

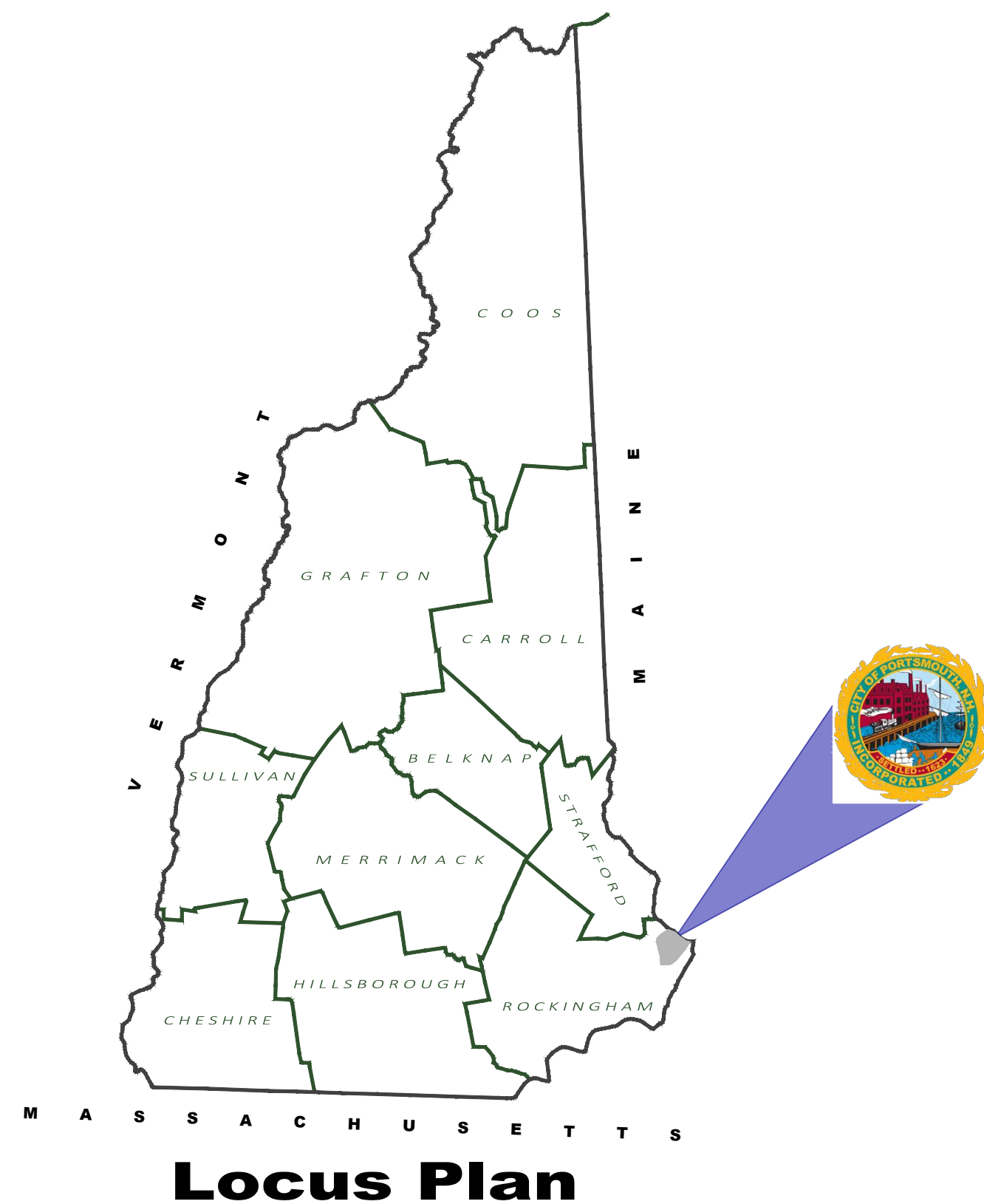
City of Portsmouth, New Hampshire

Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System

Issued for Bid - April 2020

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Prepared For:
City of Portsmouth
Department of Public Works
680 Peverly Hill Road
Portsmouth, New Hampshire 03801
 Prepared By:

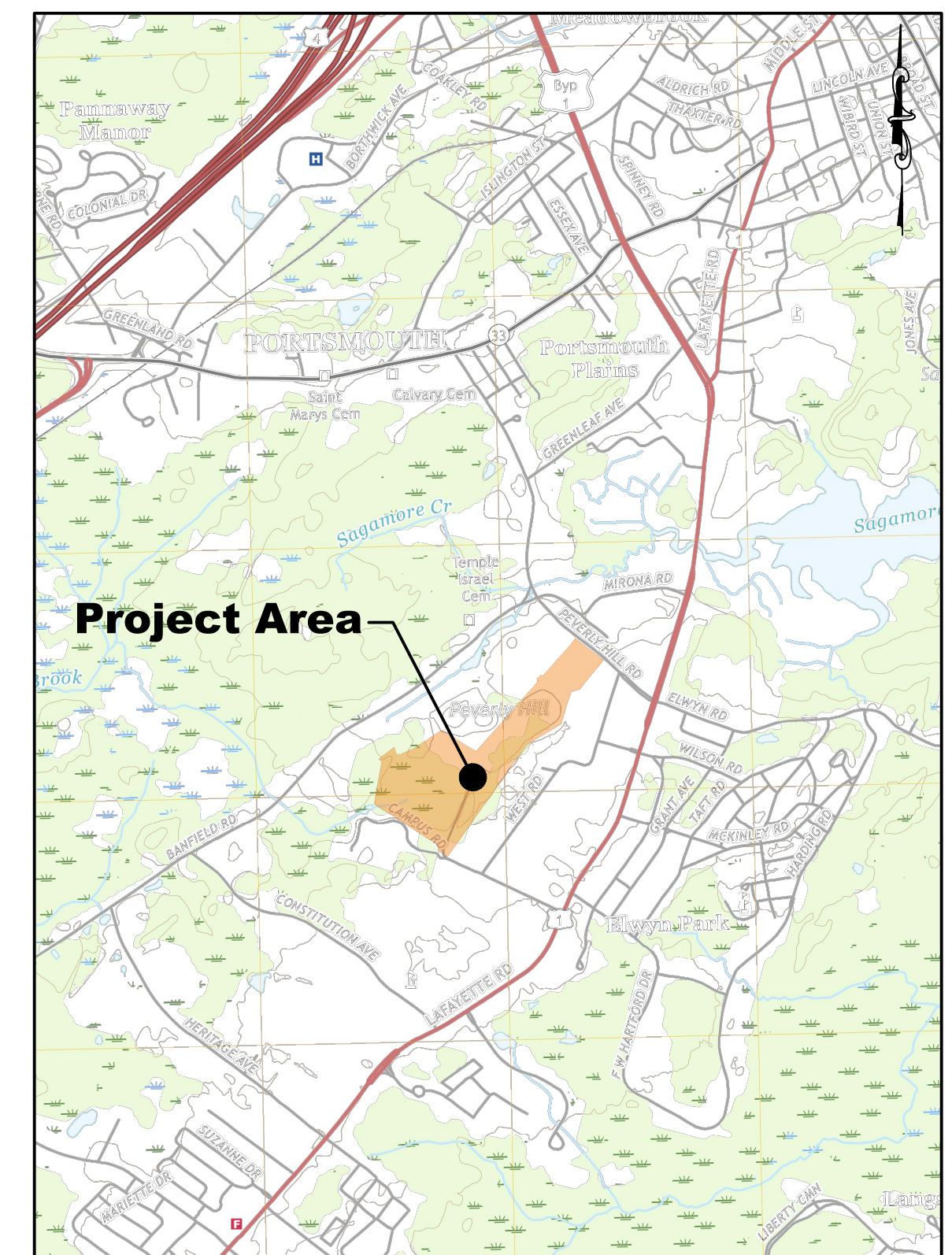


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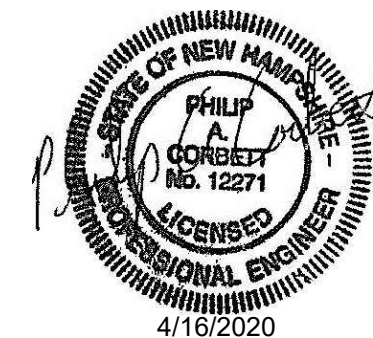
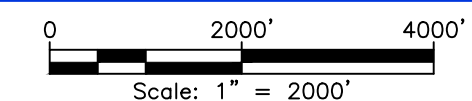


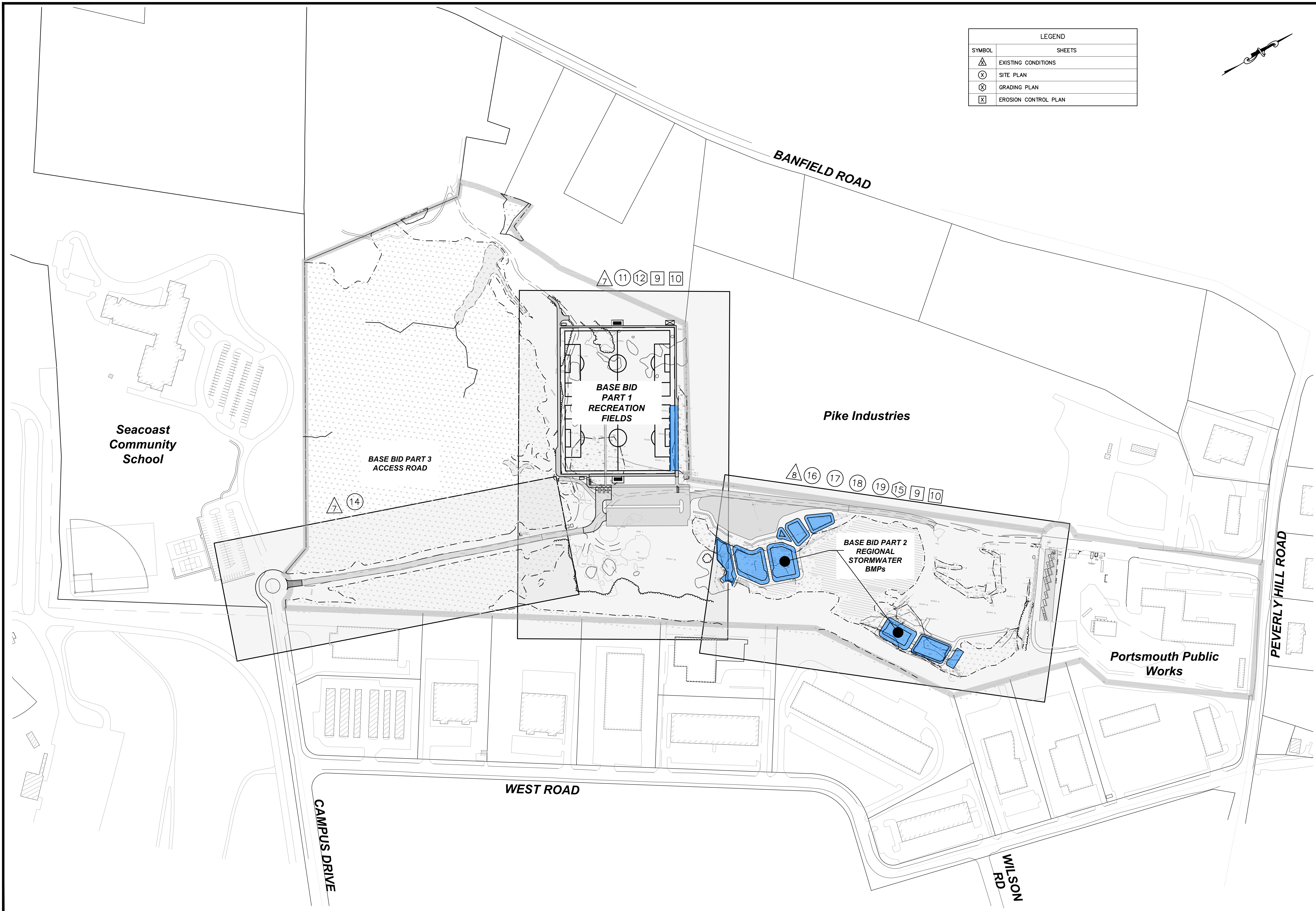
427 Main Street, Suite 400, Worcester, MA
 (978) 977-0110 (800) 726-7766 (Sampson)
 www.westonandsampson.com

**BID PLANS
 NOT FOR
 CONSTRUCTION**



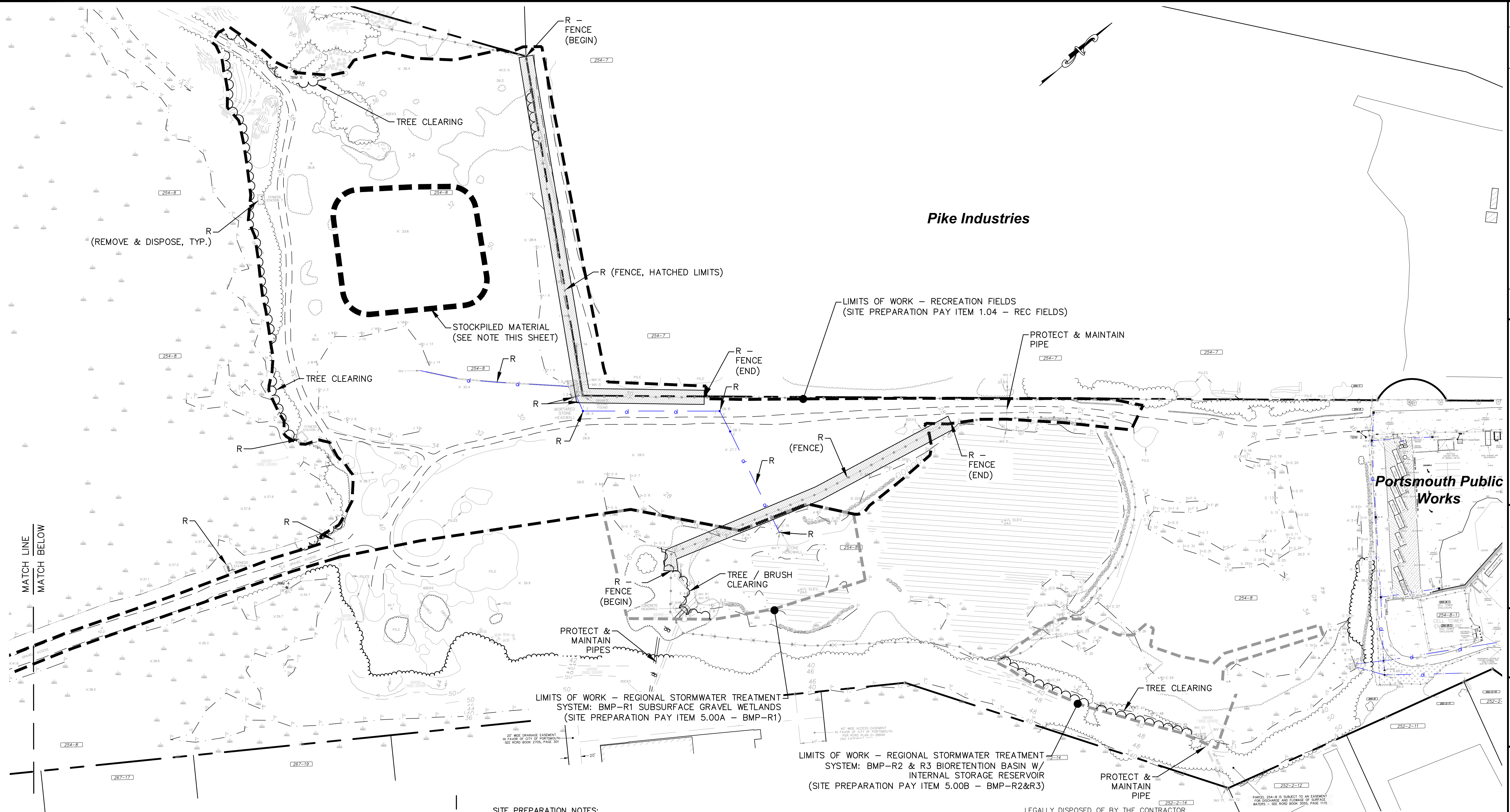
Project Location





LEGEND	
SYMBOL	SHEETS
△	EXISTING CONDITIONS
⊗	SITE PLAN
⊗	GRADING PLAN
⊗	EROSION CONTROL PLAN

<p style="font-size: small; margin: 0;">CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/641-4223 cmaengineers.com</p>													
<p>City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System</p>	<table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr> <td>date:</td> <td>April 2020</td> <td>designed by:</td> <td>JHK</td> </tr> <tr> <td>project no.:</td> <td>1119</td> <td>drawn by:</td> <td>NJM</td> </tr> <tr> <td>file name:</td> <td>1119 Overall Plan.dwg</td> <td>approved by:</td> <td>PAC</td> </tr> </table> <p style="text-align: right; font-size: x-small;"> scale: 1" = 150' 0 150' 300' Scale: 1" = 150' </p>	date:	April 2020	designed by:	JHK	project no.:	1119	drawn by:	NJM	file name:	1119 Overall Plan.dwg	approved by:	PAC
date:	April 2020	designed by:	JHK										
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file name:	1119 Overall Plan.dwg	approved by:	PAC										
<p>drawing no. G-101</p>													
<p>sheet: 2 of 45</p>													
<p>1 issued for Bid</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr> <th>no.</th> <th>revision</th> <th>date</th> <th>by</th> </tr> <tr> <td>1</td> <td></td> <td>4/16/20</td> <td>PAC</td> </tr> </table>		no.	revision	date	by	1		4/16/20	PAC				
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1		4/16/20	PAC										



SITE PREPARATION NOTES:

STOCKPILED MATERIAL

1. SINCE THE TIME OF THE TOPOGRAPHIC SURVEY, ADDITIONAL SURPLUS MATERIAL HAS BEEN STOCK-PILED IN THE APPROXIMATE AREA SHOWN ON THE PLAN. BY VISUAL OBSERVATION, IT APPEARS THIS MATERIAL MAY BE USED AS COMMON BORROW; THE CONTRACTOR SHALL CONFIRM WITH TESTING. THIS MATERIAL MUST BE PLACED IN LIFTS AND COMPACTED IN CONFORMANCE WITH THE TECHNICAL SPECIFICATIONS.

CLEARING & GRUBBING

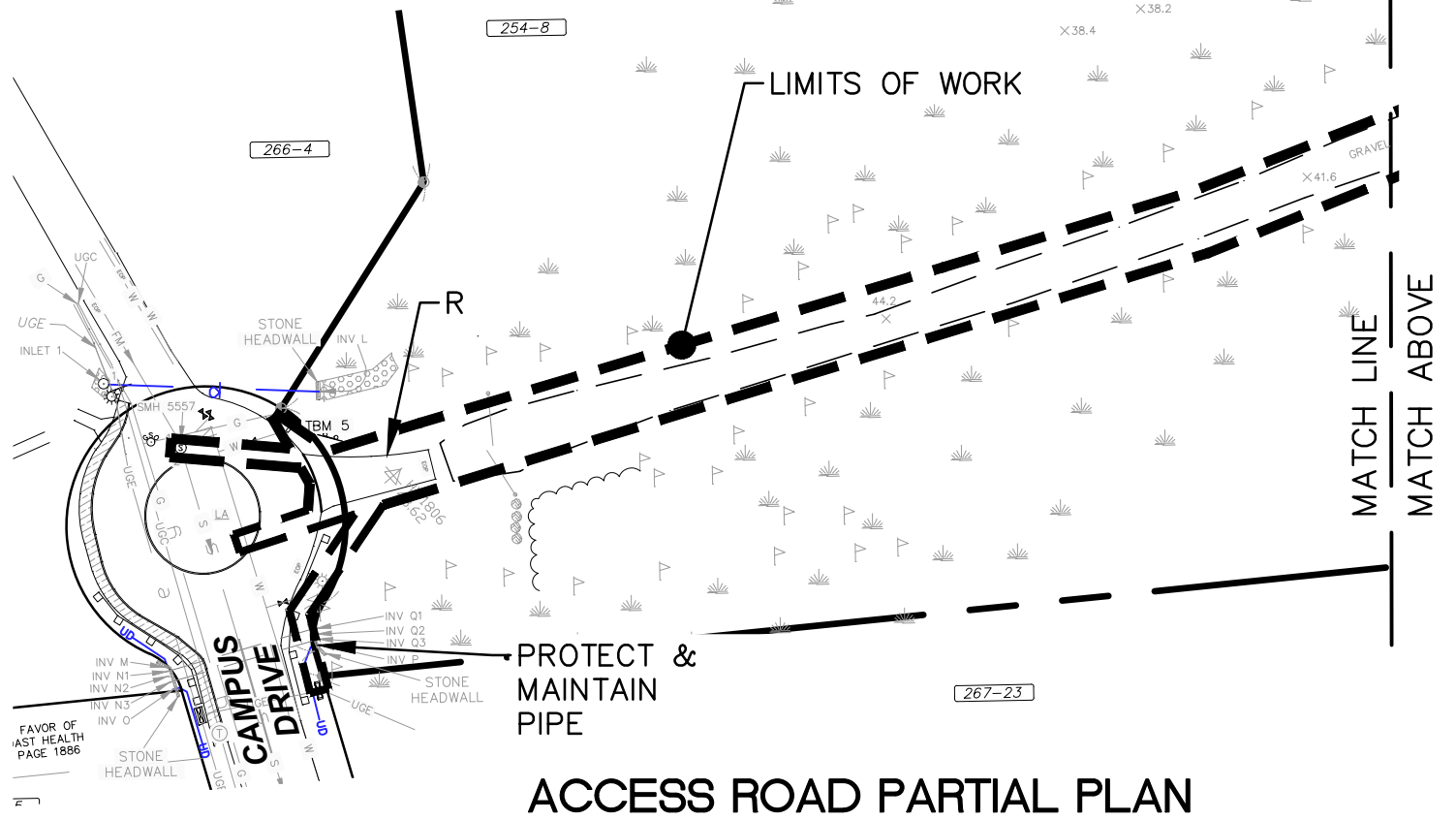
1. THE CITY HAS COMPLETED MOST OF THE REQUIRED TREE CLEARING. THE CONTRACTOR SHALL CONFIRM IF ADDITIONAL CLEARING IS REQUIRED TO COMPLETE THE WORK.
2. TO PROTECT NORTHERN LONG-EARED BATS, TREE CUTTING/ CLEARING OF TREES GREATER THAN 3-INCHES DBH IS PROHIBITED FROM JUNE 1 THROUGH JULY 31 OF EACH YEAR.
3. THE STUMPS OF ALL TREES AND BRUSH CLEARED SHALL BE REMOVED, TOGETHER WITH ALL MAJOR ROOTS AND SATISFACTORILY DISPOSED OF AWAY FROM THE PROJECT.
4. ALL CLEAN LOAM GRUBBED FROM THE WORK AREA SHALL BE STOCKPILED AND USED FOR LOAMING AND SEEDING AT PROJECT CLEAN UP. THE CONTRACTOR SHALL STOCKPILE AT A LOCATION APPROVED BY THE ENGINEER.

DEMOLITION

1. ITEMS DESIGNATED FOR REMOVAL ARE DENOTED WITH A (R) ON THE PLANS.
2. WHERE REQUIRED, THE CONTRACTOR WILL REMOVE EXISTING FENCING. ALL FENCE REMOVAL SHALL BE COORDINATED WITH THE OWNER AND THE LANDOWNER, PRIOR TO PROCEEDING.
3. THE CONTRACTOR SHALL REMOVE ALL ASPHALT, BIT. CONCRETE, RUBLE, DEBRIS, AND ALL MATERIAL NECESSARY AROUND ENTIRE SITE PRIOR TO CONSTRUCTION.
4. AS REQUIRED TO COMPLETE THE WORK, REMOVE ABANDONED UTILITIES, DRAINAGE STRUCTURES AND PIPE.
5. ALL MATERIALS ENCOUNTERED/REMOVED THAT ARE NOT WANTED (SALVAGED) BY THE CITY ARE TO BE REMOVED AND

INVASIVE SPECIES MANAGEMENT

1. THE PROJECT SITE HAS KNOWN LOCATIONS OF INVASIVE PLANT SPECIES IN THE STORMWATER MANAGEMENT AND RECREATION FIELD WORK AREAS. CONTRACTOR SHALL CONTROL THE SPREAD OF INVASIVES WITHIN THE SITE AND SHALL REMOVE INVASIVE SPECIES WHERE FOUND WITHIN THE PROJECT'S WORK LIMITS.
2. KNOWN INVASIVE PLANT SPECIES INCLUDE PHRAGMITES (PHRAGMITES AUSTRALIS), REED CANARY GRASS (PHALARIS ARUNDINACEA), AUTUMN OLIVE (ELAEAGNUS UMBELLATA), MULTIFLORA ROSE (ROSA MULTIFLORA), ORIENTAL BITTERSWEET (CELASTRUS ORBICULATUS), AND GLOSSY BUCKTHORN (FRANGULA ALNUS) HAVE BEEN OBSERVED ON SITE. OTHERS MAY BE PRESENT.
3. THE CONTRACTOR SHALL FOLLOW NHDOT'S BEST MANAGEMENT PRACTICES FOR THE CONTROL OF INVASIVE AND NOXIOUS PLANT SPECIES FOR MITIGATION AND REMOVAL OF INVASIVE PLANT SPECIES FROM THE PROJECT SITE.
4. TO PREVENT THE INTRODUCTION OR EXPORT OF INVASIVE PLANT SPECIES TO THE SITE, THE CONTRACTOR SHALL CLEAN ALL SOILS AND VEGETATION FROM CONSTRUCTION EQUIPMENT AND MATTING BEFORE SUCH EQUIPMENT IS MOVED TO THE SITE AND PRIOR TO DEMOBILIZATION FROM THE SITE.
5. CONTRACTOR SHALL PROVIDE A SITE-SPECIFIC INVASIVE SPECIES MANAGEMENT PLAN FOR REVIEW BY THE ENGINEER.
6. ALL WORK ASSOCIATED WITH THE REMOVAL OF INVASIVE SPECIES WILL BE INCLUDED IN CONTRACT ITEMS 1.04, 5.00A, 5.00B - SITE PREPARATION.

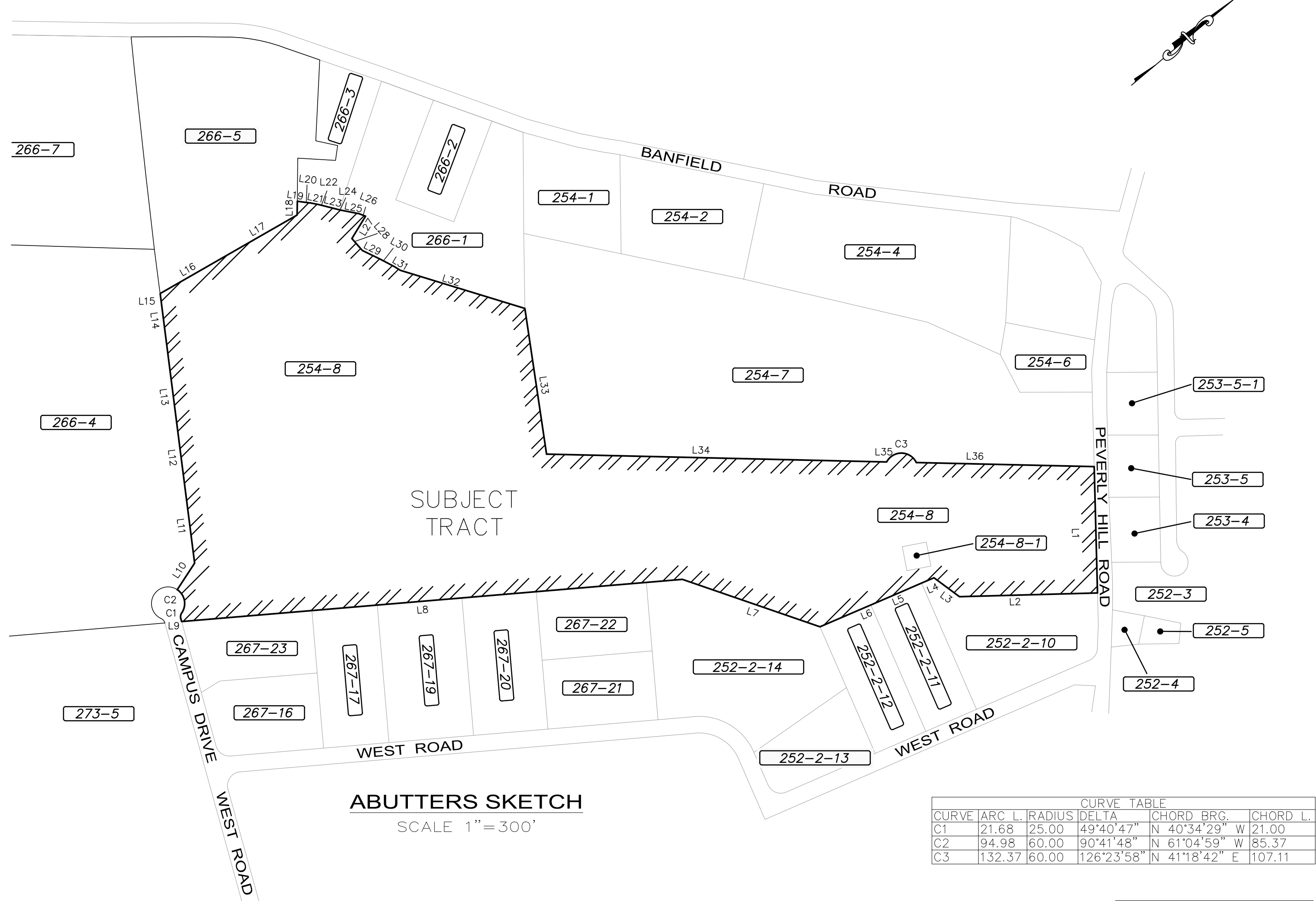


ACCESS ROAD PARTIAL PLAN

CMA ENGINEERS CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/641-4223		no. 1 revision date 4/16/20 by PAC
date: April 2020 project no: 1119 file name: 1119 Demolition Plan.dwg	designed by: JHK drawn by: NJM approved by: PAC	scale: 1" = 80' 0 80' 160'
City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System Site Preparation Plan		drawing no. N-103 sheet: 5 of 45

ABUTTERS LIST

MAP-LOT	OWNER OF RECORD	DEED REFERENCE
252-2-10	JMK REALTY LLC, PO BOX 971, PORTSMOUTH, NH 03802	3656/744
252-2-11	HEG WEST ROAD LLC, 2 INTERNATIONAL WAY, LAWRENCE, MA 01843	5835/67
252-2-12	60 WEST RD, PORTSMOUTH, NH 03801	
252-2-14	ONE HUNDRED WEST LLC, 100 WEST RD, PORTSMOUTH, NH 03801	3589/1427
252-3	LITCHFIELD PORTSMOUTH LLC	4800/1185
252-4 & 252-5	C/O EATON PARTNERS INC, 175 CANAL ST STE 401, MANCHESTER, NH 03101	N/A
253-4	LIGHTHOUSE MANUFACTURING LLC, 25 SOUTH SATELLITE RD, SOUTH WINDSOR, CT 06074	N/A
253-5	4 AMIGOS LLC, 321 LAFAYETTE RD, HAMPTON, NH 03842	N/A
253-5-1	DPH REALTY LLC, 30 MIRONA RD EXT, PORTSMOUTH, NH 03801	N/A
254-7	GERALD W. & TERESA M. REYNOLDS, 164 MASON RD, MILTON, NH 03851	N/A
254-8-1	BOURAS GROUP LLC, 10 MIRONA RD, PORTSMOUTH, NH 03801	N/A
254-8-2	PIKE INDUSTRIES, INC., 3 EASTGATE PARK RD, BELMONT, NH 03220	3192/1085
254-8-3	MCM ACQUISITION 2017 LLC	N/A
254-8-4	ATTN: TAX DEPT NH22094-A, 8051 CONGRESS AVE, BOCA RATON, FL 33487-1307	
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CURVE	ARC L	RADIUS	DELTA	CHORD BRG.	CHORD L.
C1	21.68	25.00	49°40'47"	N 40°34'29" W	21.00
C2	94.98	60.00	90°41'48"	N 61°04'59" W	85.37
C3	132.37	60.00	126°23'58"	N 41°18'42" E	107.11

LINE	BEARING	DISTANCE
L1	S 51°30'32" E	457.64
L2	S 38°28'19" W	500.01
L3	S 76°35'13" W	114.96
L4	S 16°43'54" W	48.95
L5	S 16°31'44" W	132.02
L6	S 16°47'11" W	268.29
L7	S 59°02'50" W	526.73
L8	S 35°10'38" W	1819.23
L9	N 65°24'52" W	11.22
L10	N 16°46'42" W	115.00
L11	N 57°17'20" W	270.98
L12	N 57°17'20" W	222.72
L13	N 57°17'20" W	287.56
L14	N 57°17'20" W	202.89
L15	N 10°10'42" E	4.72
L16	N 10°10'42" E	276.88
L17	N 10°10'42" E	290.00
L18	N 49°22'45" W	50.00
L19	N 47°59'56" E	21.12
L20	N 46°59'02" E	28.17
L21	N 51°03'35" E	28.56
L22	N 54°28'19" E	13.75
L23	N 54°07'57" E	64.55
L24	N 53°40'13" E	6.03
L25	N 50°59'41" E	66.28
L26	N 61°02'31" E	25.04
L27	N 18°34'23" E	95.09
L28	N 88°31'38" E	57.65
L29	N 65°49'31" E	70.30
L30	N 67°50'02" E	58.61
L31	N 71°47'07" E	26.13
L32	N 57°02'00" E	471.36
L33	S 58°29'19" E	533.10
L34	N 41°19'31" E	1223.68
L35	N 39°27'07" E	7.78
L36	N 41°18'42" E	644.30

SURVEY NOTES:

- OWNER OF RECORD.....CITY OF PORTSMOUTH, N.H.
ADDRESS.....1 JUNKINS AVE, PORTSMOUTH, NH 03801
DEED REFERENCE.....3276/2986 & 5819/2310
TAX SHEET / LOT.....254-8
ZONED..... MUNICIPAL FRONT YARD SETBACK.....N/A
MINIMUM LOT AREA N/A SIDE YARD SETBACK.....N/A
FRONTAGE..... N/A REAR YARD SETBACK.....N/A
- THE RELATIVE ERROR OF CLOSURE WAS LESS THAN 1 FOOT IN 15,000 FEET.
- THIS PLAN IS BASED ON A FIELD SURVEY, INFORMATION FROM PLANS OF RECORD AND AERIAL MAPPING BY EASTERN TOPOGRAPHICS.
PRIMARY BM: CITY CONTROL POINT "INDU"
HORIZONTAL DATUM: NAD 1983 (1986 CONTROL ADJUSTMENT)
VERTICAL DATUM: NAVD 1988
- THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES (IE CATCH BASINS, MANHOLES, WATER GATES ETC.) AND INFORMATION COMPILED FROM PLANS PROVIDED BY UTILITY COMPANIES AND GOVERNMENTAL AGENCIES. ALL CONTRACTORS SHOULD NOTIFY, IN WRITING, SAID AGENCIES PRIOR TO ANY EXCAVATION WORK AND CALL DIG-SAFE @ 1-888-DIG-SAFE.
- THE SUBJECT TRACTS LIE IN ZONE X (UNSHADED). AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON FLOOD INSURANCE MAP NO. 33015C0270E, EFFECTIVE DATE MAY 17, 2005, BY FEMA.
- PARCEL 254-8 AND A PORTION OF PARCEL 266-4 ARE SUBJECT TO A RESTRICTIVE COVENANT AGREEMENT BETWEEN JOHN IAFOLLA CO., INC. & PIKE INDUSTRIES, INC., SEE RCRD BOOK 3192, PAGE 1088, BOOK 3193, PAGE 2059 AND BOOK 3198, PAGE 853.
- WETLANDS DELINEATION 10/2018 BY GZA ENVIRONMENTAL.
- ENGINEER OR CONTRACTOR TO VERIFY SITE BENCHMARKS BY LEVELING BETWEEN 2 BENCHMARKS PRIOR TO THE SETTING OR ESTABLISHMENT OF ANY GRADES/ELEVATIONS. DISCREPANCIES ARE TO BE REPORTED TO JAMES VERRA AND ASSOC., INC.

WETLAND DELINEATION NOTES:

- JURISDICTIONAL WETLANDS WERE DELINEATED BY GZA GEOENVIRONMENTAL, INC. (GZA) ON OCTOBER 19 AND 22, 2018, AND APRIL 24, 2019, IN ACCORDANCE WITH THE 1987 U.S. ARMY CORPS OF ENGINEERS' (ACOE) "WETLANDS DELINEATION MANUAL," TECHNICAL REPORT Y-87-1 AND THE "REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL, NORTHCENTRAL AND NORTHEAST REGION," JANUARY 2012.
- GZA EVALUATED WETLANDS AS POTENTIAL VERNAL POOLS ON APRIL 24, 2019 IN ACCORDANCE WITH THE NH CODE OF ADMINISTRATIVE RULES (ENV-WT 101.75, 101.86, 101.106) AND THE MANUAL "IDENTIFICATION AND DOCUMENTATION OF VERNAL POOLS IN NEW HAMPSHIRE, NEW HAMPSHIRE FISH AND GAME DEPARTMENT, NONGAME AND ENDANGERED WILDLIFE PROGRAM. 2004.
- GZA PERFORMED A WETLANDS FUNCTIONS AND VALUES ASSESSMENT ON OCTOBER 19 AND 22, 2018, AND APRIL 24, 2019, IN ACCORDANCE WITH THE ACOE'S "HIGHWAY METHODOLOGY WORKBOOK SUPPLEMENT," SEPTEMBER 1999, AND CLASSIFIED WETLANDS IN ACCORDANCE WITH THE "CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES" (FEDERAL GEOGRAPHIC DATA COMMITTEE, 2013).

WETLAND STANDARDS:

FEDERAL GEOGRAPHIC DATA COMMITTEE. 2013. CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. FGDC-STD-004-2013. SECOND EDITION. WETLANDS SUBCOMMITTEE, FEDERAL GEOGRAPHIC DATA COMMITTEE AND U.S. FISH AND WILDLIFE SERVICE, WASHINGTON, DC.

LICHVAR, R.W., D.L. BANKS, W.N. KIRCHNER, AND N.C. MELVIN. 2016. THE NATIONAL WETLAND PLANT LIST: 2016 WETLAND RATINGS. PHYTONEURON 2016-30: 1-17. PUBLISHED 28 APRIL 2016. ISSN 2153 733X

NEW ENGLAND HYDRIC SOILS TECHNICAL COMMITTEE. 2019. VERSION 4. FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, INTERSTATE WATER POLLUTION CONTROL COMMISSION, LOWELL, MASSACHUSETTS.

U.S. ARMY CORPS OF ENGINEERS, ENVIRONMENTAL LABORATORY. 1987. CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL, TECHNICAL REPORT Y-87-1, U.S. ARMY ENGINEER WATERWAYS EXPERIMENT STATION, VICKSBURG, MISSISSIPPI.

U.S. ARMY CORPS OF ENGINEERS. 2012. REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, ED. J. S. WAKELY, R. W. LICHVAR, AND C. V. NOBLE. ERDC/EL TR-12-1. VICKSBURY, MS: U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER.

U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, 2018. FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8.2. L.M. VASILAS, G.W. HURT, AND J.F. BERKOWITZ (EDS.). USDA, NRCS, IN COOPERATION WITH THE NATIONAL TECHNICAL COMMITTEE FOR HYDRIC SOILS.

REFERENCE PLANS:

- AMENDED SITE PLAN, PROPERTY OF MICRONICS INC, 200 WEST ROAD, PORTSMOUTH, N.H., DATED 12/30/2014, RCRD PLAN D-38846.
- LOT LINE REVISION PLAN, 755 BANFIELD ROAD REALTY, LLC, CONSTITUTION AVENUE, PORTSMOUTH, N.H., REVISED TO 11/28/2011, RCRD PLAN D-37091.
- DRAINAGE EASEMENT PLAN OVER LAND OF BELLWOOD ASSOCIATES LIMITED PARTNERSHIP, CAMPUS DRIVE, PORTSMOUTH, N.H., DATED 7/30/2007, RCRD PLAN D-35073.
- ACTIVITY AND USE RESTRICTION EASEMENT PLAN FOR PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, 680 PEVERLY HILL ROAD, PORTSMOUTH, N.H., REVISED TO 9/13/2006, RCRD PLAN D-34222.
- LATTICE TOWER EASEMENT PLAN, PEVERLY HILL ROAD, PORTSMOUTH, N.H., FOR MESSAGE CENTER MANAGEMENT, REVISED TO 4/16/2002, RCRD PLAN D-30056.
- FOUNDATION FOR SEACOAST HEALTH, PORTSMOUTH, N.H., LOT LINE ADJUSTMENT, JOHN IAFOLLA COMPANY, INC. AND CITY OF PORTSMOUTH, REVISED TO 4/14/1998, RCRD PLAN D-26202.
- SUBDIVISION & LOT LINE RELOCATION PLAN FOR PIKE INDUSTRIES, INC. & JOHN IAFOLLA COMPANY, INC, PEVERLY HILL ROAD/ BANFIELD ROAD, PORTSMOUTH, N.H., REVISED TO 11/21/1997, RCRD PLAN D-26136.
- SUBDIVISION PLAN FOR JOHN IAFOLLA COMPANY, INC., PEVERLY HILL ROAD/ BANFIELD ROAD, PORTSMOUTH, N.H., REVISED TO 11/20/1996, RCRD PLAN D-25124.
- LOT LINE ELIMINATION PLAN FOR BELLWOOD ASSOCIATES LIMITED PARTNERSHIP, LAFAYETTE ROAD/ CONSTITUTION AVENUE, PORTSMOUTH, N.H., DATED 9/3/1991, RCRD PLAN D-21288.
- PLAN OF DRAINAGE EASEMENT FOR LAFAYETTE WEST CORP & FFP INTERIM PARTNERS, WEST ROAD, PORTSMOUTH, N.H., REVISED TO 3/28/1989, RCRD PLAN D-22902.
- SUBDIVISION PLAN, LINCOLN AND MARY HANSCOM, PORTSMOUTH, N.H., DATED 1/1983, RCRD PLAN D-11441.
- LOT LINE REVISION PLAN, CAMPUS DRIVE, BANFIELD & PEVERLY HILL ROADS, PORTSMOUTH, N.H., FOR CITY OF PORTSMOUTH, N.H. & FOUNDATION FOR SEACOAST HEALTH, REVISED TO 12/14/2016, RCRD PLAN D-39897.

<p>CMA ENGINEERS CIVIL/ENVIRONMENTAL/STRUCTURAL</p> <p>Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/651-4223</p> <p>c m a e n g i n e e r s . c o m</p>	
<p>designed by: JHK</p> <p>drawn by: NJM</p> <p>approved by: PAC</p>	<p>date: April 2020</p> <p>project no: 1119</p> <p>file name: 1119 ECP.dwg</p>
<p>City of Portsmouth, New Hampshire Department of Public Works</p> <p>Multi-purpose Recreation Fields and Regional Stormwater Treatment System</p> <p>Property Information</p>	<p>scale: 1" = 300'</p> <p>0 300' 600'</p>
<p>drawing no: EX-201</p>	<p>revision: 1</p> <p>issued for Bid</p> <p>no.</p> <p>date: 4/16/20</p> <p>PAC</p> <p>by</p>
<p>sheet: 6 of 45</p>	

EXISTING DRAIN & SEWER STRUCTURE TABLE

CB 44
RIM EL= 45.55
(1) INV IN 15"HDPE= 42.40
(2) INV OUT 15"HDPE= 42.30

CB 52
RIM EL= 46.87
(1) INV IN 12"HDPE= 43.10
(2) INV IN 12"HDPE= 43.37
(3) INV OUT 15"HDPE= 43.67

CB 53
RIM EL= 46.69
(1) INV OUT 12"HDPE= 43.35

CB 54
RIM EL= 44.37
(1) INV IN 15"HDPE= 41.26
(2) INV IN 12"HDPE= 41.19
(3) INV OUT 18"HDPE= 41.10

CB 55
RIM EL= 49.67
(1) INV OUT 12"HDPE= 43.00

CB 56
RIM EL= 47.97
(1) INV OUT 12"HDPE= 44.05

CB A
RIM EL= 27.63
(1) INV IN 24"HDPE= 23.81
(2) INV OUT 24"HDPE= 23.73

CB B
RIM EL= 27.41
(1) INV IN 24"HDPE= 23.43
(2) INV OUT 24"HDPE= 23.41

CB C
RIM EL= 27.22
(1) INV IN 24"HDPE= 23.24
(2) INV OUT 24"HDPE= 23.26

DMH A
RIM EL= 49.52
(1) INV IN 18"HDPE= 40.39
(2) INV IN 15"HDPE= 39.73
(3) INV OUT 18"HDPE= 40.08
BRICK WEIR FLOW LINE
FOR (4) = 41.23
(4) INV OUT 18"HDPE= 40.24

DMH B & DMH C ARE VORTECHNICS
DRAINAGE TREATMENT STRUCTURES

DMH B
RIM EL= 48.99

DMH C
RIM EL= 49.03
TRAPEZOIDAL WEIR EL= 41.73
(1) INV OUT 18"HDPE= 39.88

DROP INLET 1
CONCRETE COVER EL= 51.58
2 SIDE INLETS 0.85 W X 0.70 H
INLET EL= 50.71
(1) INV OUT 18"HDPE= 46.26

INV A
INV OUT 18"HDPE= 40.0±

INV B
INV OUT 18"HDPE= 39.65

INV C1
INV OUT 24"RCP= 33.54

INV C2
INV OUT 24"RCP= 33.56

INV D
54"W X 42"H ARCHED CMP
INV IN= 22.31

INV E
54"W X 42"H ARCHED CMP
INV OUT= 21.90

INV F
INV OUT 24"HDPE= 23.06

INV G
INV IN 24"HDPE= 23.89

INV H (PERFORATED PIPE)
INV OUT 6"HDPE= 24.52

INV I (PERFORATED PIPE)
INV IN 6"HDPE= 30.63

INV J1
INV IN 15"HDPE= 31.83

INV J2
INV IN 15"HDPE= 31.78

INV K1
INV OUT 15"HDPE= 30.66

INV K2
INV OUT 15"HDPE= 30.90

INV L
INV OUT 18"HDPE= 45.80

INV M (UNDERDRAIN)
INV OUT 4"PVC= 46.63

INV N1
INV IN 18"HDPE= 45.26

INV N2
INV IN 18"HDPE= 45.23

INV N3
INV IN 18"HDPE= 45.23

INV O (UNDERDRAIN)
INV OUT 4"PVC= 46.05

INV P (UNDERDRAIN)
INV OUT 4"PVC= 46.15

INV Q1
INV OUT 18"HDPE= 44.90

INV Q2
INV OUT 18"HDPE= 44.92

INV Q3
INV OUT 18"HDPE= 44.84

INV R1
INV OUT 36"CMP= 27.33

INV R2
INV OUT 36"CMP= 27.32

INV S1
INV IN 36"CMP= 30.68

INV S2
INV IN 36"CMP= 30.64

INV T1
INV IN 24"RCP= 35.22

INV T2
INV IN 24"RCP= 35.47

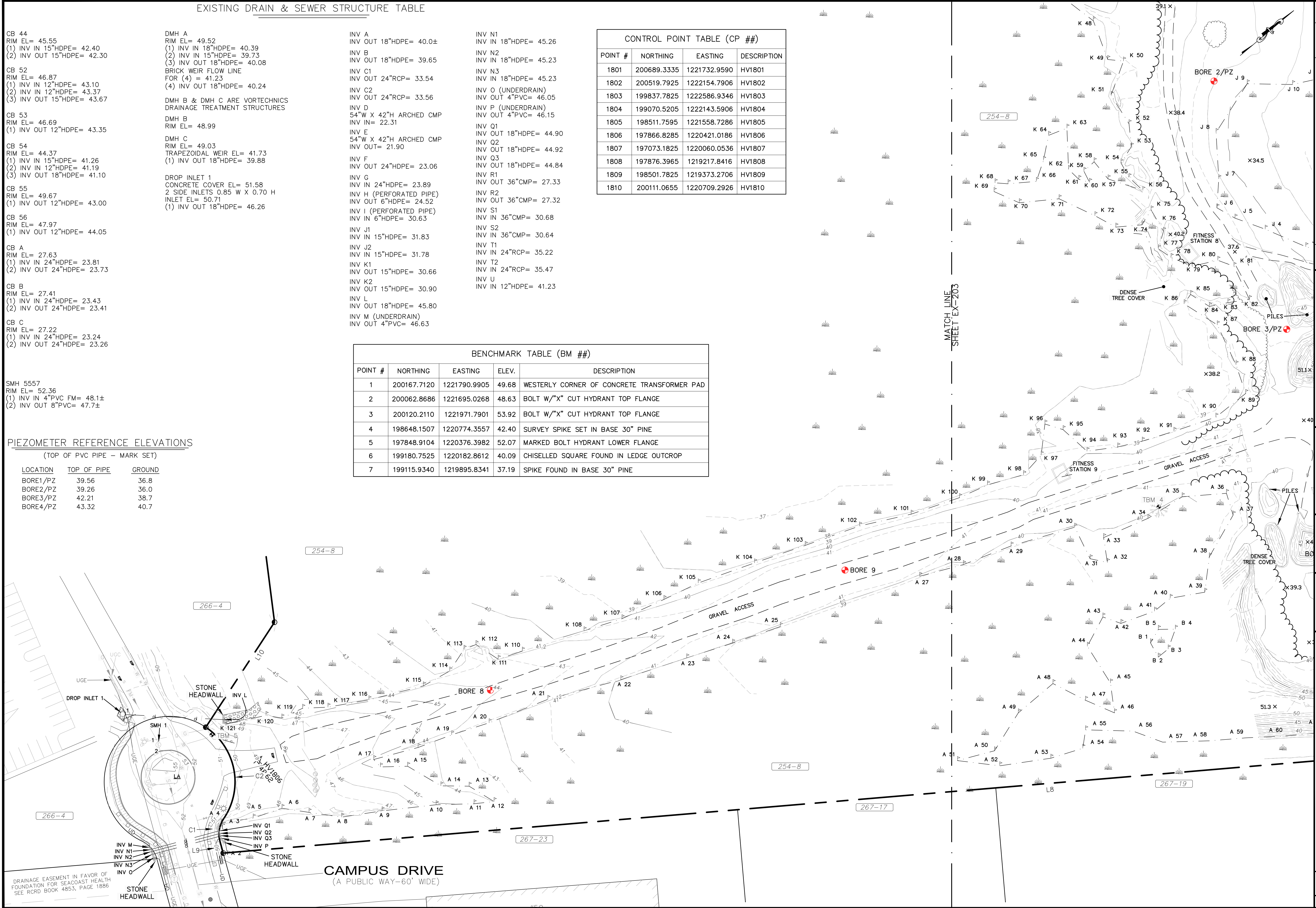
INV U
INV IN 12"HDPE= 41.23

CONTROL POINT TABLE (CP ##)			
POINT #	NORTHING	EASTING	DESCRIPTION
1801	200689.3335	1221732.9590	HV1801
1802	200519.7925	1222154.7906	HV1802
1803	199837.7825	1222586.9346	HV1803
1804	199070.5205	1222143.5906	HV1804
1805	198511.7595	1221558.7286	HV1805
1806	197866.8285	1220421.0186	HV1806
1807	197073.1825	1220060.0536	HV1807
1808	197876.3965	1219217.8416	HV1808
1809	198501.7825	1219373.2706	HV1809
1810	200111.0655	1220709.2926	HV1810

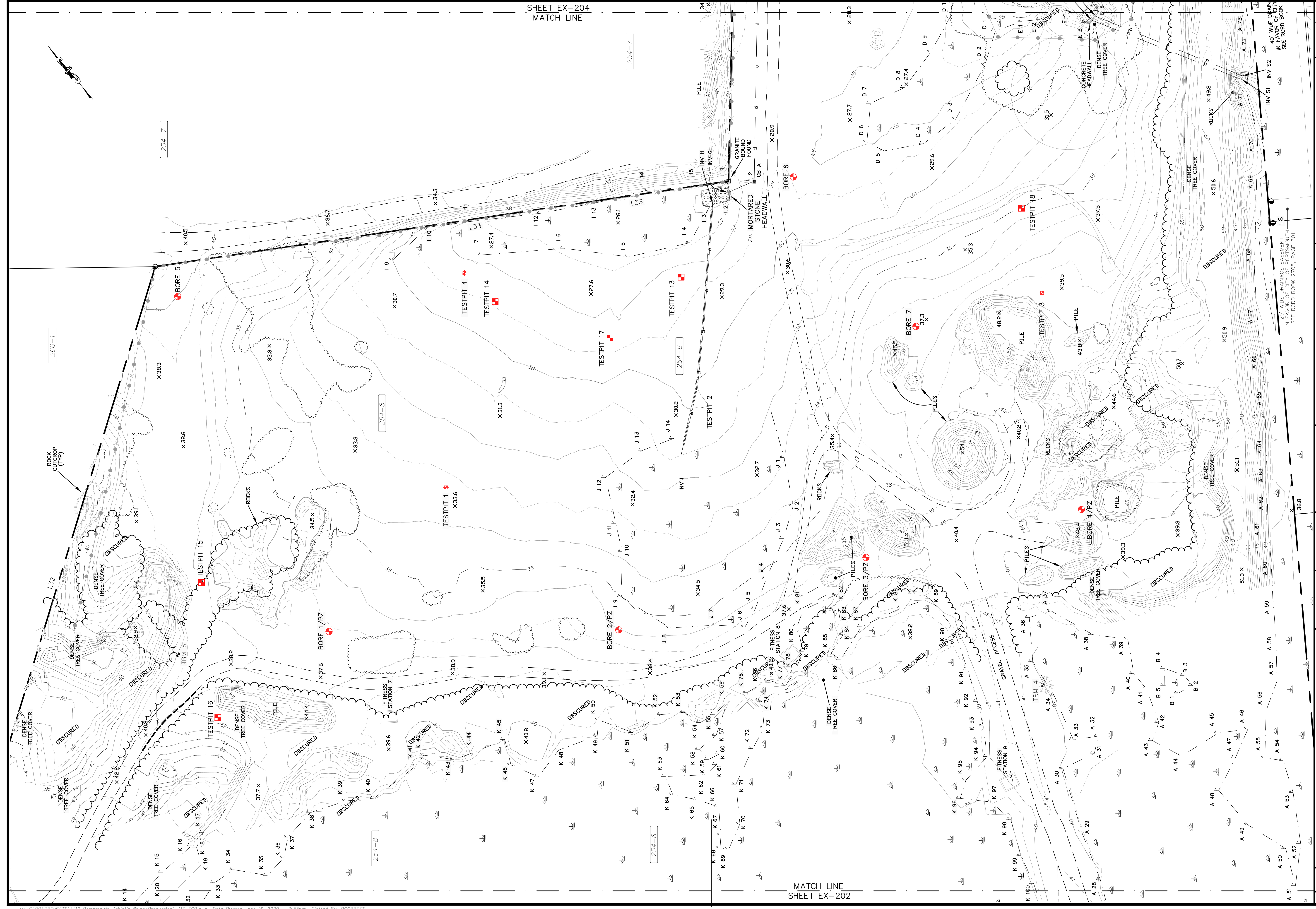
BENCHMARK TABLE (BM ##)				
POINT #	NORTHING	EASTING	ELEV.	DESCRIPTION
1	200167.7120	1221790.9905	49.68	WESTERLY CORNER OF CONCRETE TRANSFORMER PAD
2	200062.8686	1221695.0268	48.63	BOLT W/"X" CUT HYDRANT TOP FLANGE
3	200120.2110	1221971.7901	53.92	BOLT W/"X" CUT HYDRANT TOP FLANGE
4	198648.1507	1220774.3557	42.40	SURVEY SPIKE SET IN BASE 30" PINE
5	197848.9104	1220376.3982	52.07	MARKED BOLT HYDRANT LOWER FLANGE
6	199180.7525	1220182.8612	40.09	CHISELLED SQUARE FOUND IN LEDGE OUTCROP
7	199115.9340	1219895.8341	37.19	SPIKE FOUND IN BASE 30" PINE

PIEZOMETER REFERENCE ELEVATIONS
(TOP OF PVC PIPE - MARK SET)

LOCATION	TOP OF PIPE	GROUND
BORE1/PZ	39.56	36.8
BORE2/PZ	39.26	36.0
BORE3/PZ	42.21	38.7
BORE4/PZ	43.32	40.7



designed by: JHK	drawn by: N/JM	approved by: PAC	scale: 0 40' 80'
date: April 2020	project no: 1119	file name: 1119 ECP.dwg	Scale: 1" = 40'
<p>City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System Existing Conditions Plan</p>			
drawing no. EX-202			
sheet: 7 of 45			
<p>CMA ENGINEERS Civil/Environmental/Structural</p> <p>Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/651-4223</p> <p>c m a e n g i n e e r s . c o m</p>			<p>revision</p> <p>no.</p> <p>date</p> <p>4/16/20</p> <p>PAC</p>



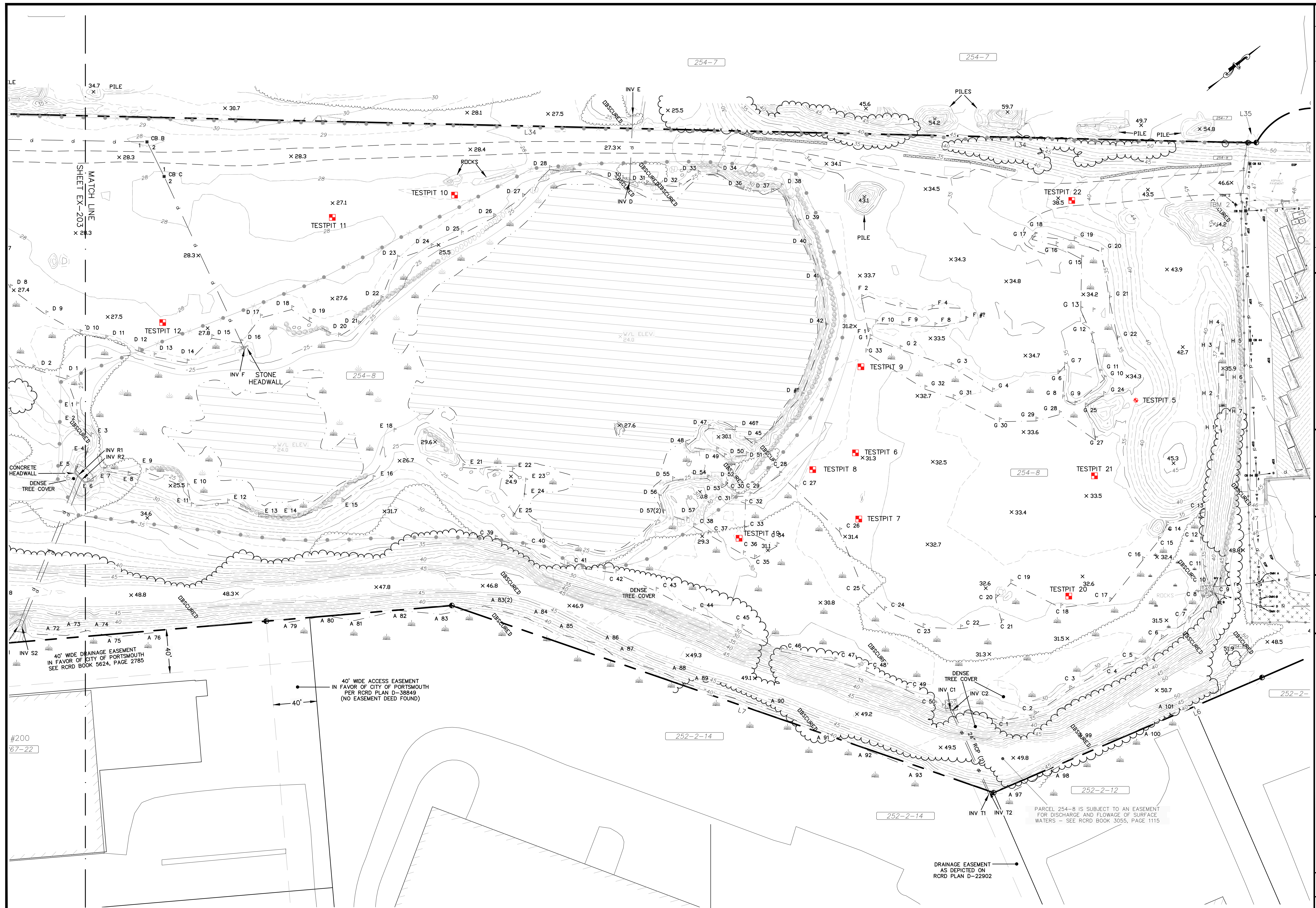
SHEET EX-204
MATCH LINE

MATCH LINE
SHEET EX-202

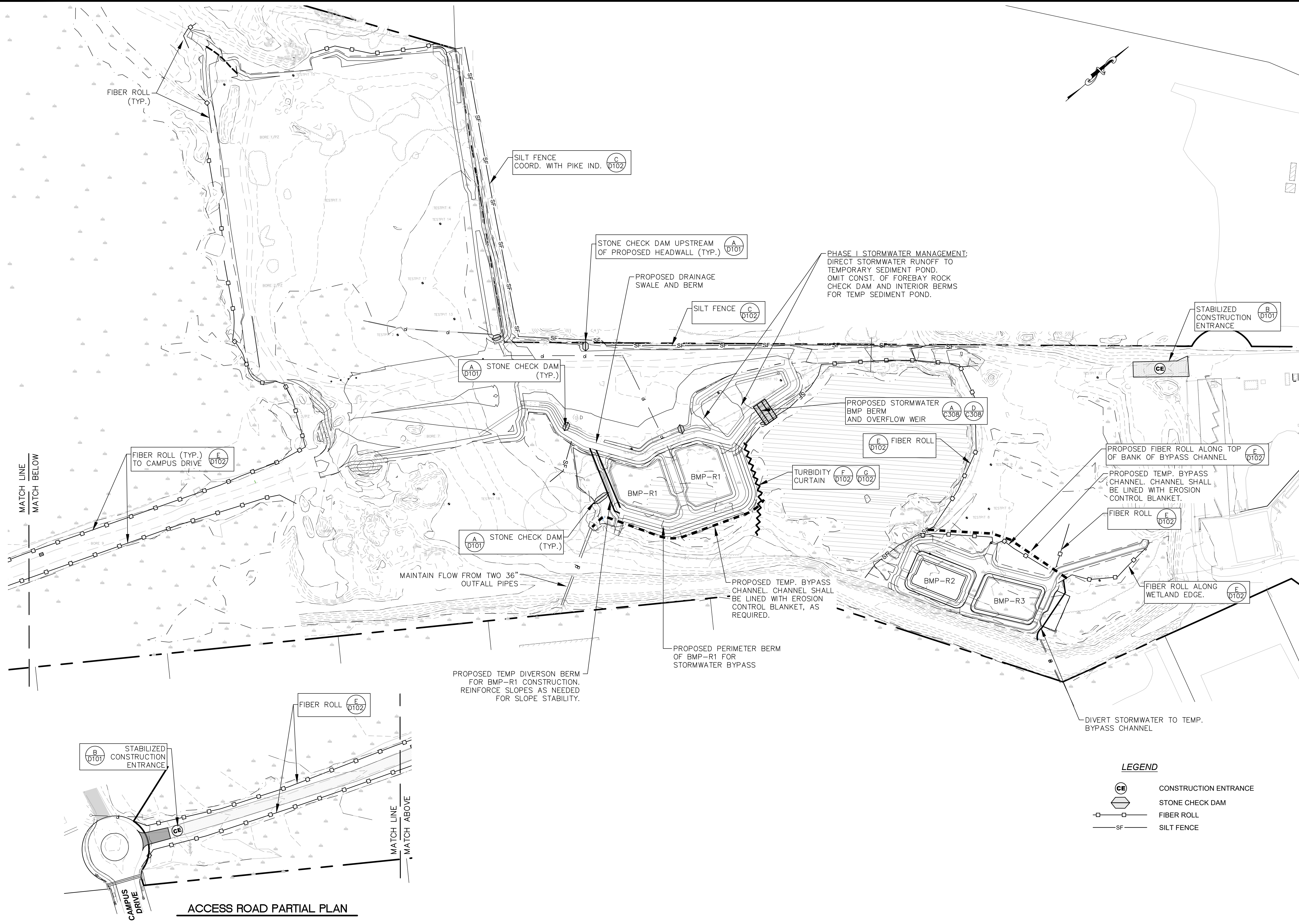
<p>City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System Existing Conditions Plan</p>		<p>date: April 2020 project no: 1119 file name: 1119 ECP.dwg</p>	<p>designed by: JHK drawn by: NJM approved by: PAC</p>	<p>scale: 1" = 40' Scale: 1" = 40'</p>
<p>drawing no: EX-203</p>		<p>sheet: 8 of 45</p>		
<p>no. 1</p>		<p>revision</p>		
<p>date 4/16/20</p>		<p>PAC</p>		
<p>by</p>		<p>date</p>		

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 Portsmouth, NH Manchester, NH Portland, ME
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 cmaengineers.com

M:\CAD\PROJECTS\1119 Portsmouth Athletic Fields\Production\1119 ECP.dwg Date Plotted: Apr 16, 2020 3:55pm Plotted By: PCORRETT



<p>CMA ENGINEERS CIVIL/ENVIRONMENTAL/STRUCTURAL</p> <p>Portsmouth, NH 03801 Manchester, NH 03103 603/431-6196 603/627-0708 207/641-4223</p> <p>cmaengineers.com</p>		<p>revision</p> <p>no.</p> <p>1</p> <p>issued for bid</p>	<p>date</p> <p>4/16/20</p> <p>PAC</p>
<p>date:</p> <p>April 2020</p>	<p>designed by:</p> <p>JHK</p>	<p>drawn by:</p> <p>NJM</p>	<p>approved by:</p> <p>PAC</p>
<p>project no.:</p> <p>1119</p>	<p>file name:</p> <p>1119 ECP.dwg</p>	<p>scale:</p> <p>0 40' 80'</p> <p>Scale: 1" = 40'</p>	<p>drawing no.:</p> <p>EX-204</p>
<p>City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System Existing Conditions Plan</p>			<p>sheet: 9 of 45</p>



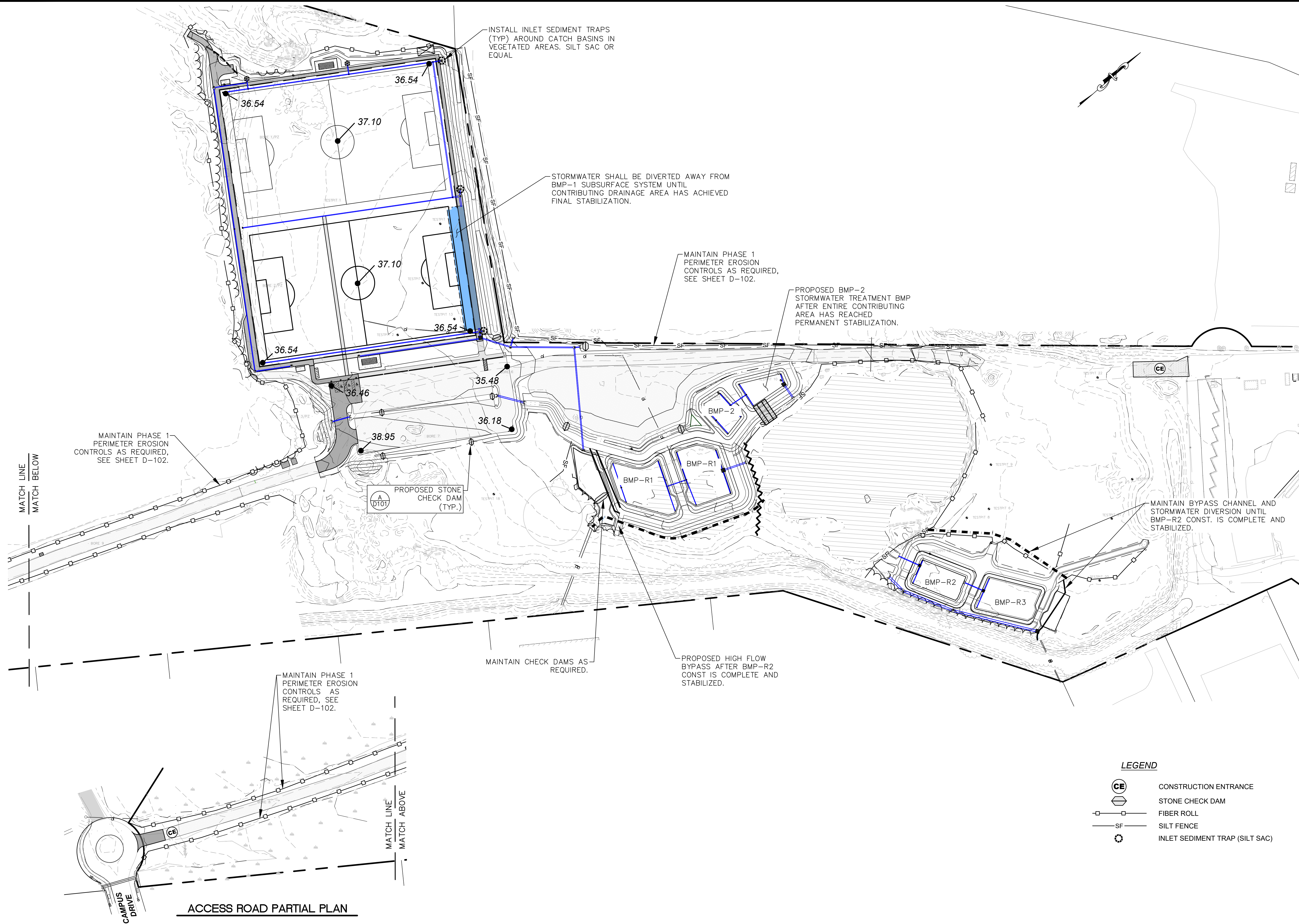
B DT01
STABILIZED
CONSTRUCTION
ENTRANCE

ACCESS ROAD PARTIAL PLAN

LEGEND

- CONSTRUCTION ENTRANCE
- STONE CHECK DAM
- FIBER ROLL
- SILTS FENCE

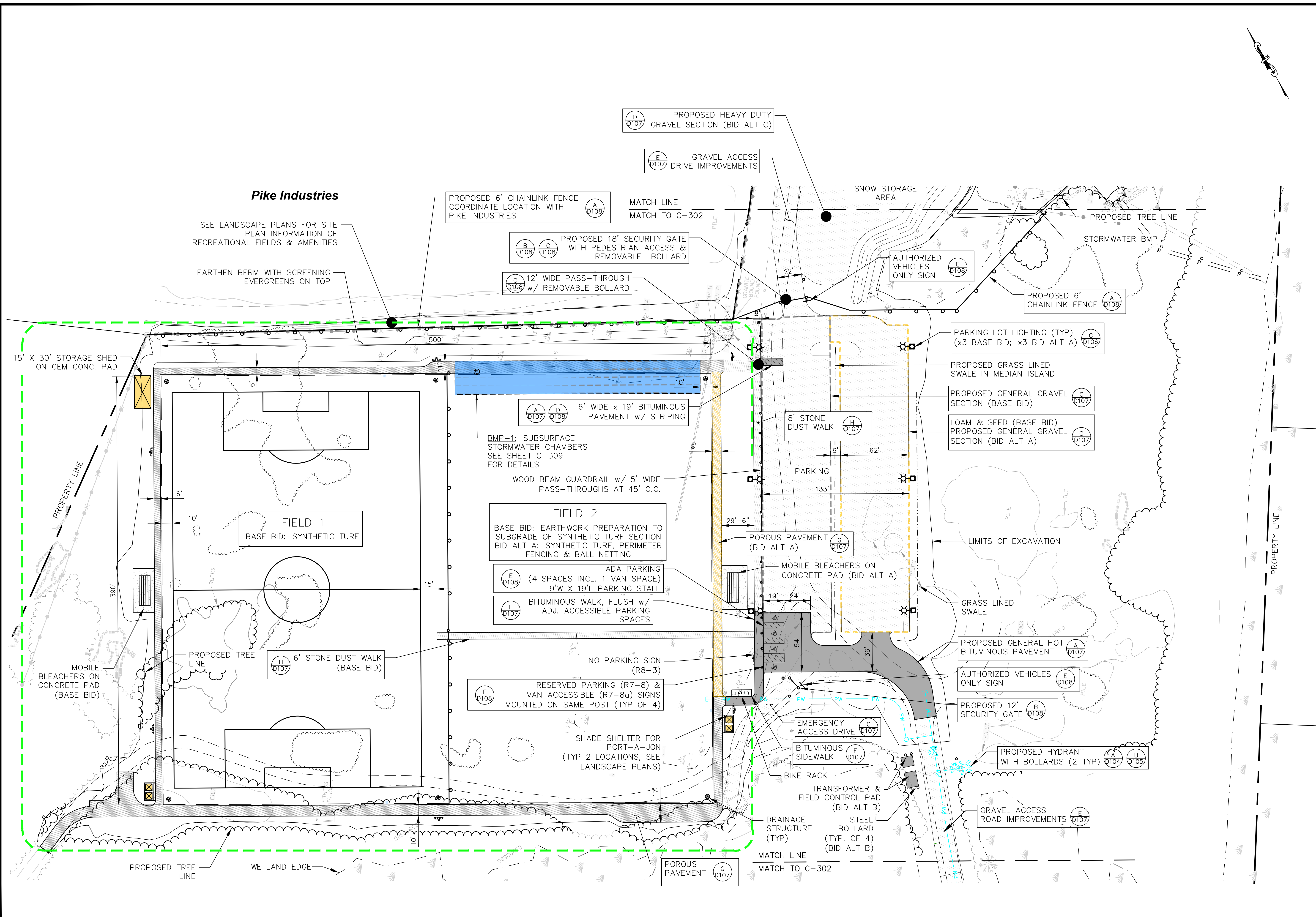
CMA ENGINEERS CIVIL/ENVIRONMENTAL/STRUCTURAL		Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/641-4223	c m a e n g i n e e r s . c o m revision no. 1 date 4/16/20 by PAC
date:	April 2020	designed by:	JHK
project no.:	1119	drawn by:	NUM
file name:	1119 ESC PLAN.dwg	approved by:	PAC
scale: 0 80' 160' Scale: 1" = 80'			
City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System Phase 1 Stormwater Management Erosion Control and Stormwater Plan			
drawing no. C-101			
sheet: 10 of 45			



