



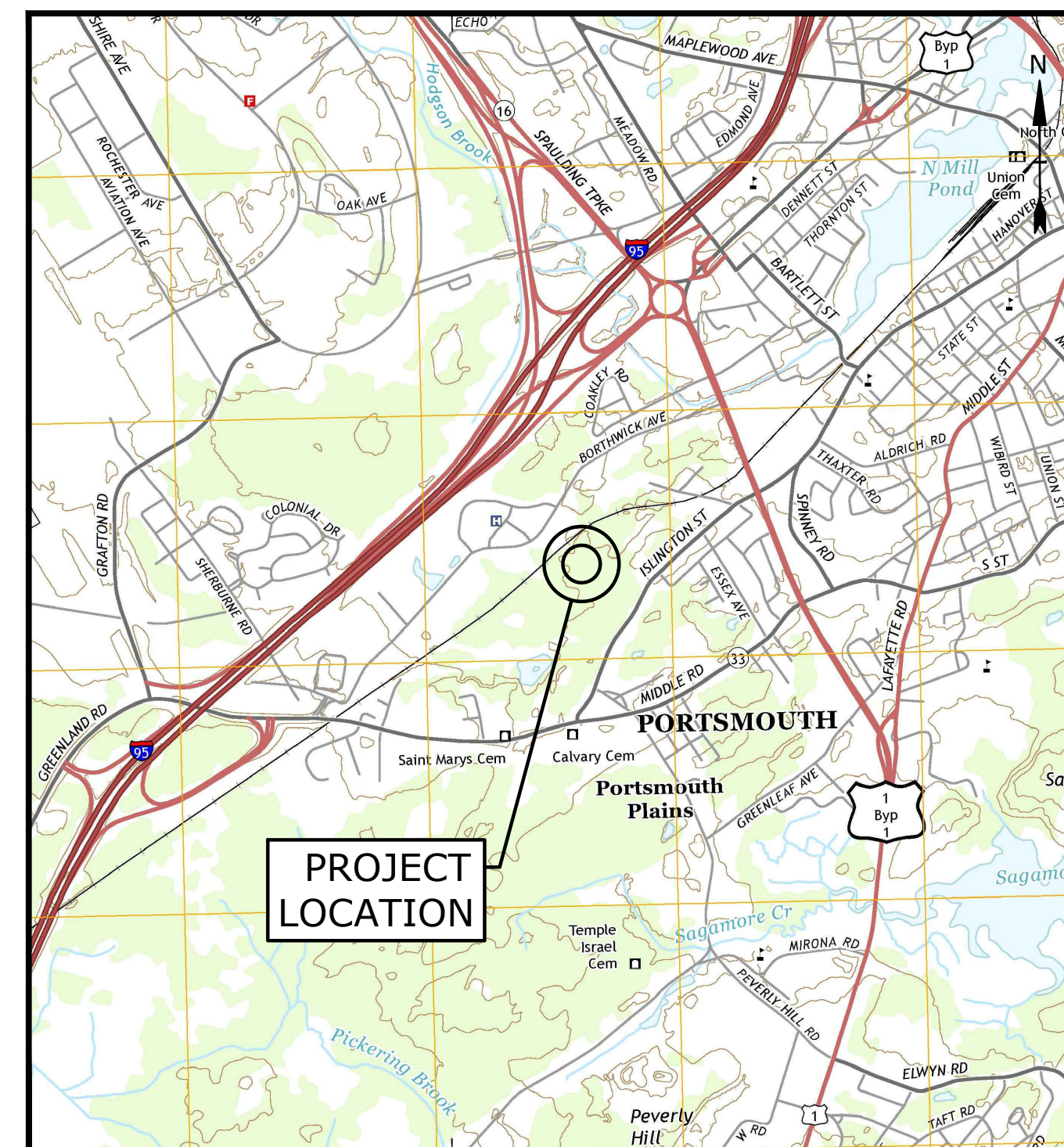
# PROPOSED SUBDIVISION ROAD & OFFICE BUILDING DEVELOPMENT

## PORTSMOUTH, NEW HAMPSHIRE PERMIT DRAWINGS

MARCH 20, 2017

LAST REVISED: MAY 20, 2019

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	05/20/2019
1 OF 5	LOT CONSOLIDATION & RESUBDIVISION PLAN	05/04/2018
2 OF 5	LOT CONSOLIDATION & RESUBDIVISION PLAN	05/04/2018
3 OF 5	LOT CONSOLIDATION & RESUBDIVISION PLAN	05/04/2018
4 OF 5	LOT CONSOLIDATION & RESUBDIVISION PLAN	05/04/2018
5 OF 5	LOT CONSOLIDATION & RESUBDIVISION PLAN	05/04/2018
G-101	GENERAL NOTES, ABBREVIATIONS & LEGEND SHEET	03/25/2019
C-101	OVERALL EXISTING CONDITIONS PLAN	03/25/2019
C-101.1	EXISTING CONDITIONS/DEMOLITION PLAN	05/20/2019
C-101.2	EXISTING CONDITIONS/DEMOLITION PLAN	05/20/2019
C-102	OVERALL SITE PLAN	05/20/2019
C-102.1	SITE PLAN & ROADWAY PROFILE	05/20/2019
C-102.2	SITE PLAN	05/20/2019
C-103.1	GRADING, DRAINAGE & EROSION CONTROL PLAN	05/20/2019
C-103.2	GRADING, DRAINAGE & EROSION CONTROL PLAN	05/20/2019
C-104.1	UTILITY PLAN & PROFILES	05/20/2019
C-104.2	UTILITY PLAN	05/20/2019
C-105.1	LANDSCAPE PLAN	05/20/2019
C-105.2	LANDSCAPE PLAN	05/20/2019
C-106	BUFFER RESTORATION & PLANTING SEQUENCING PLAN	05/20/2019
C-501	EROSION CONTROL NOTES SHEET	03/25/2019
C-502	DETAILS SHEET	03/25/2019
C-503	DETAILS SHEET	03/25/2019
C-504	DETAILS SHEET	03/25/2019
C-505	DETAILS SHEET	03/25/2019
C-506	DETAILS SHEET	03/25/2019
C-507	DETAILS SHEET	03/25/2019
C-508	DETAILS SHEET	03/25/2019
C-509	DETAILS SHEET	05/20/2019
1 OF 2	PHOTOMETRICS PLAN	05/13/2019
1 OF 2	PHOTOMETRICS PLAN	05/13/2019
2 OF 2	PHOTOMETRICS PLAN	05/13/2019
A3.01	EXTERIOR ELEVATIONS	05/15/2019
A3.02	EXTERIOR ELEVATIONS	05/15/2019

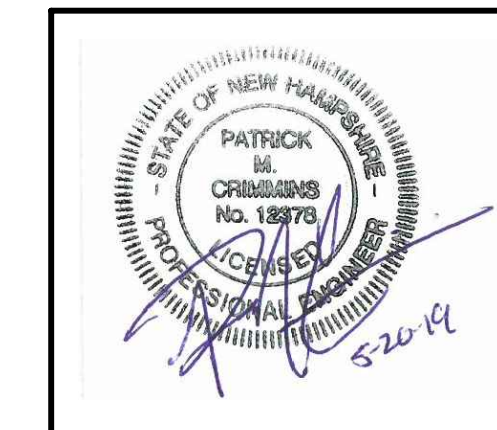


LOCATION MAP  
SCALE: 1" = 2,000'

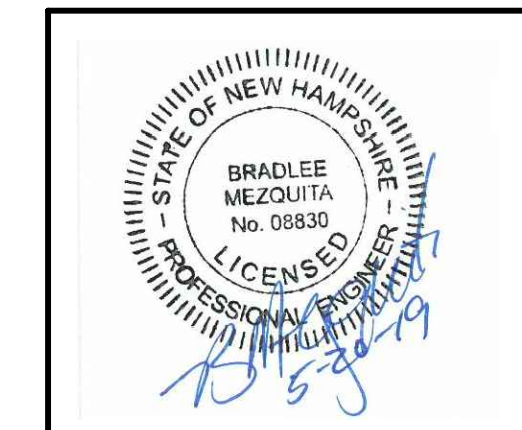
- CONSTRUCTION NOTES:**
1. THE CONTRACTOR SHALL NOT RELY ON SCALED DIMENSIONS AND SHALL CONTACT THE ENGINEER FOR CLARIFICATION IF A REQUIRED DIMENSION IS NOT PROVIDED ON THE PLANS.
  2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS AND METHODS, AND FOR SITE CONDITIONS THROUGHOUT CONSTRUCTION. NEITHER THE PLANS NOR THE SEAL OF THE ENGINEER AFFIXED HEREON EXTEND TO OR INCLUDE SYSTEMS REQUIRED FOR THE SAFETY OF THE CONTRACTOR, THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING AND IMPLEMENTING SAFETY PROCEDURES AND SYSTEMS AS REQUIRED BY THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), AND ANY STATE OR LOCAL SAFETY REGULATIONS.
  3. TIGHE & BOND, ASSUMES NO RESPONSIBILITY FOR ANY ISSUES LEGAL OR OTHERWISE, RESULTING FROM CHANGES MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION OF TIGHE & BOND.

PREPARED BY:

**Tighe & Bond**  
Engineers | Environmental Specialists



PATRICK M. CRIMMINS, PE



BRAD MEZQUITA, PE

Applicant:

**Borthwick Forest, LLC**  
c/o The Kane Company  
210 Commerce Way  
Portsmouth, New Hampshire 03801

Survey Consultant:

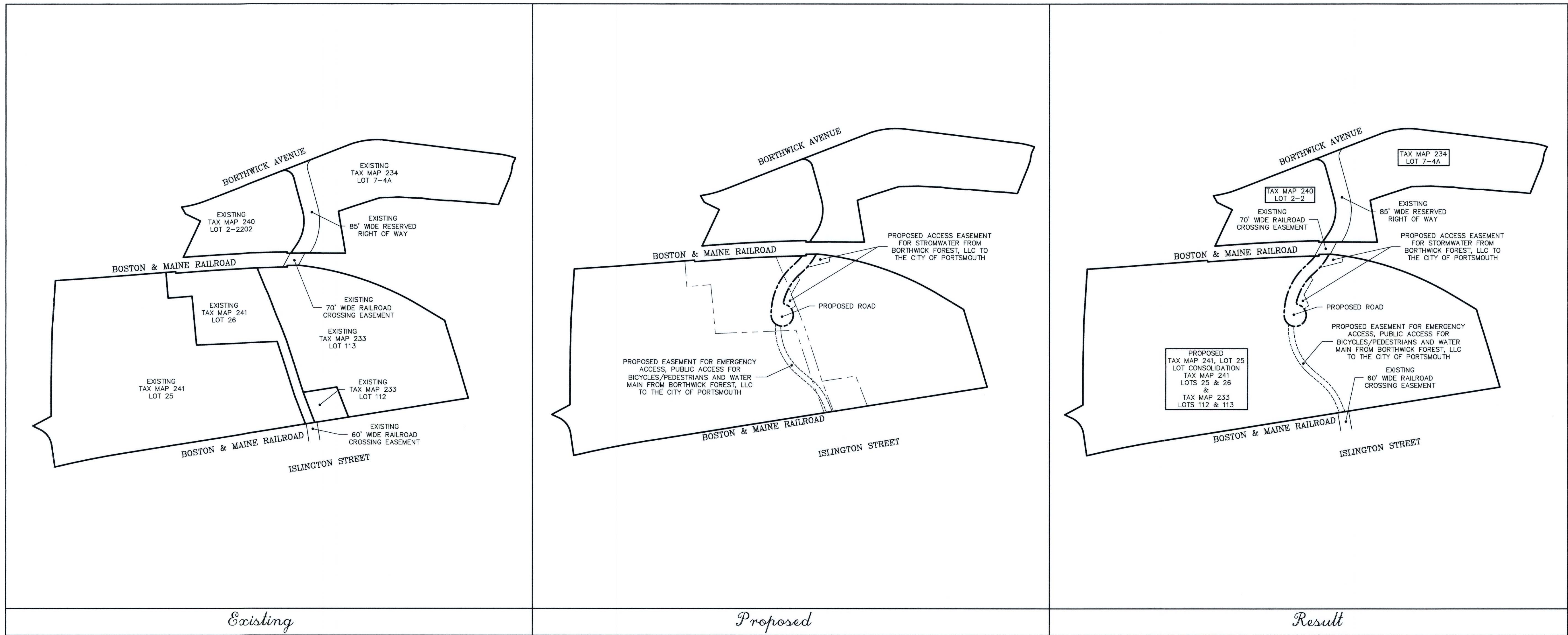
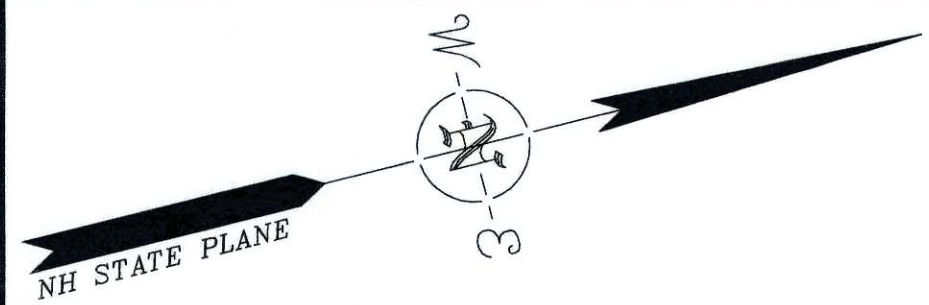


Wetland Consultant:

**Gove Environmental Services, Inc.**  
8 Continental Dr Bldg 2 Unit H  
Exeter, New Hampshire 03833

**COMPLETE SET 34 SHEETS**





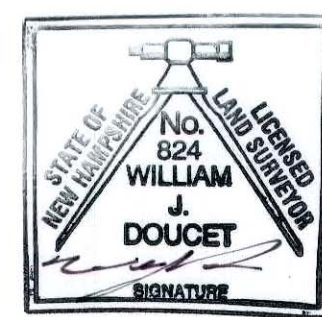
Key Plan (n.t.s.)

LEGEND

- EXISTING PROPERTY LINES
- PROPOSED RIGHT OF WAY
- EXISTING EASEMENT
- PROPOSED EASEMENT
- PROPERTY LINES TO BE ABANDONED

NO.	DATE	DESCRIPTION	BY
9	2/5/18	REMOVE EASEMENT	MWF
8	11/2/17	FOR RECORDING	MWF
7	9/26/17	REVISE EASEMENTS	MWF
6	4/17/17	ADD ADDITIONAL EASEMENTS	MWF
5	3/17/17	REVISED LAYOUT	MWF
4	3/22/16	REVISED ROAD LAYOUT	MWF
3	3/3/16	REV. LAYOUT & EASEMENTS	MWF
2	1/19/16	REVISED ROAD LAYOUT	MWF
1	11/17/15	PER ATTORNEY	MWF

NOTE:  
ALL ELECTRIC, GAS, TEL. WATER, SEWER AND DRAIN SERVICES ARE SHOWN IN SCHEMATIC FASHION, THEIR LOCATIONS ARE NOT PRECISE OR NECESSARILY ACCURATE. NO WORK WHATSOEVER SHALL BE UNDERTAKEN ON THIS SITE USING THIS PLAN TO LOCATE THE ABOVE SERVICES. CONSULT WITH THE PROPER AUTHORITIES CONCERNED WITH THE SUBJECT SERVICE LOCATIONS FOR INFORMATION REGARDING SUCH. CALL DIG-SAFE AT 1-888-DIG-SAFE.



I certify that this survey and plan were prepared by me or by those under my direct supervision and falls under the Urban Survey Classification of the NH Code of Administrative Rules of the Board of Licensure for Land Surveyors. I certify that this survey was made on the ground and is correct to the best of my knowledge and belief. Random traverse survey by Total Station, with a precision greater than 1:15,000.

L.L.S. #824  
5-4-18 DATE

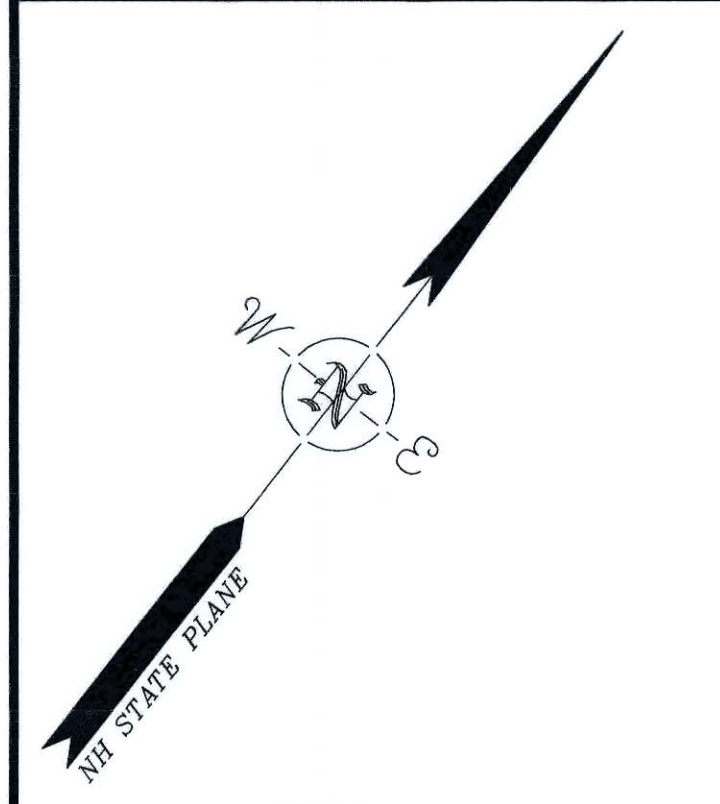
The certifications shown hereon are intended to meet registry of deed requirements and are not a certification to title or ownership of property shown. Owners of adjoining properties are according to current town assessors records.

LOT CONSOLIDATION  
&  
RESUBDIVISION PLAN  
LAND OF BORTHWICK FOREST, LLC  
AND SHOWING LAND OF  
HCA REALTY, INC.  
TAX MAP 233 LOTS 112 & 113, TAX MAP 234  
LOT 7-4A, TAX MAP 240 LOT 2-2202, & TAX  
MAP 241 LOTS 25 & 26 &  
BORTHWICK AVE. & ISLINGTON ST.  
PORTSMOUTH, NH

DRAWN BY:	M.W.F.	DATE:	MARCH 16, 2017
CHECKED BY:	S.V.M.	DRAWING NO.:	3445G
JOB NO.:	3445	SHEET	1 OF 5







- NOTES:
- REFERENCE: TAX MAP 233, LOTS 112 & 113  
TAX MAP 234, LOT 7-4A  
TAX MAP 240, LOT 2-2202  
TAX MAP 241, LOTS 25 & 26
  - PARCEL AREAS:  
LOT 112: 0.732 AC.  
LOT 113: 13.815 AC.  
LOT 7-4A: 9.085 AC.  
LOT 2-2202: 4.978 AC.  
LOT 25: 22.807 AC.  
LOT 26: 4.927 AC.
  - OWNER OF RECORD: TAX MAP 233, LOTS 112 (R.C.R.D. BOOK 4754, PAGE 626)  
TAX MAP 233, LOT 113 (R.C.R.D. BOOK 4754, PAGE 626)  
TAX MAP 241, LOT 25 (R.C.R.D. BOOK 4754, PAGE 626)  
TAX MAP 241, LOT 26 (R.C.R.D. BOOK 5670, PAGE 1115)  
BORTHWICK FOREST, LLC  
210 COMMERCE WAY, SUITE 300  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 4754, PAGE 626

- LEGEND
- WATER SHUTOFF VALVE
  - GRANITE BOUND FOUND
  - DRILL HOLE FOUND
  - IRON PIPE/ROD FOUND
  - 5/8" RE-BAR W/ ID CAP TO BE SET
  - BARBED WIRE FOUND ON GROUND
  - SEWER MANHOLE
  - JURISDICTIONAL WETLAND SYMBOL
  - BEARING
  - DIST BEARING
  - PROPOSED PROPERTY LINES
  - PROPERTY LINES TO BE ABANDONED
  - SETBACK LINE
  - STOCKADE FENCE
  - WIRE FENCE
  - APPROX. ABUTTERS LOT LINE
  - EASEMENT LINE
  - PROPOSED EASEMENT LINE
  - STONE WALL
  - EDGE OF JURISDICTIONAL WETLAND (SEE NOTE #6)
  - EDGE OF WETLAND (PER REF. PLAN #2)
  - APPROX. WATERLINE LOCATION (PER PORTSMOUTH DPW)
  - ASSESSORS TAX MAP/LOT #
  - FEATURES PER EASTERN TOPOGRAPHICS
  - POST
  - PAVED ROADS
  - GRAVEL ROADS
  - OBSCURED PAVEMENT
  - DRIVEWAYS
  - UNPAVED DRIVEWAY
  - FENCES
  - STONEWALL
  - BROOK/STREAM
  - RAILROAD TRACKS
  - OBSCURED RAILROAD TRACKS

- ZONE: OR (OFFICE RESEARCH) LOTS 112, 113, 7-4A, 2-2, 25 & 26
- DIMENSIONAL REQUIREMENTS:
 

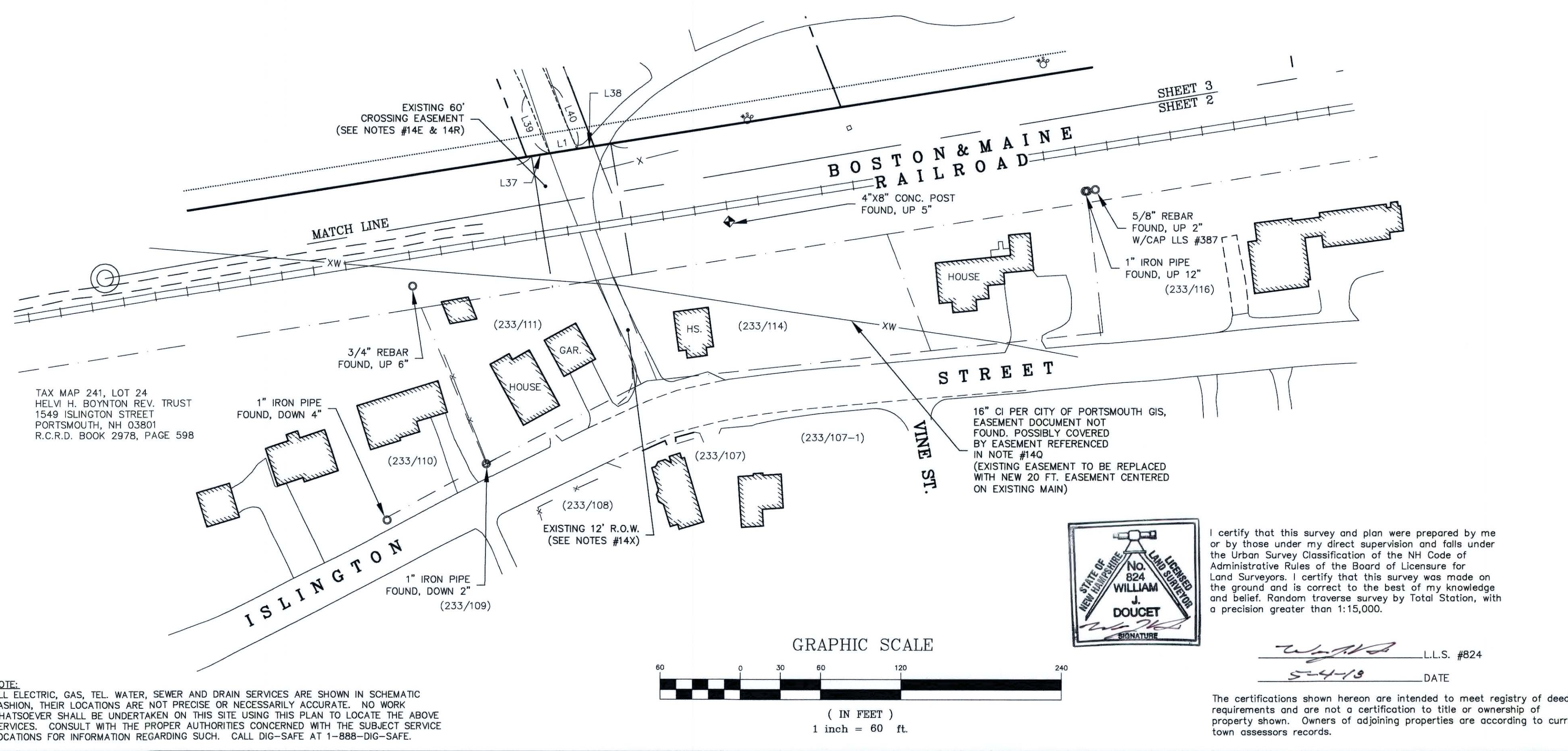
MIN. LOT AREA	15,000 SQ. FT.
MIN. FRONTAGE	100 FT.
MIN. FRONT SETBACK	30 FT.
MIN. SIDE SETBACK	10 FT.
MIN. REAR SETBACK	30 FT.
MAX. BUILDING HEIGHT	35 FT.
MAX. BUILDING COVERAGE	20%

 WETLAND BUFFER: 100 FT.
- FIELD SURVEY PERFORMED BY DOUCET SURVEY, INC., BETWEEN 2003 AND 2013. TRAVERSE ADJUSTMENTS BASED ON LEAST SQUARES ANALYSIS. AERIAL TOPOGRAPHY PROVIDED BY EASTERN TOPOGRAPHICS, INC.
- JURISDICTIONAL WETLANDS DELINEATED BY GOVE ENVIRONMENTAL SERVICES, INC. DURING APRIL 2013 AND AMENDED IN NOVEMBER 2013. WETLANDS DELINEATED IN ACCORDANCE WITH 1987 CORPS OF ENGINEERS WETLANDS DELINEATIONS MANUAL, TECHNICAL REPORT Y-87-1.
- FLOOD HAZARD ZONE: "X", PER FIRM MAP #3301390260E, DATED 5/17/05.
- HORIZONTAL DATUM BASED ON NH STATE PLANE COORDINATE SYSTEM ZONE 1800 AS ESTABLISHED BY VERRA & ASSOCIATES IN MAY 2003.
- VERTICAL DATUM IS BASED ON NGVD 29 PER NHDOT DISK R-50 (379-0150) ELEV.=33.24'.
- THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH AND IN RELATION TO THE CURRENT LEGAL DESCRIPTION, AND IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP, OR DEFINE THE LIMITS OF TITLE.
- DUE TO THE COMPLEXITY OF RESEARCHING ROAD RECORDS AS A RESULT OF INCOMPLETE, UNORGANIZED, INCONCLUSIVE, OBLITERATED, OR LOST DOCUMENTS, THERE IS AN INHERENT UNCERTAINTY INVOLVED WHEN ATTEMPTING TO DETERMINE THE LOCATION AND WIDTH OF A ROADWAY RIGHT OF WAY. THE EXTENT OF ISLINGTON STREET & BORTHWICK AVENUE AS DEPICTED HEREON IS BASED ON RESEARCH CONDUCTED AT THE PORTSMOUTH CITY CLERKS OFFICE AND ROCKINGHAM COUNTY REGISTRY OF DEEDS.
- FINAL MONUMENTATION MAY BE DIFFERENT THAN THE PROPOSED MONUMENTATION SHOWN HEREON, DUE TO THE FACT THAT SITE CONDITIONS WILL DICTATE THE ACTUAL LOCATION AND TYPE OF MONUMENTS INSTALLED IN THE FIELD. PLEASE REFER TO EITHER THE "MONUMENTATION LOCATION PLAN" TO BE RECORDED OR CONTACT DOUCET SURVEY, INC. FOR CLARIFICATION OF MONUMENTS SET. (A RECORDED PLAN WILL BE PRODUCED AT THE DISCRETION OF DOUCET SURVEY, INC.).

