

OVERALL LIGHTING STATISTICS						
AREA DESCRIPTION	SYMBOL	AVERAGE	MAXIMUM	MINIMUM	MAX/MIN	AVG/MIN
OVERALL SITE	+	0.3 FC	5.1 FC	0.0 FC	N/A	N/A
PARKING	*	1.1 FC	2.7 FC	0.3 FC	9.0 : 1	3.7 : 1
TRUCK PARKING	x	1.4 FC	3.5 FC	0.5 FC	7.0 : 1	2.8 : 1

OVERALL LIGHTING SCHEDULE						
SYMBOL	LABEL	QTY	CATALOG NUMBER	LAMP	LUMENS PER LAMP	WATTAGE
A	4	RAR-I-160L-70-4K-4F	160 LED	9,505	70	0.9
B	2	RAR-I-160L-100-4K7-SQW-UJ	160 LED	12,155	90	0.9
C	8	RWLI-I-48L-20-4K7-4W-UJ	48 LED	2,672	20	0.9
D	1	VPB-24L-15-3K7-3	24 LED	1,683	14	0.9

GENERAL NOTES

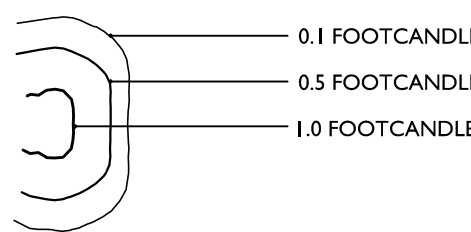
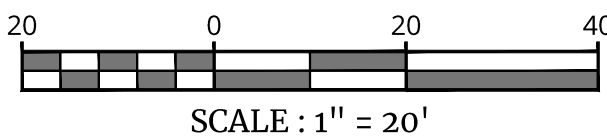
- THIS SHEET IS TO BE USED FOR LIGHTING PURPOSES ONLY.
- REFER TO SHEET 1 FOR GENERAL NOTES.

LIGHTING PLAN NOTES

- REFER TO SHEET 9.1 FOR LIGHTING DETAILS AND ORDERING INFORMATION.
- LIGHT LEVELS ON PLAN REPRESENT AVERAGE MAINTAINED FOOTCANDLE LEVELS AT FINISHED EXTERIOR GRADE.
- ALL MOUNTING HEIGHTS ARE MEASURED FROM FINISHED EXTERIOR GRADE TO LIGHT SOURCE.
- POLE LOCATIONS MAY VARY DUE TO SITE CONDITIONS. CONTRACTOR TO FIELD VERIFY POLE LOCATIONS PRIOR TO INSTALLATION TO ACCOMMODATE UTILITIES, PAVEMENTS, FENCES, ETC.
- EXISTING STREETLIGHTS ARE NOT MODELED, BUT APPEAR TO BE STANDARD LED ROADWAY FLAT LENS LUMINAIRES MOUNTED TO UTILITY POLES.
- UNDERGROUND CONDUIT LOCATIONS SHALL BE COORDINATED WITH THE PROPOSED TREE LOCATIONS.
- CONCRETE FOOTING FOR POLE MOUNTED LIGHTS TO BE DESIGNED BY OTHERS. FOOTING DETAIL TO BE SUBMITTED FOR APPROVAL PRIOR TO CONSTRUCTION.
- ELECTRICAL WIRING DESIGN FOR SITE LIGHTING TO BE DESIGNED BY OTHERS.
- ARCHITECTURAL LIGHTING FOR BUILDINGS TO BE DESIGNED BY OTHERS. COORDINATE ALL BUILDING-MOUNTED FIXTURES AND LOCATIONS WITH ARCHITECT AND ARCHITECTURAL ELEVATION DRAWINGS.
- SITE LIGHTING SUBSTITUTIONS WILL NOT BE PERMITTED UNLESS SUBSTITUTIONS ARE SUBMITTED AND APPROVED.
- LUMINAIRES TO BE MANUFACTURED BY BEACON OR EQUIVALENT AS APPROVED BY OWNER AND LANDSCAPE ARCHITECT.
- LUMINAIRES AND POLE FINISHES TO BE BLACK.
- PROPOSED LIGHTS SHALL BE EQUIPPED WITH SENSORS, TIMERS, OR THE MANUFACTURER CONTROL SYSTEM SO THE PROPOSED LIGHTS CAN BE DIMMED OR TURNED OFF AFTER OCCUPATION HOURS. ONLY SPECIFIC LIGHTING FOR SECURITY PURPOSES SHALL REMAIN ON AFTER OCCUPATION HOURS. SECURITY LIGHTING SHALL BE DETERMINED BY THE OWNER AND CONTRACTOR.

LIGHTING LEGEND

- POLE MOUNT LUMINAIRE
- BOLLARD LUMINAIRE
- WALL MOUNT LUMINAIRE



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

REV	DATE	DESCRIPTION
1	4/27/2025	REVISED SITE LAYOUT
2	6/26/2025	REVISED PER RFP

REV	DATE	DESCRIPTION
1	4/27/2025	REVISED SITE LAYOUT
2	6/26/2025	REVISED PER RFP

Matthew Kirk Bradley
PENNSYLVANIA REGISTERED LANDSCAPE ARCHITECT
LICENSE NUMBER: LA003341
COLLIERS ENGINEERING & DESIGN, INC.

PRELIMINARY/FINAL LAND
DEVELOPMENT PLAN

FOR
CITY OF CHESTER

PROJECT TYPE:
PUBLIC WORKS FACILITIES

LOCATION:
2ND ST. & PENNELL ST.
CITY OF CHESTER, PA 19013

PHILADELPHIA
2 Penn Center, Suite 700
1500 JFK Boulevard
Philadelphia, PA 19102
Phone: 215.861.9621
COLLIERS ENGINEERING & DESIGN, INC. (DO NOT
REUSE AS MASER CONSULTANT)

SCALE:
AS SHOWN
PROJECT NUMBER:
COC00094

DATE:
10/11/2024
DRAWING NAME:
C4-GH1

DRAWN BY:
JSW
CHECKED BY:
CRG

SHEET TITLE:
LIGHTING PLAN

SHEET NUMBER:
9.0

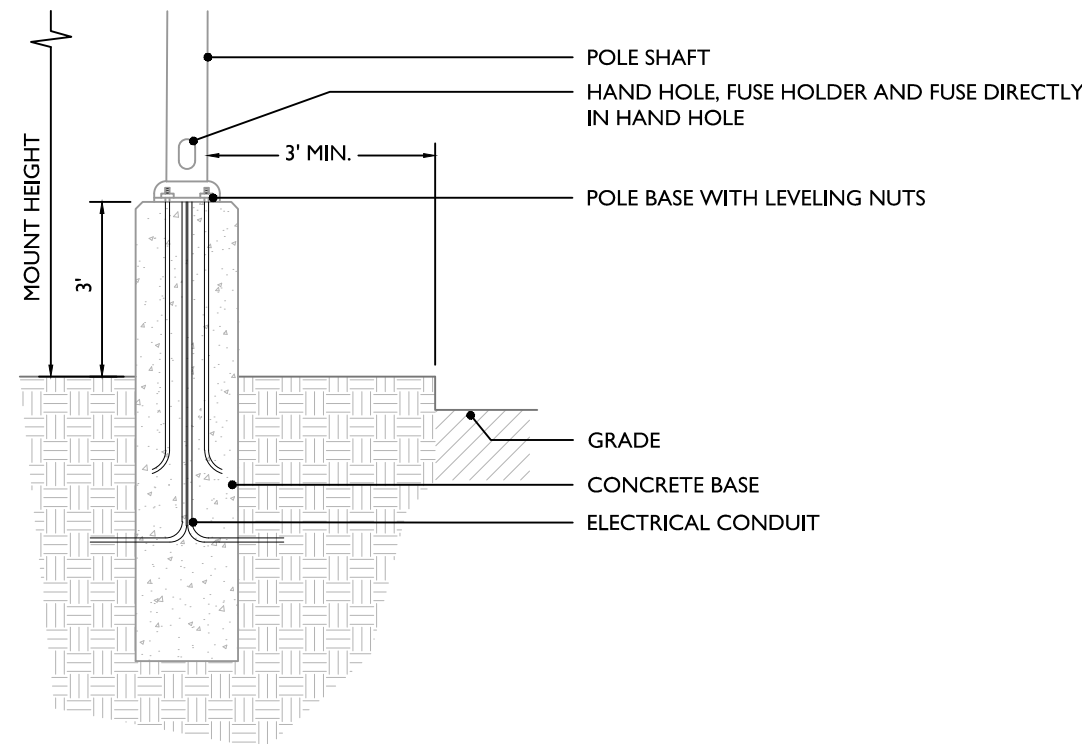
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

[illegible]

CUTSHEET FOR FIXTURES 'A' & 'B'

[illegible]

CUTSHEET FOR WALLPACKS



NOTES:

1. FOOTING SHOWN IS SCHEMATIC ONLY.
2. SHOP DRAWINGS AND CALCULATIONS FOR THE DESIGN AND SIZING OF THE CONCRETE FOOTING SHALL BE PREPARED BY A PROFESSIONAL ENGINEER, AND SHALL BE PROVIDED BY THE CONTRACTOR FOR THE APPROVAL PRIOR TO CONSTRUCTION.
3. SITE ELECTRICAL CONTRACTOR TO COORDINATE LOCATED OF EASEMENTS, UNDERGROUND UTILITIES, AND DRAINAGE AREAS BEFORE DRILLING POLE BASES.

3' PEDESTAL CONCRETE FOOTING SCHEMATIC DETAIL

[illegible]

POLE SPECIFICATION FOR FIXTURE 'A' & 'B'

NOTES

- I. POLE WILL NEED TO BE CUT TO 22' IN HEIGHT TO ACCOUNT FOR THE 3' PEDESTAL MOUNT.

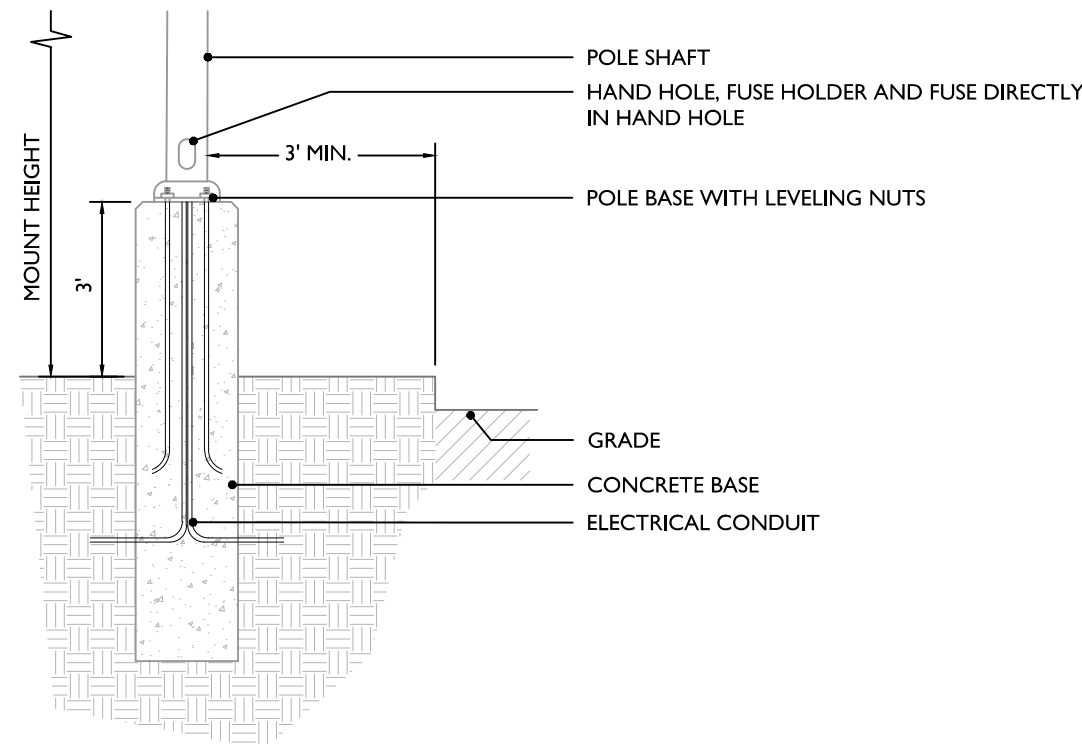
VIPER Bollard

LED BOLLARD

FEATURES

- Designed by BEACON to match the VIPer Area, Road and Wall product line.
- Available in 42" 30" 36" and 42" heights.
- Options including bollard arms, lighting, hanging and pendant installation.
- Full AULF luminaire products rated light above 5000 lumens which meet all applications (C).

CUTSHEET FOR BOLLARD FIXTURE D

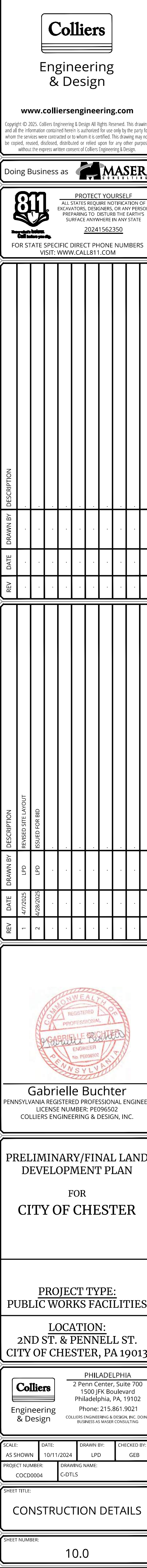


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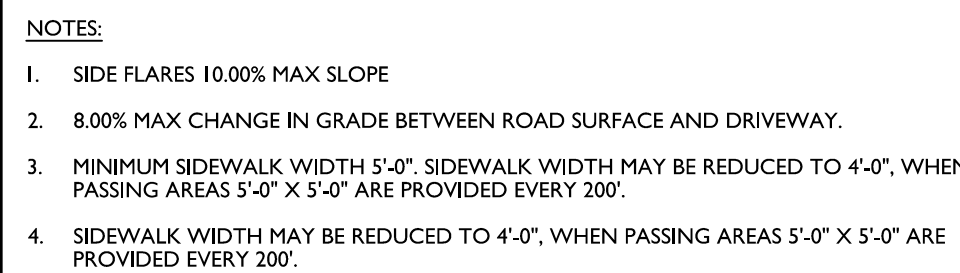
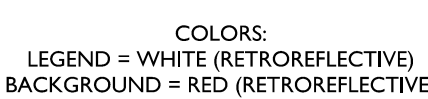
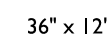
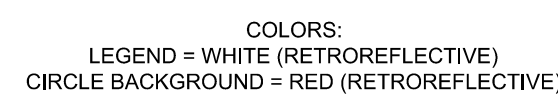
3' PEDESTAL CONCRETE FOOTING SCHEMATIC DETAIL

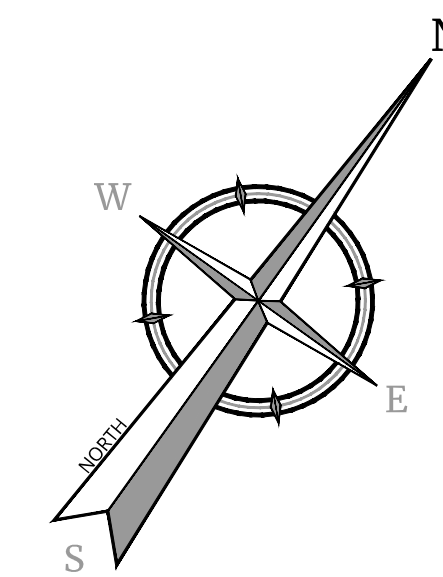
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THIS DETAIL ONLY TO BE USED ON
2ND STREET IN PENNDOT R.O.W.