LEGEND

	CONSTRUCTION ENTRANCE
	STONE CHECK DAM
	FIBER ROLL
	SILT FENCE
	INLET SEDIMENT TRAP (SILT SAC)

CMA ENGINEERS Civil/Environmental/Structural	
Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/641-4223	
cmaengineers.com	
date: April 2020 project no: 1119 file name: 1119 ESC PLAN.dwg	designed by: JHK drawn by: NJM approved by: PAC
scale: 1" = 80' 0 80' 160'	
City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System Phase 2 Stormwater Management Erosion Control and Stormwater Plan	
drawing no. C-102	
sheet: 11 of 45	
	no. 1 revision date 4/16/20 by PAC



CMA ENGINEERS CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/641-4223 cmaengineers.com			
date: April 2020 project no: 1119 file name: 1119 Site Plan-Phase 1 only	designed by: JHK drawn by: NJM approved by: PAC		
City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System Recreation Field Site Plan			
drawing no: C-201 sheet: 12 of 45			
no.	revision	date	by

STRUCTURE	STRUCTURE DETAILS
PCB-1	I.D. = 4' RIM ELEV. = 35.41 SUMP ELEV. = 30.50 UD-2 INV OUT = 32.50 (SE)
PCB-2	I.D. = 4' RIM ELEV. = 35.02 SUMP ELEV. = 30.19 UD-4 INV OUT = 32.19 (SE)
PCB-3	I.D. = 4' RIM ELEV. = 36.20 SUMP ELEV. = 31.85 UD-6 INV OUT = 33.85 (SW)
PCB-4	I.D. = 4' RIM ELEV. = 36.05 SUMP ELEV. = 31.19 UD-8 INV OUT = 33.19 (SE)
PCB-5	I.D. = 4' RIM ELEV. = 36.21 SUMP ELEV. = 29.94 DP-4 INV OUT = 31.94 (SW)
PHW-12	RIM ELEV. = 31.75 DP-11 INV IN = 29.54 (N)

STRUCTURE	STRUCTURE DETAILS
PCO-UD-1	I.D. = 1' RIM ELEV. = 36.63 SUMP ELEV. = 34.50 UD-17 INV OUT = 34.67 (SW)
PCO-UD-2	I.D. = 2' RIM ELEV. = 36.62 SUMP ELEV. = 33.99 UD-16 INV IN = 34.26 (NW) UD-15 INV OUT = 34.16 (SE)
PDMH-1	I.D. = 4' RIM ELEV. = 36.79 SUMP ELEV. = 34.01 UD-17 INV IN = 34.61 (NE) UD-16 INV OUT = 34.51 (SE)
PDMH-2	I.D. = 4' RIM ELEV. = 36.59 SUMP ELEV. = 26.55 DP-1 INV IN = 28.65 (SW) UD-8 INV IN = 29.16 (NW) DP-2 INV OUT = 28.55 (SE)

STRUCTURE	STRUCTURE DETAILS
PDMH-3	I.D. = 4' RIM ELEV. = 36.64 SUMP ELEV. = 27.51 DP-4 INV IN = 31.59 (NE) UD-10 INV IN = 31.59 (SW) DP-3 INV IN = 28.27 (NW) DP-5 INV OUT = 28.01 (SE)
PDMH-4	I.D. = 4' RIM ELEV. = 36.66 SUMP ELEV. = 31.37 UD-13 INV IN = 33.41 (SW) DP-6 INV OUT = 32.82 (NE)
PDMH-5	I.D. = 4' RIM ELEV. = 36.67 SUMP ELEV. = 31.53 UD-14 INV IN = 33.63 (SW) UD-13 INV OUT = 33.53 (NE) DP-23 INV IN = 33.63 (SE)
PDMH-6	I.D. = 4' RIM ELEV. = 37.84 SUMP ELEV. = 31.70 UD-15 INV IN = 33.90 (NW) UD-14 INV OUT = 33.70 (NE)
PDMH-7	I.D. = 4' RIM ELEV. = 33.08 SUMP ELEV. = 26.76 DP-7 INV IN = 27.36 (SW) DP-8 INV OUT = 27.26 (NE)

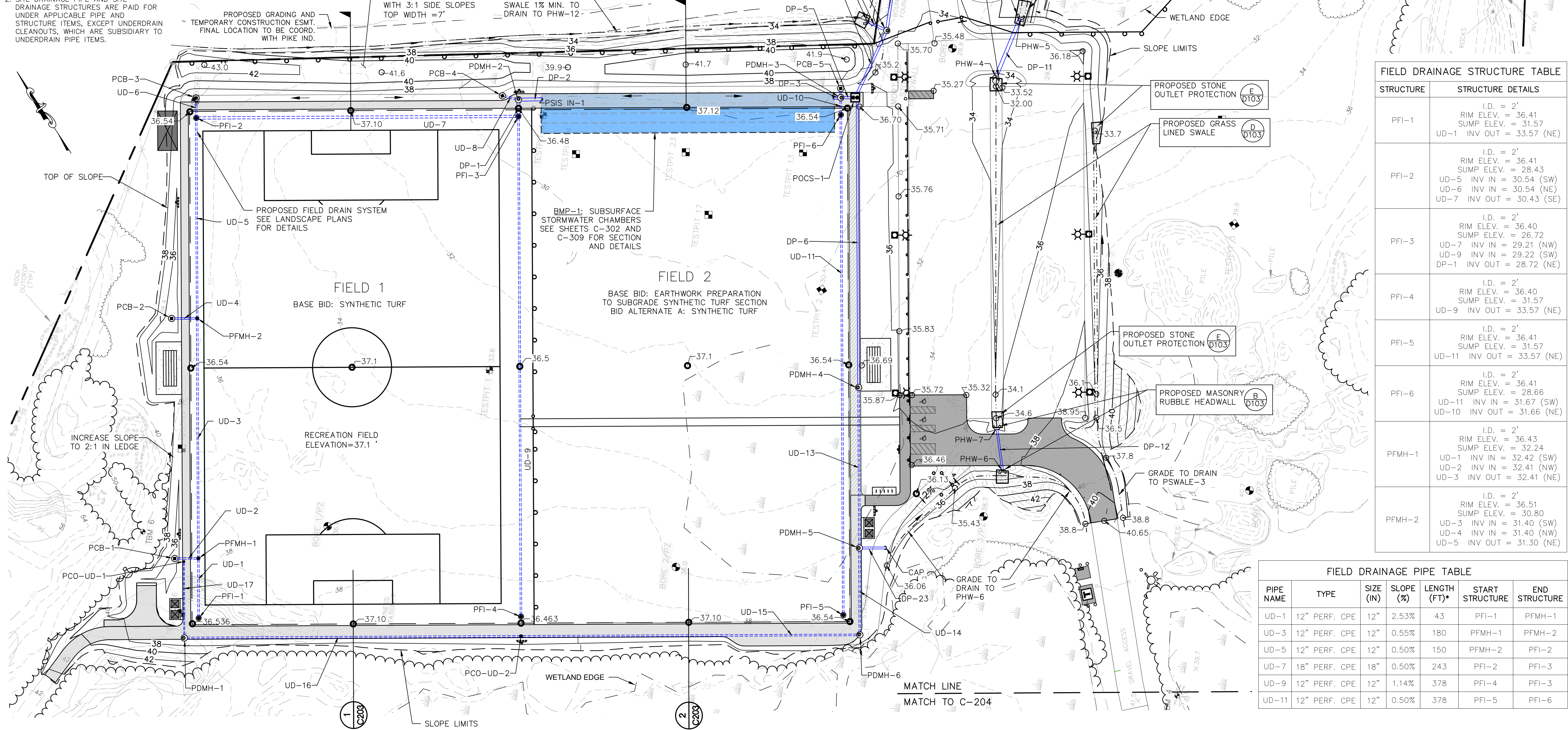
STRUCTURE	STRUCTURE DETAILS
PDMH-8	I.D. = 4' RIM ELEV. = 31.43 SUMP ELEV. = 26.09 DP-8 INV IN = 26.69 (SW) DP-9 INV IN = 27.09 (NE) DP-10 INV OUT = 26.59 (SE)
PHW-4	RIM ELEV. = 33.85 DP-11 INV OUT = 31.10 (NE)
PHW-5	RIM ELEV. = 31.75 DP-11 INV IN = 28.85 (SW)
PHW-6	RIM ELEV. = 36.68 DP-12 INV OUT = 35.02 (NE)
PHW-7	RIM ELEV. = 33.55 DP-12 INV IN = 34.70 (SW)
POCS-1	DIMENSIONS = 72"x72" RIM ELEV. = 36.67 SUMP ELEV. = 27.14 DP-5 INV IN = 27.75 (NW) DP-6 INV IN = 32.20 (SW) DP-7 INV OUT = 27.64 (NE)

PIPE NAME	TYPE	SIZE (IN)	SLOPE (%)	LENGTH (FT)*	START STRUCTURE	END STRUCTURE
DP-1	24" CPE	24"	0.50%	10	PFI-3	PDMH-2
DP-2	24" CPE	24"	0.55%	16	PDMH-2	PSIS IN-1
DP-3	24" CPE	24"	0.50%	4	PSIS-OUT	PDMH-3
DP-4	12" CPE	12"	5.00%	3	PCB-5	PDMH-3
DP-5	18" CPE	18"	2.38%	6	PDMH-3	POCS-1
DP-6	15" HP STORM PP	15"	0.50%	220	PDMH-4	POCS-1
DP-7	18" CPE	18"	0.50%	51	POCS-1	PDMH-7
DP-8	18" CLASS V RCP	18"	0.50%	110	PDMH-7	PDMH-8
DP-11	24" CLASS V RCP	24"	4.67%	47	PHW-4	PHW-5
DP-12	15" CLASS V RCP	15"	0.99%	32	PHW-6	PHW-7
DP-22	15" CLASS V RCP	15"	0.62%	14	PDMH-7	PHW-13

PIPE NAME	TYPE	SIZE (IN)	SLOPE (%)	LENGTH (FT)*	START STRUCTURE	END STRUCTURE
DP-23	15" CPE	15"	0.50%	20	--	PDMH-5
UD-2	12" PERF. CPE	12"	0.50%	15	PCB-1	PFMH-1
UD-4	12" PERF. CPE	12"	4.06%	16	PCB-2	PFMH-2
UD-6	12" PERF. CPE	12"	21.80%	13	PCB-3	PFI-2
UD-8	12" PERF. CPE	12"	32.12%	9	PCB-4	PDMH-2
UD-10	12" PERF. CPE	12"	0.50%	10	PFI-6	PDMH-3
UD-13	15" PERF. CPE	12"	0.10%	122	PDMH-5	PDMH-4
UD-14	12" PERF. CPE	12"	0.10%	62	PDMH-6	PDMH-5
UD-15	12" PERF. CPE	12"	0.10%	255	PCO-UD-2	PDMH-6
UD-16	12" PERF. CPE	12"	0.10%	253	PDMH-1	PCO-UD-2
UD-17	8" PERF. CPE	8"	0.10%	56	PCO-UD-1	PDMH-1

- GENERAL NOTES:**
- FIELD DRAINAGE PIPES AND FIELD DRAINAGE STRUCTURES ARE SUBSIDIARY TO PAY ITEM 4.00: FIELD 1 SYNTHETIC TURF FIELD.
 - SITE DRAINAGE PIPE AND SITE DRAINAGE STRUCTURES ARE PAID FOR UNDER APPLICABLE PIPE AND STRUCTURE ITEMS, EXCEPT UNDERDRAIN CLEANOUTS, WHICH ARE SUBSIDIARY TO UNDERDRAIN PIPE ITEMS.

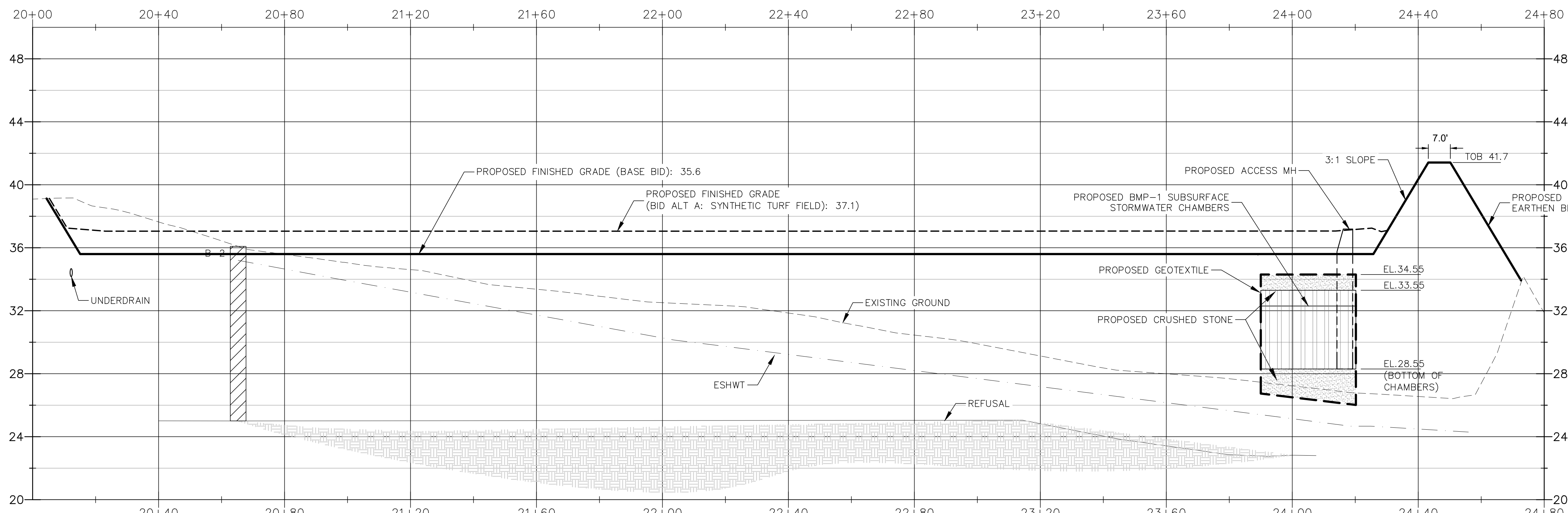
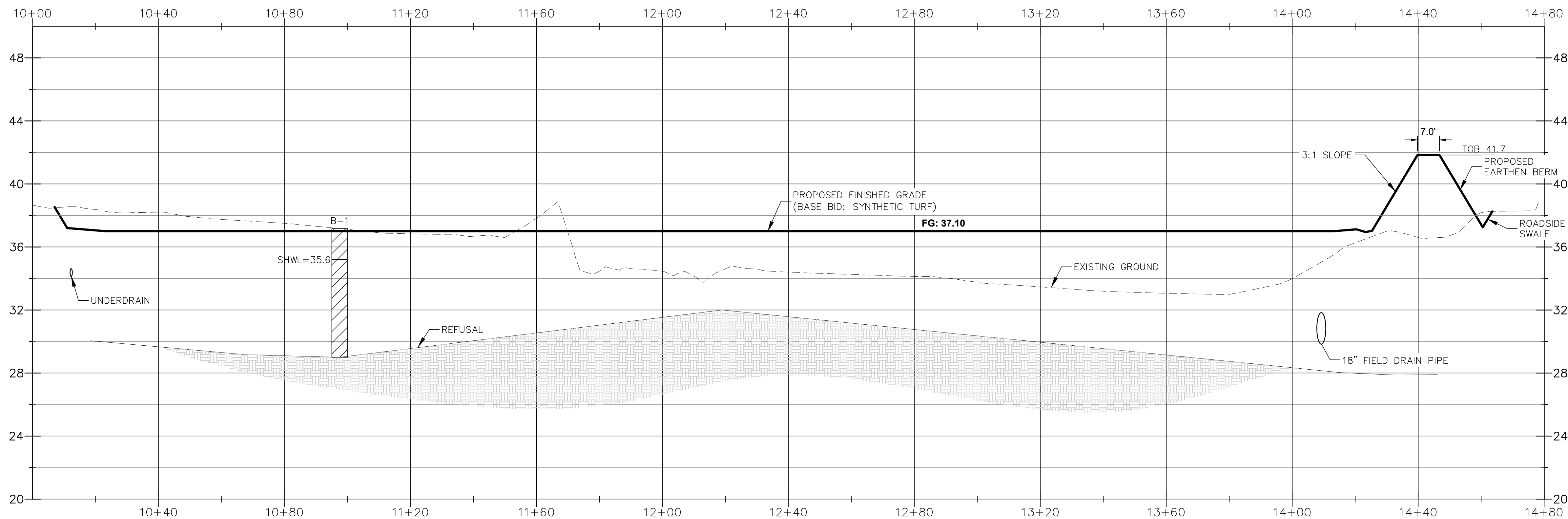
Pike Industries



STRUCTURE	STRUCTURE DETAILS
PFI-1	I.D. = 2' RIM ELEV. = 36.41 SUMP ELEV. = 31.57 UD-1 INV OUT = 33.57 (NE)
PFI-2	I.D. = 2' RIM ELEV. = 36.41 SUMP ELEV. = 28.43 UD-5 INV IN = 30.54 (SW) UD-6 INV IN = 30.54 (NE) UD-7 INV OUT = 30.43 (SE)
PFI-3	I.D. = 2' RIM ELEV. = 36.40 SUMP ELEV. = 26.72 UD-7 INV IN = 29.21 (NW) UD-9 INV IN = 29.22 (SW) DP-1 INV OUT = 28.72 (NE)
PFI-4	I.D. = 2' RIM ELEV. = 36.40 SUMP ELEV. = 31.57 UD-9 INV OUT = 33.57 (NE)
PFI-5	I.D. = 2' RIM ELEV. = 36.41 SUMP ELEV. = 31.57 UD-11 INV IN = 33.57 (NE)
PFI-6	I.D. = 2' RIM ELEV. = 36.41 SUMP ELEV. = 28.66 UD-11 INV IN = 31.67 (SW) UD-10 INV OUT = 31.66 (NE)
PFMH-1	I.D. = 2' RIM ELEV. = 36.43 SUMP ELEV. = 32.24 UD-1 INV IN = 32.42 (SW) UD-2 INV IN = 32.41 (NW) UD-3 INV OUT = 32.41 (NE)
PFMH-2	I.D. = 2' RIM ELEV. = 36.51 SUMP ELEV. = 30.80 UD-3 INV IN = 31.40 (SW) UD-4 INV IN = 31.40 (NW) UD-5 INV OUT = 31.30 (NE)

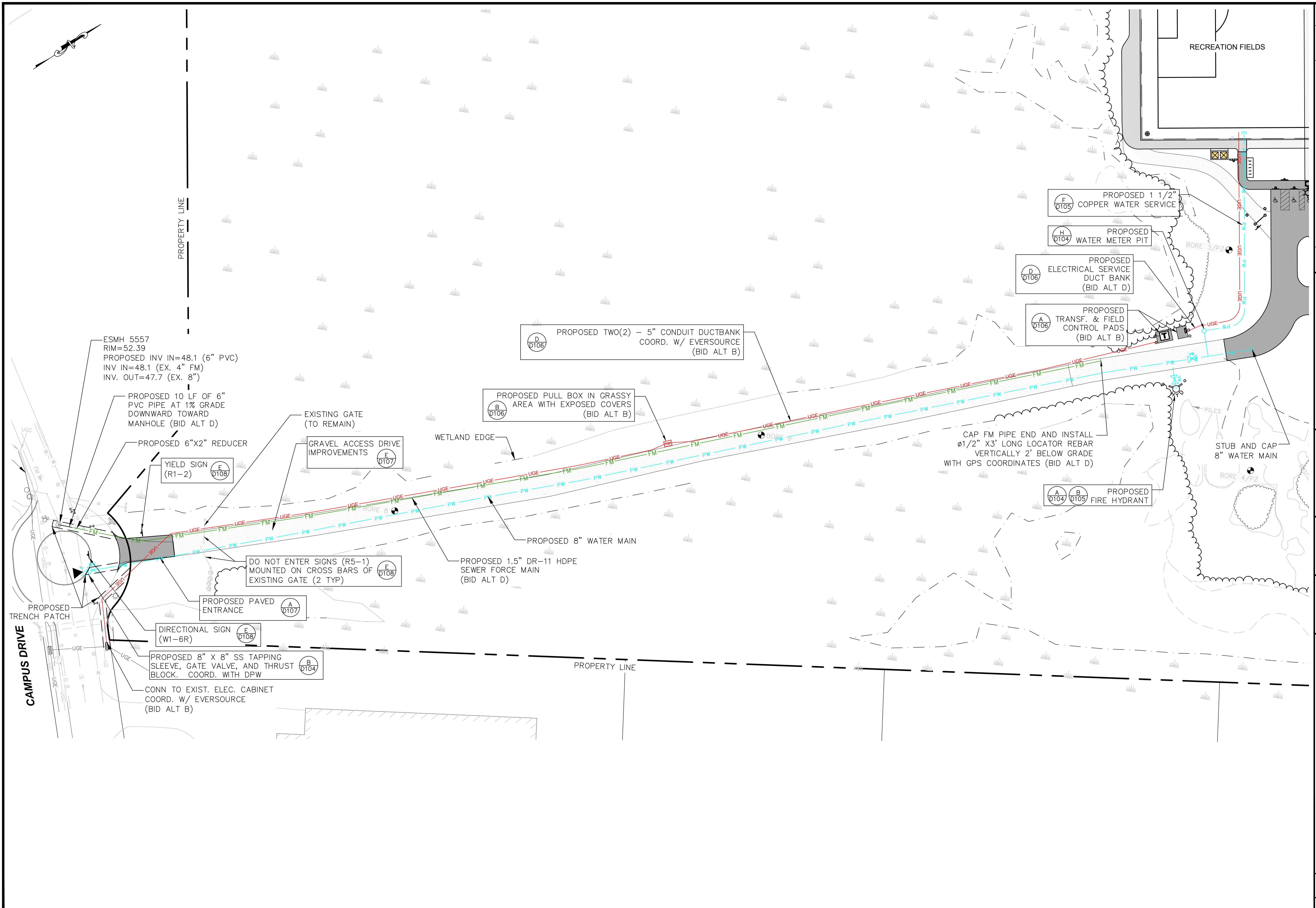
PIPE NAME	TYPE	SIZE (IN)	SLOPE (%)	LENGTH (FT)*	START STRUCTURE	END STRUCTURE
UD-1	12" PERF. CPE	12"	2.53%	43	PFI-1	PFMH-1
UD-3	12" PERF. CPE	12"	0.55%	180	PFMH-1	PFMH-2
UD-5	12" PERF. CPE	12"	0.50%	150	PFMH-2	PFI-2
UD-7	18" PERF. CPE	18"	0.50%	243	PFI-2	PFI-3
UD-9	12" PERF. CPE	12"	1.14%	378	PFI-4	PFI-3
UD-11	12" PERF. CPE	12"	0.50%	378	PFI-5	PFI-6

designed by:	JHK	drawn by:	NJM	approved by:	PAC
date:	April 2020	project no.:	1119	file name:	1119 Grading Plan-Phase dwg
scale:	1" = 40'	scale:	1" = 40'	scale:	1" = 40'
City of Portsmouth, New Hampshire	Department of Public Works	Multi-purpose Recreation Fields and Regional Stormwater Treatment System	Recreation Field Grading & Drainage	sheet:	13 of 45
CMA ENGINEERS	Civil/Environmental/Structural	Portland, ME	207/651-4223	revision:	1
Portsmouth, NH	603/431-6196	603/627-0708	207/651-4223	issued for bid:	4/16/20
c m a e n g i n e e r s . c o m			by:		

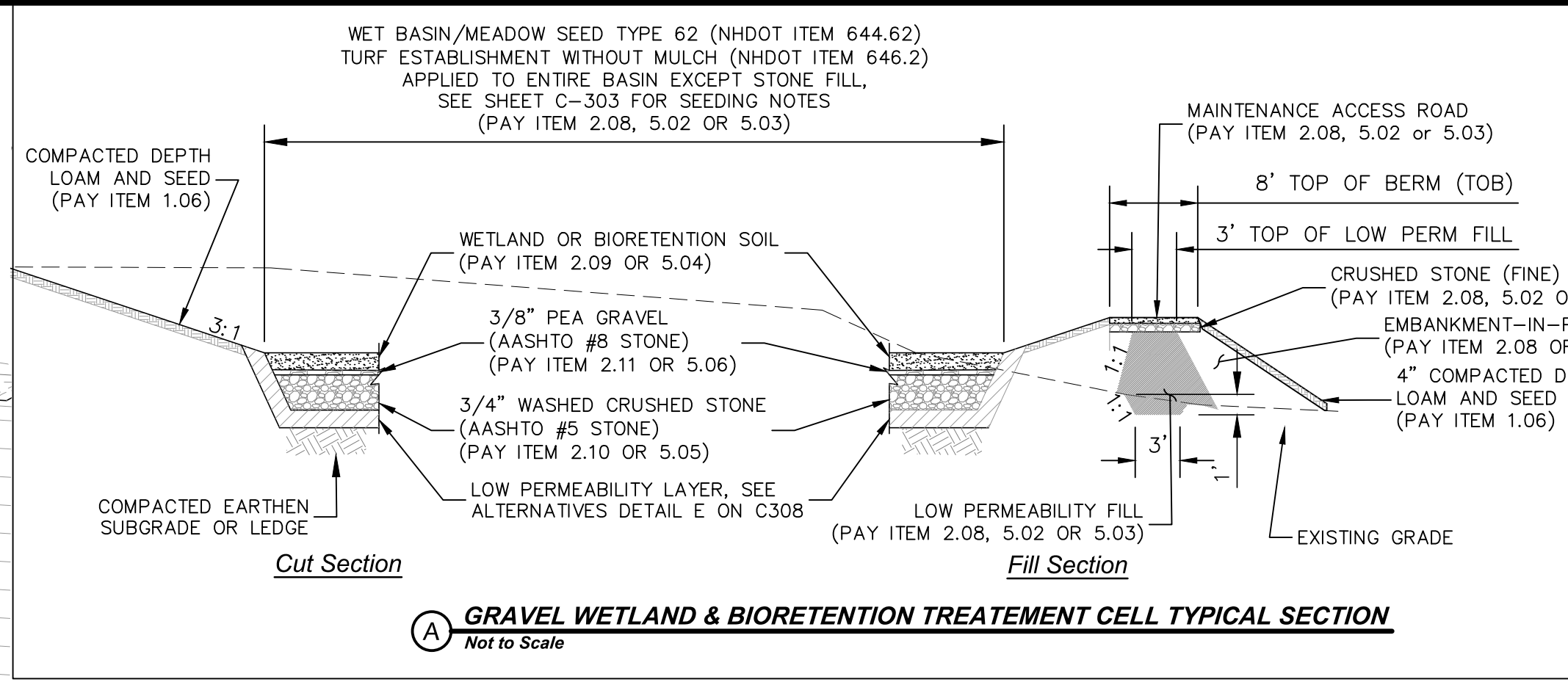
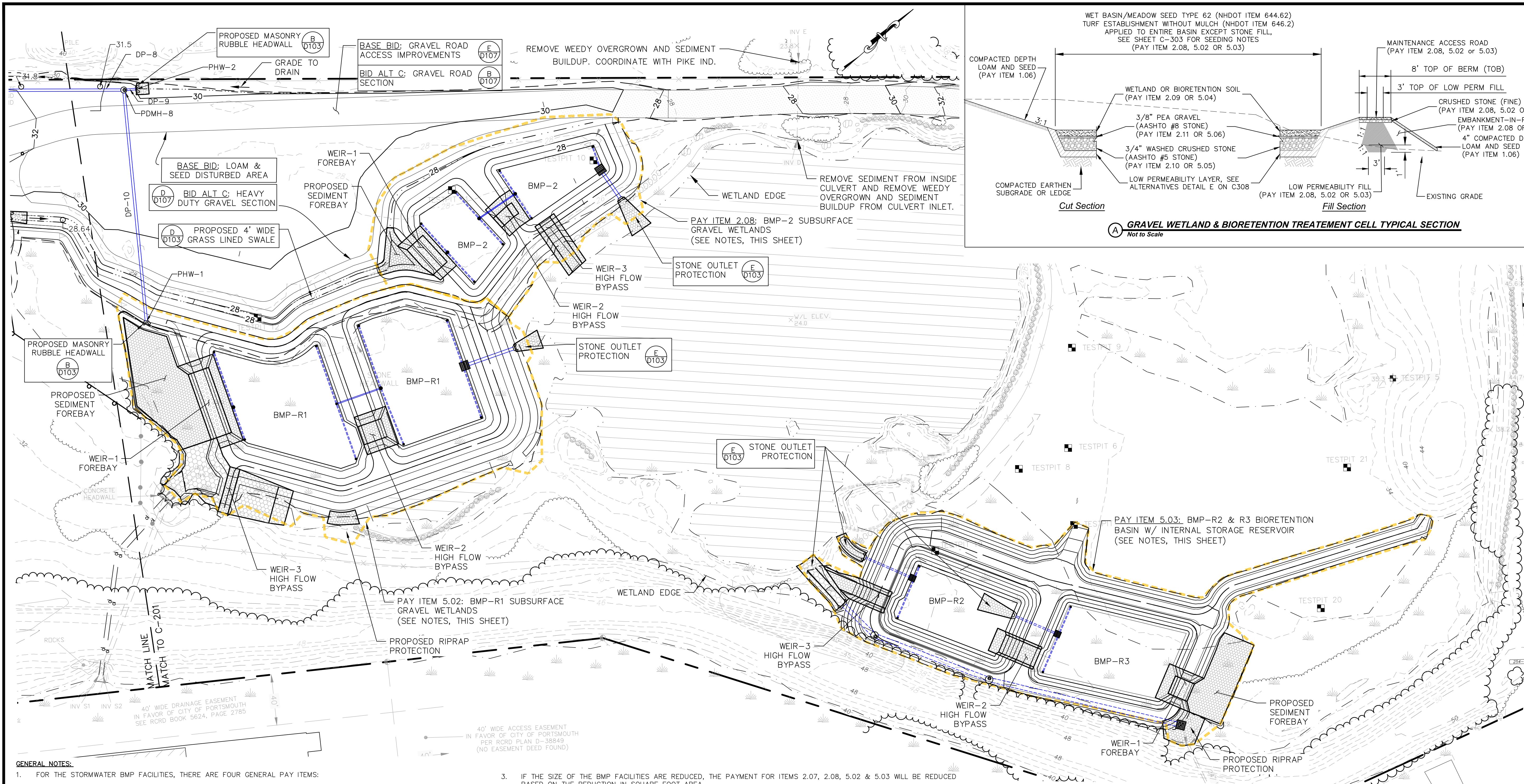


- NOTES:
1. REFUSALS NOT ENCOUNTERED DURING SUBSURFACE EXPLORATIONS WERE ASSUMED TO BE AT THE BOTTOM OF THE EXPLORATION.
 2. LINES REPRESENTING THE WATER SURFACE AND REFUSAL PROFILES WERE INTERPOLATED BETWEEN BORINGS AND TEST PITS. ACTUAL FIELD ELEVATIONS MAY VARY.
 3. SHWL DATA NOT MEASURED AT PIEZOMETERS/BORINGS WAS ASSUMED TO BE 1 FOOT BELOW EG AT THE LIMITS OF DELINEATED WETLANDS AND INTERPOLATED IN BETWEEN. ACTUAL FIELD ELEVATIONS MAY VARY.
 4. SEE LANDSCAPE PLANS TO CONSTRUCT RECREATIONAL FIELDS.

 CIVIL/ENVIRONMENTAL/STRUCTURAL		Portsmouth, NH 603/431-6196	Manchester, NH 603/627-0708	Portland, ME 207/641-4223	c m a e n g i n e e r s . c o m
date: April 2020	designed by: JHK	project no: 1119	drawn by: NJM	approved by: PAC	no. 1
City of Portsmouth, New Hampshire Department of Public Works		Multi-purpose Recreation Fields and Regional Stormwater Treatment System		Recreation Fields Site Sections	
drawing no. C-203					
sheet: 14 of 45					
scale: 1" = 20' 0 20' 40'					
file name: 1119 Field Site Sections.dwg					
issued for Bid					
revision					
date 4/16/20					
by PAC					



<p>CMA ENGINEERS CIVIL/ENVIRONMENTAL/STRUCTURAL</p> <p>Portsmouth, NH 03801 603/431-6196</p> <p>Portland, ME 04106 207/651-4223</p> <p>cmengineers.com</p>	
<p>date: April 2020</p> <p>project no: 1119</p> <p>file name: 1119 Utility Plan-Phase 1.dwg</p>	<p>designed by: JHK</p> <p>drawn by: NJM</p> <p>approved by: PAC</p>
<p>City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System Access Road Plan & Utility Plan</p>	
<p>drawing no: C-204</p>	
<p>sheet: 15 of 45</p>	
<p>scale: 1" = 40'</p>	
<p>no. 1</p> <p>revision</p> <p>date 4/16/20</p> <p>by PAC</p>	



GENERAL NOTES:

- FOR THE STORMWATER BMP FACILITIES, THERE ARE FOUR GENERAL PAY ITEMS:
 - ITEM 2.07: BMP-1 SUBSURFACE STORMWATER CHAMBERS (SITE SYSTEM)
 - ITEM 2.08: BMP-2 SUBSURFACE GRAVEL WETLANDS CONSTRUCTION (SITE SYSTEM)
 - ITEM 5.02: BMP-R1 SUBSURFACE GRAVEL WETLANDS CONSTRUCTION (REGIONAL SYSTEM)
 - ITEM 5.03: BMP-R2 & R3 BIORETENTION BASIN WITH INTERNAL STORAGE RESERVOIR (REGIONAL SYSTEM)

ITEM 2.07 & ITEM 2.08 ARE BMP SYSTEMS DESIGNED TO MANAGE THE RECREATION FIELDS PARKING AREA STORMWATER. ITEM 5.02 & ITEM 5.03 ARE BMP SYSTEMS DESIGNED TO MANAGE OFFSITE, REGIONAL STORMWATER. THE WORK INCLUDED IN THESE PAY ITEMS IS DEFINED IN SECTION 01025 - MEASUREMENT AND PAYMENT. THESE PAY ITEMS GENERALLY INCLUDE ALL WORK NECESSARY TO CONSTRUCT THE BMP FACILITIES EXCEPT FOR MATERIALS a. THROUGH i. THAT ARE PAID FOR SEPARATELY.

 - ITEMS 1.04 & 5.00: SITE PREPARATION
 - ITEMS 2.01 & 5.01: LEDGE REMOVAL AND DISPOSAL
 - ITEMS 2.09, 5.04A & 5.04B: WETLAND SOIL/BIORETENTION SOIL MIX
 - ITEMS 2.10 & 5.05: 3/4" WASHED STONE*
 - ITEMS 2.11 & 5.06: 3/8" PEA GRAVEL*
 - ITEMS 2.12 & 5.07: STONE FILL*
 - ITEMS 2.13, 2.14, 5.08, 5.09, 5.10 & 5.11: OUTLET CONTROL STRUCTURES
 - ITEMS 2.29 & 5.12: HEADWALLS
 - ITEM 2.27 & 5.15 DRAINAGE MANHOLES

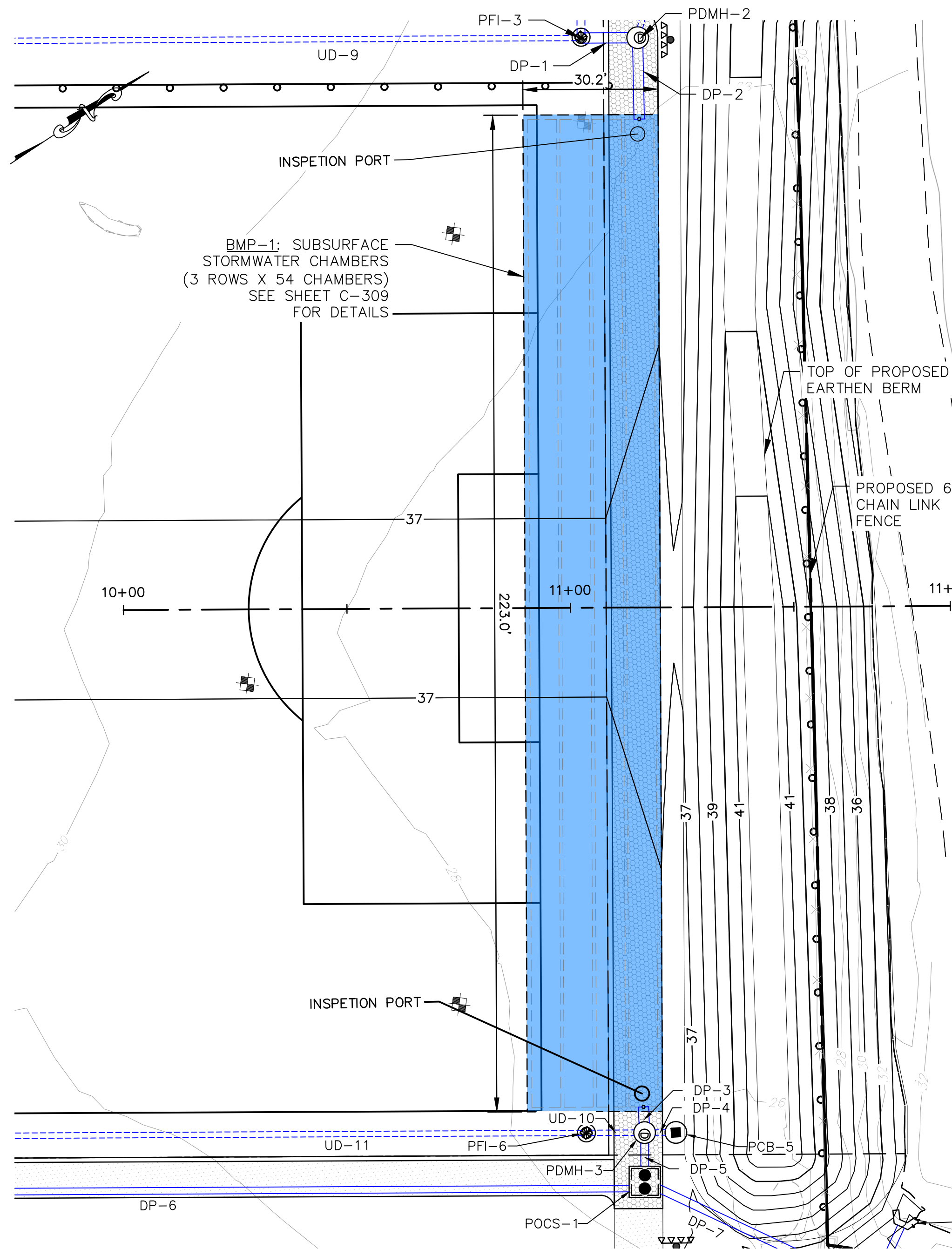
*EXCEPTION: ALL STONE AND FABRIC MATERIALS REQUIRED FOR BMP1 SUBSURFACE STORMWATER CHAMBERS ARE SUBSIDIARY TO PAY ITEM 2.07.
- FOR THE SUBSURFACE GRAVEL WETLANDS (BMP-2 & BMP-R1) AND THE BIORETENTION BASIN WITH INTERNAL STORAGE RESERVOIR (ISR) (BMP R2 & R3), THE CONTRACTOR SHALL Dewater AND REMOVE MATERIAL DOWN TO THE REQUIRED SUBGRADE ELEVATION UNLESS LEDGE IS ENCOUNTERED. DEPENDING ON THE ELEVATION OF LEDGE, THE ENGINEER MAY RECONFIGURE THE LAYOUT OF THESE BMP FACILITIES TO MINIMIZE THE REQUIRED LEDGE EXCAVATION. AFTER THE MATERIAL HAS BEEN EXCAVATED, THE CONTRACTOR SHALL PROVIDE A SURVEY OF THE SUBGRADE TOPOGRAPHY. AFTER RECEIVING THE SURVEY, THE ENGINEER WILL HAVE 5 BUSINESS DAYS TO REVIEW THE SUITABILITY OF THE SUBGRADE AND PREPARE REVISED PLANS THAT MAY RECONFIGURE THE BMP LAYOUT (IF REQUIRED). THE CONTRACTOR'S SURVEY SHALL BE SUBSIDIARY TO THE PAY ITEMS FOR THE BMP FACILITIES.

- IF THE SIZE OF THE BMP FACILITIES ARE REDUCED, THE PAYMENT FOR ITEMS 2.07, 2.08, 5.02 & 5.03 WILL BE REDUCED BASED ON THE REDUCTION IN SQUARE FOOT AREA.
- BERMS AROUND THE PERIMETER AND BETWEEN CELLS OF BMP FACILITIES SHALL BE CONSTRUCTED PER DETAIL A AND C, SHEET C-308. THE TOP OF BERMS SHALL PROVIDE SUITABLE ACCESS FOR FUTURE BMP MAINTENANCE.
- SEDIMENT FOREBAYS SHALL BE CONSTRUCTED PER DETAILS ON SHEETS C-306 AND C-307.
- SEE TYPICAL CONFIGURATION, NOTES, AND DETAILS ON SHEETS C-302 AND C-309 FOR CONSTRUCTION OF THE SUBSURFACE STORMWATER CHAMBERS (BMP-1).
- SEE TYPICAL CONFIGURATION, NOTES, AND DETAILS ON SHEET C-306 FOR CONSTRUCTION OF THE SUBSURFACE GRAVEL WETLANDS (BMP-2 & BMP-R1).
- SEE TYPICAL CONFIGURATION, NOTES, AND DETAILS ON SHEET C-307 FOR CONSTRUCTION OF THE BIORETENTION BASIN WITH INTERNAL STORAGE RESERVOIR (BMP-R2 & R3).
- THE WATER QUALITY BASIN AREAS SHALL BE CLEARED OF ALL TREES, ROOTS, STUMPS, BOULDERS, AND SOD TO A DEPTH OF 2- FEET BELOW FINAL GRADE.
- CONSTRUCT BERMS USING EMBANKMENT MATERIAL FREE OF SOD, ROOTS, FROZEN MATERIAL, NO STONES LARGER THAN 6-INCHES, OR OTHER UNSUITABLE MATERIAL. COMPACT PER STAND SPECIFICATIONS.
- ANTI-SLEEP COLLARS SHALL BE INSTALLED TO RESIST FLOW AROUND THE OUTSIDE OF PIPES. COLLAR SHOULD PROTECT A MINIMUM OF 2-FT FROM THE PIPE. THE COST OF THE COLLAR IS SUBSIDIARY TO THE BMP PAY ITEM.
- LOAM AND SEED ALL DISTURBED SLOPES AS SOON AS POSSIBLE. STABILIZE THE INLET AREA WITH REQUIRED EROSION CONTROL.
- REMOVE ACCUMULATED SEDIMENT FROM BMP FACILITIES AT COMPLETION OF PROJECT.

PIPE NAME	TYPE	SIZE (IN)	SLOPE (%)	LENGTH (FT)*	START STRUCTURE	END STRUCTURE
DP-8	18" CLASS V RCP	18"	0.50%	110	PDMH-7	PDMH-8
DP-9	15" CLASS V RCP	15"	0.50%	8	PHW-2	PDMH-8
DP-10	18" CLASS V RCP	18"	0.50%	182	PDMH-8	PHW-1

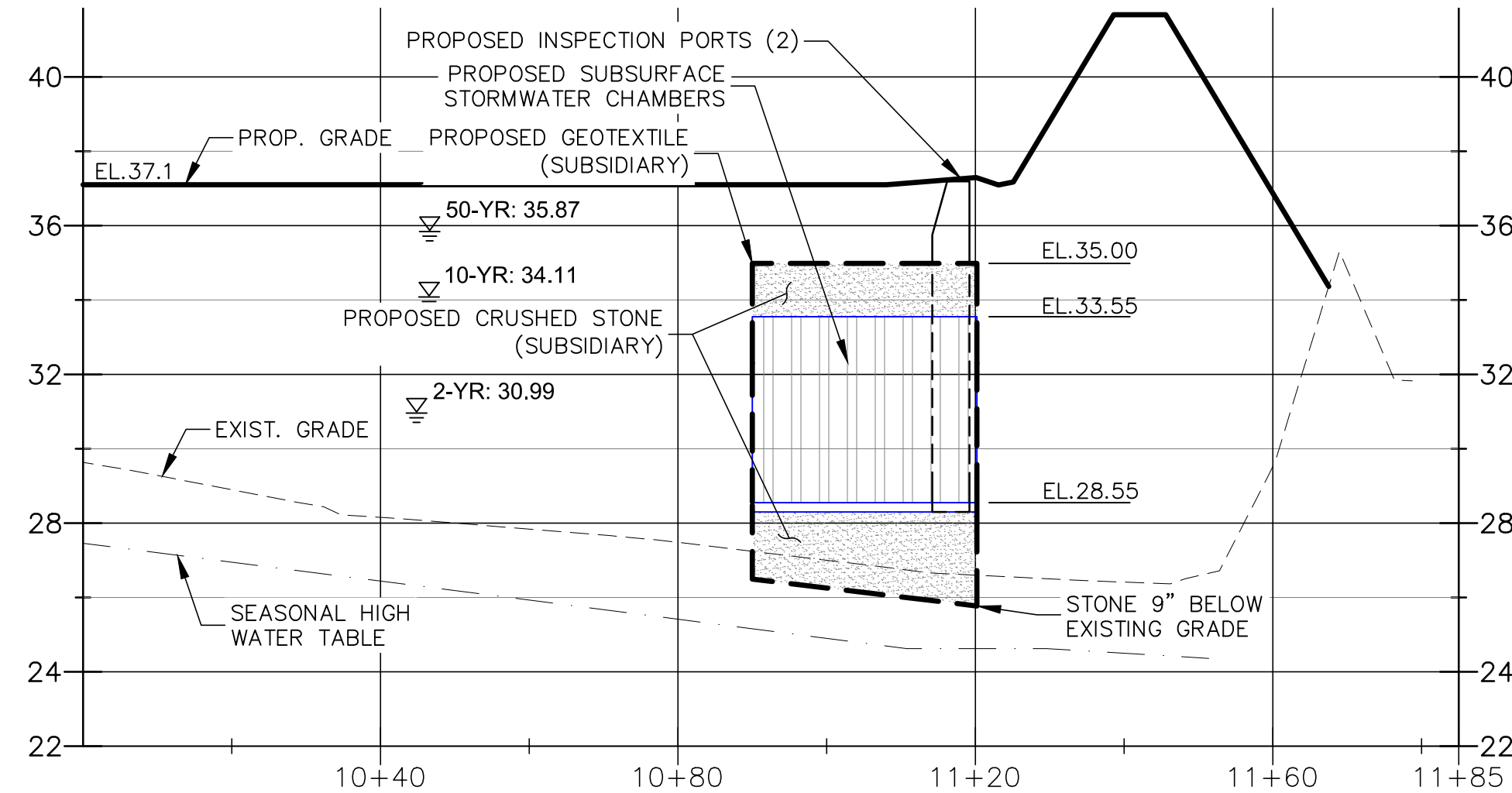
STRUCTURE	STRUCTURE DETAILS
PDMH-8	I.D. = 4' RIM ELEV. = 31.43 SUMP ELEV. = 26.09 DP-8 INV IN = 26.69 (SW) DP-9 INV IN = 27.09 (NE) DP-10 INV OUT = 26.59 (SE)
PHW-1	RIM ELEV. = 27.88 DP-10 INV IN = 25.67 (NW)
PHW-2	RIM ELEV. = 28.81 DP-9 INV OUT = 27.14 (SW)
PHW-5	RIM ELEV. = 31.75 DP-11 INV IN = 28.85 (SW)

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BMP-1: Field Subsurface Infiltration System - Plan

Scale: 1"=20'



BMP-1: Subsurface Stormwater Chambers - Section

1"=20' Horiz. & 1"=4' Vert

BMP-2 DRAINAGE STRUCTURE TABLE	
STRUCTURE	STRUCTURE DETAILS
POCS-2	DIMENSIONS = 72"x72" RIM ELEV. = 28.00 SUMP ELEV. = 23.33 UD-32 INV IN = 23.83 (NW) DP-16 INV OUT = 25.25 (E)
PRISR-1	I.D. = 2' RIM ELEV. = 28.00 SUMP ELEV. = 23.68 UD-27 INV IN = 23.83 (E) UD-26 INV OUT = 23.83 (W)
PRISR-2	I.D. = 2' RIM ELEV. = 28.00 SUMP ELEV. = 23.66 UD-28 INV IN = 23.83 (W) UD-29 INV IN = 23.83 (E) DP-15 INV OUT = 23.83 (N)
PRISR-3	I.D. = 2' RIM ELEV. = 28.00 SUMP ELEV. = 23.66 DP-15 INV IN = 23.83 (S) UD-30 INV OUT = 23.83 (W) UD-31 INV OUT = 23.83 (E)

FIELD SUBSURFACE INFILTRATION SYSTEM NOTES:

- INSPECTION PORTS SHALL BE LOCATED AT EACH END OF CHAMBER ROW UNDER POROUS PAVEMENT.
- CHAMBER DESIGN SHALL BE H-20 LOAD RATED.
- CHAMBER SYSTEM SHALL BE SIZED TO A MAXIMUM ELEVATION OF 35.00 AND MINIMUM ELEVATION OF 27.80
- STORAGE CHAMBER SYSTEM SHALL HAVE A MAXIMUM FOOTPRINT OF 6700 SF. AND MINIMUM TOTAL STORAGE VOLUME OF 0.656 ACRE- FEET.
- SEE SHEET C-202 FOR BMP-1 DRAINAGE AND STRUCTURE INFORMATION.

SUBSURFACE GRAVEL WETLANDS (SGWL) NOTES:

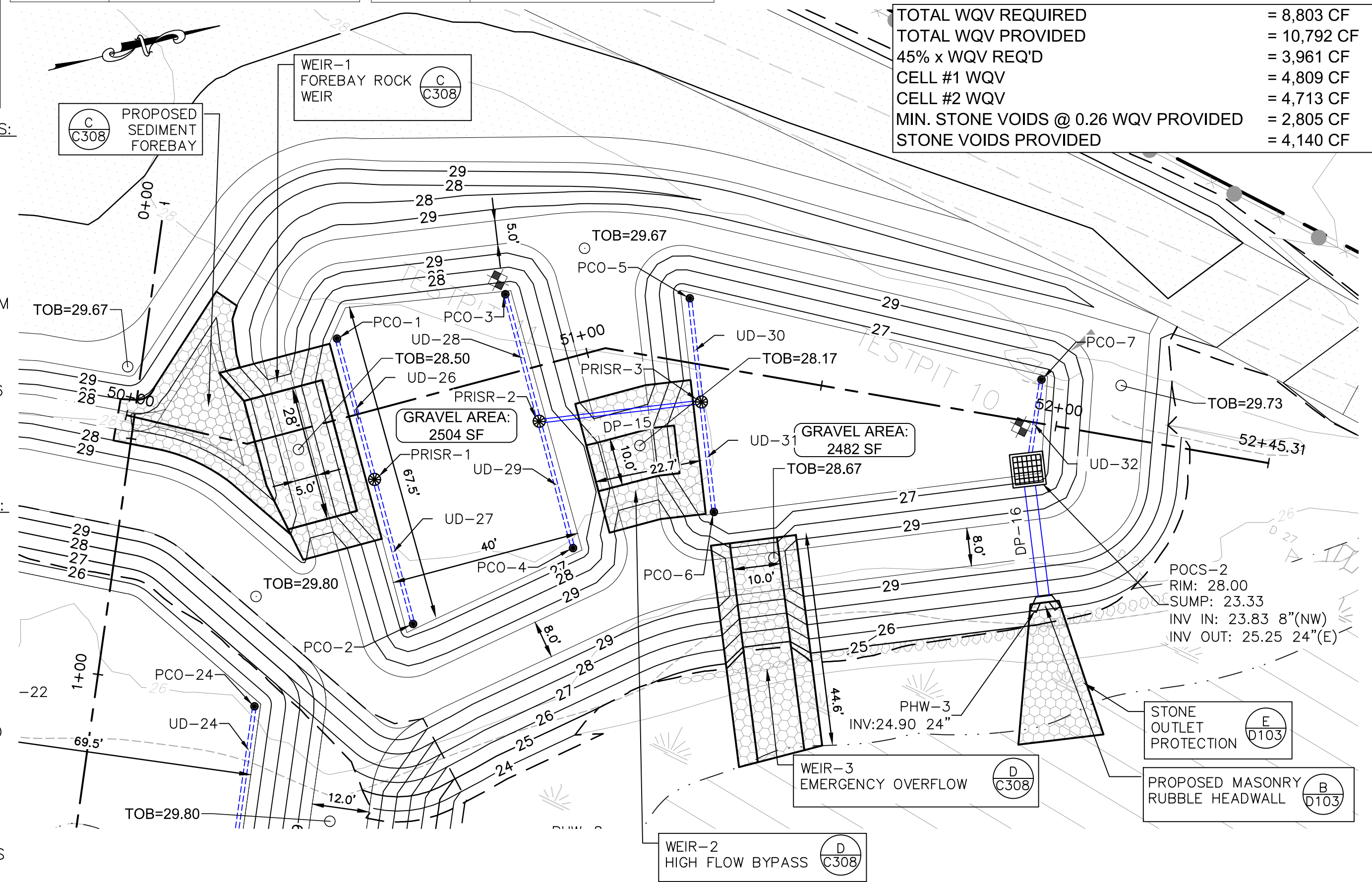
- THE SGWL IS TO BE USED FOR CONSTRUCTION STORMWATER TREATMENT AND DETENTION DURING PHASE 1 CONSTRUCTION OF THE FIELDS.
- PRIOR TO USING THE SGWL FOR CONSTRUCTION STORMWATER TREATMENT, REMOVE ALL EXISTING SOIL DOWN TO A DEPTH OF THE SURFACE GRADE OF THE WETLAND SOIL.
- AT THE COMPLETION OF THE PROJECT, AND AFTER THE SITE HAS BECOME STABILIZED, REMOVE ACCUMULATED SEDIMENT FROM DETENTION BASIN PRIOR TO CONSTRUCTING SGWL COMPONENTS.
- WHEN THE SITE HAS BECOME STABILIZED; CONSTRUCT THE SGWL TO THE SGWL PLANS AND SPECIFICATIONS.

BMP-2 DRAINAGE STRUCTURE TABLE	
STRUCTURE	STRUCTURE DETAILS
PCO-5	I.D. = 1' RIM ELEV. = 28.00 SUMP ELEV. = 23.83 UD-30 INV IN = 23.83 (E)
PCO-6	I.D. = 1' RIM ELEV. = 28.00 SUMP ELEV. = 23.83 UD-31 INV IN = 23.83 (W)
PCO-7	I.D. = 1' RIM ELEV. = 28.00 SUMP ELEV. = 23.83 UD-32 INV OUT = 23.83 (SE)
PHW-3	RIM ELEV. = 27.04 DP-16 INV IN = 24.90 (W)

BMP-2 DRAINAGE STRUCTURE TABLE	
STRUCTURE	STRUCTURE DETAILS
PCO-1	I.D. = 1' RIM ELEV. = 28.00 SUMP ELEV. = 23.83 UD-26 INV IN = 23.83 (E)
PCO-2	I.D. = 1' RIM ELEV. = 28.00 SUMP ELEV. = 23.83 UD-27 INV IN = 23.83 (W)
PCO-3	I.D. = 1' RIM ELEV. = 28.00 SUMP ELEV. = 23.83 UD-28 INV OUT = 23.83 (E)
PCO-4	I.D. = 1' RIM ELEV. = 28.00 SUMP ELEV. = 23.83 UD-29 INV OUT = 23.83 (W)

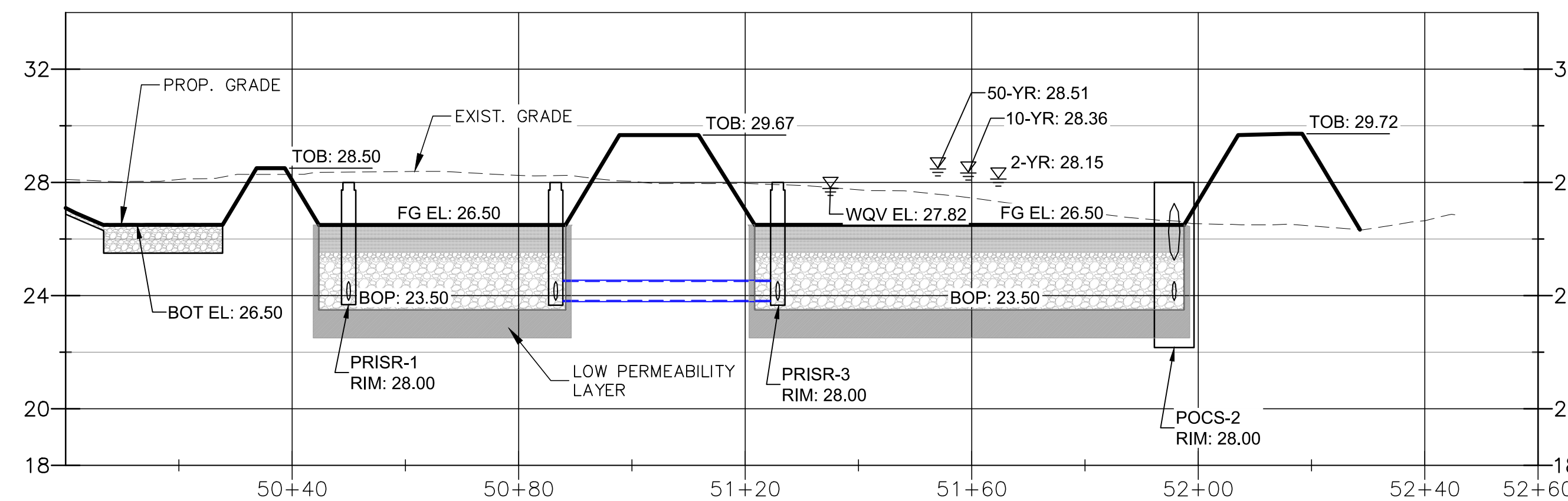
BMP-2 DRAINAGE PIPE TABLE						
PIPE NAME	TYPE	SIZE (IN)	SLOPE (%)	LENGTH (FT)*	START STRUCTURE	END STRUCTURE
DP-15	8" CPE	8"	0.00%	32	PRISR-2	PRISR-3
DP-16	24 inch N12 HDPE	24"	1.27%	25	POCS-2	PHW-3
UD-26	8" PERF. CPE	8"	0.00%	29	PRISR-1	PCO-1
UD-27	8" PERF. CPE	8"	0.00%	30	PRISR-1	PCO-2
UD-28	8" PERF. CPE	8"	0.00%	26	PCO-3	PRISR-2
UD-29	8" PERF. CPE	8"	0.00%	26	PCO-4	PRISR-2
UD-30	8" PERF. CPE	8"	0.00%	21	PRISR-3	PCO-5
UD-31	8" PERF. CPE	8"	0.00%	22	PRISR-3	PCO-6
UD-32	8" PERF. CPE	8"	0.00%	16	PCO-7	POCS-2

TOTAL WQV REQUIRED = 8,803 CF
 TOTAL WQV PROVIDED = 10,792 CF
 45% x WQV REQ'D = 3,961 CF
 CELL #1 WQV = 4,809 CF
 CELL #2 WQV = 4,713 CF
 MIN. STONE VOIDS @ 0.26 WQV PROVIDED = 2,805 CF
 STONE VOIDS PROVIDED = 4,140 CF



BMP-2: Subsurface Gravel Wetlands - Plan

Scale: 1"=20'

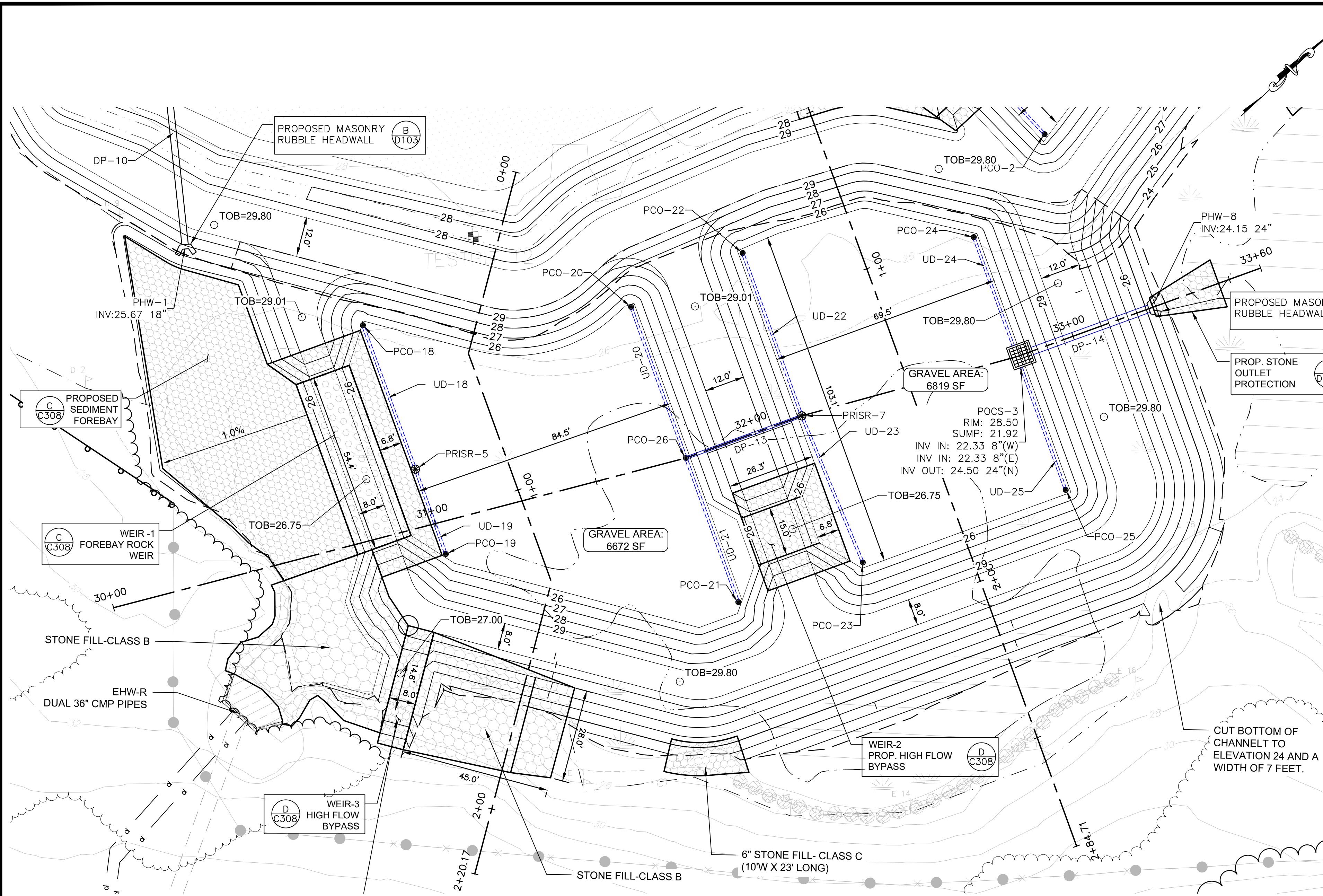


BMP-2: Subsurface Gravel Wetlands - Section

1"=20' Horiz. & 1"=4' Vert

designed by:	JHK	drawn by:	NJM	approved by:	PC
date:	April 2020	project no.:	1119	file name:	1119 DETAILS-Storm Water Sections-Rev1.dwg
scale:	1" = 20'	scale:	1" = 20'	scale:	1" = 20'
City of Portsmouth, New Hampshire	Department of Public Works	Multi-purpose Recreation Fields and Regional Stormwater Treatment System	Stormwater Treatment System BMP-1 and BMP-2 Plan & Section	drawing no.:	C-302
sheet:	17	of	45	revision:	1
issued for Bid	4/16/20	date	4/16/20	by	

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BMP-R1: Regional Subsurface Gravel Wetlands
Scale: 1"=20'

STANDARD WQV REQUIRED	=190,811 CF
TOTAL WQV PROVIDED	= 34,434 CF
45% x WQV PROVIDED	= 15,495 CF
CELL #1 WQV	= 14,161 CF
CELL #2 WQV	= 13,653 CF
REQUIRED MIN. STONE VOIDS @ 0.26 WQV	= 8,952 CF
STONE VOIDS PROVIDED	= 10,640 CF

STRUCTURE	STRUCTURE DETAILS
PCO-18	I.D. = 1' RIM ELEV. = 27.00 SUMP ELEV. = 22.33 UD-18 INV OUT = 22.33 (E)
PCO-19	I.D. = 1' RIM ELEV. = 27.00 SUMP ELEV. = 22.33 UD-19 INV OUT = 22.33 (W)
PCO-20	I.D. = 1' RIM ELEV. = 27.00 SUMP ELEV. = 22.33 UD-20 INV OUT = 22.33 (E)
PCO-21	I.D. = 1' RIM ELEV. = 27.00 SUMP ELEV. = 22.33 UD-21 INV OUT = 22.33 (W)
PCO-22	I.D. = 1' RIM ELEV. = 27.00 SUMP ELEV. = 22.33 UD-22 INV OUT = 22.33 (E)
PCO-23	I.D. = 1' RIM ELEV. = 27.00 SUMP ELEV. = 22.33 UD-23 INV OUT = 22.33 (W)
PCO-24	I.D. = 1' RIM ELEV. = 27.00 SUMP ELEV. = 22.33 UD-24 INV OUT = 22.33 (E)

STRUCTURE	STRUCTURE DETAILS
PCO-25	I.D. = 1' RIM ELEV. = 27.00 SUMP ELEV. = 22.33 UD-25 INV OUT = 22.33 (W)
PCO-26	I.D. = 1' RIM ELEV. = 27.00 SUMP ELEV. = 22.16 UD-20 INV IN = 22.33 (W) UD-21 INV IN = 22.33 (E) DP-13 INV OUT = 22.42 (N)
PHW-8	RIM ELEV. = 26.81 DP-14 INV IN = 24.15 (S)
POCS-3	DIMENSIONS = 72"x72" RIM ELEV. = 28.50 SUMP ELEV. = 21.92 UD-24 INV IN = 22.33 (W) UD-25 INV IN = 22.33 (E) DP-14 INV OUT = 24.50 (N)
PRISR-5	I.D. = 2' RIM ELEV. = 27.00 SUMP ELEV. = 22.16 UD-19 INV IN = 22.33 (E) UD-18 INV IN = 22.33 (W)
PRISR-7	I.D. = 2' RIM ELEV. = 27.00 SUMP ELEV. = 22.16 DP-13 INV IN = 22.42 (S) UD-22 INV IN = 22.33 (W) UD-23 INV IN = 22.33 (E)

PIPE NAME	TYPE	SIZE (IN)	SLOPE (%)	LENGTH (FT)*	START STRUCTURE	END STRUCTURE
DP-13	8" CPE	8"	0.00%	36	PCO-26	PRISR-7
DP-14	24" CPE	24"	0.85%	39	POCS-3	PHW-8
UD-18	8" CPE	8"	0.00%	45	PCO-18	PRISR-5
UD-19	8" CPE	8"	0.00%	26	PCO-19	PRISR-5
UD-20	8" CPE	8"	0.00%	47	PCO-20	PCO-26
UD-21	8" CPE	8"	0.00%	45	PCO-21	PCO-26
UD-22	8" CPE	8"	0.00%	51	PCO-22	PRISR-7
UD-23	8" CPE	8"	0.00%	46	PCO-23	PRISR-7
UD-24	8" CPE	8"	0.00%	35	POCS-3	PCO-24
UD-25	8" CPE	8"	0.00%	39	POCS-3	PCO-25

WETLAND AND BIORETENTION BASIN SEEDING NOTES:

- THIS SEED MIXTURE SHALL BE USED IN GRAVEL WETLANDS AND BIORETENTION BASINS WHERE PERIODIC FLOODING IS ANTICIPATED.
- THIS WORK SHALL CONSIST OF DEWATERING, FURNISHING AND SOWING SEED OF THE TYPE SPECIFIED IN THE TABLE ON THIS SHEET.
- ANY SEED TYPE WITHIN THE MIXTURE THAT DOES NOT MEET THE MINIMUM REQUIREMENTS FOR PURITY OR GERMINATION SHALL BE CONSIDERED UNACCEPTABLE AND SUBJECT TO REJECTION. UNDER NO CIRCUMSTANCES SHALL THE MIX BE ALTERED OR MODIFIED IN ANY WAY TO COMPENSATE FOR UNACCEPTABLE PURITY OR GERMINATION.
- SEEDING AND INITIAL FERTILIZING SHALL BE DONE IN THE SPRING (APRIL 1 THROUGH JUNE 1) AND FALL (AUGUST 15 THROUGH OCTOBER 14) ONLY OR AS PERMITTED. NO SPRING PLANTING WILL BE AUTHORIZED AFTER JUNE 15. SEEDING SHALL NOT BE DONE DURING WINDY WEATHER OR WHERE THE GROUND IS FROZEN, EXCESSIVELY WET, OR OTHERWISE UNTILLABLE.
- ALL AREAS TO BE SEEDDED SHALL BE EFFECTIVELY DEWATERED PRIOR TO PLANTING. SPECIAL MATTING FOR EROSION CONTROL SHALL BE APPLIED TO ALL AREAS BELOW 1 FOOT (300 MM) ABOVE THE SPECIFIED HIGH WATER MARK ON THE SAME DAY AS SEEDING IS PERFORMED.
- RESEEDING OF THE SAME AREA WILL BE AT THE CONTRACTOR'S EXPENSE AND IN THE SEASON SPECIFIED IN NOTE 4.
- SPECIAL MATTING FOR EROSION CONTROL SHALL BE SUBSIDIARY TO THIS ITEM.

