may be utilized as a template, and modified accordingly, as recommended in the recently completed "Spring Mill Multi-Modal and Land Use Study", available on the Township's website.

Any future submission of the design plans for this project must be accompanied by a letter, prepared by the applicant's engineer, which addresses each of the comments contained in this report. Should you have any questions regarding this matter, please do not hesitate to contact me at this office.

Sincerely,

Krista Heinrich, PE
Township Engineer

c: Mr. Sean Halbom – Assistant Township Manager
Mr. Charles L. Guttenplan, AICP – Director of Planning and Zoning
Mr. Sean Kilkenny, Esq.; The Law Offices of Sean Kilkenny, LLC – Township Solicitor
Mr. Allen B. Mason, P.E., Carroll Engineering – Whitemarsh Township Authority Engineer
Mr. Noah Chrismer – KRE Acquisition Corp– Applicant
Spectrum-C LLC – Owner
C. Richard Roseberry, PE– Colliers, Applicant's Engineer
Joseph M. Blackburn, Esq.–Wisler Pearlstine, LLP, Applicant's Attorney

O:\MUNICIPL\2022\2201164-WshT_401-433 Washington St-S-LD 14-21\correspondence\Review #2.doc

Whitemarsh TOWNSHIP
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Richard L. Mellor, Jr.
Township Manager

June 15, 2022

KRE Acquisition Corp.
c/o Noah Chrismer
520 US Highway 22
P.O. Box 6872
Bridgewater, NJ 08807

RE: SLD#14-21 / 401 & 433 Washington Street, Conshohocken, PA
Final Major Land Development – 598 Unit Apartment Building
Zoning Ordinance Compliance Review Letter

Dear Mr. Chrismer:

Please accept this review of the Zoning Ordinance Compliance issues for the Final Plan for the Whitemarsh Township portion of your above referenced land development. Plan submissions we reviewed include a land development plan set prepared by Colliers Engineering & Design, dated October 29, 2021 with revisions dated February 23, 2022 and May 2, 2022; Landscape and Lighting plans by Melillo-Bauer-Carman also dated December 3, 2021 with revisions noted on March 31, 2022 and May 20, 2022. An architectural set by Barton Partners dated December 3, 2021 with no noted revisions was used in the prior review. No updated architectural plans were included in the current submission.

A response letter to the February 18, 2022 Whitemarsh Township Zoning Compliance Review Letter was received from Colliers Engineering & Design, dated May 27, 2022. The following items are outstanding issues that were not adequately addressed in the response or the updated plans (comment numbers are the same as in the original review letter):

11. §116-184.F. **Original Comment 11:** All parking shall conform to the requirements of the Whitemarsh Township Fire Prevention Code as acted and amended. The applicant must obtain approval from the Whitemarsh Township Fire Marshal. (See enclosed memo dated January 13, 2022.)

Response: The Fire Marshal will submit an updated review.
Response: Acknowledged.

13. §116-188.3. **Original Comment 13:** Electric Vehicle (EV) charging stations shall be required for all new parking areas. Five electric vehicle charging stations are required for parking facilities that contain at least 50 but not more than 100 off-street parking spaces. One additional electric vehicle charging station shall be provided for every 50 spaces over 100 off-street parking spaces. A minimum of 50% of all required EV charging stations shall be ADA-accessible. Each electric vehicle charging station must include signage identifying spaces as "No Parking Except for Electric Vehicle Charging." Days and hours of operation shall be included if time limits or tow-away provisions are to be enforced.

Response: Electric Vehicle spaces are provided and shown on Sheets 5 and 6. Signs

indicating required language are shown on Sheet 6.

Outstanding issue: While the current plan shows an adequate number of electric vehicle charging spaces, there is a requirement for a portion of the spaces to be ADA-accessible. Given that the required number of EV spaces is 5, and that a minimum of 50% of the required EV stations must be ADA-accessible, there should be 3 ADA-accessible EV spaces. This should be indicated on the plans.
Response: Will comply. Three (3) ADA-accessible EV spaces are shown on plan.

15. §116-205., §116-208., §116-209., §116-210., §116-283.A.(7), §116-286.

Original Comment 15: These sections of the ordinance describe signs which are permitted in the districts on which the subject property is located. The plans must be revised to include details for all proposed signs to be installed as part of the design, in order to demonstrate compliance with these sections of the ordinance, unless signs are to be handled later through a permit application.
The applicant should revise the 'Borough of Conshohocken Sign Western Face" sign at the Southeast corner of the site, to indicate Whitemarsh Township, instead of Borough of Conshohocken. All signs in the RDD district must be approved by the Board of Supervisors.

Response: The Borough of Conshohocken sign was revised to "Whitemarsh Township", see Sheet 6.

Outstanding Issue: The issue with the sign described above has been addressed. Design details of other signs are still needed to confirm compliance with these sections so that they can be approved by the Board of Supervisors as part of the Final Plan approval.
Response: Will comply. Additional sign design details are shown on plan.

20. §116-281.A.(7)(a)

Original Comment 20: The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, which states that no portion of the parking garage shall be visible from the riverfront access and open space as required by § 116-284 herein.

Response: All ground floor parking program facing the riverfront will be shielded from view using metal screen façade panels with natural climbing vines, as well as a variety of plantings along the building perimeter at grade. Please refer to the precedent images and product specification provided for design intent.

Outstanding Issue: The metal screen façade panels with climbing vines appears to be an acceptable solution, though one that will require a high degree of maintenance.
Response: Acknowledged.

22. §116-282.A.

Original Comment 22: The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, which states that parking structures, whether freestanding or integral with other uses in the same building, shall have another permitted first floor use on any portion of the structure visible from any streets, required pathways, or riverfront access or suitable architectural treatment shall be provided. Details must be provided for the proposed Green Living Wall Screen shown on the architectural plans.

Response: Please refer to the attached example for precedent imagery and product specifications for the green planted metal screen wall being proposed at all ground floor elevations adjacent to parking program.

Outstanding Issue: See 'Outstanding Issue' in comment #20 above.
Response: Acknowledged.

24. §116-283.A. **Original Comment 24:** This section of the ordinance establishes minimum architectural design standards to be used within the Riverfront Development Overlay District. Additional details must be provided on the architectural plans to determine compliance with all specific provisions of this section.

Response: §116-283.A.1. The proposed design utilizes numerous architectural techniques including recessed façade bays, building corner setbacks, varying fenestration sizes, balconies, and façade material changes in order to break the mass of the project and provide visual interest across the length of the façade and roofline. The project will comply with all roof equipment shielded from pedestrian view by way of equipment placement or physical screening.

Outstanding issue: Updated architectural renderings are needed to assess compliance with this section.
Response: Please refer to attached updated architectural renderings.

Response: §116-283.A.2. The project façade is designed as a unified style with the dominant façade material proposed as corrugated metal panels which will provide a right texture and depth of shadow to the façade. Feature moments at the façade corners will be highlighted using wood or fiber-cement board cladding.

Outstanding issue: Corrugated metal panels are not listed as a permitted dominant façade material in this section.
Response: Corrugated metal panels are not listed on the prohibited dominant materials list. Please refer to architectural exhibits attached.

Response: §116-283.A.3. Refer to response for item [§116-283.A.](1).

Outstanding issue: While the design may comply with this section, up-to-date architectural renderings are needed to assess compliance.
Response: Please refer to attached updated architectural renderings.

Response: §116-283.A.4. No uninterrupted length of façade is greater than 100' through the use of multiple façade recesses. Facades are further broken down through the introduction of balconies.

Outstanding issue: While the design may comply with this section, up-to-date architectural renderings are needed to assess compliance.
Response: Please refer to attached updated architectural renderings.

Response: §116-283.A.6. For any ground mounted exposed equipment within the project, we will comply with the screening requirements.

