



**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 # 07-22

Project Name: AIM Academy

Address: 1200 River Road

Date: June 22, 2022

Status: Under Review

Updates:

Fire Marshal Memo 6.24.2022

Zoning Ordinance Compliance Review Letter 7.1.2022

Montgomery County Planning Commission Review Letter 7.7.2022

Township Engineer Review Letter 8.4.2022

Waiver Request Letter Revised 8.8.2022

Waiver Request Letter Revised 8.9.2022

Module Waiver 8.23.2022

WHITEMARSH BOARD OF SUPERVISORS:
THIS PLAN WAS APPROVED BY THE BOARD OF SUPERVISORS OF WHITEMARSH TOWNSHIP AT A MEETING HELD ON THE _____ DAY OF _____, 20____.

(CHAIRMAN) (SECRETARY)

WHITEMARSH TOWNSHIP ENGINEER:

(ENGINEER) (DATE)

MONTGOMERY COUNTY PLANNING COMMISSION CERTIFICATION:
THIS PLAN WAS REVIEWED BY THE MONTGOMERY COUNTY PLANNING COMMISSION ON _____, MCPC FILE NUMBER _____.

(DIRECTOR)

CERTIFICATE OF OWNERSHIP AND ACKNOWLEDGEMENT OF PLAN

ON THIS, THE _____ DAY OF _____, 2022, BEFORE ME, THE UNDERSIGNED OFFICER, PERSONALLY APPEARED _____, WHO BEING DULY SWORN ACCORDING TO LAW, DEPOSES AND SAYS THAT HE IS THE _____ OF BPG OFFICE VI RIVER PARK II LLC, GENERAL PARTNER OF BPG OFFICE VI RIVER PARK II LP, THE OWNER OF THE PROPERTY SHOWN ON THIS PLAN, AND THAT HE ACKNOWLEDGES THE SAME TO BE HIS ACT AND PLAN AND DESIRES THE SAME BE RECORDED AS SUCH ACCORDING TO LAW.

WITNESS MY HAND AND SEAL THE DAY AND DATE ABOVE WRITTEN.

MY COMMISSION EXPIRES:

(NOTARY PUBLIC OR OTHER OFFICER)

I, _____, CERTIFY THAT I AM THE _____ OF BPG OFFICE VI RIVER PARK II LLC, GENERAL PARTNER OF BPG OFFICE VI RIVER PARK II LP, THE OWNER OF THE LAND HEREIN SUBDIVIDED (OR DEVELOPED) AND THAT I DO HEREBY ADOPT THIS PLAN AND DESIRE THE SAME TO BE RECORDED.

(OWNER)

PRELIMINARY / FINAL MAJOR LAND DEVELOPMENT PLANS FOR

AIM ACADEMY

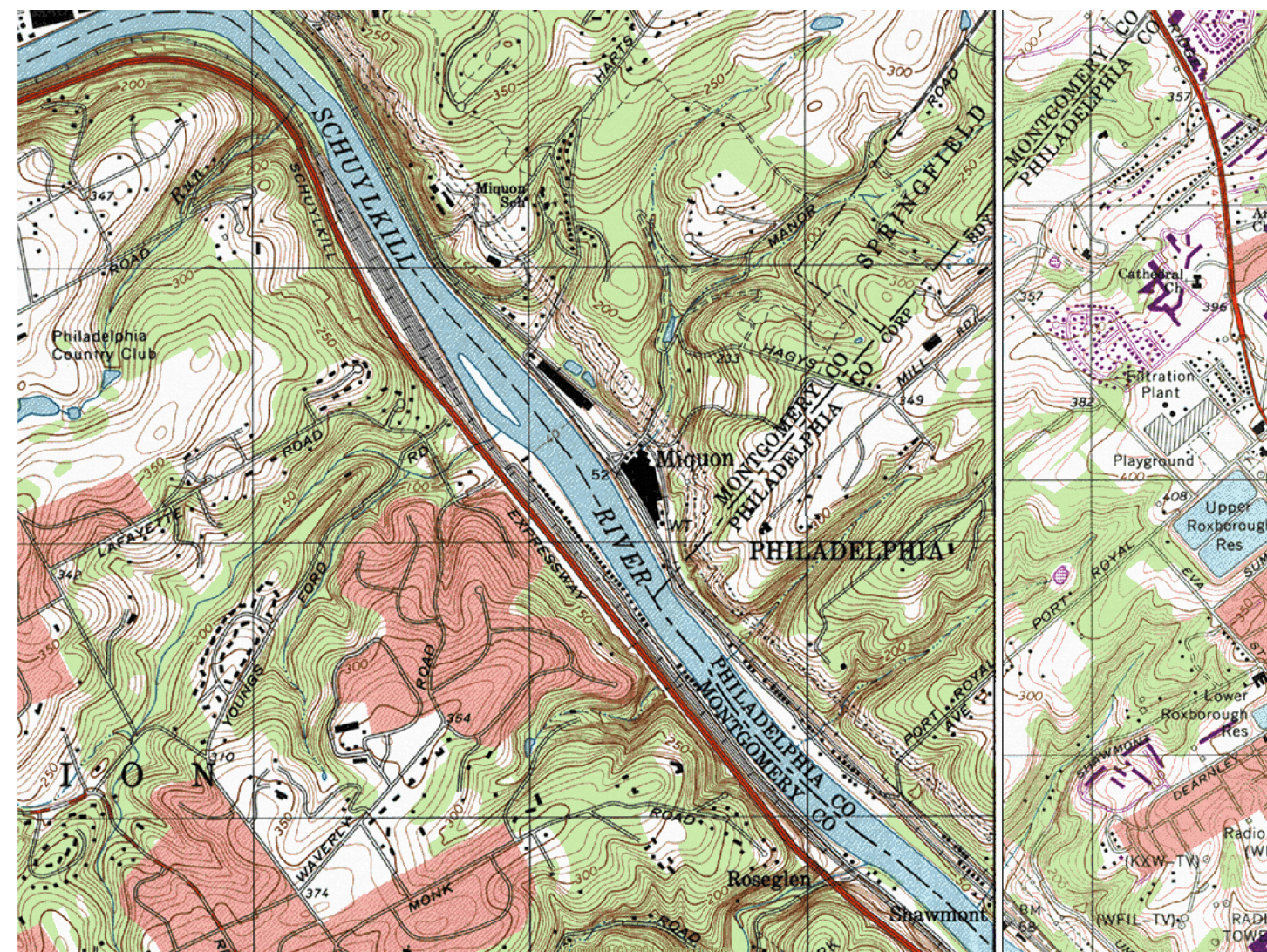
PROPOSED BUILDING ADDITION

SITUATED IN WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

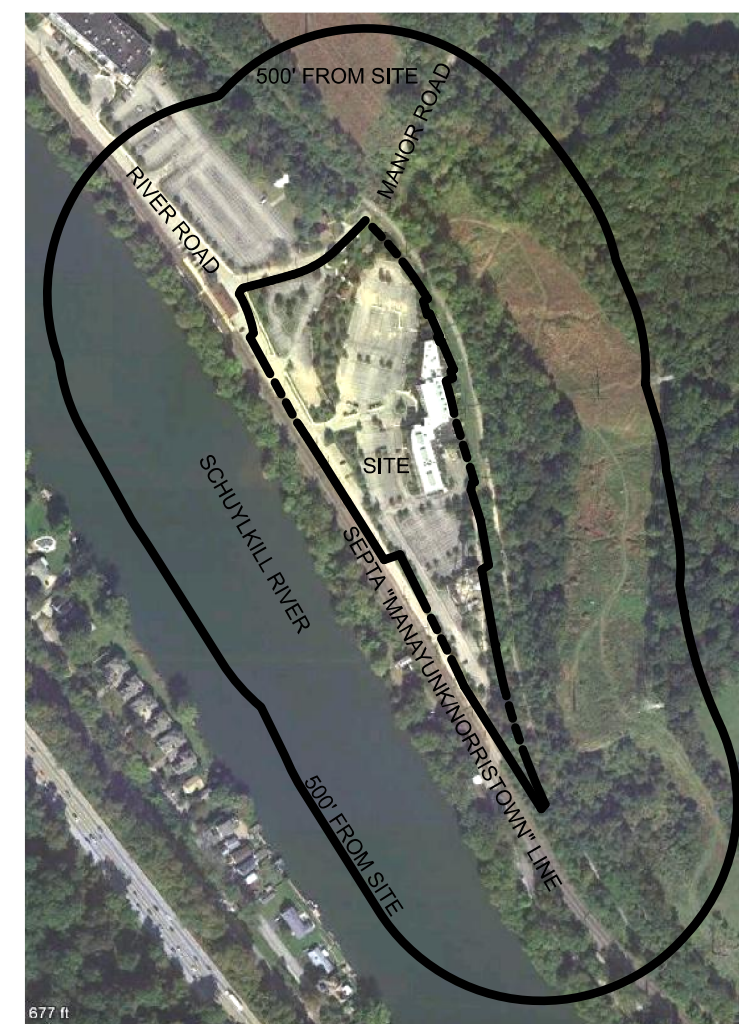
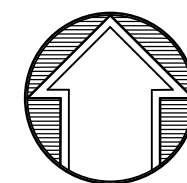
WAIVER REQUESTS:

WAIVERS BEING REQUESTED FOR APPROVAL BY THE BOARD OF SUPERVISORS

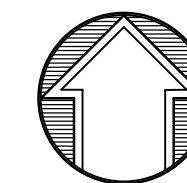
- SUBMISSION**
- CH. 105-12(D) OF SALDO TO ALLOW THE PLANS TO BE REVIEWED AND APPROVED SIMULTANEOUSLY AS BOTH PRELIMINARY AND FINAL PLANS, RATHER THAN REQUIRING SEPARATE PRELIMINARY AND FINAL SUBMISSIONS.
 - CH. 105-21 (B) (1)(N) REQUIRING FEATURES SHOWN ON THE PLAN WITHIN 500 FEET OF THE PROPERTY. WE REQUEST A MODIFICATION OF THIS SECTION TO ALLOW THE AERIAL VIEW ON THE TITLE SHEET, WHICH SHOWS EXISTING CONDITIONS WITHIN 500 FEET OF THE PROPERTY, TO SATISFY THIS REQUIREMENT.
 - CH. 105-21 (B) (9) (C) (2) REQUIRING PREPARATION OF TRAFFIC IMPACT STUDY. THE PROPOSED BUILDING ADDITION IS NOT EXPECTED TO INCREASE ENROLLMENT; THEREFORE, THE CURRENT TRAFFIC PATTERNS WILL NOT BE CHANGED BY THE ADDITION ONTO THE EXISTING BUILDING.
- RESOLUTION 2004-8, GRADING, EROSION CONTROL, STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES**
- 11- III(D)(2) THE TOP OF ANY SLOPE SHALL BE LOCATED A MINIMUM OF FIVE (5) FEET FROM PROPERTY LINE. WE REQUEST A WAIVER FROM THIS REQUIREMENT BECAUSE WE RECEIVED ZONING RELIEF THAT PERMITS PARKING LESS THAN FIVE FEET AWAY FROM THE PROPERTY LINE. THE EXISTING BUILDING ON THE EAST OF THE PROPERTY IS ALSO LESS THAN FIVE FEET AWAY FROM THE PROPERTY LINE.
 - 12- III(E)(2)(C)(IV) - STORM DRAINAGE PIPES SHALL BE AT LEAST 18 INCHES AND RCP. WE REQUEST A WAIVER FROM THIS REQUIREMENT TO USE A TWELVE INCH HDPE PIPE THE LARGEST PIPE SIZE THE PROPOSED STORMWATER SYSTEM CAN ACCOMMODATE IS A TWELVE INCH PIPE.
 - 13- III(F)(3)(D)(4)(E)(7) INFILTRATION RATES SHALL NOT BE USED IN COMPUTING THE STORAGE VOLUME OF THE INFILTRATION SYSTEM. WE REQUEST A WAIVER FROM THIS REQUIREMENT BECAUSE WE ARE USING A SUBSURFACE SYSTEM THAT IS DESIGNED TO HOLD UP TO AND INCLUDING THE 100-YEAR STORM. THIS SUBSURFACE SYSTEM DOES NOT PRESENT THE SAME CONCERNS THAT STILL WATER DOES IN ABOVE GROUND BMP FACILITIES. THE SUBSURFACE SYSTEM WILL DRAIN IN 7 DAYS, WHICH IS WITHIN DEP STANDARDS. THE DESIGN WILL UTILIZE AN EMERGENCY OVERFLOW INLET IN THE CASE OF BACK TO STORM EVENTS.
 - 14- III(F)(3)(D)(4)(G) - INFILTRATION BMPs SHALL BE CAPABLE OF COMPLETELY INFILTRATING THE IMPOUNDED WATER WITHIN 96 HOURS. WE REQUEST A WAIVER FROM THIS REQUIREMENT BECAUSE WE ARE USING A SUBSURFACE SYSTEM THAT IS DESIGNED TO HOLD UP TO AND INCLUDING THE 100-YEAR STORM. THIS SUBSURFACE SYSTEM DOES NOT PRESENT THE SAME CONCERNS THAT STILL WATER DOES IN ABOVE GROUND BMP FACILITIES. THE SUBSURFACE SYSTEM WILL DRAIN IN 7 DAYS, WHICH IS WITHIN DEP STANDARDS. THE DESIGN WILL UTILIZE AN EMERGENCY OVERFLOW INLET IN THE CASE OF BACK TO STORM EVENTS.
 - 15- III(F)(3)(D)(4)(E)(7) INFILTRATION RATES SHALL NOT BE USED IN COMPUTING THE STORAGE VOLUME OF THE INFILTRATION SYSTEM. WE REQUEST A WAIVER FROM THIS REQUIREMENT BECAUSE WE ARE USING A SUBSURFACE SYSTEM THAT IS DESIGNED TO HOLD UP TO AND INCLUDING THE 100-YEAR STORM. THIS SUBSURFACE SYSTEM DOES NOT PRESENT THE SAME CONCERNS THAT STILL WATER DOES IN ABOVE GROUND BMP FACILITIES. THE SUBSURFACE SYSTEM WILL DRAIN IN 7 DAYS, WHICH IS WITHIN DEP STANDARDS. THE DESIGN WILL UTILIZE AN EMERGENCY OVERFLOW INLET IN THE CASE OF BACK TO STORM EVENTS.



LOCATION MAP
SCALE: 1"=2000'



AERIAL VIEW
SCALE: 1"=500'



PLAN INDEX

NO.	RELATION	DESCRIPTION	START DATE	REVISION DATE
C1.0	1 of 12	TITLE SHEET	6/21/22	--
C2.0	2 of 12	EXISTING FEATURES PLAN	6/21/22	--
C3.0	3 of 12	DEMOLITION PLAN	6/21/22	--
C4.0	4 of 12	SITE PLAN	6/21/22	--
C5.0	5 of 12	CONSTRUCTION IMPROVEMENTS PLAN	6/21/22	--
C6.0	6 of 12	LANDSCAPE PLAN	6/21/22	--
C6.1	7 of 12	LANDSCAPE DETAIL SHEET	6/21/22	--
C7.0	8 of 12	EROSION & SEDIMENTATION CONTROL PLAN	6/21/22	--
C7.1	9 of 12	EROSION & SEDIMENTATION CONTROL DETAIL SHEET	6/21/22	--
C8.0	10 of 12	POST-CONSTRUCTION STORMWATERMANAGEMENT PLAN	6/21/22	--
C8.1	11 of 12	POST-CONSTRUCTION STORMWATERMANAGEMENT SHEET	6/21/22	--
C9.0	12 of 12	EXISTING RESOURCES AND SITE ANALYSIS (ERSAP) PLAN	6/21/22	--

OWNER / APPLICANT

AIM ACADEMY
1200 RIVER ROAD
CONSHOHOCKEN, PA 19428

ENGINEER / SURVEYOR / LANDSCAPE ARCHITECT

NAVE NEWELL, INC.
900 WEST VALLEY ROAD
SUITE 1100
WAYNE, PENNSYLVANIA 19087
CONTACT: JAMES P. BANNON, PE (LIC. NO. 082137)
610-265-8323



DATE	NO.	DESCRIPTION	DATE	BY



JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE 082137

**AIM ACADEMY
BUILDING ADDITION**

WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

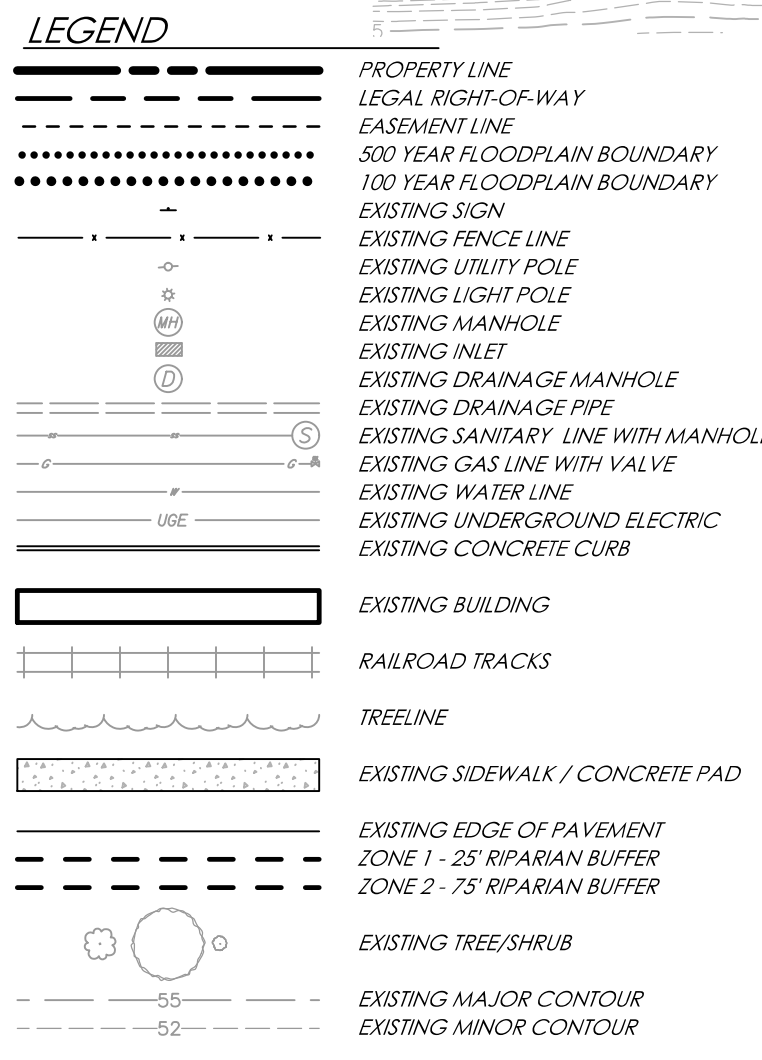
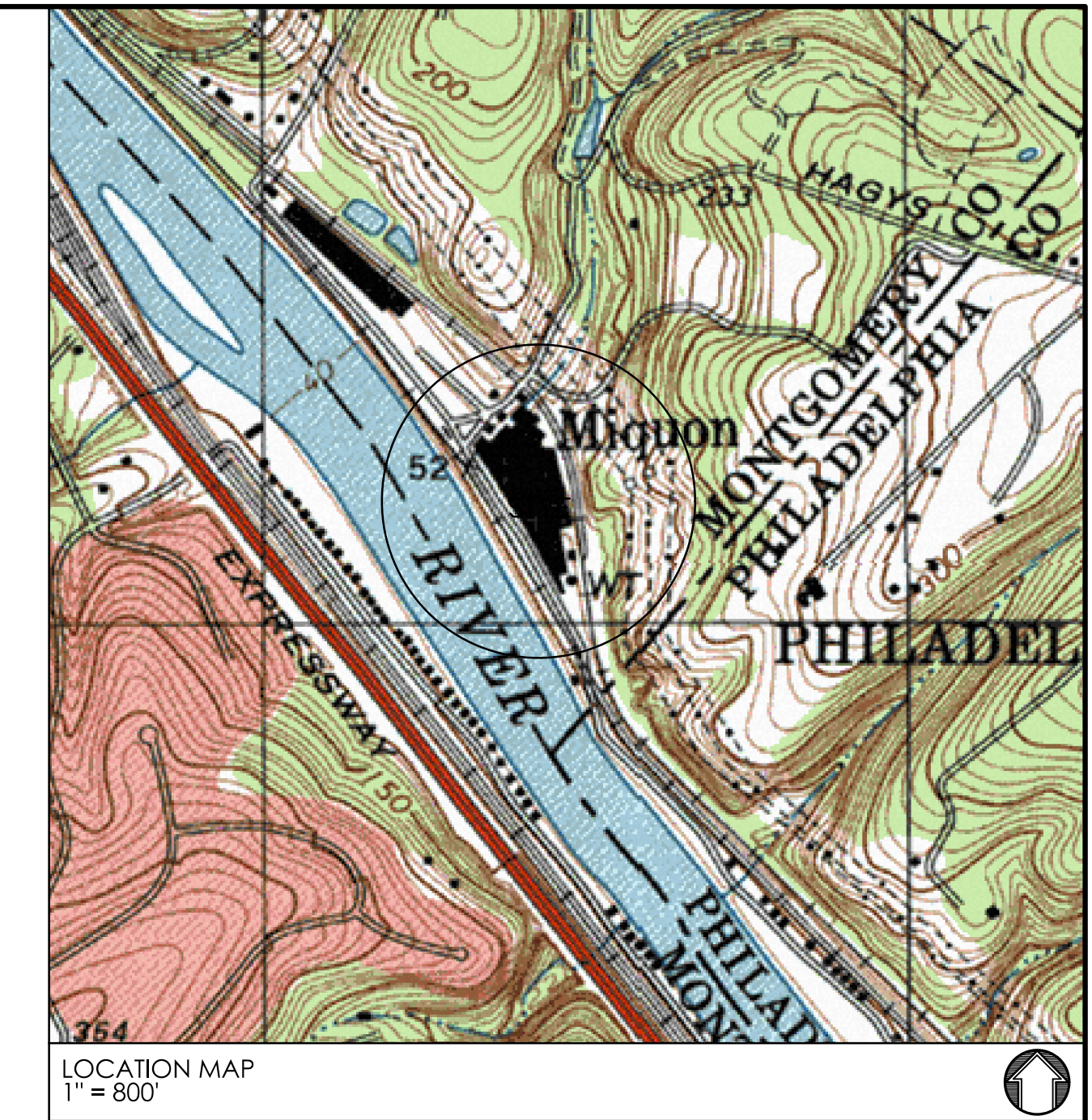
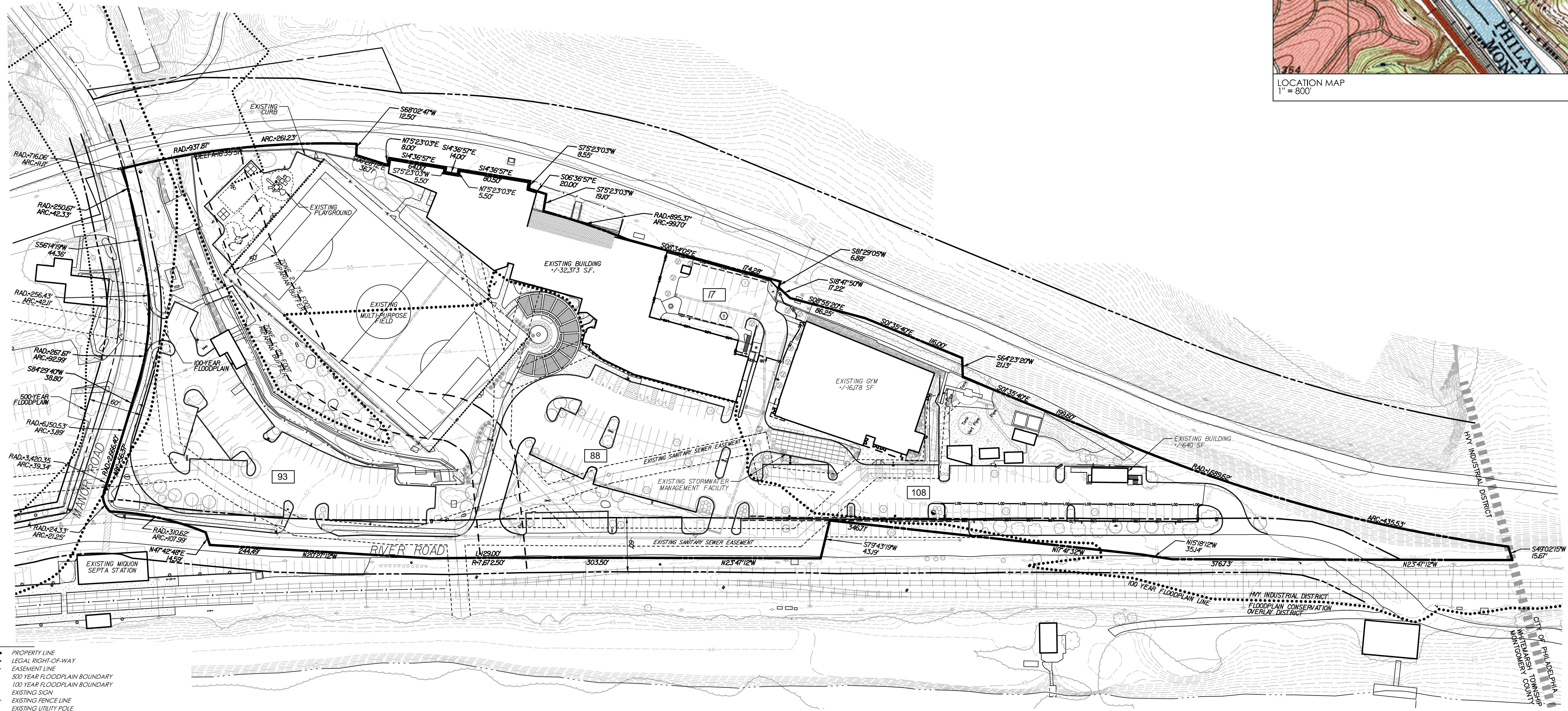
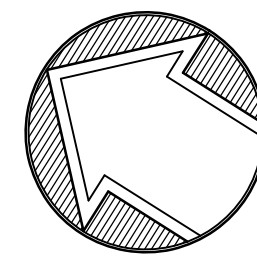
TITLE SHEET

PROJECT NO. 2011059.08
DATE: 6/21/22
SCALE: AS NOTED

DRAWN BY: CW
CHK'D BY: JPB
APPROV. BY: JPB

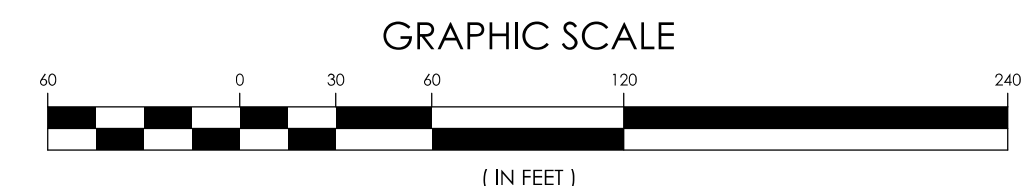
C1.0

1 of 12



NOTE: THE TOPOGRAPHY SHOWN ON THESE PLANS IS BASED ON A SURVEY CONDUCTED IN THE FIELD BY NAVE NEWELL, INC. COMPLETED ON AUGUST 15, 2011. AN ADDITIONAL SURVEY WAS CONDUCTED ON FEBRUARY 23, 2022. THERE IS NO INDICATION THAT THE DATUM USED FOR THIS PLAN MATCHES THE DATUM USED ON FEMA FLOOD INSURANCE RATE MAP NO. 42091C0307E.

- GENERAL NOTES: 1. THIS PLAN IS BASED ON A SURVEY CONDUCTED IN THE FIELD BY NAVE NEWELL, INC. COMPLETED ON AUGUST 15, 2011. AN ADDITIONAL SURVEY WAS CONDUCTED ON FEBRUARY 23, 2022. 2. THIS SURVEY REPRESENTS CONDITIONS AS OF THE DATE OF THE SURVEY EXCEPT SUCH IMPROVEMENTS OR EASEMENTS, IF ANY, THAT MAY BE LOCATED BELOW THE SURFACE OF THE LAND, ON THE SURFACE OF THE LANDS OR ABOVE THE SURFACE OF THE LANDS AND NOT VISIBLE.

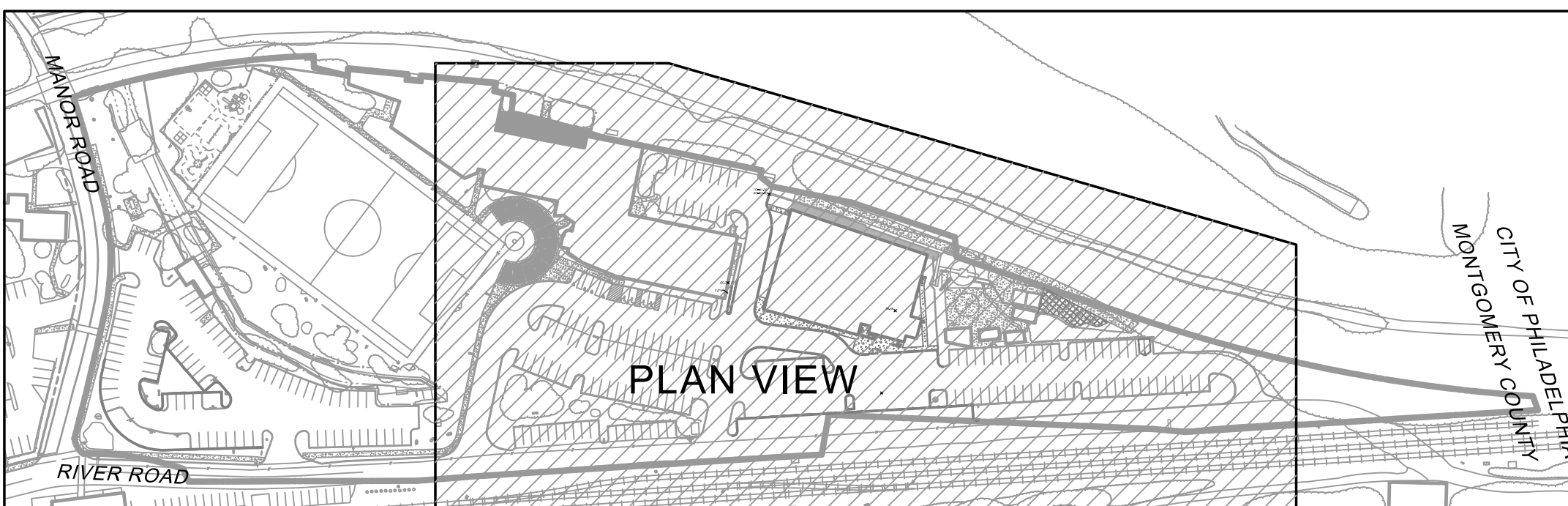
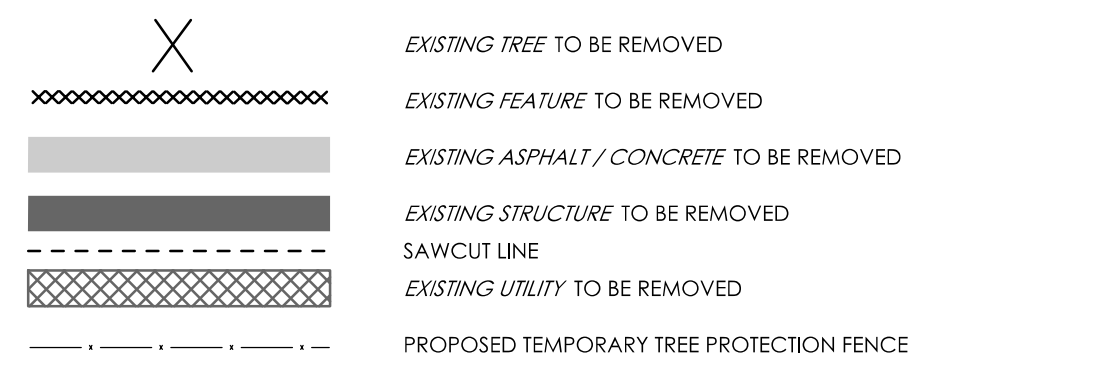
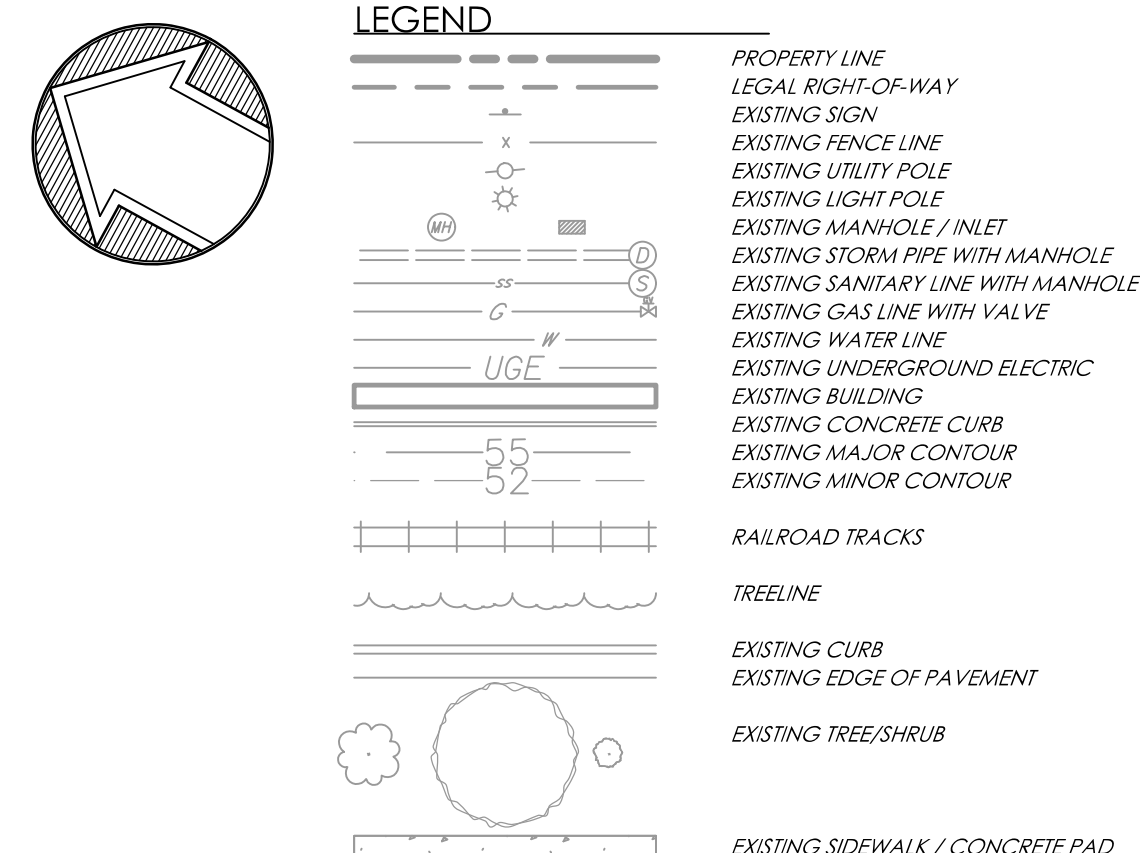


Nave NEWELL logo with tagline 'Where Ideas Get Down to Earth' and contact information for 900 West Valley Road, Suite 1100, Philadelphia, PA.

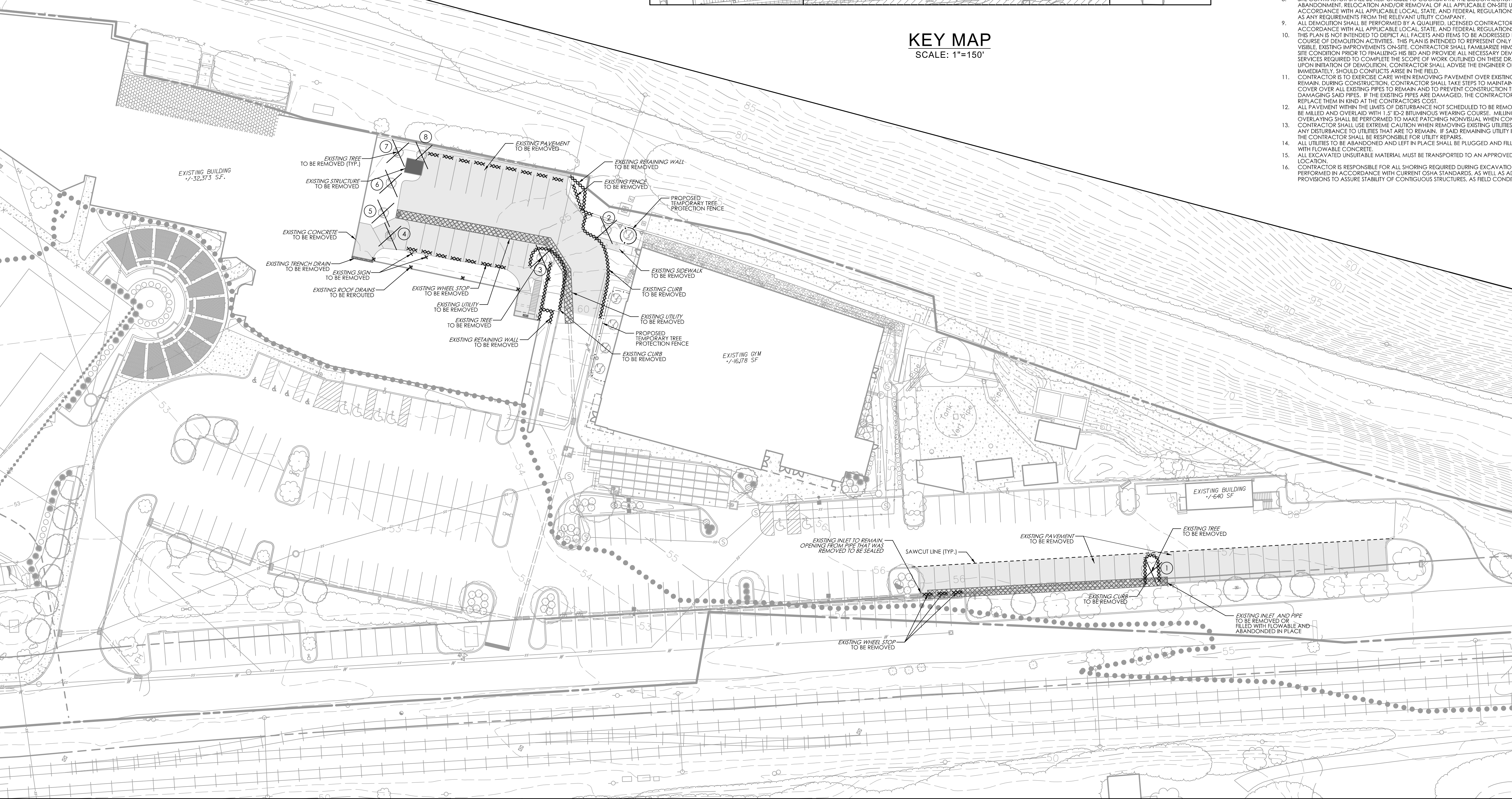
Table with columns for 'no.', 'description', 'date', and 'checked by' for recording revisions.

Professional Engineer seal for James P. Bannon, License No. PE 082137, State of Pennsylvania.

Project title 'EXISTING FEATURES PLAN' and 'AIM ACADEMY BUILDING ADDITION' for 'WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA'. Includes project number 2011059.08, date 6/21/22, and sheet number C2.0.



KEY MAP
SCALE: 1"=150'



- DEMOLITION NOTES:**
- LOCATIONS OF EXISTING UTILITIES AS SHOWN HEREIN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS, PLANS BY OTHERS, ABOVE GROUND EXAMINATION OF THE SITE AND/OR PRIVATE UTILITY LOCATION COMPANY. THE COMPLETENESS OR ACCURACY OF THE LOCATIONS ARE NOT GUARANTEED. THE CONTRACTOR MUST VERIFY LOCATIONS AND DEPTHS OF ALL UTILITIES BEFORE START OF WORK.
 - PRIOR TO STARTING CONSTRUCTION, ALL UTILITY SERVICES IN THE AREA ARE TO BE LOCATED, THE USER NOTIFIED, AND MEASURES TAKEN TO PROTECT THE LINES IN ACCORDANCE WITH PA ACT 287, AS AMENDED. CONTRACTORS ARE TO IMMEDIATELY NOTIFY THE ENGINEER OF ANY DEVIATIONS FROM THE PLAN INFORMATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT PA "ONE-CALL" AT LEAST 72 HOURS TO ANY EXCAVATION OR DEMOLITION ON-SITE.
 - ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO THE START OF DEMOLITION.
 - THE EXISTING ASPHALT TO BE RESURFACED SHALL BE PATCHED, FILLED AND/OR REPAIRED AS NECESSARY PRIOR TO THE APPLICATION OF THE WEARING COURSE.
 - IN ALL AREAS WHERE FINISHED PAVING IS TO BE PROVIDED, THE CONTRACTOR IS TO BREAK APART EXISTING ASPHALT TO EXISTING SUBBASE STONE, FOLLOWING MILLING, THE EXPOSED SUBGRADE SHALL BE INSPECTED FOR ITS SUITABILITY AS PAVEMENT SUBBASE. IN AREAS WHERE EXISTING ASPHALT WILL BE CONVERTED TO GREEN SPACE OR BUILDINGS, THE CONTRACTOR IS TO MILL OUT THE EXISTING ASPHALT FOR ITS REUSE ON-SITE AS SUBBASE IN PROPOSED ASPHALT PAVEMENT AREAS. ALL FILL MEASURES TO BE COMPACTED IN ACCORDANCE WITH THE GEOTECHNICAL SPECIFICATIONS.
 - WHERE IMPROVEMENTS ARE PROPOSED TO TIE INTO EXISTING FEATURES, THE EXISTING FEATURES SHALL BE FIELD VERIFIED FOR ELEVATION AND LOCATION. IF FIELD LOCATED DATA IS DIFFERENT THAN THE DATA CONTAINED WITHIN THE CONSTRUCTION DOCUMENTS, THE CONTRACTOR SHALL NOTIFY NAVE NEWELL, INC. PRIOR TO ANY DESIGN CHANGES. THE PAVEMENT SECTION AREA DELINEATED ON THE PLANS TO BE MODIFIED SHALL BE USED AS GUIDANCE. EXPAND OR CONTRACT THIS AREA AT THE FIELD LOCATION TO EXISTING PAVEMENT, SIDEWALK, DRIVEWAY APRONS, AND LOADING AREAS AS THE FIELD CONDITIONS WARRANT. ALL PAVEMENT SEAMS SHALL BE SEALED.
 - SITE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE DISCONNECTION, ABANDONMENT, RELOCATION AND/OR REMOVAL OF ALL APPLICABLE ON-SITE UTILITIES, IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS AS WELL AS ANY REQUIREMENTS FROM THE RELEVANT UTILITY COMPANY.
 - ALL DEMOLITION SHALL BE PERFORMED BY A QUALIFIED, LICENSED CONTRACTOR IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS. THIS PLAN IS NOT INTENDED TO DEPICT ALL FACETS AND ITEMS TO BE ADDRESSED DURING THE COURSE OF DEMOLITION ACTIVITIES. THIS PLAN IS INTENDED TO REPRESENT ONLY THE READILY VISIBLE EXISTING IMPROVEMENTS ON-SITE. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE SITE CONDITION PRIOR TO FINALIZING HIS BID AND PROVIDE ALL NECESSARY DEMOLITION SERVICES REQUIRED TO COMPLETE THE SCOPE OF WORK OUTLINED ON THESE DRAWINGS. UPON INITIATION OF DEMOLITION, CONTRACTOR SHALL ADVISE THE ENGINEER OF RECORD IMMEDIATELY. SHOULD CONFLICTS ARISE IN THE FIELD.
 - CONTRACTOR IS TO EXERCISE CARE WHEN REMOVING PAVEMENT OVER EXISTING PIPES TO REMAIN. DURING CONSTRUCTION, CONTRACTOR SHALL TAKE STEPS TO MAINTAIN ADEQUATE COVER OVER ALL EXISTING PIPES TO REMAIN AND TO PREVENT CONSTRUCTION TRAFFIC FROM DAMAGING SAID PIPES. IF THE EXISTING PIPES ARE DAMAGED, THE CONTRACTOR SHALL REPLACE THEM IN KIND AT THE CONTRACTOR'S COST.
 - ALL PAVEMENT WITHIN THE LIMITS OF DISTURBANCE NOT SCHEDULED TO BE REMOVED SHALL BE MILLED AND OVERLAIN WITH 1.5" DSB BITUMINOUS WEARING COURSE. MILLING AND OVERLAYING SHALL BE PERFORMED TO MAKE PATCHING NONVISUAL WHEN COMPLETED. CONTRACTOR SHALL USE EXTREME CAUTION WHEN REMOVING EXISTING UTILITIES TO PREVENT ANY DISTURBANCE TO UTILITIES THAT ARE TO REMAIN. IF SAID REMAINING UTILITY IS DAMAGED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR UTILITY REPAIRS.
 - ALL UTILITIES TO BE ABANDONED AND LEFT IN PLACE SHALL BE PLUGGED AND FILLED WITH FLOWABLE CONCRETE.
 - ALL EXCAVATED UNSUITABLE MATERIAL MUST BE TRANSPORTED TO AN APPROVED DISPOSAL LOCATION.
 - CONTRACTOR IS RESPONSIBLE FOR ALL SHORING REQUIRED DURING EXCAVATION AND SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS, AS WELL AS ADDITIONAL PROVISIONS TO ASSURE STABILITY OF CONTIGUOUS STRUCTURES, AS FIELD CONDITIONS DICTATE.