WETLAND AND BIORETENTION BASIN SEED TYPE 62				
SCIENTIFIC NAME	KIND OF SEED	MIN. PURITY (%)	MIN. GERMINATION (%)	APP. RATE (LBS/ACRE)
AGROSTIS PERENNANS	UPLAND BENTGRASS	95	85	2
GLYCERIA GRANDIS	AMERICAN MANNAGRASS	95	85	2
SCIROUS CYPERINUS	WOOLGRASS	95	85	3
CAREX VULPINOIDEA	FOX SEDGE	95	85	2
CAREX CRINITA	FRINGE SEDGE	95	85	3
JUNCUS EFFUSUS	SOFT RUSH	95	85	2
GLYCERIA STRIATA	FOWL MANNAGRASS	95	85	2
Total				16

date: April 2020
project no: 1119
file name: 1119 DETAILS-Storm Water Sections-Rev1.dwg

designed by: JHK
drawn by: NJM
approved by: [Signature]

scale: 1" = 20'

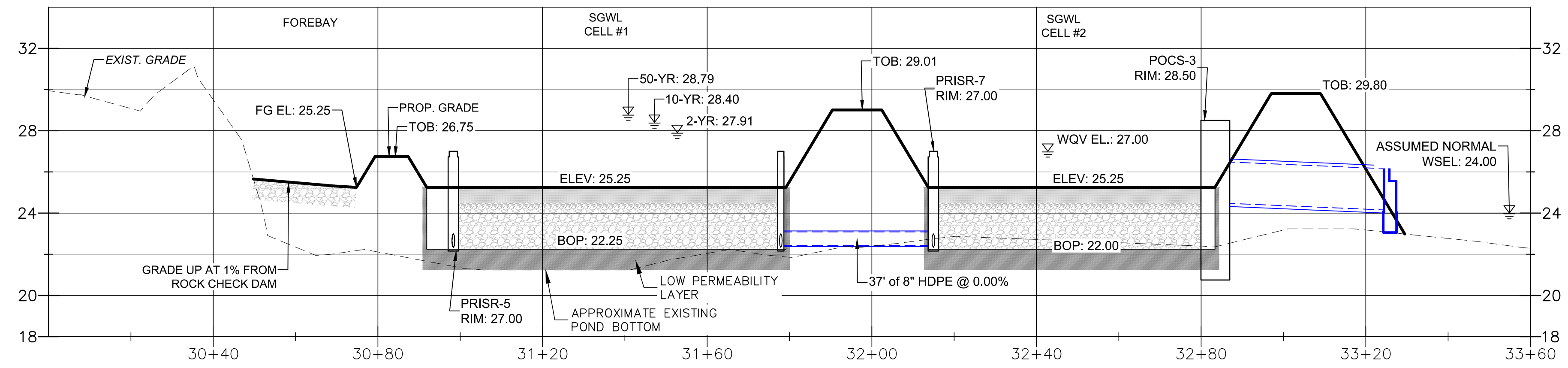
City of Portsmouth, New Hampshire
Department of Public Works

Multi-purpose Recreation Fields and
Regional Stormwater Treatment System

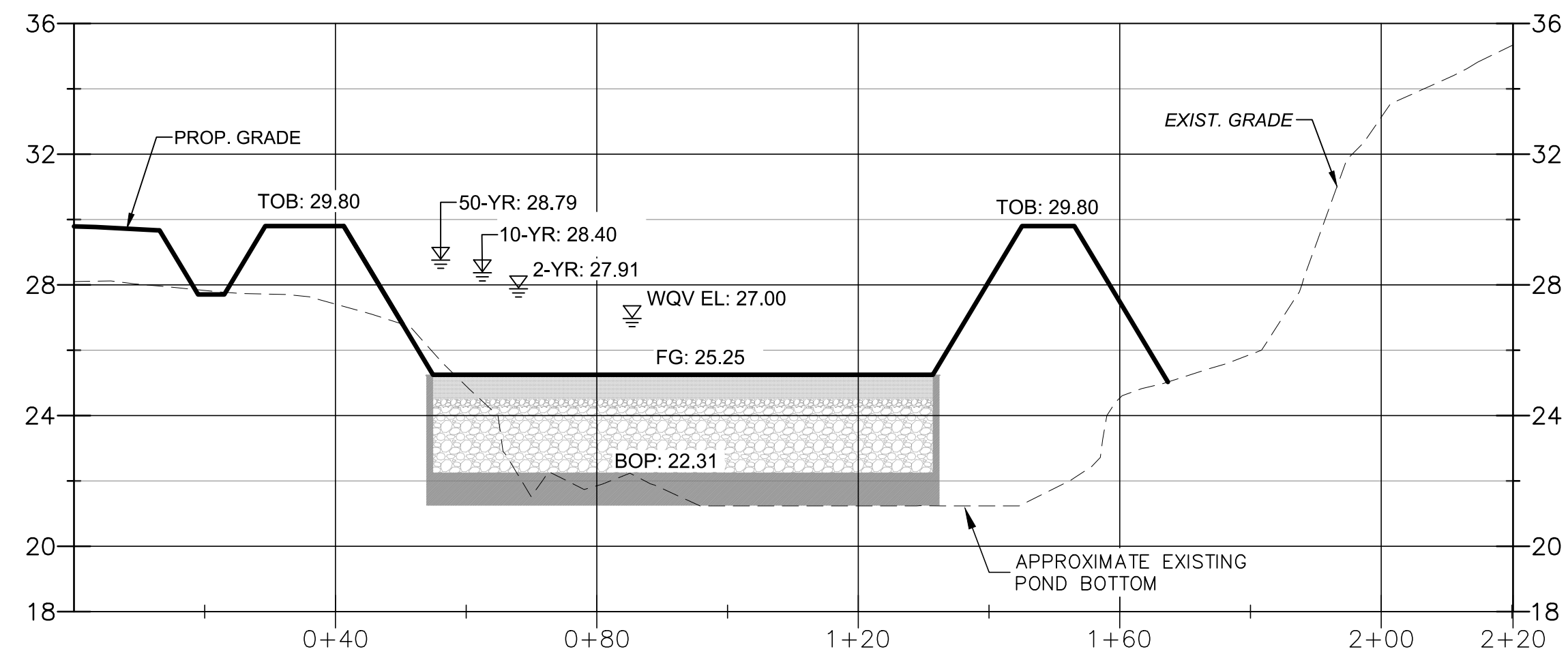
Stormwater Treatment System
BMP-R1 Plan

drawing no: C-303
sheet: 18 of 45

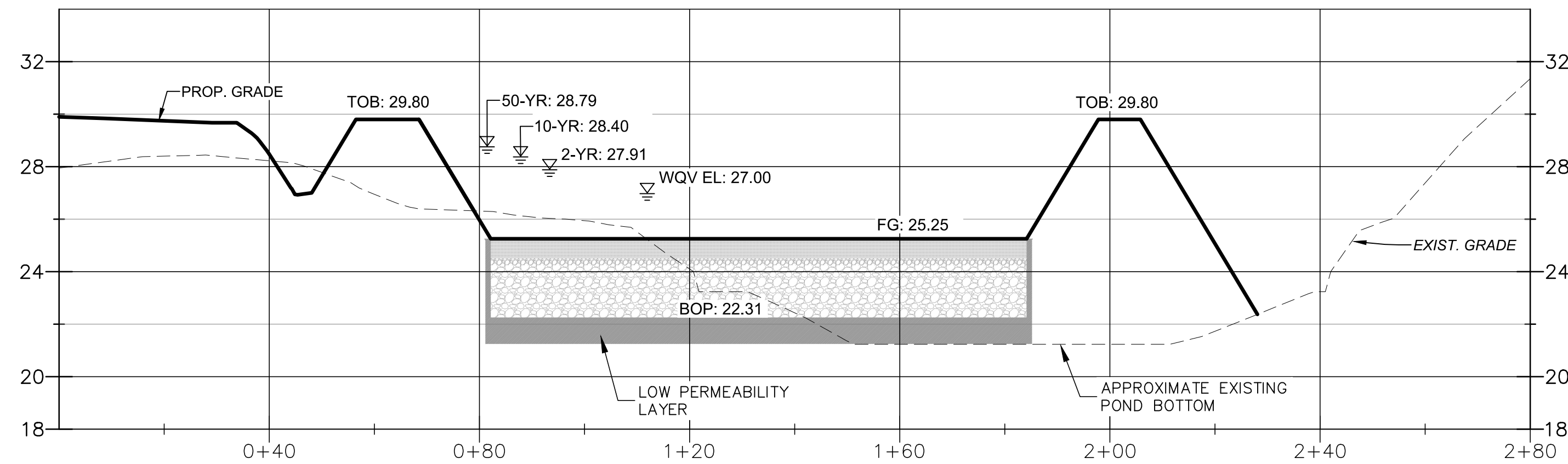
no. 1
revision
date 4/16/20
by PAC



BMP-R1: Regional Subsurface Gravel Wetlands - Section
 1"=20' Horiz. & 1"=4' Vert

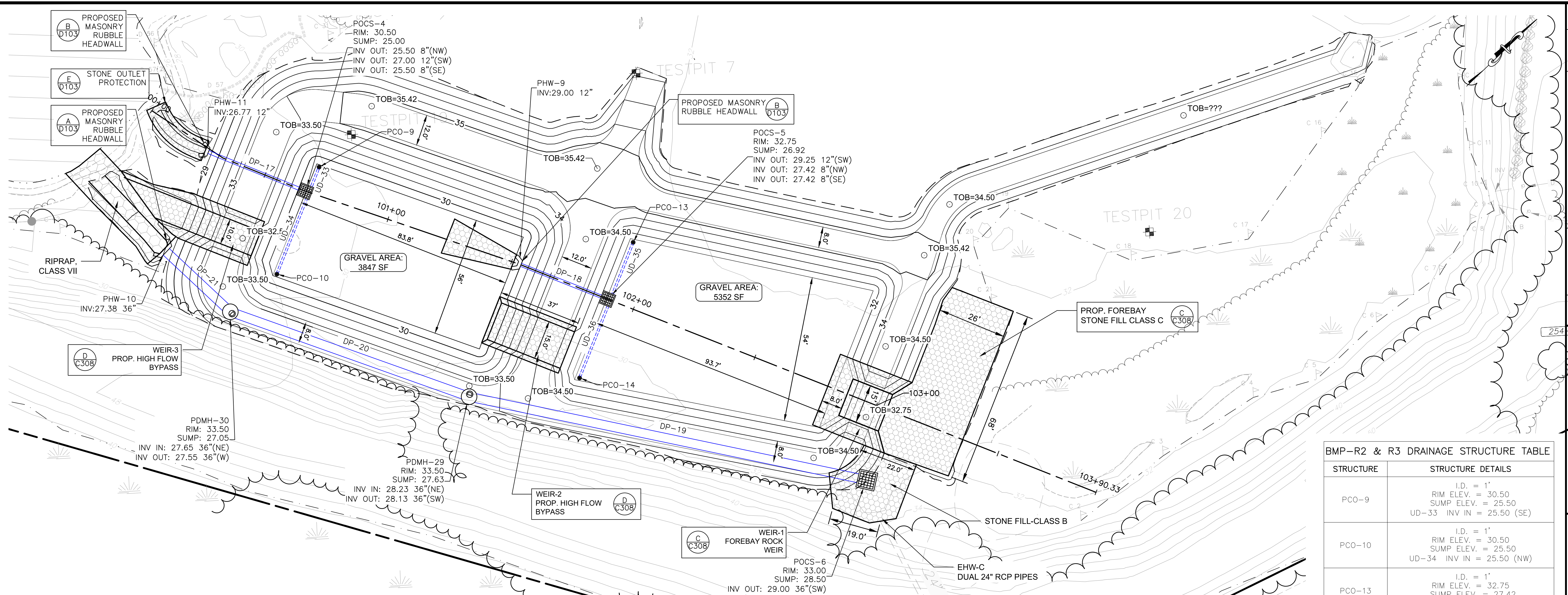


BMP-R1: Cell 1 - Section
 1"=20' Horiz. & 1"=4' Vert



BMP-R1: Cell 2 - Section
 1"=20' Horiz. & 1"=4' Vert

		CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH • Manchester, NH • Portland, ME 603/431-6196 • 603/627-0708 • 207/541-4223		c m a e n g i n e e r s . c o m	
date: April 2020	designed by: JHK	project no: 1119	drawn by: NUM	approved by: [Signature]	scale: 0 20' 40' Scale: 1" = 20'
City of Portsmouth, New Hampshire Department of Public Works		Multi-purpose Recreation Fields and Regional Stormwater Treatment System		Stormwater Treatment System BMP-R1 Sections	
drawing no. C-304					
sheet: 19 of 45					
				no. 1	revision Issued for Bid
				date 4/16/20	by PAC



BMP-R2 AND BMP-R3: Bioretention Basin with Internal Storage Reservoir (ISR) - Plan

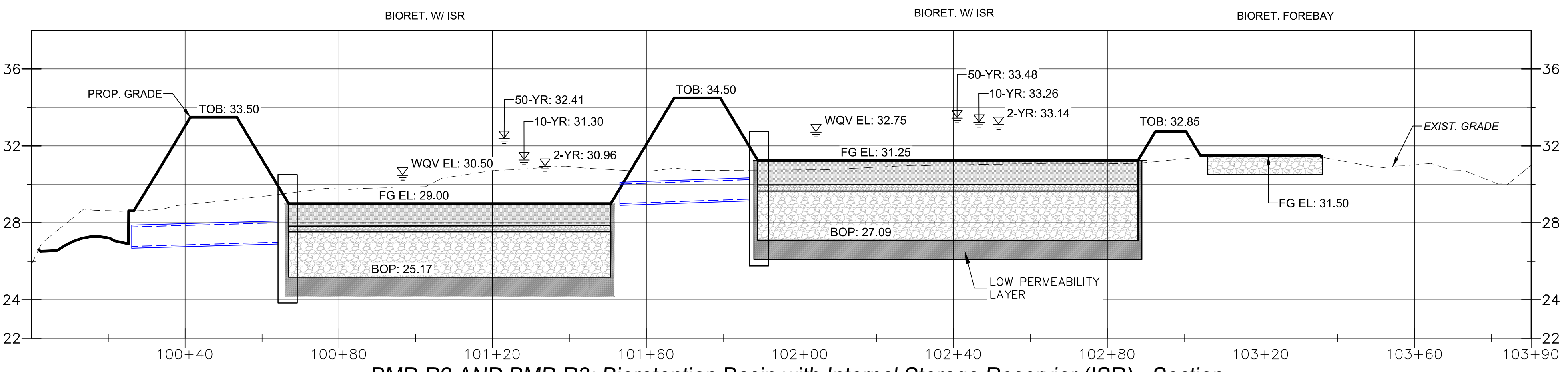
Scale: 1"=20'

STANDARD WQV REQUIRED = 84,535 CF
 TOTAL WQV PROVIDED = 27,834 CF
 REQUIRED MIN. STONE VOIDS @ 0.26 WQV = 7,236 CF
 STONE VOIDS PROVIDED = 8,245 CF

BMP-R2&R3 DRAINAGE PIPE TABLE						
PIPE NAME	TYPE	SIZE (IN)	SLOPE (%)	LENGTH (FT)*	START STRUCTURE	END STRUCTURE
DP-17	12" CPE	12"	0.56%	39	POCS-4	PHW-11
DP-18	12" CPE	12"	0.69%	34	POCS-5	PHW-9
DP-19	36" CPE	36"	0.50%	150	POCS-6	PDMH-29
DP-20	36" CPE	36"	0.50%	92	PDMH-29	PDMH-30
DP-21	36" CPE	36"	0.50%	32	PDMH-30	PHW-10
UD-33	8" PERF. CPE	8"	0.00%	8	POCS-4	PCO-9
UD-34	8" PERF. CPE	8"	0.00%	31	POCS-4	PCO-10
UD-35	8" PERF. CPE	8"	0.00%	21	POCS-5	PCO-13
UD-36	8" PERF. CPE	8"	0.00%	30	POCS-5	PCO-14

BMP-R2 & R3 DRAINAGE STRUCTURE TABLE

STRUCTURE	STRUCTURE DETAILS
PCO-9	I.D. = 1' RIM ELEV. = 30.50 SUMP ELEV. = 25.50 UD-33 INV IN = 25.50 (SE)
PCO-10	I.D. = 1' RIM ELEV. = 30.50 SUMP ELEV. = 25.50 UD-34 INV IN = 25.50 (NW)
PCO-13	I.D. = 1' RIM ELEV. = 32.75 SUMP ELEV. = 27.42 UD-35 INV IN = 27.42 (SE)
PCO-14	I.D. = 1' RIM ELEV. = 32.75 SUMP ELEV. = 25.42 UD-36 INV IN = 27.42 (NW)
PDMH-29	I.D. = 5' RIM ELEV. = 33.50 SUMP ELEV. = 27.63 DP-19 INV IN = 28.23 (NE) DP-20 INV OUT = 28.13 (SW)
PDMH-30	I.D. = 5' RIM ELEV. = 33.50 SUMP ELEV. = 27.05 DP-20 INV IN = 27.65 (NE) DP-21 INV OUT = 27.55 (W)
PHW-9	RIM ELEV. = 30.61 DP-18 INV IN = 29.00 (NE)
PHW-10	RIM ELEV. = 31.09 DP-21 INV IN = 27.38 (E)
PHW-11	RIM ELEV. = 28.38 DP-17 INV IN = 26.77 (NE)
POCS-4	DIMENSIONS = 48"x48" RIM ELEV. = 30.50 SUMP ELEV. = 25.00 UD-33 INV OUT = 25.50 (NW) DP-17 INV OUT = 27.00 (SW) UD-34 INV OUT = 25.50 (SE)
POCS-5	DIMENSIONS = 48"x48" RIM ELEV. = 32.75 SUMP ELEV. = 26.92 DP-18 INV OUT = 29.25 (SW) UD-35 INV OUT = 27.42 (NW) UD-36 INV OUT = 27.42 (SE)
POCS-6	DIMENSIONS = 72"x72" RIM ELEV. = 33.00 SUMP ELEV. = 28.50 DP-19 INV OUT = 29.00 (SW)



BMP-R2 AND BMP-R3: Bioretention Basin with Internal Storage Reservoir (ISR) - Section

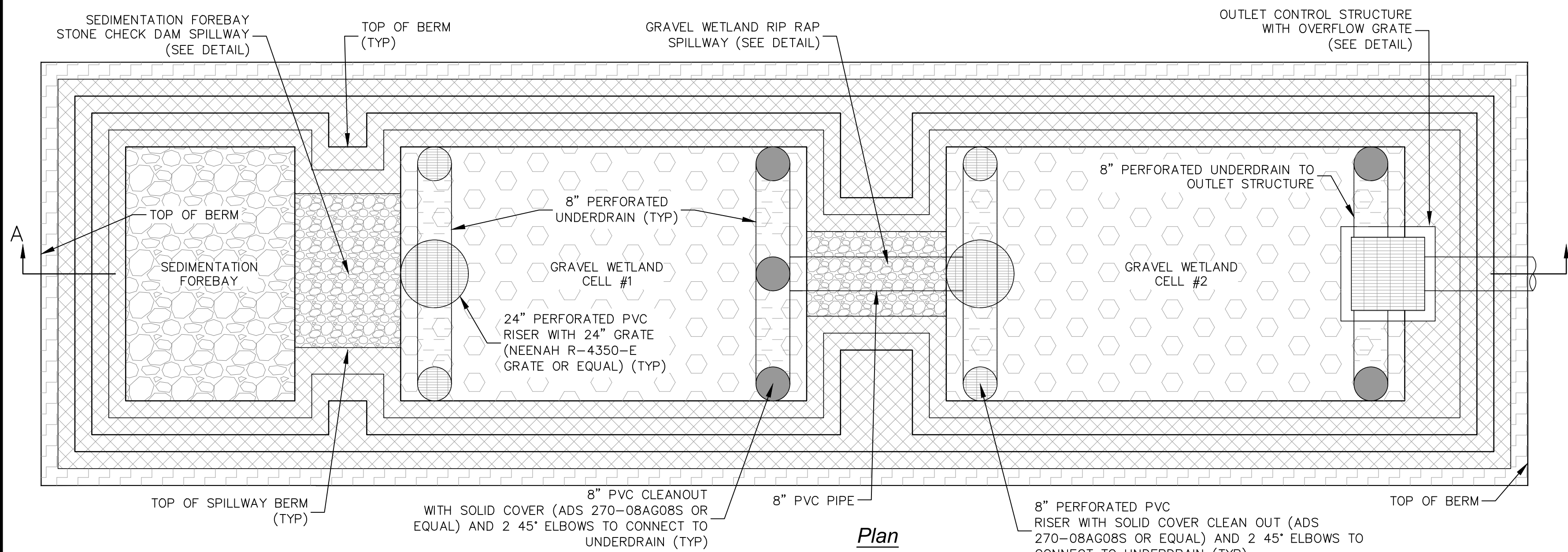
1"=20' Horiz. & 1"=4' Vert

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 Portsmouth, NH 603/431-6196
 Manchester, NH 603/627-0708
 Portland, ME 207/651-4223
 c m a e n g i n e e r s . c o m

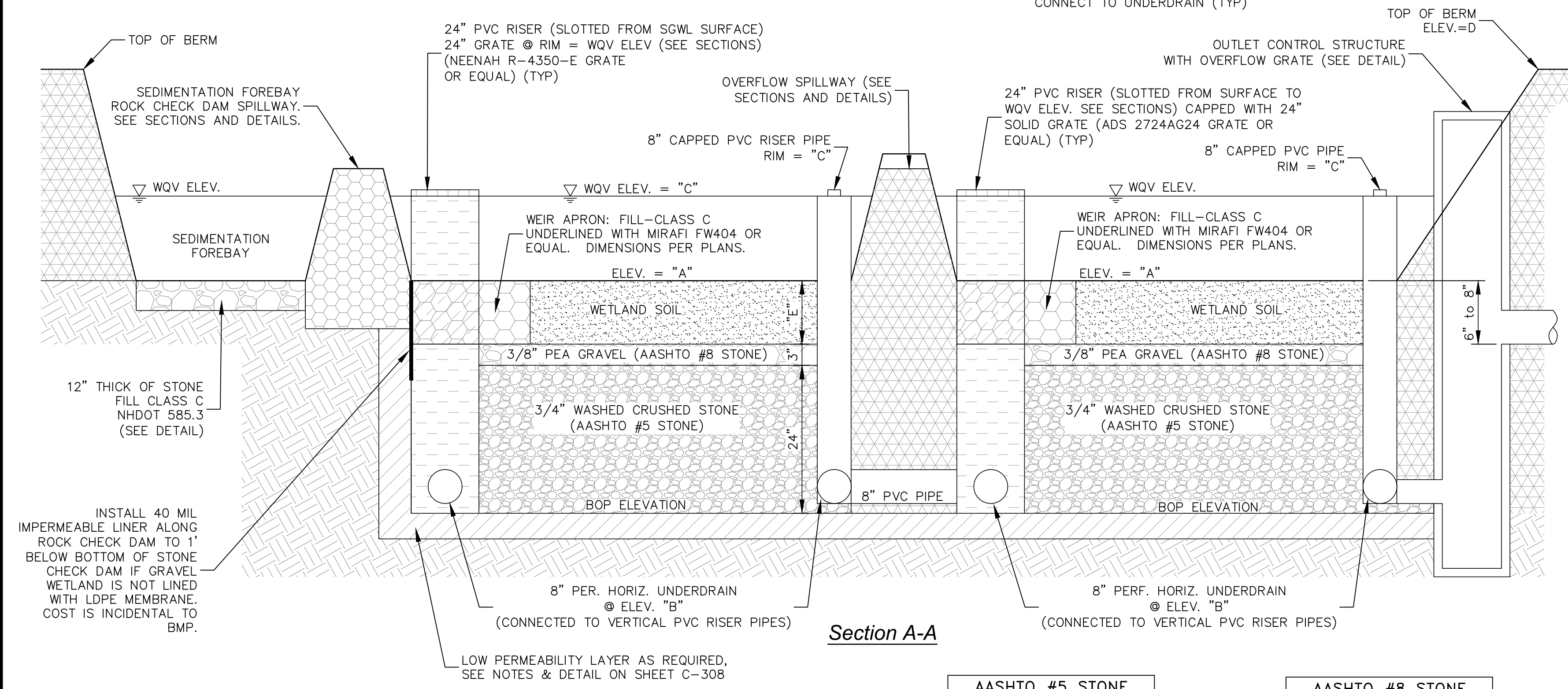
City of Portsmouth, New Hampshire
 Department of Public Works
 Multi-purpose Recreation Fields and
 Regional Stormwater Treatment System
 Stormwater Treatment System
 BMP-R2 & R3 Plan & Section

designed by: JHK
 drawn by: NJM
 approved by: PJC
 date: April 2020
 project no: 1119
 file name: 1119 DETAILS-Storm Water Sections-Rev1.dwg
 scale: 1" = 20'
 drawing no: C-305
 sheet: 20 of 45

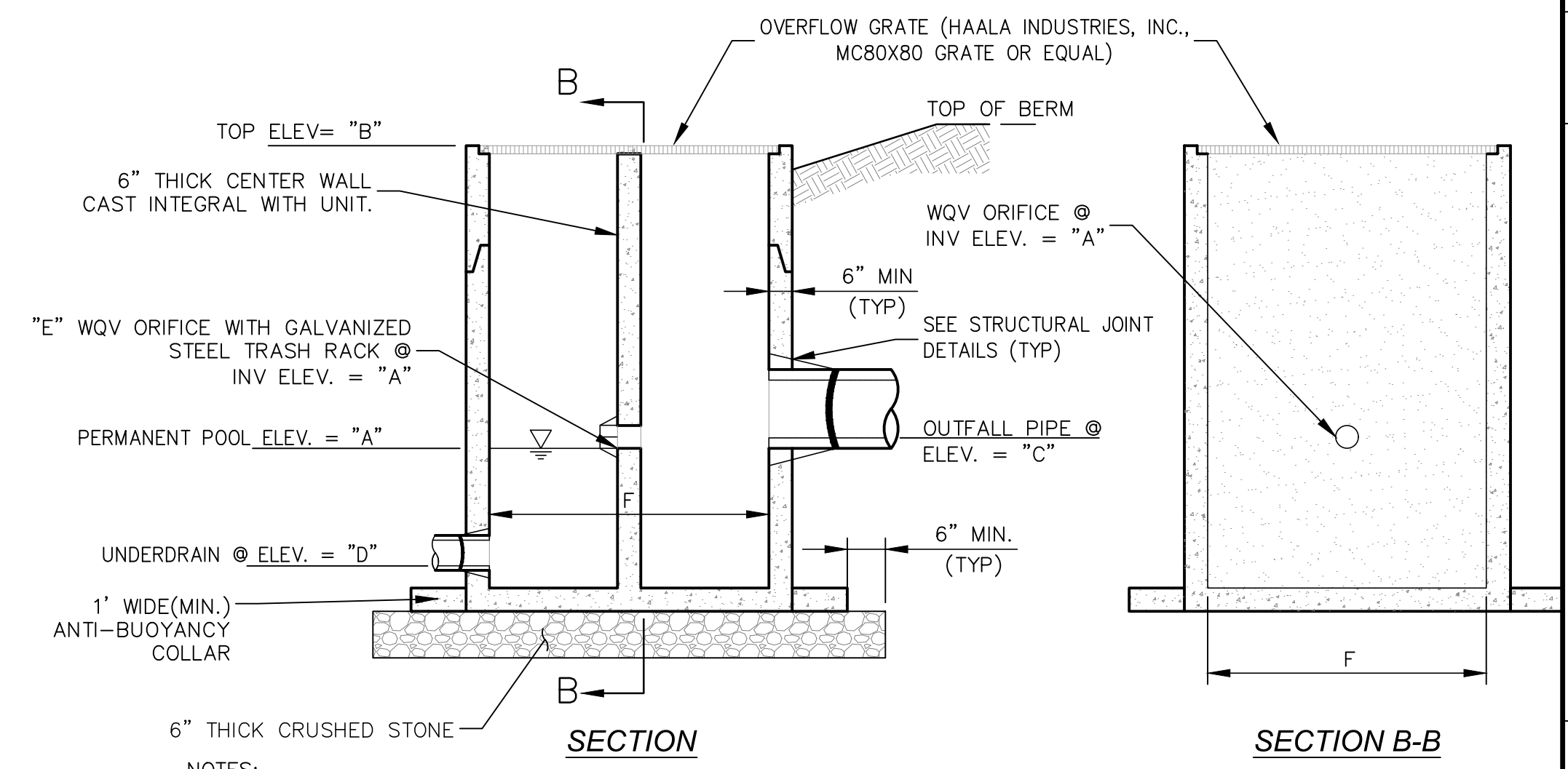
no.	1	issued for bid	4/16/20	PAC	by
revision					
date					



Plan



Section A-A



SECTION

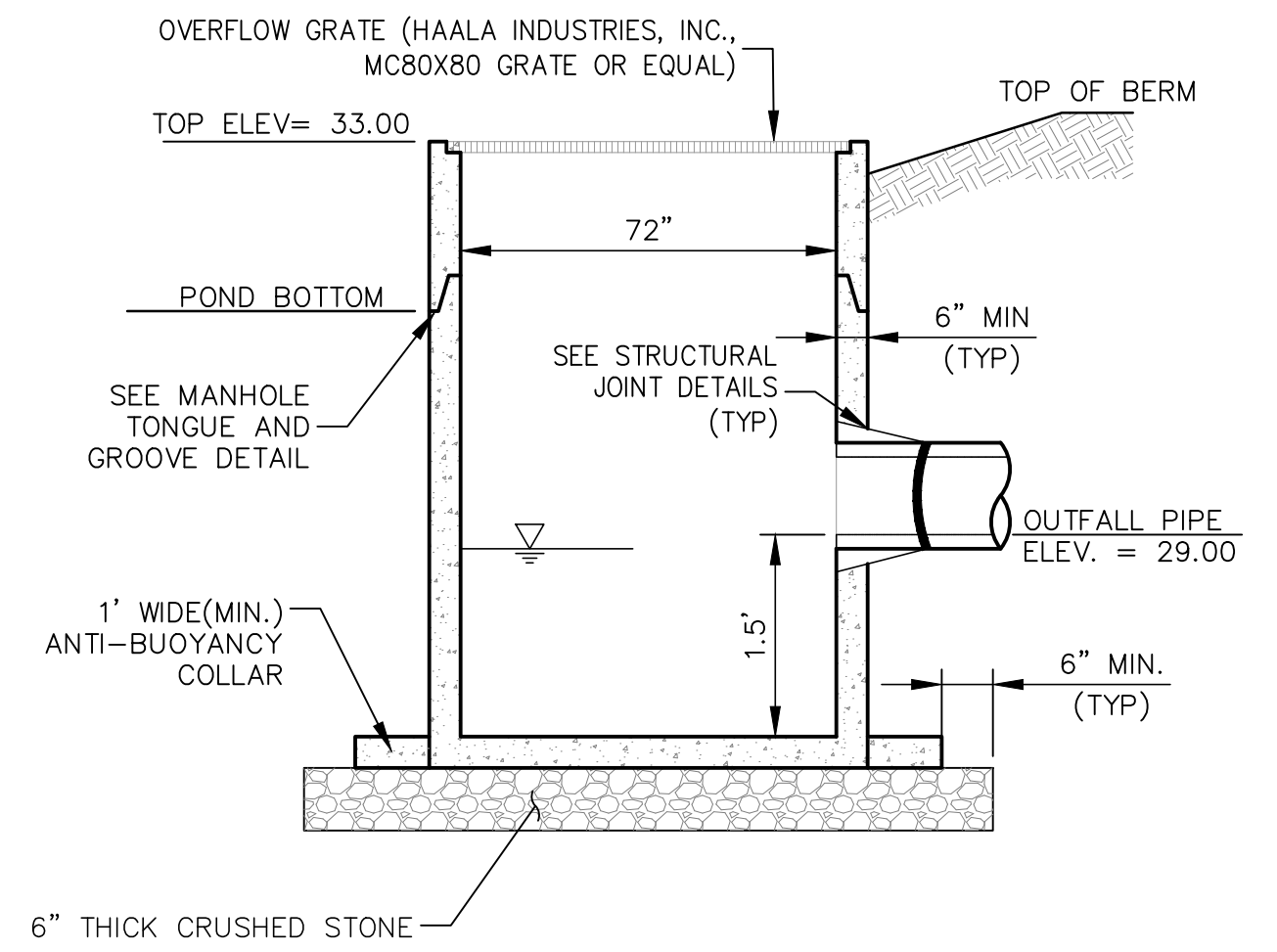
SECTION B-B

- NOTES:**
- ALL SECTIONS SHALL BE 4,000 PSI CONCRETE (TYPE II CEMENT).
 - PRECAST BOX STRUCTURE SHALL CONFORM TO ASTM C913 SPECIFICATIONS.
 - SEE DETAIL TITLE PIPE CONNECTION TO PRECAST MANHOLE STRUCTURES.
 - REINFORCEMENT:
 - DEFORMED BARS SHALL CONFORM TO ASTM A-615 GRADE 60.
 - WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185-GRADE 70.
 - REIN. STEEL SHALL HAVE 1" MINIMUM COVER.
 - THE STRUCTURE SHALL BE DESIGNED FOR HS 20-44 LOADING AND TO PREVENT FLOTATION IF FULLY SUBMERGED.
 - CRUSHED STONE BEDDING SHALL CONFORM TO NHDOT 304.4.
 - PIPE ELEVATIONS SHOWN SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
 - OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
 - OUTLET PIPE SHALL BE FLUSH WITH INNER WALL.
 - BASE SHALL BE A SINGLE CAST UP TO A MINIMUM OF 8 INCHES ABOVE OUTFALL PIPE OR TOP OF BMP SURFACE WHICH EVER IS HIGHER.

STRUCTURE DIMENSIONS				
POCS STRUCTURE ID				
ELEV.	2	3	4	5
A	25.83	24.58	27.17	29.42
B	28.00	28.50	30.50	32.75
C	25.25	27.00	26.50	29.25
D	23.83	22.33	25.50	27.42
E WQV ORIFICE DIA (IN)	2.2	4.2	3.5	3.5
F STRUCTURE LxW DIMENSIONS (IN)	72x72	72x72	48x48	48x48

Bioretention Basin and Gravel Wetland Outlet Control Structure

(B) Not to Scale



Bioretention Basin Outlet Control Structure - POCS-6

(C) Not to Scale

- NOTES:**
- WETLAND SOIL SHALL BE A SANDY CLAY LOAM WITH A HYDRAULIC CONDUCTIVITY OF 0.1-0.01 FT/DAY. ORGANIC CONTENT SHALL BE GREATER THAN 15% BY VOLUME. CLAY CONTENT SHALL BE LESS THAN 15% BY VOLUME.
 - PERFORATED PVC RISER WITHIN WETLAND SOIL LAYER SHALL BE WRAPPED WITH MIRAFI 160N OR EQUAL.
 - PERFORATED PVC RISERS SHALL HAVE VERTICAL SLOTS CUT INTO PVC RISERS ABOVE GRADE MEASURING 3"x1/8".
 - BMP-2 WETLAND VEGETATION & FOREBAY SLOPES GRASSES SHALL BE SALT TOLERABLE.
 - RISERS AND CLEANOUTS RIM SHALL BE EQUAL TO OR GREATER THAN THE WQV ELEVATIONS. SEE BMP ELEVATIONS TABLE THIS SHEET.
 - RISERS SHALL BE PERFORATED FROM TOP OF WETLAND SOIL TO WQV ELEVATION (SEE BMP ELEVATIONS TABLE). SOLID PORTION OF RISER AND CLEANOUT COVER ADAPTER SHALL BE ABOVE THE WQV ELEVATION.

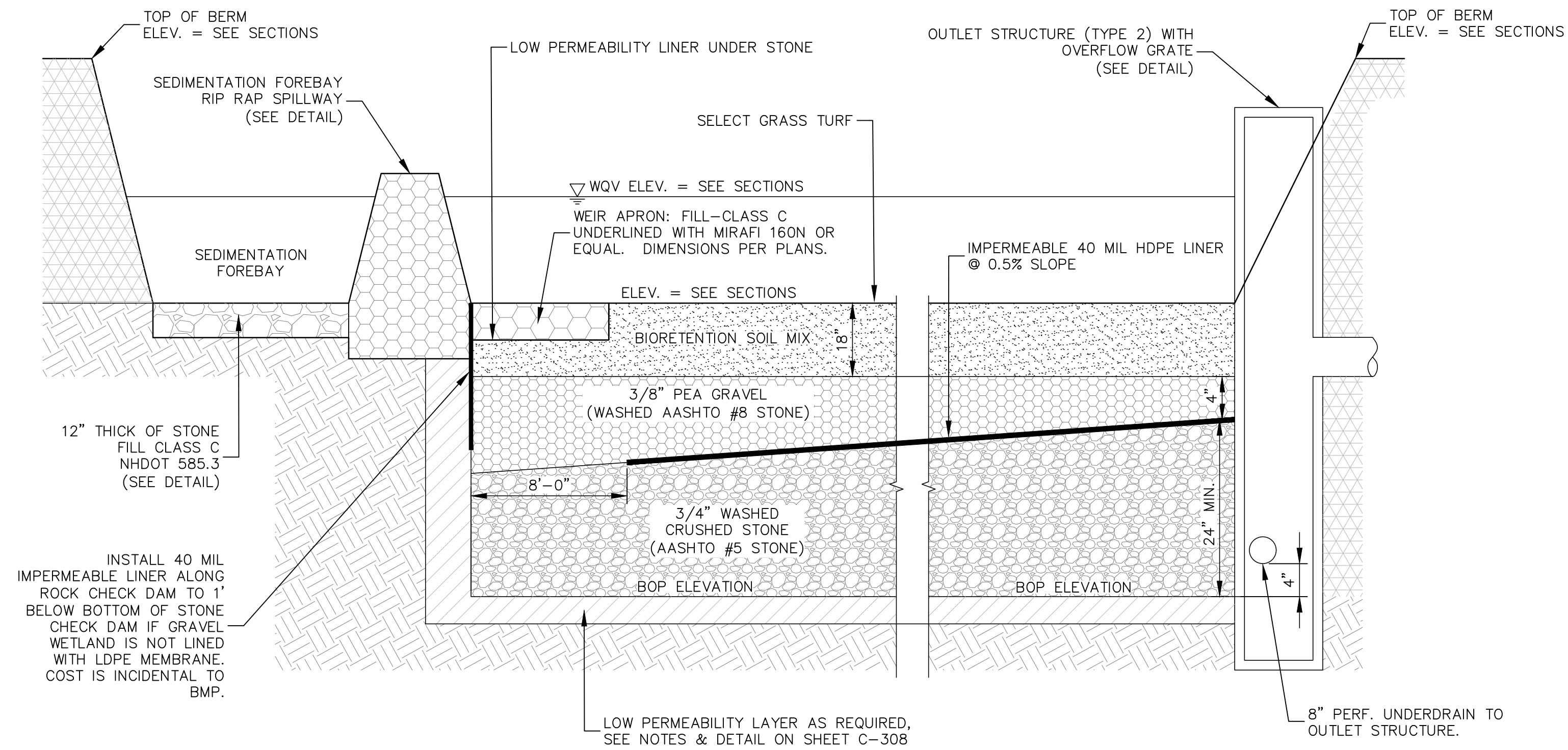
AASHTO #5 STONE (1" TO 1/2")			AASHTO #8 STONE (3/8" TO #8)		
SIEVE SIZE	% PASSING		SIEVE SIZE	% PASSING	
1-1/2"	100		1/2"	100	
1"	90-100		3/8"	85-100	
3/4"	20-55		#4	10-30	
1/2"	0-10		#8	0-10	
3/8"	0-5		#16	0-5	

BMP ELEVATIONS		
DIMENSION/ELEVATION	SUBSURFACE GRAVEL WETLANDS	
	BMP-2	BMP-R1
A	26.50	25.50
B	23.50	22.25
C (WQV ELEV)	27.92	27.00
D	29.67	29.00
E	8	12

(A) Subsurface Gravel Wetland Detail

Not to Scale

designed by: JHK	drawn by: NUM	approved by: PAC	scale:
date: April 2020	project no: 1119	file name: 1119 DETAILS-SW.dwg	
City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System Stormwater Treatment System Bioretention Basin Details			CMA ENGINEERS CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/651-4223 c m a e n g i n e e r s . c o m
drawing no: C-306			revision 1
sheet: 21 of 45			date 4/16/20 issued for bid



BIORETENTION SYSTEM SPECIFICATIONS

PRODUCTS:

SOIL MEDIA SPECIFIED ACCORDING TO PERFORMANCE REQUIREMENTS: PARTICLE SIZE DISTRIBUTION ACCORDING TO ASTM D422 (STANDARD TEST METHOD FOR PARTICLE-SIZE ANALYSIS OF SOILS).

1. PARTICLE SIZE DISTRIBUTION BY SEPARATES:

- a. EXCLUDE ANY MATERIAL > 4.76 MM - 0%
- b. VERY COARSE SAND/GRAVEL: GRAVEL (2.0 TO 4.76 MM) 5% MAXIMUM (PERCENT BY DRY WEIGHT).
- c. SAND (0.42 TO 2.0 MM) 60 - 85% (PERCENT BY DRY WEIGHT).
- d. SILT (0.075 TO 0.42 MM) 20% MAXIMUM (PERCENT BY DRY WEIGHT)
- e. CLAY (LESS THAN 0.075MM) 5% MAXIMUM (PERCENT BY DRY WEIGHT).
- f. SEE TABLE 1 FOR ACCEPTABLE PARTICLE SIZE DISTRIBUTION OF FINAL BIORETENTION SOIL MIX.

2. FRAGMENT SIZE DISTRIBUTION:

- a. STICKS AND ROOTS: SHOULD BE MINIMIZED AND PREFERABLY LIMITED TO NOTHING LARGER THAN 4.76 MM
- b. DEBRIS AND OTHER FOREIGN MATERIALS: SHOULD BE MINIMIZED

3. SOIL REACTION: PH OF 6 TO 7

4. CATION EXCHANGE CAPACITY (CEC) OF TOTAL SOIL: MINIMUM 10 MEQ/100 ML AT PH OF 7.0.

5. BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS INDICATED ON DRAWINGS

6. BASIC PROPERTIES: MANUFACTURED SOIL SHALL NOT CONTAIN THE FOLLOWING:

- a. UNACCEPTABLE MATERIALS: CONCRETE SLURRY, CONCRETE LAYERS OR CHUNKS, CEMENT, PLASTER, BUILDING DEBRIS, ASPHALT, BRICKS, OILS, GASOLINE, DIESEL FUEL, PAINT THINNER, TURPENTINE, TAR, ROOFING COMPOUND, ACID, SOLID WASTE, AND OTHER EXTRANEOUS MATERIALS THAT ARE HARMFUL TO PLANT GROWTH.
- b. UNSUITABLE MATERIALS: STONES, ROOTS, PLANTS, SOD, CLAY LUMPS, AND POCKETS OF COARSE SAND THAT EXCEED A COMBINED MAXIMUM OF 5 PERCENT BY DRY WEIGHT OF THE MANUFACTURED SOIL.
- c. LARGE MATERIALS: STONES, CLODS, ROOTS, CLAY LUMPS, AND POCKETS OF COARSE SAND EXCEEDING 0.187 INCHES (4.76 MM) IN ANY DIMENSION.

7. BIORETENTION SOIL MEDIA COMPONENTS*:

- AMOUNTS MIXED BY TOTAL VOLUME
- 60-85% - SAND (0.5 TO 2.0 MM) (SEE SPECS ON THIS SHEET)
- 15-25% - LOAM OR TOPSOIL
- 3-8% - ORGANIC MATTER
- 0-5% - WATER TREATMENT RESIDUALS OR IRON FILINGS**

*ALTERNATIVELY, USE MEDIA SPECIFIED IN THE ALTERNATION OF TERRAIN RULES, ENV-WQ 1508.07(k).

**THIS IS AN AMENDMENT USED FOR ENHANCED PHOSPOROUS ADSORPTION.

ACCEPTABLE ORGANIC SOIL AMENDMENTS

1. NO COMPOST SHOULD BE USED IN THE PLANTING MIX.
2. SPHAGNUM PEAT: PARTIALLY DECOMPOSED SPHAGNUM PEAT MOSS, FINELY DIVIDED OR OF GRANULAR TEXTURE WITH 100 PERCENT PASSING THROUGH A 1/2-INCH (13-MM) SIEVE, A PH OF 3.4 TO 4.8.
3. WOOD DERIVATIVES: SHREDDED WOOD, WOOD CHIPS, GROUND BARK, OR WOOD WASTE; OF UNIFORM TEXTURE AND FREE OF STONES, STICKS, SOIL, OR TOXIC MATERIALS.
4. MEDIA AMENDMENTS SUCH AS ZERO-VALENT IRON AND/OR DRINKING WATER TREATMENT RESIDUALS (ALUM) TO ENHANCE PHOSPHORUS SORPTION AS SPECIFIED BY THE ENGINEER.

CONSTRUCTION SEQUENCE:

1. PLACE SOIL MEDIA ACCORDING TO REQUIREMENTS IN OTHER SPECIFICATION SECTIONS.
2. VERIFY THAT NO FOREIGN OR DELETERIOUS MATERIAL OR LIQUID SUCH AS PAINT, PAINT WASHOUT, CONCRETE SLURRY, ASPHALT/CONCRETE LAYERS OR CHUNKS, CEMENT, PLASTER, OILS, GASOLINE, DIESEL FUEL, PAINT THINNER, TURPENTINE, TAR, ROOFING COMPOUND, SOLID WASTE, OR ACID HAS BEEN DEPOSITED IN PLANTING SOIL.
3. PROCEED WITH PLACEMENT ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
4. DO NOT COMPACT SUBGRADE AT BOTTOM OF EXCAVATION.
5. COMPACTION: COMPACT EACH BLENDED LIFT OF SOIL MEDIA TO 75 PERCENT OF MAXIMUM STANDARD PROCTOR DENSITY ACCORDING TO ASTM D 698.
6. FINISH GRADING: GRADE SOIL MEDIA TO A SMOOTH, UNIFORM SURFACE PLANE WITH LOOSE, UNIFORMLY FINE TEXTURE. ROLL AND RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES.
7. LIGHTLY COMPACT FINISHED FLOOR ELEVATION AND FINISHED SLOPES USING BUCKET OF AN EXCAVATOR, NON-MOTORIZED ROLLER, HAND TAMP, OR OTHER MEANS, THEN ROUGHEN SURFACE WITH RAKE TO LOOSEN SOILS BEFORE SEEDING.

SIEVE #	SIEVE SIZE	% PASSING
4	0.187 (4.76)	100
10	0.079 (2)	95
40	0.017 (0.42)	40-15
200	0.003 (0.075)	10-20
<200	PAN	0-5

BIORETENTION GENERAL NOTES:

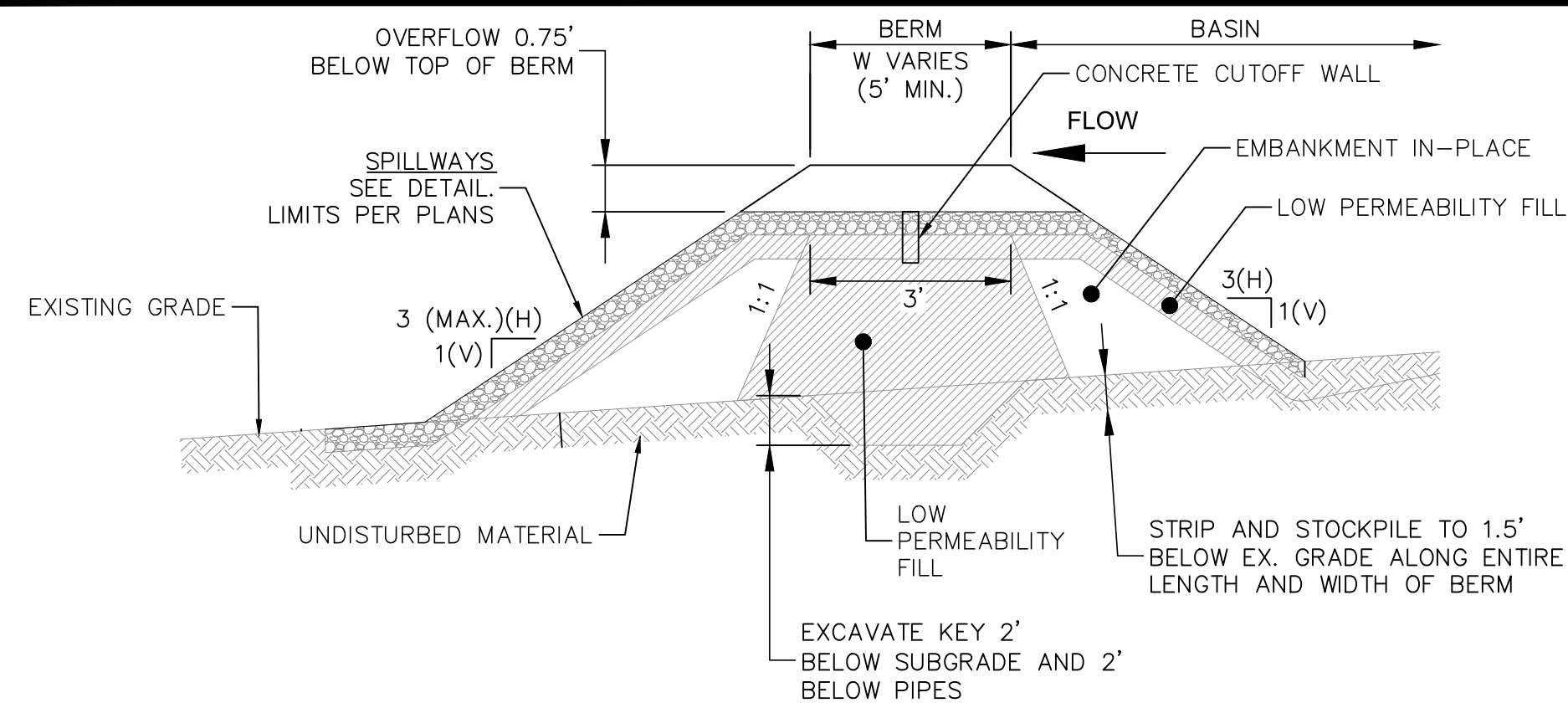
1. 8" PVC CLEAN OUT SHALL BE CAPPED WITH SOLID COVER (ADS 270-08AG08S OR EQUAL) AND TWO - 45° ELBOWS TO CONNECT TO UNDERDRAIN (TYP)
2. LOAM AND SEED ALL EARTH SLOPES AS SOON AS POSSIBLE. STABILIZE THE INLET AREA WITH REQUIRED EROSION CONTROL.

SIEVE SIZE	% PASSING
1-1/2"	100
1"	90-100
3/4"	20-55
1/2"	0-10
3/8"	0-5

SIEVE SIZE	% PASSING
1/2"	100
3/8"	85-100
#4	10-30
#8	0-10
#16	0-5

A Bioretention Basin with ISR Detail
Not to Scale

 CIVIL/ENVIRONMENTAL/STRUCTURAL	Portsmouth, NH • 603/431-6196 Manchester, NH • 603/627-0708 Portland, ME • 207/641-4223	c m a e n g i n e e r s . c o m	1 issued for Bid	4/16/20 date	PAC by
date: April 2020	project no: 1119	file name: 1119 DETAILS-SW.dwg	scale: as shown	designed by: JHK	drawn by: NJM
City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System			Stormwater Treatment System Bioretention Basin Details		
drawing no. C-307					
sheet: 22 of 45					

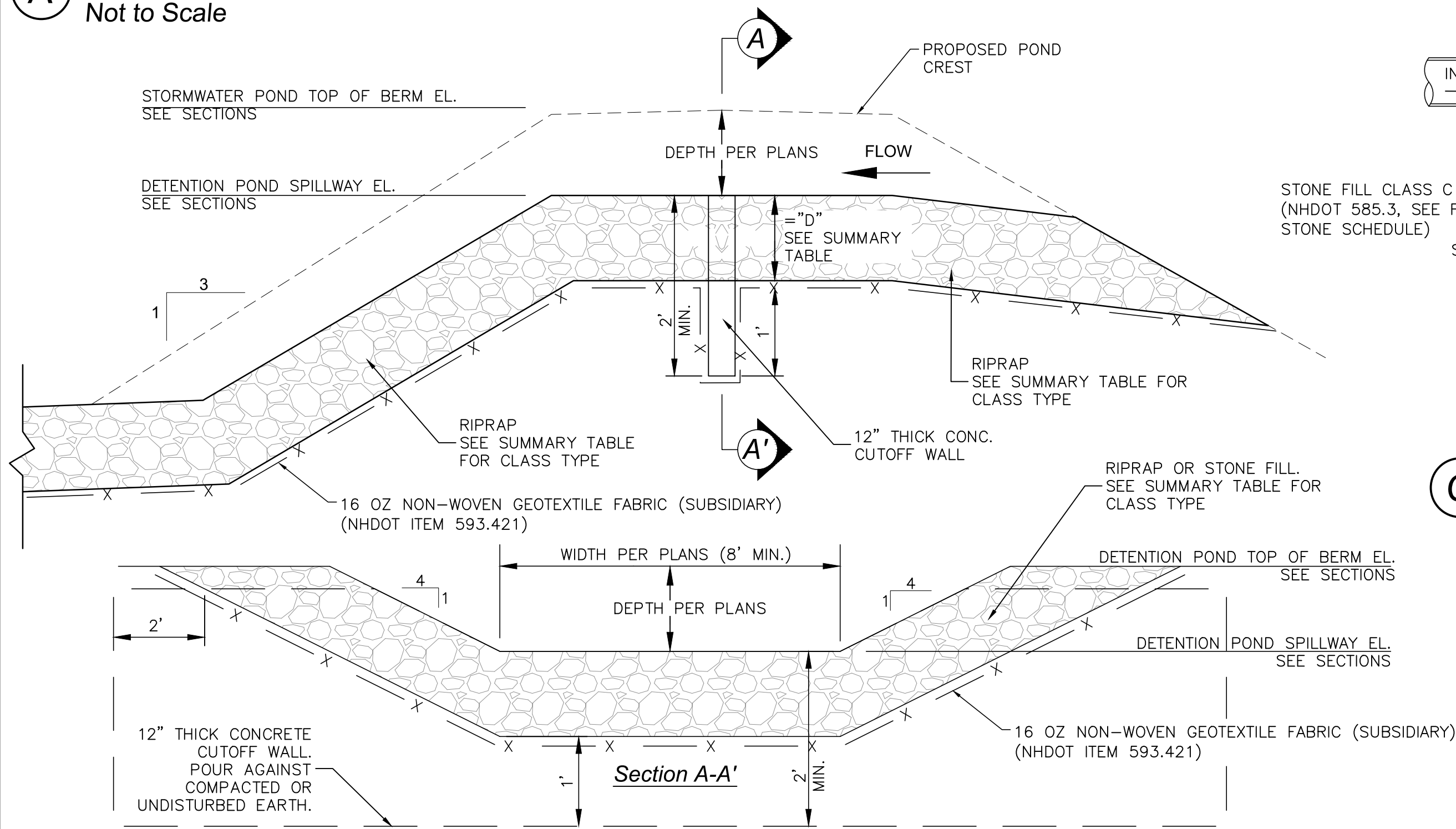


LOCATION	MATERIAL	NHDOT SPEC #	LOOSE LIFT THICKNESS (IN)	COMPACTION REQUIREMENTS (% MDD) ¹
EMBANKMENT	NATIVE SOIL ²	203.6	12 (MAX)	92% ³
LOAM COVER	BORROW ²	646.51	4 (MIN)	80%
IMP. CORE	LOW PERMEABILITY	203.53	6 (MAX)	95% ³

- NOTES:
- MDD: MAXIMUM DRY DENSITY.
 - ACCEPTABLE TO ENGINEER.
 - COMPACT TO TEST AVERAGE OF 92%, NO TEST LESS THAN 90.

LOW PERMEABILITY FILL	
SIEVE SIZE	% PASSING
3 IN	100
#4	80-100
#40	60-90
#100	40-60
#200	25-45

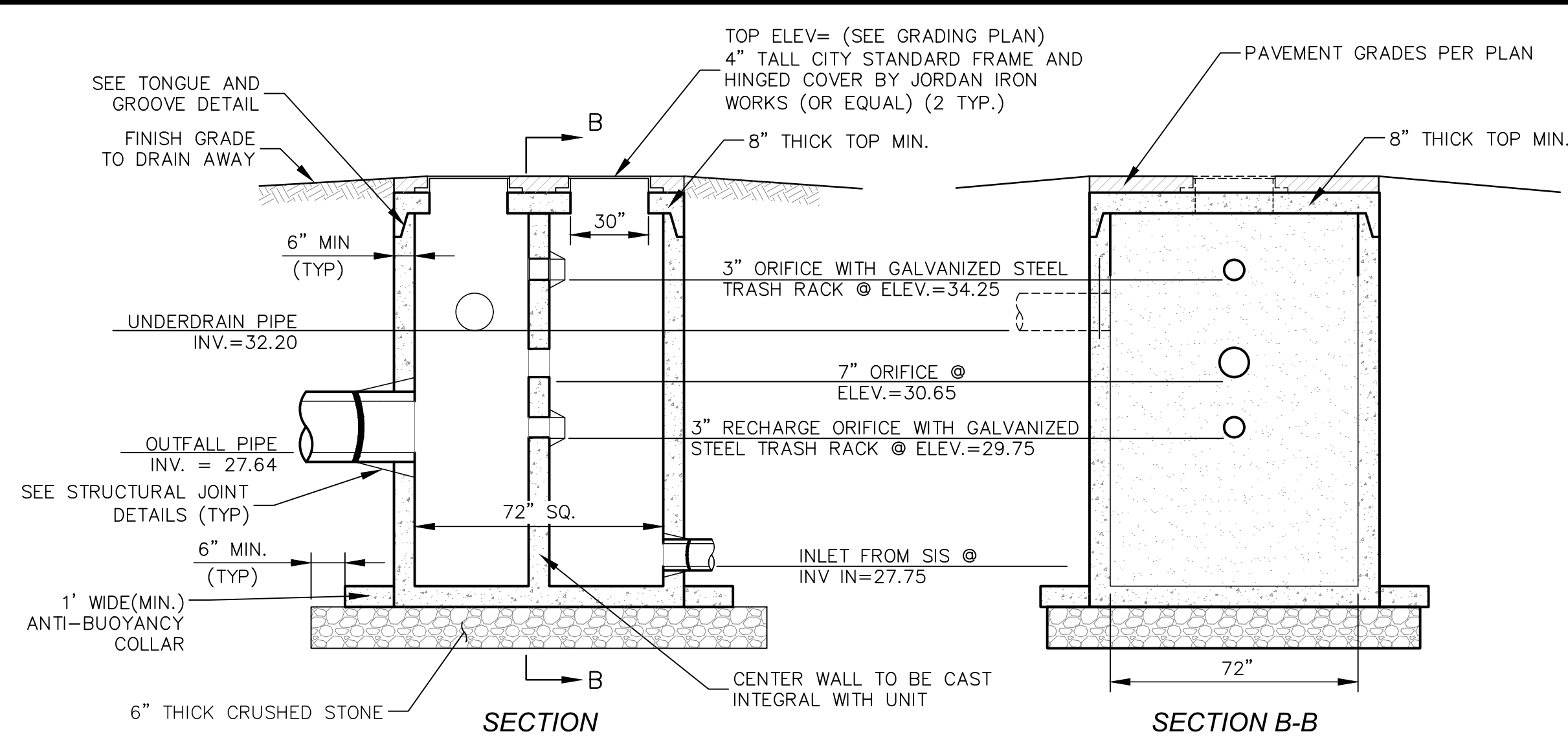
A Stormwater Dam/Berm Detail
Not to Scale



WEIR STONE SCHEDULE									
LOCATION	PLAN AREA	DEPTH, D	PERIMETER	D.S. TOE LENGTH	TOE DEPTH (NOTE 1)	NOM. DIAM (D ₅₀)	STONE FILL	STONE VOLUME	GEOTEXTILE AREA
BMP ID	WEIR ID	SF	IN	FT	FT	FT	IN	CLASS	CY
BMP-2	WEIR-2	650	14	102	--	--	6	C	30
BMP-2	WEIR-3	834	14	128	19	3.50	6	C	40
BMP-R1	WEIR-2	835	14	115	--	--	6	C	40
BMP-R1	WEIR-3 (TOP)	297	14	89	--	--	6	C	20
BMP-R1	WEIR-3(O)	1492	33	155	29	4.13	18	B	170
BMP-R2 & 3	WEIR-2	733	14	114	--	--	6	C	40
BMP-R2 & 3	WEIR-3	806	14	139	35	3.50	6	C	50

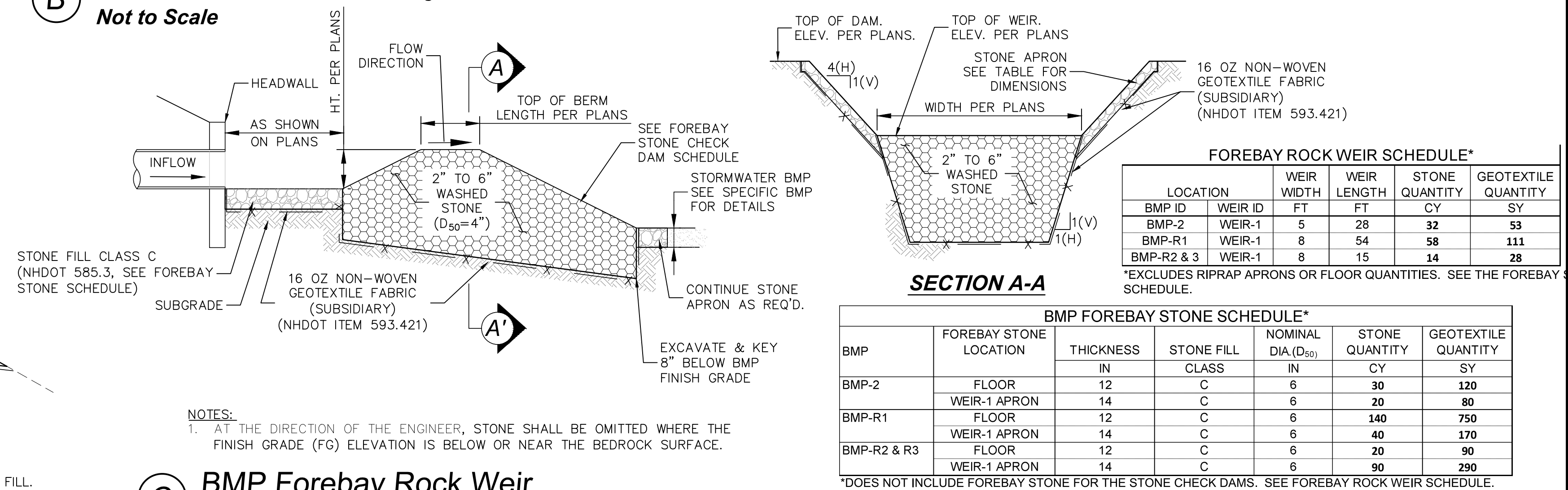
- NOTES:
- OR TO BEDROCK, WHICHEVER IS SHALLOWER. TOE TRENCH SHALL NOT BE CONSTRUCTED IF THE FG OF THE TOE IS BELOW ELEVATION 23.
 - AT THE DIRECTION OF THE ENGINEER, STONE SHALL BE OMITTED WHERE THE FINISH GRADE (FG) ELEVATION IS BELOW OR NEAR THE BEDROCK SURFACE.
 - SEE FOREBAY ROCK WEIR FOR SCHEDULES OF FOREBAY STONE AND FOREBAY ROCK WEIRS.

D Emergency/Highflow Bypass Weir and Spillway Detail
Not to Scale



- NOTES:
- ALL SECTIONS SHALL BE 4,000 PSI CONCRETE (TYPE II CEMENT).
 - PRECAST BOX STRUCTURE SHALL CONFORM TO ASTM C913 SPECIFICATIONS.
 - SEE DETAIL TITLE PIPE CONNECTION TO PRECAST MANHOLE STRUCTURES.
 - REINFORCEMENT:
 - DEFORMED BARS SHALL CONFORM TO ASTM A-615 GRADE 60.
 - WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185-GRADE 70
 - ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
 - REIN. STEEL SHALL HAVE 1' MINIMUM COVER.
 - THE STRUCTURE SHALL BE DESIGNED FOR HS 20-44 LOADING AND TO PREVENT FLOTATION IF FULLY SUBMERGED.
 - CRUSHED STONE BEDDING SHALL CONFORM TO NHDOT 304.4.
 - PIPE ELEVATIONS SHOWN SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
 - OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
 - OUTLET PIPE SHALL BE FLUSH WITH INNER WALL.
 - "SIS" = SUBSURFACE INFILTRATION SYSTEM

B Subsurface Chamber System Outlet Control Structure
Not to Scale



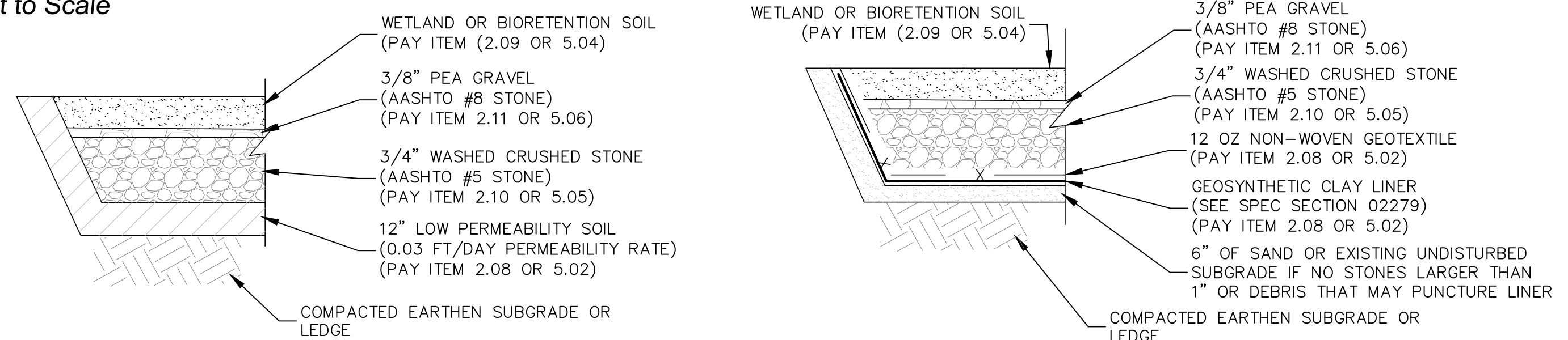
FOREBAY ROCK WEIR SCHEDULE*				
LOCATION	WEIR WIDTH	WEIR LENGTH	STONE QUANTITY	GEOTEXTILE QUANTITY
BMP ID	WEIR ID	FT	CY	SY
BMP-2	WEIR-1	5	28	32
BMP-R1	WEIR-1	8	54	58
BMP-R2 & 3	WEIR-1	8	15	14

*EXCLUDES RIPRAP APRONS OR FLOOR QUANTITIES. SEE THE FOREBAY SCHEDULE.

BMP FOREBAY STONE SCHEDULE*						
BMP	FOREBAY STONE LOCATION	THICKNESS	STONE FILL	NOMINAL DIA (D ₅₀)	STONE QUANTITY	GEOTEXTILE QUANTITY
		IN	CLASS	IN	CY	SY
BMP-2	FLOOR	12	C	6	30	120
	WEIR-1 APRON	14	C	6	20	80
BMP-R1	FLOOR	12	C	6	140	750
	WEIR-1 APRON	14	C	6	40	170
BMP-R2 & 3	FLOOR	12	C	6	20	90
	WEIR-1 APRON	14	C	6	90	290

*DOES NOT INCLUDE FOREBAY STONE FOR THE STONE CHECK DAMS. SEE FOREBAY ROCK WEIR SCHEDULE.

C BMP Forebay Rock Weir
Not to Scale

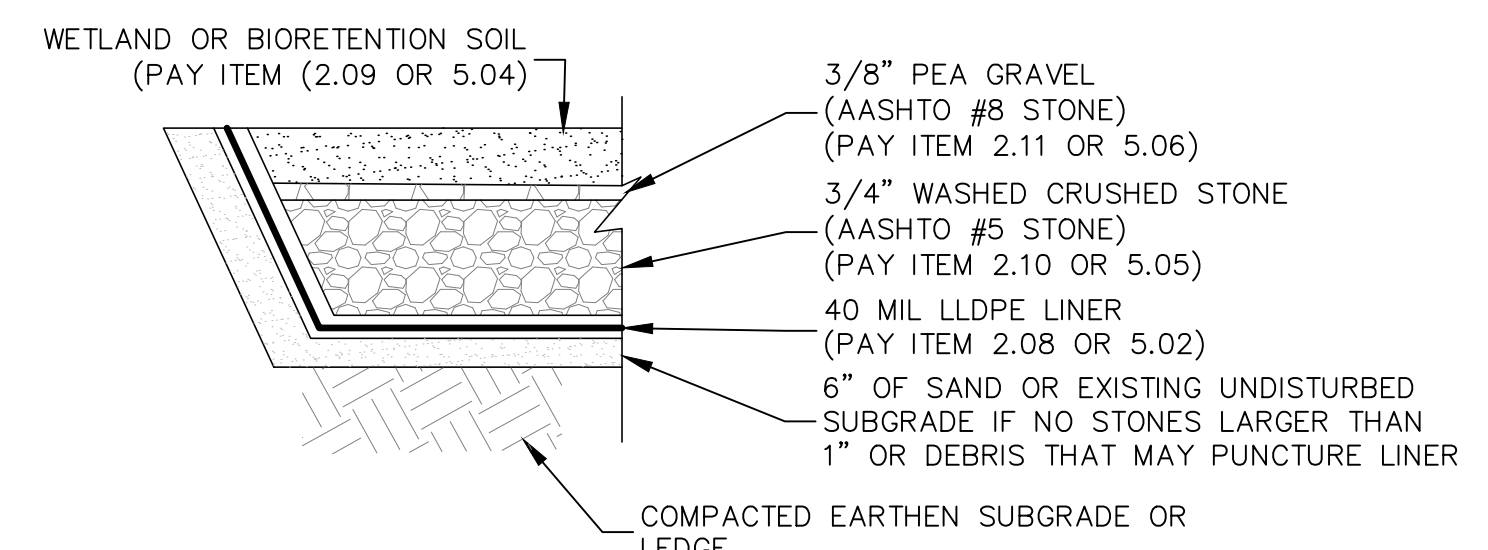


Low Permeability Soil Alternative A

LOW PERMEABILITY LAYER NOTES:

- INFILTRATION TESTING OF THE NATIVE SOILS AT THE SUBGRADE AND WITHIN THE VICINITY OF THE PROPOSED GRAVEL WETLANDS AND BIORETENTION W/ ISR SHALL OCCUR PRIOR TO INSTALLATION AND SHALL BE COORDINATED WITH THE ENGINEER.
- AN IMPERMEABLE LAYER (SEE ALTERNATIVES, THIS SHEET) SHALL BE USED IF EXISTING/INSITU SOILS HAVE GREATER THAN 10% FINES, IF PERMEABILITY RATE EXCEEDS 0.03 FT/DAY, OR IF EXCESSIVELY FRACTURED BEDROCK IS ENCOUNTERED. THE LINER SHALL EXTEND TO THE TOP OF THE WETLAND SOIL/BIORETENTION SOIL MIX.

Geosynthetic Clay Liner (GCL) Alternative B



LDPE Liner Alternative C

E Low Permeability Layer Alternatives
Not to Scale

City of Portsmouth, New Hampshire
Department of Public Works
Multi-purpose Recreation Fields and
Regional Stormwater Treatment System
Stormwater Treatment System
Stormwater Details

designed by: JHK
drawn by: NJM
approved by: PAC

date: April 2020
project no: 1119
file name: 1119 DETAILS-SW.dwg

scale:

drawing no: C-308

sheet: 23 of 45

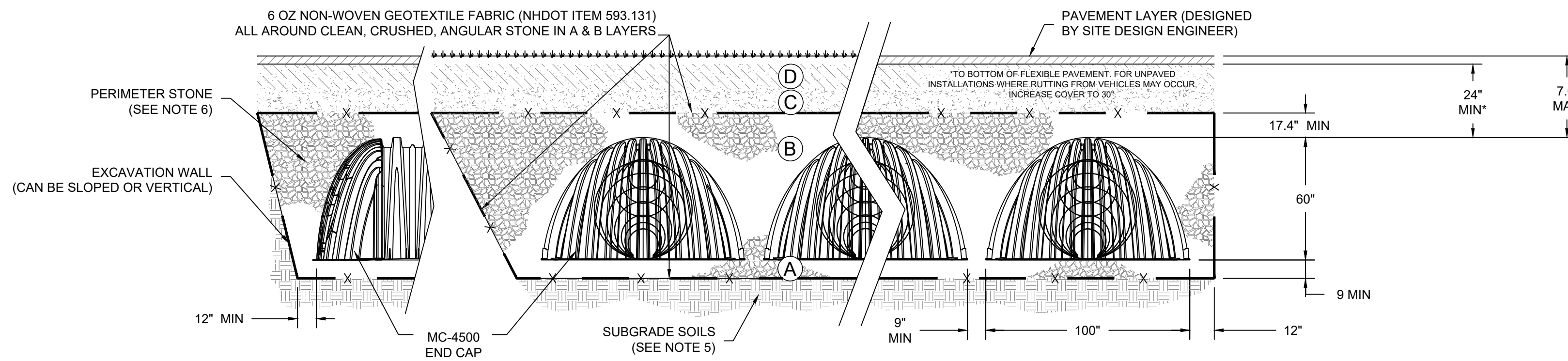
revision: 1
no. 1
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Portsmouth, NH
603/627-0708
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603/431-6196
cmaengineers.com

ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'C' LAYER.	AASHTO M145* A-1, A-2-4, A-3 OR AASHTO M43* 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	AASHTO M43* 3, 4	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	AASHTO M43* 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. 2,3

- PLEASE NOTE:
- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
 - STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
 - WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.