Outstanding issue: The plan does indicate screening with a wall. However, given the location of the development in the floodplain, there needs to be appropriate floodproofing or elevation to comply with all relevant ordinance requirements. These need to be reviewed and approved by the Township Engineer/Floodplain Administrator. Response: Will comply.

25. §116-283.A.(6) **Original Comment 25:** All ground-mounted utility equipment, including the proposed electrical equipment shall be screened from view. This shall be accomplished through the use of masonry walls and landscaping.

Response: All utility equipment is screened with masonry/retaining walls as shown on sheet 5 and sheet 9 [correction: sheet 10]. For any ground-mounted exposed equipment within the project, we will comply with the screening requirements through enclosure or landscape.

Outstanding issue: The plan does indicate screening with a wall. However, given the location of the development in the floodplain, there needs to be appropriate floodproofing or elevation to comply with all relevant ordinance requirements. These need to be reviewed and approved by the Township Engineer/Floodplain Administrator. Response: Will comply.

28. §116-284.B. **Original Comment 28:** The width of the riverfront area may be reduced to no less than 125 feet, provided at least one public amenity is provided for buildings four stories or less. We note public seating in this area; the applicant needs to explain if this is intended to be the public amenity and how it meets the requirements of this section.

Response: Testimony was provided regarding the public amenities.

Outstanding issue: Please reiterate what these will be.
Response: Per testimony provided, the riverfront area is intended to be a public amenity. The public amenities include seating areas, walking path, open space for passive and active recreation. Please refer to plan sheet 19.

29. §116-284.D. **Original Comment 29:** Public riverfront access is required in accordance with Chapter 105, Subdivision and Land Development § 105-47.K.

Response: Public riverfront access is included through the center walkway and an easement to the Borough of Conshohocken will be provided in this area.

Outstanding Issue: Assessing compliance with this section is unclear due to the existence of the multiple public pedestrian access paths in Conshohocken. However, to improve public access to the river on the east side of the development, we recommend at a minimum that a crosswalk be added connecting the sidewalk that runs along the east face of the two east buildings, spanning the East-West internal road. This improves safety for pedestrians walking to the waterfront along the east side of the property.

Response: Will comply. Crosswalk has been added and is shown on plans. Please refer to plan sheet 6.

31. §116-287.B.(5) **Original Comment 31:** The applicant must submit a Traffic Impact Study (TIS) in order to demonstrate compliance with the requirements of this section of the Ordinance.

Response: The TIS will be provided under a separate cover.

Outstanding Issue: Since this was not submitted with the final plans, it must be submitted and reviewed before final plan approval can be recommended.
Response: TIS transmitted to Whitemarsh Twp. on 6/22/22 and reviewed by Gilmore and Associates in Review Letter #2 dated July 6th, 2022.

Additional Comment

32. While a parking evacuation plan is required by §116-282.F., the Zoning Hearing Board in its decision in case ZHB #2021-48, imposed certain conditions. Among those, the Zoning Hearing Board requires the applicant to develop and submit an Emergency Action Plan which will, among other things, detail how residents are to be evacuated in an emergency. Those conditions further require that the Plan detail how transportation is to be provided to off-site parking in the event residents' vehicles need to be moved in an emergency event, and that at least one employee live on the premises and have the responsibility for facilitating the implementation of the Emergency Action Plan.

    Response: An emergency action plan will be provided prior to final approval.

    Outstanding Issue: As with the TIS, until the emergency action plan is submitted and reviewed, we cannot recommend final plan approval.
    Response: Emergency Action Plan transmitted to Whitemarsh Twp. on 7/1/22.

Should you have any questions, please do not hesitate to contact me.

Very truly yours,

Charles L. Guttenplan, AICP
Director of Planning and Zoning/Zoning Officer

cc: Richard L. Mellor, Jr., Township Manager
Sean Halbom, Township Assistant Manager
Robert A. Sztubinski, B.C.O., Director of Building and Codes
Nick Weaver, Fire Marshal
Sean P. Kilkenny, Esq., Township Solicitor
Krista Heinrich, P.E., Township Engineer
Stephanie Cecco, Conshohocken Borough Manager
Spectrum-C, LLC, Property Owner
C. Richard Roseberry, Colliers Engineering & Design, Applicant's Engineer
Joseph M. Blackburn, Esq. & Edward F. Murphy, Esq., Applicant's Attorneys

401 & 403 Washington St

Whitemarsh Zoning Ordinance

Compliance Review Exhibits

07.12.2022

Prepared by:

Major

BARTONPARTNERS
urban design + architecture

Prepared for:

KRE
Kushner Real Estate Group

Disclaimer: Work contained in these documents prepared by Major Architecture D.P.C. is preliminary in nature an
is subject to further review for compliance with applicable codes, rules, laws and requirements of authorities havin
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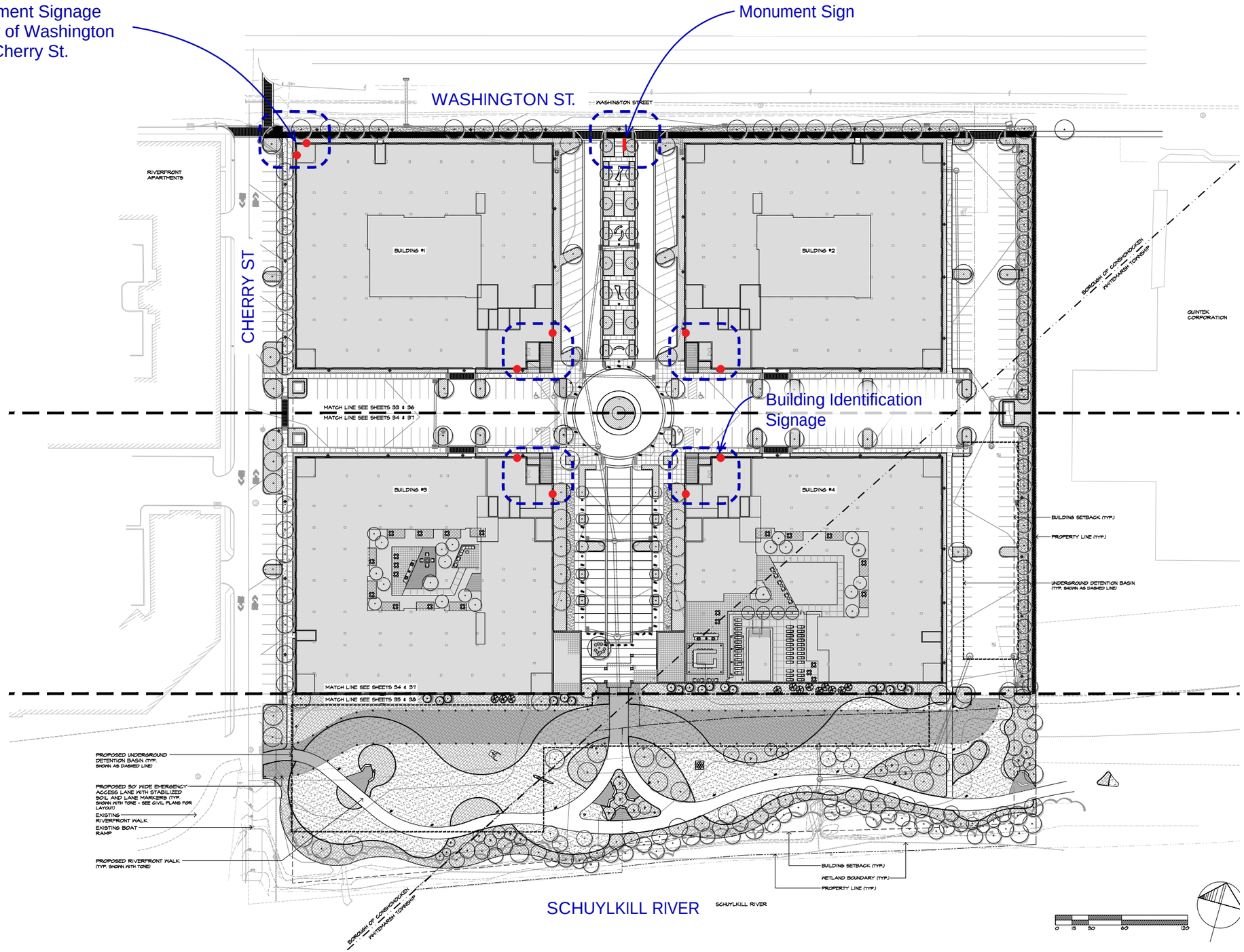


Comment 15: §116-205, §116-208, §116-209, §116-210, §116-283.1.(7), §116-286

Additional information on sign locations and sign details provided for review of development monument signs and building identification signs.

