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: December 17,2021
Status: Conditional Preliminary Land Development Approval 4.14.22

Updates:

Montgomery County Planning Commission Review – February 1, 2022 Zoning Ordinance Compliance Review Letter – February 18, 2022 Gilmore & Associates Review Letter – February 21, 2022

Zoning Hearing Board Decision ZHB#2021-48

Settlement Agreement with Conshohocken (2014)

Colliers Engineering & Design Explanation of Existing Stock Pile Slopes- March 25, 2022

Shade Tree Commission Meeting Memo - April 5, 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
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:

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____.

_____ _____
CONSHOHOCKEN BOROUGH MANAGER 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

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____.

MCPC NO. _____

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

PRELIMINARY /FINAL LAND DEVELOPMENT PLANS

FOR

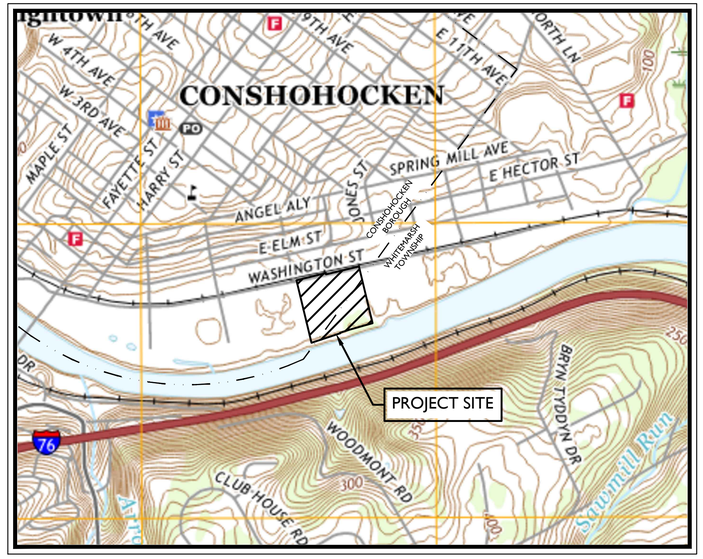
KRE ACQUISITION CORP.

401/433 WASHINGTON STREET APARTMENTS

401 & 433 WASHINGTON STREET

CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY, PENNSYLVANIA



LOCATION MAP

SOURCE: NORRISTOWN, PA USGS MAP

800 0 800
SCALE : 1" = 800'

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 REQUESTED WITHIN WHITEMARSH TOWNSHIP:

SECTION 105-21.B.(9) -	A WAIVER FOR THE SUBMISSION OF A TRANSPORTATION IMPACT STUDY.
SECTION 105-21.1.E -	A WAIVER FOR THE REQUIREMENT THAT A TRANSPORTATION IMPACT FEE BE IMPOSED.
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 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:

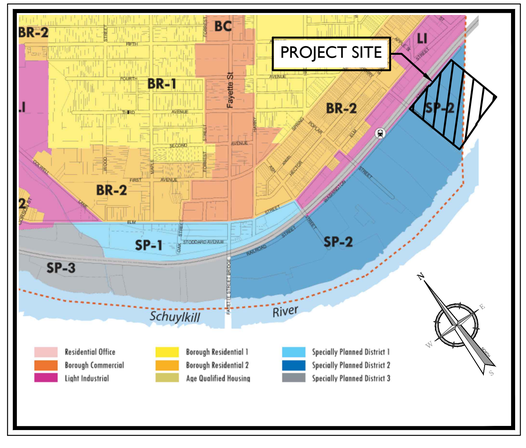
SECTION 27-1511.8.A.(1) -	VARIANCE TO ALLOW PARKING IN 401 WASHINGTON STREET TO BE LESS THAN THE REQUIRED MINIMUM.

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.

INDEX OF SHEETS

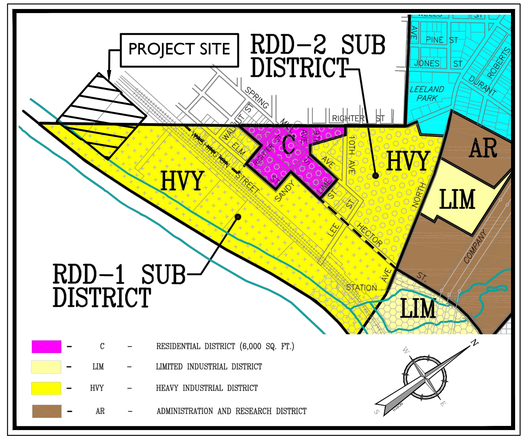
SHT. No.	DESCRIPTION	LATEST REVISION
1*	COVER SHEET	
2*	GENERAL NOTES	
3	EXISTING CONDITIONS AND DEMOLITION PLAN	
4*	DIMENSION PLAN	
5	RIVERFRONT ACCESS, RECREATION AND OPEN SPACE PLAN	
6	GRADING PLAN	
7-8	UTILITY PLANS	
9-11	PROFILES	
12	ROAD PROFILES & SECTIONS	
13	TRUCK TURNING PLAN	
14-22	CONSTRUCTION DETAILS	
23	ADA GRADING PLAN	
	ADDITIONAL SETS	
L-101 - L-202	LANDSCAPING & LIGHTING PLANS (BY OTHERS)	
E1-E5	EROSION AND SEDIMENT POLLUTION CONTROL PLANS	
P1-P5*	POST-CONSTRUCTION STORMWATER MANAGEMENT PLANS	
A1-A10	ARCHITECTURAL SHEET SET (BY OTHERS)	
TSP-1	EXISTING TREE SURVEY PLAN	
	* SHEETS TO BE RECORDED	



ZONING MAP

CONSHOHOCKEN BOROUGH

800 0 800
SCALE : 1" = 800'



ZONING MAP

WHITEMARSH TOWNSHIP

800 0 800
SCALE : 1" = 800'

Colliers Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

811 PROTECT YOURSELF
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

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: 1400908C
DRAWING NAME: C-CVER

SHEET TITLE: COVER SHEET

SHEET NUMBER: 1 of 23

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2016\1400908C\Engineering\Site Plans\C-CVER.dwg|C-01-COVER By: MDREJUS

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 MAY 7, 2021.

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

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%	69.73% (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.

16. 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.

17. POTABLE WATER SERVICE WILL BE BY EXISTING PUBLIC WATER SUPPLY AND SANITARY SEWER SERVICE WILL BE BY PUBLIC SEWAGE.

18. WETLANDS ARE SHOWN ON PLAN.

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.

22. NO TOPSOIL SHALL BE REMOVED FROM THE SITE UNLESS AUTHORIZED BY THE TOWNSHIP AND/OR MCCD. PERMANENT REMOVAL OF TOPSOIL FROM LAND WITHIN CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP IS PROHIBITED. NO TOPSOIL SHALL BE USED AS SPOIL.

23. 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.

24. 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.

25. APPROVAL OF THIS PLAN DOES NOT GUARANTEE PERMIT ISSUANCE FOR SEWAGE DISPOSAL.

26. 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.

27. PROPER PIPE COVERAGE SHALL BE MAINTAINED DURING ALL PHASES OF CONSTRUCTION. PIPE LENGTHS SHOWN HEREON ARE FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.

28. TRAFFIC SIGNAGE AND STRIPING SHALL CORRESPOND TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

29. THIS IS A SITE DEVELOPMENT PLAN AND UNLESS SPECIFICALLY NOTED ELSEWHERE HEREON, IS NOT A SURVEY.

30. ALL STRUCTURES SHALL CONFORM TO THE APPROVED BULK ZONING REQUIREMENTS.

31. 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.

32. 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.

33. 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.

34. THE CONTRACTOR IS RESPONSIBLE FOR PROJECT SAFETY, INCLUDING PROVISION OF ALL APPROPRIATE SAFETY DEVICES AND TRAINING REQUIRED.

35. 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 TO 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.

36. 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.

37. STORMWATER BMPS ARE FIXTURES THAT CAN BE ALTERED OR REMOVED ONLY AFTER APPROVAL BY THE TOWNSHIP.

_____ _____
DATE OWNER/APPLICANT

38. 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.

39. 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.

40. CONTRACTOR(S) SHALL RECEIVE A COPY OF THE APPROVED EROSION & SEDIMENTATION CONTROL PLANS.

41. WHITEMARSH TOWNSHIP AND CONSHOHOCKEN BOROUGH SHALL NOT BE RESPONSIBLE FOR THE MAINTENANCE OF ANY AREA NOT DEDICATED TO THE TOWNSHIP.

42. 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.

43. 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.

44. 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.

45. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS RELATIVE TO THE CONSTRUCTION PROPOSED ON THE PLANS.

46. ENGINEERING PERMITS: PRIOR TO ANY WORK WITHIN THE RIGHT OF WAY, PERMITS MUST BE OBTAINED FROM THE TOWNSHIP.

47. 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.

48. 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.

49. ALL CROSSWALKS, STOP BARS, ARROWS, AND "ONLY"S WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE HOT THERMOPLASTIC.

50. ALL SHEETS INCLUDED IN THIS LAND DEVELOPMENT PLAN SET ARE TO BE CONSIDERED AS IF RECORDED WITH THE RECORD PLAN.

51. 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.

52. POOLS SHALL BE ENTIRELY ENCLOSED WITH A FENCE NOT LESS THAN FOUR FEET IN HEIGHT.

53. 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).

54. 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.

55. COMPACT PARKING SPACES IN CONSHOHOCKEN BOROUGH EXCEED THE MINIMUM REQUIRED DIMENSION OF 7 ½ 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.

56. PROPOSED CURB ALONG WASHINGTON STREET SHALL BE BELGIAN BLOCK CURB. PROPOSED CURB INTERIOR TO SITE SHALL BE VERTICAL CONCRETE CURB, UNLESS OTHERWISE NOTED.

57. UNDER NO CIRCUMSTANCES SHALL CHLORINATED SWIMMING POOL DISCHARGE BE DIRECTED TO THE RIVER OR TO ANY PIPING SYSTEM THAT DISCHARGES TO THE RIVER.

58. THE MINIMUM FLOOR AREA PER DWELLING UNIT WILL BE IN CONFORMANCE WITH 27-1511.4.A. & B.

59. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH PENNDOT PUBLICATION 408 AND CONSHOHOCKEN BOROUGH CONSTRUCTION STANDARDS.

60. THESE PLANS CONFORM WITH THE CONSHOHOCKEN BOROUGH FLOODPLAIN ORDINANCE.

61. THE PROPOSED BRICK SIDEWALK ALONG WASHINGTON STREET SHALL BE CONSISTENT IN APPEARANCE WITH ADJACENT WASHINGTON STREET DEVELOPMENT

62. ALL PROPOSED OPEN SPACE WILL BE DEED RESTRICTED FROM FUTURE DEVELOPMENT.

63. 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."

64. PURSUANT TO 27-1504.D.(3)(A), (B), AND (C), THERE SHALL BE RIVERFRONT ACCESS VIA EASEMENT OR PUBLIC RIGHT-OF-WAY.

65. OPEN SPACE IS PROHIBITED FROM FURTHER DEVELOPMENT BASED ON THIS PLAN.

66. RECREATION AREA IS TO BE OFFERED FOR DEDICATION TO CONSHOHOCKEN BOROUGH.

67. APPLE STREET SHALL BE VACATED.

68. 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.

69. 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.

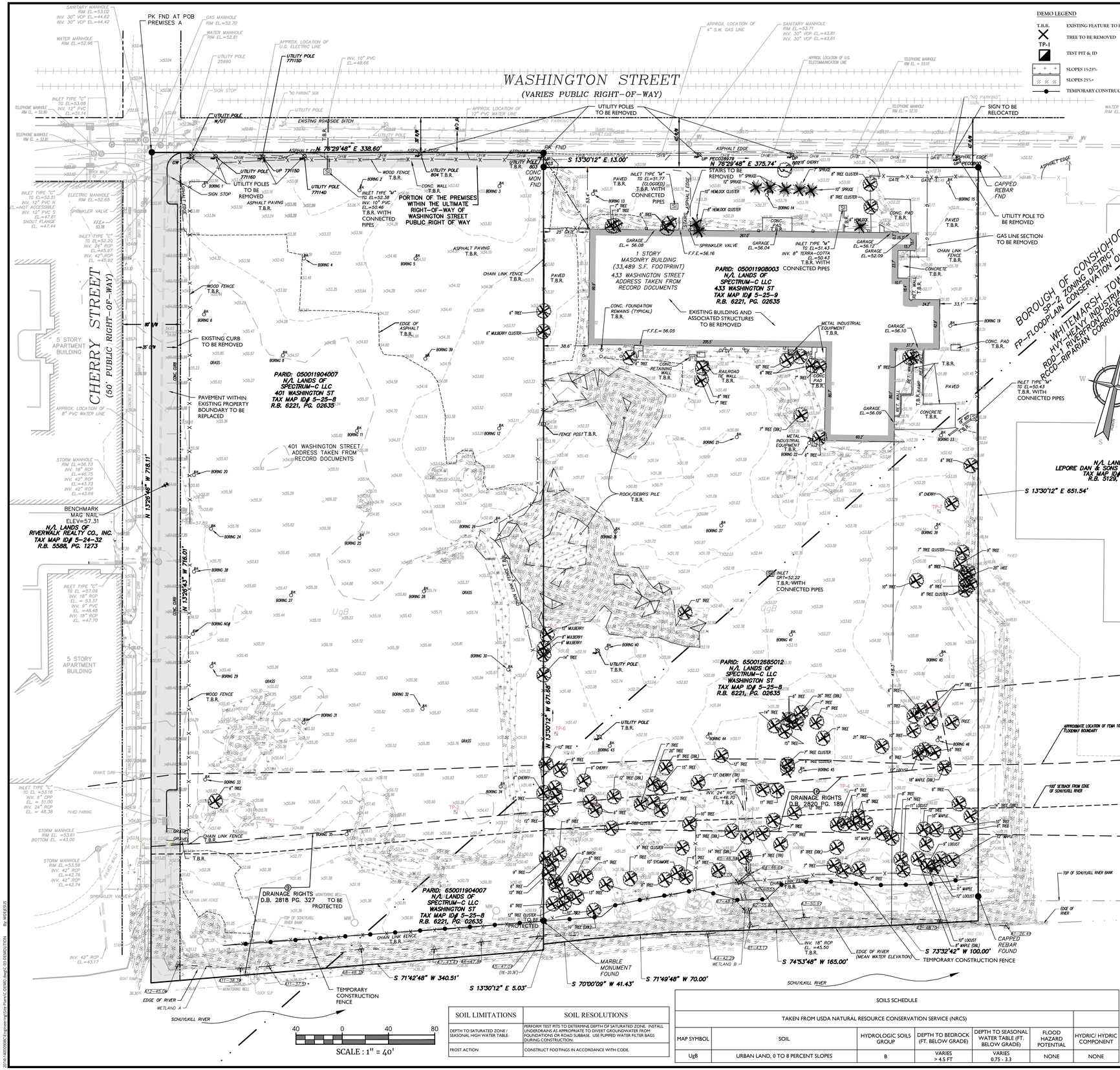
70. AN AS-BUILT SURVEY SHALL BE COMPLETED AND SUBMITTED TO THE BOROUGH OF CONSHOHOCKEN AND WHITEMARSH TOWNSHIP IN BOTH PAPER AND DIGITAL CADD FORMATS.

71. 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.

72. 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 THE JURISDICTION OF THE FLOODPLAIN CONSERVATION OVERLAY DISTRICT.
3. ALL ENCLOSED SPACES IN THE FLOODPLAIN, INCLUDING ELEVATORS, STAIR TOWERS AND TRASH COMPACTOR AREAS ("LOWER AREAS"), WILL BE WET FLOOD PROOFED IN ACCORDANCE WITH U.S. ARMY CORPS OF ENGINEERS WET FLOOD PROOFING STANDARDS. THE SPACES WILL PERMIT THE FREE MOVEMENT OF FLOOD WATERS AND THEY WILL BE CONSTRUCTED WITH FLOOD-RESISTANT MATERIALS.
4. PUBLIC WATER FACILITIES WILL BE IN WATER-TIGHT PVC WATER PIPES AND BE INSTALLED UNDERGROUND. WHERE WATER PIPES EXIT THE GROUND TO REACH UP TO ELEVATED BUILDINGS, THEY WILL TRANSITION TO DUCTILE IRON FLANGED PIPE (BEFORE EXITING THE GROUND). THE DUCTILE IRON PIPE WILL BE INSULATED FROM FREEZING AND BE BAFFLED BY AND ANCHORED TO THE CONCRETE BUILDING COLUMNS.
5. ELECTRICAL POWER LINES WILL BE INSTALLED UNDERGROUND IN INSULATED WATER PROOF CONDUIT. WHERE ELECTRIC LINES EXIT THE GROUND TO REACH UP TO ELEVATED BUILDINGS, THEY WILL BE INSTALLED IN RIGID, WATERPROOF CONDUITS, BAFFLED BY AND ANCHORED TO THE CONCRETE BUILDING COLUMNS. ELECTRIC TRANSFORMERS WILL BE EITHER POLE MOUNTED OR MOUNT



DEMO LEGEND

T.B.R.	EXISTING FEATURE TO BE REMOVED
X	TREE TO BE REMOVED
TP-1	TEST PIT & ID
+ + +	SLOPES 15-25%
½ ½ ½	SLOPES 25%+
	TEMPORARY CONSTRUCTION FENCE

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.

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.

LEGEND

- TRAVERSE LINE, CENTER LINE OR BASELINE (12+00 PI 13+00)
- RIGHT OF WAY LINE
- PROPERTY LINE
- EDGE OF PAVEMENT
- CURB LINE (FACE / D.C. / BACK)
- 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	UI = UNKNOWN VALVE	
TC = TOP OF CURB	MH = MANHOLE	MLWL= MEAN LOW WATERLINE
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 LESS 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 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.

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

Colliers Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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

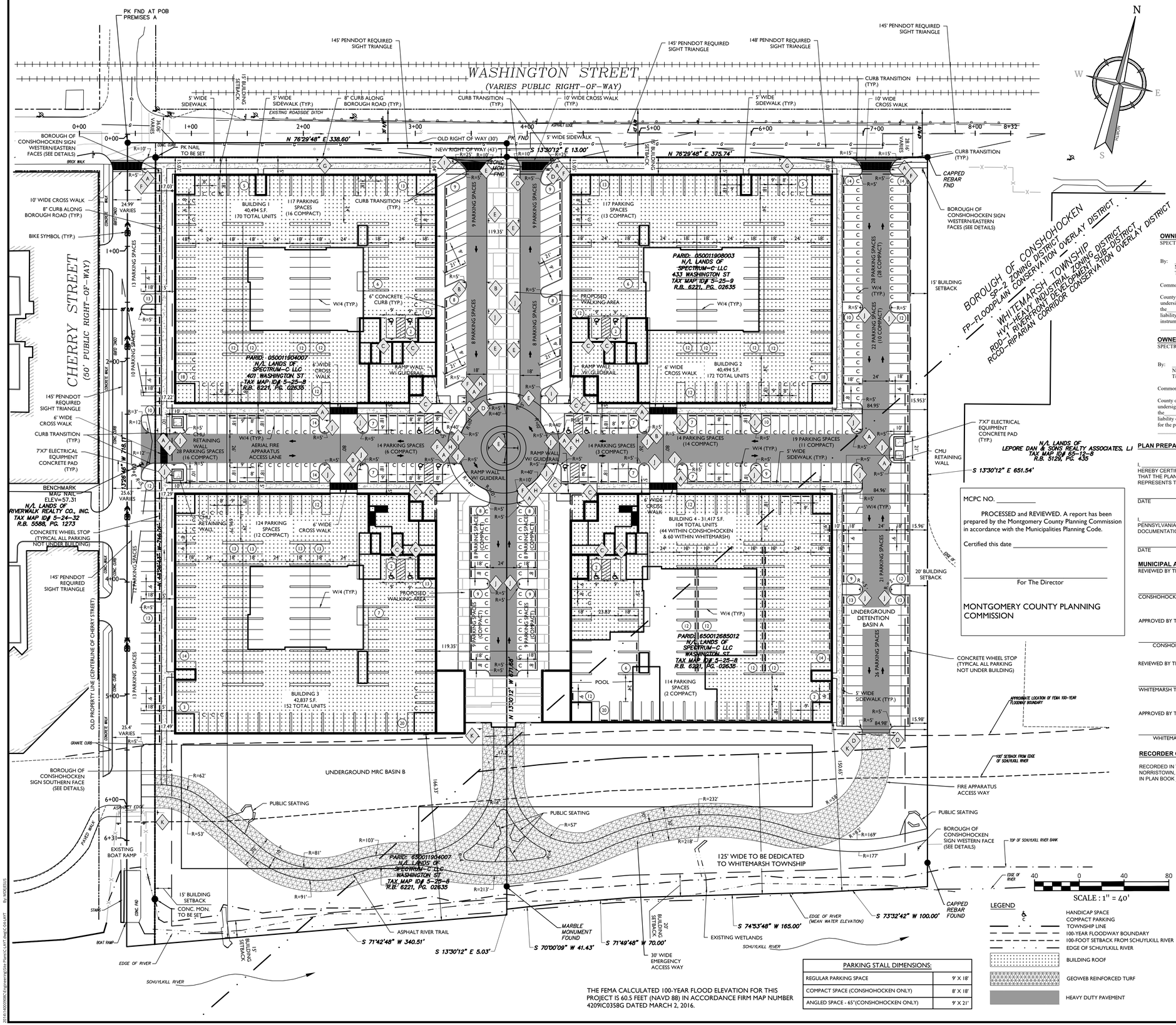
PROJECT NUMBER: 14000908C
DRAWING NAME: C-DEMO

SHEET TITLE:
EXISTING CONDITIONS AND DEMOLITION PLAN

SHEET NUMBER:
3 of 23

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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



SIGN LEGEND

SYMBOL	QUANTITY	DESCRIPTION	SIZE (IN)
A	14	'STOP' (R1-1) SIGN	30" X 30"
B	4	'TRAFFIC CIRCLE' (W16-12P) SIGN AND 'AHEAD' (W16-9P) SIGN	24" X18" 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	27	'NO PARKING - FIRE LANE' SIGN	12" x 18"
K	3	'FIRE APPARATUS ACCESS ROAD ENTRANCE' SIGN	12" x 18"

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
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:

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____.

_____ _____
CONSHOHOCKEN BOROUGH MANAGER 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

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____.

MCPC NO. _____

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

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	

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

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.

Colliers Engineering & Design
www.colliersengineering.com

Copyright © 2021, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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	DESCRIPTION	DRAWN BY

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

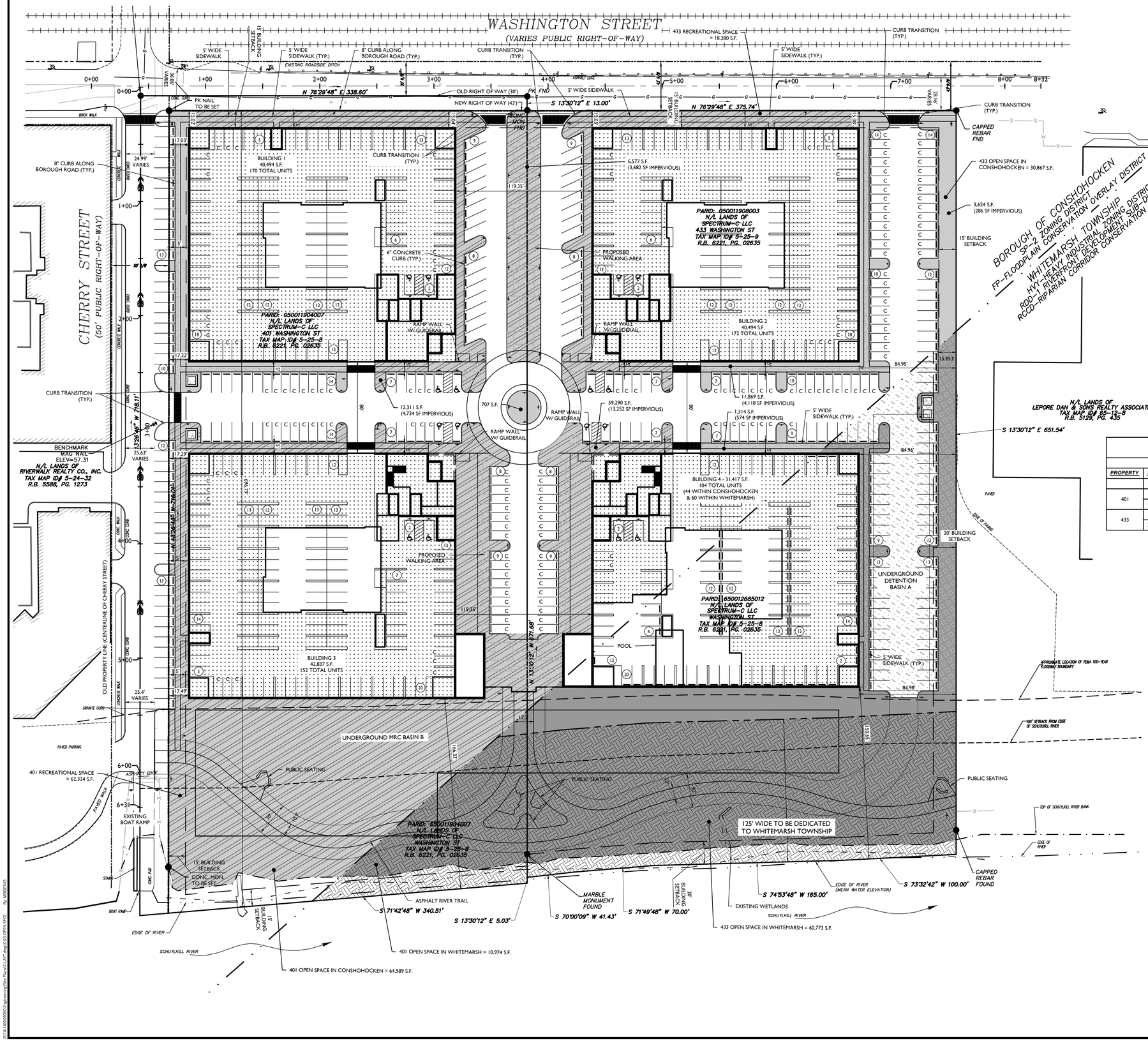
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR
PROJECT NUMBER: 14000908C		DRAWING NAME: C-LAYT	

SHEET TITLE:
DIMENSION PLAN

SHEET NUMBER:
4 of 23

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C\Engineering\Site Plans\C-LAYT.dwg|C-LAYT By: MDJEB15



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.

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%	29.78%	10,404 SF	16.22%
	4.97 ACRES (a)	0.75 ACRES	1.48 ACRES	0.24 ACRES	
433	135,118 SF	>15%	22.90%	13,711 SF	43.66%
	3.10 ACRES (b)	0.47 ACRES	0.71 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
12+00 TL 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	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.

Colliers Engineering & Design
www.colliersengineering.com

Copyright © 2021, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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

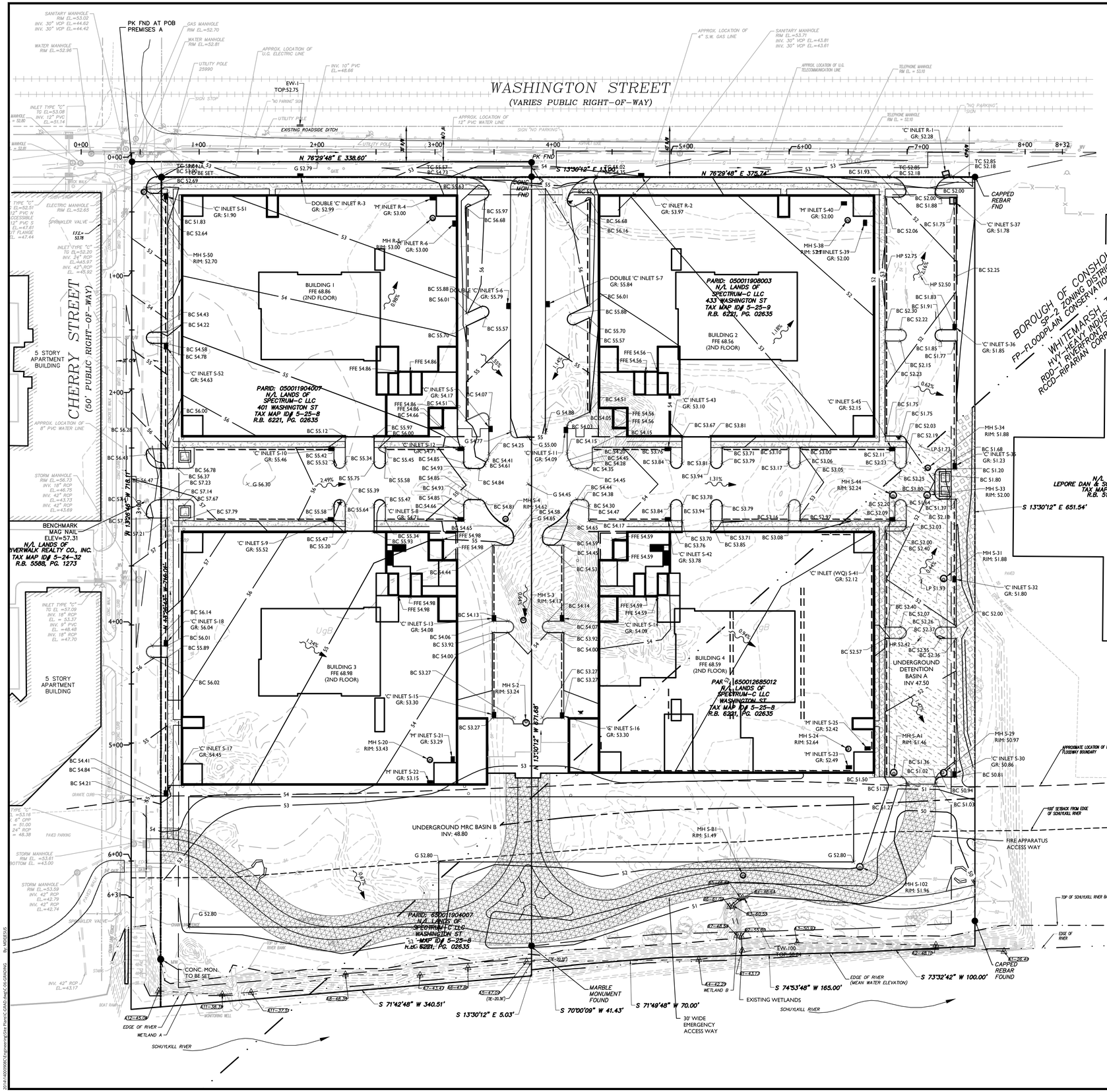
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

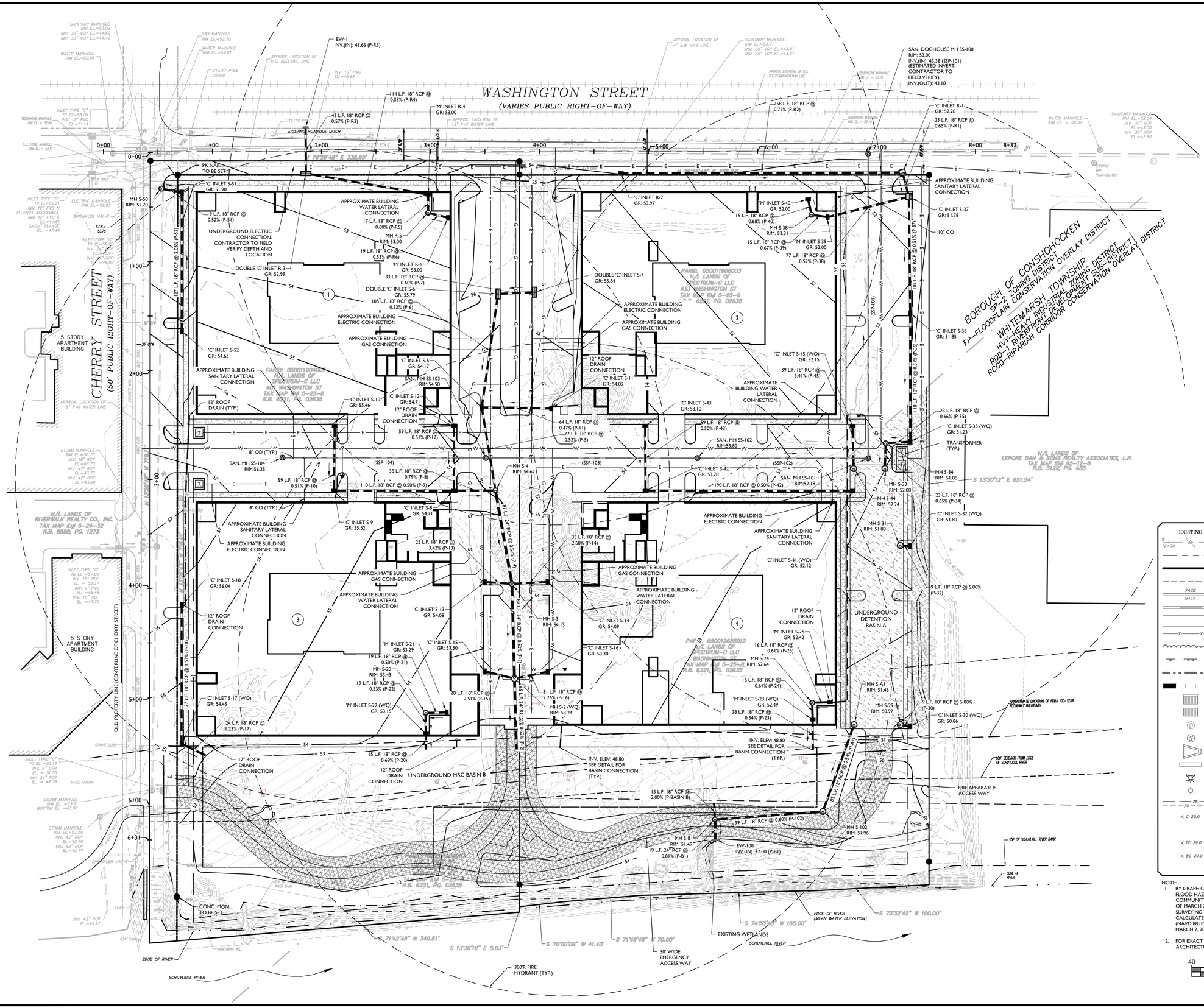
PROJECT NUMBER: 14000908C
DRAWING NAME: C-LAYT

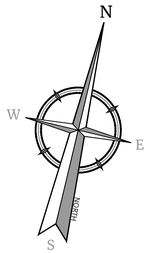
SHEET TITLE: RIVERFRONT ACCESS, RECREATION, AND OPEN SPACE PLAN

SHEET NUMBER: 5 of 23

2014\14000908C\Engineering\Site Plans\C-LAYT.dwg|C-05-OPEN-SPACE By: MDSEIDLIS


WASHINGTON STREET
(VARIES PUBLIC RIGHT-OF-WAY)
CHERRY STREET
(50' PUBLIC RIGHT-OF-WAY)
N 76°29'48" E 338.60'
S 13°30'12" E 1345.02'
N 76°29'48" E 378.74'
S 13°30'12" W 671.68'
N 13°30'12" W 718.11'
N 76°29'48" W 716.06'
S 71°42'48" W 340.51'
S 13°30'12" E 5.03'
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
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
PARID: 050011904007 N/A LANDS OF SPECTRUM-C LLC 401 WASHINGTON ST TAX MAP ID# 5-25-8 R.B. 6221, PG. 02635
PARID: 050011908003 N/A LANDS OF SPECTRUM-C LLC 433 WASHINGTON ST TAX MAP ID# 5-25-9 R.B. 6221, PG. 02635
N/A LANDS OF LEPORE DAN & SONS REALTY ASSOCIATES, L.I TAX MAP ID# 65-12-8 R.B. 5129, PG. 435
BOROUGH OF CONSHOHOCKEN
SP-2 ZONING DISTRICT
FP-FLOODPLAIN CONSERVATION OVERLAY DISTRICT
WHITEMARSH TOWNSHIP
HW-HEAVY INDUSTRIAL ZONING DISTRICT
RDD-RIVERFRONT DEVELOPMENT SUB-DISTRICT
RCOD-RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT
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
UNDERGROUND DETENTION BASIN A INV 47.50
UNDERGROUND MRC BASIN B INV: 48.80
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
5 STORY APARTMENT BUILDING
UNDERGROUND DETENTION BASIN A INV 47.50
UNDERGROUND MRC BASIN B INV: 48.80
'C' INLET S-51 GR: 51.90
DOUBLE 'C' INLET R-3 GR: 52.99
'M' INLET R-4 GR: 53.00
'C' INLET R-1 GR: 52.28
'C' INLET R-2 GR: 53.97
'M' INLET S-40 GR: 52.00
'C' INLET S-37 GR: 51.78
'C' INLET S-36 GR: 51.85
'C' INLET S-35 GR: 51.23
'C' INLET S-32 GR: 51.80
'C' INLET S-45 GR: 52.15
'C' INLET S-43 GR: 53.10
'C' INLET S-42 GR: 53.78
'C' INLET S-41 GR: 52.12
'C' INLET S-52 GR: 54.63
'C' INLET S-5 GR: 54.17
'C' INLET S-12 GR: 54.71
'C' INLET S-11 GR: 54.09
'C' INLET S-10 GR: 55.46
'C' INLET S-9 GR: 55.52
'C' INLET S-18 GR: 56.04
'C' INLET S-13 GR: 54.08
'C' INLET S-14 GR: 54.09
'C' INLET S-15 GR: 53.30
'C' INLET S-16 GR: 53.30
'C' INLET S-17 GR: 54.45
'M' INLET S-21 GR: 53.29
'M' INLET S-22 GR: 53.15
'M' INLET S-23 GR: 52.49
'M' INLET S-25 GR: 52.42
'C' INLET S-30 GR: 50.86
DOUBLE 'C' INLET S-6 GR: 55.79
DOUBLE 'C' INLET S-7 GR: 55.84
INLET R-6 GR: 53.00
MH S-50 RIM: 52.70
MH R-5 RIM: 53.00
MH S-38 RIM: 52.91
INLET S-39 GR: 52.00
MH S-34 RIM: 51.88
MH S-33 RIM: 52.00
MH S-31 RIM: 51.88
MH S-29 RIM: 50.97
MH S-44 RIM: 52.24
MH S-4 RIM: 54.62
MH S-3 RIM: 54.12
MH S-2 RIM: 53.24
MH S-20 RIM: 53.43
MH S-24 RIM: 52.64
MH S-A1 RIM: 51.46
MH S-B1 RIM: 51.49
MH S-102 RIM: 51.96
INLET S-A1 GR: 52.10
INLET S-B1 GR: 52.10
INLET S-C1 GR: 52.10
INLET S-D1 GR: 52.10
INLET S-E1 GR: 52.10
INLET S-F1 GR: 52.10
INLET S-G1 GR: 52.10
INLET S-H1 GR: 52.10
INLET S-I1 GR: 52.10
INLET S-J1 GR: 52.10
INLET S-K1 GR: 52.10
INLET S-L1 GR: 52.10
INLET S-M1 GR: 52.10
INLET S-N1 GR: 52.10
INLET S-O1 GR: 52.10
INLET S-P1 GR: 52.10
INLET S-Q1 GR: 52.10
INLET S-R1 GR: 52.10
INLET S-S1 GR: 52.10
INLET S-T1 GR: 52.10
INLET S-U1 GR: 52.10
INLET S-V1 GR: 52.10
INLET S-W1 GR: 52.10
INLET S-X1 GR: 52.10
INLET S-Y1 GR: 52.10
INLET S-Z1 GR: 52.10
'C' INLET (WQ) S-41 GR: 52.12
'C' INLET S-32 GR: 51.80
'M' INLET S-30 GR: 50.86
'C' INLET S-42 GR: 53.78
'C' INLET S-43 GR: 53.10
'C' INLET S-45 GR: 52.15





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	CURB	FACE
BACK		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.

2014\14000908C\Engineering\Site Plans\C-UTIL.dwg|C-07 UTILITY By: JORDAN WOODS

Colliers
Engineering & Design
www.colliersengineering.com

Copyright © 2021, Colliers Engineering & Design. All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

811 PROTECT YOURSELF
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

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 A

SHEET NUMBER: 7 of 23

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	50.84	24" RCP	47.00		
R-1	60 in. x 60 in. 'C' INLET	52.28	18" RCP	48.45	18" RCP	48.25
R-2	24 in. x 45 in. 'C' INLET	53.97			18" RCP	50.30
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	53.00	18" RCP	49.85	18" RCP	49.65
R-5	48 in. dia. CYLINDER MH	53.00	18" RCP	50.15	18" RCP	49.95
R-6	24 in. x 45 in. 'M' INLET	53.00			18" RCP	50.25
S-2 (WQ)	60 in. dia. CYLINDER MH	53.24	24" RCP 18" RCP 18" RCP	49.40 49.40 49.40	24" RCP	49.20
S-3	48 in. dia. CYLINDER MH	54.13	24" RCP 18" RCP 18" RCP	50.05 50.05 50.05	24" RCP	49.85
S-4	48 in. dia. CYLINDER MH	54.62	18" RCP 18" RCP	51.00 50.80	24" RCP	50.50
S-5	24 in. x 45 in. 'C' INLET	54.17	18" RCP 18" RCP	51.60 51.60	18" RCP	51.40
S-6	24 in. x 45 in. 'C' INLET	55.79	18" RCP	52.35	18" RCP	52.15
S-7	24 in. x 45 in. 'C' INLET	55.84			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	55.52	18" RCP	52.05	18" RCP	51.85
S-10	24 in. x 45 in. 'C' INLET	55.46			18" RCP	52.35
S-11	24 in. x 45 in. 'C' INLET	54.09			18" RCP	51.90
S-12	24 in. x 45 in. 'C' INLET	54.71			18" RCP	51.60
S-13	24 in. x 45 in. 'C' INLET	54.08			18" RCP	50.90
S-14	24 in. x 45 in. 'C' INLET	54.09			18" RCP	50.90
S-15	24 in. x 45 in. 'C' INLET	53.30			18" RCP	50.10
S-16	24 in. x 45 in. 'C' INLET	53.30			18" RCP	50.10
S-17 (WQ)	24 in. x 45 in. 'C' INLET	54.45	18" RCP	49.30	18" RCP	49.10
S-18	24 in. x 45 in. 'C' INLET	56.04			18" RCP	51.25
S-20	48 in. dia. CYLINDER MH	53.43	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	53.15	18" RCP	49.20	18" RCP	48.90
S-23 (WQ)	24 in. x 45 in. 'M' INLET	52.49	18" RCP	49.15	18" RCP	48.95
S-24	48 in. dia. CYLINDER MH	52.64	18" RCP	49.45	18" RCP	49.25
S-25	24 in. x 45 in. 'M' INLET	52.42			18" RCP	49.55
S-29	60 in. dia. CYLINDER MH	50.97	18" RCP	45.95		
S-30 (WQ)	24 in. x 45 in. 'C' INLET	50.86			18" RCP	46.40
S-31	60 in. dia. CYLINDER MH	51.88	18" RCP	45.95		
S-32 (WQ)	24 in. x 45 in. 'C' INLET	51.80			18" RCP	46.40
S-33	60 in. dia. CYLINDER MH	52.00	18" RCP	45.95		
S-34	48 in. dia. CYLINDER MH	51.88	18" RCP	46.30	18" RCP	46.10
S-35 (WQ)	24 in. x 45 in. 'C' INLET	51.23	18" RCP	46.65	18" RCP	46.45
S-36	24 in. x 45 in. 'C' INLET	51.85	18" RCP	47.35	18" RCP	47.25
S-37	60 in. x 60 in. 'C' INLET	51.78	18" RCP 18" RCP	48.10 48.10	18" RCP	47.90
S-38	48 in. dia. CYLINDER MH	52.31	18" RCP	49.10	18" RCP	48.90
S-39	24 in. x 45 in. 'M' INLET	52.00	18" RCP	48.80	18" RCP	48.50
S-40	24 in. x 45 in. 'M' INLET	52.00			18" RCP	49.20
S-41 (WQ)	24 in. x 45 in. 'C' INLET	52.12	18" RCP	47.55		
S-42	24 in. x 45 in. 'C' INLET	53.78	18" RCP	48.70	18" RCP	48.50
S-43	24 in. x 45 in. 'C' INLET	53.10			18" RCP	49.00
S-44	60 in. dia. CYLINDER MH	52.24	18" RCP	47.00		
S-45 (WQ)	24 in. x 45 in. 'C' INLET	52.15			18" RCP	48.33
S-50	48 in. dia. CYLINDER MH	52.70	18" RCP	47.70		
S-51	24 in. x 45 in. 'C' INLET	51.90	18" RCP	48.00	18" RCP	47.80
S-52	24 in. x 45 in. 'C' INLET	54.63			18" RCP	50.60
S-102	60 in. dia. CYLINDER MH	51.96	18" RCP	48.05	18" RCP	47.95
S-A1	60 in. dia. CYLINDER MH	51.46			18" RCP	48.50
S-B1	48 in. dia. CYLINDER MH	51.49	18" RCP 18" RCP	48.51 47.35	24" RCP	47.15

Proposed Storm Network Pipe Table

Pipe I.D.	Description	Length	Invert Up	Invert Dn	Slope
P-2	24"RCP	65'	49.20	48.80	0.62%
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	77'	51.40	51.00	0.52%
P-6	18"RCP	105'	52.15	51.60	0.52%
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'	51.90	51.60	0.47%
P-12	18"RCP	59'	51.60	51.30	0.51%
P-13	18"RCP	25'	50.90	50.05	3.42%
P-14	18"RCP	33'	50.90	50.05	2.60%
P-15	18"RCP	28'	50.10	49.40	2.51%
P-16	18"RCP	31'	50.10	49.40	2.26%
P-17	18"RCP	24'	49.10	48.80	1.23%
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	28'	48.95	48.80	0.54%
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	9'	46.40	45.95	5.00%
P-32	18"RCP	9'	46.40	45.95	5.00%
P-34	18"RCP	23'	46.10	45.95	0.65%
P-35	18"RCP	23'	46.45	46.30	0.66%
P-36	18"RCP	118'	47.25	46.65	0.51%
P-37	18"RCP	107'	47.90	47.35	0.51%
P-38	18"RCP	77'	48.50	48.10	0.52%
P-39	18"RCP	15'	48.80	48.90	0.67%
P-40	18"RCP	15'	49.20	49.10	0.68%
P-42	18"RCP	190'	48.50	47.55	0.50%
P-43	18"RCP	59'	49.00	48.70	0.50%
P-45	18"RCP	39'	48.33	47.00	3.41%
P-51	18"RCP	19'	47.80	47.70	0.52%
P-52	18"RCP	127'	50.60	48.00	2.05%
P-102	18"RCP	99'	47.95	47.35	0.60%
P-A1	18"RCP	85'	48.50	48.05	0.54%
P-B1	24"RCP	19'	47.15	47.00	0.81%
P-BASIN B	18"RCP	15'	48.80	48.51	2.00%
P-R1	18"RCP	23'	48.25	48.10	0.65%
P-R2	18"RCP	258'	50.30	48.45	0.72%
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%

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	54.50	8" SAN. PVC	47.00	8" SAN. PVC	46.90
SS-104	48 in. dia. CONED MH	56.25			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	194'	45.90	46.90	0.52%
SSP-104	8"SAN. PVC	187'	47.00	47.95	0.51%

Colliers
Engineering & Design
www.colliersengineering.com

Copyright © 2021, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

811 PROTECT YOURSELF
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

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

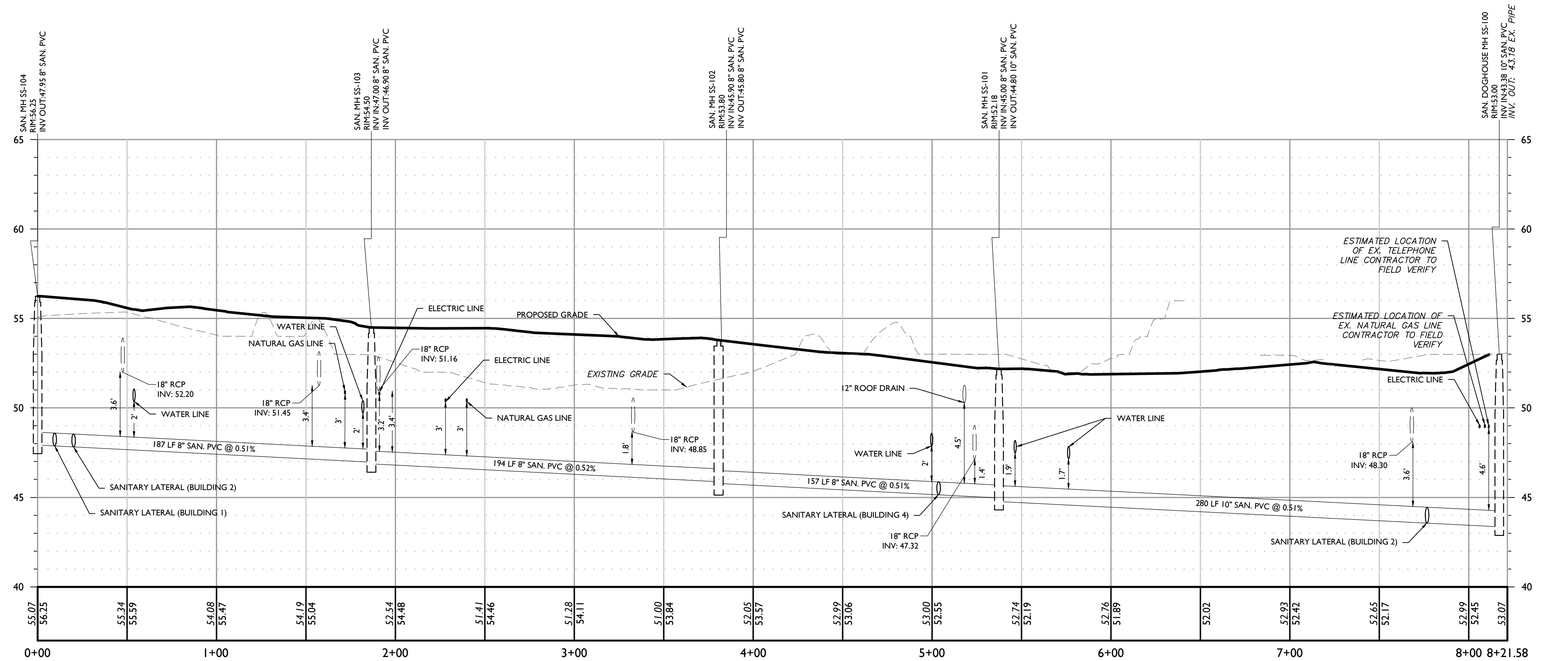
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

PROJECT NUMBER:	DRAWING NAME:
14000908C	C-UTIL

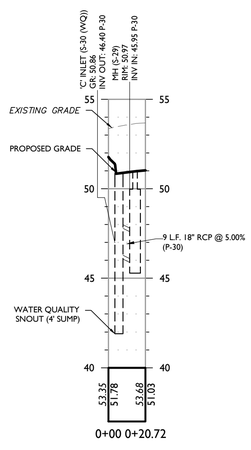
SHEET TITLE:
UTILITY PLAN B

SHEET NUMBER:
8 of 23

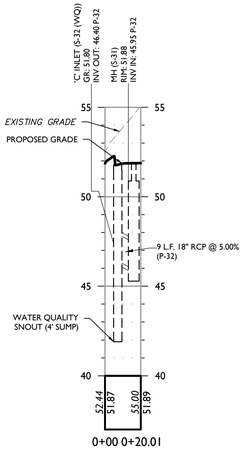
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



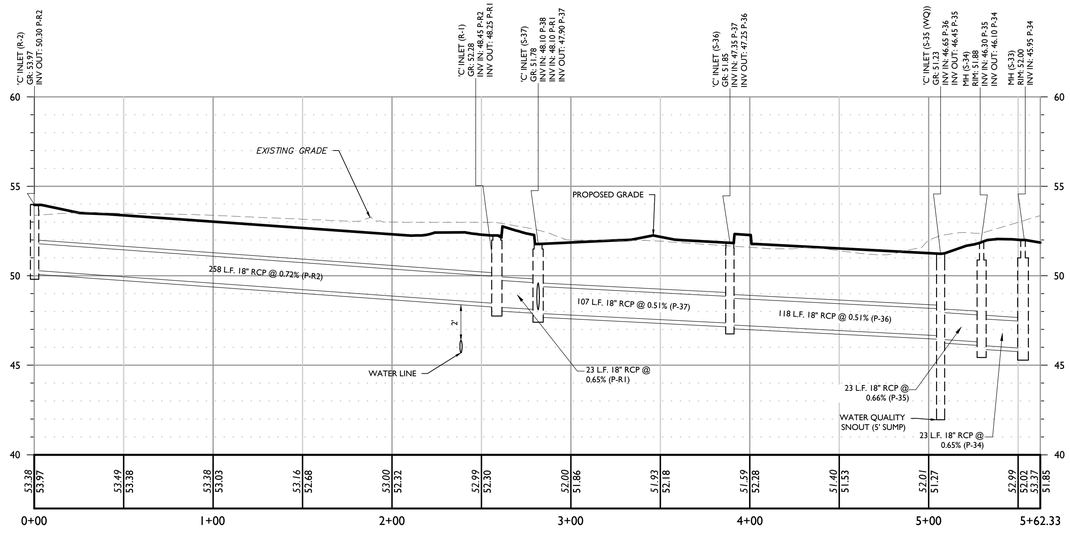
PROFILE OF MH SS-104 TO MH SS-100
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



PROFILE OF INLET S-30 TO BASIN A (MH S-29)
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



PROFILE OF INLET S-32 TO BASIN A (MH S-31)
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



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

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

\\Publish-1461\GC-PROF.dwg\C-09-PROFILES By: MDREGIS

Colliers
Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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

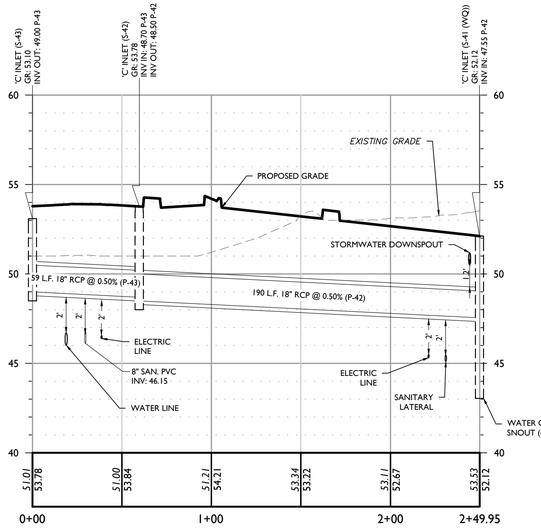
Colliers Engineering & Design
LEHIGH VALLEY
941 Marcon Boulevard, Suite 801
Allentown, PA 18109
Phone: 610.868.4201
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

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

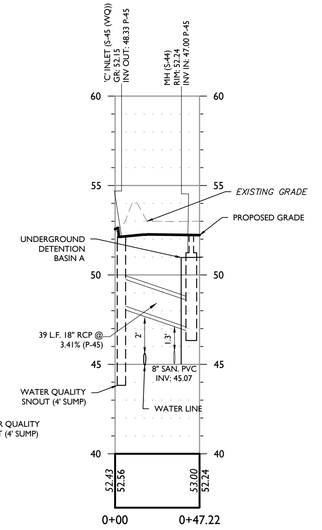
PROJECT NUMBER: 14000908C
DRAWING NAME: C-PROF

SHEET TITLE: PROFILES

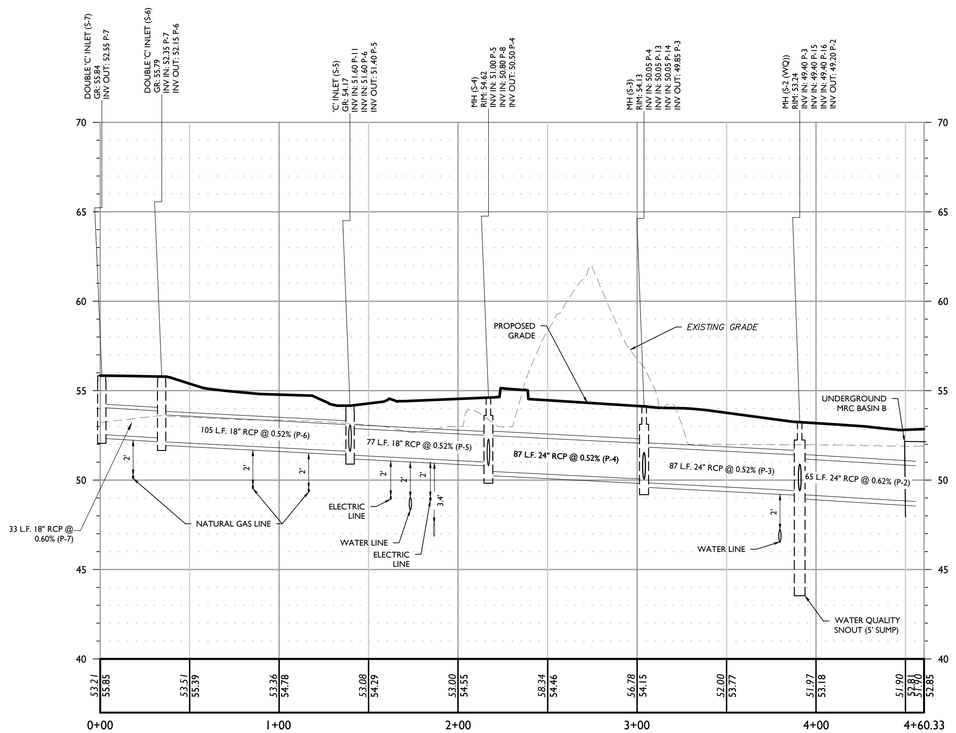
SHEET NUMBER: 9 of 23



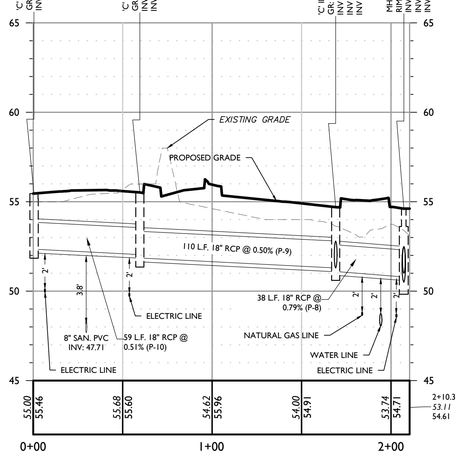
PROFILE OF INLET S-43 TO BASIN A (INLET S-41)
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



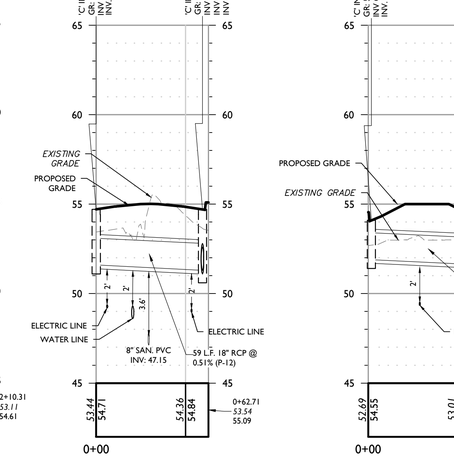
PROFILE OF INLET S-45 TO BASIN A (MH S-44)
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



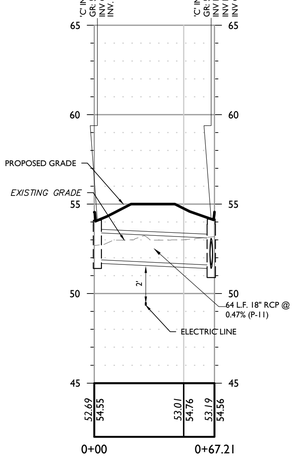
PROFILE OF INLET S-7 TO BASIN B
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



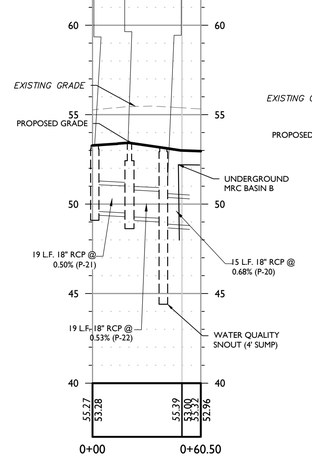
PROFILE OF INLET S-10 TO MH S-4
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



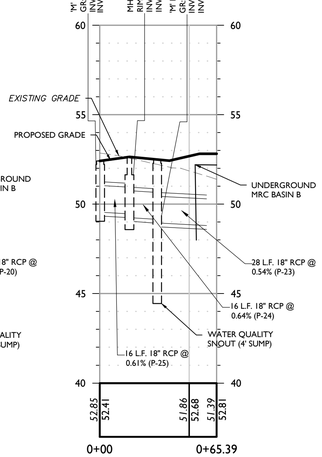
PROFILE OF INLET S-12 TO INLET S-8
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



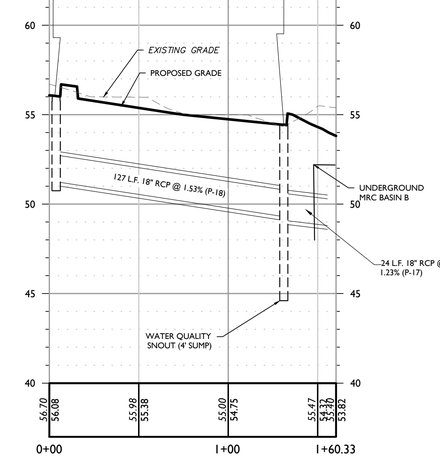
PROFILE OF INLET S-11 TO INLET S-5
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



PROFILE OF INLET S-21 TO BASIN B
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



PROFILE OF INLET S-25 TO BASIN B
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



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

PR

SCALE : 1" = 4'
VERTICAL

SCALE : 1" = 40'
HORIZONTAL

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Colliers
Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046161ER
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

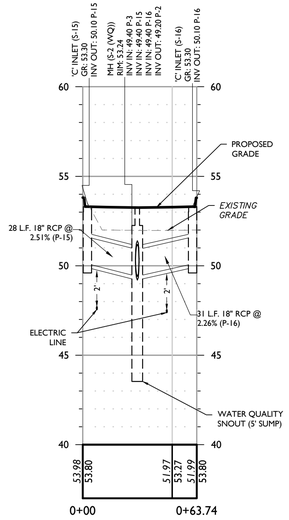
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

PROJECT NUMBER:	DRAWING NAME:
14000908C	C-PROF

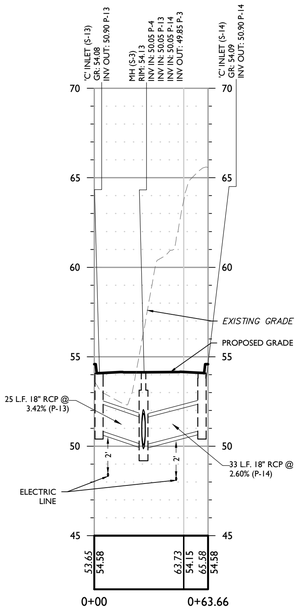
SHEET TITLE:
PROFILES

SHEET NUMBER:
10 of 23

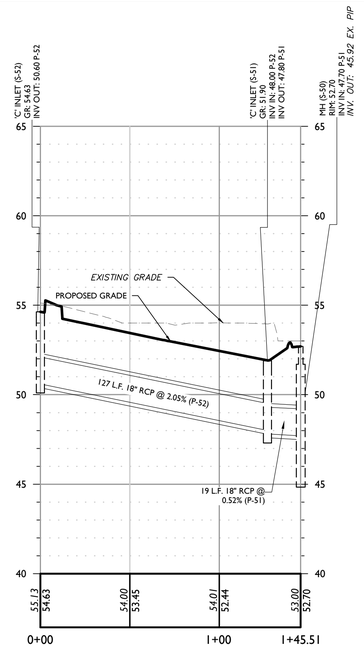
\\Ac\data\n_14\01\C-PROF.dwg|C-10 PROFILES By: MDS|01/5/5



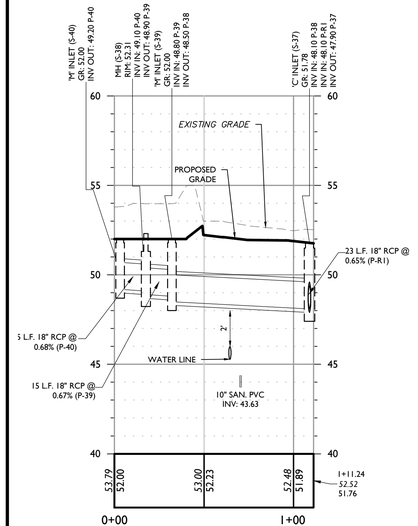
PROFILE OF INLET S-16 TO INLET S-15
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



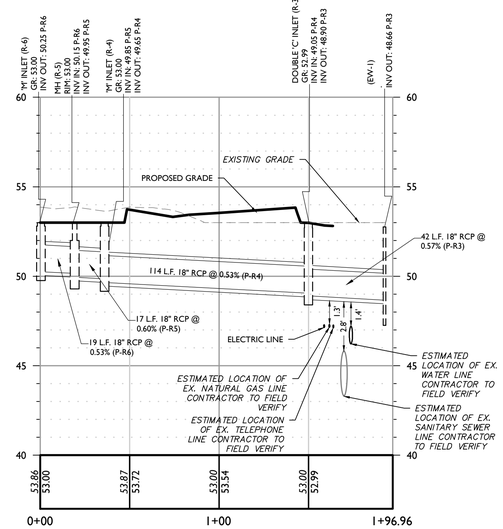
PROFILE OF INLET S-14 TO INLET S-13
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



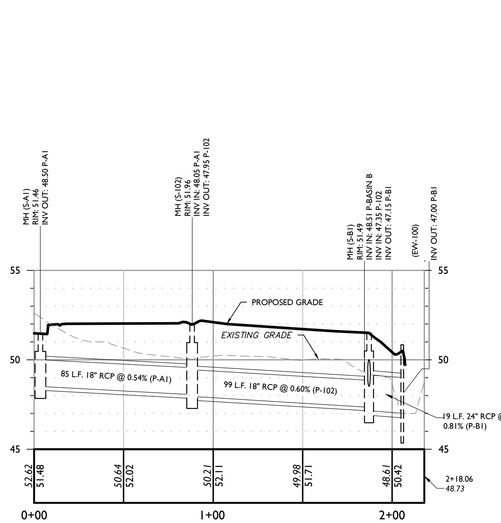
PROFILE OF INLET S-52 TO MH S-50
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



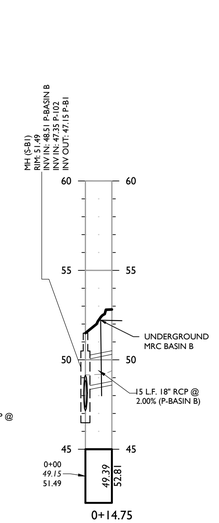
PROFILE OF INLET S-40 TO INLET S-37
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



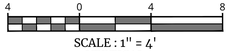
PROFILE OF INLET R-6 TO EXISTING ROADSIDE DITCH
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



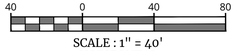
PROFILE OF MH S-A1 TO EW-100
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



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



SCALE : 1" = 4'
VERTICAL



SCALE : 1" = 40'
HORIZONTAL

Colliers
Engineering & Design

www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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

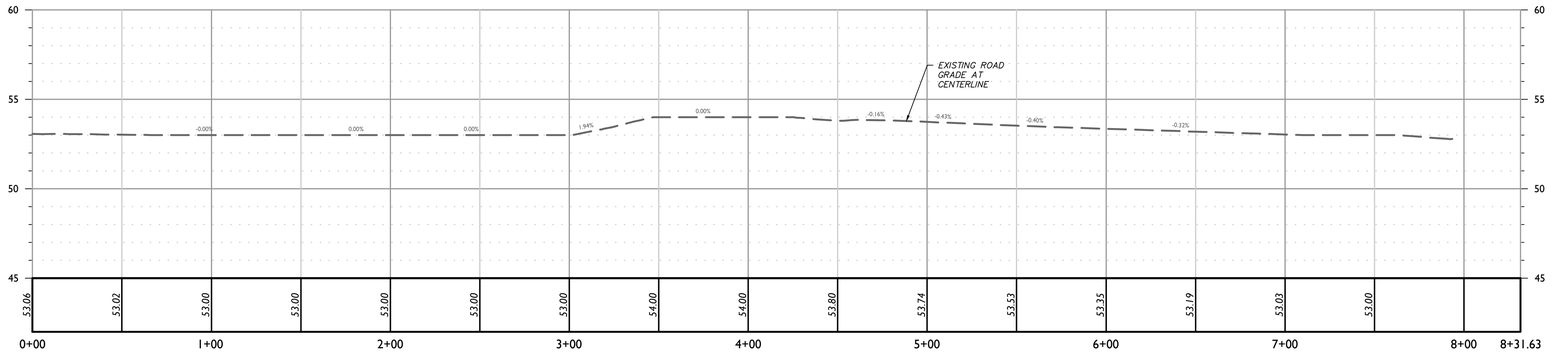
PROJECT NUMBER: 14000908C
DRAWING NAME: C-PROF

SHEET TITLE: PROFILES

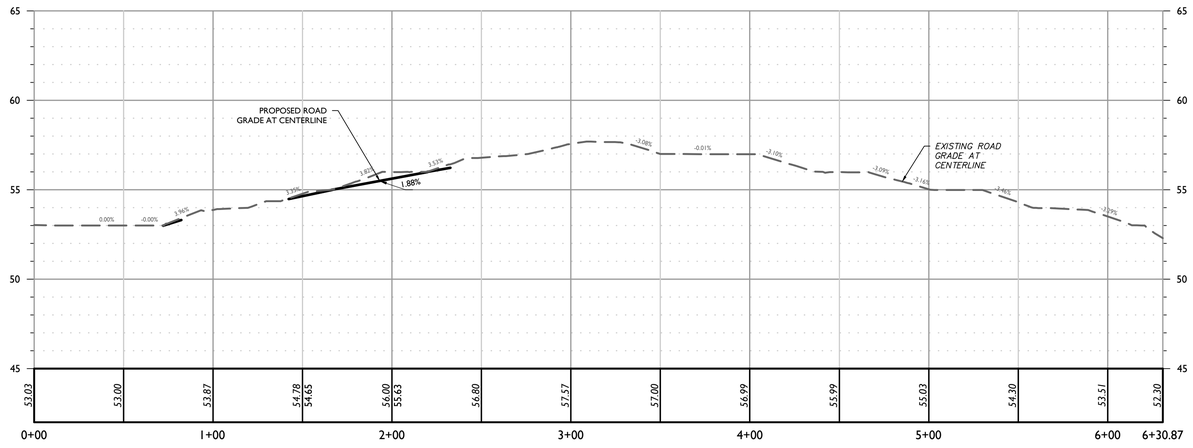
SHEET NUMBER: 11 of 23

\\APublish-146\1GC-PROF.dwg\C-11-PROFILES By: MDIEGES

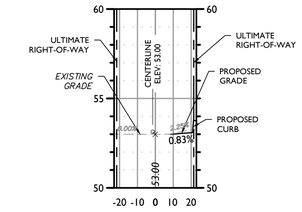
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



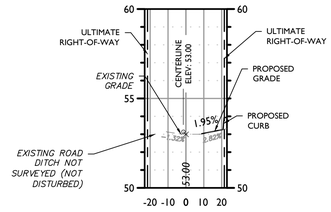
PROFILE OF WASHINGTON STREET
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



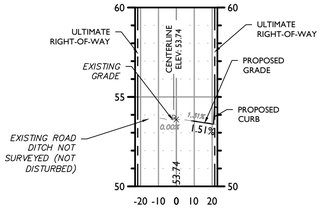
PROFILE OF CHERRY STREET
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



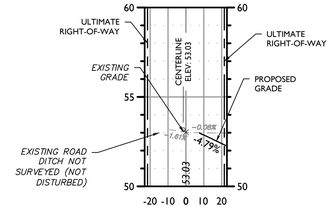
CROSS SECTION OF WASHINGTON STREET
STATION: 1+00
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



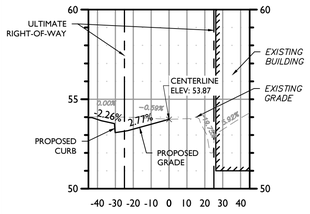
CROSS SECTION OF WASHINGTON STREET
STATION: 3+00
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



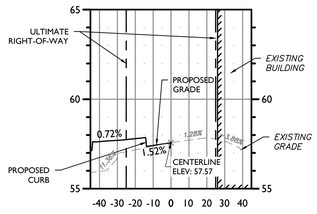
CROSS SECTION OF WASHINGTON STREET
STATION: 5+00
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



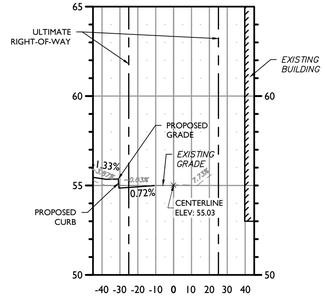
CROSS SECTION OF WASHINGTON STREET
STATION: 7+00
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



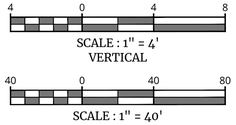
CROSS SECTION OF CHERRY STREET
STATION: 1+00
HORIZONTAL : 1" = 40'
VERTICAL : 1" = 4'



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'



SCALE : 1" = 4'
VERTICAL

SCALE : 1" = 40'
HORIZONTAL

Colliers
Engineering & Design

www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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

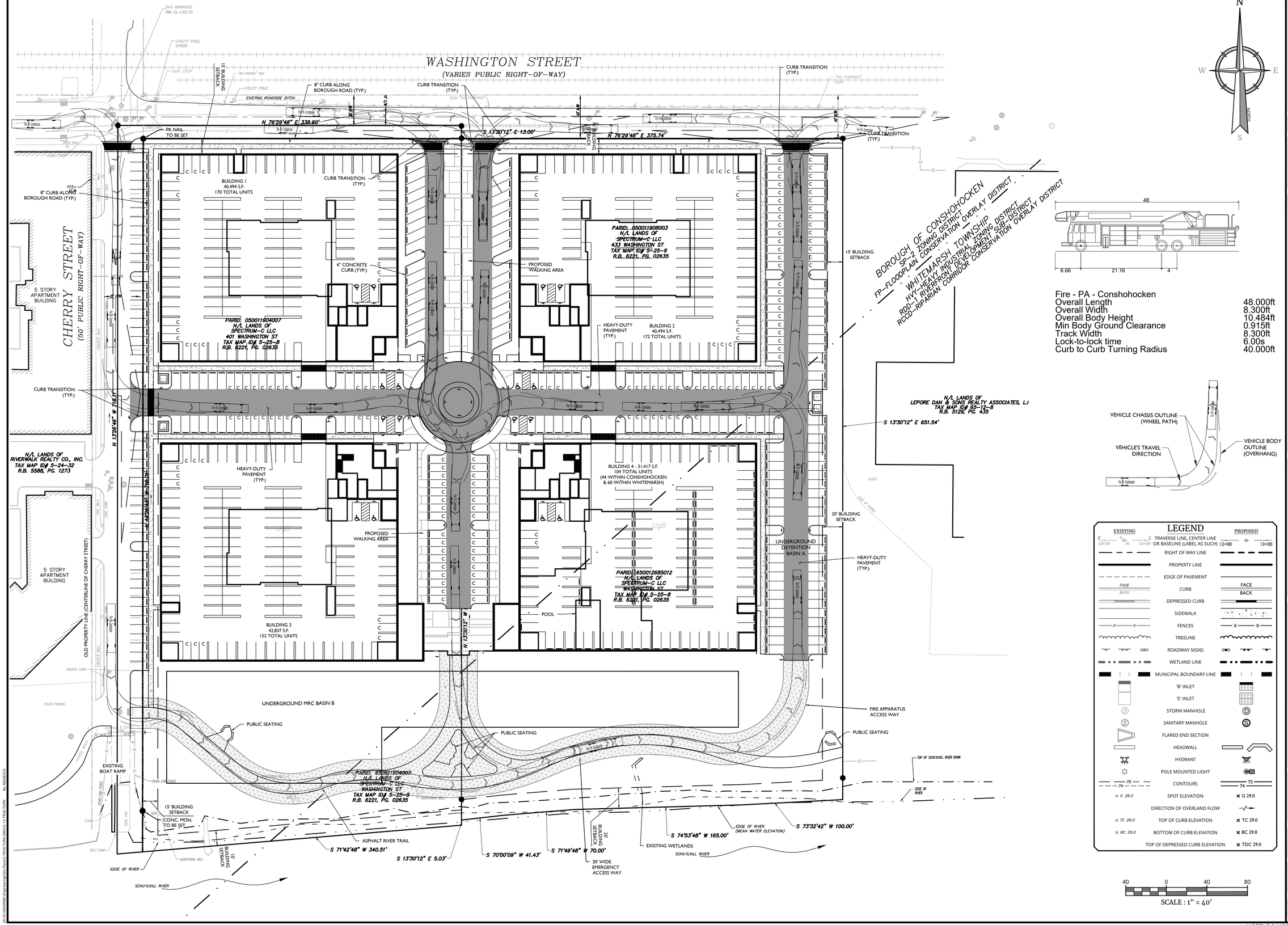
PROJECT NUMBER:	DRAWING NAME:
14000908C	C-ROAD-PROF

SHEET TITLE:
ROAD PROFILES & SECTIONS

SHEET NUMBER:
12 of 23

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C\Engineering\Site Plans\C-ROAD-PROF.dwg|C-12 LAYOUT By: MCJOHNSON



Colliers Engineering & Design

www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

811 PROTECT YOURSELF
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

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

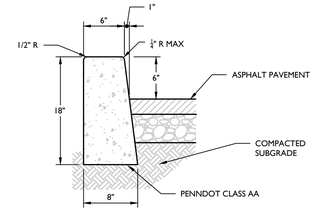
PROJECT NUMBER: 14000908C
DRAWING NAME: C-TRUK-TURN

SHEET TITLE:
TRUCK TURNING PLAN

SHEET NUMBER:
13 of 23

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

20114000908C\Engineering\Site Plans\C-TRUK-TURN.DWG\C-13 TRUK-TURN By: MDEBOJS

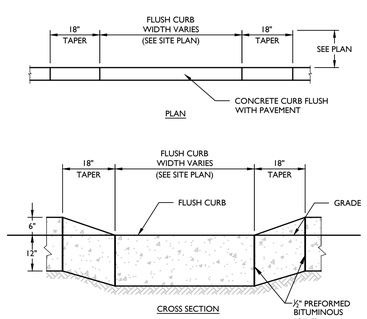


NOTES:

1. PREFORMED BITUMINOUS FIBER TRAVERSE JOINTS, 1/2" THICK AT 20' MAX. INTERVALS ALONG THE CURB.
2. PROVIDE CONTRACTION JOINTS (2" DEEP X $\frac{3}{16}$" WIDE) 4'-0" MIN TO 10'-0" MAX INTERVALS.

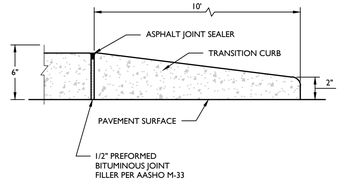
CONCRETE CURB (ASPHALT PAVEMENT) DETAIL

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



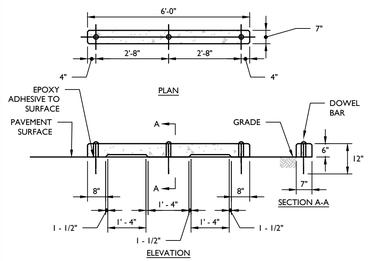
CONCRETE FLUSH CURB DETAIL

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



CURB TAPER DETAIL

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

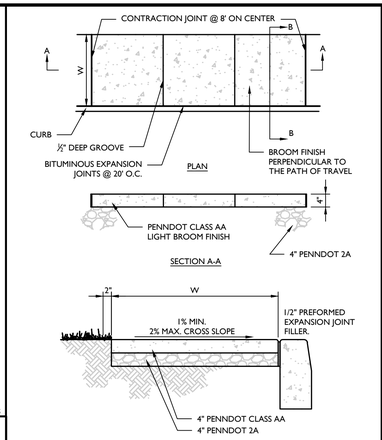


NOTES:

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

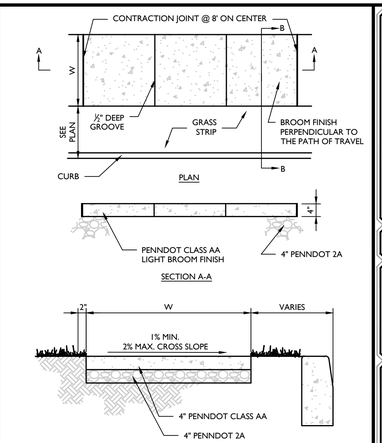


NOTES:

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

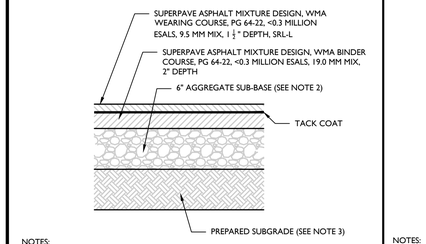


NOTES:

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

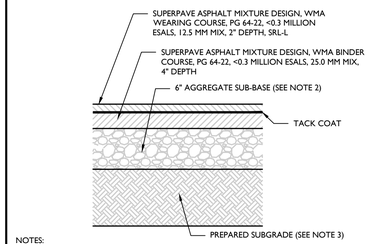


NOTES:

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

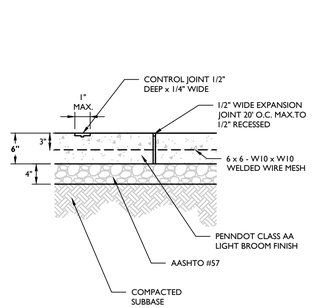


NOTES:

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.

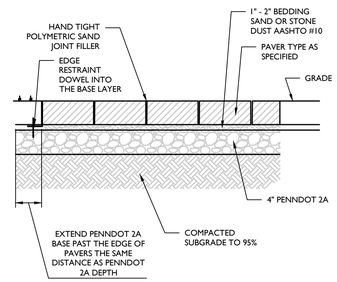
HEAVY-DUTY PAVEMENT DETAIL

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



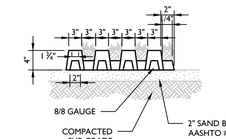
CONCRETE PAVEMENT DETAIL

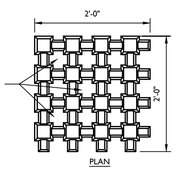
NOT TO SCALE | MCPA-SITE-PVMT-1600 | 05/01/18



TYPICAL STANDARD PAVER SECTION DETAIL

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



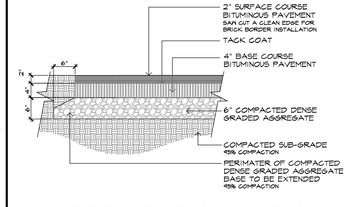


NOTES:

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".

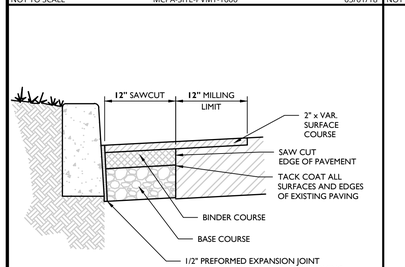
GRASS PAVERS (FOR EMERGENCY ACCESS DRIVE) DETAIL

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



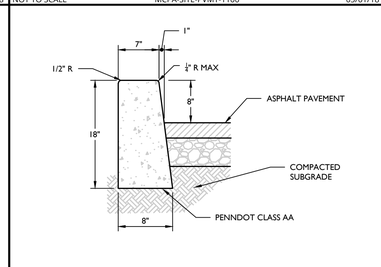
WATERFRONT ASPHALT WALKWAY

NOT TO SCALE



SAWCUT AND PAVEMENT RESTORATION DETAIL

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

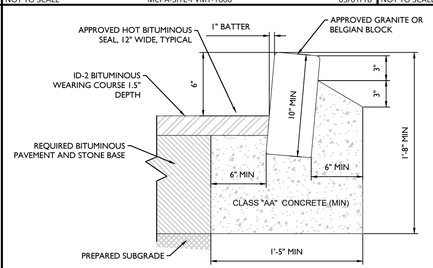


NOTES:

1. PREFORMED BITUMINOUS FIBER TRAVERSE JOINTS, 1/2" THICK AT 20' MAX. INTERVALS ALONG THE CURB.
2. PROVIDE CONTRACTION JOINTS (2" DEEP X $\frac{3}{16}$" WIDE) 4'-0" MIN TO 10'-0" MAX INTERVALS.

WASHINGTON STREET R.O.W. CONCRETE CURB DETAIL

NOT TO SCALE | WASHINGTON ROW CURB | 05/01/18



CHERRY STREET BELGIAN BLOCK CURB DETAIL

NOT TO SCALE

Colliers
Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

811 PROTECT YOURSELF
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

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:	DRAWING NAME:
14000908C	C-DTLS

SHEET TITLE:
CONSTRUCTION DETAILS

SHEET NUMBER:
14 of 23

\\APub\sh-1-14000\C-DTLS.dwg|C-14 DETAILS By: MCDONNSON

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

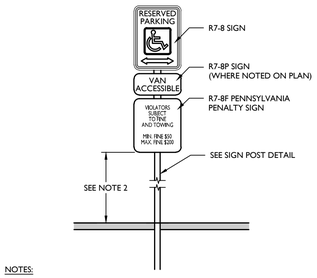
NOT TO SCALE | MCCM-SIGN-WARN-W16-12P | 12/01/20

24" x 12"

COLORS:
LEGEND = BLACK
BACKGROUND = YELLOW (RETROREFLECTIVE)

W16-9P SIGN DETAIL

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

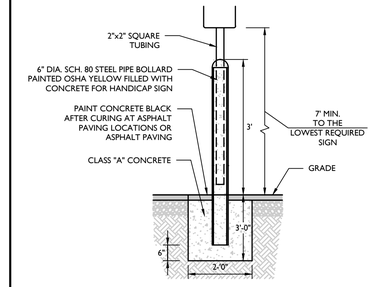


NOTES:

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.

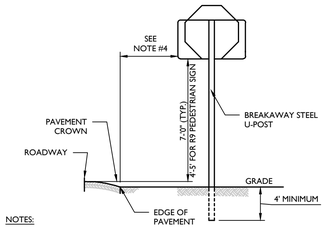
ACCESSIBLE PARKING SIGN DETAIL

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



BOLLARD MOUNTED SIGN DETAIL

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



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

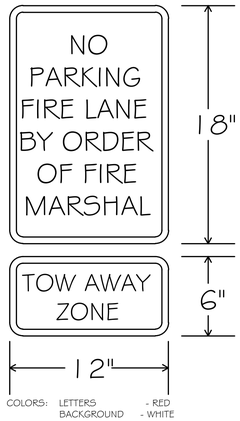
NOT TO SCALE | MCCM-SIGN-REGU-R3-7 | 12/01/20

36" x 12"

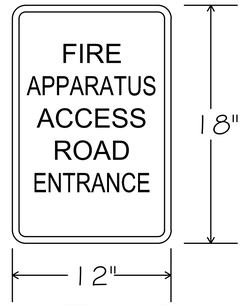
COLORS:
LEGEND = BLACK
BACKGROUND = BLACK
ARROW = WHITE (RETROREFLECTIVE)

R6-1L SIGN DETAIL

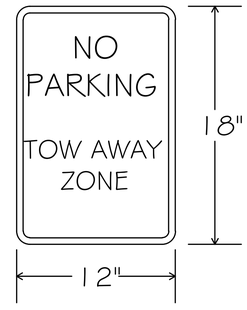
NOT TO SCALE | MCCM-SIGN-REGU-R6-1 | 12/01/20



"NO PARKING - FIRE LANE" SIGN (NTS)



FIRE APPARATUS ENTRANCE SIGN (NTS)

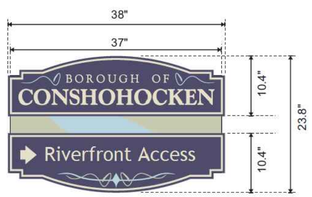


"NO PARKING - TOW AWAY ZONE" SIGN (NTS)

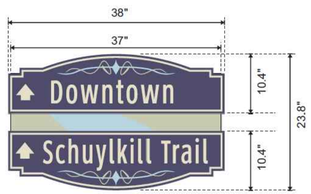
WESTERN FACE (NTS)

EASTERN FACE (NTS)

EASTERN FACE (NTS)



WESTERN FACE (NTS)



SOUTHERN FACE (NTS)

Colliers
Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

811 PROTECT YOURSELF
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

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-DTLS

SHEET TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: 15 of 23

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

U:\Publish_14000\C-DTLS.dwg|C-15-DETAILS By: MDOHNSON

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 ADA 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.

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.

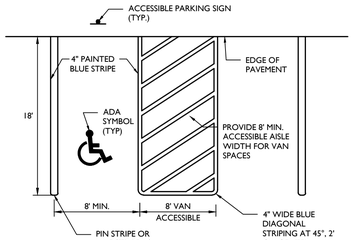
F. EXTERIOR DOORWAYS - MUST HAVE A "LEVEL" LANDING AREA ON THE EXTERIOR SIDE OF THE DOOR THAT IS SLOPED NO MORE THAN 1:48 (1/4" PER FOOT OR NORMALLY 2.0%) FOR POSITIVE DRAINAGE. THIS LANDING AREA IS GENERALLY 5 FT X 5 FT, EXCEPT WHERE OTHERWISE PERMITTED BY ADA STANDARDS. (SEE APPLICABLE CODE SECTIONS).

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

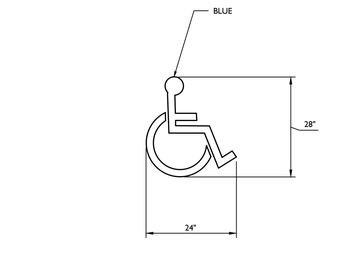
MCPA-SITE-HADA-1602 12/01/20

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.



ACCESSIBLE PARKING STALL DETAIL

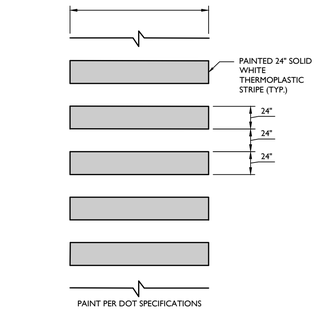
NOT TO SCALE MCPA-SITE-MRKG-1600 05/01/18



STROKE WIDTH: MINIMUM/STANDARD = 3"

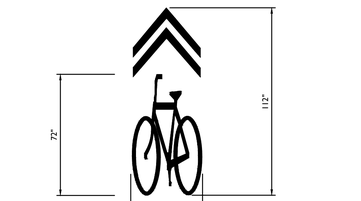
ADA SYMBOL DETAIL

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



PEDESTRIAN CROSSWALK DETAIL

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

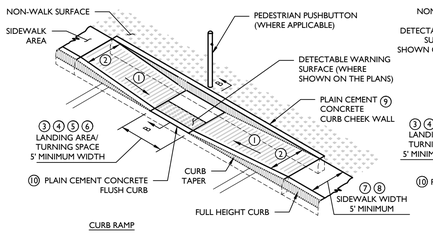


1. PAINT MARKINGS IN ACCORDANCE MUTCD CHAPTER 9.
2. SYMBOL TO BE REPEATED FACING ALTERNATING DIRECTIONS EVERY 100 FEET ALONG THE CENTER OF CHERRY STREET.

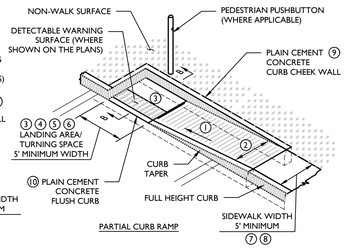
BIKE LANE PAVEMENT MARKING

NOT TO SCALE

SECTION B-B



CURB RAMP



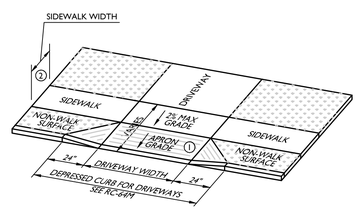
PARTIAL CURB RAMP

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

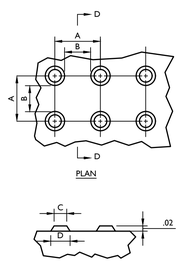


NOTES:

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



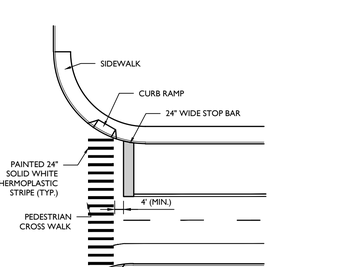
TRUNCATED DOME DIMENSIONS		
DIM	MIN mm (inch)	MAX mm (inch)
A	1.6"	2.4"
B	0.65"	1.5"
C	NOTE 1	NOTE 1
D	0.9"	1.4"

NOTES:

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

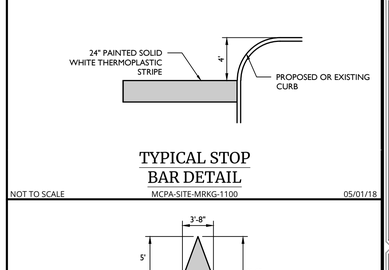
DETECTABLE WARNING SURFACE (DWS) TRUNCATED DOME DETAIL

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



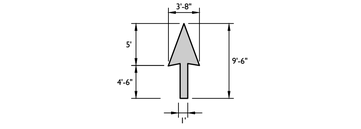
TYPICAL INTERSECTION MARKINGS WITH CROSSWALK DETAIL

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



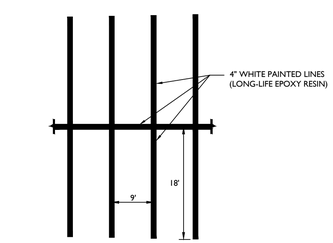
TYPICAL STOP BAR DETAIL

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



WHITE STRAIGHT PAVEMENT ARROW DETAIL

NOT TO SCALE MCPA-SITE-MRKG-1200 05/01/18



TYPICAL PARKING STALL DETAIL

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

REV	DESCRIPTION	DRAWN BY	DATE

Colliers Engineering & Design
www.colliersengineering.com

Copyright © 2021, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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

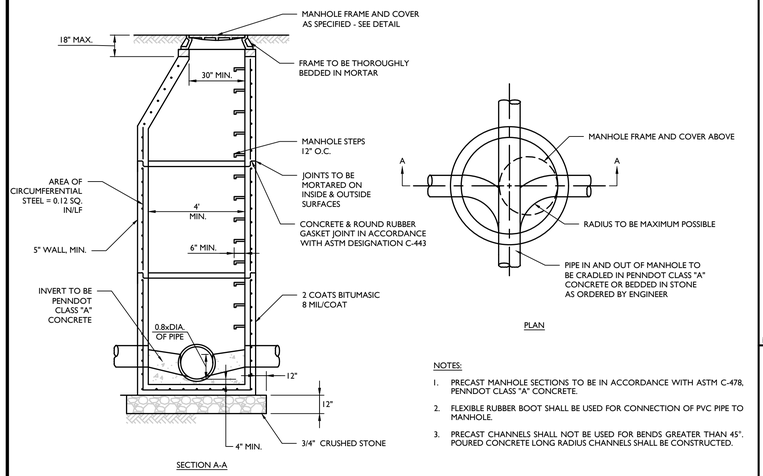
C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046162R
COLLIERS ENGINEERING & DESIGN, INC.

PRELIMINARY/FINAL LAND DEVELOPMENT PLANS

FOR

401/433 WASHINGTON STREET APARTMENTS

401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TO

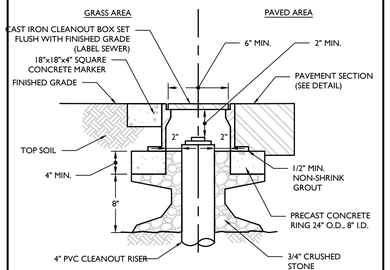


NOTES:

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

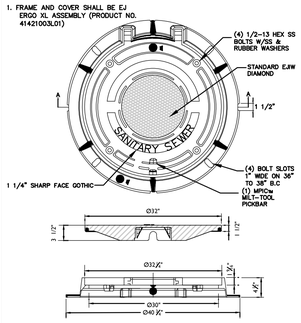
1. ALL PVC CLEANOUTS TO HAVE CAST IRON FRAME AND COVER PROTECTION BOX. DESIGN FOR H20 LOADING.

CLEANOUT PROTECTION BOX DETAIL

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

NOTE:

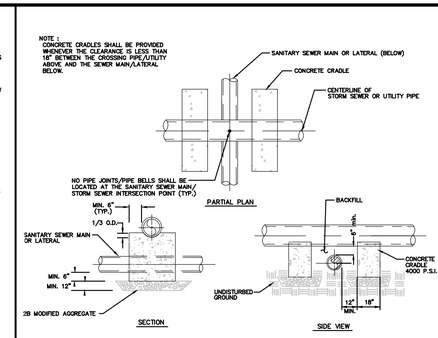
1. FRAME AND COVER SHALL BE EJ ERCO 91, ASSEMBLY (PRODUCT NO. 41421003L01)



SECTION A-A
SANITARY WATERTIGHT MANHOLE FRAME COVER DETAIL

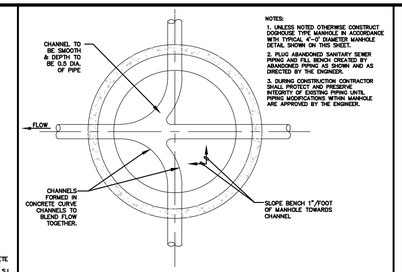
NOT TO SCALE

NOTE :
CONCRETE CRADLES SHALL BE PROVIDED WHENEVER THE CLEARANCE IS LESS THAN 18" BETWEEN THE CROSSING PIPE/UTILITY ABOVE AND THE SEWER MAIN/LATERAL BELOW.



CONCRETE CRADLE DETAIL

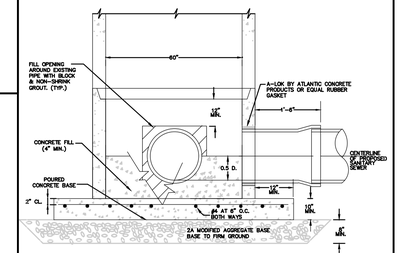
NOT TO SCALE



NOTES:

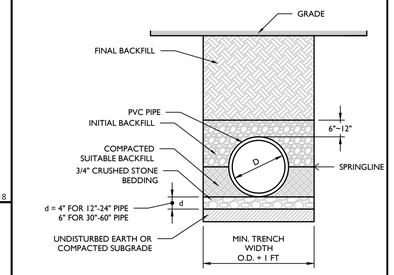
1. UNLESS NOTED OTHERWISE CONSTRUCT DOGHOUSE TYPE MANHOLE IN ACCORDANCE WITH TYPICAL 4'-0" DIAMETER MANHOLE DETAIL SHOWN ON THIS SHEET.
2. PLUG ABANDONED SANITARY SEWER LATERAL AT MAIN AND REMOVE ALL ABANDONED PIPING AS SHOWN AND AS DIRECTED BY THE ENGINEER.
3. DURING CONSTRUCTION CONTRACTOR SHALL PROTECT AND PRESERVE INTEGRITY OF EXISTING PIPING UNTIL PIPING MODIFICATIONS WITHIN MANHOLE ARE APPROVED BY THE ENGINEER.

PLAN–MANHOLE INVERT
NOT TO SCALE



DOGHOUSE MANHOLE DETAIL

NOT TO SCALE

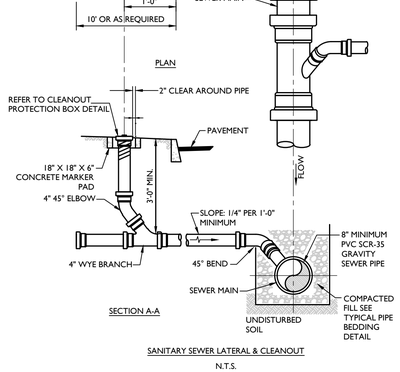


NOTES:

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



SANITARY SEWER LATERAL & CLEANOUT DETAIL

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

Colliers Engineering & Design

www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

811 PROTECT YOURSELF
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

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

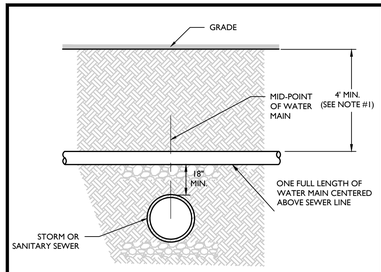
PROJECT NUMBER: 14000908C
DRAWING NAME: C-DTLS

SHEET TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: 17 of 23

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

\\APublish, 14000C-DTLS.dwg[C-17 DETAILS By: MCDAHGON



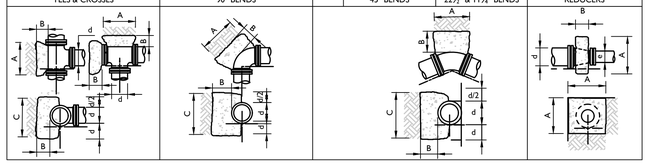
NOTES:

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' - 6"	1' - 6"
TEES & CROSSES				90° BENDS				45° BENDS				22½° & 11¼° BENDS			REDUCERS		

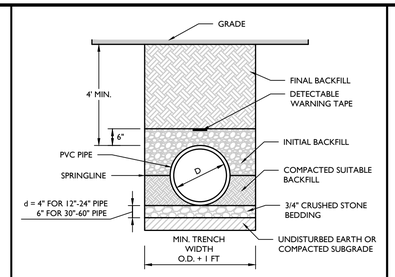


NOTES:

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

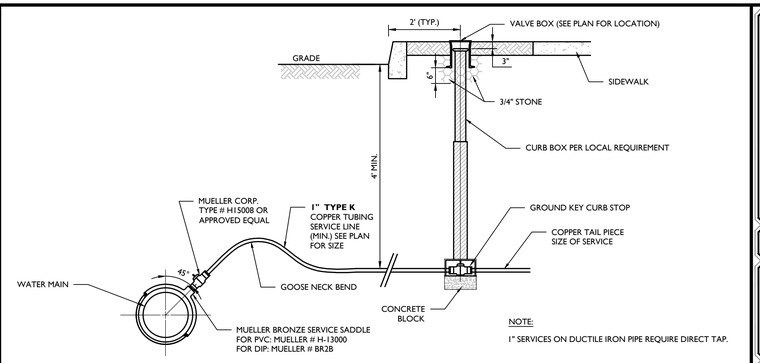


NOTES:

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

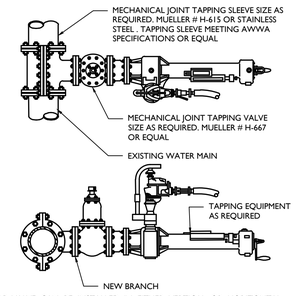


NOTE:

1" SERVICES ON DUCTILE IRON PIPE REQUIRE DIRECT TAP.

HOUSE WATER SERVICE CONNECTION DETAIL

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

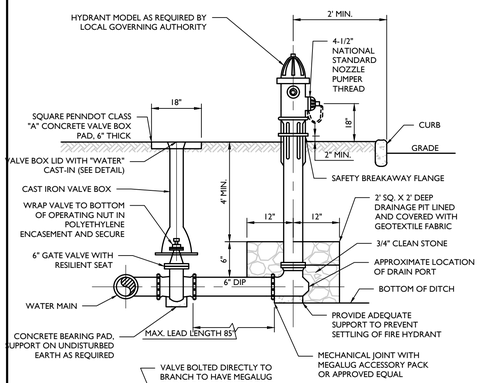


NOTES:

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.

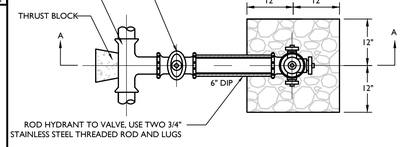
WET TAP DETAIL

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



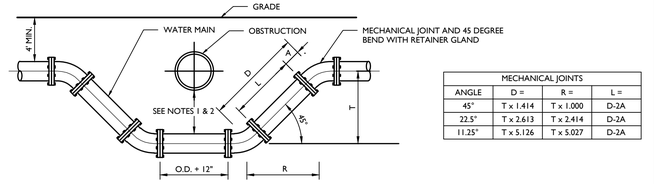
NOTES:

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



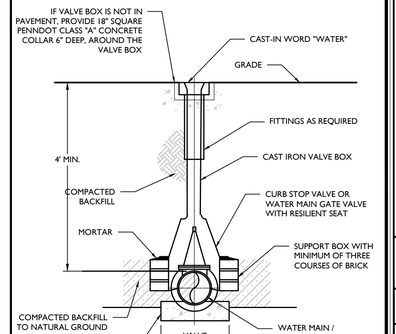
MECHANICAL JOINTS			
ANGLE	D =	R =	L =
45°	T x 1.414	T x 1.000	D-2A
22.5°	T x 2.613	T x 2.414	D-2A
11.25°	T x 5.126	T x 5.027	D-2A

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

Colliers Engineering & Design

www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

811 PROTECT YOURSELF
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

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

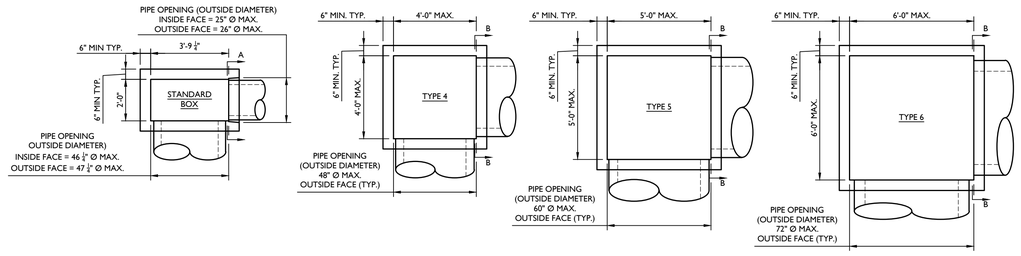
PROJECT NUMBER: 14000908C
DRAWING NAME: C-DTLS

SHEET TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: 18 of 23

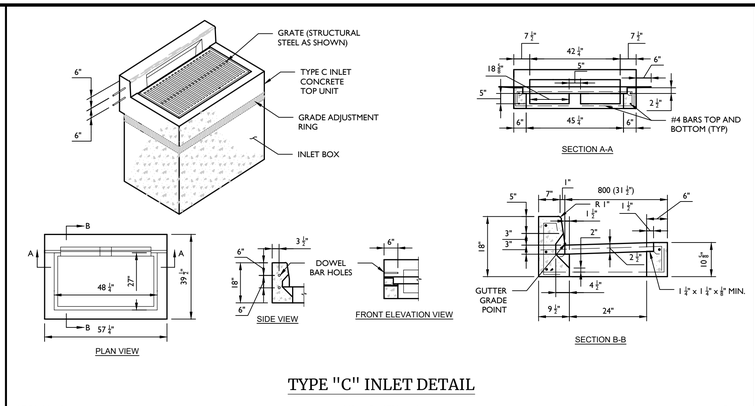
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

\\Ad.plcnh.net\14000\C-DTLS.dwg|C-18 DETAILS By: MDJOHNSON



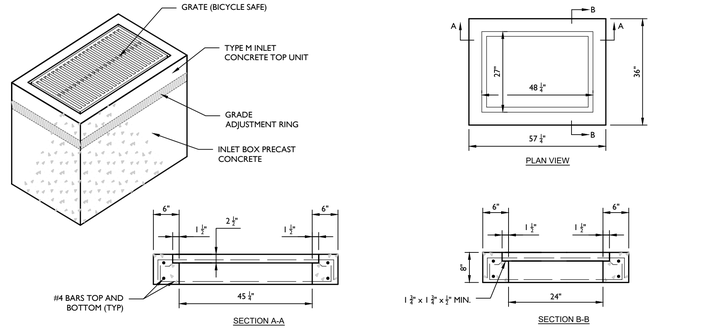
INLET BOXES DETAIL

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



TYPE "C" INLET DETAIL

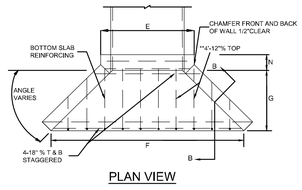
NOT TO SCALE — MCPA-UTIL-STRM-1200 — 05/01/18



TYPE "M" INLET DETAIL

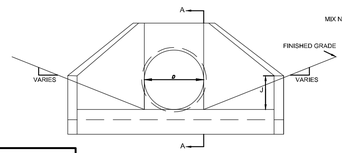
NOT TO SCALE — MCPA-UTIL-STRM-1300 — 05/01/18

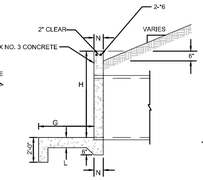
EXPOSED EDGES TO BE CHAMFERED 1" x 1"



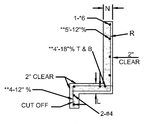
D	E	F	G	H	J	K	L	N	R	VOL.CY.
18"	3'-0"	7'-6"	5'-0"	3'-0"	2'-0"	8"	8"	8"	#5-12"℄	1.70
21"	3'-4"	7'-0"		3'-3"	2'-0"					1.80
24"	3'-8"	8'-0"	5'-0"	3'-6"	2'-0"	8"	8"	8"	#5-12"℄	1.90
27"	3'-11"	8'-3"		3'-9"	2'-0"					2.00
30"	4'-2"	8'-6"	5'-0"	4'-0"	2'-1"	8"	8"	8"	#5-12"℄	2.85
36"	4'-8"	10'-0"	5'-6"	4'-6"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

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



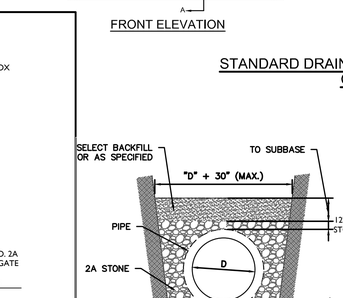


NOTE:
HEADWALL TO BE PARALLEL TO OF ROADWAY UNLESS OTHERWISE NOTED IN CONTRACT DRAWINGS



STANDARD DRAINAGE DETAILS TYPE "A" HEADWALL CIRCULAR PIPE

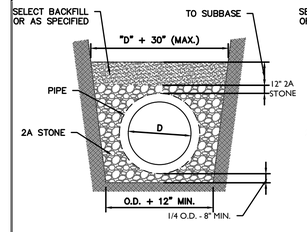
NOT TO SCALE



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.

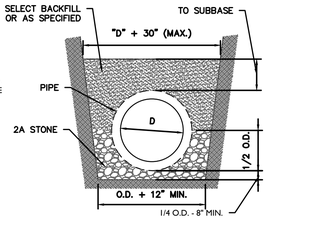
INLET BOX SUB-BASE PREPARATION DETAIL

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



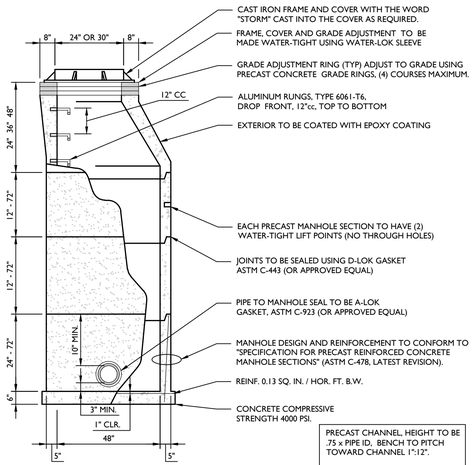
HDPE PIPE BEDDING

N.T.S.



CLASS "C" RCP PIPE BEDDING

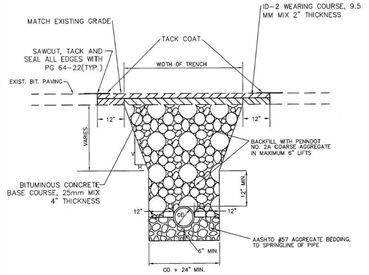
N.T.S.



48" DIAMETER STORM MANHOLE DETAIL

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

ADOPTED MAY 2009
LAST REVISED MAY 2012



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. 3/4in I.V. (MAX SLOPE) FOR TRENCHES UP TO 8 FEET IN DEPTH.
3. TRENCHES IN EXCESS OF 8 FEET SHALL BE SHORED OR STEPPED PER OSHA 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.

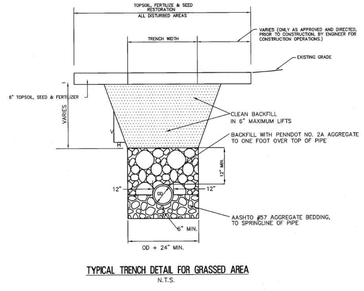
SPECIAL NOTE:
1. SEE DETAIL 15 FOR RESURFACING REQUIREMENTS FOR STREETS PAVED WITHIN FIVE (5) YEARS.
2. SEE DETAIL 16 FOR THE LATERAL AND SERVICE TRENCH DETAIL.

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

TRENCH RESTORATION AND BACKFILL FOR PAVED AREAS

NOT TO SCALE

ADOPTED MAY 2009
LAST REVISED MAY 2012



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

NOTE:
1. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO MINIMIZE WIDTH OF TRENCH.
2. 3/4in I.V. (MAX SLOPE) FOR TRENCHES UP TO 8 FEET IN DEPTH.
3. TRENCHES IN EXCESS OF 8 FEET SHALL BE SHORED OR STEPPED PER OSHA 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

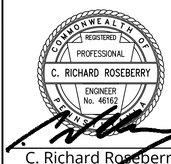
Colliers Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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



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

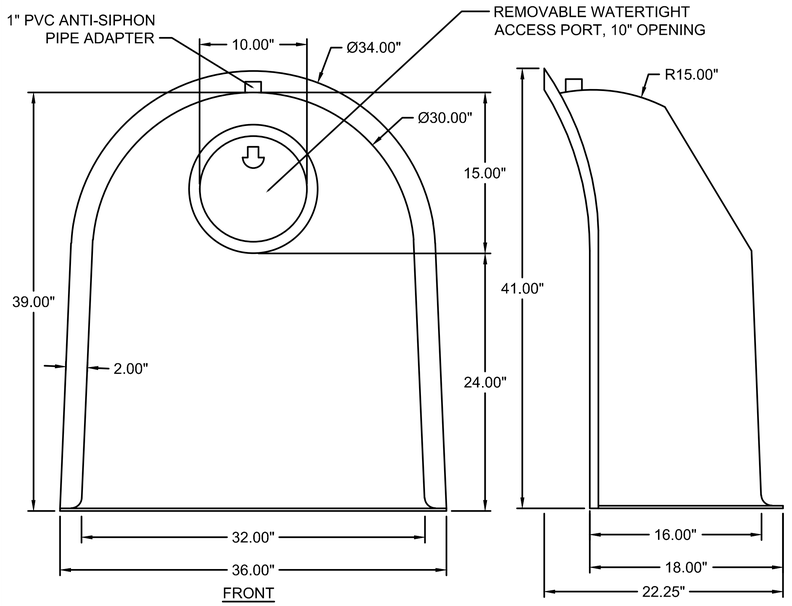
PROJECT NUMBER: 14000908C
DRAWING NAME: C-DTLS

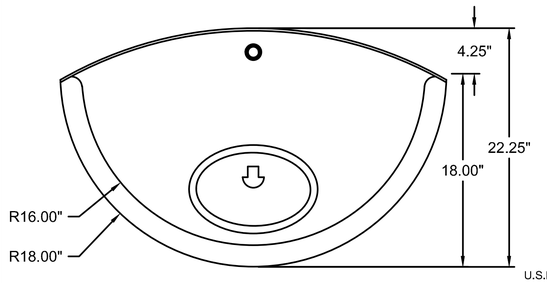
SHEET TITLE:
CONSTRUCTION DETAILS

SHEET NUMBER:
19 of 23

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

\\Ap\data\n_14000\C-DTLS.dwg|C-15 DETAILS By: MJOHNSON





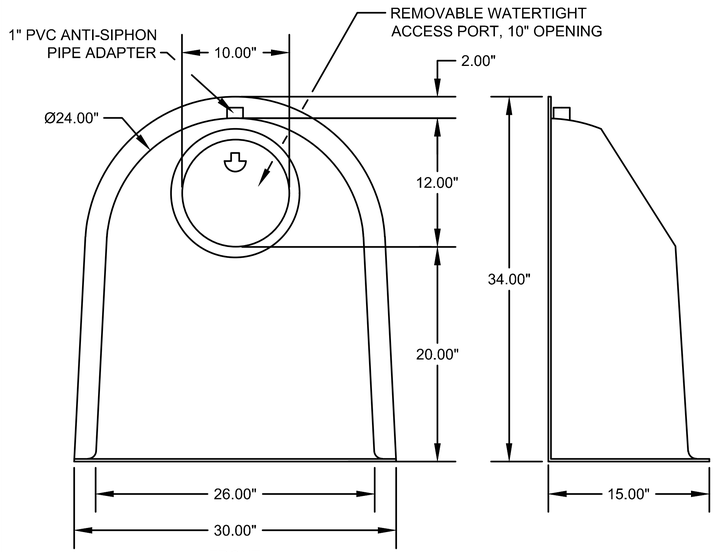
PLAN

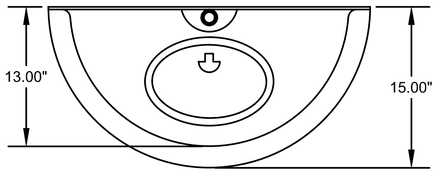
U.S.PATENT #6126817ADDITIONAL PATENTS PENDING

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





PLAN

U.S.PATENT #6126817ADDITIONAL PATENTS PENDING

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

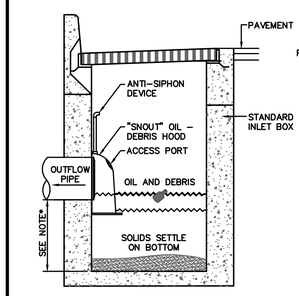
DESCRIPTION	DATE	SCALE
24F SNOUT OIL & DEBRIS STOP	09/20/99	NONE
	DRAWING NUMBER	24F

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.

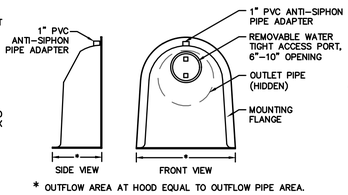
SNOUT BMP MANUFACTURER'S INSTALLATION INSTRUCTIONS:

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.



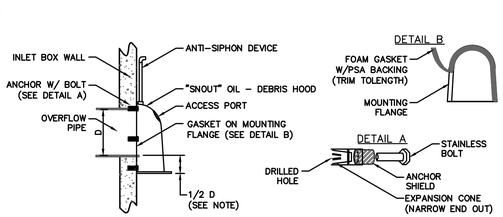
SECTION

* 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



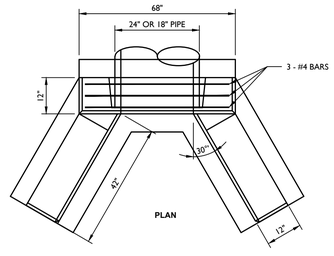
SNOUT INLET – OPERATION AND MAINTENANCE PROCEDURES

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" 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
NOT TO SCALE



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 o.w.	L D.W.	∅	W1	L D.W.	∅	W1	L D.W.	∅	W1	L D.W.	∅	W1	L D.W.	∅	W1	L D.W.	∅	W1	L D.W.	∅	W1	L D.W.	∅	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.)	(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

Colliers Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

811 PROTECT YOURSELF
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

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

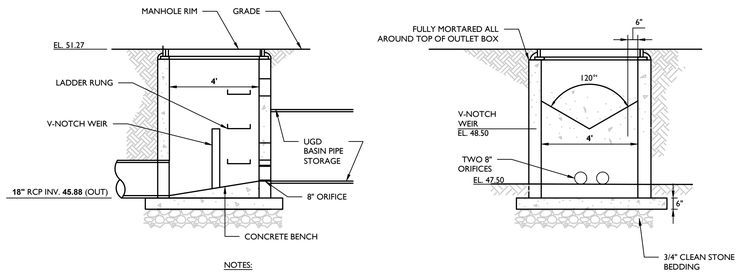
PROJECT NUMBER: 14000908C
DRAWING NAME: C-DTLS

SHEET TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: 20 of 23

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

\\Archdisk\..14000\C-DTLS.dwg|C-2.0-DETAILS By: MCJOHNSON

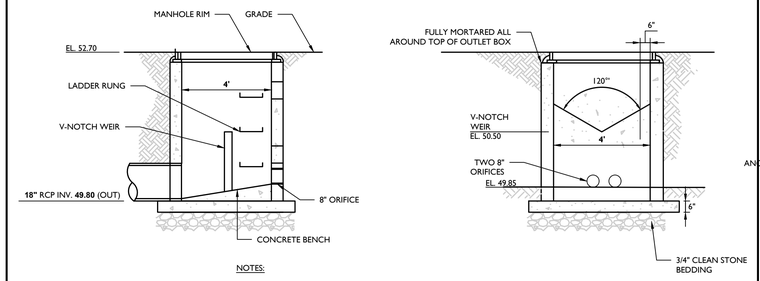


NOTES:

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

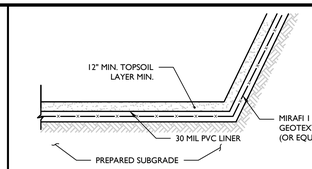


NOTES:

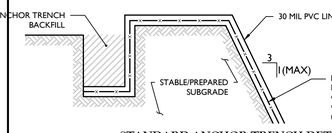
1. CONTRACTOR TO SUBMIT SHOP DRAWING FOR REVIEW AND APPROVAL.
2. ALL CONCRETE TO BE CLASS "A".

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:

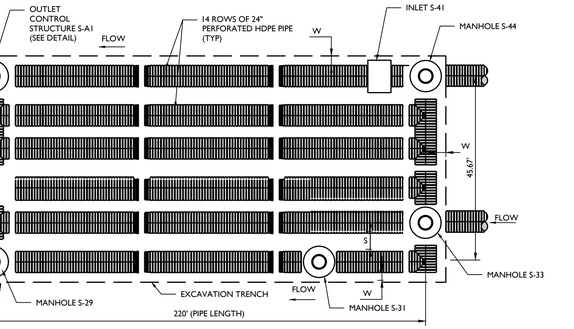
1. EXCAVATE ANCHOR TRENCH TO THE MINIMUM DIMENSIONS SHOWN. SUITABLE EXCAVATION SPOILS SHALL BE PROTECTED FROM WEATHER EVENTS, WHEN INTENDED FOR ANCHOR TRENCH BACKFILL.
2. NON-WOVEN GEOTEXTILE CUSHION AND PVC LINER SHALL FULLY EXTEND ACROSS THE BASE OF THE ANCHOR TRENCH.
3. ANCHOR TRENCH BACKFILL SHALL 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.

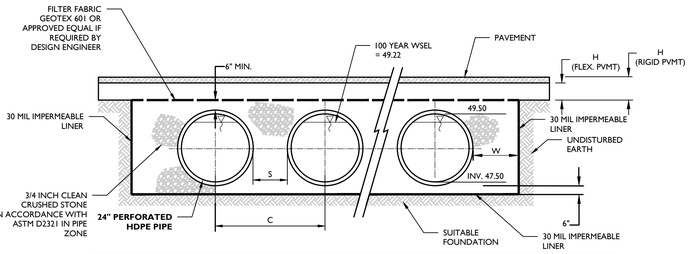
30 MIL POLYPROPYLENE POND LINER SECTION DETAIL

NOT TO SCALE | 3/21/19



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.



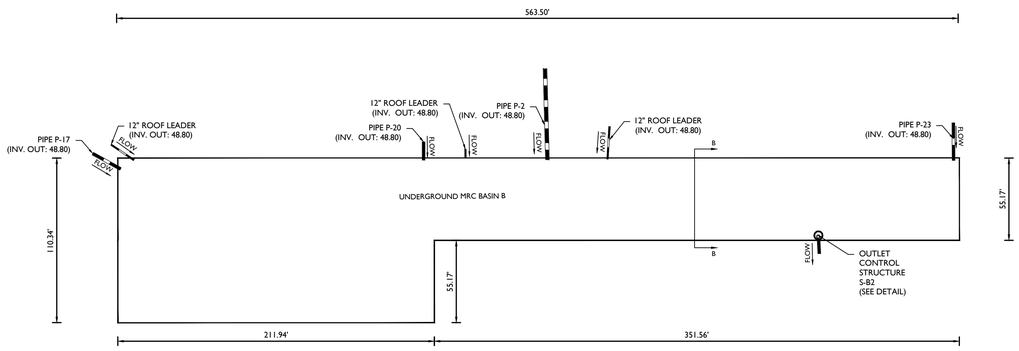
NOMINAL DIAMETER	NOMINAL O.D.	TYPICAL SPACING "S"	TYPICAL SPACING "C"	TYPICAL SIDE WALL "W"	H (MIN. PIPE COVER) (TRAFFIC)
15" (375 MM)	18" (457 MM)	12" (292 MM)	28.9 (734 MM)	8" (203 MM)	12" (292 MM)
18" (450 MM)	21" (533 MM)	13" (330 MM)	33.9" (862 MM)	9" (229 MM)	12" (292 MM)
24" (600 MM)	28" (711 MM)	13" (330 MM)	40.7" (1034 MM)	10" (254 MM)	12" (292 MM)
30" (750 MM)	36" (914 MM)	18" (457 MM)	53.1" (1347 MM)	18" (457 MM)	12" (292 MM)
36" (900 MM)	42" (1067 MM)	22" (559 MM)	63" (1600 MM)	18" (457 MM)	12" (292 MM)
42" (1050 MM)	48" (1219 MM)	24" (610 MM)	71.9" (1826 MM)	18" (457 MM)	24" (610 MM)
48" (1200 MM)	54" (1372 MM)	25" (635 MM)	78.5" (1994 MM)	18" (457 MM)	24" (610 MM)
60" (1500 MM)	67" (1702 MM)	24" (610 MM)	90" (2286 MM)	18" (457 MM)	24" (610 MM)

NOTES:

1. SEE ABOVE CHART SPECIFIC TO MATERIAL/PIPE SIZES PER MANUFACTURER'S SPECIFICATIONS.
2. (H) FOR FLEXIBLE PAVEMENT MAY INCLUDE THE PAVEMENT SUBBASE THICKNESS AS MINIMUM COVER.
3. CLASS 1A BACKFILL MATERIAL PER ASTM 2321 REQUIRED FOR PIPES 60" DIAMETER OR LARGER.
4. MATERIAL TO BE ADS PIPEOR APPROVED EQUIVALENT.

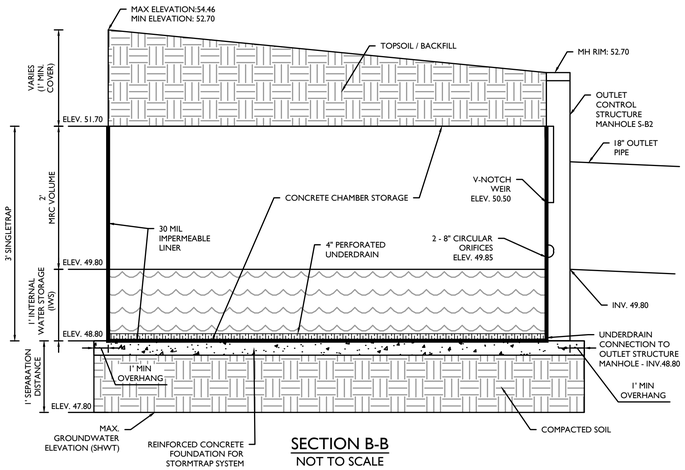
UNDERGROUND DETENTION BASIN A (CLOSED SYSTEM) DETAIL

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



UNDERGROUND SYSTEM NOTES :

1. USE 3'-0" DEEP STORMTRAP SINGLETRAP REINFORCED CONCRETE STRUCTURES OR AN EQUIVALENT FOR THE UNDERGROUND SYSTEM.
2. STORMTRAP STORAGE PROVIDED: 36,740 CF
   UNIT HEADROOM: 3'-0" SINGLETRAP
   UNIT QUANTITY: 440 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. 3.00'
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.



SECTION B-B
NOT TO SCALE

UNDERGROUND MRC BASIN B DETAIL

NOT TO SCALE | 05/01/18

Colliers Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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

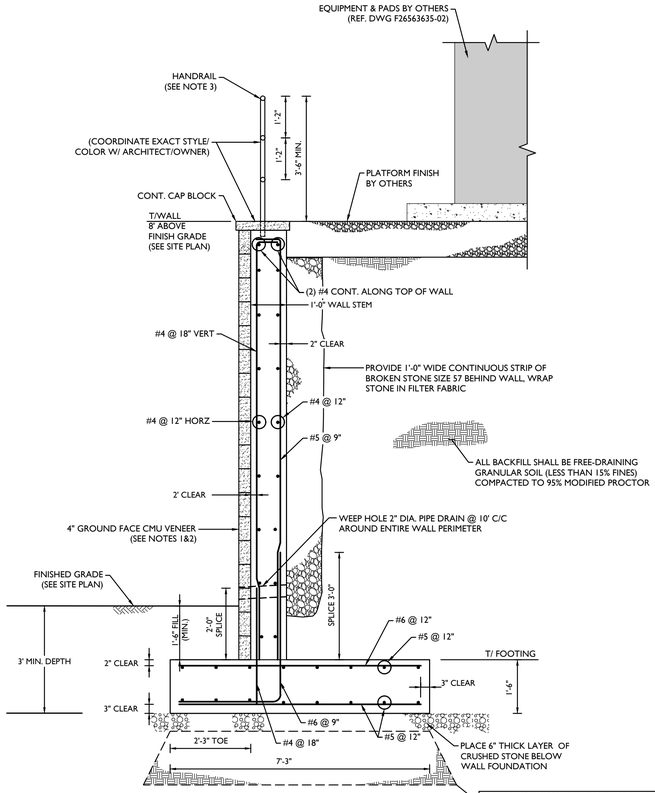
PROJECT NUMBER: 14000908C
DRAWING NAME: C-DTLS

SHEET TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: 21 of 23

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

\\APublish-14000\C-DTLS.dwg\C-21-DETAILS By: MCDONNSON



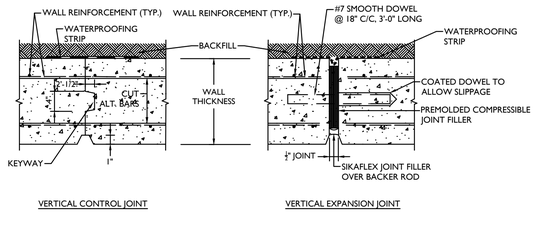
A
-

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).



VERTICAL CONTROL JOINT

VERTICAL EXPANSION JOINT

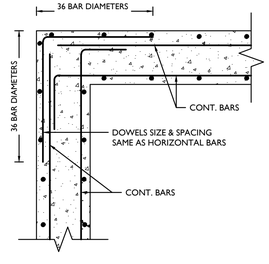
1
-

RETAINING WALL JOINTS

SCALE: N.T.S.

NOTES:

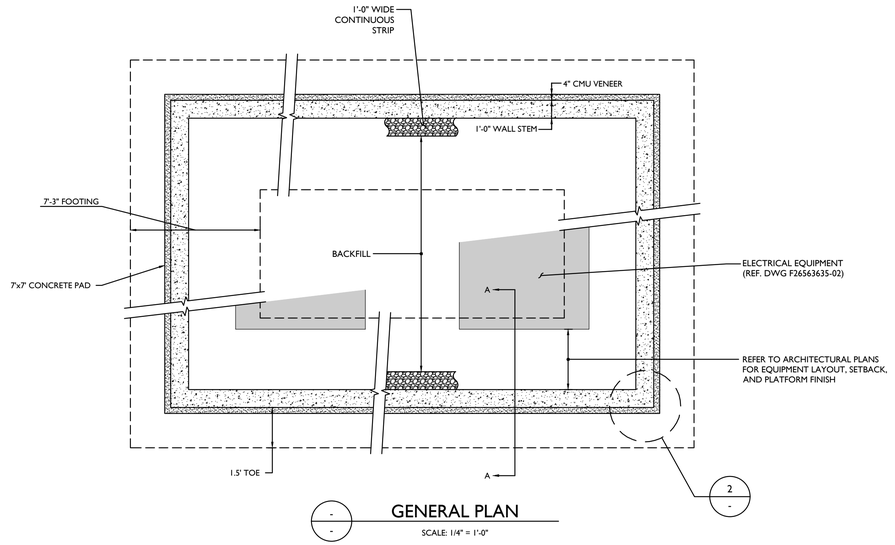
1. INSTALL VERTICAL CONTROL JOINTS AT 20' CENTERS (MAX.) AND VERTICAL EXPANSION JOINTS AT 60' CENTERS (MAX.).
2. CONCRETE FOOTINGS DO NOT REQUIRE JOINTS.



2
-

CORNER REBAR DETAIL

SCALE: N.T.S.



-
-

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.

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.

Colliers
Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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

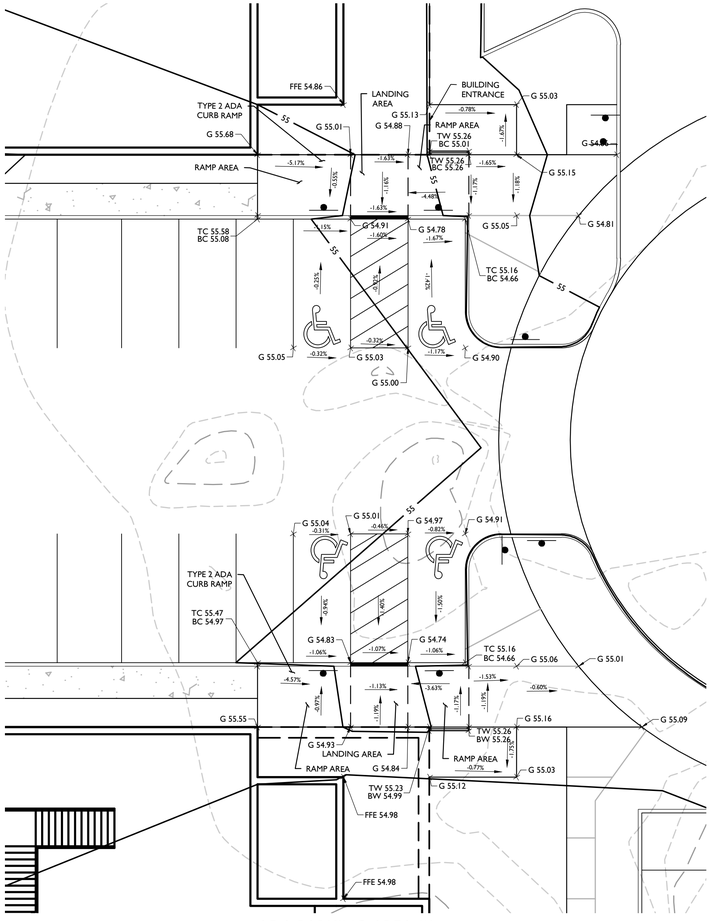
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/29/21	MD	CRR

PROJECT NUMBER: 14000908C
DRAWING NAME: C-DTLS

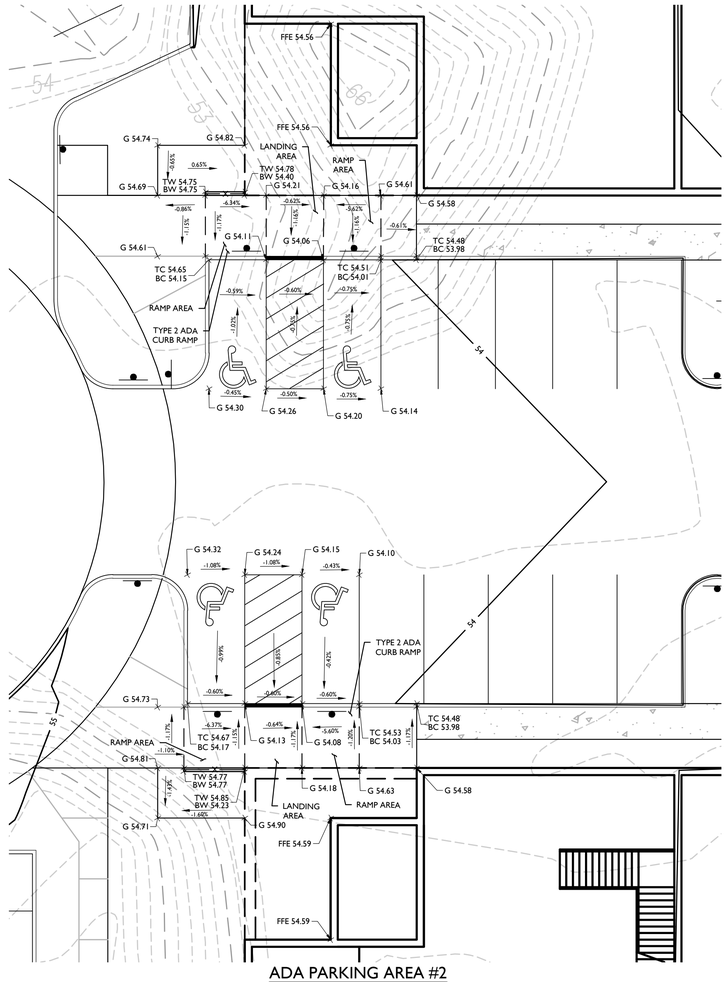
SHEET TITLE:
CONSTRUCTION DETAILS

SHEET NUMBER:
22 of 23

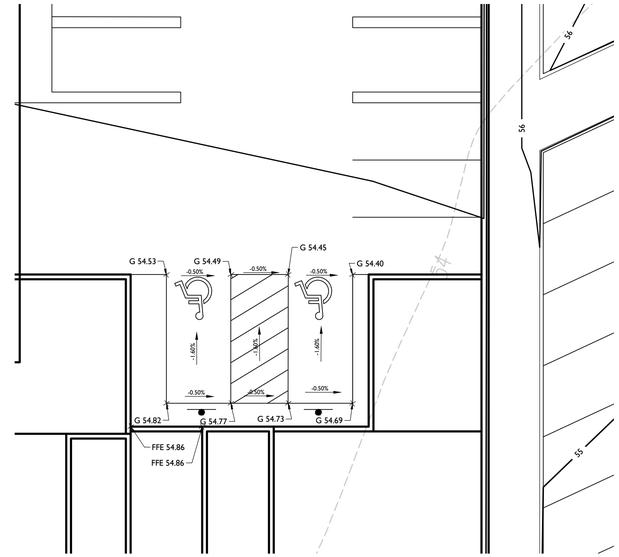
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



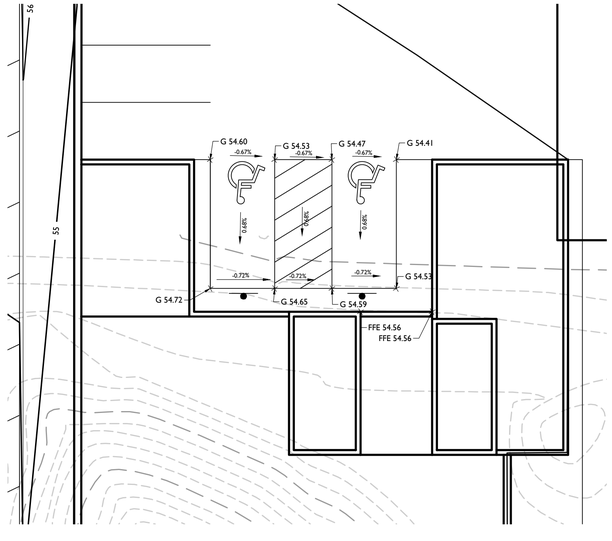
ADA PARKING AREA #1
BETWEEN BUILDINGS 1 & 3



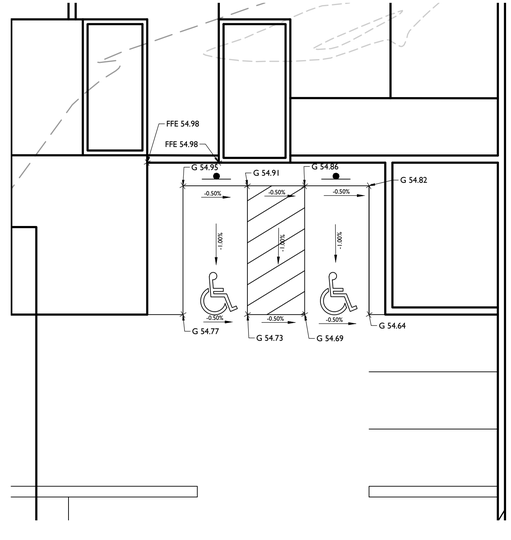
ADA PARKING AREA #2
BETWEEN BUILDINGS 2 & 4



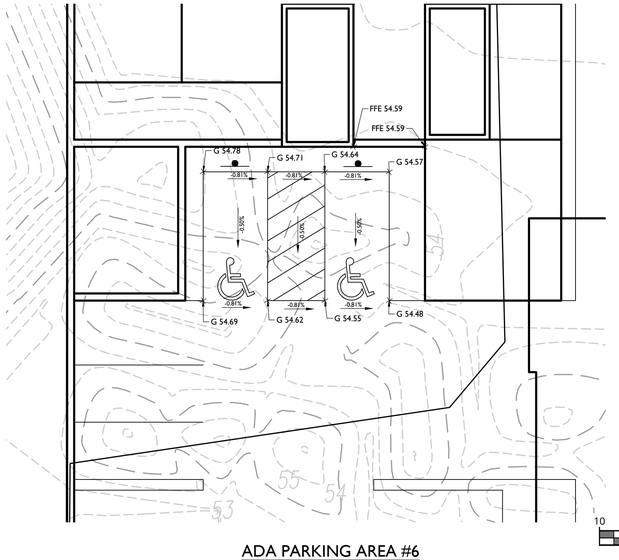
ADA PARKING AREA #3
BUILDING 1 GARAGE



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'

Colliers
Engineering & Design

www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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

C. Richard Roseberry
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE046161GR
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-GRAD-HADA

SHEET TITLE:
ADA GRADING PLAN

SHEET NUMBER:
23 of 23

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C\Engineering\Site Plans\C-GRAD-HADA.dwg|C-23 ADA By: MDEBOJS

401 WASHINGTON STREET

CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

SUBMISSION LANDSCAPE PLANS

OWNER / DEVELOPER

KRE
515 MARIN BOULEVARD
JERSEY CITY, NJ 07302
PHONE: (201) 733.8100

DESIGN ARCHITECT

MAJOR ARCHITECTURE
485 MARIN BOULEVARD
JERSEY CITY, NJ 07302
PHONE: (646) 904.8885

ARCHITECT

BARTON PARTNERS
700 E. MAIN STREET
SUITE 301
NORRISTOWN, PA 19401
PHONE: (610) 930.2800

CIVIL ENGINEER

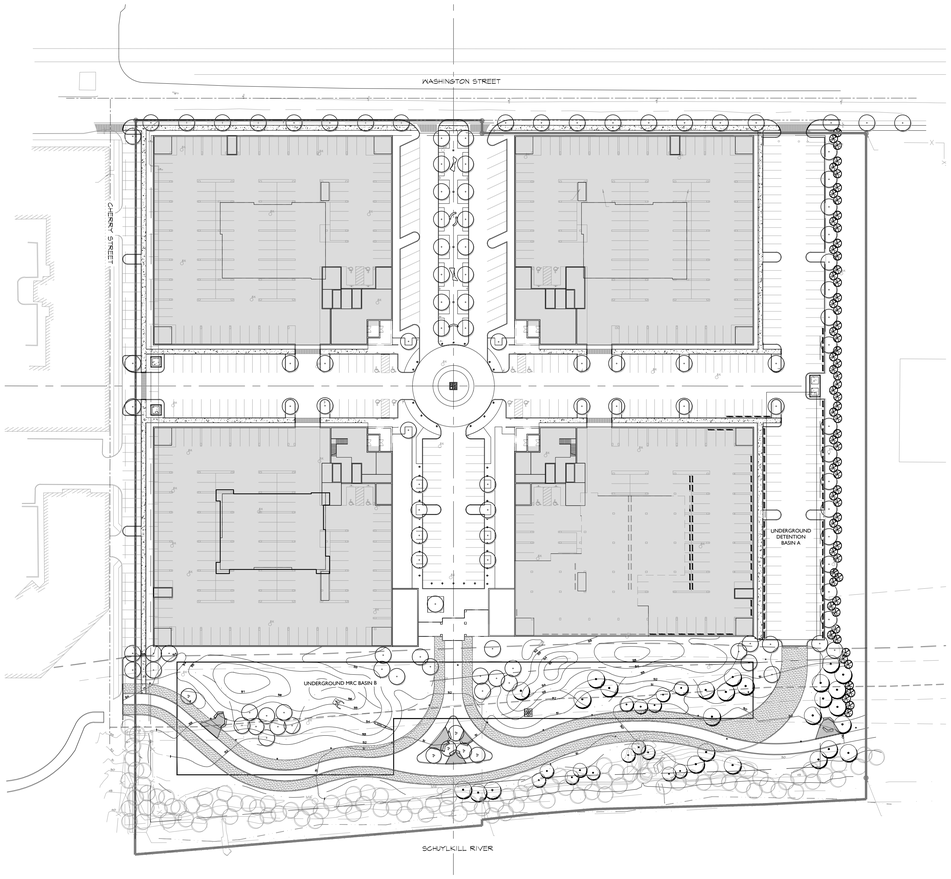
COLLIERS ENGINEERING & DESIGN
941 MARCON BOULEVARD, SUITE 801
ALLENTOWN, PA 18109
PHONE: (610) 868-4201

LANDSCAPE ARCHITECT

MELILLO | BAUER | CARMAN
LANDSCAPE ARCHITECTURE
200 UNION AVENUE
BRIELLE, NEW JERSEY 08730
PHONE: (732) 528-0664

12.03.2021 (Landscape Submission)

Project: KRE Conshohocken (21-167)			
DRAWING LIST	LANDSCAPE SUBMISSION	DATE	STATUS
	Cover Sheet		
L-101	Landscape Plan	12.03.2021	Landscape Submission
L-102	Landscape Plan	12.03.2021	Landscape Submission
L-103	Landscape Plan	12.03.2021	Landscape Submission
L-104	Lighting Plan	12.03.2021	Landscape Submission
L-105	Lighting Plan	12.03.2021	Landscape Submission
L-106	Lighting Plan	12.03.2021	Landscape Submission
L-200	Site Details	12.03.2021	Landscape Submission
L-201	Site Details	12.03.2021	Landscape Submission
L-202	Site Details - Planting Details and Notes	12.03.2021	Landscape Submission



General Notes:

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY BEARING ON THE PERFORMANCE OF THE WORK.

2. ALL GRADING SHALL BE VERIFIED IN THE FIELD BEFORE CONSTRUCTION AND SHALL BE COORDINATED WITH THE LANDSCAPE ARCHITECT AND CIVIL ENGINEER.

3. ALL PAVING SURFACES SHALL BE FLUSH AND MEET SMOOTHLY AND EVENLY. NO WALKS SHALL EXCEED 5% OR A 2% CROSS-PITCH. ALL WALKS TO BE LAID OUT IN THE FIELD UNDER THE DIRECTION OF THE LANDSCAPE ARCHITECT.

4. ALL SITE DETAILS SHALL BE REVIEWED AND SUPPLEMENTED BY A PROFESSIONAL LICENSED STRUCTURAL ENGINEER WHO SHALL SPECIFY ALL STRUCTURAL DATA, FOOTINGS, REINFORCEMENT, HARDWARE, ETC. REQUIRED FOR STRUCTURAL INTEGRITY, SAFETY AND COMPLIANCE WITH LOCAL CODES AND CONDITIONS PRIOR TO CONSTRUCTION.

5. ALL PLANTED AREAS SHALL BE IRRIGATED WITH DRIP IRRIGATION. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS.

6. ALL PLANT MATERIAL/LANDSCAPE MATERIALS SUBSTITUTIONS SHALL BE APPROVED BY THE L.A./OWNERS REPRESENTATIVE.

0 30 60 120 240

MELILLO·BAUER·CARMAN
LANDSCAPE ARCHITECTURE

PLANT SCHEDULE L-101 PLANTING SCHEDULE

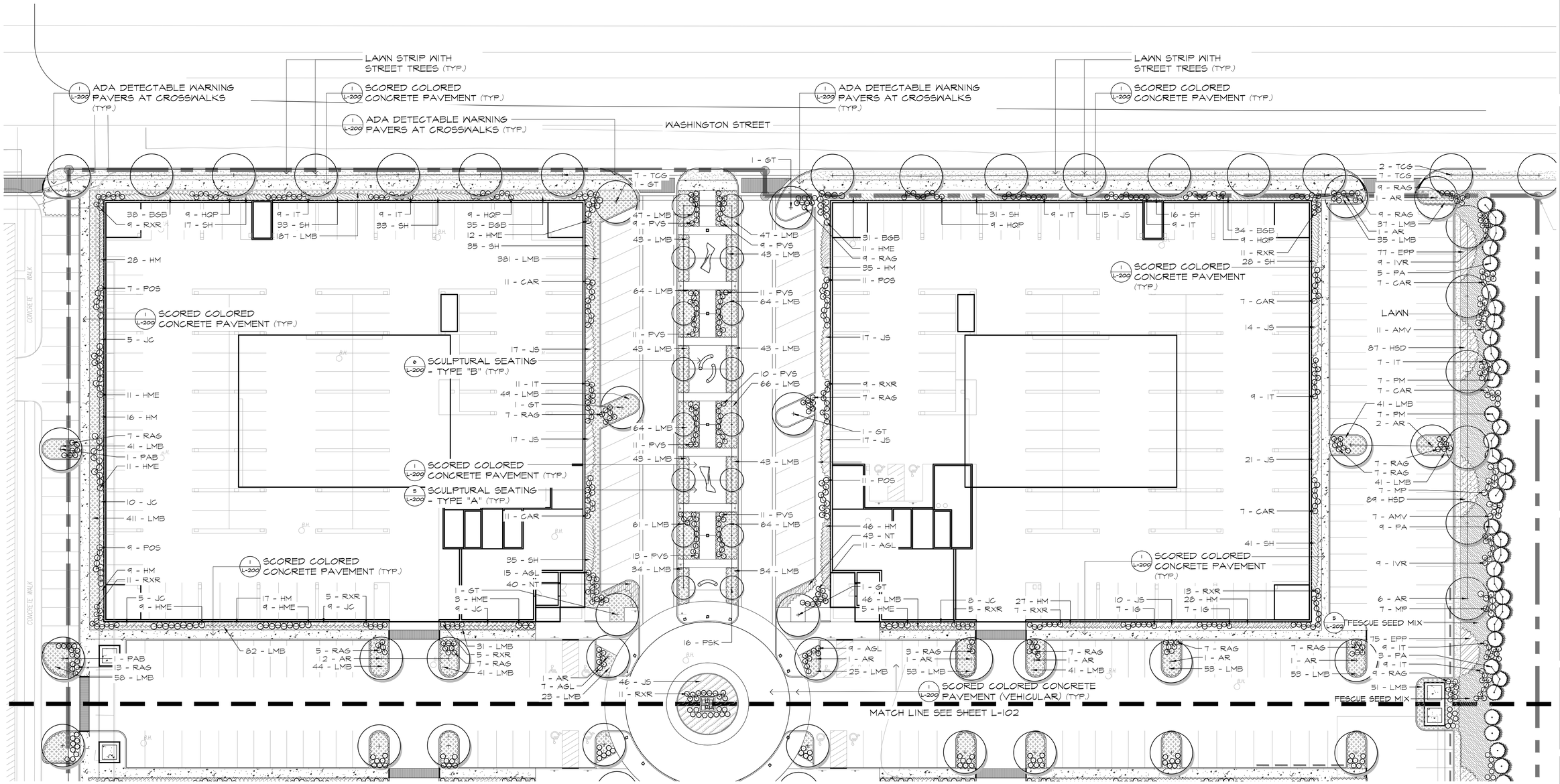
TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AR	18	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
GT	6	Gleditsia triacanthos f. inermis / Thornless Honey Locust	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
PAB	2	Platanus x acerifolia 'Bloodgood' / Bloodgood London Plane Tree	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
TCG	16	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
PA	17	Picea abies / Norway Spruce	-	8`-10`		B&B	Heavy, well formed specimens
PM	14	Picea mariana / Black Spruce	-	8`-10`		B&B	Heavy, well formed specimens

ORNAMENTAL TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
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 `Lite Richard` / Little Richard Abelia	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
AMV	18	Aronia melanocarpa `Viking` / Viking Black Chokeberry	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
CAR	50	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	81	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.
MP	14	Morella pensylvanica / Northern Bayberry	-	2.5`-3`		#7 cont.	Full Plants, 3` 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	120	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.

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.
EPP	152	Echinacea purpurea `PowWow Wildberry` / PowWow Wildberry Coneflower	-			2 Gal.	Full Plants, 18" O.C.
HM	206	Hakonechloa macra / Japanese Forest Grass	-			2 Gal.	Full Plants, 18" O.C.
HSD	176	Hemerocallis x `Stella de Oro` / Stella de Oro Daylily	-			2 Gal.	Full Plants, 18" O.C.
JC	46	Juniperus conferta / Shore Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
JS	128	Juniperus chinensis var. sargentii / Sargent Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
LMB	2,627	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.



Landscape Plan

401 Washington

Conshohocken Borough & Whitemarsh Township, PA

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

THOMAS B. BAUER
PENNSYLVANIA
REGISTERED
LANDSCAPE ARCHITECT
PA REGISTERED LANDSCAPE ARCHITECT #000722E

NO.	DATE	REVISION

SCALE: 1" = 20'-0"

DATE: 12-03-2021 JOB NO.: 21-167

DRAWING NO.

L-101

PLANT SCHEDULE L-102 PLANTING SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
AR	14	Acer rubrum / Red Maple	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`
GT	11	Gleditsia triacanthos f. inermis / Thornless Honey Locust	3-3.5" cal.	12`-14`		B&B	Full Specimens, Headed to 7`

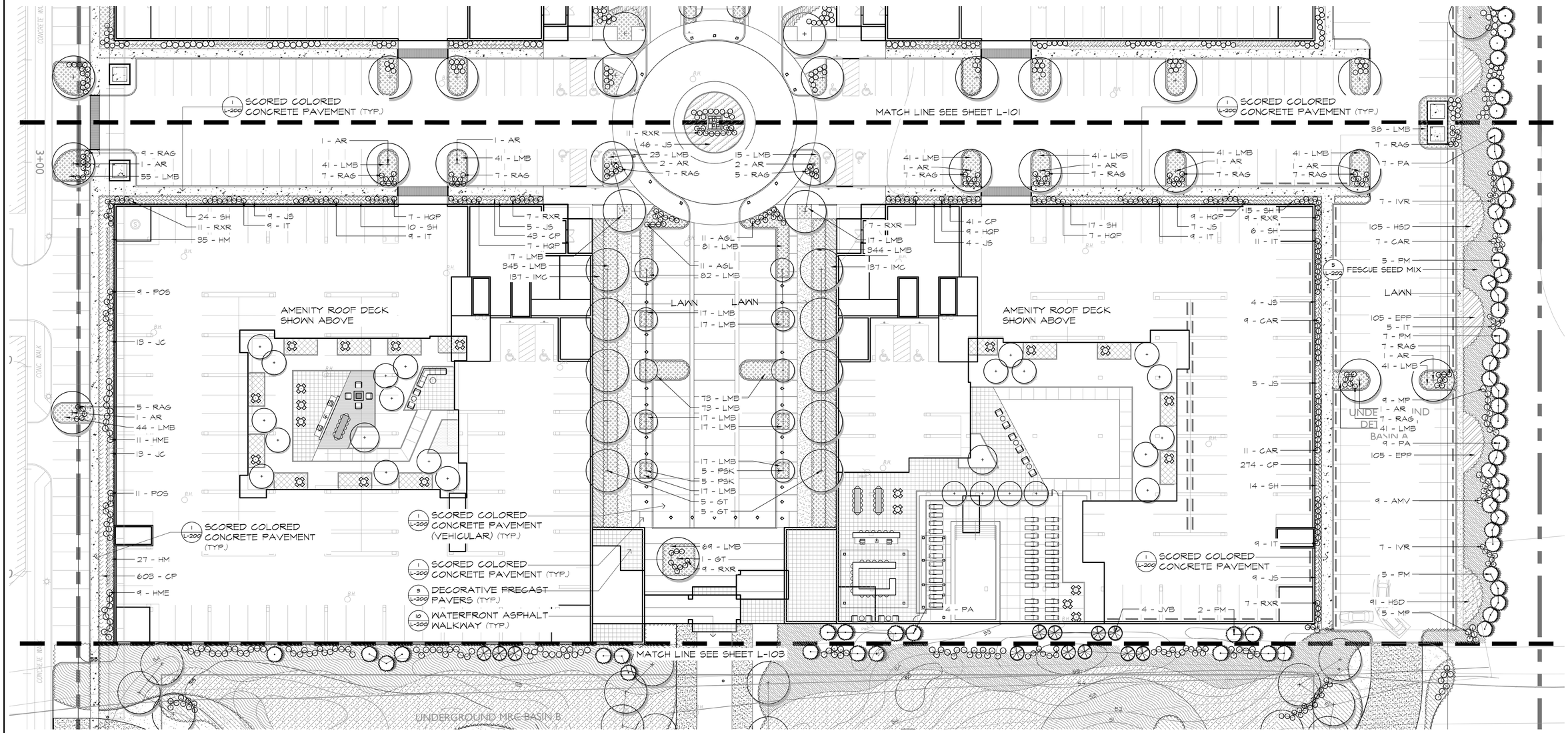
EVERGREEN TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
JVB	4	Juniperus virginiana 'Brodie' / Eastern Red Cedar 'Brodie'	-	8`-10`		B&B	Full, uniform specimens, branched to the ground
PA	20	Picea abies / Norway Spruce	-	8`-10`		B&B	Heavy, well formed specimens
PM	19	Picea mariana / Black Spruce	-	8`-10`		B&B	Heavy, well formed specimens

ORNAMENTAL TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	SPRD.	CONT	COMMENTS
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.
AMV	9	Aronia melanocarpa `Viking` / Viking Black Chokeberry	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
CAR	27	Clethra alnifolia `Rosea` / Pink Summersweet	-	2`-2.5`		#5 cont.	Full Plants, 2.5` 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	52	Itea virginica `Sprich` TM / Little Henry Virginia Sweetspire	-	2`-2.5`		#5 cont.	Full Plants, 2.5` O.C.
IVR	14	Ilex verticillata `Red Sprite` / Red Sprite Winterberry	-	2`-2.5`		#5 Cont	Full Plants, 2.5` O.C.
MP	14	Morella pensylvanica / Northern Bayberry	-	2.5`-3`		#7 cont.	Full Plants, 3` O.C.
POS	20	Physocarpus opulifolius `Snowfall` / Snowfall Ninebark	-	2.5`-3`		#7 cont.	Full Plants, 2.5` O.C.
RAG	89	Rhus aromatica `Gro-Low` / Gro-Low Fragrant Sumac	-	2`-2.5`		#5 cont.	Full Plants, 2` O.C.
RXR	61	Rosa x `Radrazz` / Knock Out Shrub Rose	-	2.5`-3`		#7 cont.	Full Plants, 2.5` 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
CP	961	Carex pensylvanica / Pennsylvania Sedge	-			1 Gal.	Full Plants, 18" O.C.
EPP	210	Echinacea purpurea `PowWow Wildberry` / PowWow Wildberry Coneflower	-			2 Gal.	Full Plants, 18" O.C.
HM	62	Hakonechloa macra / Japanese Forest Grass	-			2 Gal.	Full Plants, 18" O.C.
HSD	196	Hemerocallis x `Stella de Oro` / Stella de Oro Daylily	-			2 Gal.	Full Plants, 18" O.C.
JC	26	Juniperus conferta / Shore Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
JS	135	Juniperus chinensis var. sargentii / Sargent Juniper	-	18"-24"	18-24"	#5 cont.	Full Plants, 30" O.C.
LMB	1,706	Liriope muscari `Big Blue` / Big Blue Lilyturf	-			1 Gal.	Full Plants, 18" O.C.
SH	86	Sporobolus heterolepis / Prairie Dropseed	-			2 Gal.	Full Plants, 18" O.C.



0 10 20 40 80

Landscape Plan

401 Washington
Conshohocken Borough & Whitemarsh Township, PA

MBC
MELILLO-BAUER-CARMAN
LANDSCAPE ARCHITECTURE
200 Union Avenue, Belville, NJ 07830
295 Newark Avenue, Jersey City, NJ 07302
732-528-0664
www.mbcla.design
NJCA No. 21MH00001700

THOMAS B. BAUER
PA REGISTERED LANDSCAPE ARCHITECT
RL000723X

NO.	DATE	REVISION
SCALE: 1" = 20'-0"		
DATE: 12-03-2021	JOB NO.: 21-167	

DRAWING NO.
L-102

PLANT SCHEDULE L-103 PLANTING SCHEDULE

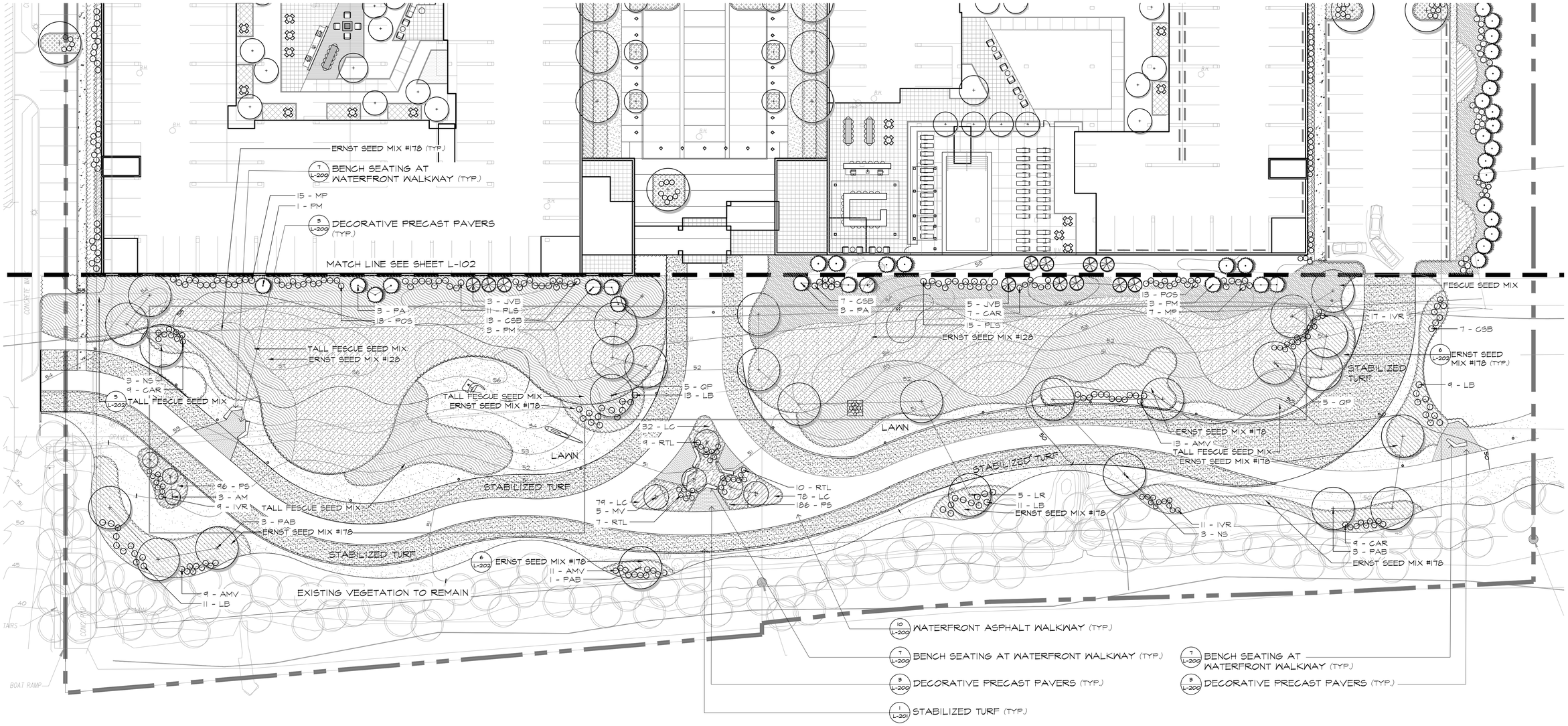
TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	CONT	COMMENTS
LR	5	Liquidambar styraciflua `Rotundiloba` TM / Round-Lobed Sweet Gum	3-3.5" cal.		B&B	
NS	6	Nyssa sylvatica / Sour Gum	3-3.5" cal.	10`-12`	B&B	Full Specimens, Headed to 7`
PAB	7	Platanus x acerifolia 'Bloodgood' / Bloodgood London Plane Tree	3-3.5" cal.	12`-14`	B&B	Full Specimens, Headed to 7`
QP	10	Quercus palustris / Pin Oak	3-3.5" cal.		B&B	Full Specimens, single stem

EVERGREEN TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	CONT	COMMENTS
JVB	8	Juniperus virginiana 'Brodie' / Eastern Red Cedar 'Brodie'	-	8`-10`	B&B	Full, uniform specimens, branched to the ground
PA	6	Picea abies / Norway Spruce	-	8`-10`	B&B	Heavy, well formed specimens
PM	7	Picea mariana / Black Spruce	-	8`-10`	B&B	Heavy, well formed specimens

ORNAMENTAL TREES	QTY	BOTANICAL / COMMON NAME	CAL	HT.	CONT	COMMENTS
AM	3	Amelanchier canadensis / Shadblow Serviceberry Multitrunk	-	8`-10`	B&B	Heavy, Multi-stemmed specimens, Min. 1.5" Cane Dia.
MV	5	Magnolia virginiana / Sweet Bay	-	8`-10`	B&B	Heavy, Multi-stemmed specimens, Min. 1.5" Cane Dia.

SHRUBS	QTY	BOTANICAL / COMMON NAME	CAL.	HT.	CONT.	COMMENTS
AMV	33	Aronia melanocarpa `Viking` / Viking Black Chokeberry	-	2.5`-3`	#7 cont.	Full Plants, 2.5` O.C.
CAR	25	Clethra alnifolia `Rosea` / Pink Summersweet	-	2`-2.5`	#5 cont.	Full Plants, 2.5` O.C.
CSB	27	Cornus stolonifera 'Bailey' / Bailey's Red-osier Dogwood	-	2.5`-3`	#7 cont.	Full Plants, 3` O.C.
IVR	37	Ilex verticillata `Red Sprite` / Red Sprite Winterberry	-	2`-2.5`	#5 Cont	Full Plants, 2.5` O.C.
LB	44	Lindera benzoin / Spicebush	-	2.5`-3`	#7 cont.	Full Plants, 3` O.C.
MP	22	Morella pensylvanica / Northern Bayberry	-	2.5`-3`	#7 cont.	Full Plants, 3` O.C.
PLS	26	Prunus laurocerasus `Schipkaensis` / Schipka Laurel	-	2.5`-3`	#7 cont.	Full Plants, 3` O.C.
POS	26	Physocarpus opulifolius `Snowfall` / Snowfall Ninebark	-	2.5`-3`	#7 cont.	Full Plants, 2.5` O.C.
RTL	26	Rhus typhina laciniata / Velvet Sumac	-	2.5`-3`	#7 cont.	Full Plants, 2.5` O.C.

GROUND COVERS	QTY	BOTANICAL / COMMON NAME	CAL.	HT	CONT.	COMMENTS
LC	189	Lobelia cardinalis / Cardinal Flower	-		2 Gal.	Full Plants, 18" O.C.
PS	282	Panicum virgatum `Shenandoah` / Shenandoah Switch Grass	-		2 Gal.	Full Plants, 24" O.C.



0 10 20 40 80

Landscape Plan

401 Washington

Conshohocken Borough & Whitemarsh Township, PA

MBC
MELILLO-BAUER-CARMAN
LANDSCAPE ARCHITECTURE

200 Union Avenue, Belelle, NJ 08730
295 Newark Avenue, Jersey City, NJ 07302
732-528-0664
www.mbcla.design
NJCA No. 21MH00001700

THOMAS B. BAUER
COMMONWEALTH OF PENNSYLVANIA
REGISTERED LANDSCAPE ARCHITECT
PA REGISTERED LANDSCAPE ARCHITECT #000072.SE

NO.	DATE	REVISION

SCALE: 1" = 20'-0"

DATE: 12-03-2021 | JOB NO.: 21-167

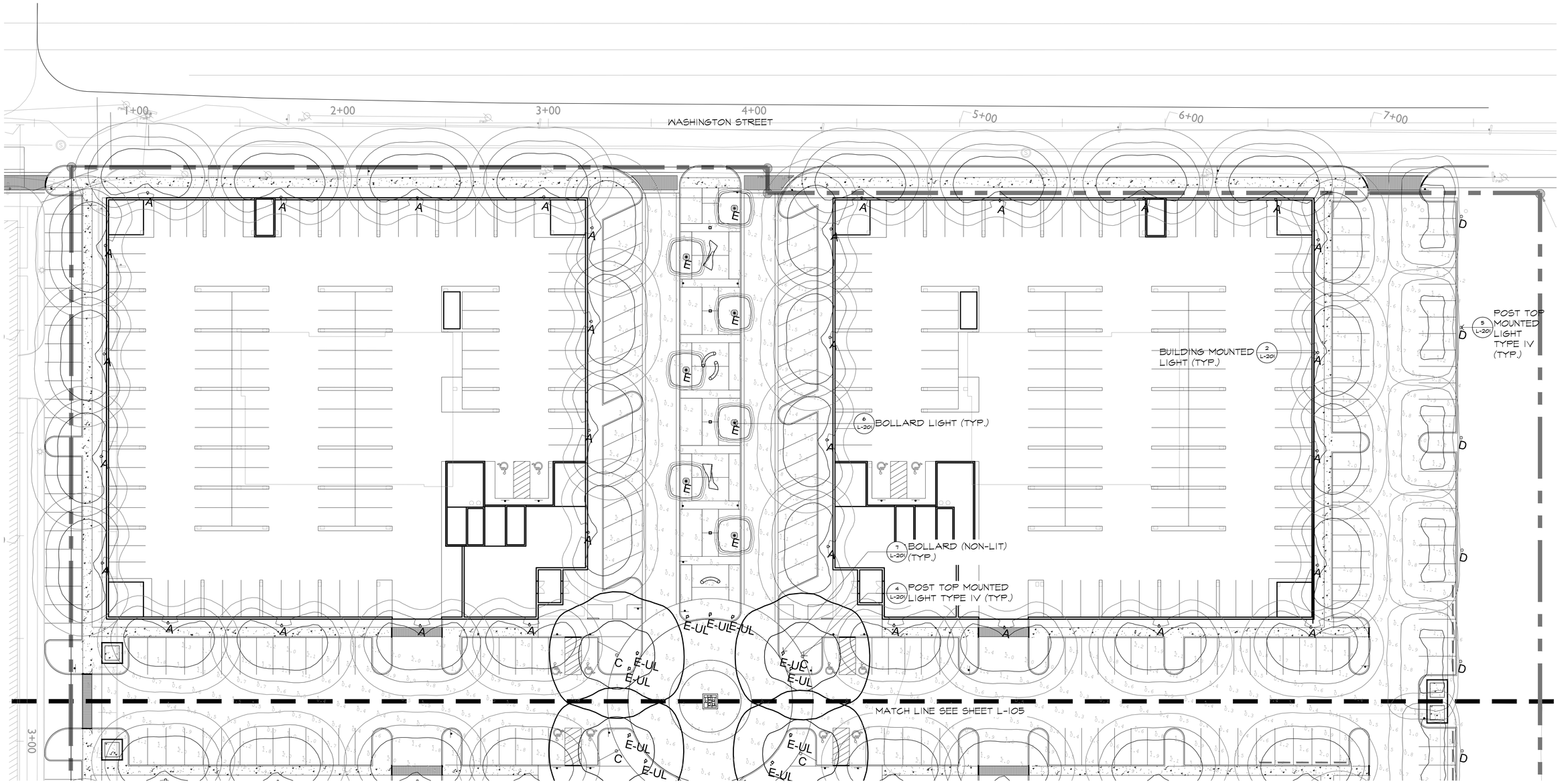
DRAWING NO.

L-103

OVERALL LIGHTING SCHEDULE

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
PATH AREA	Illuminance	Fc	0.29	10.9	0.0	N.A.	N.A.
ROADWAY	Illuminance	Fc	1.01	11.7	0.2	5.05	58.50

Diversified NJ Luminaire Schedule										
Qty	Type	Arrangement	Symbol	Manufacturer	Light Fixture	CCT	Lum. Lumens	LLF	Lum. Watts	Pole / Bracket	Mounting AFG (FT)
48	A	Single		KIM LIGHTING	URO2-96L-30-3K8-3-VOLTS-WB-COLOR-R56	3000k	3369	0.880	28.2	WALL MOUNTED @ 13' AFG	13
7	B	Single		WE-EF USA	115-1780 300-0949 VOLTS COLOR R56	3000K	2031	0.880	20	13' COLUM LIGHT	3.6, 15
10	C	Single		Kim Lighting	FM UR20 24L-25 3K8 5W VOLTS FM44 COLOR R56	3000K	2879	0.880	25	PRA13-418B-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	PRA13-418B-FM-COLOR-R56	15
22	E	Single		KIM LIGHTING	PA7R 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
16	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	3.5, 3.6



Lighting Plan

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
#000072-E

NO.	DATE	REVISION

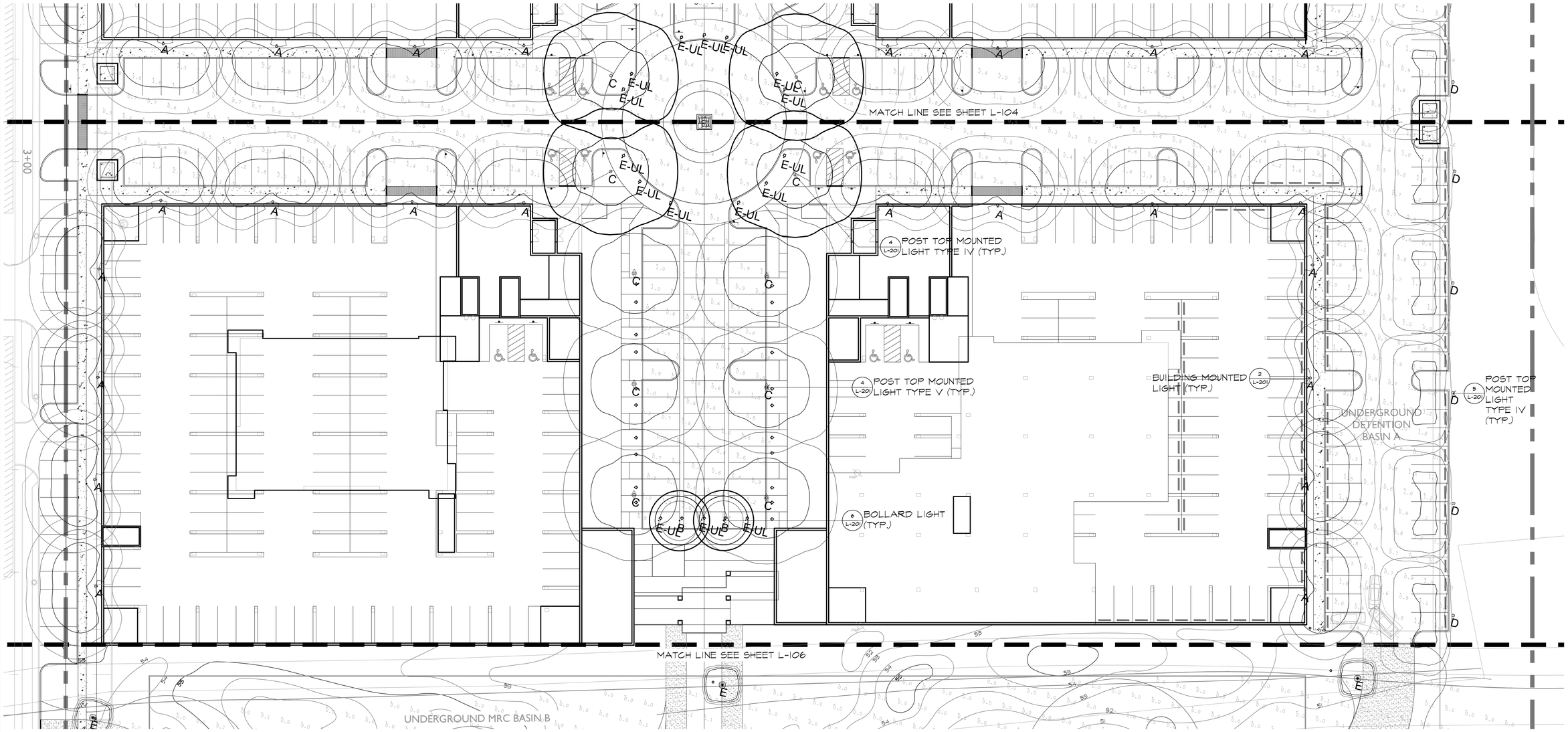
SCALE: 1" = 20'-0"
DATE: 12-03-2021
JOB NO.: 21-167

DRAWING NO.
L-104

OVERALL LIGHTING SCHEDULE

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
PATH AREA	Illuminance	Fc	0.29	10.9	0.0	N.A.	N.A.
ROADWAY	Illuminance	Fc	1.01	11.7	0.2	5.05	58.50

Diversified NJ Luminaire Schedule											
Qty	Type	Arrangement	Symbol	Manufacturer	Light Fixture	CCT	Lum. Lumens	LLF	Lum. Watts	Pole / Bracket	Mounting AFG (FT)
48	A	Single		KIM LIGHTING	URD-96L-30-3K8-3-VOLTS-WB-COLOR-R56	3000k	3369	0.880	28.2	WALL MOUNTED @ 13' AFG	13
7	B	Single		WE-EF USA	115-1780 300-0949 VOLTS COLOR R56	3000K	2031	0.880	20	13' COLUM LIGHT	3.6, 15
10	C	Single		Kim Lighting	FM URD 24L-25 3K8 5W VOLTS FM44 COLOR R56	3000K	2879	0.880	25	PRA13-4188-FM-COLOR-R56	13, 15
10	D	Single		Kim Lighting	FM URD 24L-25 3K8 4W VOLTS FM44 COLOR R56	3000K	1809	0.880	26	PRA13-4188-FM-COLOR-R56	15
22	E	Single		KIM LIGHTING	PATR 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
16	E-UL	Single		KIM LIGHTING	PATR CT NU-5 12L-020 3K7 44RB-B COLOR VOLTS R56	3000k	1841	0.010	0	NON LIT IMPACT RATED BOLLARD AT 44" AFG	3.5, 3.6



0 10 20 40 80

Lighting Plan

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
#000072SE

NO.	DATE	REVISION

SCALE: 1" = 20'-0"

DATE: 12-03-2021 JOB NO.: 21-167

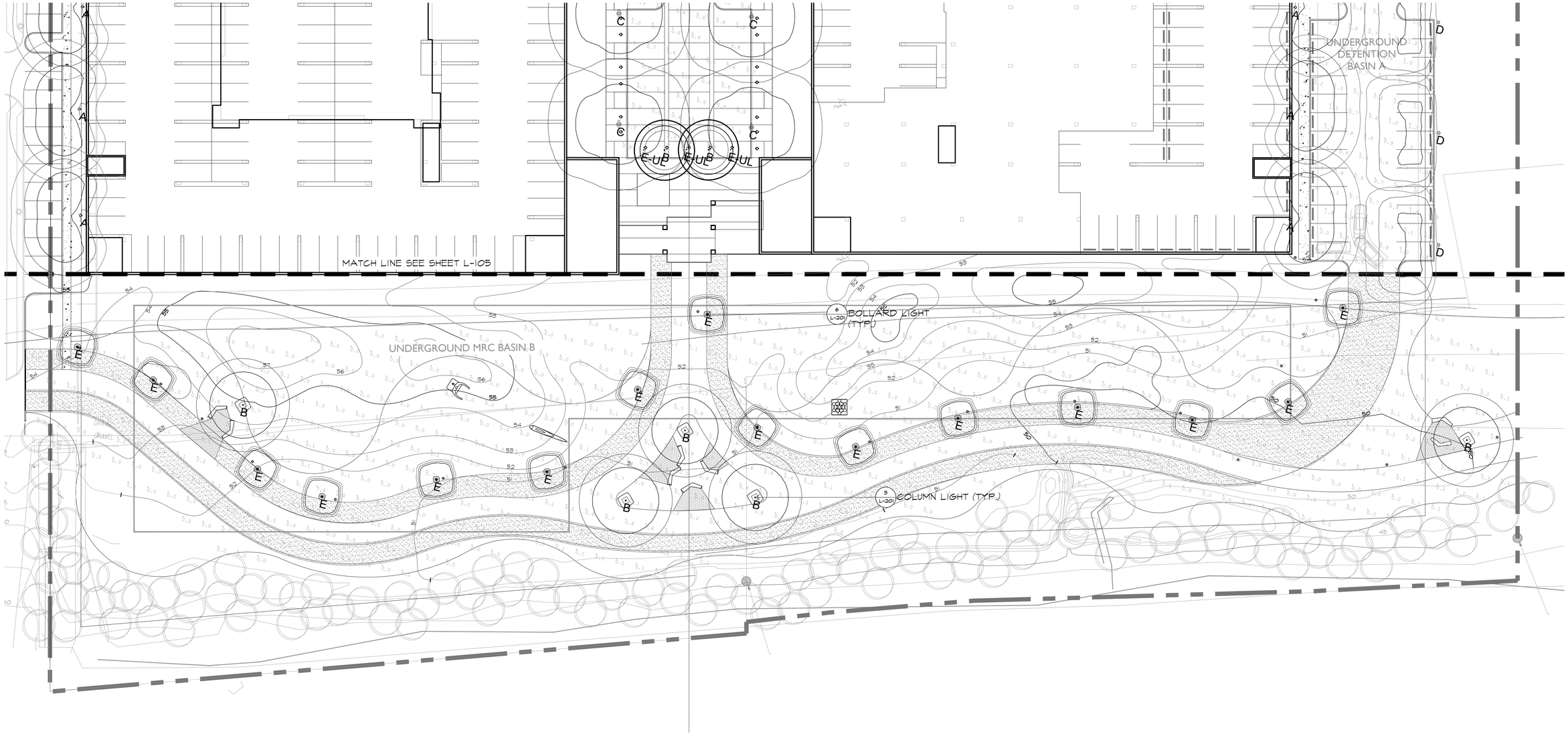
DRAWING NO.

L-105

OVERALL LIGHTING SCHEDULE

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
PATH AREA	Illuminance	Fc	0.29	10.9	0.0	N.A.	N.A.
ROADWAY	Illuminance	Fc	1.01	11.7	0.2	5.05	58.50

Diversified NJ Luminaire Schedule										
Qty	Type	Arrangement	Symbol	Manufacturer	Light Fixture	CCT	Lum. Lumens	LLF	Lum. Watts	Pole / Bracket	Mounting AFG (FT)
48	A	Single		KIM LIGHTING	LR20-96L-30-3K8-3-VOLTS-WB-COLOR-R56	3000k	3369	0.880	28.2	WALL MOUNTED @ 13' AFG	13
7	B	Single		WE-EF USA	115-1780 300-0949 VOLTS COLOR R56	3000K	2031	0.880	20	13' COLUM LIGHT	3.6, 15
10	C	Single		Kim Lighting	FM UR20 24L-25 3K8 5W 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
22	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
16	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	3.5, 3.6



0 10 20 40 80

Lighting Plan

401 Washington
Conshohocken Borough & Whitemarsh Township, PA

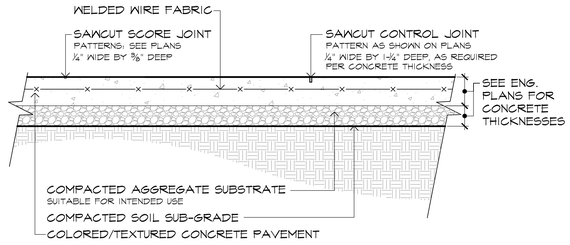
MBC
MELILLO-BAUER-CARMAN
LANDSCAPE ARCHITECTURE
200 Union Avenue Belelle, NJ 08730
295 Newark Avenue Jersey City, NJ 07302
732-528-0664
www.mbcla.design
NJCA No. 21MH00001700

THOMAS B. BAUER
PA REGISTERED LANDSCAPE ARCHITECT
#000723E

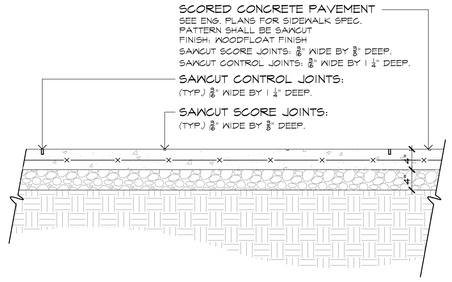
NO.	DATE	REVISION

SCALE: 1" = 20'-0"
DATE: 12-03-2021
JOB NO.: 21-167

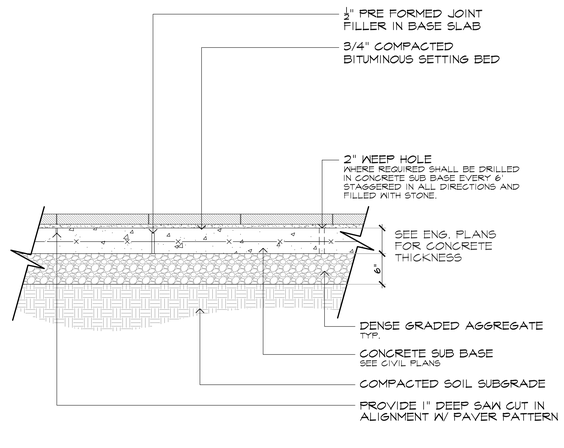
DRAWING NO.
L-106



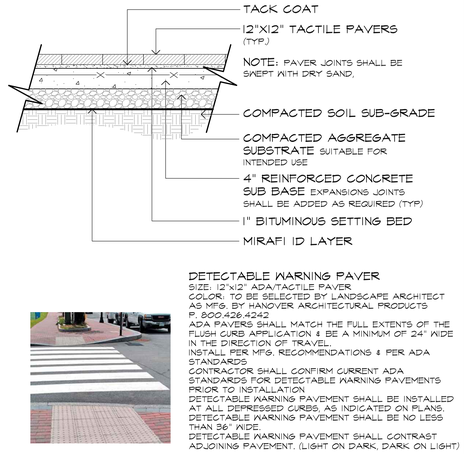
1 L-200 DETAIL: COLORED SCORED CONCRETE PAVEMENT 1"=1'-0"



2 L-200 DETAIL: COLORED SCORED CONCRETE PAVEMENT 1"=1'-0"

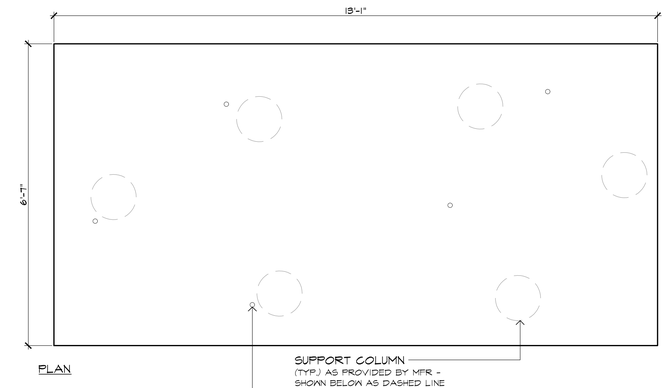


3 L-200 DETAIL: DECORATIVE PRECAST CONCRETE PAVERS 1"=1'-0"

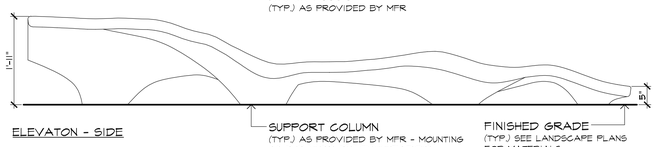


DETECTABLE WARNING PAVER
SIZE: 12"x12" ADA/TACTILE PAVER
COLOR: TO BE SELECTED BY LANDSCAPE ARCHITECT AS MFG. BY HANOVER ARCHITECTURAL PRODUCTS P. 800.426.4242
ADA PAVERS SHALL MATCH THE FULL EXTENTS OF THE FLUSH CURB APPLICATION & BE A MINIMUM OF 24" WIDE IN THE DIRECTION OF TRAVEL.
INSTALL PER MFG. 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 L-200 DETAIL: ADA DECTABLE WARNING PAVERS 1"=1'-0"



PLAN

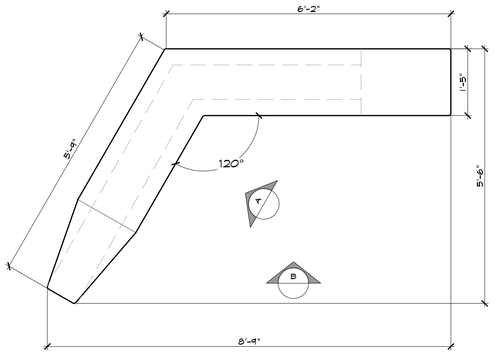


ELEVATON - SIDE

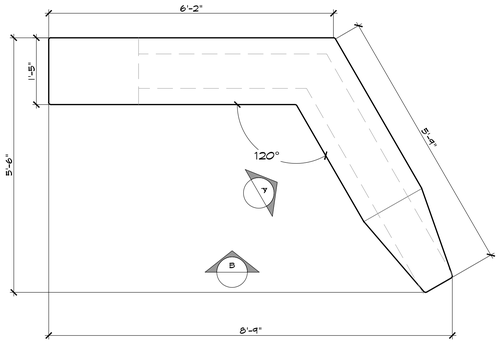
PRODUCT PHOTO

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)

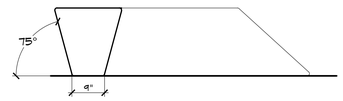
5 L-200 DETAIL: SCULPTURAL SEATING - TYPE "A" 3/4"=1'-0"



PLAN - RIGHT



PLAN - LEFT



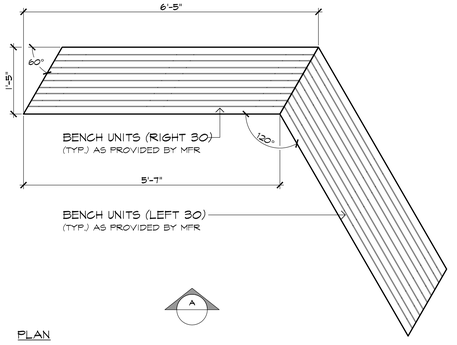
ELEVATION "A"
(TYP.) MIRRORED FOR LEFT AND RIGHT UNITS

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

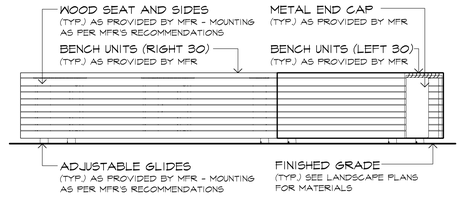
PRODUCT PHOTO

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 L-200 DETAIL: SCULPTURAL SEATING - TYPE "B" 3/4"=1'-0"



PLAN



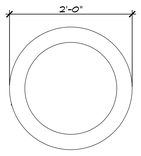
ELEVATION

PRODUCT PHOTO

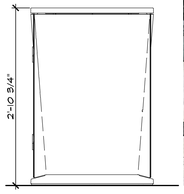
WATERFRONT SEATING:
MODEL: PARALLEL 42
(LEFT 30 AND RIGHT 30 UNITS)
MOUNTING: SURFACE
COLOR: TO BE SELECTED BY L.A.
FINISH: TO BE SELECTED BY L.A.
AS MFG. BY
ESCOFET / LANDSCAPE FORMS, INC.
P. 800.521.2546 | WWW.LANDSCAPEFORMS.COM
(OR APPROVED EQUAL)

7 L-200 DETAIL: BENCH SEATING AT WATERFRONT WALKWAY 3/4"=1'-0"

PRODUCT PHOTO:
LOCK DETAIL



TOP VIEW



SIDE VIEW

PRODUCT PHOTO

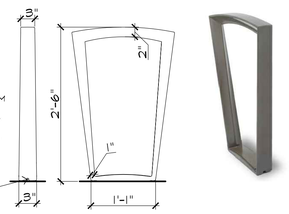
TRASH / RECYCLE RECEPTACLES
MODEL: AUSTIN
COLOR: TO BE SELECTED BY L.A.
MFG BY: LANDSCAPE FORMS, INC.
P: 1 800.521.2546
7800 E. MICHIGAN AVE.,
KALAMAZOO, MI 49048

8 L-200 DETAIL: TRASH / RECYCLE RECEPTACLES 1"=1'-0"

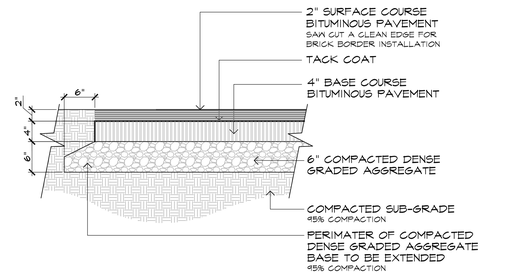
BIKE RACK
MODEL: EMERSON
SURFACE MOUNT
AS MFG. BY LANDSCAPE FORMS, INC.
P. 800.430.6204 |
WWW.LANDSCAPEFORMS.COM
(OR APPROVED EQUAL)

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 L-200 DETAIL: BIKE RACK 1"=1'-0"



10 L-200 DETAIL: WATERFRONT ASPHALT WALKWAY 1"=1'-0"

Site Details

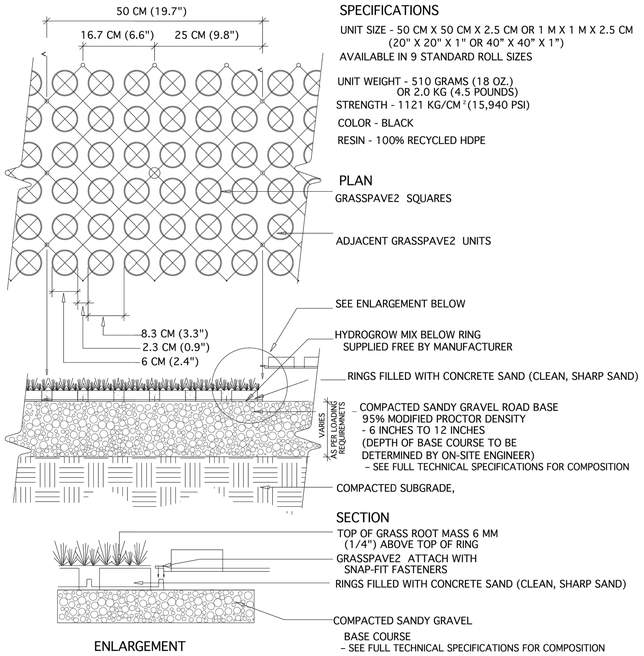
401 Washington
Conshohocken Borough & Whitemarsh Township, PA

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

THOMAS B. BAUER
COMMONWEALTH OF PENNSYLVANIA
REGISTERED LANDSCAPE ARCHITECT
PA REGISTERED LANDSCAPE ARCHITECT
RA007235E

NO.	DATE	REVISION
SCALE: AS SHOWN		
DATE: 12-03-2021	JOB NO.: 21-167	

DRAWING NO.
L-200



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/CM ^{2} (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 $\frac{3}{4}$" 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 / L-201 DETAIL: STABILIZED LAWN — NOT TO SCALE

(A) BUILDING MOUNTED AREA LIGHT
MODEL: OURO - UR20 SERIES
MODEL #: UR20-96L-30-3K8-3-VOLTS-MB-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 / L-201 DETAIL: LIGHTING "TYPE "A" - WALL MOUNTED AREA LIGHT — 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: PRA1B-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 / L-201 DETAIL: LIGHTING "TYPE "C" - POLE MOUNTED AREA LIGHT — NOT TO SCALE

(E) BOLLARD LIGHT
MODEL: PATR
MODEL #: PATR-CT-NU-5-12L-020-3K7-44IRB-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 / L-201 DETAIL: LIGHTING "TYPE "E" - BOLLARD LIGHT — NOT TO SCALE

(B) COLUMN LIGHT
MODEL: LTM 400 - 115-1780
MODEL #: 115-1780-300-0444-VOLTS-COLOR-R56
FINISH: (RAL9005) BLACK
TEMPERATURE: 3000K
MOUNTING TYPE: COLUMN LIGHT 13'
MOUNTING HT.: 15'
FIXTURE HT.: 3.6'
AS MFG. BY
WE-EF LIGHTING USA LLC
P. 724-742-0030
WWW.WE-EF.COM

INSTALL PER MFG. RECOMMENDATIONS

(OR APPROVED EQUAL)

3 / L-201 DETAIL: LIGHTING TYPE "B" - LIGHT COLUMN — NOT TO SCALE

(D) POLE MOUNTED AREA LIGHT
MODEL: OURO - UR20 SERIES
MODEL #: FM UR20-24L-25-3K8-4N-VOLTS-FM44-COLOR-R56
FINISH: (BMT) BLACK MATTE TEXTURED
TEMPERATURE: 3000K
MOUNTING TYPE: PRA1B-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 / L-201 DETAIL: LIGHTING "TYPE "D" - POLE MOUNTED AREA LIGHT — NOT TO SCALE

(E-UL) BOLLARD - UN-LIT
MODEL: PATR
MODEL #: PATR-CT-NU-5-12L-020-3K7-44IRB-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 / L-201 DETAIL: LIGHTING "TYPE "E-UL" - BOLLARD (UN-LIT) — NOT TO SCALE

Site Details

401 Washington
Conshohocken Borough & Whitemarsh Township, PA

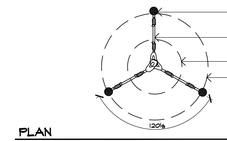
MBC
MELILLO-BAUER-CARMAN
LANDSCAPE ARCHITECTURE
200 Union Avenue, Belelle, NJ 08730
295 Newark Avenue, Jersey City, NJ 07302
732-528-0664
www.mbclo.design
NJCA No. 21MH00001700

THOMAS B. BAUER
COMMONWEALTH OF PENNSYLVANIA
REGISTERED LANDSCAPE ARCHITECT
PA REGISTERED LANDSCAPE ARCHITECT
#000723E

NO.	DATE	REVISION

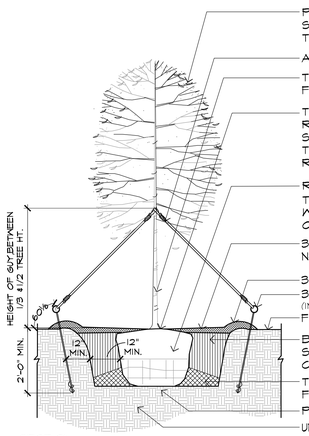
SCALE: AS SHOWN
DATE: 12-03-2021
JOB NO.: 21-167

DRAWING NO.
L-201



PLAN

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



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.

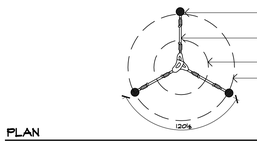
UNDISTURBED GRADE

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.

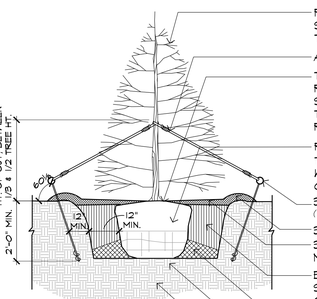
1 L-202 DETAIL: 3" CALIPER OR MORE DECIDUOUS TREE PLANTING

NOT TO SCALE



PLAN

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



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 L-202 DETAIL: EVERGREEN TREE PLANTING

NOT TO SCALE

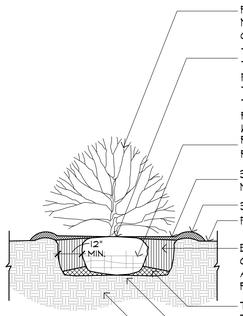
3" SHREDDED HARDWOOD BARK MULCH COVERING ENTIRE PLANTING BED.

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 L-202 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.

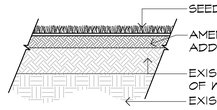
UNDISTURBED GRADE

4 L-202 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 L-202 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 WINTERIZATION 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.

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 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:FESRUBO1
AS SUPPLIED BY
ERNSTSEED.COM
SALES@ERNSTSEED.COM
1-800-873-3321

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.

