SNIPES TRACT ATHLETIC FIELDS

LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

PENNSYLVANIA ACT 287 OF 1974 AS AMENDED UTILITY USERS LIST

BUCKS COUNTY WATER AND SEWER AUTHORITY
1275 ALMSHOUSE ROAD
WARRINGTON, PA 18976
215-343-2538 - EXT. 107
CYNDI NADEAU
SENIOR ENGINEERING TECHNICIAN
ENGINEERING@BCWSA.NET

FALLS TOWNSHIP AUTHORITY
557 LINCOLN HIGHWAY
FAIRLESS HILLS, PA 19030
215-946-6062

LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067
267-274-1100

TOWNSHIP OF LOWER MAKEFIELD
SEWER AUTHORITY
1100 EDGEWOOD ROAD
YARDLEY, PA 19067
267-274-1100

COMCAST CABLEVISION
940 PROSPECT STREET
TRENTON, NJ 08618
800-266-2278

PECO ENERGY COMPANY
2301 MARKET STREET
PHILADELPHIA, PA 19101
800-494-4000

PENNSYLVANIA AMERICAN WATER
800 W. HERSHEYPARK DRIVE
HERSHEY, PA 17033
800-565-7292

VERIZON PENNSYLVANIA
900 RACE STREET
PHILADELPHIA, PA 19107
215-269-5159

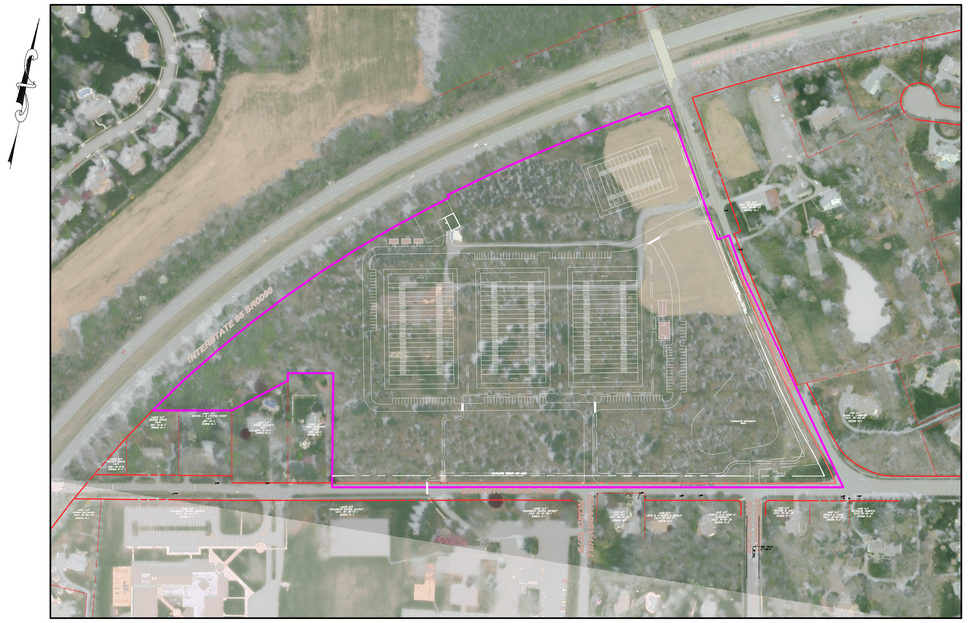
PENNSYLVANIA ONE CALL SYSTEM, INC.
1-800-242-1776
STOP! CALL BEFORE YOU DIG

BEFORE YOU DIG ANYWHERE IN
PENNSYLVANIA! CALL 1-800-242-1776
NON-MEMBERS MUST BE CONTACTED DIRECTLY

PA LAWS REQUIRES THREE WORKING DAYS
NOTICE TO UTILITIES BEFORE YOU EXCAVATE,
DRILL, BLAST OR DEMOLISH

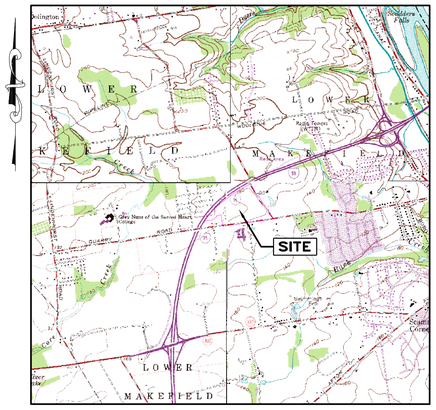
20162291370

THE CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES BEFORE THE START OF WORK.



OVERALL SITE

0 100 200 400 600
SCALE : 1"= 200'



LOCATION MAP

0 1000 2000 4000 6000
SCALE : 1"=2,000'
SOURCE MAP: USGS QUAD MAP

DRAWING INDEX

CIVIL ENGINEERS
Boucher & James, Inc.
CONSULTING ENGINEERS
1456 FERRY ROAD - BUILDING 500
DOYLESTOWN, PA 18901
VOICE: (215) 345-9400
FAX: (215) 345-9401

APPLICANT
LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067
VOICE: (267) 274-1100
FAX: (215) 493-3053

ENGINEER | SURVEY | LANDSCAPE ARCHITECT

SNIPES TRACT ATHLETIC FIELDS

FINAL PLAN
JOB NO. 1677054L
NOVEMBER 14, 2016
LAST REVISED OCTOBER 20, 2017
SHEET 1 OF 14

P:\2016\1677054\Dwg\Final Dwgs\01-Cvr.dwg || Tatiana 01-Cvr || Nov. 09, 2017 - 1:17pm || twallace

CERTIFICATION OF APPROVAL BY THE BUCKS COUNTY PLANNING COMMISSION:

BCPC No. ______________

PROCESSED AND REVIEWED. REPORT PREPARED BY THE BUCKS COUNTY PLANNING COMMISSION IN ACCORDANCE WITH THE MUNICIPALITIES PLANNING CODE.

CERTIFIED THIS DATE ____

____
(Executive Director, Bucks County Planning Commission)

CERTIFICATION OF APPROVAL BY THE
LOWER MAKEFIELD TOWNSHIP BOARD OF SUPERVISORS:

APPROVED BY THE LOWER MAKEFIELD TOWNSHIP BOARD OS SUPERVISORS THIS ________ DAY OF ________________, 20____.

____

____

____

RECORDING CERTIFICATION – COUNTY OF BUCKS

RECORDED IN THE OFFICE OF THE RECORDING OF DEEDS, BUCKS COUNTY, PENNSYLVANIA IN PLAN BOOK ________________, PAGE ________________, ON THE ______ DAY OF ______________. 20__.

____
(Recorder of Deeds)

OWNERS ACKNOWLEDGEMENT

TO ALL WHOM THESE PRESENTS MAY COME, KNOW YE THAT
I/WE ____
HAVE LAID OUT UPON MY/OUR LAND SITUATED IN THE TOWNSHIP OF LOWER MAKEFIELD, COUNTY OF BUCKS, COMMONWEALTH OF PENNSYLVANIA CERTAIN IMPROVEMENTS ACCORDING TO THIS PLAN WHICH IS INTENDED TO BE FORTHWITH RECORDED. WITNESS OUR HAND THIS

______ DAY OF ________________, 20___

__________ ______________ BY: ________________________
WITNESS

COMMONWEALTH OF PENNSYLVANIA, COUNTY OF BUCKS

ON THE________ DAY OF ________________, 20____ BEFORE ME, THE SUBSCRIBER, A NOTARY PUBLIC OF THE COMMONWEALTH OF PENNSYLVANIA, RESIDING IN ________________ PERSONALLY APPEARED ________________, WHO ACKNOWLEDGED THIS PLAN TO BE THE OFFICIAL PLAN OF PROPERTY SHOWN THEREON, SITUATED IN THE TOWNSHIP OF LOWER MAKEFIELD , COUNTY OF BUCKS, COMMONWEALTH OF PENNSYLVANIA AND DESIRED THAT THIS PLAN BE RECORDED ACCORDING TO LAW. WITNESS MY HAND AND NOTARIAL SEAL, THE DAY AND YEAR AFORESAID.

____
NOTARY PUBLIC

MY COMMISSION EXPIRES ______________ ________
(SEAL)

PROFESSIONAL SURVEYOR CERTIFICATION

I GLENN D. MONTELEONE, P.L.S. DO HEREBY CERTIFY THAT THE EXISTING FEATURES, TOPOGRAPHY AND BOUNDARY SHOWN ON THIS PLAN WAS CONFIRMED BY A FIELD SURVEY PERFORMED BY:

(Signature–Profesional Engineer/ Surveyor) (Registration Number) (Date)

PROFESSIONAL ENGINEER CERTIFICATION

TO THE BEST OF MY KNOWLEDGE, THESE PLANS ARE IN CONFORMITY WITH ENGINEERING, ZONING, BUILDING, SANITATION AND OTHER APPLICABLE TOWNSHIP ORDINANCES AND REGULATIONS EXCEPT AS NOTED BY THE VARIANCE AND WAIVER REQUESTS LISTED ON THIS SHEET.

____
(MARK W. EISOLD, P.E.)

GENERAL NOTES – PARCEL 20-016-002

1. BOUNDARY INFORMATION IS BASED ON A SURVEY COMPLETED BY BOUCHER & JAMES, INC. IN JULY AND AUGUST OF 2016.
2. EQUITABLE OWNER: LOWER MAKEFIELD TOWNSHIP
TMP #20-016-002
DEED BOOK/PAGE 2121-2329
LOWER MAKEFIELD TOWNSHIP
COUNTY OF BUCKS, PENNSYLVANIA
3. APPLICANT: LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067
4. TOTAL SITE AREA: 1,492,493 S.F. (34.26 A.C.)
5. ZONING DATA: R-1 RESIDENTIAL LOW-DENSITY
USE: PUBLIC RECREATIONAL FACILITY

	REQUIRED	EXISTING	PROPOSED*
MIN. NET LOT AREA:	1.00 AC.	34.26 AC. (1,492,493 S.F.)	32.86 AC. (1,431,544 S.F.)**
MIN. LOT WIDTH:	160 FT.	915.89 FT.	1278 FT. (DOLINGTON ROAD)
MIN. YARD SETBACKS			
FRONT (FYSB) (DOLINGTON RD)	80 FT.	801.08 FT.	80 FT.
FRONT (FYSB) (QUARRY RD)	80 FT.	786.77 FT.	446.08 FT.
FRONT (FYSB) (I-95)	100 FT.	96.11 FT.	26 FT.***
SIDE (SYSB):	25 FT.	550.70 FT.	460.11 FT.
REAR (RSYB):	75 FT.	550.70 FT.	460.11 FT.
BUILDING HEIGHT:	35 FT.	< 35 FT.	< 35 FT.
MAX. IMPERVIOUS COVERAGE:	18%	2.15% (32,147 S.F.)	12.40% (177,478 S.F.)

* PROPOSED TO BE CONSOLIDATED WITH PARCEL 20-016-001-001
** ULTIMATE RIGHT-OF-WAY: 2.269 AC. (98,845 S.F.) AND NATURAL RESOURCES PROTECTION AREA (49,223 S.F.) REMOVED FROM NET LOT AREA OF EXISTING CONSOLIDATED PARCEL.
*** VARIANCE GRANTED

PARKING REQ: 1 SPACES FOR EACH 3 PERSONS OF TOTAL CAPACITY FOR PUBLIC RECREATIONAL FACILITY
PARKING PROVIDED: 157 SPACES (7 HANDICAP SPACES AND 150 STANDARD SPACES)
TOTAL CAPACITY: 468 PEOPLE

5. THE PROPERTY SHOWN HEREON IS SUBJECT TO ANY RIGHTS-OF-WAY, EASEMENTS AND/OR COVENANTS OF RECORD THAT A TITLE REPORT MAY DISCLOSE.
6. BEARINGS SHOWN HEREON BASED ON NAD 83 STATE PLANE COORDINATES.
7. EXISTING FEATURES AND TOPOGRAPHIC INFORMATION SHOWN HEREON BASED ON A SURVEY PERFORMED BY BOUCHER & JAMES INC IN JANUARY 2016 AND JUNE 2016 AND REPRESENTS EXISTING CONDITIONS AT THAT TIME.
8. BOUCHER & JAMES, INC. HAS NOT PERFORMED A VERIFICATION SURVEY TO DETERMINE THE EXISTENCE OF ANY UNDERGROUND UTILITY LINES WHICH MAY NOT HAVE BEEN VISIBLE AT THE TIME OF THE SURVEY.
9. ANYONE USING THIS DRAWING FOR CONSTRUCTION IS ADVISED TO CALL 1-800-242-1776 PRIOR TO EXCAVATION IN ACCORDANCE WITH PA ACT NO. 287 OF 1974, AS AMENDED.
10. THE SITE IS LOCATED IN ZONE X, OUTSIDE THE 100 FLOODPLAIN BASED ON THE FLOOD INSURANCE RATE MAP FOR LOWER MAKEFIELD TOWNSHIP, BUCKS COUNTY, PENNSYLVANIA ON MAP #42017C0453J, PANEL 453 OF 532, EFFECTIVE DATE: MARCH 16, 2015 AS PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA).
11. ALL DIMENSIONS SHOWN HEREON ARE IN FEET AND DECIMALS THEREOF UNLESS OTHERWISE NOTED.
12. SHEETS 2 THROUGH 14 INCLUSIVE, ON RECORD AT LOWER MAKEFIELD TOWNSHIP, SHALL BE CONSIDERED A PART OF THE APPROVED FINAL PLAN AS IF RECORDED WITH SAME.
13. THE SITE IS PRESENTLY NOT SERVED BY WATER OR SANITARY SEWER. PUBLIC WATER SERVICE AND SANITARY SEWER ARE PROPOSED FOR THE SITE.
14. VERTICAL DATUM IS BASED ON NAVD 88 AND WAS ESTABLISHED BY GPS OBSERVATIONS.
15. CLEAR SIGHT TRIANGLES SHALL BE MAINTAINED WITHIN WHICH VEGETATION AND OTHER VISUAL OBSTRUCTIONS SHALL BE LIMITED TO A HEIGHT OF NOT MORE THAN 1.5 FEET ABOVE STREET LEVEL.

GENERAL NOTES – PARCEL 20-016-001-001

1. BOUNDARY INFORMATION IS BASED ON A SURVEY COMPLETED BY BOUCHER & JAMES, INC. IN JULY AND AUGUST OF 2016.
2. EQUITABLE OWNER: LOWER MAKEFIELD TOWNSHIP
TMP #20-016-001-001
DEED BOOK/PAGE 1599-1978
LOWER MAKEFIELD TOWNSHIP
COUNTY OF BUCKS, PENNSYLVANIA
3. APPLICANT: LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067
4. TOTAL SITE AREA: 87,120 S.F. (2.00 A.C.)
5. ZONING DATA: R-1 RESIDENTIAL LOW-DENSITY
USE: RECREATIONAL

WAIVERS GRANTED

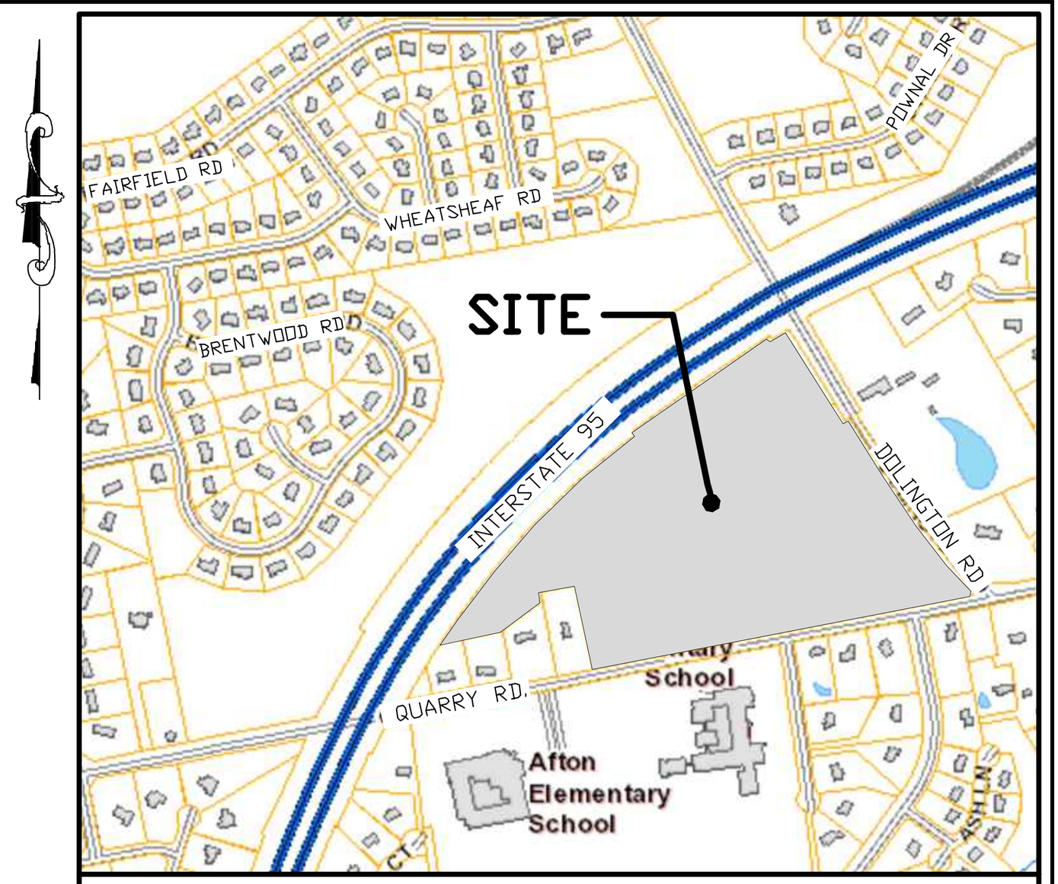
THE FOLLOWING WAIVERS HAVE BEEN GRANTED FROM THE LOWER MAKEFIELD TOWNSHIP SUBDIVISION AND LAND DEVELOPMENT ORDINANCE BY THE BOARD OF SUPERVISORS AT THEIR PUBLIC MEETING ON MAY 30, 2017:

SECTION	WAIVER REQUEST
SALDO SECTION 178-20.C.(9)	TO NOT BE REQUIRED TO SHOW SIGNIFICANT MANMADE FEATURES WITHIN 200 FEET OF THE SITE. TO INSTEAD ACCEPT AN AERIAL PHOTOGRAPH OF THE SITE AND SURROUNDING AREA.
SALDO SECTION 178-20.C.(10)	TO NOT BE REQUIRED TO PROVIDE A TREE INVENTORY OF EXISTING MATURE TREES ONSITE 8 INCHES OR MORE IN CALIPER MEASURED 4 FEET ABOVE GRADE LEVEL.
SALDO SECTION 178-20.E.(29)	TO NOT BE REQUIRED TO PROVIDE SAMPLES OF ADJACENT ROADS.
SALDO SECTION 178-53.A	TO ALLOW LIGHTING FIXTURES FOR THE ATHLETIC FIELDS WITH A MOUNTING HEIGHT EXCEEDING 20 FEET.
SALDO SECTION 178-56.A.	TO NOT BE REQUIRED TO PROVIDE A 30 FOOT WIDE EASEMENT FOR STORM AND SANITARY SEWER SINCE THE TOWNSHIP OWNS THE SITE AND THEREFORE HAS FULL ACCESS.
SALDO SECTION 178-56.C.	TO BE PERMITTED TO INSTALL A PAVED BIKEPATH WITHIN AN EXISTING (UNUSED) SANITARY SEWER EASEMENT ON THE SITE, IN ORDER TO MINIMIZE DISTURBANCE OF STEEP SLOPES.
SALDO SECTION 178-93.F.(3)(H)	TO BE PERMITTED TO PROVIDE LESS THAN 2 FEET OF COVER OVER STORM SEWER IN GRASSED AREAS.
SALDO SECTION 178-93.F.(5)(b)	TO NOT BE REQUIRED TO MATCH PIPE CROWNS OR TO PROVIDE A 2 INCH DROP ACROSS THE BOTTOM OF INLETS #2 AND #3 (INFILTRATION TRENCH) AND INLET #7 IN ORDER TO PROVIDE SUFFICIENT PIPE COVER AND PIPE SLOPE.
SALDO SECTION 178-95.C.(7)&(8)	TO PERMIT GRADING AT LESS THAN 2 PERCENT SLOPE IN THE AREAS OF THE ATHLETIC FIELDS, SKATE PARK AND SWALES, IN ORDER TO MEET ATHLETIC FIELD DESIGN STANDARDS AND MINIMIZE TREE DISTURBANCE.
SALDO SECTION 178-95.C.(10)	TO NOT BE REQUIRED TO PROVIDE A 6 INCH DROP WITHIN 15 FEET OF THE PROPOSED CONCESSION STAND BUILDING DUE TO THE PROXIMITY OF THE PROPOSED SIDEWALK AROUND THE BUILDING.
CHAPTER 173 DELAWARE RIVER SOUTH STORMWATER MANAGEMENT ORDINANCE (SWMO)	
SWMO 173-12.K	TO NOT REQUIRE THAT THE STORMWATER RUNOFF DETENTION FACILITIES COMPLETELY DRAIN BOTH THE VOLUME CONTROL AND RATE CONTROL CAPACITIES OVER A PERIOD OF 24 HOURS FROM THE END OF THE DESIGN STORM.
SALDO SECTION 178-93.B.(3)(a) & SWMO 173-14.C.(6)(G)	TO NOT BE REQUIRED TO PERFORM GROUNDWATER MOUNDING ANALYSIS FOR THE PROPOSED INFILTRATION AREAS SINCE THERE ARE NOT BUILDINGS WITH BASEMENTS NEAR THE PROPOSED INFILTRATION AREAS.

VARIANCE GRANTED

THE FOLLOWING VARIANCES FROM THE LOWER MAKEFIELD TOWNSHIP ZONING ORDINANCE WERE GRANTED BY THE ZONING HEARING BOARD AT THEIR PUBLIC MEETING ON NOVEMBER 15, 2016:

SECTION	VARIANCE REQUEST
200-18	TO NOT BE REQUIRED TO PROVIDE A 100 FOOT SETBACK FROM AN ARTERIAL ROAD (I-95)
200-63	TO ALLOW THE PROPOSED EQUIPMENT SHEDS WITHIN 26 FEET AND THE SALT STORAGE SHED WITHIN 49 FEET OF THE I-95 RIGHT-OF-WAY. TO NOT BE REQUIRED TO PROVIDE AN 80 FOOT SETBACK FROM A COLLECTOR ROAD (DOLINGTON ROAD) TO ALLOW THE PROPOSED SKATEPARK WITHIN 44 FEET OF THE DOLINGTON ROAD RIGHT-OF-WAY.



LOCATION MAP
SCALE: 1"=800'
BUCKS COUNTY GIS TAX MAP

LEGEND

- ADJOINER LINE
- EXISTING BOUNDARY
- EXISTING RIGHT-OF-WAY
- 288 EXISTING CONTOUR
- 290 EXISTING INDEX CONTOUR
- EXISTING DRIVEWAY
- EXISTING CHAINLINK FENCE
- EXISTING TREELINE
- SOILS BOUNDARY
- MON FND □ EXISTING MONUMENT
- PROPOSED BUILDING
- PROPOSED BUILDING SETBACKS
- PROPOSED CENTERLINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED SIGN
- PROPOSED SIDEWALK
- PROPOSED TRAIL
- PROPOSED TREELINE
- ■ PROPOSED MONUMENT
- ▨ PROPOSED PERVIOUS PAVEMENT

SIGN TABULATION

ID	SERIES NUMBER/ DESCRIPTION
A	R1-1: STOP SIGN
B	R7-8: RESERVED PARKING SIGN
	R7-8A: VAN ACCESSIBLE SIGN
	R7-8F: SUPPLEMENTAL FINE SIGN

IMPROVEMENTS SHOWN WITHIN THE DOLINGTON ROAD AND QUARRY ROAD ULTIMATE RIGHT-OF-WAY ARE FOR INFORMATIONAL PURPOSES ONLY AND SHALL NOT BE COMPLETED AS PART OF THIS CONTRACT

Written dimensions shall have priority over scaled dimensions. All dimensions, elevations, locations, and conditions, shall be verified by the Contractor prior to construction, and the Owner and Boucher & James, Inc. shall be notified of any discrepancies with the information shown on drawings.
Only those plans incorporating the raised or red ink professional seal shall be considered official and relied upon. All ideas, designs and arrangements presented hereon were developed for use on, and in connection with, the specified project being prepared for the Owner. These plans may not be reproduced or altered without the expressed written permission of Boucher & James, Inc.
Information shown on this plan represents professional services expressing ideas and designs developed, owned and copyrighted by Boucher & James, Inc. Reproduction of this plan without written approval of Boucher & James, Inc. is not permitted. Unauthorized reproduction of a copy of this plan for any purpose will be considered a violation of the copyright laws and a theft of corporate assets. Unauthorized alterations of the plan will be considered a violation of the professional code of ethics. Any violation will be prosecuted to the fullest extent of current statutes.

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!
KNOW WHAT'S BELOW CALL BEFORE YOU DIG!
PENNSYLVANIA ACT 287 OF 1974 (AS AMENDED) REQUIRES 3 WORKING DAYS NOTICE FOR EXCAVATION PHASE AND 10 WORKING DAYS IN DESIGN STAGE – STOP! CALL!
PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800 242-1776 or 811
PA ONE-CALL SERIAL No.
SERIAL NO. 20162291370
AUGUST 16, 2016

REVISIONS :

DATE	DESCRIPTION	DATE	DESCRIPTION
01/31/17	PLANS UPDATED WITH INFILTRATION PIT LOCATIONS AND NPDES NOTES		
05/02/17	PER ENGINEER REVIEW LETTER		
05/16/17	PER ENGINEER & EAC REVIEW LETTERS		
05/19/17	REVISED INFILTRATION TRENCH INLET 2 TO 3		
06/07/17	REVISED PER CONDITIONS OF APPROVAL		
06/30/17	REVISED PER PRE-BID MEETING		
07/07/17	REVISED PER ADDENDUM 2		
10/20/17	REVISED EXISTING AND PROPOSED WATER LINE		

PROJECT :
SNIPES TRACT ATHLETIC FIELDS
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT :
LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

0 30 60 120 180
SCALE : 1"= 60'

JOB NO.: 1677054L
DRAWN BY: TMW
CHECKED BY: MES
SCALE: 1" = 60'
PLAN STATUS: FINAL

TITLE : RECORD PLAN

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN STROUDSBURG LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345-9400 FAX: (215) 345-9401
www.bjengineers.com

SHEET 2 OF 14

PROJECT NAME : SNIPES TRACT ATHLETIC FIELDS

DATE: NOVEMBER 14, 2016

SITE CAPACITY CALCULATIONS

BASE SITE AREA CALCULATIONS

GROSS SITE AREA:	36.26 ACRES
MINUS LANDS WITHIN RIGHT OF WAY:	2.269 ACRES
MINUS LANDS WITH COVENANTS/CONS. ESMTS:	0.00 ACRES
EQUALS BASE SITE AREA:	33.99 ACRES

RESOURCE PROTECTED LANDS

	I NATURAL RESOURCE	II PERCENT OF RESOURCE TO BE PROTECTED	III TOTAL NATURAL RESOURCE LAND IN ACRES	IV TOTAL RESOURCE PROTECTED LAND (II X III)	V PROPOSED TOTAL RESOURCE PROTECTED LAND
HYDROLOGIC SURFACE FEATURES:	FLOODPLAIN	100%	0	–	0 ACRES (100%)
	FLOODPLAIN SOILS (DELAWARE RIVER)	50%	0	–	0 ACRES (100%)
	LAKES OR PONDS	100%	0	–	0 ACRES (100%)
	WETLANDS	100%	0	–	0 ACRES (100%)
	LAKE AND POND SHORELINE	100%	0	–	0 ACRES (100%)
	WETLAND AND WATERCOURSE BUFFER	100%	0	–	0 ACRES (100%)
SLOPES:	CLASS 1 STEEP SLOPE (8% TO LESS THAN 15%)	50%	0.97	0.485	0.76 ACRES (78%)
	CLASS II STEEP SLOPE (15% TO 25%)	70%	0.16	0.08	0.14 ACRES (88%)
	CLASS III STEEP SLOPE (GREATER THAN 25%)	100%	–*	–	0 ACRES (100%)
WOODLANDS:	WOODLAND ASSOCIATIONS	70%	–**	–	0 ACRES (100%)
TOTALS:			1.13	0.565	0.9 ACRES (80%)

* DENOTES AREA LESS THAN 3,000 S/F OR LOCATED WITHIN GREATER RESOURCE RESTRICTED OVERLAY
**EXISTING TREES ON SITE ARE A TREE NURSERY AND ARE NOT CONSIDERED WOODLANDS

NET BUILDABLE SITE AREA CALCULATIONS

BASE SITE AREA:	33.99 ACRES
MINUS RESOURCE PROTECTED LANDS:	1.13 ACRES
EQUALS NET BUILDABLE SITE AREA:	32.86 ACRES

MAJOR SOIL PROPERTIES AND ESTIMATED DEGREE OF LIMITATION

MAP SYMBOL	SOIL	HYDROLOGIC SOIL GROUP	DEPTH TO		SOILS FEATURES THAT AFFECT:
			HWT (FT)	BEDROCK (IN)	SHALLOW EXCAVATIONS
AbB	ABBOTTSTOWN SILT LOAM – 3–8% SLOPES	D	0.5'–1.5'	40"–60"	VERY LIMITED DEPTH TO SATURATED ZONE
FoB	FOUNTAINVILLE SILT LOAM – 3–8% SLOPES	C	1.5'–2.5'	40"–60"	VERY LIMITED DEPTH TO SATURATED ZONE LIMITED DEPTH TO BEDROCK
PnB	PENN–LANSDALE COMPLEX – 3–8% SLOPES	B	>6.5'	20"–40"	NOT LIMITED

SOURCE: SOIL INFORMATION WERE OBTAINED FROM WEB SOIL SURVEY MAPS OF BUCKS COUNTY, PENNSYLVANIA DATED OCTOBER 14, 2013 BY THE NATURAL RESOURCES CONSERVATION SERVICE.

NATURAL RESOURCE PROTECTION INVENTORY

NATURAL RESOURCE	TOTAL AREA ACRES (SF)	PROTECTION RATIO	REQUIRED PROTECTION – AC.	PROVIDED PROTECTION – AC.
SLOPES 8–15%	0.97 AC (42,253 SF)	50%	0.485 AC (21,127 SF)	0.76 AC (78%) (33,106 SF)
SLOPES 15–25%	0.16 AC (6,969 SF)	70%	0.112 AC (4,878 SF)	0.14 AC (88%) (6,098 SF)
SLOPES 15–25%	0.00 AC*	100%	–	–
WOODLANDS	0 AC**	70%	–	–

* DENOTES AREA LESS THAN 3,000 S/F
**EXISTING TREES ON SITE ARE A TREE NURSERY AND ARE NOT CONSIDERED WOODLANDS

NOTES

BOUNDARY INFORMATION AND EXISTING FEATURES SHOWN HEREON BASED ON A SURVEY PERFORMED BY BOUCHER & JAMES INC IN JULY AND AUGUST OF 2016 AND REPRESENTS EXISTING CONDITIONS AT THAT TIME.

BEARINGS SHOWN HEREON BASED ON NAD 83 STATE PLANE COORDINATES.

THE SITE IS LOCATED IN ZONE X, OUTSIDE THE 100 FLOODPLAIN BASED ON THE FLOOD INSURANCE RATE MAP FOR LOWER MAKEFIELD TOWNSHIP, BUCKS COUNTY, PENNSYLVANIA ON MAP #42017C0453J, PANEL 453 OF 532, EFFECTIVE DATE: MARCH 16, 2015 AS PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA).

LEGEND

- ADJOINER LINE
- EXISTING BOUNDARY
- EXISTING BUILDINGS
- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- EXISTING CURBLINE
- EXISTING DRIVEWAY
- EXISTING ELECTRIC STRUCTURES
- EXISTING EDGE OF PAVEMENT
- EXISTING CHAINLINK FENCE
- EXISTING FIRE HYDRANT
- EXISTING GUIDE RAIL
- EXISTING IRON PIN/PIPE
- EXISTING MONUMENT
- EXISTING LEGAL RIGHT–OF–WAY
- EXISTING SANITARY SEWER STRUCTURES
- EXISTING SANITARY EASEMENT
- EXISTING SIGN
- EXISTING STORM SEWER STRUCTURES
- EXISTING TREELINE TO BE REMOVED
- EXISTING TREELINE TO REMAIN
- EXISTING UTILITY POLE AND GUY WIRE
- EXISTING WATER STRUCTURES
- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- EXISTING SLOPES 8–15%
- EXISTING SLOPES 15–25%
- EXISTING STEEP SLOPES 25% AND GREATER
- LsC MbC MaC SOILS BOUNDARY AND DESIGNATOR

Written dimensions shall have priority over scaled dimensions. All dimensions, elevations, locations, and conditions, shall be verified by the Contractor prior to construction, and the Owner and Boucher & James, Inc. shall be notified of any discrepancies with the information shown on drawings.
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PA ONE-CALL SERIAL No.
SERIAL NO. 20162291370
AUGUST 18, 2016

REVISIONS :

DATE	DESCRIPTION	DATE	DESCRIPTION
01/31/17	PLANS UPDATED WITH INFILTRATION PIT LOCATIONS AND NPDES NOTES		
05/02/17	PER ENGINEER REVIEW LETTER		
05/16/17	PER ENGINEER & EAC REVIEW LETTERS		
05/19/17	REVISED INFILTRATION TRENCH INLET 2 TO 3		
06/07/17	REVISED PER CONDITIONS OF APPROVAL		
06/30/17	REVISED PER PRE-BID MEETING		
07/07/17	REVISED PER ADDENDUM 2		
10/20/17	REVISED EXISTING AND PROPOSED WATER LINE		

PROJECT : SNIPES TRACT ATHLETIC FIELDS
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT : LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

0 30 60 120 180
SCALE : 1"= 60'

JOB NO.: 1677054L
DRAWN BY: TMW
CHECKED BY: MES
SCALE: 1" = 60'
PLAN STATUS: FINAL

TITLE : NATURAL RESOURCE/ EXISTING FEATURES PLAN

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN ◆ STROUDSBURG ◆ LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345-9400 FAX: (215) 345-9401
www.bjengineers.com

SHEET 3 OF 14

PROJECT NAME : SNIPES TRACT ATHLETIC FIELDS

DATE: NOVEMBER 14, 2016

P:\2016\1677054\Dwg\Final Dwgs\03-NRP.dwg || Tabname :03-NPR || Nov 09, 2017 – 1:18pm || twallace

PARKING LOT AND DRIVEWAY CONSTRUCTION NOTES:

NO BITUMINOUS MATERIALS SHALL BE PLACED BETWEEN OCTOBER 31 AND APRIL 1, UNLESS OTHERWISE PERMITTED IN WRITING BY THE ENGINEER.

CONTRACTOR SHALL HAVE THE SOURCE OF MATERIAL SUPPLY APPROVED BY THE ENGINEER PRIOR TO DELIVERY TO THE PROJECT.

PLACED TEMPERATURE RANGE OF BITUMINOUS BASE/WEARING COURSE SHALL BE 130° TO 160°C.

CONTRACTOR SHALL ALLOW THE DESIGNATED ENGINEER'S REPRESENTATIVE TO INSPECT ALL MATERIALS FOR GRADE AND TEMPERATURE PRIOR TO INSTALLATION. THE ENGINEER RESERVES THE RIGHT TO REJECT ANY MATERIALS WHICH DO NOT COMPLY WITH STATE AND LOCAL SPECIFICATIONS FOR USE IN ROADWAY CONSTRUCTION.

CONTRACTOR SHALL VERIFY ALL CONDITIONS AND ELEVATIONS PRIOR TO BEGINNING WORK.

CONTRACTOR SHALL FORM PARKING LOT TO THE ESTABLISHED SUB GRADE ELEVATION AND COMPACT TO 95%.

CONTRACTOR SHALL COAT SURFACES OF MANHOLE FRAMES, VALVE BOX FRAMES, ETC. WITH OIL TO PREVENT BOND WITH ASPHALT PAVEMENT.

NO PAVING MATERIALS SHALL BE PLACED BEFORE THE SUB BASE PASSES A PROOF-ROLL TO THE ENGINEER'S REPRESENTATIVE'S SATISFACTION. SOFT AREAS WILL BE EXCAVATED AND PREPARED TO THE ENGINEER'S REPRESENTATIVE'S SATISFACTION.

NO PAVING SHALL BE INSTALLED IN AREAS OF STANDING WATER.

ALL JOINTS, SEAMS AND SURFACE STRUCTURES (VALVE BOX COVERS, MANHOLE FRAME/COVERS) SHALL BE SEALED WITH AC-20 LIQUID ASPHALT SEALER.

CONTRACTOR SHALL PROHIBIT ALL VEHICULAR TRAFFIC OR LOADS ON NEWLY COMPACTED COURSES FOR 24 HOURS OR UNTIL THE MATERIAL HAS COOLED TO 60°C. ARTIFICIAL COOLING OF THE SURFACE IS PROHIBITED.

IMPROVEMENTS SHOWN WITHIN THE DOLINGTON ROAD AND QUARRY ROAD ULTIMATE RIGHT-OF-WAY ARE FOR INFORMATIONAL PURPOSES ONLY AND SHALL NOT BE COMPLETED AS PART OF THIS CONTRACT

UTILITY NOTES

BY REFERENCE, THE RECORD PLAN NOTES INDICATED ON SHEET 2 OF THE PLAN SET ARE TO BE INCORPORATED INTO THIS PLAN SHEET.

THE ELECTRICAL CONDUIT PIPE SHALL BE 3" PVC PIPE FOR LIGHTING INSTALLED A MIN. OF 2' BELOW FINISHED GRADE. PIPE ENDS TO BE CAPPED ABOVE FINISHED GRADE FOR FUTURE WIRE INSTALLATION.

ALL MATERIALS AND WORKMANSHIP FOR WATER AND SEWER INSTALLATION SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS OF THE BUCKS COUNTY WATER AND SEWER AUTHORITY,

ALL PROPOSED UTILITIES ARE TO BE LOCATED UNDERGROUND.

ALL GRAVITY SANITARY SEWER PIPING SHALL BE 4" SDR-35.

DEPTH OF COVER SHALL BE A MINIMUM OF 4-FEET FOR ALL PIPE.

ALL PRESSURE FITTINGS, VALVES AND PLUGS SHALL UTILIZE COMPRESSION ADAPTER FITTINGS.

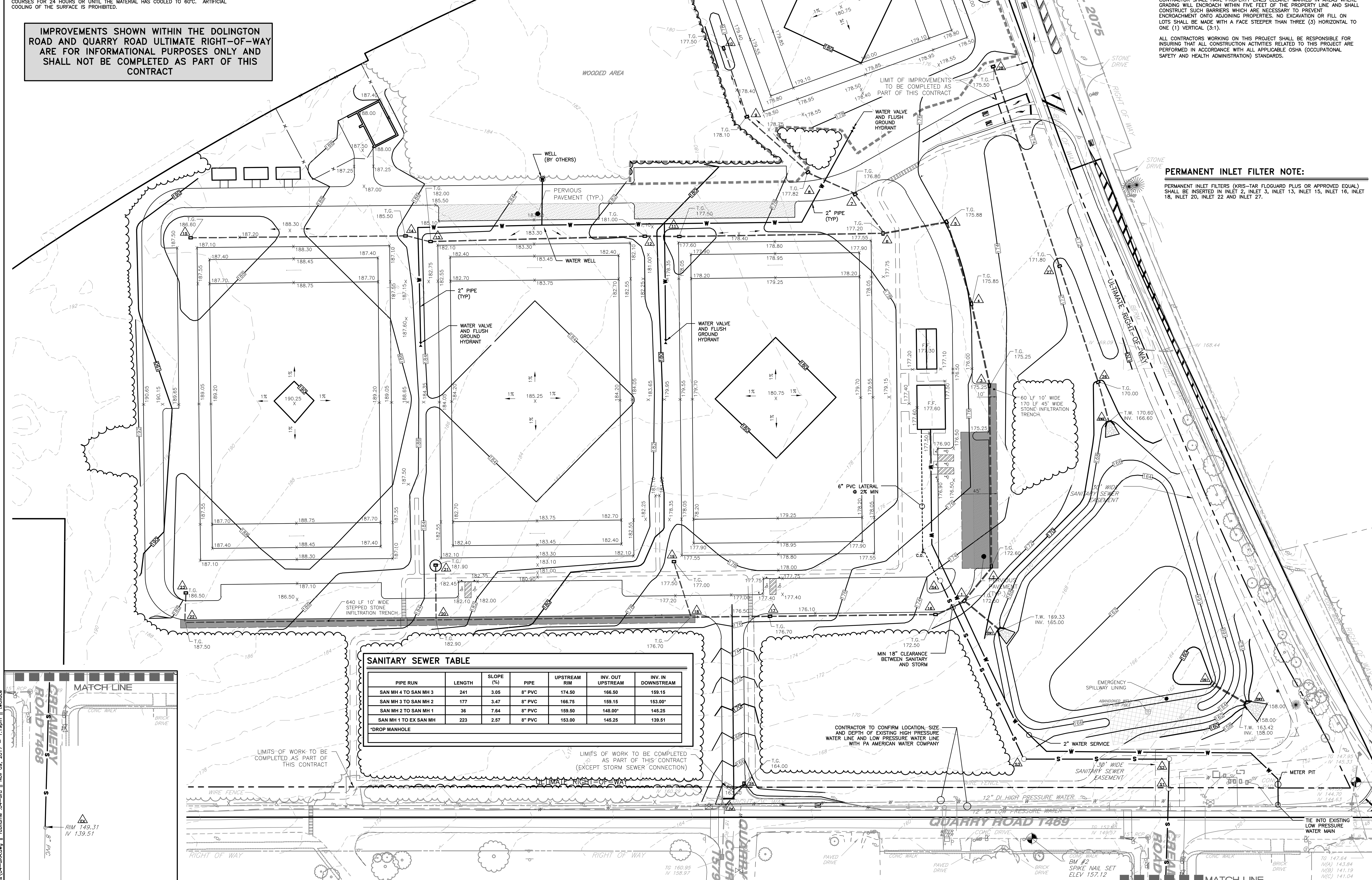
METALLIC PROTECTION TAPE IS REQUIRED ABOVE ALL UTILITIES.

THE CONTRACTOR SHALL TEST ALL WATER LATERALS AND APPURTENANCES IN ACCORDANCE WITH AWWA C600 (LATEST EDITION).

THE CONTRACTOR SHALL DISINFECT AND FLUSH ALL WATER LATERALS AND APPURTENANCES IN ACCORDANCE WITH AWWA C651 (LATEST EDITION).

ALL MATERIALS AND CONSTRUCTION PRACTICES FOR THE INSTALLATION OF WATER MAINS AND APPURTENANCES SHALL CONFORM TO THE MOST RECENT AWWA STANDARDS, AND PADEP PUBLIC WATER SUPPLY STANDARDS.

ALL MATERIALS SHALL BE INSTALLED PER THE MANUFACTURER'S SPECIFICATIONS.



SANITARY SEWER TABLE

PIPE RUN	LENGTH	SLOPE (%)	PIPE	UPSTREAM RIM	INV. OUT UPSTREAM	INV. IN DOWNSTREAM
SAN MH 4 TO SAN MH 3	241	3.05	8" PVC	174.50	166.50	159.15
SAN MH 3 TO SAN MH 2	177	3.47	8" PVC	166.75	159.15	153.00*
SAN MH 2 TO SAN MH 1	36	7.64	8" PVC	159.50	148.00*	145.25
SAN MH 1 TO EX SAN MH	223	2.57	8" PVC	153.00	145.25	139.51

*DROP MANHOLE

GRADING AND DRAINAGE NOTES:

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF LOWER MAKEFIELD TOWNSHIP, AND PENNDOT PUBLICATION 408, LATEST EDITION.

STORM SEWER PIPES SHALL ENTER THE SIDES OF INLET BOXES AND SHALL NOT ENCROACH INTO BOX CORNERS.

EXPANDED INLET BOXES SHALL BE UTILIZED AS NECESSARY.

INLETS EXCEEDING 5' IN DEPTH SHALL BE EQUIPPED WITH STEPS CAST INTO THE WALL OF THE INLET BOX IN ACCORDANCE WITH PENNDOT SPECIFICATION.

ALL INLETS SHALL BE SEALED WITH ASPHALT SEALER AFTER PLACING OF THE FINAL PAVEMENT WEARING COURSE.

ALL STORM WATER PIPING SHALL BE REINFORCED CONCRETE UNLESS OTHERWISE NOTED.

BASIN OUTLET PIPING SHALL HAVE WATERTIGHT, O-RING JOINTS.

THE DETENTION BASIN SHALL BE CONSTRUCTED AND FUNCTIONING PRIOR TO THE CONSTRUCTION OF ANY IMPERVIOUS SURFACES ON THE SITE

THE PROPOSED FINISHED GRADING SHOWN ON THIS PLAN HAS BEEN USED TO DESIGN THE STORM WATER MANAGEMENT FACILITIES.

THE CONTRACTOR SHALL COMPLY WITH THE GENERAL GRADING SCHEME INDICATED UNLESS OTHERWISE APPROVED BY THE TOWNSHIP ENGINEER.

CONTRACTOR SHALL NOT ENCROACH ONTO ADJOINING PROPERTIES UNLESS A TEMPORARY CONSTRUCTION EASEMENT HAS BEEN GRANTED BY THE ADJOINING PROPERTY OWNER.

CONTRACTOR SHALL HAVE PROPERTY LINES CLEARLY MARKED IN AREAS WHERE GRADING WILL ENCROACH WITHIN FIVE FEET OF THE PROPERTY LINE AND SHALL CONSTRUCT SUCH BARRIERS WHICH ARE NECESSARY TO PREVENT ENCROACHMENT ONTO ADJOINING PROPERTIES. NO EXCAVATION OR FILL ON LOTS SHALL BE MADE WITH A FACE STEEPER THAN THREE (3) HORIZONTAL TO ONE (1) VERTICAL (3:1).

ALL CONTRACTORS WORKING ON THIS PROJECT SHALL BE RESPONSIBLE FOR INSURING THAT ALL CONSTRUCTION ACTIVITIES RELATED TO THIS PROJECT ARE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION) STANDARDS.

LEGEND

- ADJOINER LINE
- EXISTING BOUNDARY
- EXISTING BUILDINGS
- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- EXISTING CURBLINE
- EXISTING DRIVEWAY
- EXISTING ELECTRIC STRUCTURES
- EXISTING EDGE OF PAVEMENT
- EXISTING CHAINLINK FENCE
- EXISTING FIRE HYDRANT
- EXISTING GUIDE RAIL
- EXISTING IRON PIN/PIPE
- EXISTING MONUMENT
- EXISTING LEGAL RIGHT-OF-WAY
- EXISTING SANITARY SEWER STRUCTURES
- EXISTING SANITARY EASEMENT
- EXISTING SIGN
- EXISTING STORM SEWER STRUCTURES
- EXISTING TREELINE
- EXISTING UTILITY POLE AND GUY WIRE
- EXISTING WATER STRUCTURES
- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- PROPOSED BUILDING
- PROPOSED ULTIMATE RIGHT-OF-WAY
- PROPOSED EDGE OF PAVEMENT
- PROPOSED SIGN
- PROPOSED TRAIL
- PROPOSED CONTOUR
- PROPOSED INDEX CONTOUR
- X 180.75 PROPOSED SPOT ELEVATION
- PROPOSED TREELINE
- PROPOSED STORM SEWER AND STRUCTURE
- PROPOSED SANITARY SEWER MAIN AND STRUCTURE
- PROPOSED SANITARY SEWER LATERAL
- PROPOSED WATER MAIN AND VALVE BOX
- PROPOSED WATER SERVICE LATERAL

PERMANENT INLET FILTER NOTE:

PERMANENT INLET FILTERS (KRIS-TAR FLOGUARD PLUS OR APPROVED EQUAL) SHALL BE INSERTED IN INLET 2, INLET 3, INLET 13, INLET 15, INLET 16, INLET 18, INLET 20, INLET 22 AND INLET 27.