- AERIAL TOPOGRAPHY WAS CONDUCTED BY EASTERN TOPOGRAPHICS FROM IMAGES TAKEN DURING 04/2003 WITH A PHOTO SCALE OF 1:3600. CONTOURS AND OBJECTS SHOWN WITHIN OBSCURED AREAS ARE APPROXIMATE AND SHOULD BE VERIFIED BEFORE USE FOR DESIGN OR CONSTRUCTION PURPOSES.
- THE PARCELS ARE SUBJECT TO, AND/OR IN BENEFIT OF THE FOLLOWING EASEMENTS, RESTRICTIONS, ETC.
  - INTENTIONALLY DELETED.
  - TAX MAP 233, LOTS 112, 113, TAX MAP 234, LOT 7-4A & TAX MAP 241, LOT 25
  - IN BENEFIT OF AN EASEMENT GRANTED TO ISLINGTON WOODS, LLC BY BOSTON AND MAINE CORPORATION, BOOK 4617, PAGE 2613.
  - TAX MAP 233, LOT 113
  - SUBJECT TO A WATER LINE EASEMENT FROM SHUTTLEWORTH TO THE CITY PORTSMOUTH, SEE R.C.R.D. BOOK 583, PAGE 324.
  - SUBJECT TO A WATER LINE EASEMENT FROM SHUTTLEWORTH TO THE CITY PORTSMOUTH, SEE R.C.R.D. BOOK 1409, PAGE 31.
  - IN BENEFIT OF A R.O.W. FROM BOSTON AND MAINE CORP., SEE R.C.R.D. BOOK 2400, PAGE 923.
  - TAX MAP 234, LOT 7-4A
  - SUBJECT TO A WATER LINE EASEMENT GRANTED BY SPINNEY TO JONES, SEE R.C.R.D. BOOK 551, PAGE 11. (EXACT LOCATION UNDETERMINED).
  - SUBJECT TO AN ELECTRIC EASEMENT GRANTED BY SAN ANTONIO ET AL TO NH ELECTRIC CO, SEE R.C.R.D. BOOK 1230, PAGE 222.
  - SUBJECT TO THE RIGHTS OF THE CITY OF PORTSMOUTH TO CONSTRUCT & MAINTAIN A SEWER LINE, AS MENTIONED BY REFERENCE IN R.C.R.D. BOOK 1361, PAGE 235. NO EASEMENT DOCUMENT FOUND.
  - SUBJECT TO A WATER LINE EASEMENT GRANTED BY ALLEN GREENOUGH TO THE CITY OF PORTSMOUTH, SEE R.C.R.D. BOOK 541, PAGE 254.
  - SUBJECT TO A SEWER EASEMENT GRANTED BY COAKLEY TO THE CITY OF PORTSMOUTH, SEE R.C.R.D. BOOK 984, PAGE 379.
  - SUBJECT TO THE RIGHTS OF THE STATE OF NEW HAMPSHIRE, SEE R.C.R.D. BOOK 1158, PAGE 36.
  - SUBJECT TO THE RIGHT GRANTED IN A DEED FROM COAKLEY ET AL TO BEACON CONSTRUCTION CO., INC., SEE R.C.R.D. BOOK 1284, PAGE 3.
  - SUBJECT TO ELECTRIC EASEMENT GRANTED BY COAKLEY ET AL TO NH ELECTRIC CO, SEE R.C.R.D. BOOK 1315, PAGE 306.
  - SUBJECT TO RESTRICTIONS OUTLINED IN A DEED FROM GARLAND ET AL TO PORTSMOUTH PARK TRUST, SEE R.C.R.D. BOOK 2521, PAGE 999.
  - SUBJECT TO RESTRICTIVE AGREEMENT BETWEEN PORTSMOUTH PARK TRUST AND HCA REALTY, INC., SEE R.C.R.D. BOOK 2556, PAGE 1764.
  - GAS LINE EASEMENT RESERVED BY NORTHEAST UTILITIES, BOOK 4392, PAGE 110.
  - AB) SUBJECT TO AN ACCESS & UTILITY EASEMENT, SEE R.C.R.D. BOOK 4639, PAGE 2128. TAX MAP 241, LOT 25
  - SUBJECT TO WATER RIGHTS GRANTED BY SHERBURNE TO THE PROPRIETORS OF THE PORTSMOUTH AQUEDUCT, SEE R.C.R.D. BOOK 488 PAGE 431.
  - IN BENEFIT OF A R.O.W. FROM BOSTON AND MAINE CORP., SEE R.C.R.D. BOOK 2400, PAGE 923.
  - SUBJECT TO TWO R.O.W.'S RESERVED IN A DEED FROM COAKLEY TO WALDRON, SEE R.C.R.D. BOOK 1559 PAGE 190.
  - IN BENEFIT OF A R.O.W. RESERVED IN A DEED FROM SARGENT TO DEVELATRON CORP., SEE R.C.R.D. BOOK 1563, PAGE 269.
  - TAX MAP 233, LOT 113
  - SUBJECT TO A WATER LINE EASEMENT FROM SHUTTLEWORTH TO THE CITY PORTSMOUTH, SEE R.C.R.D. BOOK 583, PAGE 324.
  - SUBJECT TO A WATER LINE EASEMENT FROM SHUTTLEWORTH TO THE CITY PORTSMOUTH, SEE R.C.R.D. BOOK 1409, PAGE 31.
  - IN BENEFIT OF A R.O.W. FROM BOSTON AND MAINE CORP., SEE R.C.R.D. BOOK 2400, PAGE 923.
  - IN BENEFIT OF A 12' R.O.W. TO ISLINGTON STREET, SEE R.C.R.D. BOOK 455, PAGE 449.
  - TAX MAP 241, LOT 26
  - SUBJECT TO AND/OR IN BENEFIT OF ANY PERTINENT EASEMENTS, RESTRICTIONS, ETC. THAT IMPACT TAX MAP 241, LOT 25, SINCE LOT 26 WAS ORIGINALLY PART OF LOT 25.
  - SUBJECT TO AN ACCESS EASEMENT, SEE R.C.R.D. BOOK 2375, PAGE 808.
  - TAX MAP 240, LOT 2-2202
  - AD) SUBJECT TO A SEWER EASEMENT, SEE R.C.R.D. BOOK 984, PAGE 378
  - AD) SUBJECT TO A GAS LINE EASEMENT, SEE R.C.R.D. BOOK 1372, PAGE 148.
  - AE) SUBJECT TO A GAS LINE EASEMENT, SEE R.C.R.D. BOOK 4392, PAGE 110.
  - AF) SUBJECT TO A 10' WIDE BUFFER, SEE R.C.R.D. BOOK 4639, PAGE 2133.

- ADDITIONAL ABUTTERS
- TAX MAP 233, LOT 111 RICHARD L & MARY C. RASH REV. TRUST 2007 RICHARD L & MARY C. RASH, TRUSTEES 1507 ISLINGTON STREET PORTSMOUTH, NH 03801 R.C.R.D. BOOK 4763, PAGE 1360
  - TAX MAP 233, LOT 110 JASON R. STILES MARGARET ANN KRISTIANSEN 1527 ISLINGTON STREET PORTSMOUTH, NH 03801 R.C.R.D. BOOK 3187, PAGE 1517
  - TAX MAP 233, LOT 109 DENNIS A. & CHERYL A. MINARD 1500 ISLINGTON STREET PORTSMOUTH, NH 03801 TAXI MAP 233, LOT 108 PAUL M. & LAURA L. MANNLE 1490 ISLINGTON STREET PORTSMOUTH, NH 03801 R.C.R.D. BOOK 2837, PAGE 1263
  - TAX MAP 233, LOT 107 ZAKARY ROBINSON 1474 ISLINGTON STREET PORTSMOUTH, NH 03801 R.C.R.D. BOOK 5596, PAGE 2951
  - TAX MAP 233, LOT 107-1 MARC C. THERRIEN 6 VINE STREET PORTSMOUTH, NH 03801 R.C.R.D. BOOK 5712, PAGE 2092
  - TAX MAP 233, PAGE 106 JAMES R. & LINDSAY RICHARD 1438 ISLINGTON STREET PORTSMOUTH, NH 03801 R.C.R.D. BOOK 5382, PAGE 1684
  - TAX MAP 233, LOT 115 STEPHEN J. CAMARDA 7 DEBRA LANE KITTERY, ME 03904 R.C.R.D. BOOK 2737, PAGE 2373
  - TAX MAP 233, LOT 116-1 WILLIAM F. & KATJIA P. BECKSTEDT 1395 ISLINGTON STREET PORTSMOUTH, NH 03801 R.C.R.D. BOOK 3745, PAGE 2748
  - TAX MAP 233, LOT 116-2 TERENCE J. RADICAN II 207 ROCKLAND STREET PORTSMOUTH, NH 03801 R.C.R.D. BOOK 5565, PAGE 2739
  - TAX MAP 233, LOT 117 JASON BALDWIN 1363 ISLINGTON STREET PORTSMOUTH, NH 03801 R.C.R.D. BOOK 5254, PAGE 331
  - TAX MAP 233, LOT 118 KEVIN D. & LIZA E. CONLEY 1345 ISLINGTON STREET PORTSMOUTH, NH 03801 R.C.R.D. BOOK 5622, PAGE 1783
  - TAX MAP 233, LOT 119 CHRISTOPHER H. GARRETT REV. TRUST 2007 CHRISTOPHER H. GARRETT, TRUSTEE 11 BARBERRY LANE PORTSMOUTH, NH 03801 R.C.R.D. BOOK 4862, PAGE 1609

- REFERENCE PLANS:
- "PLAT OF LAND BARBERRY LANE PORTSMOUTH, NH FOR NORTHERN UTILITIES, INC." BY DURGIN-SCHOFIELD ASSOCIATES, DATED 2/21/89, R.C.R.D. PLAN #D-19079.
  - "ALTA/ACSM LAND TITLE SURVEY FOR NORTHLAND DEVELOPMENT, BORTHWICK AVENUE, COUNTY OF ROCKINGHAM, PORTSMOUTH, NH," BY MILLETTE, SPRAGUE & COLWELL, INC. DATED 8/19/97.
  - "GAS LINE AS-BUILT EASEMENT AND CONSERVATION EASEMENT PLAN," BY KIMBALL CHASE COMPANY, INC. DATED 10/31/85, R.C.R.D. PLAN #D-15830.
  - "LAND IN PORTSMOUTH, NH BOSTON AND MAINE CORPORATION TO LANDERS AND GRIFFIN, INC.," J.D. BATCHELER ENGINEER OF DESIGN, DATED 2/66, R.C.R.D. PLAN #B43.
  - "SUBDIVISION OF LAND LOCATED IN PORTSMOUTH, NH FOR HOSPITAL CORPORATION OF AMERICA," BY KIMBALL CHASE COMPANY, INC. DATED 2/28/84.
  - "SUBDIVISION PLAN OF LAND FOR PORTSMOUTH PARK TRUST BORTHWICK AVE. EXT./COAKLEY RD. COUNTY OF ROCKINGHAM PORTSMOUTH, NH," BY RICHARD P. MILLETTE AND ASSOCIATES, DATED 3/27/85, R.C.R.D. PLAN #D-13747.
  - "PLAT OF PROPERTY AND IMPROVEMENTS, PORTSMOUTH HOSPITAL OFFICE BUILDING, A CONDOMINIUM PORTSMOUTH, NH," BY CESP, INC., DATED 12/12/86, R.C.R.D. PLAN #D-15831.
  - "RIGHT-OF-WAY AND TRACK MAP, CONCORD AND PORTSMOUTH R.R. OPERATED BY THE BOSTON AND MAINE R.R., STATION 33+0 TO STATION 85+80, V28/2" BY VALUATION ENGINEERS, DATED 6/30/14.
  - "RIGHT-OF-WAY AND TRACK MAP, CONCORD AND PORTSMOUTH R.R. OPERATED BY THE BOSTON AND MAINE R.R., STATION 85+80 TO STATION 138+60, V28/25" BY VALUATION ENGINEERS, DATED 6/30/14.
  - "RIGHT-OF-WAY AND TRACK MAP, CONCORD AND PORTSMOUTH R.R. OPERATED BY THE BOSTON AND MAINE R.R., STATION 2928+05 TO STATION 2966+20, V3 NH/54" BY VALUATION ENGINEERS, DATED 6/30/14.
  - "LOT LINE RELOCATION PLAN FOR J. HARRISON HOLMAN OFF ISLINGTON ST. COUNTY OF ROCKINGHAM PORTSMOUTH, N.H." DATED MARCH 6, 1980 BY RICHARD P. MILLETTE AND ASSOCIATES. R.C.R.D. PLAN #D-9356.
  - "PLAN OF LAND CURT GOWDY BROADCASTING CORPORATION PORTSMOUTH, N.H." DATED FEBRUARY 25, 1977 BY THOMAS F. MORAN, INC. R.C.R.D. PLAN #D-6765.
  - "CITY OF PORTSMOUTH DEFENSE HOMES LOCATION PLAN" REVISED JUNE 17, 1941 BY JOHN W. DURGIN. R.C.R.D. PLAN #0106.
  - "PLAN NO. 220 SHOWING PORTION OF PROPERTY OF THE HEIRS OF CORNELIUS COAKLEY TO BE CONVEYED TO BEACON CONSTRUCTION COMPANY" DATED APRIL 28, 1953 BY MOULTON ENGINEERING CO.
  - "SUBDIVISION OF LAND LOCATED IN PORTSMOUTH, N.H." DATED MARCH 6, 1984 BY KIMBALL CHASE COMPANY, INC. R.C.R.D. PLAN #D-13069.
  - "LOT LINE RELOCATION PLAN FOR PORTSMOUTH PARK TRUST AND HOSPITAL CORPORATION OF AMERICA BORTHWICK AVE. EXTENSION COUNTY OF ROCKINGHAM PORTSMOUTH, N.H." DATED JUNE 14, 1985 BY RICHARD P. MILLETTE AND ASSOCIATES. PLAN #D-15924.
  - "SUBDIVISION OF LAND PORTSMOUTH, N.H. FOR J. HARRISON HOLMAN DATED MAY 1982 BY JOHN W. DURGIN ASSOCIATES, INC. R.C.R.D. PLAN #D-10843.
  - "LOT LINE REVISION FOR RUTH M. GAITS & FREDERICK C. & JACQUELINE O. MURRAY TRUSTEES ISLINGTON STREET PORTSMOUTH, N.H." DATED JANUARY 17, 2002 BY E.J. COTE & ASSOCIATES INC. R.C.R.D. PLAN #D-29645.
  - "PERSHING TERRACE PORTSMOUTH, N.H. BELMONT REALTY CO. PROVIDENCE, R.I." DATED JULY 1918 BY WM. A. GROVER CIVIL ENGINEER, R.C.R.D. PLAN #082.
  - "PLAN OF RIGHT OF WAY ROBERT W. MESERVE ET. AL TRUSTEES OF THE PROPERTY OF BOSTON & MAINE CORPORATION TO J. HARRISON HOLMAN OFF ISLINGTON ST. COUNTY OF ROCKINGHAM PORTSMOUTH, N.H." DATED DECEMBER 1980 BY RICHARD P. MILLETTE AND ASSOCIATES. R.C.R.D. PLAN #D-10458.
  - "BASE PLAN OF LOT 7-4A BORTHWICK AVENUE COUNTY OF ROCKINGHAM PORTSMOUTH, N.H." DATED NOVEMBER 8, 2002 BY MILLETTE, SPRAGUE & COLWELL, INC.
  - "STREET REVERSION AND LOT LINE RELOCATION PLAN MAP 233-LOTS 141, 143, 144, 146 & 147 FOR DENNIS COAKLEY, DONNA & WILLIAM GLADHILL, JOSEPH ARNSTEIN AND THE CITY OF PORTSMOUTH FOCH AVENUE, BARBERRY LANE & HAIG AVENUE PORTSMOUTH, N.H. COUNTY OF ROCKINGHAM" DATED JUNE 2001 BY AMBIT ENGINEERING, INC. R.C.R.D. PLAN #D-29809.
  - "LOT LINE REVISION PLAN TAX MAP R-34 LOTS 6 & 7-6 LOCATED ON BORTHWICK AVE., COAKLEY ROAD AND U.S. ROUTE 1 BYPASS IN PORTSMOUTH, N.H. COUNTY OF ROCKINGHAM" DATED OCTOBER 20, 1993 BY KIMBALL CHASE. R.C.R.D. PLAN #D-22866.
  - "LOT LINE REVISION PERSHING TERRACE BARBERRY LANE & FOCH AVENUE PORTSMOUTH, NEW HAMPSHIRE FOR DENNIS N. COAKLEY" DATED SEPTEMBER 25, 1992. BY DURGIN, VERRA & ASSOCIATES, INC. R.C.R.D. PLAN #D-22042.
  - "WATER PIPE EASEMENT PORTSMOUTH, N.H. BOSTON & MAINE RAILROAD-TO-ELDRIDGE BREWING COMPANY, INC." DATED JUNE 1937 BY W.J. CUMMINGS, R.C.R.D. PLAN #0868.
  - "PLAN OF LOT, ISLINGTON ST., PORTSMOUTH, NH FOR EDWIN BOYNTON" DATED MARCH, 1955 BY JOHN W. DURGIN, R.C.R.D. PLAN #1349-227.
  - "PLAN OF PORTSMOUTH NATIONAL RECOVERY MUNICIPAL PROTECT NO. 152" DATED 1933, ON FILE AT NHDOT DISTRICT VI.
  - "LOT LINE REVISION PLAN FOR PORTSMOUTH HOSPITAL OFFICE BUILDING ASSOCIATION, ISLINGTON WOODS, LLC AND HCA REALTY, INC.," BY DOUCET SURVEY, INC., DATED JANUARY 13, 2006, R.C.R.D. PLAN D-33642.
  - "EASEMENT PLAN FOR ISLINGTON WOODS, LLC AND BOSTON & MAINE CORPORATION" BY DOUCET SURVEY, INC., DATED OCTOBER 20, 2005, R.C.R.D. PLAN D-33500.



SEE SHEET 5 FOR LINE & CURVE TABLES

## LOT CONSOLIDATION & RESUBDIVISION PLAN

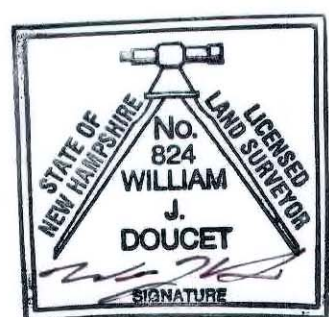
### LAND OF BORTHWICK FOREST, LLC AND SHOWING LAND OF HCA REALTY, INC.

TAX MAP 233 LOTS 112 & 113, TAX MAP 234 LOT 7-4A, TAX MAP 240 LOT 2-2202, & TAX MAP 241 LOTS 25 & 26 & BORTHWICK AVE. & ISLINGTON ST. PORTSMOUTH, NH

NO.	DATE	DESCRIPTION	BY
9	2/5/18	REMOVE EASEMENT	MWF
8	11/2/17	FOR RECORDING	MWF
7	9/26/17	REVISE EASEMENTS	MWF
6	4/17/17	ADD ADDITIONAL EASEMENTS	MWF
5	3/17/17	REVISED LAYOUT	MWF
4	3/22/16	REVISED ROAD LAYOUT	MWF
3	3/3/16	REV. LAYOUT & EASEMENTS	MWF
2	1/19/16	REVISED ROAD LAYOUT	MWF
1	11/17/15	PER ATTORNEY	MWF

NOTE: ALL ELECTRIC, GAS, TEL. WATER, SEWER AND DRAIN SERVICES ARE SHOWN IN SCHEMATIC FASHION, THEIR LOCATIONS ARE NOT PRECISE OR NECESSARILY ACCURATE. NO WORK WHATSOEVER SHALL BE UNDERTAKEN ON THIS SITE USING THIS PLAN TO LOCATE THE ABOVE SERVICES. CONSULT WITH THE PROPER AUTHORITIES CONCERNED WITH THE SUBJECT SERVICE LOCATIONS FOR INFORMATION REGARDING SUCH. CALL DIG-SAFE AT 1-888-DIG-SAFE.

I certify that this survey and plan were prepared by me or by those under my direct supervision and falls under the Urban Survey Classification of the NH Code of Administrative Rules of the Board of Licensure for Land Surveyors. I certify that this survey was made on the ground and is correct to the best of my knowledge and belief. Random traverse survey by Total Station, with a precision greater than 1:15,000.


 W. J. DOUCET L.L.S. #824  
 DATE: 5-4-18

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DRAWN BY:	M.W.F.	DATE:	MARCH 16, 2017
CHECKED BY:	S.V.M.	DRAWING NO.:	3445G
JOB NO.:	3445	SHEET	2 OF 5





BOSTON & MAINE

RAILROAD

SHEET 5  
SHEET 3

TAX MAP 233, LOT 129  
SHIRLY N. GARRETT REV. TRUST 2000  
SHIRLY N. GARRETT, TRUSTEE  
11 BARBERRY LANE  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 4298, PAGE 2633

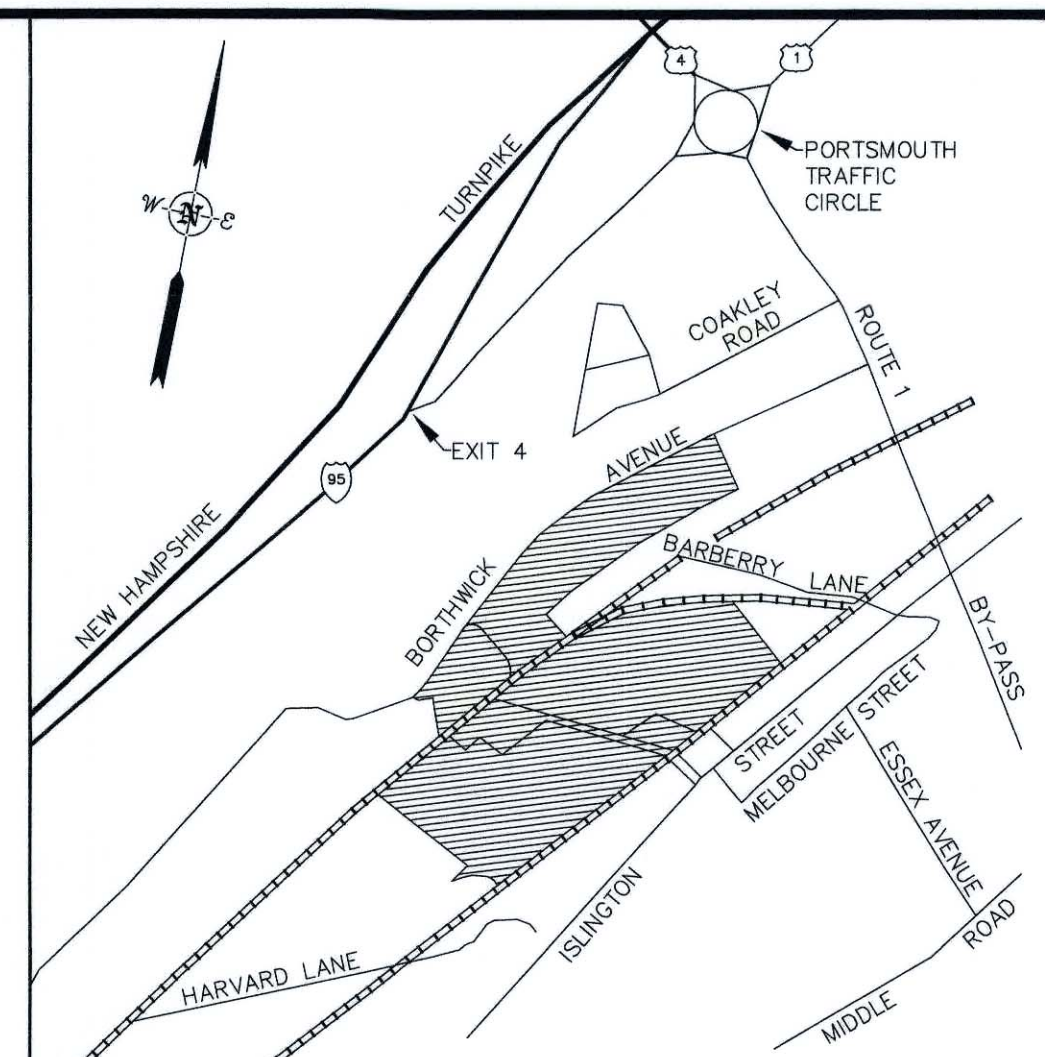
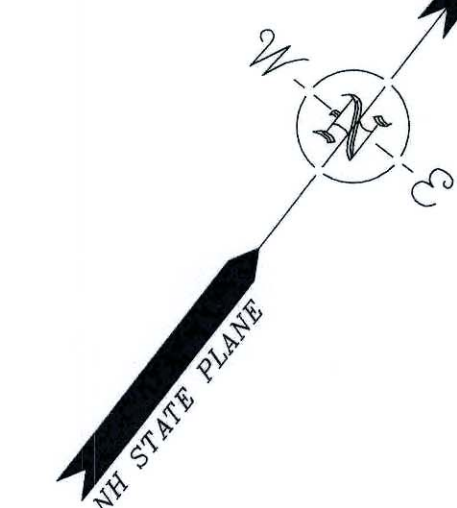
EXISTING 70' RAILROAD  
CROSSING EASEMENT  
(SEE NOTE #14B)

PROPOSED ACCESS EASEMENT  
FOR STORM WATER FROM  
BORTHWICK FOREST, LLC TO  
THE CITY OF PORTSMOUTH

PROPOSED ACCESS EASEMENT  
FOR STORM WATER FROM  
BORTHWICK FOREST, LLC TO  
THE CITY OF PORTSMOUTH

ACCESS EASEMENT  
(SEE NOTE #14Z)

DRILL HOLE FOUND  
(S 53°54'21" W, 4.59'  
TO CORNER)



Location Map (n.t.s.)

LEGEND

- WATER SHUTOFF VALVE
- GRANITE BOUND FOUND
- DRILL HOLE FOUND
- IRON PIPE/ROD FOUND
- 5/8" RE-BAR W/ ID CAP TO BE SET
- BARBED WIRE FOUND ON GROUND
- SEWER MANHOLE
- JURISDICTIONAL WETLAND SYMBOL
- BEARING  
DIST  
PROPERTY LINES
- BEARING  
DIST  
PROPOSED PROPERTY LINES
- PROPERTY LINES TO BE ABANDONED
- SETBACK LINE
- STOCKADE FENCE
- WIRE FENCE
- APPROX. ABUTTERS LOT LINE
- EASEMENT LINE
- PROPOSED EASEMENT LINE
- STONE WALL
- EDGE OF JURISDICTIONAL WETLAND (SEE NOTE #6)
- EDGE OF WETLAND (PER REF. PLAN #2)
- APPROX. WATERLINE LOCATION (PER PORTSMOUTH DPW)
- ASSESSORS TAX MAP/LOT # (233/111)
- FEATURES PER EASTERN TOPOGRAPHICS
- POST
- PAVED ROADS
- GRAVEL ROADS
- OBSCURED PAVEMENT
- DRIVEWAYS
- UNPAVED DRIVEWAY
- FENCES
- STONEWALL
- BROOK/STREAM
- RAILROAD TRACKS
- OBSCURED RAILROAD TRACKS

SEE SHEET 5 FOR LINE & CURVE TABLES

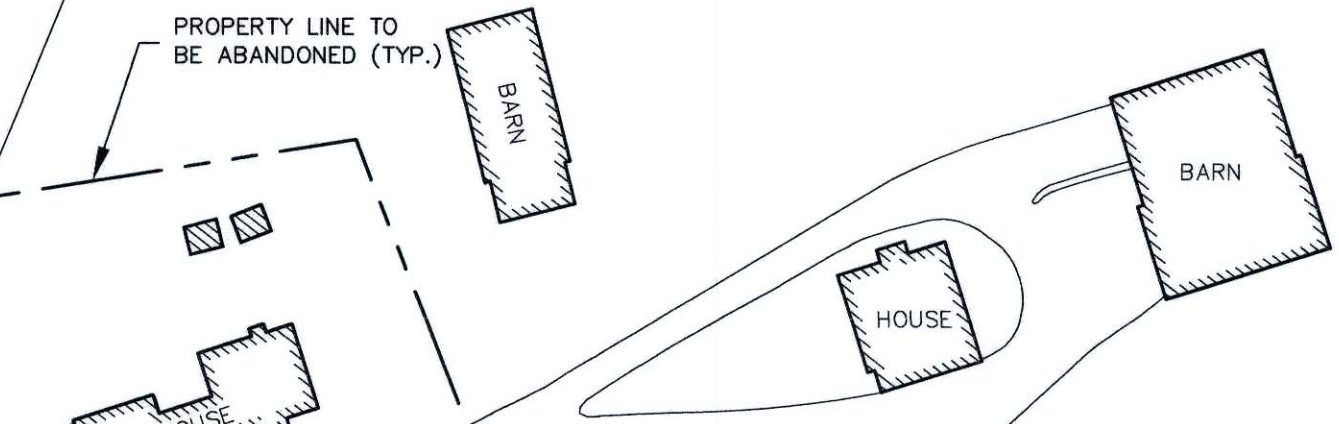
**LOT CONSOLIDATION  
&  
RESUBDIVISION PLAN  
LAND OF BORTHWICK FOREST, LLC  
AND SHOWING LAND OF  
HCA REALTY, INC.  
TAX MAP 233 LOTS 112 & 113, TAX MAP 234  
LOT 7-4A, TAX MAP 240 LOT 2-2202, & TAX  
MAP 241 LOTS 25 & 26 &  
BORTHWICK AVE. & ISLINGTON ST.  
PORTSMOUTH, NH**

PROPOSED  
TAX MAP 241, LOTS 25  
1,810,169 Sq. Ft.  
41.556 Acres  
(PROPOSED FRONTAGE=980.30')

EXISTING  
TAX MAP 233, LOT 113  
601,800 Sq. Ft.  
13.819 Acres

EXISTING  
TAX MAP 233, LOT 112  
31,900 Sq. Ft.  
0.732 Acres

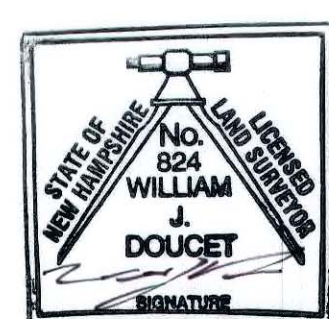
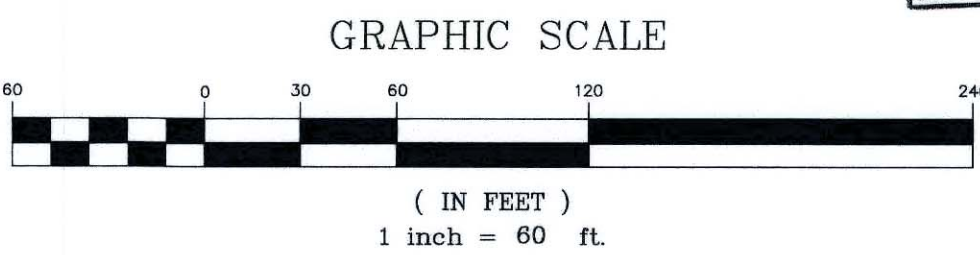
TAX MAP 233, LOT 128  
SHIRLY N. GARRETT REV. TRUST 2000  
SHIRLY N. GARRETT, TRUSTEE  
BARBERRY LANE  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 4298, PAGE 2633



BOSTON & MAINE  
RAILROAD

NO.	DATE	DESCRIPTION	BY
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8	11/2/17	FOR RECORDING	MWF
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6	4/17/17	ADD ADDITIONAL EASEMENTS	MWF
5	3/17/17	REVISED LAYOUT	MWF
4	3/22/16	REVISED ROAD LAYOUT	MWF
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2	1/19/16	REVISED ROAD LAYOUT	MWF
1	11/17/15	PER ATTORNEY	MWF

**NOTE:**  
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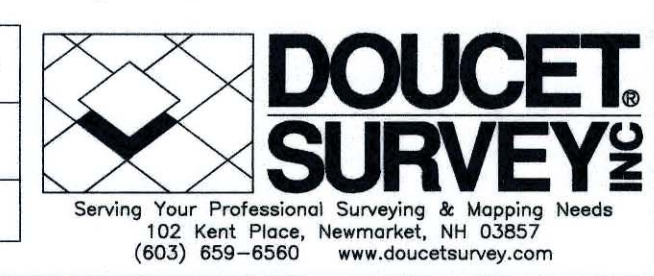


I certify that this survey and plan were prepared by me or by those under my direct supervision and falls under the Urban Survey Classification of the NH Code of Administrative Rules of the Board of Licensure for Land Surveyors. I certify that this survey was made on the ground and is correct to the best of my knowledge and belief. Random traverse survey by Total Station, with a precision greater than 1:15,000.