[illegible]

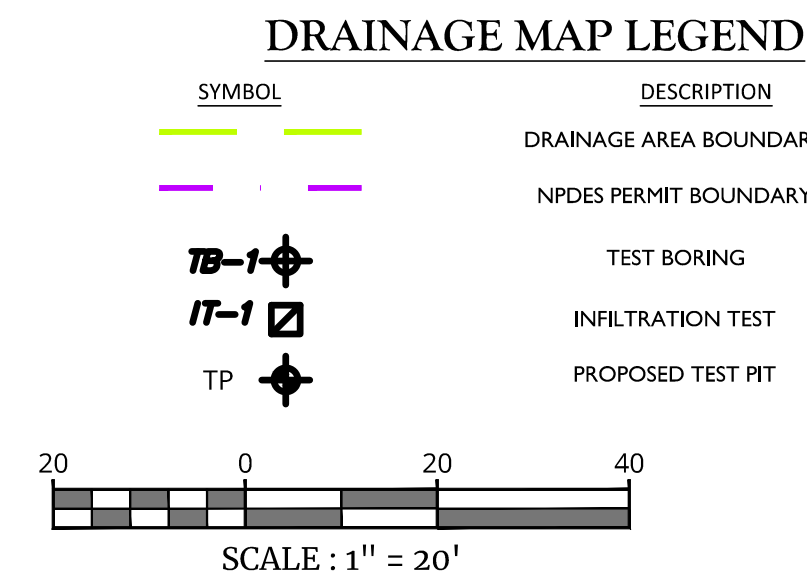
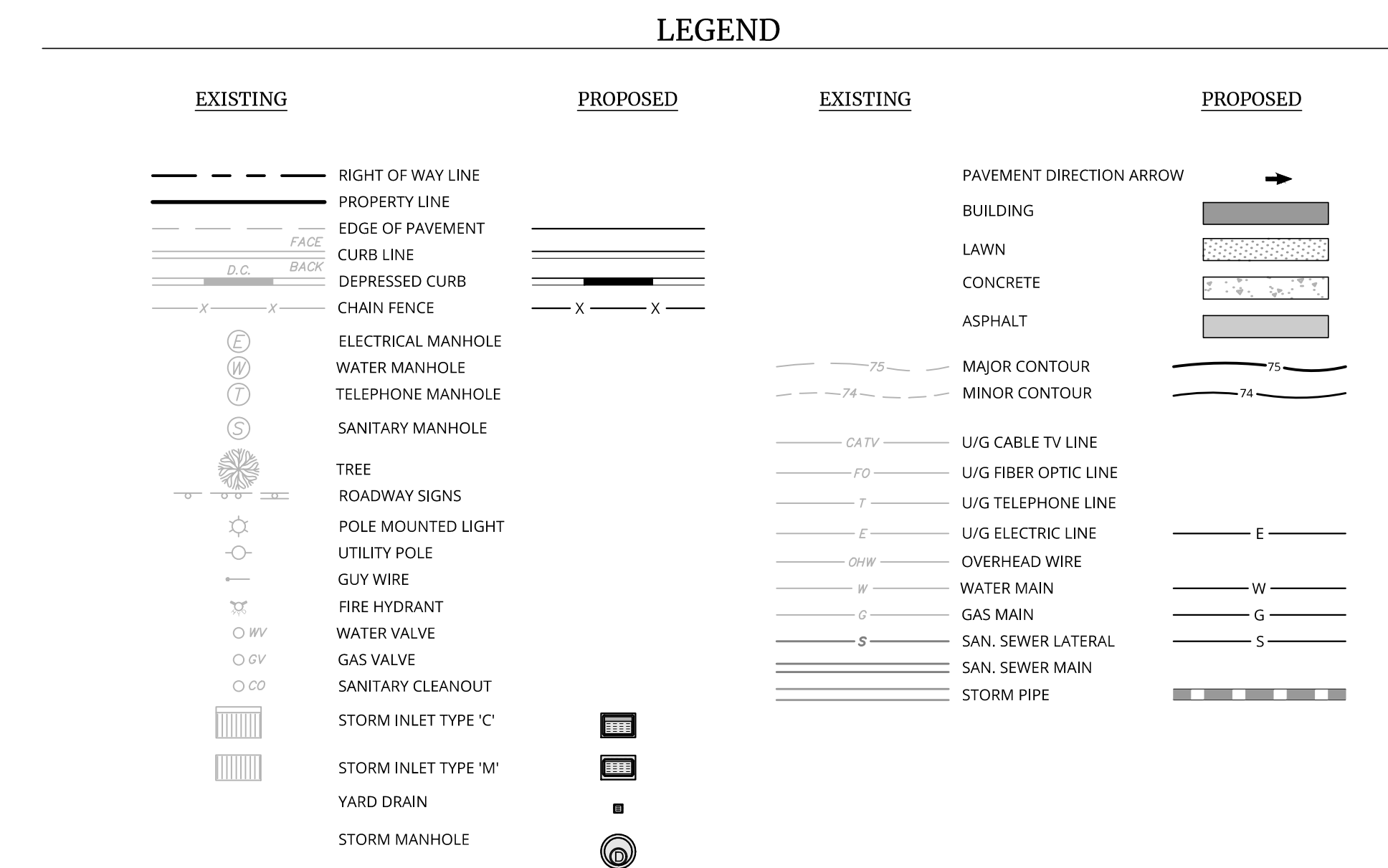


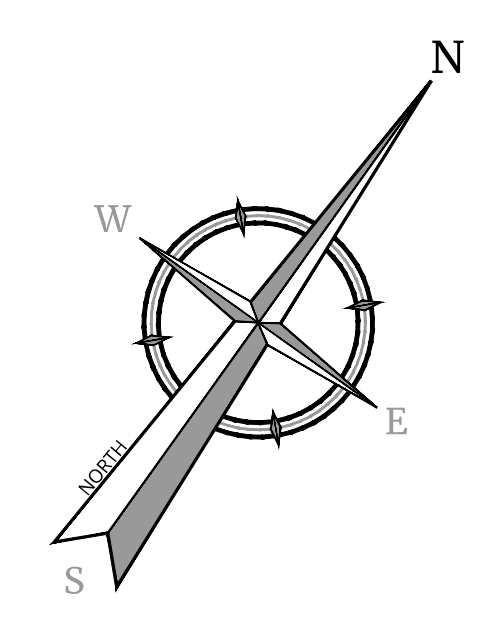
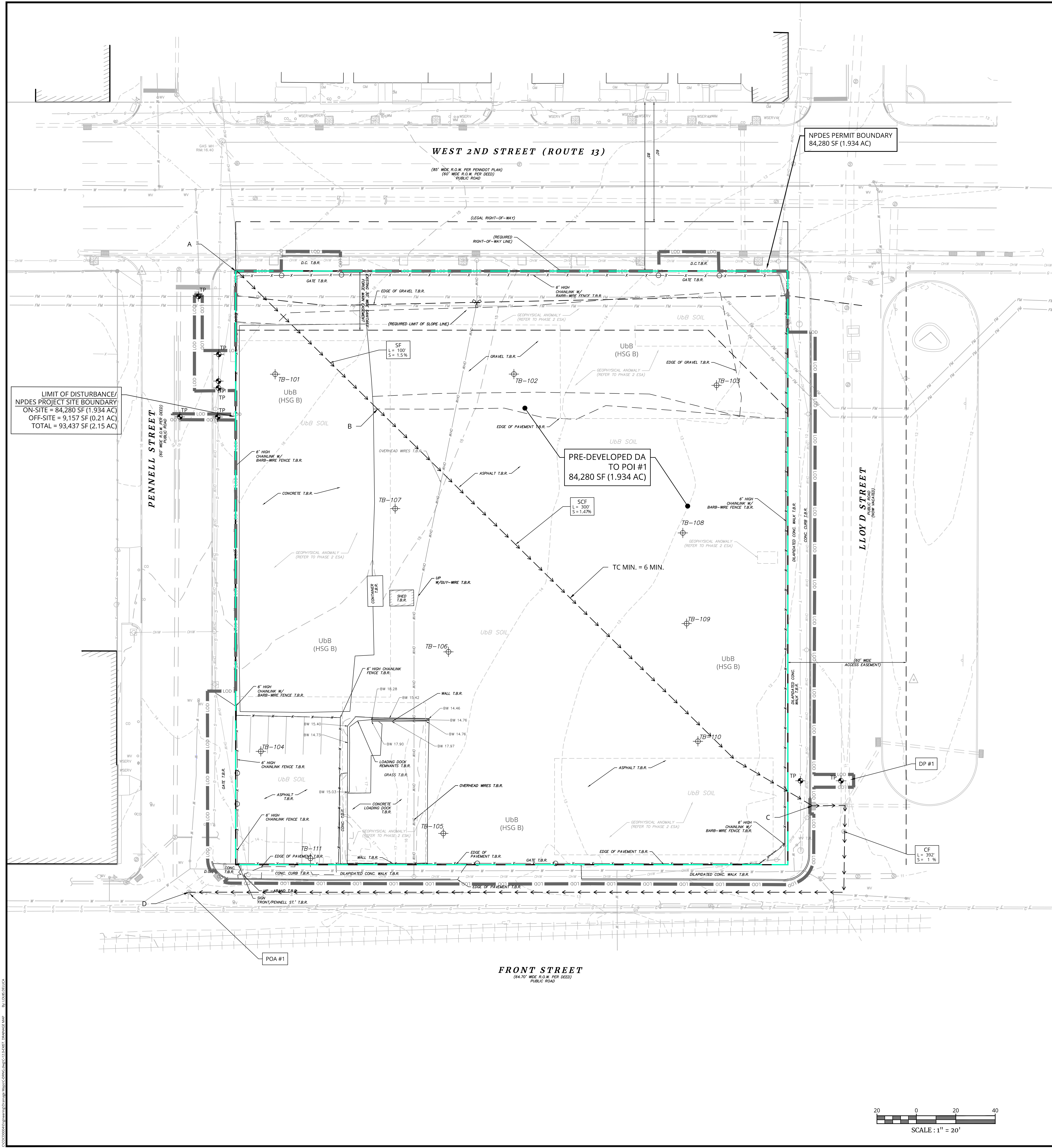
TEST BORING TABLE	
BORING ID	BORING DEPTH
TB-101	34.50
TB-102	27.30
TB-103	15.50
TB-104	30
TB-105	48.30
TB-106	33.50
TB-107	15
TB-108	13.80
TB-109	16
TB-110	12.70
TB-111	16

INFILTRATION TEST TABLE		
INFILTRATION TEST ID	INFILTRATION TEST DEPTH	INFILTRATION RATE (IN/HR)
IT-1	6.30	1.00
IT-2	5.50	0.50
IT-3	6.30	0.00
IT-4	6.60	0.00

NOTE:

MAINTENANCE REQUIRED TO PERIODICALLY REMOVE GRITS
AND DEBRIS FROM INLETS WITH SUMP AND HOOD





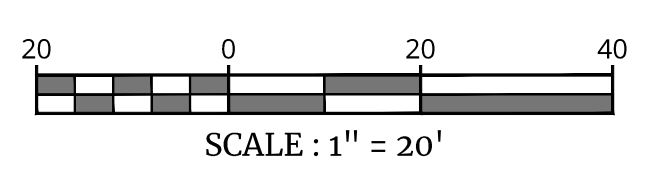
THE LIMIT OF DISTURBANCE AND NPDES BOUNDARIES ARE SHOWN OFFSET FROM OBJECTS AND OUTSIDE OF THE PROPERTY BOUNDARY FOR CLARITY. ALL DISTURBANCE WILL BE LOCATED WITHIN THE PROPERTY BOUNDARY AND LEGAL RIGHT-OF-WAY OF 2ND STREET, LLOYD STREET, FRONT STREET, AND PENNELL STREET

TEST BORING TABLE	
BORING ID	BORING DEPTH
TB-101	34.50
TB-102	27.30
TB-103	15.50
TB-104	30
TB-105	48.30
TB-106	33.50
TB-107	15
TB-108	13.80
TB-109	16
TB-110	12.70
TB-111	16

* FROM REPORT OF GEOTECHNICAL EXPLORATION DATED 11/14/24 BY COLLIERS ENGINEERING & DESIGN

DRAINAGE MAP LEGEND	
SYMBOL	DESCRIPTION
	DRAINAGE AREA BOUNDARY
	TIME OF CONCENTRATION (Tc) PATH
	TC PATH TYPE IDENTIFIER: SF = SHEET FLOW SCF = SHALLOW CONCENTRATED FLOW CF = CHANNEL/CONDUIT FLOW LENGTH OF TC PATH SLOPE OF TC PATH
	SOIL TYPE (HYDROLOGIC SOIL GROUP)
	NPDES PERMIT BOUNDARY
	TEST BORING

LEGEND	
	RIGHT-OF-WAY LINE
	PROPERTY LINE
	EDGE OF PAVEMENT
	CURB LINE
	DEPRESSED CURB
	CHAIN FENCE
	ELECTRICAL MANHOLE
	WATER MANHOLE
	TELEPHONE MANHOLE
	SANITARY MANHOLE
	MAJOR CONTOUR
	MINOR CONTOUR
	SPOT ELEVATION
	TOP OF CURB ELEV.
	BOTTOM OF CURB ELEV.
	U/G CABLE TV LINE
	U/G FIBER OPTIC LINE
	U/G TELEPHONE LINE
	U/G ELECTRIC LINE
	OVERHEAD WIRE
	WATER MAIN
	GAS MAIN
	SAN. SEWER MAIN
	STORM PIPE
	TREE
	ROADWAY SIGNS
	POLE MOUNTED LIGHT
	UTILITY POLE
	GUY WIRE
	FIRE HYDRANT
	WATER VALVE
	SANITARY CLEANOUT
	STORM INLET TYPE 'C'
	STORM INLET TYPE 'M'



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REV	DATE	DESCRIPTION	BY	DATE	DESCRIPTION
1	4/27/2025	REVISED SITE LAYOUT	LPD		
2	5/29/2025	CHECKED FOR BIDD	LPD		

Gabrielle Buchter
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE096502
COLLIERS ENGINEERING & DESIGN, INC.