STORM SEWER TABLE

PIPE RUN	LENGTH	SLOPE (%)	PIPE
INLET 23 to INLET 22	35	0.52	18" HDPE
INLET 22 to INLET 20	309	1.00	18" HDPE PERF.
INLET 21 to INLET 20	66	0.61	18" HDPE
INLET 20 to INLET 18	313	0.99	18" HDPE PERF.
INLET 19 to INLET 18	70	0.50	18" HDPE
INLET 18 to INLET 17	95	0.95	18" HDPE
INLET 17 to INLET 16	202	1.63	18" HDPE
INLET 16 to INLET 1	35	1.70	18" HDPE
INLET 15 to INLET 14	264	0.87	18" HDPE
INLET 14 to INLET 13	28	6.63	18" HDPE
INLET 13 to INLET 12	263	0.89	18" HDPE
INLET 12 to INLET 11	39	3.20	18" HDPE
INLET 11 to INLET 6	251	0.60	24" HDPE
INLET 10 to INLET 9	87	0.52	18" HDPE
INLET 9 to INLET 8	100	0.50	18" HDPE
INLET 8 to INLET 7	62	0.50	18" HDPE
INLET 7 to INLET 6	57	0.51	18" HDPE
INLET 6 to INLET 5	78	0.63	24" HDPE
INLET 5 to INLET 4	103	0.64	24" HDPE
INLET 4 to INLET 3	100	0.66	24" HDPE
INLET 3 to INLET 2	221	0.67	24" HDPE PERF.
INLET 2 to INLET 1	51	2.27	24" HDPE
INLET 1 to ENDWALL 1	54	4.62	24" HDPE
INLET 28 to INLET 27	260	1.44	18" HDPE
INLET 27 to INLET 26	150	1.03	18" HDPE
INLET 26 to ENDWALL 2	50	0.90	18" HDPE
INLET 25 to INLET 24	35	1.97	18" HDPE
OUTLET 1 TO ENDWALL 3	45	2.89	36" RCP

STRUCTURE	GR/ RIM/TW	INV. IN	INV. IN	INV. OUT
INLET 23	186.50			183.85
INLET 22*	187.50	183.67		183.50
INLET 21	181.90			178.90
INLET 20*	183.15	180.40	178.50	177.00
INLET 19	177.00			174.25
INLET 18*	176.70	173.90	173.90	173.70
INLET 17	176.70	172.80		172.60
INLET 16*	172.50	169.30		169.10
INLET 15*	186.60			183.60
INLET 14	185.50	181.30		181.10
INLET 13*	182.00	179.25		179.05
INLET 12	181.00	176.70		176.00
INLET 11	177.50	174.75		174.25
INLET 10	177.50			174.90
INLET 9	177.94	174.45		174.25
INLET 8	177.82	173.75		173.55
INLET 7	176.80	173.24		173.04
INLET 6	177.20	172.75	172.75	172.75
INLET 5	175.88	172.26		172.06
INLET 4	175.85	171.40		171.20
INLET 3*	175.25	170.54		170.54
INLET 2*	172.60	169.05		169.15
INLET 1	172.50	168.50	168.00	167.50
INLET 28	175.50			172.75
INLET 27*	171.80	169.00		168.80
INLET 26	170.00	167.25		167.05
INLET 25	164.00			161.00
EX. INLET 24	162.65	160.32		160.29
ENDWALL 1	169.33			165.00
ENDWALL 2	170.60			166.60
OUTLET 1	164.00	159.50	162.66/ 162.10	159.30
ENDWALL 3	163.42			158.00

*PERMANENT INLET FILTER TO BE INSTALLED IN THESE INLETS (SEE NOTE)

KNOW WHAT'S BELOW CALL BEFORE YOU DIG!
PENNSYLVANIA ACT 287 OF 1974 (AS AMENDED) REQUIRES 3 WORKING DAYS NOTICE FOR EXCAVATION PHASE AND 10 WORKING DAYS IN DESIGN STAGE – STOP! CALL!
PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800 242-1776 or 811
PA ONE-CALL SERIAL No.
SERIAL NO. 20162291370
AUGUST 16, 2016

REVISIONS :

DATE	DESCRIPTION	DATE	DESCRIPTION
01/31/17	PLANS UPDATED WITH INFILTRATION PIT LOCATIONS AND NPDES NOTES		
05/02/17	PER ENGINEER REVIEW LETTER		
05/16/17	PER ENGINEER & EAC REVIEW LETTERS		
05/19/17	REVISED INFILTRATION TRENCH INLET 2 TO 3		
06/07/17	REVISED PER CONDITIONS OF APPROVAL		
06/30/17	REVISED PER PRE-BID MEETING		
07/07/17	REVISED PER ADDENDUM 2		
10/20/17	REVISED EXISTING AND PROPOSED WATER LINE		

PROJECT : SNIPES TRACT ATHLETIC FIELDS
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT : LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

0 25 50 100 150
SCALE : 1"= 50'

JOB NO.: 1677054L
DRAWN BY: TMW
CHECKED BY: MES
SCALE: 1" = 50'
PLAN STATUS: FINAL

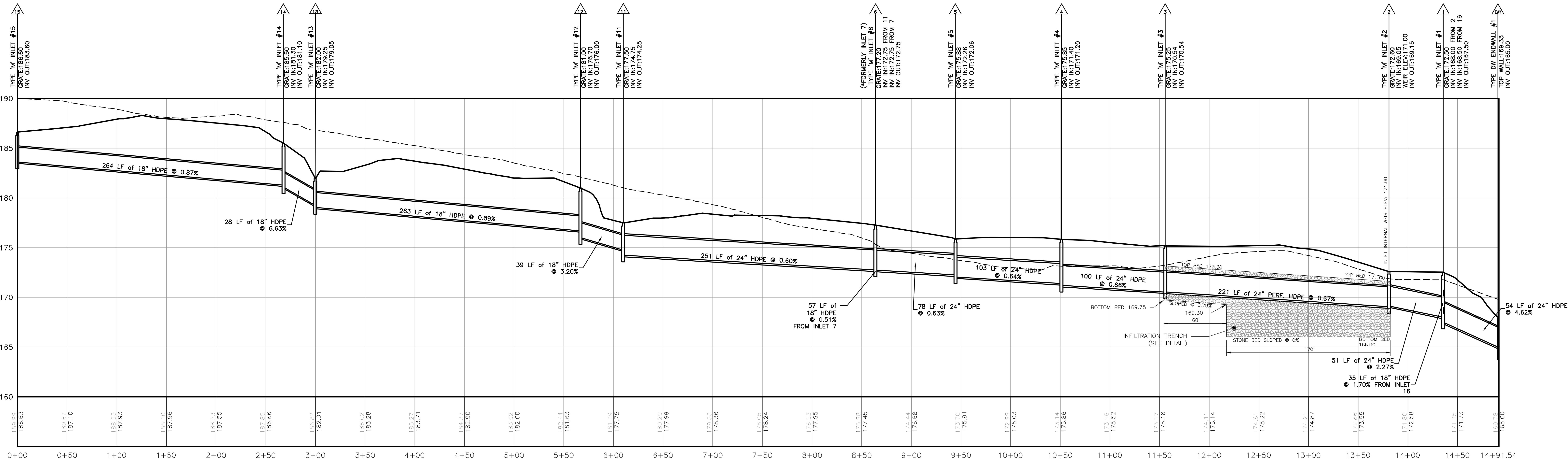
TITLE : GRADING AND UTILITY PLAN

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN ◆ STROUDSBURG ◆ LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345-9400 FAX: (215) 345-9401
www.bjengineers.com

SHEET 4 OF 14

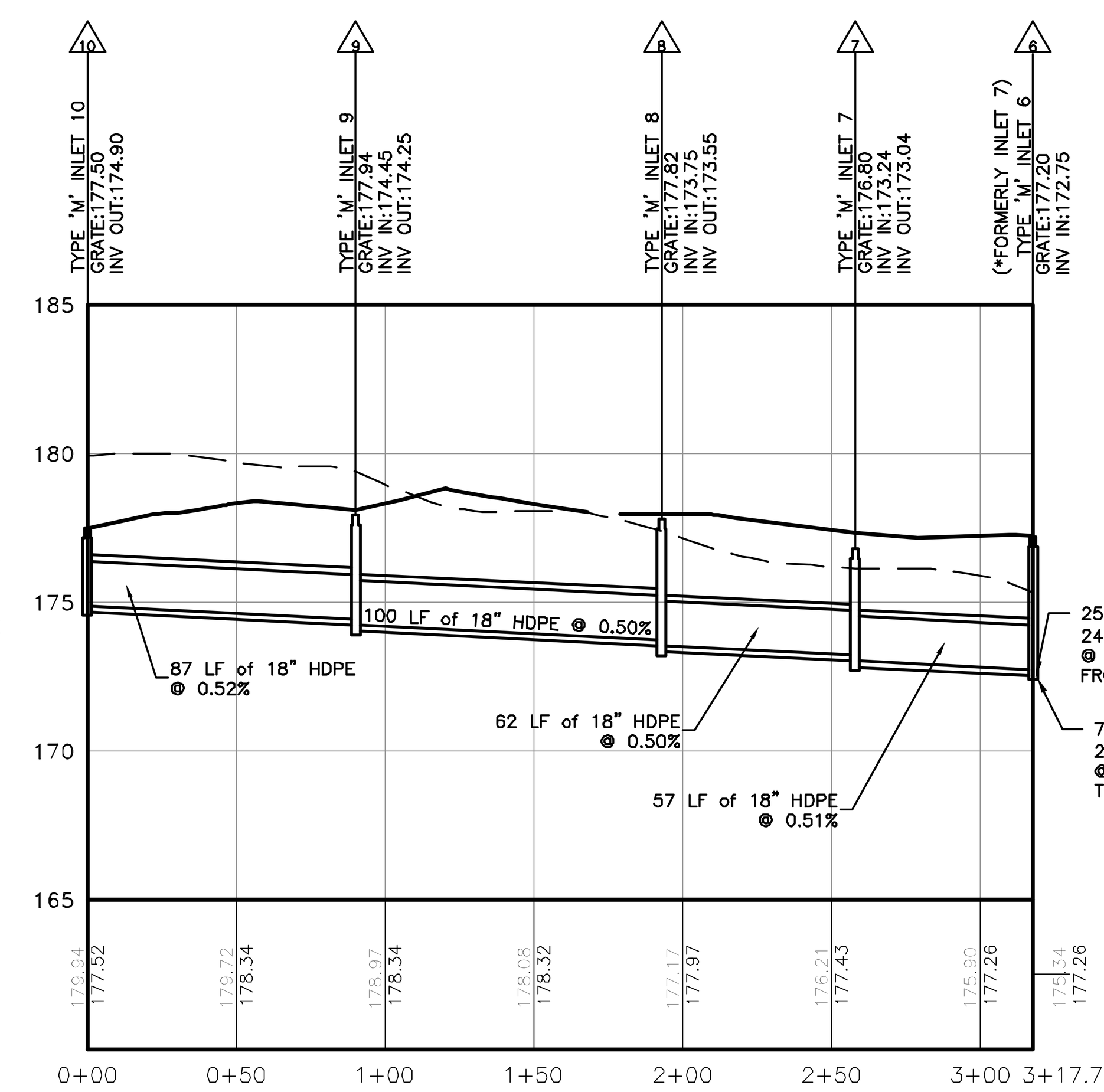
PROJECT NAME : SNIPES TRACT ATHLETIC FIELDS

DATE: NOVEMBER 14, 2016


TYPE 'M' INLET #15 GRATE:186.60 INV OUT:183.60
TYPE 'M' INLET #14 GRATE:185.50 INV IN:181.30 INV OUT:181.10
TYPE 'M' INLET #13 GRATE:182.00 INV IN:179.25 INV OUT:179.05
TYPE 'M' INLET #12 GRATE:181.00 INV IN:176.70 INV OUT:176.00
TYPE 'M' INLET #11 GRATE:177.50 INV IN:174.75 INV OUT:174.25
(*FORMERLY INLET 7) TYPE 'M' INLET #6 GRATE:177.20 INV IN:172.75 FROM 11 INV IN:172.75 FROM 7 INV OUT:172.75
TYPE 'M' INLET #5 GRATE:175.88 INV IN:172.26 INV OUT:172.06
TYPE 'M' INLET #4 GRATE:175.85 INV IN:171.40 INV OUT:171.20
TYPE 'M' INLET #3 GRATE:175.25 INV IN:170.54 INV OUT:170.54
TYPE 'M' INLET #2 GRATE:172.60 INV IN:169.05 WEIR ELEV:171.00 INV OUT:169.15
TYPE 'M' INLET #1 GRATE:172.50 INV IN:168.00 FROM 2 INV IN:168.50 FROM 16 INV OUT:167.50
TYPE DW ENDWALL #1 TOP WALL:169.33 INV OUT:165.00
264 LF of 18" HDPE @ 0.87%
28 LF of 18" HDPE @ 6.63%
263 LF of 18" HDPE @ 0.89%
39 LF of 18" HDPE @ 3.20%
251 LF of 24" HDPE @ 0.60%
57 LF of 18" HDPE @ 0.51% FROM INLET 7
78 LF of 24" HDPE @ 0.63%
103 LF of 24" HDPE @ 0.64%
100 LF of 24" HDPE @ 0.66%
TOP BED 173.30
221 LF of 24" PERF. HDPE @ 0.67%
BOTTOM BED 169.75
SLOPED @ 0.79%
169.30
60'
INFILTRATION TRENCH (SEE DETAIL)
STONE BED SLOPED @ 0%
170'
BOTTOM BED 166.00
TOP BED 171.60
INLET INTERNAL WEIR ELEV: 171.00
51 LF of 24" HDPE @ 2.27%
35 LF of 18" HDPE @ 1.70% FROM INLET 16
54 LF of 24" HDPE @ 4.62%

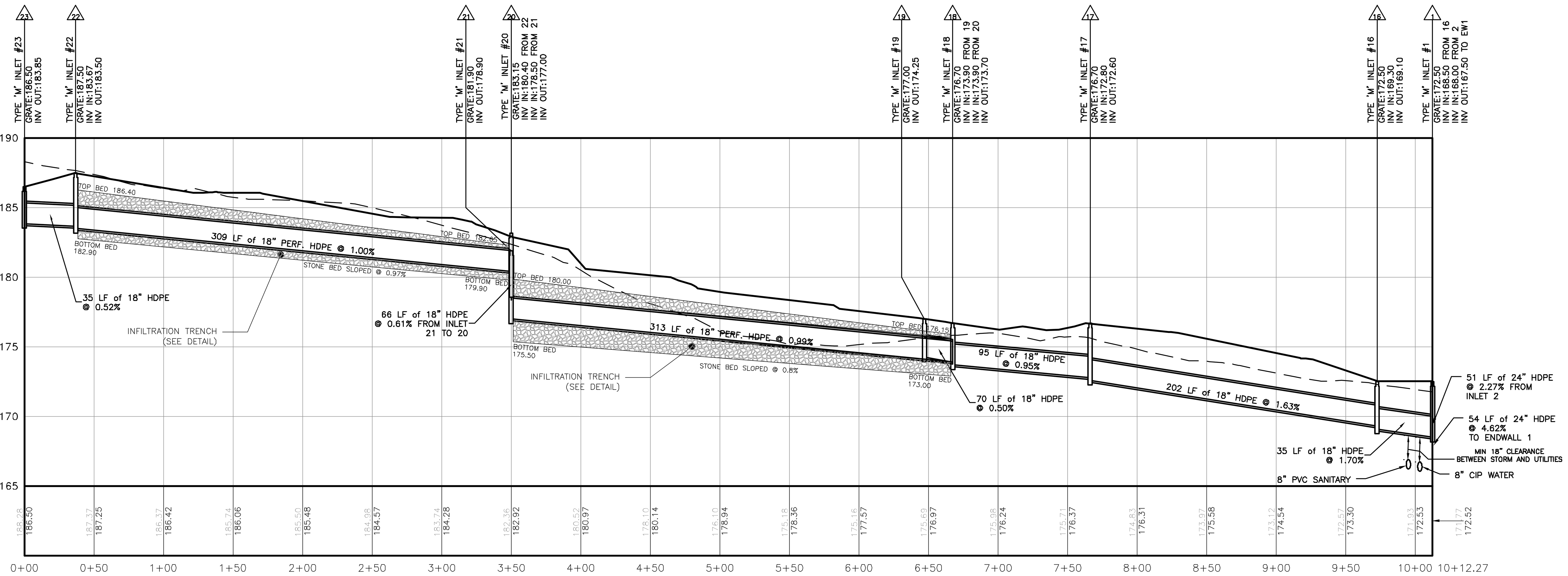
PROFILE Inlet 15 to Endwall 1

SCALE:
HORIZ: 1"=50'
VERT: 1"=5'


TYPE 'M' INLET 10 GRATE:177.50 INV OUT:174.90
TYPE 'M' INLET 9 GRATE:177.94 INV IN:174.45 INV OUT:174.25
TYPE 'M' INLET 8 GRATE:177.82 INV IN:173.75 INV OUT:173.55
TYPE 'M' INLET 7 GRATE:176.80 INV IN:173.24 INV OUT:173.04
(*FORMERLY INLET 7) TYPE 'M' INLET 6 GRATE:177.20 INV IN:172.75
87 LF of 18" HDPE @ 0.52%
100 LF of 18" HDPE @ 0.50%
62 LF of 18" HDPE @ 0.50%
57 LF of 18" HDPE @ 0.51%
251 LF of 24" HDPE @ 0.60% FROM INLET 11
78 LF of 24" HDPE @ 0.63% TO INLET 5

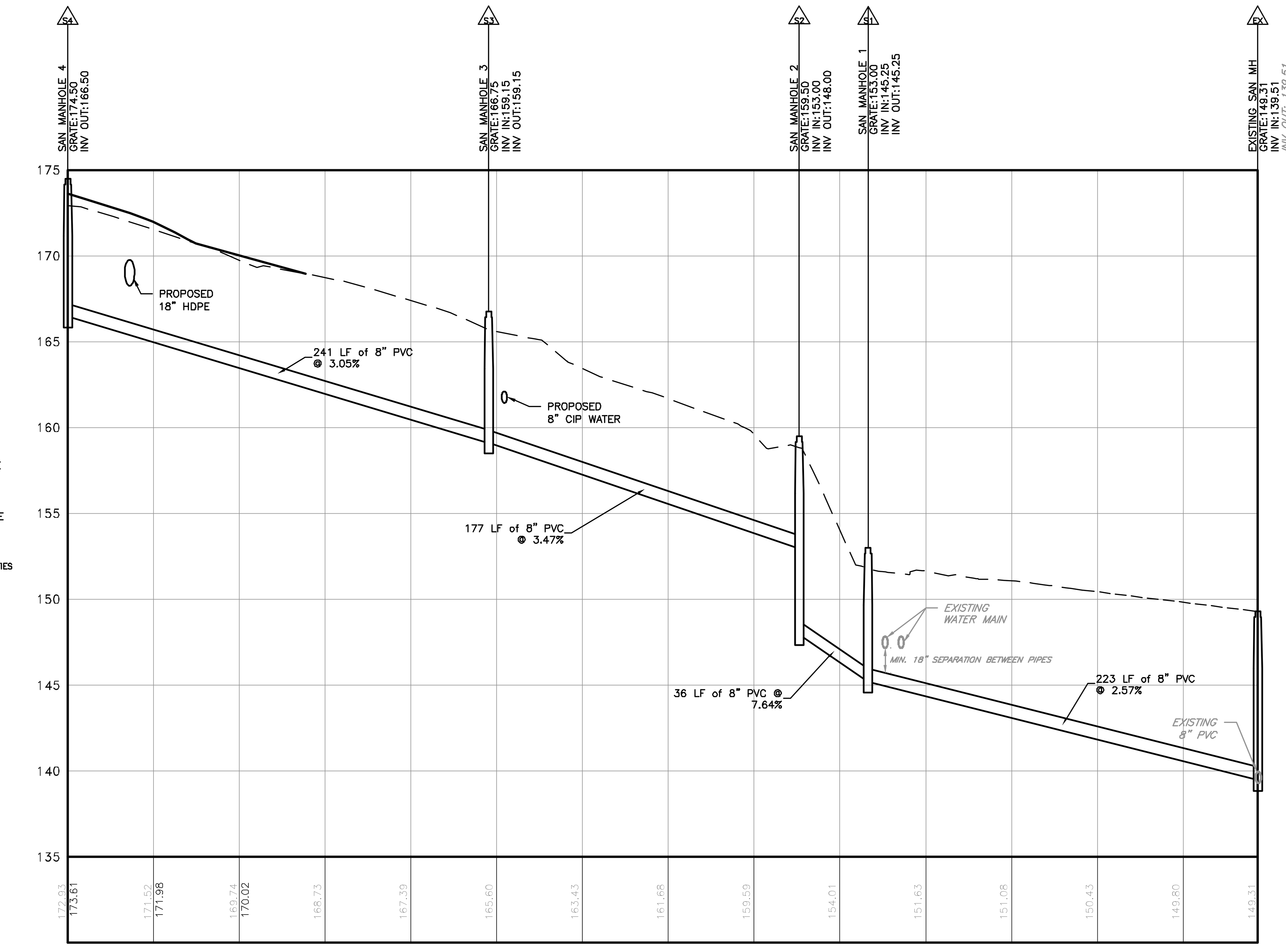
PROFILE INLET 10 TO INLET 6

SCALE:
HORIZ: 1"=50'
VERT: 1"=5'


TYPE 'M' INLET #23 GRATE:186.50 INV OUT:183.85
TYPE 'M' INLET #22 GRATE:187.50 INV IN:183.67 INV OUT:183.50
TYPE 'M' INLET #21 GRATE:181.90 INV OUT:178.90
TYPE 'M' INLET #20 GRATE:183.15 INV IN:180.40 FROM 22 INV IN:178.50 FROM 21 INV OUT:177.00
TYPE 'M' INLET #19 GRATE:177.00 INV OUT:174.25
TYPE 'M' INLET #18 GRATE:176.70 INV IN:173.90 FROM 19 INV IN:173.90 FROM 20 INV OUT:173.70
TYPE 'M' INLET #17 GRATE:176.70 INV IN:172.80 INV OUT:172.60
TYPE 'M' INLET #16 GRATE:172.50 INV IN:169.30 INV OUT:169.10
TYPE 'M' INLET #1 GRATE:172.50 INV IN:168.50 FROM 16 INV IN:168.00 FROM 2 INV OUT:167.50 TO EW1
TOP BED 186.40
BOTTOM BED 182.90
309 LF of 18" PERF. HDPE @ 1.00%
STONE BED SLOPED @ 0.97%
TOP BED 182.65
BOTTOM BED 179.90
TOP BED 180.00
35 LF of 18" HDPE @ 0.52%
INFILTRATION TRENCH (SEE DETAIL)
66 LF of 18" HDPE @ 0.61% FROM INLET 21 TO 20
313 LF of 18" PERF. HDPE @ 0.99%
BOTTOM BED 175.50
STONE BED SLOPED @ 0.8%
TOP BED 176.15
BOTTOM BED 173.00
95 LF of 18" HDPE @ 0.95%
70 LF of 18" HDPE @ 0.50%
202 LF of 18" HDPE @ 1.63%
51 LF of 24" HDPE @ 2.27% FROM INLET 2
54 LF of 24" HDPE @ 4.62% TO ENDWALL 1
35 LF of 18" HDPE @ 1.70%
MIN 18" CLEARANCE BETWEEN STORM AND UTILITIES
8" PVC SANITARY
8" CIP WATER

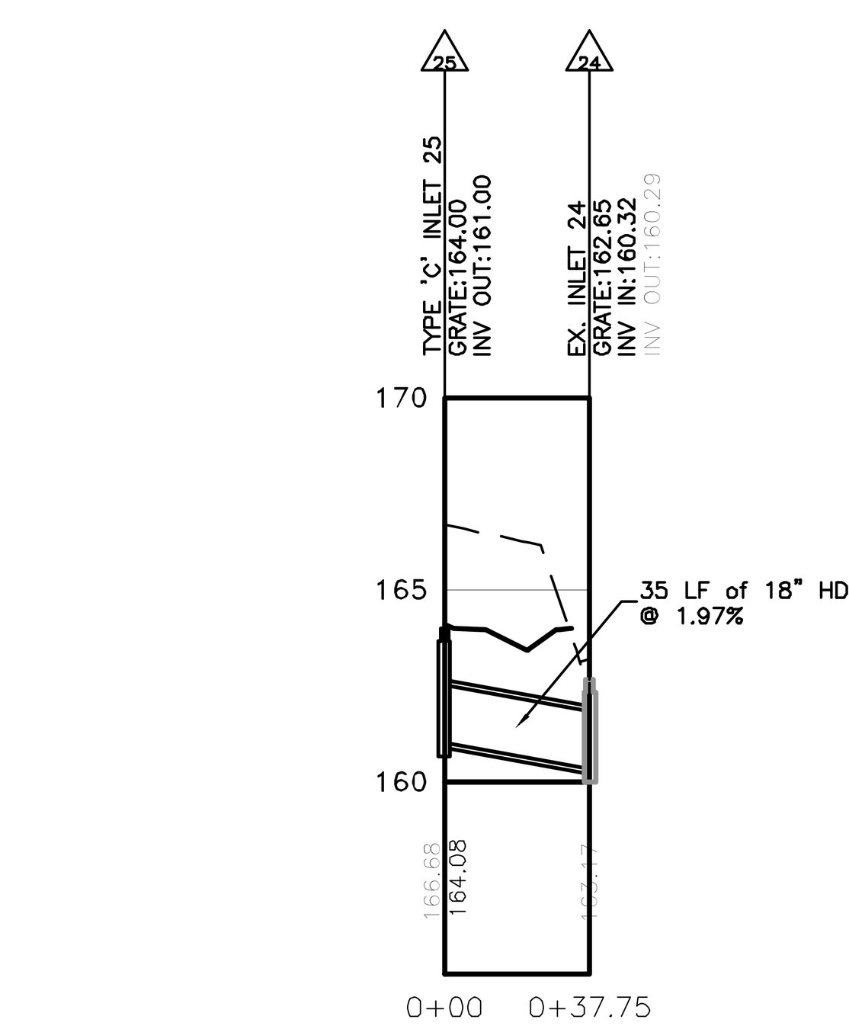
PROFILE Inlet 23 to Inlet 1

SCALE:
HORIZ: 1"=50'
VERT: 1"=5'


SAN MANHOLE 4 GRATE:174.50 INV OUT:166.50
SAN MANHOLE 3 GRATE:166.75 INV IN:159.15 INV OUT:159.15
SAN MANHOLE 2 GRATE:159.50 INV IN:153.00 INV OUT:148.00
SAN MANHOLE 1 GRATE:153.00 INV IN:145.25 INV OUT:145.25
EXISTING SAN MH GRATE:149.31 INV IN:139.51 INV OUT: 139.51
PROPOSED 18" HDPE
241 LF of 8" PVC @ 3.05%
PROPOSED 8" CIP WATER
177 LF of 8" PVC @ 3.47%
EXISTING WATER MAIN
MIN. 18" SEPARATION BETWEEN PIPES
36 LF of 8" PVC @ 7.64%
223 LF of 8" PVC @ 2.57%
EXISTING 8" PVC

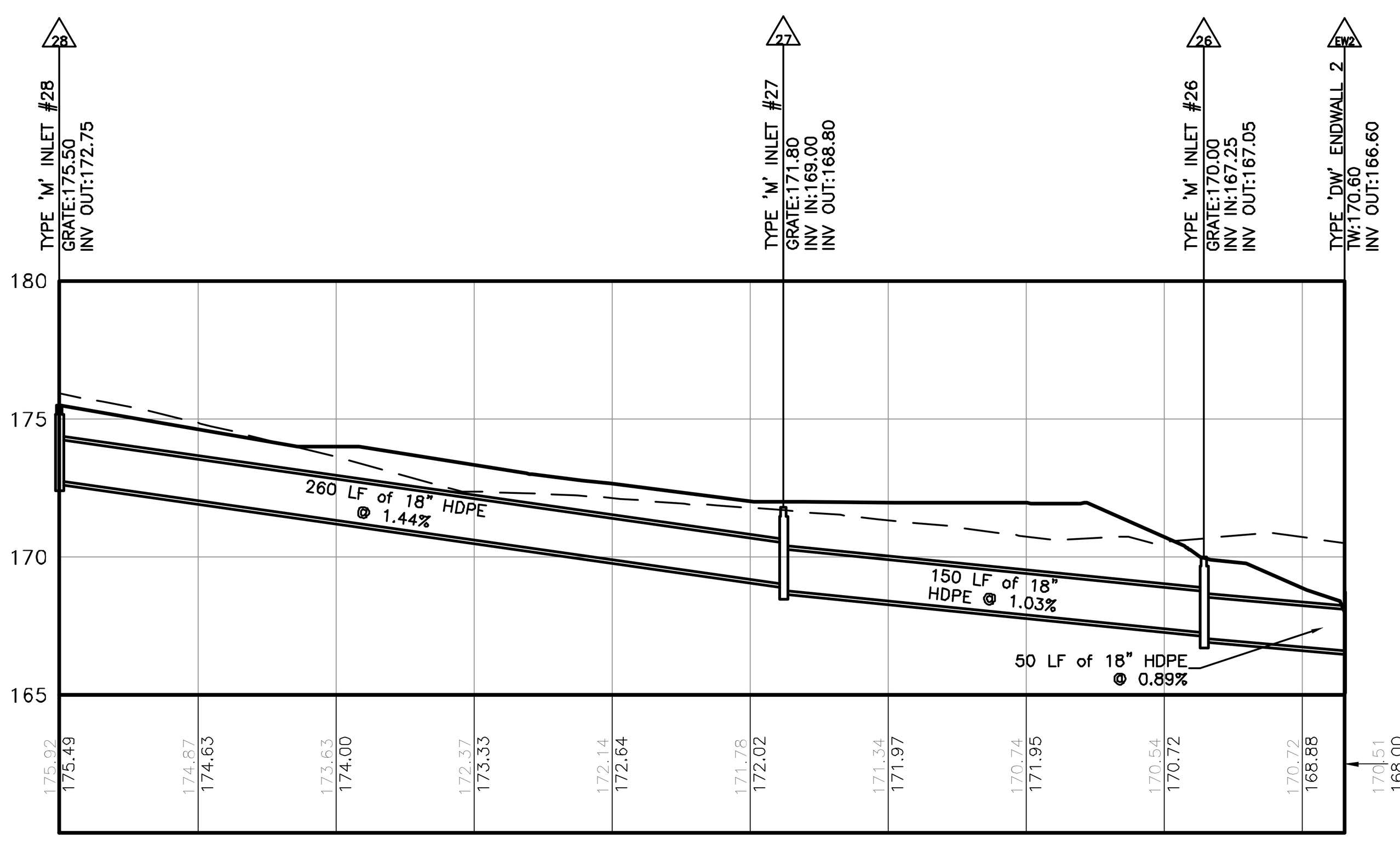
PROFILE SAN MH S4 TO EX SAN MH

SCALE:
HORIZ: 1"=50'
VERT: 1"=5'



PROFILE Inlet 25 to Ex Inlet 24

SCALE:
HORIZ: 1"=50'
VERT: 1"=5'



PROFILE Inlet 28 to Endwall 2

SCALE:
HORIZ: 1"=50'
VERT: 1"=5'

NOTE: ALL HDPE STORM SEWER PIPE TO BE SMOOTH LINED CORRUGATED PLASTIC PIPE.

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PENNSYLVANIA ACT 287 OF 1974 (AS AMENDED) REQUIRES 3 WORKING DAYS NOTICE FOR EXCAVATION PHASE AND 10 WORKING DAYS IN DESIGN STAGE – STOP! CALL!
PENNSYLVANIA ONE CALL SYSTEM, INC.
1-800 242-1776 or 811
PA ONE-CALL SERIAL No.
SERIAL NO. 20162291370
AUGUST 16, 2016

REVISIONS :

DATE	DESCRIPTION	DATE	DESCRIPTION
01/31/17	PLANS UPDATED WITH INFILTRATION PIT LOCATIONS AND NPDES NOTES		
05/02/17	PER ENGINEER REVIEW LETTER		
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10/20/17	REVISED EXISTING AND PROPOSED WATER LINE		

PROJECT :
SNIPES TRACT ATHLETIC FIELDS
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT :
LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

0 25 50 100 150
Scale In Feet HORIZ.
SCALE : 1" = 50'

0 2.5 5 10 15
Scale In Feet VERT.
SCALE : 1" = 5'

JOB NO.: 1677054L
DRAWN BY: TMW
CHECKED BY: MES
SCALE: 1" = 50'
PLAN STATUS: FINAL

TITLE : STORM SEWER & SANITARY SEWER PROFILES

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN ◆ STROUDSBURG ◆ LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345-9400 FAX: (215) 345-9401
www.bjengineers.com

PROJECT NAME : SNIPES TRACT ATHLETIC FIELDS

SHEET 5 OF 14

DATE: NOVEMBER 14, 2016

EROSION & SEDIMENTATION CONTROL NOTES

1. STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET; STOCKPILE SLOPES MUST NOT EXCEED 2:1.
2. THE OPERATOR/RESPONSIBLE PERSON (O/RP) ON SITE SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED.
3. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE O/RP SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES (BMPS) TO ELIMINATE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
4. THE O/RP SHALL ASSURE THAT AN EROSION AND SEDIMENT CONTROL PLAN HAS BEEN PREPARED, APPROVED BY THE BUCKS COUNTY CONSERVATION DISTRICT AND IS BEING IMPLEMENTED AND MAINTAINED FOR ALL SOIL AND/OR ROCK SPOIL AND BORROW AREAS REGARDLESS OF THEIR LOCATIONS.
5. ALL PUMPING OF SEDIMENT-LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP SUCH AS A PUMPED WATER FILTER BAG DISCHARGING OVER UNDISTURBED AREAS.
6. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN MUST BE AVAILABLE ON THE PROJECT SITE AT ALL TIMES.
7. EROSION AND SEDIMENT BMPS MUST BE CONSTRUCTED, STABILIZED AND FUNCTIONAL BEFORE SITE DISTURBANCE BEGINS WITHIN THE TRIBUTARY AREAS OF THOSE BMPS.
8. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMP CONTROLS MUST BE REMOVED. AREAS DISTURBED DURING THE REMOVAL OF THE BMPS MUST BE STABILIZED IMMEDIATELY.
9. AT LEAST SEVEN (7) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, THE O/RP SHALL INVITE ALL CONTRACTORS INVOLVED IN THAT ACTIVITY, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, THE EROSION AND SEDIMENT CONTROL PLAN DESIGNER AND THE BUCKS COUNTY CONSERVATION DISTRICT TO A PRE-CONSTRUCTION MEETING. ALSO, AT LEAST THREE DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, ALL CONTRACTORS INVOLVED IN THAT ACTIVITY SHALL NOTIFY THE PENNSYLVANIA ONE-CALL SYSTEM INC. AT 1-800-242-1776 TO DETERMINE ANY UNDERGROUND UTILITIES LOCATIONS.
11. DISTURBED AREAS THAT ARE AT FINISHED GRADE OR WHICH WILL NOT BE RE-DISTURBED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
12. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITY CEASES, THE O/RP SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITY. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT SPECIFIED RATES. DISTURBED AREAS THAT ARE NOT AT FINISHED GRADE AND WHICH WILL BE RE-DISTURBED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS.
13. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% (PERCENT) VEGETATIVE OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.
14. UPON THE INSTALLATION OF TEMPORARY SEDIMENT BASIN RISER(S), A QUALIFIED SITE REPRESENTATIVE SHALL CONDUCT AN IMMEDIATE INSPECTION OF THE RISER(S), WHEREUPON THE BUCKS COUNTY CONSERVATION DISTRICT SHALL BE NOTIFIED IN WRITING THAT THE RISER IS SEALED (WATERTIGHT).
15. AT STREAM CROSSING, A 50-FOOT BUFFER SHALL BE MAINTAINED. ON BUFFERS, CLEARINGS, SOD DISTURBANCES AND EXCAVATIONS, EQUIPMENT TRAFFIC SHOULD BE MINIMIZED. ACTIVITY SUCH AS STACKING LOGS, BURNING CLEARED BRUSH, DISCHARGING RAINWATER FROM TRENCHES, WELDING PIPE SECTIONS, REFUELING AND MAINTAINING EQUIPMENT SHOULD BE AVOIDED WITHIN BUFFER ZONES.
16. UNTIL A SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION CONTROL BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEANOUT, REPAIR, REPLACEMENT, RE-GRADING, RE-SEEDING, RE-MULCHING AND RE-NETTING MUST BE PERFORMED IMMEDIATELY. IF EROSION AND SEDIMENT CONTROL BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED, WILL BE REQUIRED.
17. SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF ON-SITE IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WETLANDS, FLOODPLAINS OR DRAINAGE SWALES AND IMMEDIATELY STABILIZED OR PLACED IN SOIL STOCKPILES AND STABILIZED.
18. ALL BUILDING MATERIAL AND WASTES MUST BE REMOVED FROM THE SITE AND RECYCLED IN ACCORDANCE WITH DEP'S SOLID WASTE REGULATIONS (25 PA CODE 260.1 ET SEQ., 271.1 ET SEQ., AND 287.1 ET SEQ.), AND/OR ANY ADDITIONAL LOCAL, STATE OR FEDERAL REGULATIONS. NO BUILDING MATERIALS (USED OR UNUSED) OR WASTE MATERIALS SHALL BE BURNED, BURIED, DUMPED OR DISCHARGED AT THE SITE.

UTILITY LINE TRENCH EXCAVATION REQUIREMENTS:

1. LIMIT ADVANCED CLEARING AND GRUBBING OPERATIONS TO A DISTANCE EQUAL TO TWO TIMES THE LENGTH OF PIPE INSTALLATION THAT CAN BE COMPLETED IN ONE DAY.
2. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT, PLUG INSTALLATION AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY. DAILY BACKFILLING OF THE TRENCH MAY BE DELAYED FOR A MAXIMUM OF SIX DAYS FOR CERTAIN CASES REQUIRING TESTING OF THE INSTALLED PIPE.
3. WATER THAT ACCUMULATES IN THE OPEN TRENCH WILL BE COMPLETELY REMOVED BY PUMPING TO A FACILITY FOR REMOVAL OF SEDIMENT BEFORE PIPE PLACEMENT AND / OR BACKFILLING BEGINS.
4. ON THE DAY FOLLOWING PIPE PLACEMENT AND TRENCH BACKFILLING, THE DISTURBED AREA WILL BE GRADED TO FINAL CONTOURS AND APPROPRIATE TEMPORARY EROSION AND SEDIMENT POLLUTION CONTROL MEASURES / FACILITIES WILL BE INSTALLED. SEEDING AND MULCHING OF ALL DISTURBED AREAS WILL BE DONE AT THE END OF EACH WEEK OR WITHIN THE NEXT TWO CALENDAR DAYS IF DAILY BACKFILLING HAS BEEN DELAYED.

MAINTENANCE OF FACILITIES:

1. SILT FENCE MAINTENANCE – CONTRACTOR SHALL REMOVE SEDIMENT WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE. CONTRACTOR SHALL IMMEDIATELY REPLACE ANY FENCE SECTION WHICH HAS BEEN UNDERMINED OR OVERTOPPED WITH A ROCK FILTER OUTLET.
2. ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. THE STONE SHALL BE REMOVED AND CLEANED AS IT FILLS WITH SILT. A STOCKPILE OF NO. 1 AGGREGATE SHALL BE MAINTAINED ON SITE FOR THESE PURPOSES. AT THE END OF EACH CONSTRUCTION DAY, ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IN A MANNER SATISFACTORY TO THE MUNICIPALITY AND THE COUNTY CONSERVATION DISTRICT.

SOIL INFORMATION:

1. SOIL BOUNDARY LINES SHOWN WERE OBTAINED FROM WEB SOIL SURVEY MAPS OF BUCKS COUNTY, PENNSYLVANIA DATED OCTOBER 6, 2008 BY THE NATURAL RESOURCES CONSERVATION SERVICE.
2. APPROPRIATE EARTHWORK CONSTRUCTION TECHNIQUES, INCLUDING IMPORTING SUITABLE SOILS AND UTILIZING LOCAL SUMPS AND PUMPS (TO APPROVED SEDIMENT REMOVAL FACILITIES) TO KEEP EXCAVATIONS DRY, AS RECOMMENDED BY A QUALIFIED GEOTECHNICAL ENGINEER, SHOULD BE IMPLEMENTED IF SOIL LIMITATIONS ARE ENCOUNTERED. THE COUNTY CONSERVATION DISTRICT SHALL BE CONSULTED IF SUCH LIMITATIONS ARE ENCOUNTERED.

FILL NOTES:

1. ENVIRONMENTAL DUE DILIGENCE SHALL BE EMPLOYED TO ENSURE THAT ANY FILL MATERIAL ONSITE QUALIFIES AS "CLEAN FILL". ALL FILL MATERIALS MUST BE USED IN ACCORDANCE WITH PADEP POLICY "MANAGEMENT OF FILL", AS UPDATED.
2. ALL FILL MATERIAL SHALL BE PLACED IN UPLAND AREAS AWAY FROM ANY WETLANDS AREA OR WATERCOURSE.

NPDES NOTES – RESPONSIBILITIES FOR FILL MATERIALS/ DUE DILIGENCE

APPLICANTS AND/OR OPERATORS MUST USE ENVIRONMENTAL DUE DILIGENCE TO ENSURE THAT THE FILL MATERIAL ASSOCIATED WITH THIS PROJECT QUALIFIES AS CLEAN FILL. DEFINITIONS OF CLEAN FILL AND ENVIRONMENTAL DUE DILIGENCE ARE PROVIDED BELOW. ALL FILL MATERIAL MUST BE USED IN ACCORDANCE WITH THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL," DOCUMENT NUMBER 258_2182_773. A COPY OF THIS POLICY IS AVAILABLE ONLINE AT WWW.DEPWEB.STATE.PA.US. UNDER THE HEADING QUICK ACCESS ON THE LEFT SIDE OF THE SCREEN, CLICK ON "FORMS AND PUBLICATIONS." ON THE LEFT SIDE OF THE SCREEN CLICK ON "TECHNICAL GUIDANCE DOCUMENTS – FINAL." THEN TYPE THE DOCUMENT NUMBER 258_2182_773 INTO THE SEARCH WINDOW AND CONDUCT THE SEARCH. CLICK ON "MANAGEMENT OF FILL."

CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE.)

CLEAN FILL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE: FILL MATERIALS AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE STILL QUALIFIES AS CLEAN FILL PROVIDED THE TESTING REVEALS THAT THE FILL MATERIAL CONTAINS CONCENTRATIONS OF REGULATED SUBSTANCES THAT ARE BELOW THE RESIDENTIAL LIMITS IN TABLES FP-1A AND FP-1B FOUND IN THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL."

ANY PERSON PLACING CLEAN FILL THAT HAS BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE MUST USE FORM FP-001 TO CERTIFY THE ORIGIN OF THE FILL MATERIAL AND THE RESULTS OF THE ANALYTICAL TESTING TO QUALIFY THE MATERIAL AS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE OWNER OF THE PROPERTY RECEIVING THE FILL AND MUST BE KEPT ON SITE AND MADE AVAILABLE UPON REQUEST BY THE DEPARTMENT OR AUTHORIZED CONSERVATION DISTRICT. FAILURE TO PRODUCE THE FORM UPON REQUEST MAY RESULT IN THE REVOKING, SUSPENSION OR TERMINATION OF YOUR PERMIT COVERAGE.

ENVIRONMENTAL DUE DILIGENCE: INVESTIGATIVE TECHNIQUES, INCLUDING, BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY USE HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ANALYTICAL TESTING IS NOT A REQUIRED PART OF DUE DILIGENCE UNLESS VISUAL INSPECTION AND/OR REVIEW OF THE PAST LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECTED TO A SPILL OR RELEASE OF REGULATED SUBSTANCE. IF THE FILL MAY HAVE BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE, IT MUST BE TESTED TO DETERMINE IF IT QUALIFIES AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL."

FILL MATERIAL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH THE DEPARTMENT'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 25 PA. CODE CHAPTERS 287 RESIDUAL WASTE MANAGEMENT OR 271 MUNICIPAL WASTE MANAGEMENT, WHICHEVER IS APPLICABLE.

NPDES NOTES PER COMPLETION CHECKLIST

- **THE E&S PLAN IS SEPERATE FROM THE PCSM PLAN AND LABELED "E&S" OR "EROSION AND SEDIMENT CONTROL PLAN" AND IS THE FINAL PLAN FOR CONSTRUCTION.**
- **THE E&S PLAN WAS PREPARED BY MARYELLEN SAYLOR, P.E., WHO IS TRAINED AND EXPERIENCED IN E&S DESIGN METHODS AND TECHNIQUES APPLICABLE TO THE SIZE AND SCOPE OF THE PROJECT.**
- **E&S PLAN MINIMIZES EXTENT AND DURATION OF EARTH DISTURBANCE.**
- **E&S PLAN MAXIMIZES PROTECTION OF EXISTING DRAINAGE FEATURES AND VEGETATION.**
- **E&S PLAN MINIMIZES SOIL COMPACTION.**
- **E&S PLAN UTILIZES OTHER MEASURES OR CONTROLS THAT PREVENT OR MINIMIZE GENERATION OF INCREASED STORMWATER RUNOFF.**

LEGEND

	ADJOINER LINE
	EXISTING BOUNDARY
	EXISTING BUILDINGS
288	EXISTING CONTOUR
290	EXISTING INDEX CONTOUR
	EXISTING CURBLINE
	EXISTING DRIVEWAY
	EXISTING ELECTRIC STRUCTURES
	EXISTING EDGE OF PAVEMENT
	EXISTING CHAINLINK FENCE
	EXISTING FIRE HYDRANT
	EXISTING GUIDE RAIL
○	EXISTING IRON PIN/PIPE
□	EXISTING MONUMENT
	EXISTING LEGAL RIGHT-OF-WAY
SV C.O. (S)	EXISTING SANITARY SEWER STRUCTURES
	EXISTING SANITARY EASEMENT
	EXISTING SIGN
(ST)	EXISTING STORM SEWER STRUCTURES
	EXISTING TREELINE
	EXISTING UTILITY POLE AND GUY WIRE
WV (W)	EXISTING WATER STRUCTURES
	EXISTING DECIDUOUS TREE
	EXISTING CONIFEROUS TREE
	PROPOSED BUILDING
	PROPOSED ULTIMATE RIGHT-OF-WAY
	PROPOSED EDGE OF PAVEMENT
	PROPOSED SIGN
	PROPOSED TRAIL
288	PROPOSED CONTOUR
290	PROPOSED INDEX CONTOUR
X 180.75	PROPOSED SPOT ELEVATION
	PROPOSED TREELINE
	PROPOSED STORM SEWER AND STRUCTURE
S S (S)	PROPOSED SANITARY SEWER MAIN AND STRUCTURE
	PROPOSED SANITARY SEWER LATERAL
W	PROPOSED WATER MAIN
	PROPOSED WATER SERVICE LATERAL
E E	PROPOSED ELECTRIC
	PROPOSED BAFFLE
	PROPOSED BERM
RF	PROPOSED ROCK FILTER
LOD LOD	PROPOSED LIMITS OF DISTURBANCE (24.97 ACRES)
18	PROPOSED 18-INCH FILTER FENCE
30	PROPOSED 30-INCH FILTER FENCE
SS	PROPOSED SUPER FILTER FENCE
STP	PROPOSED COMBINATION SUPER FILTER FENCE AND TREE PROTECTION
TP TP	PROPOSED TREE PROTECTION FENCE
▨	PROPOSED INLET PROTECTION
▨	PROPOSED EROSION CONTROL MATTING
	PROPOSED NPDES BOUNDARY (36.64 ACRES)
LsC MaC	SOILS BOUNDARY AND DESIGNATOR

MAJOR SOIL PROPERTIES AND ESTIMATED DEGREE OF LIMITATION

MAP SYMBOL	SOIL	HYDROLOGIC SOIL GROUP	DEPTH TO		SOILS FEATURES THAT AFFECT:	RESOLUTIONS TO SOILS LIMITATIONS:
			HWT (FT)	BEDROCK (IN)	SHALLOW EXCAVATIONS	
AbB	ABBOTTSTOWN SILT LOAM – 3–8% SLOPES	D	0.5'–1.5'	40"–60"	VERY LIMITED DEPTH TO SATURATED ZONE	UNDERDRAINS MAY BE REQUIRED
FoB	FOUNTAINVILLE SILT LOAM – 3–8% SLOPES	C	1.5'–2.5'	40"–60"	VERY LIMITED DEPTH TO SATURATED ZONE LIMITED DEPTH TO BEDROCK	UNDERDRAINS MAY BE REQUIRED, LIMIT EXCAVATION DEPTHS
PnB	PENN-LANSDALE COMPLEX – 3–8% SLOPES	B	>6.5'	20"–40"	NOT LIMITED	N/A

SOURCE: SOIL INFORMATION WERE OBTAINED FROM WEB SOIL SURVEY MAPS OF BUCKS COUNTY, PENNSYLVANIA DATED OCTOBER 14, 2013 BY THE NATURAL RESOURCES CONSERVATION SERVICE.

DISPOSAL/RECYCLING OF CONSTRUCTION MATERIAL

ALL BUILDING MATERIAL AND WASTES MUST BE REMOVED FROM THE SITE AND RECYCLED IN ACCORDANCE WITH DEP'S SOLID WASTE REGULATIONS (25 PA CODE 260.1 ET SEQ., 271.1 ET SEQ., AND 287.1 ET SEQ.), AND/OR ANY ADDITIONAL LOCAL, STATE OR FEDERAL REGULATIONS. NO BUILDING MATERIALS (USED OR UNUSED) OR WASTE MATERIALS SHALL BE BURNED, BURIED, DUMPED OR DISCHARGED AT THE SITE.

SEDIMENT REMOVED FROM BMPs SHOULD BE DISPOSED OF IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WETLANDS, FLOODPLAINS, OR DRAINAGE SWALES AND IMMEDIATELY STABILIZED, OR PLACED IN TOPSOIL STOCKPILES.

EROSION AND SEDIMENTATION/ SURFACE WATERS NOTE

THE CLOSEST RECEIVING WATERWAY IS AN UNNAMED TRIBUTARY TO BUCK CREEK. THE CHAPTER 93 RECEIVING WATER CLASSIFICATION IS WWF, MF (WARM WATER FISHES, MIGRATORY FISHES)

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!
KNOW WHAT'S BELOW CALL BEFORE YOU DIG!
PENNSYLVANIA ACT 287 OF 1974 (AS AMENDED) REQUIRES 3 WORKING DAYS NOTICE FOR EXCAVATION PHASE AND 10 WORKING DAYS IN DESIGN STAGE – STOP! CALL!
PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800 242-1776 or 811
PA ONE-CALL SERIAL No.
SERIAL NO. 20162291370
AUGUST 16, 2016

REVISIONS :

DATE	DESCRIPTION	DATE	DESCRIPTION
01/31/17	PLANS UPDATED WITH INFILTRATION PIT LOCATIONS AND NPDES NOTES		
05/02/17	PER ENGINEER REVIEW LETTER		
05/16/17	PER ENGINEER & EAC REVIEW LETTERS		
05/19/17	REVISED INFILTRATION TRENCH INLET 2 TO 3		
06/07/17	REVISED PER CONDITIONS OF APPROVAL		
06/30/17	REVISED PER PRE-BID MEETING		
07/07/17	REVISED PER ADDENDUM 2		
10/20/17	REVISED EXISTING AND PROPOSED WATER LINE		

PROJECT : SNIPES TRACT ATHLETIC FIELDS
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT : LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

0 30 60 120 180
SCALE : 1"= 60'

JOB NO.: 1677054L
DRAWN BY: TMW
CHECKED BY: MES
SCALE: 1" = 60'
PLAN STATUS: FINAL

TITLE : EROSION AND SEDIMENTATION CONTROL PLAN

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN ✦ STROUDSBURG ✦ LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345-9400 FAX: (215) 345-9401
www.bjengineers.com

SHEET 6 OF 14

PROJECT NAME : SNIPES TRACT ATHLETIC FIELDS
DATE: NOVEMBER 14, 2016

CONSTRUCTION SEQUENCE

ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.

AT LEAST 7 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE PERMITTEE SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS (LOWER MAKEFIELD TOWNSHIP (267) 274–1100, TOWNSHIP ENGINEER (215) 345–9400), THE ESCP PREPARER(BOUCHER AND JAMES, INC. 215–345–9400), AND THE BUCKS COUNTY CONSERVATION DISTRICT (BCCD) (215) 345–7577 TO AN ON–SITE MEETING. ALSO, AT LEAST 3 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM INCORPORATED AT 1–800–242–1776 FOR BURIED UTILITIES LOCATIONS.

PRIOR TO THE START OF OPERATIONS AT ANY SPOIL, BORROW OR OTHER WORK AREA NOT DETAILED ON THE APPROVED ESCP, WHETHER LOCATED WITHIN OR OUTSIDE THE INDICATED CONSTRUCTION LIMITS, THE PERMITTEE OR CO–PERMITTEE SHALL DEVELOP AND HAVE APPROVED BY THE PROCESSING ENTITY, A SEPARATE ESCP FOR EACH SITE.

CONSTRUCTION SEQUENCE

1. AT LEAST 3 DAYS PRIOR TO ANY EARTH DISTURBANCE ACTIVITIES, THE PERMITTEE SHALL CONTACT LOWER MAKEFIELD TOWNSHIP (267) 274–1100, THE TOWNSHIP ENGINEER (215) 345–9400, AND BUCKS COUNTY CONSERVATION DISTRICT (215) 345–7577.
2. INSTALL TIRE CLEANER AT DOLINGTON ROAD ENTRANCE AS SHOWN ON THE PLANS.
3. INSTALL SUPER AND STANDARD SILT FENCE AND TREE PROTECTION FENCE AS SHOWN ON THE PLANS.
4. CLEAR AND GRUB THE AREA OF SITE DEVELOPMENT.
5. CONSTRUCT THE TEMPORARY SEDIMENT BASIN, OUTLET STRUCTURE AND RIP RAP APRON. STABILIZE THE BASIN SPILLWAY, BERM AND SIDE SLOPES AS SHOWN ON THE PLANS.
6. DEMOLISH/ REMOVE EXISTING DRIVE, PARKING AREA, SALTSHED CONCRETE PAD AND EXISTING FENCE/GATE.
7. STRIP THE TOPSOIL AND STOCKPILE WHERE INDICATED ON THE PLAN.
8. ROUGH GRADE THE SITE IN THE AREA OF DEVELOPMENT. INSTALL THE STORM SEWER SYSTEM AND INFILTRATION TRENCHES STARTING AT THE DOWNSTREAM STRUCTURE **(SEE DETAILS ON SHEET 12 OF 14 FOR INFILTRATION TRENCH SEQUENCE OF CONSTRUCTION)**. INSTALL RIP RAP OUTLET PROTECTION APRONS AT THE PIPE OUTFALLS. INFILTRATION TRENCHES SHALL BE PROTECTED FROM SEDIMENT RUNOFF. **THE ENGINEER OR HIS DESIGNEE MUST BE PRESENT FOR THE CONSTRUCTION OF THE INFILTRATION TRENCHES AND THE INSTALLATION OF THE RIP RAP OUTLET PROTECTION APRONS.**
9. INSTALL WATERLINES AND SANITARY SEWER SYSTEM.
10. PREPARE THE SUBGRADE AND INSTALL THE STONE IN THE PARKING LOT AREAS, DRIVEWAYS AND BITUMINOUS WALKWAYS.
11. GRADE AND INSTALL STONE, FOUNDATIONS AND THE BUILDING PAD. (NOT INCLUDED IN THE BASE BID SITE IMPROVEMENTS OR BID ALTERNATES)
12. GRADE ATHLETIC FIELDS.
13. CLEAN OUT SEDIMENT FROM THE SEDIMENT BASIN WHEN IT REACHES AN ELEVATION OF 162.00. **(SEE SEDIMENT BASIN CROSS SECTION DETAIL ON THIS SHEET FOR SEQUENCE OF CONSTRUCTION) THE ENGINEER OR HIS DESIGNEE MUST BE PRESENT FOR THE CONSTRUCTION OF THE SEDIMENT/ DETENTION BASIN BERM AND OUTLET STRUCTURE.**
14. CONSTRUCT PAVILION AND RESTROOM. (NOT INCLUDED IN THE BASE BID SITE IMPROVEMENTS OR BID ALTERNATES)
15. FINAL GRADE AND PAVE PARKING LOT AREAS. (POROUS PAVEMENT PARKING AREAS MUST BE PROTECTED FROM SEDIMENT AND MUST NOT BE OVERLY COMPACTED)
16. FINAL GRADE LAWN AND LANDSCAPE AREAS. REDISTRIBUTE/ SPREAD TOPSOIL (MINIMUM 6") OVER LAWN AND LANDSCAPED AREAS. REMOVE SILT FENCE FROM STOCKPILE AREA ONCE THE TOPSOIL IS REDISTRIBUTED.
17. INSTALL SEED MIXES AS SHOWN ON THE LANDSCAPE PLANS.
18. INSTALL TREES AND PLANT MATERIALS AS SHOWN (EXCEPT STORMWATER MANAGEMENT LANDSCAPING). SEED/ SOD LAWN AREAS.
19. CONVERT SEDIMENT BASIN INTO PERMANENT STORMWATER DETENTION BASIN AND STABILIZE ANY DISTURBED AREAS IMMEDIATELY.
20. INSTALL STORMWATER MANAGEMENT LANDSCAPING AS SHOWN ON THE LANDSCAPE PLANS.
21. UNTIL A SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION CONTROL BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEANOUT, REPAIR, REPLACEMENT, RE–GRADING, RE–SEEDING, RE–MULCHING AND RE–NETTING MUST BE PERFORMED IMMEDIATELY. IF EROSION AND SEDIMENT CONTROL BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED, WILL BE REQUIRED.
22. UPON SITE STABILIZATION, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% (PERCENT) VEGETATIVE OR OTHER PERMANENT NON–VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.

MAINTENANCE PROGRAM

1. THE PERMITTEE OR CO–PERMITTEE WILL BE RESPONSIBLE FOR THE PROPER CONSTRUCTION, STABILIZATION, AND MAINTENANCE OF ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES AND RELATED ITEMS INCLUDED WITHIN THIS PLAN.
2. THE OWNER WILL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL PERMANENT POST CONSTRUCTION STORMWATER MANAGEMENT CONTROL MEASURES.
3. SOIL SEDIMENT REMOVED FROM ANY TEMPORARY CONTROL MEASURE DURING REGULAR MAINTENANCE WILL BE INCORPORATED BACK INTO THE EARTHWORK AS FILL ON THE SITE. ANY SOIL SEDIMENT THAT IS REMOVED TO OTHER AREAS ON SITE SHALL BE DONE WITHOUT CHANGING THE DRAINAGE PATTERNS WITHIN A SPECIFIC CONSTRUCTION STAGE.
4. SILT FENCE INSTALLED ON THE PROJECT SITE SHALL BE MAINTAINED AS FOLLOWS:
   A. THE FENCE CONDITION WILL BE INSPECTED ONCE A WEEK OR AFTER EVERY STORM EVENT, WHICHEVER COMES FIRST. ANY NECESSARY REPAIRS WILL BE MADE IMMEDIATELY.
   B. ACCUMULATED SEDIMENTS WILL BE REMOVED AS REQUIRED TO KEEP THE FENCE FUNCTIONAL. DEPOSITS WILL BE REMOVED WHERE ACCUMULATIONS REACH ½ THE ABOVE GROUND HEIGHT OF THE FENCE.
   C. ANY FENCE SECTION WHICH HAS BEEN UNDERMINED OR TOPPED WILL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET.
   D. ANY MANUFACTURER'S RECOMMENDATIONS WILL BE ADHERED TO FOR REPLACING FILTER FABRIC FENCE DUE TO WEATHERING.
5. PUMPED WATER FILTER BAGS USED ON THE PROJECT SITE SHALL BE REPLACED WHEN THEY BECOME ½ FULL. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED.
6. SEDIMENT ACCUMULATION IN THE ROCK FILTERS SHALL BE INSPECTED ONCE A WEEK OR AFTER EVERY STORM EVENT, WHICHEVER COMES FIRST. SEDIMENT ACCUMULATION WILL BE MONITORED. SEDIMENT WILL BE REMOVED FROM THE ROCK FILTERS WHEN IT REACHES ½ THE ABOVE GROUND HEIGHT OF THE FILTER.
7. AT THE END OF EACH CONSTRUCTION DAY, ANY SEDIMENT DEPOSITED ON PUBLIC ROADWAYS, WILL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE. WASHING OF THE ROADWAY WITH WATER WILL NOT BE PERMITTED.
8. A WRITTEN REPORT OF INSPECTIONS AND REPAIRS SHALL BE SUBMITTED TO BUCKS COUNTY CONSERVATION DISTRICT.

EROSION & SEDIMENT CONTROL CONSTRUCTION SPECIFICATIONS

CONSTRUCTION ENTRANCE INSTALLATION SPECIFICATION

1. CLEAR AND GRUB THE AREA NECESSARY TO INSTALL THE CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE ESCP.
2. LAY DOWN GEOTEXTILE FABRIC TO COVER AN AREA AT LEAST 20 FEET WIDE AND 50 FEET LONG.
3. PLACE A MINIMUM THICKNESS OF 8 INCHES OF AASHTO #1 STONE TO THE SAME DIMENSIONS AS THE GEOTEXTILE FABRIC.
4. STABILIZE WITH SEED AND MULCH ANY AREAS INCIDENTALLY DISTURBED BY THE INSTALLATION OF THE CONSTRUCTION ENTRANCE.

TOPSOIL STORAGE INSTALLATION SPECIFICATION

1. STABILIZE WITH SEED AND MULCH ANY AREAS INCIDENTALLY DISTURBED BY THE INSTALLATION OF THE TOPSOIL STORAGE AREA.
2. GRUBBING AND TOPSOIL MAY BE TEMPORARILY STORED IN THESE LOCATIONS UNTIL AREAS IDENTIFIED FOR SAID PURPOSE ON THE ESCP ARE CONSTRUCTED AND STABILIZED.
3. STOCKPILE HEIGHTS SHALL NOT EXCEED 35' AND SIDE SLOPE SHALL NOT BE STEEPER THAN 2:1.
4. STOCKPILES SHALL BE SEEDED AND MULCHED WITH TEMPORARY COVER IMMEDIATELY AFTER TOPSOIL PLACEMENT.

VEGETATED SWALE INSTALLATION SPECIFICATION

1. GRUB AND GRADE THE CHANNEL TO THE DIMENSIONS SHOWN ON THE ESCP. DO NOT GRUB AN AREA GREATER THAN THE LENGTH OF CHANNEL THAT CAN BE CONSTRUCTED WITHIN 2 WORKING DAYS.
2. GRADE THE CHANNEL AND IMMEDIATELY INSTALL THE CHANNEL REINFORCING. DO NOT LEAVE A NEWLY GRADED CHANNEL UNPROTECTED BY REINFORCEMENT EXCEPT AS CAN BE INSTALLED DURING THAT WORKING DAY.
3. STABILIZE WITH SEED AND MULCH ANY AREAS INCIDENTALLY DISTURBED BY THE INSTALLATION OF THE CHANNEL.

UNDERGROUND UTILITY CONSTRUCTION SPECIFICATIONS

1. EXCAVATE THE TRENCHES FOR THE INSTALLATION OF THE WATER AND SEWER AS SHOWN AND SPECIFIED ON THE PLANS. THE TOTAL LENGTH OF EXCAVATED TRENCH OPEN AT ONE TIME SHOULD NOT BE GREATER THAN THE LENGTH OF UTILITY LINE THAT CAN BE PLACED IN THE TRENCH AND BACK–FILLED IN ONE WORKING DAY. NO MORE THAN 50 LINEAL FEET OF OPEN TRENCH SHOULD EXIST AT THE END OF THE WORKDAY. IF IT IS NECESSARY TO DEWATER THE TRENCH AT ANY TIME FILTER BAGS MUST BE USED TO FILTER ALL PUMPED WATER BEFORE DISCHARGING ONTO A STABLE EROSION RESISTANT AREA.
2. PLACE BEDDING MATERIAL AS SPECIFIED
3. PLACE UTILITY LINES IN THE BEDDED TRENCH AND BACKFILL, SYSTEM–TEST AND COMPACT THE BACKFILL AS SPECIFIED.
4. ONCE THE BACKFILL OPERATIONS ARE COMPLETE IMMEDIATELY SEED AND MULCH ALL INCIDENTALLY DISTURBED AREAS NOT WITHIN THE PROPOSED PAVED AREAS.