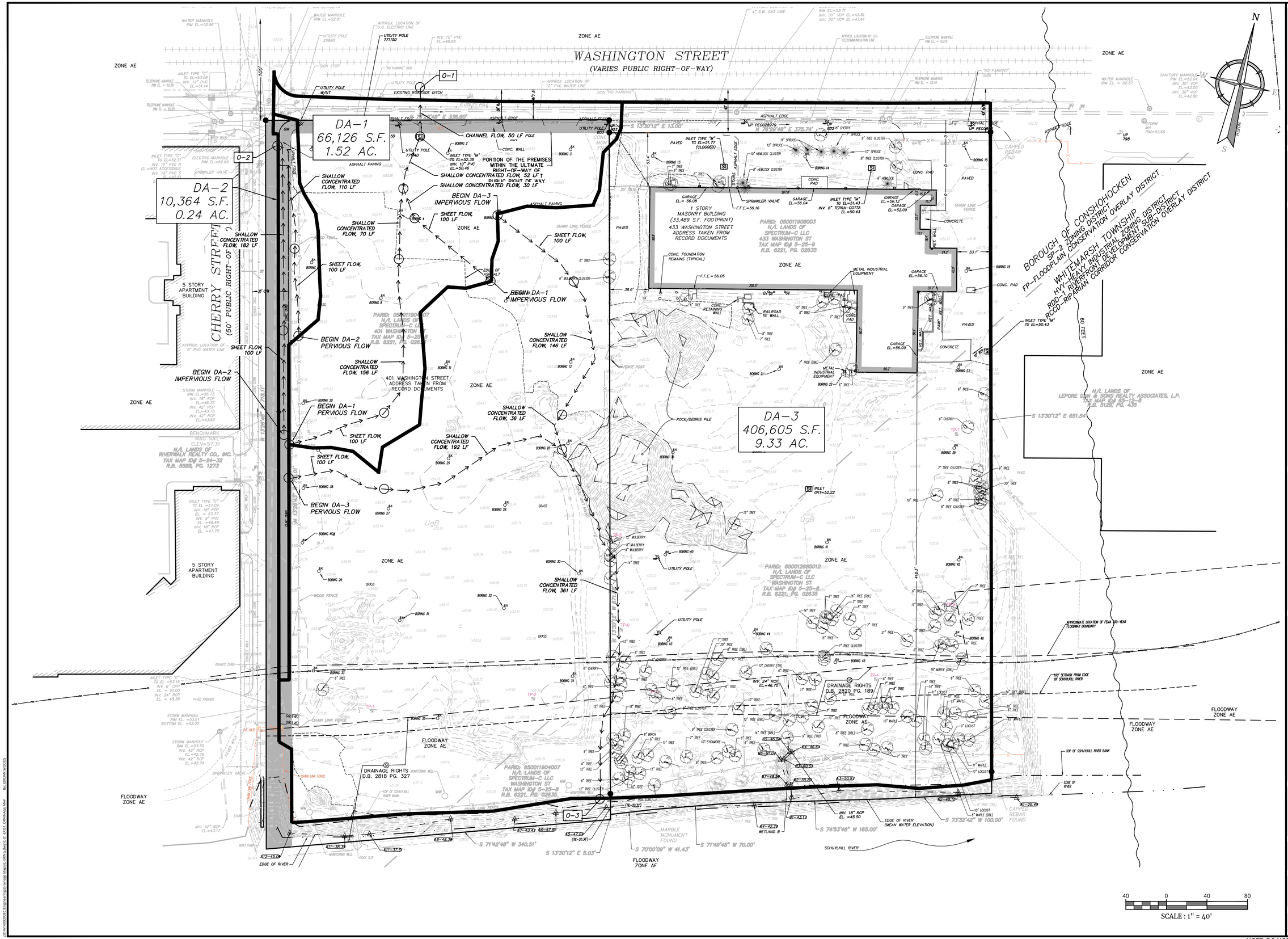
NOTES
- FINAL LIMITS OF SEEDED ZONES TO BE LAID OUT IN THE FIELD UNDER THE DIRECTION OF THE PROJECT LANDSCAPE ARCHITECT.
- CONTRACTOR SHALL CONTACT SEED SUPPLIER PRIOR TO APPLICATION TO VERIFY APPROPRIATE APPLICATION TIMING FOR THE SPECIFIED SEED MIX PER SEASONAL CONDITIONS. GENERAL SEEDING PERIOD IS 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 L-202 DETAIL: SEED MIX & INSTALLATION

NOT TO SCALE

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



Colliers
Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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-DRNG

SHEET TITLE:
EXISTING DRAINAGE MAP

SHEET NUMBER:
DA-PRE

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C\Engineering\Drainage Maps\C-DRNG.dwg(C-DR EXIST. DRAINAGE MAP By: JORDAN WOODS

DA-1
15,316 S.F.
1.18 AC.

DA-2
6,800 S.F.
0.16 AC.

DA-3 (to MRC)
272,351 S.F.
6.25 AC.

DA-3 (to PO-2)
67,862 S.F.
1.16 AC.

DA-3 (DIRECT DISCHARGE)
120,219 S.F.
2.76 AC.

WASHINGTON STREET
(VARIES PUBLIC RIGHT-OF-WAY)

CHERRY STREET
(50' PUBLIC RIGHT-OF-WAY)

BOROUGH OF CONSHOHOCKEN
SP-2 ZONING DISTRICT
FP-FLOODPLAIN CONSERVATION OVERLAY DISTRICT
WHITEMARSH TOWNSHIP
HVI-HEAVY INDUSTRIAL ZONING DISTRICT
RDD-RIVERFRONT DEVELOPMENT SUB-DISTRICT
RCCD-RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT

SCALE : 1" = 40'

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\140009085\Engineering\Drainage Maps\C-DRING.dwg\C-D2-PROP. DRAINAGE MAP By: JORDAN WOODS

Colliers
Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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

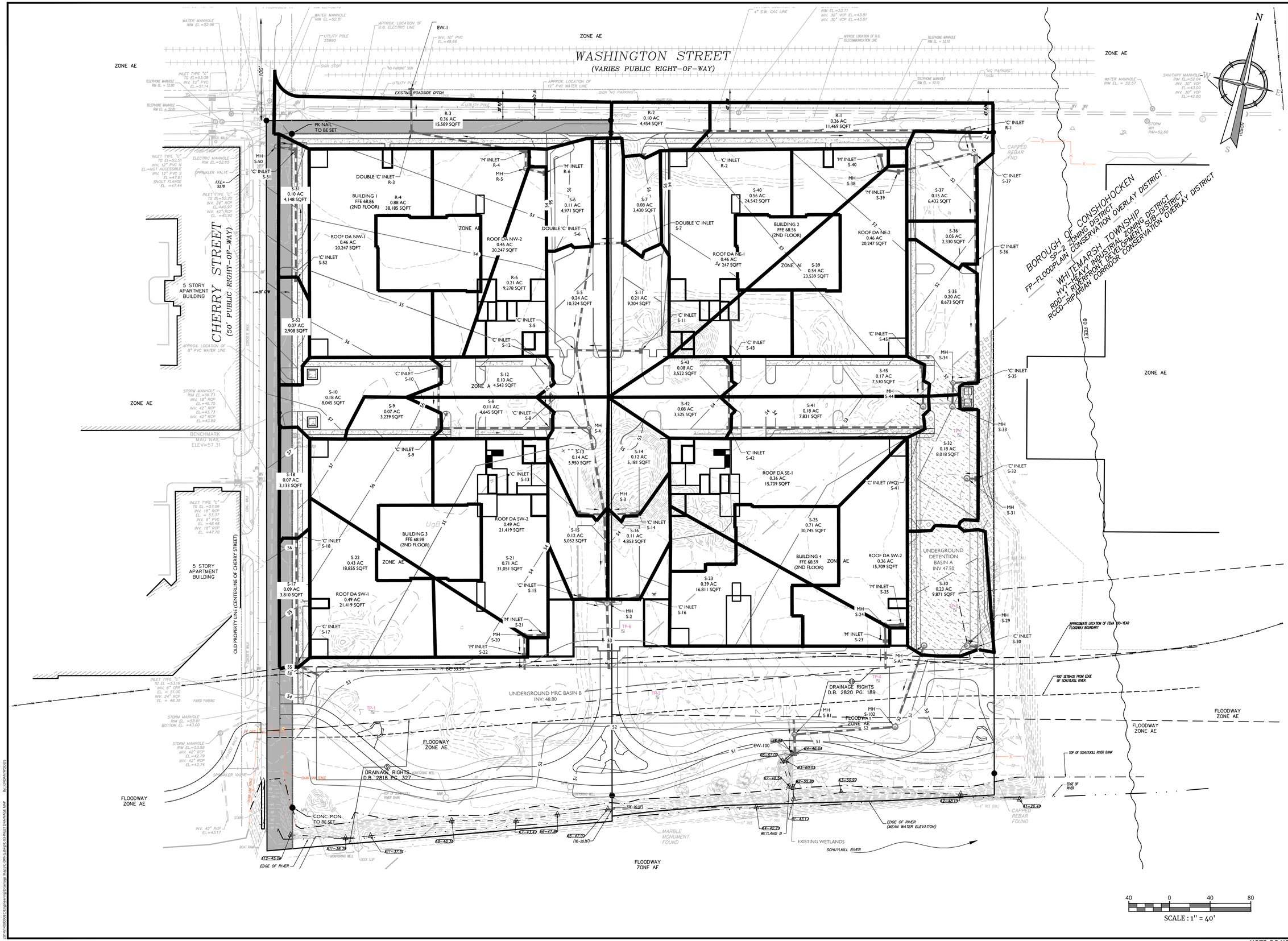
Colliers Engineering & Design
LEHIGH VALLEY
941 Marcon Boulevard, Suite 801
Allentown, PA 18109
Phone: 610.868.4201
COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

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

PROJECT NUMBER: 14000908C
DRAWING NAME: C-DRNG

SHEET TITLE:
PROPOSED
DRAINAGE MAP

SHEET NUMBER:
DA-POST



NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Colliers Engineering & Design

www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

811 PROTECT YOURSELF
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

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:	DRAWING NAME:
14000908C	C-DRNG

SHEET TITLE:

INLET DRAINAGE MAP

SHEET NUMBER:

DA-POST 3

20141400908\C\Engineering\Drainage Maps\C-DRNG.dwg|C-03 INLET DRAINAGE MAP By: JORDAN WOODS

EROSION AND SEDIMENT POLLUTION CONTROL PLANS

FOR

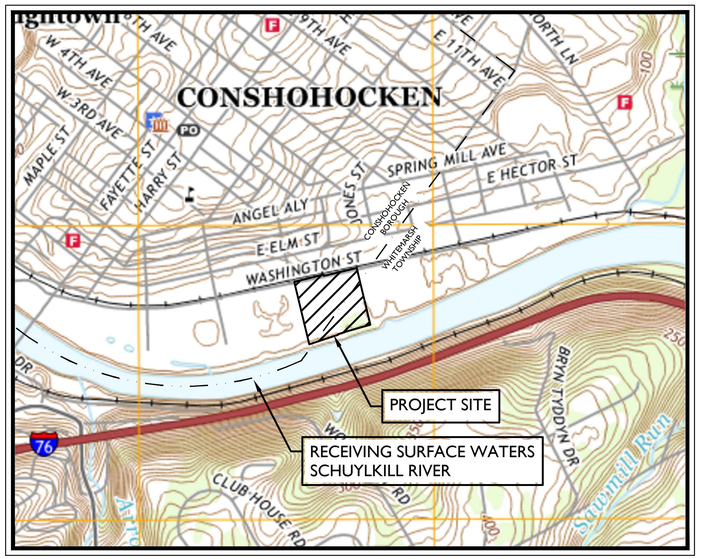
KRE ACQUISITION CORP.

401/433 WASHINGTON STREET APARTMENTS

401 & 433 WASHINGTON STREET

CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY, PENNSYLVANIA



800 0 800

SCALE : 1" = 800'

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 12/3/21

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 - E5	E&SPC DETAILS	

2016\14000908C\Engineering\E&SC-SESC-CVER.dwg, By: MJOSEPH

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. WETLANDS ARE SHOWN ON PLAN.
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 THE TOWNSHIP 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 CLASS III (OR HIGHER IF NOTED) REINFORCED CONCRETE PIPE (RCP) WITH "O" RING GASKETS OR INTERNALLY PRELUBRICATED GASKET (TYLOX SUPERSEAL OR EQUIVALENT, 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 WINDSOR DR, OWNED AND OPERATED BY LEHIGH COUNTY AUTHORITY. 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 WINDSOR DR, OWNED AND OPERATED BY THE TOWNSHIP SEWER DEPARTMENT. 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. ALL SANITARY SEWERS TO BE DEDICATED TO UMT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE UPPER MACUNGIE TOWNSHIP INFRASTRUCTURE CONSTRUCTION SPECIFICATIONS AND DEP REQUIREMENTS.
12. ALL SANITARY SEWERS NOT TO BE DEDICATED TO UMT, INCLUDING BUT NOT LIMITED TO LATERAL CONNECTIONS, SHALL CONFORM TO THE PLUMBING CODE CURRENTLY IN EFFECT IN UPPER MACUNGIE TOWNSHIP AT THE TIME OF CONSTRUCTION.
13. STORMWATER INTERCONNECTIONS WITH THE SANITARY SEWER SYSTEM SHALL NOT BE PERMITTED.
14. APPROVAL OF THESE PLANS DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT OF WASTEWATER COLLECTION, CONVEYANCE, OR TREATMENT CAPACITY.
15. THE ENTIRETY OF THE ROOF AREA OF THE PROPOSED WAREHOUSE/OFFICE BUILDING SHALL BE DIRECTED TO THE UNDERGROUND DETENTION BASIN.
16. NO PERSON SHALL PLACE ANY STRUCTURE, FILL, LANDSCAPING OR VEGETATION INTO A STORMWATER BMP, WHICH WOULD LIMIT OR ALTER THE FUNCTIONING OF THE BMP.
17. ANY ALTERATION TO THE STORMWATER BMPs SHALL NOT BE PERMITTED UNLESS AUTHORIZED BY THE UPPER MACUNGIE TOWNSHIP ENGINEER AND LEHIGH 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).

Colliers Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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

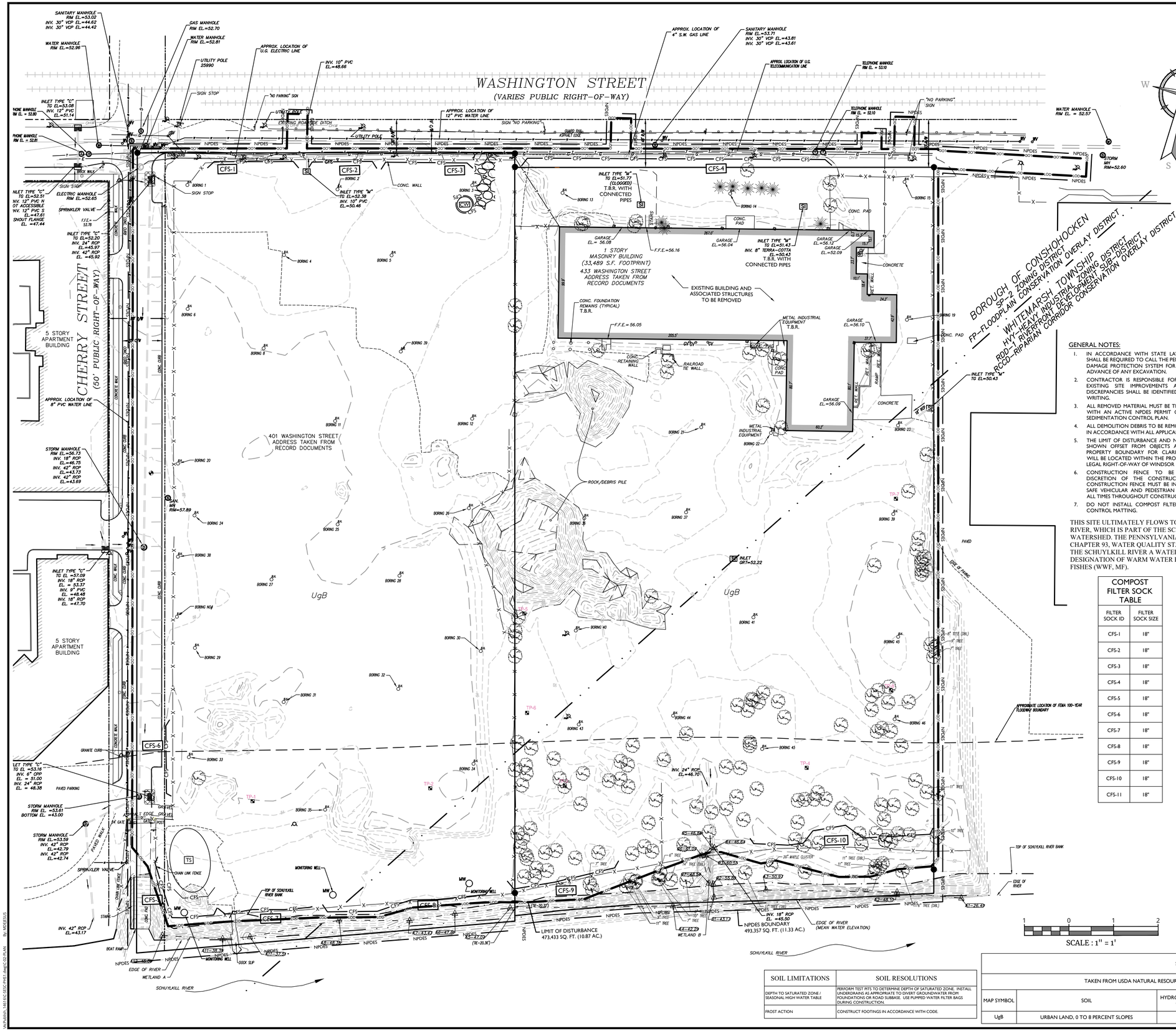
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/03/2021	SF	CRR

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

SHEET TITLE: EROSION AND SEDIMENT POLLUTION CONTROL COVER SHEET

SHEET NUMBER: E1 of E5

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 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.

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 WRITING.
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).

DEMO LEGEND

EXISTING FEATURE TO BE REMOVED

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"
CFS-11	18"

LEGEND

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

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

Colliers Engineering & Design
www.colliersengineering.com

Copyright © 2021, Colliers Engineering & Design All Rights Reserved. This drawing and all of the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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	12/03/2021	SF	CRR

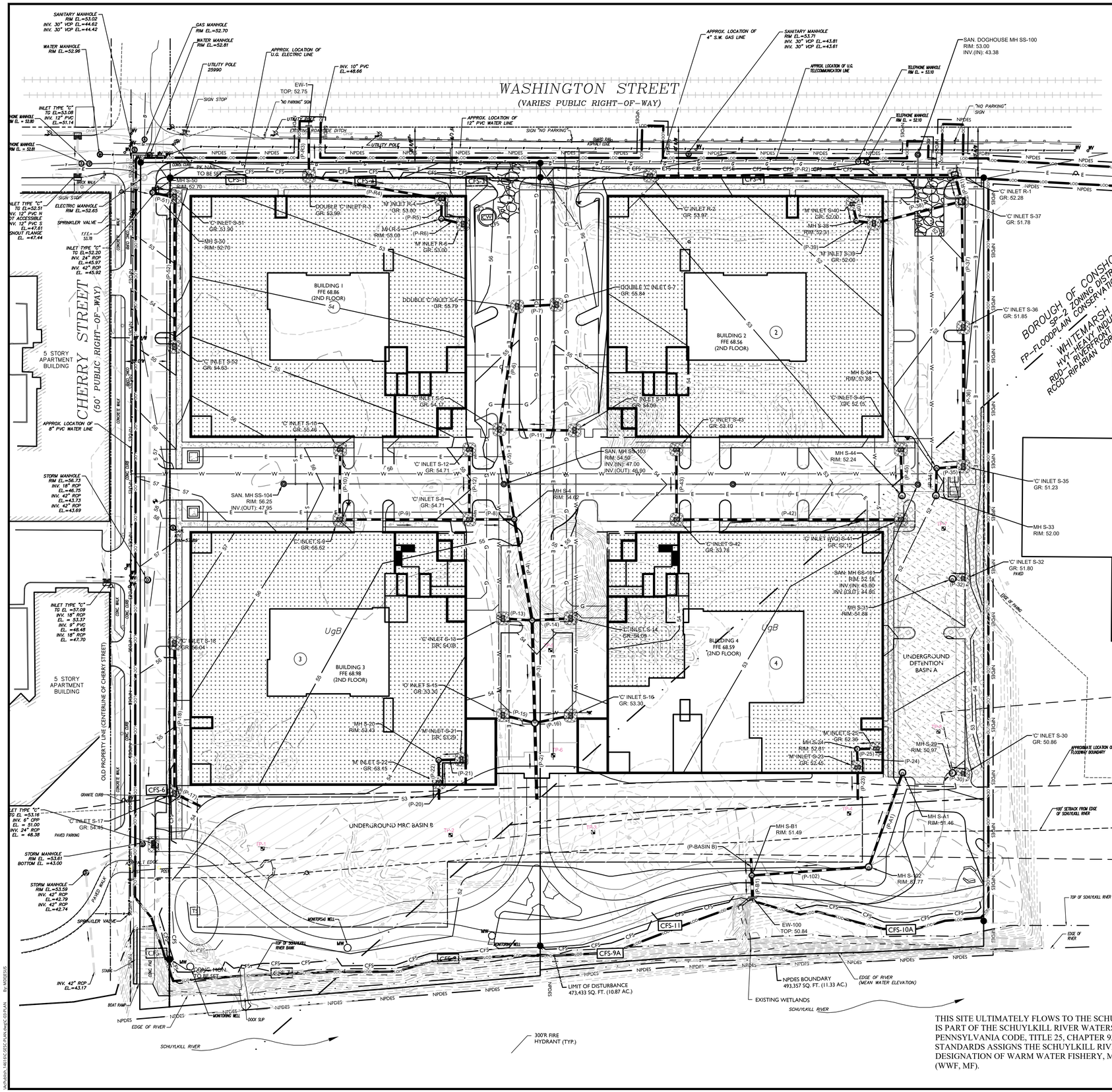
PROJECT NUMBER: 14000908C
DRAWING NAME: C-SESC-PHS1

SHEET TITLE: EROSION AND SEDIMENT POLLUTION CONTROL DEMOLITION PLAN

SHEET NUMBER: E2 of E5

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

\\Active_14616\C-SESC-PHS1.dwg|C-SD-PLAN By: MDEBESUS


WASHINGTON STREET
(VARIES PUBLIC RIGHT-OF-WAY)
CHERRY STREET
(50' PUBLIC RIGHT-OF-WAY)
OLD PROPERTY LINE (CENTERLINE OF CHERRY STREET)
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)
UNDERGROUND DETENTION BASIN A
UNDERGROUND MRC BASIN B
BOROUGH OF CONSHOHOCKEN
FP-FLOODPLAIN CONSERVATION OVERLAY DISTRICT
SP-2 ZONING 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
TOP OF SCHUYLKILL RIVER BANK
EDGE OF RIVER
EDGE OF RIVER (MEAN WATER ELEVATION)
LIMIT OF DISTURBANCE 473,433 SQ. FT. (10.87 AC.)
NPDES BOUNDARY 493,357 SQ. FT. (11.33 AC.)
EXISTING WETLANDS
SCHUYLKILL RIVER
300'R FIRE HYDRANT (TYP.)
CFS-1
CFS-2
CFS-3
CFS-4
CFS-5
CFS-6
CFS-7
CFS-8
CFS-9
CFS-9A
CFS-10
CFS-10A
CFS-11
MH S-30 RIM: 52.70
MH S-31 RIM: 52.31
MH S-32 RIM: 52.24
MH S-33 RIM: 52.00
MH S-34 RIM: 51.38
MH S-35 RIM: 52.00
MH S-36 RIM: 51.85
MH S-37 RIM: 51.78
MH S-38 RIM: 52.31
MH S-39 RIM: 52.00
MH S-40 RIM: 52.00
MH S-41 RIM: 52.28
MH S-1 RIM: 52.52
MH S-2 RIM: 52.52
MH S-3 RIM: 52.52
MH S-4 RIM: 54.92
MH S-5 RIM: 54.92
MH S-6 RIM: 53.08
MH S-7 RIM: 52.97
MH S-8 RIM: 52.97
MH S-9 RIM: 52.97
MH S-10 RIM: 52.97
MH S-11 RIM: 52.97
MH S-12 RIM: 52.97
MH S-13 RIM: 52.97
MH S-14 RIM: 52.97
MH S-15 RIM: 52.97
MH S-16 RIM: 52.97
MH

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 INSPECTIONS. ALL 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, AND ALL ITEMS LISTED AS TO BE REMOVED WITHIN THE SITE, AS SHOWN ON THE PLANS.
4. ESTABLISH STOCKPILE AND CONCRETE WASHOUT LOCATION AND PLACE DOWNSLOPE COMPOST FILTER SOCKS. ENSURE THAT COMPOST FILTER SOCKS ARE LOCATED DOWNSLOPE OF THE TOPSOIL STOCKPILE AT ALL TIMES. AS THE SITE GRADING PROGRESSES, COMPOST FILTER SOCKS SHALL BE INSTALLED PARALLEL TO EXISTING CONTOURS OR CONSTRUCTED LEVEL ALIGNMENTS. 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.
5. CONSTRUCT UNDERGROUND DETENTION BASIN B. INSTALL OUTFALL STORMSEWER SYSTEM, STARTING AT HW S-100 AND WORKING UPSLOPE TO MH S-B1. CONSTRUCT UNDERGROUND DETENTION BASIN C. INSTALL OUTFALL STORMSEWER SYSTEM, STARTING AT MH S-B1 AND WORKING UPSLOPE TO MH S-C1. CONSTRUCT UNDERGROUND DETENTION BASIN A. INSTALL OUTFALL STORMSEWER SYSTEM, STARTING AT MH S-B1 AND WORKING UPSLOPE TO 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, WILL BE COMPLETELY REMOVED BY FILTER BAG PUMPING, BEFORE PIPE PLACEMENT AND/OR BACKFILLING BEGINS.
6. INSTALL EASTERN ROCK CONSTRUCTION ENTRANCE AS SHOWN ON PLANS.
7. ROUGH GRADE SITE AND BUILDING PADS. ROUGH GRADE DRIVEWAYS, AISLES, CONCRETE PATIOS AND PARKING LOTS. REPLACE COMPOST FILTER SOCKS 8 AND 10 WITH COMPOST FILTER SOCKS 8A AND 10A RESPECTIVELY.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.
8. CONSTRUCT DOMESTIC AND FIRE WATER SYSTEMS TO PROPOSED HYDRANTS AND BUILDINGS. CONSTRUCT SANITARY SEWER SYSTEM DOWNSTREAM TO UPSTREAM, FROM THE PROPOSED TIE-IN WITH THE EXISTING SEWER LATERAL AT MH SS-100 TO MH SS-103, AND THE LATERAL CONNECTIONS TO EACH BUILDING.
9. INSTALL THE PROPOSED STORMSEWER SYSTEM, WORKING FROM DOWNSTREAM TO UPSTREAM, FROM CONNECTION PIPE P-12 TO INLET S-12, FROM CONNECTION PIPE P-13 TO INLET S-14, FROM MANHOLE S-13 TO INLET S-15, AND FROM CONNECTION PIPE P-1C TO MANHOLE S-1. 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, WILL 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.
10. INSTALL THE PROPOSED STORM SEWER SYSTEM, WORKING FROM DOWNSTREAM TO UPSTREAM, FROM CONNECTION PIPE P-20 TO INLET S-20, FROM CONNECTION PIPE P-1B TO INLET S-5, FROM INLET S-3 TO INLET S-6, FROM MANHOLE S-2 TO INLET S-9, AND FROM INLET S-7 TO INLET S-10. 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, WILL 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.
11. INSTALL THE PROPOSED STORMSEWER SYSTEM, WORKING FROM DOWNSTREAM TO UPSTREAM, FROM CONNECTION PIPE P-24 TO INLET S-24, FROM CONNECTION PIPE P-25 TO INLET S-25, FROM INLET S-30 TO INLET S-32, FROM CONNECTION PIPE P-33 TO INLET S-33, AND FROM CONNECTION PIPE P-26 TO INLET S-29. 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, WILL 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.
12. CONSTRUCT UNDERGROUND DETENTION FACILITY D. INSTALL OUTFALL STORMSEWER SYSTEM, REPLACING EXISTING INLET AT THE CORNER OF WASHINGTON STREET AND CHERRY STREET WITH MANHOLE S-40 AND WORKING UPSLOPE TO INLET S-42. 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, WILL 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.
13. INSTALL PROPOSED STORMSEWER SYSTEM, WORKING FROM DOWNSTREAM TO UPSTREAM, FROM PIPE P-R9 TO INLET R-9, FROM PIPE P-R5 TO INLET R-7, FROM MANHOLE R-6 TO INLET R-8, FROM PIPE P-R1 TO INLET R-3, AND FROM MANHOLE R-2 TO INLET R-4. 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, WILL 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.
14. 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.
15. FINALIZE GRADING IN ALL LAWN AREAS.
16. INSTALL PROPOSED SIDEWALKS AND ADA RAMPS.
17. INSTALL PROPOSED TREES AND OTHER PLANTINGS.
18. 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.

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.

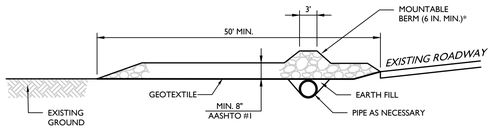
SEEDING AND SOIL SUPPLEMENTS

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

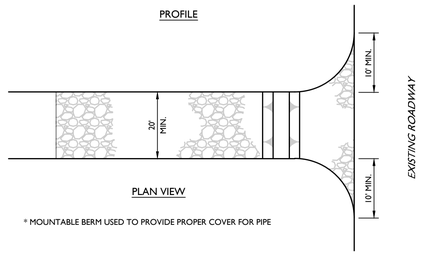
TEMPORARY SEED MIXTURES

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 TAB



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

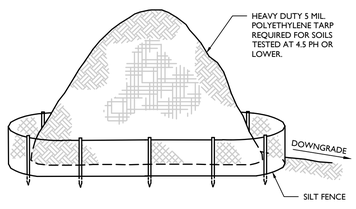
Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photo-degradable	Photo-degradable	Bio- degradable	Photo-degradable	Photo-degradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 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

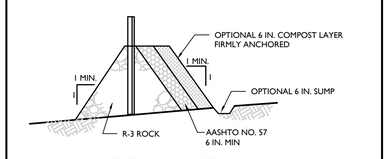


NOTES:

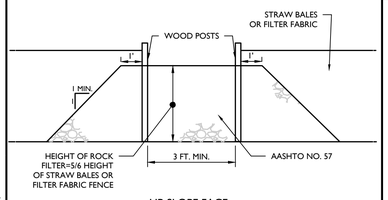
1. ALL STOCKPILES SHALL NOT TO BE LOCATED WITHIN 50 FEET OF A FLOODPLAIN, SLOPE, ROADWAY OR DRAINAGE FACILITY.

TOPSOIL STOCKPILE WITH SILT EENCE DETAIL

NOT TO SCALE | MCPA-SOIL-EROS-2200 | 05/01/18



OUTLET CROSS-SECTION



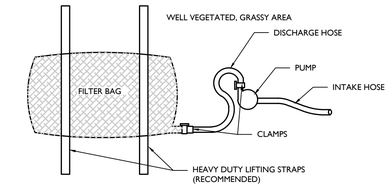
UP-SLOPE FACE

NOTES:

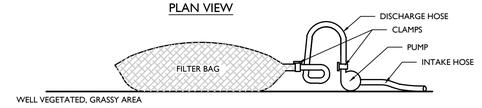
1. A ROCK FILTER OUTLET SHALL BE INSTALLED WHERE FAILURE OF A SILT FENCE OR STRAW BALE BARRIER HAS OCCURRED DUE TO CONCENTRATED FLOW. ANCHORED COMPOST LAYER SHALL BE USED ON UPSLOPE FACE IN HQ AND EV WATERSHEDS.
2. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET.

STANDARD CONSTRUCTION DETAIL # 4-6
ROCK FILTER OUTLET

NOT TO SCALE | MCPA-SOIL-EROS-1900 | 05/01/18



PLAN VIEW



ELEVATION VIEW

NOTES:

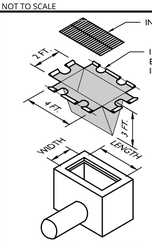
1. LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

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

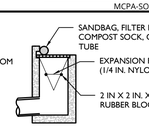
2. A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO 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

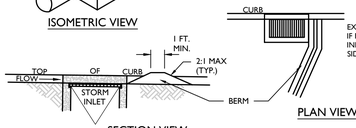
NOT TO SCALE | MCPA-SOIL-EROS-1400 | 05/01/18



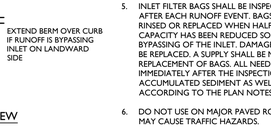
ISOMETRIC VIEW



INSTALLATION DETAIL



SECTION VIEW



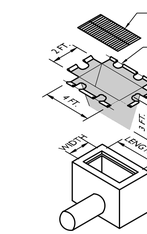
PLAN VIEW

NOTES:

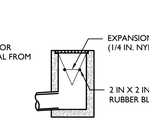
1. MAXIMUM DRAINAGE AREA = 1/2 ACRE.
2. INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.
3. ROLLED EARTHEN BERM SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. 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

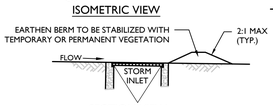
NOT TO SCALE | MCPA-SOIL-EROS-2400 | 05/01/18



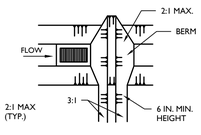
ISOMETRIC VIEW



INSTALLATION DETAIL



SECTION VIEW



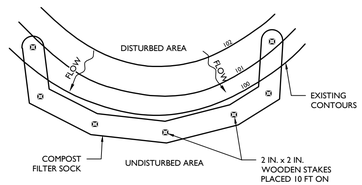
PLAN VIEW

NOTES:

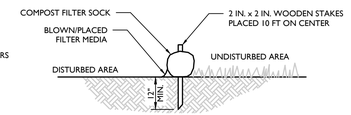
1. MAXIMUM DRAINAGE AREA = 1/2 ACRE.
2. INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.
3. ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED 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 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

NOTES:

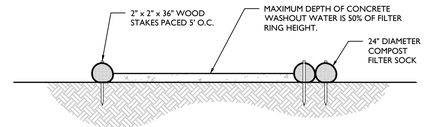
1. SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.
2. COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE 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.

STANDARD CONSTRUCTION DETAIL # 4-1
COMPOST FILTER SOCK

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

NOTES:

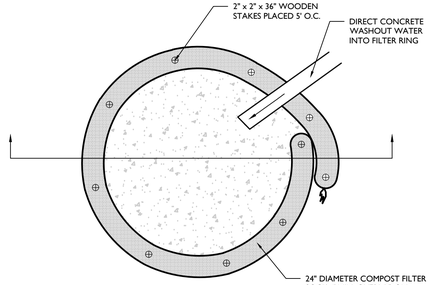
1. CONCRETE WASHOUTS ARE REQUIRED ON ALL CONSTRUCTION SITES INVOLVING CONCRETE AND STUCCO USE.
2. THE CONTRACTOR SHALL REQUIRE ALL CONCRETE DRIVERS TO UTILIZE THE CONCRETE WASHOUTS ONSITE.
3. WASHOUT FACILITIES SHALL BE LOCATED AT LEAST 50 FEET AWAY FROM STORM SEWER DRAIN INLETS, GUTTERS, OPEN DITCHES, 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.



SECTION

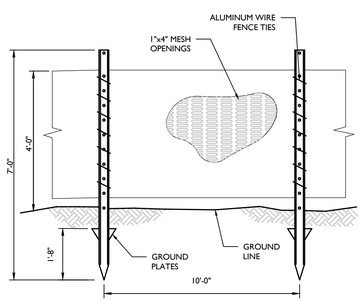
NOTES:

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

Colliers Engineering & Design

www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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	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.

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	12/03/2021	SF	CRR

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

SHEET TITLE: EROSION AND SEDIMENT POLLUTION CONTROL DETAILS

SHEET NUMBER: E5 of E5

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2018\14000908\07-Engineering\E&S\C-SESC-DTLS.dwg, C-SESC-DTLS, 1/4/2021 8:45:39 AM, Pc-ARCHIVE50

POST-CONSTRUCTION STORMWATER MANAGEMENT PLANS

FOR

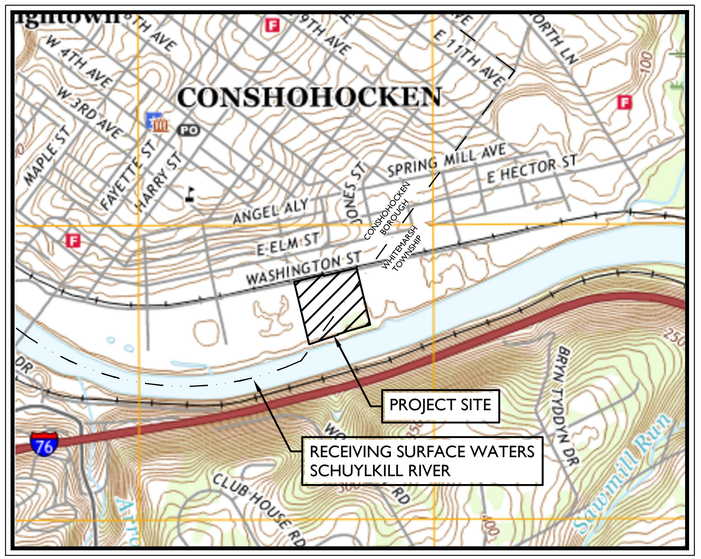
KRE ACQUISITION CORP.

401/433 WASHINGTON STREET APARTMENTS

401 & 433 WASHINGTON STREET

CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY, PENNSYLVANIA



800 0 800

SCALE : 1" = 800'

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 12/3/21

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 - P5	PCSM DETAILS	

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. WETLANDS ARE SHOWN ON PLAN.
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 THE TOWNSHIP 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 CLASS III (OR HIGHER IF NOTED) REINFORCED CONCRETE PIPE (RCP) WITH "O" RING GASKETS OR INTERNALLY PRELUBRICATED GASKET (TYLOX SUPERSEAL OR EQUIVALENT, 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 WINDSOR DR, OWNED AND OPERATED BY LEHIGH COUNTY AUTHORITY. 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 WINDSOR DR, OWNED AND OPERATED BY THE TOWNSHIP SEWER DEPARTMENT. 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. ALL SANITARY SEWERS TO BE DEDICATED TO UMT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE UPPER MACUNGIE TOWNSHIP INFRASTRUCTURE CONSTRUCTION SPECIFICATIONS AND DEP REQUIREMENTS.
12. ALL SANITARY SEWERS NOT TO BE DEDICATED TO UMT, INCLUDING BUT NOT LIMITED TO LATERAL CONNECTIONS, SHALL CONFORM TO THE PLUMBING CODE CURRENTLY IN EFFECT IN UPPER MACUNGIE TOWNSHIP AT THE TIME OF CONSTRUCTION.
13. STORMWATER INTERCONNECTIONS WITH THE SANITARY SEWER SYSTEM SHALL NOT BE PERMITTED.
14. APPROVAL OF THESE PLANS DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT OF WASTEWATER COLLECTION, CONVEYANCE, OR TREATMENT CAPACITY.
15. THE ENTIRETY OF THE ROOF AREA OF THE PROPOSED WAREHOUSE/OFFICE BUILDING SHALL BE DIRECTED TO THE UNDERGROUND DETENTION BASIN.
16. NO PERSON SHALL PLACE ANY STRUCTURE, FILL, LANDSCAPING OR VEGETATION INTO A STORMWATER BMP, WHICH WOULD LIMIT OR ALTER THE FUNCTIONING OF THE BMP.
17. ANY ALTERATION TO THE STORMWATER BMPs SHALL NOT BE PERMITTED UNLESS AUTHORIZED BY THE UPPER MACUNGIE TOWNSHIP ENGINEER AND LEHIGH 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).

Colliers Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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	12/03/2021	MD	CRR

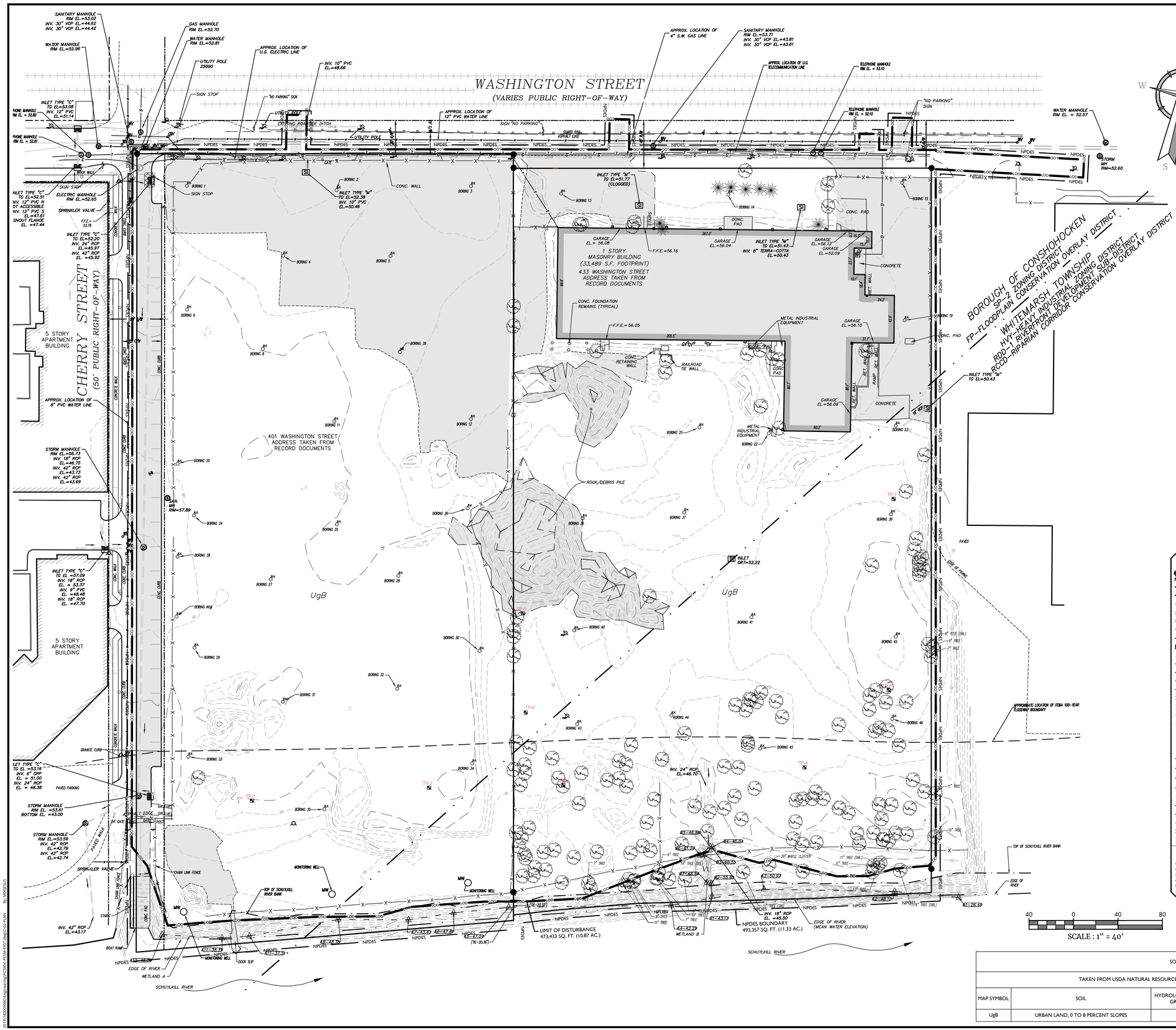
PROJECT NUMBER: 14000908C
DRAWING NAME: C-PCSM-CVER

SHEET TITLE: PCSM COVER SHEET

SHEET NUMBER: P1 of P6

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C\Engineering\PCSM\C-PCSM-CVER.dwg\C-PCSM-CVER By: MMB[8:15



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

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

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).

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.

PCSM LEGEND

	PROPOSED
EXISTING STORM PIPE	
LIMIT OF DISTURBANCE	LOD
NPDES BOUNDARY	NPDES
PRE-PROJECT IMPERVIOUS SURFACES	

LEGEND

TRAVERSE LINE, CENTER LINE OR BASELINE	WETLAND MARKER
RIGHT OF WAY LINE	TREE
PROPERTY LINE	ROADWAY SIGNS
EDGE OF PAVEMENT FACE	TRAFFIC FLOW
CURB LINE	MAILBOX
DEPRESSED CURB D.C. BACK	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
75 MAJOR CONTOUR	CAPPED REBAR/IRON PIPE
74 MINOR CONTOUR	STORM INLET TYPE 'C'
× C 29.0 SPOT ELEVATION	STORM INLET TYPE 'M'
× TC 29.0 TOP OF CURB ELEV.	FLARED END SECTION
× BC 29.0 BOTTOM OF CURB ELEV.	HEADWALL
CATV U/G CABLE TV LINE	
FO U/G FIBER OPTIC LINE	
T U/G TELEPHONE LINE	
E U/G ELECTRIC LINE	
OHW OVERHEAD WIRE	
W WATER MAIN	
G GAS MAIN	
S SAN. SEWER LATERAL	
SAN. SEWER MAIN	
STORM PIPE	

ABBREVIATIONS

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

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

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Colliers Engineering & Design
www.colliersengineering.com

Copyright © 2021, Colliers Engineering & Design All Rights Reserved. This drawing and all of the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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

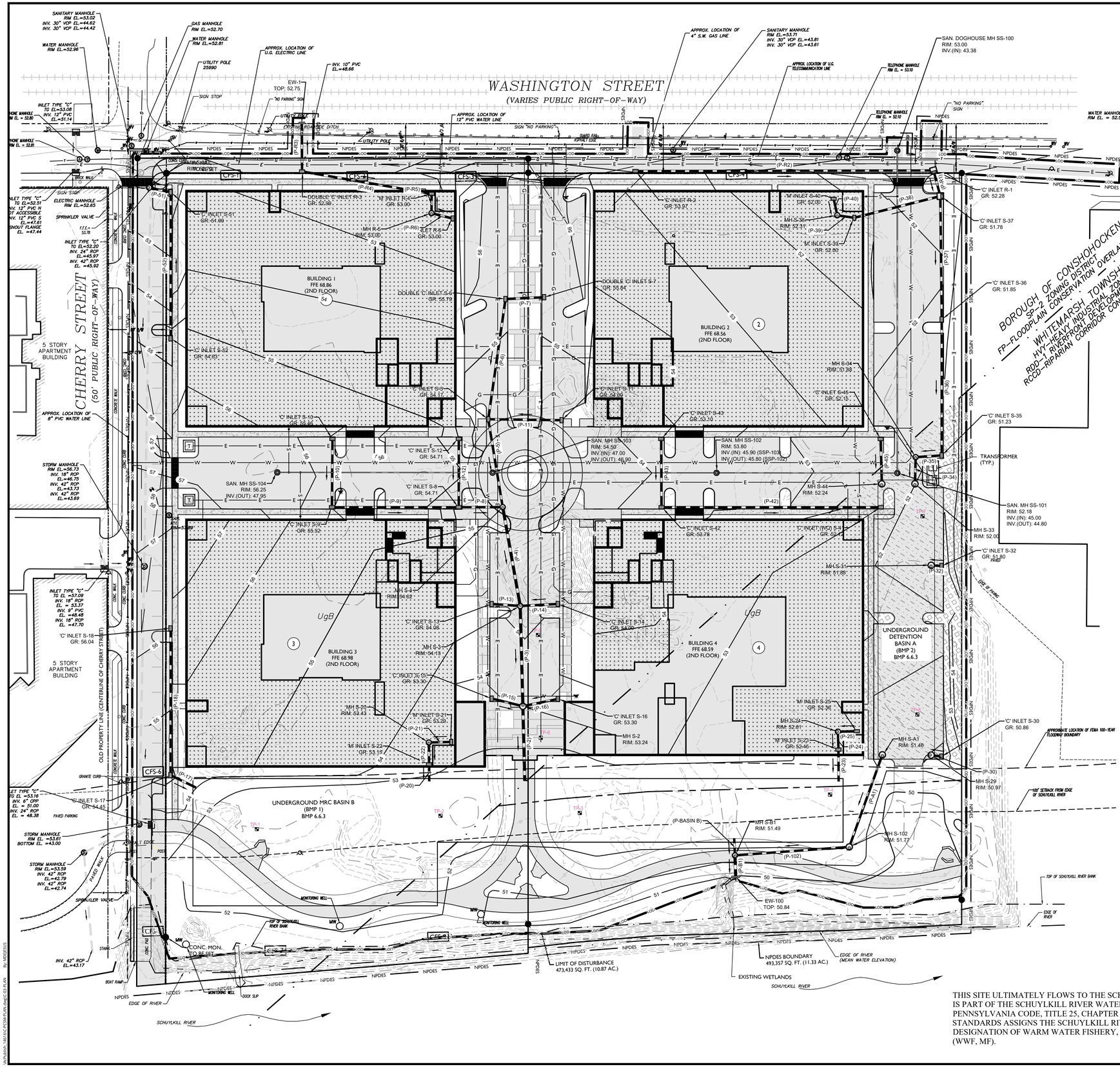
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/03/2021	MD	CRR

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

SHEET TITLE: PCSM EXISTING CONDITIONS PLAN

SHEET NUMBER: P2 of P6

2014\14000908C\Engineering\PCSM\C-PCSM-EXST.dwg\C-02-PLAN By: MD|EJS|JS



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.

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.

PCSM LEGEND

	PROPOSED
EXISTING STORM PIPE	
LIMIT OF DISTURBANCE	LOD
NPDES BOUNDARY	NPDES
POST-PROJECT IMPERVIOUS SURFACES	

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	

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).

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Colliers Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all of the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

811 PROTECT YOURSELF
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

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	12/03/2021	MD	CRR
PROJECT NUMBER: 14000908C	DRAWING NAME: C-PCSM-PLAN		

SHEET TITLE: PCSM PLAN

SHEET NUMBER: P3 of P6

\\APLdish_140\10C-PCSM-PLAN.dwg/C-03 PLAN By: MDSEGUS

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:

401 WASHINGTON STREET ASSOCIATES, L.P. & WASHINGTON STREET ASSOCIATES III, L.P.
2701 RENAISSANCE BOULEVARD, FOURTH FLOOR
KING OF PRUSSIA, PA 19406
P: (908) 725-8100

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 BASIN 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 BASINS 24-48 HOURS AFTER A RAINFALL EVENT. IF WATER IS PRESENT AFTER THIS TIME, A DESIGN PROFESSIONAL SHOULD BE CONSULTED TO EVALUATE THE UNDERGROUND DETENTION BASIN.

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	% 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)

(PENNDOT FORMULA L) SEED TYPE	% BY WEIGHT	PURITY	MAX. WEED SEED
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 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 APPLICATION RATE				
MULCH TYPE	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 25 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.

Proposed Storm Network Pipe Table

Pipe I.D.	Description	Length	Invert Up	Invert Dn	Slope
P-2	24"RCP	65'	49.20	48.80	0.62%
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	77'	51.40	51.00	0.52%
P-6	18"RCP	105'	52.15	51.60	0.52%
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'	51.90	51.60	0.47%
P-12	18"RCP	59'	51.60	51.30	0.51%
P-13	18"RCP	25'	50.90	50.05	3.42%
P-14	18"RCP	33'	50.90	50.05	2.60%
P-15	18"RCP	28'	50.10	49.40	2.51%
P-16	18"RCP	31'	50.10	49.40	2.26%
P-17	18"RCP	24'	49.10	48.80	1.23%
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	28'	48.95	48.80	0.54%
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	9'	46.40	45.95	5.00%
P-32	18"RCP	9'	46.40	45.95	5.00%
P-34	18"RCP	23'	46.10	45.95	0.65%
P-35	18"RCP	23'	46.45	46.30	0.66%
P-36	18"RCP	118'	47.25	46.65	0.51%
P-37	18"RCP	107'	47.90	47.35	0.51%
P-38	18"RCP	77'	48.50	48.10	0.52%
P-39	18"RCP	15'	48.80	48.90	0.67%
P-40	18"RCP	15'	49.20	49.10	0.68%
P-42	18"RCP	190'	48.50	47.55	0.50%
P-43	18"RCP	59'	49.00	48.70	0.50%
P-45	18"RCP	39'	48.33	47.00	3.41%
P-51	18"RCP	19'	47.80	47.70	0.52%
P-52	18"RCP	127'	50.60	48.00	2.05%
P-102	18"RCP	99'	47.95	47.35	0.60%
P-A1	18"RCP	85'	48.50	48.05	0.54%
P-B1	24"RCP	19'	47.15	47.00	0.81%

Proposed Storm Network Pipe Table

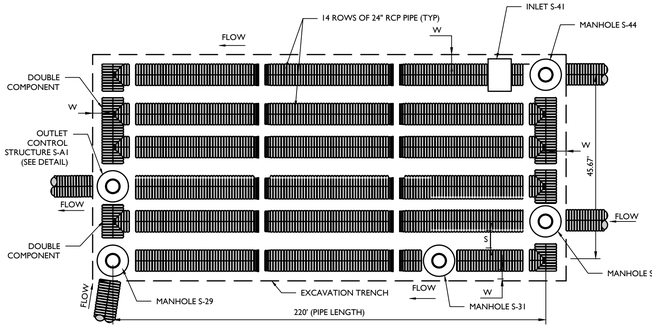
Pipe I.D.	Description	Length	Invert Up	Invert Dn	Slope
P-BASIN B	18"RCP	15'	48.80	48.51	2.00%
P-R1	18"RCP	23'	48.25	48.10	0.65%
P-R2	18"RCP	258'	50.30	48.45	0.72%
P-R3	18"RCP	42'	48.90	48.66	0.57%
P-R4	18"RCP	114'	49.65	49.05	0.53%
P-R5	18"RCP	17'	49.95	49.85	0.60%
P-R6	18"RCP	19'	50.25	50.15	0.53%

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	50.84	24" RCP	47.00		
R-1	60 in. x 60 in. 'C' INLET	52.28	18" RCP	48.45	18" RCP	48.25
R-2	24 in. x 45 in. 'C' INLET	53.97			18" RCP	50.30
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	53.00	18" RCP	49.85	18" RCP	49.65
R-5	48 in. dia. CYLINDER MH	53.00	18" RCP	50.15	18" RCP	49.95
R-6	24 in. x 45 in. 'M' INLET	53.00			18" RCP	50.25
S-2	60 in. dia. CYLINDER MH	53.24	24" RCP 18" RCP 18" RCP	49.40 49.40 49.40	24" RCP	49.20
S-3	48 in. dia. CYLINDER MH	54.13	24" RCP 18" RCP 18" RCP	50.05 50.05 50.05	24" RCP	49.85
S-4	48 in. dia. CYLINDER MH	54.62	18" RCP 18" RCP	51.00 50.80	24" RCP	50.50
S-5	24 in. x 45 in. 'C' INLET	54.17	18" RCP 18" RCP	51.60 51.60	18" RCP	51.40
S-6	24 in. x 45 in. 'C' INLET	55.79	18" RCP	52.35	18" RCP	52.15
S-7	24 in. x 45 in. 'C' INLET	55.84			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	55.52	18" RCP	52.05	18" RCP	51.85
S-10	24 in. x 45 in. 'C' INLET	55.46			18" RCP	52.35
S-11	24 in. x 45 in. 'C' INLET	54.09			18" RCP	51.90
S-12	24 in. x 45 in. 'C' INLET	54.71			18" RCP	51.60
S-13	24 in. x 45 in. 'C' INLET	54.08			18" RCP	50.90
S-14	24 in. x 45 in. 'C' INLET	54.09			18" RCP	50.90
S-15	24 in. x 45 in. 'C' INLET	53.30			18" RCP	50.10

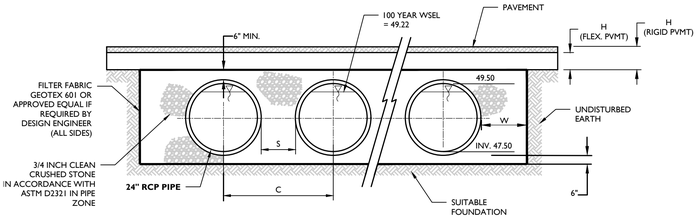
Proposed Storm Network Structure Table

Structure I.D.	Description	Rim/Grate	Pipes (In)	Inverts (In)	Pipes (Out)	Inverts (Out)
S-16	24 in. x 45 in. 'C' INLET	53.30			18" RCP	50.10
S-17	24 in. x 45 in. 'C' INLET	54.45	18" RCP	49.30	18" RCP	49.10
S-18	24 in. x 45 in. 'C' INLET	56.04			18" RCP	51.25
S-20	48 in. dia. CYLINDER MH	53.43	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	24 in. x 45 in. 'M' INLET	53.15	18" RCP	49.20	18" RCP	48.90
S-23	24 in. x 45 in. 'M' INLET	52.45	18" RCP	49.15	18" RCP	48.95
S-24	48 in. dia. CYLINDER MH	52.61	18" RCP	49.45	18" RCP	49.25
S-25



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.



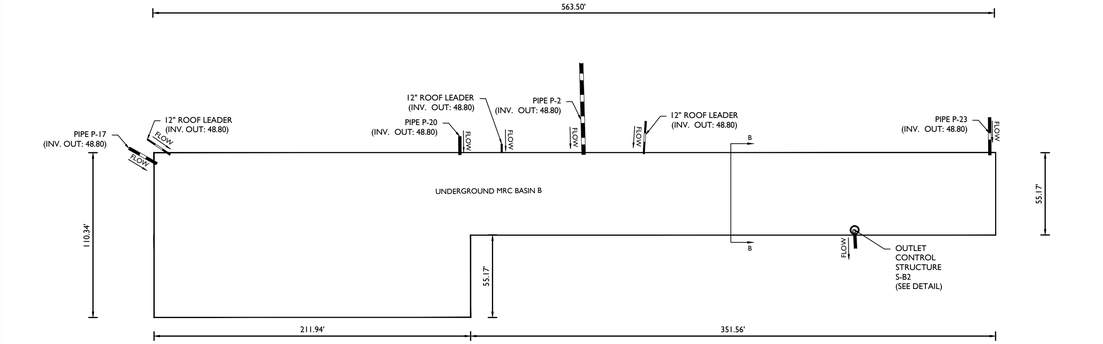
NOMINAL DIAMETER	NOMINAL O.D.	TYPICAL SPACING "S"	TYPICAL SPACING "C"	TYPICAL SIDE WALL "W"	H (MIN. PIPE COVER) (TRAFFIC)
15" (375 MM)	18" (457 MM)	12" (292 MM)	28.9 (734 MM)	8" (203 MM)	12" (292 MM)
18" (450 MM)	21" (533 MM)	13" (330 MM)	33.9" (862 MM)	9" (229 MM)	12" (292 MM)
24" (600 MM)	28" (711 MM)	13" (330 MM)	40.7" (1034 MM)	10" (254 MM)	12" (292 MM)
30" (750 MM)	36" (914 MM)	18" (457 MM)	53.1" (1347 MM)	18" (457 MM)	12" (292 MM)
36" (900 MM)	42" (1067 MM)	22" (559 MM)	63" (1600 MM)	18" (457 MM)	12" (292 MM)
42" (1050 MM)	48" (1219 MM)	24" (610 MM)	71.9" (1826 MM)	18" (457 MM)	24" (610 MM)
48" (1200 MM)	54" (1372 MM)	25" (635 MM)	78.5" (1994 MM)	18" (457 MM)	24" (610 MM)
60" (1500 MM)	67" (1702 MM)	24" (610 MM)	90" (2286 MM)	18" (457 MM)	24" (610 MM)

NOTES:

1. SEE ABOVE CHART SPECIFIC TO MATERIAL/PIPE SIZES PER MANUFACTURER'S SPECIFICATIONS.
2. (H) FOR FLEXIBLE PAVEMENT MAY INCLUDE THE PAVEMENT SUBBASE THICKNESS AS MINIMUM COVER.
3. CLASS 1A BACKFILL MATERIAL PER ASTM 2321 REQUIRED FOR PIPES 60" DIAMETER OR LARGER.
4. MATERIAL TO BE ADS PIPEOR APPROVED EQUIVALENT.

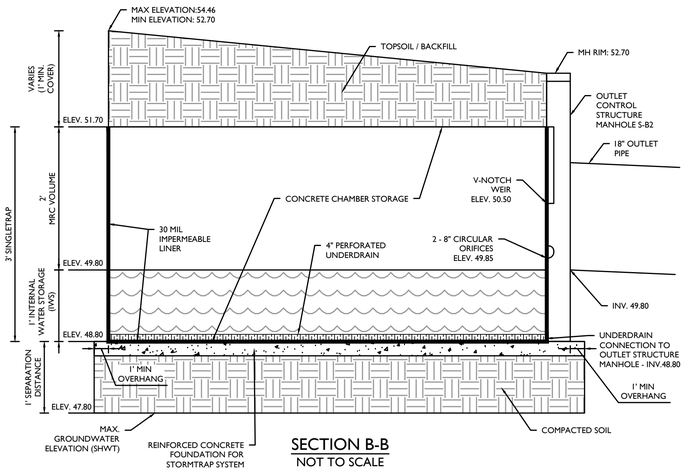
UNDERGROUND DETENTION BASIN A (CLOSED SYSTEM) DETAIL

NOT TO SCALE | MCPA-UTIL-STMW-1300 | MOD: 12/02/21 05/01/18



UNDERGROUND SYSTEM NOTES :

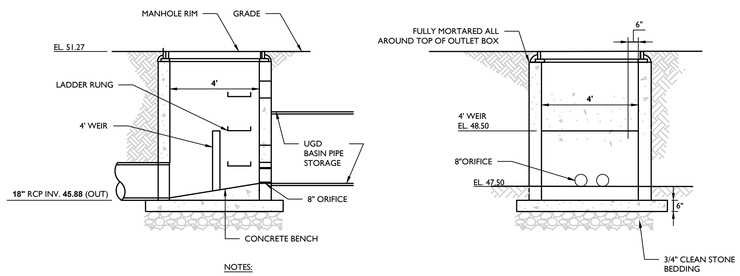
1. USE 3'-0" DEEP STORMTRAP SINGLETRAP REINFORCED CONCRETE STRUCTURES OR AN EQUIVALENT FOR THE UNDERGROUND SYSTEM.
2. STORMTRAP STORAGE PROVIDED: 36,740 CF
   UNIT HEADROOM: 3'-0" SINGLETRAP
   UNIT QUANTITY: 440 TOTAL PIECES
3. STORMTRAP MODULES SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP 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. 3.00'
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 H520 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.



SECTION B-B
NOT TO SCALE

UNDERGROUND DETENTION BASIN B (CLOSED SYSTEM) DETAIL

NOT TO SCALE | 05/01/18

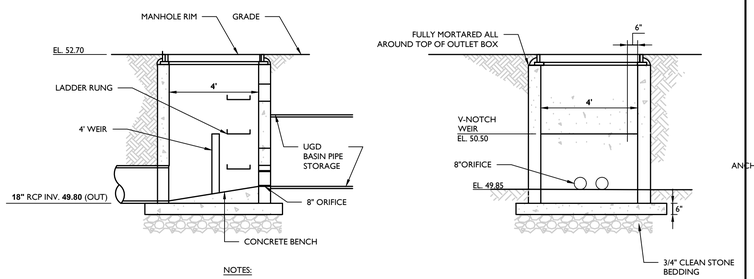


NOTES:

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

OUTLET CONTROL STRUCTURE DETAIL (SINGLE CHAMBER)

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

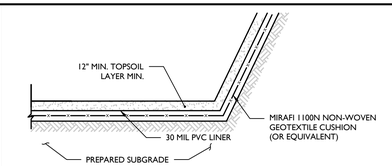


NOTES:

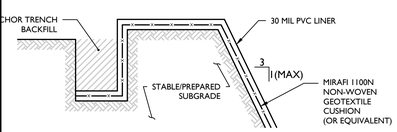
1. CONTRACTOR TO SUBMIT SHOP DRAWING FOR REVIEW AND APPROVAL.
2. ALL CONCRETE TO BE CLASS "A".

OUTLET CONTROL STRUCTURE UGD B 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

Colliers Engineering & Design
www.colliersengineering.com

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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

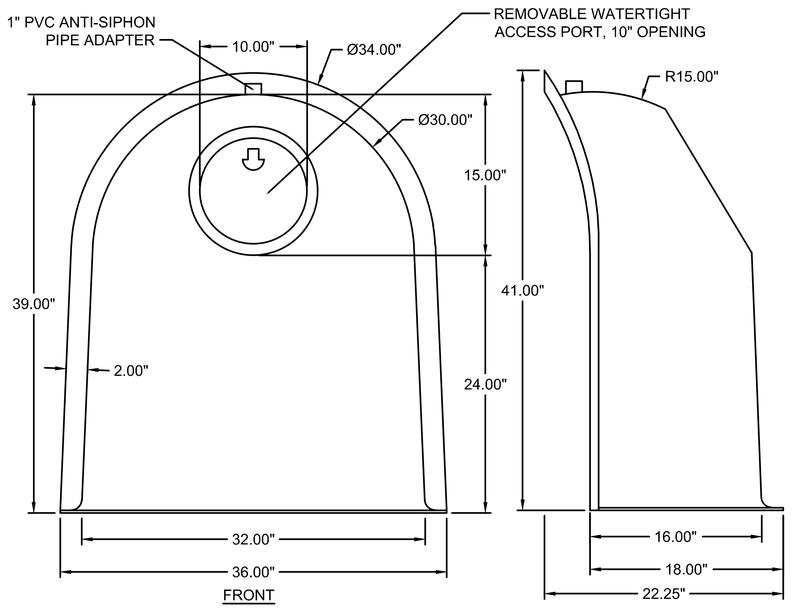
Colliers Engineering & Design
LEHIGH VALLEY
941 Marcon Boulevard, Suite 801
Allentown, PA 18109
Phone: 610.868.4201
COLLIERS ENGINEERING & DESIGN, INC DOING BUSINESS AS MASER CONSULTING

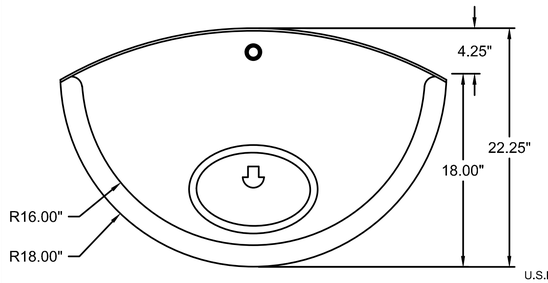
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/03/2021	MD	CRR
PROJECT NUMBER: 14000908C	DRAWING NAME: C-PCSM-DTLS		

SHEET TITLE: PCSM DETAILS

SHEET NUMBER: P5 of P6

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.





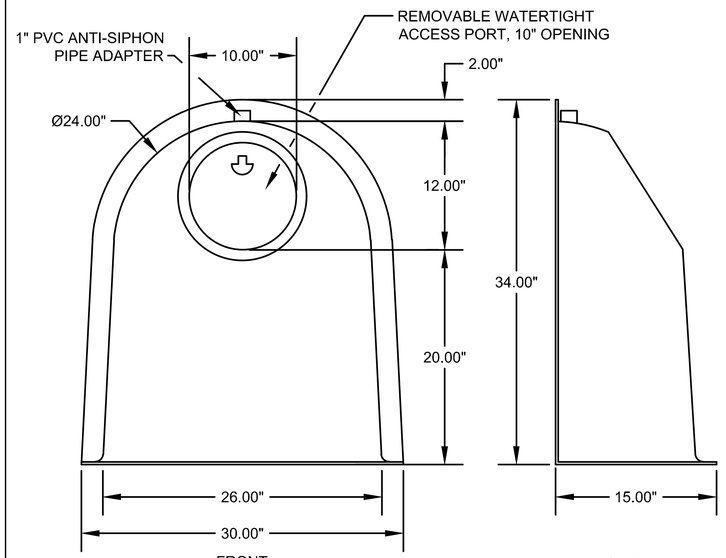
PLAN

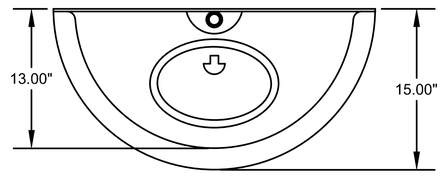
U.S.PATENT #6126817 ADDITIONAL PATENTS PENDING

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	3OR





PLAN

U.S.PATENT #6126817 ADDITIONAL PATENTS PENDING

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

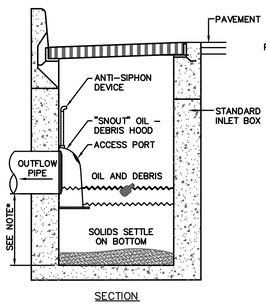
DESCRIPTION	DATE	SCALE
24F SNOUT OIL & DEBRIS STOP	09/20/99	NONE
	DRAWING NUMBER	24F

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.

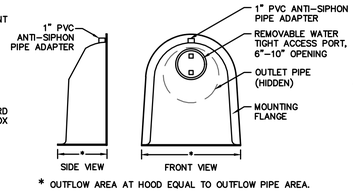
SNOUT BMP MANUFACTURER'S INSTALLATION INSTRUCTIONS:

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.



SECTION

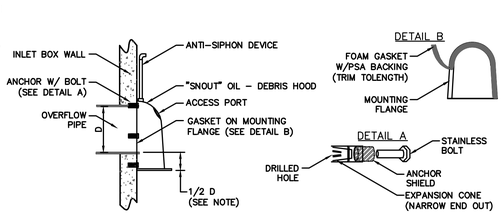
* NOTE– SUMP DEPTH OF 36" MIN. FOR < OR= 12" DIAM. OUTLET. FOR OUTLETS >OR= 15", DEPTH = 2.5–3X DIAM.



* 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
www.colliersengineering.com
Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.
Doing Business as MASER CONSULTING
PROTECT YOURSELF
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

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	12/03/2021	MD	CRR

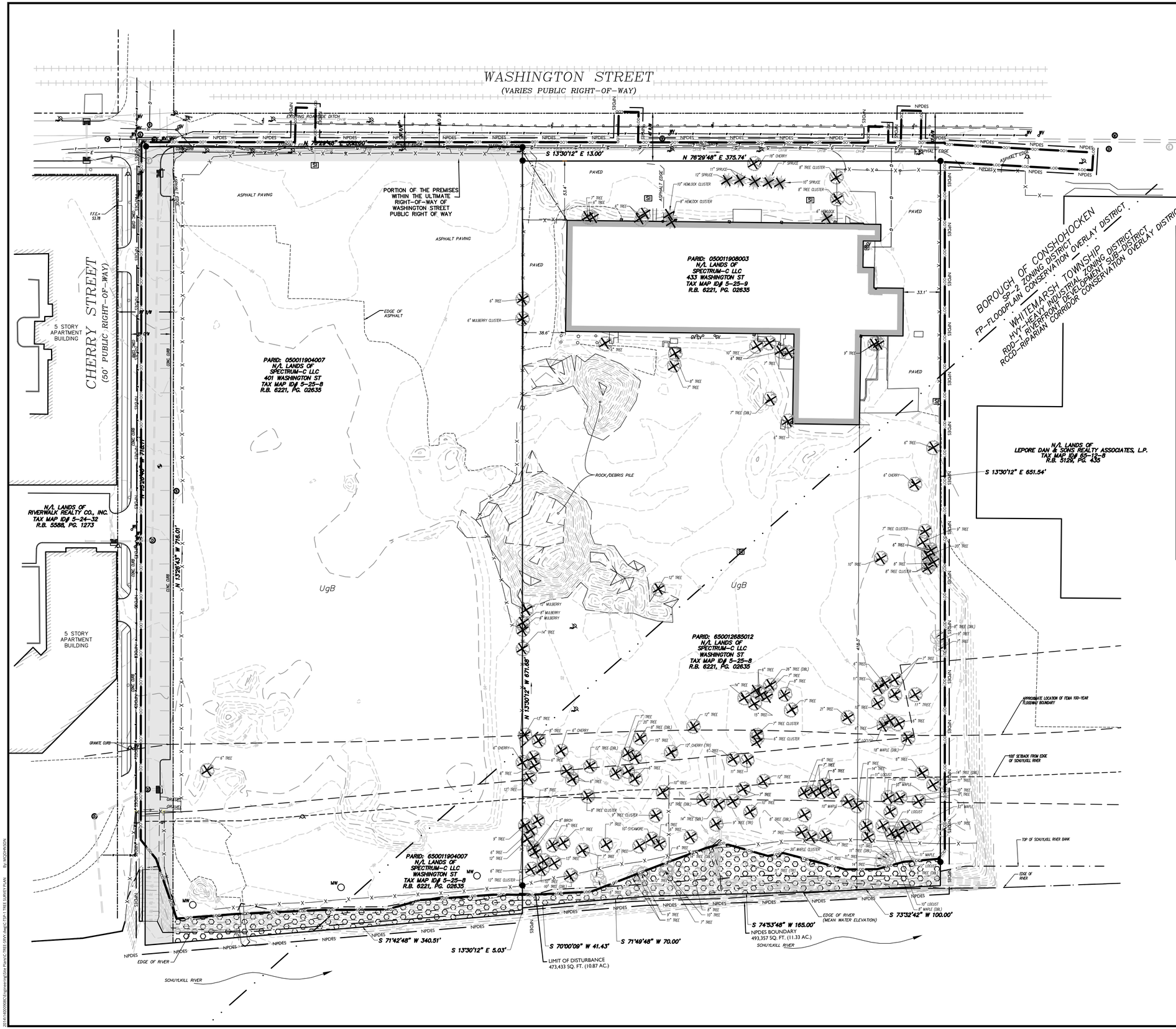
PROJECT NUMBER: 14000908C
DRAWING NAME: C-PCSM-DTLS

SHEET TITLE: PCSM DETAILS

SHEET NUMBER: P6 of P6

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

2014\14000908C-Engineering\PCSM\C-PCSM-DTLS.mxd C-SE-DETAILS By: MD@ESUS



LEGEND

- TRAVERSE LINE, CENTER LINE OR BASELINE (12+00 PI 13+00)
- RIGHT OF WAY LINE
- PROPERTY LINE
- EDGE OF PAVEMENT (FACE)
- CURB LINE (BACK, D.C.)
- 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
BC = BOTTOM OF CURB
TC = TOP OF CURB
BOL = BOLLARD
GRT = GRATE
MB = MAILBOX
FF = FINISH FLOOR
UV = UNKNOWN VALVE
MH = MANHOLE
DEP = DEPRESSED
CL = CENTERLINE
PM = PARKING METER
MHWL = MEAN HIGH WATERLINE
MLWL = MEAN LOW WATERLINE
TW = TOP OF WALL
BW = BOTTOM WALL

LEGEND

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

40 0 40 80

SCALE : 1" = 40'

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Colliers Engineering & Design

www.colliersengineering.com

Copyright © 2021, Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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

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

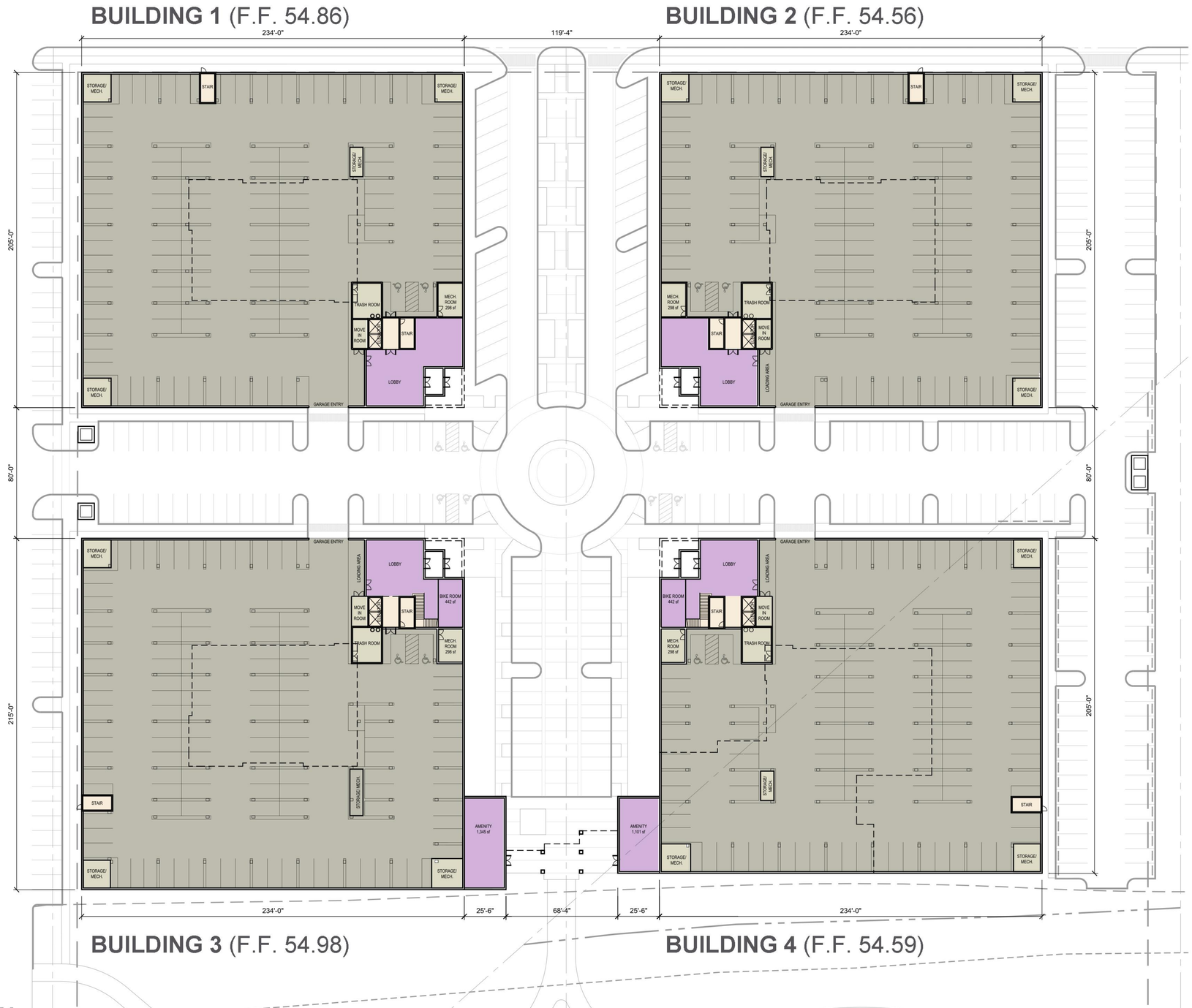
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/03/21	CMM	CRR

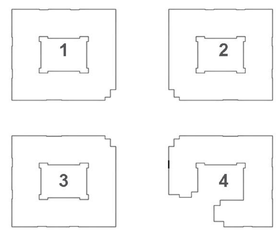
PROJECT NUMBER:	DRAWING NAME:
14000908C	C-TREE-SRVY

SHEET TITLE:
EXISTING TREE SURVEY PLAN

SHEET NUMBER:
TSP-1 of TSP-1

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





KEY PLAN

GROUND FLOOR PLAN
Scale: 1/32" = 1'-0"

The above illustrations are representative of the architectural style. They are not meant to illustrate the final design or materials but are intended to depict the size, mass, and general materials of the proposed building.

© 2021 BartonPartners Architects Planners, Inc. All rights reserved.

A1

401 & 403 Washington Street
Conshohocken, PA

Project Number: 21033
Client: KRE Group
Date: 2021.12.03

Major

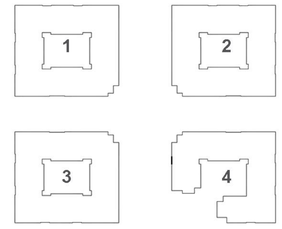
BARTONPARTNERS
urban design + architecture
700 East Main Street, Suite 301, Norristown, Pa 19401
www.bartonpartners.com | t:610.930.2800 | e:design@bartonpartners.com

BUILDING 1 (F.F. 68.86)

BUILDING 2 (F.F. 68.56)

BUILDING 3 (F.F. 68.98)

BUILDING 4 (F.F. 68.59)



KEY PLAN

FIRST RESIDENTIAL FLOOR PLAN

Scale: 1/32'' = 1'-0''

The above illustrations are representative of the architectural style. They are not meant to illustrate the final design or materials but are intended to depict the size, mass, and general materials of the proposed building.

© 2021 BartonPartners Architects Planners, Inc. All rights reserved.

A2

401 & 403 Washington Street
Conshohocken, PA

Project Number: 21033
Client: KRE Group
Date: 2021.12.03

Major

BARTONPARTNERS
urban design + architecture

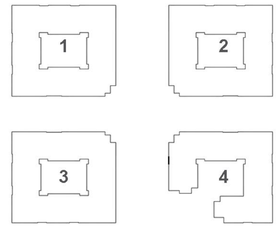
700 East Main Street, Suite 301, Norristown, Pa 19401
www.bartonpartners.com | t:610.930.2800 | e:design@bartonpartners.com

BUILDING 1 (F.F. 80.02)

BUILDING 2 (F.F. 79.72)

BUILDING 3 (F.F. 80.15)

BUILDING 4 (F.F. 79.76)



KEY PLAN

SECOND RESIDENTIAL FLOOR PLAN

Scale: 1/32" = 1'-0"

The above illustrations are representative of the architectural style. They are not meant to illustrate the final design or materials but are intended to depict the size, mass, and general materials of the proposed building.

© 2021 BartonPartners Architects Planners, Inc. All rights reserved.

A3

401 & 403 Washington Street
Conshohocken, PA

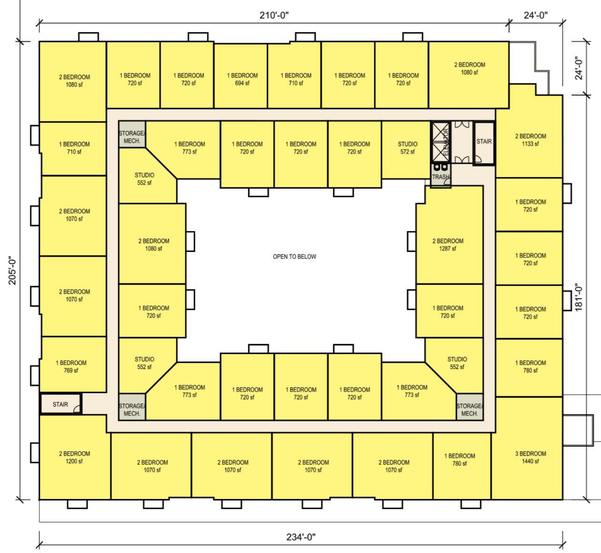
Project Number: 21033
Client: KRE Group
Date: 2021.12.03

Major

BARTONPARTNERS
urban design + architecture
700 East Main Street, Suite 301, Norristown, Pa 19401
www.bartonpartners.com | t:610.930.2800 | e:design@bartonpartners.com

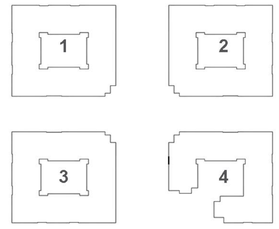
BUILDING 1 (F.F. 91.19)

BUILDING 2 (F.F. 90.89)



BUILDING 3 (F.F. 91.31)

BUILDING 4 (F.F. 90.92)



KEY PLAN

THIRD RESIDENTIAL FLOOR PLAN

Scale: 1/32" = 1'-0"

The above illustrations are representative of the architectural style. They are not meant to illustrate the final design or materials but are intended to depict the size, mass, and general materials of the proposed building.

© 2021 BartonPartners Architects Planners, Inc. All rights reserved.

A4

401 & 403 Washington Street
Conshohocken, PA

Project Number: 21033
Client: KRE Group
Date: 2021.12.03

Major

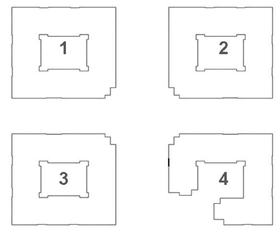
BARTONPARTNERS
urban design + architecture
700 East Main Street, Suite 301, Norristown, Pa 19401
www.bartonpartners.com | t:610.930.2800 | e:design@bartonpartners.com

BUILDING 1 (F.F. 102.36)

BUILDING 2 (F.F. 102.06)

BUILDING 3 (F.F. 102.06)

BUILDING 4 (F.F. 102.09)



KEY PLAN

FOURTH RESIDENTIAL FLOOR PLAN

Scale: 1/32" = 1'-0"

The above illustrations are representative of the architectural style. They are not meant to illustrate the final design or materials but are intended to depict the size, mass, and general materials of the proposed building.

© 2021 BartonPartners Architects Planners, Inc. All rights reserved.

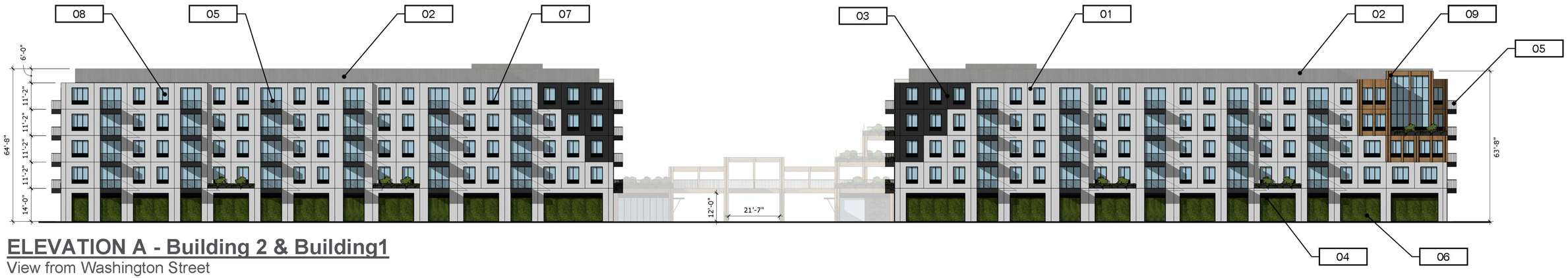
A5

401 & 403 Washington Street
Conshohocken, PA

Project Number: 21033
Client: KRE Group
Date: 2021.12.03

Major

BARTONPARTNERS
urban design + architecture
700 East Main Street, Suite 301, Norristown, Pa 19401
www.bartonpartners.com | t:610.930.2800 | e:design@bartonpartners.com



ELEVATION A - Building 2 & Building1

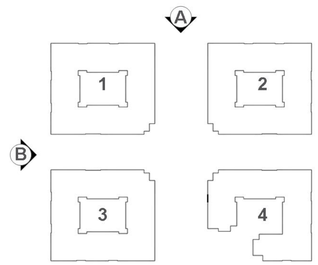
View from Washington Street
Scale: 1" = 20'-0"

ELEVATION B - Building 1 and Building 3

View from Cherry Street
Scale: 1" = 20'-0"

MATERIAL LEGEND

01 - CORRUGATED METAL/ VERTICAL CLADDING -TBD
02 - MECHANICAL SCREENS
03 - FIBER CEMENT PANELS / METAL PANEL- TBD
04 - METAL VENTING LOUVERS
05 - METAL RAILINGS
06 - GREEN LIVING WALL SCREEN
07 - METAL LOUVERS / METAL PANELS
08 - WINDOWS (METAL FIXED PANELS)
09 - PRECAST CONCRETE / HEAVY TIMBERS TBD



KEY PLAN

The above illustrations are representative of the architectural style. They are not meant to illustrate the final design or materials but are intended to depict the size, mass, and general materials of the proposed building.

© 2021 BartonPartners Architects Planners, Inc. All rights reserved.

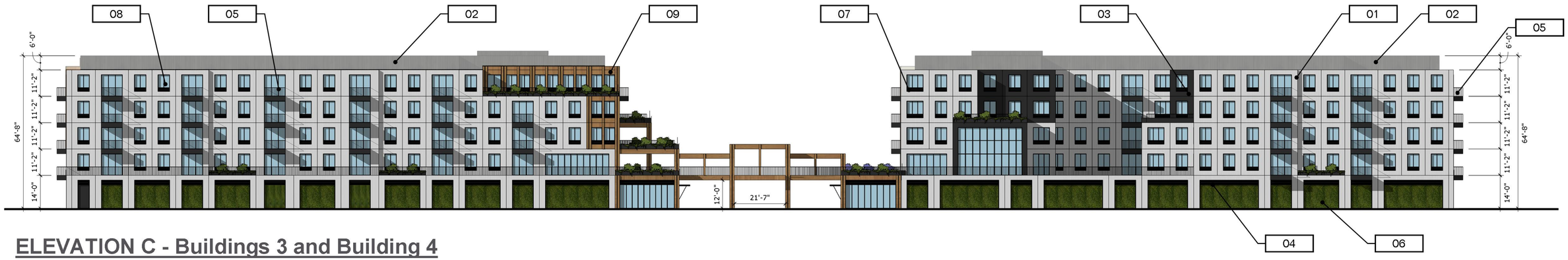
A6

401 & 403 Washington Street
Conshohocken, PA

Project Number: 21033
Client: KRE Group
Date: 2021.12.03

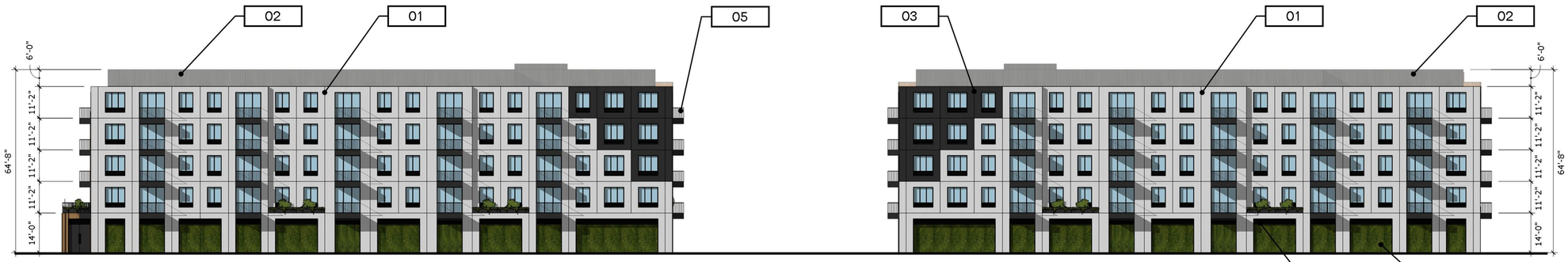
Major

BARTONPARTNERS
urban design + architecture
700 East Main Street, Suite 301, Norristown, Pa 19401
www.bartonpartners.com | t:610.930.2800 | e:design@bartonpartners.com



ELEVATION C - Buildings 3 and Building 4

View from the Schuykill River
Scale: 1" = 20'-0"

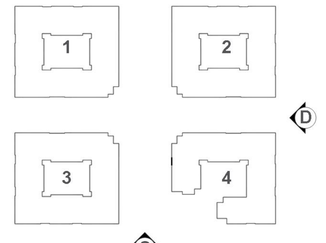


ELEVATION D - Building 4 and Building 2

View from the Parking Lot
Scale: 1" = 20'-0"

MATERIAL LEGEND

01 - CORRUGATED METAL/ VERTICAL CLADDING -TBD
02 - MECHANICAL SCREENS
03 - FIBER CEMENT PANELS / METAL PANEL- TBD
04 - METAL VENTING LOUVERS
05 - METAL RAILINGS
06 - GREEN LIVING WALL SCREEN
07 - METAL LOUVERS / METAL PANELS
08 - WINDOWS (METAL FIXED PANELS)
09 - PRECAST CONCRETE / HEAVY TIMBERS TBD



KEY PLAN

The above illustrations are representative of the architectural style. They are not meant to illustrate the final design or materials but are intended to depict the size, mass, and general materials of the proposed building.

© 2021 BartonPartners Architects Planners, Inc. All rights reserved.

A7

401 & 403 Washington Street
Conshohocken, PA

Project Number: 21033
Client: KRE Group
Date: 2021.12.03

Major

BARTONPARTNERS
urban design + architecture
700 East Main Street, Suite 301, Norristown, Pa 19401
www.bartonpartners.com | t:610.930.2800 | e:design@bartonpartners.com

ELEVATION E - Buildings 3 and Building 1

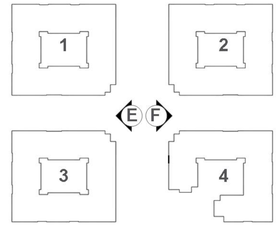
View from Boulevard Allee and The Woonerf
Scale: 1" = 20'-0"

ELEVATION F - Building 2 and Building 4

View from Boulevard Allee and The Woonerf
Scale: 1" = 20'-0"

MATERIAL LEGEND

01 - CORRUGATED METAL/ VERTICAL CLADDING -TBD
02 - MECHANICAL SCREENS
03 - FIBER CEMENT PANELS / METAL PANEL- TBD
04 - METAL VENTING LOUVERS
05 - METAL RAILINGS
06 - GREEN LIVING WALL SCREEN
07 - METAL LOUVERS / METAL PANELS
08 - WINDOWS (METAL FIXED PANELS)
09 - PRECAST CONCRETE / HEAVY TIMBERS TBD



KEY PLAN

The above illustrations are representative of the architectural style. They are not meant to illustrate the final design or materials but are intended to depict the size, mass, and general materials of the proposed building.

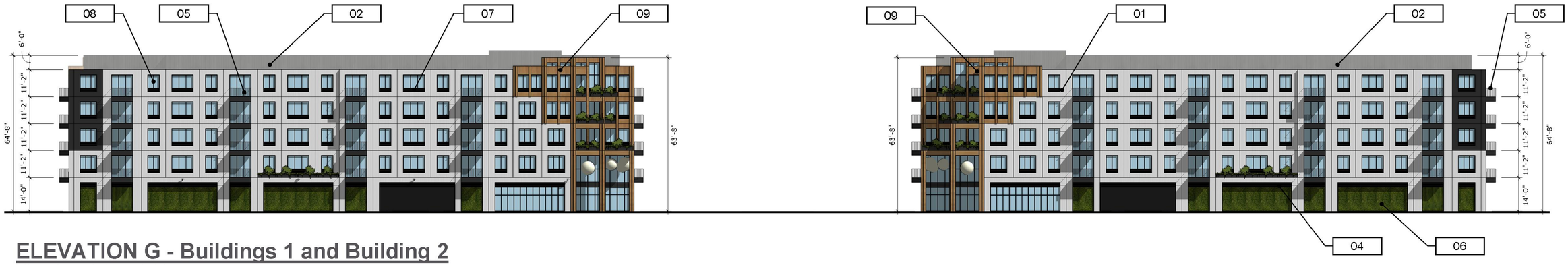
© 2021 BartonPartners Architects Planners, Inc. All rights reserved.

401 & 403 Washington Street
Conshohocken, PA

Project Number: 21033
Client: KRE Group
Date: 2021.12.03

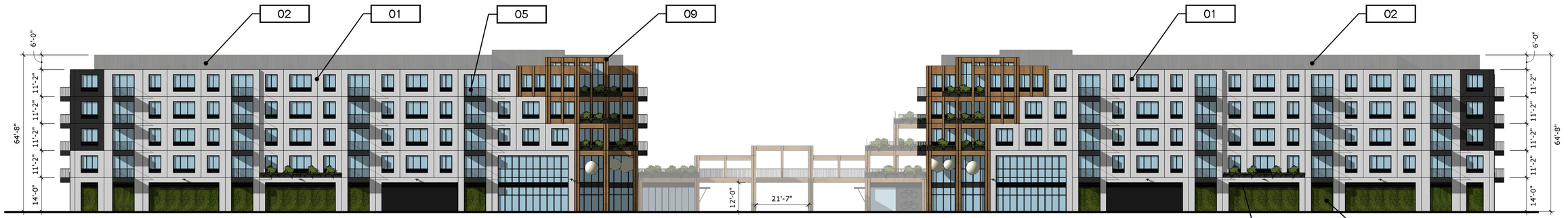
Major

BARTONPARTNERS
urban design + architecture
700 East Main Street, Suite 301, Norristown, Pa 19401
www.bartonpartners.com | t:610.930.2800 | e:design@bartonpartners.com



ELEVATION G - Buildings 1 and Building 2

View from internal drive
Scale: 1" = 20'-0"

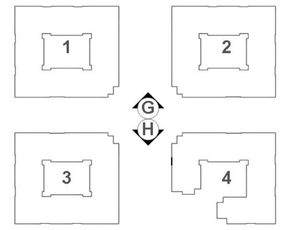


ELEVATION H - Building 4 and Building 3

View from internal drive
Scale: 1" = 20'-0"

MATERIAL LEGEND

01 - CORRUGATED METAL/ VERTICAL CLADDING -TBD
02 - MECHANICAL SCREENS
03 - FIBER CEMENT PANELS / METAL PANEL- TBD
04 - METAL VENTING LOUVERS
05 - METAL RAILINGS
06 - GREEN LIVING WALL SCREEN
07 - METAL LOUVERS / METAL PANELS
08 - WINDOWS (METAL FIXED PANELS)
09 - PRECAST CONCRETE / HEAVY TIMBERS TBD



KEY PLAN

The above illustrations are representative of the architectural style. They are not meant to illustrate the final design or materials but are intended to depict the size, mass, and general materials of the proposed building.

© 2021 BartonPartners Architects Planners, Inc. All rights reserved.

A9

401 & 403 Washington Street
Conshohocken, PA

Project Number: 21033
Client: KRE Group
Date: 2021.12.03

Major

BARTONPARTNERS
urban design + architecture
700 East Main Street, Suite 301, Norristown, Pa 19401
www.bartonpartners.com | t:610.930.2800 | e:design@bartonpartners.com

CONCEPT PERSPECTIVE VIEW

The above illustrations are representative of the architectural style. They are not meant to illustrate the final design or materials but are intended to depict the size, mass, and general materials of the proposed building.

© 2021 BartonPartners Architects Planners, Inc. All rights reserved.

A10

401 & 403 Washington Street
Conshohocken, PA

Project Number: 21033
Client: KRE Group
Date: 2021.12.03

Major

BARTONPARTNERS
urban design + architecture
700 East Main Street, Suite 301, Norristown, Pa 19401
www.bartonpartners.com | t:610.930.2800 | e:design@bartonpartners.com

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

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:** Noah Chrismer

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: 12/10/2021

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: 12/10/2021 Signature: _____

(Original Signature must be submitted)

WHITEMARSH TOWNSHIP
REQUEST FOR MODIFICATION (WAIVER) OF
SUBDIVISION and/or LAND DEVELOPMENT ORDINANCE REQUIREMENTS

Pursuant to § 512.1.(b) of the Pennsylvania Municipalities Planning Code, all requests for a modification shall be in writing and shall accompany and be a part of the application for development. The request shall state in full the grounds and facts of unreasonableness or hardship on which the request is based, the provision or provisions of the ordinance involved and the minimum modification necessary.

Check the appropriate line:

☐ No modification (or waiver) of the Whitemarsh Township Subdivision and Land Development Ordinance is requested

☒ I/we hereby request the following modification[s] (or waiver[s]) of the Whitemarsh Township Subdivision and Land Development Ordinance. (The request must identify the applicable Section[s] of the Ordinance, modification[s] requested, and facts of unreasonableness or hardship upon which the request is made; attach additional sheets if necessary).

Please see the attached waiver request letter.

Name of Subdivision and/or Land Development: 401/433 Washington Street Apartments

Date: 12/10/2021 Signature:

(Original Signature must be submitted)

By: KRE Acquisition Corp.
By: Jeremy Kaplan, Vice President

WHITEMARSH TOWNSHIP
SUBDIVISION and/or LAND DEVELOPMENT
TIME WAIVER FORM

Date: 12/10/2021

Granted to: Whitemarsh Township Board of Supervisors

Name of Subdivision and/or Land Development: 401/433 Washington Street Apartments

On or about, 12/10/2021, I/we submitted for official filing the above-reference application.

Notwithstanding any contrary provision of the Pennsylvania Municipalities Planning Code or the Code of the Township of Whitemarsh, this letter will serve as notice to Whitemarsh Township that the requirement that action be taken on this application within ninety (90) days is hereby waived, without limitation as to time. This waiver is granted to permit us to make revisions to the application during the application review process.

Further, with the understanding that this waiver is voluntarily given and will be relied upon by Whitemarsh Township, I/we will give Whitemarsh Township written notice (by certified mail or recognized overnight carrier) should we determine that limiting the time of the review process becomes necessary. Whitemarsh Township shall then have ninety (90) days from receipt of such written notice in which to act upon the application.

This waver is not transferable or assignable by the Applicants and shall apply to any and all revised submissions made in relation to the above-referenced application.

I/we represent that I/we have been duly authorized to execute this waiver on behalf of the Applicant.

Date: 12/10/2021

Signature: _____
(Original Signature must be submitted)

Printed Name: Jeremy Kaplan

Firm Name: KRE Acquisition Corp.
(if applicable)

Title: Vice President
(if applicable)

941 Marcon Boulevard
Suite 801
Allentown, Pennsylvania 18109
Main: 877 627 3772
http://colliersengineering.com

Colliers Engineering & Design

December 10, 2021

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. Variances and special exceptions were granted by Whitemarsh Township Zoning Hearing Board Resolution #2021-48 (November 15, 2021).

WAIVERS REQUESTS WITHIN WHITEMARSH TOWNSHIP:

1. Section 105-21.B.(9): A WAIVER FOR THE SUBMISSION OF A TRANSPORTATION IMPACT STUDY. All vehicular access to and from the site is located in the Borough of Conshohocken. Less than 15% of the proposed dwelling units are located within Whitemarsh Township, so we request that the Borough sets the requirements for the Traffic Impact Study for this property. This waiver was previously granted via Resolution 2015-21 on May 28, 2015.
2. Section 105-21.1.E: A WAIVER FOR THE REQUIREMENT THAT A TRANSPORTATION IMPACT FEE BE IMPOSED. All vehicular access to and from the site is located in the Borough of Conshohocken. Less than 15% of the proposed dwelling units are located within Whitemarsh Township, so we request that the Borough sets the requirements for the Traffic Impact Fees required for this property. This waiver was previously granted via Resolution 2015-21 on May 28, 2015.
3. 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. The majority of parking spaces are proposed to be located underneath the proposed building, so there isn't sufficient area to place proposed trees at this density. The applicant's proposal does provide significant landscaping for the building and a substantial buffer along the eastern side of the parking lot. This waiver was previously granted via Resolution 2015-21 on May 28, 2015.
4. Section 55-3.D: A WAIVER FOR THE REQUIREMENT THAT NO MORE THAN FIFTY PERCENT (50%) OF TREES ON A LOT BE REMOVED. The trees on the lot are not quality trees, and the proposed improvements propose flood-tolerant vegetation within the floodway and floodplain areas to promote the riverfront recreational space. This waiver was previously granted via Resolution 2015-21 on May 28, 2015.
5. Section 55-4.B.(6)(f)[1][2]&[3]: A WAIVER FROM THE REQUIREMENT THAT REPLACEMENT TREES INSTALLED BY THE APPLICANT BE SUBJECT TO CERTAIN MAXIMUM PERMISSIBLE PERCENTAGES FOR FLOWERING TREES, EVERGREEN TREES, SHRUBS, AND GROUND COVERS.

Colliers Engineering & Design

This waiver is requested to permit the applicant to meet the requirements of this section in accordance with the notations on the landscape plan as well as the comments provided by the Shade Tree Commission. This waiver was previously granted via Resolution 2015-21 on May 28, 2015.

Sincerely,

Colliers Engineering & Design, Inc.
(DBA Maser Consulting)

C. Richard Roseberry, P.E.
Regional Manager

\\maserconsulting.com\BEX\Projects\2014\14000908C\Correspondence\OUT\211210 Waiver Request Letter - Whitemarsh.docx

941 Marcon Boulevard
Suite 801
Allentown, Pennsylvania 18109
Main: 877 627 3772
http://colliersengineering.com

Colliers
Engineering
& Design

401/433 Washington Street Apartments – Project Narrative

The applicant proposes to construct a 598 unit residential apartment complex in four buildings at 401 & 433 Washington Street located in both the Borough of Conshohocken and Whitemarsh Township, Montgomery County, Pennsylvania. The entire project site is approximately 10.7 acres in size. The 401 and 433 Washington Street properties are approximately 4.97 acres and 5.69 acres, respectively. The project is bordered by Washington Street to the north, the Schuylkill River to the south, an industrial property to the east, and Cherry Street to the west. The proposed apartment buildings will be built on concrete columns so that all living spaces will be situated several feet above the 100-year FEMA delineated floodplain elevation for the Schuylkill River. Parking for the apartments is located underneath the living spaces as well as adjacent to the four buildings.

The properties have functioned as industrial uses since the 1800s. The 401 Washington Street site is currently a vacant lot that contains a foundation and parking lot of an industrial building formerly owned and occupied by C&D Battery. The 433 Washington Street site is former property of Hale Pump that contains a vacant industrial building and parking area. All of the existing features from the prior industrial uses will be demolished. The site soils consist of Urban Land (UgB), also referred to as Made Soils (MdB) in older soil surveys. This site has been located in 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 part of the PADEP Act 2 program for onsite soil contaminants.

The properties are located in the Specially Planned District Two (SP-2) Zoning District with the Floodplain (FP) 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 Slope Overlay District (SS) and the Floodplain Conservation Overlay District (FLPL) in Whitemarsh Township. Multi-family housing use is permitted by-right in the Whitemarsh Township RDD-1 Zoning District; however, grading and utility work in the floodway fringe required approval by Special Exception, which was received on November 3, 2021.

The present and proposed source of potable water is provided by AQUA Pennsylvania. Sanitary sewer will be connected into the existing Whitemarsh Township Sewer Authority's sanitary sewer main running underneath Washington Street.

PURCHASE AND SALE AGREEMENT
(401 & 433 Washington Street, Conshohocken, Pennsylvania)

THIS PURCHASE AND SALE AGREEMENT (this "Agreement") is made as of January 22, 2021 (the "Effective Date"), by and between **SPECTRUM-C LLC**, a Delaware limited liability company ("Seller"), and **KRE ACQUISITION CORP.**, a New Jersey corporation ("Buyer").

In consideration of the mutual covenants and representations herein contained, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and intending to be legally bound, Seller and Buyer agree as follows:

1. PURCHASE AND SALE

1.1 Purchase and Sale. Subject to the terms and conditions of this Agreement, Seller hereby agrees to sell and convey to Buyer, and Buyer hereby agrees to purchase from Seller, all of Seller's right, title and interest in and to the property described in this Section 1.1 (the "Property").

(a) Land. That certain premises known as (i) 401 Washington Street, Borough of Conshohocken, County of Montgomery, Commonwealth of Pennsylvania, being identified as Parcel Identification Numbers 05-00-11904-00-7 and 65-00-11904-00-7 (the "401 Washington Property"), as more particularly described in Exhibit "A-1" attached hereto and (ii) 433 Washington Street, Borough of Conshohocken, County of Montgomery, Commonwealth of Pennsylvania, being identified as Parcel Identification Numbers 05-00-11908-00-3 and 65-00-12685-01-2 (the "433 Washington Property"), as more particularly described in Exhibit "A-2" attached hereto, together with all rights, including development rights, if any, easements, licenses, rights of way, reservations, privileges, appurtenances and other estates, rights and interests appurtenant thereto, including all right, title and interest of Seller, 401 Washington Street Associates, L.P. ("401 Washington") or Washington Street Associates, III, L.P. ("433 Washington"), as applicable (to the extent such interests of 401 Washington and 433 Washington, if any, are transferred to Seller as part of Seller's acquisition of the 401 Washington Property and 433 Washington Property, if such acquisitions shall occur as provided hereinbelow), if any, in and to (i) all strips and gores and all alleys adjoining said parcels, and the land lying in the bed of any street, road or avenue, opened or proposed, in front of or adjoining said parcels, to the center line thereof; (ii) any award made or to be made and any unpaid award for any taking by condemnation or any damages to said parcels or the Improvements (as hereinafter defined) by reason of a change of grade of any street, road or avenue; and (iii) the airspace above said parcels (and rights to use such airspace) and any transferable development or similar rights appurtenant to said parcels by allocation under applicable laws, by zoning lot merger or otherwise (all of the foregoing hereinafter referred to collectively as, the "Land").

(b) Improvements. All buildings, structures and other improvements located on the Land (the "Improvements").

IN WITNESS WHEREOF, the parties hereto have executed this Agreement under seal as of the date set forth below.

SELLER:

SPECTRUM-C LLC,
a Delaware limited liability company

By: _____
Name: Jeffrey Schaffer
Title: Managing Member

BUYER:

KRE ACQUISTION CORP.,
a New Jersey corporation

By: _____
Name: Murray Kushner
Title: President

IN WITNESS WHEREOF, the parties hereto have executed this Agreement under seal as of the date set forth below.

SELLER:

SPECTRUM-C LLC,
a Delaware limited liability company

By: _____
Name: Jeffrey Schaffer
Title: Managing Member

BUYER:

KRE ACQUISITION CORP.,
a New Jersey corporation

By: _____
Name: Murray Kushner
Title: President

JOINDER OF ESCROW AGENT

The undersigned hereby agrees to: (a) act as Escrow Agent under the foregoing Purchase and Sale Agreement, (b) be the person responsible for reporting the transaction to the Internal Revenue Service under then-current Treasury Regulations, and (c) hold and disburse the Deposit in accordance with the terms of the Purchase and Sale Agreement.

Dated: 1/22/2021

FIRST AMERICAN TITLE INSURANCE COMPANY

By: Leslie Hudson

Name: Leslie Hudson
Title: Escrow Operations Manager

JOINDER OF ESCROW AGENT

The undersigned hereby agrees to: (a) act as Escrow Agent under the foregoing Purchase and Sale Agreement, (b) be the person responsible for reporting the transaction to the Internal Revenue Service under then-current Treasury Regulations, and (c) hold and disburse the Deposit in accordance with the terms of the Purchase and Sale Agreement.

Dated: 1/21/21

LAND SERVICES USA, INC.

By: _____

Name: Eileen M. Christman

Title: EVP + Counsel

DEED BK 6221 PG 02635 to 02643.1
INSTRUMENT # : 2021045082
RECORDED DATE: 04/21/2021 10:50:49 AM

5938246-0011W

RECORDER OF DEEDS
MONTGOMERY COUNTY
Jeanne Sorg

One Montgomery Plaza
Swede and Airy Streets ~ Suite 303
P.O. Box 311 ~ Norristown, PA 19404
Office: (610) 278-3289 ~ Fax: (610) 278-3869

MONTGOMERY COUNTY ROD

OFFICIAL RECORDING COVER PAGE

Document Type:	Deed	**Transaction #:**	6314283 - 3 Doc(s)
Document Date:	02/26/2021	**Document Page Count:**	8
Reference Info:		**Operator Id:**	dkrasley

RETURN TO: (Mail)
LAND SERVICES USA, INC
1835 MARKET STREET
SUITE 420
PHILADELPHIA, PA 19103

PAID BY:
LAND SERVICES USA INC

*** PROPERTY DATA:**

Parcel ID #:	05-00-11904-00-7	05-00-11908-00-3	65-00-11904-00-7
Address:	401 WASHINGTON ST	433 WASHINGTON ST	WASHINGTON ST
	PA	PA	PA
Municipality:	Conshohocken Borough (100%)	Conshohocken Borough (0%)	Whitemarsh Township (0%)
School District:	Colonial	Colonial	Colonial

*** ASSOCIATED DOCUMENT(S):**

CONSIDERATION/SECURED AMT: $1.00

FEES / TAXES:

Recording Fee:Deed	$86.75
Affidavit Fee	$1.50
Additional Pages Fee	$8.00
Additional Parcels Fee	$45.00
Additional Names Fee	$1.00
Unique Muni Fee	$5.50
Affordable Housing Pages	$8.00
Affordable Housing Names	$1.00
Affordable Housing Parcels	$1.50
Misc Fee	$5.00
Total:	$163.25

DEED BK 6221 PG 02635 to 02643.1
Recorded Date: 04/21/2021 10:50:49 AM
I hereby CERTIFY that this document is recorded in the Recorder of Deeds Office in Montgomery County, Pennsylvania.

RECORDER'S OFFICE • MONTGOMERY COUNTY PA •

Jeanne Sorg
Recorder of Deeds

Rev1a 2016-01-29

PLEASE DO NOT DETACH

THIS PAGE IS NOW PART OF THIS LEGAL DOCUMENT

NOTE: If document data differs from cover sheet, document data always supersedes.
***COVER PAGE DOES NOT INCLUDE ALL DATA, PLEASE SEE INDEX AND DOCUMENT FOR ANY ADDITIONAL**

Record + Return:
Land Services USA
1074 Westwood Dr.
West Chester PA

PREPARED BY:
Michael V. Phillips, Esquire
Obermayer Rebmann Maxwell & Hippel LLP
Centre Square West
1500 Market Street, Suite 3400
Philadelphia, PA 19102
(215) 665-3000
PAFA 20-5240

RECORD AND RETURN TO:
Etan Moskovic, Esq.
Cassin & Cassin LLP
711 Third Avenue, 20th Floor
New York, New York 10017
(215) 972-6161

RECORDER OF DEEDS
MONTGOMERY COUNTY

2021 MAR 25 A 9:42

Montgomery County

APR 16 2021

Recorder of Deeds

Tax Parcel Nos.: 05-00-11904-00-7 and 65-00-11904-00-7
05-00-11908-00-3 and 65-00-12685-01-2

DEED IN LIEU OF FORECLOSURE

This Instrument evidences a transfer by a mortgagor to the holder of a bona fide mortgage in default in lieu of a foreclosure, and is intended to be excluded from real estate transfer tax under 72 P.S. §8102-C.3.(16) and the regulations promulgated thereunder.

THIS INDENTURE, dated February 26, 2021 and effective as of the 17th day of March, 2021, is given by 401 Washington Street Associates, L.P., a Pennsylvania limited partnership, and Washington Street Associates, III, L.P., a Pennsylvania limited partnership, parties of the first part, (together, hereinafter referred to as "Grantor") to and in favor of Spectrum-C LLC, a Delaware limited liability company, party of the second part (hereinafter referred to as "Grantee").

WITNESSETH:

WHEREAS, Grantor gave that certain Open-End Mortgage, with an effective date of May 26, 2015 (the "Mortgage"), recorded on May 28, 2015, with the Montgomery County Recorder of Deeds in Mortgage Book 13951, pages 2049, *et seq.*, bearing Instrument Number 2015037456, in favor of Spectrum Origination LLC ("Lender"), on those certain premises known as 401 Washington Street, Borough of Conshohocken, Township of Whitemarsh, County of Montgomery, Commonwealth of Pennsylvania, being identified as Parcel Identification Numbers 05-00-11904-00-7 and 65-00-11904-00-7 [redacted] and 433 Washington Street, Borough of Conshohocken, Township of Whitemarsh, County of Montgomery, Commonwealth of Pennsylvania, being identified as Parcel Identification Numbers 05-00-11908-00-3 and 65-00-12685-01-2 (together, the "Premises"), as more particularly described on Exhibit "A" attached hereto and made part hereof.

WHEREAS, in addition to the Mortgage, Grantor entered into a Term Loan Agreement with Lender dated May 26, 2015 (as amended, modified, extended, renewed or supplemented, the "Loan Agreement"), and Borrower executed and delivered in favor of Lender a Secured Promissory Note in the original principal amount of $18,500,000 dated May 26, 2015 (as amended, modified, extended, renewed or supplemented, the "Note" and, together with the Mortgage, the Loan Agreement and all documents, instruments and agreements executed in connection therewith, as amended, restated, modified and supplemented from time to time, the "Loan Documents");

WHEREAS, Lender executed an Assignment of Mortgage dated March 2, 2021 and effective as of March 17, 2021, and recorded simultaneously with this Instrument with the Montgomery County Recorder of Deeds, in favor of Grantee;

WHEREAS, Grantee alleges that Grantor has defaulted on the Mortgage and the other Loan Documents, and Grantor hereby intends to convey title to the Premises to Grantee in lieu of foreclosure of the Mortgage or the exercise of one or more of the other remedies in the Mortgage and the other Loan Documents.

NOW, THEREFORE, the said Grantor, for and in consideration of the sum of One Dollar ($1.00), lawful money of the United States of America, paid by the said Grantee at and before the sealing and delivery hereof, the receipt whereof is hereby acknowledged, and intending to be legally bound hereby, has granted, conveyed, bargained, sold, aliened, enfeoffed, released and confirmed the Premises, and by these presents does hereby grant, convey, bargain, sell, alien enfeoff, release and confirm the said Premises, unto the said Grantee, its successors and assigns, forever.

TOGETHER WITH all and singular the buildings, improvements, ways, waters, water-courses, driveways, rights, liberties, privileges, hereditaments and appurtenances whatsoever thereunto belonging, or in anywise appertaining, and the reversions and remainders, rents, issues and profits thereof; and also the estate, right, title interest, use, trust, property, possession, claim and demand whatsoever, of Grantor, its heirs, personal representatives and assigns, in law, equity, or otherwise howsoever, of, in, to or out of the same and every part thereof.

TO HAVE AND TO HOLD the said interest in land, hereditaments, and premises hereby granted and released or mentioned and intended so to be, with the appurtenances, unto the said Grantee, its heirs, personal representatives and assigns, to and for the only proper use and behoof of the said Grantee, its heirs, personal representatives and assigns, forever.

AND the said Grantor, for itself, its successors and assigns, does hereby covenant, promise, and agree, to and with the said Grantee, its successors and assigns, by these presents that it, the said Grantor, its successors and assigns, SHALL and WILL WARRANT AND FOREVER DEFEND the herein above-described premises, with the improvements, easements, hereditaments and appurtenances, unto the said Grantee, its heirs, personal representatives and assigns, against the said Grantor, its successors and assigns, and against every other person lawfully claiming or who shall hereafter claim the same or any part thereof, by, from or under the said Grantor or its successors or assigns, or any of them.

AND for the purpose of avoiding, and in lieu of foreclosure proceedings, it is the intention of the Grantor to convey the Premises to Grantee immediately upon execution of this deed in lieu of foreclosure without the prior filing of this deed in lieu of foreclosure or any other action on the part of Grantor or Grantee. **It is further the intention of the Grantor and the Grantee that the fee interest conveyed by this deed in lieu of foreclosure not merge with the liens, security interests or other rights in and to the Mortgage.** This deed in lieu of foreclosure shall not constitute a satisfaction of, nor be deemed to satisfy, in whole or in part, any portion of the debt secured by the Mortgage. The rights of the Grantee pursuant to the Mortgage and other documents related thereto shall not be deemed to have been extinguished by the acceptance and recording of this deed in lieu of foreclosure and shall remain in full force and effect, and the Grantee shall have, and does not relinquish, the right to proceed to foreclosure or otherwise in accordance with the terms thereof, including but not limited to, foreclosing against any occupants or tenants of the Premises or others whose interest in the Premises are subordinate to the Mortgage.

[THIS SPACE LEFT BLANK INTENTIONALLY]

IN WITNESS WHEREOF, the Grantor has caused this Deed to be duly executed the day, month and year first above written.

GRANTOR:

401 WASHINGTON STREET ASSOCIATES, L.P.,
a Pennsylvania limited partnership

By: 401 Washington Street Associates Acquisition Corporation, its General Partner

By: _____
Name: Richard Heany
Title: President

WASHINGTON STREET ASSOCIATES, III, L.P.,
a Pennsylvania limited partnership

By: Washington Street Associates III Acquisition Corporation, its General Partner

By: _____
Name: Richard Heany
Title: President

Address of Grantee:
47 Whitney Street
Westport, Connecticut 06880

By: _____

IN WITNESS WHEREOF, the Grantor has caused this Deed to be duly executed the day, month and year first above written.

GRANTOR:

401 WASHINGTON STREET ASSOCIATES, L.P.,
a Pennsylvania limited partnership

By: 401 Washington Street Associates Acquisition Corporation, its General Partner

By: _____
Name: J. Brian O'Neill
Title: Vice President

WASHINGTON STREET ASSOCIATES, III, L.P.,
a Pennsylvania limited partnership

By: Washington Street Associates III Acquisition Corporation, its General Partner

By: _____
Name: J. Brian O'Neill
Title: Vice President

Address of Grantee:
47 Whitney Street
Westport, Connecticut 06880

By: _____

ACKNOWLEDGMENT

COMMONWEALTH OF PENNSYLVANIA :
: ss.
COUNTY OF MONTGOMERY :

On this 26th day of February, 2021, before me, a Notary Public, personally appeared Richard Heany, who acknowledged himself to be the resident of 401 Washington Street Associates Acquisition Corporation, the general partner of 401 Washington Street Associates, L.P., a Pennsylvania limited partnership, and that he, as such officer, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the limited liability company, by himself as such officer.

IN WITNESS HEREOF, I hereunto set my hand and official seal.

[NOTARIAL SEAL]

Notary Public

My Commission Expires:

Commonwealth of Pennsylvania - Notary Seal
Harry A. Reichner, Notary Public
Philadelphia County
My commission expires November 13, 2022
Commission number 1194882
Member, Pennsylvania Association of Notaries

ACKNOWLEDGMENT

COMMONWEALTH OF PENNSYLVANIA :
: ss.
COUNTY OF MONTGOMERY :

On this 26th day of February, 2021, before me, a Notary Public, personally appeared Richard Heany who acknowledged himself to be the President of Washington Street Associates III Acquisition Corporation, the general partner of Washington Street Associates, III, L.P., a Pennsylvania limited partnership, and that he, as such officer, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the limited liability company, by himself as such officer.

IN WITNESS HEREOF, I hereunto set my hand and official seal.

[NOTARIAL SEAL]

Notary Public

My Commission Expires:

Commonwealth of Pennsylvania - Notary Seal
Harry A. Reichner, Notary Public
Philadelphia County
My commission expires November 13, 2022
Commission number 1194882
Member, Pennsylvania Association of Notaries

Exhibit "A"

Legal Description of Premises

PREMISES "A"

ALL THAT CERTAIN LOT OR PIECE OF GROUND WITH THE BUILDINGS AND IMPROVEMENTS THEREON ERECTED SITUATE IN CONSHOHOCKEN BOROUGH AND WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA AND DESCRIBED ACCORDING TO A PLAN OF SURVEY MADE FOR C&D POWER SYSTEMS BY URWILER AND WALTER ON OCTOBER 29, 1985 AND DESCRIBED AS FOLLOWS, TO WIT:

BEGINNING AT A POINT IN THE TITLE LINE OF WASHINGTON STREET AND (ULTIMATE WIDTH 60 FEET), SAID POINT BEING THE INTERSECTION OF SAID TITLE LINE WITH THE CENTERLINE OF CHERRY STREET EXTENDED; THENCE EXTENDING ALONG SAID TITLE LINE OF WASHINGTON STREET NORTH 84 DEGREES 02 MINUTES 08 SECONDS EAST, 337.60 FEET TO A POINT IN THE LINE OF LANDS OF HALE FIRE PUMP COMPANY; THENCE EXTENDING ALONG SAID LANDS, CROSSING THE CONSHOHOCKEN BOROUGH, WHITEMARSH TOWNSHIP LINE SOUTH 06 DEGREES 13 MINUTES 00 SECONDS EAST 689.71 FEET TO A POINT; THENCE EXTENDING SOUTH 78 DEGREES 55 MINUTES 56 SECONDS WEST, 338.82 FEET TO A POINT IN LINE OF LANDS OF BERNARD K. WEISSMAN; THENCE EXTENDING ALONG SAID LANDS NORTH 06 DEGREES 13 MINUTES 00 SECONDS WEST 734.73 FEET TO THE POINT AND PLACE OF BEGINNING.

CONTAINING 5.421 ACRES OF LAND, MORE OR LESS.

BEING KNOWN AS 401 WASHINGTON STREET.

BEING TAX PARCEL NOS.: 05-00-11904-00-7 AND 65-00-11904-00-7

AND NOW AS MORE PARTICULARLY BOUNDED AND DESCRIBED BY THAT CERTAIN ALTA/ACSM SURVEY DATED DECEMBER 16, 2011, AS LAST REVISED MAY 21, 2015, PREPARED BY MOMENEE SURVEY GROUP, INC., FILE NO. 11-260:

ALL THAT CERTAIN TRACT OF LAND SITUATE IN THE BOROUGH OF CONSHOHOCKEN AND IN THE TOWNSHIP OF WHITEMARSH IN ACCORDANCE WITH A SURVEY PREPARED BY MOMENEE SURVEY GROUP INC. DATED DECEMBER 23, 2002, FILE NO. 01139.

BEGINNING AT A POINT ON THE SOUTHERLY SIDE OF WASHINGTON STREET (30' WIDE) SAID POINT MARKING THE NORTHWESTERLY CORNER OF THE ABOUT TO BE DESCRIBED TRACT OF LAND BEING ALSO AT THE INTERSECTION OF THE SOUTH SIDE OF WASHINGTON STREET WITH THE CENTER LINE OF CHERRY STREET EXTENDED; THENCE FROM SAID BEGINNING POINT ALONG THE SOUTHERLY SIDE OF WASHINGTON STREET NORTH 81 DEGREES 54 MINUTES 00 SECONDS EAST 338.60' TO A POINT; THENCE LEAVING WASHINGTON STREET BY LAND NOW OR FORMERLY OF HALE FIRE PUMP CO. SOUTH 8 DEGREES 06 MINUTES 00 SECONDS EAST, CROSSING OVER THE TOWNSHIP LINE DIVIDING THE BOROUGH OF CONSHOHOCKEN AND WHITEMARSH TOWNSHIP 689.71' TO A POINT ON OR NEAR THE LOW WATER MARK OF THE SCHUYLKILL RIVER; THENCE ALONG THE SCHUYLKILL RIVER SOUTH 77 DEGREES 07 MINUTES 00 SECONDS WEST 340.51' TO A POINT; THENCE BY LAND NOW OR FORMERLY OF WASHINGTON STREET

ASSOCIATES, L.P. NORTH 8 DEGREES 02 MINUTES 34 SECONDS WEST 718.11' TO THE FIRST MENTIONED POINT AND PLACE OF BEGINNING.

CONTAINING: 5.477 ACRES OF LAND, BE THE SAME MORE OR LESS.

LEGAL DESCRIPTIONS DESCRIBE SAME PARCEL.

PREMISES "B"

ALL THAT CERTAIN LOT OR PIECE OF GROUND WITH THE BUILDINGS AND IMPROVEMENTS THEREON ERECTED, SITUATE PARTLY IN WHITEMARSH TOWNSHIP AND PARTLY IN CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA AND DESCRIBED ACCORDING TO A MAJOR SUBDIVISION PLAN PREPARED BY ROBERT E. CHESTER AND ASSOCIATES FOR HALE PRODUCTS, INC., DATED DECEMBER 22, 1994 AND LAST REVISED OCTOBER 10, 1995 AND RECORDED IN MONTGOMERY COUNTY IN PLAN BOOK A-55 PAGE 488, AS FOLLOWS, TO WIT:

BEGINNING AT A POINT ON THE SOUTHERLY ULTIMATE RIGHT OF WAY LINE OF WASHINGTON STREET WHICH POINT OF BEGINNING IS COMMON TO THIS LOT AND LOT NO. 1 AS SHOWN ON SAID PLAN; THENCE EXTENDING FROM SAID POINT OF BEGINNING, ALONG LOT NO. 1, SOUTH 6 DEGREES 13 MINUTES 00 SECONDS EAST, CROSSING THE LINE DIVIDING THE BOROUGH OF CONSHOHOCKEN AND THE TOWNSHIP OF WHITEMARSH, 651.54 FEET TO A POINT ON THE MEAN LOW WATER MARK OF THE SCHUYLKILL RIVER; THENCE ALONG THE SAME, THE 4 FOLLOWING COURSES AND DISTANCES, VIZ: (1) SOUTH 80 DEGREES, 49 MINUTES, 54 SECONDS WEST 100 FEET TO A POINT; (2) SOUTH 82 DEGREES 11 MINUTES 00 SECONDS WEST 165 FEET TO A POINT; (3) SOUTH 79 DEGREES 7 MINUTES 00 SECONDS WEST 70 FEET TO A POINT; AND (4) SOUTH 77 DEGREES, 17 MINUTES 21 SECONDS WEST 41.43 FEET TO A POINT, A CORNER OF LAND, NOW OR LATE OF C. AND D. POWER SYSTEMS, INC.; THENCE EXTENDING ALONG THE SAME, NORTH 6 DEGREES 13 MINUTES 00 SECONDS WEST, RE-CROSSING THE LINE DIVIDING THE BOROUGH OF CONSHOHOCKEN AND THE TOWNSHIP OF WHITEMARSH, 671.68 FEET TO A POINT ON THE SAID SOUTHERLY ULTIMATE RIGHT OF WAY LINE OF WASHINGTON STREET; THENCE EXTENDING ALONG THE SAME, NORTH 83 DEGREES 47 MINUTES 00 SECONDS EAST 375.74 FEET TO THE FIRST MENTIONED POINT AND PLACE OF BEGINNING.

BEING LOT NO. 2 AS SHOWN ON SAID PLAN.

BEING KNOWN AS 433 WASHINGTON STREET.

BEING TAX PARCEL NOS.: 05-00-11908-00-3 AND 65-00-12685-01-2.

MONTGOMERY COUNTY COMMISSIONERS REGISTRY
05-00-11904-00-7 CONSHOHOCKEN
401 WASHINGTON ST

401 WASHINGTON ST ASSOCIATES LP $15.00
B 025 U 008 L 2208 DATE: 04/16/2021 JU

MONTGOMERY COUNTY COMMISSIONERS REGISTRY
65-00-11904-00-7 WHITEMARSH
WASHINGTON ST

401 WASHINGTON ST ASSOCIATES LP $15.00
B 012 U 010 L 2204 DATE: 04/16/2021 JU

MONTGOMERY COUNTY COMMISSIONERS REGISTRY
05-00-11908-00-3 CONSHOHOCKEN
433 WASHINGTON ST

WASHINGTON STREET ASSOCIATES III $15.00
B 025 U 009 L 2 3327 DATE: 04/16/2021 JU

MONTGOMERY COUNTY COMMISSIONERS REGISTRY
65-00-12685-01-2 WHITEMARSH
WASHINGTON ST

WASHINGTON STREET ASSOCIATES III $15.00
B 012 U 018 L 2201 DATE: 04/16/2021 JU

pennsylvania DEPARTMENT OF REVENUE (EX) MOD 04-19 (FI)

REV-183

BUREAU OF INDIVIDUAL TAXES
PO BOX 280603
HARRISBURG, PA 17128-0603

1830019105

REALTY TRANSFER TAX STATEMENT OF VALUE

COMPLETE EACH SECTION

RECORDER'S USE ONLY

State Tax Paid: 0

Book: 6221 Page: 2635

Instrument Number:

Date Recorded: 4-21-2021

SECTION I TRANSFER DATA

Date of Acceptance of Document

Grantor(s)/Lessor(s)	Telephone Number	Grantee(s)/Lessee(s)	Telephone Number
401 Washington Street Associates, L.P., c/o O'Neill Properties Group, L.P.	610-239-6100	Spectrum-C LLC	212-687-9555

Mailing Address			Mailing Address		
201 King of Prussia Road			47 Whitney Street		
City	**State**	**ZIP Code**	**City**	**State**	**ZIP Code**
Radnor	PA	19087	Westport	CT	06880

SECTION II REAL ESTATE LOCATION

Street Address	City, Township, Borough	
401 Washington Street, 433 Washington Street	Conshohocken Borough and Whitemarsh Township	
County	**School District**	**Tax Parcel Number**
Montgomery	Colonial and Whitemarsh	30-00-11904-00-7; 65-00-11094-00-7; 05-00-11908-00-3; 65-00-12685-01-2

SECTION III VALUATION DATA

Was transaction part of an assignment or relocation? ○ YES ○ NO

1. Actual Cash Consideration	2. Other Consideration	3. Total Consideration
0	+ 0	= 0
4. County Assessed Value	**5. Common Level Ratio Factor**	**6. Computed Value**
499,000	X 2.13	= 1,062,870

SECTION IV EXEMPTION DATA - Refer to instructions for exemption status.

1a. Amount of Exemption Claimed	1b. Percentage of Grantor's Interest in Real Estate	1c. Percentage of Grantor's Interest Conveyed
$1,062,870	100 %	100 %

2. Check Appropriate Box Below for Exemption Claimed.

- ○ Will or intestate succession. _____ (Name of Decedent) _____ (Estate File Number)
- ○ Transfer to a trust. (Attach complete copy of trust agreement and all amendments.)
- ○ Transfer from a trust. (Attach complete copy of trust agreement and all amendments.)
- ○ Transfer between principal and agent/straw party. (Attach complete copy of agency/straw party agreement.)
- ○ Transfers to the commonwealth, the U.S. and instrumentalities by gift, dedication, condemnation or in lieu of condemnation. (If condemnation or in lieu of condemnation, attach copy of resolution.)
- ◉ Transfer from mortgagor to a holder of a mortgage in default. (Attach copy of mortgage and note/assignment.)
- ○ Corrective or confirmatory deed. (Attach complete copy of the deed to be corrected or confirmed.)
- ○ Statutory corporate consolidation, merger or division. (Attach copy of articles.)
- ○ Other (Provide a detailed explanation of exemption claimed. If more space is needed attach additional sheets.)

SECTION V CORRESPONDENT INFORMATION - All inquiries may be directed to the following person.

Name		Telephone Number	
401 Washington Street Associates, L.P.		( )	
Mailing Address	**City**	**State**	**ZIP Code**
201 King of Prussia Road	Radnor	PA	19087

Under penalties of law, I declare that I have examined this statement, including accompanying information, and to the best of my knowledge and belief, it is true, correct and complete.

Signature of Correspondent or Responsible Party — Date 2/26/2021

FAILURE TO COMPLETE THIS FORM PROPERLY OR ATTACH REQUESTED DOCUMENTATION MAY RESULT IN THE RECORDER'S REFUSAL TO RECORD THE DEED.

1830019105

1830019105

{01844334;1}

3800-FM-BCW0271c Rev. 1/2021
Municipal Notification Form

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

MUNICIPAL NOTIFICATION OF PLANNED LAND DEVELOPMENT FOR CHAPTER 102 PERMITS

PROJECT INFORMATION (COMPLETED BY APPLICANT)

Applicant Name: **KRE Acquisition Corp.**

Applicant Address: **520 U.S. Highway 22, PO Box 6872**

Applicant City, State, ZIP: **Bridgewater, NJ, 08807**

Contact Name: **Noah Chrismer**

Contact Phone: **908-725-8100**

County: **Montgomery County**

Municipality: **Conshohocken Borough & Whitemarsh Township**

Description of Proposed Land Development and Stormwater Controls:

See attached Project Narrative.

Project Area: **11.33** acres ☐ Phased

Disturbance: **10.87** acres

Surface Waters Receiving Stormwater Discharges:

Schuylkill River

Tax Parcel ID(s) Affected by Proposed Land Development:

050011904007, 650011904007, 050011908003, 650012685012

Discharge to: ☒ MS4 ☐ Other SS ☐ CSS

The following information was submitted to the municipality for this project:

☒ Land Development / Subdivision Plan ☒ E&S Plan ☒ PCSM Plan ☐ Other:

MUNICIPAL PLAN / ORDINANCE INFORMATION (COMPLETED BY MUNICIPALITY)

1.	Is there an adopted municipal or multi-municipal comprehensive plan?	☒ Yes	☐ No
2.	Is there an enacted municipal or multi-municipal zoning ordinance?	☒ Yes	☐ No
3.	If Yes to #2, is the proposed project consistent with the ordinance?	☒ Yes	☐ No
4.	Is there a municipal stormwater management ordinance?	☒ Yes	☐ No
5.	If Yes to #4, is the proposed project consistent with the ordinance, without waiver?	☐ Yes	☒ No

6. If Yes to #4, indicate type of ordinance: ☐ Act 167 Model Ordinance ☒ DEP Model Ordinance (MS4s) ☐ Other

APPLICANT CERTIFICATION

I certify under penalty of law (see 18 Pa.C.S. § 4904 (relating to unsworn falsification)) that the information reported herein was 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 information, 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 am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

C. Richard Roseberry, P.E.
Applicant Name

Applicant Signature

Regional Manager
Applicant Title

12/9/2021
Date of Signature

MUNICIPAL ACKNOWLEDGEMENT

The municipality acknowledges that a permit application for the above-referenced project has been submitted to a reviewing agency and that notification requirements of Act 14 of 1984 and Acts 67, 68, and 127 of 2000 have been satisfied. The information reported herein by the municipality is true and accurate. The municipality reserves the right to comment to the reviewing agency relative to comprehensive plans, zoning, and stormwater ordinance consistency. Municipal acknowledgment of receipt of notification shall not be construed as project approval.

Charles L. Guttenplan, AICP
Municipal Representative Name

Municipal Representative Signature

Director of Planning & Zoning / Zoning Officer
Municipal Representative Title

12/21/2021
Date of Signature

941 Marcon Boulevard
Suite 801
Allentown, Pennsylvania 18109
Main: 877 627 3772
http://colliersengineering.com

Colliers
Engineering
& Design

401/433 Washington Street Apartments – Project Narrative

The applicant proposes to construct a 598 unit residential apartment complex in four buildings at 401 & 433 Washington Street located in both the Borough of Conshohocken and Whitemarsh Township, Montgomery County, Pennsylvania. The entire project site is approximately 11.2 acres in size. The 401 and 433 Washington Street properties are approximately 5.48 acres and 5.69 acres, respectively. The project is bordered by Washington Street to the north, the Schuylkill River to the south, an industrial property to the east, and Cherry Street to the west. The proposed apartment buildings will be built on concrete columns so that all living spaces will be situated above the 100-year FEMA delineated floodplain for the Schuylkill River. Parking for the apartments is located underneath and adjacent to the apartment buildings.

The properties have functioned as industrial uses since the 1800s. The 401 Washington Street site is currently a vacant lot that contains the foundation and the parking lot of an industrial building formerly owned and occupied by C&D Battery. The 433 Washington Street site is former property of Hale Pump that contains a vacant industrial building and parking area. All of the existing features from the prior industrial uses will be demolished. The site soils consist of Urban Land (UgB), also referred to as Made Soils (MdB) in older soil surveys. This site has been located in 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 part of the PADEP Act 2 program for onsite soil contaminants.

The properties are located in 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), and the Floodplain Conservation Overlay District (FLPL) in Whitemarsh Township. Multi-family housing use is permitted by-right in the Conshohocken Borough SP-2 Zoning District; however grading and utility work in the floodway require approval by Conditional Use. Multi-family housing use is permitted by-right in the Whitemarsh Township RDD-1 Zoning District, however grading and utility work in the floodway fringe require approval by Special Exception.

The present and proposed source of potable water is provided by AQUA Pennsylvania. Sanitary sewer will be connected into the existing Whitemarsh Township Sewer Authority's sanitary sewer main running underneath Washington Street.

941 Marcon Boulevard
Suite 801
Allentown, Pennsylvania 18109
Main: 877 627 3772
http://colliersengineering.com

Colliers
Engineering
& Design

Site Photos

Views from Washington Street:

Colliers
Engineering
& Design

Colliers Engineering & Design

From End of Adjacent Riverfront Walkway looking east:

Colliers
Engineering
& Design

R:\Projects\2014\14000908C\Photos\Photos for Submission\Site Photos.docx

Colliers Engineering & Design

Post-Construction Stormwater Management Report

December 3, 2021

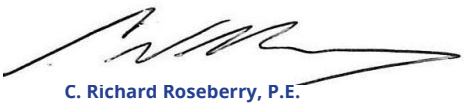
401/403 Washington Street Apartments

401 & 433 Washington Street
Conshohocken Borough & Whitemarsh Township
Montgomery County, Pennsylvania

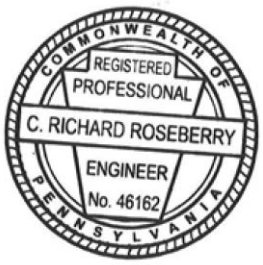
Prepared for:

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

Table of contents

Executive Summary 1

1.0 Introduction 2
1.1 Project Information 2
1.2 Pre-Project Conditions 3
1.3 Post-Project Conditions 3

2.0 Soils 4
2.1 Karst Geology 4
2.2 Infiltration and Geotechnical Testing 4

3.0 Regulations 4
3.1 Act 167 5
3.2 Erosion and Sediment Pollution Control 5
3.3 Pennsylvania Department of Environmental Protection 5

4.0 Proposed PCSM BMPs 6

5.0 Peak Rate Analysis 7

6.0 Volume Management 8
6.1 Non-Structural BMP Credits 8
6.2 Required Infiltration Volume 8
6.3 Provided Infiltration Volume 8

7.0 Water Quality Calculations 8
7.1 Required Water Quality Reductions 8

8.0 Operations and Maintenance for PCSM BMPs 9

9.0 Anti-Degradation Analysis 9

10.0 PCSM Plan Set 9

11.0 Conclusion 10

References 11

Colliers Engineering & Design

Appendices

Appendix A | Project Location Maps
Appendix B | Soil Maps and Data
Appendix C | Runoff Coefficients and Curve Numbers
Appendix D | Rainfall Depths and Intensities
Appendix E | PADEP Spreadsheets
Appendix F | Pre-Project Release Rate Calculations
Appendix G | Post-Project Release Rate Calculations
Appendix H | Stormsewer Design
Appendix I | Permanent Erosion and Sediment Pollution Control BMPs
Appendix J | Karst Features & Sinkhole Maps
Appendix K | Geotechnical Report

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 remanents 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 10.87± 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. Three study points have been established for analysis: the first (O-1) is at a point within the roadside drainage ditch on the north side of Washington Street; the second (O-2) is the municipal stormwater conveyance system within the Cherry Street Right-of-Way; and the third (O-3) is a point within the Schuylkill River where the majority of the site's runoff discharges.

1.3 Post-Project Conditions

The site was analyzed at three (3) 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

While a specific karst hazard assessment was not developed for this site, the site is not located within an area that is prone to sinkholes. 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 J.

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 K.

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 and aerial mapping.
- Land Use Coefficients and Curve Numbers are consistent with Urban Hydrology for Small Watersheds, Technical Release 55 (TR-55), see Appendix C.
- Rainfall Depths and Intensities use National Oceanic and Atmospheric Administration (NOAA) data for the region, see Appendix D.
- Storm Sewer and Inlet Design adhere to criteria found in the applicable municipal codes. The Rational Method was used for the analysis of stormwater systems and stormwater runoff rates. The Rational Method runoff coefficient adhere to the values stated in the municipal ordinances. Pipes were analyzed using the Hydraflow Storm Sewers Extension for AutoCAD Civil 3D computer analysis program, see Appendix H for storm sewer calculations.
- Hydrologic analyses were performed in accordance with the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) methodology, as described in the National Engineering Handbook Part 630 Hydrology. This modeling technique is incorporated in the Pondpack CONNECT Edition software package developed by Bentley Systems, Inc., see Appendices F and G for the release rate calculations.

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 I. 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 14 rows each of 24" HDPE perforated pipes at 220 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 with 3'-0" deep StormTrap SingleTrap reinforced concrete structures; 440 units will be required to provide the volume as included in the design calculations. 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 0.04 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 – A perforated underdrain is provided at the MRC invert with an upturned elbow to provide 12" of internal water storage.
- 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 all three 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 PondPack, see Appendix F for the pre-project calculations and Appendix G for the post-project calculations.

As summarized in the PADEP PCSM Spreadsheets in Appendix E, 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

This project included measures to mitigate the thermal impacts to the receiving surface waters, even though the project is not required to provide an analysis. An anti-degradation analysis is only required when the project is within a special protection watershed.

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.

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.

Colliers Engineering & Design

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

Colliers Engineering & Design

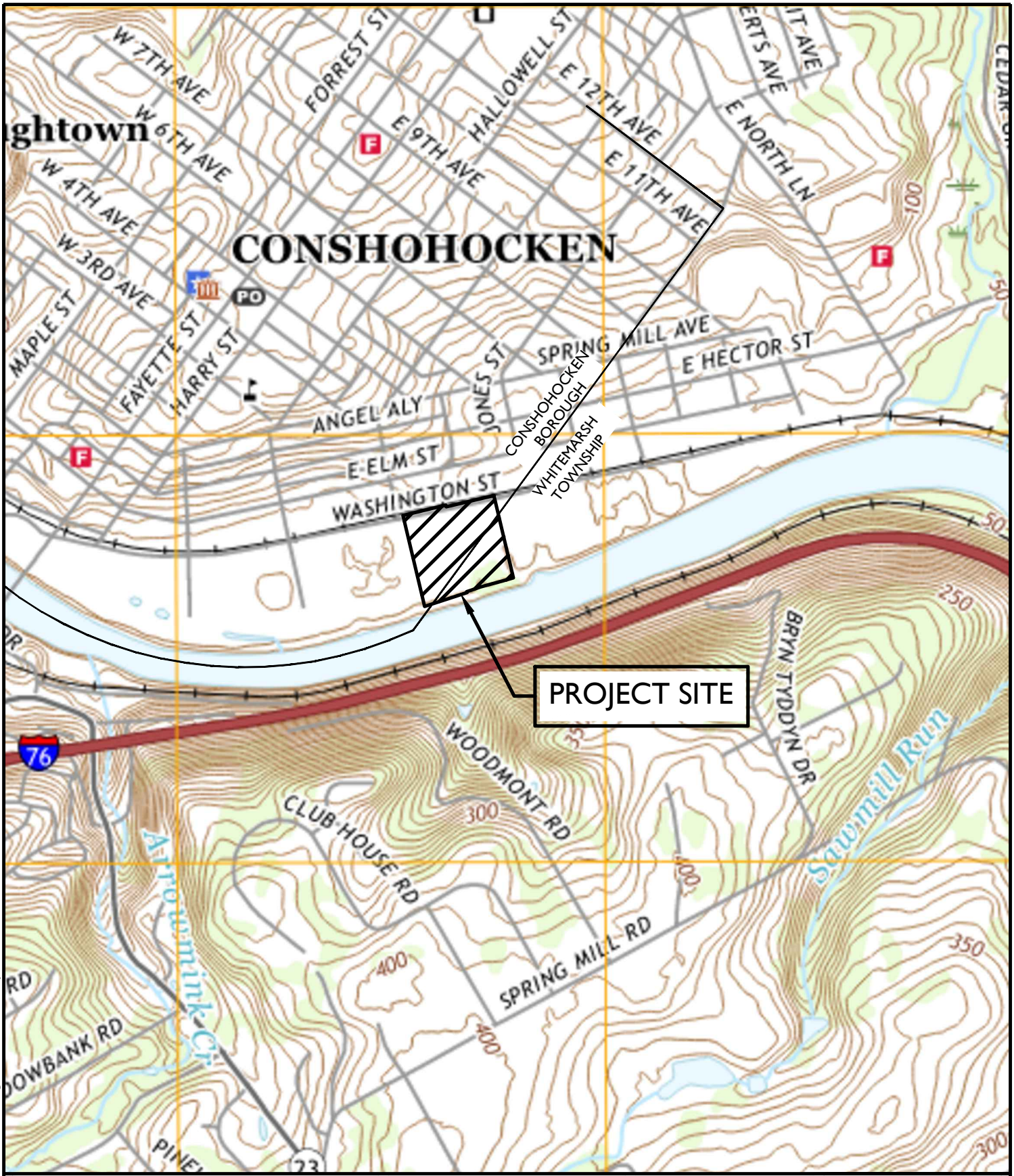
Colliers Engineering & Design is a trusted provider of multi-discipline engineering, design and consulting services providing customized solutions for public and private clients through a network of offices nationwide.

For a full listing of our office locations, please visit colliersengineering.com

1 877 627 3772

Civil/Site • Traffic/Transportation • Governmental • Survey/Geospatial
Infrastructure • Geotechnical/Environmental • Telecommunications • Utilities/Energy

Appendix A | Project Location Maps



Colliers Engineering & Design

www.colliersengineering.com

Doing Business as MASER CONSULTING

Copyright © 2021. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

PRELIMINARY/FINAL
LAND DEVELOPMENT PLANS
FOR

401/433 WASHINGTON STREET APARTMENTS

CONSHOHOCKEN BOROUGH
AND WHITEMARSH
TOWNSHIP
MONTGOMERY COUNTY
PENNSYLVANIA

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

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	12/2/2021	MD	CRR

PROJECT NUMBER:	DRAWING NAME:
14000908C	C-EXBT-USGS

SHEET TITLE: USGS MAP

SHEET NUMBER: A - 4 of 6

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

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.

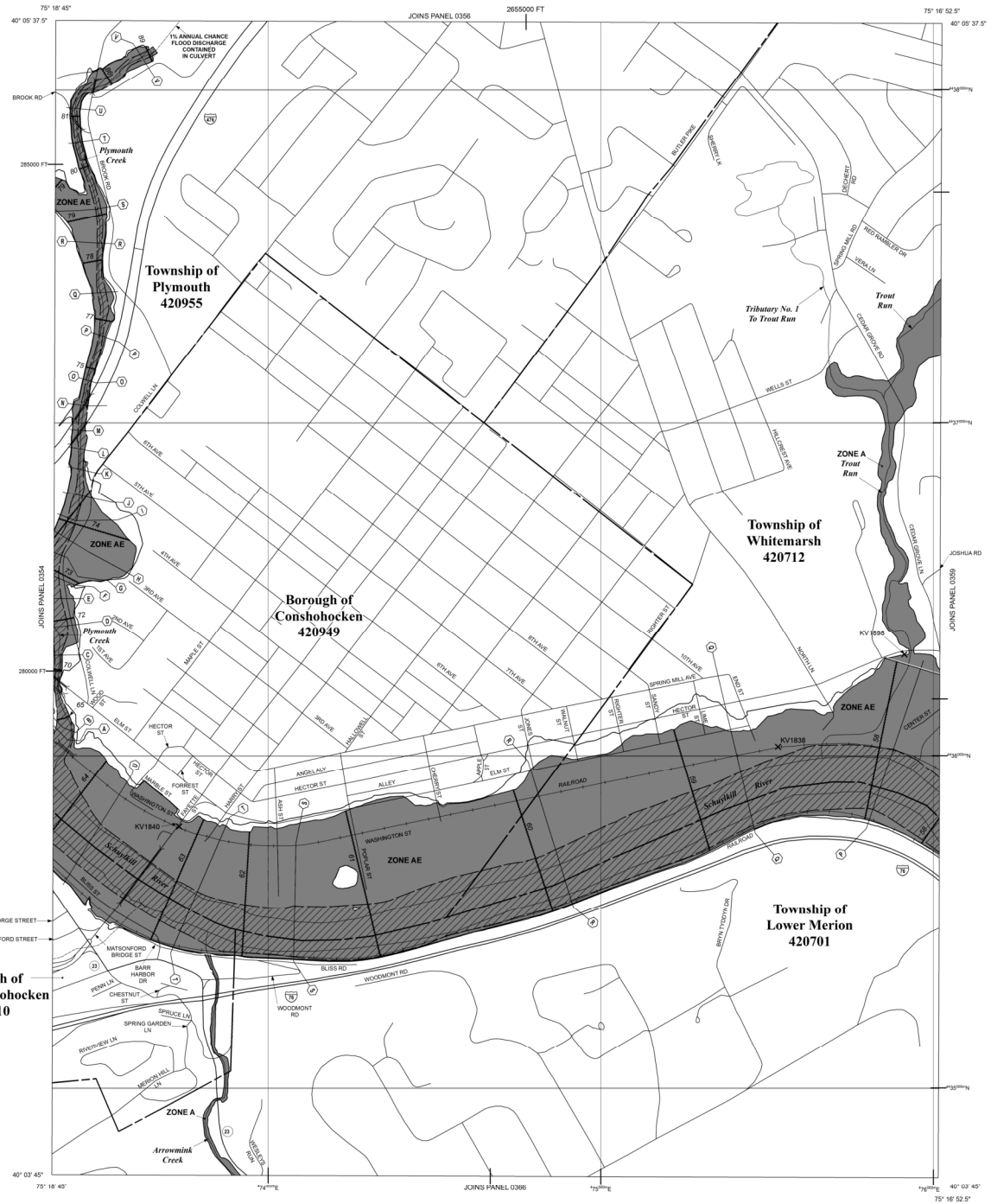
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances 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)
4276 000 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

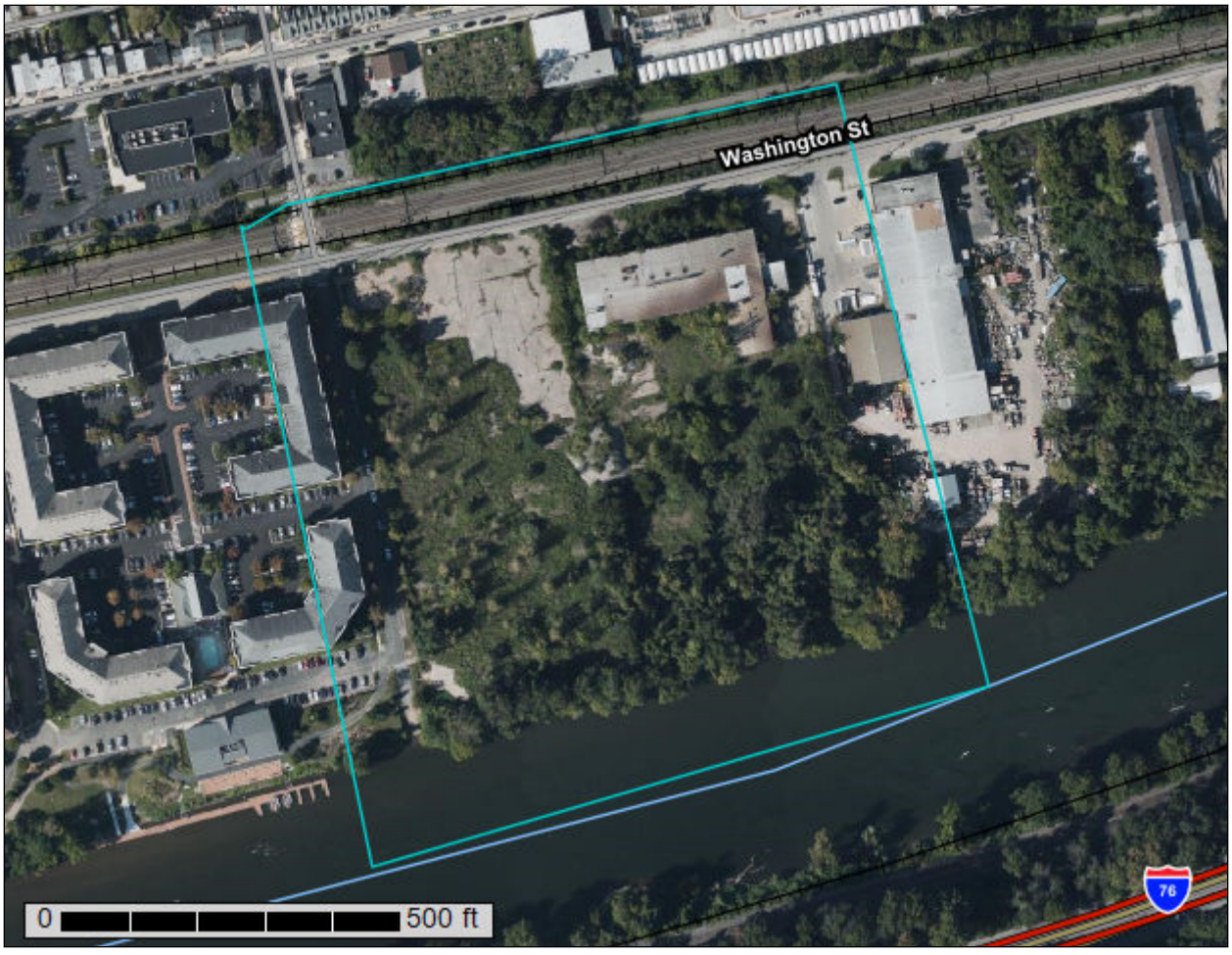
United States Department of Agriculture

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.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
Montgomery County, Pennsylvania.....13
UgB—Urban land, 0 to 8 percent slopes.....13
W—Water.....13
References.....15

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.

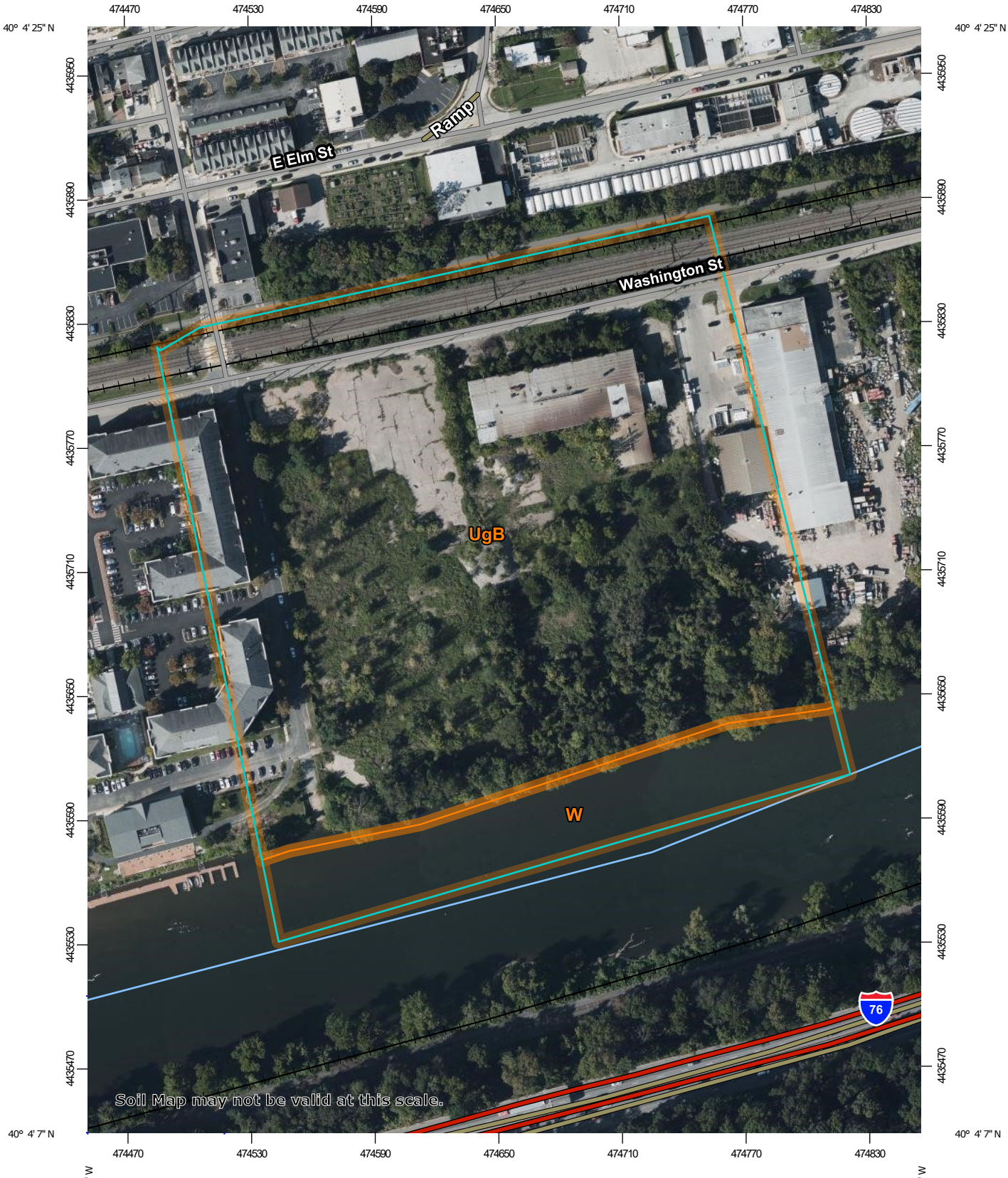
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree 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

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

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)

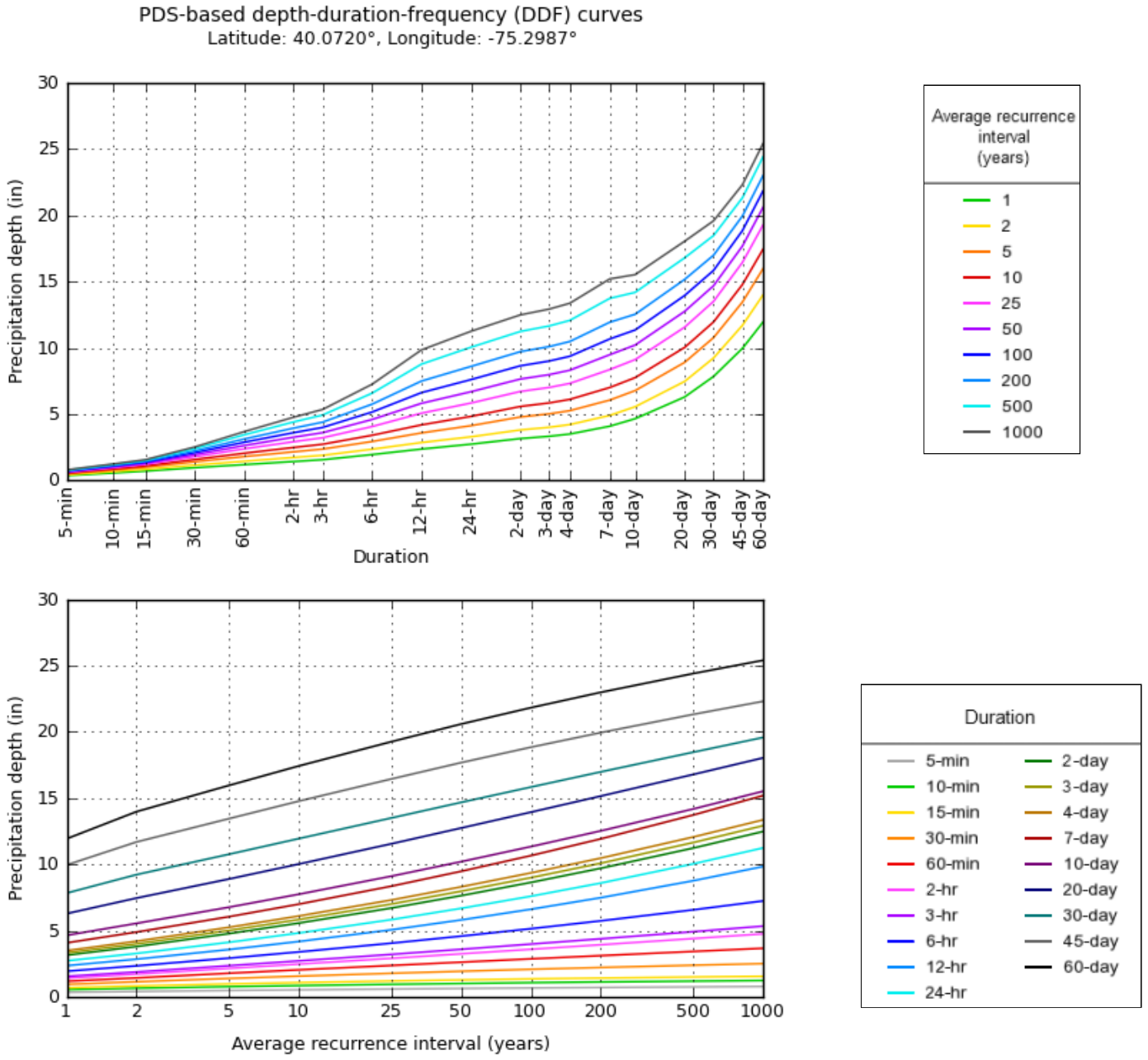
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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.

Back to Top

PF graphical



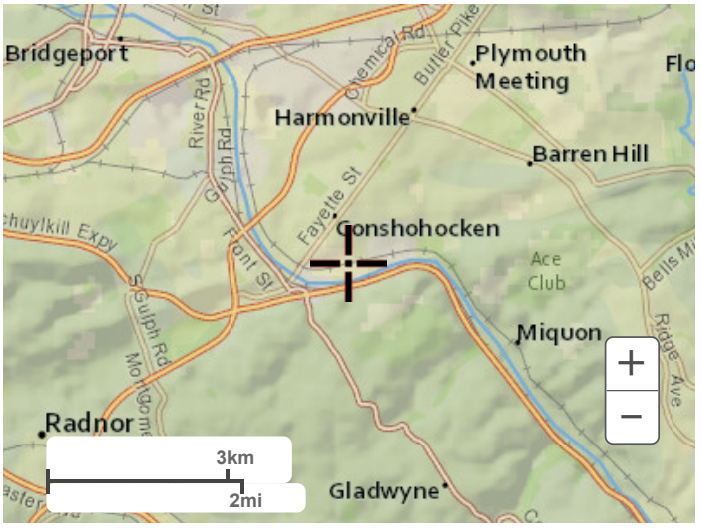
NOAA Atlas 14, Volume 2, Version 3

Created (GMT): Fri Nov 19 14:38:51 2021

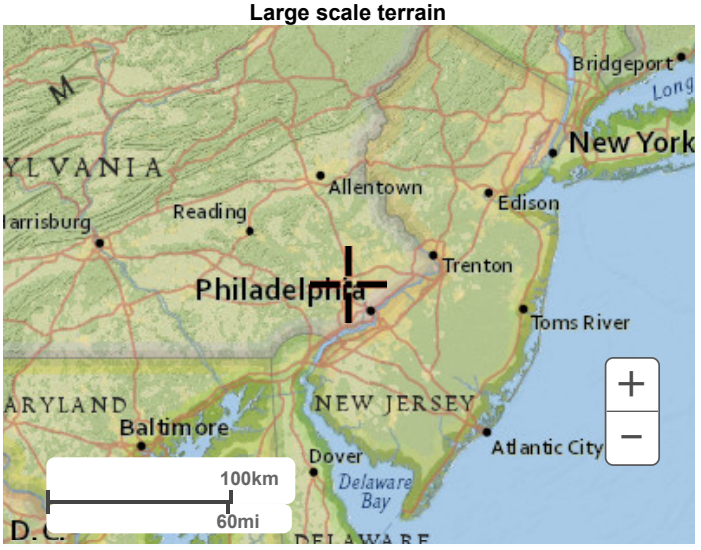
Back to Top

Maps & aerials

Small scale terrain



Large scale terrain



Large scale map

Large scale aerial

Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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: *(In Watershed)*	**11.08** acres	Total Earth Disturbance: *(In Watershed)*	**11.08** acres
No. of Post-Construction Discharge Points:	**1**	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	10.57	10.57	2.46	7.62	Schulykill River	WWF, MF	Yes
Undetained Areas	0.51	0.51	0.42	0.41	Discharge to MS4		
Totals:	**11.08**	**11.08**	**2.880647383**	**8.026285583**			

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:* **4** ☐ *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	7.63	B	58	1.448	0.37	10,237
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	2.46	B	98	0.041	3.05	27,173
Impervious Areas: Streets and Roads - Gravel (Including ROW)	0.30	B	85	0.353	1.83	2,020
Impervious as Meadow	0.69	B	58	1.448	0.37	927
TOTAL (ACRES):	**11.08**				**TOTAL (CF):**	**40,357**

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%)	3.05	B	61	1.279	0.48	5,285
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	8.03	B	98	0.041	3.05	88,781
TOTAL (ACRES):	**11.08**				**TOTAL (CF):**	**94,066**

NET CHANGE IN VOLUME TO MANAGE (CF): **53,710**

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	Y	Off-Site	6.25	65,566	0	0.00		No		36,740		
001	2	Dry Extended Detention Basin	-	Off-Site	1.56	15,904	0	0.00		No		0		
											Totals:			

INFILTRATION & ET CREDITS (CF):	
MANAGED RELEASE CREDIT (CF):	**65,566**
NET CHANGE IN VOLUME TO MANAGE (CF):	**53,710**
TOTAL CREDITS (CF):	**65,566**

VOLUME REQUIREMENT SATISFIED

Rate Control

Project: 401-433 Washington Street Apartments

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):	**6.68**	Alternative 50-Year 24-Hour Storm Event (in):	
NOAA 100-Year 24-Hour Storm Event (in):	**7.6**	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:	**7.80**	**6.04**	**-1.76**	***Rate Control Satisfied***
10-Year Storm:	**14.11**	**12.09**	**-2.02**	***Rate Control Satisfied***
50-Year Storm:	**24.77**	**21.44**	**-3.33**	***Rate Control Satisfied***
100-Year Storm:	**30.55**	**28.70**	**-1.85**	***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
001	1	Dry Extended Detention Basin	Y	21.80	32.58	45.70	52.21	1.69	3.84	7.99	10.70

001	2	Dry Extended Detention Basin	-	5.33	8.02	11.30	12.94	2.08	3.11	4.39	6.24

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	7.63	B	10,237	48.8	0.22	2.30	31.19	0.14	1.47
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	2.46	B	27,173	65.0	0.29	2.05	110.29	0.49	3.48
Impervious Areas: Streets and Roads - Gravel (Including ROW)	Highway (general)	0.30	B	2,020	141.0	0.43	2.65	17.79	0.05	0.33
Impervious as Meadow	Grassland/Herbaceous	0.69	B	927	48.8	0.22	2.30	2.82	0.01	0.13
	TOTAL (ACRES):	**11.08**					**TOTALS:**	**162.09**	**0.70**	**5.42**

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	3.05	B	5,285	78.0	0.25	1.25	25.74	0.08	0.41

Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	8.03	B	88,781	65.0	0.29	2.05	360.34	1.61	11.36
	TOTAL (ACRES):	**11.08**					**TOTALS:**	**386.08**	**1.69**	**11.78**

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS): | **223.99** | **0.99** | **6.36**

☑ **Characterize Undetained Areas (for Untreated Stormwater)** *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%)	**0.10**	**B**	**61**	**1.279**	**0.48**	**170**
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	**0.41**	**N/A**	**98**	**0.041**	**3.05**	**4,531**

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	Y	6.25	65,566			65,566	-	-	-	-	-	-
001	2	Dry Extended Detention Basin	-	1.56	15,904			15,904	24.30	0.19	1.19	24.13	0.19	1.18

	TSS	TP	TN
POLLUTANT LOADS FROM STRUCTURAL BMP (TREATED) OUTFLOWS (LBS):	24.13	0.19	1.18
POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):	19.22	0.08	0.59
NON-STRUCTURAL BMP WATER QUALITY CREDITS (LBS):			
NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):	43.35	0.27	1.78
POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):	162.09	0.70	5.42

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.

Spreadsheet User Name

Date

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):	2.88	8.03	5.15

MRC BMP INFORMATION

MRC BMP Type: **Underground Storage Chambers** Stormwater BMP Manual Section: _____

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**

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)	**5.87**	
Equivalent Contributing Impervious Area to BMP (acres)	**5.79**	
Total Drainage Area to BMP (acres)	**6.25**	
MRC BMP Release Rate (cfs)	**0.04**	*No greater than 0.01 cfs / acre of equivalent contributing impervious*
Underdrain Outflow Rate During 1.2-Inch/2-Hour Storm (cfs)	**0.04**	*<= 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)	**42,780**	
Bottom BMP Elevation (Native Soils) (ft)	**48.80**	
2-Yr/24-Hr Storm Ponding Depth (ft)	**1.68**	*1 ft (recommended) (2 ft max)*
Maximum Ponding Depth (ft)	**2.86**	*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)	**0.98**	
2-Yr/24-Hr **Post**-Development Peak Rate (cfs)	**1.69**	*1-Yr/24-Hr Pre-Development Peak Rate (or per approved Act 167 Plan)*
10-Yr/24-Hr **Post**-Development Peak Rate (cfs)	**3.84**	*10-Yr/24-Hr Pre-Development Peak Rate*
50-Yr/24-Hr **Post**-Development Peak Rate (cfs)	**7.99**	*50-Yr/24-Hr Pre-Development Peak Rate*
100-Yr/24-Hr **Post**-Development Peak Rate (cfs)	**10.70**	*100-Yr/24-Hr Pre-Development Peak Rate*
Total 2-Yr/24-Hr Runoff Volume Managed by BMP (cf)	**65,566**	
Ponding Time @ 2-Yr/24-Hr Storm (hrs)	**21.2 hrs**	*72 hrs (surface), 7 days (underground)*
Ponding Time @ 10-Yr/24-Hr Storm (hrs)	**22.8 hrs**	*72 hrs (surface), 7 days (underground)*
Ponding Time @ 50-Yr/24-Hr Storm (hrs)	**24.0 hrs**	*72 hrs (surface), 7 days (underground)*
Ponding Time @ 100-Yr/24-Hr Storm (hrs)	**24.4 hrs**	*72 hrs (surface), 7 days (underground)*

C. Richard Roseberry, P.E.
Licensed P.E. Name

Licensed P.E. Signature

PE046162R
License No.

Date

Licensed Professional's Seal

Appendix F | Pre-Project Release Rate Calculations

MASER CONSULTING P.A.

Project: 401/433 WASHINGTON STREET Sheet: ___ of ___

Project #: 14000908C Scale: _____

Calculated By: SM Date: 11/29/21 Checked By: _____ Dat _____

Element: POST-PROJECT RELEASE RATES Date: _____

Engineers | Planners | Surveyors | Landscape Architects | Environmental Scientists

STUDY POINT 1

SUB-WATERSHED AREA INFORMATION:

	Pervious Area			Impervious Area		
	CN	AREA (AC)	Tc	CN	AREA (AC)	Tc
PRE-PROJECT AREA SP 1:	58	0.13	17 MIN	98	0.11	3 MIN
TOTAL SUB-WATERSHED AREA:			0.24			
POST-PROJECT AREA SP 1:	61	0.04	2 MIN	98	0.12	2 MIN
TOTAL SUB-WATERSHED AREA:			0.16			

* Tc FROM VTPSUHM OUTPUT, PATH 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 PONDPACK. RAINFALL DEPTHS ARE FROM NOAA.

		PRE FLOW RATES	ALLOWABLE FLOW
Q_2	=	0.41 CFS	0.41 CFS
Q_{10}	=	0.66 CFS	0.66 CFS
Q_{25}	=	0.84 CFS	0.84 CFS
Q_{50}	=	0.99 CFS	0.99 CFS
Q_{100}	=	1.16 CFS	1.16 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 PONDPACK. RAINFALL DEPTHS ARE FROM NOAA.

		POST FLOW RATES	ALLOWABLE FLOW
Q_2	=	0.48 CFS	0.41 CFS
Q_{10}	=	0.75 CFS	0.66 CFS
Q_{25}	=	0.92 CFS	0.84 CFS
Q_{50}	=	1.08 CFS	0.99 CFS
Q_{100}	=	1.24 CFS	1.16 CFS

CALCULATION NOTES:

1) THE STUDY POINT IS THE CHERRY STREET MUNICIPAL STORMWATER CONVEYANCE SYSTEM. THE MINOR INCREASES IN FLOW ARE DE MINIMUS AND WILL NOT EXCEED THE CAPACITY OF THE DOWNSTREAM PIPE

2) ALL SOILS ARE 'B' SOILS.

STUDY POINT 2

SUB-WATERSHED AREA INFORMATION:

	Pervious Area			Impervious Area		
	CN	AREA (AC)	Tc	CN	AREA (AC)	Tc
PRE-PROJECT AREA SP 1:	58	0.83	18 MIN	98	0.69	3 MIN
TOTAL SUB-WATERSHED AREA:			1.52			
POST-PROJECT AREA SP 1:	61	0.06	3 MIN	98	0.29	3 MIN
TOTAL SUB-WATERSHED AREA:			0.35			

* Tc FROM VTPSUHM OUTPUT, PATH 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 PONDPACK. RAINFALL DEPTHS ARE FROM NOAA.

		PRE FLOW RATES	ALLOWABLE FLOW
Q_2	=	2.61 CFS	2.61 CFS
Q_{10}	=	4.15 CFS	4.15 CFS
Q_{25}	=	5.23 CFS	5.23 CFS
Q_{50}	=	6.22 CFS	6.22 CFS
Q_{100}	=	7.29 CFS	7.29 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 PONDPACK. RAINFALL DEPTHS ARE FROM NOAA.

		POST FLOW RATES	ALLOWABLE FLOW
Q_2	=	1.12 CFS	2.61 CFS
Q_{10}	=	1.72 CFS	4.15 CFS
Q_{25}	=	2.12 CFS	5.23 CFS
Q_{50}	=	2.46 CFS	6.22 CFS
Q_{100}	=	2.83 CFS	7.29 CFS

CALCULATION NOTES:

1) THE STUDY POINT IS THE ROADSIDE DITCH ON THE NORTH SIDE OF WASHINGTON STREET

2) ALL SOILS ARE 'B' SOILS.

MASER CONSULTING P.A.

Project: 401/433 WASHINGTON STREET Sheet: ___ of ___

Project #: 14000908C Scale: ___

Calculated By: SM Date: 11/29/2021 Checked By: ___ Date: ___

Element: PRE-PROJECT FLOW RATES Date: ___

Engineers | Planners | Surveyors | Landscape Architects | Environmental Scientists

SUB-WATERSHED AREA INFORMATION: **STUDY POINT 3**

	Pervious Area			Impervious Area		
	CN	AREA (AC)	Tc	CN	AREA (AC)	Tc
PRE ONSITE AREA SP 3:	58	7.35	24 MIN	96	1.97	12 MIN
PRE OFFSITE AREA SP 3:						
TOTAL SUB-WATERSHED AREA:		7.35			1.97	
TOTAL STUDY AREA (AC):			9.32			

* Tc FROM VTPSUHM OUTPUT, 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 PONDPACK. ALLOWABLE RELEASE RATES ARE FROM THE BOROUGH OF CONSHOHOCKEN STORMWATER MANAGEMENT ORDINANCE. RAINFALL DEPTHS ARE FROM NOAA.

		ONSITE			OFFSITE		
		PRE FLOW RATE	RELEASE RATE	ALLOWABLE FLOW	PRE FLOW RATE	RELEASE RATE	ALLOWABLE FLOW
Q_2	=	5.76 CFS	78%	4.49 CFS		100%	0.00 CFS
Q_{10}	=	11.71 CFS	100%	11.71 CFS		100%	0.00 CFS
Q_{25}	=	16.48 CFS	100%	16.48 CFS		100%	0.00 CFS
Q_{50}	=	20.80 CFS	100%	20.80 CFS		100%	0.00 CFS
Q_{100}	=	25.71 CFS	100%	25.71 CFS		100%	0.00 CFS

TOTAL POST ALLOWABLE FLOW RATES:

		ONSITE ALLOWABLE FLOW		OFFSITE ALLOWABLE FLOW		TOTAL POST ALLOWABLE FLOW	PRE TOTAL*	WEIGHTED % RELEASED
Q_2	=	4.49 CFS	+	0.00 CFS	=	4.49 CFS	5.76 CFS	77.95%
Q_{10}	=	11.71 CFS	+	0.00 CFS	=	11.71 CFS	11.71 CFS	100.00%
Q_{25}	=	16.48 CFS	+	0.00 CFS	=	16.48 CFS	16.48 CFS	100.00%
Q_{50}	=	20.80 CFS	+	0.00 CFS	=	20.80 CFS	20.80 CFS	100.00%
Q_{100}	=	25.71 CFS	+	0.00 CFS	=	25.71 CFS	25.71 CFS	100.00%

** 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.

PRE-PROJECT ANALYSIS

Pre-development Analysis Results

Project Summary	
Title	14000908C
Engineer	SMM
Company	CED
Date	11/29/2021

Notes	401/433 Washington Street Conshohocken Borough/Whitemarsh Township Montgomery County Pennsylvania

Table of Contents

	User Notifications	2
	Master Network Summary	3
DA-1-I		
	Time of Concentration Calculations, 1 years (Pre-Development 1)	5
DA-1-P		
	Time of Concentration Calculations, 1 years (Pre-Development 1)	7
DA-2-I		
	Time of Concentration Calculations, 1 years (Pre-Development 1)	9
DA-2-P		
	Time of Concentration Calculations, 1 years (Pre-Development 1)	11
DA-3-I		
	Time of Concentration Calculations, 1 years (Pre-Development 1)	13
DA-3-P		
	Time of Concentration Calculations, 2 years (Pre-Development 2)	15
	Unit Hydrograph Equations	17
DA-1-I		
	Unit Hydrograph Summary, 1 years (Pre-Development 1)	19
	Unit Hydrograph (Hydrograph Table), 1 years (Pre-Development 1)	20
	Unit Hydrograph Summary, 2 years (Pre-Development 2)	23
	Unit Hydrograph (Hydrograph Table), 2 years (Pre-Development 2)	24
	Unit Hydrograph Summary, 5 years (Pre-Development 5)	27
	Unit Hydrograph (Hydrograph Table), 5 years (Pre-Development 5)	28
	Unit Hydrograph Summary, 10 years (Pre-Development 10)	31
	Unit Hydrograph (Hydrograph Table), 10 years (Pre-Development 10)	32
	Unit Hydrograph Summary, 25 years (Pre-Development 25)	35
	Unit Hydrograph (Hydrograph Table), 25 years (Pre-Development 25)	36
	Unit Hydrograph Summary, 50 years (Pre-Development 50)	39
	Unit Hydrograph (Hydrograph Table), 50 years (Pre-Development 50)	40
	Unit Hydrograph Summary, 100 years (Pre-Development 100)	43
	Unit Hydrograph (Hydrograph Table), 100 years (Pre-Development 100)	44
DA-1-P		
	Unit Hydrograph Summary, 1 years (Pre-Development 1)	47
	Unit Hydrograph (Hydrograph Table), 1 years (Pre-Development 1)	48
	Unit Hydrograph Summary, 2 years (Pre-Development 2)	50
	Unit Hydrograph (Hydrograph Table), 2 years (Pre-Development 2)	51
	Unit Hydrograph Summary, 5 years (Pre-Development 5)	53
	Unit Hydrograph (Hydrograph Table), 5 years (Pre-Development 5)	54

Table of Contents

Unit Hydrograph Summary, 10 years (Pre-Development 10) 56

Unit Hydrograph (Hydrograph Table), 10 years (Pre-Development 10) 57

Unit Hydrograph Summary, 25 years (Pre-Development 25) 59

Unit Hydrograph (Hydrograph Table), 25 years (Pre-Development 25) 60

Unit Hydrograph Summary, 50 years (Pre-Development 50) 62

Unit Hydrograph (Hydrograph Table), 50 years (Pre-Development 50) 63

Unit Hydrograph Summary, 100 years (Pre-Development 100) 65

Unit Hydrograph (Hydrograph Table), 100 years (Pre-Development 100) 66

DA-2-I

Unit Hydrograph Summary, 1 years (Pre-Development 1) 68

Unit Hydrograph (Hydrograph Table), 1 years (Pre-Development 1) 69

Unit Hydrograph Summary, 2 years (Pre-Development 2) 71

Unit Hydrograph (Hydrograph Table), 2 years (Pre-Development 2) 72

Unit Hydrograph Summary, 5 years (Pre-Development 5) 75

Unit Hydrograph (Hydrograph Table), 5 years (Pre-Development 5) 76

Unit Hydrograph Summary, 10 years (Pre-Development 10) 79

Unit Hydrograph (Hydrograph Table), 10 years (Pre-Development 10) 80

Unit Hydrograph Summary, 25 years (Pre-Development 25) 83

Unit Hydrograph (Hydrograph Table), 25 years (Pre-Development 25) 84

Unit Hydrograph Summary, 50 years (Pre-Development 50) 87

Unit Hydrograph (Hydrograph Table), 50 years (Pre-Development 50) 88

Unit Hydrograph Summary, 100 years (Pre-Development 100) 91

Unit Hydrograph (Hydrograph Table), 100 years (Pre-Development 100) 92

DA-2-P

Unit Hydrograph Summary, 1 years (Pre-Development 1) 95

Unit Hydrograph (Hydrograph Table), 1 years (Pre-Development 1) 96

Unit Hydrograph Summary, 2 years (Pre-Development 2) 98

Unit Hydrograph (Hydrograph Table), 2 years (Pre-Development 2) 99

Unit Hydrograph Summary, 5 years (Pre-Development 5) 101

Unit Hydrograph (Hydrograph Table), 5 years (Pre-Development 5) 102

Unit Hydrograph Summary, 10 years (Pre-Development 10) 104

Unit Hydrograph (Hydrograph Table), 10 years (Pre-Development 10) 105

Unit Hydrograph Summary, 25 years (Pre-Development 25) 107

Unit Hydrograph (Hydrograph Table), 25 years (Pre-Development 25) 108

Unit Hydrograph Summary, 50 years (Pre-Development 50) 110

Unit Hydrograph (Hydrograph Table), 50 years (Pre-Development 50) 111

Unit Hydrograph Summary, 100 years (Pre-Development 100) 113

Unit Hydrograph (Hydrograph Table), 100 years (Pre-Development 100) 114

Table of Contents

DA-3-I

Unit Hydrograph Summary, 1 years (Pre-Development 1) 116
Unit Hydrograph (Hydrograph Table), 1 years (Pre-Development 1) 117
Unit Hydrograph Summary, 2 years (Pre-Development 2) 119
Unit Hydrograph (Hydrograph Table), 2 years (Pre-Development 2) 120
Unit Hydrograph Summary, 5 years (Pre-Development 5) 122
Unit Hydrograph (Hydrograph Table), 5 years (Pre-Development 5) 123
Unit Hydrograph Summary, 10 years (Pre-Development 10) 126
Unit Hydrograph (Hydrograph Table), 10 years (Pre-Development 10) 127
Unit Hydrograph Summary, 25 years (Pre-Development 25) 130
Unit Hydrograph (Hydrograph Table), 25 years (Pre-Development 25) 131
Unit Hydrograph Summary, 50 years (Pre-Development 50) 134
Unit Hydrograph (Hydrograph Table), 50 years (Pre-Development 50) 135
Unit Hydrograph Summary, 100 years (Pre-Development 100) 138
Unit Hydrograph (Hydrograph Table), 100 years (Pre-Development 100) 139

DA-3-P

Unit Hydrograph Summary, 1 years (Pre-Development 1) 142
Unit Hydrograph (Hydrograph Table), 1 years (Pre-Development 1) 143
Unit Hydrograph Summary, 2 years (Pre-Development 2) 145
Unit Hydrograph (Hydrograph Table), 2 years (Pre-Development 2) 146
Unit Hydrograph Summary, 5 years (Pre-Development 5) 148
Unit Hydrograph (Hydrograph Table), 5 years (Pre-Development 5) 149
Unit Hydrograph Summary, 10 years (Pre-Development 10) 151
Unit Hydrograph (Hydrograph Table), 10 years (Pre-Development 10) 152
Unit Hydrograph Summary, 25 years (Pre-Development 25) 154
Unit Hydrograph (Hydrograph Table), 25 years (Pre-Development 25) 155
Unit Hydrograph Summary, 50 years (Pre-Development 50) 157
Unit Hydrograph (Hydrograph Table), 50 years (Pre-Development 50) 158
Unit Hydrograph Summary, 100 years (Pre-Development 100) 160
Unit Hydrograph (Hydrograph Table), 100 years (Pre-Development 100) 161

O-1

Addition Summary, 1 years (Pre-Development 1) 163
Addition Summary, 2 years (Pre-Development 2) 164
Addition Summary, 5 years (Pre-Development 5) 165
Addition Summary, 10 years (Pre-Development 10) 166
Addition Summary, 25 years (Pre-Development 25) 167
Addition Summary, 50 years (Pre-Development 50) 168
Addition Summary, 100 years (Pre-Development 100) 169

Table of Contents

O-2

Addition Summary, 1 years (Pre-Development 1) 170

Addition Summary, 2 years (Pre-Development 2) 171

Addition Summary, 5 years (Pre-Development 5) 172

Addition Summary, 10 years (Pre-Development 10) 173

Addition Summary, 25 years (Pre-Development 25) 174

Addition Summary, 50 years (Pre-Development 50) 175

Addition Summary, 100 years (Pre-Development 100) 176

O-3

Addition Summary, 1 years (Pre-Development 1) 177

Addition Summary, 2 years (Pre-Development 2) 178

Addition Summary, 5 years (Pre-Development 5) 179

Addition Summary, 10 years (Pre-Development 10) 180

Addition Summary, 25 years (Pre-Development 25) 181

Addition Summary, 50 years (Pre-Development 50) 182

Addition Summary, 100 years (Pre-Development 100) 183

Pre-development Analysis Results

Subsection: User Notifications

User Notifications

Message Id	7
Scenario	Pre-Development 100
Element Type	Catchment
Element Id	48
Label	DA-2-P
Time	(N/A)
Message	The difference between calculated peak flow and interpolated peak flow 1.7 % is greater than 1.5 %. Computed peak flow= 0.33 ft³/s Interp. peak flow= 0.33 ft³/s. Output increment for this catchment may be too large.
Source	Warning

Pre-development Analysis Results

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (hours)	Peak Flow (ft³/s)
DA-1-I	Pre-Development 1	1	6,218.000	12.100	2.14
DA-1-I	Pre-Development 2	2	7,580.000	12.100	2.58
DA-1-I	Pre-Development 5	5	9,669.000	12.100	3.26
DA-1-I	Pre-Development 10	10	11,402.000	12.100	3.81
DA-1-I	Pre-Development 25	25	13,911.000	12.100	4.62
DA-1-I	Pre-Development 50	50	16,023.000	12.100	5.30
DA-1-I	Pre-Development 100	100	18,310.000	12.100	6.03
DA-1-P	Pre-Development 1	1	576.000	12.550	0.05
DA-1-P	Pre-Development 2	2	1,108.000	12.350	0.15
DA-1-P	Pre-Development 5	5	2,163.000	12.300	0.40
DA-1-P	Pre-Development 10	10	3,216.000	12.250	0.67
DA-1-P	Pre-Development 25	25	4,962.000	12.250	1.12
DA-1-P	Pre-Development 50	50	6,594.000	12.250	1.54
DA-1-P	Pre-Development 100	100	8,494.000	12.250	2.02
DA-2-I	Pre-Development 1	1	967.000	12.100	0.34
DA-2-I	Pre-Development 2	2	1,179.000	12.100	0.41
DA-2-I	Pre-Development 5	5	1,504.000	12.100	0.51
DA-2-I	Pre-Development 10	10	1,773.000	12.100	0.60
DA-2-I	Pre-Development 25	25	2,164.000	12.100	0.73
DA-2-I	Pre-Development 50	50	2,492.000	12.100	0.83
DA-2-I	Pre-Development 100	100	2,848.000	12.100	0.95
DA-2-P	Pre-Development 1	1	91.000	12.500	0.01
DA-2-P	Pre-Development 2	2	175.000	12.300	0.02
DA-2-P	Pre-Development 5	5	341.000	12.250	0.07
DA-2-P	Pre-Development 10	10	507.000	12.250	0.11
DA-2-P	Pre-Development 25	25	783.000	12.250	0.18
DA-2-P	Pre-Development 50	50	1,041.000	12.250	0.25
DA-2-P	Pre-Development 100	100	1,340.000	12.250	0.33
DA-3-I	Pre-Development 1	1	16,306.000	12.150	4.46
DA-3-I	Pre-Development 2	2	20,170.000	12.150	5.44
DA-3-I	Pre-Development 5	5	26,114.000	12.150	6.95
DA-3-I	Pre-Development 10	10	31,057.000	12.150	8.18
DA-3-I	Pre-Development 25	25	38,226.000	12.150	9.97
DA-3-I	Pre-Development 50	50	44,268.000	12.150	11.46
DA-3-I	Pre-Development 100	100	50,813.000	12.150	13.08
DA-3-P	Pre-Development 1	1	5,073.000	12.600	0.42
DA-3-P	Pre-Development 2	2	9,760.000	12.400	1.19
DA-3-P	Pre-Development 5	5	19,072.000	12.350	3.15
DA-3-P	Pre-Development 10	10	28,364.000	12.350	5.21
DA-3-P	Pre-Development 25	25	43,780.000	12.300	8.68
DA-3-P	Pre-Development 50	50	58,191.000	12.300	11.94
DA-3-P	Pre-Development 100	100	74,961.000	12.300	15.71

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (hours)	Peak Flow (ft³/s)
O-1	Pre-Development 1	1	6,794.000	12.100	2.14
O-1	Pre-Development 2	2	8,688.000	12.100	2.61

Pre-development Analysis Results

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft^3)	Time to Peak (hours)	Peak Flow (ft^3/s)
O-1	Pre-Development 5	5	11,832.000	12.100	3.42
O-1	Pre-Development 10	10	14,618.000	12.100	4.15
O-1	Pre-Development 25	25	18,873.000	12.100	5.26
O-1	Pre-Development 50	50	22,618.000	12.100	6.22
O-1	Pre-Development 100	100	26,804.000	12.100	7.29
O-2	Pre-Development 1	1	1,058.000	12.100	0.34
O-2	Pre-Development 2	2	1,354.000	12.100	0.41
O-2	Pre-Development 5	5	1,845.000	12.100	0.54
O-2	Pre-Development 10	10	2,281.000	12.100	0.66
O-2	Pre-Development 25	25	2,947.000	12.100	0.84
O-2	Pre-Development 50	50	3,533.000	12.100	0.99
O-2	Pre-Development 100	100	4,188.000	12.100	1.16
O-3	Pre-Development 1	1	21,380.000	12.150	4.49
O-3	Pre-Development 2	2	29,930.000	12.150	5.76
O-3	Pre-Development 5	5	45,186.000	12.200	8.71
O-3	Pre-Development 10	10	59,422.000	12.200	11.71
O-3	Pre-Development 25	25	82,006.000	12.200	16.48
O-3	Pre-Development 50	50	102,459.000	12.200	20.80
O-3	Pre-Development 100	100	125,774.000	12.200	25.71

Pre-development Analysis Results

Subsection: Time of Concentration Calculations
Label: DA-1-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.011
Slope	0.004 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	0.73 ft/s
Segment Time of Concentration	0.038 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	30.00 ft
Is Paved?	True
Slope	0.020 ft/ft
Average Velocity	2.87 ft/s
Segment Time of Concentration	0.003 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	52.00 ft
Is Paved?	True
Slope	0.004 ft/ft
Average Velocity	1.29 ft/s
Segment Time of Concentration	0.011 hours

Segment #4: TR-55 Channel Flow	
Flow Area	0.6 ft²
Hydraulic Length	50.00 ft
Manning's n	0.010
Slope	0.036 ft/ft
Wetted Perimeter	2.62 ft
Average Velocity	9.99 ft/s
Segment Time of Concentration	0.001 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.053 hours

Pre-development Analysis Results

Subsection: Time of Concentration Calculations
Label: DA-1-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc = Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Pre-development Analysis Results

Subsection: Time of Concentration Calculations
Label: DA-1-P
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.240
Slope	0.017 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	0.11 ft/s
Segment Time of Concentration	0.251 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	156.00 ft
Is Paved?	False
Slope	0.008 ft/ft
Average Velocity	1.44 ft/s
Segment Time of Concentration	0.030 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	70.00 ft
Is Paved?	True
Slope	0.012 ft/ft
Average Velocity	2.23 ft/s
Segment Time of Concentration	0.009 hours

Segment #4: TR-55 Shallow Concentrated Flow	
Hydraulic Length	52.00 ft
Is Paved?	True
Slope	0.004 ft/ft
Average Velocity	1.29 ft/s
Segment Time of Concentration	0.011 hours

Segment #5: TR-55 Channel Flow	
Flow Area	0.6 ft²
Hydraulic Length	50.00 ft
Manning's n	0.010
Slope	0.036 ft/ft
Wetted Perimeter	2.62 ft
Average Velocity	9.99 ft/s
Segment Time of Concentration	0.001 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.302 hours

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc = Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Pre-development Analysis Results

Subsection: Time of Concentration Calculations
Label: DA-2-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.011
Slope	0.013 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	1.17 ft/s
Segment Time of Concentration	0.024 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	182.00 ft
Is Paved?	True
Slope	0.020 ft/ft
Average Velocity	2.87 ft/s
Segment Time of Concentration	0.018 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.041 hours

Pre-development Analysis Results

Subsection: Time of Concentration Calculations
Label: DA-2-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc = Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Pre-development Analysis Results

Subsection: Time of Concentration Calculations
Label: DA-2-P
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.240
Slope	0.015 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	0.11 ft/s
Segment Time of Concentration	0.264 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	110.00 ft
Is Paved?	False
Slope	0.014 ft/ft
Average Velocity	1.91 ft/s
Segment Time of Concentration	0.016 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.280 hours

Pre-development Analysis Results

Subsection: Time of Concentration Calculations
Label: DA-2-P
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc = Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Pre-development Analysis Results

Subsection: Time of Concentration Calculations
Label: DA-3-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.011
Slope	0.004 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	0.73 ft/s
Segment Time of Concentration	0.038 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	146.00 ft
Is Paved?	True
Slope	0.004 ft/ft
Average Velocity	1.29 ft/s
Segment Time of Concentration	0.032 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	36.00 ft
Is Paved?	False
Slope	0.003 ft/ft
Average Velocity	0.88 ft/s
Segment Time of Concentration	0.011 hours

Segment #4: TR-55 Shallow Concentrated Flow	
Hydraulic Length	361.00 ft
Is Paved?	False
Slope	0.003 ft/ft
Average Velocity	0.88 ft/s
Segment Time of Concentration	0.113 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.194 hours

Pre-development Analysis Results

Subsection: Time of Concentration Calculations
Label: DA-3-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc = Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Pre-development Analysis Results

Subsection: Time of Concentration Calculations
Label: DA-3-P
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.240
Slope	0.017 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	0.11 ft/s
Segment Time of Concentration	0.251 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	192.00 ft
Is Paved?	False
Slope	0.012 ft/ft
Average Velocity	1.77 ft/s
Segment Time of Concentration	0.030 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	361.00 ft
Is Paved?	False
Slope	0.003 ft/ft
Average Velocity	0.88 ft/s
Segment Time of Concentration	0.113 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.394 hours

Pre-development Analysis Results

Subsection: Time of Concentration Calculations
Label: DA-3-P
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc = Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Unit Hydrograph Method (Computational Notes)

Definition of Terms

At	Total area (acres): At = Ai+Ap
Ai	Impervious area (acres)
Ap	Pervious area (acres)
CNi	Runoff curve number for impervious area
CNp	Runoff curve number for pervious area
fLoss	f loss constant infiltration (depth/time)
gKs	Saturated Hydraulic Conductivity (depth/time)
Md	Volumetric Moisture Deficit
Psi	Capillary Suction (length)
hK	Horton Infiltration Decay Rate (time^-1)
fo	Initial Infiltration Rate (depth/time)
fc	Ultimate(capacity)Infiltration Rate (depth/time)
Ia	Initial Abstraction (length)
dt	Computational increment (duration of unit excess rainfall) Default dt is smallest value of 0.1333Tc, rtm, and th (Smallest dt is then adjusted to match up with Tp)
UDdt	User specified override computational main time increment (only used if UDdt is => .1333Tc)
D(t)	Point on distribution curve (fraction of P) for time step t
K	2 / (1 + (Tr/Tp)): default K = 0.75: (for Tr/Tp = 1.67)
Ks	Hydrograph shape factor = Unit Conversions * K: = ((1hr/3600sec) * (1ft/12in) * ((5280ft)**2/sq.mi)) * K Default Ks = 645.333 * 0.75 = 484
Lag	Lag time from center of excess runoff (dt) to Tp: Lag = 0.6Tc
P	Total precipitation depth, inches
Pa(t)	Accumulated rainfall at time step t
Pi(t)	Incremental rainfall at time step t
qp	Peak discharge (cfs) for 1in. runoff, for 1hr, for 1 sq.mi. = (Ks * A * Q) / Tp (where Q = 1in. runoff, A=sq.mi.)
Qu(t)	Unit hydrograph ordinate (cfs) at time step t
Q(t)	Final hydrograph ordinate (cfs) at time step t
Rai(t)	Accumulated runoff (inches) at time step t for impervious area
Rap(t)	Accumulated runoff (inches) at time step t for pervious area
Rii(t)	Incremental runoff (inches) at time step t for impervious area
Rip(t)	Incremental runoff (inches) at time step t for pervious area
R(t)	Incremental weighted total runoff (inches)
Rtm	Time increment for rainfall table
Si	S for impervious area: Si = (1000/CNi) - 10
Sp	S for pervious area: Sp = (1000/CNp) - 10
t	Time step (row) number
Tc	Time of concentration
Tb	Time (hrs) of entire unit hydrograph: Tb = Tp + Tr
Tp	Time (hrs) to peak of a unit hydrograph: Tp = (dt/2) + Lag
Tr	Time (hrs) of receding limb of unit hydrograph: Tr = ratio of Tp

Unit Hydrograph Method
Computational Notes
Precipitation

Column (1)	Time for time step t
Column (2)	D(t) = Point on distribution curve for time step t
Column (3)	Pi(t) = Pa(t) - Pa(t-1): Col.(4) - Preceding Col.(4)
Column (4)	Pa(t) = D(t) x P: Col.(2) x P

Pervious Area Runoff (using SCS Runoff CN Method)

Column (5)	Rap(t) = Accumulated pervious runoff for time step t
	If (Pa(t) is <= 0.2Sp) then use: Rap(t) = 0.0
	If (Pa(t) is > 0.2Sp) then use:
	
	Rap(t) = (Col.(4)-0.2Sp)**2 / (Col.(4)+0.8Sp)

Column (6)	Rip(t) = Incremental pervious runoff for time step t Rip(t) = Rap(t) - Rap(t-1) Rip(t) = Col.(5) for current row - Col.(5) for preceding row.

Impervious Area Runoff

Column (7 & 8)...	Did not specify to use impervious areas.

Incremental Weighted Runoff

Column (9)	R(t) = (Ap/At) x Rip(t) + (Ai/At) x Rii(t) R(t) = (Ap/At) x Col.(6) + (Ai/At) x Col.(8)

SCS Unit Hydrograph Method

Column (10)	Q(t) is computed with the SCS unit hydrograph method using R(t) and Qu(t).