DATE	NO.	DESCRIPTION	REVISIONS



AIM ACADEMY BUILDING ADDITION

DEMOLITION PLAN

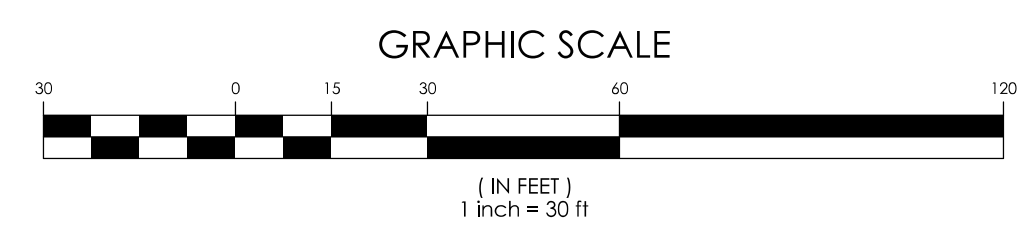
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

PROJECT NO.	2011059.08	DRAWN BY:	CW
DATE:	6/21/22	CHK'D BY:	JPB
SCALE:	1"=30'	APPROV. BY:	JPB
SHEET NO.			

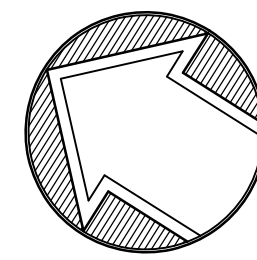
C3.0

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CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE - STOP CALL
Pennsylvania One Call System, Inc.
1-800-242-1176



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ZONING DATA

HVY INDUSTRIAL ZONING DISTRICT
NET-TRACT AREA

	REQUIRED: 2 AC	EXISTING: 333,316 S.F. (7.65 AC.)	PROPOSED (ADDITION TO REAR OF MAIN BUILDING): 333,316 S.F. (7.65 AC.)
YARD SETBACKS:			
FRONT	20'	40' (S.A.M'S PLACE)	40' (S.A.M'S PLACE)/179' (BUILDING ADDITION)
SIDE	40' AGG., 15' MIN.	0' (MAIN BUILDING)*/ 41' (S.A.M'S PLACE)	0' (MAIN BUILDING)/7' (BUILDING ADDITION)
REAR	20'	40' (S.A.M'S PLACE)	40' (S.A.M'S PLACE)/842' (BUILDING ADDITION)
MAXIMUM IMPERVIOUS COVERAGE	60%	71.1% (236,897 S.F.)	70.7% (235,545 S.F.)
MINIMUM GREEN SPACE	40%	28.9%	29.3%
MAXIMUM BUILDING COVERAGE	40%	14.8%	17.4%
ACCESSORY USE/STRUCTURE COVERAGE OF REAR YARD	30%	25.1%	24.7%

*EXISTING NON-CONFORMITY

SITE DATA

OWNER:
ACADEMY IN MANAYUNK
1200 RIVER ROAD
CONSHOHOCKEN, PA 19428

APPLICANT:
ACADEMY IN MANAYUNK
1200 RIVER ROAD
CONSHOHOCKEN, PA 19428

TAX MAP:	65	65	65
BLOCK:	5	5	5
UNIT:	10	26	24
DEED BOOK:	5547	5547	5547
PAGE:	1541	1541	1541
FOLIO NO.:	65-00-10066-00-3	65-00-10066-06-6	65-00-10066-04-8
GROSS TRACT AREA:	8.87 ACRES		
NET TRACT AREA:	7.65 ACRES		

PROPOSED SANITARY SEWER TYPE: ON-SITE (EXISTING)
PROPOSED WATER FACILITY TYPE: MUNICIPAL (EXISTING)

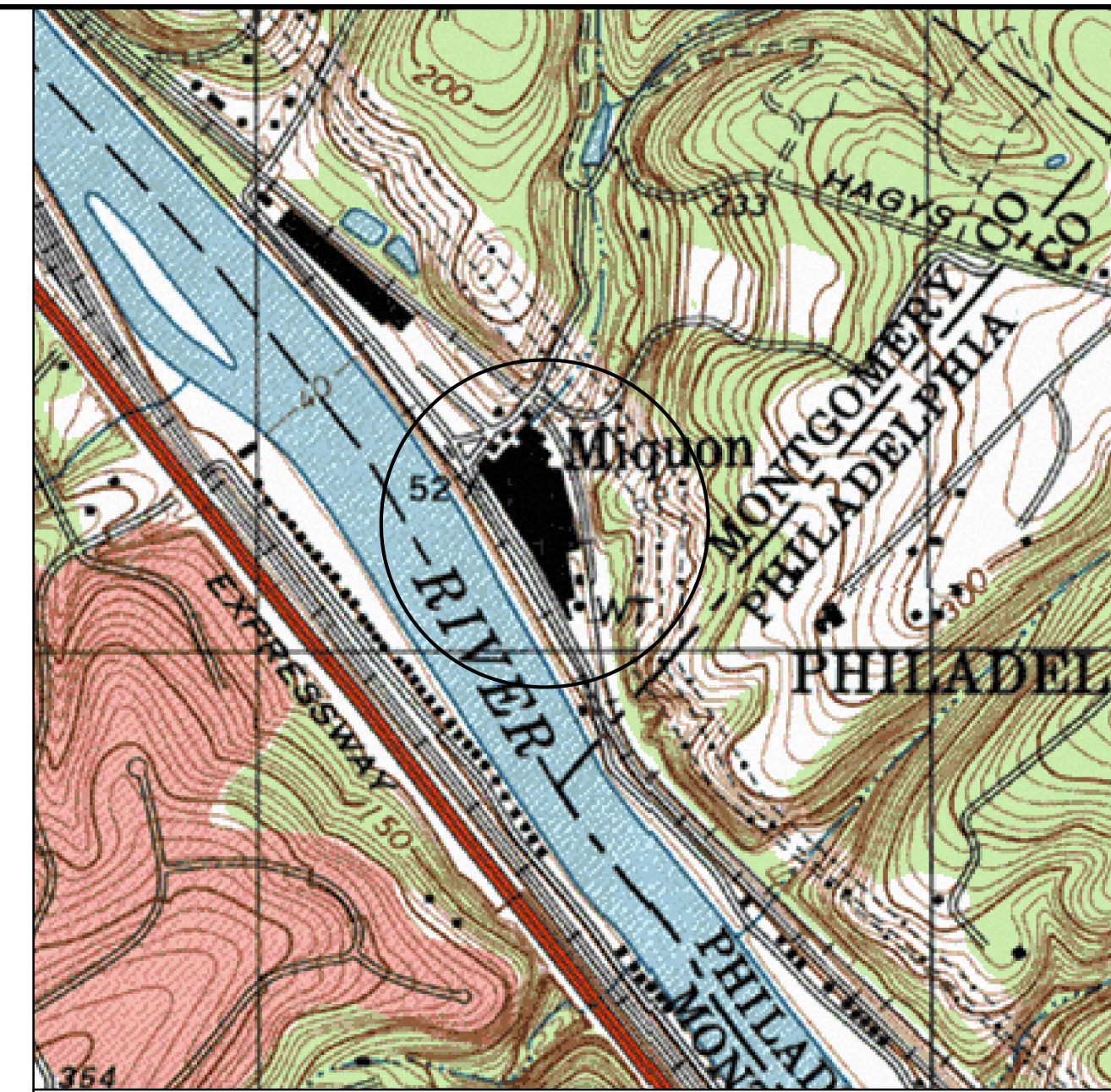
PARKING SUMMARY

AIM ACADEMY:	REQUIRED:	EXISTING:	PROPOSED:
ADMINISTRATION: 1 SPACE PER STAFF & 1 SPACE PER 2 CLASSROOMS & OFFICES (125 TOTAL STAFF * .22 OFFICES)	136 SPACES		
LOWER SCHOOL: 1 SPACE PER STAFF & 1 SPACE PER 2 CLASSROOMS & OFFICES (20 CLASSROOMS & OFFICES)	10 SPACES		
MIDDLE SCHOOL: 1 SPACE PER STAFF & 1 SPACE PER 2 CLASSROOMS & OFFICES (15 CLASSROOMS & OFFICES)	8 SPACES		
UPPER SCHOOL: 1 SPACE PER STAFF & 1 SPACE PER 10 STUDENTS (96 STUDENTS)	10 SPACES		
TWO-STORY GYMNASIUM: 1 SPACE PER 2 CLASSROOMS & OFFICES (7 OFFICES)	4 SPACES		
TOTAL AIM ACADEMY PARKING REQUIRED BY TOWNSHIP ZONING	167 SPACES	306 TOTAL SPACES	259 TOTAL SPACES*

* INCLUDES 4 ELECTRIC VEHICLE CHARGING STATION SPACES

NOTES:

- THERE ARE NO PROVISIONS BEING PROPOSED FOR THE LIGHTING OF THE PROPOSED PARKING AREAS; EXISTING LIGHTING IS TO REMAIN.
- THERE ARE NO PROPOSED SIGNS BEING PROPOSED WITHIN THIS DEVELOPMENT.
- THE PROPOSED BUILDING'S TREATMENT AND DISPOSAL OF SEWAGE AND INDUSTRIAL WASTES, WATER SUPPLY AND STORM DRAINAGE WILL BE TIED INTO EXISTING UTILITIES PRESENT ON SITE.
- THERE ARE NO BUILDINGS BEING USED OR INTENDED TO BE USED FOR DWELLING PURPOSES.
- THE PROPOSED USE OF THIS PARCEL IS A SCHOOL. THEREFORE, THERE ARE NO PROPOSED INDUSTRIAL OR COMMERCIAL OPERATIONS OCCURRING THAT WOULD PRODUCE NOISE, GLARE, AIR POLLUTION, WATER POLLUTION, FIRE HAZARDS, TRAFFIC CONGESTION OR OTHER SAFETY HAZARDS.
- THERE ARE NO METHODS PROPOSED TO BE EMPLOYED IN CONTROLLING EXCESS NOISE, AIR POLLUTION, SMOKE, FUMES, WATER POLLUTION, FIRE HAZARDS OR OTHER SAFETY HAZARDS.
- THERE ARE NO STEEP SLOPES PRESENT ON THIS PARCEL THAT ARE WITHIN THE PROJECT LIMIT OF DISTURBANCE.
- THERE ARE NO PROPOSED STORMWATER BEST MANAGEMENT PRACTICES MUST BE SUBMITTED TO WHITEMARSH TOWNSHIP IN PAPER AND DIGITAL (DWG) FORMAT UPON COMPLETION OF CONSTRUCTION ACTIVITIES.



LOCATION MAP
1" = 800'

FLOODPLAIN NOTES:

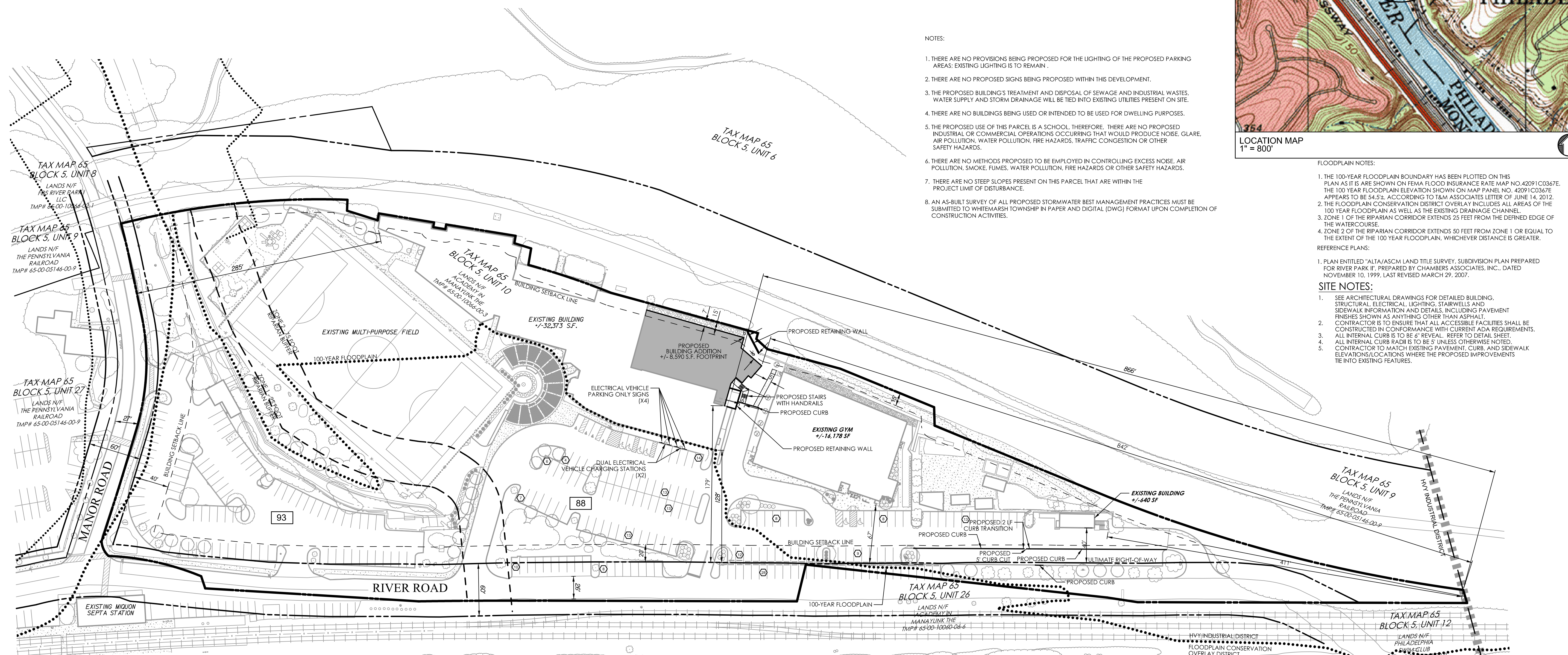
- THE 100-YEAR FLOODPLAIN BOUNDARY HAS BEEN PLOTTED ON THIS PLAN AS IT IS SHOWN ON FEMA FLOOD INSURANCE RATE MAP NO. 42091C0367E. THE 100-YEAR FLOODPLAIN ELEVATION SHOWN ON MAP PANEL NO. 42091C0367E APPEARS TO BE 54.5' ACCORDING TO T&M ASSOCIATES LETTER OF JUNE 14, 2012.
- THE FLOODPLAIN CONSERVATION DISTRICT OVERLAY INCLUDES ALL AREAS OF THE 100-YEAR FLOODPLAIN AS WELL AS THE EXISTING DRAINAGE CHANNEL.
- ZONE 1 OF THE RIPARIAN CORRIDOR EXTENDS 25 FEET FROM THE DEFINED EDGE OF THE WATERCOURSE.
- ZONE 2 OF THE RIPARIAN CORRIDOR EXTENDS 50 FEET FROM ZONE 1 OR EQUAL TO THE EXTENT OF THE 100-YEAR FLOODPLAIN, WHICHEVER DISTANCE IS GREATER.

REFERENCE PLANS:

- PLAN ENTITLED "ALTA/JASCM LAND TITLE SURVEY, SUBDIVISION PLAN PREPARED FOR RIVER PARK II, PREPARED BY CHAMBERS ASSOCIATES, INC., DATED NOVEMBER 10, 1999, LAST REVISED MARCH 29, 2007.

SITE NOTES:

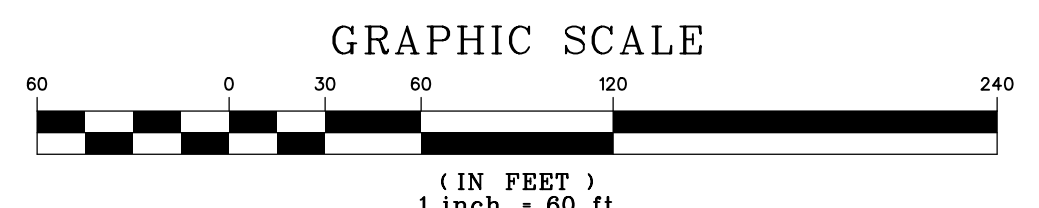
- SEE ARCHITECTURAL DRAWINGS FOR DETAILED BUILDING, STRUCTURAL, ELECTRICAL, LIGHTING, STAIRWELLS AND SIDEWALK INFORMATION AND DETAILS, INCLUDING PAVEMENT FINISHES SHOWN AS ANYTHING OTHER THAN ASPHALT.
- CONTRACTOR IS TO ENSURE THAT ALL ACCESSIBLE FACILITIES SHALL BE CONSTRUCTED IN CONFORMANCE WITH CURRENT ADA REQUIREMENTS.
- ALL INTERNAL CURB IS TO BE 6" REVEAL. REFER TO DETAIL SHEET.
- ALL INTERNAL CURB RADIUS IS TO BE 5' UNLESS OTHERWISE NOTED.
- CONTRACTOR TO MATCH EXISTING PAVEMENT, CURB, AND SIDEWALK ELEVATIONS/LOCATIONS WHERE THE PROPOSED IMPROVEMENTS TIE INTO EXISTING FEATURES.



LEGEND

	PROPERTY LINE
	LEGAL RIGHT-OF-WAY
	EASEMENT LINE
	500 YEAR FLOODPLAIN BOUNDARY
	100 YEAR FLOODPLAIN BOUNDARY
	EXISTING SIGN
	EXISTING FENCE LINE
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING CONCRETE CURB
	EXISTING BUILDING
	RAILROAD TRACKS
	TREELINE
	EXISTING SIDEWALK / CONCRETE PAD
	EXISTING EDGE OF PAVEMENT
	ZONE 1 - 25' RIPARIAN BUFFER
	ZONE 2 - 75' RIPARIAN BUFFER
	EXISTING TREE / SHRUB
	PROPOSED BUILDING
	PROPOSED CURB
	PROPOSED FLUSH CURB
	BUILDING SETBACK LINE
	PROPOSED SIDEWALK
	PROPOSED RETAINING WALL

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DATE	BY	DESCRIPTION

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE 082137

**AIM ACADEMY
BUILDING ADDITION**

DRAWING NAME: **SITE PLAN**

DRAWING NUMBER: **2011059.08**

DATE: **6/21/22**

SCALE: **1" = 60'**

SHEET NO. **C4.0**

PROJECT NO. **2011059.08**

DRAWN BY: **CC**

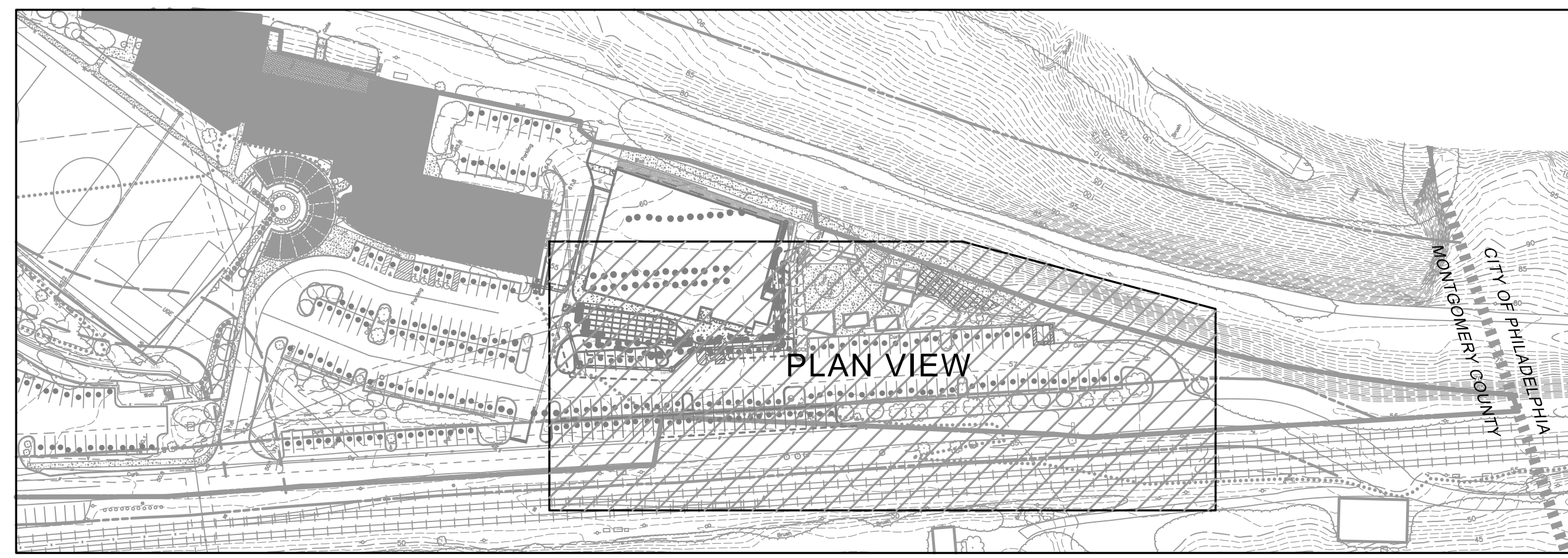
CHECKED BY: **JPB**

APPROVED BY: **JPB**

C4.0

4 of 12

LEGEND



KEY MAP

SCALE: 1"=150'

LANDSCAPE REQUIREMENTS

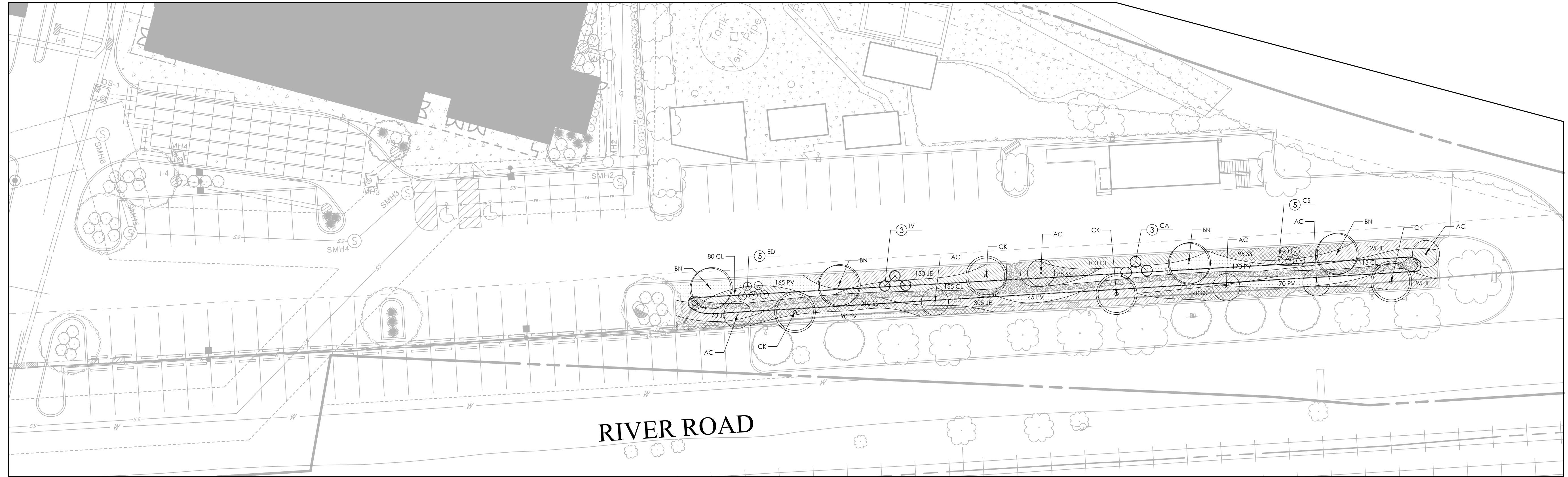
REQUIREMENTS	REQUIRED	PROPOSED
REPLACEMENT LANDSCAPING SECTION 55-4.816(g) ANY TREE 6" OR GREATER TO BE REPLACED BY 1 TREE NOT LESS THAN 3" AND MUST EQUAL THE EXISTING DBH TO BE REMOVED	14 REPLACEMENT TREES*	8 SHADE TREES **6 ORNAMENTAL TREES (COUNT AS 3 REPLACEMENT TREES) ***16 SHRUBS (12 COUNT AS REPLACEMENT TREES) ****245 PLUGS (240 COUNT AS REPLACEMENT TREES) (14 TOTAL REPLACEMENT TREES)
* SEE TREE REPLACEMENT DATA ON DEMOLITION PLAN **SECTION 55-4.816(i)(1) 30% OF THE REPLACEMENT TREES MAY BE REPLACED WITH ORNAMENTAL/LOWERING TREES AT A 2:1 RATIO ***SECTION 55-4.816(i)(2) 20% OF THE REPLACEMENT TREES MAY BE REPLACED AS SHRUBS AT A 6:1 RATIO ****SECTION 55-4.816(i)(5) 5% OF REPLACEMENT TREES MAY BE REPLACED WITH PLUGS AT A RATE OF 240 PLUGS FOR EVERY THREE-INCH-CALIPER SHADE TREE		

NOTES:

- THIS PLAN IS FOR LANDSCAPING PURPOSES ONLY. ALL SITE IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO, BUILDING LOCATIONS, CURBING, SIDEWALK, UTILITIES, AND THEIR ANCILLARY APPURTENANCES, ARE SHOWN FOR INFORMATION PURPOSES ONLY AND ARE SUBJECT TO MODIFICATION AND REVISION. CONTRACTOR SHALL REFER TO THE SITE PLAN AND GRADING PLAN, AND THEIR RELATED DETAIL SHEETS, FOR ALL SITE IMPROVEMENTS OTHER THAN LANDSCAPING.
- UNLESS OTHERWISE NOTED, ALL DISTURBED AREAS SHALL BE SEEDED.
- THERE SHALL BE NO SUBSTITUTES FOR SPECIFIED PLANTS WITHOUT WRITTEN APPROVAL BY NAVE NEWELL.
- A PRE-CONSTRUCTION CONFERENCE SHALL BE SCHEDULED WITH THE TOWNSHIP SHADE TREE COMMISSION PRIOR TO THE START OF ANY CONSTRUCTION.

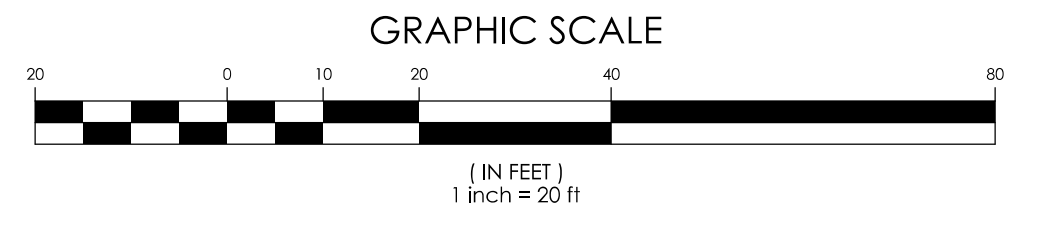
LANDSCAPE SCHEDULE

QTY.	SYM.	SCIENTIFIC NAME (COMMON NAME)	HEIGHT	SPREAD	ROOT TYPE	NOTES
DECIDUOUS TREES						
6	AC	AMELANCHIER CANADENSIS (SERVICEBERRY)	15' - 25'	15' - 25'	8 & 8	3" CAL. @ 6' ABOVE ROOT BALL
4	BN	BETULA NIGRA (RIVER BIRCH)	15' - 70'	15' - 30'	8 & 8	3" CAL. @ 6' ABOVE ROOT BALL FRST BRANCH @ 4'
4	CK	CLADRASTIS KENTUKEA (AMERICAN YELLOWWOOD)	15' - 25'	30' - 55'	8 & 8	3" CAL. @ 6' ABOVE ROOT BALL FRST BRANCH @ 6'
DECIDUOUS SHRUBS						
3	CA	CLETHRA ALNIFOLIA (SUMMERSWEET)	3' - 4'	4' - 6'	# 5 CONT.	
5	CS	CORNUS SERICEA (REDOSIER DOGWOOD)	7' - 9'	8' - 10'	# 5 CONT.	
5	ED	EUPATORIUM D. 'LITTLE JOE' (JOE PYE WEED)	3' - 8'	2' - 8'	# 5 CONT.	
3	IV	IREA VIRGINICA (SWEETSPICE)	2' - 3'	2' - 3'	# 5 CONT.	
GRASSES						
450	CL	CARY LURIDA (SHALLOW SEDGE)	-	-	# 72 PLUG	18" O.C. / ZONE 2 STAGGERED ROWS
725	JE	JUNCUS EFFUSUS (SOFT RUSH)	-	-	# 72 PLUG	18" O.C. / ZONE 2 STAGGERED ROWS
540	PV	PANICUM VIRGATUM (SWITCHGRASS)	-	-	# 72 PLUG	18" O.C. / ZONE 2 STAGGERED ROWS
530	SS	SCHIZACHYRIUM SCOPARIUM (LITTLE BLUESTEM)	-	-	# 72 PLUG	18" O.C. / ZONE 2 STAGGERED ROWS



PLAN VIEW

SCALE: 1"=20'



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DATE	NO.	DESCRIPTION	CHANGED BY

PAUL E. LEFARD, JR.
Registered Landscape Architect
License No. LA001332

DRAWING NAME: LANDSCAPE PLAN

AIM ACADEMY BUILDING ADDITION

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

PROJECT NO.	2011059.08	DRAWN BY:	JL
DATE:	6/21/22	CHK'D BY:	PEL
SCALE:	1" = 30'	APPROV. BY:	PEL
SHEET NO.	C6.0		

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GENERAL PLANTING

SUBMITTALS: Topsoil - A soil analysis report shall be submitted and show the percentage of each constituent, pH, and other pertinent soil characteristics. Recommendations should include quantities of each soil amendment and fertilizer required to achieve optimum soil conditions.

Planting Schedule - All plant material shall be planted no earlier than April 15 and may continue through June 15 or later September 1 but continue no later than October 15. Do not install plant materials when temperatures are below 35 degrees Fahrenheit or above 90 degrees Fahrenheit.

Maintenance - Written instructions for the owner's maintenance of landscaping, including initial maintenance recommendations, 12 months, and long term recommendations must be submitted prior to acceptance of landscaping.

QUALITY ASSURANCE: General - All material must comply with American Association of Nursery new standards applicable to landscaping. Material must be provided as indicated with no substitutions permitted. Plant material provided must comply with ANSI Z68.1.

Inspection - The engineer/landscape architect retains the right to inspect planting materials at any time for compliance with the contract documents. Regarding, but not limited to, latent defects, and lack of protection of maintenance, and may reject defective material. Rejected material must be immediately removed and disposed off the site. Contractor shall schedule plant inspection with engineer/landscape architect prior to installation of all plant materials.

DELIVERY, STORAGE, AND HANDLING: Packaged Materials - Material must be delivered in original unopened containers displaying weight, guaranteed chemical analysis, and manufacturer's name or furnish in bulk with appropriate certificates and protected from deterioration.

Sod - Delivery of sod shall be timed so that it will be installed within 24 hours after delivery. Sod shall be protected against drying and breakage.

Ground Cover and Plants - Delivery shall be scheduled to avoid on site storage. If planting does not occur on same day as delivery, store in location protected from sun and weather. All trees and shrubs shall not be pruned before delivery and in order to prevent shock. Stock must be covered for protection during transportation. Stock shall be bound to protect branches, bark, and overall shape during transport.

PROJECT CONDITIONS: Work Coordination - All work shall be scheduled and coordinated with work occurring in other sections and local seasons. All underground utilities must be located so to avoid damage and injury. The contractor shall be responsible for all repairs to any utility damages associated with excavation and planting.

Sequencing - Final grades must be established before planting trees and shrubs. Lawns may then be planted unless otherwise approved. Earlier plantings must be protected from later planting operations and repairs made to any resulting damage or inconsistencies.

WARRANTIES: General - Warranties shall be in addition to, and not a limitation of, other rights the owner may have against the contractor under the contract documents.

Trees and Shrubs - Warrant trees and shrubs for twelve (12) months after date of substantial completion of planting. Warranty shall cover death, and unsatisfactory growth, neglect and/or acts of God. If completion of landscaping work is materially delayed beyond the date of substantial completion, provide warranty commencing on date of acceptance by the project engineer/landscape architect.

Unsatisfactory Material - Replace unsatisfactory material with matching, healthy, vigorous plants. Plant only during next occurring planting season. At the direction of the project engineer/landscape architect either replace materials exhibiting poor quality marginal condition or extend the warranty covering such materials for one full growing season. Another inspection will be conducted at the end of the extended warranty period(s), if any, to determine acceptance or rejection. Only one replacement will be required at the end of the warranty period except for losses or replacements due to failure to comply with specified requirements.

MAINTENANCE: Lawns - Maintain lawns from immediately after planting until an acceptable lawn is established. At the end of the maintenance period, sodded lawns shall be uniform in texture, density and color substantially weed free, without gaps or bare spots and with vigorous growth of proper species and variety. Water regularly and at such times and rates as necessary for optimum growth and to avoid wilting, puddling, runoff, or erosion.

Trees and Shrubs - Maintain trees and shrubs from immediately after planting through the warranty period. Provide all maintenance necessary to achieve healthy plant growth such as watering regularly and on a timely basis, and remove weeds, replace mulch, and restore eroded watering basin around trunks if needed. Adjust stakes and guys to provide proper support and replace trees and shrubs to vertical position if necessary. Renew wrappings if damaged. Apply insecticides or fungicides if necessary to prevent or correct insect infestation and disease.

Ground Cover and Small Plants - Maintain ground cover and small plants from immediately after planting through the warranty period. Provide the following maintenance necessary to achieve healthy plant growth: water regularly and on a timely basis, remove weeds and replace mulch if needed, and spray as required to keep ground cover and small plants free of insects and disease.

PRODUCTS: TOPSOIL: Topsoil at Site - Verify suitability and quantity of topsoil stockpiled at site. If sufficient quantities of suitable topsoil are not available at site, provide topsoil from approved off site sources. Fertile agricultural soil, typical for locality, capable of sustaining vigorous plant growth and taken from a drained site free of subsoil, rocks larger than 2 inches in diameter, clay, toxic matter, plants, weeds, and roots.

SOIL AMENDMENTS: Lime - Pulverized dolomitic limestone containing not less than 85 percent total carbonates with a minimum of 30 percent magnesium carbonates minimum 30 percent passing a 10-mesh sieve and minimum 50 percent passing a 100-mesh sieve.

Humus - Shall be decomposed organic matter, pH suitable for intended use. Sand - Shall be clean washed sand free of toxic materials. Perlite - Horticultural perlite of soil amendment grade.

Commercial Fertilizer - Granular, commercial grade, pH neutral, comprised of both slow and fast release elements and containing the following minimum content of available plant nutrients:

- Trees and shrubs - 5% total nitrogen, 10% phosphoric acid, 5% soluble potash.
- Ground cover and plants - 3% total nitrogen, 10% phosphoric acid, 5% soluble potash.
- Lawns - Available nitrogen content as required to provide 1 pound per 1000 square feet at normal application rate, minimum 4% phosphoric acid, and minimum 2% soluble potash.

SEEDING: Apply seed at a rate of 4 lbs. per 1000 square feet evenly in two intersecting directions. Rake in slightly. Do not seed areas in excess of that which can be mulched on same day. Do not sow immediately following rain, when ground is too dry or during windy periods. Roll seeded area with roller not exceeding 100 lbs. Immediately following seeding and compacting, apply even layer of hay mulch. Maintain clear of shrubs and trees. Apply water with a fine spray immediately after area has been mulched. Saturate to 4 inches of soil.

SEED SPECIFICATIONS: Turf Mixture: 15% Kentucky Bluegrass, 35% Turf Type Tall Fescue, 25% Chewings Fescue, 15% Champion Perennial Ryegrass, 10% Reelseeded Red Top.

HYDROSEEDING: Apply seeding slurry with a hydraulic seeder at a rate of 4 lbs of seed per 1000 square feet evenly in two intersecting directions. Do not hydroseed area in excess of that which can be mulched on same day. Immediately following seeding, apply even layer of hay mulch. Maintain clear of shrubs and trees. Apply water with a fine spray immediately after area has been mulched. Saturate to 4 inches of soil.

SEED PROTECTION

Cover seeded slopes where grade exceeds 1' in 5' or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Provide 12 inch overlap. Backfill trench and rake smooth. Cover with adjacent soil. Secure outside edges and overlaps at 36 inch intervals with stakes. Lightly dress slopes with topsoil to ensure close contact between fabric and soil. 6' sides of ditches lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

SPECIFICATIONS: TREES AND SHRUBS: General - Provide nursery or plantation grown stock conforming to the American Standard for Nursery Stock. All vegetation shall be nursery grown, well-branched and uniformly sound, vigorous, healthy, and free from disease, sun-scald, windburn, abrasion, and harmful insects or insect eggs.

PLANTS: General - Provide field-grown or acclimatized container-grown plants from a commercial nursery, healthy, vigorous, of sizes indicated and in accordance with ANSI Z68.1, Section 6, 'Young Plants'.

GRASS MATERIALS: Sod - Provide viable (not dormant) certified turf grass complying with ASPA specifications for thickness, size, strength, moisture content, mowed height, time between harvest and transplanting, thatch, disease, nematodes, insects, and weeds. Sod type shall be Kentucky bluegrass (Poa pratensis).

Miscellaneous Landscape Material: Decorative Mulch - Shall be free of harmful materials, suitable for top dressing of plantings, and consisting of double ground shredded hardwood.

Antidesiccant - is a film-forming emulsion, permeable to transpiration yet retarding to excessive moisture loss.

Staking and Guying Materials - Stakes shall be pressure-preservative treated lumber of sizes indicated, sound, straight, and free of splits and knots larger than 1/4 of the least nominal dimension of the piece. Sharpen end and chamfer sides of driven end to prevent splitting from off-center hammer strikes. The wire will be a galvanized mid steel wire, minimum 12 gauge provide double strands. Hoisting will be rubber or plastic garden hose, and the turnbuckles shall be aluminum, galvanized steel, or similar.

PLANTING SOIL: Soil Mix - Provide planting soil mix, consisting of topsoil and amendments as recommended by soils analysis laboratory report.

Mixing - Mix topsoil and amendments thoroughly to provide uniform mixture, using a drum-type mechanical mixer, powered rotary tiller, or other means acceptable to the landscape architect.

EXECUTION: PREPARATION: Layout - Lay out planting locations, mark with stakes, adjust locations if requested, and obtain the landscape architect's approval of locations before proceeding with installation.

Preparation of Planting Soil - Prior to mixing in drum-type mixer or during tillage operations, clean topsoil of sticks, stones, clay lumps, vegetable matter, and other objectionable objects. Pit and trench backfill mix planting soil and stockpile at site, ready for use as backfill. For planting beds and lawns, either mix planting soil before placing or uniformly spread fertilizer in and soil amendments on surface of in-place topsoil and till thoroughly before planting.

Preparation for Planting Lawns - Prepare only those areas that will be planted presently. Allow for sod thickness in area to be sodded. For preparation of stripped areas, till subgrade to a depth of at least 4 inches. Place topsoil in two approximately equal lifts, working first lift into subgrade before placing second lift. Spread second lift to comply with finished lines, grades, and elevations required after allowing for settlement. To prepare for unchanged grades, prepare yet-unstripped areas as follows: remove existing vegetation including grasses and dispose of off site. Till soil to a depth of at least 6 inches. Clean topsoil of sticks, stones, clay lumps, vegetable matter, and other objectionable objects. Fine-grade, roll, rake, and drag down, cutting down high spots and filling low spots, leaving a smooth, even surface of fine-textured soil complying with required grades. If dry, water full depth of topsoil thoroughly but not excessively and allow surface moisture to dry before planting. Just before planting, correct any lawn areas that have been eroded, rutted, or settled.

Preparation of Planting Beds - Till planting bed area to a depth of at least 6 inches, clear, and add soil amendments necessary to achieve optimum growing conditions and till thoroughly.

Excavation for Trees and Shrubs - Pits, beds, and trenches: Excavate with sides vertical, bottom flat but with high center for drainage. Deglaze sides and loosen bottom. Minimum dimensions for individual pits:

- Diameter: - Ball or root spreads up to 2 feet: 1-1/2 times root spread. - Ball or root spreads 2 to 4 feet: 1-1/2 times root spread. - Ball or root spreads over 4 feet: Root ball dia. plus eighteen (18) inches.

All excavated subsoil from the site shall be mixed with appropriate volumes of soil amendments as recommended by soils analysis laboratory report as indicated on plans prior to use as planting backfill.

PLANTING TREES AND SHRUBS: Balled and Burlapped Stock - Set plants in excavation with top of ball to match adjacent finished grade. Add soil as required under ball to achieve plumb. Remove burlap from top and top 1/3 of ball retain burlap on bottom of ball. Place backfill in 3 to 4 inch thick layers. Work each layer by hand to compact backfill and eliminate voids. Maintain plumb during backfilling. When backfilling is approximately 2/3 complete, saturate backfill with water and repeat until suitably filled and compacted. Remainder of backfill water again, provide earth watering basin saucer, as indicated on the plans, and water stock.

Container - Grown Plant - Immediately before placing, remove container, or can. Set and plumb plants. Place initial backfill and remove sides of container, taking care to avoid damage to root system.