PROTECTION OF EXISTING TREES

TREE PROTECTION AREA:

1. TREE PROTECTION AREA. AN AREA THAT IS RADIAL TO THE TRUNK IN ALL DIRECTIONS OF A TREE. THE TREE PROTECTION AREA SHALL BE 15 FEET FROM THE TRUNK OF THE TREE TO BE RETAINED, OR THE DISTANCE FROM THE TRUNK TO THE DRIPLINE (THE LINE MARKING THE OUTER EDGE OF THE BRANCHES OF THE TREE), WHICHEVER IS GREATER. WHERE THERE IS A GROUP OF TREES OR WOODLANDS, THE TREE PROTECTION AREA SHALL BE THE AGGREGATE OF THE PROTECTION AREAS FOR THE INDIVIDUAL TREES.

PROTECTION FROM MECHANICAL INJURY.

1. PRIOR TO CONSTRUCTION THE TREE PROTECTION AREA SHALL BE DELINEATED BY THE FOLLOWING METHODS:
   A. THE TREE PROTECTION AREA THAT IS DELINEATED ON THE SITE PRIOR TO CONSTRUCTION SHALL CONFORM TO THE APPROVED DEVELOPMENT PLANS.
   B. ALL TREES SCHEDULED TO REMAIN SHALL BE MARKED; WHERE GROUPS OF TREES EXIST, ONLY THE TREES ON THE EDGE NEED TO BE MARKED.
   C. A FORTY–EIGHT–INCH–HIGH SNOW FENCE OR OTHER SUITABLE FENCE, MOUNTED ON STEEL POSTS LOCATED EIGHT FEET ON CENTER, SHALL BE PLACED ALONG THE BOUNDARY OF THE TREE PROTECTION AREA.
   D. WHEN THE FENCING HAS BEEN INSTALLED, IT SHALL BE INSPECTED AND APPROVED BY THE TOWNSHIP PRIOR TO COMMENCING CLEARING AND FURTHER CONSTRUCTION. THE FENCING ALONG THE TREE PROTECTION AREA SHALL BE MAINTAINED UNTIL ALL WORK AND CONSTRUCTION HAS BEEN COMPLETED. ANY DAMAGES TO THE PROTECTIVE FENCING SHALL BE REPLACED AND REPAIRED BEFORE FURTHER CONSTRUCTION SHALL BEGIN.
   E. TREES BEING REMOVED SHALL NOT BE FELLED, PUSHED OR PULLED INTO A TREE PROTECTION AREA OR INTO TREES THAT ARE TO BE RETAINED.
   F. GRADE CHANGES AND EXCAVATIONS SHALL NOT ENCROACH UPON THE TREE PROTECTION AREA.
   G. NO TOXIC MATERIALS SHALL BE STORED WITHIN 100 FEET OF A TREE PROTECTION AREA, INCLUDING PETROLEUM BASED AND/OR DERIVED PRODUCTS.
   H. THE AREA WITHIN THE TREE PROTECTION AREA SHALL NOT BE BUILT UPON NOR SHALL ANY MATERIALS BE STORED THERE EITHER TEMPORARILY OR PERMANENTLY. VEHICLES AND EQUIPMENT SHALL NOT BE PARKED IN THE TREE PROTECTION AREA.
   I. WHEN TREE STUMPS ARE LOCATED WITHIN 10 FEET OF THE TREE PROTECTION AREA, THE STUMPS SHALL BE REMOVED BY MEANS OF A STUMP GRINDER TO MINIMIZE THE EFFECT ON SURROUNDING ROOT SYSTEMS.
   J. TREE ROOTS WHICH MUST BE SEVERED SHALL BE CUT BY A BACKHOE OR SIMILAR EQUIPMENT WITH ITS CUTTING BLADE ALIGNED PERPENDICULAR TO A RADIAL LINE FROM THE TREE. THIS METHOD REDUCES THE LATERAL MOVEMENT OF THE ROOTS DURING EXCAVATION, WHICH IF DONE BY OTHER METHODS COULD DAMAGE THE INTERTWINED ROOTS OF ADJACENT TREES.
   K. WITHIN FOUR HOURS OF ANY SEVERANCE OF ROOTS, ALL TREE ROOTS THAT HAVE BEEN EXPOSED AND/OR DAMAGED SHALL BE TRIMMED CLEANLY AND COVERED TEMPORARILY WITH MOIST PEAT MOSS, BURLAP OR OTHER BIODEGRADABLE MATERIAL TO KEEP THEM FROM DRYING OUT UNTIL PERMANENT COVER CAN BE INSTALLED.
   L. SEDIMENT, RETENTION AND DETENTION BASINS SHALL NOT DISCHARGE INTO THE TREE PROTECTION AREA.
   M. SEDIMENT, RETENTION AND DETENTION BASINS SHALL NOT BE LOCATED WITHIN THE TREE PROTECTION AREA.
   N. TREES SHALL NOT BE USED FOR ROPING CABLES, SIGNS OR FENCING. NAILS AND SPIKES SHALL NOT BE DRIVEN INTO TREES.

PROTECTION FROM GRADE CHANGE.

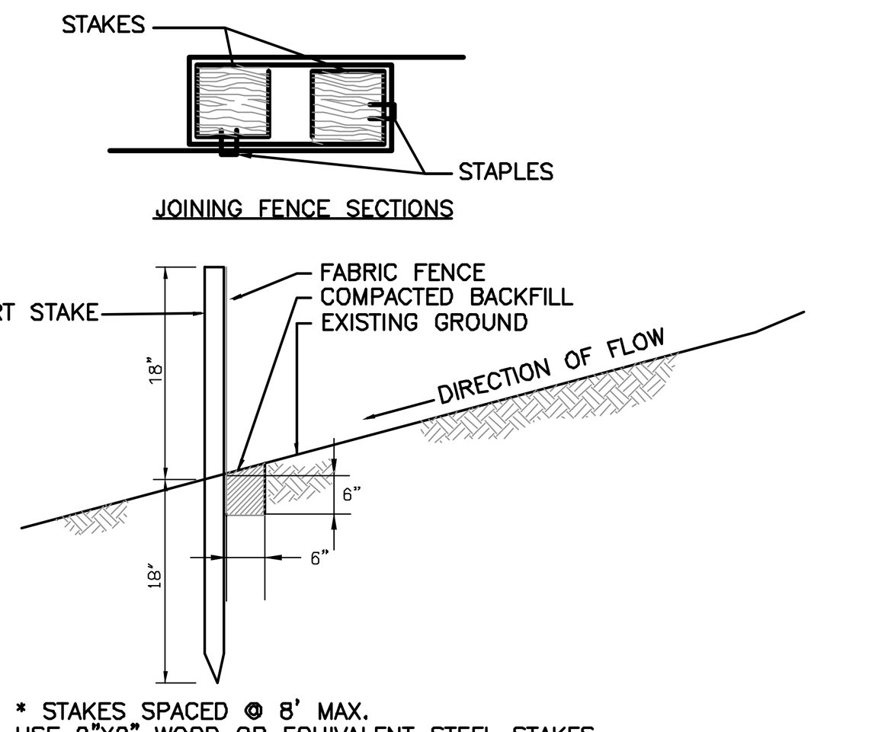
   A. WHEN THE ORIGINAL GRADE CANNOT BE RETAINED AT THE TREE PROTECTION AREA LINE, A TREE PROTECTION WALL SHALL BE CONSTRUCTED OUTSIDE THE TREE PROTECTION AREA.
   B. TO ENSURE THE SURVIVAL OF TREES, THE FOLLOWING METHODS SHALL BE USED:
   C. THE TOP OF THE TREE PROTECTION WALL SHALL BE FOUR INCHES ABOVE THE FINISHED GRADE LEVEL.
   D. THE TREE PROTECTION WALL SHALL BE CONSTRUCTED OF LARGE STONES, BRICK, BUILDING TILE, CONCRETE BLOCKS OR TREATED WOOD BEAMS NOT LESS THAN SIX INCHES BY SIX INCHES. A MEANS FOR DRAINAGE THROUGH THE WALL SHALL BE PROVIDED SO WATER WILL NOT ACCUMULATE ON EITHER SIDE OF THE WALL. WEEP HOLES SHALL BE REQUIRED WITHIN ANY WALL.
   E. ANY SEVERED ROOTS AS A RESULT OF EXCAVATION SHALL BE TRIMMED SO THAT THEIR EDGES ARE SMOOTH AND ARE CUT BACK TO A LATERAL ROOT IF EXPOSED.

TREES DAMAGED DURING CONSTRUCTION.

1. TREE TRUNKS AND EXPOSED ROOTS DAMAGED DURING CONSTRUCTION SHALL BE PROTECTED FROM FURTHER DAMAGE. DAMAGED BRANCHES SHALL BE PRUNED ACCORDING TO NATIONAL ARBORIST ASSOCIATION STANDARDS. ALL CUTS SHALL BE MADE SUFFICIENTLY CLOSE TO THE TRUNK OR PARENT LIMB BUT WITHOUT CUTTING INTO THE BRANCH COLLAR OR LEAVING A PROTRUDING STUB. ALL NECESSARY PRUNING CUTS MUST BE MADE TO PREVENT BARK FROM BEING TORN FROM THE TREE AND TO FACILITATE RAPID HEALING.
2. ALL TREES WHICH HAVE BEEN DISTURBED OR HAVE EXPERIENCED DAMAGE TO THEIR ROOTS OR BRANCHES SHALL BE FERTILIZED. TREES SHALL BE FERTILIZED IN EARLY FALL OR MID–SPRING. FERTILIZER GRADE SHALL HAVE APPROXIMATELY THREE PARTS NITROGEN TO ONE PART PHOSPHORUS AND POTASSIUM (THREE TO ONE TO ONE RATIO). FERTILIZER SHALL BE BROADCAST OVER THE SOIL SURFACE IN AN AREA TWICE THE SIZE OF THE TREE PROTECTION AREA AT A RATE OF ONE POUND OF NITROGEN PER 1,000 SQUARE FEET.

PROTECTION FROM EXCAVATIONS.

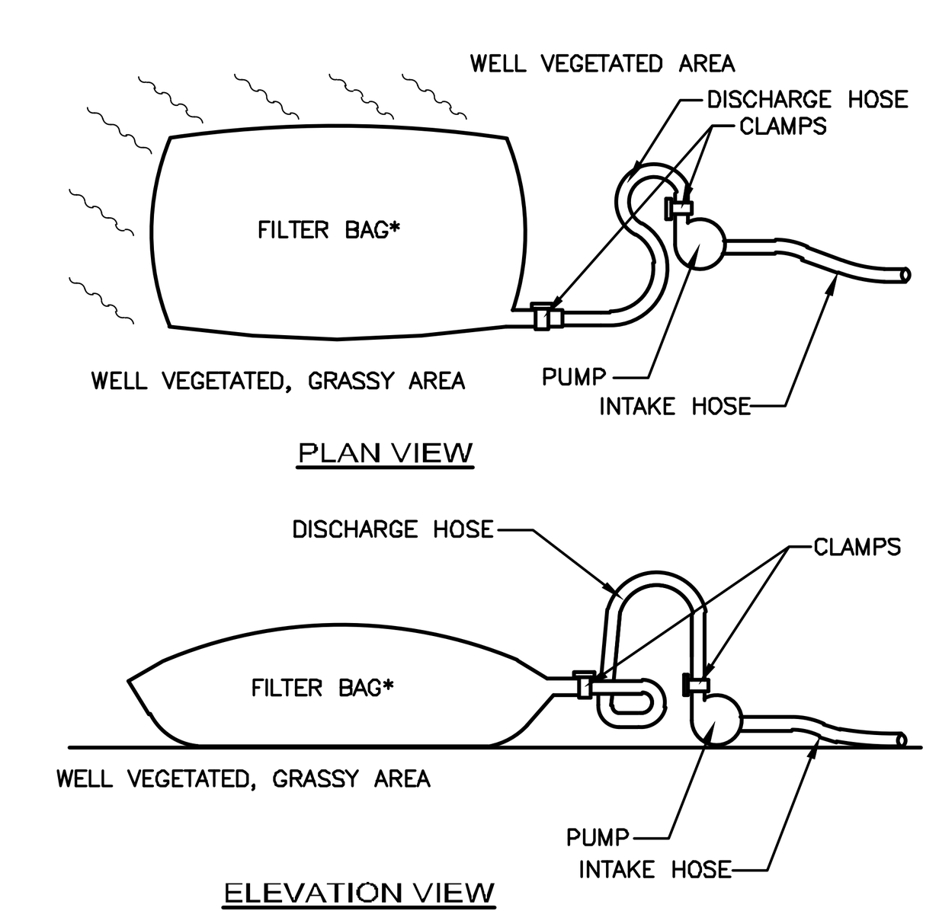
1. WHEN THERE IS NO ALTERNATIVE BUT TO LOCATE AN ELECTRICAL OR OTHER SMALL UTILITY LINE WITHIN A TREE PROTECTION AREA, THE TOWNSHIP SHALL DETERMINE THE MOST DESIRABLE LOCATION FOR THE LINE, AND THE FOLLOWING GUIDELINES SHALL BE USED:
   A. WHERE POSSIBLE, TRENCHES SHOULD BYPASS THE ROOT AREA.
   B. WHERE TRENCHES MUST BE DUG PAST THE SIDE OF A TREE, THE FOLLOWING PRECAUTIONS SHALL BE OBSERVED:
      a. TRENCHES SHALL BE NO CLOSER TO THE TRUNK THAN HALF THE DISTANCE FROM THE DRIPLINE.
      b. CUT AS FEW ROOTS AS POSSIBLE.
      c. IF ROOTS HAVE TO BE CUT, CUT THEM AS CLEANLY AS POSSIBLE.
      d. BACKFILL THE TRENCH AS SOON AS POSSIBLE, AVOIDING SOIL COMPACTION.



* STAKES SPACED @ 8' MAX.
USE 2"X2" WOOD OR EQUIVALENT STEEL STAKES.

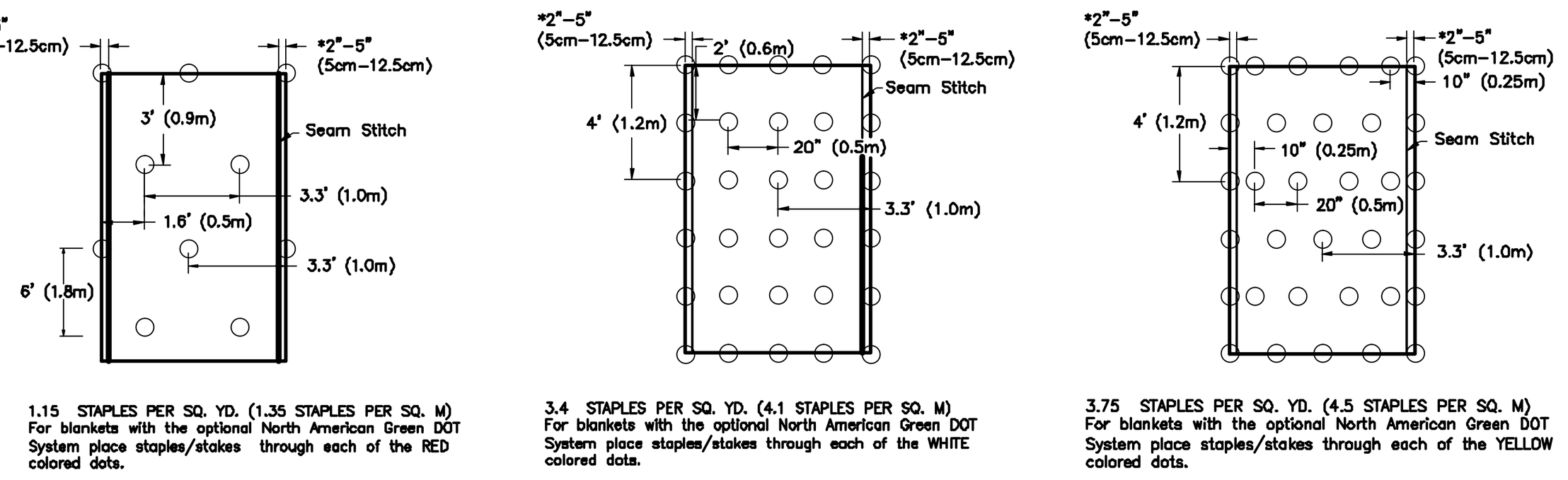
NOTES:
1. FILTER FABRIC FENCE MUST BE PLACED AT LEVEL GRADE. BOTH ENDS OF THE BARRIER MUST BE EXTENDED AT LEAST 8 FEET UP SLOPE @ 45 DEGREES TO THE MAIN BARRIER ALIGNMENT.
2. SEDIMENT MUST BE REMOVED WHEN ACCUMULATION REACHES HALF THE ABOVE GROUND HEIGHT OF THE FENCE (9").
3. ANY SECTION OF FENCE WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET (SEE ROCK FILTER OUTLET DETAIL).

STANDARD FILTER FABRIC FENCE (18" HIGH)
NOT TO SCALE



NOTES:
1. FILTER BAGS SHALL BE MADE FROM NON–WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS.
2. A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES MUST BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME ½ FULL. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED.
3. BAGS SHALL BE LOCATED IN WELL–VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE FLOW PATH SHALL BE PROVIDED. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%.
4. THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED.
5. THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR ½ THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHOULD BE FLOATING AND SCREENED.
6. FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

PUMPED WATER FILTER BAG
NOT TO SCALE

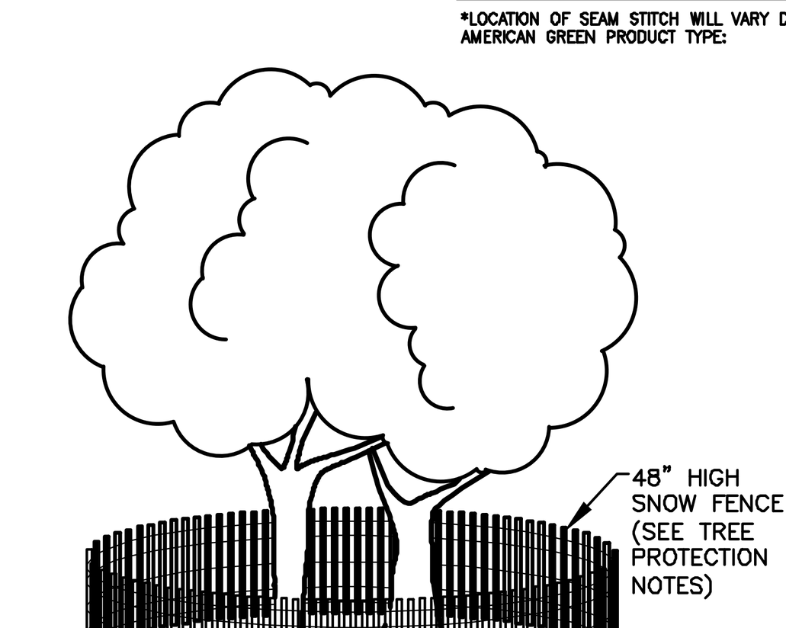


1.15 STAPLES PER SQ. YD. (1.35 STAPLES PER SQ. M) For blankets with the optional North American Green DOT System place staples/stakes through each of the RED colored dots.
STAPLE B

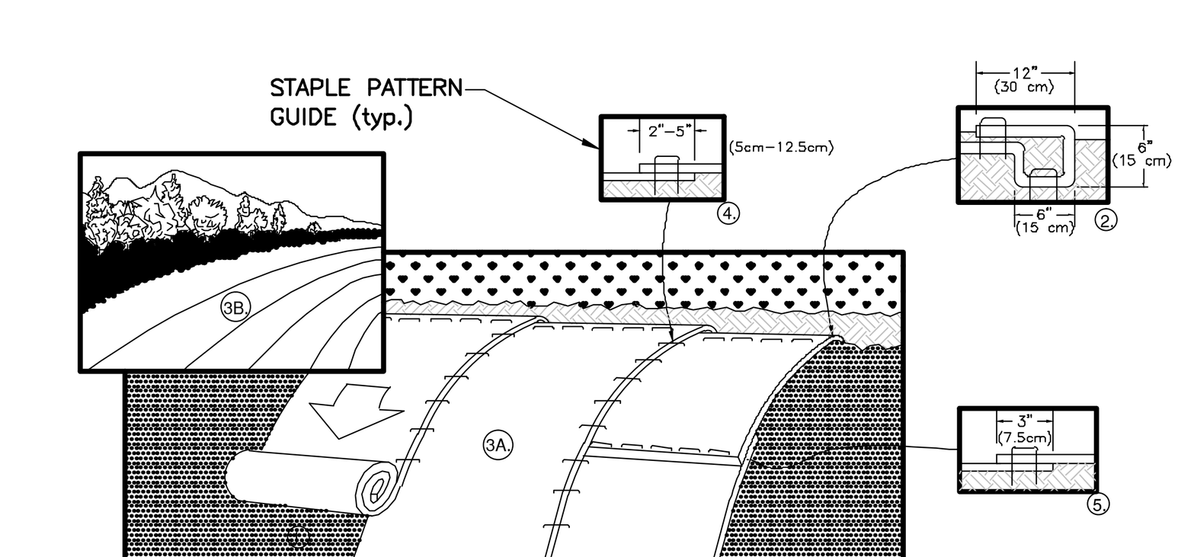
3.4 STAPLES PER SQ. YD. (4.1 STAPLES PER SQ. M) For blankets with the optional North American Green DOT System place staples/stakes through each of the WHITE colored dots.
STAPLE D

3.75 STAPLES PER SQ. YD. (4.5 STAPLES PER SQ. M) For blankets with the optional North American Green DOT System place staples/stakes through each of the YELLOW colored dots.
STAPLE E

STAPLE PATTERNS
*LOCATION OF SEAM STITCH WILL VARY DEPENDING ON NORTH AMERICAN GREEN PRODUCT TYPE.



TREE PROTECTION FENCE DETAIL
NOT TO SCALE

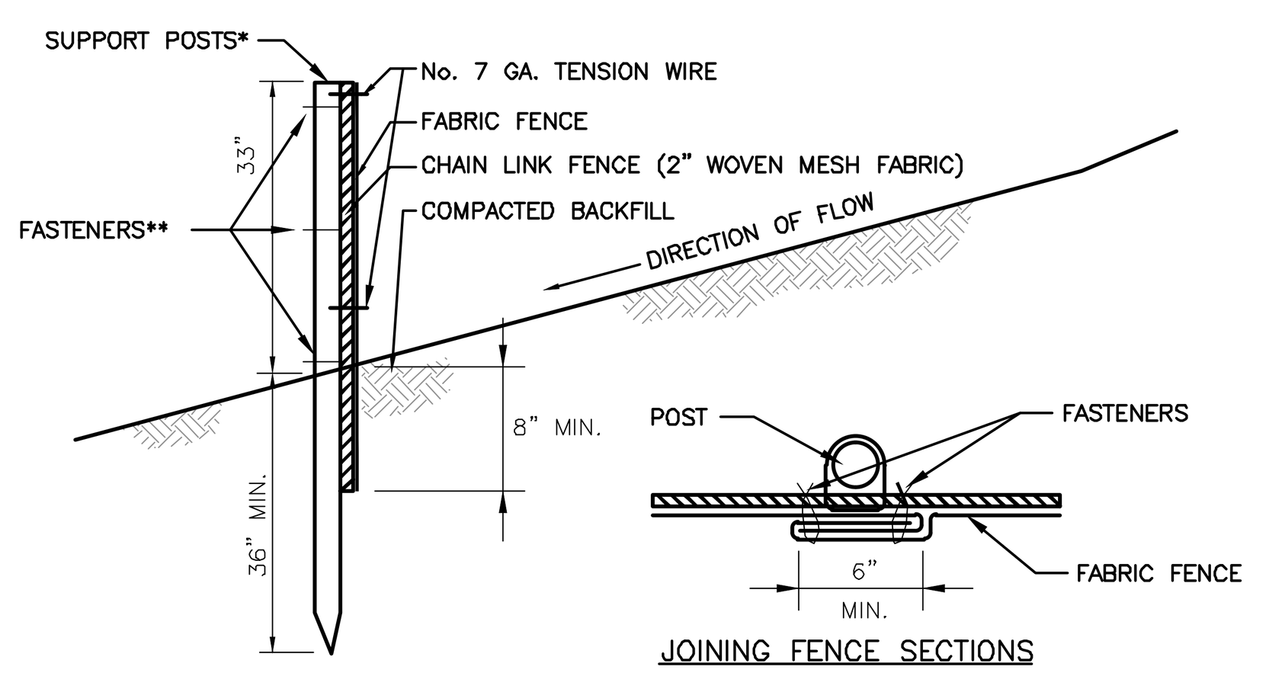


1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL–O–SEED DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"–5" (5cm–12.5cm) OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH™ ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5cm) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30cm) APART ACROSS ENTIRE BLANKET WIDTH.

NOTE:
*IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15cm) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

TURF REINFORCEMENT MAT IS SC–250 AS MANUFACTURED BY NORTH AMERICAN GREEN, OR APPROVED EQUAL.
INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

TURF REINFORCEMENT MAT SLOPE INSTALLATION DETAIL
NOT TO SCALE

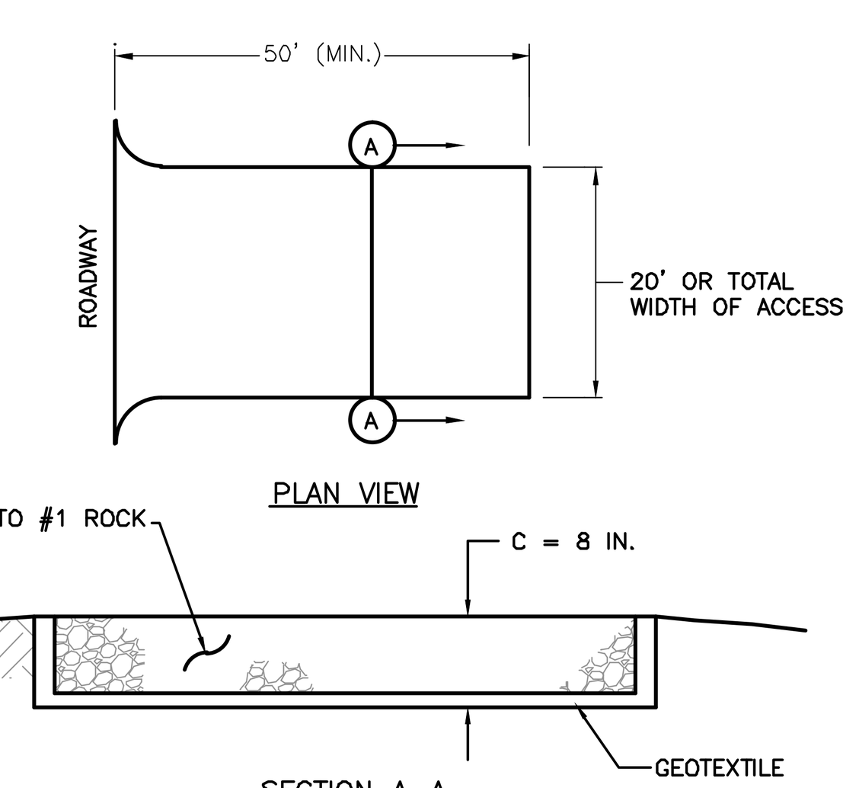


* POSTS SPACED @ 10' MAX. USE 2 1/2" DIA. GALVANIZED OR ALUMINUM POSTS.

** CHAIN LINK TO POST FASTENERS SPACED @ 14" MAX. USE No. 6 GA. ALUMINUM WIRE OR No. 9 GALVANIZED STEEL PRE–FORMED CLIPS. CHAIN LINK TO TENSION WIRE FASTENERS SPACED @ 60" MAX. USE No. 10 GA. GALVANIZED STEEL WIRE. FABRIC TO CHAIN FASTENERS SPACED @ 24" MAX. C TO C.

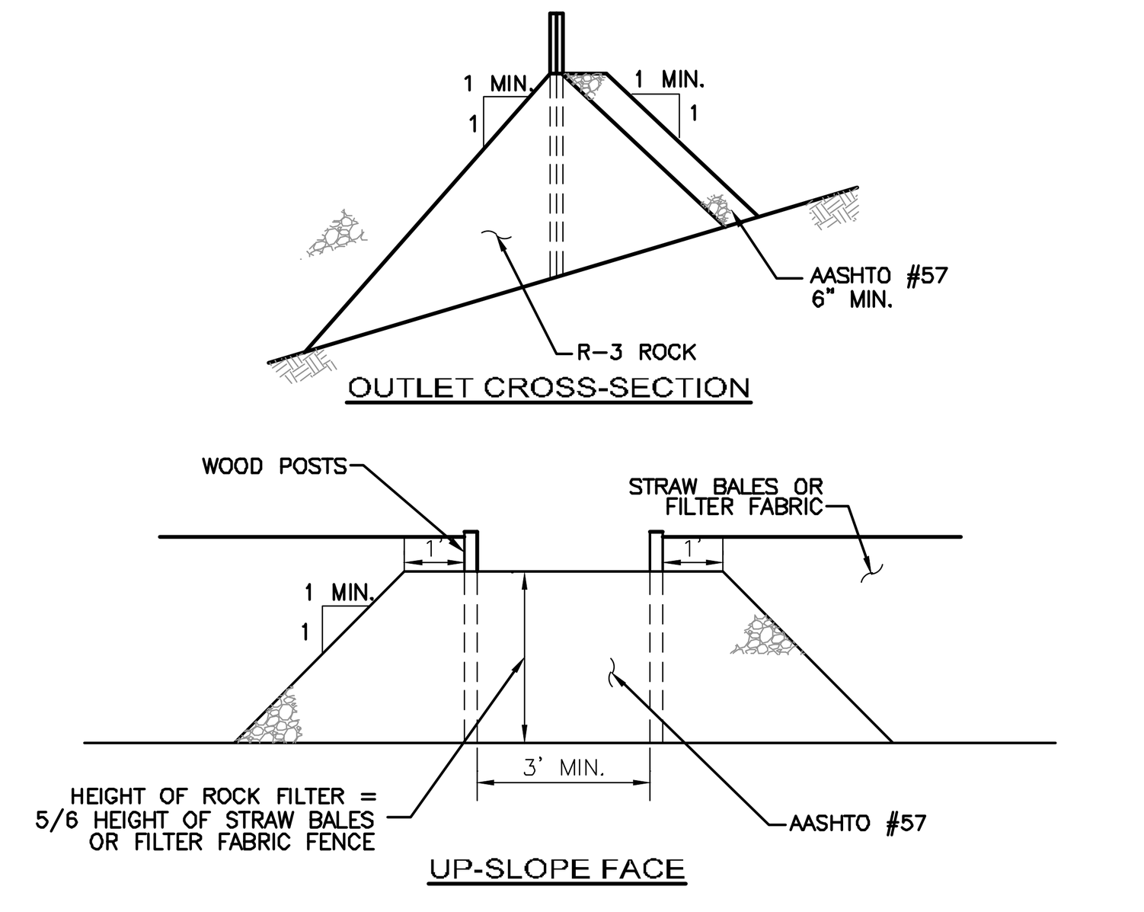
NOTES:
1. NO. 7 GA. TENSION WIRE INSTALLED HORIZONTALLY AT TOP AND BOTTOM OF CHAIN–LINK FENCE.
2. FILTER FABRIC FENCE MUST BE PLACED AT LEVEL GRADE. BOTH ENDS OF EACH FENCE SECTION MUST BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
3. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.
4. ANY SECTION OF FENCE WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET. (SEE ROCK FILTER OUTLET DETAIL)

SUPER FILTER FABRIC FENCE
NOT TO SCALE



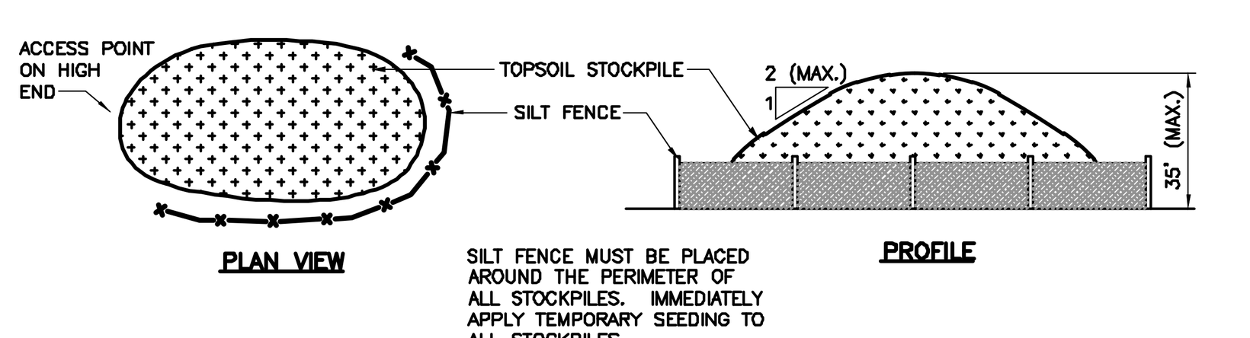
MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. AT THE END OF EACH CONSTRUCTION DAY, ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE.

ROCK CONSTRUCTION ENTRANCE
NOT TO SCALE



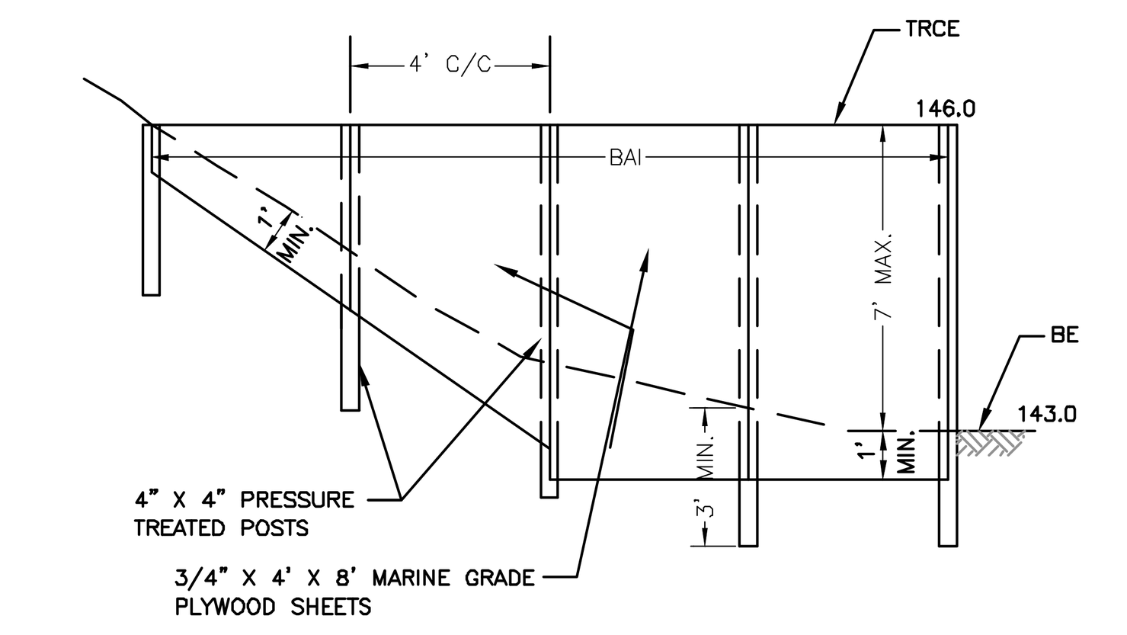
SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET.

ROCK FILTER OUTLET
NOT TO SCALE



SILT FENCE MUST BE PLACED AROUND THE PERIMETER OF ALL STOCKPILES. IMMEDIATELY APPLY TEMPORARY SEEDING TO ALL STOCKPILES.

TOPSOIL STOCKPILE AREA DETAIL
NOT TO SCALE



IN POOLS WITH DEPTHS EXCEEDING 7', THE TOP OF THE PLYWOOD BAFFLE DOES NOT NEED TO EXTEND TO THE TEMPORARY RISER CREST.

BASIN	BAFFLE LENGTH BAI (FT)	BAFFLE HEIGHT	TEMPORARY RISER CREST ELEV. TRCE (FT)	BOTTOM BOTTOM ELEV. BE (FT)
BAFFLE #1	55'	2.5'	164.0	163.50
BAFFLE #2	105	3'	164.0	162.50
BAFFLE #3	80	3'	164.0	163.00
BAFFLE #4	120	3'	164.0	162.25

SEDIMENTATION BAFFLE DETAIL
N.T.S. PADEP STANDARD CONSTRUCTION DETAIL #9

SEEDING SPECIFICATIONS

SURFACE STABILIZATION CRITERIA: DENUDED AREAS SHALL BE STABILIZED TEMPORARILY, OR PERMANENTLY WITHIN THREE (3) DAYS OF EXPOSURE. SEED, FERTILIZE, LIME AND MULCH AS BELOW: MINIMUM 90% PURITY AND 85% GERMINATION.

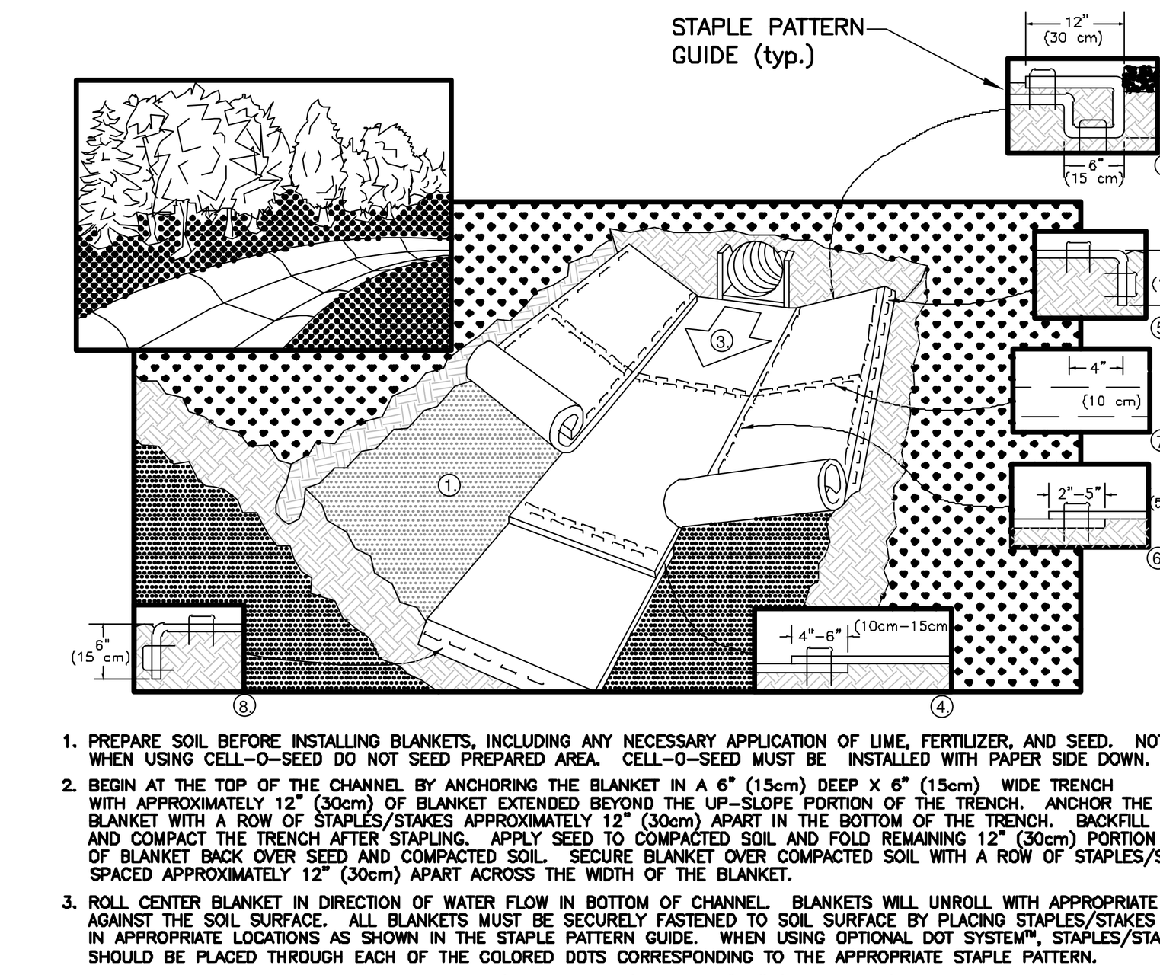
1. TEMPORARY COVER: SEED WITH 50% WINTER RYE/GRASS AT 104 LBS./ACRE.
   A. FERTILIZER – STANDARD QUALITY

ANALYSIS	RATE
0–20–20 – BASIC FERTILIZER	20 LBS./1,000 S.F.
10–10–10 – STARTER FERTILIZER	10 LBS./1,000 S.F.

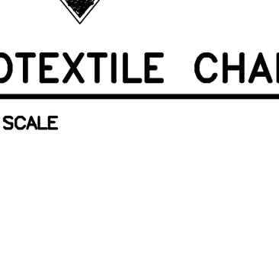
   B. LIME – AGRICULTURAL LIMESTONE (NOT TO BE APPLIED IN WOODLANDS)

ANALYSIS	RATE
90% MINIMUM OF CARBONATES	50 LBS./1,000 S.F.
CALCIUM CARBONATE OR	MAXIMUM 3 TONS/ACRE

   C. MULCH WITH HAY OR STRAW AT 3 TONS/ACRE
2. PERMANENT COVER:
   A. SEED MIX: SEE ATHLETIC TURF SEED MIX (SEE DETAIL SHEETS)
   B. FERTILIZER:
      10–20–20 (NITROGEN – P205 – K20) AT 500 LBS./ACRE
   C. LIME:
      90% MINIMUM OF CARBONATED CALCIUM CARBONATE AT 6 TONS/ACRE.
   D. MULCH WITH HAY OR STRAW AT 3 TONS/ACRE.
   E. AREAS THAT FAIL TO GERMINATE MUST BE RESEEDED.



1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL–O–SEED DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. PLACE CONSECUTIVE BLANKETS END OVER END (SHINGLE STYLE) WITH A 4"–6" (10cm–15cm) OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10cm) APART AND 4" (10cm) ON CENTER TO SECURE BLANKETS.
5. FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT BLANKETS MUST BE OVERLAPPED APPROXIMATELY 2"–5" (5cm–12.5cm) (DEPENDING ON BLANKET TYPE) AND STAPLED. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH™ ON THE BLANKET BEING OVERLAPPED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT (9m–12m) INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10cm) APART AND 4" (10cm) ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

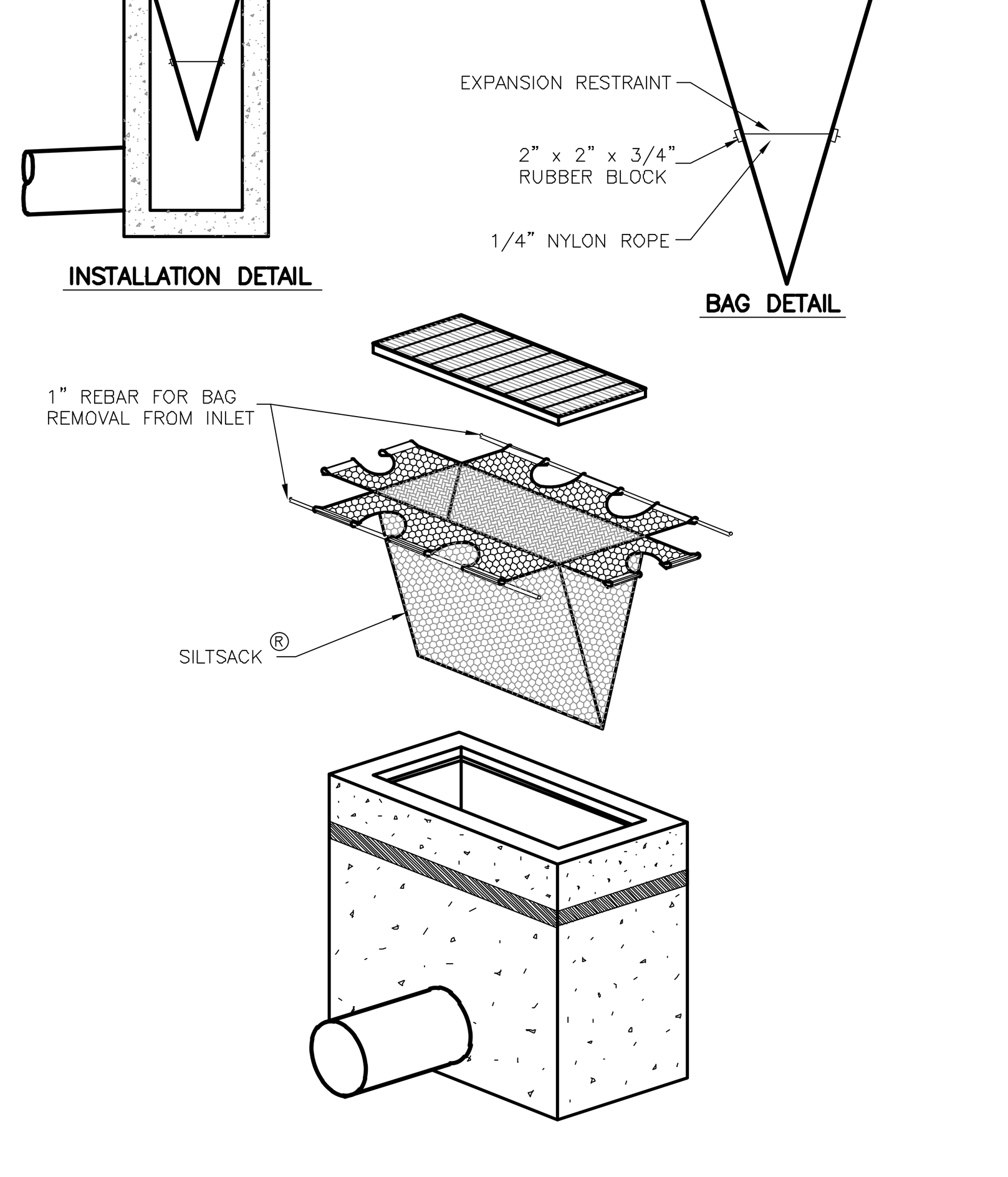


CRITICAL POINTS
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

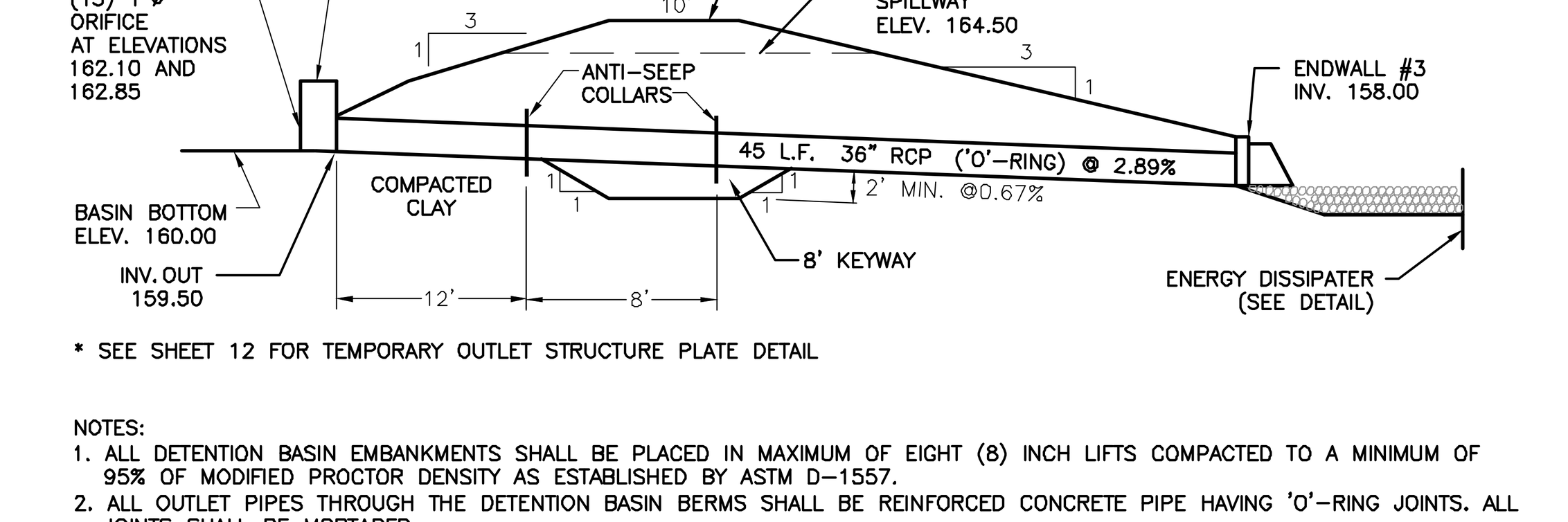
NOTE:
* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.
** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 cm) MAY BE NECESSARY TO PROPERLY ANCHOR THE BLANKETS.

SEE CHANNEL DETAIL FOR SPECIFICATIONS. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

GEOTEXTILE CHANNEL INSTALLATION DETAIL
NOT TO SCALE



INLET PROTECTION – SILT SACK
N.T.S.



* SEE SHEET 12 FOR TEMPORARY OUTLET STRUCTURE PLATE DETAIL

NOTES:
1. ALL DETENTION BASIN EMBANKMENTS SHALL BE PLACED IN MAXIMUM OF EIGHT (8) INCH LIFTS COMPACTED TO A MINIMUM OF 95% OF MODIFIED PROCTOR DENSITY AS ESTABLISHED BY ASTM D–1557.
2. ALL OUTLET PIPES THROUGH THE DETENTION BASIN BERMS SHALL BE REINFORCED CONCRETE PIPE HAVING 'O'–RING JOINTS. ALL JOINTS SHALL BE MORTARED.
3. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR THE BOX CULVERT / WING WALLS AND OUTLET STRUCTURE 1 TO BE APPROVED BY THE TOWNSHIP ENGINEER.
4. SEE THE STORMWATER DOCUMENTS AND CALCULATIONS FOR DETAILS OF OUTLET STRUCTURES 1.

SEDIMENT BASIN CROSS SECTION DETAIL
NOT TO SCALE

SEDIMENT BASIN CONSTRUCTION SEQUENCE:
1. INSTALL ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS.
   a. THE AREA IMMEDIATELY ADJACENT TO THE BASIN MUST BE STABILIZED IN ACCORDANCE WITH THE PADEP'S EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL (2000 OR LATEST EDITION) PRIOR TO BASIN CONSTRUCTION.
2. PREPARE SITE FOR EXCAVATION AND/OR EMBANKMENT CONSTRUCTION.
   a. ALL EXISTING VEGETATION SHOULD REMAIN IF FEASIBLE AND SHOULD ONLY BE REMOVED IF NECESSARY FOR CONSTRUCTION.
   b. CARE SHOULD BE TAKEN TO PREVENT COMPACTION OF THE BASIN BOTTOM.
   c. IF EXCAVATION IS REQUIRED, CLEAR THE AREA TO BE EXCAVATED OF ALL VEGETATION. REMOVE ALL TREE ROOTS, ROCKS, AND BOULDERS ONLY IN EXCAVATION AREA
3. EXCAVATE BOTTOM OF BASIN TO DESIRED ELEVATION (IF NECESSARY).
4. INSTALL SURROUNDING EMBANKMENTS AND INLET AND OUTLET CONTROL STRUCTURES.
5. GRADE SUBSOIL IN BOTTOM OF BASIN, TAKING CARE TO PREVENT COMPACTION. COMPACT SURROUNDING EMBANKMENT AREAS AND AROUND INLET AND OUTLET STRUCTURES.
6. APPLY AND GRADE PLANTING SOIL.
7. APPLY GEO–TEXTILES AND OTHER EROSION–CONTROL MEASURES.
8. SEED, PLANT AND MULCH ACCORDING TO PLANTING PLAN
9. INSTALL ANY ANTI–GRAZING MEASURES, IF NECESSARY.

SEDIMENT BASIN MAINTENANCE ISSUES:
MAINTENANCE IS NECESSARY TO ENSURE PROPER FUNCTIONALITY OF THE EXTENDED DETENTION BASIN AND SHOULD TAKE PLACE ON A QUARTERLY BASIS. A BASIN MAINTENANCE PLAN SHOULD BE DEVELOPED WHICH INCLUDES THE FOLLOWING MEASURES:
- ALL BASIN STRUCTURES EXPECTED TO RECEIVE AND/OR TRAP DEBRIS AND SEDIMENT SHOULD BE INSPECTED FOR CLOGGING AND EXCESSIVE DEBRIS AND SEDIMENT ACCUMULATION AT LEAST FOUR TIMES PER YEAR, AS WELL AS AFTER EVERY STORM GREATER THAN 1 INCH.
  - •• STRUCTURES INCLUDE BASIN BOTTOMS, TRASH RACKS, OUTLETS STRUCTURES, RIPRAP OR GABION STRUCTURES, AND INLETS.
- SEDIMENT REMOVAL SHOULD BE CONDUCTED WHEN THE BASIN IS COMPLETELY DRY. SEDIMENT SHOULD BE DISPOSED OF PROPERLY AND ONCE SEDIMENT IS REMOVED, DISTURBED AREAS NEED TO BE IMMEDIATELY STABILIZED AND REVEGETATED.
- MOWING AND/OR TRIMMING OF VEGETATION SHOULD BE PERFORMED AS NECESSARY TO SUSTAIN THE SYSTEM, BUT ALL DETRITUS SHOULD BE REMOVED FROM THE BASIN.
  - •• VEGETATED AREAS SHOULD BE INSPECTED ANNUALLY FOR EROSION.
  - •• VEGETATED AREAS SHOULD BE INSPECTED ANNUALLY FOR UNWANTED GROWTH OF EXOTIC/INVASIVE SPECIES.
  - •• VEGETATIVE COVER SHOULD BE MAINTAINED AT A MINIMUM OF 95 PERCENT. IF VEGETATIVE COVER HAS BEEN REDUCED BY 10%, VEGETATION SHOULD BE REESTABLISHED.

A WRITTEN REPORT OF THE INSPECTIONS SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO BUCKS COUNTY CONSERVATION DISTRICT.

KNOW WHAT'S BELOW CALL BEFORE YOU DIG!
PENNSYLVANIA ACT 287 OF 1974 (AS AMENDED) REQUIRES 3 WORKING DAYS NOTICE FOR EXCAVATION PHASE AND 10 WORKING DAYS IN DESIGN STAGE – STOP! CALL!
PENNSYLVANIA ONE CALL SYSTEM, INC. 1–800 242–1776 or 811
PA ONE–CALL SERIAL No.
SERIAL NO. 20162291370
AUGUST 16, 2016

REVISIONS :

DATE	DESCRIPTION	DATE	DESCRIPTION
01/31/17	PLANS UPDATED WITH INFILTRATION PIT LOCATIONS AND NPDES NOTES		
05/02/17	PER ENGINEER REVIEW LETTER		
05/16/17	PER ENGINEER & EAC REVIEW LETTERS		
05/19/17	REVISED INFILTRATION TRENCH INLET 2 TO 3		
06/07/17	REVISED PER CONDITIONS OF APPROVAL		
06/30/17	REVISED PER PRE–BID MEETING		
07/07/17	REVISED PER ADDENDUM 2		
10/20/17	REVISED EXISTING AND PROPOSED WATER LINE		

PROJECT :
SNIPES TRACT ATHLETIC FIELDS
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT :
LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

JOB NO.: 1677054L
DRAWN BY: TMW
CHECKED BY: MES
SCALE: N.T.S.
PLAN STATUS: FINAL

TITLE : EROSION AND SEDIMENTATION CONTROL DETAILS

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN ✦ STROUDSBURG ✦ LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345–9400 FAX: (215) 345–9401
www.bjengineers.com

PROJECT NAME : SNIPES TRACT ATHLETIC FIELDS

DATE: NOVEMBER 14, 2016

BUFFER AND LANDSCAPE COMPLIANCE CHART

1. STREET TREES SALDO SECTION 178-81.b\B(2)

1 *STREET TREE IS REQUIRED FOR EVERY 30 LINEAR FEET OF CURBLINE

	REQUIRED TREES	EXISTING TREES	PROPOSED TREES
DOLINGTON RD (1,300 LF/30)	44	20	24**
QUARRY RD (510 LF/30)	17	0	17
TOTAL	61	20	33

*MINIMUM TRUNK DIAMETER SHALL BE 3"
**A WAIVER OF LOCATION WILL BE REQUIRED FOR 8 STREET TREES.