PRELIMINARY/FINAL LAND DEVELOPMENT PLAN

FOR

CITY OF CHESTER

PROJECT TYPE:
PUBLIC WORKS FACILITIES

LOCATION:
2ND ST. & PENNELL ST.
CITY OF CHESTER, PA 19013

Engineering & Design

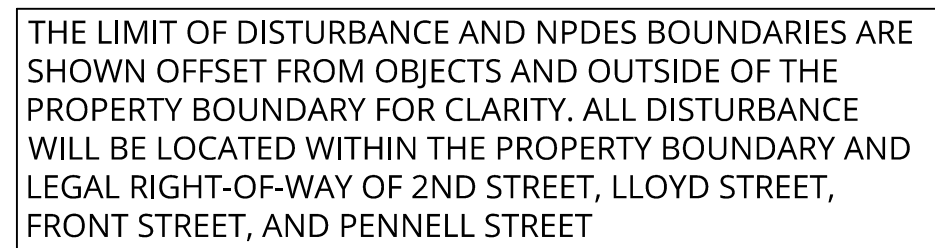
PHILADELPHIA
2 Penn Center, Suite 700
1500 JFK Boulevard
Philadelphia, PA 19102
Phone: 215.861.9021
COLLIERS ENGINEERING & DESIGN, INC. DOES BUSINESS AS MASER CONSULTING

SCALE: AS SHOWN	DATE: 10/11/2024	DRAWN BY: LPD	CHECKED BY: GEB
PROJECT NUMBER: COC00094	DRAWING NAME: C-DRNG		

SHEET TITLE:
EXISTING DRAINAGE MAP

SHEET NUMBER:
12.0

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



TEST BORING TABLE	
BORING ID	BORING DEPTH
TB-101	34.50
TB-102	27.30
TB-103	15.50
TB-104	30
TB-105	48.30
TB-106	33.50
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TB-108	13.80
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TB-110	12.70
TB-111	16

* FROM REPORT OF GEOTECHNICAL EXPLORATION DATED 11/14/24 BY COLLIERS ENGINEERING & DESIGN

[illegible]

		REVISED SITE LAYOUT	
		ISSUED FOR BID	
1	4/7/2025	LPD	
2	4/28/2025	LPD	
3	5/1	+	
4	5/2	+	
5	5/3	+	
6	5/4	+	
7	5/5	+	
8	5/6	+	
9	5/7	+	
10	5/8	+	
11	5/9	+	
12	5/10	+	
13	5/11	+	
14	5/12	+	
15	5/13	+	
16	5/14	+	
17	5/15	+	
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125	8/31	+	
126	9/1	+	
127	9/2	+	
128	9/3	+	
129	9/4	+	
130	9/5	+	



Gabrielle Buchter
PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
LICENSE NUMBER: PE096502
COLLIERS ENGINEERING & DESIGN, INC.

RELIMINARY/FINAL LAND DEVELOPMENT PLAN

R
CHESTER

PROJECT TYPE:
PUBLIC WORKS FACILITIES

LOCATION:
2ND ST. & PENNELL ST.
TY OF CHESTER, PA 19013

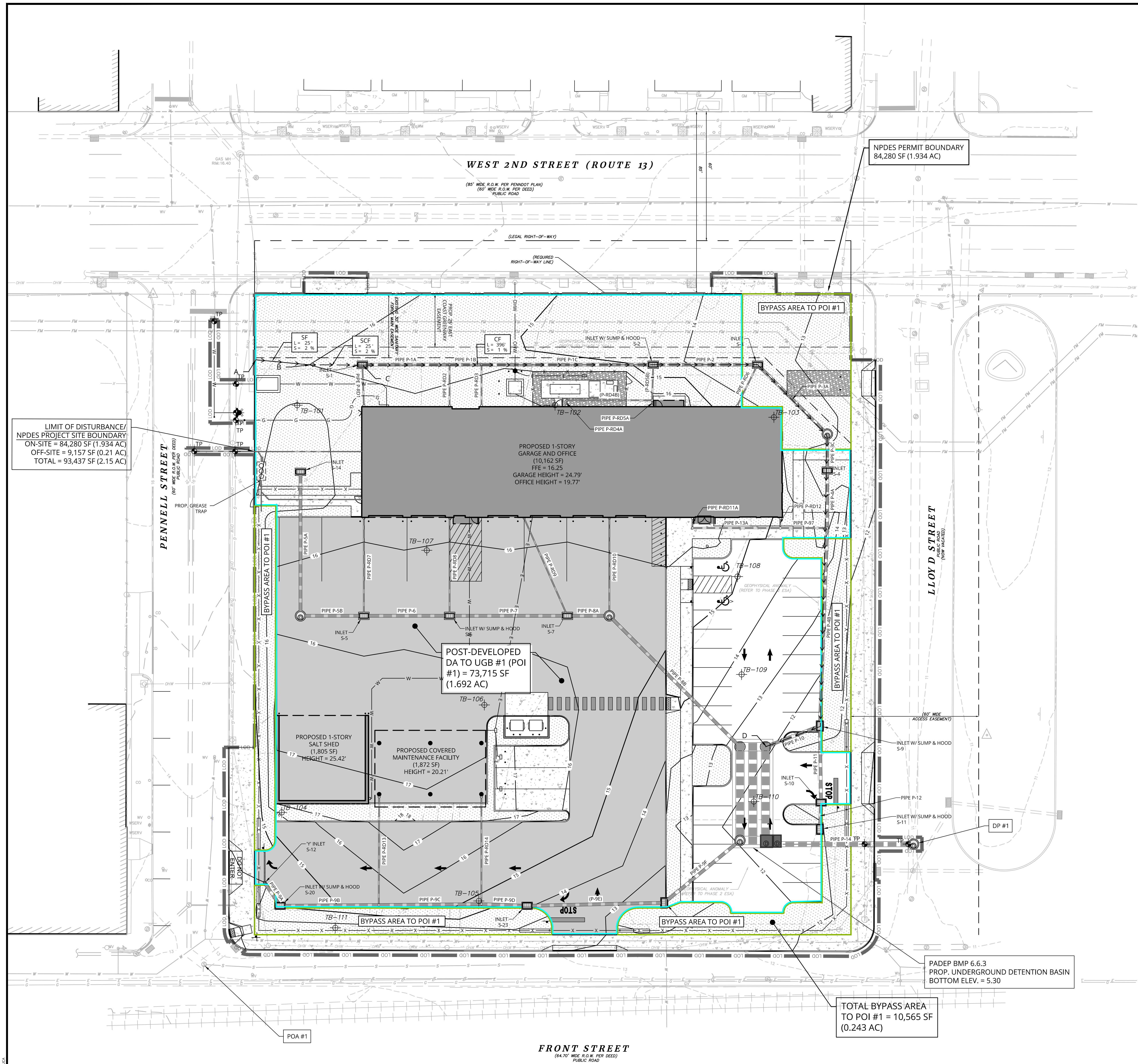
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1500 JFK Boulevard
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DATE:	DRAWN BY:	CHECKED BY:
10/11/2024	LPD	GEB
PROJECT NUMBER:	DRAWING NAME:	
COCD0004	C-DRNG	

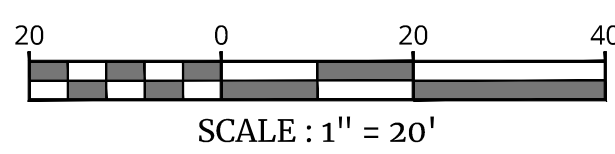
PROPOSED DRAINAGE MAP

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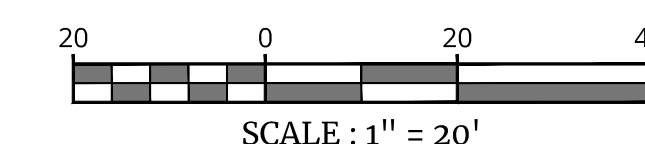
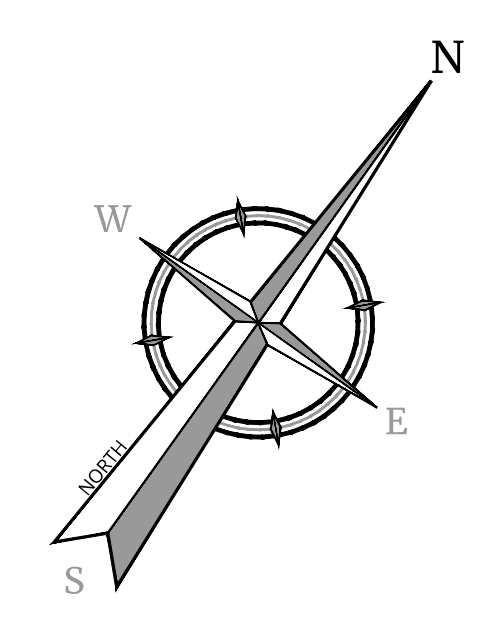
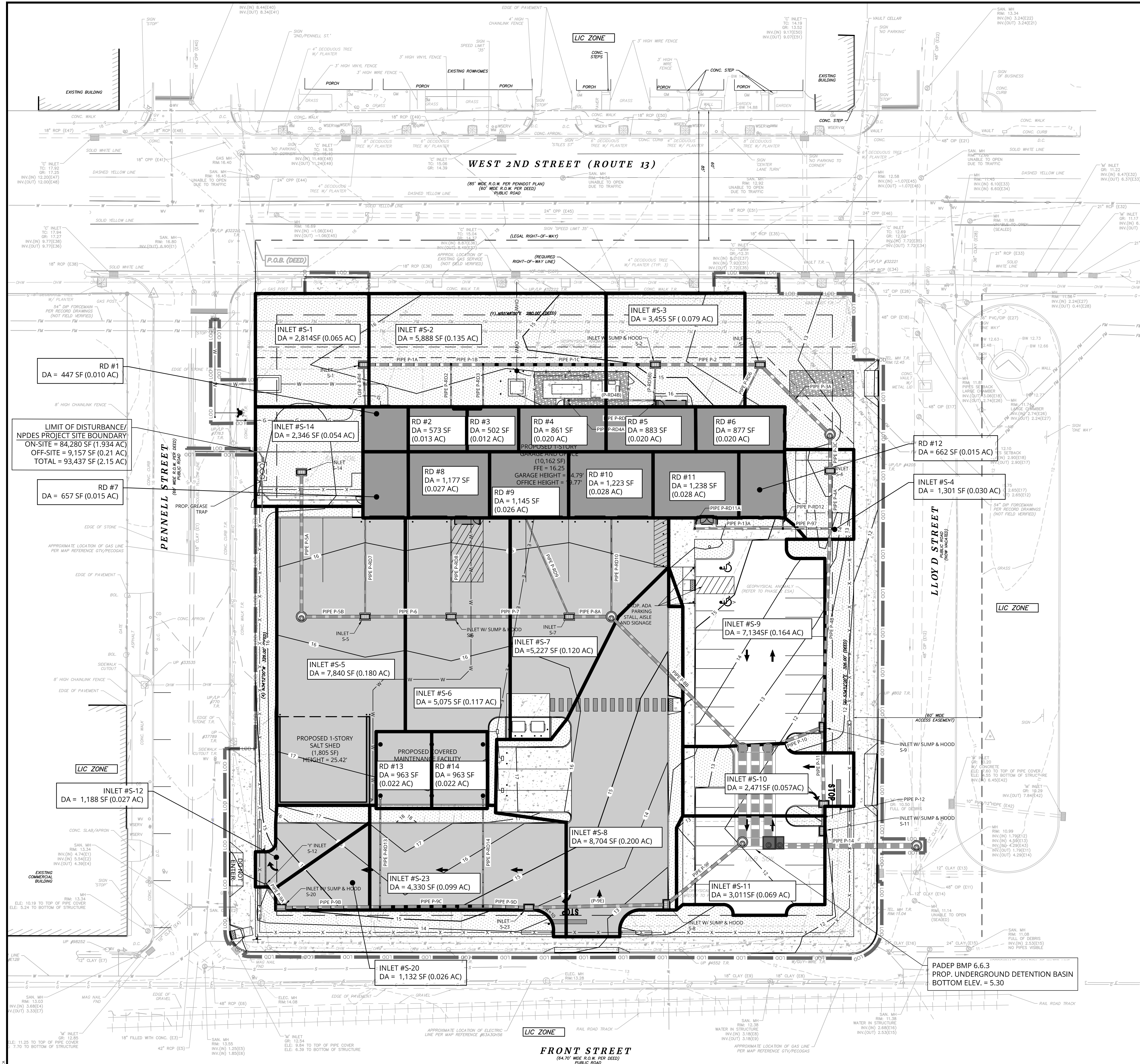
DRAINAGE MAP LEGEND

<u>SYMBOL</u>	<u>DESCRIPTION</u>
	DRAINAGE AREA TO BASIN
	BYPASS AREA BOUNDARY
	NPDES PERMIT BOUNDARY
	TEST BORING
	TEST PIT



LEGEND

EXISTING	PROPOSED	EXISTING	PROPOSED



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REV	DATE	DRAWN BY	DESCRIPTION
1	4/22/2025	LPD	REVISED SITE LAYOUT
2	5/20/2025	LPD	COVERED FOR BIDD

SEAL

GABRIELLE BUCHTER

REGISTERED PROFESSIONAL ENGINEER

PENNSYLVANIA LICENSE NUMBER: PE096502

COLLIERS ENGINEERING & DESIGN, INC.

PRELIMINARY/FINAL LAND DEVELOPMENT PLAN

FOR

CITY OF CHESTER

PROJECT TYPE:

PUBLIC WORKS FACILITIES

LOCATION:

2ND ST. & PENNELL ST.