Basin - Form earthen watering basin around excavation area with backfill holding at least 2-1/2 gallons for shrubs and 5 gallons for trees. Apply mulch.

Antidesiccant - Spray - apply covering all portions of plant in accordance with manufacturer's instructions. If in full leaf, spray deciduous trees or shrubs at nursery just before transportation and 2 weeks after transplanting.

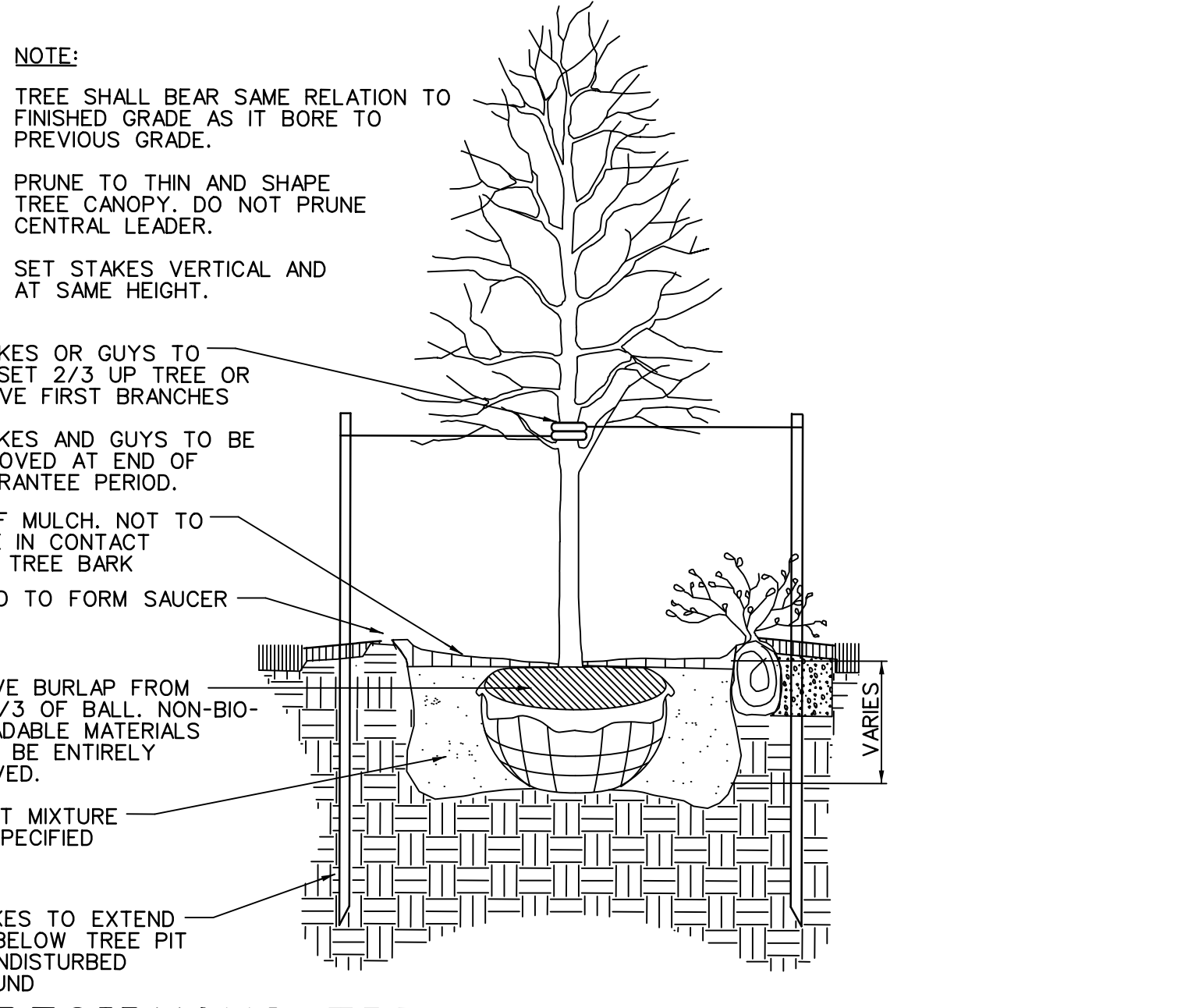
Pruning - Remove dead or broken branches. Prune to retain typical growth habit of plants with as much height and spread as practical. Make cuts with sharp instruments and flush with trunk or adjacent branch. Do not remove leaders from trees.

STAKING AND GUYING OF TREES: Protection of Tree Trunks - Inspect and, if necessary, replace trees showing signs of physical damage or insect infestation. Guy and stake trees the same day as planting. Refer to drawings and schedule for guying and staking requirements.

SODDING NEW LAWNS: Laying - Do not lay dried or broken sod. Use only fresh, properly protect sod. Lay first and subsequent parallel rows in a straight line with tightly butted joints. Do not overlap sod or leave voids. Stagger lateral joints. When each section is laid, lightly roll the entire area to ensure contact between sod and subgrade. Water sod immediately after planting to thoroughly wet the sod and subgrade immediately beneath. During first week, maintain soil continually moist to depth of 4 inches by watering daily or more often, absent adequate rainfall.

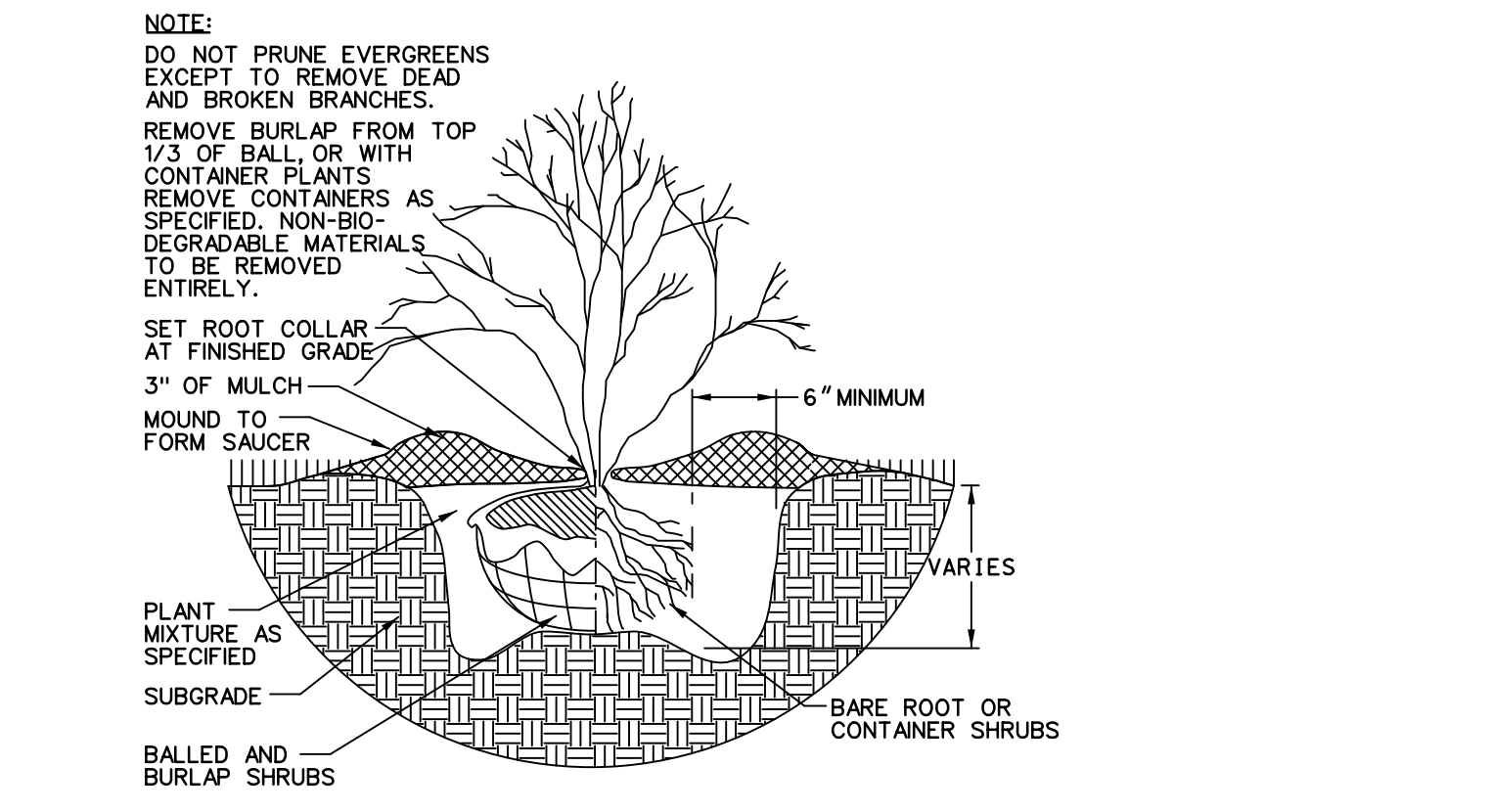
MISCELLANEOUS MATERIALS: Decorative Mulch - Apply a uniform three inch (3) thick layer of mulch in the following areas: individual planting pits and planting beds. During the maintenance and warranty period, the contractor is required to apply new mulch as necessary due to erosion, settling or as required by the landscape architect.

GENERAL NOTE: It is agreed that the professional services of the design professional do not extend to or include the review or site observation of the contractor's work or reinforcing, unless otherwise specified and agreed. It is further agreed that the owner will hold harmless, indemnify and defend the design professional from any claim or suit whatsoever arising from the contractor's performance or the failure of the contractor's work to conform to the design intent and the contract documents.



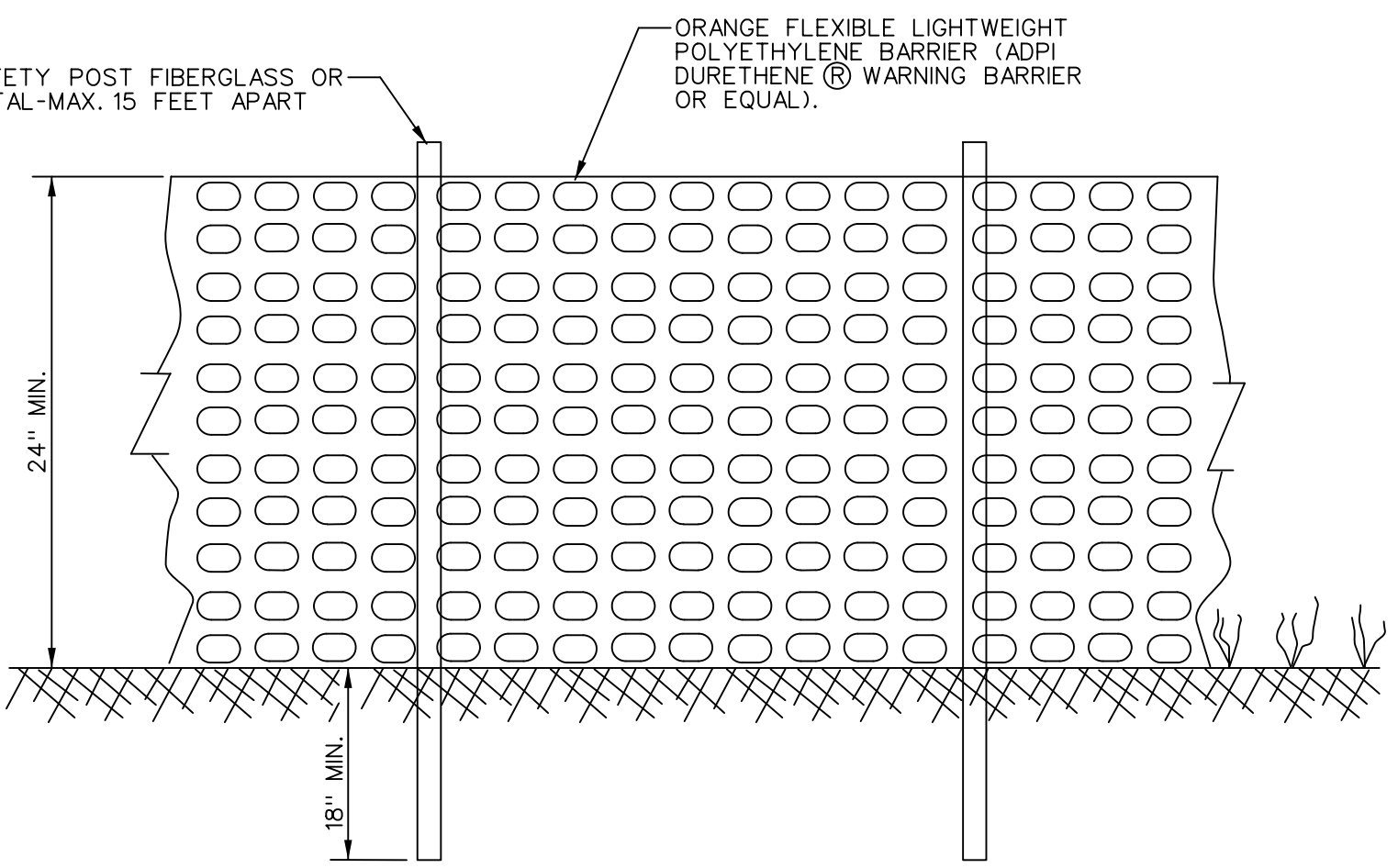
DECIDUOUS TREE AND SHRUB PLANTING

N.T.S.



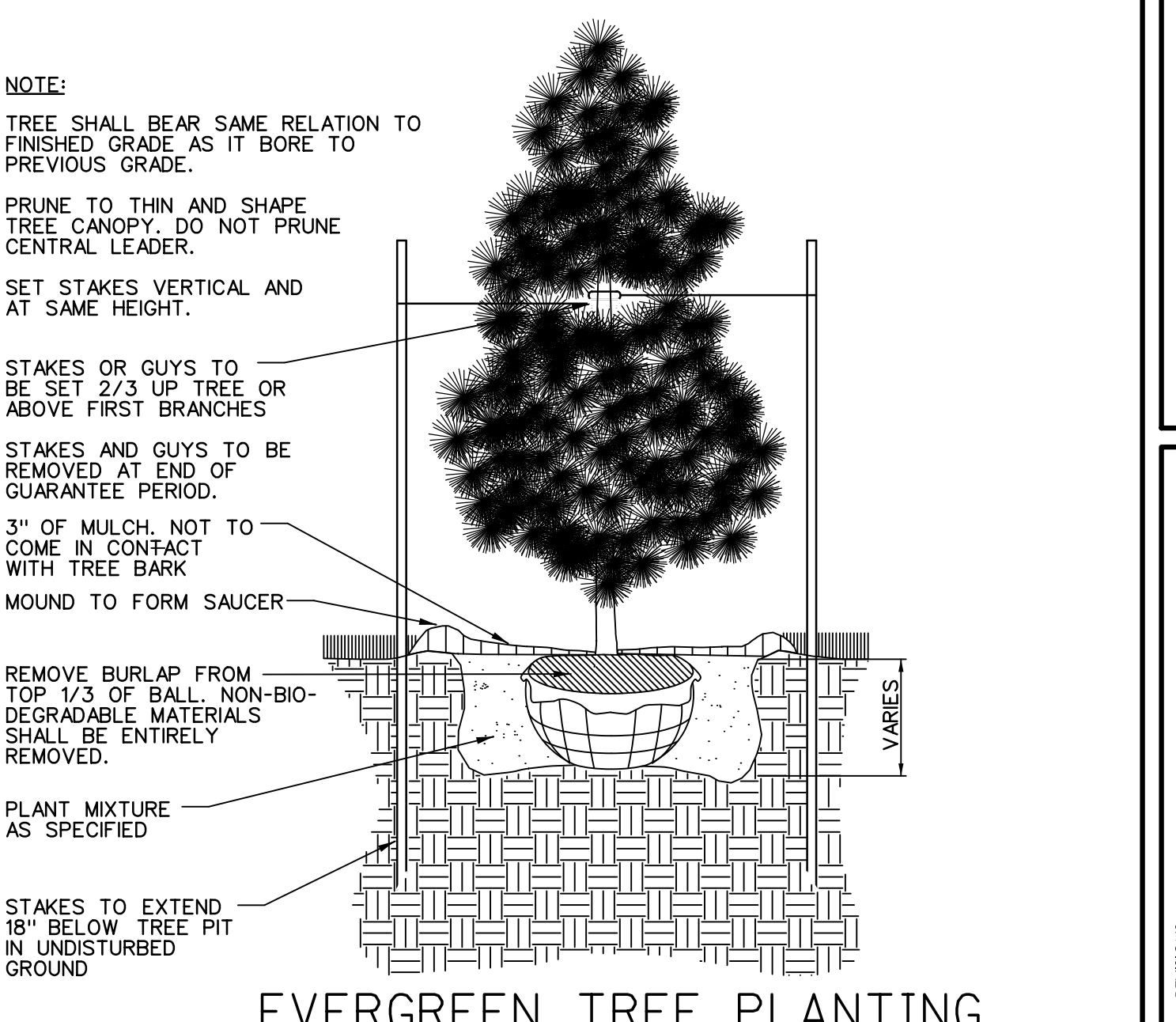
SHRUB PLANTING DETAIL

N.T.S.



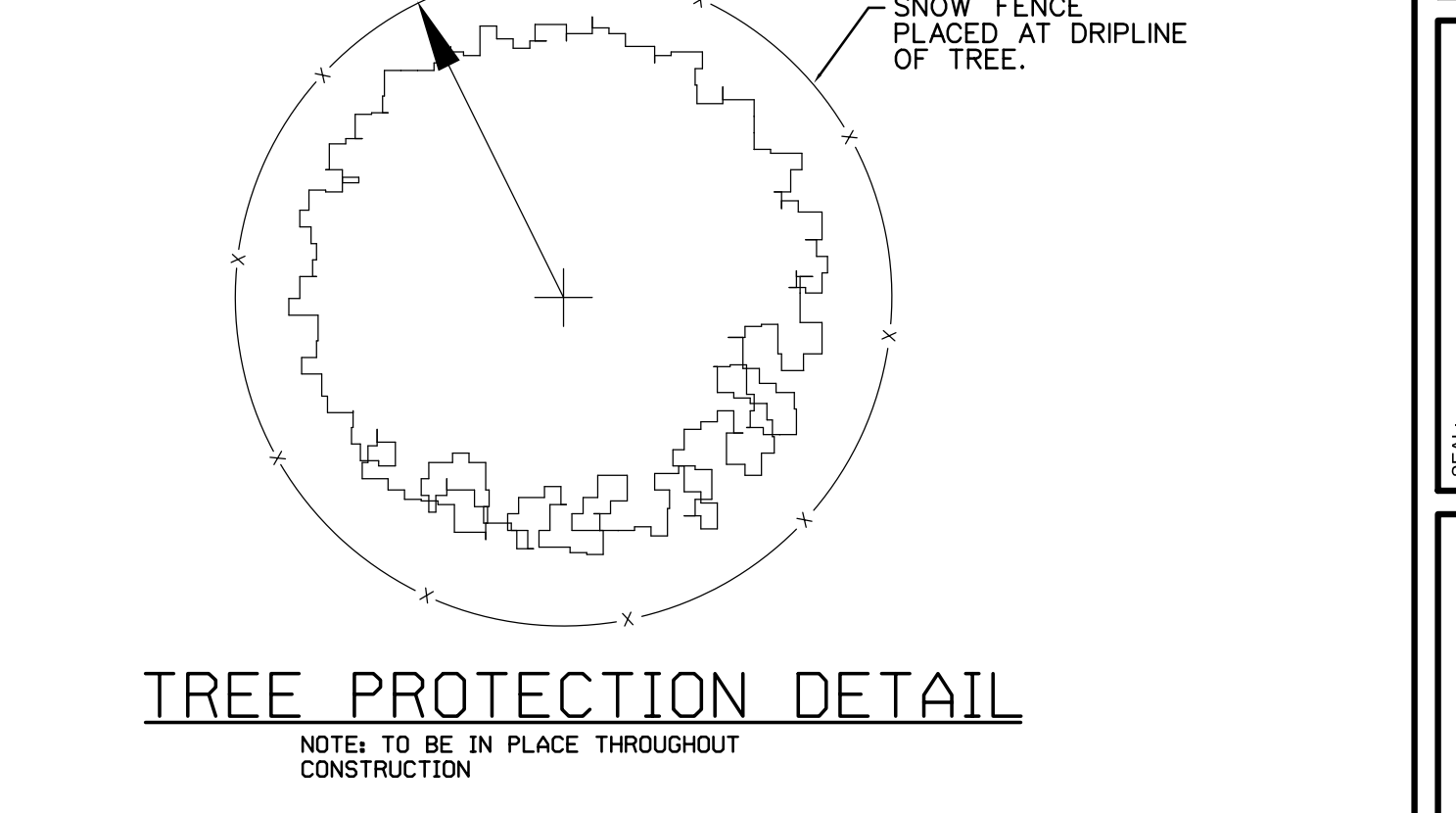
ORANGE WARNING BARRIER/TREE PROTECTION FENCE DETAIL

N.T.S.



EVERGREEN TREE PLANTING

N.T.S.



TREE PROTECTION DETAIL

NOTE: TO BE IN PLACE THROUGHOUT CONSTRUCTION

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Table with columns: no., description, checked, by.

Professional seal for Paul E. Lefard, Jr., Registered Landscape Architect, Pennsylvania License No. LA001332 & 001333.

Project title: LANDSCAPE AND LIGHTING DETAIL SHEET. Client: AIM ACADEMY BUILDING ADDITION. Location: WHITE MARSH TOWNSHIP, MONTGOMERY COUNTY, PA.

Table with project details: project no. 2011059.08, date 6/21/22, scale N.T.S., and other metadata.

Large graphic text 'C6.1'.

SEEDING & MULCHING SPECIFICATIONS

TEMPORARY: SEEDING SHALL BE COMMON RYE GRASS APPLIED AT 45 LBS. PER ACRE. LIMING TO BE DONE IN ACCORDANCE WITH THE APPROVED EAS PLAN. A COPY OF THE APPROVED PLAN...

PERMANENT: SEEDING SHALL BE 15% KENTUCKY BLUEGRASS, 35% KENTUCKY 31 FESCUE, 25% CHEWINGS FESCUE, 15% PERENNIAL RYE GRASS, AND 10% LEANED REDTOP AT A RATE OF 40 LBS. PER ACRE...

THE NON-GERMINATING PERIODS ARE BETWEEN 4/15 THROUGH 8/15 AND 9/30 THROUGH 4/15. AREAS DISTURBED DURING THESE PERIODS MUST BE LIMED, FERTILIZED, SEEDED AND MULCHED IMMEDIATELY...

GENERAL NOTES FOR UTILITY CONSTRUCTION

- 1. EXCAVATED MATERIAL SHOULD BE STAGED ON THE UPSTREAM SIDE OF A TRENCH.
2. THE DAILY EXTENT OF TRENCHING SHOULD NOT EXCEED WHAT CAN BE BACK FILLED AND STABILIZED IN ONE WORKING DAY.
3. 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.

SEDIMENT DISPOSAL:

SILT REMOVED FROM TEMPORARY SEDIMENT CONTROL STRUCTURES SHALL BE DISPOSED ON-SITE IN LANDSCAPED AREAS LOCATED OUTSIDE OF FLOOD PLAINS, WETLANDS, STEEP SLOPES, AND DRAINAGE SWALES...

DUST CONTROL:

DUST AND OTHER PARTICULATES SHALL BE KEPT WITHIN TOLERABLE LIMITS BY USING WATER. APPLICATION SHALL BE AS NEEDED OR AS DIRECTED BY THE TOWNSHIP ENGINEER OR THE CONSERVATION DISTRICT.

CRITICAL VEGETATION AREAS (C.V.A.):

CRITICAL VEGETATION AREAS ARE TO BE GRADED, HYDROSEEDED AND MULCHED WITHIN 10 DAYS OF THE BEGINNING OF EXCAVATION. IN GENERAL, CRITICAL VEGETATION AREAS ARE DEFINED AS CUT SLOPES STEEPER THAN 3H:1V...

MAINTENANCE SCHEDULE FOR TEMPORARY SEDIMENTATION CONTROL STRUCTURES

INSPECTION AND MAINTENANCE OF ALL FACILITIES SHALL BE MADE AFTER EACH RAIN STORM EVENT AND ON A WEEKLY BASIS. MAINTENANCE OF ALL TEMPORARY SEDIMENTATION CONTROL STRUCTURES SHALL BE IN ACCORDANCE WITH THESE PLANS.

MAINTENANCE PROGRAM FOR TEMPORARY SEDIMENTATION CONTROL STRUCTURES

MAINTENANCE OF ALL TEMPORARY SEDIMENTATION CONTROL STRUCTURES SHALL BE THE RESPONSIBILITY OF THE DEVELOPER AND AS STATED BELOW:

- 1. EROSION CONTROL BLANKET (ECB) - BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE...
2. COMPOST FILTER SOCK - ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT...
3. INLET PROTECTION - INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT...

ANTICIPATED E&S BMP RELATED CONSTRUCTION WASTES AND DISPOSAL PROCEDURES

SEDIMENT: SILT REMOVED FROM TEMPORARY SEDIMENT CONTROL STRUCTURES SHALL BE DISPOSED OF ON-SITE IN LANDSCAPED AREAS LOCATED OUTSIDE OF FLOODPLAINS, WETLANDS, DRAINAGE SWALES, AND DRAINAGE SWALES...

TRASH & LITTER: TRASH AND LITTER SHALL BE REMOVED FROM EROSION AND SEDIMENTATION CONTROL BMPs AND DISPOSED OF IN APPROPRIATE TRASH RECEPTACLE.

CONCRETE WASHWATER: CONCRETE WASHWATER SHALL BE DISPOSED OF IN THE LOCATION SHOWN ON-SITE. ONCE WASHWATER SOLIDIFIES THE HARDENED CONCRETE SHALL BE DISPOSED OF OFF-SITE IN AN APPROVED MANNER.

NOTE: ANY APPLICABLE MATERIAL SHALL BE RECYCLED IN ACCORDANCE TO THE APPROPRIATE REGULATIONS.

POTENTIAL THERMAL IMPACTS

THERMAL IMPACTS DURING CONSTRUCTION ACTIVITIES WILL BE MINIMIZED THROUGH AVOIDING DIRECT DISCHARGE INTO SURFACE WATERS, LIMITING THE EXTENT AND DURATION OF EARTH DISTURBANCE AND THE USE OF COMPOST FILTER SOCKS...

GEOLOGIC FORMATIONS/SOIL CONDITIONS/POLLUTANT PREVENTION

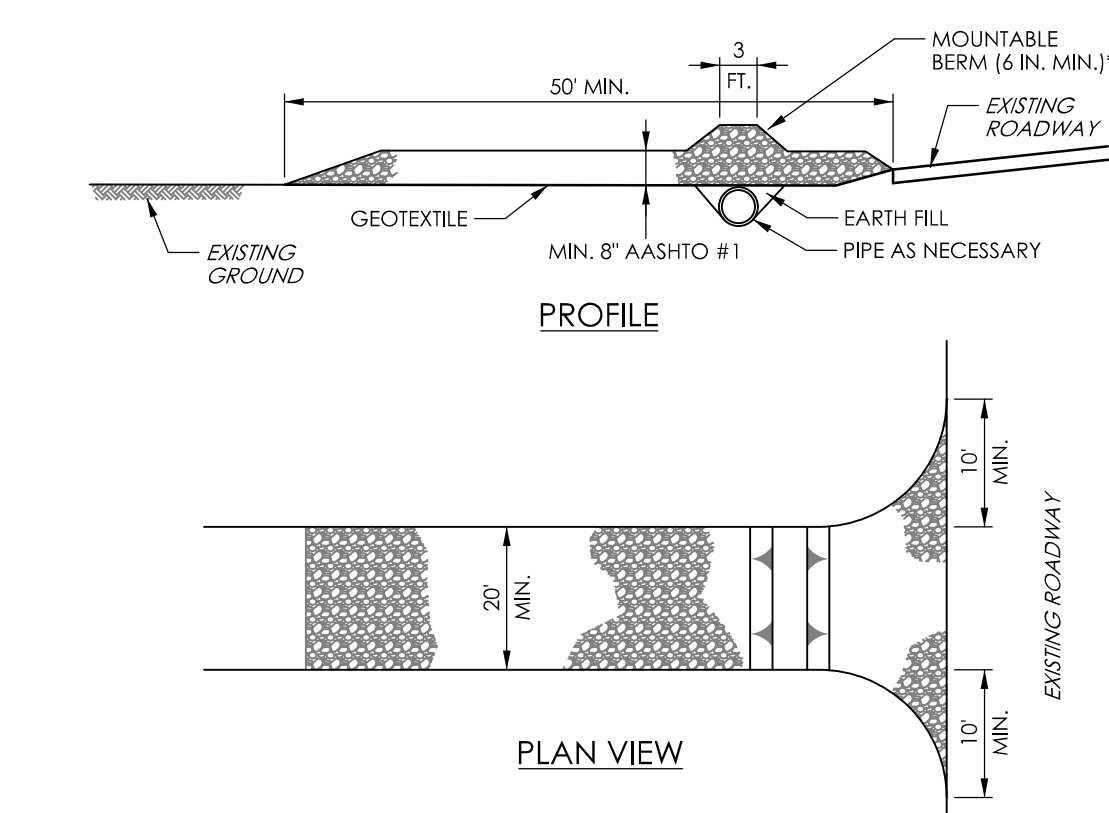
GEOLOGICAL INVESTIGATIONS SHOWED NO EVIDENCE OF KARST FEATURES ON SITE OR SOIL CONDITIONS ARE KNOWN TO BE PRESENT THAT WOULD REQUIRE SPECIFIC BMPs TO MINIMIZE POLLUTION EFFECTS ASSOCIATED WITH SAID FEATURES...

SEQUENCE OF CONSTRUCTION:

- 1. AT LEAST 7 DAYS BEFORE ANY EARTH DISTURBANCE ACTIVITIES, THE OPERATOR SHALL INWRITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES...
2. STABILIZATION NOTE - UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY THAT WILL EXCEED 4 DAYS...
3. PLACE COMPOST FILTER SOCKS AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN...
4. PLACE PERIMETER EROSION AND SEDIMENT CONTROLS AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN...

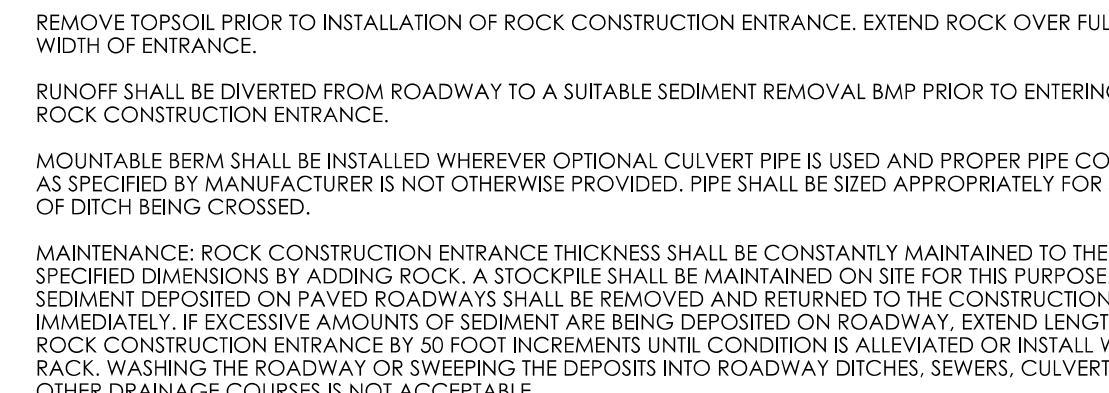
SOIL EROSION AND SEDIMENTATION CONTROL NOTES:

- 1. ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE APPLIED IN ACCORDANCE WITH THE APPROVED EAS PLAN...
2. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INWRITE ALL CONTRACTORS...
3. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED...
4. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS...
5. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL...

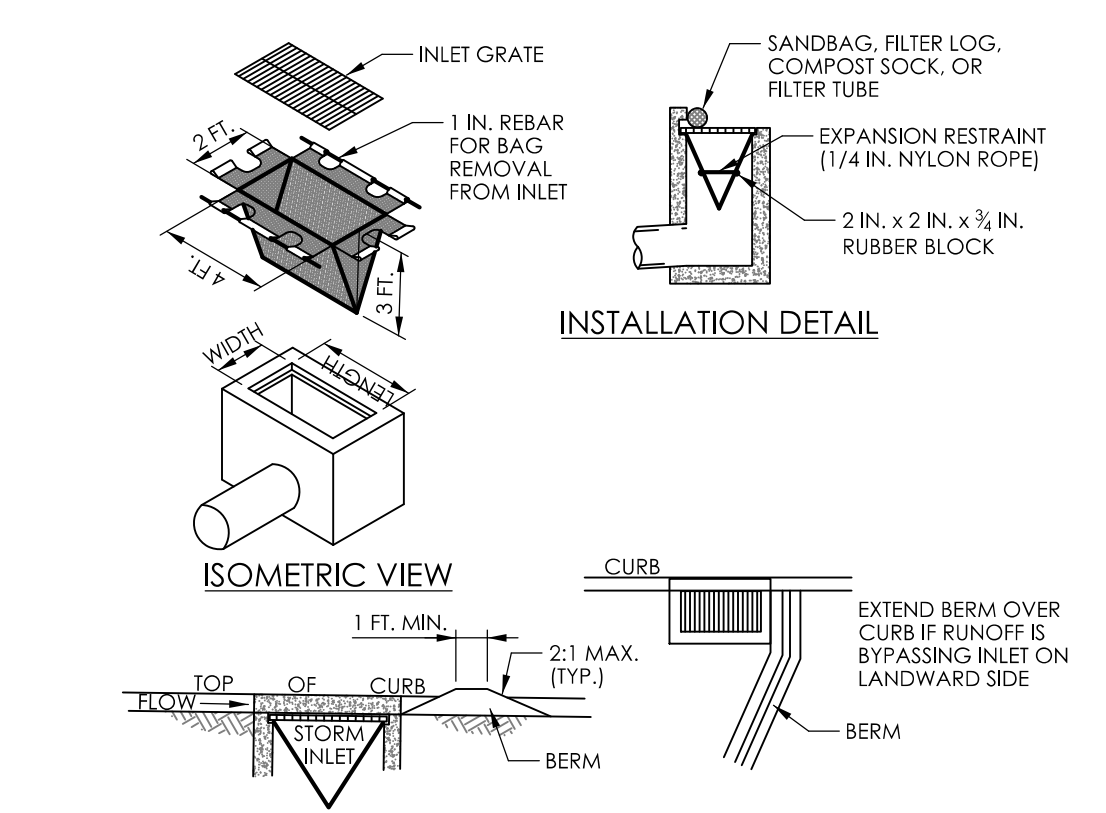


* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE

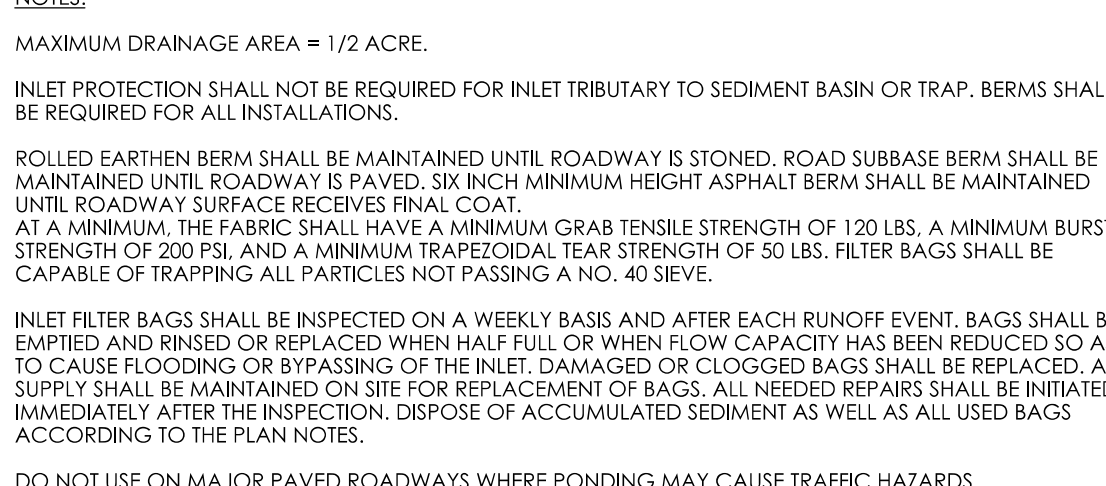
STANDARD CONSTRUCTION DETAIL #3-1 ROCK CONSTRUCTION ENTRANCE



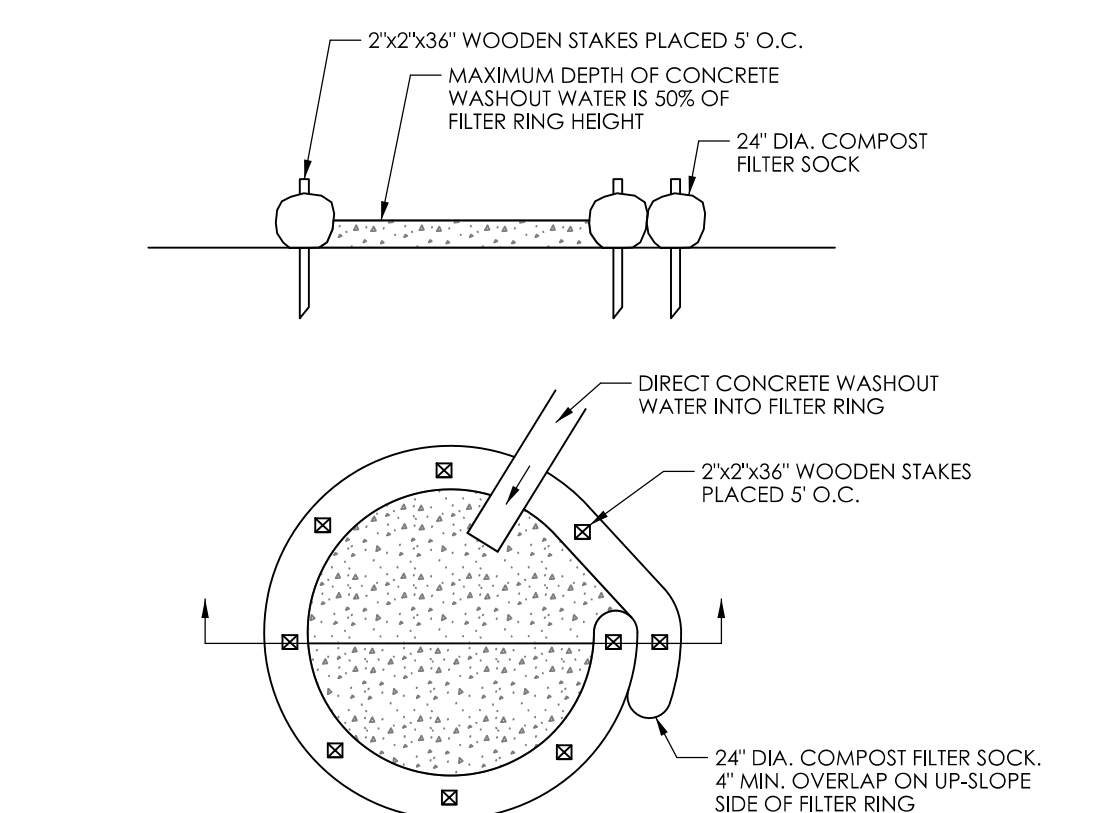
NOT TO SCALE



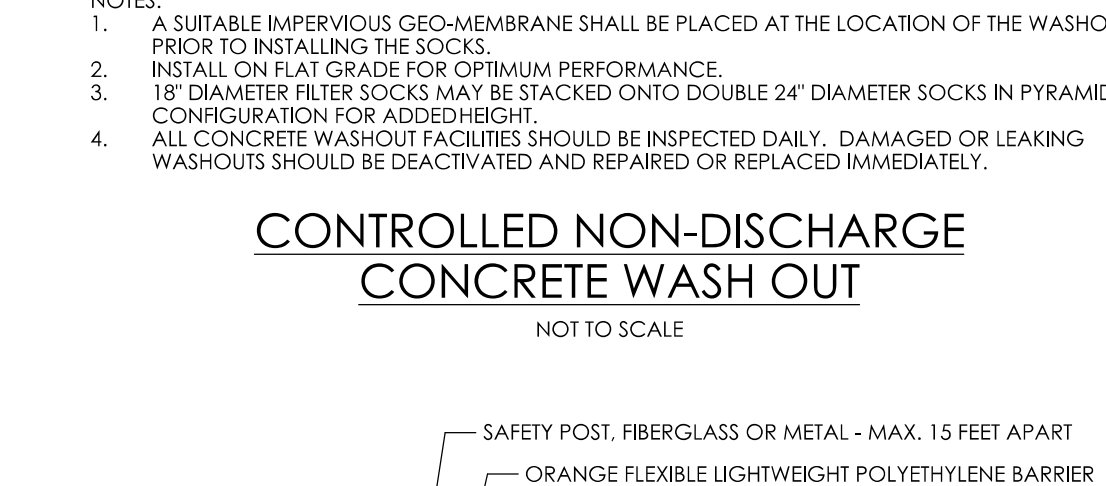
STANDARD CONSTRUCTION DETAIL #4-15 FILTER BAG INLET PROTECTION - TYPE C INLET



NOT TO SCALE

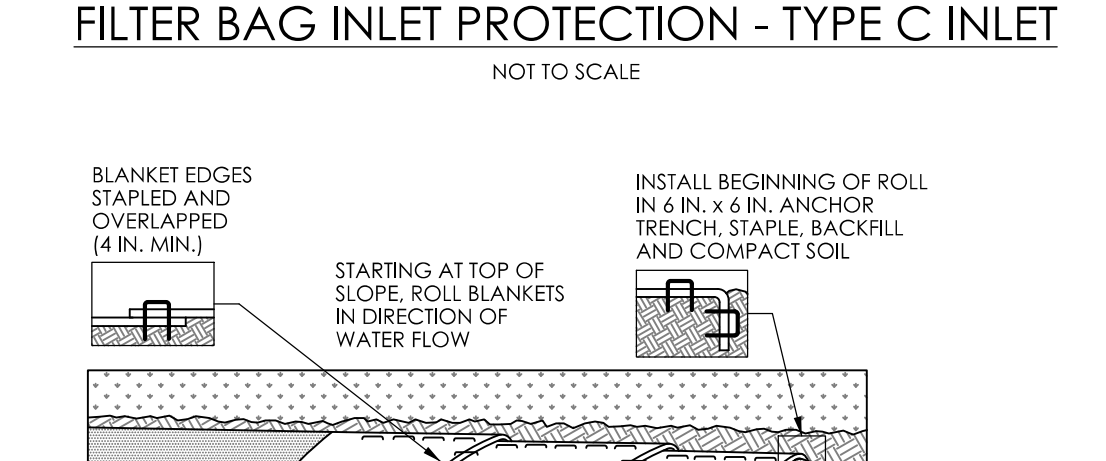


STANDARD CONSTRUCTION DETAIL #4-15 FILTER BAG INLET PROTECTION - TYPE C INLET



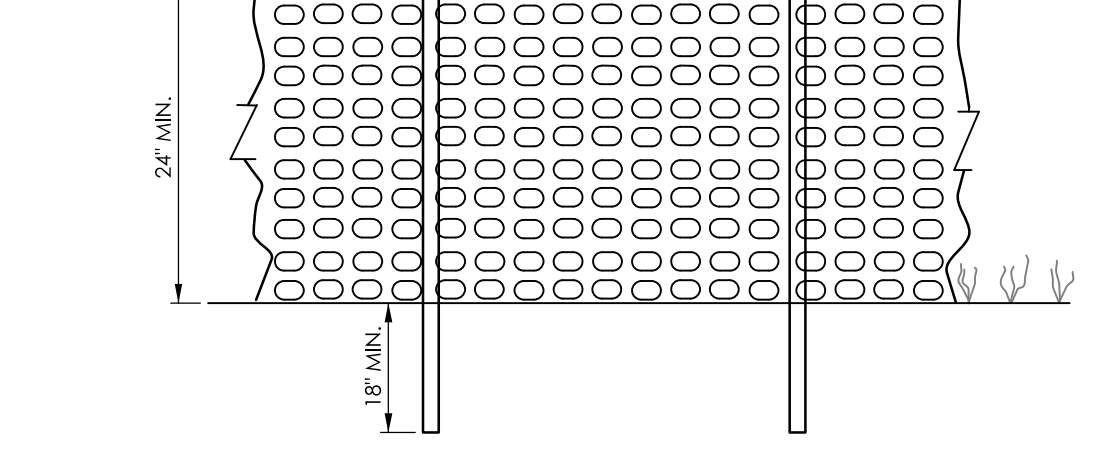
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STANDARD CONSTRUCTION DETAIL #11-1 EROSION CONTROL BLANKET INSTALLATION