2. BUFFER YARDS SALDO SECTION 178-82. b(7)

NON-RESIDENTIAL/ RESIDENTIAL SEPARATION BUFFER - TYPE I BUFFER REQUIRED
DOLINGTON ROAD - 1,340 LF - 40' ENTRY DRIVE = 1,300

	REQUIRED TREES	PROPOSED TREES
EVERGREENS (1 PER 20 LF OF BUFFER)	65	65
SHADE TREES (1 PER 60 LF OF BUFFER)	22	22
ORNAMENTAL TREES (1 PER 60 LF OF BUFFER)	22	22
SHRUBS* (1 PER 4' OF BUFFER LENGTH)	325	33 EVERGREEN TREES
GROUNDCOVER (10 PLANTS PER 1 SHRUB)	3,250	6,522

*1 EVERGREEN OR SHADE TREE MAY BE SUBSTITUTED FOR 10 SHRUBS.

PLANTING SCHEDULE

QUANT.	KEY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
SHADE TREES					
34	GT	*GLEDITSIA TRIACANTHOS VAR. INERMIS*	THORNLESS HONEYLOCUST	3" CAL.	B&B
26	TA	*TILIA AMERICANA*	AMERICAN LINDEN	3" CAL.	B&B
21	AR	*ACER RUBRUM*	RED MAPLE	3" CAL.	B&B
21	NS	*NYSSA SYLVATICA*	BLACK GUM	3" CAL.	B&B
EVERGREEN TREES					
23	IO	*ILEX OPACA*	AMERICAN HOLLY	6' MIN. HT.	B&B
38	JV	*JUNIPERUS VIRGINIANA*	EASTERN REDCEDAR	6' MIN. HT.	B&B
28	PS	*PINUS STROBUS*	WHITE PINE	6' MIN. HT.	B&B
ORNAMENTAL FLOWERING TREES					
6	AC	*AMELANCHIER CANADENSIS*	SERVICEBERRY	8' MIN. HT.	B&B
5	CC	*CERCIS CANADENSIS*	REDBUD	8' MIN. HT.	B&B
11	MV	*MAGNOLIA VIRGINIANA*	SWEETBAY MAGNOLIA	8' MIN. HT.	B&B
GROUNDCOVER PLANTS					
6,522	RA	*RHUS AROMATICA 'GRO-LOW'*	'GRO-LOW' SUMAC	3 GALLON CONTAINERS	B&B

LEGEND

- ADJOINER LINE
- EXISTING BOUNDARY
- EXISTING RIGHT-OF-WAY
- 288 EXISTING CONTOUR
- 290 EXISTING INDEX CONTOUR
- EXISTING DRIVEWAY
- EXISTING CHAINLINK FENCE
- EXISTING TREELINE
- MON FND □ EXISTING MONUMENT
- PROPOSED BUILDING
- PROPOSED BUILDING SETBACKS
- PROPOSED CENTERLINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED SIGN
- PROPOSED SIDEWALK
- PROPOSED TRAIL
- PROPOSED TREELINE
- TP TP PROPOSED TREE PROTECTION FENCE
- PROPOSED NEW SHADE TREE
- PROPOSED EVERGREEN TREE
- PROPOSED TRANSPLANTED SHADE TREE (TO BE SELECTED & TRANSPLANTED FROM SITE INTERIOR BY OTHERS)
- PROPOSED TRANSPLANTED EVERGREEN (TO BE SELECTED & TRANSPLANTED FROM SITE INTERIOR BY OTHERS)
- EXISTING TREE TO REMAIN
- NATIVE DETENTION AREA SEED MIX - ERNMIX-183
- GROUNDCOVER PLANTING AREA

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PROJECT :
SNIPES TRACT ATHLETIC FIELDS
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT :
LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

0 25 50 100 150
SCALE : 1"= 50'

JOB NO.: 1677054L
DRAWN BY: VLL
CHECKED BY: GSG
SCALE: 1" = 50'
PLAN STATUS: FINAL

TITLE : LANDSCAPE PLAN

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN STROUDSBURG LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345-9400 FAX: (215) 345-9401
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PROJECT NAME : SNIPES TRACT ATHLETIC FIELDS

DATE: NOVEMBER 14, 2016

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PLANTING STANDARDS

1. INDUSTRY STANDARDS
 1.1. NAMES OF PLANTS SHALL AGREE WITH THE NOMENCLATURE OF "STANDARD PLANT NAMES" AS ADOPTED BY THE AMERICAN JOINT COMMITTEE ON HORTICULTURE NOMENCLATURE.
 1.2. ALL PLANT MATERIAL SHALL MEET SIZING, GRADING, QUALITY AND OTHER STANDARDS SPECIFIED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION IN THE "AMERICAN STANDARD FOR NURSERY STOCK" ANSI Z60.1–2004 OR LATEST EDITION.
 1.3. INSTALLATION AND PLANT CARE OPERATIONS FOR TREES, SHRUBS AND OTHER WOODY PLANTS SHALL CONFORM TO THE STANDARDS SPECIFIED BY THE TREE CARE INDUSTRY ASSOCIATION IN THE LATEST EDITION OF "AMERICAN NATIONAL STANDARD FOR TREE CARE OPERATIONS" ANSI A300, AND THE LATEST EDITIONS OF THE ASSOCIATED "BEST MANAGEMENT PRACTICES" GUIDES AS PUBLISHED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE.
 1.4. WHERE THE PRUNING, REPAIRING, MAINTAINING, OR REMOVAL OF TREES, THE CUTTING OF BRUSH, OR PERFORMING OF PEST AND SOIL MANAGEMENT IS REQUIRED, OPERATIONS SHALL CONFORM TO THE STANDARDS SPECIFIED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE IN THE "AMERICAN NATIONAL STANDARD FOR ARBORICULTURAL OPERATIONS – SAFETY REQUIREMENTS" ANSI Z133.1–2006 OR LATEST EDITION.

2. QUALITY
 2.1. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY, SHALL BE OF SYMMETRICAL GROWTH AND SUITABLE FOR THE INTENDED USE; THEY SHALL HAVE NORMAL, WELL DEVELOPED BRANCHES AND VIGOROUS FIBROUS ROOT SYSTEMS AND SHALL BE FREE OF MECHANICAL DAMAGE AND INSECT AND DISEASE PROBLEMS.
 2.2. ALL PLANTS SHALL BE NURSERY GROWN UNLESS OTHERWISE STATED; THEY SHALL HAVE BEEN GROWN UNDER THE SAME CLIMATE AND SOIL CONDITIONS AS THE SUBJECT SITE FOR AT LEAST TWO (2) YEARS PRIOR TO DATE OF PLANTING. UNLESS APPROVED BY THE OWNER OR THEIR REPRESENTATIVE, PLANTS SHALL HAVE BEEN GROWN IN A LATITUDE NOT MORE THAN 200 MILES NORTH OR SOUTH OF THE PROJECT UNLESS THE PROVENANCE OF THE PLANT CAN BE DOCUMENTED TO BE COMPATIBLE WITH THE LATITUDE AND COLD HARDINESS ZONE OF THE PLANTING LOCATION.
 2.3. ALL CONTAINER GROWN NURSERY STOCK SHALL BE HEALTHY, VIGOROUS, WELL ROOTED, AND ESTABLISHED IN THE CONTAINER IN WHICH IT IS GROWING. CONTAINER GROWN NURSERY STOCK SHALL HAVE A WELL–ESTABLISHED ROOT SYSTEM REACHING THE SIDES OF THE CONTAINER TO MAINTAIN A FIRM BALL WHEN THE CONTAINER IS REMOVED, BUT SHALL NOT HAVE EXCESSIVE ROOT GROWTH ENCIRCLING THE INSIDE OF THE CONTAINER.
 2.4. B&B TREES SHALL HAVE A MINIMUM OF TWO (2) STRUCTURAL ROOTS WITHIN ONE (1) TO THREE (3) INCHES OF THE SOIL SURFACE OF THE ROOT BALL AS MEASURED FOUR (4) INCHES FROM THE TRUNK. WHERE EXCESS SOIL IS LOCATED OVERTOP OF THE STRUCTURAL ROOTS, THE EXCESS SOIL SHALL BE REMOVED SO THAT THE BOTTOM OF THE TRUNK FLARE IS VISIBLE. WHERE THE REMOVAL OF EXCESS SOIL OVERTOP OF THE STRUCTURAL ROOTS RESULTS IN AN UNDERSIZED ROOT BALL ACCORDING TO THE STANDARDS OF THE "AMERICAN STANDARD FOR NURSERY STOCK", THE TREE SHALL BE REJECTED.
 2.5. TREES MUST ARRIVE AT THE SITE IN EXCELLENT CONDITION. TREES WITH MULTIPLE LEADERS, UNLESS SPECIFIED, SHALL BE REJECTED. TREES WITH DAMAGED OR CROOKED LEADERS, BARK ABRASIONS, SUNSCALD, DISFIGURING KNOTS, INSECT DAMAGE, OR CUTS OF LIMBS OVER 3/4 INCH IN DIAMETER THAT ARE NOT COMPLETELY CLOSED SHALL BE REJECTED. B&B TREES WITH BROKEN OR UNDERSIZED ROOT BALLS, TREES WITH EXCESSIVE CIRCLING ROOTS OR WITH GIRDLING ROOTS, TREES WITH INJURY FROM ROUGH TREATMENT, AND TREES THAT HAVE BEEN DROUGHT STRESSED SHALL BE REJECTED.
 2.6. ALL PLANTS WHICH ARE FOUND UNSUITABLE IN GROWTH OR CONDITION OR WHICH ARE NOT TRUE TO NAME SHALL BE REJECTED.
 2.7. PLANTS MAY BE SUBJECT TO INSPECTION FOR CONFORMITY TO SPECIFICATIONS AND APPROVAL BY THE OWNER OR THEIR REPRESENTATIVE UPON DELIVERY TO THE SITE. SUCH APPROVAL SHALL NOT CONFER FINAL APPROVAL AND DOES NOT SIGNIFY THAT THE PLANT MATERIAL IS ACCEPTABLE TO BEGIN THE GUARANTEE PERIOD.

3. MEASUREMENTS
 3.1. CALIPER OF NURSERY STOCK TREES SHALL BE MEASURED AT A POINT SIX (6) INCHES ABOVE THE GROUND IF THE RESULTING MEASUREMENT IS NO MORE THAN FOUR (4) INCHES. IF THE RESULTING MEASUREMENT IS MORE THAN FOUR (4) INCHES, THE MEASUREMENT SHALL BE MADE AT A POINT TWELVE (12) INCHES ABOVE THE GROUND IN ACCORDANCE WITH THE "AMERICAN STANDARD FOR NURSERY STOCK."
 3.2. PLANTS SHALL BE MEASURED AS THEY STAND IN THEIR NATURAL POSITION. HEIGHT MEASUREMENT SHALL BE TAKEN FROM THE GROUND LEVEL FOR FIELD GROWN STOCK AND FROM THE SOIL LINE FOR CONTAINER GROWN STOCK, AT OR NEAR THE BOTTOM OF THE TRUNK FLARE. HEIGHT AND SPREAD DIMENSIONS SPECIFIED REFER TO THE MAIN BODY OF THE PLANT AND NOT FROM BRANCH TIP TO BRANCH TIP.
 3.3. STOCK FURNISHED SHALL MEET ALL MINIMUM SIZE REQUIREMENTS INDICATED. STOCK SHALL BE A FAIR AVERAGE OF ANY SIZE RANGE INDICATED. PLANTS THAT MEET MEASUREMENTS BUT DO NOT POSSESS A STANDARD RELATIONSHIP BETWEEN HEIGHT AND SPREAD, IN ACCORDANCE WITH THE "AMERICAN STANDARD FOR NURSERY STOCK," SHALL BE REJECTED. WHERE GRADING OR MEASUREMENT STANDARDS IN THE "AMERICAN STANDARD FOR NURSERY STOCK" CONFLICT WITH THOSE PROVIDED IN THIS PLAN, THE MORE RIGOROUS MEASUREMENT SHALL APPLY.
 3.4. THE USE OF DIAMETER TAPE FOR THE MEASUREMENT OF CALIPER SIZES IS PREFERRED. CALIPER MEASUREMENTS TAKEN WITH MANUAL OR ELECTRONIC 'SLOT' OR 'PINCER' TYPE CALIPER TOOLS SHALL BE THE AVERAGE OF THE SMALLEST AND LARGEST MEASUREMENTS.

4. SUBSTITUTIONS
 4.1. ANY PROPOSED PLANT SUBSTITUTIONS SHALL BE SUBMITTED TO THE OWNER OR THEIR REPRESENTATIVE PRIOR TO INSTALLATION OF THE PLANT MATERIAL. IF A SUBSTITUTION IS MADE WITHOUT RECEIVING PRIOR APPROVAL, THE SUBSTITUTED PLANTS SHALL NOT BE ACCEPTED AND SHALL BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE APPROVED PLAN SET.
 4.2. WHEN CHANGES FROM THE LANDSCAPE PLANS AND SPECIFICATIONS BECOME NECESSARY (OTHER THAN FOR MINOR PLANT RELOCATIONS DUE TO UTILITY OR OTHER STRUCTURE CONFLICTS) DURING THE LANDSCAPE INSTALLATION, WRITTEN ACCEPTANCE BY THE OWNER, UPON ADVICE OF THE LANDSCAPE ARCHITECT, SHALL BE SECURED BEFORE THE EXECUTION OF SUCH CHANGES. CHANGES MADE WITHOUT RECEIVING PRIOR WRITTEN ACCEPTANCE FROM THE OWNER SHALL NOT BE ACCEPTED AND SHALL BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE APPROVED PLAN SET.

5. GUARANTEE
 5.1. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR EIGHTEEN (18) MONTHS FROM THE DATE OF ACCEPTANCE BY THE OWNER OR THEIR REPRESENTATIVE. THE PLANTS ARE TO BE ALIVE AND IN SATISFACTORY GROWING CONDITION AS DETERMINED BY THE OWNER OR THEIR REPRESENTATIVE.
 5.2. ANY PLANT MATERIAL TWENTY–FIVE PERCENT (25%) OR MORE OF WHICH IS DEAD SHALL BE CONSIDERED DEAD. TREE SPECIES WITH DOMINANT CENTRAL LEADERS SHALL BE CONSIDERED TO BE DEAD WHEN THE LEADER IS DEAD AND/OR WHEN TWENTY–FIVE PERCENT (25%) OF THE CROWN IS DEAD. ALL DEAD PLANT MATERIAL SHALL BE REMOVED AND REPLACED IN ACCORDANCE WITH THESE PLANS DURING THE NORMAL PLANTING PERIOD.
 5.3. REPLACEMENTS SHALL BE SUBJECT TO THE SAME GUARANTEE AND REPLACEMENT AS THE ORIGINAL MATERIAL. THE REPLACEMENTS SHALL BE MADE WITHIN SIXTY (60) DAYS FOLLOWING WRITTEN DEMAND FROM THE OWNER OR THEIR REPRESENTATIVE.
 5.4. PLANT MATERIAL WHICH IS IN POOR HEALTH OR IS IN AN UNACCEPTABLE CONDITION SHALL BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE APPROVED PLAN SET UNLESS IT CAN BE DEMONSTRATED THAT THE UNACCEPTABLE CONDITION WAS CAUSED BY ONE OF THE FOLLOWING:
  5.4.1. VANDALISM
  5.4.2. DAMAGE BY THE OWNER OR OTHER CONTRACTORS OR AGENTS ACTING ON BEHALF OF THE OWNER.
  5.4.3. DAMAGE BY DEER WHERE IT CAN BE DEMONSTRATED THAT PROTECTION MEASURES WERE PROPERLY INSTALLED AND MAINTAINED BY THE CONTRACTOR. IT IS RECOMMENDED THAT DOCUMENTATION OF THE INSTALLATION, APPLICATION AND MAINTENANCE OF THESE MEASURES BE KEPT.
 5.5. IN THE CASE OF ANY QUESTIONS REGARDING THE CONDITIONS AND SATISFACTORY ESTABLISHMENT OF A REJECTED PLANT, THE CONTRACTOR MAY, IF APPROVED BY THE OWNER OR THEIR REPRESENTATIVE, ALLOW SUCH A PLANT TO REMAIN THROUGH ANOTHER GROWING SEASON AT WHICH TIME THE REJECTED PLANT, IF FOUND TO BE DEAD OR IN AN UNHEALTHY OR BADLY IMPAIRED CONDITION, SHALL BE REPLACED.

6. ALL PLANTING METHODS & PROCEDURES SHALL BE IN ACCORDANCE WITH LOWER MAKEFIELD TOWNSHIP STANDARDS.

PLANTING AND MAINTENANCE SPECIFICATIONS

1. PREPARATION OF PLANTS
 1.1. ALL PRECAUTIONS CUSTOMARY IN GOOD TRADE PRACTICE SHALL BE TAKEN IN PREPARING PLANTS FOR MOVING.
 1.2. B&B TREES SHALL BE PROPERLY DUG WITH FIRM, NATURAL BALLS OF SOIL RETAINING AS MANY FIBROUS ROOTS AS POSSIBLE, AND SHALL BE DUG TO MEET OR EXCEED THE "AMERICAN STANDARD FOR NURSERY STOCK." BALLS SHALL BE FIRMLY WRAPPED WITH NATURAL BURLAP AND SECURED WITH HEAVY, NONSYNTHETIC, ROTTABLE TWINE. THE TRUNK FLARE SHALL BE APPARENT AT THE SURFACE OF THE BALL.
 1.3. TREES WITH A DBH OF EIGHT (8) OR MORE INCHES SHALL HAVE TWELVE (12) INCHES IN DIAMETER OR MORE OF ROOT BALL FOR EVERY INCH OF TRUNK DIAMETER.
 1.4. BARE ROOT TREES SHALL NOT BE DUG OR INSTALLED AFTER BUD BREAK OR BEFORE DORMANCY. IMMEDIATELY AFTER HARVESTING PLANTS, PROTECT FROM DRYING AND DAMAGE UNTIL SHIPPED AND DELIVERED TO THE PLANTING SITE. ROOT BALLS SHALL BE CHECKED REGULARLY AND WATERED SUFFICIENTLY TO MAINTAIN ROOT VIABILITY.
 1.5. ANTI–DESICCANTS, IF SPECIFIED, SHALL BE APPLIED TO PLANTS IN FULL LEAF IMMEDIATELY BEFORE DIGGING. ANTI–DESSICANTS ARE TO BE SPRAYED SO THAT ALL LEAVES AND BRANCHES ARE COVERED WITH A CONTINUOUS PROTECTIVE FILM.
 1.6. ALL FLAGGING MATERIALS USED TO MARK TREES OR OTHER PLANTS SHALL BE COMPLETELY BIODEGRADABLE. ALL TWINE, PLASTIC, OR OTHER MATERIALS ATTACHED TO PLANTS SHALL BE REMOVED UPON PLANTING. ANY PLANT MATERIAL THAT BECOMES GIRDLED DUE TO TWINE OR OTHER EXTRANEOUS FLAGGING OR SUPPORT MATERIALS SHALL BE REMOVED AND REPLACED WITH ACCEPTABLE PLANTS IN ACCORDANCE WITH THESE PLANS.

2. SOIL EXCAVATIONS
 2.1. PLANT MATERIAL SHALL NOT BE INSTALLED UNTIL FINISHED GRADING HAS BEEN COMPLETED.
 2.2. THE FINAL DEPTH OF THE PLANTING HOLE SHALL BE DETERMINED BY THE DEPTH AND FIRMNESS OF THE ROOT BALL AND OTHER CHARACTERISTICS OF THE SITE AND THE PLANTING HOLE SHALL NOT EXCEED THE DEPTH OF THE ROOT BALL.
 2.3. THE DEPTH OF THE ROOT BALL SHALL BE MEASURED FROM THE BOTTOM OF THE TRUNK FLARE TO THE BOTTOM OF THE BALL.
 2.4. THE SOIL DIRECTLY BENEATH THE ROOT BALL SHALL BE UNDISTURBED OR PREPARED IN SUCH A WAY AS TO PREVENT SETTLING.
 2.5. THE TOP DIAMETER OF THE PLANTING HOLE SHALL BE A MINIMUM OF ONE AND ONE HALF (1.5) TIMES THE DIAMETER OF THE ROOT BALL. WHERE SOILS ON THE SITE ARE HIGHLY COMPACTED, THE DIAMETER OF THE TOP OF THE PLANTING HOLE SHALL BE A MINIMUM OF TWO (2) TIMES THE DIAMETER OF THE ROOT BALL.
 2.6. THE SIDES OF THE PLANTING HOLE SHALL BE SLOPED AT A 45 DEGREE ANGLE AND SCARIFIED.
 2.7. ON STEEP SLOPES, THE DEPTH OF THE EXCAVATION SHALL BE MEASURED AT THE CENTER OF THE PLANT HOLE.

3. PLANTING
 3.1. TREES AND SHRUBS SHALL BE ORIENTED TO THE SAME GENERAL COMPASS DIRECTION AS THEY WERE IN THE NURSERY. THE NORTH SIDE OF TREES SHALL BE MARKED IN THE NURSERY, AND THE TREE SHALL BE ROTATED TO FACE NORTH AT THE SITE WHENEVER POSSIBLE.
 3.2. PLANTS SHALL BE LIFTED ONLY FROM THE BOTTOM OF THE ROOT BALLS OR WITH BELTS OR LIFTING HARNESSES OF SUFFICIENT WIDTH NOT TO DAMAGE THE ROOT BALLS. TREES SHALL NOT BE LIFTED BY THEIR TRUNKS AND TRUNKS SHALL NOT BE USED AS A LEVER IN POSITIONING OR MOVING THE TREES.
 3.3. BARE ROOT TREES SHALL BE INSTALLED SO THAT THEIR ROOT SYSTEM IS EVENLY DISTRIBUTED AND CENTERED IN THE PLANTING HOLE, AND SPREAD TO APPROXIMATE THE NATURAL POSITION OF THE ROOTS. THE ROOTS OF BARE ROOT TREES SHALL BE PRUNED AT THE TIME OF PLANTING TO REMOVE DAMAGED OR UNDESIRABLE ROOTS. THE PLANTING SOIL BACKFILL SHALL BE WORKED FIRMLY INTO AND AROUND THE ROOTS, WITH CARE TAKEN TO FILL IN COMPLETELY WITH NO AIR POCKETS.
 3.4. THE BOTTOM OF THE TRUNK FLARE SHALL BE AT OR SLIGHTLY ABOVE THE FINISHED GRADE. TREES AND SHRUBS PLANTED WITH THE TRUNK FLARE BELOW FINISHED GRADE SHALL BE REMOVED FROM THE PLANTING HOLE AND THE BOTTOM OF THE HOLE SHALL BE BACKFILLED WITH NATIVE SOIL MATERIAL SO THAT THE TREE SITS AT THE CORRECT HEIGHT. BACKFILLED MATERIAL SHALL BE PREPARED SO AS TO PREVENT SETTLING.
 3.5. IN AREAS OF SLOWLY DRAINING SOILS, THE ROOT BALL MAY BE SET UP TO THREE (3) INCHES OR 1/8 THE DEPTH OF THE ROOT BALL ABOVE THE ADJACENT SOIL LEVEL.
 3.6. REMOVE PLASTIC, PAPER, OR FIBER POTS FROM CONTAINERIZED PLANT MATERIAL. PULL ROOTS OUT OF THE ROOT MAT, AND CUT CIRCLING ROOTS WITH A SHARP KNIFE. LOOSEN THE POTTING MEDIUM AND SHAKE AWAY FROM THE ROOT MAT. IMMEDIATELY AFTER REMOVING THE CONTAINER, INSTALL THE PLANT SO THAT THE ROOTS DO NOT DRY OUT.
 3.7. ALL ROOT BALL SUPPORTING MATERIALS SHALL BE REMOVED FROM THE TOP ONE–THIRD OF THE ROOT BALL AND REMOVED FROM THE TREE PIT PRIOR TO BACKFILLING. NATURAL BURLAP AND BIODEGRADABLE MATERIALS SHALL BE PERMITTED TO REMAIN ON THE BOTTOM TWO–THIRDS OF THE ROOT BALL AS SUPPORTING MATERIAL. SYNTHETIC (PLASTIC) BURLAP AND TWINE SHALL NOT BE ACCEPTABLE. WIRE BASKETS SHALL BE CUT OFF EIGHT (8) TO TEN (10) INCHES BELOW THE SHOULDER OF THE ROOT BALL PRIOR TO BACKFILLING.
 3.8. BACKFILL SHALL CONSIST OF NATIVE SOIL MATERIAL OR APPROVED SOIL MIX SIMILAR TO THE SOIL AT THE PLANTING SITE. BACKFILL SHALL BE FREE OF STONES, LUMPS OF CLAY GREATER THAN TWO (2) INCHES IN DIAMETER, ROOTS AND ANY OTHER EXTRANEOUS MATERIAL. PEAT MOSS SHALL NOT BE USED IN ORDER TO PREVENT THE CREATION OF A HYDROPHOBIC CONDITION. THE TOP OF THE ROOT BALL SHALL NOT BE COVERED WITH SOIL. INFORMATION REGARDING ANY PROPOSED SOIL AMENDMENTS SHALL BE SUBMITTED TO THE OWNER AND THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.
 3.9. TAMP SOIL AROUND ROOT BALL BASE FIRMLY WITH FOOT PRESSURE SO THAT THE ROOT BALL DOES NOT SHIFT. BACKFILL SHALL BE INSTALLED, SETTLED AND WATERED IN LAYERED SECTIONS TO LIMIT FUTURE SETTLING AND TO PREVENT AIR POCKETS.
 3.10. BACKFILL SHALL NOT BE COMPACTED TO A DENSITY THAT INHIBITS ROOT GROWTH.
 3.11. ALL PLANTS SHALL BE WATERED THOROUGHLY AT THE TIME OF PLANTING.
 3.12. ANY CIRCLING ROOTS SHALL BE LOOSENED AND SPREAD OUT OR CUT IF NECESSARY.

4. PRUNING
 4.1. PRUNING OF TREES SHALL CONFORM TO THE STANDARDS SPECIFIED BY THE TREE CARE INDUSTRY ASSOCIATION IN THE LATEST EDITION OF "AMERICAN NATIONAL STANDARD FOR TREE CARE OPERATIONS" ANSI A300 (PART 1) – 2008 PRUNING OR LATEST EDITION.
 4.2. WOUND TREATMENTS SHALL NOT BE USED TO COVER WOUNDS OR PRUNING CUTS, EXCEPT WHEN NECESSARY FOR DISEASE, INSECT, MISTLETOE, OR SPROUT CONTROL.
 4.3. NOT MORE THAN 25% OF THE FOLIAGE OF A TREE SHALL BE REMOVED WITHIN AN ANNUAL GROWING SEASON. THE PERCENTAGE AND DISTRIBUTION OF FOLIAGE TO BE REMOVED SHALL BE ADJUSTED ACCORDING TO THE PLANT'S SPECIES, AGE, HEALTH, AND SITE CONDITIONS.
 4.4. TOPPING AND LION'S TAILING SHALL BE CONSIDERED UNACCEPTABLE PRUNING PRACTICES. TREES WHICH HAVE BEEN PRUNED ACCORDING TO THESE METHODS SHALL BE REMOVED AND REPLACED IN ACCORDANCE WITH THESE PLANS.
 4.5. PRUNING OF TREES AT THE TIME OF PLANTING SHALL BE LIMITED TO THE REMOVAL OF DEAD, DAMAGED, OR CONFLICTING BRANCHES, SUCKER GROWTH OR WATER SPROUTS, OR TO MEET LIMB HEIGHT REQUIREMENTS.

5. MULCHING
 5.1. ALL PLANTS, WITH THE EXCEPTION OF SEEDED AREAS AND HERBACEOUS PLANT DRIFTS WITHIN STORMWATER MANAGEMENT AREAS, SHALL BE MULCHED WITHIN THREE (3) DAYS OF PLANTING WITH SHREDDED HARDWOOD MULCH.
 5.2. MULCH SHALL BE APPLIED NEAR, BUT SHALL NOT TOUCH, THE TRUNK OF THE TREE OR SHRUB AND SHALL BE APPLIED TO A MINIMUM 3' DIAMETER AREA OR TO THE PERIMETER OF THE PLANTING HOLE, WHICHEVER IS GREATER. THE TRUNK FLARES OF TREES SHALL REMAIN VISIBLE AFTER THE APPLICATION OF MULCH. 'VOLCANO MULCHING' OR THE USE OF AN EXCESSIVE AMOUNT OF MULCH IN A CONE AROUND THE TRUNK OF A TREE SHALL NOT BE PERMITTED.
 5.3. ORGANIC SHREDDED HARDWOOD MULCH SHALL BE APPLIED TO ALL PLANTS AT A MINIMUM DEPTH OF TWO (2) INCHES UPON SETTLING BUT IN NO INSTANCE SHALL THE MULCH DEPTH EXCEED FOUR (4) INCHES. FOR GROUNDCOVER PLANTS, THE MAXIMUM DEPTH SHALL BE ONE (1) INCH UPON SETTLING. A TEMPORARY SAUCER AT THE EDGE OF THE PLANTING HOLE SHALL BE CREATED TO ASSIST WITH THE RETENTION OF MOISTURE.

4. MAINTENANCE
 4.1. PLANT MATERIAL SHALL BE PROPERLY MAINTAINED BY THE CONTRACTOR AFTER PLANTING AND UNTIL THE END OF THE GUARANTEE PERIOD. THIS MAINTENANCE SHALL INCLUDE WATERING, REPLACEMENT OF DEAD PLANT MATERIAL, CONTROL OF INSECTS AND DISEASE, REPAIR OF MECHANICAL INJURY, REMOVAL OF DEAD BRANCHES, THE REMOVAL OF SUPPORT SYSTEMS AFTER THE FIRST GROWING SEASON, AND REMOVAL OF ANY TREE WRAP AND TREE GUARDS OR OTHER MATERIALS PRIOR TO THE END OF THE GUARANTEE PERIOD.
 4.2. IRRIGATOR BAGS SHALL NOT BE PERMITTED TO REMAIN ON TREES WHEN DORMANT (NOVEMBER 15TH THROUGH MAY 1ST.) TREES THAT ARE DAMAGED BY RODENTS OR INSECTS AS A RESULT OF IRRIGATOR BAGS BEING LEFT ON TREES THROUGH THE WINTER SHALL BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE LANDSCAPE PLAN.

5. REMOVAL OF ALL PLANTING DEBRIS
REMOVAL OF DEBRIS IS REQUIRED. THE PROPERTY MUST BE LEFT IN A NEAT AND ORDERLY CONDITION IN ACCORDANCE WITH GOOD AND ACCEPTED PLANTING PRACTICES.

SUPPORT SYSTEMS AND PLANT PROTECTION

1. TREE STABILIZATION
 1.1. STAKING OR STABILIZATION OF TREES SHALL ONLY BE PERMITTED IN THE EVENT THAT THE SITE CONDITIONS OR CONDITIONS OF THE TREE ARE SUCH THAT THE TREE IS ANTICIPATED TO BE UNSTABLE. WHERE IT IS DETERMINED DURING THE COURSE OF THE LANDSCAPE INSTALLATION THAT TREE STABILIZATION MAY BE NEEDED, THE CONTRACTOR SHALL SUBMIT, IN WRITING, FOR THE APPROVAL OF THE LANDSCAPE ARCHITECT, A REQUEST FOR STABILIZATION. THE REQUEST SHALL STATE THE SPECIES AND LOCATION OF EACH TREE TO BE STABILIZED, THE REASON STABILIZATION IS REQUESTED, AND THE STABILIZATION METHODS TO BE USED. APPROVAL MUST BE OBTAINED FROM THE LANDSCAPE ARCHITECT FOR THE STABILIZATION OF ANY TREE WHERE NO PROPOSED STABILIZATION METHOD WAS PREVIOUSLY INDICATED ON THE LANDSCAPE PLAN. IN NO INSTANCE SHALL STABILIZATION METHODS BE USED TO COMPENSATE FOR IMPROPERLY DUG OR POOR QUALITY PLANT MATERIAL.
 1.2. TREES SHALL BE STAKED THE SAME DAY AS PLANTING. TWO (2) HARDWOOD STAKES OF A MAXIMUM OF SIX (6) FEET IN HEIGHT AND NOT LESS THAN TWO (2) INCHES IN SMALLEST DIAMETER SHALL BE INSTALLED ON OPPOSITE SIDES OF THE TREE ON THE OUTSIDE OF THE ROOT BALL. STAKES SHALL BE DRIVEN INTO THE GROUND TO A MINIMUM DEPTH OF TWELVE (12) INCHES BELOW THE BOTTOM OF THE PLANTING HOLE EXCAVATION. THIS SHALL BE DONE BEFORE SETTING THE TREE OR, IF AFTER SETTING IN SUCH A MANNER AS NOT TO INJURE THE ROOTS. THE TOP OF THE STAKES SHALL STAND AT ABOUT WAIST HEIGHT TO ALLOW MOVEMENT OF THE TOP OF THE TREE.
 1.3. THE TREE SHALL BE SECURED TO THE TWO STAKES WITH TWO SEPARATE WEBBED ARBOR TIES OR OTHER APPROVED FLEXIBLE TIES LOCATED NO HIGHER THAN ONE–THIRD (1/3) OF THE OVERALL HEIGHT OF THE TREE. TIE MATERIAL SHALL BE WIDE, SMOOTH, NONABRASIVE, AND FLEXIBLE. TIES SHALL BE LOOPED AROUND THE TRUNK WITH LARGE ENOUGH LOOPS TO ALLOW FOR TRUNK GROWTH. THE LOOPS SHALL BE SECURED BY USE OF AN OVERHAND SLIPKNOT PULLED AGAINST A SECOND OVERHAND KNOT TIED ON THE LINE, KEEPING THE LOOP DIAMETER AT LEAST SIX (6) TO EIGHT (8) INCHES LARGER THAN THE TRUNK DIAMETER. EACH TIE SHALL THEN BE SECURED TO THE STAKE SO AS TO BRACE THE TRUNK SNUGLY, BUT NOT SO TIGHTLY THAT THE TRUNK CANNOT BEND AND FLEX. EACH TIE SHALL BE MARKED WITH BRIGHTLY COLORED FLAGGING FOR SAFETY PURPOSES.
 1.4. THE USE OF WIRE WITH RUBBER HOSE, PLASTIC CHAIN, OR OTHER NON–FLEXIBLE TIES SHALL BE PROHIBITED.
 1.5. IF SUPPORT SYSTEMS ARE REQUIRED FOR TREES GREATER THAN FOUR (4) INCHES DBH, SUPPORT SYSTEMS SHALL BE PROVIDED IN ACCORDANCE WITH THE STANDARDS SPECIFIED BY THE TREE CARE INDUSTRY ASSOCIATION IN THE LATEST EDITION OF "AMERICAN NATIONAL STANDARD FOR TREE CARE OPERATIONS" ANSI A300 (PART 3) – 2006 SUPPLEMENTAL SUPPORT SYSTEMS OR LATEST EDITION.
 1.6. STAKES AND STRAPS BROKEN (BUT NOT DELIBERATELY BROKEN THROUGH VANDALISM) PRIOR TO THE END OF THE FIRST GROWING SEASON SHALL BE REPLACED.
 1.7. ALL STAKES AND STRAPS SHALL BE REMOVED AT THE END OF THE FIRST GROWING SEASON. ANY TREES THAT BECOME GIRDLED OR DAMAGED OR DEVELOP OTHER ISSUES AS A RESULT OF THE IMPROPER USE, INSTALLATION OR MAINTENANCE OF TREE SUPPORT SYSTEMS SHALL BE REMOVED AND REPLACED IN ACCORDANCE WITH THESE PLANS.

2. OTHER PROTECTION MEASURES
 2.1. TREE WRAP SHALL BE USED ONLY WHEN NECESSARY FOR THE PROTECTION OF THIN AND/OR SMOOTH–BARKED TREES FROM SUNSCALD OR FROST CRACKS. ONLY TREE WRAP THAT IS LIGHT IN COLOR AND COMPLETELY BIODEGRADABLE SHALL BE USED. ALL TREE WRAP SHALL BE REMOVED PRIOR TO THE END OF THE GUARANTEE PERIOD. TREE WRAP SHALL BE SECURED TO THE TRUNK USING BIODEGRADABLE TAPE SUITABLE FOR NURSERY USE AND WHICH IS EXPECTED TO DEGRADE IN SUNLIGHT IN LESS THAN TWO YEARS AFTER INSTALLATION. TREES THAT DEVELOP DISEASES, INSECT INFESTATIONS, OR OTHER ISSUES AS A RESULT OF THE IMPROPER USE, INSTALLATION, OR MAINTENANCE OF TREE WRAP SHALL BE REPLACED IN ACCORDANCE WITH THESE PLANS.
 2.2. THE CAREFUL AND PROPER USE OF ORGANIC DEER REPELLENTS SUCH AS PLANTSKYDD IS ENCOURAGED FOR THE PROTECTION OF PLANT MATERIALS AGAINST BROWSING BY DEER AND OTHER ANIMALS. WHERE USE IS TO BE MADE OF THIS PROTECTION MEASURE, INFORMATION SHALL BE SUBMITTED TO THE OWNER AND THE LANDSCAPE ARCHITECT REGARDING THE APPLICATION, TIMING OF APPLICATION, AND PROCEDURES FOR USE OF THE DEER REPELLENT.
 2.3. PLASTIC TREE GUARDS SHALL BE PERMITTED TO BE USED AS PROTECTION AGAINST ANIMAL OR OTHER DAMAGE, INCLUDING BUCK RUBBING, PROVIDED THE GUARDS ARE LOOSE ENOUGH TO ADEQUATELY PREVENT MOISTURE FROM BEING TRAPPED AGAINST THE TREE TRUNK AND TO ENSURE THAT THE TREE TRUNKS DO NOT BECOME GIRDLED. ALL TREE GUARDS SHALL BE REMOVED PRIOR TO THE END OF THE GUARANTEE PERIOD. TREES THAT DEVELOP DISEASES, INSECT INFESTATIONS, OR OTHER ISSUES AS A RESULT OF THE IMPROPER USE, INSTALLATION, OR MAINTENANCE OF TREE GUARDS SHALL BE REMOVED AND REPLACED IN ACCORDANCE WITH THESE PLANS.

NATIVE DETENTION AREA MIX – ERNMX–183

AREA TO BE SEEDED WITH ERNST CONSERVATION SEED COMPANY NATIVE DETENTION AREA MIX – ERNMX 183 OR APPROVED EQUAL AT A RATE OF 20 LBS. PER ACRE WITH A COVER CROP OF GRAIN RYE AT 30 LBS. PER ACRE. APPROX. 1.65 AC. OF SEEDED AREA PROPOSED.
APPROX. 33 LBS. OF ERNMX– 183 REQUIRED
APPROX. 50 LBS. OF COVER CROP SEED REQUIRED.

	PCT.	BOTANICAL NAME	COMMON NAME
	25%	*PANICUM CLANDESTINUM (DICHANTHELIUM C.), 'TIOGA'*	DEERTONGUE, 'TIOGA'
	25%	*CAREX VULPINOIDEA, PA ECOTYPE*	FOX SEDGE, PA ECOTYPE
	20%	*ELYMUS VIRGINICUS, PA ECOTYPE*	VIRGINIA WILDRYE, PA ECOTYPE
	20%	*PANICUM VIRGATUM, 'SHAWNEE'*	SWITCHGRASS, 'SHAWNEE'
	5%	*AGROSTIS PERENNANS, PA ECOTYPE*	AUTUMN BENTGRASS, PA ECOTYPE
	2%	*AGROSTIS SCABRA, PA ECOTYPE*	TICKLEGRASS (ROUGH BENTGRASS), PA ECOTYPE
	1%	*JUNCUS EFFUSUS*	SOFT RUSH
	1%	*JUNCUS TENUIS, PA ECOTYPE*	PATH RUSH, PA ECOTYPE
	1%	*SCIRPUS ATROVIRENS, PA ECOTYPE*	GREEN BULRUSH, PA ECOTYPE

ATHLETIC FIELD MIX

AREAS SHOWN TO BE SEEDED WITH ERNST CONSERVATION SEED ATHLETIC FIELD MIX ERNMX–106 AT A RATE OF 125 LBS./AC. OR APPROVED EQUIVALENT.

	BOTANICAL NAME	COMMON NAME
	30% LOLIUM PERENNE 'AMAZING GS'	RYEGRASS 'AMAZING GS'
	30% LOLIUM ARUNDINACEUM 'CORTEZ II'	TALL FESCUE 'CORTEZ II'
	15% POA PRATENSIS 'ARC'	KENTUCKY BLUEGRASS
	15% POA PRATENSIS 'BARON'	KENTUCKY BLUEGRASS
	10% LOLIUM MULTIFLORUM	ANNUAL RYEGRASS

MIX INSTALLATION SPECIFICATIONS:

COVER CROP INCORPORATION: A COVER CROP IS NOT REQUIRED

SEED INSTALLATION DATES: INSTALL SEED BETWEEN APRIL 1 THROUGH JUNE 15 –OR– SEPTEMBER 15 THROUGH NOVEMBER 1.
ATHLETIC FIELD SEEDBED PREPARATION:

PRIOR TO APPLICATION OF TOPSOIL, SUBSOIL SHOULD BE TESTED FOR LIME REQUIREMENTS AND LIMESTONE, IF NEEDED, SHOULD BE APPLIED TO BRING SOIL PH TO 6.5 AND INCORPORATED INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES.

IMMEDIATELY PRIOR TO TOPSOIL DISTRIBUTION, THE SURFACE SHOULD BE SCARIFIED TO PROVIDE A GOOD BOND WITH THE TOPSOIL.

TOPSOIL SHOULD BE HANDLED ONLY WHEN IT IS DRY ENOUGH TO WORK WITHOUT DAMAGING SOIL STRUCTURE.

AFTER DISTRIBUTION OF TOPSOIL AND PRIOR TO PLANTING, INCORPORATE THE FOLLOWING INTO THE TOP 4 TO 6 INCHES OF TOPSOIL:
- LIMESTONE: 80 LB./1000 SQUARE FEET
- PHOSPHATE: 9 LB./1000 SQUARE FEET
- POTASH: 2 LB./1000 SQUARE FEET

WORK LIMESTONE, PHOSPHATE AND POTASH INTO THE TOPSOIL AS NEARLY AS PRACTICAL TO DEPTH OF 4–6 INCHES. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM FINE SEEDBED IS PREPARED.

REMOVE FROM THE SURFACE ALL STONES TWO INCHES OR LARGER IN ANY DIMENSION; REMOVE ALL OTHER DEBRIS SUCH AS WIRE, CABLE, TREE ROOTS, PIECES OF CONCRETE, CLODS, LUMPS OR OTHER UNSUITABLE MATERIAL.

INSPECT SEED BED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RE–TILLED AND FIRMED AS ABOVE.

APPLY A STARTER FERTILIZER JUST PRIOR TO SEEDING AND WORK LIGHTLY INTO THE SOIL. APPLY AT AN APPROXIMATE RATE OF 1 LB. OF NITROGEN PER 1000 SQUARE FEET, 0.5 TO 1 LB. OF PHOSPHATE PER 1000 SQUARE FEET, AND 0.5 TO 1 LB. OF POTASH PER 1000 SQUARE FEET USING A FERTILIZER WITH APPROXIMATE 1:1:1 OR 2:1:1 RATIO OF N:P2O5:K2O.

PERMANENT SEED MIXTURE FOR ATHLETIC FIELDS: ERNMX–106 ATHLETIC FIELD MIX.

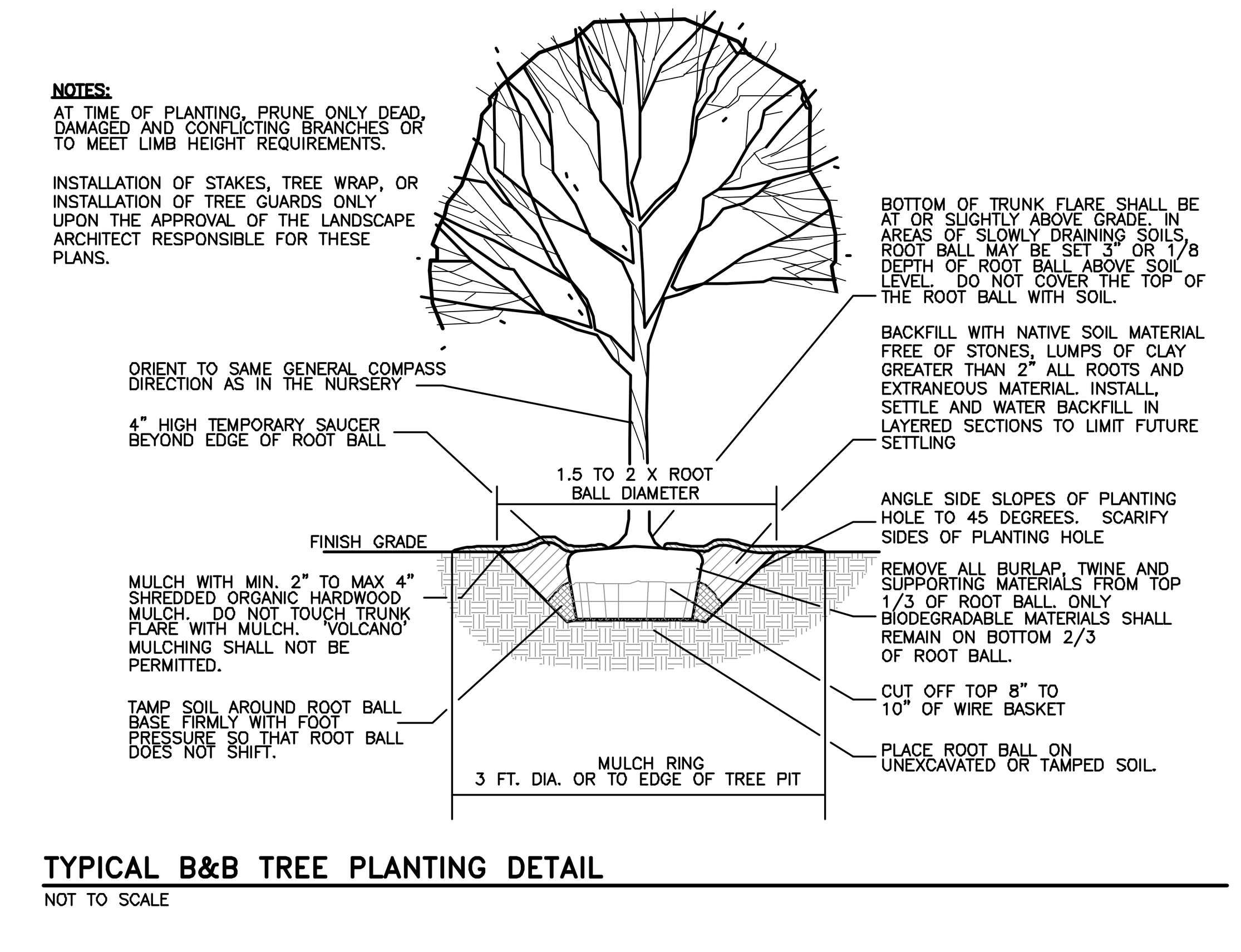
SITE PREPARATION:

PRIOR TO REMOVAL OF TOPSOIL, REMOVE GRAVEL AND OTHER DEBRIS CONSTRUCTION DEBRIS FROM THE FORMER STAGING AREA IN THE VICINITY OF THE EXISTING SALT SHED.

ERADICATE UNDESIRABLE SPECIES BY APPLYING A GLYPHOSATE SOLUTION APPROVED FOR USE WITHIN AND AROUND WETLANDS (RODEO, ETC.) BY A LICENSED TECHNICIAN, ACCORDING TO MANUFACTURERS RECOMMENDED RATES. RETREAT ANY PERSISTENT WEED SPECIES AS NECESSARY. DEEP ROOTED PERENNIALS AND WOODY SPECIES MAY REQUIRE SPECIAL REMOVAL AND CONTROL MEASURES.

INSTALL SEED MIX USING A HYDROSEED EQUIPMENT AT THE RATE SPECIFIED FOR THE SEED MIX LISTED ABOVE. INCORPORATE CELLULOSE MULCH SLURRY AT A RATE OF 1,200 LBS TO 2,000 LBS PER ACRE.

ALLOW TO GROW TO 4–6" HEIGHT BEFORE MOWING.



TYPICAL B&B TREE PLANTING DETAIL

NOT TO SCALE

KNOW WHAT'S BELOW CALL BEFORE YOU DIG!
PENNSYLVANIA ACT 287 OF 1974 (AS AMENDED) REQUIRES 3 WORKING DAYS NOTICE FOR EXCAVATION PHASE AND 10 WORKING DAYS IN DESIGN STAGE – STOP! CALL!
PENNSYLVANIA ONE CALL SYSTEM, INC.
1–800 242–1776 or 811
PA ONE–CALL SERIAL No.
SERIAL NO. 20162291370
AUGUST 16, 2016

REVISIONS :

DATE	DESCRIPTION	DATE	DESCRIPTION
01/31/17	PLANS UPDATED WITH INFILTRATION PIT LOCATIONS AND NPDES NOTES		
05/02/17	PER ENGINEER REVIEW LETTER		
05/16/17	PER ENGINEER & EAC REVIEW LETTERS		
05/19/17	REVISED INFILTRATION TRENCH INLET 2 TO 3		
06/07/17	REVISED PER CONDITIONS OF APPROVAL		
06/30/17	REVISED PER PRE–BID MEETING		
07/07/17	REVISED PER ADDENDUM 2		
10/20/17	REVISED EXISTING AND PROPOSED WATER LINE		

PROJECT :
SNIPES TRACT ATHLETIC FIELDS
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT :
LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

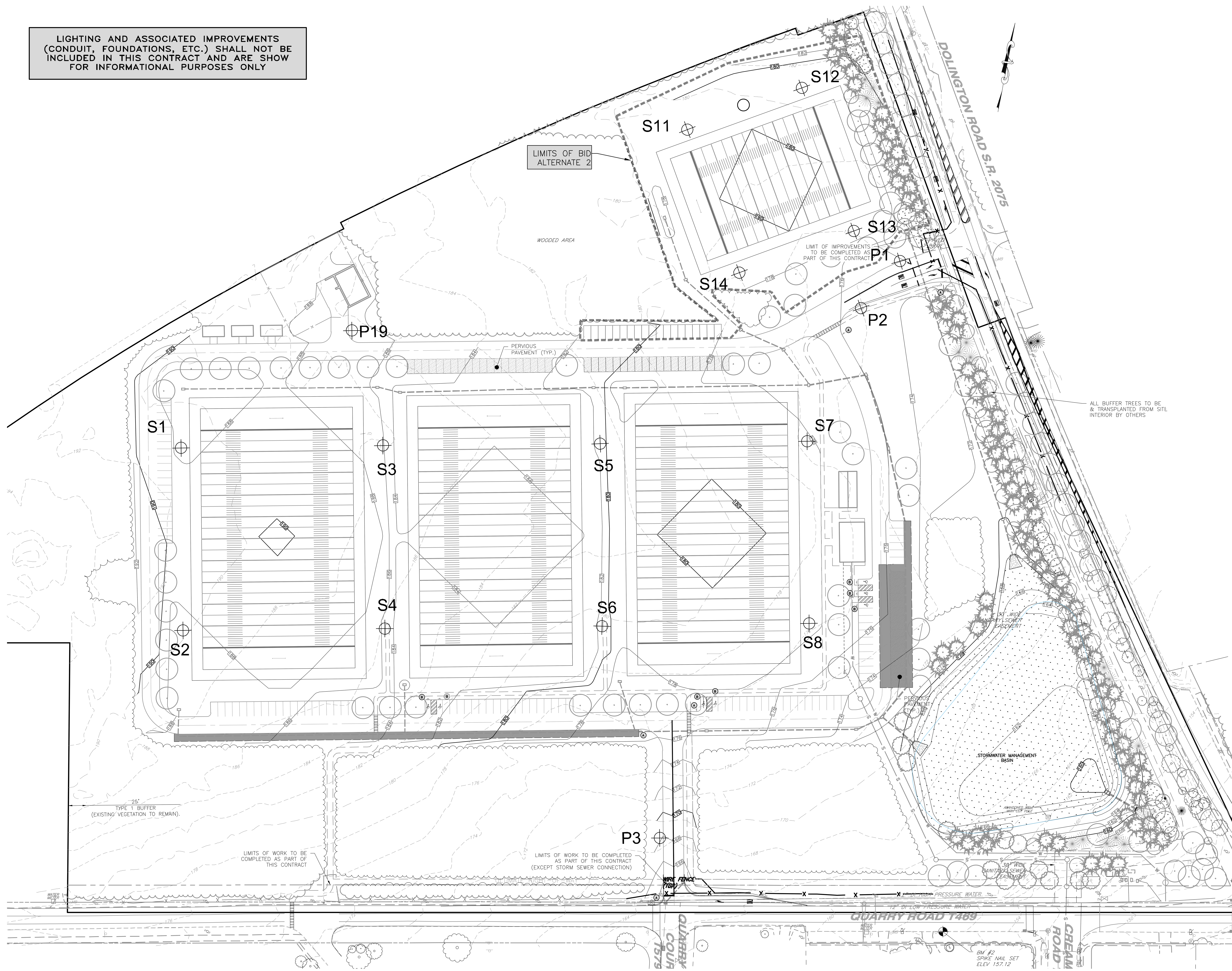
JOB NO.: 1677054L
TITLE : LANDSCAPE NOTES & DETAILS
DRAWN BY: VLL
CHECKED BY: GSG
SCALE: NTS
PLAN STATUS: FINAL

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN ✦ STROUDSBURG ✦ LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345–9400 FAX: (215) 345–9401
www.bjengineers.com

PROJECT NAME : SNIPES TRACT ATHLETIC FIELDS
DATE: NOVEMBER 14, 2016

P:\2016\1677054\Dwg\Final Dwgs\08–LND.dwg || Tabname :09–LND DTL || Nov 09, 2017 – 1:21pm || twallace

LIGHTING AND ASSOCIATED IMPROVEMENTS (CONDUIT, FOUNDATIONS, ETC.) SHALL NOT BE INCLUDED IN THIS CONTRACT AND ARE SHOW FOR INFORMATIONAL PURPOSES ONLY



S1
S2
S3
S4
S5
S6
S7
S8
S11
S12
S13
S14
P1
P2
P3
P19
LIMITS OF BID ALTERNATE 2
WOODED AREA
LIMIT OF IMPROVEMENTS TO BE COMPLETED AS PART OF THIS CONTRACT
PERVIOUS PAVEMENT (TYP.)
DOLINGTON ROAD S.R. 2075
ALL BUFFER TREES TO BE & TRANSPLANTED FROM SITE INTERIOR BY OTHERS
STORMWATER MANAGEMENT BASIN
ABANDONED WELL WITH CUT POLE
30' WIDE SANITARY SEWER EASEMENT
25'
TYPE 1 BUFFER (EXISTING VEGETATION TO REMAIN).
LIMITS OF WORK TO BE COMPLETED AS PART OF THIS CONTRACT
LIMITS OF WORK TO BE COMPLETED AS PART OF THIS CONTRACT (EXCEPT STORM SEWER CONNECTION)
WIRE FENCE (TBR)
ULTIMATE RIGHT-OF-WAY
12" DI HIGH PRESSURE WATER
12" DI LOW PRESSURE WATER
QUARRY ROAD T469
QUARRY COURT T579
CREAM ROAD
WATER METER
BM #2 SPIKE NAIL SET ELEV 157.12
BM #1 REBAR SET ELEV 148.87

LEGEND

— — —	ADJOINER LINE
———	EXISTING BOUNDARY
— - - - —	EXISTING RIGHT-OF-WAY
288	EXISTING CONTOUR
290	EXISTING INDEX CONTOUR
- - - -	EXISTING DRIVEWAY
— × — × —	EXISTING CHAINLINK FENCE
	EXISTING TREELINE
MON FND □	EXISTING MONUMENT
	PROPOSED BUILDING
	PROPOSED BUILDING SETBACKS
	PROPOSED CENTERLINE
	PROPOSED EDGE OF PAVEMENT
	PROPOSED SIGN
	PROPOSED SIDEWALK
	PROPOSED TRAIL
	PROPOSED TREELINE
	PROPOSED NEW SHADE TREE
	PROPOSED TRANSPLANTED SHADE TREE (TO BE SELECTED & TRANSPLANTED FROM SITE INTERIOR BY OTHERS)
	PROPOSED TRANSPLANTED EVERGREEN
	EXISTING TREE TO REMAIN

Name: 0.0 Blanket Grid
Spacing: 30.0' x 30.0'
Height: 3.0' above grade

	Entire Grid
Scan Average:	**3.43**
Maximum:	46
Minimum:	0
Avg / Min:	-
Max / Min:	-
UG (adjacent pts):	8495.46
CU:	0.90
No. of Points:	3720
Color / CRI:	5700K - 75 CRI / 5700K - 70 CRI / 5700K - 75 CRI
Luminaire Output:	121,000 / 17,000 / 38,600 lumens
No. of Luminaires:	**124**
Total Load:	128.44 kW

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000
Cree OSQ	--	--	--
TLC-LED-400	61,000	>72,000	>72,000

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	P1-P3, P19	20'	-	20'	Cree OSQ	2	2	0
4	S1-S2	70'	-	25'	TLC-LED-1150	1	1	0
	S7-S8			70'	TLC-LED-1150	7	7	0
				60'	TLC-LED-400	1	1	0
4	S3-S6	80'	-	70'	TLC-LED-400	1	1	0
				25'	TLC-LED-1150	1/1*	2	0
				80'	TLC-LED-1150	7/7*	14	0
4	S11-S14	70'	-	70'	TLC-LED-1150	3	3	0
16						124	124	0

* This structure utilizes a back-to-back mounting configuration

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!
KNOW WHAT'S BELOW CALL BEFORE YOU DIG!
PENNSYLVANIA ACT 287 OF 1974 (AS AMENDED) REQUIRES 3 WORKING DAYS NOTICE FOR EXCAVATION PHASE AND 10 WORKING DAYS IN DESIGN STAGE – STOP! CALL!
PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800 242-1776 or 811
PA ONE-CALL SERIAL No.
SERIAL NO. 20162291370
AUGUST 16, 2016

REVISIONS :

DATE	DESCRIPTION	DATE	DESCRIPTION
01/31/17	PLANS UPDATED WITH INFILTRATION PIT LOCATIONS AND NPDES NOTES		
05/02/17	PER ENGINEER REVIEW LETTER		
05/16/17	PER ENGINEER & EAC REVIEW LETTERS		
05/19/17	REVISED INFILTRATION TRENCH INLET 2 TO 3		
06/07/17	REVISED PER CONDITIONS OF APPROVAL		
06/30/17	REVISED PER PRE-BID MEETING		
07/07/17	REVISED PER ADDENDUM 2		
10/20/17	REVISED EXISTING AND PROPOSED WATER LINE		

PROJECT :
SNIPES TRACT ATHLETIC FIELDS
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT :
LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

0 25 50 100 150
SCALE : 1" = 50'

JOB NO.: 1677054L
DRAWN BY: TMW
CHECKED BY: MES
SCALE: 1" = 50'
PLAN STATUS: FINAL

TITLE : LIGHTING PLAN AND DETAILS

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN ✦ STROUDSBURG ✦ LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345-9400 FAX: (215) 345-9401
www.bjengineers.com

PROJECT NAME : SNIPES TRACT ATHLETIC FIELDS

SHEET 10 OF 14

DATE: NOVEMBER 14, 2016

P:\2016\1677054\Dwg\Final Dwgs\10-Lighting.dwg || Tabname :10-Lighting || Nov 09, 2017 - 1:22pm || twallace

CONSTRUCTION SEQUENCE

ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.