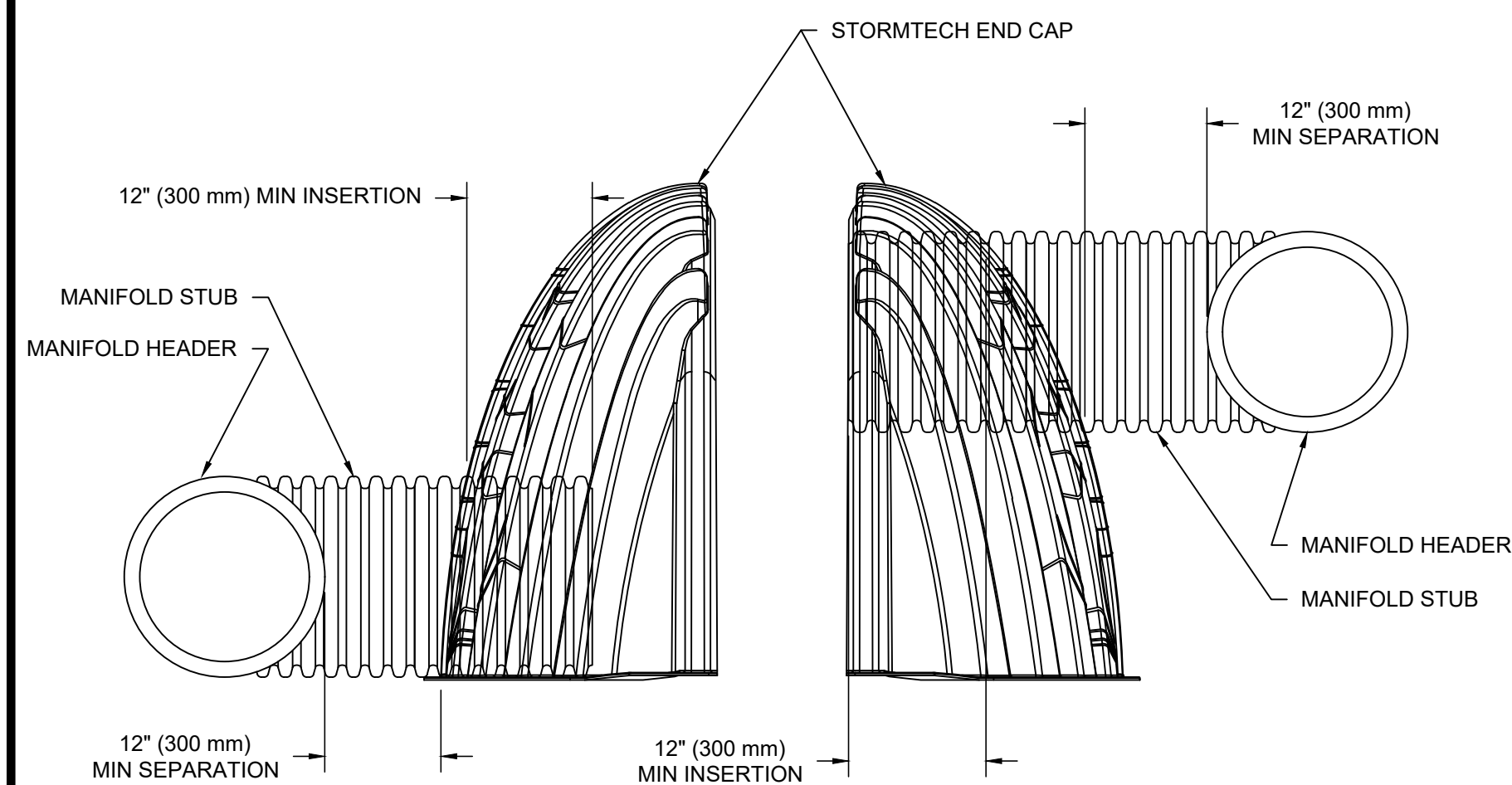


NOTES:

- MC-4500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".¹
- MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".²
- "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.³
- THE "SITE DESIGN ENGINEER" REFERS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN AND LAYOUT OF THE STORMTECH CHAMBERS FOR THIS PROJECT.⁴
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.⁵
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

MC-SERIES END CAP INSERTION DETAIL

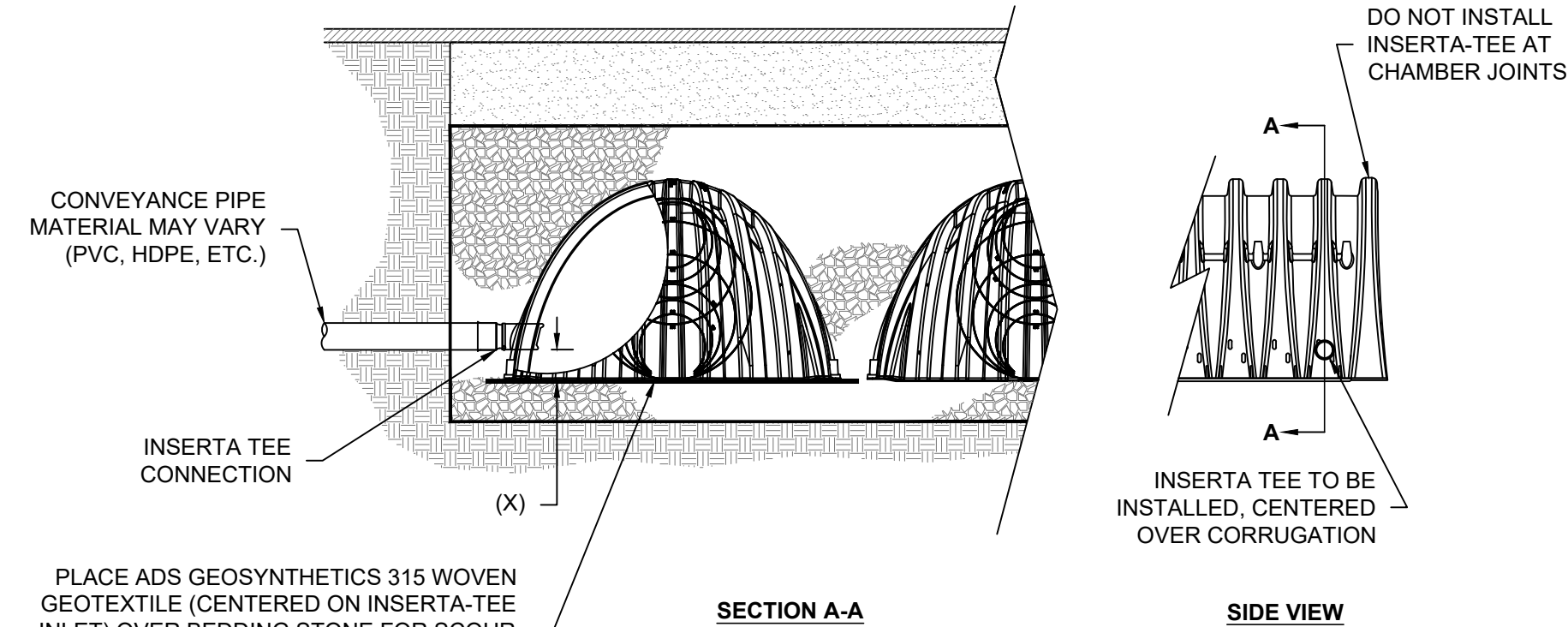
NTS



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

INSERTA TEE DETAIL

NTS



NOTE: PLACE ADS GEOSYNTHETICS 315 WOVEN GEOTEXTILE (CENTERED ON INSERTA-TEE INLET) OVER BEDDING STONE FOR SCOUR PROTECTION AT SIDE INLET CONNECTIONS. GEOTEXTILE MUST EXTEND 6" (150 mm) PAST CHAMBER FOOT

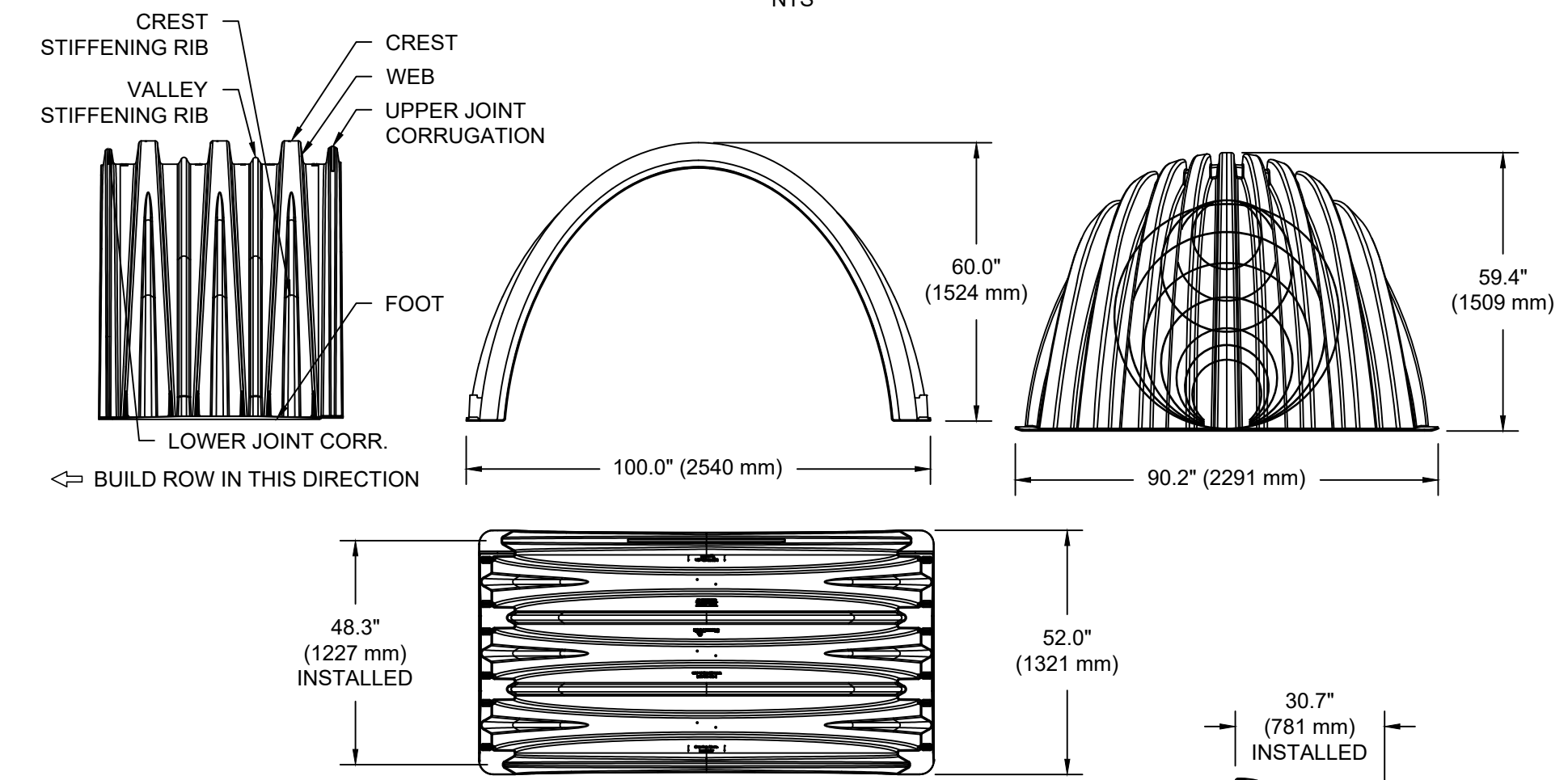
NOTE: PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)

INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON

MC-4500 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 48.3"	(2540 mm X 1524 mm X 1227 mm)
CHAMBER STORAGE	106.5 CUBIC FEET	(3.01 m ³)
MINIMUM INSTALLED STORAGE*	162.6 CUBIC FEET	(4.60 m ³)
WEIGHT	130.0 lbs.	(59.0 kg)

NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	90.2" X 59.4" X 30.7"	(2291 mm X 1509 mm X 781 mm)
END CAP STORAGE	35.7 CUBIC FEET	(1.01 m ³)
MINIMUM INSTALLED STORAGE*	108.7 CUBIC FEET	(3.08 m ³)
WEIGHT	135.0 lbs.	(61.2 kg)

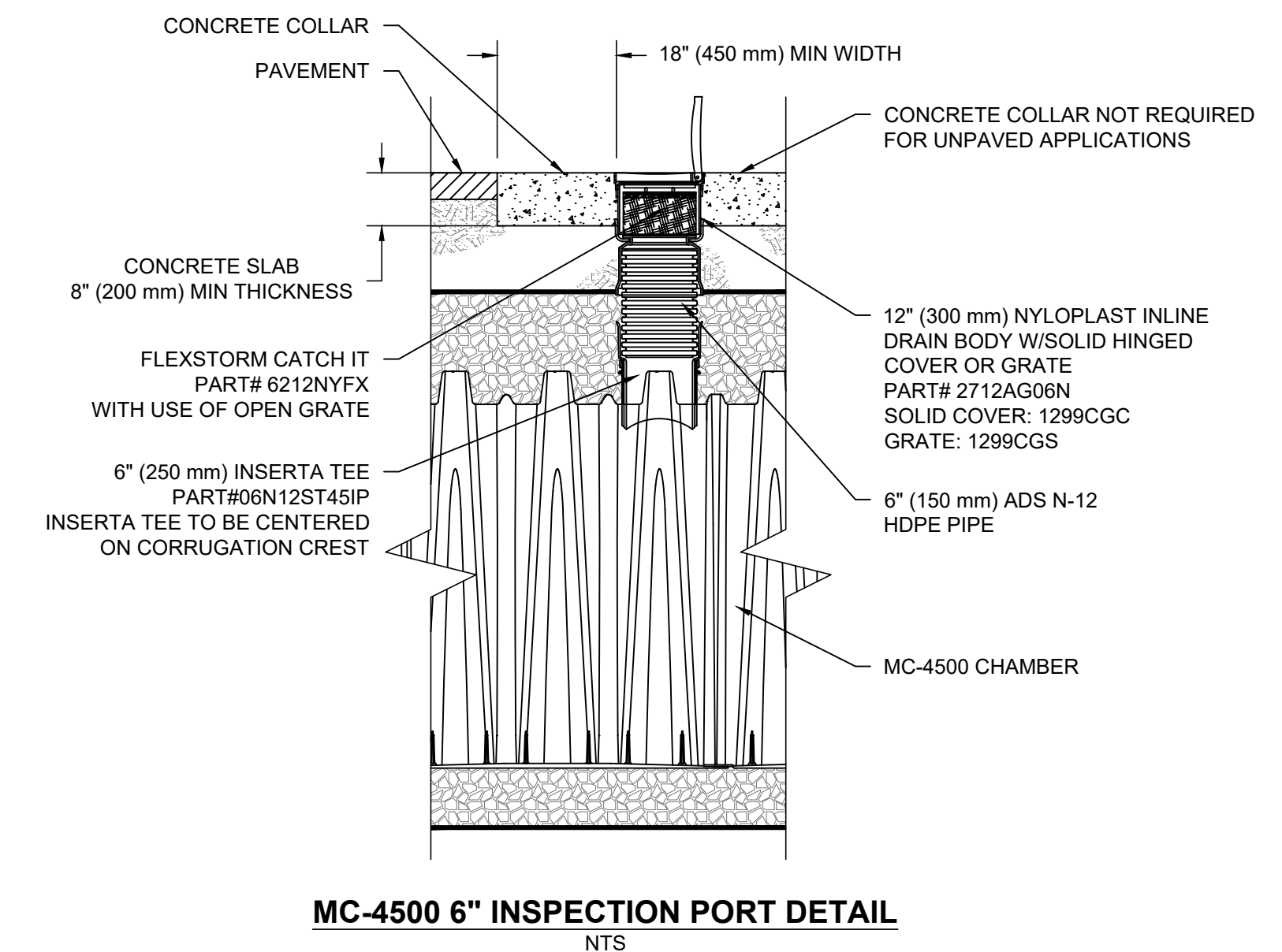
*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART #	STUB	B	C
MC4500REPE06T	6" (150 mm)	42.54" (1.081 m)	---
MC4500REPE06B	---	---	0.86" (22 mm)
MC4500REPE08T	8" (200 mm)	40.50" (1.029 m)	---
MC4500REPE08B	---	---	1.01" (26 mm)
MC4500REPE10T	10" (250 mm)	38.37" (975 mm)	---
MC4500REPE10B	---	---	1.33" (34 mm)
MC4500REPE12T	12" (300 mm)	35.69" (907 mm)	---
MC4500REPE12B	---	---	1.55" (39 mm)
MC4500REPE15T	15" (375 mm)	32.72" (831 mm)	---
MC4500REPE15B	---	---	1.70" (43 mm)
MC4500REPE18TC	18" (450 mm)	29.36" (746 mm)	---
MC4500REPE18BC	---	---	1.97" (50 mm)
MC4500REPE24TC	24" (600 mm)	23.05" (585 mm)	---
MC4500REPE24BC	---	---	2.26" (57 mm)
MC4500REPE30BC	30" (750 mm)	---	2.95" (75 mm)
MC4500REPE36BC	36" (900 mm)	---	3.25" (83 mm)
MC4500REPE42BC	42" (1050 mm)	---	3.55" (90 mm)

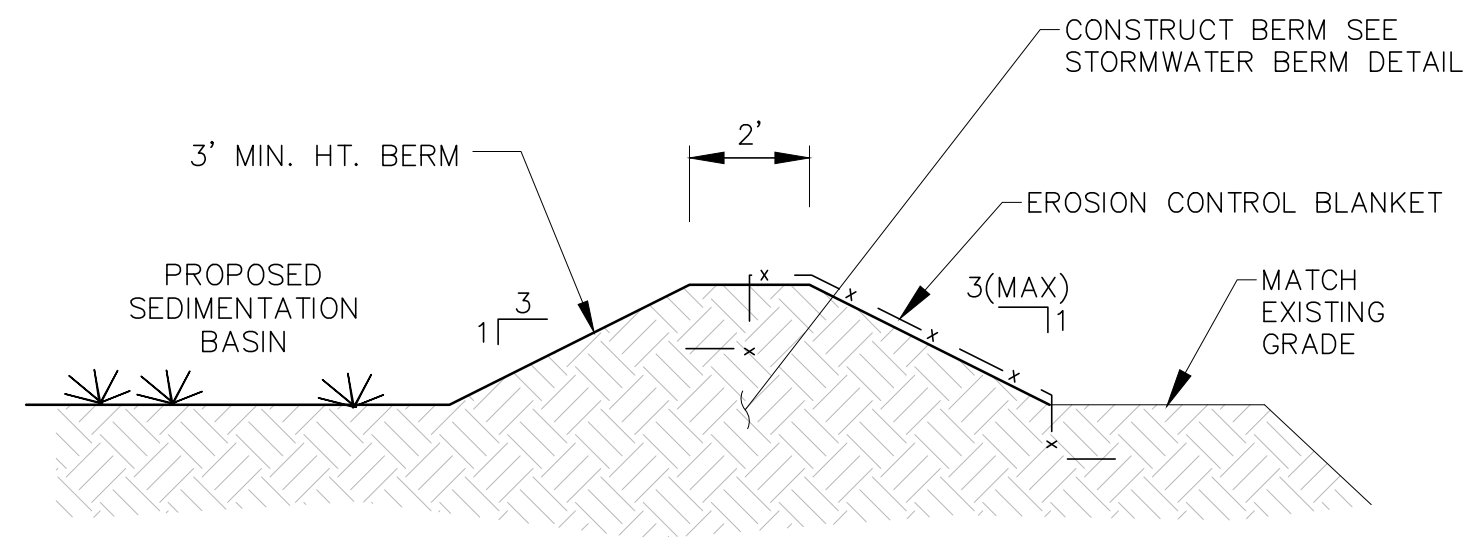
NOTE: ALL DIMENSIONS ARE NOMINAL

CUSTOM PRECURED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-4500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN "B" ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.



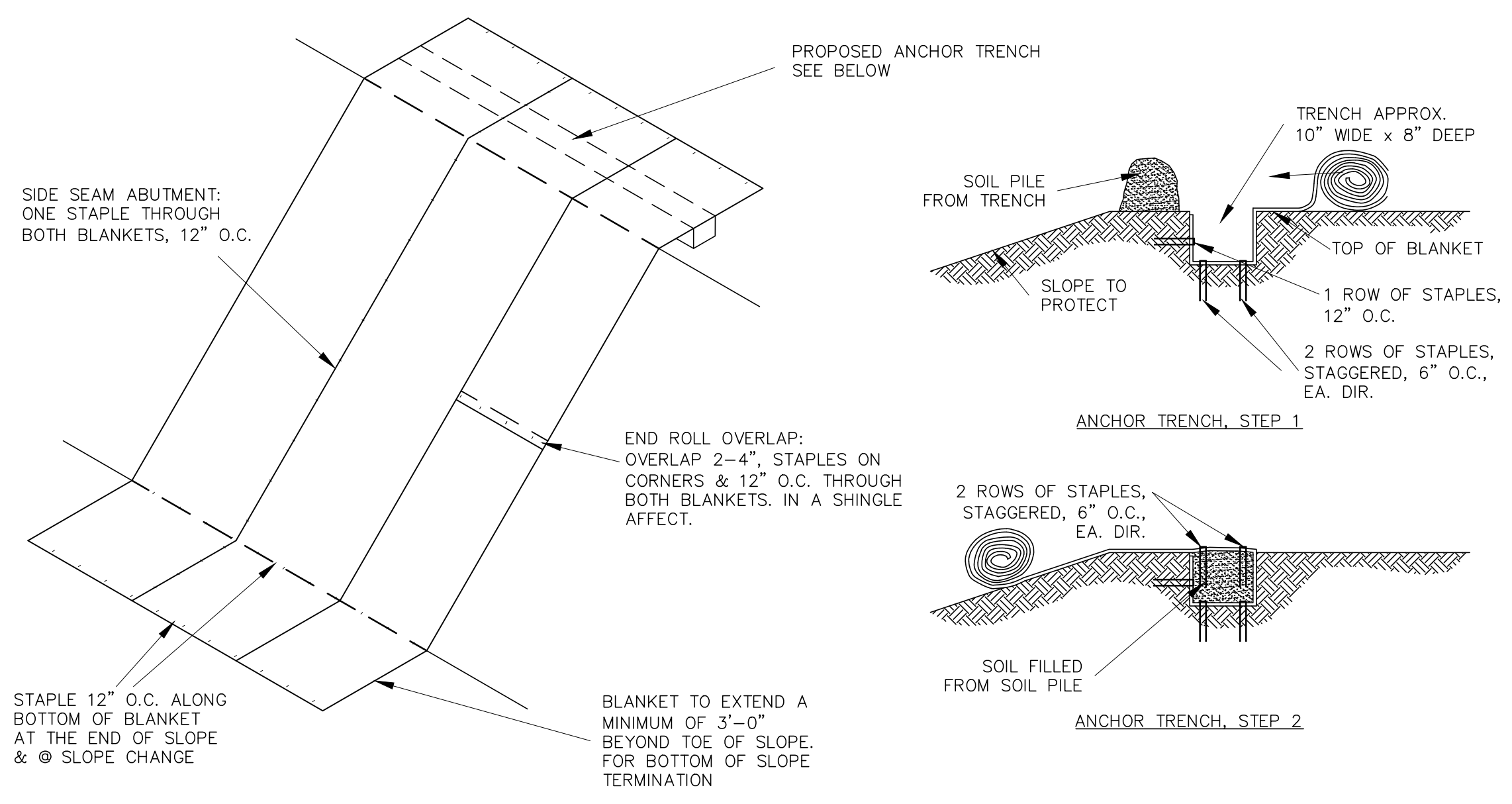
ADS Stormtech MC-4500 Chamber System
Not to Scale

designed by:	JHK	drawn by:	NJM	approved by:	PPG
date:	April 2020	project no.:	1119	file name:	1119 DETAILS-Stormwater-Chambers
scale:					
<p>City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System Stormwater Treatment System Stormwater Chamber System Details</p>					
revision:					
no.:	1	issued for Bid:			
date:	4/16/20	PAC			

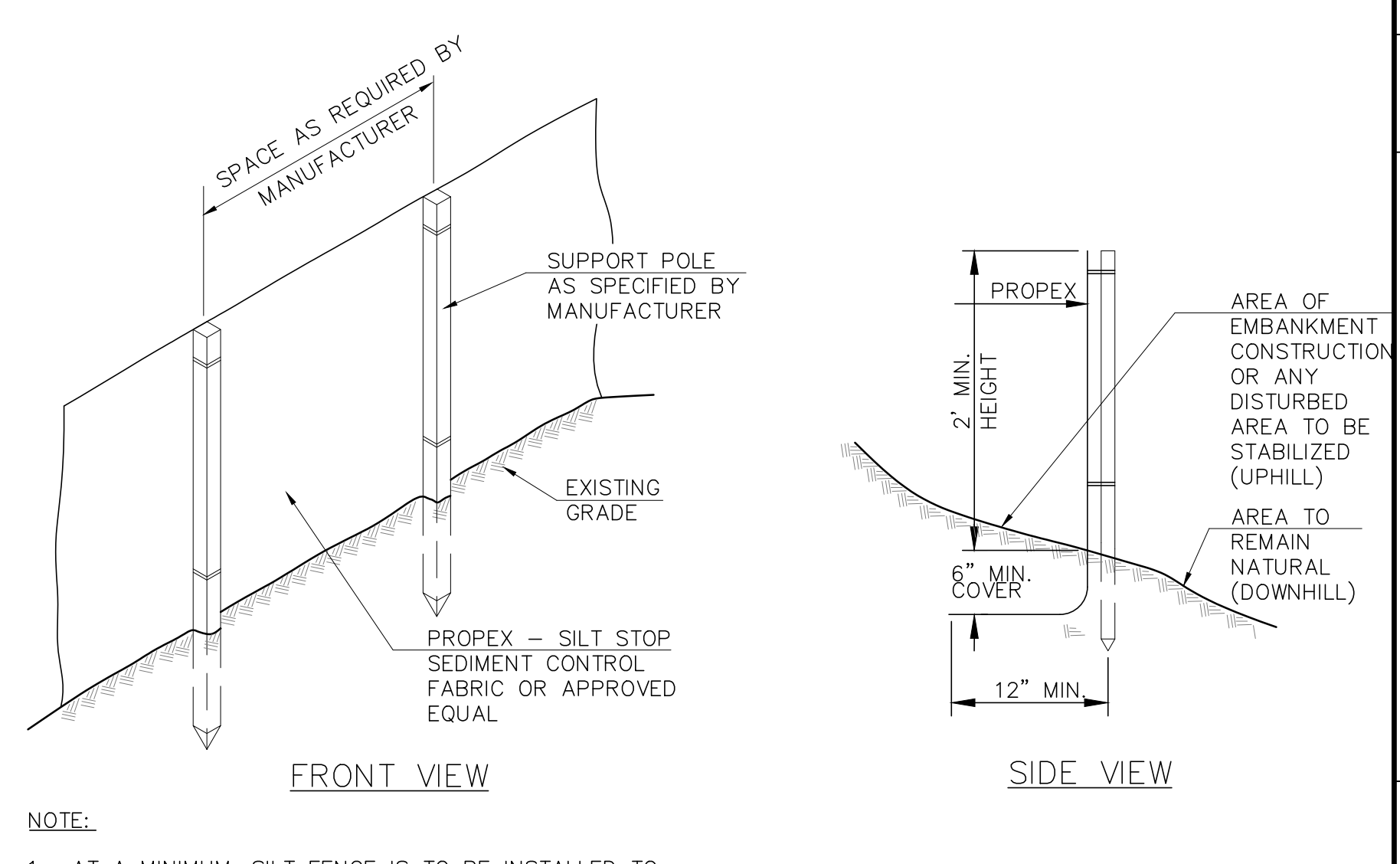
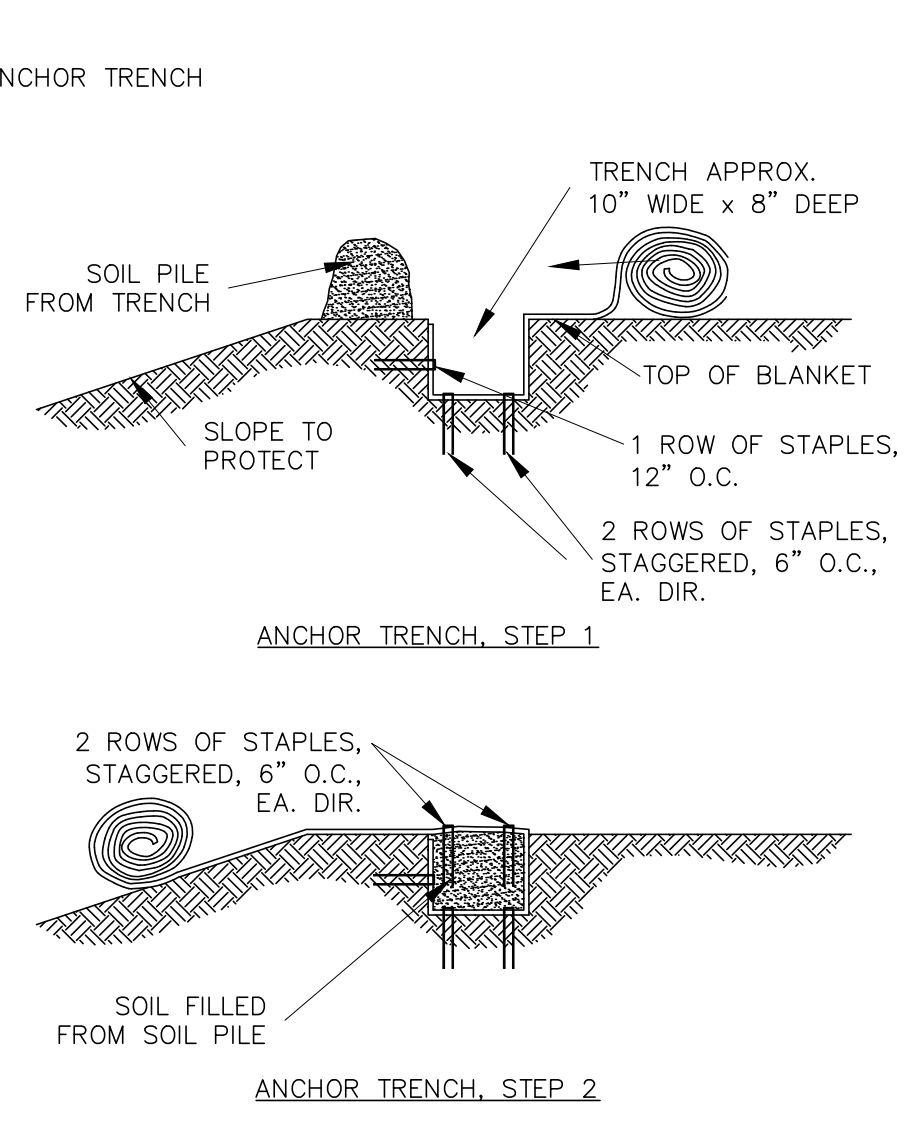


- NOTE:
1. SEDIMENTATION BASINS MUST BE INSTALLED PRIOR TO EARTH MOVING OPERATIONS.
 2. BOTTOM OF SEDIMENT BASIN SHALL BE THE FG ELEV OF THE PERMANENT STORMWATER BMP.
 3. SEE SHEET C308 FOR STORMWATER BERM AND OUTLET DETAILS.

A Sedimentation Basin (Matting)
Not to Scale

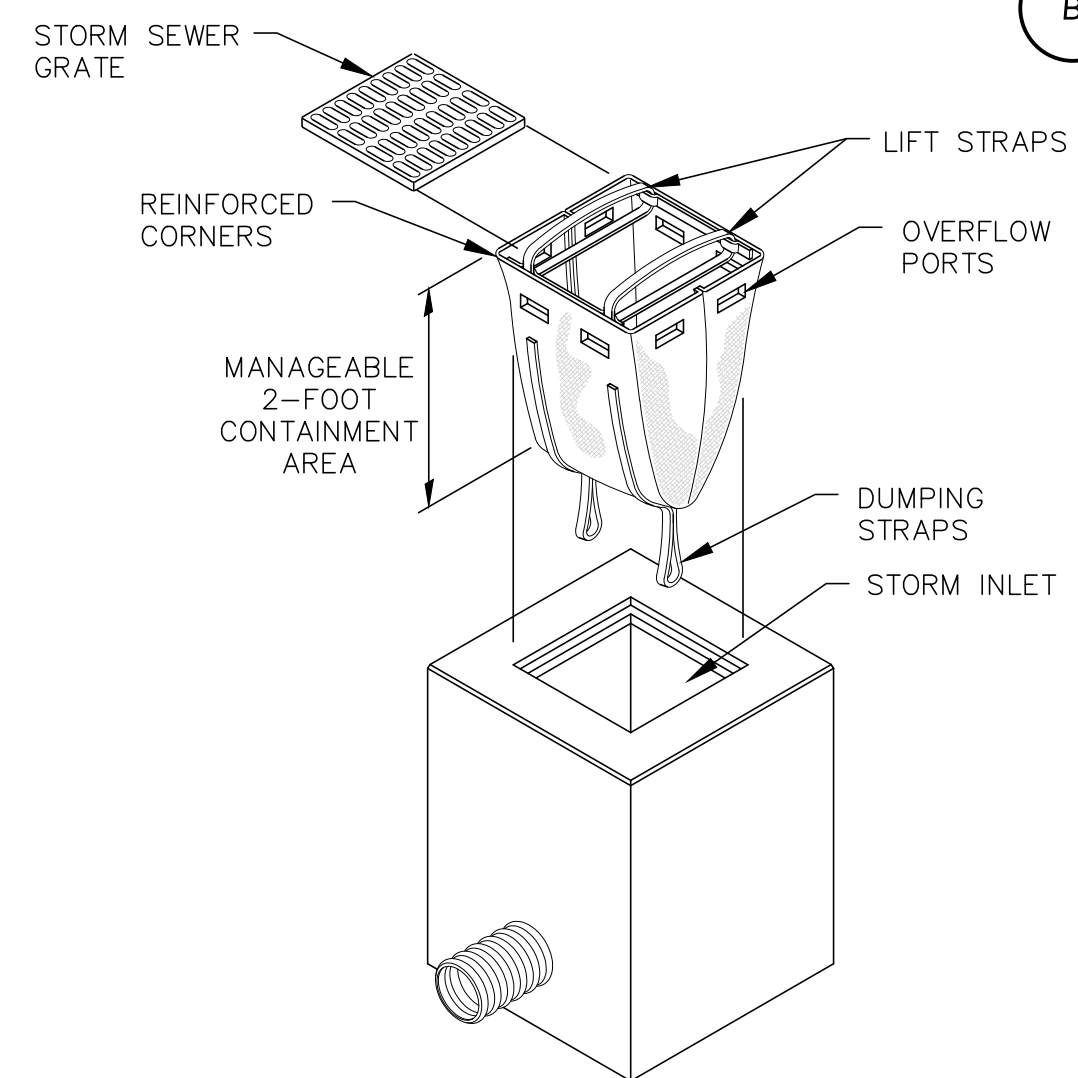


B Erosion Control Blanket Slope
Not to Scale

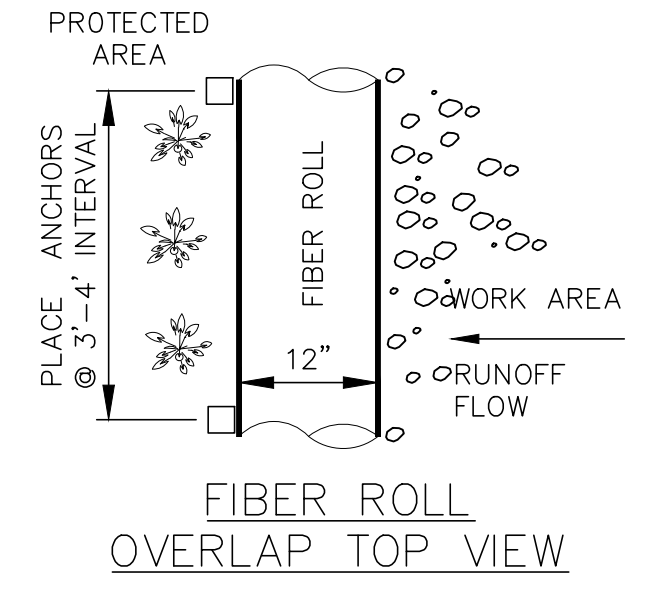
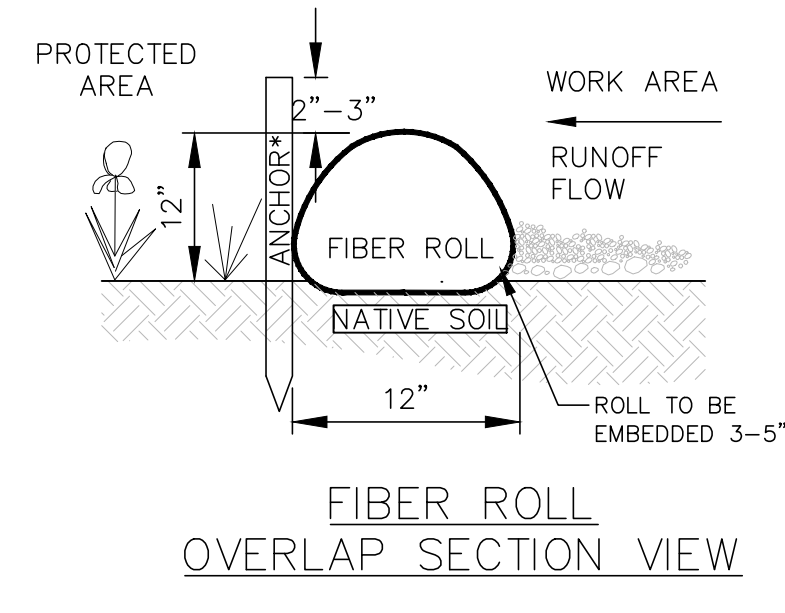
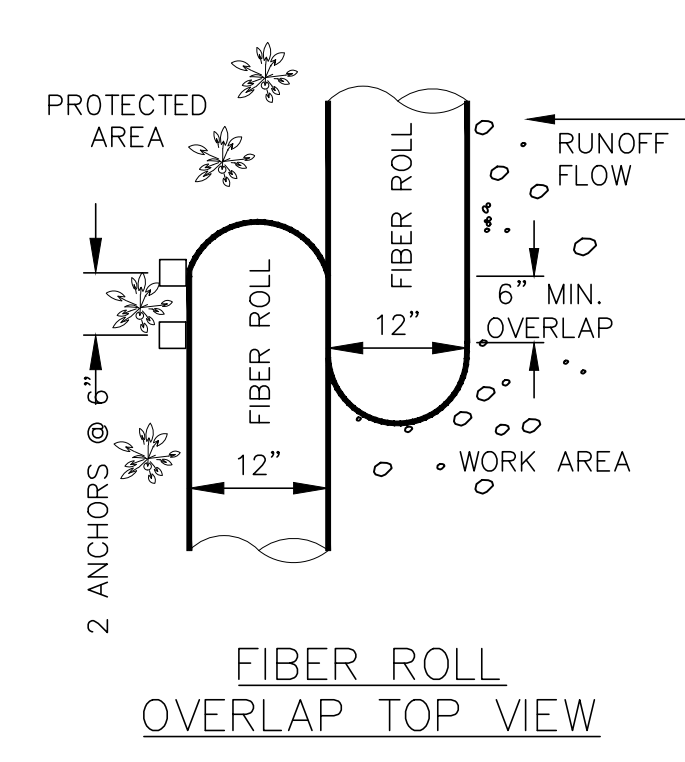
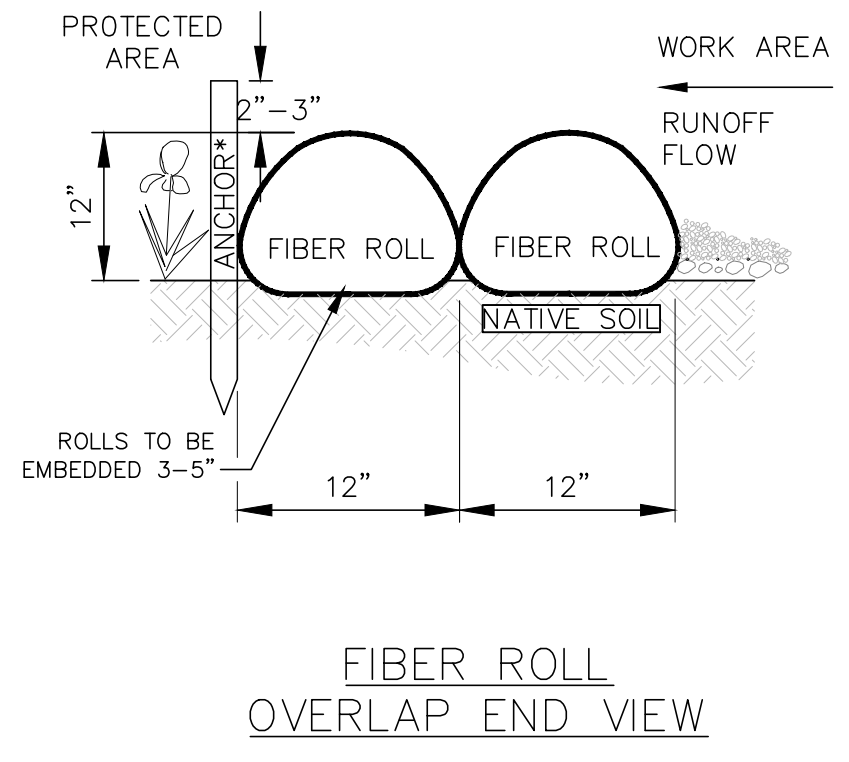


- NOTE:
1. AT A MINIMUM, SILT FENCE IS TO BE INSTALLED TO PROTECT WETLAND AREAS, WATERWAYS, EXISTING AND PROPOSED DRAINAGE FEATURES, SLOPES, LAWNS AND PLANTINGS ADJACENT TO THE WORK.

C Silt Fence
Not to Scale

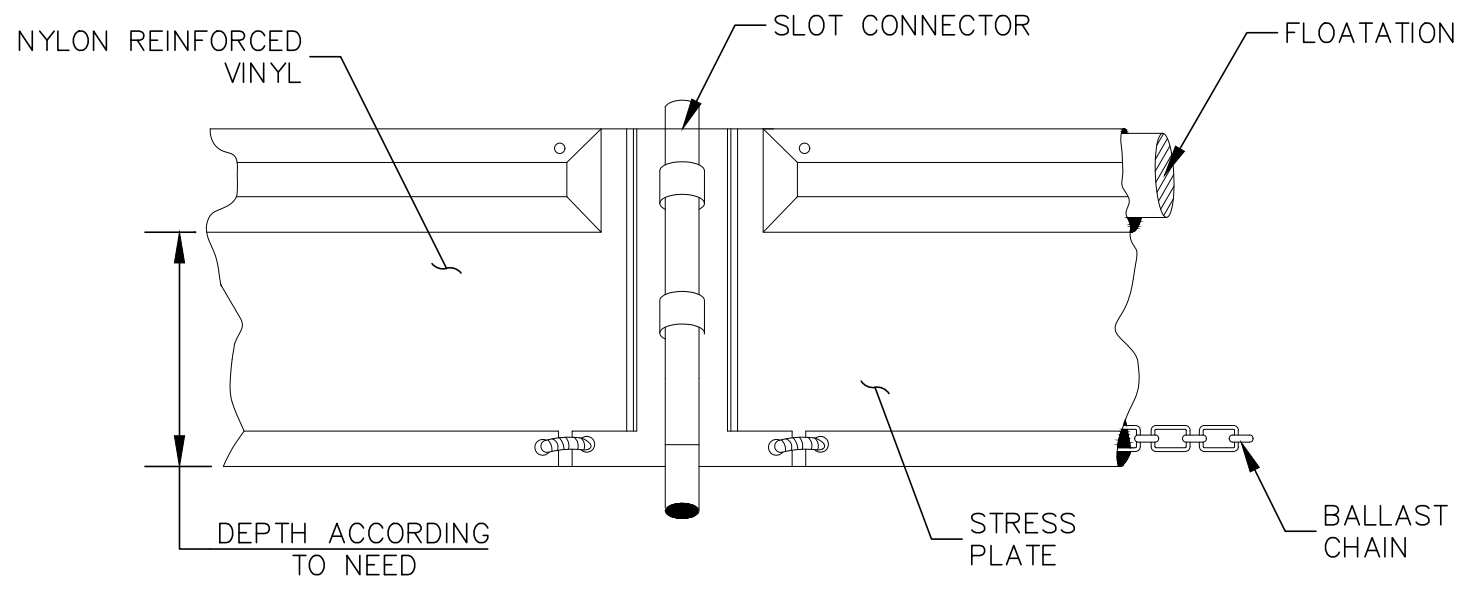


D "Silt Sack" Sediment Control Device for Inlet Protection
Not to Scale

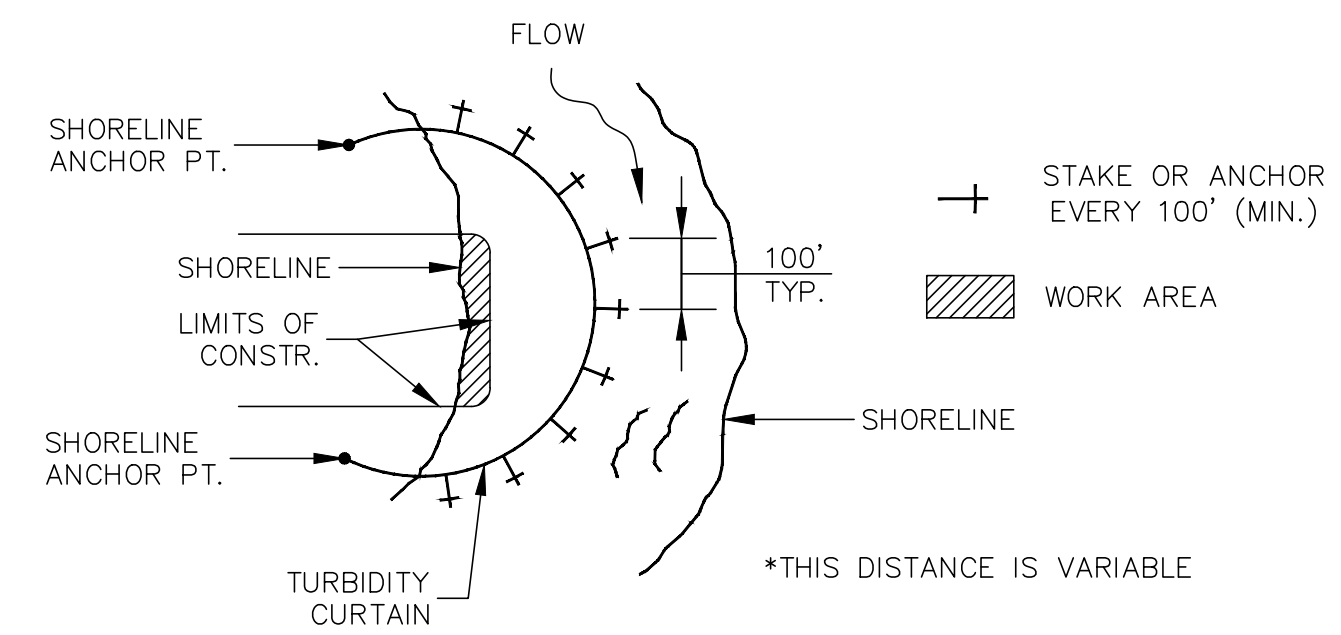


E Fiber Roll
Not to Scale

* ANCHOR STAKES TO BE 1"x1"x24" WOOD, AND DRIVEN TO 2"-3" ABOVE THE TOP OF THE FIBER ROLL.

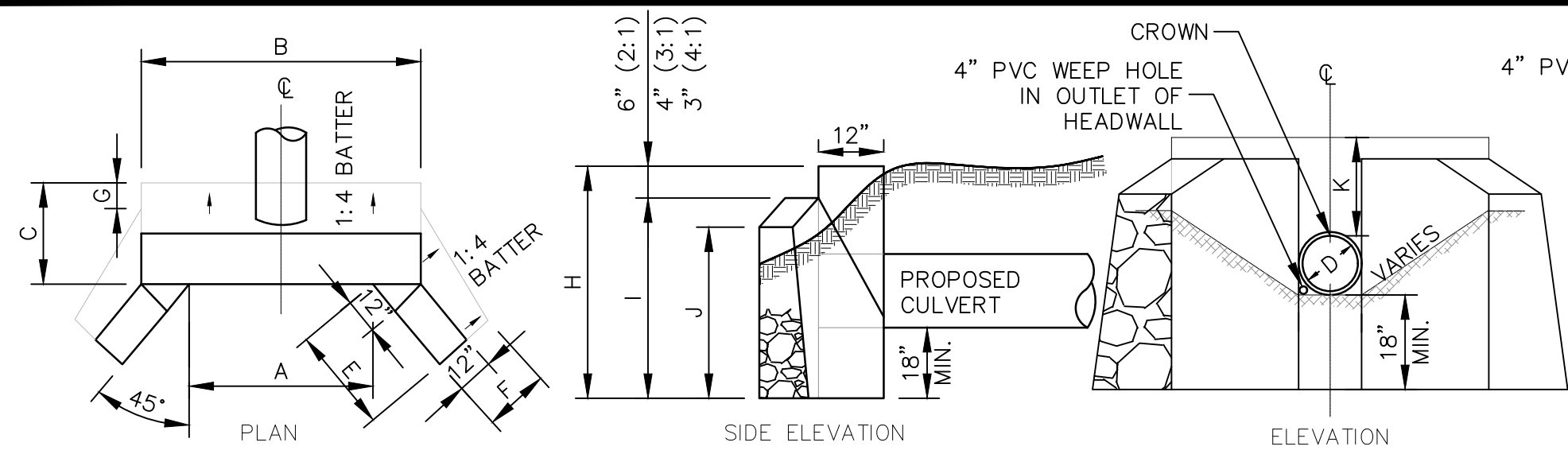


F Turbidity Curtain Elevation
Not to Scale



G Turbidity Curtain Layout
Not to Scale

		CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/641-4223	c m a e n g i n e e r s . c o m
designed by: JHK drawn by: NUM approved by: PAC	date: April 2020 project no: 1119 file name: 1119 DETAILS-ESC.dwg	scale:	revision no. 1 date 4/16/20 by PAC
City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System Erosion Control Details			
drawing no. D-102			
sheet: 26 of 45			



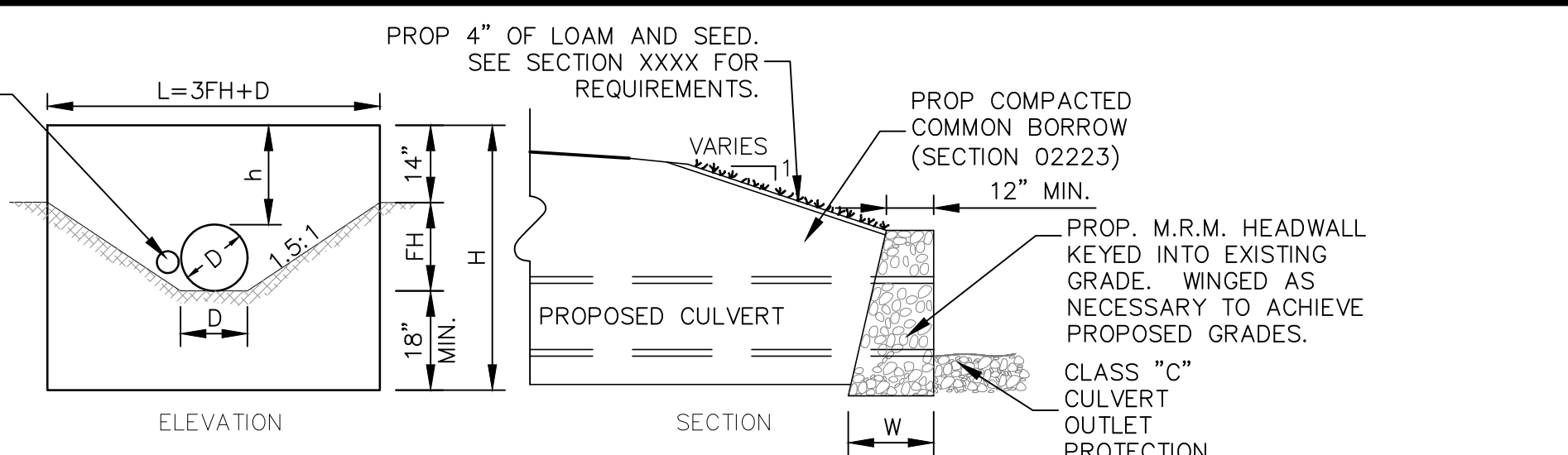
45 DEGREE WING WALLS, RCP PIPE

DIAMETER D INCHES	M.R.M. (CY)	EXC. FOR 1' DEPTH (CY)	A	B	C	E	F	G	H	I	J	K
24	2.81	2.09	2'-6"	5'-4"	2'-3"	3'-6"	2'-0"	0'-6"	5'-0"	4'-8"	4'-1"	1'-6"

45 DEGREE WING WALLS, OTHER THAN RCP PIPE

DIAMETER D INCHES	M.R.M. (CY)	EXC. FOR 1' DEPTH (CY)	A	B	C	E	F	G	H	I	J	K
24	2.18	1.79	2'-3"	5'-1"	2'-2"	2'-10"	1'-11"	0'-7"	4'-6"	4'-2"	3'-9"	12" MIN.
36	3.81	2.55	3'-3"	6'-1"	2'-5"	4'-3"	2'-1"	0'-8"	5'-6"	5'-2"	4'-5"	12" MIN.

- NOTES:
- DIMENSIONS SHOWN ARE TO PAYMENT LINES. MORTAR RUBBLE MASONRY TO BE STEPPED OUTSIDE PAYMENT LINES ON SLOPING FACES.
 - FOR OTHER THAN RCP PIPE, THE DIMENSION "K" MUST BE 12" MINIMUM FROM TOP OF HEADER TO TOP OF PIPE.
 - HEADWALLS TO BE PAID FOR UNDER ITEMS 2.29 AND 5.12.



STRAIGHT HEADWALL, RCP PIPE

DIAMETER D INCHES	M.R.M. (CY)	HEADWALL LENGTH L	HEADWALL HEIGHT H	FILL HEIGHT FH	"h"	WIDTH AT BOTTOM W
15	1.32	6'-0"	4'-3"	1'-7"	1'-6"	2'-0 3/4"
18	1.66	7'-0"	4'-6"	1'-10"	1'-6"	2'-1 1/2"

STRAIGHT HEADWALL, OTHER THAN RCP PIPE

DIAMETER D INCHES	M.R.M. (CY)	HEADWALL LENGTH L	HEADWALL HEIGHT H	FILL HEIGHT FH	"h"	WIDTH AT BOTTOM W
12	0.61	3'-6"	3'-6"	0'-10"	12" MIN.	0'-10 1/2"
18	1.13	5'-6"	4'-0"	1'-4"	12" MIN.	2'-0"

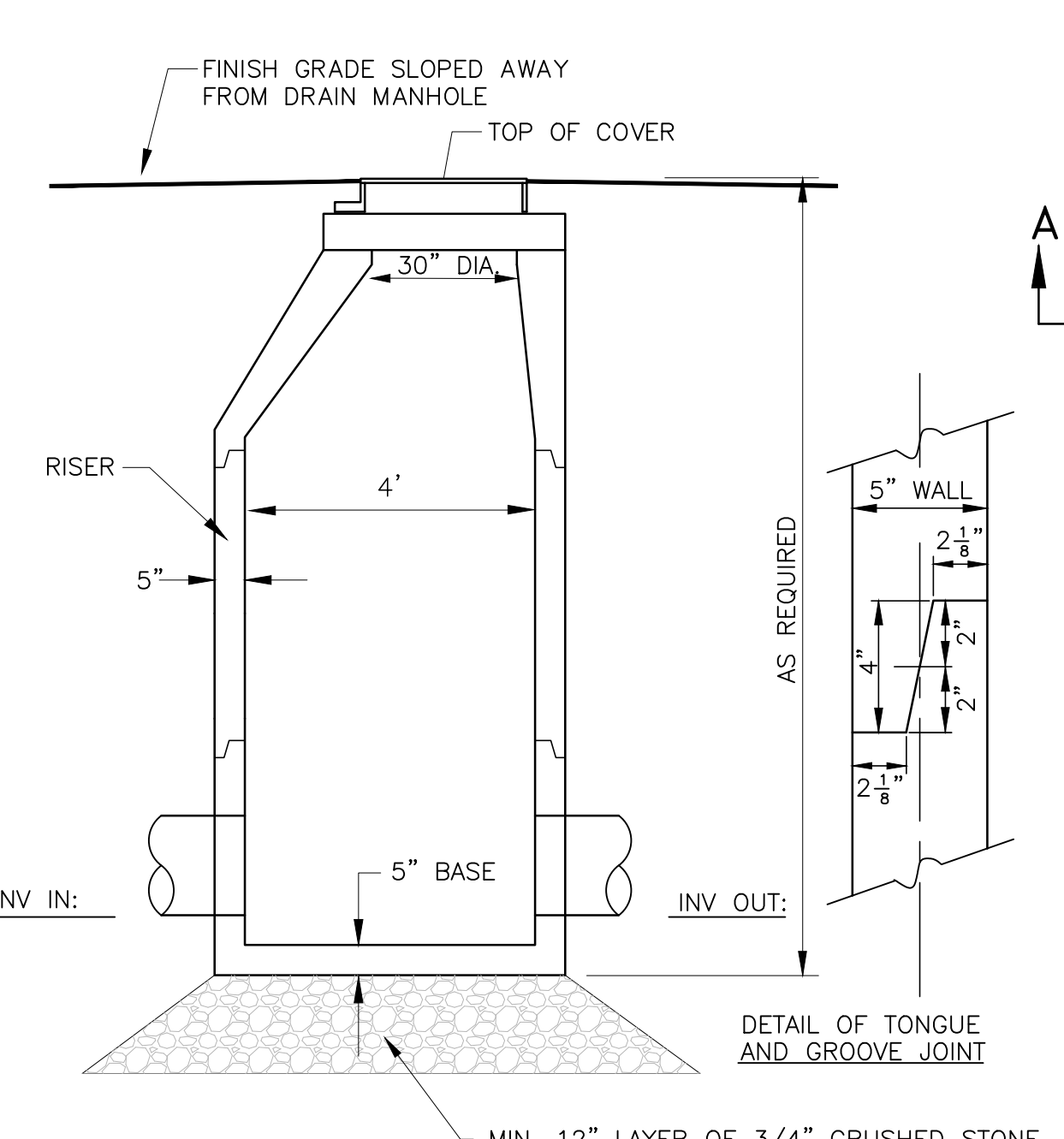
- NOTES:
- DIMENSIONS SHOWN ARE TO PAYMENT LINES. MORTAR RUBBLE MASONRY TO BE STEPPED OUTSIDE PAYMENT LINES ON SLOPING FACES.
 - FOR OTHER THAN RCP PIPE, THE DIMENSION "h" MUST BE 12" MINIMUM FROM TOP OF HEADER TO TOP OF PIPE.
 - HEADWALLS TO BE PAID FOR UNDER ITEMS 2.29 AND 5.12.

STONE LINED OUTLET PROTECTION TABLE OF DIMENSIONS

PIPE OUTLET ID	D	La	W1	W2	T	D50	NHDOT TYPE	CLASS	STONE VOLUME CY	GEO-TEXTILE AREA SY	
PHW-02	12	1.00	10	10	10	14	6	STONE FILL	C	4	20
PHW-03	24	2.00	29	6	18	14	6	STONE FILL	C	15	50
PHW-04	24	2.00	10	10	10	14	6	STONE FILL	C	5	20
PHW-05	24	2.00	21	15	15	14	6	STONE FILL	C	14	50
PWH-06	12	1.00	10	10	10	14	6	STONE FILL	C	4	20
PHW-07	12	1.00	13	7	7	14	6	STONE FILL	C	4	20
PHW-08	24	2.00	18	6	24	14	6	STONE FILL	C	12	40
PHW-09	12	1.00	27	3	14	14	6	STONE FILL	C	10	40
PHW-10	36	3.00	36	19	19	44	24	RIPRAP	VII	93	130
PHW-11	12	1.00	27	13	13	14	6	STONE FILL	C	15	50
PHW-12	12	1.00	10	10	10	14	6	STONE FILL	C	4	20
EHW-C	24	2.00	IR	IR	IR	33	18	STONE FILL	B	64	99
EHW-R	36	3.00	IR	IR	IR	33	18	STONE FILL	B	185	259

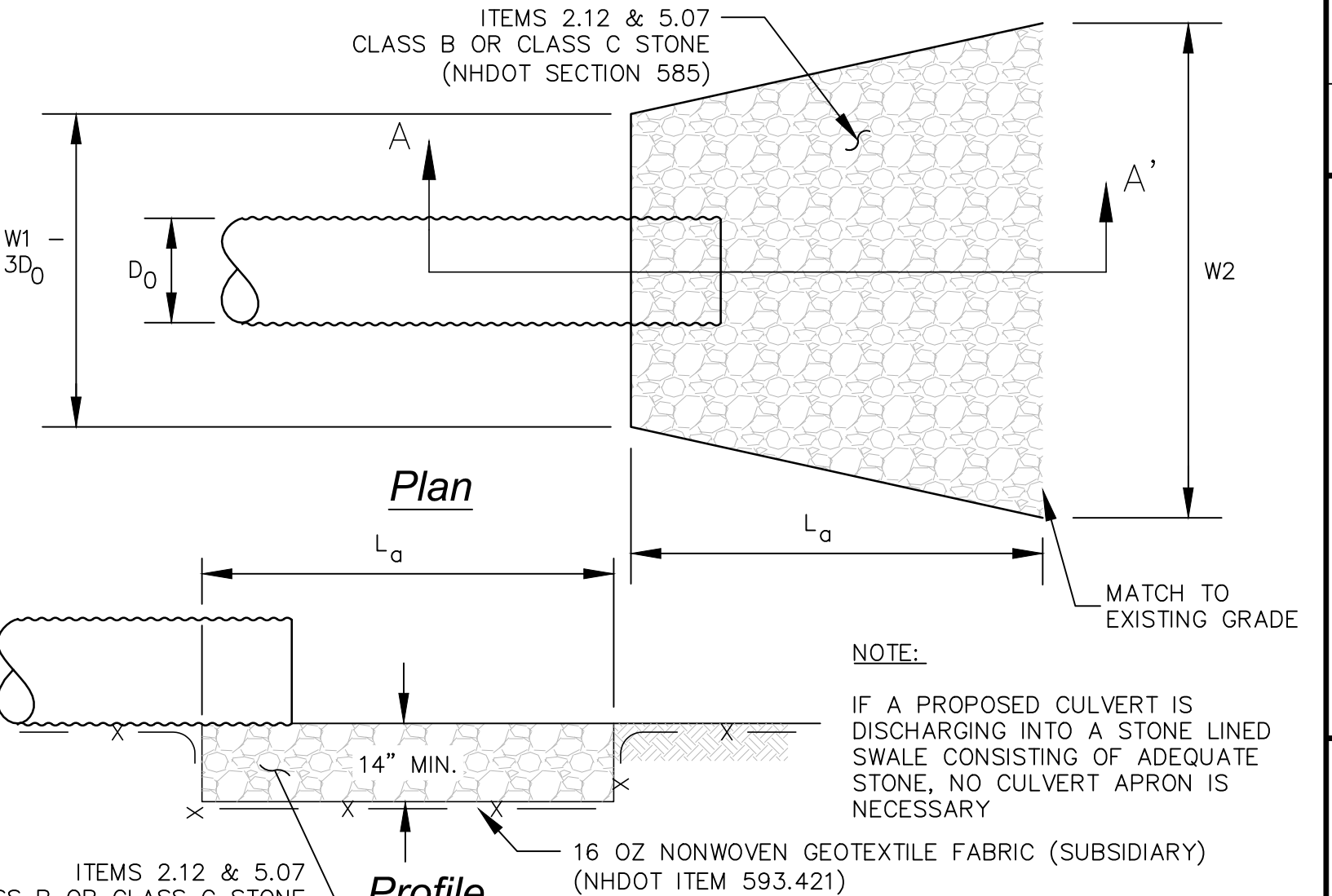
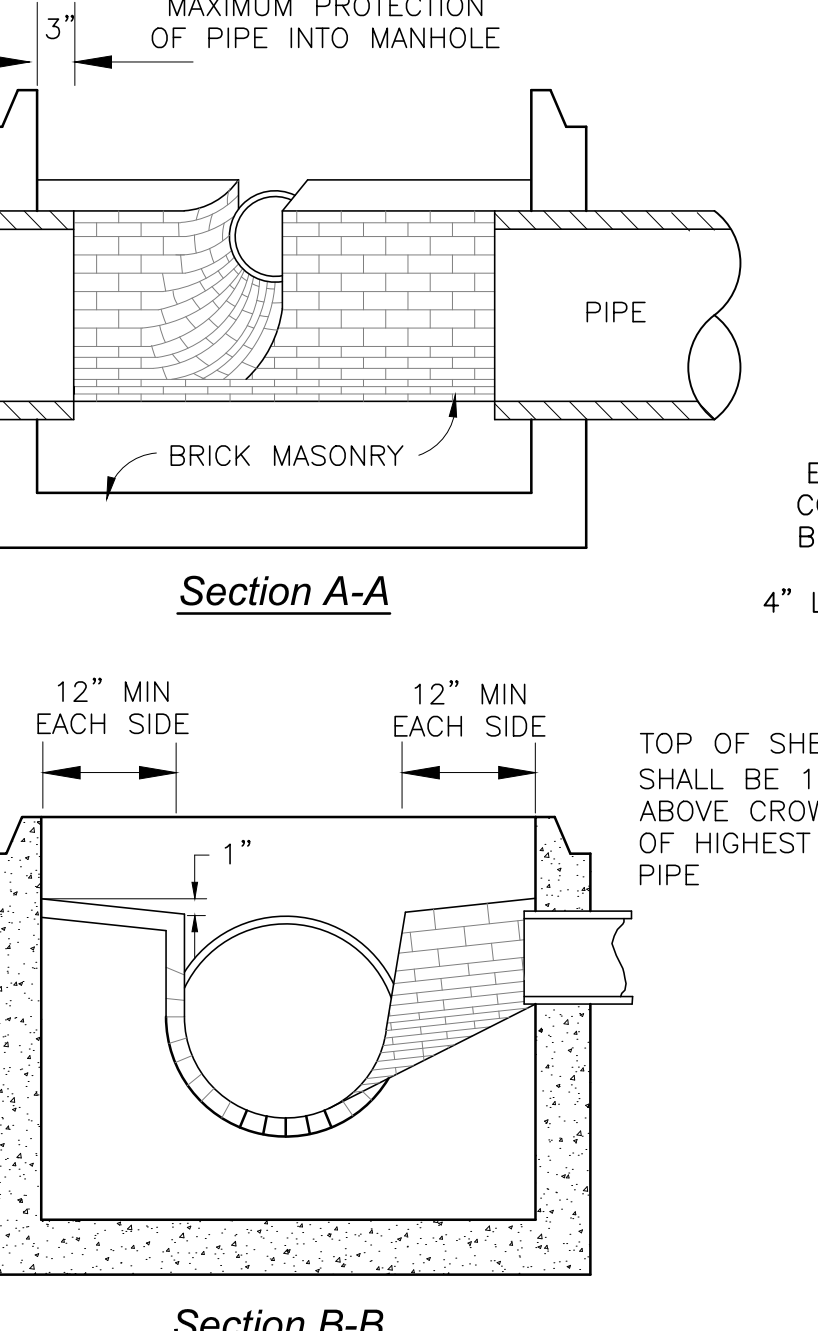
PHW-1 DOES NOT REQUIRE SEPARATE STONE OUTLET PROTECTION.
IR= IRREGULAR SHAPE. SEE PLANS FOR APPROXIMATE LAYOUT.

A 45 Degree Masonry Rubble (MRM) Headwall
Not to Scale



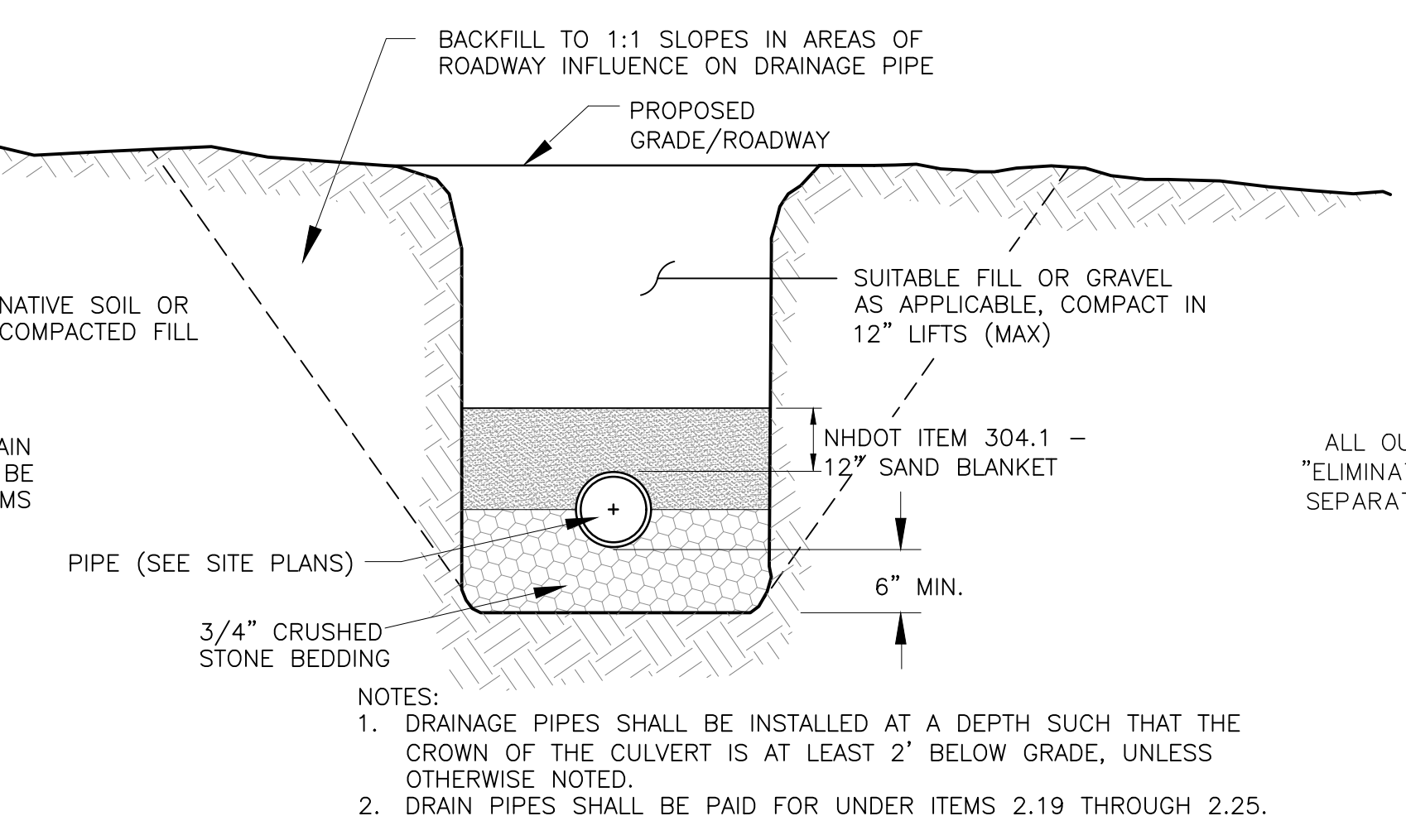
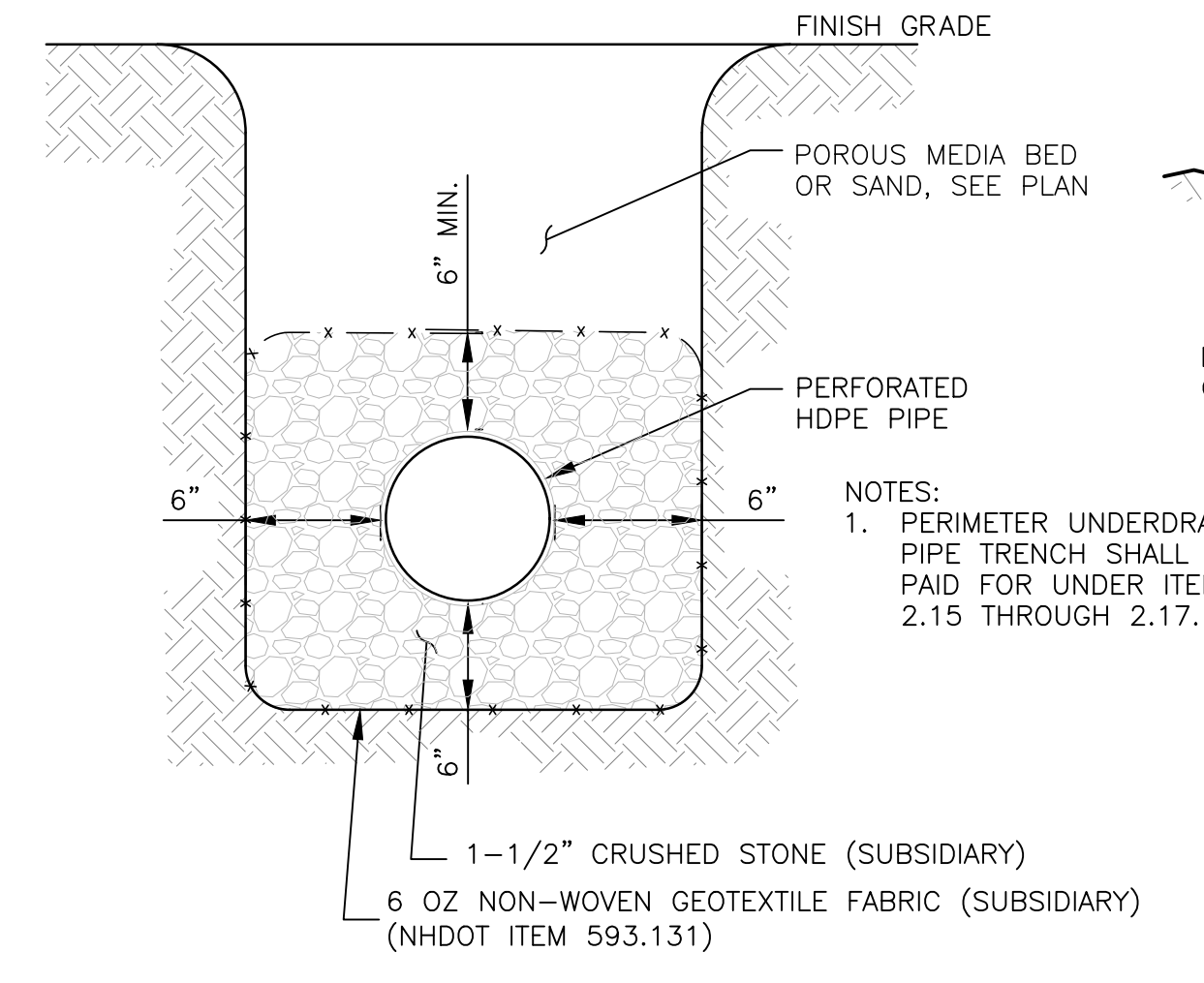
- NOTE:
- INVERT AND SHELF TO BE PLACED AFTER LEAKAGE TEST.
 - CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE.
 - DRAIN MANHOLES SHALL BE PAID FOR UNDER ITEMS 2.27 AND 5.15.
 - ALL CONSTRUCTION MATERIALS AND PROCEDURES SHALL CONFORM TO THE STATE OF N.H. DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION—LATEST EDITION AND ADDENDUMS UNLESS OTHERWISE SPECIFIED.

B Straight Masonry Rubble (MRM) Headwall
Not to Scale



NOTE:
IF A PROPOSED CULVERT IS DISCHARGING INTO A STONE LINED SWALE CONSISTING OF ADEQUATE STONE, NO CULVERT APRON IS NECESSARY.

C Drain Manhole
Not to Scale



- NOTES:
- DRAINAGE PIPES SHALL BE INSTALLED AT A DEPTH SUCH THAT THE CROWN OF THE CULVERT IS AT LEAST 2' BELOW GRADE, UNLESS OTHERWISE NOTED.
 - DRAIN PIPES SHALL BE PAID FOR UNDER ITEMS 2.19 THROUGH 2.25.

F Perimeter Underdrain Pipe Trench
Not to Scale



G Drainage Pipe
Not to Scale



D Grass Lined Swale
Not to Scale



E Stone Outlet Protection
Not to Scale

- NOTES:
- ALL STRUCTURES SHALL MEET H-20 LOADING. CONCRETE SHALL BE CLASS AA, 4,000 PSI AFTER 28 DAYS.
 - CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ.IN PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
 - THE TONGUE OR THE GROOVE OF THE WALL JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FOOT.
 - HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE EITHER AN APPROVED ELASTOMERIC OR BITUMASTIC-LIKE GASKET.
 - FOR BITUMASTIC TYPE JOINTS, THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY. APPROVED BITUMASTIC SEALANTS INCLUDE RAM-NEK, KENT SEAL NO. 2, EZ OR EQUAL.
 - ECCENTRIC CONES SHALL BE USED WHEN DEPTH TO CROWN OF SHALLOWEST PIPE EXCEEDS 30"; OTHERWISE FLAT TOP SLABS SHALL BE USED. RISERS OF 12", 36" AND 48" CAN BE USED TO REACH THE DESIRED DEPTH.
 - ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES. NO MORE THAN 75% OF A HORIZONTAL CROSS-SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.
 - PIPE-TO-MANHOLE JOINTS SHALL BE A RUBBER-LIKE KOR-N-SEAL BOOT OR APPROVED EQUAL.
 - OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
 - HOOD ON CATCH BASINS SHALL BE "THE ELIMINATOR" OIL AND FLOATING DEBRIS TRAP AS MANUFACTURED BY GROUNDWATER RESCUE, INC OF QUINCY, MA OR APPROVED EQUAL. CONTRACTOR SHALL DRILL 1/4" VERTICAL HOLE AT TOP OF HOOD.
 - CATCH BASIN GRATES TO BE NHDOT TYPE B WITH FRAMES.
 - FRAME AND GRATES SHALL BE BROUGHT TO GRADE USING GRADE SS HARD BRICKS (2 COURSE MIN., 12" MAX.) LAID FLAT. FRAMES SHALL BE SET IN A FULL BED OF MORTAR AND SEALED WITH PORTLAND CEMENT.
 - MANHOLE FRAME AND COVER SHALL BE EAST JORDAN IRON WORKS HINGE COVER PER CITY OF PORTSMOUTH STANDARD.
 - INVERT AND SHELF TO BE PLACED AFTER LEAKAGE TEST.
 - CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT.
 - INVERT BRICKS SHALL BE LAID ON EDGE.
 - CATCH BASINS SHALL BE PAID FOR UNDER ITEM 2.26.