CITY OF CHESTER, PA 19013

Colliers

Engineering & Design

PHILADELPHIA

2 Penn Center, Suite 700

1500 J.K. Boulevard

Philadelphia, PA 19102

Phone: 215.861.9021

COLLIERS ENGINEERING & DESIGN, INC. DOES NOT PROVIDE A MAJOR CONSULTANT

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/11/2024	LPD	GEH

PROJECT NUMBER:	DRAWING NAME:
COC00094	C-DRNG

SHEET TITLE:

INLET DRAINAGE MAP

SHEET NUMBER:

14.0

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

1. FOR THE PURPOSES OF THIS PLAN, "BMP" REFERS TO A PROPOSED PCSM BEST MANAGEMENT PRACTICE.
2. DO NOT STOCKPILE EQUIPMENT, SOIL, OR MACHINERY WITHIN THE AREA OF A DETENTION BMP.
3. DO NOT COMPACT DETENTION BMP SOIL BEDS DURING CONSTRUCTION. PROHIBIT ALL HEAVY EQUIPMENT FROM THE FLOOR AREA AND MINIMIZE ALL OTHER TRAFFIC, WHERE POSSIBLE. PERFORM WORK FROM THE PERIPHERY OF THE BMP TO AVOID EXCESSIVE COMPACTION WITHIN THE LEVELS, EARTH AREAS OF THE BMP.
4. A COMPLETE AND SITE SPECIFIC CONSTRUCTION SEQUENCE INCLUDING THE CONSTRUCTION OF ALL BMPs CAN BE FOUND ON THE EROSION AND SEDIMENT POLLUTION CONTROL PLAN.
5. THE PERMITTEE MUST PROVIDE ENGINEERING CONSTRUCTION OVERSIGHT FOR THE PROPOSED STORMWATER BMPs.
6. BEFORE INITIATING ANY REVISIONS TO THE APPROVED PCSM PLANS OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED PCSM PLAN, THE CONTRACTOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE BERKS COUNTY CONSERVATION DISTRICT AND/OR PADEP.
7. ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS (AT 23 PA. CODE 3601 ET SEQ. 271.1, AND 3871 ET SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, OR OTHERWISE MANAGED IN VIOLATION OF THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS).
8. IN THE EVENT OF SINKHOLE DISCOVERY A PROFESSIONAL GEOLOGIST OR ENGINEER MUST BE CONTACTED CONCERNING INVESTIGATION. ADDITIONALLY, THE BERKS COUNTY CONSERVATION DISTRICT MUST BE MADE AWARE OF THE SINKHOLE DISCOVERY IMMEDIATELY.
9. THE CONTRACTOR SHALL ASSURE THAT THE APPROVED POST-CONSTRUCTION STORMWATER MANAGEMENT PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED.
10. PCSM PLAN HAS BEEN DESIGNED TO MINIMIZE IMPERVIOUS AREAS.
11. PCSM PLAN HAS BEEN DESIGNED TO MAXIMIZE THE PROTECTION OF EXISTING DRAINAGE FEATURES AND EXISTING VEGETATION.
12. PCSM PLAN HAS BEEN DESIGNED TO MINIMIZE LAND CLEARING AND GRADING.
13. PCSM PLAN UTILIZES STRUCTURAL AND NON-STRUCTURAL BMPs THAT PREVENT OR MINIMIZE CHANGES IN STORMWATER RUNOFF.

PCSM REPORTING AND RECORDKEEPING. THE PCSM PLAN, INSPECTION REPORTS AND MONITORING RECORDS MUST BE AVAILABLE FOR REVIEW AND INSPECTION BY PADEP OR THE CONSERVATION DISTRICT.

THE STORMWATER BMPs WILL BE OWNED, OPERATED, AND MAINTAINED BY:

LICENSED PROFESSIONAL OVERSIGHT OF CRITICAL STAGES. A LICENSED PROFESSIONAL OR A DESIGNEE MUST BE PRESENT ONSITE AND BE RESPONSIBLE DURING CRITICAL STAGES OF IMPLEMENTATION OF THE APPROVED PCSM PLAN. FOR THE PURPOSES OF THIS PCSM PLAN, THE CRITICAL STAGES ARE CONSIDERED TO BE:

1. (NAME) DO HEREBY CERTIFY PURSUANT TO THE PENALTIES OF 18 P.C.S.A. CHAPTER 4904 TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THAT THE ACCOMPANYING RECORD DRAWINGS ACCURATELY REFLECT THE AS-BUILT CONDITIONS, ARE TRUE AND CORRECT, AND ARE IN CONFORMANCE WITH CHAPTER 102 OF THE RULES AND REGULATIONS OF PADEP OF ENVIRONMENTAL PROTECTION AND THAT THE PROJECT SITE WAS CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PCSM PLAN, ALL APPROVED PLAN CHANGES AND ACCEPTED CONSTRUCTION PRACTICES."

(2) THE PERMITTEE MUST PROVIDE A COPY OF THE RECORD DRAWINGS AS A PART OF THE APPROVED PCSM PLAN TO THE PERSONS OR ENTITIES IDENTIFIED IN THIS SECTION AS BEING RESPONSIBLE FOR THE LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMPS.

THE PERMITTEE OR CO-PERMITTEE IS RESPONSIBLE FOR LONG-TERM OPERATION AND MAINTENANCE OF PCSM BMPS UNLESS A DIFFERENT PERSON OR ENTITY IS IDENTIFIED IN THE NOTICE OF TERMINATION AND HAS AGREED TO LONG-TERM OPERATION AND MAINTENANCE OF PCSM BMPS.

THE PERSON RESPONSIBLE FOR PERFORMING LONG-TERM OPERATION AND MAINTENANCE MAY ENTER INTO AN AGREEMENT WITH ANOTHER PERSON INCLUDING A CONSERVATION DISTRICT, NONPROFIT ORGANIZATION, MUNICIPALITY, AUTHORITY, PRIVATE CORPORATION OR OTHER PERSON, TO TRANSFER THE RESPONSIBILITY FOR PCSM BMPs OR TO PERFORM LONG-TERM OPERATION AND MAINTENANCE AND PROVIDE NOTICE THEREOF TO THE DEPARTMENT.

OWNERSHIP OF THE PERMANENT BMPs INDICATED ON THE PCSM PLANS RESIDES WITHIN THE PROPERTY BOUNDARY FOR TAX PARCEL NO. 49-07-00042-00. THE OPERATIONS AND MAINTENANCE OF THESE BMPs WILL BECOME THE RESPONSIBILITY OF THE PROPERTY OWNER OR THEIR DESIGNEE. THIS OPERATION AND MAINTENANCE PLAN IS BASED ON CHAPTER 6 OF THE PENNSYLVANIA STORMWATER BEST MANAGEMENT PRACTICES MANUAL AND SECTIONS 7 AND 8 OF THE PENNSYLVANIA HANDBOOK OF BEST MANAGEMENT PRACTICES FOR DEVELOPING AREAS.

LIMIT VEHICULAR OPERATION OVER THE BMPs TO AVOID COMPACTION OF THE SOILS OR AGGREGATE MATERIAL. TAKE CARE TO AVOID EXCESSIVE COMPACTION WHEN ACCESS IS REQUIRED. WHEN PERFORMING MAINTENANCE ACTIVITIES IN BMPs, OPERATE EQUIPMENT WITHOUT ENTERING THE FLOOR AREA, OR USE LIGHTWEIGHT, LOW GROUND PRESSURE, TRACK MOUNTED EQUIPMENT.

IF DURING OPERATION, A SIGN OF FAILURE IS NOTED DURING INSPECTION, CORRECTIVE ACTION MUST BE COMPLETED BASED ON THE TYPE OF PROBLEM OBSERVED. SEE EACH BMP SECTION FOR CORRESPONDING CORRECTIVE ACTION DETAILS.

SEDIMENT MAY ACCUMULATE OVER TIME WITHIN BMPs AND STORM SEWER INLETS. THE DISTURBED AREAS OF THE BMPs MUST BE STABILIZED IMMEDIATELY. SEDIMENT ACCUMULATION IN STORM SEWER INLETS AND MANHOLES MUST BE REMOVED AND PROPERLY DISPOSED OF IN ACCORDANCE WITH PADEP REGULATIONS. SEDIMENT REMOVED FROM BMPs SHALL BE DISPOSED OF IN LANDSCAPE AREAS OUTSIDE OF STEEP SLOPES, WETLANDS, FLOODPLAINS OR DRAINAGE SWALES. THE SEDIMENT DISPOSAL AREA MUST BE STABILIZED IMMEDIATELY. ANY POTENTIALLY HAZARDOUS ACCUMULATIONS REMOVED FROM SUCH STRUCTURES MUST BE PROPERLY DISPOSED OF IN ACCORDANCE WITH PADEP REGULATIONS.

VEGETATIVE COVER MUST BE MOWED AT LEAST TWICE ANNUALLY, ALLOWING THE DEVELOPMENT OF THICK STANDS OF TALL GRASS AND OTHER PLANT VEGETATION

IN THE EVENT OF A SPILL, IMMEDIATELY INSPECT THE DOWNGRADIENT BMP(S) FOR CONTAMINATION, REMOVE AND PROPERLY DISPOSE OF SPILLED SUBSTANCES AND CONTAMINATED SOIL/MATERIALS. RESTORE THE AFFECTED BMP(S).

10. INSTALL THE DOUGHSTONE STORM MANHOLE LOCATED IN LLOYD ST. THE BASIN OUTFALL CONVEYANCE PIPE AND THE BASIN OUTLET STRUCTURE.
11. INSTALL GEOTEKSTILE, PVC LINER, MANHOLES AND PIPES ASSOCIATED WITH UNDERGROUND BASIN 1 AND DIRECT RUNOFF INTO THE PROPOSED STORM CONVEYANCE SYSTEM. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY. ALL OPEN TRENCHES MUST BE PROTECTED. WATER, WHICH ACCUMULATES IN THE OPEN TRENCH, WILL BE COMPLETELY REMOVED BY FILTER BAG PUMPING, BEFORE PIPE PLACEMENT AND/OR BACKFILLING BEGINS.
- * "ROUGH GRADE THE BUILDING PADS AND BEGIN INSTALLATION OF THE BUILDING FOUNDATIONS, UTILITIES AND BASE AGGREGATE FOR THE DRIVEWAYS, AND PARKING LOTS AS EARTHWORK ALLOWS, UTILIZING THE 2" OF EXCAVATED MATERIAL FROM THE LANDSCAPE AREAS. IMMEDIATELY STABILIZE STEEP SLOPES WITH EROSION CONTROL MATTING. DO NOT PLACE EROSION CONTROL MATTING ON OR UNDER COMPOST FILTER SOCKS. ADJUST COMPOST FILTER SOCKS AS NEEDED TO FIT PROPOSED IMPROVEMENTS. AS CONSTRUCTION REQUIRES, ADJUST AND COMPOST FILTER SOCKS.
12. INSTALL THE PROPOSED STORM CONVEYANCE SYSTEM, WORKING UPSLOPE. ADJUST CONSTRUCTION ENTRANCE AS NEEDED. INSTALL INLET PROTECTION ON ANY PROPOSED INLETS AS SHOWN ON THE PLANS. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY. ALL OPEN TRENCHES MUST BE PROTECTED. WATER, WHICH ACCUMULATES IN THE OPEN TRENCH, WILL BE COMPLETELY REMOVED BY FILTER BAG PUMPING, BEFORE PIPE PLACEMENT AND/OR BACKFILLING BEGINS.
13. CONTINUE CONSTRUCTION OF THE BUILDINGS, INCLUDING THE INSTALLATION OF UTILITY SERVICE CONNECTIONS FOR ELECTRIC TO THE CONNECTION POINT IN 2ND STREET, AS SHOWN ON THE PLANS. INSTALL CONNECTIONS FOR WATER, SANITARY AND GAS. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE OR CONDUIT PLACEMENT AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY. ALL OPEN TRENCHES MUST BE PROTECTED. WATER, WHICH ACCUMULATES IN THE OPEN TRENCH, WILL BE COMPLETELY REMOVED BY FILTER BAG PUMPING, BEFORE PIPE OR CONDUIT PLACEMENT AND/OR BACKFILLING BEGINS.
14. INSTALL SANITARY LINE TO OIL SEPARATOR FROM THE PROPOSED BUILDING CONNECTION TO THE CONNECTION IN PENNELL STREET. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY. ALL OPEN TRENCHES MUST BE PROTECTED. WATER, WHICH ACCUMULATES IN THE OPEN TRENCH, WILL BE COMPLETELY REMOVED BY FILTER BAG PUMPING, BEFORE PIPE PLACEMENT AND/OR BACKFILLING BEGINS. IMMEDIATELY STABILIZE AREAS AFTER GRADING COMPLETION.
15. INSTALL THE PROPOSED ROOF DRAIN SYSTEM WORKING FROM MANHOLE 5-18 AND 5-21 UPSLOPE TO THE PROPOSED BUILDING ROOF DRAIN CLEANOUT. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY. ALL OPEN TRENCHES MUST BE PROTECTED. WATER, WHICH ACCUMULATES IN THE OPEN TRENCH, WILL BE COMPLETELY REMOVED BY FILTER BAG PUMPING, BEFORE PIPE PLACEMENT AND/OR BACKFILLING BEGINS.
16. CONTINUE INSTALLATION OF THE PAVEMENT BASE COURSE FOR THE DRIVEWAYS, AND PARKING LOTS IN ACCORDANCE WITH THE PLAN DETAILS, DIRECTING STORMWATER TO THE PROPOSED INLETS.
17. INSTALL CURBING. ADJUST COMPOST FILTER SOCKS AS NEEDED TO FIT PROPOSED IMPROVEMENTS.
18. FINALIZE GRADING IN ALL LAWN AREAS BY PLACING GEOTEKSTILE, 18" OF IMPORTED CLEAN FILL, AND 6" OF TOPSOIL. WITHIN ALL PROPOSED LANDSCAPE AREAS. IMMEDIATELY STABILIZE AREAS AFTER GRADING COMPLETION. GRADING AREAS SHOULD BE SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3" TO 5" PRIOR TO TOPSOIL PLACEMENT TO PERMIT BONDING. PREPARE AND SEED LANDSCAPE RESTORATION AREAS.
19. INSTALL PROPOSED SIDEWALKS, CURBS, AND ADA RAMPS.
20. INSTALL PROPOSED STREET SIGNS, LIGHT POLES/FIXTURES, AND PROPOSED TREES.
21. COMPLETE PAVING IN ACCORDANCE WITH THE PLAN DETAILS. ONCE PAVING IS COMPLETED, ADJUST PAVEMENT MARKINGS.
- * ONCE THE ABOVE IMPROVEMENTS ARE COMPLETED AND THE SITE IS STABILIZED, CONTACT THE DELAWARE COUNTY CONSERVATION DISTRICT FOR FINAL INSPECTION PRIOR TO CONVERSION OR REMOVAL OF TEMPORARY E&S CONTROLS. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENTATION CONTROLS MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENTATION CONTROLS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORKING; INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, RE-GRASSING, RESEEDING, RE-MULCHING, AND RE-NETTING, MUST BE PERFORMED IMMEDIATELY. CONTACT THE DCCD PRIOR TO REMOVING TEMPORARY E&S BMPs.
22. UPON ACHIEVING A MINIMUM UPON 70% PERENNIAL VEGETATIVE COVER OVER THE ENTIRE VEGETATED TRIBUTARY AREA, ALL THE REMAINING TEMPORARY E&S CONTROLS SHOULD BE REMOVED, INCLUDING COMPOST FILTER SOCKS, ROCK FORMATION ENTRANCES, AND INLET PROTECTION. ALL AREAS DISTURBED DURING THE REMOVAL PROCESS SHOULD BE IMMEDIATELY STABILIZED WITH PERMANENT SEEDING, AS INDICATED ON THE PLANS.
- * THE PERMITTEE SHALL SUBMIT A NOTICE OF TERMINATION TO THE DCCD ONCE SITE WORK IS COMPLETED.
- * CRITICAL STAGES OF CONSTRUCTION NOTED ABOVE MUST BE COMPLETED BY A LICENSED ENGINEER IN THE STATE OF PA IS PRESENT ON SITE.