AT LEAST 7 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE PERMITTEE SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS (LOWER MAKEFIELD TOWNSHIP (267) 274–1100, TOWNSHIP ENGINEER (215) 345–9400), THE ESCP PREPARER(BOUCHER AND JAMES, INC. 215–345–9400), AND THE BUCKS COUNTY CONSERVATION DISTRICT (BCCD) (215) 345–7577 TO AN ON–SITE MEETING. ALSO, AT LEAST 3 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM INCORPORATED AT 1–800–242–1776 FOR BURIED UTILITIES LOCATIONS.

PRIOR TO THE START OF OPERATIONS AT ANY SPOIL, BORROW OR OTHER WORK AREA NOT DETAILED ON THE APPROVED ESCP, WHETHER LOCATED WITHIN OR OUTSIDE THE INDICATED CONSTRUCTION LIMITS, THE PERMITTEE OR CO–PERMITTEE SHALL DEVELOP AND HAVE APPROVED BY THE PROCESSING ENTITY, A SEPARATE ESCP FOR EACH SITE.

CONSTRUCTION SEQUENCE

1. AT LEAST 3 DAYS PRIOR TO ANY EARTH DISTURBANCE ACTIVITIES, THE PERMITTEE SHALL CONTACT LOWER MAKEFIELD TOWNSHIP (267) 274–1100, THE TOWNSHIP ENGINEER (215) 345–9400, AND BUCKS COUNTY CONSERVATION DISTRICT (215) 345–7577.
2. INSTALL TIRE CLEANER AT DOLINGTON ROAD ENTRANCE AS SHOWN ON THE PLANS.
3. INSTALL SILT SOXX, SUPER AND STANDARD SILT FENCE AND TREE PROTECTION FENCE AS SHOWN ON THE PLANS.
4. CLEAR AND GRUB THE AREA OF SITE DEVELOPMENT.
5. CONSTRUCT THE TEMPORARY SEDIMENT BASIN, OUTLET STRUCTURE AND RIP RAP APRON. STABILIZE THE BASIN SPILLWAY, BERM AND SIDE SLOPES AS SHOWN ON THE PLANS.
6. STRIP THE TOPSOIL AND STOCKPILE WHERE INDICATED ON THE PLAN.
7. ROUGH GRADE THE SITE IN THE AREA OF DEVELOPMENT. INSTALL THE STORM SEWER SYSTEM AND INFILTRATION TRENCHES STARTING AT THE DOWNSTREAM STRUCTURE **(SEE DETAILS ON SHEET 12 OF 14 FOR INFILTRATION TRENCH SEQUENCE OF CONSTRUCTION).** INSTALL RIP RAP OUTLET PROTECTION APRONS AT THE PIPE OUTFALLS. INFILTRATION TRENCHES SHALL BE PROTECTED FROM SEDIMENT RUNOFF BY EXTENDING THE GEOTEXTILE FABRIC OVER THE TOP OF THE RIVERSTONE PORTION OF THE TRENCH. **THE ENGINEER OR HIS DESIGNEE MUST BE PRESENT FOR THE CONSTRUCTION OF THE INFILTRATION TRENCHES AND THE INSTALLATION OF THE RIP RAP OUTLET PROTECTION APRONS.**
8. PREPARE THE SUBGRADE AND INSTALL THE STONE IN THE PARKING LOT AREAS, DRIVEWAYS AND BITUMINOUS WALKWAYS.
9. GRADE AND INSTALL STONE, FOUNDATIONS AND THE BUILDING PAD. INSTALL STONE AND PAD FOR SKATE PARK.
10. GRADE ATHLETIC FIELDS.
11. CLEAN OUT SEDIMENT FROM THE SEDIMENT BASIN WHEN IT REACHES AN ELEVATION OF 162.00. **(SEE SEDIMENT BASIN CROSS SECTION DETAIL ON THIS SHEET FOR SEQUENCE OF CONSTRUCTION) THE ENGINEER OR HIS DESIGNEE MUST BE PRESENT FOR THE CONSTRUCTION OF THE SEDIMENT/ DETENTION BASIN BERM AND OUTLET STRUCTURE.**
12. CONSTRUCT PAVILION, RESTROOM AND SKATEPARK.
13. FINAL GRADE AND PAVE PARKING LOT AREAS.
14. FINAL GRADE LAWN AND LANDSCAPE AREAS. REDISTRIBUTE/ SPREAD TOPSOIL (MINIMUM 6") OVER LAWN AND LANDSCAPED AREAS. REMOVE SILTFENCE FROM STOCKPILE AREA ONCE THE TOPSOIL IS REDISTRIBUTED.
15. INSTALL SEED MIXES AS SHOWN ON THE LANDSCAPE PLANS.
16. INSTALL TREES AND PLANT MATERIALS AS SHOWN (EXCEPT STORMWATER MANAGEMENT LANDSCAPING). SEED/ SOD LAWN AREAS.
17. CONVERT SEDIMENT BASIN INTO PERMANENT STORMWATER DETENTION BASIN AND STABILIZE ANY DISTURBED AREAS IMMEDIATELY.
18. INSTALL STORMWATER MANAGEMENT LANDSCAPING AS SHOWN ON THE LANDSCAPE PLANS.
19. UNTIL A SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION CONTROL BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEANOUT, REPAIR, REPLACEMENT, RE–GRADING, RE–SEEDING, RE–MULCHING AND RE–NETTING MUST BE PERFORMED IMMEDIATELY. IF EROSION AND SEDIMENT CONTROL BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED, WILL BE REQUIRED.
20. UPON SITE STABILIZATION, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% (PERCENT) VEGETATIVE OR OTHER PERMANENT NON–VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.

MAINTENANCE PROGRAM

1. THE PERMITTEE OR CO–PERMITTEE WILL BE RESPONSIBLE FOR THE PROPER CONSTRUCTION, STABILIZATION, AND MAINTENANCE OF ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES AND RELATED ITEMS INCLUDED WITHIN THIS PLAN.
2. THE OWNER WILL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL PERMANENT POST CONSTRUCTION STORMWATER MANAGEMENT CONTROL MEASURES.
3. SOIL SEDIMENT REMOVED FROM ANY TEMPORARY CONTROL MEASURE DURING REGULAR MAINTENANCE WILL BE INCORPORATED BACK INTO THE EARTHWORK AS FILL ON THE SITE. ANY SOIL SEDIMENT THAT IS REMOVED TO OTHER AREAS ON SITE SHALL BE DONE WITHOUT CHANGING THE DRAINAGE PATTERNS WITHIN A SPECIFIC CONSTRUCTION STAGE.

4. SILT FENCE INSTALLED ON THE PROJECT SITE SHALL BE MAINTAINED AS FOLLOWS:
   A. THE FENCE CONDITION WILL BE INSPECTED ONCE A WEEK OR AFTER EVERY STORM EVENT, WHICHEVER COMES FIRST. ANY NECESSARY REPAIRS WILL BE MADE IMMEDIATELY.
   B. ACCUMULATED SEDIMENTS WILL BE REMOVED AS REQUIRED TO KEEP THE FENCE FUNCTIONAL. DEPOSITS WILL BE REMOVED WHERE ACCUMULATIONS REACH ½ THE ABOVE GROUND HEIGHT OF THE FENCE.
   C. ANY FENCE SECTION WHICH HAS BEEN UNDERMINED OR TOPPED WILL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET.
   D. ANY MANUFACTURER'S RECOMMENDATIONS WILL BE ADHERED TO FOR REPLACING FILTER FABRIC FENCE DUE TO WEATHERING.
5. PUMPED WATER FILTER BAGS USED ON THE PROJECT SITE SHALL BE REPLACED WHEN THEY BECOME ½ FULL. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED.
6. SEDIMENT ACCUMULATION IN THE ROCK FILTERS SHALL BE INSPECTED ONCE A WEEK OR AFTER EVERY STORM EVENT, WHICHEVER COMES FIRST. SEDIMENT ACCUMULATION WILL BE MONITORED. SEDIMENT WILL BE REMOVED FROM THE ROCK FILTERS WHEN IT REACHES ½ THE ABOVE GROUND HEIGHT OF THE FILTER.
7. AT THE END OF EACH CONSTRUCTION DAY, ANY SEDIMENT DEPOSITED ON PUBLIC ROADWAYS, WILL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE. WASHING OF THE ROADWAY WITH WATER WILL NOT BE PERMITTED.
8. A WRITTEN REPORT OF INSPECTIONS AND REPAIRS SHALL BE SUBMITTED TO BUCKS COUNTY CONSERVATION DISTRICT.

EROSION & SEDIMENT CONTROL CONSTRUCTION SPECIFICATIONS

CONSTRUCTION ENTRANCE INSTALLATION SPECIFICATION

1. CLEAR AND GRUB THE AREA NECESSARY TO INSTALL THE CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE ESCP.
2. LAY DOWN GEOTEXTILE FABRIC TO COVER AN AREA AT LEAST 20 FEET WIDE AND 50 FEET LONG.
3. PLACE A MINIMUM THICKNESS OF 8 INCHES OF AASHTO #1 STONE TO THE SAME DIMENSIONS AS THE GEOTEXTILE FABRIC.
4. STABILIZE WITH SEED AND MULCH ANY AREAS INCIDENTALLY DISTURBED BY THE INSTALLATION OF THE CONSTRUCTION ENTRANCE.

TOPSOIL STORAGE INSTALLATION SPECIFICATION

1. STABILIZE WITH SEED AND MULCH ANY AREAS INCIDENTALLY DISTURBED BY THE INSTALLATION OF THE TOPSOIL STORAGE AREA.
2. GRUBBING AND TOPSOIL MAY BE TEMPORARILY STORED IN THESE LOCATIONS UNTIL AREAS IDENTIFIED FOR SAID PURPOSE ON THE ESCP ARE CONSTRUCTED AND STABILIZED.
3. STOCKPILE HEIGHTS SHALL NOT EXCEED 35' AND SIDE SLOPE SHALL NOT BE STEEPER THAN 2:1.
4. STOCKPILES SHALL BE SEEDED AND MULCHED WITH TEMPORARY COVER IMMEDIATELY AFTER TOPSOIL PLACEMENT.

VEGETATED SWALE INSTALLATION SPECIFICATION

1. GRUB AND GRADE THE CHANNEL TO THE DIMENSIONS SHOWN ON THE ESCP. DO NOT GRUB AN AREA GREATER THAN THE LENGTH OF CHANNEL THAT CAN BE CONSTRUCTED WITHIN 2 WORKING DAYS.
2. GRADE THE CHANNEL AND IMMEDIATELY INSTALL THE CHANNEL REINFORCING. DO NOT LEAVE A NEWLY GRADED CHANNEL UNPROTECTED BY REINFORCEMENT EXCEPT AS CAN BE INSTALLED DURING THAT WORKING DAY.
3. STABILIZE WITH SEED AND MULCH ANY AREAS INCIDENTALLY DISTURBED BY THE INSTALLATION OF THE CHANNEL.

UNDERGROUND UTILITY CONSTRUCTION SPECIFICATIONS

1. EXCAVATE THE TRENCHES FOR THE INSTALLATION OF THE WATER AND SEWER AS SHOWN AND SPECIFIED ON THE PLANS. THE TOTAL LENGTH OF EXCAVATED TRENCH OPEN AT ONE TIME SHOULD NOT BE GREATER THAN THE LENGTH OF UTILITY LINE THAT CAN BE PLACED IN THE TRENCH AND BACK–FILLED IN ONE WORKING DAY. NO MORE THAN 50 LINEAL FEET OF OPEN TRENCH SHOULD EXIST AT THE END OF THE WORKDAY. IF IT IS NECESSARY TO DEWATER THE TRENCH AT ANY TIME FILTER BAGS MUST BE USED TO FILTER ALL PUMPED WATER BEFORE DISCHARGING ONTO A STABLE EROSION RESISTANT AREA.
2. PLACE BEDDING MATERIAL AS SPECIFIED
3. PLACE UTILITY LINES IN THE BEDDED TRENCH AND BACKFILL, SYSTEM–TEST AND COMPACT THE BACKFILL AS SPECIFIED.
4. ONCE THE BACKFILL OPERATIONS ARE COMPLETE IMMEDIATELY SEED AND MULCH ALL INCIDENTALLY DISTURBED AREAS NOT WITHIN THE PROPOSED PAVED AREAS.

B.M.P. OPERATIONS & MAINTENANCE NOTES

GENERAL

1. THE OWNER/APPLICANT, LOWER MAKEFIELD TOWNSHIP, SHALL BE RESPONSIBLE TO INSPECT AND MAINTAIN B.M.P. MEASURES AS DESCRIBED BELOW.
2. GENERAL INSPECTIONS SHALL BE PERFORMED ON AN ANNUAL BASIS, AND AFTER EACH RAIN EVENT EXCEEDING ONE (1) INCH OF RAINFALL.
3. INSPECT GRASS AREAS FOR EROSION, BARE AREAS OR RUTTING, AND REPAIR AND RE–SEED AS NECESSARY.
4. INSPECT AREAS WITH GEOTEXTILE STABILIZATION. RE–ANCHOR LOOSE AREAS AND STABILIZE.
5. THE CRITICAL STAGES OF IMPLEMENTATION OF THIS PCSM PLAN FOR WHICH A LICENSED PROFESSIONAL OR DESIGNEE SHALL BE PRESENT ONSITE INCLUDE:
   a. CONSTRUCTION OF DETENTION BASINS INFLOW AND OUTFLOW STRUCTURES AND RIP RAP APRONS.
   b. CONSTRUCTION OF INFILTRATION TRENCHES.
   c. CONSTRUCTION OF RIP RAP APRONS.

DETENTION BASINS

1. THE STORMWATER DETENTION BASINS AND THEIR OUTLET STRUCTURES AND PIPES SHALL BE VISUALLY INSPECTED ANNUALLY IN THE FALL OF THE YEAR. IF ANY SEDIMENT OR DEBRIS HAS COLLECTED IN THE BOTTOM OF THE BASIN, OUTLET STRUCTURES OR THE OUTLET PIPES, IT SHALL BE REMOVED AS SOON AS POSSIBLE.
2. THE STORMWATER DETENTION BASINS AND THEIR OUTLET STRUCTURES SHALL BE VISUALLY INSPECTED AFTER ANY MAJOR (10, 25, 50 OR 100–YEAR) STORM EVENT, AND ANY NECESSARY CLEANING OR REPAIRS SHALL BE DONE AS SOON AS POSSIBLE.
3. ALL STORM INLETS SHALL BE VISUALLY INSPECTED AT LEAST ONCE A YEAR AT THE END OF NOVEMBER AND THEY SHALL BE CLEANED OF ANY LEAVES OR DEBRIS.

RIPRAP APRONS

1. INSPECT RIPRAP APRONS ANNUALLY AND AFTER EACH RAINFALL EVENT EXCEEDING ONE (1) INCH OF RAINFALL.
2. REMOVE SEDIMENT AND ADD ADDITIONAL STONE AS NECESSARY.

INFILTRATION TRENCH

1. CATCH BASINS AND INLETS SHOULD BE INSPECTED AND CLEANED AT LEAST 2 TIMES PER YEAR.
2. THE VEGETATION ALONG THE SURFACE OF THE INFILTRATION TRENCH SHALL BE MAINTAINED IN GOOD CONDITION, AND ANY BARE SPOTS SHALL BE REVEGETATED AS SOON AS POSSIBLE.
3. VEHICLES SHOULD NOT BE PARKED OR DRIVEN ON A VEGETATED INFILTRATION TRENCH, AND CARE SHOULD BE TAKEN TO AVOID EXCESS COMPACTION BY MOWERS.

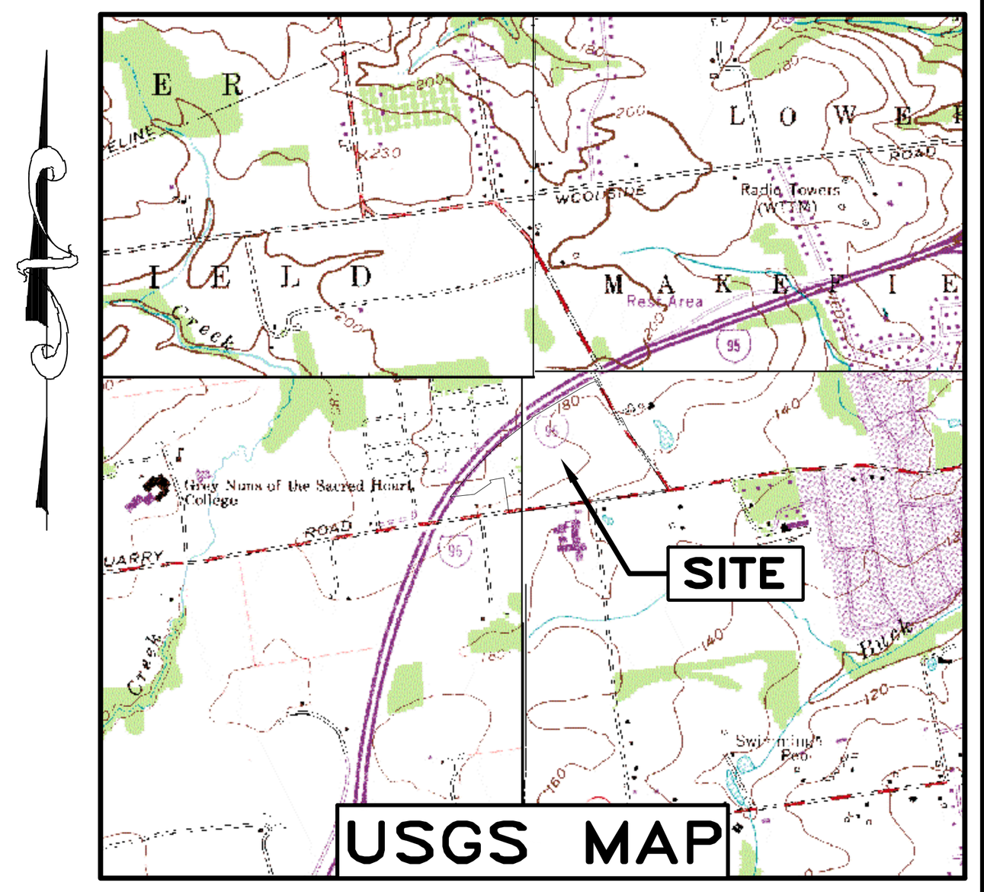
NPDES & PCSM NOTES

- **THE CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM FOR WHICH A LICENSED PROFESSIONAL OR DESIGNEE SHALL BE PRESENT ONSITE ARE THE INSTALLATION OF THE INFILTRATION TRENCHES, DETENTION BASIN, RIP RAP APRONS, ENDWALLS, AND THE INSTALLATION OF THE PERMANENT ORIFICE PLATE FOR THE DETENTION BASIN OUTLET STRUCTURE.**
- **THE PCSM PLAN IS SEPARATE FROM THE E&S PLAN AND LABELED "POST CONSTRUCTION STORMWATER MANAGEMENT PLAN" AND SHALL BE THE FINAL PLAN FOR CONSTRUCTION.**
- **PROTECTION MUST BE PROVIDED FOR INFILTRATION BMPs UNTIL DRAINAGE AREAS ARE COMPLETELY STABILIZED.**

TEST PIT LOCATION	DEPTH	INFILTRATION RATES (IN/HR)	SAFETY FACTOR 2
TP–A	6'–8" DEEP	–	–
TP–B	6' DEEP	–	–
TP–C	8' DEEP	7.885	3.94
TP–D	6'–8" DEEP	18.45	9.22
TP–E	7' DEEP	1.54	0.77
TP–F	7'–6" DEEP	–	–
TP–G	7' DEEP	–	–
TP–H	8' DEEP	0.00	0.00
TP–I	7' DEEP	2.76	1.38
TP–J	5' DEEP	–	–
TP–K	6'–8" DEEP	9.5	4.75
TP–L	1'–8" DEEP	–	–
TP–M	2'–10" DEEP	–	–
TP–N	7' DEEP	0.425	0.212
TP–O	5'–4" DEEP	–	–
TP–P	8'–0" DEEP	0.13	0.065
TP–Q	7'–6" DEEP	0.40	0.20
TP–R	6'–3" DEEP	0.00	0.00
TP–S	7'–0" DEEP	0.85	0.425

NOTE: SEE PCSM NARRATIVE APPENDIX E FOR ADDITIONAL SOIL AND GEOLOGY INFORMATION , AS WELL AS APPROPRIATE INFILTRATION AND GEOLOGICAL STUDIES THAT IDENTIFY LOCATION, DEPTHS AND METHODOLOGY.

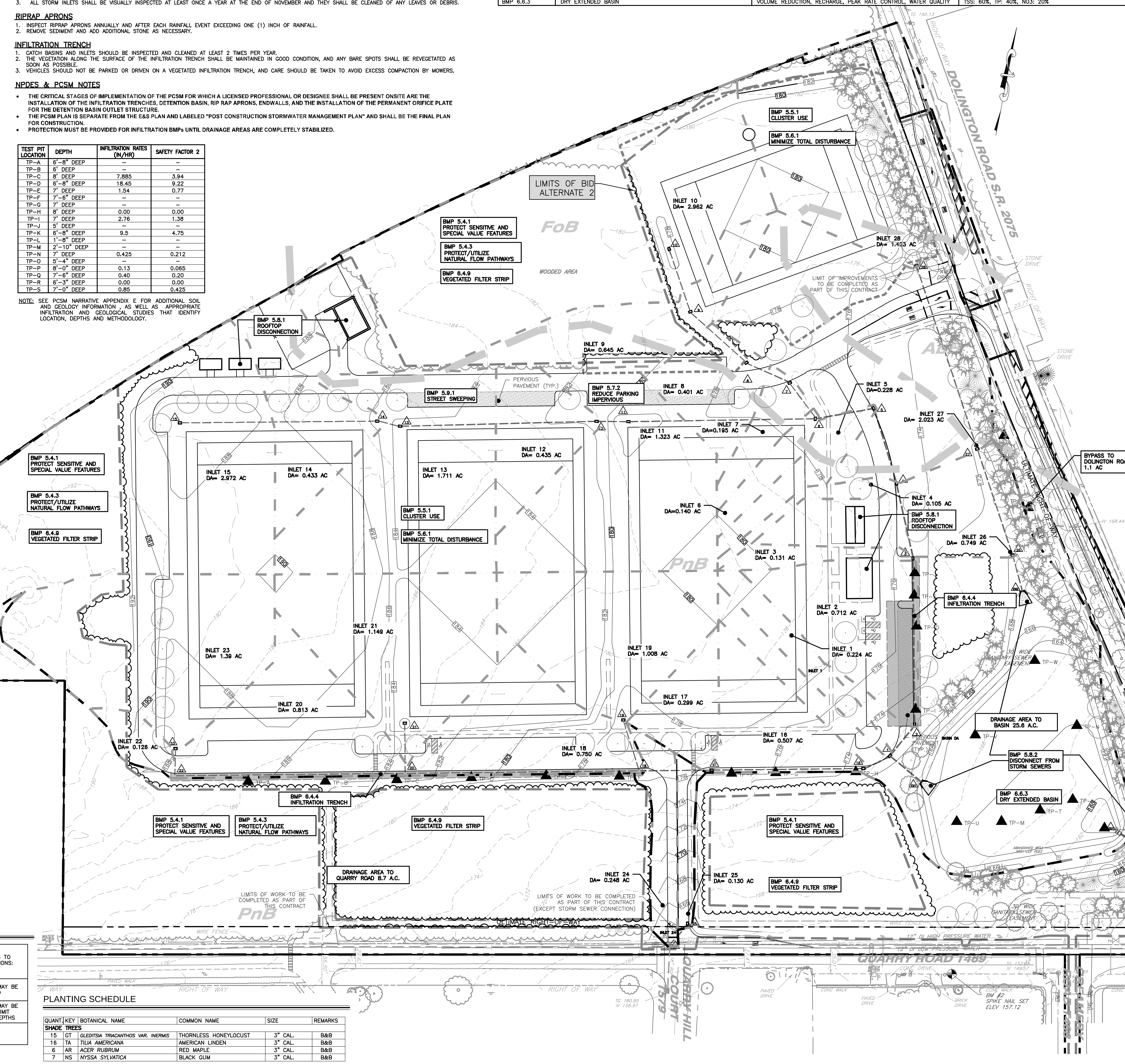
BMP NUMBER	TITLE	STORMWATER FUNCTION	WATER QUALITY FUNCTION FUNCTION
BMP 5.4.1	PROTECT SENSITIVE AND SPECIAL VALUE FEATURES	VOLUME REDUCTION, RECHARGE, PEAK RATE CONTROL, WATER QUALITY	TSS: PREVENTATIVE, TP: PREVENTATIVE, NO3: PREVENTATIVE
BMP 5.4.3	PROTECT/ UTILIZE NATURAL FLOW PATHWAYS	VOLUME REDUCTION, RECHARGE, PEAK RATE CONTROL, WATER QUALITY	TSS: 30%, TP: 20%, NO3: 0%
BMP 5.5.1	CLUSTER USE AT EACH SITE; BUILD ON SMALLEST AREA POSSIBLE	VOLUME REDUCTION, RECHARGE, PEAK RATE CONTROL, WATER QUALITY	TSS: PREVENTATIVE, TP: PREVENTATIVE, NO3: PREVENTATIVE
BMP 5.6.1	MINIMIZE TOTAL DISTURBANCE AREA – GRADING	VOLUME REDUCTION, RECHARGE, PEAK RATE CONTROL, WATER QUALITY	TSS: 40%, TP: 0%, NO3: 0%
BMP 5.7.2	REDUCE PARKING IMPERVIOUS	VOLUME REDUCTION, RECHARGE, PEAK RATE CONTROL, WATER QUALITY	TSS: PREVENTATIVE, TP: PREVENTATIVE, NO3: PREVENTATIVE
BMP 5.8.1	ROOFTOP DISCONNECTION	VOLUME REDUCTION, RECHARGE, PEAK RATE CONTROL, WATER QUALITY	TSS: 30%, TP: 0%, NO3: 0%
BMP 5.8.2	DISCONNECTION FROM STORM SEWERS	VOLUME REDUCTION, RECHARGE, PEAK RATE CONTROL, WATER QUALITY	TSS: 30%, TP: 0%, NO3: 0%
BMP 5.9.1	STREET SWEEPING	WATER QUALITY	TSS: 85%, TP: 85%, NO3: 50%
BMP 6.4.4	INFILTRATION TRENCH	VOLUME REDUCTION, RECHARGE, PEAK RATE CONTROL, WATER QUALITY	TSS: 85%, TP: 85%, NO3: 30%
BMP 6.4.8	VEGETATED SWALE	VOLUME REDUCTION, RECHARGE, PEAK RATE CONTROL, WATER QUALITY	TSS: 50%, TP: 50%, NO3: 20%
BMP 6.4.9	VEGETATED FILTER STRIP	VOLUME REDUCTION, RECHARGE, PEAK RATE CONTROL, WATER QUALITY	TSS: 30%, TP: 20%, NO3: 10%
BMP 6.6.3	DRY EXTENDED BASIN	VOLUME REDUCTION, RECHARGE, PEAK RATE CONTROL, WATER QUALITY	TSS: 60%, TP: 40%, NO3: 20%



SOURCE MAP: TRENTON WEST AND LANGHORNE QUADRANGLE MAPS
SCALE 1" = 2,000'

LEGEND

- ADJOINER LINE
- EXISTING BOUNDARY
- EXISTING BUILDINGS
- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- EXISTING CURBLINE
- EXISTING DRIVEWAY
- EXISTING ELECTRIC STRUCTURES
- EXISTING EDGE OF PAVEMENT
- EXISTING CHAINLINK FENCE
- EXISTING FIRE HYDRANT
- EXISTING GUIDE RAIL
- EXISTING IRON PIN/PIPE
- EXISTING MONUMENT
- EXISTING LEGAL RIGHT–OF–WAY
- EXISTING SANITARY SEWER STRUCTURES
- EXISTING SANITARY EASEMENT
- EXISTING SIGN
- EXISTING STORM SEWER STRUCTURES
- EXISTING TREELINE
- EXISTING UTILITY POLE AND GUY WIRE
- EXISTING WATER STRUCTURES
- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- PROPOSED BUILDING
- PROPOSED ULTIMATE RIGHT–OF–WAY
- PROPOSED EDGE OF PAVEMENT
- PROPOSED SIGN
- PROPOSED TRAIL
- PROPOSED CONTOUR
- PROPOSED INDEX CONTOUR
- PROPOSED TREELINE
- PROPOSED STORM SEWER AND STRUCTURE
- PROPOSED SANITARY SEWER MAIN AND STRUCTURE
- PROPOSED SANITARY SEWER LATERAL
- PROPOSED WATER MAIN
- PROPOSED WATER SERVICE LATERAL
- PROPOSED ELECTRIC
- POST–DEVELOPMENT WATERSHED LINE
- DRAINAGE AREA TO PROPOSED INLETS
- PROPOSED LIMITS OF DISTURBANCE (24.97 ACRES)
- PROPOSED NPDES BOUNDARY (36.64 ACRES)
- LsC MbC MaC SOIL BOUNDARY AND DESIGNATOR
- TP–A ▲ TEST PITS BY BOUCHER AND JAMES, INC.
- PROPOSED NEW SHADE TREE
- PROPOSED TRANSPLANTED SHADE TREE (TO BE SELECTED & TRANSPLANTED FROM SITE INTERIOR BY OTHERS)



NPDES NOTES

THE POST CONSTRUCTION STORMWATER MANAGEMENT PLAN HAS BEEN DESIGNED/ PREPARED TO:

- PRESERVE THE INTEGRITY OF STREAM CHANNELS AND MAINTAIN AND PROTECT THE PHYSICAL, BIOLOGICAL AND CHEMICAL QUALITIES OF THE RECEIVING STREAM.
- PREVENT AN INCREASE IN THE RATE OF STORMWATER RUNOFF.
- MINIMIZE ANY INCREASE IN STORMWATER RUNOFF VOLUME.
- MINIMIZE IMPERVIOUS AREAS.
- MAXIMIZE THE PROTECTION OF EXISTING DRAINAGE FEATURES AND EXISTING VEGETATION.
- MINIMIZE CLEARING AND GRADING. MINIMIZE SOIL COMPACTION.
- UTILIZE OTHER STRUCTURAL AND NON STRUCTURAL BMPs THAT PREVENT OR MINIMIZE CHANGES IN STORMWATER RUNOFF.

MAJOR SOIL PROPERTIES AND ESTIMATED DEGREE OF LIMITATION

MAP SYMBOL	SOIL	HYDROLOGIC SOIL GROUP	DEPTH TO		SOILS FEATURES THAT AFFECT:	RESOLUTIONS TO SOILS LIMITATIONS:
			HWT (FT)	BEDROCK (IN)	SHALLOW EXCAVATIONS	
AbB	ABBOTTSTOWN SILT LOAM – 3–8% SLOPES	D	0.5'–1.5'	40"–60"	VERY LIMITED DEPTH TO SATURATED ZONE	UNDERDRAINS MAY BE REQUIRED
FoB	FOUNTAINVILLE SILT LOAM – 3–8% SLOPES	C	1.5'–2.5'	40"–60"	VERY LIMITED DEPTH TO SATURATED ZONE LIMITED DEPTH TO BEDROCK	UNDERDRAINS MAY BE REQUIRED, LIMIT EXCAVATION DEPTHS
PnB	PENN–LANSDALE COMPLEX – 3–8% SLOPES	B	>6.5'	20"–40"	NOT LIMITED	N/A

SOURCE: SOIL INFORMATION WERE OBTAINED FROM WEB SOIL SURVEY MAPS OF BUCKS COUNTY, PENNSYLVANIA DATED OCTOBER 14, 2013 BY THE NATURAL RESOURCES CONSERVATION SERVICE.

PLANTING SCHEDULE

QUANT.	KEY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
SHADE TREES					
15	GT	*GLEDITSIA TRIACANTHOS VAR. INERMIS*	THORNLESS HONEYLOCUST	3" CAL.	B&B
16	TA	*TILIA AMERICANA*	AMERICAN LINDEN	3" CAL.	B&B
6	AR	*ACER RUBRUM*	RED MAPLE	3" CAL.	B&B
7	NS	*NYSSA SYLVATICA*	BLACK GUM	3" CAL.	B&B

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DOYLESTOWN ✤ STROUDSBURG ✤ LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345–9400 FAX: (215) 345–9401
www.bjengineers.com

SHEET 11 OF 14

PROJECT NAME : SNIPES TRACT ATHLETIC FIELDS

DATE: NOVEMBER 14, 2016

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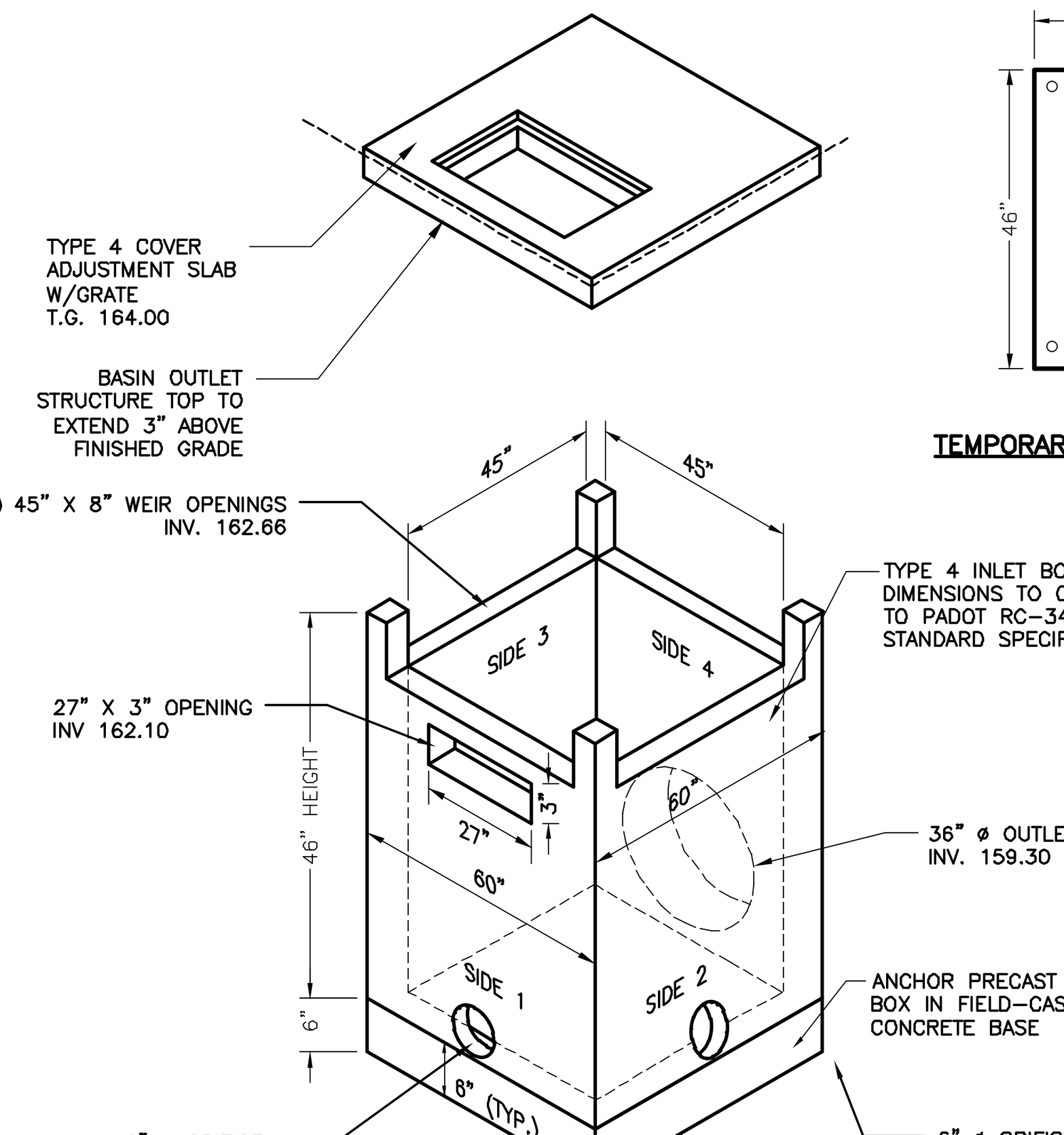
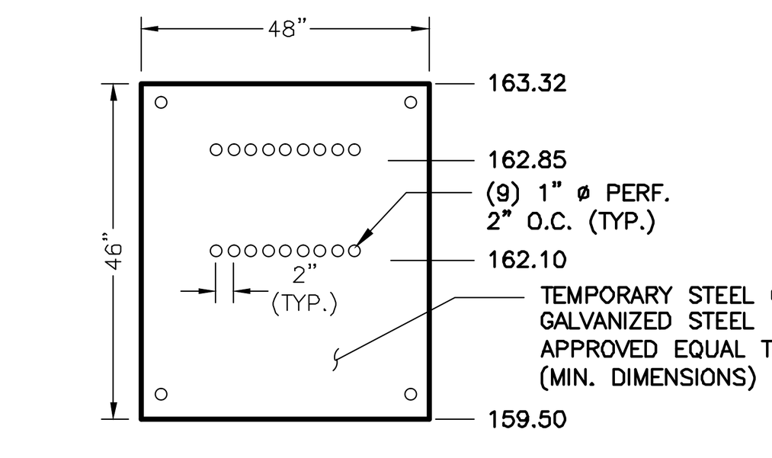
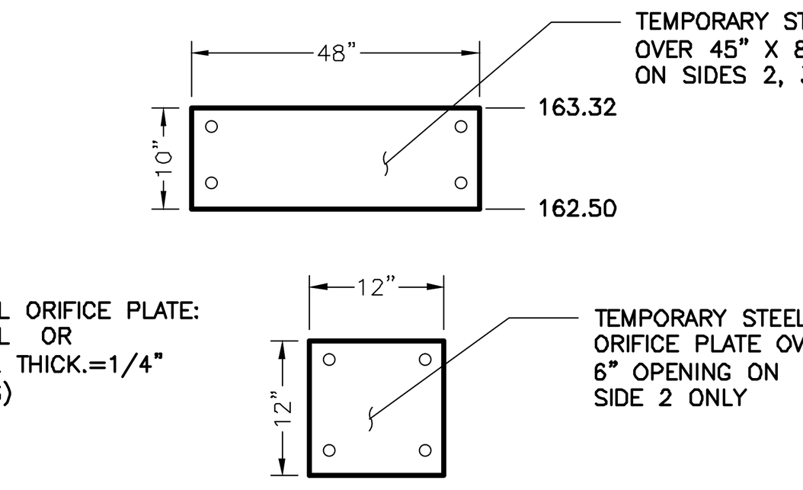


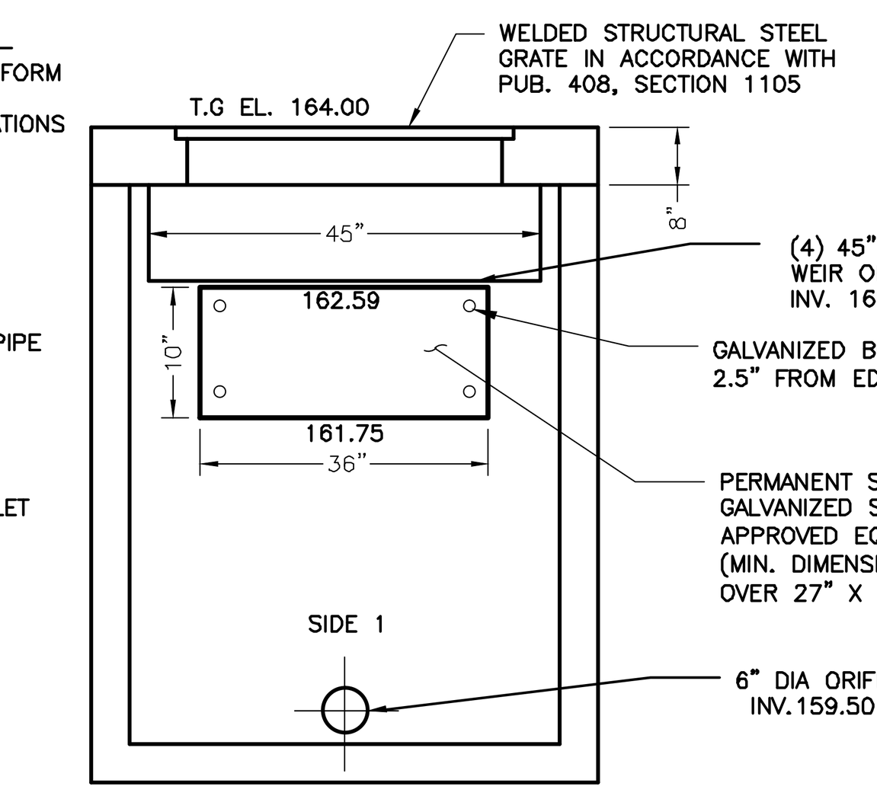
NOTES:
1. SHOP DRAWING TO BE APPROVED BY MUNICIPAL ENGINEER PRIOR TO CONSTRUCTION.
2. PROVIDE WATER–TIGHT JOINTS BETWEEN ORIFICE PLATE AND CONCRETE BOX BY CAULKING.



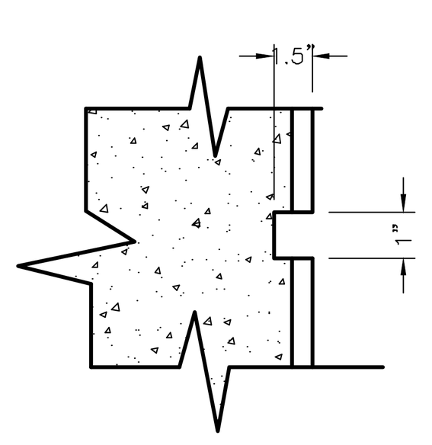
TEMPORARY OUTLET STRUCTURE PLATE DETAIL SIDE 1



TEMPORARY OUTLET STRUCTURE PLATE DETAIL SIDES 2, 3 AND 4



PERMANENT OUTLET STRUCTURE PLATE DETAIL



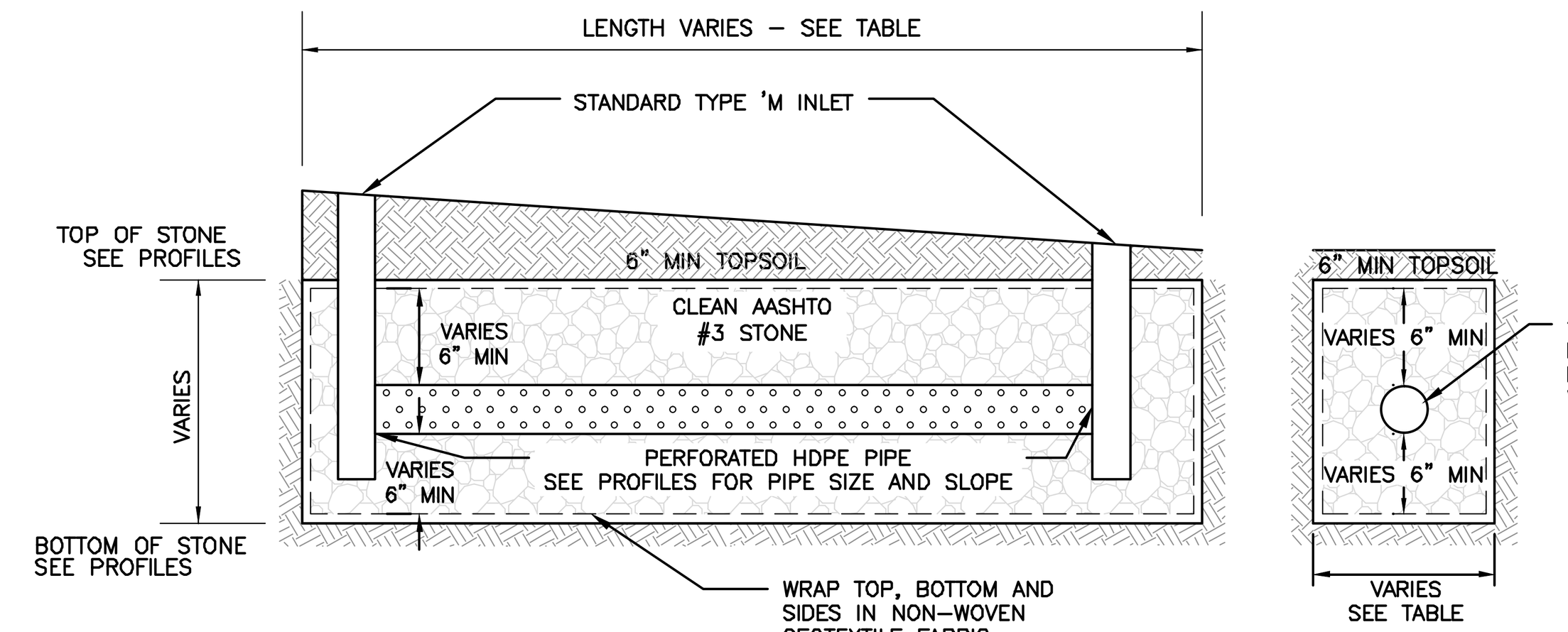
OUTLET STRUCTURE PLATE DETAIL

BASIN OUTLET STRUCTURE DETAIL

NOT TO SCALE

INFILTRATION TRENCH	WIDTH	LENGTH
INLET 2 TO INLET 3	10'/45'*	230'
INLET 18 TO INLET 22	10'	640'

*WIDTH VARIES, SEE PLAN



NOTES:
1. SUBSURFACE INFILTRATION BED FILTER FABRIC AND STONE SHALL BE KEPT CLEAN OF SOIL/SEDIMENT DURING THE INSTALLATION PROCESS. IF INSPECTION INDICATES THAT SOIL SEDIMENT HAS ENTERED ANY OF THE INFILTRATION SEEPAGE BEDS, APPROPRIATE MEASURES (I.E. CLEANING THE SOIL/SEDIMENT FROM THE FABRIC, STONE, BED, ETC. AND OR REPLACEMENT OF THE FABRIC AND STONE) SHOULD BE ADDRESSED.
2. ALL STONE FOR THE CONSTRUCTION OF THE SUBSURFACE INFILTRATION BEDS SHALL BE UNIFORMLY GRADED AND CLEAN WASHED AGGREGATE.
3. THE BOTTOM OF ALL SUBSURFACE INFILTRATION BEDS SHALL BE UNDISTURBED OR UNCOMPACTED SUBGRADE.
4. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO SUBGRADE DURING CONSTRUCTION.

CONSTRUCTION REQUIREMENTS:
1. EXCAVATION FOR THE INFILTRATION FACILITY SHALL BE PERFORMED WITH EQUIPMENT THAT WILL NOT COMPACT THE BOTTOM OF THE SEEPAGE BED/TRENCH OR LIKE FACILITY.
2. THE BOTTOM OF THE BED AND/OR TRENCH SHALL BE SCARIFIED PRIOR TO THE PLACEMENT OF AGGREGATE.
3. ONLY CLEAN AGGREGATE, FREE OF FINES, SHALL BE ALLOWED.
4. THE TOP AND SIDES OF ALL SEEPAGE BEDS, TRENCHES, OR LIKE FACILITIES SHALL BE COVERED WITH DRAINAGE FILTRATION FABRIC.

CONSTRUCTION SEQUENCE:
1. PROTECT INFILTRATION TRENCH AREA FROM COMPACTION PRIOR TO INSTALLATION.
2. IF POSSIBLE, INSTALL INFILTRATION TRENCH DURING LATER PHASES OF SITE CONSTRUCTION TO PREVENT SEDIMENTATION AND/OR DAMAGE FROM CONSTRUCTION ACTIVITY. AFTER INSTALLATION, PREVENT SEDIMENT LADEN WATER FROM ENTERING INLETS AND PIPES.
3. INSTALL AND MAINTAIN PROPER EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION.
4. EXCAVATE INFILTRATION TRENCH BOTTOM TO A UNIFORM, LEVEL UNCOMPACTED SUBGRADE FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT SUBGRADE.
5. PLACE NONWOVEN GEOTEXTILE ALONG BOTTOM AND SIDES OF TRENCH*. NONWOVEN GEOTEXTILE ROLLS SHOULD OVERLAP BY A MINIMUM OF 16 INCHES WITHIN THE TRENCH. FOLD BACK AND SECURE EXCESS GEOTEXTILE DURING STONE PLACEMENT.
6. INSTALL UPSTREAM AND DOWNSTREAM CONTROL STRUCTURES, CLEANOUTS, ETC.
7. PLACE UNIFORMLY GRADED, CLEAN–WASHED AGGREGATE IN 8–INCH LIFTS, LIGHTLY COMPACTING BETWEEN LIFTS.
8. INSTALL CONTINUOUSLY PERFORATED PIPE AS INDICATED ON PLANS. BACKFILL WITH UNIFORMLY GRADED, CLEAN–WASHED AGGREGATE IN 8–INCH LIFTS, LIGHTLY COMPACTING BETWEEN LIFTS.
9. FOLD AND SECURE NONWOVEN GEOTEXTILE OVER INFILTRATION TRENCH, WITH MINIMUM OVERLAP OF 16–INCHES.
10. PLACE 6–INCH LIFT OF APPROVED TOPSOIL OVER INFILTRATION TRENCH, AS INDICATED ON PLANS.
11. SEED AND STABILIZE TOPSOIL.
12. DO NOT REMOVE INLET PROTECTION OR OTHER EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.
13. ANY SEDIMENT THAT ENTERS INLETS DURING CONSTRUCTION IS TO BE REMOVED WITHIN 24 HOURS.

MAINTENANCE AND INSPECTION ISSUES:
- CATCH BASINS AND INLETS SHOULD BE INSPECTED AND CLEANED AT LEAST 2 TIMES PER YEAR.
- THE VEGETATION ALONG THE SURFACE OF THE INFILTRATION TRENCH SHOULD BE MAINTAINED IN GOOD CONDITION, AND ANY BARE SPOTS REVEGETATED AS SOON AS POSSIBLE.
- VEHICLES SHOULD NOT BE PARKED OR DRIVEN ON A VEGETATED INFILTRATION TRENCH, AND CARE SHOULD BE TAKEN TO AVOID EXCESSIVE COMPACTION BY MOWERS.