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-1-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.053 hours
Area (User Defined)	0.686 acres

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.097 hours
Flow (Peak, Computed)	2.14 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	2.14 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.686 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.50 in
Runoff Volume (Pervious)	6,221.246 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	6,218.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.053 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	14.52 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.143 hours
Total unit time, Tb	0.178 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.053 hours
Area (User Defined)	0.686 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.550	0.00	0.00	0.00	0.00	0.00
1.800	0.00	0.00	0.00	0.00	0.00
2.050	0.00	0.00	0.00	0.00	0.01
2.300	0.01	0.01	0.01	0.01	0.01
2.550	0.01	0.01	0.01	0.01	0.01
2.800	0.01	0.01	0.01	0.01	0.01
3.050	0.01	0.01	0.01	0.01	0.01
3.300	0.01	0.01	0.01	0.01	0.01
3.550	0.01	0.01	0.01	0.01	0.01
3.800	0.01	0.01	0.01	0.01	0.01
4.050	0.01	0.01	0.01	0.01	0.02
4.300	0.02	0.02	0.02	0.02	0.02
4.550	0.02	0.02	0.02	0.02	0.02
4.800	0.02	0.02	0.02	0.02	0.02
5.050	0.02	0.02	0.02	0.02	0.02
5.300	0.02	0.02	0.02	0.02	0.02
5.550	0.02	0.02	0.02	0.02	0.02
5.800	0.02	0.02	0.02	0.02	0.02
6.050	0.02	0.02	0.02	0.02	0.02
6.300	0.02	0.02	0.02	0.03	0.03
6.550	0.03	0.03	0.03	0.03	0.03
6.800	0.03	0.03	0.03	0.03	0.03
7.050	0.03	0.03	0.03	0.03	0.03
7.300	0.03	0.03	0.03	0.03	0.03
7.550	0.03	0.03	0.03	0.03	0.04
7.800	0.04	0.04	0.04	0.04	0.04
8.050	0.04	0.04	0.04	0.04	0.04
8.300	0.04	0.04	0.04	0.04	0.04
8.550	0.04	0.04	0.04	0.04	0.04
8.800	0.04	0.04	0.04	0.05	0.05
9.050	0.05	0.05	0.05	0.05	0.05
9.300	0.05	0.06	0.06	0.06	0.06
9.550	0.06	0.06	0.06	0.06	0.07
9.800	0.07	0.07	0.07	0.07	0.07
10.050	0.08	0.08	0.08	0.08	0.08
10.300	0.08	0.08	0.08	0.09	0.09
10.550	0.09	0.10	0.11	0.11	0.12
10.800	0.12	0.13	0.13	0.14	0.14
11.050	0.15	0.16	0.17	0.18	0.19

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.300	0.20	0.21	0.22	0.23	0.24
11.550	0.33	0.36	0.38	0.39	0.49
11.800	0.53	0.68	0.74	1.12	1.28
12.050	1.90	2.14	1.18	0.80	0.61
12.300	0.55	0.44	0.40	0.38	0.38
12.550	0.28	0.25	0.23	0.23	0.21
12.800	0.21	0.19	0.19	0.17	0.17
13.050	0.15	0.15	0.14	0.14	0.13
13.300	0.13	0.12	0.12	0.11	0.11
13.550	0.10	0.10	0.09	0.09	0.09
13.800	0.09	0.09	0.09	0.08	0.08
14.050	0.08	0.08	0.08	0.08	0.08
14.300	0.08	0.07	0.07	0.07	0.07
14.550	0.07	0.07	0.06	0.06	0.06
14.800	0.06	0.06	0.06	0.06	0.06
15.050	0.05	0.05	0.05	0.05	0.05
15.300	0.05	0.05	0.05	0.05	0.05
15.550	0.05	0.05	0.05	0.05	0.05
15.800	0.05	0.05	0.05	0.05	0.05
16.050	0.05	0.05	0.04	0.04	0.04
16.300	0.04	0.04	0.04	0.04	0.04
16.550	0.04	0.04	0.04	0.04	0.04
16.800	0.04	0.04	0.04	0.04	0.04
17.050	0.04	0.04	0.04	0.04	0.04
17.300	0.04	0.04	0.04	0.03	0.03
17.550	0.03	0.03	0.03	0.03	0.03
17.800	0.03	0.03	0.03	0.03	0.03
18.050	0.03	0.03	0.03	0.03	0.03
18.300	0.03	0.03	0.03	0.03	0.03
18.550	0.03	0.03	0.03	0.03	0.03
18.800	0.03	0.03	0.03	0.03	0.03
19.050	0.03	0.03	0.03	0.03	0.03
19.300	0.03	0.03	0.03	0.03	0.03
19.550	0.03	0.03	0.03	0.03	0.03
19.800	0.03	0.03	0.03	0.03	0.03
20.050	0.03	0.03	0.03	0.03	0.03
20.300	0.03	0.03	0.03	0.03	0.03
20.550	0.03	0.03	0.03	0.03	0.03
20.800	0.03	0.03	0.02	0.02	0.02
21.050	0.02	0.02	0.02	0.02	0.02
21.300	0.02	0.02	0.02	0.02	0.02
21.550	0.02	0.02	0.02	0.02	0.02
21.800	0.02	0.02	0.02	0.02	0.02
22.050	0.02	0.02	0.02	0.02	0.02
22.300	0.02	0.02	0.02	0.02	0.02
22.550	0.02	0.02	0.02	0.02	0.02
22.800	0.02	0.02	0.02	0.02	0.02
23.050	0.02	0.02	0.02	0.02	0.02

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.300	0.02	0.02	0.02	0.02	0.02
23.550	0.02	0.02	0.02	0.02	0.02
23.800	0.02	0.02	0.02	0.02	0.02

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-1-I
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.053 hours
Area (User Defined)	0.686 acres

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.097 hours
Flow (Peak, Computed)	2.58 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	2.58 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.686 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.05 in
Runoff Volume (Pervious)	7,584.475 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	7,580.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.053 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	14.52 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.143 hours
Total unit time, Tb	0.178 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.053 hours
Area (User Defined)	0.686 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.250	0.00	0.00	0.00	0.00	0.00
1.500	0.00	0.00	0.00	0.00	0.00
1.750	0.00	0.01	0.01	0.01	0.01
2.000	0.01	0.01	0.01	0.01	0.01
2.250	0.01	0.01	0.01	0.01	0.01
2.500	0.01	0.01	0.01	0.01	0.01
2.750	0.01	0.01	0.01	0.01	0.01
3.000	0.01	0.01	0.01	0.01	0.01
3.250	0.02	0.02	0.02	0.02	0.02
3.500	0.02	0.02	0.02	0.02	0.02
3.750	0.02	0.02	0.02	0.02	0.02
4.000	0.02	0.02	0.02	0.02	0.02
4.250	0.02	0.02	0.02	0.02	0.02
4.500	0.02	0.02	0.02	0.02	0.02
4.750	0.02	0.02	0.02	0.02	0.02
5.000	0.02	0.02	0.02	0.02	0.02
5.250	0.02	0.03	0.03	0.03	0.03
5.500	0.03	0.03	0.03	0.03	0.03
5.750	0.03	0.03	0.03	0.03	0.03
6.000	0.03	0.03	0.03	0.03	0.03
6.250	0.03	0.03	0.03	0.03	0.03
6.500	0.03	0.03	0.03	0.03	0.03
6.750	0.03	0.04	0.04	0.04	0.04
7.000	0.04	0.04	0.04	0.04	0.04
7.250	0.04	0.04	0.04	0.04	0.04
7.500	0.04	0.04	0.04	0.04	0.04
7.750	0.04	0.05	0.05	0.05	0.05
8.000	0.05	0.05	0.05	0.05	0.05
8.250	0.05	0.05	0.05	0.05	0.05
8.500	0.05	0.05	0.05	0.05	0.05
8.750	0.05	0.05	0.06	0.06	0.06
9.000	0.06	0.06	0.06	0.06	0.06
9.250	0.07	0.07	0.07	0.07	0.07
9.500	0.07	0.08	0.08	0.08	0.08
9.750	0.08	0.08	0.09	0.09	0.09
10.000	0.09	0.09	0.09	0.10	0.10
10.250	0.10	0.10	0.10	0.10	0.11
10.500	0.11	0.12	0.12	0.13	0.13
10.750	0.14	0.15	0.15	0.16	0.17

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.000	0.17	0.19	0.19	0.21	0.22
11.250	0.24	0.24	0.26	0.27	0.28
11.500	0.29	0.40	0.44	0.46	0.47
11.750	0.59	0.64	0.82	0.90	1.36
12.000	1.55	2.30	2.58	1.42	0.96
12.250	0.74	0.66	0.53	0.48	0.46
12.500	0.46	0.34	0.30	0.28	0.28
12.750	0.26	0.25	0.23	0.23	0.21
13.000	0.20	0.19	0.18	0.17	0.17
13.250	0.16	0.15	0.14	0.14	0.13
13.500	0.13	0.12	0.11	0.11	0.11
13.750	0.11	0.11	0.10	0.10	0.10
14.000	0.10	0.10	0.10	0.09	0.09
14.250	0.09	0.09	0.09	0.09	0.08
14.500	0.08	0.08	0.08	0.08	0.08
14.750	0.07	0.07	0.07	0.07	0.07
15.000	0.07	0.06	0.06	0.06	0.06
15.250	0.06	0.06	0.06	0.06	0.06
15.500	0.06	0.06	0.06	0.06	0.06
15.750	0.06	0.06	0.06	0.06	0.06
16.000	0.06	0.05	0.05	0.05	0.05
16.250	0.05	0.05	0.05	0.05	0.05
16.500	0.05	0.05	0.05	0.05	0.05
16.750	0.05	0.05	0.05	0.05	0.05
17.000	0.05	0.05	0.05	0.04	0.04
17.250	0.04	0.04	0.04	0.04	0.04
17.500	0.04	0.04	0.04	0.04	0.04
17.750	0.04	0.04	0.04	0.04	0.04
18.000	0.04	0.04	0.04	0.04	0.04
18.250	0.04	0.04	0.04	0.04	0.04
18.500	0.04	0.04	0.04	0.04	0.04
18.750	0.03	0.03	0.03	0.03	0.03
19.000	0.03	0.03	0.03	0.03	0.03
19.250	0.03	0.03	0.03	0.03	0.03
19.500	0.03	0.03	0.03	0.03	0.03
19.750	0.03	0.03	0.03	0.03	0.03
20.000	0.03	0.03	0.03	0.03	0.03
20.250	0.03	0.03	0.03	0.03	0.03
20.500	0.03	0.03	0.03	0.03	0.03
20.750	0.03	0.03	0.03	0.03	0.03
21.000	0.03	0.03	0.03	0.03	0.03
21.250	0.03	0.03	0.03	0.03	0.03
21.500	0.03	0.03	0.03	0.03	0.03
21.750	0.03	0.03	0.03	0.03	0.03
22.000	0.03	0.03	0.03	0.03	0.03
22.250	0.03	0.03	0.03	0.03	0.03
22.500	0.03	0.03	0.03	0.03	0.03
22.750	0.03	0.03	0.03	0.03	0.03

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.000	0.03	0.03	0.03	0.02	0.02
23.250	0.02	0.02	0.02	0.02	0.02
23.500	0.02	0.02	0.02	0.02	0.02
23.750	0.02	0.02	0.02	0.02	0.03
24.000	0.03	(N/A)	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-1-I
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.053 hours
Area (User Defined)	0.686 acres

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.097 hours
Flow (Peak, Computed)	3.26 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	3.26 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.686 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.89 in
Runoff Volume (Pervious)	9,674.297 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	9,669.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.053 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	14.52 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.143 hours
Total unit time, Tb	0.178 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.053 hours
Area (User Defined)	0.686 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.000	0.00	0.00	0.00	0.00	0.00
1.250	0.00	0.00	0.01	0.01	0.01
1.500	0.01	0.01	0.01	0.01	0.01
1.750	0.01	0.01	0.01	0.01	0.01
2.000	0.01	0.01	0.01	0.01	0.01
2.250	0.01	0.02	0.02	0.02	0.02
2.500	0.02	0.02	0.02	0.02	0.02
2.750	0.02	0.02	0.02	0.02	0.02
3.000	0.02	0.02	0.02	0.02	0.02
3.250	0.02	0.02	0.02	0.02	0.02
3.500	0.02	0.02	0.02	0.03	0.03
3.750	0.03	0.03	0.03	0.03	0.03
4.000	0.03	0.03	0.03	0.03	0.03
4.250	0.03	0.03	0.03	0.03	0.03
4.500	0.03	0.03	0.03	0.03	0.03
4.750	0.03	0.03	0.03	0.03	0.03
5.000	0.03	0.03	0.03	0.03	0.03
5.250	0.03	0.03	0.03	0.04	0.04
5.500	0.04	0.04	0.04	0.04	0.04
5.750	0.04	0.04	0.04	0.04	0.04
6.000	0.04	0.04	0.04	0.04	0.04
6.250	0.04	0.04	0.04	0.04	0.04
6.500	0.04	0.04	0.04	0.05	0.05
6.750	0.05	0.05	0.05	0.05	0.05
7.000	0.05	0.05	0.05	0.05	0.05
7.250	0.05	0.05	0.05	0.05	0.06
7.500	0.06	0.06	0.06	0.06	0.06
7.750	0.06	0.06	0.06	0.06	0.06
8.000	0.06	0.06	0.06	0.06	0.06
8.250	0.07	0.07	0.07	0.07	0.07
8.500	0.07	0.07	0.07	0.07	0.07
8.750	0.07	0.07	0.07	0.07	0.07
9.000	0.07	0.08	0.08	0.08	0.08
9.250	0.09	0.09	0.09	0.09	0.09
9.500	0.09	0.10	0.10	0.10	0.10
9.750	0.11	0.11	0.11	0.11	0.12
10.000	0.12	0.12	0.12	0.12	0.13
10.250	0.13	0.13	0.13	0.13	0.14
10.500	0.14	0.15	0.15	0.17	0.17

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.750	0.18	0.19	0.20	0.20	0.21
11.000	0.22	0.24	0.25	0.27	0.28
11.250	0.30	0.31	0.33	0.34	0.36
11.500	0.36	0.50	0.56	0.59	0.60
11.750	0.75	0.81	1.04	1.13	1.72
12.000	1.95	2.90	3.26	1.79	1.21
12.250	0.93	0.84	0.67	0.61	0.58
12.500	0.57	0.43	0.38	0.35	0.35
12.750	0.33	0.32	0.30	0.29	0.26
13.000	0.26	0.23	0.23	0.21	0.21
13.250	0.20	0.19	0.18	0.18	0.16
13.500	0.16	0.15	0.14	0.14	0.14
13.750	0.14	0.14	0.13	0.13	0.13
14.000	0.13	0.12	0.12	0.12	0.12
14.250	0.11	0.11	0.11	0.11	0.11
14.500	0.11	0.10	0.10	0.10	0.10
14.750	0.09	0.09	0.09	0.09	0.09
15.000	0.08	0.08	0.08	0.08	0.08
15.250	0.08	0.08	0.08	0.08	0.08
15.500	0.08	0.07	0.07	0.07	0.07
15.750	0.07	0.07	0.07	0.07	0.07
16.000	0.07	0.07	0.07	0.07	0.07
16.250	0.07	0.07	0.07	0.07	0.06
16.500	0.06	0.06	0.06	0.06	0.06
16.750	0.06	0.06	0.06	0.06	0.06
17.000	0.06	0.06	0.06	0.06	0.06
17.250	0.05	0.05	0.05	0.05	0.05
17.500	0.05	0.05	0.05	0.05	0.05
17.750	0.05	0.05	0.05	0.05	0.05
18.000	0.05	0.05	0.05	0.05	0.05
18.250	0.05	0.05	0.04	0.04	0.04
18.500	0.04	0.04	0.04	0.04	0.04
18.750	0.04	0.04	0.04	0.04	0.04
19.000	0.04	0.04	0.04	0.04	0.04
19.250	0.04	0.04	0.04	0.04	0.04
19.500	0.04	0.04	0.04	0.04	0.04
19.750	0.04	0.04	0.04	0.04	0.04
20.000	0.04	0.04	0.04	0.04	0.04
20.250	0.04	0.04	0.04	0.04	0.04
20.500	0.04	0.04	0.04	0.04	0.04
20.750	0.04	0.04	0.04	0.04	0.04
21.000	0.04	0.04	0.04	0.04	0.04
21.250	0.04	0.04	0.04	0.04	0.04
21.500	0.04	0.04	0.04	0.04	0.04
21.750	0.04	0.04	0.04	0.03	0.03
22.000	0.03	0.03	0.03	0.03	0.03
22.250	0.03	0.03	0.03	0.03	0.03
22.500	0.03	0.03	0.03	0.03	0.03

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.750	0.03	0.03	0.03	0.03	0.03
23.000	0.03	0.03	0.03	0.03	0.03
23.250	0.03	0.03	0.03	0.03	0.03
23.500	0.03	0.03	0.03	0.03	0.03
23.750	0.03	0.03	0.03	0.03	0.03
24.000	0.04	(N/A)	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-1-I
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.053 hours
Area (User Defined)	0.686 acres

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.097 hours
Flow (Peak, Computed)	3.82 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	3.81 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.686 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.58 in
Runoff Volume (Pervious)	11,408.230 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	11,402.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.053 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	14.52 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.143 hours
Total unit time, Tb	0.178 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.053 hours
Area (User Defined)	0.686 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.850	0.00	0.00	0.00	0.00	0.00
1.100	0.00	0.01	0.01	0.01	0.01
1.350	0.01	0.01	0.01	0.01	0.01
1.600	0.01	0.01	0.01	0.01	0.01
1.850	0.02	0.02	0.02	0.02	0.02
2.100	0.02	0.02	0.02	0.02	0.02
2.350	0.02	0.02	0.02	0.02	0.02
2.600	0.02	0.02	0.02	0.03	0.03
2.850	0.03	0.03	0.03	0.03	0.03
3.100	0.03	0.03	0.03	0.03	0.03
3.350	0.03	0.03	0.03	0.03	0.03
3.600	0.03	0.03	0.03	0.03	0.03
3.850	0.03	0.03	0.03	0.03	0.03
4.100	0.04	0.04	0.04	0.04	0.04
4.350	0.04	0.04	0.04	0.04	0.04
4.600	0.04	0.04	0.04	0.04	0.04
4.850	0.04	0.04	0.04	0.04	0.04
5.100	0.04	0.04	0.04	0.04	0.04
5.350	0.04	0.04	0.04	0.04	0.04
5.600	0.04	0.04	0.04	0.04	0.05
5.850	0.05	0.05	0.05	0.05	0.05
6.100	0.05	0.05	0.05	0.05	0.05
6.350	0.05	0.05	0.05	0.05	0.05
6.600	0.05	0.06	0.06	0.06	0.06
6.850	0.06	0.06	0.06	0.06	0.06
7.100	0.06	0.06	0.06	0.06	0.06
7.350	0.07	0.07	0.07	0.07	0.07
7.600	0.07	0.07	0.07	0.07	0.07
7.850	0.07	0.07	0.07	0.07	0.07
8.100	0.08	0.08	0.08	0.08	0.08
8.350	0.08	0.08	0.08	0.08	0.08
8.600	0.08	0.08	0.08	0.08	0.09
8.850	0.09	0.09	0.09	0.09	0.09
9.100	0.09	0.10	0.10	0.10	0.10
9.350	0.11	0.11	0.11	0.11	0.12
9.600	0.12	0.12	0.12	0.13	0.13
9.850	0.13	0.13	0.14	0.14	0.14
10.100	0.14	0.15	0.15	0.15	0.15
10.350	0.16	0.16	0.16	0.16	0.18

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.600	0.18	0.20	0.20	0.21	0.22
10.850	0.23	0.24	0.25	0.26	0.28
11.100	0.29	0.32	0.33	0.35	0.36
11.350	0.39	0.40	0.42	0.43	0.59
11.600	0.66	0.69	0.70	0.88	0.95
11.850	1.22	1.33	2.02	2.29	3.40
12.100	3.81	2.10	1.42	1.09	0.98
12.350	0.79	0.71	0.68	0.67	0.51
12.600	0.44	0.41	0.41	0.38	0.37
12.850	0.35	0.34	0.31	0.30	0.27
13.100	0.26	0.25	0.24	0.23	0.23
13.350	0.21	0.21	0.19	0.19	0.17
13.600	0.17	0.16	0.16	0.16	0.16
13.850	0.15	0.15	0.15	0.15	0.14
14.100	0.14	0.14	0.14	0.13	0.13
14.350	0.13	0.13	0.12	0.12	0.12
14.600	0.12	0.11	0.11	0.11	0.11
14.850	0.10	0.10	0.10	0.10	0.09
15.100	0.09	0.09	0.09	0.09	0.09
15.350	0.09	0.09	0.09	0.09	0.09
15.600	0.09	0.09	0.09	0.08	0.08
15.850	0.08	0.08	0.08	0.08	0.08
16.100	0.08	0.08	0.08	0.08	0.08
16.350	0.08	0.08	0.07	0.07	0.07
16.600	0.07	0.07	0.07	0.07	0.07
16.850	0.07	0.07	0.07	0.07	0.07
17.100	0.07	0.07	0.07	0.06	0.06
17.350	0.06	0.06	0.06	0.06	0.06
17.600	0.06	0.06	0.06	0.06	0.06
17.850	0.06	0.06	0.06	0.05	0.05
18.100	0.05	0.05	0.05	0.05	0.05
18.350	0.05	0.05	0.05	0.05	0.05
18.600	0.05	0.05	0.05	0.05	0.05
18.850	0.05	0.05	0.05	0.05	0.05
19.100	0.05	0.05	0.05	0.05	0.05
19.350	0.05	0.05	0.05	0.05	0.05
19.600	0.05	0.05	0.05	0.05	0.05
19.850	0.05	0.05	0.05	0.05	0.05
20.100	0.05	0.05	0.05	0.05	0.05
20.350	0.05	0.05	0.05	0.05	0.05
20.600	0.05	0.05	0.04	0.04	0.04
20.850	0.04	0.04	0.04	0.04	0.04
21.100	0.04	0.04	0.04	0.04	0.04
21.350	0.04	0.04	0.04	0.04	0.04
21.600	0.04	0.04	0.04	0.04	0.04
21.850	0.04	0.04	0.04	0.04	0.04
22.100	0.04	0.04	0.04	0.04	0.04
22.350	0.04	0.04	0.04	0.04	0.04

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.600	0.04	0.04	0.04	0.04	0.04
22.850	0.04	0.04	0.04	0.04	0.04
23.100	0.04	0.04	0.04	0.04	0.04
23.350	0.04	0.04	0.04	0.04	0.04
23.600	0.04	0.04	0.04	0.03	0.03
23.850	0.03	0.03	0.04	0.04	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-1-I
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.053 hours
Area (User Defined)	0.686 acres

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.097 hours
Flow (Peak, Computed)	4.62 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	4.62 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.686 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.59 in
Runoff Volume (Pervious)	13,918.614 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	13,911.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.053 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	14.52 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.143 hours
Total unit time, Tb	0.178 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.053 hours
Area (User Defined)	0.686 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.700	0.00	0.00	0.00	0.00	0.01
0.950	0.01	0.01	0.01	0.01	0.01
1.200	0.01	0.01	0.01	0.01	0.02
1.450	0.02	0.02	0.02	0.02	0.02
1.700	0.02	0.02	0.02	0.02	0.02
1.950	0.02	0.02	0.03	0.03	0.03
2.200	0.03	0.03	0.03	0.03	0.03
2.450	0.03	0.03	0.03	0.03	0.03
2.700	0.03	0.03	0.03	0.04	0.04
2.950	0.04	0.04	0.04	0.04	0.04
3.200	0.04	0.04	0.04	0.04	0.04
3.450	0.04	0.04	0.04	0.04	0.04
3.700	0.04	0.04	0.04	0.04	0.04
3.950	0.04	0.04	0.05	0.05	0.05
4.200	0.05	0.05	0.05	0.05	0.05
4.450	0.05	0.05	0.05	0.05	0.05
4.700	0.05	0.05	0.05	0.05	0.05
4.950	0.05	0.05	0.05	0.05	0.05
5.200	0.05	0.05	0.05	0.05	0.05
5.450	0.05	0.05	0.06	0.06	0.06
5.700	0.06	0.06	0.06	0.06	0.06
5.950	0.06	0.06	0.06	0.06	0.06
6.200	0.06	0.06	0.06	0.06	0.06
6.450	0.07	0.07	0.07	0.07	0.07
6.700	0.07	0.07	0.07	0.07	0.07
6.950	0.07	0.07	0.08	0.08	0.08
7.200	0.08	0.08	0.08	0.08	0.08
7.450	0.08	0.08	0.08	0.08	0.09
7.700	0.09	0.09	0.09	0.09	0.09
7.950	0.09	0.09	0.09	0.09	0.09
8.200	0.09	0.10	0.10	0.10	0.10
8.450	0.10	0.10	0.10	0.10	0.10
8.700	0.10	0.10	0.10	0.11	0.11
8.950	0.11	0.11	0.11	0.11	0.12
9.200	0.12	0.12	0.13	0.13	0.13
9.450	0.14	0.14	0.14	0.14	0.15
9.700	0.15	0.15	0.16	0.16	0.16
9.950	0.17	0.17	0.17	0.17	0.18
10.200	0.18	0.18	0.19	0.19	0.19

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.450	0.20	0.20	0.22	0.22	0.24
10.700	0.24	0.26	0.27	0.28	0.29
10.950	0.31	0.31	0.34	0.36	0.39
11.200	0.40	0.43	0.44	0.47	0.49
11.450	0.51	0.52	0.72	0.80	0.84
11.700	0.85	1.07	1.16	1.48	1.61
11.950	2.45	2.77	4.12	4.62	2.54
12.200	1.72	1.32	1.19	0.95	0.86
12.450	0.83	0.81	0.61	0.53	0.50
12.700	0.49	0.46	0.45	0.42	0.41
12.950	0.38	0.36	0.33	0.32	0.30
13.200	0.30	0.28	0.27	0.26	0.25
13.450	0.23	0.23	0.21	0.20	0.20
13.700	0.20	0.19	0.19	0.19	0.19
13.950	0.18	0.18	0.17	0.17	0.17
14.200	0.17	0.16	0.16	0.16	0.16
14.450	0.15	0.15	0.14	0.14	0.14
14.700	0.14	0.13	0.13	0.13	0.12
14.950	0.12	0.12	0.11	0.11	0.11
15.200	0.11	0.11	0.11	0.11	0.11
15.450	0.11	0.11	0.11	0.11	0.10
15.700	0.10	0.10	0.10	0.10	0.10
15.950	0.10	0.10	0.10	0.10	0.10
16.200	0.10	0.09	0.09	0.09	0.09
16.450	0.09	0.09	0.09	0.09	0.09
16.700	0.09	0.09	0.09	0.08	0.08
16.950	0.08	0.08	0.08	0.08	0.08
17.200	0.08	0.08	0.08	0.08	0.08
17.450	0.07	0.07	0.07	0.07	0.07
17.700	0.07	0.07	0.07	0.07	0.07
17.950	0.07	0.07	0.07	0.06	0.06
18.200	0.06	0.06	0.06	0.06	0.06
18.450	0.06	0.06	0.06	0.06	0.06
18.700	0.06	0.06	0.06	0.06	0.06
18.950	0.06	0.06	0.06	0.06	0.06
19.200	0.06	0.06	0.06	0.06	0.06
19.450	0.06	0.06	0.06	0.06	0.06
19.700	0.06	0.06	0.06	0.06	0.06
19.950	0.06	0.06	0.06	0.06	0.06
20.200	0.06	0.06	0.06	0.06	0.06
20.450	0.06	0.06	0.06	0.06	0.05
20.700	0.05	0.05	0.05	0.05	0.05
20.950	0.05	0.05	0.05	0.05	0.05
21.200	0.05	0.05	0.05	0.05	0.05
21.450	0.05	0.05	0.05	0.05	0.05
21.700	0.05	0.05	0.05	0.05	0.05
21.950	0.05	0.05	0.05	0.05	0.05
22.200	0.05	0.05	0.05	0.05	0.05

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.450	0.05	0.05	0.05	0.05	0.05
22.700	0.05	0.05	0.05	0.05	0.05
22.950	0.05	0.05	0.04	0.04	0.04
23.200	0.04	0.04	0.04	0.04	0.04
23.450	0.04	0.04	0.04	0.04	0.04
23.700	0.04	0.04	0.04	0.04	0.04
23.950	0.05	0.05	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-1-I
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.053 hours
Area (User Defined)	0.686 acres

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.097 hours
Flow (Peak, Computed)	5.30 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	5.30 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.686 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.44 in
Runoff Volume (Pervious)	16,032.117 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	16,023.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.053 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	14.52 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.143 hours
Total unit time, Tb	0.178 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.053 hours
Area (User Defined)	0.686 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.600	0.00	0.00	0.00	0.00	0.01
0.850	0.01	0.01	0.01	0.01	0.01
1.100	0.01	0.02	0.02	0.02	0.02
1.350	0.02	0.02	0.02	0.02	0.02
1.600	0.03	0.03	0.03	0.03	0.03
1.850	0.03	0.03	0.03	0.03	0.03
2.100	0.03	0.03	0.03	0.04	0.04
2.350	0.04	0.04	0.04	0.04	0.04
2.600	0.04	0.04	0.04	0.04	0.04
2.850	0.04	0.04	0.04	0.04	0.04
3.100	0.05	0.05	0.05	0.05	0.05
3.350	0.05	0.05	0.05	0.05	0.05
3.600	0.05	0.05	0.05	0.05	0.05
3.850	0.05	0.05	0.05	0.05	0.05
4.100	0.05	0.05	0.06	0.06	0.06
4.350	0.06	0.06	0.06	0.06	0.06
4.600	0.06	0.06	0.06	0.06	0.06
4.850	0.06	0.06	0.06	0.06	0.06
5.100	0.06	0.06	0.06	0.06	0.06
5.350	0.06	0.06	0.06	0.06	0.07
5.600	0.07	0.07	0.07	0.07	0.07
5.850	0.07	0.07	0.07	0.07	0.07
6.100	0.07	0.07	0.07	0.07	0.07
6.350	0.07	0.08	0.08	0.08	0.08
6.600	0.08	0.08	0.08	0.08	0.08
6.850	0.08	0.08	0.09	0.09	0.09
7.100	0.09	0.09	0.09	0.09	0.09
7.350	0.09	0.09	0.10	0.10	0.10
7.600	0.10	0.10	0.10	0.10	0.10
7.850	0.10	0.10	0.11	0.11	0.11
8.100	0.11	0.11	0.11	0.11	0.11
8.350	0.11	0.11	0.12	0.12	0.12
8.600	0.12	0.12	0.12	0.12	0.12
8.850	0.12	0.12	0.12	0.13	0.13
9.100	0.13	0.14	0.14	0.14	0.15
9.350	0.15	0.15	0.16	0.16	0.16
9.600	0.17	0.17	0.17	0.18	0.18
9.850	0.19	0.19	0.19	0.19	0.20
10.100	0.20	0.21	0.21	0.21	0.21

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.350	0.22	0.22	0.23	0.23	0.25
10.600	0.25	0.27	0.28	0.30	0.31
10.850	0.33	0.33	0.35	0.36	0.40
11.100	0.41	0.44	0.46	0.49	0.51
11.350	0.54	0.56	0.59	0.60	0.83
11.600	0.92	0.96	0.98	1.23	1.33
11.850	1.70	1.85	2.81	3.18	4.72
12.100	5.30	2.92	1.97	1.51	1.36
12.350	1.09	0.99	0.95	0.93	0.70
12.600	0.61	0.58	0.56	0.53	0.52
12.850	0.48	0.47	0.43	0.42	0.38
13.100	0.37	0.35	0.34	0.32	0.31
13.350	0.29	0.29	0.27	0.26	0.24
13.600	0.23	0.23	0.23	0.22	0.22
13.850	0.21	0.21	0.21	0.21	0.20
14.100	0.20	0.19	0.19	0.19	0.18
14.350	0.18	0.18	0.17	0.17	0.17
14.600	0.16	0.16	0.16	0.15	0.15
14.850	0.15	0.14	0.14	0.14	0.13
15.100	0.13	0.13	0.13	0.13	0.13
15.350	0.12	0.12	0.12	0.12	0.12
15.600	0.12	0.12	0.12	0.12	0.12
15.850	0.12	0.11	0.11	0.11	0.11
16.100	0.11	0.11	0.11	0.11	0.11
16.350	0.11	0.11	0.10	0.10	0.10
16.600	0.10	0.10	0.10	0.10	0.10
16.850	0.10	0.10	0.10	0.09	0.09
17.100	0.09	0.09	0.09	0.09	0.09
17.350	0.09	0.09	0.09	0.09	0.08
17.600	0.08	0.08	0.08	0.08	0.08
17.850	0.08	0.08	0.08	0.08	0.07
18.100	0.07	0.07	0.07	0.07	0.07
18.350	0.07	0.07	0.07	0.07	0.07
18.600	0.07	0.07	0.07	0.07	0.07
18.850	0.07	0.07	0.07	0.07	0.07
19.100	0.07	0.07	0.07	0.07	0.07
19.350	0.07	0.07	0.07	0.07	0.07
19.600	0.07	0.07	0.07	0.07	0.07
19.850	0.07	0.07	0.07	0.07	0.07
20.100	0.07	0.06	0.06	0.06	0.06
20.350	0.06	0.06	0.06	0.06	0.06
20.600	0.06	0.06	0.06	0.06	0.06
20.850	0.06	0.06	0.06	0.06	0.06
21.100	0.06	0.06	0.06	0.06	0.06
21.350	0.06	0.06	0.06	0.06	0.06
21.600	0.06	0.06	0.06	0.06	0.06
21.850	0.06	0.06	0.06	0.06	0.06
22.100	0.06	0.06	0.06	0.06	0.05

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.350	0.05	0.05	0.05	0.05	0.05
22.600	0.05	0.05	0.05	0.05	0.05
22.850	0.05	0.05	0.05	0.05	0.05
23.100	0.05	0.05	0.05	0.05	0.05
23.350	0.05	0.05	0.05	0.05	0.05
23.600	0.05	0.05	0.05	0.05	0.05
23.850	0.05	0.05	0.06	0.06	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-1-I
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.053 hours
Area (User Defined)	0.686 acres

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.097 hours
Flow (Peak, Computed)	6.04 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	6.03 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.686 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.36 in
Runoff Volume (Pervious)	18,320.202 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	18,310.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.053 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	14.52 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.143 hours
Total unit time, Tb	0.178 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.053 hours
Area (User Defined)	0.686 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.550	0.00	0.00	0.00	0.01	0.01
0.800	0.01	0.01	0.01	0.02	0.02
1.050	0.02	0.02	0.02	0.02	0.02
1.300	0.03	0.03	0.03	0.03	0.03
1.550	0.03	0.03	0.03	0.03	0.04
1.800	0.04	0.04	0.04	0.04	0.04
2.050	0.04	0.04	0.04	0.04	0.04
2.300	0.04	0.05	0.05	0.05	0.05
2.550	0.05	0.05	0.05	0.05	0.05
2.800	0.05	0.05	0.05	0.05	0.05
3.050	0.05	0.05	0.05	0.06	0.06
3.300	0.06	0.06	0.06	0.06	0.06
3.550	0.06	0.06	0.06	0.06	0.06
3.800	0.06	0.06	0.06	0.06	0.06
4.050	0.06	0.06	0.06	0.06	0.07
4.300	0.07	0.07	0.07	0.07	0.07
4.550	0.07	0.07	0.07	0.07	0.07
4.800	0.07	0.07	0.07	0.07	0.07
5.050	0.07	0.07	0.07	0.07	0.07
5.300	0.07	0.07	0.07	0.07	0.07
5.550	0.08	0.08	0.08	0.08	0.08
5.800	0.08	0.08	0.08	0.08	0.08
6.050	0.08	0.08	0.08	0.08	0.08
6.300	0.08	0.09	0.09	0.09	0.09
6.550	0.09	0.09	0.09	0.09	0.09
6.800	0.10	0.10	0.10	0.10	0.10
7.050	0.10	0.10	0.10	0.10	0.11
7.300	0.11	0.11	0.11	0.11	0.11
7.550	0.11	0.11	0.11	0.12	0.12
7.800	0.12	0.12	0.12	0.12	0.12
8.050	0.12	0.12	0.13	0.13	0.13
8.300	0.13	0.13	0.13	0.13	0.13
8.550	0.13	0.13	0.14	0.14	0.14
8.800	0.14	0.14	0.14	0.14	0.14
9.050	0.15	0.15	0.16	0.16	0.16
9.300	0.17	0.17	0.17	0.18	0.18
9.550	0.19	0.19	0.20	0.20	0.20
9.800	0.21	0.21	0.21	0.22	0.22
10.050	0.23	0.23	0.24	0.24	0.24

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.300	0.25	0.25	0.25	0.26	0.26
10.550	0.28	0.29	0.31	0.32	0.34
10.800	0.35	0.37	0.38	0.40	0.41
11.050	0.45	0.47	0.51	0.52	0.56
11.300	0.58	0.62	0.64	0.67	0.68
11.550	0.94	1.04	1.09	1.11	1.40
11.800	1.52	1.94	2.11	3.20	3.63
12.050	5.38	6.03	3.32	2.24	1.72
12.300	1.55	1.24	1.13	1.08	1.06
12.550	0.80	0.70	0.66	0.64	0.60
12.800	0.59	0.55	0.53	0.49	0.47
13.050	0.43	0.42	0.40	0.39	0.36
13.300	0.36	0.33	0.33	0.30	0.30
13.550	0.27	0.27	0.26	0.26	0.25
13.800	0.25	0.24	0.24	0.24	0.23
14.050	0.23	0.23	0.22	0.22	0.21
14.300	0.21	0.20	0.20	0.20	0.19
14.550	0.19	0.19	0.18	0.18	0.17
14.800	0.17	0.17	0.16	0.16	0.16
15.050	0.15	0.15	0.15	0.14	0.14
15.300	0.14	0.14	0.14	0.14	0.14
15.550	0.14	0.14	0.14	0.13	0.13
15.800	0.13	0.13	0.13	0.13	0.13
16.050	0.13	0.13	0.13	0.12	0.12
16.300	0.12	0.12	0.12	0.12	0.12
16.550	0.12	0.12	0.11	0.11	0.11
16.800	0.11	0.11	0.11	0.11	0.11
17.050	0.11	0.11	0.10	0.10	0.10
17.300	0.10	0.10	0.10	0.10	0.10
17.550	0.10	0.10	0.09	0.09	0.09
17.800	0.09	0.09	0.09	0.09	0.09
18.050	0.09	0.08	0.08	0.08	0.08
18.300	0.08	0.08	0.08	0.08	0.08
18.550	0.08	0.08	0.08	0.08	0.08
18.800	0.08	0.08	0.08	0.08	0.08
19.050	0.08	0.08	0.08	0.08	0.08
19.300	0.08	0.08	0.08	0.08	0.08
19.550	0.08	0.08	0.08	0.08	0.08
19.800	0.08	0.08	0.08	0.07	0.07
20.050	0.07	0.07	0.07	0.07	0.07
20.300	0.07	0.07	0.07	0.07	0.07
20.550	0.07	0.07	0.07	0.07	0.07
20.800	0.07	0.07	0.07	0.07	0.07
21.050	0.07	0.07	0.07	0.07	0.07
21.300	0.07	0.07	0.07	0.07	0.07
21.550	0.07	0.07	0.07	0.07	0.07
21.800	0.07	0.06	0.06	0.06	0.06
22.050	0.06	0.06	0.06	0.06	0.06

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.300	0.06	0.06	0.06	0.06	0.06
22.550	0.06	0.06	0.06	0.06	0.06
22.800	0.06	0.06	0.06	0.06	0.06
23.050	0.06	0.06	0.06	0.06	0.06
23.300	0.06	0.06	0.06	0.06	0.06
23.550	0.06	0.06	0.06	0.06	0.05
23.800	0.05	0.05	0.05	0.06	0.07

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-1-P
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.302 hours
Area (User Defined)	0.832 acres

Computational Time Increment	0.040 hours
Time to Peak (Computed)	12.526 hours
Flow (Peak, Computed)	0.05 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.550 hours
Flow (Peak Interpolated Output)	0.05 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	0.832 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.19 in
Runoff Volume (Pervious)	582.390 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	576.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.302 hours
Computational Time Increment	0.040 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.12 ft³/s
Unit peak time, Tp	0.201 hours
Unit receding limb, Tr	0.806 hours
Total unit time, Tb	1.007 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.302 hours
Area (User Defined)	0.832 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.050	0.00	0.00	0.01	0.02	0.03
12.300	0.04	0.04	0.05	0.05	0.05
12.550	0.05	0.05	0.05	0.04	0.04
12.800	0.04	0.04	0.04	0.04	0.04
13.050	0.03	0.03	0.03	0.03	0.03
13.300	0.03	0.03	0.03	0.03	0.03
13.550	0.02	0.02	0.02	0.02	0.02
13.800	0.02	0.02	0.02	0.02	0.02
14.050	0.02	0.02	0.02	0.02	0.02
14.300	0.02	0.02	0.02	0.02	0.02
14.550	0.02	0.02	0.02	0.02	0.02
14.800	0.02	0.02	0.02	0.02	0.01
15.050	0.01	0.01	0.01	0.01	0.01
15.300	0.01	0.01	0.01	0.01	0.01
15.550	0.01	0.01	0.01	0.01	0.01
15.800	0.01	0.01	0.01	0.01	0.01
16.050	0.01	0.01	0.01	0.01	0.01
16.300	0.01	0.01	0.01	0.01	0.01
16.550	0.01	0.01	0.01	0.01	0.01
16.800	0.01	0.01	0.01	0.01	0.01
17.050	0.01	0.01	0.01	0.01	0.01
17.300	0.01	0.01	0.01	0.01	0.01
17.550	0.01	0.01	0.01	0.01	0.01
17.800	0.01	0.01	0.01	0.01	0.01
18.050	0.01	0.01	0.01	0.01	0.01
18.300	0.01	0.01	0.01	0.01	0.01
18.550	0.01	0.01	0.01	0.01	0.01
18.800	0.01	0.01	0.01	0.01	0.01
19.050	0.01	0.01	0.01	0.01	0.01
19.300	0.01	0.01	0.01	0.01	0.01
19.550	0.01	0.01	0.01	0.01	0.01
19.800	0.01	0.01	0.01	0.01	0.01
20.050	0.01	0.01	0.01	0.01	0.01
20.300	0.01	0.01	0.01	0.01	0.01
20.550	0.01	0.01	0.01	0.01	0.01
20.800	0.01	0.01	0.01	0.01	0.01
21.050	0.01	0.01	0.01	0.01	0.01
21.300	0.01	0.01	0.01	0.01	0.01
21.550	0.01	0.01	0.01	0.01	0.01

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.800	0.01	0.01	0.01	0.01	0.01
22.050	0.01	0.01	0.01	0.01	0.01
22.300	0.01	0.01	0.01	0.01	0.01
22.550	0.01	0.01	0.01	0.01	0.01
22.800	0.01	0.01	0.01	0.01	0.01
23.050	0.01	0.01	0.01	0.01	0.01
23.300	0.01	0.01	0.01	0.01	0.01
23.550	0.01	0.01	0.01	0.01	0.01
23.800	0.01	0.01	0.01	0.01	0.01

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-1-P
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.302 hours
Area (User Defined)	0.832 acres

Computational Time Increment	0.040 hours
Time to Peak (Computed)	12.325 hours
Flow (Peak, Computed)	0.15 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.350 hours
Flow (Peak Interpolated Output)	0.15 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	0.832 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.37 in
Runoff Volume (Pervious)	1,117.344 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1,108.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.302 hours
Computational Time Increment	0.040 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.12 ft³/s
Unit peak time, Tp	0.201 hours
Unit receding limb, Tr	0.806 hours
Total unit time, Tb	1.007 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.302 hours
Area (User Defined)	0.832 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.000	0.00	0.01	0.03	0.06	0.10
12.250	0.13	0.15	0.15	0.14	0.14
12.500	0.13	0.12	0.11	0.11	0.10
12.750	0.09	0.08	0.08	0.08	0.07
13.000	0.07	0.07	0.06	0.06	0.06
13.250	0.06	0.05	0.05	0.05	0.05
13.500	0.05	0.04	0.04	0.04	0.04
13.750	0.04	0.04	0.04	0.04	0.04
14.000	0.03	0.03	0.03	0.03	0.03
14.250	0.03	0.03	0.03	0.03	0.03
14.500	0.03	0.03	0.03	0.03	0.03
14.750	0.03	0.03	0.03	0.03	0.03
15.000	0.03	0.02	0.02	0.02	0.02
15.250	0.02	0.02	0.02	0.02	0.02
15.500	0.02	0.02	0.02	0.02	0.02
15.750	0.02	0.02	0.02	0.02	0.02
16.000	0.02	0.02	0.02	0.02	0.02
16.250	0.02	0.02	0.02	0.02	0.02
16.500	0.02	0.02	0.02	0.02	0.02
16.750	0.02	0.02	0.02	0.02	0.02
17.000	0.02	0.02	0.02	0.02	0.02
17.250	0.02	0.02	0.02	0.02	0.02
17.500	0.02	0.02	0.02	0.02	0.02
17.750	0.02	0.02	0.02	0.02	0.02
18.000	0.02	0.02	0.02	0.01	0.01
18.250	0.01	0.01	0.01	0.01	0.01
18.500	0.01	0.01	0.01	0.01	0.01
18.750	0.01	0.01	0.01	0.01	0.01
19.000	0.01	0.01	0.01	0.01	0.01
19.250	0.01	0.01	0.01	0.01	0.01
19.500	0.01	0.01	0.01	0.01	0.01
19.750	0.01	0.01	0.01	0.01	0.01
20.000	0.01	0.01	0.01	0.01	0.01
20.250	0.01	0.01	0.01	0.01	0.01
20.500	0.01	0.01	0.01	0.01	0.01
20.750	0.01	0.01	0.01	0.01	0.01
21.000	0.01	0.01	0.01	0.01	0.01
21.250	0.01	0.01	0.01	0.01	0.01
21.500	0.01	0.01	0.01	0.01	0.01

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.750	0.01	0.01	0.01	0.01	0.01
22.000	0.01	0.01	0.01	0.01	0.01
22.250	0.01	0.01	0.01	0.01	0.01
22.500	0.01	0.01	0.01	0.01	0.01
22.750	0.01	0.01	0.01	0.01	0.01
23.000	0.01	0.01	0.01	0.01	0.01
23.250	0.01	0.01	0.01	0.01	0.01
23.500	0.01	0.01	0.01	0.01	0.01
23.750	0.01	0.01	0.01	0.01	0.01
24.000	0.01	(N/A)	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-1-P
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.302 hours
Area (User Defined)	0.832 acres

Computational Time Increment	0.040 hours
Time to Peak (Computed)	12.285 hours
Flow (Peak, Computed)	0.41 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.300 hours
Flow (Peak Interpolated Output)	0.40 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	0.832 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.72 in
Runoff Volume (Pervious)	2,178.505 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2,163.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.302 hours
Computational Time Increment	0.040 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.12 ft³/s
Unit peak time, Tp	0.201 hours
Unit receding limb, Tr	0.806 hours
Total unit time, Tb	1.007 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.302 hours
Area (User Defined)	0.832 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.800	0.00	0.00	0.01	0.02	0.04
12.050	0.09	0.16	0.26	0.35	0.40
12.300	0.40	0.38	0.34	0.31	0.28
12.550	0.26	0.23	0.21	0.19	0.18
12.800	0.16	0.15	0.14	0.13	0.13
13.050	0.12	0.12	0.11	0.11	0.10
13.300	0.10	0.09	0.09	0.09	0.08
13.550	0.08	0.08	0.07	0.07	0.07
13.800	0.07	0.06	0.06	0.06	0.06
14.050	0.06	0.06	0.06	0.06	0.06
14.300	0.06	0.06	0.05	0.05	0.05
14.550	0.05	0.05	0.05	0.05	0.05
14.800	0.05	0.05	0.05	0.04	0.04
15.050	0.04	0.04	0.04	0.04	0.04
15.300	0.04	0.04	0.04	0.04	0.04
15.550	0.04	0.04	0.04	0.04	0.04
15.800	0.04	0.04	0.04	0.04	0.04
16.050	0.04	0.03	0.03	0.03	0.03
16.300	0.03	0.03	0.03	0.03	0.03
16.550	0.03	0.03	0.03	0.03	0.03
16.800	0.03	0.03	0.03	0.03	0.03
17.050	0.03	0.03	0.03	0.03	0.03
17.300	0.03	0.03	0.03	0.03	0.03
17.550	0.03	0.03	0.03	0.03	0.03
17.800	0.03	0.03	0.03	0.03	0.03
18.050	0.03	0.02	0.02	0.02	0.02
18.300	0.02	0.02	0.02	0.02	0.02
18.550	0.02	0.02	0.02	0.02	0.02
18.800	0.02	0.02	0.02	0.02	0.02
19.050	0.02	0.02	0.02	0.02	0.02
19.300	0.02	0.02	0.02	0.02	0.02
19.550	0.02	0.02	0.02	0.02	0.02
19.800	0.02	0.02	0.02	0.02	0.02
20.050	0.02	0.02	0.02	0.02	0.02
20.300	0.02	0.02	0.02	0.02	0.02
20.550	0.02	0.02	0.02	0.02	0.02
20.800	0.02	0.02	0.02	0.02	0.02
21.050	0.02	0.02	0.02	0.02	0.02
21.300	0.02	0.02	0.02	0.02	0.02

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.550	0.02	0.02	0.02	0.02	0.02
21.800	0.02	0.02	0.02	0.02	0.02
22.050	0.02	0.02	0.02	0.02	0.02
22.300	0.02	0.02	0.02	0.02	0.02
22.550	0.02	0.02	0.02	0.02	0.02
22.800	0.02	0.02	0.02	0.02	0.02
23.050	0.02	0.02	0.02	0.02	0.02
23.300	0.02	0.02	0.02	0.02	0.02
23.550	0.02	0.02	0.02	0.02	0.02
23.800	0.02	0.02	0.02	0.02	0.02

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-1-P
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.302 hours
Area (User Defined)	0.832 acres

Computational Time Increment	0.040 hours
Time to Peak (Computed)	12.244 hours
Flow (Peak, Computed)	0.67 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	0.67 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	0.832 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.07 in
Runoff Volume (Pervious)	3,236.565 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	3,216.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.302 hours
Computational Time Increment	0.040 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.12 ft³/s
Unit peak time, Tp	0.201 hours
Unit receding limb, Tr	0.806 hours
Total unit time, Tb	1.007 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.302 hours
Area (User Defined)	0.832 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.600	0.00	0.00	0.00	0.01	0.02
11.850	0.03	0.05	0.08	0.13	0.21
12.100	0.34	0.49	0.62	0.67	0.66
12.350	0.60	0.54	0.47	0.43	0.38
12.600	0.35	0.31	0.28	0.26	0.23
12.850	0.22	0.20	0.19	0.18	0.17
13.100	0.16	0.16	0.15	0.14	0.14
13.350	0.13	0.13	0.12	0.12	0.11
13.600	0.11	0.10	0.10	0.09	0.09
13.850	0.09	0.09	0.09	0.09	0.08
14.100	0.08	0.08	0.08	0.08	0.08
14.350	0.08	0.08	0.07	0.07	0.07
14.600	0.07	0.07	0.07	0.07	0.07
14.850	0.06	0.06	0.06	0.06	0.06
15.100	0.06	0.06	0.06	0.05	0.05
15.350	0.05	0.05	0.05	0.05	0.05
15.600	0.05	0.05	0.05	0.05	0.05
15.850	0.05	0.05	0.05	0.05	0.05
16.100	0.05	0.05	0.05	0.05	0.05
16.350	0.05	0.05	0.05	0.05	0.04
16.600	0.04	0.04	0.04	0.04	0.04
16.850	0.04	0.04	0.04	0.04	0.04
17.100	0.04	0.04	0.04	0.04	0.04
17.350	0.04	0.04	0.04	0.04	0.04
17.600	0.04	0.04	0.04	0.04	0.04
17.850	0.04	0.04	0.04	0.03	0.03
18.100	0.03	0.03	0.03	0.03	0.03
18.350	0.03	0.03	0.03	0.03	0.03
18.600	0.03	0.03	0.03	0.03	0.03
18.850	0.03	0.03	0.03	0.03	0.03
19.100	0.03	0.03	0.03	0.03	0.03
19.350	0.03	0.03	0.03	0.03	0.03
19.600	0.03	0.03	0.03	0.03	0.03
19.850	0.03	0.03	0.03	0.03	0.03
20.100	0.03	0.03	0.03	0.03	0.03
20.350	0.03	0.03	0.03	0.03	0.03
20.600	0.03	0.03	0.03	0.03	0.03
20.850	0.03	0.03	0.03	0.03	0.03
21.100	0.03	0.03	0.03	0.03	0.03

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.350	0.03	0.03	0.03	0.03	0.03
21.600	0.03	0.03	0.03	0.03	0.03
21.850	0.03	0.03	0.03	0.03	0.03
22.100	0.03	0.03	0.03	0.03	0.03
22.350	0.03	0.03	0.03	0.03	0.03
22.600	0.03	0.03	0.03	0.02	0.02
22.850	0.02	0.02	0.02	0.02	0.02
23.100	0.02	0.02	0.02	0.02	0.02
23.350	0.02	0.02	0.02	0.02	0.02
23.600	0.02	0.02	0.02	0.02	0.02
23.850	0.02	0.02	0.02	0.02	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-1-P
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.302 hours
Area (User Defined)	0.832 acres

Computational Time Increment	0.040 hours
Time to Peak (Computed)	12.244 hours
Flow (Peak, Computed)	1.12 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	1.12 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	0.832 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.65 in
Runoff Volume (Pervious)	4,991.034 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	4,962.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.302 hours
Computational Time Increment	0.040 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.12 ft³/s
Unit peak time, Tp	0.201 hours
Unit receding limb, Tr	0.806 hours
Total unit time, Tb	1.007 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.302 hours
Area (User Defined)	0.832 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.200	0.00	0.00	0.00	0.01	0.01
11.450	0.01	0.02	0.02	0.03	0.04
11.700	0.06	0.07	0.10	0.12	0.16
11.950	0.22	0.30	0.44	0.64	0.87
12.200	1.06	1.12	1.08	0.97	0.85
12.450	0.74	0.66	0.59	0.53	0.48
12.700	0.43	0.38	0.35	0.32	0.30
12.950	0.29	0.27	0.25	0.24	0.23
13.200	0.22	0.21	0.20	0.19	0.18
13.450	0.18	0.17	0.16	0.15	0.15
13.700	0.14	0.14	0.13	0.13	0.13
13.950	0.12	0.12	0.12	0.12	0.12
14.200	0.11	0.11	0.11	0.11	0.11
14.450	0.11	0.10	0.10	0.10	0.10
14.700	0.10	0.10	0.09	0.09	0.09
14.950	0.09	0.09	0.08	0.08	0.08
15.200	0.08	0.08	0.08	0.08	0.07
15.450	0.07	0.07	0.07	0.07	0.07
15.700	0.07	0.07	0.07	0.07	0.07
15.950	0.07	0.07	0.07	0.07	0.07
16.200	0.07	0.07	0.07	0.07	0.06
16.450	0.06	0.06	0.06	0.06	0.06
16.700	0.06	0.06	0.06	0.06	0.06
16.950	0.06	0.06	0.06	0.06	0.06
17.200	0.06	0.06	0.06	0.06	0.05
17.450	0.05	0.05	0.05	0.05	0.05
17.700	0.05	0.05	0.05	0.05	0.05
17.950	0.05	0.05	0.05	0.05	0.05
18.200	0.05	0.05	0.05	0.05	0.05
18.450	0.05	0.05	0.05	0.04	0.04
18.700	0.04	0.04	0.04	0.04	0.04
18.950	0.04	0.04	0.04	0.04	0.04
19.200	0.04	0.04	0.04	0.04	0.04
19.450	0.04	0.04	0.04	0.04	0.04
19.700	0.04	0.04	0.04	0.04	0.04
19.950	0.04	0.04	0.04	0.04	0.04
20.200	0.04	0.04	0.04	0.04	0.04
20.450	0.04	0.04	0.04	0.04	0.04
20.700	0.04	0.04	0.04	0.04	0.04

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.950	0.04	0.04	0.04	0.04	0.04
21.200	0.04	0.04	0.04	0.04	0.04
21.450	0.04	0.04	0.04	0.04	0.04
21.700	0.04	0.04	0.04	0.04	0.04
21.950	0.04	0.04	0.04	0.04	0.04
22.200	0.04	0.04	0.04	0.04	0.04
22.450	0.04	0.04	0.04	0.03	0.03
22.700	0.03	0.03	0.03	0.03	0.03
22.950	0.03	0.03	0.03	0.03	0.03
23.200	0.03	0.03	0.03	0.03	0.03
23.450	0.03	0.03	0.03	0.03	0.03
23.700	0.03	0.03	0.03	0.03	0.03
23.950	0.03	0.03	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-1-P
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.302 hours
Area (User Defined)	0.832 acres

Computational Time Increment	0.040 hours
Time to Peak (Computed)	12.244 hours
Flow (Peak, Computed)	1.54 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	1.54 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	0.832 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.19 in
Runoff Volume (Pervious)	6,630.370 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	6,594.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.302 hours
Computational Time Increment	0.040 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.12 ft³/s
Unit peak time, Tp	0.201 hours
Unit receding limb, Tr	0.806 hours
Total unit time, Tb	1.007 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.302 hours
Area (User Defined)	0.832 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.850	0.00	0.00	0.00	0.01	0.01
11.100	0.01	0.01	0.02	0.02	0.03
11.350	0.03	0.04	0.05	0.06	0.07
11.600	0.08	0.10	0.12	0.14	0.18
11.850	0.22	0.27	0.35	0.47	0.65
12.100	0.92	1.23	1.47	1.54	1.46
12.350	1.31	1.14	0.99	0.87	0.78
12.600	0.70	0.62	0.56	0.50	0.45
12.850	0.42	0.39	0.37	0.35	0.33
13.100	0.31	0.29	0.28	0.27	0.25
13.350	0.24	0.23	0.22	0.21	0.21
13.600	0.20	0.19	0.18	0.17	0.17
13.850	0.16	0.16	0.16	0.16	0.15
14.100	0.15	0.15	0.15	0.14	0.14
14.350	0.14	0.14	0.13	0.13	0.13
14.600	0.13	0.13	0.12	0.12	0.12
14.850	0.12	0.11	0.11	0.11	0.11
15.100	0.10	0.10	0.10	0.10	0.10
15.350	0.10	0.09	0.09	0.09	0.09
15.600	0.09	0.09	0.09	0.09	0.09
15.850	0.09	0.09	0.09	0.09	0.09
16.100	0.09	0.08	0.08	0.08	0.08
16.350	0.08	0.08	0.08	0.08	0.08
16.600	0.08	0.08	0.08	0.08	0.08
16.850	0.08	0.08	0.07	0.07	0.07
17.100	0.07	0.07	0.07	0.07	0.07
17.350	0.07	0.07	0.07	0.07	0.07
17.600	0.07	0.07	0.07	0.06	0.06
17.850	0.06	0.06	0.06	0.06	0.06
18.100	0.06	0.06	0.06	0.06	0.06
18.350	0.06	0.06	0.06	0.06	0.06
18.600	0.06	0.06	0.06	0.06	0.06
18.850	0.06	0.06	0.06	0.05	0.05
19.100	0.05	0.05	0.05	0.05	0.05
19.350	0.05	0.05	0.05	0.05	0.05
19.600	0.05	0.05	0.05	0.05	0.05
19.850	0.05	0.05	0.05	0.05	0.05
20.100	0.05	0.05	0.05	0.05	0.05
20.350	0.05	0.05	0.05	0.05	0.05

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.600	0.05	0.05	0.05	0.05	0.05
20.850	0.05	0.05	0.05	0.05	0.05
21.100	0.05	0.05	0.05	0.05	0.05
21.350	0.05	0.05	0.05	0.05	0.05
21.600	0.05	0.05	0.05	0.05	0.05
21.850	0.05	0.05	0.05	0.05	0.05
22.100	0.05	0.04	0.04	0.04	0.04
22.350	0.04	0.04	0.04	0.04	0.04
22.600	0.04	0.04	0.04	0.04	0.04
22.850	0.04	0.04	0.04	0.04	0.04
23.100	0.04	0.04	0.04	0.04	0.04
23.350	0.04	0.04	0.04	0.04	0.04
23.600	0.04	0.04	0.04	0.04	0.04
23.850	0.04	0.04	0.04	0.04	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-1-P
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.302 hours
Area (User Defined)	0.832 acres

Computational Time Increment	0.040 hours
Time to Peak (Computed)	12.244 hours
Flow (Peak, Computed)	2.03 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	2.02 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	0.832 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.83 in
Runoff Volume (Pervious)	8,537.586 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	8,494.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.302 hours
Computational Time Increment	0.040 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.12 ft³/s
Unit peak time, Tp	0.201 hours
Unit receding limb, Tr	0.806 hours
Total unit time, Tb	1.007 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.302 hours
Area (User Defined)	0.832 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.350	0.00	0.00	0.00	0.00	0.00
10.600	0.01	0.01	0.01	0.01	0.02
10.850	0.02	0.02	0.02	0.03	0.03
11.100	0.04	0.04	0.05	0.06	0.06
11.350	0.07	0.08	0.09	0.10	0.12
11.600	0.14	0.16	0.19	0.23	0.27
11.850	0.33	0.40	0.51	0.67	0.91
12.100	1.25	1.64	1.94	2.02	1.91
12.350	1.69	1.46	1.27	1.12	0.99
12.600	0.88	0.79	0.70	0.63	0.57
12.850	0.52	0.49	0.46	0.43	0.41
13.100	0.39	0.37	0.35	0.33	0.32
13.350	0.30	0.29	0.28	0.27	0.25
13.600	0.24	0.23	0.22	0.22	0.21
13.850	0.20	0.20	0.20	0.19	0.19
14.100	0.19	0.18	0.18	0.18	0.17
14.350	0.17	0.17	0.17	0.16	0.16
14.600	0.16	0.15	0.15	0.15	0.15
14.850	0.14	0.14	0.14	0.13	0.13
15.100	0.13	0.13	0.12	0.12	0.12
15.350	0.12	0.12	0.12	0.11	0.11
15.600	0.11	0.11	0.11	0.11	0.11
15.850	0.11	0.11	0.11	0.11	0.11
16.100	0.10	0.10	0.10	0.10	0.10
16.350	0.10	0.10	0.10	0.10	0.10
16.600	0.10	0.10	0.10	0.09	0.09
16.850	0.09	0.09	0.09	0.09	0.09
17.100	0.09	0.09	0.09	0.09	0.09
17.350	0.09	0.08	0.08	0.08	0.08
17.600	0.08	0.08	0.08	0.08	0.08
17.850	0.08	0.08	0.08	0.07	0.07
18.100	0.07	0.07	0.07	0.07	0.07
18.350	0.07	0.07	0.07	0.07	0.07
18.600	0.07	0.07	0.07	0.07	0.07
18.850	0.07	0.07	0.07	0.07	0.07
19.100	0.07	0.07	0.07	0.07	0.07
19.350	0.07	0.07	0.07	0.07	0.07
19.600	0.06	0.06	0.06	0.06	0.06
19.850	0.06	0.06	0.06	0.06	0.06

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.100	0.06	0.06	0.06	0.06	0.06
20.350	0.06	0.06	0.06	0.06	0.06
20.600	0.06	0.06	0.06	0.06	0.06
20.850	0.06	0.06	0.06	0.06	0.06
21.100	0.06	0.06	0.06	0.06	0.06
21.350	0.06	0.06	0.06	0.06	0.06
21.600	0.06	0.06	0.06	0.06	0.06
21.850	0.06	0.06	0.06	0.06	0.06
22.100	0.05	0.05	0.05	0.05	0.05
22.350	0.05	0.05	0.05	0.05	0.05
22.600	0.05	0.05	0.05	0.05	0.05
22.850	0.05	0.05	0.05	0.05	0.05
23.100	0.05	0.05	0.05	0.05	0.05
23.350	0.05	0.05	0.05	0.05	0.05
23.600	0.05	0.05	0.05	0.05	0.05
23.850	0.05	0.05	0.05	0.05	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-2-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.041 hours
Area (User Defined)	0.107 acres

Computational Time Increment	0.006 hours
Time to Peak (Computed)	12.099 hours
Flow (Peak, Computed)	0.34 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.34 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.107 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.50 in
Runoff Volume (Pervious)	967.513 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	967.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.041 hours
Computational Time Increment	0.006 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.93 ft³/s
Unit peak time, Tp	0.028 hours
Unit receding limb, Tr	0.110 hours
Total unit time, Tb	0.138 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.041 hours
Area (User Defined)	0.107 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
2.500	0.00	0.00	0.00	0.00	0.00
2.750	0.00	0.00	0.00	0.00	0.00
3.000	0.00	0.00	0.00	0.00	0.00
3.250	0.00	0.00	0.00	0.00	0.00
3.500	0.00	0.00	0.00	0.00	0.00
3.750	0.00	0.00	0.00	0.00	0.00
4.000	0.00	0.00	0.00	0.00	0.00
4.250	0.00	0.00	0.00	0.00	0.00
4.500	0.00	0.00	0.00	0.00	0.00
4.750	0.00	0.00	0.00	0.00	0.00
5.000	0.00	0.00	0.00	0.00	0.00
5.250	0.00	0.00	0.00	0.00	0.00
5.500	0.00	0.00	0.00	0.00	0.00
5.750	0.00	0.00	0.00	0.00	0.00
6.000	0.00	0.00	0.00	0.00	0.00
6.250	0.00	0.00	0.00	0.00	0.00
6.500	0.00	0.00	0.00	0.00	0.00
6.750	0.00	0.00	0.00	0.00	0.00
7.000	0.00	0.00	0.00	0.00	0.00
7.250	0.00	0.00	0.01	0.01	0.01
7.500	0.01	0.01	0.01	0.01	0.01
7.750	0.01	0.01	0.01	0.01	0.01
8.000	0.01	0.01	0.01	0.01	0.01
8.250	0.01	0.01	0.01	0.01	0.01
8.500	0.01	0.01	0.01	0.01	0.01
8.750	0.01	0.01	0.01	0.01	0.01
9.000	0.01	0.01	0.01	0.01	0.01
9.250	0.01	0.01	0.01	0.01	0.01
9.500	0.01	0.01	0.01	0.01	0.01
9.750	0.01	0.01	0.01	0.01	0.01
10.000	0.01	0.01	0.01	0.01	0.01
10.250	0.01	0.01	0.01	0.01	0.01
10.500	0.01	0.01	0.02	0.02	0.02
10.750	0.02	0.02	0.02	0.02	0.02
11.000	0.02	0.02	0.02	0.03	0.03
11.250	0.03	0.03	0.03	0.03	0.04
11.500	0.04	0.05	0.06	0.06	0.06
11.750	0.08	0.08	0.11	0.12	0.19
12.000	0.20	0.32	0.34	0.15	0.12

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.250	0.09	0.08	0.07	0.06	0.06
12.500	0.06	0.04	0.04	0.04	0.04
12.750	0.03	0.03	0.03	0.03	0.03
13.000	0.03	0.02	0.02	0.02	0.02
13.250	0.02	0.02	0.02	0.02	0.02
13.500	0.02	0.01	0.01	0.01	0.01
13.750	0.01	0.01	0.01	0.01	0.01
14.000	0.01	0.01	0.01	0.01	0.01
14.250	0.01	0.01	0.01	0.01	0.01
14.500	0.01	0.01	0.01	0.01	0.01
14.750	0.01	0.01	0.01	0.01	0.01
15.000	0.01	0.01	0.01	0.01	0.01
15.250	0.01	0.01	0.01	0.01	0.01
15.500	0.01	0.01	0.01	0.01	0.01
15.750	0.01	0.01	0.01	0.01	0.01
16.000	0.01	0.01	0.01	0.01	0.01
16.250	0.01	0.01	0.01	0.01	0.01
16.500	0.01	0.01	0.01	0.01	0.01
16.750	0.01	0.01	0.01	0.01	0.01
17.000	0.01	0.01	0.01	0.01	0.01
17.250	0.01	0.01	0.01	0.01	0.01
17.500	0.01	0.01	0.01	0.01	0.01
17.750	0.01	0.01	0.00	0.00	0.00
18.000	0.00	0.00	0.00	0.00	0.00
18.250	0.00	0.00	0.00	0.00	0.00
18.500	0.00	0.00	0.00	0.00	0.00
18.750	0.00	0.00	0.00	0.00	0.00
19.000	0.00	0.00	0.00	0.00	0.00
19.250	0.00	0.00	0.00	0.00	0.00
19.500	0.00	0.00	0.00	0.00	0.00
19.750	0.00	0.00	0.00	0.00	0.00
20.000	0.00	0.00	0.00	0.00	0.00
20.250	0.00	0.00	0.00	0.00	0.00
20.500	0.00	0.00	0.00	0.00	0.00
20.750	0.00	0.00	0.00	0.00	0.00
21.000	0.00	0.00	0.00	0.00	0.00
21.250	0.00	0.00	0.00	0.00	0.00
21.500	0.00	0.00	0.00	0.00	0.00
21.750	0.00	0.00	0.00	0.00	0.00
22.000	0.00	0.00	0.00	0.00	0.00
22.250	0.00	0.00	0.00	0.00	0.00
22.500	0.00	0.00	0.00	0.00	0.00
22.750	0.00	0.00	0.00	0.00	0.00
23.000	0.00	0.00	0.00	0.00	0.00
23.250	0.00	0.00	0.00	0.00	0.00
23.500	0.00	0.00	0.00	0.00	0.00
23.750	0.00	0.00	0.00	0.00	0.00
24.000	0.00	(N/A)	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-2-I
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.041 hours
Area (User Defined)	0.107 acres

Computational Time Increment	0.006 hours
Time to Peak (Computed)	12.099 hours
Flow (Peak, Computed)	0.41 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.41 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.107 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.05 in
Runoff Volume (Pervious)	1,179.519 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1,179.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.041 hours
Computational Time Increment	0.006 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.93 ft³/s
Unit peak time, Tp	0.028 hours
Unit receding limb, Tr	0.110 hours
Total unit time, Tb	0.138 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.041 hours
Area (User Defined)	0.107 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.950	0.00	0.00	0.00	0.00	0.00
2.200	0.00	0.00	0.00	0.00	0.00
2.450	0.00	0.00	0.00	0.00	0.00
2.700	0.00	0.00	0.00	0.00	0.00
2.950	0.00	0.00	0.00	0.00	0.00
3.200	0.00	0.00	0.00	0.00	0.00
3.450	0.00	0.00	0.00	0.00	0.00
3.700	0.00	0.00	0.00	0.00	0.00
3.950	0.00	0.00	0.00	0.00	0.00
4.200	0.00	0.00	0.00	0.00	0.00
4.450	0.00	0.00	0.00	0.00	0.00
4.700	0.00	0.00	0.00	0.00	0.00
4.950	0.00	0.00	0.00	0.00	0.00
5.200	0.00	0.00	0.00	0.00	0.00
5.450	0.00	0.00	0.00	0.00	0.00
5.700	0.00	0.00	0.00	0.00	0.00
5.950	0.00	0.00	0.00	0.00	0.00
6.200	0.00	0.00	0.00	0.00	0.00
6.450	0.01	0.01	0.01	0.01	0.01
6.700	0.01	0.01	0.01	0.01	0.01
6.950	0.01	0.01	0.01	0.01	0.01
7.200	0.01	0.01	0.01	0.01	0.01
7.450	0.01	0.01	0.01	0.01	0.01
7.700	0.01	0.01	0.01	0.01	0.01
7.950	0.01	0.01	0.01	0.01	0.01
8.200	0.01	0.01	0.01	0.01	0.01
8.450	0.01	0.01	0.01	0.01	0.01
8.700	0.01	0.01	0.01	0.01	0.01
8.950	0.01	0.01	0.01	0.01	0.01
9.200	0.01	0.01	0.01	0.01	0.01
9.450	0.01	0.01	0.01	0.01	0.01
9.700	0.01	0.01	0.01	0.01	0.01
9.950	0.01	0.01	0.01	0.01	0.02
10.200	0.02	0.02	0.02	0.02	0.02
10.450	0.02	0.02	0.02	0.02	0.02
10.700	0.02	0.02	0.02	0.02	0.02
10.950	0.03	0.03	0.03	0.03	0.03
11.200	0.03	0.04	0.04	0.04	0.04
11.450	0.04	0.04	0.07	0.07	0.07

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.700	0.07	0.10	0.10	0.13	0.14
11.950	0.23	0.24	0.38	0.41	0.18
12.200	0.14	0.11	0.10	0.08	0.07
12.450	0.07	0.07	0.05	0.05	0.04
12.700	0.04	0.04	0.04	0.04	0.04
12.950	0.03	0.03	0.03	0.03	0.03
13.200	0.03	0.02	0.02	0.02	0.02
13.450	0.02	0.02	0.02	0.02	0.02
13.700	0.02	0.02	0.02	0.02	0.02
13.950	0.02	0.02	0.02	0.02	0.01
14.200	0.01	0.01	0.01	0.01	0.01
14.450	0.01	0.01	0.01	0.01	0.01
14.700	0.01	0.01	0.01	0.01	0.01
14.950	0.01	0.01	0.01	0.01	0.01
15.200	0.01	0.01	0.01	0.01	0.01
15.450	0.01	0.01	0.01	0.01	0.01
15.700	0.01	0.01	0.01	0.01	0.01
15.950	0.01	0.01	0.01	0.01	0.01
16.200	0.01	0.01	0.01	0.01	0.01
16.450	0.01	0.01	0.01	0.01	0.01
16.700	0.01	0.01	0.01	0.01	0.01
16.950	0.01	0.01	0.01	0.01	0.01
17.200	0.01	0.01	0.01	0.01	0.01
17.450	0.01	0.01	0.01	0.01	0.01
17.700	0.01	0.01	0.01	0.01	0.01
17.950	0.01	0.01	0.01	0.01	0.01
18.200	0.01	0.01	0.01	0.01	0.01
18.450	0.01	0.01	0.01	0.01	0.01
18.700	0.01	0.01	0.01	0.01	0.01
18.950	0.01	0.01	0.01	0.01	0.01
19.200	0.01	0.01	0.01	0.01	0.01
19.450	0.01	0.01	0.01	0.01	0.01
19.700	0.01	0.01	0.01	0.01	0.01
19.950	0.00	0.00	0.00	0.00	0.00
20.200	0.00	0.00	0.00	0.00	0.00
20.450	0.00	0.00	0.00	0.00	0.00
20.700	0.00	0.00	0.00	0.00	0.00
20.950	0.00	0.00	0.00	0.00	0.00
21.200	0.00	0.00	0.00	0.00	0.00
21.450	0.00	0.00	0.00	0.00	0.00
21.700	0.00	0.00	0.00	0.00	0.00
21.950	0.00	0.00	0.00	0.00	0.00
22.200	0.00	0.00	0.00	0.00	0.00
22.450	0.00	0.00	0.00	0.00	0.00
22.700	0.00	0.00	0.00	0.00	0.00
22.950	0.00	0.00	0.00	0.00	0.00
23.200	0.00	0.00	0.00	0.00	0.00
23.450	0.00	0.00	0.00	0.00	0.00

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.700	0.00	0.00	0.00	0.00	0.00
23.950	0.00	0.00	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-2-I
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.041 hours
Area (User Defined)	0.107 acres

Computational Time Increment	0.006 hours
Time to Peak (Computed)	12.099 hours
Flow (Peak, Computed)	0.51 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.51 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.107 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.89 in
Runoff Volume (Pervious)	1,504.524 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1,504.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.041 hours
Computational Time Increment	0.006 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.93 ft³/s
Unit peak time, Tp	0.028 hours
Unit receding limb, Tr	0.110 hours
Total unit time, Tb	0.138 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.041 hours
Area (User Defined)	0.107 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.450	0.00	0.00	0.00	0.00	0.00
1.700	0.00	0.00	0.00	0.00	0.00
1.950	0.00	0.00	0.00	0.00	0.00
2.200	0.00	0.00	0.00	0.00	0.00
2.450	0.00	0.00	0.00	0.00	0.00
2.700	0.00	0.00	0.00	0.00	0.00
2.950	0.00	0.00	0.00	0.00	0.00
3.200	0.00	0.00	0.00	0.00	0.00
3.450	0.00	0.00	0.00	0.00	0.00
3.700	0.00	0.00	0.00	0.00	0.00
3.950	0.00	0.00	0.00	0.00	0.00
4.200	0.00	0.00	0.00	0.00	0.00
4.450	0.00	0.00	0.00	0.00	0.00
4.700	0.00	0.00	0.00	0.01	0.01
4.950	0.01	0.01	0.01	0.01	0.01
5.200	0.01	0.01	0.01	0.01	0.01
5.450	0.01	0.01	0.01	0.01	0.01
5.700	0.01	0.01	0.01	0.01	0.01
5.950	0.01	0.01	0.01	0.01	0.01
6.200	0.01	0.01	0.01	0.01	0.01
6.450	0.01	0.01	0.01	0.01	0.01
6.700	0.01	0.01	0.01	0.01	0.01
6.950	0.01	0.01	0.01	0.01	0.01
7.200	0.01	0.01	0.01	0.01	0.01
7.450	0.01	0.01	0.01	0.01	0.01
7.700	0.01	0.01	0.01	0.01	0.01
7.950	0.01	0.01	0.01	0.01	0.01
8.200	0.01	0.01	0.01	0.01	0.01
8.450	0.01	0.01	0.01	0.01	0.01
8.700	0.01	0.01	0.01	0.01	0.01
8.950	0.01	0.01	0.01	0.01	0.01
9.200	0.01	0.01	0.01	0.01	0.01
9.450	0.01	0.01	0.02	0.02	0.02
9.700	0.02	0.02	0.02	0.02	0.02
9.950	0.02	0.02	0.02	0.02	0.02
10.200	0.02	0.02	0.02	0.02	0.02
10.450	0.02	0.02	0.02	0.02	0.03
10.700	0.03	0.03	0.03	0.03	0.03
10.950	0.03	0.03	0.04	0.04	0.04

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.200	0.04	0.05	0.05	0.05	0.05
11.450	0.06	0.06	0.08	0.09	0.09
11.700	0.09	0.12	0.13	0.17	0.18
11.950	0.29	0.31	0.48	0.51	0.23
12.200	0.18	0.14	0.13	0.10	0.09
12.450	0.09	0.09	0.06	0.06	0.05
12.700	0.05	0.05	0.05	0.05	0.04
12.950	0.04	0.04	0.04	0.04	0.03
13.200	0.03	0.03	0.03	0.03	0.03
13.450	0.03	0.02	0.02	0.02	0.02
13.700	0.02	0.02	0.02	0.02	0.02
13.950	0.02	0.02	0.02	0.02	0.02
14.200	0.02	0.02	0.02	0.02	0.02
14.450	0.02	0.02	0.02	0.02	0.02
14.700	0.02	0.01	0.01	0.01	0.01
14.950	0.01	0.01	0.01	0.01	0.01
15.200	0.01	0.01	0.01	0.01	0.01
15.450	0.01	0.01	0.01	0.01	0.01
15.700	0.01	0.01	0.01	0.01	0.01
15.950	0.01	0.01	0.01	0.01	0.01
16.200	0.01	0.01	0.01	0.01	0.01
16.450	0.01	0.01	0.01	0.01	0.01
16.700	0.01	0.01	0.01	0.01	0.01
16.950	0.01	0.01	0.01	0.01	0.01
17.200	0.01	0.01	0.01	0.01	0.01
17.450	0.01	0.01	0.01	0.01	0.01
17.700	0.01	0.01	0.01	0.01	0.01
17.950	0.01	0.01	0.01	0.01	0.01
18.200	0.01	0.01	0.01	0.01	0.01
18.450	0.01	0.01	0.01	0.01	0.01
18.700	0.01	0.01	0.01	0.01	0.01
18.950	0.01	0.01	0.01	0.01	0.01
19.200	0.01	0.01	0.01	0.01	0.01
19.450	0.01	0.01	0.01	0.01	0.01
19.700	0.01	0.01	0.01	0.01	0.01
19.950	0.01	0.01	0.01	0.01	0.01
20.200	0.01	0.01	0.01	0.01	0.01
20.450	0.01	0.01	0.01	0.01	0.01
20.700	0.01	0.01	0.01	0.01	0.01
20.950	0.01	0.01	0.01	0.01	0.01
21.200	0.01	0.01	0.01	0.01	0.01
21.450	0.01	0.01	0.01	0.01	0.01
21.700	0.01	0.01	0.01	0.01	0.01
21.950	0.01	0.01	0.01	0.01	0.01
22.200	0.01	0.01	0.01	0.01	0.01
22.450	0.01	0.01	0.01	0.01	0.01
22.700	0.01	0.01	0.01	0.01	0.00
22.950	0.00	0.00	0.00	0.00	0.00

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.200	0.00	0.00	0.00	0.00	0.00
23.450	0.00	0.00	0.00	0.00	0.00
23.700	0.00	0.00	0.00	0.00	0.00
23.950	0.01	0.01	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-2-I
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.041 hours
Area (User Defined)	0.107 acres

Computational Time Increment	0.006 hours
Time to Peak (Computed)	12.099 hours
Flow (Peak, Computed)	0.60 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.60 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.107 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.58 in
Runoff Volume (Pervious)	1,774.181 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1,773.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.041 hours
Computational Time Increment	0.006 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.93 ft³/s
Unit peak time, Tp	0.028 hours
Unit receding limb, Tr	0.110 hours
Total unit time, Tb	0.138 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.041 hours
Area (User Defined)	0.107 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.200	0.00	0.00	0.00	0.00	0.00
1.450	0.00	0.00	0.00	0.00	0.00
1.700	0.00	0.00	0.00	0.00	0.00
1.950	0.00	0.00	0.00	0.00	0.00
2.200	0.00	0.00	0.00	0.00	0.00
2.450	0.00	0.00	0.00	0.00	0.00
2.700	0.00	0.00	0.00	0.00	0.00
2.950	0.00	0.00	0.00	0.00	0.00
3.200	0.00	0.00	0.00	0.00	0.00
3.450	0.00	0.00	0.00	0.00	0.01
3.700	0.01	0.01	0.01	0.01	0.01
3.950	0.01	0.01	0.01	0.01	0.01
4.200	0.01	0.01	0.01	0.01	0.01
4.450	0.01	0.01	0.01	0.01	0.01
4.700	0.01	0.01	0.01	0.01	0.01
4.950	0.01	0.01	0.01	0.01	0.01
5.200	0.01	0.01	0.01	0.01	0.01
5.450	0.01	0.01	0.01	0.01	0.01
5.700	0.01	0.01	0.01	0.01	0.01
5.950	0.01	0.01	0.01	0.01	0.01
6.200	0.01	0.01	0.01	0.01	0.01
6.450	0.01	0.01	0.01	0.01	0.01
6.700	0.01	0.01	0.01	0.01	0.01
6.950	0.01	0.01	0.01	0.01	0.01
7.200	0.01	0.01	0.01	0.01	0.01
7.450	0.01	0.01	0.01	0.01	0.01
7.700	0.01	0.01	0.01	0.01	0.01
7.950	0.01	0.01	0.01	0.01	0.01
8.200	0.01	0.01	0.01	0.01	0.01
8.450	0.01	0.01	0.01	0.01	0.01
8.700	0.01	0.01	0.01	0.01	0.01
8.950	0.01	0.01	0.01	0.01	0.02
9.200	0.02	0.02	0.02	0.02	0.02
9.450	0.02	0.02	0.02	0.02	0.02
9.700	0.02	0.02	0.02	0.02	0.02
9.950	0.02	0.02	0.02	0.02	0.02
10.200	0.02	0.02	0.02	0.02	0.02
10.450	0.03	0.03	0.03	0.03	0.03
10.700	0.03	0.03	0.03	0.04	0.04

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.950	0.04	0.04	0.04	0.05	0.05
11.200	0.05	0.06	0.06	0.06	0.06
11.450	0.07	0.07	0.10	0.10	0.11
11.700	0.11	0.14	0.15	0.20	0.21
11.950	0.34	0.36	0.57	0.60	0.27
12.200	0.21	0.16	0.15	0.12	0.11
12.450	0.11	0.10	0.07	0.07	0.06
12.700	0.06	0.06	0.06	0.05	0.05
12.950	0.05	0.05	0.04	0.04	0.04
13.200	0.04	0.04	0.04	0.03	0.03
13.450	0.03	0.03	0.03	0.03	0.03
13.700	0.03	0.02	0.02	0.02	0.02
13.950	0.02	0.02	0.02	0.02	0.02
14.200	0.02	0.02	0.02	0.02	0.02
14.450	0.02	0.02	0.02	0.02	0.02
14.700	0.02	0.02	0.02	0.02	0.02
14.950	0.02	0.02	0.01	0.01	0.01
15.200	0.01	0.01	0.01	0.01	0.01
15.450	0.01	0.01	0.01	0.01	0.01
15.700	0.01	0.01	0.01	0.01	0.01
15.950	0.01	0.01	0.01	0.01	0.01
16.200	0.01	0.01	0.01	0.01	0.01
16.450	0.01	0.01	0.01	0.01	0.01
16.700	0.01	0.01	0.01	0.01	0.01
16.950	0.01	0.01	0.01	0.01	0.01
17.200	0.01	0.01	0.01	0.01	0.01
17.450	0.01	0.01	0.01	0.01	0.01
17.700	0.01	0.01	0.01	0.01	0.01
17.950	0.01	0.01	0.01	0.01	0.01
18.200	0.01	0.01	0.01	0.01	0.01
18.450	0.01	0.01	0.01	0.01	0.01
18.700	0.01	0.01	0.01	0.01	0.01
18.950	0.01	0.01	0.01	0.01	0.01
19.200	0.01	0.01	0.01	0.01	0.01
19.450	0.01	0.01	0.01	0.01	0.01
19.700	0.01	0.01	0.01	0.01	0.01
19.950	0.01	0.01	0.01	0.01	0.01
20.200	0.01	0.01	0.01	0.01	0.01
20.450	0.01	0.01	0.01	0.01	0.01
20.700	0.01	0.01	0.01	0.01	0.01
20.950	0.01	0.01	0.01	0.01	0.01
21.200	0.01	0.01	0.01	0.01	0.01
21.450	0.01	0.01	0.01	0.01	0.01
21.700	0.01	0.01	0.01	0.01	0.01
21.950	0.01	0.01	0.01	0.01	0.01
22.200	0.01	0.01	0.01	0.01	0.01
22.450	0.01	0.01	0.01	0.01	0.01
22.700	0.01	0.01	0.01	0.01	0.01

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.950	0.01	0.01	0.01	0.01	0.01
23.200	0.01	0.01	0.01	0.01	0.01
23.450	0.01	0.01	0.01	0.01	0.01
23.700	0.01	0.01	0.01	0.01	0.01
23.950	0.01	0.01	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-2-I
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.041 hours
Area (User Defined)	0.107 acres

Computational Time Increment	0.006 hours
Time to Peak (Computed)	12.099 hours
Flow (Peak, Computed)	0.73 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.73 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.107 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.59 in
Runoff Volume (Pervious)	2,164.589 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2,164.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.041 hours
Computational Time Increment	0.006 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.93 ft³/s
Unit peak time, Tp	0.028 hours
Unit receding limb, Tr	0.110 hours
Total unit time, Tb	0.138 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.041 hours
Area (User Defined)	0.107 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.900	0.00	0.00	0.00	0.00	0.00
1.150	0.00	0.00	0.00	0.00	0.00
1.400	0.00	0.00	0.00	0.00	0.00
1.650	0.00	0.00	0.00	0.00	0.00
1.900	0.00	0.00	0.00	0.00	0.00
2.150	0.00	0.00	0.00	0.00	0.00
2.400	0.00	0.00	0.00	0.00	0.01
2.650	0.01	0.01	0.01	0.01	0.01
2.900	0.01	0.01	0.01	0.01	0.01
3.150	0.01	0.01	0.01	0.01	0.01
3.400	0.01	0.01	0.01	0.01	0.01
3.650	0.01	0.01	0.01	0.01	0.01
3.900	0.01	0.01	0.01	0.01	0.01
4.150	0.01	0.01	0.01	0.01	0.01
4.400	0.01	0.01	0.01	0.01	0.01
4.650	0.01	0.01	0.01	0.01	0.01
4.900	0.01	0.01	0.01	0.01	0.01
5.150	0.01	0.01	0.01	0.01	0.01
5.400	0.01	0.01	0.01	0.01	0.01
5.650	0.01	0.01	0.01	0.01	0.01
5.900	0.01	0.01	0.01	0.01	0.01
6.150	0.01	0.01	0.01	0.01	0.01
6.400	0.01	0.01	0.01	0.01	0.01
6.650	0.01	0.01	0.01	0.01	0.01
6.900	0.01	0.01	0.01	0.01	0.01
7.150	0.01	0.01	0.01	0.01	0.01
7.400	0.01	0.01	0.01	0.01	0.01
7.650	0.01	0.01	0.01	0.01	0.01
7.900	0.01	0.01	0.01	0.01	0.01
8.150	0.01	0.01	0.01	0.01	0.02
8.400	0.02	0.02	0.02	0.02	0.02
8.650	0.02	0.02	0.02	0.02	0.02
8.900	0.02	0.02	0.02	0.02	0.02
9.150	0.02	0.02	0.02	0.02	0.02
9.400	0.02	0.02	0.02	0.02	0.02
9.650	0.02	0.02	0.02	0.02	0.03
9.900	0.03	0.03	0.03	0.03	0.03
10.150	0.03	0.03	0.03	0.03	0.03
10.400	0.03	0.03	0.03	0.03	0.03

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.650	0.04	0.04	0.04	0.04	0.04
10.900	0.05	0.05	0.05	0.05	0.06
11.150	0.06	0.06	0.07	0.07	0.07
11.400	0.08	0.08	0.08	0.12	0.13
11.650	0.13	0.13	0.17	0.18	0.24
11.900	0.25	0.41	0.44	0.68	0.73
12.150	0.32	0.26	0.19	0.18	0.14
12.400	0.13	0.13	0.13	0.09	0.08
12.650	0.08	0.08	0.07	0.07	0.06
12.900	0.06	0.06	0.06	0.05	0.05
13.150	0.05	0.05	0.04	0.04	0.04
13.400	0.04	0.04	0.04	0.03	0.03
13.650	0.03	0.03	0.03	0.03	0.03
13.900	0.03	0.03	0.03	0.03	0.03
14.150	0.03	0.03	0.03	0.03	0.02
14.400	0.02	0.02	0.02	0.02	0.02
14.650	0.02	0.02	0.02	0.02	0.02
14.900	0.02	0.02	0.02	0.02	0.02
15.150	0.02	0.02	0.02	0.02	0.02
15.400	0.02	0.02	0.02	0.02	0.02
15.650	0.02	0.02	0.02	0.02	0.02
15.900	0.02	0.02	0.02	0.02	0.02
16.150	0.01	0.01	0.01	0.01	0.01
16.400	0.01	0.01	0.01	0.01	0.01
16.650	0.01	0.01	0.01	0.01	0.01
16.900	0.01	0.01	0.01	0.01	0.01
17.150	0.01	0.01	0.01	0.01	0.01
17.400	0.01	0.01	0.01	0.01	0.01
17.650	0.01	0.01	0.01	0.01	0.01
17.900	0.01	0.01	0.01	0.01	0.01
18.150	0.01	0.01	0.01	0.01	0.01
18.400	0.01	0.01	0.01	0.01	0.01
18.650	0.01	0.01	0.01	0.01	0.01
18.900	0.01	0.01	0.01	0.01	0.01
19.150	0.01	0.01	0.01	0.01	0.01
19.400	0.01	0.01	0.01	0.01	0.01
19.650	0.01	0.01	0.01	0.01	0.01
19.900	0.01	0.01	0.01	0.01	0.01
20.150	0.01	0.01	0.01	0.01	0.01
20.400	0.01	0.01	0.01	0.01	0.01
20.650	0.01	0.01	0.01	0.01	0.01
20.900	0.01	0.01	0.01	0.01	0.01
21.150	0.01	0.01	0.01	0.01	0.01
21.400	0.01	0.01	0.01	0.01	0.01
21.650	0.01	0.01	0.01	0.01	0.01
21.900	0.01	0.01	0.01	0.01	0.01
22.150	0.01	0.01	0.01	0.01	0.01
22.400	0.01	0.01	0.01	0.01	0.01

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.650	0.01	0.01	0.01	0.01	0.01
22.900	0.01	0.01	0.01	0.01	0.01
23.150	0.01	0.01	0.01	0.01	0.01
23.400	0.01	0.01	0.01	0.01	0.01
23.650	0.01	0.01	0.01	0.01	0.01
23.900	0.01	0.01	0.01	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-2-I
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.041 hours
Area (User Defined)	0.107 acres

Computational Time Increment	0.006 hours
Time to Peak (Computed)	12.099 hours
Flow (Peak, Computed)	0.83 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.83 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.107 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.44 in
Runoff Volume (Pervious)	2,493.277 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2,492.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.041 hours
Computational Time Increment	0.006 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.93 ft³/s
Unit peak time, Tp	0.028 hours
Unit receding limb, Tr	0.110 hours
Total unit time, Tb	0.138 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.041 hours
Area (User Defined)	0.107 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.800	0.00	0.00	0.00	0.00	0.00
1.050	0.00	0.00	0.00	0.00	0.00
1.300	0.00	0.00	0.00	0.00	0.00
1.550	0.00	0.00	0.00	0.00	0.00
1.800	0.00	0.00	0.00	0.00	0.00
2.050	0.01	0.01	0.01	0.01	0.01
2.300	0.01	0.01	0.01	0.01	0.01
2.550	0.01	0.01	0.01	0.01	0.01
2.800	0.01	0.01	0.01	0.01	0.01
3.050	0.01	0.01	0.01	0.01	0.01
3.300	0.01	0.01	0.01	0.01	0.01
3.550	0.01	0.01	0.01	0.01	0.01
3.800	0.01	0.01	0.01	0.01	0.01
4.050	0.01	0.01	0.01	0.01	0.01
4.300	0.01	0.01	0.01	0.01	0.01
4.550	0.01	0.01	0.01	0.01	0.01
4.800	0.01	0.01	0.01	0.01	0.01
5.050	0.01	0.01	0.01	0.01	0.01
5.300	0.01	0.01	0.01	0.01	0.01
5.550	0.01	0.01	0.01	0.01	0.01
5.800	0.01	0.01	0.01	0.01	0.01
6.050	0.01	0.01	0.01	0.01	0.01
6.300	0.01	0.01	0.01	0.01	0.01
6.550	0.01	0.01	0.01	0.01	0.01
6.800	0.01	0.01	0.01	0.01	0.01
7.050	0.01	0.01	0.01	0.01	0.01
7.300	0.01	0.01	0.01	0.01	0.02
7.550	0.02	0.02	0.02	0.02	0.02
7.800	0.02	0.02	0.02	0.02	0.02
8.050	0.02	0.02	0.02	0.02	0.02
8.300	0.02	0.02	0.02	0.02	0.02
8.550	0.02	0.02	0.02	0.02	0.02
8.800	0.02	0.02	0.02	0.02	0.02
9.050	0.02	0.02	0.02	0.02	0.02
9.300	0.02	0.02	0.02	0.02	0.02
9.550	0.03	0.03	0.03	0.03	0.03
9.800	0.03	0.03	0.03	0.03	0.03
10.050	0.03	0.03	0.03	0.03	0.03
10.300	0.03	0.03	0.03	0.04	0.04

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.550	0.04	0.04	0.04	0.04	0.05
10.800	0.05	0.05	0.05	0.06	0.06
11.050	0.06	0.06	0.07	0.07	0.08
11.300	0.08	0.09	0.09	0.09	0.09
11.550	0.14	0.14	0.15	0.15	0.20
11.800	0.21	0.28	0.29	0.47	0.50
12.050	0.79	0.83	0.37	0.29	0.22
12.300	0.21	0.16	0.15	0.15	0.14
12.550	0.10	0.09	0.09	0.09	0.08
12.800	0.08	0.07	0.07	0.07	0.06
13.050	0.06	0.06	0.05	0.05	0.05
13.300	0.05	0.05	0.04	0.04	0.04
13.550	0.04	0.04	0.04	0.04	0.03
13.800	0.03	0.03	0.03	0.03	0.03
14.050	0.03	0.03	0.03	0.03	0.03
14.300	0.03	0.03	0.03	0.03	0.03
14.550	0.03	0.03	0.02	0.02	0.02
14.800	0.02	0.02	0.02	0.02	0.02
15.050	0.02	0.02	0.02	0.02	0.02
15.300	0.02	0.02	0.02	0.02	0.02
15.550	0.02	0.02	0.02	0.02	0.02
15.800	0.02	0.02	0.02	0.02	0.02
16.050	0.02	0.02	0.02	0.02	0.02
16.300	0.02	0.02	0.02	0.02	0.02
16.550	0.02	0.02	0.02	0.02	0.02
16.800	0.02	0.02	0.01	0.01	0.01
17.050	0.01	0.01	0.01	0.01	0.01
17.300	0.01	0.01	0.01	0.01	0.01
17.550	0.01	0.01	0.01	0.01	0.01
17.800	0.01	0.01	0.01	0.01	0.01
18.050	0.01	0.01	0.01	0.01	0.01
18.300	0.01	0.01	0.01	0.01	0.01
18.550	0.01	0.01	0.01	0.01	0.01
18.800	0.01	0.01	0.01	0.01	0.01
19.050	0.01	0.01	0.01	0.01	0.01
19.300	0.01	0.01	0.01	0.01	0.01
19.550	0.01	0.01	0.01	0.01	0.01
19.800	0.01	0.01	0.01	0.01	0.01
20.050	0.01	0.01	0.01	0.01	0.01
20.300	0.01	0.01	0.01	0.01	0.01
20.550	0.01	0.01	0.01	0.01	0.01
20.800	0.01	0.01	0.01	0.01	0.01
21.050	0.01	0.01	0.01	0.01	0.01
21.300	0.01	0.01	0.01	0.01	0.01
21.550	0.01	0.01	0.01	0.01	0.01
21.800	0.01	0.01	0.01	0.01	0.01
22.050	0.01	0.01	0.01	0.01	0.01
22.300	0.01	0.01	0.01	0.01	0.01

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.550	0.01	0.01	0.01	0.01	0.01
22.800	0.01	0.01	0.01	0.01	0.01
23.050	0.01	0.01	0.01	0.01	0.01
23.300	0.01	0.01	0.01	0.01	0.01
23.550	0.01	0.01	0.01	0.01	0.01
23.800	0.01	0.01	0.01	0.01	0.01

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-2-I
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.041 hours
Area (User Defined)	0.107 acres

Computational Time Increment	0.006 hours
Time to Peak (Computed)	12.099 hours
Flow (Peak, Computed)	0.95 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.95 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	0.107 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.36 in
Runoff Volume (Pervious)	2,849.114 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2,848.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.041 hours
Computational Time Increment	0.006 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.93 ft³/s
Unit peak time, Tp	0.028 hours
Unit receding limb, Tr	0.110 hours
Total unit time, Tb	0.138 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.041 hours
Area (User Defined)	0.107 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.650	0.00	0.00	0.00	0.00	0.00
0.900	0.00	0.00	0.00	0.00	0.00
1.150	0.00	0.00	0.00	0.00	0.00
1.400	0.00	0.00	0.00	0.00	0.01
1.650	0.01	0.01	0.01	0.01	0.01
1.900	0.01	0.01	0.01	0.01	0.01
2.150	0.01	0.01	0.01	0.01	0.01
2.400	0.01	0.01	0.01	0.01	0.01
2.650	0.01	0.01	0.01	0.01	0.01
2.900	0.01	0.01	0.01	0.01	0.01
3.150	0.01	0.01	0.01	0.01	0.01
3.400	0.01	0.01	0.01	0.01	0.01
3.650	0.01	0.01	0.01	0.01	0.01
3.900	0.01	0.01	0.01	0.01	0.01
4.150	0.01	0.01	0.01	0.01	0.01
4.400	0.01	0.01	0.01	0.01	0.01
4.650	0.01	0.01	0.01	0.01	0.01
4.900	0.01	0.01	0.01	0.01	0.01
5.150	0.01	0.01	0.01	0.01	0.01
5.400	0.01	0.01	0.01	0.01	0.01
5.650	0.01	0.01	0.01	0.01	0.01
5.900	0.01	0.01	0.01	0.01	0.01
6.150	0.01	0.01	0.01	0.01	0.01
6.400	0.01	0.01	0.01	0.01	0.01
6.650	0.01	0.01	0.01	0.01	0.02
6.900	0.02	0.02	0.02	0.02	0.02
7.150	0.02	0.02	0.02	0.02	0.02
7.400	0.02	0.02	0.02	0.02	0.02
7.650	0.02	0.02	0.02	0.02	0.02
7.900	0.02	0.02	0.02	0.02	0.02
8.150	0.02	0.02	0.02	0.02	0.02
8.400	0.02	0.02	0.02	0.02	0.02
8.650	0.02	0.02	0.02	0.02	0.02
8.900	0.02	0.02	0.02	0.02	0.02
9.150	0.02	0.02	0.03	0.03	0.03
9.400	0.03	0.03	0.03	0.03	0.03
9.650	0.03	0.03	0.03	0.03	0.03
9.900	0.03	0.03	0.03	0.04	0.04
10.150	0.04	0.04	0.04	0.04	0.04

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.400	0.04	0.04	0.04	0.04	0.05
10.650	0.05	0.05	0.05	0.05	0.06
10.900	0.06	0.06	0.06	0.07	0.07
11.150	0.08	0.08	0.09	0.09	0.10
11.400	0.10	0.10	0.11	0.16	0.16
11.650	0.17	0.17	0.23	0.24	0.32
11.900	0.33	0.53	0.57	0.89	0.95
12.150	0.42	0.33	0.25	0.24	0.18
12.400	0.17	0.17	0.16	0.12	0.11
12.650	0.10	0.10	0.09	0.09	0.08
12.900	0.08	0.07	0.07	0.07	0.06
13.150	0.06	0.06	0.06	0.06	0.05
13.400	0.05	0.05	0.05	0.04	0.04
13.650	0.04	0.04	0.04	0.04	0.04
13.900	0.04	0.04	0.04	0.04	0.04
14.150	0.03	0.03	0.03	0.03	0.03
14.400	0.03	0.03	0.03	0.03	0.03
14.650	0.03	0.03	0.03	0.03	0.03
14.900	0.03	0.02	0.02	0.02	0.02
15.150	0.02	0.02	0.02	0.02	0.02
15.400	0.02	0.02	0.02	0.02	0.02
15.650	0.02	0.02	0.02	0.02	0.02
15.900	0.02	0.02	0.02	0.02	0.02
16.150	0.02	0.02	0.02	0.02	0.02
16.400	0.02	0.02	0.02	0.02	0.02
16.650	0.02	0.02	0.02	0.02	0.02
16.900	0.02	0.02	0.02	0.02	0.02
17.150	0.02	0.02	0.02	0.02	0.02
17.400	0.02	0.02	0.02	0.01	0.01
17.650	0.01	0.01	0.01	0.01	0.01
17.900	0.01	0.01	0.01	0.01	0.01
18.150	0.01	0.01	0.01	0.01	0.01
18.400	0.01	0.01	0.01	0.01	0.01
18.650	0.01	0.01	0.01	0.01	0.01
18.900	0.01	0.01	0.01	0.01	0.01
19.150	0.01	0.01	0.01	0.01	0.01
19.400	0.01	0.01	0.01	0.01	0.01
19.650	0.01	0.01	0.01	0.01	0.01
19.900	0.01	0.01	0.01	0.01	0.01
20.150	0.01	0.01	0.01	0.01	0.01
20.400	0.01	0.01	0.01	0.01	0.01
20.650	0.01	0.01	0.01	0.01	0.01
20.900	0.01	0.01	0.01	0.01	0.01
21.150	0.01	0.01	0.01	0.01	0.01
21.400	0.01	0.01	0.01	0.01	0.01
21.650	0.01	0.01	0.01	0.01	0.01
21.900	0.01	0.01	0.01	0.01	0.01
22.150	0.01	0.01	0.01	0.01	0.01

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.400	0.01	0.01	0.01	0.01	0.01
22.650	0.01	0.01	0.01	0.01	0.01
22.900	0.01	0.01	0.01	0.01	0.01
23.150	0.01	0.01	0.01	0.01	0.01
23.400	0.01	0.01	0.01	0.01	0.01
23.650	0.01	0.01	0.01	0.01	0.01
23.900	0.01	0.01	0.01	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-2-P
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.280 hours
Area (User Defined)	0.131 acres

Computational Time Increment	0.037 hours
Time to Peak (Computed)	12.525 hours
Flow (Peak, Computed)	0.01 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.500 hours
Flow (Peak Interpolated Output)	0.01 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	0.131 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.19 in
Runoff Volume (Pervious)	91.861 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	91.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.280 hours
Computational Time Increment	0.037 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	0.53 ft³/s
Unit peak time, Tp	0.186 hours
Unit receding limb, Tr	0.746 hours
Total unit time, Tb	0.932 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.280 hours
Area (User Defined)	0.131 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.100	0.00	0.00	0.00	0.00	0.01
12.350	0.01	0.01	0.01	0.01	0.01
12.600	0.01	0.01	0.01	0.01	0.01
12.850	0.01	0.01	0.01	0.01	0.01
13.100	0.01	0.00	0.00	0.00	0.00
13.350	0.00	0.00	0.00	0.00	0.00
13.600	0.00	0.00	0.00	0.00	0.00
13.850	0.00	0.00	0.00	0.00	0.00
14.100	0.00	0.00	0.00	0.00	0.00
14.350	0.00	0.00	0.00	0.00	0.00
14.600	0.00	0.00	0.00	0.00	0.00
14.850	0.00	0.00	0.00	0.00	0.00
15.100	0.00	0.00	0.00	0.00	0.00
15.350	0.00	0.00	0.00	0.00	0.00
15.600	0.00	0.00	0.00	0.00	0.00
15.850	0.00	0.00	0.00	0.00	0.00
16.100	0.00	0.00	0.00	0.00	0.00
16.350	0.00	0.00	0.00	0.00	0.00
16.600	0.00	0.00	0.00	0.00	0.00
16.850	0.00	0.00	0.00	0.00	0.00
17.100	0.00	0.00	0.00	0.00	0.00
17.350	0.00	0.00	0.00	0.00	0.00
17.600	0.00	0.00	0.00	0.00	0.00
17.850	0.00	0.00	0.00	0.00	0.00
18.100	0.00	0.00	0.00	0.00	0.00
18.350	0.00	0.00	0.00	0.00	0.00
18.600	0.00	0.00	0.00	0.00	0.00
18.850	0.00	0.00	0.00	0.00	0.00
19.100	0.00	0.00	0.00	0.00	0.00
19.350	0.00	0.00	0.00	0.00	0.00
19.600	0.00	0.00	0.00	0.00	0.00
19.850	0.00	0.00	0.00	0.00	0.00
20.100	0.00	0.00	0.00	0.00	0.00
20.350	0.00	0.00	0.00	0.00	0.00
20.600	0.00	0.00	0.00	0.00	0.00
20.850	0.00	0.00	0.00	0.00	0.00
21.100	0.00	0.00	0.00	0.00	0.00
21.350	0.00	0.00	0.00	0.00	0.00
21.600	0.00	0.00	0.00	0.00	0.00

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.850	0.00	0.00	0.00	0.00	0.00
22.100	0.00	0.00	0.00	0.00	0.00
22.350	0.00	0.00	0.00	0.00	0.00
22.600	0.00	0.00	0.00	0.00	0.00
22.850	0.00	0.00	0.00	0.00	0.00
23.100	0.00	0.00	0.00	0.00	0.00
23.350	0.00	0.00	0.00	0.00	0.00
23.600	0.00	0.00	0.00	0.00	0.00
23.850	0.00	0.00	0.00	0.00	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-2-P
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.280 hours
Area (User Defined)	0.131 acres

Computational Time Increment	0.037 hours
Time to Peak (Computed)	12.301 hours
Flow (Peak, Computed)	0.02 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.300 hours
Flow (Peak Interpolated Output)	0.02 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	0.131 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.37 in
Runoff Volume (Pervious)	176.239 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	175.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.280 hours
Computational Time Increment	0.037 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	0.53 ft³/s
Unit peak time, Tp	0.186 hours
Unit receding limb, Tr	0.746 hours
Total unit time, Tb	0.932 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.280 hours
Area (User Defined)	0.131 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.000	0.00	0.00	0.00	0.01	0.02
12.250	0.02	0.02	0.02	0.02	0.02
12.500	0.02	0.02	0.02	0.02	0.01
12.750	0.01	0.01	0.01	0.01	0.01
13.000	0.01	0.01	0.01	0.01	0.01
13.250	0.01	0.01	0.01	0.01	0.01
13.500	0.01	0.01	0.01	0.01	0.01
13.750	0.01	0.01	0.01	0.01	0.01
14.000	0.01	0.01	0.01	0.01	0.01
14.250	0.01	0.01	0.00	0.00	0.00
14.500	0.00	0.00	0.00	0.00	0.00
14.750	0.00	0.00	0.00	0.00	0.00
15.000	0.00	0.00	0.00	0.00	0.00
15.250	0.00	0.00	0.00	0.00	0.00
15.500	0.00	0.00	0.00	0.00	0.00
15.750	0.00	0.00	0.00	0.00	0.00
16.000	0.00	0.00	0.00	0.00	0.00
16.250	0.00	0.00	0.00	0.00	0.00
16.500	0.00	0.00	0.00	0.00	0.00
16.750	0.00	0.00	0.00	0.00	0.00
17.000	0.00	0.00	0.00	0.00	0.00
17.250	0.00	0.00	0.00	0.00	0.00
17.500	0.00	0.00	0.00	0.00	0.00
17.750	0.00	0.00	0.00	0.00	0.00
18.000	0.00	0.00	0.00	0.00	0.00
18.250	0.00	0.00	0.00	0.00	0.00
18.500	0.00	0.00	0.00	0.00	0.00
18.750	0.00	0.00	0.00	0.00	0.00
19.000	0.00	0.00	0.00	0.00	0.00
19.250	0.00	0.00	0.00	0.00	0.00
19.500	0.00	0.00	0.00	0.00	0.00
19.750	0.00	0.00	0.00	0.00	0.00
20.000	0.00	0.00	0.00	0.00	0.00
20.250	0.00	0.00	0.00	0.00	0.00
20.500	0.00	0.00	0.00	0.00	0.00
20.750	0.00	0.00	0.00	0.00	0.00
21.000	0.00	0.00	0.00	0.00	0.00
21.250	0.00	0.00	0.00	0.00	0.00
21.500	0.00	0.00	0.00	0.00	0.00

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.750	0.00	0.00	0.00	0.00	0.00
22.000	0.00	0.00	0.00	0.00	0.00
22.250	0.00	0.00	0.00	0.00	0.00
22.500	0.00	0.00	0.00	0.00	0.00
22.750	0.00	0.00	0.00	0.00	0.00
23.000	0.00	0.00	0.00	0.00	0.00
23.250	0.00	0.00	0.00	0.00	0.00
23.500	0.00	0.00	0.00	0.00	0.00
23.750	0.00	0.00	0.00	0.00	0.00
24.000	0.00	(N/A)	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-2-P
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.280 hours
Area (User Defined)	0.131 acres

Computational Time Increment	0.037 hours
Time to Peak (Computed)	12.264 hours
Flow (Peak, Computed)	0.07 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	0.07 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	0.131 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.72 in
Runoff Volume (Pervious)	343.617 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	341.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.280 hours
Computational Time Increment	0.037 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	0.53 ft³/s
Unit peak time, Tp	0.186 hours
Unit receding limb, Tr	0.746 hours
Total unit time, Tb	0.932 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.280 hours
Area (User Defined)	0.131 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.850	0.00	0.00	0.00	0.01	0.02
12.100	0.03	0.05	0.06	0.07	0.06
12.350	0.06	0.05	0.05	0.04	0.04
12.600	0.04	0.03	0.03	0.03	0.02
12.850	0.02	0.02	0.02	0.02	0.02
13.100	0.02	0.02	0.02	0.02	0.01
13.350	0.01	0.01	0.01	0.01	0.01
13.600	0.01	0.01	0.01	0.01	0.01
13.850	0.01	0.01	0.01	0.01	0.01
14.100	0.01	0.01	0.01	0.01	0.01
14.350	0.01	0.01	0.01	0.01	0.01
14.600	0.01	0.01	0.01	0.01	0.01
14.850	0.01	0.01	0.01	0.01	0.01
15.100	0.01	0.01	0.01	0.01	0.01
15.350	0.01	0.01	0.01	0.01	0.01
15.600	0.01	0.01	0.01	0.01	0.01
15.850	0.01	0.01	0.01	0.01	0.01
16.100	0.01	0.01	0.01	0.01	0.01
16.350	0.01	0.01	0.01	0.01	0.01
16.600	0.01	0.01	0.01	0.01	0.00
16.850	0.00	0.00	0.00	0.00	0.00
17.100	0.00	0.00	0.00	0.00	0.00
17.350	0.00	0.00	0.00	0.00	0.00
17.600	0.00	0.00	0.00	0.00	0.00
17.850	0.00	0.00	0.00	0.00	0.00
18.100	0.00	0.00	0.00	0.00	0.00
18.350	0.00	0.00	0.00	0.00	0.00
18.600	0.00	0.00	0.00	0.00	0.00
18.850	0.00	0.00	0.00	0.00	0.00
19.100	0.00	0.00	0.00	0.00	0.00
19.350	0.00	0.00	0.00	0.00	0.00
19.600	0.00	0.00	0.00	0.00	0.00
19.850	0.00	0.00	0.00	0.00	0.00
20.100	0.00	0.00	0.00	0.00	0.00
20.350	0.00	0.00	0.00	0.00	0.00
20.600	0.00	0.00	0.00	0.00	0.00
20.850	0.00	0.00	0.00	0.00	0.00
21.100	0.00	0.00	0.00	0.00	0.00
21.350	0.00	0.00	0.00	0.00	0.00

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.600	0.00	0.00	0.00	0.00	0.00
21.850	0.00	0.00	0.00	0.00	0.00
22.100	0.00	0.00	0.00	0.00	0.00
22.350	0.00	0.00	0.00	0.00	0.00
22.600	0.00	0.00	0.00	0.00	0.00
22.850	0.00	0.00	0.00	0.00	0.00
23.100	0.00	0.00	0.00	0.00	0.00
23.350	0.00	0.00	0.00	0.00	0.00
23.600	0.00	0.00	0.00	0.00	0.00
23.850	0.00	0.00	0.00	0.00	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-2-P
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.280 hours
Area (User Defined)	0.131 acres

Computational Time Increment	0.037 hours
Time to Peak (Computed)	12.264 hours
Flow (Peak, Computed)	0.11 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	0.11 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	0.131 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.07 in
Runoff Volume (Pervious)	510.506 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	507.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.280 hours
Computational Time Increment	0.037 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	0.53 ft³/s
Unit peak time, Tp	0.186 hours
Unit receding limb, Tr	0.746 hours
Total unit time, Tb	0.932 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.280 hours
Area (User Defined)	0.131 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.700	0.00	0.00	0.00	0.01	0.01
11.950	0.01	0.02	0.04	0.06	0.09
12.200	0.10	0.11	0.10	0.09	0.08
12.450	0.07	0.06	0.06	0.05	0.05
12.700	0.04	0.04	0.04	0.03	0.03
12.950	0.03	0.03	0.03	0.03	0.02
13.200	0.02	0.02	0.02	0.02	0.02
13.450	0.02	0.02	0.02	0.02	0.02
13.700	0.02	0.01	0.01	0.01	0.01
13.950	0.01	0.01	0.01	0.01	0.01
14.200	0.01	0.01	0.01	0.01	0.01
14.450	0.01	0.01	0.01	0.01	0.01
14.700	0.01	0.01	0.01	0.01	0.01
14.950	0.01	0.01	0.01	0.01	0.01
15.200	0.01	0.01	0.01	0.01	0.01
15.450	0.01	0.01	0.01	0.01	0.01
15.700	0.01	0.01	0.01	0.01	0.01
15.950	0.01	0.01	0.01	0.01	0.01
16.200	0.01	0.01	0.01	0.01	0.01
16.450	0.01	0.01	0.01	0.01	0.01
16.700	0.01	0.01	0.01	0.01	0.01
16.950	0.01	0.01	0.01	0.01	0.01
17.200	0.01	0.01	0.01	0.01	0.01
17.450	0.01	0.01	0.01	0.01	0.01
17.700	0.01	0.01	0.01	0.01	0.01
17.950	0.01	0.01	0.01	0.01	0.01
18.200	0.01	0.01	0.01	0.01	0.01
18.450	0.01	0.01	0.01	0.01	0.01
18.700	0.01	0.01	0.01	0.00	0.00
18.950	0.00	0.00	0.00	0.00	0.00
19.200	0.00	0.00	0.00	0.00	0.00
19.450	0.00	0.00	0.00	0.00	0.00
19.700	0.00	0.00	0.00	0.00	0.00
19.950	0.00	0.00	0.00	0.00	0.00
20.200	0.00	0.00	0.00	0.00	0.00
20.450	0.00	0.00	0.00	0.00	0.00
20.700	0.00	0.00	0.00	0.00	0.00
20.950	0.00	0.00	0.00	0.00	0.00
21.200	0.00	0.00	0.00	0.00	0.00

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.450	0.00	0.00	0.00	0.00	0.00
21.700	0.00	0.00	0.00	0.00	0.00
21.950	0.00	0.00	0.00	0.00	0.00
22.200	0.00	0.00	0.00	0.00	0.00
22.450	0.00	0.00	0.00	0.00	0.00
22.700	0.00	0.00	0.00	0.00	0.00
22.950	0.00	0.00	0.00	0.00	0.00
23.200	0.00	0.00	0.00	0.00	0.00
23.450	0.00	0.00	0.00	0.00	0.00
23.700	0.00	0.00	0.00	0.00	0.00
23.950	0.00	0.00	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-2-P
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.280 hours
Area (User Defined)	0.131 acres

Computational Time Increment	0.037 hours
Time to Peak (Computed)	12.227 hours
Flow (Peak, Computed)	0.18 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	0.18 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	0.131 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.65 in
Runoff Volume (Pervious)	787.239 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	783.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.280 hours
Computational Time Increment	0.037 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	0.53 ft³/s
Unit peak time, Tp	0.186 hours
Unit receding limb, Tr	0.746 hours
Total unit time, Tb	0.932 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.280 hours
Area (User Defined)	0.131 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.350	0.00	0.00	0.00	0.00	0.00
11.600	0.01	0.01	0.01	0.01	0.02
11.850	0.02	0.03	0.04	0.05	0.08
12.100	0.11	0.15	0.18	0.18	0.17
12.350	0.15	0.13	0.11	0.10	0.09
12.600	0.08	0.07	0.06	0.06	0.05
12.850	0.05	0.05	0.04	0.04	0.04
13.100	0.04	0.04	0.03	0.03	0.03
13.350	0.03	0.03	0.03	0.03	0.03
13.600	0.02	0.02	0.02	0.02	0.02
13.850	0.02	0.02	0.02	0.02	0.02
14.100	0.02	0.02	0.02	0.02	0.02
14.350	0.02	0.02	0.02	0.02	0.02
14.600	0.02	0.02	0.02	0.01	0.01
14.850	0.01	0.01	0.01	0.01	0.01
15.100	0.01	0.01	0.01	0.01	0.01
15.350	0.01	0.01	0.01	0.01	0.01
15.600	0.01	0.01	0.01	0.01	0.01
15.850	0.01	0.01	0.01	0.01	0.01
16.100	0.01	0.01	0.01	0.01	0.01
16.350	0.01	0.01	0.01	0.01	0.01
16.600	0.01	0.01	0.01	0.01	0.01
16.850	0.01	0.01	0.01	0.01	0.01
17.100	0.01	0.01	0.01	0.01	0.01
17.350	0.01	0.01	0.01	0.01	0.01
17.600	0.01	0.01	0.01	0.01	0.01
17.850	0.01	0.01	0.01	0.01	0.01
18.100	0.01	0.01	0.01	0.01	0.01
18.350	0.01	0.01	0.01	0.01	0.01
18.600	0.01	0.01	0.01	0.01	0.01
18.850	0.01	0.01	0.01	0.01	0.01
19.100	0.01	0.01	0.01	0.01	0.01
19.350	0.01	0.01	0.01	0.01	0.01
19.600	0.01	0.01	0.01	0.01	0.01
19.850	0.01	0.01	0.01	0.01	0.01
20.100	0.01	0.01	0.01	0.01	0.01
20.350	0.01	0.01	0.01	0.01	0.01
20.600	0.01	0.01	0.01	0.01	0.01
20.850	0.01	0.01	0.01	0.01	0.01

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.100	0.01	0.01	0.01	0.01	0.01
21.350	0.01	0.01	0.01	0.01	0.01
21.600	0.01	0.01	0.01	0.01	0.01
21.850	0.01	0.01	0.01	0.01	0.01
22.100	0.01	0.01	0.01	0.01	0.01
22.350	0.01	0.01	0.01	0.01	0.01
22.600	0.01	0.01	0.01	0.01	0.01
22.850	0.01	0.01	0.01	0.01	0.01
23.100	0.01	0.01	0.01	0.01	0.01
23.350	0.01	0.01	0.01	0.01	0.01
23.600	0.01	0.01	0.01	0.01	0.00
23.850	0.00	0.00	0.00	0.01	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-2-P
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.280 hours
Area (User Defined)	0.131 acres

Computational Time Increment	0.037 hours
Time to Peak (Computed)	12.227 hours
Flow (Peak, Computed)	0.25 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	0.25 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	0.131 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.19 in
Runoff Volume (Pervious)	1,045.813 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1,041.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.280 hours
Computational Time Increment	0.037 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	0.53 ft³/s
Unit peak time, Tp	0.186 hours
Unit receding limb, Tr	0.746 hours
Total unit time, Tb	0.932 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.280 hours
Area (User Defined)	0.131 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.000	0.00	0.00	0.00	0.00	0.00
11.250	0.00	0.00	0.01	0.01	0.01
11.500	0.01	0.01	0.01	0.02	0.02
11.750	0.02	0.03	0.04	0.05	0.06
12.000	0.08	0.11	0.16	0.21	0.24
12.250	0.25	0.23	0.20	0.17	0.15
12.500	0.13	0.12	0.11	0.09	0.08
12.750	0.07	0.07	0.06	0.06	0.06
13.000	0.05	0.05	0.05	0.05	0.04
13.250	0.04	0.04	0.04	0.04	0.03
13.500	0.03	0.03	0.03	0.03	0.03
13.750	0.03	0.03	0.03	0.03	0.02
14.000	0.02	0.02	0.02	0.02	0.02
14.250	0.02	0.02	0.02	0.02	0.02
14.500	0.02	0.02	0.02	0.02	0.02
14.750	0.02	0.02	0.02	0.02	0.02
15.000	0.02	0.02	0.02	0.02	0.02
15.250	0.02	0.02	0.01	0.01	0.01
15.500	0.01	0.01	0.01	0.01	0.01
15.750	0.01	0.01	0.01	0.01	0.01
16.000	0.01	0.01	0.01	0.01	0.01
16.250	0.01	0.01	0.01	0.01	0.01
16.500	0.01	0.01	0.01	0.01	0.01
16.750	0.01	0.01	0.01	0.01	0.01
17.000	0.01	0.01	0.01	0.01	0.01
17.250	0.01	0.01	0.01	0.01	0.01
17.500	0.01	0.01	0.01	0.01	0.01
17.750	0.01	0.01	0.01	0.01	0.01
18.000	0.01	0.01	0.01	0.01	0.01
18.250	0.01	0.01	0.01	0.01	0.01
18.500	0.01	0.01	0.01	0.01	0.01
18.750	0.01	0.01	0.01	0.01	0.01
19.000	0.01	0.01	0.01	0.01	0.01
19.250	0.01	0.01	0.01	0.01	0.01
19.500	0.01	0.01	0.01	0.01	0.01
19.750	0.01	0.01	0.01	0.01	0.01
20.000	0.01	0.01	0.01	0.01	0.01
20.250	0.01	0.01	0.01	0.01	0.01
20.500	0.01	0.01	0.01	0.01	0.01

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.750	0.01	0.01	0.01	0.01	0.01
21.000	0.01	0.01	0.01	0.01	0.01
21.250	0.01	0.01	0.01	0.01	0.01
21.500	0.01	0.01	0.01	0.01	0.01
21.750	0.01	0.01	0.01	0.01	0.01
22.000	0.01	0.01	0.01	0.01	0.01
22.250	0.01	0.01	0.01	0.01	0.01
22.500	0.01	0.01	0.01	0.01	0.01
22.750	0.01	0.01	0.01	0.01	0.01
23.000	0.01	0.01	0.01	0.01	0.01
23.250	0.01	0.01	0.01	0.01	0.01
23.500	0.01	0.01	0.01	0.01	0.01
23.750	0.01	0.01	0.01	0.01	0.01
24.000	0.01	(N/A)	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-2-P
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.280 hours
Area (User Defined)	0.131 acres

Computational Time Increment	0.037 hours
Time to Peak (Computed)	12.227 hours
Flow (Peak, Computed)	0.33 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	0.33 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	0.131 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.83 in
Runoff Volume (Pervious)	1,346.639 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1,340.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.280 hours
Computational Time Increment	0.037 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	0.53 ft³/s
Unit peak time, Tp	0.186 hours
Unit receding limb, Tr	0.746 hours
Total unit time, Tb	0.932 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.280 hours
Area (User Defined)	0.131 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.550	0.00	0.00	0.00	0.00	0.00
10.800	0.00	0.00	0.00	0.00	0.00
11.050	0.01	0.01	0.01	0.01	0.01
11.300	0.01	0.01	0.01	0.02	0.02
11.550	0.02	0.02	0.03	0.03	0.04
11.800	0.05	0.05	0.07	0.09	0.11
12.050	0.15	0.21	0.28	0.32	0.33
12.300	0.30	0.26	0.22	0.19	0.17
12.550	0.15	0.13	0.12	0.11	0.09
12.800	0.09	0.08	0.07	0.07	0.07
13.050	0.06	0.06	0.06	0.05	0.05
13.300	0.05	0.05	0.04	0.04	0.04
13.550	0.04	0.04	0.04	0.03	0.03
13.800	0.03	0.03	0.03	0.03	0.03
14.050	0.03	0.03	0.03	0.03	0.03
14.300	0.03	0.03	0.03	0.03	0.03
14.550	0.03	0.02	0.02	0.02	0.02
14.800	0.02	0.02	0.02	0.02	0.02
15.050	0.02	0.02	0.02	0.02	0.02
15.300	0.02	0.02	0.02	0.02	0.02
15.550	0.02	0.02	0.02	0.02	0.02
15.800	0.02	0.02	0.02	0.02	0.02
16.050	0.02	0.02	0.02	0.02	0.02
16.300	0.02	0.02	0.02	0.02	0.02
16.550	0.02	0.02	0.02	0.02	0.01
16.800	0.01	0.01	0.01	0.01	0.01
17.050	0.01	0.01	0.01	0.01	0.01
17.300	0.01	0.01	0.01	0.01	0.01
17.550	0.01	0.01	0.01	0.01	0.01
17.800	0.01	0.01	0.01	0.01	0.01
18.050	0.01	0.01	0.01	0.01	0.01
18.300	0.01	0.01	0.01	0.01	0.01
18.550	0.01	0.01	0.01	0.01	0.01
18.800	0.01	0.01	0.01	0.01	0.01
19.050	0.01	0.01	0.01	0.01	0.01
19.300	0.01	0.01	0.01	0.01	0.01
19.550	0.01	0.01	0.01	0.01	0.01
19.800	0.01	0.01	0.01	0.01	0.01
20.050	0.01	0.01	0.01	0.01	0.01

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.300	0.01	0.01	0.01	0.01	0.01
20.550	0.01	0.01	0.01	0.01	0.01
20.800	0.01	0.01	0.01	0.01	0.01
21.050	0.01	0.01	0.01	0.01	0.01
21.300	0.01	0.01	0.01	0.01	0.01
21.550	0.01	0.01	0.01	0.01	0.01
21.800	0.01	0.01	0.01	0.01	0.01
22.050	0.01	0.01	0.01	0.01	0.01
22.300	0.01	0.01	0.01	0.01	0.01
22.550	0.01	0.01	0.01	0.01	0.01
22.800	0.01	0.01	0.01	0.01	0.01
23.050	0.01	0.01	0.01	0.01	0.01
23.300	0.01	0.01	0.01	0.01	0.01
23.550	0.01	0.01	0.01	0.01	0.01
23.800	0.01	0.01	0.01	0.01	0.01

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-3-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.194 hours
Area (User Defined)	1.969 acres

Computational Time Increment	0.026 hours
Time to Peak (Computed)	12.150 hours
Flow (Peak, Computed)	4.46 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	4.46 ft³/s

Drainage Area	
SCS CN (Composite)	95.988
Area (User Defined)	1.969 acres
Maximum Retention (Pervious)	0.42 in
Maximum Retention (Pervious, 20 percent)	0.08 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.29 in
Runoff Volume (Pervious)	16,335.167 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	16,306.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.194 hours
Computational Time Increment	0.026 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	11.48 ft³/s
Unit peak time, Tp	0.130 hours
Unit receding limb, Tr	0.518 hours
Total unit time, Tb	0.648 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.194 hours
Area (User Defined)	1.969 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
2.850	0.00	0.00	0.00	0.00	0.00
3.100	0.00	0.00	0.00	0.01	0.01
3.350	0.01	0.01	0.01	0.01	0.01
3.600	0.01	0.01	0.01	0.01	0.01
3.850	0.01	0.01	0.01	0.01	0.01
4.100	0.01	0.02	0.02	0.02	0.02
4.350	0.02	0.02	0.02	0.02	0.02
4.600	0.02	0.02	0.02	0.02	0.02
4.850	0.02	0.02	0.02	0.02	0.03
5.100	0.03	0.03	0.03	0.03	0.03
5.350	0.03	0.03	0.03	0.03	0.03
5.600	0.03	0.03	0.03	0.03	0.03
5.850	0.03	0.03	0.03	0.04	0.04
6.100	0.04	0.04	0.04	0.04	0.04
6.350	0.04	0.04	0.04	0.04	0.04
6.600	0.05	0.05	0.05	0.05	0.05
6.850	0.05	0.05	0.05	0.05	0.05
7.100	0.06	0.06	0.06	0.06	0.06
7.350	0.06	0.06	0.06	0.06	0.07
7.600	0.07	0.07	0.07	0.07	0.07
7.850	0.07	0.07	0.07	0.08	0.08
8.100	0.08	0.08	0.08	0.08	0.08
8.350	0.08	0.08	0.09	0.09	0.09
8.600	0.09	0.09	0.09	0.09	0.09
8.850	0.10	0.10	0.10	0.10	0.10
9.100	0.10	0.11	0.11	0.11	0.12
9.350	0.12	0.12	0.13	0.13	0.13
9.600	0.14	0.14	0.14	0.15	0.15
9.850	0.15	0.16	0.16	0.17	0.17
10.100	0.17	0.18	0.18	0.19	0.19
10.350	0.19	0.20	0.20	0.21	0.21
10.600	0.22	0.23	0.24	0.25	0.27
10.850	0.28	0.29	0.31	0.32	0.34
11.100	0.36	0.38	0.40	0.43	0.45
11.350	0.48	0.51	0.53	0.56	0.60
11.600	0.69	0.80	0.89	0.97	1.09
11.850	1.26	1.48	1.79	2.26	2.91
12.100	3.80	4.46	4.21	3.41	2.65
12.350	2.13	1.75	1.47	1.29	1.16

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.600	1.02	0.88	0.77	0.71	0.66
12.850	0.63	0.59	0.56	0.53	0.50
13.100	0.48	0.45	0.43	0.41	0.39
13.350	0.37	0.36	0.34	0.33	0.31
13.600	0.30	0.28	0.27	0.27	0.26
13.850	0.26	0.25	0.25	0.24	0.24
14.100	0.24	0.23	0.23	0.22	0.22
14.350	0.22	0.21	0.21	0.20	0.20
14.600	0.20	0.19	0.19	0.18	0.18
14.850	0.18	0.17	0.17	0.16	0.16
15.100	0.16	0.15	0.15	0.15	0.15
15.350	0.15	0.14	0.14	0.14	0.14
15.600	0.14	0.14	0.14	0.14	0.14
15.850	0.13	0.13	0.13	0.13	0.13
16.100	0.13	0.13	0.13	0.13	0.13
16.350	0.12	0.12	0.12	0.12	0.12
16.600	0.12	0.12	0.12	0.12	0.11
16.850	0.11	0.11	0.11	0.11	0.11
17.100	0.11	0.11	0.11	0.11	0.10
17.350	0.10	0.10	0.10	0.10	0.10
17.600	0.10	0.10	0.10	0.10	0.09
17.850	0.09	0.09	0.09	0.09	0.09
18.100	0.09	0.09	0.09	0.09	0.09
18.350	0.08	0.08	0.08	0.08	0.08
18.600	0.08	0.08	0.08	0.08	0.08
18.850	0.08	0.08	0.08	0.08	0.08
19.100	0.08	0.08	0.08	0.08	0.08
19.350	0.08	0.08	0.08	0.08	0.08
19.600	0.08	0.08	0.08	0.08	0.08
19.850	0.08	0.08	0.08	0.08	0.08
20.100	0.08	0.08	0.07	0.07	0.07
20.350	0.07	0.07	0.07	0.07	0.07
20.600	0.07	0.07	0.07	0.07	0.07
20.850	0.07	0.07	0.07	0.07	0.07
21.100	0.07	0.07	0.07	0.07	0.07
21.350	0.07	0.07	0.07	0.07	0.07
21.600	0.07	0.07	0.07	0.07	0.07
21.850	0.07	0.07	0.07	0.07	0.07
22.100	0.06	0.06	0.06	0.06	0.06
22.350	0.06	0.06	0.06	0.06	0.06
22.600	0.06	0.06	0.06	0.06	0.06
22.850	0.06	0.06	0.06	0.06	0.06
23.100	0.06	0.06	0.06	0.06	0.06
23.350	0.06	0.06	0.06	0.06	0.06
23.600	0.06	0.06	0.06	0.06	0.06
23.850	0.06	0.06	0.06	0.06	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-3-I
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.194 hours
Area (User Defined)	1.969 acres

Computational Time Increment	0.026 hours
Time to Peak (Computed)	12.150 hours
Flow (Peak, Computed)	5.45 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	5.44 ft³/s

Drainage Area	
SCS CN (Composite)	95.988
Area (User Defined)	1.969 acres
Maximum Retention (Pervious)	0.42 in
Maximum Retention (Pervious, 20 percent)	0.08 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.83 in
Runoff Volume (Pervious)	20,204.322 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	20,170.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.194 hours
Computational Time Increment	0.026 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	11.48 ft³/s
Unit peak time, Tp	0.130 hours
Unit receding limb, Tr	0.518 hours
Total unit time, Tb	0.648 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.194 hours
Area (User Defined)	1.969 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
2.400	0.00	0.00	0.00	0.00	0.00
2.650	0.00	0.00	0.01	0.01	0.01
2.900	0.01	0.01	0.01	0.01	0.01
3.150	0.01	0.01	0.01	0.01	0.01
3.400	0.02	0.02	0.02	0.02	0.02
3.650	0.02	0.02	0.02	0.02	0.02
3.900	0.02	0.02	0.02	0.02	0.03
4.150	0.03	0.03	0.03	0.03	0.03
4.400	0.03	0.03	0.03	0.03	0.03
4.650	0.03	0.03	0.03	0.04	0.04
4.900	0.04	0.04	0.04	0.04	0.04
5.150	0.04	0.04	0.04	0.04	0.04
5.400	0.04	0.04	0.04	0.05	0.05
5.650	0.05	0.05	0.05	0.05	0.05
5.900	0.05	0.05	0.05	0.05	0.05
6.150	0.05	0.05	0.06	0.06	0.06
6.400	0.06	0.06	0.06	0.06	0.06
6.650	0.07	0.07	0.07	0.07	0.07
6.900	0.07	0.07	0.07	0.08	0.08
7.150	0.08	0.08	0.08	0.08	0.08
7.400	0.08	0.09	0.09	0.09	0.09
7.650	0.09	0.09	0.09	0.10	0.10
7.900	0.10	0.10	0.10	0.10	0.10
8.150	0.11	0.11	0.11	0.11	0.11
8.400	0.11	0.11	0.12	0.12	0.12
8.650	0.12	0.12	0.12	0.12	0.13
8.900	0.13	0.13	0.13	0.13	0.14
9.150	0.14	0.14	0.15	0.15	0.15
9.400	0.16	0.16	0.17	0.17	0.18
9.650	0.18	0.19	0.19	0.19	0.20
9.900	0.20	0.21	0.21	0.22	0.22
10.150	0.23	0.23	0.24	0.24	0.25
10.400	0.25	0.26	0.26	0.27	0.28
10.650	0.29	0.31	0.32	0.34	0.35
10.900	0.37	0.39	0.41	0.43	0.45
11.150	0.48	0.51	0.54	0.57	0.60
11.400	0.64	0.67	0.70	0.75	0.86
11.650	0.99	1.10	1.21	1.36	1.56
11.900	1.83	2.20	2.78	3.57	4.65

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.150	5.44	5.13	4.16	3.23	2.59
12.400	2.12	1.79	1.56	1.40	1.23
12.650	1.07	0.94	0.86	0.80	0.76
12.900	0.72	0.68	0.65	0.61	0.58
13.150	0.54	0.52	0.49	0.47	0.45
13.400	0.43	0.42	0.40	0.38	0.36
13.650	0.34	0.33	0.32	0.32	0.31
13.900	0.30	0.30	0.29	0.29	0.28
14.150	0.28	0.28	0.27	0.27	0.26
14.400	0.26	0.25	0.25	0.24	0.24
14.650	0.23	0.23	0.22	0.22	0.21
14.900	0.21	0.20	0.20	0.19	0.19
15.150	0.19	0.18	0.18	0.18	0.18
15.400	0.17	0.17	0.17	0.17	0.17
15.650	0.17	0.17	0.17	0.16	0.16
15.900	0.16	0.16	0.16	0.16	0.16
16.150	0.16	0.15	0.15	0.15	0.15
16.400	0.15	0.15	0.15	0.15	0.14
16.650	0.14	0.14	0.14	0.14	0.14
16.900	0.14	0.14	0.13	0.13	0.13
17.150	0.13	0.13	0.13	0.13	0.12
17.400	0.12	0.12	0.12	0.12	0.12
17.650	0.12	0.12	0.11	0.11	0.11
17.900	0.11	0.11	0.11	0.11	0.11
18.150	0.10	0.10	0.10	0.10	0.10
18.400	0.10	0.10	0.10	0.10	0.10
18.650	0.10	0.10	0.10	0.10	0.10
18.900	0.10	0.10	0.10	0.10	0.10
19.150	0.10	0.10	0.10	0.10	0.10
19.400	0.10	0.10	0.09	0.09	0.09
19.650	0.09	0.09	0.09	0.09	0.09
19.900	0.09	0.09	0.09	0.09	0.09
20.150	0.09	0.09	0.09	0.09	0.09
20.400	0.09	0.09	0.09	0.09	0.09
20.650	0.09	0.09	0.09	0.09	0.09
20.900	0.09	0.09	0.09	0.09	0.08
21.150	0.08	0.08	0.08	0.08	0.08
21.400	0.08	0.08	0.08	0.08	0.08
21.650	0.08	0.08	0.08	0.08	0.08
21.900	0.08	0.08	0.08	0.08	0.08
22.150	0.08	0.08	0.08	0.08	0.08
22.400	0.08	0.08	0.08	0.08	0.08
22.650	0.08	0.07	0.07	0.07	0.07
22.900	0.07	0.07	0.07	0.07	0.07
23.150	0.07	0.07	0.07	0.07	0.07
23.400	0.07	0.07	0.07	0.07	0.07
23.650	0.07	0.07	0.07	0.07	0.07
23.900	0.07	0.07	0.07	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-3-I
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.194 hours
Area (User Defined)	1.969 acres

Computational Time Increment	0.026 hours
Time to Peak (Computed)	12.150 hours
Flow (Peak, Computed)	6.95 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	6.95 ft³/s

Drainage Area	
SCS CN (Composite)	95.988
Area (User Defined)	1.969 acres
Maximum Retention (Pervious)	0.42 in
Maximum Retention (Pervious, 20 percent)	0.08 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.66 in
Runoff Volume (Pervious)	26,157.300 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	26,114.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.194 hours
Computational Time Increment	0.026 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	11.48 ft³/s
Unit peak time, Tp	0.130 hours
Unit receding limb, Tr	0.518 hours
Total unit time, Tb	0.648 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.194 hours
Area (User Defined)	1.969 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.950	0.00	0.00	0.00	0.00	0.00
2.200	0.01	0.01	0.01	0.01	0.01
2.450	0.01	0.01	0.01	0.01	0.02
2.700	0.02	0.02	0.02	0.02	0.02
2.950	0.02	0.02	0.02	0.02	0.03
3.200	0.03	0.03	0.03	0.03	0.03
3.450	0.03	0.03	0.03	0.03	0.04
3.700	0.04	0.04	0.04	0.04	0.04
3.950	0.04	0.04	0.04	0.04	0.05
4.200	0.05	0.05	0.05	0.05	0.05
4.450	0.05	0.05	0.05	0.05	0.05
4.700	0.06	0.06	0.06	0.06	0.06
4.950	0.06	0.06	0.06	0.06	0.06
5.200	0.06	0.06	0.07	0.07	0.07
5.450	0.07	0.07	0.07	0.07	0.07
5.700	0.07	0.07	0.07	0.07	0.08
5.950	0.08	0.08	0.08	0.08	0.08
6.200	0.08	0.08	0.08	0.09	0.09
6.450	0.09	0.09	0.09	0.09	0.10
6.700	0.10	0.10	0.10	0.10	0.10
6.950	0.11	0.11	0.11	0.11	0.11
7.200	0.11	0.12	0.12	0.12	0.12
7.450	0.12	0.12	0.13	0.13	0.13
7.700	0.13	0.13	0.14	0.14	0.14
7.950	0.14	0.14	0.14	0.15	0.15
8.200	0.15	0.15	0.15	0.16	0.16
8.450	0.16	0.16	0.16	0.16	0.17
8.700	0.17	0.17	0.17	0.17	0.18
8.950	0.18	0.18	0.18	0.19	0.19
9.200	0.19	0.20	0.21	0.21	0.22
9.450	0.22	0.23	0.23	0.24	0.25
9.700	0.25	0.26	0.26	0.27	0.27
9.950	0.28	0.29	0.29	0.30	0.30
10.200	0.31	0.32	0.32	0.33	0.34
10.450	0.34	0.35	0.36	0.37	0.39
10.700	0.41	0.43	0.45	0.47	0.49
10.950	0.51	0.54	0.56	0.59	0.63
11.200	0.67	0.71	0.75	0.79	0.83
11.450	0.87	0.91	0.98	1.12	1.29

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.700	1.43	1.56	1.75	2.01	2.35
11.950	2.83	3.57	4.57	5.94	6.95
12.200	6.54	5.29	4.11	3.30	2.70
12.450	2.27	1.98	1.78	1.57	1.35
12.700	1.19	1.09	1.02	0.96	0.91
12.950	0.86	0.82	0.77	0.73	0.69
13.200	0.65	0.63	0.60	0.57	0.55
13.450	0.53	0.50	0.48	0.46	0.44
13.700	0.42	0.41	0.40	0.39	0.39
13.950	0.38	0.37	0.37	0.36	0.35
14.200	0.35	0.34	0.34	0.33	0.32
14.450	0.32	0.31	0.31	0.30	0.29
14.700	0.29	0.28	0.28	0.27	0.26
14.950	0.26	0.25	0.25	0.24	0.23
15.200	0.23	0.23	0.22	0.22	0.22
15.450	0.22	0.22	0.22	0.21	0.21
15.700	0.21	0.21	0.21	0.21	0.20
15.950	0.20	0.20	0.20	0.20	0.20
16.200	0.20	0.19	0.19	0.19	0.19
16.450	0.19	0.19	0.18	0.18	0.18
16.700	0.18	0.18	0.18	0.17	0.17
16.950	0.17	0.17	0.17	0.17	0.16
17.200	0.16	0.16	0.16	0.16	0.16
17.450	0.15	0.15	0.15	0.15	0.15
17.700	0.15	0.15	0.14	0.14	0.14
17.950	0.14	0.14	0.14	0.13	0.13
18.200	0.13	0.13	0.13	0.13	0.13
18.450	0.13	0.13	0.13	0.13	0.13
18.700	0.13	0.13	0.13	0.13	0.12
18.950	0.12	0.12	0.12	0.12	0.12
19.200	0.12	0.12	0.12	0.12	0.12
19.450	0.12	0.12	0.12	0.12	0.12
19.700	0.12	0.12	0.12	0.12	0.12
19.950	0.12	0.12	0.12	0.12	0.11
20.200	0.11	0.11	0.11	0.11	0.11
20.450	0.11	0.11	0.11	0.11	0.11
20.700	0.11	0.11	0.11	0.11	0.11
20.950	0.11	0.11	0.11	0.11	0.11
21.200	0.11	0.11	0.11	0.11	0.11
21.450	0.10	0.10	0.10	0.10	0.10
21.700	0.10	0.10	0.10	0.10	0.10
21.950	0.10	0.10	0.10	0.10	0.10
22.200	0.10	0.10	0.10	0.10	0.10
22.450	0.10	0.10	0.10	0.10	0.09
22.700	0.09	0.09	0.09	0.09	0.09
22.950	0.09	0.09	0.09	0.09	0.09
23.200	0.09	0.09	0.09	0.09	0.09
23.450	0.09	0.09	0.09	0.09	0.09

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.700	0.09	0.09	0.09	0.09	0.08
23.950	0.09	0.09	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-3-I
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.194 hours
Area (User Defined)	1.969 acres

Computational Time Increment	0.026 hours
Time to Peak (Computed)	12.150 hours
Flow (Peak, Computed)	8.19 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	8.18 ft³/s

Drainage Area	
SCS CN (Composite)	95.988
Area (User Defined)	1.969 acres
Maximum Retention (Pervious)	0.42 in
Maximum Retention (Pervious, 20 percent)	0.08 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.35 in
Runoff Volume (Pervious)	31,108.364 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	31,057.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.194 hours
Computational Time Increment	0.026 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	11.48 ft³/s
Unit peak time, Tp	0.130 hours
Unit receding limb, Tr	0.518 hours
Total unit time, Tb	0.648 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.194 hours
Area (User Defined)	1.969 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.700	0.00	0.00	0.00	0.00	0.01
1.950	0.01	0.01	0.01	0.01	0.01
2.200	0.01	0.02	0.02	0.02	0.02
2.450	0.02	0.02	0.02	0.03	0.03
2.700	0.03	0.03	0.03	0.03	0.03
2.950	0.03	0.04	0.04	0.04	0.04
3.200	0.04	0.04	0.04	0.04	0.05
3.450	0.05	0.05	0.05	0.05	0.05
3.700	0.05	0.05	0.05	0.06	0.06
3.950	0.06	0.06	0.06	0.06	0.06
4.200	0.06	0.06	0.07	0.07	0.07
4.450	0.07	0.07	0.07	0.07	0.07
4.700	0.07	0.08	0.08	0.08	0.08
4.950	0.08	0.08	0.08	0.08	0.08
5.200	0.08	0.09	0.09	0.09	0.09
5.450	0.09	0.09	0.09	0.09	0.09
5.700	0.09	0.09	0.10	0.10	0.10
5.950	0.10	0.10	0.10	0.10	0.10
6.200	0.10	0.11	0.11	0.11	0.11
6.450	0.11	0.12	0.12	0.12	0.12
6.700	0.12	0.13	0.13	0.13	0.13
6.950	0.13	0.14	0.14	0.14	0.14
7.200	0.14	0.15	0.15	0.15	0.15
7.450	0.15	0.16	0.16	0.16	0.16
7.700	0.16	0.17	0.17	0.17	0.17
7.950	0.17	0.18	0.18	0.18	0.18
8.200	0.19	0.19	0.19	0.19	0.19
8.450	0.20	0.20	0.20	0.20	0.20
8.700	0.21	0.21	0.21	0.21	0.22
8.950	0.22	0.22	0.22	0.23	0.23
9.200	0.24	0.24	0.25	0.26	0.26
9.450	0.27	0.28	0.28	0.29	0.30
9.700	0.31	0.31	0.32	0.33	0.33
9.950	0.34	0.35	0.35	0.36	0.37
10.200	0.38	0.38	0.39	0.40	0.40
10.450	0.41	0.42	0.43	0.44	0.46
10.700	0.49	0.51	0.54	0.56	0.59
10.950	0.62	0.64	0.67	0.71	0.75
11.200	0.80	0.84	0.89	0.94	0.99

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.450	1.04	1.09	1.16	1.33	1.53
11.700	1.70	1.86	2.08	2.38	2.79
11.950	3.35	4.22	5.40	7.01	8.18
12.200	7.70	6.23	4.83	3.88	3.17
12.450	2.66	2.33	2.09	1.84	1.59
12.700	1.40	1.28	1.20	1.13	1.07
12.950	1.01	0.96	0.91	0.86	0.81
13.200	0.77	0.73	0.70	0.67	0.65
13.450	0.62	0.59	0.56	0.54	0.51
13.700	0.49	0.48	0.47	0.46	0.45
13.950	0.44	0.44	0.43	0.42	0.42
14.200	0.41	0.40	0.39	0.39	0.38
14.450	0.37	0.37	0.36	0.35	0.34
14.700	0.34	0.33	0.32	0.32	0.31
14.950	0.30	0.29	0.29	0.28	0.27
15.200	0.27	0.27	0.26	0.26	0.26
15.450	0.26	0.25	0.25	0.25	0.25
15.700	0.25	0.25	0.24	0.24	0.24
15.950	0.24	0.24	0.23	0.23	0.23
16.200	0.23	0.23	0.22	0.22	0.22
16.450	0.22	0.22	0.22	0.21	0.21
16.700	0.21	0.21	0.21	0.20	0.20
16.950	0.20	0.20	0.20	0.19	0.19
17.200	0.19	0.19	0.19	0.18	0.18
17.450	0.18	0.18	0.18	0.18	0.17
17.700	0.17	0.17	0.17	0.17	0.16
17.950	0.16	0.16	0.16	0.16	0.16
18.200	0.15	0.15	0.15	0.15	0.15
18.450	0.15	0.15	0.15	0.15	0.15
18.700	0.15	0.15	0.15	0.15	0.15
18.950	0.15	0.15	0.14	0.14	0.14
19.200	0.14	0.14	0.14	0.14	0.14
19.450	0.14	0.14	0.14	0.14	0.14
19.700	0.14	0.14	0.14	0.14	0.14
19.950	0.14	0.14	0.14	0.13	0.13
20.200	0.13	0.13	0.13	0.13	0.13
20.450	0.13	0.13	0.13	0.13	0.13
20.700	0.13	0.13	0.13	0.13	0.13
20.950	0.13	0.13	0.13	0.13	0.13
21.200	0.12	0.12	0.12	0.12	0.12
21.450	0.12	0.12	0.12	0.12	0.12
21.700	0.12	0.12	0.12	0.12	0.12
21.950	0.12	0.12	0.12	0.12	0.12
22.200	0.12	0.12	0.11	0.11	0.11
22.450	0.11	0.11	0.11	0.11	0.11
22.700	0.11	0.11	0.11	0.11	0.11
22.950	0.11	0.11	0.11	0.11	0.11
23.200	0.11	0.11	0.10	0.10	0.10

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.450	0.10	0.10	0.10	0.10	0.10
23.700	0.10	0.10	0.10	0.10	0.10
23.950	0.10	0.10	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-3-I
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.194 hours
Area (User Defined)	1.969 acres

Computational Time Increment	0.026 hours
Time to Peak (Computed)	12.150 hours
Flow (Peak, Computed)	9.97 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	9.97 ft³/s

Drainage Area	
SCS CN (Composite)	95.988
Area (User Defined)	1.969 acres
Maximum Retention (Pervious)	0.42 in
Maximum Retention (Pervious, 20 percent)	0.08 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.36 in
Runoff Volume (Pervious)	38,287.724 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	38,226.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.194 hours
Computational Time Increment	0.026 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	11.48 ft³/s
Unit peak time, Tp	0.130 hours
Unit receding limb, Tr	0.518 hours
Total unit time, Tb	0.648 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.194 hours
Area (User Defined)	1.969 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.400	0.00	0.00	0.00	0.00	0.01
1.650	0.01	0.01	0.01	0.01	0.02
1.900	0.02	0.02	0.02	0.02	0.03
2.150	0.03	0.03	0.03	0.03	0.03
2.400	0.04	0.04	0.04	0.04	0.04
2.650	0.04	0.05	0.05	0.05	0.05
2.900	0.05	0.05	0.06	0.06	0.06
3.150	0.06	0.06	0.06	0.07	0.07
3.400	0.07	0.07	0.07	0.07	0.07
3.650	0.08	0.08	0.08	0.08	0.08
3.900	0.08	0.08	0.09	0.09	0.09
4.150	0.09	0.09	0.09	0.09	0.09
4.400	0.10	0.10	0.10	0.10	0.10
4.650	0.10	0.10	0.10	0.11	0.11
4.900	0.11	0.11	0.11	0.11	0.11
5.150	0.11	0.11	0.12	0.12	0.12
5.400	0.12	0.12	0.12	0.12	0.12
5.650	0.12	0.13	0.13	0.13	0.13
5.900	0.13	0.13	0.13	0.13	0.14
6.150	0.14	0.14	0.14	0.14	0.15
6.400	0.15	0.15	0.15	0.16	0.16
6.650	0.16	0.16	0.16	0.17	0.17
6.900	0.17	0.17	0.18	0.18	0.18
7.150	0.18	0.19	0.19	0.19	0.19
7.400	0.20	0.20	0.20	0.20	0.21
7.650	0.21	0.21	0.21	0.22	0.22
7.900	0.22	0.22	0.23	0.23	0.23
8.150	0.23	0.24	0.24	0.24	0.24
8.400	0.25	0.25	0.25	0.26	0.26
8.650	0.26	0.26	0.27	0.27	0.27
8.900	0.27	0.28	0.28	0.28	0.29
9.150	0.29	0.30	0.31	0.32	0.32
9.400	0.33	0.34	0.35	0.36	0.37
9.650	0.37	0.38	0.39	0.40	0.41
9.900	0.42	0.43	0.43	0.44	0.45
10.150	0.46	0.47	0.48	0.49	0.50
10.400	0.50	0.51	0.52	0.53	0.55
10.650	0.58	0.61	0.64	0.67	0.70
10.900	0.73	0.76	0.80	0.83	0.88

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.150	0.93	0.98	1.04	1.10	1.16
11.400	1.22	1.28	1.34	1.43	1.64
11.650	1.89	2.09	2.28	2.55	2.92
11.900	3.41	4.10	5.15	6.59	8.54
12.150	9.97	9.37	7.58	5.88	4.71
12.400	3.85	3.24	2.83	2.54	2.23
12.650	1.93	1.70	1.55	1.45	1.37
12.900	1.30	1.23	1.16	1.10	1.04
13.150	0.98	0.93	0.89	0.85	0.82
13.400	0.78	0.75	0.72	0.68	0.65
13.650	0.62	0.60	0.58	0.57	0.56
13.900	0.55	0.54	0.53	0.52	0.51
14.150	0.50	0.50	0.49	0.48	0.47
14.400	0.46	0.45	0.44	0.44	0.43
14.650	0.42	0.41	0.40	0.39	0.38
14.900	0.38	0.37	0.36	0.35	0.34
15.150	0.33	0.33	0.32	0.32	0.32
15.400	0.31	0.31	0.31	0.31	0.30
15.650	0.30	0.30	0.30	0.29	0.29
15.900	0.29	0.29	0.29	0.28	0.28
16.150	0.28	0.28	0.28	0.27	0.27
16.400	0.27	0.27	0.26	0.26	0.26
16.650	0.26	0.25	0.25	0.25	0.25
16.900	0.24	0.24	0.24	0.24	0.24
17.150	0.23	0.23	0.23	0.23	0.22
17.400	0.22	0.22	0.22	0.22	0.21
17.650	0.21	0.21	0.21	0.20	0.20
17.900	0.20	0.20	0.19	0.19	0.19
18.150	0.19	0.19	0.19	0.18	0.18
18.400	0.18	0.18	0.18	0.18	0.18
18.650	0.18	0.18	0.18	0.18	0.18
18.900	0.18	0.18	0.18	0.18	0.18
19.150	0.17	0.17	0.17	0.17	0.17
19.400	0.17	0.17	0.17	0.17	0.17
19.650	0.17	0.17	0.17	0.17	0.17
19.900	0.17	0.17	0.16	0.16	0.16
20.150	0.16	0.16	0.16	0.16	0.16
20.400	0.16	0.16	0.16	0.16	0.16
20.650	0.16	0.16	0.16	0.16	0.16
20.900	0.15	0.15	0.15	0.15	0.15
21.150	0.15	0.15	0.15	0.15	0.15
21.400	0.15	0.15	0.15	0.15	0.15
21.650	0.15	0.15	0.14	0.14	0.14
21.900	0.14	0.14	0.14	0.14	0.14
22.150	0.14	0.14	0.14	0.14	0.14
22.400	0.14	0.14	0.14	0.14	0.14
22.650	0.13	0.13	0.13	0.13	0.13
22.900	0.13	0.13	0.13	0.13	0.13

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.150	0.13	0.13	0.13	0.13	0.13
23.400	0.13	0.13	0.13	0.12	0.12
23.650	0.12	0.12	0.12	0.12	0.12
23.900	0.12	0.12	0.13	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-3-I
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.194 hours
Area (User Defined)	1.969 acres

Computational Time Increment	0.026 hours
Time to Peak (Computed)	12.150 hours
Flow (Peak, Computed)	11.47 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	11.46 ft³/s

Drainage Area	
SCS CN (Composite)	95.988
Area (User Defined)	1.969 acres
Maximum Retention (Pervious)	0.42 in
Maximum Retention (Pervious, 20 percent)	0.08 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.20 in
Runoff Volume (Pervious)	44,338.620 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	44,268.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.194 hours
Computational Time Increment	0.026 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	11.48 ft³/s
Unit peak time, Tp	0.130 hours
Unit receding limb, Tr	0.518 hours
Total unit time, Tb	0.648 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.194 hours
Area (User Defined)	1.969 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.250	0.00	0.00	0.00	0.01	0.01
1.500	0.01	0.01	0.02	0.02	0.02
1.750	0.02	0.03	0.03	0.03	0.03
2.000	0.03	0.04	0.04	0.04	0.04
2.250	0.05	0.05	0.05	0.05	0.05
2.500	0.06	0.06	0.06	0.06	0.06
2.750	0.07	0.07	0.07	0.07	0.07
3.000	0.08	0.08	0.08	0.08	0.08
3.250	0.08	0.09	0.09	0.09	0.09
3.500	0.09	0.09	0.10	0.10	0.10
3.750	0.10	0.10	0.10	0.11	0.11
4.000	0.11	0.11	0.11	0.11	0.11
4.250	0.12	0.12	0.12	0.12	0.12
4.500	0.12	0.12	0.13	0.13	0.13
4.750	0.13	0.13	0.13	0.13	0.13
5.000	0.14	0.14	0.14	0.14	0.14
5.250	0.14	0.14	0.14	0.15	0.15
5.500	0.15	0.15	0.15	0.15	0.15
5.750	0.15	0.16	0.16	0.16	0.16
6.000	0.16	0.16	0.16	0.17	0.17
6.250	0.17	0.17	0.18	0.18	0.18
6.500	0.18	0.19	0.19	0.19	0.20
6.750	0.20	0.20	0.20	0.21	0.21
7.000	0.21	0.21	0.22	0.22	0.22
7.250	0.23	0.23	0.23	0.23	0.24
7.500	0.24	0.24	0.25	0.25	0.25
7.750	0.25	0.26	0.26	0.26	0.27
8.000	0.27	0.27	0.28	0.28	0.28
8.250	0.28	0.29	0.29	0.29	0.29
8.500	0.30	0.30	0.30	0.31	0.31
8.750	0.31	0.32	0.32	0.32	0.32
9.000	0.33	0.33	0.34	0.34	0.35
9.250	0.36	0.37	0.38	0.39	0.40
9.500	0.41	0.42	0.43	0.44	0.45
9.750	0.46	0.47	0.48	0.49	0.50
10.000	0.51	0.52	0.53	0.54	0.55
10.250	0.56	0.57	0.58	0.59	0.60
10.500	0.61	0.62	0.64	0.67	0.70
10.750	0.74	0.78	0.81	0.85	0.89

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.000	0.92	0.96	1.02	1.08	1.14
11.250	1.21	1.28	1.34	1.42	1.48
11.500	1.55	1.66	1.89	2.18	2.42
11.750	2.63	2.94	3.37	3.94	4.72
12.000	5.94	7.58	9.83	11.46	10.77
12.250	8.71	6.75	5.42	4.42	3.72
12.500	3.25	2.92	2.56	2.21	1.95
12.750	1.78	1.67	1.57	1.49	1.41
13.000	1.34	1.26	1.19	1.13	1.07
13.250	1.02	0.98	0.94	0.90	0.86
13.500	0.82	0.78	0.75	0.71	0.69
13.750	0.67	0.65	0.64	0.63	0.62
14.000	0.61	0.60	0.59	0.58	0.57
14.250	0.56	0.55	0.54	0.53	0.52
14.500	0.51	0.50	0.49	0.48	0.47
14.750	0.46	0.45	0.44	0.43	0.42
15.000	0.41	0.40	0.39	0.38	0.38
15.250	0.37	0.37	0.36	0.36	0.36
15.500	0.35	0.35	0.35	0.35	0.34
15.750	0.34	0.34	0.34	0.33	0.33
16.000	0.33	0.33	0.32	0.32	0.32
16.250	0.32	0.31	0.31	0.31	0.30
16.500	0.30	0.30	0.30	0.29	0.29
16.750	0.29	0.29	0.28	0.28	0.28
17.000	0.28	0.27	0.27	0.27	0.27
17.250	0.26	0.26	0.26	0.25	0.25
17.500	0.25	0.25	0.24	0.24	0.24
17.750	0.24	0.23	0.23	0.23	0.23
18.000	0.22	0.22	0.22	0.22	0.21
18.250	0.21	0.21	0.21	0.21	0.21
18.500	0.21	0.21	0.21	0.21	0.21
18.750	0.21	0.20	0.20	0.20	0.20
19.000	0.20	0.20	0.20	0.20	0.20
19.250	0.20	0.20	0.20	0.20	0.20
19.500	0.20	0.19	0.19	0.19	0.19
19.750	0.19	0.19	0.19	0.19	0.19
20.000	0.19	0.19	0.19	0.19	0.19
20.250	0.19	0.19	0.18	0.18	0.18
20.500	0.18	0.18	0.18	0.18	0.18
20.750	0.18	0.18	0.18	0.18	0.18
21.000	0.18	0.18	0.17	0.17	0.17
21.250	0.17	0.17	0.17	0.17	0.17
21.500	0.17	0.17	0.17	0.17	0.17
21.750	0.17	0.17	0.17	0.16	0.16
22.000	0.16	0.16	0.16	0.16	0.16
22.250	0.16	0.16	0.16	0.16	0.16
22.500	0.16	0.16	0.16	0.15	0.15
22.750	0.15	0.15	0.15	0.15	0.15

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.000	0.15	0.15	0.15	0.15	0.15
23.250	0.15	0.15	0.14	0.14	0.14
23.500	0.14	0.14	0.14	0.14	0.14
23.750	0.14	0.14	0.14	0.14	0.14
24.000	0.15	(N/A)	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-3-I
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.194 hours
Area (User Defined)	1.969 acres

Computational Time Increment	0.026 hours
Time to Peak (Computed)	12.150 hours
Flow (Peak, Computed)	13.09 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	13.08 ft³/s

Drainage Area	
SCS CN (Composite)	95.988
Area (User Defined)	1.969 acres
Maximum Retention (Pervious)	0.42 in
Maximum Retention (Pervious, 20 percent)	0.08 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.12 in
Runoff Volume (Pervious)	50,893.749 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	50,813.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.194 hours
Computational Time Increment	0.026 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	11.48 ft³/s
Unit peak time, Tp	0.130 hours
Unit receding limb, Tr	0.518 hours
Total unit time, Tb	0.648 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.194 hours
Area (User Defined)	1.969 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.100	0.00	0.00	0.00	0.01	0.01
1.350	0.01	0.02	0.02	0.02	0.03
1.600	0.03	0.03	0.03	0.04	0.04
1.850	0.04	0.05	0.05	0.05	0.05
2.100	0.06	0.06	0.06	0.06	0.07
2.350	0.07	0.07	0.07	0.08	0.08
2.600	0.08	0.08	0.08	0.09	0.09
2.850	0.09	0.09	0.09	0.10	0.10
3.100	0.10	0.10	0.10	0.11	0.11
3.350	0.11	0.11	0.11	0.12	0.12
3.600	0.12	0.12	0.12	0.13	0.13
3.850	0.13	0.13	0.13	0.13	0.14
4.100	0.14	0.14	0.14	0.14	0.14
4.350	0.15	0.15	0.15	0.15	0.15
4.600	0.15	0.15	0.16	0.16	0.16
4.850	0.16	0.16	0.16	0.16	0.17
5.100	0.17	0.17	0.17	0.17	0.17
5.350	0.17	0.18	0.18	0.18	0.18
5.600	0.18	0.18	0.18	0.18	0.19
5.850	0.19	0.19	0.19	0.19	0.19
6.100	0.19	0.20	0.20	0.20	0.21
6.350	0.21	0.21	0.22	0.22	0.22
6.600	0.22	0.23	0.23	0.23	0.24
6.850	0.24	0.24	0.25	0.25	0.25
7.100	0.26	0.26	0.26	0.27	0.27
7.350	0.27	0.28	0.28	0.28	0.29
7.600	0.29	0.29	0.29	0.30	0.30
7.850	0.30	0.31	0.31	0.31	0.32
8.100	0.32	0.32	0.33	0.33	0.33
8.350	0.34	0.34	0.34	0.35	0.35
8.600	0.35	0.36	0.36	0.36	0.37
8.850	0.37	0.37	0.38	0.38	0.38
9.100	0.39	0.40	0.41	0.42	0.43
9.350	0.44	0.45	0.46	0.47	0.49
9.600	0.50	0.51	0.52	0.53	0.54
9.850	0.55	0.56	0.58	0.59	0.60
10.100	0.61	0.62	0.63	0.64	0.66
10.350	0.67	0.68	0.69	0.70	0.72
10.600	0.74	0.77	0.81	0.85	0.89

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.850	0.93	0.98	1.02	1.06	1.11
11.100	1.17	1.23	1.31	1.39	1.46
11.350	1.54	1.62	1.70	1.78	1.90
11.600	2.17	2.50	2.77	3.01	3.37
11.850	3.85	4.50	5.40	6.78	8.66
12.100	11.21	13.08	12.29	9.93	7.70
12.350	6.17	5.04	4.24	3.71	3.33
12.600	2.92	2.52	2.22	2.03	1.90
12.850	1.79	1.69	1.61	1.52	1.44
13.100	1.36	1.28	1.22	1.16	1.11
13.350	1.07	1.02	0.98	0.94	0.89
13.600	0.85	0.81	0.78	0.76	0.74
13.850	0.73	0.72	0.70	0.69	0.68
14.100	0.67	0.66	0.65	0.64	0.63
14.350	0.61	0.60	0.59	0.58	0.57
14.600	0.56	0.55	0.53	0.52	0.51
14.850	0.50	0.49	0.48	0.47	0.46
15.100	0.44	0.44	0.43	0.42	0.42
15.350	0.41	0.41	0.41	0.40	0.40
15.600	0.40	0.40	0.39	0.39	0.39
15.850	0.38	0.38	0.38	0.37	0.37
16.100	0.37	0.37	0.36	0.36	0.36
16.350	0.35	0.35	0.35	0.34	0.34
16.600	0.34	0.34	0.33	0.33	0.33
16.850	0.32	0.32	0.32	0.31	0.31
17.100	0.31	0.31	0.30	0.30	0.30
17.350	0.29	0.29	0.29	0.28	0.28
17.600	0.28	0.28	0.27	0.27	0.27
17.850	0.26	0.26	0.26	0.25	0.25
18.100	0.25	0.25	0.24	0.24	0.24
18.350	0.24	0.24	0.24	0.24	0.24
18.600	0.24	0.24	0.23	0.23	0.23
18.850	0.23	0.23	0.23	0.23	0.23
19.100	0.23	0.23	0.23	0.23	0.23
19.350	0.22	0.22	0.22	0.22	0.22
19.600	0.22	0.22	0.22	0.22	0.22
19.850	0.22	0.22	0.22	0.22	0.21
20.100	0.21	0.21	0.21	0.21	0.21
20.350	0.21	0.21	0.21	0.21	0.21
20.600	0.21	0.21	0.21	0.20	0.20
20.850	0.20	0.20	0.20	0.20	0.20
21.100	0.20	0.20	0.20	0.20	0.20
21.350	0.20	0.19	0.19	0.19	0.19
21.600	0.19	0.19	0.19	0.19	0.19
21.850	0.19	0.19	0.19	0.19	0.18
22.100	0.18	0.18	0.18	0.18	0.18
22.350	0.18	0.18	0.18	0.18	0.18
22.600	0.18	0.18	0.18	0.17	0.17

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.850	0.17	0.17	0.17	0.17	0.17
23.100	0.17	0.17	0.17	0.17	0.17
23.350	0.16	0.16	0.16	0.16	0.16
23.600	0.16	0.16	0.16	0.16	0.16
23.850	0.16	0.16	0.16	0.17	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-3-P
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.394 hours
Area (User Defined)	7.353 acres

Computational Time Increment	0.053 hours
Time to Peak (Computed)	12.619 hours
Flow (Peak, Computed)	0.42 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.600 hours
Flow (Peak Interpolated Output)	0.42 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	7.353 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.19 in
Runoff Volume (Pervious)	5,144.574 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	5,073.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.394 hours
Computational Time Increment	0.053 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	21.13 ft³/s
Unit peak time, Tp	0.263 hours
Unit receding limb, Tr	1.052 hours
Total unit time, Tb	1.314 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.394 hours
Area (User Defined)	7.353 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.000	0.00	0.00	0.01	0.03	0.08
12.250	0.14	0.21	0.28	0.33	0.37
12.500	0.40	0.41	0.42	0.41	0.40
12.750	0.39	0.38	0.36	0.35	0.34
13.000	0.33	0.32	0.31	0.30	0.29
13.250	0.28	0.27	0.26	0.25	0.24
13.500	0.23	0.23	0.22	0.21	0.20
13.750	0.20	0.19	0.19	0.18	0.18
14.000	0.18	0.18	0.17	0.17	0.17
14.250	0.17	0.17	0.16	0.16	0.16
14.500	0.16	0.16	0.15	0.15	0.15
14.750	0.15	0.14	0.14	0.14	0.14
15.000	0.14	0.13	0.13	0.13	0.13
15.250	0.12	0.12	0.12	0.12	0.12
15.500	0.12	0.12	0.12	0.11	0.11
15.750	0.11	0.11	0.11	0.11	0.11
16.000	0.11	0.11	0.11	0.11	0.11
16.250	0.11	0.11	0.11	0.11	0.11
16.500	0.11	0.10	0.10	0.10	0.10
16.750	0.10	0.10	0.10	0.10	0.10
17.000	0.10	0.10	0.10	0.10	0.10
17.250	0.10	0.09	0.09	0.09	0.09
17.500	0.09	0.09	0.09	0.09	0.09
17.750	0.09	0.09	0.09	0.09	0.09
18.000	0.08	0.08	0.08	0.08	0.08
18.250	0.08	0.08	0.08	0.08	0.08
18.500	0.08	0.08	0.08	0.08	0.08
18.750	0.08	0.08	0.08	0.08	0.08
19.000	0.08	0.08	0.08	0.08	0.08
19.250	0.08	0.08	0.08	0.08	0.08
19.500	0.08	0.08	0.08	0.08	0.07
19.750	0.07	0.07	0.07	0.07	0.07
20.000	0.07	0.07	0.07	0.07	0.07
20.250	0.07	0.07	0.07	0.07	0.07
20.500	0.07	0.07	0.07	0.07	0.07
20.750	0.07	0.07	0.07	0.07	0.07
21.000	0.07	0.07	0.07	0.07	0.07
21.250	0.07	0.07	0.07	0.07	0.07
21.500	0.07	0.07	0.07	0.07	0.07

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.750	0.07	0.07	0.07	0.07	0.07
22.000	0.07	0.07	0.07	0.07	0.07
22.250	0.07	0.07	0.07	0.07	0.07
22.500	0.07	0.06	0.06	0.06	0.06
22.750	0.06	0.06	0.06	0.06	0.06
23.000	0.06	0.06	0.06	0.06	0.06
23.250	0.06	0.06	0.06	0.06	0.06
23.500	0.06	0.06	0.06	0.06	0.06
23.750	0.06	0.06	0.06	0.06	0.06
24.000	0.06	(N/A)	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-3-P
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.394 hours
Area (User Defined)	7.353 acres

Computational Time Increment	0.053 hours
Time to Peak (Computed)	12.409 hours
Flow (Peak, Computed)	1.19 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.400 hours
Flow (Peak Interpolated Output)	1.19 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	7.353 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.37 in
Runoff Volume (Pervious)	9,870.118 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	9,760.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.394 hours
Computational Time Increment	0.053 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	21.13 ft³/s
Unit peak time, Tp	0.263 hours
Unit receding limb, Tr	1.052 hours
Total unit time, Tb	1.314 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.394 hours
Area (User Defined)	7.353 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.950	0.00	0.01	0.04	0.14	0.31
12.200	0.56	0.81	1.01	1.13	1.19
12.450	1.18	1.14	1.10	1.05	0.99
12.700	0.93	0.87	0.82	0.77	0.72
12.950	0.69	0.66	0.63	0.60	0.57
13.200	0.55	0.52	0.50	0.48	0.46
13.450	0.45	0.43	0.41	0.40	0.38
13.700	0.37	0.36	0.34	0.34	0.33
13.950	0.32	0.32	0.31	0.31	0.30
14.200	0.30	0.29	0.29	0.28	0.28
14.450	0.28	0.27	0.27	0.27	0.26
14.700	0.26	0.25	0.25	0.24	0.24
14.950	0.24	0.23	0.23	0.22	0.22
15.200	0.21	0.21	0.21	0.20	0.20
15.450	0.20	0.20	0.20	0.19	0.19
15.700	0.19	0.19	0.19	0.19	0.19
15.950	0.19	0.19	0.18	0.18	0.18
16.200	0.18	0.18	0.18	0.18	0.18
16.450	0.18	0.18	0.17	0.17	0.17
16.700	0.17	0.17	0.17	0.17	0.17
16.950	0.16	0.16	0.16	0.16	0.16
17.200	0.16	0.16	0.16	0.15	0.15
17.450	0.15	0.15	0.15	0.15	0.15
17.700	0.15	0.14	0.14	0.14	0.14
17.950	0.14	0.14	0.14	0.13	0.13
18.200	0.13	0.13	0.13	0.13	0.13
18.450	0.13	0.13	0.13	0.13	0.13
18.700	0.13	0.13	0.13	0.13	0.12
18.950	0.12	0.12	0.12	0.12	0.12
19.200	0.12	0.12	0.12	0.12	0.12
19.450	0.12	0.12	0.12	0.12	0.12
19.700	0.12	0.12	0.12	0.12	0.12
19.950	0.12	0.12	0.12	0.12	0.12
20.200	0.12	0.12	0.12	0.12	0.12
20.450	0.12	0.12	0.12	0.12	0.12
20.700	0.11	0.11	0.11	0.11	0.11
20.950	0.11	0.11	0.11	0.11	0.11
21.200	0.11	0.11	0.11	0.11	0.11
21.450	0.11	0.11	0.11	0.11	0.11

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.700	0.11	0.11	0.11	0.11	0.11
21.950	0.11	0.11	0.11	0.11	0.11
22.200	0.11	0.10	0.10	0.10	0.10
22.450	0.10	0.10	0.10	0.10	0.10
22.700	0.10	0.10	0.10	0.10	0.10
22.950	0.10	0.10	0.10	0.10	0.10
23.200	0.10	0.10	0.10	0.10	0.10
23.450	0.10	0.10	0.10	0.10	0.09
23.700	0.09	0.09	0.09	0.09	0.09
23.950	0.09	0.09	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-3-P
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.394 hours
Area (User Defined)	7.353 acres

Computational Time Increment	0.053 hours
Time to Peak (Computed)	12.356 hours
Flow (Peak, Computed)	3.16 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.350 hours
Flow (Peak Interpolated Output)	3.15 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	7.353 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.72 in
Runoff Volume (Pervious)	19,243.941 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	19,072.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.394 hours
Computational Time Increment	0.053 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	21.13 ft³/s
Unit peak time, Tp	0.263 hours
Unit receding limb, Tr	1.052 hours
Total unit time, Tb	1.314 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.394 hours
Area (User Defined)	7.353 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.750	0.00	0.00	0.01	0.04	0.10
12.000	0.23	0.48	0.91	1.50	2.17
12.250	2.72	3.04	3.15	3.08	2.89
12.500	2.68	2.48	2.30	2.12	1.94
12.750	1.79	1.64	1.52	1.41	1.33
13.000	1.25	1.19	1.13	1.07	1.02
13.250	0.97	0.92	0.88	0.84	0.81
13.500	0.78	0.75	0.72	0.69	0.66
13.750	0.63	0.61	0.60	0.58	0.57
14.000	0.56	0.55	0.54	0.53	0.52
14.250	0.51	0.51	0.50	0.49	0.48
14.500	0.48	0.47	0.46	0.45	0.45
14.750	0.44	0.43	0.42	0.41	0.41
15.000	0.40	0.39	0.38	0.37	0.37
15.250	0.36	0.35	0.35	0.34	0.34
15.500	0.34	0.34	0.33	0.33	0.33
15.750	0.33	0.32	0.32	0.32	0.32
16.000	0.32	0.31	0.31	0.31	0.31
16.250	0.31	0.30	0.30	0.30	0.30
16.500	0.30	0.29	0.29	0.29	0.29
16.750	0.29	0.28	0.28	0.28	0.28
17.000	0.27	0.27	0.27	0.27	0.27
17.250	0.26	0.26	0.26	0.26	0.25
17.500	0.25	0.25	0.25	0.25	0.24
17.750	0.24	0.24	0.24	0.23	0.23
18.000	0.23	0.23	0.22	0.22	0.22
18.250	0.22	0.22	0.21	0.21	0.21
18.500	0.21	0.21	0.21	0.21	0.21
18.750	0.21	0.21	0.21	0.21	0.21
19.000	0.21	0.21	0.20	0.20	0.20
19.250	0.20	0.20	0.20	0.20	0.20
19.500	0.20	0.20	0.20	0.20	0.20
19.750	0.20	0.20	0.20	0.20	0.20
20.000	0.20	0.20	0.19	0.19	0.19
20.250	0.19	0.19	0.19	0.19	0.19
20.500	0.19	0.19	0.19	0.19	0.19
20.750	0.19	0.19	0.19	0.19	0.19
21.000	0.18	0.18	0.18	0.18	0.18
21.250	0.18	0.18	0.18	0.18	0.18

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.500	0.18	0.18	0.18	0.18	0.18
21.750	0.18	0.18	0.18	0.17	0.17
22.000	0.17	0.17	0.17	0.17	0.17
22.250	0.17	0.17	0.17	0.17	0.17
22.500	0.17	0.17	0.17	0.17	0.17
22.750	0.16	0.16	0.16	0.16	0.16
23.000	0.16	0.16	0.16	0.16	0.16
23.250	0.16	0.16	0.16	0.16	0.16
23.500	0.16	0.15	0.15	0.15	0.15
23.750	0.15	0.15	0.15	0.15	0.15
24.000	0.15	(N/A)	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-3-P
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.394 hours
Area (User Defined)	7.353 acres

Computational Time Increment	0.053 hours
Time to Peak (Computed)	12.356 hours
Flow (Peak, Computed)	5.21 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.350 hours
Flow (Peak Interpolated Output)	5.21 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	7.353 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.07 in
Runoff Volume (Pervious)	28,590.368 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	28,364.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.394 hours
Computational Time Increment	0.053 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	21.13 ft³/s
Unit peak time, Tp	0.263 hours
Unit receding limb, Tr	1.052 hours
Total unit time, Tb	1.314 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.394 hours
Area (User Defined)	7.353 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.550	0.00	0.00	0.01	0.03	0.06
11.800	0.11	0.19	0.32	0.51	0.82
12.050	1.31	2.04	2.99	4.01	4.78
12.300	5.17	5.21	4.98	4.60	4.20
12.550	3.83	3.50	3.20	2.91	2.65
12.800	2.42	2.23	2.06	1.93	1.81
13.050	1.71	1.62	1.53	1.45	1.37
13.300	1.31	1.25	1.19	1.14	1.10
13.550	1.05	1.01	0.97	0.93	0.89
13.800	0.86	0.83	0.81	0.79	0.78
14.050	0.76	0.75	0.74	0.73	0.71
14.300	0.70	0.69	0.68	0.67	0.66
14.550	0.65	0.64	0.63	0.62	0.61
14.800	0.60	0.58	0.57	0.56	0.55
15.050	0.54	0.53	0.52	0.51	0.50
15.300	0.49	0.48	0.47	0.47	0.47
15.550	0.46	0.46	0.45	0.45	0.45
15.800	0.44	0.44	0.44	0.44	0.43
16.050	0.43	0.43	0.42	0.42	0.42
16.300	0.42	0.41	0.41	0.41	0.40
16.550	0.40	0.40	0.40	0.39	0.39
16.800	0.39	0.38	0.38	0.38	0.37
17.050	0.37	0.37	0.37	0.36	0.36
17.300	0.36	0.35	0.35	0.35	0.34
17.550	0.34	0.34	0.33	0.33	0.33
17.800	0.32	0.32	0.32	0.31	0.31
18.050	0.31	0.30	0.30	0.30	0.30
18.300	0.29	0.29	0.29	0.29	0.29
18.550	0.29	0.28	0.28	0.28	0.28
18.800	0.28	0.28	0.28	0.28	0.28
19.050	0.28	0.28	0.28	0.28	0.28
19.300	0.27	0.27	0.27	0.27	0.27
19.550	0.27	0.27	0.27	0.27	0.27
19.800	0.27	0.27	0.27	0.27	0.26
20.050	0.26	0.26	0.26	0.26	0.26
20.300	0.26	0.26	0.26	0.26	0.26
20.550	0.26	0.26	0.25	0.25	0.25
20.800	0.25	0.25	0.25	0.25	0.25
21.050	0.25	0.25	0.25	0.25	0.25

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.300	0.24	0.24	0.24	0.24	0.24
21.550	0.24	0.24	0.24	0.24	0.24
21.800	0.24	0.24	0.24	0.23	0.23
22.050	0.23	0.23	0.23	0.23	0.23
22.300	0.23	0.23	0.23	0.23	0.23
22.550	0.22	0.22	0.22	0.22	0.22
22.800	0.22	0.22	0.22	0.22	0.22
23.050	0.22	0.22	0.21	0.21	0.21
23.300	0.21	0.21	0.21	0.21	0.21
23.550	0.21	0.21	0.21	0.21	0.20
23.800	0.20	0.20	0.20	0.20	0.20

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-3-P
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.394 hours
Area (User Defined)	7.353 acres

Computational Time Increment	0.053 hours
Time to Peak (Computed)	12.304 hours
Flow (Peak, Computed)	8.71 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.300 hours
Flow (Peak Interpolated Output)	8.68 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	7.353 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.65 in
Runoff Volume (Pervious)	44,088.571 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	43,780.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.394 hours
Computational Time Increment	0.053 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	21.13 ft³/s
Unit peak time, Tp	0.263 hours
Unit receding limb, Tr	1.052 hours
Total unit time, Tb	1.314 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.394 hours
Area (User Defined)	7.353 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.150	0.00	0.00	0.01	0.01	0.03
11.400	0.05	0.08	0.11	0.16	0.21
11.650	0.29	0.38	0.50	0.65	0.85
11.900	1.11	1.48	2.02	2.85	4.06
12.150	5.56	7.11	8.22	8.68	8.59
12.400	8.10	7.38	6.65	6.01	5.45
12.650	4.93	4.46	4.03	3.67	3.35
12.900	3.09	2.87	2.69	2.53	2.38
13.150	2.25	2.13	2.01	1.91	1.82
13.400	1.74	1.66	1.59	1.52	1.46
13.650	1.40	1.34	1.29	1.24	1.20
13.900	1.17	1.14	1.12	1.10	1.08
14.150	1.06	1.04	1.03	1.01	0.99
14.400	0.98	0.96	0.95	0.93	0.91
14.650	0.90	0.88	0.87	0.85	0.83
14.900	0.82	0.80	0.79	0.77	0.75
15.150	0.74	0.72	0.71	0.69	0.68
15.400	0.68	0.67	0.66	0.66	0.65
15.650	0.64	0.64	0.64	0.63	0.63
15.900	0.62	0.62	0.61	0.61	0.61
16.150	0.60	0.60	0.59	0.59	0.58
16.400	0.58	0.58	0.57	0.57	0.56
16.650	0.56	0.55	0.55	0.55	0.54
16.900	0.54	0.53	0.53	0.52	0.52
17.150	0.52	0.51	0.51	0.50	0.50
17.400	0.49	0.49	0.48	0.48	0.47
17.650	0.47	0.47	0.46	0.46	0.45
17.900	0.45	0.44	0.44	0.43	0.43
18.150	0.42	0.42	0.42	0.41	0.41
18.400	0.41	0.40	0.40	0.40	0.40
18.650	0.40	0.40	0.40	0.39	0.39
18.900	0.39	0.39	0.39	0.39	0.39
19.150	0.39	0.39	0.38	0.38	0.38
19.400	0.38	0.38	0.38	0.38	0.38
19.650	0.38	0.38	0.37	0.37	0.37
19.900	0.37	0.37	0.37	0.37	0.37
20.150	0.37	0.36	0.36	0.36	0.36
20.400	0.36	0.36	0.36	0.36	0.36
20.650	0.36	0.35	0.35	0.35	0.35

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.900	0.35	0.35	0.35	0.35	0.34
21.150	0.34	0.34	0.34	0.34	0.34
21.400	0.34	0.34	0.34	0.34	0.33
21.650	0.33	0.33	0.33	0.33	0.33
21.900	0.33	0.33	0.32	0.32	0.32
22.150	0.32	0.32	0.32	0.32	0.32
22.400	0.32	0.31	0.31	0.31	0.31
22.650	0.31	0.31	0.31	0.31	0.30
22.900	0.30	0.30	0.30	0.30	0.30
23.150	0.30	0.30	0.30	0.29	0.29
23.400	0.29	0.29	0.29	0.29	0.29
23.650	0.29	0.28	0.28	0.28	0.28
23.900	0.28	0.28	0.28	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-3-P
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.394 hours
Area (User Defined)	7.353 acres

Computational Time Increment	0.053 hours
Time to Peak (Computed)	12.304 hours
Flow (Peak, Computed)	11.98 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.300 hours
Flow (Peak Interpolated Output)	11.94 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	7.353 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.19 in
Runoff Volume (Pervious)	58,569.729 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	58,191.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.394 hours
Computational Time Increment	0.053 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	21.13 ft³/s
Unit peak time, Tp	0.263 hours
Unit receding limb, Tr	1.052 hours
Total unit time, Tb	1.314 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.394 hours
Area (User Defined)	7.353 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.750	0.00	0.00	0.00	0.01	0.02
11.000	0.03	0.05	0.07	0.09	0.12
11.250	0.16	0.19	0.24	0.29	0.35
11.500	0.41	0.48	0.58	0.70	0.85
11.750	1.03	1.26	1.54	1.92	2.45
12.000	3.21	4.36	5.99	8.00	10.03
12.250	11.43	11.94	11.72	10.96	9.92
12.500	8.89	7.99	7.21	6.50	5.85
12.750	5.28	4.78	4.36	4.01	3.72
13.000	3.48	3.26	3.07	2.89	2.73
13.250	2.58	2.45	2.33	2.22	2.12
13.500	2.03	1.95	1.86	1.78	1.71
13.750	1.64	1.58	1.53	1.49	1.45
14.000	1.42	1.39	1.37	1.34	1.32
14.250	1.30	1.28	1.26	1.24	1.22
14.500	1.20	1.18	1.16	1.14	1.12
14.750	1.10	1.07	1.05	1.03	1.01
15.000	0.99	0.97	0.95	0.93	0.91
15.250	0.89	0.88	0.86	0.85	0.84
15.500	0.83	0.83	0.82	0.81	0.81
15.750	0.80	0.79	0.79	0.78	0.78
16.000	0.77	0.77	0.76	0.76	0.75
16.250	0.75	0.74	0.74	0.73	0.72
16.500	0.72	0.71	0.71	0.70	0.70
16.750	0.69	0.69	0.68	0.67	0.67
17.000	0.66	0.66	0.65	0.65	0.64
17.250	0.63	0.63	0.62	0.62	0.61
17.500	0.61	0.60	0.59	0.59	0.58
17.750	0.58	0.57	0.57	0.56	0.55
18.000	0.55	0.54	0.54	0.53	0.52
18.250	0.52	0.52	0.51	0.51	0.51
18.500	0.50	0.50	0.50	0.50	0.50
18.750	0.49	0.49	0.49	0.49	0.49
19.000	0.49	0.49	0.49	0.48	0.48
19.250	0.48	0.48	0.48	0.48	0.48
19.500	0.47	0.47	0.47	0.47	0.47
19.750	0.47	0.47	0.46	0.46	0.46
20.000	0.46	0.46	0.46	0.46	0.46
20.250	0.45	0.45	0.45	0.45	0.45

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.500	0.45	0.45	0.44	0.44	0.44
20.750	0.44	0.44	0.44	0.44	0.43
21.000	0.43	0.43	0.43	0.43	0.43
21.250	0.43	0.42	0.42	0.42	0.42
21.500	0.42	0.42	0.42	0.41	0.41
21.750	0.41	0.41	0.41	0.41	0.41
22.000	0.40	0.40	0.40	0.40	0.40
22.250	0.40	0.40	0.39	0.39	0.39
22.500	0.39	0.39	0.39	0.38	0.38
22.750	0.38	0.38	0.38	0.38	0.38
23.000	0.37	0.37	0.37	0.37	0.37
23.250	0.37	0.37	0.36	0.36	0.36
23.500	0.36	0.36	0.36	0.35	0.35
23.750	0.35	0.35	0.35	0.35	0.35
24.000	0.35	(N/A)	(N/A)	(N/A)	(N/A)

Pre-development Analysis Results

Subsection: Unit Hydrograph Summary
Label: DA-3-P
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.394 hours
Area (User Defined)	7.353 acres

Computational Time Increment	0.053 hours
Time to Peak (Computed)	12.304 hours
Flow (Peak, Computed)	15.75 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.300 hours
Flow (Peak Interpolated Output)	15.71 ft³/s

Drainage Area	
SCS CN (Composite)	58.000
Area (User Defined)	7.353 acres
Maximum Retention (Pervious)	7.24 in
Maximum Retention (Pervious, 20 percent)	1.45 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.83 in
Runoff Volume (Pervious)	75,417.225 ft³

Hydrograph Volume (Area under Hydrograph curve)	
Volume	74,961.000 ft³

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.394 hours
Computational Time Increment	0.053 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	21.13 ft³/s
Unit peak time, Tp	0.263 hours
Unit receding limb, Tr	1.052 hours
Total unit time, Tb	1.314 hours

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.394 hours
Area (User Defined)	7.353 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.300	0.00	0.00	0.01	0.01	0.02
10.550	0.03	0.04	0.05	0.07	0.09
10.800	0.11	0.13	0.15	0.18	0.21
11.050	0.24	0.28	0.32	0.37	0.42
11.300	0.48	0.55	0.63	0.71	0.80
11.550	0.90	1.04	1.21	1.42	1.68
11.800	2.00	2.39	2.91	3.62	4.63
12.050	6.15	8.27	10.85	13.42	15.16
12.300	15.71	15.32	14.26	12.84	11.46
12.550	10.26	9.22	8.28	7.44	6.69
12.800	6.05	5.50	5.05	4.68	4.36
13.050	4.09	3.84	3.62	3.41	3.22
13.300	3.05	2.89	2.76	2.64	2.52
13.550	2.42	2.31	2.21	2.12	2.03
13.800	1.96	1.90	1.84	1.80	1.76
14.050	1.73	1.69	1.66	1.63	1.61
14.300	1.58	1.55	1.53	1.50	1.48
14.550	1.45	1.43	1.40	1.38	1.35
14.800	1.33	1.30	1.27	1.25	1.22
15.050	1.20	1.17	1.14	1.12	1.10
15.300	1.08	1.06	1.05	1.04	1.02
15.550	1.02	1.01	1.00	0.99	0.98
15.800	0.98	0.97	0.96	0.96	0.95
16.050	0.94	0.94	0.93	0.92	0.92
16.300	0.91	0.90	0.90	0.89	0.88
16.550	0.87	0.87	0.86	0.85	0.85
16.800	0.84	0.83	0.83	0.82	0.81
17.050	0.81	0.80	0.79	0.78	0.78
17.300	0.77	0.76	0.76	0.75	0.74
17.550	0.73	0.73	0.72	0.71	0.71
17.800	0.70	0.69	0.68	0.68	0.67
18.050	0.66	0.66	0.65	0.64	0.64
18.300	0.63	0.63	0.62	0.62	0.62
18.550	0.61	0.61	0.61	0.61	0.60
18.800	0.60	0.60	0.60	0.60	0.60
19.050	0.59	0.59	0.59	0.59	0.59
19.300	0.59	0.58	0.58	0.58	0.58
19.550	0.58	0.58	0.57	0.57	0.57
19.800	0.57	0.57	0.57	0.56	0.56

Pre-development Analysis Results

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.050	0.56	0.56	0.56	0.56	0.55
20.300	0.55	0.55	0.55	0.55	0.54
20.550	0.54	0.54	0.54	0.54	0.54
20.800	0.53	0.53	0.53	0.53	0.53
21.050	0.53	0.52	0.52	0.52	0.52
21.300	0.52	0.51	0.51	0.51	0.51
21.550	0.51	0.51	0.50	0.50	0.50
21.800	0.50	0.50	0.50	0.49	0.49
22.050	0.49	0.49	0.49	0.48	0.48
22.300	0.48	0.48	0.48	0.48	0.47
22.550	0.47	0.47	0.47	0.47	0.46
22.800	0.46	0.46	0.46	0.46	0.45
23.050	0.45	0.45	0.45	0.45	0.45
23.300	0.44	0.44	0.44	0.44	0.44
23.550	0.43	0.43	0.43	0.43	0.43
23.800	0.43	0.42	0.42	0.42	0.42

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-1
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1-I
<Catchment to Outflow Node>	DA-1-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-1-I	6,217.541	12.100	2.14
Flow (From)	DA-1-P	576.174	12.550	0.05
Flow (In)	O-1	6,793.716	12.100	2.14

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-1
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1-I
<Catchment to Outflow Node>	DA-1-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-1-I	7,580.069	12.100	2.58
Flow (From)	DA-1-P	1,107.669	12.350	0.15
Flow (In)	O-1	8,687.738	12.100	2.61

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-1
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1-I
<Catchment to Outflow Node>	DA-1-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-1-I	9,668.816	12.100	3.26
Flow (From)	DA-1-P	2,162.885	12.300	0.40
Flow (In)	O-1	11,831.701	12.100	3.42

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-1
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1-I
<Catchment to Outflow Node>	DA-1-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-1-I	11,401.855	12.100	3.81
Flow (From)	DA-1-P	3,215.651	12.250	0.67
Flow (In)	O-1	14,617.507	12.100	4.15

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-1
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1-I
<Catchment to Outflow Node>	DA-1-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-1-I	13,910.945	12.100	4.62
Flow (From)	DA-1-P	4,962.083	12.250	1.12
Flow (In)	O-1	18,873.029	12.100	5.26

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-1
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1-I
<Catchment to Outflow Node>	DA-1-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-1-I	16,023.353	12.100	5.30
Flow (From)	DA-1-P	6,594.435	12.250	1.54
Flow (In)	O-1	22,617.788	12.100	6.22

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-1
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1-I
<Catchment to Outflow Node>	DA-1-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-1-I	18,310.256	12.100	6.03
Flow (From)	DA-1-P	8,493.952	12.250	2.02
Flow (In)	O-1	26,804.207	12.100	7.29

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-2
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Summary for Hydrograph Addition at 'O-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2-I
<Catchment to Outflow Node>	DA-2-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-2-I	967.090	12.100	0.34
Flow (From)	DA-2-P	90.945	12.500	0.01
Flow (In)	O-2	1,058.036	12.100	0.34

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-2
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Summary for Hydrograph Addition at 'O-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2-I
<Catchment to Outflow Node>	DA-2-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-2-I	1,179.010	12.100	0.41
Flow (From)	DA-2-P	174.813	12.300	0.02
Flow (In)	O-2	1,353.823	12.100	0.41

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-2
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Summary for Hydrograph Addition at 'O-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2-I
<Catchment to Outflow Node>	DA-2-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-2-I	1,503.883	12.100	0.51
Flow (From)	DA-2-P	341.320	12.250	0.07
Flow (In)	O-2	1,845.203	12.100	0.54

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-2
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Summary for Hydrograph Addition at 'O-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2-I
<Catchment to Outflow Node>	DA-2-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-2-I	1,773.431	12.100	0.60
Flow (From)	DA-2-P	507.435	12.250	0.11
Flow (In)	O-2	2,280.866	12.100	0.66

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-2
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Summary for Hydrograph Addition at 'O-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2-I
<Catchment to Outflow Node>	DA-2-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-2-I	2,163.682	12.100	0.73
Flow (From)	DA-2-P	782.995	12.250	0.18
Flow (In)	O-2	2,946.677	12.100	0.84

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-2
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Summary for Hydrograph Addition at 'O-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2-I
<Catchment to Outflow Node>	DA-2-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-2-I	2,492.236	12.100	0.83
Flow (From)	DA-2-P	1,040.548	12.250	0.25
Flow (In)	O-2	3,532.785	12.100	0.99

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-2
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Summary for Hydrograph Addition at 'O-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2-I
<Catchment to Outflow Node>	DA-2-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-2-I	2,847.930	12.100	0.95
Flow (From)	DA-2-P	1,340.251	12.250	0.33
Flow (In)	O-2	4,188.182	12.100	1.16

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-3
Scenario: Pre-Development 1

Return Event: 1 years
Storm Event: 1-YR

Summary for Hydrograph Addition at 'O-3'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-3-I
<Catchment to Outflow Node>	DA-3-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-3-I	16,306.429	12.150	4.46
Flow (From)	DA-3-P	5,073.251	12.600	0.42
Flow (In)	O-3	21,379.680	12.150	4.49

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-3
Scenario: Pre-Development 2

Return Event: 2 years
Storm Event: 2-YR

Summary for Hydrograph Addition at 'O-3'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-3-I
<Catchment to Outflow Node>	DA-3-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-3-I	20,169.680	12.150	5.44
Flow (From)	DA-3-P	9,760.057	12.400	1.19
Flow (In)	O-3	29,929.737	12.150	5.76

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-3
Scenario: Pre-Development 5

Return Event: 5 years
Storm Event: 5-YR

Summary for Hydrograph Addition at 'O-3'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-3-I
<Catchment to Outflow Node>	DA-3-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-3-I	26,113.643	12.150	6.95
Flow (From)	DA-3-P	19,071.962	12.350	3.15
Flow (In)	O-3	45,185.605	12.200	8.71

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-3
Scenario: Pre-Development 10

Return Event: 10 years
Storm Event: 10-YR

Summary for Hydrograph Addition at 'O-3'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-3-I
<Catchment to Outflow Node>	DA-3-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-3-I	31,057.246	12.150	8.18
Flow (From)	DA-3-P	28,364.346	12.350	5.21
Flow (In)	O-3	59,421.591	12.200	11.71

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-3
Scenario: Pre-Development 25

Return Event: 25 years
Storm Event: 25-YR

Summary for Hydrograph Addition at 'O-3'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-3-I
<Catchment to Outflow Node>	DA-3-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-3-I	38,225.816	12.150	9.97
Flow (From)	DA-3-P	43,780.466	12.300	8.68
Flow (In)	O-3	82,006.282	12.200	16.48

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-3
Scenario: Pre-Development 50

Return Event: 50 years
Storm Event: 50-YR

Summary for Hydrograph Addition at 'O-3'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-3-I
<Catchment to Outflow Node>	DA-3-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-3-I	44,267.646	12.150	11.46
Flow (From)	DA-3-P	58,191.068	12.300	11.94
Flow (In)	O-3	102,458.715	12.200	20.80

Pre-development Analysis Results

Subsection: Addition Summary
Label: O-3
Scenario: Pre-Development 100

Return Event: 100 years
Storm Event: 100-YR

Summary for Hydrograph Addition at 'O-3'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-3-I
<Catchment to Outflow Node>	DA-3-P

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-3-I	50,812.973	12.150	13.08
Flow (From)	DA-3-P	74,961.423	12.300	15.71
Flow (In)	O-3	125,774.395	12.200	25.71

Index

D

DA-1-I (Time of Concentration Calculations, 1 years (Pre-Development 1))...5, 6

DA-1-I (Unit Hydrograph (Hydrograph Table), 1 years (Pre-Development 1))...20, 21, 22

DA-1-I (Unit Hydrograph (Hydrograph Table), 10 years (Pre-Development 10))...32, 33, 34

DA-1-I (Unit Hydrograph (Hydrograph Table), 100 years (Pre-Development 100))...44, 45, 46

DA-1-I (Unit Hydrograph (Hydrograph Table), 2 years (Pre-Development 2))...24, 25, 26

DA-1-I (Unit Hydrograph (Hydrograph Table), 25 years (Pre-Development 25))...36, 37, 38

DA-1-I (Unit Hydrograph (Hydrograph Table), 5 years (Pre-Development 5))...28, 29, 30

DA-1-I (Unit Hydrograph (Hydrograph Table), 50 years (Pre-Development 50))...40, 41, 42

DA-1-I (Unit Hydrograph Summary, 1 years (Pre-Development 1))...19

DA-1-I (Unit Hydrograph Summary, 10 years (Pre-Development 10))...31

DA-1-I (Unit Hydrograph Summary, 100 years (Pre-Development 100))...43

DA-1-I (Unit Hydrograph Summary, 2 years (Pre-Development 2))...23

DA-1-I (Unit Hydrograph Summary, 25 years (Pre-Development 25))...35

DA-1-I (Unit Hydrograph Summary, 5 years (Pre-Development 5))...27

DA-1-I (Unit Hydrograph Summary, 50 years (Pre-Development 50))...39

DA-1-P (Time of Concentration Calculations, 1 years (Pre-Development 1))...7, 8

DA-1-P (Unit Hydrograph (Hydrograph Table), 1 years (Pre-Development 1))...48, 49

DA-1-P (Unit Hydrograph (Hydrograph Table), 10 years (Pre-Development 10))...57, 58

DA-1-P (Unit Hydrograph (Hydrograph Table), 100 years (Pre-Development 100))...66, 67

DA-1-P (Unit Hydrograph (Hydrograph Table), 2 years (Pre-Development 2))...51, 52

DA-1-P (Unit Hydrograph (Hydrograph Table), 25 years (Pre-Development 25))...60, 61

DA-1-P (Unit Hydrograph (Hydrograph Table), 5 years (Pre-Development 5))...54, 55

DA-1-P (Unit Hydrograph (Hydrograph Table), 50 years (Pre-Development 50))...63, 64

DA-1-P (Unit Hydrograph Summary, 1 years (Pre-Development 1))...47

DA-1-P (Unit Hydrograph Summary, 10 years (Pre-Development 10))...56

DA-1-P (Unit Hydrograph Summary, 100 years (Pre-Development 100))...65

DA-1-P (Unit Hydrograph Summary, 2 years (Pre-Development 2))...50

DA-1-P (Unit Hydrograph Summary, 25 years (Pre-Development 25))...59

DA-1-P (Unit Hydrograph Summary, 5 years (Pre-Development 5))...53

DA-1-P (Unit Hydrograph Summary, 50 years (Pre-Development 50))...62

DA-2-I (Time of Concentration Calculations, 1 years (Pre-Development 1))...9, 10

DA-2-I (Unit Hydrograph (Hydrograph Table), 1 years (Pre-Development 1))...69, 70

DA-2-I (Unit Hydrograph (Hydrograph Table), 10 years (Pre-Development 10))...80, 81, 82

DA-2-I (Unit Hydrograph (Hydrograph Table), 100 years (Pre-Development 100))...92, 93, 94

DA-2-I (Unit Hydrograph (Hydrograph Table), 2 years (Pre-Development 2))...72, 73, 74

DA-2-I (Unit Hydrograph (Hydrograph Table), 25 years (Pre-Development 25))...84, 85, 86

DA-2-I (Unit Hydrograph (Hydrograph Table), 5 years (Pre-Development 5))...76, 77, 78

DA-2-I (Unit Hydrograph (Hydrograph Table), 50 years (Pre-Development 50))...88, 89, 90

DA-2-I (Unit Hydrograph Summary, 1 years (Pre-Development 1))...68

DA-2-I (Unit Hydrograph Summary, 10 years (Pre-Development 10))...79

DA-2-I (Unit Hydrograph Summary, 100 years (Pre-Development 100))...91

DA-2-I (Unit Hydrograph Summary, 2 years (Pre-Development 2))...71

DA-2-I (Unit Hydrograph Summary, 25 years (Pre-Development 25))...83

DA-2-I (Unit Hydrograph Summary, 5 years (Pre-Development 5))...75

DA-2-I (Unit Hydrograph Summary, 50 years (Pre-Development 50))...87

DA-2-P (Time of Concentration Calculations, 1 years (Pre-Development 1))...11, 12

DA-2-P (Unit Hydrograph (Hydrograph Table), 1 years (Pre-Development 1))...96, 97

DA-2-P (Unit Hydrograph (Hydrograph Table), 10 years (Pre-Development 10))...105, 106

DA-2-P (Unit Hydrograph (Hydrograph Table), 100 years (Pre-Development 100))...114, 115

DA-2-P (Unit Hydrograph (Hydrograph Table), 2 years (Pre-Development 2))...99, 100

DA-2-P (Unit Hydrograph (Hydrograph Table), 25 years (Pre-Development 25))...108, 109

DA-2-P (Unit Hydrograph (Hydrograph Table), 5 years (Pre-Development 5))...102, 103

DA-2-P (Unit Hydrograph (Hydrograph Table), 50 years (Pre-Development 50))...111, 112

DA-2-P (Unit Hydrograph Summary, 1 years (Pre-Development 1))...95

DA-2-P (Unit Hydrograph Summary, 10 years (Pre-Development 10))...104

DA-2-P (Unit Hydrograph Summary, 100 years (Pre-Development 100))...113

DA-2-P (Unit Hydrograph Summary, 2 years (Pre-Development 2))...98

DA-2-P (Unit Hydrograph Summary, 25 years (Pre-Development 25))...107

DA-2-P (Unit Hydrograph Summary, 5 years (Pre-Development 5))...101

DA-2-P (Unit Hydrograph Summary, 50 years (Pre-Development 50))...110

DA-3-I (Time of Concentration Calculations, 1 years (Pre-Development 1))...13, 14

DA-3-I (Unit Hydrograph (Hydrograph Table), 1 years (Pre-Development 1))...117, 118

DA-3-I (Unit Hydrograph (Hydrograph Table), 10 years (Pre-Development 10))...127, 128, 129

DA-3-I (Unit Hydrograph (Hydrograph Table), 100 years (Pre-Development 100))...139, 140, 141

DA-3-I (Unit Hydrograph (Hydrograph Table), 2 years (Pre-Development 2))...120, 121

DA-3-I (Unit Hydrograph (Hydrograph Table), 25 years (Pre-Development 25))...131, 132, 133

DA-3-I (Unit Hydrograph (Hydrograph Table), 5 years (Pre-Development 5))...123, 124, 125

DA-3-I (Unit Hydrograph (Hydrograph Table), 50 years (Pre-Development 50))...135, 136, 137

DA-3-I (Unit Hydrograph Summary, 1 years (Pre-Development 1))...116

DA-3-I (Unit Hydrograph Summary, 10 years (Pre-Development 10))...126

DA-3-I (Unit Hydrograph Summary, 100 years (Pre-Development 100))...138

DA-3-I (Unit Hydrograph Summary, 2 years (Pre-Development 2))...119

DA-3-I (Unit Hydrograph Summary, 25 years (Pre-Development 25))...130

DA-3-I (Unit Hydrograph Summary, 5 years (Pre-Development 5))...122

DA-3-I (Unit Hydrograph Summary, 50 years (Pre-Development 50))...134

DA-3-P (Time of Concentration Calculations, 2 years (Pre-Development 2))...15, 16

DA-3-P (Unit Hydrograph (Hydrograph Table), 1 years (Pre-Development 1))...143, 144

DA-3-P (Unit Hydrograph (Hydrograph Table), 10 years (Pre-Development 10))...152, 153

DA-3-P (Unit Hydrograph (Hydrograph Table), 100 years (Pre-Development 100))...161, 162

DA-3-P (Unit Hydrograph (Hydrograph Table), 2 years (Pre-Development 2))...146, 147

DA-3-P (Unit Hydrograph (Hydrograph Table), 25 years (Pre-Development 25))...155, 156

DA-3-P (Unit Hydrograph (Hydrograph Table), 5 years (Pre-Development 5))...149, 150

DA-3-P (Unit Hydrograph (Hydrograph Table), 50 years (Pre-Development 50))...158, 159

DA-3-P (Unit Hydrograph Summary, 1 years (Pre-Development 1))...142

DA-3-P (Unit Hydrograph Summary, 10 years (Pre-Development 10))...151

DA-3-P (Unit Hydrograph Summary, 100 years (Pre-Development 100))...160

DA-3-P (Unit Hydrograph Summary, 2 years (Pre-Development 2))...145

DA-3-P (Unit Hydrograph Summary, 25 years (Pre-Development 25))...154

DA-3-P (Unit Hydrograph Summary, 5 years (Pre-Development 5))...148

DA-3-P (Unit Hydrograph Summary, 50 years (Pre-Development 50))...157

M

Master Network Summary...3, 4

O

O-1 (Addition Summary, 1 years (Pre-Development 1))...163

O-1 (Addition Summary, 10 years (Pre-Development 10))...166

O-1 (Addition Summary, 100 years (Pre-Development 100))...169

O-1 (Addition Summary, 2 years (Pre-Development 2))...164

O-1 (Addition Summary, 25 years (Pre-Development 25))...167

O-1 (Addition Summary, 5 years (Pre-Development 5))...165

O-1 (Addition Summary, 50 years (Pre-Development 50))...168

O-2 (Addition Summary, 1 years (Pre-Development 1))...170

O-2 (Addition Summary, 10 years (Pre-Development 10))...173

O-2 (Addition Summary, 100 years (Pre-Development 100))...176

O-2 (Addition Summary, 2 years (Pre-Development 2))...171

O-2 (Addition Summary, 25 years (Pre-Development 25))...174

O-2 (Addition Summary, 5 years (Pre-Development 5))...172

O-2 (Addition Summary, 50 years (Pre-Development 50))...175

O-3 (Addition Summary, 1 years (Pre-Development 1))...177

O-3 (Addition Summary, 10 years (Pre-Development 10))...180

O-3 (Addition Summary, 100 years (Pre-Development 100))...183

O-3 (Addition Summary, 2 years (Pre-Development 2))...178

O-3 (Addition Summary, 25 years (Pre-Development 25))...181

O-3 (Addition Summary, 5 years (Pre-Development 5))...179

O-3 (Addition Summary, 50 years (Pre-Development 50))...182

U

Unit Hydrograph Equations...17, 18

User Notifications...2

Appendix G | Post-Project Release Rate Calculations

STUDY POINT 1

SUB-WATERSHED AREA INFORMATION:

	Pervious Area			Impervious Area		
	CN	AREA (AC)	Tc	CN	AREA (AC)	Tc
PRE-PROJECT AREA SP 1:	58	0.83	18 MIN	98	0.69	3 MIN
TOTAL SUB-WATERSHED AREA:			1.52			
POST-PROJECT AREA SP 1:	61	0.06	3 MIN	98	0.29	3 MIN
TOTAL SUB-WATERSHED AREA:			0.35			

* Tc FROM VTPSUHM OUTPUT, PATH 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 PONDPACK. RAINFALL DEPTHS ARE FROM NOAA.