Signage Locations

Major

BARTONPARTNERS
urban design + architecture

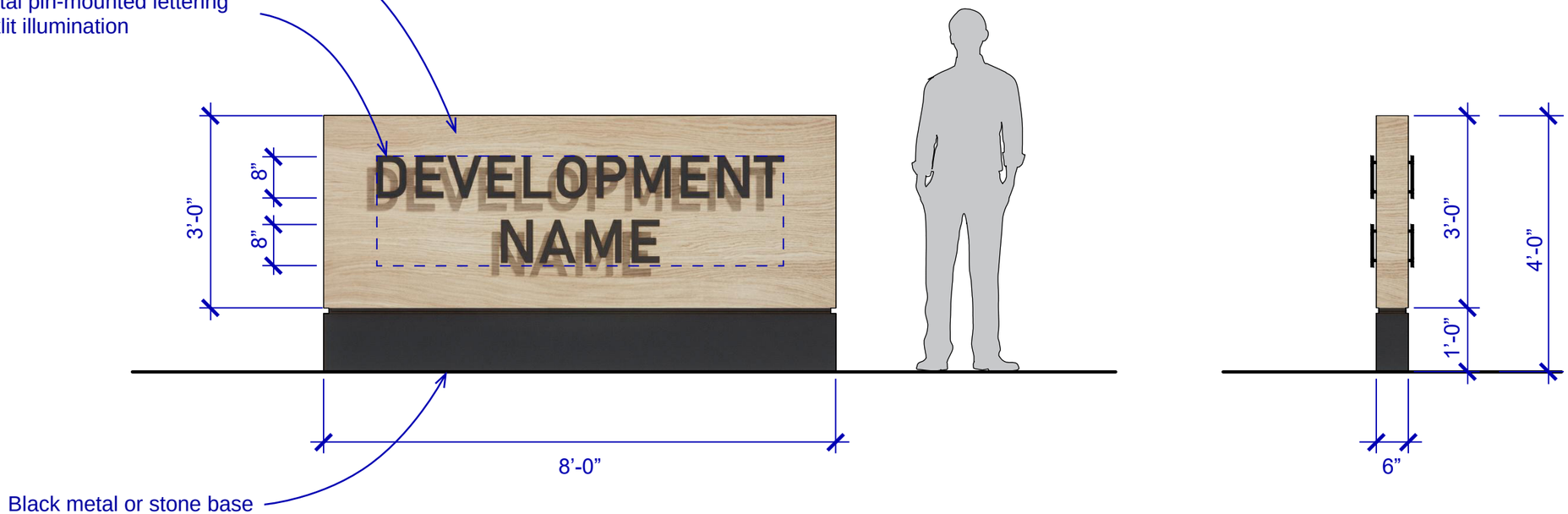
401 & 433 Washington Street

Comment 15: §116-205, §116-208, §116-209, §116-210, §116-283.1.(7), §116-286

Additional information on sign locations and sign details provided for review of development monument signs and building identification signs.

- Wood or metal
- 24 square feet

Black metal pin-mounted lettering with backlit illumination



Monument Sign - Design

401 & 433 Washington Street

Major BARTONPARTNERS urban design + architecture

Comment 15: §116-205, §116-208, §116-209, §116-210, §116-283.1.(7), §116-286

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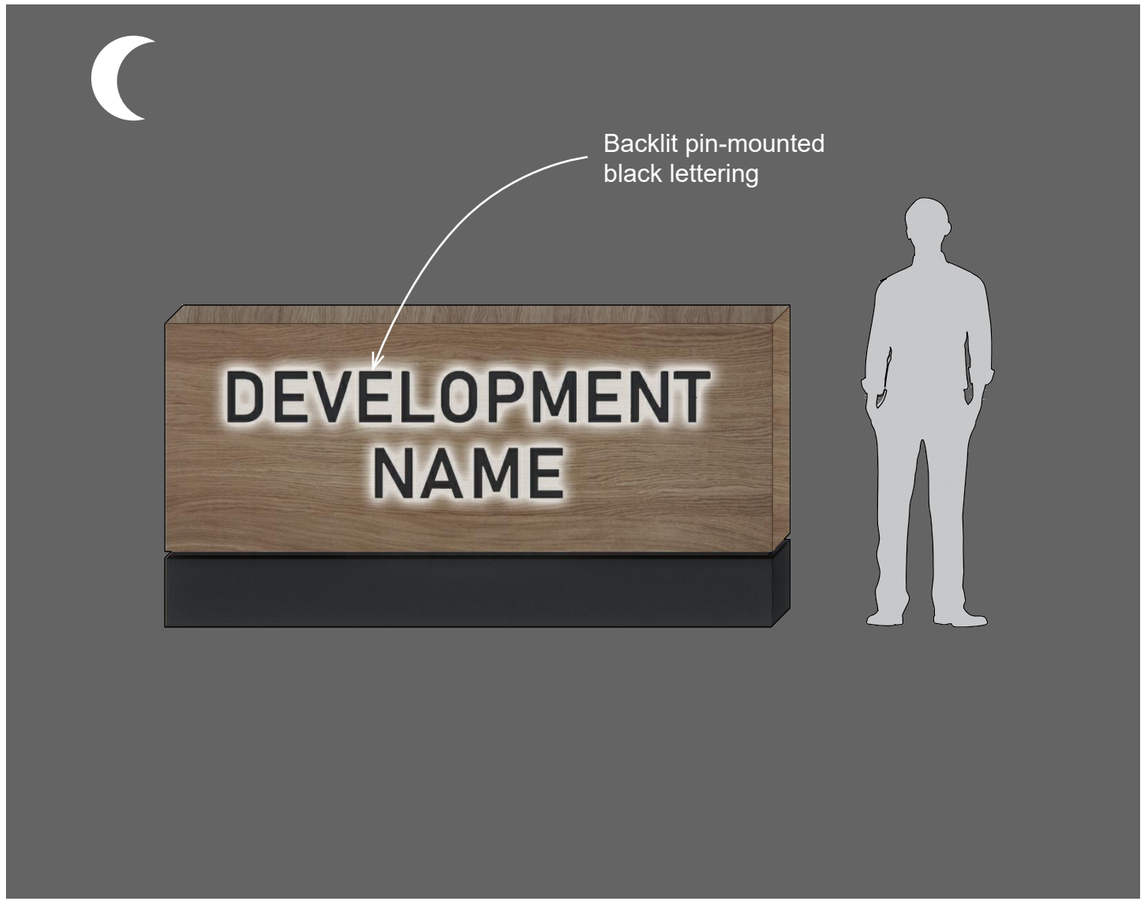

Comment 15: §116-205, §116-208, §116-209, §116-210, §116-283.1.(7), §116-286

Additional information on signage locations and signage details are being provided for review for development monument signs and building identification signs.