THE CONTRACTOR SHALL REMOVE FROM THE SITE, RECYCLE, OR DISPOSE OF ALL BUILDING MATERIALS AND WASTES IN ACCORDANCE WITH PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA CODE 260.1 ET SEQ., 271.1 ET SEQ., AND 287.1 ET SEQ. THE CONTRACTOR SHALL NOT LEGALLY BURY, DUMP OR DISCHARGE ANY BUILDING MATERIAL OR WASTES AT THE SITE.

EXPOSED DURING CONSTRUCTION AND FOR THE REUSE AND/OR OFF-SITE DISPOSAL OF GENERATED MATERIALS

I. ANY EXCAVATED SOIL WHICH IS CONFIRMED TO BE CONTAMINATED AT CONCENTRATIONS WHICH EXCEED THE PADEP CLEAN FILL STANDARDS FOR RESIDENCES SHOULD BE DISPOSED OFF-SITE AT A PERMITTED FACILITY. DISPOSAL MANIFESTS SHOULD BE MAINTAINED. EXCAVATED SOILS SHOULD BE PLACED IN CONTAINERS TO BE TRANSPORTED TO AN OFF-SITE DISPOSAL FACILITY.

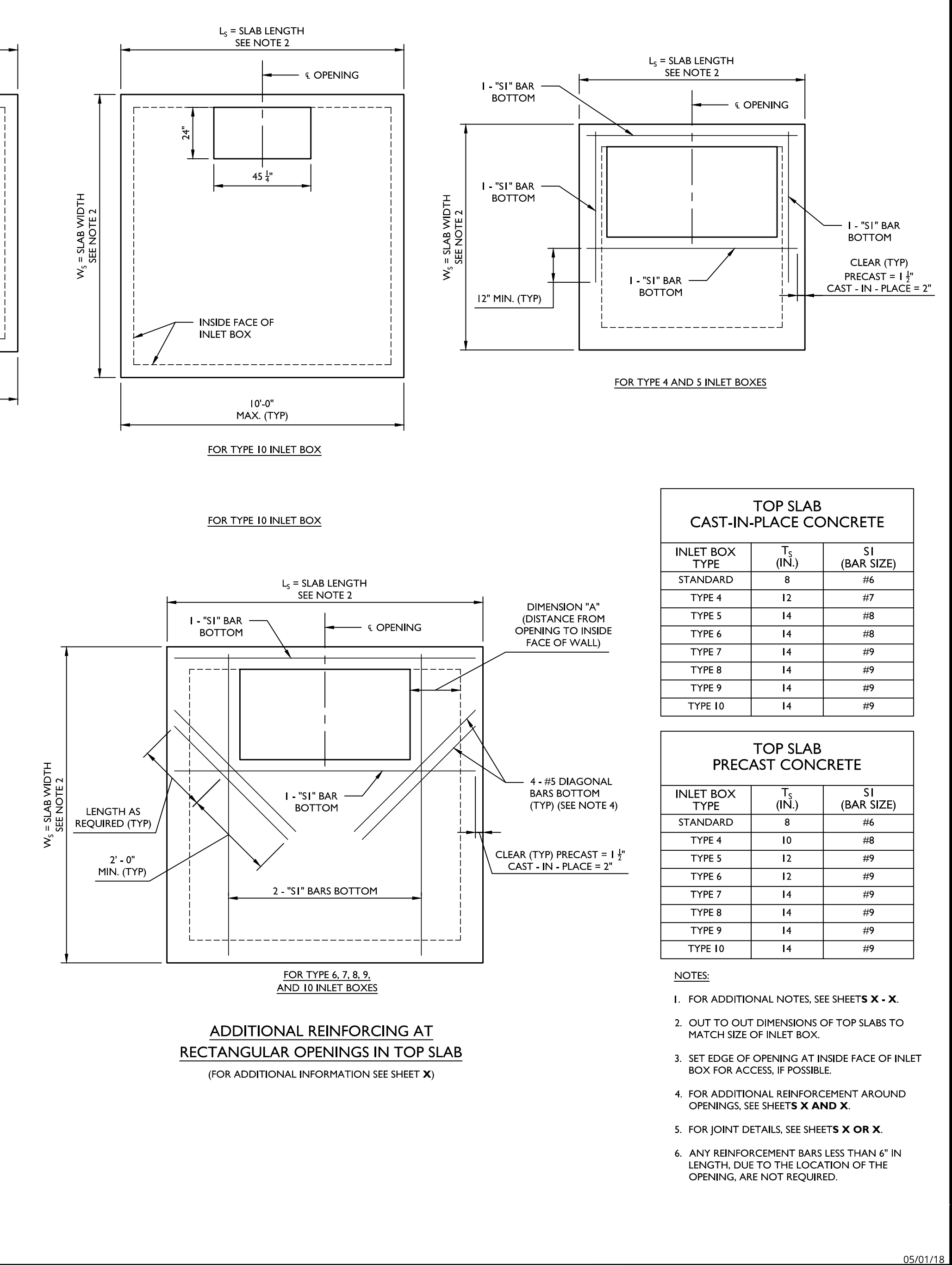
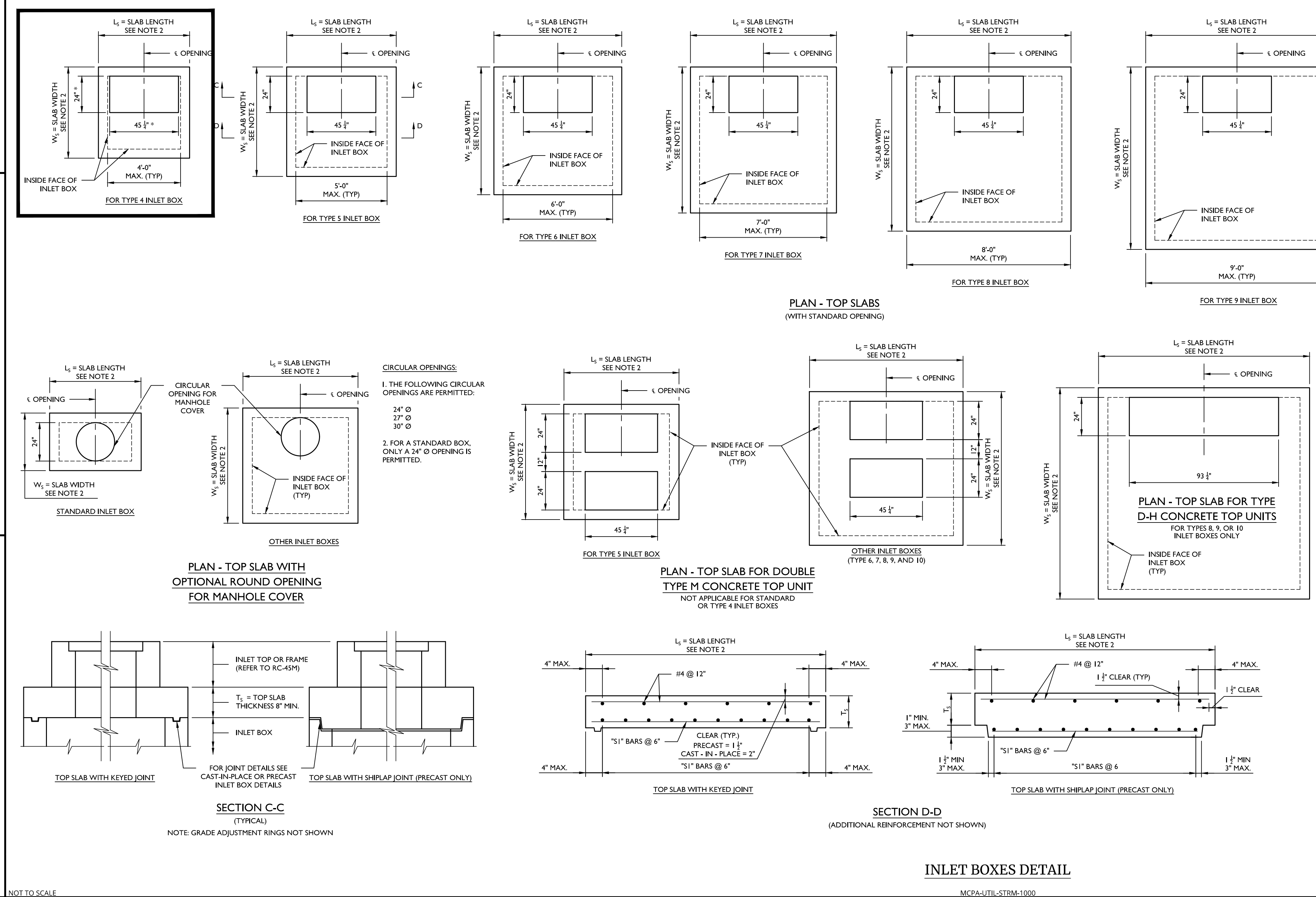
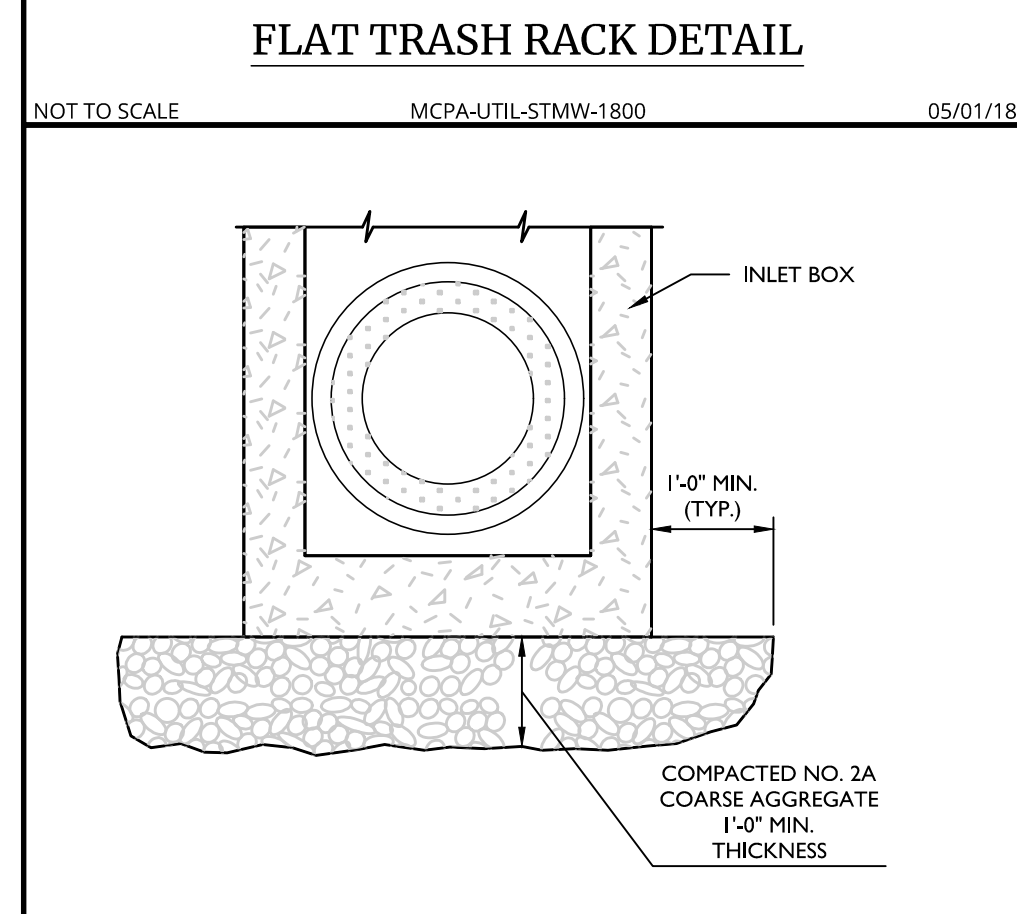
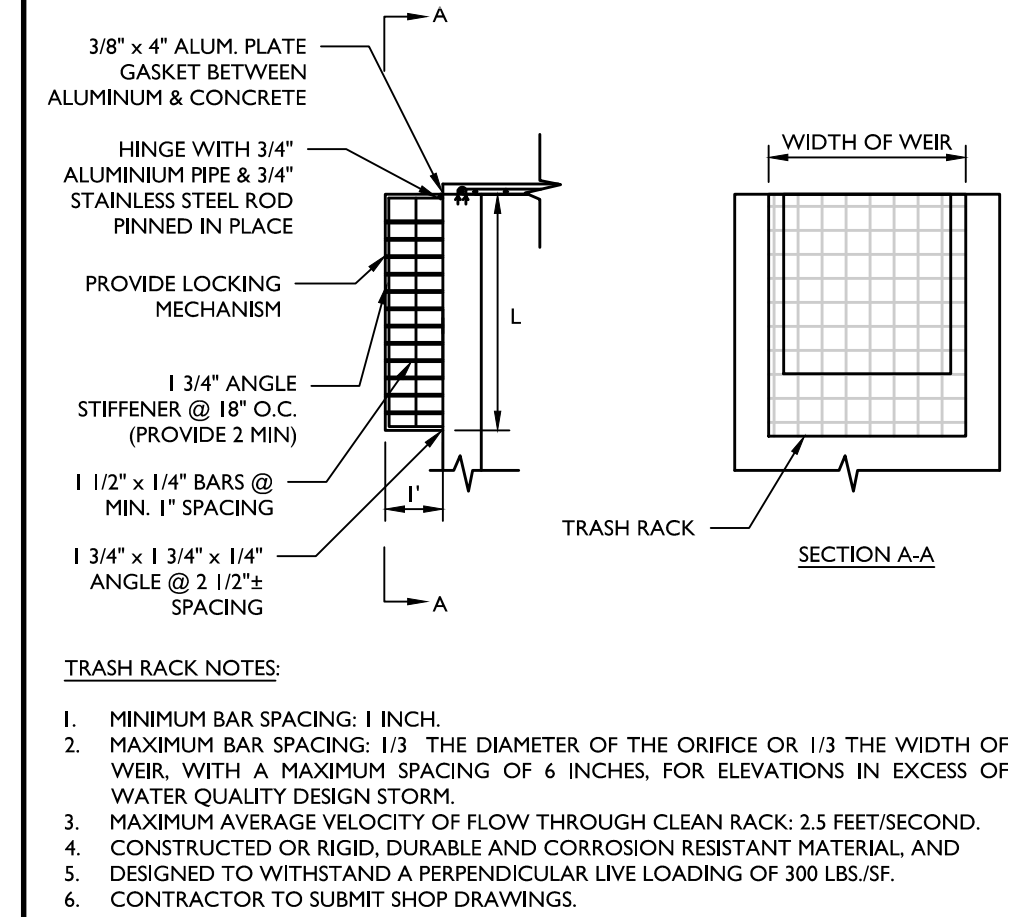
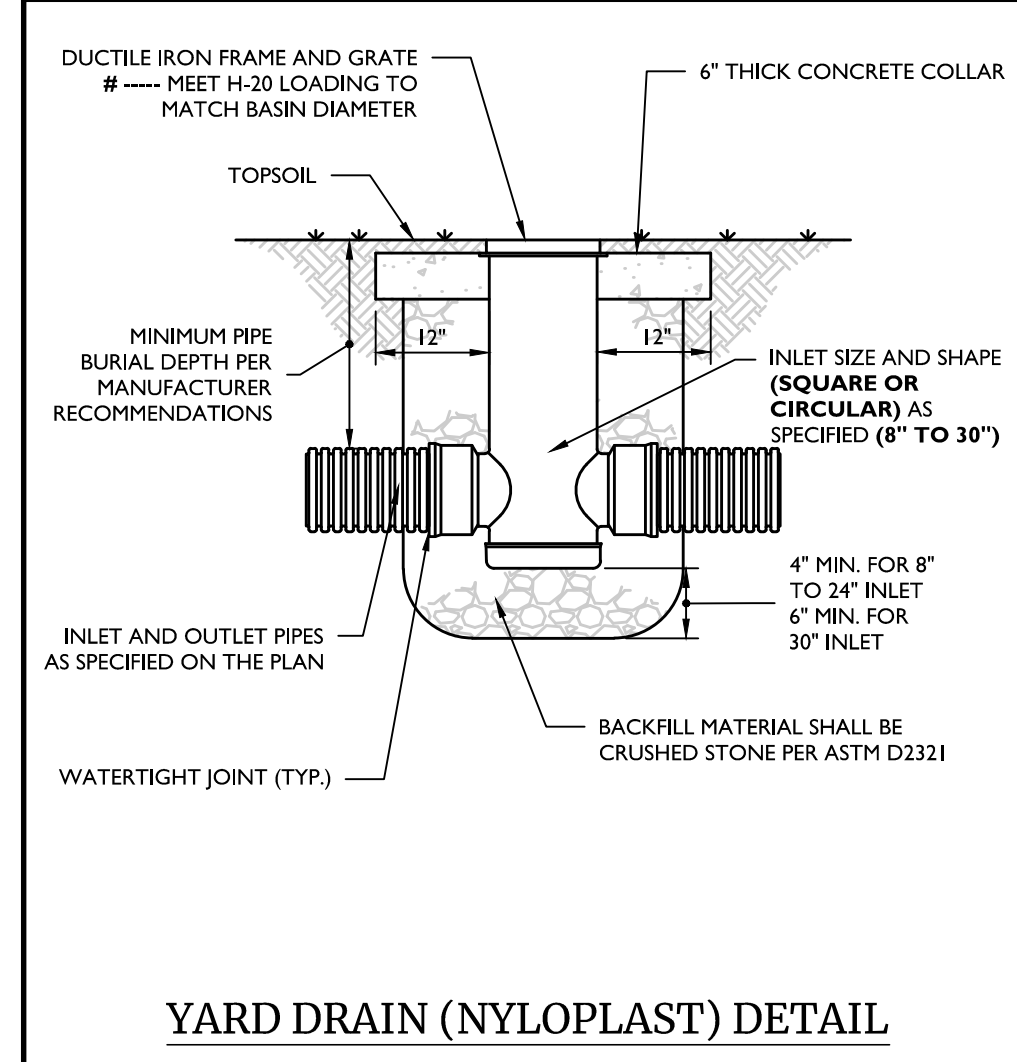
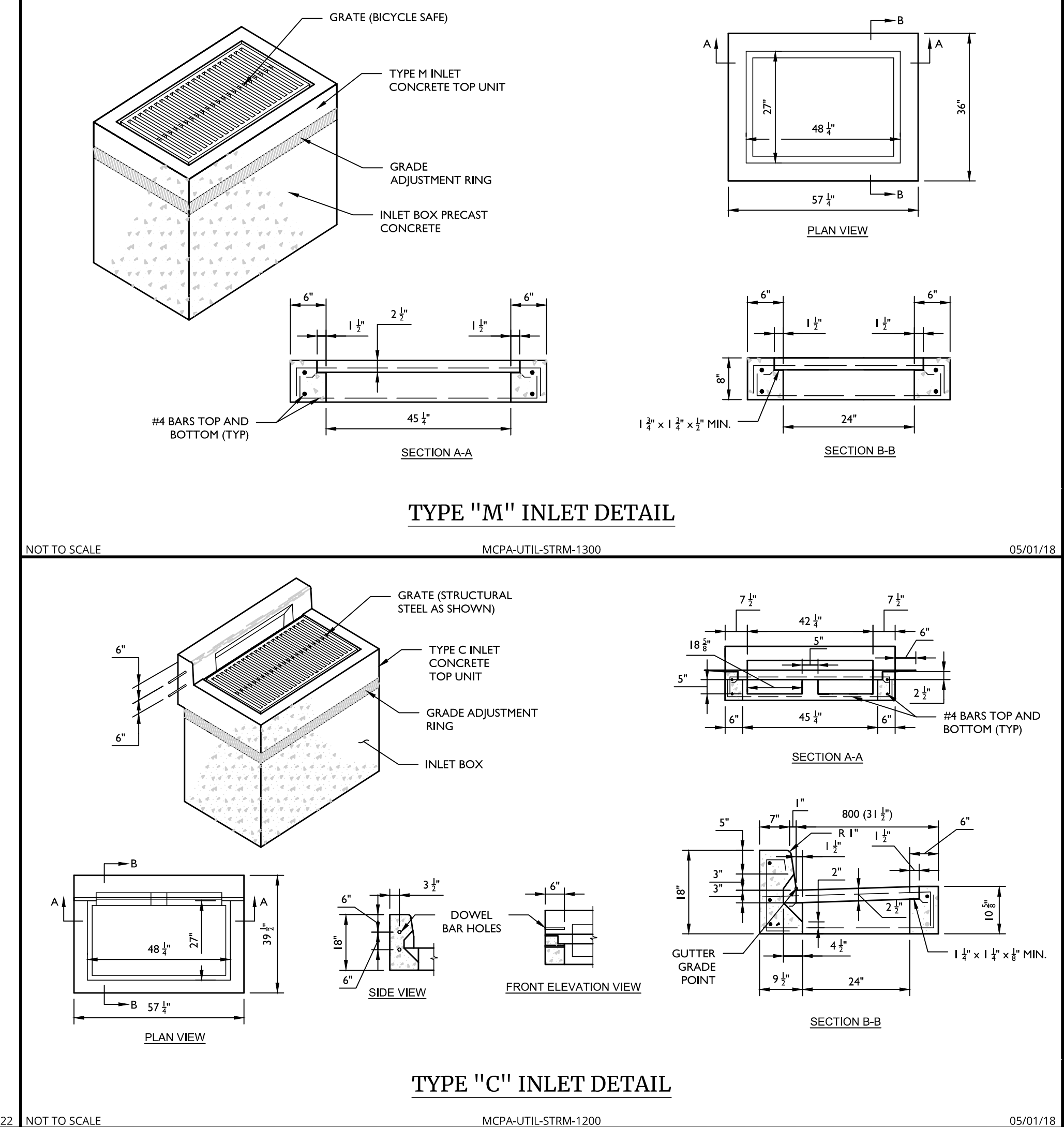
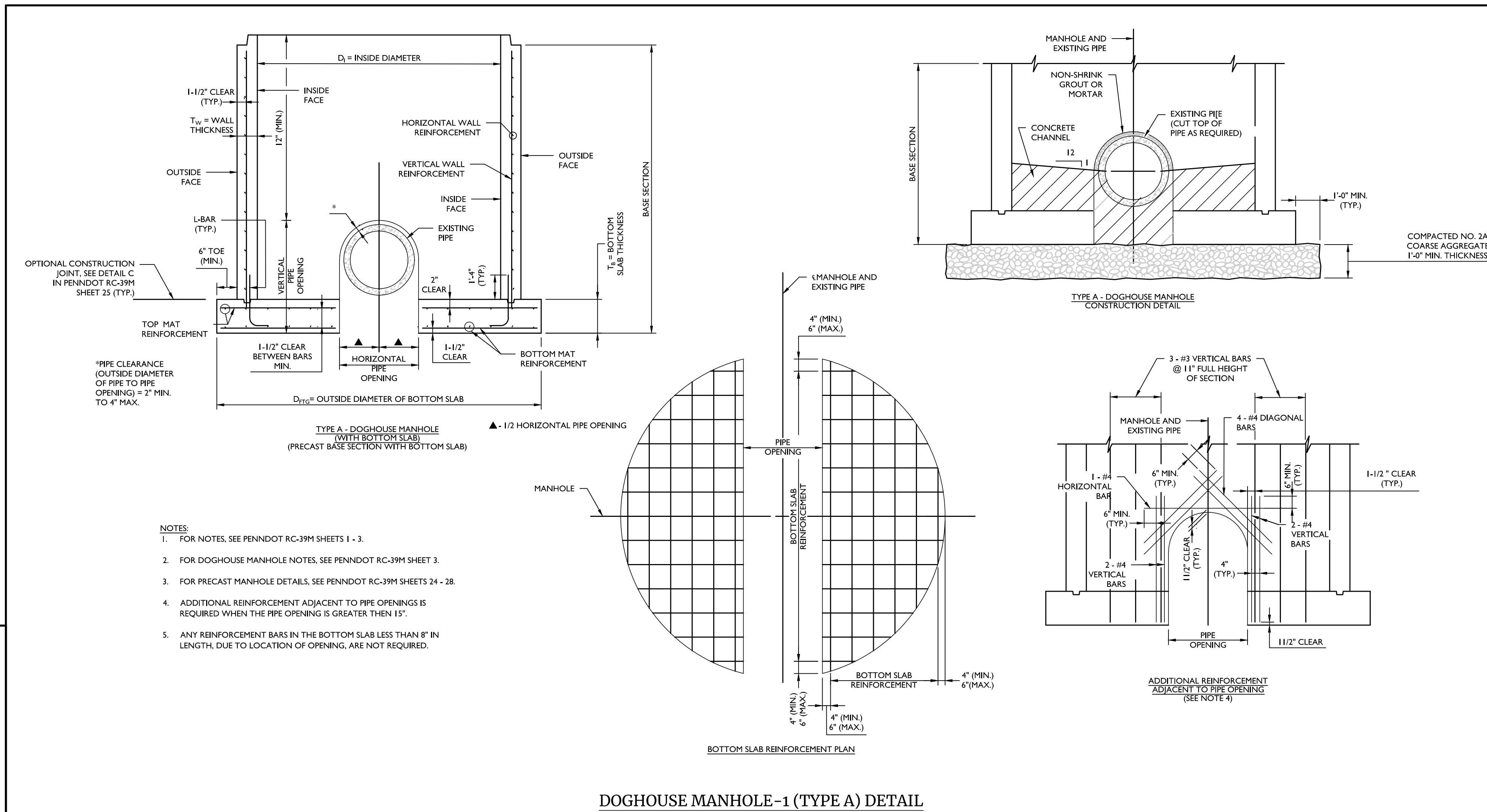
ENVIRONMENTAL DUE DILIGENCE AND DETERMINATION OF CLEAN FILL WILL REST WITH THE CONTRACTOR.