		PRE FLOW RATES	ALLOWABLE FLOW
Q_2	=	2.61 CFS	2.61 CFS
Q_{10}	=	4.15 CFS	4.15 CFS
Q_{25}	=	5.23 CFS	5.23 CFS
Q_{50}	=	6.22 CFS	6.22 CFS
Q_{100}	=	7.29 CFS	7.29 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 PONDPACK. RAINFALL DEPTHS ARE FROM NOAA.

		POST FLOW RATES	ALLOWABLE FLOW
Q_2	=	1.12 CFS	2.61 CFS
Q_{10}	=	1.72 CFS	4.15 CFS
Q_{25}	=	2.12 CFS	5.23 CFS
Q_{50}	=	2.46 CFS	6.22 CFS
Q_{100}	=	2.83 CFS	7.29 CFS

CALCULATION NOTES:

1) THE STUDY POINT IS THE ROADSIDE DITCH ON THE NORTH SIDE OF WASHINGTON STREET

2) ALL SOILS ARE 'B' SOILS.

MASER CONSULTING P.A.

Project: 401/433 WASHINGTON STREET Sheet: ___ of ___

Project #: 14000908C Scale: _____

Calculated By: SM Date: 11/29/21 Checked By: _____ Dat _____

Element: POST-PROJECT RELEASE RATES Date: _____

Engineers | Planners | Surveyors | Landscape Architects | Environmental Scientists

STUDY POINT 2

SUB-WATERSHED AREA INFORMATION:

	Pervious Area			Impervious Area		
	CN	AREA (AC)	Tc	CN	AREA (AC)	Tc
PRE-PROJECT AREA SP 1:	58	0.13	17 MIN	98	0.11	3 MIN
TOTAL SUB-WATERSHED AREA:			0.24			
POST-PROJECT AREA SP 1:	61	0.04	2 MIN	98	0.12	2 MIN
TOTAL SUB-WATERSHED AREA:			0.16			

* Tc FROM VTPSUHM OUTPUT, PATH 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 PONDPACK. RAINFALL DEPTHS ARE FROM NOAA.

		PRE FLOW RATES	ALLOWABLE FLOW
Q_2	=	0.41 CFS	0.41 CFS
Q_{10}	=	0.66 CFS	0.66 CFS
Q_{25}	=	0.84 CFS	0.84 CFS
Q_{50}	=	0.99 CFS	0.99 CFS
Q_{100}	=	1.16 CFS	1.16 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 PONDPACK. RAINFALL DEPTHS ARE FROM NOAA.

		POST FLOW RATES	ALLOWABLE FLOW
Q_2	=	0.48 CFS	0.41 CFS
Q_{10}	=	0.75 CFS	0.66 CFS
Q_{25}	=	0.92 CFS	0.84 CFS
Q_{50}	=	1.08 CFS	0.99 CFS
Q_{100}	=	1.24 CFS	1.16 CFS

CALCULATION NOTES:

1) THE STUDY POINT IS THE CHERRY STREET MUNICIPAL STORMWATER CONVEYANCE SYSTEM. THE MINOR INCREASES IN FLOW ARE DE MINIMUS AND WILL NOT EXCEED THE CAPACITY OF THE DOWNSTREAM PIPE

2) ALL SOILS ARE 'B' SOILS.

SUB-WATERSHED AREA INFORMATION:

	Pervious Area			Impervious Area		
	CN	AREA (AC)	Tc	CN	AREA (AC)	Tc
POST TO BASIN A (MRC) AREA:	61	0.38	4 MIN	98	5.87	4 MIN
POST TO BASIN B (PO-2) AREA:	61	0.14	4 MIN	98	1.42	4 MIN
BASIN BYPASS AREA:	61	2.43	13 MIN	98	0.33	2 MIN
TOTAL SUB-WATERSHED AREA:		2.95			7.62	
TOTAL STUDY AREA (AC):			10.57			

* Tc FROM VTPSUHM OUTPUT, 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 PONDPACK. RAINFALL DEPTHS ARE FROM NOAA.

		POST TO BASIN A	POST TO BASIN B	BASIN BYPASS
		POST FLOW RATES	POST FLOW RATES	POST FLOW RATES
Q_2	=	21.80 CFS	5.33 CFS	1.63 CFS
Q_{10}	=	32.58 CFS	8.02 CFS	3.78 CFS
Q_{25}	=	39.70 CFS	9.80 CFS	5.44 CFS
Q_{50}	=	45.70 CFS	11.30 CFS	6.94 CFS
Q_{100}	=	52.21 CFS	12.94 CFS	8.65 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_2	=	1.69 CFS	+	2.08 CFS	+	1.63 CFS	=	4.34 CFS	4.49 CFS
Q_{10}	=	3.84 CFS	+	3.11 CFS	+	3.78 CFS	=	9.48 CFS	11.71 CFS
Q_{25}	=	5.65 CFS	+	3.80 CFS	+	5.44 CFS	=	13.80 CFS	16.48 CFS
Q_{50}	=	7.99 CFS	+	4.39 CFS	+	6.94 CFS	=	17.74 CFS	20.80 CFS
Q_{100}	=	10.70 CFS	+	6.24 CFS	+	8.65 CFS	=	24.46 CFS	25.71 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.

1.2” STORM EVENT ANALYSIS

1.2"/24hr Storm Event Results

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DA-1-I	1.2"/2-HR	1	0.024	1.950	0.17
DA-1-P	1.2"/2-HR	1	0.001	2.000	0.01
DA-2-I	1.2"/2-HR	1	0.010	1.950	0.07
DA-2-P	1.2"/2-HR	1	0.000	0.000	0.00
DA-3-I	1.2"/2-HR	1	0.027	1.950	0.19
DA-3-P	1.2"/2-HR	1	0.000	0.000	0.00
MRC-I	1.2"/2-HR	1	0.482	1.950	3.47
MRC-P	1.2"/2-HR	1	0.000	0.000	0.00
PO-2-I	1.2"/2-HR	1	0.116	1.950	0.84
PO-2-P	1.2"/2-HR	1	0.000	0.000	0.00

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
O-1	1.2"/2-HR	1	0.025	1.950	0.18
O-2	1.2"/2-HR	1	0.010	1.950	0.07
O-3	1.2"/2-HR	1	0.161	2.000	1.00

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
MRC (IN)	1.2"/2-HR	1	0.482	1.950	3.47	(N/A)	(N/A)
MRC (OUT)	1.2"/2-HR	1	0.018	2.150	0.04	49.87	0.903
PO-2 (IN)	1.2"/2-HR	1	0.116	1.950	0.84	(N/A)	(N/A)
PO-2 (OUT)	1.2"/2-HR	1	0.116	2.000	0.80	47.85	0.026

1.2"/24hr Storm Event Results

Subsection: Time-Depth Curve
Label: 1.2"/2-HR
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

Time-Depth Curve: 1.2"/2-HR	
Label	1.2"/2-HR
Start Time	0.000 hours
Increment	1.000 hours
End Time	2.000 hours
Return Event	1 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 1.000 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	0.60	1.20	(N/A)	(N/A)

1.2"/24hr Storm Event Results

Subsection: Time of Concentration Calculations
Label: MRC-I
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.011
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	1.06 ft/s
Segment Time of Concentration	0.026 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	90.00 ft
Is Paved?	True
Slope	0.010 ft/ft
Average Velocity	2.03 ft/s
Segment Time of Concentration	0.012 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	460.00 ft
Manning's n	0.013
Slope	0.005 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	4.22 ft/s
Segment Time of Concentration	0.030 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.069 hours

1.2"/24hr Storm Event Results

Subsection: Time of Concentration Calculations
Label: MRC-I
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc = Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

1.2"/24hr Storm Event Results

Subsection: Time of Concentration Calculations
Label: MRC-P
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.011
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	1.06 ft/s
Segment Time of Concentration	0.026 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	90.00 ft
Is Paved?	True
Slope	0.010 ft/ft
Average Velocity	2.03 ft/s
Segment Time of Concentration	0.012 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	460.00 ft
Manning's n	0.013
Slope	0.005 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	4.22 ft/s
Segment Time of Concentration	0.030 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.069 hours

1.2"/24hr Storm Event Results

Subsection: Time of Concentration Calculations
Label: MRC-P
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

==== SCS Channel Flow

Tc =	R = Qa / Wp
	V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n
	(Lf / V) / 3600
Where:	R= Hydraulic radius
	Aq= Flow area, square feet
	Wp= Wetted perimeter, feet
	V= Velocity, ft/sec
	Sf= Slope, ft/ft
	n= Manning's n
	Tc= Time of concentration, hours
	Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =	Unpaved surface:
	V = 16.1345 * (Sf**0.5)
	Paved Surface:
	V = 20.3282 * (Sf**0.5)
	(Lf / V) / 3600
Where:	V= Velocity, ft/sec
	Sf= Slope, ft/ft
	Tc= Time of concentration, hours
	Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =	(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))
Where:	Tc= Time of concentration, hours
	n= Manning's n
	Lf= Flow length, feet
	P= 2yr, 24hr Rain depth, inches
	Sf= Slope, %

1.2"/24hr Storm Event Results

Subsection: Unit Hydrograph Equations

Unit Hydrograph Method (Computational Notes)

Definition of Terms

At	Total area (acres): At = Ai+Ap
Ai	Impervious area (acres)
Ap	Pervious area (acres)
CNi	Runoff curve number for impervious area
CNp	Runoff curve number for pervious area
fLoss	f loss constant infiltration (depth/time)
gKs	Saturated Hydraulic Conductivity (depth/time)
Md	Volumetric Moisture Deficit
Psi	Capillary Suction (length)
hK	Horton Infiltration Decay Rate (time^-1)
fo	Initial Infiltration Rate (depth/time)
fc	Ultimate(capacity)Infiltration Rate (depth/time)
Ia	Initial Abstraction (length)
dt	Computational increment (duration of unit excess rainfall) Default dt is smallest value of 0.1333Tc, rtm, and th (Smallest dt is then adjusted to match up with Tp)
UDdt	User specified override computational main time increment (only used if UDdt is => .1333Tc)
D(t)	Point on distribution curve (fraction of P) for time step t
K	2 / (1 + (Tr/Tp)): default K = 0.75: (for Tr/Tp = 1.67)
Ks	Hydrograph shape factor = Unit Conversions * K: = ((1hr/3600sec) * (1ft/12in) * ((5280ft)**2/sq.mi)) * K Default Ks = 645.333 * 0.75 = 484
Lag	Lag time from center of excess runoff (dt) to Tp: Lag = 0.6Tc
P	Total precipitation depth, inches
Pa(t)	Accumulated rainfall at time step t
Pi(t)	Incremental rainfall at time step t
qp	Peak discharge (cfs) for 1in. runoff, for 1hr, for 1 sq.mi. = (Ks * A * Q) / Tp (where Q = 1in. runoff, A=sq.mi.)
Qu(t)	Unit hydrograph ordinate (cfs) at time step t
Q(t)	Final hydrograph ordinate (cfs) at time step t
Rai(t)	Accumulated runoff (inches) at time step t for impervious area
Rap(t)	Accumulated runoff (inches) at time step t for pervious area
Rii(t)	Incremental runoff (inches) at time step t for impervious area
Rip(t)	Incremental runoff (inches) at time step t for pervious area
R(t)	Incremental weighted total runoff (inches)
Rtm	Time increment for rainfall table
Si	S for impervious area: Si = (1000/CNi) - 10
Sp	S for pervious area: Sp = (1000/CNp) - 10
t	Time step (row) number
Tc	Time of concentration
Tb	Time (hrs) of entire unit hydrograph: Tb = Tp + Tr
Tp	Time (hrs) to peak of a unit hydrograph: Tp = (dt/2) + Lag
Tr	Time (hrs) of receding limb of unit hydrograph: Tr = ratio of Tp

1.2"/24hr Storm Event Results

Subsection: Unit Hydrograph Equations

Unit Hydrograph Method
Computational Notes
Precipitation

Column (1)	Time for time step t
Column (2)	D(t) = Point on distribution curve for time step t
Column (3)	Pi(t) = Pa(t) - Pa(t-1): Col.(4) - Preceding Col.(4)
Column (4)	Pa(t) = D(t) x P: Col.(2) x P

Pervious Area Runoff (using SCS Runoff CN Method)

Column (5)	Rap(t) = Accumulated pervious runoff for time step t
	If (Pa(t) is <= 0.2Sp) then use: Rap(t) = 0.0
	If (Pa(t) is > 0.2Sp) then use:
	
	Rap(t) = (Col.(4)-0.2Sp)**2 / (Col.(4)+0.8Sp)

Column (6)	Rip(t) = Incremental pervious runoff for time step t Rip(t) = Rap(t) - Rap(t-1) Rip(t) = Col.(5) for current row - Col.(5) for preceding row.

Impervious Area Runoff

Column (7 & 8)...	Did not specify to use impervious areas.

Incremental Weighted Runoff

Column (9)	R(t) = (Ap/At) x Rip(t) + (Ai/At) x Rii(t) R(t) = (Ap/At) x Col.(6) + (Ai/At) x Col.(8)

SCS Unit Hydrograph Method

Column (10)	Q(t) is computed with the SCS unit hydrograph method using R(t) and Qu(t).

1.2"/24hr Storm Event Results

Subsection: Unit Hydrograph Summary
Label: MRC-I
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

Storm Event	1.2"/2-HR
Return Event	1 years
Duration	24.000 hours
Depth	1.20 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	1.993 hours
Flow (Peak, Computed)	3.47 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	1.950 hours
Flow (Peak Interpolated Output)	3.47 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	255,806.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.99 in
Runoff Volume (Pervious)	0.482 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.482 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	96.58 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

1.2"/24hr Storm Event Results

Subsection: Unit Hydrograph Summary
Label: MRC-I
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

SCS Unit Hydrograph Parameters

1.2"/24hr Storm Event Results

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 1 years
Label: MRC-I Storm Event: 1.2"/2-HR
Scenario: 1.2"/2-HR

Storm Event	1.2"/2-HR
Return Event	1 years
Duration	24.000 hours
Depth	1.20 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.050	0.00	0.05	0.55	1.16	1.64
0.300	2.00	2.26	2.47	2.62	2.75
0.550	2.85	2.93	3.00	3.06	3.11
0.800	3.15	3.19	3.22	3.25	3.27
1.050	3.30	3.32	3.33	3.35	3.36
1.300	3.37	3.39	3.40	3.40	3.41
1.550	3.42	3.43	3.43	3.44	3.45
1.800	3.45	3.46	3.46	3.47	3.46
2.050	1.70	0.29	0.05	0.00	0.00

1.2"/24hr Storm Event Results

Subsection: Unit Hydrograph Summary
Label: MRC-P
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

Storm Event	1.2"/2-HR
Return Event	1 years
Duration	24.000 hours
Depth	1.20 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	0.000 hours
Flow (Peak, Computed)	0.00 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	0.000 hours
Flow (Peak Interpolated Output)	0.00 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	16,545.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.00 in
Runoff Volume (Pervious)	0.000 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.000 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.25 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

1.2"/24hr Storm Event Results

Subsection: Unit Hydrograph Summary
Label: MRC-P
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

SCS Unit Hydrograph Parameters

1.2"/24hr Storm Event Results

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 1 years
Label: MRC-P Storm Event: 1.2"/2-HR
Scenario: 1.2"/2-HR

Storm Event	1.2"/2-HR
Return Event	1 years
Duration	24.000 hours
Depth	1.20 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.000	0.00	0.00	(N/A)	(N/A)	(N/A)

1.2"/24hr Storm Event Results

Subsection: Addition Summary
Label: O-3
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

Summary for Hydrograph Addition at 'O-3'

Upstream Link	Upstream Node
Outlet-MRC	MRC
<Catchment to Outflow Node>	DA-3-I
<Catchment to Outflow Node>	DA-3-P
Outlet-2	PO-2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Outlet-MRC	0.018	2.150	0.04
Flow (From)	DA-3-I	0.027	1.950	0.19
Flow (From)	DA-3-P	0.000	0.000	0.00
Flow (From)	Outlet-2	0.116	2.000	0.80
Flow (In)	O-3	0.161	2.000	1.00

1.2"/24hr Storm Event Results

Subsection: Elevation vs. Volume Curve
Label: MRC
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

Elevation-Volume

Pond Elevation (ft)	Pond Volume (ac-ft)
48.80	0.000
48.90	0.084
49.00	0.169
49.10	0.253
49.20	0.337
49.30	0.422
49.40	0.506
49.50	0.590
49.60	0.675
49.70	0.759
49.80	0.843
49.90	0.928
50.00	1.012
50.10	1.096
50.20	1.181
50.30	1.265
50.40	1.349
50.50	1.434
50.60	1.518
50.70	1.603
50.80	1.687
50.90	1.771
51.00	1.856
51.10	1.940
51.20	2.024
51.30	2.109
51.40	2.193
51.50	2.277
51.60	2.362
51.70	2.446
51.80	2.530

1.2"/24hr Storm Event Results

Subsection: Outlet Input Data
Label: MRC
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

Requested Pond Water Surface Elevations	
Minimum (Headwater)	48.80 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	51.80 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward	TW	49.85	51.80
Vnotch Weir	Weir - 1	Forward	TW	50.50	51.80
Tailwater Settings	Tailwater			(N/A)	(N/A)

1.2"/24hr Storm Event Results

Subsection: Outlet Input Data
Label: MRC
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	2
Elevation	49.85 ft
Orifice Diameter	8.0 in
Orifice Coefficient	0.600

Structure ID: Weir - 1 Structure Type: Vnotch Weir	
Number of Openings	1
Elevation	50.50 ft
V-Notch Angle	120.00 degrees
Coefficient of Discharge	0.576

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft^3/s
Flow Tolerance (Maximum)	10.000 ft^3/s

1.2"/24hr Storm Event Results

Subsection: Composite Rating Curve
Label: MRC
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
48.80	0.00	(N/A)	0.00
49.30	0.00	(N/A)	0.00
49.80	0.00	(N/A)	0.00
49.85	0.00	(N/A)	0.00
50.30	0.95	(N/A)	0.00
50.50	1.80	(N/A)	0.00
50.80	2.85	(N/A)	0.00
51.30	5.99	(N/A)	0.00
51.80	12.50	(N/A)	0.00

Contributing Structures
None Contributing
None Contributing
None Contributing
None Contributing
Orifice - 1
Orifice - 1 + Weir - 1
Orifice - 1 + Weir - 1
Orifice - 1 + Weir - 1
Orifice - 1 + Weir - 1

1.2"/24hr Storm Event Results

Subsection: Elevation-Volume-Flow Table (Pond)
Label: MRC
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	49.30 ft
Volume (Initial)	0.422 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
48.80	0.00	0.000	0.000	0.00	0.00	0.00
49.30	0.00	0.422	0.000	0.00	0.00	204.11
49.80	0.00	0.843	0.000	0.00	0.00	408.22
49.85	0.00	0.886	0.000	0.00	0.00	428.63
50.30	0.95	1.265	0.000	0.00	0.95	613.29
50.50	1.80	1.434	0.000	0.00	1.80	695.77
50.80	2.85	1.687	0.000	0.00	2.85	819.29
51.30	5.99	2.109	0.000	0.00	5.99	1,026.55
51.80	12.50	2.530	0.000	0.00	12.50	1,237.16

1.2"/24hr Storm Event Results

Subsection: Level Pool Pond Routing Summary
Label: MRC (IN)
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	49.30 ft
Volume (Initial)	0.422 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	3.47 ft³/s	Time to Peak (Flow, In)	1.950 hours
Flow (Peak Outlet)	0.04 ft³/s	Time to Peak (Flow, Outlet)	2.150 hours

Elevation (Water Surface, Peak)	49.87 ft
Volume (Peak)	0.903 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.422 ac-ft
Volume (Total Inflow)	0.482 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.018 ac-ft
Volume (Retained)	0.886 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

1.2"/24hr Storm Event Results

Subsection: Pond Routed Hydrograph (total out) Return Event: 1 years
Label: MRC (OUT) Storm Event: 1.2"/2-HR
Scenario: 1.2"/2-HR

Peak Discharge	0.04 ft³/s
Time to Peak	2.150 hours
Hydrograph Volume	0.018 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.950	0.00	0.01	0.03	0.04	0.04
2.200	0.04	0.04	0.04	0.04	0.04
2.450	0.04	0.04	0.04	0.04	0.04
2.700	0.04	0.04	0.04	0.04	0.04
2.950	0.04	0.04	0.04	0.04	0.04
3.200	0.04	0.04	0.04	0.04	0.03
3.450	0.03	0.03	0.03	0.03	0.03
3.700	0.03	0.03	0.03	0.03	0.03
3.950	0.03	0.03	0.03	0.03	0.03
4.200	0.03	0.03	0.03	0.03	0.03
4.450	0.03	0.03	0.03	0.03	0.03
4.700	0.03	0.03	0.03	0.03	0.03
4.950	0.03	0.02	0.02	0.02	0.02
5.200	0.02	0.02	0.02	0.02	0.02
5.450	0.02	0.02	0.02	0.02	0.02
5.700	0.02	0.02	0.02	0.02	0.02
5.950	0.02	0.02	0.02	0.02	0.02
6.200	0.02	0.02	0.02	0.02	0.02
6.450	0.02	0.02	0.02	0.02	0.02
6.700	0.02	0.02	0.02	0.02	0.02
6.950	0.02	0.02	0.02	0.02	0.02
7.200	0.02	0.02	0.02	0.02	0.02
7.450	0.01	0.01	0.01	0.01	0.01
7.700	0.01	0.01	0.01	0.01	0.01
7.950	0.01	0.01	0.01	0.01	0.01
8.200	0.01	0.01	0.01	0.01	0.01
8.450	0.01	0.01	0.01	0.01	0.01
8.700	0.01	0.01	0.01	0.01	0.01
8.950	0.01	0.01	0.01	0.01	0.01
9.200	0.01	0.01	0.01	0.01	0.01
9.450	0.01	0.01	0.01	0.01	0.01
9.700	0.01	0.01	0.01	0.01	0.01
9.950	0.01	0.01	0.01	0.01	0.01
10.200	0.01	0.01	0.01	0.01	0.01
10.450	0.01	0.01	0.01	0.01	0.01
10.700	0.01	0.01	0.01	0.01	0.01
10.950	0.01	0.01	0.01	0.01	0.01
11.200	0.01	0.01	0.01	0.01	0.01
11.450	0.01	0.01	0.01	0.01	0.01
11.700	0.01	0.01	0.01	0.01	0.01
11.950	0.01	0.01	0.01	0.01	0.01

1.2"/24hr Storm Event Results

Subsection: Pond Routed Hydrograph (total out) Return Event: 1 years
Label: MRC (OUT) Storm Event: 1.2"/2-HR
Scenario: 1.2"/2-HR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.200	0.01	0.01	0.01	0.01	0.01
12.450	0.01	0.01	0.01	0.01	0.01
12.700	0.01	0.00	0.00	0.00	0.00
12.950	0.00	0.00	0.00	0.00	0.00
13.200	0.00	0.00	0.00	0.00	0.00
13.450	0.00	0.00	0.00	0.00	0.00
13.700	0.00	0.00	0.00	0.00	0.00
13.950	0.00	0.00	0.00	0.00	0.00
14.200	0.00	0.00	0.00	0.00	0.00
14.450	0.00	0.00	0.00	0.00	0.00
14.700	0.00	0.00	0.00	0.00	0.00
14.950	0.00	0.00	0.00	0.00	0.00
15.200	0.00	0.00	0.00	0.00	0.00
15.450	0.00	0.00	0.00	0.00	0.00
15.700	0.00	0.00	0.00	0.00	0.00
15.950	0.00	0.00	0.00	0.00	0.00
16.200	0.00	0.00	0.00	0.00	0.00
16.450	0.00	0.00	0.00	0.00	0.00
16.700	0.00	0.00	0.00	0.00	0.00
16.950	0.00	0.00	0.00	0.00	0.00
17.200	0.00	0.00	0.00	0.00	0.00
17.450	0.00	0.00	0.00	0.00	0.00
17.700	0.00	0.00	0.00	0.00	0.00
17.950	0.00	0.00	0.00	0.00	0.00
18.200	0.00	0.00	0.00	0.00	0.00
18.450	0.00	0.00	0.00	0.00	0.00
18.700	0.00	0.00	0.00	0.00	0.00
18.950	0.00	0.00	0.00	0.00	0.00
19.200	0.00	0.00	0.00	0.00	0.00
19.450	0.00	0.00	0.00	0.00	0.00
19.700	0.00	0.00	0.00	0.00	0.00
19.950	0.00	0.00	0.00	0.00	0.00
20.200	0.00	0.00	(N/A)	(N/A)	(N/A)

1.2"/24hr Storm Event Results

Subsection: Pond Inflow Summary
Label: MRC (IN)
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

Summary for Hydrograph Addition at 'MRC'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	MRC-I
<Catchment to Outflow Node>	MRC-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	MRC-I	0.482	1.950	3.47
Flow (From)	MRC-P	0.000	0.000	0.00
Flow (In)	MRC	0.482	1.950	3.47

1.2"/24hr Storm Event Results

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

Peak Discharge	0.04 ft³/s
Time to Peak	2.150 hours
Hydrograph Volume	0.018 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.950	0.00	0.01	0.03	0.04	0.04
2.200	0.04	0.04	0.04	0.04	0.04
2.450	0.04	0.04	0.04	0.04	0.04
2.700	0.04	0.04	0.04	0.04	0.04
2.950	0.04	0.04	0.04	0.04	0.04
3.200	0.04	0.04	0.04	0.04	0.03
3.450	0.03	0.03	0.03	0.03	0.03
3.700	0.03	0.03	0.03	0.03	0.03
3.950	0.03	0.03	0.03	0.03	0.03
4.200	0.03	0.03	0.03	0.03	0.03
4.450	0.03	0.03	0.03	0.03	0.03
4.700	0.03	0.03	0.03	0.03	0.03
4.950	0.03	0.02	0.02	0.02	0.02
5.200	0.02	0.02	0.02	0.02	0.02
5.450	0.02	0.02	0.02	0.02	0.02
5.700	0.02	0.02	0.02	0.02	0.02
5.950	0.02	0.02	0.02	0.02	0.02
6.200	0.02	0.02	0.02	0.02	0.02
6.450	0.02	0.02	0.02	0.02	0.02
6.700	0.02	0.02	0.02	0.02	0.02
6.950	0.02	0.02	0.02	0.02	0.02
7.200	0.02	0.02	0.02	0.02	0.02
7.450	0.01	0.01	0.01	0.01	0.01
7.700	0.01	0.01	0.01	0.01	0.01
7.950	0.01	0.01	0.01	0.01	0.01
8.200	0.01	0.01	0.01	0.01	0.01
8.450	0.01	0.01	0.01	0.01	0.01
8.700	0.01	0.01	0.01	0.01	0.01
8.950	0.01	0.01	0.01	0.01	0.01
9.200	0.01	0.01	0.01	0.01	0.01
9.450	0.01	0.01	0.01	0.01	0.01
9.700	0.01	0.01	0.01	0.01	0.01
9.950	0.01	0.01	0.01	0.01	0.01
10.200	0.01	0.01	0.01	0.01	0.01
10.450	0.01	0.01	0.01	0.01	0.01
10.700	0.01	0.01	0.01	0.01	0.01
10.950	0.01	0.01	0.01	0.01	0.01
11.200	0.01	0.01	0.01	0.01	0.01
11.450	0.01	0.01	0.01	0.01	0.01
11.700	0.01	0.01	0.01	0.01	0.01
11.950	0.01	0.01	0.01	0.01	0.01

1.2"/24hr Storm Event Results

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: 1.2"/2-HR

Return Event: 1 years
Storm Event: 1.2"/2-HR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.200	0.01	0.01	0.01	0.01	0.01
12.450	0.01	0.01	0.01	0.01	0.01
12.700	0.01	0.00	0.00	0.00	0.00
12.950	0.00	0.00	0.00	0.00	0.00
13.200	0.00	0.00	0.00	0.00	0.00
13.450	0.00	0.00	0.00	0.00	0.00
13.700	0.00	0.00	0.00	0.00	0.00
13.950	0.00	0.00	0.00	0.00	0.00
14.200	0.00	0.00	0.00	0.00	0.00
14.450	0.00	0.00	0.00	0.00	0.00
14.700	0.00	0.00	0.00	0.00	0.00
14.950	0.00	0.00	0.00	0.00	0.00
15.200	0.00	0.00	0.00	0.00	0.00
15.450	0.00	0.00	0.00	0.00	0.00
15.700	0.00	0.00	0.00	0.00	0.00
15.950	0.00	0.00	0.00	0.00	0.00
16.200	0.00	0.00	0.00	0.00	0.00
16.450	0.00	0.00	0.00	0.00	0.00
16.700	0.00	0.00	0.00	0.00	0.00
16.950	0.00	0.00	0.00	0.00	0.00
17.200	0.00	0.00	0.00	0.00	0.00
17.450	0.00	0.00	0.00	0.00	0.00
17.700	0.00	0.00	0.00	0.00	0.00
17.950	0.00	0.00	0.00	0.00	0.00
18.200	0.00	0.00	0.00	0.00	0.00
18.450	0.00	0.00	0.00	0.00	0.00
18.700	0.00	0.00	0.00	0.00	0.00
18.950	0.00	0.00	0.00	0.00	0.00
19.200	0.00	0.00	0.00	0.00	0.00
19.450	0.00	0.00	0.00	0.00	0.00
19.700	0.00	0.00	0.00	0.00	0.00
19.950	0.00	0.00	0.00	0.00	0.00
20.200	0.00	0.00	(N/A)	(N/A)	(N/A)

POST-PROJECT ANALYSIS

Table of Contents

	User Notifications	2
	Master Network Summary	6
DA-1-I		
	Time of Concentration Calculations, 1 years (Post-Development 1)	10
DA-1-P		
	Time of Concentration Calculations, 1 years (Post-Development 1)	12
DA-2-I		
	Time of Concentration Calculations, 1 years (Post-Development 1)	14
DA-2-P		
	Time of Concentration Calculations, 1 years (Post-Development 1)	16
DA-3-I		
	Time of Concentration Calculations, 1 years (Post-Development 1)	18
DA-3-P		
	Time of Concentration Calculations, 1 years (Post-Development 1)	20
MRC-I		
	Time of Concentration Calculations, 1 years (Post-Development 1)	22
MRC-P		
	Time of Concentration Calculations, 1 years (Post-Development 1)	24
PO-2-I		
	Time of Concentration Calculations, 1 years (Post-Development 1)	26
PO-2-P		
	Time of Concentration Calculations, 1 years (Post-Development 1)	28
	Unit Hydrograph Equations	30
DA-1-I		
	Unit Hydrograph Summary, 1 years (Post-Development 1)	32
	Unit Hydrograph (Hydrograph Table), 1 years (Post-Development 1)	33
	Unit Hydrograph Summary, 2 years (Post-Development 2)	36
	Unit Hydrograph (Hydrograph Table), 2 years (Post-Development 2)	37
	Unit Hydrograph Summary, 5 years (Post-Development 5)	40
	Unit Hydrograph (Hydrograph Table), 5 years (Post-Development 5)	41
	Unit Hydrograph Summary, 10 years (Post-Development 10)	44
	Unit Hydrograph (Hydrograph Table), 10 years (Post-Development 10)	45
	Unit Hydrograph Summary, 25 years (Post-Development 25)	48
	Unit Hydrograph (Hydrograph Table), 25 years (Post-Development 25)	49
	Unit Hydrograph Summary, 50 years (Post-Development 50)	52
	Unit Hydrograph (Hydrograph Table), 50 years (Post-Development 50)	53
	Unit Hydrograph Summary, 100 years (Post-Development 100)	56

Table of Contents

Unit Hydrograph (Hydrograph Table), 100 years (Post-Development 100) 57

DA-1-P

Unit Hydrograph Summary, 1 years (Post-Development 1) 60

Unit Hydrograph (Hydrograph Table), 1 years (Post-Development 1) 61

Unit Hydrograph Summary, 2 years (Post-Development 2) 63

Unit Hydrograph (Hydrograph Table), 2 years (Post-Development 2) 64

Unit Hydrograph Summary, 5 years (Post-Development 5) 66

Unit Hydrograph (Hydrograph Table), 5 years (Post-Development 5) 67

Unit Hydrograph Summary, 10 years (Post-Development 10) 69

Unit Hydrograph (Hydrograph Table), 10 years (Post-Development 10) 70

Unit Hydrograph Summary, 25 years (Post-Development 25) 72

Unit Hydrograph (Hydrograph Table), 25 years (Post-Development 25) 73

Unit Hydrograph Summary, 50 years (Post-Development 50) 75

Unit Hydrograph (Hydrograph Table), 50 years (Post-Development 50) 76

Unit Hydrograph Summary, 100 years (Post-Development 100) 78

Unit Hydrograph (Hydrograph Table), 100 years (Post-Development 100) 79

DA-2-I

Unit Hydrograph Summary, 1 years (Post-Development 1) 81

Unit Hydrograph (Hydrograph Table), 1 years (Post-Development 1) 82

Unit Hydrograph Summary, 2 years (Post-Development 2) 84

Unit Hydrograph (Hydrograph Table), 2 years (Post-Development 2) 85

Unit Hydrograph Summary, 5 years (Post-Development 5) 88

Unit Hydrograph (Hydrograph Table), 5 years (Post-Development 5) 89

Unit Hydrograph Summary, 10 years (Post-Development 10) 92

Unit Hydrograph (Hydrograph Table), 10 years (Post-Development 10) 93

Unit Hydrograph Summary, 25 years (Post-Development 25) 96

Unit Hydrograph (Hydrograph Table), 25 years (Post-Development 25) 97

Unit Hydrograph Summary, 50 years (Post-Development 50) 100

Unit Hydrograph (Hydrograph Table), 50 years (Post-Development 50) 101

Unit Hydrograph Summary, 100 years (Post-Development 100) 104

Unit Hydrograph (Hydrograph Table), 100 years (Post-Development 100) 105

DA-2-P

Unit Hydrograph Summary, 1 years (Post-Development 1) 108

Unit Hydrograph (Hydrograph Table), 1 years (Post-Development 1) 109

Unit Hydrograph Summary, 2 years (Post-Development 2) 110

Unit Hydrograph (Hydrograph Table), 2 years (Post-Development 2) 111

Unit Hydrograph Summary, 5 years (Post-Development 5) 112

Unit Hydrograph (Hydrograph Table), 5 years (Post-Development 5) 113

Table of Contents

Unit Hydrograph Summary, 10 years (Post-Development 10) 114

Unit Hydrograph (Hydrograph Table), 10 years (Post-Development 10) 115

Unit Hydrograph Summary, 25 years (Post-Development 25) 117

Unit Hydrograph (Hydrograph Table), 25 years (Post-Development 25) 118

Unit Hydrograph Summary, 50 years (Post-Development 50) 120

Unit Hydrograph (Hydrograph Table), 50 years (Post-Development 50) 121

Unit Hydrograph Summary, 100 years (Post-Development 100) 123

Unit Hydrograph (Hydrograph Table), 100 years (Post-Development 100) 124

DA-3-I

Unit Hydrograph Summary, 1 years (Post-Development 1) 126

Unit Hydrograph (Hydrograph Table), 1 years (Post-Development 1) 127

Unit Hydrograph Summary, 2 years (Post-Development 2) 130

Unit Hydrograph (Hydrograph Table), 2 years (Post-Development 2) 131

Unit Hydrograph Summary, 5 years (Post-Development 5) 134

Unit Hydrograph (Hydrograph Table), 5 years (Post-Development 5) 135

Unit Hydrograph Summary, 10 years (Post-Development 10) 138

Unit Hydrograph (Hydrograph Table), 10 years (Post-Development 10) 139

Unit Hydrograph Summary, 25 years (Post-Development 25) 142

Unit Hydrograph (Hydrograph Table), 25 years (Post-Development 25) 143

Unit Hydrograph Summary, 50 years (Post-Development 50) 146

Unit Hydrograph (Hydrograph Table), 50 years (Post-Development 50) 147

Unit Hydrograph Summary, 100 years (Post-Development 100) 150

Unit Hydrograph (Hydrograph Table), 100 years (Post-Development 100) 151

DA-3-P

Unit Hydrograph Summary, 1 years (Post-Development 1) 154

Unit Hydrograph (Hydrograph Table), 1 years (Post-Development 1) 155

Unit Hydrograph Summary, 2 years (Post-Development 2) 157

Unit Hydrograph (Hydrograph Table), 2 years (Post-Development 2) 158

Unit Hydrograph Summary, 5 years (Post-Development 5) 160

Unit Hydrograph (Hydrograph Table), 5 years (Post-Development 5) 161

Unit Hydrograph Summary, 10 years (Post-Development 10) 163

Unit Hydrograph (Hydrograph Table), 10 years (Post-Development 10) 164

Unit Hydrograph Summary, 25 years (Post-Development 25) 166

Unit Hydrograph (Hydrograph Table), 25 years (Post-Development 25) 167

Unit Hydrograph Summary, 50 years (Post-Development 50) 169

Unit Hydrograph (Hydrograph Table), 50 years (Post-Development 50) 170

Unit Hydrograph Summary, 100 years (Post-Development 100) 172

Unit Hydrograph (Hydrograph Table), 100 years (Post-Development 100) 173

Table of Contents

MRC-I

Unit Hydrograph Summary, 1 years (Post-Development 1) 175
Unit Hydrograph (Hydrograph Table), 1 years (Post-Development 1) 176
Unit Hydrograph Summary, 2 years (Post-Development 2) 179
Unit Hydrograph (Hydrograph Table), 2 years (Post-Development 2) 180
Unit Hydrograph Summary, 5 years (Post-Development 5) 183
Unit Hydrograph (Hydrograph Table), 5 years (Post-Development 5) 184
Unit Hydrograph Summary, 10 years (Post-Development 10) 187
Unit Hydrograph (Hydrograph Table), 10 years (Post-Development 10) 188
Unit Hydrograph Summary, 25 years (Post-Development 25) 191
Unit Hydrograph (Hydrograph Table), 25 years (Post-Development 25) 192
Unit Hydrograph Summary, 50 years (Post-Development 50) 195
Unit Hydrograph (Hydrograph Table), 50 years (Post-Development 50) 196
Unit Hydrograph Summary, 100 years (Post-Development 100) 199
Unit Hydrograph (Hydrograph Table), 100 years (Post-Development 100) 200

MRC-P

Unit Hydrograph Summary, 1 years (Post-Development 1) 203
Unit Hydrograph (Hydrograph Table), 1 years (Post-Development 1) 204
Unit Hydrograph Summary, 2 years (Post-Development 2) 206
Unit Hydrograph (Hydrograph Table), 2 years (Post-Development 2) 207
Unit Hydrograph Summary, 5 years (Post-Development 5) 209
Unit Hydrograph (Hydrograph Table), 5 years (Post-Development 5) 210
Unit Hydrograph Summary, 10 years (Post-Development 10) 212
Unit Hydrograph (Hydrograph Table), 10 years (Post-Development 10) 213
Unit Hydrograph Summary, 25 years (Post-Development 25) 215
Unit Hydrograph (Hydrograph Table), 25 years (Post-Development 25) 216
Unit Hydrograph Summary, 50 years (Post-Development 50) 218
Unit Hydrograph (Hydrograph Table), 50 years (Post-Development 50) 219
Unit Hydrograph Summary, 100 years (Post-Development 100) 221
Unit Hydrograph (Hydrograph Table), 100 years (Post-Development 100) 222

PO-2-I

Unit Hydrograph Summary, 1 years (Post-Development 1) 224
Unit Hydrograph (Hydrograph Table), 1 years (Post-Development 1) 225
Unit Hydrograph Summary, 2 years (Post-Development 2) 228
Unit Hydrograph (Hydrograph Table), 2 years (Post-Development 2) 229
Unit Hydrograph Summary, 5 years (Post-Development 5) 232
Unit Hydrograph (Hydrograph Table), 5 years (Post-Development 5) 233
Unit Hydrograph Summary, 10 years (Post-Development 10) 236

Unit Hydrograph (Hydrograph Table), 10 years (Post-Development 10) 237
Unit Hydrograph Summary, 25 years (Post-Development 25) 240
Unit Hydrograph (Hydrograph Table), 25 years (Post-Development 25) 241
Unit Hydrograph Summary, 50 years (Post-Development 50) 244
Unit Hydrograph (Hydrograph Table), 50 years (Post-Development 50) 245
Unit Hydrograph Summary, 100 years (Post-Development 100) 248
Unit Hydrograph (Hydrograph Table), 100 years (Post-Development 100) 249

PO-2-P

Unit Hydrograph Summary, 1 years (Post-Development 1) 252
Unit Hydrograph (Hydrograph Table), 1 years (Post-Development 1) 253
Unit Hydrograph Summary, 2 years (Post-Development 2) 255
Unit Hydrograph (Hydrograph Table), 2 years (Post-Development 2) 256
Unit Hydrograph Summary, 5 years (Post-Development 5) 258
Unit Hydrograph (Hydrograph Table), 5 years (Post-Development 5) 259
Unit Hydrograph Summary, 10 years (Post-Development 10) 261
Unit Hydrograph (Hydrograph Table), 10 years (Post-Development 10) 262
Unit Hydrograph Summary, 25 years (Post-Development 25) 264
Unit Hydrograph (Hydrograph Table), 25 years (Post-Development 25) 265
Unit Hydrograph Summary, 50 years (Post-Development 50) 267
Unit Hydrograph (Hydrograph Table), 50 years (Post-Development 50) 268
Unit Hydrograph Summary, 100 years (Post-Development 100) 270
Unit Hydrograph (Hydrograph Table), 100 years (Post-Development 100) 271

O-1

Addition Summary, 1 years (Post-Development 1) 273
Addition Summary, 2 years (Post-Development 2) 274
Addition Summary, 5 years (Post-Development 5) 275
Addition Summary, 10 years (Post-Development 10) 276
Addition Summary, 25 years (Post-Development 25) 277
Addition Summary, 50 years (Post-Development 50) 278
Addition Summary, 100 years (Post-Development 100) 279

O-2

Addition Summary, 1 years (Post-Development 1) 280
Addition Summary, 2 years (Post-Development 2) 281
Addition Summary, 5 years (Post-Development 5) 282
Addition Summary, 10 years (Post-Development 10) 283
Addition Summary, 25 years (Post-Development 25) 284
Addition Summary, 50 years (Post-Development 50) 285
Addition Summary, 100 years (Post-Development 100) 286

Table of Contents

O-3

Addition Summary, 1 years (Post-Development 1) 287

Addition Summary, 2 years (Post-Development 2) 288

Addition Summary, 5 years (Post-Development 5) 289

Addition Summary, 10 years (Post-Development 10) 290

Addition Summary, 25 years (Post-Development 25) 291

Addition Summary, 50 years (Post-Development 50) 292

Addition Summary, 100 years (Post-Development 100) 293

MRC

Time vs. Volume, 1 years (Post-Development 1) 294

Time vs. Volume, 2 years (Post-Development 2) 297

Time vs. Volume, 5 years (Post-Development 5) 300

Time vs. Volume, 10 years (Post-Development 10) 303

Time vs. Volume, 25 years (Post-Development 25) 306

Time vs. Volume, 50 years (Post-Development 50) 309

Time vs. Volume, 100 years (Post-Development 100) 312

PO-2

Time vs. Volume, 1 years (Post-Development 1) 315

Time vs. Volume, 2 years (Post-Development 2) 318

Time vs. Volume, 5 years (Post-Development 5) 321

Time vs. Volume, 10 years (Post-Development 10) 324

Time vs. Volume, 25 years (Post-Development 25) 327

Time vs. Volume, 50 years (Post-Development 50) 330

Time vs. Volume, 100 years (Post-Development 100) 333

MRC

Elevation vs. Volume Curve, 1 years (Post-Development 1) 336

PO-2

Pipe Volume, 1 years (Post-Development 1) 337

MRC

Outlet Input Data, 1 years (Post-Development 1) 338

Individual Outlet Curves, 1 years (Post-Development 1) 340

Composite Rating Curve, 1 years (Post-Development 1) 342

PO-2

Outlet Input Data, 1 years (Post-Development 1) 343

Individual Outlet Curves, 1 years (Post-Development 1) 345

Composite Rating Curve, 1 years (Post-Development 1) 347

MRC

Elevation-Volume-Flow Table (Pond), 1 years (Post-Development 1) 348

Table of Contents

MRC (OUT)

Pond Routed Hydrograph (total out), 1 years (Post-Development 1) 349
Pond Routed Hydrograph (total out), 2 years (Post-Development 2) 351
Pond Routed Hydrograph (total out), 5 years (Post-Development 5) 353
Pond Routed Hydrograph (total out), 10 years (Post-Development 10) 355
Pond Routed Hydrograph (total out), 25 years (Post-Development 25) 357
Pond Routed Hydrograph (total out), 50 years (Post-Development 50) 359
Pond Routed Hydrograph (total out), 100 years (Post-Development 100) 361

MRC (IN)

Pond Inflow Summary, 1 years (Post-Development 1) 363
Pond Inflow Summary, 2 years (Post-Development 2) 364
Pond Inflow Summary, 5 years (Post-Development 5) 365
Pond Inflow Summary, 10 years (Post-Development 10) 366
Pond Inflow Summary, 25 years (Post-Development 25) 367
Pond Inflow Summary, 50 years (Post-Development 50) 368
Pond Inflow Summary, 100 years (Post-Development 100) 369

Outlet-2

Diverted Hydrograph, 1 years (Post-Development 1) 370
Diverted Hydrograph, 2 years (Post-Development 2) 372
Diverted Hydrograph, 5 years (Post-Development 5) 374
Diverted Hydrograph, 10 years (Post-Development 10) 377
Diverted Hydrograph, 25 years (Post-Development 25) 380
Diverted Hydrograph, 50 years (Post-Development 50) 383
Diverted Hydrograph, 100 years (Post-Development 100) 386

Outlet-MRC

Diverted Hydrograph, 1 years (Post-Development 1) 389
Diverted Hydrograph, 2 years (Post-Development 2) 391
Diverted Hydrograph, 5 years (Post-Development 5) 393
Diverted Hydrograph, 10 years (Post-Development 10) 395
Diverted Hydrograph, 25 years (Post-Development 25) 397
Diverted Hydrograph, 50 years (Post-Development 50) 399
Diverted Hydrograph, 100 years (Post-Development 100) 401

PO-2

Elevation-Volume-Flow Table (Pond), 1 years (Post-Development 1) 403

PO-2 (OUT)

Pond Routed Hydrograph (total out), 1 years (Post-Development 1) 404
Pond Routed Hydrograph (total out), 2 years (Post-Development 2) 406
Pond Routed Hydrograph (total out), 5 years (Post-Development 5) 408

Table of Contents

Pond Routed Hydrograph (total out), 10 years (Post-Development 10) 411

Pond Routed Hydrograph (total out), 25 years (Post-Development 25) 414

Pond Routed Hydrograph (total out), 50 years (Post-Development 50) 417

Pond Routed Hydrograph (total out), 100 years (Post-Development 100) 420

PO-2 (IN)

Pond Inflow Summary, 1 years (Post-Development 1) 423

Pond Inflow Summary, 2 years (Post-Development 2) 424

Pond Inflow Summary, 5 years (Post-Development 5) 425

Pond Inflow Summary, 10 years (Post-Development 10) 426

Pond Inflow Summary, 25 years (Post-Development 25) 427

Pond Inflow Summary, 50 years (Post-Development 50) 428

Pond Inflow Summary, 100 years (Post-Development 100) 429

User Notifications

Message Id	7
Scenario	Post-Development 1
Element Type	Catchment
Element Id	48
Label	DA-2-P
Time	(N/A)
Message	The difference between calculated peak flow and interpolated peak flow 3.5 % is greater than 1.5 %. Computed peak flow= 0.01 ft³/s Interp. peak flow= 0.01 ft³/s. Output increment for this catchment may be too large.
Source	Warning
Message Id	7
Scenario	Post-Development 1
Element Type	Catchment
Element Id	79
Label	MRC-P
Time	(N/A)
Message	The difference between calculated peak flow and interpolated peak flow 13.9 % is greater than 1.5 %. Computed peak flow= 0.08 ft³/s Interp. peak flow= 0.07 ft³/s. Output increment for this catchment may be too large.
Source	Warning
Message Id	7
Scenario	Post-Development 1
Element Type	Catchment
Element Id	77
Label	PO-2-P
Time	(N/A)
Message	The difference between calculated peak flow and interpolated peak flow 16.7 % is greater than 1.5 %. Computed peak flow= 0.03 ft³/s Interp. peak flow= 0.02 ft³/s. Output increment for this catchment may be too large.
Source	Warning
Message Id	67
Scenario	Post-Development 1
Element Type	Composite Outlet Structure
Element Id	70
Label	PO-2
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure PO-2. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning
Message Id	67
Scenario	Post-Development 2
Element Type	Composite Outlet Structure
Element Id	70
Label	PO-2
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure PO-2. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

User Notifications

Message Id	67
Scenario	Post-Development 5
Element Type	Composite Outlet Structure
Element Id	70
Label	PO-2
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure PO-2. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

Message Id	67
Scenario	Post-Development 10
Element Type	Composite Outlet Structure
Element Id	70
Label	PO-2
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure PO-2. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

Message Id	67
Scenario	Post-Development 25
Element Type	Composite Outlet Structure
Element Id	70
Label	PO-2
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure PO-2. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

Message Id	67
Scenario	Post-Development 50
Element Type	Composite Outlet Structure
Element Id	70
Label	PO-2
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure PO-2. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

Message Id	67
Scenario	Post-Development 100
Element Type	Composite Outlet Structure
Element Id	70
Label	PO-2
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure PO-2. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning

User Notifications

Message Id	67
Scenario	1.2"/2-HR
Element Type	Composite Outlet Structure
Element Id	70
Label	PO-2
Time	(N/A)
Message	Flow direction set to reverse for one ore more structures in composite outlet structure PO-2. To eliminate this warning, edit outlet data and select forward only. If reverse flow analysis is required, then the tailwater conditions must be set to interconnected pond.
Source	Warning
Message Id	7
Scenario	Post-Development 2
Element Type	Catchment
Element Id	50
Label	DA-3-P
Time	(N/A)
Message	The difference between calculated peak flow and interpolated peak flow 1.9 % is greater than 1.5 %. Computed peak flow= 0.81 ft³/s Interp. peak flow= 0.79 ft³/s. Output increment for this catchment may be too large.
Source	Warning
Message Id	7
Scenario	Post-Development 2
Element Type	Catchment
Element Id	79
Label	MRC-P
Time	(N/A)
Message	The difference between calculated peak flow and interpolated peak flow 7.5 % is greater than 1.5 %. Computed peak flow= 0.20 ft³/s Interp. peak flow= 0.19 ft³/s. Output increment for this catchment may be too large.
Source	Warning
Message Id	7
Scenario	Post-Development 2
Element Type	Catchment
Element Id	77
Label	PO-2-P
Time	(N/A)
Message	The difference between calculated peak flow and interpolated peak flow 6.0 % is greater than 1.5 %. Computed peak flow= 0.08 ft³/s Interp. peak flow= 0.07 ft³/s. Output increment for this catchment may be too large.
Source	Warning
Message Id	7
Scenario	Post-Development 5
Element Type	Catchment
Element Id	79
Label	MRC-P
Time	(N/A)
Message	The difference between calculated peak flow and interpolated peak flow 3.9 % is greater than 1.5 %. Computed peak flow= 0.43 ft³/s Interp. peak flow= 0.42 ft³/s. Output increment for this catchment may be too large.
Source	Warning

User Notifications

Message Id	7
Scenario	Post-Development 5
Element Type	Catchment
Element Id	77
Label	PO-2-P
Time	(N/A)
Message	The difference between calculated peak flow and interpolated peak flow 3.1 % is greater than 1.5 %. Computed peak flow= 0.16 ft³/s Interp. peak flow= 0.16 ft³/s. Output increment for this catchment may be too large.
Source	Warning
Message Id	7
Scenario	Post-Development 10
Element Type	Catchment
Element Id	79
Label	MRC-P
Time	(N/A)
Message	The difference between calculated peak flow and interpolated peak flow 2.7 % is greater than 1.5 %. Computed peak flow= 0.65 ft³/s Interp. peak flow= 0.64 ft³/s. Output increment for this catchment may be too large.
Source	Warning
Message Id	7
Scenario	Post-Development 10
Element Type	Catchment
Element Id	77
Label	PO-2-P
Time	(N/A)
Message	The difference between calculated peak flow and interpolated peak flow 2.1 % is greater than 1.5 %. Computed peak flow= 0.25 ft³/s Interp. peak flow= 0.24 ft³/s. Output increment for this catchment may be too large.
Source	Warning
Message Id	7
Scenario	Post-Development 25
Element Type	Catchment
Element Id	79
Label	MRC-P
Time	(N/A)
Message	The difference between calculated peak flow and interpolated peak flow 1.7 % is greater than 1.5 %. Computed peak flow= 1.01 ft³/s Interp. peak flow= 0.99 ft³/s. Output increment for this catchment may be too large.
Source	Warning

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)
DA-1-I	Post-Development 1	1	0.060	12.100	0.90
DA-1-I	Post-Development 2	2	0.073	12.100	1.09
DA-1-I	Post-Development 5	5	0.094	12.100	1.37
DA-1-I	Post-Development 10	10	0.111	12.100	1.61
DA-1-I	Post-Development 25	25	0.135	12.100	1.95
DA-1-I	Post-Development 50	50	0.155	12.100	2.24
DA-1-I	Post-Development 100	100	0.177	12.100	2.55
DA-1-P	Post-Development 1	1	0.005	12.100	0.10
DA-1-P	Post-Development 2	2	0.008	12.100	0.13
DA-1-P	Post-Development 5	5	0.011	12.100	0.19
DA-1-P	Post-Development 10	10	0.014	12.100	0.25
DA-1-P	Post-Development 25	25	0.019	12.100	0.32
DA-1-P	Post-Development 50	50	0.023	12.100	0.39
DA-1-P	Post-Development 100	100	0.027	12.100	0.46
DA-2-I	Post-Development 1	1	0.025	12.100	0.38
DA-2-I	Post-Development 2	2	0.031	12.100	0.46
DA-2-I	Post-Development 5	5	0.039	12.100	0.58
DA-2-I	Post-Development 10	10	0.046	12.100	0.68
DA-2-I	Post-Development 25	25	0.056	12.100	0.82
DA-2-I	Post-Development 50	50	0.065	12.100	0.94
DA-2-I	Post-Development 100	100	0.074	12.100	1.07
DA-2-P	Post-Development 1	1	0.001	12.100	0.01
DA-2-P	Post-Development 2	2	0.001	12.100	0.02
DA-2-P	Post-Development 5	5	0.003	12.100	0.05
DA-2-P	Post-Development 10	10	0.004	12.100	0.07
DA-2-P	Post-Development 25	25	0.006	12.100	0.10
DA-2-P	Post-Development 50	50	0.007	12.100	0.14
DA-2-P	Post-Development 100	100	0.009	12.100	0.17
DA-3-I	Post-Development 1	1	0.068	12.100	1.04
DA-3-I	Post-Development 2	2	0.083	12.100	1.25
DA-3-I	Post-Development 5	5	0.106	12.100	1.58
DA-3-I	Post-Development 10	10	0.125	12.100	1.84
DA-3-I	Post-Development 25	25	0.153	12.100	2.23
DA-3-I	Post-Development 50	50	0.176	12.100	2.56
DA-3-I	Post-Development 100	100	0.201	12.100	2.92
DA-3-P	Post-Development 1	1	0.054	12.250	0.31
DA-3-P	Post-Development 2	2	0.096	12.250	0.79
DA-3-P	Post-Development 5	5	0.177	12.200	1.83
DA-3-P	Post-Development 10	10	0.255	12.200	2.83
DA-3-P	Post-Development 25	25	0.382	12.200	4.45
DA-3-P	Post-Development 50	50	0.499	12.200	5.91
DA-3-P	Post-Development 100	100	0.635	12.200	7.59
MRC-I	Post-Development 1	1	1.222	12.100	17.90
MRC-I	Post-Development 2	2	1.490	12.100	21.61

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)
MRC-I	Post-Development 5	5	1.901	12.100	27.27
MRC-I	Post-Development 10	10	2.241	12.100	31.95
MRC-I	Post-Development 25	25	2.735	12.100	38.71
MRC-I	Post-Development 50	50	3.150	12.100	44.39
MRC-I	Post-Development 100	100	3.599	12.100	50.54
PO-2-P	Post-Development 1	1	0.003	12.100	0.02
PO-2-P	Post-Development 2	2	0.006	12.100	0.07
PO-2-P	Post-Development 5	5	0.010	12.100	0.16
PO-2-P	Post-Development 10	10	0.015	12.100	0.24
PO-2-P	Post-Development 25	25	0.022	12.100	0.38
PO-2-P	Post-Development 50	50	0.029	12.100	0.50
PO-2-P	Post-Development 100	100	0.037	12.100	0.64
PO-2-I	Post-Development 1	1	0.295	12.100	4.36
PO-2-I	Post-Development 2	2	0.359	12.100	5.26
PO-2-I	Post-Development 5	5	0.458	12.100	6.64
PO-2-I	Post-Development 10	10	0.541	12.100	7.78
PO-2-I	Post-Development 25	25	0.660	12.100	9.42
PO-2-I	Post-Development 50	50	0.760	12.100	10.81
PO-2-I	Post-Development 100	100	0.868	12.100	12.30
MRC-P	Post-Development 1	1	0.008	12.150	0.07
MRC-P	Post-Development 2	2	0.015	12.100	0.19
MRC-P	Post-Development 5	5	0.028	12.100	0.42
MRC-P	Post-Development 10	10	0.040	12.100	0.64
MRC-P	Post-Development 25	25	0.060	12.100	0.99
MRC-P	Post-Development 50	50	0.078	12.100	1.31
MRC-P	Post-Development 100	100	0.099	12.100	1.68

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)
O-1	Post-Development 1	1	0.066	12.100	1.00
O-1	Post-Development 2	2	0.081	12.100	1.22
O-1	Post-Development 5	5	0.105	12.100	1.57
O-1	Post-Development 10	10	0.125	12.100	1.86
O-1	Post-Development 25	25	0.154	12.100	2.27
O-1	Post-Development 50	50	0.178	12.100	2.62
O-1	Post-Development 100	100	0.205	12.100	3.00
O-2	Post-Development 1	1	0.026	12.100	0.39
O-2	Post-Development 2	2	0.032	12.100	0.48
O-2	Post-Development 5	5	0.042	12.100	0.62
O-2	Post-Development 10	10	0.050	12.100	0.75
O-2	Post-Development 25	25	0.062	12.100	0.92
O-2	Post-Development 50	50	0.072	12.100	1.08

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
O-2	Post-Development 100	100	0.083	12.100	1.24
O-3	Post-Development 1	1	1.054	12.200	2.95
O-3	Post-Development 2	2	1.423	12.250	4.34
O-3	Post-Development 5	5	2.015	12.200	7.13
O-3	Post-Development 10	10	2.524	12.200	9.48
O-3	Post-Development 25	25	3.284	12.200	13.80
O-3	Post-Development 50	50	3.940	12.200	17.74
O-3	Post-Development 100	100	4.662	12.200	24.46

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
PO-2 (IN)	Post-Development 1	1	0.298	12.100	4.38	(N/A)	(N/A)
PO-2 (OUT)	Post-Development 1	1	0.296	12.200	1.73	48.18	0.067
PO-2 (IN)	Post-Development 2	2	0.365	12.100	5.33	(N/A)	(N/A)
PO-2 (OUT)	Post-Development 2	2	0.363	12.200	2.08	48.29	0.082
PO-2 (IN)	Post-Development 5	5	0.469	12.100	6.80	(N/A)	(N/A)
PO-2 (OUT)	Post-Development 5	5	0.466	12.200	2.63	48.47	0.106
PO-2 (IN)	Post-Development 10	10	0.556	12.100	8.02	(N/A)	(N/A)
PO-2 (OUT)	Post-Development 10	10	0.553	12.200	3.11	48.61	0.127
PO-2 (IN)	Post-Development 25	25	0.682	12.100	9.80	(N/A)	(N/A)
PO-2 (OUT)	Post-Development 25	25	0.678	12.200	3.80	48.82	0.156
PO-2 (IN)	Post-Development 50	50	0.789	12.100	11.30	(N/A)	(N/A)

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
PO-2 (OUT)	Post-Development 50	50	0.785	12.200	4.39	49.00	0.179
PO-2 (IN)	Post-Development 100	100	0.905	12.100	12.94	(N/A)	(N/A)
PO-2 (OUT)	Post-Development 100	100	0.900	12.200	6.24	49.22	0.203
MRC (IN)	Post-Development 1	1	1.231	12.100	17.97	(N/A)	(N/A)
MRC (OUT)	Post-Development 1	1	0.635	13.450	0.98	50.31	1.270
MRC (IN)	Post-Development 2	2	1.505	12.100	21.80	(N/A)	(N/A)
MRC (OUT)	Post-Development 2	2	0.881	13.050	1.69	50.48	1.413
MRC (IN)	Post-Development 5	5	1.928	12.100	27.68	(N/A)	(N/A)
MRC (OUT)	Post-Development 5	5	1.266	12.850	2.66	50.75	1.642
MRC (IN)	Post-Development 10	10	2.281	12.100	32.58	(N/A)	(N/A)
MRC (OUT)	Post-Development 10	10	1.592	12.650	3.84	50.96	1.819
MRC (IN)	Post-Development 25	25	2.794	12.100	39.70	(N/A)	(N/A)
MRC (OUT)	Post-Development 25	25	2.071	12.550	5.65	51.25	2.062
MRC (IN)	Post-Development 50	50	3.228	12.100	45.70	(N/A)	(N/A)
MRC (OUT)	Post-Development 50	50	2.480	12.500	7.99	51.45	2.238
MRC (IN)	Post-Development 100	100	3.699	12.100	52.21	(N/A)	(N/A)
MRC (OUT)	Post-Development 100	100	2.926	12.400	10.70	51.66	2.414

Post-Development Analysis Results (with BMPs)

Subsection: Time of Concentration Calculations
Label: DA-1-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.011
Slope	0.005 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	0.80 ft/s
Segment Time of Concentration	0.035 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	85.00 ft
Is Paved?	True
Slope	0.005 ft/ft
Average Velocity	1.44 ft/s
Segment Time of Concentration	0.016 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	50.00 ft
Manning's n	0.013
Slope	0.005 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	4.22 ft/s
Segment Time of Concentration	0.003 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.054 hours

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc = Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Post-Development Analysis Results (with BMPs)

Subsection: Time of Concentration Calculations
Label: DA-1-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.011
Slope	0.005 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	0.80 ft/s
Segment Time of Concentration	0.035 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	85.00 ft
Is Paved?	True
Slope	0.005 ft/ft
Average Velocity	1.44 ft/s
Segment Time of Concentration	0.016 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	50.00 ft
Manning's n	0.013
Slope	0.005 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	4.22 ft/s
Segment Time of Concentration	0.003 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.054 hours

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc = Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Post-Development Analysis Results (with BMPs)

Subsection: Time of Concentration Calculations
Label: DA-2-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.011
Slope	0.017 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	1.30 ft/s
Segment Time of Concentration	0.021 hours

Segment #2: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	135.00 ft
Manning's n	0.013
Slope	0.005 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	4.22 ft/s
Segment Time of Concentration	0.009 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.030 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n (Lf / V) / 3600
Where:	R= Hydraulic radius Aq= Flow area, square feet Wp= Wetted perimeter, feet V= Velocity, ft/sec Sf= Slope, ft/ft n= Manning's n Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =	(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))
Where:	Tc= Time of concentration, hours n= Manning's n Lf= Flow length, feet P= 2yr, 24hr Rain depth, inches Sf= Slope, %

Post-Development Analysis Results (with BMPs)

Subsection: Time of Concentration Calculations
Label: DA-2-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.011
Slope	0.017 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	1.30 ft/s
Segment Time of Concentration	0.021 hours

Segment #2: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	135.00 ft
Manning's n	0.013
Slope	0.005 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	4.22 ft/s
Segment Time of Concentration	0.009 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.030 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n (Lf / V) / 3600
Where:	R= Hydraulic radius Aq= Flow area, square feet Wp= Wetted perimeter, feet V= Velocity, ft/sec Sf= Slope, ft/ft n= Manning's n Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =	(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))
Where:	Tc= Time of concentration, hours n= Manning's n Lf= Flow length, feet P= 2yr, 24hr Rain depth, inches Sf= Slope, %

Post-Development Analysis Results (with BMPs)

Subsection: Time of Concentration Calculations
Label: DA-3-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.011
Slope	0.020 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	1.39 ft/s
Segment Time of Concentration	0.020 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	50.00 ft
Is Paved?	True
Slope	0.020 ft/ft
Average Velocity	2.87 ft/s
Segment Time of Concentration	0.005 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.025 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp
	V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n
	(Lf / V) / 3600
Where:	R= Hydraulic radius
	Aq= Flow area, square feet
	Wp= Wetted perimeter, feet
	V= Velocity, ft/sec
	Sf= Slope, ft/ft
	n= Manning's n
	Tc= Time of concentration, hours
	Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =	Unpaved surface:
	V = 16.1345 * (Sf**0.5)
	Paved Surface:
	V = 20.3282 * (Sf**0.5)
	(Lf / V) / 3600
Where:	V= Velocity, ft/sec
	Sf= Slope, ft/ft
	Tc= Time of concentration, hours
	Lf= Flow length, feet

Post-Development Analysis Results (with BMPs)

Subsection: Time of Concentration Calculations
Label: DA-3-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	25.00 ft
Manning's n	0.240
Slope	0.100 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	0.17 ft/s
Segment Time of Concentration	0.041 hours

Segment #2: TR-55 Sheet Flow	
Hydraulic Length	59.00 ft
Manning's n	0.240
Slope	0.020 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	0.11 ft/s
Segment Time of Concentration	0.154 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	200.00 ft
Is Paved?	False
Slope	0.020 ft/ft
Average Velocity	2.28 ft/s
Segment Time of Concentration	0.024 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.219 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp
	V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n
	(Lf / V) / 3600
Where:	R= Hydraulic radius
	Aq= Flow area, square feet
	Wp= Wetted perimeter, feet
	V= Velocity, ft/sec
	Sf= Slope, ft/ft
	n= Manning's n
	Tc= Time of concentration, hours
	Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =	Unpaved surface:
	V = 16.1345 * (Sf**0.5)
	Paved Surface:
	V = 20.3282 * (Sf**0.5)
	(Lf / V) / 3600
Where:	V= Velocity, ft/sec
	Sf= Slope, ft/ft
	Tc= Time of concentration, hours
	Lf= Flow length, feet

Post-Development Analysis Results (with BMPs)

Subsection: Time of Concentration Calculations
Label: MRC-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.011
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	1.06 ft/s
Segment Time of Concentration	0.026 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	90.00 ft
Is Paved?	True
Slope	0.010 ft/ft
Average Velocity	2.03 ft/s
Segment Time of Concentration	0.012 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	460.00 ft
Manning's n	0.013
Slope	0.005 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	4.22 ft/s
Segment Time of Concentration	0.030 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.069 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n (Lf / V) / 3600
Where:	R= Hydraulic radius Aq= Flow area, square feet Wp= Wetted perimeter, feet V= Velocity, ft/sec Sf= Slope, ft/ft n= Manning's n Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =	Unpaved surface: V = 16.1345 * (Sf**0.5) Paved Surface: V = 20.3282 * (Sf**0.5) (Lf / V) / 3600
Where:	V= Velocity, ft/sec Sf= Slope, ft/ft Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =	(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))
Where:	Tc= Time of concentration, hours n= Manning's n Lf= Flow length, feet P= 2yr, 24hr Rain depth, inches Sf= Slope, %

Post-Development Analysis Results (with BMPs)

Subsection: Time of Concentration Calculations
Label: MRC-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.011
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	1.06 ft/s
Segment Time of Concentration	0.026 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	90.00 ft
Is Paved?	True
Slope	0.010 ft/ft
Average Velocity	2.03 ft/s
Segment Time of Concentration	0.012 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	460.00 ft
Manning's n	0.013
Slope	0.005 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	4.22 ft/s
Segment Time of Concentration	0.030 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.069 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n (Lf / V) / 3600
Where:	R= Hydraulic radius Aq= Flow area, square feet Wp= Wetted perimeter, feet V= Velocity, ft/sec Sf= Slope, ft/ft n= Manning's n Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =	Unpaved surface: V = 16.1345 * (Sf**0.5) Paved Surface: V = 20.3282 * (Sf**0.5) (Lf / V) / 3600
Where:	V= Velocity, ft/sec Sf= Slope, ft/ft Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =	(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))
Where:	Tc= Time of concentration, hours n= Manning's n Lf= Flow length, feet P= 2yr, 24hr Rain depth, inches Sf= Slope, %

Post-Development Analysis Results (with BMPs)

Subsection: Time of Concentration Calculations
Label: PO-2-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.011
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	1.06 ft/s
Segment Time of Concentration	0.026 hours

Segment #2: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	560.00 ft
Manning's n	0.013
Slope	0.005 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	4.22 ft/s
Segment Time of Concentration	0.037 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.063 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp
	V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n
	(Lf / V) / 3600
Where:	R= Hydraulic radius
	Aq= Flow area, square feet
	Wp= Wetted perimeter, feet
	V= Velocity, ft/sec
	Sf= Slope, ft/ft
	n= Manning's n
	Tc= Time of concentration, hours
	Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =	(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))
Where:	Tc= Time of concentration, hours
	n= Manning's n
	Lf= Flow length, feet
	P= 2yr, 24hr Rain depth, inches
	Sf= Slope, %

Post-Development Analysis Results (with BMPs)

Subsection: Time of Concentration Calculations
Label: PO-2-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	100.00 ft
Manning's n	0.011
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.28 in
Average Velocity	1.06 ft/s
Segment Time of Concentration	0.026 hours

Segment #2: TR-55 Channel Flow	
Flow Area	1.8 ft²
Hydraulic Length	560.00 ft
Manning's n	0.013
Slope	0.005 ft/ft
Wetted Perimeter	4.71 ft
Average Velocity	4.22 ft/s
Segment Time of Concentration	0.037 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.063 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n (Lf / V) / 3600
Where:	R= Hydraulic radius Aq= Flow area, square feet Wp= Wetted perimeter, feet V= Velocity, ft/sec Sf= Slope, ft/ft n= Manning's n Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =	(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))
Where:	Tc= Time of concentration, hours n= Manning's n Lf= Flow length, feet P= 2yr, 24hr Rain depth, inches Sf= Slope, %

Unit Hydrograph Method (Computational Notes)

Definition of Terms

At	Total area (acres): At = Ai+Ap
Ai	Impervious area (acres)
Ap	Pervious area (acres)
CNi	Runoff curve number for impervious area
CNp	Runoff curve number for pervious area
fLoss	f loss constant infiltration (depth/time)
gKs	Saturated Hydraulic Conductivity (depth/time)
Md	Volumetric Moisture Deficit
Psi	Capillary Suction (length)
hK	Horton Infiltration Decay Rate (time^-1)
fo	Initial Infiltration Rate (depth/time)
fc	Ultimate(capacity)Infiltration Rate (depth/time)
Ia	Initial Abstraction (length)
dt	Computational increment (duration of unit excess rainfall) Default dt is smallest value of 0.1333Tc, rtm, and th (Smallest dt is then adjusted to match up with Tp)
UDdt	User specified override computational main time increment (only used if UDdt is => .1333Tc)
D(t)	Point on distribution curve (fraction of P) for time step t
K	2 / (1 + (Tr/Tp)): default K = 0.75: (for Tr/Tp = 1.67)
Ks	Hydrograph shape factor = Unit Conversions * K: = ((1hr/3600sec) * (1ft/12in) * ((5280ft)**2/sq.mi)) * K Default Ks = 645.333 * 0.75 = 484
Lag	Lag time from center of excess runoff (dt) to Tp: Lag = 0.6Tc
P	Total precipitation depth, inches
Pa(t)	Accumulated rainfall at time step t
Pi(t)	Incremental rainfall at time step t
qp	Peak discharge (cfs) for 1in. runoff, for 1hr, for 1 sq.mi. = (Ks * A * Q) / Tp (where Q = 1in. runoff, A=sq.mi.)
Qu(t)	Unit hydrograph ordinate (cfs) at time step t
Q(t)	Final hydrograph ordinate (cfs) at time step t
Rai(t)	Accumulated runoff (inches) at time step t for impervious area
Rap(t)	Accumulated runoff (inches) at time step t for pervious area
Rii(t)	Incremental runoff (inches) at time step t for impervious area
Rip(t)	Incremental runoff (inches) at time step t for pervious area
R(t)	Incremental weighted total runoff (inches)
Rtm	Time increment for rainfall table
Si	S for impervious area: Si = (1000/CNi) - 10
Sp	S for pervious area: Sp = (1000/CNp) - 10
t	Time step (row) number
Tc	Time of concentration
Tb	Time (hrs) of entire unit hydrograph: Tb = Tp + Tr
Tp	Time (hrs) to peak of a unit hydrograph: Tp = (dt/2) + Lag
Tr	Time (hrs) of receding limb of unit hydrograph: Tr = ratio of Tp

Unit Hydrograph Method
Computational Notes
Precipitation

Column (1)	Time for time step t
Column (2)	D(t) = Point on distribution curve for time step t
Column (3)	Pi(t) = Pa(t) - Pa(t-1): Col.(4) - Preceding Col.(4)
Column (4)	Pa(t) = D(t) x P: Col.(2) x P

Pervious Area Runoff (using SCS Runoff CN Method)

Column (5)	Rap(t) = Accumulated pervious runoff for time step t
	If (Pa(t) is <= 0.2Sp) then use: Rap(t) = 0.0
	If (Pa(t) is > 0.2Sp) then use:
	
	Rap(t) = (Col.(4)-0.2Sp)**2 / (Col.(4)+0.8Sp)

Column (6)	Rip(t) = Incremental pervious runoff for time step t Rip(t) = Rap(t) - Rap(t-1) Rip(t) = Col.(5) for current row - Col.(5) for preceding row.

Impervious Area Runoff

Column (7 & 8)...	Did not specify to use impervious areas.

Incremental Weighted Runoff

Column (9)	R(t) = (Ap/At) x Rip(t) + (Ai/At) x Rii(t) R(t) = (Ap/At) x Col.(6) + (Ai/At) x Col.(8)

SCS Unit Hydrograph Method

Column (10)	Q(t) is computed with the SCS unit hydrograph method using R(t) and Qu(t).

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-1-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	12,609.000 ft²

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	0.90 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.90 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	12,609.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.50 in
Runoff Volume (Pervious)	0.060 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.060 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.054 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.02 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.145 hours
Total unit time, Tb	0.181 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	12,609.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.750	0.00	0.00	0.00	0.00	0.00
2.000	0.00	0.00	0.00	0.00	0.00
2.250	0.00	0.00	0.00	0.00	0.00
2.500	0.00	0.00	0.00	0.00	0.00
2.750	0.00	0.00	0.00	0.00	0.00
3.000	0.00	0.00	0.00	0.00	0.00
3.250	0.00	0.00	0.00	0.00	0.00
3.500	0.00	0.01	0.01	0.01	0.01
3.750	0.01	0.01	0.01	0.01	0.01
4.000	0.01	0.01	0.01	0.01	0.01
4.250	0.01	0.01	0.01	0.01	0.01
4.500	0.01	0.01	0.01	0.01	0.01
4.750	0.01	0.01	0.01	0.01	0.01
5.000	0.01	0.01	0.01	0.01	0.01
5.250	0.01	0.01	0.01	0.01	0.01
5.500	0.01	0.01	0.01	0.01	0.01
5.750	0.01	0.01	0.01	0.01	0.01
6.000	0.01	0.01	0.01	0.01	0.01
6.250	0.01	0.01	0.01	0.01	0.01
6.500	0.01	0.01	0.01	0.01	0.01
6.750	0.01	0.01	0.01	0.01	0.01
7.000	0.01	0.01	0.01	0.01	0.01
7.250	0.01	0.01	0.01	0.01	0.01
7.500	0.01	0.01	0.01	0.01	0.01
7.750	0.01	0.02	0.02	0.02	0.02
8.000	0.02	0.02	0.02	0.02	0.02
8.250	0.02	0.02	0.02	0.02	0.02
8.500	0.02	0.02	0.02	0.02	0.02
8.750	0.02	0.02	0.02	0.02	0.02
9.000	0.02	0.02	0.02	0.02	0.02
9.250	0.02	0.02	0.02	0.02	0.02
9.500	0.03	0.03	0.03	0.03	0.03
9.750	0.03	0.03	0.03	0.03	0.03
10.000	0.03	0.03	0.03	0.03	0.03
10.250	0.03	0.03	0.04	0.04	0.04
10.500	0.04	0.04	0.04	0.04	0.05
10.750	0.05	0.05	0.05	0.05	0.06
11.000	0.06	0.06	0.07	0.07	0.08
11.250	0.08	0.08	0.09	0.09	0.10

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.500	0.10	0.14	0.15	0.16	0.16
11.750	0.21	0.22	0.29	0.31	0.47
12.000	0.54	0.80	0.90	0.50	0.34
12.250	0.26	0.23	0.19	0.17	0.16
12.500	0.16	0.12	0.10	0.10	0.10
12.750	0.09	0.09	0.08	0.08	0.07
13.000	0.07	0.07	0.06	0.06	0.06
13.250	0.06	0.05	0.05	0.05	0.05
13.500	0.04	0.04	0.04	0.04	0.04
13.750	0.04	0.04	0.04	0.04	0.04
14.000	0.04	0.03	0.03	0.03	0.03
14.250	0.03	0.03	0.03	0.03	0.03
14.500	0.03	0.03	0.03	0.03	0.03
14.750	0.03	0.03	0.02	0.02	0.02
15.000	0.02	0.02	0.02	0.02	0.02
15.250	0.02	0.02	0.02	0.02	0.02
15.500	0.02	0.02	0.02	0.02	0.02
15.750	0.02	0.02	0.02	0.02	0.02
16.000	0.02	0.02	0.02	0.02	0.02
16.250	0.02	0.02	0.02	0.02	0.02
16.500	0.02	0.02	0.02	0.02	0.02
16.750	0.02	0.02	0.02	0.02	0.02
17.000	0.02	0.02	0.02	0.02	0.02
17.250	0.02	0.02	0.02	0.01	0.01
17.500	0.01	0.01	0.01	0.01	0.01
17.750	0.01	0.01	0.01	0.01	0.01
18.000	0.01	0.01	0.01	0.01	0.01
18.250	0.01	0.01	0.01	0.01	0.01
18.500	0.01	0.01	0.01	0.01	0.01
18.750	0.01	0.01	0.01	0.01	0.01
19.000	0.01	0.01	0.01	0.01	0.01
19.250	0.01	0.01	0.01	0.01	0.01
19.500	0.01	0.01	0.01	0.01	0.01
19.750	0.01	0.01	0.01	0.01	0.01
20.000	0.01	0.01	0.01	0.01	0.01
20.250	0.01	0.01	0.01	0.01	0.01
20.500	0.01	0.01	0.01	0.01	0.01
20.750	0.01	0.01	0.01	0.01	0.01
21.000	0.01	0.01	0.01	0.01	0.01
21.250	0.01	0.01	0.01	0.01	0.01
21.500	0.01	0.01	0.01	0.01	0.01
21.750	0.01	0.01	0.01	0.01	0.01
22.000	0.01	0.01	0.01	0.01	0.01
22.250	0.01	0.01	0.01	0.01	0.01
22.500	0.01	0.01	0.01	0.01	0.01
22.750	0.01	0.01	0.01	0.01	0.01
23.000	0.01	0.01	0.01	0.01	0.01
23.250	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.500	0.01	0.01	0.01	0.01	0.01
23.750	0.01	0.01	0.01	0.01	0.01
24.000	0.01	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-1-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	12,609.000 ft²

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	1.09 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	1.09 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	12,609.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.05 in
Runoff Volume (Pervious)	0.074 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.073 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.054 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.02 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.145 hours
Total unit time, Tb	0.181 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	12,609.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.450	0.00	0.00	0.00	0.00	0.00
1.700	0.00	0.00	0.00	0.00	0.00
1.950	0.00	0.00	0.00	0.00	0.00
2.200	0.00	0.00	0.00	0.00	0.00
2.450	0.00	0.00	0.00	0.00	0.00
2.700	0.00	0.01	0.01	0.01	0.01
2.950	0.01	0.01	0.01	0.01	0.01
3.200	0.01	0.01	0.01	0.01	0.01
3.450	0.01	0.01	0.01	0.01	0.01
3.700	0.01	0.01	0.01	0.01	0.01
3.950	0.01	0.01	0.01	0.01	0.01
4.200	0.01	0.01	0.01	0.01	0.01
4.450	0.01	0.01	0.01	0.01	0.01
4.700	0.01	0.01	0.01	0.01	0.01
4.950	0.01	0.01	0.01	0.01	0.01
5.200	0.01	0.01	0.01	0.01	0.01
5.450	0.01	0.01	0.01	0.01	0.01
5.700	0.01	0.01	0.01	0.01	0.01
5.950	0.01	0.01	0.01	0.01	0.01
6.200	0.01	0.01	0.01	0.01	0.01
6.450	0.01	0.01	0.01	0.01	0.01
6.700	0.01	0.01	0.01	0.02	0.02
6.950	0.02	0.02	0.02	0.02	0.02
7.200	0.02	0.02	0.02	0.02	0.02
7.450	0.02	0.02	0.02	0.02	0.02
7.700	0.02	0.02	0.02	0.02	0.02
7.950	0.02	0.02	0.02	0.02	0.02
8.200	0.02	0.02	0.02	0.02	0.02
8.450	0.02	0.02	0.02	0.02	0.02
8.700	0.02	0.02	0.02	0.02	0.02
8.950	0.02	0.02	0.03	0.03	0.03
9.200	0.03	0.03	0.03	0.03	0.03
9.450	0.03	0.03	0.03	0.03	0.03
9.700	0.03	0.03	0.04	0.04	0.04
9.950	0.04	0.04	0.04	0.04	0.04
10.200	0.04	0.04	0.04	0.04	0.04
10.450	0.05	0.05	0.05	0.05	0.05
10.700	0.06	0.06	0.06	0.07	0.07
10.950	0.07	0.07	0.08	0.08	0.09

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.200	0.09	0.10	0.10	0.11	0.11
11.450	0.12	0.12	0.17	0.19	0.19
11.700	0.20	0.25	0.27	0.35	0.38
11.950	0.57	0.65	0.97	1.09	0.61
12.200	0.41	0.31	0.28	0.23	0.20
12.450	0.20	0.19	0.15	0.13	0.12
12.700	0.12	0.11	0.11	0.10	0.10
12.950	0.09	0.09	0.08	0.08	0.07
13.200	0.07	0.07	0.06	0.06	0.06
13.450	0.06	0.05	0.05	0.05	0.05
13.700	0.05	0.05	0.05	0.04	0.04
13.950	0.04	0.04	0.04	0.04	0.04
14.200	0.04	0.04	0.04	0.04	0.04
14.450	0.04	0.04	0.03	0.03	0.03
14.700	0.03	0.03	0.03	0.03	0.03
14.950	0.03	0.03	0.03	0.03	0.03
15.200	0.03	0.03	0.03	0.03	0.03
15.450	0.03	0.03	0.02	0.02	0.02
15.700	0.02	0.02	0.02	0.02	0.02
15.950	0.02	0.02	0.02	0.02	0.02
16.200	0.02	0.02	0.02	0.02	0.02
16.450	0.02	0.02	0.02	0.02	0.02
16.700	0.02	0.02	0.02	0.02	0.02
16.950	0.02	0.02	0.02	0.02	0.02
17.200	0.02	0.02	0.02	0.02	0.02
17.450	0.02	0.02	0.02	0.02	0.02
17.700	0.02	0.02	0.02	0.02	0.02
17.950	0.02	0.02	0.02	0.02	0.02
18.200	0.02	0.02	0.02	0.02	0.02
18.450	0.01	0.01	0.01	0.01	0.01
18.700	0.01	0.01	0.01	0.01	0.01
18.950	0.01	0.01	0.01	0.01	0.01
19.200	0.01	0.01	0.01	0.01	0.01
19.450	0.01	0.01	0.01	0.01	0.01
19.700	0.01	0.01	0.01	0.01	0.01
19.950	0.01	0.01	0.01	0.01	0.01
20.200	0.01	0.01	0.01	0.01	0.01
20.450	0.01	0.01	0.01	0.01	0.01
20.700	0.01	0.01	0.01	0.01	0.01
20.950	0.01	0.01	0.01	0.01	0.01
21.200	0.01	0.01	0.01	0.01	0.01
21.450	0.01	0.01	0.01	0.01	0.01
21.700	0.01	0.01	0.01	0.01	0.01
21.950	0.01	0.01	0.01	0.01	0.01
22.200	0.01	0.01	0.01	0.01	0.01
22.450	0.01	0.01	0.01	0.01	0.01
22.700	0.01	0.01	0.01	0.01	0.01
22.950	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.200	0.01	0.01	0.01	0.01	0.01
23.450	0.01	0.01	0.01	0.01	0.01
23.700	0.01	0.01	0.01	0.01	0.01
23.950	0.01	0.01	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-1-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	12,609.000 ft²

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	1.38 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	1.37 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	12,609.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.89 in
Runoff Volume (Pervious)	0.094 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.094 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.054 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.02 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.145 hours
Total unit time, Tb	0.181 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	12,609.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.100	0.00	0.00	0.00	0.00	0.00
1.350	0.00	0.00	0.00	0.00	0.00
1.600	0.00	0.00	0.00	0.00	0.00
1.850	0.00	0.00	0.00	0.01	0.01
2.100	0.01	0.01	0.01	0.01	0.01
2.350	0.01	0.01	0.01	0.01	0.01
2.600	0.01	0.01	0.01	0.01	0.01
2.850	0.01	0.01	0.01	0.01	0.01
3.100	0.01	0.01	0.01	0.01	0.01
3.350	0.01	0.01	0.01	0.01	0.01
3.600	0.01	0.01	0.01	0.01	0.01
3.850	0.01	0.01	0.01	0.01	0.01
4.100	0.01	0.01	0.01	0.01	0.01
4.350	0.01	0.01	0.01	0.01	0.01
4.600	0.01	0.01	0.01	0.01	0.01
4.850	0.01	0.01	0.01	0.01	0.01
5.100	0.01	0.01	0.01	0.01	0.01
5.350	0.01	0.01	0.01	0.01	0.02
5.600	0.02	0.02	0.02	0.02	0.02
5.850	0.02	0.02	0.02	0.02	0.02
6.100	0.02	0.02	0.02	0.02	0.02
6.350	0.02	0.02	0.02	0.02	0.02
6.600	0.02	0.02	0.02	0.02	0.02
6.850	0.02	0.02	0.02	0.02	0.02
7.100	0.02	0.02	0.02	0.02	0.02
7.350	0.02	0.02	0.02	0.02	0.02
7.600	0.02	0.02	0.02	0.02	0.03
7.850	0.03	0.03	0.03	0.03	0.03
8.100	0.03	0.03	0.03	0.03	0.03
8.350	0.03	0.03	0.03	0.03	0.03
8.600	0.03	0.03	0.03	0.03	0.03
8.850	0.03	0.03	0.03	0.03	0.03
9.100	0.03	0.03	0.03	0.04	0.04
9.350	0.04	0.04	0.04	0.04	0.04
9.600	0.04	0.04	0.04	0.04	0.05
9.850	0.05	0.05	0.05	0.05	0.05
10.100	0.05	0.05	0.05	0.05	0.05
10.350	0.06	0.06	0.06	0.06	0.06
10.600	0.06	0.07	0.07	0.08	0.08

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.850	0.08	0.09	0.09	0.09	0.10
11.100	0.10	0.11	0.12	0.13	0.13
11.350	0.14	0.14	0.15	0.15	0.21
11.600	0.24	0.25	0.25	0.32	0.34
11.850	0.44	0.48	0.72	0.82	1.22
12.100	1.37	0.77	0.51	0.39	0.35
12.350	0.28	0.26	0.25	0.24	0.18
12.600	0.16	0.15	0.15	0.14	0.13
12.850	0.12	0.12	0.11	0.11	0.10
13.100	0.10	0.09	0.09	0.08	0.08
13.350	0.08	0.07	0.07	0.07	0.06
13.600	0.06	0.06	0.06	0.06	0.06
13.850	0.06	0.06	0.05	0.05	0.05
14.100	0.05	0.05	0.05	0.05	0.05
14.350	0.05	0.05	0.05	0.04	0.04
14.600	0.04	0.04	0.04	0.04	0.04
14.850	0.04	0.04	0.04	0.04	0.03
15.100	0.03	0.03	0.03	0.03	0.03
15.350	0.03	0.03	0.03	0.03	0.03
15.600	0.03	0.03	0.03	0.03	0.03
15.850	0.03	0.03	0.03	0.03	0.03
16.100	0.03	0.03	0.03	0.03	0.03
16.350	0.03	0.03	0.03	0.03	0.03
16.600	0.03	0.03	0.03	0.03	0.03
16.850	0.03	0.03	0.02	0.02	0.02
17.100	0.02	0.02	0.02	0.02	0.02
17.350	0.02	0.02	0.02	0.02	0.02
17.600	0.02	0.02	0.02	0.02	0.02
17.850	0.02	0.02	0.02	0.02	0.02
18.100	0.02	0.02	0.02	0.02	0.02
18.350	0.02	0.02	0.02	0.02	0.02
18.600	0.02	0.02	0.02	0.02	0.02
18.850	0.02	0.02	0.02	0.02	0.02
19.100	0.02	0.02	0.02	0.02	0.02
19.350	0.02	0.02	0.02	0.02	0.02
19.600	0.02	0.02	0.02	0.02	0.02
19.850	0.02	0.02	0.02	0.02	0.02
20.100	0.02	0.02	0.02	0.02	0.02
20.350	0.02	0.02	0.02	0.02	0.02
20.600	0.02	0.02	0.02	0.02	0.02
20.850	0.02	0.02	0.02	0.02	0.02
21.100	0.02	0.02	0.02	0.02	0.02
21.350	0.02	0.02	0.02	0.02	0.02
21.600	0.02	0.02	0.02	0.02	0.02
21.850	0.01	0.01	0.01	0.01	0.01
22.100	0.01	0.01	0.01	0.01	0.01
22.350	0.01	0.01	0.01	0.01	0.01
22.600	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.850	0.01	0.01	0.01	0.01	0.01
23.100	0.01	0.01	0.01	0.01	0.01
23.350	0.01	0.01	0.01	0.01	0.01
23.600	0.01	0.01	0.01	0.01	0.01
23.850	0.01	0.01	0.01	0.02	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-1-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	12,609.000 ft²

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	1.61 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	1.61 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	12,609.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.58 in
Runoff Volume (Pervious)	0.111 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.111 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.054 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.02 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.145 hours
Total unit time, Tb	0.181 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	12,609.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.950	0.00	0.00	0.00	0.00	0.00
1.200	0.00	0.00	0.00	0.00	0.00
1.450	0.00	0.00	0.00	0.01	0.01
1.700	0.01	0.01	0.01	0.01	0.01
1.950	0.01	0.01	0.01	0.01	0.01
2.200	0.01	0.01	0.01	0.01	0.01
2.450	0.01	0.01	0.01	0.01	0.01
2.700	0.01	0.01	0.01	0.01	0.01
2.950	0.01	0.01	0.01	0.01	0.01
3.200	0.01	0.01	0.01	0.01	0.01
3.450	0.01	0.01	0.01	0.01	0.01
3.700	0.01	0.01	0.01	0.01	0.01
3.950	0.01	0.01	0.01	0.01	0.02
4.200	0.02	0.02	0.02	0.02	0.02
4.450	0.02	0.02	0.02	0.02	0.02
4.700	0.02	0.02	0.02	0.02	0.02
4.950	0.02	0.02	0.02	0.02	0.02
5.200	0.02	0.02	0.02	0.02	0.02
5.450	0.02	0.02	0.02	0.02	0.02
5.700	0.02	0.02	0.02	0.02	0.02
5.950	0.02	0.02	0.02	0.02	0.02
6.200	0.02	0.02	0.02	0.02	0.02
6.450	0.02	0.02	0.02	0.02	0.02
6.700	0.02	0.02	0.02	0.02	0.02
6.950	0.03	0.03	0.03	0.03	0.03
7.200	0.03	0.03	0.03	0.03	0.03
7.450	0.03	0.03	0.03	0.03	0.03
7.700	0.03	0.03	0.03	0.03	0.03
7.950	0.03	0.03	0.03	0.03	0.03
8.200	0.03	0.03	0.03	0.03	0.03
8.450	0.03	0.03	0.03	0.03	0.04
8.700	0.04	0.04	0.04	0.04	0.04
8.950	0.04	0.04	0.04	0.04	0.04
9.200	0.04	0.04	0.04	0.04	0.05
9.450	0.05	0.05	0.05	0.05	0.05
9.700	0.05	0.05	0.05	0.06	0.06
9.950	0.06	0.06	0.06	0.06	0.06
10.200	0.06	0.06	0.06	0.07	0.07
10.450	0.07	0.07	0.07	0.08	0.08

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.700	0.08	0.09	0.09	0.10	0.10
10.950	0.11	0.11	0.12	0.12	0.13
11.200	0.14	0.15	0.15	0.16	0.17
11.450	0.18	0.18	0.25	0.28	0.29
11.700	0.30	0.37	0.40	0.51	0.56
11.950	0.85	0.96	1.43	1.61	0.90
12.200	0.60	0.46	0.41	0.33	0.30
12.450	0.29	0.28	0.21	0.19	0.18
12.700	0.17	0.16	0.16	0.15	0.14
12.950	0.13	0.13	0.12	0.11	0.11
13.200	0.10	0.10	0.10	0.09	0.09
13.450	0.08	0.08	0.07	0.07	0.07
13.700	0.07	0.07	0.07	0.07	0.06
13.950	0.06	0.06	0.06	0.06	0.06
14.200	0.06	0.06	0.06	0.05	0.05
14.450	0.05	0.05	0.05	0.05	0.05
14.700	0.05	0.05	0.05	0.04	0.04
14.950	0.04	0.04	0.04	0.04	0.04
15.200	0.04	0.04	0.04	0.04	0.04
15.450	0.04	0.04	0.04	0.04	0.04
15.700	0.04	0.04	0.04	0.04	0.03
15.950	0.03	0.03	0.03	0.03	0.03
16.200	0.03	0.03	0.03	0.03	0.03
16.450	0.03	0.03	0.03	0.03	0.03
16.700	0.03	0.03	0.03	0.03	0.03
16.950	0.03	0.03	0.03	0.03	0.03
17.200	0.03	0.03	0.03	0.03	0.03
17.450	0.03	0.03	0.03	0.03	0.03
17.700	0.02	0.02	0.02	0.02	0.02
17.950	0.02	0.02	0.02	0.02	0.02
18.200	0.02	0.02	0.02	0.02	0.02
18.450	0.02	0.02	0.02	0.02	0.02
18.700	0.02	0.02	0.02	0.02	0.02
18.950	0.02	0.02	0.02	0.02	0.02
19.200	0.02	0.02	0.02	0.02	0.02
19.450	0.02	0.02	0.02	0.02	0.02
19.700	0.02	0.02	0.02	0.02	0.02
19.950	0.02	0.02	0.02	0.02	0.02
20.200	0.02	0.02	0.02	0.02	0.02
20.450	0.02	0.02	0.02	0.02	0.02
20.700	0.02	0.02	0.02	0.02	0.02
20.950	0.02	0.02	0.02	0.02	0.02
21.200	0.02	0.02	0.02	0.02	0.02
21.450	0.02	0.02	0.02	0.02	0.02
21.700	0.02	0.02	0.02	0.02	0.02
21.950	0.02	0.02	0.02	0.02	0.02
22.200	0.02	0.02	0.02	0.02	0.02
22.450	0.02	0.02	0.02	0.02	0.02

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.700	0.02	0.02	0.02	0.02	0.02
22.950	0.02	0.02	0.02	0.02	0.02
23.200	0.02	0.02	0.02	0.02	0.02
23.450	0.02	0.02	0.01	0.01	0.01
23.700	0.01	0.01	0.01	0.01	0.01
23.950	0.02	0.02	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-1-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	12,609.000 ft²

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	1.95 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	1.95 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	12,609.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.59 in
Runoff Volume (Pervious)	0.135 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.135 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.054 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.02 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.145 hours
Total unit time, Tb	0.181 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	12,609.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.750	0.00	0.00	0.00	0.00	0.00
1.000	0.00	0.00	0.00	0.00	0.01
1.250	0.01	0.01	0.01	0.01	0.01
1.500	0.01	0.01	0.01	0.01	0.01
1.750	0.01	0.01	0.01	0.01	0.01
2.000	0.01	0.01	0.01	0.01	0.01
2.250	0.01	0.01	0.01	0.01	0.01
2.500	0.01	0.01	0.01	0.01	0.01
2.750	0.01	0.01	0.01	0.01	0.02
3.000	0.02	0.02	0.02	0.02	0.02
3.250	0.02	0.02	0.02	0.02	0.02
3.500	0.02	0.02	0.02	0.02	0.02
3.750	0.02	0.02	0.02	0.02	0.02
4.000	0.02	0.02	0.02	0.02	0.02
4.250	0.02	0.02	0.02	0.02	0.02
4.500	0.02	0.02	0.02	0.02	0.02
4.750	0.02	0.02	0.02	0.02	0.02
5.000	0.02	0.02	0.02	0.02	0.02
5.250	0.02	0.02	0.02	0.02	0.02
5.500	0.02	0.02	0.02	0.02	0.02
5.750	0.02	0.02	0.02	0.02	0.02
6.000	0.02	0.02	0.03	0.03	0.03
6.250	0.03	0.03	0.03	0.03	0.03
6.500	0.03	0.03	0.03	0.03	0.03
6.750	0.03	0.03	0.03	0.03	0.03
7.000	0.03	0.03	0.03	0.03	0.03
7.250	0.03	0.03	0.03	0.03	0.03
7.500	0.04	0.04	0.04	0.04	0.04
7.750	0.04	0.04	0.04	0.04	0.04
8.000	0.04	0.04	0.04	0.04	0.04
8.250	0.04	0.04	0.04	0.04	0.04
8.500	0.04	0.04	0.04	0.04	0.04
8.750	0.04	0.04	0.04	0.04	0.05
9.000	0.05	0.05	0.05	0.05	0.05
9.250	0.05	0.05	0.06	0.06	0.06
9.500	0.06	0.06	0.06	0.06	0.06
9.750	0.07	0.07	0.07	0.07	0.07
10.000	0.07	0.07	0.07	0.08	0.08
10.250	0.08	0.08	0.08	0.08	0.08

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.500	0.08	0.09	0.09	0.10	0.10
10.750	0.11	0.11	0.12	0.12	0.13
11.000	0.13	0.14	0.15	0.16	0.17
11.250	0.18	0.19	0.20	0.20	0.21
11.500	0.22	0.30	0.34	0.35	0.36
11.750	0.45	0.49	0.62	0.68	1.03
12.000	1.17	1.73	1.95	1.09	0.73
12.250	0.56	0.50	0.40	0.37	0.35
12.500	0.34	0.26	0.23	0.21	0.21
12.750	0.20	0.19	0.18	0.17	0.16
13.000	0.15	0.14	0.14	0.13	0.13
13.250	0.12	0.12	0.11	0.11	0.10
13.500	0.10	0.09	0.09	0.08	0.08
13.750	0.08	0.08	0.08	0.08	0.08
14.000	0.08	0.07	0.07	0.07	0.07
14.250	0.07	0.07	0.07	0.07	0.06
14.500	0.06	0.06	0.06	0.06	0.06
14.750	0.06	0.06	0.05	0.05	0.05
15.000	0.05	0.05	0.05	0.05	0.05
15.250	0.05	0.05	0.05	0.05	0.05
15.500	0.04	0.04	0.04	0.04	0.04
15.750	0.04	0.04	0.04	0.04	0.04
16.000	0.04	0.04	0.04	0.04	0.04
16.250	0.04	0.04	0.04	0.04	0.04
16.500	0.04	0.04	0.04	0.04	0.04
16.750	0.04	0.04	0.04	0.04	0.04
17.000	0.03	0.03	0.03	0.03	0.03
17.250	0.03	0.03	0.03	0.03	0.03
17.500	0.03	0.03	0.03	0.03	0.03
17.750	0.03	0.03	0.03	0.03	0.03
18.000	0.03	0.03	0.03	0.03	0.03
18.250	0.03	0.03	0.03	0.03	0.03
18.500	0.03	0.03	0.03	0.03	0.03
18.750	0.03	0.03	0.03	0.03	0.03
19.000	0.03	0.03	0.03	0.03	0.03
19.250	0.03	0.03	0.03	0.03	0.03
19.500	0.02	0.02	0.02	0.02	0.02
19.750	0.02	0.02	0.02	0.02	0.02
20.000	0.02	0.02	0.02	0.02	0.02
20.250	0.02	0.02	0.02	0.02	0.02
20.500	0.02	0.02	0.02	0.02	0.02
20.750	0.02	0.02	0.02	0.02	0.02
21.000	0.02	0.02	0.02	0.02	0.02
21.250	0.02	0.02	0.02	0.02	0.02
21.500	0.02	0.02	0.02	0.02	0.02
21.750	0.02	0.02	0.02	0.02	0.02
22.000	0.02	0.02	0.02	0.02	0.02
22.250	0.02	0.02	0.02	0.02	0.02

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.500	0.02	0.02	0.02	0.02	0.02
22.750	0.02	0.02	0.02	0.02	0.02
23.000	0.02	0.02	0.02	0.02	0.02
23.250	0.02	0.02	0.02	0.02	0.02
23.500	0.02	0.02	0.02	0.02	0.02
23.750	0.02	0.02	0.02	0.02	0.02
24.000	0.02	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-1-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	12,609.000 ft²

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	2.24 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	2.24 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	12,609.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.44 in
Runoff Volume (Pervious)	0.155 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.155 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.054 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.02 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.145 hours
Total unit time, Tb	0.181 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	12,609.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.650	0.00	0.00	0.00	0.00	0.00
0.900	0.00	0.00	0.01	0.01	0.01
1.150	0.01	0.01	0.01	0.01	0.01
1.400	0.01	0.01	0.01	0.01	0.01
1.650	0.01	0.01	0.01	0.01	0.01
1.900	0.01	0.01	0.01	0.01	0.01
2.150	0.01	0.01	0.02	0.02	0.02
2.400	0.02	0.02	0.02	0.02	0.02
2.650	0.02	0.02	0.02	0.02	0.02
2.900	0.02	0.02	0.02	0.02	0.02
3.150	0.02	0.02	0.02	0.02	0.02
3.400	0.02	0.02	0.02	0.02	0.02
3.650	0.02	0.02	0.02	0.02	0.02
3.900	0.02	0.02	0.02	0.02	0.02
4.150	0.02	0.02	0.02	0.02	0.02
4.400	0.02	0.02	0.02	0.02	0.02
4.650	0.02	0.02	0.03	0.03	0.03
4.900	0.03	0.03	0.03	0.03	0.03
5.150	0.03	0.03	0.03	0.03	0.03
5.400	0.03	0.03	0.03	0.03	0.03
5.650	0.03	0.03	0.03	0.03	0.03
5.900	0.03	0.03	0.03	0.03	0.03
6.150	0.03	0.03	0.03	0.03	0.03
6.400	0.03	0.03	0.03	0.03	0.03
6.650	0.03	0.03	0.03	0.03	0.04
6.900	0.04	0.04	0.04	0.04	0.04
7.150	0.04	0.04	0.04	0.04	0.04
7.400	0.04	0.04	0.04	0.04	0.04
7.650	0.04	0.04	0.04	0.04	0.04
7.900	0.04	0.04	0.04	0.05	0.05
8.150	0.05	0.05	0.05	0.05	0.05
8.400	0.05	0.05	0.05	0.05	0.05
8.650	0.05	0.05	0.05	0.05	0.05
8.900	0.05	0.05	0.05	0.05	0.06
9.150	0.06	0.06	0.06	0.06	0.06
9.400	0.06	0.07	0.07	0.07	0.07
9.650	0.07	0.07	0.08	0.08	0.08
9.900	0.08	0.08	0.08	0.08	0.08
10.150	0.09	0.09	0.09	0.09	0.09

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.400	0.09	0.10	0.10	0.10	0.11
10.650	0.12	0.12	0.13	0.13	0.14
10.900	0.14	0.15	0.15	0.17	0.17
11.150	0.19	0.19	0.21	0.21	0.23
11.400	0.24	0.25	0.25	0.35	0.39
11.650	0.40	0.41	0.52	0.56	0.72
11.900	0.78	1.18	1.34	1.99	2.24
12.150	1.25	0.83	0.64	0.57	0.46
12.400	0.42	0.40	0.39	0.30	0.26
12.650	0.24	0.24	0.22	0.22	0.20
12.900	0.20	0.18	0.18	0.16	0.15
13.150	0.15	0.14	0.14	0.13	0.12
13.400	0.12	0.11	0.11	0.10	0.10
13.650	0.10	0.10	0.09	0.09	0.09
13.900	0.09	0.09	0.09	0.08	0.08
14.150	0.08	0.08	0.08	0.08	0.08
14.400	0.08	0.07	0.07	0.07	0.07
14.650	0.07	0.07	0.06	0.06	0.06
14.900	0.06	0.06	0.06	0.06	0.05
15.150	0.05	0.05	0.05	0.05	0.05
15.400	0.05	0.05	0.05	0.05	0.05
15.650	0.05	0.05	0.05	0.05	0.05
15.900	0.05	0.05	0.05	0.05	0.05
16.150	0.05	0.05	0.05	0.05	0.04
16.400	0.04	0.04	0.04	0.04	0.04
16.650	0.04	0.04	0.04	0.04	0.04
16.900	0.04	0.04	0.04	0.04	0.04
17.150	0.04	0.04	0.04	0.04	0.04
17.400	0.04	0.04	0.04	0.04	0.04
17.650	0.03	0.03	0.03	0.03	0.03
17.900	0.03	0.03	0.03	0.03	0.03
18.150	0.03	0.03	0.03	0.03	0.03
18.400	0.03	0.03	0.03	0.03	0.03
18.650	0.03	0.03	0.03	0.03	0.03
18.900	0.03	0.03	0.03	0.03	0.03
19.150	0.03	0.03	0.03	0.03	0.03
19.400	0.03	0.03	0.03	0.03	0.03
19.650	0.03	0.03	0.03	0.03	0.03
19.900	0.03	0.03	0.03	0.03	0.03
20.150	0.03	0.03	0.03	0.03	0.03
20.400	0.03	0.03	0.03	0.03	0.03
20.650	0.03	0.03	0.03	0.03	0.03
20.900	0.03	0.03	0.03	0.03	0.03
21.150	0.03	0.03	0.03	0.03	0.03
21.400	0.02	0.02	0.02	0.02	0.02
21.650	0.02	0.02	0.02	0.02	0.02
21.900	0.02	0.02	0.02	0.02	0.02
22.150	0.02	0.02	0.02	0.02	0.02

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.400	0.02	0.02	0.02	0.02	0.02
22.650	0.02	0.02	0.02	0.02	0.02
22.900	0.02	0.02	0.02	0.02	0.02
23.150	0.02	0.02	0.02	0.02	0.02
23.400	0.02	0.02	0.02	0.02	0.02
23.650	0.02	0.02	0.02	0.02	0.02
23.900	0.02	0.02	0.02	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-1-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	12,609.000 ft²

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	2.55 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	2.55 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	12,609.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.36 in
Runoff Volume (Pervious)	0.178 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.177 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.054 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.02 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.145 hours
Total unit time, Tb	0.181 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	12,609.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.550	0.00	0.00	0.00	0.00	0.00
0.800	0.00	0.01	0.01	0.01	0.01
1.050	0.01	0.01	0.01	0.01	0.01
1.300	0.01	0.01	0.01	0.01	0.01
1.550	0.01	0.01	0.01	0.01	0.01
1.800	0.02	0.02	0.02	0.02	0.02
2.050	0.02	0.02	0.02	0.02	0.02
2.300	0.02	0.02	0.02	0.02	0.02
2.550	0.02	0.02	0.02	0.02	0.02
2.800	0.02	0.02	0.02	0.02	0.02
3.050	0.02	0.02	0.02	0.02	0.02
3.300	0.02	0.02	0.02	0.02	0.02
3.550	0.02	0.03	0.03	0.03	0.03
3.800	0.03	0.03	0.03	0.03	0.03
4.050	0.03	0.03	0.03	0.03	0.03
4.300	0.03	0.03	0.03	0.03	0.03
4.550	0.03	0.03	0.03	0.03	0.03
4.800	0.03	0.03	0.03	0.03	0.03
5.050	0.03	0.03	0.03	0.03	0.03
5.300	0.03	0.03	0.03	0.03	0.03
5.550	0.03	0.03	0.03	0.03	0.03
5.800	0.03	0.03	0.03	0.03	0.03
6.050	0.03	0.03	0.03	0.03	0.04
6.300	0.04	0.04	0.04	0.04	0.04
6.550	0.04	0.04	0.04	0.04	0.04
6.800	0.04	0.04	0.04	0.04	0.04
7.050	0.04	0.04	0.04	0.04	0.04
7.300	0.04	0.05	0.05	0.05	0.05
7.550	0.05	0.05	0.05	0.05	0.05
7.800	0.05	0.05	0.05	0.05	0.05
8.050	0.05	0.05	0.05	0.05	0.05
8.300	0.05	0.05	0.05	0.06	0.06
8.550	0.06	0.06	0.06	0.06	0.06
8.800	0.06	0.06	0.06	0.06	0.06
9.050	0.06	0.06	0.07	0.07	0.07
9.300	0.07	0.07	0.07	0.08	0.08
9.550	0.08	0.08	0.08	0.08	0.09
9.800	0.09	0.09	0.09	0.09	0.09
10.050	0.10	0.10	0.10	0.10	0.10

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.300	0.10	0.11	0.11	0.11	0.11
10.550	0.12	0.12	0.13	0.14	0.14
10.800	0.15	0.16	0.16	0.17	0.17
11.050	0.19	0.20	0.21	0.22	0.24
11.300	0.24	0.26	0.27	0.28	0.29
11.550	0.40	0.44	0.46	0.47	0.59
11.800	0.64	0.82	0.89	1.34	1.53
12.050	2.26	2.55	1.42	0.95	0.73
12.300	0.65	0.53	0.48	0.46	0.45
12.550	0.34	0.29	0.28	0.27	0.25
12.800	0.25	0.23	0.22	0.21	0.20
13.050	0.18	0.18	0.17	0.16	0.15
13.300	0.15	0.14	0.14	0.13	0.13
13.550	0.12	0.11	0.11	0.11	0.11
13.800	0.11	0.10	0.10	0.10	0.10
14.050	0.10	0.10	0.09	0.09	0.09
14.300	0.09	0.09	0.09	0.08	0.08
14.550	0.08	0.08	0.08	0.08	0.07
14.800	0.07	0.07	0.07	0.07	0.07
15.050	0.06	0.06	0.06	0.06	0.06
15.300	0.06	0.06	0.06	0.06	0.06
15.550	0.06	0.06	0.06	0.06	0.06
15.800	0.06	0.06	0.06	0.05	0.05
16.050	0.05	0.05	0.05	0.05	0.05
16.300	0.05	0.05	0.05	0.05	0.05
16.550	0.05	0.05	0.05	0.05	0.05
16.800	0.05	0.05	0.05	0.05	0.05
17.050	0.04	0.04	0.04	0.04	0.04
17.300	0.04	0.04	0.04	0.04	0.04
17.550	0.04	0.04	0.04	0.04	0.04
17.800	0.04	0.04	0.04	0.04	0.04
18.050	0.04	0.04	0.04	0.04	0.04
18.300	0.04	0.04	0.04	0.03	0.03
18.550	0.03	0.03	0.03	0.03	0.03
18.800	0.03	0.03	0.03	0.03	0.03
19.050	0.03	0.03	0.03	0.03	0.03
19.300	0.03	0.03	0.03	0.03	0.03
19.550	0.03	0.03	0.03	0.03	0.03
19.800	0.03	0.03	0.03	0.03	0.03
20.050	0.03	0.03	0.03	0.03	0.03
20.300	0.03	0.03	0.03	0.03	0.03
20.550	0.03	0.03	0.03	0.03	0.03
20.800	0.03	0.03	0.03	0.03	0.03
21.050	0.03	0.03	0.03	0.03	0.03
21.300	0.03	0.03	0.03	0.03	0.03
21.550	0.03	0.03	0.03	0.03	0.03
21.800	0.03	0.03	0.03	0.03	0.03
22.050	0.03	0.03	0.03	0.03	0.03

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.300	0.03	0.03	0.03	0.03	0.03
22.550	0.03	0.03	0.03	0.03	0.03
22.800	0.03	0.03	0.03	0.03	0.03
23.050	0.02	0.02	0.02	0.02	0.02
23.300	0.02	0.02	0.02	0.02	0.02
23.550	0.02	0.02	0.02	0.02	0.02
23.800	0.02	0.02	0.02	0.03	0.03

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-1-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	2,707.000 ft²

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.109 hours
Flow (Peak, Computed)	0.10 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.10 ft³/s

Drainage Area	
SCS CN (Composite)	80.000
Area (User Defined)	2,707.000 ft²
Maximum Retention (Pervious)	2.50 in
Maximum Retention (Pervious, 20 percent)	0.50 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.05 in
Runoff Volume (Pervious)	0.005 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.005 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.054 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.29 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.145 hours
Total unit time, Tb	0.181 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	2,707.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.800	0.00	0.00	0.00	0.00	0.00
11.050	0.00	0.00	0.00	0.00	0.00
11.300	0.00	0.00	0.00	0.00	0.00
11.550	0.01	0.01	0.01	0.01	0.01
11.800	0.01	0.02	0.02	0.04	0.05
12.050	0.08	0.10	0.06	0.04	0.03
12.300	0.03	0.02	0.02	0.02	0.02
12.550	0.02	0.01	0.01	0.01	0.01
12.800	0.01	0.01	0.01	0.01	0.01
13.050	0.01	0.01	0.01	0.01	0.01
13.300	0.01	0.01	0.01	0.01	0.01
13.550	0.01	0.01	0.01	0.01	0.01
13.800	0.01	0.01	0.01	0.00	0.00
14.050	0.00	0.00	0.00	0.00	0.00
14.300	0.00	0.00	0.00	0.00	0.00
14.550	0.00	0.00	0.00	0.00	0.00
14.800	0.00	0.00	0.00	0.00	0.00
15.050	0.00	0.00	0.00	0.00	0.00
15.300	0.00	0.00	0.00	0.00	0.00
15.550	0.00	0.00	0.00	0.00	0.00
15.800	0.00	0.00	0.00	0.00	0.00
16.050	0.00	0.00	0.00	0.00	0.00
16.300	0.00	0.00	0.00	0.00	0.00
16.550	0.00	0.00	0.00	0.00	0.00
16.800	0.00	0.00	0.00	0.00	0.00
17.050	0.00	0.00	0.00	0.00	0.00
17.300	0.00	0.00	0.00	0.00	0.00
17.550	0.00	0.00	0.00	0.00	0.00
17.800	0.00	0.00	0.00	0.00	0.00
18.050	0.00	0.00	0.00	0.00	0.00
18.300	0.00	0.00	0.00	0.00	0.00
18.550	0.00	0.00	0.00	0.00	0.00
18.800	0.00	0.00	0.00	0.00	0.00
19.050	0.00	0.00	0.00	0.00	0.00
19.300	0.00	0.00	0.00	0.00	0.00
19.550	0.00	0.00	0.00	0.00	0.00
19.800	0.00	0.00	0.00	0.00	0.00
20.050	0.00	0.00	0.00	0.00	0.00
20.300	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.550	0.00	0.00	0.00	0.00	0.00
20.800	0.00	0.00	0.00	0.00	0.00
21.050	0.00	0.00	0.00	0.00	0.00
21.300	0.00	0.00	0.00	0.00	0.00
21.550	0.00	0.00	0.00	0.00	0.00
21.800	0.00	0.00	0.00	0.00	0.00
22.050	0.00	0.00	0.00	0.00	0.00
22.300	0.00	0.00	0.00	0.00	0.00
22.550	0.00	0.00	0.00	0.00	0.00
22.800	0.00	0.00	0.00	0.00	0.00
23.050	0.00	0.00	0.00	0.00	0.00
23.300	0.00	0.00	0.00	0.00	0.00
23.550	0.00	0.00	0.00	0.00	0.00
23.800	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-1-P
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	2,707.000 ft²

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	0.13 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.13 ft³/s

Drainage Area	
SCS CN (Composite)	80.000
Area (User Defined)	2,707.000 ft²
Maximum Retention (Pervious)	2.50 in
Maximum Retention (Pervious, 20 percent)	0.50 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.46 in
Runoff Volume (Pervious)	0.008 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.008 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.054 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.29 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.145 hours
Total unit time, Tb	0.181 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	2,707.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.300	0.00	0.00	0.00	0.00	0.00
10.550	0.00	0.00	0.00	0.00	0.00
10.800	0.00	0.00	0.00	0.00	0.00
11.050	0.00	0.00	0.00	0.00	0.01
11.300	0.01	0.01	0.01	0.01	0.01
11.550	0.01	0.01	0.01	0.01	0.02
11.800	0.02	0.03	0.03	0.06	0.07
12.050	0.11	0.13	0.08	0.05	0.04
12.300	0.04	0.03	0.03	0.03	0.03
12.550	0.02	0.02	0.02	0.02	0.02
12.800	0.02	0.01	0.01	0.01	0.01
13.050	0.01	0.01	0.01	0.01	0.01
13.300	0.01	0.01	0.01	0.01	0.01
13.550	0.01	0.01	0.01	0.01	0.01
13.800	0.01	0.01	0.01	0.01	0.01
14.050	0.01	0.01	0.01	0.01	0.01
14.300	0.01	0.01	0.01	0.01	0.01
14.550	0.01	0.01	0.01	0.01	0.00
14.800	0.00	0.00	0.00	0.00	0.00
15.050	0.00	0.00	0.00	0.00	0.00
15.300	0.00	0.00	0.00	0.00	0.00
15.550	0.00	0.00	0.00	0.00	0.00
15.800	0.00	0.00	0.00	0.00	0.00
16.050	0.00	0.00	0.00	0.00	0.00
16.300	0.00	0.00	0.00	0.00	0.00
16.550	0.00	0.00	0.00	0.00	0.00
16.800	0.00	0.00	0.00	0.00	0.00
17.050	0.00	0.00	0.00	0.00	0.00
17.300	0.00	0.00	0.00	0.00	0.00
17.550	0.00	0.00	0.00	0.00	0.00
17.800	0.00	0.00	0.00	0.00	0.00
18.050	0.00	0.00	0.00	0.00	0.00
18.300	0.00	0.00	0.00	0.00	0.00
18.550	0.00	0.00	0.00	0.00	0.00
18.800	0.00	0.00	0.00	0.00	0.00
19.050	0.00	0.00	0.00	0.00	0.00
19.300	0.00	0.00	0.00	0.00	0.00
19.550	0.00	0.00	0.00	0.00	0.00
19.800	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.050	0.00	0.00	0.00	0.00	0.00
20.300	0.00	0.00	0.00	0.00	0.00
20.550	0.00	0.00	0.00	0.00	0.00
20.800	0.00	0.00	0.00	0.00	0.00
21.050	0.00	0.00	0.00	0.00	0.00
21.300	0.00	0.00	0.00	0.00	0.00
21.550	0.00	0.00	0.00	0.00	0.00
21.800	0.00	0.00	0.00	0.00	0.00
22.050	0.00	0.00	0.00	0.00	0.00
22.300	0.00	0.00	0.00	0.00	0.00
22.550	0.00	0.00	0.00	0.00	0.00
22.800	0.00	0.00	0.00	0.00	0.00
23.050	0.00	0.00	0.00	0.00	0.00
23.300	0.00	0.00	0.00	0.00	0.00
23.550	0.00	0.00	0.00	0.00	0.00
23.800	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-1-P
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	2,707.000 ft²

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	0.19 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.19 ft³/s

Drainage Area	
SCS CN (Composite)	80.000
Area (User Defined)	2,707.000 ft²
Maximum Retention (Pervious)	2.50 in
Maximum Retention (Pervious, 20 percent)	0.50 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.14 in
Runoff Volume (Pervious)	0.011 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.011 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.054 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.29 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.145 hours
Total unit time, Tb	0.181 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	2,707.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
9.450	0.00	0.00	0.00	0.00	0.00
9.700	0.00	0.00	0.00	0.00	0.00
9.950	0.00	0.00	0.00	0.00	0.00
10.200	0.00	0.00	0.00	0.00	0.00
10.450	0.00	0.00	0.00	0.00	0.00
10.700	0.00	0.00	0.00	0.01	0.01
10.950	0.01	0.01	0.01	0.01	0.01
11.200	0.01	0.01	0.01	0.01	0.01
11.450	0.01	0.01	0.02	0.02	0.02
11.700	0.02	0.03	0.04	0.05	0.05
11.950	0.09	0.10	0.16	0.19	0.11
12.200	0.08	0.06	0.05	0.04	0.04
12.450	0.04	0.04	0.03	0.03	0.02
12.700	0.02	0.02	0.02	0.02	0.02
12.950	0.02	0.02	0.02	0.02	0.01
13.200	0.01	0.01	0.01	0.01	0.01
13.450	0.01	0.01	0.01	0.01	0.01
13.700	0.01	0.01	0.01	0.01	0.01
13.950	0.01	0.01	0.01	0.01	0.01
14.200	0.01	0.01	0.01	0.01	0.01
14.450	0.01	0.01	0.01	0.01	0.01
14.700	0.01	0.01	0.01	0.01	0.01
14.950	0.01	0.01	0.01	0.01	0.01
15.200	0.01	0.01	0.01	0.01	0.01
15.450	0.01	0.01	0.01	0.01	0.01
15.700	0.01	0.01	0.01	0.01	0.01
15.950	0.01	0.01	0.01	0.01	0.00
16.200	0.00	0.00	0.00	0.00	0.00
16.450	0.00	0.00	0.00	0.00	0.00
16.700	0.00	0.00	0.00	0.00	0.00
16.950	0.00	0.00	0.00	0.00	0.00
17.200	0.00	0.00	0.00	0.00	0.00
17.450	0.00	0.00	0.00	0.00	0.00
17.700	0.00	0.00	0.00	0.00	0.00
17.950	0.00	0.00	0.00	0.00	0.00
18.200	0.00	0.00	0.00	0.00	0.00
18.450	0.00	0.00	0.00	0.00	0.00
18.700	0.00	0.00	0.00	0.00	0.00
18.950	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
19.200	0.00	0.00	0.00	0.00	0.00
19.450	0.00	0.00	0.00	0.00	0.00
19.700	0.00	0.00	0.00	0.00	0.00
19.950	0.00	0.00	0.00	0.00	0.00
20.200	0.00	0.00	0.00	0.00	0.00
20.450	0.00	0.00	0.00	0.00	0.00
20.700	0.00	0.00	0.00	0.00	0.00
20.950	0.00	0.00	0.00	0.00	0.00
21.200	0.00	0.00	0.00	0.00	0.00
21.450	0.00	0.00	0.00	0.00	0.00
21.700	0.00	0.00	0.00	0.00	0.00
21.950	0.00	0.00	0.00	0.00	0.00
22.200	0.00	0.00	0.00	0.00	0.00
22.450	0.00	0.00	0.00	0.00	0.00
22.700	0.00	0.00	0.00	0.00	0.00
22.950	0.00	0.00	0.00	0.00	0.00
23.200	0.00	0.00	0.00	0.00	0.00
23.450	0.00	0.00	0.00	0.00	0.00
23.700	0.00	0.00	0.00	0.00	0.00
23.950	0.00	0.00	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-1-P
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	2,707.000 ft²

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	0.25 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.25 ft³/s

Drainage Area	
SCS CN (Composite)	80.000
Area (User Defined)	2,707.000 ft²
Maximum Retention (Pervious)	2.50 in
Maximum Retention (Pervious, 20 percent)	0.50 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.74 in
Runoff Volume (Pervious)	0.014 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.014 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.054 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.29 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.145 hours
Total unit time, Tb	0.181 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	2,707.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
8.800	0.00	0.00	0.00	0.00	0.00
9.050	0.00	0.00	0.00	0.00	0.00
9.300	0.00	0.00	0.00	0.00	0.00
9.550	0.00	0.00	0.00	0.00	0.00
9.800	0.00	0.00	0.00	0.00	0.00
10.050	0.00	0.00	0.00	0.00	0.00
10.300	0.00	0.00	0.00	0.00	0.00
10.550	0.00	0.01	0.01	0.01	0.01
10.800	0.01	0.01	0.01	0.01	0.01
11.050	0.01	0.01	0.01	0.01	0.01
11.300	0.01	0.02	0.02	0.02	0.02
11.550	0.03	0.03	0.03	0.03	0.04
11.800	0.05	0.06	0.07	0.11	0.13
12.050	0.21	0.25	0.14	0.10	0.08
12.300	0.07	0.06	0.05	0.05	0.05
12.550	0.04	0.03	0.03	0.03	0.03
12.800	0.03	0.03	0.02	0.02	0.02
13.050	0.02	0.02	0.02	0.02	0.02
13.300	0.02	0.02	0.02	0.01	0.01
13.550	0.01	0.01	0.01	0.01	0.01
13.800	0.01	0.01	0.01	0.01	0.01
14.050	0.01	0.01	0.01	0.01	0.01
14.300	0.01	0.01	0.01	0.01	0.01
14.550	0.01	0.01	0.01	0.01	0.01
14.800	0.01	0.01	0.01	0.01	0.01
15.050	0.01	0.01	0.01	0.01	0.01
15.300	0.01	0.01	0.01	0.01	0.01
15.550	0.01	0.01	0.01	0.01	0.01
15.800	0.01	0.01	0.01	0.01	0.01
16.050	0.01	0.01	0.01	0.01	0.01
16.300	0.01	0.01	0.01	0.01	0.01
16.550	0.01	0.01	0.01	0.01	0.01
16.800	0.01	0.01	0.01	0.01	0.01
17.050	0.01	0.01	0.01	0.01	0.00
17.300	0.00	0.00	0.00	0.00	0.00
17.550	0.00	0.00	0.00	0.00	0.00
17.800	0.00	0.00	0.00	0.00	0.00
18.050	0.00	0.00	0.00	0.00	0.00
18.300	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
18.550	0.00	0.00	0.00	0.00	0.00
18.800	0.00	0.00	0.00	0.00	0.00
19.050	0.00	0.00	0.00	0.00	0.00
19.300	0.00	0.00	0.00	0.00	0.00
19.550	0.00	0.00	0.00	0.00	0.00
19.800	0.00	0.00	0.00	0.00	0.00
20.050	0.00	0.00	0.00	0.00	0.00
20.300	0.00	0.00	0.00	0.00	0.00
20.550	0.00	0.00	0.00	0.00	0.00
20.800	0.00	0.00	0.00	0.00	0.00
21.050	0.00	0.00	0.00	0.00	0.00
21.300	0.00	0.00	0.00	0.00	0.00
21.550	0.00	0.00	0.00	0.00	0.00
21.800	0.00	0.00	0.00	0.00	0.00
22.050	0.00	0.00	0.00	0.00	0.00
22.300	0.00	0.00	0.00	0.00	0.00
22.550	0.00	0.00	0.00	0.00	0.00
22.800	0.00	0.00	0.00	0.00	0.00
23.050	0.00	0.00	0.00	0.00	0.00
23.300	0.00	0.00	0.00	0.00	0.00
23.550	0.00	0.00	0.00	0.00	0.00
23.800	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-1-P
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	2,707.000 ft²

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	0.32 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.32 ft³/s

Drainage Area	
SCS CN (Composite)	80.000
Area (User Defined)	2,707.000 ft²
Maximum Retention (Pervious)	2.50 in
Maximum Retention (Pervious, 20 percent)	0.50 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.63 in
Runoff Volume (Pervious)	0.019 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.019 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.054 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.29 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.145 hours
Total unit time, Tb	0.181 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	2,707.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
7.800	0.00	0.00	0.00	0.00	0.00
8.050	0.00	0.00	0.00	0.00	0.00
8.300	0.00	0.00	0.00	0.00	0.00
8.550	0.00	0.00	0.00	0.00	0.00
8.800	0.00	0.00	0.00	0.00	0.00
9.050	0.00	0.00	0.00	0.00	0.00
9.300	0.00	0.00	0.00	0.00	0.00
9.550	0.00	0.00	0.00	0.00	0.00
9.800	0.00	0.00	0.00	0.01	0.01
10.050	0.01	0.01	0.01	0.01	0.01
10.300	0.01	0.01	0.01	0.01	0.01
10.550	0.01	0.01	0.01	0.01	0.01
10.800	0.01	0.01	0.01	0.01	0.01
11.050	0.01	0.02	0.02	0.02	0.02
11.300	0.02	0.02	0.02	0.02	0.03
11.550	0.04	0.04	0.04	0.05	0.06
11.800	0.07	0.09	0.10	0.15	0.18
12.050	0.27	0.32	0.18	0.13	0.10
12.300	0.09	0.07	0.06	0.06	0.06
12.550	0.05	0.04	0.04	0.04	0.04
12.800	0.03	0.03	0.03	0.03	0.03
13.050	0.03	0.02	0.02	0.02	0.02
13.300	0.02	0.02	0.02	0.02	0.02
13.550	0.02	0.02	0.02	0.02	0.02
13.800	0.01	0.01	0.01	0.01	0.01
14.050	0.01	0.01	0.01	0.01	0.01
14.300	0.01	0.01	0.01	0.01	0.01
14.550	0.01	0.01	0.01	0.01	0.01
14.800	0.01	0.01	0.01	0.01	0.01
15.050	0.01	0.01	0.01	0.01	0.01
15.300	0.01	0.01	0.01	0.01	0.01
15.550	0.01	0.01	0.01	0.01	0.01
15.800	0.01	0.01	0.01	0.01	0.01
16.050	0.01	0.01	0.01	0.01	0.01
16.300	0.01	0.01	0.01	0.01	0.01
16.550	0.01	0.01	0.01	0.01	0.01
16.800	0.01	0.01	0.01	0.01	0.01
17.050	0.01	0.01	0.01	0.01	0.01
17.300	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
17.550	0.01	0.01	0.01	0.01	0.01
17.800	0.01	0.01	0.01	0.01	0.01
18.050	0.01	0.01	0.01	0.01	0.01
18.300	0.01	0.01	0.01	0.01	0.01
18.550	0.01	0.01	0.01	0.01	0.00
18.800	0.00	0.00	0.00	0.00	0.00
19.050	0.00	0.00	0.00	0.00	0.00
19.300	0.00	0.00	0.00	0.00	0.00
19.550	0.00	0.00	0.00	0.00	0.00
19.800	0.00	0.00	0.00	0.00	0.00
20.050	0.00	0.00	0.00	0.00	0.00
20.300	0.00	0.00	0.00	0.00	0.00
20.550	0.00	0.00	0.00	0.00	0.00
20.800	0.00	0.00	0.00	0.00	0.00
21.050	0.00	0.00	0.00	0.00	0.00
21.300	0.00	0.00	0.00	0.00	0.00
21.550	0.00	0.00	0.00	0.00	0.00
21.800	0.00	0.00	0.00	0.00	0.00
22.050	0.00	0.00	0.00	0.00	0.00
22.300	0.00	0.00	0.00	0.00	0.00
22.550	0.00	0.00	0.00	0.00	0.00
22.800	0.00	0.00	0.00	0.00	0.00
23.050	0.00	0.00	0.00	0.00	0.00
23.300	0.00	0.00	0.00	0.00	0.00
23.550	0.00	0.00	0.00	0.00	0.00
23.800	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-1-P
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	2,707.000 ft²

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	0.39 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.39 ft³/s

Drainage Area	
SCS CN (Composite)	80.000
Area (User Defined)	2,707.000 ft²
Maximum Retention (Pervious)	2.50 in
Maximum Retention (Pervious, 20 percent)	0.50 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.40 in
Runoff Volume (Pervious)	0.023 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.023 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.054 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.29 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.145 hours
Total unit time, Tb	0.181 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	2,707.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
7.100	0.00	0.00	0.00	0.00	0.00
7.350	0.00	0.00	0.00	0.00	0.00
7.600	0.00	0.00	0.00	0.00	0.00
7.850	0.00	0.00	0.00	0.00	0.00
8.100	0.00	0.00	0.00	0.00	0.00
8.350	0.00	0.00	0.00	0.00	0.00
8.600	0.00	0.00	0.00	0.00	0.00
8.850	0.00	0.00	0.00	0.00	0.00
9.100	0.00	0.00	0.00	0.00	0.00
9.350	0.00	0.00	0.00	0.01	0.01
9.600	0.01	0.01	0.01	0.01	0.01
9.850	0.01	0.01	0.01	0.01	0.01
10.100	0.01	0.01	0.01	0.01	0.01
10.350	0.01	0.01	0.01	0.01	0.01
10.600	0.01	0.01	0.01	0.01	0.01
10.850	0.01	0.02	0.02	0.02	0.02
11.100	0.02	0.02	0.02	0.03	0.03
11.350	0.03	0.03	0.03	0.03	0.05
11.600	0.05	0.06	0.06	0.07	0.08
11.850	0.11	0.12	0.18	0.22	0.33
12.100	0.39	0.22	0.15	0.12	0.10
12.350	0.08	0.08	0.07	0.07	0.06
12.600	0.05	0.05	0.04	0.04	0.04
12.850	0.04	0.04	0.03	0.03	0.03
13.100	0.03	0.03	0.03	0.03	0.03
13.350	0.02	0.02	0.02	0.02	0.02
13.600	0.02	0.02	0.02	0.02	0.02
13.850	0.02	0.02	0.02	0.02	0.02
14.100	0.02	0.02	0.02	0.02	0.01
14.350	0.01	0.01	0.01	0.01	0.01
14.600	0.01	0.01	0.01	0.01	0.01
14.850	0.01	0.01	0.01	0.01	0.01
15.100	0.01	0.01	0.01	0.01	0.01
15.350	0.01	0.01	0.01	0.01	0.01
15.600	0.01	0.01	0.01	0.01	0.01
15.850	0.01	0.01	0.01	0.01	0.01
16.100	0.01	0.01	0.01	0.01	0.01
16.350	0.01	0.01	0.01	0.01	0.01
16.600	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
16.850	0.01	0.01	0.01	0.01	0.01
17.100	0.01	0.01	0.01	0.01	0.01
17.350	0.01	0.01	0.01	0.01	0.01
17.600	0.01	0.01	0.01	0.01	0.01
17.850	0.01	0.01	0.01	0.01	0.01
18.100	0.01	0.01	0.01	0.01	0.01
18.350	0.01	0.01	0.01	0.01	0.01
18.600	0.01	0.01	0.01	0.01	0.01
18.850	0.01	0.01	0.01	0.01	0.01
19.100	0.01	0.01	0.01	0.01	0.01
19.350	0.01	0.01	0.01	0.01	0.01
19.600	0.01	0.01	0.01	0.01	0.01
19.850	0.01	0.01	0.01	0.01	0.01
20.100	0.01	0.01	0.01	0.01	0.01
20.350	0.01	0.01	0.01	0.01	0.01
20.600	0.01	0.01	0.01	0.01	0.01
20.850	0.01	0.01	0.01	0.01	0.01
21.100	0.01	0.00	0.00	0.00	0.00
21.350	0.00	0.00	0.00	0.00	0.00
21.600	0.00	0.00	0.00	0.00	0.00
21.850	0.00	0.00	0.00	0.00	0.00
22.100	0.00	0.00	0.00	0.00	0.00
22.350	0.00	0.00	0.00	0.00	0.00
22.600	0.00	0.00	0.00	0.00	0.00
22.850	0.00	0.00	0.00	0.00	0.00
23.100	0.00	0.00	0.00	0.00	0.00
23.350	0.00	0.00	0.00	0.00	0.00
23.600	0.00	0.00	0.00	0.00	0.00
23.850	0.00	0.00	0.00	0.00	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-1-P
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	2,707.000 ft²

Computational Time Increment	0.007 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	0.46 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.46 ft³/s

Drainage Area	
SCS CN (Composite)	80.000
Area (User Defined)	2,707.000 ft²
Maximum Retention (Pervious)	2.50 in
Maximum Retention (Pervious, 20 percent)	0.50 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.25 in
Runoff Volume (Pervious)	0.027 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.027 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.054 hours
Computational Time Increment	0.007 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.29 ft³/s
Unit peak time, Tp	0.036 hours
Unit receding limb, Tr	0.145 hours
Total unit time, Tb	0.181 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.054 hours
Area (User Defined)	2,707.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
6.500	0.00	0.00	0.00	0.00	0.00
6.750	0.00	0.00	0.00	0.00	0.00
7.000	0.00	0.00	0.00	0.00	0.00
7.250	0.00	0.00	0.00	0.00	0.00
7.500	0.00	0.00	0.00	0.00	0.00
7.750	0.00	0.00	0.00	0.00	0.00
8.000	0.00	0.00	0.00	0.00	0.00
8.250	0.00	0.00	0.00	0.00	0.00
8.500	0.00	0.00	0.00	0.00	0.00
8.750	0.00	0.00	0.00	0.00	0.00
9.000	0.00	0.00	0.01	0.01	0.01
9.250	0.01	0.01	0.01	0.01	0.01
9.500	0.01	0.01	0.01	0.01	0.01
9.750	0.01	0.01	0.01	0.01	0.01
10.000	0.01	0.01	0.01	0.01	0.01
10.250	0.01	0.01	0.01	0.01	0.01
10.500	0.01	0.01	0.01	0.01	0.02
10.750	0.02	0.02	0.02	0.02	0.02
11.000	0.02	0.02	0.02	0.03	0.03
11.250	0.03	0.03	0.04	0.04	0.04
11.500	0.04	0.06	0.06	0.07	0.07
11.750	0.09	0.10	0.13	0.14	0.22
12.000	0.26	0.39	0.46	0.26	0.18
12.250	0.14	0.12	0.10	0.09	0.09
12.500	0.09	0.06	0.06	0.05	0.05
12.750	0.05	0.05	0.04	0.04	0.04
13.000	0.04	0.04	0.03	0.03	0.03
13.250	0.03	0.03	0.03	0.03	0.02
13.500	0.02	0.02	0.02	0.02	0.02
13.750	0.02	0.02	0.02	0.02	0.02
14.000	0.02	0.02	0.02	0.02	0.02
14.250	0.02	0.02	0.02	0.02	0.02
14.500	0.02	0.02	0.02	0.01	0.01
14.750	0.01	0.01	0.01	0.01	0.01
15.000	0.01	0.01	0.01	0.01	0.01
15.250	0.01	0.01	0.01	0.01	0.01
15.500	0.01	0.01	0.01	0.01	0.01
15.750	0.01	0.01	0.01	0.01	0.01
16.000	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-1-P
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
16.250	0.01	0.01	0.01	0.01	0.01
16.500	0.01	0.01	0.01	0.01	0.01
16.750	0.01	0.01	0.01	0.01	0.01
17.000	0.01	0.01	0.01	0.01	0.01
17.250	0.01	0.01	0.01	0.01	0.01
17.500	0.01	0.01	0.01	0.01	0.01
17.750	0.01	0.01	0.01	0.01	0.01
18.000	0.01	0.01	0.01	0.01	0.01
18.250	0.01	0.01	0.01	0.01	0.01
18.500	0.01	0.01	0.01	0.01	0.01
18.750	0.01	0.01	0.01	0.01	0.01
19.000	0.01	0.01	0.01	0.01	0.01
19.250	0.01	0.01	0.01	0.01	0.01
19.500	0.01	0.01	0.01	0.01	0.01
19.750	0.01	0.01	0.01	0.01	0.01
20.000	0.01	0.01	0.01	0.01	0.01
20.250	0.01	0.01	0.01	0.01	0.01
20.500	0.01	0.01	0.01	0.01	0.01
20.750	0.01	0.01	0.01	0.01	0.01
21.000	0.01	0.01	0.01	0.01	0.01
21.250	0.01	0.01	0.01	0.01	0.01
21.500	0.01	0.01	0.01	0.01	0.01
21.750	0.01	0.01	0.01	0.01	0.01
22.000	0.01	0.01	0.01	0.01	0.01
22.250	0.01	0.01	0.01	0.01	0.01
22.500	0.01	0.01	0.01	0.01	0.01
22.750	0.01	0.01	0.01	0.01	0.01
23.000	0.01	0.00	0.00	0.00	0.00
23.250	0.00	0.00	0.00	0.00	0.00
23.500	0.00	0.00	0.00	0.00	0.00
23.750	0.00	0.00	0.00	0.00	0.01
24.000	0.01	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-2-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	5,236.000 ft²

Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.097 hours
Flow (Peak, Computed)	0.38 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.38 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	5,236.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.50 in
Runoff Volume (Pervious)	0.025 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.025 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.51 ft³/s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.101 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	5,236.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
2.350	0.00	0.00	0.00	0.00	0.00
2.600	0.00	0.00	0.00	0.00	0.00
2.850	0.00	0.00	0.00	0.00	0.00
3.100	0.00	0.00	0.00	0.00	0.00
3.350	0.00	0.00	0.00	0.00	0.00
3.600	0.00	0.00	0.00	0.00	0.00
3.850	0.00	0.00	0.00	0.00	0.00
4.100	0.00	0.00	0.00	0.00	0.00
4.350	0.00	0.00	0.00	0.00	0.00
4.600	0.00	0.00	0.00	0.00	0.00
4.850	0.00	0.00	0.00	0.00	0.00
5.100	0.00	0.00	0.00	0.00	0.00
5.350	0.00	0.00	0.00	0.00	0.00
5.600	0.00	0.00	0.00	0.00	0.00
5.850	0.00	0.00	0.00	0.00	0.00
6.100	0.00	0.00	0.00	0.00	0.00
6.350	0.00	0.00	0.00	0.00	0.00
6.600	0.00	0.00	0.00	0.00	0.00
6.850	0.00	0.00	0.01	0.01	0.01
7.100	0.01	0.01	0.01	0.01	0.01
7.350	0.01	0.01	0.01	0.01	0.01
7.600	0.01	0.01	0.01	0.01	0.01
7.850	0.01	0.01	0.01	0.01	0.01
8.100	0.01	0.01	0.01	0.01	0.01
8.350	0.01	0.01	0.01	0.01	0.01
8.600	0.01	0.01	0.01	0.01	0.01
8.850	0.01	0.01	0.01	0.01	0.01
9.100	0.01	0.01	0.01	0.01	0.01
9.350	0.01	0.01	0.01	0.01	0.01
9.600	0.01	0.01	0.01	0.01	0.01
9.850	0.01	0.01	0.01	0.01	0.01
10.100	0.01	0.01	0.01	0.01	0.01
10.350	0.01	0.01	0.02	0.02	0.02
10.600	0.02	0.02	0.02	0.02	0.02
10.850	0.02	0.02	0.02	0.02	0.03
11.100	0.03	0.03	0.03	0.03	0.03
11.350	0.04	0.04	0.04	0.04	0.06
11.600	0.06	0.07	0.07	0.09	0.09
11.850	0.13	0.13	0.22	0.23	0.37

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.100	0.38	0.14	0.13	0.10	0.10
12.350	0.07	0.07	0.07	0.07	0.04
12.600	0.04	0.04	0.04	0.04	0.04
12.850	0.03	0.03	0.03	0.03	0.03
13.100	0.03	0.02	0.02	0.02	0.02
13.350	0.02	0.02	0.02	0.02	0.02
13.600	0.02	0.02	0.02	0.02	0.02
13.850	0.02	0.02	0.01	0.01	0.01
14.100	0.01	0.01	0.01	0.01	0.01
14.350	0.01	0.01	0.01	0.01	0.01
14.600	0.01	0.01	0.01	0.01	0.01
14.850	0.01	0.01	0.01	0.01	0.01
15.100	0.01	0.01	0.01	0.01	0.01
15.350	0.01	0.01	0.01	0.01	0.01
15.600	0.01	0.01	0.01	0.01	0.01
15.850	0.01	0.01	0.01	0.01	0.01
16.100	0.01	0.01	0.01	0.01	0.01
16.350	0.01	0.01	0.01	0.01	0.01
16.600	0.01	0.01	0.01	0.01	0.01
16.850	0.01	0.01	0.01	0.01	0.01
17.100	0.01	0.01	0.01	0.01	0.01
17.350	0.01	0.01	0.01	0.01	0.01
17.600	0.01	0.01	0.01	0.01	0.01
17.850	0.01	0.01	0.01	0.01	0.01
18.100	0.01	0.01	0.01	0.01	0.01
18.350	0.01	0.01	0.01	0.01	0.01
18.600	0.01	0.01	0.01	0.01	0.01
18.850	0.01	0.01	0.01	0.01	0.00
19.100	0.00	0.00	0.00	0.00	0.00
19.350	0.00	0.00	0.00	0.00	0.00
19.600	0.00	0.00	0.00	0.00	0.00
19.850	0.00	0.00	0.00	0.00	0.00
20.100	0.00	0.00	0.00	0.00	0.00
20.350	0.00	0.00	0.00	0.00	0.00
20.600	0.00	0.00	0.00	0.00	0.00
20.850	0.00	0.00	0.00	0.00	0.00
21.100	0.00	0.00	0.00	0.00	0.00
21.350	0.00	0.00	0.00	0.00	0.00
21.600	0.00	0.00	0.00	0.00	0.00
21.850	0.00	0.00	0.00	0.00	0.00
22.100	0.00	0.00	0.00	0.00	0.00
22.350	0.00	0.00	0.00	0.00	0.00
22.600	0.00	0.00	0.00	0.00	0.00
22.850	0.00	0.00	0.00	0.00	0.00
23.100	0.00	0.00	0.00	0.00	0.00
23.350	0.00	0.00	0.00	0.00	0.00
23.600	0.00	0.00	0.00	0.00	0.00
23.850	0.00	0.00	0.00	0.00	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-2-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	5,236.000 ft²

Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.097 hours
Flow (Peak, Computed)	0.46 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.46 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	5,236.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.05 in
Runoff Volume (Pervious)	0.031 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.031 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.51 ft³/s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.101 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	5,236.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.850	0.00	0.00	0.00	0.00	0.00
2.100	0.00	0.00	0.00	0.00	0.00
2.350	0.00	0.00	0.00	0.00	0.00
2.600	0.00	0.00	0.00	0.00	0.00
2.850	0.00	0.00	0.00	0.00	0.00
3.100	0.00	0.00	0.00	0.00	0.00
3.350	0.00	0.00	0.00	0.00	0.00
3.600	0.00	0.00	0.00	0.00	0.00
3.850	0.00	0.00	0.00	0.00	0.00
4.100	0.00	0.00	0.00	0.00	0.00
4.350	0.00	0.00	0.00	0.00	0.00
4.600	0.00	0.00	0.00	0.00	0.00
4.850	0.00	0.00	0.00	0.00	0.00
5.100	0.00	0.00	0.00	0.00	0.00
5.350	0.00	0.00	0.00	0.00	0.00
5.600	0.00	0.00	0.00	0.00	0.00
5.850	0.00	0.00	0.00	0.00	0.01
6.100	0.01	0.01	0.01	0.01	0.01
6.350	0.01	0.01	0.01	0.01	0.01
6.600	0.01	0.01	0.01	0.01	0.01
6.850	0.01	0.01	0.01	0.01	0.01
7.100	0.01	0.01	0.01	0.01	0.01
7.350	0.01	0.01	0.01	0.01	0.01
7.600	0.01	0.01	0.01	0.01	0.01
7.850	0.01	0.01	0.01	0.01	0.01
8.100	0.01	0.01	0.01	0.01	0.01
8.350	0.01	0.01	0.01	0.01	0.01
8.600	0.01	0.01	0.01	0.01	0.01
8.850	0.01	0.01	0.01	0.01	0.01
9.100	0.01	0.01	0.01	0.01	0.01
9.350	0.01	0.01	0.01	0.01	0.01
9.600	0.01	0.01	0.01	0.01	0.01
9.850	0.02	0.02	0.02	0.02	0.02
10.100	0.02	0.02	0.02	0.02	0.02
10.350	0.02	0.02	0.02	0.02	0.02
10.600	0.02	0.02	0.02	0.03	0.03
10.850	0.03	0.03	0.03	0.03	0.03
11.100	0.03	0.04	0.04	0.04	0.04
11.350	0.05	0.05	0.05	0.05	0.08

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.600	0.08	0.08	0.08	0.11	0.11
11.850	0.16	0.16	0.27	0.27	0.45
12.100	0.46	0.17	0.16	0.12	0.11
12.350	0.09	0.08	0.08	0.08	0.05
12.600	0.05	0.05	0.05	0.04	0.04
12.850	0.04	0.04	0.04	0.04	0.03
13.100	0.03	0.03	0.03	0.03	0.03
13.350	0.02	0.02	0.02	0.02	0.02
13.600	0.02	0.02	0.02	0.02	0.02
13.850	0.02	0.02	0.02	0.02	0.02
14.100	0.02	0.02	0.02	0.02	0.02
14.350	0.02	0.02	0.01	0.01	0.01
14.600	0.01	0.01	0.01	0.01	0.01
14.850	0.01	0.01	0.01	0.01	0.01
15.100	0.01	0.01	0.01	0.01	0.01
15.350	0.01	0.01	0.01	0.01	0.01
15.600	0.01	0.01	0.01	0.01	0.01
15.850	0.01	0.01	0.01	0.01	0.01
16.100	0.01	0.01	0.01	0.01	0.01
16.350	0.01	0.01	0.01	0.01	0.01
16.600	0.01	0.01	0.01	0.01	0.01
16.850	0.01	0.01	0.01	0.01	0.01
17.100	0.01	0.01	0.01	0.01	0.01
17.350	0.01	0.01	0.01	0.01	0.01
17.600	0.01	0.01	0.01	0.01	0.01
17.850	0.01	0.01	0.01	0.01	0.01
18.100	0.01	0.01	0.01	0.01	0.01
18.350	0.01	0.01	0.01	0.01	0.01
18.600	0.01	0.01	0.01	0.01	0.01
18.850	0.01	0.01	0.01	0.01	0.01
19.100	0.01	0.01	0.01	0.01	0.01
19.350	0.01	0.01	0.01	0.01	0.01
19.600	0.01	0.01	0.01	0.01	0.01
19.850	0.01	0.01	0.01	0.01	0.01
20.100	0.01	0.01	0.01	0.01	0.01
20.350	0.01	0.01	0.01	0.01	0.01
20.600	0.01	0.01	0.01	0.01	0.01
20.850	0.01	0.01	0.01	0.01	0.01
21.100	0.01	0.01	0.01	0.01	0.01
21.350	0.01	0.01	0.01	0.01	0.00
21.600	0.00	0.00	0.00	0.00	0.00
21.850	0.00	0.00	0.00	0.00	0.00
22.100	0.00	0.00	0.00	0.00	0.00
22.350	0.00	0.00	0.00	0.00	0.00
22.600	0.00	0.00	0.00	0.00	0.00
22.850	0.00	0.00	0.00	0.00	0.00
23.100	0.00	0.00	0.00	0.00	0.00
23.350	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.600	0.00	0.00	0.00	0.00	0.00
23.850	0.00	0.00	0.01	0.01	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-2-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	5,236.000 ft²

Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.097 hours
Flow (Peak, Computed)	0.58 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.58 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	5,236.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.89 in
Runoff Volume (Pervious)	0.039 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.039 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.51 ft³/s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.101 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	5,236.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.350	0.00	0.00	0.00	0.00	0.00
1.600	0.00	0.00	0.00	0.00	0.00
1.850	0.00	0.00	0.00	0.00	0.00
2.100	0.00	0.00	0.00	0.00	0.00
2.350	0.00	0.00	0.00	0.00	0.00
2.600	0.00	0.00	0.00	0.00	0.00
2.850	0.00	0.00	0.00	0.00	0.00
3.100	0.00	0.00	0.00	0.00	0.00
3.350	0.00	0.00	0.00	0.00	0.00
3.600	0.00	0.00	0.00	0.00	0.00
3.850	0.00	0.00	0.00	0.00	0.00
4.100	0.00	0.00	0.01	0.01	0.01
4.350	0.01	0.01	0.01	0.01	0.01
4.600	0.01	0.01	0.01	0.01	0.01
4.850	0.01	0.01	0.01	0.01	0.01
5.100	0.01	0.01	0.01	0.01	0.01
5.350	0.01	0.01	0.01	0.01	0.01
5.600	0.01	0.01	0.01	0.01	0.01
5.850	0.01	0.01	0.01	0.01	0.01
6.100	0.01	0.01	0.01	0.01	0.01
6.350	0.01	0.01	0.01	0.01	0.01
6.600	0.01	0.01	0.01	0.01	0.01
6.850	0.01	0.01	0.01	0.01	0.01
7.100	0.01	0.01	0.01	0.01	0.01
7.350	0.01	0.01	0.01	0.01	0.01
7.600	0.01	0.01	0.01	0.01	0.01
7.850	0.01	0.01	0.01	0.01	0.01
8.100	0.01	0.01	0.01	0.01	0.01
8.350	0.01	0.01	0.01	0.01	0.01
8.600	0.01	0.01	0.01	0.01	0.01
8.850	0.01	0.01	0.01	0.01	0.01
9.100	0.01	0.01	0.01	0.02	0.02
9.350	0.02	0.02	0.02	0.02	0.02
9.600	0.02	0.02	0.02	0.02	0.02
9.850	0.02	0.02	0.02	0.02	0.02
10.100	0.02	0.02	0.02	0.02	0.02
10.350	0.02	0.02	0.02	0.02	0.03
10.600	0.03	0.03	0.03	0.03	0.03
10.850	0.04	0.04	0.04	0.04	0.04

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.100	0.04	0.05	0.05	0.05	0.05
11.350	0.06	0.06	0.06	0.06	0.10
11.600	0.10	0.10	0.10	0.14	0.14
11.850	0.20	0.20	0.34	0.35	0.57
12.100	0.58	0.22	0.20	0.15	0.14
12.350	0.11	0.11	0.10	0.10	0.07
12.600	0.06	0.06	0.06	0.06	0.06
12.850	0.05	0.05	0.05	0.04	0.04
13.100	0.04	0.04	0.04	0.03	0.03
13.350	0.03	0.03	0.03	0.03	0.03
13.600	0.03	0.02	0.02	0.02	0.02
13.850	0.02	0.02	0.02	0.02	0.02
14.100	0.02	0.02	0.02	0.02	0.02
14.350	0.02	0.02	0.02	0.02	0.02
14.600	0.02	0.02	0.02	0.02	0.02
14.850	0.02	0.02	0.01	0.01	0.01
15.100	0.01	0.01	0.01	0.01	0.01
15.350	0.01	0.01	0.01	0.01	0.01
15.600	0.01	0.01	0.01	0.01	0.01
15.850	0.01	0.01	0.01	0.01	0.01
16.100	0.01	0.01	0.01	0.01	0.01
16.350	0.01	0.01	0.01	0.01	0.01
16.600	0.01	0.01	0.01	0.01	0.01
16.850	0.01	0.01	0.01	0.01	0.01
17.100	0.01	0.01	0.01	0.01	0.01
17.350	0.01	0.01	0.01	0.01	0.01
17.600	0.01	0.01	0.01	0.01	0.01
17.850	0.01	0.01	0.01	0.01	0.01
18.100	0.01	0.01	0.01	0.01	0.01
18.350	0.01	0.01	0.01	0.01	0.01
18.600	0.01	0.01	0.01	0.01	0.01
18.850	0.01	0.01	0.01	0.01	0.01
19.100	0.01	0.01	0.01	0.01	0.01
19.350	0.01	0.01	0.01	0.01	0.01
19.600	0.01	0.01	0.01	0.01	0.01
19.850	0.01	0.01	0.01	0.01	0.01
20.100	0.01	0.01	0.01	0.01	0.01
20.350	0.01	0.01	0.01	0.01	0.01
20.600	0.01	0.01	0.01	0.01	0.01
20.850	0.01	0.01	0.01	0.01	0.01
21.100	0.01	0.01	0.01	0.01	0.01
21.350	0.01	0.01	0.01	0.01	0.01
21.600	0.01	0.01	0.01	0.01	0.01
21.850	0.01	0.01	0.01	0.01	0.01
22.100	0.01	0.01	0.01	0.01	0.01
22.350	0.01	0.01	0.01	0.01	0.01
22.600	0.01	0.01	0.01	0.01	0.01
22.850	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.100	0.01	0.01	0.01	0.01	0.01
23.350	0.01	0.01	0.01	0.01	0.01
23.600	0.01	0.01	0.01	0.01	0.01
23.850	0.01	0.01	0.01	0.01	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-2-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	5,236.000 ft²

Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.097 hours
Flow (Peak, Computed)	0.68 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.68 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	5,236.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.58 in
Runoff Volume (Pervious)	0.046 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.046 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.51 ft³/s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.101 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	5,236.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.100	0.00	0.00	0.00	0.00	0.00
1.350	0.00	0.00	0.00	0.00	0.00
1.600	0.00	0.00	0.00	0.00	0.00
1.850	0.00	0.00	0.00	0.00	0.00
2.100	0.00	0.00	0.00	0.00	0.00
2.350	0.00	0.00	0.00	0.00	0.00
2.600	0.00	0.00	0.00	0.00	0.00
2.850	0.00	0.00	0.00	0.00	0.00
3.100	0.00	0.00	0.01	0.01	0.01
3.350	0.01	0.01	0.01	0.01	0.01
3.600	0.01	0.01	0.01	0.01	0.01
3.850	0.01	0.01	0.01	0.01	0.01
4.100	0.01	0.01	0.01	0.01	0.01
4.350	0.01	0.01	0.01	0.01	0.01
4.600	0.01	0.01	0.01	0.01	0.01
4.850	0.01	0.01	0.01	0.01	0.01
5.100	0.01	0.01	0.01	0.01	0.01
5.350	0.01	0.01	0.01	0.01	0.01
5.600	0.01	0.01	0.01	0.01	0.01
5.850	0.01	0.01	0.01	0.01	0.01
6.100	0.01	0.01	0.01	0.01	0.01
6.350	0.01	0.01	0.01	0.01	0.01
6.600	0.01	0.01	0.01	0.01	0.01
6.850	0.01	0.01	0.01	0.01	0.01
7.100	0.01	0.01	0.01	0.01	0.01
7.350	0.01	0.01	0.01	0.01	0.01
7.600	0.01	0.01	0.01	0.01	0.01
7.850	0.01	0.01	0.01	0.01	0.01
8.100	0.01	0.01	0.01	0.01	0.01
8.350	0.01	0.01	0.01	0.01	0.01
8.600	0.01	0.01	0.01	0.01	0.01
8.850	0.02	0.02	0.02	0.02	0.02
9.100	0.02	0.02	0.02	0.02	0.02
9.350	0.02	0.02	0.02	0.02	0.02
9.600	0.02	0.02	0.02	0.02	0.02
9.850	0.02	0.02	0.02	0.02	0.02
10.100	0.03	0.03	0.03	0.03	0.03
10.350	0.03	0.03	0.03	0.03	0.03
10.600	0.03	0.03	0.04	0.04	0.04

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.850	0.04	0.04	0.05	0.05	0.05
11.100	0.05	0.06	0.06	0.06	0.06
11.350	0.07	0.07	0.07	0.08	0.11
11.600	0.12	0.12	0.12	0.17	0.17
11.850	0.23	0.23	0.40	0.41	0.66
12.100	0.68	0.26	0.24	0.17	0.17
12.350	0.13	0.12	0.12	0.12	0.08
12.600	0.08	0.07	0.07	0.07	0.06
12.850	0.06	0.06	0.05	0.05	0.05
13.100	0.05	0.04	0.04	0.04	0.04
13.350	0.04	0.04	0.03	0.03	0.03
13.600	0.03	0.03	0.03	0.03	0.03
13.850	0.03	0.03	0.03	0.03	0.03
14.100	0.03	0.02	0.02	0.02	0.02
14.350	0.02	0.02	0.02	0.02	0.02
14.600	0.02	0.02	0.02	0.02	0.02
14.850	0.02	0.02	0.02	0.02	0.02
15.100	0.02	0.02	0.02	0.02	0.02
15.350	0.02	0.02	0.02	0.02	0.02
15.600	0.02	0.01	0.01	0.01	0.01
15.850	0.01	0.01	0.01	0.01	0.01
16.100	0.01	0.01	0.01	0.01	0.01
16.350	0.01	0.01	0.01	0.01	0.01
16.600	0.01	0.01	0.01	0.01	0.01
16.850	0.01	0.01	0.01	0.01	0.01
17.100	0.01	0.01	0.01	0.01	0.01
17.350	0.01	0.01	0.01	0.01	0.01
17.600	0.01	0.01	0.01	0.01	0.01
17.850	0.01	0.01	0.01	0.01	0.01
18.100	0.01	0.01	0.01	0.01	0.01
18.350	0.01	0.01	0.01	0.01	0.01
18.600	0.01	0.01	0.01	0.01	0.01
18.850	0.01	0.01	0.01	0.01	0.01
19.100	0.01	0.01	0.01	0.01	0.01
19.350	0.01	0.01	0.01	0.01	0.01
19.600	0.01	0.01	0.01	0.01	0.01
19.850	0.01	0.01	0.01	0.01	0.01
20.100	0.01	0.01	0.01	0.01	0.01
20.350	0.01	0.01	0.01	0.01	0.01
20.600	0.01	0.01	0.01	0.01	0.01
20.850	0.01	0.01	0.01	0.01	0.01
21.100	0.01	0.01	0.01	0.01	0.01
21.350	0.01	0.01	0.01	0.01	0.01
21.600	0.01	0.01	0.01	0.01	0.01
21.850	0.01	0.01	0.01	0.01	0.01
22.100	0.01	0.01	0.01	0.01	0.01
22.350	0.01	0.01	0.01	0.01	0.01
22.600	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.850	0.01	0.01	0.01	0.01	0.01
23.100	0.01	0.01	0.01	0.01	0.01
23.350	0.01	0.01	0.01	0.01	0.01
23.600	0.01	0.01	0.01	0.01	0.01
23.850	0.01	0.01	0.01	0.01	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-2-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	5,236.000 ft²

Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.097 hours
Flow (Peak, Computed)	0.82 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.82 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	5,236.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.59 in
Runoff Volume (Pervious)	0.056 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.056 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.51 ft³/s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.101 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	5,236.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.900	0.00	0.00	0.00	0.00	0.00
1.150	0.00	0.00	0.00	0.00	0.00
1.400	0.00	0.00	0.00	0.00	0.00
1.650	0.00	0.00	0.00	0.00	0.00
1.900	0.00	0.00	0.00	0.00	0.00
2.150	0.00	0.00	0.01	0.01	0.01
2.400	0.01	0.01	0.01	0.01	0.01
2.650	0.01	0.01	0.01	0.01	0.01
2.900	0.01	0.01	0.01	0.01	0.01
3.150	0.01	0.01	0.01	0.01	0.01
3.400	0.01	0.01	0.01	0.01	0.01
3.650	0.01	0.01	0.01	0.01	0.01
3.900	0.01	0.01	0.01	0.01	0.01
4.150	0.01	0.01	0.01	0.01	0.01
4.400	0.01	0.01	0.01	0.01	0.01
4.650	0.01	0.01	0.01	0.01	0.01
4.900	0.01	0.01	0.01	0.01	0.01
5.150	0.01	0.01	0.01	0.01	0.01
5.400	0.01	0.01	0.01	0.01	0.01
5.650	0.01	0.01	0.01	0.01	0.01
5.900	0.01	0.01	0.01	0.01	0.01
6.150	0.01	0.01	0.01	0.01	0.01
6.400	0.01	0.01	0.01	0.01	0.01
6.650	0.01	0.01	0.01	0.01	0.01
6.900	0.01	0.01	0.01	0.01	0.01
7.150	0.01	0.01	0.01	0.01	0.01
7.400	0.01	0.01	0.01	0.01	0.01
7.650	0.02	0.02	0.02	0.02	0.02
7.900	0.02	0.02	0.02	0.02	0.02
8.150	0.02	0.02	0.02	0.02	0.02
8.400	0.02	0.02	0.02	0.02	0.02
8.650	0.02	0.02	0.02	0.02	0.02
8.900	0.02	0.02	0.02	0.02	0.02
9.150	0.02	0.02	0.02	0.02	0.02
9.400	0.02	0.02	0.02	0.03	0.03
9.650	0.03	0.03	0.03	0.03	0.03
9.900	0.03	0.03	0.03	0.03	0.03
10.150	0.03	0.03	0.03	0.03	0.03
10.400	0.03	0.03	0.03	0.04	0.04

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.650	0.04	0.04	0.05	0.05	0.05
10.900	0.05	0.05	0.06	0.06	0.06
11.150	0.07	0.07	0.08	0.08	0.08
11.400	0.09	0.09	0.09	0.14	0.14
11.650	0.15	0.15	0.20	0.20	0.28
11.900	0.28	0.48	0.49	0.80	0.82
12.150	0.31	0.29	0.21	0.21	0.15
12.400	0.15	0.14	0.14	0.09	0.09
12.650	0.09	0.09	0.08	0.08	0.07
12.900	0.07	0.06	0.06	0.06	0.06
13.150	0.05	0.05	0.05	0.05	0.04
13.400	0.04	0.04	0.04	0.04	0.04
13.650	0.03	0.03	0.03	0.03	0.03
13.900	0.03	0.03	0.03	0.03	0.03
14.150	0.03	0.03	0.03	0.03	0.03
14.400	0.03	0.03	0.03	0.03	0.03
14.650	0.02	0.02	0.02	0.02	0.02
14.900	0.02	0.02	0.02	0.02	0.02
15.150	0.02	0.02	0.02	0.02	0.02
15.400	0.02	0.02	0.02	0.02	0.02
15.650	0.02	0.02	0.02	0.02	0.02
15.900	0.02	0.02	0.02	0.02	0.02
16.150	0.02	0.02	0.02	0.02	0.02
16.400	0.02	0.02	0.02	0.02	0.02
16.650	0.02	0.02	0.01	0.01	0.01
16.900	0.01	0.01	0.01	0.01	0.01
17.150	0.01	0.01	0.01	0.01	0.01
17.400	0.01	0.01	0.01	0.01	0.01
17.650	0.01	0.01	0.01	0.01	0.01
17.900	0.01	0.01	0.01	0.01	0.01
18.150	0.01	0.01	0.01	0.01	0.01
18.400	0.01	0.01	0.01	0.01	0.01
18.650	0.01	0.01	0.01	0.01	0.01
18.900	0.01	0.01	0.01	0.01	0.01
19.150	0.01	0.01	0.01	0.01	0.01
19.400	0.01	0.01	0.01	0.01	0.01
19.650	0.01	0.01	0.01	0.01	0.01
19.900	0.01	0.01	0.01	0.01	0.01
20.150	0.01	0.01	0.01	0.01	0.01
20.400	0.01	0.01	0.01	0.01	0.01
20.650	0.01	0.01	0.01	0.01	0.01
20.900	0.01	0.01	0.01	0.01	0.01
21.150	0.01	0.01	0.01	0.01	0.01
21.400	0.01	0.01	0.01	0.01	0.01
21.650	0.01	0.01	0.01	0.01	0.01
21.900	0.01	0.01	0.01	0.01	0.01
22.150	0.01	0.01	0.01	0.01	0.01
22.400	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.650	0.01	0.01	0.01	0.01	0.01
22.900	0.01	0.01	0.01	0.01	0.01
23.150	0.01	0.01	0.01	0.01	0.01
23.400	0.01	0.01	0.01	0.01	0.01
23.650	0.01	0.01	0.01	0.01	0.01
23.900	0.01	0.01	0.01	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-2-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	5,236.000 ft²

Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.097 hours
Flow (Peak, Computed)	0.94 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.94 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	5,236.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.44 in
Runoff Volume (Pervious)	0.065 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.065 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.51 ft³/s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.101 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	5,236.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.750	0.00	0.00	0.00	0.00	0.00
1.000	0.00	0.00	0.00	0.00	0.00
1.250	0.00	0.00	0.00	0.00	0.00
1.500	0.00	0.00	0.00	0.00	0.00
1.750	0.00	0.01	0.01	0.01	0.01
2.000	0.01	0.01	0.01	0.01	0.01
2.250	0.01	0.01	0.01	0.01	0.01
2.500	0.01	0.01	0.01	0.01	0.01
2.750	0.01	0.01	0.01	0.01	0.01
3.000	0.01	0.01	0.01	0.01	0.01
3.250	0.01	0.01	0.01	0.01	0.01
3.500	0.01	0.01	0.01	0.01	0.01
3.750	0.01	0.01	0.01	0.01	0.01
4.000	0.01	0.01	0.01	0.01	0.01
4.250	0.01	0.01	0.01	0.01	0.01
4.500	0.01	0.01	0.01	0.01	0.01
4.750	0.01	0.01	0.01	0.01	0.01
5.000	0.01	0.01	0.01	0.01	0.01
5.250	0.01	0.01	0.01	0.01	0.01
5.500	0.01	0.01	0.01	0.01	0.01
5.750	0.01	0.01	0.01	0.01	0.01
6.000	0.01	0.01	0.01	0.01	0.01
6.250	0.01	0.01	0.01	0.01	0.01
6.500	0.01	0.01	0.01	0.01	0.01
6.750	0.01	0.01	0.01	0.01	0.02
7.000	0.02	0.02	0.02	0.02	0.02
7.250	0.02	0.02	0.02	0.02	0.02
7.500	0.02	0.02	0.02	0.02	0.02
7.750	0.02	0.02	0.02	0.02	0.02
8.000	0.02	0.02	0.02	0.02	0.02
8.250	0.02	0.02	0.02	0.02	0.02
8.500	0.02	0.02	0.02	0.02	0.02
8.750	0.02	0.02	0.02	0.02	0.02
9.000	0.02	0.02	0.02	0.02	0.02
9.250	0.03	0.03	0.03	0.03	0.03
9.500	0.03	0.03	0.03	0.03	0.03
9.750	0.03	0.03	0.03	0.03	0.03
10.000	0.03	0.04	0.04	0.04	0.04
10.250	0.04	0.04	0.04	0.04	0.04

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.500	0.04	0.04	0.04	0.05	0.05
10.750	0.05	0.05	0.06	0.06	0.06
11.000	0.06	0.07	0.07	0.08	0.08
11.250	0.09	0.09	0.10	0.10	0.10
11.500	0.10	0.16	0.16	0.17	0.17
11.750	0.23	0.24	0.32	0.33	0.55
12.000	0.56	0.92	0.94	0.36	0.33
12.250	0.24	0.24	0.18	0.17	0.16
12.500	0.16	0.11	0.11	0.10	0.10
12.750	0.09	0.09	0.08	0.08	0.07
13.000	0.07	0.06	0.06	0.06	0.06
13.250	0.06	0.05	0.05	0.05	0.05
13.500	0.05	0.04	0.04	0.04	0.04
13.750	0.04	0.04	0.04	0.04	0.04
14.000	0.04	0.03	0.03	0.03	0.03
14.250	0.03	0.03	0.03	0.03	0.03
14.500	0.03	0.03	0.03	0.03	0.03
14.750	0.03	0.03	0.03	0.03	0.02
15.000	0.02	0.02	0.02	0.02	0.02
15.250	0.02	0.02	0.02	0.02	0.02
15.500	0.02	0.02	0.02	0.02	0.02
15.750	0.02	0.02	0.02	0.02	0.02
16.000	0.02	0.02	0.02	0.02	0.02
16.250	0.02	0.02	0.02	0.02	0.02
16.500	0.02	0.02	0.02	0.02	0.02
16.750	0.02	0.02	0.02	0.02	0.02
17.000	0.02	0.02	0.02	0.02	0.02
17.250	0.02	0.02	0.02	0.02	0.01
17.500	0.01	0.01	0.01	0.01	0.01
17.750	0.01	0.01	0.01	0.01	0.01
18.000	0.01	0.01	0.01	0.01	0.01
18.250	0.01	0.01	0.01	0.01	0.01
18.500	0.01	0.01	0.01	0.01	0.01
18.750	0.01	0.01	0.01	0.01	0.01
19.000	0.01	0.01	0.01	0.01	0.01
19.250	0.01	0.01	0.01	0.01	0.01
19.500	0.01	0.01	0.01	0.01	0.01
19.750	0.01	0.01	0.01	0.01	0.01
20.000	0.01	0.01	0.01	0.01	0.01
20.250	0.01	0.01	0.01	0.01	0.01
20.500	0.01	0.01	0.01	0.01	0.01
20.750	0.01	0.01	0.01	0.01	0.01
21.000	0.01	0.01	0.01	0.01	0.01
21.250	0.01	0.01	0.01	0.01	0.01
21.500	0.01	0.01	0.01	0.01	0.01
21.750	0.01	0.01	0.01	0.01	0.01
22.000	0.01	0.01	0.01	0.01	0.01
22.250	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.500	0.01	0.01	0.01	0.01	0.01
22.750	0.01	0.01	0.01	0.01	0.01
23.000	0.01	0.01	0.01	0.01	0.01
23.250	0.01	0.01	0.01	0.01	0.01
23.500	0.01	0.01	0.01	0.01	0.01
23.750	0.01	0.01	0.01	0.01	0.01
24.000	0.01	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-2-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	5,236.000 ft²

Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.097 hours
Flow (Peak, Computed)	1.07 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	1.07 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	5,236.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.36 in
Runoff Volume (Pervious)	0.074 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.074 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.51 ft³/s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.101 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	5,236.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.650	0.00	0.00	0.00	0.00	0.00
0.900	0.00	0.00	0.00	0.00	0.00
1.150	0.00	0.00	0.00	0.00	0.00
1.400	0.00	0.01	0.01	0.01	0.01
1.650	0.01	0.01	0.01	0.01	0.01
1.900	0.01	0.01	0.01	0.01	0.01
2.150	0.01	0.01	0.01	0.01	0.01
2.400	0.01	0.01	0.01	0.01	0.01
2.650	0.01	0.01	0.01	0.01	0.01
2.900	0.01	0.01	0.01	0.01	0.01
3.150	0.01	0.01	0.01	0.01	0.01
3.400	0.01	0.01	0.01	0.01	0.01
3.650	0.01	0.01	0.01	0.01	0.01
3.900	0.01	0.01	0.01	0.01	0.01
4.150	0.01	0.01	0.01	0.01	0.01
4.400	0.01	0.01	0.01	0.01	0.01
4.650	0.01	0.01	0.01	0.01	0.01
4.900	0.01	0.01	0.01	0.01	0.01
5.150	0.01	0.01	0.01	0.01	0.01
5.400	0.01	0.01	0.01	0.01	0.01
5.650	0.01	0.01	0.01	0.01	0.01
5.900	0.01	0.01	0.01	0.01	0.01
6.150	0.01	0.01	0.01	0.01	0.02
6.400	0.02	0.02	0.02	0.02	0.02
6.650	0.02	0.02	0.02	0.02	0.02
6.900	0.02	0.02	0.02	0.02	0.02
7.150	0.02	0.02	0.02	0.02	0.02
7.400	0.02	0.02	0.02	0.02	0.02
7.650	0.02	0.02	0.02	0.02	0.02
7.900	0.02	0.02	0.02	0.02	0.02
8.150	0.02	0.02	0.02	0.02	0.02
8.400	0.02	0.02	0.02	0.02	0.02
8.650	0.02	0.02	0.02	0.02	0.02
8.900	0.02	0.03	0.03	0.03	0.03
9.150	0.03	0.03	0.03	0.03	0.03
9.400	0.03	0.03	0.03	0.03	0.03
9.650	0.03	0.03	0.04	0.04	0.04
9.900	0.04	0.04	0.04	0.04	0.04
10.150	0.04	0.04	0.04	0.04	0.04

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.400	0.04	0.05	0.05	0.05	0.05
10.650	0.06	0.06	0.06	0.06	0.07
10.900	0.07	0.07	0.07	0.08	0.08
11.150	0.09	0.09	0.10	0.10	0.11
11.400	0.11	0.12	0.12	0.18	0.19
11.650	0.19	0.20	0.26	0.27	0.37
11.900	0.37	0.63	0.64	1.05	1.07
12.150	0.41	0.37	0.27	0.27	0.20
12.400	0.20	0.19	0.19	0.12	0.12
12.650	0.11	0.11	0.10	0.10	0.09
12.900	0.09	0.08	0.08	0.07	0.07
13.150	0.07	0.07	0.06	0.06	0.06
13.400	0.06	0.05	0.05	0.05	0.05
13.650	0.05	0.05	0.04	0.04	0.04
13.900	0.04	0.04	0.04	0.04	0.04
14.150	0.04	0.04	0.04	0.04	0.04
14.400	0.04	0.03	0.03	0.03	0.03
14.650	0.03	0.03	0.03	0.03	0.03
14.900	0.03	0.03	0.03	0.03	0.03
15.150	0.03	0.03	0.03	0.03	0.02
15.400	0.02	0.02	0.02	0.02	0.02
15.650	0.02	0.02	0.02	0.02	0.02
15.900	0.02	0.02	0.02	0.02	0.02
16.150	0.02	0.02	0.02	0.02	0.02
16.400	0.02	0.02	0.02	0.02	0.02
16.650	0.02	0.02	0.02	0.02	0.02
16.900	0.02	0.02	0.02	0.02	0.02
17.150	0.02	0.02	0.02	0.02	0.02
17.400	0.02	0.02	0.02	0.02	0.02
17.650	0.02	0.02	0.02	0.02	0.02
17.900	0.02	0.02	0.02	0.01	0.01
18.150	0.01	0.01	0.01	0.01	0.01
18.400	0.01	0.01	0.01	0.01	0.01
18.650	0.01	0.01	0.01	0.01	0.01
18.900	0.01	0.01	0.01	0.01	0.01
19.150	0.01	0.01	0.01	0.01	0.01
19.400	0.01	0.01	0.01	0.01	0.01
19.650	0.01	0.01	0.01	0.01	0.01
19.900	0.01	0.01	0.01	0.01	0.01
20.150	0.01	0.01	0.01	0.01	0.01
20.400	0.01	0.01	0.01	0.01	0.01
20.650	0.01	0.01	0.01	0.01	0.01
20.900	0.01	0.01	0.01	0.01	0.01
21.150	0.01	0.01	0.01	0.01	0.01
21.400	0.01	0.01	0.01	0.01	0.01
21.650	0.01	0.01	0.01	0.01	0.01
21.900	0.01	0.01	0.01	0.01	0.01
22.150	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.400	0.01	0.01	0.01	0.01	0.01
22.650	0.01	0.01	0.01	0.01	0.01
22.900	0.01	0.01	0.01	0.01	0.01
23.150	0.01	0.01	0.01	0.01	0.01
23.400	0.01	0.01	0.01	0.01	0.01
23.650	0.01	0.01	0.01	0.01	0.01
23.900	0.01	0.01	0.01	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-2-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	1,564.000 ft²

Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.105 hours
Flow (Peak, Computed)	0.01 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.01 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	1,564.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.27 in
Runoff Volume (Pervious)	0.001 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.001 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.35 ft³/s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.101 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	1,564.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.000	0.00	0.00	0.01	0.00	0.00
12.250	0.00	0.00	0.00	0.00	0.00
12.500	0.00	0.00	0.00	0.00	0.00
12.750	0.00	0.00	0.00	0.00	0.00
13.000	0.00	0.00	0.00	0.00	0.00
13.250	0.00	0.00	0.00	0.00	0.00
13.500	0.00	0.00	0.00	0.00	0.00
13.750	0.00	0.00	0.00	0.00	0.00
14.000	0.00	0.00	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-2-P
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	1,564.000 ft²

Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.105 hours
Flow (Peak, Computed)	0.02 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.02 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	1,564.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.48 in
Runoff Volume (Pervious)	0.001 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.001 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.35 ft³/s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.101 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 2 years
Label: DA-2-P Storm Event: 2-YR
Scenario: Post-Development 2

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	1,564.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.900	0.00	0.00	0.01	0.02	0.02
12.150	0.01	0.01	0.01	0.01	0.01
12.400	0.01	0.01	0.01	0.00	0.00
12.650	0.00	0.00	0.00	0.00	0.00
12.900	0.00	0.00	0.00	0.00	0.00
13.150	0.00	0.00	0.00	0.00	0.00
13.400	0.00	0.00	0.00	0.00	0.00
13.650	0.00	0.00	0.00	0.00	0.00
13.900	0.00	0.00	0.00	0.00	0.00
14.150	0.00	0.00	0.00	0.00	0.00
14.400	0.00	0.00	0.00	0.00	0.00
14.650	0.00	0.00	0.00	0.00	0.00
14.900	0.00	0.00	0.00	0.00	0.00
15.150	0.00	0.00	0.00	0.00	0.00
15.400	0.00	0.00	0.00	0.00	0.00
15.650	0.00	0.00	0.00	0.00	0.00
15.900	0.00	0.00	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-2-P
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	1,564.000 ft²

Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	0.05 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.05 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	1,564.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.88 in
Runoff Volume (Pervious)	0.003 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.003 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.35 ft³/s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.101 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	1,564.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.700	0.00	0.00	0.00	0.00	0.01
11.950	0.01	0.02	0.04	0.05	0.02
12.200	0.02	0.01	0.01	0.01	0.01
12.450	0.01	0.01	0.01	0.01	0.01
12.700	0.01	0.01	0.01	0.01	0.01
12.950	0.01	0.01	0.00	0.00	0.00
13.200	0.00	0.00	0.00	0.00	0.00
13.450	0.00	0.00	0.00	0.00	0.00
13.700	0.00	0.00	0.00	0.00	0.00
13.950	0.00	0.00	0.00	0.00	0.00
14.200	0.00	0.00	0.00	0.00	0.00
14.450	0.00	0.00	0.00	0.00	0.00
14.700	0.00	0.00	0.00	0.00	0.00
14.950	0.00	0.00	0.00	0.00	0.00
15.200	0.00	0.00	0.00	0.00	0.00
15.450	0.00	0.00	0.00	0.00	0.00
15.700	0.00	0.00	0.00	0.00	0.00
15.950	0.00	0.00	0.00	0.00	0.00
16.200	0.00	0.00	0.00	0.00	0.00
16.450	0.00	0.00	0.00	0.00	0.00
16.700	0.00	0.00	0.00	0.00	0.00
16.950	0.00	0.00	0.00	0.00	0.00
17.200	0.00	0.00	0.00	0.00	0.00
17.450	0.00	0.00	0.00	0.00	0.00
17.700	0.00	0.00	0.00	0.00	0.00
17.950	0.00	0.00	0.00	0.00	0.00
18.200	0.00	0.00	0.00	0.00	0.00
18.450	0.00	0.00	0.00	0.00	0.00
18.700	0.00	0.00	0.00	0.00	0.00
18.950	0.00	0.00	0.00	0.00	0.00
19.200	0.00	0.00	0.00	0.00	0.00
19.450	0.00	0.00	0.00	0.00	0.00
19.700	0.00	0.00	0.00	0.00	0.00
19.950	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-2-P
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	1,564.000 ft²

Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	0.07 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.07 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	1,564.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.26 in
Runoff Volume (Pervious)	0.004 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.004 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.35 ft³/s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.101 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	1,564.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.500	0.00	0.00	0.00	0.00	0.00
11.750	0.01	0.01	0.01	0.01	0.02
12.000	0.03	0.06	0.07	0.03	0.03
12.250	0.02	0.02	0.02	0.02	0.02
12.500	0.02	0.01	0.01	0.01	0.01
12.750	0.01	0.01	0.01	0.01	0.01
13.000	0.01	0.01	0.01	0.01	0.01
13.250	0.01	0.01	0.01	0.01	0.00
13.500	0.00	0.00	0.00	0.00	0.00
13.750	0.00	0.00	0.00	0.00	0.00
14.000	0.00	0.00	0.00	0.00	0.00
14.250	0.00	0.00	0.00	0.00	0.00
14.500	0.00	0.00	0.00	0.00	0.00
14.750	0.00	0.00	0.00	0.00	0.00
15.000	0.00	0.00	0.00	0.00	0.00
15.250	0.00	0.00	0.00	0.00	0.00
15.500	0.00	0.00	0.00	0.00	0.00
15.750	0.00	0.00	0.00	0.00	0.00
16.000	0.00	0.00	0.00	0.00	0.00
16.250	0.00	0.00	0.00	0.00	0.00
16.500	0.00	0.00	0.00	0.00	0.00
16.750	0.00	0.00	0.00	0.00	0.00
17.000	0.00	0.00	0.00	0.00	0.00
17.250	0.00	0.00	0.00	0.00	0.00
17.500	0.00	0.00	0.00	0.00	0.00
17.750	0.00	0.00	0.00	0.00	0.00
18.000	0.00	0.00	0.00	0.00	0.00
18.250	0.00	0.00	0.00	0.00	0.00
18.500	0.00	0.00	0.00	0.00	0.00
18.750	0.00	0.00	0.00	0.00	0.00
19.000	0.00	0.00	0.00	0.00	0.00
19.250	0.00	0.00	0.00	0.00	0.00
19.500	0.00	0.00	0.00	0.00	0.00
19.750	0.00	0.00	0.00	0.00	0.00
20.000	0.00	0.00	0.00	0.00	0.00
20.250	0.00	0.00	0.00	0.00	0.00
20.500	0.00	0.00	0.00	0.00	0.00
20.750	0.00	0.00	0.00	0.00	0.00
21.000	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.250	0.00	0.00	0.00	0.00	0.00
21.500	0.00	0.00	0.00	0.00	0.00
21.750	0.00	0.00	0.00	0.00	0.00
22.000	0.00	0.00	0.00	0.00	0.00
22.250	0.00	0.00	0.00	0.00	0.00
22.500	0.00	0.00	0.00	0.00	0.00
22.750	0.00	0.00	0.00	0.00	0.00
23.000	0.00	0.00	0.00	0.00	0.00
23.250	0.00	0.00	0.00	0.00	0.00
23.500	0.00	0.00	0.00	0.00	0.00
23.750	0.00	0.00	0.00	0.00	0.00
24.000	0.00	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-2-P
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	1,564.000 ft²

Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	0.10 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.10 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	1,564.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.89 in
Runoff Volume (Pervious)	0.006 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.006 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.35 ft³/s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.101 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	1,564.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.100	0.00	0.00	0.00	0.00	0.00
11.350	0.00	0.00	0.00	0.00	0.01
11.600	0.01	0.01	0.01	0.01	0.01
11.850	0.02	0.02	0.04	0.05	0.09
12.100	0.10	0.04	0.04	0.03	0.03
12.350	0.02	0.02	0.02	0.02	0.01
12.600	0.01	0.01	0.01	0.01	0.01
12.850	0.01	0.01	0.01	0.01	0.01
13.100	0.01	0.01	0.01	0.01	0.01
13.350	0.01	0.01	0.01	0.01	0.01
13.600	0.01	0.01	0.01	0.01	0.01
13.850	0.01	0.01	0.01	0.01	0.01
14.100	0.01	0.01	0.01	0.00	0.00
14.350	0.00	0.00	0.00	0.00	0.00
14.600	0.00	0.00	0.00	0.00	0.00
14.850	0.00	0.00	0.00	0.00	0.00
15.100	0.00	0.00	0.00	0.00	0.00
15.350	0.00	0.00	0.00	0.00	0.00
15.600	0.00	0.00	0.00	0.00	0.00
15.850	0.00	0.00	0.00	0.00	0.00
16.100	0.00	0.00	0.00	0.00	0.00
16.350	0.00	0.00	0.00	0.00	0.00
16.600	0.00	0.00	0.00	0.00	0.00
16.850	0.00	0.00	0.00	0.00	0.00
17.100	0.00	0.00	0.00	0.00	0.00
17.350	0.00	0.00	0.00	0.00	0.00
17.600	0.00	0.00	0.00	0.00	0.00
17.850	0.00	0.00	0.00	0.00	0.00
18.100	0.00	0.00	0.00	0.00	0.00
18.350	0.00	0.00	0.00	0.00	0.00
18.600	0.00	0.00	0.00	0.00	0.00
18.850	0.00	0.00	0.00	0.00	0.00
19.100	0.00	0.00	0.00	0.00	0.00
19.350	0.00	0.00	0.00	0.00	0.00
19.600	0.00	0.00	0.00	0.00	0.00
19.850	0.00	0.00	0.00	0.00	0.00
20.100	0.00	0.00	0.00	0.00	0.00
20.350	0.00	0.00	0.00	0.00	0.00
20.600	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.850	0.00	0.00	0.00	0.00	0.00
21.100	0.00	0.00	0.00	0.00	0.00
21.350	0.00	0.00	0.00	0.00	0.00
21.600	0.00	0.00	0.00	0.00	0.00
21.850	0.00	0.00	0.00	0.00	0.00
22.100	0.00	0.00	0.00	0.00	0.00
22.350	0.00	0.00	0.00	0.00	0.00
22.600	0.00	0.00	0.00	0.00	0.00
22.850	0.00	0.00	0.00	0.00	0.00
23.100	0.00	0.00	0.00	0.00	0.00
23.350	0.00	0.00	0.00	0.00	0.00
23.600	0.00	0.00	0.00	0.00	0.00
23.850	0.00	0.00	0.00	0.00	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-2-P
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	1,564.000 ft²

Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	0.14 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.14 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	1,564.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.47 in
Runoff Volume (Pervious)	0.007 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.007 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.35 ft³/s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.101 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	1,564.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.800	0.00	0.00	0.00	0.00	0.00
11.050	0.00	0.00	0.00	0.00	0.00
11.300	0.00	0.00	0.00	0.01	0.01
11.550	0.01	0.01	0.01	0.01	0.02
11.800	0.02	0.03	0.03	0.06	0.07
12.050	0.12	0.14	0.05	0.05	0.04
12.300	0.04	0.03	0.03	0.03	0.03
12.550	0.02	0.02	0.02	0.02	0.02
12.800	0.02	0.01	0.01	0.01	0.01
13.050	0.01	0.01	0.01	0.01	0.01
13.300	0.01	0.01	0.01	0.01	0.01
13.550	0.01	0.01	0.01	0.01	0.01
13.800	0.01	0.01	0.01	0.01	0.01
14.050	0.01	0.01	0.01	0.01	0.01
14.300	0.01	0.01	0.01	0.01	0.01
14.550	0.01	0.01	0.01	0.01	0.01
14.800	0.01	0.00	0.00	0.00	0.00
15.050	0.00	0.00	0.00	0.00	0.00
15.300	0.00	0.00	0.00	0.00	0.00
15.550	0.00	0.00	0.00	0.00	0.00
15.800	0.00	0.00	0.00	0.00	0.00
16.050	0.00	0.00	0.00	0.00	0.00
16.300	0.00	0.00	0.00	0.00	0.00
16.550	0.00	0.00	0.00	0.00	0.00
16.800	0.00	0.00	0.00	0.00	0.00
17.050	0.00	0.00	0.00	0.00	0.00
17.300	0.00	0.00	0.00	0.00	0.00
17.550	0.00	0.00	0.00	0.00	0.00
17.800	0.00	0.00	0.00	0.00	0.00
18.050	0.00	0.00	0.00	0.00	0.00
18.300	0.00	0.00	0.00	0.00	0.00
18.550	0.00	0.00	0.00	0.00	0.00
18.800	0.00	0.00	0.00	0.00	0.00
19.050	0.00	0.00	0.00	0.00	0.00
19.300	0.00	0.00	0.00	0.00	0.00
19.550	0.00	0.00	0.00	0.00	0.00
19.800	0.00	0.00	0.00	0.00	0.00
20.050	0.00	0.00	0.00	0.00	0.00
20.300	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.550	0.00	0.00	0.00	0.00	0.00
20.800	0.00	0.00	0.00	0.00	0.00
21.050	0.00	0.00	0.00	0.00	0.00
21.300	0.00	0.00	0.00	0.00	0.00
21.550	0.00	0.00	0.00	0.00	0.00
21.800	0.00	0.00	0.00	0.00	0.00
22.050	0.00	0.00	0.00	0.00	0.00
22.300	0.00	0.00	0.00	0.00	0.00
22.550	0.00	0.00	0.00	0.00	0.00
22.800	0.00	0.00	0.00	0.00	0.00
23.050	0.00	0.00	0.00	0.00	0.00
23.300	0.00	0.00	0.00	0.00	0.00
23.550	0.00	0.00	0.00	0.00	0.00
23.800	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-2-P
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	1,564.000 ft²

Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.101 hours
Flow (Peak, Computed)	0.17 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.17 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	1,564.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.14 in
Runoff Volume (Pervious)	0.009 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.009 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	1.35 ft³/s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.101 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	1,564.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.400	0.00	0.00	0.00	0.00	0.00
10.650	0.00	0.00	0.00	0.00	0.00
10.900	0.00	0.00	0.00	0.00	0.00
11.150	0.00	0.01	0.01	0.01	0.01
11.400	0.01	0.01	0.01	0.01	0.01
11.650	0.02	0.02	0.03	0.03	0.04
11.900	0.04	0.08	0.09	0.15	0.17
12.150	0.07	0.06	0.05	0.05	0.04
12.400	0.04	0.03	0.03	0.02	0.02
12.650	0.02	0.02	0.02	0.02	0.02
12.900	0.02	0.02	0.02	0.01	0.01
13.150	0.01	0.01	0.01	0.01	0.01
13.400	0.01	0.01	0.01	0.01	0.01
13.650	0.01	0.01	0.01	0.01	0.01
13.900	0.01	0.01	0.01	0.01	0.01
14.150	0.01	0.01	0.01	0.01	0.01
14.400	0.01	0.01	0.01	0.01	0.01
14.650	0.01	0.01	0.01	0.01	0.01
14.900	0.01	0.01	0.01	0.01	0.01
15.150	0.01	0.01	0.01	0.01	0.01
15.400	0.01	0.01	0.01	0.01	0.01
15.650	0.00	0.00	0.00	0.00	0.00
15.900	0.00	0.00	0.00	0.00	0.00
16.150	0.00	0.00	0.00	0.00	0.00
16.400	0.00	0.00	0.00	0.00	0.00
16.650	0.00	0.00	0.00	0.00	0.00
16.900	0.00	0.00	0.00	0.00	0.00
17.150	0.00	0.00	0.00	0.00	0.00
17.400	0.00	0.00	0.00	0.00	0.00
17.650	0.00	0.00	0.00	0.00	0.00
17.900	0.00	0.00	0.00	0.00	0.00
18.150	0.00	0.00	0.00	0.00	0.00
18.400	0.00	0.00	0.00	0.00	0.00
18.650	0.00	0.00	0.00	0.00	0.00
18.900	0.00	0.00	0.00	0.00	0.00
19.150	0.00	0.00	0.00	0.00	0.00
19.400	0.00	0.00	0.00	0.00	0.00
19.650	0.00	0.00	0.00	0.00	0.00
19.900	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-2-P
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.150	0.00	0.00	0.00	0.00	0.00
20.400	0.00	0.00	0.00	0.00	0.00
20.650	0.00	0.00	0.00	0.00	0.00
20.900	0.00	0.00	0.00	0.00	0.00
21.150	0.00	0.00	0.00	0.00	0.00
21.400	0.00	0.00	0.00	0.00	0.00
21.650	0.00	0.00	0.00	0.00	0.00
21.900	0.00	0.00	0.00	0.00	0.00
22.150	0.00	0.00	0.00	0.00	0.00
22.400	0.00	0.00	0.00	0.00	0.00
22.650	0.00	0.00	0.00	0.00	0.00
22.900	0.00	0.00	0.00	0.00	0.00
23.150	0.00	0.00	0.00	0.00	0.00
23.400	0.00	0.00	0.00	0.00	0.00
23.650	0.00	0.00	0.00	0.00	0.00
23.900	0.00	0.00	0.00	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-3-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.025 hours
Area (User Defined)	14,272.000 ft²

Computational Time Increment	0.003 hours
Time to Peak (Computed)	12.098 hours
Flow (Peak, Computed)	1.04 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	1.04 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	14,272.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.50 in
Runoff Volume (Pervious)	0.068 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.068 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.025 hours
Computational Time Increment	0.003 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	14.98 ft³/s
Unit peak time, Tp	0.017 hours
Unit receding limb, Tr	0.066 hours
Total unit time, Tb	0.083 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.025 hours
Area (User Defined)	14,272.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.700	0.00	0.00	0.00	0.00	0.00
1.950	0.00	0.00	0.00	0.00	0.00
2.200	0.00	0.00	0.00	0.00	0.00
2.450	0.00	0.00	0.00	0.00	0.00
2.700	0.00	0.00	0.00	0.00	0.00
2.950	0.00	0.00	0.00	0.00	0.00
3.200	0.00	0.01	0.01	0.01	0.01
3.450	0.01	0.01	0.01	0.01	0.01
3.700	0.01	0.01	0.01	0.01	0.01
3.950	0.01	0.01	0.01	0.01	0.01
4.200	0.01	0.01	0.01	0.01	0.01
4.450	0.01	0.01	0.01	0.01	0.01
4.700	0.01	0.01	0.01	0.01	0.01
4.950	0.01	0.01	0.01	0.01	0.01
5.200	0.01	0.01	0.01	0.01	0.01
5.450	0.01	0.01	0.01	0.01	0.01
5.700	0.01	0.01	0.01	0.01	0.01
5.950	0.01	0.01	0.01	0.01	0.01
6.200	0.01	0.01	0.01	0.01	0.01
6.450	0.01	0.01	0.01	0.01	0.01
6.700	0.01	0.01	0.01	0.01	0.01
6.950	0.01	0.01	0.01	0.01	0.01
7.200	0.01	0.02	0.02	0.02	0.02
7.450	0.02	0.02	0.02	0.02	0.02
7.700	0.02	0.02	0.02	0.02	0.02
7.950	0.02	0.02	0.02	0.02	0.02
8.200	0.02	0.02	0.02	0.02	0.02
8.450	0.02	0.02	0.02	0.02	0.02
8.700	0.02	0.02	0.02	0.02	0.02
8.950	0.02	0.02	0.02	0.02	0.02
9.200	0.02	0.03	0.03	0.03	0.03
9.450	0.03	0.03	0.03	0.03	0.03
9.700	0.03	0.03	0.03	0.03	0.03
9.950	0.03	0.04	0.04	0.04	0.04
10.200	0.04	0.04	0.04	0.04	0.04
10.450	0.04	0.04	0.05	0.05	0.05
10.700	0.05	0.06	0.06	0.06	0.06
10.950	0.07	0.07	0.08	0.08	0.09
11.200	0.09	0.09	0.10	0.10	0.10

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.450	0.11	0.11	0.17	0.18	0.18
11.700	0.19	0.25	0.26	0.35	0.36
11.950	0.61	0.62	1.03	1.04	0.37
12.200	0.36	0.26	0.26	0.19	0.19
12.450	0.18	0.18	0.12	0.12	0.11
12.700	0.11	0.10	0.10	0.09	0.09
12.950	0.08	0.08	0.07	0.07	0.07
13.200	0.07	0.06	0.06	0.06	0.06
13.450	0.05	0.05	0.05	0.05	0.04
13.700	0.04	0.04	0.04	0.04	0.04
13.950	0.04	0.04	0.04	0.04	0.04
14.200	0.04	0.04	0.04	0.03	0.03
14.450	0.03	0.03	0.03	0.03	0.03
14.700	0.03	0.03	0.03	0.03	0.03
14.950	0.03	0.03	0.03	0.03	0.02
15.200	0.02	0.02	0.02	0.02	0.02
15.450	0.02	0.02	0.02	0.02	0.02
15.700	0.02	0.02	0.02	0.02	0.02
15.950	0.02	0.02	0.02	0.02	0.02
16.200	0.02	0.02	0.02	0.02	0.02
16.450	0.02	0.02	0.02	0.02	0.02
16.700	0.02	0.02	0.02	0.02	0.02
16.950	0.02	0.02	0.02	0.02	0.02
17.200	0.02	0.02	0.02	0.02	0.02
17.450	0.02	0.02	0.02	0.02	0.02
17.700	0.02	0.02	0.02	0.02	0.02
17.950	0.01	0.01	0.01	0.01	0.01
18.200	0.01	0.01	0.01	0.01	0.01
18.450	0.01	0.01	0.01	0.01	0.01
18.700	0.01	0.01	0.01	0.01	0.01
18.950	0.01	0.01	0.01	0.01	0.01
19.200	0.01	0.01	0.01	0.01	0.01
19.450	0.01	0.01	0.01	0.01	0.01
19.700	0.01	0.01	0.01	0.01	0.01
19.950	0.01	0.01	0.01	0.01	0.01
20.200	0.01	0.01	0.01	0.01	0.01
20.450	0.01	0.01	0.01	0.01	0.01
20.700	0.01	0.01	0.01	0.01	0.01
20.950	0.01	0.01	0.01	0.01	0.01
21.200	0.01	0.01	0.01	0.01	0.01
21.450	0.01	0.01	0.01	0.01	0.01
21.700	0.01	0.01	0.01	0.01	0.01
21.950	0.01	0.01	0.01	0.01	0.01
22.200	0.01	0.01	0.01	0.01	0.01
22.450	0.01	0.01	0.01	0.01	0.01
22.700	0.01	0.01	0.01	0.01	0.01
22.950	0.01	0.01	0.01	0.01	0.01
23.200	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.450	0.01	0.01	0.01	0.01	0.01
23.700	0.01	0.01	0.01	0.01	0.01
23.950	0.01	0.01	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-3-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.025 hours
Area (User Defined)	14,272.000 ft²

Computational Time Increment	0.003 hours
Time to Peak (Computed)	12.098 hours
Flow (Peak, Computed)	1.25 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	1.25 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	14,272.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.05 in
Runoff Volume (Pervious)	0.083 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.083 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.025 hours
Computational Time Increment	0.003 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	14.98 ft³/s
Unit peak time, Tp	0.017 hours
Unit receding limb, Tr	0.066 hours
Total unit time, Tb	0.083 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.025 hours
Area (User Defined)	14,272.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.350	0.00	0.00	0.00	0.00	0.00
1.600	0.00	0.00	0.00	0.00	0.00
1.850	0.00	0.00	0.00	0.00	0.00
2.100	0.00	0.00	0.00	0.00	0.00
2.350	0.00	0.00	0.00	0.01	0.01
2.600	0.01	0.01	0.01	0.01	0.01
2.850	0.01	0.01	0.01	0.01	0.01
3.100	0.01	0.01	0.01	0.01	0.01
3.350	0.01	0.01	0.01	0.01	0.01
3.600	0.01	0.01	0.01	0.01	0.01
3.850	0.01	0.01	0.01	0.01	0.01
4.100	0.01	0.01	0.01	0.01	0.01
4.350	0.01	0.01	0.01	0.01	0.01
4.600	0.01	0.01	0.01	0.01	0.01
4.850	0.01	0.01	0.01	0.01	0.01
5.100	0.01	0.01	0.01	0.01	0.01
5.350	0.01	0.01	0.01	0.01	0.01
5.600	0.01	0.01	0.01	0.01	0.01
5.850	0.01	0.01	0.01	0.01	0.01
6.100	0.01	0.01	0.01	0.01	0.01
6.350	0.02	0.02	0.02	0.02	0.02
6.600	0.02	0.02	0.02	0.02	0.02
6.850	0.02	0.02	0.02	0.02	0.02
7.100	0.02	0.02	0.02	0.02	0.02
7.350	0.02	0.02	0.02	0.02	0.02
7.600	0.02	0.02	0.02	0.02	0.02
7.850	0.02	0.02	0.02	0.02	0.02
8.100	0.02	0.02	0.02	0.02	0.02
8.350	0.02	0.02	0.02	0.02	0.03
8.600	0.03	0.03	0.03	0.03	0.03
8.850	0.03	0.03	0.03	0.03	0.03
9.100	0.03	0.03	0.03	0.03	0.03
9.350	0.03	0.03	0.04	0.04	0.04
9.600	0.04	0.04	0.04	0.04	0.04
9.850	0.04	0.04	0.04	0.04	0.04
10.100	0.04	0.05	0.05	0.05	0.05
10.350	0.05	0.05	0.05	0.05	0.06
10.600	0.06	0.06	0.06	0.07	0.07
10.850	0.08	0.08	0.08	0.08	0.09

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.100	0.09	0.10	0.10	0.12	0.12
11.350	0.13	0.13	0.14	0.14	0.21
11.600	0.21	0.22	0.22	0.31	0.31
11.850	0.43	0.43	0.74	0.75	1.24
12.100	1.25	0.45	0.44	0.32	0.31
12.350	0.23	0.23	0.22	0.22	0.14
12.600	0.14	0.13	0.13	0.12	0.12
12.850	0.11	0.11	0.10	0.10	0.09
13.100	0.09	0.08	0.08	0.07	0.07
13.350	0.07	0.07	0.06	0.06	0.05
13.600	0.05	0.05	0.05	0.05	0.05
13.850	0.05	0.05	0.05	0.05	0.05
14.100	0.05	0.04	0.04	0.04	0.04
14.350	0.04	0.04	0.04	0.04	0.04
14.600	0.04	0.04	0.04	0.04	0.04
14.850	0.03	0.03	0.03	0.03	0.03
15.100	0.03	0.03	0.03	0.03	0.03
15.350	0.03	0.03	0.03	0.03	0.03
15.600	0.03	0.03	0.03	0.03	0.03
15.850	0.03	0.03	0.03	0.03	0.03
16.100	0.03	0.03	0.03	0.03	0.03
16.350	0.02	0.02	0.02	0.02	0.02
16.600	0.02	0.02	0.02	0.02	0.02
16.850	0.02	0.02	0.02	0.02	0.02
17.100	0.02	0.02	0.02	0.02	0.02
17.350	0.02	0.02	0.02	0.02	0.02
17.600	0.02	0.02	0.02	0.02	0.02
17.850	0.02	0.02	0.02	0.02	0.02
18.100	0.02	0.02	0.02	0.02	0.02
18.350	0.02	0.02	0.02	0.02	0.02
18.600	0.02	0.02	0.02	0.02	0.02
18.850	0.02	0.02	0.02	0.02	0.02
19.100	0.02	0.02	0.02	0.02	0.02
19.350	0.02	0.02	0.02	0.02	0.02
19.600	0.02	0.02	0.02	0.02	0.02
19.850	0.02	0.02	0.02	0.02	0.02
20.100	0.02	0.02	0.02	0.02	0.02
20.350	0.01	0.01	0.01	0.01	0.01
20.600	0.01	0.01	0.01	0.01	0.01
20.850	0.01	0.01	0.01	0.01	0.01
21.100	0.01	0.01	0.01	0.01	0.01
21.350	0.01	0.01	0.01	0.01	0.01
21.600	0.01	0.01	0.01	0.01	0.01
21.850	0.01	0.01	0.01	0.01	0.01
22.100	0.01	0.01	0.01	0.01	0.01
22.350	0.01	0.01	0.01	0.01	0.01
22.600	0.01	0.01	0.01	0.01	0.01
22.850	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.100	0.01	0.01	0.01	0.01	0.01
23.350	0.01	0.01	0.01	0.01	0.01
23.600	0.01	0.01	0.01	0.01	0.01
23.850	0.01	0.01	0.01	0.01	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-3-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.025 hours
Area (User Defined)	14,272.000 ft²

Computational Time Increment	0.003 hours
Time to Peak (Computed)	12.098 hours
Flow (Peak, Computed)	1.58 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	1.58 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	14,272.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.89 in
Runoff Volume (Pervious)	0.106 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.106 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.025 hours
Computational Time Increment	0.003 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	14.98 ft³/s
Unit peak time, Tp	0.017 hours
Unit receding limb, Tr	0.066 hours
Total unit time, Tb	0.083 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.025 hours
Area (User Defined)	14,272.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.050	0.00	0.00	0.00	0.00	0.00
1.300	0.00	0.00	0.00	0.00	0.00
1.550	0.00	0.00	0.00	0.00	0.00
1.800	0.01	0.01	0.01	0.01	0.01
2.050	0.01	0.01	0.01	0.01	0.01
2.300	0.01	0.01	0.01	0.01	0.01
2.550	0.01	0.01	0.01	0.01	0.01
2.800	0.01	0.01	0.01	0.01	0.01
3.050	0.01	0.01	0.01	0.01	0.01
3.300	0.01	0.01	0.01	0.01	0.01
3.550	0.01	0.01	0.01	0.01	0.01
3.800	0.01	0.01	0.01	0.01	0.01
4.050	0.01	0.01	0.01	0.01	0.01
4.300	0.01	0.01	0.01	0.01	0.01
4.550	0.01	0.01	0.01	0.02	0.02
4.800	0.02	0.02	0.02	0.02	0.02
5.050	0.02	0.02	0.02	0.02	0.02
5.300	0.02	0.02	0.02	0.02	0.02
5.550	0.02	0.02	0.02	0.02	0.02
5.800	0.02	0.02	0.02	0.02	0.02
6.050	0.02	0.02	0.02	0.02	0.02
6.300	0.02	0.02	0.02	0.02	0.02
6.550	0.02	0.02	0.02	0.02	0.02
6.800	0.02	0.02	0.02	0.02	0.02
7.050	0.02	0.02	0.02	0.02	0.03
7.300	0.03	0.03	0.03	0.03	0.03
7.550	0.03	0.03	0.03	0.03	0.03
7.800	0.03	0.03	0.03	0.03	0.03
8.050	0.03	0.03	0.03	0.03	0.03
8.300	0.03	0.03	0.03	0.03	0.03
8.550	0.03	0.03	0.03	0.03	0.03
8.800	0.03	0.03	0.03	0.04	0.04
9.050	0.04	0.04	0.04	0.04	0.04
9.300	0.04	0.04	0.04	0.05	0.05
9.550	0.05	0.05	0.05	0.05	0.05
9.800	0.05	0.05	0.05	0.06	0.06
10.050	0.06	0.06	0.06	0.06	0.06
10.300	0.06	0.06	0.06	0.07	0.07
10.550	0.07	0.07	0.08	0.08	0.09

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.800	0.09	0.10	0.10	0.10	0.10
11.050	0.12	0.12	0.13	0.13	0.15
11.300	0.15	0.16	0.16	0.17	0.17
11.550	0.27	0.27	0.28	0.29	0.39
11.800	0.39	0.54	0.54	0.93	0.94
12.050	1.56	1.58	0.57	0.55	0.40
12.300	0.40	0.29	0.29	0.27	0.27
12.550	0.18	0.18	0.17	0.17	0.15
12.800	0.15	0.14	0.14	0.12	0.12
13.050	0.11	0.11	0.10	0.10	0.09
13.300	0.09	0.08	0.08	0.08	0.08
13.550	0.07	0.07	0.07	0.07	0.06
13.800	0.06	0.06	0.06	0.06	0.06
14.050	0.06	0.06	0.06	0.06	0.05
14.300	0.05	0.05	0.05	0.05	0.05
14.550	0.05	0.05	0.05	0.05	0.04
14.800	0.04	0.04	0.04	0.04	0.04
15.050	0.04	0.04	0.04	0.04	0.04
15.300	0.04	0.04	0.04	0.04	0.04
15.550	0.04	0.04	0.03	0.03	0.03
15.800	0.03	0.03	0.03	0.03	0.03
16.050	0.03	0.03	0.03	0.03	0.03
16.300	0.03	0.03	0.03	0.03	0.03
16.550	0.03	0.03	0.03	0.03	0.03
16.800	0.03	0.03	0.03	0.03	0.03
17.050	0.03	0.03	0.03	0.03	0.03
17.300	0.03	0.03	0.03	0.03	0.03
17.550	0.02	0.02	0.02	0.02	0.02
17.800	0.02	0.02	0.02	0.02	0.02
18.050	0.02	0.02	0.02	0.02	0.02
18.300	0.02	0.02	0.02	0.02	0.02
18.550	0.02	0.02	0.02	0.02	0.02
18.800	0.02	0.02	0.02	0.02	0.02
19.050	0.02	0.02	0.02	0.02	0.02
19.300	0.02	0.02	0.02	0.02	0.02
19.550	0.02	0.02	0.02	0.02	0.02
19.800	0.02	0.02	0.02	0.02	0.02
20.050	0.02	0.02	0.02	0.02	0.02
20.300	0.02	0.02	0.02	0.02	0.02
20.550	0.02	0.02	0.02	0.02	0.02
20.800	0.02	0.02	0.02	0.02	0.02
21.050	0.02	0.02	0.02	0.02	0.02
21.300	0.02	0.02	0.02	0.02	0.02
21.550	0.02	0.02	0.02	0.02	0.02
21.800	0.02	0.02	0.02	0.02	0.02
22.050	0.02	0.02	0.02	0.02	0.02
22.300	0.02	0.02	0.02	0.02	0.02
22.550	0.02	0.02	0.02	0.02	0.02

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.800	0.02	0.02	0.02	0.02	0.02
23.050	0.02	0.02	0.01	0.01	0.01
23.300	0.01	0.01	0.01	0.01	0.01
23.550	0.01	0.01	0.01	0.01	0.01
23.800	0.01	0.01	0.01	0.02	0.02

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-3-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.025 hours
Area (User Defined)	14,272.000 ft²

Computational Time Increment	0.003 hours
Time to Peak (Computed)	12.098 hours
Flow (Peak, Computed)	1.85 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	1.84 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	14,272.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.58 in
Runoff Volume (Pervious)	0.125 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.125 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.025 hours
Computational Time Increment	0.003 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	14.98 ft³/s
Unit peak time, Tp	0.017 hours
Unit receding limb, Tr	0.066 hours
Total unit time, Tb	0.083 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.025 hours
Area (User Defined)	14,272.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.900	0.00	0.00	0.00	0.00	0.00
1.150	0.00	0.00	0.00	0.00	0.00
1.400	0.00	0.01	0.01	0.01	0.01
1.650	0.01	0.01	0.01	0.01	0.01
1.900	0.01	0.01	0.01	0.01	0.01
2.150	0.01	0.01	0.01	0.01	0.01
2.400	0.01	0.01	0.01	0.01	0.01
2.650	0.01	0.01	0.01	0.01	0.01
2.900	0.01	0.01	0.01	0.01	0.01
3.150	0.01	0.01	0.01	0.01	0.01
3.400	0.01	0.01	0.01	0.02	0.02
3.650	0.02	0.02	0.02	0.02	0.02
3.900	0.02	0.02	0.02	0.02	0.02
4.150	0.02	0.02	0.02	0.02	0.02
4.400	0.02	0.02	0.02	0.02	0.02
4.650	0.02	0.02	0.02	0.02	0.02
4.900	0.02	0.02	0.02	0.02	0.02
5.150	0.02	0.02	0.02	0.02	0.02
5.400	0.02	0.02	0.02	0.02	0.02
5.650	0.02	0.02	0.02	0.02	0.02
5.900	0.02	0.02	0.02	0.02	0.02
6.150	0.02	0.02	0.02	0.02	0.02
6.400	0.02	0.03	0.03	0.03	0.03
6.650	0.03	0.03	0.03	0.03	0.03
6.900	0.03	0.03	0.03	0.03	0.03
7.150	0.03	0.03	0.03	0.03	0.03
7.400	0.03	0.03	0.03	0.03	0.03
7.650	0.03	0.03	0.03	0.03	0.03
7.900	0.03	0.04	0.04	0.04	0.04
8.150	0.04	0.04	0.04	0.04	0.04
8.400	0.04	0.04	0.04	0.04	0.04
8.650	0.04	0.04	0.04	0.04	0.04
8.900	0.04	0.04	0.04	0.04	0.04
9.150	0.05	0.05	0.05	0.05	0.05
9.400	0.05	0.05	0.05	0.06	0.06
9.650	0.06	0.06	0.06	0.06	0.06
9.900	0.06	0.07	0.07	0.07	0.07
10.150	0.07	0.07	0.07	0.07	0.08
10.400	0.08	0.08	0.08	0.09	0.09

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.650	0.10	0.10	0.10	0.11	0.11
10.900	0.11	0.12	0.12	0.14	0.14
11.150	0.16	0.16	0.17	0.17	0.19
11.400	0.19	0.20	0.20	0.31	0.32
11.650	0.33	0.33	0.46	0.46	0.63
11.900	0.64	1.09	1.11	1.83	1.84
12.150	0.67	0.64	0.47	0.46	0.34
12.400	0.34	0.32	0.32	0.21	0.21
12.650	0.19	0.19	0.18	0.18	0.16
12.900	0.16	0.14	0.14	0.13	0.13
13.150	0.12	0.12	0.11	0.11	0.10
13.400	0.10	0.09	0.09	0.08	0.08
13.650	0.08	0.08	0.08	0.08	0.07
13.900	0.07	0.07	0.07	0.07	0.07
14.150	0.07	0.07	0.06	0.06	0.06
14.400	0.06	0.06	0.06	0.06	0.06
14.650	0.05	0.05	0.05	0.05	0.05
14.900	0.05	0.05	0.05	0.04	0.04
15.150	0.04	0.04	0.04	0.04	0.04
15.400	0.04	0.04	0.04	0.04	0.04
15.650	0.04	0.04	0.04	0.04	0.04
15.900	0.04	0.04	0.04	0.04	0.04
16.150	0.04	0.04	0.04	0.04	0.04
16.400	0.04	0.04	0.04	0.04	0.04
16.650	0.03	0.03	0.03	0.03	0.03
16.900	0.03	0.03	0.03	0.03	0.03
17.150	0.03	0.03	0.03	0.03	0.03
17.400	0.03	0.03	0.03	0.03	0.03
17.650	0.03	0.03	0.03	0.03	0.03
17.900	0.03	0.03	0.03	0.03	0.03
18.150	0.03	0.03	0.03	0.03	0.03
18.400	0.03	0.02	0.02	0.02	0.02
18.650	0.02	0.02	0.02	0.02	0.02
18.900	0.02	0.02	0.02	0.02	0.02
19.150	0.02	0.02	0.02	0.02	0.02
19.400	0.02	0.02	0.02	0.02	0.02
19.650	0.02	0.02	0.02	0.02	0.02
19.900	0.02	0.02	0.02	0.02	0.02
20.150	0.02	0.02	0.02	0.02	0.02
20.400	0.02	0.02	0.02	0.02	0.02
20.650	0.02	0.02	0.02	0.02	0.02
20.900	0.02	0.02	0.02	0.02	0.02
21.150	0.02	0.02	0.02	0.02	0.02
21.400	0.02	0.02	0.02	0.02	0.02
21.650	0.02	0.02	0.02	0.02	0.02
21.900	0.02	0.02	0.02	0.02	0.02
22.150	0.02	0.02	0.02	0.02	0.02
22.400	0.02	0.02	0.02	0.02	0.02

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.650	0.02	0.02	0.02	0.02	0.02
22.900	0.02	0.02	0.02	0.02	0.02
23.150	0.02	0.02	0.02	0.02	0.02
23.400	0.02	0.02	0.02	0.02	0.02
23.650	0.02	0.02	0.02	0.02	0.02
23.900	0.02	0.02	0.02	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-3-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.025 hours
Area (User Defined)	14,272.000 ft²

Computational Time Increment	0.003 hours
Time to Peak (Computed)	12.098 hours
Flow (Peak, Computed)	2.24 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	2.23 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	14,272.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.59 in
Runoff Volume (Pervious)	0.153 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.153 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.025 hours
Computational Time Increment	0.003 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	14.98 ft³/s
Unit peak time, Tp	0.017 hours
Unit receding limb, Tr	0.066 hours
Total unit time, Tb	0.083 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.025 hours
Area (User Defined)	14,272.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.700	0.00	0.00	0.00	0.00	0.00
0.950	0.00	0.00	0.00	0.00	0.01
1.200	0.01	0.01	0.01	0.01	0.01
1.450	0.01	0.01	0.01	0.01	0.01
1.700	0.01	0.01	0.01	0.01	0.01
1.950	0.01	0.01	0.01	0.01	0.01
2.200	0.01	0.01	0.01	0.01	0.01
2.450	0.01	0.01	0.02	0.02	0.02
2.700	0.02	0.02	0.02	0.02	0.02
2.950	0.02	0.02	0.02	0.02	0.02
3.200	0.02	0.02	0.02	0.02	0.02
3.450	0.02	0.02	0.02	0.02	0.02
3.700	0.02	0.02	0.02	0.02	0.02
3.950	0.02	0.02	0.02	0.02	0.02
4.200	0.02	0.02	0.02	0.02	0.02
4.450	0.02	0.02	0.02	0.02	0.02
4.700	0.02	0.02	0.02	0.02	0.02
4.950	0.02	0.02	0.03	0.03	0.03
5.200	0.03	0.03	0.03	0.03	0.03
5.450	0.03	0.03	0.03	0.03	0.03
5.700	0.03	0.03	0.03	0.03	0.03
5.950	0.03	0.03	0.03	0.03	0.03
6.200	0.03	0.03	0.03	0.03	0.03
6.450	0.03	0.03	0.03	0.03	0.03
6.700	0.03	0.03	0.03	0.03	0.03
6.950	0.04	0.04	0.04	0.04	0.04
7.200	0.04	0.04	0.04	0.04	0.04
7.450	0.04	0.04	0.04	0.04	0.04
7.700	0.04	0.04	0.04	0.04	0.04
7.950	0.04	0.04	0.04	0.04	0.05
8.200	0.05	0.05	0.05	0.05	0.05
8.450	0.05	0.05	0.05	0.05	0.05
8.700	0.05	0.05	0.05	0.05	0.05
8.950	0.05	0.05	0.05	0.05	0.06
9.200	0.06	0.06	0.06	0.06	0.06
9.450	0.07	0.07	0.07	0.07	0.07
9.700	0.07	0.07	0.07	0.08	0.08
9.950	0.08	0.08	0.08	0.08	0.09
10.200	0.09	0.09	0.09	0.09	0.09

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.450	0.10	0.10	0.11	0.11	0.12
10.700	0.12	0.13	0.13	0.14	0.14
10.950	0.15	0.15	0.17	0.17	0.19
11.200	0.19	0.21	0.21	0.23	0.23
11.450	0.25	0.25	0.38	0.39	0.41
11.700	0.41	0.55	0.56	0.77	0.78
11.950	1.33	1.34	2.22	2.23	0.81
12.200	0.78	0.56	0.56	0.41	0.41
12.450	0.39	0.39	0.25	0.25	0.24
12.700	0.23	0.21	0.21	0.19	0.19
12.950	0.17	0.17	0.15	0.15	0.14
13.200	0.14	0.13	0.13	0.12	0.12
13.450	0.11	0.11	0.10	0.10	0.09
13.700	0.09	0.09	0.09	0.09	0.09
13.950	0.09	0.09	0.08	0.08	0.08
14.200	0.08	0.08	0.08	0.07	0.07
14.450	0.07	0.07	0.07	0.07	0.07
14.700	0.07	0.06	0.06	0.06	0.06
14.950	0.06	0.06	0.05	0.05	0.05
15.200	0.05	0.05	0.05	0.05	0.05
15.450	0.05	0.05	0.05	0.05	0.05
15.700	0.05	0.05	0.05	0.05	0.05
15.950	0.05	0.05	0.05	0.05	0.05
16.200	0.05	0.04	0.04	0.04	0.04
16.450	0.04	0.04	0.04	0.04	0.04
16.700	0.04	0.04	0.04	0.04	0.04
16.950	0.04	0.04	0.04	0.04	0.04
17.200	0.04	0.04	0.04	0.04	0.04
17.450	0.04	0.04	0.03	0.03	0.03
17.700	0.03	0.03	0.03	0.03	0.03
17.950	0.03	0.03	0.03	0.03	0.03
18.200	0.03	0.03	0.03	0.03	0.03
18.450	0.03	0.03	0.03	0.03	0.03
18.700	0.03	0.03	0.03	0.03	0.03
18.950	0.03	0.03	0.03	0.03	0.03
19.200	0.03	0.03	0.03	0.03	0.03
19.450	0.03	0.03	0.03	0.03	0.03
19.700	0.03	0.03	0.03	0.03	0.03
19.950	0.03	0.03	0.03	0.03	0.03
20.200	0.03	0.03	0.03	0.03	0.03
20.450	0.03	0.03	0.03	0.03	0.03
20.700	0.03	0.03	0.03	0.03	0.03
20.950	0.03	0.03	0.03	0.03	0.03
21.200	0.03	0.03	0.03	0.02	0.02
21.450	0.02	0.02	0.02	0.02	0.02
21.700	0.02	0.02	0.02	0.02	0.02
21.950	0.02	0.02	0.02	0.02	0.02
22.200	0.02	0.02	0.02	0.02	0.02

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.450	0.02	0.02	0.02	0.02	0.02
22.700	0.02	0.02	0.02	0.02	0.02
22.950	0.02	0.02	0.02	0.02	0.02
23.200	0.02	0.02	0.02	0.02	0.02
23.450	0.02	0.02	0.02	0.02	0.02
23.700	0.02	0.02	0.02	0.02	0.02
23.950	0.02	0.02	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-3-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.025 hours
Area (User Defined)	14,272.000 ft²

Computational Time Increment	0.003 hours
Time to Peak (Computed)	12.098 hours
Flow (Peak, Computed)	2.57 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	2.56 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	14,272.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.44 in
Runoff Volume (Pervious)	0.176 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.176 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.025 hours
Computational Time Increment	0.003 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	14.98 ft³/s
Unit peak time, Tp	0.017 hours
Unit receding limb, Tr	0.066 hours
Total unit time, Tb	0.083 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.025 hours
Area (User Defined)	14,272.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.600	0.00	0.00	0.00	0.00	0.00
0.850	0.00	0.00	0.01	0.01	0.01
1.100	0.01	0.01	0.01	0.01	0.01
1.350	0.01	0.01	0.01	0.01	0.01
1.600	0.01	0.01	0.01	0.01	0.01
1.850	0.01	0.01	0.02	0.02	0.02
2.100	0.02	0.02	0.02	0.02	0.02
2.350	0.02	0.02	0.02	0.02	0.02
2.600	0.02	0.02	0.02	0.02	0.02
2.850	0.02	0.02	0.02	0.02	0.02
3.100	0.02	0.02	0.02	0.02	0.02
3.350	0.02	0.02	0.02	0.02	0.02
3.600	0.02	0.02	0.02	0.02	0.02
3.850	0.03	0.03	0.03	0.03	0.03
4.100	0.03	0.03	0.03	0.03	0.03
4.350	0.03	0.03	0.03	0.03	0.03
4.600	0.03	0.03	0.03	0.03	0.03
4.850	0.03	0.03	0.03	0.03	0.03
5.100	0.03	0.03	0.03	0.03	0.03
5.350	0.03	0.03	0.03	0.03	0.03
5.600	0.03	0.03	0.03	0.03	0.03
5.850	0.03	0.03	0.03	0.03	0.03
6.100	0.03	0.03	0.03	0.04	0.04
6.350	0.04	0.04	0.04	0.04	0.04
6.600	0.04	0.04	0.04	0.04	0.04
6.850	0.04	0.04	0.04	0.04	0.04
7.100	0.04	0.04	0.04	0.04	0.04
7.350	0.05	0.05	0.05	0.05	0.05
7.600	0.05	0.05	0.05	0.05	0.05
7.850	0.05	0.05	0.05	0.05	0.05
8.100	0.05	0.05	0.05	0.05	0.05
8.350	0.05	0.05	0.06	0.06	0.06
8.600	0.06	0.06	0.06	0.06	0.06
8.850	0.06	0.06	0.06	0.06	0.06
9.100	0.06	0.07	0.07	0.07	0.07
9.350	0.07	0.07	0.08	0.08	0.08
9.600	0.08	0.08	0.08	0.09	0.09
9.850	0.09	0.09	0.09	0.09	0.10
10.100	0.10	0.10	0.10	0.10	0.10

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.350	0.11	0.11	0.11	0.11	0.12
10.600	0.12	0.13	0.13	0.15	0.15
10.850	0.16	0.16	0.17	0.17	0.20
11.100	0.20	0.22	0.22	0.24	0.24
11.350	0.27	0.27	0.28	0.29	0.44
11.600	0.44	0.47	0.47	0.64	0.64
11.850	0.88	0.89	1.52	1.54	2.55
12.100	2.56	0.93	0.89	0.65	0.64
12.350	0.47	0.47	0.45	0.44	0.29
12.600	0.29	0.27	0.27	0.25	0.25
12.850	0.22	0.22	0.20	0.20	0.18
13.100	0.17	0.16	0.16	0.15	0.15
13.350	0.14	0.14	0.12	0.12	0.11
13.600	0.11	0.11	0.11	0.10	0.10
13.850	0.10	0.10	0.10	0.10	0.09
14.100	0.09	0.09	0.09	0.09	0.09
14.350	0.08	0.08	0.08	0.08	0.08
14.600	0.08	0.08	0.07	0.07	0.07
14.850	0.07	0.07	0.07	0.07	0.06
15.100	0.06	0.06	0.06	0.06	0.06
15.350	0.06	0.06	0.06	0.06	0.06
15.600	0.06	0.06	0.06	0.06	0.06
15.850	0.05	0.05	0.05	0.05	0.05
16.100	0.05	0.05	0.05	0.05	0.05
16.350	0.05	0.05	0.05	0.05	0.05
16.600	0.05	0.05	0.05	0.05	0.05
16.850	0.05	0.05	0.05	0.05	0.04
17.100	0.04	0.04	0.04	0.04	0.04
17.350	0.04	0.04	0.04	0.04	0.04
17.600	0.04	0.04	0.04	0.04	0.04
17.850	0.04	0.04	0.04	0.04	0.04
18.100	0.04	0.04	0.04	0.04	0.04
18.350	0.03	0.03	0.03	0.03	0.03
18.600	0.03	0.03	0.03	0.03	0.03
18.850	0.03	0.03	0.03	0.03	0.03
19.100	0.03	0.03	0.03	0.03	0.03
19.350	0.03	0.03	0.03	0.03	0.03
19.600	0.03	0.03	0.03	0.03	0.03
19.850	0.03	0.03	0.03	0.03	0.03
20.100	0.03	0.03	0.03	0.03	0.03
20.350	0.03	0.03	0.03	0.03	0.03
20.600	0.03	0.03	0.03	0.03	0.03
20.850	0.03	0.03	0.03	0.03	0.03
21.100	0.03	0.03	0.03	0.03	0.03
21.350	0.03	0.03	0.03	0.03	0.03
21.600	0.03	0.03	0.03	0.03	0.03
21.850	0.03	0.03	0.03	0.03	0.03
22.100	0.03	0.03	0.03	0.03	0.03

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.350	0.03	0.03	0.03	0.03	0.03
22.600	0.03	0.03	0.03	0.03	0.03
22.850	0.02	0.02	0.02	0.02	0.02
23.100	0.02	0.02	0.02	0.02	0.02
23.350	0.02	0.02	0.02	0.02	0.02
23.600	0.02	0.02	0.02	0.02	0.02
23.850	0.02	0.02	0.03	0.03	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-3-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.025 hours
Area (User Defined)	14,272.000 ft²

Computational Time Increment	0.003 hours
Time to Peak (Computed)	12.098 hours
Flow (Peak, Computed)	2.92 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	2.92 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	14,272.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.36 in
Runoff Volume (Pervious)	0.201 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.201 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.025 hours
Computational Time Increment	0.003 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	14.98 ft³/s
Unit peak time, Tp	0.017 hours
Unit receding limb, Tr	0.066 hours
Total unit time, Tb	0.083 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.025 hours
Area (User Defined)	14,272.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.550	0.00	0.00	0.00	0.00	0.00
0.800	0.01	0.01	0.01	0.01	0.01
1.050	0.01	0.01	0.01	0.01	0.01
1.300	0.01	0.01	0.01	0.01	0.01
1.550	0.02	0.02	0.02	0.02	0.02
1.800	0.02	0.02	0.02	0.02	0.02
2.050	0.02	0.02	0.02	0.02	0.02
2.300	0.02	0.02	0.02	0.02	0.02
2.550	0.02	0.02	0.02	0.02	0.02
2.800	0.02	0.02	0.02	0.03	0.03
3.050	0.03	0.03	0.03	0.03	0.03
3.300	0.03	0.03	0.03	0.03	0.03
3.550	0.03	0.03	0.03	0.03	0.03
3.800	0.03	0.03	0.03	0.03	0.03
4.050	0.03	0.03	0.03	0.03	0.03
4.300	0.03	0.03	0.03	0.03	0.03
4.550	0.03	0.03	0.03	0.03	0.03
4.800	0.03	0.03	0.03	0.03	0.03
5.050	0.03	0.03	0.03	0.03	0.04
5.300	0.04	0.04	0.04	0.04	0.04
5.550	0.04	0.04	0.04	0.04	0.04
5.800	0.04	0.04	0.04	0.04	0.04
6.050	0.04	0.04	0.04	0.04	0.04
6.300	0.04	0.04	0.04	0.04	0.04
6.550	0.04	0.04	0.04	0.04	0.05
6.800	0.05	0.05	0.05	0.05	0.05
7.050	0.05	0.05	0.05	0.05	0.05
7.300	0.05	0.05	0.05	0.05	0.05
7.550	0.05	0.05	0.06	0.06	0.06
7.800	0.06	0.06	0.06	0.06	0.06
8.050	0.06	0.06	0.06	0.06	0.06
8.300	0.06	0.06	0.06	0.06	0.06
8.550	0.06	0.06	0.07	0.07	0.07
8.800	0.07	0.07	0.07	0.07	0.07
9.050	0.07	0.07	0.08	0.08	0.08
9.300	0.08	0.08	0.08	0.09	0.09
9.550	0.09	0.09	0.09	0.09	0.10
9.800	0.10	0.10	0.10	0.11	0.11
10.050	0.11	0.11	0.11	0.11	0.12

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.300	0.12	0.12	0.12	0.13	0.13
10.550	0.14	0.14	0.15	0.15	0.17
10.800	0.17	0.18	0.18	0.20	0.20
11.050	0.22	0.22	0.25	0.25	0.28
11.300	0.28	0.30	0.30	0.32	0.33
11.550	0.50	0.50	0.53	0.53	0.72
11.800	0.73	1.01	1.01	1.73	1.75
12.050	2.90	2.92	1.05	1.01	0.74
12.300	0.73	0.54	0.53	0.51	0.51
12.550	0.33	0.33	0.31	0.31	0.28
12.800	0.28	0.25	0.25	0.23	0.23
13.050	0.20	0.20	0.18	0.18	0.17
13.300	0.17	0.16	0.16	0.14	0.14
13.550	0.13	0.13	0.12	0.12	0.12
13.800	0.12	0.12	0.12	0.11	0.11
14.050	0.11	0.11	0.10	0.10	0.10
14.300	0.10	0.10	0.10	0.09	0.09
14.550	0.09	0.09	0.09	0.09	0.08
14.800	0.08	0.08	0.08	0.07	0.07
15.050	0.07	0.07	0.07	0.07	0.07
15.300	0.07	0.07	0.07	0.07	0.07
15.550	0.07	0.07	0.06	0.06	0.06
15.800	0.06	0.06	0.06	0.06	0.06
16.050	0.06	0.06	0.06	0.06	0.06
16.300	0.06	0.06	0.06	0.06	0.06
16.550	0.06	0.06	0.05	0.05	0.05
16.800	0.05	0.05	0.05	0.05	0.05
17.050	0.05	0.05	0.05	0.05	0.05
17.300	0.05	0.05	0.05	0.05	0.05
17.550	0.05	0.05	0.04	0.04	0.04
17.800	0.04	0.04	0.04	0.04	0.04
18.050	0.04	0.04	0.04	0.04	0.04
18.300	0.04	0.04	0.04	0.04	0.04
18.550	0.04	0.04	0.04	0.04	0.04
18.800	0.04	0.04	0.04	0.04	0.04
19.050	0.04	0.04	0.04	0.04	0.04
19.300	0.04	0.04	0.04	0.04	0.04
19.550	0.04	0.04	0.04	0.04	0.04
19.800	0.04	0.04	0.04	0.04	0.04
20.050	0.04	0.04	0.04	0.04	0.03
20.300	0.03	0.03	0.03	0.03	0.03
20.550	0.03	0.03	0.03	0.03	0.03
20.800	0.03	0.03	0.03	0.03	0.03
21.050	0.03	0.03	0.03	0.03	0.03
21.300	0.03	0.03	0.03	0.03	0.03
21.550	0.03	0.03	0.03	0.03	0.03
21.800	0.03	0.03	0.03	0.03	0.03
22.050	0.03	0.03	0.03	0.03	0.03

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.300	0.03	0.03	0.03	0.03	0.03
22.550	0.03	0.03	0.03	0.03	0.03
22.800	0.03	0.03	0.03	0.03	0.03
23.050	0.03	0.03	0.03	0.03	0.03
23.300	0.03	0.03	0.03	0.03	0.03
23.550	0.03	0.03	0.03	0.03	0.03
23.800	0.03	0.03	0.03	0.03	0.03

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-3-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.219 hours
Area (User Defined)	105,947.000 ft²

Computational Time Increment	0.029 hours
Time to Peak (Computed)	12.269 hours
Flow (Peak, Computed)	0.31 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	0.31 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	105,947.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.27 in
Runoff Volume (Pervious)	0.054 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.054 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.219 hours
Computational Time Increment	0.029 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	12.58 ft³/s
Unit peak time, Tp	0.146 hours
Unit receding limb, Tr	0.584 hours
Total unit time, Tb	0.730 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.219 hours
Area (User Defined)	105,947.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.000	0.00	0.01	0.07	0.17	0.27
12.250	0.31	0.31	0.29	0.27	0.26
12.500	0.24	0.23	0.22	0.20	0.18
12.750	0.17	0.16	0.15	0.15	0.14
13.000	0.14	0.13	0.13	0.12	0.12
13.250	0.11	0.11	0.11	0.10	0.10
13.500	0.09	0.09	0.09	0.08	0.08
13.750	0.08	0.08	0.08	0.08	0.07
14.000	0.07	0.07	0.07	0.07	0.07
14.250	0.07	0.07	0.07	0.07	0.07
14.500	0.07	0.06	0.06	0.06	0.06
14.750	0.06	0.06	0.06	0.06	0.06
15.000	0.05	0.05	0.05	0.05	0.05
15.250	0.05	0.05	0.05	0.05	0.05
15.500	0.05	0.05	0.05	0.05	0.05
15.750	0.05	0.05	0.05	0.05	0.05
16.000	0.05	0.05	0.05	0.05	0.04
16.250	0.04	0.04	0.04	0.04	0.04
16.500	0.04	0.04	0.04	0.04	0.04
16.750	0.04	0.04	0.04	0.04	0.04
17.000	0.04	0.04	0.04	0.04	0.04
17.250	0.04	0.04	0.04	0.04	0.04
17.500	0.04	0.04	0.04	0.04	0.04
17.750	0.04	0.04	0.03	0.03	0.03
18.000	0.03	0.03	0.03	0.03	0.03
18.250	0.03	0.03	0.03	0.03	0.03
18.500	0.03	0.03	0.03	0.03	0.03
18.750	0.03	0.03	0.03	0.03	0.03
19.000	0.03	0.03	0.03	0.03	0.03
19.250	0.03	0.03	0.03	0.03	0.03
19.500	0.03	0.03	0.03	0.03	0.03
19.750	0.03	0.03	0.03	0.03	0.03
20.000	0.03	0.03	0.03	0.03	0.03
20.250	0.03	0.03	0.03	0.03	0.03
20.500	0.03	0.03	0.03	0.03	0.03
20.750	0.03	0.03	0.03	0.03	0.03
21.000	0.03	0.03	0.03	0.03	0.03
21.250	0.03	0.03	0.03	0.03	0.03
21.500	0.03	0.03	0.03	0.03	0.03

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.750	0.03	0.03	0.03	0.03	0.03
22.000	0.03	0.03	0.03	0.03	0.03
22.250	0.03	0.03	0.03	0.03	0.03
22.500	0.03	0.03	0.03	0.03	0.03
22.750	0.03	0.03	0.03	0.03	0.03
23.000	0.03	0.03	0.02	0.02	0.02
23.250	0.02	0.02	0.02	0.02	0.02
23.500	0.02	0.02	0.02	0.02	0.02
23.750	0.02	0.02	0.02	0.02	0.02
24.000	0.02	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-3-P
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.219 hours
Area (User Defined)	105,947.000 ft²

Computational Time Increment	0.029 hours
Time to Peak (Computed)	12.210 hours
Flow (Peak, Computed)	0.81 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	0.79 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	105,947.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.48 in
Runoff Volume (Pervious)	0.097 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.096 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.219 hours
Computational Time Increment	0.029 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	12.58 ft³/s
Unit peak time, Tp	0.146 hours
Unit receding limb, Tr	0.584 hours
Total unit time, Tb	0.730 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.219 hours
Area (User Defined)	105,947.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.850	0.00	0.00	0.01	0.06	0.17
12.100	0.38	0.64	0.79	0.79	0.72
12.350	0.64	0.57	0.51	0.47	0.44
12.600	0.40	0.36	0.32	0.30	0.28
12.850	0.27	0.26	0.25	0.24	0.23
13.100	0.22	0.21	0.20	0.19	0.18
13.350	0.18	0.17	0.16	0.16	0.15
13.600	0.14	0.14	0.13	0.13	0.13
13.850	0.13	0.12	0.12	0.12	0.12
14.100	0.12	0.12	0.11	0.11	0.11
14.350	0.11	0.11	0.11	0.10	0.10
14.600	0.10	0.10	0.10	0.10	0.09
14.850	0.09	0.09	0.09	0.09	0.09
15.100	0.08	0.08	0.08	0.08	0.08
15.350	0.08	0.08	0.08	0.08	0.08
15.600	0.08	0.08	0.07	0.07	0.07
15.850	0.07	0.07	0.07	0.07	0.07
16.100	0.07	0.07	0.07	0.07	0.07
16.350	0.07	0.07	0.07	0.07	0.07
16.600	0.07	0.07	0.07	0.07	0.06
16.850	0.06	0.06	0.06	0.06	0.06
17.100	0.06	0.06	0.06	0.06	0.06
17.350	0.06	0.06	0.06	0.06	0.06
17.600	0.06	0.06	0.06	0.05	0.05
17.850	0.05	0.05	0.05	0.05	0.05
18.100	0.05	0.05	0.05	0.05	0.05
18.350	0.05	0.05	0.05	0.05	0.05
18.600	0.05	0.05	0.05	0.05	0.05
18.850	0.05	0.05	0.05	0.05	0.05
19.100	0.05	0.05	0.05	0.05	0.05
19.350	0.05	0.05	0.05	0.05	0.05
19.600	0.05	0.05	0.05	0.05	0.05
19.850	0.05	0.05	0.05	0.05	0.05
20.100	0.05	0.05	0.05	0.05	0.04
20.350	0.04	0.04	0.04	0.04	0.04
20.600	0.04	0.04	0.04	0.04	0.04
20.850	0.04	0.04	0.04	0.04	0.04
21.100	0.04	0.04	0.04	0.04	0.04
21.350	0.04	0.04	0.04	0.04	0.04

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.600	0.04	0.04	0.04	0.04	0.04
21.850	0.04	0.04	0.04	0.04	0.04
22.100	0.04	0.04	0.04	0.04	0.04
22.350	0.04	0.04	0.04	0.04	0.04
22.600	0.04	0.04	0.04	0.04	0.04
22.850	0.04	0.04	0.04	0.04	0.04
23.100	0.04	0.04	0.04	0.04	0.04
23.350	0.04	0.04	0.04	0.04	0.04
23.600	0.04	0.04	0.04	0.04	0.04
23.850	0.04	0.04	0.04	0.04	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-3-P
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.219 hours
Area (User Defined)	105,947.000 ft²

Computational Time Increment	0.029 hours
Time to Peak (Computed)	12.210 hours
Flow (Peak, Computed)	1.84 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.200 hours
Flow (Peak Interpolated Output)	1.83 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	105,947.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.88 in
Runoff Volume (Pervious)	0.177 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.177 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.219 hours
Computational Time Increment	0.029 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	12.58 ft³/s
Unit peak time, Tp	0.146 hours
Unit receding limb, Tr	0.584 hours
Total unit time, Tb	0.730 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.219 hours
Area (User Defined)	105,947.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.600	0.00	0.00	0.01	0.02	0.05
11.850	0.09	0.16	0.26	0.43	0.71
12.100	1.16	1.64	1.83	1.73	1.49
12.350	1.27	1.10	0.97	0.87	0.80
12.600	0.72	0.64	0.57	0.53	0.49
12.850	0.47	0.45	0.43	0.41	0.39
13.100	0.37	0.35	0.33	0.32	0.31
13.350	0.30	0.29	0.28	0.26	0.25
13.600	0.24	0.23	0.22	0.22	0.21
13.850	0.21	0.21	0.20	0.20	0.20
14.100	0.20	0.19	0.19	0.19	0.18
14.350	0.18	0.18	0.18	0.17	0.17
14.600	0.17	0.16	0.16	0.16	0.15
14.850	0.15	0.15	0.15	0.14	0.14
15.100	0.14	0.13	0.13	0.13	0.13
15.350	0.13	0.13	0.13	0.12	0.12
15.600	0.12	0.12	0.12	0.12	0.12
15.850	0.12	0.12	0.12	0.12	0.12
16.100	0.12	0.11	0.11	0.11	0.11
16.350	0.11	0.11	0.11	0.11	0.11
16.600	0.11	0.11	0.11	0.10	0.10
16.850	0.10	0.10	0.10	0.10	0.10
17.100	0.10	0.10	0.10	0.10	0.10
17.350	0.09	0.09	0.09	0.09	0.09
17.600	0.09	0.09	0.09	0.09	0.09
17.850	0.09	0.08	0.08	0.08	0.08
18.100	0.08	0.08	0.08	0.08	0.08
18.350	0.08	0.08	0.08	0.08	0.08
18.600	0.08	0.08	0.08	0.08	0.08
18.850	0.08	0.08	0.08	0.08	0.08
19.100	0.08	0.08	0.08	0.08	0.07
19.350	0.07	0.07	0.07	0.07	0.07
19.600	0.07	0.07	0.07	0.07	0.07
19.850	0.07	0.07	0.07	0.07	0.07
20.100	0.07	0.07	0.07	0.07	0.07
20.350	0.07	0.07	0.07	0.07	0.07
20.600	0.07	0.07	0.07	0.07	0.07
20.850	0.07	0.07	0.07	0.07	0.07
21.100	0.07	0.07	0.07	0.07	0.07

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.350	0.07	0.07	0.07	0.07	0.07
21.600	0.07	0.07	0.06	0.06	0.06
21.850	0.06	0.06	0.06	0.06	0.06
22.100	0.06	0.06	0.06	0.06	0.06
22.350	0.06	0.06	0.06	0.06	0.06
22.600	0.06	0.06	0.06	0.06	0.06
22.850	0.06	0.06	0.06	0.06	0.06
23.100	0.06	0.06	0.06	0.06	0.06
23.350	0.06	0.06	0.06	0.06	0.06
23.600	0.06	0.06	0.06	0.06	0.06
23.850	0.06	0.05	0.06	0.06	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-3-P
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.219 hours
Area (User Defined)	105,947.000 ft²

Computational Time Increment	0.029 hours
Time to Peak (Computed)	12.210 hours
Flow (Peak, Computed)	2.84 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.200 hours
Flow (Peak Interpolated Output)	2.83 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	105,947.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.26 in
Runoff Volume (Pervious)	0.256 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.255 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.219 hours
Computational Time Increment	0.029 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	12.58 ft³/s
Unit peak time, Tp	0.146 hours
Unit receding limb, Tr	0.584 hours
Total unit time, Tb	0.730 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.219 hours
Area (User Defined)	105,947.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.300	0.00	0.00	0.01	0.01	0.02
11.550	0.04	0.06	0.09	0.12	0.17
11.800	0.22	0.30	0.41	0.58	0.85
12.050	1.28	1.93	2.61	2.83	2.61
12.300	2.22	1.88	1.61	1.39	1.24
12.550	1.14	1.02	0.90	0.80	0.73
12.800	0.69	0.65	0.62	0.59	0.56
13.050	0.54	0.51	0.48	0.46	0.44
13.300	0.42	0.41	0.39	0.38	0.36
13.550	0.35	0.33	0.32	0.31	0.30
13.800	0.29	0.29	0.28	0.28	0.27
14.050	0.27	0.27	0.26	0.26	0.25
14.300	0.25	0.25	0.24	0.24	0.23
14.550	0.23	0.23	0.22	0.22	0.21
14.800	0.21	0.20	0.20	0.20	0.19
15.050	0.19	0.18	0.18	0.18	0.17
15.300	0.17	0.17	0.17	0.17	0.17
15.550	0.17	0.17	0.16	0.16	0.16
15.800	0.16	0.16	0.16	0.16	0.16
16.050	0.16	0.15	0.15	0.15	0.15
16.300	0.15	0.15	0.15	0.15	0.15
16.550	0.14	0.14	0.14	0.14	0.14
16.800	0.14	0.14	0.14	0.14	0.13
17.050	0.13	0.13	0.13	0.13	0.13
17.300	0.13	0.13	0.12	0.12	0.12
17.550	0.12	0.12	0.12	0.12	0.12
17.800	0.12	0.11	0.11	0.11	0.11
18.050	0.11	0.11	0.11	0.11	0.11
18.300	0.11	0.10	0.10	0.10	0.10
18.550	0.10	0.10	0.10	0.10	0.10
18.800	0.10	0.10	0.10	0.10	0.10
19.050	0.10	0.10	0.10	0.10	0.10
19.300	0.10	0.10	0.10	0.10	0.10
19.550	0.10	0.10	0.10	0.10	0.10
19.800	0.10	0.10	0.10	0.10	0.10
20.050	0.10	0.10	0.09	0.09	0.09
20.300	0.09	0.09	0.09	0.09	0.09
20.550	0.09	0.09	0.09	0.09	0.09
20.800	0.09	0.09	0.09	0.09	0.09

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.050	0.09	0.09	0.09	0.09	0.09
21.300	0.09	0.09	0.09	0.09	0.09
21.550	0.09	0.09	0.09	0.09	0.09
21.800	0.09	0.09	0.08	0.08	0.08
22.050	0.08	0.08	0.08	0.08	0.08
22.300	0.08	0.08	0.08	0.08	0.08
22.550	0.08	0.08	0.08	0.08	0.08
22.800	0.08	0.08	0.08	0.08	0.08
23.050	0.08	0.08	0.08	0.08	0.08
23.300	0.08	0.08	0.08	0.08	0.07
23.550	0.07	0.07	0.07	0.07	0.07
23.800	0.07	0.07	0.07	0.07	0.08

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-3-P
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.219 hours
Area (User Defined)	105,947.000 ft²

Computational Time Increment	0.029 hours
Time to Peak (Computed)	12.181 hours
Flow (Peak, Computed)	4.47 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.200 hours
Flow (Peak Interpolated Output)	4.45 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	105,947.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.89 in
Runoff Volume (Pervious)	0.384 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.382 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.219 hours
Computational Time Increment	0.029 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	12.58 ft³/s
Unit peak time, Tp	0.146 hours
Unit receding limb, Tr	0.584 hours
Total unit time, Tb	0.730 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.219 hours
Area (User Defined)	105,947.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.800	0.00	0.00	0.01	0.01	0.02
11.050	0.02	0.03	0.04	0.05	0.07
11.300	0.08	0.10	0.12	0.14	0.16
11.550	0.19	0.23	0.30	0.36	0.44
11.800	0.53	0.66	0.85	1.12	1.56
12.050	2.23	3.20	4.19	4.45	4.04
12.300	3.38	2.83	2.40	2.06	1.83
12.550	1.66	1.49	1.31	1.16	1.06
12.800	0.99	0.93	0.89	0.84	0.80
13.050	0.76	0.73	0.69	0.65	0.63
13.300	0.60	0.58	0.56	0.53	0.51
13.550	0.49	0.47	0.45	0.43	0.42
13.800	0.41	0.40	0.40	0.39	0.38
14.050	0.38	0.37	0.37	0.36	0.36
14.300	0.35	0.34	0.34	0.33	0.33
14.550	0.32	0.32	0.31	0.30	0.30
14.800	0.29	0.29	0.28	0.27	0.27
15.050	0.26	0.26	0.25	0.25	0.24
15.300	0.24	0.24	0.24	0.23	0.23
15.550	0.23	0.23	0.23	0.23	0.22
15.800	0.22	0.22	0.22	0.22	0.22
16.050	0.22	0.21	0.21	0.21	0.21
16.300	0.21	0.21	0.20	0.20	0.20
16.550	0.20	0.20	0.20	0.20	0.19
16.800	0.19	0.19	0.19	0.19	0.19
17.050	0.18	0.18	0.18	0.18	0.18
17.300	0.18	0.17	0.17	0.17	0.17
17.550	0.17	0.17	0.16	0.16	0.16
17.800	0.16	0.16	0.16	0.15	0.15
18.050	0.15	0.15	0.15	0.15	0.15
18.300	0.14	0.14	0.14	0.14	0.14
18.550	0.14	0.14	0.14	0.14	0.14
18.800	0.14	0.14	0.14	0.14	0.14
19.050	0.14	0.14	0.14	0.14	0.14
19.300	0.14	0.14	0.14	0.14	0.13
19.550	0.13	0.13	0.13	0.13	0.13
19.800	0.13	0.13	0.13	0.13	0.13
20.050	0.13	0.13	0.13	0.13	0.13
20.300	0.13	0.13	0.13	0.13	0.13

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.550	0.13	0.13	0.13	0.13	0.13
20.800	0.12	0.12	0.12	0.12	0.12
21.050	0.12	0.12	0.12	0.12	0.12
21.300	0.12	0.12	0.12	0.12	0.12
21.550	0.12	0.12	0.12	0.12	0.12
21.800	0.12	0.12	0.12	0.12	0.11
22.050	0.11	0.11	0.11	0.11	0.11
22.300	0.11	0.11	0.11	0.11	0.11
22.550	0.11	0.11	0.11	0.11	0.11
22.800	0.11	0.11	0.11	0.11	0.11
23.050	0.11	0.11	0.10	0.10	0.10
23.300	0.10	0.10	0.10	0.10	0.10
23.550	0.10	0.10	0.10	0.10	0.10
23.800	0.10	0.10	0.10	0.10	0.10

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-3-P
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.219 hours
Area (User Defined)	105,947.000 ft²

Computational Time Increment	0.029 hours
Time to Peak (Computed)	12.181 hours
Flow (Peak, Computed)	5.97 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.200 hours
Flow (Peak Interpolated Output)	5.91 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	105,947.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.47 in
Runoff Volume (Pervious)	0.501 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.499 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.219 hours
Computational Time Increment	0.029 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	12.58 ft³/s
Unit peak time, Tp	0.146 hours
Unit receding limb, Tr	0.584 hours
Total unit time, Tb	0.730 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.219 hours
Area (User Defined)	105,947.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.300	0.00	0.00	0.00	0.01	0.01
10.550	0.01	0.02	0.02	0.03	0.04
10.800	0.05	0.05	0.06	0.07	0.08
11.050	0.10	0.11	0.13	0.15	0.17
11.300	0.19	0.21	0.24	0.27	0.30
11.550	0.34	0.41	0.50	0.60	0.70
11.800	0.83	1.02	1.27	1.64	2.23
12.050	3.11	4.38	5.63	5.91	5.33
12.300	4.42	3.68	3.11	2.66	2.35
12.550	2.13	1.90	1.67	1.48	1.34
12.800	1.25	1.18	1.12	1.07	1.02
13.050	0.97	0.91	0.87	0.82	0.79
13.300	0.76	0.73	0.70	0.67	0.64
13.550	0.61	0.59	0.56	0.54	0.52
13.800	0.51	0.50	0.50	0.49	0.48
14.050	0.47	0.47	0.46	0.45	0.44
14.300	0.44	0.43	0.42	0.42	0.41
14.550	0.40	0.39	0.39	0.38	0.37
14.800	0.36	0.36	0.35	0.34	0.33
15.050	0.33	0.32	0.31	0.31	0.30
15.300	0.30	0.30	0.29	0.29	0.29
15.550	0.29	0.29	0.28	0.28	0.28
15.800	0.28	0.28	0.27	0.27	0.27
16.050	0.27	0.27	0.26	0.26	0.26
16.300	0.26	0.26	0.25	0.25	0.25
16.550	0.25	0.25	0.24	0.24	0.24
16.800	0.24	0.24	0.23	0.23	0.23
17.050	0.23	0.23	0.22	0.22	0.22
17.300	0.22	0.22	0.21	0.21	0.21
17.550	0.21	0.21	0.20	0.20	0.20
17.800	0.20	0.19	0.19	0.19	0.19
18.050	0.19	0.18	0.18	0.18	0.18
18.300	0.18	0.18	0.18	0.18	0.18
18.550	0.18	0.18	0.17	0.17	0.17
18.800	0.17	0.17	0.17	0.17	0.17
19.050	0.17	0.17	0.17	0.17	0.17
19.300	0.17	0.17	0.17	0.17	0.17
19.550	0.17	0.17	0.17	0.16	0.16
19.800	0.16	0.16	0.16	0.16	0.16

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.050	0.16	0.16	0.16	0.16	0.16
20.300	0.16	0.16	0.16	0.16	0.16
20.550	0.16	0.16	0.16	0.15	0.15
20.800	0.15	0.15	0.15	0.15	0.15
21.050	0.15	0.15	0.15	0.15	0.15
21.300	0.15	0.15	0.15	0.15	0.15
21.550	0.15	0.15	0.14	0.14	0.14
21.800	0.14	0.14	0.14	0.14	0.14
22.050	0.14	0.14	0.14	0.14	0.14
22.300	0.14	0.14	0.14	0.14	0.14
22.550	0.14	0.13	0.13	0.13	0.13
22.800	0.13	0.13	0.13	0.13	0.13
23.050	0.13	0.13	0.13	0.13	0.13
23.300	0.13	0.13	0.13	0.13	0.13
23.550	0.12	0.12	0.12	0.12	0.12
23.800	0.12	0.12	0.12	0.12	0.13

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: DA-3-P
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.219 hours
Area (User Defined)	105,947.000 ft²

Computational Time Increment	0.029 hours
Time to Peak (Computed)	12.181 hours
Flow (Peak, Computed)	7.69 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.200 hours
Flow (Peak Interpolated Output)	7.59 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	105,947.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.14 in
Runoff Volume (Pervious)	0.637 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.635 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.219 hours
Computational Time Increment	0.029 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	12.58 ft³/s
Unit peak time, Tp	0.146 hours
Unit receding limb, Tr	0.584 hours
Total unit time, Tb	0.730 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.219 hours
Area (User Defined)	105,947.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
9.750	0.00	0.00	0.00	0.01	0.01
10.000	0.01	0.02	0.02	0.02	0.03
10.250	0.03	0.04	0.04	0.05	0.05
10.500	0.06	0.07	0.07	0.08	0.09
10.750	0.10	0.11	0.13	0.14	0.16
11.000	0.17	0.19	0.21	0.23	0.26
11.250	0.29	0.32	0.35	0.39	0.43
11.500	0.47	0.53	0.62	0.75	0.88
11.750	1.01	1.19	1.43	1.77	2.25
12.000	3.00	4.13	5.73	7.28	7.59
12.250	6.79	5.61	4.65	3.91	3.33
12.500	2.93	2.65	2.36	2.07	1.83
12.750	1.66	1.55	1.46	1.38	1.32
13.000	1.25	1.19	1.13	1.07	1.01
13.250	0.97	0.93	0.89	0.86	0.82
13.500	0.79	0.75	0.72	0.69	0.66
13.750	0.64	0.63	0.62	0.61	0.60
14.000	0.59	0.58	0.57	0.56	0.55
14.250	0.54	0.53	0.52	0.52	0.51
14.500	0.50	0.49	0.48	0.47	0.46
14.750	0.45	0.44	0.43	0.43	0.42
15.000	0.41	0.40	0.39	0.38	0.37
15.250	0.37	0.36	0.36	0.36	0.35
15.500	0.35	0.35	0.35	0.34	0.34
15.750	0.34	0.34	0.33	0.33	0.33
16.000	0.33	0.33	0.32	0.32	0.32
16.250	0.32	0.31	0.31	0.31	0.31
16.500	0.30	0.30	0.30	0.30	0.29
16.750	0.29	0.29	0.29	0.28	0.28
17.000	0.28	0.28	0.27	0.27	0.27
17.250	0.27	0.26	0.26	0.26	0.26
17.500	0.25	0.25	0.25	0.25	0.24
17.750	0.24	0.24	0.24	0.23	0.23
18.000	0.23	0.23	0.22	0.22	0.22
18.250	0.22	0.22	0.22	0.21	0.21
18.500	0.21	0.21	0.21	0.21	0.21
18.750	0.21	0.21	0.21	0.21	0.21
19.000	0.21	0.21	0.21	0.21	0.20
19.250	0.20	0.20	0.20	0.20	0.20

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: DA-3-P
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
19.500	0.20	0.20	0.20	0.20	0.20
19.750	0.20	0.20	0.20	0.20	0.20
20.000	0.20	0.19	0.19	0.19	0.19
20.250	0.19	0.19	0.19	0.19	0.19
20.500	0.19	0.19	0.19	0.19	0.19
20.750	0.19	0.19	0.18	0.18	0.18
21.000	0.18	0.18	0.18	0.18	0.18
21.250	0.18	0.18	0.18	0.18	0.18
21.500	0.18	0.18	0.18	0.17	0.17
21.750	0.17	0.17	0.17	0.17	0.17
22.000	0.17	0.17	0.17	0.17	0.17
22.250	0.17	0.17	0.17	0.16	0.16
22.500	0.16	0.16	0.16	0.16	0.16
22.750	0.16	0.16	0.16	0.16	0.16
23.000	0.16	0.16	0.16	0.16	0.15
23.250	0.15	0.15	0.15	0.15	0.15
23.500	0.15	0.15	0.15	0.15	0.15
23.750	0.15	0.15	0.15	0.15	0.15
24.000	0.15	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: MRC-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	12.107 hours
Flow (Peak, Computed)	17.95 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	17.90 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	255,806.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.50 in
Runoff Volume (Pervious)	1.223 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.222 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	96.58 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.400	0.00	0.00	0.01	0.01	0.01
1.650	0.01	0.02	0.02	0.02	0.02
1.900	0.03	0.03	0.03	0.03	0.04
2.150	0.04	0.04	0.04	0.05	0.05
2.400	0.05	0.05	0.06	0.06	0.06
2.650	0.06	0.07	0.07	0.07	0.07
2.900	0.07	0.08	0.08	0.08	0.08
3.150	0.09	0.09	0.09	0.09	0.09
3.400	0.10	0.10	0.10	0.10	0.10
3.650	0.11	0.11	0.11	0.11	0.11
3.900	0.11	0.12	0.12	0.12	0.12
4.150	0.12	0.13	0.13	0.13	0.13
4.400	0.13	0.13	0.14	0.14	0.14
4.650	0.14	0.14	0.15	0.15	0.15
4.900	0.15	0.15	0.15	0.15	0.16
5.150	0.16	0.16	0.16	0.16	0.16
5.400	0.17	0.17	0.17	0.17	0.17
5.650	0.17	0.18	0.18	0.18	0.18
5.900	0.18	0.18	0.18	0.19	0.19
6.150	0.19	0.20	0.20	0.20	0.21
6.400	0.21	0.21	0.22	0.22	0.22
6.650	0.23	0.23	0.23	0.24	0.24
6.900	0.24	0.25	0.25	0.25	0.26
7.150	0.26	0.26	0.27	0.27	0.27
7.400	0.28	0.28	0.29	0.29	0.29
7.650	0.30	0.30	0.30	0.31	0.31
7.900	0.31	0.32	0.32	0.32	0.33
8.150	0.33	0.33	0.34	0.34	0.34
8.400	0.35	0.35	0.36	0.36	0.36
8.650	0.37	0.37	0.37	0.38	0.38
8.900	0.38	0.39	0.39	0.40	0.41
9.150	0.43	0.44	0.45	0.46	0.47
9.400	0.48	0.50	0.51	0.52	0.53
9.650	0.54	0.55	0.57	0.58	0.59
9.900	0.60	0.62	0.63	0.64	0.65
10.150	0.66	0.68	0.69	0.70	0.71
10.400	0.72	0.74	0.75	0.80	0.83
10.650	0.88	0.92	0.97	1.01	1.06
10.900	1.10	1.15	1.19	1.28	1.35

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.150	1.45	1.52	1.62	1.69	1.79
11.400	1.87	1.94	2.00	2.58	3.04
11.650	3.21	3.30	3.95	4.46	5.46
11.900	6.23	8.73	10.68	14.82	17.90
12.150	12.30	7.46	5.71	4.83	4.04
12.400	3.51	3.33	3.25	2.65	2.18
12.650	2.04	1.97	1.87	1.80	1.70
12.900	1.63	1.53	1.46	1.36	1.29
13.150	1.23	1.19	1.13	1.09	1.04
13.400	1.00	0.95	0.91	0.86	0.82
13.650	0.80	0.79	0.77	0.76	0.75
13.900	0.74	0.73	0.72	0.70	0.69
14.150	0.68	0.67	0.65	0.64	0.63
14.400	0.62	0.61	0.60	0.58	0.57
14.650	0.56	0.55	0.53	0.53	0.51
14.900	0.50	0.49	0.48	0.46	0.45
15.150	0.45	0.44	0.44	0.44	0.43
15.400	0.43	0.43	0.42	0.42	0.42
15.650	0.42	0.41	0.41	0.41	0.40
15.900	0.40	0.40	0.39	0.39	0.39
16.150	0.38	0.38	0.38	0.37	0.37
16.400	0.37	0.36	0.36	0.36	0.36
16.650	0.35	0.35	0.34	0.34	0.34
16.900	0.34	0.33	0.33	0.33	0.32
17.150	0.32	0.32	0.31	0.31	0.31
17.400	0.30	0.30	0.30	0.29	0.29
17.650	0.29	0.28	0.28	0.28	0.27
17.900	0.27	0.27	0.27	0.26	0.26
18.150	0.26	0.26	0.26	0.26	0.25
18.400	0.25	0.25	0.25	0.25	0.25
18.650	0.25	0.25	0.25	0.25	0.25
18.900	0.25	0.25	0.24	0.24	0.24
19.150	0.24	0.24	0.24	0.24	0.24
19.400	0.24	0.24	0.24	0.24	0.23
19.650	0.23	0.23	0.23	0.23	0.23
19.900	0.23	0.23	0.23	0.23	0.23
20.150	0.23	0.23	0.22	0.22	0.22
20.400	0.22	0.22	0.22	0.22	0.22
20.650	0.22	0.22	0.22	0.22	0.21
20.900	0.21	0.21	0.21	0.21	0.21
21.150	0.21	0.21	0.21	0.21	0.21
21.400	0.21	0.21	0.20	0.20	0.20
21.650	0.20	0.20	0.20	0.20	0.20
21.900	0.20	0.20	0.20	0.20	0.19
22.150	0.19	0.19	0.19	0.19	0.19
22.400	0.19	0.19	0.19	0.19	0.19
22.650	0.19	0.19	0.18	0.18	0.18
22.900	0.18	0.18	0.18	0.18	0.18

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.150	0.18	0.18	0.18	0.18	0.18
23.400	0.18	0.17	0.17	0.17	0.17
23.650	0.17	0.17	0.17	0.17	0.17
23.900	0.17	0.19	0.20	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: MRC-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	12.107 hours
Flow (Peak, Computed)	21.67 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	21.61 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	255,806.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.05 in
Runoff Volume (Pervious)	1.491 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.490 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	96.58 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.150	0.00	0.00	0.00	0.01	0.01
1.400	0.02	0.02	0.02	0.03	0.03
1.650	0.03	0.04	0.04	0.04	0.05
1.900	0.05	0.06	0.06	0.06	0.06
2.150	0.07	0.07	0.07	0.08	0.08
2.400	0.08	0.09	0.09	0.09	0.09
2.650	0.10	0.10	0.10	0.11	0.11
2.900	0.11	0.11	0.12	0.12	0.12
3.150	0.12	0.13	0.13	0.13	0.13
3.400	0.14	0.14	0.14	0.14	0.15
3.650	0.15	0.15	0.15	0.15	0.16
3.900	0.16	0.16	0.16	0.17	0.17
4.150	0.17	0.17	0.17	0.18	0.18
4.400	0.18	0.18	0.18	0.19	0.19
4.650	0.19	0.19	0.19	0.20	0.20
4.900	0.20	0.20	0.20	0.21	0.21
5.150	0.21	0.21	0.21	0.21	0.22
5.400	0.22	0.22	0.22	0.22	0.23
5.650	0.23	0.23	0.23	0.23	0.23
5.900	0.24	0.24	0.24	0.24	0.25
6.150	0.25	0.25	0.26	0.26	0.27
6.400	0.27	0.27	0.28	0.28	0.29
6.650	0.29	0.29	0.30	0.30	0.31
6.900	0.31	0.32	0.32	0.32	0.33
7.150	0.33	0.34	0.34	0.34	0.35
7.400	0.35	0.36	0.36	0.36	0.37
7.650	0.37	0.38	0.38	0.38	0.39
7.900	0.39	0.40	0.40	0.41	0.41
8.150	0.42	0.42	0.42	0.43	0.43
8.400	0.44	0.44	0.45	0.45	0.45
8.650	0.46	0.46	0.47	0.47	0.48
8.900	0.48	0.48	0.49	0.50	0.51
9.150	0.53	0.54	0.56	0.57	0.59
9.400	0.60	0.61	0.63	0.64	0.66
9.650	0.67	0.68	0.70	0.71	0.73
9.900	0.74	0.76	0.77	0.79	0.80
10.150	0.82	0.83	0.85	0.86	0.88
10.400	0.89	0.91	0.92	0.98	1.02
10.650	1.08	1.13	1.19	1.24	1.30

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.900	1.35	1.41	1.46	1.57	1.65
11.150	1.77	1.86	1.98	2.06	2.18
11.400	2.27	2.37	2.44	3.14	3.70
11.650	3.90	4.01	4.79	5.41	6.62
11.900	7.55	10.56	12.92	17.90	21.61
12.150	14.84	9.00	6.88	5.82	4.87
12.400	4.23	4.02	3.91	3.20	2.63
12.650	2.46	2.37	2.26	2.17	2.05
12.900	1.96	1.84	1.75	1.63	1.55
13.150	1.48	1.43	1.36	1.32	1.25
13.400	1.21	1.14	1.10	1.03	0.99
13.650	0.96	0.95	0.93	0.92	0.90
13.900	0.89	0.88	0.86	0.85	0.83
14.150	0.82	0.81	0.79	0.78	0.76
14.400	0.75	0.73	0.72	0.70	0.69
14.650	0.67	0.66	0.64	0.63	0.61
14.900	0.60	0.58	0.57	0.56	0.55
15.150	0.54	0.53	0.53	0.53	0.52
15.400	0.52	0.52	0.51	0.51	0.51
15.650	0.50	0.50	0.49	0.49	0.48
15.900	0.48	0.48	0.47	0.47	0.47
16.150	0.46	0.46	0.45	0.45	0.45
16.400	0.44	0.44	0.43	0.43	0.43
16.650	0.42	0.42	0.41	0.41	0.41
16.900	0.40	0.40	0.40	0.39	0.39
17.150	0.38	0.38	0.38	0.37	0.37
17.400	0.37	0.36	0.36	0.35	0.35
17.650	0.35	0.34	0.34	0.34	0.33
17.900	0.33	0.32	0.32	0.32	0.31
18.150	0.31	0.31	0.31	0.31	0.31
18.400	0.31	0.30	0.30	0.30	0.30
18.650	0.30	0.30	0.30	0.30	0.30
18.900	0.30	0.30	0.29	0.29	0.29
19.150	0.29	0.29	0.29	0.29	0.29
19.400	0.29	0.29	0.28	0.28	0.28
19.650	0.28	0.28	0.28	0.28	0.28
19.900	0.28	0.28	0.27	0.27	0.27
20.150	0.27	0.27	0.27	0.27	0.27
20.400	0.27	0.27	0.27	0.27	0.27
20.650	0.26	0.26	0.26	0.26	0.26
20.900	0.26	0.26	0.26	0.25	0.25
21.150	0.25	0.25	0.25	0.25	0.25
21.400	0.25	0.25	0.25	0.24	0.24
21.650	0.24	0.24	0.24	0.24	0.24
21.900	0.24	0.24	0.24	0.24	0.23
22.150	0.23	0.23	0.23	0.23	0.23
22.400	0.23	0.23	0.23	0.23	0.23
22.650	0.22	0.22	0.22	0.22	0.22

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.900	0.22	0.22	0.22	0.22	0.22
23.150	0.21	0.21	0.21	0.21	0.21
23.400	0.21	0.21	0.21	0.21	0.21
23.650	0.21	0.21	0.20	0.20	0.20
23.900	0.20	0.22	0.24	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: MRC-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	12.107 hours
Flow (Peak, Computed)	27.34 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	27.27 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	255,806.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.89 in
Runoff Volume (Pervious)	1.902 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.901 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	96.58 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.950	0.00	0.00	0.01	0.02	0.02
1.200	0.03	0.03	0.04	0.04	0.05
1.450	0.05	0.06	0.06	0.07	0.07
1.700	0.08	0.08	0.09	0.09	0.10
1.950	0.10	0.10	0.11	0.11	0.12
2.200	0.12	0.12	0.13	0.13	0.14
2.450	0.14	0.14	0.15	0.15	0.15
2.700	0.16	0.16	0.17	0.17	0.17
2.950	0.17	0.18	0.18	0.18	0.19
3.200	0.19	0.19	0.20	0.20	0.20
3.450	0.21	0.21	0.21	0.21	0.22
3.700	0.22	0.22	0.22	0.23	0.23
3.950	0.23	0.23	0.24	0.24	0.24
4.200	0.24	0.25	0.25	0.25	0.25
4.450	0.26	0.26	0.26	0.26	0.27
4.700	0.27	0.27	0.27	0.28	0.28
4.950	0.28	0.28	0.28	0.29	0.29
5.200	0.29	0.29	0.30	0.30	0.30
5.450	0.30	0.30	0.31	0.31	0.31
5.700	0.31	0.31	0.32	0.32	0.32
5.950	0.32	0.32	0.33	0.33	0.34
6.200	0.34	0.35	0.35	0.36	0.36
6.450	0.37	0.37	0.38	0.38	0.39
6.700	0.39	0.40	0.40	0.41	0.41
6.950	0.42	0.42	0.43	0.44	0.44
7.200	0.45	0.45	0.45	0.46	0.47
7.450	0.47	0.48	0.48	0.49	0.49
7.700	0.50	0.50	0.51	0.51	0.52
7.950	0.53	0.53	0.53	0.54	0.55
8.200	0.55	0.56	0.56	0.57	0.57
8.450	0.58	0.58	0.59	0.59	0.60
8.700	0.60	0.61	0.61	0.62	0.62
8.950	0.63	0.64	0.65	0.67	0.69
9.200	0.70	0.72	0.74	0.76	0.77
9.450	0.80	0.81	0.83	0.85	0.87
9.700	0.88	0.90	0.92	0.94	0.96
9.950	0.98	0.99	1.01	1.03	1.05
10.200	1.07	1.09	1.10	1.13	1.14
10.450	1.16	1.18	1.25	1.31	1.39

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.700	1.45	1.53	1.58	1.66	1.72
10.950	1.80	1.86	2.00	2.11	2.26
11.200	2.37	2.52	2.63	2.78	2.89
11.450	3.01	3.10	3.99	4.69	4.95
11.700	5.08	6.07	6.86	8.38	9.55
11.950	13.36	16.33	22.60	27.27	18.71
12.200	11.34	8.67	7.33	6.14	5.33
12.450	5.06	4.93	4.03	3.32	3.09
12.700	2.99	2.84	2.73	2.58	2.47
12.950	2.32	2.21	2.06	1.95	1.86
13.200	1.80	1.72	1.66	1.58	1.52
13.450	1.44	1.38	1.30	1.24	1.21
13.700	1.20	1.17	1.16	1.14	1.12
13.950	1.10	1.09	1.06	1.05	1.03
14.200	1.01	0.99	0.98	0.96	0.94
14.450	0.92	0.91	0.88	0.87	0.85
14.700	0.83	0.81	0.80	0.77	0.76
14.950	0.74	0.72	0.70	0.69	0.68
15.200	0.67	0.67	0.66	0.66	0.66
15.450	0.65	0.64	0.64	0.64	0.63
15.700	0.62	0.62	0.61	0.61	0.61
15.950	0.60	0.59	0.59	0.59	0.58
16.200	0.58	0.57	0.57	0.56	0.56
16.450	0.55	0.55	0.54	0.54	0.53
16.700	0.53	0.52	0.52	0.51	0.51
16.950	0.50	0.50	0.49	0.49	0.48
17.200	0.48	0.47	0.47	0.46	0.46
17.450	0.46	0.45	0.45	0.44	0.44
17.700	0.43	0.43	0.42	0.42	0.41
17.950	0.41	0.40	0.40	0.39	0.39
18.200	0.39	0.39	0.39	0.39	0.38
18.450	0.38	0.38	0.38	0.38	0.38
18.700	0.38	0.38	0.38	0.37	0.37
18.950	0.37	0.37	0.37	0.37	0.37
19.200	0.37	0.36	0.36	0.36	0.36
19.450	0.36	0.36	0.36	0.36	0.35
19.700	0.35	0.35	0.35	0.35	0.35
19.950	0.35	0.35	0.34	0.34	0.34
20.200	0.34	0.34	0.34	0.34	0.34
20.450	0.33	0.33	0.33	0.33	0.33
20.700	0.33	0.33	0.33	0.33	0.32
20.950	0.32	0.32	0.32	0.32	0.32
21.200	0.32	0.32	0.32	0.31	0.31
21.450	0.31	0.31	0.31	0.31	0.31
21.700	0.30	0.30	0.30	0.30	0.30
21.950	0.30	0.30	0.30	0.29	0.29
22.200	0.29	0.29	0.29	0.29	0.29
22.450	0.29	0.29	0.28	0.28	0.28

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.700	0.28	0.28	0.28	0.28	0.28
22.950	0.28	0.28	0.27	0.27	0.27
23.200	0.27	0.27	0.27	0.27	0.27
23.450	0.26	0.26	0.26	0.26	0.26
23.700	0.26	0.26	0.25	0.25	0.25
23.950	0.28	0.31	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: MRC-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	12.107 hours
Flow (Peak, Computed)	32.03 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	31.95 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	255,806.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.58 in
Runoff Volume (Pervious)	2.243 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.241 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	96.58 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.800	0.00	0.00	0.01	0.02	0.03
1.050	0.03	0.04	0.05	0.05	0.06
1.300	0.07	0.07	0.08	0.09	0.09
1.550	0.10	0.10	0.11	0.12	0.12
1.800	0.13	0.13	0.14	0.14	0.15
2.050	0.15	0.16	0.16	0.17	0.17
2.300	0.18	0.18	0.18	0.19	0.19
2.550	0.20	0.20	0.20	0.21	0.21
2.800	0.22	0.22	0.22	0.23	0.23
3.050	0.23	0.24	0.24	0.24	0.25
3.300	0.25	0.26	0.26	0.26	0.27
3.550	0.27	0.27	0.27	0.28	0.28
3.800	0.28	0.29	0.29	0.29	0.30
4.050	0.30	0.30	0.30	0.31	0.31
4.300	0.31	0.32	0.32	0.32	0.32
4.550	0.33	0.33	0.33	0.33	0.34
4.800	0.34	0.34	0.34	0.35	0.35
5.050	0.35	0.35	0.36	0.36	0.36
5.300	0.36	0.36	0.37	0.37	0.37
5.550	0.37	0.38	0.38	0.38	0.38
5.800	0.39	0.39	0.39	0.39	0.39
6.050	0.40	0.41	0.41	0.42	0.42
6.300	0.43	0.44	0.44	0.45	0.45
6.550	0.46	0.46	0.47	0.48	0.48
6.800	0.49	0.49	0.50	0.51	0.51
7.050	0.52	0.52	0.53	0.54	0.54
7.300	0.55	0.55	0.56	0.57	0.57
7.550	0.58	0.58	0.59	0.60	0.60
7.800	0.61	0.62	0.62	0.63	0.63
8.050	0.64	0.64	0.65	0.66	0.66
8.300	0.67	0.67	0.68	0.69	0.69
8.550	0.70	0.70	0.71	0.72	0.72
8.800	0.73	0.74	0.74	0.75	0.76
9.050	0.78	0.79	0.82	0.83	0.86
9.300	0.88	0.90	0.92	0.94	0.96
9.550	0.99	1.01	1.03	1.05	1.07
9.800	1.09	1.12	1.14	1.16	1.18
10.050	1.20	1.22	1.25	1.26	1.29
10.300	1.31	1.33	1.35	1.38	1.39

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.550	1.48	1.55	1.64	1.71	1.80
10.800	1.87	1.96	2.03	2.12	2.19
11.050	2.36	2.49	2.66	2.79	2.97
11.300	3.09	3.27	3.40	3.54	3.64
11.550	4.69	5.52	5.81	5.97	7.13
11.800	8.05	9.84	11.21	15.67	19.14
12.050	26.49	31.95	21.92	13.28	10.15
12.300	8.58	7.19	6.24	5.93	5.77
12.550	4.71	3.88	3.62	3.50	3.33
12.800	3.20	3.02	2.89	2.72	2.59
13.050	2.41	2.28	2.18	2.11	2.01
13.300	1.94	1.85	1.78	1.68	1.62
13.550	1.52	1.45	1.42	1.40	1.37
13.800	1.36	1.33	1.32	1.29	1.27
14.050	1.25	1.23	1.20	1.19	1.16
14.300	1.14	1.12	1.10	1.08	1.06
14.550	1.03	1.01	0.99	0.97	0.95
14.800	0.93	0.91	0.89	0.86	0.84
15.050	0.82	0.80	0.79	0.79	0.78
15.300	0.78	0.77	0.77	0.76	0.75
15.550	0.75	0.74	0.74	0.73	0.72
15.800	0.72	0.71	0.71	0.70	0.70
16.050	0.69	0.69	0.68	0.68	0.67
16.300	0.66	0.66	0.65	0.65	0.64
16.550	0.63	0.63	0.62	0.62	0.61
16.800	0.60	0.60	0.60	0.59	0.58
17.050	0.58	0.57	0.57	0.56	0.55
17.300	0.55	0.54	0.54	0.53	0.53
17.550	0.52	0.52	0.51	0.51	0.50
17.800	0.49	0.49	0.48	0.48	0.47
18.050	0.46	0.46	0.46	0.46	0.45
18.300	0.45	0.45	0.45	0.45	0.45
18.550	0.45	0.44	0.44	0.44	0.44
18.800	0.44	0.44	0.44	0.43	0.43
19.050	0.43	0.43	0.43	0.43	0.43
19.300	0.42	0.42	0.42	0.42	0.42
19.550	0.42	0.42	0.41	0.41	0.41
19.800	0.41	0.41	0.41	0.41	0.40
20.050	0.40	0.40	0.40	0.40	0.40
20.300	0.40	0.39	0.39	0.39	0.39
20.550	0.39	0.39	0.39	0.39	0.38
20.800	0.38	0.38	0.38	0.38	0.38
21.050	0.37	0.37	0.37	0.37	0.37
21.300	0.37	0.37	0.37	0.36	0.36
21.550	0.36	0.36	0.36	0.36	0.36
21.800	0.36	0.35	0.35	0.35	0.35
22.050	0.35	0.34	0.34	0.34	0.34
22.300	0.34	0.34	0.34	0.33	0.33

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.550	0.33	0.33	0.33	0.33	0.33
22.800	0.33	0.32	0.32	0.32	0.32
23.050	0.32	0.32	0.31	0.31	0.31
23.300	0.31	0.31	0.31	0.31	0.31
23.550	0.30	0.30	0.30	0.30	0.30
23.800	0.30	0.29	0.29	0.33	0.36

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: MRC-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	12.107 hours
Flow (Peak, Computed)	38.80 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	38.71 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	255,806.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.59 in
Runoff Volume (Pervious)	2.737 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.735 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	96.58 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.650	0.00	0.00	0.01	0.02	0.03
0.900	0.04	0.05	0.06	0.07	0.08
1.150	0.09	0.10	0.11	0.12	0.12
1.400	0.13	0.14	0.15	0.16	0.16
1.650	0.17	0.17	0.18	0.19	0.20
1.900	0.20	0.21	0.21	0.22	0.22
2.150	0.23	0.23	0.24	0.25	0.25
2.400	0.26	0.26	0.27	0.27	0.28
2.650	0.28	0.28	0.29	0.30	0.30
2.900	0.30	0.31	0.31	0.31	0.32
3.150	0.32	0.33	0.33	0.33	0.34
3.400	0.34	0.35	0.35	0.35	0.36
3.650	0.36	0.36	0.37	0.37	0.37
3.900	0.38	0.38	0.38	0.39	0.39
4.150	0.39	0.40	0.40	0.41	0.41
4.400	0.41	0.41	0.41	0.42	0.42
4.650	0.42	0.43	0.43	0.43	0.44
4.900	0.44	0.44	0.44	0.45	0.45
5.150	0.45	0.45	0.46	0.46	0.46
5.400	0.47	0.47	0.47	0.47	0.48
5.650	0.48	0.48	0.48	0.49	0.49
5.900	0.49	0.49	0.50	0.50	0.51
6.150	0.52	0.52	0.53	0.54	0.55
6.400	0.55	0.56	0.57	0.57	0.58
6.650	0.59	0.59	0.60	0.61	0.62
6.900	0.62	0.63	0.64	0.65	0.65
7.150	0.66	0.67	0.67	0.68	0.69
7.400	0.70	0.70	0.71	0.72	0.72
7.650	0.73	0.74	0.75	0.75	0.76
7.900	0.77	0.78	0.78	0.79	0.80
8.150	0.80	0.81	0.82	0.82	0.83
8.400	0.84	0.85	0.86	0.86	0.87
8.650	0.88	0.89	0.89	0.90	0.91
8.900	0.91	0.92	0.93	0.95	0.97
9.150	1.00	1.02	1.06	1.08	1.11
9.400	1.13	1.16	1.18	1.21	1.23
9.650	1.26	1.28	1.31	1.33	1.37
9.900	1.39	1.42	1.44	1.47	1.49
10.150	1.52	1.55	1.57	1.60	1.62

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.400	1.65	1.68	1.70	1.81	1.89
10.650	2.00	2.08	2.19	2.28	2.39
10.900	2.47	2.59	2.67	2.87	3.03
11.150	3.24	3.40	3.61	3.76	3.98
11.400	4.14	4.31	4.43	5.70	6.70
11.650	7.06	7.25	8.65	9.78	11.94
11.900	13.59	19.00	23.21	32.10	38.71
12.150	26.55	16.09	12.30	10.39	8.71
12.400	7.55	7.18	6.99	5.71	4.70
12.650	4.38	4.24	4.03	3.87	3.66
12.900	3.50	3.29	3.13	2.92	2.76
13.150	2.63	2.55	2.43	2.35	2.24
13.400	2.15	2.04	1.96	1.84	1.76
13.650	1.72	1.69	1.66	1.64	1.61
13.900	1.59	1.56	1.54	1.51	1.49
14.150	1.46	1.44	1.41	1.38	1.35
14.400	1.33	1.30	1.28	1.25	1.23
14.650	1.20	1.18	1.15	1.13	1.10
14.900	1.07	1.04	1.02	0.99	0.97
15.150	0.96	0.95	0.94	0.94	0.93
15.400	0.93	0.92	0.91	0.90	0.90
15.650	0.89	0.88	0.88	0.87	0.86
15.900	0.86	0.85	0.84	0.84	0.83
16.150	0.82	0.82	0.81	0.80	0.79
16.400	0.79	0.78	0.77	0.77	0.76
16.650	0.75	0.75	0.74	0.73	0.73
16.900	0.72	0.71	0.71	0.70	0.69
17.150	0.69	0.68	0.67	0.66	0.66
17.400	0.65	0.64	0.64	0.63	0.63
17.650	0.62	0.61	0.60	0.60	0.59
17.900	0.58	0.58	0.57	0.56	0.56
18.150	0.55	0.55	0.55	0.55	0.55
18.400	0.54	0.54	0.54	0.54	0.54
18.650	0.54	0.53	0.53	0.53	0.53
18.900	0.53	0.53	0.52	0.52	0.52
19.150	0.52	0.52	0.52	0.51	0.51
19.400	0.51	0.51	0.51	0.51	0.50
19.650	0.50	0.50	0.50	0.50	0.50
19.900	0.49	0.49	0.49	0.49	0.49
20.150	0.48	0.48	0.48	0.48	0.48
20.400	0.48	0.47	0.47	0.47	0.47
20.650	0.47	0.47	0.46	0.46	0.46
20.900	0.46	0.46	0.46	0.45	0.45
21.150	0.45	0.45	0.45	0.45	0.44
21.400	0.44	0.44	0.44	0.44	0.43
21.650	0.43	0.43	0.43	0.43	0.43
21.900	0.42	0.42	0.42	0.42	0.42
22.150	0.42	0.42	0.41	0.41	0.41

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.400	0.41	0.41	0.40	0.40	0.40
22.650	0.40	0.40	0.39	0.39	0.39
22.900	0.39	0.39	0.39	0.39	0.38
23.150	0.38	0.38	0.38	0.38	0.38
23.400	0.38	0.37	0.37	0.37	0.37
23.650	0.37	0.37	0.36	0.36	0.36
23.900	0.36	0.40	0.43	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: MRC-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	12.107 hours
Flow (Peak, Computed)	44.50 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	44.39 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	255,806.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.44 in
Runoff Volume (Pervious)	3.152 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	3.150 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	96.58 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.550	0.00	0.00	0.01	0.02	0.04
0.800	0.05	0.06	0.08	0.09	0.10
1.050	0.11	0.12	0.13	0.14	0.15
1.300	0.16	0.17	0.18	0.19	0.20
1.550	0.21	0.21	0.22	0.23	0.24
1.800	0.24	0.25	0.26	0.27	0.27
2.050	0.28	0.28	0.29	0.30	0.30
2.300	0.31	0.31	0.32	0.32	0.33
2.550	0.34	0.34	0.35	0.35	0.36
2.800	0.36	0.37	0.37	0.37	0.38
3.050	0.38	0.39	0.39	0.40	0.40
3.300	0.41	0.41	0.41	0.42	0.42
3.550	0.43	0.43	0.43	0.44	0.44
3.800	0.44	0.45	0.45	0.46	0.46
4.050	0.46	0.47	0.47	0.47	0.48
4.300	0.48	0.48	0.49	0.49	0.49
4.550	0.50	0.50	0.50	0.51	0.51
4.800	0.51	0.51	0.52	0.52	0.52
5.050	0.53	0.53	0.53	0.54	0.54
5.300	0.54	0.54	0.55	0.55	0.55
5.550	0.56	0.56	0.56	0.56	0.57
5.800	0.57	0.57	0.57	0.58	0.58
6.050	0.59	0.60	0.60	0.61	0.62
6.300	0.63	0.64	0.64	0.65	0.66
6.550	0.67	0.68	0.69	0.69	0.70
6.800	0.71	0.72	0.73	0.74	0.74
7.050	0.75	0.76	0.77	0.78	0.78
7.300	0.79	0.80	0.81	0.82	0.83
7.550	0.83	0.84	0.85	0.86	0.87
7.800	0.87	0.88	0.89	0.90	0.91
8.050	0.92	0.92	0.93	0.94	0.95
8.300	0.95	0.96	0.97	0.98	0.99
8.550	1.00	1.00	1.02	1.02	1.03
8.800	1.04	1.05	1.05	1.06	1.07
9.050	1.10	1.13	1.16	1.18	1.22
9.300	1.25	1.28	1.30	1.34	1.36
9.550	1.40	1.42	1.46	1.48	1.51
9.800	1.54	1.58	1.60	1.63	1.66
10.050	1.69	1.72	1.75	1.78	1.81

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.300	1.84	1.87	1.90	1.93	1.96
10.550	2.08	2.17	2.30	2.39	2.53
10.800	2.62	2.75	2.85	2.98	3.08
11.050	3.31	3.48	3.73	3.90	4.15
11.300	4.33	4.57	4.75	4.95	5.09
11.550	6.55	7.70	8.11	8.32	9.94
11.800	11.22	13.71	15.60	21.80	26.63
12.050	36.82	44.39	30.44	18.45	14.10
12.300	11.92	9.98	8.66	8.23	8.01
12.550	6.54	5.39	5.02	4.86	4.62
12.800	4.44	4.19	4.02	3.77	3.59
13.050	3.34	3.17	3.02	2.92	2.79
13.300	2.70	2.56	2.47	2.34	2.24
13.550	2.11	2.02	1.97	1.94	1.91
13.800	1.88	1.85	1.83	1.79	1.76
14.050	1.73	1.70	1.67	1.65	1.61
14.300	1.59	1.55	1.53	1.49	1.47
14.550	1.43	1.41	1.37	1.35	1.32
14.800	1.29	1.26	1.23	1.20	1.17
15.050	1.14	1.11	1.10	1.09	1.08
15.300	1.08	1.07	1.06	1.05	1.04
15.550	1.04	1.03	1.02	1.01	1.00
15.800	1.00	0.99	0.98	0.97	0.97
16.050	0.96	0.95	0.94	0.94	0.93
16.300	0.92	0.91	0.91	0.89	0.89
16.550	0.88	0.87	0.87	0.86	0.85
16.800	0.84	0.83	0.83	0.82	0.81
17.050	0.80	0.80	0.79	0.78	0.77
17.300	0.76	0.75	0.75	0.74	0.73
17.550	0.72	0.72	0.71	0.70	0.69
17.800	0.68	0.68	0.67	0.66	0.65
18.050	0.64	0.64	0.63	0.63	0.63
18.300	0.63	0.63	0.62	0.62	0.62
18.550	0.62	0.62	0.61	0.61	0.61
18.800	0.61	0.61	0.60	0.60	0.60
19.050	0.60	0.60	0.59	0.59	0.59
19.300	0.59	0.59	0.59	0.58	0.58
19.550	0.58	0.58	0.57	0.57	0.57
19.800	0.57	0.57	0.57	0.56	0.56
20.050	0.56	0.56	0.56	0.55	0.55
20.300	0.55	0.55	0.55	0.54	0.54
20.550	0.54	0.54	0.54	0.53	0.53
20.800	0.53	0.53	0.53	0.52	0.52
21.050	0.52	0.52	0.52	0.51	0.51
21.300	0.51	0.51	0.51	0.50	0.50
21.550	0.50	0.50	0.50	0.49	0.49
21.800	0.49	0.49	0.49	0.48	0.48
22.050	0.48	0.48	0.48	0.48	0.47

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.300	0.47	0.47	0.47	0.46	0.46
22.550	0.46	0.46	0.46	0.46	0.45
22.800	0.45	0.45	0.45	0.45	0.45
23.050	0.44	0.44	0.44	0.44	0.43
23.300	0.43	0.43	0.43	0.43	0.42
23.550	0.42	0.42	0.42	0.42	0.41
23.800	0.41	0.41	0.41	0.46	0.50

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: MRC-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	12.107 hours
Flow (Peak, Computed)	50.66 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	50.54 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	255,806.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.36 in
Runoff Volume (Pervious)	3.602 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	3.599 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	96.58 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	255,806.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.500	0.00	0.01	0.02	0.04	0.06
0.750	0.07	0.09	0.10	0.12	0.13
1.000	0.14	0.16	0.17	0.18	0.19
1.250	0.20	0.21	0.22	0.23	0.25
1.500	0.26	0.26	0.27	0.28	0.29
1.750	0.30	0.31	0.32	0.32	0.33
2.000	0.34	0.34	0.35	0.36	0.36
2.250	0.37	0.38	0.38	0.39	0.40
2.500	0.40	0.41	0.41	0.42	0.42
2.750	0.43	0.44	0.44	0.44	0.45
3.000	0.45	0.46	0.46	0.47	0.47
3.250	0.48	0.48	0.49	0.49	0.50
3.500	0.50	0.51	0.51	0.51	0.52
3.750	0.52	0.52	0.53	0.53	0.54
4.000	0.54	0.54	0.55	0.55	0.55
4.250	0.56	0.57	0.57	0.57	0.57
4.500	0.58	0.58	0.58	0.59	0.59
4.750	0.59	0.60	0.60	0.60	0.61
5.000	0.61	0.61	0.62	0.62	0.62
5.250	0.63	0.63	0.63	0.64	0.64
5.500	0.64	0.65	0.65	0.65	0.65
5.750	0.66	0.66	0.66	0.67	0.67
6.000	0.67	0.68	0.69	0.70	0.71
6.250	0.72	0.73	0.74	0.74	0.76
6.500	0.76	0.77	0.78	0.79	0.80
6.750	0.81	0.82	0.83	0.84	0.85
7.000	0.86	0.87	0.87	0.89	0.89
7.250	0.90	0.91	0.92	0.93	0.94
7.500	0.95	0.96	0.96	0.98	0.99
7.750	1.00	1.00	1.01	1.02	1.04
8.000	1.04	1.05	1.06	1.07	1.08
8.250	1.09	1.10	1.11	1.11	1.13
8.500	1.14	1.15	1.15	1.16	1.17
8.750	1.18	1.19	1.20	1.21	1.22
9.000	1.23	1.26	1.29	1.33	1.36
9.250	1.40	1.43	1.46	1.49	1.53
9.500	1.56	1.60	1.63	1.67	1.69
9.750	1.73	1.76	1.80	1.83	1.87
10.000	1.90	1.93	1.96	2.00	2.04

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.250	2.07	2.10	2.14	2.17	2.21
10.500	2.24	2.37	2.48	2.63	2.73
10.750	2.88	2.99	3.14	3.25	3.40
11.000	3.51	3.77	3.97	4.25	4.45
11.250	4.73	4.93	5.22	5.42	5.64
11.500	5.80	7.46	8.78	9.24	9.49
11.750	11.32	12.79	15.62	17.77	24.83
12.000	30.32	41.93	50.54	34.66	21.00
12.250	16.05	13.56	11.36	9.86	9.37
12.500	9.12	7.45	6.13	5.72	5.53
12.750	5.25	5.05	4.77	4.57	4.29
13.000	4.09	3.81	3.60	3.44	3.33
13.250	3.18	3.07	2.92	2.81	2.66
13.500	2.55	2.40	2.30	2.24	2.21
13.750	2.17	2.14	2.10	2.08	2.04
14.000	2.01	1.97	1.94	1.90	1.88
14.250	1.83	1.80	1.76	1.74	1.70
14.500	1.67	1.63	1.60	1.56	1.53
14.750	1.50	1.47	1.43	1.40	1.36
15.000	1.33	1.30	1.27	1.25	1.24
15.250	1.23	1.22	1.22	1.21	1.20
15.500	1.19	1.18	1.17	1.16	1.15
15.750	1.14	1.13	1.13	1.12	1.11
16.000	1.10	1.09	1.08	1.07	1.07
16.250	1.05	1.05	1.04	1.03	1.02
16.500	1.01	1.00	0.99	0.98	0.98
16.750	0.96	0.96	0.95	0.94	0.93
17.000	0.92	0.91	0.91	0.89	0.89
17.250	0.87	0.87	0.86	0.85	0.84
17.500	0.83	0.82	0.82	0.80	0.80
17.750	0.79	0.78	0.77	0.76	0.75
18.000	0.74	0.73	0.73	0.72	0.72
18.250	0.72	0.72	0.71	0.71	0.71
18.500	0.71	0.70	0.70	0.70	0.70
18.750	0.69	0.69	0.69	0.69	0.69
19.000	0.68	0.68	0.68	0.68	0.67
19.250	0.67	0.67	0.67	0.67	0.66
19.500	0.66	0.66	0.66	0.65	0.65
19.750	0.65	0.65	0.65	0.64	0.64
20.000	0.64	0.64	0.63	0.63	0.63
20.250	0.63	0.63	0.62	0.62	0.62
20.500	0.62	0.62	0.62	0.61	0.61
20.750	0.60	0.60	0.60	0.60	0.60
21.000	0.59	0.59	0.59	0.59	0.58
21.250	0.58	0.58	0.58	0.58	0.57
21.500	0.57	0.57	0.57	0.56	0.56
21.750	0.56	0.56	0.56	0.55	0.55
22.000	0.55	0.55	0.54	0.54	0.54

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.250	0.54	0.54	0.53	0.53	0.53
22.500	0.53	0.53	0.53	0.52	0.52
22.750	0.51	0.51	0.51	0.51	0.51
23.000	0.51	0.50	0.50	0.50	0.50
23.250	0.49	0.49	0.49	0.49	0.49
23.500	0.48	0.48	0.48	0.48	0.48
23.750	0.47	0.47	0.47	0.46	0.52
24.000	0.56	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: MRC-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	12.125 hours
Flow (Peak, Computed)	0.08 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	0.07 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	16,545.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.27 in
Runoff Volume (Pervious)	0.008 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.008 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.25 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.000	0.00	0.02	0.06	0.07	0.05
12.250	0.05	0.04	0.04	0.04	0.04
12.500	0.04	0.03	0.03	0.02	0.02
12.750	0.02	0.02	0.02	0.02	0.02
13.000	0.02	0.02	0.02	0.02	0.02
13.250	0.02	0.02	0.02	0.01	0.01
13.500	0.01	0.01	0.01	0.01	0.01
13.750	0.01	0.01	0.01	0.01	0.01
14.000	0.01	0.01	0.01	0.01	0.01
14.250	0.01	0.01	0.01	0.01	0.01
14.500	0.01	0.01	0.01	0.01	0.01
14.750	0.01	0.01	0.01	0.01	0.01
15.000	0.01	0.01	0.01	0.01	0.01
15.250	0.01	0.01	0.01	0.01	0.01
15.500	0.01	0.01	0.01	0.01	0.01
15.750	0.01	0.01	0.01	0.01	0.01
16.000	0.01	0.01	0.01	0.01	0.01
16.250	0.01	0.01	0.01	0.01	0.01
16.500	0.01	0.01	0.01	0.01	0.01
16.750	0.01	0.01	0.01	0.01	0.01
17.000	0.01	0.01	0.01	0.01	0.01
17.250	0.01	0.01	0.01	0.01	0.01
17.500	0.01	0.01	0.01	0.01	0.01
17.750	0.01	0.01	0.01	0.01	0.01
18.000	0.01	0.01	0.01	0.01	0.01
18.250	0.00	0.00	0.00	0.00	0.00
18.500	0.00	0.00	0.00	0.00	0.00
18.750	0.00	0.00	0.00	0.00	0.00
19.000	0.00	0.00	0.00	0.00	0.00
19.250	0.00	0.00	0.00	0.00	0.00
19.500	0.00	0.00	0.00	0.00	0.00
19.750	0.00	0.00	0.00	0.00	0.00
20.000	0.00	0.00	0.00	0.00	0.00
20.250	0.00	0.00	0.00	0.00	0.00
20.500	0.00	0.00	0.00	0.00	0.00
20.750	0.00	0.00	0.00	0.00	0.00
21.000	0.00	0.00	0.00	0.00	0.00
21.250	0.00	0.00	0.00	0.00	0.00
21.500	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.750	0.00	0.00	0.00	0.00	0.00
22.000	0.00	0.00	0.00	0.00	0.00
22.250	0.00	0.00	0.00	0.00	0.00
22.500	0.00	0.00	0.00	0.00	0.00
22.750	0.00	0.00	0.00	0.00	0.00
23.000	0.00	0.00	0.00	0.00	0.00
23.250	0.00	0.00	0.00	0.00	0.00
23.500	0.00	0.00	0.00	0.00	0.00
23.750	0.00	0.00	0.00	0.00	0.00
24.000	0.00	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: MRC-P
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	12.116 hours
Flow (Peak, Computed)	0.20 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.19 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	16,545.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.48 in
Runoff Volume (Pervious)	0.015 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.015 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.25 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-P
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.850	0.00	0.00	0.02	0.04	0.10
12.100	0.19	0.16	0.11	0.09	0.08
12.350	0.07	0.07	0.06	0.06	0.05
12.600	0.04	0.04	0.04	0.04	0.04
12.850	0.04	0.04	0.03	0.03	0.03
13.100	0.03	0.03	0.03	0.03	0.03
13.350	0.03	0.02	0.02	0.02	0.02
13.600	0.02	0.02	0.02	0.02	0.02
13.850	0.02	0.02	0.02	0.02	0.02
14.100	0.02	0.02	0.02	0.02	0.02
14.350	0.02	0.02	0.02	0.02	0.02
14.600	0.02	0.01	0.01	0.01	0.01
14.850	0.01	0.01	0.01	0.01	0.01
15.100	0.01	0.01	0.01	0.01	0.01
15.350	0.01	0.01	0.01	0.01	0.01
15.600	0.01	0.01	0.01	0.01	0.01
15.850	0.01	0.01	0.01	0.01	0.01
16.100	0.01	0.01	0.01	0.01	0.01
16.350	0.01	0.01	0.01	0.01	0.01
16.600	0.01	0.01	0.01	0.01	0.01
16.850	0.01	0.01	0.01	0.01	0.01
17.100	0.01	0.01	0.01	0.01	0.01
17.350	0.01	0.01	0.01	0.01	0.01
17.600	0.01	0.01	0.01	0.01	0.01
17.850	0.01	0.01	0.01	0.01	0.01
18.100	0.01	0.01	0.01	0.01	0.01
18.350	0.01	0.01	0.01	0.01	0.01
18.600	0.01	0.01	0.01	0.01	0.01
18.850	0.01	0.01	0.01	0.01	0.01
19.100	0.01	0.01	0.01	0.01	0.01
19.350	0.01	0.01	0.01	0.01	0.01
19.600	0.01	0.01	0.01	0.01	0.01
19.850	0.01	0.01	0.01	0.01	0.01
20.100	0.01	0.01	0.01	0.01	0.01
20.350	0.01	0.01	0.01	0.01	0.01
20.600	0.01	0.01	0.01	0.01	0.01
20.850	0.01	0.01	0.01	0.01	0.01
21.100	0.01	0.01	0.01	0.01	0.01
21.350	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-P
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.600	0.01	0.01	0.01	0.01	0.01
21.850	0.01	0.01	0.01	0.01	0.01
22.100	0.01	0.01	0.01	0.01	0.01
22.350	0.01	0.01	0.01	0.01	0.01
22.600	0.01	0.01	0.01	0.01	0.01
22.850	0.01	0.01	0.01	0.01	0.01
23.100	0.01	0.01	0.01	0.01	0.01
23.350	0.01	0.01	0.01	0.01	0.01
23.600	0.01	0.01	0.01	0.01	0.01
23.850	0.01	0.01	0.01	0.01	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: MRC-P
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	12.116 hours
Flow (Peak, Computed)	0.43 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.42 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	16,545.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.88 in
Runoff Volume (Pervious)	0.028 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.028 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.25 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-P
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.600	0.00	0.00	0.01	0.01	0.02
11.850	0.04	0.06	0.10	0.16	0.28
12.100	0.42	0.33	0.22	0.18	0.15
12.350	0.13	0.12	0.12	0.11	0.09
12.600	0.08	0.07	0.07	0.07	0.07
12.850	0.06	0.06	0.06	0.06	0.05
13.100	0.05	0.05	0.05	0.05	0.04
13.350	0.04	0.04	0.04	0.04	0.04
13.600	0.03	0.03	0.03	0.03	0.03
13.850	0.03	0.03	0.03	0.03	0.03
14.100	0.03	0.03	0.03	0.03	0.03
14.350	0.03	0.03	0.03	0.03	0.03
14.600	0.02	0.02	0.02	0.02	0.02
14.850	0.02	0.02	0.02	0.02	0.02
15.100	0.02	0.02	0.02	0.02	0.02
15.350	0.02	0.02	0.02	0.02	0.02
15.600	0.02	0.02	0.02	0.02	0.02
15.850	0.02	0.02	0.02	0.02	0.02
16.100	0.02	0.02	0.02	0.02	0.02
16.350	0.02	0.02	0.02	0.02	0.02
16.600	0.02	0.02	0.02	0.02	0.02
16.850	0.02	0.02	0.02	0.02	0.02
17.100	0.02	0.01	0.01	0.01	0.01
17.350	0.01	0.01	0.01	0.01	0.01
17.600	0.01	0.01	0.01	0.01	0.01
17.850	0.01	0.01	0.01	0.01	0.01
18.100	0.01	0.01	0.01	0.01	0.01
18.350	0.01	0.01	0.01	0.01	0.01
18.600	0.01	0.01	0.01	0.01	0.01
18.850	0.01	0.01	0.01	0.01	0.01
19.100	0.01	0.01	0.01	0.01	0.01
19.350	0.01	0.01	0.01	0.01	0.01
19.600	0.01	0.01	0.01	0.01	0.01
19.850	0.01	0.01	0.01	0.01	0.01
20.100	0.01	0.01	0.01	0.01	0.01
20.350	0.01	0.01	0.01	0.01	0.01
20.600	0.01	0.01	0.01	0.01	0.01
20.850	0.01	0.01	0.01	0.01	0.01
21.100	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-P
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.350	0.01	0.01	0.01	0.01	0.01
21.600	0.01	0.01	0.01	0.01	0.01
21.850	0.01	0.01	0.01	0.01	0.01
22.100	0.01	0.01	0.01	0.01	0.01
22.350	0.01	0.01	0.01	0.01	0.01
22.600	0.01	0.01	0.01	0.01	0.01
22.850	0.01	0.01	0.01	0.01	0.01
23.100	0.01	0.01	0.01	0.01	0.01
23.350	0.01	0.01	0.01	0.01	0.01
23.600	0.01	0.01	0.01	0.01	0.01
23.850	0.01	0.01	0.01	0.01	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: MRC-P
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	12.116 hours
Flow (Peak, Computed)	0.65 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.64 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	16,545.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.26 in
Runoff Volume (Pervious)	0.040 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.040 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.25 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-P
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.300	0.00	0.00	0.00	0.01	0.01
11.550	0.01	0.02	0.03	0.03	0.05
11.800	0.06	0.09	0.12	0.19	0.27
12.050	0.45	0.64	0.48	0.31	0.25
12.300	0.22	0.19	0.17	0.16	0.16
12.550	0.13	0.11	0.10	0.10	0.10
12.800	0.09	0.09	0.09	0.08	0.08
13.050	0.07	0.07	0.07	0.07	0.06
13.300	0.06	0.06	0.06	0.05	0.05
13.550	0.05	0.05	0.05	0.04	0.04
13.800	0.04	0.04	0.04	0.04	0.04
14.050	0.04	0.04	0.04	0.04	0.04
14.300	0.04	0.04	0.04	0.04	0.04
14.550	0.03	0.03	0.03	0.03	0.03
14.800	0.03	0.03	0.03	0.03	0.03
15.050	0.03	0.03	0.03	0.03	0.03
15.300	0.03	0.03	0.03	0.03	0.03
15.550	0.03	0.03	0.03	0.03	0.02
15.800	0.02	0.02	0.02	0.02	0.02
16.050	0.02	0.02	0.02	0.02	0.02
16.300	0.02	0.02	0.02	0.02	0.02
16.550	0.02	0.02	0.02	0.02	0.02
16.800	0.02	0.02	0.02	0.02	0.02
17.050	0.02	0.02	0.02	0.02	0.02
17.300	0.02	0.02	0.02	0.02	0.02
17.550	0.02	0.02	0.02	0.02	0.02
17.800	0.02	0.02	0.02	0.02	0.02
18.050	0.02	0.02	0.02	0.02	0.02
18.300	0.02	0.02	0.02	0.02	0.02
18.550	0.02	0.02	0.02	0.02	0.02
18.800	0.02	0.02	0.02	0.02	0.02
19.050	0.02	0.02	0.02	0.02	0.02
19.300	0.02	0.02	0.02	0.02	0.02
19.550	0.02	0.02	0.02	0.02	0.02
19.800	0.02	0.01	0.01	0.01	0.01
20.050	0.01	0.01	0.01	0.01	0.01
20.300	0.01	0.01	0.01	0.01	0.01
20.550	0.01	0.01	0.01	0.01	0.01
20.800	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-P
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.050	0.01	0.01	0.01	0.01	0.01
21.300	0.01	0.01	0.01	0.01	0.01
21.550	0.01	0.01	0.01	0.01	0.01
21.800	0.01	0.01	0.01	0.01	0.01
22.050	0.01	0.01	0.01	0.01	0.01
22.300	0.01	0.01	0.01	0.01	0.01
22.550	0.01	0.01	0.01	0.01	0.01
22.800	0.01	0.01	0.01	0.01	0.01
23.050	0.01	0.01	0.01	0.01	0.01
23.300	0.01	0.01	0.01	0.01	0.01
23.550	0.01	0.01	0.01	0.01	0.01
23.800	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: MRC-P
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	12.107 hours
Flow (Peak, Computed)	1.01 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.99 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	16,545.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.89 in
Runoff Volume (Pervious)	0.060 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.060 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.25 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-P
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.800	0.00	0.00	0.00	0.00	0.01
11.050	0.01	0.01	0.01	0.01	0.02
11.300	0.02	0.02	0.03	0.03	0.03
11.550	0.05	0.06	0.07	0.08	0.10
11.800	0.13	0.17	0.22	0.34	0.46
12.050	0.73	0.99	0.74	0.47	0.37
12.300	0.32	0.28	0.24	0.24	0.23
12.550	0.19	0.16	0.15	0.15	0.14
12.800	0.13	0.13	0.12	0.12	0.11
13.050	0.10	0.10	0.09	0.09	0.09
13.300	0.09	0.08	0.08	0.07	0.07
13.550	0.07	0.07	0.06	0.06	0.06
13.800	0.06	0.06	0.06	0.06	0.06
14.050	0.06	0.06	0.06	0.05	0.05
14.300	0.05	0.05	0.05	0.05	0.05
14.550	0.05	0.05	0.05	0.05	0.04
14.800	0.04	0.04	0.04	0.04	0.04
15.050	0.04	0.04	0.04	0.04	0.04
15.300	0.04	0.04	0.04	0.04	0.04
15.550	0.04	0.04	0.03	0.03	0.03
15.800	0.03	0.03	0.03	0.03	0.03
16.050	0.03	0.03	0.03	0.03	0.03
16.300	0.03	0.03	0.03	0.03	0.03
16.550	0.03	0.03	0.03	0.03	0.03
16.800	0.03	0.03	0.03	0.03	0.03
17.050	0.03	0.03	0.03	0.03	0.03
17.300	0.03	0.03	0.03	0.03	0.03
17.550	0.03	0.03	0.02	0.02	0.02
17.800	0.02	0.02	0.02	0.02	0.02
18.050	0.02	0.02	0.02	0.02	0.02
18.300	0.02	0.02	0.02	0.02	0.02
18.550	0.02	0.02	0.02	0.02	0.02
18.800	0.02	0.02	0.02	0.02	0.02
19.050	0.02	0.02	0.02	0.02	0.02
19.300	0.02	0.02	0.02	0.02	0.02
19.550	0.02	0.02	0.02	0.02	0.02
19.800	0.02	0.02	0.02	0.02	0.02
20.050	0.02	0.02	0.02	0.02	0.02
20.300	0.02	0.02	0.02	0.02	0.02

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-P
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.550	0.02	0.02	0.02	0.02	0.02
20.800	0.02	0.02	0.02	0.02	0.02
21.050	0.02	0.02	0.02	0.02	0.02
21.300	0.02	0.02	0.02	0.02	0.02
21.550	0.02	0.02	0.02	0.02	0.02
21.800	0.02	0.02	0.02	0.02	0.02
22.050	0.02	0.02	0.02	0.02	0.02
22.300	0.02	0.02	0.02	0.02	0.02
22.550	0.02	0.02	0.02	0.02	0.02
22.800	0.02	0.02	0.02	0.02	0.02
23.050	0.02	0.02	0.02	0.02	0.02
23.300	0.02	0.02	0.02	0.02	0.02
23.550	0.02	0.02	0.02	0.02	0.02
23.800	0.02	0.02	0.02	0.02	0.02

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: MRC-P
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	12.107 hours
Flow (Peak, Computed)	1.33 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	1.31 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	16,545.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.47 in
Runoff Volume (Pervious)	0.078 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.078 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.25 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-P
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.300	0.00	0.00	0.00	0.00	0.00
10.550	0.00	0.01	0.01	0.01	0.01
10.800	0.01	0.01	0.01	0.02	0.02
11.050	0.02	0.02	0.03	0.03	0.03
11.300	0.04	0.04	0.05	0.05	0.06
11.550	0.08	0.10	0.11	0.13	0.16
11.800	0.19	0.26	0.31	0.48	0.64
12.050	0.98	1.31	0.96	0.61	0.48
12.300	0.42	0.36	0.31	0.30	0.30
12.550	0.24	0.20	0.19	0.18	0.18
12.800	0.17	0.16	0.16	0.15	0.14
13.050	0.13	0.12	0.12	0.12	0.11
13.300	0.11	0.10	0.10	0.09	0.09
13.550	0.09	0.08	0.08	0.08	0.08
13.800	0.08	0.08	0.07	0.07	0.07
14.050	0.07	0.07	0.07	0.07	0.07
14.300	0.07	0.06	0.06	0.06	0.06
14.550	0.06	0.06	0.06	0.06	0.06
14.800	0.05	0.05	0.05	0.05	0.05
15.050	0.05	0.05	0.05	0.05	0.05
15.300	0.05	0.05	0.05	0.04	0.04
15.550	0.04	0.04	0.04	0.04	0.04
15.800	0.04	0.04	0.04	0.04	0.04
16.050	0.04	0.04	0.04	0.04	0.04
16.300	0.04	0.04	0.04	0.04	0.04
16.550	0.04	0.04	0.04	0.04	0.04
16.800	0.04	0.04	0.04	0.04	0.04
17.050	0.03	0.03	0.03	0.03	0.03
17.300	0.03	0.03	0.03	0.03	0.03
17.550	0.03	0.03	0.03	0.03	0.03
17.800	0.03	0.03	0.03	0.03	0.03
18.050	0.03	0.03	0.03	0.03	0.03
18.300	0.03	0.03	0.03	0.03	0.03
18.550	0.03	0.03	0.03	0.03	0.03
18.800	0.03	0.03	0.03	0.03	0.03
19.050	0.03	0.03	0.03	0.03	0.03
19.300	0.03	0.03	0.03	0.03	0.03
19.550	0.03	0.03	0.03	0.03	0.03
19.800	0.03	0.03	0.03	0.03	0.03

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-P
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.050	0.02	0.02	0.02	0.02	0.02
20.300	0.02	0.02	0.02	0.02	0.02
20.550	0.02	0.02	0.02	0.02	0.02
20.800	0.02	0.02	0.02	0.02	0.02
21.050	0.02	0.02	0.02	0.02	0.02
21.300	0.02	0.02	0.02	0.02	0.02
21.550	0.02	0.02	0.02	0.02	0.02
21.800	0.02	0.02	0.02	0.02	0.02
22.050	0.02	0.02	0.02	0.02	0.02
22.300	0.02	0.02	0.02	0.02	0.02
22.550	0.02	0.02	0.02	0.02	0.02
22.800	0.02	0.02	0.02	0.02	0.02
23.050	0.02	0.02	0.02	0.02	0.02
23.300	0.02	0.02	0.02	0.02	0.02
23.550	0.02	0.02	0.02	0.02	0.02
23.800	0.02	0.02	0.02	0.02	0.02

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: MRC-P
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

Computational Time Increment	0.009 hours
Time to Peak (Computed)	12.107 hours
Flow (Peak, Computed)	1.70 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	1.68 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	16,545.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.14 in
Runoff Volume (Pervious)	0.099 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.099 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.069 hours
Computational Time Increment	0.009 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.25 ft³/s
Unit peak time, Tp	0.046 hours
Unit receding limb, Tr	0.184 hours
Total unit time, Tb	0.230 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-P
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.069 hours
Area (User Defined)	16,545.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
9.800	0.00	0.00	0.00	0.00	0.00
10.050	0.00	0.00	0.01	0.01	0.01
10.300	0.01	0.01	0.01	0.01	0.01
10.550	0.01	0.01	0.02	0.02	0.02
10.800	0.02	0.02	0.03	0.03	0.03
11.050	0.04	0.04	0.05	0.05	0.06
11.300	0.06	0.07	0.08	0.08	0.09
11.550	0.12	0.15	0.17	0.18	0.23
11.800	0.27	0.35	0.43	0.64	0.84
12.050	1.28	1.68	1.22	0.77	0.60
12.300	0.52	0.44	0.39	0.37	0.37
12.550	0.30	0.25	0.23	0.23	0.22
12.800	0.21	0.20	0.19	0.18	0.17
13.050	0.16	0.15	0.15	0.14	0.14
13.300	0.13	0.13	0.12	0.12	0.11
13.550	0.10	0.10	0.10	0.10	0.09
13.800	0.09	0.09	0.09	0.09	0.09
14.050	0.09	0.09	0.08	0.08	0.08
14.300	0.08	0.08	0.08	0.08	0.07
14.550	0.07	0.07	0.07	0.07	0.07
14.800	0.07	0.06	0.06	0.06	0.06
15.050	0.06	0.06	0.06	0.06	0.06
15.300	0.06	0.06	0.05	0.05	0.05
15.550	0.05	0.05	0.05	0.05	0.05
15.800	0.05	0.05	0.05	0.05	0.05
16.050	0.05	0.05	0.05	0.05	0.05
16.300	0.05	0.05	0.05	0.05	0.05
16.550	0.05	0.05	0.05	0.05	0.04
16.800	0.04	0.04	0.04	0.04	0.04
17.050	0.04	0.04	0.04	0.04	0.04
17.300	0.04	0.04	0.04	0.04	0.04
17.550	0.04	0.04	0.04	0.04	0.04
17.800	0.04	0.04	0.04	0.04	0.03
18.050	0.03	0.03	0.03	0.03	0.03
18.300	0.03	0.03	0.03	0.03	0.03
18.550	0.03	0.03	0.03	0.03	0.03
18.800	0.03	0.03	0.03	0.03	0.03
19.050	0.03	0.03	0.03	0.03	0.03
19.300	0.03	0.03	0.03	0.03	0.03

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: MRC-P
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
19.550	0.03	0.03	0.03	0.03	0.03
19.800	0.03	0.03	0.03	0.03	0.03
20.050	0.03	0.03	0.03	0.03	0.03
20.300	0.03	0.03	0.03	0.03	0.03
20.550	0.03	0.03	0.03	0.03	0.03
20.800	0.03	0.03	0.03	0.03	0.03
21.050	0.03	0.03	0.03	0.03	0.03
21.300	0.03	0.03	0.03	0.03	0.03
21.550	0.03	0.03	0.03	0.03	0.03
21.800	0.03	0.03	0.03	0.03	0.03
22.050	0.03	0.03	0.03	0.03	0.03
22.300	0.03	0.03	0.03	0.03	0.03
22.550	0.03	0.03	0.03	0.02	0.02
22.800	0.02	0.02	0.02	0.02	0.02
23.050	0.02	0.02	0.02	0.02	0.02
23.300	0.02	0.02	0.02	0.02	0.02
23.550	0.02	0.02	0.02	0.02	0.02
23.800	0.02	0.02	0.02	0.03	0.03

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: PO-2-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	61,702.000 ft²

Computational Time Increment	0.008 hours
Time to Peak (Computed)	12.105 hours
Flow (Peak, Computed)	4.37 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	4.36 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	61,702.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.50 in
Runoff Volume (Pervious)	0.295 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.295 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.063 hours
Computational Time Increment	0.008 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	25.40 ft³/s
Unit peak time, Tp	0.042 hours
Unit receding limb, Tr	0.168 hours
Total unit time, Tb	0.211 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	61,702.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.450	0.00	0.00	0.00	0.00	0.00
1.700	0.00	0.00	0.01	0.01	0.01
1.950	0.01	0.01	0.01	0.01	0.01
2.200	0.01	0.01	0.01	0.01	0.01
2.450	0.01	0.01	0.01	0.01	0.02
2.700	0.02	0.02	0.02	0.02	0.02
2.950	0.02	0.02	0.02	0.02	0.02
3.200	0.02	0.02	0.02	0.02	0.02
3.450	0.02	0.02	0.02	0.02	0.03
3.700	0.03	0.03	0.03	0.03	0.03
3.950	0.03	0.03	0.03	0.03	0.03
4.200	0.03	0.03	0.03	0.03	0.03
4.450	0.03	0.03	0.03	0.03	0.03
4.700	0.03	0.04	0.04	0.04	0.04
4.950	0.04	0.04	0.04	0.04	0.04
5.200	0.04	0.04	0.04	0.04	0.04
5.450	0.04	0.04	0.04	0.04	0.04
5.700	0.04	0.04	0.04	0.04	0.04
5.950	0.04	0.04	0.05	0.05	0.05
6.200	0.05	0.05	0.05	0.05	0.05
6.450	0.05	0.05	0.05	0.05	0.05
6.700	0.06	0.06	0.06	0.06	0.06
6.950	0.06	0.06	0.06	0.06	0.06
7.200	0.06	0.06	0.07	0.07	0.07
7.450	0.07	0.07	0.07	0.07	0.07
7.700	0.07	0.07	0.07	0.07	0.08
7.950	0.08	0.08	0.08	0.08	0.08
8.200	0.08	0.08	0.08	0.08	0.08
8.450	0.09	0.09	0.09	0.09	0.09
8.700	0.09	0.09	0.09	0.09	0.09
8.950	0.09	0.09	0.10	0.10	0.10
9.200	0.11	0.11	0.11	0.11	0.12
9.450	0.12	0.12	0.13	0.13	0.13
9.700	0.13	0.14	0.14	0.14	0.15
9.950	0.15	0.15	0.15	0.16	0.16
10.200	0.16	0.17	0.17	0.17	0.17
10.450	0.18	0.18	0.19	0.20	0.21
10.700	0.22	0.24	0.24	0.26	0.27
10.950	0.28	0.29	0.31	0.33	0.35

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.200	0.37	0.39	0.41	0.44	0.45
11.450	0.47	0.48	0.64	0.74	0.78
11.700	0.80	0.97	1.08	1.35	1.51
11.950	2.18	2.60	3.70	4.36	2.79
12.200	1.73	1.33	1.15	0.95	0.84
12.450	0.80	0.78	0.62	0.52	0.49
12.700	0.47	0.45	0.43	0.41	0.39
12.950	0.37	0.35	0.32	0.31	0.29
13.200	0.29	0.27	0.26	0.25	0.24
13.450	0.23	0.22	0.21	0.20	0.19
13.700	0.19	0.19	0.18	0.18	0.18
13.950	0.17	0.17	0.17	0.17	0.16
14.200	0.16	0.16	0.16	0.15	0.15
14.450	0.15	0.14	0.14	0.14	0.13
14.700	0.13	0.13	0.13	0.12	0.12
14.950	0.12	0.11	0.11	0.11	0.11
15.200	0.11	0.11	0.11	0.10	0.10
15.450	0.10	0.10	0.10	0.10	0.10
15.700	0.10	0.10	0.10	0.10	0.10
15.950	0.10	0.09	0.09	0.09	0.09
16.200	0.09	0.09	0.09	0.09	0.09
16.450	0.09	0.09	0.09	0.09	0.08
16.700	0.08	0.08	0.08	0.08	0.08
16.950	0.08	0.08	0.08	0.08	0.08
17.200	0.08	0.08	0.07	0.07	0.07
17.450	0.07	0.07	0.07	0.07	0.07
17.700	0.07	0.07	0.07	0.07	0.07
17.950	0.06	0.06	0.06	0.06	0.06
18.200	0.06	0.06	0.06	0.06	0.06
18.450	0.06	0.06	0.06	0.06	0.06
18.700	0.06	0.06	0.06	0.06	0.06
18.950	0.06	0.06	0.06	0.06	0.06
19.200	0.06	0.06	0.06	0.06	0.06
19.450	0.06	0.06	0.06	0.06	0.06
19.700	0.06	0.06	0.06	0.06	0.06
19.950	0.06	0.06	0.05	0.05	0.05
20.200	0.05	0.05	0.05	0.05	0.05
20.450	0.05	0.05	0.05	0.05	0.05
20.700	0.05	0.05	0.05	0.05	0.05
20.950	0.05	0.05	0.05	0.05	0.05
21.200	0.05	0.05	0.05	0.05	0.05
21.450	0.05	0.05	0.05	0.05	0.05
21.700	0.05	0.05	0.05	0.05	0.05
21.950	0.05	0.05	0.05	0.05	0.05
22.200	0.05	0.05	0.05	0.05	0.05
22.450	0.05	0.05	0.05	0.05	0.04
22.700	0.04	0.04	0.04	0.04	0.04
22.950	0.04	0.04	0.04	0.04	0.04

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.200	0.04	0.04	0.04	0.04	0.04
23.450	0.04	0.04	0.04	0.04	0.04
23.700	0.04	0.04	0.04	0.04	0.04
23.950	0.05	0.05	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: PO-2-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	61,702.000 ft²

Computational Time Increment	0.008 hours
Time to Peak (Computed)	12.105 hours
Flow (Peak, Computed)	5.27 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	5.26 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	61,702.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.05 in
Runoff Volume (Pervious)	0.360 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.359 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.063 hours
Computational Time Increment	0.008 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	25.40 ft³/s
Unit peak time, Tp	0.042 hours
Unit receding limb, Tr	0.168 hours
Total unit time, Tb	0.211 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	61,702.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.200	0.00	0.00	0.00	0.00	0.00
1.450	0.00	0.01	0.01	0.01	0.01
1.700	0.01	0.01	0.01	0.01	0.01
1.950	0.01	0.01	0.01	0.02	0.02
2.200	0.02	0.02	0.02	0.02	0.02
2.450	0.02	0.02	0.02	0.02	0.02
2.700	0.02	0.02	0.03	0.03	0.03
2.950	0.03	0.03	0.03	0.03	0.03
3.200	0.03	0.03	0.03	0.03	0.03
3.450	0.03	0.03	0.03	0.04	0.04
3.700	0.04	0.04	0.04	0.04	0.04
3.950	0.04	0.04	0.04	0.04	0.04
4.200	0.04	0.04	0.04	0.04	0.04
4.450	0.04	0.04	0.04	0.05	0.05
4.700	0.05	0.05	0.05	0.05	0.05
4.950	0.05	0.05	0.05	0.05	0.05
5.200	0.05	0.05	0.05	0.05	0.05
5.450	0.05	0.05	0.05	0.05	0.05
5.700	0.06	0.06	0.06	0.06	0.06
5.950	0.06	0.06	0.06	0.06	0.06
6.200	0.06	0.06	0.06	0.06	0.07
6.450	0.07	0.07	0.07	0.07	0.07
6.700	0.07	0.07	0.07	0.07	0.08
6.950	0.08	0.08	0.08	0.08	0.08
7.200	0.08	0.08	0.08	0.08	0.09
7.450	0.09	0.09	0.09	0.09	0.09
7.700	0.09	0.09	0.09	0.09	0.10
7.950	0.10	0.10	0.10	0.10	0.10
8.200	0.10	0.10	0.10	0.10	0.11
8.450	0.11	0.11	0.11	0.11	0.11
8.700	0.11	0.11	0.11	0.11	0.12
8.950	0.12	0.12	0.12	0.12	0.13
9.200	0.13	0.14	0.14	0.14	0.14
9.450	0.15	0.15	0.16	0.16	0.16
9.700	0.17	0.17	0.17	0.18	0.18
9.950	0.18	0.19	0.19	0.19	0.20
10.200	0.20	0.21	0.21	0.21	0.21
10.450	0.22	0.22	0.24	0.25	0.26
10.700	0.27	0.29	0.30	0.32	0.33

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.950	0.34	0.35	0.38	0.40	0.43
11.200	0.45	0.48	0.50	0.53	0.55
11.450	0.57	0.59	0.78	0.90	0.95
11.700	0.97	1.18	1.31	1.63	1.83
11.950	2.64	3.15	4.46	5.26	3.36
12.200	2.09	1.61	1.39	1.15	1.01
12.450	0.96	0.94	0.75	0.63	0.59
12.700	0.57	0.54	0.52	0.49	0.47
12.950	0.44	0.42	0.39	0.37	0.35
13.200	0.34	0.33	0.32	0.30	0.29
13.450	0.27	0.26	0.25	0.24	0.23
13.700	0.23	0.22	0.22	0.22	0.22
13.950	0.21	0.21	0.20	0.20	0.20
14.200	0.19	0.19	0.19	0.18	0.18
14.450	0.18	0.17	0.17	0.17	0.16
14.700	0.16	0.15	0.15	0.15	0.14
14.950	0.14	0.14	0.13	0.13	0.13
15.200	0.13	0.13	0.13	0.13	0.13
15.450	0.12	0.12	0.12	0.12	0.12
15.700	0.12	0.12	0.12	0.12	0.12
15.950	0.11	0.11	0.11	0.11	0.11
16.200	0.11	0.11	0.11	0.11	0.11
16.450	0.11	0.10	0.10	0.10	0.10
16.700	0.10	0.10	0.10	0.10	0.10
16.950	0.10	0.10	0.09	0.09	0.09
17.200	0.09	0.09	0.09	0.09	0.09
17.450	0.09	0.09	0.09	0.08	0.08
17.700	0.08	0.08	0.08	0.08	0.08
17.950	0.08	0.08	0.08	0.08	0.07
18.200	0.07	0.07	0.07	0.07	0.07
18.450	0.07	0.07	0.07	0.07	0.07
18.700	0.07	0.07	0.07	0.07	0.07
18.950	0.07	0.07	0.07	0.07	0.07
19.200	0.07	0.07	0.07	0.07	0.07
19.450	0.07	0.07	0.07	0.07	0.07
19.700	0.07	0.07	0.07	0.07	0.07
19.950	0.07	0.07	0.07	0.07	0.07
20.200	0.07	0.07	0.06	0.06	0.06
20.450	0.06	0.06	0.06	0.06	0.06
20.700	0.06	0.06	0.06	0.06	0.06
20.950	0.06	0.06	0.06	0.06	0.06
21.200	0.06	0.06	0.06	0.06	0.06
21.450	0.06	0.06	0.06	0.06	0.06
21.700	0.06	0.06	0.06	0.06	0.06
21.950	0.06	0.06	0.06	0.06	0.06
22.200	0.06	0.06	0.06	0.06	0.06
22.450	0.05	0.05	0.05	0.05	0.05
22.700	0.05	0.05	0.05	0.05	0.05

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.950	0.05	0.05	0.05	0.05	0.05
23.200	0.05	0.05	0.05	0.05	0.05
23.450	0.05	0.05	0.05	0.05	0.05
23.700	0.05	0.05	0.05	0.05	0.05
23.950	0.05	0.06	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: PO-2-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	61,702.000 ft²

Computational Time Increment	0.008 hours
Time to Peak (Computed)	12.105 hours
Flow (Peak, Computed)	6.65 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	6.64 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	61,702.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.89 in
Runoff Volume (Pervious)	0.459 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.458 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.063 hours
Computational Time Increment	0.008 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	25.40 ft³/s
Unit peak time, Tp	0.042 hours
Unit receding limb, Tr	0.168 hours
Total unit time, Tb	0.211 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	61,702.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.950	0.00	0.00	0.00	0.00	0.01
1.200	0.01	0.01	0.01	0.01	0.01
1.450	0.01	0.01	0.02	0.02	0.02
1.700	0.02	0.02	0.02	0.02	0.02
1.950	0.02	0.03	0.03	0.03	0.03
2.200	0.03	0.03	0.03	0.03	0.03
2.450	0.03	0.03	0.04	0.04	0.04
2.700	0.04	0.04	0.04	0.04	0.04
2.950	0.04	0.04	0.04	0.04	0.05
3.200	0.05	0.05	0.05	0.05	0.05
3.450	0.05	0.05	0.05	0.05	0.05
3.700	0.05	0.05	0.05	0.05	0.06
3.950	0.06	0.06	0.06	0.06	0.06
4.200	0.06	0.06	0.06	0.06	0.06
4.450	0.06	0.06	0.06	0.06	0.06
4.700	0.06	0.07	0.07	0.07	0.07
4.950	0.07	0.07	0.07	0.07	0.07
5.200	0.07	0.07	0.07	0.07	0.07
5.450	0.07	0.07	0.07	0.07	0.07
5.700	0.08	0.08	0.08	0.08	0.08
5.950	0.08	0.08	0.08	0.08	0.08
6.200	0.08	0.08	0.09	0.09	0.09
6.450	0.09	0.09	0.09	0.09	0.09
6.700	0.10	0.10	0.10	0.10	0.10
6.950	0.10	0.10	0.10	0.11	0.11
7.200	0.11	0.11	0.11	0.11	0.11
7.450	0.11	0.12	0.12	0.12	0.12
7.700	0.12	0.12	0.12	0.12	0.13
7.950	0.13	0.13	0.13	0.13	0.13
8.200	0.13	0.13	0.14	0.14	0.14
8.450	0.14	0.14	0.14	0.14	0.14
8.700	0.15	0.15	0.15	0.15	0.15
8.950	0.15	0.15	0.16	0.16	0.17
9.200	0.17	0.18	0.18	0.18	0.19
9.450	0.19	0.20	0.20	0.21	0.21
9.700	0.21	0.22	0.22	0.23	0.23
9.950	0.24	0.24	0.25	0.25	0.25
10.200	0.26	0.26	0.27	0.27	0.28
10.450	0.28	0.29	0.30	0.32	0.34

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.700	0.35	0.37	0.38	0.40	0.42
10.950	0.44	0.45	0.49	0.51	0.55
11.200	0.57	0.61	0.64	0.67	0.70
11.450	0.73	0.75	0.99	1.14	1.20
11.700	1.23	1.50	1.66	2.07	2.32
11.950	3.34	3.98	5.64	6.64	4.24
12.200	2.64	2.02	1.75	1.45	1.27
12.450	1.21	1.19	0.94	0.79	0.74
12.700	0.72	0.68	0.66	0.62	0.59
12.950	0.56	0.53	0.49	0.47	0.45
13.200	0.43	0.41	0.40	0.38	0.37
13.450	0.34	0.33	0.31	0.30	0.29
13.700	0.29	0.28	0.28	0.27	0.27
13.950	0.27	0.26	0.26	0.25	0.25
14.200	0.24	0.24	0.24	0.23	0.23
14.450	0.22	0.22	0.21	0.21	0.20
14.700	0.20	0.19	0.19	0.19	0.18
14.950	0.18	0.17	0.17	0.17	0.16
15.200	0.16	0.16	0.16	0.16	0.16
15.450	0.16	0.16	0.15	0.15	0.15
15.700	0.15	0.15	0.15	0.15	0.15
15.950	0.14	0.14	0.14	0.14	0.14
16.200	0.14	0.14	0.14	0.14	0.13
16.450	0.13	0.13	0.13	0.13	0.13
16.700	0.13	0.13	0.12	0.12	0.12
16.950	0.12	0.12	0.12	0.12	0.12
17.200	0.12	0.11	0.11	0.11	0.11
17.450	0.11	0.11	0.11	0.11	0.10
17.700	0.10	0.10	0.10	0.10	0.10
17.950	0.10	0.10	0.10	0.09	0.09
18.200	0.09	0.09	0.09	0.09	0.09
18.450	0.09	0.09	0.09	0.09	0.09
18.700	0.09	0.09	0.09	0.09	0.09
18.950	0.09	0.09	0.09	0.09	0.09
19.200	0.09	0.09	0.09	0.09	0.09
19.450	0.09	0.09	0.09	0.09	0.09
19.700	0.09	0.09	0.09	0.08	0.08
19.950	0.08	0.08	0.08	0.08	0.08
20.200	0.08	0.08	0.08	0.08	0.08
20.450	0.08	0.08	0.08	0.08	0.08
20.700	0.08	0.08	0.08	0.08	0.08
20.950	0.08	0.08	0.08	0.08	0.08
21.200	0.08	0.08	0.08	0.08	0.08
21.450	0.07	0.07	0.07	0.07	0.07
21.700	0.07	0.07	0.07	0.07	0.07
21.950	0.07	0.07	0.07	0.07	0.07
22.200	0.07	0.07	0.07	0.07	0.07
22.450	0.07	0.07	0.07	0.07	0.07

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.700	0.07	0.07	0.07	0.07	0.07
22.950	0.07	0.07	0.07	0.07	0.06
23.200	0.06	0.06	0.06	0.06	0.06
23.450	0.06	0.06	0.06	0.06	0.06
23.700	0.06	0.06	0.06	0.06	0.06
23.950	0.07	0.07	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: PO-2-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	61,702.000 ft²

Computational Time Increment	0.008 hours
Time to Peak (Computed)	12.105 hours
Flow (Peak, Computed)	7.79 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	7.78 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	61,702.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.58 in
Runoff Volume (Pervious)	0.541 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.541 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.063 hours
Computational Time Increment	0.008 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	25.40 ft³/s
Unit peak time, Tp	0.042 hours
Unit receding limb, Tr	0.168 hours
Total unit time, Tb	0.211 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	61,702.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.850	0.00	0.00	0.00	0.01	0.01
1.100	0.01	0.01	0.01	0.01	0.02
1.350	0.02	0.02	0.02	0.02	0.02
1.600	0.03	0.03	0.03	0.03	0.03
1.850	0.03	0.03	0.03	0.04	0.04
2.100	0.04	0.04	0.04	0.04	0.04
2.350	0.04	0.04	0.05	0.05	0.05
2.600	0.05	0.05	0.05	0.05	0.05
2.850	0.05	0.05	0.05	0.06	0.06
3.100	0.06	0.06	0.06	0.06	0.06
3.350	0.06	0.06	0.06	0.06	0.06
3.600	0.07	0.07	0.07	0.07	0.07
3.850	0.07	0.07	0.07	0.07	0.07
4.100	0.07	0.07	0.07	0.07	0.08
4.350	0.08	0.08	0.08	0.08	0.08
4.600	0.08	0.08	0.08	0.08	0.08
4.850	0.08	0.08	0.08	0.08	0.08
5.100	0.09	0.09	0.09	0.09	0.09
5.350	0.09	0.09	0.09	0.09	0.09
5.600	0.09	0.09	0.09	0.09	0.09
5.850	0.09	0.09	0.09	0.10	0.10
6.100	0.10	0.10	0.10	0.10	0.10
6.350	0.11	0.11	0.11	0.11	0.11
6.600	0.11	0.11	0.11	0.12	0.12
6.850	0.12	0.12	0.12	0.12	0.13
7.100	0.13	0.13	0.13	0.13	0.13
7.350	0.13	0.14	0.14	0.14	0.14
7.600	0.14	0.14	0.14	0.15	0.15
7.850	0.15	0.15	0.15	0.15	0.15
8.100	0.16	0.16	0.16	0.16	0.16
8.350	0.16	0.16	0.17	0.17	0.17
8.600	0.17	0.17	0.17	0.18	0.18
8.850	0.18	0.18	0.18	0.18	0.19
9.100	0.19	0.20	0.20	0.21	0.21
9.350	0.22	0.22	0.23	0.23	0.24
9.600	0.24	0.25	0.25	0.26	0.26
9.850	0.27	0.27	0.28	0.28	0.29
10.100	0.29	0.30	0.31	0.31	0.32
10.350	0.32	0.33	0.33	0.34	0.36

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.600	0.37	0.40	0.41	0.44	0.45
10.850	0.48	0.49	0.52	0.53	0.57
11.100	0.60	0.65	0.67	0.72	0.75
11.350	0.79	0.82	0.86	0.88	1.16
11.600	1.34	1.41	1.44	1.76	1.95
11.850	2.43	2.72	3.91	4.67	6.61
12.100	7.78	4.97	3.09	2.37	2.05
12.350	1.69	1.49	1.42	1.39	1.10
12.600	0.92	0.87	0.84	0.80	0.77
12.850	0.72	0.70	0.65	0.62	0.58
13.100	0.55	0.52	0.51	0.48	0.47
13.350	0.44	0.43	0.40	0.39	0.36
13.600	0.35	0.34	0.34	0.33	0.33
13.850	0.32	0.32	0.31	0.31	0.30
14.100	0.30	0.29	0.29	0.28	0.28
14.350	0.27	0.26	0.26	0.26	0.25
14.600	0.24	0.24	0.23	0.23	0.22
14.850	0.22	0.21	0.21	0.20	0.20
15.100	0.19	0.19	0.19	0.19	0.19
15.350	0.19	0.18	0.18	0.18	0.18
15.600	0.18	0.18	0.18	0.17	0.17
15.850	0.17	0.17	0.17	0.17	0.17
16.100	0.17	0.16	0.16	0.16	0.16
16.350	0.16	0.16	0.16	0.15	0.15
16.600	0.15	0.15	0.15	0.15	0.15
16.850	0.14	0.14	0.14	0.14	0.14
17.100	0.14	0.14	0.14	0.13	0.13
17.350	0.13	0.13	0.13	0.13	0.13
17.600	0.12	0.12	0.12	0.12	0.12
17.850	0.12	0.12	0.11	0.11	0.11
18.100	0.11	0.11	0.11	0.11	0.11
18.350	0.11	0.11	0.11	0.11	0.11
18.600	0.11	0.11	0.11	0.11	0.11
18.850	0.11	0.11	0.10	0.10	0.10
19.100	0.10	0.10	0.10	0.10	0.10
19.350	0.10	0.10	0.10	0.10	0.10
19.600	0.10	0.10	0.10	0.10	0.10
19.850	0.10	0.10	0.10	0.10	0.10
20.100	0.10	0.10	0.10	0.10	0.10
20.350	0.10	0.09	0.09	0.09	0.09
20.600	0.09	0.09	0.09	0.09	0.09
20.850	0.09	0.09	0.09	0.09	0.09
21.100	0.09	0.09	0.09	0.09	0.09
21.350	0.09	0.09	0.09	0.09	0.09
21.600	0.09	0.09	0.09	0.09	0.09
21.850	0.09	0.08	0.08	0.08	0.08
22.100	0.08	0.08	0.08	0.08	0.08
22.350	0.08	0.08	0.08	0.08	0.08

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.600	0.08	0.08	0.08	0.08	0.08
22.850	0.08	0.08	0.08	0.08	0.08
23.100	0.08	0.08	0.08	0.08	0.07
23.350	0.07	0.07	0.07	0.07	0.07
23.600	0.07	0.07	0.07	0.07	0.07
23.850	0.07	0.07	0.08	0.09	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: PO-2-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	61,702.000 ft²

Computational Time Increment	0.008 hours
Time to Peak (Computed)	12.105 hours
Flow (Peak, Computed)	9.44 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	9.42 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	61,702.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.59 in
Runoff Volume (Pervious)	0.660 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.660 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.063 hours
Computational Time Increment	0.008 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	25.40 ft³/s
Unit peak time, Tp	0.042 hours
Unit receding limb, Tr	0.168 hours
Total unit time, Tb	0.211 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	61,702.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.700	0.00	0.00	0.01	0.01	0.01
0.950	0.01	0.02	0.02	0.02	0.02
1.200	0.02	0.03	0.03	0.03	0.03
1.450	0.03	0.04	0.04	0.04	0.04
1.700	0.04	0.04	0.05	0.05	0.05
1.950	0.05	0.05	0.05	0.05	0.06
2.200	0.06	0.06	0.06	0.06	0.06
2.450	0.06	0.06	0.07	0.07	0.07
2.700	0.07	0.07	0.07	0.07	0.07
2.950	0.07	0.07	0.08	0.08	0.08
3.200	0.08	0.08	0.08	0.08	0.08
3.450	0.08	0.08	0.09	0.09	0.09
3.700	0.09	0.09	0.09	0.09	0.09
3.950	0.09	0.09	0.09	0.09	0.10
4.200	0.10	0.10	0.10	0.10	0.10
4.450	0.10	0.10	0.10	0.10	0.10
4.700	0.10	0.10	0.10	0.11	0.11
4.950	0.11	0.11	0.11	0.11	0.11
5.200	0.11	0.11	0.11	0.11	0.11
5.450	0.11	0.11	0.11	0.11	0.12
5.700	0.12	0.12	0.12	0.12	0.12
5.950	0.12	0.12	0.12	0.12	0.12
6.200	0.13	0.13	0.13	0.13	0.13
6.450	0.14	0.14	0.14	0.14	0.14
6.700	0.14	0.15	0.15	0.15	0.15
6.950	0.15	0.15	0.16	0.16	0.16
7.200	0.16	0.16	0.16	0.17	0.17
7.450	0.17	0.17	0.17	0.17	0.18
7.700	0.18	0.18	0.18	0.18	0.19
7.950	0.19	0.19	0.19	0.19	0.19
8.200	0.20	0.20	0.20	0.20	0.20
8.450	0.20	0.21	0.21	0.21	0.21
8.700	0.21	0.22	0.22	0.22	0.22
8.950	0.22	0.22	0.23	0.24	0.24
9.200	0.25	0.26	0.26	0.27	0.27
9.450	0.28	0.28	0.29	0.30	0.31
9.700	0.31	0.32	0.32	0.33	0.34
9.950	0.34	0.35	0.36	0.36	0.37
10.200	0.37	0.38	0.39	0.39	0.40

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.450	0.41	0.41	0.44	0.46	0.49
10.700	0.50	0.53	0.55	0.58	0.60
10.950	0.63	0.65	0.70	0.73	0.79
11.200	0.82	0.88	0.91	0.97	1.00
11.450	1.04	1.07	1.41	1.63	1.71
11.700	1.75	2.13	2.37	2.95	3.30
11.950	4.75	5.66	8.01	9.42	6.02
12.200	3.74	2.87	2.48	2.05	1.81
12.450	1.72	1.68	1.34	1.12	1.05
12.700	1.02	0.97	0.93	0.88	0.84
12.950	0.79	0.75	0.70	0.66	0.63
13.200	0.61	0.58	0.57	0.54	0.52
13.450	0.49	0.47	0.44	0.42	0.41
13.700	0.41	0.40	0.40	0.39	0.38
13.950	0.38	0.37	0.36	0.36	0.35
14.200	0.35	0.34	0.33	0.33	0.32
14.450	0.31	0.31	0.30	0.30	0.29
14.700	0.28	0.28	0.27	0.26	0.26
14.950	0.25	0.25	0.24	0.23	0.23
15.200	0.23	0.23	0.23	0.22	0.22
15.450	0.22	0.22	0.22	0.22	0.21
15.700	0.21	0.21	0.21	0.21	0.21
15.950	0.20	0.20	0.20	0.20	0.20
16.200	0.20	0.19	0.19	0.19	0.19
16.450	0.19	0.19	0.18	0.18	0.18
16.700	0.18	0.18	0.18	0.17	0.17
16.950	0.17	0.17	0.17	0.17	0.17
17.200	0.16	0.16	0.16	0.16	0.16
17.450	0.16	0.15	0.15	0.15	0.15
17.700	0.15	0.15	0.14	0.14	0.14
17.950	0.14	0.14	0.14	0.13	0.13
18.200	0.13	0.13	0.13	0.13	0.13
18.450	0.13	0.13	0.13	0.13	0.13
18.700	0.13	0.13	0.13	0.13	0.13
18.950	0.13	0.13	0.13	0.13	0.13
19.200	0.12	0.12	0.12	0.12	0.12
19.450	0.12	0.12	0.12	0.12	0.12
19.700	0.12	0.12	0.12	0.12	0.12
19.950	0.12	0.12	0.12	0.12	0.12
20.200	0.12	0.12	0.12	0.12	0.11
20.450	0.11	0.11	0.11	0.11	0.11
20.700	0.11	0.11	0.11	0.11	0.11
20.950	0.11	0.11	0.11	0.11	0.11
21.200	0.11	0.11	0.11	0.11	0.11
21.450	0.11	0.11	0.11	0.10	0.10
21.700	0.10	0.10	0.10	0.10	0.10
21.950	0.10	0.10	0.10	0.10	0.10
22.200	0.10	0.10	0.10	0.10	0.10

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.450	0.10	0.10	0.10	0.10	0.10
22.700	0.10	0.10	0.09	0.09	0.09
22.950	0.09	0.09	0.09	0.09	0.09
23.200	0.09	0.09	0.09	0.09	0.09
23.450	0.09	0.09	0.09	0.09	0.09
23.700	0.09	0.09	0.09	0.09	0.09
23.950	0.10	0.11	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: PO-2-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	61,702.000 ft²

Computational Time Increment	0.008 hours
Time to Peak (Computed)	12.105 hours
Flow (Peak, Computed)	10.82 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	10.81 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	61,702.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.44 in
Runoff Volume (Pervious)	0.760 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.760 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.063 hours
Computational Time Increment	0.008 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	25.40 ft³/s
Unit peak time, Tp	0.042 hours
Unit receding limb, Tr	0.168 hours
Total unit time, Tb	0.211 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	61,702.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.600	0.00	0.00	0.01	0.01	0.01
0.850	0.02	0.02	0.02	0.02	0.03
1.100	0.03	0.03	0.03	0.04	0.04
1.350	0.04	0.04	0.05	0.05	0.05
1.600	0.05	0.05	0.06	0.06	0.06
1.850	0.06	0.06	0.06	0.07	0.07
2.100	0.07	0.07	0.07	0.07	0.07
2.350	0.08	0.08	0.08	0.08	0.08
2.600	0.08	0.08	0.08	0.09	0.09
2.850	0.09	0.09	0.09	0.09	0.09
3.100	0.09	0.09	0.10	0.10	0.10
3.350	0.10	0.10	0.10	0.10	0.10
3.600	0.10	0.10	0.11	0.11	0.11
3.850	0.11	0.11	0.11	0.11	0.11
4.100	0.11	0.11	0.11	0.12	0.12
4.350	0.12	0.12	0.12	0.12	0.12
4.600	0.12	0.12	0.12	0.12	0.12
4.850	0.12	0.12	0.13	0.13	0.13
5.100	0.13	0.13	0.13	0.13	0.13
5.350	0.13	0.13	0.13	0.13	0.13
5.600	0.13	0.14	0.14	0.14	0.14
5.850	0.14	0.14	0.14	0.14	0.14
6.100	0.14	0.15	0.15	0.15	0.15
6.350	0.15	0.16	0.16	0.16	0.16
6.600	0.16	0.17	0.17	0.17	0.17
6.850	0.17	0.18	0.18	0.18	0.18
7.100	0.18	0.19	0.19	0.19	0.19
7.350	0.19	0.20	0.20	0.20	0.20
7.600	0.20	0.21	0.21	0.21	0.21
7.850	0.21	0.22	0.22	0.22	0.22
8.100	0.22	0.23	0.23	0.23	0.23
8.350	0.23	0.23	0.24	0.24	0.24
8.600	0.24	0.25	0.25	0.25	0.25
8.850	0.25	0.25	0.26	0.26	0.27
9.100	0.27	0.28	0.29	0.30	0.30
9.350	0.31	0.31	0.32	0.33	0.34
9.600	0.34	0.35	0.36	0.37	0.37
9.850	0.38	0.39	0.40	0.40	0.41
10.100	0.41	0.42	0.43	0.44	0.44

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.350	0.45	0.46	0.47	0.47	0.50
10.600	0.52	0.56	0.58	0.61	0.63
10.850	0.67	0.69	0.72	0.74	0.80
11.100	0.84	0.91	0.94	1.01	1.05
11.350	1.11	1.15	1.20	1.23	1.62
11.600	1.87	1.97	2.01	2.45	2.72
11.850	3.38	3.79	5.45	6.49	9.18
12.100	10.81	6.90	4.29	3.29	2.84
12.350	2.35	2.07	1.97	1.93	1.53
12.600	1.28	1.20	1.17	1.11	1.07
12.850	1.00	0.97	0.90	0.86	0.80
13.100	0.76	0.72	0.70	0.67	0.65
13.350	0.61	0.59	0.56	0.54	0.51
13.600	0.49	0.47	0.47	0.46	0.45
13.850	0.44	0.44	0.43	0.42	0.42
14.100	0.41	0.40	0.40	0.39	0.38
14.350	0.37	0.37	0.36	0.35	0.34
14.600	0.34	0.33	0.32	0.32	0.31
14.850	0.30	0.30	0.29	0.28	0.27
15.100	0.27	0.27	0.26	0.26	0.26
15.350	0.26	0.26	0.25	0.25	0.25
15.600	0.25	0.25	0.24	0.24	0.24
15.850	0.24	0.24	0.23	0.23	0.23
16.100	0.23	0.23	0.23	0.22	0.22
16.350	0.22	0.22	0.22	0.21	0.21
16.600	0.21	0.21	0.21	0.20	0.20
16.850	0.20	0.20	0.20	0.20	0.19
17.100	0.19	0.19	0.19	0.19	0.18
17.350	0.18	0.18	0.18	0.18	0.17
17.600	0.17	0.17	0.17	0.17	0.17
17.850	0.16	0.16	0.16	0.16	0.16
18.100	0.15	0.15	0.15	0.15	0.15
18.350	0.15	0.15	0.15	0.15	0.15
18.600	0.15	0.15	0.15	0.15	0.15
18.850	0.15	0.15	0.15	0.14	0.14
19.100	0.14	0.14	0.14	0.14	0.14
19.350	0.14	0.14	0.14	0.14	0.14
19.600	0.14	0.14	0.14	0.14	0.14
19.850	0.14	0.14	0.14	0.14	0.13
20.100	0.13	0.13	0.13	0.13	0.13
20.350	0.13	0.13	0.13	0.13	0.13
20.600	0.13	0.13	0.13	0.13	0.13
20.850	0.13	0.13	0.13	0.13	0.13
21.100	0.12	0.12	0.12	0.12	0.12
21.350	0.12	0.12	0.12	0.12	0.12
21.600	0.12	0.12	0.12	0.12	0.12
21.850	0.12	0.12	0.12	0.12	0.12
22.100	0.12	0.12	0.12	0.11	0.11

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.350	0.11	0.11	0.11	0.11	0.11
22.600	0.11	0.11	0.11	0.11	0.11
22.850	0.11	0.11	0.11	0.11	0.11
23.100	0.11	0.11	0.10	0.10	0.10
23.350	0.10	0.10	0.10	0.10	0.10
23.600	0.10	0.10	0.10	0.10	0.10
23.850	0.10	0.10	0.11	0.12	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: PO-2-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	61,702.000 ft²

Computational Time Increment	0.008 hours
Time to Peak (Computed)	12.105 hours
Flow (Peak, Computed)	12.32 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	12.30 ft³/s

Drainage Area	
SCS CN (Composite)	98.000
Area (User Defined)	61,702.000 ft²
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.36 in
Runoff Volume (Pervious)	0.869 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.868 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.063 hours
Computational Time Increment	0.008 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	25.40 ft³/s
Unit peak time, Tp	0.042 hours
Unit receding limb, Tr	0.168 hours
Total unit time, Tb	0.211 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	61,702.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.500	0.00	0.00	0.01	0.01	0.01
0.750	0.02	0.02	0.02	0.03	0.03
1.000	0.03	0.04	0.04	0.04	0.05
1.250	0.05	0.05	0.05	0.06	0.06
1.500	0.06	0.06	0.07	0.07	0.07
1.750	0.07	0.07	0.08	0.08	0.08
2.000	0.08	0.08	0.08	0.09	0.09
2.250	0.09	0.09	0.09	0.09	0.10
2.500	0.10	0.10	0.10	0.10	0.10
2.750	0.10	0.11	0.11	0.11	0.11
3.000	0.11	0.11	0.11	0.11	0.11
3.250	0.12	0.12	0.12	0.12	0.12
3.500	0.12	0.12	0.12	0.12	0.12
3.750	0.13	0.13	0.13	0.13	0.13
4.000	0.13	0.13	0.13	0.13	0.13
4.250	0.14	0.14	0.14	0.14	0.14
4.500	0.14	0.14	0.14	0.14	0.14
4.750	0.14	0.14	0.14	0.15	0.15
5.000	0.15	0.15	0.15	0.15	0.15
5.250	0.15	0.15	0.15	0.15	0.15
5.500	0.15	0.16	0.16	0.16	0.16
5.750	0.16	0.16	0.16	0.16	0.16
6.000	0.16	0.16	0.17	0.17	0.17
6.250	0.17	0.18	0.18	0.18	0.18
6.500	0.18	0.19	0.19	0.19	0.19
6.750	0.20	0.20	0.20	0.20	0.20
7.000	0.21	0.21	0.21	0.21	0.22
7.250	0.22	0.22	0.22	0.22	0.23
7.500	0.23	0.23	0.23	0.24	0.24
7.750	0.24	0.24	0.25	0.25	0.25
8.000	0.25	0.25	0.26	0.26	0.26
8.250	0.26	0.26	0.27	0.27	0.27
8.500	0.27	0.28	0.28	0.28	0.28
8.750	0.29	0.29	0.29	0.29	0.29
9.000	0.30	0.31	0.31	0.32	0.33
9.250	0.34	0.34	0.35	0.36	0.37
9.500	0.38	0.39	0.39	0.40	0.41
9.750	0.42	0.42	0.44	0.44	0.45
10.000	0.46	0.47	0.47	0.48	0.49

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.250	0.50	0.51	0.52	0.52	0.53
10.500	0.54	0.58	0.60	0.64	0.66
10.750	0.70	0.72	0.76	0.79	0.82
11.000	0.85	0.92	0.96	1.03	1.08
11.250	1.15	1.19	1.27	1.31	1.37
11.500	1.40	1.85	2.13	2.24	2.29
11.750	2.79	3.10	3.85	4.31	6.20
12.000	7.39	10.46	12.30	7.85	4.88
12.250	3.75	3.23	2.68	2.36	2.25
12.500	2.20	1.74	1.46	1.37	1.33
12.750	1.26	1.22	1.14	1.10	1.03
13.000	0.98	0.91	0.87	0.82	0.80
13.250	0.76	0.74	0.70	0.68	0.64
13.500	0.61	0.58	0.55	0.54	0.53
13.750	0.52	0.52	0.51	0.50	0.49
14.000	0.48	0.47	0.47	0.46	0.45
14.250	0.44	0.43	0.42	0.42	0.41
14.500	0.40	0.39	0.39	0.38	0.37
14.750	0.36	0.35	0.34	0.34	0.33
15.000	0.32	0.31	0.31	0.30	0.30
15.250	0.30	0.30	0.29	0.29	0.29
15.500	0.29	0.28	0.28	0.28	0.28
15.750	0.28	0.27	0.27	0.27	0.27
16.000	0.26	0.26	0.26	0.26	0.26
16.250	0.25	0.25	0.25	0.25	0.25
16.500	0.24	0.24	0.24	0.24	0.24
16.750	0.23	0.23	0.23	0.23	0.22
17.000	0.22	0.22	0.22	0.22	0.21
17.250	0.21	0.21	0.21	0.21	0.20
17.500	0.20	0.20	0.20	0.19	0.19
17.750	0.19	0.19	0.19	0.18	0.18
18.000	0.18	0.18	0.17	0.17	0.17
18.250	0.17	0.17	0.17	0.17	0.17
18.500	0.17	0.17	0.17	0.17	0.17
18.750	0.17	0.17	0.17	0.17	0.17
19.000	0.16	0.16	0.16	0.16	0.16
19.250	0.16	0.16	0.16	0.16	0.16
19.500	0.16	0.16	0.16	0.16	0.16
19.750	0.16	0.16	0.16	0.16	0.15
20.000	0.15	0.15	0.15	0.15	0.15
20.250	0.15	0.15	0.15	0.15	0.15
20.500	0.15	0.15	0.15	0.15	0.15
20.750	0.15	0.15	0.14	0.14	0.14
21.000	0.14	0.14	0.14	0.14	0.14
21.250	0.14	0.14	0.14	0.14	0.14
21.500	0.14	0.14	0.14	0.14	0.14
21.750	0.14	0.14	0.13	0.13	0.13
22.000	0.13	0.13	0.13	0.13	0.13

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-I
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.250	0.13	0.13	0.13	0.13	0.13
22.500	0.13	0.13	0.13	0.13	0.12
22.750	0.12	0.12	0.12	0.12	0.12
23.000	0.12	0.12	0.12	0.12	0.12
23.250	0.12	0.12	0.12	0.12	0.12
23.500	0.12	0.12	0.12	0.11	0.11
23.750	0.11	0.11	0.11	0.11	0.13
24.000	0.14	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: PO-2-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	6,160.000 ft²

Computational Time Increment	0.008 hours
Time to Peak (Computed)	12.121 hours
Flow (Peak, Computed)	0.03 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.02 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	6,160.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.27 in
Runoff Volume (Pervious)	0.003 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.003 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.063 hours
Computational Time Increment	0.008 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.54 ft³/s
Unit peak time, Tp	0.042 hours
Unit receding limb, Tr	0.168 hours
Total unit time, Tb	0.211 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Storm Event	1-YR
Return Event	1 years
Duration	24.000 hours
Depth	2.73 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	6,160.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.000	0.00	0.01	0.02	0.02	0.02
12.250	0.02	0.02	0.01	0.01	0.01
12.500	0.01	0.01	0.01	0.01	0.01
12.750	0.01	0.01	0.01	0.01	0.01
13.000	0.01	0.01	0.01	0.01	0.01
13.250	0.01	0.01	0.01	0.01	0.01
13.500	0.01	0.00	0.00	0.00	0.00
13.750	0.00	0.00	0.00	0.00	0.00
14.000	0.00	0.00	0.00	0.00	0.00
14.250	0.00	0.00	0.00	0.00	0.00
14.500	0.00	0.00	0.00	0.00	0.00
14.750	0.00	0.00	0.00	0.00	0.00
15.000	0.00	0.00	0.00	0.00	0.00
15.250	0.00	0.00	0.00	0.00	0.00
15.500	0.00	0.00	0.00	0.00	0.00
15.750	0.00	0.00	0.00	0.00	0.00
16.000	0.00	0.00	0.00	0.00	0.00
16.250	0.00	0.00	0.00	0.00	0.00
16.500	0.00	0.00	0.00	0.00	0.00
16.750	0.00	0.00	0.00	0.00	0.00
17.000	0.00	0.00	0.00	0.00	0.00
17.250	0.00	0.00	0.00	0.00	0.00
17.500	0.00	0.00	0.00	0.00	0.00
17.750	0.00	0.00	0.00	0.00	0.00
18.000	0.00	0.00	0.00	0.00	0.00
18.250	0.00	0.00	0.00	0.00	0.00
18.500	0.00	0.00	0.00	0.00	0.00
18.750	0.00	0.00	0.00	0.00	0.00
19.000	0.00	0.00	0.00	0.00	0.00
19.250	0.00	0.00	0.00	0.00	0.00
19.500	0.00	0.00	0.00	0.00	0.00
19.750	0.00	0.00	0.00	0.00	0.00
20.000	0.00	0.00	0.00	0.00	0.00
20.250	0.00	0.00	0.00	0.00	0.00
20.500	0.00	0.00	0.00	0.00	0.00
20.750	0.00	0.00	0.00	0.00	0.00
21.000	0.00	0.00	0.00	0.00	0.00
21.250	0.00	0.00	0.00	0.00	0.00
21.500	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-P
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.750	0.00	0.00	0.00	0.00	0.00
22.000	0.00	0.00	0.00	0.00	0.00
22.250	0.00	0.00	0.00	0.00	0.00
22.500	0.00	0.00	0.00	0.00	0.00
22.750	0.00	0.00	0.00	0.00	0.00
23.000	0.00	0.00	0.00	0.00	0.00
23.250	0.00	0.00	0.00	0.00	0.00
23.500	0.00	0.00	0.00	0.00	0.00
23.750	0.00	0.00	0.00	0.00	0.00
24.000	0.00	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: PO-2-P
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	6,160.000 ft²

Computational Time Increment	0.008 hours
Time to Peak (Computed)	12.113 hours
Flow (Peak, Computed)	0.08 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.07 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	6,160.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.48 in
Runoff Volume (Pervious)	0.006 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.006 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.063 hours
Computational Time Increment	0.008 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.54 ft³/s
Unit peak time, Tp	0.042 hours
Unit receding limb, Tr	0.168 hours
Total unit time, Tb	0.211 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-P
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Storm Event	2-YR
Return Event	2 years
Duration	24.000 hours
Depth	3.28 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	6,160.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.900	0.00	0.01	0.02	0.04	0.07
12.150	0.06	0.04	0.03	0.03	0.03
12.400	0.02	0.02	0.02	0.02	0.02
12.650	0.02	0.02	0.01	0.01	0.01
12.900	0.01	0.01	0.01	0.01	0.01
13.150	0.01	0.01	0.01	0.01	0.01
13.400	0.01	0.01	0.01	0.01	0.01
13.650	0.01	0.01	0.01	0.01	0.01
13.900	0.01	0.01	0.01	0.01	0.01
14.150	0.01	0.01	0.01	0.01	0.01
14.400	0.01	0.01	0.01	0.01	0.01
14.650	0.01	0.01	0.01	0.01	0.01
14.900	0.01	0.00	0.00	0.00	0.00
15.150	0.00	0.00	0.00	0.00	0.00
15.400	0.00	0.00	0.00	0.00	0.00
15.650	0.00	0.00	0.00	0.00	0.00
15.900	0.00	0.00	0.00	0.00	0.00
16.150	0.00	0.00	0.00	0.00	0.00
16.400	0.00	0.00	0.00	0.00	0.00
16.650	0.00	0.00	0.00	0.00	0.00
16.900	0.00	0.00	0.00	0.00	0.00
17.150	0.00	0.00	0.00	0.00	0.00
17.400	0.00	0.00	0.00	0.00	0.00
17.650	0.00	0.00	0.00	0.00	0.00
17.900	0.00	0.00	0.00	0.00	0.00
18.150	0.00	0.00	0.00	0.00	0.00
18.400	0.00	0.00	0.00	0.00	0.00
18.650	0.00	0.00	0.00	0.00	0.00
18.900	0.00	0.00	0.00	0.00	0.00
19.150	0.00	0.00	0.00	0.00	0.00
19.400	0.00	0.00	0.00	0.00	0.00
19.650	0.00	0.00	0.00	0.00	0.00
19.900	0.00	0.00	0.00	0.00	0.00
20.150	0.00	0.00	0.00	0.00	0.00
20.400	0.00	0.00	0.00	0.00	0.00
20.650	0.00	0.00	0.00	0.00	0.00
20.900	0.00	0.00	0.00	0.00	0.00
21.150	0.00	0.00	0.00	0.00	0.00
21.400	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-P
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.650	0.00	0.00	0.00	0.00	0.00
21.900	0.00	0.00	0.00	0.00	0.00
22.150	0.00	0.00	0.00	0.00	0.00
22.400	0.00	0.00	0.00	0.00	0.00
22.650	0.00	0.00	0.00	0.00	0.00
22.900	0.00	0.00	0.00	0.00	0.00
23.150	0.00	0.00	0.00	0.00	0.00
23.400	0.00	0.00	0.00	0.00	0.00
23.650	0.00	0.00	0.00	0.00	0.00
23.900	0.00	0.00	0.00	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: PO-2-P
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	6,160.000 ft²

Computational Time Increment	0.008 hours
Time to Peak (Computed)	12.113 hours
Flow (Peak, Computed)	0.16 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.16 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	6,160.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.88 in
Runoff Volume (Pervious)	0.010 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.010 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.063 hours
Computational Time Increment	0.008 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.54 ft³/s
Unit peak time, Tp	0.042 hours
Unit receding limb, Tr	0.168 hours
Total unit time, Tb	0.211 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-P
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Storm Event	5-YR
Return Event	5 years
Duration	24.000 hours
Depth	4.12 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	6,160.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.650	0.00	0.00	0.01	0.01	0.01
11.900	0.02	0.04	0.06	0.11	0.16
12.150	0.12	0.08	0.06	0.06	0.05
12.400	0.04	0.04	0.04	0.03	0.03
12.650	0.03	0.03	0.03	0.03	0.02
12.900	0.02	0.02	0.02	0.02	0.02
13.150	0.02	0.02	0.02	0.02	0.02
13.400	0.02	0.01	0.01	0.01	0.01
13.650	0.01	0.01	0.01	0.01	0.01
13.900	0.01	0.01	0.01	0.01	0.01
14.150	0.01	0.01	0.01	0.01	0.01
14.400	0.01	0.01	0.01	0.01	0.01
14.650	0.01	0.01	0.01	0.01	0.01
14.900	0.01	0.01	0.01	0.01	0.01
15.150	0.01	0.01	0.01	0.01	0.01
15.400	0.01	0.01	0.01	0.01	0.01
15.650	0.01	0.01	0.01	0.01	0.01
15.900	0.01	0.01	0.01	0.01	0.01
16.150	0.01	0.01	0.01	0.01	0.01
16.400	0.01	0.01	0.01	0.01	0.01
16.650	0.01	0.01	0.01	0.01	0.01
16.900	0.01	0.01	0.01	0.01	0.01
17.150	0.01	0.01	0.01	0.01	0.01
17.400	0.01	0.01	0.01	0.01	0.01
17.650	0.01	0.01	0.00	0.00	0.00
17.900	0.00	0.00	0.00	0.00	0.00
18.150	0.00	0.00	0.00	0.00	0.00
18.400	0.00	0.00	0.00	0.00	0.00
18.650	0.00	0.00	0.00	0.00	0.00
18.900	0.00	0.00	0.00	0.00	0.00
19.150	0.00	0.00	0.00	0.00	0.00
19.400	0.00	0.00	0.00	0.00	0.00
19.650	0.00	0.00	0.00	0.00	0.00
19.900	0.00	0.00	0.00	0.00	0.00
20.150	0.00	0.00	0.00	0.00	0.00
20.400	0.00	0.00	0.00	0.00	0.00
20.650	0.00	0.00	0.00	0.00	0.00
20.900	0.00	0.00	0.00	0.00	0.00
21.150	0.00	0.00	0.00	0.00	0.00

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-P
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.400	0.00	0.00	0.00	0.00	0.00
21.650	0.00	0.00	0.00	0.00	0.00
21.900	0.00	0.00	0.00	0.00	0.00
22.150	0.00	0.00	0.00	0.00	0.00
22.400	0.00	0.00	0.00	0.00	0.00
22.650	0.00	0.00	0.00	0.00	0.00
22.900	0.00	0.00	0.00	0.00	0.00
23.150	0.00	0.00	0.00	0.00	0.00
23.400	0.00	0.00	0.00	0.00	0.00
23.650	0.00	0.00	0.00	0.00	0.00
23.900	0.00	0.00	0.00	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: PO-2-P
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	6,160.000 ft²

Computational Time Increment	0.008 hours
Time to Peak (Computed)	12.113 hours
Flow (Peak, Computed)	0.25 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.24 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	6,160.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.26 in
Runoff Volume (Pervious)	0.015 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.015 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.063 hours
Computational Time Increment	0.008 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.54 ft³/s
Unit peak time, Tp	0.042 hours
Unit receding limb, Tr	0.168 hours
Total unit time, Tb	0.211 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-P
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Storm Event	10-YR
Return Event	10 years
Duration	24.000 hours
Depth	4.82 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	6,160.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.350	0.00	0.00	0.00	0.00	0.01
11.600	0.01	0.01	0.01	0.02	0.02
11.850	0.03	0.04	0.07	0.10	0.18
12.100	0.24	0.17	0.11	0.09	0.08
12.350	0.07	0.06	0.06	0.06	0.05
12.600	0.04	0.04	0.04	0.04	0.04
12.850	0.03	0.03	0.03	0.03	0.03
13.100	0.03	0.02	0.02	0.02	0.02
13.350	0.02	0.02	0.02	0.02	0.02
13.600	0.02	0.02	0.02	0.02	0.02
13.850	0.02	0.02	0.02	0.02	0.02
14.100	0.01	0.01	0.01	0.01	0.01
14.350	0.01	0.01	0.01	0.01	0.01
14.600	0.01	0.01	0.01	0.01	0.01
14.850	0.01	0.01	0.01	0.01	0.01
15.100	0.01	0.01	0.01	0.01	0.01
15.350	0.01	0.01	0.01	0.01	0.01
15.600	0.01	0.01	0.01	0.01	0.01
15.850	0.01	0.01	0.01	0.01	0.01
16.100	0.01	0.01	0.01	0.01	0.01
16.350	0.01	0.01	0.01	0.01	0.01
16.600	0.01	0.01	0.01	0.01	0.01
16.850	0.01	0.01	0.01	0.01	0.01
17.100	0.01	0.01	0.01	0.01	0.01
17.350	0.01	0.01	0.01	0.01	0.01
17.600	0.01	0.01	0.01	0.01	0.01
17.850	0.01	0.01	0.01	0.01	0.01
18.100	0.01	0.01	0.01	0.01	0.01
18.350	0.01	0.01	0.01	0.01	0.01
18.600	0.01	0.01	0.01	0.01	0.01
18.850	0.01	0.01	0.01	0.01	0.01
19.100	0.01	0.01	0.01	0.01	0.01
19.350	0.01	0.01	0.01	0.01	0.01
19.600	0.01	0.01	0.01	0.01	0.01
19.850	0.01	0.01	0.01	0.01	0.01
20.100	0.01	0.01	0.01	0.01	0.01
20.350	0.01	0.01	0.01	0.01	0.01
20.600	0.01	0.01	0.01	0.01	0.01
20.850	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-P
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.100	0.01	0.01	0.01	0.01	0.01
21.350	0.01	0.01	0.01	0.01	0.00
21.600	0.00	0.00	0.00	0.00	0.00
21.850	0.00	0.00	0.00	0.00	0.00
22.100	0.00	0.00	0.00	0.00	0.00
22.350	0.00	0.00	0.00	0.00	0.00
22.600	0.00	0.00	0.00	0.00	0.00
22.850	0.00	0.00	0.00	0.00	0.00
23.100	0.00	0.00	0.00	0.00	0.00
23.350	0.00	0.00	0.00	0.00	0.00
23.600	0.00	0.00	0.00	0.00	0.00
23.850	0.00	0.00	0.00	0.01	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: PO-2-P
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	6,160.000 ft²

Computational Time Increment	0.008 hours
Time to Peak (Computed)	12.113 hours
Flow (Peak, Computed)	0.38 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.38 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	6,160.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.89 in
Runoff Volume (Pervious)	0.022 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.022 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.063 hours
Computational Time Increment	0.008 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.54 ft³/s
Unit peak time, Tp	0.042 hours
Unit receding limb, Tr	0.168 hours
Total unit time, Tb	0.211 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-P
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Storm Event	25-YR
Return Event	25 years
Duration	24.000 hours
Depth	5.83 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	6,160.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.900	0.00	0.00	0.00	0.00	0.00
11.150	0.00	0.01	0.01	0.01	0.01
11.400	0.01	0.01	0.01	0.02	0.02
11.650	0.03	0.03	0.04	0.05	0.07
11.900	0.08	0.13	0.18	0.28	0.38
12.150	0.26	0.17	0.14	0.12	0.10
12.400	0.09	0.09	0.09	0.07	0.06
12.650	0.06	0.05	0.05	0.05	0.05
12.900	0.05	0.04	0.04	0.04	0.04
13.150	0.04	0.03	0.03	0.03	0.03
13.400	0.03	0.03	0.03	0.03	0.02
13.650	0.02	0.02	0.02	0.02	0.02
13.900	0.02	0.02	0.02	0.02	0.02
14.150	0.02	0.02	0.02	0.02	0.02
14.400	0.02	0.02	0.02	0.02	0.02
14.650	0.02	0.02	0.02	0.02	0.02
14.900	0.02	0.01	0.01	0.01	0.01
15.150	0.01	0.01	0.01	0.01	0.01
15.400	0.01	0.01	0.01	0.01	0.01
15.650	0.01	0.01	0.01	0.01	0.01
15.900	0.01	0.01	0.01	0.01	0.01
16.150	0.01	0.01	0.01	0.01	0.01
16.400	0.01	0.01	0.01	0.01	0.01
16.650	0.01	0.01	0.01	0.01	0.01
16.900	0.01	0.01	0.01	0.01	0.01
17.150	0.01	0.01	0.01	0.01	0.01
17.400	0.01	0.01	0.01	0.01	0.01
17.650	0.01	0.01	0.01	0.01	0.01
17.900	0.01	0.01	0.01	0.01	0.01
18.150	0.01	0.01	0.01	0.01	0.01
18.400	0.01	0.01	0.01	0.01	0.01
18.650	0.01	0.01	0.01	0.01	0.01
18.900	0.01	0.01	0.01	0.01	0.01
19.150	0.01	0.01	0.01	0.01	0.01
19.400	0.01	0.01	0.01	0.01	0.01
19.650	0.01	0.01	0.01	0.01	0.01
19.900	0.01	0.01	0.01	0.01	0.01
20.150	0.01	0.01	0.01	0.01	0.01
20.400	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-P
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.650	0.01	0.01	0.01	0.01	0.01
20.900	0.01	0.01	0.01	0.01	0.01
21.150	0.01	0.01	0.01	0.01	0.01
21.400	0.01	0.01	0.01	0.01	0.01
21.650	0.01	0.01	0.01	0.01	0.01
21.900	0.01	0.01	0.01	0.01	0.01
22.150	0.01	0.01	0.01	0.01	0.01
22.400	0.01	0.01	0.01	0.01	0.01
22.650	0.01	0.01	0.01	0.01	0.01
22.900	0.01	0.01	0.01	0.01	0.01
23.150	0.01	0.01	0.01	0.01	0.01
23.400	0.01	0.01	0.01	0.01	0.01
23.650	0.01	0.01	0.01	0.01	0.01
23.900	0.01	0.01	0.01	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: PO-2-P
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	6,160.000 ft²

Computational Time Increment	0.008 hours
Time to Peak (Computed)	12.105 hours
Flow (Peak, Computed)	0.50 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.50 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	6,160.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.47 in
Runoff Volume (Pervious)	0.029 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.029 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.063 hours
Computational Time Increment	0.008 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.54 ft³/s
Unit peak time, Tp	0.042 hours
Unit receding limb, Tr	0.168 hours
Total unit time, Tb	0.211 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-P
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Storm Event	50-YR
Return Event	50 years
Duration	24.000 hours
Depth	6.68 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	6,160.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.450	0.00	0.00	0.00	0.00	0.00
10.700	0.00	0.00	0.00	0.00	0.01
10.950	0.01	0.01	0.01	0.01	0.01
11.200	0.01	0.01	0.01	0.02	0.02
11.450	0.02	0.02	0.03	0.04	0.04
11.700	0.05	0.06	0.07	0.10	0.12
11.950	0.19	0.24	0.38	0.50	0.34
12.200	0.22	0.17	0.15	0.13	0.12
12.450	0.11	0.11	0.09	0.07	0.07
12.700	0.07	0.07	0.06	0.06	0.06
12.950	0.05	0.05	0.05	0.05	0.04
13.200	0.04	0.04	0.04	0.04	0.04
13.450	0.03	0.03	0.03	0.03	0.03
13.700	0.03	0.03	0.03	0.03	0.03
13.950	0.03	0.03	0.03	0.03	0.03
14.200	0.03	0.02	0.02	0.02	0.02
14.450	0.02	0.02	0.02	0.02	0.02
14.700	0.02	0.02	0.02	0.02	0.02
14.950	0.02	0.02	0.02	0.02	0.02
15.200	0.02	0.02	0.02	0.02	0.02
15.450	0.02	0.02	0.02	0.02	0.02
15.700	0.02	0.02	0.02	0.02	0.02
15.950	0.02	0.02	0.02	0.02	0.02
16.200	0.01	0.01	0.01	0.01	0.01
16.450	0.01	0.01	0.01	0.01	0.01
16.700	0.01	0.01	0.01	0.01	0.01
16.950	0.01	0.01	0.01	0.01	0.01
17.200	0.01	0.01	0.01	0.01	0.01
17.450	0.01	0.01	0.01	0.01	0.01
17.700	0.01	0.01	0.01	0.01	0.01
17.950	0.01	0.01	0.01	0.01	0.01
18.200	0.01	0.01	0.01	0.01	0.01
18.450	0.01	0.01	0.01	0.01	0.01
18.700	0.01	0.01	0.01	0.01	0.01
18.950	0.01	0.01	0.01	0.01	0.01
19.200	0.01	0.01	0.01	0.01	0.01
19.450	0.01	0.01	0.01	0.01	0.01
19.700	0.01	0.01	0.01	0.01	0.01
19.950	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-P
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.200	0.01	0.01	0.01	0.01	0.01
20.450	0.01	0.01	0.01	0.01	0.01
20.700	0.01	0.01	0.01	0.01	0.01
20.950	0.01	0.01	0.01	0.01	0.01
21.200	0.01	0.01	0.01	0.01	0.01
21.450	0.01	0.01	0.01	0.01	0.01
21.700	0.01	0.01	0.01	0.01	0.01
21.950	0.01	0.01	0.01	0.01	0.01
22.200	0.01	0.01	0.01	0.01	0.01
22.450	0.01	0.01	0.01	0.01	0.01
22.700	0.01	0.01	0.01	0.01	0.01
22.950	0.01	0.01	0.01	0.01	0.01
23.200	0.01	0.01	0.01	0.01	0.01
23.450	0.01	0.01	0.01	0.01	0.01
23.700	0.01	0.01	0.01	0.01	0.01
23.950	0.01	0.01	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph Summary
Label: PO-2-P
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	6,160.000 ft²

Computational Time Increment	0.008 hours
Time to Peak (Computed)	12.105 hours
Flow (Peak, Computed)	0.64 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	0.64 ft³/s

Drainage Area	
SCS CN (Composite)	61.000
Area (User Defined)	6,160.000 ft²
Maximum Retention (Pervious)	6.39 in
Maximum Retention (Pervious, 20 percent)	1.28 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.14 in
Runoff Volume (Pervious)	0.037 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.037 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.063 hours
Computational Time Increment	0.008 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	2.54 ft³/s
Unit peak time, Tp	0.042 hours
Unit receding limb, Tr	0.168 hours
Total unit time, Tb	0.211 hours

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-P
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Storm Event	100-YR
Return Event	100 years
Duration	24.000 hours
Depth	7.60 in
Time of Concentration (Composite)	0.063 hours
Area (User Defined)	6,160.000 ft²

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
9.900	0.00	0.00	0.00	0.00	0.00
10.150	0.00	0.00	0.00	0.00	0.00
10.400	0.00	0.00	0.00	0.00	0.01
10.650	0.01	0.01	0.01	0.01	0.01
10.900	0.01	0.01	0.01	0.01	0.02
11.150	0.02	0.02	0.02	0.02	0.03
11.400	0.03	0.03	0.03	0.05	0.06
11.650	0.06	0.07	0.09	0.10	0.13
11.900	0.16	0.25	0.32	0.50	0.64
12.150	0.43	0.28	0.22	0.19	0.16
12.400	0.14	0.14	0.14	0.11	0.09
12.650	0.09	0.08	0.08	0.08	0.07
12.900	0.07	0.07	0.06	0.06	0.06
13.150	0.05	0.05	0.05	0.05	0.05
13.400	0.05	0.04	0.04	0.04	0.04
13.650	0.04	0.04	0.04	0.03	0.03
13.900	0.03	0.03	0.03	0.03	0.03
14.150	0.03	0.03	0.03	0.03	0.03
14.400	0.03	0.03	0.03	0.03	0.03
14.650	0.03	0.03	0.02	0.02	0.02
14.900	0.02	0.02	0.02	0.02	0.02
15.150	0.02	0.02	0.02	0.02	0.02
15.400	0.02	0.02	0.02	0.02	0.02
15.650	0.02	0.02	0.02	0.02	0.02
15.900	0.02	0.02	0.02	0.02	0.02
16.150	0.02	0.02	0.02	0.02	0.02
16.400	0.02	0.02	0.02	0.02	0.02
16.650	0.02	0.02	0.02	0.02	0.02
16.900	0.02	0.02	0.02	0.02	0.02
17.150	0.02	0.02	0.02	0.01	0.01
17.400	0.01	0.01	0.01	0.01	0.01
17.650	0.01	0.01	0.01	0.01	0.01
17.900	0.01	0.01	0.01	0.01	0.01
18.150	0.01	0.01	0.01	0.01	0.01
18.400	0.01	0.01	0.01	0.01	0.01
18.650	0.01	0.01	0.01	0.01	0.01
18.900	0.01	0.01	0.01	0.01	0.01
19.150	0.01	0.01	0.01	0.01	0.01
19.400	0.01	0.01	0.01	0.01	0.01

Post-Development Analysis Results (with BMPs)

Subsection: Unit Hydrograph (Hydrograph Table)
Label: PO-2-P
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
19.650	0.01	0.01	0.01	0.01	0.01
19.900	0.01	0.01	0.01	0.01	0.01
20.150	0.01	0.01	0.01	0.01	0.01
20.400	0.01	0.01	0.01	0.01	0.01
20.650	0.01	0.01	0.01	0.01	0.01
20.900	0.01	0.01	0.01	0.01	0.01
21.150	0.01	0.01	0.01	0.01	0.01
21.400	0.01	0.01	0.01	0.01	0.01
21.650	0.01	0.01	0.01	0.01	0.01
21.900	0.01	0.01	0.01	0.01	0.01
22.150	0.01	0.01	0.01	0.01	0.01
22.400	0.01	0.01	0.01	0.01	0.01
22.650	0.01	0.01	0.01	0.01	0.01
22.900	0.01	0.01	0.01	0.01	0.01
23.150	0.01	0.01	0.01	0.01	0.01
23.400	0.01	0.01	0.01	0.01	0.01
23.650	0.01	0.01	0.01	0.01	0.01
23.900	0.01	0.01	0.01	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-1
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1-I
<Catchment to Outflow Node>	DA-1-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-1-I	0.060	12.100	0.90
Flow (From)	DA-1-P	0.005	12.100	0.10
Flow (In)	O-1	0.066	12.100	1.00

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-1
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1-I
<Catchment to Outflow Node>	DA-1-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-1-I	0.073	12.100	1.09
Flow (From)	DA-1-P	0.008	12.100	0.13
Flow (In)	O-1	0.081	12.100	1.22

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-1
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1-I
<Catchment to Outflow Node>	DA-1-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-1-I	0.094	12.100	1.37
Flow (From)	DA-1-P	0.011	12.100	0.19
Flow (In)	O-1	0.105	12.100	1.57

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-1
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1-I
<Catchment to Outflow Node>	DA-1-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-1-I	0.111	12.100	1.61
Flow (From)	DA-1-P	0.014	12.100	0.25
Flow (In)	O-1	0.125	12.100	1.86

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-1
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1-I
<Catchment to Outflow Node>	DA-1-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-1-I	0.135	12.100	1.95
Flow (From)	DA-1-P	0.019	12.100	0.32
Flow (In)	O-1	0.154	12.100	2.27

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1-I
<Catchment to Outflow Node>	DA-1-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-1-I	0.155	12.100	2.24
Flow (From)	DA-1-P	0.023	12.100	0.39
Flow (In)	O-1	0.178	12.100	2.62

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-1
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1-I
<Catchment to Outflow Node>	DA-1-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-1-I	0.177	12.100	2.55
Flow (From)	DA-1-P	0.027	12.100	0.46
Flow (In)	O-1	0.205	12.100	3.00

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-2
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Summary for Hydrograph Addition at 'O-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2-P
<Catchment to Outflow Node>	DA-2-I

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-2-P	0.001	12.100	0.01
Flow (From)	DA-2-I	0.025	12.100	0.38
Flow (In)	O-2	0.026	12.100	0.39

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-2
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Summary for Hydrograph Addition at 'O-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2-P
<Catchment to Outflow Node>	DA-2-I

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-2-P	0.001	12.100	0.02
Flow (From)	DA-2-I	0.031	12.100	0.46
Flow (In)	O-2	0.032	12.100	0.48

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-2
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Summary for Hydrograph Addition at 'O-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2-P
<Catchment to Outflow Node>	DA-2-I

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-2-P	0.003	12.100	0.05
Flow (From)	DA-2-I	0.039	12.100	0.58
Flow (In)	O-2	0.042	12.100	0.62

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-2
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Summary for Hydrograph Addition at 'O-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2-P
<Catchment to Outflow Node>	DA-2-I

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-2-P	0.004	12.100	0.07
Flow (From)	DA-2-I	0.046	12.100	0.68
Flow (In)	O-2	0.050	12.100	0.75

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-2
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Summary for Hydrograph Addition at 'O-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2-P
<Catchment to Outflow Node>	DA-2-I

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-2-P	0.006	12.100	0.10
Flow (From)	DA-2-I	0.056	12.100	0.82
Flow (In)	O-2	0.062	12.100	0.92

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-2
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Summary for Hydrograph Addition at 'O-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2-P
<Catchment to Outflow Node>	DA-2-I

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-2-P	0.007	12.100	0.14
Flow (From)	DA-2-I	0.064	12.100	0.94
Flow (In)	O-2	0.072	12.100	1.08

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-2
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Summary for Hydrograph Addition at 'O-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2-P
<Catchment to Outflow Node>	DA-2-I

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	DA-2-P	0.009	12.100	0.17
Flow (From)	DA-2-I	0.074	12.100	1.07
Flow (In)	O-2	0.083	12.100	1.24

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-3
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Summary for Hydrograph Addition at 'O-3'

Upstream Link	Upstream Node
Outlet-MRC	MRC
<Catchment to Outflow Node>	DA-3-I
<Catchment to Outflow Node>	DA-3-P
Outlet-2	PO-2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Outlet-MRC	0.635	13.450	0.98
Flow (From)	DA-3-I	0.068	12.100	1.04
Flow (From)	DA-3-P	0.054	12.250	0.31
Flow (From)	Outlet-2	0.296	12.200	1.73
Flow (In)	O-3	1.054	12.200	2.95

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-3
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Summary for Hydrograph Addition at 'O-3'

Upstream Link	Upstream Node
Outlet-MRC	MRC
<Catchment to Outflow Node>	DA-3-I
<Catchment to Outflow Node>	DA-3-P
Outlet-2	PO-2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Outlet-MRC	0.881	13.050	1.69
Flow (From)	DA-3-I	0.083	12.100	1.25
Flow (From)	DA-3-P	0.096	12.250	0.79
Flow (From)	Outlet-2	0.363	12.200	2.08
Flow (In)	O-3	1.423	12.250	4.34

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-3
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Summary for Hydrograph Addition at 'O-3'

Upstream Link	Upstream Node
Outlet-MRC	MRC
<Catchment to Outflow Node>	DA-3-I
<Catchment to Outflow Node>	DA-3-P
Outlet-2	PO-2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Outlet-MRC	1.266	12.850	2.66
Flow (From)	DA-3-I	0.106	12.100	1.58
Flow (From)	DA-3-P	0.177	12.200	1.83
Flow (From)	Outlet-2	0.466	12.200	2.63
Flow (In)	O-3	2.015	12.200	7.13