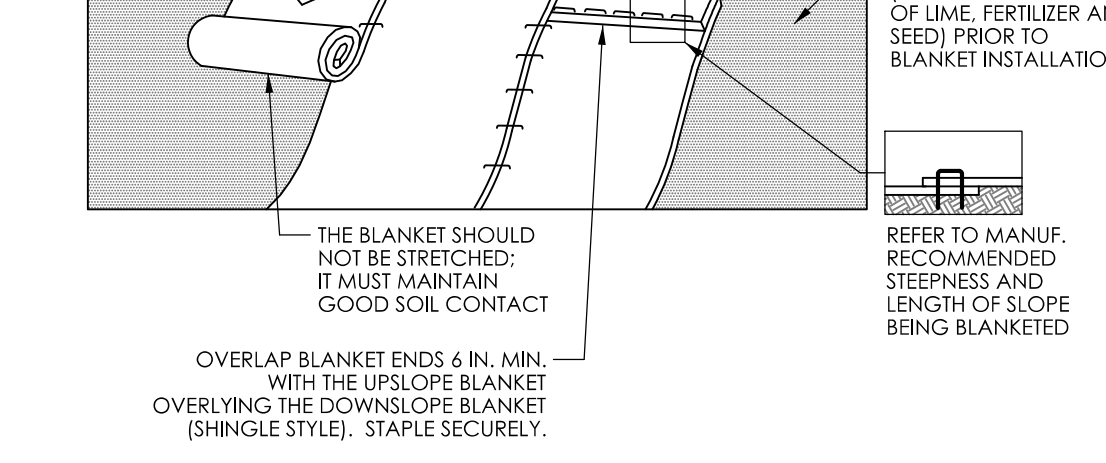
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STANDARD CONSTRUCTION DETAIL #4-1 COMPOST FILTER SOCK



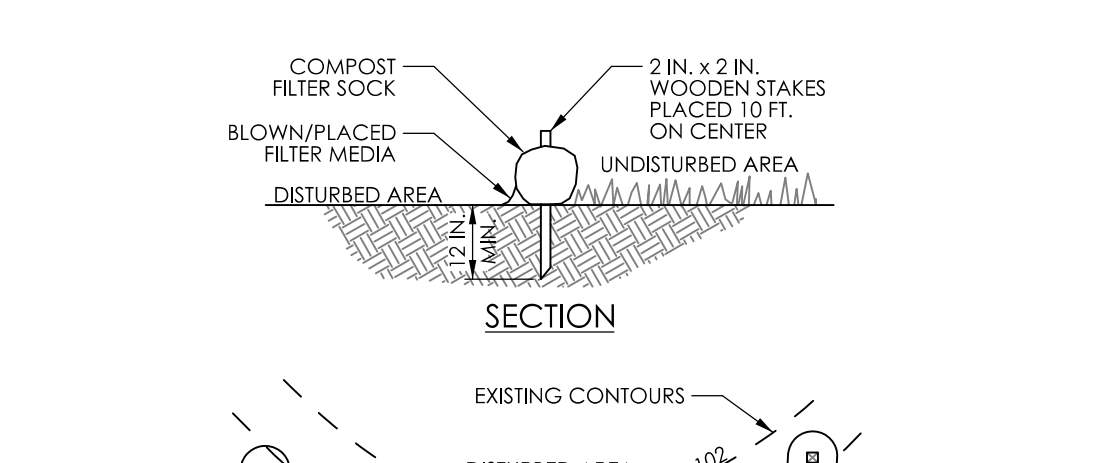
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STANDARD CONSTRUCTION DETAIL #11-1 EROSION CONTROL BLANKET INSTALLATION



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STANDARD CONSTRUCTION DETAIL #4-1 COMPOST FILTER SOCK



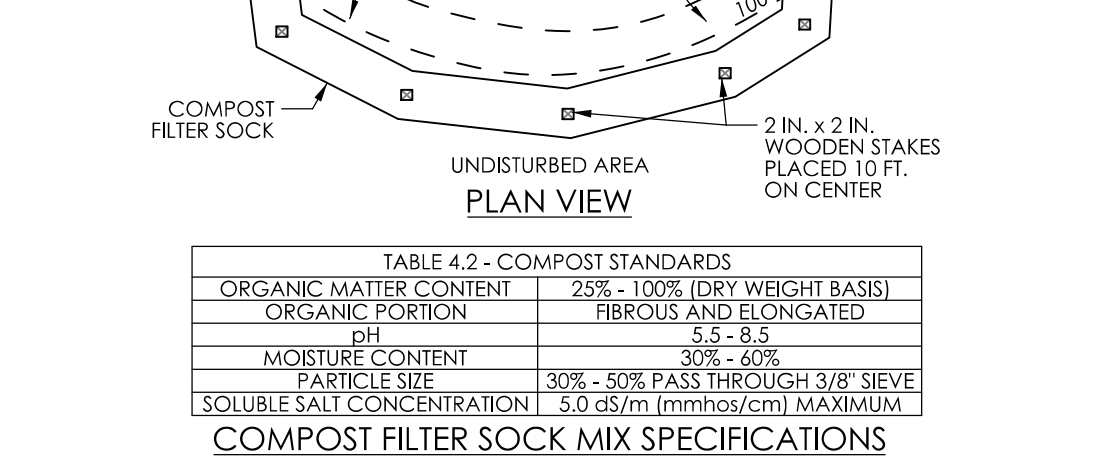
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STANDARD CONSTRUCTION DETAIL #11-1 EROSION CONTROL BLANKET INSTALLATION



NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #4-1 COMPOST FILTER SOCK



NOT TO SCALE

Nave NEWELL logo and contact information: 900 West Valley Road - Suite 1100, P.O. Box 265-8323, 610.265.4299, www.navenewell.com

Table with columns: no., description, date, by. Includes revision notes for the drawing.

Professional Engineer seal for James P. Bannon, Montgomery County, PA, License No. PE 082137.

Vertical title block: EROSION AND SEDIMENTATION CONTROL DETAIL SHEET, AIM ACADEMY BUILDING ADDITION, WHITE MARSH TOWNSHIP, MONTGOMERY COUNTY, PA.

Project information: project no. 2011059.08, date: 6/21/22, scale: AS NOTED, sheet no. C7.1 of 12.

POST-CONSTRUCTION STORMWATER MANAGEMENT NOTES:

- 1. PRESERVATION OF EXISTING STREAM CHANNELS, AS WELL AS THE PROTECTION OF THE PHYSICAL, BIOLOGICAL AND CHEMICAL QUALITIES OF THE RECEIVING STREAM, WILL BE ACHIEVED THROUGH THE IMPLEMENTATION OF APPROVED STORMWATER BMPs THAT WILL REDUCE THE RATE AND RUNOFF VOLUME IN THE POST-DEVELOPMENT CONDITION. WATER QUALITY BMPs ARE ALSO PROPOSED TO MITIGATE POLLUTION IMPACTS.
2. POST-CONSTRUCTION RUNOFF RATES WILL BE REDUCED TO LESS THAN PRE-CONSTRUCTION RUNOFF RATES FOR THE OVERALL SITE THROUGH THE USE OF A RAIN GARDEN.
3. THE POST-DEVELOPMENT RUNOFF VOLUME WILL BE REDUCED TO LESS THAN THE PRE-DEVELOPMENT RUNOFF VOLUME THROUGH THE USE OF SOIL LANDSCAPING.
4. PRE-DEVELOPMENT DRAINAGE PATTERNS WERE MAINTAINED IN THE POST-DEVELOPMENT CONDITION, TO THE EXTENT PRACTICAL. ALL OF THE SITE DISCHARGE DRAINS TO THE SCHUYLKILL RIVER, WHICH HAS A CHAPTER 93 CLASSIFICATION OF WW1 - WARM WATER RIVER.
5. THE INTRODUCTION OF ADDITIONAL IMPERVIOUS SURFACES WAS MINIMIZED TO THE EXTENT PRACTICAL.
6. THE LIMIT OF EARTH DISTURBANCE (INCLUDING GRADING AND CLEARING) IS MINIMIZED AND THE PRESERVATION OF EXISTING VEGETATION IS MAXIMIZED TO THE EXTENT PRACTICAL.
7. NO ADDITIONAL DISCHARGES TO THE WATERCOURSES ARE PROPOSED AS PART OF THIS PROJECT. THE BMPs PROPOSED TO DRAIN WILL DISCHARGE TO THE WATERCOURSES VIA EXISTING DRAINAGE FACILITIES.
8. SOIL COMPACTION SHALL BE MINIMIZED TO THE EXTENT PRACTICAL, PARTICULARLY IN THE AREAS TO BE PERVIOUS IN THE POST-DEVELOPMENT CONDITION.
9. CHANGES TO THE SITE'S RUNOFF WILL BE MINIMIZED THROUGH THE USE OF A RAIN GARDEN.
10. THE PERMITTEE SHALL PROVIDE ENGINEERING CONSTRUCTION OVERSIGHT FOR THE PROPOSED STORMWATER BMPs. A LICENSED PROFESSIONAL ENGINEER KNOWLEDGEABLE IN THE DESIGN AND CONSTRUCTION OF STORMWATER BMPs, PREFERABLY THE DESIGN ENGINEER, SHALL CONDUCT THE OVERSIGHT.
11. AS-BUILT PLANS OF THE STORMWATER BMPs SHALL BE PROVIDED WITHIN SIX MONTHS FOLLOWING THE COMPLETION OF THE BMP CONSTRUCTION. THE AS-BUILT PLANS SHALL BE SIGNED AND SEALED BY A PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER.
12. NO UNTREATED RUNOFF SHALL ENTER ANY BMPs UNTIL FINAL SITE STABILIZATION IS ACHIEVED IN THE TRIBUTARY DRAINAGE AREA. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERMANENT VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.
13. 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 P.A. CODE 2601 ET SEQ. 271.1 AND 287.1 ET. SEQ. NO BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.
14. THE PROJECT AREA IS NOT LOCATED IN AN HQ - HIGH QUALITY OR EV - EXCEPTIONAL VALUE WATERSHED.
15. A WRITTEN REPORT DOCUMENTING EACH INSPECTION AND ALL BMP REPAIR AND MAINTENANCE ACTIVITIES MUST BE PROVIDED AS PART OF THE LONG-TERM OPERATION AND MAINTENANCE PROGRAM.
16. THE PCSM PLAN, INSPECTION REPORTS AND MONITORING RECORDS SHALL BE KEPT ON SITE AND AVAILABLE FOR REVIEW AND INSPECTION BY THE DEPARTMENT AND CONSERVATION DISTRICT.
17. THE POTENTIAL FOR THERMAL IMPACTS IS MINIMIZED THROUGH THE USE OF RAIN GARDEN, WHICH WILL PROVIDE TIME FOR RUNOFF TO COOL.

SEEDING & MULCHING SPECIFICATIONS

- TEMPORARY: SEEDING SHALL BE COMMON RYE GRASS APPLIED AT 45 LBS. PER ACRE. LIVING TO BE APPLIED AT 1 TON/ACRE. 50-50 FERTILIZER TO BE APPLIED AT 1000 LBS/ACRE. HAY OR STRAW MULCH TO BE APPLIED AT 3 TONS/ACRE.
PERMANENT: SEEDING SHALL BE 15% KENTUCKY BLUEGRASS, 35% KENTUCKY 31 FESCUE, 25% CHEWINGS FESCUE, 15% PERENNIAL RYE GRASS, AND 10% RECYCLED REDTOP AT A RATE OF 40 LBS. PER ACRE. LIVING TO BE APPLIED AT 3 TONS/ACRE. 10-20-30 FERTILIZER TO BE APPLIED AT 1000 LBS/ACRE. HAY OR STRAW MULCH TO BE APPLIED AT 3 TONS/ACRE.

THE NON-GERMINATING PERIODS ARE BETWEEN 6/15 THROUGH 8/15 AND 9/30 THROUGH 4/15. AREAS DISTURBED DURING THESE PERIODS MUST BE LIMED, FERTILIZED, SEEDED AND MULCHED IMMEDIATELY FOLLOWING THE END OF THOSE PERIODS. TOPSOIL TAKEN FROM CONSTRUCTION AREAS SHALL BE SEEDS WITH VEGETATIVE COVER AND STOCKPILES FOR RE-USE IN FINISH GRADING. THERE IS TO BE NO EARTH DISTURBANCE OR VEGETATIVE CLEARING IN AREAS OUTSIDE OF THE DELINEATED AREAS TO BE DISTURBED.

GENERAL NOTES FOR UTILITY CONSTRUCTION

- 1. EXCAVATED MATERIAL SHOULD BE STACKED ON THE UPSTREAM SIDE OF A TRENCH.
2. THE DAILY EXTENT OF TRENCHING SHOULD NOT EXCEED WHAT CAN BE BACK FILLED AND STABILIZED IN ONE WORKING DAY.
3. 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.
4. WORK CREWS AND EQUIPMENT FROM TRENCHING, PLACEMENT OF PIPE, AND BACKFILLING WILL BE SELF CONTAINED AND SEPARATE FROM CLEARING AND GRUBBING AND SITE RESTORATION AND STABILIZATION OPERATIONS.
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.
7. SOILS EXCAVATED FROM EXISTING SURFACE LAYER SHOULD BE STOCKPILED SEPARATELY AND RETURNED AS FINAL SURFACE LAYER FOLLOWING TRENCH BACKFILLING.

POTENTIAL THERMAL IMPACTS

THERMAL IMPACTS DURING CONSTRUCTION ACTIVITIES WILL BE MINIMIZED THROUGH AVOIDING DIRECT DISCHARGE INTO SURFACE WATERS. LIMITING THE EXTENT AND DURATION OF EARTH DISTURBANCE AND THE USE OF COMPOST FILTER SOCK, WHICH IS THE PRIMARY PERIMETER CONTROL. RUNOFF WILL BE TREATED BY THE COMPOST FILTER SOCK AND THEN DISCHARGED TO STABILIZED VEGETATIVE COVER. AS THE DISCHARGE FLOWS BELOW THE CANOPY OF EXISTING VEGETATION (LAWN, TREES, ETC.), THE DISCHARGE WILL BE AFFORDED TIME TO COOL PRIOR TO REACHING THE RECEIVING WATERWAYS.

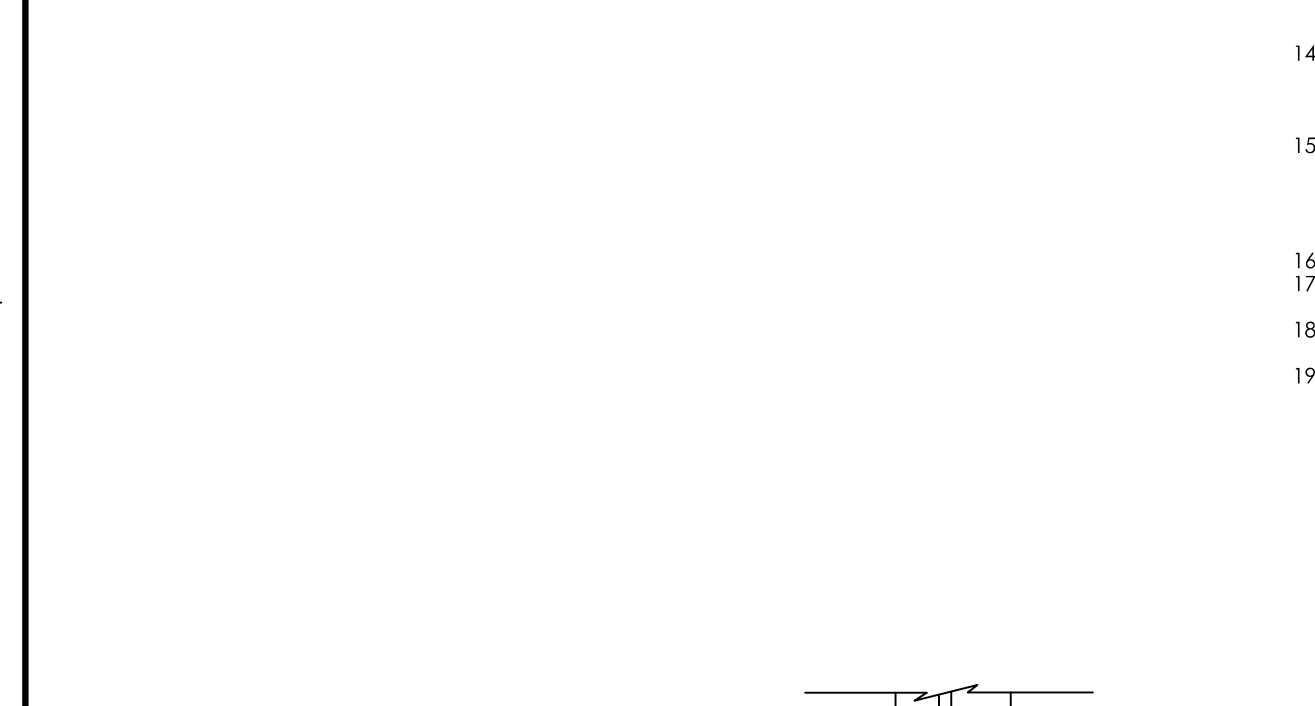
GEOLOGIC FORMATIONS/SOIL CONDITIONS/POLLUTANT PREVENTION

GEOLOGICAL INVESTIGATIONS SHOWED NO EVIDENCE OF KARST FEATURES ON SITE, OR SOIL CONDITIONS ARE KNOWN TO BE PRESENT THAT WOULD REQUIRE SPECIFIC BMPs TO MINIMIZE POLLUTION ASSOCIATED WITH SAID FEATURES. BASED ON THE INFORMATION OBTAINED AT THE BORING LOCATION, THE GEOLOGICAL REPORT CONCLUDES THAT THE SITE SOILS WILL PROVIDE ADEQUATE INFILTRATION AT THE DEPTHS TESTED. IT IS NOT ANTICIPATED THAT BEDROCK WILL BE WITHIN THE EXCAVATION AREA OF THE PROPOSED INFILTRATION FACILITIES, AND GROUNDWATER IS NOT ANTICIPATED TO BE ENCOUNTERED WITHIN THE LIMITS OF EXCAVATION FOR THE PROPOSED INFILTRATION FACILITIES. IF ISSUES ARISE ON SITE DURING CONSTRUCTION THE GEOLOGICAL ENGINEER SHALL BE NOTIFIED IMMEDIATELY.

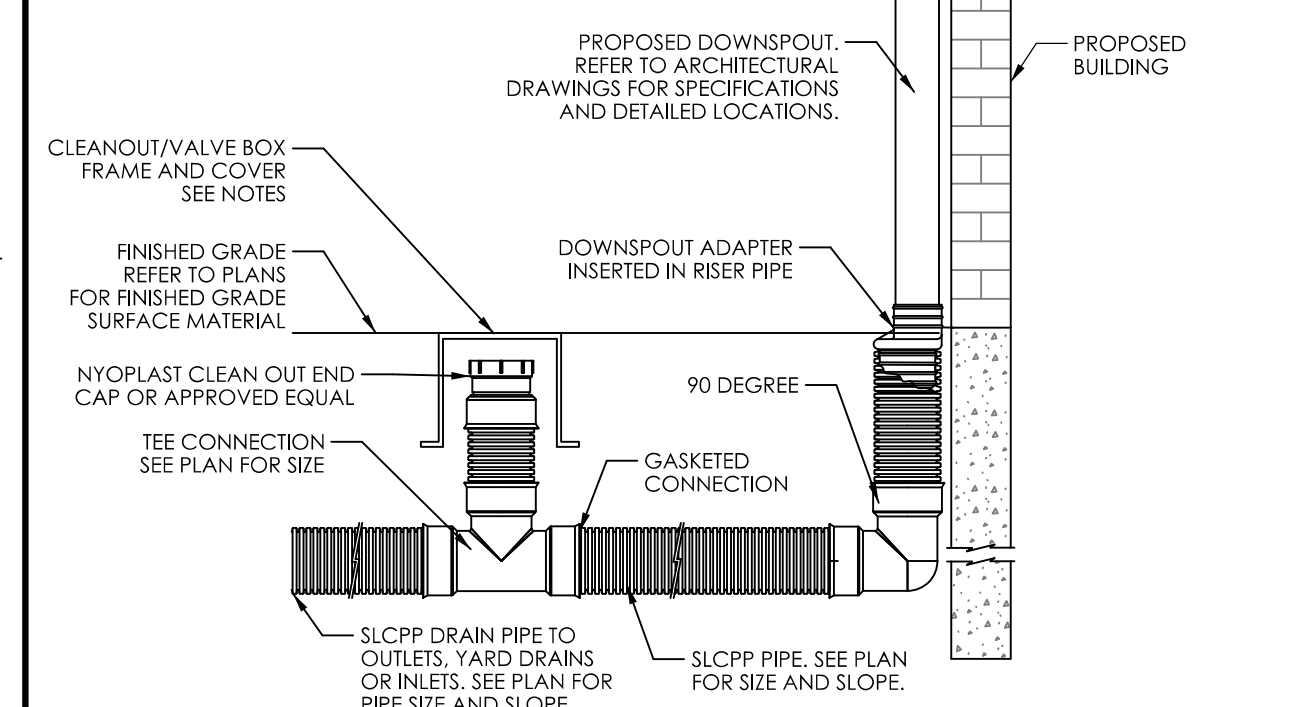
RECYCLING AND DISPOSAL OF WASTE FROM PCSM BMPs

INDIVIDUALS RESPONSIBLE FOR PCSM MAINTENANCE ACTIVITIES SHALL REMOVE FROM THE SITE, RECYCLE, OR DISPOSE OF ALL MATERIALS REMOVED FROM PCSM BMPs IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS. SEDIMENT REMOVED FROM PCSM BMPs OR FACILITIES SHALL BE DISPOSED OF OFF-SITE AT AN APPROVED FACILITY. RECYCLING OF EXCESS MATERIAL RATHER THAN DISPOSAL IS PREFERRED WHENEVER POSSIBLE.

CONCEPTUAL TYPE 4 MANHOLE ASSEMBLY WITH ECCENTRIC CONE



CONCEPTUAL TYPE 5 MANHOLE ASSEMBLY WITH REDUCER CONE



CONCEPTUAL MANHOLE ASSEMBLY WITH SQUARE INLET BOX (BOTTOM) AND TYPE 4 MANHOLE (TOP)



CONCEPTUAL MANHOLE ASSEMBLY WITH SQUARE INLET BOX (BOTTOM) AND TYPE 4 MANHOLE (TOP) AND TYPE 4 MANHOLE (TOP)



CONCEPTUAL MANHOLE ASSEMBLY WITH SQUARE INLET BOX (BOTTOM) AND TYPE 4 MANHOLE (TOP) AND TYPE 4 MANHOLE (TOP)



AMENDED SOIL

- CLAY CONTENT - LESS THAN 5%
SAND CONTENT - 50% - 60%
LEAF COMPOST OR AGED LEAF MULCH - 20% - 30%
HIGH QUALITY TOPSOIL - 20% - 30%
PERMEABILITY OF AT LEAST 1.0 FEET PER DAY (0.5" PER HOUR)
FREE OF STONES, STUMPS, ROOTS, OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER
FREE OF BRUSH OR SEEDS FROM NOXIOUS WEEDS

MULCH LAYER

- AGED DOUBLE-SHREDDED, HARDWOOD BARK MULCH, PLACED ON SURFACE TO DEPTH OF 2-3 INCHES.

GEOTEXTILE FABRIC

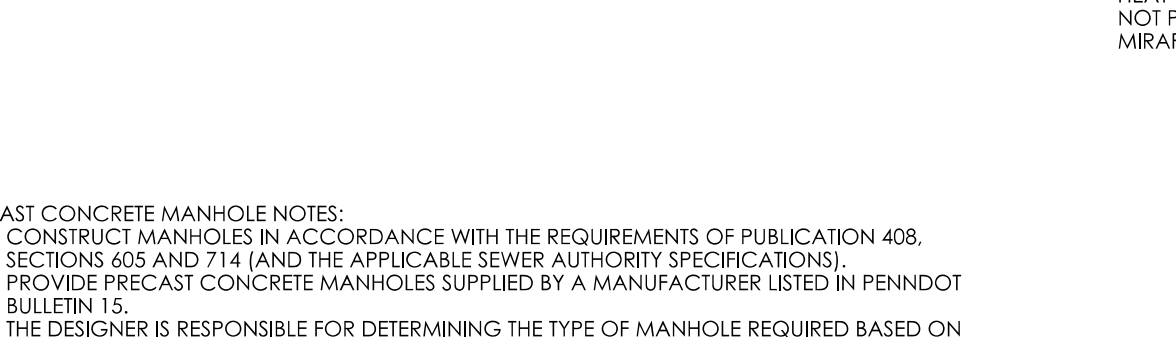
- SHALL CONSIST OF NEEDLED NONWOVEN POLYPROPYLENE FIBERS AND MEET THE FOLLOWING PROPERTIES:

- GRAB TENSILE STRENGTH (ASTM - D4632) 120 LBS
MULLEN BURST STRENGTH (ASTM - D3786) 225 PSI
FLOW RATE (ASTM-D4091) 95 GAL/MIN/SF
UV RESISTANCE AFTER 500 HRS (ASTM-D4355) 70%
HEAT SET OR HEAT-CALCENDARED FABRICS ARE NOT PERMITTED. ACCEPTABLE TYPES INCLUDE MIRAFI 140N, AMOCO 4547, AND GEOTEX 451

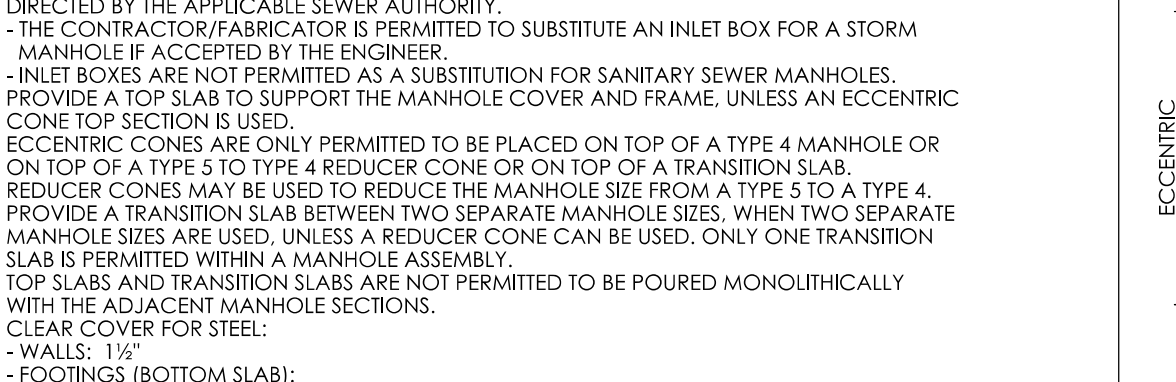
RAIN GARDEN DETAIL



OUTLET STRUCTURE DETAIL



NYLOPLAST 24" DRAIN BASIN



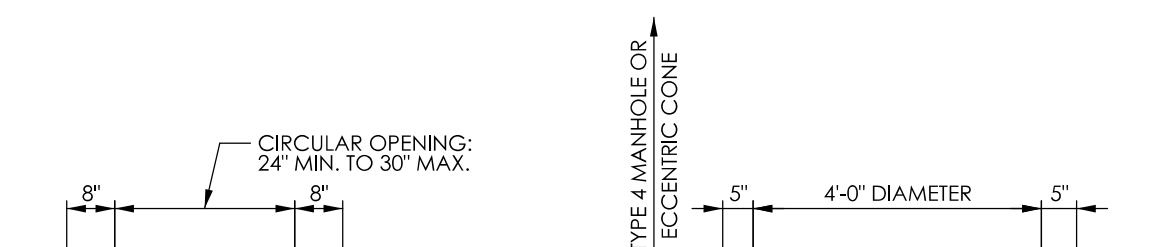
CAST CONCRETE MANHOLE NOTES:

- 1. CONSTRUCT MANHOLES IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408, SECTIONS 605 AND 714 (AND THE APPLICABLE SEWER AUTHORITY SPECIFICATIONS).
2. PROVIDE PRECAST CONCRETE MANHOLES SUPPLIED BY A MANUFACTURER LISTED IN PENNDOT BULLETIN 15.
3. THE DESIGNER IS RESPONSIBLE FOR DETERMINING THE TYPE OF MANHOLE REQUIRED BASED ON THE REQUIRED PIPE SIZES AND PIPE OPENINGS.
4. THE SELECTION OF COMPONENTS TO ACHIEVE A SPECIFIC MANHOLE ASSEMBLY IS THE CONTRACTOR'S RESPONSIBILITY, UNLESS OTHERWISE INDICATED ON THE CONTRACT, OR AS DIRECTED BY THE APPLICABLE SEWER AUTHORITY.
5. THE CONTRACTOR/FABRICATOR IS PERMITTED TO SUBSTITUTE AN INLET BOX FOR A STORM MANHOLE IF ACCEPTED BY THE ENGINEER.
6. INLET BOXES ARE NOT PERMITTED AS A SUBSTITUTION FOR SANITARY SEWER MANHOLES.
7. PROVIDE A TOP SLAB TO SUPPORT THE MANHOLE COVER AND FRAME, UNLESS AN ECCENTRIC CONE TOP SECTION IS USED.
8. ECCENTRIC CONES ARE ONLY PERMITTED TO BE PLACED ON TOP OF A TYPE 4 MANHOLE OR ON TOP OF A TYPE 5 TO TYPE 4 REDUCER CONE OR ON TOP OF A TRANSITION SLAB.
9. REDUCER CONES MAY BE USED TO REDUCE THE MANHOLE SIZE FROM A TYPE 5 TO A TYPE 4. PROVIDE A TRANSITION SLAB BETWEEN TWO SEPARATE MANHOLES. WHEN TWO SEPARATE MANHOLE SIZES ARE USED, UNLESS A REDUCER CONE CAN BE USED, ONLY ONE TRANSITION SLAB IS PERMITTED WITHIN A MANHOLE ASSEMBLY.
10. TOP SLABS AND TRANSITION SLABS ARE NOT PERMITTED TO BE POURED MONOLITHICALLY WITH THE ADJACENT MANHOLE SECTIONS.
11. CLEAR COVER FOR STEEL:
- WALLS: 1/2"
- FOOTINGS (BOTTOM SLAB):
- TOP COVER: 2"
- BOTTOM COVER: 1 1/2"
- SIDE COVER: 1 1/2"
- TOP AND TRANSITION SLABS (TOP AND BOTTOM): 1 1/2"
12. MINIMUM SLAB AND WALL THICKNESS:
- MINIMUM TOP SLAB THICKNESS: 8"
- MINIMUM TRANSITION SLAB THICKNESS: 10"
- MINIMUM WALL THICKNESS:
- TYPE 4, 5, AND 6: INSIDE DIAMETER/12 + 1"
- ALL SANITARY SEWER JOINTS MUST BE WATER-TIGHT.
13. PROVIDE SHIRAP JOINT OR KEVLET JOINT BETWEEN:
- THE BOTTOM OF THE TOP SLAB AND TOP OF THE MANHOLE
- THE TRANSITION SLAB AND THE ADJACENT TOP AND BOTTOM SECTIONS
14. IF BOTTOM SLAB IS NOT POURED WITH THE WALLS:
- (STORMWATER) PROVIDE A JOINT IN THE BASE SECTION BETWEEN THE WALL AND BOTTOM SLAB.
- (SANITARY SEWER) PROVIDE A JOINT WITH A POLYVINYL CHLORIDE WATERSTOP IN THE BASE SECTION BETWEEN THE WALL AND THE BOTTOM SLAB.
15. SEGMENT HEIGHTS:
- MINIMUM HEIGHT:
- RISER SECTIONS = 1'-0" (2'-0" PREFERRED)
- BASE SECTIONS = 2'-0"
- MAXIMUM HEIGHT = 8'-0"
16. USE EPOXY BONDING COMPOUND BETWEEN POURS.
17. REFER TO PENNDOT PUBLICATION 72, RC-384, RC-394, AND RC-464 FOR DETAILED INFORMATION PERTAINING TO STEEL REINFORCEMENT AND WELDED WIRE FABRIC (WVF) REQUIREMENTS.
18. CONCRETE CLASS FOR ALL PRECAST STRUCTURES SHALL BE CLASS AA CEMENT CONCRETE, MODIFIED. (DESIGN COMPRESSIVE STRENGTH: f'c = 4,000 PSI)
19. ALL CIRCULAR MANHOLES SHALL CONFORM TO ASTM C478 (ASHTO M199) STANDARD SPECIFICATION FOR CIRCULAR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS.

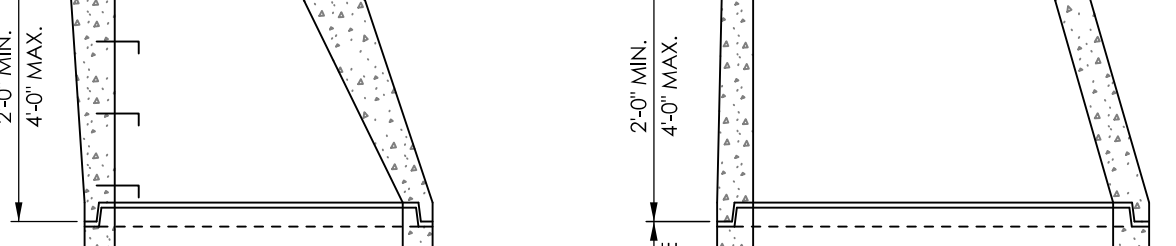
CONCEPTUAL TYPE 4 MANHOLE ASSEMBLY WITH ECCENTRIC CONE



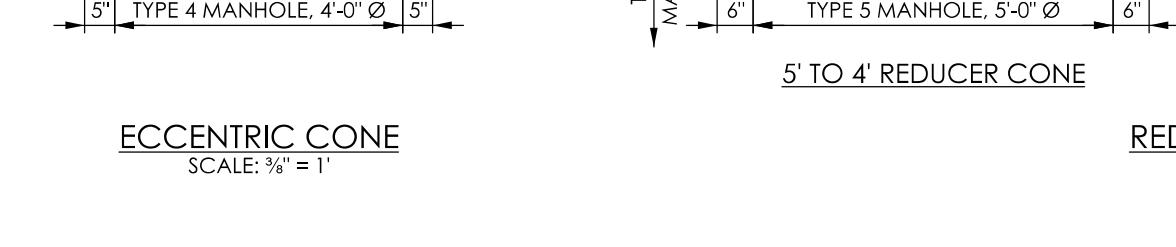
CONCEPTUAL TYPE 5 MANHOLE ASSEMBLY WITH REDUCER CONE



CONCEPTUAL MANHOLE ASSEMBLY WITH SQUARE INLET BOX (BOTTOM) AND TYPE 4 MANHOLE (TOP)