*William J. Doucet* L.L.S. #824  
DATE: 5-4-18

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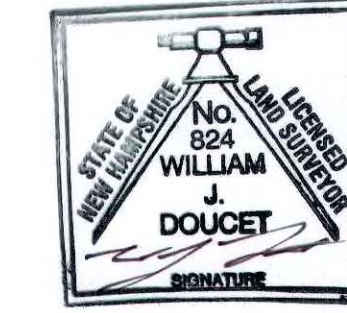
DRAWN BY:	M.W.F.	DATE:	MARCH 16, 2017
CHECKED BY:	S.V.M.	DRAWING NO.:	3445G
JOB NO.:	3445	SHEET	3 OF 5





TAX MAP 240, LOT 2-2001  
 CITY OF PORTSMOUTH  
 DPW  
 PO BOX 628  
 PORTSMOUTH, NH 03802  
 R.C.R.D. BOOK 2648, PAGE 901

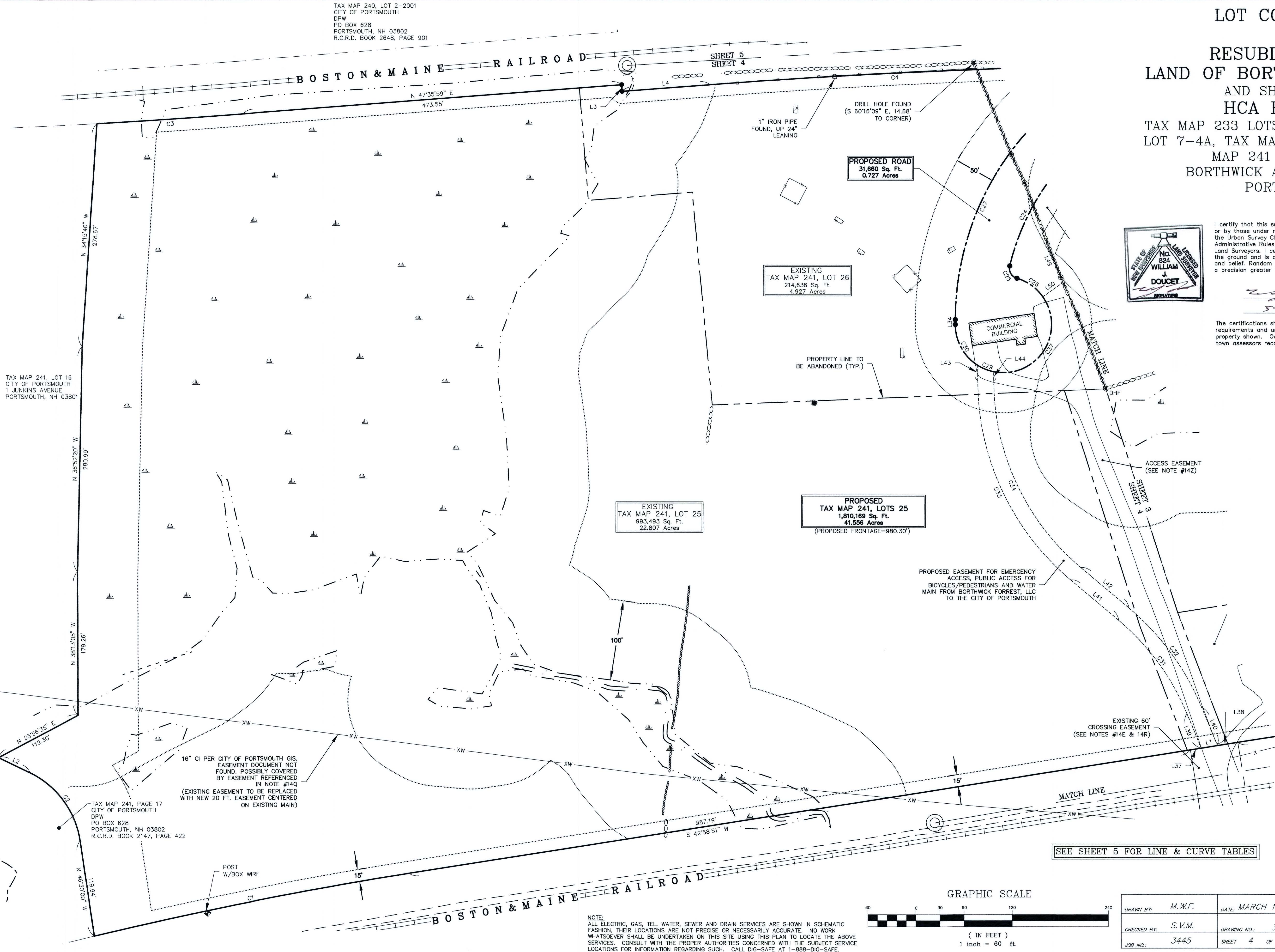
**LOT CONSOLIDATION  
 &  
 RESUBDIVISION PLAN  
 LAND OF BORTHWICK FOREST, LLC  
 AND SHOWING LAND OF  
 HCA REALTY, INC.**  
 TAX MAP 233 LOTS 112 & 113, TAX MAP 234  
 LOT 7-4A, TAX MAP 240 LOT 2-2202, & TAX  
 MAP 241 LOTS 25 & 26 &  
 BORTHWICK AVE. & ISLINGTON ST.  
 PORTSMOUTH, NH



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*[Signature]* L.L.S. #824  
 5-4-18 DATE

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TAX MAP 241, LOT 16  
 CITY OF PORTSMOUTH  
 1 JUNKINS AVENUE  
 PORTSMOUTH, NH 03801

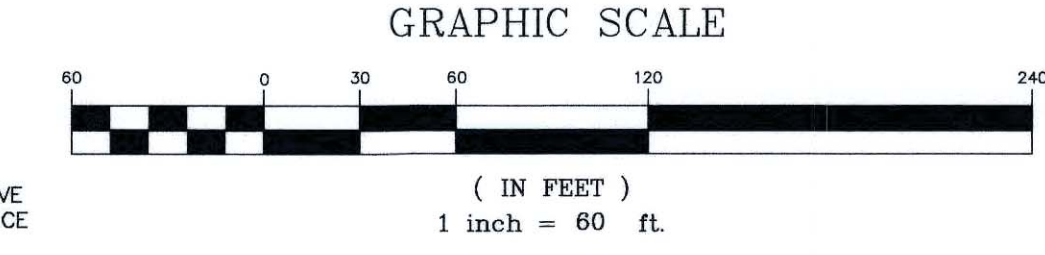
N 34°15'40" W 278.67'  
 N 36°52'20" W 280.89'  
 N 38°13'05" W 179.26'  
 N 23°56'35" E 112.30'

16" CI PER CITY OF PORTSMOUTH GIS, EASEMENT DOCUMENT NOT FOUND. POSSIBLY COVERED BY EASEMENT REFERENCED IN NOTE #140 (EXISTING EASEMENT TO BE REPLACED WITH NEW 20 FT. EASEMENT CENTERED ON EXISTING MAIN)

TAX MAP 241, PAGE 17  
 CITY OF PORTSMOUTH  
 DPW  
 PO BOX 628  
 PORTSMOUTH, NH 03802  
 R.C.R.D. BOOK 2147, PAGE 422

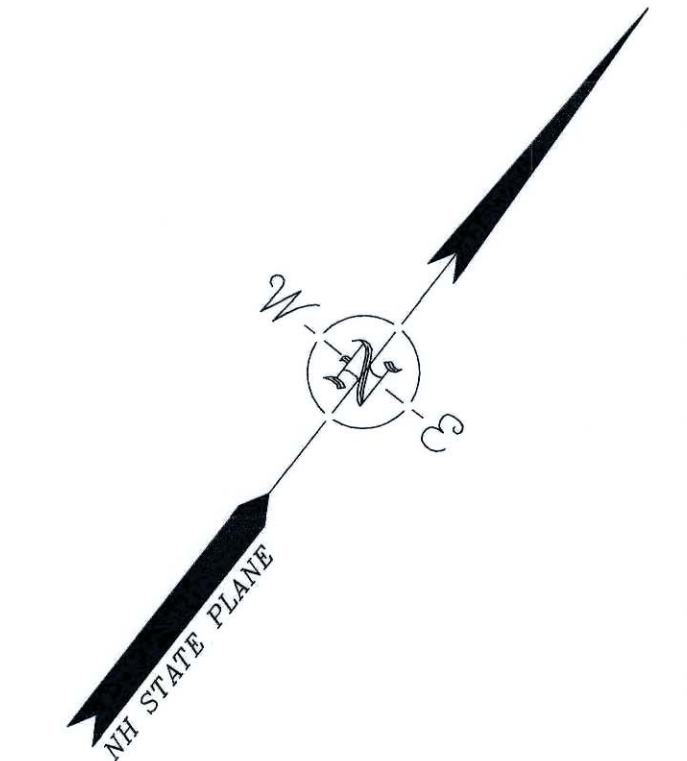
EXISTING  
 TAX MAP 241, LOT 25  
 993,493 Sq. Ft.  
 22.807 Acres

PROPOSED  
 TAX MAP 241, LOTS 25  
 1,810,169 Sq. Ft.  
 41.556 Acres  
 (PROPOSED FRONTAGE=980.30')



NOTE:  
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SEE SHEET 5 FOR LINE & CURVE TABLES

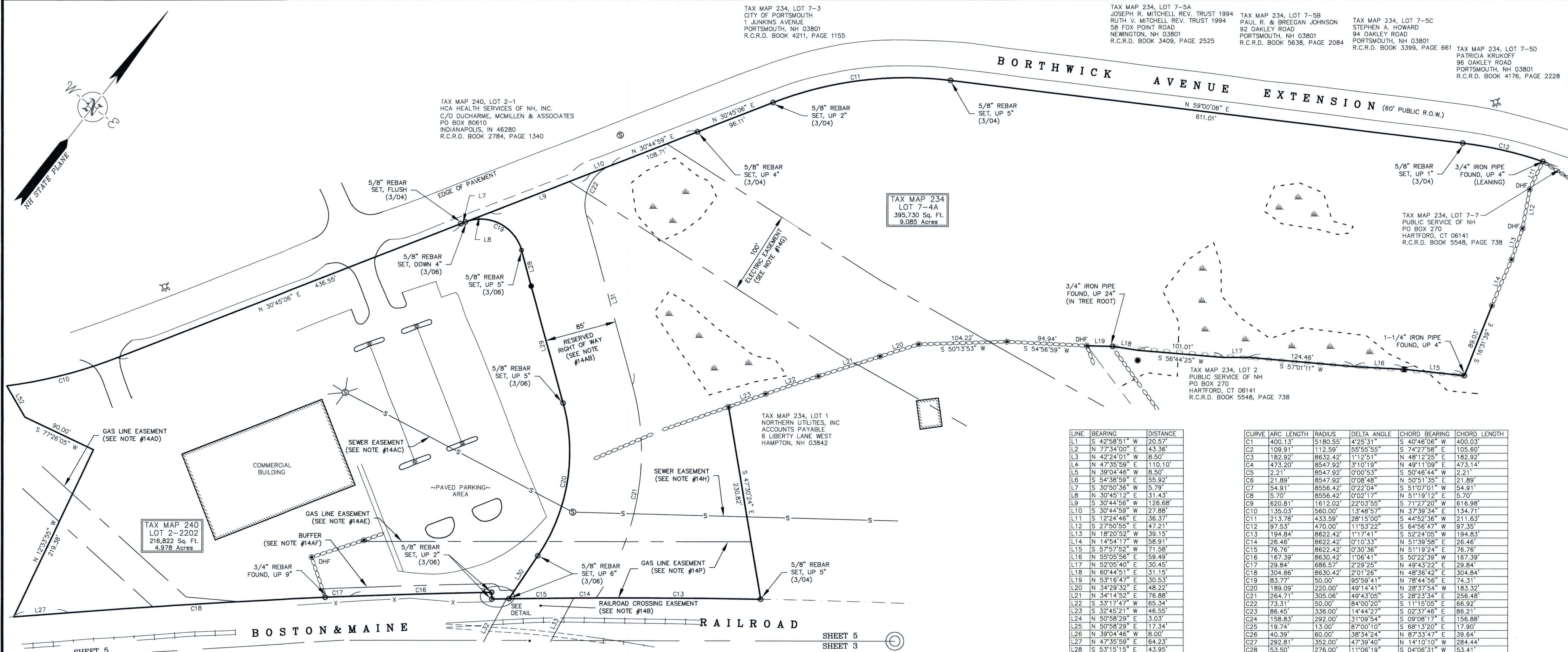


NO.	DATE	DESCRIPTION	BY
9	2/5/18	REMOVE EASEMENT	MWF
8	11/2/17	FOR RECORDING	MWF
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6	4/17/17	ADD ADDITIONAL EASEMENTS	MWF
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3	3/3/16	REV. LAYOUT & EASEMENTS	MWF
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1	11/17/15	PER ATTORNEY	MWF

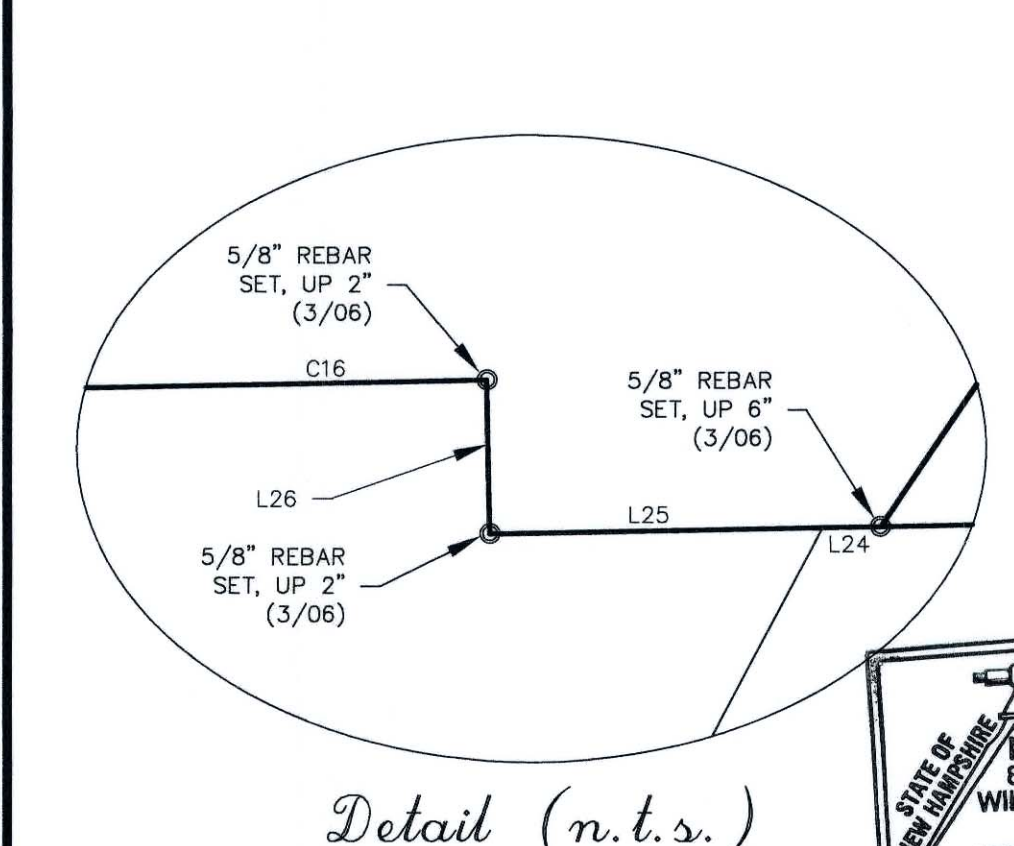
DRAWN BY: M.W.F. DATE: MARCH 16, 2017  
 CHECKED BY: S.V.M. DRAWING NO.: 3445G  
 JOB NO.: 3445 SHEET 4 OF 5





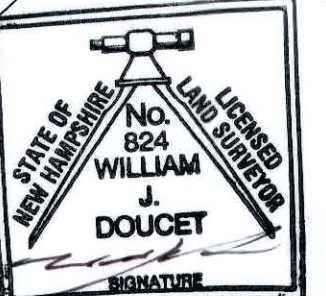


SHEET 5  
SHEET 4



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W.J.M. L.L.S. #824  
5-4-18 DATE



NO.	DATE	DESCRIPTION	BY
9	2/5/18	REMOVE EASEMENT	MWF
8	11/2/17	FOR RECORDING	MWF
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3	3/3/16	REV. LAYOUT & EASEMENTS	MWF
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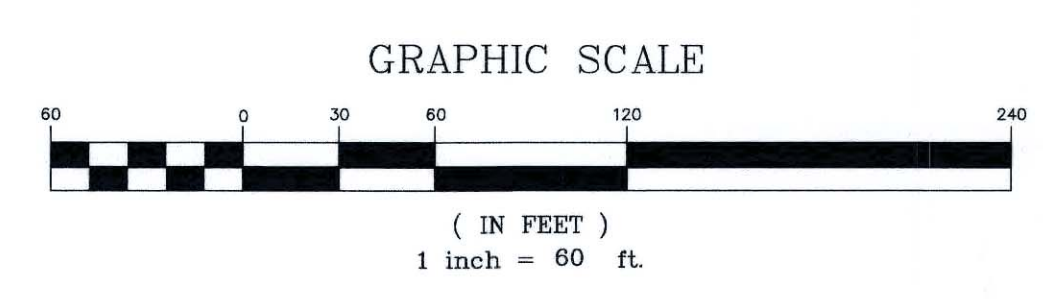
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- LEGEND**
- WATER SHUTOFF VALVE
  - GRANITE BOUND FOUND
  - DRILL HOLE FOUND
  - IRON PIPE/ROD FOUND
  - 5/8" RE-BAR W/ ID CAP TO BE SET
  - BARBED WIRE FOUND ON GROUND
  - SEWER MANHOLE
  - JURISDICTIONAL WETLAND SYMBOL
  - PROPERTY LINES
  - PROPOSED PROPERTY LINES
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  - STOCKADE FENCE
  - WIRE FENCE
  - APPROX. ABUTTERS LOT LINE
  - EASEMENT LINE
  - PROPOSED EASEMENT LINE
  - STONE WALL
  - EDGE OF JURISDICTIONAL WETLAND (SEE NOTE #6)
  - EDGE OF WETLAND (PER REF. PLAN #2)
  - APPROX. WATERLINE LOCATION (PER PORTSMOUTH DPW)
  - ASSESSORS TAX MAP/LOT # (233/111)
  - FEATURES PER EASTERN TOPOGRAPHICS
  - POST
  - PAVED ROADS
  - GRAVEL ROADS
  - OBSCURED PAVEMENT
  - DRIVEWAYS
  - UNPAVED DRIVEWAY
  - FENCES
  - STONEWALL
  - BROOK/STREAM
  - RAILROAD TRACKS
  - OBSCURED RAILROAD TRACKS

LINE	BEARING	DISTANCE
L1	S 42°58'51" W	20.57'
L2	N 77°34'00" E	43.36'
L3	N 42°24'01" W	8.50'
L4	N 47°35'59" E	110.10'
L5	N 38°04'46" W	8.50'
L6	S 54°38'59" E	55.92'
L7	S 30°50'36" W	5.79'
L8	N 30°45'12" E	31.43'
L9	S 30°44'59" W	126.68'
L10	S 30°44'59" W	27.88'
L11	S 12°24'46" E	36.37'
L12	S 27°50'55" E	47.21'
L13	N 18°20'52" W	39.15'
L14	N 14°54'17" W	58.91'
L15	S 57°57'52" W	71.58'
L16	N 55°05'56" E	59.49'
L17	N 52°05'40" E	30.45'
L18	N 60°44'51" E	31.15'
L19	N 53°16'47" E	30.53'
L20	N 34°29'52" E	48.22'
L21	N 34°14'52" E	76.88'
L22	S 33°17'47" W	65.34'
L23	S 32°45'21" W	46.55'
L24	N 50°58'29" E	3.03'
L25	N 50°58'29" E	17.34'
L26	N 39°04'46" W	8.00'
L27	N 47°35'59" E	64.23'
L28	S 53°15'15" E	43.95'
L29	S 53°15'15" E	143.79'
L30	S 04°00'34" E	61.16'
L31	S 53°15'15" E	207.17'
L32	S 10°00'00" E	85.25'
L33	S 10°00'00" E	75.13'
L34	S 38°00'00" E	5.99'
L35	N 09°39'40" E	24.25'
L36	N 09°39'40" E	24.25'
L37	N 42°58'51" E	13.71'
L38	N 42°58'51" W	25.72'
L39	N 60°34'00" E	46.76'
L40	N 60°34'00" W	51.58'
L41	N 88°00'00" W	78.53'
L42	S 88°00'00" E	78.53'
L43	N 38°00'00" W	19.25'
L44	N 38°00'00" W	11.22'
L45	S 37°55'23" W	126.44'
L46	S 29°34'37" E	34.27'
L47	S 80°20'20" E	19.66'
L48	N 08°02'02" W	95.93'
L49	N 60°43'02" W	65.65'
L50	N 16°50'59" E	30.76'
L51	N 10°00'00" W	3.55'
L52	S 68°07'11" E	42.72'

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	400.13'	5180.55'	4°25'31"	S 40°46'06" W	400.03'
C2	109.91'	112.59'	55°55'55"	S 74°27'58" E	105.60'
C3	182.92'	8632.42'	1°12'51"	N 48°12'25" E	182.92'
C4	473.20'	8547.92'	3°10'19"	N 49°11'09" E	473.14'
C5	2.21'	8547.92'	0°00'53"	S 50°46'44" W	2.21'
C6	21.89'	8547.92'	0°08'48"	N 50°51'35" E	21.89'
C7	54.91'	8556.42'	0°22'04"	S 51°07'01" W	54.91'
C8	5.70'	8556.42'	0°02'17"	N 51°19'12" E	5.70'
C9	620.81'	1612.02'	22°03'55"	S 71°27'20" W	616.98'
C10	135.03'	560.00'	13°48'57"	N 37°39'34" E	134.71'
C11	213.78'	433.59'	28°15'00"	S 44°52'36" W	211.63'
C12	97.53'	470.00'	11°53'22"	S 64°56'47" W	97.35'
C13	194.84'	8622.42'	1°17'41"	S 52°24'05" W	194.83'
C14	26.46'	8622.42'	0°10'33"	N 51°39'58" E	26.46'
C15	76.76'	8622.42'	0°30'36"	N 51°19'24" E	76.76'
C16	167.39'	8630.42'	1°06'41"	S 50°22'39" W	167.39'
C17	29.84'	686.57'	2°29'25"	N 49°43'22" E	29.84'
C18	304.86'	8630.42'	2°01'26"	N 48°36'42" E	304.84'
C19	83.77'	50.00'	95°59'41"	N 78°44'56" E	74.31'
C20	189.09'	220.00'	49°14'41"	N 28°37'54" W	183.32'
C21	264.71'	305.06'	49°43'05"	S 28°23'34" E	256.48'
C22	73.31'	50.00'	84°00'20"	S 11°15'05" E	66.92'
C23	86.45'	336.00'	14°44'27"	S 02°37'46" E	86.21'
C24	158.83'	292.00'	31°09'54"	S 09°08'17" E	156.88'
C25	19.74'	13.00'	87°00'10"	S 68°13'20" E	17.90'
C26	40.39'	60.00'	38°34'24"	N 87°33'47" E	39.64'
C27	292.81'	352.00'	47°39'40"	N 14°10'10" W	284.44'
C28	53.50'	276.00'	11°06'19"	S 04°06'31" W	53.41'
C29	21.87'	60.00'	20°41'38"	N 73°53'02" E	21.55'
C30	60.50'	60.00'	57°46'09"	S 66°53'04" E	57.97'
C31	145.56'	304.00'	27°26'00"	N 74°17'00" W	144.17'
C32	155.13'	324.00'	27°26'00"	S 74°17'00" E	153.65'
C33	282.74'	324.00'	50°00'00"	N 63°00'00" W	273.86'
C34	265.29'	304.00'	50°00'00"	N 63°00'00" W	256.95'
C35	28.85'	336.00'	4°55'13"	N 07°12'04" E	28.85'
C36	70.96'	1612.02'	2°51'20"	S 59°09'43" W	70.95'
C37	143.14'	60.00'	136°41'14"	N 04°48'24" W	111.53'
C38	16.39'	292.00'	3°13'00"	S 08°03'10" W	16.39'

**LOT CONSOLIDATION & RESUBDIVISION PLAN**  
**LAND OF BORTHWICK FOREST, LLC**  
 AND SHOWING LAND OF  
**HCA REALTY, INC.**  
 TAX MAP 233 LOTS 112 & 113, TAX MAP 234  
 LOT 7-4A, TAX MAP 240 LOT 2-2202, & TAX  
 MAP 241 LOTS 25 & 26 &  
 BORTHWICK AVE. & ISLINGTON ST.  
 PORTSMOUTH, NH



DRAWN BY: M.W.F. DATE: MARCH 16, 2017  
 CHECKED BY: S.V.M. DRAWING NO.: 3445G  
 JOB NO.: 3445 SHEET 5 OF 5





**GENERAL NOTES:**

- THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK.
- COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH.
- THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED SURVEYOR OR PROFESSIONAL ENGINEER TO DETERMINE ALL LINES AND GRADES.
- THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES. CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES AND COMPLY WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
- THE CONTRACTOR SHALL OBTAIN AND PAY FOR AND COMPLY WITH ADDITIONAL PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
- THE CONTRACTOR SHALL PHASE DEMOLITION AND CONSTRUCTION AS REQUIRED TO PROVIDE CONTINUOUS SERVICE TO EXISTING BUSINESSES AND HOMES THROUGHOUT THE CONSTRUCTION PERIOD. EXISTING BUSINESS AND HOME SERVICES INCLUDE, BUT ARE NOT LIMITED TO ELECTRICAL, COMMUNICATION, FIRE PROTECTION, DOMESTIC WATER AND SEWER SERVICES. TEMPORARY SERVICES, IF REQUIRED, SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND UTILITY COMPANY STANDARDS. CONTRACTOR SHALL PROVIDE DETAILED CONSTRUCTION SCHEDULE TO OWNER PRIOR TO ANY DEMOLITION/CONSTRUCTION ACTIVITIES AND SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED ABUTTER.
- ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION.
- CONTRACTOR TO SUBMIT AS-BUILT PLANS ON REPRODUCIBLE MYLARS AND IN DIGITAL FORMAT (.DWG FILE) ON DISK TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR OR PROFESSIONAL ENGINEER.
- CONTRACTOR SHALL THOROUGHLY CLEAN ALL CATCH BASINS AND DRAIN LINES, WITHIN THE LIMIT OF WORK, OF SEDIMENT IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
- THE PROPERTY OWNER SHALL PROVIDE AN AS-BUILT RESTORATION PLAN AND FOLLOW-UP MONITORING ONE AND THREE YEARS AFTER THE RESTORATION WORK HAS BEEN COMPLETED TO INSURE A SURVIVAL RATE OF AT LEAST 80% OF THE NEW PLANTINGS. THE MONITORING PLAN SHALL BE SUBMITTED TO THE PLANNING DEPARTMENT AND SHALL INCLUDE A REQUIREMENT THAT ANY NEW INVASIVE SPECIES FOUND IN THE RESTORATION AREA DURING THE SITE MONITORING BE MECHANICALLY REMOVED.
- ATV USE SHALL BE PROHIBITED IN THE DESCRIBED BLANDING TURTLE NESTING AREA AND THE IMPACTED AREA SHALL BE SIGNED ACCORDINGLY BY THE PROPERTY OWNER.
- THE SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
- ALL IMPROVEMENTS SHOWN ON THE SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
- THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS SHALL BE RESPONSIBLE FOR THE MAINTENANCE, REPAIR AND REPLACEMENT OF ALL REQUIRED SCREENING AND LANDSCAPE MATERIALS.
- ALL REQUIRED PLANT MATERIALS SHALL BE TENDED AND MAINTAINED IN A HEALTHY GROWING CONDITION, REPLACED WHEN NECESSARY, AND KEPT FREE OF REFUSE AND DEBRIS. ALL REQUIRED FENCES AND WALLS SHALL BE MAINTAINED IN GOOD REPAIR.
- THE PROPERTY OWNER SHALL BE RESPONSIBLE TO REMOVE AND REPLACE DEAD OR DISEASED PLANT MATERIALS IMMEDIATELY WITH THE SAME TYPE, SIZE AND QUANTITY OF PLANT MATERIALS AS ORIGINALLY INSTALLED, UNLESS ALTERNATIVE PLANTINGS ARE REQUESTED, JUSTIFIED AND APPROVED BY THE PLANNING BOARD OR PLANNING DIRECTOR.