- DETERMINE IF IT QUALIFIES AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE CITY OF FARGO STANDARD SPECIFICATIONS FOR "MANAGEMENT OF FILL".
4. FILL MATERIAL: THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH THE DEPARTMENT'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 35 PA. DNR 10.01 AND 10.02 AND MINNESOTA'S SOLID WASTE MANAGEMENT, WHICH ARE APPLICABLE. THESE REGULATIONS ARE AVAILABLE ON-LINE AT WWW.PACODE.COM.
- STORMSEWER TRENCH EXCAVATION NOTES**
1. LIMIT ADVANCED CLEANING AND GRUBBING OPERATIONS TO A DISTANCE EQUAL, TO TWO TIMES THE LENGTH OF PIPE INSTALLATION, THAT CAN BE COMPLETED IN ONE DAY.
 2. WORK CREWS AND EQUIPMENT FOR TRENCHING, PLACEMENT OF PIPE, PLUG CONSTRUCTION AND BACKFILLING WILL BE SEPT CONTAINED AND SEPARATE FROM CLEANING AND GRUBBING AND SITE RESTORATION AND STABILIZATION OPERATIONS.
 3. ALL SOIL EXCAVATED FROM THE TRENCH WILL BE PLACED ON THE UPHILL SIDE OF THE TRENCH.
 4. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT, PLUG INSTALLATION AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY.
 5. WATER REMOVAL ACCUMULATED IN THE OPEN TRENCH WILL BE COMPLETELY REMOVED BY PUMPING BEFORE PIPE PLACEMENT AND /OR BACKFILLING BEGINS. WATER REMOVED FROM THE TRENCH SHALL BE PUMPED THROUGH A FILL TRENCH DEVICE.
 6. ON THE DAY OF COVERING PIPE PLACEMENT AND TRENCH BACKFILLING, THE DISTURBED AREA WILL BE GRADED TO FINAL CONTOURS AND IMMEDIATELY STABILIZED.

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

PLACE TOPSOIL ON THE PREPARED AREAS AND, UNLESS OTHERWISE INDICATED, SPREAD AND COMPACT TO A 4-INCH UNIFORM DEPTH $\pm 1/2$ INCHES. COMPACT WITH A ROLLER WEIGHING NOT OVER 120 POUNDS PER FOOT WIDTH OF ROLLER OR BY OTHER ACCEPTABLE METHODS, AS DIRECTED. REMOVE OVERDEPTH TOPSOIL, UNLESS OTHERWISE AGREED UPON IN WRITING. DO NOT PLACE TOPSOIL IN A WET OR FROZEN CONDITION.