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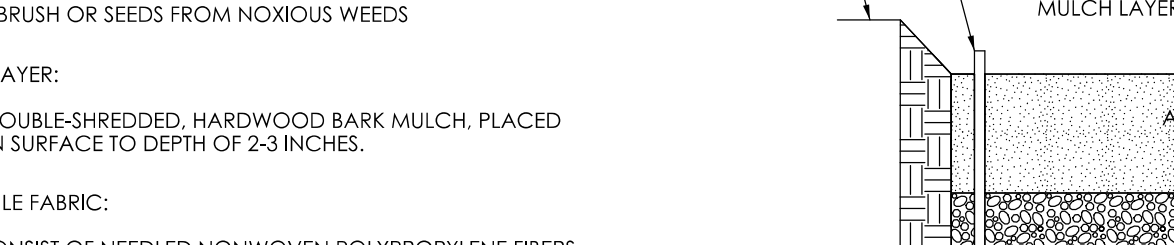
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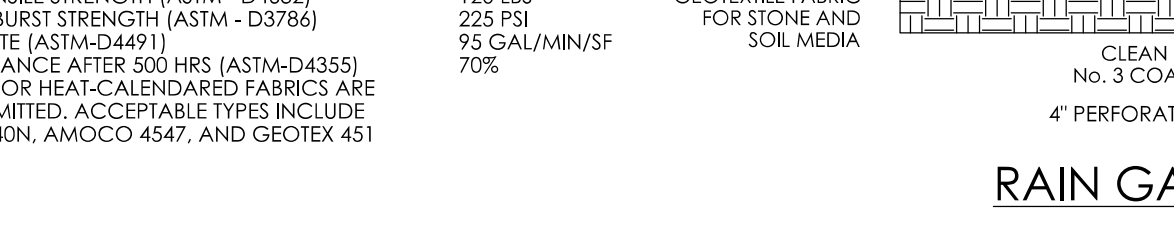
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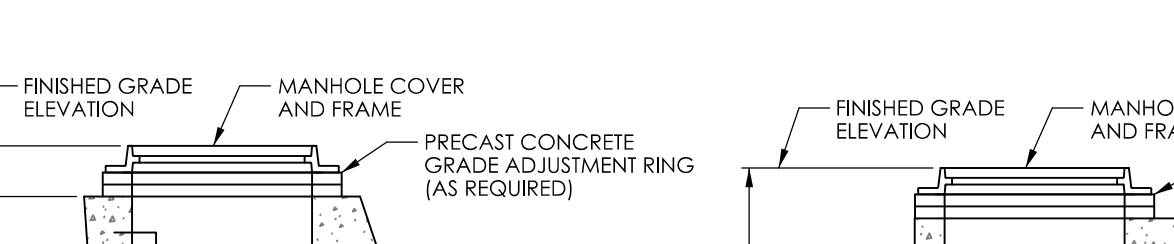
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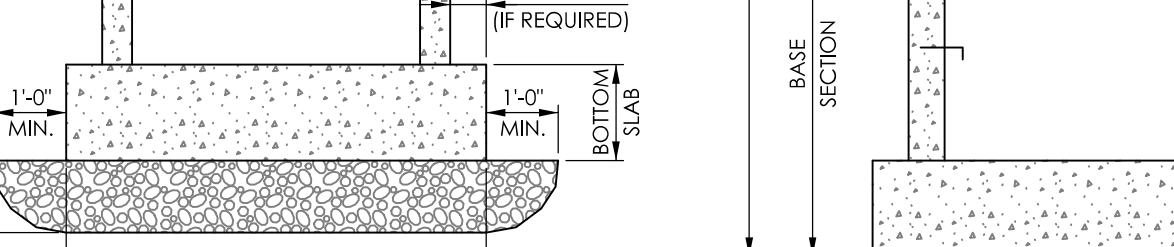
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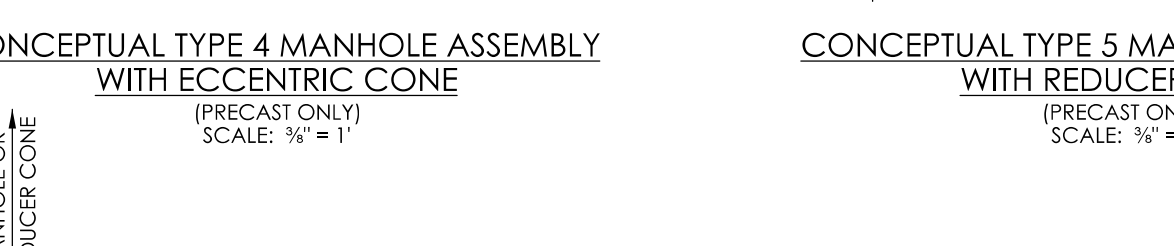
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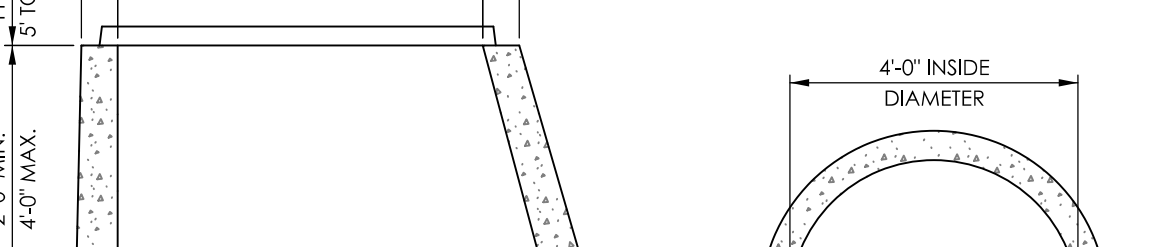
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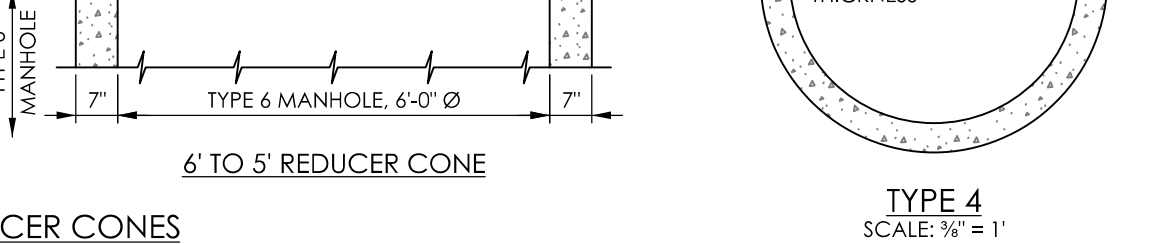
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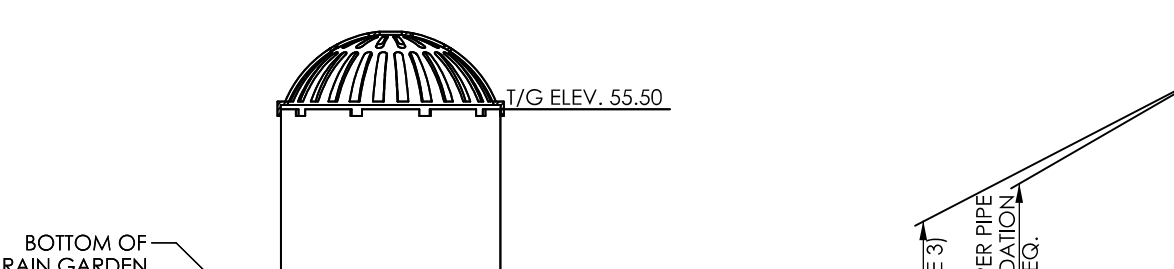
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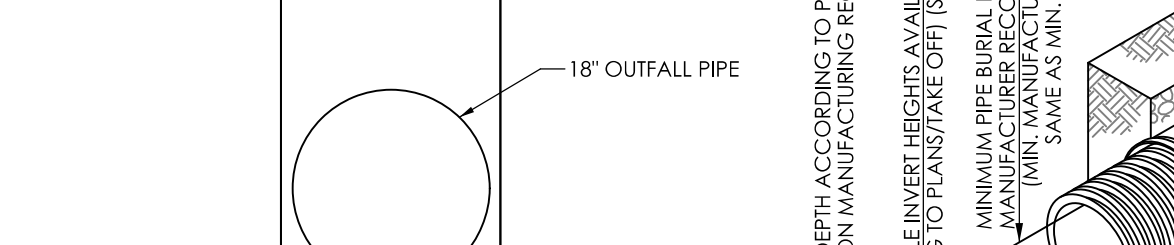
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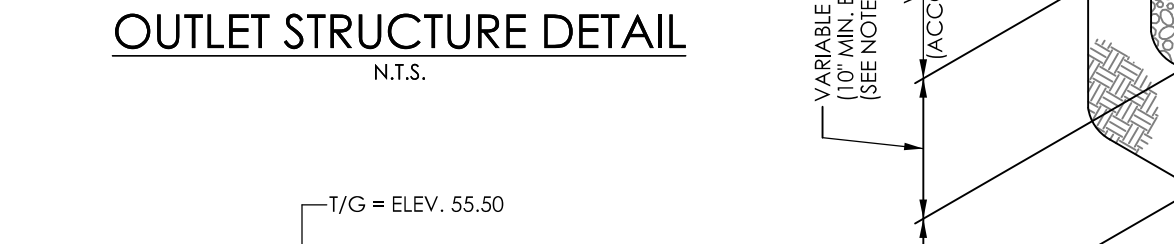
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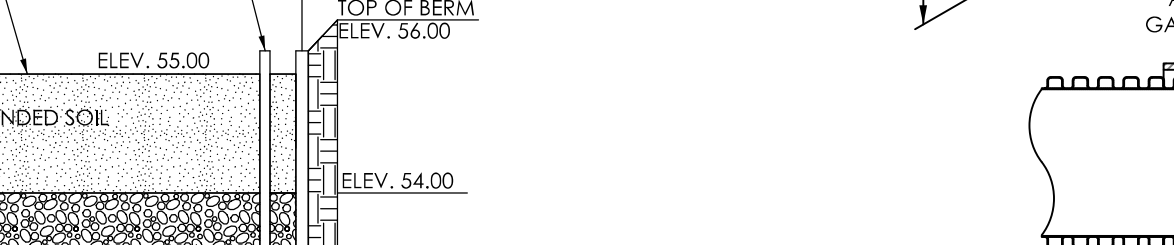
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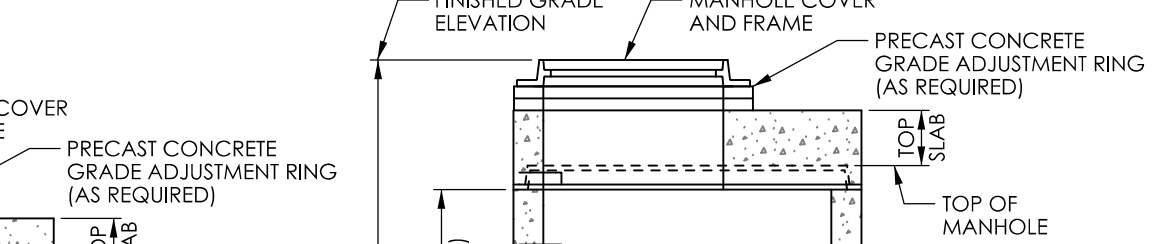
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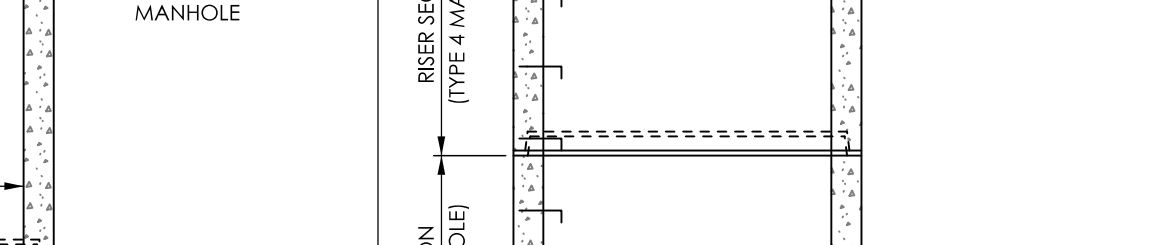
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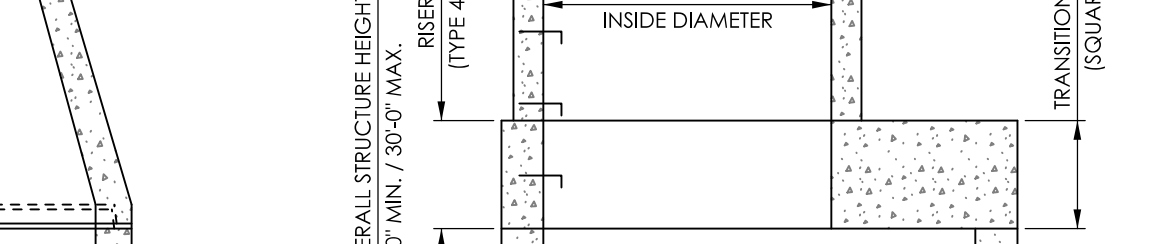
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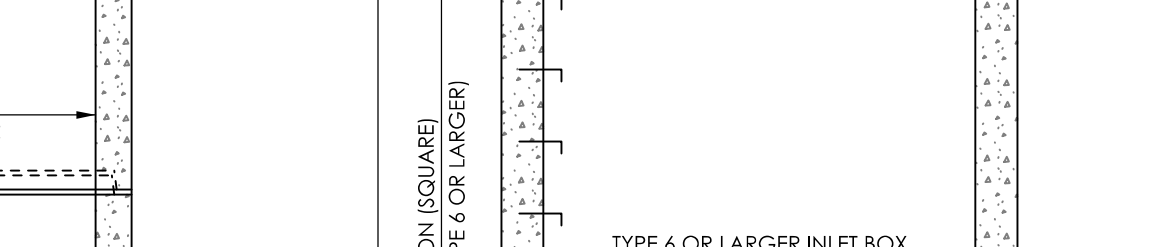
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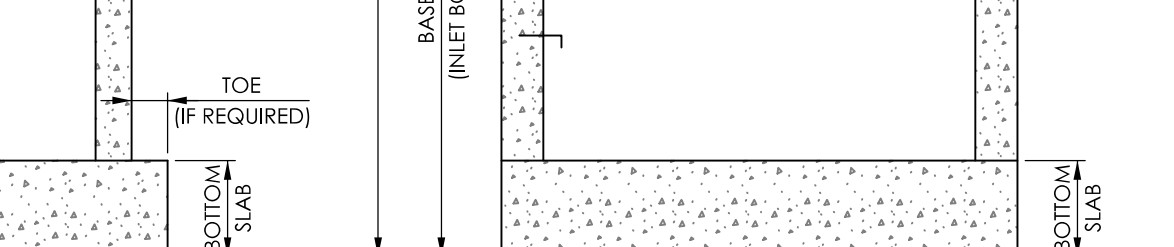
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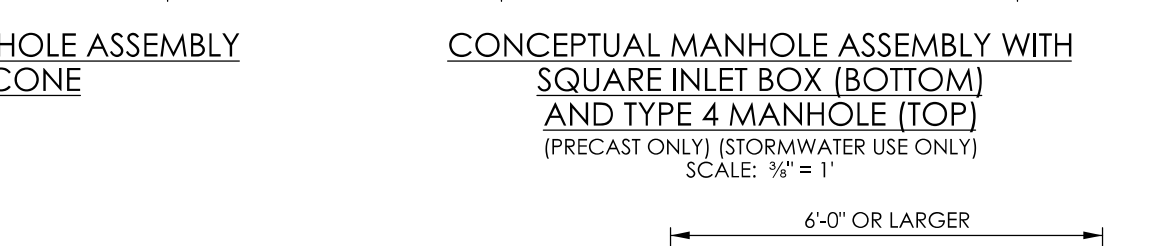
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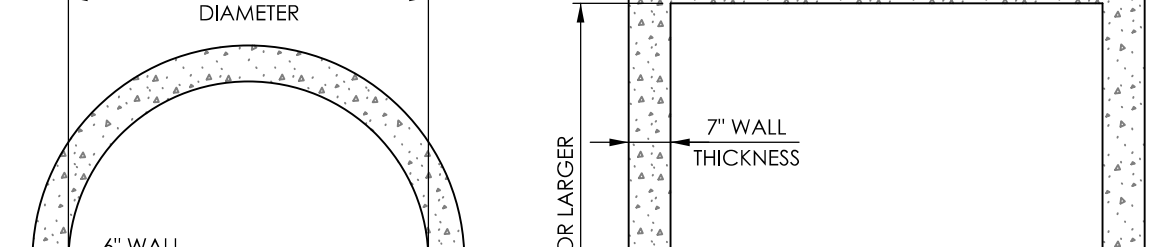
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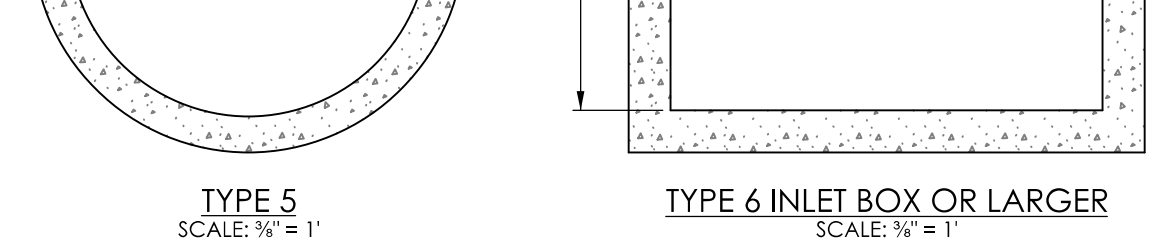
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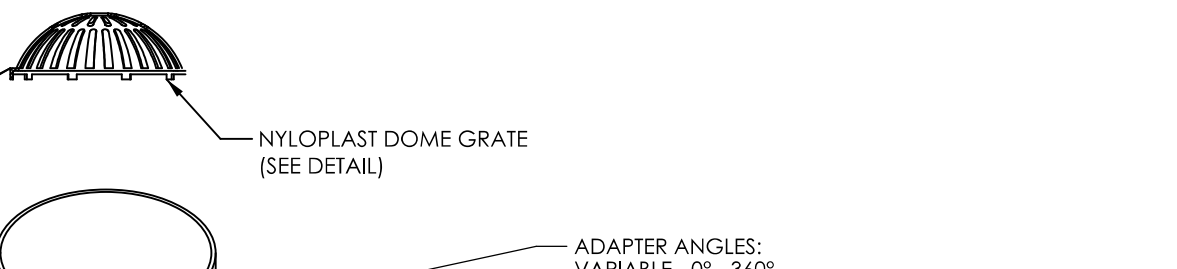
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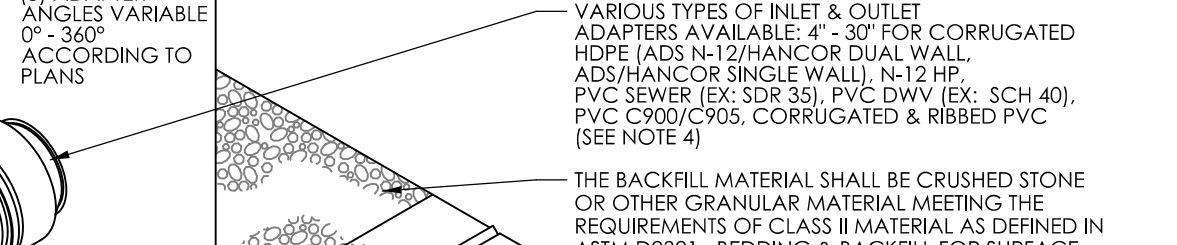
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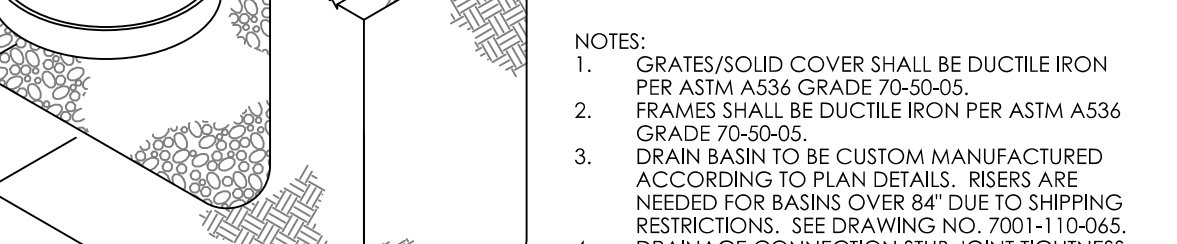
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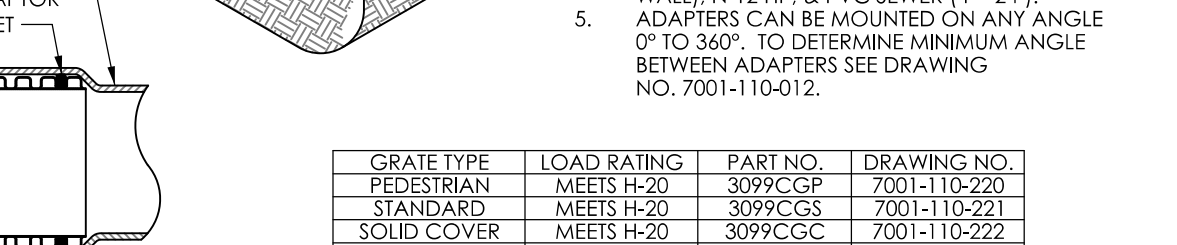
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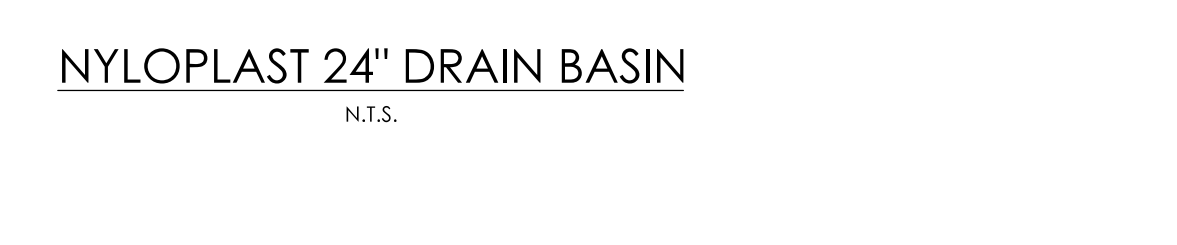
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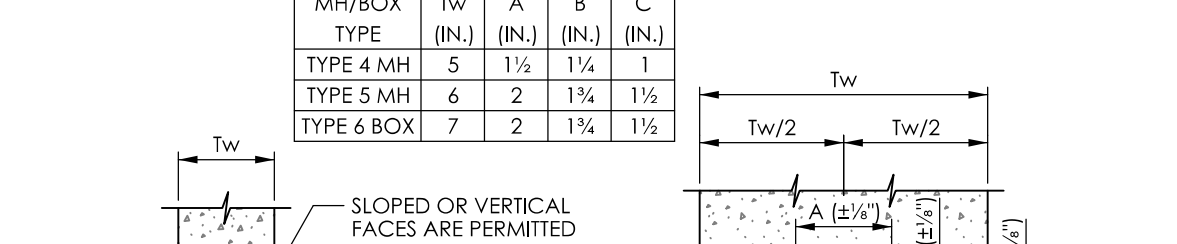
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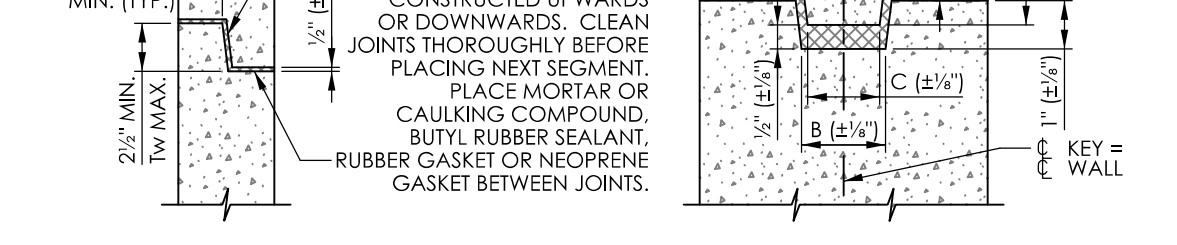
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SOILS LEGEND:
 SOILS INFORMATION OBTAINED FROM THE USDA-NRCS WEB SOIL SURVEY, VERSION 10, SURVEY PERFORMED ON FEBRUARY 10, 2022.

MaC	MANOR LOAM, 15 TO 25 PERCENT SLOPES
MaE	MANOR LOAM, 25 TO 35 PERCENT SLOPES
W	WATER
GnC	GLENEG SILT LOAM, 8 TO 15 PERCENT SLOPES
Ud	URBAN LAND, 15 TO 25 PERCENT SLOPES
MaD	MANOR LOAM, 15 TO 25 PERCENT SLOPES
UdB	URBAN LAND, 0 TO 8 PERCENT SLOPES

SOIL LIMITATIONS AND RESOLUTIONS

SOIL LIMITATION	RESOLUTION(S)
CUTBANKS CAVE	PROVIDE APPROPRIATE BENCHING AND/OR SHORING IN AREAS OF EXCAVATION.
CORROSIVE TO CONCRETE	INSTALL REBAR TO MINIMUM COVER REQUIREMENTS AND USE EPOXY COATED REBAR. APPLY MOISTURE BARRIER TO SURFACE OF EXPOSED CONCRETE. SOILS SHALL BE STABILIZED WITH EITHER TEMPORARY OR FINAL STABILIZATION IN AREAS WHERE EARTHWORK IS DELAYED OR STOPPED FOR FOUR CONSECUTIVE DAYS. SOILS TO BE EVALUATED BY GEOTECHNICAL SPECIALIST. WATER TABLE EVALUATION WILL BE REQUIRED, POSSIBLY IN AN AREA OF WETLANDS.
EASILY ERODIBLE	SOILS SHOULD NOT BE USED FOR STRUCTURAL FILL UNLESS THEY HAVE BEEN EVALUATED BY A GEOTECHNICAL ENGINEER AND THE GEOTECHNICAL ENGINEER DEEMS THEM SUITABLE AS FILL OR PROVIDES RECOMMENDATIONS TO AMEND SOILS MAKING THEM SUITABLE AS FILL.
HYDRIC/HYDRIC INCLUSIONS	SOILS SHOULD BE EVALUATED FOR SUITABILITY FOR INFILTRATION PRACTICES.
LOW STRENGTH / LANDSLIDE PRONE	AREAS OF EMBANKMENTS WITH PIPES PASSING THROUGH THEM SHALL HAVE ANTI-SEEP COLLARS INSTALLED PER THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S (PA DEP) EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM. SOIL SHOULD BE AMENDED AS RECOMMENDED TO PROVIDE ADEQUATE MATERIALS NECESSARY FOR REQUIRED PLANT GROWTH.
SLOW PERCOLATION	SOILS SHOULD BE FREE OF FROZEN OR MUCKY MATERIALS. FILL SHOULD NOT BE PLACED ON SATURATED OR FROZEN SURFACES. EARTHWORK INVOLVING THESE SOILS SHOULD BE LIMITED TO THE WARMER MONTHS WHEN PRACTICAL.
PIPING	SOILS SHOULD BE EVALUATED FOR WEETNESS PRIOR TO USE IN SITE WORK. IF GEOTECHNICAL ENGINEER DEEMS SOILS TOO WET FOR SITE WORK, THEN SOILS SHALL BE AMENDED OR DRIED PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
POOR SOURCE OF TOPSOIL	
FROST ACTION	
WEETNESS	

NOTES:
 1. ALL PROPOERTY AREA AND 500' PERIMETER IS IN THE SCHUYLKILL RIVER WATERSHED.

LEGEND

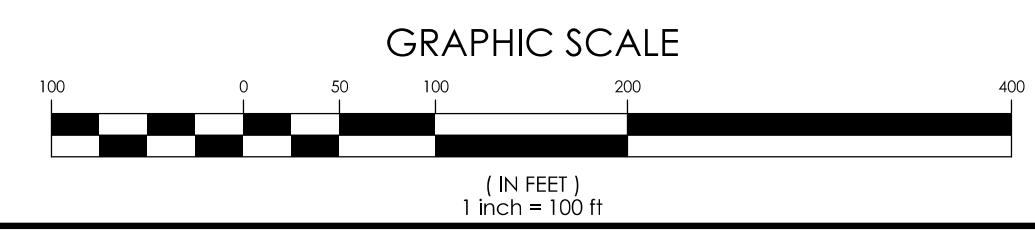
	PROPERTY LINE
	EXISTING RIGHT-OF-WAY
	EXISTING EASEMENT LINE
	ADJOINING LOT LINES
	EXISTING BUILDING
	EXISTING RETAINING WALL
	EXISTING CONCRETE PAD
	EXISTING EDGE OF PAVING
	EXISTING PASDA 2 FT CONTIGUOUS
	500' BUFFER FROM PROPERTY LINE
	SOIL BOUNDARY LINES
	SOIL BOUNDARY TEXT

TAX PARCEL MAP INFO

#	1	2	3	4	*5	6	7	8	9	**11	12	13	14
TAX MAP, BLOCK, UNIT	65 - 5 - 10	65 - 5 - 9	65 - 5 - 32	65 - 5 - 6	65 - 5 - 7	65 - 5 - 2	65 - 5 - 29	65 - 5 - 8	65 - 5 - 9	65 - 5 - 27	65 - 5 - 11	65 - 5 - 25	65 - 5 - 12
TMP	65-00-10066-00-3	65-00-05146-00-9	65-00-10066-04-8	-	65-00-05149-00-6	65-00-10066-03-9	65-00-10066-09-3	65-00-10066-02-1	65-00-05146-00-9	65-00-10066-08-4	65-00-10063-00-6	65-00-10066-05-7	65-00-10060-00-9
OWNER	ACADEMY IN MANAYUNK THE	PENNSYLVANIA RAILROAD	ACADEMY IN MANAYUNK THE	-	PECO	WHITEMARSH TOWNSHIP	DEANGELIS KERRY J & RUMER KATHY L	FDS RIVER PARK I LLC	PENNSYLVANIA RAILROAD	FDS RIVER PARK I LLC	PHILADELPHIA & READING RAILROAD CO	FDS RIVER PARK I LLC	ACADEMY IN MANAYUNK THE
DB/PG	6033 - 2959	-	6033 - 2959	-	-	5721 - 795	5980 - 2502	6070 - 839	-	6070 - 839	-	6070 - 839	6033 - 2959

* THERE ARE TWO 'FIVES' SHOWN ON THE PLAN BECAUSE THEY BOTH HAVE THE SAME EXACT TAX PARCEL MAP INFORMATION, THEY'RE JUST DIVIDED BY MANOR ROAD
 ** THERE ARE TWO 'ELEVENS' SHOWN ON THE PLAN BECAUSE THEY BOTH HAVE THE SAME EXACT TAX PARCEL MAP INFORMATION, THEY'RE JUST DIVIDED BY RIVER ROAD

PROJECT SERIAL NO.
CALL BEFORE YOU DIG!
 PENNSYLVANIA LAW REQUIRES
 3 WORKING DAYS NOTICE FOR
 CONSTRUCTION PHASE AND 10 WORKING
 DAYS IN DESIGN STAGE - STOP CALL
 Pennsylvania One Call System, Inc.
 1-800-242-1776



DATE	BY	REVISIONS

JAMES P. BANNON
 Professional Engineer
 Pennsylvania License No. PE 882137

EXISTING RESOURCES & SITE ANALYSIS PLAN (ERSAP)

AIM ACADEMY BUILDING ADDITION

WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

PROJECT NO.	2011059.08	DRAWN BY:	CC
DATE:	6/21/22	CHECKED BY:	JPB
SCALE:	1"=100'	APPROVED BY:	JPB
SHEET NO.			

C9.0

12 of 12

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 Whitmarsh, as amended, and agrees to obtain all necessary permits in connection with the proposed subdivision and/or land development.

Whitmarsh 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 Whitmarsh 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 Whitmarsh, as amended, and, to the best of my knowledge and belief, this application and the submitted plans conform to those provisions.

Date of Submission:

5-26-22

Signature:

Patricia M. Roberts

(Original Signature must be submitted)

Printed Name:

Patricia Roberts

I, (name) Patricia Roberts (title) Executive Director of
(entity submitting application) AIM Academy do hereby affirm

that I am authorized by the applicant to affix my signature to this application.

Date: 5-26-22

Signature:

Patricia M. Roberts

(Original Signature must be submitted)

**WHITEMARSH TOWNSHIP
SUBDIVISION and/or LAND DEVELOPMENT
TIME WAIVER FORM**

Date: May 20, 2022

Granted to: Whitemarsh Township Board of Supervisors

Name of Subdivision and/or Land Development: AIM Academy - Building Addition

On or about May 20, 2022, 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 waiver 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: 5-26-22

Signature:



(Original Signature must be submitted)

Printed Name:

Patricia Roberts

Firm Name:

AIM Academy

(if applicable)

Title:

Executive Director

(if applicable)



**AIM Academy – Building Addition
Preliminary/Final Land Development Waiver Request List**

June 21, 2022

Subdivision and Land Development Ordinance

1. Ch. 105 12(D) of SALDO to allow the plans to be reviewed and approved simultaneously as both Preliminary and Final plans, rather than requiring separate Preliminary and Final submissions.
2. Ch. 105-21 (B)(1)(n) Requiring features shown on the plan within 500 feet of the property. We request a modification of this section to allow the Aerial View on the Title Sheet, which shows existing conditions within 500 feet of the property, to satisfy this requirement.
3. Ch. 105-21 (B)(9)(C)(2) Requiring preparation of Traffic Impact Study. The proposed building addition is not expected to increase enrollment; therefore, the current traffic patterns will not be changed by the addition onto the existing building.

Resolution 2004-8: Grading, Erosion Control, Stormwater Management, and Best Management Practices

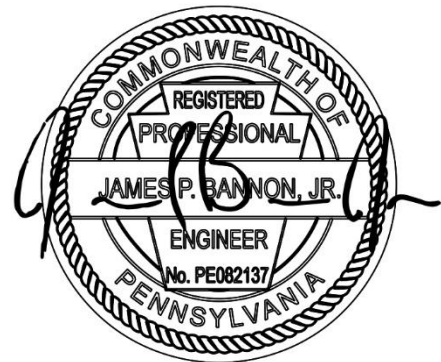
4. II(D)(2) – The top of any slope shall be located a minimum of five (5) feet from property line: We request a waiver from this requirement because we will be constructing the rain garden less than five feet from the ultimate right-of-way line. The existing parking area currently does not meet the requirements and the removal of parking area and the removal of the impervious will
5. II(E)(2)(g)(iv) - storm drainage pipes shall be at least 18 inches and RCP: We request a waiver from this requirement to use a twelve inch HDPE pipe in the proposed rain garden. No new storm pipes are proposed within the Township's right-of-way

K:\11Proj\11059\08_Building_Addition\Proj_Data\Support_Data\Applications\22-06-13_Waiver_Req_Ltr.docx

**POST CONSTRUCTION STORMWATER MANAGEMENT REPORT
AND SITE DRAINAGE/EROSION & SEDIMENTATION CALCULATIONS**

**1200 RIVER ROAD
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA**

AIM ACADEMY BUILDING ADDITION



**Issued: June 21, 2022
Nave Newell No.: 2011059.08**

**POST CONSTRUCTION STORMWATER MANAGEMENT REPORT AND SITE DRAINAGE/EROSION AND
SEDIMENTATION CALCULATIONS
SUMMARY OF CONTENTS**

**AIM ACADEMY BUILDING ADDITION
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA**

SECTION	CHAPTER	PAGE
I.	Stormwater Narrative	1
II.	Maps <ul style="list-style-type: none"> • Location Map • NRCS Soils Map/Survey 	6
III.	Summary of Peak-rate Flows HydroCAD Summary <ul style="list-style-type: none"> • Pre-Development • Post-Development 	13
IV.	Volume Calculations <ul style="list-style-type: none"> • Volume Summary • Dewatering Calculations 	105
V.	Infiltration Testing Report	109
VI.	Erosion and Sedimentation Calculations <ul style="list-style-type: none"> • Compost Filter Sock Calculations 	130
Appendix	(Sheet 1 of 2) Pre-Development Drainage Area Plan (Sheet 2 of 2) Post-Development/Inlet Drainage Area Plan	132

l.

Post-Construction Stormwater Management (PCSM) Narrative

Introduction

This Post-Construction Stormwater Management Narrative was developed to comply with the requirements of Chapter 102, Title 25 of the Administrative Code, created under the Clean Streams Law, and the Whitmarsh Township Stormwater Management Ordinance and Resolution 2004-8. The Pennsylvania Department of Environmental Protection (PADEP) Pennsylvania Stormwater Best Management Practices Manual was used as a reference in facilities design.

Project Description

AIM Academy is an existing school use located on an 8.87-acre tract, Block 5, Unit 10 in Whitmarsh Township, Montgomery County, Pennsylvania. The site is located at the intersections of River Road and Manor Road. This proposed redevelopment is the construction of a building addition, located to the rear of the existing building. The proposed improvements include the construction of a building addition and elimination of parking spaces to add a proposed rain garden.

Existing Conditions

The site is located at 1200 River Road, Montgomery County, PA.

Site topography description: The existing parking lot drains from north to south. A series of curb inlets convey surface runoff to the existing channel along the western edge of the parking lot by way of 24-inch concrete pipes.

Existing and Historic land use: The parcels are currently developed as a school campus with buildings, recreational fields, and parking lots.

Watershed Information: The site is located within the Schuylkill River watershed, which is classified as WWF – Warm Water Fishes.

Site soils are mapped in the NRCS Soil Survey as follows:

UgB – Urban complex, 0 to 8 Percent Slopes, HSG 'D'

MaD – Loam, 15 to 25 Percent Slopes, HSG 'D'

Proposed Conditions

The project will propose an addition to an existing building. An existing parking lot will be removed where the proposed building addition will be constructed. A portion of the existing parking lot, located at the western portion of the site, will be removed and used for a rain garden to meet the township's volume requirements. The existing site drainage patterns in the post development condition will mimic the pre-development conditions.

PCSM PLAN STORMWATER ANALYSIS §102.8(g):

Stormwater Management

The stormwater management system for this project is designed to meet the provisions of Resolution 2004-8 and the Whitemarsh Township Grading, Erosion Control, Stormwater Management and Best Management Practices Ordinance (Chapter 58 of the Whitemarsh Township Code).

As previously noted, the project site is tributary to the Schuylkill River and is in the Schuylkill Watershed. Note that the "studied area" includes the entire area within the limit of disturbance. This is depicted on the enclosed drainage area plans.

The following discharge points were established in order to perform the analysis:

Discharge Point Name:	001
Location of DP001:	Located at an existing inlet that eventually discharges to River Road
Drainage Area within the LOD:	0.390 AC
Description:	The majority of the study area currently flows overland through a series of storm sewers, which eventually drains to a storm system in River Road, at the western property line. In the proposed conditions, in the studied area will mimic the pre-development conditions and will discharge to an existing drainage system.

- (1) Predevelopment site characterization and assessment of soil and geology including appropriate infiltration and geotechnical studies that identify location and depths of test sites and methods used.

These supplementary reports are provided in Section V.

VOLUME CONTROL AND WATER QUALITY §102.8(g)(2)

The project is subject to the provisions of the Township of Whitemarsh Stormwater Management Ordinance Resolution 2004-8.

Township Requirement

Per the Township Stormwater Management Ordinance, the post-construction total runoff volume shall not exceed the pre-development total runoff condition for all storms equal to or less than the 2-year, 24-hour duration precipitation (design storm).

Volume Control

The post development total run-off volume shall not exceed the pre-development total run-off volume for all storms equal or less than the 2-year, twenty-four (24) hour duration precipitation design storm per the PA BMP Manual criteria. The two-year runoff volume was evaluated for the disturbed areas associated with the project. In the pre-development study area, all non-

impervious and impervious areas modeled as “meadow – in good condition”. Post-development coverages are broken out into lawn and impervious conditions.

All volume calculations are based on the SCS Curve Number Method and a 2-year 24-hour rainfall depth of 3.20 inches values from Whitemarsh Township Stormwater Management Ordinance, Resolution 2004-8.

Two-year runoff volumes were evaluated for each discharge point. The following BMP's are proposed for this project:

- BMP 6.4.5 Rain Garden – One rain garden is proposed to be constructed to regulate volume, peak rate, and water quality.

Groundwater Recharge/Infiltration

The Township requires the net two-year volume to be to be infiltrated. Refer to Section V of this report for volume credit calculations.

Water Quality

The following BMPs are used to meet the water quality requirements of the Township:

- BMP 6.4.5 Rain Garden

A detailed sequence of construction and operations is included on the E&S Plan and maintenance schedule is included on the PCSM Plan.

RATE CONTROL §102.8(g)(3)

Township Requirement

The site, which falls within the Schuylkill River Watershed was analyzed for the design frequency storms as indicated in the Township of Whitemarsh Stormwater Ordinance Resolution 2004-8 for Peak Rate Control Standards.

- 2-year post development to 2-year pre-development
- 5-year post development to 5-year pre-development
- 10 year post development to 10-year pre-development
- 25-year post development to 25-year pre-development
- 50-year post development to 50-year pre-development
- 100-year post development to 100-year pre-development

Design Storm	Pre-development Flow (24-Hour)	Allowable Flow	Post-development Flow (24-Hour)
2-year	7.26 cfs	7.26 cfs	7.09 cfs
5-year	9.98 cfs	9.98 cfs	9.49 cfs
10-year	12.18 cfs	12.18 cfs	11.41 cfs
25-year	14.12 cfs	14.12 cfs	13.09 cfs
50-year	16.06 cfs	16.06 cfs	14.77 cfs
100-year	18.01 cfs	18.01 cfs	16.46 cfs

METHODOLGY §102.8(g)(4)

Volume and Rate Control Methodology - The Soil Cover Complex Method was utilized to calculate the pre-development and post-development volumes. The rainfall values from Whitemarsh Township Stormwater Management Ordinance Resolution 2004-8 used for the stormwater calculations. The following rainfall values were used:

Average recurrence interval (years)	Rainfall (inches)
1 year	2.60
2 year	3.20
5 year	4.20
10 year	5.00
25 year	5.70
50 year	6.40
100 year	7.10

Stormwater rate calculations are based on the SCS TR-20 method and were calculated using HydroCAD, Version 10.

SPECIAL CONSIDERATION TO ADDRESS SOIL §102.8(g)(5)

Soil Summary:

The following soils are mapped for the project area per the NRCS Web Soil Survey, dated February 10, 2022.

Conclusion

The site improvements will consist of a proposed building addition located in the area of an existing parking lot. The stormwater management facility proposed on the project site allow the project to adequately meet the Township and State's stormwater management requirements.

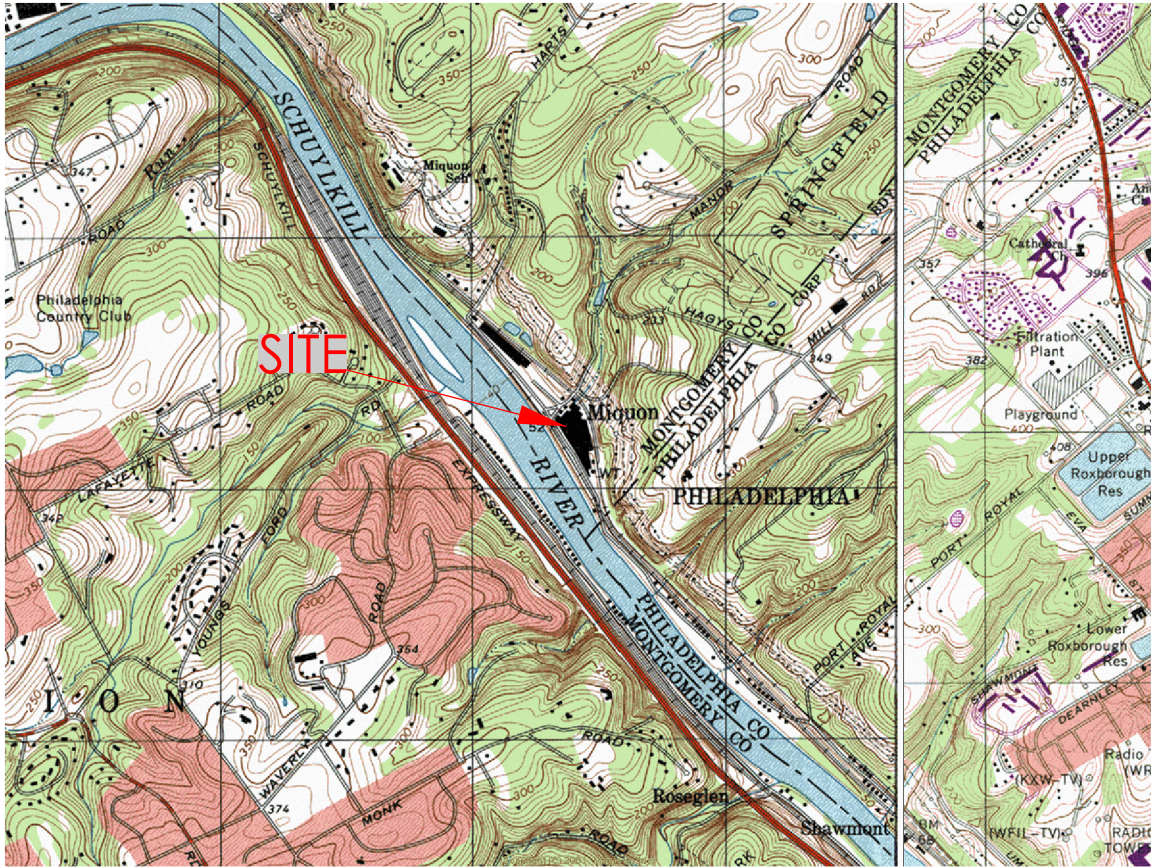
PCSM PLAN PREPARER REQUIREMENTS (§102.8(e))

The plan was prepared under the direction of the following professional:

James P. Bannon, PE
Nave Newell, Inc.
900 West Valley Road, Suite 1100
Wayne, PA 19087
(610) 265-8323

Jim Bannon, PE has over 20 years of experience preparing land development and E&S control plans.

II.



900 West Valley Road • Suite 1100
Wayne, PA 19087-1830
p: 610.265.8323 f: 610.265.4299
www.navenewell.com

DRAWING NAME: **LOCATION MAP**

PROJECT NAME: **ACADEMY IN MANAYUNK
BUILDING ADDITION**

SCALE:
1" = 20'

DRAWN BY:
CW

PROJECT NUMBER:
2011059.08

SHEET

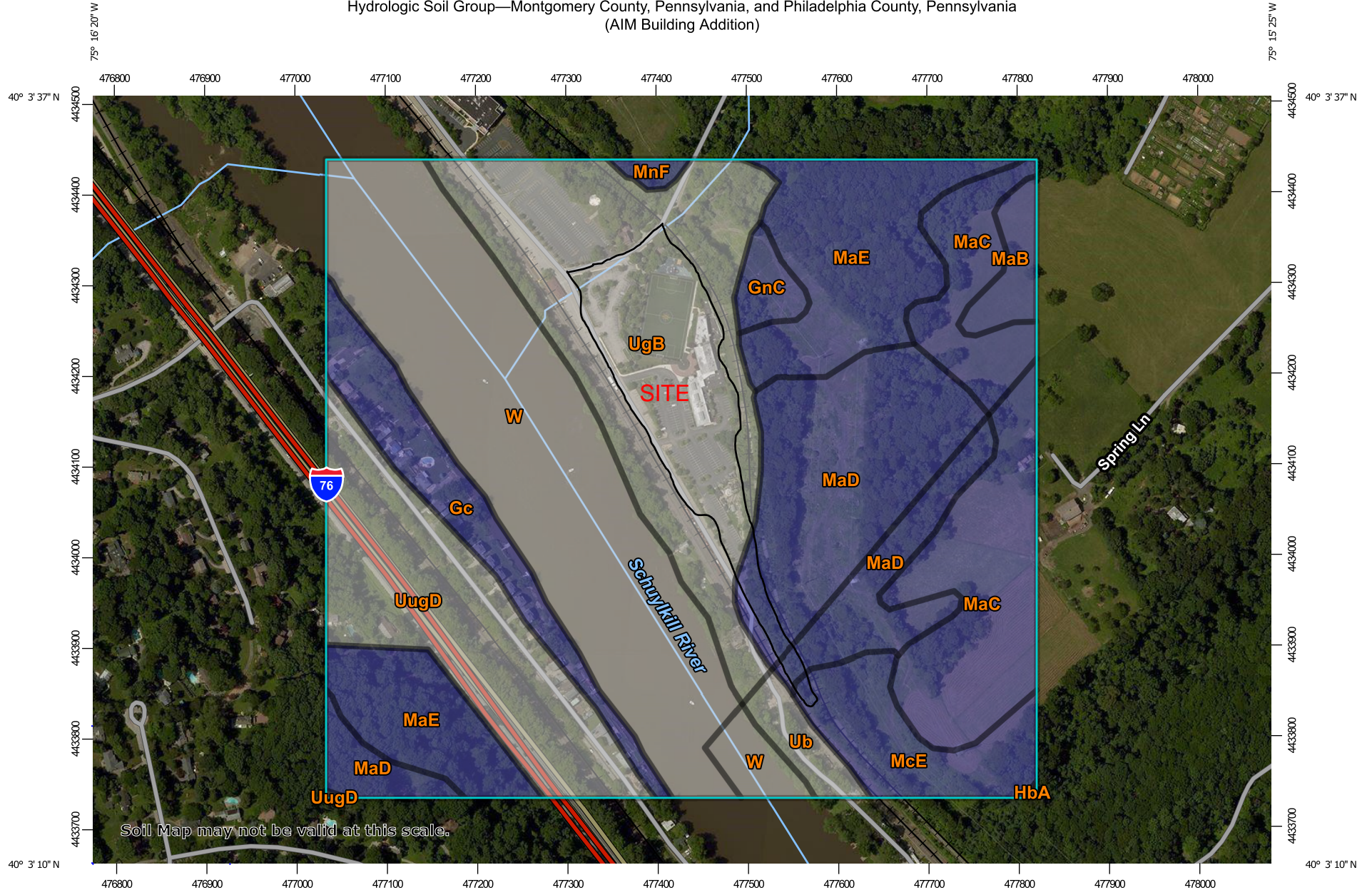
CHK'D BY:
JPB

APPROV. BY:
JBP

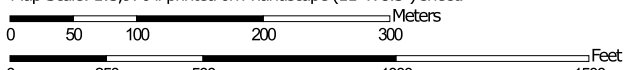
DATE:
6/21/22

1 of 1

Hydrologic Soil Group—Montgomery County, Pennsylvania, and Philadelphia County, Pennsylvania
(AIM Building Addition)




Map Scale: 1:5,970 if printed on A landscape (11" x 8.5") sheet.