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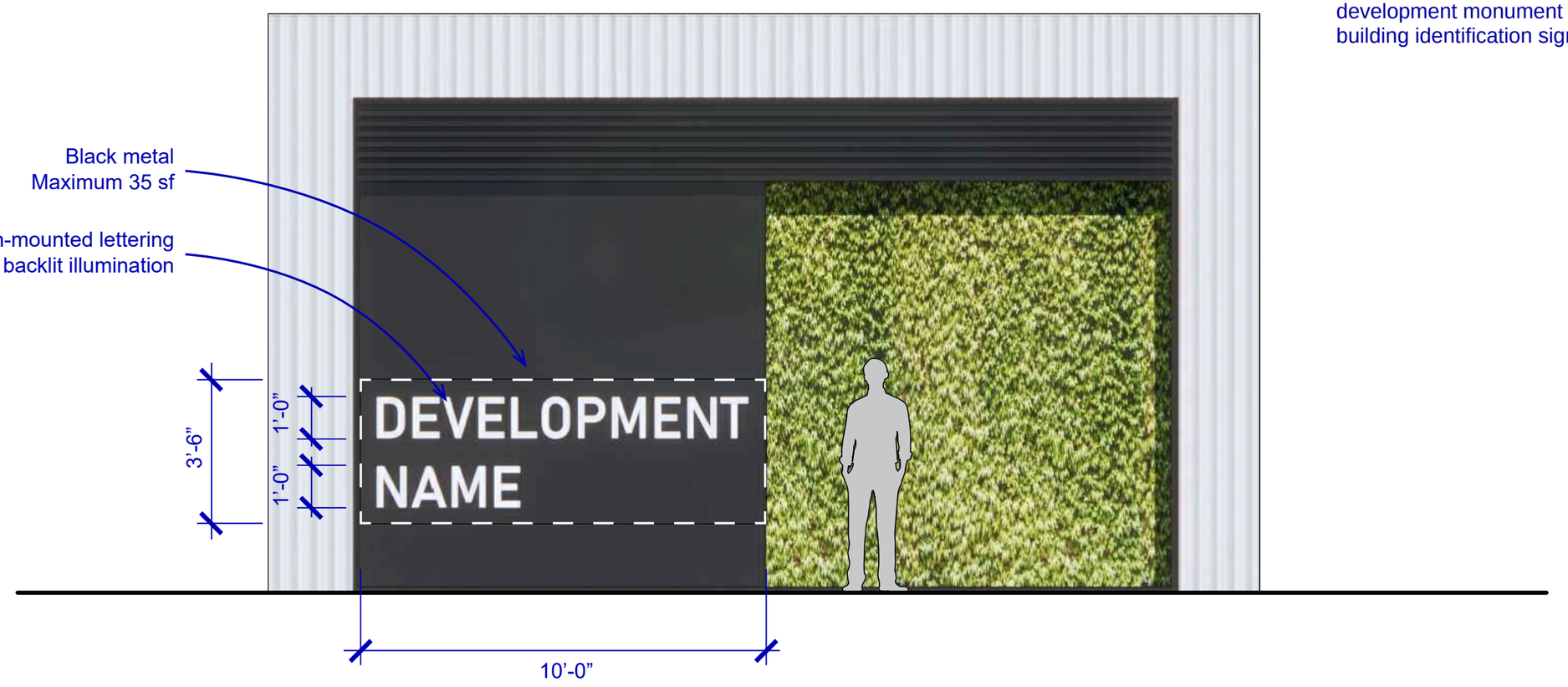
Washington Street Corner - Development Signage

401 & 433 Washington Street

Comment 15: §116-205, §116-208, §116-209, §116-210, §116-283.1.(7), §116-286

Additional information on sign locations and sign details provided for review of development monument signs and building identification signs.



Comment 15: §116-205, §116-208, §116-209, §116-210, §116-283.1.(7), §116-286

Additional information on signage locations and signage details are being provided for review for development monument signs and building identification signs.

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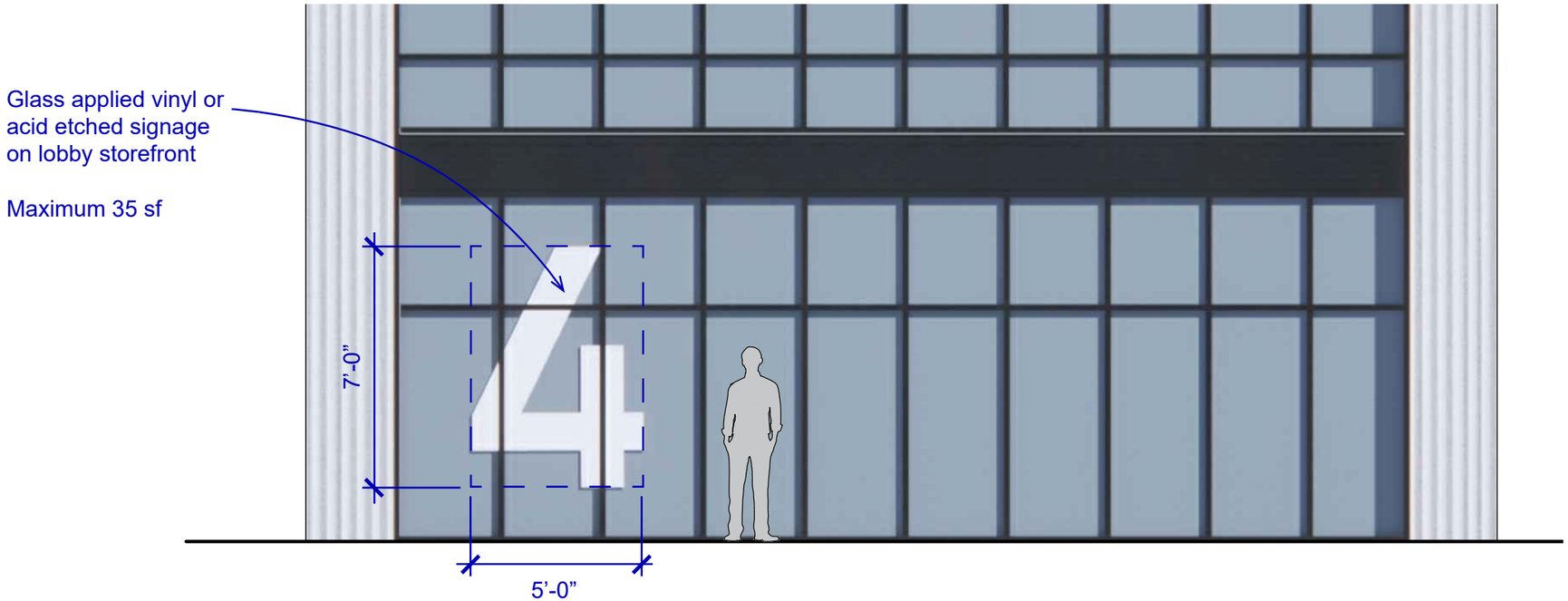
Building Identification Signage - Typical

401 & 433 Washington Street

Comment 15: §116-205, §116-208, §116-209, §116-210, §116-283.1.(7), §116-286

Additional information on sign locations and sign details provided for review of development monument signs and building identification signs.



Building Identification Signage - Typical

Comment 24: §116-283.A.1

Updated architectural renderings are provided as requested to highlight the following:

- All roof equipement is shielded / screened from view through equipment placement on roof.
- Roofline is varied with 3'+ height pop-ups at building corners.
- 3'-0" overhaving eaves have been added to Whitemarsh Township building corners as required.

Comment 24: §116-283.A.2

The zoning text neither specifies nor excludes metal panel as a facade material. We believe metal panel is a premium facade cladding solution that will provide an elevated product in-line with approved materials such as wood, precast concrete and glass. The architectural rendering has been provided for consider-ation.