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-3
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Summary for Hydrograph Addition at 'O-3'

Upstream Link	Upstream Node
Outlet-MRC	MRC
<Catchment to Outflow Node>	DA-3-I
<Catchment to Outflow Node>	DA-3-P
Outlet-2	PO-2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Outlet-MRC	1.592	12.650	3.84
Flow (From)	DA-3-I	0.125	12.100	1.84
Flow (From)	DA-3-P	0.255	12.200	2.83
Flow (From)	Outlet-2	0.553	12.200	3.11
Flow (In)	O-3	2.524	12.200	9.48

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-3
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Summary for Hydrograph Addition at 'O-3'

Upstream Link	Upstream Node
Outlet-MRC	MRC
<Catchment to Outflow Node>	DA-3-I
<Catchment to Outflow Node>	DA-3-P
Outlet-2	PO-2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Outlet-MRC	2.071	12.550	5.65
Flow (From)	DA-3-I	0.153	12.100	2.23
Flow (From)	DA-3-P	0.382	12.200	4.45
Flow (From)	Outlet-2	0.678	12.200	3.80
Flow (In)	O-3	3.284	12.200	13.80

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-3
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Summary for Hydrograph Addition at 'O-3'

Upstream Link	Upstream Node
Outlet-MRC	MRC
<Catchment to Outflow Node>	DA-3-I
<Catchment to Outflow Node>	DA-3-P
Outlet-2	PO-2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Outlet-MRC	2.480	12.500	7.99
Flow (From)	DA-3-I	0.176	12.100	2.56
Flow (From)	DA-3-P	0.499	12.200	5.91
Flow (From)	Outlet-2	0.785	12.200	4.39
Flow (In)	O-3	3.940	12.200	17.74

Post-Development Analysis Results (with BMPs)

Subsection: Addition Summary
Label: O-3
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Summary for Hydrograph Addition at 'O-3'

Upstream Link	Upstream Node
Outlet-MRC	MRC
<Catchment to Outflow Node>	DA-3-I
<Catchment to Outflow Node>	DA-3-P
Outlet-2	PO-2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Outlet-MRC	2.926	12.400	10.70
Flow (From)	DA-3-I	0.201	12.100	2.92
Flow (From)	DA-3-P	0.635	12.200	7.59
Flow (From)	Outlet-2	0.900	12.200	6.24
Flow (In)	O-3	4.662	12.200	24.46

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.422	0.422	0.422	0.422	0.422
0.250	0.422	0.422	0.422	0.422	0.422
0.500	0.422	0.422	0.422	0.422	0.422
0.750	0.422	0.422	0.422	0.422	0.422
1.000	0.422	0.422	0.422	0.422	0.422
1.250	0.422	0.422	0.422	0.422	0.422
1.500	0.422	0.422	0.422	0.422	0.422
1.750	0.422	0.422	0.422	0.422	0.422
2.000	0.423	0.423	0.423	0.423	0.423
2.250	0.423	0.424	0.424	0.424	0.424
2.500	0.424	0.425	0.425	0.425	0.425
2.750	0.426	0.426	0.426	0.427	0.427
3.000	0.427	0.428	0.428	0.428	0.429
3.250	0.429	0.429	0.430	0.430	0.430
3.500	0.431	0.431	0.432	0.432	0.433
3.750	0.433	0.433	0.434	0.434	0.435
4.000	0.435	0.436	0.436	0.437	0.437
4.250	0.438	0.438	0.439	0.440	0.440
4.500	0.441	0.441	0.442	0.442	0.443
4.750	0.444	0.444	0.445	0.445	0.446
5.000	0.447	0.447	0.448	0.449	0.449
5.250	0.450	0.451	0.451	0.452	0.453
5.500	0.453	0.454	0.455	0.455	0.456
5.750	0.457	0.458	0.458	0.459	0.460
6.000	0.461	0.461	0.462	0.463	0.464
6.250	0.465	0.465	0.466	0.467	0.468
6.500	0.469	0.470	0.471	0.472	0.473
6.750	0.474	0.474	0.475	0.476	0.477
7.000	0.479	0.480	0.481	0.482	0.483
7.250	0.484	0.485	0.486	0.487	0.488
7.500	0.490	0.491	0.492	0.493	0.494
7.750	0.496	0.497	0.498	0.499	0.501
8.000	0.502	0.503	0.505	0.506	0.507
8.250	0.509	0.510	0.512	0.513	0.515
8.500	0.516	0.518	0.519	0.521	0.522
8.750	0.524	0.525	0.527	0.528	0.530
9.000	0.531	0.533	0.535	0.537	0.538
9.250	0.540	0.542	0.544	0.546	0.548
9.500	0.550	0.552	0.554	0.557	0.559
9.750	0.561	0.564	0.566	0.568	0.571
10.000	0.573	0.576	0.579	0.581	0.584
10.250	0.587	0.590	0.593	0.596	0.599
10.500	0.602	0.605	0.608	0.612	0.616
10.750	0.620	0.624	0.628	0.633	0.637
11.000	0.642	0.647	0.653	0.658	0.665
11.250	0.671	0.678	0.685	0.693	0.701
11.500	0.709	0.718	0.730	0.743	0.756

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
11.750	0.771	0.788	0.809	0.833	0.864
12.000	0.904	0.956	1.023	1.084	1.123
12.250	1.148	1.167	1.182	1.195	1.206
12.500	1.216	1.225	1.232	1.237	1.241
12.750	1.246	1.250	1.253	1.256	1.259
13.000	1.261	1.263	1.265	1.266	1.267
13.250	1.268	1.269	1.269	1.270	1.270
13.500	1.270	1.269	1.269	1.268	1.267
13.750	1.267	1.266	1.265	1.264	1.264
14.000	1.263	1.262	1.261	1.260	1.259
14.250	1.258	1.256	1.255	1.254	1.253
14.500	1.251	1.250	1.249	1.247	1.246
14.750	1.245	1.243	1.242	1.240	1.238
15.000	1.237	1.235	1.233	1.232	1.230
15.250	1.228	1.226	1.225	1.223	1.221
15.500	1.220	1.218	1.216	1.215	1.213
15.750	1.211	1.210	1.208	1.206	1.205
16.000	1.203	1.201	1.200	1.198	1.196
16.250	1.195	1.193	1.192	1.190	1.188
16.500	1.187	1.185	1.184	1.182	1.180
16.750	1.179	1.177	1.176	1.174	1.172
17.000	1.171	1.169	1.168	1.166	1.165
17.250	1.163	1.161	1.160	1.158	1.157
17.500	1.155	1.154	1.152	1.151	1.149
17.750	1.147	1.146	1.144	1.143	1.141
18.000	1.140	1.138	1.137	1.135	1.134
18.250	1.132	1.131	1.129	1.128	1.126
18.500	1.125	1.124	1.122	1.121	1.119
18.750	1.118	1.117	1.115	1.114	1.113
19.000	1.111	1.110	1.109	1.107	1.106
19.250	1.105	1.104	1.102	1.101	1.100
19.500	1.099	1.097	1.096	1.095	1.094
19.750	1.093	1.091	1.090	1.089	1.088
20.000	1.087	1.086	1.085	1.084	1.082
20.250	1.081	1.080	1.079	1.078	1.077
20.500	1.076	1.075	1.074	1.073	1.072
20.750	1.071	1.070	1.069	1.068	1.067
21.000	1.066	1.065	1.064	1.063	1.062
21.250	1.061	1.060	1.059	1.058	1.057
21.500	1.056	1.056	1.055	1.054	1.053
21.750	1.052	1.051	1.050	1.049	1.048
22.000	1.048	1.047	1.046	1.045	1.044
22.250	1.043	1.043	1.042	1.041	1.040
22.500	1.039	1.039	1.038	1.037	1.036
22.750	1.035	1.035	1.034	1.033	1.032
23.000	1.032	1.031	1.030	1.029	1.029
23.250	1.028	1.027	1.026	1.026	1.025

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
23.500	1.024	1.024	1.023	1.022	1.021
23.750	1.021	1.020	1.019	1.019	1.018
24.000	1.017	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.422	0.422	0.422	0.422	0.422
0.250	0.422	0.422	0.422	0.422	0.422
0.500	0.422	0.422	0.422	0.422	0.422
0.750	0.422	0.422	0.422	0.422	0.422
1.000	0.422	0.422	0.422	0.422	0.422
1.250	0.422	0.422	0.422	0.422	0.422
1.500	0.422	0.422	0.422	0.422	0.423
1.750	0.423	0.423	0.423	0.423	0.424
2.000	0.424	0.424	0.424	0.425	0.425
2.250	0.425	0.425	0.426	0.426	0.426
2.500	0.427	0.427	0.428	0.428	0.428
2.750	0.429	0.429	0.430	0.430	0.431
3.000	0.431	0.432	0.432	0.433	0.433
3.250	0.434	0.434	0.435	0.435	0.436
3.500	0.436	0.437	0.438	0.438	0.439
3.750	0.439	0.440	0.441	0.441	0.442
4.000	0.443	0.443	0.444	0.445	0.445
4.250	0.446	0.447	0.448	0.448	0.449
4.500	0.450	0.451	0.451	0.452	0.453
4.750	0.454	0.455	0.455	0.456	0.457
5.000	0.458	0.459	0.460	0.460	0.461
5.250	0.462	0.463	0.464	0.465	0.466
5.500	0.467	0.468	0.468	0.469	0.470
5.750	0.471	0.472	0.473	0.474	0.475
6.000	0.476	0.477	0.478	0.479	0.480
6.250	0.481	0.482	0.483	0.485	0.486
6.500	0.487	0.488	0.489	0.490	0.492
6.750	0.493	0.494	0.495	0.497	0.498
7.000	0.499	0.501	0.502	0.503	0.505
7.250	0.506	0.507	0.509	0.510	0.512
7.500	0.513	0.515	0.516	0.518	0.519
7.750	0.521	0.522	0.524	0.526	0.527
8.000	0.529	0.531	0.532	0.534	0.536
8.250	0.538	0.539	0.541	0.543	0.545
8.500	0.547	0.548	0.550	0.552	0.554
8.750	0.556	0.558	0.560	0.562	0.564
9.000	0.566	0.568	0.570	0.572	0.574
9.250	0.577	0.579	0.581	0.584	0.586
9.500	0.589	0.592	0.594	0.597	0.600
9.750	0.603	0.606	0.609	0.612	0.615
10.000	0.618	0.621	0.624	0.628	0.631
10.250	0.635	0.638	0.642	0.645	0.649
10.500	0.653	0.657	0.661	0.665	0.670
10.750	0.675	0.680	0.685	0.690	0.696
11.000	0.702	0.708	0.715	0.722	0.729
11.250	0.737	0.746	0.755	0.764	0.773
11.500	0.783	0.795	0.809	0.825	0.841

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
11.750	0.859	0.880	0.905	0.934	0.971
12.000	1.018	1.080	1.160	1.233	1.279
12.250	1.308	1.329	1.346	1.359	1.371
12.500	1.381	1.390	1.395	1.399	1.403
12.750	1.406	1.408	1.410	1.412	1.413
13.000	1.413	1.413	1.413	1.412	1.412
13.250	1.410	1.409	1.408	1.406	1.404
13.500	1.402	1.400	1.397	1.395	1.392
13.750	1.390	1.387	1.385	1.382	1.379
14.000	1.377	1.374	1.372	1.369	1.366
14.250	1.364	1.361	1.358	1.356	1.353
14.500	1.350	1.348	1.345	1.342	1.340
14.750	1.337	1.334	1.331	1.329	1.326
15.000	1.323	1.321	1.318	1.315	1.312
15.250	1.310	1.307	1.305	1.302	1.300
15.500	1.297	1.295	1.292	1.290	1.288
15.750	1.285	1.283	1.281	1.279	1.276
16.000	1.274	1.272	1.270	1.268	1.266
16.250	1.264	1.262	1.260	1.258	1.256
16.500	1.254	1.252	1.250	1.248	1.246
16.750	1.244	1.242	1.240	1.238	1.236
17.000	1.234	1.232	1.230	1.228	1.227
17.250	1.225	1.223	1.221	1.219	1.217
17.500	1.215	1.213	1.211	1.209	1.207
17.750	1.206	1.204	1.202	1.200	1.198
18.000	1.196	1.194	1.192	1.190	1.189
18.250	1.187	1.185	1.183	1.181	1.180
18.500	1.178	1.176	1.174	1.173	1.171
18.750	1.169	1.168	1.166	1.164	1.163
19.000	1.161	1.159	1.158	1.156	1.155
19.250	1.153	1.152	1.150	1.149	1.147
19.500	1.146	1.144	1.143	1.141	1.140
19.750	1.138	1.137	1.135	1.134	1.133
20.000	1.131	1.130	1.128	1.127	1.126
20.250	1.124	1.123	1.122	1.120	1.119
20.500	1.118	1.116	1.115	1.114	1.113
20.750	1.111	1.110	1.109	1.108	1.107
21.000	1.105	1.104	1.103	1.102	1.101
21.250	1.099	1.098	1.097	1.096	1.095
21.500	1.094	1.093	1.092	1.090	1.089
21.750	1.088	1.087	1.086	1.085	1.084
22.000	1.083	1.082	1.081	1.080	1.079
22.250	1.078	1.077	1.076	1.075	1.074
22.500	1.073	1.072	1.071	1.070	1.069
22.750	1.068	1.067	1.066	1.065	1.064
23.000	1.063	1.062	1.061	1.060	1.060
23.250	1.059	1.058	1.057	1.056	1.055

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
23.500	1.054	1.053	1.053	1.052	1.051
23.750	1.050	1.049	1.048	1.047	1.047
24.000	1.046	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.422	0.422	0.422	0.422	0.422
0.250	0.422	0.422	0.422	0.422	0.422
0.500	0.422	0.422	0.422	0.422	0.422
0.750	0.422	0.422	0.422	0.422	0.422
1.000	0.422	0.422	0.422	0.422	0.422
1.250	0.422	0.422	0.422	0.423	0.423
1.500	0.423	0.423	0.424	0.424	0.424
1.750	0.425	0.425	0.425	0.426	0.426
2.000	0.426	0.427	0.427	0.428	0.428
2.250	0.429	0.429	0.430	0.430	0.431
2.500	0.432	0.432	0.433	0.433	0.434
2.750	0.435	0.435	0.436	0.437	0.438
3.000	0.438	0.439	0.440	0.441	0.441
3.250	0.442	0.443	0.444	0.445	0.445
3.500	0.446	0.447	0.448	0.449	0.450
3.750	0.451	0.452	0.453	0.453	0.454
4.000	0.455	0.456	0.457	0.458	0.459
4.250	0.460	0.461	0.462	0.463	0.465
4.500	0.466	0.467	0.468	0.469	0.470
4.750	0.471	0.472	0.473	0.474	0.476
5.000	0.477	0.478	0.479	0.480	0.482
5.250	0.483	0.484	0.485	0.486	0.488
5.500	0.489	0.490	0.491	0.493	0.494
5.750	0.495	0.497	0.498	0.499	0.501
6.000	0.502	0.503	0.505	0.506	0.507
6.250	0.509	0.510	0.512	0.513	0.515
6.500	0.516	0.518	0.519	0.521	0.523
6.750	0.524	0.526	0.528	0.529	0.531
7.000	0.533	0.535	0.536	0.538	0.540
7.250	0.542	0.544	0.546	0.547	0.549
7.500	0.551	0.553	0.555	0.557	0.559
7.750	0.562	0.564	0.566	0.568	0.570
8.000	0.572	0.574	0.577	0.579	0.581
8.250	0.583	0.586	0.588	0.590	0.593
8.500	0.595	0.598	0.600	0.602	0.605
8.750	0.607	0.610	0.612	0.615	0.618
9.000	0.620	0.623	0.626	0.628	0.631
9.250	0.634	0.637	0.640	0.644	0.647
9.500	0.650	0.654	0.657	0.661	0.664
9.750	0.668	0.672	0.675	0.679	0.683
10.000	0.687	0.692	0.696	0.700	0.705
10.250	0.709	0.714	0.718	0.723	0.728
10.500	0.732	0.737	0.743	0.748	0.754
10.750	0.760	0.767	0.773	0.780	0.788
11.000	0.795	0.803	0.812	0.821	0.830
11.250	0.840	0.851	0.862	0.874	0.886
11.500	0.899	0.913	0.931	0.950	0.970

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
11.750	0.992	1.018	1.048	1.083	1.129
12.000	1.188	1.265	1.365	1.454	1.509
12.250	1.543	1.567	1.585	1.599	1.611
12.500	1.622	1.630	1.635	1.637	1.639
12.750	1.640	1.641	1.642	1.641	1.640
13.000	1.639	1.637	1.635	1.632	1.629
13.250	1.626	1.622	1.618	1.614	1.610
13.500	1.606	1.601	1.596	1.591	1.586
13.750	1.581	1.576	1.571	1.566	1.562
14.000	1.557	1.552	1.547	1.542	1.537
14.250	1.532	1.527	1.522	1.517	1.513
14.500	1.508	1.503	1.498	1.493	1.488
14.750	1.484	1.479	1.474	1.469	1.464
15.000	1.459	1.455	1.450	1.445	1.440
15.250	1.436	1.431	1.427	1.422	1.418
15.500	1.414	1.409	1.405	1.401	1.397
15.750	1.393	1.389	1.385	1.381	1.378
16.000	1.374	1.370	1.367	1.363	1.360
16.250	1.356	1.353	1.350	1.347	1.343
16.500	1.340	1.337	1.334	1.331	1.328
16.750	1.325	1.322	1.319	1.316	1.313
17.000	1.311	1.308	1.305	1.302	1.300
17.250	1.297	1.295	1.292	1.290	1.287
17.500	1.285	1.282	1.280	1.278	1.275
17.750	1.273	1.271	1.268	1.266	1.264
18.000	1.262	1.260	1.257	1.255	1.253
18.250	1.251	1.249	1.247	1.245	1.242
18.500	1.240	1.238	1.236	1.234	1.232
18.750	1.230	1.228	1.226	1.224	1.222
19.000	1.221	1.219	1.217	1.215	1.213
19.250	1.211	1.209	1.208	1.206	1.204
19.500	1.202	1.200	1.199	1.197	1.195
19.750	1.194	1.192	1.190	1.189	1.187
20.000	1.185	1.184	1.182	1.180	1.179
20.250	1.177	1.176	1.174	1.173	1.171
20.500	1.169	1.168	1.166	1.165	1.163
20.750	1.162	1.160	1.159	1.158	1.156
21.000	1.155	1.153	1.152	1.150	1.149
21.250	1.148	1.146	1.145	1.144	1.142
21.500	1.141	1.140	1.138	1.137	1.136
21.750	1.134	1.133	1.132	1.131	1.129
22.000	1.128	1.127	1.126	1.124	1.123
22.250	1.122	1.121	1.119	1.118	1.117
22.500	1.116	1.115	1.114	1.112	1.111
22.750	1.110	1.109	1.108	1.107	1.106
23.000	1.105	1.103	1.102	1.101	1.100
23.250	1.099	1.098	1.097	1.096	1.095

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
23.500	1.094	1.093	1.092	1.091	1.090
23.750	1.089	1.088	1.087	1.086	1.085
24.000	1.084	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.422	0.422	0.422	0.422	0.422
0.250	0.422	0.422	0.422	0.422	0.422
0.500	0.422	0.422	0.422	0.422	0.422
0.750	0.422	0.422	0.422	0.422	0.422
1.000	0.422	0.422	0.422	0.422	0.423
1.250	0.423	0.423	0.423	0.424	0.424
1.500	0.424	0.425	0.425	0.426	0.426
1.750	0.427	0.427	0.428	0.428	0.429
2.000	0.429	0.430	0.431	0.431	0.432
2.250	0.433	0.433	0.434	0.435	0.436
2.500	0.436	0.437	0.438	0.439	0.440
2.750	0.441	0.441	0.442	0.443	0.444
3.000	0.445	0.446	0.447	0.448	0.449
3.250	0.450	0.451	0.452	0.453	0.454
3.500	0.455	0.457	0.458	0.459	0.460
3.750	0.461	0.462	0.463	0.465	0.466
4.000	0.467	0.468	0.469	0.471	0.472
4.250	0.473	0.475	0.476	0.477	0.479
4.500	0.480	0.481	0.483	0.484	0.485
4.750	0.487	0.488	0.489	0.491	0.492
5.000	0.494	0.495	0.497	0.498	0.500
5.250	0.501	0.503	0.504	0.506	0.507
5.500	0.509	0.510	0.512	0.513	0.515
5.750	0.516	0.518	0.520	0.521	0.523
6.000	0.524	0.526	0.528	0.529	0.531
6.250	0.533	0.535	0.536	0.538	0.540
6.500	0.542	0.544	0.546	0.548	0.550
6.750	0.552	0.554	0.556	0.558	0.560
7.000	0.562	0.564	0.566	0.568	0.570
7.250	0.573	0.575	0.577	0.580	0.582
7.500	0.584	0.587	0.589	0.591	0.594
7.750	0.596	0.599	0.601	0.604	0.607
8.000	0.609	0.612	0.614	0.617	0.620
8.250	0.623	0.625	0.628	0.631	0.634
8.500	0.637	0.639	0.642	0.645	0.648
8.750	0.651	0.654	0.657	0.660	0.663
9.000	0.666	0.670	0.673	0.676	0.680
9.250	0.683	0.687	0.690	0.694	0.698
9.500	0.702	0.706	0.710	0.714	0.719
9.750	0.723	0.727	0.732	0.737	0.741
10.000	0.746	0.751	0.756	0.761	0.766
10.250	0.772	0.777	0.782	0.788	0.794
10.500	0.799	0.805	0.812	0.818	0.825
10.750	0.832	0.840	0.848	0.856	0.865
11.000	0.874	0.883	0.893	0.903	0.914
11.250	0.926	0.938	0.951	0.964	0.977
11.500	0.991	1.007	1.027	1.049	1.071

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
11.750	1.096	1.126	1.160	1.201	1.254
12.000	1.322	1.412	1.527	1.631	1.694
12.250	1.731	1.757	1.776	1.790	1.800
12.500	1.810	1.817	1.819	1.819	1.818
12.750	1.817	1.815	1.813	1.810	1.806
13.000	1.802	1.797	1.792	1.787	1.781
13.250	1.775	1.769	1.763	1.757	1.751
13.500	1.744	1.737	1.730	1.723	1.717
13.750	1.710	1.703	1.697	1.691	1.684
14.000	1.678	1.672	1.666	1.660	1.653
14.250	1.647	1.641	1.635	1.629	1.623
14.500	1.617	1.611	1.605	1.599	1.593
14.750	1.587	1.581	1.575	1.569	1.563
15.000	1.557	1.551	1.545	1.539	1.533
15.250	1.528	1.522	1.516	1.511	1.505
15.500	1.500	1.495	1.489	1.484	1.479
15.750	1.474	1.469	1.464	1.459	1.455
16.000	1.450	1.445	1.440	1.436	1.431
16.250	1.427	1.423	1.418	1.414	1.410
16.500	1.406	1.402	1.398	1.394	1.390
16.750	1.386	1.382	1.378	1.375	1.371
17.000	1.367	1.364	1.360	1.357	1.354
17.250	1.350	1.347	1.344	1.340	1.337
17.500	1.334	1.331	1.328	1.325	1.322
17.750	1.319	1.316	1.313	1.310	1.308
18.000	1.305	1.302	1.299	1.297	1.294
18.250	1.292	1.289	1.287	1.284	1.282
18.500	1.279	1.277	1.275	1.273	1.271
18.750	1.268	1.266	1.264	1.262	1.260
19.000	1.258	1.256	1.254	1.252	1.250
19.250	1.248	1.246	1.244	1.242	1.240
19.500	1.239	1.237	1.235	1.233	1.231
19.750	1.229	1.228	1.226	1.224	1.222
20.000	1.221	1.219	1.217	1.215	1.214
20.250	1.212	1.210	1.209	1.207	1.205
20.500	1.204	1.202	1.200	1.199	1.197
20.750	1.196	1.194	1.192	1.191	1.189
21.000	1.188	1.186	1.185	1.183	1.182
21.250	1.180	1.179	1.177	1.176	1.174
21.500	1.173	1.172	1.170	1.169	1.167
21.750	1.166	1.165	1.163	1.162	1.160
22.000	1.159	1.158	1.156	1.155	1.154
22.250	1.152	1.151	1.150	1.149	1.147
22.500	1.146	1.145	1.143	1.142	1.141
22.750	1.140	1.138	1.137	1.136	1.135
23.000	1.134	1.132	1.131	1.130	1.129
23.250	1.128	1.126	1.125	1.124	1.123

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
23.500	1.122	1.121	1.120	1.118	1.117
23.750	1.116	1.115	1.114	1.113	1.112
24.000	1.111	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.422	0.422	0.422	0.422	0.422
0.250	0.422	0.422	0.422	0.422	0.422
0.500	0.422	0.422	0.422	0.422	0.422
0.750	0.422	0.422	0.422	0.422	0.422
1.000	0.423	0.423	0.423	0.424	0.424
1.250	0.424	0.425	0.425	0.426	0.426
1.500	0.427	0.428	0.428	0.429	0.430
1.750	0.430	0.431	0.432	0.433	0.434
2.000	0.434	0.435	0.436	0.437	0.438
2.250	0.439	0.440	0.441	0.442	0.443
2.500	0.444	0.446	0.447	0.448	0.449
2.750	0.450	0.451	0.453	0.454	0.455
3.000	0.456	0.458	0.459	0.460	0.462
3.250	0.463	0.464	0.466	0.467	0.469
3.500	0.470	0.471	0.473	0.474	0.476
3.750	0.477	0.479	0.481	0.482	0.484
4.000	0.485	0.487	0.488	0.490	0.492
4.250	0.493	0.495	0.497	0.498	0.500
4.500	0.502	0.503	0.505	0.507	0.509
4.750	0.510	0.512	0.514	0.516	0.518
5.000	0.519	0.521	0.523	0.525	0.527
5.250	0.529	0.531	0.533	0.535	0.536
5.500	0.538	0.540	0.542	0.544	0.546
5.750	0.548	0.550	0.552	0.554	0.556
6.000	0.558	0.560	0.562	0.565	0.567
6.250	0.569	0.571	0.573	0.576	0.578
6.500	0.580	0.583	0.585	0.587	0.590
6.750	0.592	0.595	0.597	0.600	0.603
7.000	0.605	0.608	0.610	0.613	0.616
7.250	0.619	0.621	0.624	0.627	0.630
7.500	0.633	0.636	0.639	0.642	0.645
7.750	0.648	0.651	0.654	0.657	0.661
8.000	0.664	0.667	0.670	0.674	0.677
8.250	0.680	0.684	0.687	0.691	0.694
8.500	0.698	0.701	0.705	0.708	0.712
8.750	0.716	0.719	0.723	0.727	0.731
9.000	0.734	0.738	0.742	0.746	0.751
9.250	0.755	0.759	0.764	0.768	0.773
9.500	0.778	0.783	0.788	0.793	0.798
9.750	0.804	0.809	0.815	0.821	0.826
10.000	0.832	0.838	0.844	0.851	0.857
10.250	0.863	0.870	0.877	0.883	0.890
10.500	0.897	0.904	0.912	0.919	0.927
10.750	0.936	0.944	0.953	0.963	0.972
11.000	0.982	0.993	1.004	1.015	1.028
11.250	1.041	1.054	1.069	1.083	1.099
11.500	1.115	1.133	1.157	1.182	1.209

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
11.750	1.239	1.273	1.314	1.362	1.424
12.000	1.505	1.612	1.750	1.873	1.945
12.250	1.985	2.012	2.031	2.043	2.051
12.500	2.058	2.062	2.061	2.057	2.053
12.750	2.047	2.041	2.035	2.028	2.020
13.000	2.012	2.003	1.994	1.985	1.975
13.250	1.965	1.955	1.945	1.935	1.925
13.500	1.914	1.904	1.893	1.883	1.872
13.750	1.862	1.852	1.842	1.833	1.824
14.000	1.814	1.805	1.796	1.788	1.779
14.250	1.771	1.763	1.754	1.746	1.739
14.500	1.731	1.723	1.716	1.709	1.701
14.750	1.694	1.687	1.680	1.673	1.666
15.000	1.659	1.652	1.646	1.639	1.632
15.250	1.625	1.619	1.612	1.606	1.599
15.500	1.593	1.587	1.581	1.575	1.569
15.750	1.563	1.557	1.551	1.545	1.540
16.000	1.534	1.529	1.523	1.518	1.513
16.250	1.507	1.502	1.497	1.492	1.487
16.500	1.482	1.477	1.472	1.468	1.463
16.750	1.458	1.454	1.449	1.444	1.440
17.000	1.436	1.431	1.427	1.423	1.418
17.250	1.414	1.410	1.406	1.402	1.398
17.500	1.394	1.390	1.387	1.383	1.379
17.750	1.376	1.372	1.368	1.365	1.361
18.000	1.358	1.355	1.351	1.348	1.345
18.250	1.341	1.338	1.335	1.332	1.329
18.500	1.326	1.324	1.321	1.318	1.315
18.750	1.313	1.310	1.307	1.305	1.302
19.000	1.300	1.298	1.295	1.293	1.291
19.250	1.288	1.286	1.284	1.282	1.280
19.500	1.278	1.276	1.274	1.272	1.270
19.750	1.268	1.266	1.265	1.263	1.261
20.000	1.259	1.257	1.256	1.254	1.252
20.250	1.250	1.249	1.247	1.245	1.244
20.500	1.242	1.240	1.239	1.237	1.235
20.750	1.234	1.232	1.231	1.229	1.227
21.000	1.226	1.224	1.223	1.221	1.220
21.250	1.218	1.216	1.215	1.213	1.212
21.500	1.210	1.209	1.207	1.206	1.205
21.750	1.203	1.202	1.200	1.199	1.197
22.000	1.196	1.195	1.193	1.192	1.190
22.250	1.189	1.188	1.186	1.185	1.184
22.500	1.182	1.181	1.180	1.178	1.177
22.750	1.176	1.174	1.173	1.172	1.170
23.000	1.169	1.168	1.167	1.165	1.164
23.250	1.163	1.162	1.160	1.159	1.158

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
23.500	1.157	1.155	1.154	1.153	1.152
23.750	1.151	1.149	1.148	1.147	1.146
24.000	1.145	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.422	0.422	0.422	0.422	0.422
0.250	0.422	0.422	0.422	0.422	0.422
0.500	0.422	0.422	0.422	0.422	0.422
0.750	0.422	0.422	0.422	0.423	0.423
1.000	0.423	0.424	0.424	0.425	0.425
1.250	0.426	0.427	0.427	0.428	0.429
1.500	0.430	0.430	0.431	0.432	0.433
1.750	0.434	0.435	0.436	0.437	0.438
2.000	0.439	0.441	0.442	0.443	0.444
2.250	0.445	0.447	0.448	0.449	0.451
2.500	0.452	0.453	0.455	0.456	0.458
2.750	0.459	0.460	0.462	0.463	0.465
3.000	0.467	0.468	0.470	0.471	0.473
3.250	0.475	0.476	0.478	0.480	0.481
3.500	0.483	0.485	0.487	0.488	0.490
3.750	0.492	0.494	0.496	0.498	0.499
4.000	0.501	0.503	0.505	0.507	0.509
4.250	0.511	0.513	0.515	0.517	0.519
4.500	0.521	0.523	0.525	0.527	0.529
4.750	0.531	0.534	0.536	0.538	0.540
5.000	0.542	0.544	0.546	0.549	0.551
5.250	0.553	0.555	0.558	0.560	0.562
5.500	0.564	0.567	0.569	0.571	0.574
5.750	0.576	0.578	0.581	0.583	0.585
6.000	0.588	0.590	0.593	0.595	0.598
6.250	0.600	0.603	0.605	0.608	0.611
6.500	0.613	0.616	0.619	0.622	0.625
6.750	0.627	0.630	0.633	0.636	0.639
7.000	0.642	0.645	0.649	0.652	0.655
7.250	0.658	0.661	0.665	0.668	0.671
7.500	0.675	0.678	0.682	0.685	0.689
7.750	0.692	0.696	0.699	0.703	0.707
8.000	0.711	0.714	0.718	0.722	0.726
8.250	0.730	0.734	0.738	0.742	0.746
8.500	0.750	0.754	0.758	0.762	0.766
8.750	0.771	0.775	0.779	0.784	0.788
9.000	0.792	0.797	0.801	0.806	0.811
9.250	0.816	0.821	0.826	0.832	0.837
9.500	0.843	0.848	0.854	0.860	0.866
9.750	0.872	0.879	0.885	0.892	0.898
10.000	0.905	0.912	0.918	0.925	0.932
10.250	0.939	0.946	0.953	0.960	0.967
10.500	0.974	0.982	0.989	0.998	1.006
10.750	1.015	1.024	1.034	1.044	1.054
11.000	1.065	1.076	1.088	1.101	1.115
11.250	1.129	1.144	1.160	1.177	1.194
11.500	1.211	1.232	1.258	1.287	1.317

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
11.750	1.350	1.388	1.434	1.488	1.558
12.000	1.650	1.771	1.927	2.065	2.144
12.250	2.185	2.210	2.226	2.233	2.236
12.500	2.238	2.236	2.229	2.219	2.209
12.750	2.199	2.188	2.177	2.166	2.154
13.000	2.143	2.131	2.119	2.108	2.096
13.250	2.084	2.072	2.060	2.047	2.035
13.500	2.023	2.010	1.997	1.985	1.972
13.750	1.960	1.948	1.937	1.925	1.914
14.000	1.903	1.892	1.882	1.872	1.861
14.250	1.851	1.842	1.832	1.822	1.813
14.500	1.804	1.795	1.786	1.777	1.769
14.750	1.760	1.752	1.744	1.736	1.728
15.000	1.720	1.712	1.705	1.697	1.690
15.250	1.683	1.676	1.669	1.662	1.656
15.500	1.649	1.642	1.636	1.629	1.623
15.750	1.617	1.611	1.604	1.598	1.592
16.000	1.587	1.581	1.575	1.569	1.564
16.250	1.558	1.552	1.547	1.542	1.536
16.500	1.531	1.526	1.520	1.515	1.510
16.750	1.505	1.500	1.495	1.491	1.486
17.000	1.481	1.476	1.472	1.467	1.462
17.250	1.458	1.453	1.449	1.444	1.440
17.500	1.436	1.432	1.427	1.423	1.419
17.750	1.415	1.411	1.407	1.403	1.399
18.000	1.395	1.392	1.388	1.384	1.380
18.250	1.377	1.373	1.370	1.367	1.363
18.500	1.360	1.357	1.354	1.351	1.348
18.750	1.345	1.342	1.339	1.336	1.333
19.000	1.330	1.328	1.325	1.323	1.320
19.250	1.318	1.315	1.313	1.310	1.308
19.500	1.306	1.303	1.301	1.299	1.297
19.750	1.295	1.293	1.291	1.289	1.287
20.000	1.285	1.283	1.281	1.279	1.277
20.250	1.276	1.274	1.272	1.270	1.269
20.500	1.267	1.265	1.264	1.262	1.261
20.750	1.259	1.257	1.256	1.254	1.253
21.000	1.251	1.250	1.248	1.247	1.245
21.250	1.244	1.242	1.241	1.239	1.238
21.500	1.236	1.235	1.233	1.232	1.230
21.750	1.229	1.227	1.226	1.225	1.223
22.000	1.222	1.220	1.219	1.217	1.216
22.250	1.215	1.213	1.212	1.211	1.209
22.500	1.208	1.207	1.205	1.204	1.203
22.750	1.201	1.200	1.199	1.197	1.196
23.000	1.195	1.193	1.192	1.191	1.190
23.250	1.188	1.187	1.186	1.184	1.183

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
23.500	1.182	1.181	1.179	1.178	1.177
23.750	1.176	1.175	1.173	1.172	1.171
24.000	1.170	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.422	0.422	0.422	0.422	0.422
0.250	0.422	0.422	0.422	0.422	0.422
0.500	0.422	0.422	0.422	0.422	0.422
0.750	0.422	0.423	0.423	0.424	0.424
1.000	0.425	0.425	0.426	0.427	0.427
1.250	0.428	0.429	0.430	0.431	0.432
1.500	0.433	0.434	0.435	0.436	0.437
1.750	0.439	0.440	0.441	0.443	0.444
2.000	0.445	0.447	0.448	0.450	0.451
2.250	0.453	0.454	0.456	0.457	0.459
2.500	0.461	0.462	0.464	0.466	0.467
2.750	0.469	0.471	0.473	0.475	0.476
3.000	0.478	0.480	0.482	0.484	0.486
3.250	0.488	0.490	0.492	0.494	0.496
3.500	0.498	0.500	0.502	0.504	0.506
3.750	0.509	0.511	0.513	0.515	0.517
4.000	0.520	0.522	0.524	0.526	0.529
4.250	0.531	0.533	0.536	0.538	0.540
4.500	0.543	0.545	0.547	0.550	0.552
4.750	0.555	0.557	0.560	0.562	0.565
5.000	0.567	0.570	0.572	0.575	0.577
5.250	0.580	0.583	0.585	0.588	0.590
5.500	0.593	0.596	0.598	0.601	0.604
5.750	0.606	0.609	0.612	0.615	0.617
6.000	0.620	0.623	0.626	0.629	0.632
6.250	0.635	0.638	0.641	0.644	0.647
6.500	0.650	0.653	0.656	0.660	0.663
6.750	0.666	0.669	0.673	0.676	0.680
7.000	0.683	0.687	0.690	0.694	0.698
7.250	0.701	0.705	0.709	0.713	0.717
7.500	0.721	0.725	0.729	0.733	0.737
7.750	0.741	0.745	0.749	0.753	0.757
8.000	0.762	0.766	0.770	0.775	0.779
8.250	0.784	0.788	0.793	0.797	0.802
8.500	0.807	0.811	0.816	0.821	0.826
8.750	0.831	0.836	0.840	0.845	0.850
9.000	0.856	0.861	0.866	0.871	0.877
9.250	0.883	0.888	0.894	0.900	0.906
9.500	0.912	0.919	0.925	0.931	0.938
9.750	0.944	0.951	0.958	0.964	0.971
10.000	0.978	0.985	0.992	0.999	1.006
10.250	1.013	1.021	1.028	1.035	1.043
10.500	1.050	1.058	1.066	1.075	1.084
10.750	1.094	1.104	1.114	1.125	1.137
11.000	1.148	1.161	1.174	1.188	1.203
11.250	1.219	1.235	1.253	1.271	1.290
11.500	1.310	1.332	1.361	1.392	1.425

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
11.750	1.461	1.504	1.555	1.615	1.694
12.000	1.798	1.934	2.109	2.261	2.343
12.250	2.382	2.402	2.412	2.414	2.411
12.500	2.407	2.399	2.385	2.369	2.352
12.750	2.336	2.319	2.302	2.286	2.270
13.000	2.253	2.237	2.220	2.204	2.188
13.250	2.173	2.158	2.143	2.129	2.115
13.500	2.102	2.088	2.074	2.061	2.047
13.750	2.034	2.021	2.008	1.996	1.983
14.000	1.971	1.960	1.948	1.937	1.926
14.250	1.915	1.904	1.893	1.883	1.873
14.500	1.863	1.853	1.843	1.833	1.824
14.750	1.815	1.805	1.796	1.787	1.779
15.000	1.770	1.761	1.753	1.745	1.737
15.250	1.729	1.721	1.714	1.707	1.699
15.500	1.693	1.686	1.679	1.673	1.666
15.750	1.660	1.654	1.647	1.641	1.635
16.000	1.629	1.623	1.617	1.611	1.605
16.250	1.600	1.594	1.588	1.583	1.577
16.500	1.572	1.566	1.561	1.556	1.550
16.750	1.545	1.540	1.535	1.530	1.525
17.000	1.520	1.515	1.510	1.506	1.501
17.250	1.496	1.491	1.487	1.482	1.478
17.500	1.473	1.469	1.464	1.460	1.455
17.750	1.451	1.447	1.442	1.438	1.434
18.000	1.430	1.426	1.422	1.418	1.414
18.250	1.410	1.406	1.402	1.399	1.395
18.500	1.392	1.388	1.385	1.381	1.378
18.750	1.375	1.372	1.369	1.366	1.363
19.000	1.360	1.357	1.354	1.351	1.348
19.250	1.346	1.343	1.340	1.338	1.335
19.500	1.333	1.330	1.328	1.325	1.323
19.750	1.321	1.319	1.316	1.314	1.312
20.000	1.310	1.308	1.306	1.304	1.302
20.250	1.300	1.298	1.296	1.294	1.292
20.500	1.290	1.289	1.287	1.285	1.283
20.750	1.282	1.280	1.278	1.277	1.275
21.000	1.274	1.272	1.271	1.269	1.268
21.250	1.266	1.265	1.263	1.262	1.261
21.500	1.259	1.258	1.256	1.255	1.254
21.750	1.252	1.251	1.249	1.248	1.247
22.000	1.245	1.244	1.243	1.241	1.240
22.250	1.239	1.237	1.236	1.235	1.233
22.500	1.232	1.231	1.229	1.228	1.227
22.750	1.225	1.224	1.223	1.222	1.220
23.000	1.219	1.218	1.216	1.215	1.214
23.250	1.213	1.211	1.210	1.209	1.208

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: MRC
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
23.500	1.206	1.205	1.204	1.203	1.201
23.750	1.200	1.199	1.198	1.197	1.195
24.000	1.195	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.000	0.000	0.000
2.750	0.000	0.000	0.000	0.000	0.000
3.000	0.000	0.000	0.000	0.000	0.000
3.250	0.000	0.000	0.000	0.000	0.000
3.500	0.000	0.000	0.000	0.000	0.000
3.750	0.000	0.000	0.000	0.000	0.000
4.000	0.000	0.000	0.000	0.000	0.000
4.250	0.000	0.000	0.001	0.001	0.001
4.500	0.001	0.001	0.001	0.001	0.001
4.750	0.001	0.001	0.001	0.001	0.001
5.000	0.001	0.001	0.001	0.001	0.001
5.250	0.001	0.001	0.001	0.001	0.001
5.500	0.001	0.001	0.001	0.001	0.001
5.750	0.001	0.001	0.001	0.001	0.001
6.000	0.001	0.001	0.001	0.001	0.001
6.250	0.001	0.001	0.001	0.001	0.001
6.500	0.001	0.001	0.001	0.001	0.001
6.750	0.001	0.001	0.001	0.001	0.001
7.000	0.001	0.001	0.001	0.001	0.001
7.250	0.001	0.001	0.001	0.001	0.001
7.500	0.001	0.001	0.001	0.001	0.001
7.750	0.001	0.001	0.001	0.001	0.001
8.000	0.001	0.001	0.001	0.001	0.001
8.250	0.001	0.001	0.001	0.001	0.001
8.500	0.001	0.001	0.001	0.001	0.001
8.750	0.001	0.001	0.002	0.002	0.002
9.000	0.002	0.002	0.002	0.002	0.002
9.250	0.002	0.002	0.002	0.002	0.002
9.500	0.002	0.002	0.002	0.002	0.002
9.750	0.002	0.002	0.002	0.002	0.002
10.000	0.002	0.002	0.002	0.002	0.002
10.250	0.003	0.003	0.003	0.003	0.003
10.500	0.003	0.003	0.003	0.003	0.003
10.750	0.003	0.003	0.003	0.004	0.004
11.000	0.004	0.004	0.004	0.005	0.005
11.250	0.005	0.006	0.006	0.007	0.007
11.500	0.008	0.009	0.010	0.011	0.012

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
11.750	0.014	0.016	0.019	0.022	0.028
12.000	0.036	0.046	0.056	0.065	0.067
12.250	0.066	0.064	0.062	0.059	0.057
12.500	0.054	0.051	0.049	0.046	0.043
12.750	0.039	0.036	0.033	0.030	0.028
13.000	0.026	0.023	0.021	0.020	0.018
13.250	0.017	0.015	0.014	0.013	0.012
13.500	0.011	0.010	0.010	0.009	0.008
13.750	0.008	0.007	0.007	0.006	0.006
14.000	0.006	0.005	0.005	0.005	0.004
14.250	0.004	0.004	0.004	0.004	0.004
14.500	0.004	0.003	0.003	0.003	0.003
14.750	0.003	0.003	0.003	0.003	0.003
15.000	0.003	0.003	0.003	0.003	0.002
15.250	0.002	0.002	0.002	0.002	0.002
15.500	0.002	0.002	0.002	0.002	0.002
15.750	0.002	0.002	0.002	0.002	0.002
16.000	0.002	0.002	0.002	0.002	0.002
16.250	0.002	0.002	0.002	0.002	0.002
16.500	0.002	0.002	0.002	0.002	0.002
16.750	0.002	0.002	0.002	0.002	0.002
17.000	0.002	0.002	0.002	0.002	0.002
17.250	0.002	0.002	0.002	0.001	0.001
17.500	0.001	0.001	0.001	0.001	0.001
17.750	0.001	0.001	0.001	0.001	0.001
18.000	0.001	0.001	0.001	0.001	0.001
18.250	0.001	0.001	0.001	0.001	0.001
18.500	0.001	0.001	0.001	0.001	0.001
18.750	0.001	0.001	0.001	0.001	0.001
19.000	0.001	0.001	0.001	0.001	0.001
19.250	0.001	0.001	0.001	0.001	0.001
19.500	0.001	0.001	0.001	0.001	0.001
19.750	0.001	0.001	0.001	0.001	0.001
20.000	0.001	0.001	0.001	0.001	0.001
20.250	0.001	0.001	0.001	0.001	0.001
20.500	0.001	0.001	0.001	0.001	0.001
20.750	0.001	0.001	0.001	0.001	0.001
21.000	0.001	0.001	0.001	0.001	0.001
21.250	0.001	0.001	0.001	0.001	0.001
21.500	0.001	0.001	0.001	0.001	0.001
21.750	0.001	0.001	0.001	0.001	0.001
22.000	0.001	0.001	0.001	0.001	0.001
22.250	0.001	0.001	0.001	0.001	0.001
22.500	0.001	0.001	0.001	0.001	0.001
22.750	0.001	0.001	0.001	0.001	0.001
23.000	0.001	0.001	0.001	0.001	0.001
23.250	0.001	0.001	0.001	0.001	0.001

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
23.500	0.001	0.001	0.001	0.001	0.001
23.750	0.001	0.001	0.001	0.001	0.001
24.000	0.001	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.000	0.000	0.000
2.750	0.000	0.000	0.000	0.000	0.000
3.000	0.000	0.000	0.000	0.000	0.000
3.250	0.000	0.000	0.000	0.000	0.001
3.500	0.001	0.001	0.001	0.001	0.001
3.750	0.001	0.001	0.001	0.001	0.001
4.000	0.001	0.001	0.001	0.001	0.001
4.250	0.001	0.001	0.001	0.001	0.001
4.500	0.001	0.001	0.001	0.001	0.001
4.750	0.001	0.001	0.001	0.001	0.001
5.000	0.001	0.001	0.001	0.001	0.001
5.250	0.001	0.001	0.001	0.001	0.001
5.500	0.001	0.001	0.001	0.001	0.001
5.750	0.001	0.001	0.001	0.001	0.001
6.000	0.001	0.001	0.001	0.001	0.001
6.250	0.001	0.001	0.001	0.001	0.001
6.500	0.001	0.001	0.001	0.001	0.001
6.750	0.001	0.001	0.001	0.001	0.001
7.000	0.001	0.001	0.001	0.001	0.001
7.250	0.001	0.001	0.001	0.001	0.001
7.500	0.001	0.001	0.001	0.001	0.001
7.750	0.001	0.002	0.002	0.002	0.002
8.000	0.002	0.002	0.002	0.002	0.002
8.250	0.002	0.002	0.002	0.002	0.002
8.500	0.002	0.002	0.002	0.002	0.002
8.750	0.002	0.002	0.002	0.002	0.002
9.000	0.002	0.002	0.002	0.002	0.002
9.250	0.002	0.002	0.002	0.002	0.002
9.500	0.002	0.002	0.002	0.002	0.003
9.750	0.003	0.003	0.003	0.003	0.003
10.000	0.003	0.003	0.003	0.003	0.003
10.250	0.003	0.003	0.003	0.003	0.003
10.500	0.003	0.004	0.004	0.004	0.004
10.750	0.004	0.004	0.004	0.005	0.005
11.000	0.005	0.006	0.006	0.006	0.007
11.250	0.007	0.008	0.008	0.009	0.010
11.500	0.010	0.011	0.013	0.014	0.016

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
11.750	0.018	0.021	0.025	0.029	0.036
12.000	0.046	0.055	0.069	0.079	0.082
12.250	0.081	0.079	0.076	0.073	0.069
12.500	0.066	0.063	0.059	0.056	0.053
12.750	0.050	0.047	0.044	0.041	0.038
13.000	0.034	0.031	0.029	0.027	0.024
13.250	0.022	0.021	0.019	0.018	0.016
13.500	0.015	0.014	0.013	0.012	0.011
13.750	0.010	0.010	0.009	0.008	0.008
14.000	0.008	0.007	0.007	0.006	0.006
14.250	0.006	0.005	0.005	0.005	0.005
14.500	0.004	0.004	0.004	0.004	0.004
14.750	0.004	0.004	0.004	0.004	0.003
15.000	0.003	0.003	0.003	0.003	0.003
15.250	0.003	0.003	0.003	0.003	0.003
15.500	0.003	0.003	0.003	0.003	0.003
15.750	0.003	0.002	0.002	0.002	0.002
16.000	0.002	0.002	0.002	0.002	0.002
16.250	0.002	0.002	0.002	0.002	0.002
16.500	0.002	0.002	0.002	0.002	0.002
16.750	0.002	0.002	0.002	0.002	0.002
17.000	0.002	0.002	0.002	0.002	0.002
17.250	0.002	0.002	0.002	0.002	0.002
17.500	0.002	0.002	0.002	0.002	0.002
17.750	0.002	0.002	0.002	0.002	0.002
18.000	0.002	0.002	0.002	0.002	0.002
18.250	0.002	0.002	0.001	0.001	0.001
18.500	0.001	0.001	0.001	0.001	0.001
18.750	0.001	0.001	0.001	0.001	0.001
19.000	0.001	0.001	0.001	0.001	0.001
19.250	0.001	0.001	0.001	0.001	0.001
19.500	0.001	0.001	0.001	0.001	0.001
19.750	0.001	0.001	0.001	0.001	0.001
20.000	0.001	0.001	0.001	0.001	0.001
20.250	0.001	0.001	0.001	0.001	0.001
20.500	0.001	0.001	0.001	0.001	0.001
20.750	0.001	0.001	0.001	0.001	0.001
21.000	0.001	0.001	0.001	0.001	0.001
21.250	0.001	0.001	0.001	0.001	0.001
21.500	0.001	0.001	0.001	0.001	0.001
21.750	0.001	0.001	0.001	0.001	0.001
22.000	0.001	0.001	0.001	0.001	0.001
22.250	0.001	0.001	0.001	0.001	0.001
22.500	0.001	0.001	0.001	0.001	0.001
22.750	0.001	0.001	0.001	0.001	0.001
23.000	0.001	0.001	0.001	0.001	0.001
23.250	0.001	0.001	0.001	0.001	0.001

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
23.500	0.001	0.001	0.001	0.001	0.001
23.750	0.001	0.001	0.001	0.001	0.001
24.000	0.001	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.001	0.001	0.001
2.750	0.001	0.001	0.001	0.001	0.001
3.000	0.001	0.001	0.001	0.001	0.001
3.250	0.001	0.001	0.001	0.001	0.001
3.500	0.001	0.001	0.001	0.001	0.001
3.750	0.001	0.001	0.001	0.001	0.001
4.000	0.001	0.001	0.001	0.001	0.001
4.250	0.001	0.001	0.001	0.001	0.001
4.500	0.001	0.001	0.001	0.001	0.001
4.750	0.001	0.001	0.001	0.001	0.001
5.000	0.001	0.001	0.001	0.001	0.001
5.250	0.001	0.001	0.001	0.001	0.001
5.500	0.001	0.001	0.001	0.001	0.001
5.750	0.001	0.001	0.001	0.001	0.001
6.000	0.001	0.001	0.001	0.001	0.001
6.250	0.001	0.001	0.001	0.001	0.001
6.500	0.001	0.001	0.001	0.002	0.002
6.750	0.002	0.002	0.002	0.002	0.002
7.000	0.002	0.002	0.002	0.002	0.002
7.250	0.002	0.002	0.002	0.002	0.002
7.500	0.002	0.002	0.002	0.002	0.002
7.750	0.002	0.002	0.002	0.002	0.002
8.000	0.002	0.002	0.002	0.002	0.002
8.250	0.002	0.002	0.002	0.002	0.002
8.500	0.002	0.002	0.002	0.002	0.002
8.750	0.002	0.002	0.002	0.003	0.003
9.000	0.003	0.003	0.003	0.003	0.003
9.250	0.003	0.003	0.003	0.003	0.003
9.500	0.003	0.003	0.003	0.003	0.003
9.750	0.003	0.003	0.003	0.004	0.004
10.000	0.004	0.004	0.004	0.004	0.004
10.250	0.004	0.004	0.004	0.004	0.004
10.500	0.005	0.005	0.005	0.005	0.006
10.750	0.006	0.006	0.006	0.007	0.007
11.000	0.008	0.008	0.009	0.009	0.010
11.250	0.010	0.011	0.012	0.013	0.014
11.500	0.015	0.016	0.018	0.020	0.023

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
11.750	0.026	0.030	0.035	0.041	0.048
12.000	0.057	0.071	0.088	0.102	0.106
12.250	0.105	0.103	0.099	0.094	0.090
12.500	0.086	0.082	0.077	0.072	0.068
12.750	0.064	0.060	0.057	0.054	0.051
13.000	0.048	0.045	0.042	0.039	0.035
13.250	0.032	0.030	0.028	0.025	0.023
13.500	0.021	0.020	0.018	0.017	0.016
13.750	0.015	0.014	0.013	0.012	0.011
14.000	0.011	0.010	0.010	0.009	0.009
14.250	0.008	0.008	0.008	0.007	0.007
14.500	0.007	0.006	0.006	0.006	0.006
14.750	0.005	0.005	0.005	0.005	0.005
15.000	0.004	0.004	0.004	0.004	0.004
15.250	0.004	0.004	0.004	0.004	0.003
15.500	0.003	0.003	0.003	0.003	0.003
15.750	0.003	0.003	0.003	0.003	0.003
16.000	0.003	0.003	0.003	0.003	0.003
16.250	0.003	0.003	0.003	0.003	0.003
16.500	0.003	0.003	0.003	0.003	0.003
16.750	0.003	0.003	0.003	0.003	0.003
17.000	0.002	0.002	0.002	0.002	0.002
17.250	0.002	0.002	0.002	0.002	0.002
17.500	0.002	0.002	0.002	0.002	0.002
17.750	0.002	0.002	0.002	0.002	0.002
18.000	0.002	0.002	0.002	0.002	0.002
18.250	0.002	0.002	0.002	0.002	0.002
18.500	0.002	0.002	0.002	0.002	0.002
18.750	0.002	0.002	0.002	0.002	0.002
19.000	0.002	0.002	0.002	0.002	0.002
19.250	0.002	0.002	0.002	0.002	0.002
19.500	0.002	0.002	0.002	0.002	0.002
19.750	0.002	0.002	0.002	0.002	0.002
20.000	0.002	0.002	0.002	0.002	0.002
20.250	0.002	0.002	0.002	0.002	0.002
20.500	0.002	0.002	0.002	0.002	0.002
20.750	0.002	0.002	0.002	0.002	0.002
21.000	0.002	0.002	0.002	0.001	0.001
21.250	0.001	0.001	0.001	0.001	0.001
21.500	0.001	0.001	0.001	0.001	0.001
21.750	0.001	0.001	0.001	0.001	0.001
22.000	0.001	0.001	0.001	0.001	0.001
22.250	0.001	0.001	0.001	0.001	0.001
22.500	0.001	0.001	0.001	0.001	0.001
22.750	0.001	0.001	0.001	0.001	0.001
23.000	0.001	0.001	0.001	0.001	0.001
23.250	0.001	0.001	0.001	0.001	0.001

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
23.500	0.001	0.001	0.001	0.001	0.001
23.750	0.001	0.001	0.001	0.001	0.001
24.000	0.001	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.001	0.001
2.250	0.001	0.001	0.001	0.001	0.001
2.500	0.001	0.001	0.001	0.001	0.001
2.750	0.001	0.001	0.001	0.001	0.001
3.000	0.001	0.001	0.001	0.001	0.001
3.250	0.001	0.001	0.001	0.001	0.001
3.500	0.001	0.001	0.001	0.001	0.001
3.750	0.001	0.001	0.001	0.001	0.001
4.000	0.001	0.001	0.001	0.001	0.001
4.250	0.001	0.001	0.001	0.001	0.001
4.500	0.001	0.001	0.001	0.001	0.001
4.750	0.001	0.001	0.001	0.001	0.001
5.000	0.001	0.001	0.001	0.001	0.001
5.250	0.001	0.001	0.001	0.001	0.002
5.500	0.002	0.002	0.002	0.002	0.002
5.750	0.002	0.002	0.002	0.002	0.002
6.000	0.002	0.002	0.002	0.002	0.002
6.250	0.002	0.002	0.002	0.002	0.002
6.500	0.002	0.002	0.002	0.002	0.002
6.750	0.002	0.002	0.002	0.002	0.002
7.000	0.002	0.002	0.002	0.002	0.002
7.250	0.002	0.002	0.002	0.002	0.002
7.500	0.002	0.002	0.002	0.002	0.002
7.750	0.002	0.002	0.002	0.002	0.003
8.000	0.003	0.003	0.003	0.003	0.003
8.250	0.003	0.003	0.003	0.003	0.003
8.500	0.003	0.003	0.003	0.003	0.003
8.750	0.003	0.003	0.003	0.003	0.003
9.000	0.003	0.003	0.003	0.003	0.003
9.250	0.003	0.003	0.003	0.003	0.003
9.500	0.004	0.004	0.004	0.004	0.004
9.750	0.004	0.004	0.004	0.004	0.004
10.000	0.004	0.005	0.005	0.005	0.005
10.250	0.005	0.005	0.006	0.006	0.006
10.500	0.006	0.006	0.007	0.007	0.007
10.750	0.007	0.008	0.008	0.009	0.009
11.000	0.010	0.010	0.011	0.011	0.012
11.250	0.013	0.014	0.015	0.016	0.017
11.500	0.018	0.020	0.023	0.026	0.029

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
11.750	0.033	0.038	0.044	0.049	0.057
12.000	0.068	0.084	0.106	0.122	0.127
12.250	0.126	0.122	0.118	0.113	0.108
12.500	0.103	0.098	0.092	0.086	0.081
12.750	0.076	0.072	0.068	0.064	0.060
13.000	0.057	0.053	0.050	0.048	0.045
13.250	0.042	0.039	0.036	0.033	0.030
13.500	0.028	0.026	0.024	0.022	0.020
13.750	0.019	0.018	0.016	0.015	0.014
14.000	0.014	0.013	0.012	0.011	0.011
14.250	0.010	0.010	0.010	0.009	0.009
14.500	0.008	0.008	0.008	0.007	0.007
14.750	0.007	0.007	0.006	0.006	0.006
15.000	0.006	0.005	0.005	0.005	0.005
15.250	0.005	0.004	0.004	0.004	0.004
15.500	0.004	0.004	0.004	0.004	0.004
15.750	0.004	0.004	0.004	0.004	0.004
16.000	0.004	0.004	0.003	0.003	0.003
16.250	0.003	0.003	0.003	0.003	0.003
16.500	0.003	0.003	0.003	0.003	0.003
16.750	0.003	0.003	0.003	0.003	0.003
17.000	0.003	0.003	0.003	0.003	0.003
17.250	0.003	0.003	0.003	0.003	0.003
17.500	0.003	0.003	0.003	0.003	0.003
17.750	0.003	0.003	0.002	0.002	0.002
18.000	0.002	0.002	0.002	0.002	0.002
18.250	0.002	0.002	0.002	0.002	0.002
18.500	0.002	0.002	0.002	0.002	0.002
18.750	0.002	0.002	0.002	0.002	0.002
19.000	0.002	0.002	0.002	0.002	0.002
19.250	0.002	0.002	0.002	0.002	0.002
19.500	0.002	0.002	0.002	0.002	0.002
19.750	0.002	0.002	0.002	0.002	0.002
20.000	0.002	0.002	0.002	0.002	0.002
20.250	0.002	0.002	0.002	0.002	0.002
20.500	0.002	0.002	0.002	0.002	0.002
20.750	0.002	0.002	0.002	0.002	0.002
21.000	0.002	0.002	0.002	0.002	0.002
21.250	0.002	0.002	0.002	0.002	0.002
21.500	0.002	0.002	0.002	0.002	0.002
21.750	0.002	0.002	0.002	0.002	0.002
22.000	0.002	0.002	0.002	0.002	0.002
22.250	0.002	0.002	0.002	0.002	0.002
22.500	0.002	0.002	0.002	0.002	0.002
22.750	0.002	0.002	0.002	0.002	0.002
23.000	0.002	0.002	0.002	0.002	0.002
23.250	0.001	0.001	0.001	0.001	0.001

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
23.500	0.001	0.001	0.001	0.001	0.001
23.750	0.001	0.001	0.001	0.001	0.001
24.000	0.001	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.001	0.001	0.001	0.001	0.001
2.000	0.001	0.001	0.001	0.001	0.001
2.250	0.001	0.001	0.001	0.001	0.001
2.500	0.001	0.001	0.001	0.001	0.001
2.750	0.001	0.001	0.001	0.001	0.001
3.000	0.001	0.001	0.001	0.001	0.001
3.250	0.001	0.001	0.001	0.001	0.001
3.500	0.001	0.001	0.001	0.001	0.001
3.750	0.001	0.001	0.001	0.001	0.002
4.000	0.002	0.002	0.002	0.002	0.002
4.250	0.002	0.002	0.002	0.002	0.002
4.500	0.002	0.002	0.002	0.002	0.002
4.750	0.002	0.002	0.002	0.002	0.002
5.000	0.002	0.002	0.002	0.002	0.002
5.250	0.002	0.002	0.002	0.002	0.002
5.500	0.002	0.002	0.002	0.002	0.002
5.750	0.002	0.002	0.002	0.002	0.002
6.000	0.002	0.002	0.002	0.002	0.002
6.250	0.002	0.002	0.002	0.002	0.002
6.500	0.002	0.002	0.002	0.002	0.002
6.750	0.002	0.002	0.002	0.002	0.002
7.000	0.003	0.003	0.003	0.003	0.003
7.250	0.003	0.003	0.003	0.003	0.003
7.500	0.003	0.003	0.003	0.003	0.003
7.750	0.003	0.003	0.003	0.003	0.003
8.000	0.003	0.003	0.003	0.003	0.003
8.250	0.003	0.003	0.003	0.003	0.003
8.500	0.003	0.003	0.003	0.004	0.004
8.750	0.004	0.004	0.004	0.004	0.004
9.000	0.004	0.004	0.004	0.004	0.004
9.250	0.004	0.004	0.004	0.004	0.004
9.500	0.005	0.005	0.005	0.005	0.005
9.750	0.005	0.006	0.006	0.006	0.006
10.000	0.006	0.006	0.007	0.007	0.007
10.250	0.007	0.007	0.008	0.008	0.008
10.500	0.008	0.008	0.009	0.009	0.009
10.750	0.010	0.010	0.011	0.011	0.012
11.000	0.013	0.013	0.014	0.015	0.016
11.250	0.018	0.019	0.020	0.021	0.023
11.500	0.025	0.027	0.031	0.035	0.039

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
11.750	0.044	0.048	0.053	0.060	0.070
12.000	0.084	0.104	0.131	0.150	0.156
12.250	0.154	0.151	0.145	0.139	0.133
12.500	0.127	0.121	0.114	0.107	0.101
12.750	0.095	0.089	0.084	0.079	0.074
13.000	0.070	0.066	0.062	0.059	0.055
13.250	0.052	0.049	0.047	0.044	0.041
13.500	0.038	0.035	0.032	0.030	0.028
13.750	0.026	0.024	0.022	0.021	0.019
14.000	0.018	0.017	0.016	0.016	0.015
14.250	0.014	0.013	0.013	0.012	0.012
14.500	0.011	0.011	0.010	0.010	0.010
14.750	0.009	0.009	0.009	0.008	0.008
15.000	0.008	0.007	0.007	0.007	0.007
15.250	0.006	0.006	0.006	0.006	0.006
15.500	0.006	0.005	0.005	0.005	0.005
15.750	0.005	0.005	0.005	0.005	0.005
16.000	0.004	0.004	0.004	0.004	0.004
16.250	0.004	0.004	0.004	0.004	0.004
16.500	0.004	0.004	0.004	0.004	0.004
16.750	0.004	0.004	0.004	0.004	0.004
17.000	0.004	0.004	0.003	0.003	0.003
17.250	0.003	0.003	0.003	0.003	0.003
17.500	0.003	0.003	0.003	0.003	0.003
17.750	0.003	0.003	0.003	0.003	0.003
18.000	0.003	0.003	0.003	0.003	0.003
18.250	0.003	0.003	0.003	0.003	0.003
18.500	0.003	0.003	0.003	0.003	0.003
18.750	0.003	0.003	0.003	0.003	0.003
19.000	0.003	0.003	0.003	0.003	0.002
19.250	0.002	0.002	0.002	0.002	0.002
19.500	0.002	0.002	0.002	0.002	0.002
19.750	0.002	0.002	0.002	0.002	0.002
20.000	0.002	0.002	0.002	0.002	0.002
20.250	0.002	0.002	0.002	0.002	0.002
20.500	0.002	0.002	0.002	0.002	0.002
20.750	0.002	0.002	0.002	0.002	0.002
21.000	0.002	0.002	0.002	0.002	0.002
21.250	0.002	0.002	0.002	0.002	0.002
21.500	0.002	0.002	0.002	0.002	0.002
21.750	0.002	0.002	0.002	0.002	0.002
22.000	0.002	0.002	0.002	0.002	0.002
22.250	0.002	0.002	0.002	0.002	0.002
22.500	0.002	0.002	0.002	0.002	0.002
22.750	0.002	0.002	0.002	0.002	0.002
23.000	0.002	0.002	0.002	0.002	0.002
23.250	0.002	0.002	0.002	0.002	0.002

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
23.500	0.002	0.002	0.002	0.002	0.002
23.750	0.002	0.002	0.002	0.002	0.002
24.000	0.002	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.001	0.001	0.001	0.001	0.001
1.750	0.001	0.001	0.001	0.001	0.001
2.000	0.001	0.001	0.001	0.001	0.001
2.250	0.001	0.001	0.001	0.001	0.001
2.500	0.001	0.001	0.001	0.001	0.001
2.750	0.001	0.001	0.001	0.001	0.001
3.000	0.001	0.001	0.001	0.002	0.002
3.250	0.002	0.002	0.002	0.002	0.002
3.500	0.002	0.002	0.002	0.002	0.002
3.750	0.002	0.002	0.002	0.002	0.002
4.000	0.002	0.002	0.002	0.002	0.002
4.250	0.002	0.002	0.002	0.002	0.002
4.500	0.002	0.002	0.002	0.002	0.002
4.750	0.002	0.002	0.002	0.002	0.002
5.000	0.002	0.002	0.002	0.002	0.002
5.250	0.002	0.002	0.002	0.002	0.002
5.500	0.002	0.002	0.002	0.002	0.002
5.750	0.002	0.002	0.002	0.002	0.002
6.000	0.002	0.002	0.002	0.002	0.002
6.250	0.003	0.003	0.003	0.003	0.003
6.500	0.003	0.003	0.003	0.003	0.003
6.750	0.003	0.003	0.003	0.003	0.003
7.000	0.003	0.003	0.003	0.003	0.003
7.250	0.003	0.003	0.003	0.003	0.003
7.500	0.003	0.003	0.003	0.003	0.003
7.750	0.003	0.003	0.004	0.004	0.004
8.000	0.004	0.004	0.004	0.004	0.004
8.250	0.004	0.004	0.004	0.004	0.004
8.500	0.004	0.004	0.004	0.004	0.004
8.750	0.004	0.004	0.004	0.004	0.004
9.000	0.004	0.005	0.005	0.005	0.005
9.250	0.005	0.005	0.005	0.005	0.006
9.500	0.006	0.006	0.006	0.006	0.006
9.750	0.007	0.007	0.007	0.007	0.008
10.000	0.008	0.008	0.008	0.008	0.009
10.250	0.009	0.009	0.009	0.009	0.010
10.500	0.010	0.010	0.011	0.011	0.011
10.750	0.012	0.013	0.013	0.014	0.015
11.000	0.016	0.017	0.018	0.019	0.020
11.250	0.021	0.023	0.025	0.027	0.028
11.500	0.030	0.033	0.038	0.042	0.046

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
11.750	0.050	0.055	0.061	0.069	0.081
12.000	0.098	0.121	0.152	0.173	0.179
12.250	0.177	0.173	0.168	0.161	0.154
12.500	0.147	0.140	0.132	0.125	0.117
12.750	0.110	0.104	0.098	0.092	0.087
13.000	0.082	0.077	0.072	0.068	0.064
13.250	0.061	0.057	0.054	0.051	0.049
13.500	0.046	0.044	0.040	0.037	0.034
13.750	0.032	0.030	0.028	0.026	0.024
14.000	0.023	0.021	0.020	0.019	0.018
14.250	0.017	0.017	0.016	0.015	0.014
14.500	0.014	0.013	0.013	0.012	0.012
14.750	0.011	0.011	0.010	0.010	0.010
15.000	0.009	0.009	0.009	0.008	0.008
15.250	0.008	0.008	0.007	0.007	0.007
15.500	0.007	0.007	0.007	0.006	0.006
15.750	0.006	0.006	0.006	0.006	0.006
16.000	0.006	0.006	0.005	0.005	0.005
16.250	0.005	0.005	0.005	0.005	0.005
16.500	0.005	0.005	0.005	0.005	0.004
16.750	0.004	0.004	0.004	0.004	0.004
17.000	0.004	0.004	0.004	0.004	0.004
17.250	0.004	0.004	0.004	0.004	0.004
17.500	0.004	0.004	0.004	0.004	0.004
17.750	0.004	0.004	0.003	0.003	0.003
18.000	0.003	0.003	0.003	0.003	0.003
18.250	0.003	0.003	0.003	0.003	0.003
18.500	0.003	0.003	0.003	0.003	0.003
18.750	0.003	0.003	0.003	0.003	0.003
19.000	0.003	0.003	0.003	0.003	0.003
19.250	0.003	0.003	0.003	0.003	0.003
19.500	0.003	0.003	0.003	0.003	0.003
19.750	0.003	0.003	0.003	0.003	0.003
20.000	0.003	0.003	0.003	0.003	0.003
20.250	0.003	0.003	0.003	0.003	0.003
20.500	0.003	0.003	0.003	0.003	0.003
20.750	0.003	0.003	0.003	0.003	0.003
21.000	0.003	0.003	0.003	0.002	0.002
21.250	0.002	0.002	0.002	0.002	0.002
21.500	0.002	0.002	0.002	0.002	0.002
21.750	0.002	0.002	0.002	0.002	0.002
22.000	0.002	0.002	0.002	0.002	0.002
22.250	0.002	0.002	0.002	0.002	0.002
22.500	0.002	0.002	0.002	0.002	0.002
22.750	0.002	0.002	0.002	0.002	0.002
23.000	0.002	0.002	0.002	0.002	0.002
23.250	0.002	0.002	0.002	0.002	0.002

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
23.500	0.002	0.002	0.002	0.002	0.002
23.750	0.002	0.002	0.002	0.002	0.002
24.000	0.002	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.001	0.001	0.001	0.001
1.500	0.001	0.001	0.001	0.001	0.001
1.750	0.001	0.001	0.001	0.001	0.001
2.000	0.001	0.001	0.001	0.001	0.001
2.250	0.001	0.001	0.001	0.001	0.001
2.500	0.001	0.001	0.002	0.002	0.002
2.750	0.002	0.002	0.002	0.002	0.002
3.000	0.002	0.002	0.002	0.002	0.002
3.250	0.002	0.002	0.002	0.002	0.002
3.500	0.002	0.002	0.002	0.002	0.002
3.750	0.002	0.002	0.002	0.002	0.002
4.000	0.002	0.002	0.002	0.002	0.002
4.250	0.002	0.002	0.002	0.002	0.002
4.500	0.002	0.002	0.002	0.002	0.002
4.750	0.002	0.002	0.002	0.002	0.003
5.000	0.003	0.003	0.003	0.003	0.003
5.250	0.003	0.003	0.003	0.003	0.003
5.500	0.003	0.003	0.003	0.003	0.003
5.750	0.003	0.003	0.003	0.003	0.003
6.000	0.003	0.003	0.003	0.003	0.003
6.250	0.003	0.003	0.003	0.003	0.003
6.500	0.003	0.003	0.003	0.003	0.003
6.750	0.003	0.003	0.003	0.003	0.003
7.000	0.003	0.003	0.003	0.003	0.004
7.250	0.004	0.004	0.004	0.004	0.004
7.500	0.004	0.004	0.004	0.004	0.004
7.750	0.004	0.004	0.004	0.004	0.004
8.000	0.004	0.004	0.004	0.004	0.004
8.250	0.005	0.005	0.005	0.005	0.005
8.500	0.005	0.005	0.005	0.005	0.005
8.750	0.005	0.005	0.005	0.005	0.006
9.000	0.006	0.006	0.006	0.006	0.006
9.250	0.006	0.006	0.007	0.007	0.007
9.500	0.007	0.007	0.007	0.008	0.008
9.750	0.008	0.008	0.009	0.009	0.009
10.000	0.009	0.010	0.010	0.010	0.010
10.250	0.011	0.011	0.011	0.011	0.012
10.500	0.012	0.012	0.013	0.013	0.014
10.750	0.015	0.015	0.016	0.017	0.018
11.000	0.019	0.020	0.021	0.023	0.024
11.250	0.026	0.028	0.030	0.032	0.035
11.500	0.037	0.040	0.045	0.049	0.053

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
11.750	0.057	0.063	0.071	0.080	0.094
12.000	0.114	0.140	0.173	0.200	0.203
12.250	0.196	0.188	0.179	0.172	0.166
12.500	0.159	0.152	0.144	0.136	0.129
12.750	0.121	0.115	0.108	0.102	0.096
13.000	0.091	0.086	0.081	0.076	0.072
13.250	0.068	0.064	0.061	0.057	0.054
13.500	0.052	0.049	0.046	0.044	0.041
13.750	0.038	0.036	0.033	0.031	0.029
14.000	0.027	0.026	0.024	0.023	0.022
14.250	0.021	0.020	0.019	0.018	0.017
14.500	0.017	0.016	0.015	0.015	0.014
14.750	0.014	0.013	0.013	0.012	0.012
15.000	0.011	0.011	0.010	0.010	0.010
15.250	0.009	0.009	0.009	0.009	0.009
15.500	0.008	0.008	0.008	0.008	0.008
15.750	0.008	0.007	0.007	0.007	0.007
16.000	0.007	0.007	0.007	0.007	0.006
16.250	0.006	0.006	0.006	0.006	0.006
16.500	0.006	0.006	0.006	0.006	0.006
16.750	0.006	0.005	0.005	0.005	0.005
17.000	0.005	0.005	0.005	0.005	0.005
17.250	0.005	0.005	0.005	0.004	0.004
17.500	0.004	0.004	0.004	0.004	0.004
17.750	0.004	0.004	0.004	0.004	0.004
18.000	0.004	0.004	0.004	0.004	0.004
18.250	0.004	0.004	0.004	0.004	0.004
18.500	0.004	0.003	0.003	0.003	0.003
18.750	0.003	0.003	0.003	0.003	0.003
19.000	0.003	0.003	0.003	0.003	0.003
19.250	0.003	0.003	0.003	0.003	0.003
19.500	0.003	0.003	0.003	0.003	0.003
19.750	0.003	0.003	0.003	0.003	0.003
20.000	0.003	0.003	0.003	0.003	0.003
20.250	0.003	0.003	0.003	0.003	0.003
20.500	0.003	0.003	0.003	0.003	0.003
20.750	0.003	0.003	0.003	0.003	0.003
21.000	0.003	0.003	0.003	0.003	0.003
21.250	0.003	0.003	0.003	0.003	0.003
21.500	0.003	0.003	0.003	0.003	0.003
21.750	0.003	0.003	0.003	0.003	0.003
22.000	0.003	0.003	0.003	0.003	0.003
22.250	0.003	0.003	0.003	0.003	0.003
22.500	0.003	0.003	0.003	0.003	0.003
22.750	0.003	0.003	0.002	0.002	0.002
23.000	0.002	0.002	0.002	0.002	0.002
23.250	0.002	0.002	0.002	0.002	0.002

Post-Development Analysis Results (with BMPs)

Subsection: Time vs. Volume
Label: PO-2
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
23.500	0.002	0.002	0.002	0.002	0.002
23.750	0.002	0.002	0.002	0.002	0.002
24.000	0.002	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Elevation vs. Volume Curve
Label: MRC
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Elevation-Volume

Pond Elevation (ft)	Pond Volume (ac-ft)
48.80	0.000
48.90	0.084
49.00	0.169
49.10	0.253
49.20	0.337
49.30	0.422
49.40	0.506
49.50	0.590
49.60	0.675
49.70	0.759
49.80	0.843
49.90	0.928
50.00	1.012
50.10	1.096
50.20	1.181
50.30	1.265
50.40	1.349
50.50	1.434
50.60	1.518
50.70	1.603
50.80	1.687
50.90	1.771
51.00	1.856
51.10	1.940
51.20	2.024
51.30	2.109
51.40	2.193
51.50	2.277
51.60	2.362
51.70	2.446
51.80	2.530

Post-Development Analysis Results (with BMPs)

Subsection: Pipe Volume
Label: PO-2
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Volume Results (Pipe)	
Pipe Storage Upstream Invert	47.50 ft
Pipe Storage Downstream Invert	47.50 ft
Pipe Storage Length	220.00 ft
Pipe Storage Diameter	24.0 in
Pipe Storage Number of Barrels	14
Pipe Storage Slice Width	0.10 ft
Pipe Storage Vertical Increment	0.10 ft

Elevation (ft)	Perpendicular Downstream Depth (ft)	Perpendicular Downstream Area (ft²)	Wetted Length (ft)	Filled Length (ft)	Perpendicular Upstream Depth (ft)	Perpendicular Upstream Area (ft²)	Total Volume (ac-ft)
47.50	0.00	0.0	220.00	0.00	0.00	0.0	0.000
47.60	0.10	0.1	220.00	0.00	0.10	0.1	0.004
47.70	0.20	0.2	220.00	0.00	0.20	0.2	0.012
47.80	0.30	0.3	220.00	0.00	0.30	0.3	0.021
47.90	0.40	0.4	220.00	0.00	0.40	0.4	0.032
48.00	0.50	0.6	220.00	0.00	0.50	0.6	0.043
48.10	0.60	0.8	220.00	0.00	0.60	0.8	0.056
48.20	0.70	1.0	220.00	0.00	0.70	1.0	0.069
48.30	0.80	1.2	220.00	0.00	0.80	1.2	0.083
48.40	0.90	1.4	220.00	0.00	0.90	1.4	0.097
48.50	1.00	1.6	220.00	0.00	1.00	1.6	0.111
48.60	1.10	1.8	220.00	0.00	1.10	1.8	0.125
48.70	1.20	2.0	220.00	0.00	1.20	2.0	0.139
48.80	1.30	2.2	220.00	0.00	1.30	2.2	0.153
48.90	1.40	2.3	220.00	0.00	1.40	2.3	0.166
49.00	1.50	2.5	220.00	0.00	1.50	2.5	0.179
49.10	1.60	2.7	220.00	0.00	1.60	2.7	0.190
49.20	1.70	2.8	220.00	0.00	1.70	2.8	0.201
49.30	1.80	3.0	220.00	0.00	1.80	3.0	0.211
49.40	1.90	3.1	220.00	0.00	1.90	3.1	0.218
49.50	2.00	3.1	220.00	220.00	2.00	3.1	0.222

Post-Development Analysis Results (with BMPs)

Subsection: Outlet Input Data
Label: MRC
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Requested Pond Water Surface Elevations	
Minimum (Headwater)	48.80 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	51.80 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward	TW	49.85	51.80
Vnotch Weir	Weir - 1	Forward	TW	50.50	51.80
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	2
Elevation	49.85 ft
Orifice Diameter	8.0 in
Orifice Coefficient	0.600

Structure ID: Weir - 1 Structure Type: Vnotch Weir	
Number of Openings	1
Elevation	50.50 ft
V-Notch Angle	120.00 degrees
Coefficient of Discharge	0.576

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft^3/s
Flow Tolerance (Maximum)	10.000 ft^3/s

Post-Development Analysis Results (with BMPs)

Subsection: Individual Outlet Curves
Label: MRC
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice - 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
48.80	0.00	(N/A)	0.00	HW & TW below invert
49.30	0.00	(N/A)	0.00	HW & TW below invert
49.80	0.00	(N/A)	0.00	HW & TW below invert
49.85	0.00	(N/A)	0.00	Upstream HW & DNstream TW < Inv.El
50.30	0.95	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .126ft Dcr= .323ft CRIT.DEPTH Hev= .00ft
50.50	1.80	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .200ft Dcr= .449ft CRIT.DEPTH Hev= .00ft
50.80	2.64	(N/A)	0.00	H =.62
51.30	3.55	(N/A)	0.00	H =1.12
51.80	4.27	(N/A)	0.00	H =1.62

Post-Development Analysis Results (with BMPs)

Subsection: Individual Outlet Curves
Label: MRC
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Vnotch Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
48.80	0.00	(N/A)	0.00	HW & TW below Inv.El.=50.500
49.30	0.00	(N/A)	0.00	HW & TW below Inv.El.=50.500
49.80	0.00	(N/A)	0.00	HW & TW below Inv.El.=50.500
49.85	0.00	(N/A)	0.00	HW & TW below Inv.El.=50.500
50.30	0.00	(N/A)	0.00	HW & TW below Inv.El.=50.500
50.50	0.00	(N/A)	0.00	H=.00; Htw=.00; Qfree=.00;
50.80	0.21	(N/A)	0.00	H=.30; Htw=.00; Qfree=.21;
51.30	2.44	(N/A)	0.00	H=.80; Htw=.00; Qfree=2.44;
51.80	8.22	(N/A)	0.00	H=1.30; Htw=.00; Qfree=8.22;

Post-Development Analysis Results (with BMPs)

Subsection: Composite Rating Curve
Label: MRC
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
48.80	0.00	(N/A)	0.00	None Contributing
49.30	0.00	(N/A)	0.00	None Contributing
49.80	0.00	(N/A)	0.00	None Contributing
49.85	0.00	(N/A)	0.00	None Contributing
50.30	0.95	(N/A)	0.00	Orifice - 1
50.50	1.80	(N/A)	0.00	Orifice - 1 + Weir - 1
50.80	2.85	(N/A)	0.00	Orifice - 1 + Weir - 1
51.30	5.99	(N/A)	0.00	Orifice - 1 + Weir - 1
51.80	12.50	(N/A)	0.00	Orifice - 1 + Weir - 1

Post-Development Analysis Results (with BMPs)

Subsection: Outlet Input Data
Label: PO-2
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Requested Pond Water Surface Elevations	
Minimum (Headwater)	47.50 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	49.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward	TW	47.50	49.50
Vnotch Weir	Weir - 1	Forward	TW	48.50	49.50
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	2
Elevation	47.50 ft
Orifice Diameter	8.0 in
Orifice Coefficient	0.600

Structure ID: Weir - 1 Structure Type: Vnotch Weir	
Number of Openings	1
Elevation	48.50 ft
V-Notch Angle	120.00 degrees
Coefficient of Discharge	0.576

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft^3/s
Flow Tolerance (Maximum)	10.000 ft^3/s

Post-Development Analysis Results (with BMPs)

Subsection: Individual Outlet Curves
Label: PO-2
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice - 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
47.50	0.00	(N/A)	0.00	Upstream HW & DNstream TW < Inv.El
48.00	1.15	(N/A)	0.00	CRIT.DEPTH CONTROL Vh= .143ft Dcr= .357ft CRIT.DEPTH Hev= .00ft
48.50	2.74	(N/A)	0.00	H =.67
49.00	3.63	(N/A)	0.00	H =1.17
49.50	4.34	(N/A)	0.00	H =1.67

Post-Development Analysis Results (with BMPs)

Subsection: Individual Outlet Curves
Label: PO-2
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Weir - 1 (Vnotch Weir)

Upstream ID = (Pond Water Surface)
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Computation Messages
47.50	0.00	(N/A)	0.00	HW & TW below Inv.El.=48.500
48.00	0.00	(N/A)	0.00	HW & TW below Inv.El.=48.500
48.50	0.00	(N/A)	0.00	H=.00; Htw=.00; Qfree=.00;
49.00	0.75	(N/A)	0.00	H=.50; Htw=.00; Qfree=.75;
49.50	4.27	(N/A)	0.00	H=1.00; Htw=.00; Qfree=4.27;

Post-Development Analysis Results (with BMPs)

Subsection: Composite Rating Curve
Label: PO-2
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
47.50	0.00	(N/A)	0.00	None Contributing
48.00	1.15	(N/A)	0.00	Orifice - 1
48.50	2.74	(N/A)	0.00	Orifice - 1 + Weir - 1
49.00	4.38	(N/A)	0.00	Orifice - 1 + Weir - 1
49.50	8.61	(N/A)	0.00	Orifice - 1 + Weir - 1

Post-Development Analysis Results (with BMPs)

Subsection: Elevation-Volume-Flow Table (Pond)
Label: MRC
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	49.30 ft
Volume (Initial)	0.422 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
48.80	0.00	0.000	0.000	0.00	0.00	0.00
49.30	0.00	0.422	0.000	0.00	0.00	204.11
49.80	0.00	0.843	0.000	0.00	0.00	408.22
49.85	0.00	0.886	0.000	0.00	0.00	428.63
50.30	0.95	1.265	0.000	0.00	0.95	613.29
50.50	1.80	1.434	0.000	0.00	1.80	695.77
50.80	2.85	1.687	0.000	0.00	2.85	819.29
51.30	5.99	2.109	0.000	0.00	5.99	1,026.55
51.80	12.50	2.530	0.000	0.00	12.50	1,237.16

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: MRC (OUT)
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Peak Discharge	0.98 ft³/s
Time to Peak	13.450 hours
Hydrograph Volume	0.635 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.950	0.00	0.05	0.18	0.35	0.50
12.200	0.60	0.66	0.71	0.75	0.78
12.450	0.81	0.83	0.85	0.87	0.88
12.700	0.90	0.91	0.92	0.92	0.93
12.950	0.94	0.95	0.95	0.95	0.96
13.200	0.97	0.97	0.97	0.98	0.98
13.450	0.98	0.98	0.97	0.97	0.97
13.700	0.97	0.96	0.96	0.95	0.95
13.950	0.95	0.95	0.95	0.94	0.94
14.200	0.94	0.94	0.93	0.93	0.93
14.450	0.92	0.92	0.92	0.91	0.91
14.700	0.91	0.90	0.90	0.90	0.89
14.950	0.89	0.88	0.88	0.87	0.87
15.200	0.87	0.86	0.86	0.85	0.85
15.450	0.84	0.84	0.84	0.83	0.83
15.700	0.82	0.82	0.82	0.81	0.81
15.950	0.80	0.80	0.79	0.79	0.79
16.200	0.78	0.78	0.77	0.77	0.77
16.450	0.76	0.76	0.75	0.75	0.75
16.700	0.74	0.74	0.73	0.73	0.73
16.950	0.72	0.72	0.71	0.71	0.71
17.200	0.70	0.70	0.69	0.69	0.69
17.450	0.68	0.68	0.67	0.67	0.67
17.700	0.66	0.66	0.65	0.65	0.65
17.950	0.64	0.64	0.64	0.63	0.63
18.200	0.62	0.62	0.62	0.61	0.61
18.450	0.61	0.60	0.60	0.60	0.59
18.700	0.59	0.58	0.58	0.58	0.57
18.950	0.57	0.57	0.56	0.56	0.56
19.200	0.55	0.55	0.55	0.55	0.54
19.450	0.54	0.54	0.53	0.53	0.53
19.700	0.52	0.52	0.52	0.52	0.51
19.950	0.51	0.51	0.50	0.50	0.50
20.200	0.50	0.49	0.49	0.49	0.48
20.450	0.48	0.48	0.48	0.47	0.47
20.700	0.47	0.47	0.46	0.46	0.46
20.950	0.46	0.45	0.45	0.45	0.45
21.200	0.44	0.44	0.44	0.44	0.43
21.450	0.43	0.43	0.43	0.43	0.42
21.700	0.42	0.42	0.42	0.41	0.41
21.950	0.41	0.41	0.41	0.40	0.40
22.200	0.40	0.40	0.39	0.39	0.39
22.450	0.39	0.39	0.38	0.38	0.38

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: MRC (OUT)
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.700	0.38	0.38	0.37	0.37	0.37
22.950	0.37	0.37	0.37	0.36	0.36
23.200	0.36	0.36	0.36	0.35	0.35
23.450	0.35	0.35	0.35	0.35	0.34
23.700	0.34	0.34	0.34	0.34	0.33
23.950	0.33	0.33	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: MRC (OUT)
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Peak Discharge	1.69 ft³/s
Time to Peak	13.050 hours
Hydrograph Volume	0.881 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.800	0.00	0.05	0.12	0.21	0.33
12.050	0.49	0.69	0.87	1.02	1.17
12.300	1.27	1.36	1.42	1.48	1.53
12.550	1.58	1.60	1.62	1.64	1.66
12.800	1.67	1.68	1.68	1.69	1.69
13.050	1.69	1.69	1.69	1.68	1.68
13.300	1.67	1.67	1.66	1.65	1.64
13.550	1.63	1.61	1.60	1.59	1.58
13.800	1.56	1.55	1.54	1.52	1.51
14.050	1.50	1.49	1.47	1.46	1.45
14.300	1.43	1.42	1.41	1.39	1.38
14.550	1.37	1.35	1.34	1.33	1.31
14.800	1.30	1.29	1.27	1.26	1.24
15.050	1.23	1.22	1.20	1.19	1.18
15.300	1.16	1.15	1.14	1.13	1.11
15.550	1.10	1.09	1.08	1.07	1.06
15.800	1.04	1.03	1.02	1.01	1.00
16.050	0.99	0.98	0.97	0.96	0.95
16.300	0.95	0.94	0.94	0.93	0.93
16.550	0.92	0.92	0.91	0.91	0.90
16.800	0.90	0.89	0.89	0.88	0.88
17.050	0.87	0.87	0.86	0.86	0.85
17.300	0.85	0.84	0.84	0.83	0.83
17.550	0.82	0.82	0.81	0.81	0.80
17.800	0.80	0.80	0.79	0.79	0.78
18.050	0.78	0.77	0.77	0.76	0.76
18.300	0.75	0.75	0.74	0.74	0.74
18.550	0.73	0.73	0.72	0.72	0.71
18.800	0.71	0.71	0.70	0.70	0.69
19.050	0.69	0.68	0.68	0.68	0.67
19.300	0.67	0.67	0.66	0.66	0.65
19.550	0.65	0.65	0.64	0.64	0.64
19.800	0.63	0.63	0.62	0.62	0.62
20.050	0.61	0.61	0.61	0.60	0.60
20.300	0.60	0.59	0.59	0.59	0.58
20.550	0.58	0.58	0.57	0.57	0.57
20.800	0.56	0.56	0.56	0.56	0.55
21.050	0.55	0.55	0.54	0.54	0.54
21.300	0.53	0.53	0.53	0.53	0.52
21.550	0.52	0.52	0.52	0.51	0.51
21.800	0.51	0.50	0.50	0.50	0.50
22.050	0.49	0.49	0.49	0.49	0.48
22.300	0.48	0.48	0.48	0.47	0.47

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: MRC (OUT)
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.550	0.47	0.47	0.46	0.46	0.46
22.800	0.46	0.45	0.45	0.45	0.45
23.050	0.44	0.44	0.44	0.44	0.44
23.300	0.43	0.43	0.43	0.43	0.42
23.550	0.42	0.42	0.42	0.42	0.41
23.800	0.41	0.41	0.41	0.41	0.40

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: MRC (OUT)
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Peak Discharge	2.66 ft³/s
Time to Peak	12.850 hours
Hydrograph Volume	1.266 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.400	0.00	0.00	0.03	0.07	0.11
11.650	0.16	0.21	0.27	0.33	0.41
11.900	0.50	0.61	0.76	0.96	1.45
12.150	1.88	2.11	2.25	2.35	2.43
12.400	2.49	2.53	2.58	2.61	2.63
12.650	2.64	2.65	2.66	2.66	2.66
12.900	2.66	2.66	2.65	2.64	2.63
13.150	2.62	2.61	2.59	2.58	2.56
13.400	2.55	2.53	2.51	2.49	2.47
13.650	2.45	2.43	2.41	2.39	2.37
13.900	2.35	2.33	2.31	2.29	2.27
14.150	2.25	2.23	2.20	2.18	2.16
14.400	2.14	2.12	2.10	2.08	2.06
14.650	2.04	2.02	2.00	1.98	1.96
14.900	1.94	1.92	1.90	1.88	1.86
15.150	1.84	1.82	1.80	1.78	1.76
15.400	1.74	1.72	1.70	1.67	1.65
15.650	1.63	1.61	1.59	1.57	1.55
15.900	1.54	1.52	1.50	1.48	1.46
16.150	1.44	1.43	1.41	1.39	1.38
16.400	1.36	1.34	1.33	1.31	1.30
16.650	1.28	1.27	1.25	1.24	1.22
16.900	1.21	1.20	1.18	1.17	1.15
17.150	1.14	1.13	1.11	1.10	1.09
17.400	1.08	1.06	1.05	1.04	1.03
17.650	1.02	1.01	0.99	0.98	0.97
17.900	0.96	0.95	0.95	0.94	0.94
18.150	0.93	0.92	0.92	0.91	0.91
18.400	0.90	0.90	0.89	0.89	0.88
18.650	0.88	0.87	0.87	0.86	0.86
18.900	0.85	0.85	0.84	0.84	0.83
19.150	0.83	0.82	0.82	0.81	0.81
19.400	0.81	0.80	0.80	0.79	0.79
19.650	0.78	0.78	0.77	0.77	0.77
19.900	0.76	0.76	0.75	0.75	0.75
20.150	0.74	0.74	0.73	0.73	0.73
20.400	0.72	0.72	0.71	0.71	0.71
20.650	0.70	0.70	0.70	0.69	0.69
20.900	0.68	0.68	0.68	0.67	0.67
21.150	0.67	0.66	0.66	0.66	0.65
21.400	0.65	0.65	0.64	0.64	0.64
21.650	0.63	0.63	0.63	0.62	0.62
21.900	0.62	0.61	0.61	0.61	0.60

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: MRC (OUT)
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.150	0.60	0.60	0.59	0.59	0.59
22.400	0.59	0.58	0.58	0.58	0.57
22.650	0.57	0.57	0.56	0.56	0.56
22.900	0.56	0.55	0.55	0.55	0.55
23.150	0.54	0.54	0.54	0.53	0.53
23.400	0.53	0.53	0.52	0.52	0.52
23.650	0.52	0.51	0.51	0.51	0.51
23.900	0.50	0.50	0.50	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: MRC (OUT)
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Peak Discharge	3.84 ft³/s
Time to Peak	12.650 hours
Hydrograph Volume	1.592 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.050	0.00	0.02	0.04	0.07	0.10
11.300	0.13	0.16	0.20	0.23	0.26
11.550	0.31	0.36	0.41	0.47	0.53
11.800	0.60	0.69	0.79	0.93	1.24
12.050	1.69	2.18	2.62	2.90	3.18
12.300	3.37	3.51	3.62	3.70	3.77
12.550	3.82	3.83	3.84	3.83	3.82
12.800	3.81	3.79	3.77	3.74	3.71
13.050	3.67	3.64	3.59	3.55	3.51
13.300	3.46	3.42	3.37	3.32	3.27
13.550	3.22	3.17	3.12	3.07	3.02
13.800	2.97	2.92	2.88	2.84	2.81
14.050	2.79	2.76	2.74	2.71	2.68
14.300	2.66	2.63	2.61	2.58	2.56
14.550	2.53	2.51	2.48	2.46	2.43
14.800	2.41	2.38	2.36	2.33	2.31
15.050	2.28	2.26	2.23	2.21	2.19
15.300	2.16	2.14	2.12	2.09	2.07
15.550	2.05	2.03	2.01	1.98	1.96
15.800	1.94	1.92	1.90	1.88	1.86
16.050	1.84	1.82	1.80	1.78	1.76
16.300	1.74	1.72	1.70	1.68	1.66
16.550	1.64	1.62	1.60	1.58	1.56
16.800	1.54	1.52	1.50	1.48	1.46
17.050	1.45	1.43	1.41	1.40	1.38
17.300	1.36	1.35	1.33	1.31	1.30
17.550	1.28	1.27	1.25	1.24	1.22
17.800	1.21	1.20	1.18	1.17	1.15
18.050	1.14	1.13	1.11	1.10	1.09
18.300	1.07	1.06	1.05	1.04	1.03
18.550	1.01	1.00	0.99	0.98	0.97
18.800	0.96	0.95	0.95	0.94	0.94
19.050	0.93	0.93	0.92	0.92	0.91
19.300	0.91	0.90	0.90	0.89	0.89
19.550	0.88	0.88	0.87	0.87	0.86
19.800	0.86	0.86	0.85	0.85	0.84
20.050	0.84	0.83	0.83	0.83	0.82
20.300	0.82	0.81	0.81	0.80	0.80
20.550	0.80	0.79	0.79	0.78	0.78
20.800	0.78	0.77	0.77	0.76	0.76
21.050	0.76	0.75	0.75	0.75	0.74
21.300	0.74	0.73	0.73	0.73	0.72
21.550	0.72	0.72	0.71	0.71	0.71

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: MRC (OUT)
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.800	0.70	0.70	0.69	0.69	0.69
22.050	0.68	0.68	0.68	0.67	0.67
22.300	0.67	0.66	0.66	0.66	0.66
22.550	0.65	0.65	0.65	0.64	0.64
22.800	0.64	0.63	0.63	0.63	0.62
23.050	0.62	0.62	0.61	0.61	0.61
23.300	0.61	0.60	0.60	0.60	0.59
23.550	0.59	0.59	0.59	0.58	0.58
23.800	0.58	0.57	0.57	0.57	0.57

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: MRC (OUT)
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Peak Discharge	5.65 ft³/s
Time to Peak	12.550 hours
Hydrograph Volume	2.071 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.400	0.00	0.01	0.03	0.05	0.07
10.650	0.08	0.10	0.13	0.15	0.17
10.900	0.19	0.22	0.24	0.27	0.30
11.150	0.33	0.36	0.39	0.42	0.46
11.400	0.50	0.54	0.58	0.62	0.68
11.650	0.75	0.81	0.89	1.00	1.20
11.900	1.44	1.75	2.09	2.54	3.32
12.150	4.24	4.77	5.07	5.27	5.41
12.400	5.50	5.57	5.62	5.65	5.64
12.650	5.61	5.58	5.54	5.49	5.44
12.900	5.39	5.33	5.27	5.21	5.14
13.150	5.07	5.00	4.92	4.85	4.77
13.400	4.70	4.62	4.54	4.47	4.39
13.650	4.31	4.23	4.16	4.08	4.01
13.900	3.94	3.87	3.80	3.73	3.67
14.150	3.60	3.54	3.47	3.41	3.35
14.400	3.29	3.23	3.18	3.12	3.07
14.650	3.01	2.96	2.90	2.85	2.82
14.900	2.79	2.76	2.73	2.71	2.68
15.150	2.65	2.62	2.59	2.57	2.54
15.400	2.51	2.48	2.46	2.43	2.41
15.650	2.38	2.36	2.33	2.31	2.28
15.900	2.26	2.24	2.21	2.19	2.17
16.150	2.15	2.12	2.10	2.08	2.06
16.400	2.04	2.02	2.00	1.98	1.96
16.650	1.94	1.92	1.90	1.88	1.86
16.900	1.84	1.82	1.80	1.78	1.76
17.150	1.74	1.72	1.70	1.68	1.66
17.400	1.64	1.62	1.60	1.58	1.56
17.650	1.54	1.52	1.51	1.49	1.47
17.900	1.45	1.43	1.42	1.40	1.38
18.150	1.37	1.35	1.34	1.32	1.30
18.400	1.29	1.27	1.26	1.25	1.23
18.650	1.22	1.20	1.19	1.18	1.17
18.900	1.15	1.14	1.13	1.12	1.11
19.150	1.09	1.08	1.07	1.06	1.05
19.400	1.04	1.03	1.02	1.01	1.00
19.650	0.99	0.98	0.97	0.96	0.95
19.900	0.95	0.94	0.94	0.94	0.93
20.150	0.93	0.92	0.92	0.91	0.91
20.400	0.90	0.90	0.90	0.89	0.89
20.650	0.88	0.88	0.88	0.87	0.87
20.900	0.86	0.86	0.86	0.85	0.85

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: MRC (OUT)
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.150	0.84	0.84	0.84	0.83	0.83
21.400	0.82	0.82	0.82	0.81	0.81
21.650	0.81	0.80	0.80	0.80	0.79
21.900	0.79	0.78	0.78	0.78	0.77
22.150	0.77	0.77	0.76	0.76	0.76
22.400	0.75	0.75	0.75	0.74	0.74
22.650	0.74	0.73	0.73	0.73	0.72
22.900	0.72	0.72	0.71	0.71	0.71
23.150	0.70	0.70	0.70	0.69	0.69
23.400	0.69	0.68	0.68	0.68	0.68
23.650	0.67	0.67	0.67	0.66	0.66
23.900	0.66	0.65	0.65	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: MRC (OUT)
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Peak Discharge	7.99 ft³/s
Time to Peak	12.500 hours
Hydrograph Volume	2.480 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
9.850	0.00	0.02	0.03	0.05	0.07
10.100	0.08	0.10	0.12	0.13	0.15
10.350	0.17	0.19	0.20	0.22	0.24
10.600	0.26	0.28	0.30	0.33	0.35
10.850	0.37	0.40	0.42	0.45	0.48
11.100	0.51	0.54	0.58	0.61	0.65
11.350	0.69	0.73	0.78	0.82	0.87
11.600	0.94	1.06	1.21	1.38	1.57
11.850	1.80	2.02	2.31	2.69	3.48
12.100	4.64	5.67	6.54	7.18	7.56
12.350	7.80	7.91	7.96	7.99	7.96
12.600	7.85	7.70	7.54	7.38	7.22
12.850	7.05	6.88	6.70	6.52	6.34
13.100	6.16	5.99	5.90	5.81	5.72
13.350	5.63	5.54	5.45	5.35	5.26
13.600	5.16	5.07	4.98	4.89	4.80
13.850	4.71	4.63	4.54	4.46	4.38
14.100	4.30	4.23	4.15	4.08	4.00
14.350	3.93	3.86	3.79	3.72	3.66
14.600	3.59	3.52	3.46	3.40	3.34
14.850	3.27	3.21	3.16	3.10	3.04
15.100	2.98	2.93	2.87	2.83	2.80
15.350	2.78	2.75	2.72	2.69	2.66
15.600	2.64	2.61	2.58	2.56	2.53
15.850	2.51	2.48	2.46	2.43	2.41
16.100	2.38	2.36	2.34	2.31	2.29
16.350	2.27	2.24	2.22	2.20	2.18
16.600	2.16	2.14	2.11	2.09	2.07
16.850	2.05	2.03	2.01	1.99	1.97
17.100	1.95	1.93	1.91	1.90	1.88
17.350	1.86	1.84	1.82	1.80	1.78
17.600	1.76	1.74	1.72	1.70	1.68
17.850	1.66	1.64	1.62	1.60	1.58
18.100	1.57	1.55	1.53	1.51	1.49
18.350	1.48	1.46	1.44	1.43	1.41
18.600	1.40	1.38	1.37	1.35	1.34
18.850	1.32	1.31	1.29	1.28	1.27
19.100	1.25	1.24	1.23	1.22	1.20
19.350	1.19	1.18	1.17	1.16	1.15
19.600	1.13	1.12	1.11	1.10	1.09
19.850	1.08	1.07	1.06	1.05	1.04
20.100	1.03	1.02	1.02	1.01	1.00
20.350	0.99	0.98	0.97	0.96	0.96

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: MRC (OUT)
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.600	0.95	0.95	0.94	0.94	0.94
20.850	0.93	0.93	0.92	0.92	0.92
21.100	0.91	0.91	0.90	0.90	0.90
21.350	0.89	0.89	0.89	0.88	0.88
21.600	0.87	0.87	0.87	0.86	0.86
21.850	0.86	0.85	0.85	0.85	0.84
22.100	0.84	0.83	0.83	0.83	0.82
22.350	0.82	0.82	0.81	0.81	0.81
22.600	0.80	0.80	0.80	0.79	0.79
22.850	0.79	0.78	0.78	0.78	0.77
23.100	0.77	0.77	0.76	0.76	0.76
23.350	0.76	0.75	0.75	0.75	0.74
23.600	0.74	0.74	0.73	0.73	0.73
23.850	0.72	0.72	0.72	0.72	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: MRC (OUT)
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Peak Discharge	10.70 ft³/s
Time to Peak	12.400 hours
Hydrograph Volume	2.926 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
9.250	0.00	0.01	0.02	0.04	0.05
9.500	0.07	0.08	0.10	0.12	0.13
9.750	0.15	0.16	0.18	0.20	0.21
10.000	0.23	0.25	0.27	0.29	0.30
10.250	0.32	0.34	0.36	0.38	0.40
10.500	0.41	0.43	0.46	0.48	0.50
10.750	0.52	0.55	0.58	0.60	0.63
11.000	0.66	0.69	0.73	0.76	0.80
11.250	0.84	0.88	0.92	0.99	1.08
11.500	1.18	1.29	1.43	1.59	1.75
11.750	1.91	2.09	2.30	2.55	2.90
12.000	3.67	4.69	6.00	8.35	9.61
12.250	10.21	10.53	10.67	10.70	10.65
12.500	10.59	10.47	10.26	10.00	9.75
12.750	9.49	9.24	8.98	8.73	8.48
13.000	8.22	7.97	7.71	7.46	7.22
13.250	6.98	6.75	6.53	6.31	6.10
13.500	5.94	5.84	5.74	5.64	5.53
13.750	5.44	5.34	5.24	5.15	5.06
14.000	4.97	4.88	4.80	4.71	4.63
14.250	4.55	4.47	4.39	4.31	4.23
14.500	4.16	4.09	4.01	3.94	3.87
14.750	3.80	3.73	3.67	3.60	3.53
15.000	3.47	3.41	3.34	3.28	3.22
15.250	3.16	3.11	3.05	3.00	2.94
15.500	2.89	2.84	2.82	2.79	2.76
15.750	2.74	2.71	2.68	2.66	2.63
16.000	2.61	2.58	2.56	2.53	2.51
16.250	2.49	2.46	2.44	2.42	2.39
16.500	2.37	2.35	2.33	2.30	2.28
16.750	2.26	2.24	2.22	2.20	2.18
17.000	2.15	2.13	2.11	2.09	2.07
17.250	2.05	2.04	2.02	2.00	1.98
17.500	1.96	1.94	1.92	1.90	1.89
17.750	1.87	1.85	1.83	1.81	1.80
18.000	1.78	1.76	1.74	1.72	1.70
18.250	1.68	1.66	1.64	1.62	1.60
18.500	1.59	1.57	1.55	1.53	1.52
18.750	1.50	1.49	1.47	1.46	1.44
19.000	1.43	1.41	1.40	1.38	1.37
19.250	1.36	1.34	1.33	1.32	1.30
19.500	1.29	1.28	1.27	1.26	1.24
19.750	1.23	1.22	1.21	1.20	1.19

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: MRC (OUT)
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.000	1.18	1.17	1.16	1.15	1.14
20.250	1.13	1.12	1.11	1.10	1.09
20.500	1.08	1.07	1.06	1.05	1.05
20.750	1.04	1.03	1.02	1.01	1.01
21.000	1.00	0.99	0.98	0.97	0.97
21.250	0.96	0.95	0.95	0.95	0.94
21.500	0.94	0.94	0.93	0.93	0.93
21.750	0.92	0.92	0.92	0.91	0.91
22.000	0.90	0.90	0.90	0.89	0.89
22.250	0.89	0.88	0.88	0.88	0.87
22.500	0.87	0.87	0.86	0.86	0.86
22.750	0.85	0.85	0.85	0.85	0.84
23.000	0.84	0.84	0.83	0.83	0.83
23.250	0.82	0.82	0.82	0.81	0.81
23.500	0.81	0.80	0.80	0.80	0.79
23.750	0.79	0.79	0.79	0.78	0.78
24.000	0.78	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Pond Inflow Summary
Label: MRC (IN)
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Summary for Hydrograph Addition at 'MRC'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	MRC-I
<Catchment to Outflow Node>	MRC-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	MRC-I	1.222	12.100	17.90
Flow (From)	MRC-P	0.008	12.150	0.07
Flow (In)	MRC	1.231	12.100	17.97

Post-Development Analysis Results (with BMPs)

Subsection: Pond Inflow Summary
Label: MRC (IN)
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Summary for Hydrograph Addition at 'MRC'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	MRC-I
<Catchment to Outflow Node>	MRC-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	MRC-I	1.490	12.100	21.61
Flow (From)	MRC-P	0.015	12.100	0.19
Flow (In)	MRC	1.505	12.100	21.80

Post-Development Analysis Results (with BMPs)

Subsection: Pond Inflow Summary
Label: MRC (IN)
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Summary for Hydrograph Addition at 'MRC'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	MRC-I
<Catchment to Outflow Node>	MRC-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	MRC-I	1.901	12.100	27.27
Flow (From)	MRC-P	0.028	12.100	0.42
Flow (In)	MRC	1.928	12.100	27.68

Post-Development Analysis Results (with BMPs)

Subsection: Pond Inflow Summary
Label: MRC (IN)
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Summary for Hydrograph Addition at 'MRC'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	MRC-I
<Catchment to Outflow Node>	MRC-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	MRC-I	2.241	12.100	31.95
Flow (From)	MRC-P	0.040	12.100	0.64
Flow (In)	MRC	2.281	12.100	32.58

Post-Development Analysis Results (with BMPs)

Subsection: Pond Inflow Summary
Label: MRC (IN)
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Summary for Hydrograph Addition at 'MRC'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	MRC-I
<Catchment to Outflow Node>	MRC-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	MRC-I	2.735	12.100	38.71
Flow (From)	MRC-P	0.060	12.100	0.99
Flow (In)	MRC	2.794	12.100	39.70

Post-Development Analysis Results (with BMPs)

Subsection: Pond Inflow Summary
Label: MRC (IN)
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Summary for Hydrograph Addition at 'MRC'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	MRC-I
<Catchment to Outflow Node>	MRC-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	MRC-I	3.150	12.100	44.39
Flow (From)	MRC-P	0.078	12.100	1.31
Flow (In)	MRC	3.228	12.100	45.70

Post-Development Analysis Results (with BMPs)

Subsection: Pond Inflow Summary
Label: MRC (IN)
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Summary for Hydrograph Addition at 'MRC'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	MRC-I
<Catchment to Outflow Node>	MRC-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	MRC-I	3.599	12.100	50.54
Flow (From)	MRC-P	0.099	12.100	1.68
Flow (In)	MRC	3.699	12.100	52.21

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Peak Discharge	1.73 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	0.296 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.650	0.00	0.00	0.00	0.00	0.00
1.900	0.00	0.00	0.00	0.00	0.00
2.150	0.00	0.01	0.01	0.01	0.01
2.400	0.01	0.01	0.01	0.01	0.01
2.650	0.01	0.01	0.01	0.01	0.01
2.900	0.01	0.01	0.01	0.01	0.02
3.150	0.02	0.02	0.02	0.02	0.02
3.400	0.02	0.02	0.02	0.02	0.02
3.650	0.02	0.02	0.02	0.02	0.02
3.900	0.02	0.02	0.02	0.02	0.03
4.150	0.03	0.03	0.03	0.03	0.03
4.400	0.03	0.03	0.03	0.03	0.03
4.650	0.03	0.03	0.03	0.03	0.03
4.900	0.03	0.03	0.03	0.03	0.03
5.150	0.03	0.03	0.04	0.04	0.04
5.400	0.04	0.04	0.04	0.04	0.04
5.650	0.04	0.04	0.04	0.04	0.04
5.900	0.04	0.04	0.04	0.04	0.04
6.150	0.04	0.04	0.04	0.04	0.04
6.400	0.05	0.05	0.05	0.05	0.05
6.650	0.05	0.05	0.05	0.05	0.05
6.900	0.05	0.05	0.05	0.05	0.06
7.150	0.06	0.06	0.06	0.06	0.06
7.400	0.06	0.06	0.06	0.06	0.06
7.650	0.06	0.06	0.07	0.07	0.07
7.900	0.07	0.07	0.07	0.07	0.07
8.150	0.07	0.07	0.07	0.07	0.08
8.400	0.08	0.08	0.08	0.08	0.08
8.650	0.08	0.08	0.08	0.08	0.08
8.900	0.09	0.09	0.09	0.09	0.09
9.150	0.09	0.09	0.09	0.10	0.10
9.400	0.10	0.10	0.10	0.11	0.11
9.650	0.11	0.11	0.11	0.12	0.12
9.900	0.12	0.12	0.13	0.13	0.13
10.150	0.14	0.14	0.14	0.14	0.15
10.400	0.15	0.15	0.16	0.16	0.16
10.650	0.17	0.17	0.18	0.18	0.19
10.900	0.20	0.21	0.21	0.22	0.23
11.150	0.24	0.26	0.27	0.28	0.30
11.400	0.31	0.33	0.34	0.37	0.40
11.650	0.44	0.47	0.52	0.57	0.64
11.900	0.72	0.84	1.00	1.21	1.48
12.150	1.67	1.73	1.71	1.67	1.62

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.400	1.55	1.48	1.42	1.35	1.28
12.650	1.21	1.14	1.07	1.01	0.95
12.900	0.89	0.84	0.79	0.74	0.70
13.150	0.66	0.62	0.59	0.55	0.52
13.400	0.50	0.47	0.44	0.42	0.40
13.650	0.38	0.36	0.34	0.33	0.31
13.900	0.30	0.29	0.27	0.26	0.25
14.150	0.25	0.24	0.23	0.22	0.22
14.400	0.21	0.20	0.20	0.19	0.19
14.650	0.18	0.18	0.17	0.17	0.16
14.900	0.16	0.16	0.15	0.15	0.14
15.150	0.14	0.14	0.14	0.13	0.13
15.400	0.13	0.13	0.12	0.12	0.12
15.650	0.12	0.12	0.11	0.11	0.11
15.900	0.11	0.11	0.11	0.11	0.11
16.150	0.10	0.10	0.10	0.10	0.10
16.400	0.10	0.10	0.10	0.10	0.10
16.650	0.10	0.09	0.09	0.09	0.09
16.900	0.09	0.09	0.09	0.09	0.09
17.150	0.09	0.09	0.09	0.08	0.08
17.400	0.08	0.08	0.08	0.08	0.08
17.650	0.08	0.08	0.08	0.08	0.08
17.900	0.07	0.07	0.07	0.07	0.07
18.150	0.07	0.07	0.07	0.07	0.07
18.400	0.07	0.07	0.07	0.07	0.07
18.650	0.07	0.07	0.06	0.06	0.06
18.900	0.06	0.06	0.06	0.06	0.06
19.150	0.06	0.06	0.06	0.06	0.06
19.400	0.06	0.06	0.06	0.06	0.06
19.650	0.06	0.06	0.06	0.06	0.06
19.900	0.06	0.06	0.06	0.06	0.06
20.150	0.06	0.06	0.06	0.06	0.06
20.400	0.06	0.06	0.06	0.06	0.06
20.650	0.06	0.06	0.06	0.06	0.06
20.900	0.06	0.05	0.05	0.05	0.05
21.150	0.05	0.05	0.05	0.05	0.05
21.400	0.05	0.05	0.05	0.05	0.05
21.650	0.05	0.05	0.05	0.05	0.05
21.900	0.05	0.05	0.05	0.05	0.05
22.150	0.05	0.05	0.05	0.05	0.05
22.400	0.05	0.05	0.05	0.05	0.05
22.650	0.05	0.05	0.05	0.05	0.05
22.900	0.05	0.05	0.05	0.05	0.05
23.150	0.05	0.05	0.05	0.05	0.05
23.400	0.05	0.05	0.04	0.04	0.04
23.650	0.04	0.04	0.04	0.04	0.04
23.900	0.04	0.04	0.04	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Peak Discharge	2.08 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	0.363 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.400	0.00	0.00	0.00	0.00	0.00
1.650	0.00	0.00	0.00	0.01	0.01
1.900	0.01	0.01	0.01	0.01	0.01
2.150	0.01	0.01	0.01	0.01	0.01
2.400	0.01	0.01	0.01	0.02	0.02
2.650	0.02	0.02	0.02	0.02	0.02
2.900	0.02	0.02	0.02	0.02	0.02
3.150	0.02	0.02	0.03	0.03	0.03
3.400	0.03	0.03	0.03	0.03	0.03
3.650	0.03	0.03	0.03	0.03	0.03
3.900	0.03	0.03	0.03	0.03	0.04
4.150	0.04	0.04	0.04	0.04	0.04
4.400	0.04	0.04	0.04	0.04	0.04
4.650	0.04	0.04	0.04	0.04	0.04
4.900	0.04	0.04	0.04	0.05	0.05
5.150	0.05	0.05	0.05	0.05	0.05
5.400	0.05	0.05	0.05	0.05	0.05
5.650	0.05	0.05	0.05	0.05	0.05
5.900	0.05	0.05	0.05	0.05	0.05
6.150	0.06	0.06	0.06	0.06	0.06
6.400	0.06	0.06	0.06	0.06	0.06
6.650	0.06	0.06	0.06	0.07	0.07
6.900	0.07	0.07	0.07	0.07	0.07
7.150	0.07	0.07	0.07	0.07	0.08
7.400	0.08	0.08	0.08	0.08	0.08
7.650	0.08	0.08	0.08	0.08	0.09
7.900	0.09	0.09	0.09	0.09	0.09
8.150	0.09	0.09	0.09	0.09	0.10
8.400	0.10	0.10	0.10	0.10	0.10
8.650	0.10	0.10	0.10	0.10	0.11
8.900	0.11	0.11	0.11	0.11	0.11
9.150	0.11	0.11	0.12	0.12	0.12
9.400	0.12	0.13	0.13	0.13	0.13
9.650	0.14	0.14	0.14	0.15	0.15
9.900	0.15	0.15	0.16	0.16	0.16
10.150	0.17	0.17	0.17	0.18	0.18
10.400	0.18	0.19	0.19	0.20	0.20
10.650	0.21	0.21	0.22	0.23	0.24
10.900	0.24	0.25	0.26	0.27	0.29
11.150	0.30	0.31	0.33	0.35	0.36
11.400	0.38	0.40	0.42	0.45	0.49
11.650	0.53	0.58	0.63	0.69	0.77
11.900	0.87	1.02	1.21	1.45	1.77

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.150	2.01	2.08	2.07	2.02	1.95
12.400	1.87	1.79	1.72	1.64	1.55
12.650	1.46	1.38	1.31	1.24	1.17
12.900	1.10	1.04	0.98	0.92	0.86
13.150	0.81	0.77	0.72	0.68	0.64
13.400	0.61	0.58	0.54	0.52	0.49
13.650	0.46	0.44	0.42	0.40	0.38
13.900	0.36	0.35	0.34	0.32	0.31
14.150	0.30	0.29	0.28	0.27	0.26
14.400	0.25	0.25	0.24	0.23	0.23
14.650	0.22	0.22	0.21	0.20	0.20
14.900	0.19	0.19	0.19	0.18	0.18
15.150	0.17	0.17	0.16	0.16	0.16
15.400	0.15	0.15	0.15	0.15	0.15
15.650	0.14	0.14	0.14	0.14	0.14
15.900	0.13	0.13	0.13	0.13	0.13
16.150	0.13	0.13	0.12	0.12	0.12
16.400	0.12	0.12	0.12	0.12	0.12
16.650	0.12	0.11	0.11	0.11	0.11
16.900	0.11	0.11	0.11	0.11	0.11
17.150	0.11	0.10	0.10	0.10	0.10
17.400	0.10	0.10	0.10	0.10	0.10
17.650	0.10	0.09	0.09	0.09	0.09
17.900	0.09	0.09	0.09	0.09	0.09
18.150	0.09	0.09	0.08	0.08	0.08
18.400	0.08	0.08	0.08	0.08	0.08
18.650	0.08	0.08	0.08	0.08	0.08
18.900	0.08	0.08	0.08	0.08	0.08
19.150	0.08	0.08	0.08	0.07	0.07
19.400	0.07	0.07	0.07	0.07	0.07
19.650	0.07	0.07	0.07	0.07	0.07
19.900	0.07	0.07	0.07	0.07	0.07
20.150	0.07	0.07	0.07	0.07	0.07
20.400	0.07	0.07	0.07	0.07	0.07
20.650	0.07	0.07	0.07	0.07	0.07
20.900	0.07	0.07	0.07	0.07	0.07
21.150	0.07	0.07	0.07	0.06	0.06
21.400	0.06	0.06	0.06	0.06	0.06
21.650	0.06	0.06	0.06	0.06	0.06
21.900	0.06	0.06	0.06	0.06	0.06
22.150	0.06	0.06	0.06	0.06	0.06
22.400	0.06	0.06	0.06	0.06	0.06
22.650	0.06	0.06	0.06	0.06	0.06
22.900	0.06	0.06	0.06	0.06	0.06
23.150	0.06	0.06	0.06	0.06	0.06
23.400	0.05	0.05	0.05	0.05	0.05
23.650	0.05	0.05	0.05	0.05	0.05
23.900	0.05	0.05	0.05	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Peak Discharge	2.63 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	0.466 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.150	0.00	0.00	0.00	0.00	0.00
1.400	0.00	0.01	0.01	0.01	0.01
1.650	0.01	0.01	0.01	0.01	0.01
1.900	0.01	0.01	0.02	0.02	0.02
2.150	0.02	0.02	0.02	0.02	0.02
2.400	0.02	0.02	0.03	0.03	0.03
2.650	0.03	0.03	0.03	0.03	0.03
2.900	0.03	0.03	0.04	0.04	0.04
3.150	0.04	0.04	0.04	0.04	0.04
3.400	0.04	0.04	0.04	0.04	0.04
3.650	0.05	0.05	0.05	0.05	0.05
3.900	0.05	0.05	0.05	0.05	0.05
4.150	0.05	0.05	0.05	0.05	0.06
4.400	0.06	0.06	0.06	0.06	0.06
4.650	0.06	0.06	0.06	0.06	0.06
4.900	0.06	0.06	0.06	0.06	0.06
5.150	0.06	0.07	0.07	0.07	0.07
5.400	0.07	0.07	0.07	0.07	0.07
5.650	0.07	0.07	0.07	0.07	0.07
5.900	0.07	0.07	0.07	0.07	0.07
6.150	0.08	0.08	0.08	0.08	0.08
6.400	0.08	0.08	0.08	0.08	0.08
6.650	0.08	0.09	0.09	0.09	0.09
6.900	0.09	0.09	0.09	0.09	0.09
7.150	0.10	0.10	0.10	0.10	0.10
7.400	0.10	0.10	0.10	0.11	0.11
7.650	0.11	0.11	0.11	0.11	0.11
7.900	0.11	0.12	0.12	0.12	0.12
8.150	0.12	0.12	0.12	0.12	0.13
8.400	0.13	0.13	0.13	0.13	0.13
8.650	0.13	0.13	0.14	0.14	0.14
8.900	0.14	0.14	0.14	0.14	0.14
9.150	0.15	0.15	0.15	0.15	0.16
9.400	0.16	0.16	0.17	0.17	0.17
9.650	0.18	0.18	0.18	0.19	0.19
9.900	0.20	0.20	0.20	0.21	0.21
10.150	0.22	0.22	0.22	0.23	0.23
10.400	0.24	0.24	0.25	0.25	0.26
10.650	0.26	0.27	0.28	0.29	0.30
10.900	0.31	0.32	0.34	0.35	0.37
11.150	0.38	0.40	0.42	0.44	0.46
11.400	0.49	0.51	0.54	0.57	0.62
11.650	0.68	0.73	0.80	0.88	0.99

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.900	1.11	1.28	1.50	1.82	2.23
12.150	2.54	2.63	2.61	2.55	2.47
12.400	2.37	2.27	2.17	2.07	1.97
12.650	1.86	1.75	1.66	1.57	1.49
12.900	1.41	1.33	1.26	1.19	1.13
13.150	1.06	1.00	0.94	0.88	0.83
13.400	0.79	0.74	0.70	0.67	0.63
13.650	0.60	0.57	0.54	0.51	0.49
13.900	0.47	0.45	0.43	0.41	0.40
14.150	0.38	0.37	0.36	0.35	0.34
14.400	0.33	0.32	0.31	0.30	0.29
14.650	0.28	0.28	0.27	0.26	0.25
14.900	0.25	0.24	0.24	0.23	0.22
15.150	0.22	0.21	0.21	0.20	0.20
15.400	0.20	0.19	0.19	0.19	0.18
15.650	0.18	0.18	0.18	0.17	0.17
15.900	0.17	0.17	0.17	0.17	0.16
16.150	0.16	0.16	0.16	0.16	0.16
16.400	0.15	0.15	0.15	0.15	0.15
16.650	0.15	0.15	0.14	0.14	0.14
16.900	0.14	0.14	0.14	0.14	0.14
17.150	0.13	0.13	0.13	0.13	0.13
17.400	0.13	0.13	0.13	0.12	0.12
17.650	0.12	0.12	0.12	0.12	0.12
17.900	0.12	0.11	0.11	0.11	0.11
18.150	0.11	0.11	0.11	0.11	0.11
18.400	0.10	0.10	0.10	0.10	0.10
18.650	0.10	0.10	0.10	0.10	0.10
18.900	0.10	0.10	0.10	0.10	0.10
19.150	0.10	0.10	0.10	0.10	0.09
19.400	0.09	0.09	0.09	0.09	0.09
19.650	0.09	0.09	0.09	0.09	0.09
19.900	0.09	0.09	0.09	0.09	0.09
20.150	0.09	0.09	0.09	0.09	0.09
20.400	0.09	0.09	0.09	0.09	0.09
20.650	0.09	0.09	0.09	0.09	0.09
20.900	0.08	0.08	0.08	0.08	0.08
21.150	0.08	0.08	0.08	0.08	0.08
21.400	0.08	0.08	0.08	0.08	0.08
21.650	0.08	0.08	0.08	0.08	0.08
21.900	0.08	0.08	0.08	0.08	0.08
22.150	0.08	0.08	0.08	0.08	0.08
22.400	0.08	0.08	0.08	0.07	0.07
22.650	0.07	0.07	0.07	0.07	0.07
22.900	0.07	0.07	0.07	0.07	0.07
23.150	0.07	0.07	0.07	0.07	0.07
23.400	0.07	0.07	0.07	0.07	0.07
23.650	0.07	0.07	0.07	0.07	0.07

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.900	0.07	0.07	0.07	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Peak Discharge	3.11 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	0.553 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.950	0.00	0.00	0.00	0.00	0.00
1.200	0.00	0.01	0.01	0.01	0.01
1.450	0.01	0.01	0.01	0.01	0.01
1.700	0.02	0.02	0.02	0.02	0.02
1.950	0.02	0.02	0.03	0.03	0.03
2.200	0.03	0.03	0.03	0.03	0.03
2.450	0.03	0.04	0.04	0.04	0.04
2.700	0.04	0.04	0.04	0.04	0.04
2.950	0.05	0.05	0.05	0.05	0.05
3.200	0.05	0.05	0.05	0.05	0.05
3.450	0.06	0.06	0.06	0.06	0.06
3.700	0.06	0.06	0.06	0.06	0.06
3.950	0.06	0.06	0.06	0.07	0.07
4.200	0.07	0.07	0.07	0.07	0.07
4.450	0.07	0.07	0.07	0.07	0.07
4.700	0.07	0.08	0.08	0.08	0.08
4.950	0.08	0.08	0.08	0.08	0.08
5.200	0.08	0.08	0.08	0.08	0.08
5.450	0.08	0.08	0.08	0.09	0.09
5.700	0.09	0.09	0.09	0.09	0.09
5.950	0.09	0.09	0.09	0.09	0.09
6.200	0.09	0.09	0.09	0.10	0.10
6.450	0.10	0.10	0.10	0.10	0.10
6.700	0.10	0.10	0.11	0.11	0.11
6.950	0.11	0.11	0.11	0.11	0.12
7.200	0.12	0.12	0.12	0.12	0.12
7.450	0.12	0.13	0.13	0.13	0.13
7.700	0.13	0.13	0.13	0.14	0.14
7.950	0.14	0.14	0.14	0.14	0.14
8.200	0.15	0.15	0.15	0.15	0.15
8.450	0.15	0.15	0.16	0.16	0.16
8.700	0.16	0.16	0.16	0.16	0.17
8.950	0.17	0.17	0.17	0.17	0.17
9.200	0.18	0.18	0.18	0.19	0.19
9.450	0.19	0.20	0.20	0.21	0.21
9.700	0.21	0.22	0.22	0.23	0.23
9.950	0.24	0.24	0.25	0.25	0.26
10.200	0.26	0.27	0.27	0.28	0.28
10.450	0.29	0.29	0.30	0.30	0.31
10.700	0.32	0.33	0.34	0.36	0.37
10.950	0.38	0.40	0.41	0.43	0.45
11.200	0.47	0.50	0.52	0.55	0.57
11.450	0.60	0.63	0.67	0.73	0.80

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.700	0.87	0.94	1.04	1.16	1.30
11.950	1.49	1.76	2.13	2.62	2.99
12.200	3.11	3.08	3.00	2.90	2.78
12.450	2.67	2.55	2.44	2.31	2.18
12.700	2.06	1.95	1.85	1.75	1.65
12.950	1.57	1.48	1.40	1.33	1.26
13.200	1.19	1.12	1.06	1.00	0.94
13.450	0.89	0.84	0.79	0.75	0.71
13.700	0.67	0.64	0.61	0.58	0.56
13.950	0.53	0.51	0.49	0.47	0.46
14.200	0.44	0.42	0.41	0.40	0.39
14.450	0.37	0.36	0.35	0.34	0.33
14.700	0.33	0.32	0.31	0.30	0.29
14.950	0.29	0.28	0.27	0.26	0.26
15.200	0.25	0.25	0.24	0.24	0.23
15.450	0.23	0.22	0.22	0.22	0.21
15.700	0.21	0.21	0.21	0.20	0.20
15.950	0.20	0.20	0.19	0.19	0.19
16.200	0.19	0.19	0.18	0.18	0.18
16.450	0.18	0.18	0.18	0.17	0.17
16.700	0.17	0.17	0.17	0.17	0.17
16.950	0.16	0.16	0.16	0.16	0.16
17.200	0.16	0.15	0.15	0.15	0.15
17.450	0.15	0.15	0.15	0.14	0.14
17.700	0.14	0.14	0.14	0.14	0.14
17.950	0.13	0.13	0.13	0.13	0.13
18.200	0.13	0.13	0.12	0.12	0.12
18.450	0.12	0.12	0.12	0.12	0.12
18.700	0.12	0.12	0.12	0.12	0.12
18.950	0.12	0.11	0.11	0.11	0.11
19.200	0.11	0.11	0.11	0.11	0.11
19.450	0.11	0.11	0.11	0.11	0.11
19.700	0.11	0.11	0.11	0.11	0.11
19.950	0.11	0.11	0.11	0.11	0.11
20.200	0.11	0.10	0.10	0.10	0.10
20.450	0.10	0.10	0.10	0.10	0.10
20.700	0.10	0.10	0.10	0.10	0.10
20.950	0.10	0.10	0.10	0.10	0.10
21.200	0.10	0.10	0.10	0.10	0.10
21.450	0.10	0.10	0.10	0.09	0.09
21.700	0.09	0.09	0.09	0.09	0.09
21.950	0.09	0.09	0.09	0.09	0.09
22.200	0.09	0.09	0.09	0.09	0.09
22.450	0.09	0.09	0.09	0.09	0.09
22.700	0.09	0.09	0.09	0.09	0.09
22.950	0.09	0.08	0.08	0.08	0.08
23.200	0.08	0.08	0.08	0.08	0.08
23.450	0.08	0.08	0.08	0.08	0.08

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.700	0.08	0.08	0.08	0.08	0.08
23.950	0.08	0.08	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Peak Discharge	3.80 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	0.678 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.800	0.00	0.00	0.00	0.00	0.00
1.050	0.01	0.01	0.01	0.01	0.01
1.300	0.01	0.01	0.02	0.02	0.02
1.550	0.02	0.02	0.03	0.03	0.03
1.800	0.03	0.03	0.03	0.04	0.04
2.050	0.04	0.04	0.04	0.04	0.04
2.300	0.05	0.05	0.05	0.05	0.05
2.550	0.05	0.05	0.06	0.06	0.06
2.800	0.06	0.06	0.06	0.06	0.06
3.050	0.07	0.07	0.07	0.07	0.07
3.300	0.07	0.07	0.07	0.07	0.08
3.550	0.08	0.08	0.08	0.08	0.08
3.800	0.08	0.08	0.08	0.08	0.08
4.050	0.09	0.09	0.09	0.09	0.09
4.300	0.09	0.09	0.09	0.09	0.09
4.550	0.09	0.09	0.10	0.10	0.10
4.800	0.10	0.10	0.10	0.10	0.10
5.050	0.10	0.10	0.10	0.10	0.10
5.300	0.10	0.11	0.11	0.11	0.11
5.550	0.11	0.11	0.11	0.11	0.11
5.800	0.11	0.11	0.11	0.11	0.11
6.050	0.11	0.12	0.12	0.12	0.12
6.300	0.12	0.12	0.12	0.12	0.12
6.550	0.13	0.13	0.13	0.13	0.13
6.800	0.13	0.13	0.14	0.14	0.14
7.050	0.14	0.14	0.14	0.15	0.15
7.300	0.15	0.15	0.15	0.15	0.16
7.550	0.16	0.16	0.16	0.16	0.16
7.800	0.17	0.17	0.17	0.17	0.17
8.050	0.17	0.18	0.18	0.18	0.18
8.300	0.18	0.19	0.19	0.19	0.19
8.550	0.19	0.19	0.20	0.20	0.20
8.800	0.20	0.20	0.20	0.21	0.21
9.050	0.21	0.21	0.22	0.22	0.22
9.300	0.23	0.23	0.23	0.24	0.24
9.550	0.25	0.25	0.26	0.26	0.27
9.800	0.27	0.28	0.28	0.29	0.30
10.050	0.30	0.31	0.31	0.32	0.33
10.300	0.33	0.34	0.34	0.35	0.36
10.550	0.36	0.37	0.38	0.39	0.41
10.800	0.42	0.44	0.45	0.47	0.49
11.050	0.51	0.53	0.55	0.58	0.61
11.300	0.64	0.67	0.70	0.74	0.77

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.550	0.82	0.90	0.98	1.06	1.16
11.800	1.26	1.40	1.56	1.80	2.13
12.050	2.59	3.20	3.66	3.80	3.77
12.300	3.67	3.55	3.40	3.26	3.12
12.550	2.97	2.81	2.65	2.51	2.37
12.800	2.25	2.13	2.01	1.91	1.80
13.050	1.71	1.62	1.53	1.45	1.37
13.300	1.30	1.24	1.17	1.11	1.05
13.550	0.99	0.93	0.88	0.83	0.79
13.800	0.75	0.72	0.69	0.66	0.63
14.050	0.60	0.58	0.56	0.54	0.52
14.300	0.50	0.49	0.47	0.46	0.45
14.550	0.43	0.42	0.41	0.40	0.39
14.800	0.38	0.37	0.36	0.35	0.34
15.050	0.33	0.32	0.32	0.31	0.30
15.300	0.29	0.29	0.28	0.28	0.27
15.550	0.27	0.27	0.26	0.26	0.25
15.800	0.25	0.25	0.25	0.24	0.24
16.050	0.24	0.23	0.23	0.23	0.23
16.300	0.23	0.22	0.22	0.22	0.22
16.550	0.21	0.21	0.21	0.21	0.21
16.800	0.21	0.20	0.20	0.20	0.20
17.050	0.20	0.19	0.19	0.19	0.19
17.300	0.19	0.18	0.18	0.18	0.18
17.550	0.18	0.18	0.17	0.17	0.17
17.800	0.17	0.17	0.17	0.16	0.16
18.050	0.16	0.16	0.16	0.16	0.15
18.300	0.15	0.15	0.15	0.15	0.15
18.550	0.15	0.15	0.15	0.14	0.14
18.800	0.14	0.14	0.14	0.14	0.14
19.050	0.14	0.14	0.14	0.14	0.14
19.300	0.14	0.14	0.14	0.14	0.13
19.550	0.13	0.13	0.13	0.13	0.13
19.800	0.13	0.13	0.13	0.13	0.13
20.050	0.13	0.13	0.13	0.13	0.13
20.300	0.13	0.13	0.13	0.13	0.13
20.550	0.12	0.12	0.12	0.12	0.12
20.800	0.12	0.12	0.12	0.12	0.12
21.050	0.12	0.12	0.12	0.12	0.12
21.300	0.12	0.12	0.12	0.12	0.12
21.550	0.12	0.12	0.12	0.11	0.11
21.800	0.11	0.11	0.11	0.11	0.11
22.050	0.11	0.11	0.11	0.11	0.11
22.300	0.11	0.11	0.11	0.11	0.11
22.550	0.11	0.11	0.11	0.11	0.11
22.800	0.11	0.10	0.10	0.10	0.10
23.050	0.10	0.10	0.10	0.10	0.10
23.300	0.10	0.10	0.10	0.10	0.10

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.550	0.10	0.10	0.10	0.10	0.10
23.800	0.10	0.10	0.10	0.10	0.10

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Peak Discharge	4.39 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	0.785 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.700	0.00	0.00	0.00	0.00	0.01
0.950	0.01	0.01	0.01	0.01	0.01
1.200	0.02	0.02	0.02	0.02	0.02
1.450	0.03	0.03	0.03	0.03	0.03
1.700	0.04	0.04	0.04	0.04	0.04
1.950	0.05	0.05	0.05	0.05	0.05
2.200	0.06	0.06	0.06	0.06	0.06
2.450	0.06	0.07	0.07	0.07	0.07
2.700	0.07	0.07	0.07	0.08	0.08
2.950	0.08	0.08	0.08	0.08	0.08
3.200	0.08	0.09	0.09	0.09	0.09
3.450	0.09	0.09	0.09	0.09	0.10
3.700	0.10	0.10	0.10	0.10	0.10
3.950	0.10	0.10	0.10	0.10	0.10
4.200	0.11	0.11	0.11	0.11	0.11
4.450	0.11	0.11	0.11	0.11	0.11
4.700	0.11	0.12	0.12	0.12	0.12
4.950	0.12	0.12	0.12	0.12	0.12
5.200	0.12	0.12	0.12	0.12	0.13
5.450	0.13	0.13	0.13	0.13	0.13
5.700	0.13	0.13	0.13	0.13	0.13
5.950	0.13	0.13	0.13	0.14	0.14
6.200	0.14	0.14	0.14	0.14	0.14
6.450	0.14	0.15	0.15	0.15	0.15
6.700	0.15	0.15	0.16	0.16	0.16
6.950	0.16	0.16	0.16	0.17	0.17
7.200	0.17	0.17	0.17	0.18	0.18
7.450	0.18	0.18	0.18	0.19	0.19
7.700	0.19	0.19	0.19	0.20	0.20
7.950	0.20	0.20	0.20	0.21	0.21
8.200	0.21	0.21	0.21	0.21	0.22
8.450	0.22	0.22	0.22	0.22	0.23
8.700	0.23	0.23	0.23	0.23	0.24
8.950	0.24	0.24	0.24	0.25	0.25
9.200	0.25	0.26	0.26	0.27	0.27
9.450	0.28	0.28	0.29	0.29	0.30
9.700	0.30	0.31	0.32	0.32	0.33
9.950	0.33	0.34	0.35	0.35	0.36
10.200	0.37	0.38	0.38	0.39	0.40
10.450	0.40	0.41	0.42	0.43	0.44
10.700	0.45	0.47	0.49	0.50	0.52
10.950	0.54	0.56	0.58	0.61	0.64
11.200	0.67	0.70	0.74	0.77	0.81

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.450	0.85	0.89	0.95	1.04	1.13
11.700	1.22	1.32	1.44	1.60	1.79
11.950	2.07	2.45	2.99	3.70	4.23
12.200	4.39	4.35	4.24	4.10	3.93
12.450	3.76	3.60	3.43	3.24	3.06
12.700	2.89	2.73	2.58	2.44	2.31
12.950	2.19	2.07	1.96	1.86	1.76
13.200	1.67	1.58	1.50	1.42	1.35
13.450	1.28	1.22	1.15	1.09	1.03
13.700	0.97	0.92	0.88	0.84	0.80
13.950	0.76	0.73	0.70	0.67	0.65
14.200	0.63	0.60	0.58	0.57	0.55
14.450	0.53	0.52	0.50	0.49	0.47
14.700	0.46	0.45	0.44	0.42	0.41
14.950	0.40	0.39	0.38	0.37	0.36
15.200	0.35	0.35	0.34	0.33	0.33
15.450	0.32	0.32	0.31	0.31	0.30
15.700	0.30	0.29	0.29	0.29	0.28
15.950	0.28	0.28	0.27	0.27	0.27
16.200	0.26	0.26	0.26	0.26	0.25
16.450	0.25	0.25	0.25	0.25	0.24
16.700	0.24	0.24	0.24	0.23	0.23
16.950	0.23	0.23	0.23	0.22	0.22
17.200	0.22	0.22	0.22	0.21	0.21
17.450	0.21	0.21	0.20	0.20	0.20
17.700	0.20	0.20	0.19	0.19	0.19
17.950	0.19	0.19	0.18	0.18	0.18
18.200	0.18	0.18	0.18	0.17	0.17
18.450	0.17	0.17	0.17	0.17	0.17
18.700	0.17	0.17	0.16	0.16	0.16
18.950	0.16	0.16	0.16	0.16	0.16
19.200	0.16	0.16	0.16	0.16	0.16
19.450	0.16	0.15	0.15	0.15	0.15
19.700	0.15	0.15	0.15	0.15	0.15
19.950	0.15	0.15	0.15	0.15	0.15
20.200	0.15	0.15	0.15	0.15	0.15
20.450	0.14	0.14	0.14	0.14	0.14
20.700	0.14	0.14	0.14	0.14	0.14
20.950	0.14	0.14	0.14	0.14	0.14
21.200	0.14	0.14	0.14	0.14	0.14
21.450	0.13	0.13	0.13	0.13	0.13
21.700	0.13	0.13	0.13	0.13	0.13
21.950	0.13	0.13	0.13	0.13	0.13
22.200	0.13	0.13	0.13	0.13	0.13
22.450	0.12	0.12	0.12	0.12	0.12
22.700	0.12	0.12	0.12	0.12	0.12
22.950	0.12	0.12	0.12	0.12	0.12
23.200	0.12	0.12	0.12	0.12	0.12

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.450	0.11	0.11	0.11	0.11	0.11
23.700	0.11	0.11	0.11	0.11	0.11
23.950	0.11	0.11	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Peak Discharge	6.24 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	0.900 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.600	0.00	0.00	0.00	0.00	0.01
0.850	0.01	0.01	0.01	0.01	0.02
1.100	0.02	0.02	0.02	0.03	0.03
1.350	0.03	0.03	0.04	0.04	0.04
1.600	0.04	0.05	0.05	0.05	0.05
1.850	0.06	0.06	0.06	0.06	0.06
2.100	0.07	0.07	0.07	0.07	0.07
2.350	0.08	0.08	0.08	0.08	0.08
2.600	0.08	0.09	0.09	0.09	0.09
2.850	0.09	0.09	0.10	0.10	0.10
3.100	0.10	0.10	0.10	0.10	0.10
3.350	0.11	0.11	0.11	0.11	0.11
3.600	0.11	0.11	0.11	0.12	0.12
3.850	0.12	0.12	0.12	0.12	0.12
4.100	0.12	0.12	0.12	0.13	0.13
4.350	0.13	0.13	0.13	0.13	0.13
4.600	0.13	0.13	0.13	0.14	0.14
4.850	0.14	0.14	0.14	0.14	0.14
5.100	0.14	0.14	0.14	0.14	0.14
5.350	0.15	0.15	0.15	0.15	0.15
5.600	0.15	0.15	0.15	0.15	0.15
5.850	0.15	0.15	0.15	0.16	0.16
6.100	0.16	0.16	0.16	0.16	0.16
6.350	0.16	0.17	0.17	0.17	0.17
6.600	0.17	0.17	0.18	0.18	0.18
6.850	0.18	0.18	0.19	0.19	0.19
7.100	0.19	0.19	0.20	0.20	0.20
7.350	0.20	0.20	0.21	0.21	0.21
7.600	0.21	0.22	0.22	0.22	0.22
7.850	0.22	0.23	0.23	0.23	0.23
8.100	0.24	0.24	0.24	0.24	0.24
8.350	0.25	0.25	0.25	0.25	0.26
8.600	0.26	0.26	0.26	0.26	0.27
8.850	0.27	0.27	0.27	0.28	0.28
9.100	0.28	0.29	0.29	0.29	0.30
9.350	0.30	0.31	0.32	0.32	0.33
9.600	0.33	0.34	0.35	0.35	0.36
9.850	0.37	0.38	0.38	0.39	0.40
10.100	0.41	0.41	0.42	0.43	0.44
10.350	0.45	0.45	0.46	0.47	0.48
10.600	0.49	0.51	0.52	0.54	0.56
10.850	0.58	0.60	0.62	0.64	0.67
11.100	0.70	0.73	0.77	0.81	0.85

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.350	0.89	0.93	0.98	1.02	1.09
11.600	1.19	1.28	1.38	1.50	1.64
11.850	1.82	2.04	2.36	2.80	3.42
12.100	4.24	6.00	6.24	5.68	5.02
12.350	4.39	4.22	4.05	3.89	3.72
12.600	3.53	3.33	3.15	2.98	2.82
12.850	2.68	2.54	2.41	2.28	2.17
13.100	2.05	1.95	1.85	1.75	1.66
13.350	1.58	1.50	1.43	1.36	1.29
13.600	1.23	1.17	1.11	1.05	1.00
13.850	0.95	0.91	0.87	0.83	0.80
14.100	0.77	0.74	0.71	0.69	0.67
14.350	0.64	0.62	0.61	0.59	0.57
14.600	0.55	0.54	0.52	0.51	0.50
14.850	0.48	0.47	0.46	0.45	0.44
15.100	0.43	0.42	0.41	0.40	0.39
15.350	0.38	0.37	0.37	0.36	0.36
15.600	0.35	0.34	0.34	0.34	0.33
15.850	0.33	0.32	0.32	0.32	0.31
16.100	0.31	0.31	0.30	0.30	0.30
16.350	0.29	0.29	0.29	0.29	0.28
16.600	0.28	0.28	0.28	0.27	0.27
16.850	0.27	0.26	0.26	0.26	0.26
17.100	0.26	0.25	0.25	0.25	0.25
17.350	0.24	0.24	0.24	0.24	0.23
17.600	0.23	0.23	0.23	0.22	0.22
17.850	0.22	0.22	0.22	0.21	0.21
18.100	0.21	0.21	0.20	0.20	0.20
18.350	0.20	0.20	0.20	0.19	0.19
18.600	0.19	0.19	0.19	0.19	0.19
18.850	0.19	0.19	0.19	0.18	0.18
19.100	0.18	0.18	0.18	0.18	0.18
19.350	0.18	0.18	0.18	0.18	0.18
19.600	0.18	0.18	0.17	0.17	0.17
19.850	0.17	0.17	0.17	0.17	0.17
20.100	0.17	0.17	0.17	0.17	0.17
20.350	0.17	0.17	0.17	0.16	0.16
20.600	0.16	0.16	0.16	0.16	0.16
20.850	0.16	0.16	0.16	0.16	0.16
21.100	0.16	0.16	0.16	0.16	0.16
21.350	0.16	0.15	0.15	0.15	0.15
21.600	0.15	0.15	0.15	0.15	0.15
21.850	0.15	0.15	0.15	0.15	0.15
22.100	0.15	0.15	0.15	0.14	0.14
22.350	0.14	0.14	0.14	0.14	0.14
22.600	0.14	0.14	0.14	0.14	0.14
22.850	0.14	0.14	0.14	0.14	0.14
23.100	0.13	0.13	0.13	0.13	0.13

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-2
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.350	0.13	0.13	0.13	0.13	0.13
23.600	0.13	0.13	0.13	0.13	0.13
23.850	0.13	0.13	0.13	0.13	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Peak Discharge	0.98 ft³/s
Time to Peak	13.450 hours
Hydrograph Volume	0.635 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.950	0.00	0.05	0.18	0.35	0.50
12.200	0.60	0.66	0.71	0.75	0.78
12.450	0.81	0.83	0.85	0.87	0.88
12.700	0.90	0.91	0.92	0.92	0.93
12.950	0.94	0.95	0.95	0.95	0.96
13.200	0.97	0.97	0.97	0.98	0.98
13.450	0.98	0.98	0.97	0.97	0.97
13.700	0.97	0.96	0.96	0.95	0.95
13.950	0.95	0.95	0.95	0.94	0.94
14.200	0.94	0.94	0.93	0.93	0.93
14.450	0.92	0.92	0.92	0.91	0.91
14.700	0.91	0.90	0.90	0.90	0.89
14.950	0.89	0.88	0.88	0.87	0.87
15.200	0.87	0.86	0.86	0.85	0.85
15.450	0.84	0.84	0.84	0.83	0.83
15.700	0.82	0.82	0.82	0.81	0.81
15.950	0.80	0.80	0.79	0.79	0.79
16.200	0.78	0.78	0.77	0.77	0.77
16.450	0.76	0.76	0.75	0.75	0.75
16.700	0.74	0.74	0.73	0.73	0.73
16.950	0.72	0.72	0.71	0.71	0.71
17.200	0.70	0.70	0.69	0.69	0.69
17.450	0.68	0.68	0.67	0.67	0.67
17.700	0.66	0.66	0.65	0.65	0.65
17.950	0.64	0.64	0.64	0.63	0.63
18.200	0.62	0.62	0.62	0.61	0.61
18.450	0.61	0.60	0.60	0.60	0.59
18.700	0.59	0.58	0.58	0.58	0.57
18.950	0.57	0.57	0.56	0.56	0.56
19.200	0.55	0.55	0.55	0.55	0.54
19.450	0.54	0.54	0.53	0.53	0.53
19.700	0.52	0.52	0.52	0.52	0.51
19.950	0.51	0.51	0.50	0.50	0.50
20.200	0.50	0.49	0.49	0.49	0.48
20.450	0.48	0.48	0.48	0.47	0.47
20.700	0.47	0.47	0.46	0.46	0.46
20.950	0.46	0.45	0.45	0.45	0.45
21.200	0.44	0.44	0.44	0.44	0.43
21.450	0.43	0.43	0.43	0.43	0.42
21.700	0.42	0.42	0.42	0.41	0.41
21.950	0.41	0.41	0.41	0.40	0.40
22.200	0.40	0.40	0.39	0.39	0.39
22.450	0.39	0.39	0.38	0.38	0.38

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.700	0.38	0.38	0.37	0.37	0.37
22.950	0.37	0.37	0.37	0.36	0.36
23.200	0.36	0.36	0.36	0.35	0.35
23.450	0.35	0.35	0.35	0.35	0.34
23.700	0.34	0.34	0.34	0.34	0.33
23.950	0.33	0.33	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Peak Discharge	1.69 ft³/s
Time to Peak	13.050 hours
Hydrograph Volume	0.881 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.800	0.00	0.05	0.12	0.21	0.33
12.050	0.49	0.69	0.87	1.02	1.17
12.300	1.27	1.36	1.42	1.48	1.53
12.550	1.58	1.60	1.62	1.64	1.66
12.800	1.67	1.68	1.68	1.69	1.69
13.050	1.69	1.69	1.69	1.68	1.68
13.300	1.67	1.67	1.66	1.65	1.64
13.550	1.63	1.61	1.60	1.59	1.58
13.800	1.56	1.55	1.54	1.52	1.51
14.050	1.50	1.49	1.47	1.46	1.45
14.300	1.43	1.42	1.41	1.39	1.38
14.550	1.37	1.35	1.34	1.33	1.31
14.800	1.30	1.29	1.27	1.26	1.24
15.050	1.23	1.22	1.20	1.19	1.18
15.300	1.16	1.15	1.14	1.13	1.11
15.550	1.10	1.09	1.08	1.07	1.06
15.800	1.04	1.03	1.02	1.01	1.00
16.050	0.99	0.98	0.97	0.96	0.95
16.300	0.95	0.94	0.94	0.93	0.93
16.550	0.92	0.92	0.91	0.91	0.90
16.800	0.90	0.89	0.89	0.88	0.88
17.050	0.87	0.87	0.86	0.86	0.85
17.300	0.85	0.84	0.84	0.83	0.83
17.550	0.82	0.82	0.81	0.81	0.80
17.800	0.80	0.80	0.79	0.79	0.78
18.050	0.78	0.77	0.77	0.76	0.76
18.300	0.75	0.75	0.74	0.74	0.74
18.550	0.73	0.73	0.72	0.72	0.71
18.800	0.71	0.71	0.70	0.70	0.69
19.050	0.69	0.68	0.68	0.68	0.67
19.300	0.67	0.67	0.66	0.66	0.65
19.550	0.65	0.65	0.64	0.64	0.64
19.800	0.63	0.63	0.62	0.62	0.62
20.050	0.61	0.61	0.61	0.60	0.60
20.300	0.60	0.59	0.59	0.59	0.58
20.550	0.58	0.58	0.57	0.57	0.57
20.800	0.56	0.56	0.56	0.56	0.55
21.050	0.55	0.55	0.54	0.54	0.54
21.300	0.53	0.53	0.53	0.53	0.52
21.550	0.52	0.52	0.52	0.51	0.51
21.800	0.51	0.50	0.50	0.50	0.50
22.050	0.49	0.49	0.49	0.49	0.48
22.300	0.48	0.48	0.48	0.47	0.47

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.550	0.47	0.47	0.46	0.46	0.46
22.800	0.46	0.45	0.45	0.45	0.45
23.050	0.44	0.44	0.44	0.44	0.44
23.300	0.43	0.43	0.43	0.43	0.42
23.550	0.42	0.42	0.42	0.42	0.41
23.800	0.41	0.41	0.41	0.41	0.40

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Peak Discharge	2.66 ft³/s
Time to Peak	12.850 hours
Hydrograph Volume	1.266 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.400	0.00	0.00	0.03	0.07	0.11
11.650	0.16	0.21	0.27	0.33	0.41
11.900	0.50	0.61	0.76	0.96	1.45
12.150	1.88	2.11	2.25	2.35	2.43
12.400	2.49	2.53	2.58	2.61	2.63
12.650	2.64	2.65	2.66	2.66	2.66
12.900	2.66	2.66	2.65	2.64	2.63
13.150	2.62	2.61	2.59	2.58	2.56
13.400	2.55	2.53	2.51	2.49	2.47
13.650	2.45	2.43	2.41	2.39	2.37
13.900	2.35	2.33	2.31	2.29	2.27
14.150	2.25	2.23	2.20	2.18	2.16
14.400	2.14	2.12	2.10	2.08	2.06
14.650	2.04	2.02	2.00	1.98	1.96
14.900	1.94	1.92	1.90	1.88	1.86
15.150	1.84	1.82	1.80	1.78	1.76
15.400	1.74	1.72	1.70	1.67	1.65
15.650	1.63	1.61	1.59	1.57	1.55
15.900	1.54	1.52	1.50	1.48	1.46
16.150	1.44	1.43	1.41	1.39	1.38
16.400	1.36	1.34	1.33	1.31	1.30
16.650	1.28	1.27	1.25	1.24	1.22
16.900	1.21	1.20	1.18	1.17	1.15
17.150	1.14	1.13	1.11	1.10	1.09
17.400	1.08	1.06	1.05	1.04	1.03
17.650	1.02	1.01	0.99	0.98	0.97
17.900	0.96	0.95	0.95	0.94	0.94
18.150	0.93	0.92	0.92	0.91	0.91
18.400	0.90	0.90	0.89	0.89	0.88
18.650	0.88	0.87	0.87	0.86	0.86
18.900	0.85	0.85	0.84	0.84	0.83
19.150	0.83	0.82	0.82	0.81	0.81
19.400	0.81	0.80	0.80	0.79	0.79
19.650	0.78	0.78	0.77	0.77	0.77
19.900	0.76	0.76	0.75	0.75	0.75
20.150	0.74	0.74	0.73	0.73	0.73
20.400	0.72	0.72	0.71	0.71	0.71
20.650	0.70	0.70	0.70	0.69	0.69
20.900	0.68	0.68	0.68	0.67	0.67
21.150	0.67	0.66	0.66	0.66	0.65
21.400	0.65	0.65	0.64	0.64	0.64
21.650	0.63	0.63	0.63	0.62	0.62
21.900	0.62	0.61	0.61	0.61	0.60

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.150	0.60	0.60	0.59	0.59	0.59
22.400	0.59	0.58	0.58	0.58	0.57
22.650	0.57	0.57	0.56	0.56	0.56
22.900	0.56	0.55	0.55	0.55	0.55
23.150	0.54	0.54	0.54	0.53	0.53
23.400	0.53	0.53	0.52	0.52	0.52
23.650	0.52	0.51	0.51	0.51	0.51
23.900	0.50	0.50	0.50	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Peak Discharge	3.84 ft³/s
Time to Peak	12.650 hours
Hydrograph Volume	1.592 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.050	0.00	0.02	0.04	0.07	0.10
11.300	0.13	0.16	0.20	0.23	0.26
11.550	0.31	0.36	0.41	0.47	0.53
11.800	0.60	0.69	0.79	0.93	1.24
12.050	1.69	2.18	2.62	2.90	3.18
12.300	3.37	3.51	3.62	3.70	3.77
12.550	3.82	3.83	3.84	3.83	3.82
12.800	3.81	3.79	3.77	3.74	3.71
13.050	3.67	3.64	3.59	3.55	3.51
13.300	3.46	3.42	3.37	3.32	3.27
13.550	3.22	3.17	3.12	3.07	3.02
13.800	2.97	2.92	2.88	2.84	2.81
14.050	2.79	2.76	2.74	2.71	2.68
14.300	2.66	2.63	2.61	2.58	2.56
14.550	2.53	2.51	2.48	2.46	2.43
14.800	2.41	2.38	2.36	2.33	2.31
15.050	2.28	2.26	2.23	2.21	2.19
15.300	2.16	2.14	2.12	2.09	2.07
15.550	2.05	2.03	2.01	1.98	1.96
15.800	1.94	1.92	1.90	1.88	1.86
16.050	1.84	1.82	1.80	1.78	1.76
16.300	1.74	1.72	1.70	1.68	1.66
16.550	1.64	1.62	1.60	1.58	1.56
16.800	1.54	1.52	1.50	1.48	1.46
17.050	1.45	1.43	1.41	1.40	1.38
17.300	1.36	1.35	1.33	1.31	1.30
17.550	1.28	1.27	1.25	1.24	1.22
17.800	1.21	1.20	1.18	1.17	1.15
18.050	1.14	1.13	1.11	1.10	1.09
18.300	1.07	1.06	1.05	1.04	1.03
18.550	1.01	1.00	0.99	0.98	0.97
18.800	0.96	0.95	0.95	0.94	0.94
19.050	0.93	0.93	0.92	0.92	0.91
19.300	0.91	0.90	0.90	0.89	0.89
19.550	0.88	0.88	0.87	0.87	0.86
19.800	0.86	0.86	0.85	0.85	0.84
20.050	0.84	0.83	0.83	0.83	0.82
20.300	0.82	0.81	0.81	0.80	0.80
20.550	0.80	0.79	0.79	0.78	0.78
20.800	0.78	0.77	0.77	0.76	0.76
21.050	0.76	0.75	0.75	0.75	0.74
21.300	0.74	0.73	0.73	0.73	0.72
21.550	0.72	0.72	0.71	0.71	0.71

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.800	0.70	0.70	0.69	0.69	0.69
22.050	0.68	0.68	0.68	0.67	0.67
22.300	0.67	0.66	0.66	0.66	0.66
22.550	0.65	0.65	0.65	0.64	0.64
22.800	0.64	0.63	0.63	0.63	0.62
23.050	0.62	0.62	0.61	0.61	0.61
23.300	0.61	0.60	0.60	0.60	0.59
23.550	0.59	0.59	0.59	0.58	0.58
23.800	0.58	0.57	0.57	0.57	0.57

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Peak Discharge	5.65 ft³/s
Time to Peak	12.550 hours
Hydrograph Volume	2.071 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.400	0.00	0.01	0.03	0.05	0.07
10.650	0.08	0.10	0.13	0.15	0.17
10.900	0.19	0.22	0.24	0.27	0.30
11.150	0.33	0.36	0.39	0.42	0.46
11.400	0.50	0.54	0.58	0.62	0.68
11.650	0.75	0.81	0.89	1.00	1.20
11.900	1.44	1.75	2.09	2.54	3.32
12.150	4.24	4.77	5.07	5.27	5.41
12.400	5.50	5.57	5.62	5.65	5.64
12.650	5.61	5.58	5.54	5.49	5.44
12.900	5.39	5.33	5.27	5.21	5.14
13.150	5.07	5.00	4.92	4.85	4.77
13.400	4.70	4.62	4.54	4.47	4.39
13.650	4.31	4.23	4.16	4.08	4.01
13.900	3.94	3.87	3.80	3.73	3.67
14.150	3.60	3.54	3.47	3.41	3.35
14.400	3.29	3.23	3.18	3.12	3.07
14.650	3.01	2.96	2.90	2.85	2.82
14.900	2.79	2.76	2.73	2.71	2.68
15.150	2.65	2.62	2.59	2.57	2.54
15.400	2.51	2.48	2.46	2.43	2.41
15.650	2.38	2.36	2.33	2.31	2.28
15.900	2.26	2.24	2.21	2.19	2.17
16.150	2.15	2.12	2.10	2.08	2.06
16.400	2.04	2.02	2.00	1.98	1.96
16.650	1.94	1.92	1.90	1.88	1.86
16.900	1.84	1.82	1.80	1.78	1.76
17.150	1.74	1.72	1.70	1.68	1.66
17.400	1.64	1.62	1.60	1.58	1.56
17.650	1.54	1.52	1.51	1.49	1.47
17.900	1.45	1.43	1.42	1.40	1.38
18.150	1.37	1.35	1.34	1.32	1.30
18.400	1.29	1.27	1.26	1.25	1.23
18.650	1.22	1.20	1.19	1.18	1.17
18.900	1.15	1.14	1.13	1.12	1.11
19.150	1.09	1.08	1.07	1.06	1.05
19.400	1.04	1.03	1.02	1.01	1.00
19.650	0.99	0.98	0.97	0.96	0.95
19.900	0.95	0.94	0.94	0.94	0.93
20.150	0.93	0.92	0.92	0.91	0.91
20.400	0.90	0.90	0.90	0.89	0.89
20.650	0.88	0.88	0.88	0.87	0.87
20.900	0.86	0.86	0.86	0.85	0.85

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.150	0.84	0.84	0.84	0.83	0.83
21.400	0.82	0.82	0.82	0.81	0.81
21.650	0.81	0.80	0.80	0.80	0.79
21.900	0.79	0.78	0.78	0.78	0.77
22.150	0.77	0.77	0.76	0.76	0.76
22.400	0.75	0.75	0.75	0.74	0.74
22.650	0.74	0.73	0.73	0.73	0.72
22.900	0.72	0.72	0.71	0.71	0.71
23.150	0.70	0.70	0.70	0.69	0.69
23.400	0.69	0.68	0.68	0.68	0.68
23.650	0.67	0.67	0.67	0.66	0.66
23.900	0.66	0.65	0.65	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Peak Discharge	7.99 ft³/s
Time to Peak	12.500 hours
Hydrograph Volume	2.480 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
9.850	0.00	0.02	0.03	0.05	0.07
10.100	0.08	0.10	0.12	0.13	0.15
10.350	0.17	0.19	0.20	0.22	0.24
10.600	0.26	0.28	0.30	0.33	0.35
10.850	0.37	0.40	0.42	0.45	0.48
11.100	0.51	0.54	0.58	0.61	0.65
11.350	0.69	0.73	0.78	0.82	0.87
11.600	0.94	1.06	1.21	1.38	1.57
11.850	1.80	2.02	2.31	2.69	3.48
12.100	4.64	5.67	6.54	7.18	7.56
12.350	7.80	7.91	7.96	7.99	7.96
12.600	7.85	7.70	7.54	7.38	7.22
12.850	7.05	6.88	6.70	6.52	6.34
13.100	6.16	5.99	5.90	5.81	5.72
13.350	5.63	5.54	5.45	5.35	5.26
13.600	5.16	5.07	4.98	4.89	4.80
13.850	4.71	4.63	4.54	4.46	4.38
14.100	4.30	4.23	4.15	4.08	4.00
14.350	3.93	3.86	3.79	3.72	3.66
14.600	3.59	3.52	3.46	3.40	3.34
14.850	3.27	3.21	3.16	3.10	3.04
15.100	2.98	2.93	2.87	2.83	2.80
15.350	2.78	2.75	2.72	2.69	2.66
15.600	2.64	2.61	2.58	2.56	2.53
15.850	2.51	2.48	2.46	2.43	2.41
16.100	2.38	2.36	2.34	2.31	2.29
16.350	2.27	2.24	2.22	2.20	2.18
16.600	2.16	2.14	2.11	2.09	2.07
16.850	2.05	2.03	2.01	1.99	1.97
17.100	1.95	1.93	1.91	1.90	1.88
17.350	1.86	1.84	1.82	1.80	1.78
17.600	1.76	1.74	1.72	1.70	1.68
17.850	1.66	1.64	1.62	1.60	1.58
18.100	1.57	1.55	1.53	1.51	1.49
18.350	1.48	1.46	1.44	1.43	1.41
18.600	1.40	1.38	1.37	1.35	1.34
18.850	1.32	1.31	1.29	1.28	1.27
19.100	1.25	1.24	1.23	1.22	1.20
19.350	1.19	1.18	1.17	1.16	1.15
19.600	1.13	1.12	1.11	1.10	1.09
19.850	1.08	1.07	1.06	1.05	1.04
20.100	1.03	1.02	1.02	1.01	1.00
20.350	0.99	0.98	0.97	0.96	0.96

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.600	0.95	0.95	0.94	0.94	0.94
20.850	0.93	0.93	0.92	0.92	0.92
21.100	0.91	0.91	0.90	0.90	0.90
21.350	0.89	0.89	0.89	0.88	0.88
21.600	0.87	0.87	0.87	0.86	0.86
21.850	0.86	0.85	0.85	0.85	0.84
22.100	0.84	0.83	0.83	0.83	0.82
22.350	0.82	0.82	0.81	0.81	0.81
22.600	0.80	0.80	0.80	0.79	0.79
22.850	0.79	0.78	0.78	0.78	0.77
23.100	0.77	0.77	0.76	0.76	0.76
23.350	0.76	0.75	0.75	0.75	0.74
23.600	0.74	0.74	0.73	0.73	0.73
23.850	0.72	0.72	0.72	0.72	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Peak Discharge	10.70 ft³/s
Time to Peak	12.400 hours
Hydrograph Volume	2.926 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
9.250	0.00	0.01	0.02	0.04	0.05
9.500	0.07	0.08	0.10	0.12	0.13
9.750	0.15	0.16	0.18	0.20	0.21
10.000	0.23	0.25	0.27	0.29	0.30
10.250	0.32	0.34	0.36	0.38	0.40
10.500	0.41	0.43	0.46	0.48	0.50
10.750	0.52	0.55	0.58	0.60	0.63
11.000	0.66	0.69	0.73	0.76	0.80
11.250	0.84	0.88	0.92	0.99	1.08
11.500	1.18	1.29	1.43	1.59	1.75
11.750	1.91	2.09	2.30	2.55	2.90
12.000	3.67	4.69	6.00	8.35	9.61
12.250	10.21	10.53	10.67	10.70	10.65
12.500	10.59	10.47	10.26	10.00	9.75
12.750	9.49	9.24	8.98	8.73	8.48
13.000	8.22	7.97	7.71	7.46	7.22
13.250	6.98	6.75	6.53	6.31	6.10
13.500	5.94	5.84	5.74	5.64	5.53
13.750	5.44	5.34	5.24	5.15	5.06
14.000	4.97	4.88	4.80	4.71	4.63
14.250	4.55	4.47	4.39	4.31	4.23
14.500	4.16	4.09	4.01	3.94	3.87
14.750	3.80	3.73	3.67	3.60	3.53
15.000	3.47	3.41	3.34	3.28	3.22
15.250	3.16	3.11	3.05	3.00	2.94
15.500	2.89	2.84	2.82	2.79	2.76
15.750	2.74	2.71	2.68	2.66	2.63
16.000	2.61	2.58	2.56	2.53	2.51
16.250	2.49	2.46	2.44	2.42	2.39
16.500	2.37	2.35	2.33	2.30	2.28
16.750	2.26	2.24	2.22	2.20	2.18
17.000	2.15	2.13	2.11	2.09	2.07
17.250	2.05	2.04	2.02	2.00	1.98
17.500	1.96	1.94	1.92	1.90	1.89
17.750	1.87	1.85	1.83	1.81	1.80
18.000	1.78	1.76	1.74	1.72	1.70
18.250	1.68	1.66	1.64	1.62	1.60
18.500	1.59	1.57	1.55	1.53	1.52
18.750	1.50	1.49	1.47	1.46	1.44
19.000	1.43	1.41	1.40	1.38	1.37
19.250	1.36	1.34	1.33	1.32	1.30
19.500	1.29	1.28	1.27	1.26	1.24
19.750	1.23	1.22	1.21	1.20	1.19

Post-Development Analysis Results (with BMPs)

Subsection: Diverted Hydrograph
Label: Outlet-MRC
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.000	1.18	1.17	1.16	1.15	1.14
20.250	1.13	1.12	1.11	1.10	1.09
20.500	1.08	1.07	1.06	1.05	1.05
20.750	1.04	1.03	1.02	1.01	1.01
21.000	1.00	0.99	0.98	0.97	0.97
21.250	0.96	0.95	0.95	0.95	0.94
21.500	0.94	0.94	0.93	0.93	0.93
21.750	0.92	0.92	0.92	0.91	0.91
22.000	0.90	0.90	0.90	0.89	0.89
22.250	0.89	0.88	0.88	0.88	0.87
22.500	0.87	0.87	0.86	0.86	0.86
22.750	0.85	0.85	0.85	0.85	0.84
23.000	0.84	0.84	0.83	0.83	0.83
23.250	0.82	0.82	0.82	0.81	0.81
23.500	0.81	0.80	0.80	0.80	0.79
23.750	0.79	0.79	0.79	0.78	0.78
24.000	0.78	(N/A)	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Elevation-Volume-Flow Table (Pond)
Label: PO-2
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	47.50 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
47.50	0.00	0.000	0.000	0.00	0.00	0.00
48.00	1.15	0.043	0.000	0.00	1.15	22.17
48.50	2.74	0.111	0.000	0.00	2.74	56.50
49.00	4.38	0.179	0.000	0.00	4.38	90.88
49.50	8.61	0.222	0.000	0.00	8.61	116.12

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Peak Discharge	1.73 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	0.296 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.650	0.00	0.00	0.00	0.00	0.00
1.900	0.00	0.00	0.00	0.00	0.00
2.150	0.00	0.01	0.01	0.01	0.01
2.400	0.01	0.01	0.01	0.01	0.01
2.650	0.01	0.01	0.01	0.01	0.01
2.900	0.01	0.01	0.01	0.01	0.02
3.150	0.02	0.02	0.02	0.02	0.02
3.400	0.02	0.02	0.02	0.02	0.02
3.650	0.02	0.02	0.02	0.02	0.02
3.900	0.02	0.02	0.02	0.02	0.03
4.150	0.03	0.03	0.03	0.03	0.03
4.400	0.03	0.03	0.03	0.03	0.03
4.650	0.03	0.03	0.03	0.03	0.03
4.900	0.03	0.03	0.03	0.03	0.03
5.150	0.03	0.03	0.04	0.04	0.04
5.400	0.04	0.04	0.04	0.04	0.04
5.650	0.04	0.04	0.04	0.04	0.04
5.900	0.04	0.04	0.04	0.04	0.04
6.150	0.04	0.04	0.04	0.04	0.04
6.400	0.05	0.05	0.05	0.05	0.05
6.650	0.05	0.05	0.05	0.05	0.05
6.900	0.05	0.05	0.05	0.05	0.06
7.150	0.06	0.06	0.06	0.06	0.06
7.400	0.06	0.06	0.06	0.06	0.06
7.650	0.06	0.06	0.07	0.07	0.07
7.900	0.07	0.07	0.07	0.07	0.07
8.150	0.07	0.07	0.07	0.07	0.08
8.400	0.08	0.08	0.08	0.08	0.08
8.650	0.08	0.08	0.08	0.08	0.08
8.900	0.09	0.09	0.09	0.09	0.09
9.150	0.09	0.09	0.09	0.10	0.10
9.400	0.10	0.10	0.10	0.11	0.11
9.650	0.11	0.11	0.11	0.12	0.12
9.900	0.12	0.12	0.13	0.13	0.13
10.150	0.14	0.14	0.14	0.14	0.15
10.400	0.15	0.15	0.16	0.16	0.16
10.650	0.17	0.17	0.18	0.18	0.19
10.900	0.20	0.21	0.21	0.22	0.23
11.150	0.24	0.26	0.27	0.28	0.30
11.400	0.31	0.33	0.34	0.37	0.40
11.650	0.44	0.47	0.52	0.57	0.64
11.900	0.72	0.84	1.00	1.21	1.48
12.150	1.67	1.73	1.71	1.67	1.62

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.400	1.55	1.48	1.42	1.35	1.28
12.650	1.21	1.14	1.07	1.01	0.95
12.900	0.89	0.84	0.79	0.74	0.70
13.150	0.66	0.62	0.59	0.55	0.52
13.400	0.50	0.47	0.44	0.42	0.40
13.650	0.38	0.36	0.34	0.33	0.31
13.900	0.30	0.29	0.27	0.26	0.25
14.150	0.25	0.24	0.23	0.22	0.22
14.400	0.21	0.20	0.20	0.19	0.19
14.650	0.18	0.18	0.17	0.17	0.16
14.900	0.16	0.16	0.15	0.15	0.14
15.150	0.14	0.14	0.14	0.13	0.13
15.400	0.13	0.13	0.12	0.12	0.12
15.650	0.12	0.12	0.11	0.11	0.11
15.900	0.11	0.11	0.11	0.11	0.11
16.150	0.10	0.10	0.10	0.10	0.10
16.400	0.10	0.10	0.10	0.10	0.10
16.650	0.10	0.09	0.09	0.09	0.09
16.900	0.09	0.09	0.09	0.09	0.09
17.150	0.09	0.09	0.09	0.08	0.08
17.400	0.08	0.08	0.08	0.08	0.08
17.650	0.08	0.08	0.08	0.08	0.08
17.900	0.07	0.07	0.07	0.07	0.07
18.150	0.07	0.07	0.07	0.07	0.07
18.400	0.07	0.07	0.07	0.07	0.07
18.650	0.07	0.07	0.06	0.06	0.06
18.900	0.06	0.06	0.06	0.06	0.06
19.150	0.06	0.06	0.06	0.06	0.06
19.400	0.06	0.06	0.06	0.06	0.06
19.650	0.06	0.06	0.06	0.06	0.06
19.900	0.06	0.06	0.06	0.06	0.06
20.150	0.06	0.06	0.06	0.06	0.06
20.400	0.06	0.06	0.06	0.06	0.06
20.650	0.06	0.06	0.06	0.06	0.06
20.900	0.06	0.05	0.05	0.05	0.05
21.150	0.05	0.05	0.05	0.05	0.05
21.400	0.05	0.05	0.05	0.05	0.05
21.650	0.05	0.05	0.05	0.05	0.05
21.900	0.05	0.05	0.05	0.05	0.05
22.150	0.05	0.05	0.05	0.05	0.05
22.400	0.05	0.05	0.05	0.05	0.05
22.650	0.05	0.05	0.05	0.05	0.05
22.900	0.05	0.05	0.05	0.05	0.05
23.150	0.05	0.05	0.05	0.05	0.05
23.400	0.05	0.05	0.04	0.04	0.04
23.650	0.04	0.04	0.04	0.04	0.04
23.900	0.04	0.04	0.04	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Peak Discharge	2.08 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	0.363 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.400	0.00	0.00	0.00	0.00	0.00
1.650	0.00	0.00	0.00	0.01	0.01
1.900	0.01	0.01	0.01	0.01	0.01
2.150	0.01	0.01	0.01	0.01	0.01
2.400	0.01	0.01	0.01	0.02	0.02
2.650	0.02	0.02	0.02	0.02	0.02
2.900	0.02	0.02	0.02	0.02	0.02
3.150	0.02	0.02	0.03	0.03	0.03
3.400	0.03	0.03	0.03	0.03	0.03
3.650	0.03	0.03	0.03	0.03	0.03
3.900	0.03	0.03	0.03	0.03	0.04
4.150	0.04	0.04	0.04	0.04	0.04
4.400	0.04	0.04	0.04	0.04	0.04
4.650	0.04	0.04	0.04	0.04	0.04
4.900	0.04	0.04	0.04	0.05	0.05
5.150	0.05	0.05	0.05	0.05	0.05
5.400	0.05	0.05	0.05	0.05	0.05
5.650	0.05	0.05	0.05	0.05	0.05
5.900	0.05	0.05	0.05	0.05	0.05
6.150	0.06	0.06	0.06	0.06	0.06
6.400	0.06	0.06	0.06	0.06	0.06
6.650	0.06	0.06	0.06	0.07	0.07
6.900	0.07	0.07	0.07	0.07	0.07
7.150	0.07	0.07	0.07	0.07	0.08
7.400	0.08	0.08	0.08	0.08	0.08
7.650	0.08	0.08	0.08	0.08	0.09
7.900	0.09	0.09	0.09	0.09	0.09
8.150	0.09	0.09	0.09	0.09	0.10
8.400	0.10	0.10	0.10	0.10	0.10
8.650	0.10	0.10	0.10	0.10	0.11
8.900	0.11	0.11	0.11	0.11	0.11
9.150	0.11	0.11	0.12	0.12	0.12
9.400	0.12	0.13	0.13	0.13	0.13
9.650	0.14	0.14	0.14	0.15	0.15
9.900	0.15	0.15	0.16	0.16	0.16
10.150	0.17	0.17	0.17	0.18	0.18
10.400	0.18	0.19	0.19	0.20	0.20
10.650	0.21	0.21	0.22	0.23	0.24
10.900	0.24	0.25	0.26	0.27	0.29
11.150	0.30	0.31	0.33	0.35	0.36
11.400	0.38	0.40	0.42	0.45	0.49
11.650	0.53	0.58	0.63	0.69	0.77
11.900	0.87	1.02	1.21	1.45	1.77

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.150	2.01	2.08	2.07	2.02	1.95
12.400	1.87	1.79	1.72	1.64	1.55
12.650	1.46	1.38	1.31	1.24	1.17
12.900	1.10	1.04	0.98	0.92	0.86
13.150	0.81	0.77	0.72	0.68	0.64
13.400	0.61	0.58	0.54	0.52	0.49
13.650	0.46	0.44	0.42	0.40	0.38
13.900	0.36	0.35	0.34	0.32	0.31
14.150	0.30	0.29	0.28	0.27	0.26
14.400	0.25	0.25	0.24	0.23	0.23
14.650	0.22	0.22	0.21	0.20	0.20
14.900	0.19	0.19	0.19	0.18	0.18
15.150	0.17	0.17	0.16	0.16	0.16
15.400	0.15	0.15	0.15	0.15	0.15
15.650	0.14	0.14	0.14	0.14	0.14
15.900	0.13	0.13	0.13	0.13	0.13
16.150	0.13	0.13	0.12	0.12	0.12
16.400	0.12	0.12	0.12	0.12	0.12
16.650	0.12	0.11	0.11	0.11	0.11
16.900	0.11	0.11	0.11	0.11	0.11
17.150	0.11	0.10	0.10	0.10	0.10
17.400	0.10	0.10	0.10	0.10	0.10
17.650	0.10	0.09	0.09	0.09	0.09
17.900	0.09	0.09	0.09	0.09	0.09
18.150	0.09	0.09	0.08	0.08	0.08
18.400	0.08	0.08	0.08	0.08	0.08
18.650	0.08	0.08	0.08	0.08	0.08
18.900	0.08	0.08	0.08	0.08	0.08
19.150	0.08	0.08	0.08	0.07	0.07
19.400	0.07	0.07	0.07	0.07	0.07
19.650	0.07	0.07	0.07	0.07	0.07
19.900	0.07	0.07	0.07	0.07	0.07
20.150	0.07	0.07	0.07	0.07	0.07
20.400	0.07	0.07	0.07	0.07	0.07
20.650	0.07	0.07	0.07	0.07	0.07
20.900	0.07	0.07	0.07	0.07	0.07
21.150	0.07	0.07	0.07	0.06	0.06
21.400	0.06	0.06	0.06	0.06	0.06
21.650	0.06	0.06	0.06	0.06	0.06
21.900	0.06	0.06	0.06	0.06	0.06
22.150	0.06	0.06	0.06	0.06	0.06
22.400	0.06	0.06	0.06	0.06	0.06
22.650	0.06	0.06	0.06	0.06	0.06
22.900	0.06	0.06	0.06	0.06	0.06
23.150	0.06	0.06	0.06	0.06	0.06
23.400	0.05	0.05	0.05	0.05	0.05
23.650	0.05	0.05	0.05	0.05	0.05
23.900	0.05	0.05	0.05	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Peak Discharge	2.63 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	0.466 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
1.150	0.00	0.00	0.00	0.00	0.00
1.400	0.00	0.01	0.01	0.01	0.01
1.650	0.01	0.01	0.01	0.01	0.01
1.900	0.01	0.01	0.02	0.02	0.02
2.150	0.02	0.02	0.02	0.02	0.02
2.400	0.02	0.02	0.03	0.03	0.03
2.650	0.03	0.03	0.03	0.03	0.03
2.900	0.03	0.03	0.04	0.04	0.04
3.150	0.04	0.04	0.04	0.04	0.04
3.400	0.04	0.04	0.04	0.04	0.04
3.650	0.05	0.05	0.05	0.05	0.05
3.900	0.05	0.05	0.05	0.05	0.05
4.150	0.05	0.05	0.05	0.05	0.06
4.400	0.06	0.06	0.06	0.06	0.06
4.650	0.06	0.06	0.06	0.06	0.06
4.900	0.06	0.06	0.06	0.06	0.06
5.150	0.06	0.07	0.07	0.07	0.07
5.400	0.07	0.07	0.07	0.07	0.07
5.650	0.07	0.07	0.07	0.07	0.07
5.900	0.07	0.07	0.07	0.07	0.07
6.150	0.08	0.08	0.08	0.08	0.08
6.400	0.08	0.08	0.08	0.08	0.08
6.650	0.08	0.09	0.09	0.09	0.09
6.900	0.09	0.09	0.09	0.09	0.09
7.150	0.10	0.10	0.10	0.10	0.10
7.400	0.10	0.10	0.10	0.11	0.11
7.650	0.11	0.11	0.11	0.11	0.11
7.900	0.11	0.12	0.12	0.12	0.12
8.150	0.12	0.12	0.12	0.12	0.13
8.400	0.13	0.13	0.13	0.13	0.13
8.650	0.13	0.13	0.14	0.14	0.14
8.900	0.14	0.14	0.14	0.14	0.14
9.150	0.15	0.15	0.15	0.15	0.16
9.400	0.16	0.16	0.17	0.17	0.17
9.650	0.18	0.18	0.18	0.19	0.19
9.900	0.20	0.20	0.20	0.21	0.21
10.150	0.22	0.22	0.22	0.23	0.23
10.400	0.24	0.24	0.25	0.25	0.26
10.650	0.26	0.27	0.28	0.29	0.30
10.900	0.31	0.32	0.34	0.35	0.37
11.150	0.38	0.40	0.42	0.44	0.46
11.400	0.49	0.51	0.54	0.57	0.62
11.650	0.68	0.73	0.80	0.88	0.99

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.900	1.11	1.28	1.50	1.82	2.23
12.150	2.54	2.63	2.61	2.55	2.47
12.400	2.37	2.27	2.17	2.07	1.97
12.650	1.86	1.75	1.66	1.57	1.49
12.900	1.41	1.33	1.26	1.19	1.13
13.150	1.06	1.00	0.94	0.88	0.83
13.400	0.79	0.74	0.70	0.67	0.63
13.650	0.60	0.57	0.54	0.51	0.49
13.900	0.47	0.45	0.43	0.41	0.40
14.150	0.38	0.37	0.36	0.35	0.34
14.400	0.33	0.32	0.31	0.30	0.29
14.650	0.28	0.28	0.27	0.26	0.25
14.900	0.25	0.24	0.24	0.23	0.22
15.150	0.22	0.21	0.21	0.20	0.20
15.400	0.20	0.19	0.19	0.19	0.18
15.650	0.18	0.18	0.18	0.17	0.17
15.900	0.17	0.17	0.17	0.17	0.16
16.150	0.16	0.16	0.16	0.16	0.16
16.400	0.15	0.15	0.15	0.15	0.15
16.650	0.15	0.15	0.14	0.14	0.14
16.900	0.14	0.14	0.14	0.14	0.14
17.150	0.13	0.13	0.13	0.13	0.13
17.400	0.13	0.13	0.13	0.12	0.12
17.650	0.12	0.12	0.12	0.12	0.12
17.900	0.12	0.11	0.11	0.11	0.11
18.150	0.11	0.11	0.11	0.11	0.11
18.400	0.10	0.10	0.10	0.10	0.10
18.650	0.10	0.10	0.10	0.10	0.10
18.900	0.10	0.10	0.10	0.10	0.10
19.150	0.10	0.10	0.10	0.10	0.09
19.400	0.09	0.09	0.09	0.09	0.09
19.650	0.09	0.09	0.09	0.09	0.09
19.900	0.09	0.09	0.09	0.09	0.09
20.150	0.09	0.09	0.09	0.09	0.09
20.400	0.09	0.09	0.09	0.09	0.09
20.650	0.09	0.09	0.09	0.09	0.09
20.900	0.08	0.08	0.08	0.08	0.08
21.150	0.08	0.08	0.08	0.08	0.08
21.400	0.08	0.08	0.08	0.08	0.08
21.650	0.08	0.08	0.08	0.08	0.08
21.900	0.08	0.08	0.08	0.08	0.08
22.150	0.08	0.08	0.08	0.08	0.08
22.400	0.08	0.08	0.08	0.07	0.07
22.650	0.07	0.07	0.07	0.07	0.07
22.900	0.07	0.07	0.07	0.07	0.07
23.150	0.07	0.07	0.07	0.07	0.07
23.400	0.07	0.07	0.07	0.07	0.07
23.650	0.07	0.07	0.07	0.07	0.07

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.900	0.07	0.07	0.07	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Peak Discharge	3.11 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	0.553 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.950	0.00	0.00	0.00	0.00	0.00
1.200	0.00	0.01	0.01	0.01	0.01
1.450	0.01	0.01	0.01	0.01	0.01
1.700	0.02	0.02	0.02	0.02	0.02
1.950	0.02	0.02	0.03	0.03	0.03
2.200	0.03	0.03	0.03	0.03	0.03
2.450	0.03	0.04	0.04	0.04	0.04
2.700	0.04	0.04	0.04	0.04	0.04
2.950	0.05	0.05	0.05	0.05	0.05
3.200	0.05	0.05	0.05	0.05	0.05
3.450	0.06	0.06	0.06	0.06	0.06
3.700	0.06	0.06	0.06	0.06	0.06
3.950	0.06	0.06	0.06	0.07	0.07
4.200	0.07	0.07	0.07	0.07	0.07
4.450	0.07	0.07	0.07	0.07	0.07
4.700	0.07	0.08	0.08	0.08	0.08
4.950	0.08	0.08	0.08	0.08	0.08
5.200	0.08	0.08	0.08	0.08	0.08
5.450	0.08	0.08	0.08	0.09	0.09
5.700	0.09	0.09	0.09	0.09	0.09
5.950	0.09	0.09	0.09	0.09	0.09
6.200	0.09	0.09	0.09	0.10	0.10
6.450	0.10	0.10	0.10	0.10	0.10
6.700	0.10	0.10	0.11	0.11	0.11
6.950	0.11	0.11	0.11	0.11	0.12
7.200	0.12	0.12	0.12	0.12	0.12
7.450	0.12	0.13	0.13	0.13	0.13
7.700	0.13	0.13	0.13	0.14	0.14
7.950	0.14	0.14	0.14	0.14	0.14
8.200	0.15	0.15	0.15	0.15	0.15
8.450	0.15	0.15	0.16	0.16	0.16
8.700	0.16	0.16	0.16	0.16	0.17
8.950	0.17	0.17	0.17	0.17	0.17
9.200	0.18	0.18	0.18	0.19	0.19
9.450	0.19	0.20	0.20	0.21	0.21
9.700	0.21	0.22	0.22	0.23	0.23
9.950	0.24	0.24	0.25	0.25	0.26
10.200	0.26	0.27	0.27	0.28	0.28
10.450	0.29	0.29	0.30	0.30	0.31
10.700	0.32	0.33	0.34	0.36	0.37
10.950	0.38	0.40	0.41	0.43	0.45
11.200	0.47	0.50	0.52	0.55	0.57
11.450	0.60	0.63	0.67	0.73	0.80

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.700	0.87	0.94	1.04	1.16	1.30
11.950	1.49	1.76	2.13	2.62	2.99
12.200	3.11	3.08	3.00	2.90	2.78
12.450	2.67	2.55	2.44	2.31	2.18
12.700	2.06	1.95	1.85	1.75	1.65
12.950	1.57	1.48	1.40	1.33	1.26
13.200	1.19	1.12	1.06	1.00	0.94
13.450	0.89	0.84	0.79	0.75	0.71
13.700	0.67	0.64	0.61	0.58	0.56
13.950	0.53	0.51	0.49	0.47	0.46
14.200	0.44	0.42	0.41	0.40	0.39
14.450	0.37	0.36	0.35	0.34	0.33
14.700	0.33	0.32	0.31	0.30	0.29
14.950	0.29	0.28	0.27	0.26	0.26
15.200	0.25	0.25	0.24	0.24	0.23
15.450	0.23	0.22	0.22	0.22	0.21
15.700	0.21	0.21	0.21	0.20	0.20
15.950	0.20	0.20	0.19	0.19	0.19
16.200	0.19	0.19	0.18	0.18	0.18
16.450	0.18	0.18	0.18	0.17	0.17
16.700	0.17	0.17	0.17	0.17	0.17
16.950	0.16	0.16	0.16	0.16	0.16
17.200	0.16	0.15	0.15	0.15	0.15
17.450	0.15	0.15	0.15	0.14	0.14
17.700	0.14	0.14	0.14	0.14	0.14
17.950	0.13	0.13	0.13	0.13	0.13
18.200	0.13	0.13	0.12	0.12	0.12
18.450	0.12	0.12	0.12	0.12	0.12
18.700	0.12	0.12	0.12	0.12	0.12
18.950	0.12	0.11	0.11	0.11	0.11
19.200	0.11	0.11	0.11	0.11	0.11
19.450	0.11	0.11	0.11	0.11	0.11
19.700	0.11	0.11	0.11	0.11	0.11
19.950	0.11	0.11	0.11	0.11	0.11
20.200	0.11	0.10	0.10	0.10	0.10
20.450	0.10	0.10	0.10	0.10	0.10
20.700	0.10	0.10	0.10	0.10	0.10
20.950	0.10	0.10	0.10	0.10	0.10
21.200	0.10	0.10	0.10	0.10	0.10
21.450	0.10	0.10	0.10	0.09	0.09
21.700	0.09	0.09	0.09	0.09	0.09
21.950	0.09	0.09	0.09	0.09	0.09
22.200	0.09	0.09	0.09	0.09	0.09
22.450	0.09	0.09	0.09	0.09	0.09
22.700	0.09	0.09	0.09	0.09	0.09
22.950	0.09	0.08	0.08	0.08	0.08
23.200	0.08	0.08	0.08	0.08	0.08
23.450	0.08	0.08	0.08	0.08	0.08

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.700	0.08	0.08	0.08	0.08	0.08
23.950	0.08	0.08	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Peak Discharge	3.80 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	0.678 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.800	0.00	0.00	0.00	0.00	0.00
1.050	0.01	0.01	0.01	0.01	0.01
1.300	0.01	0.01	0.02	0.02	0.02
1.550	0.02	0.02	0.03	0.03	0.03
1.800	0.03	0.03	0.03	0.04	0.04
2.050	0.04	0.04	0.04	0.04	0.04
2.300	0.05	0.05	0.05	0.05	0.05
2.550	0.05	0.05	0.06	0.06	0.06
2.800	0.06	0.06	0.06	0.06	0.06
3.050	0.07	0.07	0.07	0.07	0.07
3.300	0.07	0.07	0.07	0.07	0.08
3.550	0.08	0.08	0.08	0.08	0.08
3.800	0.08	0.08	0.08	0.08	0.08
4.050	0.09	0.09	0.09	0.09	0.09
4.300	0.09	0.09	0.09	0.09	0.09
4.550	0.09	0.09	0.10	0.10	0.10
4.800	0.10	0.10	0.10	0.10	0.10
5.050	0.10	0.10	0.10	0.10	0.10
5.300	0.10	0.11	0.11	0.11	0.11
5.550	0.11	0.11	0.11	0.11	0.11
5.800	0.11	0.11	0.11	0.11	0.11
6.050	0.11	0.12	0.12	0.12	0.12
6.300	0.12	0.12	0.12	0.12	0.12
6.550	0.13	0.13	0.13	0.13	0.13
6.800	0.13	0.13	0.14	0.14	0.14
7.050	0.14	0.14	0.14	0.15	0.15
7.300	0.15	0.15	0.15	0.15	0.16
7.550	0.16	0.16	0.16	0.16	0.16
7.800	0.17	0.17	0.17	0.17	0.17
8.050	0.17	0.18	0.18	0.18	0.18
8.300	0.18	0.19	0.19	0.19	0.19
8.550	0.19	0.19	0.20	0.20	0.20
8.800	0.20	0.20	0.20	0.21	0.21
9.050	0.21	0.21	0.22	0.22	0.22
9.300	0.23	0.23	0.23	0.24	0.24
9.550	0.25	0.25	0.26	0.26	0.27
9.800	0.27	0.28	0.28	0.29	0.30
10.050	0.30	0.31	0.31	0.32	0.33
10.300	0.33	0.34	0.34	0.35	0.36
10.550	0.36	0.37	0.38	0.39	0.41
10.800	0.42	0.44	0.45	0.47	0.49
11.050	0.51	0.53	0.55	0.58	0.61
11.300	0.64	0.67	0.70	0.74	0.77

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.550	0.82	0.90	0.98	1.06	1.16
11.800	1.26	1.40	1.56	1.80	2.13
12.050	2.59	3.20	3.66	3.80	3.77
12.300	3.67	3.55	3.40	3.26	3.12
12.550	2.97	2.81	2.65	2.51	2.37
12.800	2.25	2.13	2.01	1.91	1.80
13.050	1.71	1.62	1.53	1.45	1.37
13.300	1.30	1.24	1.17	1.11	1.05
13.550	0.99	0.93	0.88	0.83	0.79
13.800	0.75	0.72	0.69	0.66	0.63
14.050	0.60	0.58	0.56	0.54	0.52
14.300	0.50	0.49	0.47	0.46	0.45
14.550	0.43	0.42	0.41	0.40	0.39
14.800	0.38	0.37	0.36	0.35	0.34
15.050	0.33	0.32	0.32	0.31	0.30
15.300	0.29	0.29	0.28	0.28	0.27
15.550	0.27	0.27	0.26	0.26	0.25
15.800	0.25	0.25	0.25	0.24	0.24
16.050	0.24	0.23	0.23	0.23	0.23
16.300	0.23	0.22	0.22	0.22	0.22
16.550	0.21	0.21	0.21	0.21	0.21
16.800	0.21	0.20	0.20	0.20	0.20
17.050	0.20	0.19	0.19	0.19	0.19
17.300	0.19	0.18	0.18	0.18	0.18
17.550	0.18	0.18	0.17	0.17	0.17
17.800	0.17	0.17	0.17	0.16	0.16
18.050	0.16	0.16	0.16	0.16	0.15
18.300	0.15	0.15	0.15	0.15	0.15
18.550	0.15	0.15	0.15	0.14	0.14
18.800	0.14	0.14	0.14	0.14	0.14
19.050	0.14	0.14	0.14	0.14	0.14
19.300	0.14	0.14	0.14	0.14	0.13
19.550	0.13	0.13	0.13	0.13	0.13
19.800	0.13	0.13	0.13	0.13	0.13
20.050	0.13	0.13	0.13	0.13	0.13
20.300	0.13	0.13	0.13	0.13	0.13
20.550	0.12	0.12	0.12	0.12	0.12
20.800	0.12	0.12	0.12	0.12	0.12
21.050	0.12	0.12	0.12	0.12	0.12
21.300	0.12	0.12	0.12	0.12	0.12
21.550	0.12	0.12	0.12	0.11	0.11
21.800	0.11	0.11	0.11	0.11	0.11
22.050	0.11	0.11	0.11	0.11	0.11
22.300	0.11	0.11	0.11	0.11	0.11
22.550	0.11	0.11	0.11	0.11	0.11
22.800	0.11	0.10	0.10	0.10	0.10
23.050	0.10	0.10	0.10	0.10	0.10
23.300	0.10	0.10	0.10	0.10	0.10

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.550	0.10	0.10	0.10	0.10	0.10
23.800	0.10	0.10	0.10	0.10	0.10

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Peak Discharge	4.39 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	0.785 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.700	0.00	0.00	0.00	0.00	0.01
0.950	0.01	0.01	0.01	0.01	0.01
1.200	0.02	0.02	0.02	0.02	0.02
1.450	0.03	0.03	0.03	0.03	0.03
1.700	0.04	0.04	0.04	0.04	0.04
1.950	0.05	0.05	0.05	0.05	0.05
2.200	0.06	0.06	0.06	0.06	0.06
2.450	0.06	0.07	0.07	0.07	0.07
2.700	0.07	0.07	0.07	0.08	0.08
2.950	0.08	0.08	0.08	0.08	0.08
3.200	0.08	0.09	0.09	0.09	0.09
3.450	0.09	0.09	0.09	0.09	0.10
3.700	0.10	0.10	0.10	0.10	0.10
3.950	0.10	0.10	0.10	0.10	0.10
4.200	0.11	0.11	0.11	0.11	0.11
4.450	0.11	0.11	0.11	0.11	0.11
4.700	0.11	0.12	0.12	0.12	0.12
4.950	0.12	0.12	0.12	0.12	0.12
5.200	0.12	0.12	0.12	0.12	0.13
5.450	0.13	0.13	0.13	0.13	0.13
5.700	0.13	0.13	0.13	0.13	0.13
5.950	0.13	0.13	0.13	0.14	0.14
6.200	0.14	0.14	0.14	0.14	0.14
6.450	0.14	0.15	0.15	0.15	0.15
6.700	0.15	0.15	0.16	0.16	0.16
6.950	0.16	0.16	0.16	0.17	0.17
7.200	0.17	0.17	0.17	0.18	0.18
7.450	0.18	0.18	0.18	0.19	0.19
7.700	0.19	0.19	0.19	0.20	0.20
7.950	0.20	0.20	0.20	0.21	0.21
8.200	0.21	0.21	0.21	0.21	0.22
8.450	0.22	0.22	0.22	0.22	0.23
8.700	0.23	0.23	0.23	0.23	0.24
8.950	0.24	0.24	0.24	0.25	0.25
9.200	0.25	0.26	0.26	0.27	0.27
9.450	0.28	0.28	0.29	0.29	0.30
9.700	0.30	0.31	0.32	0.32	0.33
9.950	0.33	0.34	0.35	0.35	0.36
10.200	0.37	0.38	0.38	0.39	0.40
10.450	0.40	0.41	0.42	0.43	0.44
10.700	0.45	0.47	0.49	0.50	0.52
10.950	0.54	0.56	0.58	0.61	0.64
11.200	0.67	0.70	0.74	0.77	0.81