POST-CONSTRUCTION STORMWATER MANAGEMENT BMPs HAVE BEEN SELECTED IN ORDER TO MINIMIZE THERMAL IMPACTS TO SURFACE WATERS TO THE GREATEST EXTENT PRACTICAL. RUNOFF WILL BE CAPTURED AND DIRECTED TO SUBSURFACE PIPING, RUNOFF FROM PAVED AREAS OF THE PROJECT DISCHARGE THROUGH VEGETATED SWALES OR BURIED PIPE, THEREBY PROVIDING A RUNOFF OPPORTUNITY FOR COOLING OF THE SURFACE WATERS. THE MAJORITY OF THE SITE RUNOFF WILL DISCHARGE INTO A DETENTION BASIN AND DETENTION BASIN. ADDITIONALLY, THE USE OF SPRAY IRRIGATION PROMOTES INFILTRATION AND REDUCTIONS IN THERMAL IMPACTS. AS SUCH, THE PROJECT WILL NOT HAVE AN ADVERSE IMPACT ON THE NATURAL TEMPERATURES OF THE RECEIVING SURFACE WATERS.



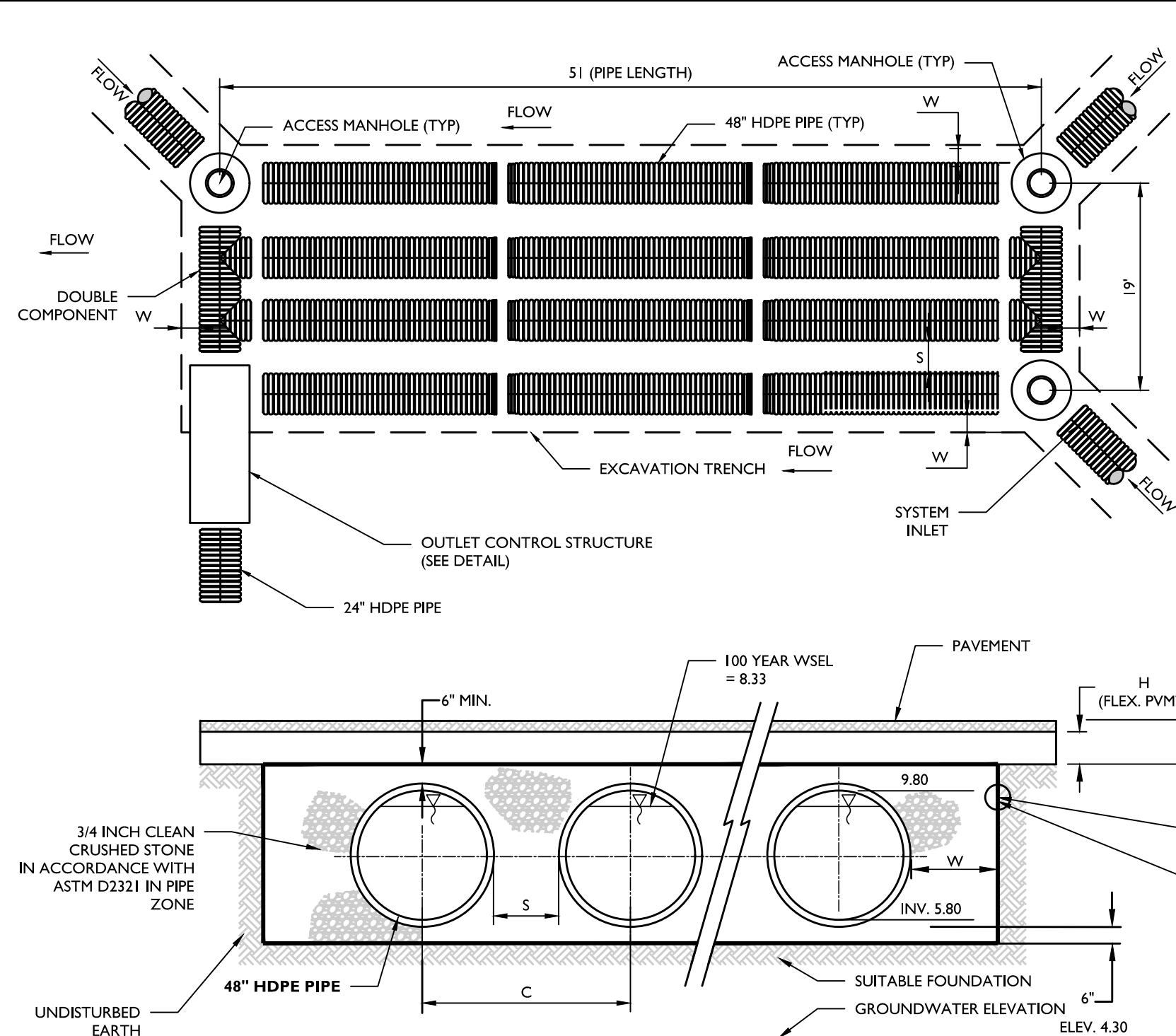
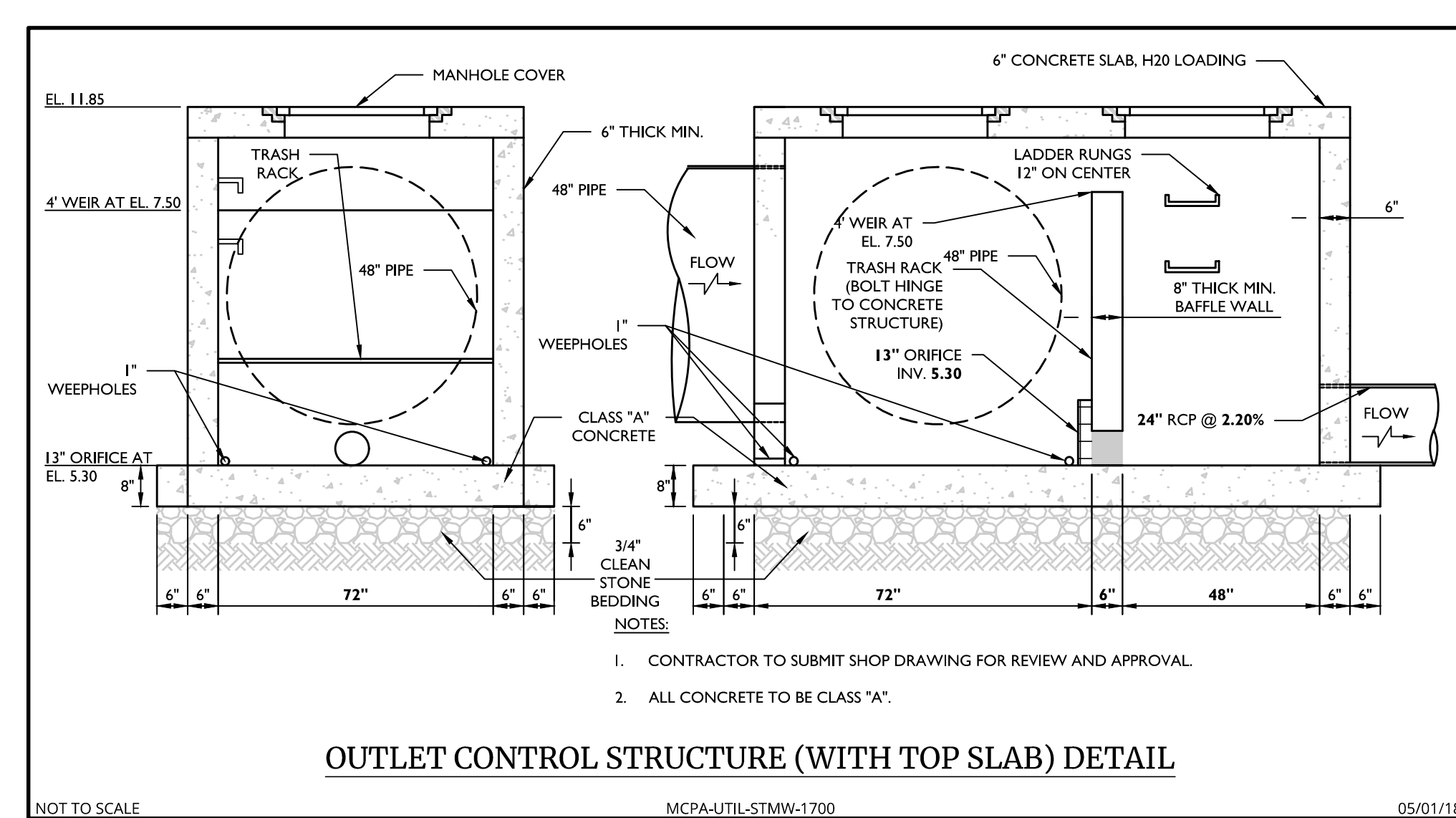
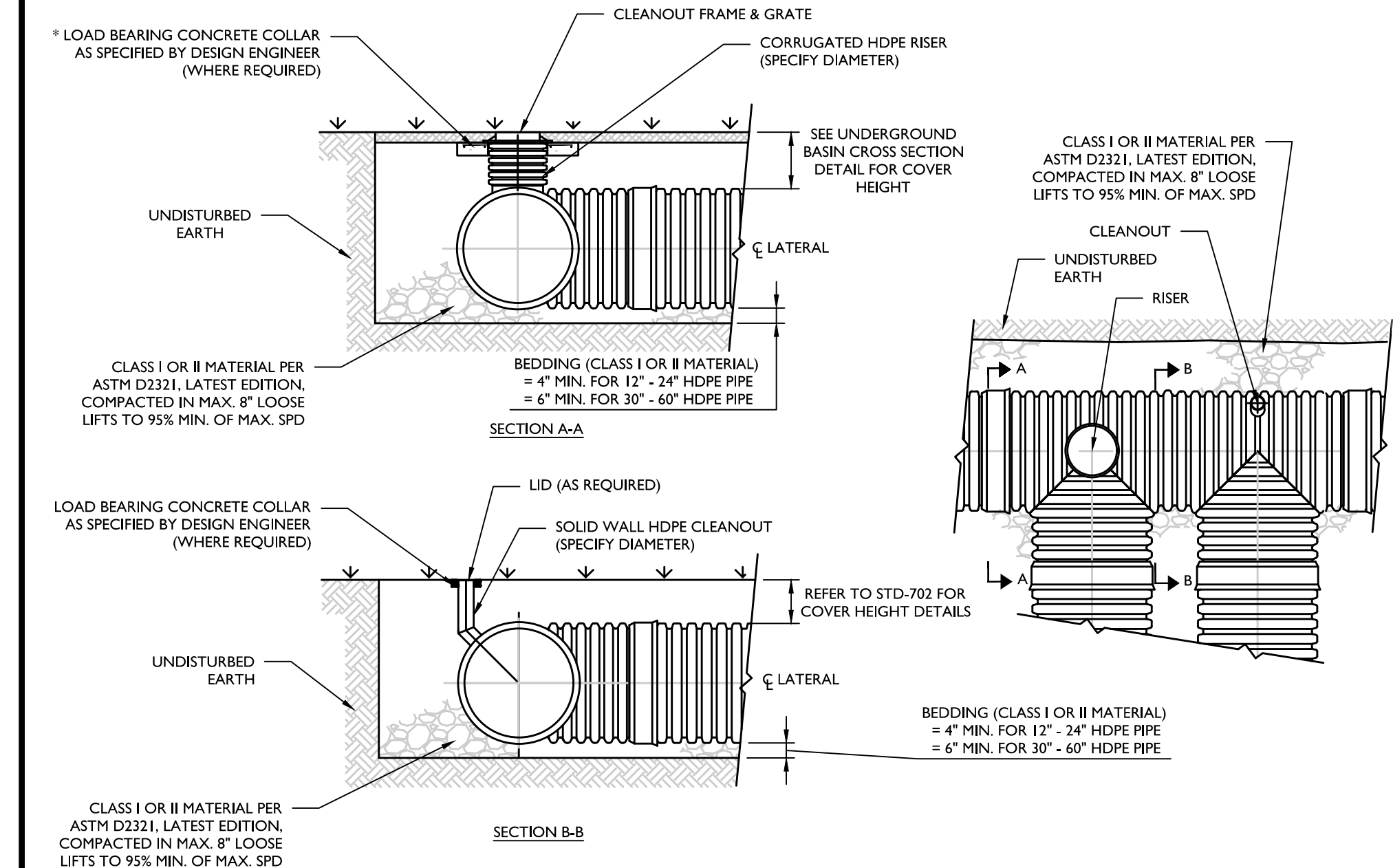
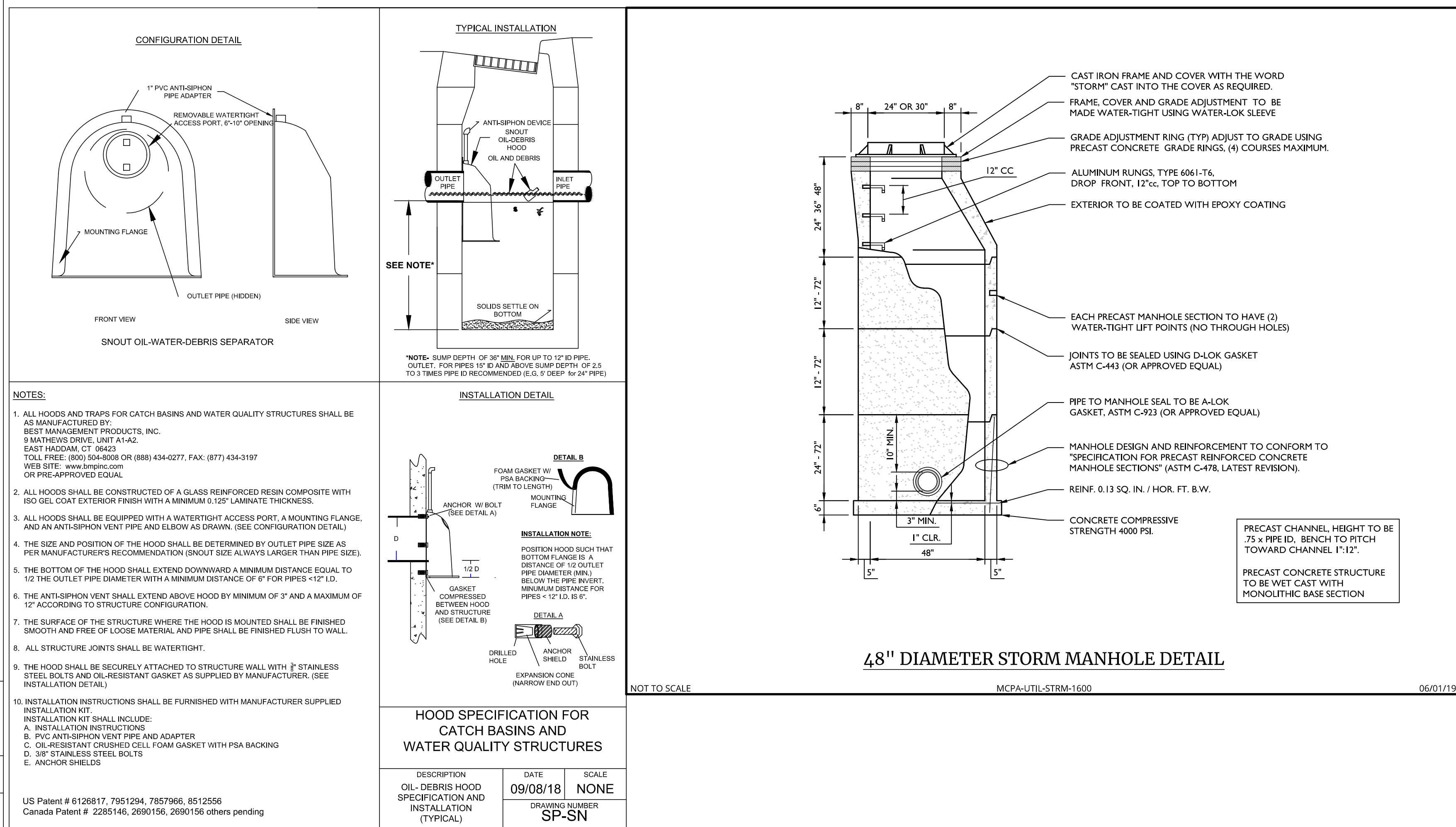
US PATENT #6126817 ADDITIONAL PATENTS PENDING

BMP, INC.