Comment 24: §116-283.A.3

Updated architectural renderings are provid-ed as requested to show variation in facade including the following elements:

- Building corners are articulated through pop-ups, step-backs and material chang-es.
- Fenestration sizes vary across the facade to provide visual interest.
- Protruding balconys are provided to further break-up facade articulation.
- 1'-0" recessed bays are included on each facade.

Comment 24: §116-283.A.1

Updated architectural renderings are provided as requested to highlight the following:

- All roof equipement is shielded / screened from view through equipment placement on roof.
- Roofline is varied with 3'+ height pop-ups at building corners.
- 3'-0" overhaving eaves have been added to Whitemarsh Township building corners as required.

Comment 24: §116-283.A.3

Updated architectural renderings are provided as requested to show variation in facade including the following elements:

- Building corners are articulated through pop-ups, step-backs and material changes.
- Fenestration sizes vary across the facade to provide visual interest.
- Protruding balconys are provided to further break-up facade articulation.
- 1'-0" recessed bays are included on each facade.

Comment 24: §116-283.A.4

Updated architectural renderings are provided as requested. Note that no facade is greater than 85' of unterrupted length in Whitemarsh Township, through the use of 1'-0" facade recesses. The facade is further broken down by incorporating balconies and material cladding changes.

Conceptual View from Parking Lot

Comment 24: §116-283.A.1

Updated architectural renderings are provided as requested to highlight the following:

- All roof equipement is shielded / screened from view through equipment placement on roof.
- Roofline is varied with 3'+ height pop-ups at building corners.
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- Protruding balconys are provided to further break-up facade articulation.
- 1'-0" recessed bays are included on each facade.

Comment 24: §116-283.A.4

Updated architectural renderings are provided as requested. Note that no facade is greater than 85' of unterrupted length in Whitemarsh Township, through the use of 1'-0" facade recesses. The facade is further broken down by incorporating balconies and material cladding changes.

Conceptual View from Riverfront Walkway

Thank you!

Major

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New York, NY 10004
www.itsmajor.com

WHITEMARSH TOWNSHIP

To: Charlie L. Guttenplan, Director of Planning & Zoning/Zoning Officer

From: NICHOLAS W. WEAVER, FIRE MARSHAL

Subject: **KRE Acquisition Corp Emergency Action Plan 401-403 Washington Street**

Date: July 11, 2022

cc:

The Emergency Action Plan is approved as a draft. The Emergency Action Plan shall be updated prior to occupancy with items that cannot be submitted at this time, such as final floor plans and contact information.

Nicholas W. Weaver
Fire Marshal
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 610-825-3535 ext. 2614
Email: nweaver@whitemarshtwp.org

Whitemarsh TOWNSHIP
616 GERMANTOWN PIKE - LAFAYETTE HILL, PA 19444-1821
TEL: 610-825-3535 FAX: 610-825-9416
www.whitemarshtwp.org

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Patrice Turenne

Richard L. Mellor, Jr.
Township Manager

July 18, 2022

KRE Acquisition Corp.
c/o Noah Chrismer
520 US Highway 22
P.O. Box 6872
Bridgewater, NJ 08807

RE: SLD#14-21 / 401 & 433 Washington Street, Conshohocken, PA
Final Major Land Development – 598 Unit Apartment Building
Zoning Ordinance Compliance Review Letter - Response to Outstanding Issues

Dear Mr. Chrismer:

Please accept this review of the outstanding Zoning Ordinance Compliance issues for the Final Plan for the Whitemarsh Township portion of your above referenced land development. Plan submissions we reviewed include a land development plan set prepared by Colliers Engineering & Design, dated October 29, 2021 with revisions dated February 23, 2022 and May 2, 2022; Landscape and Lighting plans by Melillo-Bauer-Carman also dated December 3, 2021 with revisions noted on March 31, 2022 and May 20, 2022. An architectural set by Barton Partners dated December 3, 2021 with no noted revisions was used in the prior review. Updated architectural renderings were received on July 12, 2022. These were reviewed to assess outstanding issues.

A response letter to the February 18, 2022 Whitemarsh Township Zoning Compliance Review Letter was received from Colliers Engineering & Design, dated May 27, 2022. We identified outstanding issues in a letter dated June 15, 2022. The applicant responded with clarification by returning the letter with in-line comments and additional architectural renderings on July 13, 2022. The following items are outstanding issues addressed in the response or the updated plans (comment numbers are the same as in the original review letter):

13. §116-188.3.

Original Comment 13: Electric Vehicle (EV) charging stations shall be required for all new parking areas. Five electric vehicle charging stations are required for parking facilities that contain at least 50 but not more than 100 off-street parking spaces. One additional electric vehicle charging station shall be provided for every 50 spaces over 100 off-street parking spaces. A minimum of 50% of all required EV charging stations shall be ADA-accessible. Each electric vehicle charging station must include signage identifying spaces as "No Parking Except for Electric Vehicle Charging." Days and hours of operation shall be included if time limits or tow-away provisions are to be enforced.

Response (applicant): Electric Vehicle spaces are provided and shown on Sheets 5 and 6. Signs indicating required language are shown on Sheet 6.

Outstanding issue: While the current plan shows an adequate number of electric vehicle charging spaces, there is a requirement for a portion of the spaces to be ADA-accessible. Given that the required number of EV spaces is 5, and that a minimum of

50% of the required EV stations must be ADA-accessible, there should be 3 ADA-accessible EV spaces. This should be indicated on the plans.

Response (applicant): Will comply. Three (3) ADA-accessible EV spaces are shown on plan.

Reply to response: We are unable to locate the ADA-accessible EV spaces; all EV spaces appear identical and with identical proposed signage.

15. §116-205., §116-208., §116-209., §116-210., §116-283.A.(7), §116-286.

Original Comment 15: These sections of the ordinance describe signs which are permitted in the districts on which the subject property is located. The plans must be revised to include details for all proposed signs to be installed as part of the design, in order to demonstrate compliance with these sections of the ordinance, unless signs are to be handled later through a permit application.
The applicant should revise the 'Borough of Conshohocken Sign Western Face" sign at the Southeast corner of the site, to indicate Whitemarsh Township, instead of Borough of Conshohocken. All signs in the RDD district must be approved by the Board of Supervisors.

Response (applicant): The Borough of Conshohocken sign was revised to "Whitemarsh Township", see Sheet 6.

Outstanding Issue: The issue with the sign described above has been addressed. Design details of other signs are still needed to confirm compliance with these sections so that they can be approved by the Board of Supervisors as part of the Final Plan approval.

Response **(applicant)**: Will comply. Additional sign details are shown on the plan.

Reply to response: Acknowledged. Additional details provided indicate compliance with this section. All signs will need to be approved by the Board of Supervisors as part of final plan approval.

24. §116-283.A.

Original Comment 24: This section of the ordinance establishes minimum architectural design standards to be used within the Riverfront Development Overlay District. Additional details must be provided on the architectural plans to determine compliance with all specific provisions of this section.

Response (applicant): §116-283.A.1. The proposed design utilizes numerous architectural techniques including recessed façade bays, building corner setbacks, varying fenestration sizes, balconies, and façade material changes in order to break the mass of the project and provide visual interest across the length of the façade and roofline. The project will comply with all roof equipment shielded from pedestrian view by way of equipment placement or physical screening.

Outstanding issue: Updated architectural renderings are needed to assess compliance with this section.

Response (applicant): Please refer to updated architectural renderings.

Reply: The renderings demonstrate compliance with this section.

Response (applicant): §116-283.A.2. The project façade is designed as a unified style with the dominant façade material proposed as corrugated metal panels which will provide a right texture and depth of shadow to the façade. Feature moments at the façade corners will be highlighted using wood or fiber-cement board cladding.