**DEMOLITION NOTES:**

- EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.
- ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES.
- COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
- ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- SAW CUT AND REMOVE PAVEMENT ONE (1) FOOT OFF PROPOSED EDGE OF PAVEMENT OR EXISTING CURB LINE IN ALL AREAS WHERE PAVEMENT TO BE REMOVED ABUTS EXISTING PAVEMENT OR CONCRETE TO REMAIN.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS.
- UTILITIES SHALL BE TERMINATED AT THE MAIN LINE PER UTILITY COMPANY AND CITY OF PORTSMOUTH STANDARDS. THE CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES LOCATED WITHIN THE LIMITS OF WORK UNLESS OTHERWISE NOTED. CONTRACTOR SHALL VERIFY ORIGIN OF ALL DRAINS AND UTILITIES PRIOR TO REMOVAL/TERMINATION TO DETERMINE IF DRAINS OR UTILITY IS ACTIVE, AND SERVICES ANY ON OR OFF-SITE STRUCTURE TO REMAIN. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY OF ANY SUCH UTILITY FOUND AND SHALL MAINTAIN THESE UTILITIES UNTIL PERMANENT SOLUTION IS IN PLACE.
- PAVEMENT REMOVAL LIMITS ARE SHOWN FOR CONTRACTOR'S CONVENIENCE. ADDITIONAL PAVEMENT REMOVAL MAY BE REQUIRED DEPENDING ON THE CONTRACTOR'S OPERATION. CONTRACTOR TO VERIFY FULL LIMITS OF PAVEMENT REMOVAL PRIOR TO BID.
- THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE PADS, UTILITIES AND PAVEMENT WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ITEMS TO BE REMOVED INCLUDE BUT ARE NOT LIMITED TO: CONCRETE, PAVEMENT, CURBS, LIGHTING, MANHOLES, CATCH BASINS, UNDER GROUND PIPING, POLES, STAIRS, SIGNS, FENCES, RAMPS, WALLS, BOLLARDS, BUILDING SLABS, FOUNDATION, TREES AND LANDSCAPING.
- REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL STUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
- CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED BY THE CONTRACTOR, THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED SURVEYOR TO REPLACE DISTURBED MONUMENTS.
- PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS/CURB INLETS WITHIN CONSTRUCTION LIMITS AS WELL AS CATCH BASINS/CURB INLETS THAT MAY RECEIVE RUNOFF FROM CONSTRUCTION ACTIVITIES. INLET PROTECTION BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE "HIGH FLOW SILT SACK" BY ACF ENVIRONMENTAL OR EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN EVENT OF 0.25 INCHES OR GREATER. CONTRACTOR SHALL COMPLETE A MAINTENANCE INSPECTION REPORT AFTER EACH INSPECTION. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED OR SEDIMENT HAS ACCUMULATED TO 1/3 THE DESIGN DEPTH OF THE BARRIER.
- SEE ROADWAY IMPROVEMENT PLANS FOR OFF-SITE DEMOLITION.
- THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFETY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.

- SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL UTILITIES TO BE REMOVED AND PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
- THE CONTRACTOR SHALL REMOVE AND SALVAGE EXISTING GRANITE CURB FOR REUSE.

**SITE NOTES:**

- PAVEMENT MARKINGS SHALL BE INSTALLED AS SHOWN, INCLUDING PARKING SPACES, STOP BARS, ADA SYMBOLS, PAINTED ISLANDS, FIRE LANES, CROSS WALKS, ARROWS, LEGENDS AND CENTERLINES. ALL MARKINGS EXCEPT CENTERLINE AND MEDIAN ISLANDS TO BE CONSTRUCTED USING WHITE PAVEMENT MARKINGS. ALL THERMOPLASTIC PAVEMENT MARKINGS INCLUDING LEGENDS, ARROWS, CROSSWALKS AND STOP BARS SHALL MEET THE REQUIREMENTS OF AASHTO M249. ALL PAINTED PAVEMENT MARKINGS INCLUDING CENTERLINES, LANE LINES AND PAINTED MEDIANS SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F".
- ALL PAVEMENT MARKINGS AND SIGNS TO CONFORM TO "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", AND THE AMERICANS WITH DISABILITIES ACT REQUIREMENTS, LATEST EDITIONS.
- SEE DETAILS FOR PAVEMENT MARKINGS, ADA SYMBOLS, SIGNS AND SIGN POSTS.
- CENTERLINES SHALL BE FOUR (4) INCH WIDE YELLOW LINES.
- PAINTED ISLANDS SHALL BE FOUR (4) INCH WIDE DIAGONAL LINES AT 3'-0" O.C. BORDERED BY FOUR (4) INCH WIDE LINES.
- STOP BARS SHALL BE EIGHTEEN (18) INCHES WIDE, WHITE THERMOPLASTIC AND CONFORM TO CURRENT MUTCD STANDARDS.
- CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAW CUT LINE WITH RS-1 EMULSION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CURTUE.
- SEE ARCHITECTURAL/BUILDING DRAWINGS FOR ALL CONCRETE PADS & SIDEWALKS ADJACENT TO BUILDING.
- COORDINATE ALL OFF-SITE SITE WORK WITH ROADWAY IMPROVEMENT PLANS.
- CONTRACTOR TO PROVIDE BACKFILL AND COMPACTION AT CURB LINE AFTER CONCRETE FORMS FOR SIDEWALKS AND PADS HAVE BEEN STRIPPED. COORDINATE WITH BUILDING CONTRACTOR.
- ALL LIGHT POLE BASES NOT PROTECTED BY A RAISED CURB SHALL BE PAINTED YELLOW.
- COORDINATE ALL WORK ADJACENT TO BUILDING WITH BUILDING CONTRACTOR.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING RETAINING WALL DESIGN FROM WALL MANUFACTURERS, AND SUBMITTING DESIGN TO ENGINEER PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO CONSTRUCT WALL IN ACCORDANCE WITH DESIGN APPROVED BY THE ENGINEER. RETAINING WALL SHALL BE SEGMENTAL BLOCK WALL SYSTEM AS OUTLINED IN THE SPECIFICATIONS.
- ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
- EASEMENTS BETWEEN THE APPLICANT AND THE CITY OF PORTSMOUTH SHALL BE RECORDED PRIOR TO EXECUTED SITE REVIEW AGREEMENT.
- APPLICANT SHALL PROVIDE LIGHT POLE BASE, 24 FT ALUMINUM LIGHT POLE WITH 8 FT ARM AND WIRING FOR STREET LIGHTING. CITY OF PORTSMOUTH TO PROVIDE LED FIXTURES.
- UPON FINAL APPROVAL THE APPLICATION AGREES TO PROVIDE ALL REQUIRED PROPERTY LINE MONUMENTATIONS, BENCHMARKS, AND HOUSE NUMBER AS SPECIFIED IN THE SUBDIVISION RULES AND REGULATIONS TO THE CITY OF PORTSMOUTH PLANNING DEPARTMENT.

**GRADING AND DRAINAGE NOTES:**

- COMPACTION REQUIREMENTS:  
BELOW PAVED OR CONCRETE AREAS 95%  
TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL 95%  
BELOW LOAM AND SEED AREAS 90%  
\* ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM-2922.
- ALL STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE (HANCOR HI-Q, ADS N-12 OR EQUAL) OR RCP CLASS IV, UNLESS OTHERWISE SPECIFIED.
- ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
- CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE AND LAWN AREAS FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCES, EXITS, RAMPS AND LOADING DOCK AREAS ADJACENT TO THE BUILDING.
- ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED FERTILIZER AND MULCH.
- ALL STORM DRAIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NHDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
- ALL PROPOSED CATCH BASINS SHALL BE EQUIPPED WITH OIL/GAS SEPARATOR HOODS AND 4' SUMPS.

**EROSION CONTROL NOTES:**

- SEE SHEET C-501 FOR GENERAL EROSION CONTROL NOTES AND DETAILS.

**UTILITY NOTES:**

- COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
  - NATURAL GAS - UNITIL
  - WATER - CITY OF PORTSMOUTH
  - SEWER - CITY OF PORTSMOUTH
  - ELECTRIC - EVERSOURCE
  - TELECOMMUNICATIONS - FAIRPOINT & COMCAST
- ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, CEMENT LINED DUCTILE IRON PIPE.
- ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE CITY OF PORTSMOUTH WATER DEPARTMENT.
- ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
- CONNECTION TO EXISTING WATER MAIN SHALL BE CONSTRUCTED TO CITY OF PORTSMOUTH STANDARDS.
- EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE DEPARTMENT OF PUBLIC WORKS STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
- ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
- THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE APPLICABLE UTILITY COMPANIES.
- ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
- THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
- CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES.
- A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
- SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.

- HYDRANTS, GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH.
- COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
- ALL SEWER PIPE WITH LESS THAN 6' OF COVER SHALL BE INSULATED.
- CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
- SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER.
- CONTRACTOR SHALL CONSTRUCT ALL UTILITIES AND DRAINS TO WITHIN 10' OF THE FOUNDATION WALLS AND CONNECT THESE TO SERVICE STUBS FROM THE BUILDING.
- FINAL DESIGN FOR ALL ELECTRIC, TELECOMMUNICATIONS, AND GAS WORK SHALL BE COORDINATED WITH THE UTILITY COMPANY AND CITY OF PORTSMOUTH PRIOR TO CONSTRUCTION.
- THE APPLICANT SHALL HAVE A SITE SURVEY CONDUCTED BY A RADIO COMMUNICATIONS CARRIER APPROVED BY THE CITY'S COMMUNICATIONS DIVISION. THE RADIO COMMUNICATIONS CARRIER MUST BE FAMILIAR AND CONVERSANT WITH THE POLICE AND RADIO CONFIGURATION. IF THE SITE SURVEY INDICATES IT IS NECESSARY TO INSTALL A SIGNAL REPEATER EITHER ON OR NEAR THE PROPOSED PROJECT, THOSE COSTS SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. THE OWNER SHALL COORDINATE WITH THE SUPERVISOR OF RADIO COMMUNICATIONS FOR THE CITY.

**LANDSCAPE NOTES:**

- THE CONTRACTOR SHALL FURNISH AND PLANT ALL PLANTS IN QUANTITIES AS SHOWN ON THIS PLAN. NO SUBSTITUTIONS WILL BE PERMITTED UNLESS APPROVED BY OWNER. ALL PLANTS SHALL BE NURSERY GROWN.
- ALL PLANTS SHALL BE NURSERY GROWN AND PLANTS AND WORKMANSHIP SHALL CONFORM TO THE AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS, INCLUDING BUT NOT LIMITED TO SIZE, HEALTH, SHAPE, ETC., AND SHALL BE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO ARRIVAL ON-SITE AND AFTER PLANTING.
- PLANT STOCK SHALL BE GROWN WITHIN THE HARDINESS ZONES 4 THRU 7 ESTABLISHED BY THE PLANT HARDINESS ZONE MAP, MISCELLANEOUS PUBLICATIONS NO. 814, AGRICULTURAL RESEARCH SERVICE, UNITED STATES DEPARTMENT AGRICULTURE, LATEST REVISION.
- PLANT MATERIAL SHALL BARE THE SAME RELATIONSHIP TO FINISHED GRADE AS TO THE ORIGINAL PLANTING GRADE PRIOR TO DIGGING.
- THE NUMBER OF EACH INDIVIDUAL PLANT TYPE AND SIZE PROVIDED IN THE PLANT LIST OR ON THE PLAN IS FOR THE CONTRACTOR'S CONVENIENCE ONLY. IF A DISCREPANCY EXISTS BETWEEN THE NUMBER OF PLANTS ON THE LABEL AND THE NUMBER OF SYMBOLS SHOWN ON THE DRAWINGS, THE GREATER NUMBER SHALL APPLY.
- NO SUBSTITUTION OF PLANT MATERIALS WILL BE ALLOWED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE.
- THE CONTRACTOR SHALL LOCATE, VERIFY AND MARK ALL EXISTING AND NEWLY INSTALLED UNDERGROUND UTILITIES PRIOR TO ANY LAWN WORK OR PLANTING. ANY CONFLICTS WHICH MIGHT OCCUR BETWEEN PLANTING AND UTILITIES SHALL IMMEDIATELY BE REPORTED TO THE OWNER SO THAT ALTERNATE PLANTING LOCATIONS CAN BE DETERMINED.
- ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED, SHALL RECEIVE 6" OF LOAM AND SEED. NO FILL SHALL BE PLACED IN ANY WETLAND AREA.
- THREE INCHES (3") OF UNTREATED BARK MULCH IS TO BE USED AROUND THE TREE AND SHRUB PLANTING AS SPECIFIED IN THE DETAILS. WHERE BARK MULCH IS TO BE USED IN A CURBED ISLAND THE BARK MULCH SHALL MEET THE TOP INSIDE EDGE OF THE CURB. ALL OTHER AREAS SHALL RECEIVE 6" INCHES OF LOAM AND SEED.
- SEE PLANTING DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- TREE STAKES SHALL REMAIN IN PLACE FOR NO LESS THAN 6 MONTHS AND NO MORE THAN 1 YEAR.
- PLANTING SHALL BE COMPLETED FROM APRIL 15TH THROUGH OCTOBER 1ST. NO PLANTING DURING JULY AND AUGUST UNLESS SPECIAL PROVISIONS ARE MADE FOR DROUGHT.
- PARKING AREA PLANTED ISLANDS TO HAVE MINIMUM OF 1'-0" TOPSOIL PLACED TO WITHIN 3 INCHES OF THE TOP OF CURB ELEVATION. REMOVE ALL CONSTRUCTION DEBRIS BEFORE PLACING TOPSOIL.
- TREES SHALL BE PRUNED IN ACCORDANCE WITH THE LATEST EDITION OF ANSI A300 "TREES, SHRUBS AND OTHER WOOD PLANT MAINTENANCE STANDARD PRACTICES."
- ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24 HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN, IF NECESSARY DURING THE FIRST GROWING SEASON. LANDSCAPE CONTRACTOR SHALL COORDINATE WATERING SCHEDULE WITH OWNER DURING THE ONE (1) YEAR GUARANTEE PERIOD.
- EXISTING TREES AND SHRUBS SHOWN ON THE PLAN ARE TO REMAIN UNDISTURBED. ALL EXISTING TREES AND SHRUBS SHOWN TO REMAIN ARE TO BE PROTECTED WITH A 4-FOOT SNOW FENCE PLACED AT THE DRIP LINE OF THE BRANCHES OR AT 8 FEET MINIMUM FROM THE TREE TRUNK. ANY EXISTING TREE OR SHRUB SHOWN TO REMAIN, WHICH IS REMOVED DURING CONSTRUCTION, SHALL BE REPLACED BY A TREE OF COMPARABLE SIZE AND SPECIES TREE OR SHRUB.
- THE CONTRACTOR SHALL GUARANTEE ALL PLANTINGS TO BE IN GOOD HEALTHY, FLOURISHING AND ACCEPTABLE CONDITION FOR A PERIOD OF ONE (1) YEAR BEGINNING AT THE DATE OF ACCEPTANCE OF SUBSTANTIAL COMPLETION. ALL GRASSES, TREES AND SHRUBS THAT, IN THE OPINION OF THE LANDSCAPE ARCHITECT, SHOW LESS THAN 80% HEALTHY GROWTH AT THE END OF ONE YEAR PERIOD SHALL BE REPLACED BY THE CONTRACTOR.
- UPON EXPIRATION OF THE CONTRACTOR'S ONE YEAR GUARANTEE PERIOD, THE OWNER SHALL BE RESPONSIBLE FOR LANDSCAPE MAINTENANCE INCLUDING WATERING DURING PERIODS OF DROUGHT
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PLANTING AND LAWNS AGAINST DAMAGE FROM ONGOING CONSTRUCTION. THIS PROTECTION SHALL BEGIN AT THE TIME THE PLANT IS INSTALLED AND CONTINUE UNTIL THE FORMAL ACCEPTANCE OF ALL THE PLANTINGS.
- PRE-PURCHASE PLANT MATERIAL AND ARRANGE FOR DELIVERY TO MEET PROJECT SCHEDULE AS REQUIRED IT MAY BE NECESSARY TO PRE-DIG CERTAIN SPECIES WELL IN ADVANCE OF ACTUAL PLANTING DATES.

**ABBREVIATIONS**

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS	HMP	HOT MIX PAVEMENT	PVC	POLYVINYL CHLORIDE
AC	ACRES	HW	HEADWALL	PVMT	PAVEMENT
ADA	AMERICANS WITH DISABILITIES ACT	HYD	HYDRANT	PVD	PROPOSED YARD DRAIN
AGGR	AGGREGATE	ID	INSIDE DIAMETER	R	RADIUS
AOT	ALTERATION OF TERRAIN	INV	INVERT	RCP	REINFORCED CONCRETE PIPE
BLDG	BUILDING	L	LENGTH	RL	ROOF LEADER
BMP(S)	BEST MANAGEMENT PRACTICES(S)	LF	LINEAR FEET	ROW	RIGHT OF WAY
BOC	BOTTOM OF CURB	MAX	MAXIMUM	SF	SQUARE FEET
BOW	BOTTOM OF WALL	MIN	MINIMUM	SSSNE	SOCIETY OF SOIL SCIENTISTS OF NORTHERN NEW ENGLAND
CB	CATCH BASIN	NCSS	NATIONAL COOPERATIVE SURVEY	STD	STANDARD
CCB	CAPE COD BERM	NHDES	NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES	TBR	TO BE REMOVED
CMF	CORRUGATED METAL PIPE	NRE	NORTHEAST REGIONAL CLIMATE CENTER	TOC	TOP OF CURB
CONST	CONSTRUCT	NRCS	NATURAL RESOURCES CONSERVATION SERVICE	TOW	TOP OF WALL
COORD	COORDINATE	OC	ON CENTER	TYP	TYPICAL
DIA	DIAMETER	OD	OUTSIDE DIAMETER	UD	UNDERDRAIN
DIP	DUCTILE IRON PIPE	PAD	PROPOSED AREA DRAIN	USCS	UNIFIED SOIL CLASSIFICATION SYSTEM
DMH	DRAINAGE MANHOLE	PC	POINT OF CURVATURE	USDA	UNITED STATES DEPARTMENT OF AGRICULTURE
DWG	DRAWING	PCB	PROPOSED CATCH BASIN	W	WIDTH
ELEV	ELEVATION	PDMH	PROPOSED DRAINAGE MANHOLE	W/	WITH
EP	EDGE OF PAVEMENT	PI	POINT OF INTERSECTION	YD	YARD DARIN
EXIST	EXISTING	POS	PROPOSED OUTLET STRUCTURE		
FES	FLARED END SECTION	PROP	PROPOSED		
FF	FINISHED FLOOR	PSMH	PROPOSED SEWER MANHOLE		
HDPE	HIGH DENSITY POLYETHYLENE	PT	POINT OF TANGENCY		
HMA	HOT MIX ASPHALT				

**LEGEND**

	UTILITY POLE
	UTILITY POLE (PER AERIAL TOPOGRAPHY)
	LIGHT POLE
	LIGHT POLE (PER AERIAL TOPOGRAPHY)
	IRON ROD FOUND
	DRILL HOLE SET (UNLESS OTHERWISE NOTED)
	5/8" RE-BAR W/D CAP TO BE SET
	BARBED WIRE FOUND ON GROUND
	SEWER MANHOLE (PER AERIAL TOPOGRAPHY)
	SEWER MANHOLE
	GAS GATE VALVE
	WATER GATE VALVE
	WATER SHUTOFF VALVE
	CATCH BASIN (PER AERIAL TOPOGRAPHY)
	TREE (PER AERIAL TOPOGRAPHY)
	FENCE POST
	HYDRANT
	HYDRANT (PER AERIAL TOPOGRAPHY)
	BOULDER (PER AERIAL TOPOGRAPHY)
	EDGE OF PAVEMENT
	EDGE OF GRAVEL
	DRILL HOLE FOUND
	WETLAND
	STRUCTURES
	PILE
	STONE WALL
	REMNANT STONE WALL
	BOX WIRE FENCE
	CHAINLINK FENCE
	RAILROAD TRACKS
	EDGE OF WETLAND (SEE REFERENCE PLAN #32 & #36)
	EDGE OF WETLAND
	TREE LINE
	WATER LINE
	UNDERGROUND GAS LINE (WITNESSED BY ABOVE GROUND MARKER)
	OVERHEAD WIRE
	SEWER LINE
	EASEMENT LINE
	OBSCURED AREA
	PARKING OUTLINE
	MINOR CONTOUR
	MAJOR CONTOUR
	PROPERTY LINES
	APPROXIMATE ABUTTERS LINE
	STREAM
	ZONING BOUNDARY
	PROPOSED RIGHT OF WAY LINE
	100' WETLAND BUFFER LINE
	SETBACK LINE
	PROPOSED TREE LINE
	PROPOSED GAS SERVICE
	PROPOSED UNDERGROUND ELECTRIC/COMMUNICATION
	PROPOSED WATER
	PROPOSED SEWER
	PROPOSED CONTOUR
	PROPOSED PAVEMENT
	PROPOSED PERIMETER EROSION CONTROL
	PROPOSED LIMIT OF CLEARING
	PAVEMENT TO BE REMOVED
	APPROXIMATE LIMIT OF WORK



**Proposed Subdivision Road & Office Building Development**

Borthwick Forest, LLC

Portsmouth, New Hampshire

N	3/4/2019	Rev Pricing Drawings / Admin Approval
M	5/8/2018	Submitted for Final Approval
L	5/4/2018	Revised RCRD Submission
K	2/26/2018	GMP Submission
J	2/6/2018	Planning Board Submission
I	1/12/2018	GMP Submission
H	11/3/2017	For Submission to RCRD
G	8/31/2017	Revised TAC Submission
F	6/2/2017	AsT Submission
E	5/11/2017	Planning Board Submission
D	4/24/2017	TAC & ConCom Submission
C	3/31/2017	TAC Submission
P	3/25/2019	Construction Drawings
O	3/20/2019	Revised GMP Submission
MARK	DATE	DESCRIPTION

PROJECT NO:	K0076-13
DATE:	3/20/2017
FILE:	K0076-13_DSGN.DWG
DRAWN BY:	CMJ
CHECKED:	PMC
APPROVED:	BLM

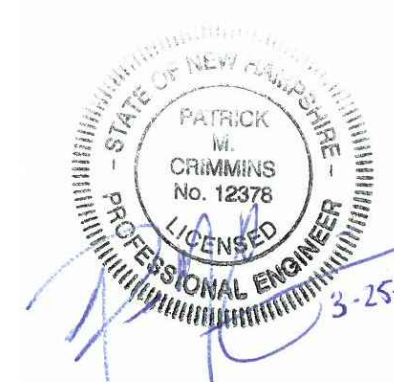
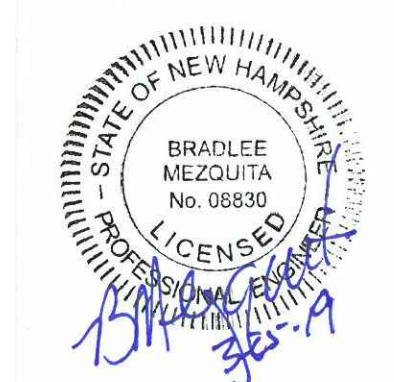
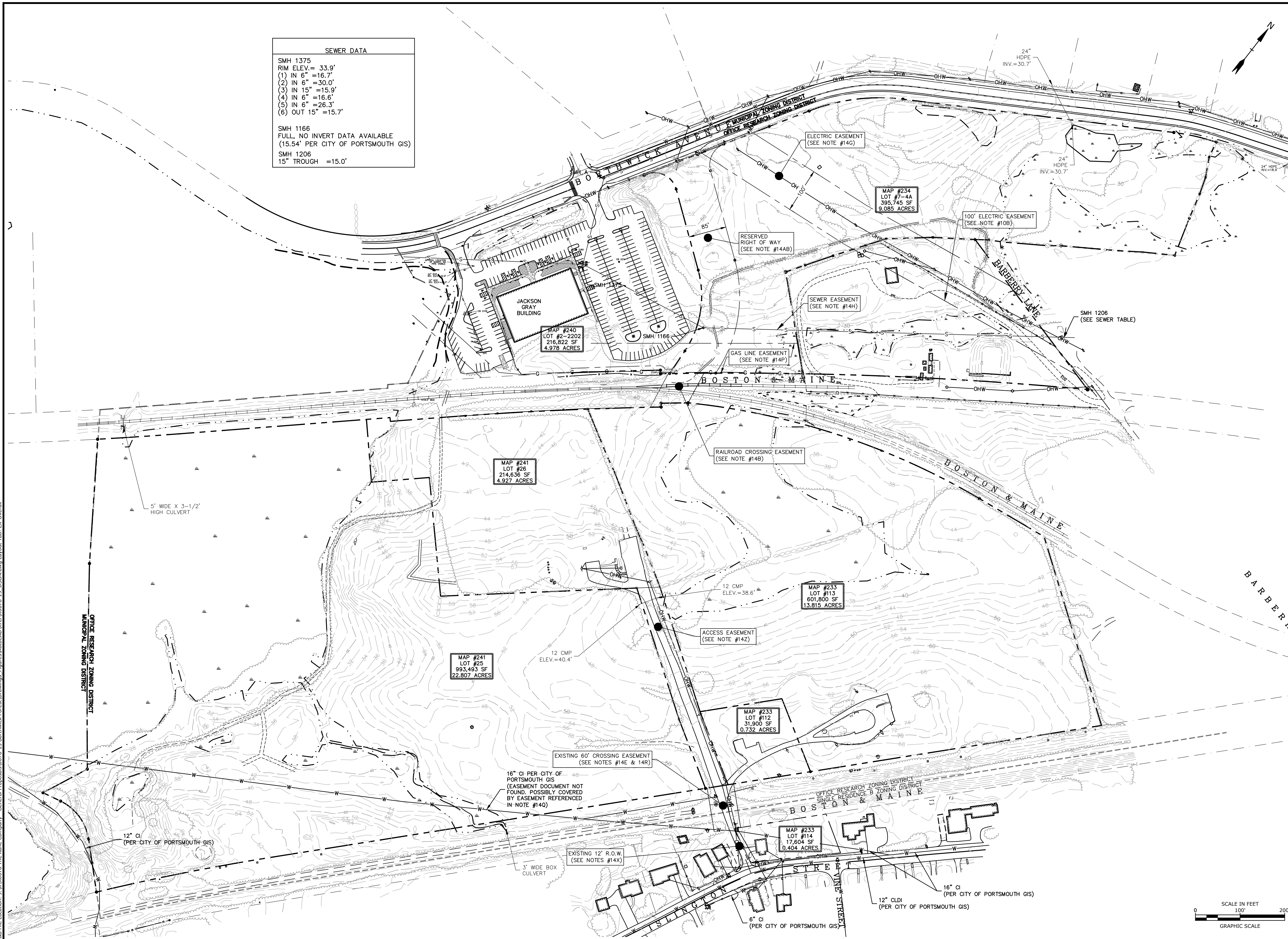
**GENERAL NOTES, ABBREVIATIONS & LEGEND SHEET**

SCALE: AS SHOWN

G-101



SEWER DATA	
SMH 1375	RIM ELEV. = 33.9'
(1) IN 6" = 16.7'	
(2) IN 6" = 30.0'	
(3) IN 15" = 15.9'	
(4) IN 6" = 16.6'	
(5) IN 6" = 26.3'	
(6) OUT 15" = 15.7'	
SMH 1166	FULL, NO INVERT DATA AVAILABLE (15.54' PER CITY OF PORTSMOUTH GIS)
SMH 1206	15" TROUGH = 15.0'



**Proposed  
Subdivision Road  
& Office Building  
Development**

Borthwick Forest, LLC

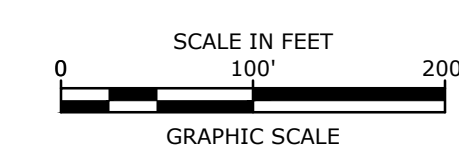
Portsmouth,  
New Hampshire

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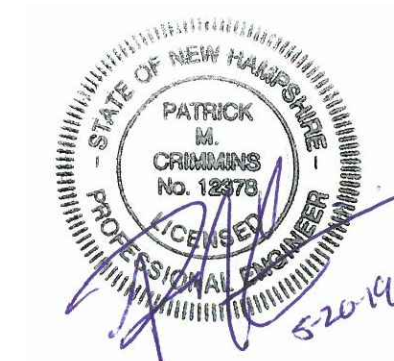
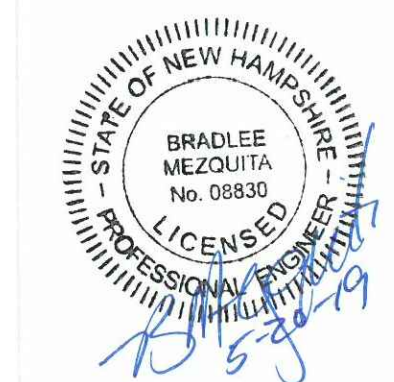
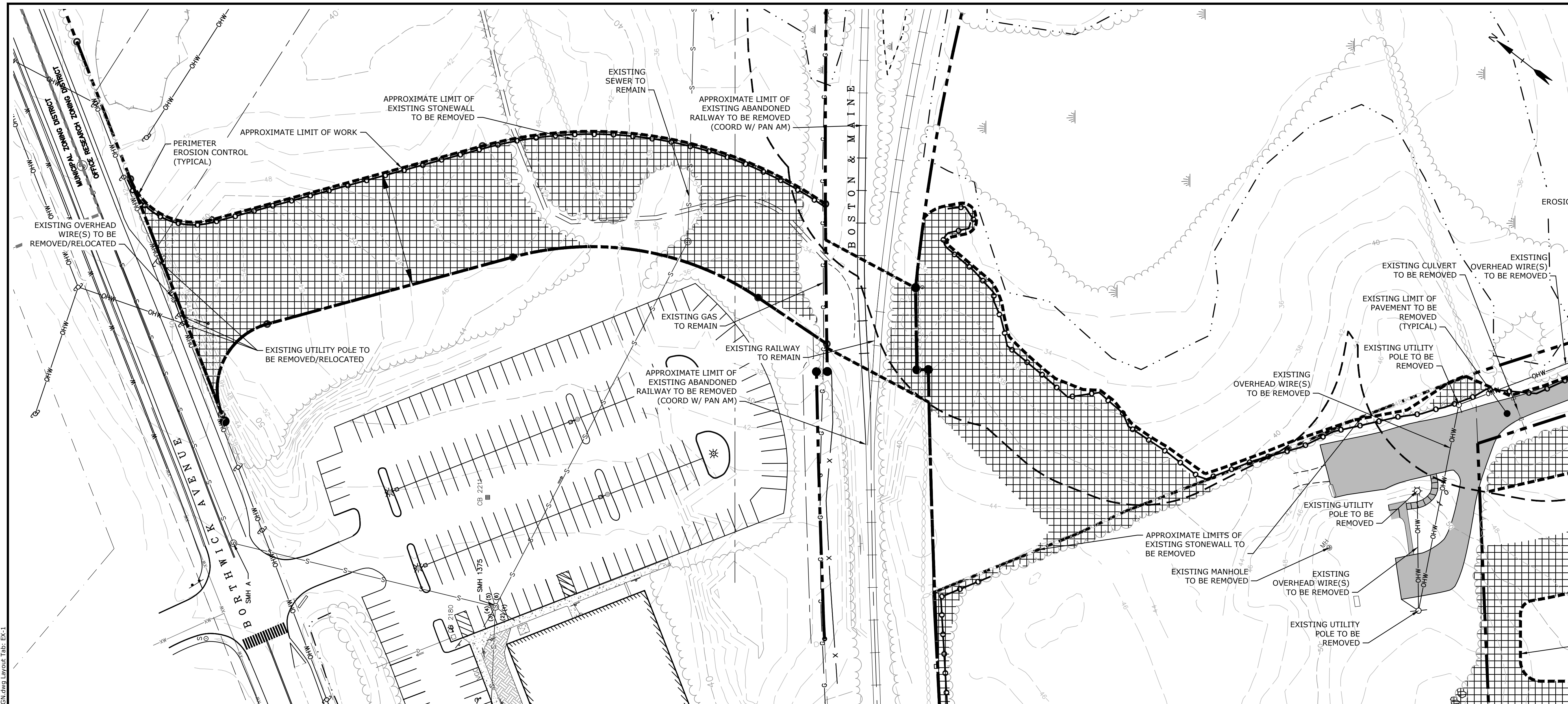
**OVERALL EXISTING  
CONDITIONS PLAN**