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 Rating Polygons





 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available


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 scales ranging from 1:12,000 to 1:15,800.

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 Survey Area: Philadelphia County, Pennsylvania
 Survey Area Data: Version 17, Sep 1, 2021

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 15, 2014—Jun 24, 2014

MAP LEGEND

MAP INFORMATION

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Gc	Gibraltar silt loam	B	6.5	4.7%
GnC	Glenelg silt loam, 8 to 15 percent slopes	B	1.5	1.1%
MaB	Manor loam, 3 to 8 percent slopes	B	1.9	1.4%
MaC	Manor loam, 8 to 15 percent slopes	B	4.9	3.6%
MaD	Manor loam, 15 to 25 percent slopes	B	15.0	10.9%
MaE	Manor loam, 25 to 35 percent slopes	B	15.7	11.4%
MnF	Manor loam, 25 to 60 percent slopes, very stony	B	0.5	0.4%
UgB	Urban land, 0 to 8 percent slopes		25.1	18.2%
UgD	Urban land-Udorthents, schist and gneiss complex, 8 to 25 percent slopes		14.4	10.5%
W	Water		27.7	20.1%
Subtotals for Soil Survey Area			113.3	82.3%
Totals for Area of Interest			137.6	100.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HbA	Hatboro-Codorus complex, 0 to 3 percent slopes, frequently flooded	B/D	0.0	0.0%
MaC	Manor loam, 8 to 15 percent slopes	B	10.3	7.5%
MaD	Manor loam, 15 to 25 percent slopes	B	4.6	3.3%
McE	Manor and Chester extremely stony loams, 25 to 50 percent slopes	B	5.9	4.3%
Ub	Urban land		1.9	1.4%
W	Water		1.6	1.1%
Subtotals for Soil Survey Area			24.3	17.7%
Totals for Area of Interest			137.6	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

III.

SUMMARY OF FLOWS

Pre-Development/Post Development DP001

Storm	Pre-Development Flow (CFS)	Allowable Flow* (CFS)	Post-Development Flow (CFS)	Net Change in Runoff (CFS)
1	5.67		5.66	
2	7.26	7.26	7.09	-0.17
5	9.98	9.98	9.49	-0.49
10	12.18	12.18	11.41	-0.77
25	14.12	14.12	13.09	-1.03
50	16.06	16.06	14.77	-1.29
100	18.01	18.01	16.46	-1.55

* Per requirements of Whitemarsh Township Resolution 2004-8



900 West Valley Road
Suite 1100
Wayne, PA
(610) 265-8323

PROJECT NAME: AIM Academy Building Addition

JOB #: 2011-059.08

BY: CW

DATE: 6/9/2022

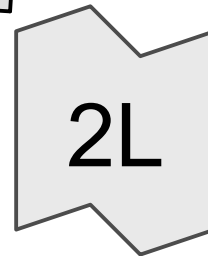
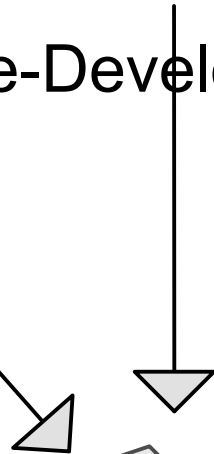
CHK'D: JPB



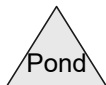
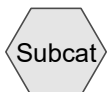
Pre-Development
(Outside LOD)



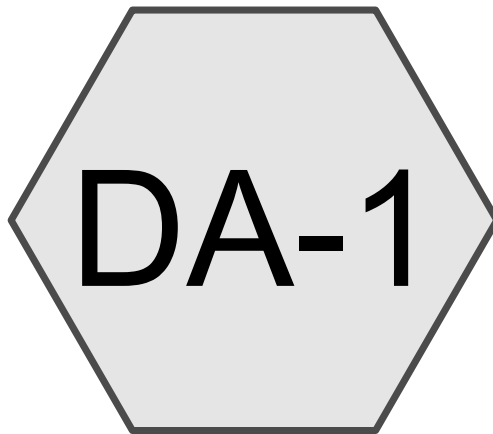
Pre-Development



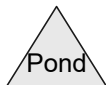
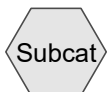
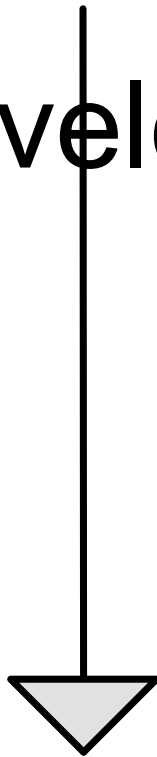
Pre-Development
DP001



Routing Diagram for 11059.08_AIM Academy-Building Addition
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Pre-Development



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Page 2

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type II 24-hr		Default	24.00	1	2.60	2
2	2-Year	Type II 24-hr		Default	24.00	1	3.20	2
3	5-Year	Type II 24-hr		Default	24.00	1	4.20	2
4	10-Year	Type II 24-hr		Default	24.00	1	5.00	2
5	25-Year	Type II 24-hr		Default	24.00	1	5.70	2
6	50-Year	Type II 24-hr		Default	24.00	1	6.40	2
7	100-Year	Type II 24-hr		Default	24.00	1	7.10	2

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Page 3

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
1,309	58	Meadow, non-grazed, HSG B (DA-1)
15,710	78	Meadow, non-grazed, HSG D (DA-1)

11059.08_AIM Academy-Building Addition

Type II 24-hr 1-Year Rainfall=2.60"

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Page 4

Summary for Subcatchment DA-1: Pre-Development

Runoff = 0.57 cfs @ 11.97 hrs, Volume= 1,135 cf, Depth= 0.80"

Routed to Link 2L : Pre-Development DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=2.60"

Area (sf)	CN	Description
1,309	58	Meadow, non-grazed, HSG B
15,710	78	Meadow, non-grazed, HSG D
17,019		Weighted Average
17,019		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

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Type II 24-hr 2-Year Rainfall=3.20"

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Summary for Subcatchment DA-1: Pre-Development

Runoff = 0.87 cfs @ 11.97 hrs, Volume= 1,704 cf, Depth= 1.20"

Routed to Link 2L : Pre-Development DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
1,309	58	Meadow, non-grazed, HSG B
15,710	78	Meadow, non-grazed, HSG D
17,019		Weighted Average
17,019		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

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Type II 24-hr 5-Year Rainfall=4.20"

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Page 6

Summary for Subcatchment DA-1: Pre-Development

Runoff = 1.41 cfs @ 11.96 hrs, Volume= 2,763 cf, Depth= 1.95"

Routed to Link 2L : Pre-Development DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

Type II 24-hr 5-Year Rainfall=4.20"

Area (sf)	CN	Description
1,309	58	Meadow, non-grazed, HSG B
15,710	78	Meadow, non-grazed, HSG D
17,019		Weighted Average
17,019		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment DA-1: Pre-Development

Runoff = 1.86 cfs @ 11.96 hrs, Volume= 3,678 cf, Depth= 2.59"

Routed to Link 2L : Pre-Development DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
1,309	58	Meadow, non-grazed, HSG B
15,710	78	Meadow, non-grazed, HSG D
17,019		Weighted Average
17,019		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment DA-1: Pre-Development

Runoff = 2.27 cfs @ 11.96 hrs, Volume= 4,512 cf, Depth= 3.18"

Routed to Link 2L : Pre-Development DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 25-Year Rainfall=5.70"

Area (sf)	CN	Description
1,309	58	Meadow, non-grazed, HSG B
15,710	78	Meadow, non-grazed, HSG D
17,019		Weighted Average
17,019		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment DA-1: Pre-Development

Runoff = 2.69 cfs @ 11.96 hrs, Volume= 5,370 cf, Depth= 3.79"

Routed to Link 2L : Pre-Development DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 50-Year Rainfall=6.40"

Area (sf)	CN	Description
1,309	58	Meadow, non-grazed, HSG B
15,710	78	Meadow, non-grazed, HSG D
17,019		Weighted Average
17,019		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment DA-1: Pre-Development

Runoff = 3.11 cfs @ 11.96 hrs, Volume= 6,247 cf, Depth= 4.41"
 Routed to Link 2L : Pre-Development DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 100-Year Rainfall=7.10"

Area (sf)	CN	Description
1,309	58	Meadow, non-grazed, HSG B
15,710	78	Meadow, non-grazed, HSG D
17,019		Weighted Average
17,019		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

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Multi-Event Tables

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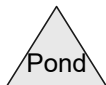
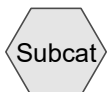
Page 11

Events for Subcatchment DA-1: Pre-Development

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.60	0.57	1,135	0.80
2-Year	3.20	0.87	1,704	1.20
5-Year	4.20	1.41	2,763	1.95
10-Year	5.00	1.86	3,678	2.59
25-Year	5.70	2.27	4,512	3.18
50-Year	6.40	2.69	5,370	3.79
100-Year	7.10	3.11	6,247	4.41



Pre-Development
(Outside LOD)



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Page 2

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type II 24-hr		Default	24.00	1	2.60	2
2	2-Year	Type II 24-hr		Default	24.00	1	3.20	2
3	5-Year	Type II 24-hr		Default	24.00	1	4.20	2
4	10-Year	Type II 24-hr		Default	24.00	1	5.00	2
5	25-Year	Type II 24-hr		Default	24.00	1	5.70	2
6	50-Year	Type II 24-hr		Default	24.00	1	6.40	2
7	100-Year	Type II 24-hr		Default	24.00	1	7.10	2

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Page 3

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
634	61	>75% Grass cover, Good, HSG B (DA-5)
8,320	80	>75% Grass cover, Good, HSG D (DA-5)
55,010	98	Paved parking, HSG D (DA-5)

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Type II 24-hr 1-Year Rainfall=2.60"

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Page 4

Summary for Subcatchment DA-5: Pre-Development (Outside LOD)

Runoff = 5.10 cfs @ 11.96 hrs, Volume= 11,542 cf, Depth= 2.17"

Routed to Link 2L : Pre-Development DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 1-Year Rainfall=2.60"

Area (sf)	CN	Description
8,320	80	>75% Grass cover, Good, HSG D
634	61	>75% Grass cover, Good, HSG B
55,010	98	Paved parking, HSG D
63,964		Weighted Average
8,954		14.00% Pervious Area
55,010		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc 1

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Type II 24-hr 2-Year Rainfall=3.20"

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Page 5

Summary for Subcatchment DA-5: Pre-Development (Outside LOD)

Runoff = 6.40 cfs @ 11.96 hrs, Volume= 14,599 cf, Depth= 2.74"

Routed to Link 2L : Pre-Development DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
8,320	80	>75% Grass cover, Good, HSG D
634	61	>75% Grass cover, Good, HSG B
55,010	98	Paved parking, HSG D
63,964		Weighted Average
8,954		14.00% Pervious Area
55,010		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc 1

11059.08_AIM Academy-Building Addition

Type II 24-hr 5-Year Rainfall=4.20"

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Page 6

Summary for Subcatchment DA-5: Pre-Development (Outside LOD)

Runoff = 8.58 cfs @ 11.96 hrs, Volume= 19,754 cf, Depth= 3.71"

Routed to Link 2L : Pre-Development DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 5-Year Rainfall=4.20"

Area (sf)	CN	Description
8,320	80	>75% Grass cover, Good, HSG D
634	61	>75% Grass cover, Good, HSG B
55,010	98	Paved parking, HSG D
63,964		Weighted Average
8,954		14.00% Pervious Area
55,010		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc 1

11059.08_AIM Academy-Building Addition

Type II 24-hr 10-Year Rainfall=5.00"

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Page 7

Summary for Subcatchment DA-5: Pre-Development (Outside LOD)

Runoff = 10.32 cfs @ 11.96 hrs, Volume= 23,913 cf, Depth= 4.49"

Routed to Link 2L : Pre-Development DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
8,320	80	>75% Grass cover, Good, HSG D
634	61	>75% Grass cover, Good, HSG B
55,010	98	Paved parking, HSG D
63,964		Weighted Average
8,954		14.00% Pervious Area
55,010		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc 1

11059.08_AIM Academy-Building Addition

Type II 24-hr 25-Year Rainfall=5.70"

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Page 8

Summary for Subcatchment DA-5: Pre-Development (Outside LOD)

Runoff = 11.85 cfs @ 11.96 hrs, Volume= 27,570 cf, Depth= 5.17"

Routed to Link 2L : Pre-Development DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 25-Year Rainfall=5.70"

Area (sf)	CN	Description
8,320	80	>75% Grass cover, Good, HSG D
634	61	>75% Grass cover, Good, HSG B
55,010	98	Paved parking, HSG D
63,964		Weighted Average
8,954		14.00% Pervious Area
55,010		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc 1

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Type II 24-hr 50-Year Rainfall=6.40"

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Summary for Subcatchment DA-5: Pre-Development (Outside LOD)

Runoff = 13.38 cfs @ 11.96 hrs, Volume= 31,239 cf, Depth= 5.86"

Routed to Link 2L : Pre-Development DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 50-Year Rainfall=6.40"

Area (sf)	CN	Description
8,320	80	>75% Grass cover, Good, HSG D
634	61	>75% Grass cover, Good, HSG B
55,010	98	Paved parking, HSG D
63,964		Weighted Average
8,954		14.00% Pervious Area
55,010		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc 1

Summary for Subcatchment DA-5: Pre-Development (Outside LOD)

Runoff = 14.91 cfs @ 11.96 hrs, Volume= 34,917 cf, Depth= 6.55"

Routed to Link 2L : Pre-Development DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 100-Year Rainfall=7.10"

Area (sf)	CN	Description
8,320	80	>75% Grass cover, Good, HSG D
634	61	>75% Grass cover, Good, HSG B
55,010	98	Paved parking, HSG D
63,964		Weighted Average
8,954		14.00% Pervious Area
55,010		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc 1

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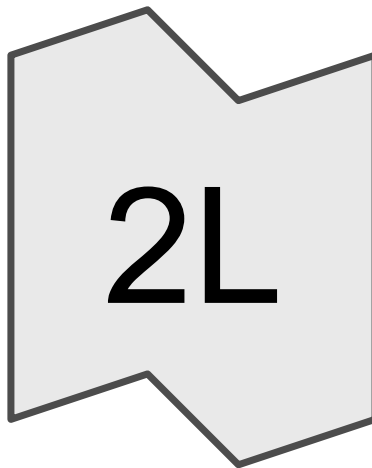
Multi-Event Tables

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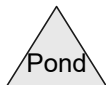
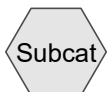
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Events for Subcatchment DA-5: Pre-Development (Outside LOD)

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.60	5.10	11,542	2.17
2-Year	3.20	6.40	14,599	2.74
5-Year	4.20	8.58	19,754	3.71
10-Year	5.00	10.32	23,913	4.49
25-Year	5.70	11.85	27,570	5.17
50-Year	6.40	13.38	31,239	5.86
100-Year	7.10	14.91	34,917	6.55



Pre-Development DP001



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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type II 24-hr		Default	24.00	1	2.60	2
2	2-Year	Type II 24-hr		Default	24.00	1	3.20	2
3	5-Year	Type II 24-hr		Default	24.00	1	4.20	2
4	10-Year	Type II 24-hr		Default	24.00	1	5.00	2
5	25-Year	Type II 24-hr		Default	24.00	1	5.70	2
6	50-Year	Type II 24-hr		Default	24.00	1	6.40	2
7	100-Year	Type II 24-hr		Default	24.00	1	7.10	2

Summary for Link 2L: Pre-Development DP001

Inflow Area = 80,983 sf, 67.93% Impervious, Inflow Depth = 1.88" for 1-Year event
Inflow = 5.67 cfs @ 11.96 hrs, Volume= 12,677 cf
Primary = 5.67 cfs @ 11.96 hrs, Volume= 12,677 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

Summary for Link 2L: Pre-Development DP001

Inflow Area = 80,983 sf, 67.93% Impervious, Inflow Depth = 2.42" for 2-Year event
Inflow = 7.26 cfs @ 11.96 hrs, Volume= 16,303 cf
Primary = 7.26 cfs @ 11.96 hrs, Volume= 16,303 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

Summary for Link 2L: Pre-Development DP001

Inflow Area = 80,983 sf, 67.93% Impervious, Inflow Depth = 3.34" for 5-Year event
Inflow = 9.98 cfs @ 11.96 hrs, Volume= 22,517 cf
Primary = 9.98 cfs @ 11.96 hrs, Volume= 22,517 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

Summary for Link 2L: Pre-Development DP001

Inflow Area = 80,983 sf, 67.93% Impervious, Inflow Depth = 4.09" for 10-Year event
Inflow = 12.18 cfs @ 11.96 hrs, Volume= 27,591 cf
Primary = 12.18 cfs @ 11.96 hrs, Volume= 27,591 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

Summary for Link 2L: Pre-Development DP001

Inflow Area = 80,983 sf, 67.93% Impervious, Inflow Depth = 4.75" for 25-Year event
Inflow = 14.12 cfs @ 11.96 hrs, Volume= 32,082 cf
Primary = 14.12 cfs @ 11.96 hrs, Volume= 32,082 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

Summary for Link 2L: Pre-Development DP001

Inflow Area = 80,983 sf, 67.93% Impervious, Inflow Depth = 5.42" for 50-Year event
Inflow = 16.06 cfs @ 11.96 hrs, Volume= 36,609 cf
Primary = 16.06 cfs @ 11.96 hrs, Volume= 36,609 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

Summary for Link 2L: Pre-Development DP001

Inflow Area = 80,983 sf, 67.93% Impervious, Inflow Depth = 6.10" for 100-Year event
Inflow = 18.01 cfs @ 11.96 hrs, Volume= 41,164 cf
Primary = 18.01 cfs @ 11.96 hrs, Volume= 41,164 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

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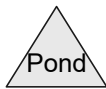
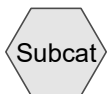
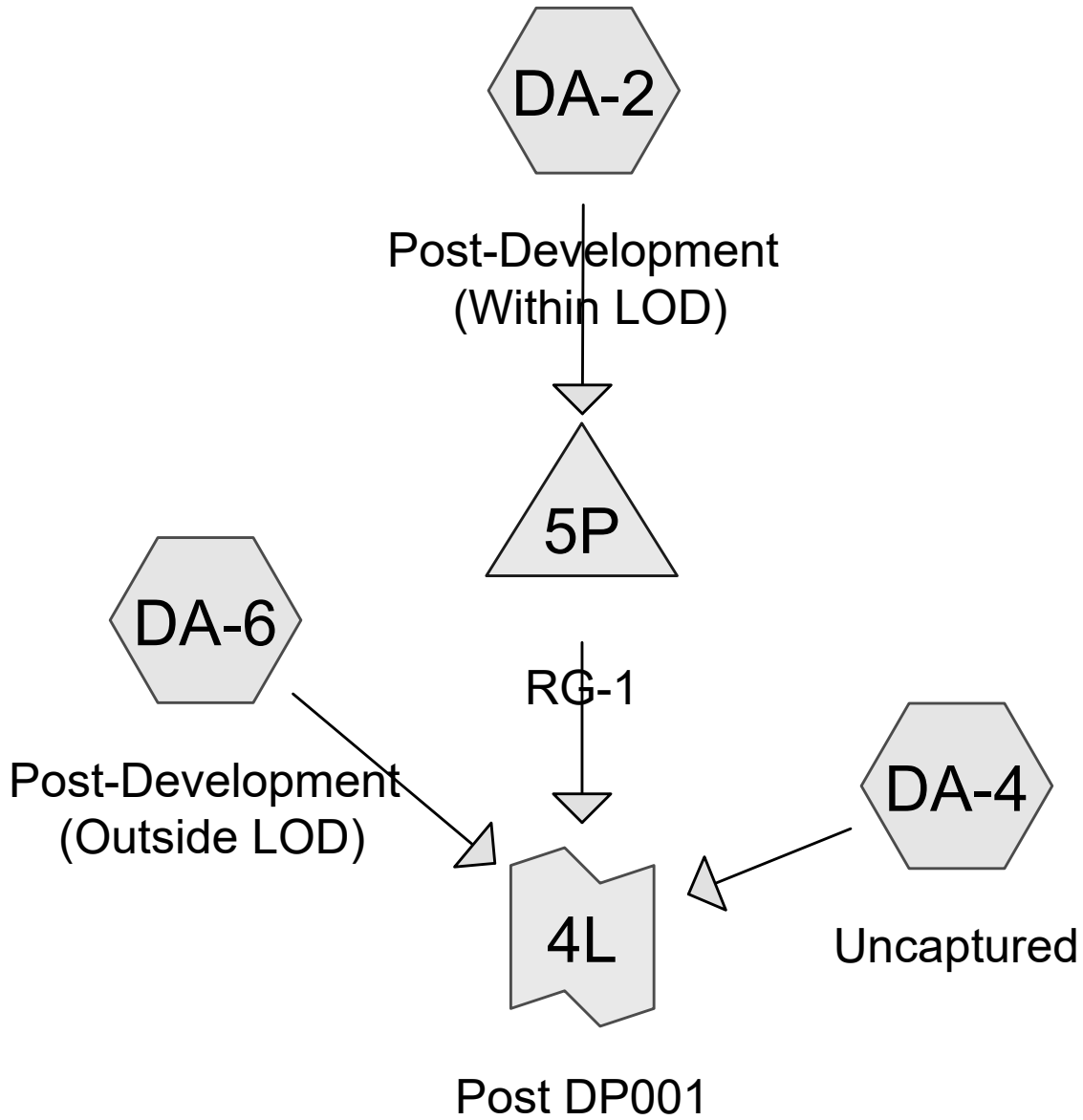
Multi-Event Tables

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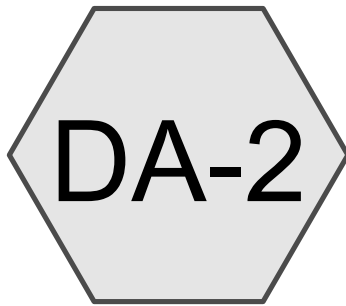
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Events for Link 2L: Pre-Development DP001

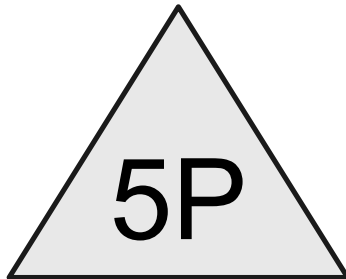
Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-Year	5.67	5.67	0.00
2-Year	7.26	7.26	0.00
5-Year	9.98	9.98	0.00
10-Year	12.18	12.18	0.00
25-Year	14.12	14.12	0.00
50-Year	16.06	16.06	0.00
100-Year	18.01	18.01	0.00



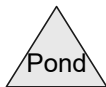
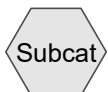
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Post-Development
(Within LOD)



RG-1



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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type II 24-hr		Default	24.00	1	2.60	2
2	2-Year	Type II 24-hr		Default	24.00	1	3.20	2
3	5-Year	Type II 24-hr		Default	24.00	1	4.20	2
4	10-Year	Type II 24-hr		Default	24.00	1	5.00	2
5	25-Year	Type II 24-hr		Default	24.00	1	5.70	2
6	50-Year	Type II 24-hr		Default	24.00	1	6.40	2
7	100-Year	Type II 24-hr		Default	24.00	1	7.10	2

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Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
1,255	61	>75% Grass cover, Good, HSG B (DA-2)
3,719	80	>75% Grass cover, Good, HSG D (DA-2)
266	98	Paved parking, HSG D (DA-2)

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Type II 24-hr 1-Year Rainfall=2.60"

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Summary for Subcatchment DA-2: Post-Development (Within LOD)

Runoff = 0.18 cfs @ 11.97 hrs, Volume= 373 cf, Depth= 0.85"
 Routed to Pond 5P : RG-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 1-Year Rainfall=2.60"

Area (sf)	CN	Description
1,255	61	>75% Grass cover, Good, HSG B
3,719	80	>75% Grass cover, Good, HSG D
266	98	Paved parking, HSG D
5,240		Weighted Average
4,974		94.92% Pervious Area
266		5.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Pond 5P: RG-1

Inflow Area = 5,240 sf, 5.08% Impervious, Inflow Depth = 0.85" for 1-Year event
 Inflow = 0.18 cfs @ 11.97 hrs, Volume= 373 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link 4L : Post DP001

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Peak Elev= 53.60' @ 24.29 hrs Surf.Area= 1,555 sf Storage= 373 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	53.00'	3,297 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	1,555	0.0	0	0
54.00	1,555	40.0	622	622
55.00	1,555	20.0	311	933
56.00	3,172	100.0	2,364	3,297

Device	Routing	Invert	Outlet Devices
#1	Primary	53.00'	18.0" Round Culvert L= 8.0' Ke= 0.500 Inlet / Outlet Invert= 53.00' / 52.88' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	55.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

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Type II 24-hr 1-Year Rainfall=2.60"

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Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=53.00' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Controls 0.00 cfs)

↑2=Orifice/Grate (Controls 0.00 cfs)

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Type II 24-hr 2-Year Rainfall=3.20"

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Summary for Subcatchment DA-2: Post-Development (Within LOD)

Runoff = 0.27 cfs @ 11.97 hrs, Volume= 547 cf, Depth= 1.25"
 Routed to Pond 5P : RG-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
1,255	61	>75% Grass cover, Good, HSG B
3,719	80	>75% Grass cover, Good, HSG D
266	98	Paved parking, HSG D
5,240		Weighted Average
4,974		94.92% Pervious Area
266		5.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Pond 5P: RG-1

Inflow Area = 5,240 sf, 5.08% Impervious, Inflow Depth = 1.25" for 2-Year event
 Inflow = 0.27 cfs @ 11.97 hrs, Volume= 547 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link 4L : Post DP001

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Peak Elev= 53.88' @ 24.29 hrs Surf.Area= 1,555 sf Storage= 547 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	53.00'	3,297 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	1,555	0.0	0	0
54.00	1,555	40.0	622	622
55.00	1,555	20.0	311	933
56.00	3,172	100.0	2,364	3,297

Device	Routing	Invert	Outlet Devices
#1	Primary	53.00'	18.0" Round Culvert L= 8.0' Ke= 0.500 Inlet / Outlet Invert= 53.00' / 52.88' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	55.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

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Type II 24-hr 2-Year Rainfall=3.20"

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Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=53.00' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Controls 0.00 cfs)

↑2=Orifice/Grate (Controls 0.00 cfs)

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Type II 24-hr 5-Year Rainfall=4.20"

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Summary for Subcatchment DA-2: Post-Development (Within LOD)

Runoff = 0.43 cfs @ 11.96 hrs, Volume= 868 cf, Depth= 1.99"
 Routed to Pond 5P : RG-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 5-Year Rainfall=4.20"

Area (sf)	CN	Description
1,255	61	>75% Grass cover, Good, HSG B
3,719	80	>75% Grass cover, Good, HSG D
266	98	Paved parking, HSG D
5,240		Weighted Average
4,974		94.92% Pervious Area
266		5.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Pond 5P: RG-1

Inflow Area = 5,240 sf, 5.08% Impervious, Inflow Depth = 1.99" for 5-Year event
 Inflow = 0.43 cfs @ 11.96 hrs, Volume= 868 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link 4L : Post DP001

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Peak Elev= 54.79' @ 24.29 hrs Surf.Area= 1,555 sf Storage= 868 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	53.00'	3,297 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	1,555	0.0	0	0
54.00	1,555	40.0	622	622
55.00	1,555	20.0	311	933
56.00	3,172	100.0	2,364	3,297

Device	Routing	Invert	Outlet Devices
#1	Primary	53.00'	18.0" Round Culvert L= 8.0' Ke= 0.500 Inlet / Outlet Invert= 53.00' / 52.88' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	55.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

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Type II 24-hr 5-Year Rainfall=4.20"

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Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=53.00' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Controls 0.00 cfs)

↑2=Orifice/Grate (Controls 0.00 cfs)

Summary for Subcatchment DA-2: Post-Development (Within LOD)

Runoff = 0.57 cfs @ 11.96 hrs, Volume= 1,145 cf, Depth= 2.62"
 Routed to Pond 5P : RG-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
1,255	61	>75% Grass cover, Good, HSG B
3,719	80	>75% Grass cover, Good, HSG D
266	98	Paved parking, HSG D
5,240		Weighted Average
4,974		94.92% Pervious Area
266		5.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Pond 5P: RG-1

Inflow Area = 5,240 sf, 5.08% Impervious, Inflow Depth = 2.62" for 10-Year event
 Inflow = 0.57 cfs @ 11.96 hrs, Volume= 1,145 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link 4L : Post DP001

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Peak Elev= 55.13' @ 24.29 hrs Surf.Area= 1,762 sf Storage= 1,145 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	53.00'	3,297 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	1,555	0.0	0	0
54.00	1,555	40.0	622	622
55.00	1,555	20.0	311	933
56.00	3,172	100.0	2,364	3,297

Device	Routing	Invert	Outlet Devices
#1	Primary	53.00'	18.0" Round Culvert L= 8.0' Ke= 0.500 Inlet / Outlet Invert= 53.00' / 52.88' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	55.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

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Type II 24-hr 10-Year Rainfall=5.00"

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Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=53.00' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Controls 0.00 cfs)

↑2=Orifice/Grate (Controls 0.00 cfs)

Summary for Subcatchment DA-2: Post-Development (Within LOD)

Runoff = 0.69 cfs @ 11.96 hrs, Volume= 1,398 cf, Depth= 3.20"
 Routed to Pond 5P : RG-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 25-Year Rainfall=5.70"

Area (sf)	CN	Description
1,255	61	>75% Grass cover, Good, HSG B
3,719	80	>75% Grass cover, Good, HSG D
266	98	Paved parking, HSG D
5,240		Weighted Average
4,974		94.92% Pervious Area
266		5.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Pond 5P: RG-1

Inflow Area = 5,240 sf, 5.08% Impervious, Inflow Depth = 3.20" for 25-Year event
 Inflow = 0.69 cfs @ 11.96 hrs, Volume= 1,398 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link 4L : Post DP001

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Peak Elev= 55.26' @ 24.29 hrs Surf.Area= 1,981 sf Storage= 1,398 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	53.00'	3,297 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	1,555	0.0	0	0
54.00	1,555	40.0	622	622
55.00	1,555	20.0	311	933
56.00	3,172	100.0	2,364	3,297

Device	Routing	Invert	Outlet Devices
#1	Primary	53.00'	18.0" Round Culvert L= 8.0' Ke= 0.500 Inlet / Outlet Invert= 53.00' / 52.88' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	55.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

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Type II 24-hr 25-Year Rainfall=5.70"

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Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=53.00' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Controls 0.00 cfs)

↑2=Orifice/Grate (Controls 0.00 cfs)

Summary for Subcatchment DA-2: Post-Development (Within LOD)

Runoff = 0.82 cfs @ 11.96 hrs, Volume= 1,659 cf, Depth= 3.80"
 Routed to Pond 5P : RG-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 50-Year Rainfall=6.40"

Area (sf)	CN	Description
1,255	61	>75% Grass cover, Good, HSG B
3,719	80	>75% Grass cover, Good, HSG D
266	98	Paved parking, HSG D
5,240		Weighted Average
4,974		94.92% Pervious Area
266		5.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Pond 5P: RG-1

Inflow Area = 5,240 sf, 5.08% Impervious, Inflow Depth = 3.80" for 50-Year event
 Inflow = 0.82 cfs @ 11.96 hrs, Volume= 1,659 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link 4L : Post DP001

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Peak Elev= 55.39' @ 24.29 hrs Surf.Area= 2,183 sf Storage= 1,659 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	53.00'	3,297 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	1,555	0.0	0	0
54.00	1,555	40.0	622	622
55.00	1,555	20.0	311	933
56.00	3,172	100.0	2,364	3,297

Device	Routing	Invert	Outlet Devices
#1	Primary	53.00'	18.0" Round Culvert L= 8.0' Ke= 0.500 Inlet / Outlet Invert= 53.00' / 52.88' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	55.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

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Type II 24-hr 50-Year Rainfall=6.40"

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Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=53.00' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Controls 0.00 cfs)

↑2=Orifice/Grate (Controls 0.00 cfs)

Summary for Subcatchment DA-2: Post-Development (Within LOD)

Runoff = 0.94 cfs @ 11.96 hrs, Volume= 1,926 cf, Depth= 4.41"
 Routed to Pond 5P : RG-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 100-Year Rainfall=7.10"

Area (sf)	CN	Description
1,255	61	>75% Grass cover, Good, HSG B
3,719	80	>75% Grass cover, Good, HSG D
266	98	Paved parking, HSG D
5,240		Weighted Average
4,974		94.92% Pervious Area
266		5.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Pond 5P: RG-1

Inflow Area = 5,240 sf, 5.08% Impervious, Inflow Depth = 4.41" for 100-Year event
 Inflow = 0.94 cfs @ 11.96 hrs, Volume= 1,926 cf
 Outflow = 0.00 cfs @ 24.07 hrs, Volume= 13 cf, Atten= 99%, Lag= 726.3 min
 Primary = 0.00 cfs @ 24.07 hrs, Volume= 13 cf
 Routed to Link 4L : Post DP001

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Peak Elev= 55.50' @ 24.07 hrs Surf.Area= 2,370 sf Storage= 1,922 cf

Plug-Flow detention time= 1,189.3 min calculated for 13 cf (1% of inflow)
 Center-of-Mass det. time= 676.6 min (1,481.2 - 804.7)

Volume	Invert	Avail.Storage	Storage Description	
#1	53.00'	3,297 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	1,555	0.0	0	0
54.00	1,555	40.0	622	622
55.00	1,555	20.0	311	933
56.00	3,172	100.0	2,364	3,297

Device	Routing	Invert	Outlet Devices
#1	Primary	53.00'	18.0" Round Culvert L= 8.0' Ke= 0.500 Inlet / Outlet Invert= 53.00' / 52.88' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	55.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

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Type II 24-hr 100-Year Rainfall=7.10"

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Primary OutFlow Max=0.00 cfs @ 24.07 hrs HW=55.50' TW=0.00' (Dynamic Tailwater)

↳ **1=Culvert** (Passes 0.00 cfs of 11.27 cfs potential flow)

↳ **2=Orifice/Grate** (Weir Controls 0.00 cfs @ 0.20 fps)

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Events for Subcatchment DA-2: Post-Development (Within LOD)

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.60	0.18	373	0.85
2-Year	3.20	0.27	547	1.25
5-Year	4.20	0.43	868	1.99
10-Year	5.00	0.57	1,145	2.62
25-Year	5.70	0.69	1,398	3.20
50-Year	6.40	0.82	1,659	3.80
100-Year	7.10	0.94	1,926	4.41

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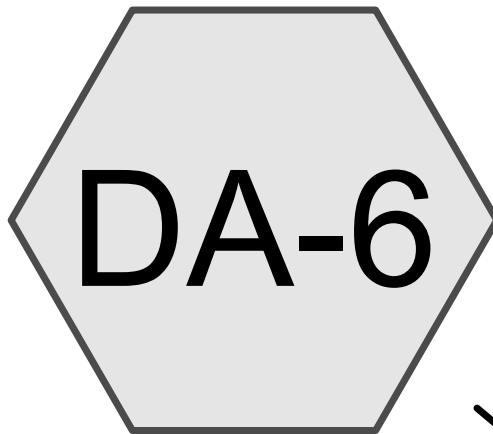
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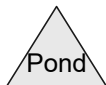
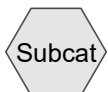
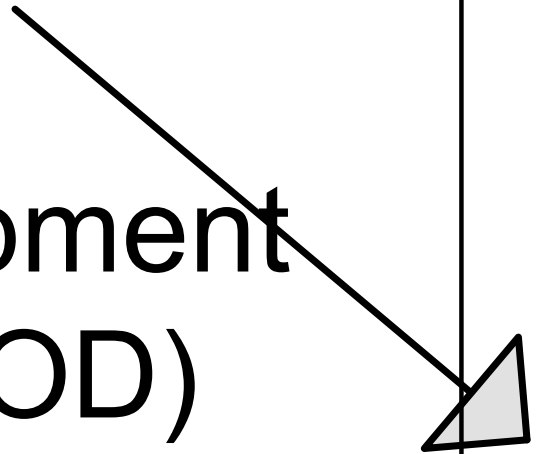
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Events for Pond 5P: RG-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	0.18	0.00	53.60	373
2-Year	0.27	0.00	53.88	547
5-Year	0.43	0.00	54.79	868
10-Year	0.57	0.00	55.13	1,145
25-Year	0.69	0.00	55.26	1,398
50-Year	0.82	0.00	55.39	1,659
100-Year	0.94	0.00	55.50	1,922



Post-Development
(Outside LOD)



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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type II 24-hr		Default	24.00	1	2.60	2
2	2-Year	Type II 24-hr		Default	24.00	1	3.20	2
3	5-Year	Type II 24-hr		Default	24.00	1	4.20	2
4	10-Year	Type II 24-hr		Default	24.00	1	5.00	2
5	25-Year	Type II 24-hr		Default	24.00	1	5.70	2
6	50-Year	Type II 24-hr		Default	24.00	1	6.40	2
7	100-Year	Type II 24-hr		Default	24.00	1	7.10	2

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Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
7,626	80	>75% Grass cover, Good, HSG D (DA-6)
50,749	98	Paved parking, HSG D (DA-6)

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Type II 24-hr 1-Year Rainfall=2.60"

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Summary for Subcatchment DA-6: Post-Development (Outside LOD)

Runoff = 4.71 cfs @ 11.96 hrs, Volume= 10,633 cf, Depth= 2.19"

Routed to Link 4L : Post DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=2.60"

Area (sf)	CN	Description
7,626	80	>75% Grass cover, Good, HSG D
50,749	98	Paved parking, HSG D
58,375		Weighted Average
7,626		13.06% Pervious Area
50,749		86.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc 1

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Type II 24-hr 2-Year Rainfall=3.20"

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Summary for Subcatchment DA-6: Post-Development (Outside LOD)

Runoff = 5.89 cfs @ 11.96 hrs, Volume= 13,441 cf, Depth= 2.76"
 Routed to Link 4L : Post DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
7,626	80	>75% Grass cover, Good, HSG D
50,749	98	Paved parking, HSG D
58,375		Weighted Average
7,626		13.06% Pervious Area
50,749		86.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc 1

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Type II 24-hr 5-Year Rainfall=4.20"

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Summary for Subcatchment DA-6: Post-Development (Outside LOD)

Runoff = 7.89 cfs @ 11.96 hrs, Volume= 18,170 cf, Depth= 3.74"

Routed to Link 4L : Post DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=4.20"

Area (sf)	CN	Description
7,626	80	>75% Grass cover, Good, HSG D
50,749	98	Paved parking, HSG D
58,375		Weighted Average
7,626		13.06% Pervious Area
50,749		86.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc 1

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Type II 24-hr 10-Year Rainfall=5.00"

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Summary for Subcatchment DA-6: Post-Development (Outside LOD)

Runoff = 9.48 cfs @ 11.96 hrs, Volume= 21,982 cf, Depth= 4.52"
 Routed to Link 4L : Post DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
7,626	80	>75% Grass cover, Good, HSG D
50,749	98	Paved parking, HSG D
58,375		Weighted Average
7,626		13.06% Pervious Area
50,749		86.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc 1

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Type II 24-hr 25-Year Rainfall=5.70"

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Summary for Subcatchment DA-6: Post-Development (Outside LOD)

Runoff = 10.88 cfs @ 11.96 hrs, Volume= 25,332 cf, Depth= 5.21"
 Routed to Link 4L : Post DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 25-Year Rainfall=5.70"

Area (sf)	CN	Description
7,626	80	>75% Grass cover, Good, HSG D
50,749	98	Paved parking, HSG D
58,375		Weighted Average
7,626		13.06% Pervious Area
50,749		86.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc 1

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Type II 24-hr 50-Year Rainfall=6.40"

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Summary for Subcatchment DA-6: Post-Development (Outside LOD)

Runoff = 12.28 cfs @ 11.96 hrs, Volume= 28,691 cf, Depth= 5.90"

Routed to Link 4L : Post DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 50-Year Rainfall=6.40"

Area (sf)	CN	Description
7,626	80	>75% Grass cover, Good, HSG D
50,749	98	Paved parking, HSG D
58,375		Weighted Average
7,626		13.06% Pervious Area
50,749		86.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc 1

Summary for Subcatchment DA-6: Post-Development (Outside LOD)

Runoff = 13.68 cfs @ 11.96 hrs, Volume= 32,057 cf, Depth= 6.59"
 Routed to Link 4L : Post DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 100-Year Rainfall=7.10"

Area (sf)	CN	Description
7,626	80	>75% Grass cover, Good, HSG D
50,749	98	Paved parking, HSG D
58,375		Weighted Average
7,626		13.06% Pervious Area
50,749		86.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc 1

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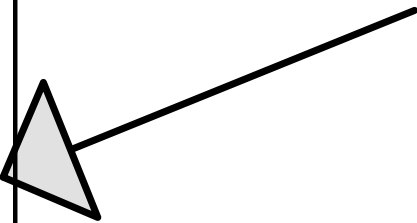
Multi-Event Tables

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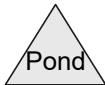
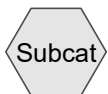
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Events for Subcatchment DA-6: Post-Development (Outside LOD)

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.60	4.71	10,633	2.19
2-Year	3.20	5.89	13,441	2.76
5-Year	4.20	7.89	18,170	3.74
10-Year	5.00	9.48	21,982	4.52
25-Year	5.70	10.88	25,332	5.21
50-Year	6.40	12.28	28,691	5.90
100-Year	7.10	13.68	32,057	6.59



Uncaptured



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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type II 24-hr		Default	24.00	1	2.60	2
2	2-Year	Type II 24-hr		Default	24.00	1	3.20	2
3	5-Year	Type II 24-hr		Default	24.00	1	4.20	2
4	10-Year	Type II 24-hr		Default	24.00	1	5.00	2
5	25-Year	Type II 24-hr		Default	24.00	1	5.70	2
6	50-Year	Type II 24-hr		Default	24.00	1	6.40	2
7	100-Year	Type II 24-hr		Default	24.00	1	7.10	2

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Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
1,503	80	>75% Grass cover, Good, HSG D (DA-4)
10,338	98	Paved parking, HSG D (DA-4)

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Type II 24-hr 1-Year Rainfall=2.60"

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Summary for Subcatchment DA-4: Uncaptured

Runoff = 0.96 cfs @ 11.96 hrs, Volume= 2,162 cf, Depth= 2.19"
 Routed to Link 4L : Post DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 1-Year Rainfall=2.60"

Area (sf)	CN	Description
10,338	98	Paved parking, HSG D
1,503	80	>75% Grass cover, Good, HSG D
11,841		Weighted Average
1,503		12.69% Pervious Area
10,338		87.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc