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

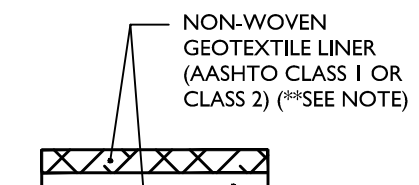
DESCRIPTION	DATE	SCALE
18F SNOT OIL & DEBRIS STOP	09/14/99	NONE
DRAWING NUMBER		18F

<p align="center">BMP, INC.</p> <p>53 MT. ARCHER ROAD, LYME, CT. 06371 (800) 504-8008 FAX: (860) 434-3195</p>		
<p>DESCRIPTION</p> <p align="center">18R SNOOT</p> <p>OIL & DEBRIS STOP</p>	<p>DATE</p> <p align="center">09/06/99</p>	<p>SCALE</p> <p align="center">NONE</p>
<p align="center">DRAWING NUMBER</p> <p align="center">18R</p>		



NOMINAL DIAMETER	NOMINAL O.D.	TYPICAL SPACING "A"	TYPICAL SPACING "C"	TYPICAL SIDE WALL "W"	H (MIN. PIPE COVER) (TRAFFIC)
15"	18"	12"	28.9"	20"	12"
(375 mm)	(457 mm)	(914 mm)	(734 mm)	(813 mm)	(305 mm)
18"	21"	13"	33.9"	9"	12"
(450 mm)	(533 mm)	(330 mm)	(862 mm)	(229 mm)	(305 mm)
24"	28"	17"	40.7"	10"	12"
(600 mm)	(711 mm)	(430 mm)	(1034 mm)	(254 mm)	(305 mm)
30"	36"	18"	53.1"	18"	22"
(750 mm)	(914 mm)	(457 mm)	(1349 mm)	(457 mm)	(559 mm)
36"	42"	22"	63"	18"	12"
(900 mm)	(1067 mm)	(559 mm)	(1600 mm)	(457 mm)	(305 mm)
42"	48"	24"	71.9"	18"	24"
(1067 mm)	(1219 mm)	(610 mm)	(1828 mm)	(457 mm)	(610 mm)
48"	54"	25"	76.5"	18"	24"
(1200 mm)	(1372 mm)	(635 mm)	(1954 mm)	(457 mm)	(610 mm)
54"	60"	26"	81.1"	18"	24"
(1350 mm)	(1524 mm)	(660 mm)	(2060 mm)	(457 mm)	(610 mm)

- ### UNDERGROUND HOPE SYSTEM NOTES:
1. ALL REFERENCES TO CLASS I OR II MATERIAL ARE PER ASTM D3321 "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS;"
 2. ALL RETENTION AND DETENTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH BOTH D2321, LATEST EDITION AND THE MANUFACTURER'S PUBLISHED INSTALLATION GUIDELINES.
 3. HEADERS SHOULD BE TAKEN TO PREVENT THE MIGRATION OF NATIVE FINES INTO THE BACKFILL MATERIAL. WITH REQUIRED PERMITS.
 4. FILTER FABRIC, A GEOTEXTILE FABRIC MAY BE USED AS SPECIFIED BY THE ENGINEER TO PREVENT THE MIGRATION OF FINES FROM THE NATIVE SOIL INTO THE SELECT BACKFILL MATERIAL. A PVC LINER IS REQUIRED.
 5. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL PROVIDE A FOUNDATION. A DEPTH OF 12" SHALL BE REQUIRED. THE FOUNDATION SHALL BE AS SPECIFIED BY THE ENGINEER, AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
 6. BEDDING: SUTABLE MATERIAL SHALL BE CLASS I OR II. THE CONTRACTOR SHALL PROVIDE BEDDING FOR PROTECTION FOR THE PIPE. THE BEDDING SHALL BE AS SPECIFIED BY THE ENGINEER. MINIMUM BEDDING THICKNESS SHALL BE 4" FOR 24" PIPES, 6" FOR 36" PIPES.
 7. INITIAL BACKFILL: SUTABLE MATERIAL SHALL BE CLASS I OR II. THE PIPE TO BOTTOM ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE BEDDING. THE BEDDING SHALL BE AS SPECIFIED BY THE ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN D2321.
 8. MINIMUM COVER: MINIMUM COVER ABOVE ALL RETENTION/DETENTION SYSTEMS IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLATULATION, FOR ALL OTHER APPLICATIONS (ROADS, DRIVEWAYS, PARKING AREAS, ETC.) COVER SHALL BE 48" OF 48" DIAMETER PIPE MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE



- NOTES:
1. CLASS I BACKFILL REQUIRED AROUND 60" DIAMETER FITTINGS
 2. LOAD BEARING CONCRETE COLLAR SHALL BE CONSTRUCTED IN TRAFFIC AREAS SUCH THAT THE LIVE LOAD IS

RETENTION-DETENTION RISE AND CLEANOUT DETAIL

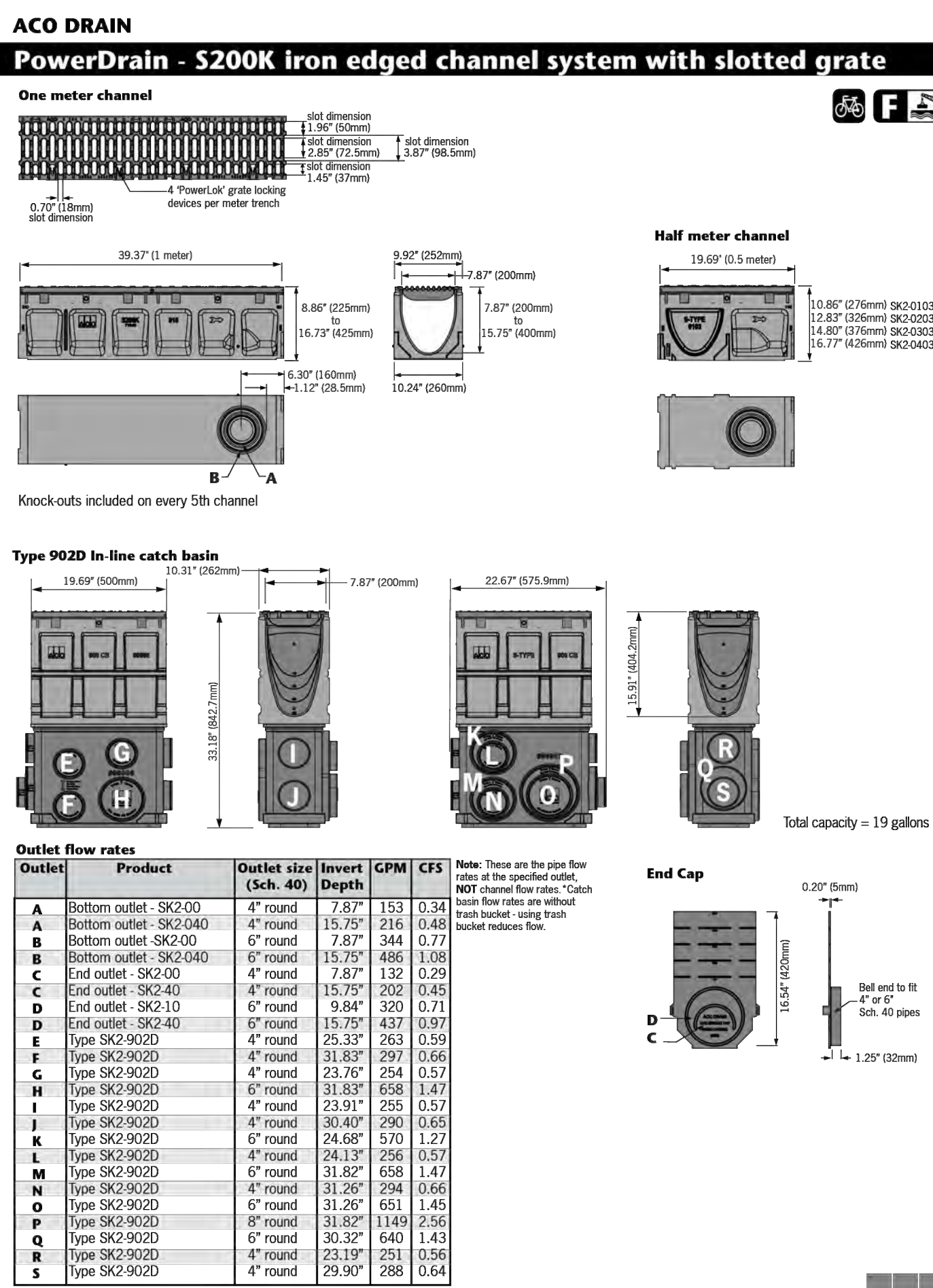
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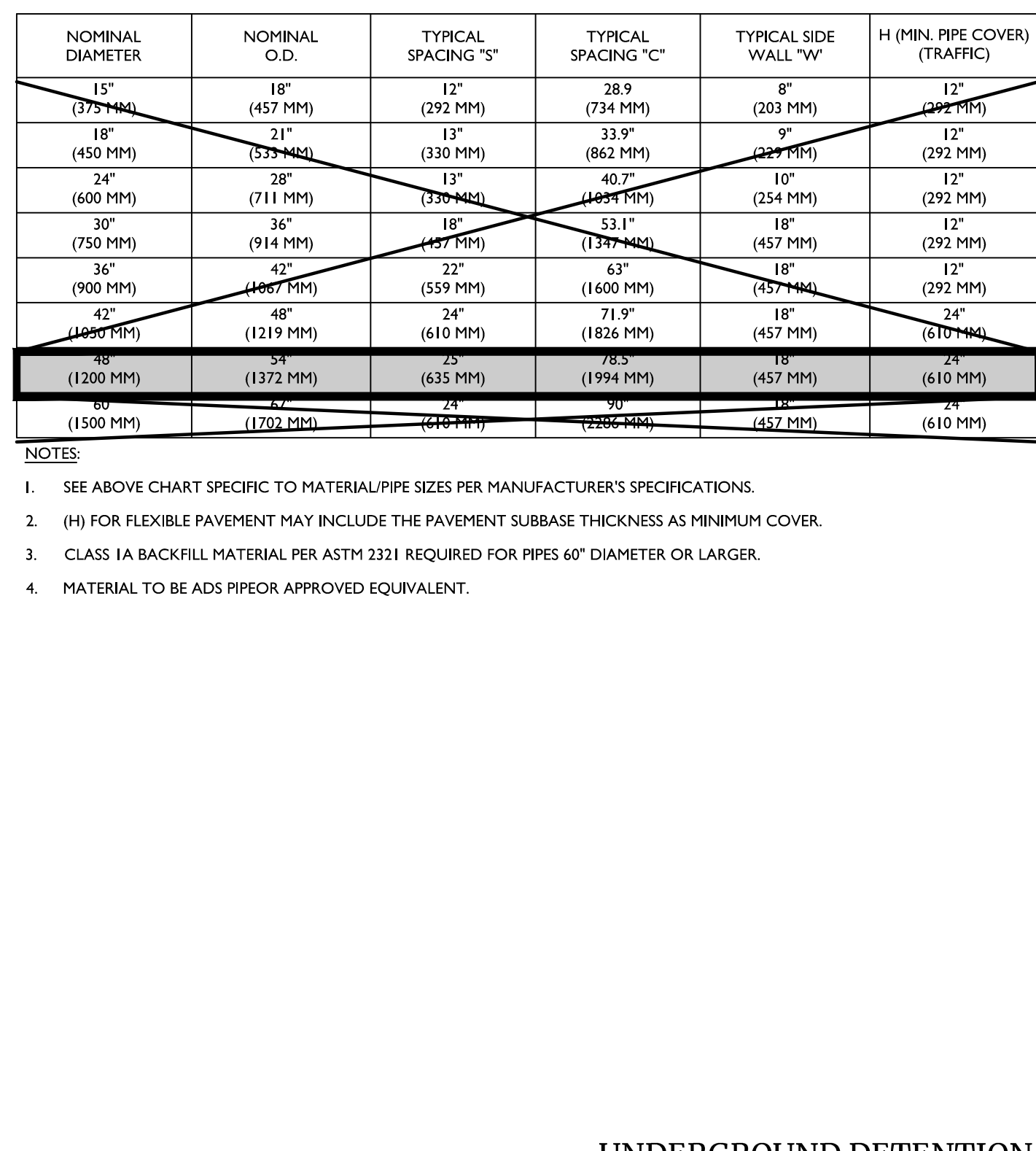
ACO DRAIN
PowerDrain - S200K iron edged channel system with slotted grate

[illegible]

- Notes:
1. This channel offers bottom knockout feature: 6" & 8" round.
 2. Inverts shown are male end; for female invert depth subtract 5mm (-0.2") from invert (except neutral channels where it will be same as male invert) to calculate overall channel depth, add 25.4mm (1.0") to invert depth.
 3. The basin assembly includes polymer concrete cover, PowerLok grate, trash bucket and plastic base.
 4. Catch basin assembly includes polymer concrete cover, PowerLok grate, deep trash bucket, plastic riser and plastic base.
 5. Water intake per meter channel is 140.2 m³ (904.51 cm³).



ACO Specification Information



UNDERGROUND DETENTION BASIN DETAIL