SCALE: AS SHOWN



Last Save Date: March 25, 2019 11:13 AM By: CML  
 Plot Date: Monday, March 25, 2019 Plotted By: Craig M. Langton  
 P&E File Location: J:\K0076 The Kennebec Company - General Proposals\0076-13 Borthwick Forest\Drawings - General Proposals\0076-13\_DSGN.dwg Layout Tab: EX-Overall





**Proposed  
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Borthwick Forest, LLC

Portsmouth,  
New Hampshire

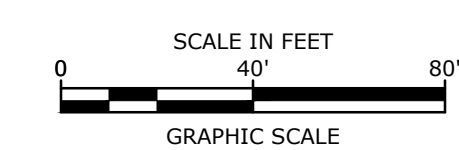
MARK	DATE	DESCRIPTION
N	5/20/2019	Amended Site Plan Approval
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PROJECT NO:	K0076-13
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FILE:	K0076-13_DSGN.DWG
DRAWN BY:	CML
CHECKED:	PMC
APPROVED:	BLM

**EXISTING CONDITIONS/  
DEMOLITION PLAN**

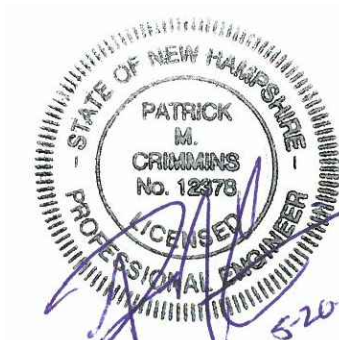
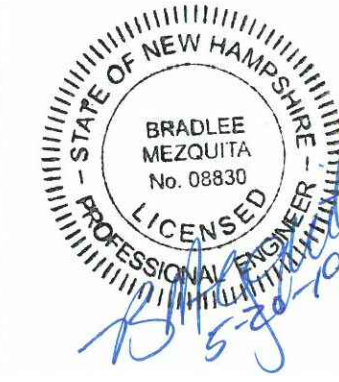
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**C-101.1**



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 Plot Date: Monday, May 20, 2019 Plotted By: Craig M. Langton  
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**Proposed  
Subdivision Road  
& Office Building  
Development**

Borthwick Forest, LLC

Portsmouth,  
New Hampshire

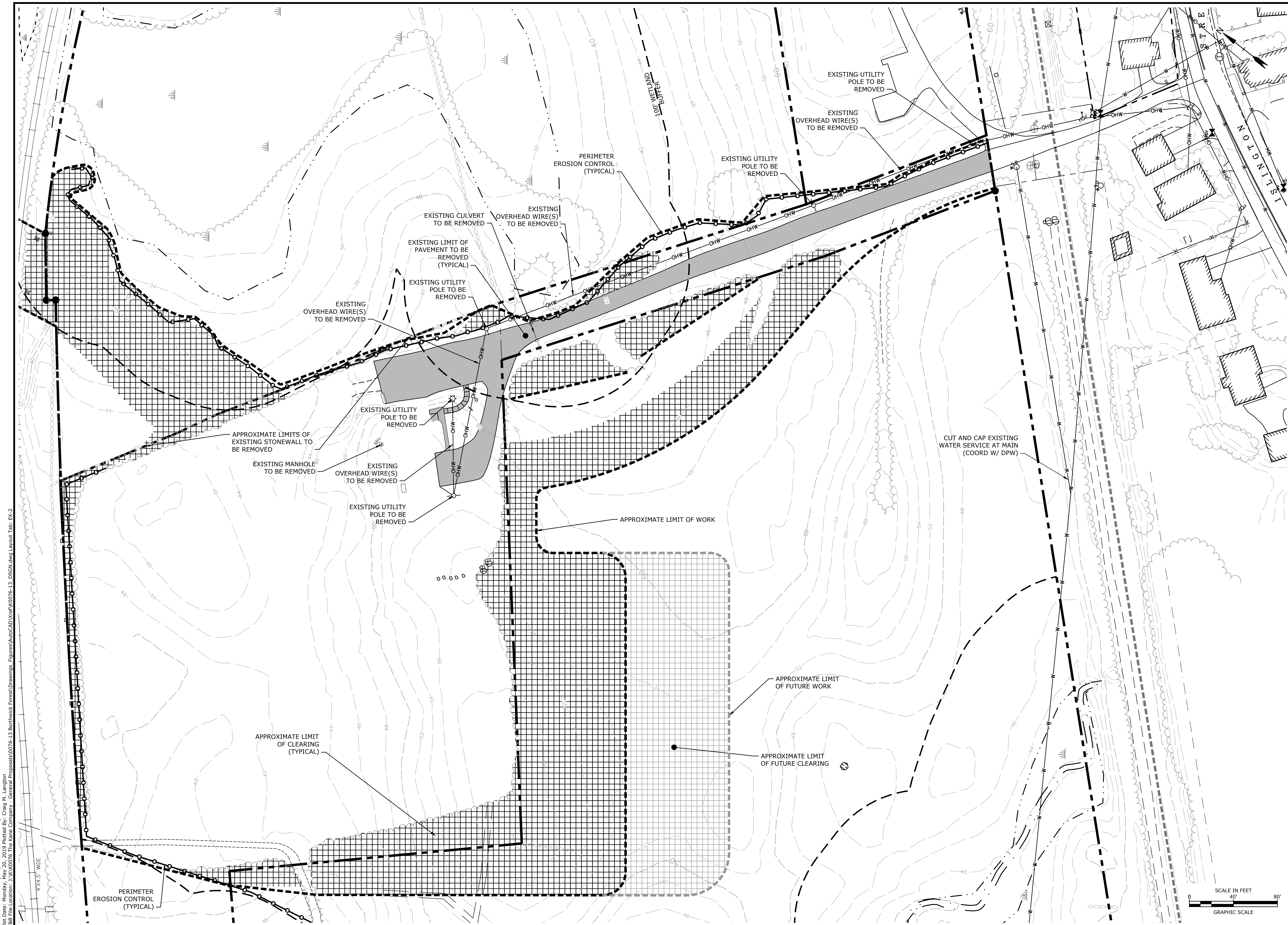
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FILE:	K0076-13_DSGN.DWG
DRAWN BY:	CML
CHECKED:	PMC
APPROVED:	BLM

**EXISTING CONDITIONS/  
DEMOLITION PLAN**

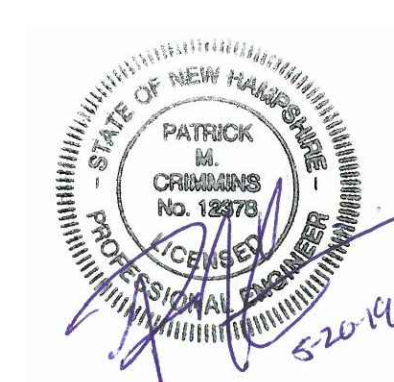
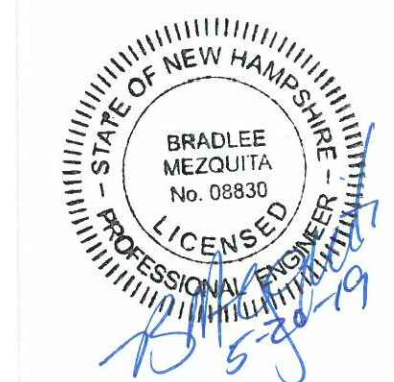
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**C-101.2**



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 Plot Date: Monday, May 20, 2019 Plotted By: Craig M. Langston  
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**Proposed  
Subdivision Road  
& Office Building  
Development**

Borthwick Forest, LLC

Portsmouth,  
New Hampshire

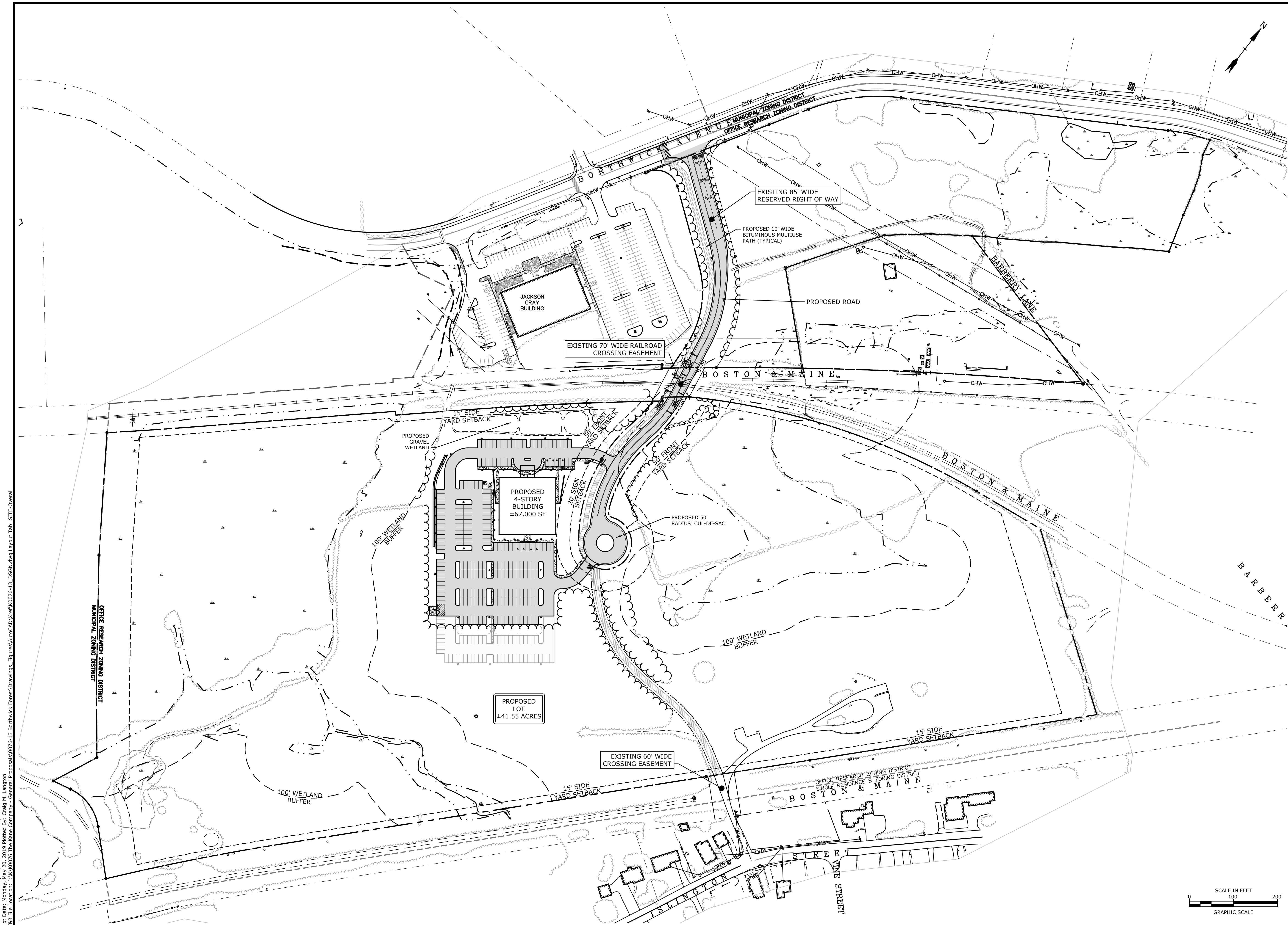
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PROJECT NO:	K0076-13
DATE:	3/20/2017
FILE:	K0076-13_DSGN.DWG
DRAWN BY:	CML
CHECKED:	PMC
APPROVED:	BLM

**OVERALL SITE PLAN**

SCALE: AS SHOWN

**C-102**



Last Save Date: May 20, 2019 10:03 AM By: CML  
 Plot Date: Monday, May 20, 2019 Plotted By: Craig M. Langton  
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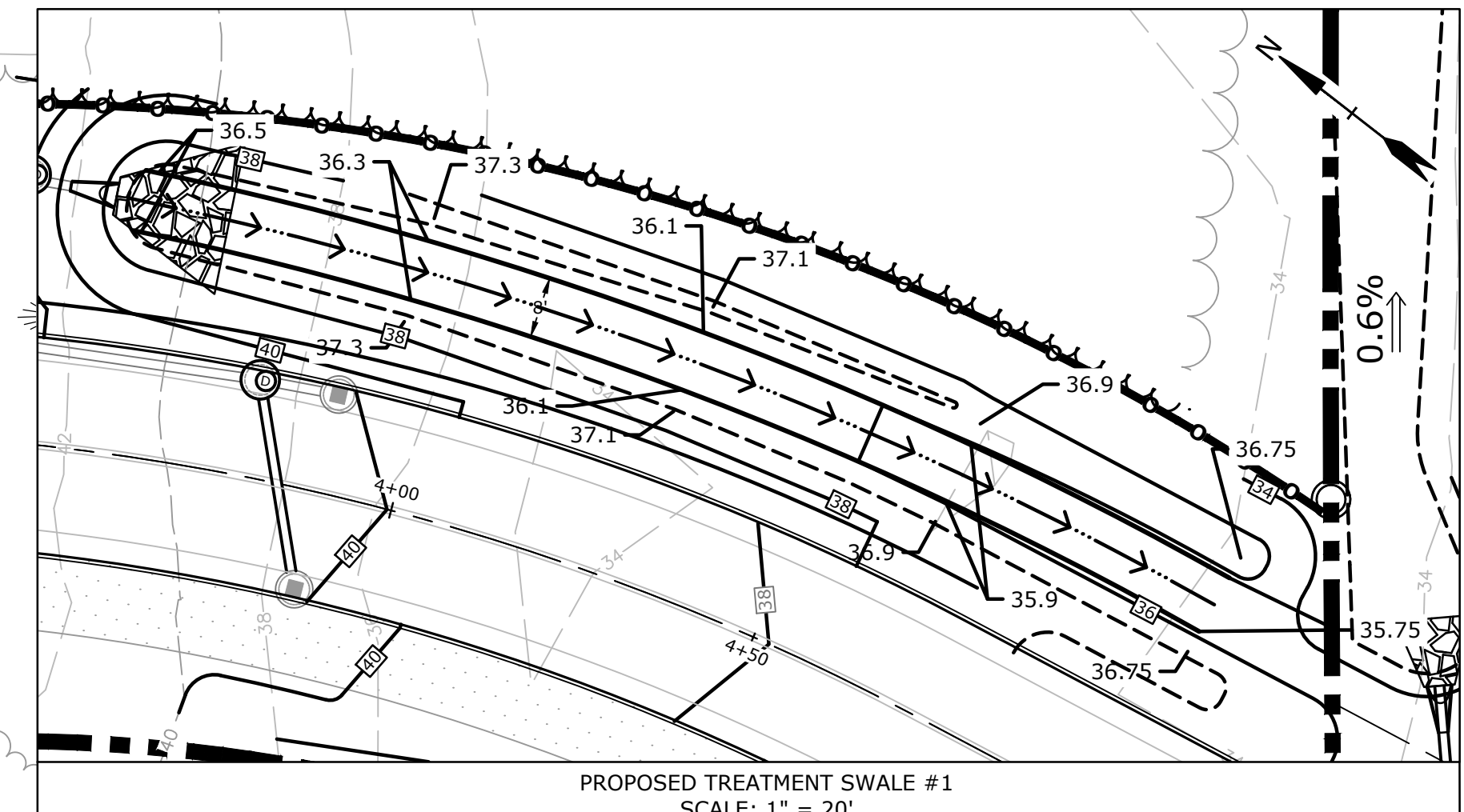
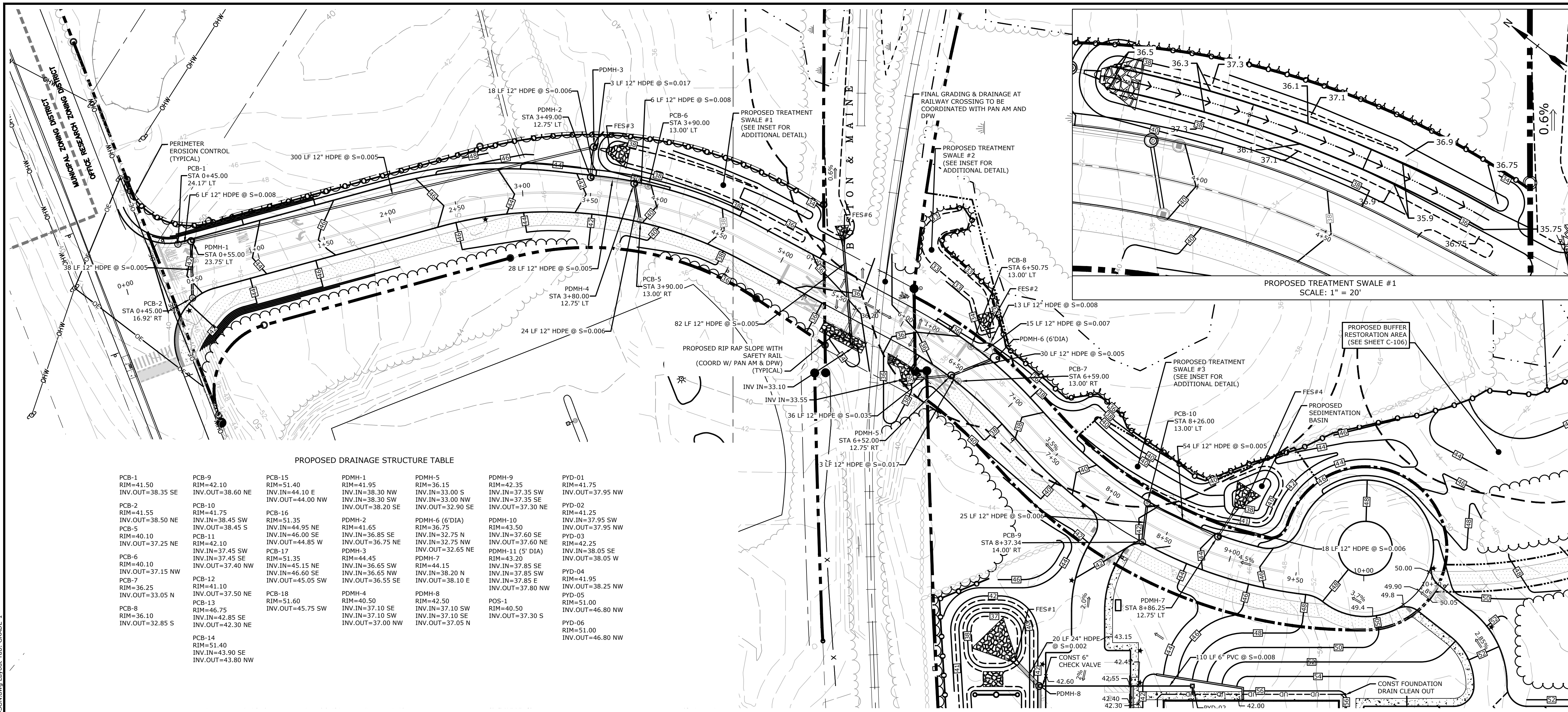
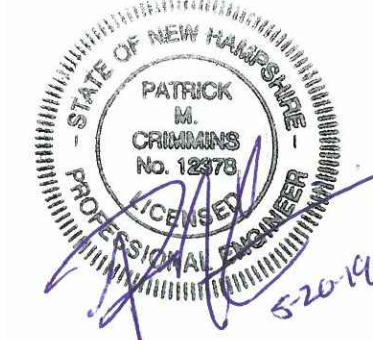
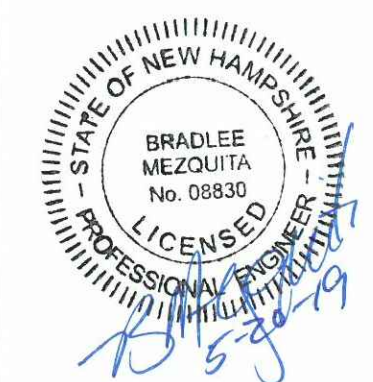






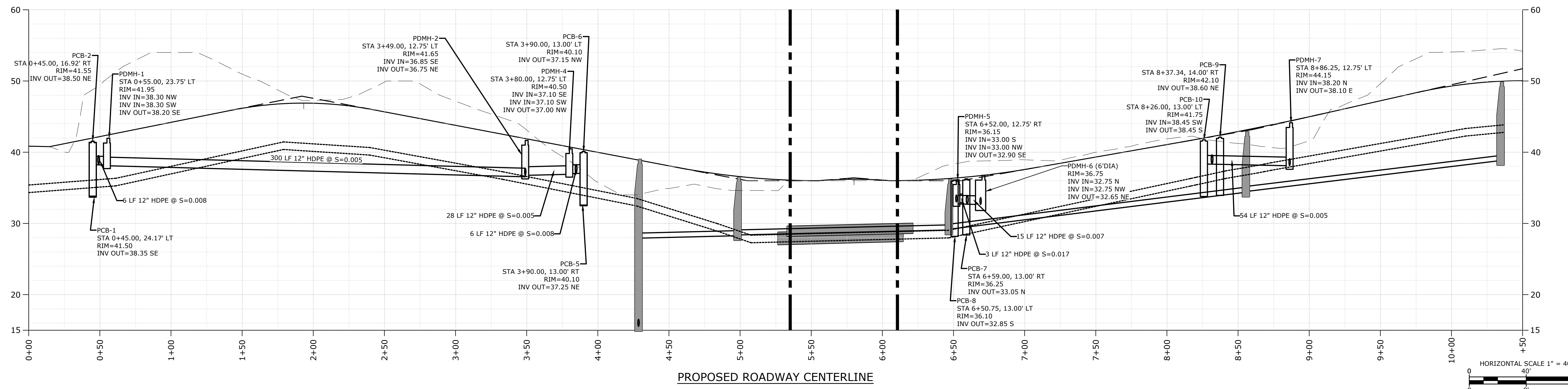






**PROPOSED DRAINAGE STRUCTURE TABLE**

PCB-1 RIM=41.50 INV.OUT=38.35 SE	PCB-9 RIM=42.10 INV.OUT=38.60 NE	PCB-15 RIM=51.40 INV.IN=44.10 E INV.IN=44.00 NW	PDMH-1 RIM=41.95 INV.IN=38.30 NW INV.IN=33.00 SW INV.OUT=37.30 SE	PDMH-5 RIM=36.15 INV.IN=33.00 S INV.IN=33.00 NW INV.OUT=37.35 SE	PDMH-9 RIM=42.35 INV.IN=37.35 SW INV.IN=37.35 SE INV.OUT=37.30 NE	PYD-01 RIM=41.75 INV.OUT=37.95 NW
PCB-2 RIM=41.55 INV.OUT=38.50 NE	PCB-10 RIM=41.75 INV.IN=38.45 SW INV.OUT=38.45 S	PCB-16 RIM=51.35 INV.IN=44.95 NE INV.IN=46.00 SE INV.OUT=44.85 W	PDMH-2 RIM=41.65 INV.IN=36.85 SE INV.IN=32.75 NE INV.OUT=36.75 NE	PDMH-6 (6" DIA) RIM=36.75 INV.IN=32.75 N INV.IN=32.75 NW INV.OUT=32.65 NE	PDMH-10 RIM=43.50 INV.IN=37.60 NE INV.IN=37.60 SE INV.OUT=37.95 NW	PYD-02 RIM=41.25 INV.IN=37.95 SW INV.OUT=37.95 NW
PCB-5 RIM=40.10 INV.OUT=37.25 NE	PCB-11 RIM=42.10 INV.IN=37.45 SW INV.OUT=37.40 NW	PCB-17 RIM=51.35 INV.IN=45.15 NE INV.IN=46.60 SE INV.OUT=45.05 SW	PDMH-3 RIM=44.45 INV.IN=36.65 SW INV.IN=37.85 E INV.OUT=36.55 SE	PDMH-7 RIM=44.15 INV.IN=37.85 SE INV.IN=38.20 N INV.OUT=37.85 E	PDMH-11 (5" DIA) RIM=43.20 INV.IN=37.85 SW INV.IN=37.85 E INV.OUT=37.80 NW	PYD-03 RIM=42.25 INV.IN=38.05 SE INV.IN=38.05 W INV.OUT=38.25 NW
PCB-6 RIM=40.10 INV.OUT=37.15 NW	PCB-12 RIM=41.10 INV.OUT=37.50 NE	PCB-18 RIM=51.60 INV.OUT=45.75 SW	PDMH-4 RIM=40.50 INV.IN=37.10 SE INV.IN=37.10 SW INV.OUT=37.05 N	PDMH-8 RIM=42.50 INV.IN=37.10 SW INV.IN=37.10 SE INV.OUT=37.05 N	POS-1 RIM=40.50 INV.OUT=37.30 S	PYD-04 RIM=41.95 INV.OUT=38.25 NW
PCB-7 RIM=36.25 INV.OUT=33.05 N	PCB-13 RIM=46.75 INV.IN=42.85 SE INV.OUT=42.30 NE					PYD-05 RIM=51.00 INV.OUT=46.80 NW
PCB-8 RIM=36.10 INV.OUT=32.85 S	PCB-14 RIM=51.40 INV.IN=43.90 SE INV.OUT=43.80 NW					PYD-06 RIM=51.00 INV.OUT=46.80 NW



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Borthwick Forest, LLC

Portsmouth,  
New Hampshire

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O	5/20/2019	Amended Site Plan Approval

PROJECT NO:	K0076-13
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FILE:	K0076-13_DSGN.DWG
DRAWN BY:	CML
CHECKED:	PMC
APPROVED:	BLM