Summary for Subcatchment DA-4: Uncaptured

Runoff = 1.20 cfs @ 11.96 hrs, Volume= 2,732 cf, Depth= 2.77"
 Routed to Link 4L : Post DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
10,338	98	Paved parking, HSG D
1,503	80	>75% Grass cover, Good, HSG D
11,841		Weighted Average
1,503		12.69% Pervious Area
10,338		87.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc

Summary for Subcatchment DA-4: Uncaptured

Runoff = 1.60 cfs @ 11.96 hrs, Volume= 3,692 cf, Depth= 3.74"
 Routed to Link 4L : Post DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 5-Year Rainfall=4.20"

Area (sf)	CN	Description
10,338	98	Paved parking, HSG D
1,503	80	>75% Grass cover, Good, HSG D
11,841		Weighted Average
1,503		12.69% Pervious Area
10,338		87.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc

Summary for Subcatchment DA-4: Uncaptured

Runoff = 1.93 cfs @ 11.96 hrs, Volume= 4,466 cf, Depth= 4.53"
 Routed to Link 4L : Post DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 10-Year Rainfall=5.00"

Area (sf)	CN	Description
10,338	98	Paved parking, HSG D
1,503	80	>75% Grass cover, Good, HSG D
11,841		Weighted Average
1,503		12.69% Pervious Area
10,338		87.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc

Summary for Subcatchment DA-4: Uncaptured

Runoff = 2.21 cfs @ 11.96 hrs, Volume= 5,146 cf, Depth= 5.21"
 Routed to Link 4L : Post DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 25-Year Rainfall=5.70"

Area (sf)	CN	Description
10,338	98	Paved parking, HSG D
1,503	80	>75% Grass cover, Good, HSG D
11,841		Weighted Average
1,503		12.69% Pervious Area
10,338		87.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc

Summary for Subcatchment DA-4: Uncaptured

Runoff = 2.49 cfs @ 11.96 hrs, Volume= 5,827 cf, Depth= 5.91"
 Routed to Link 4L : Post DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 50-Year Rainfall=6.40"

Area (sf)	CN	Description
10,338	98	Paved parking, HSG D
1,503	80	>75% Grass cover, Good, HSG D
11,841		Weighted Average
1,503		12.69% Pervious Area
10,338		87.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc

Summary for Subcatchment DA-4: Uncaptured

Runoff = 2.78 cfs @ 11.96 hrs, Volume= 6,510 cf, Depth= 6.60"
 Routed to Link 4L : Post DP001

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 100-Year Rainfall=7.10"

Area (sf)	CN	Description
10,338	98	Paved parking, HSG D
1,503	80	>75% Grass cover, Good, HSG D
11,841		Weighted Average
1,503		12.69% Pervious Area
10,338		87.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc

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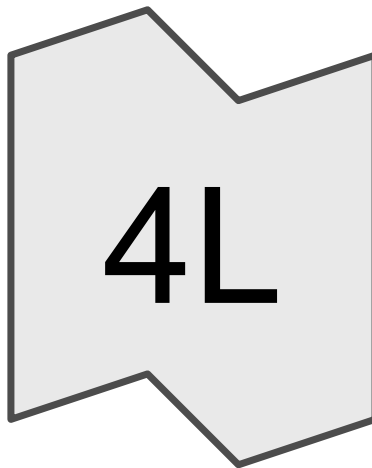
Multi-Event Tables

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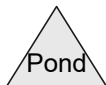
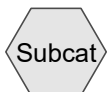
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Events for Subcatchment DA-4: Uncaptured

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.60	0.96	2,162	2.19
2-Year	3.20	1.20	2,732	2.77
5-Year	4.20	1.60	3,692	3.74
10-Year	5.00	1.93	4,466	4.53
25-Year	5.70	2.21	5,146	5.21
50-Year	6.40	2.49	5,827	5.91
100-Year	7.10	2.78	6,510	6.60



Post DP001



Routing Diagram for 11059.08_AIM Academy-Building Addition
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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type II 24-hr		Default	24.00	1	2.60	2
2	2-Year	Type II 24-hr		Default	24.00	1	3.20	2
3	5-Year	Type II 24-hr		Default	24.00	1	4.20	2
4	10-Year	Type II 24-hr		Default	24.00	1	5.00	2
5	25-Year	Type II 24-hr		Default	24.00	1	5.70	2
6	50-Year	Type II 24-hr		Default	24.00	1	6.40	2
7	100-Year	Type II 24-hr		Default	24.00	1	7.10	2

Summary for Link 4L: Post DP001

Inflow Area = 75,456 sf, 81.31% Impervious, Inflow Depth = 2.03" for 1-Year event
Inflow = 5.66 cfs @ 11.96 hrs, Volume= 12,795 cf
Primary = 5.66 cfs @ 11.96 hrs, Volume= 12,795 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

Summary for Link 4L: Post DP001

Inflow Area = 75,456 sf, 81.31% Impervious, Inflow Depth = 2.57" for 2-Year event
Inflow = 7.09 cfs @ 11.96 hrs, Volume= 16,173 cf
Primary = 7.09 cfs @ 11.96 hrs, Volume= 16,173 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

Summary for Link 4L: Post DP001

Inflow Area = 75,456 sf, 81.31% Impervious, Inflow Depth = 3.48" for 5-Year event
Inflow = 9.49 cfs @ 11.96 hrs, Volume= 21,862 cf
Primary = 9.49 cfs @ 11.96 hrs, Volume= 21,862 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

Summary for Link 4L: Post DP001

Inflow Area = 75,456 sf, 81.31% Impervious, Inflow Depth = 4.21" for 10-Year event
Inflow = 11.41 cfs @ 11.96 hrs, Volume= 26,448 cf
Primary = 11.41 cfs @ 11.96 hrs, Volume= 26,448 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

Summary for Link 4L: Post DP001

Inflow Area = 75,456 sf, 81.31% Impervious, Inflow Depth = 4.85" for 25-Year event
Inflow = 13.09 cfs @ 11.96 hrs, Volume= 30,477 cf
Primary = 13.09 cfs @ 11.96 hrs, Volume= 30,477 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

Summary for Link 4L: Post DP001

Inflow Area = 75,456 sf, 81.31% Impervious, Inflow Depth = 5.49" for 50-Year event
Inflow = 14.77 cfs @ 11.96 hrs, Volume= 34,518 cf
Primary = 14.77 cfs @ 11.96 hrs, Volume= 34,518 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

Summary for Link 4L: Post DP001

Inflow Area = 75,456 sf, 81.31% Impervious, Inflow Depth = 6.14" for 100-Year event
Inflow = 16.46 cfs @ 11.96 hrs, Volume= 38,580 cf
Primary = 16.46 cfs @ 11.96 hrs, Volume= 38,580 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

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Multi-Event Tables

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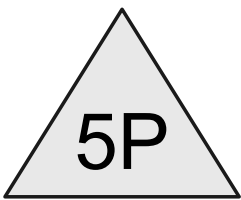
Events for Link 4L: Post DP001

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-Year	5.66	5.66	0.00
2-Year	7.09	7.09	0.00
5-Year	9.49	9.49	0.00
10-Year	11.41	11.41	0.00
25-Year	13.09	13.09	0.00
50-Year	14.77	14.77	0.00
100-Year	16.46	16.46	0.00

100-Year Routing for Area
to the Rain Garden Outside
of the LOD



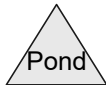
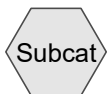
Post-Development
(Within LOD)



Post-Development
(Outside LOD)



RG-1



Routing Diagram for 11059.08_AIM Academy-Building Addition
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Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
2,279	61	>75% Grass cover, Good, HSG B (DA-2, DA-3)
4,426	80	>75% Grass cover, Good, HSG D (DA-2, DA-3)
5,901	98	Paved parking, HSG D (DA-2, DA-3)

Summary for Subcatchment DA-2: Post-Development (Within LOD)

Runoff = 0.94 cfs @ 11.96 hrs, Volume= 1,926 cf, Depth= 4.41"
 Routed to Pond 5P : RG-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 100-Year Rainfall=7.10"

Area (sf)	CN	Description
1,255	61	>75% Grass cover, Good, HSG B
3,719	80	>75% Grass cover, Good, HSG D
266	98	Paved parking, HSG D
5,240		Weighted Average
4,974		94.92% Pervious Area
266		5.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment DA-3: Post-Development (Outside LOD)

Runoff = 1.61 cfs @ 11.96 hrs, Volume= 3,740 cf, Depth= 6.09"
 Routed to Pond 5P : RG-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs
 Type II 24-hr 100-Year Rainfall=7.10"

Area (sf)	CN	Description
1,024	61	>75% Grass cover, Good, HSG B
5,635	98	Paved parking, HSG D
707	80	>75% Grass cover, Good, HSG D
7,366		Weighted Average
1,731		23.50% Pervious Area
5,635		76.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Tc

Summary for Pond 5P: RG-1

Inflow Area = 12,606 sf, 46.81% Impervious, Inflow Depth = 5.39" for 100-Year event
 Inflow = 2.55 cfs @ 11.96 hrs, Volume= 5,666 cf
 Outflow = 2.03 cfs @ 12.01 hrs, Volume= 3,754 cf, Atten= 20%, Lag= 2.9 min
 Primary = 2.03 cfs @ 12.01 hrs, Volume= 3,754 cf
 Routed to Link 4L : Post DP001

Routing by Dyn-Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.01 hrs

11059.08_AIM Academy-Building Addition

Type II 24-hr 100-Year Rainfall=7.10"

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Peak Elev= 55.71' @ 12.01 hrs Surf.Area= 2,709 sf Storage= 2,455 cf

Plug-Flow detention time= 199.1 min calculated for 3,754 cf (66% of inflow)

Center-of-Mass det. time= 93.0 min (861.3 - 768.2)

Volume	Invert	Avail.Storage	Storage Description
#1	53.00'	3,297 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.00	1,555	0.0	0	0
54.00	1,555	40.0	622	622
55.00	1,555	20.0	311	933
56.00	3,172	100.0	2,364	3,297

Device	Routing	Invert	Outlet Devices
#1	Primary	53.00'	18.0" Round Culvert L= 8.0' Ke= 0.500 Inlet / Outlet Invert= 53.00' / 52.88' S= 0.0150 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	55.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.03 cfs @ 12.01 hrs HW=55.71' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Passes 2.03 cfs of 11.92 cfs potential flow)

↑2=Orifice/Grate (Weir Controls 2.03 cfs @ 1.51 fps)

IV.

Volume Summary – AIM Academy Building Addition

This project is designed to meet the following criteria:

Total LOD - 0.39 Acres (17,019 SF)

1. Whitmarsh Township Water Quality Volume (WQv) per Resoluton 2004-8

$$WQv = [(0.17)(Rv)(A)] \text{ where}$$

$$A = 0.39 \text{ Acres}$$

$$Rv = 0.05+0.009*I \text{ or } 0.05+0.009*[(0.24/0.39)*100] = 0.604$$

$$WQv = (0.17)(0.604)(0.39) = 0.0400 \text{ acre-feet or } \underline{1,742.40 \text{ CF}}$$

2. Whitmarsh Township Infiltration Recharge Volume (Rev) per Resoluton 2004-8

$$Rev = [(S)(Rv)(A)/12] \text{ where}$$

$$S = 0.25$$

$$Rv = 0.05+0.009*I \text{ or } 0.05+0.009*[(0.24/0.39)*100] = 0.604$$

$$A = 0.39 \text{ Acres}$$

$$Rev = [(0.25)(0.604)(0.39)/12] = 0.0049 \text{ acre-feet or } \underline{213.44 \text{ CF}}$$

Total Volume Reduction Credits for this project: 1,913 CF

11059.08_AIM Academy-Building Addition

Type II 24-hr 100-Year Rainfall=7.10"

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Stage-Area-Storage for Pond 5P: RG-1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
55.08	1,684	1,063	55.60	2,525	2,157
55.09	1,701	1,079	55.61	2,541	2,182
55.10	1,717	1,097	55.62	2,558	2,208
55.11	1,733	1,114	55.63	2,574	2,234
55.12	1,749	1,131	55.64	2,590	2,259
55.13	1,765	1,149	55.65	2,606	2,285
55.14	1,781	1,167	55.66	2,622	2,311
55.15	1,798	1,184	55.67	2,638	2,338
55.16	1,814	1,202	55.68	2,655	2,364
55.17	1,830	1,221	55.69	2,671	2,391
55.18	1,846	1,239	55.70	2,687	2,418
55.19	1,862	1,258	55.71	2,703	2,445
55.20	1,878	1,276	55.72	2,719	2,472
55.21	1,895	1,295	55.73	2,735	2,499
55.22	1,911	1,314	55.74	2,752	2,526
55.23	1,927	1,333	55.75	2,768	2,554
55.24	1,943	1,353	55.76	2,784	2,582
55.25	1,959	1,372	55.77	2,800	2,610
55.26	1,975	1,392	55.78	2,816	2,638
55.27	1,992	1,412	55.79	2,832	2,666
55.28	2,008	1,432	55.80	2,849	2,694
55.29	2,024	1,452	55.81	2,865	2,723
55.30	2,040	1,472	55.82	2,881	2,752
55.31	2,056	1,493	55.83	2,897	2,781
55.32	2,072	1,513	55.84	2,913	2,810
55.33	2,089	1,534	55.85	2,929	2,839
55.34	2,105	1,555	55.86	2,946	2,868
55.35	2,121	1,576	55.87	2,962	2,898
55.36	2,137	1,598	55.88	2,978	2,928
55.37	2,153	1,619	55.89	2,994	2,957
55.38	2,169	1,641	55.90	3,010	2,987
55.39	2,186	1,662	55.91	3,026	3,018
55.40	2,202	1,684	55.92	3,043	3,048
55.41	2,218	1,706	55.93	3,059	3,078
55.42	2,234	1,729	55.94	3,075	3,109
55.43	2,250	1,751	55.95	3,091	3,140
55.44	2,266	1,774	55.96	3,107	3,171
55.45	2,283	1,796	55.97	3,123	3,202
55.46	2,299	1,819	55.98	3,140	3,233
55.47	2,315	1,842	55.99	3,156	3,265
55.48	2,331	1,866	56.00	3,172	3,297
55.49	2,347	1,889			
55.50	2,364	1,913			
55.51	2,380	1,936			
55.52	2,396	1,960			
55.53	2,412	1,984			
55.54	2,428	2,008			
55.55	2,444	2,033			
55.56	2,461	2,057			
55.57	2,477	2,082			
55.58	2,493	2,107			
55.59	2,509	2,132			

Volume Credit taken below low flow orifice: 1,913 CF

DEWATERING CALCULATIONS -DP001
AIM Academy Building Expansion
NN PROJECT NO. 20111-059.08

Rain Garden #1

Bed Area (SF) = 1,555

Design Infiltration Rate (in/hr) = 1.39

2 yr. Volume to Infiltrate (CF) = 1,913

in/hr to ft/ hr = $1.39 \text{ (in/hr)} / 12 = 0.11583 \text{ ft/hr}$

Total cf/hr = $0.11583 \text{ (ft/hr)} * 1,555 \text{ SF} = 180 \text{ cf/hr}$

Drain Time = $1913 \text{ (CF)} / 180 \text{ (cf/hr)} =$

11 hrs

V.



STORMWATER INFILTRATION REPORT

AIM Academy – Innovation Addition Whitemarsh Township, Montgomery County, Pennsylvania

May 19, 2022

Prepared For:

AIM ACADEMY
1200 River Road
Conshohocken, Pennsylvania 19428

Attn: Ms. Pat Roberts

Prepared By:

GEO-TECHNOLOGY ASSOCIATES, INC.
Geotechnical and Environmental Consultants
2405 John Fries Highway
Quakertown, Pennsylvania 18951
(215) 536-8363

GTA Job No: 31220559

GEO-TECHNOLOGY ASSOCIATES, INC.

GEOTECHNICAL AND
ENVIRONMENTAL CONSULTANTS

A Practicing Geoprofessional Business Association Member Firm



May 19, 2022

AIM Academy (c/o Jennifer Crawford, AIA of Blackney Hayes Architects)
1200 River Road
Conshohocken, Pennsylvania 19428

Attn: Ms. Pat Roberts
Chief Executive Officer

Re: Stormwater Infiltration Report
AIM Academy - Innovation Addition
Whitemarsh Township, Montgomery County, Pennsylvania

Dear Ms. Roberts:

In accordance with our agreement, Geo-Technology Associates, Inc. (GTA) has performed a subsurface exploration and infiltration testing at the above-referenced property. The purpose of the exploration and testing was to evaluate the on-site soils for stormwater infiltration within the rain garden located in the southeastern portion of the property for the proposed academy addition and associated improvements. The fieldwork consisted of drilling four test borings and performing four infiltration tests utilizing cased borehole methodology. The stormwater testing was performed in general accordance with the *Pennsylvania Stormwater Best Management Practices Manual* (BMP Manual) prepared by the Pennsylvania Department of Environmental Protection (PADEP).

For our use in preparation of this report, GTA was provided the *Parking Exhibit for AIM Academy Building Addition* plan prepared by Nave Newell, Inc., dated February 15, 2022. The plan depicts the existing site features, topography, property boundaries, floodplain boundary, proposed stormwater design concept, and the site improvements/building addition. This report summarizes the results of the field exploration and infiltration testing and provides recommendations regarding the design and construction of the proposed rain garden. Attached to this report are the *Site Location Map, Site Historical Aerial Photo, Site Web Soil Survey Map, Site Geology Map, Exploration Location Plan, Field Infiltration Results Table, and Test Boring Logs*.

2405 John Fries Highway, Bldg. 3, Quakertown, PA 18951 (215) 536-8363 Fax: (215) 529-9303

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✦ Northeastern, OH ✦ Sterling, VA ✦ Nashville, TN ✦ Charlotte, NC ✦ Raleigh, NC ✦ Orlando, FL

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Site Description

The subject site encompasses approximately 7.65 acres and is located at 1200 River Road in Whitmarsh Township, Montgomery County, Pennsylvania. At the time of GTA's subsurface exploration, the site was developed with the AIM Academy campus consisting of several multi-story buildings, pavements, landscaping, sports fields, and utilities. The subject site is bound by Manor Road, followed by commercial and residential properties to the north; by the Schuylkill River Trail, followed by wooded terrain to the east; and by River Road, followed by an active passenger rail line and the Schuylkill River to the west and south.

The topography of the site is generally flat to gently sloping consisting of rolling hill terraces with site drainage generally directed into existing storm structures and directed to the Schuylkill River. Ground surface elevations range from a high of about elevation (EL) 80 feet along the northeastern property boundary, to a low of about EL 50 feet along the western property boundary. Refer to the attached *Site Location Map* identified as Figure 1 for additional information.

Site History

GTA reviewed available online aerial photographs dated 1948 through 2020. By 1948, the subject site was developed with an apparent industrial / manufacturing facility with several multi-story buildings and pavements. Sometime between 1950 and 1958, an expansion of a southwestern industrial building occurred, adjacent to River Road. Sometime between 1965 and 1971, one of the southeastern buildings was no longer apparent and expansion of the southwestern building continued. Sometime between 1992 and 1999, several of the southern buildings were no longer apparent. Sometime between 1999 and 2002, the northern buildings were removed and paved parking lots were constructed. By 2013, a portion of the northern parking lot was removed and the present-day athletic field was constructed. By 2017, a portion of the southern parking lot was removed and a multi-story building was constructed. No significant changes occurred between 2017 and present-day.

Mapped Site Soils

Based on a review of the *United States Department of Agriculture and Natural Resources Conservation Service (USDA NRCS) Web Soil Survey*, the soils on the property are mapped as belonging to the Urban Land complex, Manor, Mt. Airy, Glenville, and Blocktown soil series. The soils observed during the field exploration generally confirmed the mapped Urban Land complex and Manor soil series based on our field observations. However, based on our review of the *Web Soil Survey* in adjacent properties and hand-texturing soil classifications during our subsurface exploration, the property is also believed to be underlain by the Glenville soil series.

The Manor series consists of very deep, well-drained soils formed in residuum weathered from micaceous schist. The soils occur on hillslope summits, shoulders, and backslope topographic positions in the Piedmont Plateau. The Glenville series consists of very deep, moderately well to somewhat poorly-drained soils formed primarily in colluvium or residuum affected by soil creep that is weathered from phyllite, micaceous schist, granitic gneiss, and other acid crystalline rocks.

While the soil profile characteristics and permeability rates of the Urban Land complex have not been quantified, the soils are variable and generally consist of deep profiles similar to the nearby undisturbed soils that have been disturbed by cutting or filling, and areas that are covered by buildings and pavement. A fragipan is present with the Glenville series and the soils occur on footslope topographic positions in drainageways. A fragipan is a layer of soil that exhibits platy or prismatic structure, firm consistence, and may contain up to a moderate amount of coarse fragments. Water perches above a fragipan as it slowly permeates through this dense layer of soil. Refer to the above-referenced soil map and *Site Web Soil Survey Map* identified as Figure 3 for additional information.

Site Geology

According to *Pennsylvania Department of Conservation and Natural Resources Pennsylvania GEOlogic Data Exploration* mapping tool, the site is located within the Piedmont Upland Section of the Piedmont Physiographic Province of Southeastern Pennsylvania. Specifically, a majority of the site is indicated to be underlain by the Wissahickon Formation and the southern corner of the site also underlain by Ultramafic rocks. The Wissahickon Formation consists of oligoclase-mica schist, some hornblend gneiss, some augen gneiss and some quart-rich and feldspar-rich members due to various degrees of granitization. Ultramafic rocks include serpentine, steatite, and other products of alterations of peridotites and pyroxenites. The rock fragments and subsurface soils observed within the test borings generally confirmed the mapped Wissahickon Formation encountering varying levels of granitized mica-schist. Refer to the attached *Site Geology Map* identified as Figure 4 for additional information.

Subsurface Exploration

A total of four test borings (identified as INF-1 through INF-4) were conducted at locations provided by Nave Newell, Inc. and field-located by GTA utilizing a hand-held GPS unit and measuring from existing on-site features. The test borings were conducted on April 12, 2022 using a truck-mounted CME-45 drill rig and extended to depths ranging between 52 inches to 132 inches below the existing ground surface (bgs). Soil samples were obtained from the test borings using a two-foot split-spoon sampler that was driven continuously from the ground surface to the termination or refusal depths of the test borings. The approximate test boring locations are indicated on the attached *Exploration Location Plan* identified as Figure 5. The specific *Test Boring Logs* are also included as attachments. Existing ground surface elevations

indicated on the logs were estimated from the provided plan and should be considered approximate.

Subsurface Conditions

The test borings encountered four to six inches of asphalt and up to 24 inches of underlying stone subbase. Historic fill materials were observed in all of the test borings and extended to depths of about 52 inches to 120 inches bgs. At Test Borings INF-1, INF-3, and INF-4 the historic fill was observed to the termination depth of each location. The historic fill generally consisted of a mixture of grayish-black coarse to fine sand with varying amounts of gravel-sized concrete, brick, and rock fragments within the soil matrix. In Test Borings INF-1 and INF-4, initial split spoon and auger refusal on apparent concrete debris were observed at depths of about 78 inches and 52 inches bgs, respectively. Test Borings INF-1, INF-3, and INF-4 were offset laterally approximately five to 10 feet from their original locations to try and extend the soil borings beyond the refusal materials, however, refusal was encountered in the offset borings beyond the refusal materials, however, refusal was encountered in the offset locations at the following depths: INF-1 at 78 inches bgs and INF-4 at 48 inches bgs. The offset location for INF-3 was able to penetrate through the refusal materials and was terminated within historic fill materials at approximately 120 inches bgs.

Test Boring INF-2 was able to penetrate through the fill materials and generally encountered historic soils classified as silt loam and loam with varying amounts of gravel-sized coarse fragments in the soil matrix. A perched water table, identified by the delineation of thick fragipans and/or redoximorphic features was identified in Test Boring INF-2 at a depth of about 108 inches bgs. Limiting zones, such as indications of the seasonal high-water table, groundwater seeps, or apparent bedrock were not observed within any of the test borings performed in the proposed rain garden. The test borings were left open to monitor the groundwater rise or fall throughout the day and the test borings remained dry throughout the day. Refer to the attached *Test Boring Logs* for additional information.

Infiltration Testing

Four infiltration tests were performed in auger probes offset from each test boring in general accordance with cased-borehole methodology. Auger probes were drilled to just above the testing depths and casing subgrade. The casing was then pushed into the subgrade soils and cleaned out to the testing elevations with a hand auger. The infiltration tests were set at depths selected by Nave Newell, Inc. and by GTA's staff scientist after observing the subsurface soil conditions and redoximorphic features. Raw infiltration rates ranged from 0.81 to 4.38 inches per hour. Slower infiltration rates are likely due to the presence of the firm to very firm consistency historical fill soils. A summary of the infiltration test results is included in the table on the following page and individual rates are included in the attached *Field Infiltration Results Table*.

Summary of Infiltration Test Results					
Test Boring Location	Ground Surface Elevation (ft)	Infiltration Test Depth (ft)	Infiltration Test Elevation (ft)	Final Raw Infiltration Rate (in/hr)	Stormwater Facility Location
INF-1	56.5	3.5	53.0	2.31	Proposed Rain Garden
INF-2	56.5	3.5	53.0	3.63	
INF-3	56.0	3.0	53.0	4.38	
INF-4	56.0	3.0	53.0	0.81	

Stormwater Considerations and Recommendations

Based on the results of our field exploration and infiltration testing, the infiltration of stormwater on the site is considered feasible with some limitations. Issues related to construction of the rain garden include the firm to very firm consistency historical fill soils encountered. General stormwater recommendations related to the design and construction of proposed rain garden, as well as recommendations for alternative stormwater BMP options are included in the following paragraphs.

When more than two infiltration tests are employed for design purposes within the stormwater rain garden, the highest rate of the test results should be discarded and the geometric mean should be used to determine the average rate of the remaining test results. A safety factor of 2.0 should be applied to the raw infiltration rates for design purposes. Averaging of all tests across the site is not recommended.

In rain gardens, the permeability of the surficial topsoil, planting soil, or amended soil may limit the performance of the system depending on design rates. Blended amended soils may be required to increase the permeability of the surface soils. We recommend the planting/amended soils have a permeability of at least twice the design rate.

Where two feet of separation from the observed perched water table is not feasible and existing fill soils/building debris are encountered at the proposed bottom of bed elevations, we recommend placing a processed infiltration media to maintain the required two feet of separation and to increase the permeability of the firm existing fill materials. Infiltration media can consist of quarry processed materials such as PennDOT Size No. 2A dense-graded aggregate or AASHTO Size No. 57 open-graded stone. Granular blended soil mixtures containing at least 70 percent sand have also been used as infiltration media. Quarry processed crushed stone materials will typically have an infiltration rate in excess of 6 inches per hour. An additional soil buffer/filter media may be required above the crushed stone infiltration media if the pollutant loading is expected to be significant. The addition of a soil buffer may not be necessary if additional BMP controls are provided. Engineered filter media should provide a minimum infiltration rate of 0.5 inches per hour or equal to the design rate with a

maximum infiltration rate on the order of 6.0 inches per hour depending on the anticipated pollutant loading. For design purposes, the outlet flow rate should be modeled using the anticipated infiltration rate of engineered filter media or soil, whichever is slower. We recommend that all infiltration/filter media be wrapped with a suitable filter fabric to reduce clogging.

The design of the stormwater rain garden should not be entirely dependent on infiltration for complete discharge. We recommend that the system be designed as an open system, with a positive overflow that discharges excess volume in a non-erosive manner. This design will allow for controlled discharge under situations such as extreme precipitation events or below-freezing conditions. The infiltration areas should be level, with a slope of less than one percent.

GTA recommends installing an underdrain system below the proposed bottom of basin elevations. Installing underdrains will promote the rain garden's stormwater capacity and help establish plant/vegetation growth which is critical to the long-term success of the facility. The underdrain can be installed with a valve to control dewatering or plugged following the establishment of vegetation.

Infiltration areas should not be exposed to unstabilized runoff and construction disturbance that may decrease infiltration rates. It will be important to limit disturbance and compaction of the infiltration surface during construction. Where possible, the operation of heavy, rubber tire equipment directly on the infiltration area subgrades should be avoided or kept to a minimum. After grubbing and rough grading, infiltration areas should be tilled with a disc or chisel plow followed by a leveling drag, to restore the soils to a loose condition. Construction oversight by competent engineering personnel during installation of the stormwater rain garden is critical to successful functioning of the system. Ideally, construction oversight should be provided by the geotechnical engineer, or qualified representative, retained by the project owner to document construction operations and assure that project specifications and special construction requirements are met. Periodic inspection and maintenance of the infiltration systems will be required to maximize the efficiency and design life of the system.

Limitations

This report has been prepared in accordance with generally accepted engineering practice. The analysis and conclusions contained in this report are based on the data obtained from limited observations and testing. The observations do not necessarily reflect variations in geologic or hydrogeologic conditions that may exist beneath the site.

In the event that any changes in the nature, design, or location of the facilities are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report are

verified in writing. Geo-Technology Associates, Inc. is not responsible for any claims, damages, or liability associated with interpretation of subsurface data or reuse of the subsurface data or engineering analysis without the expressed written authorization of Geo-Technology Associates, Inc.

At completion, the test borings were backfilled with the excavated material and leveled off with the surrounding grades. No additional compaction effort or site restoration was performed. Future settlement and consolidation of the soil replaced in the test borings may occur, resulting in a depression or hole that may require maintenance or restoration. Geo-Technology Associates, Inc. is not responsible for additional maintenance and restoration of the test pit locations.

This report and the attachments are instruments of service. The subject matter of this report is limited to the facts and matters stated herein. Absence of a reference to any other conditions or subject matter shall not be construed by the reader to imply approval by the writer.

We appreciate the opportunity to have been of assistance to you on this project. Please contact our office if you have questions regarding this report.

Sincerely,
GEO-TECHNOLOGY ASSOCIATES, INC.



Michael W. Derr, P.E.
Vice President



CML/MJC/CAW/mwd
31220559

Attachments:

- *Site Location Map*
- *Site Historical Aerial Photo*
- *Site Web Soil Survey Map*
- *Site Geology Map*
- *Exploration Location Plan*
- *Field Infiltration Results Table*
- *Subsurface Exploration Logs*

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an “apply-by” date on the report, ask what it should be, and, in general, if you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying it.* A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the “Findings” Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old*.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration*. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists*.



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e-mail: info@geoprofessional.org www.geoprofessional.org

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Notes:

- 1) Base map obtained from: Google Earth Pro, Geologic Units of Pennsylvania. Google Corporation, Vers. 7.3.4.8248, 2021, Created 2022.



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 www.gtaeng.com

SITE LOCATION MAP
 AIM ACADEMY – INNOVATION
 ADDITION
 MONTGOMERY COUNTY
 PENNSYLVANIA

SCALE
 NTS

DATE
 MAY 2022

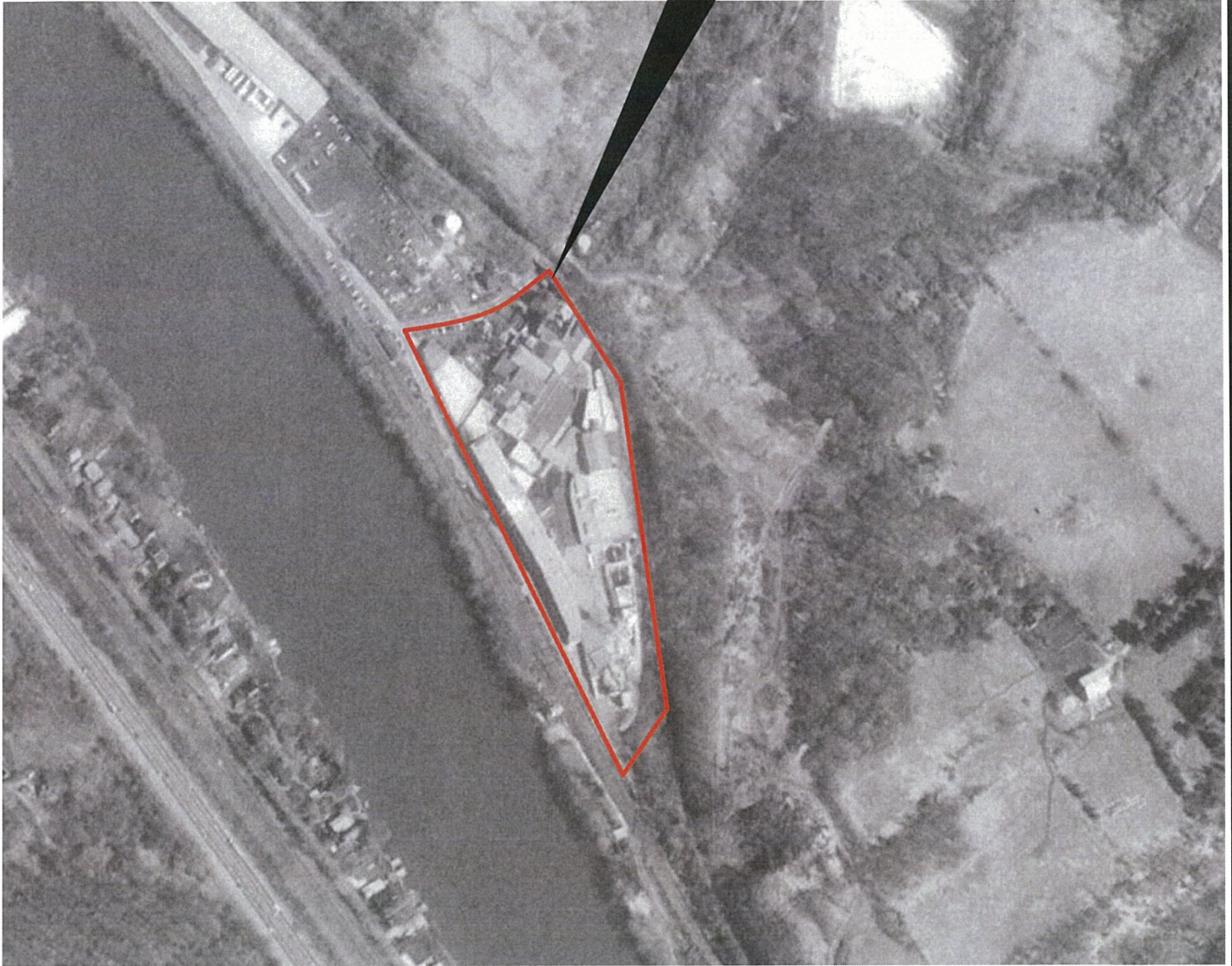
DRAWN BY
 CML 120

REVIEW BY
 MWD

JOB NO.
 31220559

FIGURE NO.
 1

**SUBJECT
PROPERTY**



Notes:

- 1) Base map obtained from: Google Earth Pro, Geologic Units of Pennsylvania. Google Corporation, Vers. 7.3.4.8248, 2021, Created 1992.



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SITE HISTORICAL AERIAL PHOTO
AIM ACADEMY – INNOVATION
ADDITION
MONTGOMERY COUNTY
PENNSYLVANIA

SCALE
NTS

DATE
MAY 2022

DRAWN BY
MJC 121

REVIEW BY
MWD

JOB NO.
31220559

FIGURE NO.
2



Notes:

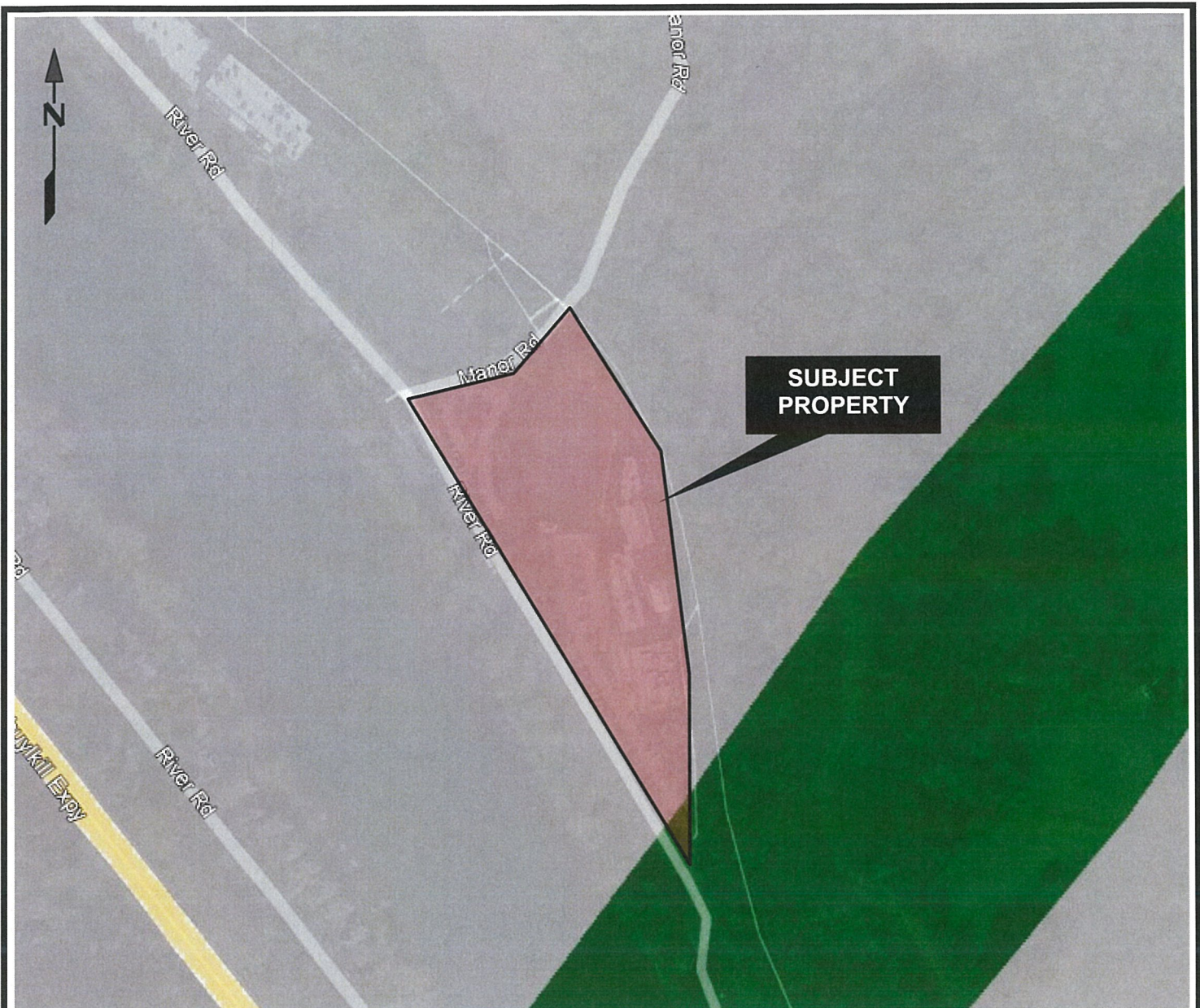
- 1) UgB: Urban Land complex
- 2) MaD: Manor Soil Series
- 3) Base map obtained from *USDA NRCS Web Soil Survey* online mapping tool.



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SITE WEB SOIL SURVEY MAP
AIM ACADEMY – INNOVATION
ADDITION
MONTGOMERY COUNTY
PENNSYLVANIA

SCALE NTS	DATE MAY 2022	DRAWN BY CML 122	REVIEW BY MWD	JOB NO. 31220559	FIGURE NO. 3
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Notes:

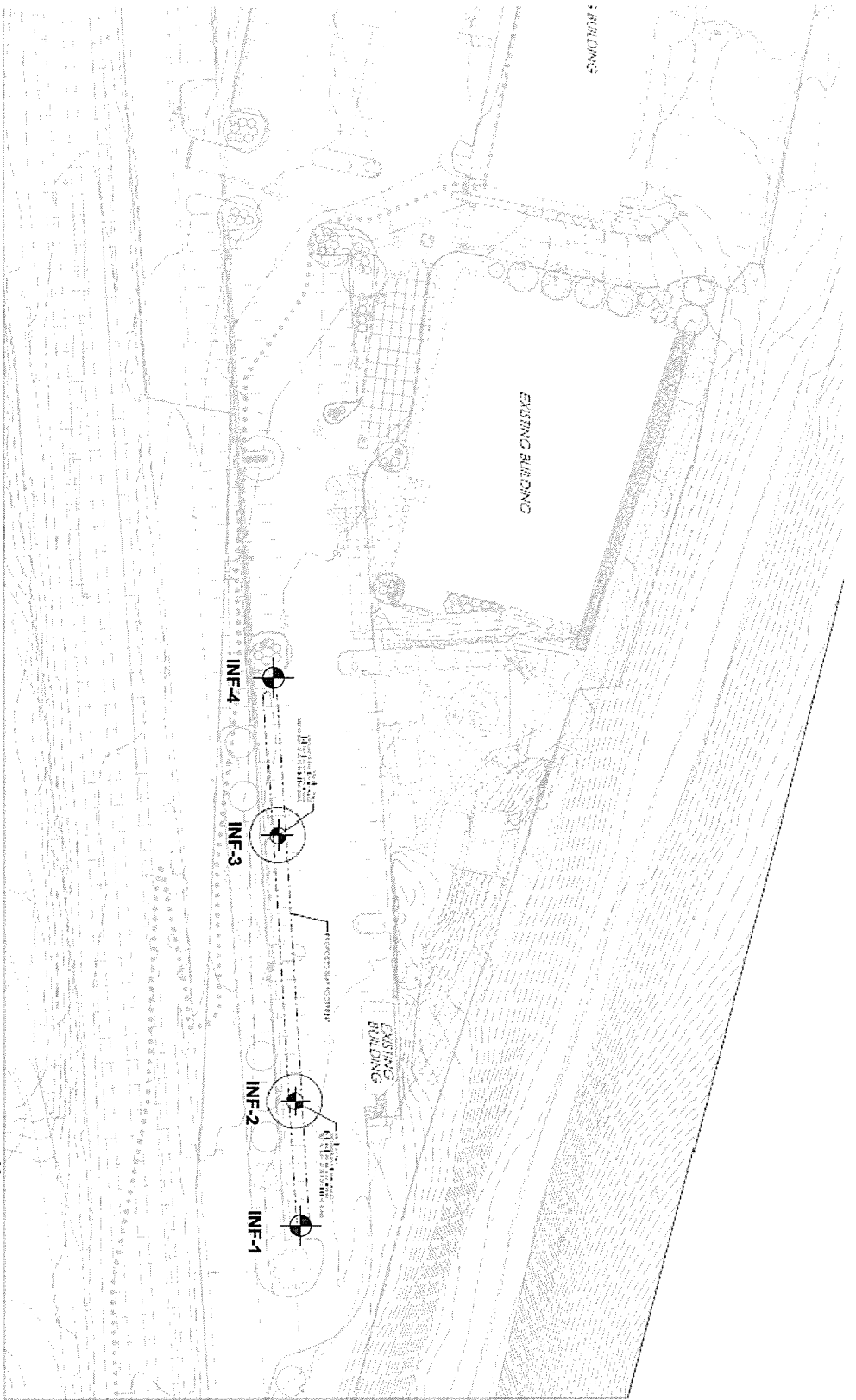
- 1) **Gray Shading:** Consists of mica-schist, hornblend gneiss, augen gneiss, and some quartz- and feldspar-rich members due to carrying degrees of granitization of the Wissahickon Formation.
- 2) **Green Shading:** Consists of ultramafic rock including serpentine, steatite, and other products of the alteration of peridotities and pyroxenites.
- 3) Base map obtained by: Google Earth Pro, Geologic Units of Pennsylvania. Google Corporation, Vers. 7.3.4.8248, 2021.