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.450	0.85	0.89	0.95	1.04	1.13
11.700	1.22	1.32	1.44	1.60	1.79
11.950	2.07	2.45	2.99	3.70	4.23
12.200	4.39	4.35	4.24	4.10	3.93
12.450	3.76	3.60	3.43	3.24	3.06
12.700	2.89	2.73	2.58	2.44	2.31
12.950	2.19	2.07	1.96	1.86	1.76
13.200	1.67	1.58	1.50	1.42	1.35
13.450	1.28	1.22	1.15	1.09	1.03
13.700	0.97	0.92	0.88	0.84	0.80
13.950	0.76	0.73	0.70	0.67	0.65
14.200	0.63	0.60	0.58	0.57	0.55
14.450	0.53	0.52	0.50	0.49	0.47
14.700	0.46	0.45	0.44	0.42	0.41
14.950	0.40	0.39	0.38	0.37	0.36
15.200	0.35	0.35	0.34	0.33	0.33
15.450	0.32	0.32	0.31	0.31	0.30
15.700	0.30	0.29	0.29	0.29	0.28
15.950	0.28	0.28	0.27	0.27	0.27
16.200	0.26	0.26	0.26	0.26	0.25
16.450	0.25	0.25	0.25	0.25	0.24
16.700	0.24	0.24	0.24	0.23	0.23
16.950	0.23	0.23	0.23	0.22	0.22
17.200	0.22	0.22	0.22	0.21	0.21
17.450	0.21	0.21	0.20	0.20	0.20
17.700	0.20	0.20	0.19	0.19	0.19
17.950	0.19	0.19	0.18	0.18	0.18
18.200	0.18	0.18	0.18	0.17	0.17
18.450	0.17	0.17	0.17	0.17	0.17
18.700	0.17	0.17	0.16	0.16	0.16
18.950	0.16	0.16	0.16	0.16	0.16
19.200	0.16	0.16	0.16	0.16	0.16
19.450	0.16	0.15	0.15	0.15	0.15
19.700	0.15	0.15	0.15	0.15	0.15
19.950	0.15	0.15	0.15	0.15	0.15
20.200	0.15	0.15	0.15	0.15	0.15
20.450	0.14	0.14	0.14	0.14	0.14
20.700	0.14	0.14	0.14	0.14	0.14
20.950	0.14	0.14	0.14	0.14	0.14
21.200	0.14	0.14	0.14	0.14	0.14
21.450	0.13	0.13	0.13	0.13	0.13
21.700	0.13	0.13	0.13	0.13	0.13
21.950	0.13	0.13	0.13	0.13	0.13
22.200	0.13	0.13	0.13	0.13	0.13
22.450	0.12	0.12	0.12	0.12	0.12
22.700	0.12	0.12	0.12	0.12	0.12
22.950	0.12	0.12	0.12	0.12	0.12
23.200	0.12	0.12	0.12	0.12	0.12

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.450	0.11	0.11	0.11	0.11	0.11
23.700	0.11	0.11	0.11	0.11	0.11
23.950	0.11	0.11	(N/A)	(N/A)	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Peak Discharge	6.24 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	0.900 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0.600	0.00	0.00	0.00	0.00	0.01
0.850	0.01	0.01	0.01	0.01	0.02
1.100	0.02	0.02	0.02	0.03	0.03
1.350	0.03	0.03	0.04	0.04	0.04
1.600	0.04	0.05	0.05	0.05	0.05
1.850	0.06	0.06	0.06	0.06	0.06
2.100	0.07	0.07	0.07	0.07	0.07
2.350	0.08	0.08	0.08	0.08	0.08
2.600	0.08	0.09	0.09	0.09	0.09
2.850	0.09	0.09	0.10	0.10	0.10
3.100	0.10	0.10	0.10	0.10	0.10
3.350	0.11	0.11	0.11	0.11	0.11
3.600	0.11	0.11	0.11	0.12	0.12
3.850	0.12	0.12	0.12	0.12	0.12
4.100	0.12	0.12	0.12	0.13	0.13
4.350	0.13	0.13	0.13	0.13	0.13
4.600	0.13	0.13	0.13	0.14	0.14
4.850	0.14	0.14	0.14	0.14	0.14
5.100	0.14	0.14	0.14	0.14	0.14
5.350	0.15	0.15	0.15	0.15	0.15
5.600	0.15	0.15	0.15	0.15	0.15
5.850	0.15	0.15	0.15	0.16	0.16
6.100	0.16	0.16	0.16	0.16	0.16
6.350	0.16	0.17	0.17	0.17	0.17
6.600	0.17	0.17	0.18	0.18	0.18
6.850	0.18	0.18	0.19	0.19	0.19
7.100	0.19	0.19	0.20	0.20	0.20
7.350	0.20	0.20	0.21	0.21	0.21
7.600	0.21	0.22	0.22	0.22	0.22
7.850	0.22	0.23	0.23	0.23	0.23
8.100	0.24	0.24	0.24	0.24	0.24
8.350	0.25	0.25	0.25	0.25	0.26
8.600	0.26	0.26	0.26	0.26	0.27
8.850	0.27	0.27	0.27	0.28	0.28
9.100	0.28	0.29	0.29	0.29	0.30
9.350	0.30	0.31	0.32	0.32	0.33
9.600	0.33	0.34	0.35	0.35	0.36
9.850	0.37	0.38	0.38	0.39	0.40
10.100	0.41	0.41	0.42	0.43	0.44
10.350	0.45	0.45	0.46	0.47	0.48
10.600	0.49	0.51	0.52	0.54	0.56
10.850	0.58	0.60	0.62	0.64	0.67
11.100	0.70	0.73	0.77	0.81	0.85

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.350	0.89	0.93	0.98	1.02	1.09
11.600	1.19	1.28	1.38	1.50	1.64
11.850	1.82	2.04	2.36	2.80	3.42
12.100	4.24	6.00	6.24	5.68	5.02
12.350	4.39	4.22	4.05	3.89	3.72
12.600	3.53	3.33	3.15	2.98	2.82
12.850	2.68	2.54	2.41	2.28	2.17
13.100	2.05	1.95	1.85	1.75	1.66
13.350	1.58	1.50	1.43	1.36	1.29
13.600	1.23	1.17	1.11	1.05	1.00
13.850	0.95	0.91	0.87	0.83	0.80
14.100	0.77	0.74	0.71	0.69	0.67
14.350	0.64	0.62	0.61	0.59	0.57
14.600	0.55	0.54	0.52	0.51	0.50
14.850	0.48	0.47	0.46	0.45	0.44
15.100	0.43	0.42	0.41	0.40	0.39
15.350	0.38	0.37	0.37	0.36	0.36
15.600	0.35	0.34	0.34	0.34	0.33
15.850	0.33	0.32	0.32	0.32	0.31
16.100	0.31	0.31	0.30	0.30	0.30
16.350	0.29	0.29	0.29	0.29	0.28
16.600	0.28	0.28	0.28	0.27	0.27
16.850	0.27	0.26	0.26	0.26	0.26
17.100	0.26	0.25	0.25	0.25	0.25
17.350	0.24	0.24	0.24	0.24	0.23
17.600	0.23	0.23	0.23	0.22	0.22
17.850	0.22	0.22	0.22	0.21	0.21
18.100	0.21	0.21	0.20	0.20	0.20
18.350	0.20	0.20	0.20	0.19	0.19
18.600	0.19	0.19	0.19	0.19	0.19
18.850	0.19	0.19	0.19	0.18	0.18
19.100	0.18	0.18	0.18	0.18	0.18
19.350	0.18	0.18	0.18	0.18	0.18
19.600	0.18	0.18	0.17	0.17	0.17
19.850	0.17	0.17	0.17	0.17	0.17
20.100	0.17	0.17	0.17	0.17	0.17
20.350	0.17	0.17	0.17	0.16	0.16
20.600	0.16	0.16	0.16	0.16	0.16
20.850	0.16	0.16	0.16	0.16	0.16
21.100	0.16	0.16	0.16	0.16	0.16
21.350	0.16	0.15	0.15	0.15	0.15
21.600	0.15	0.15	0.15	0.15	0.15
21.850	0.15	0.15	0.15	0.15	0.15
22.100	0.15	0.15	0.15	0.14	0.14
22.350	0.14	0.14	0.14	0.14	0.14
22.600	0.14	0.14	0.14	0.14	0.14
22.850	0.14	0.14	0.14	0.14	0.14
23.100	0.13	0.13	0.13	0.13	0.13

Post-Development Analysis Results (with BMPs)

Subsection: Pond Routed Hydrograph (total out)
Label: PO-2 (OUT)
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.350	0.13	0.13	0.13	0.13	0.13
23.600	0.13	0.13	0.13	0.13	0.13
23.850	0.13	0.13	0.13	0.13	(N/A)

Post-Development Analysis Results (with BMPs)

Subsection: Pond Inflow Summary
Label: PO-2 (IN)
Scenario: Post-Development 1

Return Event: 1 years
Storm Event: 1-YR

Summary for Hydrograph Addition at 'PO-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	PO-2-I
<Catchment to Outflow Node>	PO-2-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	PO-2-I	0.295	12.100	4.36
Flow (From)	PO-2-P	0.003	12.100	0.02
Flow (In)	PO-2	0.298	12.100	4.38

Post-Development Analysis Results (with BMPs)

Subsection: Pond Inflow Summary
Label: PO-2 (IN)
Scenario: Post-Development 2

Return Event: 2 years
Storm Event: 2-YR

Summary for Hydrograph Addition at 'PO-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	PO-2-I
<Catchment to Outflow Node>	PO-2-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	PO-2-I	0.359	12.100	5.26
Flow (From)	PO-2-P	0.006	12.100	0.07
Flow (In)	PO-2	0.365	12.100	5.33

Post-Development Analysis Results (with BMPs)

Subsection: Pond Inflow Summary
Label: PO-2 (IN)
Scenario: Post-Development 5

Return Event: 5 years
Storm Event: 5-YR

Summary for Hydrograph Addition at 'PO-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	PO-2-I
<Catchment to Outflow Node>	PO-2-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	PO-2-I	0.458	12.100	6.64
Flow (From)	PO-2-P	0.010	12.100	0.16
Flow (In)	PO-2	0.469	12.100	6.80

Post-Development Analysis Results (with BMPs)

Subsection: Pond Inflow Summary
Label: PO-2 (IN)
Scenario: Post-Development 10

Return Event: 10 years
Storm Event: 10-YR

Summary for Hydrograph Addition at 'PO-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	PO-2-I
<Catchment to Outflow Node>	PO-2-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	PO-2-I	0.541	12.100	7.78
Flow (From)	PO-2-P	0.015	12.100	0.24
Flow (In)	PO-2	0.556	12.100	8.02

Post-Development Analysis Results (with BMPs)

Subsection: Pond Inflow Summary
Label: PO-2 (IN)
Scenario: Post-Development 25

Return Event: 25 years
Storm Event: 25-YR

Summary for Hydrograph Addition at 'PO-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	PO-2-I
<Catchment to Outflow Node>	PO-2-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	PO-2-I	0.660	12.100	9.42
Flow (From)	PO-2-P	0.022	12.100	0.38
Flow (In)	PO-2	0.682	12.100	9.80

Post-Development Analysis Results (with BMPs)

Subsection: Pond Inflow Summary
Label: PO-2 (IN)
Scenario: Post-Development 50

Return Event: 50 years
Storm Event: 50-YR

Summary for Hydrograph Addition at 'PO-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	PO-2-I
<Catchment to Outflow Node>	PO-2-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	PO-2-I	0.760	12.100	10.81
Flow (From)	PO-2-P	0.029	12.100	0.50
Flow (In)	PO-2	0.789	12.100	11.30

Post-Development Analysis Results (with BMPs)

Subsection: Pond Inflow Summary
Label: PO-2 (IN)
Scenario: Post-Development 100

Return Event: 100 years
Storm Event: 100-YR

Summary for Hydrograph Addition at 'PO-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	PO-2-I
<Catchment to Outflow Node>	PO-2-P

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	PO-2-I	0.868	12.100	12.30
Flow (From)	PO-2-P	0.037	12.100	0.64
Flow (In)	PO-2	0.905	12.100	12.94

Appendix H | Stormsewer Design

Colliers Engineering & Design

Project Name:	401/433 WASHINGTON STREET APARTMENTS		
Project No.:	14000908C	Date:	11/29/2021
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%	=	0.00	x	0.85	0.95	=	0.00	0.00
B	2-6%	=	0.15	x	0.86	0.96	=	0.13	0.14
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%	=	0.09	x	0.20	0.25	=	0.02	0.02
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.24**					**0.15**	**0.17**
					CW		=	**0.61**	**0.69**

S-6

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%	=	0.09	x	0.86	0.96	=	0.08	0.09
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	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.11**					**0.08**	**0.09**
					CW		=	**0.76**	**0.85**

S-7

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%	=	0.08	x	0.86	0.96	=	0.07	0.08
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	=	**0.08**					**0.07**	**0.08**
					CW		=	**0.86**	**0.96**

S-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%	=	0.11	x	0.86	0.96	=	0.09	0.11
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**	**0.11**
					CW		=	**0.86**	**0.96**

S-9

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%	=	0.07	x	0.86	0.96	=	0.06	0.07
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	=	**0.07**					**0.06**	**0.07**
					CW		=	**0.86**	**0.96**

S-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%	=	0.18	x	0.86	0.96	=	0.15	0.17
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	=	**0.18**					**0.15**	**0.17**
					CW		=	**0.86**	**0.96**

S-11

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%	=	0.09	x	0.86	0.96	=	0.08	0.08
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%	=	0.12	x	0.20	0.25	=	0.02	0.03
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.21**					**0.10**	**0.11**
					CW		=	**0.48**	**0.55**

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%	=	0.00	x	0.85	0.95	=	0.00	0.00
B	2-6%	=	0.46	x	0.86	0.96	=	0.40	0.44
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	=	**0.46**					**0.40**	**0.44**
					CW		=	**0.86**	**0.96**

S-12

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%	=	0.10	x	0.86	0.96	=	0.09	0.10
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	=	**0.10**					**0.09**	**0.10**
					CW		=	**0.86**	**0.96**

S-13

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%	=	0.13	x	0.86	0.96	=	0.11	0.12
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%	=	0.01	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**					**0.11**	**0.13**
					CW		=	**0.80**	**0.89**

S-14

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%	=	0.11	x	0.86	0.96	=	0.09	0.11
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%	=	0.01	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**					**0.10**	**0.11**
					CW		=	**0.81**	**0.90**

S-15

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%	=	0.09	x	0.86	0.96	=	0.08	0.09
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	=	**0.12**					**0.08**	**0.09**
					CW		=	**0.70**	**0.78**

S-16

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%	=	0.08	x	0.86	0.96	=	0.07	0.08
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	=	**0.11**					**0.07**	**0.08**
					CW		=	**0.68**	**0.77**

S-17

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%	=	0.07	x	0.86	0.96	=	0.06	0.07
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	=	**0.09**					**0.06**	**0.07**
					CW		=	**0.71**	**0.80**

S-18

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%	=	0.06	x	0.86	0.96	=	0.05	0.06
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%	=	0.01	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.07**					**0.05**	**0.06**
					CW		=	**0.77**	**0.86**

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%	=	0.00	x	0.85	0.95	=	0.00	0.00
B	2-6%	=	0.46	x	0.86	0.96	=	0.40	0.44
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	=	**0.46**					**0.40**	**0.44**
					CW		=	**0.86**	**0.96**

S-21

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%	=	0.71	x	0.86	0.96	=	0.61	0.68
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	=	**0.71**					**0.61**	**0.68**
					CW		=	**0.86**	**0.96**

S-22

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%	=	0.43	x	0.86	0.96	=	0.37	0.41
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	=	**0.43**					**0.37**	**0.41**
					CW		=	**0.86**	**0.96**

Roof DA SW-1 (to BASIN)

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%	=	0.49	x	0.86	0.96	=	0.42	0.47
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		=	**0.86**	**0.96**

Roof DA SW-2 (Basin B)

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%	=	0.49	x	0.86	0.96	=	0.42	0.47
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		=	**0.86**	**0.96**

Roof DA SE-1 (to BASIN B)

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%	=	0.36	x	0.86	0.96	=	0.31	0.35
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	=	**0.36**					**0.31**	**0.35**
					CW		=	**0.86**	**0.96**

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%	=	0.00	x	0.85	0.95	=	0.00	0.00
B	2-6%	=	0.36	x	0.86	0.96	=	0.31	0.35
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	=	**0.36**					**0.31**	**0.35**
					CW		=	**0.86**	**0.96**

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%	=	0.00	x	0.85	0.95	=	0.00	0.00
B	2-6%	=	0.46	x	0.86	0.96	=	0.40	0.44
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	=	**0.46**					**0.40**	**0.44**
					CW		=	**0.86**	**0.96**

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%	=	0.00	x	0.85	0.95	=	0.00	0.00
B	2-6%	=	0.46	x	0.86	0.96	=	0.40	0.44
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	=	**0.46**					**0.40**	**0.44**
					CW		=	**0.86**	**0.96**

S-23

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%	=	0.39	x	0.86	0.96	=	0.34	0.37
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	=	**0.39**					**0.34**	**0.37**
					CW		=	**0.86**	**0.96**

S-25

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%	=	0.71	x	0.86	0.96	=	0.61	0.68
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	=	**0.71**					**0.61**	**0.68**
					CW		=	**0.86**	**0.96**

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%	=	0.03	x	0.20	0.25	=	0.01	0.01
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.23**					**0.18**	**0.20**
					CW		=	**0.77**	**0.87**

S-32

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%	=	0.18	x	0.86	0.96	=	0.15	0.17
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	=	**0.18**					**0.15**	**0.17**
					CW		=	**0.86**	**0.96**

S-35

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%	=	0.19	x	0.86	0.96	=	0.16	0.18
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%	=	0.01	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**					**0.17**	**0.18**
					CW		=	**0.83**	**0.92**

S-36

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%	=	0.05	x	0.86	0.96	=	0.04	0.05
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		=	**0.86**	**0.96**

S-37

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%	=	0.14	x	0.86	0.96	=	0.12	0.13
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%	=	0.01	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.15**					**0.12**	**0.14**
					CW		=	**0.82**	**0.91**

S-39

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%	=	0.54	x	0.86	0.96	=	0.46	0.52
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	=	**0.54**					**0.46**	**0.52**
					CW		=	**0.86**	**0.96**

S-40

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%	=	0.56	x	0.86	0.96	=	0.48	0.54
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	=	**0.56**					**0.48**	**0.54**
					CW		=	**0.86**	**0.96**

S-41

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%	=	0.17	x	0.86	0.96	=	0.15	0.16
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%	=	0.01	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**					**0.15**	**0.17**
					CW		=	**0.82**	**0.92**

S-42

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%	=	0.08	x	0.86	0.96	=	0.07	0.08
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	=	**0.08**					**0.07**	**0.08**
					CW		=	**0.86**	**0.96**

S-43

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%	=	0.07	x	0.86	0.96	=	0.06	0.07
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%	=	0.01	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		=	**0.78**	**0.87**

S-45

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%	=	0.16	x	0.86	0.96	=	0.14	0.15
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%	=	0.01	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**					**0.14**	**0.16**
					CW		=	**0.82**	**0.92**

R-1

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%	=	0.22	x	0.86	0.96	=	0.19	0.21
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	=	**0.26**					**0.20**	**0.22**
					CW		=	**0.75**	**0.84**

R-2

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%	=	0.09	x	0.86	0.96	=	0.08	0.09
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%	=	0.01	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		=	**0.79**	**0.89**

R-3

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%	=	0.34	x	0.86	0.96	=	0.29	0.33
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	=	**0.36**					**0.30**	**0.33**
					CW		=	**0.82**	**0.92**

R-4

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%	=	0.88	x	0.86	0.96	=	0.76	0.84
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	=	**0.88**					**0.76**	**0.84**
					CW		=	**0.86**	**0.96**

R-6

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%	=	0.21	x	0.86	0.96	=	0.18	0.20
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	=	**0.21**					**0.18**	**0.20**
					CW		=	**0.86**	**0.96**

S-51

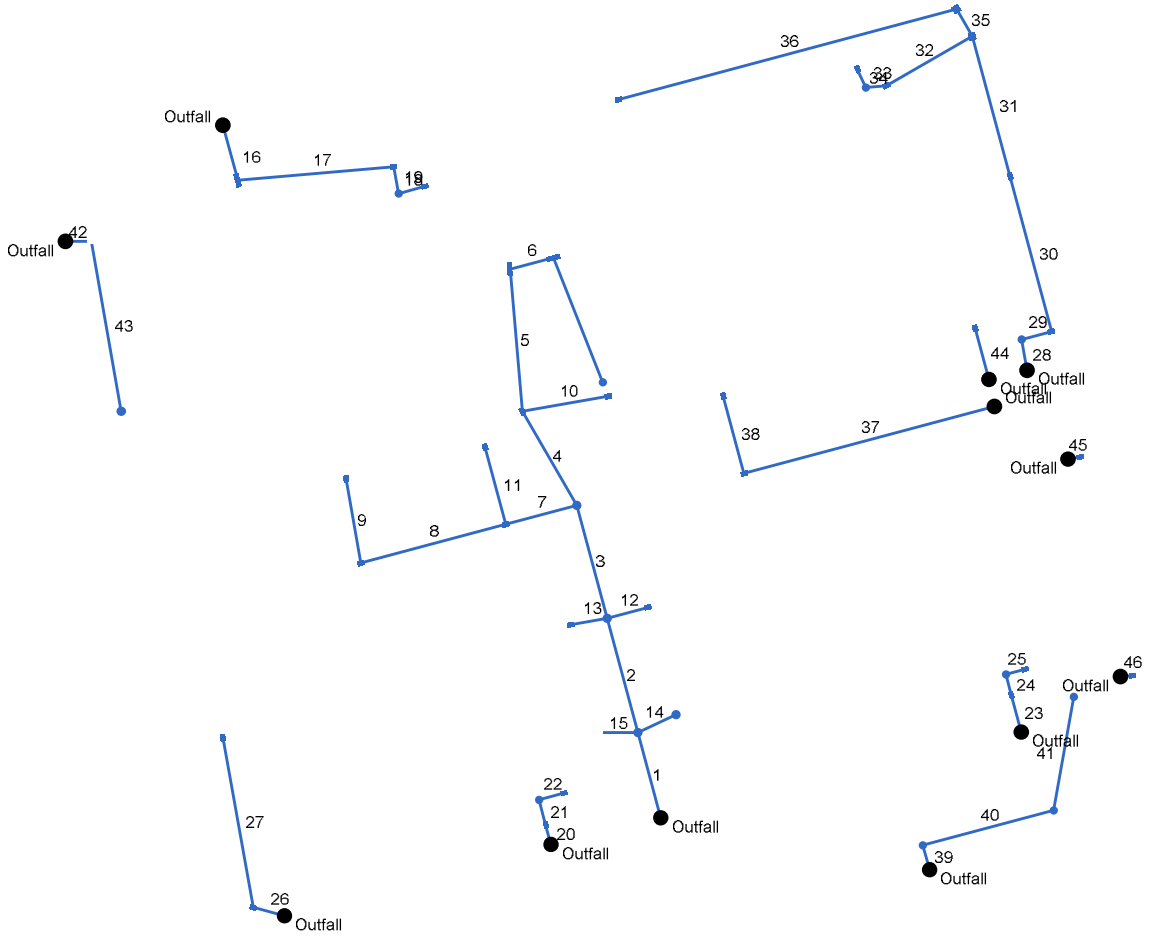
SOIL	SLOPE		AREA		C (<=10)	c (25+)		C x A (<= 10YR)	C x A (25 YR+)
IMPERVIOUS									
B	0-2%	=	0.00	x	0.85	0.95	=	0.00	0.00
B	2-6%	=	0.08	x	0.86	0.96	=	0.07	0.08
B	+6%	=	0.00	x	0.87	0.97	=	0.00	0.00
MEADOW/LAWN									
B	0-2%	=	0.00	x	0.15	0.19	=	0.00	0.00
B	2-6%	=	0.02	x	0.20	0.25	=	0.00	0.01
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.10**					**0.07**	**0.08**
					CW		=	**0.73**	**0.82**

S-52

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%	=	0.06	x	0.86	0.96	=	0.05	0.06
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%	=	0.01	x	0.20	0.25	=	0.00	0.00
B	+6%	=	0.00	x	0.24	0.30	=	0.00	0.00
	TOTAL	=	**0.07**					**0.05**	**0.06**
					CW		=	**0.77**	**0.86**

10-YEAR CALCULATIONS
PROPOSED NETWORK

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: 10 Yr.stm	Number of lines: 46	Date: 12/2/2021

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	65.00	-105.00	MH	0.00	0.00	0.00	5.0	48.80	0.62	49.20	24	Cir	0.012	0.99	53.24	P-2
2	1	87.00	0.03	MH	0.00	0.00	0.00	5.0	49.40	0.52	49.85	24	Cir	0.012	1.00	54.13	P-3
3	2	86.00	0.00	MH	0.00	0.00	0.00	5.0	50.05	0.52	50.50	24	Cir	0.012	1.00	54.59	P-4
4	3	80.00	-15.00	Comb	0.00	0.24	0.61	5.0	51.00	0.50	51.40	18	Cir	0.012	1.50	54.17	P-5
5	4	105.00	25.00	Comb	0.00	0.11	0.76	5.0	51.60	0.52	52.15	18	Cir	0.012	1.48	55.79	P-6
6	5	33.00	80.00	Comb	0.00	0.08	0.86	5.0	52.35	0.61	52.55	18	Cir	0.012	1.00	55.84	P-7
7	3	54.00	-90.00	Comb	0.00	0.11	0.86	5.0	50.80	0.56	51.10	18	Cir	0.012	1.50	54.72	P-8
8	7	110.00	0.00	Comb	0.00	0.07	0.86	5.0	51.30	0.50	51.85	18	Cir	0.012	1.50	56.04	P-9
9	8	63.00	95.00	Comb	0.00	0.18	0.86	5.0	52.05	0.48	52.35	18	Cir	0.012	1.00	55.46	P-10
10	4	64.00	110.00	Comb	0.00	0.21	0.48	5.0	51.60	0.47	51.90	18	Cir	0.012	1.00	54.09	P-11
11	7	59.00	90.00	Comb	0.00	0.10	0.86	5.0	51.30	0.51	51.60	18	Cir	0.012	1.00	54.81	P-12
12	2	31.00	90.00	Comb	0.00	0.12	0.81	5.0	50.05	2.74	50.90	18	Cir	0.012	1.00	54.09	P-14
13	2	27.00	-85.00	Comb	0.00	0.14	0.80	5.0	50.05	3.15	50.90	18	Cir	0.012	1.00	54.58	P-13
14	1	31.00	80.00	Comb	0.00	0.11	0.68	5.0	49.40	2.26	50.10	18	Cir	0.012	1.00	53.30	P-16
15	1	28.00	-75.00	Comb	0.00	0.12	0.70	5.0	49.40	2.50	50.10	18	Cir	0.012	1.00	53.30	P-15
16	End	42.00	75.00	Comb	0.00	0.36	0.82	5.0	48.66	0.57	48.90	18	Cir	0.012	1.48	52.99	P-R3
17	16	115.00	-80.00	Grate	0.01	0.00	0.00	5.0	49.05	0.52	49.65	18	Cir	0.012	1.50	53.88	P-R4
18	17	20.00	85.00	MH	0.00	0.00	0.00	5.0	49.85	0.50	49.95	18	Cir	0.012	1.00	53.00	P-R5
19	18	20.00	-95.00	Grate	0.01	0.00	0.00	5.0	50.15	0.50	50.25	18	Cir	0.012	1.00	53.64	P-R6
20	End	15.00	-105.00	Grate	0.00	0.00	0.00	5.0	48.80	0.67	48.90	18	Cir	0.012	0.50	53.15	P-20
21	20	19.00	0.00	MH	0.01	0.00	0.00	5.0	49.20	0.53	49.30	18	Cir	0.012	1.00	53.43	P-22
22	21	19.00	90.00	Grate	0.01	0.00	0.00	5.0	49.50	0.53	49.60	18	Cir	0.012	1.00	53.29	P-21
23	End	28.00	-105.00	Grate	0.01	0.00	0.00	5.0	48.80	0.54	48.95	18	Cir	0.012	0.50	52.45	P-23

Project File: 10 Yr.stm | Number of lines: 46 | Date: 12/2/2021

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	16.00	0.00	MH	0.00	0.00	0.00	5.0	49.15	0.62	49.25	18	Cir	0.012	1.00	52.61	P-24
25	24	15.00	90.00	Grate	0.01	0.00	0.00	5.0	49.45	0.67	49.55	18	Cir	0.012	1.00	52.39	P-25
26	End	24.00	-165.00	Comb	0.00	0.09	0.71	5.0	48.80	1.25	49.10	18	Cir	0.012	1.38	54.44	P-17
27	26	127.00	65.00	Comb	0.00	0.07	0.77	5.0	49.30	1.54	51.25	18	Cir	0.012	1.00	56.53	P-18
28	End	23.00	-100.00	MH	0.00	0.00	0.00	5.0	45.95	0.65	46.10	18	Cir	0.012	1.00	51.88	P-34
29	28	23.00	85.00	Comb	0.00	0.20	0.83	5.0	46.30	0.65	46.45	18	Cir	0.012	1.50	51.23	P-35
30	29	118.00	-90.00	Comb	0.00	0.05	0.86	5.0	46.65	0.51	47.25	18	Cir	0.012	0.50	51.86	P-36
31	30	107.00	0.00	Comb	0.00	0.15	0.82	5.0	47.35	0.51	47.90	18	Cir	0.012	1.55	51.78	P-37
32	31	73.00	-105.00	Comb	0.00	0.00	0.00	5.0	48.10	0.55	48.50	18	Cir	0.012	0.72	52.00	P-38
33	32	15.00	25.00	MH	0.01	0.00	0.00	5.0	48.80	0.67	48.90	18	Cir	0.012	0.95	52.31	P-39
34	33	15.00	70.00	DrGrt	0.01	0.00	0.00	5.0	49.10	0.67	49.20	18	Cir	0.012	1.00	52.00	P-40
35	31	23.00	-15.00	Comb	0.00	0.26	0.75	5.0	48.10	0.65	48.25	18	Cir	0.012	1.46	52.25	P-R1
36	35	257.00	-75.00	Comb	0.00	0.10	0.79	5.0	48.45	0.72	50.30	18	Cir	0.012	1.00	54.55	P-R2
37	End	190.00	165.00	Comb	0.00	0.08	0.86	5.0	47.55	0.50	48.50	18	Cir	0.012	1.50	54.31	P-42
38	37	59.00	90.00	Comb	0.00	0.08	0.79	5.0	48.70	0.51	49.00	18	Cir	0.012	1.00	53.10	P-43
39	End	18.61	-105.00	MH	10.70	0.00	0.00	5.0	47.00	0.81	47.15	24	Cir	0.012	1.00	51.49	P-B1
40	39	99.32	90.00	MH	0.00	0.00	0.00	5.0	47.35	0.60	47.95	18	Cir	0.012	0.92	51.77	P-102
41	40	84.84	-65.00	MH	6.45	0.00	0.00	5.0	48.05	0.54	48.51	18	Cir	0.012	1.00	51.46	P-A1
42	End	19.00	0.00	Comb	0.00	0.10	0.73	5.0	47.70	0.53	47.80	18	Cir	0.012	1.48	51.91	P-51
43	42	127.00	80.00	Comb	0.00	0.07	0.77	5.0	48.00	2.05	50.60	18	Cir	0.012	1.00	54.77	P-52
44	End	39.00	-105.00	Comb	0.00	0.17	0.92	5.0	47.00	3.41	48.33	18	Cir	0.012	1.00	52.15	P-45
45	End	9.00	-10.00	Comb	0.00	0.18	0.96	5.0	45.95	5.00	46.40	18	Cir	0.012	1.00	51.80	P-32
46	End	9.00	-5.00	Comb	0.00	0.23	0.87	5.0	45.95	5.00	46.40	18	Cir	0.012	1.00	50.86	P-30

Project File: 10 Yr.stm | Number of lines: 46 | Date: 12/2/2021

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	Manhole	53.24	Cir	4.77	4.77	24	Cir	49.20	24 18 18	Cir Cir Cir	49.40 49.40 49.40
2	S-3	Manhole	54.13	Cir	4.77	4.77	24	Cir	49.85	24 18 18	Cir Cir Cir	50.05 50.05 50.05
3	S-4	Manhole	54.59	Cir	4.77	4.77	24	Cir	50.50	18 18	Cir Cir	51.00 50.80
4	S-5	Combination	54.17	Rect	4.77	3.27	18	Cir	51.40	18 18	Cir Cir	51.60 51.60
5	S-6	Combination	55.79	Rect	9.54	3.27	18	Cir	52.15	18	Cir	52.35
6	S-7	Combination	55.84	Rect	9.54	3.27	18	Cir	52.55			
7	S-8	Combination	54.72	Rect	4.77	3.27	18	Cir	51.10	18 18	Cir Cir	51.30 51.30
8	S-9	Combination	56.04	Rect	4.77	3.27	18	Cir	51.85	18	Cir	52.05
9	S-10	Combination	55.46	Rect	4.77	3.27	18	Cir	52.35			
10	S-11	Combination	54.09	Rect	4.77	3.27	18	Cir	51.90			
11	S-12	Combination	54.81	Rect	4.77	3.27	18	Cir	51.60			
12	S-14	Combination	54.09	Rect	4.77	3.27	18	Cir	50.90			
13	S-13	Combination	54.58	Rect	4.77	3.27	18	Cir	50.90			
14	S-16	Combination	53.30	Cir	4.77	4.77	18	Cir	50.10			
15	S-15	Combination	53.30	Rect	4.77	3.27	18	Cir	50.10			
16	R-3	Combination	52.99	Rect	9.54	3.27	18	Cir	48.90	18	Cir	49.05
17	R-4	Grate	53.88	Rect	4.77	3.27	18	Cir	49.65	18	Cir	49.85
18	R-5	Manhole	53.00	Cir	4.00	4.00	18	Cir	49.95	18	Cir	50.15
19	R-6	Grate	53.64	Rect	4.77	3.00	18	Cir	50.25			

Project File: 10 Yr.stm | Number of Structures: 46 | Run Date: 12/2/2021

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	S-22	Grate	53.15	Rect	4.77	3.00	18	Cir	48.90	18	Cir	49.20
21	S-20	Manhole	53.43	Cir	4.00	4.00	18	Cir	49.30	18	Cir	49.50
22	S-21	Grate	53.29	Rect	4.77	3.00	18	Cir	49.60			
23	S-23	Grate	52.45	Rect	4.77	3.00	18	Cir	48.95	18	Cir	49.15
24	S-24	Manhole	52.61	Cir	4.00	4.00	18	Cir	49.25	18	Cir	49.45
25	S-25	Grate	52.39	Rect	4.77	3.00	18	Cir	49.55			
26	S-17	Combination	54.44	Rect	4.77	3.27	18	Cir	49.10	18	Cir	49.30
27	S-18	Combination	56.53	Rect	4.77	3.27	18	Cir	51.25			
28	S-34	Manhole	51.88	Cir	4.00	4.00	18	Cir	46.10	18	Cir	46.30
29	S-35	Combination	51.23	Rect	4.77	3.27	18	Cir	46.45	18	Cir	46.65
30	S-36	Combination	51.86	Rect	4.77	3.27	18	Cir	47.25	18	Cir	47.35
31	S-37	Combination	51.78	Rect	5.00	5.00	18	Cir	47.90	18 18	Cir Cir	48.10 48.10
32	S-39	Combination	52.00	Rect	4.77	3.27	18	Cir	48.50	18	Cir	48.80
33	S-38	Manhole	52.31	Cir	4.00	4.00	18	Cir	48.90	18	Cir	49.10
34	S-40	DropGrate	52.00	Rect	4.77	3.00	18	Cir	49.20			
35	R-1	Combination	52.25	Rect	5.00	5.00	18	Cir	48.25	18	Cir	48.45
36	R-2	Combination	54.55	Rect	4.77	3.27	18	Cir	50.30			
37	S-42	Combination	54.31	Rect	4.77	3.27	18	Cir	48.50	18	Cir	48.70
38	S-43	Combination	53.10	Rect	4.77	3.27	18	Cir	49.00			
39	S-B1	Manhole	51.49	Cir	4.00	4.00	24	Cir	47.15	18	Cir	47.35
40	S-102	Manhole	51.77	Cir	4.00	4.00	18	Cir	47.95	18	Cir	48.05
41	S-A1	Manhole	51.46	Cir	4.00	4.00	18	Cir	48.51			

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-51	Combination	51.91	Rect	4.77	3.27	18	Cir	47.80	18	Cir	48.00
43	S-52	Combination	54.77	Cir	4.77	4.77	18	Cir	50.60			
44	S-45	Combination	52.15	Rect	4.77	3.27	18	Cir	48.33			
45	S-32	Combination	51.80	Rect	4.77	3.27	18	Cir	46.40			
46	S-30	Combination	50.86	Rect	4.77	3.27	18	Cir	46.40			

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	6.58	24	Cir	65.00	48.80	49.20	0.615	50.80	50.83	0.09	50.92	End	Manhole
2	P-3	5.80	24	Cir	87.00	49.40	49.85	0.517	50.92	50.70	0.32	50.70	1	Manhole
3	P-4	4.71	24	Cir	86.00	50.05	50.50	0.523	50.75	51.26	n/a	51.26	2	Manhole
4	P-5	2.43	18	Cir	80.00	51.00	51.40	0.500	51.57	51.99	0.33	51.99	3	Combination
5	P-6	1.02	18	Cir	105.00	51.60	52.15	0.524	51.99	52.53	n/a	52.53 j	4	Combination
6	P-7	0.50	18	Cir	33.00	52.35	52.55	0.606	52.59	52.81	0.09	52.81	5	Combination
7	P-8	2.49	18	Cir	54.00	50.80	51.10	0.556	51.36	51.70	n/a	51.70	3	Combination
8	P-9	1.46	18	Cir	110.00	51.30	51.85	0.500	51.73	52.30	0.25	52.30	7	Combination
9	P-10	1.12	18	Cir	63.00	52.05	52.35	0.476	52.43	52.75	0.14	52.75	8	Combination
10	P-11	0.73	18	Cir	64.00	51.60	51.90	0.469	51.99	52.22	n/a	52.22 j	4	Combination
11	P-12	0.62	18	Cir	59.00	51.30	51.60	0.508	51.70	51.89	n/a	51.89 j	7	Combination
12	P-14	0.70	18	Cir	31.00	50.05	50.90	2.742	50.70	51.21	n/a	51.21 j	2	Combination
13	P-13	0.81	18	Cir	27.00	50.05	50.90	3.148	50.70	51.23	n/a	51.23 j	2	Combination
14	P-16	0.54	18	Cir	31.00	49.40	50.10	2.258	50.92	50.91	0.00	50.92	1	Combination
15	P-15	0.61	18	Cir	28.00	49.40	50.10	2.500	50.92	50.91	0.01	50.92	1	Combination
16	P-R3	0.25	18	Cir	42.00	48.66	48.90	0.571	51.17*	51.17*	0.00	51.17	End	Combination
17	P-R4	0.02	18	Cir	115.00	49.05	49.65	0.522	51.17*	51.17*	0.00	51.17	16	Grate
18	P-R5	0.01	18	Cir	20.00	49.85	49.95	0.500	51.17	51.17	0.00	51.17	17	Manhole
19	P-R6	0.01	18	Cir	20.00	50.15	50.25	0.500	51.17	51.17	0.00	51.17	18	Grate
20	P-20	0.02	18	Cir	15.00	48.80	48.90	0.667	49.39	49.39	0.00	49.39	End	Grate
21	P-22	0.02	18	Cir	19.00	49.20	49.30	0.526	49.39	49.39	0.00	49.40	20	Manhole
22	P-21	0.01	18	Cir	19.00	49.50	49.60	0.526	49.54	49.64	0.01	49.65	21	Grate
23	P-23	0.02	18	Cir	28.00	48.80	48.95	0.536	49.92	49.92	0.00	49.92	End	Grate
24	P-24	0.01	18	Cir	16.00	49.15	49.25	0.625	49.92	49.92	0.00	49.92	23	Manhole

Project File: 10 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

NOTES: Return period = 10 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-25	0.01	18	Cir	15.00	49.45	49.55	0.667	49.92	49.92	0.00	49.92	24	Grate
26	P-17	0.62	18	Cir	24.00	48.80	49.10	1.250	50.30	50.30	0.00	50.30	End	Combination
27	P-18	0.39	18	Cir	127.00	49.30	51.25	1.535	50.30	51.48	n/a	51.48 j	26	Combination
28	P-34	0.69	18	Cir	23.00	45.95	46.10	0.652	47.45	47.45	0.00	47.45	End	Manhole
29	P-35	0.69	18	Cir	23.00	46.30	46.45	0.652	47.45	46.76	n/a	46.76	28	Combination
30	P-36	0.51	18	Cir	118.00	46.65	47.25	0.508	46.91	47.51	0.05	47.51	29	Combination
31	P-37	0.47	18	Cir	107.00	47.35	47.90	0.514	47.59	48.15	n/a	48.15	30	Combination
32	P-38	0.02	18	Cir	73.00	48.10	48.50	0.548	48.15	48.55	0.01	48.57	31	Combination
33	P-39	0.02	18	Cir	15.00	48.80	48.90	0.667	48.85	48.95	0.02	48.97	32	Manhole
34	P-40	0.01	18	Cir	15.00	49.10	49.20	0.667	49.14	49.24	0.01	49.25	33	DropGrate
35	P-R1	1.31	18	Cir	23.00	48.10	48.25	0.652	48.48	48.68	n/a	48.68	31	Combination
36	P-R2	0.57	18	Cir	257.00	48.45	50.30	0.720	48.70	50.58	n/a	50.58	35	Combination
37	P-42	0.83	18	Cir	190.00	47.55	48.50	0.500	48.61	48.84	n/a	48.84	End	Combination
38	P-43	0.46	18	Cir	59.00	48.70	49.00	0.508	48.94	49.25	0.09	49.25	37	Combination
39	P-B1	17.15	24	Cir	18.61	47.00	47.15	0.806	48.33	48.64	0.72	48.64	End	Manhole
40	P-102	6.45	18	Cir	99.32	47.35	47.95	0.604	48.64	48.93	n/a	48.93	39	Manhole
41	P-A1	6.45	18	Cir	84.84	48.05	48.51	0.542	49.04	49.50	0.42	49.92	40	Manhole
42	P-51	0.67	18	Cir	19.00	47.70	47.80	0.526	49.20	49.20	0.00	49.20	End	Combination
43	P-52	0.39	18	Cir	127.00	48.00	50.60	2.047	49.20	50.83	n/a	50.83 j	42	Combination
44	P-45	1.13	18	Cir	39.00	47.00	48.33	3.410	47.27	48.73	0.14	48.73	End	Combination
45	P-32	1.25	18	Cir	9.00	45.95	46.40	5.000	48.50*	48.50*	0.01	48.51	End	Combination
46	P-30	1.45	18	Cir	9.00	45.95	46.40	5.000	47.45	47.44	0.02	47.46	End	Combination

Project File: 10 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

NOTES: Return period = 10 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	65.00	0.00	1.59	0.00	0.00	1.16	5.0	12.1	5.7	6.58	19.22	2.25	24	0.62	48.80	49.20	50.80	50.83	52.83	53.24	P-2
2	1	87.00	0.00	1.36	0.00	0.00	1.00	5.0	11.4	5.8	5.80	17.62	3.41	24	0.52	49.40	49.85	50.92	50.70	53.24	54.13	P-3
3	2	86.00	0.00	1.10	0.00	0.00	0.80	5.0	10.6	5.9	4.71	17.72	4.52	24	0.52	50.05	50.50	50.75	51.26	54.13	54.59	P-4
4	3	80.00	0.24	0.64	0.61	0.15	0.40	5.0	9.8	6.1	2.43	8.04	3.88	18	0.50	51.00	51.40	51.57	51.99	54.59	54.17	P-5
5	4	105.00	0.11	0.19	0.76	0.08	0.15	5.0	7.0	6.7	1.02	8.23	2.87	18	0.52	51.60	52.15	51.99	52.53	54.17	55.79	P-6
6	5	33.00	0.08	0.08	0.86	0.07	0.07	5.0	5.0	7.2	0.50	8.86	2.56	18	0.61	52.35	52.55	52.59	52.81	55.79	55.84	P-7
7	3	54.00	0.11	0.46	0.86	0.09	0.40	5.0	8.8	6.3	2.49	8.48	3.98	18	0.56	50.80	51.10	51.36	51.70	54.59	54.72	P-8
8	7	110.00	0.07	0.25	0.86	0.06	0.22	5.0	6.7	6.8	1.46	8.04	3.35	18	0.50	51.30	51.85	51.73	52.30	54.72	56.04	P-9
9	8	63.00	0.18	0.18	0.86	0.15	0.15	5.0	5.0	7.2	1.12	7.85	3.08	18	0.48	52.05	52.35	52.43	52.75	56.04	55.46	P-10
10	4	64.00	0.21	0.21	0.48	0.10	0.10	5.0	5.0	7.2	0.73	7.79	2.34	18	0.47	51.60	51.90	51.99	52.22	54.17	54.09	P-11
11	7	59.00	0.10	0.10	0.86	0.09	0.09	5.0	5.0	7.2	0.62	8.11	2.11	18	0.51	51.30	51.60	51.70	51.89	54.72	54.81	P-12
12	2	31.00	0.12	0.12	0.81	0.10	0.10	5.0	5.0	7.2	0.70	18.84	1.81	18	2.74	50.05	50.90	50.70	51.21	54.13	54.09	P-14
13	2	27.00	0.14	0.14	0.80	0.11	0.11	5.0	5.0	7.2	0.81	20.18	1.93	18	3.15	50.05	50.90	50.70	51.23	54.13	54.58	P-13
14	1	31.00	0.11	0.11	0.68	0.07	0.07	5.0	5.0	7.2	0.54	17.09	0.43	18	2.26	49.40	50.10	50.92	50.91	53.24	53.30	P-16
15	1	28.00	0.12	0.12	0.70	0.08	0.08	5.0	5.0	7.2	0.61	17.99	0.48	18	2.50	49.40	50.10	50.92	50.91	53.24	53.30	P-15
16	End	42.00	0.36	0.36	0.82	0.30	0.30	5.0	292.2	0.8	0.25	8.60	0.14	18	0.57	48.66	48.90	51.17	51.17	50.37	52.99	P-R3
17	16	115.00	0.00	0.00	0.00	0.00	0.00	5.0	122.8	0.0	0.02	8.22	0.01	18	0.52	49.05	49.65	51.17	51.17	52.99	53.88	P-R4
18	17	20.00	0.00	0.00	0.00	0.00	0.00	5.0	63.9	0.0	0.01	8.04	0.01	18	0.50	49.85	49.95	51.17	51.17	53.88	53.00	P-R5
19	18	20.00	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	8.04	0.01	18	0.50	50.15	50.25	51.17	51.17	53.00	53.64	P-R6
20	End	15.00	0.00	0.00	0.00	0.00	0.00	5.0	88.9	0.0	0.02	9.29	0.04	18	0.67	48.80	48.90	49.39	49.39	52.98	53.15	P-20
21	20	19.00	0.00	0.00	0.00	0.00	0.00	5.0	61.0	0.0	0.02	8.25	0.30	18	0.53	49.20	49.30	49.39	49.39	53.15	53.43	P-22
22	21	19.00	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	8.25	0.78	18	0.53	49.50	49.60	49.54	49.64	53.43	53.29	P-21

Project File: 10 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	End	28.00	0.00	0.00	0.00	0.00	0.00	5.0	96.3	0.0	0.02	8.33	0.02	18	0.54	48.80	48.95	49.92	49.92	52.82	52.45	P-23
24	23	16.00	0.00	0.00	0.00	0.00	0.00	5.0	49.2	0.0	0.01	8.99	0.01	18	0.62	49.15	49.25	49.92	49.92	52.45	52.61	P-24
25	24	15.00	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	9.29	0.03	18	0.67	49.45	49.55	49.92	49.92	52.61	52.39	P-25
26	End	24.00	0.09	0.16	0.71	0.06	0.12	5.0	14.6	5.3	0.62	12.72	0.38	18	1.25	48.80	49.10	50.30	50.30	54.03	54.44	P-17
27	26	127.00	0.07	0.07	0.77	0.05	0.05	5.0	5.0	7.2	0.39	14.10	1.29	18	1.54	49.30	51.25	50.30	51.48	54.44	56.53	P-18
28	End	23.00	0.00	0.76	0.00	0.00	0.61	5.0	181.3	1.1	0.69	9.19	0.40	18	0.65	45.95	46.10	47.45	47.45	52.00	51.88	P-34
29	28	23.00	0.20	0.76	0.83	0.17	0.61	5.0	181.1	1.1	0.69	9.19	1.56	18	0.65	46.30	46.45	47.45	46.76	51.88	51.23	P-35
30	29	118.00	0.05	0.56	0.86	0.04	0.44	5.0	179.9	1.1	0.51	8.11	2.50	18	0.51	46.65	47.25	46.91	47.51	51.23	51.86	P-36
31	30	107.00	0.15	0.51	0.82	0.12	0.40	5.0	178.8	1.1	0.47	8.16	2.44	18	0.51	47.35	47.90	47.59	48.15	51.86	51.78	P-37
32	31	73.00	0.00	0.00	0.00	0.00	0.00	5.0	71.3	0.0	0.02	8.42	0.98	18	0.55	48.10	48.50	48.15	48.55	51.78	52.00	P-38
33	32	15.00	0.00	0.00	0.00	0.00	0.00	5.0	49.2	0.0	0.02	9.29	1.03	18	0.67	48.80	48.90	48.85	48.95	52.00	52.31	P-39
34	33	15.00	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	9.29	0.85	18	0.67	49.10	49.20	49.14	49.24	52.31	52.00	P-40
35	31	23.00	0.26	0.36	0.75	0.20	0.27	5.0	18.2	4.8	1.31	9.19	3.42	18	0.65	48.10	48.25	48.48	48.68	51.78	52.25	P-R1
36	35	257.00	0.10	0.10	0.79	0.08	0.08	5.0	5.0	7.2	0.57	9.65	2.75	18	0.72	48.45	50.30	48.70	50.58	52.25	54.55	P-R2
37	End	190.00	0.08	0.16	0.86	0.07	0.13	5.0	8.8	6.3	0.83	8.04	1.70	18	0.50	47.55	48.50	48.61	48.84	52.12	54.31	P-42
38	37	59.00	0.08	0.08	0.79	0.06	0.06	5.0	5.0	7.2	0.46	8.11	2.42	18	0.51	48.70	49.00	48.94	49.25	54.31	53.10	P-43
39	End	18.61	0.00	0.00	0.00	0.00	0.00	5.0	5.8	0.0	17.15	22.00	7.28	24	0.81	47.00	47.15	48.33	48.64	49.25	51.49	P-B1
40	39	99.32	0.00	0.00	0.00	0.00	0.00	5.0	5.4	0.0	6.45	8.84	4.63	18	0.60	47.35	47.95	48.64	48.93	51.49	51.77	P-102
41	40	84.84	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	6.45	8.38	5.22	18	0.54	48.05	48.51	49.04	49.50	51.77	51.46	P-A1
42	End	19.00	0.10	0.17	0.73	0.07	0.13	5.0	14.6	5.3	0.67	8.25	0.38	18	0.53	47.70	47.80	49.20	49.20	52.70	51.91	P-51
43	42	127.00	0.07	0.07	0.77	0.05	0.05	5.0	5.0	7.2	0.39	16.28	1.26	18	2.05	48.00	50.60	49.20	50.83	51.91	54.77	P-52
44	End	39.00	0.17	0.17	0.92	0.16	0.16	5.0	5.0	7.2	1.13	21.01	4.13	18	3.41	47.00	48.33	47.27	48.73	52.24	52.15	P-45

Project File: 10 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	End	9.00	0.18	0.18	0.96	0.17	0.17	5.0	5.0	7.2	1.25	25.44	0.71	18	5.00	45.95	46.40	48.50	48.50	51.88	51.80	P-32
46	End	9.00	0.23	0.23	0.87	0.20	0.20	5.0	5.0	7.2	1.45	25.44	0.96	18	5.00	45.95	46.40	47.45	47.44	50.97	50.86	P-30

Project File: 10 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	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	0.012	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	1.06	0.07	1.13	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.036	0.036	0.012	0.14	3.97	0.14	3.97	0.0	Off
5	S-6	0.61	0.00	0.54	0.07	Comb	6.0	7.04	0.00	8.04	2.25	0.006	1.00	0.015	0.015	0.012	0.11	7.07	0.05	3.08	0.0	4
6	S-7	0.50	0.00	0.45	0.04	Comb	6.0	7.04	0.00	8.04	2.25	0.005	1.00	0.015	0.015	0.012	0.10	6.79	0.04	2.75	0.0	10
7	S-8	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	6.47	0.10	6.47	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	0.010	0.010	0.012	0.07	7.13	0.07	7.13	0.0	Off
9	S-10	1.12	0.00	1.12	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.012	0.13	12.94	0.13	12.94	0.0	Off
10	S-11	0.73	0.04	0.77	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.050	0.050	0.012	0.12	2.44	0.12	2.44	0.0	Off
11	S-12	0.62	0.00	0.62	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.020	0.020	0.012	0.09	4.71	0.09	4.71	0.0	Off
12	S-14	0.70	0.00	0.70	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.012	0.10	9.62	0.10	9.62	0.0	Off
13	S-13	0.81	0.00	0.81	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.012	0.11	10.52	0.11	10.52	0.0	Off
14	S-16	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	0.012	0.08	8.16	0.08	8.16	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	0.012	0.09	8.78	0.09	8.78	0.0	Off
16	R-3	2.14	0.00	2.14	0.00	Comb	6.0	8.04	9.54	8.04	2.25	Sag	1.00	0.015	0.015	0.012	0.16	10.35	0.16	10.35	0.0	Off
17	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
18	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
19	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
20	S-22	0.00	0.00	0.00	0.00	Grate	0.0	0.00	9.05	4.02	2.25	Sag	1.00	0.050	0.020	0.000	0.00	0.00	0.00	0.00	0.0	Off
21	S-20	0.01*	0.00	0.00	0.01	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.012	0.00	0.00	0.00	0.00	0.0	Off
22	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
23	S-23	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	0.012	0.01	1.07	0.01	1.07	0.0	Off

Project File: 10 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	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	0.012	0.00	0.00	0.00	0.00	0.0	Off
25	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	0.012	0.01	1.07	0.01	1.07	0.0	Off
26	S-17	0.46	0.00	0.46	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.033	0.033	0.012	0.09	2.59	0.09	2.59	0.0	Off
27	S-18	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	0.012	0.07	6.66	0.07	6.66	0.0	Off
28	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
29	S-35	1.20	0.00	1.20	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.034	0.034	0.012	0.15	4.33	0.15	4.33	0.0	Off
30	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	0.012	0.06	5.80	0.06	5.80	0.0	Off
31	S-37	0.89	0.00	0.89	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.012	0.11	11.17	0.11	11.17	0.0	Off
32	S-39	0.00	0.00	0.00	0.00	Comb	6.0	4.02	9.05	4.02	2.25	Sag	1.00	0.050	0.020	0.000	0.00	0.00	0.00	0.00	0.0	Off
33	S-38	0.01*	0.00	0.00	0.01	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
34	S-40	0.01*	0.00	0.01	0.00	DrGrt	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.00	3.07	0.00	3.07	0.0	Off
35	R-1	1.41	0.00	1.24	0.17	Comb	6.0	2.69	0.00	4.02	2.25	0.026	1.00	0.100	0.100	0.012	0.23	2.25	0.10	1.02	0.0	Off
36	R-2	0.57	0.00	0.45	0.12	Comb	6.0	2.69	0.00	4.02	2.25	0.005	1.00	0.027	0.027	0.012	0.13	4.96	0.07	2.74	0.0	Off
37	S-42	0.50	0.00	0.50	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.012	0.08	7.75	0.08	7.75	0.0	Off
38	S-43	0.46	0.00	0.46	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.012	0.07	7.35	0.07	7.35	0.0	Off
39	S-B1	10.70*	0.00	0.00	10.70	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
40	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
41	S-A1	6.45*	0.00	0.00	6.45	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-51	0.53	0.00	0.53	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.012	0.08	5.53	0.08	5.53	0.0	Off
43	S-52	0.39	0.00	0.39	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.019	0.190	0.012	0.07	1.27	0.07	1.27	0.0	Off
44	S-45	1.13	0.00	1.13	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.009	0.009	0.000	0.13	14.41	0.13	14.41	0.0	Off
45	S-32	1.25	0.00	1.25	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.014	0.014	0.000	0.14	10.06	0.14	10.06	0.0	Off
46	S-30	1.45	0.00	1.45	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.011	0.011	0.000	0.15	13.92	0.15	13.92	0.0	Off

Project File: 10 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	6.58	48.80	50.80	2.00	3.14	2.09	0.07	50.87	0.072	65.00	49.20	50.83	1.63	2.74	2.40	0.09	50.92	0.073	0.073	0.047	0.99	0.09
2	24	5.80	49.40	50.92	1.52	1.27	2.27	0.32	51.24	0.000	87.00	49.85	50.70	0.85**	1.27	4.56	0.32	51.02	0.000	0.000	n/a	1.00	0.32
3	24	4.71	50.05	50.75	0.70*	0.99	4.77	0.28	51.04	0.000	86.00	50.50	51.26	0.76**	1.10	4.28	0.28	51.55	0.000	0.000	n/a	1.00	n/a
4	18	2.43	51.00	51.57	0.57*	0.61	3.98	0.22	51.79	0.000	80.00	51.40	51.99	0.59**	0.65	3.77	0.22	52.21	0.000	0.000	n/a	1.50	0.33
5	18	1.02	51.60	51.99	0.39	0.35	2.80	0.13	52.12	0.000	105.00	52.15	52.53 j	0.38**	0.35	2.94	0.13	52.66	0.000	0.000	n/a	1.48	n/a
6	18	0.50	52.35	52.59	0.24*	0.18	2.70	0.09	52.68	0.000	33.00	52.55	52.81	0.26**	0.21	2.42	0.09	52.90	0.000	0.000	n/a	1.00	0.09
7	18	2.49	50.80	51.36	0.56*	0.60	4.17	0.22	51.58	0.000	54.00	51.10	51.70	0.60**	0.66	3.80	0.22	51.92	0.000	0.000	n/a	1.50	n/a
8	18	1.46	51.30	51.73	0.43*	0.42	3.46	0.16	51.90	0.000	110.00	51.85	52.30	0.45**	0.45	3.25	0.16	52.47	0.000	0.000	n/a	1.50	0.25
9	18	1.12	52.05	52.43	0.38*	0.36	3.15	0.14	52.57	0.000	63.00	52.35	52.75	0.40**	0.37	3.01	0.14	52.89	0.000	0.000	n/a	1.00	0.14
10	18	0.73	51.60	51.99	0.39	0.27	2.00	0.11	52.10	0.000	64.00	51.90	52.22 j	0.32**	0.27	2.68	0.11	52.33	0.000	0.000	n/a	1.00	n/a
11	18	0.62	51.30	51.70	0.40	0.24	1.66	0.10	51.80	0.000	59.00	51.60	51.89 j	0.29**	0.24	2.57	0.10	51.99	0.000	0.000	n/a	1.00	0.10
12	18	0.70	50.05	50.70	0.65	0.27	0.96	0.11	50.81	0.000	31.00	50.90	51.21 j	0.31**	0.27	2.65	0.11	51.32	0.000	0.000	n/a	1.00	n/a
13	18	0.81	50.05	50.70	0.65	0.29	1.10	0.12	50.82	0.000	27.00	50.90	51.23 j	0.33**	0.29	2.76	0.12	51.35	0.000	0.000	n/a	1.00	0.12
14	18	0.54	49.40	50.92	1.50	1.77	0.31	0.00	50.92	0.002	31.00	50.10	50.91	0.81	0.98	0.55	0.00	50.92	0.007	0.005	0.001	1.00	0.00
15	18	0.61	49.40	50.92	1.50	1.77	0.34	0.00	50.92	0.003	28.00	50.10	50.91	0.81	0.98	0.62	0.01	50.92	0.009	0.006	0.002	1.00	0.01
16	18	0.25	48.66	51.17	1.50	1.77	0.14	0.00	51.17	0.000	42.00	48.90	51.17	1.50	1.77	0.14	0.00	51.17	0.000	0.000	0.000	1.48	0.00
17	18	0.02	49.05	51.17	1.50	1.77	0.01	0.00	51.17	0.000	115.00	49.65	51.17	1.50	1.77	0.01	0.00	51.17	0.000	0.000	0.000	1.50	0.00
18	18	0.01	49.85	51.17	1.32	1.65	0.01	0.00	51.17	0.000	20.00	49.95	51.17	1.22	1.54	0.01	0.00	51.17	0.000	0.000	0.000	1.00	0.00
19	18	0.01	50.15	51.17	1.02	1.28	0.01	0.00	51.17	0.000	20.00	50.25	51.17	0.92	1.13	0.01	0.00	51.17	0.000	0.000	0.000	1.00	0.00
20	18	0.02	48.80	49.39	0.59	0.65	0.03	0.00	49.39	0.000	15.00	48.90	49.39	0.49	0.50	0.04	0.00	49.39	0.000	0.000	0.000	0.50	0.00
21	18	0.02	49.20	49.39	0.19	0.13	0.15	0.00	49.39	0.003	19.00	49.30	49.39	0.09	0.05	0.44	0.00	49.40	0.054	0.028	0.005	1.00	0.00
22	18	0.01	49.50	49.54	0.04*	0.01	0.79	0.01	49.55	0.524	19.00	49.60	49.64	0.04**	0.01	0.77	0.01	49.65	0.498	0.511	0.097	1.00	0.01

Project File: 10 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	48.80	49.92	1.12	1.42	0.01	0.00	49.92	0.000	28.00	48.95	49.92	0.97	1.21	0.02	0.00	49.92	0.000	0.000	0.000	0.50	0.00
24	18	0.01	49.15	49.92	0.77	0.91	0.01	0.00	49.92	0.000	16.00	49.25	49.92	0.67	0.76	0.01	0.00	49.92	0.000	0.000	0.000	1.00	0.00
25	18	0.01	49.45	49.92	0.47	0.47	0.02	0.00	49.92	0.000	15.00	49.55	49.92	0.37	0.34	0.03	0.00	49.92	0.000	0.000	0.000	1.00	0.00
26	18	0.62	48.80	50.30	1.50*	1.77	0.35	0.00	50.30	0.003	24.00	49.10	50.30	1.20	1.52	0.41	0.00	50.30	0.003	0.003	0.001	1.38	0.00
27	18	0.39	49.30	50.30	1.00	0.17	0.31	0.08	50.38	0.000	127.00	51.25	51.48 j	0.23**	0.17	2.27	0.08	51.56	0.000	0.000	n/a	1.00	n/a
28	18	0.69	45.95	47.45	1.50*	1.77	0.39	0.00	47.45	0.004	23.00	46.10	47.45	1.35	1.67	0.41	0.00	47.45	0.003	0.004	0.001	1.00	0.00
29	18	0.69	46.30	47.45	1.15	0.26	0.48	0.11	47.56	0.000	23.00	46.45	46.76	0.31**	0.26	2.64	0.11	46.87	0.000	0.000	n/a	1.50	n/a
30	18	0.51	46.65	46.91	0.26*	0.20	2.56	0.09	47.00	0.000	118.00	47.25	47.51	0.26**	0.21	2.43	0.09	47.61	0.000	0.000	n/a	0.50	0.05
31	18	0.47	47.35	47.59	0.24*	0.19	2.50	0.09	47.68	0.000	107.00	47.90	48.15	0.25**	0.20	2.38	0.09	48.24	0.000	0.000	n/a	1.55	n/a
32	18	0.02	48.10	48.15	0.05*	0.02	0.99	0.02	48.17	0.545	73.00	48.50	48.55	0.05**	0.02	0.98	0.01	48.57	0.533	0.539	0.394	0.72	0.01
33	18	0.02	48.80	48.85	0.05*	0.02	1.05	0.02	48.87	0.660	15.00	48.90	48.95	0.05**	0.02	1.02	0.02	48.97	0.596	0.628	0.094	0.95	0.02
34	18	0.01	49.10	49.14	0.04*	0.01	0.85	0.01	49.15	0.666	15.00	49.20	49.24	0.04**	0.01	0.85	0.01	49.25	0.648	0.657	0.099	1.00	0.01
35	18	1.31	48.10	48.48	0.38*	0.36	3.68	0.15	48.64	0.000	23.00	48.25	48.68	0.43**	0.42	3.15	0.15	48.83	0.000	0.000	n/a	1.46	n/a
36	18	0.57	48.45	48.70	0.25*	0.19	2.99	0.10	48.80	0.000	257.00	50.30	50.58	0.28**	0.23	2.51	0.10	50.68	0.000	0.000	n/a	1.00	n/a
37	18	0.83	47.55	48.61	1.06	0.30	0.62	0.12	48.73	0.000	190.00	48.50	48.84	0.34**	0.30	2.77	0.12	48.96	0.000	0.000	n/a	1.50	n/a
38	18	0.46	48.70	48.94	0.24*	0.18	2.48	0.09	49.03	0.000	59.00	49.00	49.25	0.25**	0.19	2.36	0.09	49.34	0.000	0.000	n/a	1.00	0.09
39	24	17.15	47.00	48.33	1.33	2.22	7.73	0.72	49.05	0.000	18.61	47.15	48.64	1.49**	2.51	6.83	0.72	49.37	0.000	0.000	n/a	1.00	0.72
40	18	6.45	47.35	48.64	1.29	1.23	3.99	0.43	49.07	0.000	99.32	47.95	48.93	0.98**	1.23	5.26	0.43	49.36	0.000	0.000	n/a	0.92	n/a
41	18	6.45	48.05	49.04	0.99*	1.23	5.23	0.42	49.46	0.542	84.84	48.51	49.50	0.99**	1.24	5.22	0.42	49.92	0.540	0.541	0.459	1.00	0.42
42	18	0.67	47.70	49.20	1.50*	1.77	0.38	0.00	49.20	0.003	19.00	47.80	49.20	1.40	1.72	0.39	0.00	49.20	0.003	0.003	0.001	1.48	0.00
43	18	0.39	48.00	49.20	1.20	0.17	0.26	0.08	49.28	0.000	127.00	50.60	50.83 j	0.23**	0.17	2.27	0.08	50.91	0.000	0.000	n/a	1.00	n/a
44	18	1.13	47.00	47.27	0.27	0.22	5.23	0.14	47.41	0.000	39.00	48.33	48.73	0.40**	0.37	3.02	0.14	48.87	0.000	0.000	n/a	1.00	0.14

Project File: 10 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

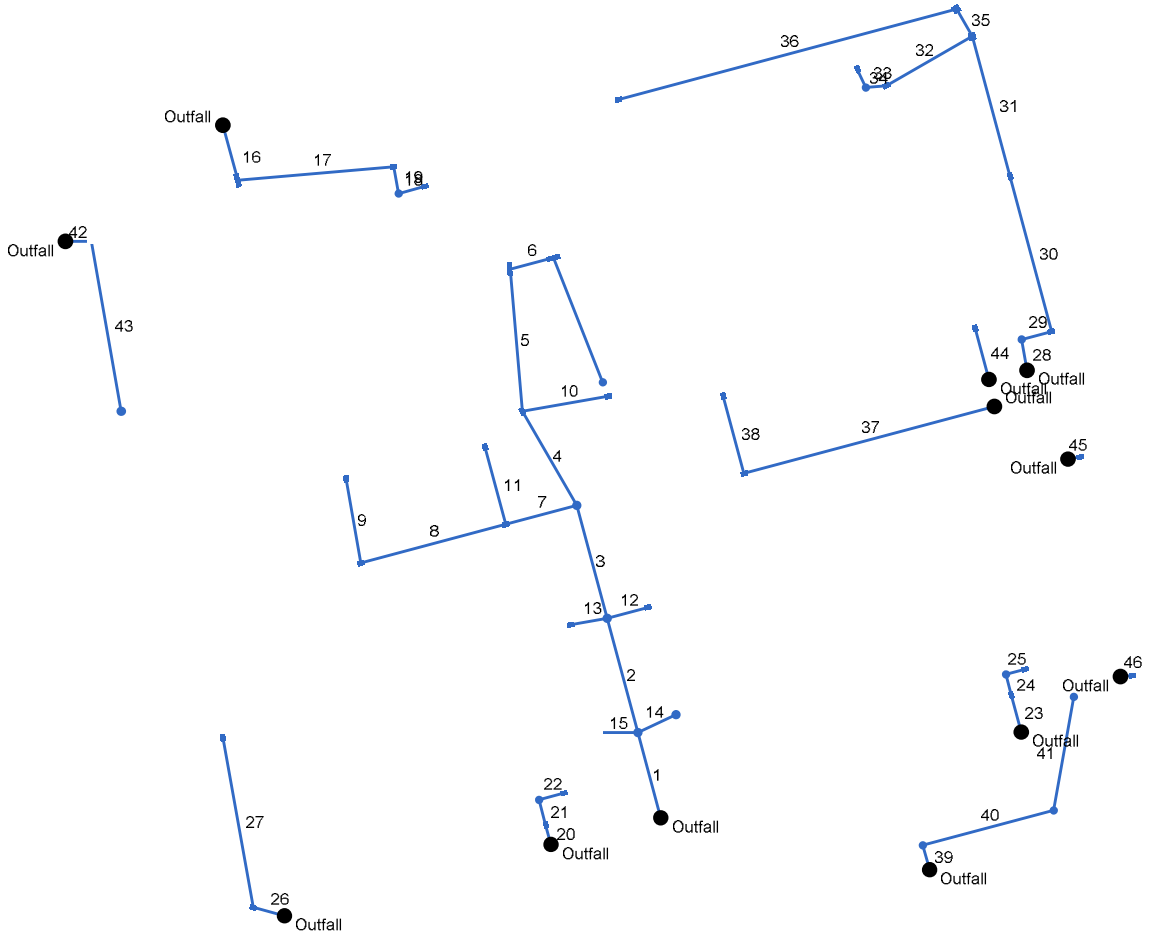
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
45	18	1.25	45.95	48.50	1.50	1.77	0.71	0.01	48.51	0.012	9.00	46.40	48.50	1.50	1.77	0.71	0.01	48.51	0.012	0.012	0.001	1.00	0.01
46	18	1.45	45.95	47.45	1.50*	1.77	0.82	0.01	47.46	0.016	9.00	46.40	47.44	1.04	1.31	1.11	0.02	47.46	0.024	0.020	0.002	1.00	0.02

Project File: 10 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

25 - YEAR CALCULATIONS
PROPOSED NETWORK

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: 25 Yr.stm	Number of lines: 46	Date: 12/2/2021

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	65.00	-105.00	MH	0.00	0.00	0.00	5.0	48.80	0.62	49.20	24	Cir	0.012	0.99	53.24	P-2
2	1	87.00	0.03	MH	0.00	0.00	0.00	5.0	49.40	0.52	49.85	24	Cir	0.012	1.00	54.13	P-3
3	2	86.00	0.00	MH	0.00	0.00	0.00	5.0	50.05	0.52	50.50	24	Cir	0.012	1.00	54.59	P-4
4	3	80.00	-15.00	Comb	0.00	0.24	0.69	5.0	51.00	0.50	51.40	18	Cir	0.012	1.50	54.17	P-5
5	4	105.00	25.00	Comb	0.00	0.11	0.85	5.0	51.60	0.52	52.15	18	Cir	0.012	1.48	55.79	P-6
6	5	33.00	80.00	Comb	0.00	0.08	0.96	5.0	52.35	0.61	52.55	18	Cir	0.012	1.00	55.84	P-7
7	3	54.00	-90.00	Comb	0.00	0.11	0.96	5.0	50.80	0.56	51.10	18	Cir	0.012	1.50	54.72	P-8
8	7	110.00	0.00	Comb	0.00	0.07	0.96	5.0	51.30	0.50	51.85	18	Cir	0.012	1.50	56.04	P-9
9	8	63.00	95.00	Comb	0.00	0.18	0.96	5.0	52.05	0.48	52.35	18	Cir	0.012	1.00	55.46	P-10
10	4	64.00	110.00	Comb	0.00	0.21	0.55	5.0	51.60	0.47	51.90	18	Cir	0.012	1.00	54.09	P-11
11	7	59.00	90.00	Comb	0.00	0.56	0.96	5.0	51.30	0.51	51.60	18	Cir	0.012	1.00	54.81	P-12
12	2	31.00	90.00	Comb	0.00	0.12	0.90	5.0	50.05	2.74	50.90	18	Cir	0.012	1.00	54.09	P-14
13	2	27.00	-85.00	Comb	0.00	0.14	0.89	5.0	50.05	3.15	50.90	18	Cir	0.012	1.00	54.58	P-13
14	1	31.00	80.00	Comb	0.00	0.11	0.77	5.0	49.40	2.26	50.10	18	Cir	0.012	1.00	53.30	P-16
15	1	28.00	-75.00	Comb	0.00	0.12	0.78	5.0	49.40	2.50	50.10	18	Cir	0.012	1.00	53.30	P-15
16	End	42.00	75.00	Comb	0.00	0.36	0.92	5.0	48.66	0.57	48.90	18	Cir	0.012	1.48	52.99	P-R3
17	16	115.00	-80.00	Grate	0.01	0.00	0.00	5.0	49.05	0.52	49.65	18	Cir	0.012	1.50	53.88	P-R4
18	17	20.00	85.00	MH	0.00	0.00	0.00	5.0	49.85	0.50	49.95	18	Cir	0.012	1.00	53.00	P-R5
19	18	20.00	-95.00	Grate	0.01	0.00	0.00	5.0	50.15	0.50	50.25	18	Cir	0.012	1.00	53.64	P-R6
20	End	15.00	-105.00	Grate	0.00	0.00	0.00	5.0	48.80	0.67	48.90	18	Cir	0.012	0.50	53.15	P-20
21	20	19.00	0.00	MH	0.01	0.00	0.00	5.0	49.20	0.53	49.30	18	Cir	0.012	1.00	53.43	P-22
22	21	19.00	90.00	Grate	0.01	0.00	0.00	5.0	49.50	0.53	49.60	18	Cir	0.012	1.00	53.29	P-21
23	End	28.00	-105.00	Grate	0.01	0.00	0.00	5.0	48.80	0.54	48.95	18	Cir	0.012	0.50	52.45	P-23

Project File: 25 Yr.stm | Number of lines: 46 | Date: 12/2/2021

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	16.00	0.00	MH	0.00	0.00	0.00	5.0	49.15	0.62	49.25	18	Cir	0.012	1.00	52.61	P-24
25	24	15.00	90.00	Grate	0.00	0.82	0.96	5.0	49.45	0.67	49.55	18	Cir	0.012	1.00	52.39	P-25
26	End	24.00	-165.00	Comb	0.00	0.09	0.80	5.0	48.80	1.25	49.10	18	Cir	0.012	1.38	54.44	P-17
27	26	127.00	65.00	Comb	0.00	0.53	0.95	5.0	49.30	1.54	51.25	18	Cir	0.012	1.00	56.53	P-18
28	End	23.00	-100.00	MH	0.00	0.00	0.00	5.0	45.95	0.65	46.10	18	Cir	0.012	1.00	51.88	P-34
29	28	23.00	85.00	Comb	0.00	0.20	0.92	5.0	46.30	0.65	46.45	18	Cir	0.012	1.50	51.23	P-35
30	29	118.00	-90.00	Comb	0.00	0.05	0.96	5.0	46.65	0.51	47.25	18	Cir	0.012	0.50	51.86	P-36
31	30	107.00	0.00	Comb	0.00	0.15	0.91	5.0	47.35	0.51	47.90	18	Cir	0.012	1.55	51.78	P-37
32	31	73.00	-105.00	Comb	0.00	0.00	0.00	5.0	48.10	0.55	48.50	18	Cir	0.012	0.72	52.00	P-38
33	32	15.00	25.00	MH	0.01	0.00	0.00	5.0	48.80	0.67	48.90	18	Cir	0.012	0.95	52.31	P-39
34	33	15.00	70.00	Grate	0.01	0.00	0.00	5.0	49.10	0.67	49.20	18	Cir	0.012	1.00	52.00	P-40
35	31	23.00	-15.00	Comb	0.00	0.26	0.84	5.0	48.10	0.65	48.25	18	Cir	0.012	1.46	52.25	P-R1
36	35	257.00	-75.00	Comb	0.00	0.10	0.89	5.0	48.45	0.72	50.30	18	Cir	0.012	1.00	54.55	P-R2
37	End	190.00	165.00	Comb	0.00	0.08	0.96	5.0	47.55	0.50	48.50	18	Cir	0.012	1.50	54.31	P-42
38	37	59.00	90.00	Comb	0.00	0.08	0.96	5.0	48.70	0.51	49.00	18	Cir	0.012	1.00	53.10	P-43
39	End	18.61	-105.00	MH	10.70	0.00	0.00	5.0	47.00	0.81	47.15	24	Cir	0.012	1.00	51.49	P-B1
40	39	99.32	90.00	MH	0.00	0.00	0.00	5.0	47.35	0.60	47.95	18	Cir	0.012	0.92	51.77	P-102
41	40	84.84	-65.00	MH	6.45	0.00	0.00	5.0	48.05	0.54	48.51	18	Cir	0.012	1.00	51.46	P-A1
42	End	19.00	0.00	Comb	0.00	0.10	0.82	5.0	47.70	0.53	47.80	18	Cir	0.012	1.48	51.91	P-51
43	42	127.00	80.00	Comb	0.00	0.07	0.86	5.0	48.00	2.05	50.60	18	Cir	0.012	1.00	54.77	P-52
44	End	39.00	-105.00	Comb	0.00	0.17	0.92	5.0	47.00	3.41	48.33	18	Cir	0.012	1.00	52.15	P-45
45	End	9.00	-10.00	Comb	0.00	0.18	0.96	5.0	45.95	5.00	46.40	18	Cir	0.012	1.00	51.80	P-32
46	End	9.00	-5.00	Comb	0.00	0.23	0.87	5.0	45.95	5.00	46.40	18	Cir	0.012	1.00	50.86	P-30

Project File: 25 Yr.stm | Number of lines: 46 | Date: 12/2/2021

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	Manhole	53.24	Cir	4.77	4.77	24	Cir	49.20	24 18 18	Cir Cir Cir	49.40 49.40 49.40
2	S-3	Manhole	54.13	Cir	4.77	4.77	24	Cir	49.85	24 18 18	Cir Cir Cir	50.05 50.05 50.05
3	S-4	Manhole	54.59	Cir	4.77	4.77	24	Cir	50.50	18 18	Cir Cir	51.00 50.80
4	S-5	Combination	54.17	Rect	4.77	3.27	18	Cir	51.40	18 18	Cir Cir	51.60 51.60
5	S-6	Combination	55.79	Rect	9.54	3.27	18	Cir	52.15	18	Cir	52.35
6	S-7	Combination	55.84	Rect	9.54	3.27	18	Cir	52.55			
7	S-8	Combination	54.72	Rect	4.77	3.27	18	Cir	51.10	18 18	Cir Cir	51.30 51.30
8	S-9	Combination	56.04	Rect	4.77	3.27	18	Cir	51.85	18	Cir	52.05
9	S-10	Combination	55.46	Rect	4.77	3.27	18	Cir	52.35			
10	S-11	Combination	54.09	Rect	4.77	3.27	18	Cir	51.90			
11	S-12	Combination	54.81	Rect	4.77	3.27	18	Cir	51.60			
12	S-14	Combination	54.09	Rect	4.77	3.27	18	Cir	50.90			
13	S-13	Combination	54.58	Rect	4.77	3.27	18	Cir	50.90			
14	S-16	Combination	53.30	Cir	4.77	4.77	18	Cir	50.10			
15	S-15	Combination	53.30	Rect	4.77	3.27	18	Cir	50.10			
16	R-3	Combination	52.99	Rect	9.54	3.27	18	Cir	48.90	18	Cir	49.05
17	R-4	Grate	53.88	Rect	4.77	3.27	18	Cir	49.65	18	Cir	49.85
18	R-5	Manhole	53.00	Cir	4.00	4.00	18	Cir	49.95	18	Cir	50.15
19	R-6	Grate	53.64	Rect	4.77	3.00	18	Cir	50.25			

Project File: 25 Yr.stm | Number of Structures: 46 | Run Date: 12/2/2021

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	S-22	Grate	53.15	Rect	4.77	3.00	18	Cir	48.90	18	Cir	49.20
21	S-20	Manhole	53.43	Cir	4.00	4.00	18	Cir	49.30	18	Cir	49.50
22	S-21	Grate	53.29	Rect	4.77	3.00	18	Cir	49.60			
23	S-23	Grate	52.45	Rect	4.77	3.00	18	Cir	48.95	18	Cir	49.15
24	S-24	Manhole	52.61	Cir	4.00	4.00	18	Cir	49.25	18	Cir	49.45
25	S-25	Grate	52.39	Rect	4.77	3.00	18	Cir	49.55			
26	S-17	Combination	54.44	Rect	4.77	3.27	18	Cir	49.10	18	Cir	49.30
27	S-18	Combination	56.53	Rect	4.77	3.27	18	Cir	51.25			
28	S-34	Manhole	51.88	Cir	4.00	4.00	18	Cir	46.10	18	Cir	46.30
29	S-35	Combination	51.23	Rect	4.77	3.27	18	Cir	46.45	18	Cir	46.65
30	S-36	Combination	51.86	Rect	4.77	3.27	18	Cir	47.25	18	Cir	47.35
31	S-37	Combination	51.78	Rect	5.00	5.00	18	Cir	47.90	18 18	Cir Cir	48.10 48.10
32	S-39	Combination	52.00	Rect	4.77	3.27	18	Cir	48.50	18	Cir	48.80
33	S-38	Manhole	52.31	Cir	4.00	4.00	18	Cir	48.90	18	Cir	49.10
34	S-40	Grate	52.00	Rect	4.77	3.00	18	Cir	49.20			
35	R-1	Combination	52.25	Rect	5.00	5.00	18	Cir	48.25	18	Cir	48.45
36	R-2	Combination	54.55	Rect	4.77	3.27	18	Cir	50.30			
37	S-42	Combination	54.31	Rect	4.77	3.27	18	Cir	48.50	18	Cir	48.70
38	S-43	Combination	53.10	Rect	4.77	3.27	18	Cir	49.00			
39	S-B1	Manhole	51.49	Cir	4.00	4.00	24	Cir	47.15	18	Cir	47.35
40	S-102	Manhole	51.77	Cir	4.00	4.00	18	Cir	47.95	18	Cir	48.05
41	S-A1	Manhole	51.46	Cir	4.00	4.00	18	Cir	48.51			

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-51	Combination	51.91	Rect	4.77	3.27	18	Cir	47.80	18	Cir	48.00
43	S-52	Combination	54.77	Cir	4.77	4.77	18	Cir	50.60			
44	S-45	Combination	52.15	Rect	4.77	3.27	18	Cir	48.33			
45	S-32	Combination	51.80	Rect	4.77	3.27	18	Cir	46.40			
46	S-30	Combination	50.86	Rect	4.77	3.27	18	Cir	46.40			

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	12.05	24	Cir	65.00	48.80	49.20	0.615	50.80	50.90	0.28	51.18	End	Manhole
2	P-3	10.94	24	Cir	87.00	49.40	49.85	0.517	51.18	51.04	n/a	51.04	1	Manhole
3	P-4	9.44	24	Cir	86.00	50.05	50.50	0.523	51.09	51.60	n/a	51.60	2	Manhole
4	P-5	3.26	18	Cir	80.00	51.00	51.40	0.500	51.67	52.09	0.40	52.09	3	Combination
5	P-6	1.33	18	Cir	105.00	51.60	52.15	0.524	52.09	52.58	n/a	52.58 j	4	Combination
6	P-7	0.63	18	Cir	33.00	52.35	52.55	0.606	52.62	52.85	0.10	52.85	5	Combination
7	P-8	6.55	18	Cir	54.00	50.80	51.10	0.556	51.79	52.09	0.65	52.74	3	Combination
8	P-9	1.89	18	Cir	110.00	51.30	51.85	0.500	52.74	52.37	n/a	52.37	7	Combination
9	P-10	1.43	18	Cir	63.00	52.05	52.35	0.476	52.48	52.80	0.16	52.80	8	Combination
10	P-11	0.95	18	Cir	64.00	51.60	51.90	0.469	52.09	52.26	n/a	52.26 j	4	Combination
11	P-12	4.43	18	Cir	59.00	51.30	51.60	0.508	52.74	52.41	n/a	52.41	7	Combination
12	P-14	0.89	18	Cir	31.00	50.05	50.90	2.742	51.04	51.25	n/a	51.25 j	2	Combination
13	P-13	1.03	18	Cir	27.00	50.05	50.90	3.148	51.04	51.28	n/a	51.28 j	2	Combination
14	P-16	0.70	18	Cir	31.00	49.40	50.10	2.258	51.18	51.18	0.00	51.18	1	Combination
15	P-15	0.77	18	Cir	28.00	49.40	50.10	2.500	51.18	51.18	0.01	51.18	1	Combination
16	P-R3	0.33	18	Cir	42.00	48.66	48.90	0.571	51.17*	51.17*	0.00	51.17	End	Combination
17	P-R4	0.02	18	Cir	115.00	49.05	49.65	0.522	51.17*	51.17*	0.00	51.17	16	Grate
18	P-R5	0.01	18	Cir	20.00	49.85	49.95	0.500	51.17	51.17	0.00	51.17	17	Manhole
19	P-R6	0.01	18	Cir	20.00	50.15	50.25	0.500	51.17	51.17	0.00	51.17	18	Grate
20	P-20	0.02	18	Cir	15.00	48.80	48.90	0.667	49.39	49.39	0.00	49.39	End	Grate
21	P-22	0.02	18	Cir	19.00	49.20	49.30	0.526	49.39	49.39	0.00	49.40	20	Manhole
22	P-21	0.01	18	Cir	19.00	49.50	49.60	0.526	49.54	49.64	0.01	49.65	21	Grate
23	P-23	6.47	18	Cir	28.00	48.80	48.95	0.536	49.92	49.98	0.19	50.17	End	Grate
24	P-24	6.48	18	Cir	16.00	49.15	49.25	0.625	50.17	50.23	0.43	50.23	23	Manhole

Project File: 25 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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
25	P-25	6.49	18	Cir	15.00	49.45	49.55	0.667	50.37	50.53	n/a	50.53	24	Grate
26	P-17	4.59	18	Cir	24.00	48.80	49.10	1.250	50.30	50.30	0.20	50.50	End	Combination
27	P-18	4.15	18	Cir	127.00	49.30	51.25	1.535	50.50	52.03	n/a	52.03 j	26	Combination
28	P-34	0.92	18	Cir	23.00	45.95	46.10	0.652	47.45	47.45	0.00	47.46	End	Manhole
29	P-35	0.92	18	Cir	23.00	46.30	46.45	0.652	47.46	46.81	0.19	46.81	28	Combination
30	P-36	0.68	18	Cir	118.00	46.65	47.25	0.508	46.94	47.56	0.05	47.56	29	Combination
31	P-37	0.62	18	Cir	107.00	47.35	47.90	0.514	47.63	48.19	n/a	48.19	30	Combination
32	P-38	0.02	18	Cir	73.00	48.10	48.50	0.548	48.19	48.55	0.01	48.55	31	Combination
33	P-39	0.02	18	Cir	15.00	48.80	48.90	0.667	48.85	48.95	0.02	48.97	32	Manhole
34	P-40	0.01	18	Cir	15.00	49.10	49.20	0.667	49.14	49.24	0.01	49.25	33	Grate
35	P-R1	1.84	18	Cir	23.00	48.10	48.25	0.652	48.55	48.76	n/a	48.76	31	Combination
36	P-R2	0.73	18	Cir	257.00	48.45	50.30	0.720	48.76	50.62	n/a	50.62	35	Combination
37	P-42	1.15	18	Cir	190.00	47.55	48.50	0.500	48.61	48.90	n/a	48.90 j	End	Combination
38	P-43	0.63	18	Cir	59.00	48.70	49.00	0.508	48.98	49.30	0.10	49.30	37	Combination
39	P-B1	17.15	24	Cir	18.61	47.00	47.15	0.806	48.33	48.64	0.72	48.64	End	Manhole
40	P-102	6.45	18	Cir	99.32	47.35	47.95	0.604	48.64	48.93	n/a	48.93	39	Manhole
41	P-A1	6.45	18	Cir	84.84	48.05	48.51	0.542	49.04	49.50	0.42	49.92	40	Manhole
42	P-51	0.92	18	Cir	19.00	47.70	47.80	0.526	49.20	49.20	0.01	49.21	End	Combination
43	P-52	0.50	18	Cir	127.00	48.00	50.60	2.047	49.21	50.86	n/a	50.86 j	42	Combination
44	P-45	1.29	18	Cir	39.00	47.00	48.33	3.410	47.27	48.75	0.15	48.75	End	Combination
45	P-32	1.43	18	Cir	9.00	45.95	46.40	5.000	48.50*	48.50*	0.01	48.51	End	Combination
46	P-30	1.65	18	Cir	9.00	45.95	46.40	5.000	47.45	47.44	0.02	47.47	End	Combination

Project File: 25 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	65.00	0.00	2.05	0.00	0.00	1.75	5.0	10.2	6.9	12.05	19.22	4.03	24	0.62	48.80	49.20	50.80	50.90	52.83	53.24	P-2
2	1	87.00	0.00	1.82	0.00	0.00	1.57	5.0	9.8	7.0	10.94	17.62	4.68	24	0.52	49.40	49.85	51.18	51.04	53.24	54.13	P-3
3	2	86.00	0.00	1.56	0.00	0.00	1.33	5.0	9.4	7.1	9.44	17.72	5.54	24	0.52	50.05	50.50	51.09	51.60	54.13	54.59	P-4
4	3	80.00	0.24	0.64	0.69	0.17	0.45	5.0	8.8	7.2	3.26	8.04	4.22	18	0.50	51.00	51.40	51.67	52.09	54.59	54.17	P-5
5	4	105.00	0.11	0.19	0.85	0.09	0.17	5.0	6.5	7.8	1.33	8.23	2.91	18	0.52	51.60	52.15	52.09	52.58	54.17	55.79	P-6
6	5	33.00	0.08	0.08	0.96	0.08	0.08	5.0	5.0	8.2	0.63	8.86	2.74	18	0.61	52.35	52.55	52.62	52.85	55.79	55.84	P-7
7	3	54.00	0.11	0.92	0.96	0.11	0.88	5.0	8.0	7.4	6.55	8.48	5.29	18	0.56	50.80	51.10	51.79	52.09	54.59	54.72	P-8
8	7	110.00	0.07	0.25	0.96	0.07	0.24	5.0	6.3	7.9	1.89	8.04	2.29	18	0.50	51.30	51.85	52.74	52.37	54.72	56.04	P-9
9	8	63.00	0.18	0.18	0.96	0.17	0.17	5.0	5.0	8.2	1.43	7.85	3.30	18	0.48	52.05	52.35	52.48	52.80	56.04	55.46	P-10
10	4	64.00	0.21	0.21	0.55	0.12	0.12	5.0	5.0	8.2	0.95	7.79	2.40	18	0.47	51.60	51.90	52.09	52.26	54.17	54.09	P-11
11	7	59.00	0.56	0.56	0.96	0.54	0.54	5.0	5.0	8.2	4.43	8.11	3.56	18	0.51	51.30	51.60	52.74	52.41	54.72	54.81	P-12
12	2	31.00	0.12	0.12	0.90	0.11	0.11	5.0	5.0	8.2	0.89	18.84	1.78	18	2.74	50.05	50.90	51.04	51.25	54.13	54.09	P-14
13	2	27.00	0.14	0.14	0.89	0.12	0.12	5.0	5.0	8.2	1.03	20.18	1.89	18	3.15	50.05	50.90	51.04	51.28	54.13	54.58	P-13
14	1	31.00	0.11	0.11	0.77	0.08	0.08	5.0	5.0	8.2	0.70	17.09	0.45	18	2.26	49.40	50.10	51.18	51.18	53.24	53.30	P-16
15	1	28.00	0.12	0.12	0.78	0.09	0.09	5.0	5.0	8.2	0.77	17.99	0.50	18	2.50	49.40	50.10	51.18	51.18	53.24	53.30	P-15
16	End	42.00	0.36	0.36	0.92	0.33	0.33	5.0	292.2	0.9	0.33	8.60	0.18	18	0.57	48.66	48.90	51.17	51.17	50.37	52.99	P-R3
17	16	115.00	0.00	0.00	0.00	0.00	0.00	5.0	122.8	0.0	0.02	8.22	0.01	18	0.52	49.05	49.65	51.17	51.17	52.99	53.88	P-R4
18	17	20.00	0.00	0.00	0.00	0.00	0.00	5.0	63.9	0.0	0.01	8.04	0.01	18	0.50	49.85	49.95	51.17	51.17	53.88	53.00	P-R5
19	18	20.00	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	8.04	0.01	18	0.50	50.15	50.25	51.17	51.17	53.00	53.64	P-R6
20	End	15.00	0.00	0.00	0.00	0.00	0.00	5.0	88.9	0.0	0.02	9.29	0.04	18	0.67	48.80	48.90	49.39	49.39	52.98	53.15	P-20
21	20	19.00	0.00	0.00	0.00	0.00	0.00	5.0	61.0	0.0	0.02	8.25	0.30	18	0.53	49.20	49.30	49.39	49.39	53.15	53.43	P-22
22	21	19.00	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	8.25	0.78	18	0.53	49.50	49.60	49.54	49.64	53.43	53.29	P-21

Project File: 25 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	End	28.00	0.00	0.82	0.00	0.00	0.79	5.0	5.1	8.2	6.47	8.33	4.79	18	0.54	48.80	48.95	49.92	49.98	52.82	52.45	P-23
24	23	16.00	0.00	0.82	0.00	0.00	0.79	5.0	5.1	8.2	6.48	8.99	5.16	18	0.62	49.15	49.25	50.17	50.23	52.45	52.61	P-24
25	24	15.00	0.82	0.82	0.96	0.79	0.79	5.0	5.0	8.2	6.49	9.29	5.48	18	0.67	49.45	49.55	50.37	50.53	52.61	52.39	P-25
26	End	24.00	0.09	0.62	0.80	0.07	0.58	5.0	5.9	8.0	4.59	12.72	2.81	18	1.25	48.80	49.10	50.30	50.30	54.03	54.44	P-17
27	26	127.00	0.53	0.53	0.95	0.50	0.50	5.0	5.0	8.2	4.15	14.10	3.61	18	1.54	49.30	51.25	50.50	52.03	54.44	56.53	P-18
28	End	23.00	0.00	0.76	0.00	0.00	0.68	5.0	180.7	1.3	0.92	9.19	0.54	18	0.65	45.95	46.10	47.45	47.45	52.00	51.88	P-34
29	28	23.00	0.20	0.76	0.92	0.18	0.68	5.0	180.6	1.3	0.92	9.19	1.74	18	0.65	46.30	46.45	47.46	46.81	51.88	51.23	P-35
30	29	118.00	0.05	0.56	0.96	0.05	0.49	5.0	179.7	1.3	0.68	8.11	2.71	18	0.51	46.65	47.25	46.94	47.56	51.23	51.86	P-36
31	30	107.00	0.15	0.51	0.91	0.14	0.44	5.0	178.8	1.3	0.62	8.16	2.64	18	0.51	47.35	47.90	47.63	48.19	51.86	51.78	P-37
32	31	73.00	0.00	0.00	0.00	0.00	0.00	5.0	71.3	0.0	0.02	8.42	0.75	18	0.55	48.10	48.50	48.19	48.55	51.78	52.00	P-38
33	32	15.00	0.00	0.00	0.00	0.00	0.00	5.0	49.2	0.0	0.02	9.29	1.03	18	0.67	48.80	48.90	48.85	48.95	52.00	52.31	P-39
34	33	15.00	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	9.29	0.85	18	0.67	49.10	49.20	49.14	49.24	52.31	52.00	P-40
35	31	23.00	0.26	0.36	0.84	0.22	0.31	5.0	15.3	6.0	1.84	9.19	3.76	18	0.65	48.10	48.25	48.55	48.76	51.78	52.25	P-R1
36	35	257.00	0.10	0.10	0.89	0.09	0.09	5.0	5.0	8.2	0.73	9.65	2.73	18	0.72	48.45	50.30	48.76	50.62	52.25	54.55	P-R2
37	End	190.00	0.08	0.16	0.96	0.08	0.15	5.0	7.7	7.5	1.15	8.04	1.95	18	0.50	47.55	48.50	48.61	48.90	52.12	54.31	P-42
38	37	59.00	0.08	0.08	0.96	0.08	0.08	5.0	5.0	8.2	0.63	8.11	2.65	18	0.51	48.70	49.00	48.98	49.30	54.31	53.10	P-43
39	End	18.61	0.00	0.00	0.00	0.00	0.00	5.0	5.8	0.0	17.15	22.00	7.28	24	0.81	47.00	47.15	48.33	48.64	49.25	51.49	P-B1
40	39	99.32	0.00	0.00	0.00	0.00	0.00	5.0	5.4	0.0	6.45	8.84	4.63	18	0.60	47.35	47.95	48.64	48.93	51.49	51.77	P-102
41	40	84.84	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	6.45	8.38	5.22	18	0.54	48.05	48.51	49.04	49.50	51.77	51.46	P-A1
42	End	19.00	0.10	0.17	0.82	0.08	0.14	5.0	12.5	6.4	0.92	8.25	0.53	18	0.53	47.70	47.80	49.20	49.20	52.70	51.91	P-51
43	42	127.00	0.07	0.07	0.86	0.06	0.06	5.0	5.0	8.2	0.50	16.28	1.37	18	2.05	48.00	50.60	49.21	50.86	51.91	54.77	P-52
44	End	39.00	0.17	0.17	0.92	0.16	0.16	5.0	5.0	8.2	1.29	21.01	4.55	18	3.41	47.00	48.33	47.27	48.75	52.24	52.15	P-45

Project File: 25 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	End	9.00	0.18	0.18	0.96	0.17	0.17	5.0	5.0	8.2	1.43	25.44	0.81	18	5.00	45.95	46.40	48.50	48.50	51.88	51.80	P-32
46	End	9.00	0.23	0.23	0.87	0.20	0.20	5.0	5.0	8.2	1.65	25.44	1.10	18	5.00	45.95	46.40	47.45	47.44	50.97	50.86	P-30

Project File: 25 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	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	1.37	0.12	1.49	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.036	0.036	0.000	0.17	4.68	0.17	4.68	0.0	Off
5	S-6	0.77	0.00	0.65	0.12	Comb	6.0	7.04	0.00	8.04	2.25	0.006	1.00	0.010	0.010	0.012	0.10	9.97	0.05	5.04	0.0	4
6	S-7	0.63	0.00	0.55	0.09	Comb	6.0	7.04	0.00	8.04	2.25	0.005	1.00	0.010	0.010	0.012	0.10	9.58	0.05	4.53	0.0	10
7	S-8	0.87	0.00	0.87	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.11	7.51	0.11	7.51	0.0	Off
8	S-9	0.55	0.00	0.55	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.08	8.28	0.08	8.28	0.0	Off
9	S-10	1.43	0.00	1.43	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.15	15.10	0.15	15.10	0.0	Off
10	S-11	0.95	0.09	1.04	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.050	0.050	0.000	0.14	2.86	0.14	2.86	0.0	Off
11	S-12	4.43	0.00	4.43	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.32	21.24	0.32	21.24	0.0	Off
12	S-14	0.89	0.00	0.89	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.11	11.17	0.11	11.17	0.0	Off
13	S-13	1.03	0.00	1.03	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.12	12.24	0.12	12.24	0.0	Off
14	S-16	0.70	0.00	0.70	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.10	9.58	0.10	9.58	0.0	Off
15	S-15	0.77	0.00	0.77	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.10	10.20	0.10	10.20	0.0	Off
16	R-3	2.73	0.00	2.73	0.00	Comb	6.0	8.04	9.54	8.04	2.25	Sag	1.00	0.015	0.015	0.000	0.18	12.11	0.18	12.11	0.0	Off
17	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
18	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
19	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
20	S-22	0.00	0.00	0.00	0.00	Grate	0.0	0.00	9.05	4.02	2.25	Sag	1.00	0.050	0.020	0.000	0.00	0.00	0.00	0.00	0.0	Off
21	S-20	0.01*	0.00	0.00	0.01	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
22	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
23	S-23	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

Project File: 25 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	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
25	S-25	6.49	0.00	6.49	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.41	41.21	0.41	41.21	0.0	Off
26	S-17	0.59	0.00	0.59	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.033	0.033	0.000	0.10	2.97	0.10	2.97	0.0	Off
27	S-18	4.15	0.00	4.15	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.30	30.28	0.30	30.28	0.0	Off
28	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
29	S-35	1.52	0.00	1.52	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.034	0.034	0.000	0.17	4.98	0.17	4.98	0.0	Off
30	S-36	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	6.72	0.07	6.72	0.0	Off
31	S-37	1.13	0.00	1.13	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.13	12.98	0.13	12.98	0.0	Off
32	S-39	0.00	0.00	0.00	0.00	Comb	6.0	4.02	9.05	4.02	2.25	Sag	1.00	0.050	0.020	0.000	0.00	0.00	0.00	0.00	0.0	Off
33	S-38	0.01*	0.00	0.00	0.01	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
34	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
35	R-1	1.80	0.00	1.53	0.27	Comb	6.0	2.69	0.00	4.02	2.25	0.026	1.00	0.100	0.100	0.012	0.25	2.47	0.12	1.21	0.0	Off
36	R-2	0.73	0.00	0.56	0.17	Comb	6.0	2.69	0.00	4.02	2.25	0.005	1.00	0.027	0.027	0.012	0.15	5.44	0.09	3.16	0.0	Off
37	S-42	0.63	0.00	0.63	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.09	9.00	0.09	9.00	0.0	Off
38	S-43	0.63	0.00	0.63	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.09	9.00	0.09	9.00	0.0	Off
39	S-B1	10.70*	0.00	0.00	10.70	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
40	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
41	S-A1	6.45*	0.00	0.00	6.45	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-51	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	6.42	0.10	6.42	0.0	Off
43	S-52	0.50	0.00	0.50	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.019	0.190	0.000	0.08	1.33	0.08	1.33	0.0	Off
44	S-45	1.29	0.00	1.29	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.009	0.009	0.000	0.14	15.68	0.14	15.68	0.0	Off
45	S-32	1.43	0.00	1.43	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.014	0.014	0.000	0.15	10.93	0.15	10.93	0.0	Off
46	S-30	1.65	0.00	1.65	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.011	0.011	0.000	0.17	15.14	0.17	15.14	0.0	Off

Project File: 25 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	12.05	48.80	50.80	2.00	3.14	3.83	0.23	51.03	0.242	65.00	49.20	50.90	1.70	2.85	4.23	0.28	51.18	0.227	0.234	0.152	0.99	0.28
2	24	10.94	49.40	51.18	1.78	1.94	3.71	0.50	51.67	0.000	87.00	49.85	51.04	1.19**	1.94	5.64	0.50	51.53	0.000	0.000	n/a	1.00	n/a
3	24	9.44	50.05	51.09	1.04*	1.65	5.73	0.45	51.53	0.000	86.00	50.50	51.60	1.10**	1.76	5.35	0.45	52.04	0.000	0.000	n/a	1.00	n/a
4	18	3.26	51.00	51.67	0.67*	0.76	4.31	0.27	51.93	0.000	80.00	51.40	52.09	0.69**	0.79	4.13	0.27	52.35	0.000	0.000	n/a	1.50	0.40
5	18	1.33	51.60	52.09	0.49	0.42	2.67	0.16	52.24	0.000	105.00	52.15	52.58 j	0.43**	0.42	3.16	0.16	52.74	0.000	0.000	n/a	1.48	0.23
6	18	0.63	52.35	52.62	0.27*	0.22	2.90	0.10	52.73	0.000	33.00	52.55	52.85	0.30**	0.25	2.58	0.10	52.95	0.000	0.000	n/a	1.00	0.10
7	18	6.55	50.80	51.79	0.99*	1.24	5.30	0.44	52.23	0.555	54.00	51.10	52.09	0.99**	1.24	5.28	0.43	52.53	0.551	0.553	0.299	1.50	0.65
8	18	1.89	51.30	52.74	1.44	0.54	1.08	0.19	52.93	0.000	110.00	51.85	52.37	0.52**	0.54	3.50	0.19	52.56	0.000	0.000	n/a	1.50	n/a
9	18	1.43	52.05	52.48	0.43*	0.42	3.37	0.16	52.64	0.000	63.00	52.35	52.80	0.45**	0.44	3.23	0.16	52.96	0.000	0.000	n/a	1.00	0.16
10	18	0.95	51.60	52.09	0.49	0.33	1.91	0.13	52.22	0.000	64.00	51.90	52.26 j	0.36**	0.33	2.88	0.13	52.39	0.000	0.000	n/a	1.00	0.13
11	18	4.43	51.30	52.74	1.44	0.97	2.54	0.33	53.07	0.000	59.00	51.60	52.41	0.81**	0.97	4.58	0.33	52.73	0.000	0.000	n/a	1.00	n/a
12	18	0.89	50.05	51.04	0.99	0.31	0.72	0.12	51.16	0.000	31.00	50.90	51.25 j	0.35**	0.31	2.83	0.12	51.38	0.000	0.000	n/a	1.00	0.12
13	18	1.03	50.05	51.04	0.99	0.35	0.84	0.13	51.17	0.000	27.00	50.90	51.28 j	0.38**	0.35	2.94	0.13	51.41	0.000	0.000	n/a	1.00	0.13
14	18	0.70	49.40	51.18	1.50	1.77	0.40	0.00	51.18	0.004	31.00	50.10	51.18	1.08	1.36	0.51	0.00	51.18	0.005	0.004	0.001	1.00	0.00
15	18	0.77	49.40	51.18	1.50	1.77	0.44	0.00	51.18	0.005	28.00	50.10	51.18	1.08	1.36	0.57	0.01	51.18	0.006	0.005	0.002	1.00	0.01
16	18	0.33	48.66	51.17	1.50	1.77	0.18	0.00	51.17	0.001	42.00	48.90	51.17	1.50	1.77	0.18	0.00	51.17	0.001	0.001	0.000	1.48	0.00
17	18	0.02	49.05	51.17	1.50	1.77	0.01	0.00	51.17	0.000	115.00	49.65	51.17	1.50	1.77	0.01	0.00	51.17	0.000	0.000	0.000	1.50	0.00
18	18	0.01	49.85	51.17	1.32	1.65	0.01	0.00	51.17	0.000	20.00	49.95	51.17	1.22	1.54	0.01	0.00	51.17	0.000	0.000	0.000	1.00	0.00
19	18	0.01	50.15	51.17	1.02	1.28	0.01	0.00	51.17	0.000	20.00	50.25	51.17	0.92	1.13	0.01	0.00	51.17	0.000	0.000	0.000	1.00	0.00
20	18	0.02	48.80	49.39	0.59	0.65	0.03	0.00	49.39	0.000	15.00	48.90	49.39	0.49	0.50	0.04	0.00	49.39	0.000	0.000	0.000	0.50	0.00
21	18	0.02	49.20	49.39	0.19	0.13	0.15	0.00	49.39	0.003	19.00	49.30	49.39	0.09	0.05	0.44	0.00	49.40	0.054	0.028	0.005	1.00	0.00
22	18	0.01	49.50	49.54	0.04*	0.01	0.79	0.01	49.55	0.524	19.00	49.60	49.64	0.04**	0.01	0.77	0.01	49.65	0.498	0.511	0.097	1.00	0.01

Project File: 25 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	6.47	48.80	49.92	1.12	1.42	4.57	0.32	50.24	0.393	28.00	48.95	49.98	1.03	1.29	5.01	0.39	50.37	0.487	0.440	0.123	0.50	0.19
24	18	6.48	49.15	50.17	1.02	1.23	5.04	0.43	50.61	0.000	16.00	49.25	50.23	0.98**	1.23	5.27	0.43	50.67	0.000	0.000	n/a	1.00	0.43
25	18	6.49	49.45	50.37	0.92*	1.14	5.68	0.43	50.81	0.000	15.00	49.55	50.53	0.98**	1.23	5.28	0.43	50.97	0.000	0.000	n/a	1.00	n/a
26	18	4.59	48.80	50.30	1.50*	1.77	2.60	0.10	50.40	0.163	24.00	49.10	50.30	1.20	1.52	3.02	0.14	50.45	0.169	0.166	0.040	1.38	0.20
27	18	4.15	49.30	50.50	1.20	0.93	2.74	0.31	50.81	0.000	127.00	51.25	52.03 j	0.78**	0.93	4.47	0.31	52.34	0.000	0.000	n/a	1.00	0.31
28	18	0.92	45.95	47.45	1.50*	1.77	0.52	0.00	47.45	0.007	23.00	46.10	47.45	1.35	1.68	0.55	0.00	47.46	0.006	0.006	0.001	1.00	0.00
29	18	0.92	46.30	47.46	1.16	0.32	0.63	0.13	47.58	0.000	23.00	46.45	46.81	0.36**	0.32	2.86	0.13	46.93	0.000	0.000	n/a	1.50	0.19
30	18	0.68	46.65	46.94	0.29*	0.24	2.79	0.11	47.05	0.000	118.00	47.25	47.56	0.31**	0.26	2.63	0.11	47.66	0.000	0.000	n/a	0.50	0.05
31	18	0.62	47.35	47.63	0.28*	0.23	2.72	0.10	47.73	0.000	107.00	47.90	48.19	0.29**	0.24	2.56	0.10	48.29	0.000	0.000	n/a	1.55	n/a
32	18	0.02	48.10	48.19	0.09	0.02	0.45	0.00	48.19	0.058	73.00	48.50	48.55	0.05**	0.02	1.06	0.02	48.57	0.667	0.363	n/a	0.72	0.01
33	18	0.02	48.80	48.85	0.05*	0.02	1.05	0.02	48.87	0.660	15.00	48.90	48.95	0.05**	0.02	1.02	0.02	48.97	0.596	0.628	0.094	0.95	0.02
34	18	0.01	49.10	49.14	0.04*	0.01	0.85	0.01	49.15	0.666	15.00	49.20	49.24	0.04**	0.01	0.85	0.01	49.25	0.648	0.657	0.099	1.00	0.01
35	18	1.84	48.10	48.55	0.45*	0.45	4.06	0.19	48.74	0.000	23.00	48.25	48.76	0.51**	0.53	3.47	0.19	48.95	0.000	0.000	n/a	1.46	n/a
36	18	0.73	48.45	48.76	0.31	0.26	2.78	0.11	48.87	0.000	257.00	50.30	50.62	0.32**	0.27	2.68	0.11	50.73	0.000	0.000	n/a	1.00	n/a
37	18	1.15	47.55	48.61	1.06	0.38	0.86	0.14	48.75	0.000	190.00	48.50	48.90 j	0.40**	0.38	3.03	0.14	49.04	0.000	0.000	n/a	1.50	n/a
38	18	0.63	48.70	48.98	0.28*	0.23	2.73	0.10	49.09	0.000	59.00	49.00	49.30	0.30**	0.25	2.58	0.10	49.40	0.000	0.000	n/a	1.00	0.10
39	24	17.15	47.00	48.33	1.33	2.22	7.73	0.72	49.05	0.000	18.61	47.15	48.64	1.49**	2.51	6.83	0.72	49.37	0.000	0.000	n/a	1.00	0.72
40	18	6.45	47.35	48.64	1.29	1.23	3.99	0.43	49.07	0.000	99.32	47.95	48.93	0.98**	1.23	5.26	0.43	49.36	0.000	0.000	n/a	0.92	n/a
41	18	6.45	48.05	49.04	0.99*	1.23	5.23	0.42	49.46	0.542	84.84	48.51	49.50	0.99**	1.24	5.22	0.42	49.92	0.540	0.541	0.459	1.00	0.42
42	18	0.92	47.70	49.20	1.50*	1.77	0.52	0.00	49.20	0.006	19.00	47.80	49.20	1.40	1.72	0.53	0.00	49.21	0.006	0.006	0.001	1.48	0.01
43	18	0.50	48.00	49.21	1.21	0.21	0.33	0.09	49.30	0.000	127.00	50.60	50.86 j	0.26**	0.21	2.41	0.09	50.95	0.000	0.000	n/a	1.00	n/a
44	18	1.29	47.00	47.27	0.27	0.22	5.96	0.15	47.42	0.000	39.00	48.33	48.75	0.42**	0.41	3.13	0.15	48.91	0.000	0.000	n/a	1.00	0.15

Project File: 25 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

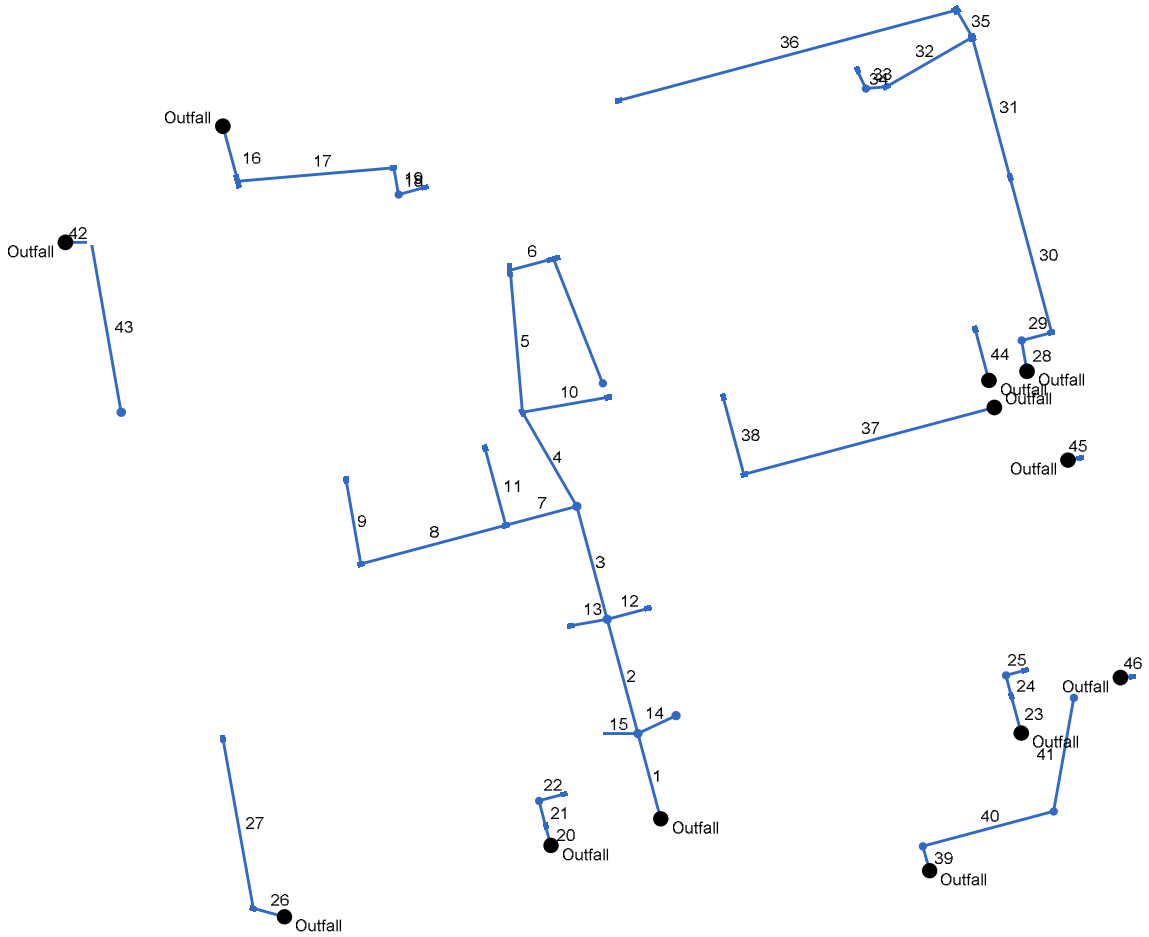
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
45	18	1.43	45.95	48.50	1.50	1.77	0.81	0.01	48.51	0.016	9.00	46.40	48.50	1.50	1.77	0.81	0.01	48.51	0.016	0.016	0.001	1.00	0.01
46	18	1.65	45.95	47.45	1.50*	1.77	0.93	0.01	47.46	0.021	9.00	46.40	47.44	1.04	1.31	1.26	0.02	47.47	0.031	0.026	0.002	1.00	0.02

Project File: 25 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

100-YEAR CALCULATIONS
PROPOSED NETWORK

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: 100 Yr.stm	Number of lines: 46	Date: 12/2/2021

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	65.00	-105.00	MH	0.00	0.00	0.00	5.0	48.80	0.62	49.20	24	Cir	0.012	0.99	53.24	P-2
2	1	87.00	0.03	MH	0.00	0.00	0.00	5.0	49.40	0.52	49.85	24	Cir	0.012	1.00	54.13	P-3
3	2	86.00	0.00	MH	0.00	0.00	0.00	5.0	50.05	0.52	50.50	24	Cir	0.012	1.00	54.59	P-4
4	3	80.00	-15.00	Comb	0.00	0.24	0.69	5.0	51.00	0.50	51.40	18	Cir	0.012	1.50	54.17	P-5
5	4	105.00	25.00	Comb	0.00	0.11	0.85	5.0	51.60	0.52	52.15	18	Cir	0.012	1.48	55.79	P-6
6	5	33.00	80.00	Comb	0.00	0.08	0.96	5.0	52.35	0.61	52.55	18	Cir	0.012	1.00	55.84	P-7
7	3	54.00	-90.00	Comb	0.00	0.11	0.96	5.0	50.80	0.56	51.10	18	Cir	0.012	1.50	54.72	P-8
8	7	110.00	0.00	Comb	0.00	0.07	0.96	5.0	51.30	0.50	51.85	18	Cir	0.012	1.50	56.04	P-9
9	8	63.00	95.00	Comb	0.00	0.18	0.96	5.0	52.05	0.48	52.35	18	Cir	0.012	1.00	55.46	P-10
10	4	64.00	110.00	Comb	0.00	0.21	0.55	5.0	51.60	0.47	51.90	18	Cir	0.012	1.00	54.09	P-11
11	7	59.00	90.00	Comb	0.00	0.56	0.96	5.0	51.30	0.51	51.60	18	Cir	0.012	1.00	54.81	P-12
12	2	31.00	90.00	Comb	0.00	0.12	0.90	5.0	50.05	2.74	50.90	18	Cir	0.012	1.00	54.09	P-14
13	2	27.00	-85.00	Comb	0.00	0.14	0.89	5.0	50.05	3.15	50.90	18	Cir	0.012	1.00	54.58	P-13
14	1	31.00	80.00	Comb	0.00	0.11	0.77	5.0	49.40	2.26	50.10	18	Cir	0.012	1.00	53.30	P-16
15	1	28.00	-75.00	Comb	0.00	0.12	0.78	5.0	49.40	2.50	50.10	18	Cir	0.012	1.00	53.30	P-15
16	End	42.00	75.00	Comb	0.00	0.36	0.92	5.0	48.66	0.57	48.90	18	Cir	0.012	1.48	52.99	P-R3
17	16	115.00	-80.00	Grate	0.01	0.00	0.00	5.0	49.05	0.52	49.65	18	Cir	0.012	1.50	53.88	P-R4
18	17	20.00	85.00	MH	0.00	0.00	0.00	5.0	49.85	0.50	49.95	18	Cir	0.012	1.00	53.00	P-R5
19	18	20.00	-95.00	Grate	0.01	0.00	0.00	5.0	50.15	0.50	50.25	18	Cir	0.012	1.00	53.64	P-R6
20	End	15.00	-105.00	Grate	0.00	0.00	0.00	5.0	48.80	0.67	48.90	18	Cir	0.012	0.50	53.15	P-20
21	20	19.00	0.00	MH	0.01	0.00	0.00	5.0	49.20	0.53	49.30	18	Cir	0.012	1.00	53.43	P-22
22	21	19.00	90.00	Grate	0.01	0.00	0.00	5.0	49.50	0.53	49.60	18	Cir	0.012	1.00	53.29	P-21
23	End	28.00	-105.00	Grate	0.01	0.00	0.00	5.0	48.80	0.54	48.95	18	Cir	0.012	0.50	52.45	P-23

Project File: 100 Yr.stm | Number of lines: 46 | Date: 12/2/2021

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	16.00	0.00	MH	0.00	0.00	0.00	5.0	49.15	0.62	49.25	18	Cir	0.012	1.00	52.61	P-24
25	24	15.00	90.00	Grate	0.00	0.82	0.96	5.0	49.45	0.67	49.55	18	Cir	0.012	1.00	52.39	P-25
26	End	24.00	-165.00	Comb	0.00	0.09	0.80	5.0	48.80	1.25	49.10	18	Cir	0.012	1.38	54.44	P-17
27	26	127.00	65.00	Comb	0.00	0.53	0.95	5.0	49.30	1.54	51.25	18	Cir	0.012	1.00	56.53	P-18
28	End	23.00	-100.00	MH	0.00	0.00	0.00	5.0	45.95	0.65	46.10	18	Cir	0.012	1.00	51.88	P-34
29	28	23.00	85.00	Comb	0.00	0.20	0.92	5.0	46.30	0.65	46.45	18	Cir	0.012	1.50	51.23	P-35
30	29	118.00	-90.00	Comb	0.00	0.05	0.96	5.0	46.65	0.51	47.25	18	Cir	0.012	0.50	51.86	P-36
31	30	107.00	0.00	Comb	0.00	0.15	0.91	5.0	47.35	0.51	47.90	18	Cir	0.012	1.55	51.78	P-37
32	31	73.00	-105.00	Comb	0.00	0.00	0.00	5.0	48.10	0.55	48.50	18	Cir	0.012	0.72	52.00	P-38
33	32	15.00	25.00	MH	0.01	0.00	0.00	5.0	48.80	0.67	48.90	18	Cir	0.012	0.95	52.31	P-39
34	33	15.00	70.00	Grate	0.01	0.00	0.00	5.0	49.10	0.67	49.20	18	Cir	0.012	1.00	52.00	P-40
35	31	23.00	-15.00	Comb	0.00	0.26	0.84	5.0	48.10	0.65	48.25	18	Cir	0.012	1.46	52.25	P-R1
36	35	257.00	-75.00	Comb	0.00	0.10	0.89	5.0	48.45	0.72	50.30	18	Cir	0.012	1.00	54.55	P-R2
37	End	190.00	165.00	Comb	0.00	0.08	0.96	5.0	47.55	0.50	48.50	18	Cir	0.012	1.50	54.31	P-42
38	37	59.00	90.00	Comb	0.00	0.08	0.96	5.0	48.70	0.51	49.00	18	Cir	0.012	1.00	53.10	P-43
39	End	18.61	-105.00	MH	10.70	0.00	0.00	5.0	47.00	0.81	47.15	24	Cir	0.012	1.00	51.49	P-B1
40	39	99.32	90.00	MH	0.00	0.00	0.00	5.0	47.35	0.60	47.95	18	Cir	0.012	0.92	51.77	P-102
41	40	84.84	-65.00	MH	6.45	0.00	0.00	5.0	48.05	0.54	48.51	18	Cir	0.012	1.00	51.46	P-A1
42	End	19.00	0.00	Comb	0.00	0.10	0.82	5.0	47.70	0.53	47.80	18	Cir	0.012	1.48	51.91	P-51
43	42	127.00	80.00	Comb	0.00	0.07	0.86	5.0	48.00	2.05	50.60	18	Cir	0.012	1.00	54.77	P-52
44	End	39.00	-105.00	Comb	0.00	0.17	0.92	5.0	47.00	3.41	48.33	18	Cir	0.012	1.00	52.15	P-45
45	End	9.00	-10.00	Comb	0.00	0.18	0.96	5.0	45.95	5.00	46.40	18	Cir	0.012	1.00	51.80	P-32
46	End	9.00	-5.00	Comb	0.00	0.23	0.87	5.0	45.95	5.00	46.40	18	Cir	0.012	1.00	50.86	P-30

Project File: 100 Yr.stm | Number of lines: 46 | Date: 12/2/2021

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	Manhole	53.24	Cir	4.77	4.77	24	Cir	49.20	24 18 18	Cir Cir Cir	49.40 49.40 49.40
2	S-3	Manhole	54.13	Cir	4.77	4.77	24	Cir	49.85	24 18 18	Cir Cir Cir	50.05 50.05 50.05
3	S-4	Manhole	54.59	Cir	4.77	4.77	24	Cir	50.50	18 18	Cir Cir	51.00 50.80
4	S-5	Combination	54.17	Rect	4.77	3.27	18	Cir	51.40	18 18	Cir Cir	51.60 51.60
5	S-6	Combination	55.79	Rect	9.54	3.27	18	Cir	52.15	18	Cir	52.35
6	S-7	Combination	55.84	Rect	9.54	3.27	18	Cir	52.55			
7	S-8	Combination	54.72	Rect	4.77	3.27	18	Cir	51.10	18 18	Cir Cir	51.30 51.30
8	S-9	Combination	56.04	Rect	4.77	3.27	18	Cir	51.85	18	Cir	52.05
9	S-10	Combination	55.46	Rect	4.77	3.27	18	Cir	52.35			
10	S-11	Combination	54.09	Rect	4.77	3.27	18	Cir	51.90			
11	S-12	Combination	54.81	Rect	4.77	3.27	18	Cir	51.60			
12	S-14	Combination	54.09	Rect	4.77	3.27	18	Cir	50.90			
13	S-13	Combination	54.58	Rect	4.77	3.27	18	Cir	50.90			
14	S-16	Combination	53.30	Cir	4.77	4.77	18	Cir	50.10			
15	S-15	Combination	53.30	Rect	4.77	3.27	18	Cir	50.10			
16	R-3	Combination	52.99	Rect	9.54	3.27	18	Cir	48.90	18	Cir	49.05
17	R-4	Grate	53.88	Rect	4.77	3.27	18	Cir	49.65	18	Cir	49.85
18	R-5	Manhole	53.00	Cir	4.00	4.00	18	Cir	49.95	18	Cir	50.15
19	R-6	Grate	53.64	Rect	4.77	3.00	18	Cir	50.25			

Project File: 100 Yr.stm | Number of Structures: 46 | Run Date: 12/2/2021

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	S-22	Grate	53.15	Rect	4.77	3.00	18	Cir	48.90	18	Cir	49.20
21	S-20	Manhole	53.43	Cir	4.00	4.00	18	Cir	49.30	18	Cir	49.50
22	S-21	Grate	53.29	Rect	4.77	3.00	18	Cir	49.60			
23	S-23	Grate	52.45	Rect	4.77	3.00	18	Cir	48.95	18	Cir	49.15
24	S-24	Manhole	52.61	Cir	4.00	4.00	18	Cir	49.25	18	Cir	49.45
25	S-25	Grate	52.39	Rect	4.77	3.00	18	Cir	49.55			
26	S-17	Combination	54.44	Rect	4.77	3.27	18	Cir	49.10	18	Cir	49.30
27	S-18	Combination	56.53	Rect	4.77	3.27	18	Cir	51.25			
28	S-34	Manhole	51.88	Cir	4.00	4.00	18	Cir	46.10	18	Cir	46.30
29	S-35	Combination	51.23	Rect	4.77	3.27	18	Cir	46.45	18	Cir	46.65
30	S-36	Combination	51.86	Rect	4.77	3.27	18	Cir	47.25	18	Cir	47.35
31	S-37	Combination	51.78	Rect	5.00	5.00	18	Cir	47.90	18 18	Cir Cir	48.10 48.10
32	S-39	Combination	52.00	Rect	4.77	3.27	18	Cir	48.50	18	Cir	48.80
33	S-38	Manhole	52.31	Cir	4.00	4.00	18	Cir	48.90	18	Cir	49.10
34	S-40	Grate	52.00	Rect	4.77	3.00	18	Cir	49.20			
35	R-1	Combination	52.25	Rect	5.00	5.00	18	Cir	48.25	18	Cir	48.45
36	R-2	Combination	54.55	Rect	4.77	3.27	18	Cir	50.30			
37	S-42	Combination	54.31	Rect	4.77	3.27	18	Cir	48.50	18	Cir	48.70
38	S-43	Combination	53.10	Rect	4.77	3.27	18	Cir	49.00			
39	S-B1	Manhole	51.49	Cir	4.00	4.00	24	Cir	47.15	18	Cir	47.35
40	S-102	Manhole	51.77	Cir	4.00	4.00	18	Cir	47.95	18	Cir	48.05
41	S-A1	Manhole	51.46	Cir	4.00	4.00	18	Cir	48.51			

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-51	Combination	51.91	Rect	4.77	3.27	18	Cir	47.80	18	Cir	48.00
43	S-52	Combination	54.77	Cir	4.77	4.77	18	Cir	50.60			
44	S-45	Combination	52.15	Rect	4.77	3.27	18	Cir	48.33			
45	S-32	Combination	51.80	Rect	4.77	3.27	18	Cir	46.40			
46	S-30	Combination	50.86	Rect	4.77	3.27	18	Cir	46.40			

Project File: 100 Yr.stm | Number of Structures: 46 | Run Date: 12/2/2021

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	14.87	24	Cir	65.00	48.80	49.20	0.615	50.80	50.98	0.39	51.37	End	Manhole
2	P-3	13.48	24	Cir	87.00	49.40	49.85	0.517	51.37	51.17	n/a	51.17	1	Manhole
3	P-4	11.61	24	Cir	86.00	50.05	50.50	0.523	51.23	51.72	0.52	51.72	2	Manhole
4	P-5	3.99	18	Cir	80.00	51.00	51.40	0.500	51.75	52.16	n/a	52.16	3	Combination
5	P-6	1.60	18	Cir	105.00	51.60	52.15	0.524	52.16	52.62	n/a	52.62 j	4	Combination
6	P-7	0.76	18	Cir	33.00	52.35	52.55	0.606	52.65	52.87	n/a	52.87	5	Combination
7	P-8	7.98	18	Cir	54.00	50.80	51.10	0.556	51.96	52.26	0.69	52.95	3	Combination
8	P-9	2.27	18	Cir	110.00	51.30	51.85	0.500	52.95	52.99	0.06	53.04	7	Combination
9	P-10	1.70	18	Cir	63.00	52.05	52.35	0.476	53.04	52.84	n/a	52.84	8	Combination
10	P-11	1.14	18	Cir	64.00	51.60	51.90	0.469	52.16	52.30	n/a	52.30 j	4	Combination
11	P-12	5.29	18	Cir	59.00	51.30	51.60	0.508	52.95	53.07	0.14	53.21	7	Combination
12	P-14	1.06	18	Cir	31.00	50.05	50.90	2.742	51.17	51.28	n/a	51.28 j	2	Combination
13	P-13	1.23	18	Cir	27.00	50.05	50.90	3.148	51.17	51.31	n/a	51.31 j	2	Combination
14	P-16	0.83	18	Cir	31.00	49.40	50.10	2.258	51.37	51.37	0.00	51.37	1	Combination
15	P-15	0.92	18	Cir	28.00	49.40	50.10	2.500	51.37	51.37	0.01	51.38	1	Combination
16	P-R3	0.40	18	Cir	42.00	48.66	48.90	0.571	51.17*	51.17*	0.00	51.17	End	Combination
17	P-R4	0.02	18	Cir	115.00	49.05	49.65	0.522	51.17*	51.17*	0.00	51.17	16	Grate
18	P-R5	0.01	18	Cir	20.00	49.85	49.95	0.500	51.17	51.17	0.00	51.17	17	Manhole
19	P-R6	0.01	18	Cir	20.00	50.15	50.25	0.500	51.17	51.17	0.00	51.17	18	Grate
20	P-20	0.02	18	Cir	15.00	48.80	48.90	0.667	49.39	49.39	0.00	49.39	End	Grate
21	P-22	0.02	18	Cir	19.00	49.20	49.30	0.526	49.39	49.39	0.00	49.40	20	Manhole
22	P-21	0.01	18	Cir	19.00	49.50	49.60	0.526	49.54	49.64	0.01	49.65	21	Grate
23	P-23	7.72	18	Cir	28.00	48.80	48.95	0.536	49.92	50.09	0.22	50.31	End	Grate
24	P-24	7.72	18	Cir	16.00	49.15	49.25	0.625	50.31	50.33	0.50	50.33	23	Manhole

Project File: 100 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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-25	7.74	18	Cir	15.00	49.45	49.55	0.667	50.50	50.63	0.51	50.63	24	Grate
26	P-17	5.51	18	Cir	24.00	48.80	49.10	1.250	50.30	50.31	0.28	50.59	End	Combination
27	P-18	4.95	18	Cir	127.00	49.30	51.25	1.535	50.59	52.11	n/a	52.11 j	26	Combination
28	P-34	1.15	18	Cir	23.00	45.95	46.10	0.652	47.45	47.45	0.01	47.46	End	Manhole
29	P-35	1.15	18	Cir	23.00	46.30	46.45	0.652	47.46	46.85	n/a	46.85	28	Combination
30	P-36	0.85	18	Cir	118.00	46.65	47.25	0.508	46.98	47.59	n/a	47.59	29	Combination
31	P-37	0.77	18	Cir	107.00	47.35	47.90	0.514	47.66	48.23	n/a	48.23	30	Combination
32	P-38	0.02	18	Cir	73.00	48.10	48.50	0.548	48.23	48.55	0.01	48.55	31	Combination
33	P-39	0.02	18	Cir	15.00	48.80	48.90	0.667	48.85	48.95	0.02	48.97	32	Manhole
34	P-40	0.01	18	Cir	15.00	49.10	49.20	0.667	49.14	49.24	0.01	49.25	33	Grate
35	P-R1	2.32	18	Cir	23.00	48.10	48.25	0.652	48.61	48.83	0.31	48.83	31	Combination
36	P-R2	0.88	18	Cir	257.00	48.45	50.30	0.720	48.83	50.65	n/a	50.65 j	35	Combination
37	P-42	1.40	18	Cir	190.00	47.55	48.50	0.500	48.61	48.94	n/a	48.94 j	End	Combination
38	P-43	0.76	18	Cir	59.00	48.70	49.00	0.508	49.01	49.32	n/a	49.32	37	Combination
39	P-B1	17.15	24	Cir	18.61	47.00	47.15	0.806	48.33	48.64	0.72	48.64	End	Manhole
40	P-102	6.45	18	Cir	99.32	47.35	47.95	0.604	48.64	48.93	n/a	48.93	39	Manhole
41	P-A1	6.45	18	Cir	84.84	48.05	48.51	0.542	49.04	49.50	0.42	49.92	40	Manhole
42	P-51	1.14	18	Cir	19.00	47.70	47.80	0.526	49.20	49.20	0.01	49.21	End	Combination
43	P-52	0.59	18	Cir	127.00	48.00	50.60	2.047	49.21	50.88	n/a	50.88 j	42	Combination
44	P-45	1.54	18	Cir	39.00	47.00	48.33	3.410	47.27	48.80	0.17	48.80	End	Combination
45	P-32	1.70	18	Cir	9.00	45.95	46.40	5.000	48.50*	48.50*	0.01	48.52	End	Combination
46	P-30	1.97	18	Cir	9.00	45.95	46.40	5.000	47.45	47.44	0.04	47.47	End	Combination

Project File: 100 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	65.00	0.00	2.05	0.00	0.00	1.75	5.0	9.4	8.5	14.87	19.22	4.88	24	0.62	48.80	49.20	50.80	50.98	52.83	53.24	P-2
2	1	87.00	0.00	1.82	0.00	0.00	1.57	5.0	9.1	8.6	13.48	17.62	5.21	24	0.52	49.40	49.85	51.37	51.17	53.24	54.13	P-3
3	2	86.00	0.00	1.56	0.00	0.00	1.33	5.0	8.7	8.7	11.61	17.72	5.89	24	0.52	50.05	50.50	51.23	51.72	54.13	54.59	P-4
4	3	80.00	0.24	0.64	0.69	0.17	0.45	5.0	8.1	8.8	3.99	8.04	4.48	18	0.50	51.00	51.40	51.75	52.16	54.59	54.17	P-5
5	4	105.00	0.11	0.19	0.85	0.09	0.17	5.0	6.3	9.4	1.60	8.23	2.98	18	0.52	51.60	52.15	52.16	52.62	54.17	55.79	P-6
6	5	33.00	0.08	0.08	0.96	0.08	0.08	5.0	5.0	9.8	0.76	8.86	2.88	18	0.61	52.35	52.55	52.65	52.87	55.79	55.84	P-7
7	3	54.00	0.11	0.92	0.96	0.11	0.88	5.0	7.5	9.0	7.98	8.48	5.45	18	0.56	50.80	51.10	51.96	52.26	54.59	54.72	P-8
8	7	110.00	0.07	0.25	0.96	0.07	0.24	5.0	6.1	9.5	2.27	8.04	1.43	18	0.50	51.30	51.85	52.95	52.99	54.72	56.04	P-9
9	8	63.00	0.18	0.18	0.96	0.17	0.17	5.0	5.0	9.8	1.70	7.85	2.38	18	0.48	52.05	52.35	53.04	52.84	56.04	55.46	P-10
10	4	64.00	0.21	0.21	0.55	0.12	0.12	5.0	5.0	9.8	1.14	7.79	2.45	18	0.47	51.60	51.90	52.16	52.30	54.17	54.09	P-11
11	7	59.00	0.56	0.56	0.96	0.54	0.54	5.0	5.0	9.8	5.29	8.11	3.00	18	0.51	51.30	51.60	52.95	53.07	54.72	54.81	P-12
12	2	31.00	0.12	0.12	0.90	0.11	0.11	5.0	5.0	9.8	1.06	18.84	1.86	18	2.74	50.05	50.90	51.17	51.28	54.13	54.09	P-14
13	2	27.00	0.14	0.14	0.89	0.12	0.12	5.0	5.0	9.8	1.23	20.18	1.98	18	3.15	50.05	50.90	51.17	51.31	54.13	54.58	P-13
14	1	31.00	0.11	0.11	0.77	0.08	0.08	5.0	5.0	9.8	0.83	17.09	0.50	18	2.26	49.40	50.10	51.37	51.37	53.24	53.30	P-16
15	1	28.00	0.12	0.12	0.78	0.09	0.09	5.0	5.0	9.8	0.92	17.99	0.55	18	2.50	49.40	50.10	51.37	51.37	53.24	53.30	P-15
16	End	42.00	0.36	0.36	0.92	0.33	0.33	5.0	292.2	1.2	0.40	8.60	0.23	18	0.57	48.66	48.90	51.17	51.17	50.37	52.99	P-R3
17	16	115.00	0.00	0.00	0.00	0.00	0.00	5.0	122.8	0.0	0.02	8.22	0.01	18	0.52	49.05	49.65	51.17	51.17	52.99	53.88	P-R4
18	17	20.00	0.00	0.00	0.00	0.00	0.00	5.0	63.9	0.0	0.01	8.04	0.01	18	0.50	49.85	49.95	51.17	51.17	53.88	53.00	P-R5
19	18	20.00	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	8.04	0.01	18	0.50	50.15	50.25	51.17	51.17	53.00	53.64	P-R6
20	End	15.00	0.00	0.00	0.00	0.00	0.00	5.0	88.9	0.0	0.02	9.29	0.04	18	0.67	48.80	48.90	49.39	49.39	52.98	53.15	P-20
21	20	19.00	0.00	0.00	0.00	0.00	0.00	5.0	61.0	0.0	0.02	8.25	0.30	18	0.53	49.20	49.30	49.39	49.39	53.15	53.43	P-22
22	21	19.00	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	8.25	0.78	18	0.53	49.50	49.60	49.54	49.64	53.43	53.29	P-21

Project File: 100 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	End	28.00	0.00	0.82	0.00	0.00	0.79	5.0	5.1	9.8	7.72	8.33	5.40	18	0.54	48.80	48.95	49.92	50.09	52.82	52.45	P-23
24	23	16.00	0.00	0.82	0.00	0.00	0.79	5.0	5.1	9.8	7.72	8.99	5.47	18	0.62	49.15	49.25	50.31	50.33	52.45	52.61	P-24
25	24	15.00	0.82	0.82	0.96	0.79	0.79	5.0	5.0	9.8	7.74	9.29	5.79	18	0.67	49.45	49.55	50.50	50.63	52.61	52.39	P-25
26	End	24.00	0.09	0.62	0.80	0.07	0.58	5.0	5.8	9.6	5.51	12.72	3.37	18	1.25	48.80	49.10	50.30	50.31	54.03	54.44	P-17
27	26	127.00	0.53	0.53	0.95	0.50	0.50	5.0	5.0	9.8	4.95	14.10	3.91	18	1.54	49.30	51.25	50.59	52.11	54.44	56.53	P-18
28	End	23.00	0.00	0.76	0.00	0.00	0.68	5.0	180.4	1.7	1.15	9.19	0.67	18	0.65	45.95	46.10	47.45	47.45	52.00	51.88	P-34
29	28	23.00	0.20	0.76	0.92	0.18	0.68	5.0	180.3	1.7	1.15	9.19	1.91	18	0.65	46.30	46.45	47.46	46.85	51.88	51.23	P-35
30	29	118.00	0.05	0.56	0.96	0.05	0.49	5.0	179.5	1.7	0.85	8.11	2.88	18	0.51	46.65	47.25	46.98	47.59	51.23	51.86	P-36
31	30	107.00	0.15	0.51	0.91	0.14	0.44	5.0	178.8	1.7	0.77	8.16	2.81	18	0.51	47.35	47.90	47.66	48.23	51.86	51.78	P-37
32	31	73.00	0.00	0.00	0.00	0.00	0.00	5.0	71.3	0.0	0.02	8.42	0.67	18	0.55	48.10	48.50	48.23	48.55	51.78	52.00	P-38
33	32	15.00	0.00	0.00	0.00	0.00	0.00	5.0	49.2	0.0	0.02	9.29	1.03	18	0.67	48.80	48.90	48.85	48.95	52.00	52.31	P-39
34	33	15.00	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.01	9.29	0.85	18	0.67	49.10	49.20	49.14	49.24	52.31	52.00	P-40
35	31	23.00	0.26	0.36	0.84	0.22	0.31	5.0	13.6	7.6	2.32	9.19	4.02	18	0.65	48.10	48.25	48.61	48.83	51.78	52.25	P-R1
36	35	257.00	0.10	0.10	0.89	0.09	0.09	5.0	5.0	9.8	0.88	9.65	2.67	18	0.72	48.45	50.30	48.83	50.65	52.25	54.55	P-R2
37	End	190.00	0.08	0.16	0.96	0.08	0.15	5.0	7.3	9.1	1.40	8.04	2.12	18	0.50	47.55	48.50	48.61	48.94	52.12	54.31	P-42
38	37	59.00	0.08	0.08	0.96	0.08	0.08	5.0	5.0	9.8	0.76	8.11	2.79	18	0.51	48.70	49.00	49.01	49.32	54.31	53.10	P-43
39	End	18.61	0.00	0.00	0.00	0.00	0.00	5.0	5.8	0.0	17.15	22.00	7.28	24	0.81	47.00	47.15	48.33	48.64	49.25	51.49	P-B1
40	39	99.32	0.00	0.00	0.00	0.00	0.00	5.0	5.4	0.0	6.45	8.84	4.63	18	0.60	47.35	47.95	48.64	48.93	51.49	51.77	P-102
41	40	84.84	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	6.45	8.38	5.22	18	0.54	48.05	48.51	49.04	49.50	51.77	51.46	P-A1
42	End	19.00	0.10	0.17	0.82	0.08	0.14	5.0	11.3	8.0	1.14	8.25	0.66	18	0.53	47.70	47.80	49.20	49.20	52.70	51.91	P-51
43	42	127.00	0.07	0.07	0.86	0.06	0.06	5.0	5.0	9.8	0.59	16.28	1.46	18	2.05	48.00	50.60	49.21	50.88	51.91	54.77	P-52
44	End	39.00	0.17	0.17	0.92	0.16	0.16	5.0	5.0	9.8	1.54	21.01	5.11	18	3.41	47.00	48.33	47.27	48.80	52.24	52.15	P-45

Project File: 100 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	End	9.00	0.18	0.18	0.96	0.17	0.17	5.0	5.0	9.8	1.70	25.44	0.96	18	5.00	45.95	46.40	48.50	48.50	51.88	51.80	P-32
46	End	9.00	0.23	0.23	0.87	0.20	0.20	5.0	5.0	9.8	1.97	25.44	1.31	18	5.00	45.95	46.40	47.45	47.44	50.97	50.86	P-30

Project File: 100 Yr.stm

Number of lines: 46

Run Date: 12/2/2021

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	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	1.63	0.16	1.79	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.036	0.036	0.000	0.19	5.22	0.19	5.22	0.0	Off
5	S-6	0.92	0.00	0.76	0.16	Comb	6.0	7.04	0.00	8.04	2.25	0.006	1.00	0.010	0.010	0.012	0.11	10.65	0.06	5.55	0.0	4
6	S-7	0.76	0.00	0.64	0.11	Comb	6.0	7.04	0.00	8.04	2.25	0.005	1.00	0.010	0.010	0.012	0.10	10.23	0.05	4.99	0.0	10
7	S-8	1.04	0.00	1.04	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.13	8.38	0.13	8.38	0.0	Off
8	S-9	0.66	0.00	0.66	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.09	9.25	0.09	9.25	0.0	Off
9	S-10	1.70	0.00	1.70	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.17	16.91	0.17	16.91	0.0	Off
10	S-11	1.14	0.11	1.25	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.050	0.050	0.000	0.16	3.17	0.16	3.17	0.0	Off
11	S-12	5.29	0.00	5.29	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.36	23.82	0.36	23.82	0.0	Off
12	S-14	1.06	0.00	1.06	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.13	12.50	0.13	12.50	0.0	Off
13	S-13	1.23	0.00	1.23	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.14	13.70	0.14	13.70	0.0	Off
14	S-16	0.83	0.00	0.83	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.11	10.71	0.11	10.71	0.0	Off
15	S-15	0.92	0.00	0.92	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.11	11.41	0.11	11.41	0.0	Off
16	R-3	3.26	0.00	3.26	0.00	Comb	6.0	8.04	9.54	8.04	2.25	Sag	1.00	0.015	0.015	0.000	0.20	13.55	0.20	13.55	0.0	Off
17	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
18	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
19	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
20	S-22	0.00	0.00	0.00	0.00	Grate	0.0	0.00	9.05	4.02	2.25	Sag	1.00	0.050	0.020	0.000	0.00	0.00	0.00	0.00	0.0	Off
21	S-20	0.01*	0.00	0.00	0.01	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
22	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
23	S-23	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

Project File: 100 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	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
25	S-25	7.74	0.00	7.74	0.00	Grate	0.0	0.00	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.46	46.20	0.46	46.20	0.0	Off
26	S-17	0.71	0.00	0.71	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.033	0.033	0.000	0.11	3.28	0.11	3.28	0.0	Off
27	S-18	4.95	0.00	4.95	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.34	33.98	0.34	33.98	0.0	Off
28	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
29	S-35	1.81	0.00	1.81	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.034	0.034	0.000	0.19	5.54	0.19	5.54	0.0	Off
30	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	7.49	0.07	7.49	0.0	Off
31	S-37	1.34	0.00	1.34	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.15	14.53	0.15	14.53	0.0	Off
32	S-39	0.00	0.00	0.00	0.00	Comb	6.0	4.02	9.05	4.02	2.25	Sag	1.00	0.050	0.020	0.000	0.00	0.00	0.00	0.00	0.0	Off
33	S-38	0.01*	0.00	0.00	0.01	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
34	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
35	R-1	2.15	0.00	1.78	0.37	Comb	6.0	2.69	0.00	4.02	2.25	0.026	1.00	0.100	0.100	0.012	0.26	2.64	0.14	1.37	0.0	Off
36	R-2	0.88	0.00	0.65	0.22	Comb	6.0	2.69	0.00	4.02	2.25	0.005	1.00	0.027	0.027	0.012	0.16	5.81	0.09	3.49	0.0	Off
37	S-42	0.76	0.00	0.76	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.10	10.06	0.10	10.06	0.0	Off
38	S-43	0.76	0.00	0.76	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.010	0.010	0.000	0.10	10.06	0.10	10.06	0.0	Off
39	S-B1	10.70*	0.00	0.00	10.70	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
40	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
41	S-A1	6.45*	0.00	0.00	6.45	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-51	0.81	0.00	0.81	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.015	0.015	0.000	0.11	7.16	0.11	7.16	0.0	Off
43	S-52	0.59	0.00	0.59	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.019	0.190	0.000	0.09	1.38	0.09	1.38	0.0	Off
44	S-45	1.54	0.00	1.54	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.009	0.009	0.000	0.16	17.57	0.16	17.57	0.0	Off
45	S-32	1.70	0.00	1.70	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.014	0.014	0.000	0.17	12.22	0.17	12.22	0.0	Off
46	S-30	1.97	0.00	1.97	0.00	Comb	6.0	4.02	7.54	4.02	2.25	Sag	1.00	0.011	0.011	0.000	0.19	16.95	0.19	16.95	0.0	Off

Project File: 100 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	14.87	48.80	50.80	2.00	3.14	4.73	0.35	51.15	0.368	65.00	49.20	50.98	1.78	2.95	5.04	0.39	51.37	0.328	0.348	0.226	0.99	0.39
2	24	13.48	49.40	51.37	1.97	2.20	4.30	0.58	51.95	0.000	87.00	49.85	51.17	1.32**	2.20	6.13	0.58	51.75	0.000	0.000	n/a	1.00	n/a
3	24	11.61	50.05	51.23	1.18*	1.93	6.02	0.52	51.75	0.000	86.00	50.50	51.72	1.22**	2.01	5.77	0.52	52.24	0.000	0.000	n/a	1.00	0.52
4	18	3.99	51.00	51.75	0.75*	0.88	4.54	0.30	52.05	0.000	80.00	51.40	52.16	0.76**	0.90	4.41	0.30	52.47	0.000	0.000	n/a	1.50	n/a
5	18	1.60	51.60	52.16	0.56	0.48	2.64	0.17	52.34	0.000	105.00	52.15	52.62 j	0.47**	0.48	3.33	0.17	52.80	0.000	0.000	n/a	1.48	n/a
6	18	0.76	52.35	52.65	0.30*	0.25	3.06	0.11	52.76	0.000	33.00	52.55	52.87	0.32**	0.28	2.71	0.11	52.99	0.000	0.000	n/a	1.00	n/a
7	18	7.98	50.80	51.96	1.16*	1.46	5.46	0.46	52.42	0.555	54.00	51.10	52.26	1.16	1.46	5.45	0.46	52.72	0.554	0.555	0.300	1.50	0.69
8	18	2.27	51.30	52.95	1.50	1.77	1.29	0.03	52.98	0.040	110.00	51.85	52.99	1.14	1.44	1.58	0.04	53.03	0.047	0.043	0.048	1.50	0.06
9	18	1.70	52.05	53.04	0.99	0.50	1.37	0.18	53.22	0.000	63.00	52.35	52.84	0.49**	0.50	3.39	0.18	53.02	0.000	0.000	n/a	1.00	n/a
10	18	1.14	51.60	52.16	0.56	0.38	1.87	0.14	52.31	0.000	64.00	51.90	52.30 j	0.40**	0.38	3.02	0.14	52.44	0.000	0.000	n/a	1.00	n/a
11	18	5.29	51.30	52.95	1.50	1.77	2.99	0.14	53.09	0.216	59.00	51.60	53.07	1.47	1.76	3.01	0.14	53.21	0.194	0.205	0.121	1.00	0.14
12	18	1.06	50.05	51.17	1.12	0.36	0.75	0.14	51.31	0.000	31.00	50.90	51.28 j	0.38**	0.36	2.97	0.14	51.42	0.000	0.000	n/a	1.00	0.14
13	18	1.23	50.05	51.17	1.12	0.40	0.87	0.15	51.32	0.000	27.00	50.90	51.31 j	0.41**	0.40	3.09	0.15	51.46	0.000	0.000	n/a	1.00	n/a
14	18	0.83	49.40	51.37	1.50	1.77	0.47	0.00	51.37	0.005	31.00	50.10	51.37	1.27	1.60	0.52	0.00	51.37	0.005	0.005	0.002	1.00	0.00
15	18	0.92	49.40	51.37	1.50	1.77	0.52	0.00	51.37	0.007	28.00	50.10	51.37	1.27	1.60	0.58	0.01	51.38	0.006	0.006	0.002	1.00	0.01
16	18	0.40	48.66	51.17	1.50	1.77	0.23	0.00	51.17	0.001	42.00	48.90	51.17	1.50	1.77	0.23	0.00	51.17	0.001	0.001	0.001	1.48	0.00
17	18	0.02	49.05	51.17	1.50	1.77	0.01	0.00	51.17	0.000	115.00	49.65	51.17	1.50	1.77	0.01	0.00	51.17	0.000	0.000	0.000	1.50	0.00
18	18	0.01	49.85	51.17	1.32	1.65	0.01	0.00	51.17	0.000	20.00	49.95	51.17	1.22	1.54	0.01	0.00	51.17	0.000	0.000	0.000	1.00	0.00
19	18	0.01	50.15	51.17	1.02	1.28	0.01	0.00	51.17	0.000	20.00	50.25	51.17	0.92	1.14	0.01	0.00	51.17	0.000	0.000	0.000	1.00	0.00
20	18	0.02	48.80	49.39	0.59	0.65	0.03	0.00	49.39	0.000	15.00	48.90	49.39	0.49	0.50	0.04	0.00	49.39	0.000	0.000	0.000	0.50	0.00
21	18	0.02	49.20	49.39	0.19	0.13	0.15	0.00	49.39	0.003	19.00	49.30	49.39	0.09	0.05	0.44	0.00	49.40	0.054	0.028	0.005	1.00	0.00
22	18	0.01	49.50	49.54	0.04*	0.01	0.79	0.01	49.55	0.524	19.00	49.60	49.64	0.04**	0.01	0.77	0.01	49.65	0.498	0.511	0.097	1.00	0.01

Project File: 100 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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	7.72	48.80	49.92	1.12	1.42	5.45	0.46	50.38	0.559	28.00	48.95	50.09	1.14	1.44	5.35	0.45	50.54	0.536	0.547	0.153	0.50	0.22
24	18	7.72	49.15	50.31	1.16	1.36	5.25	0.50	50.82	0.000	16.00	49.25	50.33	1.08**	1.36	5.70	0.50	50.83	0.000	0.000	n/a	1.00	0.50
25	18	7.74	49.45	50.50	1.05*	1.32	5.88	0.51	51.00	0.000	15.00	49.55	50.63	1.08**	1.36	5.70	0.51	51.13	0.000	0.000	n/a	1.00	0.51
26	18	5.51	48.80	50.30	1.50*	1.77	3.12	0.15	50.45	0.235	24.00	49.10	50.31	1.21	1.52	3.62	0.20	50.51	0.243	0.239	0.057	1.38	0.28
27	18	4.95	49.30	50.59	1.29	1.04	3.07	0.35	50.94	0.000	127.00	51.25	52.11 j	0.86**	1.04	4.76	0.35	52.46	0.000	0.000	n/a	1.00	0.35
28	18	1.15	45.95	47.45	1.50*	1.77	0.65	0.01	47.46	0.010	23.00	46.10	47.45	1.35	1.68	0.69	0.01	47.46	0.009	0.010	0.002	1.00	0.01
29	18	1.15	46.30	47.46	1.16	0.38	0.79	0.14	47.60	0.000	23.00	46.45	46.85	0.40**	0.38	3.04	0.14	46.99	0.000	0.000	n/a	1.50	n/a
30	18	0.85	46.65	46.98	0.33*	0.29	2.97	0.12	47.10	0.000	118.00	47.25	47.59	0.34**	0.30	2.79	0.12	47.71	0.000	0.000	n/a	0.50	n/a
31	18	0.77	47.35	47.66	0.31*	0.27	2.90	0.11	47.78	0.000	107.00	47.90	48.23	0.33**	0.28	2.72	0.11	48.34	0.000	0.000	n/a	1.55	n/a
32	18	0.02	48.10	48.23	0.13	0.02	0.28	0.00	48.23	0.015	73.00	48.50	48.55	0.05**	0.02	1.06	0.02	48.57	0.667	0.341	n/a	0.72	0.01
33	18	0.02	48.80	48.85	0.05*	0.02	1.05	0.02	48.87	0.660	15.00	48.90	48.95	0.05**	0.02	1.02	0.02	48.97	0.596	0.628	0.094	0.95	0.02
34	18	0.01	49.10	49.14	0.04*	0.01	0.85	0.01	49.15	0.666	15.00	49.20	49.24	0.04**	0.01	0.85	0.01	49.25	0.648	0.657	0.099	1.00	0.01
35	18	2.32	48.10	48.61	0.51*	0.54	4.33	0.21	48.83	0.000	23.00	48.25	48.83	0.58**	0.62	3.72	0.21	49.04	0.000	0.000	n/a	1.46	0.31
36	18	0.88	48.45	48.83	0.38	0.31	2.52	0.12	48.95	0.000	257.00	50.30	50.65 j	0.35**	0.31	2.82	0.12	50.77	0.000	0.000	n/a	1.00	0.12
37	18	1.40	47.55	48.61	1.06	0.44	1.05	0.16	48.77	0.000	190.00	48.50	48.94 j	0.44**	0.44	3.20	0.16	49.10	0.000	0.000	n/a	1.50	n/a
38	18	0.76	48.70	49.01	0.31*	0.26	2.87	0.11	49.12	0.000	59.00	49.00	49.32	0.32**	0.28	2.71	0.11	49.44	0.000	0.000	n/a	1.00	n/a
39	24	17.15	47.00	48.33	1.33	2.22	7.73	0.72	49.05	0.000	18.61	47.15	48.64	1.49**	2.51	6.83	0.72	49.37	0.000	0.000	n/a	1.00	0.72
40	18	6.45	47.35	48.64	1.29	1.23	3.99	0.43	49.07	0.000	99.32	47.95	48.93	0.98**	1.23	5.26	0.43	49.36	0.000	0.000	n/a	0.92	n/a
41	18	6.45	48.05	49.04	0.99*	1.23	5.23	0.42	49.46	0.542	84.84	48.51	49.50	0.99**	1.24	5.22	0.42	49.92	0.540	0.541	0.459	1.00	0.42
42	18	1.14	47.70	49.20	1.50*	1.77	0.65	0.01	49.21	0.010	19.00	47.80	49.20	1.40	1.72	0.67	0.01	49.21	0.009	0.009	0.002	1.48	0.01
43	18	0.59	48.00	49.21	1.21	0.23	0.39	0.10	49.31	0.000	127.00	50.60	50.88 j	0.28**	0.23	2.53	0.10	50.98	0.000	0.000	n/a	1.00	0.10
44	18	1.54	47.00	47.27	0.27*	0.22	6.93	0.17	47.44	0.000	39.00	48.33	48.80	0.47**	0.47	3.30	0.17	48.96	0.000	0.000	n/a	1.00	0.17

Project File: 100 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

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)
45	18	1.70	45.95	48.50	1.50	1.77	0.96	0.01	48.51	0.022	9.00	46.40	48.50	1.50	1.77	0.96	0.01	48.52	0.022	0.022	0.002	1.00	0.01
46	18	1.97	45.95	47.45	1.50*	1.77	1.11	0.02	47.47	0.030	9.00	46.40	47.44	1.04	1.31	1.51	0.04	47.47	0.044	0.037	0.003	1.00	0.04

Project File: 100 Yr.stm | Number of lines: 46 | Run Date: 12/2/2021

Notes: * Normal depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Colliers Engineering & Design

Appendix I | 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.

Colliers Engineering & Design

Appendix J | Karst Features & Sinkhole Maps

KARST DENSITY MAP—AN INNOVATIVE APPROACH TO VISUALIZING KARST FEATURES

INTRODUCTION

Approximately 7 percent of Pennsylvania is underlain by carbonate bedrock in the form of limestone and dolomite. Most of the carbonate bedrock occurs in the valleys and lowlands of south-central and southeastern Pennsylvania, where over 2 million people live.

Carbonate rocks are unique in that they weather more readily than other types of rocks. The dissolution or dissolving away of the carbonate bedrock by water over long periods of time results in a landscape called karst topography. It is characterized by features such as sinkholes, surface depressions, and caves. The dissolution of the carbonate rock also develops the subsurface drainage network for water along widened cracks or fractures within the bedrock layers. The majority of water in karst areas does not occur as surface streams but is primarily in the subsurface as groundwater.

Sinkholes and surface depressions are subsidence features. The surface expression of these features is a result of water transporting residual material and soil through subsurface pathways established by the dissolution process. Both features are typically circular in shape and can vary in size. Sinkholes exhibit an actual break or hole on the land surface, whereas surface depressions are generally bowl-shaped hollows that do not show this land-surface break. Caves are formed as fractures widen by dissolution, creating large openings in the rocks.

Karst features often impact public safety and health. Subsidence and water-quality problems have been associated with karst topography for many years. Gradual subsidence or the sudden collapse of the land surface can cause serious damage to urban structures, utilities, and roadways. In addition, karst features serve as direct recharge zones to local and regional aquifers, making these areas highly vulnerable to groundwater contamination.

In 1985, the Pennsylvania Geological Survey began investigations to map karst features throughout the commonwealth. Results of these investigations were released as a series of county-based open-file reports (see "References"). For each county, karst surface features were located through an extensive review of aerial photographs (taken in the 1940s–70s) and a subsequent field survey. Identified features were then transferred to scale-stable, 7.5-minute topographic base maps. Additional karst features were compiled from municipal questionnaires and published and unpublished data sources. Although not karst features, small surface mines may be similar in appearance to karst subsidence features. This is most apparent where such a mine has been abandoned for a long period of time. For this reason, surface mines were identified and added to the open-file maps.

After completion of the open-file reports, karst features and surface mines were digitized as point data from the topographic base maps using GSMAP software from the U.S. Geological Survey. Points were positioned in the best-determined center of surface depressions, sinkholes, and surface mines, and at the entrance points of caves. Coordinates and feature types were saved in ASCII files, which were later converted to Microsoft Excel 2000 spreadsheet files. Shapefiles were created from the inventoried data, and point locations and feature attributes were spot-checked against the corresponding features on the original maps. Corrections to the data were made where applicable. The resultant data file served as the basis for the density layer calculations.

As a result of the inventory, 111,715 individual points were compiled for 14 counties (107 7.5-minute quadrangles). Karst features make up approximately 98.4 percent of the points in the database: 96 percent, surface depressions; 2.3 percent, sinkholes; and 0.1 percent, cave entrances. Approximately 1.6 percent of the data points were surface mines, which were not included in the density layer calculation.

DENSITY LAYER CALCULATION

To create the digital density surface, ESRI ArcView 3.2 software was used to divide the study area into 25- by 25-meter (82- by 82-foot) grid cells and to count the karst data points that fell within the area of a 250-meter (820-foot) search radius from the center of each cell. The number of points divided by the search area (approximately 0.2 square kilometer [0.08 square mile or 49 acres]) represents the karst density value of a cell. After the density value was calculated for the first cell, the search area was shifted to the next 25-square-meter grid cell, and the floating process was repeated until all of the cells were assigned a density value. This process smoothed the density data over the study area. Grid cells were then assigned a color using an ESRI ArcMap 8.3 "quantile" gradation of density values. On the map, red represents more than 150 karst features per square kilometer (nearly 400 per square mile). The darkest green color indicates that at least one karst feature falls within the 250-meter search radius of the cell.

DISCLAIMER

While this map is useful for planning and preliminary site studies, it is not a substitute for site-specific subsurface investigations.

The occurrence of a sinkhole or surface depression depends on numerous factors, including rock type, geologic structure (e.g., fractures, joints, and faults), surface and subsurface hydrology, surficial materials (particularly in the glaciated areas of Northampton and Lehigh Counties), and land use. On the map, color shows the density of karst features over a given area. Although orange and red indicate areas where karst features are interpreted to be more abundant, it does not guarantee that new sinkholes will occur in these areas. Conversely, sinkholes can occur in areas where no karst features have been observed. The occurrence of sinkholes, therefore, is not restricted to the high-density areas delineated on the map.

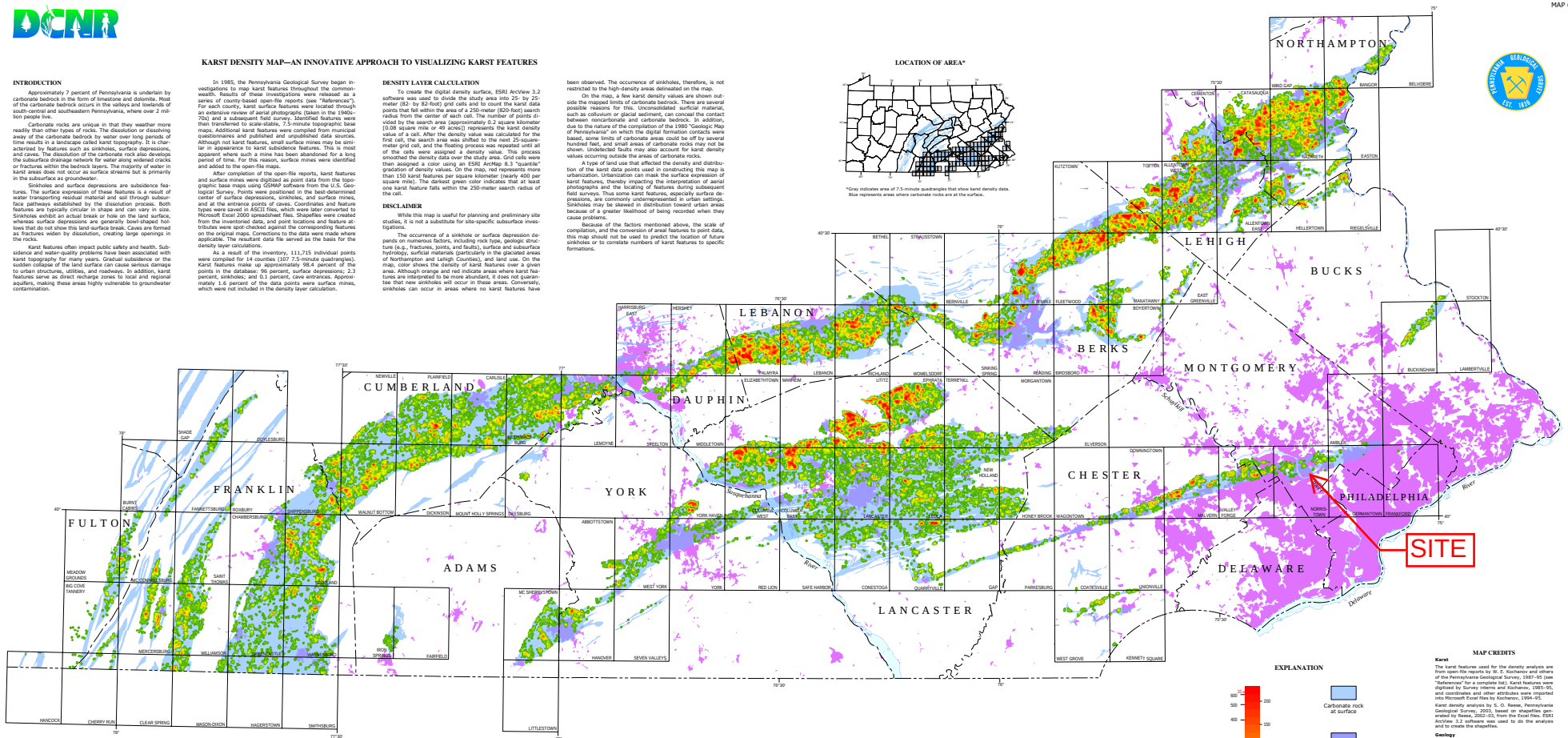
On the map, a few karst density values are shown outside the mapped limits of carbonate bedrock. There are several possible reasons for this. Unconsolidated surficial material, such as colluvium or glacial sediment, can conceal the contact between noncarbonate and carbonate bedrock. In addition, due to the nature of the compilation of the 1980 "Geologic Map of Pennsylvania" on which the digital formation contacts were based, some limits of carbonate areas could be off by several hundred feet, and small areas of carbonate rocks may not be shown. Undetected faults may also account for karst density values occurring outside the areas of carbonate rocks.

A type of land use that affected the density and distribution of the karst data points used in constructing this map is urbanization. Urbanization can mask the surface expression of karst features, thereby impacting the interpretation of aerial photographs and the locating of features during subsequent field surveys. Thus some karst features, especially surface depressions, are commonly underrepresented in urban settings. Sinkholes may be skewed in distribution toward urban areas because of a greater likelihood of being recorded when they cause problems.

Because of the factors mentioned above, the scale of compilation, and the conversion of areal features to point data, this map should not be used to predict the location of future sinkholes or to correlate numbers of karst features to specific formations.

LOCATION OF AREA*

*Gray indicates area of 7.5-minute quadrangles that show karst density data. Blue represents areas where carbonate rocks are at the surface.

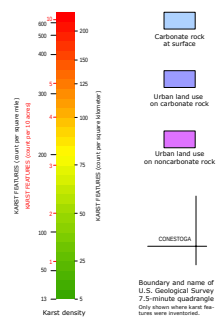


DENSITY OF MAPPED KARST FEATURES IN SOUTH-CENTRAL AND SOUTHEASTERN PENNSYLVANIA

BY
WILLIAM E. KOCHANOV AND STUART O. REESE
2003

SCALE 1:300,000
5 0 5 10 15 20 25 30 KILOMETERS
5 0 5 10 15 MILES
Albers equal area conic projection
Standard parallels 40°N and 42°N, center 78°W

EXPLANATION



REFERENCES

Kochanov, W. E., 1987a, Sinkholes and karst-related features of Lehigh County, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open-File Report 87–01, scale 1:24,000, 6 maps plus 19-page text.

_____ 1987b, Sinkholes and karst-related features of Northampton County, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open-File Report 87–02, scale 1:24,000, 10 maps plus 24-page text.

_____ 1988a, Sinkholes and karst-related features of Berks County, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open-File Report 88–01, scale 1:24,000, 16 maps plus 13-page text.

_____ 1988b, Sinkholes and karst-related features of Lebanon County, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open-File Report 88–02, scale 1:24,000, 4 maps plus 11-page text.

_____ 1989a, Sinkholes and karst-related features of Cumberland County, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open-File Report 89–02, scale 1:24,000, 9 maps plus 16-page text.

_____ 1989b, Sinkholes and karst-related features of Dauphin County, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open-File Report 89–01, scale 1:24,000, 5 maps plus 8-page text.

_____ 1989c, Sinkholes and karst-related features of Franklin County, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open-File Report 89–03, scale 1:24,000, 20 maps plus 15-page text.

_____ 1990, Sinkholes and karst-related features of Lancaster County, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open-File Report 90–01, scale 1:24,000, 18 maps plus 12-page text.

Kochanov, W. E., Lichtinger, J. F., and Becker, Mona, 1992a, Sinkholes and karst-related features of Bucks County, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open-File Report 93–03, scale 1:24,000, 4 maps plus 9-page text.

_____ 1993b, Sinkholes and karst-related features of Chester County, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open-File Report 93–01, scale 1:24,000, 10 maps plus 9-page text.

_____ 1993c, Sinkholes and karst-related features of Montgomery County, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open-File Report 93–02, scale 1:24,000, 5 maps plus 7-page text.

Kochanov, W. E., and Miller, Rachel, 1995a, Sinkholes and karst-related features of Adams County, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open-File Report 95–05, scale 1:24,000, 6 maps plus 9-page text.

_____ 1995b, Sinkholes and karst-related features of York County, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open-File Report 95–06, scale 1:24,000, 10 maps plus 9-page text.

MAP CREDITS

Karst

The karst features used for the density analysis are from open-file reports by W. E. Kochanov and others of the Pennsylvania Geological Survey, 1987–95 (see "References"). Karst features in Lehigh County were digitized by Survey interns and Kochanov, 1985–95, and coordinates and other attributes were imported into Microsoft Excel files by Kochanov, 1994–95.

Karst density analysis by S. O. Reese, Pennsylvania Geological Survey, 2003, based on shapefiles generated by Reese, 2002–03, from the Excel files. ESRI ArcView 3.2 software was used to do the analysis and to create the shapefiles.

Geology

Locations of carbonate rocks are slightly modified from *Geologic Map of Pennsylvania*, compiled by T. M. Berg and others (1980, Pennsylvania Geological Survey, 4th ser., Map 1, 2nd ed., scale 1:250,000, 3 sheets). The latter map was prepared as a data set by C. E. Miles, T. G. Whitfield, J. G. Kuchinski, and others (*Bedrock Geology of Pennsylvania*, 2001, Pennsylvania Geological Survey, 4th ser., scale 1:250,000).

Base Map

Urban areas are from the data set *Urban areas of Pennsylvania—PA Explorer CD-ROM edition* by Joe Bishop (1998, University Park, Gap Analysis Program, Environmental Resources Research Institute, Pennsylvania State University).

State and county lines are slightly modified from an unpublished municipality data set (Pennsylvania Department of Environmental Protection, 1998, 1:24,000-scale accuracy).

Quadrangle lines are from shapefiles created by M. E. Moore of the Pennsylvania Geological Survey (1990, unpublished), using ESRI Atlas GIS software.

River shorelines are from the data set *Major Rivers in Pennsylvania* by Environmental Resources Research Institute, Pennsylvania State University, in *Pennsylvania GIS Compendium* (1996, Pennsylvania Department of Environmental Protection, 1:24,000-scale accuracy). Data set derived from Pennsylvania Department of Transportation data.

Other

Map layout and design by S. O. Reese and C. E. O'Neil of the Pennsylvania Geological Survey, 2003. Cartography by S. O. Reese, 2002–03. Map editing by C. E. O'Neil, 2003.

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,

Appendix K | Geotechnical Report

TEST BORING LOG B-1/IT-1

Project Information

Project Name: 401-403 Wahsington Avenue
Project Location: Conshohocken, PA
Project Number: 14000908A

MASER CONSULTING P.A.

Engineers
Planners
Surveyors
Landscape Architects
Environmental Scientists

190 Brodhead Road
Suite 210
Bethlehem, PA 18017
T: 610.868.4201
F: 610.868.4202
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	
10	8' - 10'	Sample Recovery =			1.5			45.8
	S - 6	2	2	4	5	**6**		
	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

MASER CONSULTING P.A.

Engineers
Planners
Surveyors
Landscape Architects
Environmental Scientists

190 Brodhead Road
Suite 210
Bethlehem, PA 18017
T: 610.868.4201
F: 610.868.4202
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	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

MASER CONSULTING P.A.

Engineers
Planners
Surveyors
Landscape Architects
Environmental Scientists

190 Brodhead Road
Suite 210
Bethlehem, PA 18017
T: 610.868.4201
F: 610.868.4202
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	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

Engineers
Planners
Surveyors
Landscape
Architects
Environmental
Scientists

MASER CONSULTING P.A.

190 Brodhead Road
Suite 210
Bethlehem, PA 18017
T: 610.868.4201
F: 610.868.4202
www.maserconsulting.com

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		51.5
	0' - 2'	Sample Recovery =			8		.5 ft Topsoil	
	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

MASER CONSULTING P.A.

Engineers
Planners
Surveyors
Landscape Architects
Environmental Scientists

190 Brodhead Road
Suite 210
Bethlehem, PA 18017
T: 610.868.4201
F: 610.868.4202
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	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**		
	2' - 4'	Sample Recovery =			8		4 ft * auger grinding 1.5 - 3.5 ft	
	S - 3	3	2	2	3	**4**		
	4' - 6'	Sample Recovery =			12		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)	
	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							End of boring at 11.2 feet.	11.5

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

MASER CONSULTING P.A.

Engineers
Planners
Surveyors
Landscape Architects
Environmental Scientists

190 Brodhead Road
Suite 210
Bethlehem, PA 18017
T: 610.868.4201
F: 610.868.4202
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	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		9 ft Soft moist silty CLAY, trace fine sand.	
	S - 5	2	3	20	30	**23**		
	8' - 10'	Sample Recovery =			24		10 ft Compact moist brown gravelly fine to coarse SAND, trace to little silt (Alluvial Soil)	
10							End of boring at 10 feet.	41.5
20								31.5
30								21.5
40								11.5

10 ft

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

MASER CONSULTING P.A.

Engineers
Planners
Surveyors
Landscape Architects
Environmental Scientists

190 Brodhead Road
Suite 210
Bethlehem, PA 18017
T: 610.868.4201
F: 610.868.4202
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	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			
	S - 4	1	1	1	2	**2**	7 ft	
	6' - 8'	Sample Recovery =			24		Soft moist to wet brown fine to medium SAND and CLAY, little silt, trace gravel.	
	S - 5	1	1	2	5	**3**	9 ft	
	8' - 10'	Sample Recovery =			24			
10	S - 6	2	3	2	2	**5**	Loose wet brown silty fine to coarse(-) SAND, little to trace clay, trace gravel. (Alluvial Soil)	43.5
	10' - 12'	Sample Recovery =			24		12.5 ft	
	S - 7	4	9	16	18	**25**	Medium compact wet brown fine to coarse sandy GRAVEL, trace silt. (Alluvial Soil)	
	12' - 14'	Sample Recovery =			18		14 ft	
							End of boring at 14 feet.	
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.

Engineers
Planners
Surveyors
Landscape Architects
Environmental Scientists

190 Brodhead Road
Suite 210
Bethlehem, PA 18017
T: 610.868.4201
F: 610.868.4202
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	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:

Providing Innovative Solutions to Subsurface Problems Since 1985

DBA
DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

REPORT OF GEOTECHNICAL EXPLORATION

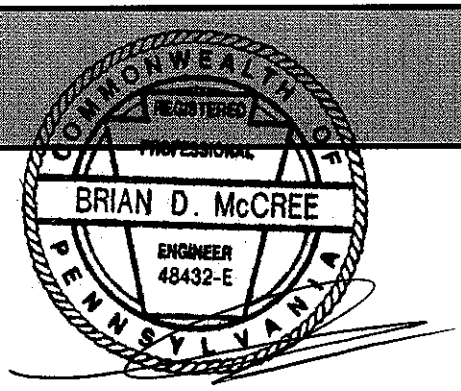
PROPOSED RESIDENCE STRUCTURES
401 AND 433 WASHINGTON STREET PARCELS
CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

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.
3335 WEST RIDGE PIKE
POTTSTOWN, PENNSYLVANIA 19464
(610) 495-6255



Mr. Brian D. McCree, PE
Vice President

Matthew Uhrig, EIT
Geotechnical Engineer

TABLE OF CONTENTS

	PAGE
EXECUTIVE SUMMARY	4
1. INTRODUCTION	7
2. PROPOSED CONSTRUCTION	7
3. GEOTECHNICAL EXPLORATION	8
4. GEOTECHNICAL BACKGROUND	8
4.1 SITE DESCRIPTION	8
4.2 GEOLOGY	9
4.3 SOILS	10
5. LABORATORY TESTING	10
6. SUBSURFACE CONDITIONS	11
7. GEOTECHNICAL ANALYSIS AND RECOMMENDATIONS	12
7.1 SITE PREPARATION	15
7.1.1 COMPACTION GROUTING	16
7.2 FOUNDATIONS	17
7.2.1 SHALLOW FOUNDATIONS VIA SOIL REPLACEMENT	17
7.2.2 SHALLOW FOUNDATIONS VIA RAMMED AGGREGATE PIERS	19
7.2.3 SEISMIC SITE COEFFICIENT	21
7.3 SLAB ON-GRADE	21
7.4 BACKFILL OF FOUNDATION AND UTILITY TRENCHES	22
7.5 PAVEMENTS AND WALKWAYS	23
7.6 FILL AND COMPACTION CRITERIA	23
7.7 LATERAL EARTH PRESSURES - RETAINING WALLS	24
8. QUALITY CONTROL	25
9. LIMITATIONS	26

FIGURES AND TABLES

FIGURE I: *SITE LOCATION*
FIGURE II: *GEOLOGY*
FIGURE III: *SOILS*

TABLE I: *LABORATORY TEST RESULTS*
TABLE IIA: *APPROXIMATE ROCK and FILL ELEVATIONS*
TABLE IIB: *APPROXIMATE GROUNDWATER ELEVATIONS*
TABLE III: *APPROXIMATE DEPTHS TO ENHANCED WEATHERED ZONES OF STRATUM III AND/OR IV*
TABLE IV: *COMPACTION CRITERIA*

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.

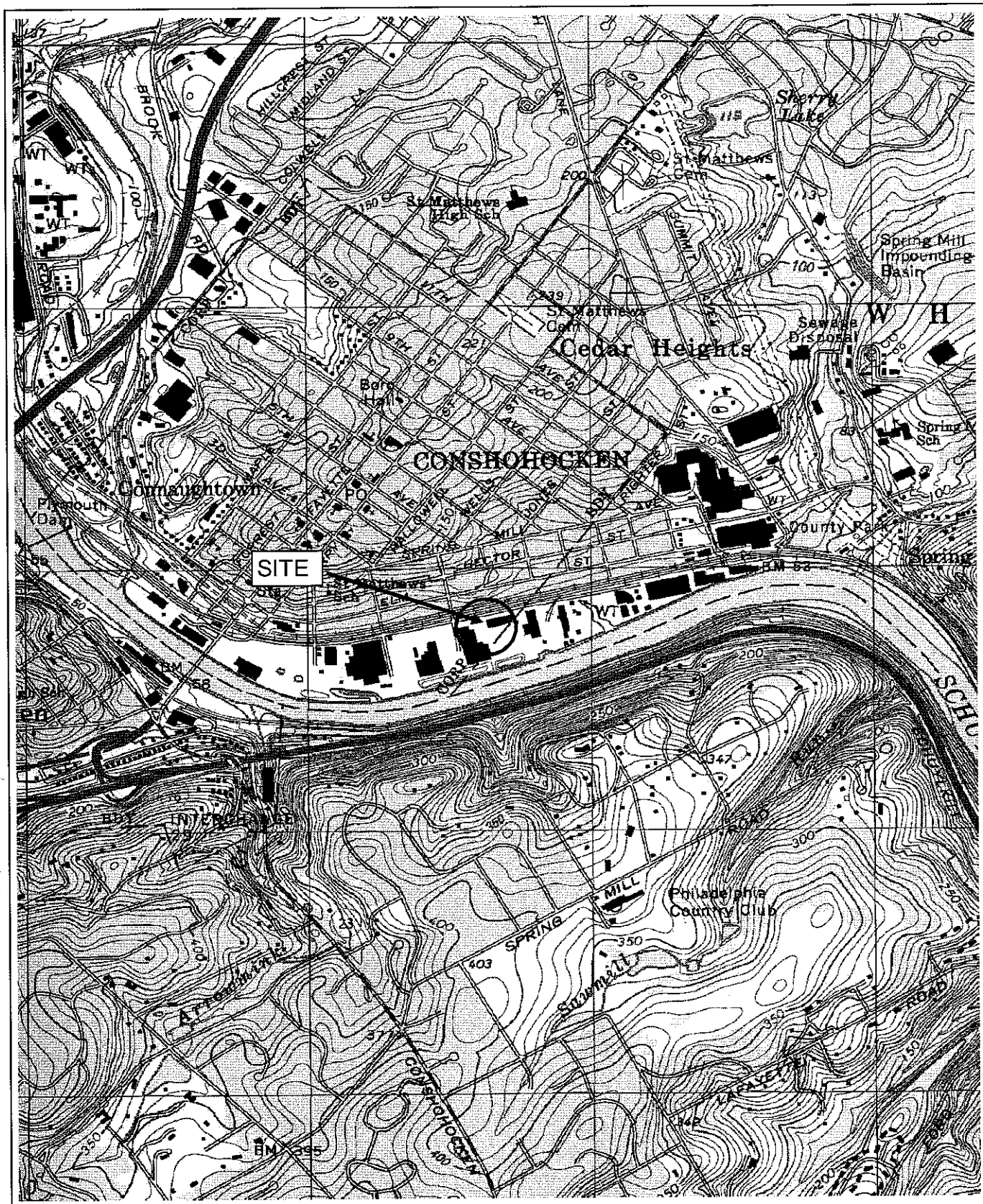
DBA can provide a contract for Geotechnical and Construction Quality Control Services (Special Inspections), as required. A pre-work meeting with the design professionals, contractors, and the Geotechnical Engineer is strongly recommended.

9. LIMITATIONS

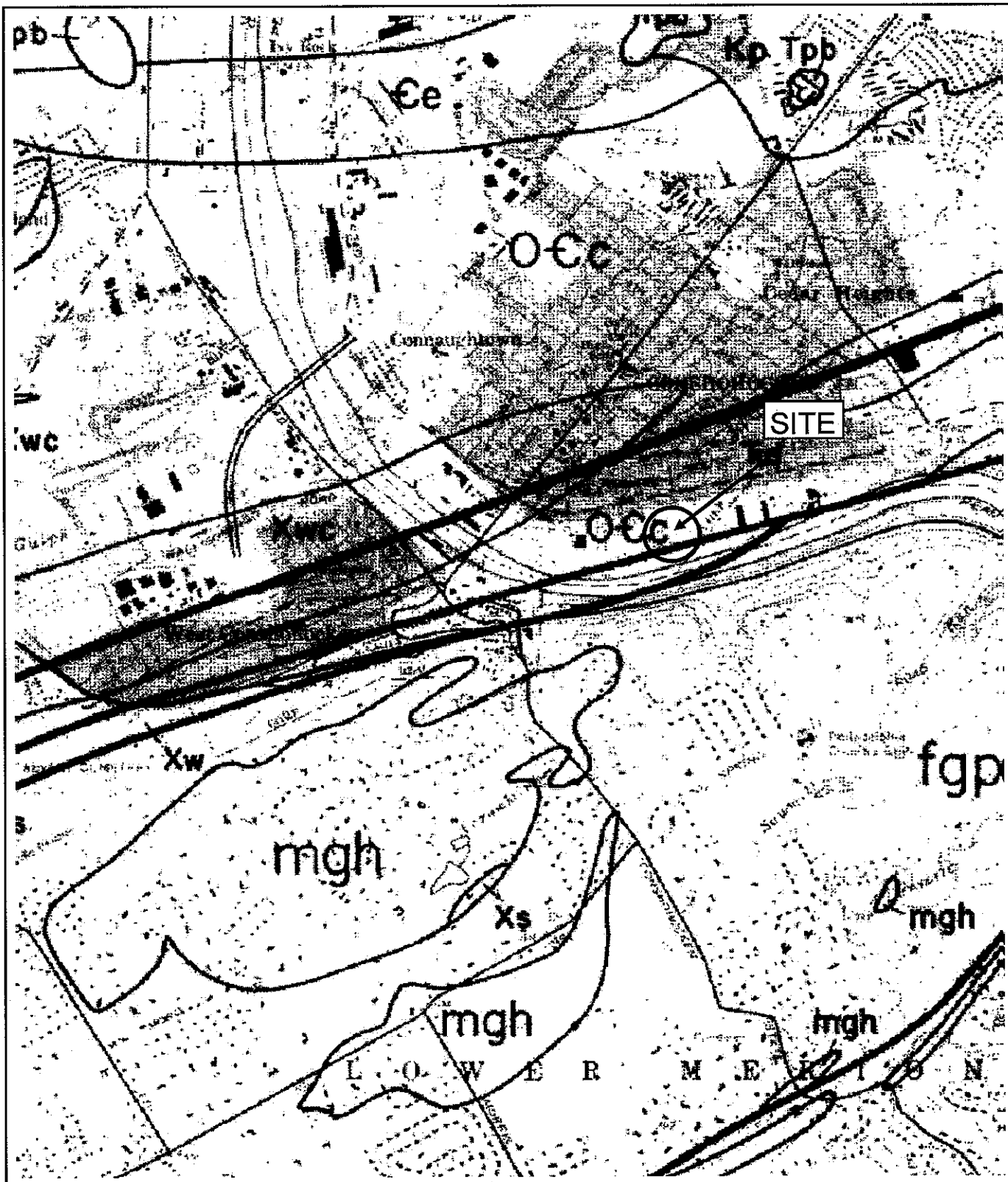
Services performed by DBA, including the Geotechnical Exploration, report, and any subsequent construction monitoring have been or will be conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under 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

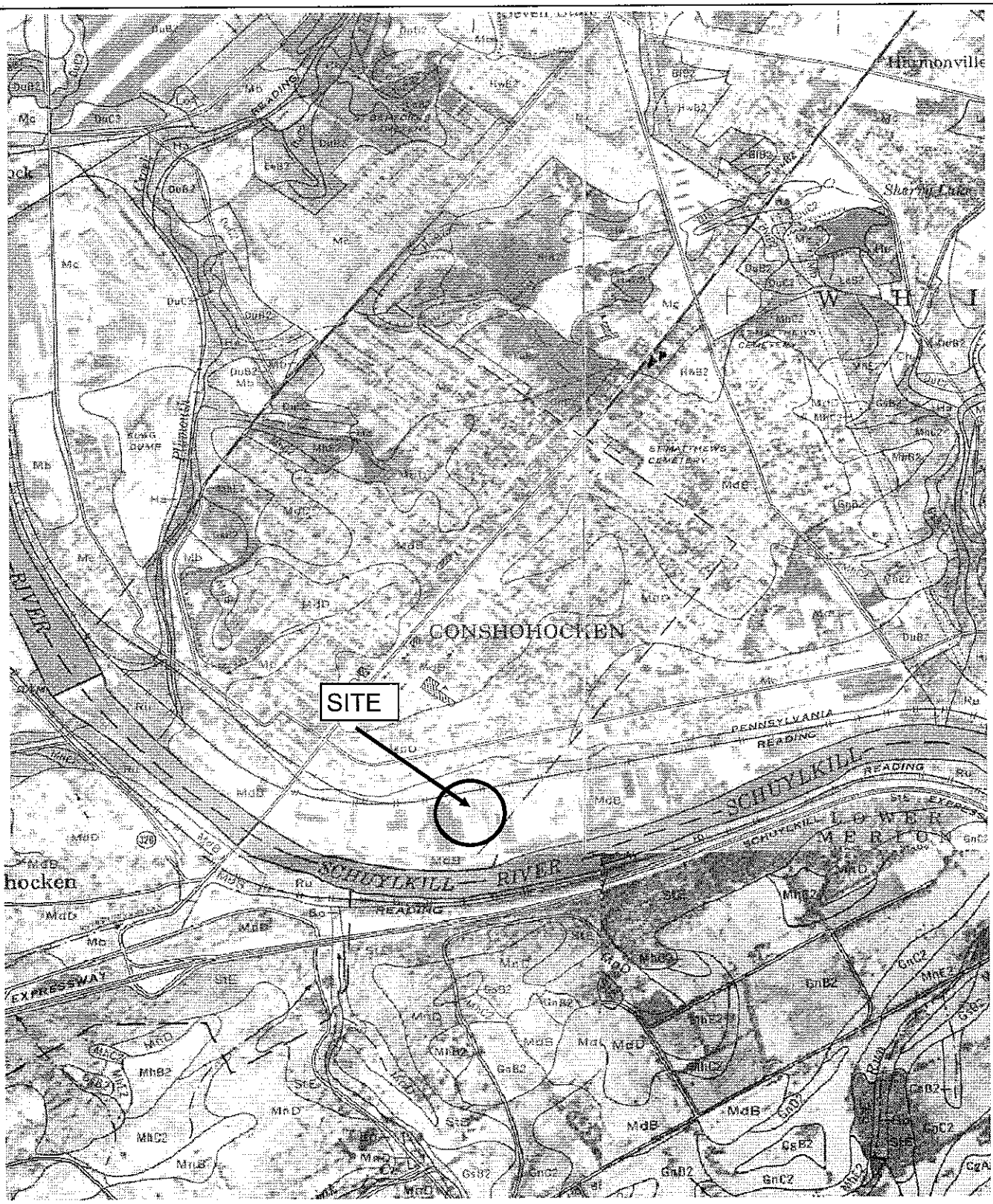
Project 4287G1

Figure II

SITE GEOLOGY

USGS Geologic Quadrangle Maps of PA

Norristown Quadrangle



KEY

MdB - Madeland Schist and Gneiss Materials

GEOTECHNICAL & ENVIRONMENTAL ENGINEERS
DAVID BLACKMORE & ASSOC., INC.
3335 West Ridge Pike
Pottstown, Pennsylvania 19464
Telephone: (610) 495-6255 FAX: (610) 495-7358

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.

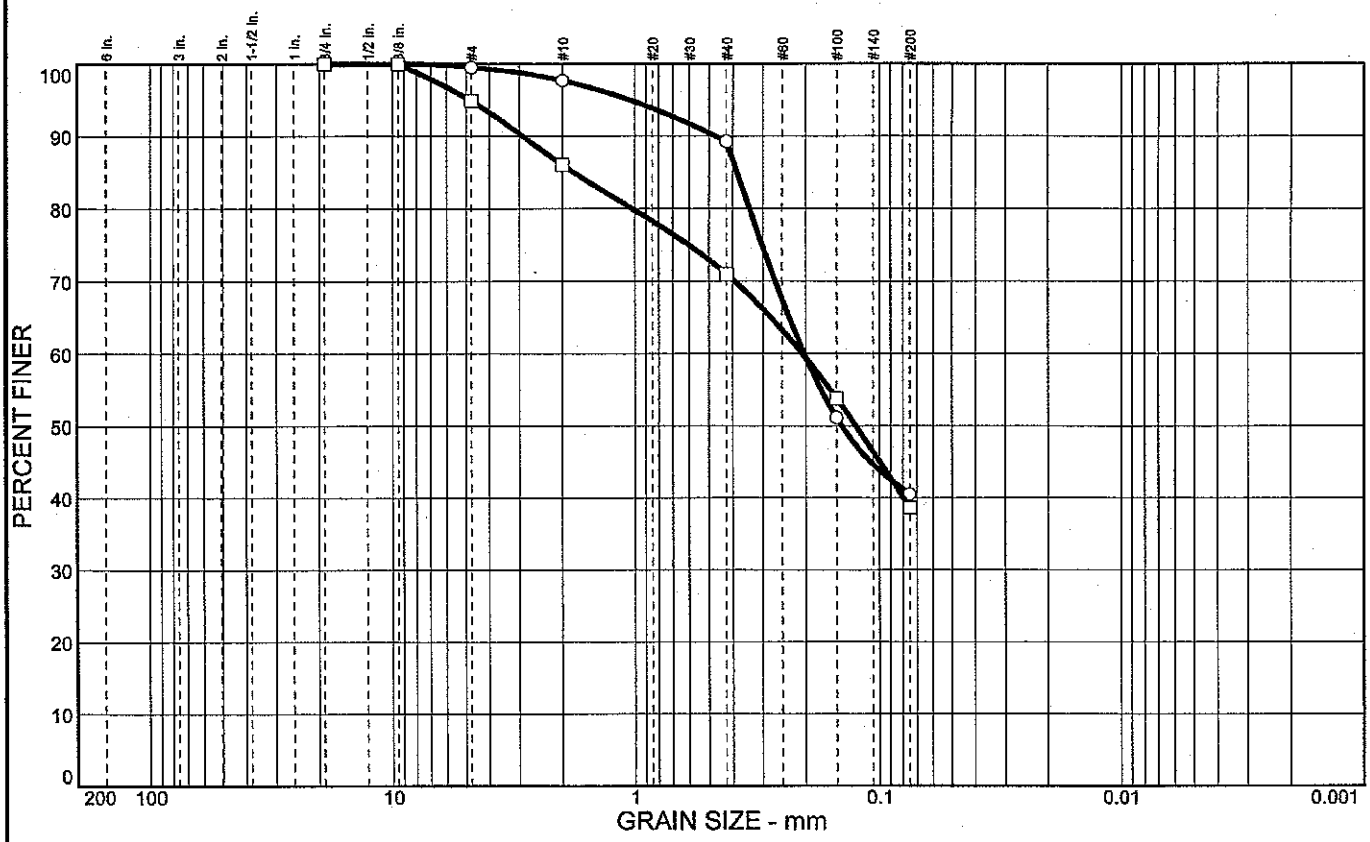
8. Water from roof drains or other drainage systems should be collected and conveyed away from structures to prevent infiltration near foundations. This is extremely important and an often overlooked detail which results in the formation of numerous sinkholes at or below the building foundation.