H 4' Diameter Catch Basin
Not to Scale



City of Portsmouth, New Hampshire
Department of Public Works
Multi-purpose Recreation Fields and Regional Stormwater Treatment System
Drainage Details

designed by: JHK
drawn by: NJM
approved by: PAC

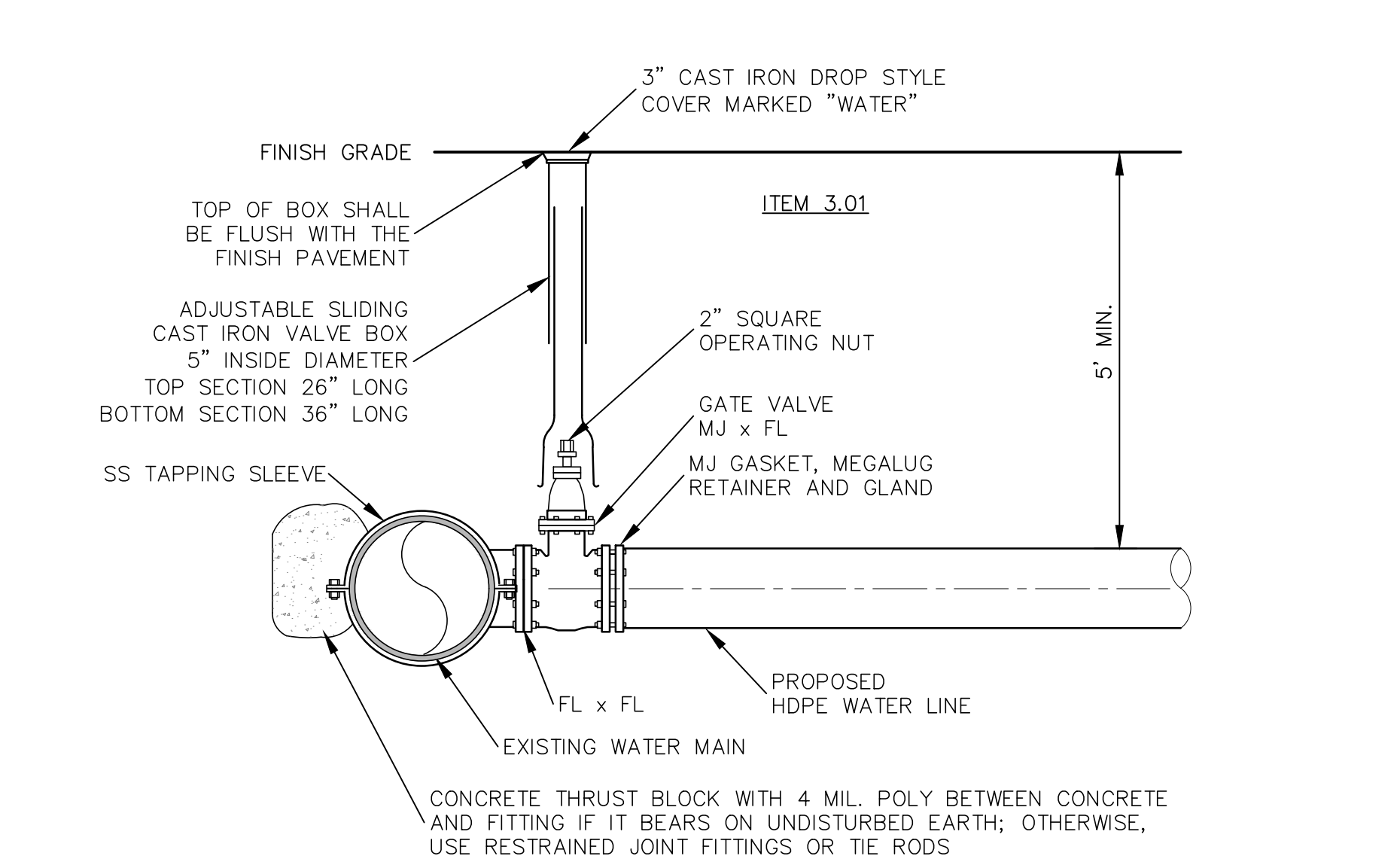
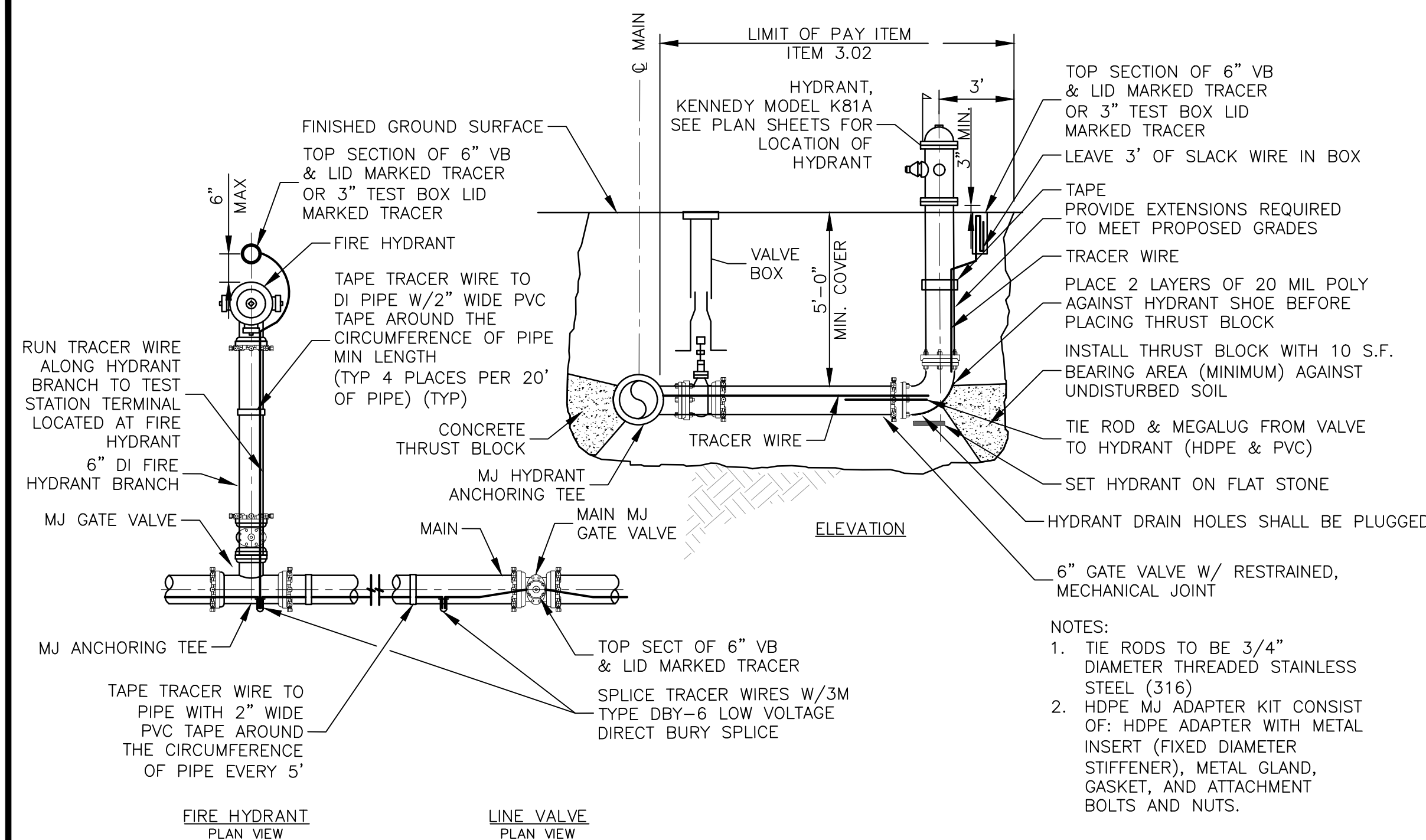
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revision
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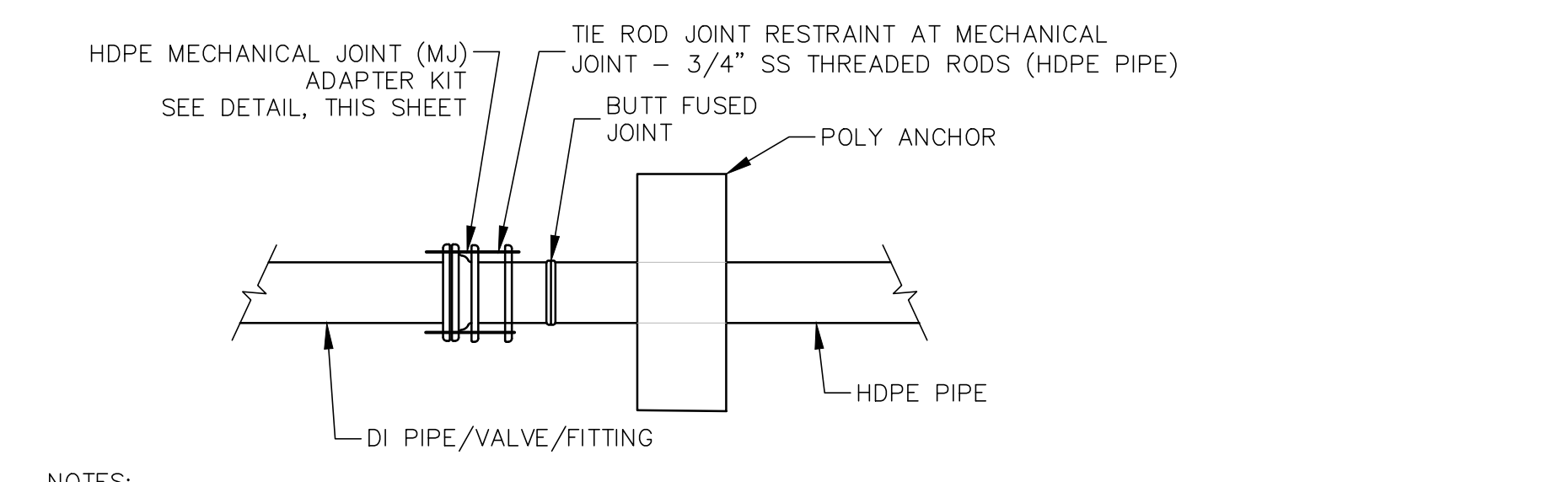
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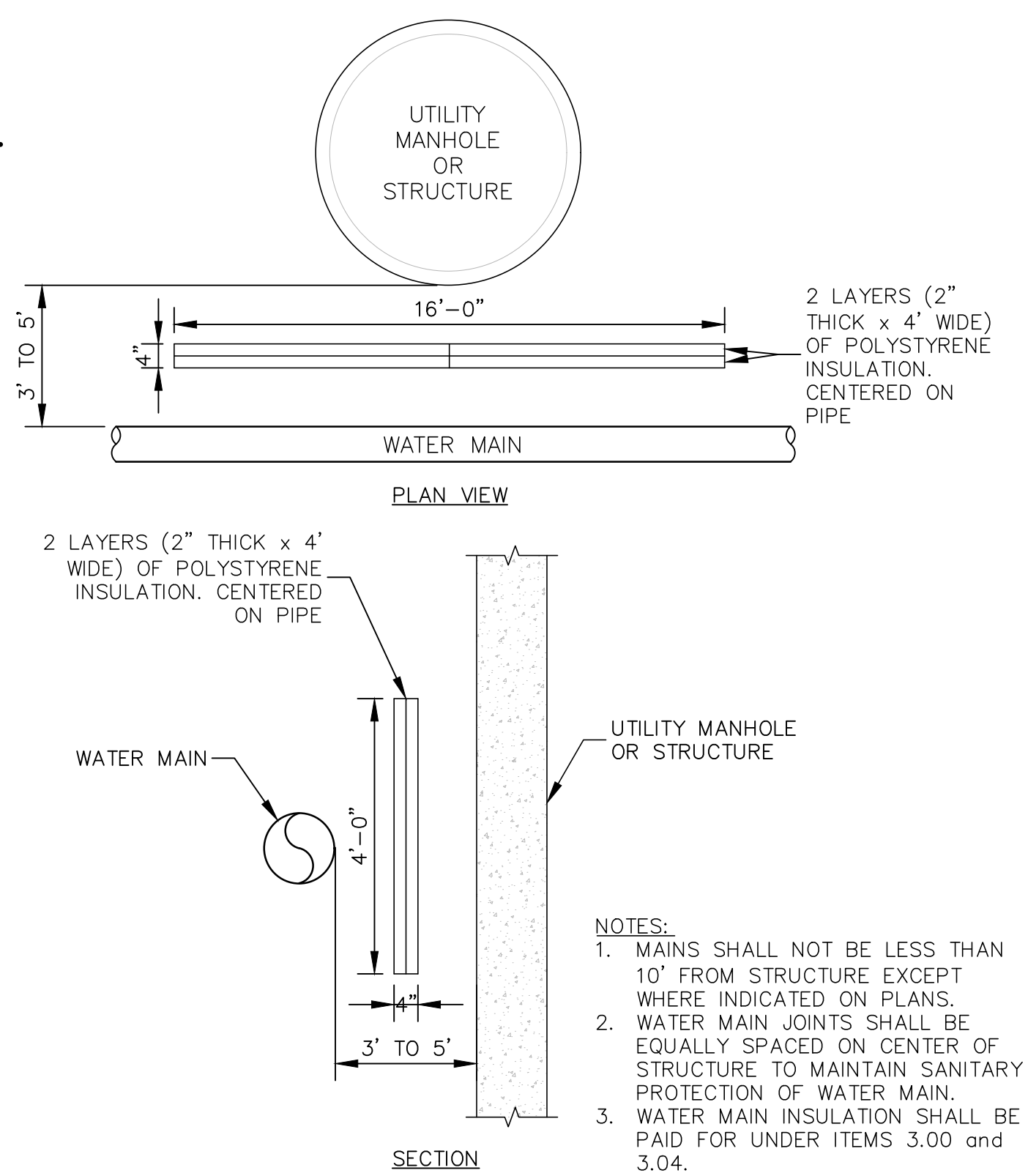


C Not Used

B Water Main Connection with Tapping Sleeve Detail
Not to Scale

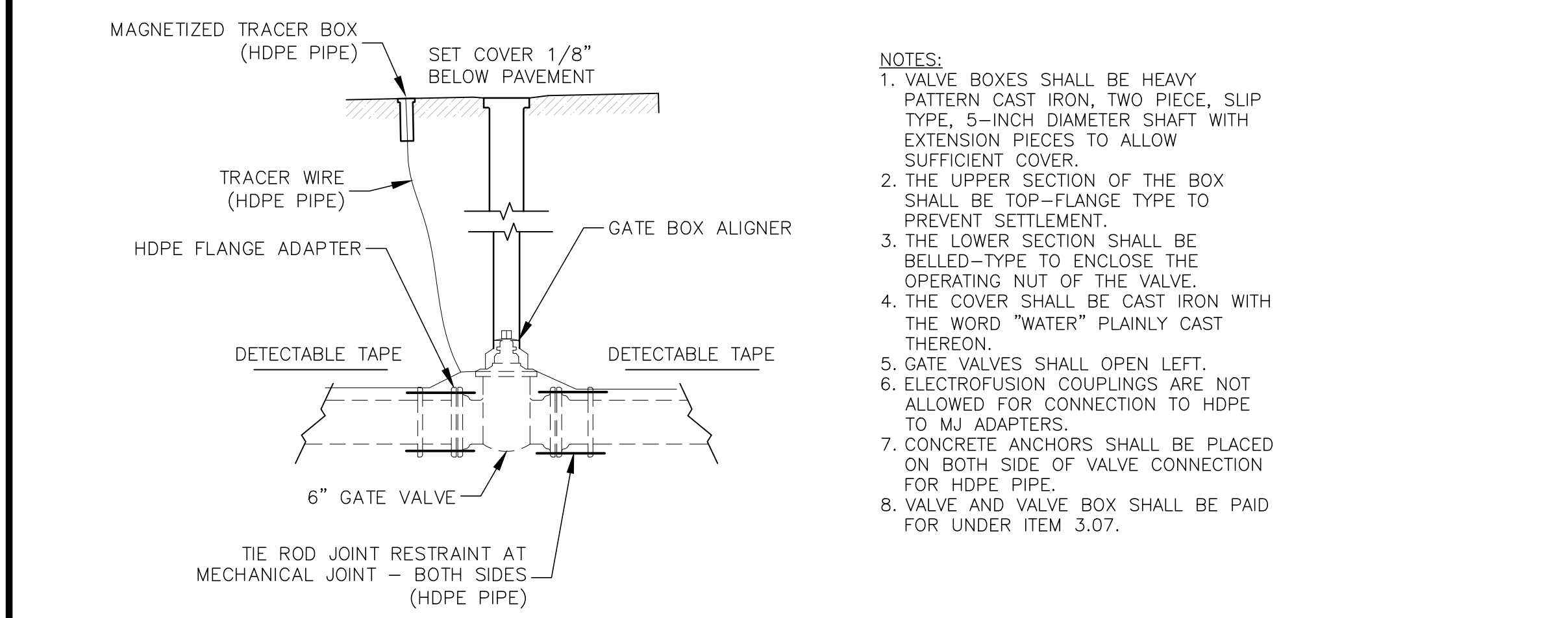


E HDPE Restrained Joint Connection
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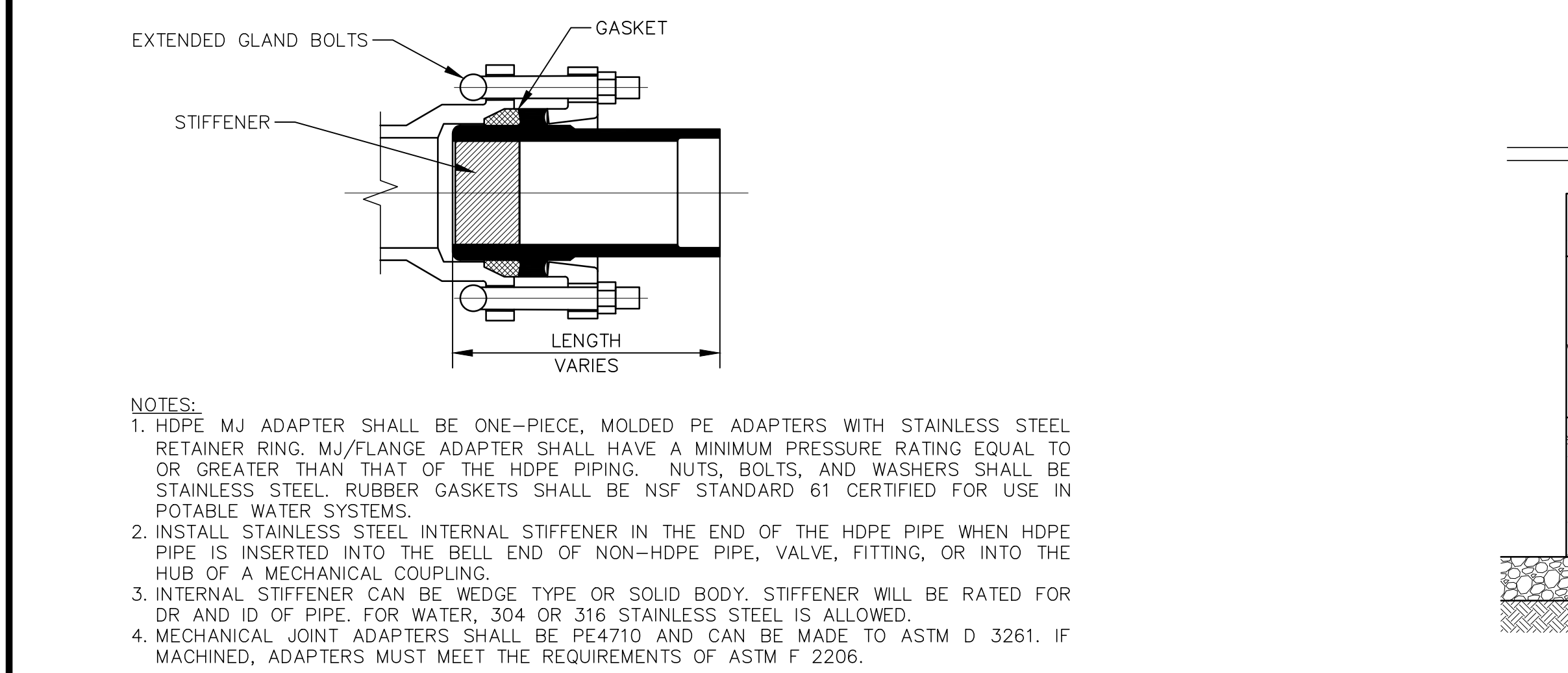


F Water Main Insulation Detail
Not to Scale

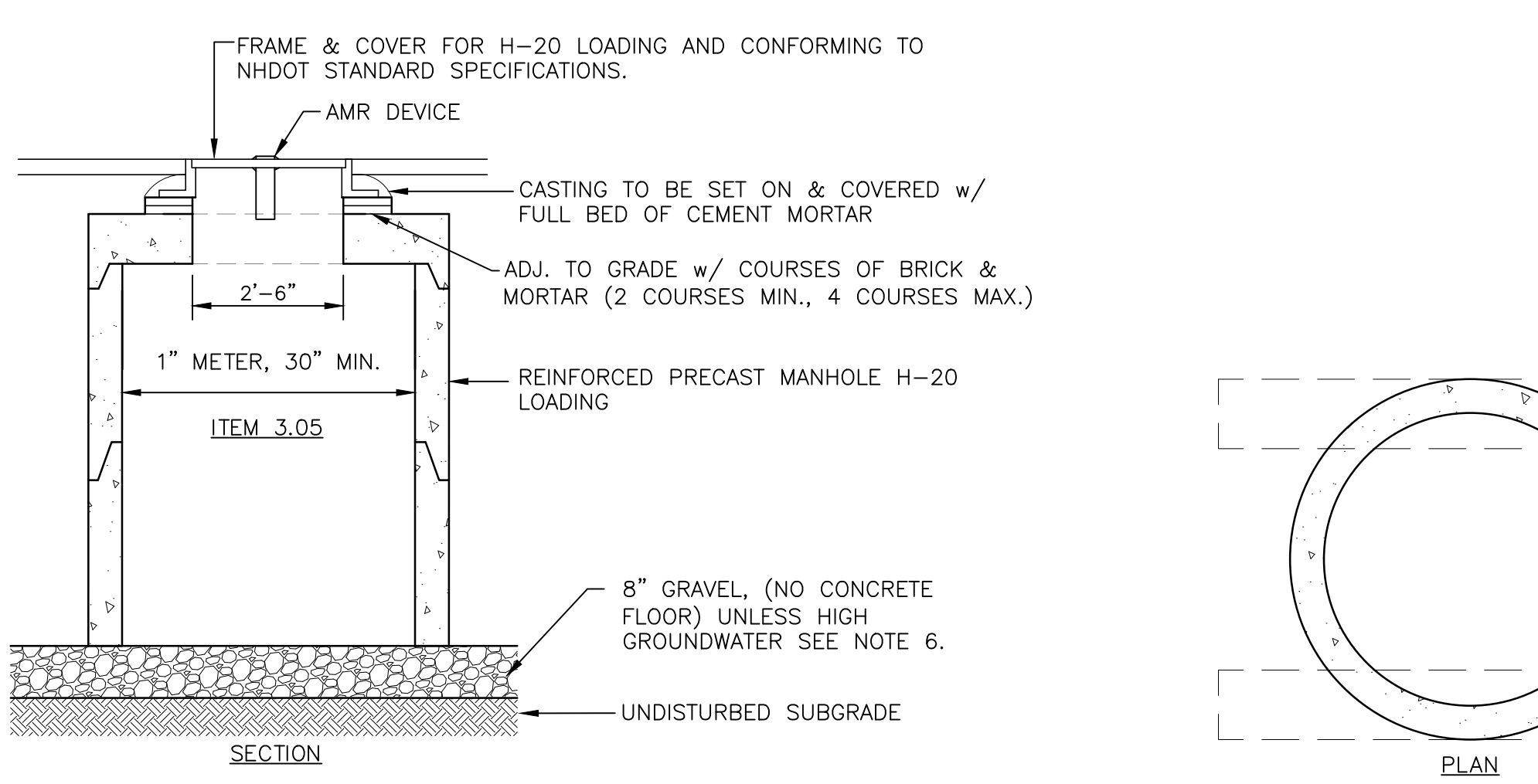
A Hydrant Assembly (HDPE MAIN)
Not to Scale



D Gate Valve and Box
Not to Scale

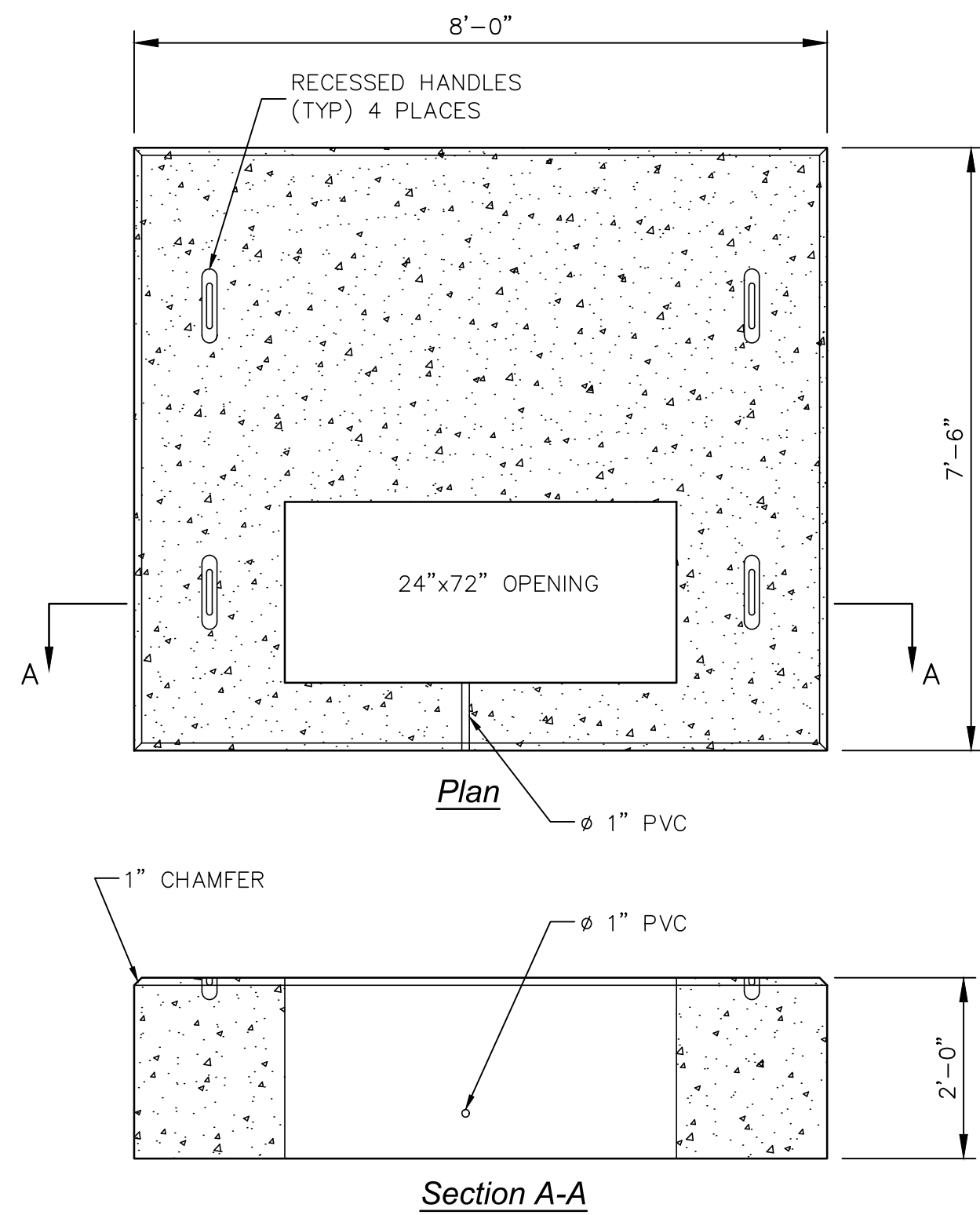


G Mechanical Joint Adapter Detail
Not to Scale

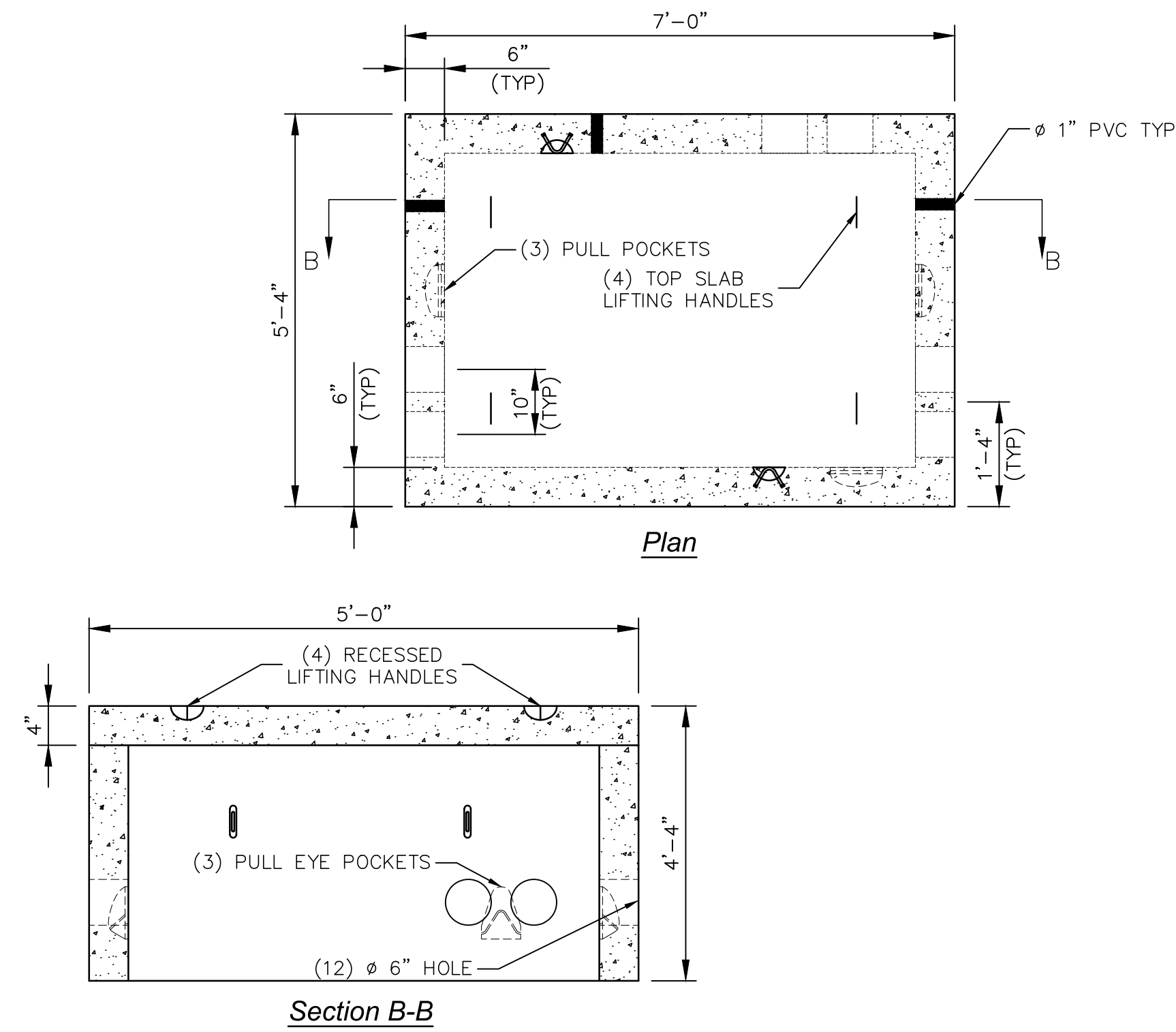


H Meter Pit Detail
Not to Scale

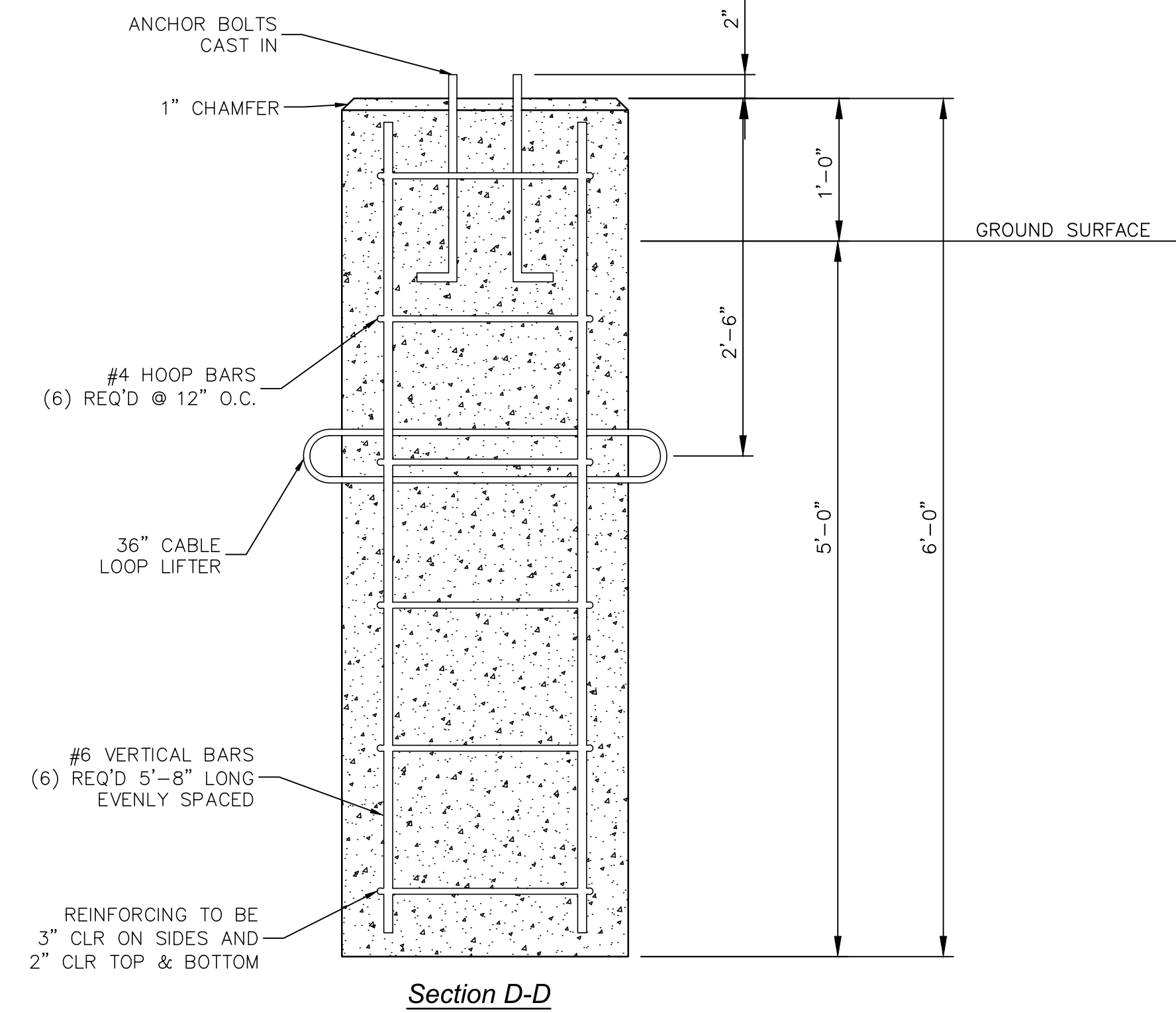
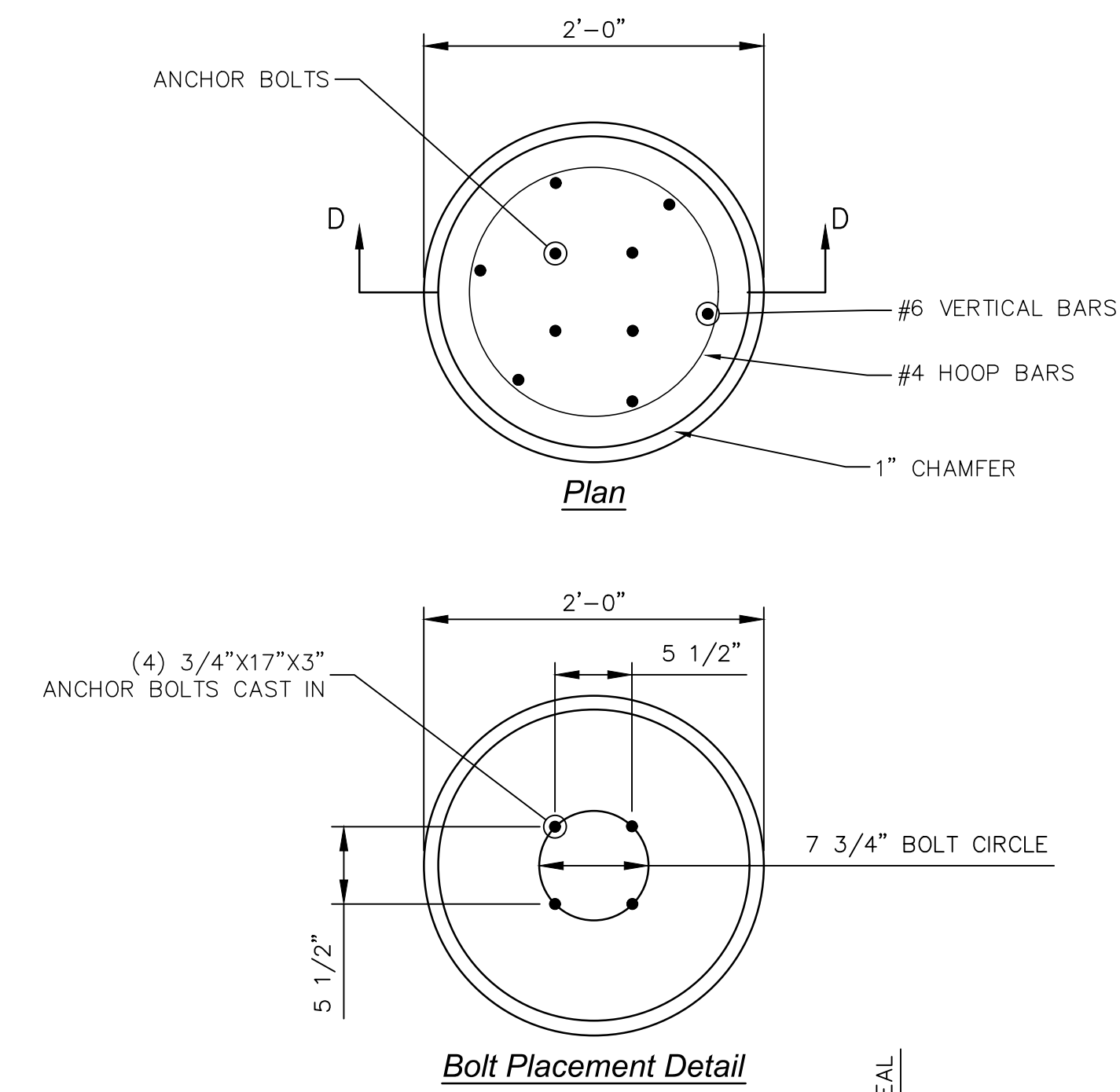
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drawing no. D-104					
sheet: 28 of 45					
revision	no.	date			
1	Issued for Bid	4/16/20			
<p>CMA ENGINEERS Civil/Environmental/Structural Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/641-4223 c m a e n g i n e e r s . c o m</p>					



- NOTES:
1. CONCRETE MINIMUM 4,000 PSI AFTER 28 DAYS.
 2. REINFORCEMENT STEEL SHALL CONFORM TO ASTM A615 GRADE 60.
 3. TRANSFORMER PAD SHALL BE PAID FOR UNDER BID ALTERNATIVE B.



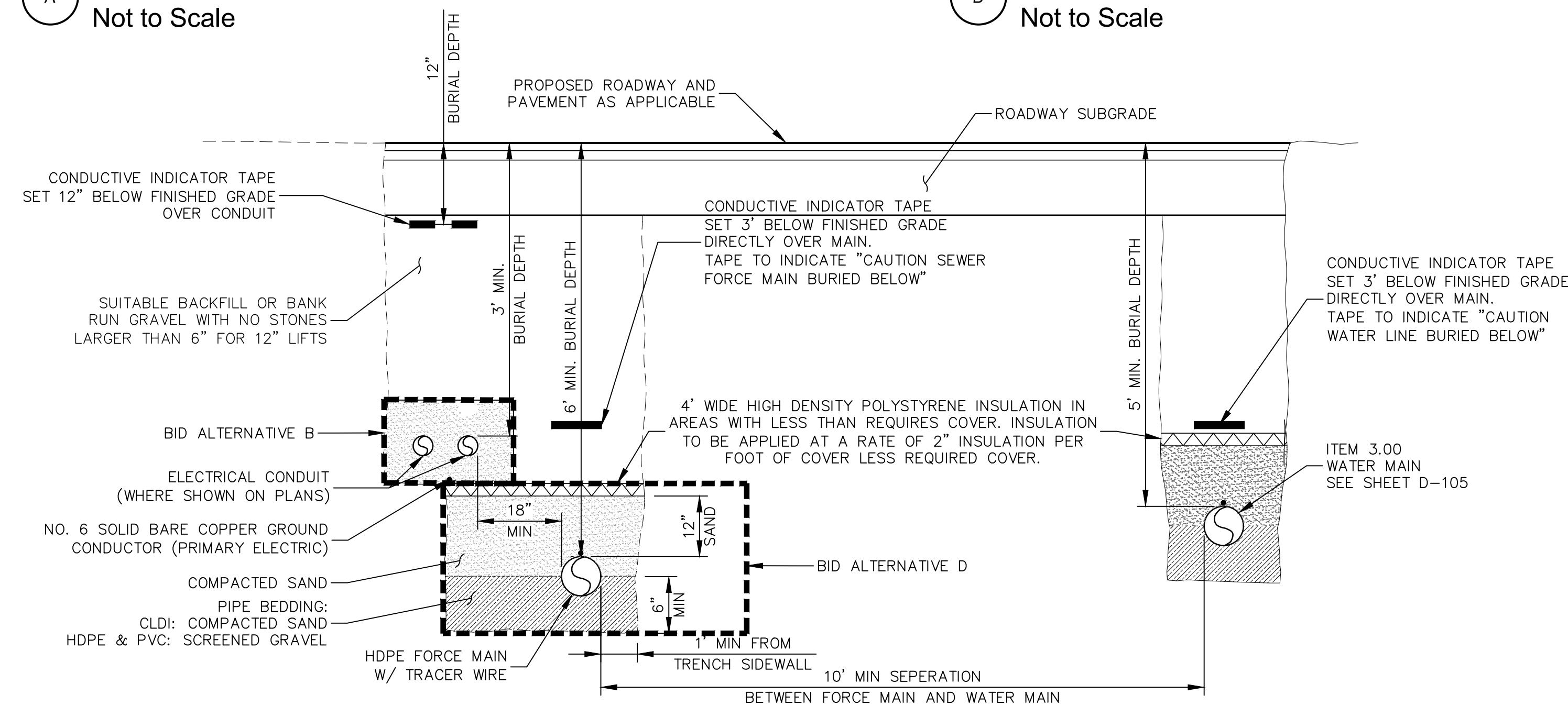
- NOTES:
1. CONCRETE MINIMUM 5,000 PSI AFTER 28 DAYS.
 2. REINFORCEMENT STEEL SHALL CONFORM TO ASTM A615 GRADE 60.
 3. DESIGNED FOR HS-20 LOADING.
 4. PULL BOX SHALL BE PAID FOR UNDER BID ALTERNATIVE B.



- NOTES:
1. CONCRETE MINIMUM 5,000 PSI AFTER 28 DAYS.
 2. LIGHT POLE BASE SIZE SHALL BE DESIGNED BY PROFESSIONAL ENGINEER AND SUBMITTED FOR REVIEW.
 3. SEE SECTION 16500 FOR INFORMATION ON LIGHT POLES AND SOLAR POWERED FIXTURES.
 4. BUY AMERICA CERTIFICATE REQUIRED.
 5. SITE LIGHTING POLE FOUNDATION TO BE PAID FOR UNDER ITEM 4.11.

A 3 Phase 500 KVA Transformer Pad Detail
Not to Scale

B Pull Box Detail
Not to Scale



- NOTES:
1. TRENCH WIDTH AS REQUIRED TO MAINTAIN 6 INCHES MINIMUM SPACING BETWEEN ALL CONDUITS AND TRENCH SIDEWALLS.
 2. TRACER WIRE: PVC AND WATER MAINS SHALL HAVE TRACER WIRE PLACED ON TOP OF THE PIPE. PROVIDE TRACER WIRE ACCESS BOXES AT VALVES, HYDRANTS, AND MAINLINE WHERE NECESSARY TO ACHIEVE 500' MAX. INTERVALS, IN ADDITION TO THE BEGINNING AND END OF THE PIPE.

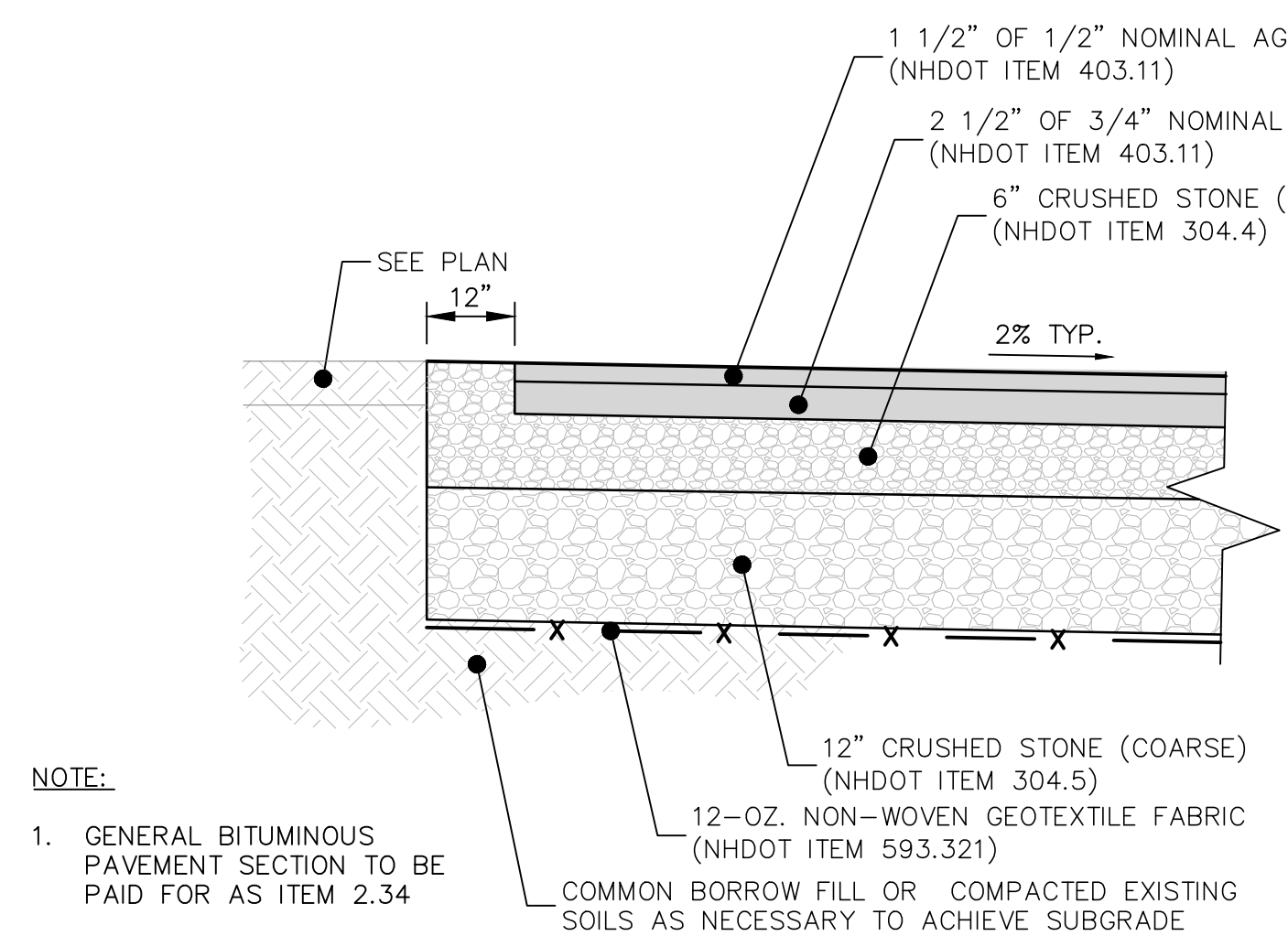
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% PASSING	SIEVE SIZE
100%	1"
90-100%	3/4"
20-55%	3/8"

SCREENED GRAVEL BEDDING	
% PASSING	SIEVE SIZE
0-10%	#4
0-5%	#8

C Site Lighting Pole Foundation
Not to Scale

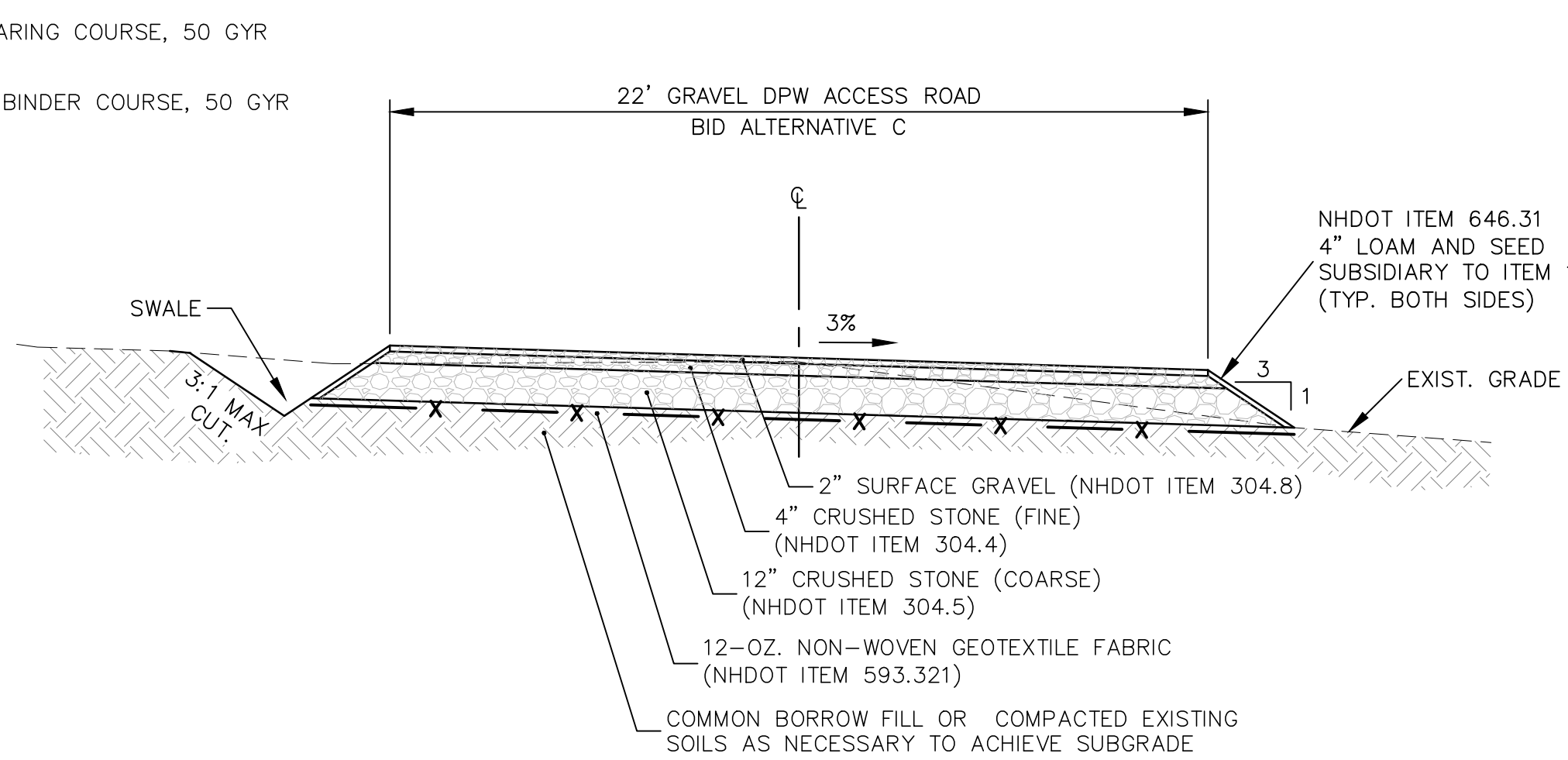
D Water Main, Force Main and Electric/Communication Conduit Trench
Not to Scale

		CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/641-4223		c m a e n g i n e e r s . c o m	
designed by:	JHK	drawn by:	NUM	approved by:	PAC
date:	April 2020	project no.:	1119	file name:	1119 DETAILS.dwg
City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System Electrical Details		drawing no. D-106			
sheet:	30	of	45	revision	no.
				1	Issued for Bid
					date
					4/16/20
					PAC
					by

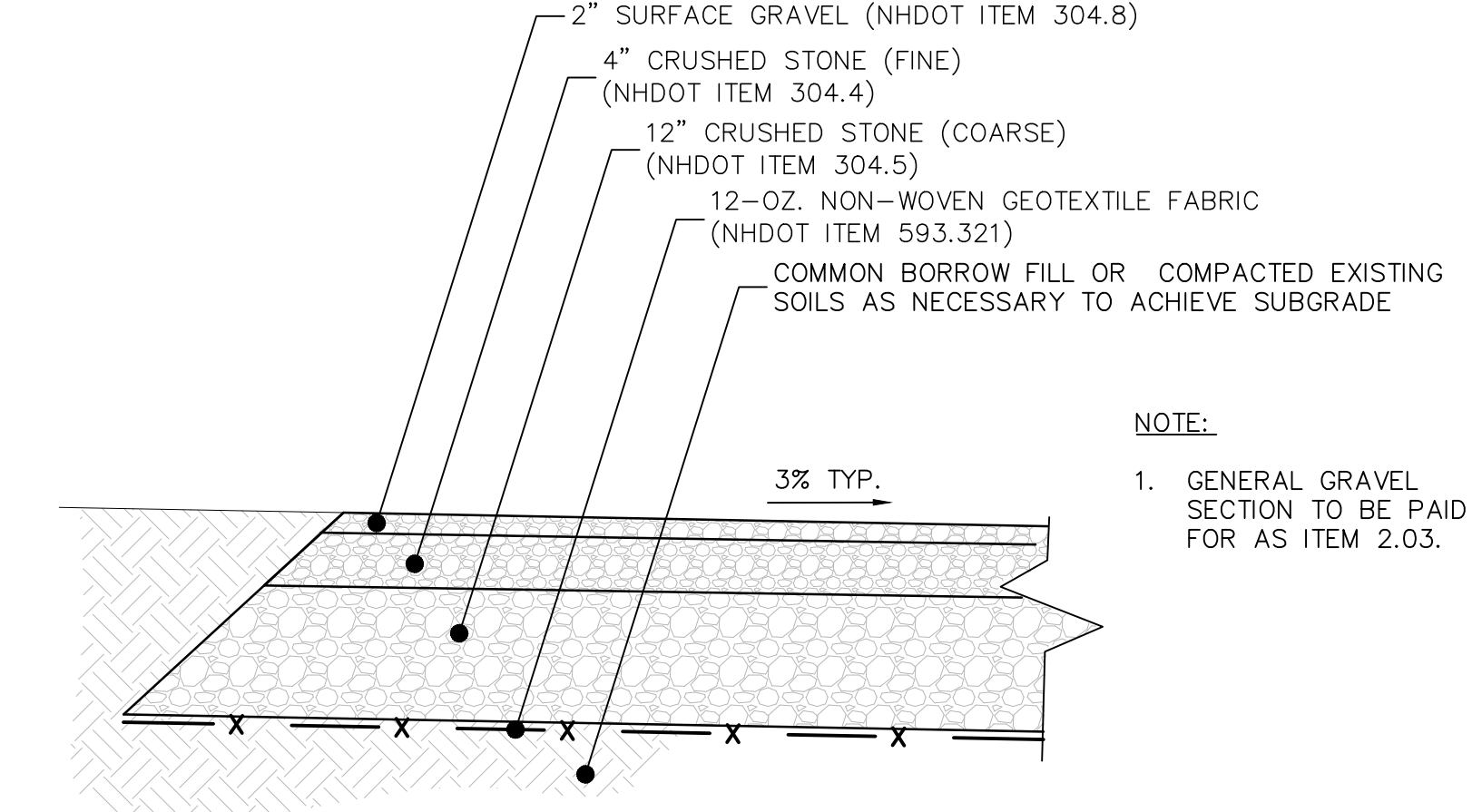


NOTE:
 1. GENERAL BITUMINOUS PAVEMENT SECTION TO BE PAID FOR AS ITEM 2.34
 COMMON BORROW FILL OR COMPACTED EXISTING SOILS AS NECESSARY TO ACHIEVE SUBGRADE

A General Bituminous Pavement Section
 Not to Scale

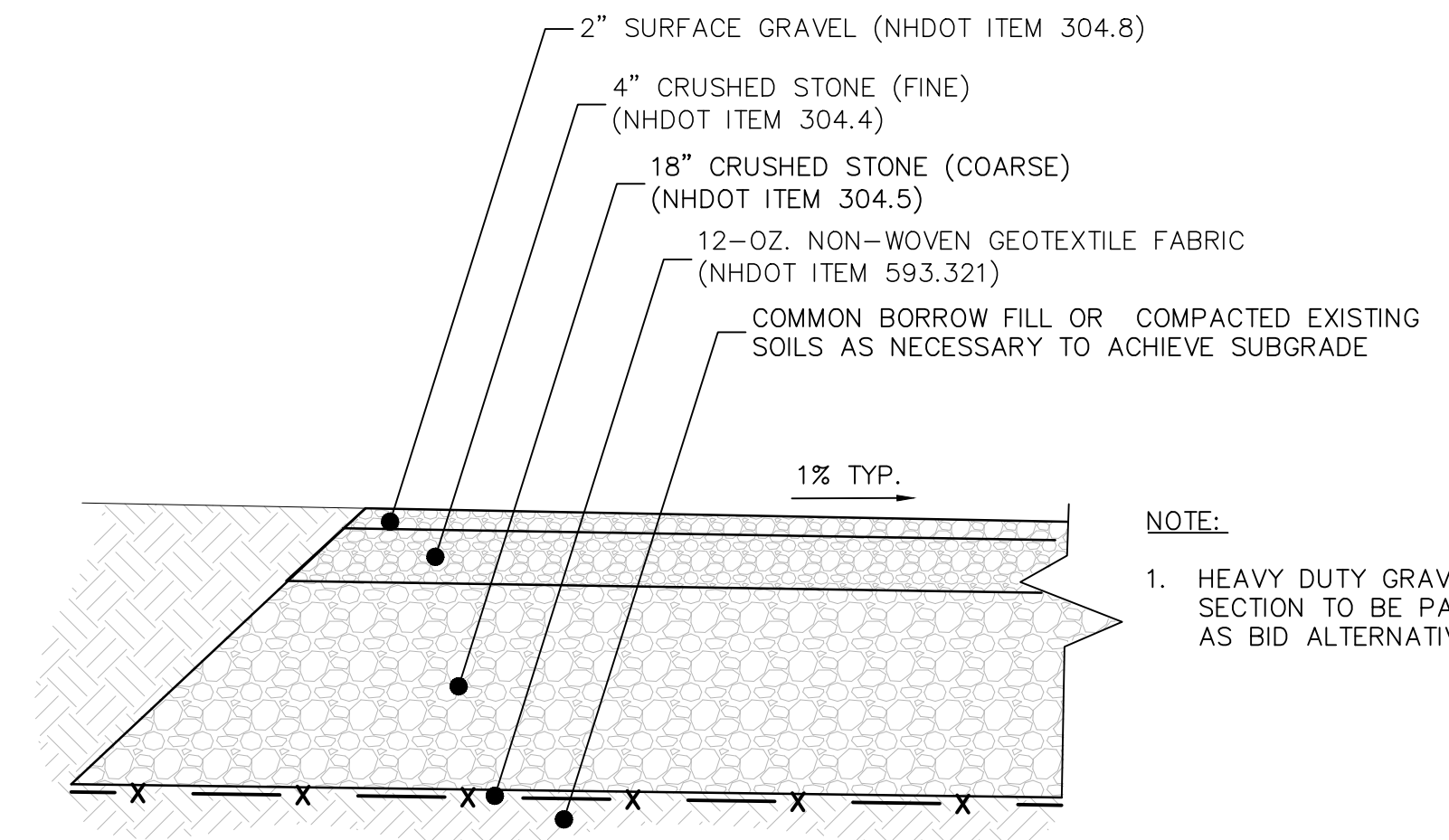


B Gravel Road Section
 Not to Scale



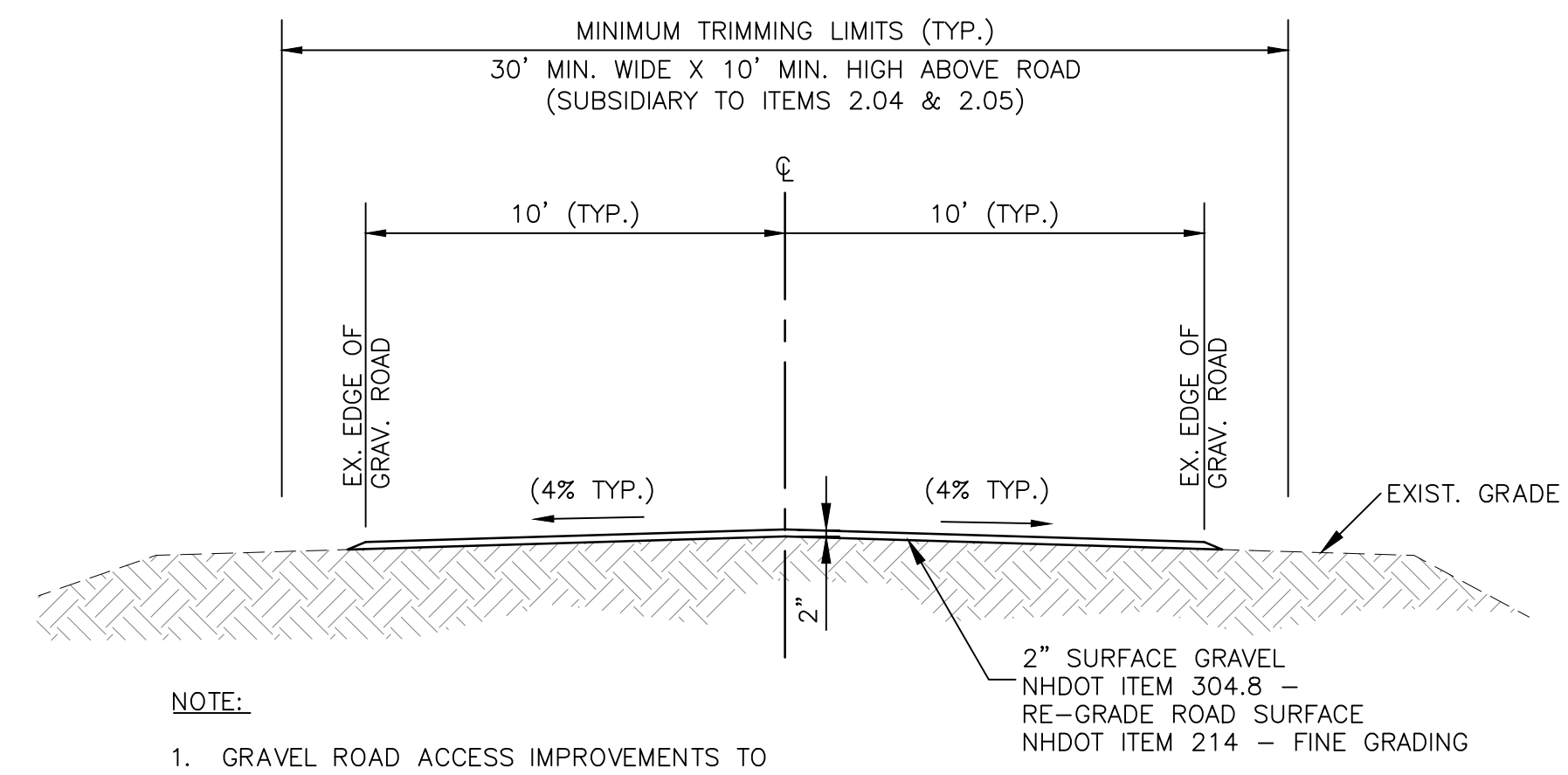
NOTE:
 1. GENERAL GRAVEL SECTION TO BE PAID FOR AS ITEM 2.03.

C General Gravel Section
 Not to Scale



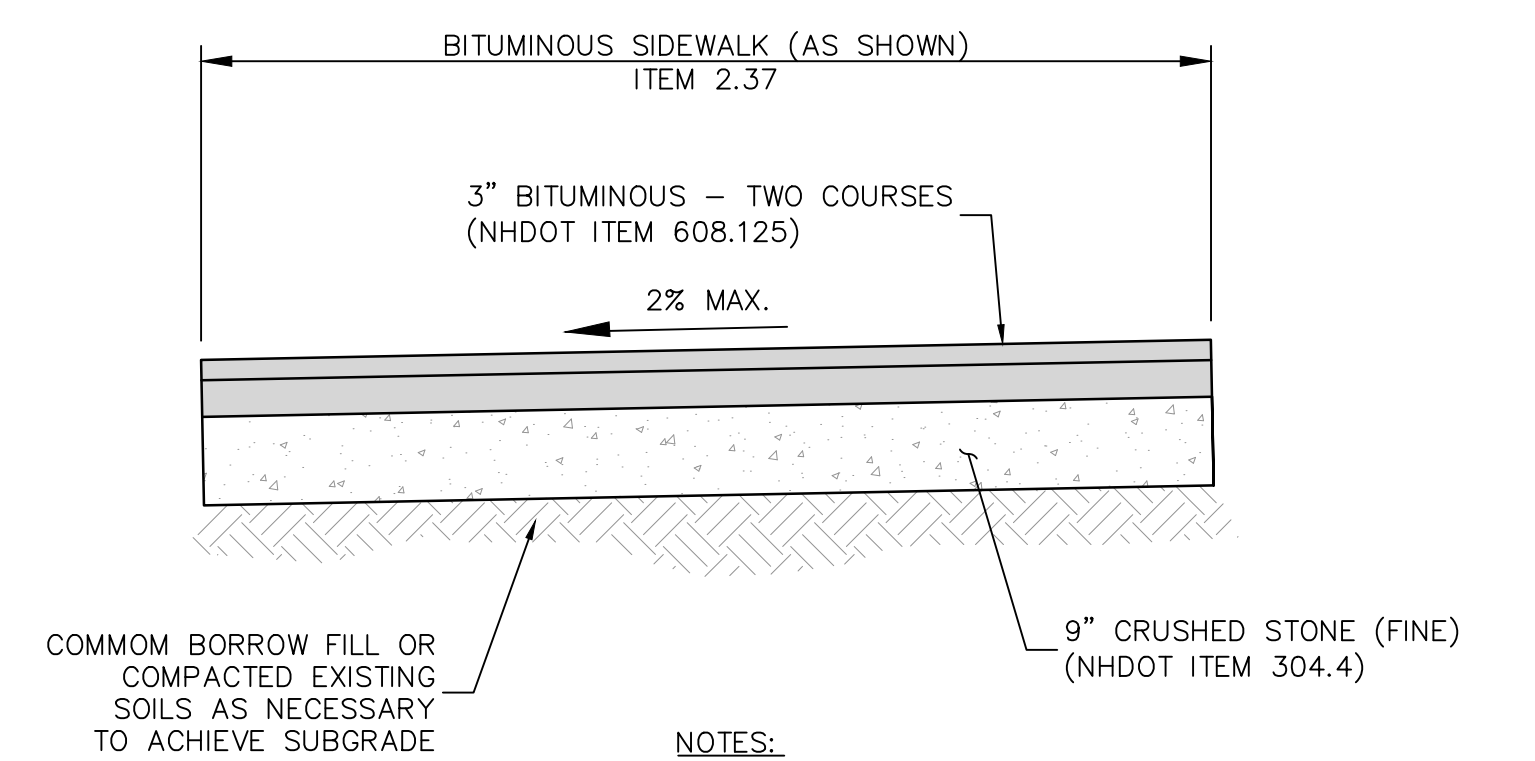
NOTE:
 1. HEAVY DUTY GRAVEL SECTION TO BE PAID FOR AS BID ALTERNATIVE C.

D Heavy Duty Gravel Section
 Not to Scale



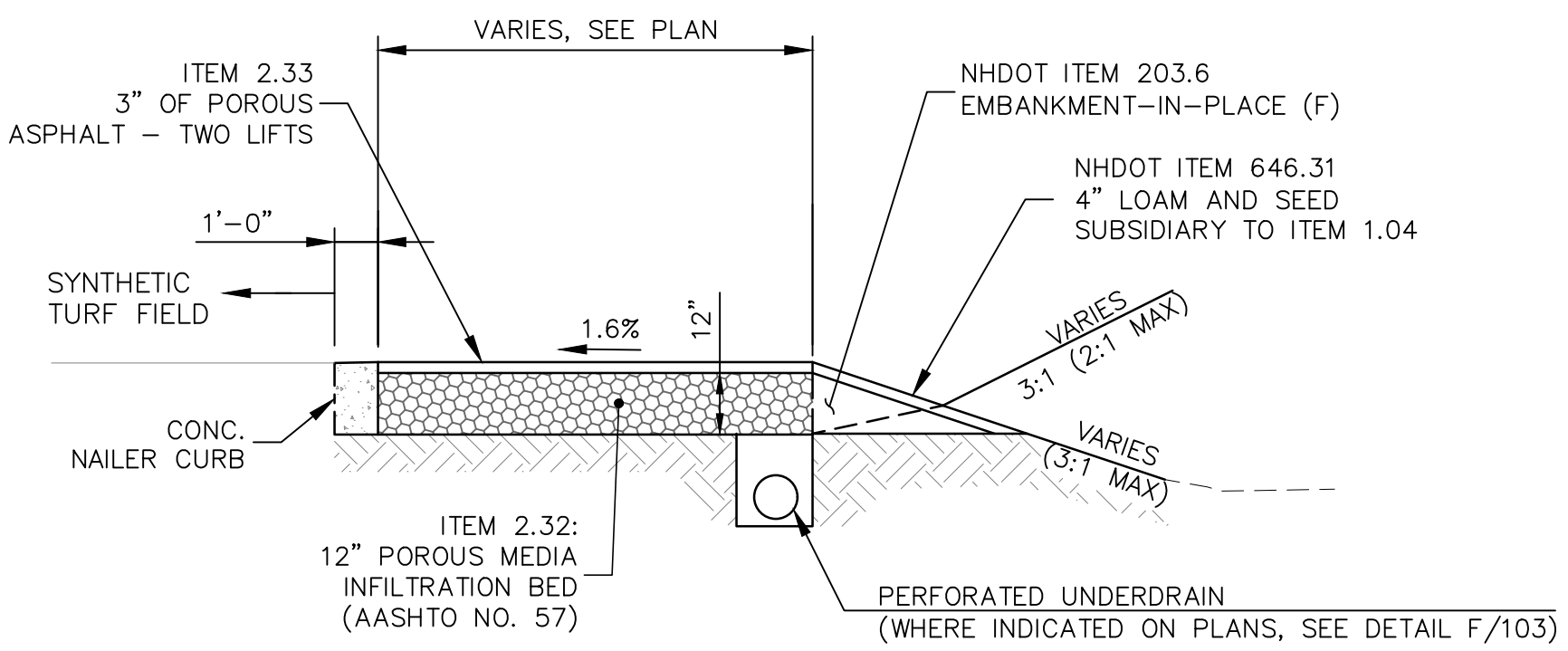
NOTE:
 1. GRAVEL ROAD ACCESS IMPROVEMENTS TO BE PAID FOR AS ITEMS 2.04 AND 2.05.