Outstanding issue: Corrugated metal panels are not listed as a permitted dominant façade material in this section.

Response (applicant): Corrugated metal panels are not listed on the prohibited dominant materials list. Please refer to architectural exhibits attached.

Reply: Corrugated metal panels will be accepted as a permitted dominant exterior material since this material is not on the 'prohibited materials' list and the list of permitted dominant exterior materials can be interpreted as a non-exclusive list.

Response (applicant): §116-283.A.3. [Describes architectural blocking and style] Refer to response for item §116-283.A.(1).

Outstanding issue: While the design may comply with this section, up-to-date architectural renderings are needed to assess compliance.

Response (applicant): Please refer to updated architectural renderings.

Reply: The renderings demonstrate compliance with this section.

Response (applicant): §116-283.A.4. No uninterrupted length of façade is greater than 100' through the use of multiple façade recesses. Facades are further broken down through the introduction of balconies.

Outstanding issue: While the design may comply with this section, up-to-date architectural renderings are needed to assess compliance.

Response (applicant): Please refer to updated architectural renderings.

Reply: The renderings demonstrate compliance with this section.

Response: §116-283.A.6. For any ground mounted exposed equipment within the project, we will comply with the screening requirements.

Outstanding issue: The plan does indicate screening with a wall. However, given the location of the development in the floodplain, there needs to be appropriate floodproofing or elevation to comply with all relevant ordinance requirements. These need to be reviewed and approved by the Township Engineer/Floodplain Administrator.

Response (applicant): Will comply.

Reply: Noted.

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28. §116-284.B.

Original Comment 28: The width of the riverfront area may be reduced to no less than 125 feet, provided at least one public amenity is provided for buildings four stories or less. We note public seating in this area; the applicant needs to explain if this is intended to be the public amenity and how it meets the requirements of this section.

Response (applicant): Testimony was provided regarding the public amenities.

Outstanding issue: Please reiterate what these will be.

Response (applicant): Per testimony provided the riverfront area is intended to be a public amenity. The public amenities include seating areas, walking path, open space for passive and active recreation. Please refer to plan sheet 19.

Reply: The plan demonstrates compliance with this section. The seating area at the intersection of the central connector path and the river trail can be considered a public amenity as described in section 116-283.B.5. The riverfront path itself is not considered a public amenity that is considered as part of the requirements of section 116-284.B.

29. §116-284.D.

Original Comment 29: Public riverfront access is required in accordance with Chapter 105, Subdivision and Land Development § 105-47.K.

Response (applicant): Public riverfront access is included through the center walkway and an easement to the Borough of Conshohocken will be provided in this area.

Outstanding Issue: Assessing compliance with this section is unclear due to the existence of the multiple public pedestrian access paths in Conshohocken. However, to improve public access to the river on the east side of the development, we recommend at a minimum that a crosswalk be added connecting the sidewalk that runs along the east face of the two east buildings, spanning the East-West internal road. This improves safety for pedestrians walking to the waterfront along the east

side of the property.

Response (applicant): Will comply. A crosswalk was added and is shown on plans. Please refer to plan on sheet 6.

Reply: Noted.

Should you have any questions, please do not hesitate to contact me.

Very truly yours,

Charles L. Guttenplan, AICP
Director of Planning and Zoning/Zoning Officer

cc: Richard L. Mellor, Jr., Township Manager
Sean Halbom, Township Assistant Manager
Robert A. Sztubinski, B.C.O., Director of Building and Codes
Nick Weaver, Fire Marshal
Sean P. Kilkenny, Esq., Township Solicitor
Krista Heinrich, P.E., Township Engineer
Stephanie Cecco, Conshohocken Borough Manager
Spectrum-C, LLC, Property Owner
C. Richard Roseberry, Colliers Engineering & Design, Applicant's Engineer
Joseph M. Blackburn, Esq. & Edward F. Murphy, Esq., Applicant's Attorneys

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Colliers
Engineering
& Design

July 21, 2022

Charles L. Guttenplan
Director of Planning & Zoning
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444

401/433 Washington Street Apartments
Colliers Engineering & Design Project No. 14000908C

Dear Mr. Guttenplan,

On behalf of our clients, KRE Acquisition Corp., we are requesting the following deviations of the SALDO for the above referenced project.

WAIVERS REQUESTS WITHIN WHITEMARSH TOWNSHIP:

1. A WAIVER OF SALDO §105-53(B)(2) FOR PROVIDING A 50' BUFFER

   Applicant is requesting a waiver to install a 15' landscaped buffer where a 50' buffer is required. Unique conditions of this property, including its straddling the boundary between Conshohocken and Whitemarsh, give rise to the waiver request. The current plan sought largely to replicate, although improve, that substantially similar plan for the development of the property which was reviewed and recommended for approval as a Preliminary Plan by the Whitemarsh Township Planning Commission at its March 8, 2022, meeting. As a result of comments from the Township Engineer, significant attention has been given to enhancing the plantings in and functionality of the buffer as compared to the previously recommended Preliminary Plan for the site.

   The proposed landscape buffer between the parking lot and the eastern property boundary provides a dense, biodiverse, and layered planting buffer. This layering includes shrubs, evergreens, shade trees, and a green screen on the first-floor parking deck of the building in Whitemarsh. More specifically, the evergreen screen which includes 126 evergreen trees, initially planted at a 6'-8' height and maturing at 12'-15' height, will provide a solid wall of green vegetation serving as a visual screen to and from the neighboring industrial property. In addition to providing visual interest within the parking lot landscape, with a mature height of +/- 40', the eighteen (18) shade trees will also mitigate views of the residential building from the property to the east. The green screen on the garage facade further mitigates views of the project. Last, the eighty-nine (89) shrubs planted at a height of 2'-2 ½' along the base of the evergreen screen and the 503 ground cover plantings will provide an extra layer of buffer to mitigate headlight glare beyond the property limits.

   It is worth noting that after extensive consultation and coordination on biodiversity and planting selections with the Township's Arborist, the applicant incorporated as much

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plant material for screening as is physically able to be accommodated within the proposed buffer area. As a result, the applicant received the Arborist's support and recommendation of approval for the proposed landscape plan. The proposed landscape plan, including the proposed buffer were ultimately approved by the Whitemarsh Township Shade Tree Commission at their regular meeting on April 5th, 2022.

For additional context, the Township Engineer's first review of the plans in the Engineer's Review Letter dated February 21st, 2022, wherein comment #26, dealing with the section governing buffers, references only a need for applicant to demonstrate sufficient screening materials, but makes no corresponding comment about the inadequacy of the buffer area width. Based on that comment, the Applicant has incorporated as much screening as physically able to be accommodated within the existing buffer areas. This second Township Engineer Review Letter, dated July 6th, 2022, is the first that Applicant is being made aware of the need for a waiver.

The Applicant has made significant effort to meld the land-use requirements, planning principals and vision of both Whitemarsh Township and the Borough of Conshohocken. It is worth noting that the proposed landscape buffer falls within both municipalities. No buffer is required in Conshohocken Borough.

Based on the foregoing, and in further recognition of the significant layered screening materials and biodiversity incorporated as a result of the February 21st, 2022, Review Letter and Shade Tree Commission Approval (April 5th, 2022), the Applicant believes a waiver of the width provisions of this section would be appropriate.

2. A WAIVER OF SALDO §105-53(D) DEDICATION OF LAND SUITABLE FOR PARK AND RECREATIONAL USE TO THETOWNSHIP OR PAYMENT OF FEES IN LIEN THEREOF.