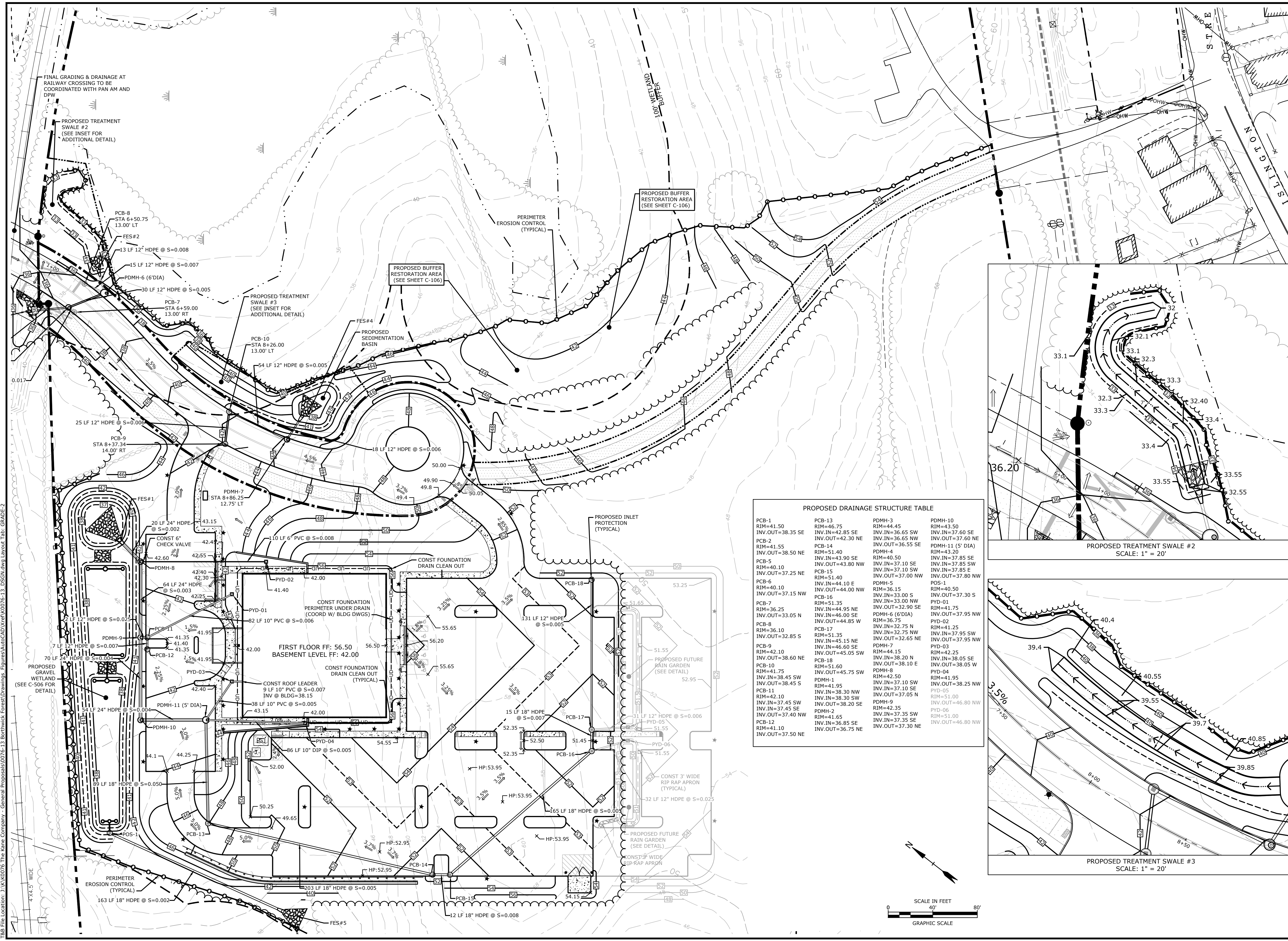
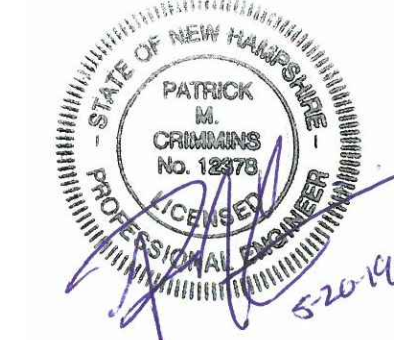
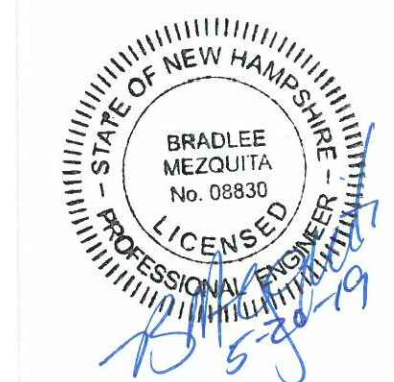
**GRADING, DRAINAGE &  
EROSION CONTROL PLAN**

SCALE: AS SHOWN

**C-103.1**

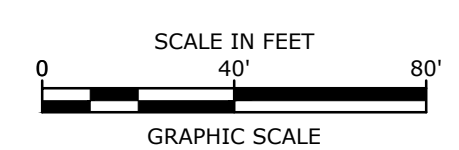
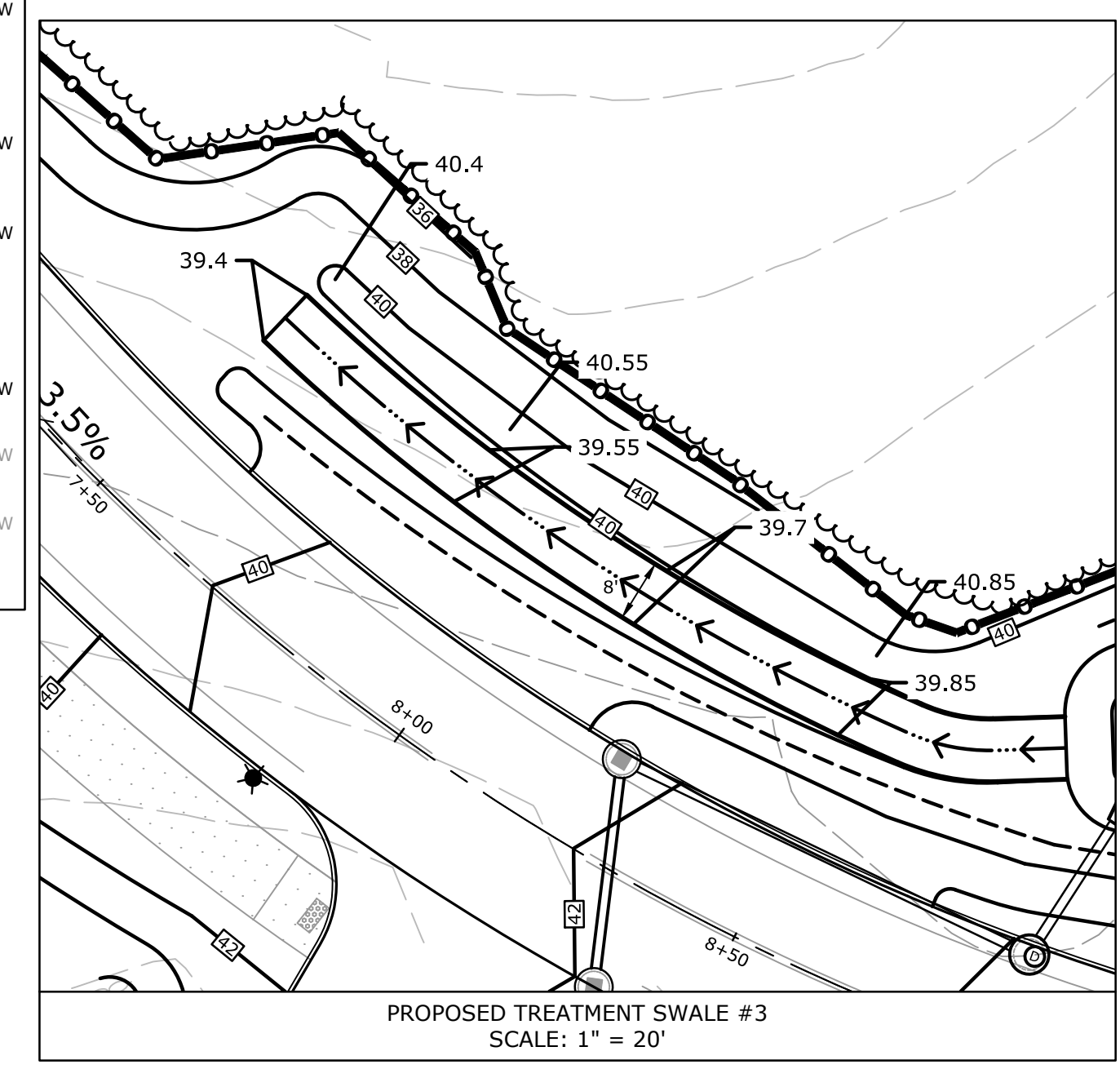
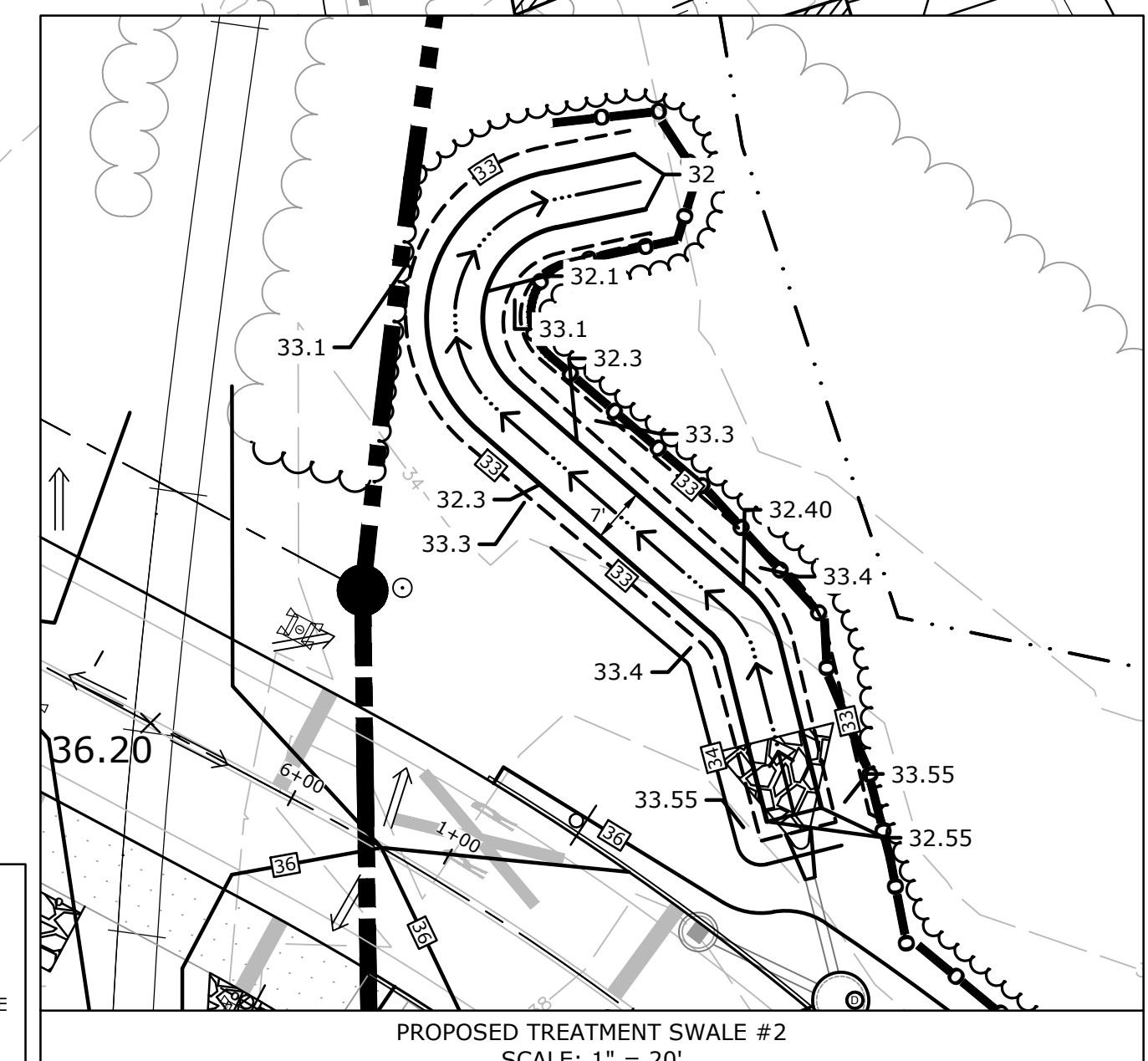
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**PROPOSED DRAINAGE STRUCTURE TABLE**

PCB-1 RIM=41.50 INV.OUT=38.35 SE	PCB-13 RIM=46.75 INV.IN=42.85 SE INV.OUT=42.30 NE	PDMH-3 RIM=44.45 INV.IN=36.65 SW INV.IN=36.65 NW INV.OUT=36.55 SE	PDMH-10 RIM=43.50 INV.IN=37.60 SE INV.OUT=37.60 NE
PCB-2 RIM=41.55 INV.OUT=38.50 NE	PCB-14 RIM=51.40 INV.IN=43.90 SE INV.OUT=43.80 NW	PDMH-4 RIM=40.50 INV.IN=37.10 SE INV.IN=37.10 SW INV.OUT=37.00 NW	PDMH-11 (5' DIA) RIM=43.20 INV.IN=37.85 SE INV.IN=37.85 SW INV.IN=37.85 E INV.OUT=37.80 NW
PCB-5 RIM=40.10 INV.OUT=37.25 NE	PCB-15 RIM=51.40 INV.IN=44.10 E INV.OUT=44.00 NW	PDMH-5 RIM=36.15 INV.IN=33.00 S INV.IN=33.00 W INV.OUT=32.90 SE	POS-1 RIM=40.50 INV.OUT=37.30 S
PCB-6 RIM=40.10 INV.OUT=37.15 NW	PCB-16 RIM=51.35 INV.IN=44.95 NE INV.IN=46.00 SE INV.OUT=44.85 W	PDMH-6 (6'DIA) RIM=36.75 INV.IN=32.75 N INV.IN=32.75 NW INV.OUT=32.65 NE	PYD-01 RIM=41.75 INV.OUT=37.95 NW
PCB-7 RIM=36.25 INV.OUT=33.05 N	PCB-17 RIM=51.35 INV.IN=45.15 NE INV.IN=45.05 SW	PDMH-7 RIM=44.15 INV.IN=38.20 N INV.IN=38.20 E INV.OUT=38.10 N	PYD-02 RIM=41.25 INV.IN=37.95 SW INV.OUT=37.95 NW
PCB-8 RIM=36.10 INV.OUT=32.85 S	PCB-18 RIM=51.60 INV.IN=46.60 SE INV.OUT=45.75 SW	PDMH-8 RIM=42.50 INV.IN=37.10 SW INV.IN=37.10 SE INV.OUT=37.05 N	PYD-03 RIM=42.25 INV.IN=38.05 SE INV.OUT=38.05 W
PCB-9 RIM=42.10 INV.OUT=38.60 NE	PCB-19 RIM=51.45 INV.IN=46.60 SE INV.OUT=45.75 SW	PDMH-9 RIM=42.35 INV.IN=37.35 SW INV.IN=37.35 SE INV.OUT=37.30 NE	PYD-04 RIM=41.95 INV.OUT=38.25 NW
PCB-10 RIM=41.75 INV.IN=38.45 SW INV.OUT=38.45 S	PCB-20 RIM=51.45 INV.IN=46.60 SE INV.OUT=45.75 SW	PDMH-10 RIM=42.35 INV.IN=37.35 SW INV.IN=37.35 SE INV.OUT=37.30 NE	PYD-05 RIM=51.00 INV.OUT=46.80 NW
PCB-11 RIM=42.10 INV.OUT=38.60 NE	PCB-21 RIM=51.45 INV.IN=46.60 SE INV.OUT=45.75 SW	PDMH-11 RIM=42.35 INV.IN=37.35 SW INV.IN=37.35 SE INV.OUT=37.30 NE	PYD-06 RIM=51.00 INV.OUT=46.80 NW
PCB-12 RIM=41.10 INV.OUT=37.50 NE			



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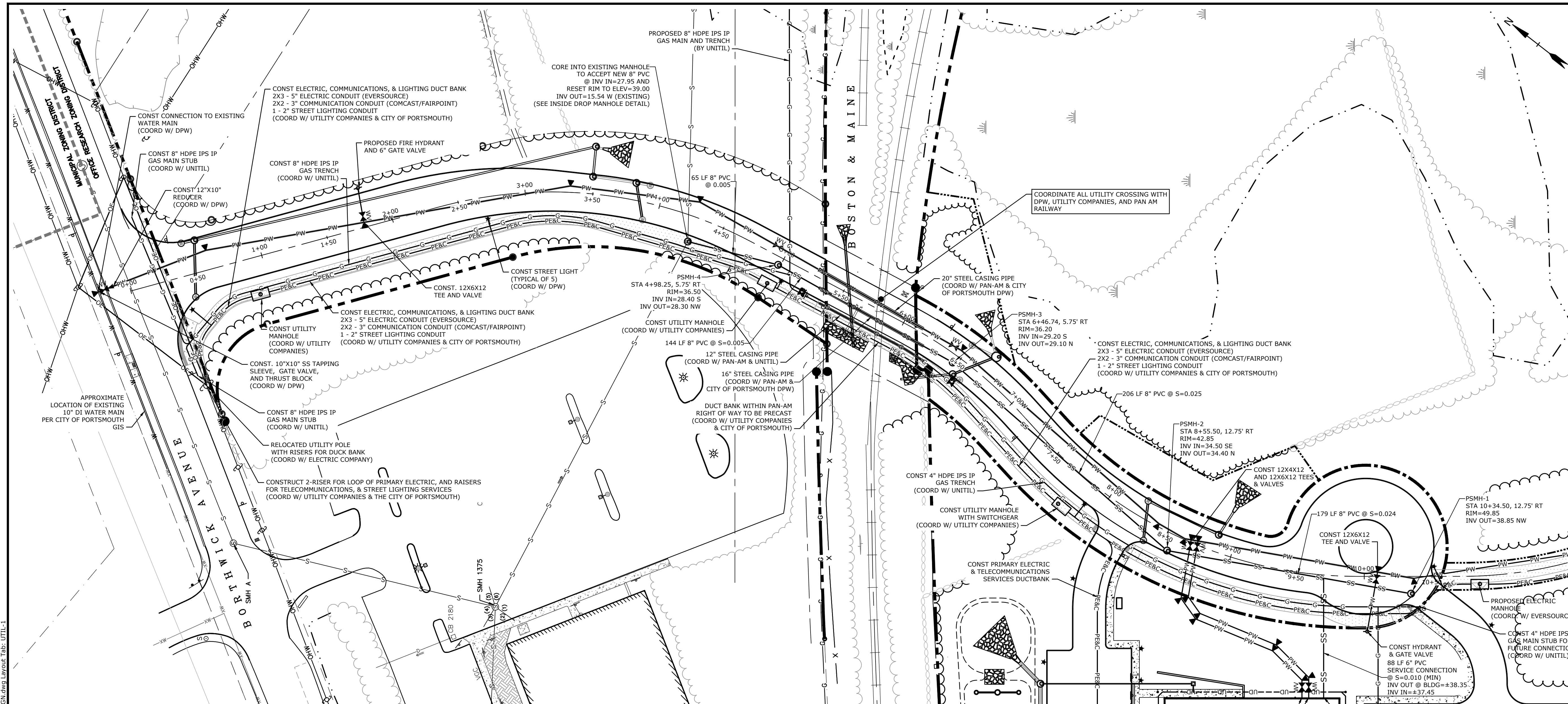
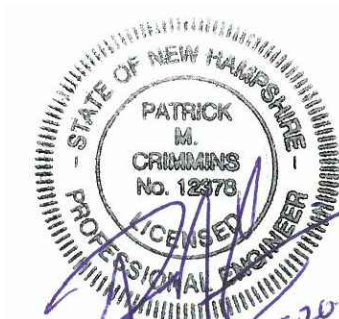
**GRADING, DRAINAGE &  
EROSION CONTROL PLAN**

SCALE: AS SHOWN

**C-103.2**

Last Save Date: May 20, 2019 10:03 AM By: CML  
 Plot Date: Monday, May 20, 2019 Plotted By: Craig M. Langston  
 P&E File Location: Z:\K0076 The Kennebec Company - General Proposals\0076-13 Borthwick Forest\Drawings\Figures\AutoCAD\Xref\K0076-13\_DSGN.dwg Layout Tab: GRADE-2





**Proposed Subdivision Road & Office Building Development**

Borthwick Forest, LLC

Portsmouth, New Hampshire

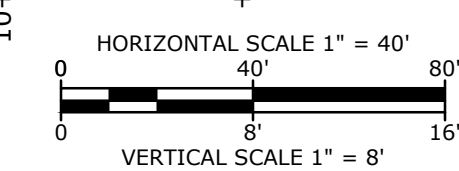
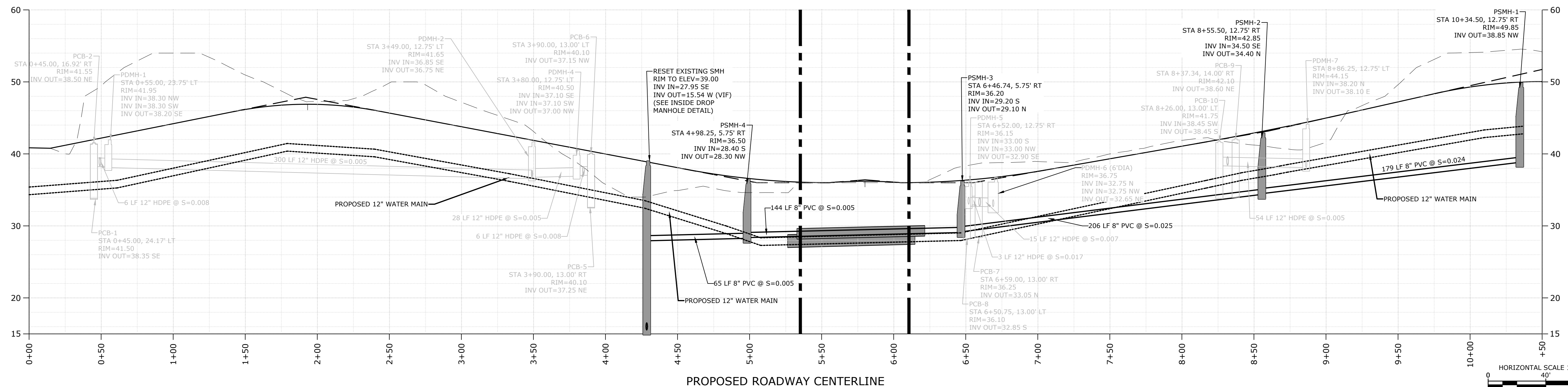
MARK	DATE	DESCRIPTION
N	3/4/2019	Rev Pricing Drawings / Admin Approval
M	10/22/2018	Rev. per NHDES Sewer Connection Permit Comments
L	6/13/2018	FOR NHDES Sewer Connection Permit Application
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F	6/2/2017	AoT Submission
E	5/11/2017	Planning Board Submission
D	4/24/2017	TAC & ConCom Submission
Q	5/20/2019	Amended Site Plan Approval
P	3/25/2019	Construction Drawings
O	3/20/2019	Revised GMP Submission

PROJECT NO:	K0076-13
DATE:	3/20/2017
FILE:	K0076-13.DSGN.DWG
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**UTILITY PLAN**

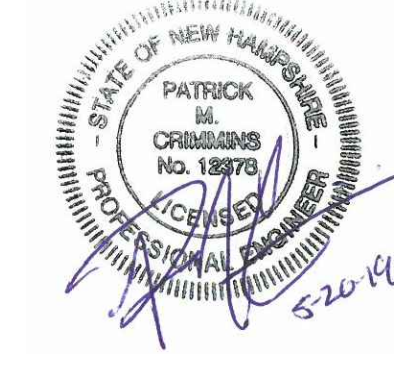
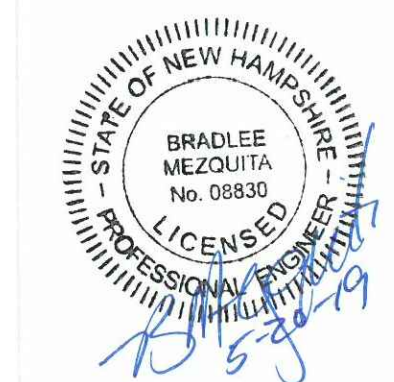
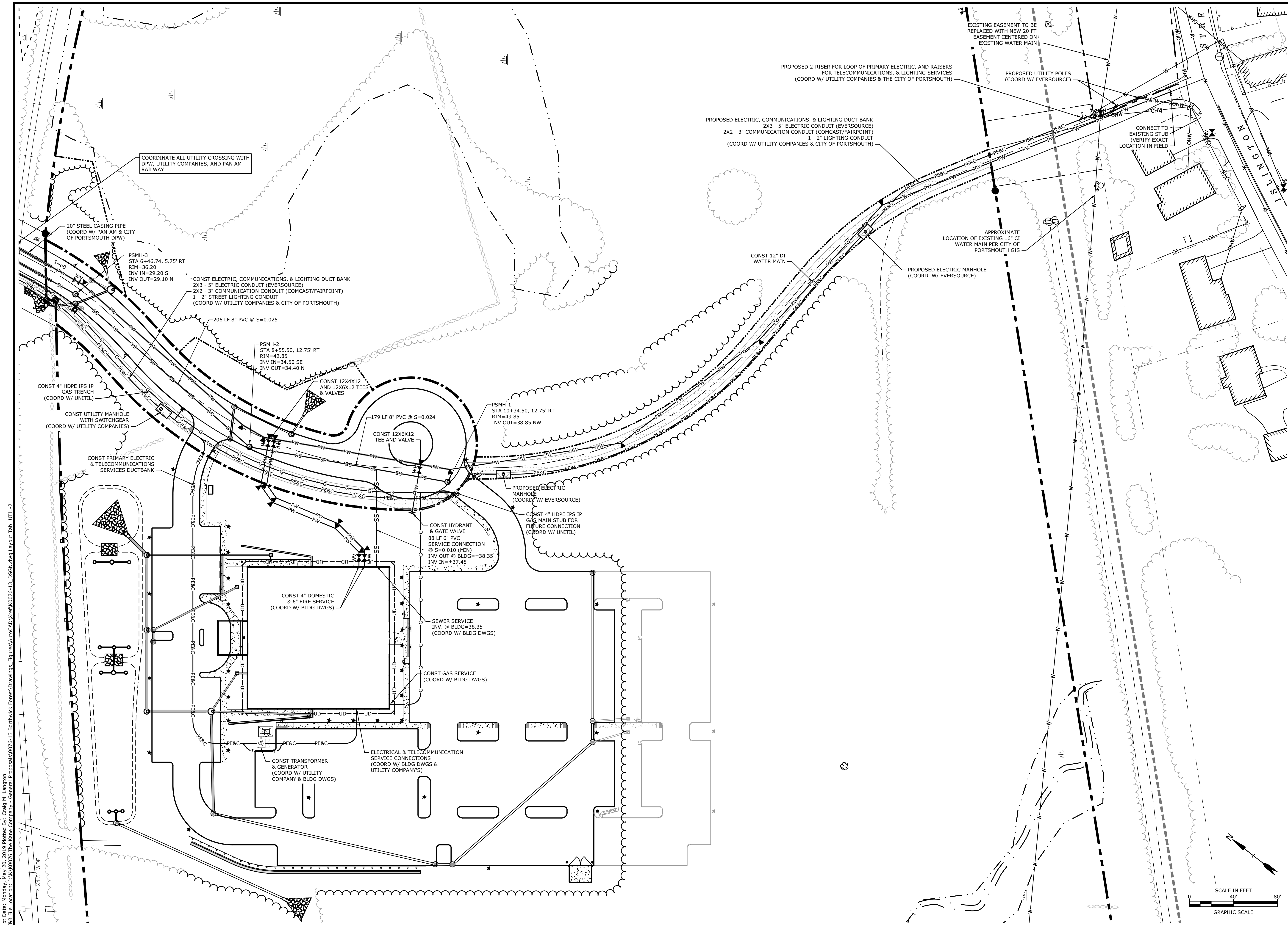
SCALE: AS SHOWN

**C-104.1**



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**Proposed  
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Borthwick Forest, LLC

Portsmouth,  
New Hampshire

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PROJECT NO:	K0076-13
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FILE:	K0076-13_DSGN.DWG
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**UTILITY PLAN**

SCALE: AS SHOWN

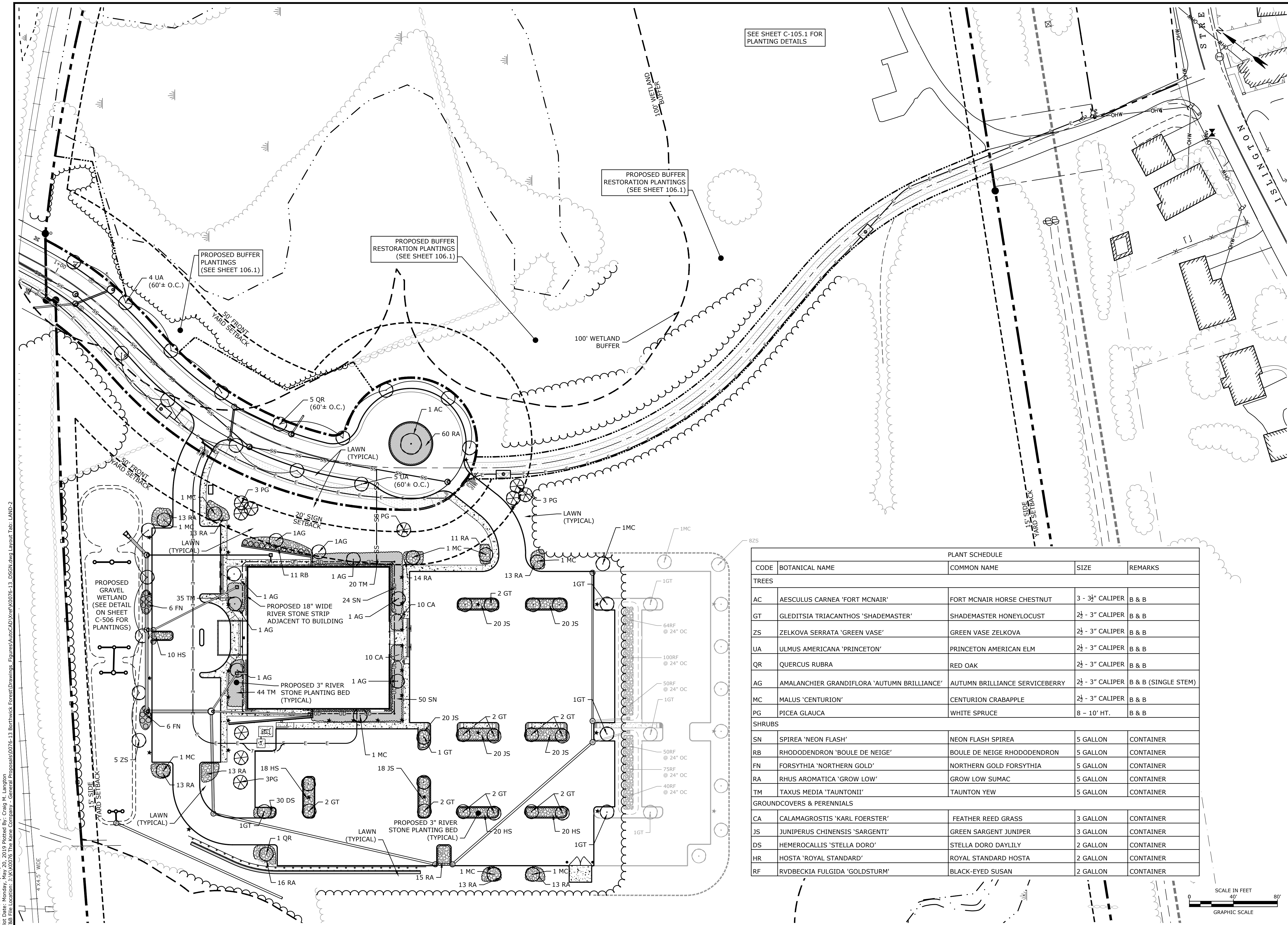
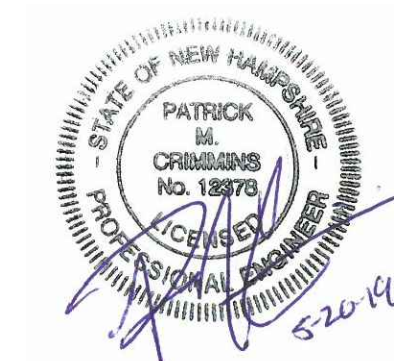
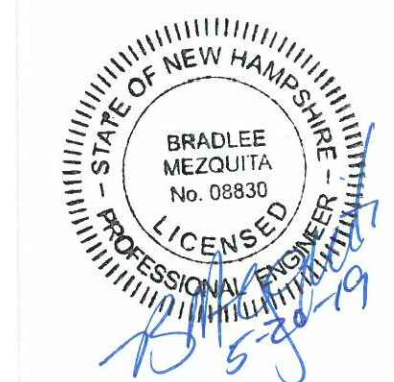
**C-104.2**