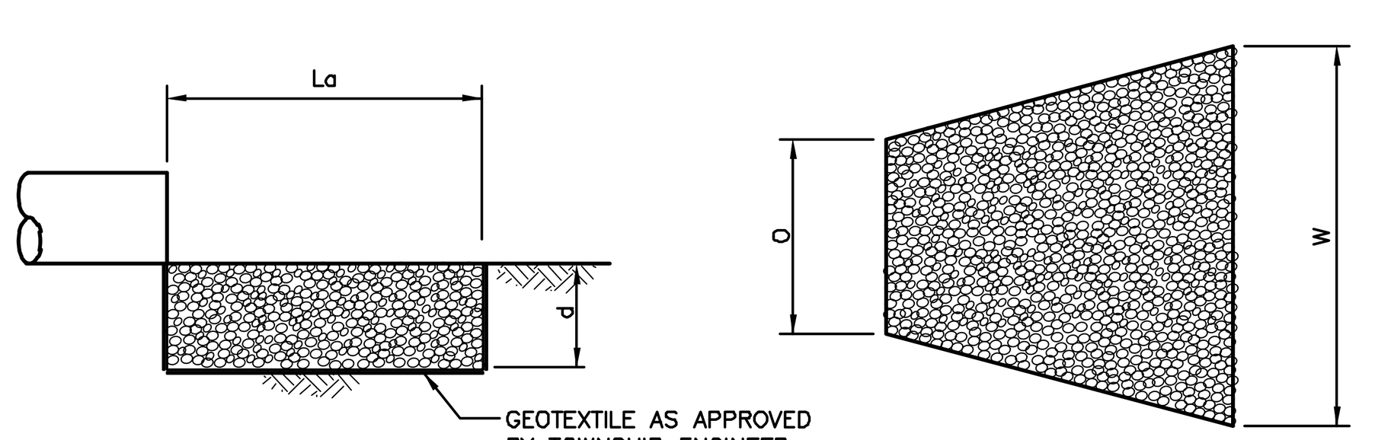
STORMWATER INFILTRATION TRENCH NOTES

NOT TO SCALE

DISPOSAL/RECYCLING OF CONSTRUCTION MATERIAL

ALL BUILDING MATERIAL AND WASTES MUST BE REMOVED FROM THE SITE AND RECYCLED IN ACCORDANCE WITH DEP'S SOLID WASTE REGULATIONS (25 PA CODE 260.1 ET SEQ., 271.1 ET SEQ., AND 287.1 ET SEQ.), AND/OR ANY ADDITIONAL LOCAL, STATE OR FEDERAL REGULATIONS. NO BUILDING MATERIALS (USED OR UNUSED) OR WASTE MATERIALS SHALL BE BURNED, BURIED, DUMPED OR DISCHARGED AT THE SITE.

SEDIMENT REMOVED FROM BMPs SHOULD BE DISPOSED OF IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WETLANDS, FLOODPLAINS, OR DRAINAGE SWALES AND IMMEDIATELY STABILIZED, OR PLACED IN TOPSOIL STOCKPILES.



NOTE: RIPRAP TO BE PENN DOT ROCK LINING R–4 U.O.N.
* RIPRAP TO BE PENN DOT ROCK LINING R–5

OUTLET NO.	PIPE DIA Pd (IN)	RIPRAP SIZE (R–_)	RIPRAP THICK. d (IN)	APRON LENGTH La (FT)	APRON INITIAL WIDTH O (FT)	APRON TERMINAL WIDTH W (FT)
EW 1	24" HDPE	R–6	36"	22	6	22
EW 2	18" HDPE	R–4	18"	12	5	13
EW 3	36" RCP	R–5	27"	20	9	24

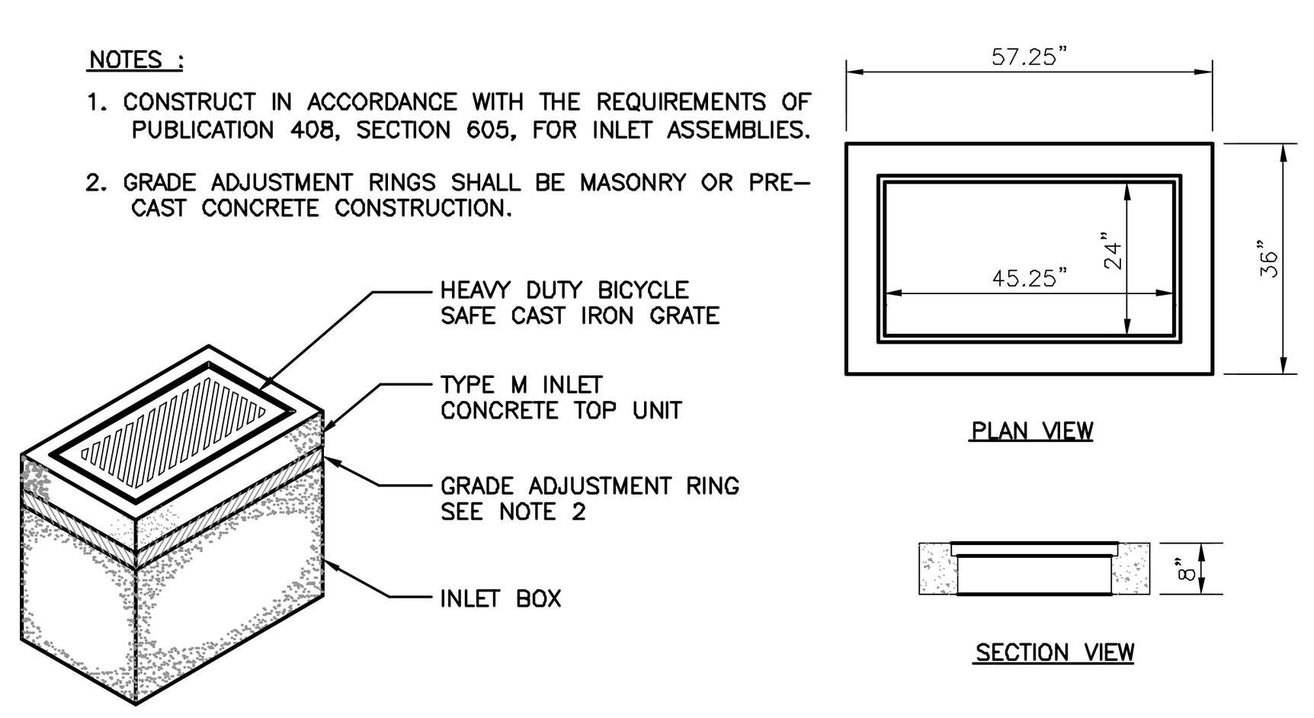
ALL APRONS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN. TERMINAL WIDTHS SHALL BE ADJUSTED AS NECESSARY TO MATCH RECEIVING CHANNELS.

ALL APRONS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DISPLACED RIPRAP WITHIN THE APRON SHALL BE REPLACED IMMEDIATELY.

RIPRAP APRONS AT PIPE OUTLETS

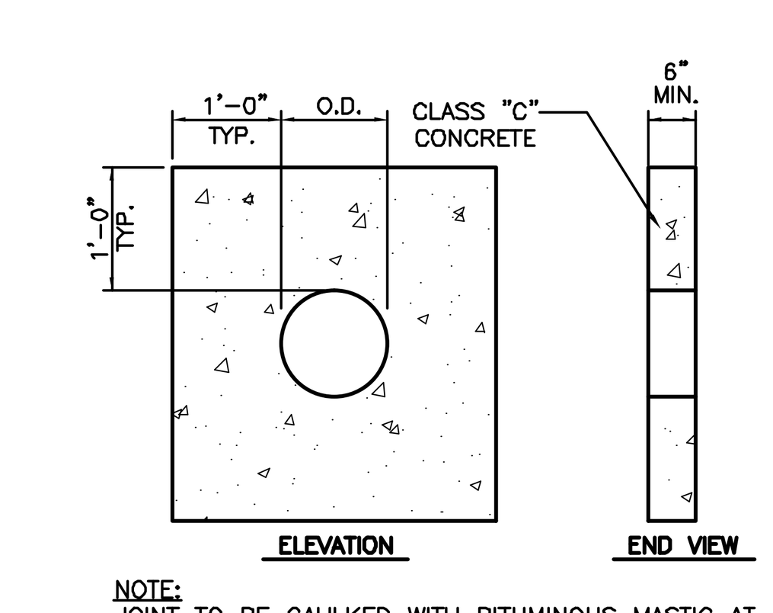
NOT TO SCALE PADEP STANDARD CONSTRUCTION DETAIL #33

NOTES :
1. CONSTRUCT IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408, SECTION 605, FOR INLET ASSEMBLIES.
2. GRADE ADJUSTMENT RINGS SHALL BE MASONRY OR PRE–CAST CONCRETE CONSTRUCTION.



TYPE 'M' INLET CONCRETE TOP UNIT

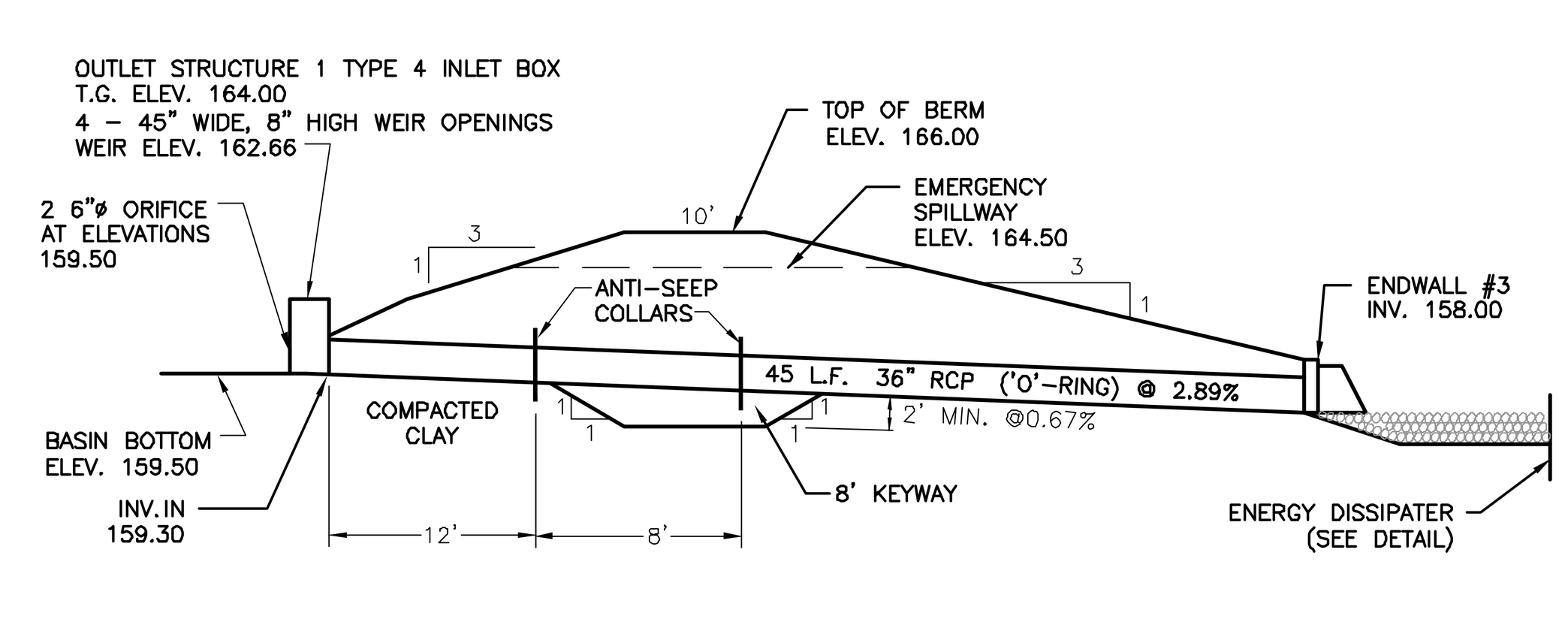
NOT TO SCALE



NOTE:
JOINT TO BE CAULKED WITH BITUMINOUS MASTIC AT TIME OF INSTALLATION.

ANTI–SEEP COLLAR

NOT TO SCALE



LOCATION	BASIN/RISER STRUCTURE TYPE	GRATE ELEV.	ORIFICE ELEV.	ORIFICE DIA.
OS 1	TYPE 'M' INLET	164.00	159.50	6" (2)

OUTLET PIPE				
PIPE SIZE	PIPE LENGTH	INV. IN	INV. OUT	SLOPE (%)
36" RCP	45 L.F.	159.30	158.00	2.89%

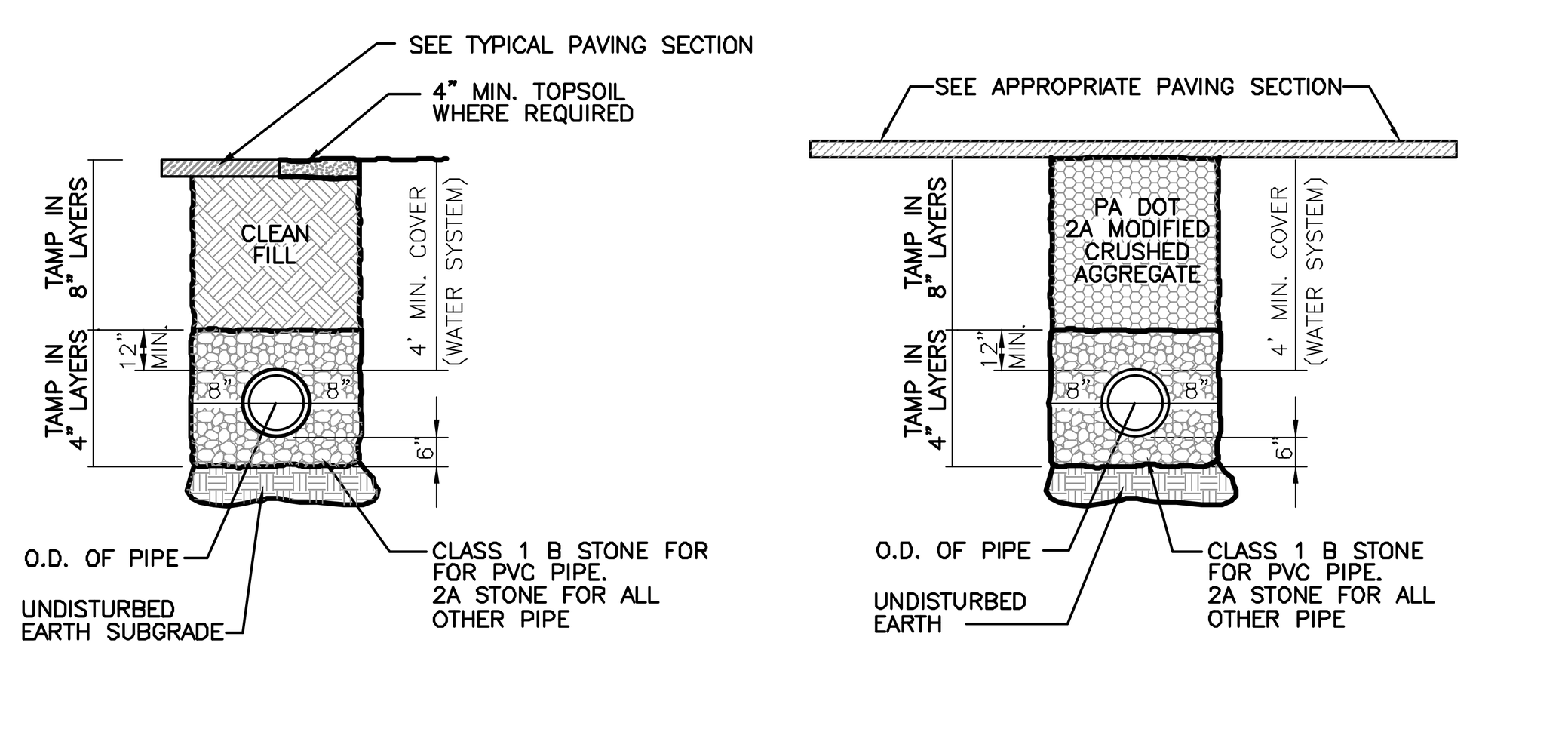
BASIN STRUCTURE				
BERM ELEV.	SPILLWAY ELEV.	100 YR. W.S. ELEV.	BASIN BOTTOM ELEV.	TEMP. BASIN BOTTOM
166.00	164.50	164.42	159.50	159.50

SEDIMENT BASIN CONSTRUCTION SEQUENCE:
- **THE ENGINEER OR HIS DESIGNEE MUST BE PRESENT FOR THE CONSTRUCTION OF THE SEDIMENT/ DETENTION BASIN BERM AND OUTLET STRUCTURE.**

1. INSTALL ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS.
   a. THE AREA IMMEDIATELY ADJACENT TO THE BASIN MUST BE STABILIZED IN ACCORDANCE WITH THE PADEP'S EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL (2000 OR LATEST EDITION) PRIOR TO BASIN CONSTRUCTION.
2. PREPARE SITE FOR EXCAVATION AND/OR EMBANKMENT CONSTRUCTION.
   a. ALL EXISTING VEGETATION SHOULD REMAIN IF FEASIBLE AND SHOULD ONLY BE REMOVED IF NECESSARY FOR CONSTRUCTION.
   b. CARE SHOULD BE TAKEN TO PREVENT COMPACTION OF THE BASIN BOTTOM.
   c. IF EXCAVATION IS REQUIRED, CLEAR THE AREA TO BE EXCAVATED OF ALL VEGETATION. REMOVE ALL TREE ROOTS, ROCKS, AND BOULDERS ONLY IN EXCAVATION AREA
3. EXCAVATE BOTTOM OF BASIN TO DESIRED ELEVATION (IF NECESSARY).
4. INSTALL SURROUNDING EMBANKMENTS AND INLET AND OUTLET CONTROL STRUCTURES.
5. GRADE SUBSOIL IN BOTTOM OF BASIN, TAKING CARE TO PREVENT COMPACTION. COMPACT SURROUNDING EMBANKMENT AREAS AND AROUND INLET AND OUTLET STRUCTURES.
6. APPLY AND GRADE PLANTING SOIL.
7. APPLY GEO–TEXTILES AND OTHER EROSION–CONTROL MEASURES.
8. SEED, PLANT AND MULCH ACCORDING TO PLANTING PLAN
9. INSTALL ANY ANTI–GRAZING MEASURES, IF NECESSARY.

CROSS SECTION AT BASIN BERM

NOT TO SCALE



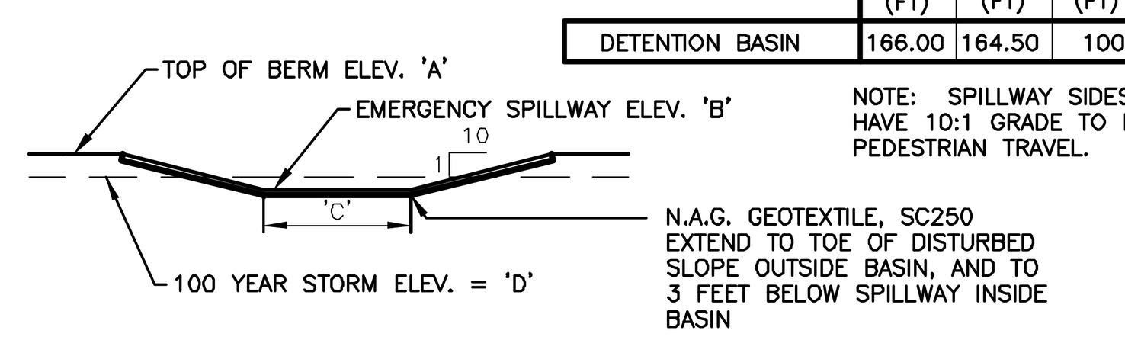
NOTES :
1. ALL BACKFILL MATERIAL IS SUBJECT TO PENNDOT, TOWNSHIP AND/OR AUTHORITY APPROVAL.
2. CLEAN FILL : CLEAN DRY EARTH WITH A MAXIMUM STONE SIZE OF 6 INCHES

TYPICAL TRENCH DETAIL

NOT TO SCALE

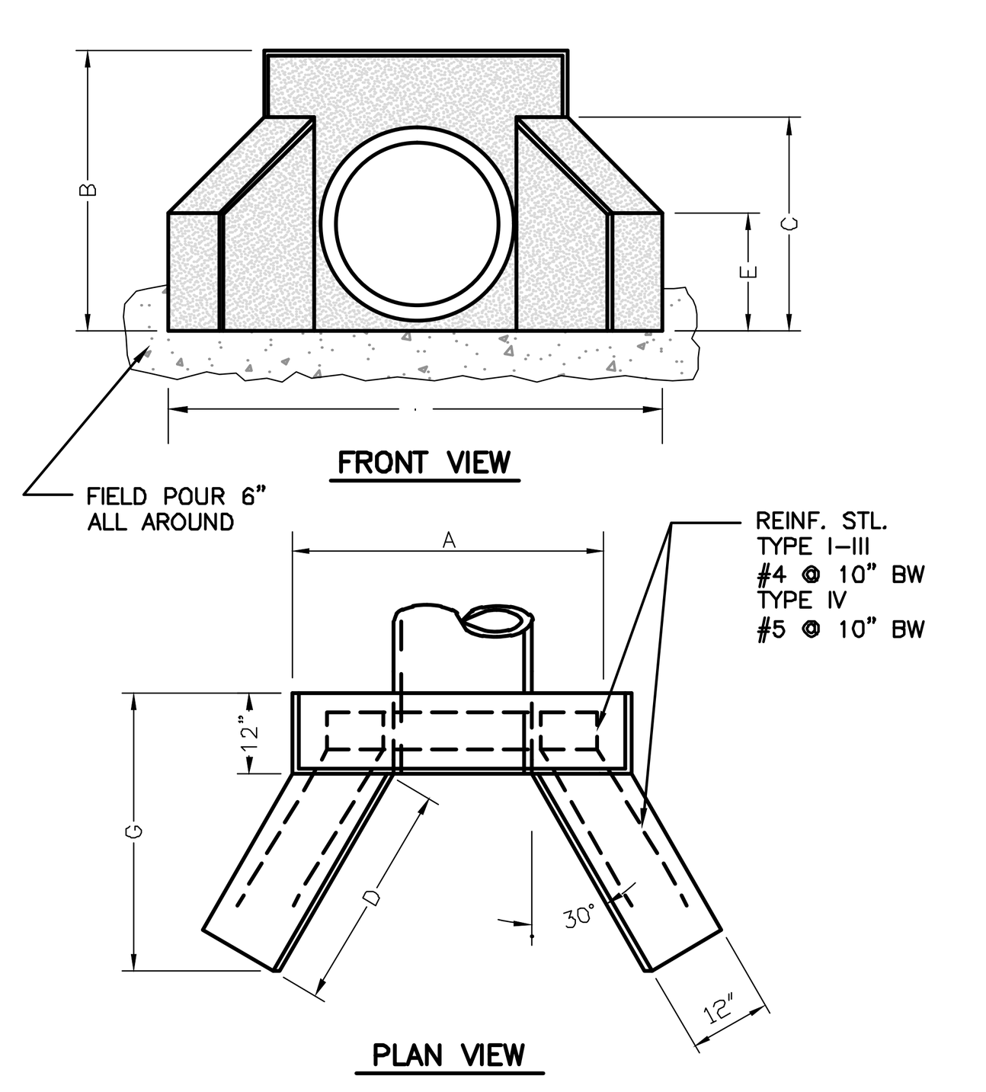
	A (FT)	B (FT)	C (FT)	D (FT)
DETENTION BASIN	166.00	164.50	100	164.42

NOTE: SPILLWAY SIDESLOPES TO HAVE 10:1 GRADE TO PROMOTE PEDESTRIAN TRAVEL.



EMERGENCY SPILLWAY

NOT TO SCALE

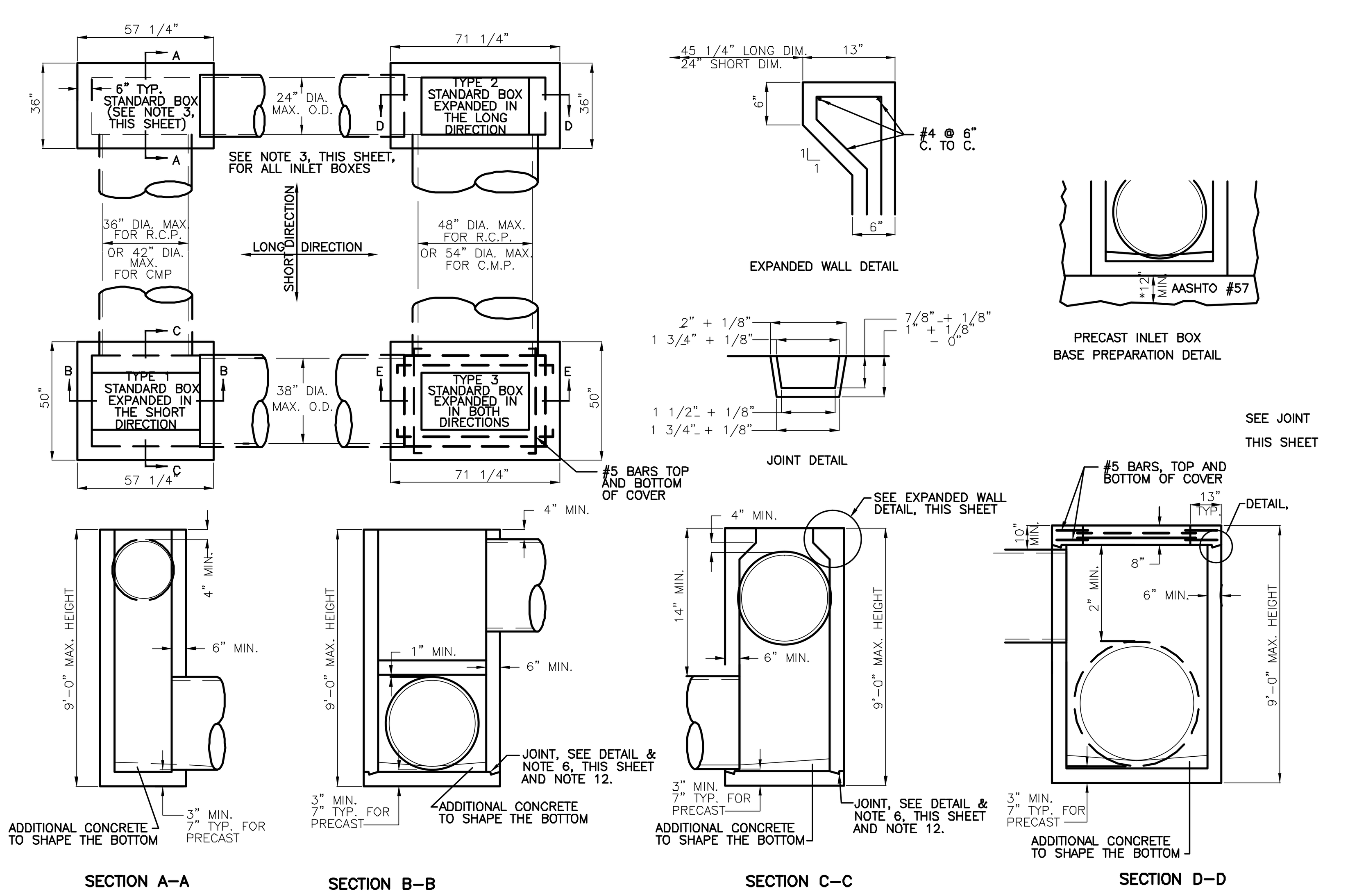


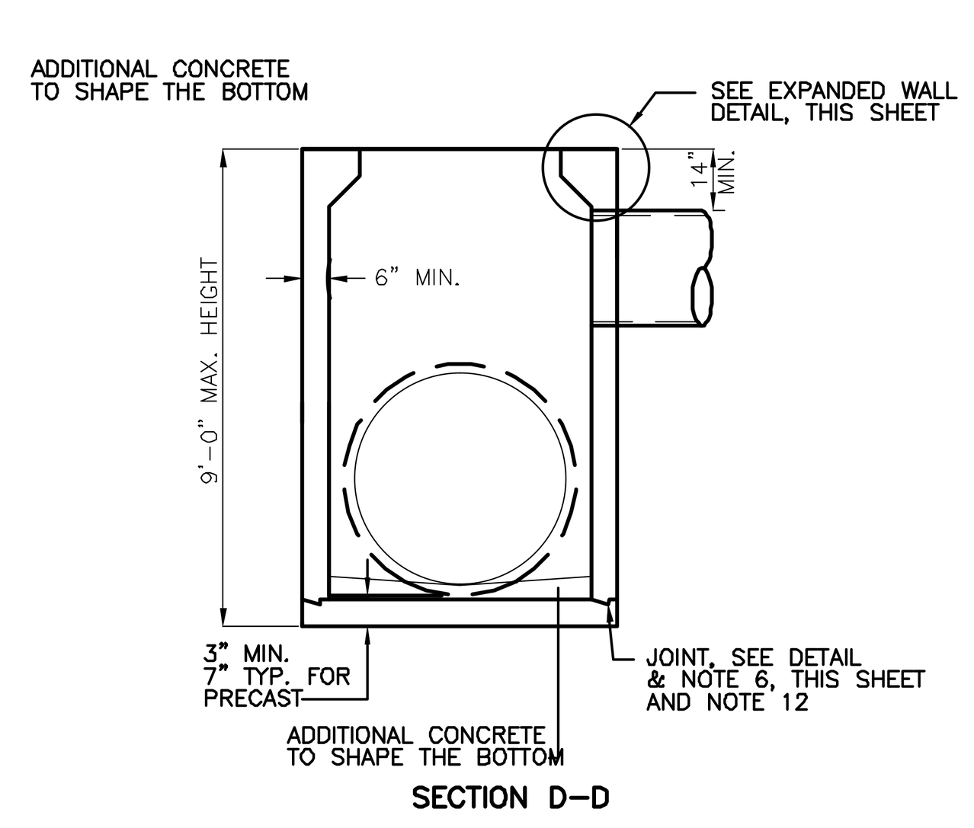
TYPE	PIPE ID (in)	WEIGHT (lbs)	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G (in)
I	12–15	3400	56	39	26	36	12	86	44
II	18–21	4880	64	48	36	39	20	96	48
III	24–27	5270	68	52	40	42	24	104	48
IV	30–36	9250	76	65	54	63	28	134	67

NOTES:
1. TYPE MARKED BY * INDICATES WALL FABRICATED IN (3) PIECES
2. CONCRETE IS DESIGNED TO OBTAIN A STRENGTH 04 4,000 PSI IN 28 DAYS
3. REINFORCING STEEL HAS A YIELD STRENGTH 60,000 PSI

TYPE D–W ENDWALL

NOT TO SCALE



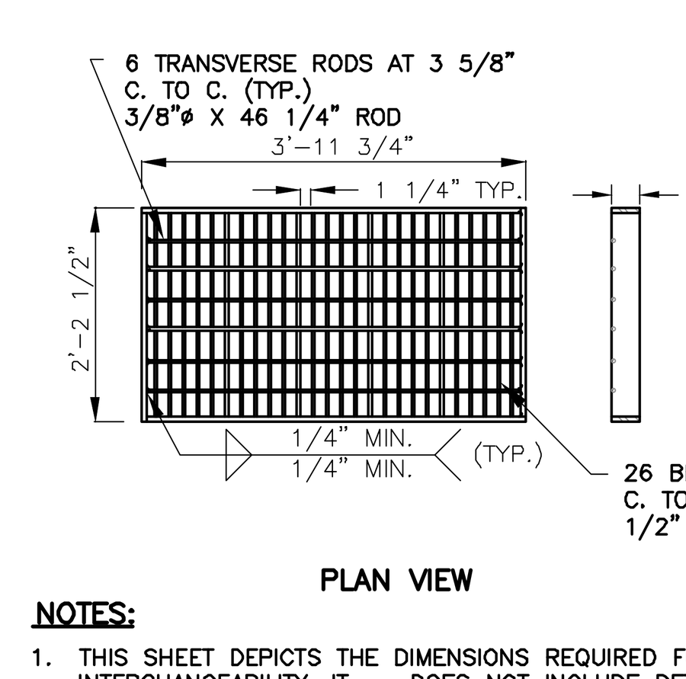


NOTES:
1. MATERIALS AND CONSTRUCTION SHALL COMPLY WITH REQUIREMENT TO SCALE OF SPECIFICATIONS FORM 408, CURRENT EDITION, SECTION 605 FOR CAST–IN–PLACE, AND SECTION 713.2 FOR PRECAST CEMENT CONCRETE UNITS AND AS MODIFIED HEREIN.
2. PRECAST CONCRETE INLET BOXES MAY BE USED IN LIEU OF CAST–IN–PLACE BOXES SHOWN. IF PRECAST INLET BOXES ARE USED, ONLY ITEMS SUPPLIED BY AN APPROVED MANUFACTURER AS LISTED IN BULLETIN NO. 15 WILL BE PERMITTED (SEE NOTE 9.)
3. ALL INLET BOXES SHALL HAVE THE 24" X 45 1/4" STANDARD OPENING TO ACCOMMODATE THE STANDARD TOP COMPONENT TO SCALE.
4. TYPICAL INLET WALLS SHALL BE 6" UNLESS OTHERWISE INDICATED FOR CONCRETE CONSTRUCTION AND 8" FOR BRICK CONSTRUCTION.
5. INLETS THAT EXCEED THE MAXIMUM DEPTH AS SHOWN SHALL REQUIRE A SPECIAL DESIGN.
6. PIPE BLOCK–OUTS EXTENDING INTO THE BASE SHALL NOT BE PERMITTED WHEN THE BASE IS NOT MONOLITHIC WITH THE INLET WALLS.
7. PIPE OR PIPES SHALL BE LOCATED AS REQUIRED, WITH THE INLET BOTTOM SHAPED TO CHANNEL THE FLOW TOWARD THE OUTLET PIPE.
8. PRECAST BOXES SHALL BE PLACED ON A PROPERLY PREPARED BASE AS SHOWN.
9. ANY MANUFACTURER DESIRING TO BE LISTED IN BULLETIN NO. 15 FOR THESE UNITS SHALL SUBMIT A 22" X 36" SHOP DRAWING TO THE BUREAU OF MATERIALS, TESTING, AND RESEARCH FOR APPROVAL. THE SHOP DRAWING MUST SHOW ALL DETAILS INCLUDING DIMENSIONS, TOLERANCES, HANDLING REINFORCEMENT, AND ANY MANUFACTURING DRAFTS.
10. INLETS THAT EXCEED 5'–0" IN DEPTH SHALL BE CONSTRUCTED WITH STEPS SIMILAR TO THE MANHOLES.
11. PRECAST CONCRETE ADJUSTMENT RINGS REQUIRED FOR UP TO 8" OF ADJUSTMENT. FOR ADJUSTMENT 12" AND ABOVE A PRECAST CONCRETE RISER OR RISERS IS REQUIRED.
12. ALL INLETS REQUIRE CONSTRUCTION JOINT TO SCALE OR KEYS FOR RISER SECTIONS AND PRECAST COVER ADJUSTMENT SLABS.
13. MASTIC OR NON SHRINK GROUT IS REQUIRED AT ALL CONSTRUCTION JOINT TO SCALE OF KEYS.
14. FOR PIPE DIAMETERS LARGER THAN 48" RCP OR 54" CMP USE A MODIFIED INLET BOX. REFER TO PENNDOT RC–34M SHEET 9 OF 10 CURRENT EDITION.

STANDARD INLET BOXES (PRECAST)

NOT TO SCALE

(PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PUBLICATION No.72: STANDARDS FOR ROADWAY CONSTRUCTION RC–34M SHEET 8 OF 10, 4/15/04)

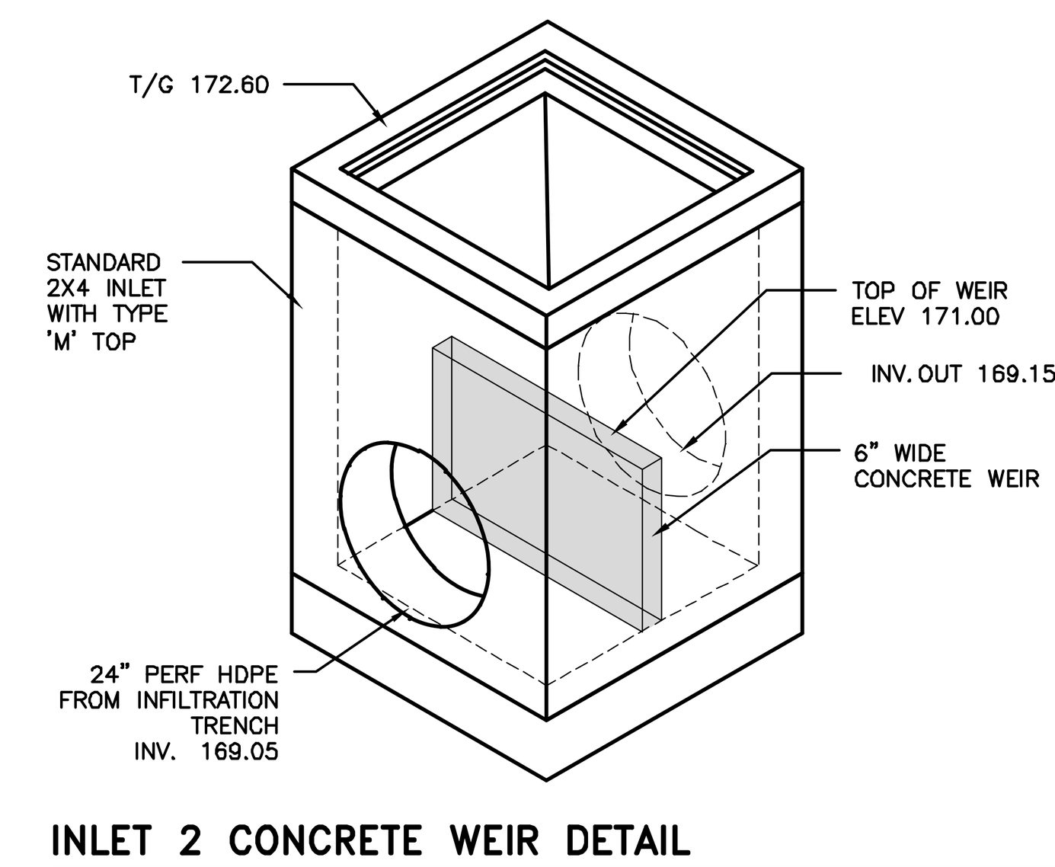


PLAN VIEW

NOTES:
1. THIS SHEET DEPICTS THE DIMENSIONS REQUIRED FOR UNIFORMITY AND INTERCHANGEABILITY. IT DOES NOT INCLUDE DETAILS REQUIRED FOR FABRICATION OR MANUFACTURING. ONLY GRATES SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15 SHALL BE PERMITTED. FOR A BULLETIN 15 LISTING, SUBMIT A 22"X36" REPRODUCIBLE SHOP DRAWING TO THE BUREAU OF CONSTRUCTION AND MATERIALS, MATERIALS AND TESTING DIVISION FOR REVIEW AND APPROVAL.
2. WELD STRUCTURAL STEEL GRATES IN ACCORDANCE WITH THE REQUIREMENT TO SCALE OF PUBLICATION 408, SECTION 1105.03(R).
3. PROVIDE TRANSVERSE BARS, MEETING THE REQUIREMENT TO SCALE OF PUB. 408.
4. PROVIDE BICYCLE SAFE, STRUCTURAL STEEL OR CAST IRON VANE GRATES FOR INSTALLATION ONLY WHERE BICYCLE TRAFFIC IS ANTICIPATED, SUCH AS CURBED ROADWAYS IN URBAN AREAS OR ROADWAYS SPECIFICALLY ESTABLISHED AND SIGNED AS BIKEWAYS OR HAVING BIKE LANES. ALTERNATE BICYCLE –SAFE GRATE DESIGNS SHALL REQUIRE A SHOP DRAWING SUBMISSION. AS SPECIFIED IN NOTE 1, AND SHALL CONFORM TO THE DIMENSIONAL REQUIREMENT TO SCALE FOR PROPER INSTALLATION WITH THE CURRENT CONCRETE TOP UNITS.
5. FABRICATE SLOTS BY BURNING, DRILLING, SHEARING OR PUNCHING. HAVE THE BOTTOM OF ALL BURNED OR DRILLED SLOTS CONFORM TO THE SHAPE OF THE ROD.
6. PROVIDE STRUCTURAL STEEL GRATES WITH THE GRATE SPACERS LOCATED FLUSH ALONG THE TOP SURFACE OF THE GRATE.
7. DO NOT USE CAST IRON GRATES WITHIN THE TRAVEL LANES. THESE GRATES ARE PERMITTED AT THE EDGE OF OUTSIDE SHOULDERS, SWALES, WITH WIDE MEDIAN SWALES AND INFIELD AREAS THAT ARE OUTSIDE THE TRAVEL LANES OR CURB TO CURB ROADWAYS.
8. COAT STRUCTURAL STEEL FRAMES AND GRATES WITH BITUMINOUS PAINT. AS AN ALTERNATIVE TO BITUMINOUS PAINT, HOT DIP GALVANIZE STRUCTURAL STEEL GRATES AND FRAMES IN ACCORDANCE WITH SECTION 1105.02(S).

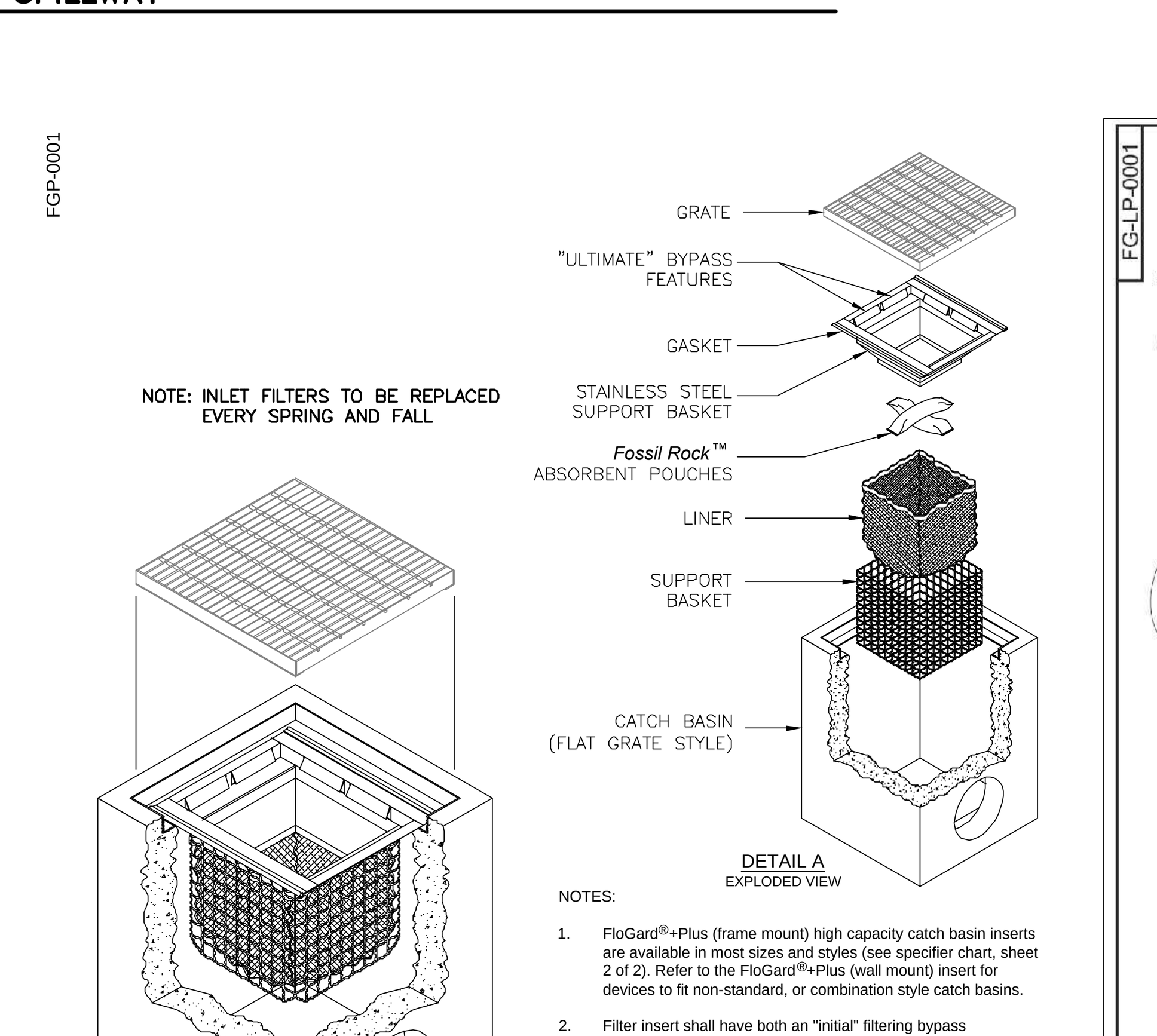
STRUCTURAL STEEL BICYCLE SAFE GRATE

NOT TO SCALE



INLET 2 CONCRETE WEIR DETAIL

NOT TO SCALE



NOTES:
1. FloGard®+Plus (frame mount) high capacity catch basin inserts are available in most sizes and styles (see specifier chart, sheet 2 of 2). Refer to the FloGard®+Plus (wall mount) insert for devices to fit non-standard, or combination style catch basins.
2. Filter insert shall have both an "initial" filtering bypass and "ultimate" high flow bypass feature.
3. Filter support frame shall be constructed from stainless steel Type 304.
4. Allow a minimum of 2.0 feet, of clearance between the bottom of the grate and top of outlet pipe(s), or refer to the FloGard® insert for "shallow" installations.
5. Filter medium shall be *Fossil Rock*™ , installed and maintained in accordance with manufacturer specifications.
6. Storage capacity reflects 80% of maximum solids collection prior to impeding filtering bypass.
7. Filtered flow r/rate includes a safety factor of two.

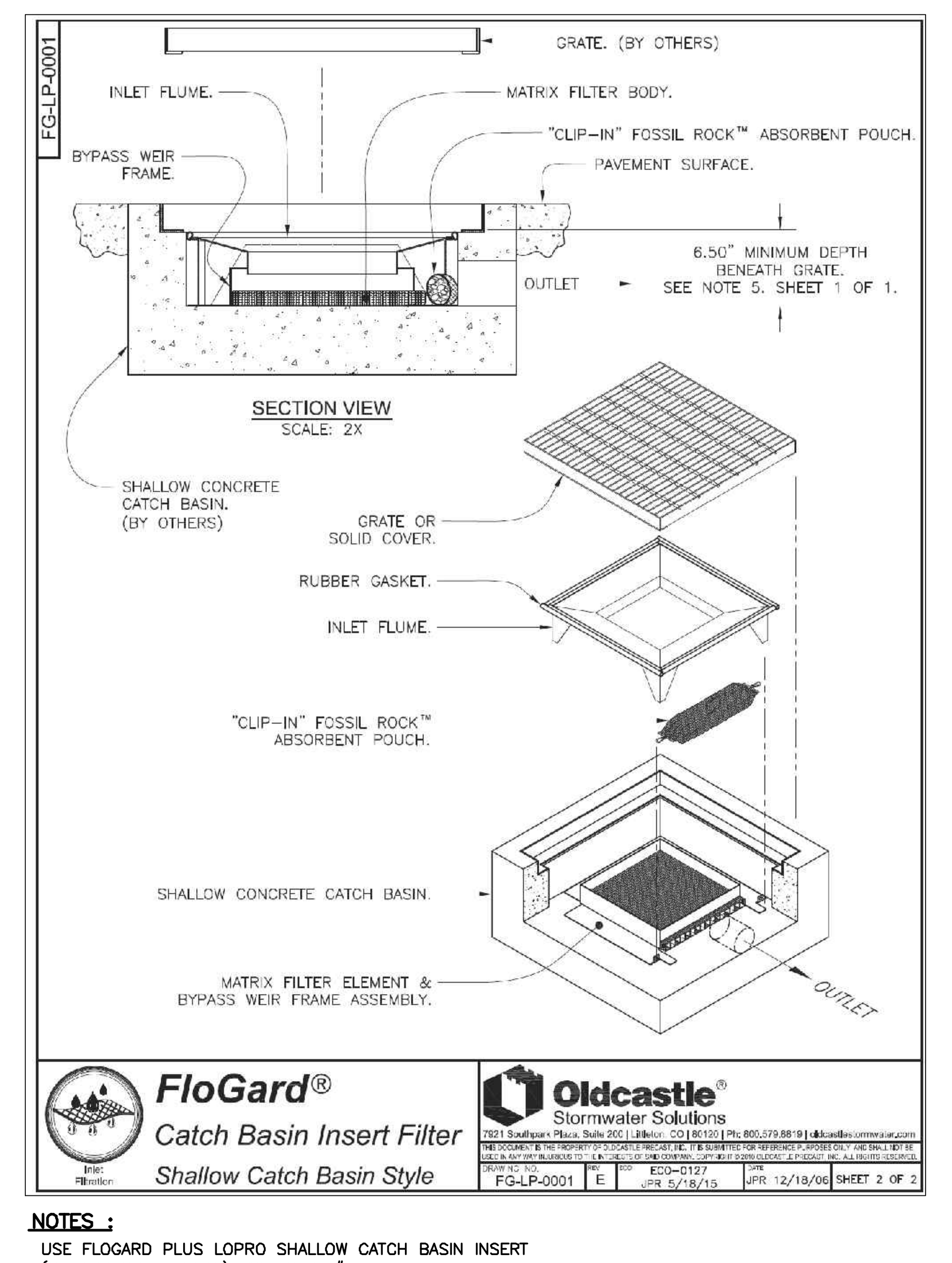
U.S. PATENT # 6,00,023 & 6,877,029

TITLE

FloGard®+PLUS
CATCH BASIN FILTER INSERT
(Flat Grated Inlet Style)
OR APPROVED EQUAL

KRISTAR

DRAWING NO. FGP-0001 REV E ECO 0098 JPR 12/7/11 DATE JPR 11/3/06 SHEET 1 OF 2



NOTES :
USE FLOGARD PLUS LOPRO SHALLOW CATCH BASIN INSERT (OR APPROVED EQUAL) FOR INLET #2

KNOW WHAT'S BELOW CALL BEFORE YOU DIG!
PENNSYLVANIA ACT 287 OF 1974 (AS AMENDED) REQUIRES 3 WORKING DAYS NOTICE FOR EXCAVATION PHASE AND 10 WORKING DAYS IN DESIGN STAGE – STOP! CALL!
PENNSYLVANIA ONE CALL SYSTEM, INC. 1–800 242–1776 or 811
PA ONE–CALL SERIAL No.
SERIAL NO. 20162291370
AUGUST 16, 2016

REVISIONS :

DATE	DESCRIPTION	DATE	DESCRIPTION
01/31/17	PLANS UPDATED WITH INFILTRATION PIT LOCATIONS AND NPDES NOTES		
05/02/17	PER ENGINEER REVIEW LETTER		
05/16/17	PER ENGINEER & EAC REVIEW LETTERS		
05/19/17	REVISED INFILTRATION TRENCH INLET 2 TO 3		
06/07/17	REVISED PER CONDITIONS OF APPROVAL		
06/30/17	REVISED PER PRE–BID MEETING		
07/07/17	REVISED PER ADDENDUM 2		
10/20/17	REVISED EXISTING AND PROPOSED WATER LINE		

PROJECT :
SNIPES TRACT ATHLETIC FIELDS
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT :
LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

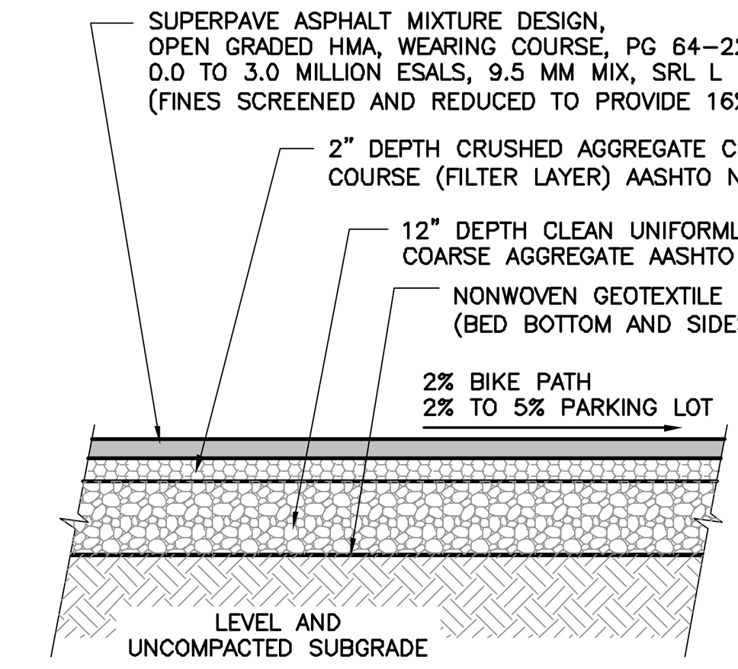
JOB NO.: 1677054L
DRAWN BY: TMW
CHECKED BY: MES
SCALE: N.T.S.
PLAN STATUS: FINAL

TITLE : POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN ✦ STROUDSBURG ✦ LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345–9400 FAX: (215) 345–9401
www.bjengineers.com

PROJECT NAME : SNIPES TRACT ATHLETIC FIELDS

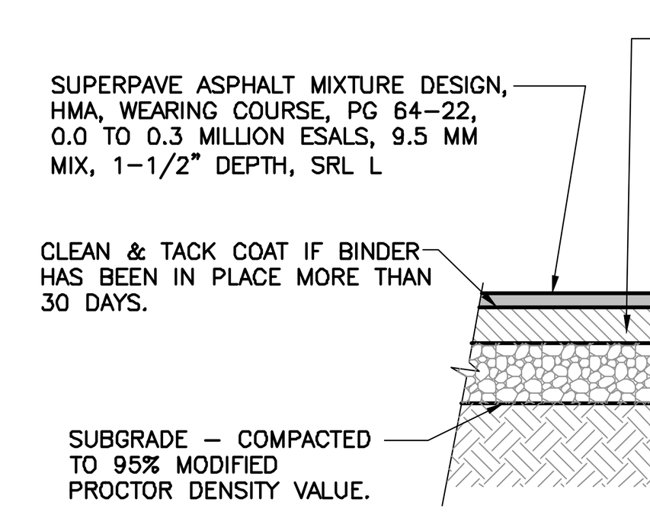
DATE: NOVEMBER 14, 2016



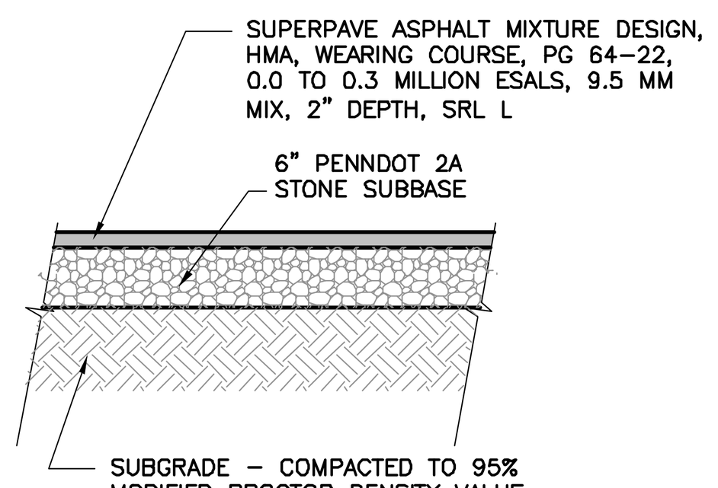
BIKE PATH: PERVIOUS ASPHALT SHALL BE PLACED DIRECTLY ON THE STONE SUBBASE IN A SINGLE 3" LIFT, LIGHTLY ROLLED TO A FINISHED DEPTH OF 2".

NOTES:
1. EXISTING SUBGRADE UNDER BED SHALL NOT BE COMPACTED OF SUBJECT TO EXCESSIVE CONSTRUCTION EQUIPMENT PRIOR TO GEOTEXTILE AND STONE PLACEMENT.
2. UNDERCUTTING OF SUBGRADE MAY BE REQUIRED IF UNSUITABLE MATERIAL IS FOUND. STONE IS THE ONLY SUITABLE FILL MATERIAL.
3. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO PENNDOT SPECIFICATION, FORM 408
4. PAVEMENT SECTION DEPTH SHALL BE AS INDICATED.
5. ADJACENT STRIPS OF GEOTEXTILE SHALL OVERLAP A MINIMUM OF 16". SECURE GEOTEXTILE A MINIMUM OF 4 FEET OUTSIDE OF BED.