Applicant is requesting a waiver for the Fee in Lieu of Dedication of Land for Park and/or Recreational Use. Unique conditions of this property, being located entirely within the floodplain, render the land area offered for dedication ineligible for dedication per Section 105-53(D) of the Subdivision and Land Development Ordinance. The Applicant remains willing to dedicate land for park and/or recreational use if acceptable to the Township, but in the absence of suitable land for dedication, the Applicant asks that the Township consider the significant investment and commitment to provide a best-in-class public park and recreational amenity in Whitemarsh Township.

The true gem of the proposed project in Whitemarsh Township and Conshohocken Borough is the 2.5-acre riverfront public park, the majority of which (approximately 1.7-acres) is in Whitemarsh Township. The riverfront park is designed and offered for public use and enjoyment. With direct access to the riverfront, generous open space for active and passive recreation and spectacular views of the Schuylkill River, the riverfront park

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can be enjoyed by residents of the project, as well as all members of the local community, throughout the year.

Pedestrian access to the riverfront park is provided from Washington Street via an approximately 100' wide, tree-lined Boulevard Promenade that is well furnished with seating areas, biodiverse landscaping, and thoughtful lighting. Wayfinding signage will be provided at Washington Street, and throughout the Promenade, to guide and welcome the public to the Riverfront Park. In essence, the Promenade is an extension of the riverfront park.

The applicant has spent considerable effort to ensure that upon arrival, the user will experience best-in-class design and amenities that make the riverfront park a very special place for active and passive recreation in Whitemarsh Township.

The primary pedestrian circulation path, a meandering 10' wide asphalt walkway, is an extension of the existing riverfront walkway to the west. Along the walkway, the public can experience several respite areas with decorative pavements and curated furniture.

The landscape of the riverfront park is beautifully designed and lush with a varied palette of native plant materials suitable to the Schuylkill River's potential flood conditions. Shade trees, evergreen trees, ornamental flowering trees, various shrub and ornamental grass varieties, in addition to perennials, groundcovers, and a meandering lawn will enhance the riverfront park experience.

Local artists will have the opportunity to display their sculpture throughout the park, a feature that will encourage and embrace public participation in the landscape.

On the technical side, the park will afford the opportunity for fire and emergency vehicle access, underground stormwater detention, and landscape lighting for evening usage and public safety.

The Applicant's focus on biodiversity, sustainability, resilience, and best-in-class design are key components of the proposed public amenity and serve to make the riverfront park a true public destination.

Based on the foregoing, and in further recognition of the significant investment and commitment on behalf of the Applicant to provide a best-in-class public park and recreational amenity, the Applicant believes a waiver for the required fee in lieu of dedication of land for park and/or recreational use provisions of this section would be appropriate.

Colliers
Engineering
& Design

Sincerely,

Colliers Engineering & Design, Inc.
(DBA Maser Consulting)

C. Richard Roseberry, P.E.
Regional Manager

\\corp.collierseng.com\corp\Lehigh Valley\Projects\2014\14000908C\Correspondence\OUT\220721 Waiver Request Letter.docx

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Colliers Engineering & Design

July 22, 2022

Gilmore & Associates, Inc.
Attn: Krista Heinrich, P.E.
Township Engineer
65 East Butler Avenue, Suite 100
New Britain, PA 18901

401/433 Washington Street Apartments
Colliers Engineering & Design Project No. 14000908C

Dear Ms. Heinrich,

Colliers Engineering and Design is in receipt of your letter dated July 6, 2022, and offers the following responses:

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

1. 105-21(B)(18) The applicant shall submit a 'Preliminary Common Open Space Ownership and Management Plan' consistent with the requirements of this section of the ordinance.

Acknowledged.

2. 105-21(B)(9)(d) [6][a] All streets and/or intersections showing a level of service below C shall be considered deficient, and specific recommendations for the elimination of these problems shall be listed. Deficiencies are noted at the following intersections:

a. Ash Street and Elm Street with a delay increase of more than 10 seconds for the eastbound left-turn critical movement. This intersection is located in Conshohocken Borough. Any modifications to the intersection are subject to the review of the Borough or PennDOT.

Acknowledged. The intersection of Ash Street and Elm Street is located within the Borough of Conshohocken and not Whitemarsh Township. The Borough of Conshohocken does not have a LOS C or better requirements in regard to traffic impact studies according to Section 27-824 of the Borough's Zoning Ordinance. Also as noted in the study, the traffic assigned to travel along Elm Street to then turn right onto Poplar Street or Cherry Street to access the site could divert to Harry Street to access Washington Street instead.

b. North Lane and Hector Street -The North Lane southbound approach operates at LOS E during the AM and PM peak hour. Any recommendations for elimination of these problems should be provided in the study.

The referenced LOS E conditions also are present under existing conditions without the proposed development project. Retiming the traffic control signal could be completed

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that would result in the LOS E operating at LOS D for the subject approach during the morning, but would remain at LOS E during the afternoon, since the delay is also a function of the signal cycle length that is not recommended to be modified as the signal is coordinated with other signals in the area. The retiming of this indicates that the additional time would be adequate as the green time for the approach would then gap out based on the volumes during each time period. The corresponding with-development tables both without and with the extension to Washington Street are provided. It is also noted that the applicant will be contributing to the Township's Act 209 based upon the number of apartment units within the Township, which are utilized for off-site intersection costs.

3. 105-21.1(K)(2) Within the South Transportation Service Area an impact fee in the amount of Two Thousand Five Hundred and Twenty-Nine Dollars ($2,529.00) per anticipated peak hour trip must be provided by the applicant. The proposed development will generate 234 trips during the PM peak hour. 60 units of the 598-unit development will be in Whitemarsh township. Therefore, the traffic impact fee totals $59,376.52 (234 trips x 60 units/598 units x $2,529.00).

Acknowledged.

4. 105-26(E) The applicant must provide evidence in sufficient detail to demonstrate that there are no environmental concerns related to previous uses of the site. It is our understanding the applicant is currently proceeding with the Act 2 process and once approved by PADEP, the remediation plan will be submitted to the Township.

Acknowledged.

5. 105-38 Plan Sheet 6 must be revised to list the quantity of Sign O (6) in the sign legend to reflect the number of signs noted on the plan.

Sign quantities will be added to the sign legend.

6. 105-38 The applicant's engineer should consider removing sign J from the landscape islands along the parking perimeter.

Sign J will be removed from the plan.

7. 105-40, 105-50(C)(2) The applicant has indicated that garbage will be collected within the building(s). The location must be shown, and turning templates for garbage trucks must be provided.

Trash rooms are shown on the architectural plans. It is not intended for trash trucks to access the parking areas beneath the buildings. Trash will be wheeled to the main driveways. Turning templates for garbage trucks will be added to the plan.

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8. 105-47 Additional grading information shall be added to the plans in sufficient detail to clarify the proposed longitudinal and cross slopes for the pedestrian pathways:

• Proposed grading (contour lines representing elevation 51 & 52) along the sidewalk at the southeast corner of Building 4 must be revised to provide ADA accessible longitudinal and cross slopes.

Additional grading information will be added to the plan.

• Plan Sheets 28 and 29 must be revised to include dimensions at all critical points for all proposed curb ramps and ADA parking spaces to verify accessibility.

Acknowledged.

9. 105-47(K)(1) A right-of-way of at least 25 feet in width shall be offered for dedication to the Township. If the area is not accepted for dedication, an easement for public use must be provided along with maintenance agreements acceptable to the Township. Within the portion of the site located in Whitemarsh Township, the plans appear to show one 15±-foot easement and one 10±-foot easement, separated by a parking area. The plan also shows an easement of varying width through the center of the site, predominantly in Conshohocken Borough, labeled as "30' Public Access Easement to be dedicated to Whitemarsh Township". The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance or a waiver must be obtained.