E Gravel Road Access Improvements
 Not to Scale

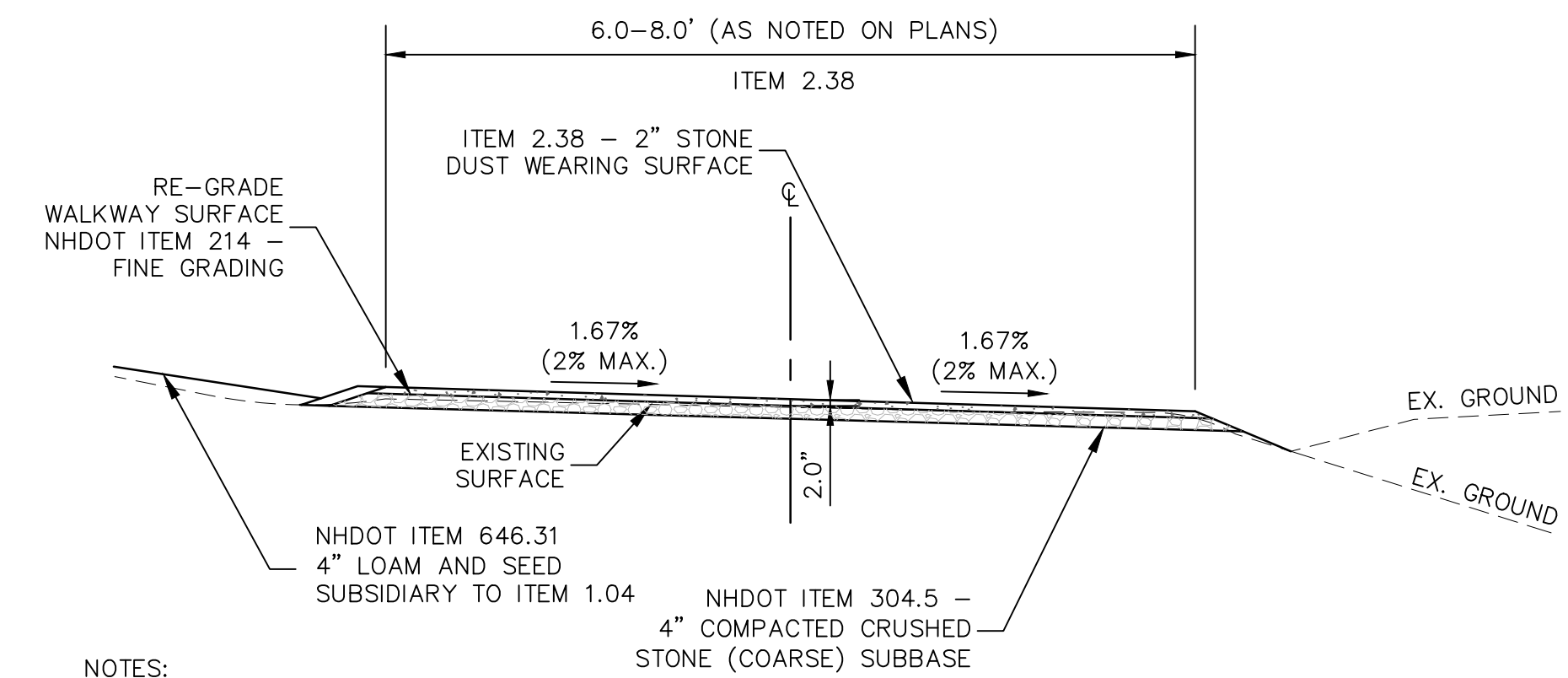


NOTES:
 1. SIDEWALK SHALL BE CONSTRUCTED OF MATERIALS SPECIFIED AND INSTALLED IN ACCORDANCE WITH DOT SPECIFICATION 608 - SIDEWALKS.

F Bituminous Sidewalk
 Not to Scale



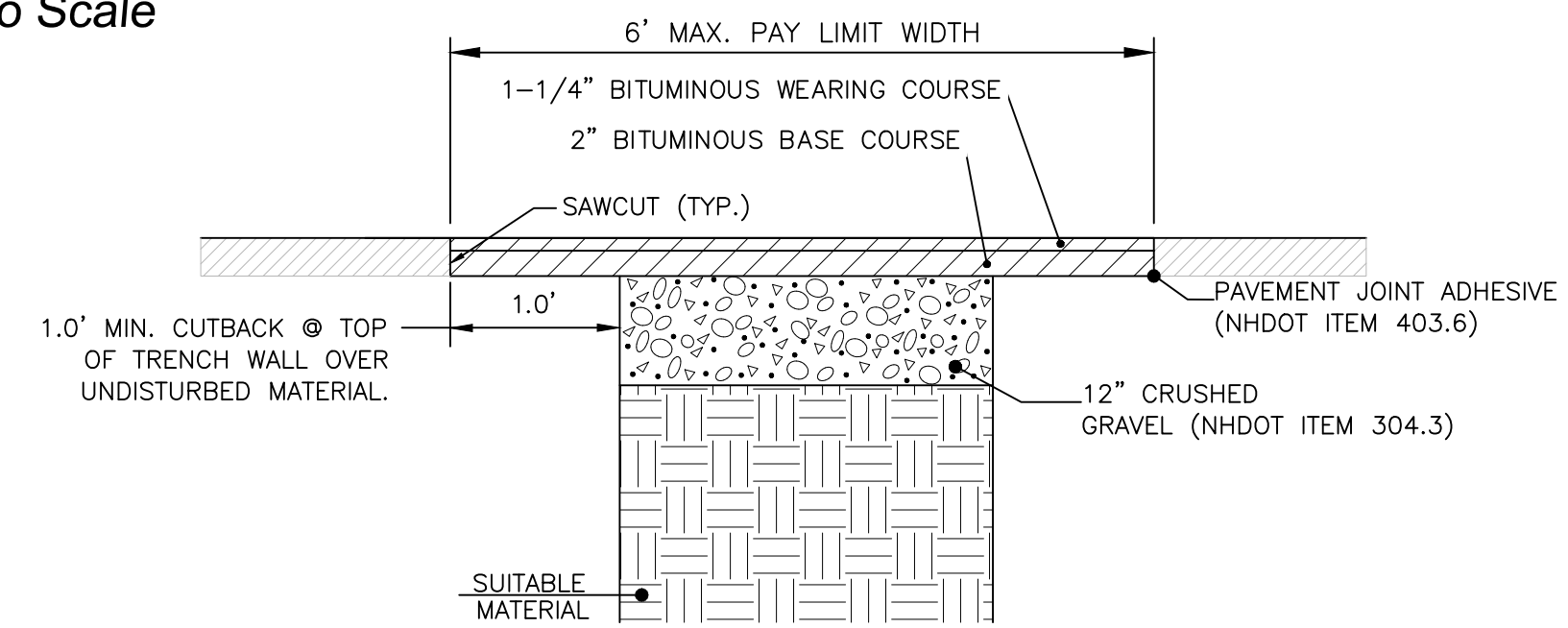
G Porous Pavement Path
 Not to Scale



NOTES:
 1. STONEDUST SHALL BE A CLEAN, GRANULAR, WELL-GRADED AND FREE FROM CLAY, SAND OR ORGANIC MATERIAL.
 2. AGGREGATE SHALL CONSISTS OF HARD, DURABLE PARTICLES OR FRAGMENTS OF CRUSHED STONE OR GRAVEL.
 3. GRADATION SHALL BE OBTAINED BY CRUSHING, SCREENING, AND BLENDING PROCESSES AS MAY BE NECESSARY. MATERIAL SHALL MEET FOLLOWING SCREEN ANALYSIS REQUIREMENTS BY WEIGHT.

SIEVE DESIGNATION	PERCENT PASSING
3/8"	90-100%
NO. 4	60-81%
NO. 8	44-60%
NO. 40	20-33%
NO. 200	10-16%

H Stone Dust Walk
 Not to Scale



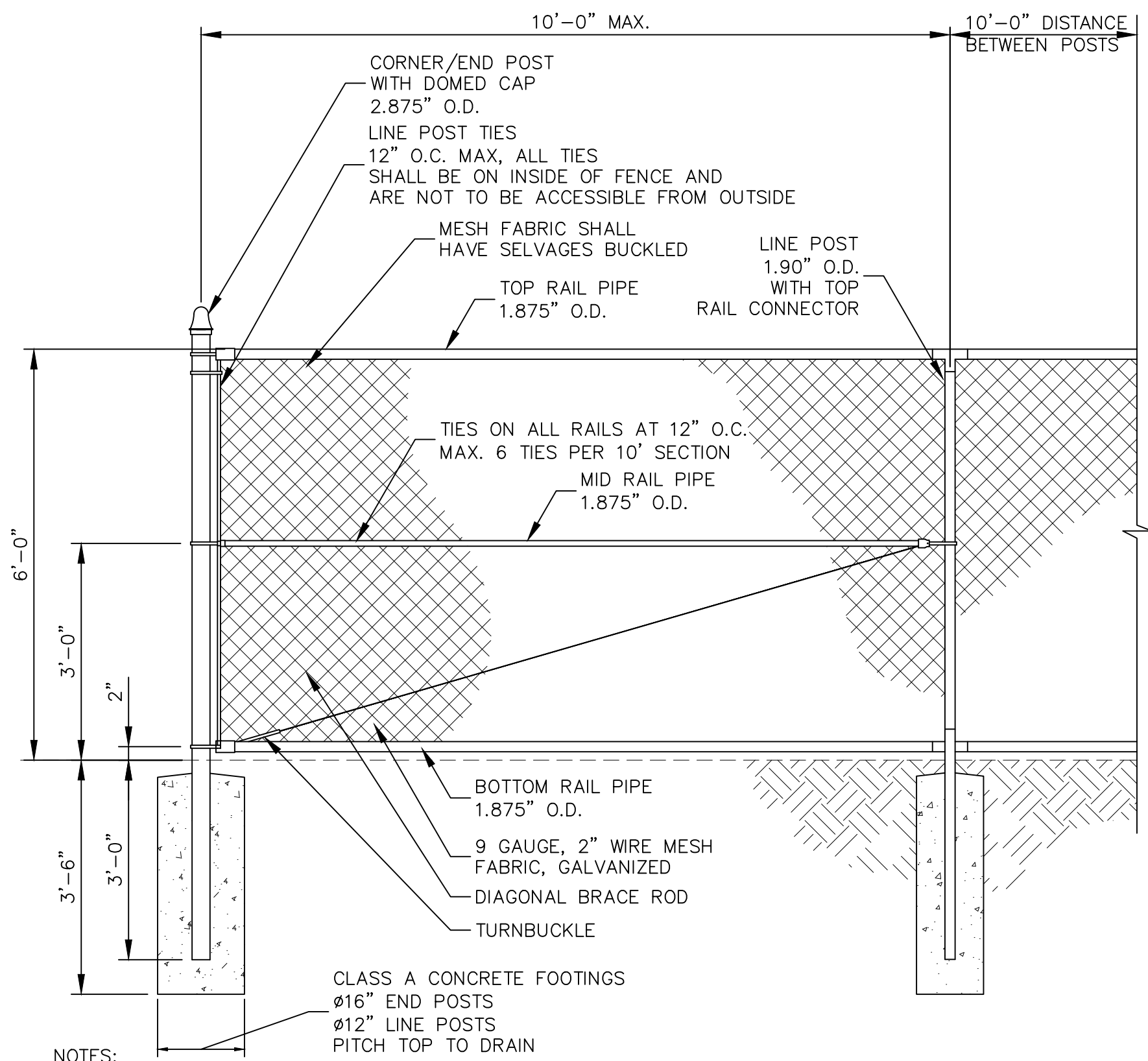
PAVEMENT COURSES:

COURSE	MINIMUM LIFT THICKNESS	NOMINAL MAX. AGGREGATE SIZE	GYRATORY COMPACTION EFFORT	MINIMUM BINDER CONTENT
WEARING	1-1/4"	3/8"	75	6.0%
BASE	2"	3/4"	50	5.0%

PAVEMENT NOTES:
 1. THE CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF ALL AREAS DISTURBED BEYOND THE TRENCH PATCH LIMITS.
 2. ALL PAVEMENT EDGES SHALL BE SAWCUT AND THE CONTRACTOR SHALL TRIM, TACK, AND MATCH EXISTING PAVEMENT AT LOCATIONS WHERE NEW PAVEMENT MEETS EXISTING PAVEMENT (ALL SUBSIDIARY TO PAYMENT FOR TRENCH PATCH REPAIR).

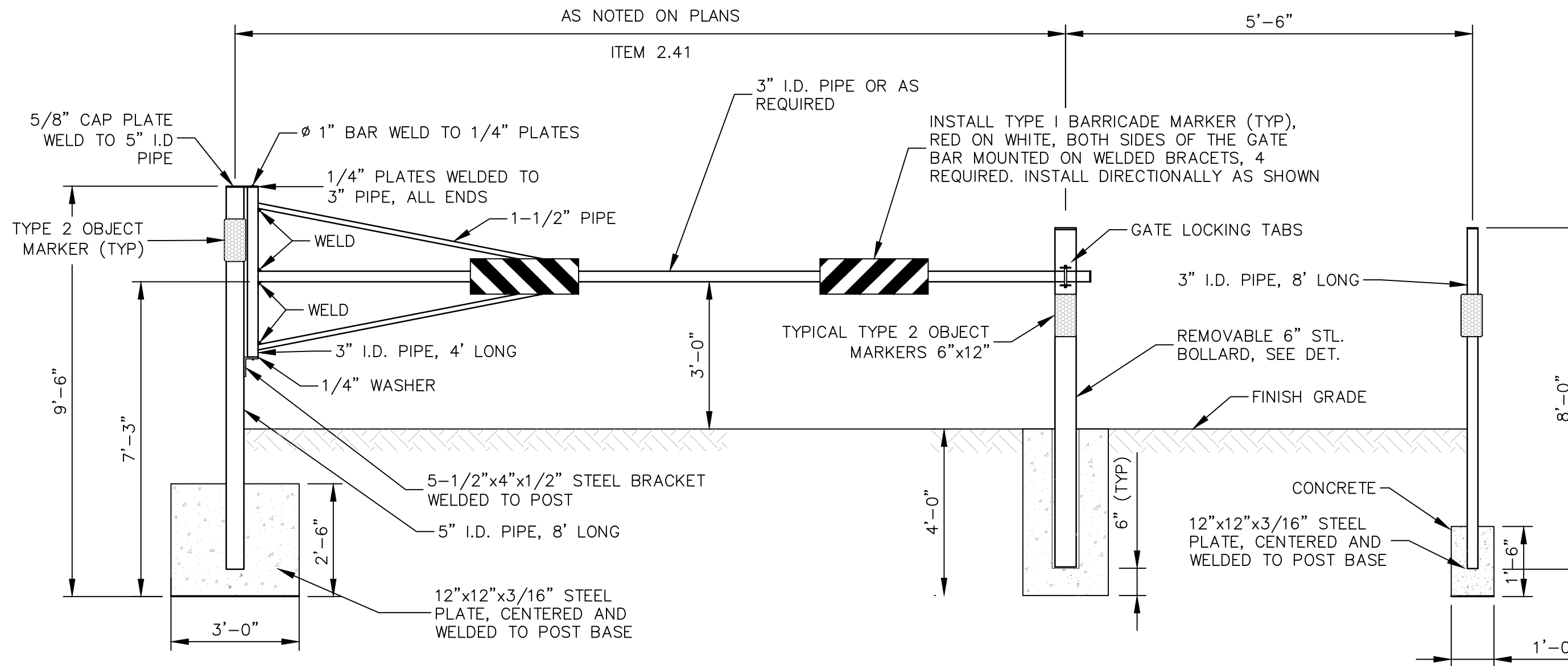
H Permanent Trench Patch Detail
 Not to Scale

designed by: JHK	drawn by: NJM	approved by: PAC	scale:
date: April 2020	project no: 1119	file name: 1119 DETAILS.dwg	
CMA ENGINEERS CIVIL/ENVIRONMENTAL/STRUCTURAL Portsmouth, NH 603/431-6196 Manchester, NH 603/627-0708 Portland, ME 207/641-4223 c m a e n g i n e e r s . c o m			
City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields and Regional Stormwater Treatment System Roadway and Path Details			
drawing no: D-107			
sheet: 31 of 45			



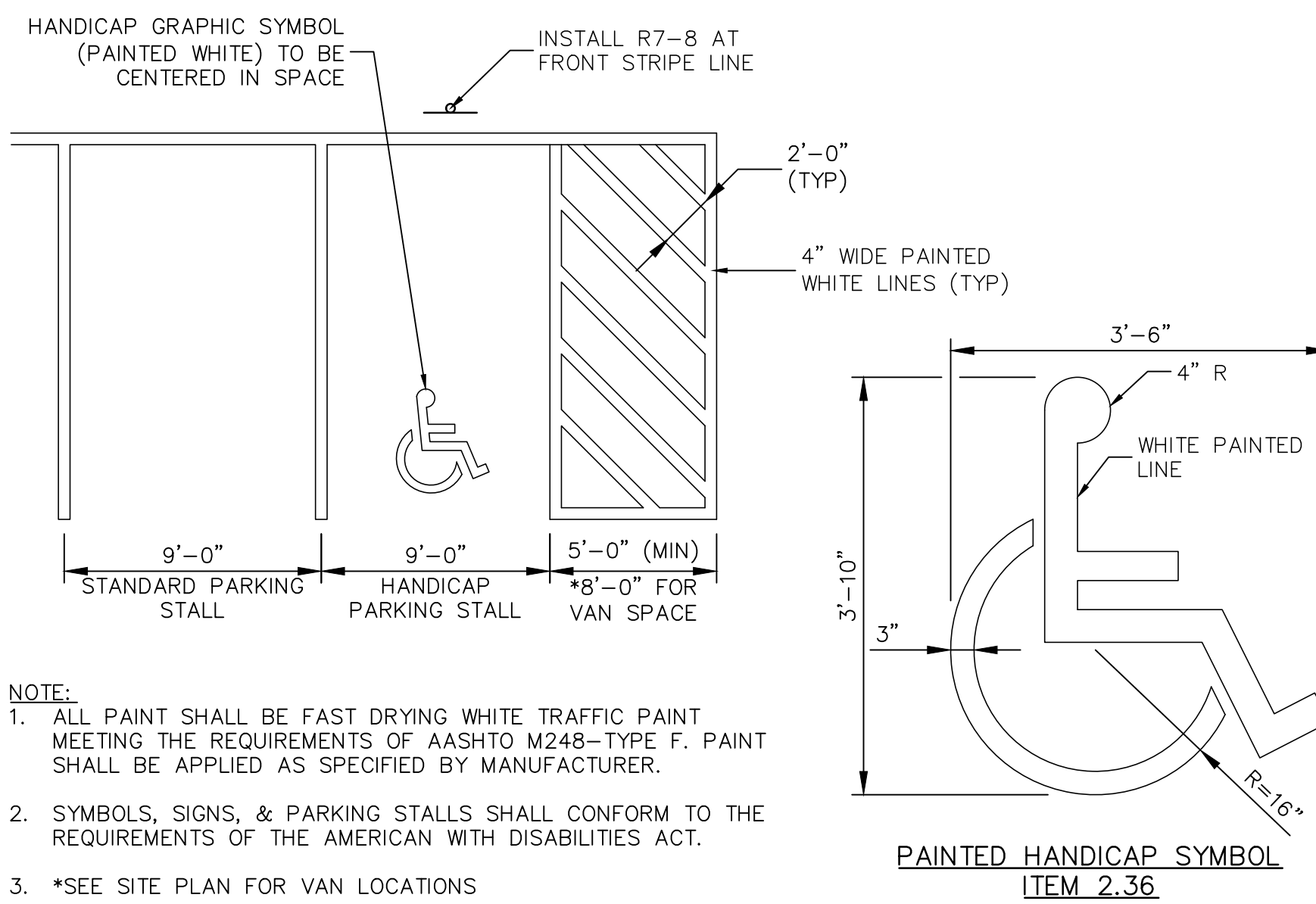
- NOTES:**
- GATES AND POSTS SHALL BE HOT DIPPED GALVANIZED STEEL. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND/OR CATALOG CUTS FOR APPROVAL PRIOR TO FABRICATION
 - CONCRETE FOOTINGS AND GRAVEL BASE ARE SUBSIDIARY.
 - CHAIN LINK FENCE SHALL BE PAID FOR AS ITEM 2.40.

A Chain Link Fence Detail
Not to Scale



- NOTES:**
- GATES AND POSTS SHALL BE HOT DIPPED GALVANIZED STEEL PAINTED GLOSS YELLOW. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND/OR CATALOG CUTS FOR APPROVAL PRIOR TO FABRICATION
 - STEEL POSTS AND SWING ARMS SHALL BE 3" I.D. MINIMUM.
 - CONCRETE FOOTINGS AND GRAVEL BASE ARE SUBSIDIARY.
 - SECURITY GATES SHALL INCLUDE LOCKS AND KEYS AS SPECIFIED.
 - DRILL ϕ 1/4" HOLES 4'-0" CENTER TO CENTER IN BOTTOM OF GATE ARM FOR DRAINAGE.
 - A SECOND LOCKING POST SHALL BE INSTALLED BEHIND THE GATE, AS STAKED BY THE ENGINEER, ENABLING THE GATE TO BE LOCKED OPEN. TYPICAL TO LOCKING POST.

B Security Gate with Pedestrian Access
Not to Scale



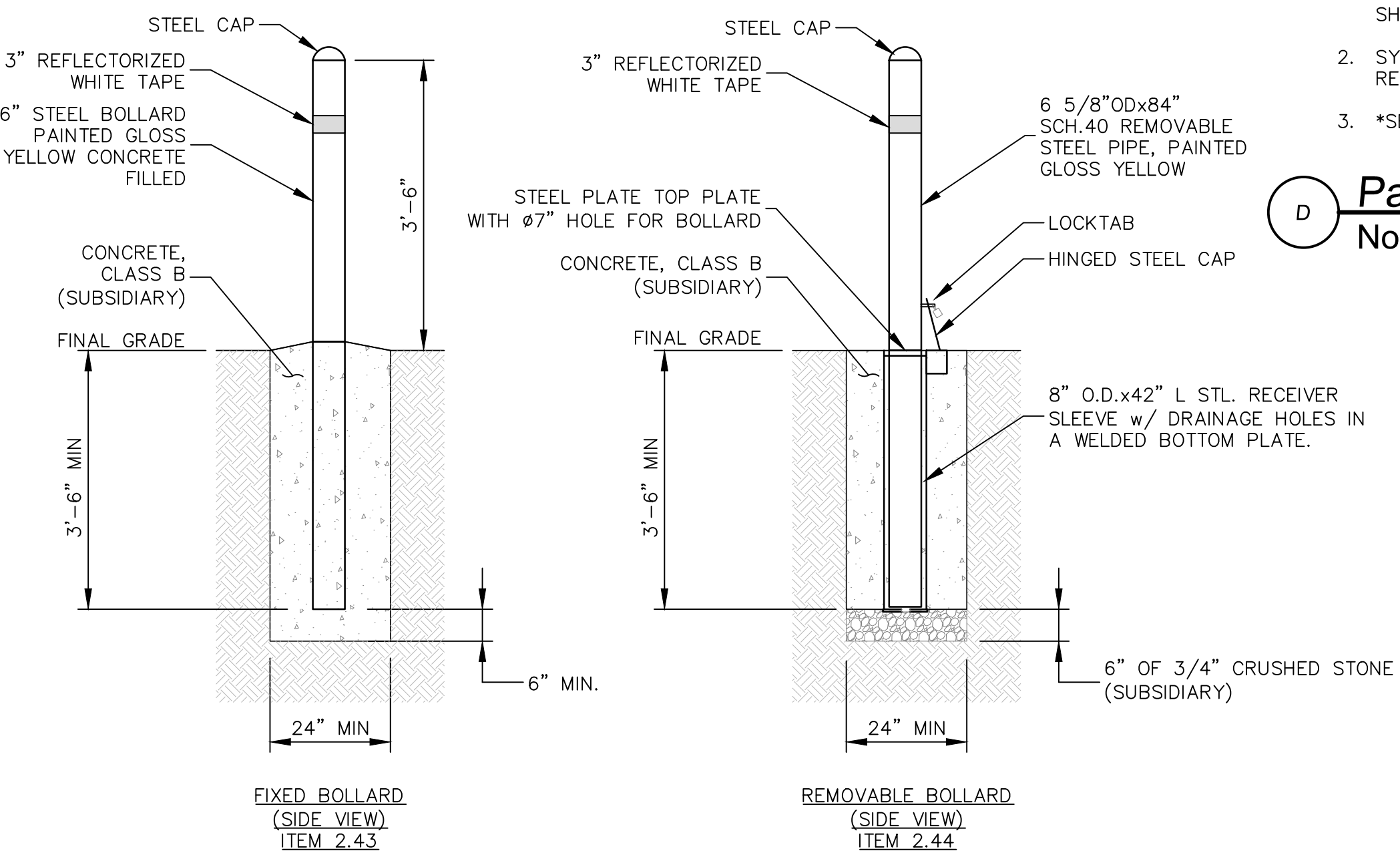
- NOTE:**
- ALL PAINT SHALL BE FAST DRYING WHITE TRAFFIC PAINT MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
 - SYMBOLS, SIGNS, & PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICAN WITH DISABILITIES ACT.
 - *SEE SITE PLAN FOR VAN LOCATIONS

D Parking Stall Striping Detail
Not to Scale

- SIGNING NOTES:**
- EXISTING SIGNS THAT CONFLICT WITH THE PROPOSED LAYOUT SHALL BE REMOVED OR RELOCATED AS DIRECTED BY THE ENGINEER. THIS WORK PAID UNDER CONTRACT ITEMS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND RELOCATION OF ALL ROADWAY SIGNS. ANY SIGNS DAMAGED DURING THE COMPLETION OF WORK SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.
 - NOTE NEW REFLECTIVITY REQUIREMENTS IN THE 2016 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SECTION 718 PUBLISHED BY THE NHDOT.
 - REFER TO THE 2016 STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION AS PUBLISHED BY THE NHDOT FOR EXACT DETAILS OF PERMANENT SIGNING STANDARDS AND NHDOT SPECIFIC SIGNS.
 - REFER TO THE LATEST EDITION OF THE STANDARD HIGHWAY SIGNS MANUAL AS PUBLISHED BY THE USDOT-FHWA FOR EXACT DETAILS OF BORDERS, ETC.
 - THE MINIMUM SIGN HEIGHT FOR A ROAD SIGN IN A RURAL PROJECT SHALL BE 6- FEET. ALL OTHER SIGN HEIGHTS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MUTCD.
 - ALL WARNING SIGNS SHALL HAVE TYPE IV BACKGROUND SHEETING UNLESS OTHERWISE SPECIFIED.
 - ALL EXISTING SIGNS THAT ARE REMOVED ARE TO BE STORED BY THE CONTRACTOR AND RESET AS DIRECTED. ANY EXISTING SIGNS TO BE RESET THAT ARE DAMAGED BY THE CONTRACTOR'S OPERATIONS ARE TO BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY.
 - WHERE NEEDED, SIGNS POSTS SHALL BE U-CHANNEL, DIRECT BURIED, SINGLE POST.

E Sign Table
Not to Scale

IDENT #	SIGN SIZE		TEXT	TEXT DIMENSIONS			# SIGNS REQ'D	SIGN AREA (SQ. FT)	
	WIDTH (INCH)	HEIGHT (INCH)		LETTER HEIGHT (INCH)				NOM. AREA	TOTAL AREA
				UC	LC	CAPS			
R1-2	30	30	YIELD	REFER TO MUTCD AND ITS LATEST REVISIONS			1	2.70	2.70
W1-6R	36	12	→	REFER TO MUTCD AND ITS LATEST REVISIONS			1	3.00	3.00
R7-8	12	18	RESERVED PARKING	REFER TO MUTCD AND ITS LATEST REVISIONS			4	1.50	6.00
R7-8a	12	6	VAN ACCESSIBLE	REFER TO MUTCD AND ITS LATEST REVISIONS			4	0.50	2.00
R8-3	12	18	NO PARKING	REFER TO MUTCD AND ITS LATEST REVISIONS			1	1.50	1.50
R5-1	30	30	DO NOT ENTER	REFER TO MUTCD AND ITS LATEST REVISIONS			2	6.25	12.50
NA	18	24	AUTHORIZED VEHICLES ONLY	-			2	3.00	6.00



C Steel Bollard Detail
Not to Scale

CMA ENGINEERS
Civil/Environmental/Structural

designed by: JHK
drawn by: NJM
approved by: PAC

date: April 2020
project no: 1119
file name: 1119 DETAILS.dwg

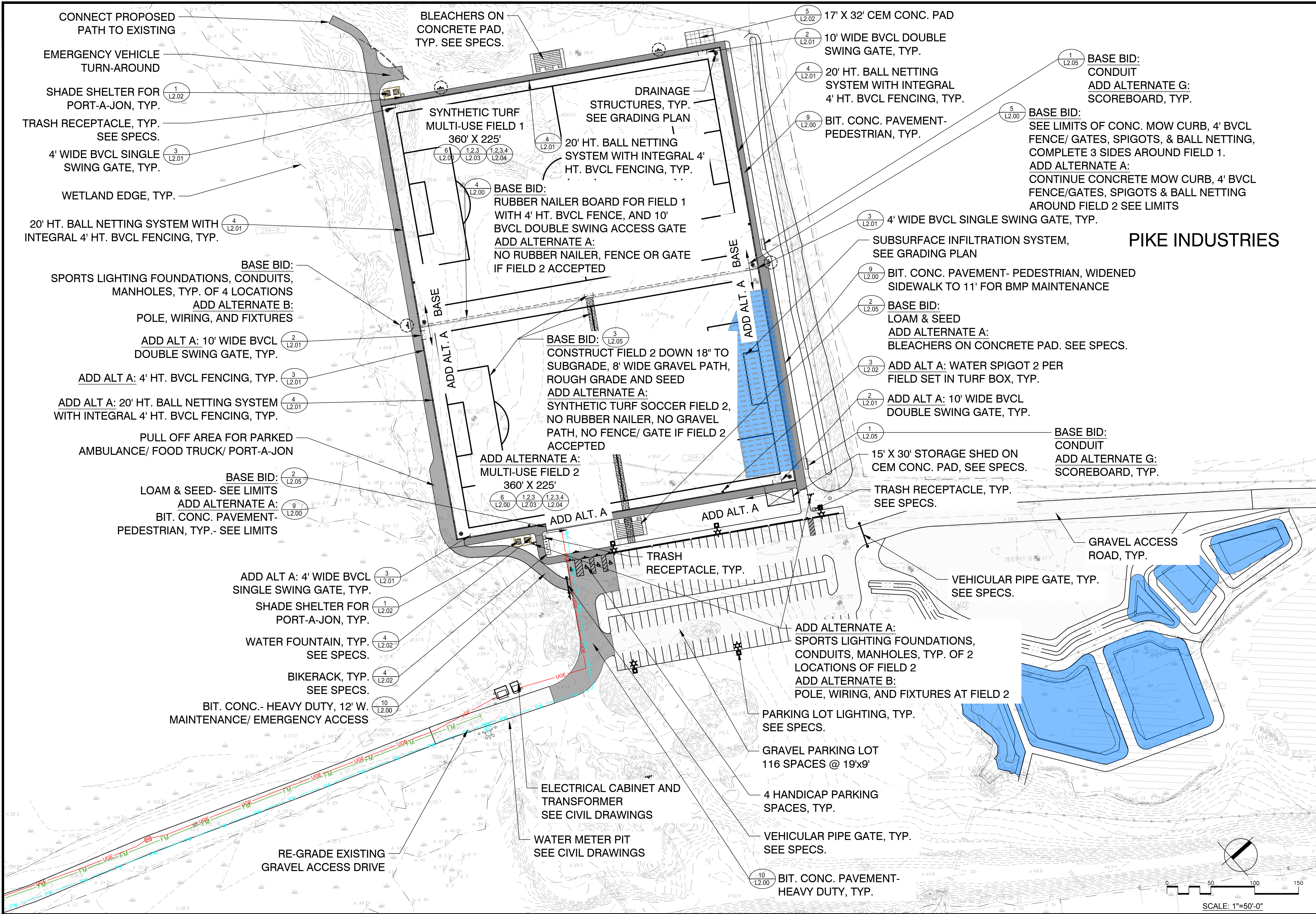
City of Portsmouth, New Hampshire
Department of Public Works
Multi-purpose Recreation Fields and
Regional Stormwater Treatment System
Miscellaneous Details

drawing no: D-108
sheet: 32 of 45

Portsmouth, NH 603/431-6196
Manchester, NH 603/627-0708
Portland, ME 207/641-4223

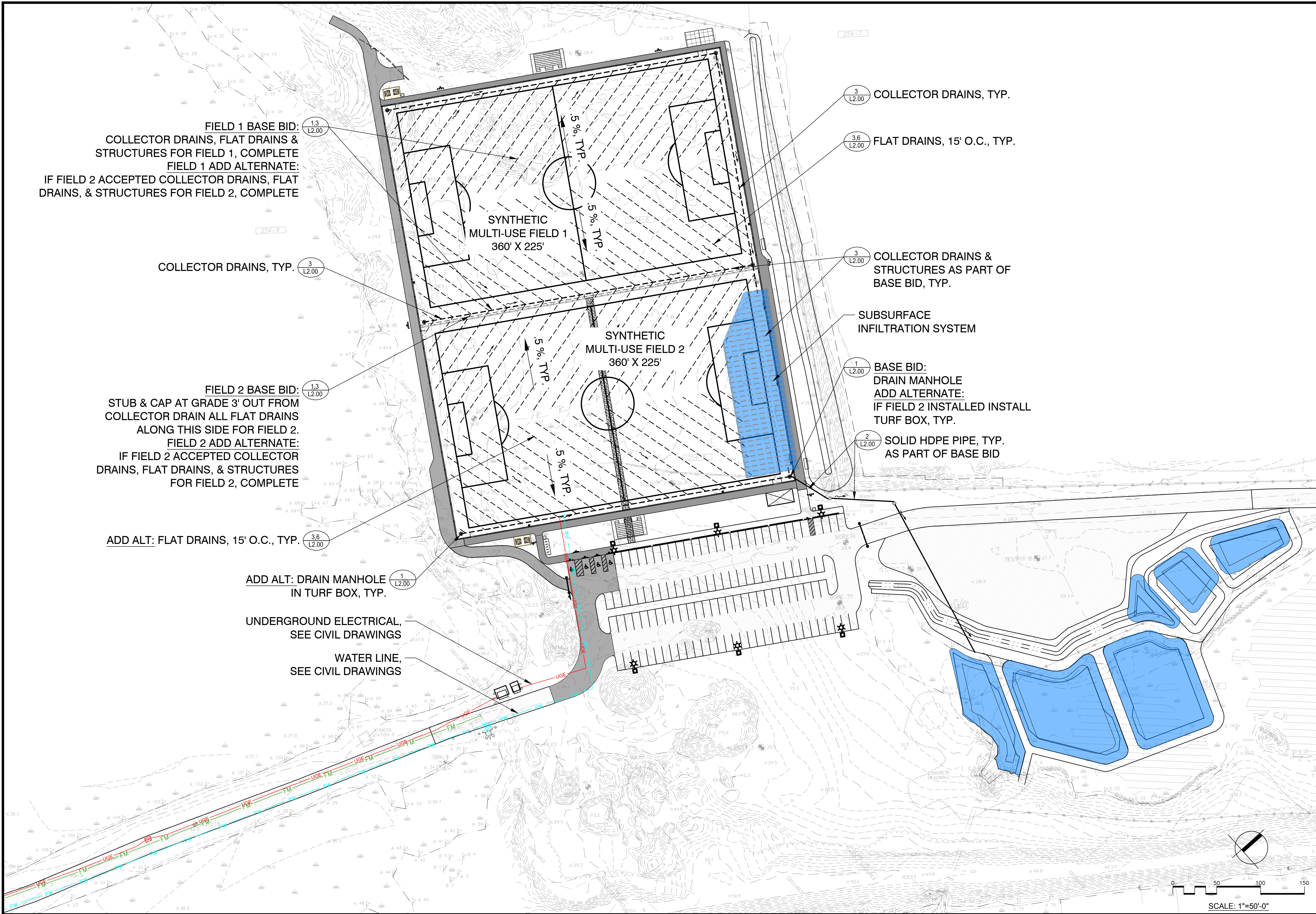
revision: 1
issued for Bid

no. 1
date 4/16/20
by

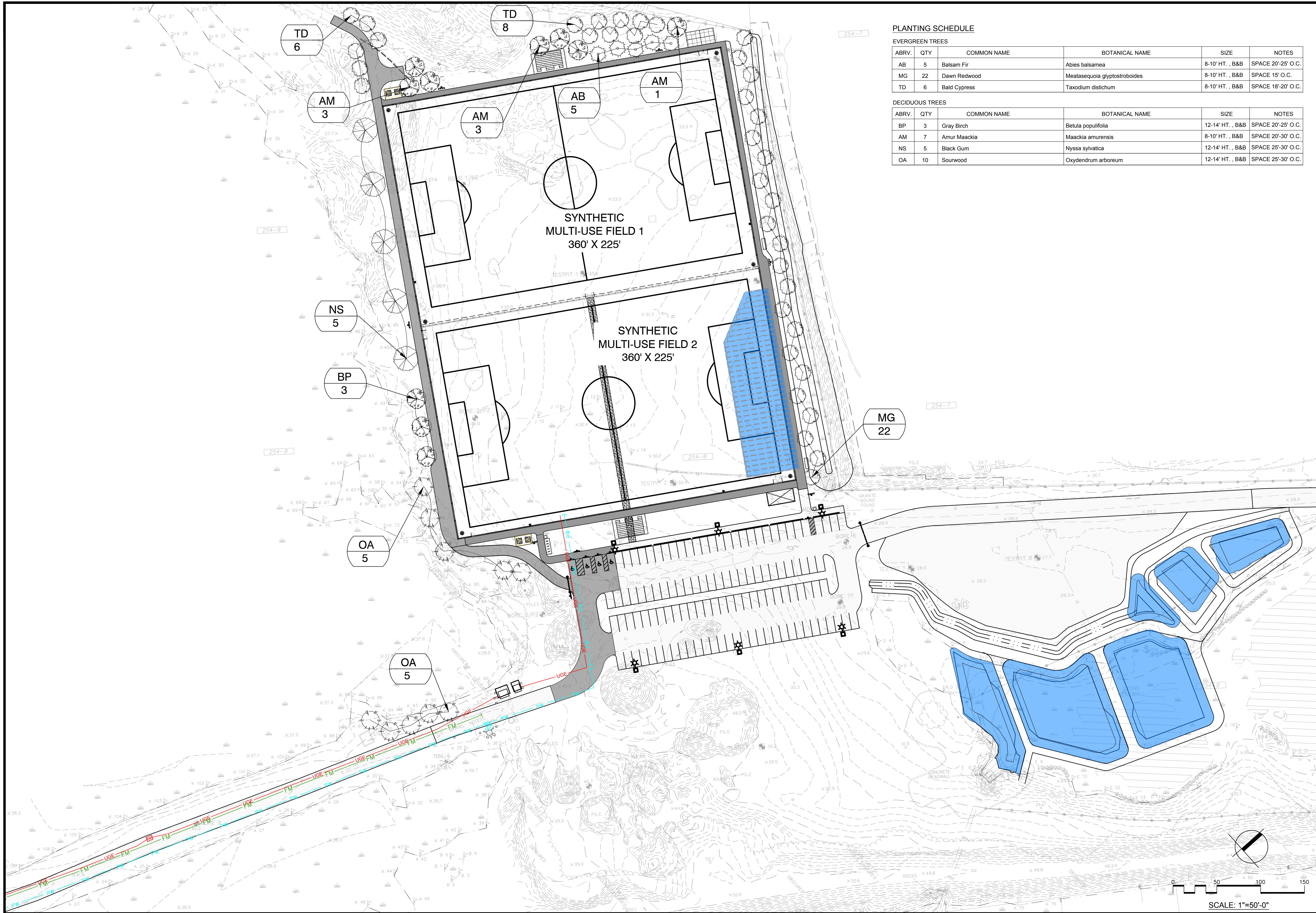


PIKE INDUSTRIES

designed by:	drawn by:	approved by:	scale:
date:	project no.:	file name:	
		Phase 1.dwg	
City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields 680 Peaverly Hill Road Recreation Fields SITE PLAN		drawing no. L1.01 sheet: - of -	
CMA ENGINEERS CIVIL/ENVIRONMENTAL ENGINEERS Portsmouth, NH Manchester, NH Portland, Maine Weston & Sampson 427 Main Street, Suite 400, Worcester, MA (978) 977-0110 (800) 726-7766 (Sampson) www.westonandsampson.com		revision no. by date	



<p>CMA ENGINEERS Civil/Environmental Engineers Portsmouth, NH Manchester, NH Portland, Maine</p> <p>Weston & Sampson 427 Main Street, Suite 400, Worcester, MA (978) 977-0110 (800) 726-7766 www.westonandsampson.com</p>	
<p>designed by:</p>	<p>date:</p>
<p>drawn by:</p>	<p>project no.:</p>
<p>approved by:</p>	<p>file name: Phase 1.dwg</p>
<p>scale:</p>	<p>revision</p>
<p>City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields 680 Peaverly Hill Road Recreation Fields DRAINAGE & UTILITIES</p>	
<p>drawing no. L1.02</p>	
<p>sheet: - of -</p>	<p>no. date by</p>




PLANTING SCHEDULE

EVERGREEN TREES

ABRV.	QTY	COMMON NAME	BOTANICAL NAME	SIZE	NOTES
AB	5	Balsam Fir	Abies balsamea	8-10' HT., B&B	SPACE 20'-25' O.C.
MG	22	Dawn Redwood	Metasequoia glyptostroboides	8-10' HT., B&B	SPACE 15' O.C.
TD	6	Bald Cypress	Taxodium distichum	8-10' HT., B&B	SPACE 18'-20' O.C.

DECIDUOUS TREES

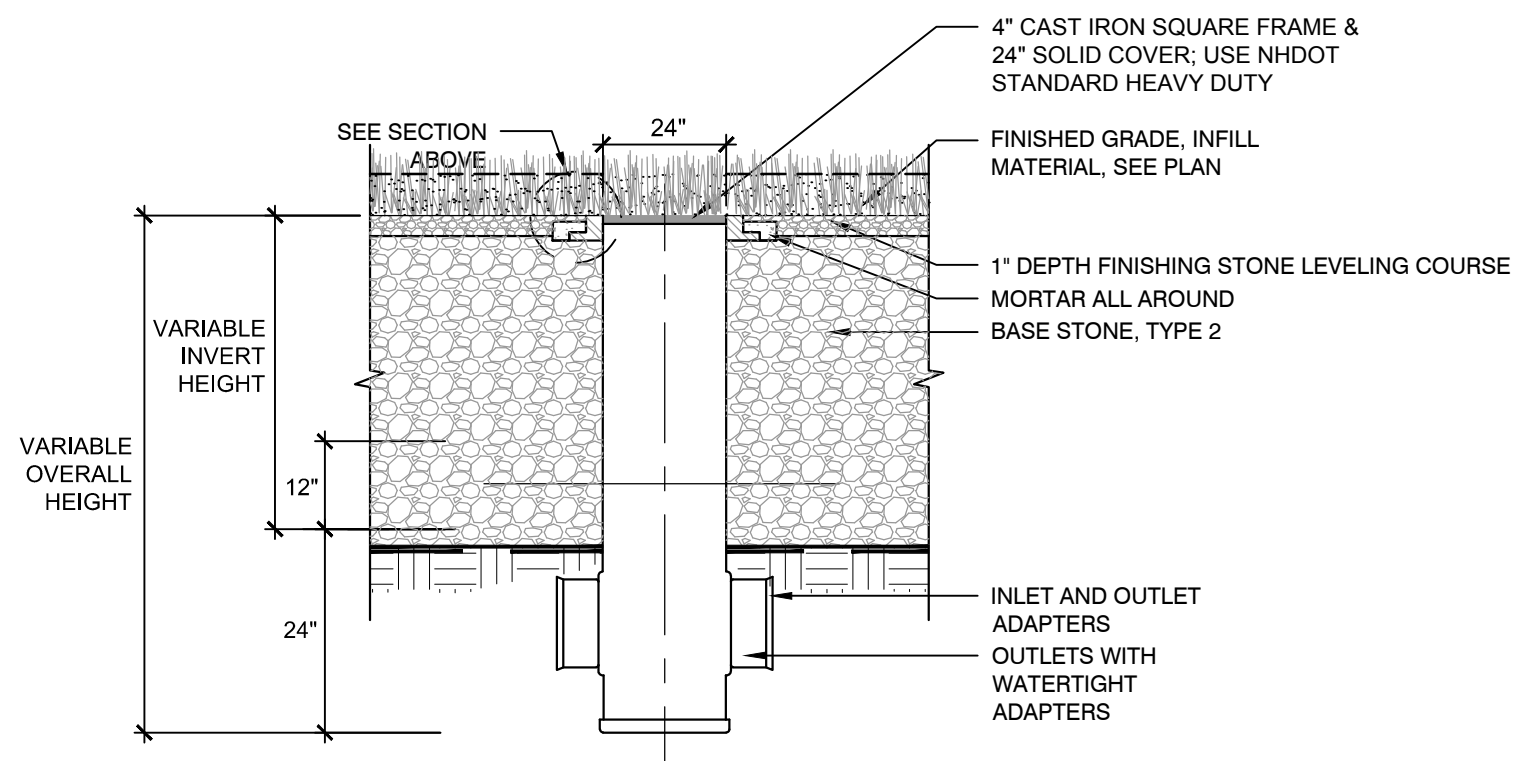
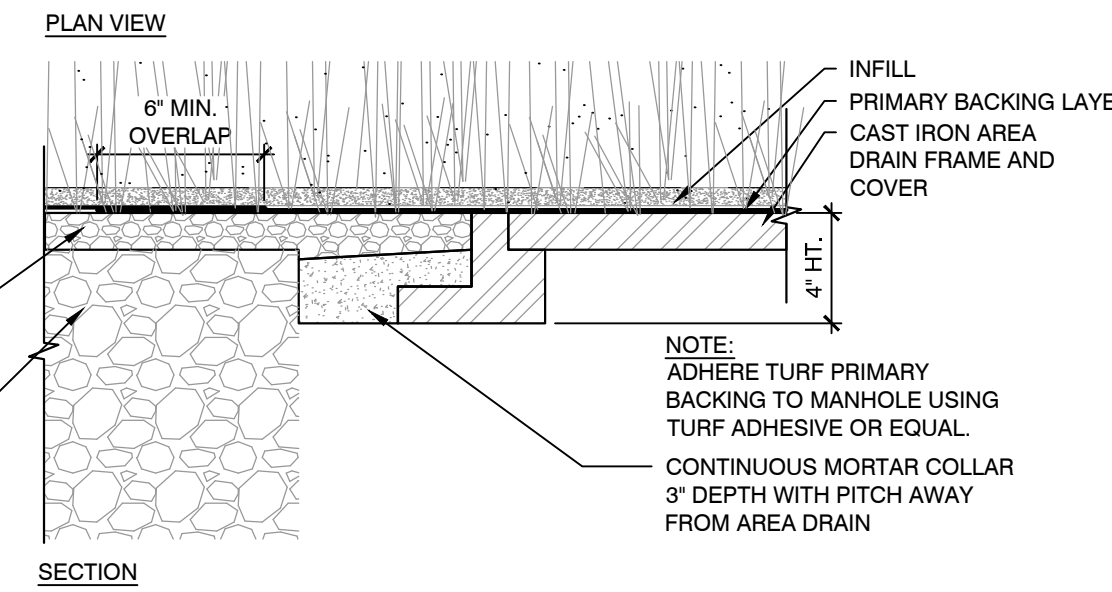
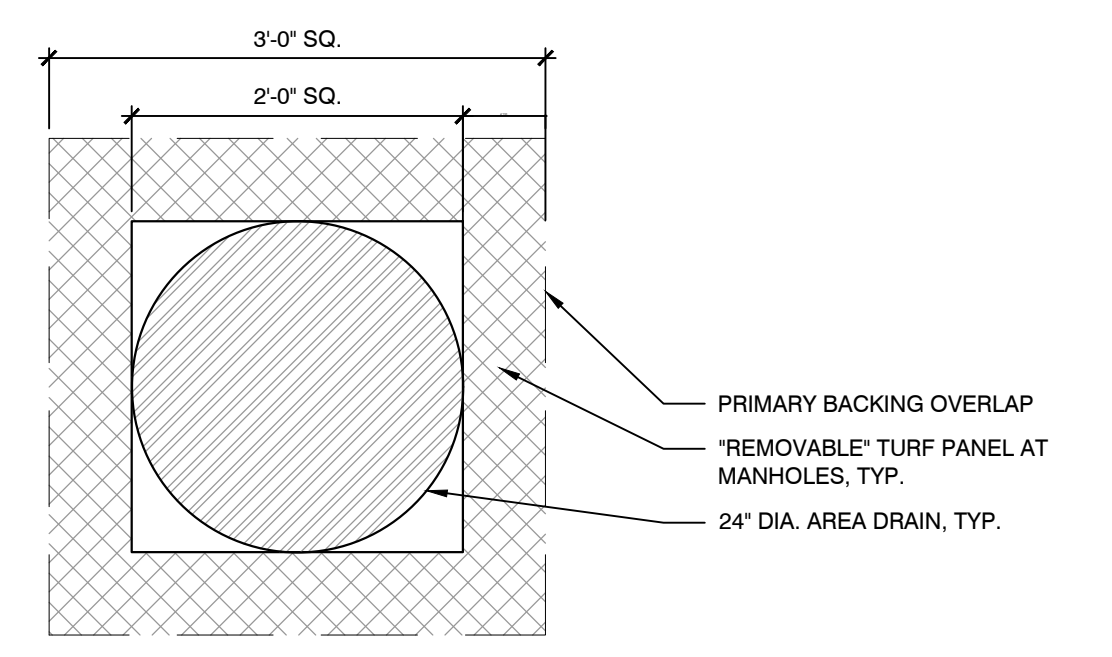
ABRV.	QTY	COMMON NAME	BOTANICAL NAME	SIZE	NOTES
BP	3	Gray Birch	Betula populifolia	12-14' HT., B&B	SPACE 20'-25' O.C.
AM	7	Amur Maackia	Maackia amurensis	8-10' HT., B&B	SPACE 20'-30' O.C.
NS	5	Black Gum	Nyssa sylvatica	12-14' HT., B&B	SPACE 25'-30' O.C.
OA	10	Sourwood	Oxydendrum arboreum	12-14' HT., B&B	SPACE 25'-30' O.C.

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designed by:	date:	project no.:	file name:	scale:
drawn by:			Phase 1.dwg	
approved by:				
City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields 680 Peverly Hill Road Recreation Fields PLANTING PLAN		drawing no. L1.03 sheet: of		

SCALE: 1"=50'-0"

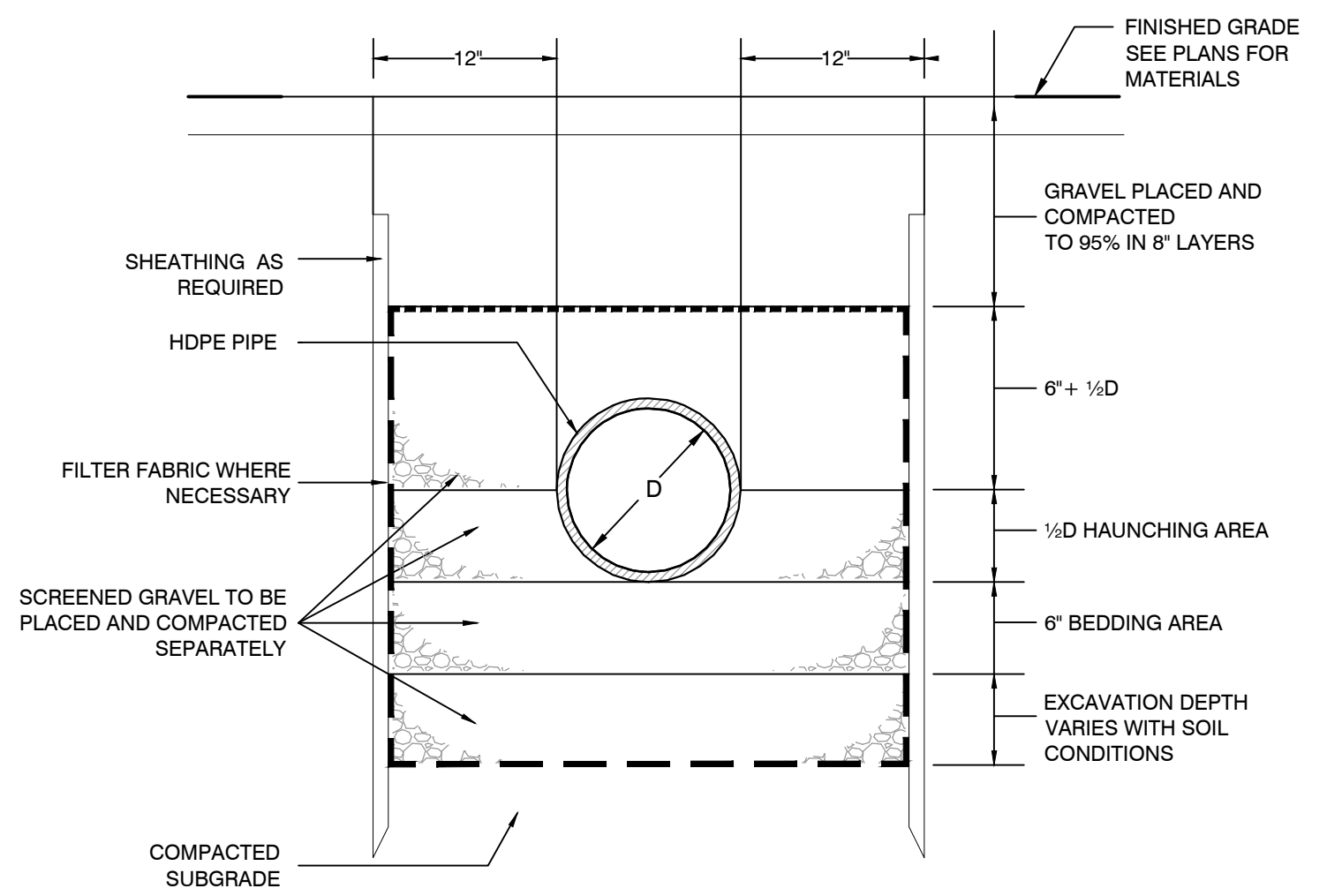
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City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields 680 Peverly Hill Road Recreation Fields DETAILS			
drawing no. L2.00			
sheet: - of -			

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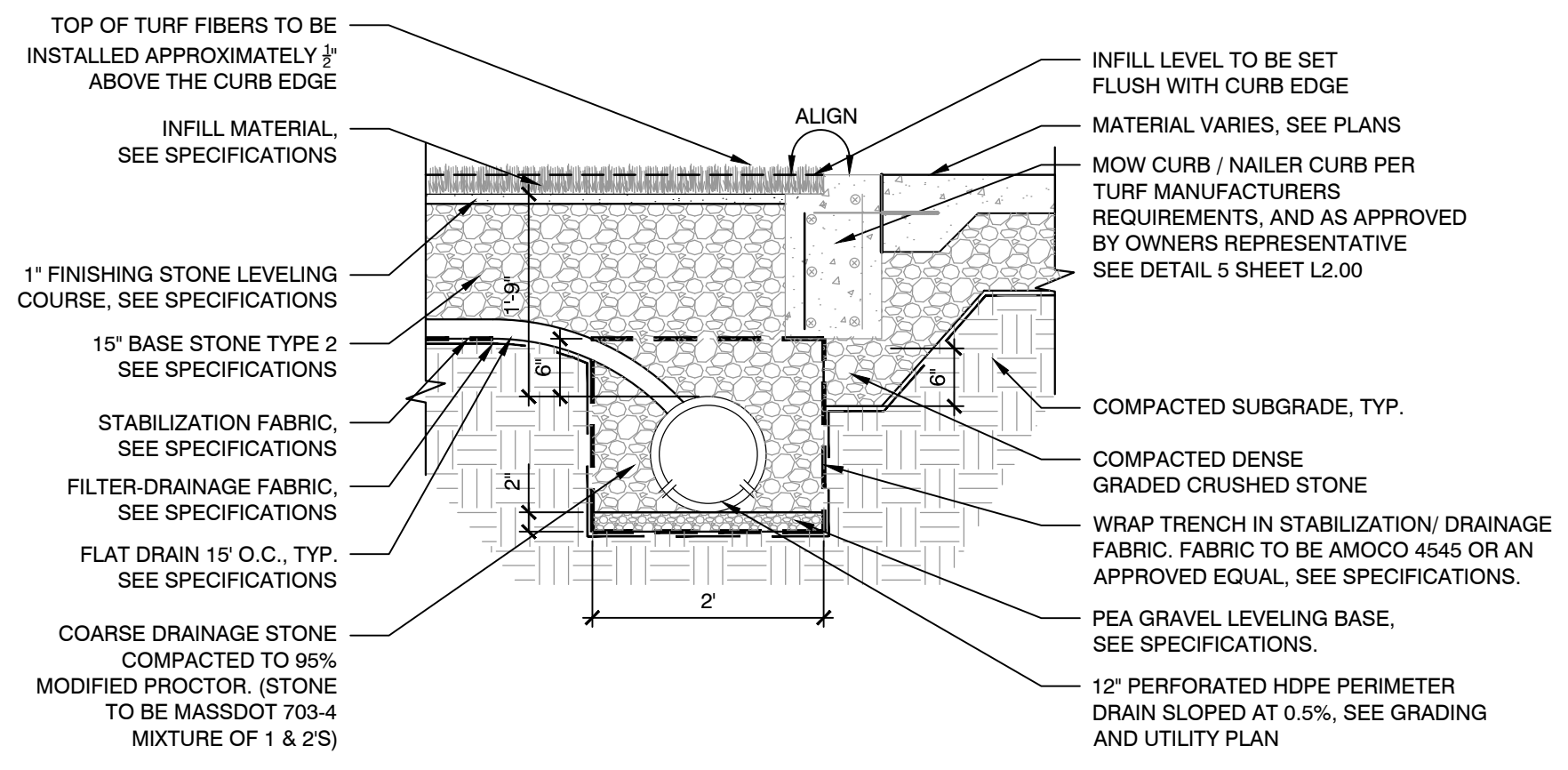


- NOTES:
 1. 24" MIN SUMP IS REQUIRED AT ALL AREA DRAINS WITHIN THE SYNTHETIC TURF FIELD.
 2. GRATES AND/OR COVERS SHALL BE 24" ROUND AT THE LOCATIONS INDICATED ON THE GRADING PLAN.

1 PVC DRAINAGE MANHOLE IN TURF FIELD
 SCALE: N.T.S.

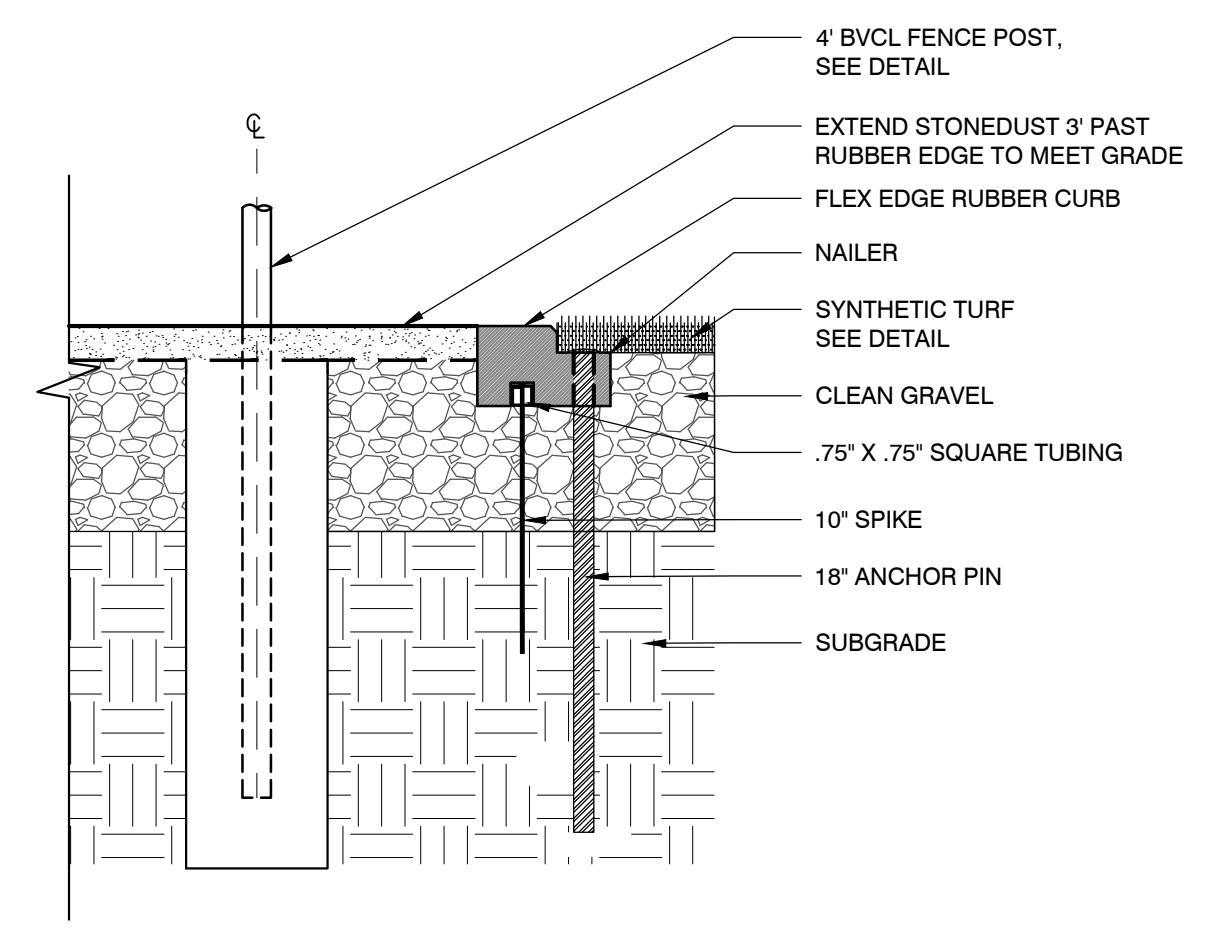


2 DRAIN PIPE TRENCH
 SCALE: N.T.S.

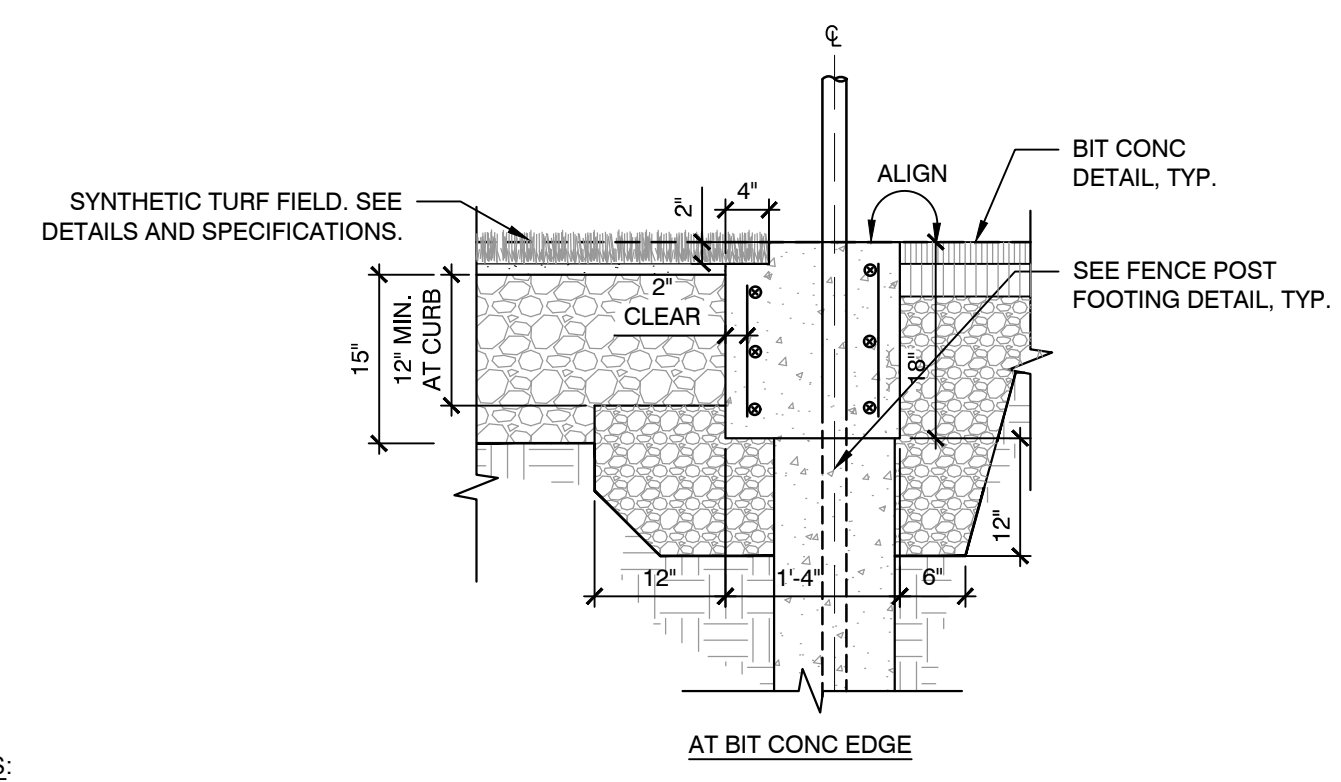


- NOTES:
 1. FLAT DRAIN TO BE DIRECTLY CONNECTED TO PERIMETER DRAIN. PROVIDE MANUFACTURED FITTINGS TO MAKE THE CONNECTION AS REQUIRED AND APPROVED BY THE OWNERS REPRESENTATIVE.
 2. CONCRETE CURB TO BE 4,500 PSI AT 28 DAYS (AIR CONTENT 6% +/- 1%) (COARSE AGGREGATE ASTM C-33 SIZE #57)

3 COLLECTOR DRAIN
 SCALE: N.T.S.

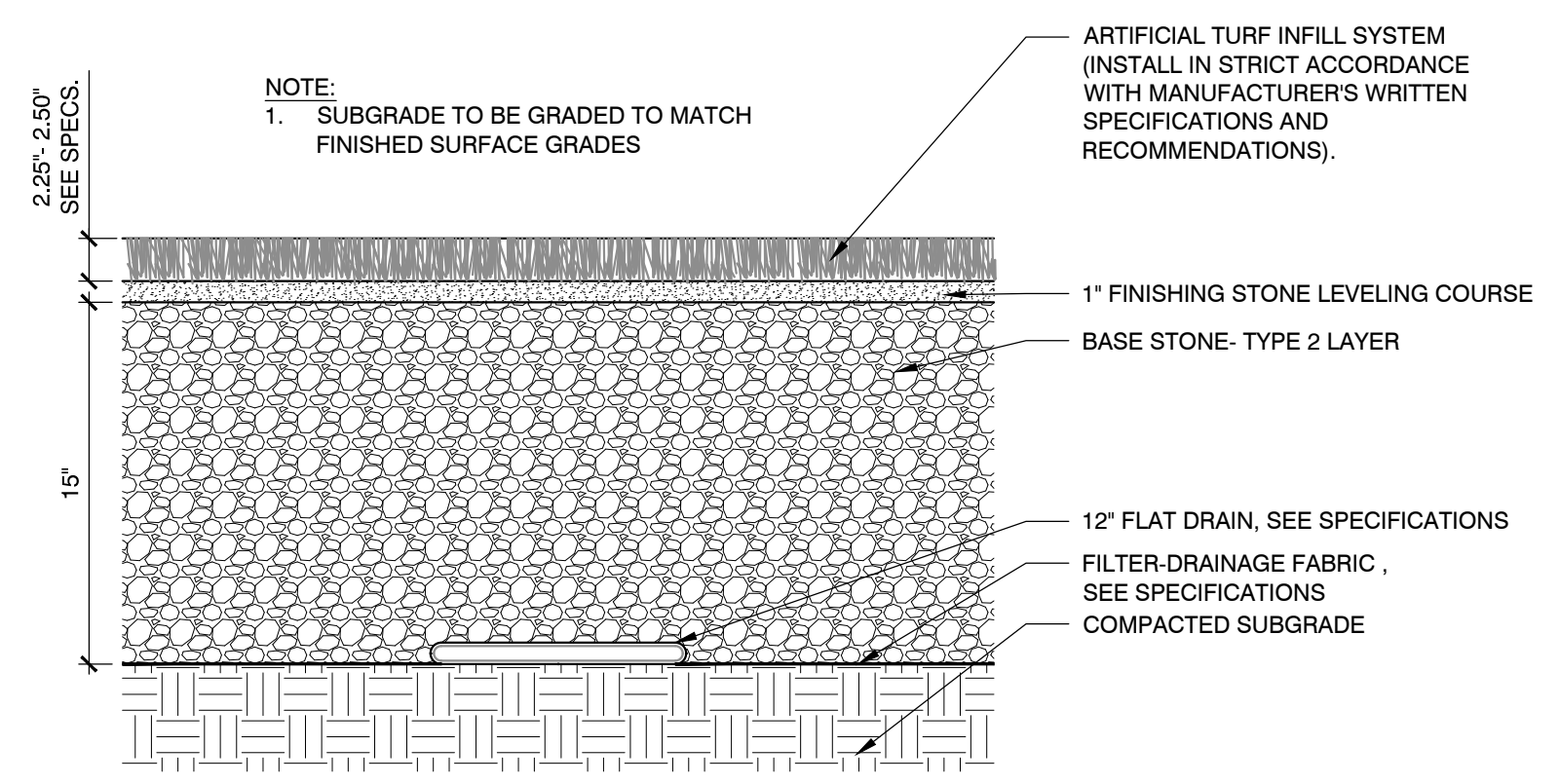


4 RUBBER NAILER CURB
 SCALE: N.T.S.

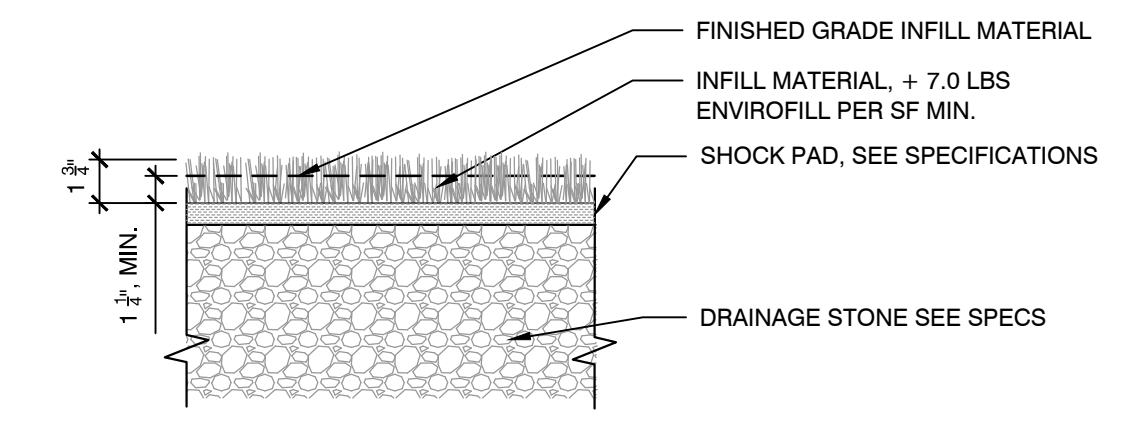


- NOTES:
 1. CONTRACTOR TO PROVIDE CONTROL JOINTS (PERFORMED OR SAWCUT) 10' O.C. MIN. 1/2" DEEP
 2. CONTRACTOR TO PROVIDE EXPANSION JOINTS EVERY 40' O.C.
 3. CONCRETE CURB TO BE 4,500 PSI AT 28 DAYS (AIR CONTENT 6% +/- 1%) (COARSE AGGREGATE ASTM C-33 SIZE #57)

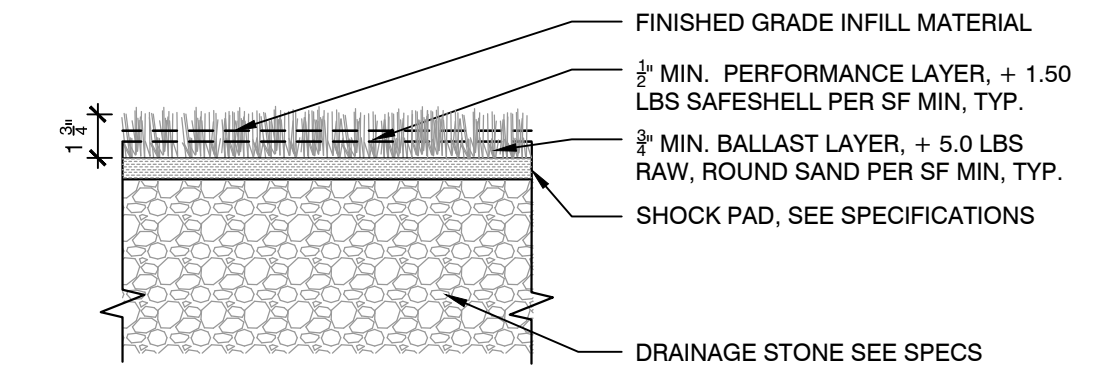
5 CONCRETE MOW/ NAILER CURB
 SCALE: N.T.S.



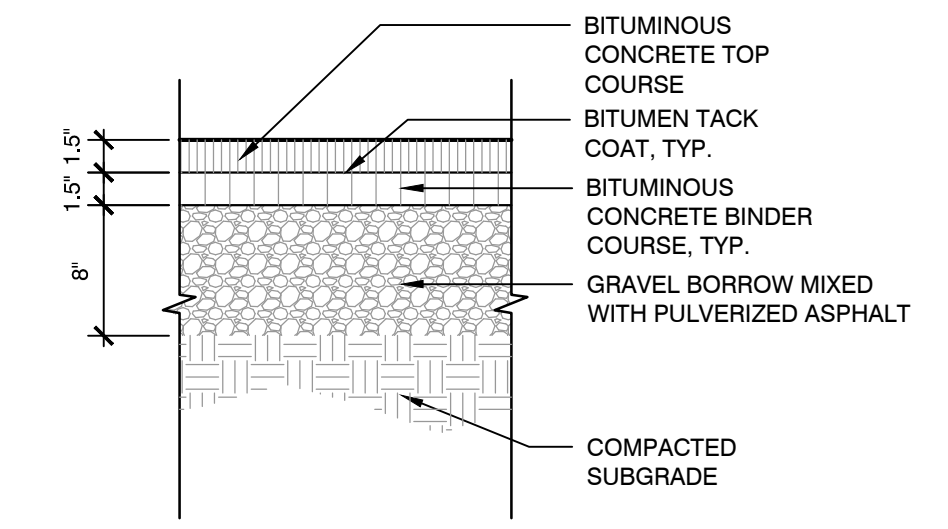
6 SYNTHETIC TURF FIELD
 SCALE: N.T.S.