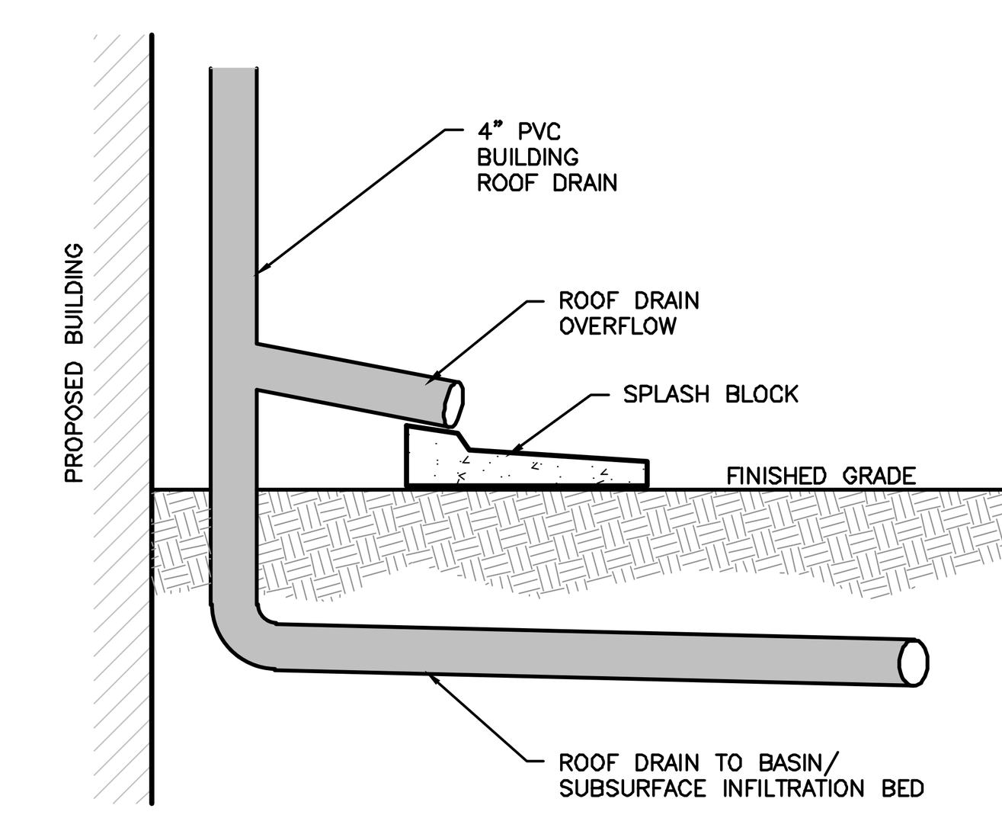
POROUS ASPHALT – BIKE PATH (DETAIL BID ALTERNATE)
NOT TO SCALE



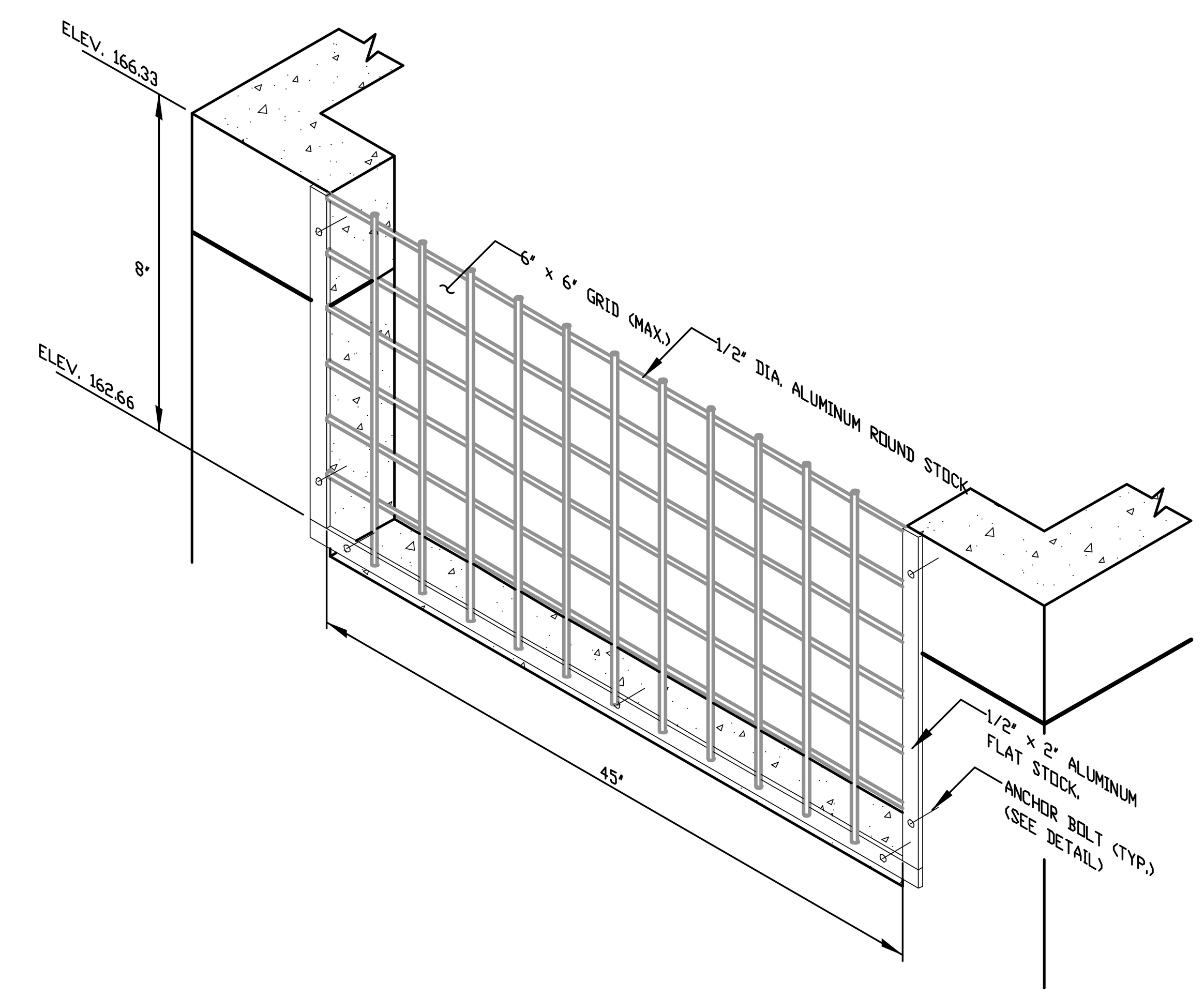
BITUMINOUS PAVEMENT – SECTION
NOT TO SCALE



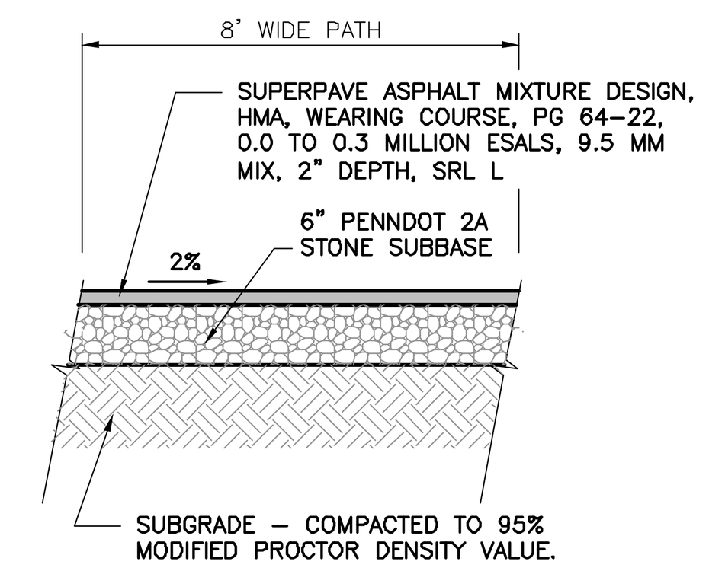
WALKING PATH PAVEMENT SECTION
NOT TO SCALE



BUILDING ROOF DRAIN
NOT TO SCALE



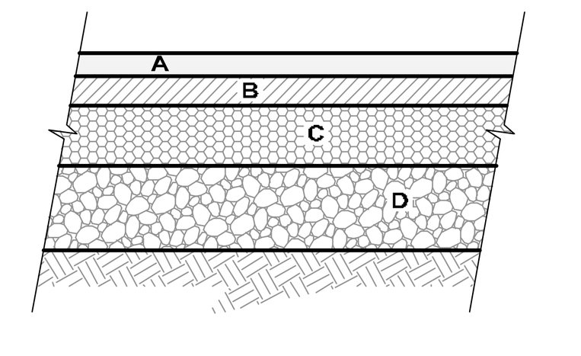
OUTLET STRUCTURE WEIR TRASH RACK
NOT TO SCALE



8' WIDE BIKE PATH DETAIL
NOT TO SCALE

A	1-1/2" DEPTH, SRL-H, SUPERPAVE ASPHALT MIXTURE DESIGN, HMA WEARING COURSE, PG 64-22, 0.3 TO 3.0 MILLION ESALs, 9.5 mm MIX
B	2" DEPTH, SUPERPAVE ASPHALT MIXTURE DESIGN, HMA BINDER COURSE, PG 64-22, 0.3 TO 3.0 MILLION ESALs, 19.0 mm MIX
C	5" DEPTH, SUPERPAVE ASPHALT MIXTURE DESIGN, HMA BASE COURSE, PG 64-22, 0.3 TO 3.0 MILLION ESALs, 25.0 mm MIX (MATCH EXISTING DEPTH IF GREATER)
D	6" NO. 2A STONE SUBBASE

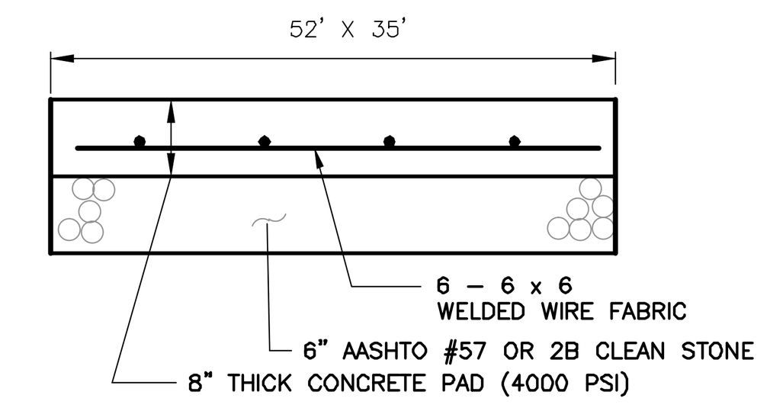
COMPACTED (1) SUBGRADE



(1) NOTE:
UNDERCUTTING WILL BE REQUIRED TO REMOVE UNSUITABLE MATERIAL. A MUNICIPAL FIELD REPRESENTATIVE MUST BE PRESENT FOR ALL SUBGRADE COMPACTION.

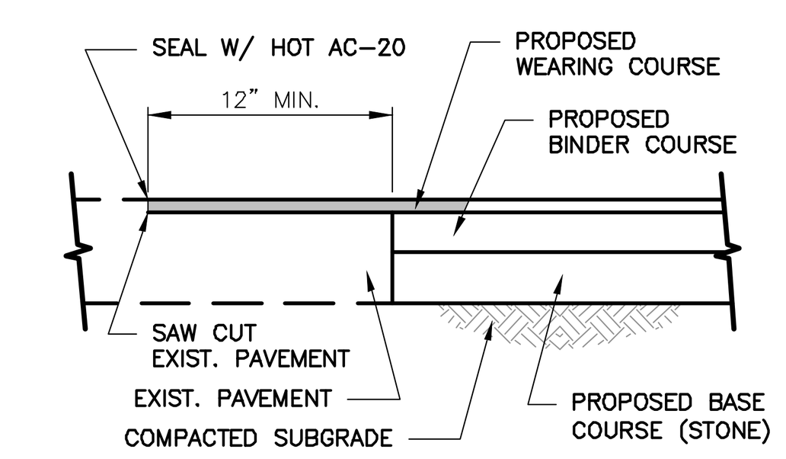
NOTES:
1. CLEAN AND PLACE TACK COAT BEFORE APPLICATION OF WEARING COURSE IF BINDER HAS BEEN IN PLACE MORE THAN 30 DAYS.
2. SUBGRADE SHALL BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY VALUES.
3. UNDERCUTTING OF SUBGRADE MAY BE REQUIRED IF UNSUITABLE MATERIAL IS FOUND. A MUNICIPAL REPRESENTATIVE SHALL BE PRESENT FOR ALL SUBGRADE COMPACTION WITHIN PUBLIC ROADWAYS.
4. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO PENNDOT SPECIFICATION, FORM 408.
5. PAVEMENT SECTION DEPTH SHALL BE AS INDICATED, OR MATCH EXISTING, WHICHEVER IS GREATER.

TOWNSHIP ROAD PAVEMENT – SECTION
NOT TO SCALE

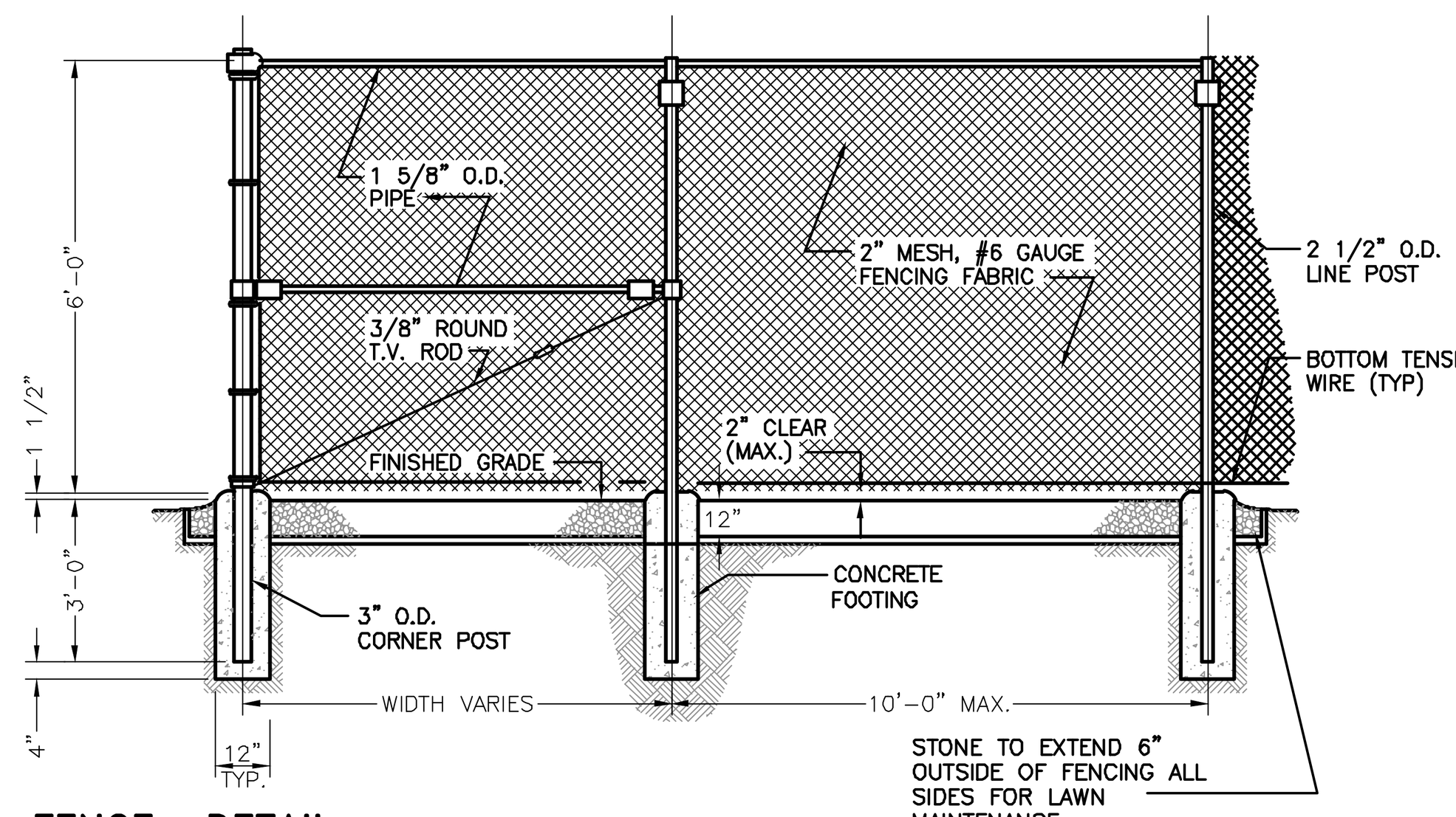


NOTES:
1. CONCRETE PAD SHALL BE TO THE DIMENSIONS SHOWN ON THE RECORD PLAN (SHEET 2)
2. CONCRETE SHALL BE PennDOT CLASS 'A'.
3. ALL CONCRETE SHALL BE SPRAYED WITH CONCRETE CURBING COMPOUND.
4. SUBGRADE SHALL BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY VALUES.

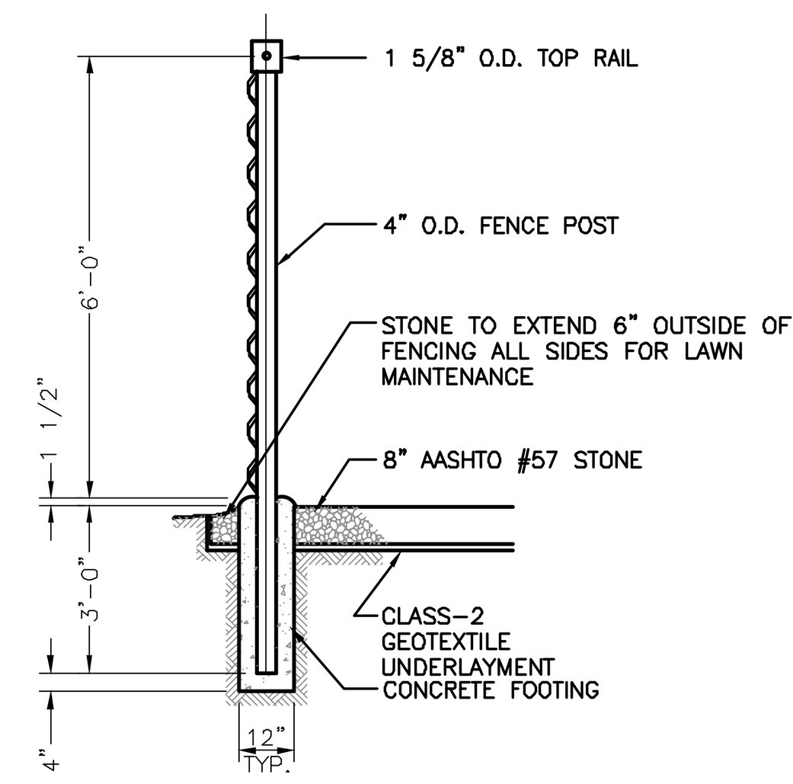
SALT SHED CONCRETE PAD DETAIL
NOT TO SCALE



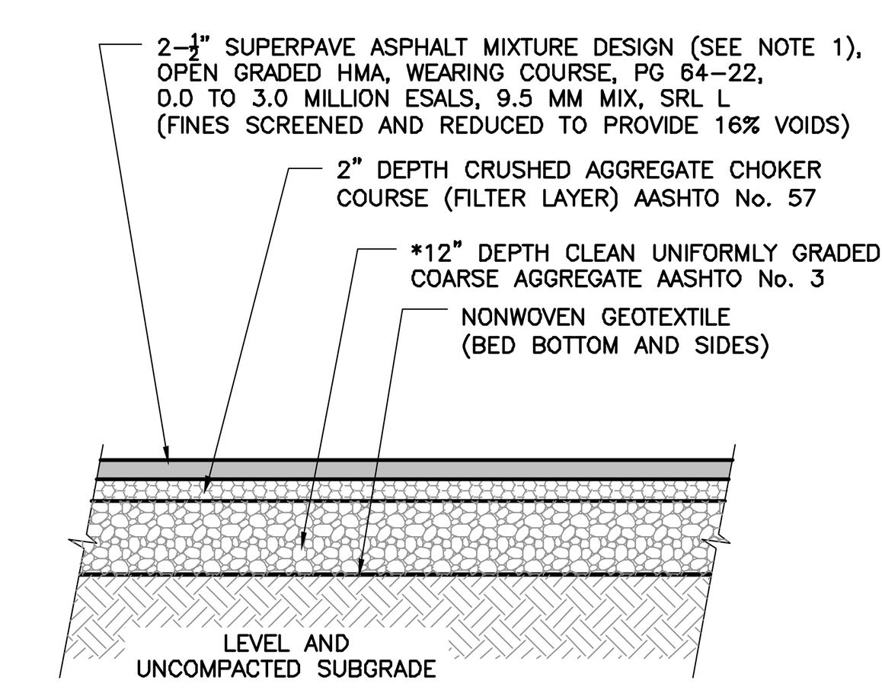
TYPICAL PAVEMENT MATCH DETAIL
NOT TO SCALE



FENCE DETAIL
NOT TO SCALE



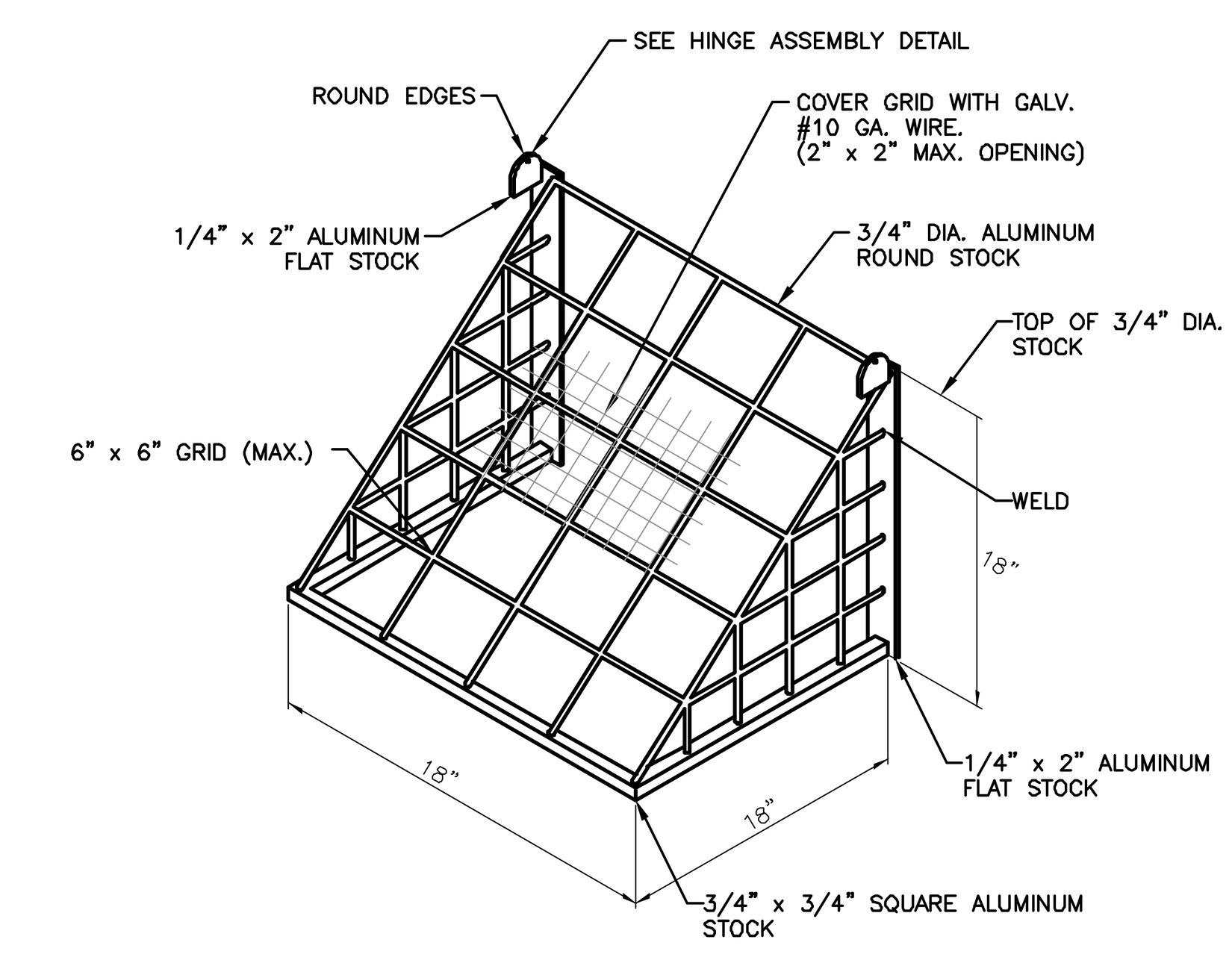
FENCE POST DETAIL
NOT TO SCALE



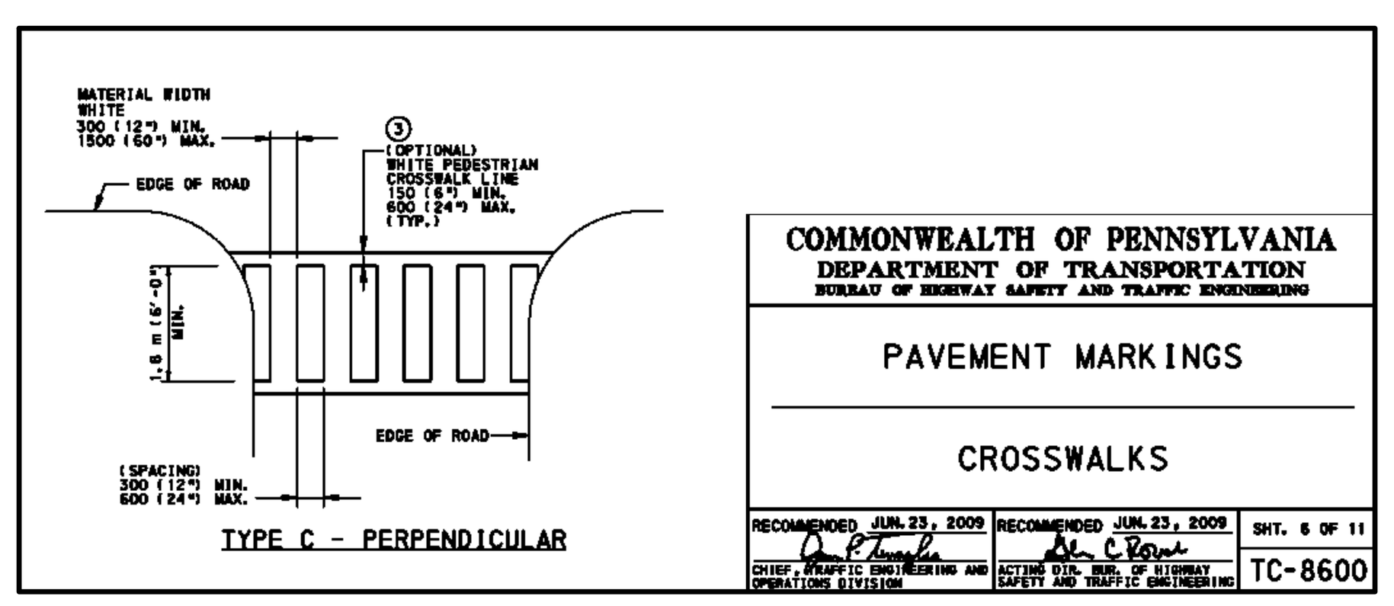
* DEPTH OF AASHTO NO.3 STONE WILL BE GREATER THAN 12" IN THE AREA OF INFILTRATION TRENCH FROM INLET #2 TO INLET #3 (SEE SHEETS 2, 4 AND 5 OF 14)

NOTES:
1. PERVIOUS ASPHALT SHALL BE PLACED DIRECTLY ON THE STONE SUBBASE IN A SINGLE 3½" LIFT, LIGHTLY ROLLED TO A FINISHED DEPTH OF 2½".
2. EXISTING SUBGRADE UNDER BED SHALL NOT BE COMPACTED OF SUBJECT TO EXCESSIVE CONSTRUCTION EQUIPMENT PRIOR TO GEOTEXTILE AND STONE PLACEMENT.
3. UNDERCUTTING OF SUBGRADE MAY BE REQUIRED IF UNSUITABLE MATERIAL IS FOUND. STONE IS THE ONLY SUITABLE FILL MATERIAL.
4. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO PENNDOT SPECIFICATION, FORM 408
5. PAVEMENT SECTION DEPTH SHALL BE AS INDICATED.
6. ADJACENT STRIPS OF GEOTEXTILE SHALL OVERLAP A MINIMUM OF 16". SECURE GEOTEXTILE A MINIMUM OF 4 FEET OUTSIDE OF BED.

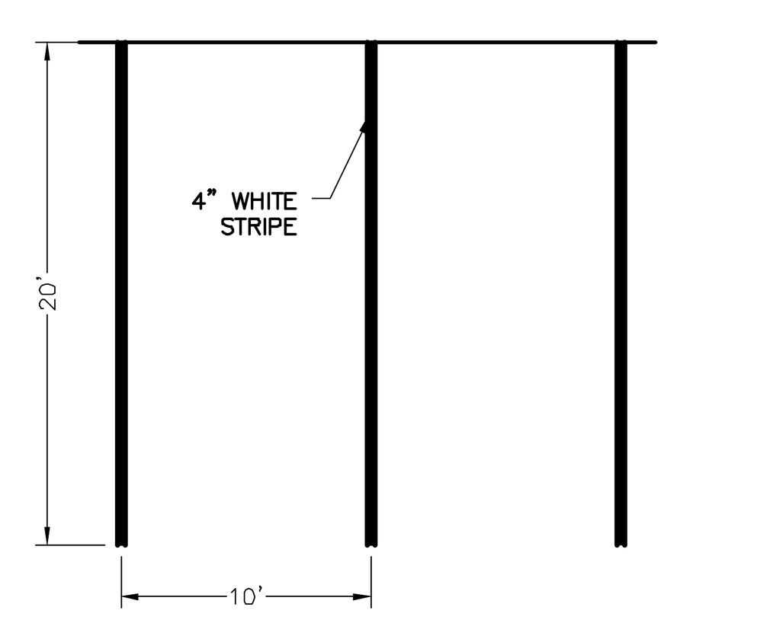
PERVIOUS PAVEMENT – PARKING LOT
NOT TO SCALE



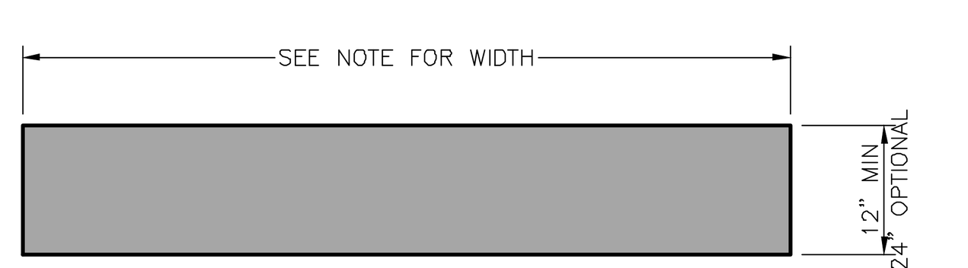
OUTLET STRUCTURE ORIFICE TRASH RACK DETAIL
NOT TO SCALE



CROSSWALK STRIPING
NOT TO SCALE



STANDARD PARKING STRIPING
NOT TO SCALE

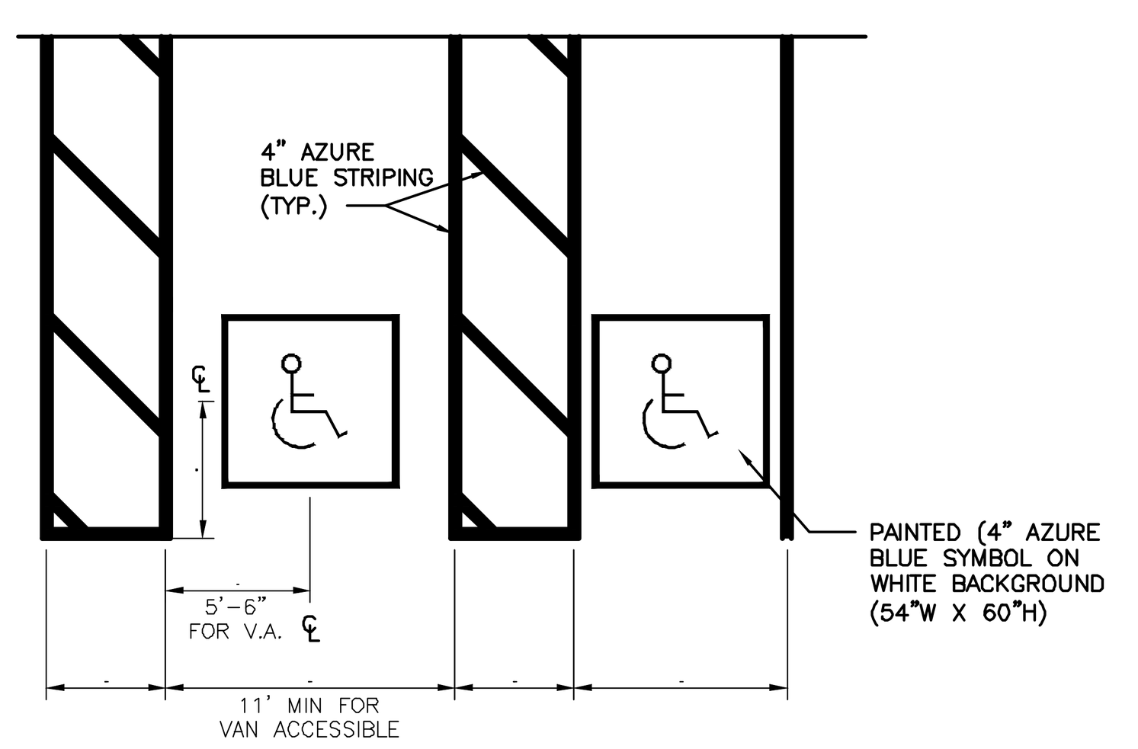


NOTES:
1. STOP LINES ARE SOLID WHITE LINES THAT COMPLETELY TRAVERSE EACH TRAFFIC LANE. AT AN INTERSECTION WITH A STOP SIGN, THE STOP LINE SHOULD BE PLACED AT A LOCATION NO LESS THAN 4', OR MORE THAN 30' FROM THE NEAREST EDGE OF THE INTERSECTING ROADWAY TO ENSURE MAXIMUM SIGHT DISTANCE TO VEHICLES ON THE CROSSING ROUTE. WHEN USED ON MULTI-LANE APPROACH TO A SIGNALIZED INTERSECTION, THE STOP LINE MAY BE STAGGERED TO ASSIST TURNING VEHICLES AND TO IMPROVE SIGHT DISTANCE FOR MOTORIST DESIRING TO MAKE A TURN ON RED.
2. LOCATE STOP LINES AT A MINIMUM OF 4' IN ADVANCE OF AND PARALLEL TO THE CROSSWALK LINES UNLESS OTHERWISE NOTED

STOP BAR
NOT TO SCALE

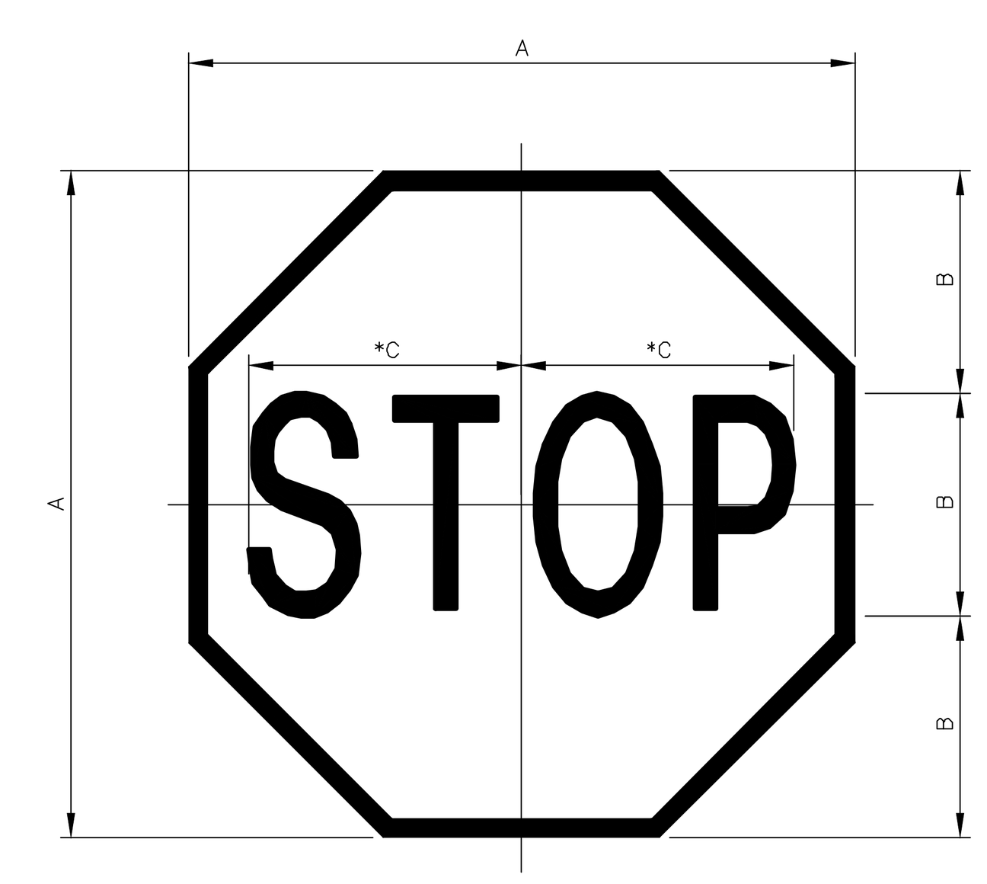
SIGNAGE AND STRIPING NOTES

1. ALL PROPOSED SIGNS SHALL BE IN ACCORDANCE WITH PENNDOT PUBLICATION 236M, "HANDBOOK OF APPROVED SIGNS", LATEST VERSION.
2. EXISTING CLEARANCE MARKER SIGNS TO BE REMOVED (K3, K4) MAY BE REUSED TO FACILITATE PLACEMENT OF PROPOSED CLEARANCE MARKERS (K5, K6) AS LONG AS THE CONDITION OF THE SIGNS IS ADEQUATE AS DETERMINED BY REPRESENTATIVES OF PENNDOT AND LOWER MAKEFIELD TOWNSHIP.
3. ALL PROPOSED PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH PENNDOT PUBLICATION 111M (TC8600), LATEST VERSION.



NOTES:
1. CURB RAMPS MAY NOT EXTEND INTO ANY PORTION OF THE PARKING SPACE OR ASSOCIATED STRIPED ISLAND.
2. CURB RAMPS, PAVEMENT MARKINGS & APPLICABLE SIGNAGE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST A.D.A. ACCESSIBILITY GUIDELINES.

A.D.A ACCESSIBLE PARKING STRIPING
NOT TO SCALE

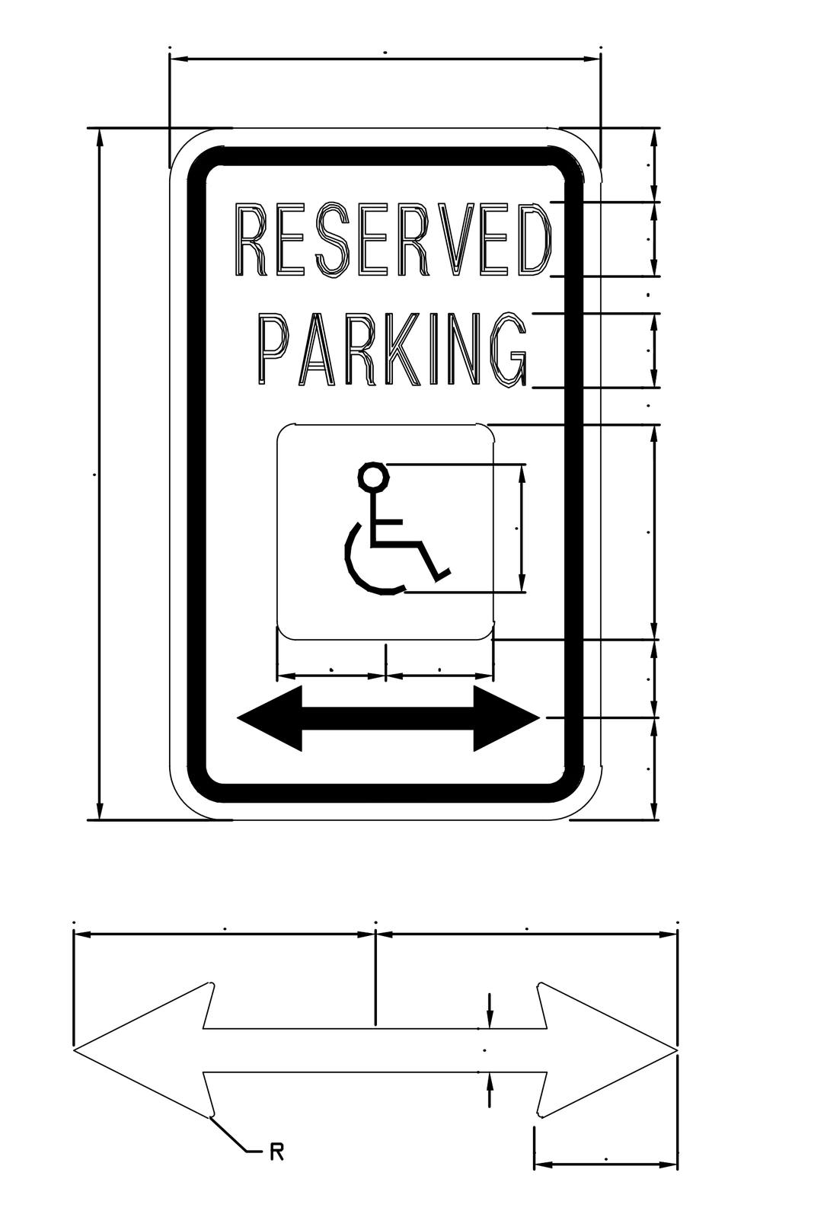


COLOR: LEGEND AND BORDER — WHITE (RELFECTORIZED)
BACKGROUND — RED (REFLECTORIZED)

NOTE: SIGN SHALL BE INSTALLED ON STANDARD BREAK-AWAY POST.

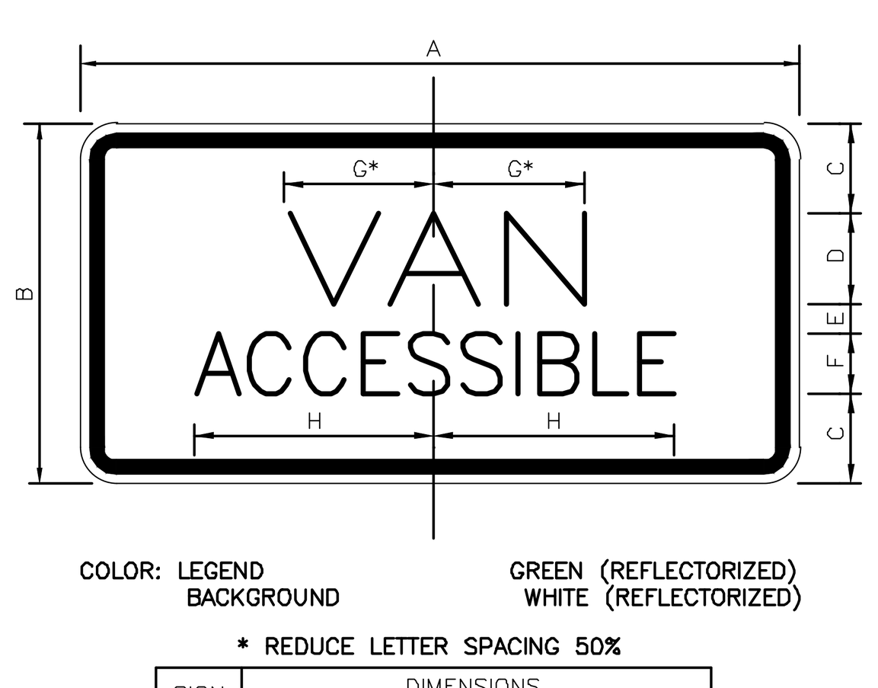
SIGN SIZE	DIMENSIONS A	B	C	SERIES LINE	BOR-DER	BLANK STD.
24x24	24	8	10	C	24	B1-24
30x30	30	10	12 ½	C	30	B1-30
36x36	36	12	15	C	36	B1-36
48x48	48	16	20	C	48	B1-48

STOP SIGN (R1-1)
NOT TO SCALE



SIGN SIZE	DIMENSIONS A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	MARGIN	BORDER
12x18	12	18	2	1	1 1/2	2 1/2	6	4 1/8	5	4 1/4	3	1/2	3 7/8	7/8	3/4	1/8	4	3/8	3/8

RESERVED PARKING SIGN (R7-8)
NOT TO SCALE



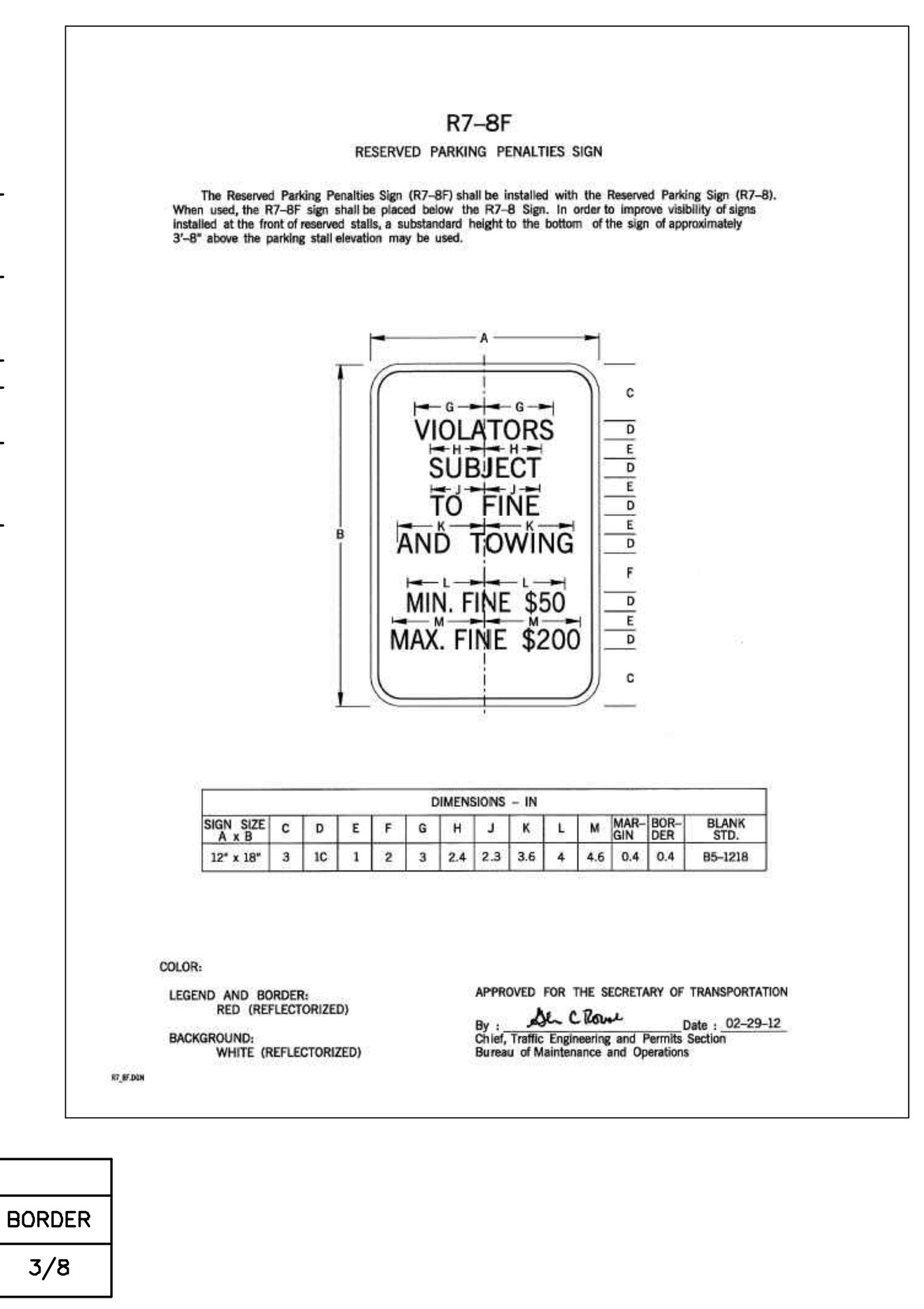
COLOR: LEGEND — GREEN (REFLECTORIZED)
BACKGROUND — WHITE (REFLECTORIZED)

* REDUCE LETTER SPACING 50%

SIGN SIZE	DIMENSIONS A	B	C	D	E	F	G	H
12x6	12	6	1½	1½	½	1	2½	4

SIGN SIZE	SERIES LINES 1	2	MAR-GIN	BOR-DER	BLANK STD.
12x6	D	D	3/8	3/8	B5-1206

VAN ACCESSIBLE SIGN
(PENNDOT R7-8A)


R7-8F
RESERVED PARKING PENALTIES SIGN

The Reserved Parking Penalties Sign (R7-8F) shall be installed with the Reserved Parking Sign (R7-8). When used, the R7-8F sign shall be placed below the R7-8 Sign. In order to improve visibility of signs installed at the front of reserved stalls, a substandard height to the bottom of the sign of approximately 3'-8" above the parking stall elevation may be used.