No portion of the site maintains any frontage on any public thoroughfare within Whitemarsh Township. Therefore, there is no possible way to provide perpendicular access to the river on the site from any public thoroughfare within the Township, thus the provisions of Section 105-47(K) are inapplicable. Based on prior communications with Township Staff and professionals, the Applicant understands that the area of the "30' Public Access Easement to be dedicated to Whitemarsh Township" satisfies the provisions of this section notwithstanding it being "predominantly in Conshohocken Borough".

10. 105-47(K)(3) This section of the ordinance requires public riverfront access, perpendicular to the river, including a red shale macadam pathway with a minimum of 10 feet in width and separated from any vehicular traffic. The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance or a waiver must be obtained.

Again, no portion of the site maintains any frontage whatsoever on any public thoroughfare within Whitemarsh Township. Therefore, there is no possible way to provide perpendicular access to the river on the site from any public thoroughfare within the Township, and the provisions of Section 105-47(K) are inapplicable.

That said, and without waiver of its position of inapplicability of this section, to the extent the Township desires that limited portion of the riverfront access perpendicular to the

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river, and within the Township, to be comprised of red shale macadam, Applicant will comply.

11. 105-47(K)(4) This section of the ordinance requires public riverfront access, perpendicular to the river, including at least one seating area along each access. The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance or a waiver must be obtained.

Again, no portion of the site maintains any frontage whatsoever on any public thoroughfare within Whitemarsh Township. Therefore, there is no possible way to provide perpendicular access to the river on the site from any public thoroughfare within the Township, and the provisions of Section 105-47(K) are inapplicable.

That said, and without waiver of its position of inapplicability of this section, to the extent the Township desires that limited portion of the riverfront access perpendicular to the river, and within the Township, to contain a seating area, Applicant will comply.

12. 105-47(K)(5) This section of the ordinance requires public riverfront access, perpendicular to the river, including appropriate signage to direct pedestrians to the river in accordance with Chapter 116, Zoning, § 116-286B(5). The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance or a waiver must be obtained.

Again, no portion of the site maintains any frontage whatsoever on any public thoroughfare within Whitemarsh Township. Therefore, there is no possible way to provide perpendicular access to the river on the site from any public thoroughfare within the Township, and the provisions of Section 105-47(K) are inapplicable. That said, and without waiver of its position of inapplicability of this section, to the extent the Township desires that limited portion of the riverfront access perpendicular to the river, and within the Township, to contain certain signage, Applicant will comply.

13. 105-52(B)(2) This section of the ordinance requires that all buffers shall have a minimum width of 50 feet. The Board of Supervisors may permit an alternative planting option which shall have a screening capability equal to or greater than any of the available options. A waiver would be required in order to allow a portion of the proposed buffer along Building 4 to be less than 50 feet wide.

A waiver of the 50' buffer is being sought. Applicant has incorporated as much screening as physically able to be accommodated within the existing buffer areas. In further recognition of the significant screening materials incorporated as a result of the February 21, 2022 review, Applicant believes a waiver of the width provisions of this section would be appropriate. See attached waiver request.

14. 105-53(D) This section of the ordinance requires the dedication of land in the amount of 10% of the total Site Area for Park and/or Recreational use. The applicant has the option of offering a fee in lieu of dedicating actual land area and can also provide a combination of a fee in lieu and dedication of land. All offers of land and/or fees in lieu of dedication must meet the requirements of this section of the ordinance.

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Waiver is requested. It is noted that a waiver from the provisions of this Section was requested and granted for this project pursuant to Resolution 2015-10, "in recognition of the Applicant's proposal to offer the riverfront park area to the Township, or, alternatively, to make that area available to the public." As the Applicant remains presently committed to making the riverfront park area available to the public via either dedication or easement, it is believed this waiver is still appropriate as was previously contemplated and granted.

15. 105-53(D)(1)(c) If actual land area is offered, the applicant is advised that this section of the ordinance states that no more than 25% of the minimum land area required for park and recreation land may consist of floodplain or riparian corridor buffer areas, wetlands or areas with slopes in excess of 8%.

A waiver is being requested as the entire site is located within the floodplain.

16. 105-53(D)(1)(g) If actual land area is offered, the applicant is advised that this section of the ordinance states that the land area required for park and recreation land may not be used in calculating density.

Acknowledged.

17. 105-73 Grading of the trail in the area of the contour line representing an elevation of 51 should be revised to eliminate potential for ponding.

Grading will be revised.

18. 105-78 The applicant must obtain the approval of the Whitemarsh Township Authority with regard to proposed sanitary sewerage facilities.

Acknowledged.

19. 105-89 The developer shall enter into a written agreement with the Township in the manner and form approved by the Solicitor wherein the developer shall agree, to construct or cause to be constructed at his own expense all proposed improvements shown on the approved land development plan, all in strict accordance with the standards and specifications of the Township and within the time specified in said agreement, and to deposit with the Township financial security in an amount sufficient to cover the cost of all subdivision or land development improvements, including both public and private improvements.

Acknowledged.

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GRADING, EROSION CONTROL, STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES ORDINANCE:

20. 58-4(B)(2)(p) The plan must be revised to show the size, location and construction details of all existing and proposed storm drainage facilities. The following must be addressed:

• The Stormwater Management (SWM) Report indicates a 4' long weir at elevation 49.15, where Plan Sheet P7 indicates the same to be at elevation 49.10

Construction details of storm drainage facilities will be revised.

• The section view in the Detail for Outlet Control Structure S-A1 on Plan Sheet P7 must be revised to call for an 8" orifice within the weir wall, in order to be consistent with the SWM Report.

Construction details of storm drainage facilities will be revised.

21. 58-4(B)(2)(q) Item #2 under Site Work in the Construction Sequence must be revised to include installation of tree protection fencing.

The construction sequence will be revised to include installation of tree protection fencing.

22. 58-4(D)(1) Since the limit of disturbance is greater than one acre, the applicant must obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Pennsylvania Department of Environmental Protection. Once obtained, a copy must be submitted to the Township.

Acknowledged.

23. 58-8(H) All easements must be documented in the form of an easement agreement, approved by the Township Solicitor and recorded at the Recorder of Deeds for Montgomery County.

Acknowledged.

24. 58-11(G)(1) 58-11(H)(1) The property owner shall sign an operations and maintenance agreement with the Township addressing stormwater BMPs that are to be privately owned. The plans indicate that the lot owner is responsible for the "Ownership and Maintenance" of the BMPs. The operation and maintenance agreement shall be subject to review and approval of the Township.

Acknowledged.

Colliers Engineering & Design

RESOLUTION 2004-8:

25. I(C)(5), I(C)(6) Fills placed in or adjacent to natural watercourses, floodways, floodway fringes, constructed channels, or wetlands shall have suitable protection against erosion during periods of flooding, where approved by the Army Corps of Engineers, the Pennsylvania Department of Environmental Protection.

Acknowledged.

26. II(B)(16) The applicant must submit legal descriptions for any proposed rights-of-way, easements, or lands to be offered for dedication.

Legal descriptions will be provided.

ADDITIONAL COMMENTS

27. The proposed improvements will require the applicant to obtain a Chapter 105 Water Obstruction and Encroachment General Permit, administered by the Pennsylvania Department of Environmental Protection (PADEP) Bureau of Waterways Engineering and Wetlands. Once obtained, the permit must be submitted to the Township.

Acknowledged.

28. The plans must be revised to include a construction detail for the proposed 'Whitemarsh Township Sign Western Face". Please note, the details for the Conshohocken Borough wayfinding signage may be utilized as a template, and modified accordingly, as recommended in the recently completed "Spring Mill Multi-Modal and Land Use Study", available on the Township's website.

The plans will be revised.

Sincerely,

Colliers Engineering & Design, Inc.
(DBA Maser Consulting)

C. Richard Roseberry, P.E., AICP
Regional Manager

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