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SITE GEOLOGY MAP
AIM ACADEMY – INNOVATION
ADDITION
MONTGOMERY COUNTY
PENNSYLVANIA

SCALE NTS	DATE MAY 2022	DRAWN BY CML 123	REVIEW BY MWD	JOB NO. 31220559	FIGURE NO. 4
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Notes: (1) Layout was obtained from a drawing titled *AIM Academy Building Addition* prepared by Nave Newell dated February 21, 2022.
 (2) Exploration Location Plan should be read together with GTA Report Job No. 31220559 for complete evaluation.

Key:
 INF-# Number and approximate location of Borehole Infiltration Test performed for this study



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EXPLORATION LOCATION PLAN
 AIM Academy-Innovation Addition
 Montgomery County, Pennsylvania

JOB NUMBER: 31220559
FIGURE: 5
REVIEW BY: CAW
SCALE: NTS
DATE: APR 2022



GEO-TECHNOLOGY ASSOCIATES
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Date: 4/11/2022 Staff Scientist: C. Limbert
 Project Number: 31220559 Site Location: Whitemarsh Township, Montgomery County, Pennsylvania
 Project Name: AIM Academy - Innovation Addition Weather: Sunny 65F

Location		INF-1	
Test Depth (ft)		3.5'	
Test Elevation		+/-53.0	
	TIME	DROP (IN.)	LEVEL (IN.)
Start	12:00 PM		30.75
1st Reading*	12:30 PM	2.125	32.88
2nd Reading*	1:00 PM	2.000	34.88
3rd Reading	1:30 PM	1.375	36.25
4th Reading	2:00 PM	0.750	37.00
5th Reading	2:30 PM	1.375	38.38
6th Reading	3:00 PM	1.125	39.50
7th Reading	3:30 PM	1.000	40.50
8th Reading	4:00 PM	1.125	41.63
Raw Infiltration Rate: inches per hour			2.31

*1st and 2nd reading coincide to one hour presoak.

Location		INF-2	
Test Depth (ft)		3.5'	
Test Elevation		+/-53.0	
	TIME	DROP (IN.)	LEVEL (IN.)
Start	11:00 AM		39.13
1st Reading*	11:30 AM	5.875	45.00
2nd Reading*	12:00 PM	4.500	49.50
3rd Reading	12:30 PM	2.750	52.25
4th Reading	1:00 PM	2.625	54.88
5th Reading	1:30 PM	1.500	56.38
6th Reading	2:00 PM	1.625	58.00
7th Reading	2:30 PM	2.125	60.13
8th Reading	3:00 PM	2.000	62.13
Raw Infiltration Rate: inches per hour			3.63

Soil Description: Historic Fill - Loamy Sand

Soil Description: Historic Fill - Sandy Loam

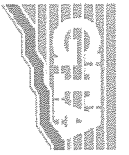
Location		INF-3	
Test Depth (ft)		3.0'	
Test Elevation		+/-53.0	
	TIME	DROP (IN.)	LEVEL (IN.)
Start	1:10 PM		30.13
1st Reading*	1:40 PM	4.125	34.25
2nd Reading*	2:10 PM	4.625	38.88
3rd Reading	2:40 PM	3.625	42.50
4th Reading	3:10 PM	3.250	45.75
5th Reading	3:40 PM	2.500	48.25
6th Reading	4:10 PM	2.125	50.38
7th Reading	4:40 PM	2.000	52.38
8th Reading	5:10 PM	2.125	54.50
Raw Infiltration Rate: inches per hour			4.38

*1st and 2nd reading coincide to one hour presoak.

Location		INF-4	
Test Depth (ft)		3.0'	
Test Elevation		+/-53.0	
	TIME	DROP (IN.)	LEVEL (IN.)
Start	1:45 PM		29.50
1st Reading*	2:15 PM	2.00	31.50
2nd Reading*	2:45 PM	0.88	32.38
3rd Reading	3:15 PM	0.75	33.13
4th Reading	3:45 PM	0.63	33.75
5th Reading	4:15 PM	0.50	34.25
6th Reading	4:45 PM	0.25	34.50
7th Reading	5:15 PM	0.38	34.88
8th Reading	5:45 PM	0.50	35.38
Raw Infiltration Rate: inches per hour			0.81

Soil Description: Historic Fill - Gravelly Sandy Loam

Soil Description: Historic Fill - Loam



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 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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 A Practicing Geoprosfessional Business Association Member Firm

SUBSURFACE LOG: INF-1

PROJECT NAME: AIM Academy
 PROJECT NUMBER: 31220559
 PROJECT LOCATION: Whitmarsh Township,
 Montgomery County, Pennsylvania
 CLIENT: AIM Academy
 LOGGED BY: C. Limbert
 CHECKED BY: C. Weinhoid

CONTRACTOR: Beechwood Drilling
 EQUIPMENT: CME45
 DATE STARTED: 04/11 /2022
 DATE COMPLETED: 04/11 /2022
 WEATHER: Sunny 65F

TEST LOCATION: Parking lot
 SLOPE: 0%
 LANDSCAPE POSITION: Terrace
 COVER: Asphalt
 DATUM: Topo
 ELEVATION: 56.5

SOIL TYPE:	SOIL DEPTH CLASS:	SOIL DRAINAGE CLASS:	PARENT MATERIAL:				
Urbanland	Very Deep, >54 in: Deep, 36-54 in: Moderately Deep 18-36 in: Shallow, <18 in:	Well-Drained: Mod. Well-Drained: Somewhat Poorly-Drained: Poorly-Drained:	Wissahickon Formation-mica schist				
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	N-Value	REDOX FEATURES	COMMENTS
			Auger through 2' Asphalt				
F	24-48	Black	Loamy Sand	Single Grain	10		Historic Fill
F	48-72	Black	Loamy Sand	Single Grain	50/1		Historic Fill
F	72-78	Black	Loamy Sand	Single Grain	50/1		Historic Fill

NOTES: The ground surface elevation should be considered approximate. Boring terminated at 6.5 feet bgs. Refusal on apparent concrete debris.

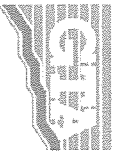
Soil Features & Limiting Zones:
 Bedrock Depth: NE
 Groundwater Seeps: NE
 Seasonal High Water Table Depth: NE
 Fragipan Depth: NE

Infiltration Results:
 Proposed Infiltration Depth: 3.5 feet
 Performed Infiltration Depth: 3.5 feet
 Final Raw Infiltration Rate (in/hr): 2.31
 Rock With Open Joints And Insufficient Soil Depth: NE

Coarse Fragments by Volume
 No modifier: >15%
 Gravelly (ex.): 15-35%
 V: Very: 36-65%
 X: Extremely 65-90%
 Gravel (ex.) >90%

Redoxomorphic Features:
 Contrast:
 F/: <2%
 C/: 2-20%
 M/: >20%
 /D: Distinct
 /P: Prominent

Redoximorphic Concentration: accumulation of Iron-Mn Oxides due to water cycling
Redoximorphic Depletions: loss of Iron-Mn Oxides due to prolonged aquic conditions
Clay Films: Illuviation of clay particles
Clay Depletion: Loss of clay due to prolonged aquic eluviation processes
Reduced Matrix: Anaerobic soil that oxides/changes matrix color upon presence of air



GEO-TECHNOLOGY ASSOCIATES, INC.
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

2405 John Fries Highway, Quakertown, PA 18951
 A Practicing Geoprofessional Business Association Member Firm

SUBSURFACE LOG: INF-2

PROJECT NAME: AIM Academy
 PROJECT NUMBER: 31220559
 PROJECT LOCATION: Whitemarsh Township,
 Montgomery County, Pennsylvania
 CLIENT: AIM Academy
 LOGGED BY: C. Limbert
 CHECKED BY: C. Weirhold

CONTRACTOR: Beechwood Drilling
 EQUIPMENT: CME45
 DATE STARTED: 04/11 /2022
 DATE COMPLETED: 04/11 /2022
 WEATHER: Sunny 65F

TEST LOCATION: Parking lot
 SLOPE: 0%
 LANDSCAPE POSITION: Terrace
 COVER: Asphalt
 DATUM: Topo
 ELEVATION: 56.5

HORIZON	DEPTH (in.)	SOIL DEPTH CLASS:	SOIL DRAINAGE CLASS:	PARENT MATERIAL:	SOIL TYPE:	SOIL COLOR	TEXTURE	STRUCTURE	N-Value	REDOX FEATURES	COMMENTS
		Very Deep, >54 in:	Well-Drained:	Wissahickon Formation-mica schist	Urbanland						
		Deep, 36-54 in:	Mod. Well-Drained:								
		Moderately Deep 18-36 in:	Somewhat Poorly-Drained:								
		Shallow, <18 in:	Poorly-Drained:								
							Auger through 1' Asphalt & Subbase				
F	12-36	Brown	Loam				Single Grain				Historic Fill
F	36-60	Black	X Gravelly Loam				Single Grain		19		Historic Fill
F	60-84	Black	Sandy Loam				Single Grain		38		Historic Fill
B w1	84-108	7.5YR 4/6	Silt Loam				Subangular Blocky		11		Alluvium
B w2	108-132	7.5YR 5/4	Silt Loam				Subangular Blocky		11		Alluvium

NOTES: The ground surface elevation should be considered approximate. Boring terminated at 11 feet bgs.

Soil Features & Limiting Zones:
 Bedrock Depth: NE
 Groundwater Seeps: NE
 Seasonal High Water Table Depth: NE
 Fragipan Depth: NE

Infiltration Results:
 Proposed Infiltration Depth: 3.5 feet
 Performed Infiltration Depth: 3.5 feet
 Final Raw Infiltration Rate (in/hr): 3.63
 Rock With Open Joints And Insufficient Soil Depth: NE

Coarse Fragments by Volume
 No modifier: >15%
 Gravelly (ex.): 15-35%
 V: Very: 36-65%
 X: Extremely 65-90%
 Gravel (ex.) >90%

Redoxomorphic Features:
 Quantity: Contrast:
 F/: <2% /F: Faint
 C/: 2-20% /D: Distinct
 M/: >20% /P: Prominent

Redoximorphic Concentration: accumulation of Iron-Mn Oxides due to water cycling
Redoximorphic Depletions: loss of Iron-Mn Oxides due to prolonged aquic conditions
Clay Films: Illuviation of clay particles
Clay Depletion: Loss of clay due to prolonged aquic eluviation processes
Reduced Matrix: Anaerobic soil that oxides/changes matrix color upon presence of air



GEO-TECHNOLOGY ASSOCIATES, INC.
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

2405 John Fries Highway, Quakertown, PA 18951
 A Practicing Geoprofessional Business Association Member Firm

SUBSURFACE LOG: INF-3

PROJECT NAME: AIM Academy
 PROJECT NUMBER: 31220559
 PROJECT LOCATION: Whitmarsh Township,
 Montgomery County, Pennsylvania
 CLIENT: AIM Academy
 LOGGED BY: C. Limbert
 CHECKED BY: C. Weinhoid

CONTRACTOR: Beechwood Drilling
 EQUIPMENT: CME45
 DATE STARTED: 04/11 /2022
 DATE COMPLETED: 04/11 /2022
 WEATHER: Sunny 65F

TEST LOCATION: Parking lot
 SLOPE: 0%
 LANDSCAPE POSITION: Terrace
 COVER: Asphalt
 DATUM: Topo
 ELEVATION: 56.0

SOIL TYPE:	SOIL DEPTH CLASS:	SOIL DRAINAGE CLASS:	PARENT MATERIAL:				
Urbanland	Very Deep, >54 in: Deep, 36-54 in: Moderately Deep 18-36 in: Shallow, <18 in:	X Well-Drained: Mod. Well-Drained: Somewhat Poorly-Drained: Poorly-Drained:	X Wissahickon Formation-mica schist				
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	N-Value	REDOX FEATURES	COMMENTS
			Auger through 1' Asphalt & Subbase				
F	12-24	10YR 5/3	Fine Loamy Sand	Single Grain	Very Friable		Historic Fill
F	24-48	Gray	Loam	Single Grain	28		Historic Fill
F	48-72	10YR 4/2	V Gravelly	Single Grain	41		Historic Fill
F	72-96	10YR 4/2	V Gravelly	Single Grain	37		Historic Fill
F	96-120	10YR 4/2	V Gravelly	Single Grain	12		Historic Fill

NOTES: The ground surface elevation should be considered approximate. Boring terminated at 10 feet bgs. Initial boring location was offset 10 feet after refusal at 4 feet bgs.

Soil Features & Limiting Zones:
 Bedrock Depth: NE
 Groundwater Seeps: NE
 Seasonal High Water Table Depth: NE
 Fragipan Depth: NE

Infiltration Results:
 Proposed Infiltration Depth: 3.0 feet
 Performed Infiltration Depth: 3.0 feet
 Final Raw Infiltration Rate (in/hr): 4.38
 Rock With Open Joints And Insufficient Soil Depth: NE

Coarse Fragments by Volume
 No modifier: >15%
 Gravelly (ex.): 15-35%
 V: Very: 36-65%
 X: Extremely 65-90%
 Gravel (ex.) >90%

Redoxomorphic Features:
 Quantity: Contrast:
 F/: <2% /F: Faint
 C/: 2-20% /D: Distinct
 M/: >20% /P: Prominent

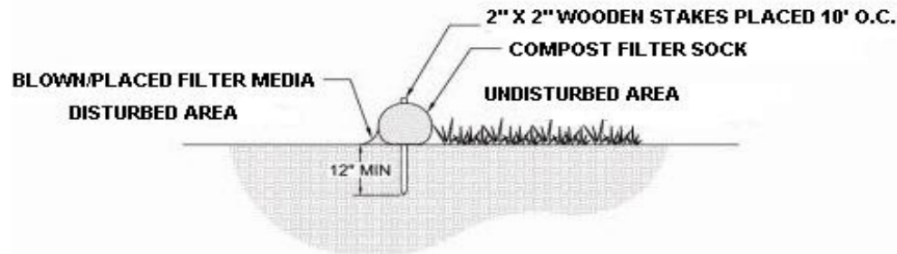
Redoximorphic Concentration: accumulation of Iron-Mn Oxides due to water cycling
Redoximorphic Depletions: loss of Iron-Mn Oxides due to prolonged aquic conditions
Clay Films: Illuviation of clay particles
Clay Depletion: Loss of clay due to prolonged aquic eluviation processes
Reduced Matrix: Anaerobic soil that oxides/changes matrix color upon presence of air

VI.

STANDARD E&S WORKSHEET #1


Compost Filter Socks

PROJECT NAME: AIM Academy Building addition (NN PROJECT #2011-059.08)
LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA
PREPARED BY: CW **DATE:** 6/9/2022
CHECKED BY: JPB **DATE:** 6/9/2022



COMPOST SOCK SIZING TABLE

Sock No.	Dia. (IN)	Sock Length (LF)	Location	Slope Height Above Barrier (FT)	Slope Length Above Barrier (FT)	Slope (%)
1	12	26	SEE E&S PLAN	6.5	90	7.2
2	12	46	SEE E&S PLAN	10.0	115	8.7
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						


 <p>900 West Valley Road Suite 1100 Wayne, PA (610) 265-8323</p>	<p>PROJECT NAME: AIM Building Academy Building Addition JOB #: 2011-059.08 DATE: 6/9/2022</p> <p align="right">BY: CW CHK'D: JPB</p>
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Appendix

UPDATES

WHITEMARSH TOWNSHIP

To: Charlie L. Guttenplan, Director of Planning & Zoning/Zoning Officer

From: NICHOLAS W. WEAVER, FIRE MARSHAL 

Subject: **SLD #07-22 AIM Academy 1200 River Road**

Date: June 24, 2022

cc:

This application cannot be approved at this time for the following outstanding items:

1. Fire Department Connection on the Gym shall be unobstructed and provided with access to emergency services. Remove landscaping and any other obstruction between the connection and the Fire Department Apparatus Access.
2. Fire Hydrant plan to be updated with distances. This plan shall meet the requirements as set forth in Chapter 5 of the International Fire Code 2015 edition, Appendix B of the International Fire Code 2015 Edition, Appendix C of the International Fire Code 2015 Edition, and Whitemarsh Township Ordinance #1003.
 - a. All buildings must have a fire hydrant within 600' of all portions structure by approved route.
 - i. If the building is equipped with standpipes a hydrant is required within 100' of the fire department connection
 - b. The hydrants must be capable of flowing a minimum of 1500 gallons per minute for one hour.
 - i. Hydrants must meet the needed fire flow as required by Appendix B
 - c. The average spacing between hydrants shall meet the requirements set forth by Appendix C of the International Fire Code 2015 Edition.
3. Provide an Emergency Responder Radio Coverage Plan. This plan shall meet the requirements as set forth in Chapter 5 of the International Fire Code 2015.
 - a. All new buildings shall have approved radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building.

Nicholas W. Weaver
Fire Marshal
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 610-825-3535 ext. 2614
Email: nweaver@whitemarshwp.org



Whitemarsh TOWNSHIP

616 GERMANTOWN PIKE - LAFAYETTE HILL, PA 19444-1821
TEL: 610-825-3535 FAX: 610-825-9416
www.whitemarshwp.org

BOARD of SUPERVISORS

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Richard L. Mellor, Jr.
Township Manager

July 1, 2022

AIM Academy
c/o Patricia Roberts, Executive Director
1200 River Road
Conshohocken, PA 19428

**RE: SLD#07-22, AIM Academy, Conshohocken, PA
Preliminary/Final Major Land Development, Building Addition and Rain Garden
Zoning Ordinance Compliance Review Letter**

Dear Ms. Roberts:

Please accept this as a review of the Zoning Ordinance Compliance issues for your above referenced 12-Sheet Preliminary/Final Land Development Plan submission, prepared by Nave Newell Inc., dated June 21, 2022. This plan illustrates a building addition in the rear of the main structure as well as a new stormwater (rain) garden located in the southern part of the parking lot.

Please note that the site for this development is zoned HVY Heavy Industrial. There is a portion of the site located in the Floodplain Conservation Overlay District and a portion of the site located in the Riparian Corridor Conservation Overlay District. There are no improvements associated with this plan located in either of these districts. The following review assesses the compliance of the improvements with relevant zoning code sections.

1. **§116-22.** The plans must be revised to include a note which states that the permanent removal of topsoil from land within the Township is prohibited.
2. **§116-28.A.(2).** If there will be an increased use of water, 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.** If there will be an increased need for sanitary sewage disposal, the applicant must obtain the approval of the Whitemarsh Township Authority with regard to any adjusted connection or sanitary sewage needs.
4. **§116-184. F.** All parking shall conform to the Whitemarsh Township Fire Prevention Code as amended. Additionally, building design and site requirements for fire fighting access must conform to this Code as well. The Fire Marshal has issued a separate review, enclosed herewith (memo dated June 24, 2022).
5. **§116-188.3.D.** The plan illustrates four electric vehicle (EV) charging spaces. If the lot was new, expanded, or reconstructed, the ordinance would require nine electric vehicle charging spaces. Given that the number of spaces is being reduced, this requirement does not strictly apply to this land development. However, we feel that the inclusion of EV spaces is prudent, and additional spaces are encouraged as part of the site improvements. Of the EV spaces included, fifty percent or more must be ADA accessible (§116-188.3.D.3.).

"A GREAT PLACE TO LIVE AND WORK"

Additional Comment:

1. There are several parts of this plan where existing nonconformities are reduced. Notably, the impervious coverage is being reduced from 71.1% to 70.7%. Up to 60% is permitted by-right per §116-148.B.1. This reduction occurs because most of the building addition is being placed on top of existing parking, and parking in the southern portion of the lot is being removed to install the rain garden. These modifications also reduce the superfluous parking nonconformity (§116-184.B).

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 memo dated June 24, 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
James P. Bannon, P.E., Applicant's Engineer, Nave Newell Inc.

**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

July 7, 2022

Mr. Charles L. Guttenplan, AICP
Director of Planning & Zoning Officer
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, Pennsylvania 19444

Re: MCPC #22-0171-001
Plan Name: AIM Academy- Building Addition
(1 lots/ 8,590 sq. ft. addition/comprising 8.87 acres
Situate: River Road (north)/Manor Road (east)
Whitemarsh Township

Dear Mr. Guttenplan:

We have reviewed the above-referenced subdivision and land development plan in accordance with Section 502 of Act 247, "The Pennsylvania Municipalities Planning Code," as you requested on June 22, 2022. We forward this letter as a report of our review.

BACKGROUND

The applicant, Academy in Manayunk (AIM) has submitted a preliminary land development plan that proposes the construction of an addition located at the rear of an existing school campus building. The school campus is located at 1200 River Road, (Tax Parcel # 65-00-10066-00-3) which is situated in the township's HVY- Industrial Zoning District. The addition is proposed for an area immediately south of the Schuylkill River Trail that is currently a surface parking lot. The 8.8 acre parcel serves as a school campus with various buildings, recreational playing fields and surface parking lots.

Property History - The school campus buildings and grounds were once an industrial complex that dated to the mid-18th century. It was part of a larger paper mill owned by W.C. Hamilton and later Simpson Paper Company that produced fine quality paper used to make currency. In the late 1990s, the property was redeveloped and repurposed into 240,000 sq. ft. of office space. The applicant's parcel was redeveloped as River Park II in the late 1990s and was a part of a larger 25-acre office campus comprising approximately 240,000 sq. ft. of office space.



CONSISTENCY WITH THE COUNTY COMPREHENSIVE AND MUNICIPAL PLANS

The development proposal is consistent with both the *MONTCO 2040: A Shared Vision*, the Montgomery County Comprehensive Plan and the *Whitemarsh Township Selective Comprehensive Plan Update, November 2020*. The county's plan promotes reinvestment in the suburban areas and mixed use corridors where infrastructure already exists. The township's Selective Comprehensive Plan Update identifies this area as a 'Mixed-Use Node' character area. The plan recommends that this character area should leverage its access to the Miquon Regional Rail Station to promote mixed use developments, with an emphasis on "High-density, walkable development" and an emphasis on connectivity, mobility, and compatible-types of developments.

The Mixed-Use Node character areas are located along existing commercial corridors, at regional rail stations and nodes where expanded mixed use development is desirable. Each Mixed Use Node is associated with a regional rail station. Future uses identified for this character area include but are not limited to retail, restaurants, housing, office and services.

RECOMMENDATION

We are supportive of this development proposal and believe the proposed building addition and related improvements are consistent and add value to this area of the township. In the course of our review, however, we have identified a concern regarding the proposed planting design for the bioretention facility that we recommend the township consider in its assessment of this proposal.

COMMENT

Landscape Improvement along River Road

The applicant's plan (Sheet #6/12) proposes a 275 ft. long bioretention area that will replace a previously impervious asphalt parking bay. This is a positive development and will assist in mitigating the adverse impacts of parking lot rainwater runoff before it enters the Schuylkill River. We are concerned that the facility may not yield its potential environmental benefits due to the minimal planting of shrubs in very small groups. As well, there are only 11 shrubs proposed for a 275 ft. by 18 ft. wide area, which are widely spaced apart. (Note: the 5-Eupatorium 'Little Joe' - Joe Pye Weed is a perennial and doesn't persist in the winter which is a defining feature of shrubs). In accordance with best management practices, we recommend that bioretention areas rely upon a greater density of vegetative coverage provided by trees and shrubs, as opposed to coverage provided by perennials and grasses. Woody plants have a greater life span and will lower maintenance costs and minimize potential invasive plants and vines occupying the facility over time. In order to help ensure the effectiveness of the bioretention facility, we recommend the applicant modify the planting plan to include additional appropriate tree and shrub groupings.

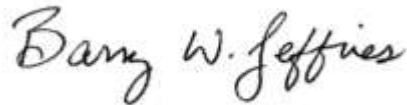
CONCLUSION

We generally support the proposal and recommend the township address the above mentioned review comments regarding the bioretention area landscape plan to its satisfaction. 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 proposal ID MCPC #22-0171-001 has been set aside for the applicant's 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.

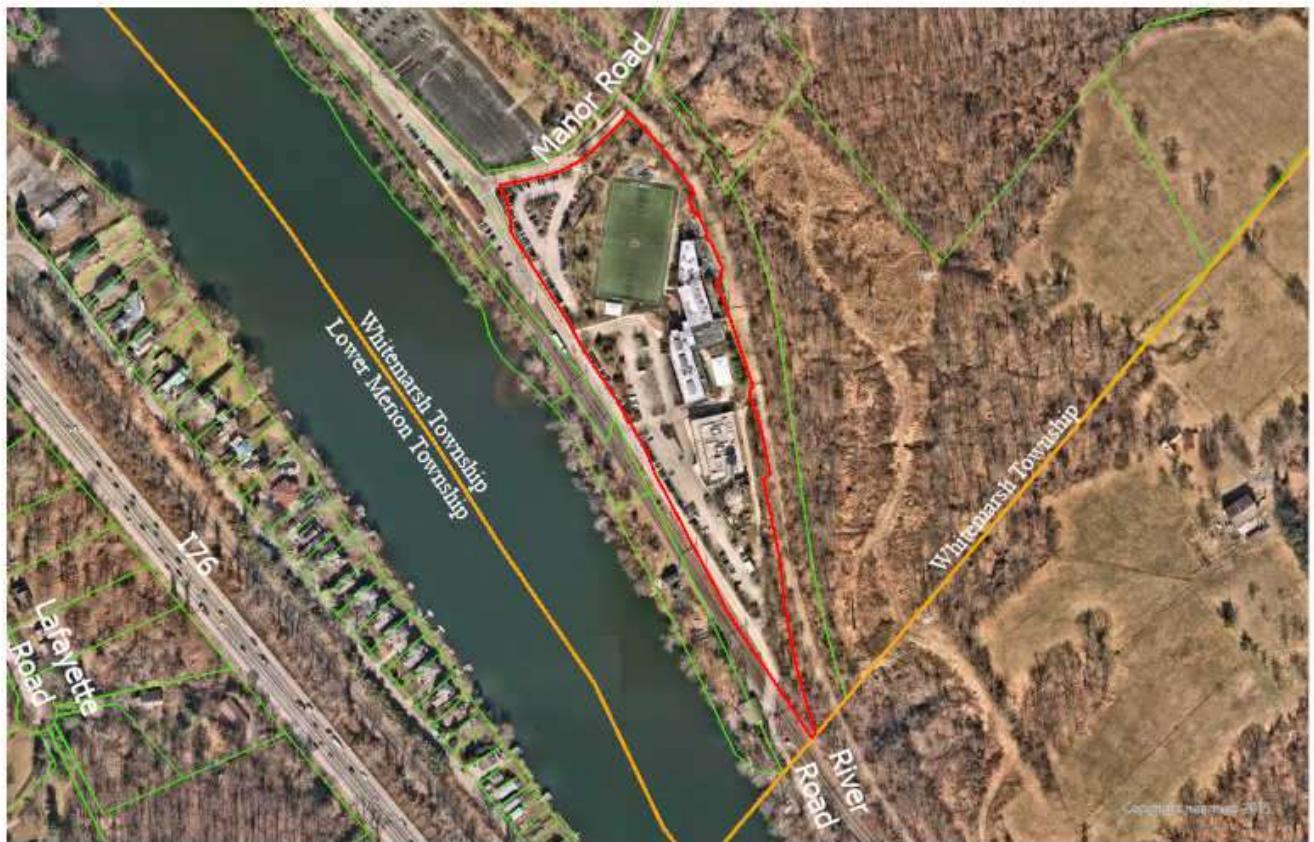
Sincerely,



Barry W Jeffries, ASLA, Senior Design Planner
bjeffrie@montcopa.org - 610-278-3444

c: Chrm., Township Planning Commission
Township Engineer
Township Solicitor

Attachments
Aerial & Site Plan

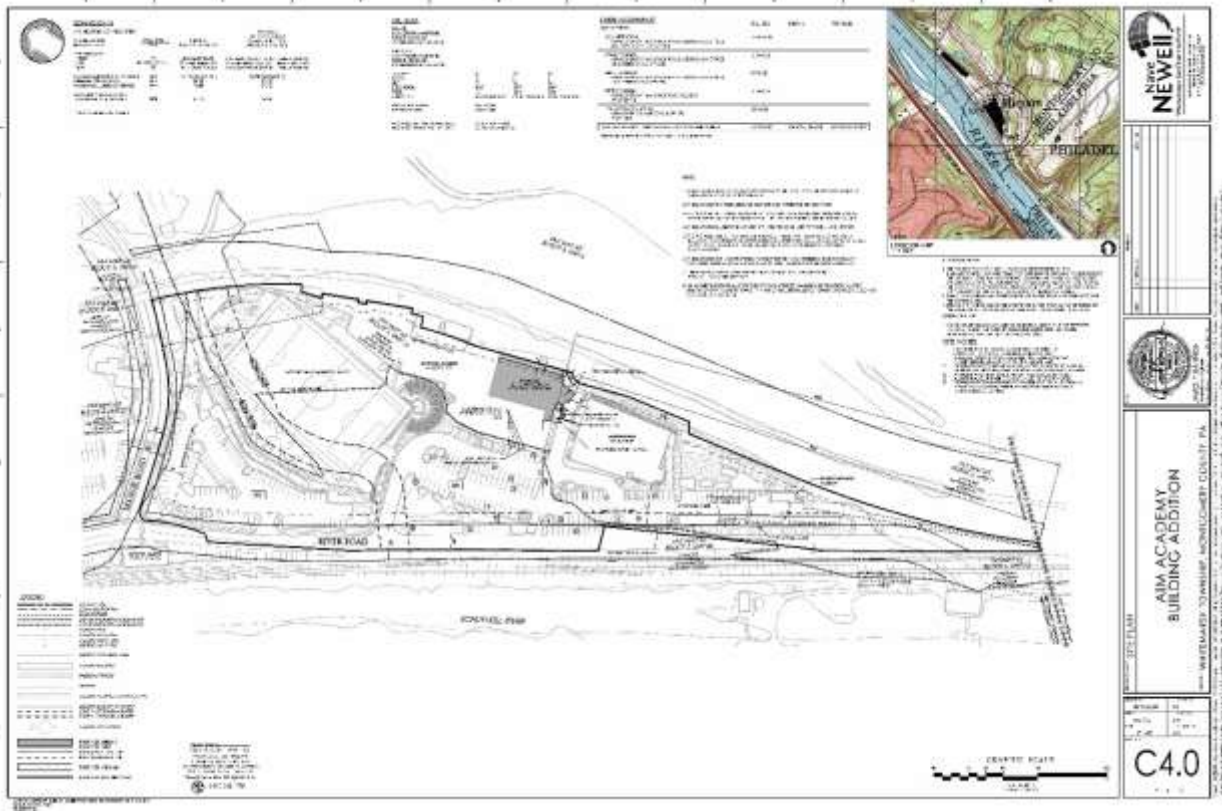


AIM Academy-Building Addition
MCPC#220171001

Montgomery
County
Planning
Commission
Montgomery County Courthouse - Planning Commission
400 East 21st Pennsylvania PA 19103-0211
(610) 278-3723 (F) 610-278-3941
www.montcopa.org/placomm
Aerial photographs provided by Aerialmap.

0 150 300 600 Feet

N





GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

August 4, 2022

Mr. Richard L. Mellor, Jr. - Township Manager
Whitemarsh Township Municipal Building
616 Germantown Pike
Lafayette Hill, PA 19444

**RE: Preliminary Plan Review
1200 River Road
Whitemarsh Township, Montgomery County, PA
S/LD # 07-22
Our Project Number 2022-07061**

Dear Mr. Mellor:

As requested, we have reviewed plans for the above referenced Preliminary Plan Submission consisting of:

- 12-Sheet Plan prepared by Nave Newell, Inc. and dated June 21, 2022, with no noted revisions.
- Post Construction Stormwater Management (PCSM) plan narrative prepared by Nave Newell, Inc. and dated June 21, 2022, 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:

<u>Section</u>	<u>Description</u>
1. 105-12(D)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires separate Preliminary and Final plan submissions.
2. 105-21(B)(1)(n)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the plans to show existing principal buildings, 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. An aerial photo has been included in the plan set which shows the required features.
3. 105-21(B) (9)(c)(2)	The applicant is requesting a waiver from the requirements of this section of the ordinance, in order to not require a Traffic Impact Study because the proposed building addition is not expected to increase enrollment. We have no objection to the granting of this waiver.
4. II(D)(2)	The applicant is requesting relief from the requirements of this section of the ordinance, which states that the top of any slope shall be located a minimum of five (5) feet from a property line. Please note, the applicant has obtained zoning relief that permits parking less than five feet away from the property line.

65 East Butler Avenue | Suite 100 | New Britain, PA 18901 | Phone: 215-345-4330 | Fax: 215-345-8606

- | <u>Section</u> | <u>Description</u> |
|-----------------------------|--|
| 5. II(E)(2)(g)(iv) | The applicant is requesting relief from the requirements of this section of the ordinance, to allow 12 inch HDPE pipe in the proposed rain garden, where this section of the ordinance requires storm drainage pipes to be at least 18 inches and constructed of reinforced concrete pipe. We have no objection to the granting of this relief. |
| 6. II(F)(3)(d)
[4][e][7] | The applicant is requesting relief from the requirements of this section of the ordinance, which states that infiltration rates shall not be used in computing the storage volume of the infiltration system. We have no objection to the granting of this relief. |
| 7. II(F)(3)(d)[4][g] | The applicant is requesting relief from the requirements of this section of the ordinance, to allow the proposed subsurface system to dewater in 7 days, where this section requires that infiltration BMPs shall be capable of completely infiltrating the impounded water within 96 hours. We have no objection to the granting of this relief since the impounded water would be below grade. |

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

- | <u>Section</u> | <u>Description</u> | | | | | | | | | | | | | | | |
|--------------------------|--|-------------------------|------------------------|-------------------------|------------------------|-----------|-----------|-----------|------------|-----------------|---------|---------|----------|----------|----------|------------|
| 8. 105-21(B)(1)(h) | The plans must be revised to include a graphic scale for the location map. | | | | | | | | | | | | | | | |
| 9. 105-21.1(K)(2) | Within the South Transportation Service Area an impact fee in the amount of Two Thousand Five Hundred and Twenty-Nine Dollars (\$2,529.00) per anticipated peak hour trip must be provided by the applicant. The applicant must indicate whether there will be an increase in number of students as a result of the proposed improvements, in order to facilitate evaluation of any potential trip generation and traffic impact fees | | | | | | | | | | | | | | | |
| 10. 105-30 | As defined by Section 105-29(C) and 105-30(A), streets adjacent to the site are subject to the following requirements: | | | | | | | | | | | | | | | |
| | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Street Name</th> <th style="width: 15%;">Classification</th> <th style="width: 15%;">Required Ultimate R.O.W</th> <th style="width: 15%;">Required Cartway Width</th> <th style="width: 10%;">Curbs</th> <th style="width: 10%;">Sidewalks</th> <th style="width: 10%;">Tree Zone</th> </tr> </thead> <tbody> <tr> <td>River Road</td> <td rowspan="2" style="text-align: center;">Minor Collector</td> <td rowspan="2" style="text-align: center;">60 feet</td> <td rowspan="2" style="text-align: center;">40 feet</td> <td rowspan="2" style="text-align: center;">Required</td> <td rowspan="2" style="text-align: center;">Required</td> <td rowspan="2" style="text-align: center;">Required</td> </tr> <tr> <td>Manor Road</td> </tr> </tbody> </table> | Street Name | Classification | Required Ultimate R.O.W | Required Cartway Width | Curbs | Sidewalks | Tree Zone | River Road | Minor Collector | 60 feet | 40 feet | Required | Required | Required | Manor Road |
| Street Name | Classification | Required Ultimate R.O.W | Required Cartway Width | Curbs | Sidewalks | Tree Zone | | | | | | | | | | |
| River Road | Minor Collector | 60 feet | 40 feet | Required | Required | Required | | | | | | | | | | |
| Manor Road | | | | | | | | | | | | | | | | |
| | The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, or a waiver must be requested to allow the existing cartways to be remain less than 40 feet in width, and to not require additional sidewalk or street trees along portions of the frontage. | | | | | | | | | | | | | | | |
| 11. 105-38(C),
105-76 | The applicant must obtain a letter of approval from the Township Fire Marshal to ensure that adequate fire protection is provided. | | | | | | | | | | | | | | | |
| 12. 105-46,
105-47 | The plans must be revised to include a detail for the proposed concrete curb, sidewalk, stairs, and handrail. | | | | | | | | | | | | | | | |

<u>Section</u>	<u>Description</u>
13. 105-48	This section of the ordinance requires the installation of street trees along all streets where suitable trees do not exist. Large street trees shall be planted at intervals of not more than 45 feet, and/or small street trees at intervals of not more than 30 feet.
14. 105-52	All landscaping plans are subject to the review and approval of the Shade Tree Commission.
15. 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. A waiver would be required, since the proposed addition is directly adjacent a property line, and a buffer would not be feasible.
16. 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.
17. 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.
18. 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

<u>Section</u>	<u>Description</u>
19. 55-4(A)(4)	The tree survey plan shall be reviewed by the Shade Tree Commission in a public meeting.
20. 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. Protective fencing should be shown on the plans along the tree line bordering the proposed rain garden on the ultimate right-of-way on River Road.
21. 55-4(B)(2)	A note must be added to the plans requiring a pre-construction conference with the Township Shade Tree Commission prior to start of construction.

GRADING, EROSION CONTROL, STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES ORDINANCE:

<u>Section</u>	<u>Description</u>
22. 58-4 (B)(3)	The plan should be revised to show a topsoil stockpile and concrete washout location with appropriate erosion and sedimentation controls.
23. 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.

RESOLUTION 2004-8:

<u>Section</u>	<u>Description</u>
24. I(C)(1)(b)	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.
25. II(C)(8)(d)	The following note shall be attached to all drainage plans and signed and sealed by the applicant's Registered Professional Engineer experienced in geotechnical and soil engineering: <i>"I certify that the proposed facility is/is not underlain by limestone."</i>

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 (*via email*)
Mr. Nick Weaver - Fire Marshal (*via email*)
Ms. Patricia Roberts, Executive Director – AIM Academy
Mr. James P. Bannon, Jr. PE – Applicant's Engineer



AIM Academy – Building Addition Preliminary/Final Land Development Waiver Request List

June 21, 2022

Revised: August 8, 2022

Subdivision and Land Development Ordinance

1. Ch. 105 12(D) of SALDO to allow the plans to be reviewed and approved simultaneously as both Preliminary and Final plans, rather than requiring separate Preliminary and Final submissions.
2. Ch. 105-21 (B)(1)(n) Requiring features shown on the plan within 500 feet of the property. We request a modification of this section to allow the Aerial View on the Title Sheet, which shows existing conditions within 500 feet of the property, to satisfy this requirement.
3. Ch. 105-21 (B)(9)(C)(2) Requiring preparation of Traffic Impact Study. The proposed building addition is not expected to increase enrollment; therefore, the current traffic patterns will not be changed by the addition onto the existing building.

Resolution 2004-8: Grading, Erosion Control, Stormwater Management, and Best Management Practices

4. II(D)(2) – The top of any slope shall be located a minimum of five (5) feet from property line: We request a waiver from this requirement because we will be constructing the rain garden less than five feet from the ultimate right-of-way line. The existing parking area currently does not meet this requirement and the removal of parking spaces for the construction of the rain garden will also be less than five feet from the property line.
5. II(E)(2)(g)(iv) - storm drainage pipes shall be at least 18 inches and RCP: We request a waiver from this requirement to use a twelve inch HDPE pipe in the proposed rain garden. No new storm pipes are proposed within the Township's right-of-way

Street Trees

6. 105-48 – Installation of street trees along all streets where suitable trees do not exist: We request a waiver from this section to allow the number and location of trees as shown on the Landscape Plan. There are existing street trees in the area of the proposed rain garden and no improvements are proposed along the rest of the property frontage.

Buffer Yards

7. 105-52 – Buffer yards are required between land developments: We request a waiver from this section because the proposed addition will be connected to the existing building, which already located directly adjacent to the property line, so a buffer yard is not feasible. The proposed building addition will be located adjacent to the Schuylkill River Trail and will not negatively impact adjacent properties.

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AIM Academy – Building Addition Preliminary/Final Land Development Waiver Request List

June 21, 2022

Revised: August 9, 2022

Subdivision and Land Development Ordinance

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5. II(E)(2)(g)(iv) - storm drainage pipes shall be at least 18 inches and RCP: We request a waiver from this requirement to use a twelve inch HDPE pipe in the proposed rain garden. No new storm pipes are proposed within the Township's right-of-way

Street Standards

6. 105-30 – Minor Collector roads shall have a 40' cartway, curbs, sidewalks, and tree zone: We request a waiver from this section to leave the existing streets in their current conditions and not widen the cartways to 40' or install additional sidewalks and tree zones.

Street Trees

7. 105-48 – Installation of street trees along all streets where suitable trees do not exist: We request a waiver from this section to allow the number and location of trees as shown on the Landscape Plan. There are existing street trees in the area of the proposed rain garden and no improvements are proposed along the rest of the property frontage.

Buffer Yards

8. 105-52 – Buffer yards are required between land developments: We request a waiver from this section because the proposed addition will be connected to the existing building, which already located directly adjacent to the property line, so a buffer yard is not feasible. The proposed building addition will be located adjacent to the Schuylkill River Trail and will not negatively impact adjacent properties.

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August 23, 2022

SENT VIA ELECTRONIC MAIL ONLY

Ms. Christina Whitty
Nave Newell, Inc.
900 West Valley Road, Suite 110
Wayne, PA 19087
cwhitty@navenewell.net

Re: Act 537 Planning Waiver
AIM Academy Addition
DEP Code No. 1-46960-338-X
Whitemarsh Township
Montgomery County

Dear Ms. Whitty:

This letter is in response to the application for Sewage Facilities Planning Modules for the construction of an 8,590-square-foot addition to an existing school to accommodate the existing student population. This project is located at 1200 River Road in Whitemarsh Township, Montgomery County, on Tax Map Parcel 65-00-10066-00-3.

The Department of Environmental Protection (DEP) has determined that sewage facilities planning is not required for this project. Therefore, no planning modules are required to be submitted to DEP.

The determination that sewage planning is not required is based on the applicant's representation that the proposed construction and use of the new addition will produce no increase in sewage flows or school population. Previous planning approval for the Academy in Manayunk (DEP Code No. 1-46960-297-3, issued November 25, 2014) allowed for a maximum of 400 students, 100 staff, and flows of 3,420 gallons of sewage per day. Should any further subdivision, improvements and/or additional uses be proposed for the property, or should the school population or sewage flows increase, the project sponsor must submit an application mailer to DEP in order to determine whether additional sewage facilities planning is required.

This response is only a determination of planning requirements under the Pennsylvania Sewage Facilities Act concerning the above-referenced project. We recommend that you contact Whitemarsh Township regarding any additional local requirements applicable to this project.

If you have any questions or concerns, please contact me at 484.250.5179 or subanks@pa.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Suzanne Banks". The signature is fluid and cursive, with the first name "Suzanne" being more prominent than the last name "Banks".

Suzanne Banks
Sewage Planning Specialist 2
Clean Water

Cc: Montgomery County Planning Commission (via email)
Montgomery County Health Department (via email)
Whitemarsh Township (via email)
BPG Office VI River Park II, LP (via email)
Planning Section
Re