SIGN SIZE A x B	C	D	E	F	G	H	J	K	L	M	MAR-GIN	BOR-DER	BLANK STD.
12" x 18"	3	1C	1	2	3	2.4	2.3	3.6	4	4.6	0.4	0.4	B5-1218

COLOR:
LEGEND AND BORDER: RED (REFLECTORIZED)
BACKGROUND: WHITE (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION
By: [illegible] Date: 02-29-12
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations

KNOW WHAT'S BELOW CALL BEFORE YOU DIG!
PENNSYLVANIA ACT 287 OF 1974 (AS AMENDED) REQUIRES 3 WORKING DAYS NOTICE FOR EXCAVATION PHASE AND 10 WORKING DAYS IN DESIGN STAGE – STOP! CALL!
PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800 242-1776 or 811
PA ONE-CALL SERIAL No.
SERIAL NO. 20162291370
AUGUST 16, 2016

REVISIONS :

DATE	DESCRIPTION	DATE	DESCRIPTION
01/31/17	PLANS UPDATED WITH INFILTRATION PIT LOCATIONS AND NPDES NOTES		
05/02/17	PER ENGINEER REVIEW LETTER		
05/16/17	PER ENGINEER & EAC REVIEW LETTERS		
05/19/17	REVISED INFILTRATION TRENCH INLET 2 TO 3		
06/07/17	REVISED PER CONDITIONS OF APPROVAL		
06/30/17	REVISED PER PRE-BID MEETING		
07/07/17	REVISED PER ADDENDUM 2		
10/20/17	REVISED EXISTING AND PROPOSED WATER LINE		

PROJECT :
SNIPES TRACT ATHLETIC FIELDS
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT :
LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

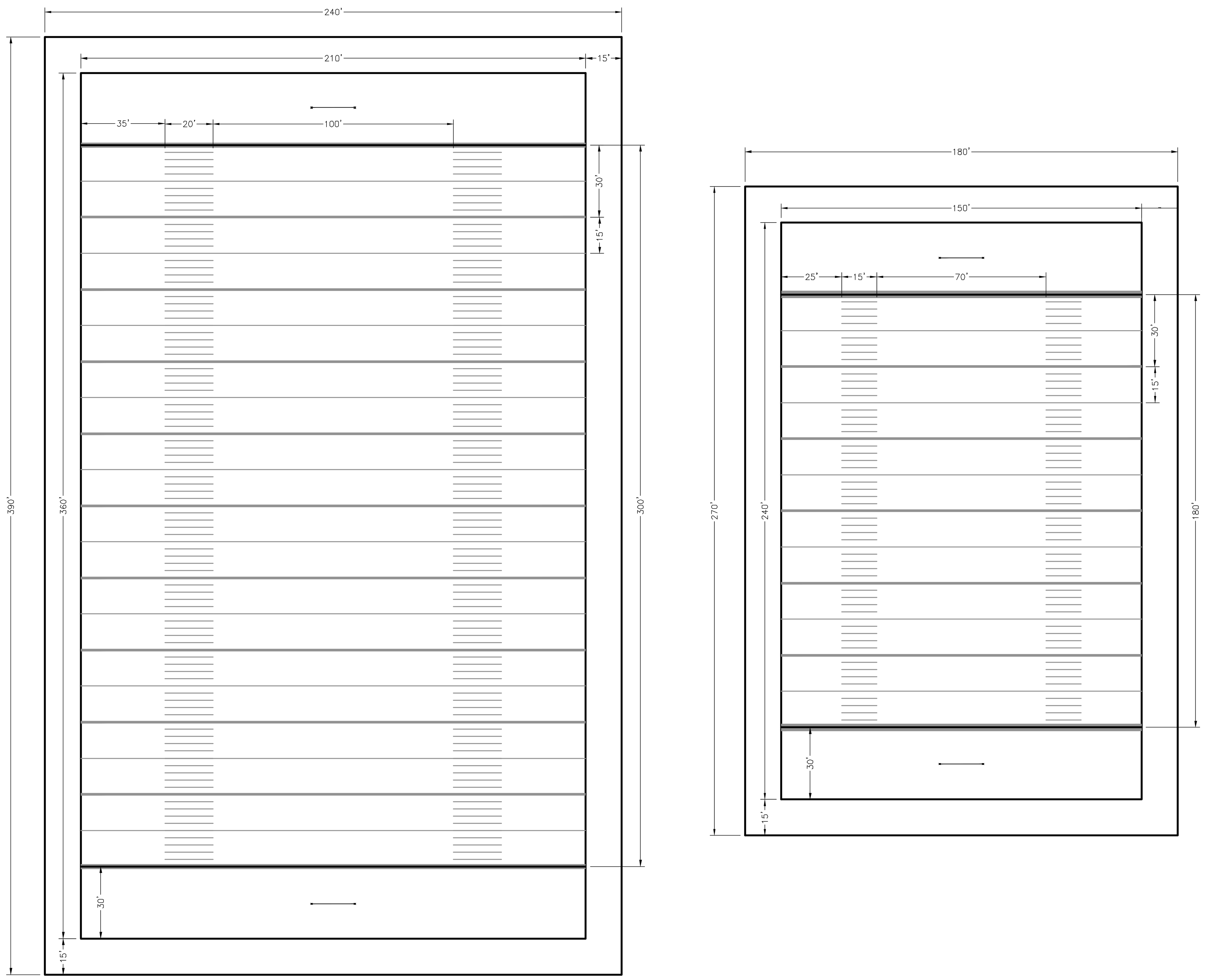
JOB NO.: 1677054L
DRAWN BY: TMW
CHECKED BY: MES
SCALE: AS NOTED
PLAN STATUS: FINAL

TITLE : CONSTRUCTION DETAILS (1 OF 2)

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN ✦ STROUDSBURG ✦ LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345-9400 FAX: (215) 345-9401
www.bjengineers.com

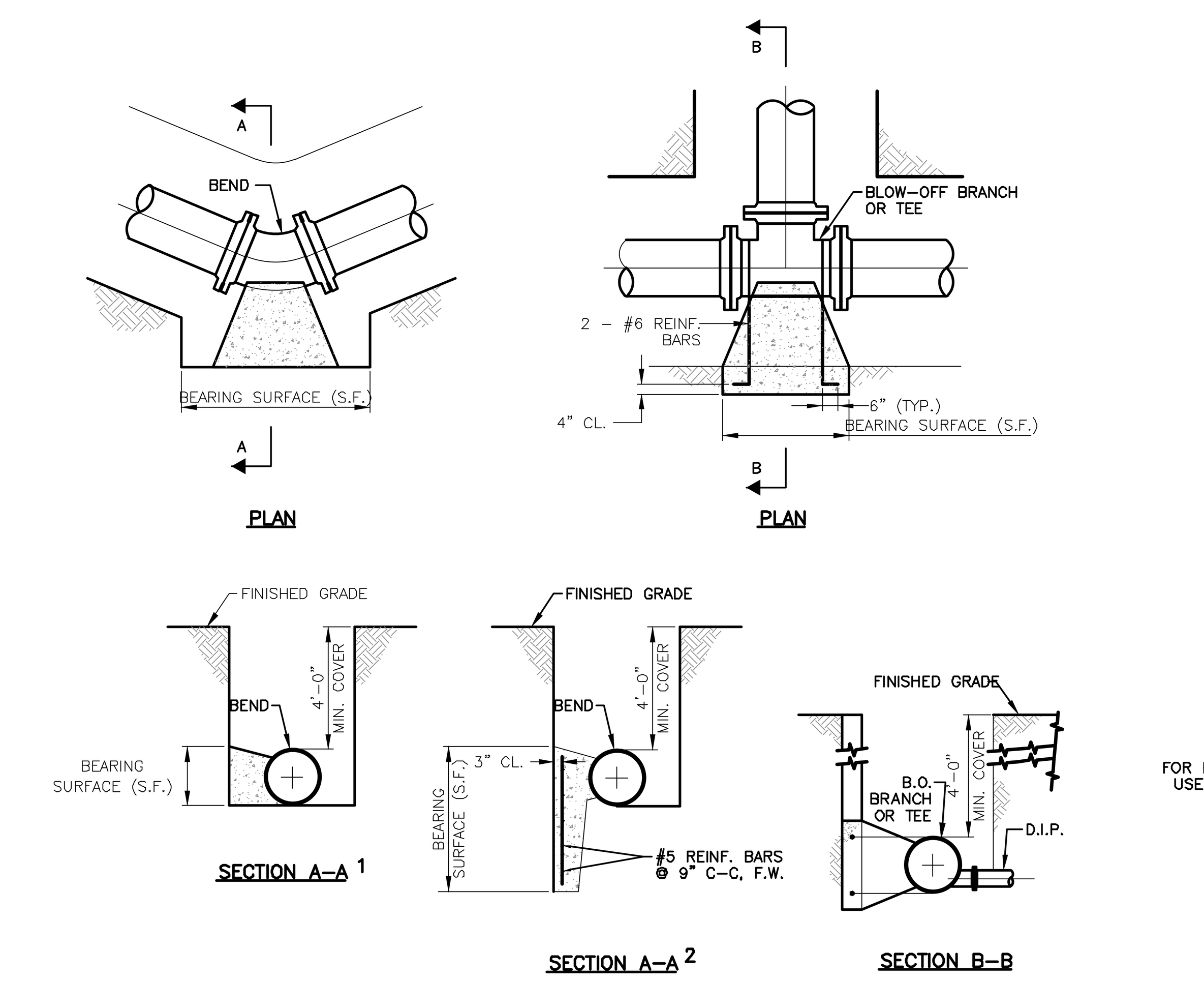
PROJECT NAME : SNIPES TRACT ATHLETIC FIELDS

DATE: NOVEMBER 14, 2016



LARGE AND SMALL ATHLETIC FIELDS – STANDARD DIMENSIONS

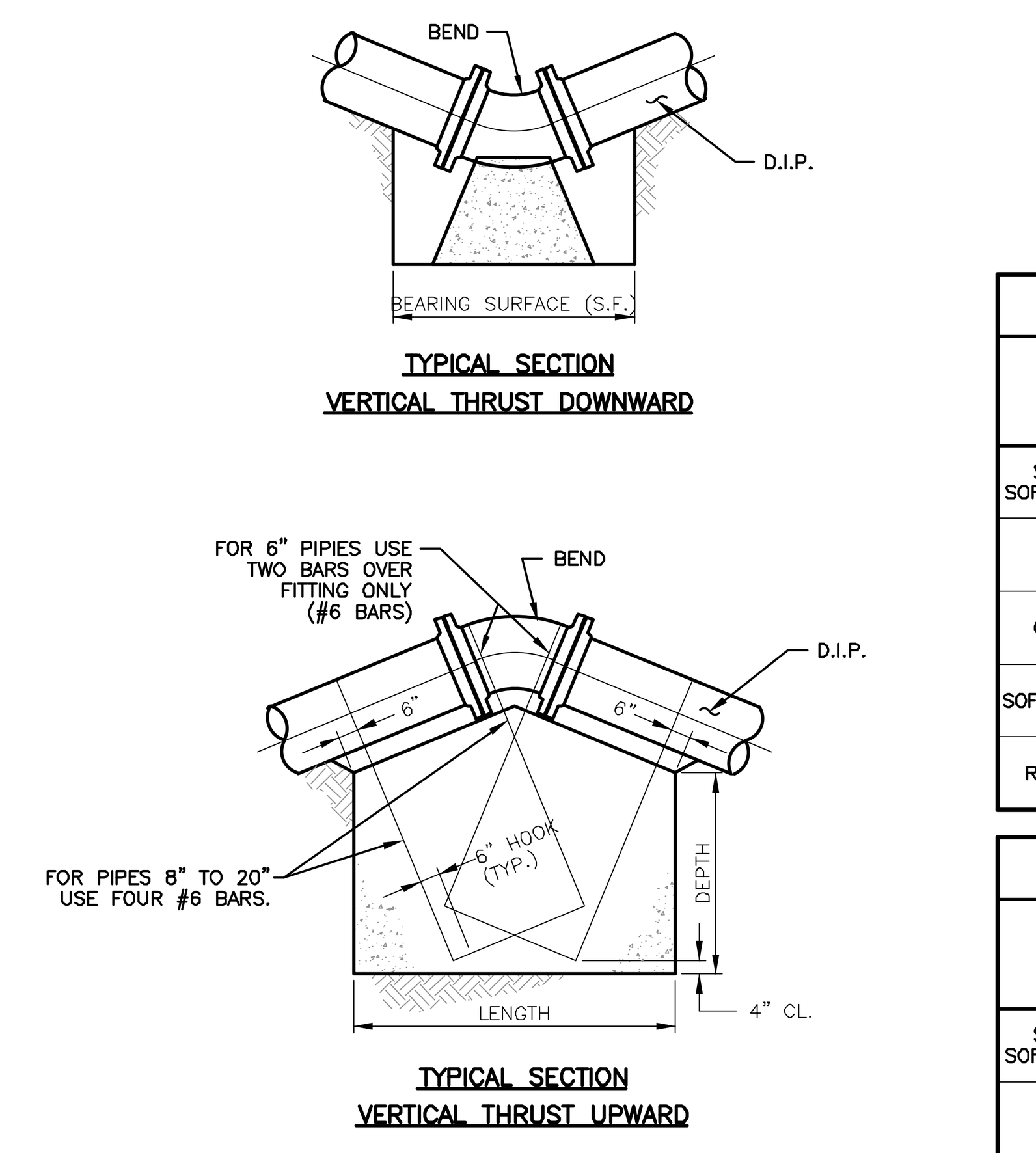
NOT TO SCALE



1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2500 P.S.I. AT THE END OF 28 DAYS.
2. ALL REINFORCING STEEL SHALL BE DEFORMED BARS.
3. NO COUPLING OR JOINTS SHALL BE COVERED WITH CONCRETE.
4. USE SECTION A–A 1 FOR BEARING SURFACE LESS THAN 10 SQ. FT. AND A–A 2 FOR BEARING SURFACE GREATER THAN 10 SQ. FT.

THRUST BLOCKS – TYP. BLOCKING FOR HORIZONTAL BLOCKS

NO SCALE



NOTE:
1. REINF. BARS TO BE SECURED U–SHAPED AROUND PIPE.
2. PAINT ALL EXPOSED STEEL WITH TWO COATS VANDURA ASPHALT PAINT OR APPROVED EQUAL.

THRUST BLOCK – TYP. BLOCKING FOR VERT. THRUSTS.

NO SCALE

SCHEDULE OF DIMENSIONS FOR CONCRETE BLOCKING OF VERTICAL BENDS WITH AN UPWARD THRUST BASED ON A WORKING PRESSURE OF 150 P.S.I.

PIPE SIZES	LENGTH			WIDTH			DEPTH		
	11-1/4°	22-1/2°	45°	11-1/4°	22-1/2°	45°	11-1/4°	22-1/2°	45°
6" & 8"	3.0'	4.0'	6.0'	3.0'	3.0'	3.0'	2.0'	3.0'	4.0'
10" & 12"	4.5'	6.0'	8.0'	3.0'	3.0'	4.0'	3.0'	4.5'	5.0'

MIN. SQUARE FEET OF BEARING SURFACE REQUIRED FOR HORIZONTAL THRUST BLOCKING AND VERTICAL THRUSTS DOWNWARD

TYPE OF BEARING MATERIAL AND ALLOWABLE LOADS	6" AND 8"				10" AND 12"			
	DEGREE BEND OR DEFLECTION				DEGREE BEND OR DEFLECTION			
	11-1/4°	22-1/2°	45°	45°	11-1/4°	22-1/2°	45°	45°
SAND, 1 TON/SQ. FT. SOFT CLAY, 1 TON/SQ. FT.	1.50	3.00	6.00	12.00	3.00	6.00	12.00	24.50
SAND & GRAVEL 2 TON/SQ. FT.	1.00	1.50	3.00	6.00	1.50	3.00	6.00	12.00
CLAY, 3 TON/SQ. FT.	1.00	1.00	2.00	4.00	1.00	2.00	4.00	8.00
SOFT ROCK, 5 TON/SQ. FT.	1.00	1.00	1.00	2.50	1.00	1.00	2.50	5.00
ROCK, 20 TON/SQ. FT.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

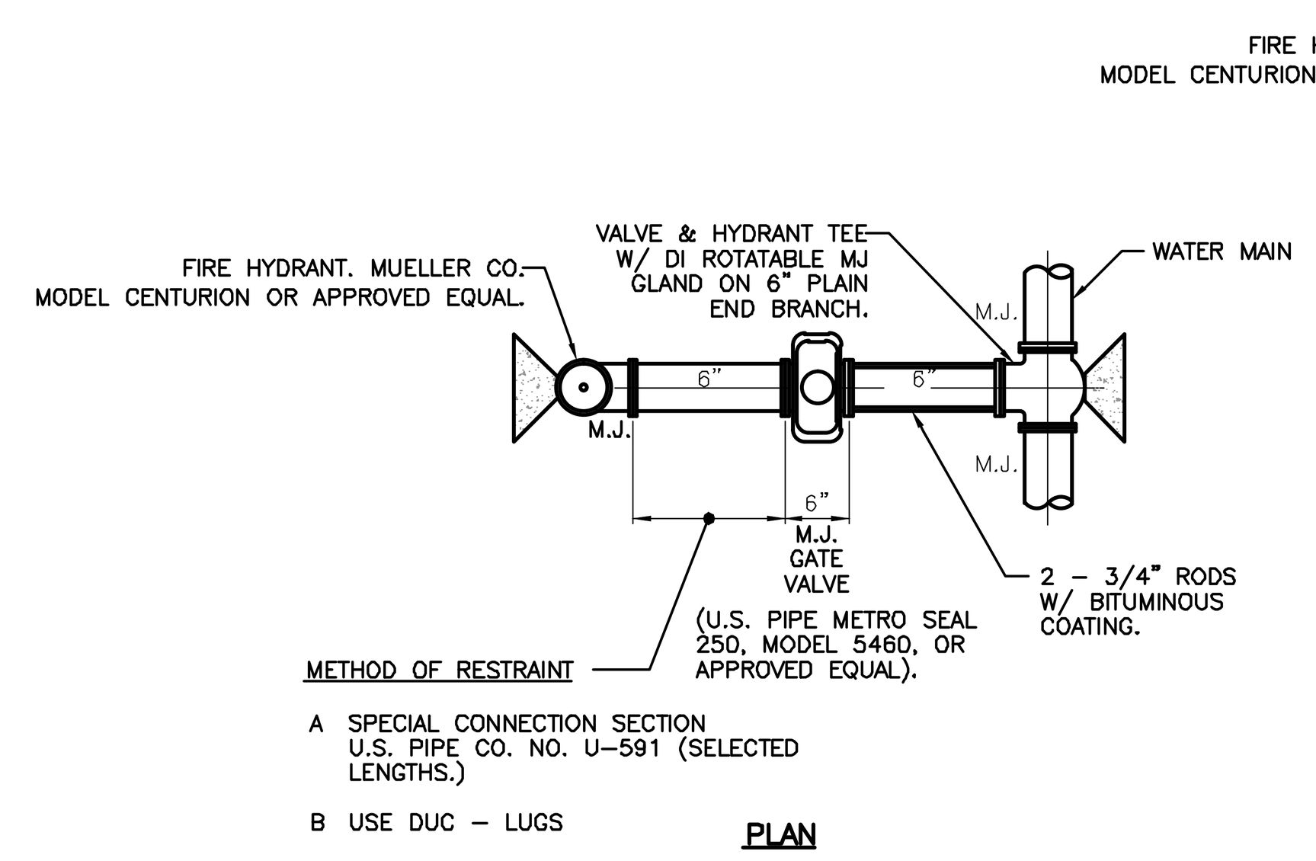
MIN. SQUARE FEET OF BEARING SURFACE REQUIRED FOR HORIZONTAL THRUST BLOCKING AND VERTICAL THRUSTS DOWNWARD

TYPE OF BEARING MATERIAL AND ALLOWABLE LOADS	14" AND 16"				18" AND 20"			
	DEGREE BEND OR DEFLECTION				DEGREE BEND OR DEFLECTION			
	11-1/4°	22-1/2°	45°	45°	11-1/4°	22-1/2°	45°	45°
SAND, 1 TON/SQ. FT. SOFT CLAY, 1 TON/SQ. FT.	5.50	11.00	21.50	43.00	8.50	16.50	33.00	66.00
SAND & GRAVEL 2 TON/SQ. FT.	2.50	5.50	11.00	21.50	4.00	8.50	16.50	33.00
CLAY, 3 TON/SQ. FT.	2.00	3.50	7.00	14.00	3.00	5.50	11.00	22.00
SOFT ROCK, 5 TON/SQ. FT.	1.00	2.00	4.50	8.50	1.50	3.50	6.50	13.00
ROCK, 20 TON/SQ. FT.	1.00	1.00	1.00	2.00	1.00	1.00	1.50	3.50

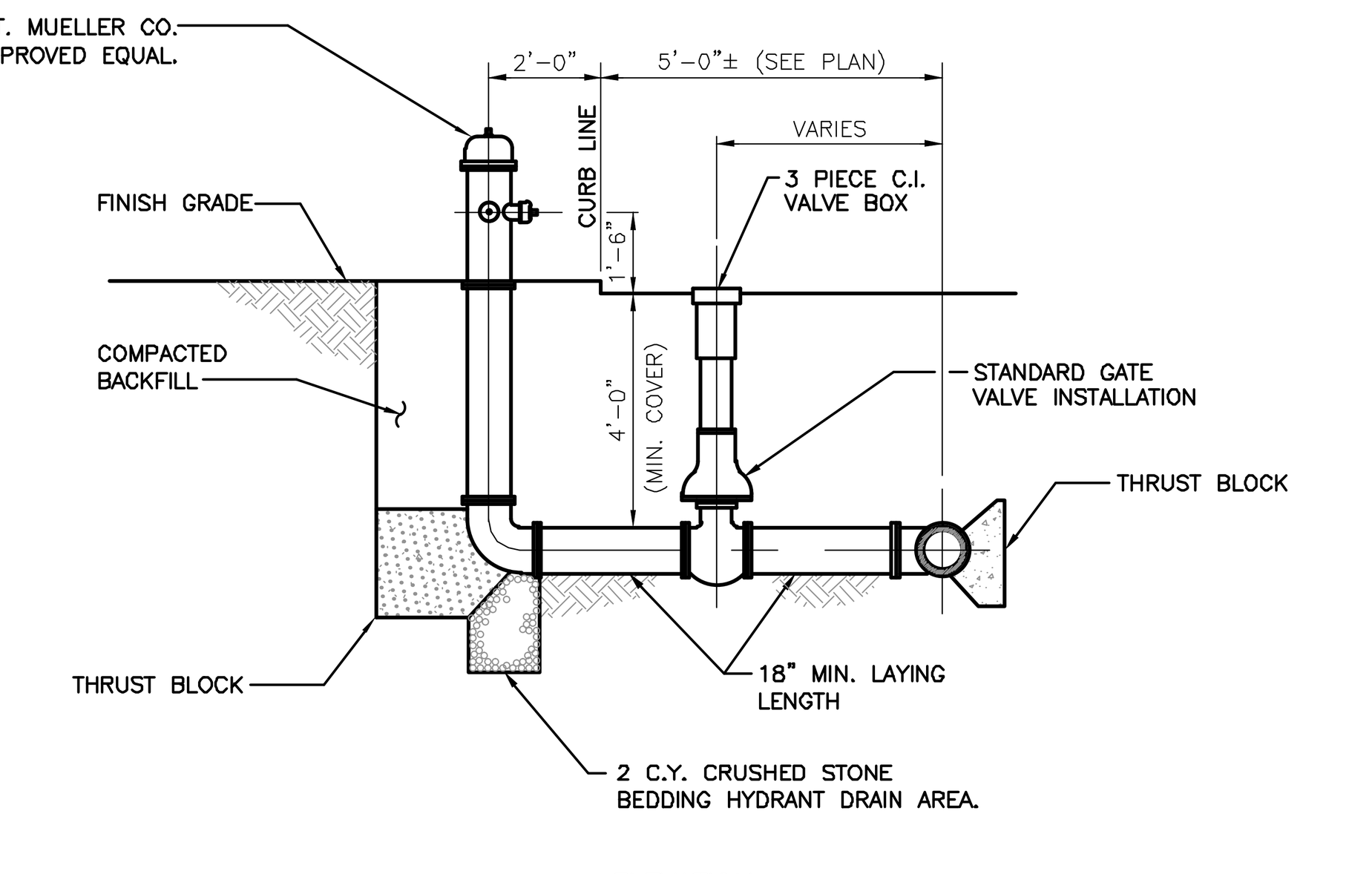
THRUST BLOCK – SCHEDULE OF DIMENSIONS

THRUST BLOCKS

NOT TO SCALE



FIRE HYDRANT. MUELLER CO. MODEL CENTURION OR APPROVED EQUAL.
VALVE & HYDRANT TEE W/ DI ROTATABLE MJ GLAND ON 6" PLAIN END BRANCH.
WATER MAIN
M.J.
6"
6"
M.J.
M.J.
6"
M.J. GATE VALVE
(U.S. PIPE METRO SEAL 250, MODEL 5460, OR APPROVED EQUAL).
2 – 3/4" RODS W/ BITUMINOUS COATING.
METHOD OF RESTRAINT
A SPECIAL CONNECTION SECTION U.S. PIPE CO. NO. U–591 (SELECTED LENGTHS.)
B USE DUC – LUGS
PLAN

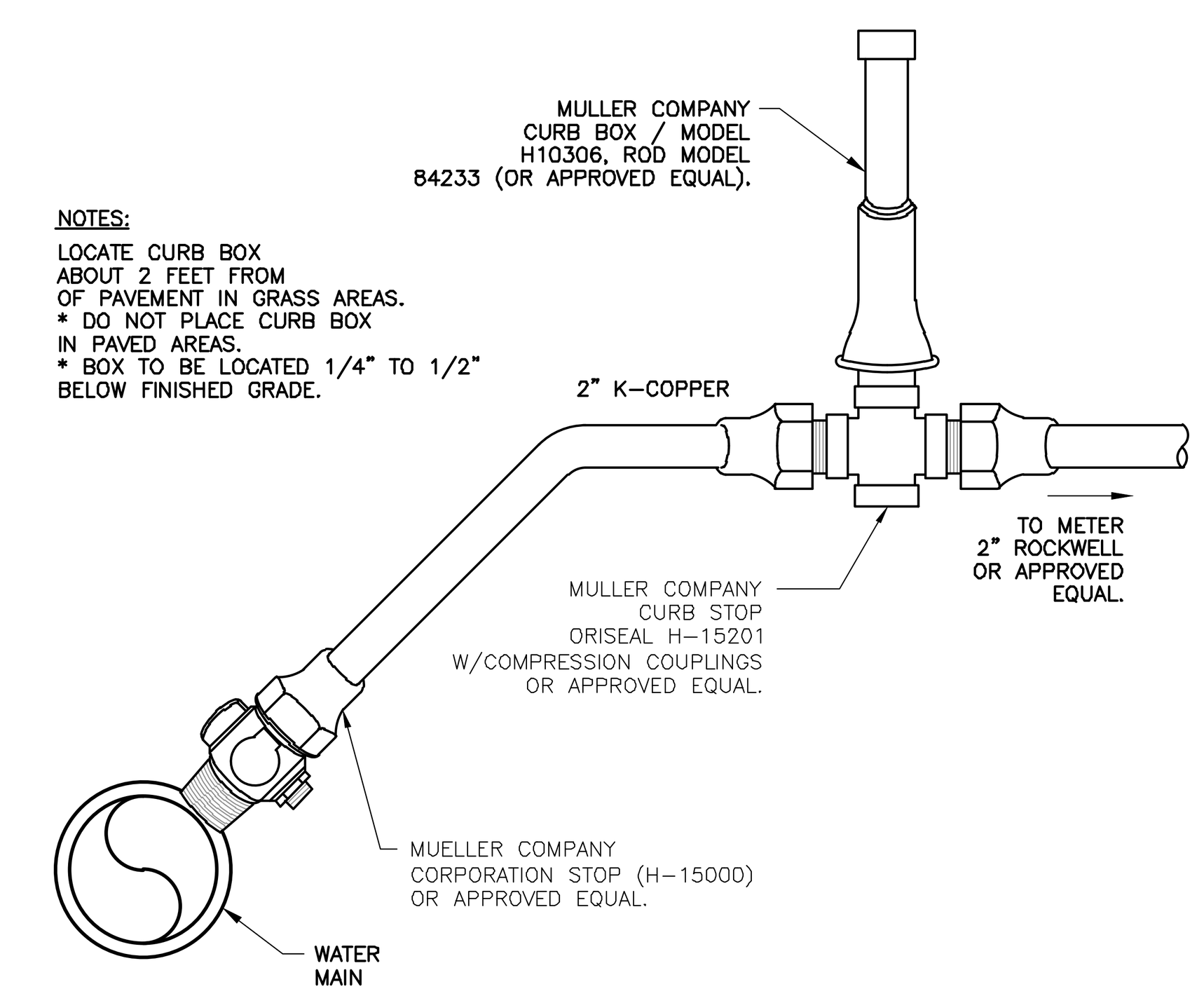


FIRE HYDRANT. MUELLER CO. MODEL CENTURION OR APPROVED EQUAL.
2'–0"
5'–0"± (SEE PLAN)
VARIES
CURB LINE
1'–6"
3 PIECE C.I. VALVE BOX
FINISH GRADE
COMPACTED BACKFILL
4'–0" (MIN. COVER)
STANDARD GATE VALVE INSTALLATION
THRUST BLOCK
THRUST BLOCK
18" MIN. LAYING LENGTH
2 C.Y. CRUSHED STONE BEDDING HYDRANT DRAIN AREA.
ELEVATION

TYPICAL FIRE HYDRANT & RESTRAINTS DETAILS

NOT TO SCALE

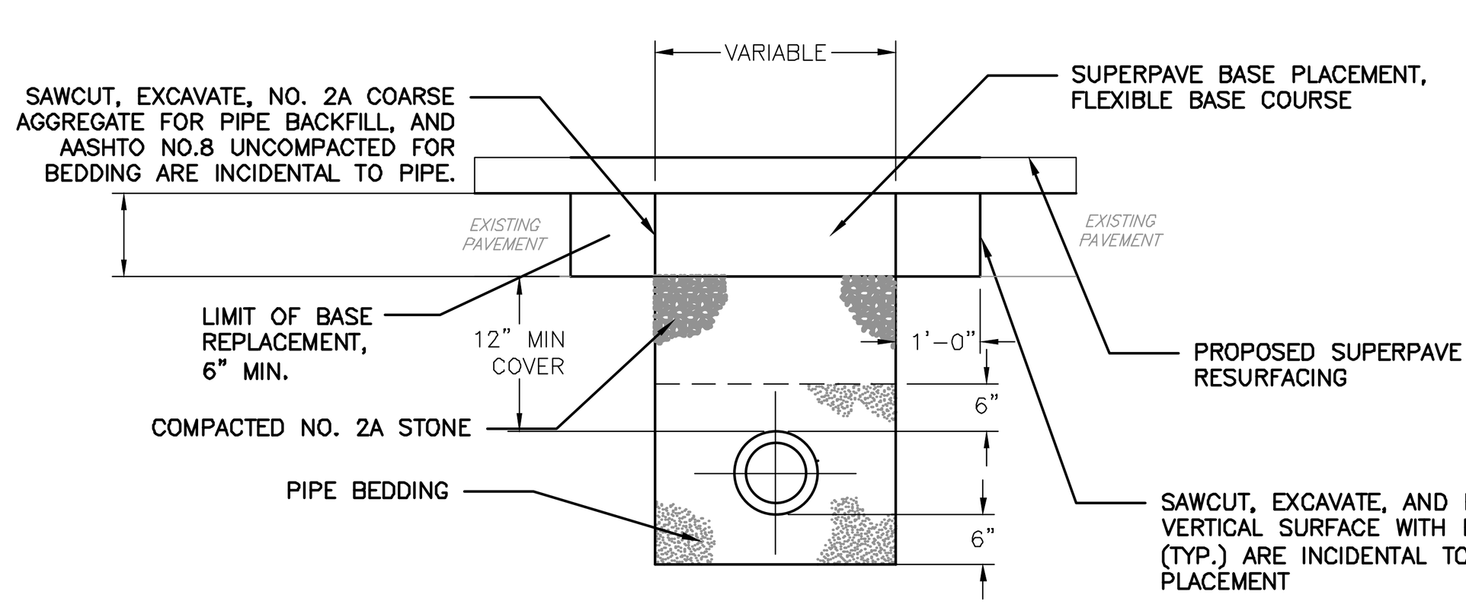
NOTES:
LOCATE CURB BOX ABOUT 2 FEET FROM OF PAVEMENT IN GRASS AREAS.
* DO NOT PLACE CURB BOX IN PAVED AREAS.
* BOX TO BE LOCATED 1/4" TO 1/2" BELOW FINISHED GRADE.



MULLER COMPANY CURB BOX / MODEL H10306, ROD MODEL 84233 (OR APPROVED EQUAL).
2" K–COPPER
TO METER 2" ROCKWELL OR APPROVED EQUAL.
MULLER COMPANY CURB STOP ORISEAL H–15201 W/COMPRESSION COUPLINGS OR APPROVED EQUAL.
MUELLER COMPANY CORPORATION STOP (H–15000) OR APPROVED EQUAL.
WATER MAIN

WATER SERVICE DETAIL

NOT TO SCALE

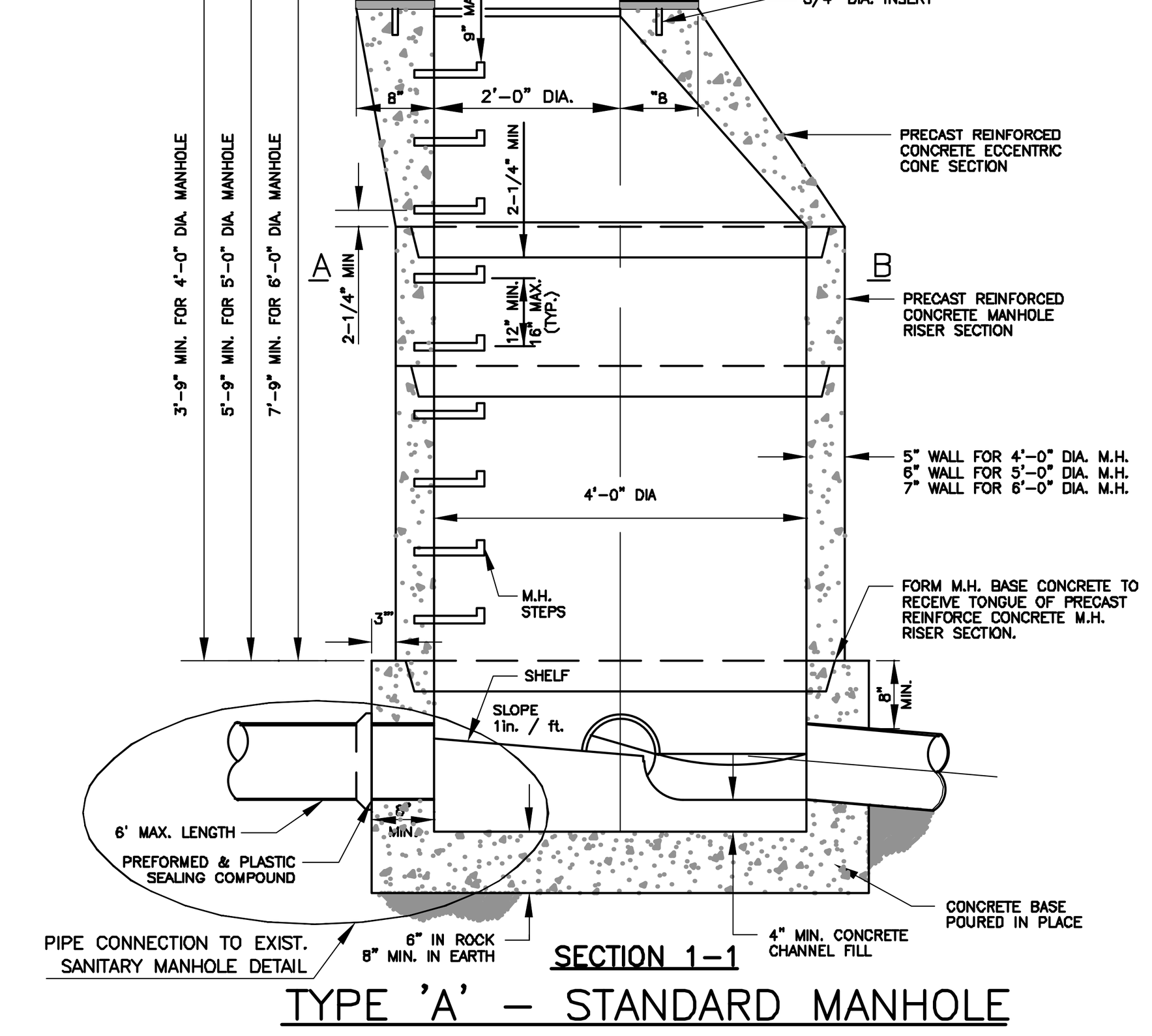


VARIABLE
SAWCUT, EXCAVATE, NO. 2A COARSE AGGREGATE FOR PIPE BACKFILL, AND AASHTO NO.8 UNCOMPACTED FOR BEDDING ARE INCIDENTAL TO PIPE.
SUPERPAVE BASE PLACEMENT, FLEXIBLE BASE COURSE
EXISTING PAVEMENT
EXISTING PAVEMENT
LIMIT OF BASE REPLACEMENT, 6" MIN.
12" MIN COVER
1'–0"
6"
6"
PROPOSED SUPERPAVE RESURFACING
COMPACTED NO. 2A STONE
PIPE BEDDING
SAWCUT, EXCAVATE, AND PAINT VERTICAL SURFACE WITH PG 64–22 (TYP.) ARE INCIDENTAL TO BASE PLACEMENT

NOTE:
1. IN ALL EXCAVATION AREAS, FOLLOW OSHA SAFETY REQUIREMENTS.
2. CONSTRUCT FLEXIBLE BASE REPLACEMENT IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408, SECTION 316.
3. FOR SUPERPAVE REPLACEMENT, SAWCUTTING, EXCAVATION, HAULING AND DISPOSAL, BITUMINOUS TACK COAT, BITUMINOUS MATERIAL AND SEALING OF THE JOINTS ARE CONSIDERED INCIDENTAL.
4. PERFORM AND COMPLETE PIPE RESTORATION WORK PRIOR TO THE FLEXIBLE SUPERPAVE BASE BASE REPLACEMENT.

FLEXIBLE PAVEMENT RESTORATION (FIGURE 7–3)

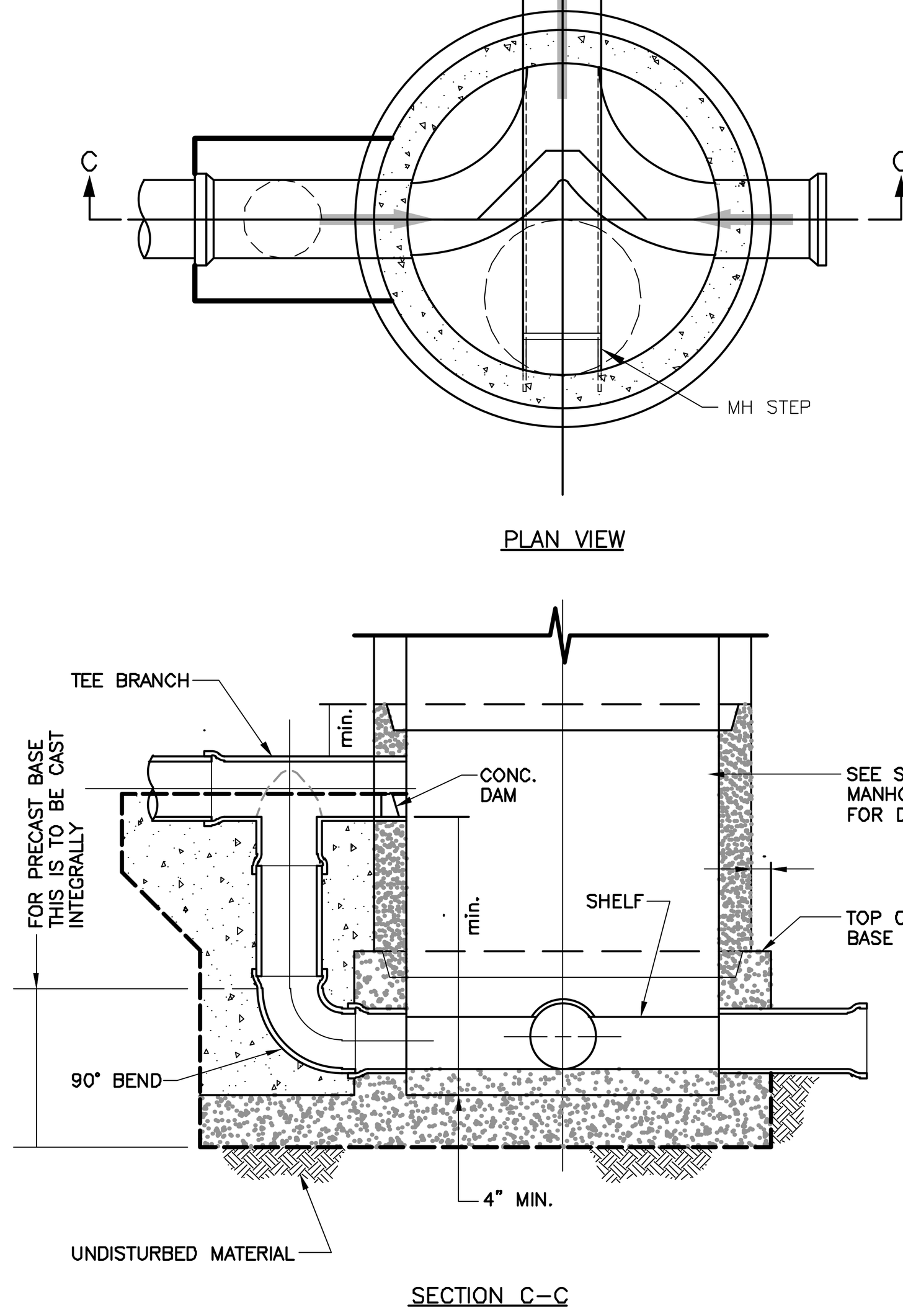
NOT TO SCALE



PROPOSED WATERTIGHT FRAME & COVER FOR SANITARY MANHOLES S–1 THROUGH S–4
STANDARD M.H. FRAME & COVER (WTC WHERE REQUIRED)
ADJUST TO GRADE WITH MAX. OF TWO GRADE RINGS.
3/4" DIA. INSERT
9" MAX.
8"
2'–0" DIA.
8"
2–1/4" MIN
PRECAST REINFORCED CONCRETE ECCENTRIC CONE SECTION
A
B
2–1/4" MIN
12" MIN. 16" MAX. (TYP.)
PRECAST REINFORCED CONCRETE MANHOLE RISER SECTION
3'–9" MIN. FOR 4'–0" DIA. MANHOLE
5'–9" MIN. FOR 5'–0" DIA. MANHOLE
7'–9" MIN. FOR 6'–0" DIA. MANHOLE
5" WALL FOR 4'–0" DIA. M.H.
6" WALL FOR 5'–0" DIA. M.H.
7" WALL FOR 6'–0" DIA. M.H.
4'–0" DIA
M.H. STEPS
FORM M.H. BASE CONCRETE TO RECEIVE TONGUE OF PRECAST REINFORCE CONCRETE M.H. RISER SECTION.
3"
SHELF
SLOPE 1in. / ft.
8" MIN.
6' MAX. LENGTH
6" MIN
PREFORMED & PLASTIC SEALING COMPOUND
CONCRETE BASE POURED IN PLACE
PIPE CONNECTION TO EXIST. SANITARY MANHOLE DETAIL
6" IN ROCK 8" MIN. IN EARTH
4" MIN. CONCRETE CHANNEL FILL
SECTION 1–1

TYPE 'A' – STANDARD MANHOLE

NOT TO SCALE

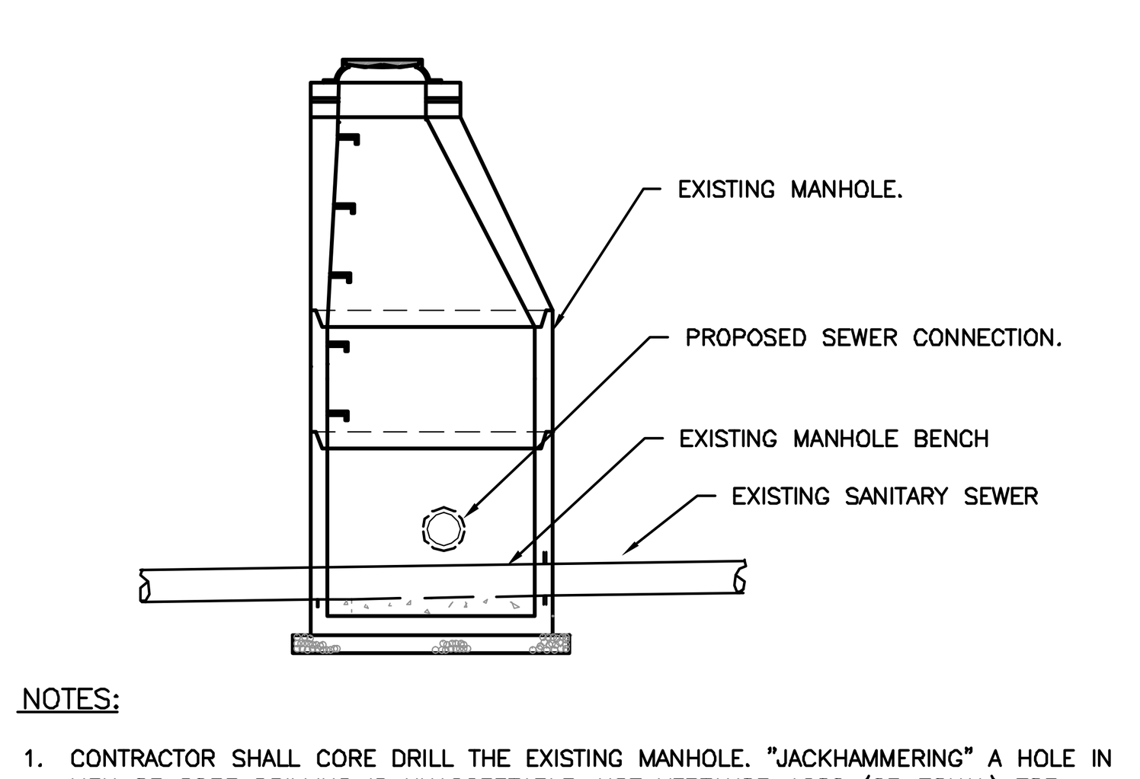


TYPE 'A' – DROP MANHOLE

NOT TO SCALE

SANITARY SEWER MANHOLE

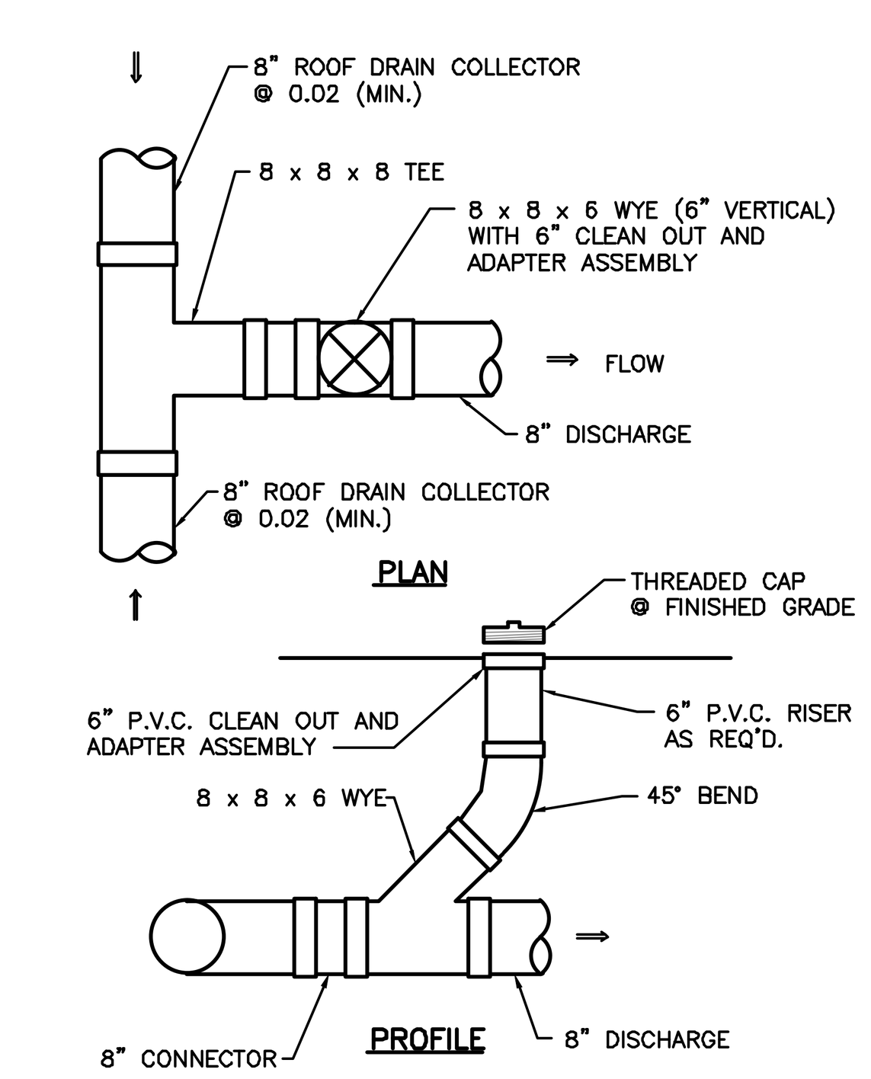
NOT TO SCALE



NOTES:
1. CONTRACTOR SHALL CORE DRILL THE EXISTING MANHOLE. "JACKHAMMERING" A HOLE IN LIEU OF CORE DRILLING IS UNACCEPTABLE. USE VERTAKOR 1200 (OR EQUAL) FOR DRILLING. THE CORE DRILLED HOLE SHALL BE SIZED TO PERMIT INSTALLATION OF A "GROUT–IN" TYPE FLEXIBLE PIPE SLEEVE. (KOR–N–SEAL, (OR EQUAL)).
2. NON–SHRINK GROUT SHALL BE USED TO SECURE THE FLEXIBLE PIPE SLEEVE AND TO SEAL ALL OTHER CONCRETE OPENINGS.
3. FLOW SHALL BE MAINTAINED DURING THE INSTALLATION OF THE NEW LATERAL.
4. A CHANNEL SHALL BE FORMED FOR THE NEW PIPE CONNECTION.
5. CONCRETE SHALL BE PLACED UNDER THE NEW PIPE FOR A DISTANCE OF THREE (3) FEET OUTSIDE OF THE MANHOLE WALL.

CONNECTION TO EXISTING SANITARY MANHOLE DETAIL

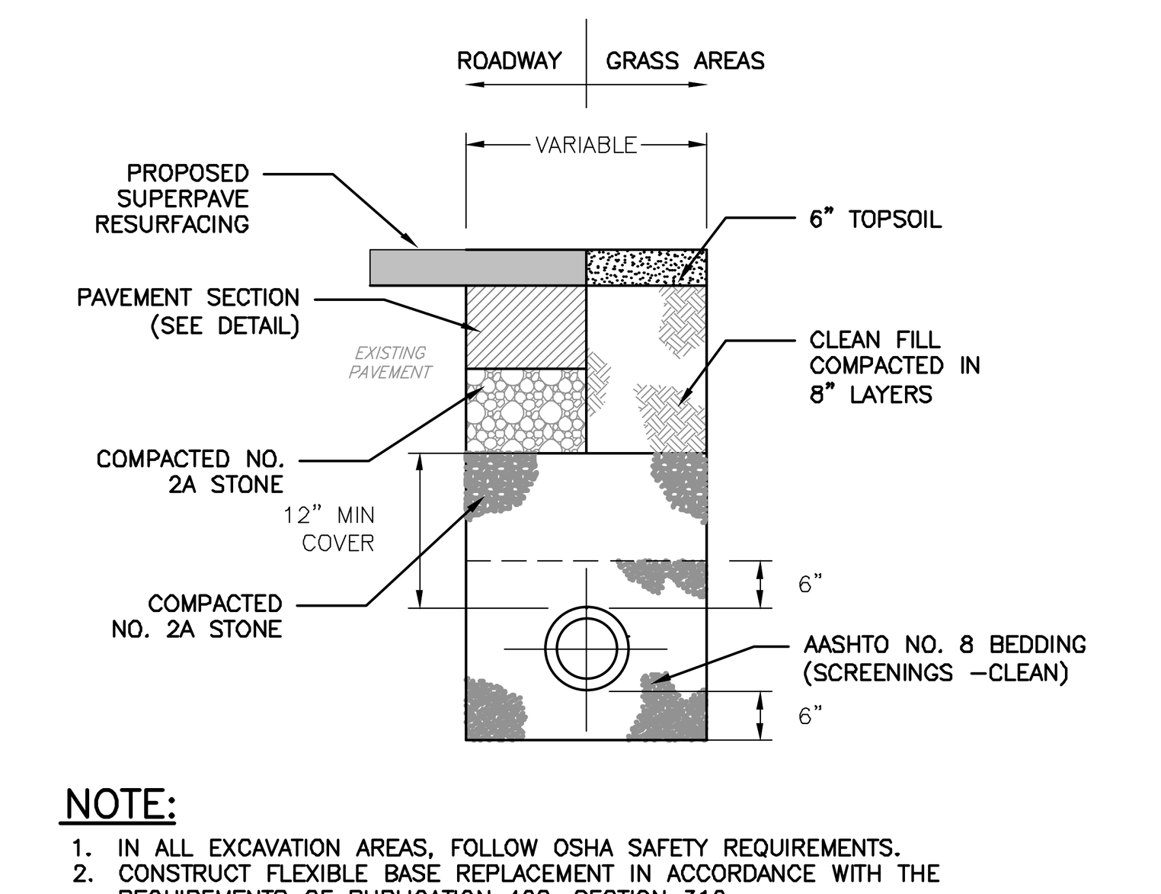
NOT TO SCALE



8" ROOF DRAIN COLLECTOR @ 0.02 (MIN.)
8 x 8 x 8 TEE
8 x 8 x 6 WYE (6" VERTICAL) WITH 6" CLEAN OUT AND ADAPTER ASSEMBLY
FLOW
8" DISCHARGE
8" ROOF DRAIN COLLECTOR @ 0.02 (MIN.)
PLAN
THREADED CAP @ FINISHED GRADE
6" P.V.C. CLEAN OUT AND ADAPTER ASSEMBLY
6" P.V.C. RISER AS REQ'D.
8 x 8 x 6 WYE
45° BEND
8" CONNECTOR
PROFILE
8" DISCHARGE

CLEAN OUT ASSEMBLY DETAIL

NOT TO SCALE

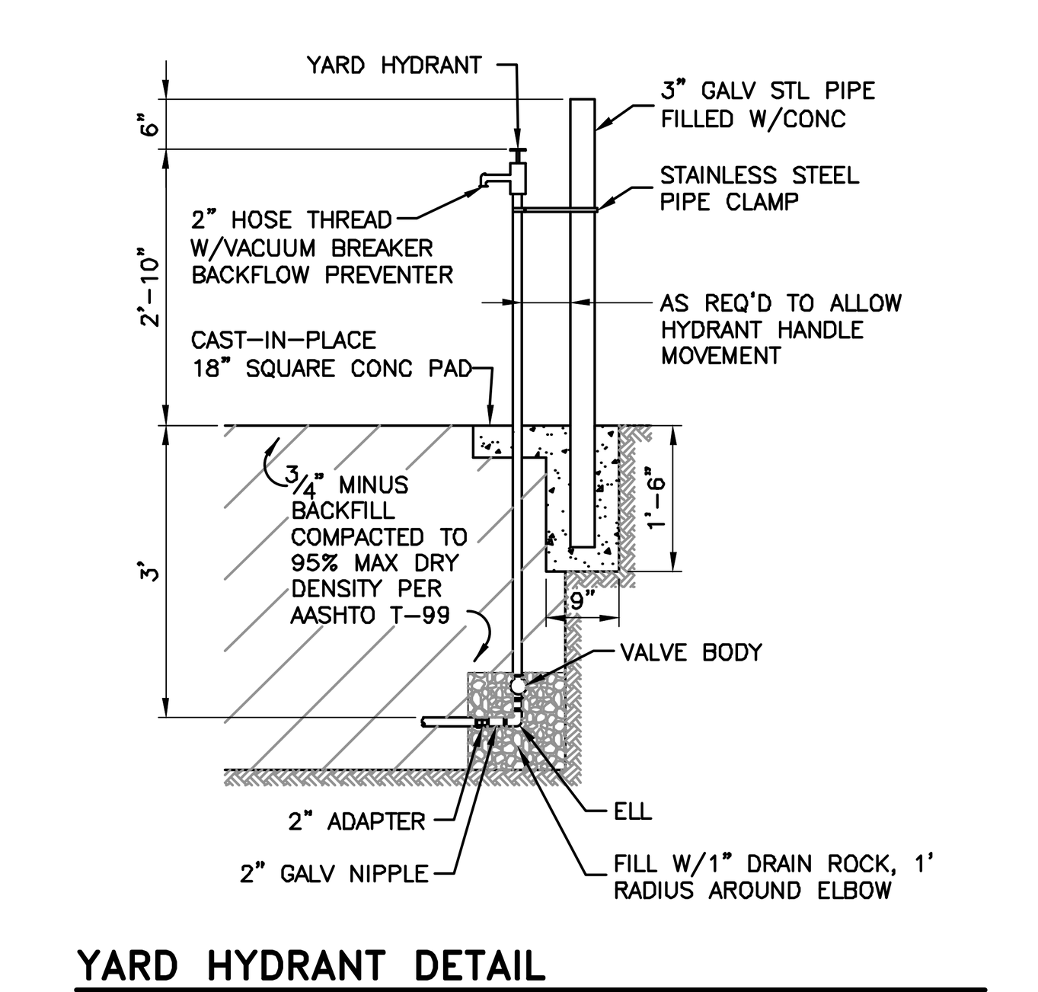


ROADWAY
GRASS AREAS
VARIABLE
PROPOSED SUPERPAVE RESURFACING
6" TOPSOIL
PAVEMENT SECTION (SEE DETAIL)
EXISTING PAVEMENT
CLEAN FILL COMPACTED IN 8" LAYERS
COMPACTED NO. 2A STONE
12" MIN COVER
6"
COMPACTED NO. 2A STONE
AASHTO NO. 8 BEDDING (SCREENINGS –CLEAN)
6"

NOTE:
1. IN ALL EXCAVATION AREAS, FOLLOW OSHA SAFETY REQUIREMENTS.
2. CONSTRUCT FLEXIBLE BASE REPLACEMENT IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408, SECTION 316.
3. FOR SUPERPAVE REPLACEMENT, SAWCUTTING, EXCAVATION, HAULING AND DISPOSAL, BITUMINOUS TACK COAT, BITUMINOUS MATERIAL AND SEALING OF THE JOINTS ARE CONSIDERED INCIDENTAL.
4. PERFORM AND COMPLETE PIPE RESTORATION WORK PRIOR TO THE FLEXIBLE SUPERPAVE BASE BASE REPLACEMENT.
5. SAWCUT, EXCAVATION, NO. 2A COARSE AGGREGATE FOR PIPE BACKFILL, AND AASHTO NO.8 UNCOMPACTED FOR BEDDING ARE INCIDENTAL TO PIPE.

TRENCH RESTORATION DETAIL

NOT TO SCALE



YARD HYDRANT
3" GALV STL PIPE FILLED W/CONC
6"
STAINLESS STEEL PIPE CLAMP
2" HOSE THREAD W/VACUUM BREAKER BACKFLOW PREVENTER
2'–10"
AS REQ'D TO ALLOW HYDRANT HANDLE MOVEMENT
CAST–IN–PLACE 18" SQUARE CONC PAD
3/4" MINUS BACKFILL COMPACTED TO 95% MAX DRY DENSITY PER AASHTO T–99
1'–6"
3'
9"
VALVE BODY
2" ADAPTER
ELL
2" GALV NIPPLE
FILL W/1" DRAIN ROCK, 1' RADIUS AROUND ELBOW

YARD HYDRANT DETAIL

NOT TO SCALE

PENNSYLVANIA ONE CALL SYSTEM, INC. 1–800–242–1776 STOP–CALL BEFORE YOU DIG!

KNOW WHAT'S BELOW CALL BEFORE YOU DIG!
PENNSYLVANIA ACT 287 OF 1974 (AS AMENDED) REQUIRES 3 WORKING DAYS NOTICE FOR EXCAVATION PHASE AND 10 WORKING DAYS IN DESIGN STAGE – STOP! CALL!
PENNSYLVANIA ONE CALL SYSTEM, INC. 1–800 242–1776 or 811
PA ONE–CALL SERIAL No.
SERIAL NO. 20162291370
AUGUST 16, 2016

REVISIONS :

DATE	DESCRIPTION	DATE	DESCRIPTION
01/31/17	PLANS UPDATED WITH INFILTRATION PIT LOCATIONS AND NPDES NOTES		
05/02/17	PER ENGINEER REVIEW LETTER		
05/16/17	PER ENGINEER & EAC REVIEW LETTERS		
05/19/17	REVISED INFILTRATION TRENCH INLET 2 TO 3		
06/07/17	REVISED PER CONDITIONS OF APPROVAL		
06/30/17	REVISED PER PRE–BID MEETING		
07/07/17	REVISED PER ADDENDUM 2		
10/20/17	REVISED EXISTING AND PROPOSED WATER LINE		

PROJECT :
SNIPES TRACT ATHLETIC FIELDS
LOWER MAKEFIELD TOWNSHIP
BUCKS COUNTY, PENNSYLVANIA

APPLICANT :
LOWER MAKEFIELD TOWNSHIP
1100 EDGEWOOD ROAD
YARDLEY, PA 19067

JOB NO.: 1677054L
DRAWN BY: TMW
CHECKED BY: MES
SCALE: AS NOTED
PLAN STATUS: FINAL

TITLE : CONSTRUCTION DETAILS (2 OF 2)

Boucher & James, Inc.
CONSULTING ENGINEERS
DOYLESTOWN ✦ STROUDSBURG ✦ LEHIGH VALLEY
CORPORATE HEADQUARTERS: 1456 FERRY RD, BUILDING 500, DOYLESTOWN, PA. 18901
VOICE: (215) 345–9400 FAX: (215) 345–9401
www.bjengineers.com

PROJECT NAME : SNIPES TRACT ATHLETIC FIELDS

DATE: NOVEMBER 14, 2016

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