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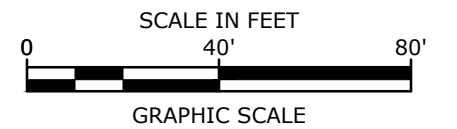
SEE SHEET C-105.1 FOR PLANTING DETAILS

PROPOSED BUFFER RESTORATION PLANTINGS (SEE SHEET 106.1)

PROPOSED BUFFER RESTORATION PLANTINGS (SEE SHEET 106.1)

PROPOSED BUFFER PLANTINGS (SEE SHEET 106.1)

PLANT SCHEDULE				
CODE	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
<b>TREES</b>				
AC	AESCULUS CARNEA 'FORT MCNAIR'	FORT MCNAIR HORSE CHESTNUT	3 - 3 1/2" CALIPER	B & B
GT	GLEDITSIA TRIACANTHOS 'SHADEMASTER'	SHADEMASTER HONEYLOCUST	2 1/2 - 3" CALIPER	B & B
ZS	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	2 1/2 - 3" CALIPER	B & B
UA	ULMUS AMERICANA 'PRINCETON'	PRINCETON AMERICAN ELM	2 1/2 - 3" CALIPER	B & B
QR	QUERCUS RUBRA	RED OAK	2 1/2 - 3" CALIPER	B & B
AG	AMALANCHIER GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	2 1/2 - 3" CALIPER	B & B (SINGLE STEM)
MC	MALUS 'CENTURION'	CENTURION CRABAPPLE	2 1/2 - 3" CALIPER	B & B
PG	PICEA GLAUCA	WHITE SPRUCE	8 - 10' HT.	B & B
<b>SHRUBS</b>				
SN	SPIREA 'NEON FLASH'	NEON FLASH SPIREA	5 GALLON	CONTAINER
RB	RHODODENDRON 'BOULE DE NEIGE'	BOULE DE NEIGE RHODODENDRON	5 GALLON	CONTAINER
FN	FORSYTHIA 'NORTHERN GOLD'	NORTHERN GOLD FORSYTHIA	5 GALLON	CONTAINER
RA	RHUS AROMATICA 'GROW LOW'	GROW LOW SUMAC	5 GALLON	CONTAINER
TM	TAXUS MEDIA 'TAUNTONII'	TAUNTON YEW	5 GALLON	CONTAINER
<b>GROUNDCOVERS &amp; PERENNIALS</b>				
CA	CALAMAGROSTIS 'KARL FOERSTER'	FEATHER REED GRASS	3 GALLON	CONTAINER
JS	JUNIPERUS CHINENSIS 'SARGENTI'	GREEN SARGENT JUNIPER	3 GALLON	CONTAINER
DS	HEMEROCALLIS 'STELLA DORO'	STELLA DORO DAYLILY	2 GALLON	CONTAINER
HR	HOSTA 'ROYAL STANDARD'	ROYAL STANDARD HOSTA	2 GALLON	CONTAINER
RF	RVOBECKIA FULGIDA 'GOLDSTURM'	BLACK-EYED SUSAN	2 GALLON	CONTAINER



**Proposed Subdivision Road & Office Building Development**

Borthwick Forest, LLC

Portsmouth, New Hampshire

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F	6/2/2017	AsT Submission
E	5/11/2017	Planning Board Submission
D	4/24/2017	TAC & ConCom Submission
C	3/31/2017	TAC Submission
B	3/29/2017	Conditional Use Permit Submission
O	5/20/2019	Amended Site Plan Approval

PROJECT NO:	K0076-13
DATE:	3/20/2017
FILE:	K0076-13_DSGN.DWG
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APPROVED:	BLM

**LANDSCAPE PLAN**

SCALE: AS SHOWN

**C-105.2**

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**GENERAL BUFFER PLANTING SEQUENCE NOTES:**

1. EROSION CONTROLS SHALL BE PLACED AROUND ALL JURISDICTIONAL WETLANDS. (SEE SHEET C-103.1 AND C-103.2)
2. ALL PAVEMENT ASSOCIATED WITH WBBX ROAD SHALL BE REMOVED
3. ALL REMAINING GRAVEL OR FILL MATERIAL SHALL BE REMOVED.
4. CLEAN LOAM SHALL BE PLACED WITHIN THE BUFFER PLANTING AREA AS NEEDED.
5. THE REMAINING OPEN GROUND WITHIN THE DISTURBED AREAS SHALL BE PLANTED WITH A RESTORATION SEED MIX AT A RATE OF 35 LB/ACRE | 1250 SQ FT/LB
6. ALL SEEDED AREAS SHALL BE MULCHED WITH STRAW TO PREVENT EROSION.

**BUFFER PLANTINGS:**

1. PLANTINGS OF THE FOLLOWING TREE SPECIES SHALL BE DONE AT A SPACING OF 15' OC, 8 EACH OF THE FOLLOWING. THAT ARE TO BE NO LESS THAN 3' TALL AND CONTAINER GROWN:
  - ACER RUBRUM (RED MAPLE)
  - BETULA ALLEGHANIENSIS (YELLOW BIRCH)
  - ABIES BALSAMEA (BALSAM FIR)
2. THE FOLLOWING SHRUB SPECIES SHALL BE PLANTED AT A SPACING OF 8' OC 15 EACH OF THE FOLLOWING. THAT ARE TO BE NO LESS THAN 2' TALL AND CONTAINER GROWN:
  - COMPTONIA PEREGRINA (SWEET FERN)
  - CORNUS ALTERNIFOLIA (ALTERNATE-LEAVED DOGWOOD)
  - JUNIPERUS COMMUNIS (COMMON JUNIPER)
  - VACCINIUM ANGUSTIFOLIUM (LOWBUSH BLUEBERRY)
  - VIBURNUM ACERIFOLIUM (MAPLE LEAF VIBURNUM)
  - CORYLUS AMERICANA (AMERICAN HAZELNUT)

**BUFFER PLANTINGS:**

1. PLANTINGS OF THE FOLLOWING TREE SPECIES SHALL BE DONE AT A SPACING OF 15' OC, 24 EACH OF THE FOLLOWING. THAT ARE TO BE NO LESS THAN 3' TALL AND CONTAINER GROWN:
  - ACER RUBRUM (RED MAPLE)
  - BETULA ALLEGHANIENSIS (YELLOW BIRCH)
  - ABIES BALSAMEA (BALSAM FIR)
2. THE FOLLOWING SHRUB SPECIES SHALL BE PLANTED AT A SPACING OF 8' OC 45 EACH OF THE FOLLOWING. THAT ARE TO BE NO LESS THAN 2' TALL AND CONTAINER GROWN:
  - COMPTONIA PEREGRINA (SWEET FERN)
  - CORNUS ALTERNIFOLIA (ALTERNATE-LEAVED DOGWOOD)
  - JUNIPERUS COMMUNIS (COMMON JUNIPER)
  - VACCINIUM ANGUSTIFOLIUM (LOWBUSH BLUEBERRY)
  - VIBURNUM ACERIFOLIUM (MAPLE LEAF VIBURNUM)
  - CORYLUS AMERICANA (AMERICAN HAZELNUT)

PROPOSED PLANTING OF 30 PINE TREES (PINUS STROBUS)  
(3' TALL AND CONTAINER GROWN)  
APPROXIMATELY 20' OC  
(EXACT LOCATIONS TO BE COORDINATED WITH GOVE ENVIRONMENTAL SERVICES AND THE CITY OF PORTSMOUTH CONSERVATION COMMISSION)

AREA TO BE PLANTED WITH A RESTORATION SEED MIX AT A RATE OF 35 LB/ACRE | 1250 SQ FT/LB

APPROXIMATE NUMBER AND TYPE OF EXISTING TREES TO BE REMOVED WITHIN WETLAND BUFFER:

- CHERRY - 7
- OAK - 16
- PINE - 20
- MAPLE - 8

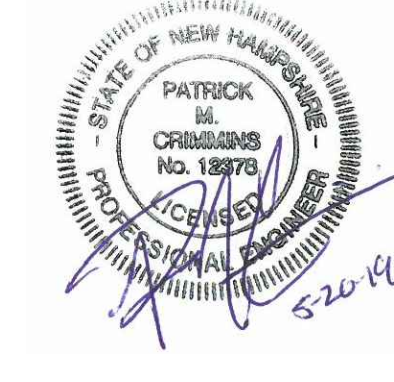
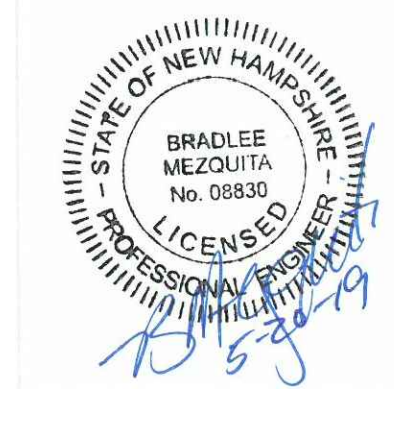
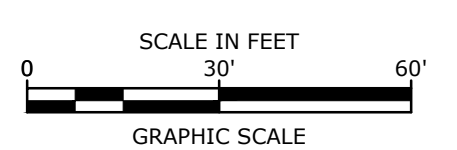
LIMITS OF PROPOSED GRAVEL WETLAND (SEE DETAIL ON SHEET C-506 FOR PLANTINGS)

APPROXIMATE LIMITS OF PROPOSED TREATMENT SWALES

100' WETLAND BUFFER

**LEGEND**

- PROPOSED WETLAND BUFFER PLANTINGS
- PROPOSED IMPERVIOUS AREA WITHIN WETLAND BUFFER = ±6,300 SF
- TOTAL PROPOSED RESTORATION AREA = ±21,500 SF
- RESTORATION AREA #1 = ±5,800 SF (EXISTING WBBX ROAD PAVEMENT AND GRAVEL BASE TO BE REMOVED WITHIN WETLAND BUFFER, RESTORED TO NATURAL TOPOGRAPHY AND VEGETATED WITH BUFFER PLANTINGS) (SEE SHEET 103.2 FOR PROPOSED GRADING)
- RESTORATION AREA #2 = 12,300 SF (EXISTING VEGETATIVE AREA ADJACENT TO WBBX ROAD WITHIN WETLAND BUFFER TO BE RESTORED TO NATURAL TOPOGRAPHY AND VEGETATED WITH BUFFER PLANTINGS) (SEE SHEET 103.2 FOR PROPOSED GRADING)
- RESTORATION AREA #3 = 3,400 SF (EXISTING WBBX ROAD PAVEMENT AND GRAVEL BASE TO BE REMOVED OUTSIDE OF WETLAND BUFFER AND RESTORED TO NATURAL TOPOGRAPHY AND VEGETATED WITH SEED MIX) (SEE SHEET 103.2 FOR PROPOSED GRADING)



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D	6/2/2017	AOI Submission
C	5/11/2017	Planning Board Submission
B	5/11/2017	Planning Board Submission
A	4/24/2017	TAC & ConCom Submission

PROJECT NO:	K0076-13
DATE:	4/24/2017
FILE:	K0076-13.DSGN.DWG
DRAWN BY:	CML
CHECKED:	PMC
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**BUFFER RESTORATION & PLANTING SEQUENCING PLAN**

SCALE: AS SHOWN

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**GENERAL PROJECT INFORMATION**

PROJECT OWNER: BORTHWICK FOREST, LLC c/o THE KANE COMPANY  
210 COMERCE WAY  
PORTSMOUTH, NEW HAMPSHIRE 03801  
PROJECT NAME: PROPOSED SUBDIVISION ROAD & OFFICE BUILDING DEVELOPMENT  
PROJECT ADDRESS: BORTHWICK AVENUE  
PORTSMOUTH, NEW HAMPSHIRE 03801  
PROJECT LATITUDE: 43°-08'-14"N  
PROJECT LONGITUDE: 70°-56'-22"W

**PROJECT DESCRIPTION**

THE PROJECT CONSISTS OF APPROXIMATELY 1,100 LF OR ROADWAY AS WELL AS A 3 STORY 50,000 SF OFFICE BUILDING WITH ASSOCIATED SITE IMPROVEMENTS THE WORK IS ANTICIPATED TO START IN SPRING OF 2018, AND BE COMPLETED BY WINTER OF 2019.

**DISTURBED AREA**

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 7 ACRES.

**SOIL CHARACTERISTICS**

BASED ON THE NRCS WEB SOIL SURVEY FOR THE SOILS ON SITE CONSIST OF CHATFIELD-HOLLIS-CANTON COMPLEX AND URBAN LAND SOILS WHICH ARE MODERATELY DRAINED SOILS.

**NAME OF RECEIVING WATERS**

THE STORM WATER RUNOFF WILL ULTIMATELY DISCHARGE INTO AN UNNAMED WETLAND. PRIOR TO DISCHARGING TO THE WETLAND, STORMWATER RUNOFF WILL BE COLLECTED AND TREATED BY VARIOUS TREATMENT SWALES, SEDIMENTATION BASINS AND A GRAVEL WETLAND.

**CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:**

- 1. CUT AND CLEAR TREES.
- 2. CONSTRUCT TEMPORARY AND PERMANENT SEDIMENT, EROSION AND DETENTION CONTROL FACILITIES. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS THAT WILL INFLUENCE STORMWATER RUNOFF SUCH AS:
  - NEW CONSTRUCTION
  - DEVELOPMENT OF BORROW PIT AREAS
  - DISPOSAL OF SEDIMENT SPOIL, STUMP AND OTHER SOLID WASTE
  - FLOOD PLAIN EXCAVATION WORK
  - STREAM CHANNEL MODIFICATIONS
  - CONTROL OF DUST
  - CONSTRUCTION OF ACCESS AND HAUL ROAD
  - NEARNESS OF CONSTRUCTION SITE TO RECEIVING WATERS
  - CONSTRUCTION DURING LATE WINTER AND EARLY SPRING
- 3. CLEAR AND DISPOSE OF DEBRIS.
- 4. CONSTRUCT TEMPORARY CULVERTS AND DIVERSION CHANNELS AS REQUIRED.
- 5. ALL PERMANENT DITCHES, SWALES, DETENTION, RETENTION AND SEDIMENTATION BASINS TO BE STABILIZED USING THE VEGETATIVE AND NON-STRUCTURAL BMPs PRIOR TO DIRECTING RUNOFF TO THEM.
- 6. GRADE AND GRAVEL ROADWAYS AND PARKING AREAS - ALL ROADS AND PARKING AREA SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
- 7. BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
- 8. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, PERIMETER EROSION CONTROL MEASURES, SEDIMENT TRAPS, ETC., MULCH AND SEED AS REQUIRED.
- 9. FINISH PAVING ALL ROADWAYS AND PARKING LOTS.
- 10. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
- 11. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
- 12. REMOVE TRAPPED SEDIMENTS FROM COLLECTOR DEVICES AS APPROPRIATE AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.

**SPECIAL CONSTRUCTION NOTES:**

- 1. THE CONSTRUCTION SEQUENCE MUST LIMIT THE DURATION AND AREA OF DISTURBANCE.
- 2. THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.
- 3. LOT DISTURBANCE, OTHER THAN THAT SHOWN ON THE APPROVED PLANS, SHALL NOT COMMENCE UNTIL AFTER THE ROADWAY HAS THE BASE COURSE TO DESIGN ELEVATION AND THE ASSOCIATED DRAINAGE IS COMPLETE AND STABLE. - THIS NOTE IS APPLICABLE TO SINGLE/DUPEX FAMILY SUBDIVISIONS, WHEN LOT DEVELOPMENT IS NOT PART OF THE PERMIT.

**EROSION CONTROL NOTES:**

- 1. ALL EROSION CONTROL MEASURES AND PRACTICES SHALL CONFORM TO THE "NEW HAMPSHIRE STORMWATER MANUAL VOLUME 3: EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" PREPARED BY THE NHDES.
- 2. PRIOR TO ANY WORK OR SOIL DISTURBANCE, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EROSION CONTROL MEASURES AS REQUIRED IN THE PROJECT MANUAL.
- 3. CONTRACTOR SHALL INSTALL TEMPORARY EROSION CONTROL BARRIERS, INCLUDING HAY BALES, SILT FENCES, MULCH BERMS, SILT SACKS AND SILT SOCKS AS SHOWN IN THESE DRAWINGS AS THE FIRST ORDER OF WORK.
- 4. SILT SACK INLET PROTECTION SHALL BE INSTALLED IN ALL EXISTING AND PROPOSED CATCH BASIN INLETS WITHIN THE WORK LIMITS AND BE MAINTAINED FOR THE DURATION OF THE PROJECT.
- 5. PERIMETER CONTROLS INCLUDING SILT FENCES, MULCH BERM, SILT SOCK, AND/OR HAY BALE BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL NON-PAVED AREAS HAVE BEEN STABILIZED.
- 6. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
- 7. ALL DISTURBED AREAS NOT OTHERWISE BEING TREATED SHALL RECEIVE 6" LOAM, SEED AND FERTILIZER.
- 8. INSPECT ALL INLET PROTECTION AND PERIMETER CONTROLS WEEKLY AND AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE FILTER HEIGHT.
- 9. CONSTRUCT EROSION CONTROL BLANKETS ON ALL SLOPES STEEPER THAN 3:1.

**STABILIZATION:**

- 1. AN AREA SHALL BE CONSIDERED STABLE WHEN ONE OF THE FOLLOWING HAS OCCURRED:
  - A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
  - B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
  - C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED;
- 2. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.;
- 3. IN AREAS TO BE PAVED, "STABLE" MEANS THAT BASE COURSE GRAVELS MEETING THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2 HAVE BEEN INSTALLED.
- 4. WINTER STABILIZATION PRACTICES:
  - A. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1. AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS;
  - B. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS;
  - C. AFTER NOVEMBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT;
- 5. STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES, AND DISTURBED AREAS, WHERE CONSTRUCTION ACTIVITY SHALL NOT OCCUR FOR MORE THAN TWENTY-ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA. STABILIZATION MEASURES TO BE USED INCLUDE:
  - A. TEMPORARY SEEDING;
  - B. MULCHING.
- 6. WHEN CONSTRUCTION ACTIVITY PERMANENTLY OR TEMPORARILY CEASES WITHIN 100 FEET OF NEARBY SURFACE WATERS OR DELINEATED WETLANDS, THE AREA SHALL BE STABILIZED WITHIN SEVEN (7) DAYS OR PRIOR TO A RAIN EVENT. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN THESE AREAS, SILT FENCES, MULCH BERMS, HAY BALE BARRIERS AND ANY

EARTH/DIKES SHALL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED. DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET RUNOFF FROM THE SITE WILL BE FILTERED THROUGH SILT FENCES, MULCH BERMS, HAY BALE BARRIERS, OR SILT SOCKS. ALL STORM DRAIN BASIN INLETS SHALL BE PROVIDED WITH FLARED END SECTIONS AND TRASH RACKS. THE SITE SHALL BE STABILIZED FOR THE WINTER BY NOVEMBER 15.

**DUST CONTROL:**

- 1. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST THROUGHOUT THE CONSTRUCTION PERIOD.
- 2. DUST CONTROL METHODS SHALL INCLUDE, BUT BE NOT LIMITED TO SPRINKLING WATER ON EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING.
- 3. DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.

**STOCKPILES:**

- 1. LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CATCH BASINS, SWALES, AND CULVERTS.
- 2. ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY EROSION CONTROL MEASURES PRIOR TO THE ONSET OF PRECIPITATION.
- 3. PERIMETER BARRIERS SHOULD BE MAINTAINED AT ALL TIMES, AND ADJUSTED AS NEEDED TO ACCOMMODATE THE DELIVERY AND REMOVAL OF MATERIALS FROM THE STOCKPILE. THE INTEGRITY OF THE BARRIER SHOULD BE INSPECTED AT THE END OF EACH WORKING DAY.
- 4. PROTECT ALL STOCKPILES FROM STORMWATER RUN-OFF USING TEMPORARY EROSION CONTROL MEASURES SUCH AS BERMS, SILT SOCK, OR OTHER APPROVED PRACTICE TO PREVENT MIGRATION OF MATERIAL BEYOND THE IMMEDIATE CONFINES OF THE STOCKPILES.

**OFF SITE VEHICLE TRACKING:**

- 1. THE CONTRACTOR SHALL CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE(S) PRIOR TO ANY EXCAVATION ACTIVITIES.

**VEGETATION:**

- 1. TEMPORARY GRASS COVER:
  - A. SEEDBED PREPARATION:
    - a. APPLY FERTILIZER AT THE RATE OF 600 POUNDS PER ACRE OF 10-10-10. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF THREE (3) TONS PER ACRE;
  - B. SEEDING:
    - a. UTILIZE ANNUAL RYE GRASS AT A RATE OF 40 LBS/ACRE;
    - b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF TWO (2) INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED;
    - c. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). HYDROSEEDINGS, WHICH INCLUDE MULCH, MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING;
  - C. MAINTENANCE:
    - a. TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED. AT A MINIMUM, 95% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER BARRIERS, CHECK DAMS, ETC.).
- 2. VEGETATIVE PRACTICE:
  - A. FOR PERMANENT MEASURES AND PLANTINGS:
    - a. LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF THREE (3) TONS PER ACRE IN ORDER TO PROVIDE A PH VALUE OF 5.5 TO 6.5;
    - b. FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 800 POUNDS PER ACRE OF 10-20-20 FERTILIZER;
    - c. SOIL CONDITIONERS AND FERTILIZER SHALL BE APPLIED AT THE RECOMMENDED RATES AND SHALL BE THOROUGHLY WORKED INTO THE LOAM. LOAM SHALL BE RAKED UNTIL THE SURFACE IS FINELY PULVERIZED, SMOOTH AND EVEN, AND THEN COMPACTED TO AN EVEN SURFACE CONFORMING TO THE REQUIRED LINES AND GRADES WITH APPROVED ROLLERS WEIGHING BETWEEN 4-1/2 POUNDS AND 5-1/2 POUNDS PER INCH OF WIDTH;
    - d. SEED SHALL BE SOWN AT THE RATE SHOWN BELOW. SOWING SHALL BE DONE ON A CALM, DRY DAY, PREFERABLY BY MACHINE, BUT IF BY HAND, ONLY BY EXPERIENCED WORKMEN. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4 INCH AND ROLLED WITH A HAND ROLLER WEIGHING NOT OVER 100 POUNDS PER LINEAR FOOT OF WIDTH;
    - e. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AS INDICATED ABOVE;
    - f. THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED WITH GRASS SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED;
    - g. THE CONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL ACCEPTED;
    - h. A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL BE APPLIED AT THE INDICATED RATE:

SEED MIX	APPLICATION RATE
CREeping RED FESCUE	50 LBS/ACRE
KENTUCKY BLUEGRASS	100 LBS/ACRE
PERENNIAL RY GRASS	50 LBS/ACRE

IN NO CASE SHALL THE WEED CONTENT EXCEED ONE (1) PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH STATE AND FEDERAL SEED LAWS. SEEDING SHALL BE DONE NO LATER THAN SEPTEMBER 15. IN NO CASE SHALL SEEDING TAKE PLACE OVER SNOW.
  - A. FOLLOW PERMANENT MEASURES SLOPE, LIME, FERTILIZER AND GRADING REQUIREMENTS. APPLY SEED MIXTURE AT TWICE THE INDICATED RATE. APPLY MULCH AS INDICATED FOR PERMANENT MEASURES.

**CONCRETE WASHOUT AREA:**

- 1. THE FOLLOWING ARE THE ONLY NON-STORMWATER DISCHARGES ALLOWED. ALL OTHER NON-STORMWATER DISCHARGES ARE PROHIBITED ON SITE:
  - A. THE CONCRETE DELIVERY TRUCKS SHALL, WHENEVER POSSIBLE, USE WASHOUT FACILITIES AT THEIR OWN PLANT OR DISPATCH FACILITY;
  - B. IF IT IS NECESSARY, SITE CONTRACTOR SHALL DESIGNATE SPECIFIC WASHOUT AREAS AND DESIGN FACILITIES TO HANDLE ANTICIPATED WASHOUT WATER;
  - C. CONTRACTOR SHALL LOCATE WASHOUT AREAS AT LEAST 150 FEET AWAY FROM STORM DRAINS, SWALES AND SURFACE WATERS OR DELINEATED WETLANDS;
  - D. INSPECT WASHOUT FACILITIES DAILY TO DETECT LEAKS OR TEARS AND TO IDENTIFY WHEN MATERIALS NEED TO BE REMOVED.

**ALLOWABLE NON-STORMWATER DISCHARGES:**

- 1. FIRE-FIGHTING ACTIVITIES;
- 2. FIRE HYDRANT FLUSHING;
- 3. WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED;
- 4. WATER USED TO CONTROL DUST;
- 5. POTABLE WATER INCLUDING UNCONTAMINATED WATER LINE FLUSHING;
- 6. ROUTINE EXTERNAL BUILDING WASH DOWN WHERE DETERGENTS ARE NOT USED;
- 7. PAVEMENT WASH WATERS WHERE DETERGENTS ARE NOT USED;
- 8. UNCONTAMINATED AIR CONDITIONING/COMPRESSOR CONDENSATION;
- 9. UNCONTAMINATED GROUND WATER OR SPRING WATER;
- 10. FOUNDATION OR FOOTING DRAINS WHICH ARE UNCONTAMINATED;
- 11. UNCONTAMINATED EXCAVATION DEWATERING;
- 12. LANDSCAPE IRRIGATION.

**WASTE DISPOSAL:**

- 1. WASTE MATERIAL:
  - A. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
  - B. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
  - C. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
- 2. HAZARDOUS WASTE:
  - A. ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER;
  - B. SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
- 3. SANITARY WASTE:
  - A. ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE

PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

**SPILL PREVENTION:**

- 1. CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY LOCAL, STATE AND FEDERAL AGENCIES. AT A MINIMUM, CONTRACTOR SHALL FOLLOW THE BEST MANAGEMENT SPILL PREVENTION PRACTICES OUTLINED BELOW.
- 2. THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
  - A. GOOD HOUSEKEEPING - THE FOLLOWING GOOD HOUSEKEEPING PRACTICE SHALL BE FOLLOWED ON SITE DURING CONSTRUCTION:
    - a. ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB SHALL BE STORED ON SITE;
    - b. ALL MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE;
    - c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED;
    - d. THE SITE SUPERINTENDENT SHALL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS;
    - e. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER;
    - f. WHENEVER POSSIBLE ALL OF A PRODUCT SHALL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
  - B. HAZARDOUS PRODUCTS - THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
    - g. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE;
    - h. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHALL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION;
    - i. SURPLUS PRODUCT THAT MUST BE DISPOSED OF SHALL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.
  - C. PRODUCT SPECIFIC PRACTICES - THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ON SITE:
    - A. PETROLEUM PRODUCTS:
      - ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE;
      - PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
    - B. FERTILIZERS:
      - FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS;
      - ONCE APPLIED FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER;
      - STORAGE SHALL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER SHALL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
    - C. PAINTS:
      - ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE;
      - EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM;
      - EXCESS PAINT SHALL BE DISPOSED OF PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
    - D. SPILL CONTROL PRACTICES - IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION, THE FOLLOWING PRACTICES SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
      - a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES;
      - b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS SHALL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE;
      - c. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY;
      - d. THE SPILL AREA SHALL BE KEPT WELL VENTILATED AND PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE;
      - e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL SHALL BE REPORTED TO THE APPROPRIATE LOCAL, STATE OR FEDERAL AGENCIES AS REQUIRED;
      - f. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS SHALL BE RESPONSIBLE FOR SPILL PREVENTION AND CLEANUP COORDINATION.
    - E. VEHICLE FUELING AND MAINTENANCE PRACTICE:
      - a. CONTRACTOR SHALL MAKE AN EFFORT TO PERFORM EQUIPMENT/VEHICAL FUELING AND MAINTENANCE AT AN OFF-SITE FACILITY;
      - b. CONTRACTOR SHALL PROVIDE AN ON-SITE FUELING AND MAINTENANCE AREA THAT IS CLEAN AND DRY;
      - c. IF POSSIBLE THE CONTRACTOR SHALL KEEP AREA COVERED;
      - d. CONTRACTOR SHALL KEEP A SPILL KIT AT THE FUELING AND MAINTENANCE AREA;
      - e. CONTRACTOR SHALL REGULARLY INSPECT VEHICLES FOR LEAKS AND DAMAGE;
      - f. CONTRACTOR SHALL USE DRIP PANS, DRIP CLOTHS, OR ABSORBENT PADS WHEN REPLACING SPENT FLUID.