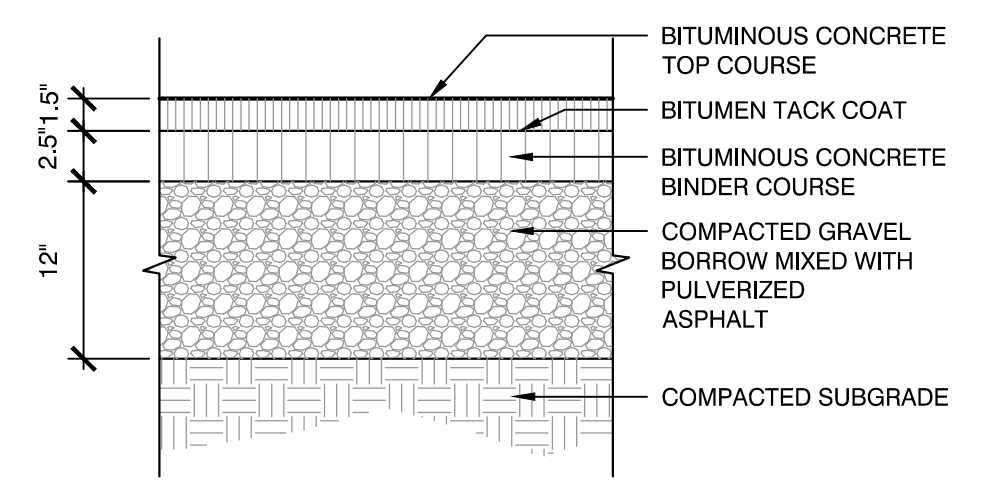
7 SYNTHETIC TURF WITH ENVIROFILL- ALTERNATE
 SCALE: N.T.S.



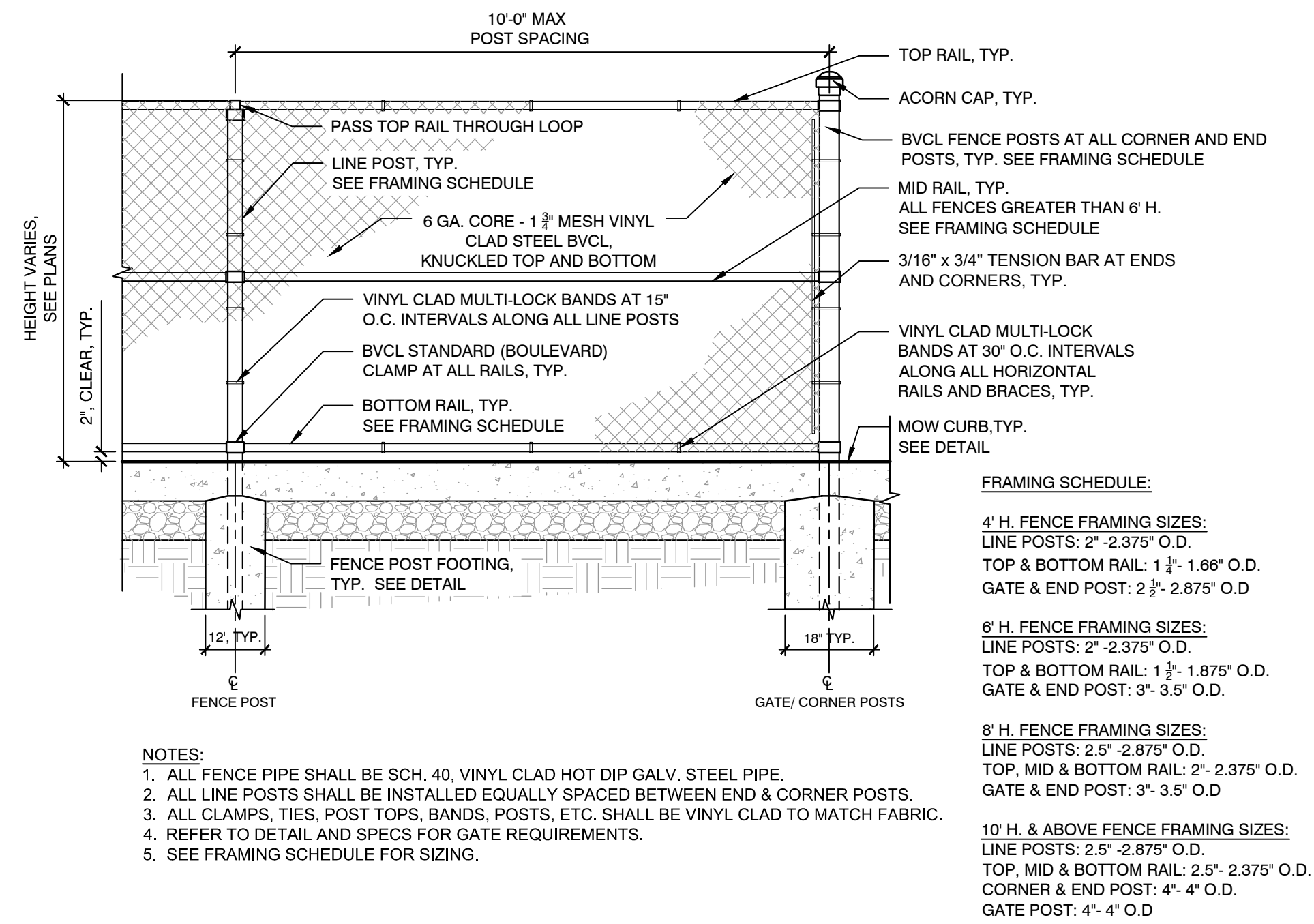
8 SYNTHETIC TURF WITH SAFESHELL SYSTEM- ALTERNATE
 SCALE: N.T.S.



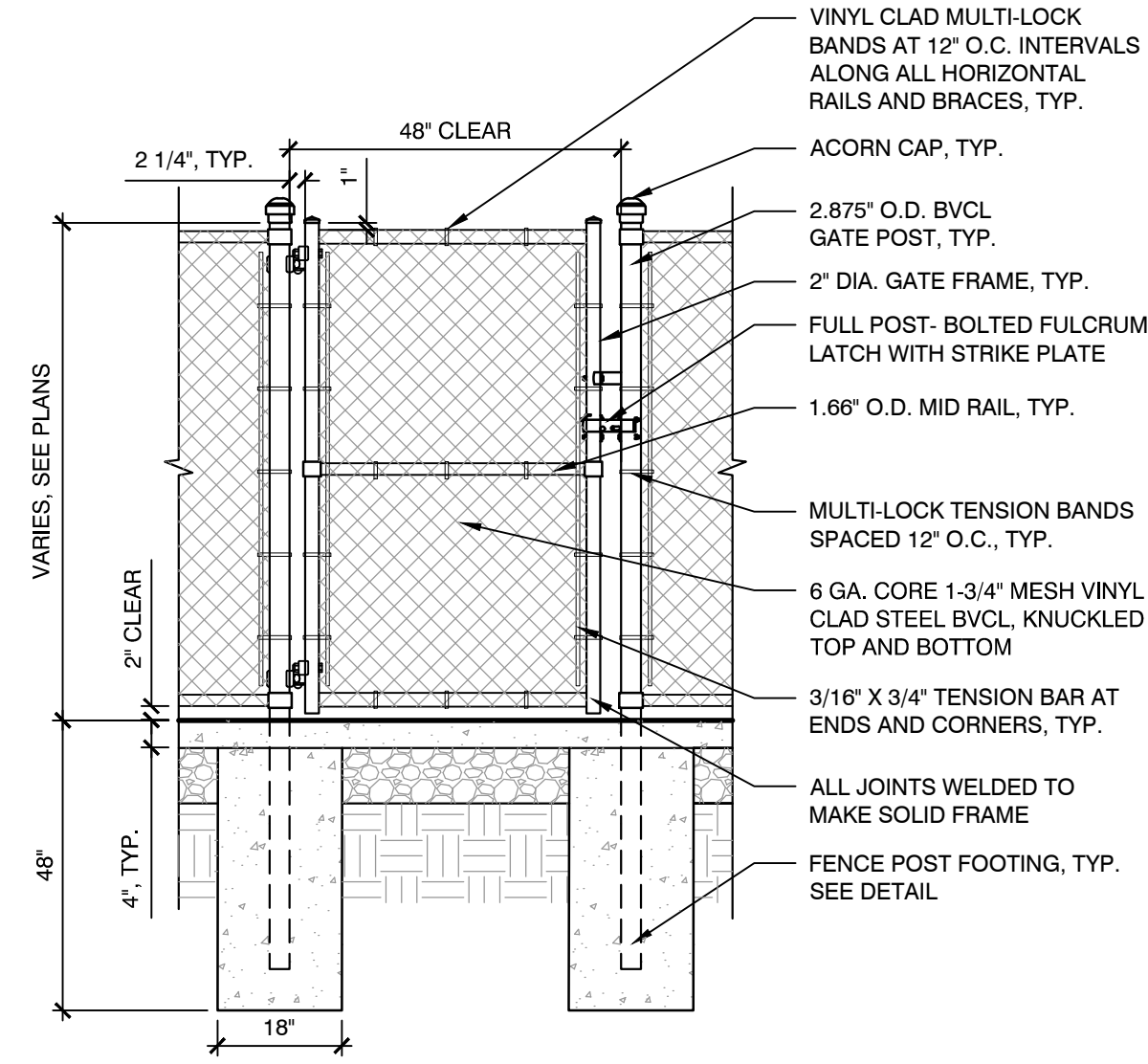
9 BITUMINOUS CONCRETE PAVEMENT- PEDESTRIAN
 SCALE: N.T.S.



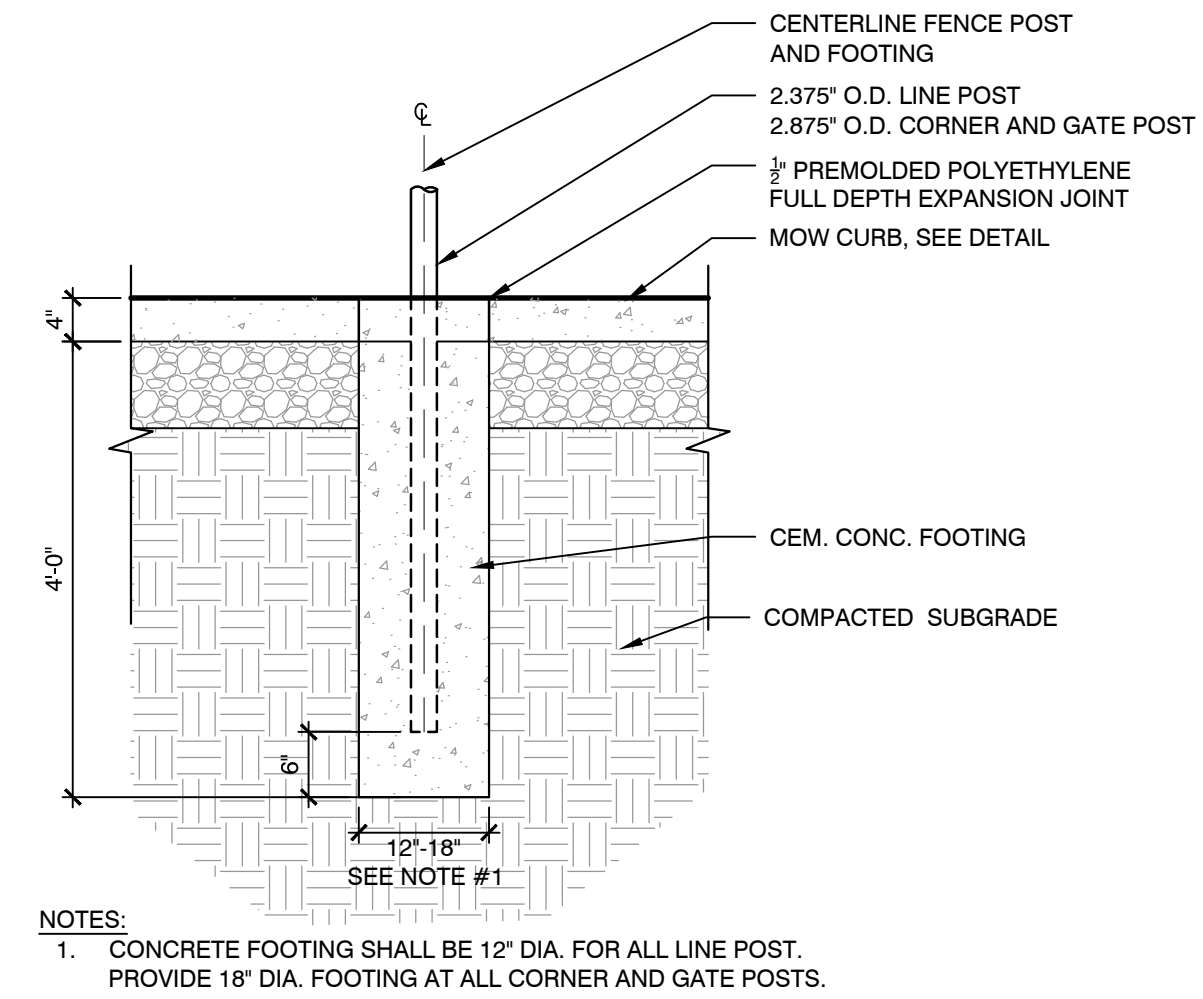
10 BITUMINOUS CONCRETE PAVEMENT- HEAVY DUTY
 SCALE: N.T.S.



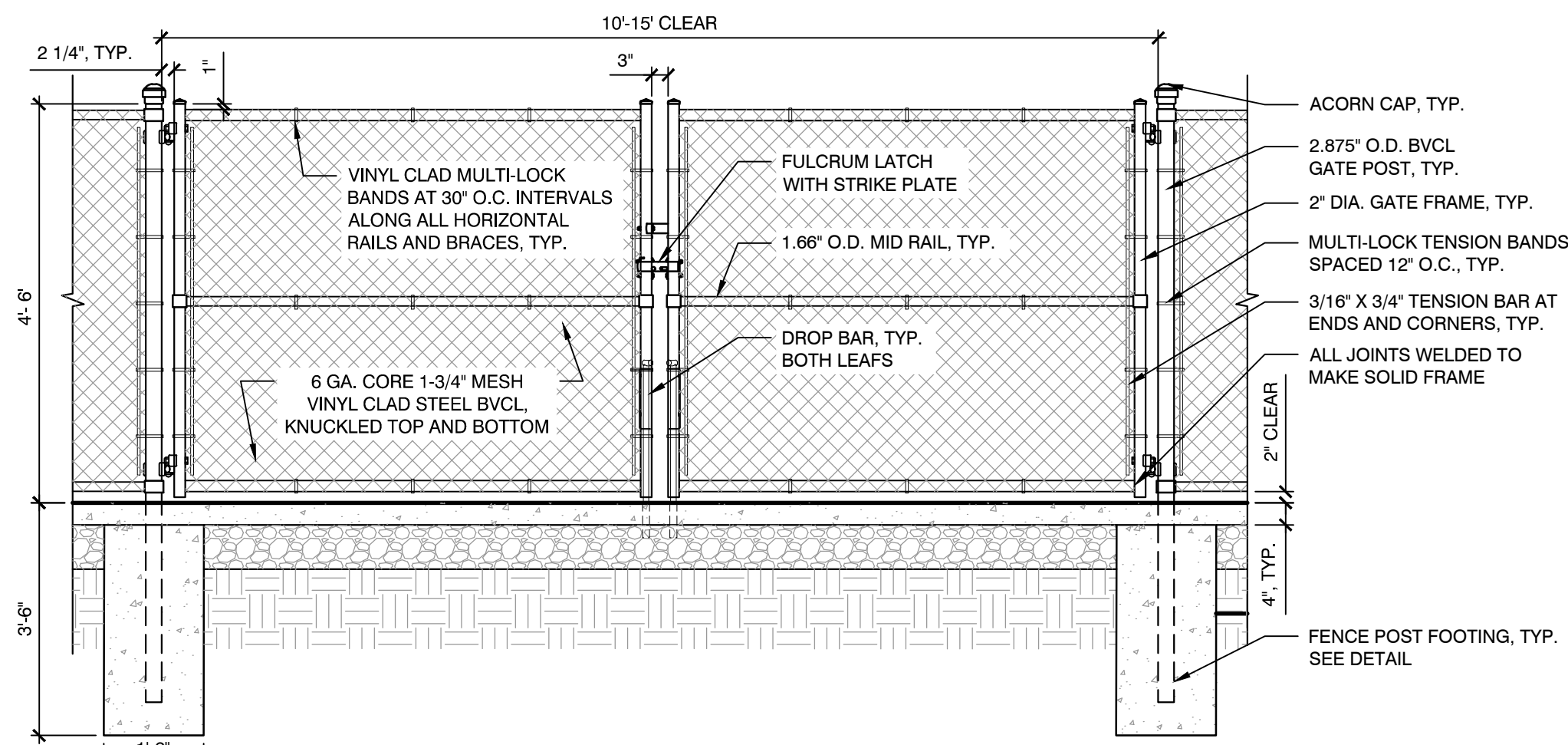
1 BVCL SINGLE SWING GATE
SCALE: N.T.S.



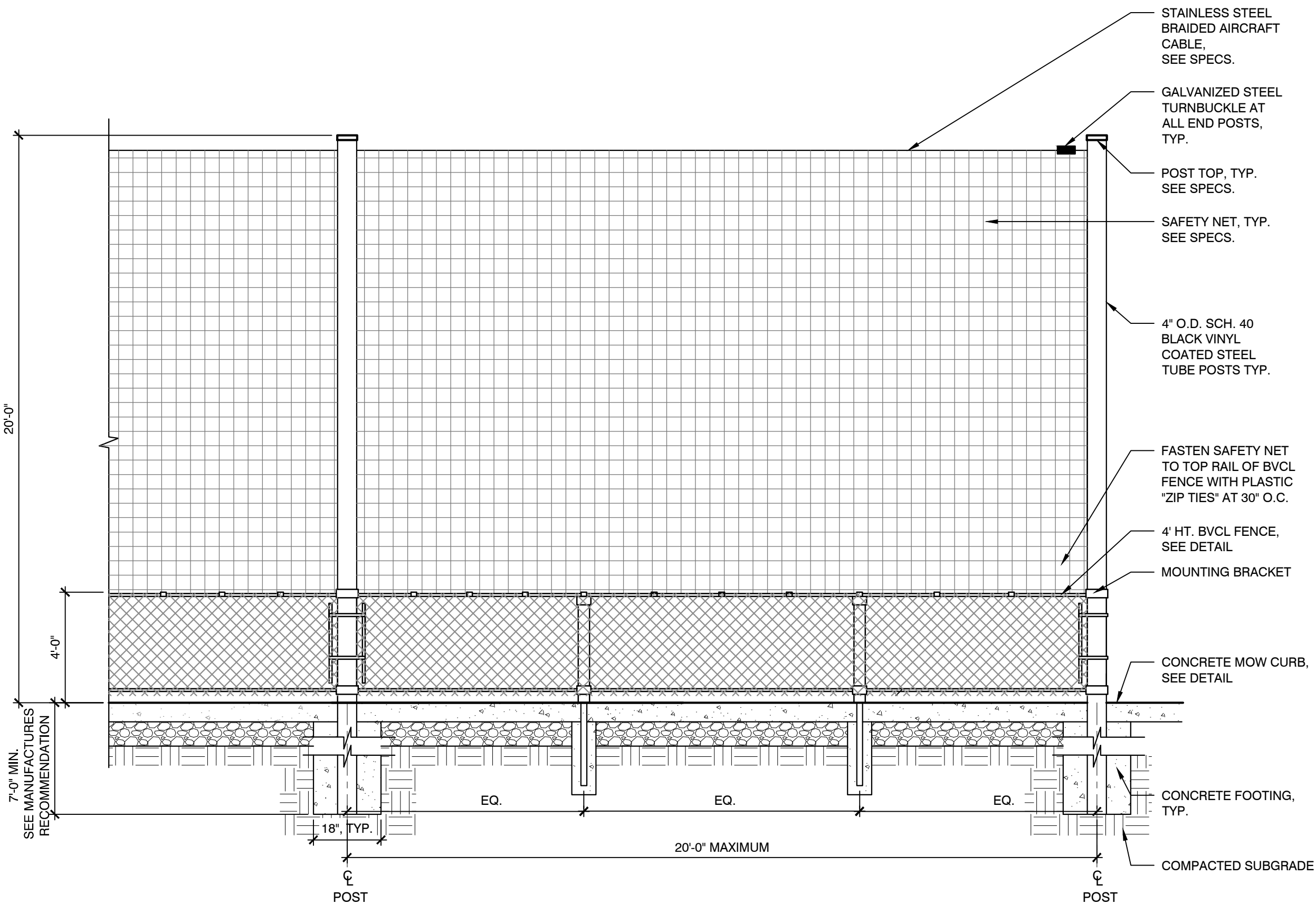
3 BVCL SINGLE SWING GATE
SCALE: N.T.S.



5 FENCE POST FOOTING
SCALE: N.T.S.

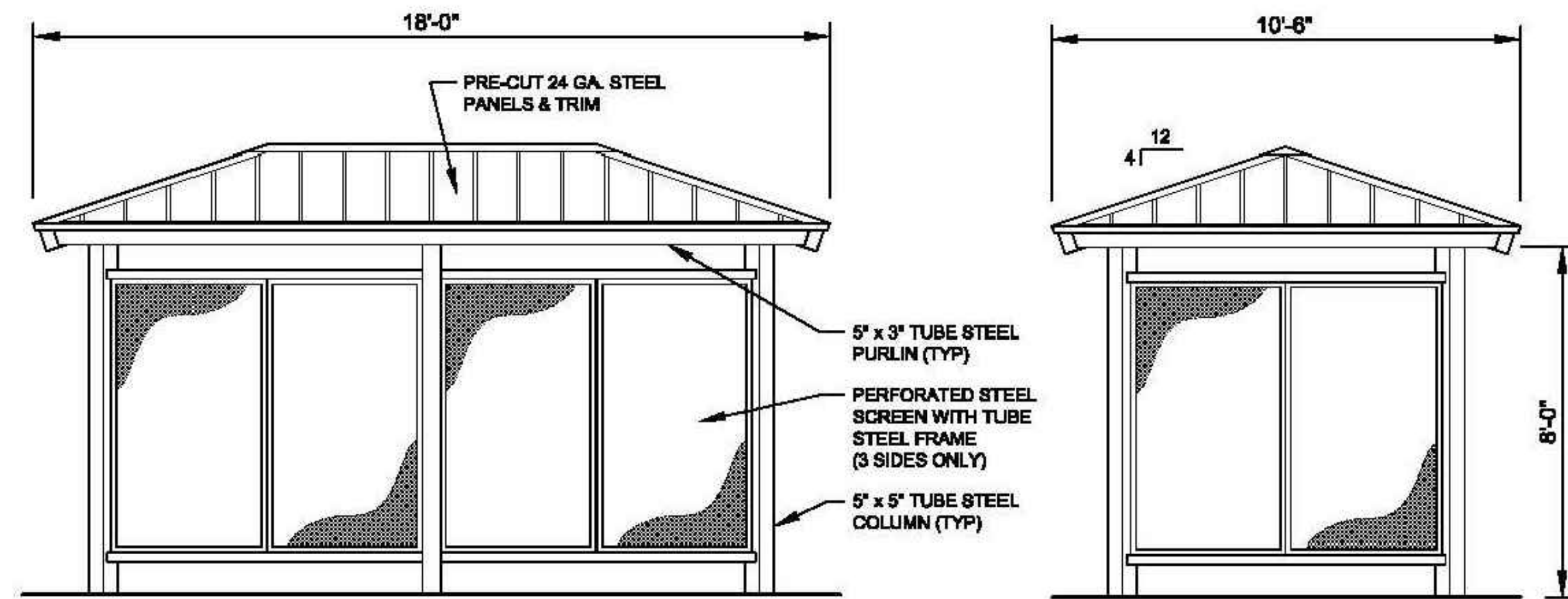


2 BVCL DOUBLE SWING GATE
SCALE: N.T.S.



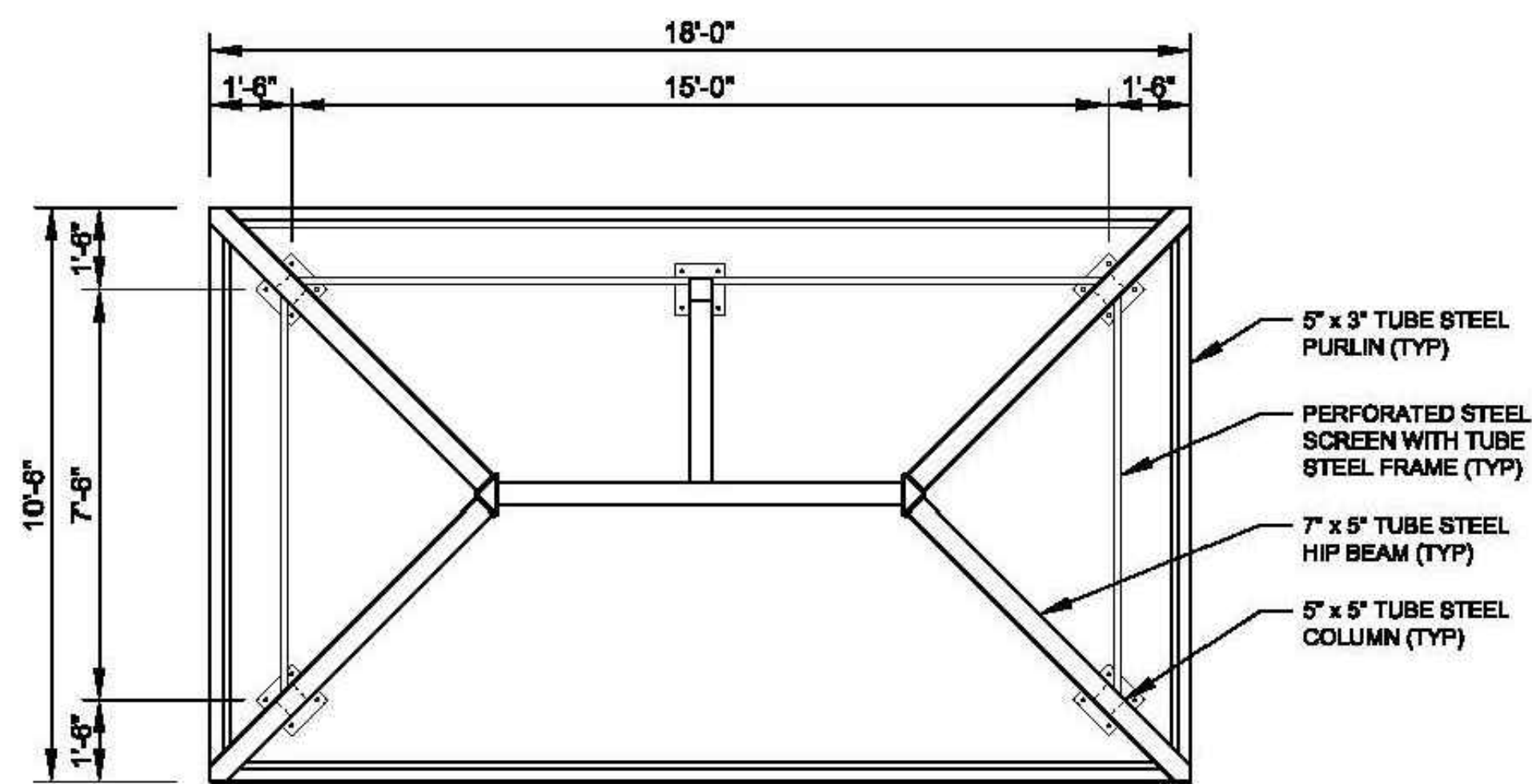
4 BALL NETTING INTEGRAL WITH 4' HT. BVCL FENCE, TYP.
SCALE: N.T.S.

designed by:	drawn by:	approved by:	scale:
date:	project no.:	file name:	L7.01-Drainage Details.dwg
West & Sampson CIVIL / ENVIRONMENTAL ENGINEERS Portsmouth, NH Manchester, NH Portland, Maine 427 Main Street, Suite 400, Worcester, MA (978) 977-0110 (800) 726-7766 www.westandsampson.com			
City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields 680 Peverly Hill Road Recreation Fields DETAILS			
drawing no. L2.01			
sheet: - of -			

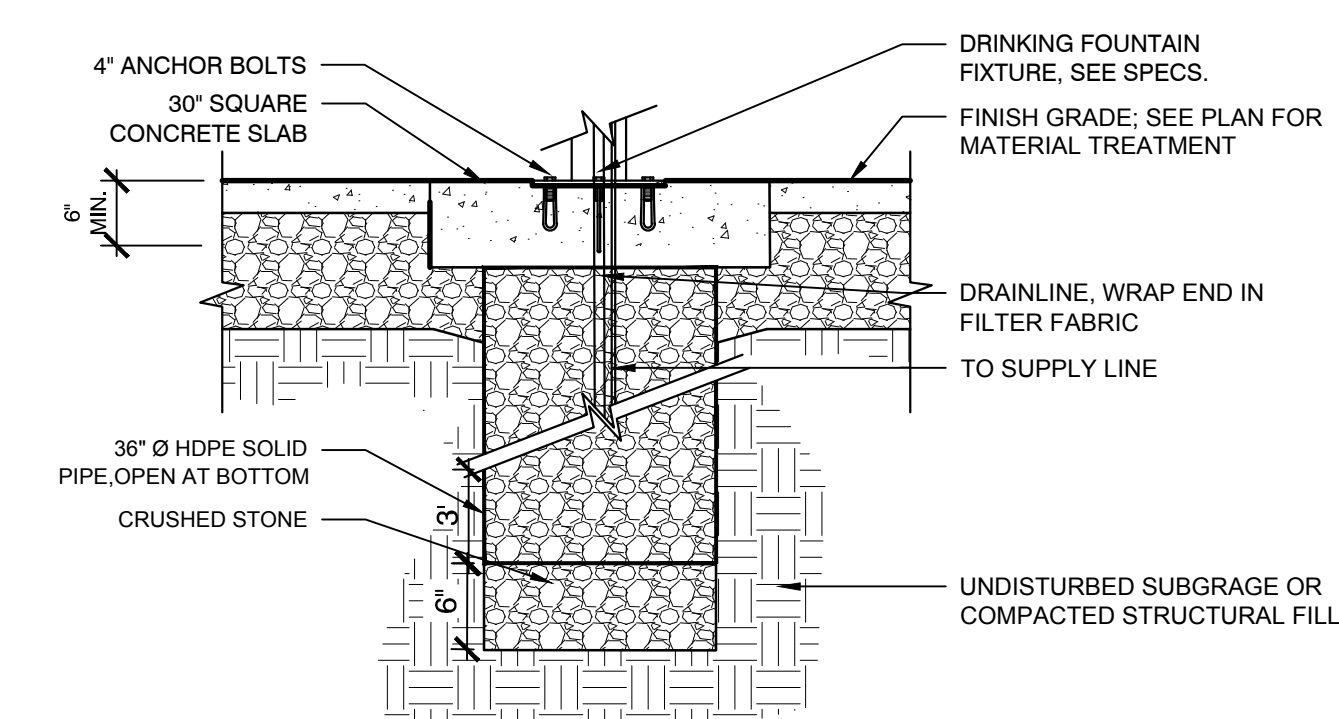
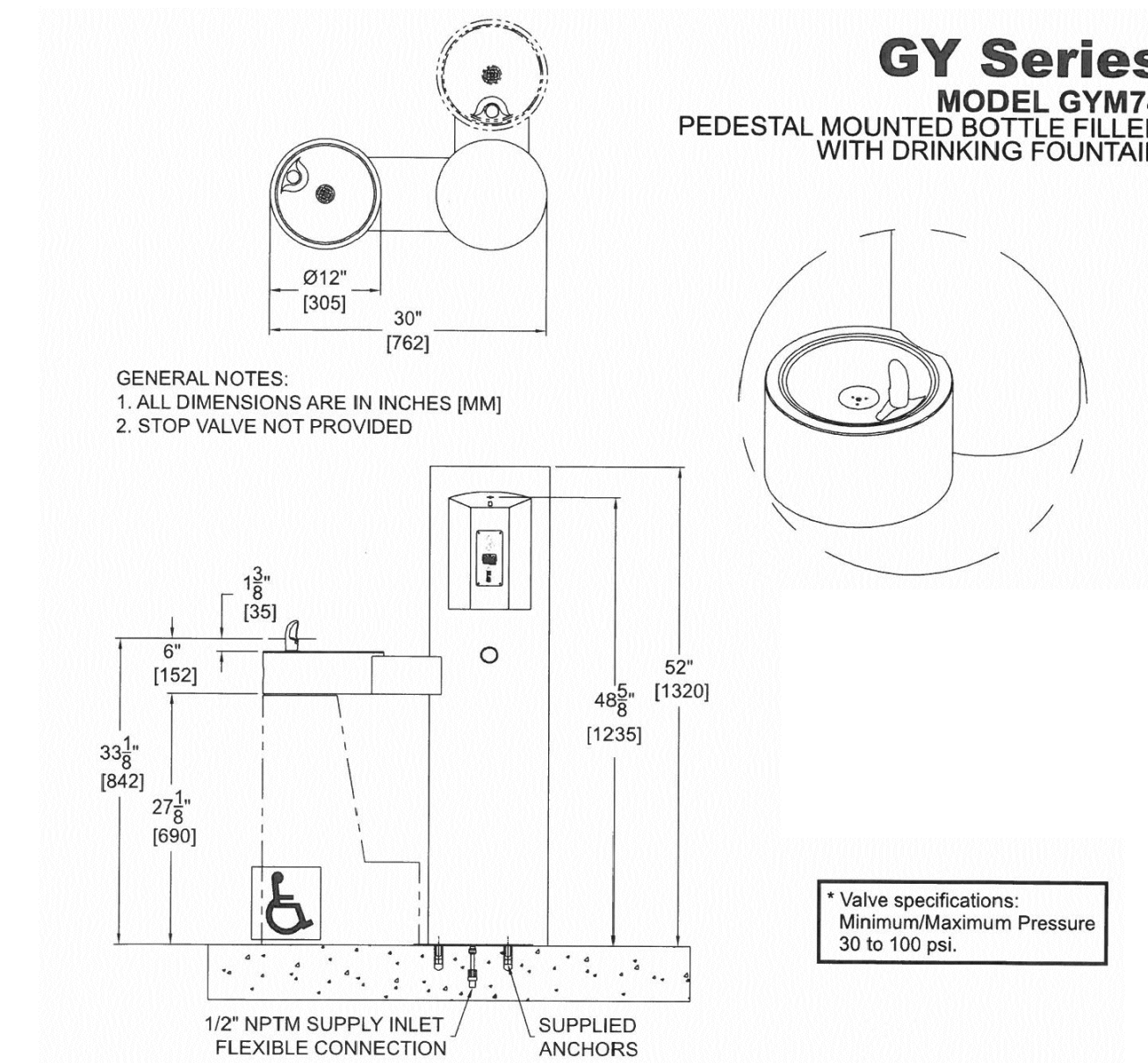


REAR ELEVATION
SCALE: NTS

SIDE ELEVATION
SCALE: NTS



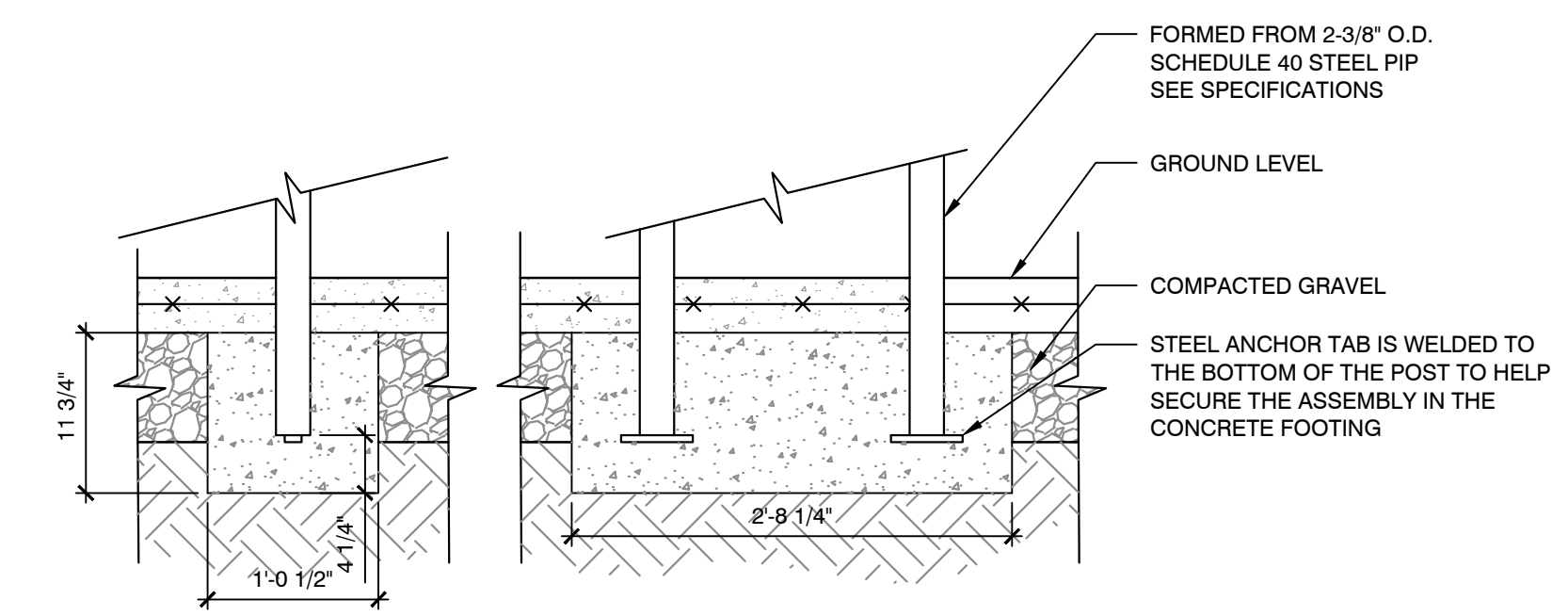
FRAMING PLAN
SCALE: NTS



4 WATER FOUNTAIN & FOOTING
SCALE: NTS

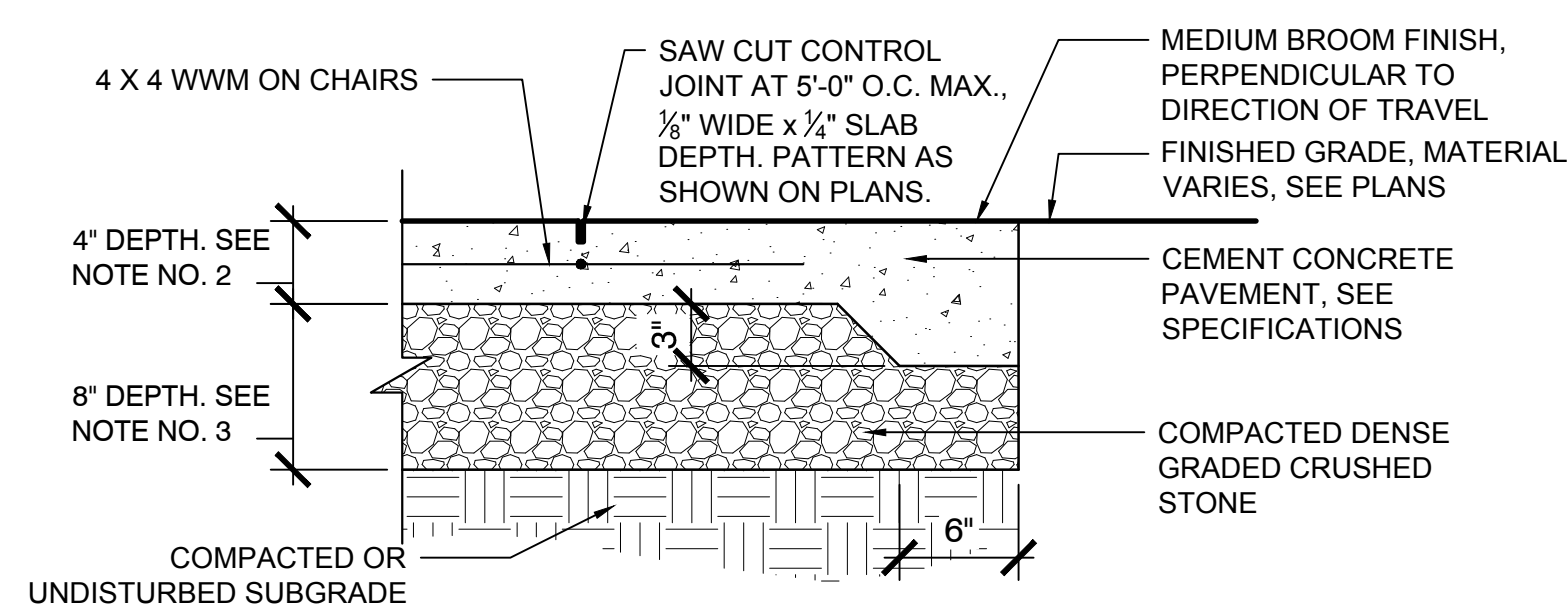
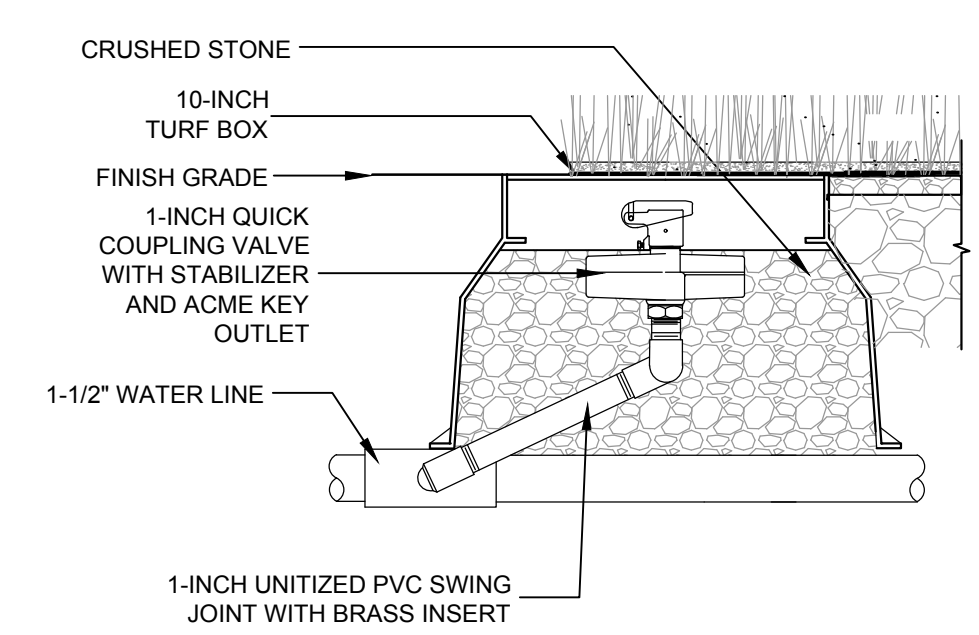
1 SHADE SHELTER W/ SCREENED WALLS FOR PORT-A-JOHN
SCALE: NTS

NOTE: GRAPHIC REPRESENTATION TO SHOW INTENT. REFER TO SPECIFICATIONS FOR SHELTER TYPE AND REQUIREMENTS.



2 BIKE RACK
SCALE: NTS

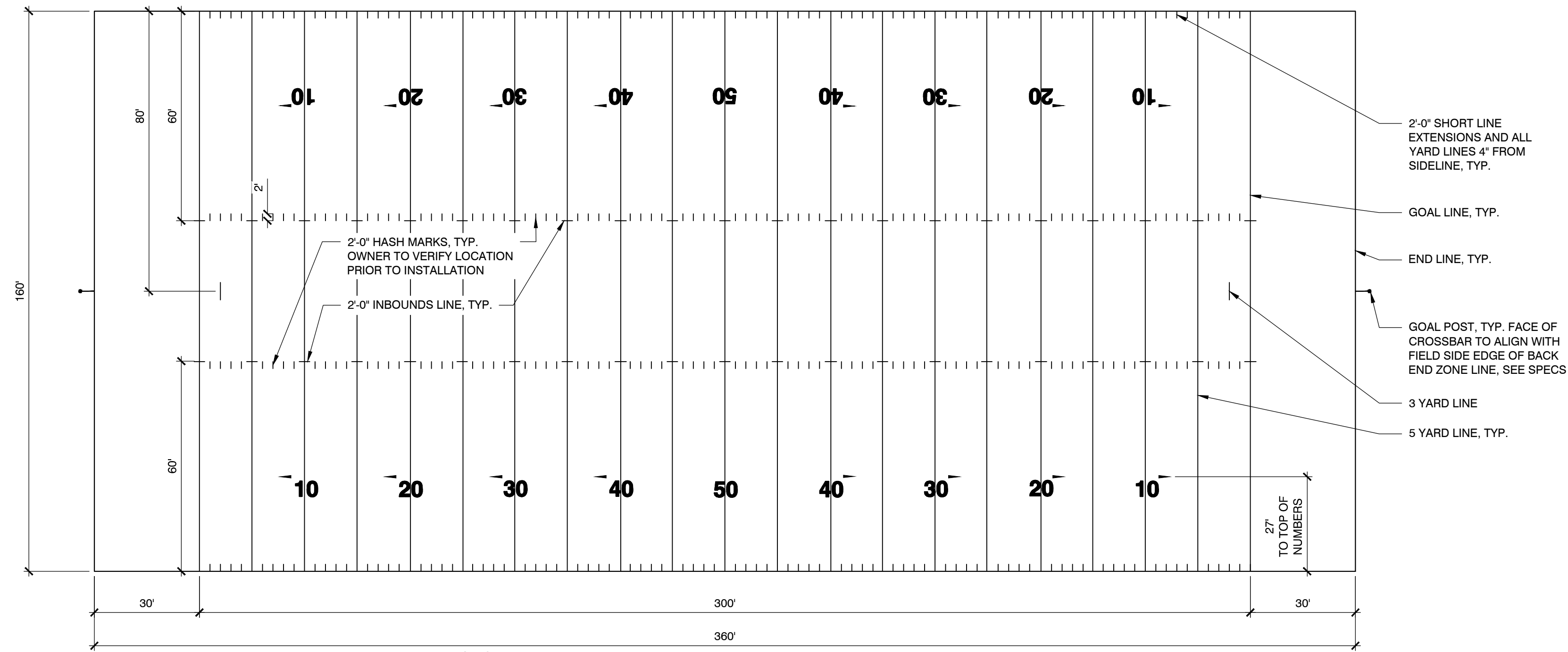
3 QUICK COUPLER HOSE CONNECTION, VALVE AND BOX
SCALE: NTS



- NOTE:
1. EXPANSION JOINT SPACING SHALL BE 30'-0" MAX. SEE DETAIL, THIS SHEET.
 2. NO REINF. @ 4" DEPTH PVMT. 6x6-W2.9xW2.9 WELDED WIRE FABRIC W/12" LAP @ 6" DEPTH PVMT.
 3. USE 8" GRAVEL BORROW UNDER 4" CEM. CONC. WALK PVMT. USE 12" GRAVEL BORROW UNDER 6" CEM. CONC. PADS/SLABS.
 4. DOWELS SHALL BE USED AT EXPANSION JOINTS AND WHERE NEW CONCRETE PAVEMENT ABUTS EXISTING CONCRETE PAVING TO REMAIN AND ANY PROPOSED CONCRETE RAMPS AND STAIRS.
 5. FOR SIDEWALK PAVEMENT, USE BROOM FINISH PERPENDICULAR TO ROUTE OF TRAVEL.

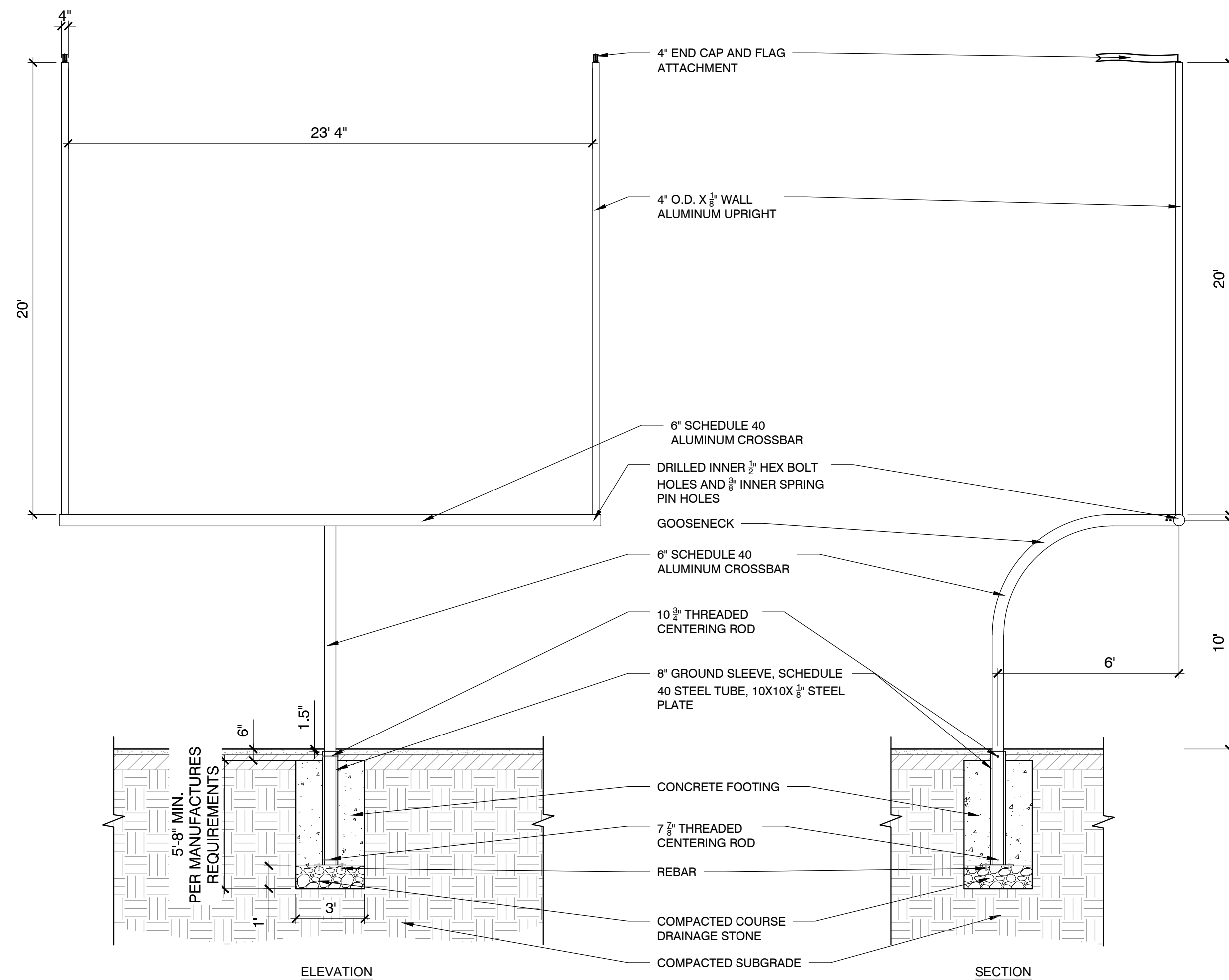
5 CEMENT CONCRETE PAVEMENT
SCALE: NTS

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<p>designed by:</p>	<p>drawn by:</p>	<p>approved by:</p>	<p>scale:</p>	<p>no.</p>
<p>date:</p>	<p>project no:</p>	<p>file name:</p>	<p>L7.01-Drainage Details.dwg</p>	<p>no.</p>
<p>City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields 680 Peverly Hill Road Recreation Fields DETAILS</p>				
<p>drawing no. L2.02</p>				
<p>sheet: - of -</p>				

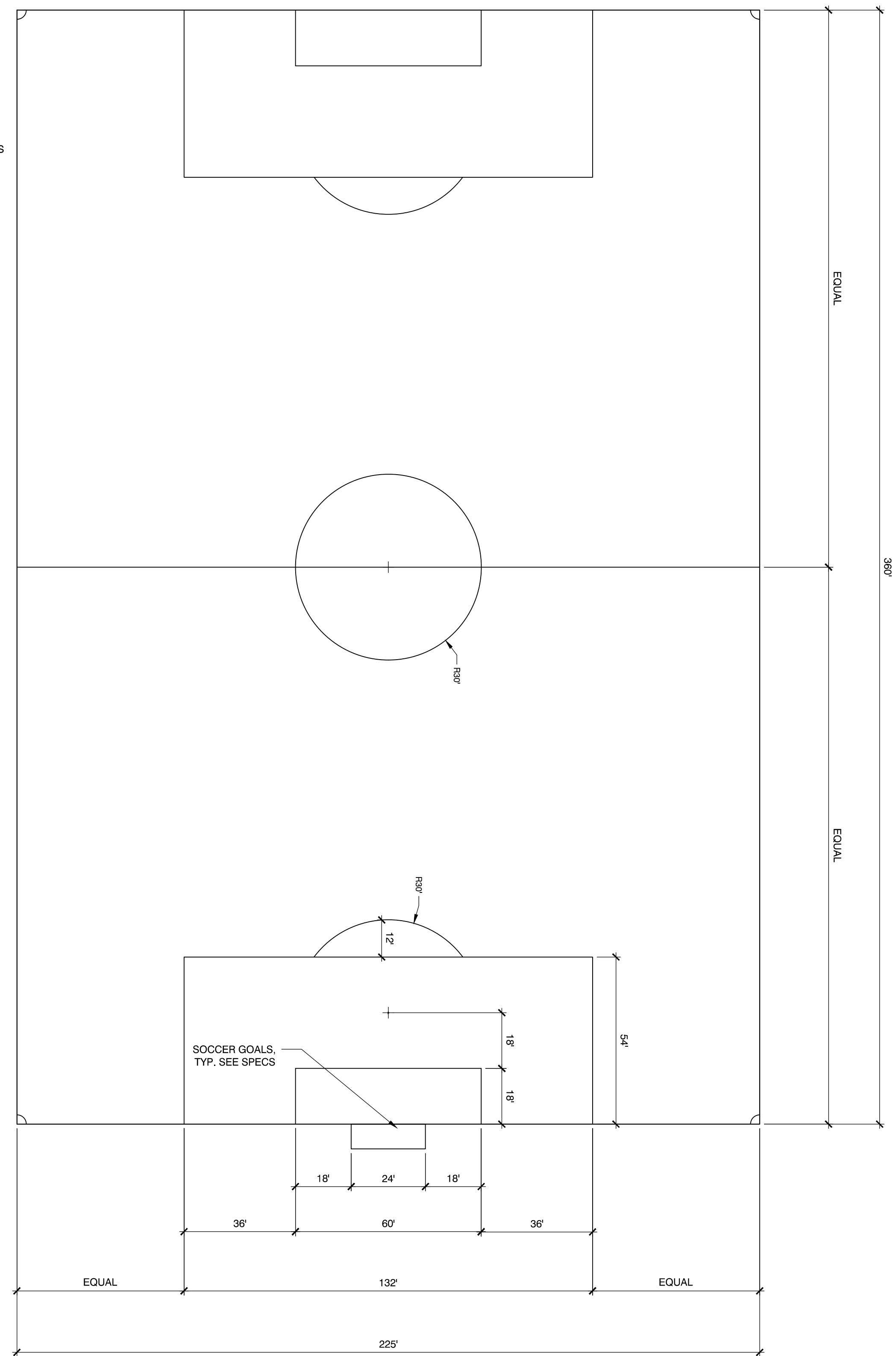


- NOTES:
1. ALL FOOTBALL FIELD LINES ARE 4" WIDE AND WHITE UNLESS OTHERWISE NOTED.
 2. END LINES AND SIDELINES ARE CONSIDERED OUT-OF-BOUNDS.
 3. TAKE MEASUREMENT FROM CENTER OF 50 YD LINE TO CENTER OF 5 YARD LINES, AND FROM CENTER OF 50 YARD LINE TO INSIDE OF GOAL GOAL LINES, SIDE LINES, AND END LINES.
 4. ALL MARKINGS SHALL BE STITCHED, COLOR WHITE.

1 FOOTBALL FIELD LAYOUT
SCALE: NTS

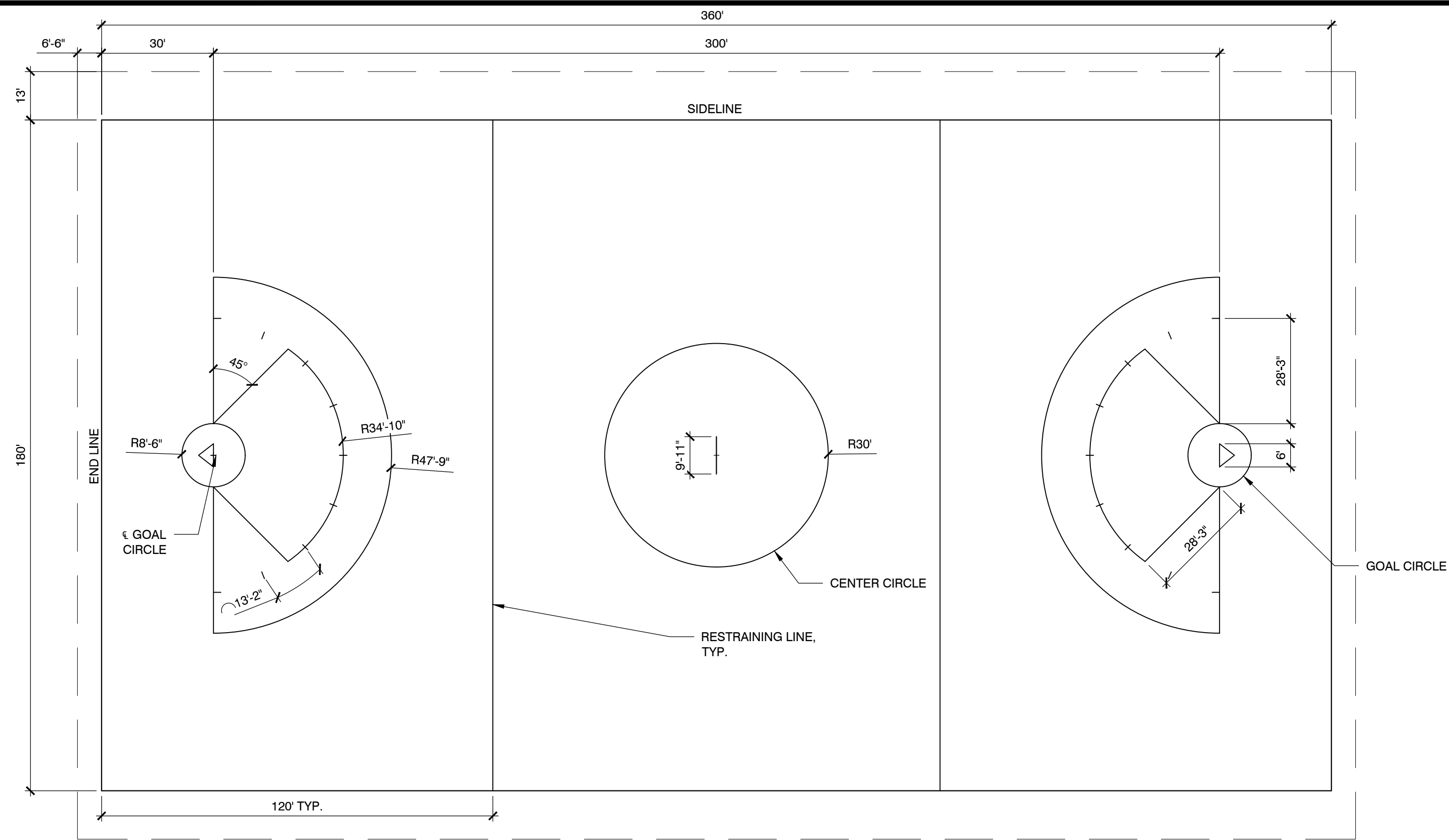


2 FOOTBALL GOAL POST
SCALE: NTS



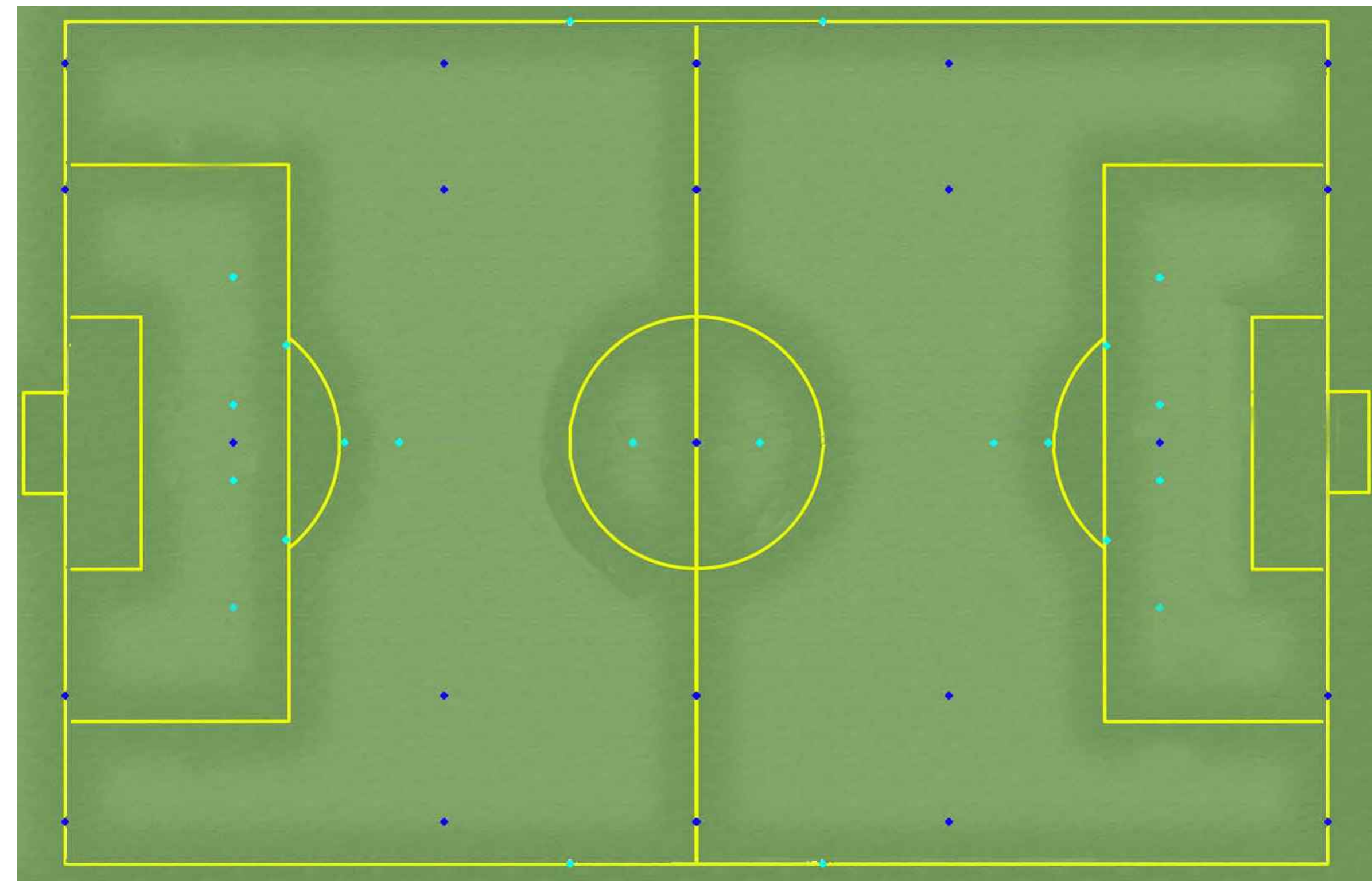
3 SOCCER FIELD LAYOUT
SCALE: NTS

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<p>date: -</p>	<p>project no: -</p>	<p>file name: L7.01-Drainage Details.dwg</p>
<p>City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields 680 Peverly Hill Road Recreation Fields DETAILS</p>		<p>drawing no. L2.03</p>
<p>sheet: - of -</p>	<p>revision</p>	<p>no. date by</p>

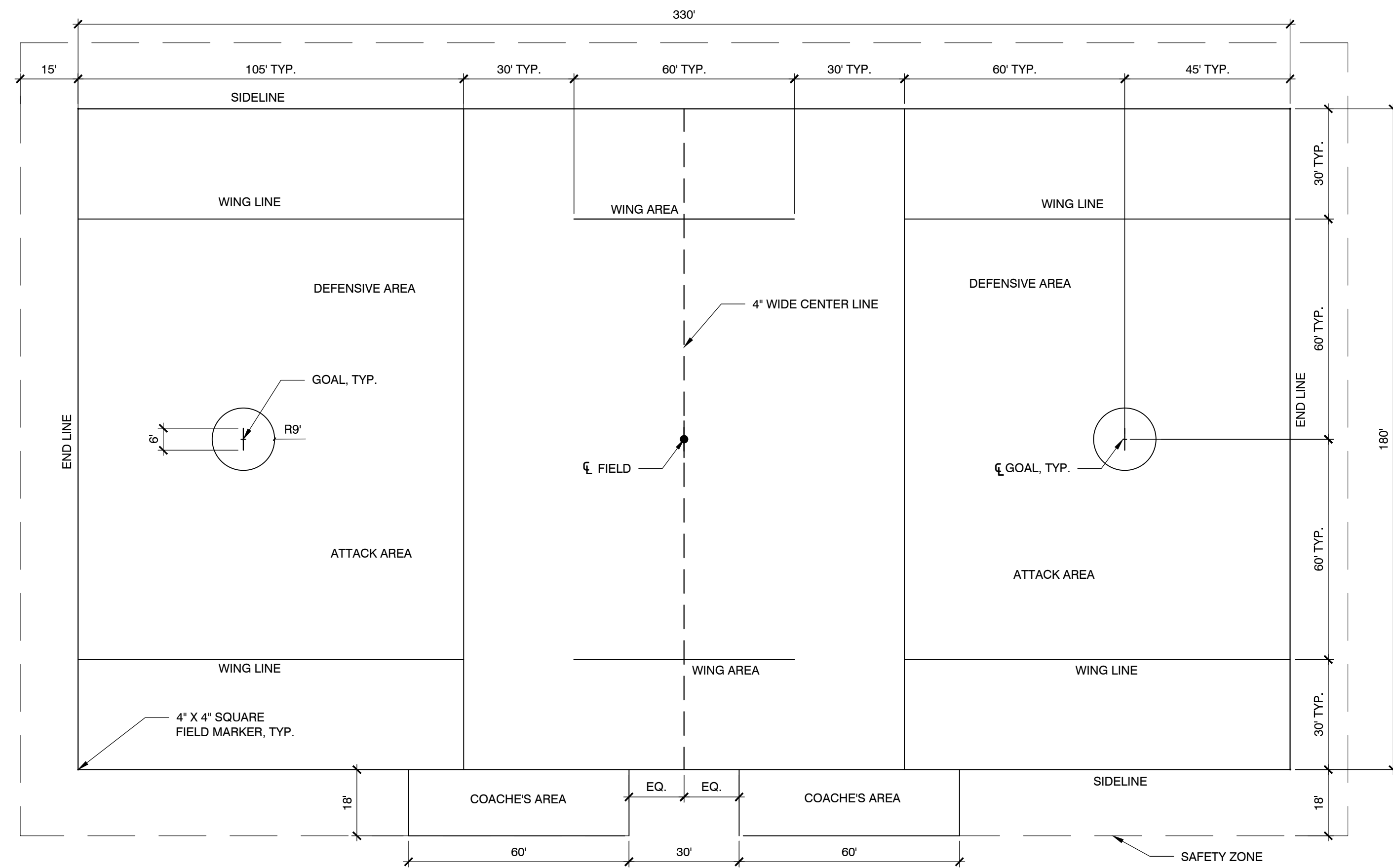


1 WOMEN'S LACROSSE FIELD LAYOUT
SCALE: NTS

NOTE:
 1. END LINES AND SIDELINES ARE CONSIDERED OUT-OF-BOUNDS.
 2. ALL FIELD BOUNDARY/LIMIT DIMENSIONS ARE TO THE INSIDE EDGE (FIELD SIDE) OF END LINES OR SIDELINES ACCORDINGLY.
 3. LAYOUT FOR CONTRACTOR REFERENCE ONLY. CONTRACTOR SHALL ONLY INSTALL TICK MARKS FOR FUTURE PAINTING OF WOMEN'S LACROSSE FIELD LINES TO BE DONE BY OWNER.



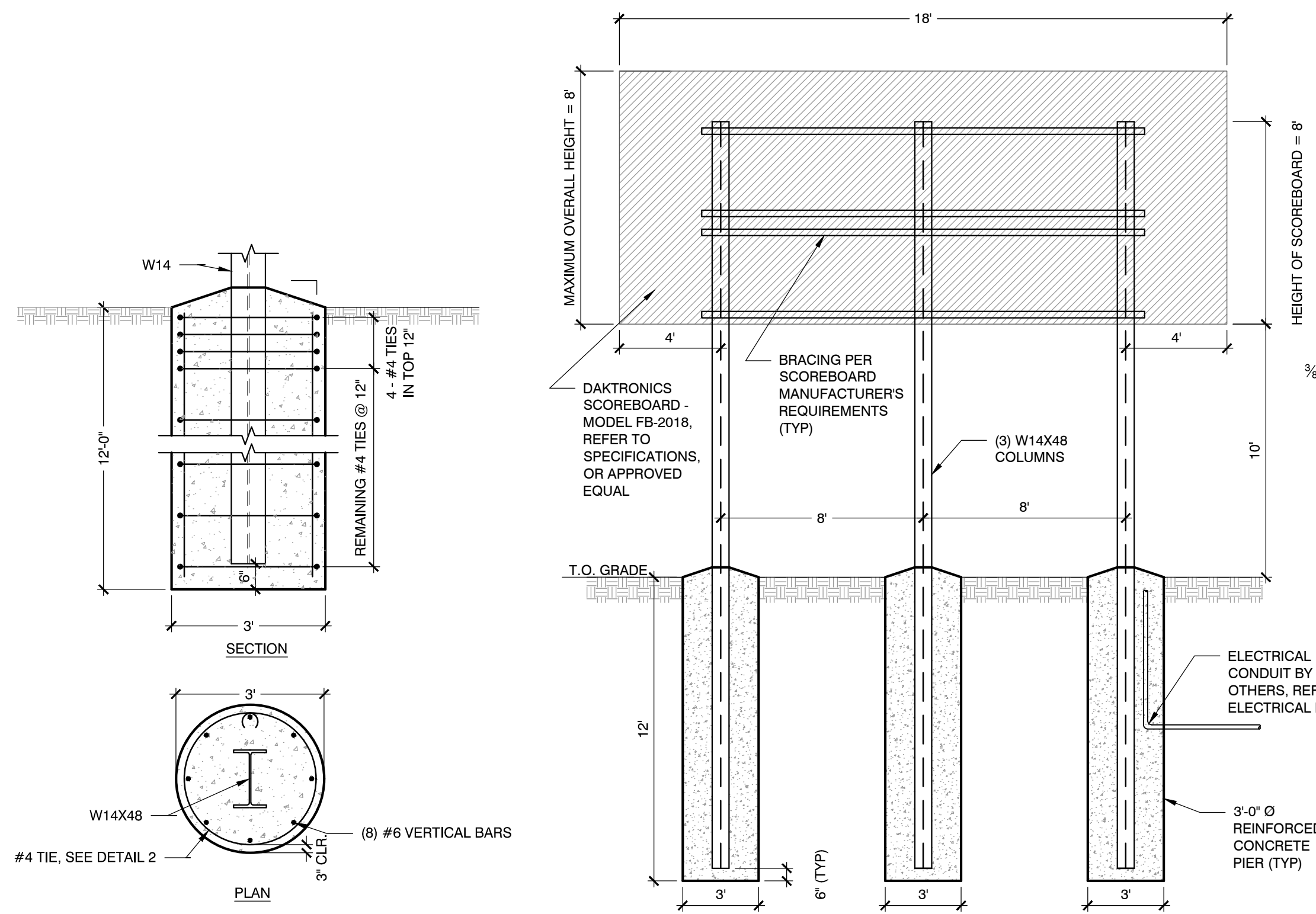
3 WOMEN'S AND MEN'S LACROSSE FIELD TICK MARK LAYOUT
SCALE: NTS



2 MEN'S LACROSSE FIELD LAYOUT
SCALE: NTS

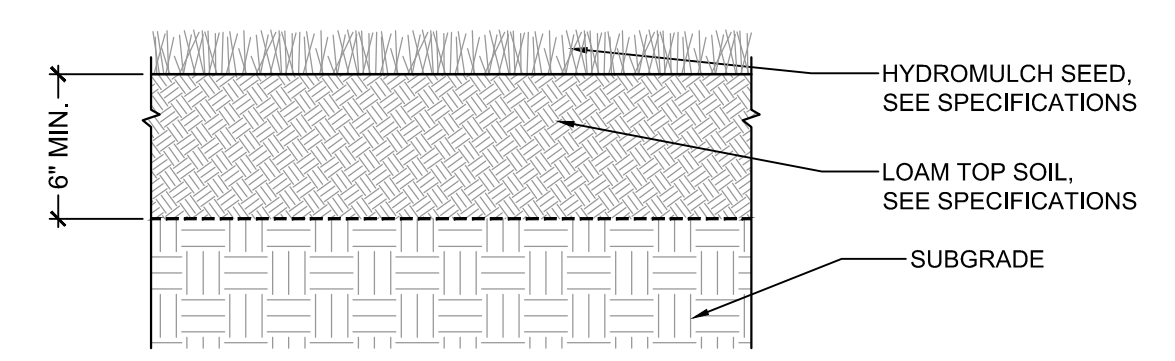
NOTE:
 1. END LINES AND SIDELINES ARE ALL CONSIDERED OUT-OF-BOUNDS.
 2. ALL FIELD BOUNDARY/LIMIT DIMENSIONS ARE TO THE INSIDE EDGE (FIELD SIDE) OF END LINES OR SIDELINES ACCORDINGLY.
 3. LAYOUT FOR CONTRACTOR REFERENCE ONLY. CONTRACTOR SHALL ONLY INSTALL TICK MARKS FOR FUTURE PAINTING OF MEN'S LACROSSE FIELD LINES TO BE DONE BY OWNER.