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 ○	□
.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 ○	□
#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'

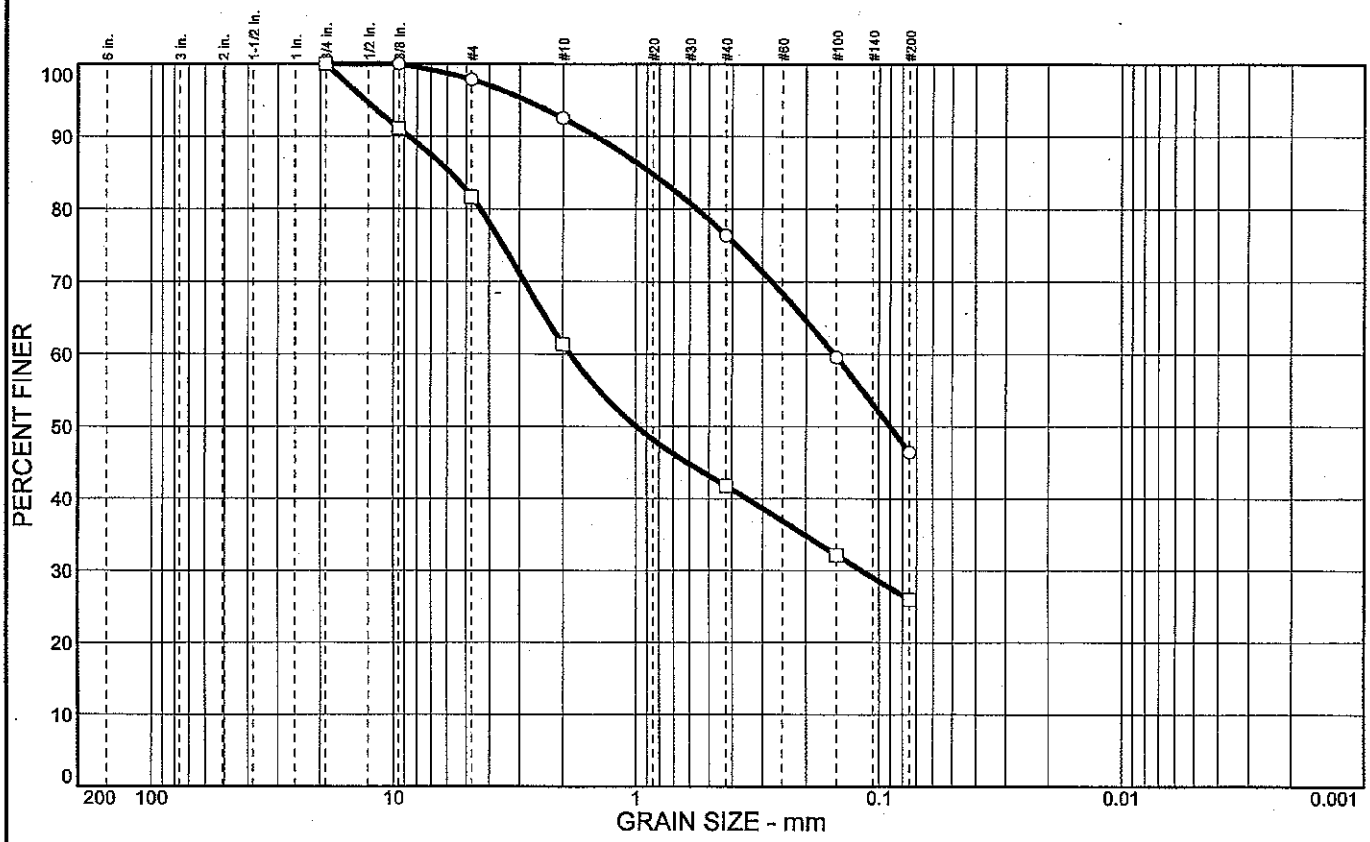
DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

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'

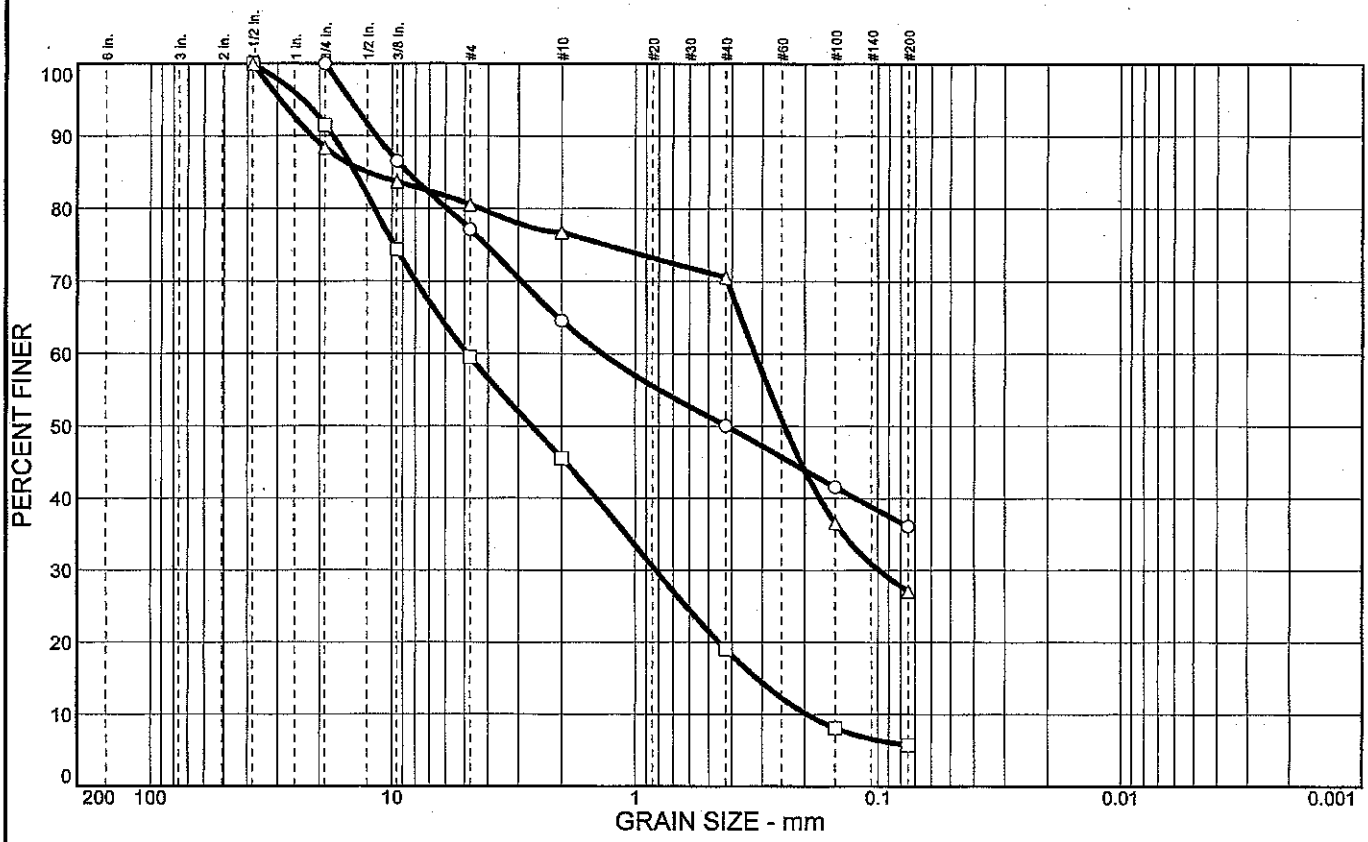
DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

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
○		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'

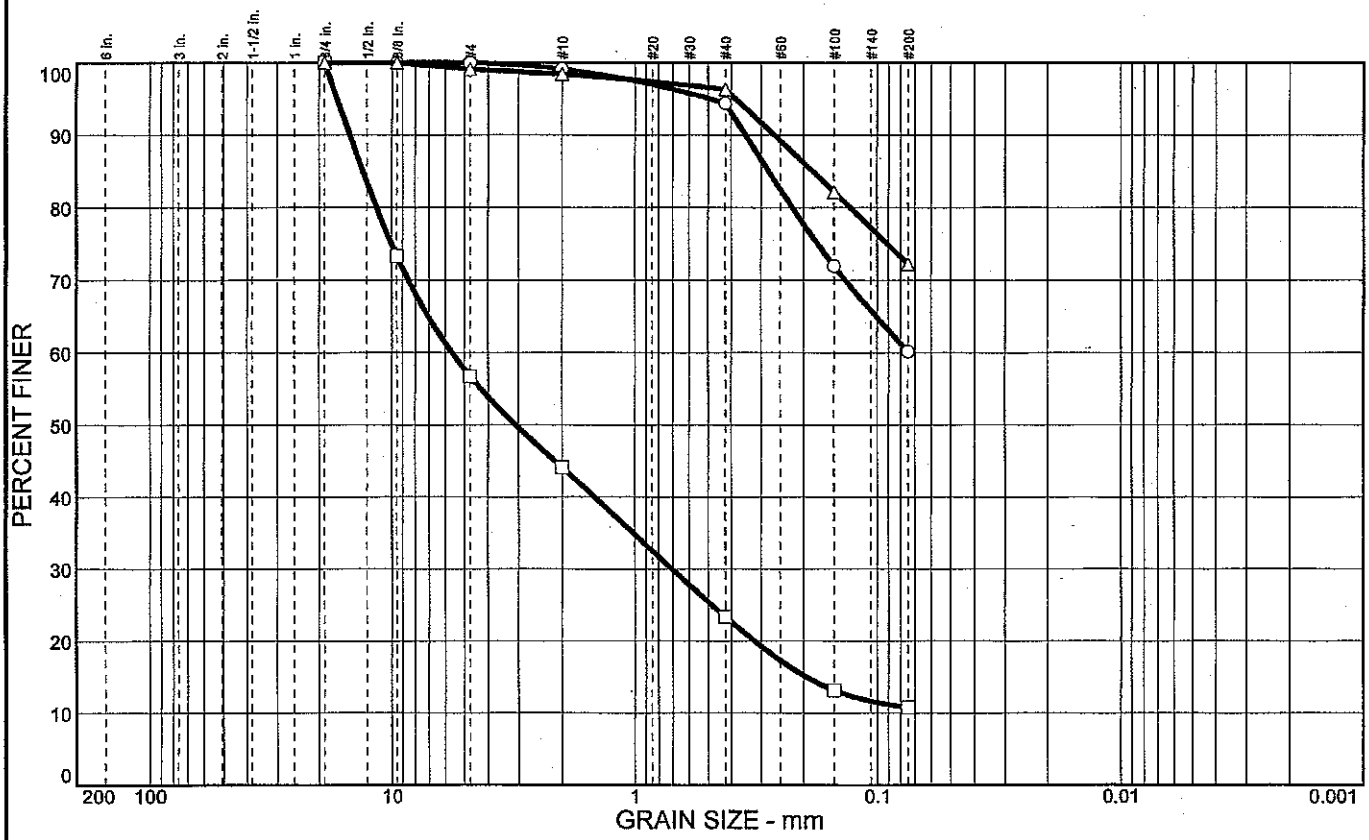
DBA DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

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
○			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'

DBA DAVID BLACKMORE & ASSOCIATES, INC.
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

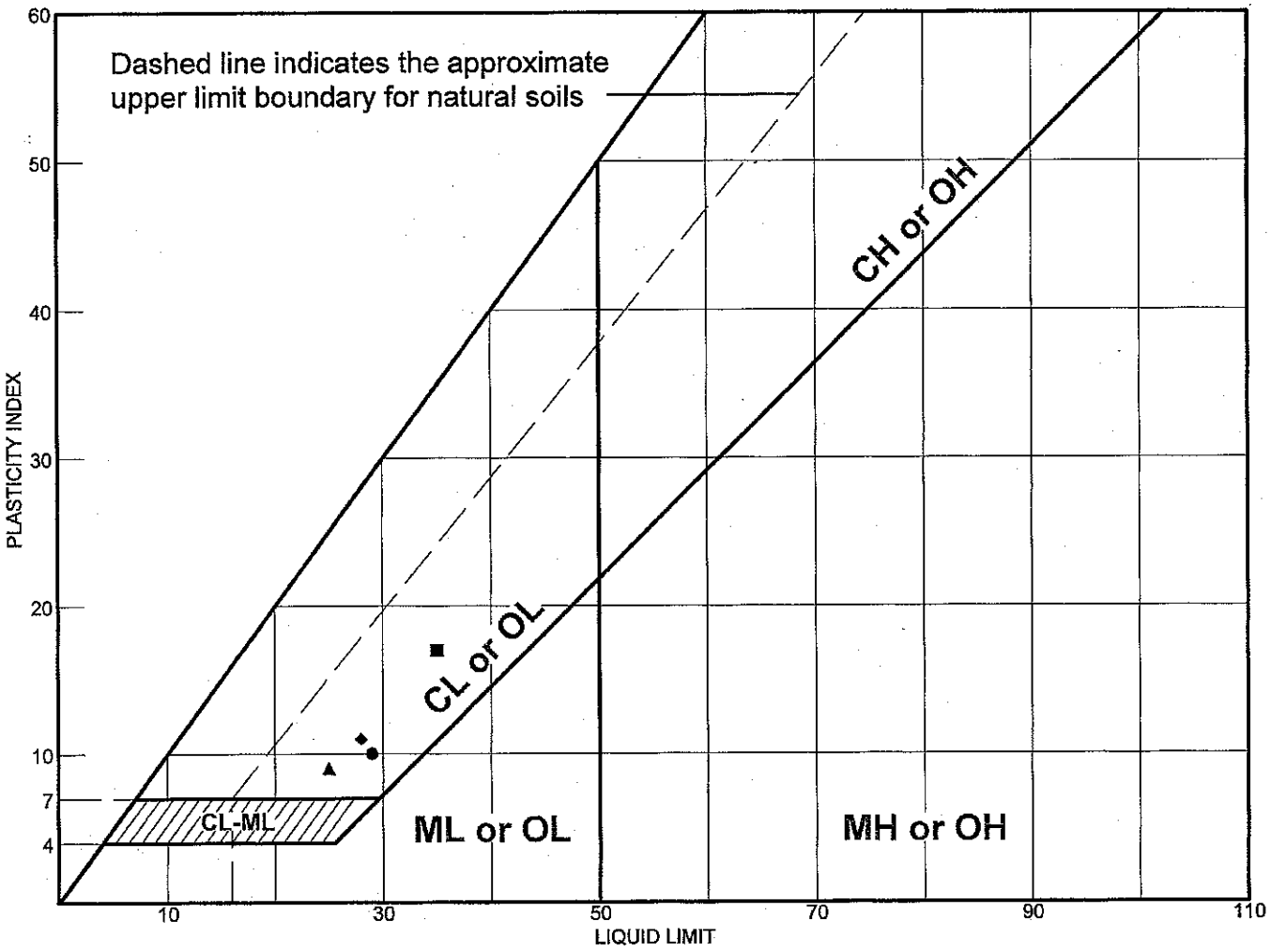
Client: O'Neill Properties

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					

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.

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	SPT DATA	SPT Value
			Asphalt (4")					
			Modified Stone (6")					
			Stratum IMF FILL consisting of black fine sand, coal, some slag			S-1*	1-2-2-2	4
				4.25	48.76			
			FILL consisting of orange brown fine sand and silt with some rock fragments			S-2*	2-2-3-3	5
	▼					S-3*	2-2-2-3	4
				8.50	44.51			
			Stratum II Brown and orange brown mottled fine sand and silt with occasional rock fragments			S-4*	3-6-10-11	16
				10.33	42.68			
			Stratum III Reddish brown fine to medium sand with rock fragments, pebbles, occasional boulders			S-5**	9-9-9-12	18
						S-6**	5-8-9-8	17
				20.42	32.59	S-7**	36-50/3"	100
			Stratum IVA Gray, brown and tan weathered limestone					
				23.92	29.09			
			Auger Refusal on Limestone Bedrock					

Notes:
* very moist
** wet

Very hard augering from 20.75'.

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

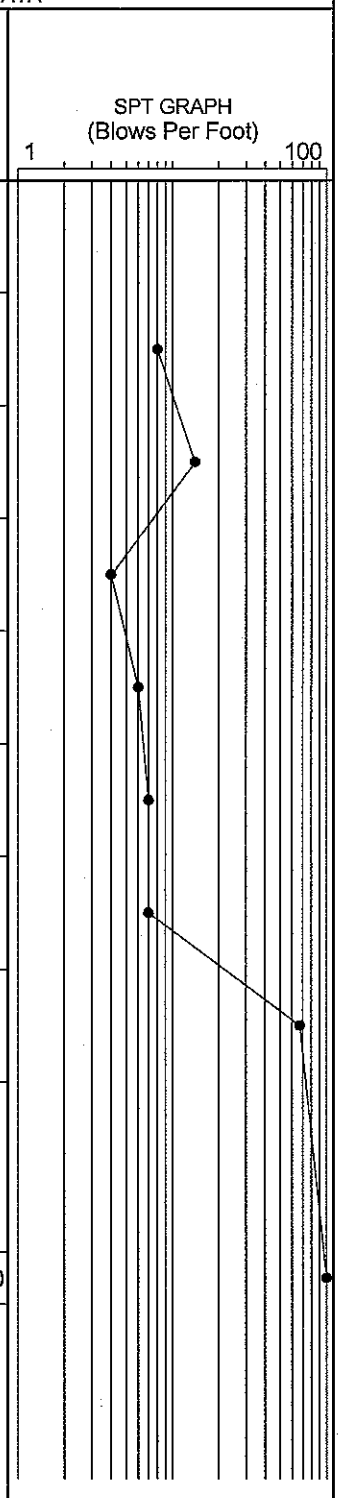
Boring Number : B3

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					



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 : 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
1.0			Asphalt (4")					
2.0			Modified Stone (5")					
3.0			Stratum IMF FILL consisting of black fine sand, coal, some slag			S-1*	1-2-1-2	3
4.0								
5.0						S-2*	1-1-2-2	3
6.0				5.75	47.92			
7.0	▼		Stratum II Orange brown and grey discolored fine sand and silt	6.58	47.09	S-3*	2-2-1-2	3
8.0								
9.0			Reddish brown fine sand and silt			S-4**	3-4-22-24	26
10.0								
11.0			Stratum III Reddish brown fine to medium sand with rock fragments and pebbles			S-5*	19-23-26-31	49
12.0								
13.0								
14.0								
15.0								
16.0						S-6*	5-16-15-18	31
17.0								
18.0								
19.0								
20.0								
21.0				21.50	32.17	S-7*	12-8-5-7	13
22.0			Orange brown fine sand and silt					
23.0								
24.0				24.00	29.67			
25.0			Stratum IVA Orange brown, tan, and gray weathered phyllitic limestone					
26.0						S-8**	11-12-15-28	27
27.0								
28.0								
29.0								
30.0								
31.0						S-9	13-16-18-20	34
32.0								
33.0								
34.0								
35.0				35.83	17.84	S-10	44-50/4"	100
36.0			Spoon Refusal on Dense Weathered Limestone					
37.0								

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

Notes:
** wet*
***moist*

Samples S-2 and S-3 had fuel odor.

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 : 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					

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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* S-2*	5-7-3-4 5-5-6-5	10 11
	▼		Stratum II Orange brown and reddish brown fine sand and silt	9.67	44.35	S-3** S-4***	3-2-2-2 1-1-3-19	4 4
			Stratum III Orange brown fine to medium sand with rock fragments and pebbles	19.00	35.02	S-5*** S-6***	18-23-20-22 13-25-34-36	43 59
			Orange brown, gray and tan fine sand and silt with limestone fragments			S-7* S-8* S-9** S-10**	13-12-14-16 7-8-14-16 3-4-5-7 6-6-8-9	26 22 9 14
			Notes: ** moist* *** very moist* **** wet* *Fairly hard, choppy augering from 14.0' to 18.50'.*	37.00	17.02	S-11**	5-13-26-30	39
			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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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	LITHOLOGY: LITHOLOGIC SYMBOL	LITHOLOGY: GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	LITHOLOGY: DEPTH (FT)	LITHOLOGY: ELEVATION	SAMPLING DATA: NUMBER	SPT DATA	SPT Value
			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
			Orange brown and tan fine sand and silt, some gray and white residual weathered limestone	23.00	31.68	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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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
1.0			Asphalt (4")					
2.0			Modified Stone (5")					
3.0			Stratum IMF FILL consisting of black and orange brown fine sand, some slag, coal			S-1	1-2-2-2	4
4.0								
5.0						S-2	2-2-4-3	6
6.0								
7.0				7.17	47.66	S-3	2-2-6-7	8
8.0	▼		Stratum II Reddish brown fine sand and silt					
9.0						S-4	3-2-5-3	7
10.0								
11.0				11.33	43.50	S-5	2-3-10-27	13
12.0			Stratum III Reddish brown and orange brown fine to medium sand with rock fragments and pebbles					
13.0								
14.0								
15.0								
16.0						S-6	12-25-28-30	53
17.0								
18.0								
19.0								
20.0								
21.0						S-7	23-24-17-19	41
22.0								
23.0				23.00	31.83			
24.0			Stratum IVB Orange brown, tan and gray weathered quartz schist					
25.0								
26.0						S-8	24-25-27-30	52
27.0								
28.0								
29.0								
30.0								
31.0			***Notes:***			S-9	9-10-16-17	26
32.0								
33.0			*Samples S-1 through S-3 and S-8 were moist.*					
34.0			*Samples S-4 and S-5 were wet.*					
35.0			*Samples S-9 and S-10 were very moist.*					
36.0				36.83	18.00	S-10	21-38-44-50/4"	82
37.0			Spoon Refusal on dense weathered schist					
38.0								

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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	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 (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*			S-11**	10-12-14-16	26
				37.00	18.79			
			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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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	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	2.00	53.67			
			FILL consisting of black fine sand, some slag, and coal			S-1*	1-2-3-3	5
						S-2*	5-4-5-5	9
				7.67	48.00	S-3*	8-9-5-2	14
			Stratum III					
			Reddish brown fine sand, some silt			S-4*	2-1-2-2	3
				11.25	44.42	S-5*	3-4-11-28	15
			Reddish brown and orange brown fine to medium sand with rock fragments, pebbles					
						S-6*	13-14-12-13	26
						S-7*	15-17-15-8	32
				23.00	32.67			
			Stratum IVA					
			Orange brown, brown, and gray weathered limestone			S-8*	1-1-1/12"	1
						S-9*	1/24"	1
						S-10*	1/12"-8-50/5"	100
				31.58	24.09			
			Auger Refusal on limestone bedrock					

Water Content: 5 10 20 30 40 50
SPT GRAPH (Blows Per Foot): 1 100

Notes:
** wet*

Hard augering from 31.0'.

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 : 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 FILL consisting of black fine sand with some slag, coal, brick, some silt			S-1*	2-2-2-2	4
						S-2*	4-6-4-3	10
	▼			7.50	48.17	S-3*	1-1-8-5	9
			Stratum III Orange brown fine sand	9.00	46.67	S-4*	3-4-8-15	12
			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					

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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	Water Content 5 10 20 30 40 50	SPT DATA	SPT Value	SPT GRAPH (Blows Per Foot) 1 100
			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							

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 : 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")					
1.0			Stratum IMF Brown and dark brown fine sand and silt with some rock fragments, occasional boulders					
2.0								
3.0						S-1*	3-2-2-4	4
4.0								
5.0						S-2*	5-4-2-2	6
6.0				6.50	46.97			
7.0			Stratum II Reddish brown fine sand and silt	7.75	45.72	S-3**	2-4-4-5	8
8.0			Stratum III Reddish brown fine sand					
9.0						S-4**	2-3-2-2	5
10.0								
11.0						S-5**	3-4-5-13	9
12.0				11.75	41.72			
13.0			Reddish brown fine sand, some medium sand with rock fragments and pebbles			S-6**	12-14-15-13	29
14.0				14.50	38.97			
15.0			Orange brown fine to medium sand with rock fragments, pebbles					
16.0						S-7**	10-9-10-12	19
17.0								
18.0								
19.0				19.00	34.47			
20.0			Stratum IVA Gray and brown weathered limestone			S-8	50/0" NR	100
21.0				21.75	31.72			
22.0			Auger Refusal on limestone bedrock					
23.0								
24.0								
25.0								

Water Content: 5 10 20 30 40 50

SPT GRAPH (Blows Per Foot): 1 — 100

Notes:
** moist*
***wet*

Very hard augering from 19.0'.

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 : 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	SPT DATA	SPT Value
			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'.

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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			S-3**		12-13-14-13	27	
8.0			Reddish brown fine sand with some rock fragments, pebbles	7.83	54.31					
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										
15.0										
16.0						S-6**		3-3-2-4	5	
17.0										
18.0						S-7**		3-3-1/12"	3	
19.0										

Notes:
** very moist*
***wet*

Samples S-1 and S-2 had fuel odor.

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 : 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: SPT DATA	SAMPLING DATA: SPT Value
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								

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.

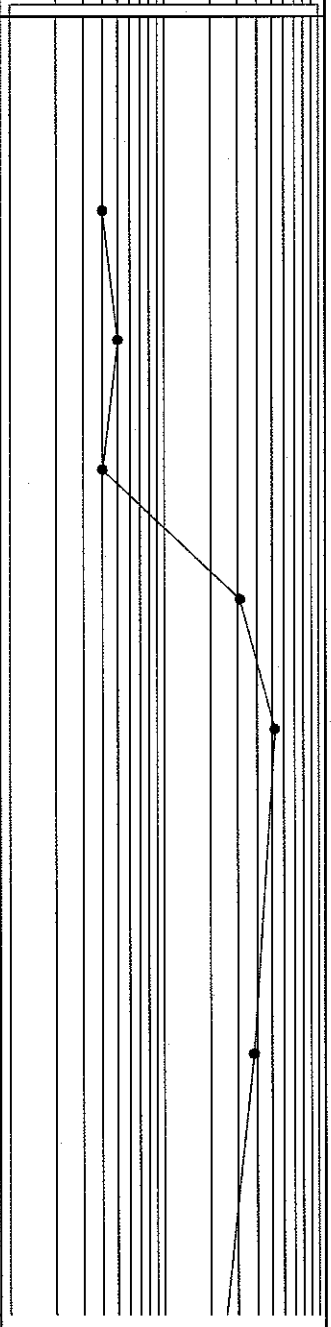
DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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 (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-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										

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 : 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	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
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					
3.0				3.17	48.65	S-1*	1-2-2-2	4
4.0			FILL consisting of black organic silt with some coal					
5.0	▼			5.33	46.49	S-2*	2-2-3-2	5
6.0			Stratum II Reddish brown fine sand and silt					
7.0						S-3*	2-2-3-6	5
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						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								

Notes:
** very moist*
*** wet*
**** moist*

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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
			Stratum II Reddish brown fine sand and silt	6.25	44.39	S-2*	2-3-4-4	7
			Stratum III Reddish brown fine sand	8.67	41.97	S-3*	4-4-6-6	10
			Brown and black fine to medium sand with rock fragments, pebbles	11.00	39.64	S-4**	7-16-27-31	43
			Orange brown fine to medium sand with rock fragments, pebbles, occasional boulders			S-5**	31-32-35-36	67
			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
			Orange brown fine sand and silt with occasional limestone fragments	22.00	28.64			
			Stratum IVA Orange brown, brown, and grey weathered limestone	25.67	24.97	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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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
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			
			Stratum II Reddish brown fine sand and silt	6.50	45.89	S-2**	1-1-1-2	2
			Stratum III Reddish brown fine sand, some silt	9.33	43.06	S-3**	1-2-3-3	5
						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
						S-7**	28-42-50/3"	100

Water Content: 5 10 20 30 40 50
SPT GRAPH (Blows Per Foot): 1 — 100

Notes:
** very moist*
*** wet*

Fairly hard to hard, choppy augering from 21'3" to 23'

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 : 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			
			Orange brown fine sand and silt with limestone fragments					
						S-8**	10-11-11-10	22
				28.00	24.39			
			Stratum IVA Orange brown, brown, and grey weathered limestone			S-9*	3-3-4-3	7
						S-10*	8-7-6-6	13
						S-11*	9-10-13-16	23
				36.00	16.39			
			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.

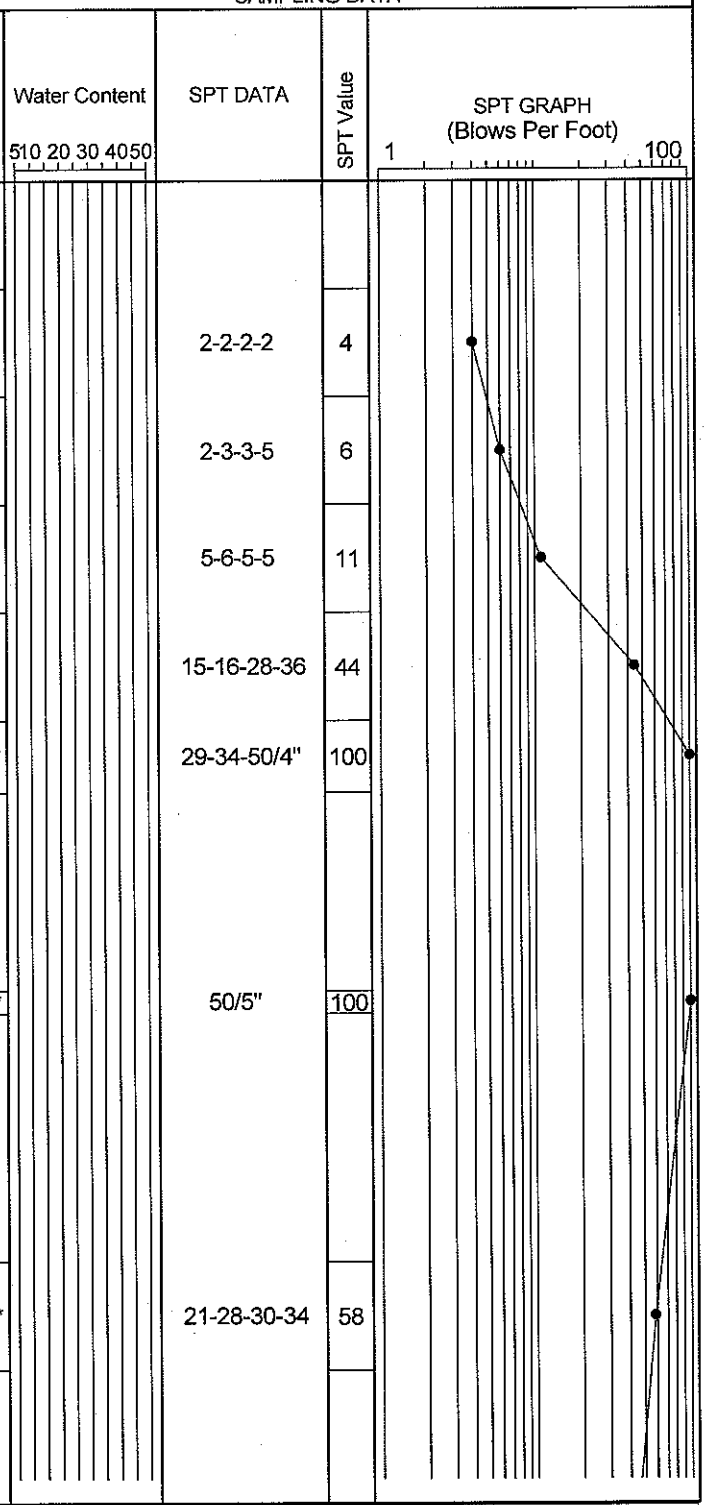
DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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	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	S-3*	5-6-5-5	11
			Stratum III Reddish brown fine sand, some silt	8.17	43.80	S-4*	15-16-28-36	44
			Reddish brown fine sand, occasional rock fragments	9.25	42.72	S-5**	29-34-50/4"	100
			Reddish brown fine sand, some medium sand with rock fragments, pebbles	11.50	40.47	S-6**	50/5"	100
			Orange brown fine to medium sand with rock fragments, pebbles, occasional boulders			S-7**	21-28-30-34	58



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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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
			FILL consisting of black fine sand, some slag, coal, some brick			S-2*	1-1-1-2	2
						S-3*	2-2-2-1	4
						S-4*	2-2-3-3	5
				9.50	46.79			
			Stratum II Reddish brown fine sand and silt			S-5*	3-3-5-12	8
				11.58	44.71	S-6**	38-50/4"	100
			Stratum III Reddish brown fine sand, some medium sand with rock fragments, pebbles					
				14.00	42.29			
			Orange brown fine to medium sand with rock fragments, pebbles			S-7*	30-32-50/4"	100

Water Content: 5 10 20 30 40 50
SPT GRAPH (Blows Per Foot): 1 — 100

Notes:
** wet*
*** moist*

Hard choppy augering from 12'6" to 18'6" and from 21' to 22'6"

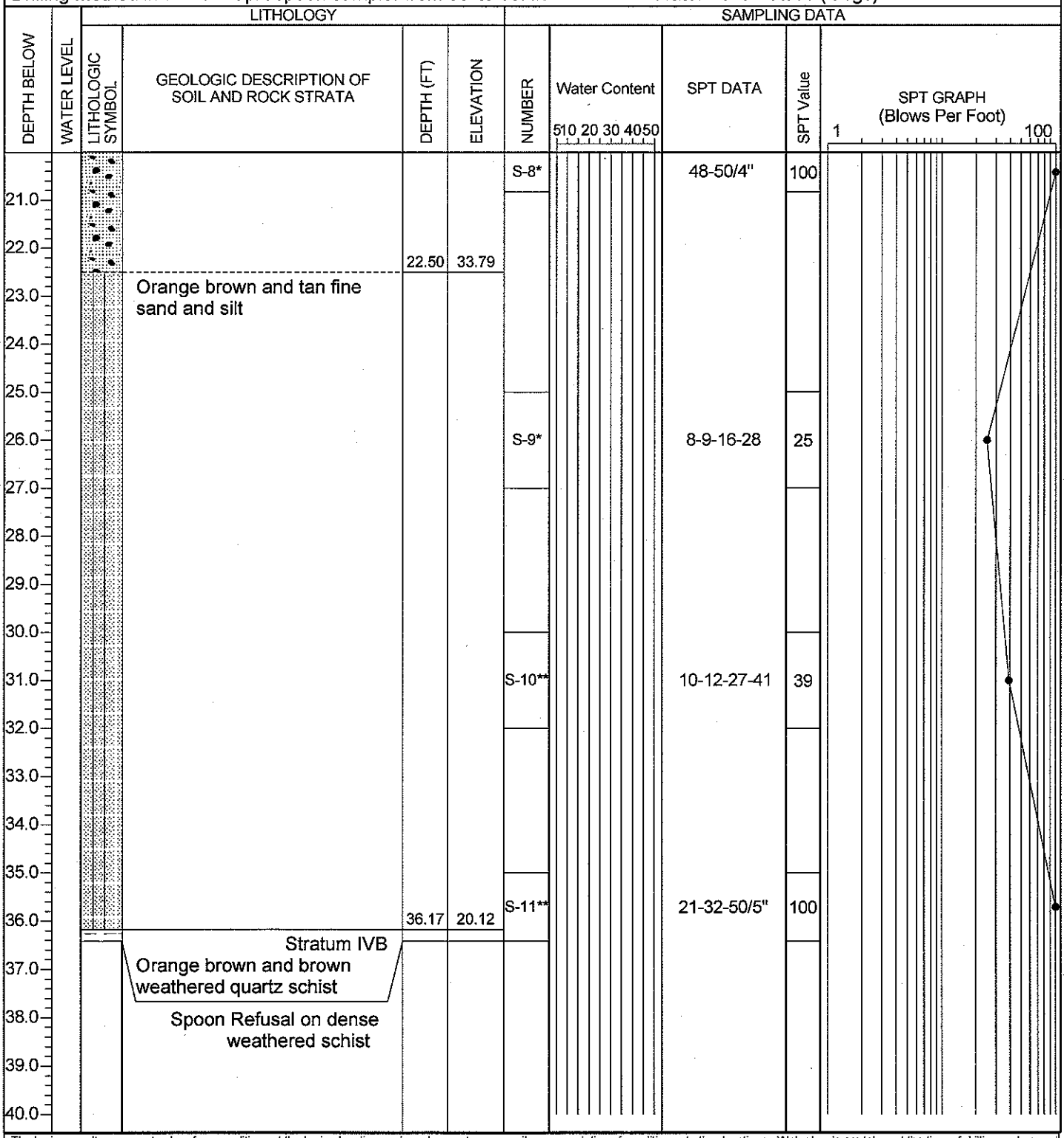
The boring results represent subsurface conditions at the boring locations only and are not necessarily representative of conditions at other locations. Water levels are taken at the time of drilling and are not indicative of seasonal variations in the ground water level. NR = No Recovery, S =Split Spoon sample(2" O.D.), C=Rock Coring Run.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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):



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 : 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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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										
40.0				39.92	15.41	S-13		23-50/5"	100	
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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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 FILL consisting of black fine sand with rock fragments, brick, concrete, boulders	1.00	51.97			
			Concrete			S-1*	2-1-1-1	2
			FILL consisting of black fine sand, some slag, coal			S-2*	1-1-1-2	2
	▼			6.00	46.97			
			Reddish brown and grey slightly organic silt			S-3*	1/12"-1-3	1
				8.25	44.72			
			Stratum III Reddish brown and orange brown fine sand and silt	10.17	42.80	S-4*	4-4-5-8	9
			Reddish brown fine to medium sand with rock fragments, pebbles			S-5**	12-15-17-24	32
				14.00	38.97			
			Orange brown fine sand and silt with occasional rock fragments			S-6**	1/24"	1
						S-7**	1-2-8-9	10
				20.00	32.97	S-8**	8-11-10-8	21
			Stratum IVA Grey and brown weathered limestone					
						S-9**	11-12-13-12	25

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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: SPT DATA	SAMPLING DATA: SPT Value
30.0						S-10**	2-2-4-5	6
32.0						S-11**	5-7-6-6	13
34.0						S-12**	2-1-1/12"	1
37.0						S-13**	1/48"	1
40.0						S-14**	2-2-6-3	8
42.0						S-15**	1/12"-1/18"	1
44.0						S-16**	6-28-33-35	61
45.0				45.00	7.97			
			Boring Terminated					

Water Content: 5 10 20 30 40 50
SPT GRAPH (Blows Per Foot): 1 — 100

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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
				23.50	32.30			
			Stratum IVB					
			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"			S-9**	5-6-7-8	13
			Hard augering from 33'6"					
			Very hard augering from 34'6"					
				35.08	20.72	S-10	50/1" 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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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"

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 : 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: SPT DATA	SAMPLING DATA: SPT Value
			Stratum IMF FILL consisting of dark brown fine sand with rock fragments, some boulders					
				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			
			Grey organic silt			S-4*	1/12"-1-2	1
				10.17	45.61			
			Reddish brown slightly organic silt	10.58	45.20			
				11.25	44.53	S-5*	2-3-3-4	6
			Stratum II Reddish brown fine sand and silt	12.67	43.11			
			Orange brown fine sand and silt, some clay			S-6*	9-29-42-54	71
			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					

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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: SPT DATA	SAMPLING DATA: SPT Value
20.0								
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
				36.75	19.03			
37.0			Boring Terminated					
38.0								

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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
						S-9	50/2" N.R.	100
				35.17	18.74	S-10	50/2" N.R.	100
			Boring Terminated					

Notes:
** very moist*
*** moist*
**** wet*

Hard augering from 18'

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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
	▼			9.50	46.62	S-4*	3-3-2-2	5
			Brown and reddish brown slightly organic silt with some roots	12.25	43.87	S-5*	2-1-2-1	3
			Stratum II Orange brown and reddish brown fine sand and silt, trace of clay	13.75	42.37	S-6*	2-4-7-23	11
						S-7*	42-50/5"	100
			Stratum III Reddish brown fine to medium sand with rock fragments, pebbles	18.00	38.12			
			Stratum IVB Multi-colored weathered phyllite			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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	SPT DATA	SPT Value
			LITHOLOGY			SAMPLING DATA		
1.0			Stratum IMF FILL consisting of concrete fragments and boulders with rock fragments, fine sand					
3.0				3.50	52.40	S-1*	3-2-2-2	4
4.0			FILL consisting of black fine sand, some slag, coal, cinders, brick			S-2*	2-2-1-1	3
7.0				7.00	48.90	S-3*	1/12"-1/12"	1
8.0			Reddish brown and brown slightly organic silt			S-4*	1/12"-1/12"	1
10.0				10.50	45.40			
11.0			Stratum II Reddish brown fine sand and silt, trace of clay			S-5**	1-2-2-2	4
12.0				12.25	43.65			
13.0			Orange brown fine sand and silt, some clay			S-6*	3-3-6-6	9
14.0				14.00	41.90			
15.0			Orange brown fine sand and silt, some clay with some rock fragments and pebbles			S-7**	18-42-50/4"	100
17.0				17.00	38.90			
18.0			Stratum III Orange brown fine to medium sand with rock fragments, pebbles					
20.0				20.00	35.90	S-8	23-16-13-22	29
21.0			Stratum IVB Multi-colored weathered schist					
24.0						S-9	50/3"	100
25.0								

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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.

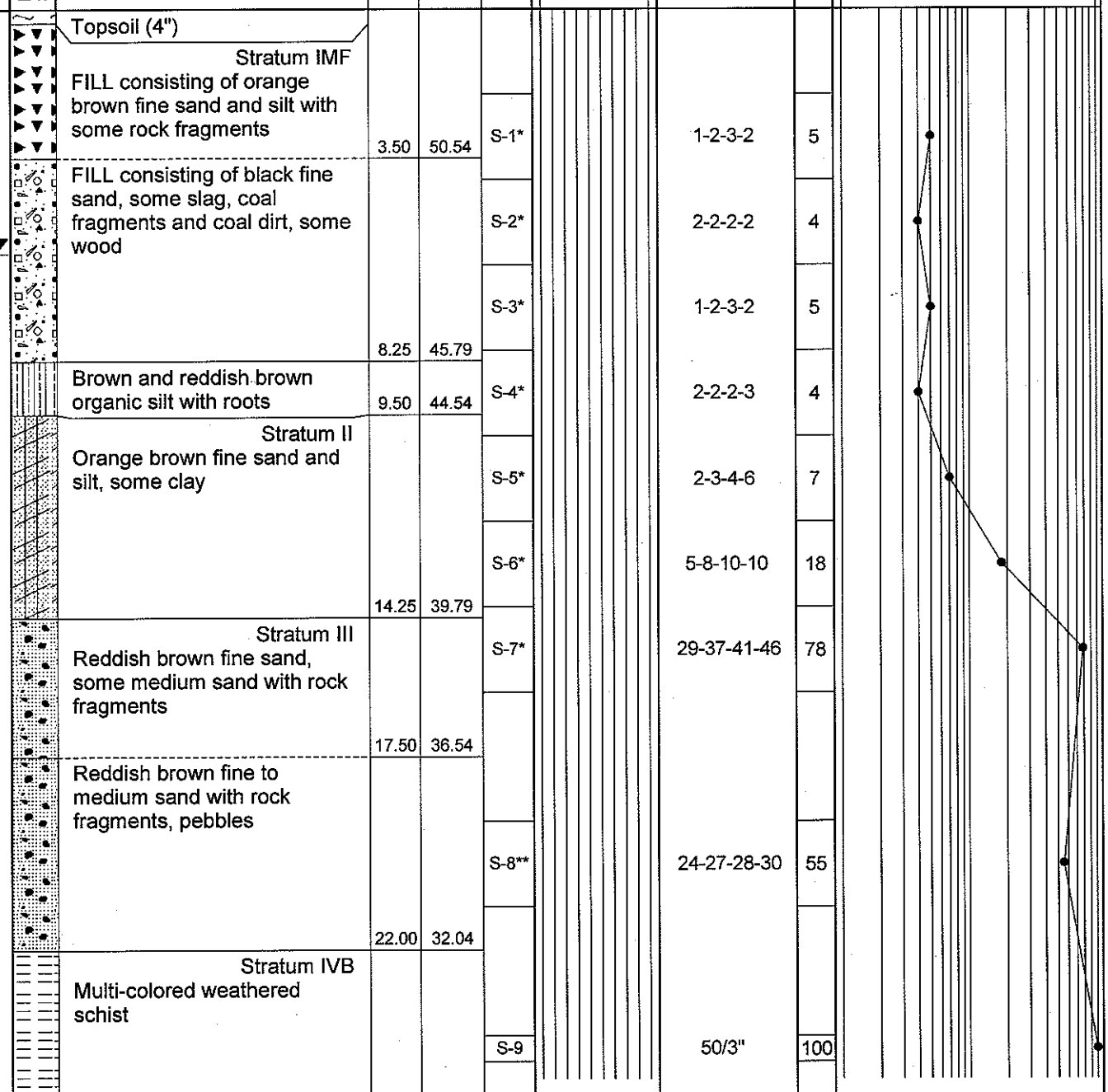
DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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



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 : 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			***Notes:***							
46.0			** very moist*							
47.0			*** wet*							
48.0			*Hard augering from 22'*							
49.0										
50.0										

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.

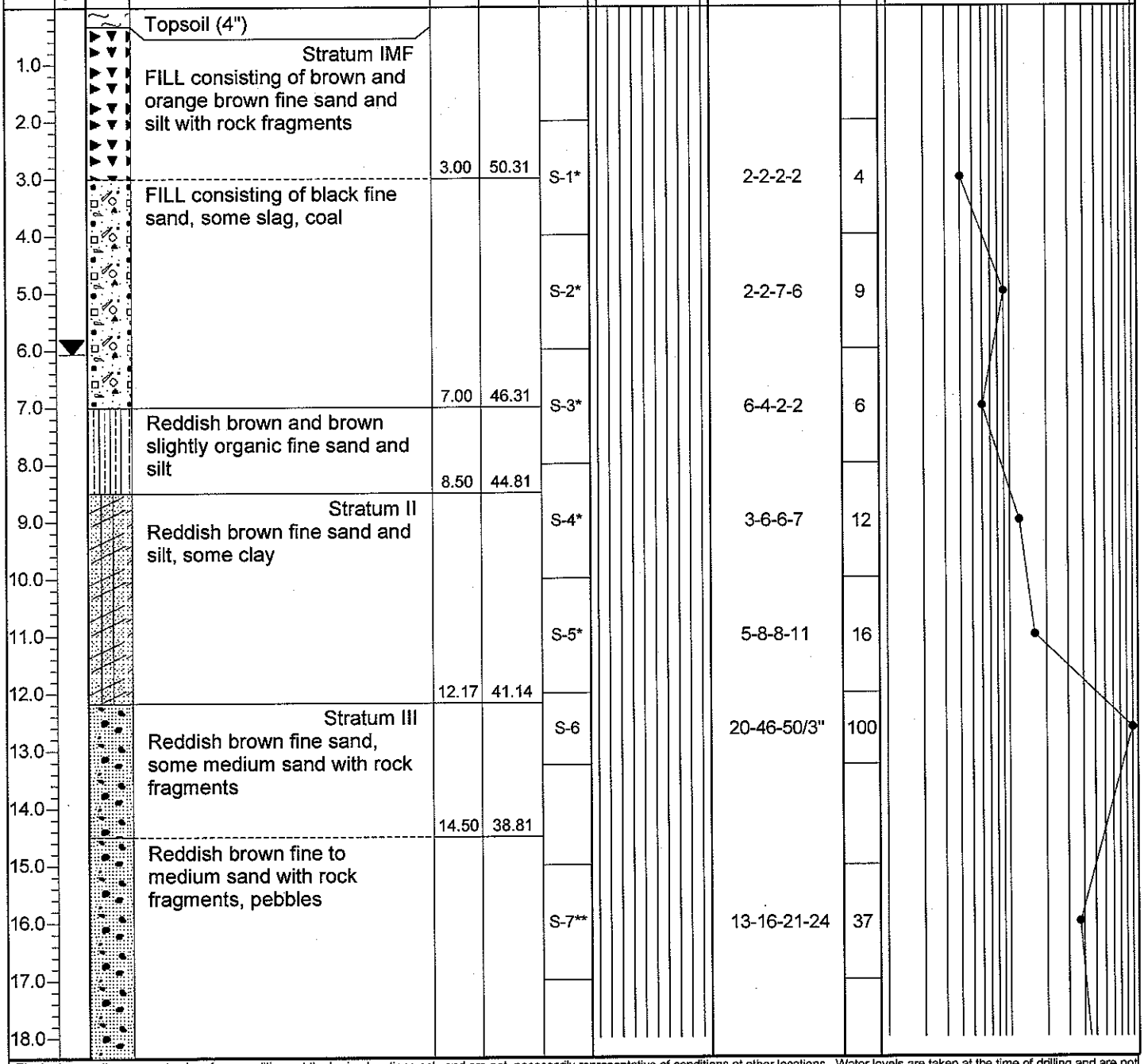
DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

Boring Number : 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



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 : 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					

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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			
			Topsoil with rock fragments (2")						
			Stratum IMF FILL consisting of orange brown, brown and black fine sand and silt with rock fragments	4.50	46.43	S-1*		1-3-4-5	7
				5.75	45.18	S-2**		4-3-3-2	6
			FILL consisting of black and some slag, cinders, coal			S-3**		2-3-3-4	6
			Reddish brown and brown organic silt	8.17	42.76				
			Stratum III Reddish brown fine to medium sand with rock fragments, pebbles			S-4*		15-22-18-26	40
						S-5**		23-16-15-19	31
						S-6		50/2" N.R.	100
			Stratum IVB Multi-colored weathered quartz schist	16.00	34.93				
						S-7*		8-22-31-43	53
						S-8*		10-16-38-50/4"	54
				29.17	21.76				
			Auger Refusal on schist bedrock						

SPT GRAPH (Blows Per Foot): 1 to 100

Notes:
** very moist*
*** wet*

Hard choppy augering from 12'6" to 15'9"

Hard augering from 27'

Very hard augering from 29'

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 : 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".

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 : 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
0.0			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	6.17	47.12	S-2*	4-4-3-3	7
			Black organic silt	8.33	44.96	S-3**	1/12"-1/12"	1
			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

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 : B38

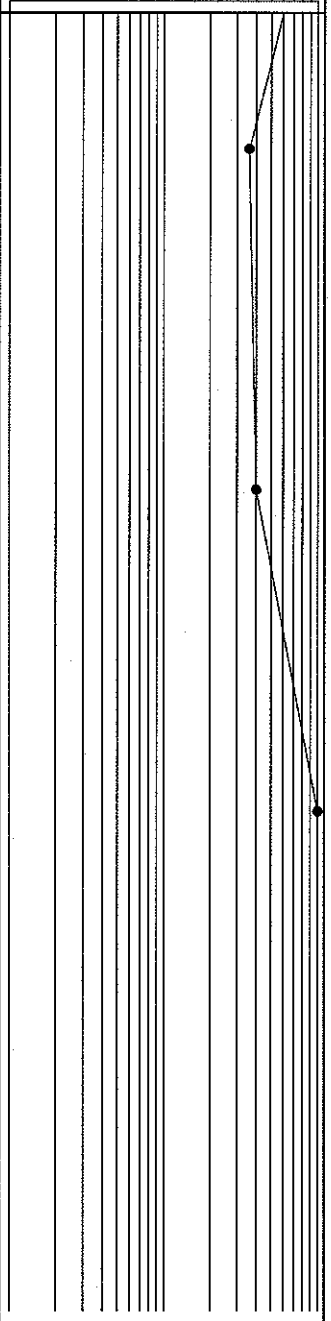
Project : Proposed Residential Structures
Location: 401 & 433 Washington Street
Twp/City/State: Conshohocken Borough, Montgomery County, PA
Drilling Contractor : Corcoran Drilling Co., Inc.
X Coordinate (ft) : 0 Y Coordinate (ft) : 0
Drilling Method #1 : 5" diameter Solid Augers from 0' to 33.67'
Drilling 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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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
			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	9.83	44.78	S-4	2-2-3-6	5
			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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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	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 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					

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 14'6"

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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:

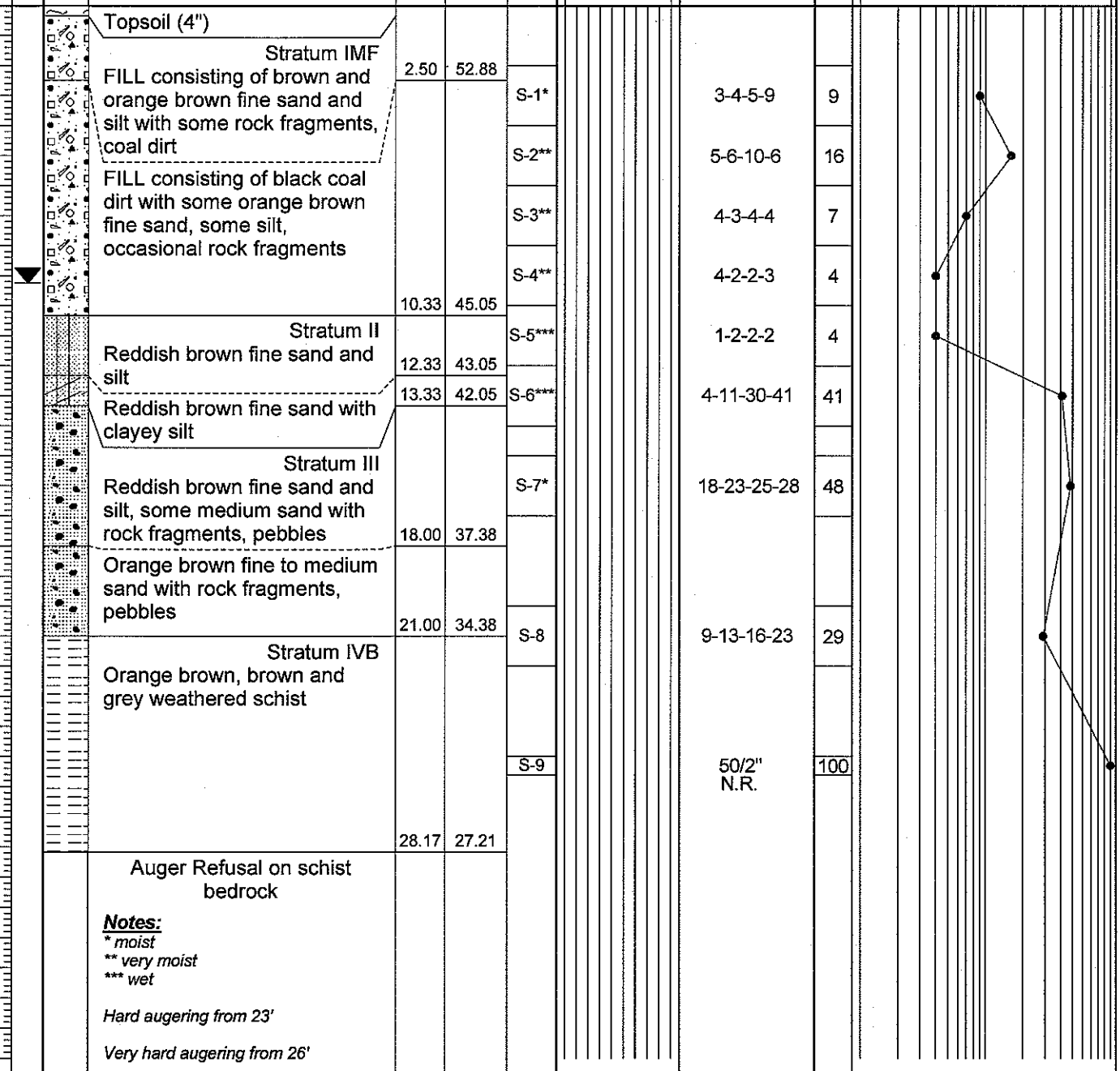
Project Number : 4287G1
Date Drilled : 1/4/2013
Inspected by : MTU
Boring Depth: 28.17'
Ground Surface Elevation (ft msl) : 55.38'
Water Level - Immediate (ft bgs) : 9.25'
Water Level -Static (ft bgs):

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'



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 : 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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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
0.0			Topsoil (4")					
			Stratum IMF	1.50	49.25			
1.0			FILL consisting of brown fine sand and silt, occasional rock fragments					
2.0								
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 ** wet					
25.0			*Hard, choppy augering from 13' to 17'*			S-9	50/1"	100
26.0			*Hard, smooth augering from 17'* *Very hard augering from 26'*				N.R.	
27.0				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.

DAVID BLACKMORE & ASSOCIATES, INC.
Geotechnical & Environmental Engineers
Phone: 610-495-6255 Fax: 610-495-7353
www.dbaengineering.com

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	LITHOLOGIC SYMBOL	GEOLOGIC DESCRIPTION OF SOIL AND ROCK STRATA	DEPTH (FT)	ELEVATION	NUMBER	Water Content	SPT DATA	SPT Value	SPT GRAPH (Blows Per Foot)
							5 10 20 30 40 50			1 100
1.0			Topsoil (5")							
2.0			Stratum IMF FILL consisting of black coal dirt with roots			S-1*		1-2-3-3	5	
3.0										
4.0				4.50	47.42					
5.0	▼		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	
6.0										
7.0						S-3***		2-1-2-2	3	
8.0			Stratum II Reddish brown fine sand and silt	8.17	43.75					
9.0						S-4**		4-6-7-10	13	
10.0			Reddish brown fine sand and clayey silt							
11.0						S-5**		10-14-17-22	31	
12.0										
13.0				13.00	38.92					
14.0			Stratum III Reddish brown fine to medium sand with rock fragments, pebbles							
15.0										
16.0						S-6***		22-28-38-40	66	
17.0										
18.0				18.50	33.42					
19.0			Stratum IVB Orange brown, brown, and grey weathered schist							
20.0						S-7		50/2" N.R	100	
21.0										
22.0										
23.0										
24.0										
25.0						S-8		50/1" N.R.	100	
26.0			***Notes:*** ** moist* *** very moist* **** wet*							
27.0										
28.0										
29.0			*Hard augering from 18'6"*							
30.0						S-9		50/1" N.R.	100	
31.0										
32.0				32.83	19.09					
33.0			Auger Refusal							

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 : 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'

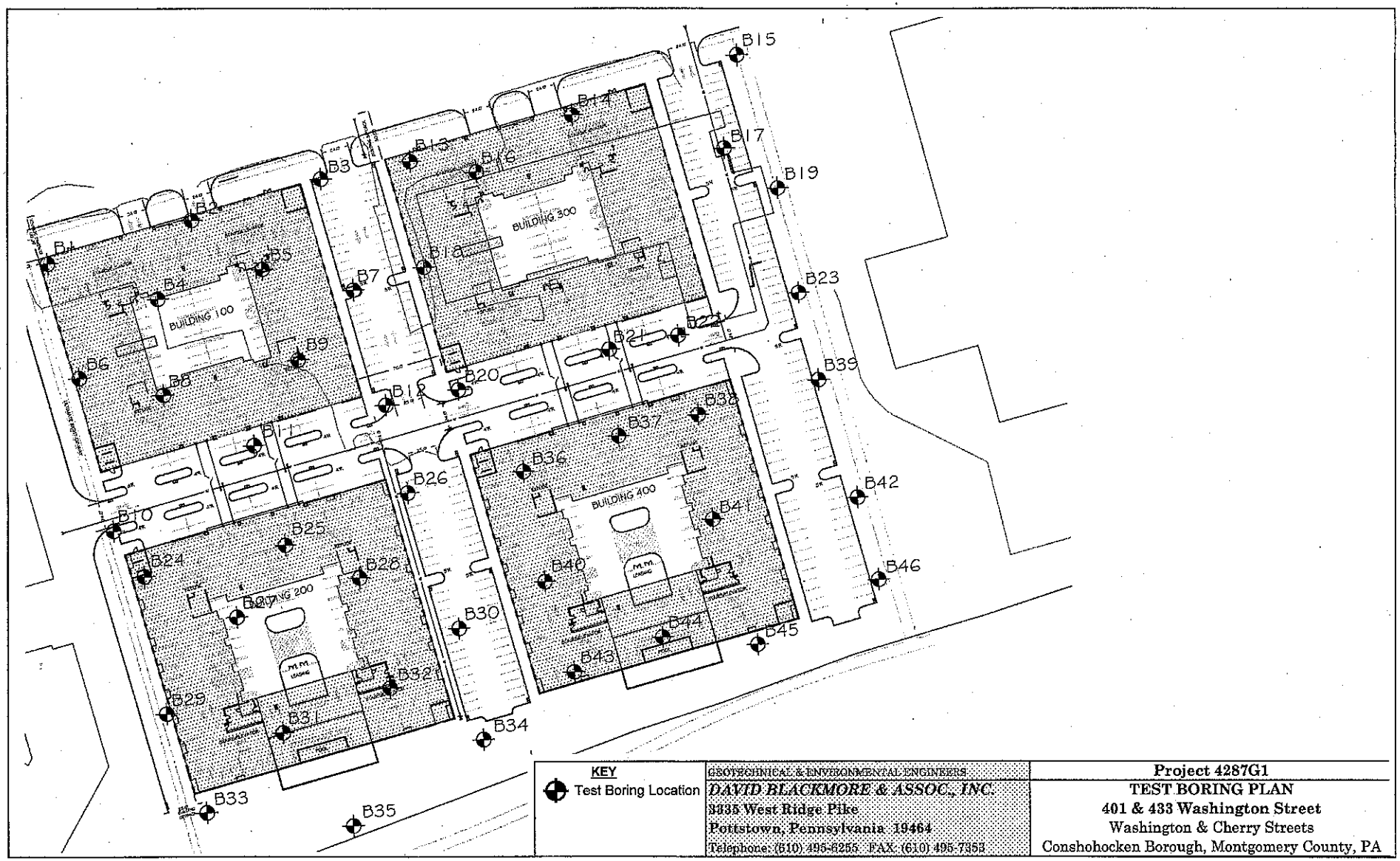
Project Number : 4287G1
Date Drilled : 1/3/2013
Inspected by : MTU
Boring Depth: 35.17'
Ground Surface Elevation (ft msl) : 54.44'
Water Level - Immediate (ft bgs) : 7.75'
Water Level -Static (ft bgs):

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					
3.0			FILL consisting of coal with some orange brown fine sand and silt			S-1*	2-3-4-6	7
4.0								
5.0						S-2*	4-3-4-6	7
6.0								
7.0	▼					S-3*	3-2-2-3	4
8.0				8.25	46.19			
9.0			Stratum II			S-4**	3-2-2-2	4
10.0			Reddish brown fine sand and silt	10.33	44.11			
11.0						S-5**	2-3-6-7	9
12.0			Reddish brown fine sand and clayey silt	12.67	41.77			
13.0			Stratum III			S-6**	6-18-23-28	41
14.0			Reddish brown fine sand,					
15.0			some medium sand and silt			S-7***	33-50/3"	100
16.0			wtih rock fragments, pebbles					
17.0								
18.0								
19.0								
20.0				20.58	33.86			
21.0			Stratum IVB			S-8	6-9-28-53	37
22.0			Multi-colored weathered schist					
23.0								
24.0								
25.0						S-9	50/2" N.R.	100
26.0			***Notes:***					
27.0			** moist*					
28.0			*** very moist*					
29.0			**** wet*					
30.0			*Fairly hard choppy augering from 13'6" to 16'9"*			S-10	50/3" N.R.	100
31.0			*Very hard augering from 16'9" to 19'*					
32.0			*Hard augering from 22'6"*					
33.0								
34.0								
35.0				35.17	19.27	S-11	50/2" N.R.	100
36.0			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.

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

WHITEMARSH TOWNSHIP

To: Charlie L. Guttenplan, Director of Planning & Zoning/Zoning Officer

From: NICHOLAS W. WEAVER, FIRE MARSHAL

Subject: **KRE Acquisition Corp 401-403 Washington Street**

Date: January 13, 2022

cc:

This application is approved.

Nicholas W. Weaver
Fire Marshal
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 610-825-3535 ext. 2614
Email: nweaver@whitemarshtwp.org

MONTGOMERY COUNTY
BOARD OF COMMISSIONERS
VALERIE A. ARKOOSH, MD, MPH, CHAIR
KENNETH E. LAWRENCE, JR., VICE CHAIR
JOSEPH C. GALE, COMMISSIONER

MONTGOMERY COUNTY
PLANNING COMMISSION
MONTGOMERY COUNTY COURTHOUSE • PO BOX 311
NORRISTOWN, PA 19404-0311
610-278-3722
FAX: 610-278-3941 • TDD: 610-631-1211
WWW.MONTCOPA.ORG

SCOTT FRANCE, AICP
EXECUTIVE DIRECTOR

January 11, 2022

Stephanie Cecco, Borough Manager
Borough of Conshohocken
400 Fayette Street, Suite 200
Conshohocken, Pennsylvania 19428

Re: MCPC #21-0327-001
Plan Name: 401/430 Washington Street (Apartments)
598 dwelling units/ 4 buildings / approximately 10.7 acres
Borough of Conshohocken / Township of Whitemarsh

Dear Ms. Cecco:

We have reviewed the above-referenced subdivision/land development plan in accordance with Section 502 of Act 247, "The Pennsylvania Municipalities Planning Code," as requested by the borough in an electronic documentation received in this office on December 7, 2021. We forward this letter as a report of our review.

BACKGROUND

The applicant, KRE Acquisition Corp., Bridgewater NJ, has submitted for review a land development plan that proposes the redevelopment of a 10.7 acre former industrial tract with 598 multi-family residential dwelling units, surface parking lots, stormwater management facilities and various amenities.

The development tract comprises 2 existing lots at 401 and 433 Washington Street, both of which are vacant industrial lots, and four tax parcels totaling 10.66 acres located in both Conshohocken Borough and Whitemarsh Township. Two tax parcels comprise the 4.97 acre lot at 401 Washington Street: TP 05-00-11904-00-7 (Conshohocken) and TP 65-00-11904-00-7) and the 5.69 acre lot at 433 Washington Street is comprised of TP 05-00-11908-00-3 (Conshohocken) and TP 65-00-12685-01-2 (Whitemarsh).

. According to the plan submittal documentation, 401 Washington Street contains the foundation of an industrial building owned and occupied by C&D Battery. The 433 Washington Street site is a former property of Hale Pump that contains a vacant industrial building and parking area. The development tract lies within the Borough of Conshohocken's Specially Planned District Two (SP-2) and in Whitemarsh Township's Heavy Industrial District (HVY) and the Riverfront Development District One subdistrict (RDD-1). The plan notes indicate that 60 residential units are located in the Whitemarsh

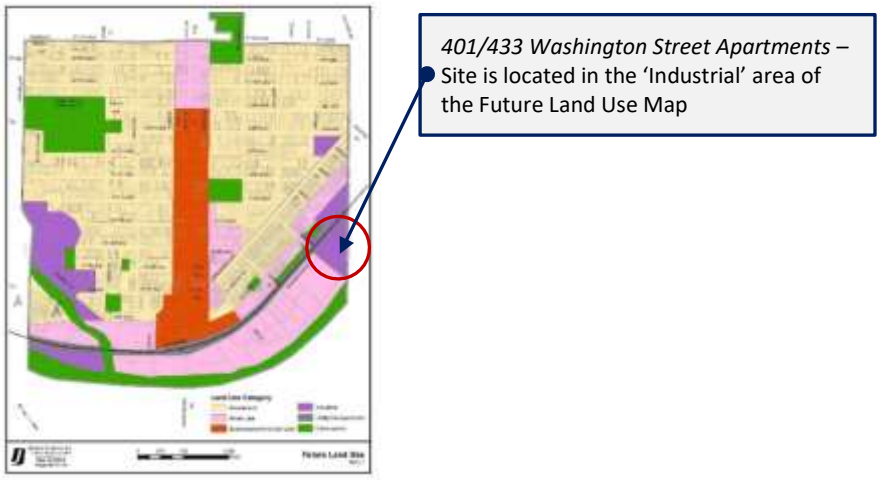
Township portion of 433 Washington Street and the remainder are in the borough. Approximately 2.91 acres of the development tract are in Whitemarsh Township and the remainder are located in the borough. Both lots are situated in the 100-year floodplain and development footprint lies immediately outside the Schuylkill River FEMA-designated floodway boundary.

The Planning Commission's last review letter for this property, dated May 22, 2014 was for the development of four multi-family residential dwellings totaling 602 units. The applicant's documentation submitted with this proposal includes a Settlement Agreement and related Plan Exhibits dated October 22, 2014, which states various terms of the settlement in a narrative (pages 3-7). The submitted architectural plans show four buildings, each approximately 205 ft. by 210 ft., each with a courtyard. Buildings #3 and #4, which are closest to the riverfront, are connected by a bridge that allows movement between the first floor amenities and pool deck. The site lies immediately south of SEPTA's Norristown/Manayunk Regional Rail line and the Schuylkill River Trail.

CONSISTENCY WITH THE COUNTY AND BOROUGH PLANS

Consistency with *Montco 2040*- A Shared Vision

The plans for the redevelopment of this site are consistent with the future land use vision and stated goals of *Montco 2040: A Shared Vison*, the comprehensive plan and future land use vision for the county. The Future Land Use Map of the plan designates the land use vision for the site as part of a larger 'Regional Mixed-Use Center' (RMUC) that extends from the Schuylkill Riverfront to East Elm Street. The 'RMUC' designation supports intensely developed areas including 'high-density, multi-family and townhomes". (Page 80) https://www.montcopa.org/1579/Montco-2040-Comprehensive-Plan). The comprehensive plan recommends that these centers should "establish more of a sense of place, ideally with a clearly defined public gathering place."



Conshohocken Borough Future Land Use Map, 2018

Consistency with Conshohocken Comprehensive Plan Update, June, 2018

The redevelopment proposal for this property appears somewhat compatible with the borough's future land use vision for this area as stated in the 2018 Comprehensive Plan and in Chapter Five's Future Conditions, Land Use Map #7. According to and as shown in the attached map, the future land use designation , is for an 'Industrial' area. While the development tract is designated 'Industrial', it is located

at a boundary with the 'Mixed-Use' area where the future land use goal is "to provide for the development and redevelopment of properties which incorporate a variety of land uses which are a complementary mix including residential, retail, commercial, employment, civic and entertainment uses in close proximity - sometimes in the same building."

RECOMMENDATION

The Montgomery County Planning Commission (MCPC) generally supports the redevelopment of this property as a multi-family residential riverfront development at this site as submitted. We believe our recommendation is supported by both the county's and the borough's comprehensive plans and their land use vision for the redevelopment of this area. While the project has the potential to become a transformative residential project, we believe the submitted development plans could be improved in several areas. Of particular concern is the proposed pedestrian access to the riverfront along the apartment building's Cherry Street frontage, totalling 560 feet in length. The 5 ft. wide sidewalk is inadequate, and we believe the pedestrian experience could be greatly improved by creating more physical space for both a wider sidewalk (6-8 ft.) and including street trees from Washington Street to the Schuylkill riverfront. The riverfront trail and the experience of proximity to and connection with the river can make this area an important destination for both apartment and borough residents. In addition, we recommend the applicant ensure that a comprehensive and effective evacuation plan is implemented with this development and that residents are fully aware of the impacts associated with flooding events and the absolute need to follow the evacuation directives given by the county and municipal emergency agencies. These issues and others are discussed below.

COMMENTS

1. Schuylkill River Public Open Space

The Borough of Conshohocken Zoning Code regulations for Riverfront Access & Open Space in SP-2 District (Section 27-1504.D. 1.-3. (a- c) require that the development provide year-round opportunities for passive outdoor recreation and facilitate circulation for pedestrians to and throughout the riverfront area. The 'Riverfront, Access, Recreation and Open Space Plan' (Sheet 5/23) as submitted falls short of achieving this goal. We recommend the borough ensure that the applicant's plan addresses the goals of the public riverfront access, use and enjoyment.

a. Riverfront access and open space amenities-

The Open Space Plan shows a 10 ft.-wide pedestrian trail along the Schuylkill Riverfront and landscaping, pedestrian lighting and several public seating areas. We believe the riverfront trail could be improved with the addition of other amenities that could make this area of the riverfront a more attractive destination. This could include a water fountain that also could serve dogs, riverfront-wayfinding stations, and an art installation. We suggest the applicant consider site-specific interpretive panels or art murals depicting some of the 19th century industrial heritage of the Conshohocken riverfront.

b. *Open Space Deed Restriction and Easement Area-*

The applicant should include an open space plan that preserves the riverfront open space area in perpetuity through a conservation easement of fee-simple transfer as may be required by the

borough according to Section 27-1504. D.(4.e) and presented for final plan recording at the Montgomery County Recorder of Deeds.

2. Transportation and Circulation Issues

a. *Access Driveway Misaligned with Riverwalk at Millennium's driveway*

The site plan shows a driveway between Building #1 and Building #3 that is not aligned with the driveway entrance at the Riverwalk at Millennium at 309 Washington Street. The proposed alignment can create unnecessary hazardous vehicular movements at this entrance area. We recommend that the applicant's driveway at this intersection with Cherry Street be aligned with the neighboring Riverwalk at Millennium driveway entrance to ensure safe ingress/egress to the properties. This is shown in the annotated site plan below.

b. *Traffic roundabout between the apartment buildings*

A traffic roundabout with a radius of + 40 ft. is shown in both an architectural rendering and in the site development plan. The rendering illustration appears to show a plaza area with bollards and a variety of paving materials, with festive interaction of residents surrounding a food truck. By contrast, the site plan shows a roundabout with several different types of signage arranged to safely control the movement of vehicles and pedestrians. The applicant should clarify for the borough how the roundabout is intended to function and ensure that adequate safety measures for motorist and pedestrians are implemented.

c. *Proper trail alignment needed with the Riverwalk at the Millennium's riverfront trail.*

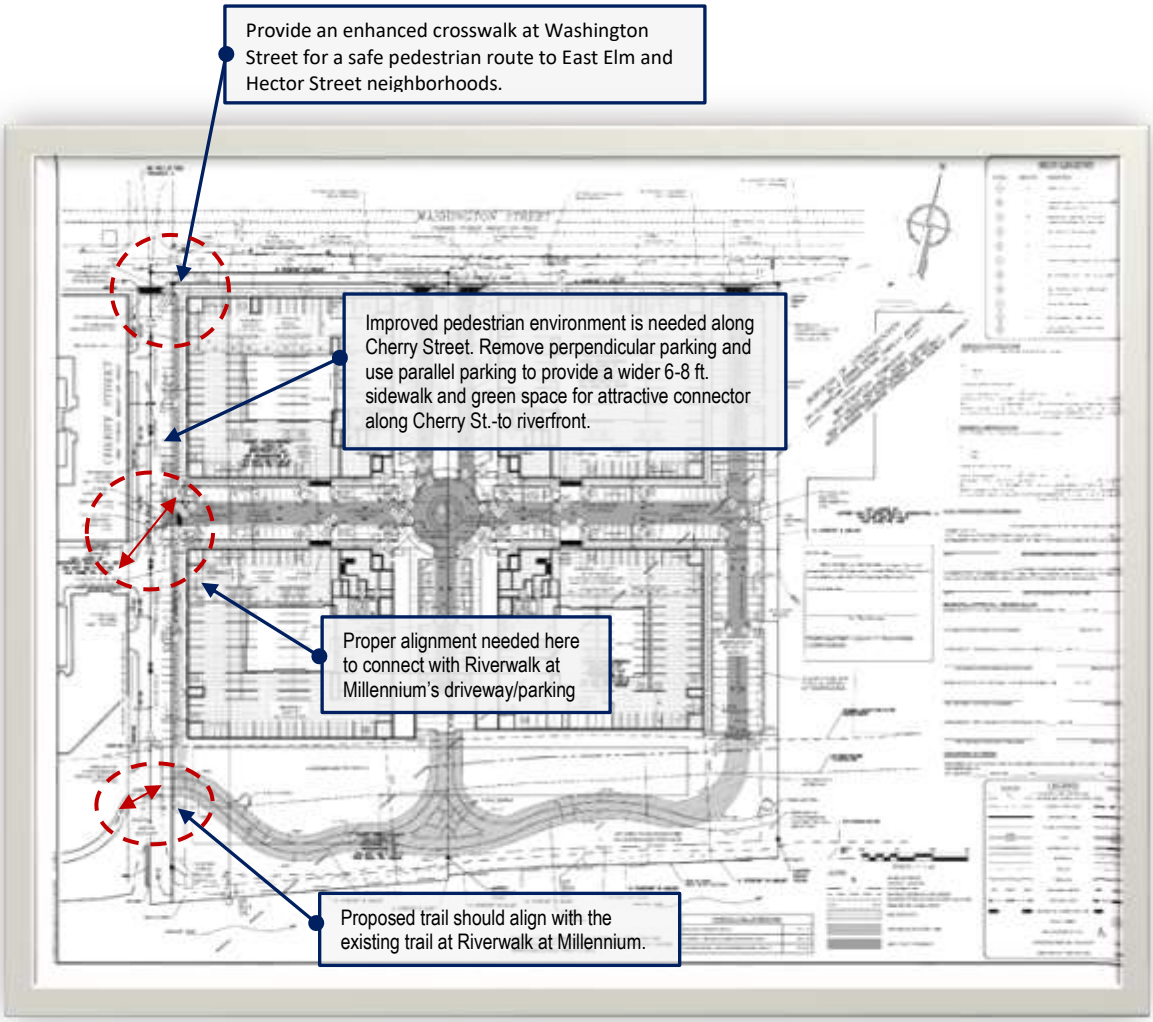
The applicant's trail at the Cherry Street entrance should be aligned properly with the existing riverfront trail immediately to the west at The Riverwalk at Millennium. The existing zig-zag movement is not a safe arrangement for a shared-use riverfront trail designed toaccommodate pedestrians and cyclists.

d. *Right-of-way and Cartway Dimensions*

The applicant's Dimension Plan (sheet 4/23) should clearly show the placement of the new right-of-way on the plan. It is not clearly delineated, and we suggest that the cartway dimensions be shown in various locations along the applicant's Washington Street frontage. The borough should seek this information to ensure the consistency of improvements to the roadway along the applicant's frontage.

e. *Sidewalks and the legal right-of-way*

The plan appears to place the sidewalks outside the legal right-of-way on private property. We recommend that the right-of-way line should be established so that the sidewalks are within the public right-of-way and not located within private property.



3. Pedestrian Issues

a. *Cherry Street Perpendicular Parking Arrangement*

The plan proposes a change to the existing parallel parking arrangement along Cherry Street and would re-configure it with 90 degree perpendicular parking. This will enable the applicant to more than double the parking along the street from 23 spaces to 48 spaces and assist in satisfying the borough's off-street parking requirements for the development. We believe this arrangement is not desirable because it diminishes the potential of Cherry Street serving as the borough's connection to the Schuylkill Riverfront from Washington Street and East Elm Street neighborhoods.

Of concern is how borough residents are to access the riverfront trail. It is not clear if the primary public access route is along Cherry Street, and we believe this is not an appealing connection from the borough. This route is not pedestrian-friendly as it has only a 5 ft. wide sidewalk connection from

Washington Street to the Schuylkill Riverfront. This route is disrupted by perpendicular parking spaces along the street and occasional tree islands, some of which are spaced 180 ft. apart.

The parallel parking arrangement provides a wider physical space for both greening and a 6-8 ft. wide sidewalk. Trees and a wider sidewalk will provide a more comfortable pedestrian experience than the proposed 5 ft. wide sidewalk with very limited space for trees and landscape improvements. We recommend the borough consider the multiple benefits of a more open, attractive streetscape along Cherry Street and the opportunity to create a stronger visual and physical connection to the riverfront for its residents. In addition, we recommend the applicant revise the parking arrangement to provide an improved pedestrian connection to the riverfront.

Cherry Street with trees at Riverwalk at Millennium provide an improved pedestrian experience

b. *Unified Washington Streetscape Unified Streetscape Design*
The borough should ensure that the Washington Streetscape design in this proposal is consistent with the existing design, materials and arrangement of the streetscape along the frontage of the other surrounding redevelopments on the street. Washington Street sidewalk from the Matsonford overpass to Cherry Street uses a red-brick pavement and appears to have a standard globe light fixture. We recommend the applicant work with the borough to ensure that this uniform design is implemented along the applicant's street frontage. The applicant should address these standards in the preliminary plan submission and the borough should assess the applicant's proposed streetscape improvements with these considerations in mind.

c. *Pedestrian circulation along the driveways and connections*
There are several missing links in the development's pedestrian network that interrupt the required continuous sidewalk pedestrian route needed for a safe and walkable environment. For instance, several parking lot areas do not have sidewalks to the entrances and other destinations from the

parking lot. These include several sidewalks around the perimeter of the apartment buildings that appear to drop-off without a sidewalk connection or cross-walk that would create a safe route. It is not desirable to have pedestrians walking in the driveways or behind parked cars. We recommend the applicant examine these areas to ensure that a continuous and connected pedestrian sidewalk network is established with the site's development.

d. *Public access and signage to the Schuylkill River amenities*
In addition to establishing a safe pedestrian route to the riverfront, we recommend that the applicant's plan include directional and orientation signage to be posted along pedestrian walkways along both Cherry and Washington Street to help guide borough residents to the new riverfront trail and amenities.

e. *Washington Street crossing and safe access from Conshohocken neighborhoods*
The applicant should ensure that an enhanced cross-walk at Washington Street and Cherry Street is included as a planned roadway improvement. Residents of nearby neighborhoods along East Elm Street and Hector Street should be encouraged to walk or bike to the riverfront along a safe route. We encourage the borough and the applicant to work together to plan and design a project that would create a well-designed, universally accessible connection across the SEPTA Regional Rail right-of-way and along the connecting streets.

4. Residential development within the Schuylkill River 100 year floodplain

After the disastrous impacts received by Schuylkill Riverfront municipalities from the flooding and storms associated with Hurricane Ida on Sept 1-2, 2021 we recognize the borough is proactively planning how to avoid a similar scenario that occurred in the late summer. Our concern is that this development will inevitably place additional burdens on local and county emergency services responding to Schuylkill River flooding events, rescues at this site, and on the neighboring properties. The applicant should work with the borough and Whitemarsh Township to ensure that an effective evacuation plan for residents and their pets is established. It is our understanding that there will be on-site management of this facility that could assist in the event of an evacuation. We recommend the applicant provide the evacuation plan to all new residents and disclose the risks associated with living at this location and the need for residents to heed and act on all evacuation orders or risk the potential loss of life and property. In light of the catastrophic damages associated with Hurricane Ida, we believe this disclosure and blunt statement is warranted. Given the extent of surface parking lots and accommodation of vehicles, we recommend the applicant coordinate with the Borough and Township to consider alternative parking locations in case of a flood event that may damage vehicles in the surface parking areas.

5. Landscape Design Comments

A. Resiliency of the landscape plantings

The applicant should ensure that the landscape design and plantings selected demonstrate resiliency to the ever-increasing frequency of flooding along the Schuylkill River. There is growing evidence that the unprecedented destructive flooding that occurred along the Schuylkill River and its floodplain from the remnants of Hurricane Ida in September 2021 may not

be a once in a century event. We recommend the proposed landscape plans should be assessed with this consideration in mind.

B. Trees along Cherry Street façade and other apartment building facades

The applicant's proposed landscape plantings are limited along many of the building's +200 ft. facades and do not achieve the desirable human-scale next to a 5 story building. A more densely planted and robust coverage of native shrub groupings is needed, along with appropriate smaller ornamental trees which can create an attractive and more pedestrian friendly environment. Also, additional plantings are needed along the Cherry Street building facades and several others which are adjacent to surface parking areas. As shown in the Cherry Street street-view photo, the medium stature, ornamental trees can become an effective landscape addition even when planted in the shallow, 10-12 ft. wide strip adjacent to the apartment building. We believe a similar treatment is needed along several of the applicant's building facades where in some instances there is only a small shrub grouping shown as landscape improvement for over 125-175 ft.

Healthy trees are needed to create a high-quality walking environment. As a general rule, a minimum of 5-7 shrubs should be planted per 25 ft. of building façade along with small ornamental trees to create a high-quality walking environment. We recommend the applicant consider adding the following small tree species along the building façade perimeter where limited space exists. The following species are adapted to this type of setting: Serviceberry (*Amelanchier* species); Little Gem Southern Magnolia (*Magnolia grandiflora 'Little Gem*'); Swamp Bay Magnolia (*Magnolia virginiana*) are good candidates for the limited pervious area.

6. **Settlement Agreement – Green Building Initiatives- (#27, pg. 5)**
   The Settlement Agreement dated October 22, 2014 between Washington Street Associates LP and its successors and the Borough of Conshohocken states that various green development initiatives will be implemented with the site's development. These include energy efficient building materials, electric vehicle charging stations and bike parking. These improvements are not shown on the submitted plans and we recommend the applicant provide the borough with additional details on their green building initiatives and include the location of these improvements on subsequent plans for the borough's review.

CONCLUSION

The Montgomery County Planning Commission generally supports the applicant's proposal and recommend the borough address the above mentioned review comments to your satisfaction.

Please note that any recommendations contained in this report are advisory to the borough and final disposition for the approval of any proposal will be made by the borough. Please be aware that the MCPC #21-0327-001 has been set aside for the applicant' plan. If any subsequent plans are submitted for final recording, this MCPC number should appear on the applicant sheets within the plans in the box reserved for the seal of this agency.

Should the governing body approve a final plat of this proposal, the applicant must present the plan to our office for seal and signature prior to recording with the Recorder of Deeds office. A paper copy bearing the municipal seal and signature of approval must be supplied for our files.

Sincerely,

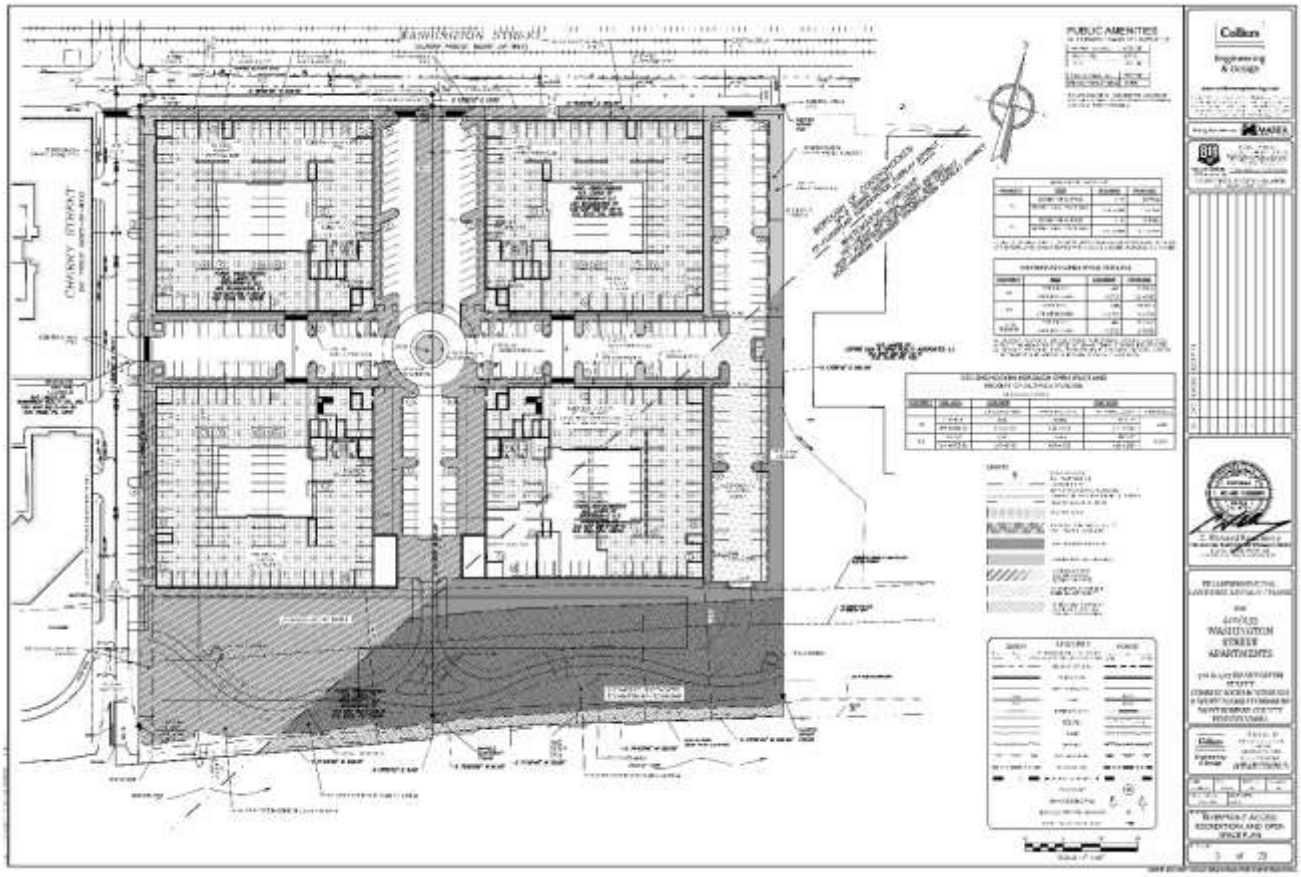
Barry W. Jeffries

Barry W Jeffries, ASLA, Senior Design Planner
bjeffrie@montcopa.org - 610-278-3444

c: Chair, Conshohocken Borough Planning Commission
Karen MacNair, Conshohocken Borough Engineer
Michael Peters, Conshohocken Borough Solicitor
Richard Mellor, Whitemarsh Township Manager
Charles Guttenplan, Whitemarsh Director of Planning & Zoning
Richard Roseberry for Colliers Engineering, Applicant's consultant

401/433 Washington Street
MCPC #210327001

Montgomery County Planning Commission
Montgomery County Courthouse • Planning Commission
PO Box 311 • Norristown PA 19404-0311
(p) 610.278.3722 • (f) 610.278.3941
www.montcopa.org/plancom
Aerial photography provided by Nearmap.


PUBLIC AMENITIES
Colliers
Engineering & Design
WASHINGTON STREET APARTMENTS

UPDATES

MONTGOMERY COUNTY
BOARD OF COMMISSIONERS

VALERIE A. ARKOOSH, MD, MPH, CHAIR
KENNETH E. LAWRENCE, JR., VICE CHAIR
JOSEPH C. GALE, COMMISSIONER

MONTGOMERY COUNTY
PLANNING COMMISSION

MONTGOMERY COUNTY COURTHOUSE • PO BOX 311
NORRISTOWN, PA 19404-0311
610-278-3722
FAX: 610-278-3941 • TDD: 610-631-1211
WWW.MONTCOPA.ORG

SCOTT FRANCE, AICP
EXECUTIVE DIRECTOR

February 1, 2022

Mr. Charles L. Guttenplan, AICP
Director of Planning & Zoning Officer
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, Pennsylvania 19444

Re: MCPC #21-0327-002
Plan Name: 401/430 Washington Street (Apartments)
598 dwelling units/ 4 buildings / approximately 10.7 acres
Situate: Washington Ave (south)/ east of Cherry Street
Whitemarsh Township / Borough of Conshohocken

Dear Mr. Guttenplan:

We have reviewed the above-referenced subdivision proposal in accordance with Section 502 of Act 247, "The Pennsylvania Municipalities Planning Code," as you requested on December 29, 2022. We forward this letter as a report of our review.

BACKGROUND

The applicant, KRE Acquisition Corp., Bridgewater NJ, has submitted for review a land development plan that proposes the redevelopment of a 10.7 acre former industrial tract with 598 multi-family residential dwelling units, surface parking lots, stormwater management facilities and various amenities.

The development tract comprises 2 existing lots at 401 and 433 Washington Street, both of which are vacant industrial lots, and four tax parcels totaling 10.66 acres located in both Conshohocken Borough and Whitemarsh Township. Two tax parcels comprise the 4.97 acre lot at 401 Washington Street: TP 05-00-11904-00-7 (Conshohocken) and TP 65-00-11904-00-7) and the 5.69 acre lot at 433 Washington Street is comprised of TP 05-00-11908-00-3 (Conshohocken) and TP 65-00-12685-01-2 (Whitemarsh).

According to the plan submittal documentation, 401 Washington Street contains the foundation of an industrial building owned and occupied by C&D Battery. The 433 Washington Street site is a former property of Hale Pump that contains a vacant industrial building and parking area. The development tract lies within the Borough of Conshohocken's Specially Planned District Two (SP-2) and in Whitemarsh Township's Heavy Industrial District (HVY) and the Riverfront Development District. The plan notes

indicate that 60 residential units are located in the Whitemarsh Township portion of 433 Washington Street and the remainder are in the Borough of Conshohocken. Approximately 2.91 acres of the development tract are in Whitemarsh Township and the remainder are located in the Borough of Conshohocken. Both lots are situated in the 100-year floodplain and the development footprint lies immediately outside the Schuylkill River FEMA-designated floodway boundary.

The Planning Commission's last review letter for this property dated May 22, 2014 was for the development of four multi-family residential dwellings totaling 602 units. The applicant's documentation submitted with this proposal includes a Settlement Agreement and related Plan Exhibits dated October 22, 2014, which states various terms of the settlement in a narrative (pages 3-7). The submitted architectural plans show four buildings, each approximately 205 ft. by 210 ft., each with a courtyard. Buildings #3 and #4, which are closest to the riverfront, are connected by a bridge that allows movement between the first floor amenities and pool deck. The site lies immediately south of SEPTA's Norristown/Manayunk Regional Rail line and the Schuylkill River Trail.

According to the applicant's submitted documentation, several variances and special exceptions were granted by the Whitemarsh Township Zoning Hearing Board Resolution #2021 in a decision of November 15, 2021. These include:

Variance from Section 116-165. To permit nonresidential structures within the Floodplain Conservation District.

Variance from Section 116-260. "so as to permit the clearing of vegetation, installation of parking lots, roads, driveways, fences, and stormwater basins within the Riparian Corridor Conservation District.

Special Exception from Section 116-166.A.(3), "so as to permit a stormwater retention basin with the floodway."

Special Exception from Section 116-166.B.(3), " so as to permit utilities, public facilities, and improvements such as streets, transmission lines, pipelines, water lines and similar uses in the floodway fringe."

The applicant is requesting 3 waivers from Section 105: one from the township's Subdivision and Land Development Code, and 2 waivers from the Section 55, Tree Protection Standards.

CONSISTENCY WITH THE COUNTY COMPREHENSIVE PLAN

Consistency with *Montco 2040*- A Shared Vision

The plans for the redevelopment of this site are consistent with the future land use vision and stated goals of *Montco 2040: A Shared Vison*, the comprehensive plan and future land use vision for the county. The Future Land Use Map of the plan designates the land use vision for the site as part of a larger 'Regional Mixed-Use Center' (RMUC) that extends from the Schuylkill Riverfront to East Elm Street. The 'RMUC' designation supports intensely developed areas including 'high-density, multi-family and townhomes". (Page 80) https://www.montcopa.org/1579/Montco-2040-Comprehensive-Plan). The comprehensive plan recommends that these centers should "establish more of a sense of place, ideally with a clearly defined public gathering place."

Consistency with the Whitemarsh Township Plan Update, 2020
The redevelopment proposal for this property appears compatible with the township's future land use vision for this area which envisioned a 'Waterfront District Character Area' as recommended by the Whitemarsh Township Selective Comprehensive Plan Update, 2020 and specifically in the plans Chapter Four- Future Land Use Plan. The future land use goal for this character area is to support high-density development and quality public spaces along the riverfront.

RECOMMENDATION

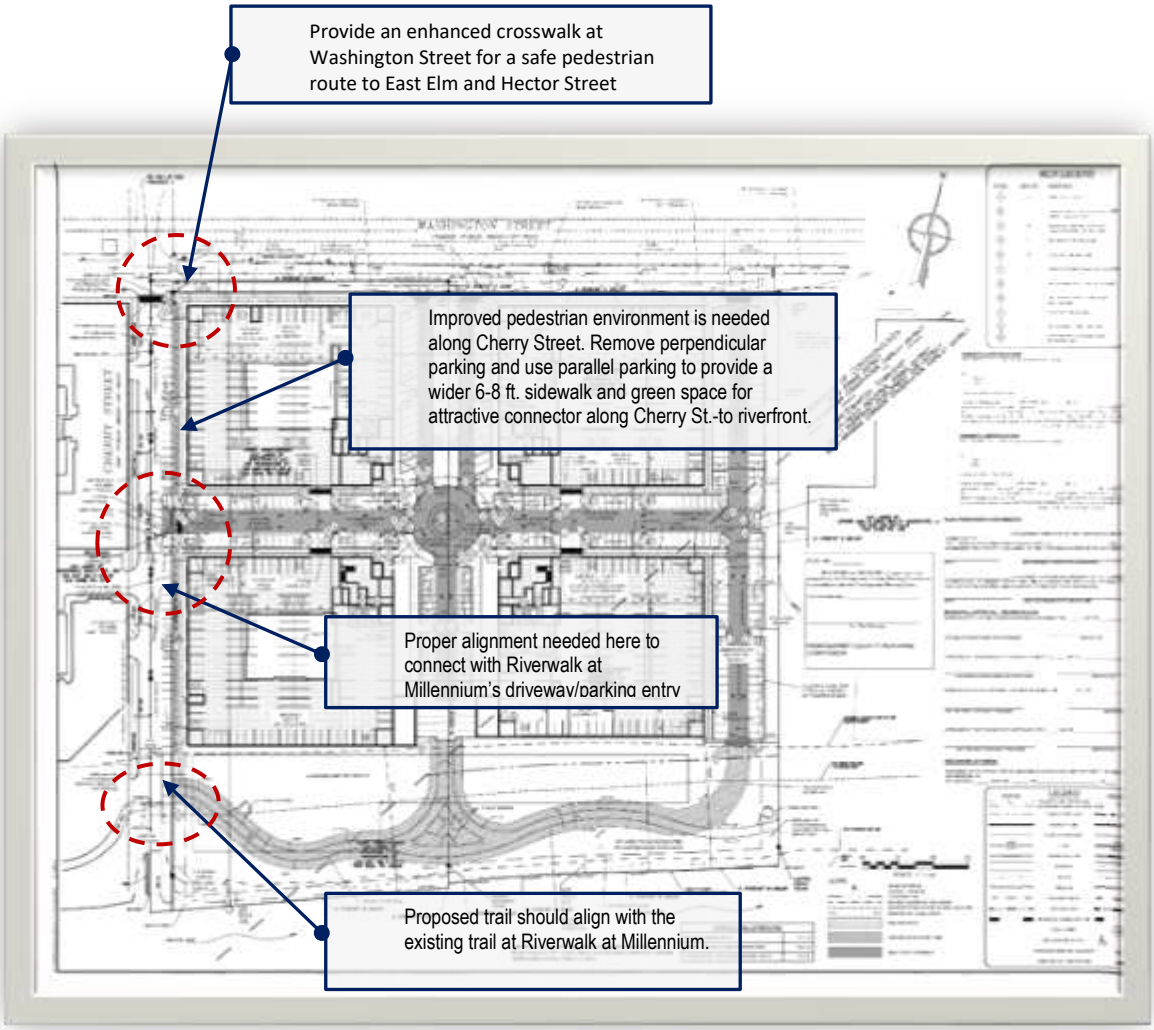
The Montgomery County Planning Commission (MCPC) supports the redevelopment of this property as a multi-family residential riverfront development at this site as submitted. We believe our recommendation is supported by both the county's and the township's comprehensive plans and their land use vision for the redevelopment of this area. While the project has the potential to become a transformative residential project, we believe the submitted development plans could be improved in several areas. We believe the proposal needs to demonstrate to both Whitemarsh Township and Conshohocken Borough that an attractive and effective pedestrian walking environment will be established between the riverfront and Washington Street. We expressed these concerns in our January 11, 2022 review letter to Conshohocken Borough (MCPC # 21-0327-001) and believe it is important to reiterate these concerns regarding several of these issues.

In order for Whitemarsh Township to achieve its Schuylkill Riverfront trail and greenway goals set forth by RDD Overlay regulations and its "decades-long" planning efforts, it will need to rely upon the Borough of Conshohocken's development review and approval process. Accordingly, we strongly recommend the township work closely with the borough to ensure that an attractive, pedestrian-friendly streetscape and sidewalk arrangement is developed along the applicant's Cherry Street frontage. The access route should be a share-public use easement area and should be recorded with the applicant's filing of the final plan with the Recorder of Deeds. We have included an annotated graphic illustrating these issues along Cherry Street and recommend the township work to ensure an effective public access route to the Schuylkill Riverfront and the trail is achieved. We believe the riverfront in the area shared with the borough can become an important destination for both apartment dwellers and residents of both municipalities. These and other issues are discussed below.

COMMENTS

1. **Schuylkill Riverfront Open Space**
   a. *Ensuring great access to the riverfront and trail*
   One of the key goals of redevelopment projects within the Riverfront Development Overlay District according to Section 116-278, is to " . . . recognize the unique character and natural resources of the Schuylkill Riverfront and to preserve and enhance the public's access to the area." We believe a key ingredient for the success of the riverfront as a destination is an attractive and pedestrian-friendly streetscape environment along Cherry Street. As mentioned above, we raised concerns to the borough regarding the perpendicular parking arrangement proposed along the +/- 550-ft. length between Washington Street and the riverfront trail. A narrow 5-ft. sidewalk setback approximately 6-8 ft. from a building is proposed for this distance. A well-designed streetscape with a wider 8ft.-

wide sidewalk is needed, along with shade trees, to create a high-quality walking environment. We offered our site planning comments regarding public access to the riverfront amenities to the Borough of Conshohocken (illustrated below). We encourage the township to collaborate with the borough to ensure that Cherry Street is redeveloped along the applicant's frontage in a manner which supports attractive, pedestrian-friendly streetscape environment.



Riverfront Pedestrian Access & Trail Issues from January 11, 2022 MCPC Review Letter to Borough of Conshohocken

b. *Riverfront Trail* -- Section 105-47.K.(3)

The township's regulations for pathways in the RDD district require a 10-ft.-wide "red-shale, macadam pathway" along the riverfront. The applicant should ensure that the proposed riverfront pathway satisfies this requirement. Since two-thirds of the riverfront trail is situated in Whitemarsh Township, we recommend that the applicant use the red-shale macadam for the entire riverfront trail within the development tract.

c. *Riverfront amenities & signage to the Schuylkill Riverfront amenities*

We believe the riverfront trail could be improved with the addition of other amenities that could make the riverfront area a more attractive destination. A directional and wayfinding signage plan is needed for public orientation on how the riverfront area can be used. Other amenities that would be useful include a water fountain that also could serve dogs, riverfront-wayfinding stations, and an art installation. We suggest the applicant consider site-specific interpretive panels or art murals depicting some of the 19th century industrial heritage of the Conshohocken and Spring Mill riverfront.

2. Residential Development within the Schulykill River Floodplain

After the disastrous impacts suffered by Schuylkill Riverfront municipalities from the flooding and storms associated with Hurricane Ida on Sept 1-2, 2021 we understand that municipalities are eager to avoid a similar scenario that resulted in extensive damage to properties along the Schuylkill Riverfront and floodplain. The applicant is required to work with both Conshohocken Borough and Whitemarsh Township to ensure that an effective evacuation plan for residents and their pets is established.

According to the decision of the Whitemarsh Township Zoning Hearing Board decision, one of the conditions is that an on-site (24/7) representative of the owner(s) or management company is required and will be responsible for the implementation of the Emergency Action Plan. In addition, the township's land development code, Section 116-282.F. - Off-Street Parking and Loading regulations requires the applicant to provide a parking evacuation plan, subject to the approval of the Whitemarsh Township Supervisors. The applicant should provide both of these plans to the township for approval.

In addition, we recommend the applicant provide the evacuation plan to all new residents and disclose the risks associated with living within the Schuylkill River's 100-year floodplain as well as the need for residents to heed and act on all evacuation orders or risk the potential loss of life and property. We believe this disclosure and blunt statement is needed in light of the catastrophic damages associated with Hurricane Ida. Given the extent of surface parking lots and accommodation of vehicles, we recommend the applicant coordinate with the township to consider alternative parking locations in case of a flood event that may damage vehicles in the surface parking areas.

3. Surface Parking Lot Comments

a. *Sidewalks – width at Building #4's parking lo*t.

The width of the sidewalks bordering the parking lot of Building #4 appear to vary in width. The walkway closest to the building is 5 ft. in width and the outer sidewalk appears less than ½ this width. Section 105-47.B requires a minimum width of five feet for all sidewalks. The applicant should ensure that all sidewalks comply with the township's sidewalk requirements.

b. *Sidewalk connections needed to Schuylkill Riverfront Trail*.

The sidewalks along apartment Building #4's surface parking lots and building facades (within the township's portion of this development) are not directly connected and accessible -- without walking in the stabilized turf area -- to the Schuylkill Riverfront Trail, the development's chief amenity. The

sidewalks appear to end abruptly at the end of the parking bay. The applicant should connect these walkways with the trail for the safety and convenience of residents.

c. Electrical Vehicle Charging Stations

The plan shows the required electrical vehicle (EV) charging stations in the surface parking lot as required by Section 116-188.3 Electric Vehicle Charging Stations. The applicant should provide the required stations and ensure that the plan fully addresses all of the EV charging station requirements, including: the location, the minimum number, minimum ADA- accessible stations, accessible routes, and EV charging station signage. The township may wish to collaborate with the Borough of Conshohocken to ensure that these requirements are fully addressed.

d. ADA- Accessible Parking Spaces

It appears the applicant has designated only 16 - ADA spaces for the 598 dwelling units proposed in this residential community. Each of the buildings have 2 ADA spaces under the structure and 2 spaces located immediately outside the building. It is unclear whether this adequately addresses the need or requirements for ADA accessibility for a community of this size. While all of the ADA parking spaces lie outside the township boundary, it is incumbent on both municipalities to ensure that ADA accessibility is provided for residents. We recommend the applicant indicate the location of the public leasing office, as this would be a priority area to provide proximate ADA spaces. Additionally, the plan does not show where the ADA van-accessible parking spaces are located. These spaces are dimensionally different, and the applicant should provide the township with details on their location. We recommend the applicant ensure that the site plan fully addresses the latest requirements of the International Building Code and associated ANSI standards for ADA parking and accessibility to public facilities.

2. Chapter 55 of the Township Code - Tree Preservation and Landscape Plan

a. *Tree Preservation along the Schuylkill River's embankment*

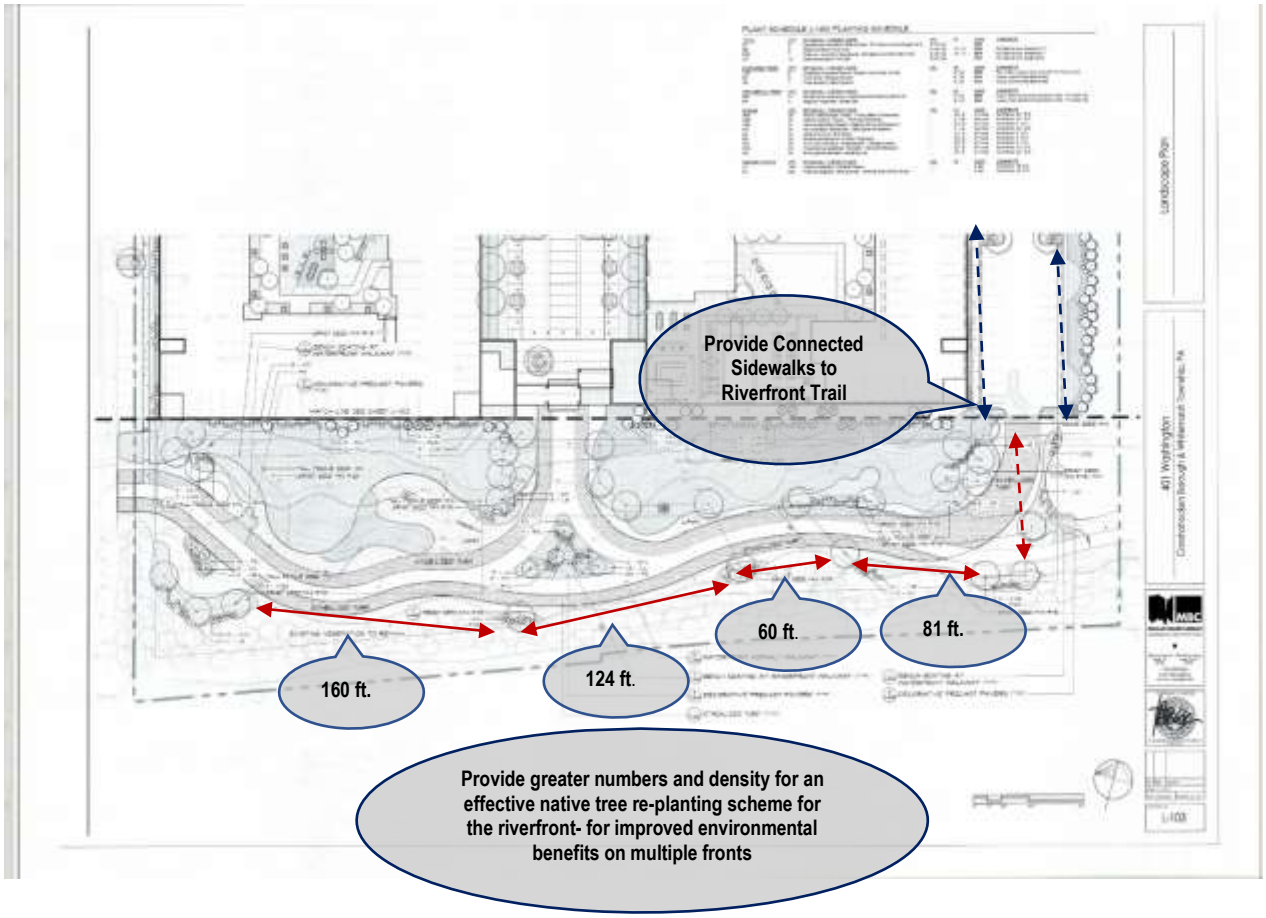
The applicant has received a variance that permits the clearing of vegetation within the Riparian Corridor Conservation District. After a review of the applicant's Tree Survey Plan, we have concerns regarding the limits of disturbance along the riverbank and what trees may be either removed or impacted. (Sheet- TSP-1, Colliers Engineering & Design). Notwithstanding the variances, we recommend the applicant ensure to the greatest extent feasible that the native river floodplain trees along the river's embankment area will not be disturbed and their root areas protected as required by the regulations stated in Chapter 55 of the Township Code. The trees in this area and their root systems are essential natural erosion control devices and protect the integrity of the riverbank and the floodway fringe. The applicant may require authorization from Department of Environmental Protection's (DEP) Chapter 105 Permitting Program for the proposed activity, and encourage them to contact DEP for additional details. We recommend the applicant work with the township and its Shade Tree Commission to preserve and further enhance the tree canopy lining the riverbank.

There appear to be some differences regarding the extent of tree preservation shown in the applicant's Tree Survey Plan (sheet- TSP-1, by Colliers Engineering & Design) and the landscape architect's Landscape Plan for the riverfront area (L-103, MBC LA). We recommend the township seek clarification

regarding tree removal in this area and strive to preserve the integrity of the tree canopy along the riverbank.

b. Additional Tree Plantings Needed and Resiliency of the landscape Improvements in the Floodway Fringe

1. Additional Plantings- The landscape improvements plan in this area provides limited improvements with very widely separated tree plantings along the riverfront trail, as shown by the attached graphic. The landscape plan proposes several groupings of trees and shrubs in this area, but we believe additional plantings are needed for a denser and perhaps a more naturalistic scheme. As shown in the plan, some of the proposed trees and shrub grouping are between 60 ft-120 ft. apart. We recommend the applicant provide the township with a denser planting scheme, as it will yield a shaded walkway and provide a more attractive and environmentally beneficial improvement along the riverfront.
2. Landscape resiliency- The applicant should ensure that the landscape design and plantings selected demonstrate resiliency to the ever-increasing frequency of flooding along the Schuylkill River. There is growing evidence that the unprecedented destructive flooding that occurred along the Schuylkill River and its floodplain from the remnants of Hurricane Ida in September, 2021 may not be a once in a century event. We recommend that the proposed landscape plans be assessed with this consideration in mind.



CONCLUSION

Please note that the review comment and recommendation contained in this report are advisory to the municipality and final disposition for the approval of any proposal will be made by the municipality.

Please be aware that the MCPC #21-0327-002 has been set aside for the applicant' plan. If any subsequent plans are submitted for final recording, this MCPC number should appear on the applicant sheets within the plans in the box reserved for the seal of this agency.

Should the governing body approve a final plat of this proposal, the applicant must present the plan to our office for seal and signature prior to recording with the Recorder of Deeds office. A paper copy bearing the municipal seal and signature of approval must be supplied for our files.

Sincerely,

Barry W. Jeffries

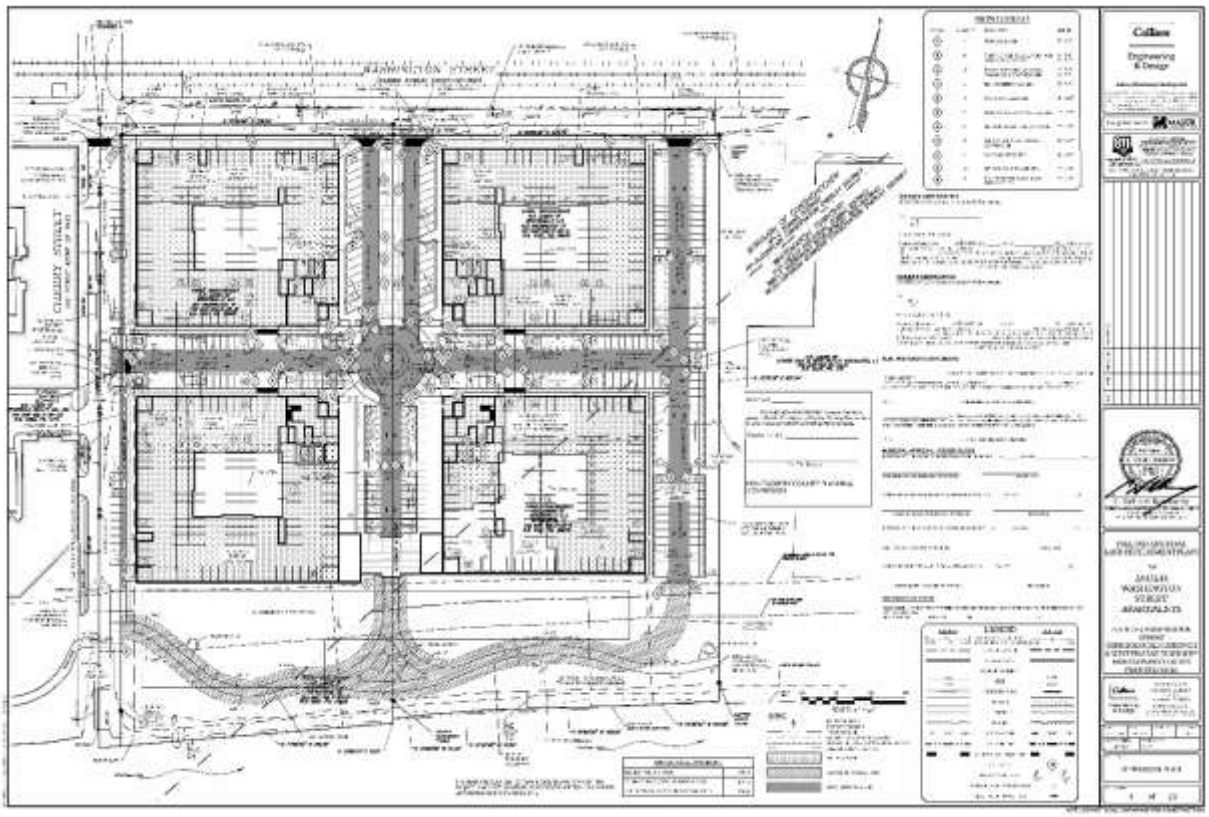
Barry W Jeffries, ASLA, Senior Design Planner
bjeffrie@montcopa.org - 610-278-3444

c: Chair, Whitemarsh Township Planning Commission
Krista Heinrich, PE, Whitemarsh Township Engineer
David Sander, Esq., Whitemarsh Township Solicitor
Stephanie Cecco, Conshohocken Boro Manager

Attachments: Aerial & Site Plan

401/433 Washington Street Apartments
MCPC #210327002

Montgomery County Planning Commission
Montgomery County Courthouse - Planning Commission
PO Box 311 • Norristown PA 19404-0311
(p) 610.278.3722 • (f) 610.278.3941
www.montcopa.org/plancom
Aerial photography provided by Nearmap.



Whitemarsh TOWNSHIP

616 GERMANTOWN PIKE - LAFAYETTE HILL, PA 19444-1821
TEL: 610-825-3535 FAX: 610-825-9416
www.whitemarshtwp.org

BOARD of SUPERVISORS

Laura Boyle Nester – Chair
Fran McCusker – Vice Chair
Vincent Manuele
Jacy Toll
Patrice Turenne

Richard L. Mellor, Jr.
Township Manager

February 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
Preliminary Final Major Land Development – 598 Unit Apartment Building
Zoning Ordinance Compliance Review Letter

Dear Mr. Chrismer:

Please accept this as a review of the Zoning Ordinance Compliance issues 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 no noted revisions; an architectural set by Barton Partners dated December 3, 2021 with no noted revisions; and landscape and lighting plans by Melillo-Bauer-Carman also dated December 3, 2021 with no noted revisions.

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.

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.

3. §116-29. The applicant must obtain the approval of the Whitemarsh Township Authority with regard to proposed sanitary sewer facilities.

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.

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.

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.

7. §116-165. The Zoning Hearing Board in case ZHB# 2021-48, on November 15,2021 granted the applicant a variance to permit non-residential structures within the Floodplain Conservation District.

8. §116-166.A.(3) The Zoning Hearing Board in case ZHB# 2021-48, on November 15,2021 granted the applicant a special exception to permit a stormwater retention basin within the floodway.

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.

10. §116-166.C. Any new construction must be in full compliance with 44 CFR 60.3(a) through (d) of the National Flood Insurance Program regulations. These regulations require that all new construction and substantial improvements 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 with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. A registered 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.

11. §116-184.F. 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.)

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.

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 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.

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.

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 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.

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.

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.

18. §116-279.B.(3) If a structure is otherwise permitted by 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.

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.)

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 as required by § 116-284 herein.

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.

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.

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.

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.

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.

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.

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.
    (b) Benches, trash receptacles, bicycle racks and other street furniture in a style approved by the Board of Supervisors.
    (c) Wide sidewalks and other pedestrian amenities, landscaping, shade trees.
    (d) A variety of pavement materials for street surfaces and sidewalks.
    (e) Planting strips, located between the curb and sidewalk.

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.

29. §116-284.D. Public riverfront access is required in accordance with Chapter 105, Subdivision and Land Development § 105-47.K.

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.

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.

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.
All of the relief granted by the Zoning Hearing Board in this case, and all conditions imposed, must be added to the plans.

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

Encls.: Fire Marshal Review Memo 1.13.2022

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
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

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

February 21, 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:

- 23-Sheet Plan prepared by Colliers Engineering & Design and dated October 29, 2021 with no noted revisions
- Post Construction Stormwater Management (PCSM) plan narrative prepared by Colliers Engineering & Design and dated December 3, 2021 with no noted revisions
- Various supporting documents, forms and correspondence enclosed with the application

The following comments are offered for your consideration:

The applicant is requesting waivers and/or relief from the requirements of the following sections of the ordinance:

1. 105-21(B)(9)(c)[1][a] The applicant is requesting a waiver from the requirements of this section of the ordinance to not require a transportation impact study (TIS) be prepared for the proposed development in accordance with the requirements contained in this section of the ordinance. It is our understanding that similar relief, through amendment of the settlement agreement between the Borough and Applicant, from the requirement to provide a traffic study was requested from Conshohocken Borough. The Settlement agreement indicates that a TIS was prepared by the Borough's consultant. The granting of any waiver should be conditioned that the applicant provide a copy of the TIS, and that the TIS shall be updated, if necessary, to meet the requirements of 105-21(B)(9).

2. 105-21.1(K)(2) The applicant is requesting a waiver from the requirements of this section of the ordinance to not require the provision of a traffic impact fee. 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. Based on data documented within the latest edition

	Section	Description
	105-21.1(K)(2) (con't)	of the ITE Trip Generation Manual, the 60 units in Whitemarsh Township can be expected to generate 24 trips during the PM peak hour. The resultant Traffic Impact Fee calculation for a development situated in the South Transportation Service Area is calculated to be $60,696.00 (i.e., 24 PM peak hour trips x $2,529.00 per PM peak hour trip = $60,696.00).
3.	105-39(A)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires that all parking areas shall have at least one, three-inch-caliper tree for every two parking spaces provided.
4.	55-3(D)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that the removal of more than 50% of the trees on any lot shall not be permitted under any circumstance unless expressly permitted by the terms of this Code.
5.	55-4(B)(6)(f)[1], 55-4(B)(6)(f)[2], 55-4(B)(6)(f)[3]	The applicant is requesting a waiver from the requirements of these sections of the ordinance, which state that: [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. [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. [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.

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

	Section	Description
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 • PCSM Plans P1 - P6 • Landscape Plans (10 Sheets)
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 drains, culverts, bridges, utility easements, quarries, railroads, and other significant man-made features within 500 feet of and within the site, including properties across streets.
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.

	Section	Description
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.
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.
11.	105-21(B)(10)(b)	The applicant shall submit a letter from the appropriate municipal authority indicating the availability of central water supply.
12.	105-21(B)(12)	A map showing the location of the proposed subdivision within its neighborhood context shall be submitted.
13.	105-21(B)(13)	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.
14.	105-21(B)(15)	A Preliminary Resource Impact and 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.
15.	105-21(B)(17)(e)	The applicant shall submit a Community Association Document consistent with the requirements of this section of the ordinance.
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.
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.
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.
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.

	Section	Description
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.
21.	105-40, 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.
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 compliant 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.
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: (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. (2) There must be at least one access to the river. Access points must be located no more than 500 feet apart. (3) A red shale macadam pathway with a minimum of 10 feet in width shall be provided and separated from any vehicular traffic. (4) At least one seating area shall be provided along each access. (5) Lighting fixtures shall be installed along the pathway and shall be of a style as approved by the Board of Supervisors. (6) The access shall contain appropriate signage to direct pedestrians to the river in accordance with Chapter 116, Zoning, § 116-286B(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.
25.	105-52	Buffer yards are required between land developments to soften visual impact, 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.

	Section	Description
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 applicant should provide evidence in sufficient detail to the Board of Supervisors in order to demonstrate that sufficient screening will be provided.
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.
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%.
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.
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.
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.
32.	105-78	The applicant must obtain the approval of the Whitemarsh Township Authority with regard to proposed sanitary sewerage facilities.
33.	105-78(C) 105-79	All preliminary plan submissions shall include a completed sewage facilities planning module (the planning module) for land development provided by DEP.
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.
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.

	Section	Description
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 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.

CHAPTER 55 - TREE PROTECTION STANDARDS

	Section	Description
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.
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 planting provided to meet those requirements.
39.	55-4(A)(4)	The tree survey plan shall be reviewed by the Shade Tree Commission in a public meeting.
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.
41.	55-4(B)(6)(a)	This section of the ordinance requires that every 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, measured at 6 inches above the ground line, shall equal or exceed the DBH of the tree removed.
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.

GRADING, EROSION CONTROL, STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES ORDINANCE:

	Section	Description
43.	58-4(B)(2)(l)	The plans appear to show the Limit of Disturbance extending over the property line onto the property at 501 Washington St, which must be revised.
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. • 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.
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.
46.	58-4(B)(3)	The proposed topsoil stockpile area must be relocated 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.
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.
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.

	Section	Description
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.

RESOLUTION 2004-8:

	Section	Description
51.	I(B)(4)(k)	Edges of slopes shall be a minimum of five feet from property lines or right of way lines.
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.
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, Pennsylvania Department of Environmental Protection and approved by the Township.
54.	I(C)(6)	Fills placed 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, and the Township.
55.	II(B)(16)	The applicant must submit legal descriptions for any proposed rights-of-way, easements, or lands to be offered for dedication.
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.
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 for review.

	Section	Description
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 address groundwater displacement and buoyancy considerations for Basin A.

ADDITIONAL COMMENTS

59. 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.

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.

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

WHITEMARSH TOWNSHIP ZONING HEARING BOARD

DECISION AND ORDER

APPLICATION NO.: 2021-48
APPLICANT: KRE Acquisition Corp.
Block 012, Units 010 and 018
401 and 433 Washington Street
Conshohocken, PA 19428
HVY – Heavy Industrial District
RDD-1 – Riverfront Overlay District, Sub-District 1
Floodplain Conservation Overlay District
Riparian Corridor Conservation Overlay District

FIRST HEARING DATE: 10/06/21
CONT'D HEARING DATE: 11/03/21
VOTE: 11/03/21
WRITTEN DECISION: 11/15/21
COPY MAILED: 11/15/21

The Applicant proposes to construct a 598-unit residential apartment complex in four buildings at 401-433 Washington Street located in both the Borough of Conshohocken and Whitemarsh Township. The entire project site is approximately 11.2 acres in size. The 401 and 433 Washington Street properties are approximately 5.4 acres and 5.6 acres, respectively. Sixty (60) residential units and part of a nonresidential space will be located in the approximately 2.9 acres of the property in Whitemarsh Township.

After completion of a public hearing on the above-referenced Application, pursuant to public notice as required by law, the Zoning Hearing Board of Whitemarsh Township decided and orders as follows:

1. A variance from Section 116-165, so as to permit nonresidential structures within the Floodplain Conservation District, is **GRANTED**.

2. A variance from Section 116-260, so as to permit the clearing of vegetation, installation of parking lots, roads, driveways, fences, and stormwater basins within the Riparian Corridor Conservation District, is **GRANTED**.

3. A special exception from Section 116-166.A.(3), so as to permit a stormwater retention basin within the floodway, is **GRANTED**.

4. A special exception from Section 116-166.B.(3), so as to permit utilities, public facilities, and improvements such as streets, transmission lines, pipelines, water lines and similar uses in the floodway fringe, is **GRANTED**.

5. A variance from Section 116-281.A.(9), so as to permit a 125' wide area of riverfront land offered for dedication to be included in the maximum building and impervious ground cover calculations, is **GRANTED**.

6. The request for a variance from Section 116-284.E, so as to permit the location of the approximately 35' wide public riverfront access bisecting the proposed project, where such access would intersect with the Schuylkill River within Whitemarsh Township but not extend to any public right-of-way within Whitemarsh Township, was withdrawn.

7. The request for a variance from Section 116-280, so as to permit less than 2% of the footprint of the Project within Whitemarsh Township to contain a permitted nonresidential use, was withdrawn.

8. The requests for interpretations under Sections 116-165, 116-260 and 116-284.E are not required.

THIS DECISION IS SUBJECT TO THE FOLLOWING CONDITIONS:

1. All use and development permitted by this Decision shall substantially conform to the exhibits and testimony presented by the Applicant, unless inconsistent with any specific conditions imposed by this Board, in which case these specific conditions shall take precedence.

2. The Applicant shall apply for and obtain all permits required by the Township Codes in a timely manner.

3. The Applicant shall comply with all requirements of the Township Engineer as set forth in the Memo dated September 23, 2021, and all requirements of the Township with respect to the land development process, except to the extent expressly waived by the Board of Supervisors.

4. The Applicant shall comply with all requirements of the National Flood Insurance Program related to construction in the floodplain, and all requirements of the Township Engineer as related to development in the floodplain and riparian corridor.

5. The Applicant shall develop and submit to the Township an Emergency Action Plan and comply with all requirements of the Township with respect to the contents of the Plan; such shall also be updated at least annually or as otherwise required by the Township.

6. As part of the Emergency Action Plan, the Applicant, and all owner(s) of the property, shall provide for transportation to offsite parking facilities in the event that residents' cars are required to be moved during an emergency situation.

7. The Applicant, and all owner(s) of the property, shall cause at least one (1) employee of the owner(s) (or the owners' management company) to live as a resident in the project, which employee shall have the responsibility of facilitating the implementation of the Emergency Action Plan.

As required by Section 116-227.D of the Zoning Ordinance, the Applicant is on notice that:

Certain relief from floodplain regulations may result in increased premium rates for flood insurance and/or may increase the risks of life and property. The development and use of the property in the floodplain are entirely at the risk of the Applicant/Owners.

This Decision and Order of the Board is final and any appeal of it must be filed with the Court of Common Pleas of Montgomery County within thirty (30) days following the copy mailing date set out above.

The Board reserves the right to issue Findings of Fact and Conclusions of Law in the event of an appeal.

Section 116-223 of the Zoning Ordinance provides as follows:

Expiration of granted appeals. Unless otherwise specified by the Board, all approvals granted by the Zoning Hearing Board shall automatically expire 365 days after the date of the decision unless: (1) the applicant has acted upon the approval by obtaining the required permit(s) and paying the prescribed fees for same, or (2) the Zoning Hearing Board decision is on appeal to the courts, at which point, the approval, if upheld on appeal, shall expire 365 days after final determination on appeal.

The Zoning Hearing Board may extend the expiration date of approvals for a 180 day period upon request by the applicant, provided that the applicant is, in the opinion of the Zoning Hearing Board, diligently pursuing governmental and/or regulatory approvals as required. Requests for extensions shall be in writing and submitted to the Zoning Hearing Board at least 30 days before any applicable expiration date. Only one (1) extension may be provided for any application.

No. 2021-48
WHITEMARSH TOWNSHIP ZONING HEARING BOARD:

Robert A. Bacine, Chair

William E. Kramer, Vice Chair

Marc Weinstein

Stanley A. Casacio

James Behr

Randi Rubin

KRC

SETTLEMENT AGREEMENT

This Settlement Agreement and Release ("Agreement") is made and entered into by and between 401 Washington Street Associates, L.P. ("401"), Washington Street Associates III, L.P. ("WSA III" and collectively with 401, "WSA") and the Borough of Conshohocken (the "Borough" and collectively with WSA, the "Parties") this 22ND day of October, 2014.

BACKGROUND

The 401/433 Dispute

1. 401 is the record owner of certain real property located at 401 Washington Street in the Borough of Conshohocken (the "401 Property").

2. WSA III is the record owner of certain real property located at 433 Washington Street in the Borough of Conshohocken (the "433 Property" and collectively with the 401 Property, the "Property.")

3. WSA proposes to develop approximately 600 multi-family residential dwelling units, parking, certain amenities and related facilities at the Property (the "Development").

4. On or about June 28, 2013, 401/433 submitted an application (the "Conditional Use Application") to the Borough requesting conditional use approval to allow construction of the certain improvements and stormwater facilities at the 401/433 Property located in the floodway pursuant to Article 17 of the Conshohocken Zoning Ordinance.

5. In particular, 401/433 requested conditional use for: a) the installation of stormwater outfalls into the Schuylkill River (the "River") pursuant to §27-1705.5(D); b) permission to grade and/or regrade land, including the deposit of topsoils and the grades in relation to the installation of the improvements and the stormwater facilities pursuant to §27-1705.5(F);

and c) the installation of utility lines related to the installation of the improvements and stormwater facilities pursuant to § 27-17505.5(G).

6. The Borough Council of the Borough of Conshohocken ("Council") convened a hearing on August 21, 2013 with regard to the 401/433 Application.

7. On or about October 16, 2013, Council voted to deny the 401/433 Application (the "Denial").

8. 401/433 filed a timely appeal from the 401/433 Denial in the Court of Common Pleas of Montgomery County which is docketed at 2013-33624 (the "Appeal").

9. Notwithstanding the Denial and subsequent Appeal, WSA continued to pursue certain land development approvals necessary for the Development.

10. On or about November 20, 2013, the Borough granted preliminary land development approval for the Development (the "Preliminary Approval") prepared by Right Angle Engineering, dated May, 2013 (the "Preliminary Plans"). For demonstrative purposes, page 3, entitled "Overall Site Plan" of the Preliminary Plans is attached hereto as Exhibit "A".

11. The Preliminary Plans proposed, among other things, 619 multi-family residential units.

12. The Preliminary Approval Plans were approved subject to conditions outlined in a December 11, 2013 letter to WSA by the Borough's solicitor, Michael Savona.

13. Thereafter, WSA submitted an application for final land development which included plans prepared by Right Angle Engineering, with a last revision date of April 4, 2014 (the "Final Plans"). For demonstrative purposes, page 4 of the Final Plans, entitled "Overall Site Plan" is attached hereto as Exhibit "B."

14. The Final Plans reflected the conditions imposed as part of the Preliminary Approval.

15. The Final Plans proposed 602 multi-family residential units.

16. The Final Land Development Plans were reviewed by:

a. The Montgomery County Planning Commission by virtue of their letter dated May 22, 2014

b. The Conshohocken Planning Commission at their May 27, 2014 and August 24, 2014 meetings.

c. The Conshohocken Borough Engineer by virtue of their letter dated May 22, 2014.

d. The Conshohocken Borough professional planner, KSK, by virtue of their letter dated June 24, 2014.

17. In response to the aforementioned reviews, WSA submitted revised the Final Plans, prepared by Right Angle Engineering, with a last revision date of August 29, 2014, which among other things, reduced the number of proposed residential dwelling units to 598 and eliminated above ground rain gardens in order to maximize the utility of riverfront open space, (the "Revised Final Plans). For demonstrative purposes, pages 4 and 5 of the Revised Final Plans entitled "Overall Site Plan" is attached hereto as Exhibit "C."

TERMS OF THE SETTMENT

18. The Parties desire to avoid the cost and expense of additional litigation relating to the Disputes and have agreed to settle and release all claims they may have against each other and execute this Agreement in order to memorialize the terms of this Agreement.

19. Final land development approval, including all waivers, zoning relief, conditional use approval and all other Borough approvals necessary for the Development of the Property consistent with the plans attached hereto as Exhibit "C" ("the Plan") is hereby granted and approved by Borough Council, subject to all of the terms and conditions set forth under this

Agreement. As a part of this approval, the final record plans are hereby approved for recording upon final review and approval by the Borough Engineer and Borough Solicitor.

20. WSA shall pay a general impact fee to the Borough in the amount of $2,510.00 per residential dwelling unit (the "Impact Fee"). These Impact Fees will be paid at the time a building permit is issued for vertical construction of the proposed residential building. For example, when a building permit is issued for vertical construction of a building that will contain 150 residential units, an Impact Fee of $376,500.00 will be paid.

21. The requirements of section 804 of the Borough's Subdivision and Land Development Ordinance (the "SALDO") for the Development and the Property are satisfied pursuant to the proposed offer to dedicate riverfront land to the Borough or an easement for the public's benefit on such property. The respective landowners shall retain the obligation to maintain such land. The dedication provided under this paragraph shall be in the form of a fee simple conveyance of the riverfront portions of the Property located in the Borough from WSA to the Borough. To the extent that subdivision of the required riverfront property is required, such subdivision is approved under the terms of this Agreement, subject to final review and approval of an appropriate minor subdivision plan for each conveyance by the Borough Engineer and Borough Solicitor.

22. WSA will convey easements to Borough across the Property in order to confirm public access to the riverfront areas and riverfront trails.

23. WSA agrees that it shall modify the Plan to include the construction of certain public amenities on the riverfront land to be dedicated to the Borough. The public amenities shall include an elevated wooden boardwalk walkway, not less than ten (10) feet wide and running the entire width of the Property, to be located at or near the top of the bank of the Schuylkill River, as well as a floating walkway, similar to the boat launch located at the Conshohocken Rowing Center, to be used for pedestrian access only, subject to the following conditions: 1) The

exclusion of additional impervious coverage from zoning calculations; 2) The waiver of any requirement to obtain conditional use as these will be Borough amenities; 3) Approval from DEP and/or the Army Corps of Engineers as applicable; 4) Final design approval of the boardwalk and pedestrian river walk by the Borough on or before January 31, 2015; 5) Subject to outside agency approvals, Public Amenity construction must be commenced during construction of the first phase of development, however commencement of construction of phase one improvements shall not be delayed by the construction of any public amenities; and 6) WSA shall be given full credit for the cost of the construction of the public amenities under this paragraph against the payment of any general impact fees under paragraph 20. In no event shall the costs of the public amenities exceed the total impact fees under paragraph 20.

24. WSA, its successors or assigns, shall agree to accept bids for the construction of any and all improvements at the 401 and 433 Properties on an open shop basis.

25. WSA will revise the Plans to demonstrate that any and all storm water which is proposed to be discharged from the Property into the Schuylkill River shall first be captured and cleaned by appropriate and acceptable storm water best management practices, approved by the Borough Engineer, prior to discharge into the Schuylkill River

26. WSA agrees that no less than 50 of the residential units proposed for the 401 Property and 50 of the units proposed for the 433 Property will be furnished and made available for rental as hotel and/or "extended stay" products.

27. WSA will include green development initiatives in the construction of the buildings on the 401 Property and 433 Property, such as LED light bulbs, use of recycled/sustainable insulation and other building materials and supplies, bike racks, electric vehicle charging stations and other similar green development features.

28. The Development will proceed in two phases, each phase comprising approximately 300 residential units. Building permits for construction for the second phase of

approximately 300 residential units shall not be issued before October 1, 2017.

29. The Borough acknowledges that WSA (and its affiliates) have paid the total sum of $35,000.00 to reimburse the Borough for the cost of that comprehensive traffic study prepared by Pennoni Associates, Inc. at the request and direction of the Borough of Conshohocken and summarized in a memorandum from Pennoni Engineer Brian R., Keaveney, PE, PTOE to Borough Manager Fran Marabella and dated October 2, 2013 (the "Global Traffic Study"). This payment, in conjunction with the Impact Fees discussed above in paragraph 20, will satisfy the requirement for any traffic study and all off-site traffic improvements needed for future development at the Property and the balance of development at Millennium Bock A, provided that any development of Millennium Block A proceeds as a non-residential use and that permits for construction are obtained not more than thirty-six (36) months from the date of this Agreement. The Borough will provide each of the OPG related entities with complete and full copies of all records, studies and reports prepared by the Borough's Traffic Engineer.

30. To the extent that the Global Traffic Study recommends the design, permitting, purchase, construction and installation of a Global Traffic Light Traffic Adaptive Signaling ("TAS") within the Borough and/or in neighboring municipalities, at the Borough's request, the WSA shall design, permit, purchase, construct and install TAS systems at intersections directed by the Borough within twenty-four (24) months of the date of execution of this Agreement. Such work shall be done in conjunction with the Borough and subject to PennDOT permitting and design requirements and standards. WSA shall receive a credit for all such work against Impact Fees due under this Agreement. In no event shall the combined public amenities under paragraph 23 and the TAS systems under this paragraph exceed the total impact fees under paragraph 20.

31. The Parties agree that the approvals referenced above in paragraph 19 shall be submitted to the Court for approval pursuant to a stipulation between the Parties.

32. This Agreement shall be construed, governed and enforced under the laws of the

Commonwealth of Pennsylvania.

33. This Agreement is an integrated agreement containing the entire understanding among the Parties regarding the matters addressed herein, and, except as set forth in this Agreement, no representations, warranties, or promises have been made or relied upon by the Parties to this Agreement. This Agreement shall prevail over prior communications regarding the matters addressed herein.

34. This Agreement shall be binding upon and inure to the benefit of the Parties and their respective heirs, successors, executors, trustees, administrators and assigns.

35. To be effective, any modification of this Agreement must be in writing and must be executed by all Parties hereto, and approved by the Court.

36. The provisions of this Agreement are severable and if any provision is held to be unenforceable or invalid, it shall not affect the validity or enforceability of any other provision.

37. The Parties shall each pay their own expenses and legal fees in respect of the Litigation and the negotiation and execution of this Agreement.

38. Nothing contained in this Agreement shall preclude the Parties from initiating legal action solely for the purpose of enforcing their rights under this Agreement.

39. This Agreement may be executed in counterparts, each of which shall be an original and all of which shall constitute one agreement. Facsimile signatures on this Agreement are and shall be enforceable for all purposes. The Parties executing this Agreement represent that they each have sole authority to prosecute, compromise and release any and all claims released by this Agreement and that none of said claims has been sold, assigned, conveyed or otherwise transferred to any other person or entity.

[Signatures appear on the following page.]

IN WITNESS WHEREOF, intending to be legally bound hereby, the parties have executed this Agreement the day and date first written above.

BOROUGH OF CONSHOHOCKEN

By: _____
RICHARD J. Manfredi, Manage

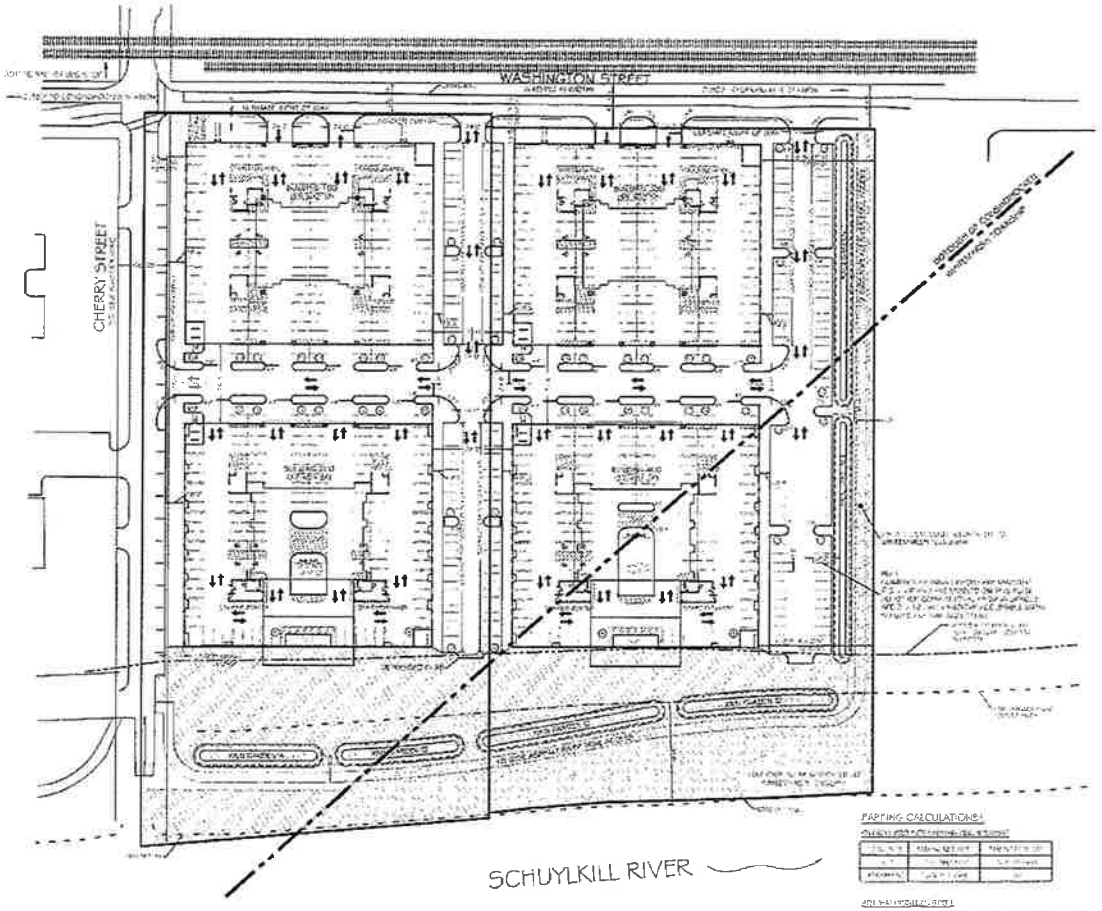
WASHINGTON STREET ASSOCIATES III, L.P.
By: Washington Street Associates III Acquisition Corporation

By: _____
Richard Heany, President

401 WASHINGTON STREET ASSOCIATES, L.P.
By: 401 Washington Street Associates Acquisition Corporation

By: _____
Richard Heany, President

EXHIBIT A



CONSHOHOCKEN BOROUGH ZONING DATA:

WHITEMARSH TOWNSHIP ZONING DATA:

PARKING CALCULATIONS:

BUILDING SITE DATA:

FLOOR AREA RATIO CALCULATIONS (CONSHOHOCKEN §27-1606.2.A):

GRAPHIC SCALE

RIGHT ANGLE ENGINEERING

PRELIMINARY/FINAL PLAN SUBMISSION

OVERALL SITE PLAN

for: WASHINGTON STREET ASSOCIATES

project: 401 & 435 WASHINGTON STREET, CONSHOHOCKEN BOROUGH & WHITEMARSH TWP.

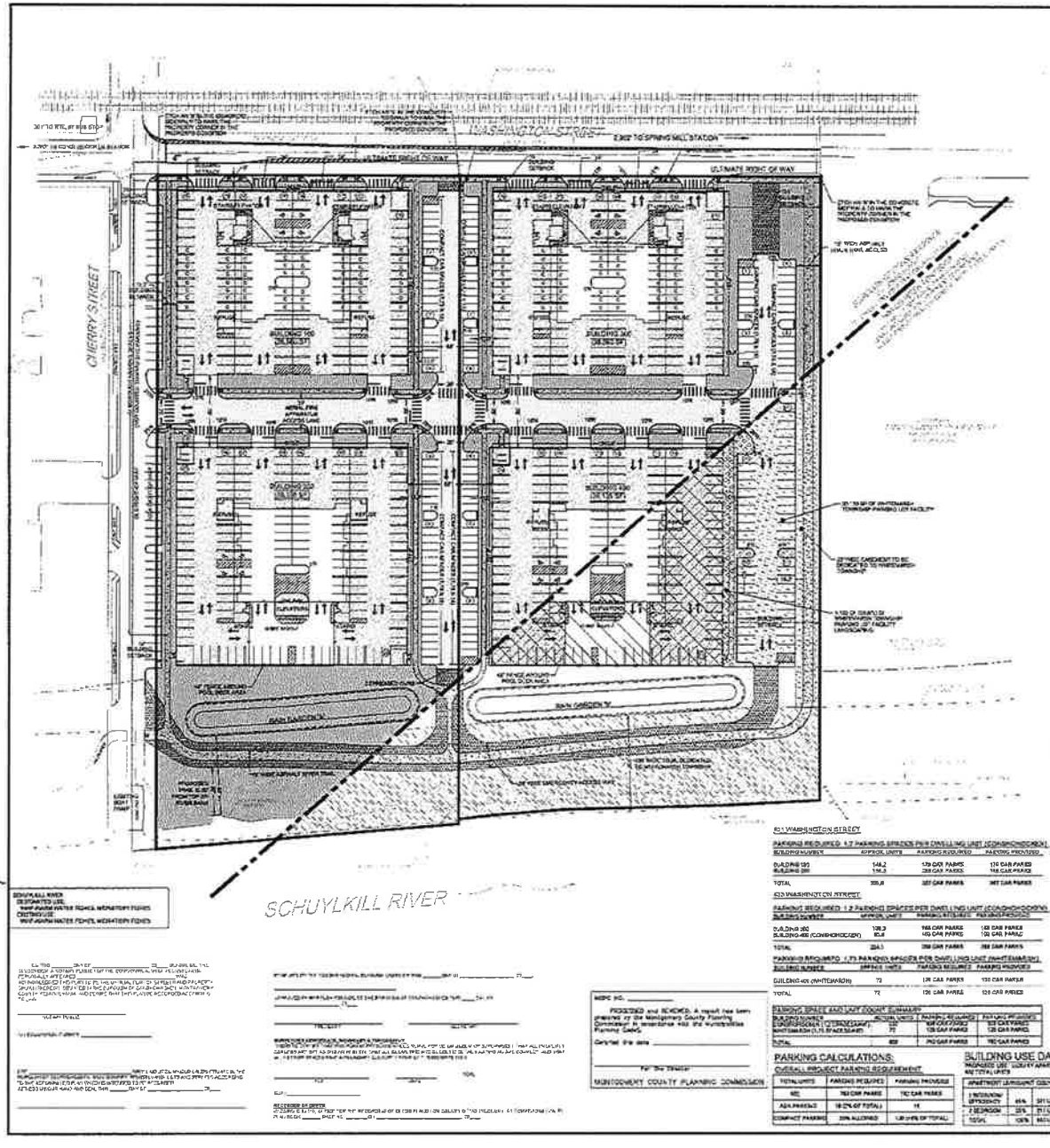
12.888.00

03

A 1/9/13

EXHIBIT

EXHIBIT B



GENERAL NOTES:

FLOOD PROOFING NOTES:

CONSHOHOCKEN BOROUGH ZONING DATA:

SPECIALLY PLANNED DISTRICT TWO (SP-2)

WHITEMARSH TOWNSHIP ZONING DATA:

HEAVY INDUSTRIAL OVERLAY (HIO) OVER KING ROAD SUD DISTRICT

FLOOR AREA RATIO CALCULATIONS (CONSHOHOCKEN 27-1511.3.2):

PARKING CALCULATIONS:

BUILDING USE DATA

IMPERVIOUS COVERAGE TABLE

PROPERTY	FEATURE	AREA (SF)	% OF LOT	TOTAL IMPERVIOUS % OF LOT AREA (A)
421	ASPHALT	49,837	25.11%	97.75%
	BUILDING	80,374	36.47%	
	CURBING	1,180	0.54%	
	SIDEWALK	10,421	5.79%	
	GREEN	99,841	50.39%	
433	ASPHALT	48,754	25.51%	99.44%
	BUILDING	80,308	45.29%	
	CURBING	2,284	0.95%	
	SIDEWALK	11,361	5.84%	
	GREEN	90,134	52.52%	

(A) THE LOT AREA OF 421 WASHINGTON STREET IS 419,557 SF AND THE LOT AREA OF 433 WASHINGTON STREET IS 87,978 SF.

100-YEAR FLOODPLAIN ENCROACHMENT TABLE

VOLUME OF IMPACT (AREA X DEPTH OF FLOODPLAIN)

FEATURE	AREA (SF)	DEPTH OF FLOODPLAIN (FT)	EXISTING VOLUME (CF)	CHANGE (CF)
BUILDING	23,949	0	29,679	-
BUILDING COLUMNS	488	6	-	2,810
LEASING OFFICE	3,251	6	-	19,288
POOL	1,264	6	-	6,318
REFUSE AREAS	2,352	6	-	11,760
STAIR TOWERS	4,704	6	-	13,704
WALLS	2,926	6	-	12,458
TOTAL	82,481		29,679	74,946

THE TOTAL ENCROACHMENT IS 7,000 CUBIC FEET MORE THAN THE EXISTING CONDITION. THERE WILL BE MORE FLOODPLAIN STORAGE VOLUME IN THE PROPOSED CONDITION.

LEGEND

HANDICAP RAMP
CONCRETE PAVING
CROSSWALK
TOWNSHIP LINE
WALNUT FLOODWAY BOUNDARY
ROW/CURB SETBACK FROM SCHUYLKILL RIVER
EDGE OF SCHUYLKILL RIVER
FENCE
CURB/RETAINING WALL
100' WIDE TO BE DEDICATED TO WHITEMARSH TOWNSHIP
25' WIDE PUBLIC RIVERFRONT ACCESS WITHIN WHITEMARSH TOWNSHIP
CONSHOHOCKEN OPEN SPACE
SIDEWALK
WHITEMARSH TOWNSHIP 4-STORY BUILDING (5,153 SF + 67,387)
WHITEMARSH TOWNSHIP 2-STORY BUILDING (5,153 SF + 33,743)
WHITEMARSH TOWNSHIP PARKING LOT FACILITY
WHITEMARSH TOWNSHIP PARKING LOT FACILITY - DEMOTED LANDSCAPING
HEAVY DUTY PAVING

THIS PLAN IS 50 SCALE

GRAPHIC SCALE

RIGHT ANGLE ENGINEERING

Right Angle Engineering, LLC
700 South Henderson Rd.
King of Prussia, PA 19406
Suite 202
Phone: (610) 205-1588

REVISED FINAL PLAN SUBMISSION

OVERALL SITE PLAN

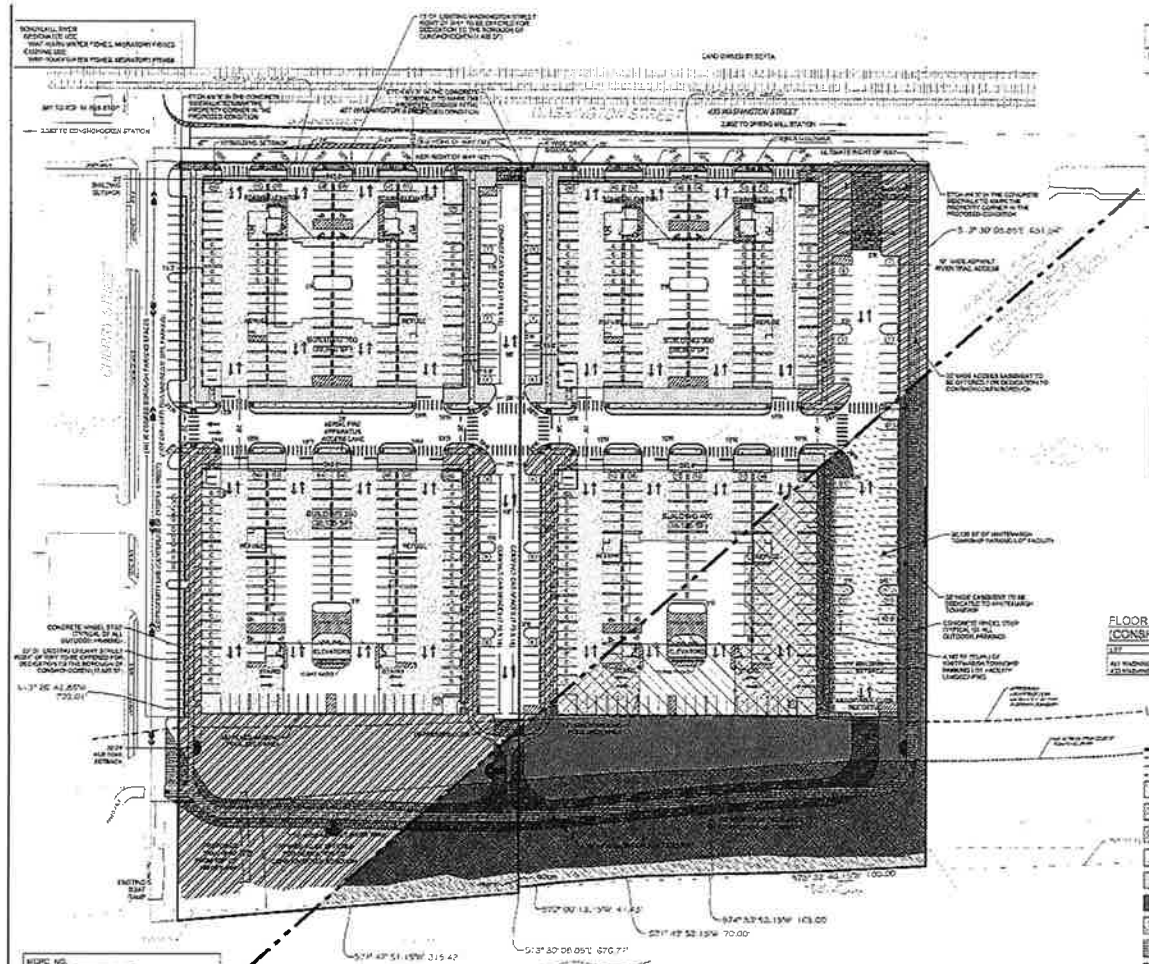
PROJECT: WASHINGTON STREET ASSOCIATES, L.P.
PROJECT: WASHINGTON STREET APARTMENTS
LOCATION: 401 & 403 WASHINGTON STREET
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP

DATE: FEBRUARY 1, 2023
SCALE: 1" = 50'
DRAWN BY: MHC
PROJECT NO.: 12.100.00
CAD FILE: OVERALL SITE PLAN.DWG
SHEET NO.: 04

NO.	DATE	BY	DESCRIPTION
6	2/1/23	MHC	PER FINAL LAND DEVELOPMENT APPROVAL
5	1/31/23	MHC	PER FINAL LAND DEVELOPMENT APPROVAL
4	1/31/23	MHC	CONSHOHOCKEN BOROUGH SUBMISSION
3	1/31/23	MHC	PER CONSHOHOCKEN BOROUGH SUBMISSION
2	12/16/22	MHC	PER CONSHOHOCKEN BOROUGH SUBMISSION
1	11/28/22	MHC	PER CONSHOHOCKEN BOROUGH SUBMISSION
NO.	DATE	BY	DESCRIPTION

31 1,191 x 23

EXHIBIT C



IMPERVIOUS COVERAGE TABLE

PROPERTY	FEATURE	AREA (SF)	% OF LOT AREA (a)	TOTAL IMPERVIOUS % OF LOT AREA (a)
401	ASPHALT	46,837	23.01%	67.59%
	BUILDING	83,304	39.47%	
	CURBING	1,168	0.24%	
	SIDEWALK	13,402	6.23%	
	GREEN	68,861	31.05%	
433	ASPHALT	62,750	25.31%	66.40%
	BUILDING	82,569	33.28%	
	CURBING	2,366	0.95%	
	SIDEWALK	17,287	6.97%	
	GREEN	83,151	33.54%	

(a) THE LOT AREA OF 401 WASHINGTON STREET IS 216,922 SF AND THE LOT AREA OF 433 WASHINGTON STREET IS 247,904 SF.

100-YEAR FLOODPLAIN ENCROACHMENT TABLE

VOLUME OF IMPACT (AREA X DEPTH OF FLOODPLAIN)

FEATURE	AREA (SF)	DEPTH OF FLOODPLAIN (FT)	EXISTING (CUBIC FEET)	PROPOSED (CUBIC FEET)
BUILDING	33,849	6	203,878	-
BUILDING COLUMNS	466	6	-	2,058
LEASING OFFICE	3,231	6	-	19,386
POOL	1,386	6	-	8,316
RESERVE AREAS	2,862	6	-	17,742
STAIR TOWERS	8,704	6	-	52,224
WALLS	2,876	6	-	12,438
TOTAL	53,481		203,878	112,919

DUE TO THE REDUCTION IN FLOODPLAIN ENCROACHMENT BETWEEN THE EXISTING AND THE PROPOSED CONDITION, THERE IS MORE FLOODPLAIN STORAGE VOLUME IN THE PROPOSED CONDITION

PARKING DATA:

	NUMBER OF UNITS	REQUIRED PARKING*	PROVIDED PARKING	COMPACT ALLOWED**	COMPACT PROVIDED	ADA PARKING PROVIDED
401 WASHINGTON ST. (Conshohocken)	265	345	350	122	8	8
433 WASHINGTON ST. (Conshohocken)	241	290	290	101	50	9
433 WASHINGTON ST. (Whitemarsh)	72	126	126	0	0	-

* REQUIRED PARKING: 1.2 SPACES PER DWELLING UNIT IN CONSHOHOCKEN & 1.75 SPACES PER DWELLING UNIT IN WHITEMARSH

** 30% OF TOTAL ALLOWED IN CONSHOHOCKEN & 0% OF TOTAL ALLOWED IN WHITEMARSH

*** ADA REQUIRES 2% OF TOTAL SPACES

PARKING STALL DIMENSIONS	
COMPACT BETWEEN BUILDINGS	7.75' X 18'
COMPACT BOA ON BUILDINGS	7.75' X 18'
BELOW BUILDING 100, 200 & 300	8.5' X 18'
BELOW BUILDING 400	9.0' X 18'
ALONG EAST OF SITE	9.0' X 18'

BUILDING USE DATA

PROPOSED USE: LUXURY APARTMENTS
594 TOTAL UNITS

APARTMENT LAYOUT MIX		
1 BEDROOM EFFICIENCY	45%	268 UNITS
2 BEDROOM	55%	326 UNITS
TOTAL	100%	594 UNITS

FLOOR AREA RATIO CALCULATIONS (CONSHOHOCKEN 27-1511.3.D.i.)

LOT	NET BUILDABLE LOT AREA	FLOOR AREA	FAR
401 WASHINGTON	216,922 SF (4.97 AC.)	323,340 SF	1.49
433 WASHINGTON	247,904 SF (5.69 AC.)	349,979 SF	1.41

CONSHOHOCKEN BOROUGH ZONING DATA:

401 WASHINGTON STREET

SPECIALLY PLANNED DISTRICT TWO (SP-2)

ITEM	ZONING ORDINANCE	PERMITTED	PROPOSED
SPECIALLY PLANNED DISTRICT TWO	27-1511.3.		
MINIMUM LOT AREA	27-1511.3.	3 ACRES	4.97 ACRES (NET)
MINIMUM LOT WIDTH	27-1511.3.B	100 FEET	315.42 FEET
MINIMUM LOT DEPTH	27-1511.3.B	100 FEET	670.77 FEET
MAXIMUM IMPERVIOUS COVERAGE	27-1511.3.A	70%	67.59%
MAXIMUM FLOOR AREA RATIO (FAR)	27-1511.3.D	1.5	1.49 (a)
MAXIMUM FLOOR AREA/ONE BEDROOM	27-1511.3.	700 SF	700 SF
MAXIMUM FLOOR AREA/TWO BEDROOM	27-1511.3.	900 SF	900 SF
MAXIMUM BUILDING HEIGHT	27-1511.3.B.	65 FEET	65 FEET
BUILDING SETBACK FROM ULTIMATE RIGHT-OF-WAY/PROPERTY LINE	27-1511.3.B.(1)	10 FEET	16 FEET
PARKING SETBACK FROM ULTIMATE RIGHT-OF-WAY	27-1511.3.B.(1)	10 FEET	16 FEET
MINIMUM BUILDING SEPARATION	27-1511.3.C.	20 FEET/75 FEET (b)	75 FEET

(a) 1.49 FAR IS THE TOTAL FAR WHEN COMBINING 401 WASHINGTON STREET (1.41 FAR) AND 433 WASHINGTON STREET (1.51 FAR).
(b) 75 FEET WITH SURFACE PARKING BETWEEN BUILDINGS.

433 WASHINGTON STREET

SPECIALLY PLANNED DISTRICT TWO (SP-2)

ITEM	ZONING ORDINANCE	PERMITTED	PROPOSED
SPECIALLY PLANNED DISTRICT TWO	27-1511.3.		
MINIMUM LOT AREA	27-1511.3.	3 ACRES	5.69 ACRES (NET)
MINIMUM LOT WIDTH	27-1511.3.B.	100 FEET	376.74 FEET
MINIMUM LOT DEPTH	27-1511.3.B	100 FEET	151.34 FEET
MAXIMUM IMPERVIOUS COVERAGE	27-1511.3.A	70%	66.40%
MAXIMUM FLOOR AREA RATIO (FAR)	27-1511.3.D	1.5	1.51 (a)
MAXIMUM FLOOR AREA/ONE BEDROOM	27-1511.3.	700 SF	700 SF
MAXIMUM FLOOR AREA/TWO BEDROOM	27-1511.3.	900 SF	900 SF
MAXIMUM BUILDING HEIGHT	27-1511.3.B.	65 FEET	65 FEET
BUILDING SETBACK FROM ULTIMATE RIGHT-OF-WAY/PROPERTY LINE	27-1511.3.B.(1)	10 FEET	16 FEET
PARKING SETBACK FROM ULTIMATE RIGHT-OF-WAY	27-1511.3.B.(1)	10 FEET	16 FEET
MINIMUM BUILDING SEPARATION	27-1511.3.C.	20 FEET/75 FEET (b)	75 FEET

(a) 1.51 FAR WITH SURFACE PARKING BETWEEN BUILDINGS.

WHITEMARSH TOWNSHIP ZONING DATA:

HEAVY INDUSTRIAL DISTRICT (HI-1) WITH MIXED USE DISTRICT

ITEM	ZONING ORDINANCE	PERMITTED	PROPOSED
MINIMUM LOT AREA	110-281.A(1)	3 ACRES	4.97 ACRES
MINIMUM LOT WIDTH AT BUILDING SETBACK	110-281.A(2)	200 FEET	376.74 FEET
BUILDING SETBACKS	110-281.A(3)(a)	20 FEET	161 FEET
MINIMUM PARKING SETBACK	110-281.A(4)	15 FEET	25 FEET
MAXIMUM BUILDING COVERAGE	110-281.A(5)	40%	22.48%
MAXIMUM DENSITY	110-281.A(6)	20 DWELLING UNITS PER ACRE	21 DU/AC (a)
MAXIMUM BUILDING HEIGHT	110-281.A(7)	4 STORIES	4 STORIES
IMPERVIOUS COVERAGE	110-281.A(8)	70%	66.99%

(a) 51 UNITS ARE LOCATED IN THE WHITEMARSH TOWNSHIP PORTION OF 433 WASHINGTON STREET, WITH THE WHITEMARSH TOWNSHIP PORTION OF THE LOT MEASURING 2.39 ACRES.

CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES TWO WORKING DAYS NOTICE FOR CONSTRUCTION PLANS AND 10 WORKING DAYS IN DESIGN-STOP CALL
Pennsylvania One Call System, Inc
1-800-242-1776
ONE CALL NOTE
SERIAL NO. 20140871077
UTILITY LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND BASED ON EXISTING INFORMATION RECEIVED FROM UTILITY COMPANIES

50 25 0 50 100 150 200
GRAPHIC SCALE

MCPC NO. _____

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

I/WE _____ HAVE LAID UPON MY/OUR LANDS SITUATE IN THE BOROUGH OF CONSHOHOCKEN, MONTGOMERY, PENNSYLVANIA, LOTS AND STREETS ACCORDING TO THE ACCOMPANIED PLAN WHICH IS INTENDED TO BE RECORDED WITNESS MY/OUR HAND AND SEAL THIS _____ DAY OF _____, 20___.

_____ _____

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

_____

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

_____ _____
PRESIDENT
_____ _____
SECRETARY

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___.

SURVEYOR'S CERTIFICATE, BOUNDARY & TOPOGRAPHY
THIS IS TO CERTIFY THAT THIS PLAN REPRESENTS A FIELD SURVEY BY ME OR UNDER MY SUPERVISION, THAT ALL PROPERTY CORNERS ARE SET AS SHOWN HEREON, THAT ALL GEOMETRIC AND GEODETIC DETAILS AS SHOWN ARE CORRECT, AND THAT ALL LOTS OR TRACTS HAVE A BOUNDARY CLOSURE ERROR OF 1:10,000 OR BETTER

_____ _____ SEAL
PLS DATE
SUR: _____

ON THIS _____ DAY OF _____, 20___, BEFORE ME, THE SUBSCRIBER, A NOTARY PUBLIC FOR THE COMMONWEALTH OF PENNSYLVANIA, PERSONALLY APPEARED _____ WHO ACKNOWLEDGED THIS PLAN TO BE THE OFFICIAL PLAN OF STREETS AND PROPERTY SHOWN THEREON, SITUATED IN THE BOROUGH OF CONSHOHOCKEN, MONTGOMERY COUNTY, PENNSYLVANIA, AND DESIRE THAT THIS PLAN BE RECORDED ACCORDING TO LAW.

_____
NOTARY PUBLIC

MY COMMISSION EXPIRES: _____

EXHIBIT C (1 of 2)

RIGHT ANGLE ENGINEERING
Right Angle Engineering, LLC
700 South Henderson Rd.
Suite 202
King of Prussia, PA 19406
Phone: (610) 337-5389

NO.	DATE	DESCRIPTION
1	1/31/12	PP FINAL SUBDIVISION APPROVAL
2	2/29/12	PP FINAL SUBDIVISION APPROVAL
3	3/30/12	PP FINAL SUBDIVISION APPROVAL
4	4/27/12	CONSHOHOCKEN BOROUGH SUBMISSION
5	5/11/12	CONSHOHOCKEN BOROUGH SUBMISSION
6	6/8/12	WHITEMARSH SUBMISSION

REVISED FINAL PLAN SUBMISSION

OVERALL SITE PLAN

NEW WASHINGTON STREET ASSOCIATES, L.P.
PROJECT WASHINGTON STREET APARTMENTS
401 & 433 WASHINGTON STREET,
CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP

DATE: FEBRUARY 7, 2012
SCALE: 1" = 50'
DRAWN BY: MRC
DESIGNED BY: MRC
PROJECT NO.: 12.100.00
DRAWING NO.: 04
SHEET 04 OF 28

GENERAL NOTES:

1. OWNER/APPLICANT:
   401 WASHINGTON STREET ASSOCIATES, L.P.
   2701 RENAISSANCE BOULEVARD, FOURTH FLOOR
   KING OF PRUSSIA, PA 19406
   WASHINGTON ASSOCIATES II, L.P.
   2701 RENAISSANCE BOULEVARD, FOURTH FLOOR
   KING OF PRUSSIA, PA 19406
2. SUBJECT PROPERTIES ARE LOCATED IN CONSHOHOCKEN BOROUGH, AND WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA.
3. THE PROPOSED USE IS MULTI-FAMILY RESIDENTIAL. EACH PROPOSED APARTMENT BUILDING IS FOUR FLOORS OVER AT-GRADE PARKING.
4. THE SUBJECT PROPERTIES ARE LOCATED IN THE SPECIALLY PLANNED TWO (SP-2) ZONING DISTRICT/FLOODPLAIN CONSERVATION DISTRICT (CONSHOHOCKEN BOROUGH) AND THE HEAVY INDUSTRIAL (HV)/RIVERFRONT DEVELOPMENT (RDD-1) SUB DISTRICT/FLOODPLAIN CONSERVATION OVERLAY DISTRICT/RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT (WHITEMARSH TOWNSHIP).
5. 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).
6. PERMANENT REMOVAL OF TOPSOIL FROM LAND WITHIN CONSHOHOCKEN BOROUGH & WHITEMARSH TOWNSHIP IS PROHIBITED. NO TOPSOIL SHALL BE USED AS SPOIL.
7. 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.
8. POOLS SHALL BE ENTIRELY ENCLOSED WITH A FENCE NOT LESS THAN FOUR FEET IN HEIGHT.
9. 10.57 ACRES IS THE SUM OF THE NET LOT AREA OF 401 WASHINGTON STREET (4.97 ACRES) AND 433 WASHINGTON STREET (5.60 ACRES).
10. THERE ARE SIXTEEN (17) A.D.A. ACCESSIBLE PARKING SPACES SHOWN ON THIS PLAN.
11. 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.
12. POTABLE WATER SERVICE WILL BE BY EXISTING PUBLIC WATER SUPPLY.
13. SANITARY SEWER SERVICE WILL BE BY PUBLIC SEWAGE.
14. COMPACT PARKING SPACES IN CONSHOHOCKEN BOROUGH ARE MINIMUM 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.
15. PROPOSED CURB ALONG WASHINGTON STREET SHALL BE BELGIAN BLOCK CURB. PROPOSED CURB INTERIOR TO SITE SHALL BE VERTICAL CONCRETE CURB, UNLESS OTHERWISE NOTED.
16. THIS PROJECT PROPOSES TO DISTURB APPROXIMATELY 216 SF OF 8-15% STEEP SLOPES (3.29%), 87 SF OF 15-25% STEEP SLOPES (1.06%) AND 623 SF OF 25%+ STEEP SLOPES (1.77%) IN THE SCHUYLKILL RIVER BANK DURING THE INSTALLATION OF THE STORM WATER OUTFALL STRUCTURE.
17. A SPECIAL EXCEPTION FROM SECTION 115-156(B)(3) WAS GRANTED BY THE WHITEMARSH TOWNSHIP ZONING HEARING BOARD DECISION NUMBER 2013-22.
18. STORMWATER BMPS ARE FIXTURES THAT CAN BE ALTERED OR REMOVED ONLY AFTER APPROVAL BY THE TOWNSHIP.

DATE _____ OWNER/APPLICANT _____

19. 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 TO 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.
20. UNDER NO CIRCUMSTANCES SHALL CHLORINATED SWIMMING POOL DISCHARGE BE DIRECTED TO A STREAM OR TO ANY PIPING SYSTEM THAT DISCHARGES TO A STREAM.
21. PER WHITEMARSH TOWNSHIP ORDINANCE SECTION 115-39(C), A MINIMUM OF 10% OF ANY PARKING LOT FACILITY IN OVER 2000 SF MUST BE DEVOTED TO LANDSCAPING. 20,139 SF OF PARKING LOT FACILITY EXISTS IN WHITEMARSH, OF WHICH 20.8% (4,182 SF) IS DEVOTED TO LANDSCAPING.
22. THE MINIMUM FLOOR AREA PER DWELLING UNIT WILL BE IN CONFORMANCE WITH 27-1511.4.A. & B.
23. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH PENNDOT PUBLICATION 408 AND CONSHOHOCKEN BOROUGH CONSTRUCTION STANDARDS.
24. THESE PLANS CONFORM WITH THE CONSHOHOCKEN BOROUGH FLOODPLAIN ORDINANCE. DATE:_____
25. THE PROPOSED BRICK SIDEWALK ALONG WASHINGTON STREET SHALL BE CONSISTENT IN APPEARANCE WITH ADJACENT WASHINGTON STREET DEVELOPMENT.
26. THE FEMA CALCULATED 100-YEAR FLOOD ELEVATION FOR THIS PROJECT IS 50.5 FEET (NAVD 1988) IN ACCORDANCE FIRM MAP NUMBER 42091C0358E DATED DECEMBER 19, 1996.
27. ALL PROPOSED OPEN SPACE WILL BE DEED RESTRICTED FROM FUTURE DEVELOPMENT.
28. 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." PARKING STALLS UNDER THE BUILDINGS WHICH DO NOT ABUT A WALL ARE PROVIDED WITH WHEEL STOPS.
29. PURSUANT TO 27-1504.D.(3)(A), (B), AND (C), THERE SHALL BE RIVERFRONT ACCESS VIA EASEMENT OR PUBLIC RIGHT-OF-WAY.
30. OPEN SPACE IS PROHIBITED FROM FURTHER DEVELOPMENT BASED ON THIS PLAN.
31. RECREATION AREA IS TO BE OFFERED FOR DEDICATION TO CONSHOHOCKEN BOROUGH.

FLOOD PROOFING NOTES:

1. ALL COMPONENTS OF THIS PROJECT WILL BE FLOODPROOFED 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 STRUCTURES ARE PROPOSED TO BE BUILT IN THE SCHUYLKILL RIVER FLOODWAY.
3. ALL ENCLOSED SPACES IN THE FLOODPLAIN, INCLUDING ELEVATORS, STAIR TOWERS AND TRASH COMPACTOR AREAS ("LOWER AREAS"), WILL BE WET FLOOD PROOFED IN ACCORDANCE WITH U.S. ARMY CORPS OF ENGINEERS WET FLOOD PROOFING STANDARDS. THE SPACES WILL PERMIT THE FREE MOVEMENT OF FLOOD WATERS AND THEY WILL BE CONSTRUCTED WITH FLOOD-RESISTANT MATERIALS.
4. PUBLIC WATER FACILITIES WILL BE IN WATER-TIGHT PVC WATER PIPES AND BE INSTALLED UNDERGROUND. WHERE WATER PIPES EXIT THE GROUND TO REACH UP TO ELEVATED BUILDINGS, THEY WILL TRANSITION TO DUCTILE IRON FLANGED PIPE (BEFORE EXITING THE GROUND). THE DUCTILE IRON PIPE WILL BE INSULATED FROM FREEZING AND BE BAFFLED BY AND ANCHORED TO THE CONCRETE BUILDING COLUMNS.
5. ELECTRICAL POWER LINES WILL BE INSTALLED UNDERGROUND IN INSULATED WATER PROOF CONDUIT. WHERE ELECTRIC LINES EXIT THE GROUND TO REACH UP TO ELEVATED BUILDINGS, THEY WILL BE INSTALLED IN RIGID, WATERPROOF CONDUITS, BAFFLED BY AND ANCHORED TO THE CONCRETE BUILDING COLUMNS. ELECTRIC TRANSFORMERS WILL BE EITHER POLE MOUNTED OR MOUNTED ON CONCRETE PLATFORMS ABOVE THE 100-YEAR FLOOR ELEVATION.
6. NATURAL GAS FACILITIES WILL BE IN RIGID PIPES AND INSTALLED UNDERGROUND. WHERE NATURAL GAS PIPES EXIT THE GROUND TO REACH UP TO ELEVATED BUILDINGS, THEY WILL BE INSTALLED IN RIGID CONDUIT, BAFFLED BY AND ANCHORED TO THE BUILDING COLUMNS.
7. COMMUNICATION LINES WILL BE INSTALLED UNDERGROUND IN WATERPROOF CONDUIT. WHERE COMMUNICATION LINES EXIT THE GROUND TO REACH UP TO ELEVATED BUILDINGS, THEY WILL BE INSTALLED IN RIGID, WATERPROOF CONDUITS, BAFFLED BY AND ANCHORED TO THE CONCRETE BUILDING COLUMNS.
8. GRAVITY SANITARY SEWER PIPES AND SANITARY SEWER MANHOLES WILL BE INSTALLED UNDERGROUND. PIPES WILL BE MANDREL TESTED AND BOTH PIPES AND MANHOLES WILL BE PRESSURE TESTED AFTER INSTALLATION. MANHOLES WILL BE FITTED WITH BOLT-DOWN WATERPROOF (GASKETED) LIDS.
9. THE PROPOSED LIVING SPACES FOR EACH BUILDING WILL BE AT LEAST 24 INCHES ABOVE THE 100-YEAR FLOOD ELEVATION (NAVD 1988).
10. ALL PROPOSED STRUCTURES WILL BE PERMANENTLY ANCHORED SO AS TO PREVENT FLOTATION OR LATERAL MOVEMENT.
11. ALL PROPOSED STORM DRAINAGE FACILITIES WILL CONVEY THE FLOW OF STORM WATER RUNOFF IN A SAFE AND EFFICIENT MANNER. THE SYSTEM WILL ENSURE PROPER DRAINAGE ALONG DRIVEWAYS AND PARKING LOTS AND PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS. THE STORM WATER MANAGEMENT SYSTEM WILL ALSO PREVENT THE DISCHARGE OF EXCESS RUN OFF ONTO ADJACENT PROPERTIES
12. ALL APARTMENT RESIDENT VEHICLES WILL BE MOVED OUTSIDE THE FLOODPLAIN BY VEHICLE OWNER IN THE EVENT OF A FLOOD WARNING. VEHICLES NOT MOVED BY VEHICLE OWNER WILL BE TOWED OUTSIDE THE FLOODPLAIN BY A TOWING COMPANY CONTRACTED BY THE APARTMENT BUILDING OWNER.
13. TRASH COMPACTORS WILL BE FULLY ENCLOSED WITH CONTAINERS (HOPPERS) MECHANICALLY COUPLED TO COMPACTOR.
14. SEWAGE DISPOSAL PROPOSED FOR THIS PROJECT BY PUBLIC SEWER.
15. I, MICHAEL V. MINERVINI, A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY THAT THE FLOOD PROOFING METHODS EMPLOYED ON THIS PROJECT USED TO PROTECT SEWER, WATER AND ELECTRIC LINES TO A HEIGHT OF 24 INCHES ABOVE THE 100-YEAR FLOOD ELEVATION, ARE ADEQUATE TO WITHSTAND THE FLOOD DEPTHS, PRESSURES, VELOCITIES, IMPACT AND UPLIFT FORCES AND OTHER FACTORS ASSOCIATED WITH THE 100-YEAR FLOOD AND A RECORD OF SUCH CERTIFICATIONS INDICATING THE SPECIFIC ELEVATION (IN RELATION TO MEAN SEA LEVEL WITH A DATUM OF NAVD 1988) TO WHICH THE SEWER, WATER AND ELECTRIC LINES ARE FLOOD PROOFED SHALL BE MAINTAINED WITH THE DIRECTOR OF BUILDING AND PLANNING.

DATE PROFESSIONAL ENGINEER: MICHAEL V. MINERVINI, PE
ENGINEER NO. PE071233

CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE CALL
Pennsylvania One Call System, Inc.
1-800-242-1776
ONE CALL NOTE
SERIAL NO 20140271007
UTILITY LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND BASED ON EXISTING INFORMATION RECEIVED FROM UTILITY COMPANIES.

- Waiver from section 22-404.1.A requiring alleys in a residential development as the Borough requested internal driveways instead of alleys.
- Waiver from Section 22-404.2.A prohibiting driveways in a front yard setback as the project has a building setback, not a front yard setback.
- Waiver from Section 22-404.2.F to allow for more than two driveways per property front.
- Waiver from Section 22-405.1.C requiring minimum sidewalk of 15 feet in width.
- Waiver from section 22-419.1 requiring monuments on rear property corners because corners are located in steep slope areas along river bank
- Waiver from Section 22-804.4.A.7 denying areas dedicated to the Borough to be used in calculating density. Transfer of development rights.

ZONING VARIANCES GRANTED

CONSHOHOCKEN BOROUGH:
- 27-1511(6)(E) - TO ALLOW UNDERGROUND PARKING BE WITHOUT PLANTINGS, CONDITIONED ON A DEDICATION OF 10' TO THE BOROUGH FOR PUBLIC ACCESS
- 27-1505(B)(3) - TO ALLOW SIDEWALKS PLANTED VERGE LANDSCAPING ALONG THE NORTHERN SIDE OF HORIZONTAL DRIVE TO BE BROKEN UP BY INGRESS/EGRESS POINTS
- 27-2007(5) - TO ALLOW 2 ADDITIONAL ACCESS WAYS ON WASHINGTON ST.

WHITEMARSH TOWNSHIP:
- 115-156(B)(3) - SPECIAL EXCEPTION TO CONSTRUCT IN THE FLOODWAY FRINGE

ON THIS _____ DAY OF _____
20____, BEFORE ME, THE SUBSCRIBER, A NOTARY PUBLIC FOR THE COMMONWEALTH OF PENNSYLVANIA, PERSONALLY APPEARED _____ WHO ACKNOWLEDGED THIS PLAN TO BE THE OFFICIAL PLAN OF STREETS AND PROPERTY SHOWN THEREON, SITUATED IN THE BOROUGH OF CONSHOHOCKEN, MONTGOMERY COUNTY, PENNSYLVANIA, AND DESIRE THAT THIS PLAN BE RECORDED ACCORDING TO LAW.

_____
NOTARY PUBLIC

MY COMMISSION EXPIRES: _____

SURVEYOR'S CERTIFICATE, BOUNDARY & TOPOGRAPHY
THIS IS TO CERTIFY THAT THIS PLAN REPRESENTS A FIELD SURVEY BY ME OR UNDER MY SUPERVISION, THAT ALL PROPERTY CORNERS ARE SET AS SHOWN HEREON, THAT ALL GEOMETRIC AND GEODETIC DETAILS AS SHOWN ARE CORRECT, AND THAT ALL LOTS OR TRACTS HAVE A BOUNDARY CLOSURE ERROR OF 1:10,000 OR BETTER

_____ SEAL
PLS DATE

SUR -

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

_____

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

_____ _____
PRESIDENT
SECRETARY

I/WE _____ HAVE LAID UPON MY/OUR LANDS SITUATE IN THE BOROUGH OF CONSHOHOCKEN, MONTGOMERY, PENNSYLVANIA, LOTS AND STREETS ACCORDING TO THE ACCOMPANIED PLAN WHICH IS INTENDED TO BE RECORDED WITNESS MY/OUR HAND AND SEAL THIS _____ DAY OF _____, 20____

_____ _____

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____

MCPC NO. _____

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

50 25 0 50 100 150 200
GRAPHIC SCALE

RIGHT ANGLE ENGINEERING

Right Angle Engineering, LLC
f/d/b Faust Associates Inc.
Suite 201
King of Prussia, PA 19406
Phone: (610) 337-5899

#	DATE	DESCRIPTION
1	7/20/15	PER TWP LAND DEVELOPMENT COMMENTS
2	8/19/15	PER TWP LAND DEVELOPMENT COMMENTS
3	10/5/15	PER TWP LAND DEVELOPMENT COMMENTS
4	10/30/15	PER TWP LAND DEVELOPMENT COMMENTS
5	11/24/15	PER TWP LAND DEVELOPMENT COMMENTS
6	12/14/15	PER TWP LAND DEVELOPMENT COMMENTS
7	1/11/16	PER TWP LAND DEVELOPMENT COMMENTS
8	2/1/16	PER TWP LAND DEVELOPMENT COMMENTS
9	2/15/16	PER TWP LAND DEVELOPMENT COMMENTS
10	3/7/16	PER TWP LAND DEVELOPMENT COMMENTS
11	3/21/16	PER TWP LAND DEVELOPMENT COMMENTS
12	4/4/16	PER TWP LAND DEVELOPMENT COMMENTS
13	4/18/16	PER TWP LAND DEVELOPMENT COMMENTS
14	5/2/16	PER TWP LAND DEVELOPMENT COMMENTS
15	5/16/16	PER TWP LAND DEVELOPMENT COMMENTS
16	5/23/16	PER TWP LAND DEVELOPMENT COMMENTS
17	6/6/16	PER TWP LAND DEVELOPMENT COMMENTS
18	6/20/16	PER TWP LAND DEVELOPMENT COMMENTS
19	7/5/16	PER TWP LAND DEVELOPMENT COMMENTS
20	7/18/16	PER TWP LAND DEVELOPMENT COMMENTS
21	8/1/16	PER TWP LAND DEVELOPMENT COMMENTS
22	8/15/16	PER TWP LAND DEVELOPMENT COMMENTS
23	8/29/16	PER TWP LAND DEVELOPMENT COMMENTS
24	9/12/16	PER TWP LAND DEVELOPMENT COMMENTS
25	9/26/16	PER TWP LAND DEVELOPMENT COMMENTS
26	10/10/16	PER TWP LAND DEVELOPMENT COMMENTS
27	10/24/16	PER TWP LAND DEVELOPMENT COMMENTS
28	11/7/16	PER TWP LAND DEVELOPMENT COMMENTS
29	11/21/16	PER TWP LAND DEVELOPMENT COMMENTS
30	12/5/16	PER TWP LAND DEVELOPMENT COMMENTS
31	12/19/16	PER TWP LAND DEVELOPMENT COMMENTS
32	1/3/17	PER TWP LAND DEVELOPMENT COMMENTS
33	1/17/17	PER TWP LAND DEVELOPMENT COMMENTS
34	1/31/17	PER TWP LAND DEVELOPMENT COMMENTS
35	2/14/17	PER TWP LAND DEVELOPMENT COMMENTS
36	2/28/17	PER TWP LAND DEVELOPMENT COMMENTS
37	3/14/17	PER TWP LAND DEVELOPMENT COMMENTS
38	3/28/17	PER TWP LAND DEVELOPMENT COMMENTS
39	4/11/17	PER TWP LAND DEVELOPMENT COMMENTS
40	4/25/17	PER TWP LAND DEVELOPMENT COMMENTS
41	5/9/17	PER TWP LAND DEVELOPMENT COMMENTS
42	5/23/17	PER TWP LAND DEVELOPMENT COMMENTS
43	6/6/17	PER TWP LAND DEVELOPMENT COMMENTS
44	6/20/17	PER TWP LAND DEVELOPMENT COMMENTS
45	7/5/17	PER TWP LAND DEVELOPMENT COMMENTS
46	7/18/17	PER TWP LAND DEVELOPMENT COMMENTS
47	8/1/17	PER TWP LAND DEVELOPMENT COMMENTS
48	8/15/17	PER TWP LAND DEVELOPMENT COMMENTS
49	8/29/17	PER TWP LAND DEVELOPMENT COMMENTS
50	9/12/17	PER TWP LAND DEVELOPMENT COMMENTS
51	9/26/17	PER TWP LAND DEVELOPMENT COMMENTS
52	10/10/17	PER TWP LAND DEVELOPMENT COMMENTS
53	10/24/17	PER TWP LAND DEVELOPMENT COMMENTS
54	11/7/17	PER TWP LAND DEVELOPMENT COMMENTS
55	11/21/17	PER TWP LAND DEVELOPMENT COMMENTS
56	12/5/17	PER TWP LAND DEVELOPMENT COMMENTS
57	12/19/17	PER TWP LAND DEVELOPMENT COMMENTS
58	1/3/18	PER TWP LAND DEVELOPMENT COMMENTS
59	1/17/18	PER TWP LAND DEVELOPMENT COMMENTS
60	1/31/18	PER TWP LAND DEVELOPMENT COMMENTS
61	2/14/18	PER TWP LAND DEVELOPMENT COMMENTS
62	2/28/18	PER TWP LAND DEVELOPMENT COMMENTS
63	3/14/18	PER TWP LAND DEVELOPMENT COMMENTS
64	3/28/18	PER TWP LAND DEVELOPMENT COMMENTS
65	4/11/18	PER TWP LAND DEVELOPMENT COMMENTS
66	4/25/18	PER TWP LAND DEVELOPMENT COMMENTS
67	5/9/18	PER TWP LAND DEVELOPMENT COMMENTS
68	5/23/18	PER TWP LAND DEVELOPMENT COMMENTS
69	6/6/18	PER TWP LAND DEVELOPMENT COMMENTS
70	6/20/18	PER TWP LAND DEVELOPMENT COMMENTS
71	7/5/18	PER TWP LAND DEVELOPMENT COMMENTS
72	7/18/18	PER TWP LAND DEVELOPMENT COMMENTS
73	8/1/18	PER TWP LAND DEVELOPMENT COMMENTS
74	8/15/18	PER TWP LAND DEVELOPMENT COMMENTS
75	8/29/18	PER TWP LAND DEVELOPMENT COMMENTS
76	9/12/18	PER TWP LAND DEVELOPMENT COMMENTS
77	9/26/18	PER TWP LAND DEVELOPMENT COMMENTS
78	10/10/18	PER TWP LAND DEVELOPMENT COMMENTS
79	10/24/18	PER TWP LAND DEVELOPMENT COMMENTS
80	11/7/18	PER TWP LAND DEVELOPMENT COMMENTS
81	11/21/18	PER TWP LAND DEVELOPMENT COMMENTS
82	12/5/18	PER TWP LAND DEVELOPMENT COMMENTS
83	12/19/18	PER TWP LAND DEVELOPMENT COMMENTS
84	1/3/19	PER TWP LAND DEVELOPMENT COMMENTS
85	1/17/19	PER TWP LAND DEVELOPMENT COMMENTS
86	1/31/19	PER TWP LAND DEVELOPMENT COMMENTS
87	2/14/19	PER TWP LAND DEVELOPMENT COMMENTS
88	2/28/19	PER TWP LAND DEVELOPMENT COMMENTS
89	3/14/19	PER TWP LAND DEVELOPMENT COMMENTS
90	3/28/19	PER TWP LAND DEVELOPMENT COMMENTS
91	4/11/19	PER TWP LAND DEVELOPMENT COMMENTS
92	4/25/19	PER TWP LAND DEVELOPMENT COMMENTS
93	5/9/19	PER TWP LAND DEVELOPMENT COMMENTS
94	5/23/19	PER TWP LAND DEVELOPMENT COMMENTS
95	6/6/19	PER TWP LAND DEVELOPMENT COMMENTS
96	6/20/19	PER TWP LAND DEVELOPMENT COMMENTS
97	7/5/19	PER TWP LAND DEVELOPMENT COMMENTS
98	7/18/19	PER TWP LAND DEVELOPMENT COMMENTS
99	8/1/19	PER TWP LAND DEVELOPMENT COMMENTS
100	8/15/19	PER TWP LAND DEVELOPMENT COMMENTS
101	8/29/19	PER TWP LAND DEVELOPMENT COMMENTS
102	9/12/19	PER TWP LAND DEVELOPMENT COMMENTS
103	9/26/19	PER TWP LAND DEVELOPMENT COMMENTS
104	10/10/19	PER TWP LAND DEVELOPMENT COMMENTS
105	10/24/19	PER TWP LAND DEVELOPMENT COMMENTS
106	11/7/19	PER TWP LAND DEVELOPMENT COMMENTS
107	11/21/19	PER TWP LAND DEVELOPMENT COMMENTS
108	12/5/19	PER TWP LAND DEVELOPMENT COMMENTS
109	12/19/19	PER TWP LAND DEVELOPMENT COMMENTS
110	1/3/20	PER TWP LAND DEVELOPMENT COMMENTS
111	1/17/20	PER TWP LAND DEVELOPMENT COMMENTS
112	1/31/20	PER TWP LAND DEVELOPMENT COMMENTS
113	2/14/20	PER TWP LAND DEVELOPMENT COMMENTS
114	2/28/20	PER TWP LAND DEVELOPMENT COMMENTS
115	3/14/20	PER TWP LAND DEVELOPMENT COMMENTS
116	3/28/20	PER TWP LAND DEVELOPMENT COMMENTS
117	4/11/20	PER TWP LAND DEVELOPMENT COMMENTS
118	4/25/20	PER TWP LAND DEVELOPMENT COMMENTS
119	5/9/20	PER TWP LAND DEVELOPMENT COMMENTS
120	5/23/20	PER TWP LAND DEVELOPMENT COMMENTS
121	6/6/20	PER TWP LAND DEVELOPMENT COMMENTS
122	6/20/20	PER TWP LAND DEVELOPMENT COMMENTS
123	7/5/20	PER TWP LAND DEVELOPMENT COMMENTS
124	7/18/20	PER TWP LAND DEVELOPMENT COMMENTS
125	8/1/20	PER TWP LAND DEVELOPMENT COMMENTS
126	8/15/20	PER TWP LAND DEVELOPMENT COMMENTS
127	8/29/20	PER TWP LAND DEVELOPMENT COMMENTS
128	9/12/20	PER TWP LAND DEVELOPMENT COMMENTS
129	9/26/20	PER TWP LAND DEVELOPMENT COMMENTS
130	10/10/20	PER TWP LAND DEVELOPMENT COMMENTS
131	10/24/20	PER TWP LAND DEVELOPMENT COMMENTS
132	11/7/20	PER TWP LAND DEVELOPMENT COMMENTS
133	11/21/20	PER TWP LAND DEVELOPMENT COMMENTS
134	12/5/20	PER TWP LAND DEVELOPMENT COMMENTS
135	12/19/20	PER TWP LAND DEVELOPMENT COMMENTS
136	1/3/21	PER TWP LAND DEVELOPMENT COMMENTS
137	1/17/21	PER TWP LAND DEVELOPMENT COMMENTS
138	1/31/21	PER TWP LAND DEVELOPMENT COMMENTS
139	2/14/21	PER TWP LAND DEVELOPMENT COMMENTS
140	2/28/21	PER TWP LAND DEVELOPMENT COMMENTS
141	3/14/21	PER TWP LAND DEVELOPMENT COMMENTS
142	3/28/21	PER TWP LAND DEVELOPMENT COMMENTS
143	4/11/21	PER TWP LAND DEVELOPMENT COMMENTS
144	4/25/21	PER TWP LAND DEVELOPMENT COMMENTS
145	5/9/21	PER TWP LAND DEVELOPMENT COMMENTS
146	5/23/21	PER TWP LAND DEVELOPMENT COMMENTS
147	6/6/21	PER TWP LAND DEVELOPMENT COMMENTS
148	6/20/21	PER TWP LAND DEVELOPMENT COMMENTS
149	7/5/21	PER TWP LAND DEVELOPMENT COMMENTS
150	7/18/21	PER TWP LAND DEVELOPMENT COMMENTS
151	8/1/21	PER TWP LAND DEVELOPMENT COMMENTS
152	8/15/21	PER TWP LAND DEVELOPMENT COMMENTS
153	8/29/21	PER TWP LAND DEVELOPMENT COMMENTS
154	9/12/21	PER TWP LAND DEVELOPMENT COMMENTS
155	9/26/21	PER TWP LAND DEVELOPMENT COMMENTS
156	10/10/21	PER TWP LAND DEVELOPMENT COMMENTS
157	10/24/21	PER TWP LAND DEVELOPMENT COMMENTS
158	11/7/21	PER TWP LAND DEVELOPMENT COMMENTS
159	11/21/21	PER TWP LAND DEVELOPMENT COMMENTS
160	12/5/21	PER TWP LAND DEVELOPMENT COMMENTS
161	12/19/21	PER TWP LAND DEVELOPMENT COMMENTS
162	1/3/22	PER TWP LAND DEVELOPMENT COMMENTS
163	1/17/22	PER TWP LAND DEVELOPMENT COMMENTS
164	1/31/22	PER TWP LAND DEVELOPMENT COMMENTS
165	2/14/22	PER TWP LAND DEVELOPMENT COMMENTS
166	2/28/22	PER TWP LAND DEVELOPMENT COMMENTS
167	3/14/22	PER TWP LAND DEVELOPMENT COMMENTS
168	3/28/22	PER TWP LAND DEVELOPMENT COMMENTS
169	4/11/22	PER TWP LAND DEVELOPMENT COMMENTS
170	4/25/22	PER TWP LAND DEVELOPMENT COMMENTS
171	5/9/22	PER TWP LAND DEVELOPMENT COMMENTS
172	5/23/22	PER TWP LAND DEVELOPMENT COMMENTS
173	6/6/22	PER TWP LAND DEVELOPMENT COMMENTS
174	6/20/22	PER TWP LAND DEVELOPMENT COMMENTS
175	7/5/22	PER TWP LAND DEVELOPMENT COMMENTS
176	7/18/22	PER TWP LAND DEVELOPMENT COMMENTS
177	8/1/22	PER TWP LAND DEVELOPMENT COMMENTS
178	8/15/22	PER TWP LAND DEVELOPMENT COMMENTS
179	8/29/22	PER TWP LAND DEVELOPMENT COMMENTS
180	9/12/22	PER TWP LAND DEVELOPMENT COMMENTS
181	9/26/22	PER TWP LAND DEVELOPMENT COMMENTS
182	10/10/22	PER TWP LAND DEVELOPMENT COMMENTS
183	10/24/22	PER TWP LAND DEVELOPMENT COMMENTS
184	11/7/22	PER TWP LAND DEVELOPMENT COMMENTS
185	11/21/22	PER TWP LAND DEVELOPMENT COMMENTS
186	12/5/22	PER TWP LAND DEVELOPMENT COMMENTS
187	12/19/22	PER TWP LAND DEVELOPMENT COMMENTS
188	1/3/23	PER TWP LAND DEVELOPMENT COMMENTS
189	1/17/23	PER TWP LAND DEVELOPMENT COMMENTS
190	1/31/23	PER TWP LAND DEVELOPMENT COMMENTS
191	2/14/23	PER TWP LAND DEVELOPMENT COMMENTS
192	2/28/23	PER TWP LAND DEVELOPMENT COMMENTS
193	3/14/23	PER TWP LAND DEVELOPMENT COMMENTS
194	3/28/23	PER TWP LAND DEVELOPMENT COMMENTS
195	4/11/23	PER TWP LAND DEVELOPMENT COMMENTS
196	4/25/23

941 Marcon Boulevard
Suite 801
Allentown, Pennsylvania 18109
Main: 877 627 3772
http://colliersengineering.com/

Colliers Engineering & Design

Memorandum

To: Charles Guttenplan, AICP

From: C. Richard Roseberry, P.E., AICP

Date: March 25, 2022

Subject: Site Photographs – Existing Stockpile Slopes

Project No.: 16001030B

The project site at 601 Washington Street has been used as a storage yard for a landscaping company. The existing site has concrete storage areas with stockpiled landscape materials, soil stockpiles, and piles of split firewood. The stockpiled landscape materials, soil stockpiles, and firewood piles were modeled and included in our steep slope calculations. With the revised plans, we updated our steep slope calculations to remove the stockpiled materials.

Please see below for the site photographs that were taken on February 18, 2022. The photographs show the areas of the stockpiled materials and piles of firewood. Attached is an exhibit showing the photograph locations.

Attachment: EXISTING STOCKPILES PHOTO EXHIBIT

R:\Projects\2016\16001030B\Emails\OUT\220325 Steep Slope Memo to TWP\Steep Slope Memorandum.docx

Colliers Engineering & Design

Photo 1

Colliers Engineering & Design

Photo 2

Colliers Engineering & Design

Photo 3

Colliers Engineering & Design

Photo 4

Colliers Engineering & Design

Photo 5

Colliers
Engineering
& Design

Photo 6

Colliers Engineering & Design

Photo 7

Colliers Engineering & Design

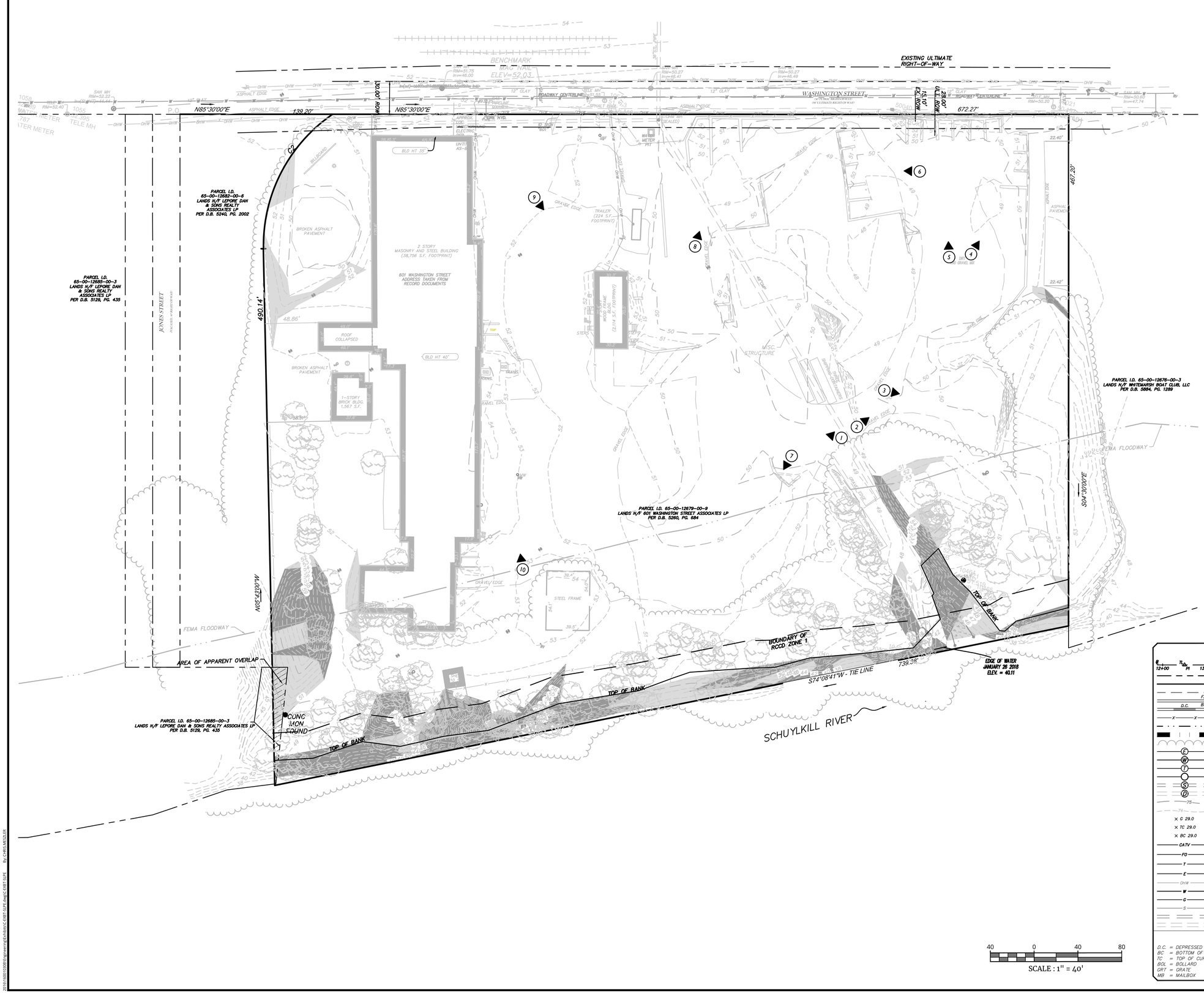
Photo 8

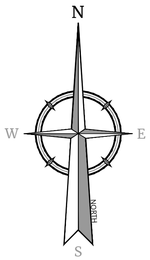
Colliers
Engineering
& Design

Photo 9

Colliers
Engineering
& Design

Photo 10





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
- 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
- PHOTO LOCATION AND VIEW DIRECTION
- STEEP SLOPES 15% - 25%
- STEEP SLOPES 25%+

ABBREVIATIONS

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

40 0 40 80
SCALE : 1" = 40'

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Colliers Engineering & Design
www.colliersengineering.com

Copyright © 2022. Colliers Engineering & Design All Rights Reserved. This drawing and all the information contained herein is authorized for use only by the party for whom the services were contracted or to whom it is certified. This drawing may not be copied, reused, disclosed, distributed or relied upon for any other purpose without the express written consent of Colliers Engineering & Design.

Doing Business as MASER CONSULTING

PROTECT YOURSELF
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.
20173630563
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

PRELIMINARY/FINAL LAND DEVELOPMENT PLANS
FOR
601 WASHINGTON STREET APARTMENTS

601 WASHINGTON STREET

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	03/25/22	CMM	CRR

PROJECT NUMBER: 160010308
DRAWING NAME: C-EXBT-SLPE

SHEET TITLE:
EXISTING STOCKPILES PHOTO EXHIBIT

SHEET NUMBER: 1 of 1

2016\160\10308\Engineering\Exhibits\C-EXBT-SLPE.dwg C-EXBT-SLPE By: CHRIS.METZLER

WHITEMARSH TOWNSHIP

To: Charles Guttenplan, AICP, Director of Planning and Zoning

From: SEAN HALBOM, ASST. TOWNSHIP MANAGER

Subject: **Summary of Shade Tree Commission Meeting: 4/5/2022: 401/433 Washington Street (SLD# 14-21)**

Date: April 6, 2022

Tom Bauer, Landscape Architect, and Jordan Minnow presented on behalf of the applicant, KRE Group. They shared the site plans included in the meeting agenda and provided a summary of the design plan and access to the Schuylkill River. He highlighted the pedestrian and vehicle accessways as well as the landscape area nearby the riverfront.

Mr. Bauer described the existing site and explained that DEP was requiring the site to be capped. He noted the Township Arborists description of the low-grade pioneer species on site. He stated the existing site would require 320 three-inch caliper trees, which would not fit on the site area. They proposed to utilize substitution species as well as larger caliper species to achieve the requirements.

Mr. Bauer summarized the tree planting plan as using 22 ornamental and 41 evergreen trees at a 2:1 ration (31 tree equivalent) , 393 shrubs (64 tree equivalent at a 6:1 ration), and 1,300+ groundcover (32 tree equivalent at a 40:1 ratio). In addition, 70 shade trees would be planted. Of those 70 shade trees, 18 trees (or 25%) would be 6” caliper, 18 more would be 5” caliper, and 28 trees (or 40%) would be 4” caliper. The remaining 6 trees would be 3” caliper.

Mr. Bauer concluded by stating that he believes the plan offers a large native palate and will be ecologically beneficial to the area. Mr. Minnow shared their thanks with Mr. Hosbach and his help in formulating a good plan for the area.

Mr. Fassbender stated that a waiver would need to be granted to address the removal of more than 50% of trees from the site. He shared his concern about the use of larger caliper trees due to health concerns with larger trees thriving as well as smaller plants. Mr. Bauer and Mr. Minnow both shared they were willing to plant smaller trees if that was the commissions desire or make similar adjustments.

Chair Ziegler asked John for his thoughts. Mr. Hosbach pointed to his review letter and suggested the swap of the Pin Oaks for Willow Oaks, break up the Arborvitae for more use of Spruce and Southern Magnolia. He shared he’d like to keep the diversity levels at 10%, if possible. He stated the use of the larger trees is fine so long as they are maintained. He stated their planting time would also be critical. Mr. Baur shared that they will be planting at the appropriate time of the year.

Sean Halbom, MPA
Assistant Township Manager
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 610-825-3535 ext. 2604
Email: shalbom@whitemarshtwp.org

Tam Paulits offered three comments. She asked what the total percentage of substitution shrubs was at this time. Mr. Baur replied they are maxed out on the shrubs to achieve the inch-for-inch replacement. Chair Ziegler clarified that additional shrubs beyond what is required are present on the plans.

Ms. Paulits shared that Ginko is nonnative according to our ordinance, which is Eastern U.S.

Ms. Paulits pointed at that the Viburnum Plicatum is on the invasive species list in PA.

Mr. Baur asked John about the use of the Ginko tree. Mr. Hosbach replied that Ginko trees, while nonnative, are a commonly used urban landscaping tree that would be appropriate for this soil.

Mr. Kaufman asked if the applicant would be willing to offer a two-year guarantee for the plantings given the waiver requests. Mr. Minnow offered that the applicant will be holding the property beyond development and would covenant to the landscaping. Mr. Baur again stated the applicant team's belief in the plan as a good urban ecosystem. Mr. Kaufman encouraged the applicant to replace any species unavailable for purchase with native options.

Debra Harris shared that this project was a great example of a need for a fee in lieu provision in the ordinance, so trees could be planted elsewhere in the township.

Mr. Fassbender made a motion to approve the plans and waiver requests for removal of greater than fifty percent of trees from any site, use of various substitution species and sizes, swapping of the Viburnum Plicatum for native species, and the applicant's agreement for an additional six-month warranty on the replacement tree species. Mr. D'Amore seconded the motion. The motion passed unanimously, 4-0.