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date: - project no: - file name: L2.04-Drainage Details.dwg scale: -	designed by: - drawn by: - approved by: -	no. - revision - date - by -

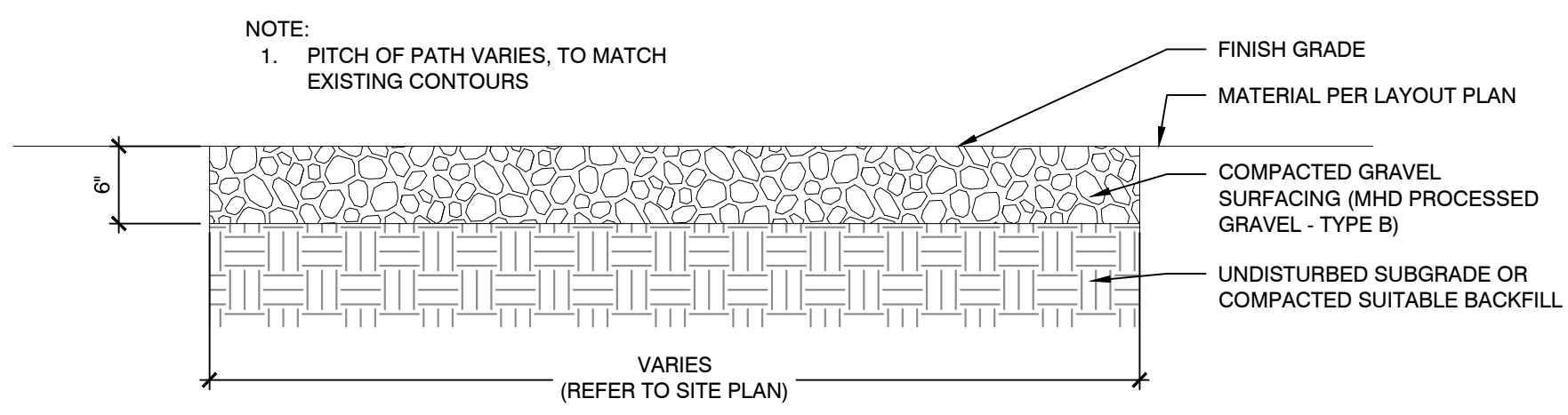


NOTE:
1. FOOTING LAYOUT AND DIMENSIONS ARE SUBJECT TO CHANGE BASED UPON OWNERS SPECIFIC SCOREBOARD.

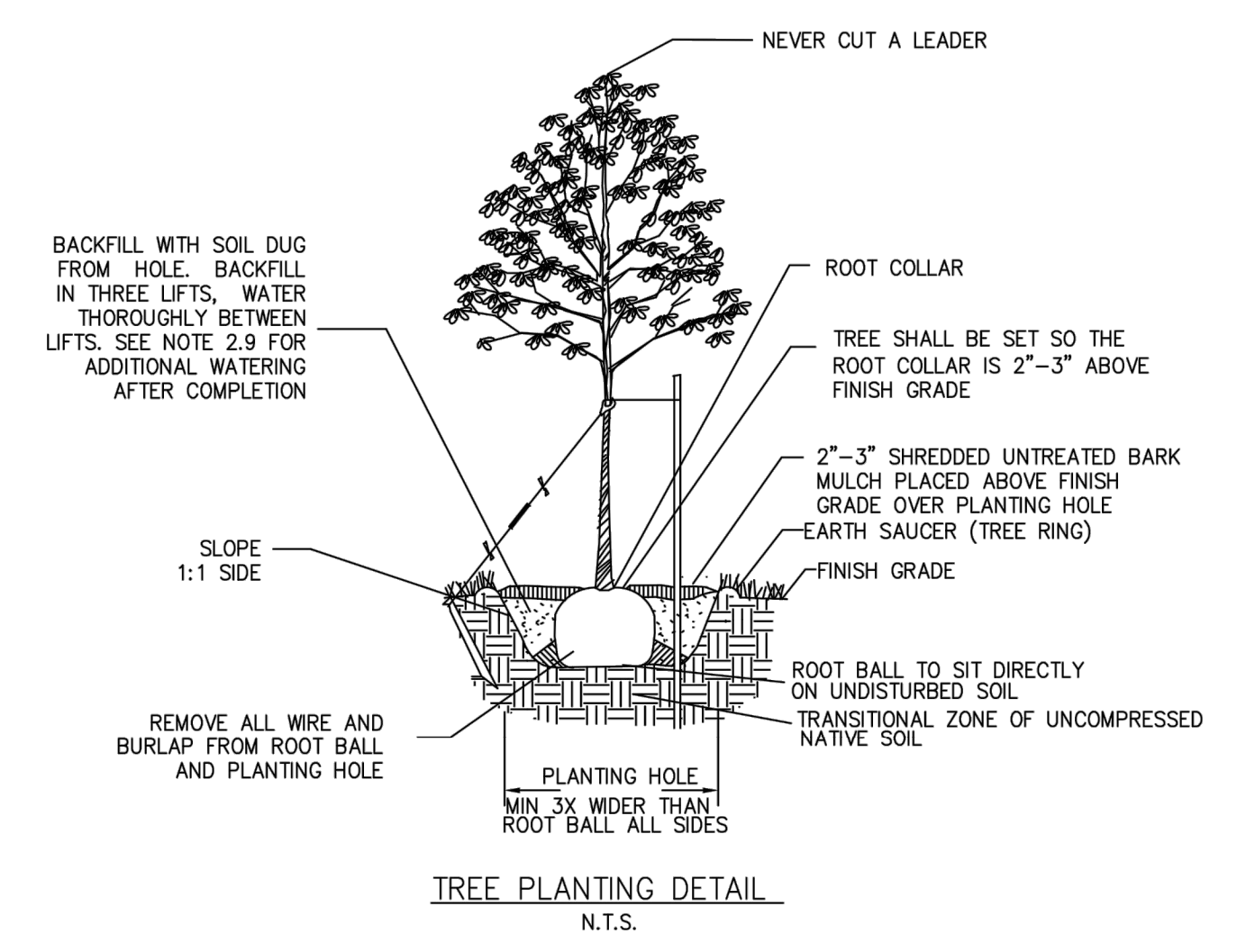
1 SCOREBOARD & FOOTING
SCALE: NTS



2 LOAM AND SEED
SCALE: NTS



3 GRAVEL PATHWAY
SCALE: NTS



- PART 1 - GENERAL:**
- THE BASE OF THE CITY OF PORTSMOUTH TREE PLANTING REQUIREMENTS IS THE ANSI A300 PART 6 STANDARD PRACTICES FOR PLANTING AND TRANSPLANTING. ANSI A300 PART 6 LAYS OUT TERMS AND BASIC STANDARDS AS SET FORTH BY INDUSTRY BUT IT IS NOT THE "END ALL" FOR THE CITY OF PORTSMOUTH. THE FOLLOWING ARE THE CITY OF PORTSMOUTH, NH TREE PLANTING REQUIREMENTS THAT ARE IN ADDITION TO OR THAT GO BEYOND THE ANSI A300 PART 6.
- PART 2 - EXECUTION:**
- ALL PLANTING HOLES SHALL BE DUG BY HAND - NO MACHINES. THE ONLY EXCEPTIONS ARE NEW CONSTRUCTION WHERE NEW PLANTING PITS, PLANTING BEDS WITH GRANITE CURBING, AND PLANTING SITES WITH SILVA CELLS ARE BEING CREATED. IF A MACHINE IS USED TO DIG IN ANY OF THESE SITUATIONS AND PLANTING DEPTH NEEDS TO BE RAISED THE MATERIAL IN THE BOTTOM OF THE PLANTING HOLE MUST BE FIRMED WITH MACHINE TO PREVENT SINKING OF THE ROOT BALL.
 - ALL WIRE AND BURLAP SHALL BE REMOVED FROM THE ROOT BALL AND PLANTING HOLE.
 - THE ROOT BALL OF THE TREE SHALL BE WORKED SO THAT THE ROOT COLLAR OF THE TREE IS VISIBLE AND NO GIRDLING ROOTS ARE PRESENT.
 - THE ROOT COLLAR OF THE TREE SHALL BE 2"-3" ABOVE GRADE OF PLANTING HOLE FOR FINISHING DEPTH.
 - ALL PLANTINGS SHALL BE BACKFILLED WITH SOIL FROM THE SITE AND AMENDED NO MORE THAN 20% WITH ORGANIC COMPOST. THE ONLY EXCEPTIONS ARE NEW CONSTRUCTION WHERE ENGINEERED SOIL IS BEING USED IN CONJUNCTION WITH SILVA CELLS AND WHERE NEW PLANTING BEDS ARE BEING CREATED.
 - ALL PLANTINGS SHALL BE BACKFILLED IN THREE LIFTS AND ALL LIFTS SHALL BE WATERED SO THE PLANTING WILL BE SET AND FREE OF AIR POCKETS - NO EXCEPTIONS.
 - AN EARTH BERM SHALL BE PLACED AROUND THE PERIMETER OF THE PLANTING HOLE EXCEPT WHERE CURBED PLANTING BEDS OR PITS ARE BEING USED.
 - 2"-3" OF MULCH SHALL BE PLACED OVER THE PLANTING AREA.
 - AT THE TIME OF PLANTING IS COMPLETE THE PLANTING SHALL RECEIVE ADDITIONAL WATER TO ENSURE COMPLETE HYDRATION OF THE ROOTS, BACKFILL MATERIAL AND MULCH LAYER.
 - STAKES AND GUYS SHALL BE USED WHERE APPROPRIATE AND/OR NECESSARY. GUY MATERIAL SHALL BE NON-DAMAGING TO THE TREE.
 - ALL PLANTING STOCK SHALL BE SPECIMEN QUALITY, FREE OF DEFECTS, AND DISEASE OR INJURY. THE CITY OF PORTSMOUTH, NH RESERVES THE RIGHT TO REFUSE/REJECT ANY PLANT MATERIAL OR PLANTING ACTION THAT FAILS TO MEET THE STANDARDS SET FORTH IN THE ANSI A300 PART 6 STANDARD PRACTICES FOR PLANTING AND TRANSPORTATION AND/OR THE CITY OF PORTSMOUTH, NH PLANTING REQUIREMENTS.

4 TREE PLANTING- CITY STANDARD
SCALE: NTS

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City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields 680 Peverly Hill Road Recreation Fields DETAILS		drawing no. L2.05 sheet: - of -

GENERAL ELECTRICAL NOTES :

- DRAWINGS ARE DIAGRAMMATIC ONLY. THE EXACT LOCATION, MOUNTING HEIGHTS, SIZE OF EQUIPMENT AND ROUTING OF RACEWAYS SHALL BE COORDINATED AND DETERMINED IN THE FIELD.
- WORK SHALL CONFORM TO THE NEW HAMPSHIRE ELECTRICAL CODE AND NEW HAMPSHIRE BUILDING CODE AND REQUIREMENTS OF LOCAL AUTHORITIES HAVING JURISDICTION.
- THE WORD "CONTRACTOR" AS USED IN THE "ELECTRICAL WORK" SHALL MEAN THE ELECTRICAL SUBCONTRACTOR.
- CONTRACTOR SHALL PAY FOR ALL PERMITS, INSURANCE AND TESTS, AND SHALL PROVIDE LABOR AND MATERIAL TO COMPLETE THE ELECTRICAL WORK SHOWN.
- CONTRACTOR SHALL PAY ELECTRIC UTILITY COMPANY BACKCHARGES AND PROVIDE COORDINATION WITH SAME.
- EXCEPT AS OTHERWISE NOTED, THE ELECTRICAL WORK SHALL INCLUDE PANELBOARDS, CIRCUIT BREAKERS, FEEDERS, WIRING, RACEWAYS, LIGHTING FIXTURES, DEVICES, SAFETY SWITCHES, MOUNTING AND WIRING, TRANSFORMERS AND CONNECTIONS NECESSARY TO OPERATE ALL EQUIPMENT.
- THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY LIGHTING AND POWER AND PAY ALL ENERGY CHARGES.
- DURING CONSTRUCTION, THE ELECTRICAL CONTRACTOR SHALL KEEP HIS PORTION OF THE WORK NEAT, CLEAN AND ORDERLY.
- ALL SYSTEMS SHALL BE TESTED FOR SHORT CIRCUIT AND GROUNDS PRIOR TO ENERGIZING AND ANY DEFECTS SHALL BE CORRECTED.
- ALL CUTTING AND PATCHING REQUIRED FOR ELECTRICAL WORK SHALL BE INCLUDED AS PART OF THIS SECTION.
- COMPLETE SHOP DRAWINGS SHALL BE SUBMITTED FOR ELECTRICAL EQUIPMENT. WHERE SPECIFIED, ELECTRICAL EQUIPMENT IS SUBSTITUTED. THE ELECTRICAL CONTRACTOR SHALL SUBMIT COMPLETE SPECIFICATIONS ON THE SUBSTITUTE AS WELL AS THE ITEM ORIGINALLY SPECIFIED.
- MATERIALS SHALL BE SPECIFICATION GRADE AND UL LISTED.
- WHERE MATERIAL IS CALLED OUT IN THE LEGEND BY MANUFACTURER, TYPE OR CATALOG NUMBER, SUCH DESIGNATIONS ARE TO ESTABLISH STANDARDS OR DESIRED QUALITY. ACCEPTANCE OR REJECTIONS OF PROPOSED SUBSTITUTIONS SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER.
- WORK SHALL BE COORDINATED WITH THAT OF OTHER TRADES TO ELIMINATE INTERFERENCES.
- ELECTRICAL WORK SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF WHICH SYSTEM IS PUT INTO SERVICE UNLESS OTHERWISE SPECIFIED.
- WORK SHALL BE GROUNDED IN ACCORDANCE WITH CODE REQUIREMENTS. COMPLETE EQUIPMENT (INSULATED GREEN WIRE) GROUNDING SYSTEM SHALL BE INSTALLED.
- WIRE SHALL BE TYPE "THHN/THWN" INSULATED FOR 600 VOLTS, MINIMUM SIZE #12 AWG COPPER UNLESS SPECIFICALLY NOTED OTHERWISE.
- WIRING METHODS:
 - EXTERIOR BELOW GRADE DIRECT BURIED WIRING SHALL BE IN SCHEDULE 80 PVC.
 - EXTERIOR BELOW GRADE CONCRETE ENCASED WIRING SHALL BE IN SCHEDULE 40 PVC
 - EXTERIOR ABOVE GROUND WIRING SHALL BE IN RIGID STEEL CONDUIT
 - INTERIOR WIRING SHALL BE IN RIGID STEEL CONDUIT.
- PANELBOARDS SHALL BE DEAD FRONT, THERMAL MAGNETIC BOLT-ON CIRCUIT BREAKER TYPE, DESIGNED FOR SURFACE MOUNTING AS INDICATED ON PLAN, AND HAVING CONNECTIONS TO 480/277 VOLT, 3-PHASE, 4-WIRE AND 120/208 VOLT, 3 PHASE, 4 WIRE SERVICE. ALL BUS BARS SHALL BE COPPER. CABINETS SHALL BE MADE OF CODE GAUGE GALVANIZED SHEET STEEL, WITH A MINIMUM OF 4 INCH GUTTERS, DOOR IN DOOR CONSTRUCTION, LOCKED DOOR, AND FLUSH HINGES. TYPEWRITTEN INDEX SHALL BE MOUNTED ON DOOR INSIDE TRANSPARENT COVER INDICATING LOAD SERVED. PANELS SHALL INCLUDE SEPARATE EQUIPMENT GROUND BUS.
- CONDUIT RUNS AS SHOWN ON THE PLANS ARE DIAGRAMMATIC ONLY; EXACT LOCATION AND METHOD OF SUPPORT SHALL BE DETERMINED IN THE FIELD.
- CONTRACTOR SHALL CHECK EXISTING CONDITIONS TO DETERMINE EXACT EXTENT OF WORK TO BE PERFORMED PRIOR TO BIDDING. DIMENSIONS RELEVANT TO EXISTING WORK SHALL BE VERIFIED IN THE FIELD.
- PROVIDE AS-BUILT "CADD" DRAWINGS AT THE COMPLETION OF THE PROJECT.

ABBREVIATIONS

A	AMPERE	NTS	NOT TO SCALE
AF	AMPERE FRAME	PNL	PANELBOARD
AC	ALTERNATING CURRENT	PH	PHASE
AT	AMPERE TRIP	FL	FLOOR
ATS	AUTOMATIC TRANSFER SWITCH	FLA	FULL LOAD AMPERE
BKR	BREAKER	GC	GENERAL CONTRACTOR
C	CONDUIT	GFI	GROUND FAULT INTERRUPTER
CKT	CIRCUIT	GND	GROUND
CB	CIRCUIT BREAKER	IG	ISOLATED GROUND
EC	ELECTRICAL CONTRACTOR	JB	JUNCTION BOX
EMT	ELECTRIC METALLIC TUBING	KB	KILOVOLT AMPERES
KW	KILOWATT	PVC	POLYVINYL CHLORIDE CONDUIT
MCB	MAIN CIRCUIT BREAKER	RSC	RIGID GALVANIZED STEEL CONDUIT
MLO	MAIN LUGS ONLY	XFMR	TRANSFORMER
MC	MECHANICAL CONTRACTOR	V	VOLTS
MTD	MOUNTED	W	WATTS OR WIRE
MTG	MOUNTING	WP	WEATHERPROOF
NMC	NON-METALLIC CONDUIT		
NA	NOT APPLICABLE		
NIC	NOT IN CONTRACT		

ELECTRICAL SYMBOL LIST

RECEPTACLES

- DUPLEX CONVENIENCE OUTLET RATED 20A, 125V, U-SLOT GROUNDED TYPE. ALL OTHER MOUNTING HEIGHTS SHALL BE AS NOTED ADJACENT TO THE SYMBOL. REFER TO RECEPTACLE ABBREVIATIONS FOR SPECIAL PURPOSE RECEPTACLES
- DUPLEX RECEPTACLE WITH INTERGRAL GROUND FAULT INTERRUPTER

RACEWAY AND WIRING

- HOMERUN TO PANELBOARD, NUMBER OF SLASH MARKS INDICATES NUMBER OF #12 AWG CONDUCTORS IN MINIMUM 3/4" CONDUIT. NO SLASH MARKS INDICATE 2#12 & 1#12G, 3/4" UNLESS NOTED OTHERWISE. -GREEN GROUND CONDUCTOR IS NOT INDICATED BUT SHALL BE INCLUDED IN EACH RACEWAY. SIZE SHALL BE #12 UNLESS INDICATED OTHERWISE. -HOMERUNS TO PANELBOARDS SHALL HAVE A MAXIMUM OF THREE PHASE CONDUCTORS (ONE PER PHASE) PLUS NEUTRAL AND GROUND CONDUCTOR IN EACH CONDUIT.
- NEW UNDERGROUND ELECTRIC LINE

MISCELLANEOUS

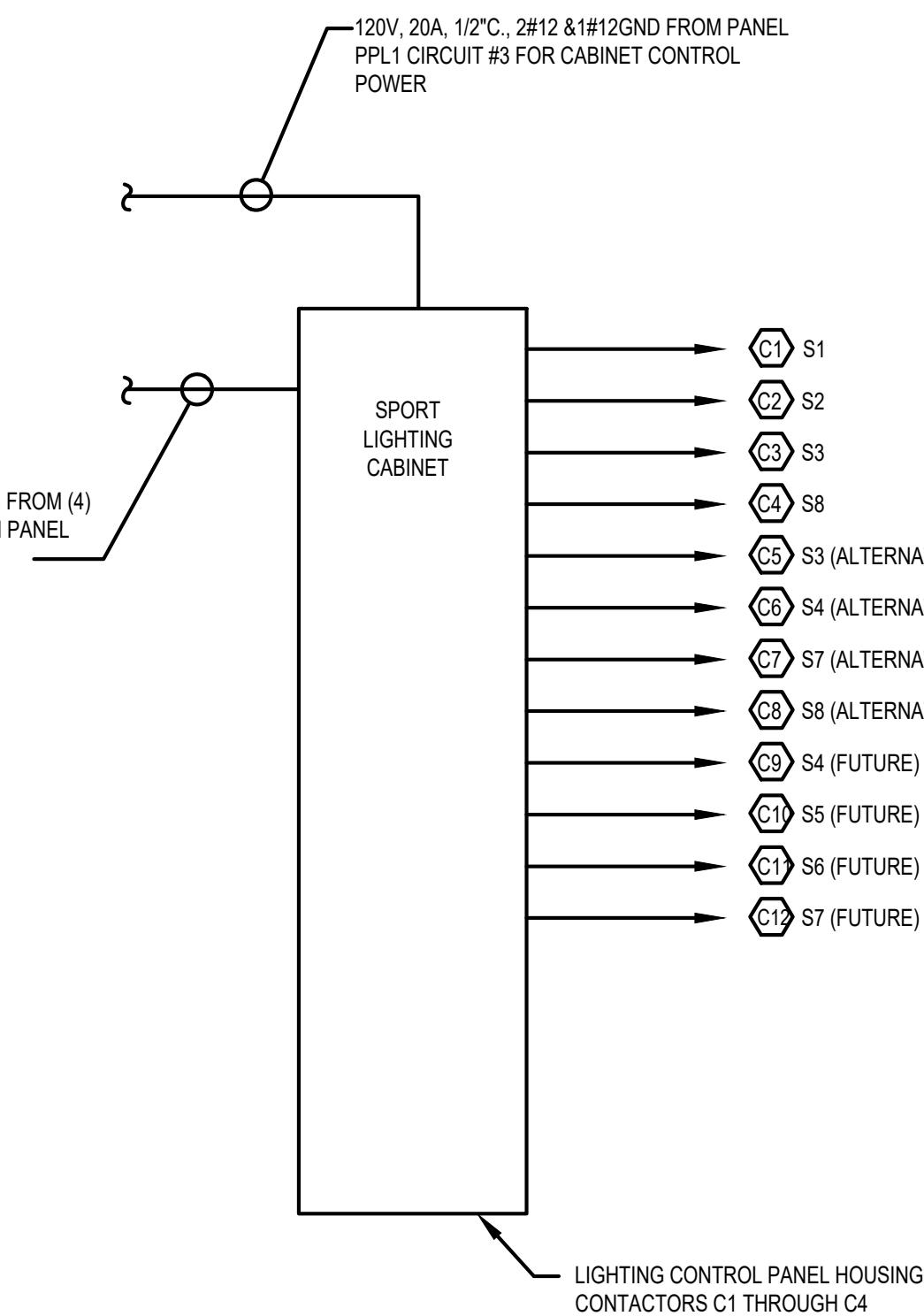
- JUNCTION BOX WITH BLANK COVERPLATE, SIZE AS REQUIRED BY N.E.C.
- CONTACTOR
- ELECTRIC UTILITY BILLING METER
- GROUND - SYSTEM AND/OR EQUIPMENT
- DIGITAL TIMER SWITCH

POWER DISTRIBUTION EQUIPMENT

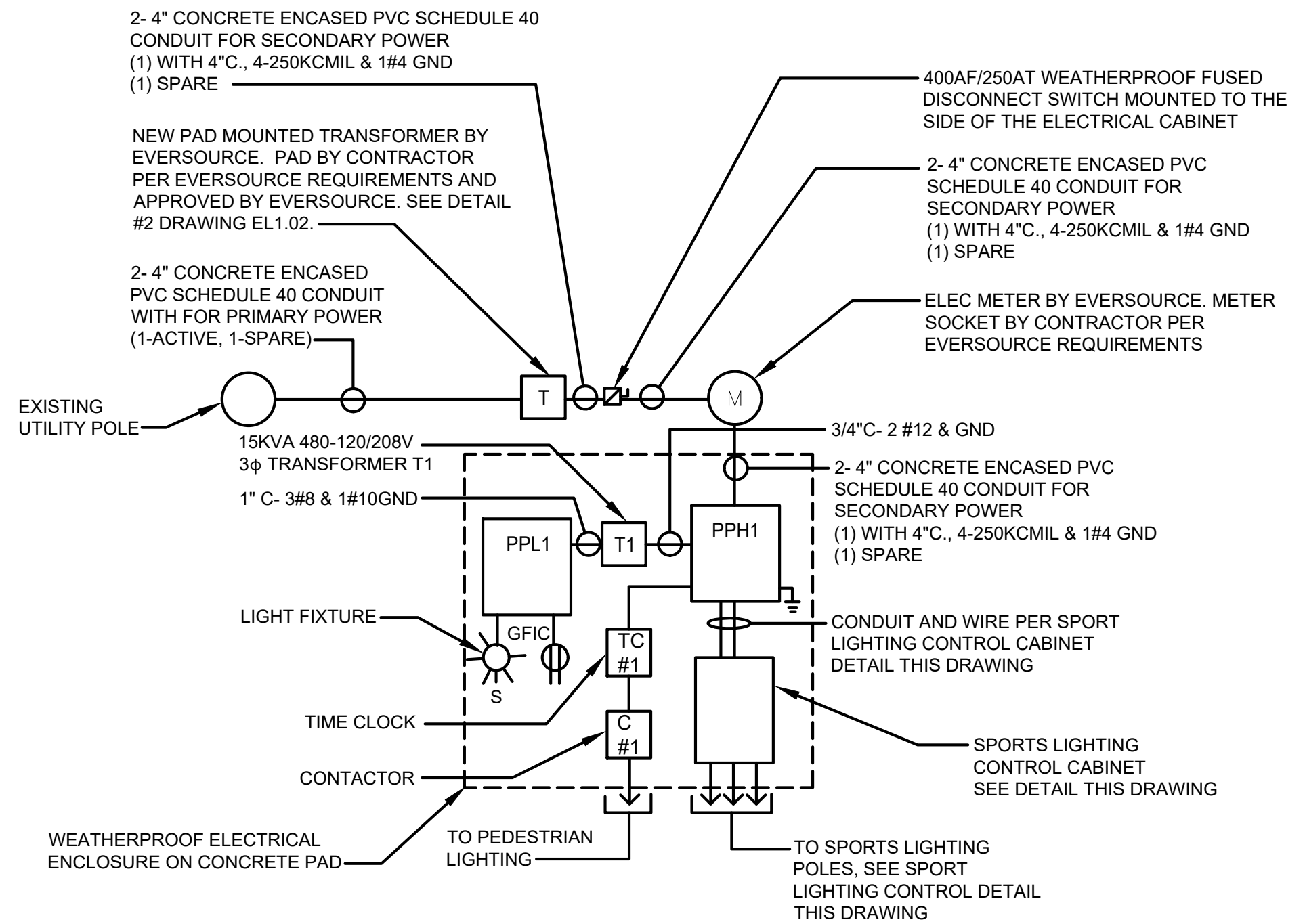
- HAND HOLE

LIGHTING

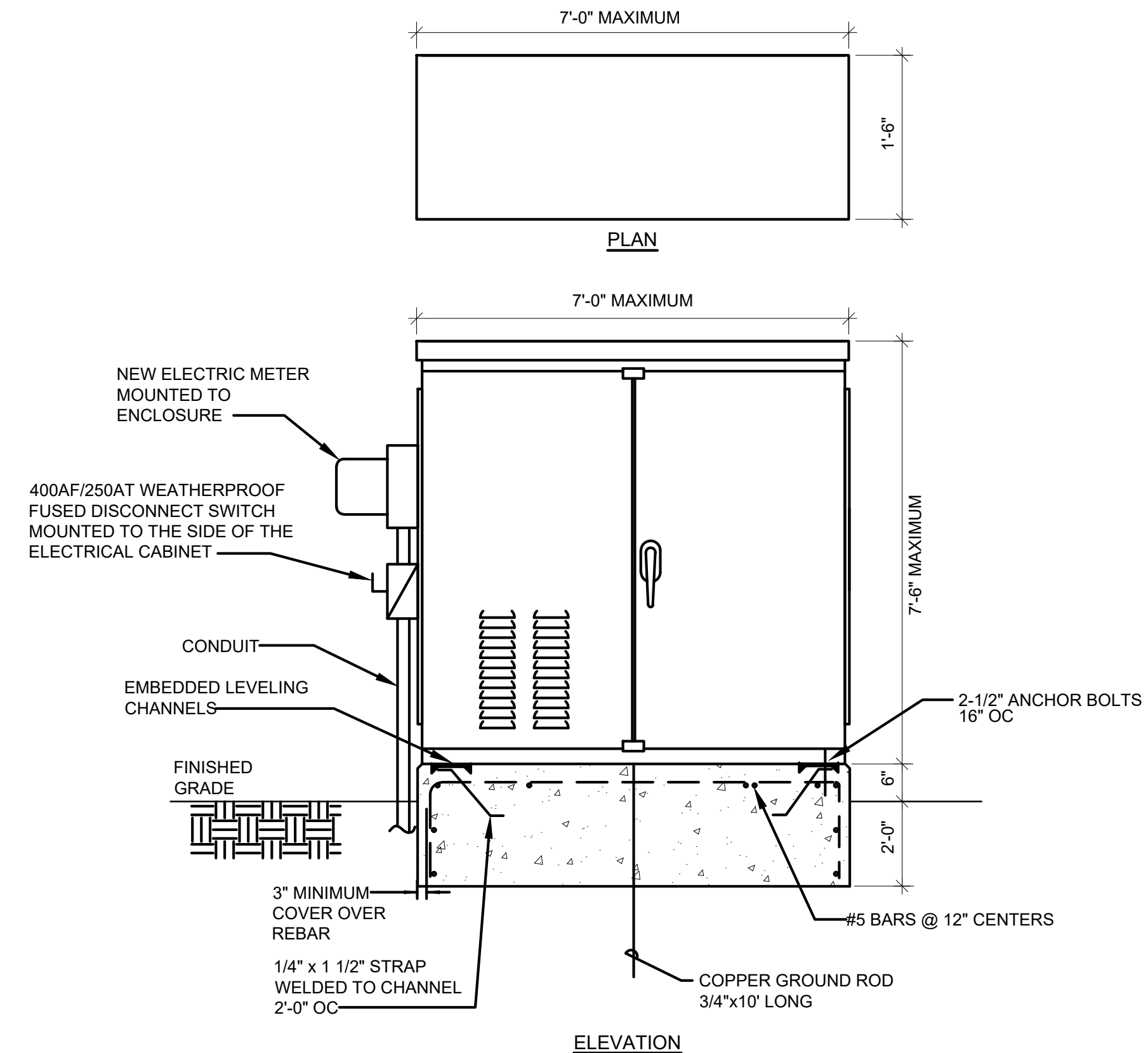
- SPORTS LIGHT POLE - 'F1' INDICATES POLE NUMBER 'C1' INDICATES CONTACTOR OR CONTRACTORS CONTROLLING POLE MOUNTED FIXTURES
- POLE MOUNTED LIGHT FIXTURE



FOOTBALL FIELD SPORTS LIGHTING CONTROL DIAGRAM
SCALE: N.T.S.



1 ONE LINE DIAGRAM
SCALE: N.T.S.



- NOTES:**
- FINAL CABINET SIZE SHALL BE DETERMINED BASED ON ACTUAL EQUIPMENT AND LAYOUT OF EQUIPMENT

PAD MOUNTED ELECTRICAL CABINET
SCALE: N.T.S.

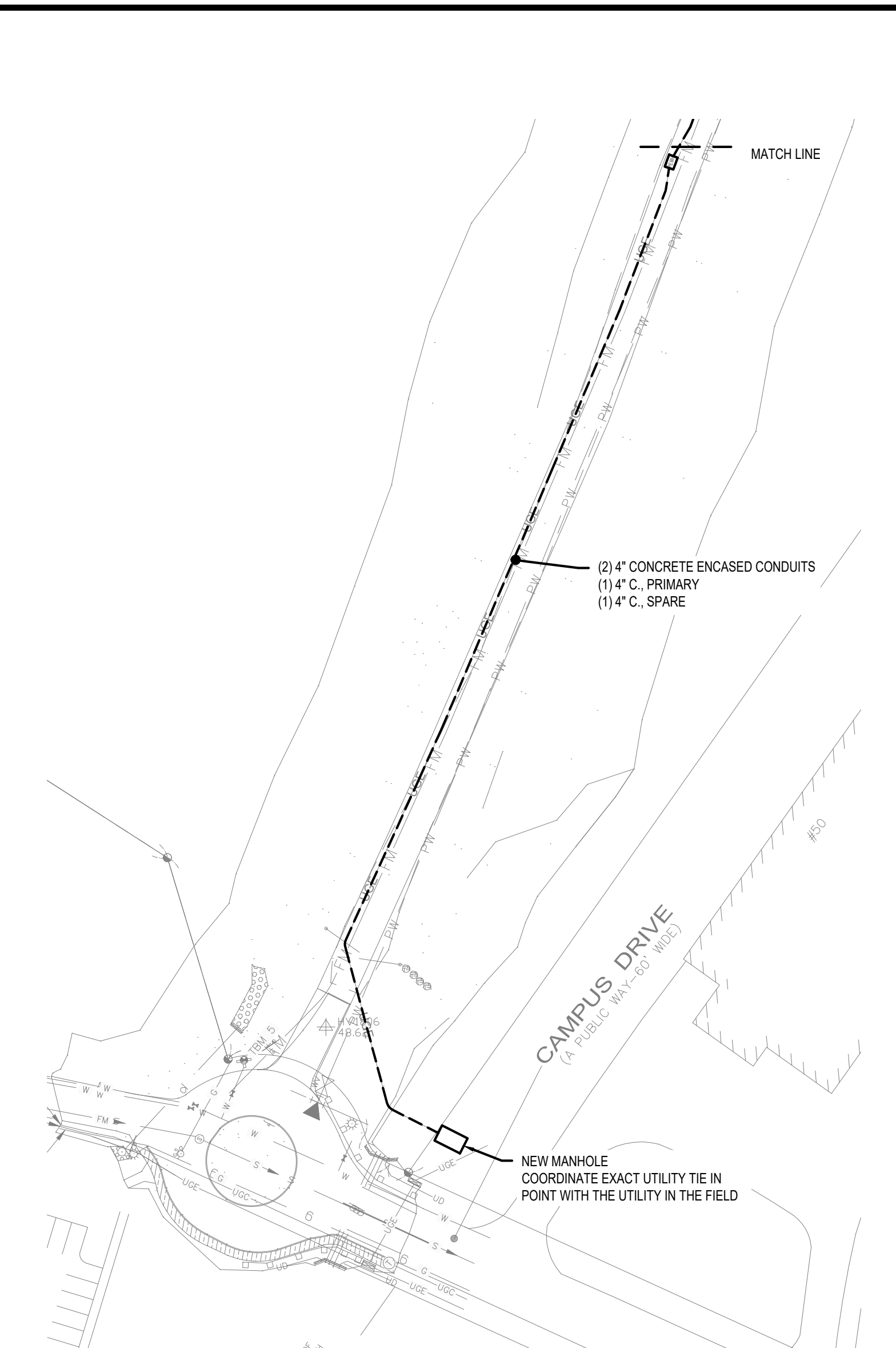
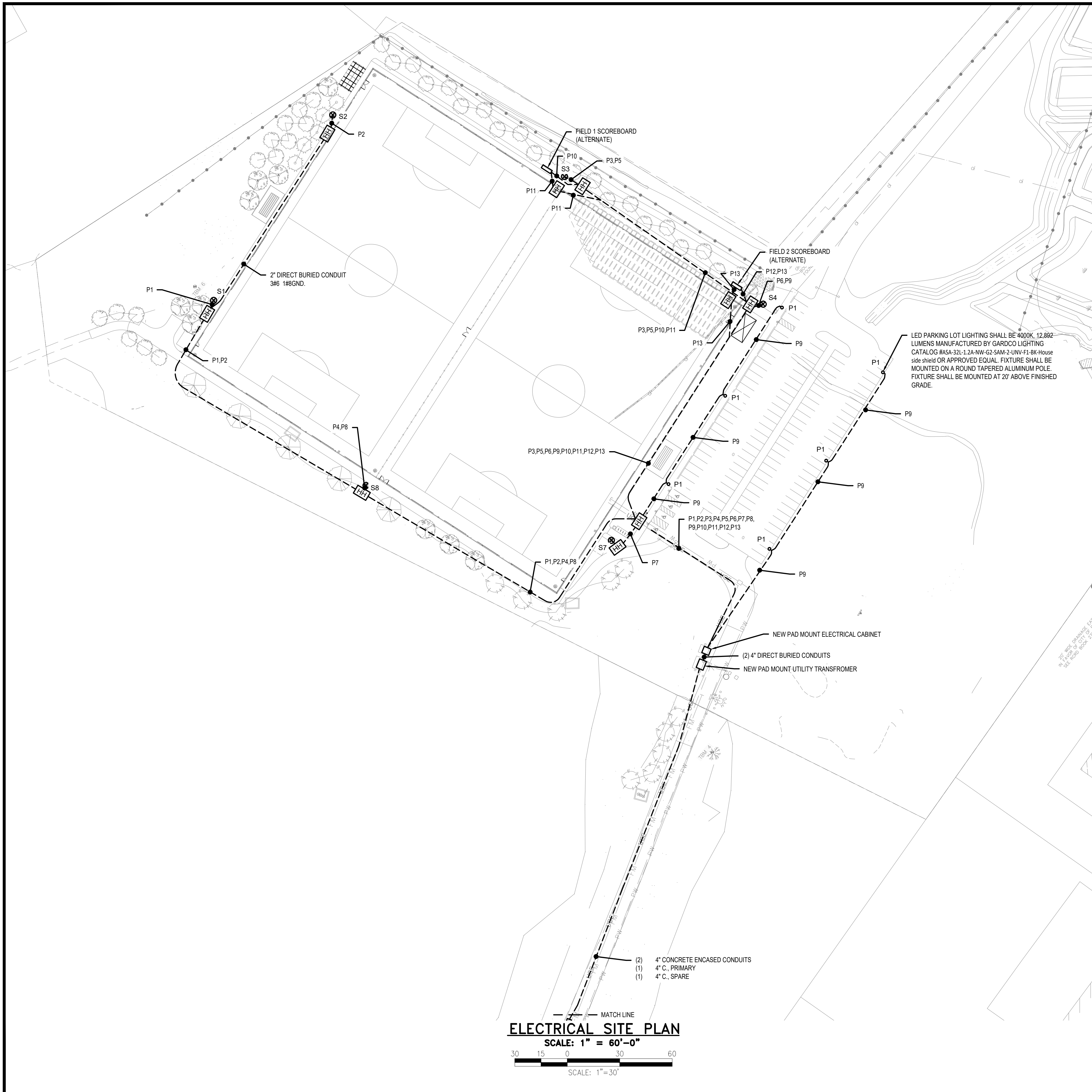
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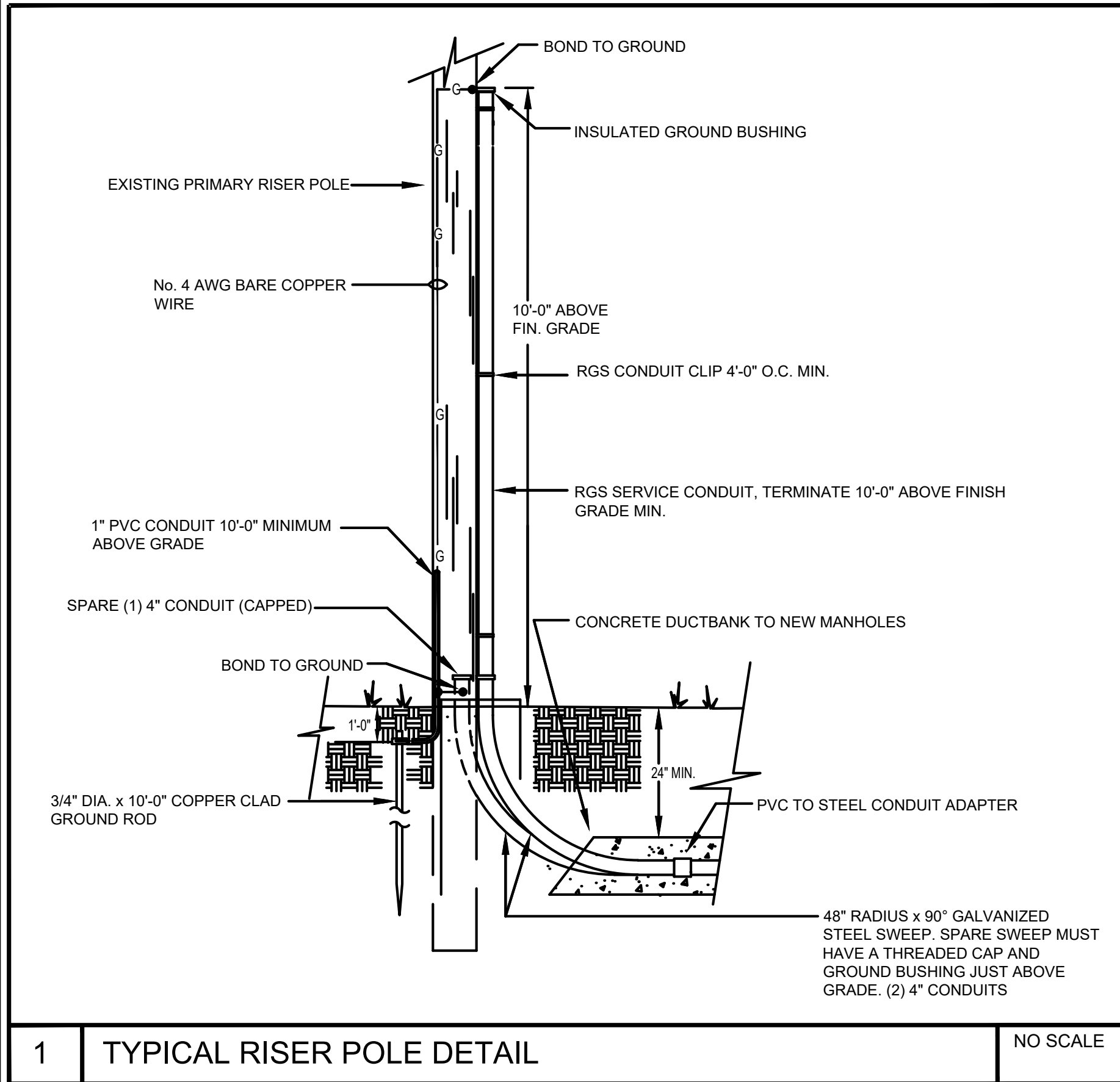
City of Portsmouth, New Hampshire
Department of Public Works
Multi-purpose Recreation Fields
680 Peverly Hill Road
Recreation Fields
ELECTRICAL LEGEND AND DETAILS



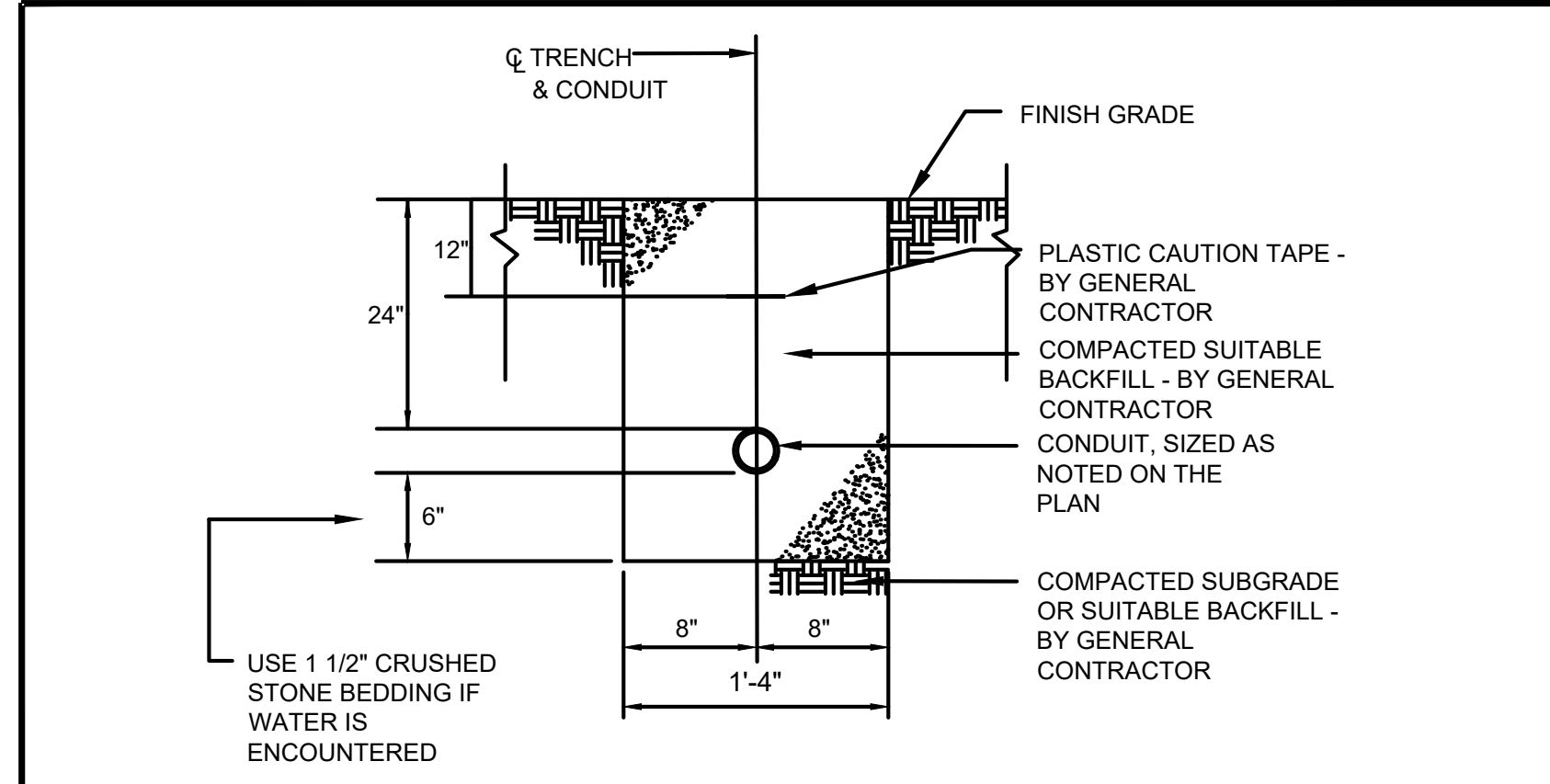
ELECTRICAL SITE PLAN
SCALE: 1" = 60'-0"

- DRAWING NOTES:
- REFER TO DRAWING EL1.00 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
 - REFER TO DRAWING EL1.03 FOR SCHEDULES.
 - REFER TO DRAWING EL1.02 FOR DETAILS.

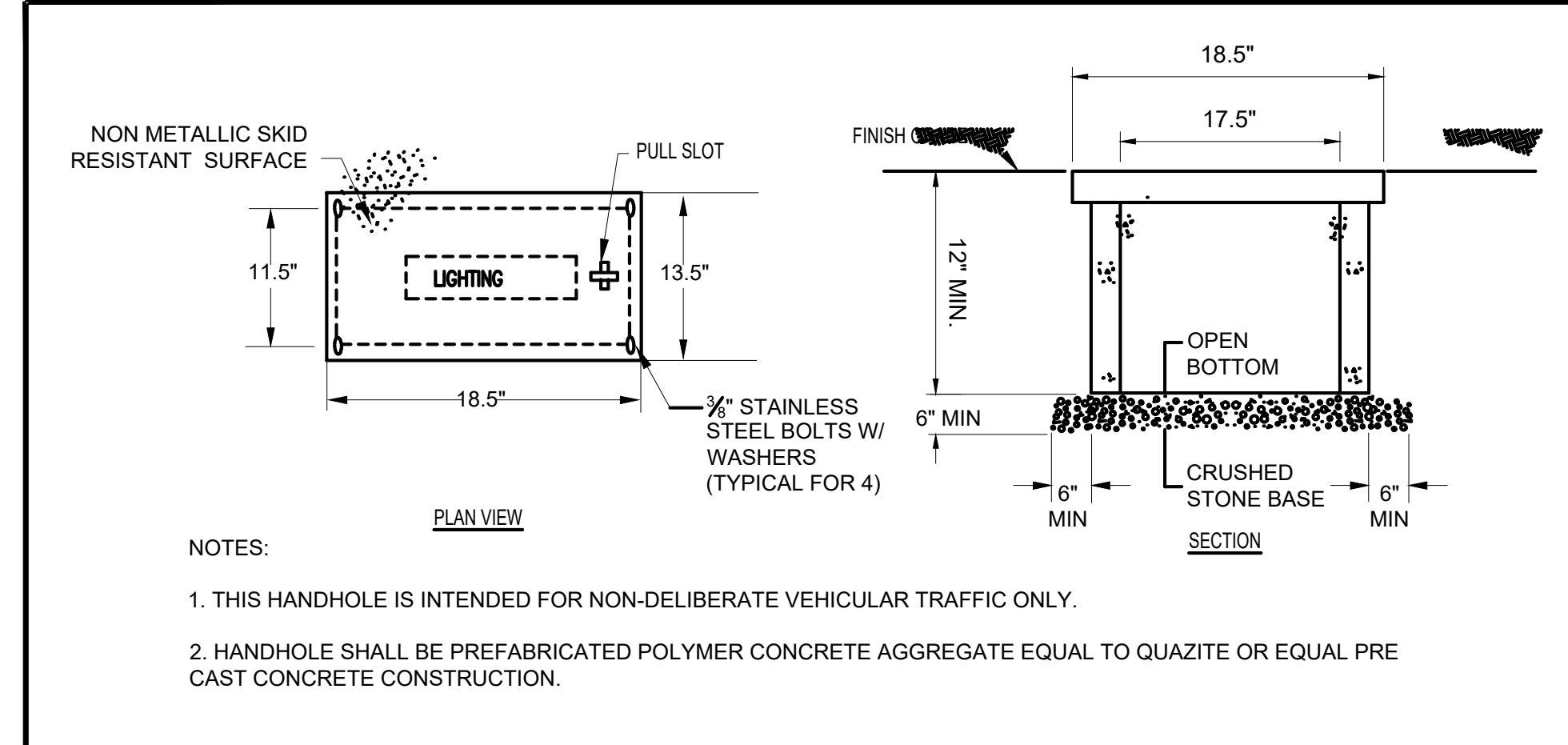
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City of Portsmouth, New Hampshire Department of Public Works Multi-purpose Recreation Fields 680 Pevery Hill Road Recreation Fields ELECTRICAL SITE PLAN REVISED			sheet: of				



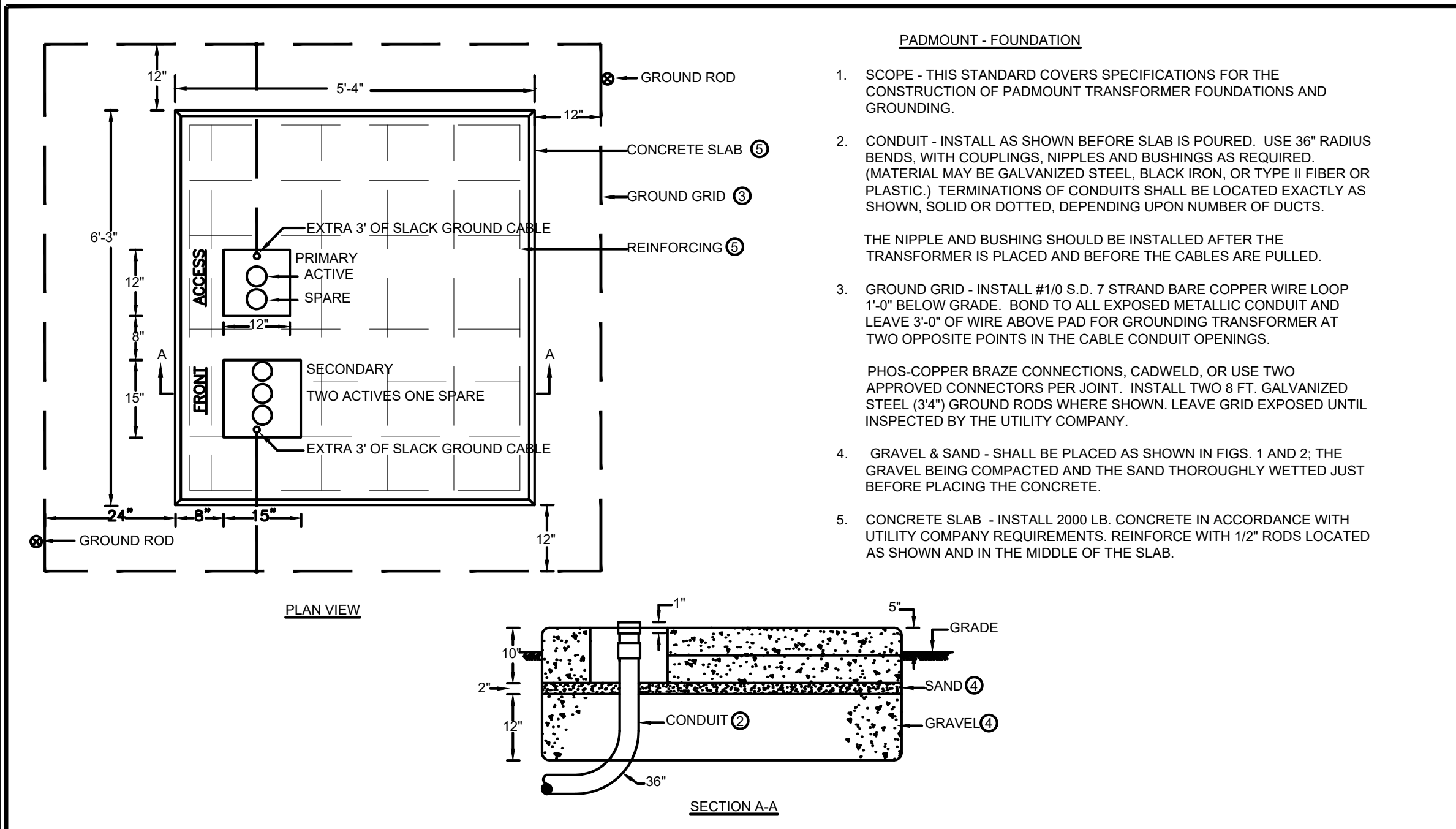
1 TYPICAL RISER POLE DETAIL NO SCALE



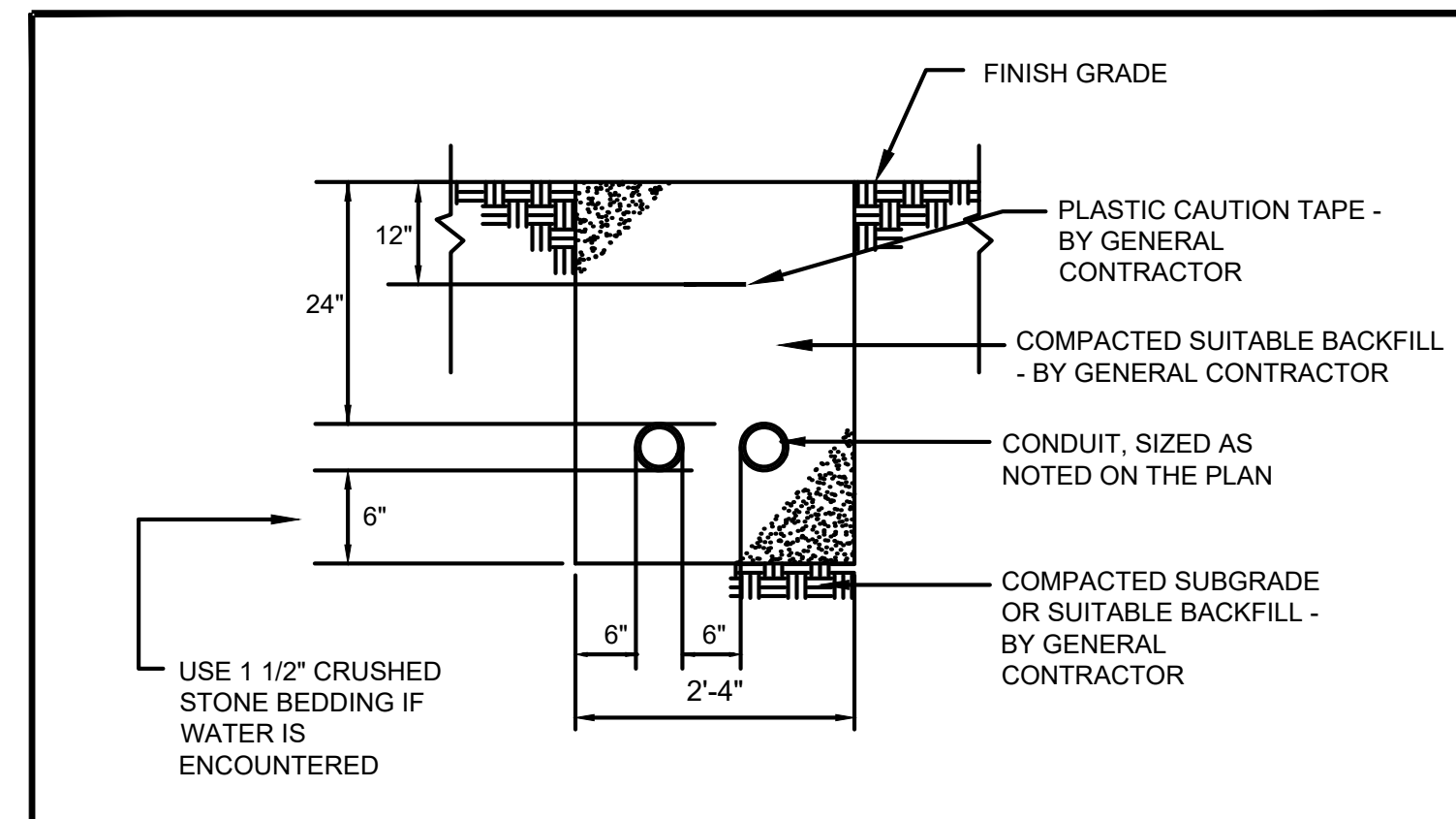
3 TYPICAL DIRECT BURIED CONDUIT DETAIL NO SCALE



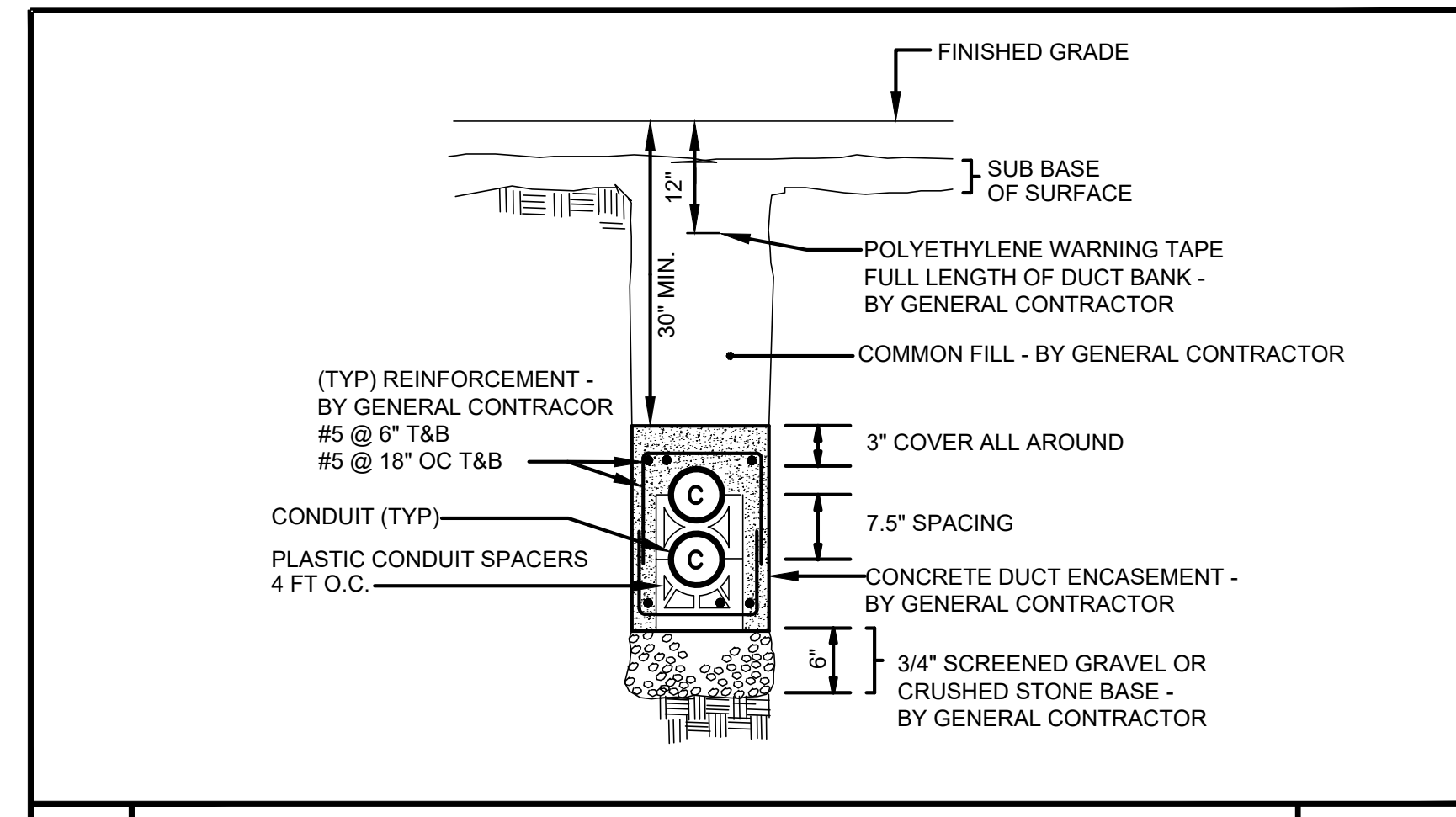
5 PREFABRICATED HANDHOLE \"HH\" DETAIL NO SCALE



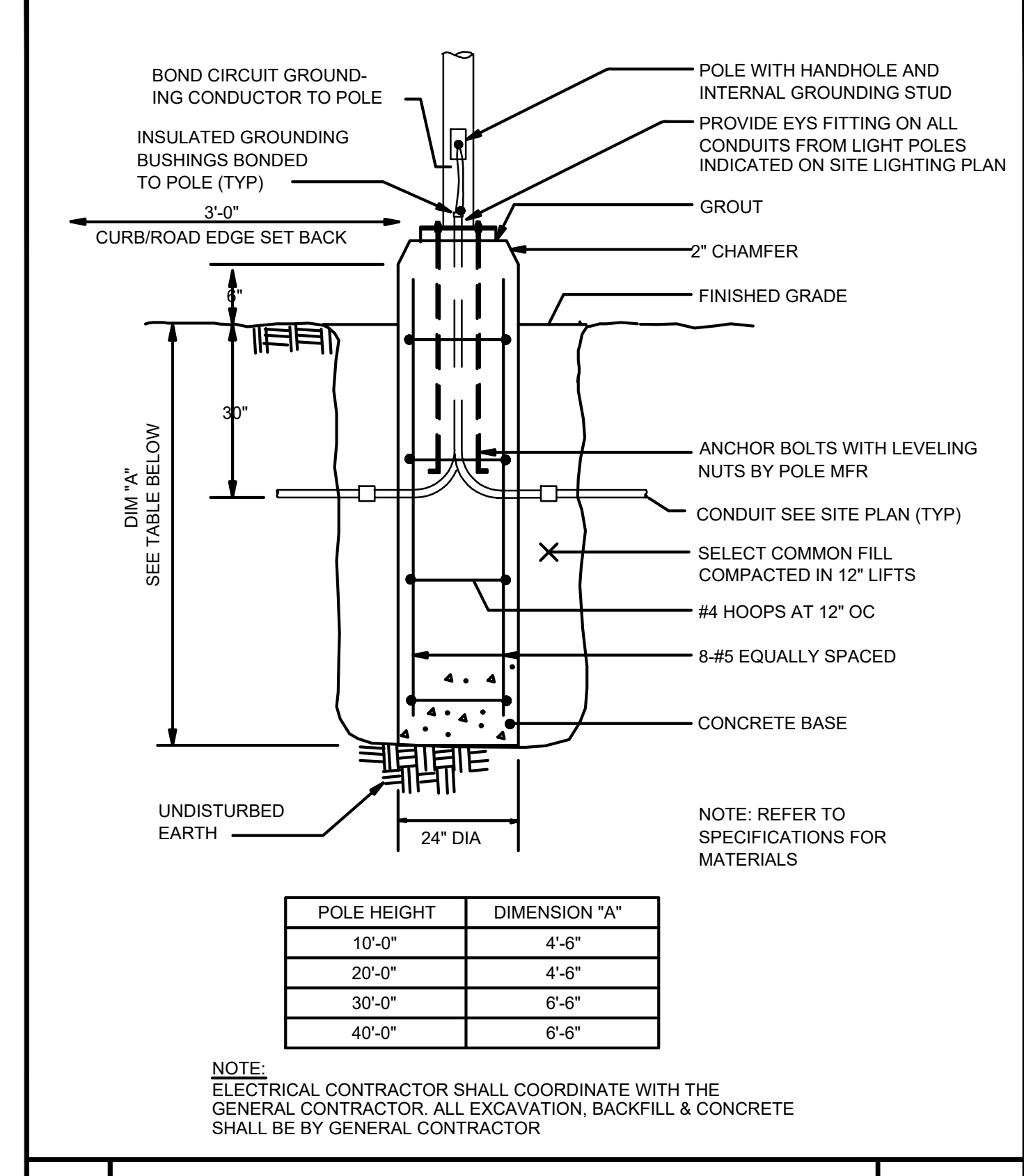
2 PAD MOUNTED TRANSFORMER DETAIL NO SCALE



6 TYPICAL DIRECT BURIED MULTIPLE CONDUIT DETAIL NO SCALE



7 TYPICAL CONCRETE ENCASED DUCTBANK DETAIL NO SCALE



4 TYPICAL LIGHT POLE BASE DETAIL NO SCALE

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City of Portsmouth, New Hampshire
 Department of Public Works
 Multi-purpose Recreation Fields
 680 Peverly Hill Road
 Recreation Fields
 ELECTRICAL DETAILS

CONDUIT & WIRING SCHEDULE							
CONDUIT	FEEDER	FROM	TO	FIXTURES	LOAD	VOLTAGE	REMARKS
P1	2"C., 3#6 & 1#8G	LIGHTING CONTROL PANEL CONTACTOR C1	FIXTURE S1	5 @ 1430W	12.82A	480V	DIRECT BURIED
P2	2"C., 3#6 & 1#8G	LIGHTING CONTROL PANEL CONTACTOR C2	FIXTURE S2	5 @ 1430W	12.82A	480V	DIRECT BURIED
P3	2"C., 3#6 & 1#10G	LIGHTING CONTROL PANEL CONTACTOR C3	FIXTURE S3	6 @ 1430W	12.82A	480V	DIRECT BURIED
P4	2"C., 3#10 & 1#10G	LIGHTING CONTROL PANEL CONTACTOR C4	FIXTURE S8	6 @ 1430W	12.82A	480V	DIRECT BURIED
P5	2"C., 3#10 & 1#10G	LIGHTING CONTROL PANEL CONTACTOR C5	FIXTURE S3 (ALTERNATE)	6 @ 1430W	12.82A	480V	DIRECT BURIED NOTE 2
P6	2"C., 3#10 & 1#10G	LIGHTING CONTROL PANEL CONTACTOR C6	FIXTURE S4 (ALTERNATE)	6 @ 1430W	12.82A	480V	DIRECT BURIED NOTE 2
P7	2"C., 3#10 & 1#10G	LIGHTING CONTROL PANEL CONTACTOR C7	FIXTURE S7 (ALTERNATE)	6 @ 1430W	12.82A	480V	DIRECT BURIED NOTE 2
P8	2"C., 3#10 & 1#10G	LIGHTING CONTROL PANEL CONTACTOR C8	FIXTURE S8 (ALTERNATE)	6 @ 1430W	12.82A	480V	DIRECT BURIED NOTE 2
P9	2"C., 2#10 & 1#10G	PANEL PPH1 VIA TIMECLOCK	PARKING LOT LIGHTING	-	-	277V	DIRECT BURIED
P10	2"C., 2#4 & 1#8G	PANEL PPL1	FIELD 1 SCOREBOARD	-	-	120V	DIRECT BURIED NOTE 1
P11	2"C., WITH PULLSTRING	COMMUNICATIONS	FIELD 1 SCOREBOARD	-	-	120V	DIRECT BURIED NOTE 1
P12	2"C., 2#6 & 1#10G	PANEL PPL1	FIELD 2 SCOREBOARD (ALTERNATE)	-	-	120V	DIRECT BURIED NOTE 1
P13	2"C., WITH PULLSTRING	COMMUNICATIONS	FIELD 2 SCOREBOARD (ALTERNATE)	-	-	120V	DIRECT BURIED NOTE 1

SCHEDULE NOTES:

- ALL CONDUIT FOR SCOREBOARDS IS BASE BID. SCOREBOARDS AND WIRING ARE ALTERNATE.
- ALL CONDUIT FOR SPORTS LIGHTING IS BASE BID. WIRING FOR FIXTURE IS ALTERNATE.

PANELBOARD SCHEDULE							
PANELBOARD NO.: PPL1		SERVICE: 120/208V, 3Ø, 4W, 50 MCB					
LOCATION: ELECTRICAL ENCLOSURE		BUS BARS: 100A					
MOUNTING: SURFACE		AIC: 10,000	TOTAL NO. OF POLES: 12				
CKT. No.	DESCRIPTION OF LOAD	CIRCUIT BREAKERS			DESCRIPTION OF LOAD	CKT. No.	
		TRIP	POLES	TRIP			
1	ENCLOSURE RECEPTACLE	20	1	1	20	ENCLOSURE LIGHT	2
3	SPORTS LIGHTING CONTROL	20	1	1	20	FIELD 2 SCORE BOARD	4
5	FIELD 1 SCORE BOARD	20	1	1	20	SPARE	6
7	SPARE	20	1	1	20	SPARE	8
9	SPACE					SPACE	10
11	SPACE					SPACE	12
-	-					-	-
-	-					-	-

* PROVIDE PANELBOARD WITH A GROUND BUS

PANELBOARD SCHEDULE							
PANELBOARD NO.: PPH1		SERVICE ENTRANCE RATED					
LOCATION: ELECTRICAL ENCLOSURE		BUS BARS: 250A					
MOUNTING: SURFACE		AIC: 22,000	TOTAL NO. OF POLES: 30				
CKT. No.	DESCRIPTION OF LOAD	CIRCUIT BREAKERS			DESCRIPTION OF LOAD	CKT. No.	
		TRIP	POLES	TRIP			
1	-	-	-	-	-	-	2
3	SPORT LIGHTING S1/C1	30	3	3	30	SPORT LIGHTING S2/C2	4
5	-	-	-	-	-	-	6
7	-	-	-	-	-	-	8
9	SPORT LIGHTING S3/C3	30	3	3	30	SPORT LIGHTINGS8/C4	10
11	-	-	-	-	-	-	12
13	-	-	-	-	-	-	14
15	SPORT LIGHTING S3/C5 (ALTERNATE)	30	3	3	30	SPORT LIGHTING S4/C6 (ALTERNATE)	16
17	-	-	-	-	-	-	18
19	-	-	-	-	-	-	20
21	SPORT LIGHTING S7/C5 (ALTERNATE)	30	3	3	30	SPORT LIGHTING S8/C8 (ALTERNATE)	22
23	-	-	-	-	-	-	24
25	-	-	-	-	-	-	26
27	SPORT LIGHTING S4/C9 (FUTURE)	30	3	3	30	SPORT LIGHTING S5/C10 (FUTURE)	28
29	-	-	-	-	-	-	30
31	-	-	-	-	-	-	32
33	SPORT LIGHTING S6/C11 (FUTURE)	30	3	3	30	SPORT LIGHTING S7/C12 (FUTURE)	34
35	-	-	-	-	-	-	36
37	-	-	-	-	-	-	38
39	SPARE	30	3	30	30	SPARE	40
41	-	-	-	-	-	-	42
43	-	-	-	-	-	-	44
45	SPARE	30	3	30	30	SPARE	46
47	-	-	-	-	-	-	48
49	-	-	-	-	-	-	50
51	SPARE	30	3	30	30	SPARE	52
53	-	-	-	-	-	-	54
55	-	-	-	-	-	-	56
57	SPARE	30	3	30	30	SPARE	58
59	-	-	-	-	-	-	60
61	-	-	-	-	-	-	62
63	SPARE	30	3	30	30	SPARE	64
65	-	-	-	-	-	-	66
67	-	-	-	-	-	-	68
69	SPARE	30	3	30	30	SPARE	70
71	-	-	-	-	-	-	72
73	-	-	-	-	-	-	74
75	SPARE	30	3	30	30	SPARE	76
77	-	-	-	-	-	-	78
79	-	-	20	1	20	PARKING LOT LIGHTING	80
81	TRANSFORMER T1	30	3	20	1	SPARE	82
83	-	-	-	20	1	SPARE	84

* PROVIDE PANELBOARD WITH A GROUND BUS

no.	revision	date	by

CMA ENGINEERS
 CIVIL/ENVIRONMENTAL ENGINEERS
 Portsmouth, NH Manchester, NH Portland, Maine

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City of Portsmouth, New Hampshire
 Department of Public Works
 Multi-purpose Recreation Fields
 680 Peverly Hill Road
 Recreation Fields
 ELECTRICAL SCHEDULES

drawing no.
EL1.03

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