**EROSION CONTROL OBSERVATIONS AND MAINTENANCE PRACTICES**

THIS PROJECT EXCEEDS ONE (1) ACRE OF DISTURBANCE AND THUS REQUIRES A SWPPP. THE SWPPP SHALL BE PREPARED BY THE ENGINEER. THE CONTRACTOR SHALL BE FAMILIAR WITH THE SWPPP AND KEEP AN UPDATED COPY OF THE SWPPP ONSITE AT ALL TIMES.

THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES THAT SHALL BE FOLLOWED AS PART OF THIS PROJECT:

- 1. OBSERVATIONS OF THE PROJECT FOR COMPLIANCE WITH THE SWPPP SHALL BE MADE BY THE CONTRACTOR AT LEAST ONCE A WEEK OR WITHIN 24 HOURS OF A STORM 0.25 INCHES OR GREATER;
- 2. AN OBSERVATION REPORT SHALL BE MADE AFTER EACH OBSERVATION AND DISTRIBUTED TO THE ENGINEER, THE OWNER, AND THE CONTRACTOR;
- 3. A REPRESENTATIVE OF THE SITE CONTRACTOR, SHALL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR ACTIVITIES;
- 4. IF A REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT.

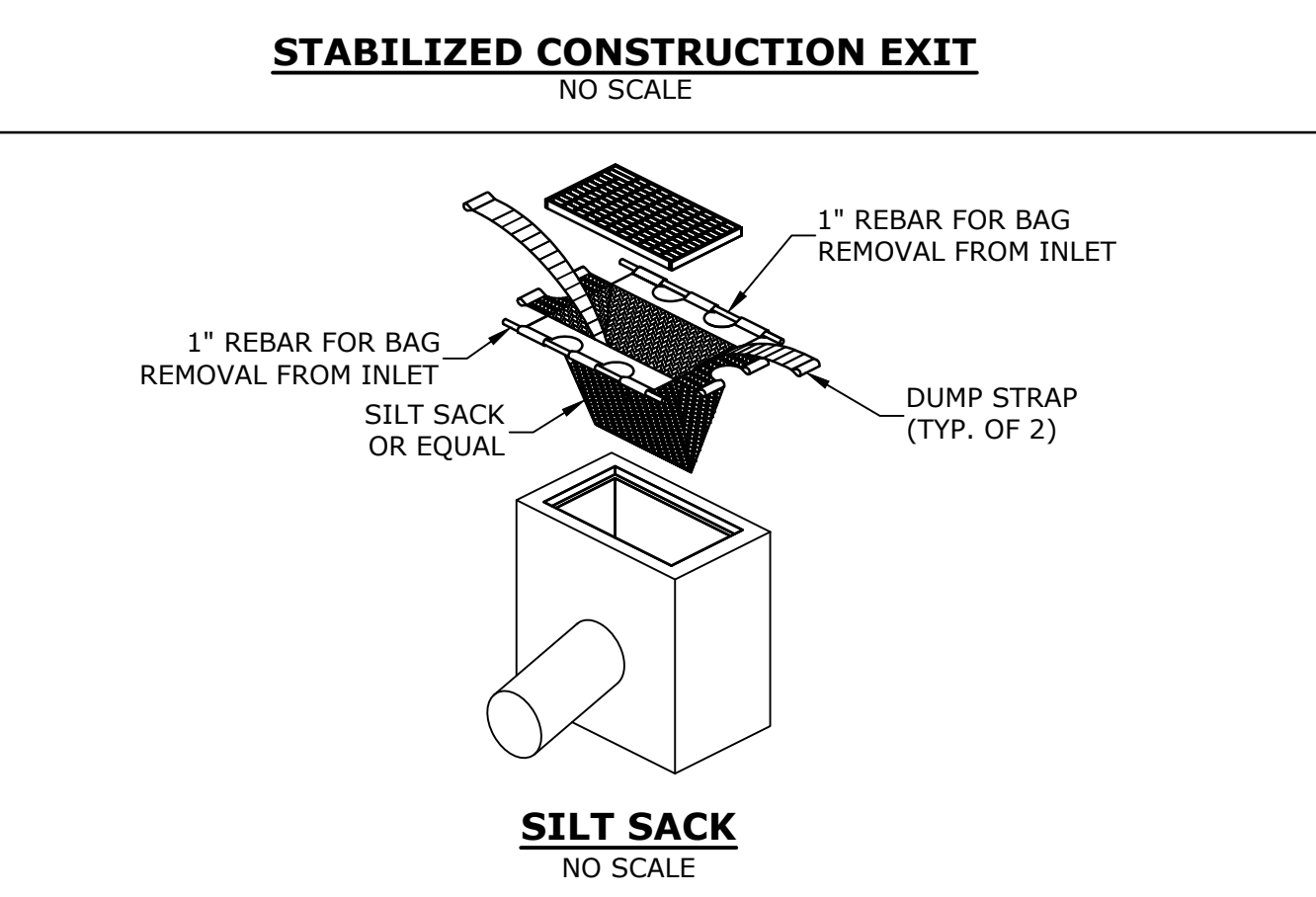
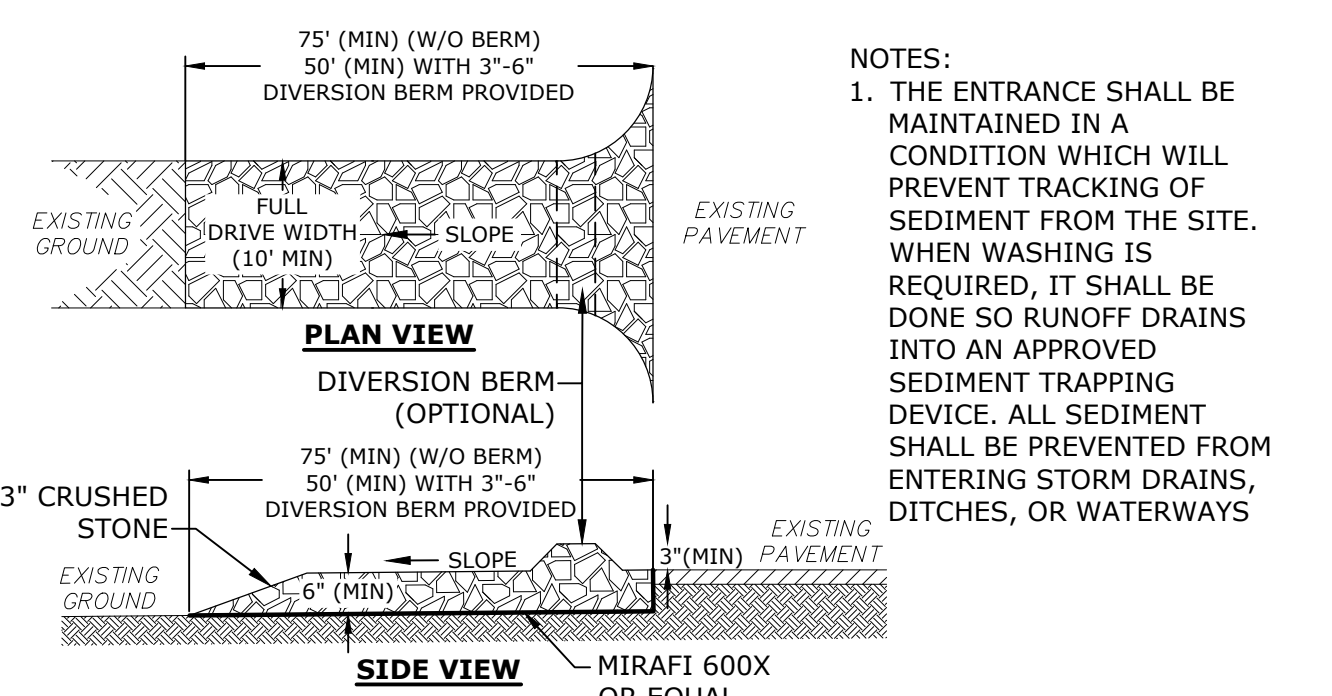
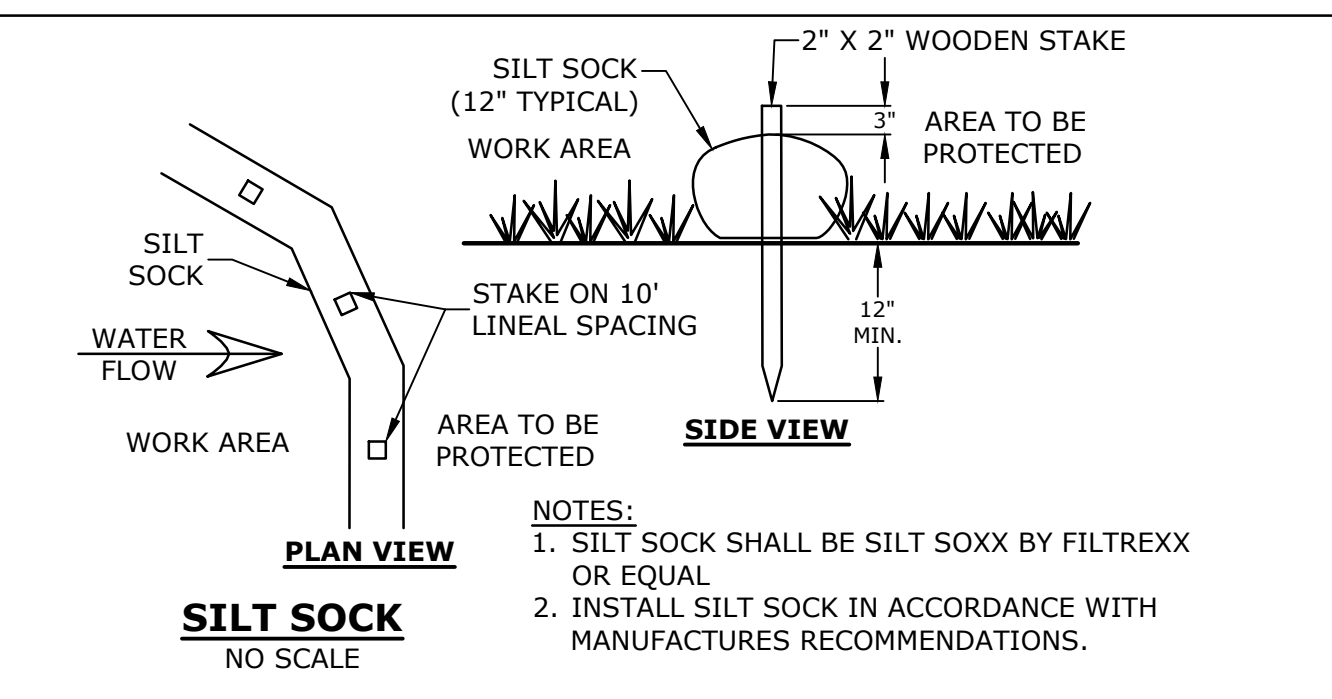
**BLASTING NOTES:**

- 1. IF MORE THAN 5000 CUBIC YARDS ARE TO BE BLASTED A BLASTING PLAN SHALL BE PROVIDED. THE BLASTING PLAN SHALL INCLUDE:
  - A. LOCATION AND IDENTIFICATION OF DRINKING WATER WELLS LOCATED WITHIN 2000 FEET OF THE PROPOSED BLASTING ACTIVITIES;
  - B. A GROUNDWATER QUALITY SAMPLING PROGRAM, APPROVED BY NHDES PRIOR TO INITIATING BLASTING, TO MONITOR FOR NITRATE AND NITRITE EITHER IN THE DRINKING WATER SUPPLY WELLS OR IN OTHER WELLS THAT ARE REPRESENTATIVE OF THE DRINKING WATER SUPPLY WELLS IN THE AREA.
- 2. THE FOLLOWING BEST MANAGEMENT PROCEDURES FOR BLASTING SHALL BE COMPLIED WITH:
  - A. LOADING PRACTICES - THE FOLLOWING BLASTHOLE LOADING PRACTICES TO MINIMIZE ENVIRONMENTAL EFFECTS SHALL BE FOLLOWED:
    - a. DRILLING LOGS SHALL BE MAINTAINED BY THE DRILLER AND COMMUNICATED DIRECTLY TO THE BLASTER. THE LOGS SHALL INDICATE DEPTHS AND LENGTHS OF VOIDS, CAVITIES, AND FAULT ZONES OR OTHER WEAK ZONES ENCOUNTERED AS WELL AS GROUNDWATER CONDITIONS;
    - b. EXPLOSIVE PRODUCTS SHALL BE MANAGED ON-SITE SO THAT THEY ARE EITHER USED IN THE BOREHOLE, RETURNED TO THE DELIVERY VEHICLE, OR PLACED IN SECURE CONTAINERS FOR OFF-SITE DISPOSAL;
    - c. SPILLS AROUND THE BOREHOLE SHALL EITHER BE PLACED IN THE BOREHOLE OR CLEANED UP AND RETURNED TO AN APPROPRIATE VEHICLE FOR HANDLING OR PLACEMENT IN SECURED CONTAINERS FOR OFF-SITE DISPOSAL;
    - d. LOADED EXPLOSIVES SHALL BE DETONATED AS SOON AS POSSIBLE AND SHALL NOT BE LEFT IN THE BLASTHOLES OVERNIGHT, UNLESS WEATHER OR OTHER SAFETY CONCERNS REASONABLY DICTATE THAT DETONATION SHOULD BE POSTPONED;
    - e. LOADING EQUIPMENT SHALL BE CLEANED IN AN AREA WHERE WASTEWATER CAN BE PROPERLY CONTAINED AND HANDLED IN A MANNER THAT PREVENTS RELEASE OF CONTAMINANTS TO THE ENVIRONMENT;

- f. EXPLOSIVES SHALL BE LOADED TO MAINTAIN GOOD CONTINUITY IN THE COLUMN LOAD TO PROMOTE COMPLETE DETONATION. INDUSTRY ACCEPTED LOADING PRACTICES FOR PRIMING, STEMMING, DECKING AND COLUMN RISE NEED TO BE ATTENDED TO.
- B. EXPLOSIVE SELECTION - THE FOLLOWING BMPs SHALL BE FOLLOWED TO REDUCE THE POTENTIAL FOR GROUNDWATER CONTAMINATION WHEN EXPLOSIVES ARE USED:
  - a. EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT ARE APPROPRIATE FOR SITE CONDITIONS AND SAFE BLAST EXECUTION;
  - b. EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT HAVE THE APPROPRIATE WATER RESISTANCE FOR THE SITE CONDITIONS PRESENT TO MINIMIZE THE POTENTIAL FOR HAZARDOUS EFFECT OF THE PRODUCT UPON GROUNDWATER.
- C. PREVENTION OF MISFIRES. APPROPRIATE PRACTICES SHALL BE DEVELOPED AND IMPLEMENTED TO PREVENT MISFIRES.
- D. MUCK PILES MANAGEMENT - MUCK PILES (THE BLASTED PIECES OF ROCK) AND ROCK PILES SHALL BE MANAGED IN A MANNER TO REDUCE THE POTENTIAL FOR CONTAMINATION BY IMPLEMENTING THE FOLLOWING MEASURES:
  - c. REMOVE THE MUCK PILE FROM THE BLAST AREA AS SOON AS REASONABLY POSSIBLE;
  - d. MANAGE THE INTERACTION OF BLASTED ROCK PILES AND STORMWATER TO PREVENT CONTAMINATION OF WATER SUPPLY WELLS OR SURFACE WATER.
- E. SPILL PREVENTION MEASURES AND SPILL MITIGATION - SPILL PREVENTION AND SPILL MITIGATION MEASURES SHALL BE IMPLEMENTED TO PREVENT THE RELEASE OF FUEL AND OTHER RELATED SUBSTANCES TO THE ENVIRONMENT. THE MEASURES SHALL INCLUDE AT A MINIMUM:
  - a. THE FUEL STORAGE REQUIREMENTS SHALL INCLUDE:
    - STORAGE OF REGULATED SUBSTANCES ON AN IMPERVIOUS SURFACE;
    - SECURE STORAGE AREAS AGAINST UNAUTHORIZED ENTRY;
    - LABEL REGULATED CONTAINERS CLEARLY AND VISIBLY;
    - INSPECT STORAGE AREAS WEEKLY;
    - COVER REGULATED CONTAINERS IN OUTSIDE STORAGE AREAS;
    - WHEREVER POSSIBLE, KEEP REGULATED CONTAINERS THAT ARE STORED OUTSIDE MORE THAN 50 FEET FROM SURFACE WATER AND STORM DRAINS, 75 FEET FROM PRIVATE WELLS, AND 400 FEET FROM PUBLIC WELLS;
    - SECONDARY CONTAINMENT IS REQUIRED FOR CONTAINERS CONTAINING REGULATED SUBSTANCES STORED OUTSIDE, EXCEPT FOR ON PREMISE USE HEATING FUEL TANKS, OR ABOVEGROUND OR UNDERGROUND STORAGE TANKS OTHERWISE REGULATED.
  - b. THE FUEL HANDLING REQUIREMENTS SHALL INCLUDE:
    - EXCEPT WHEN IN USE, KEEP CONTAINERS CONTAINING REGULATED SUBSTANCES CLOSED AND SEALED;
    - PLACE DRIP PANS UNDER SPIGOTS, VALVES, AND PUMPS;
    - HAVE SPILL CONTROL AND CONTAINMENT EQUIPMENT READILY AVAILABLE IN ALL WORK AREAS;
    - USE FUNNELS AND DRIP PANS WHEN TRANSFERRING REGULATED SUBSTANCES;
    - PERFORM TRANSFERS OF REGULATED SUBSTANCES OVER AN IMPERVIOUS SURFACE.
  - c. THE TRAINING OF ON-SITE EMPLOYEES AND THE ON-SITE POSTING OF RELEASE RESPONSE INFORMATION DESCRIBING WHAT TO DO IN THE EVENT OF A SPILL OF REGULATED SUBSTANCES.
  - d. FUELING AND MAINTENANCE OF EXCAVATION, EARTHMOVING AND OTHER CONSTRUCTION RELATED EQUIPMENT SHALL COMPLY WITH THE REGULATIONS OF THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES THESE REQUIREMENTS ARE SUMMARIZED IN WD-DWGB-22-6 BEST MANAGEMENT PRACTICES FOR FUELING AND MAINTENANCE OF EXCAVATION AND EARTHMOVING EQUIPMENT, OR ITS SUCCESSOR DOCUMENT. <https://www.des.nh.gov/organization/commissioner/pip/factsheets/dwgb/documents/dwgb-22-6.pdf>



Engineers | Environmental Specialists



**Proposed Subdivision Road & Office Building Development**

Borthwick Forest, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	3/25/2019	Construction Drawings
J	3/20/2019	Revised GMP Submission
I	3/4/2019	Rev Pricing Drawings / Admin Approval
H	5/8/2018	Submitted for Final Approval
G	2/26/2018	GMP Submission
F	2/6/2018	Planning Board Submission
E	1/12/2018	GMP Submission
D	6/2/2017	Aot Submission
C	5/11/2017	Planning Board Submission
B	4/24/2017	TAC & ConCom Submission
A	3/20/2017	TAC Submission

PROJECT NO:	K0076-13
DATE:	3/20/2017
FILE:	K0076-13.DTL.DWG
DRAWN BY:	CMC
CHECKED:	PMC
APPROVED:	BLM

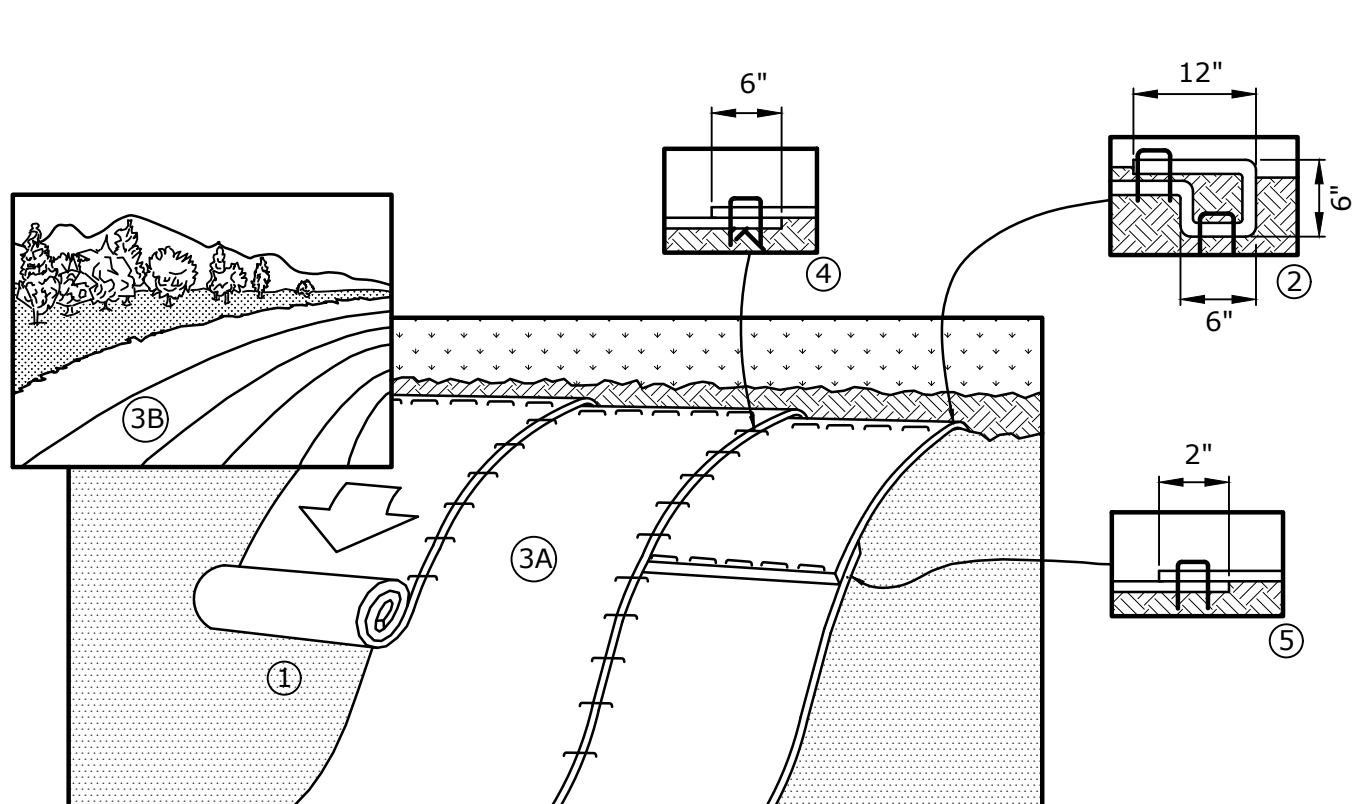
**EROSION CONTROL NOTES SHEET**

SCALE: AS SHOWN

C-501

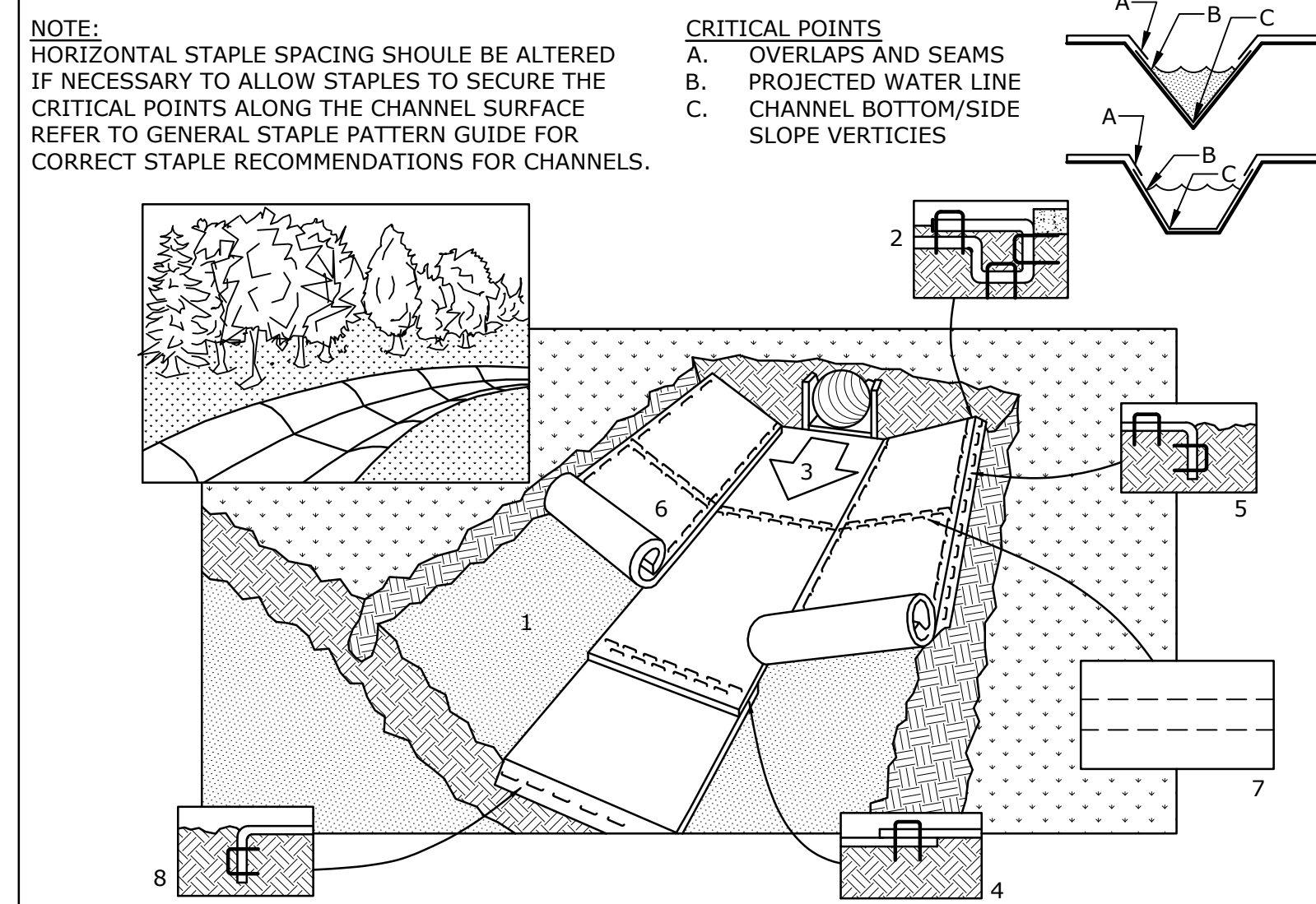
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Plot Date: Monday, March 25, 2019 Plotted By: Craig M. Langton  
File Location: J:\K0076 - Borthwick Forest\Drawings - Filenames\AutoCAD\Xref\K0076-13\_DTLs.dwg Layout Tab: C-501





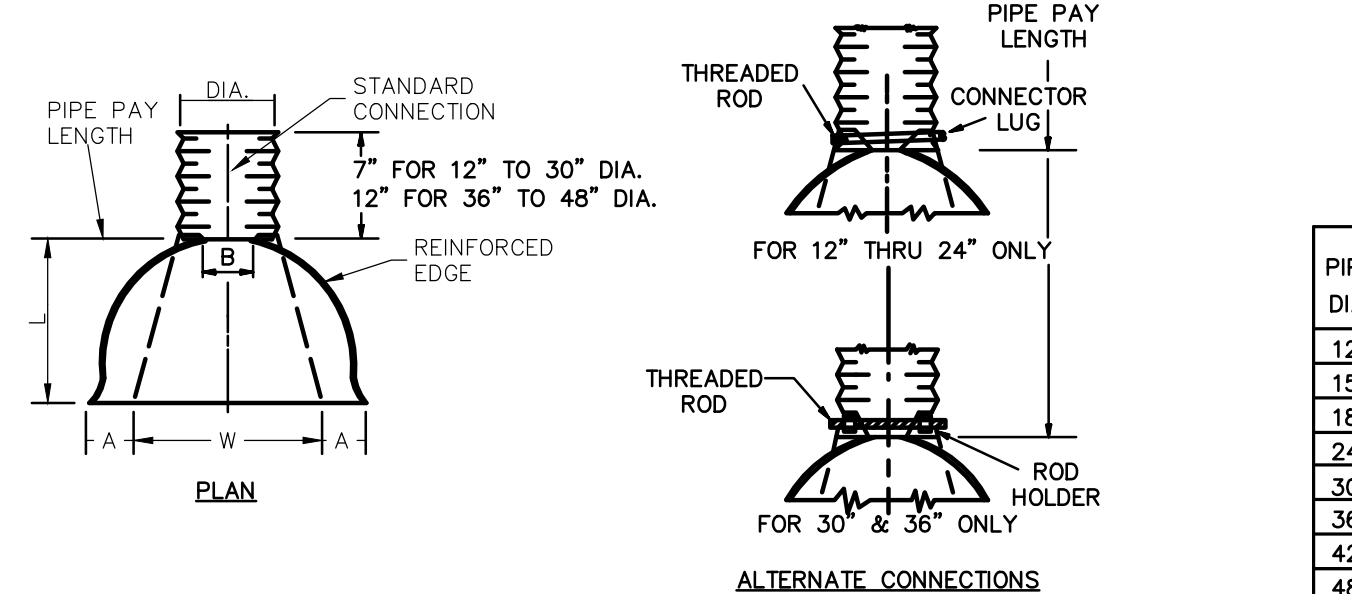
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE, 36" OVER THE GRADE BREAK, BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UPSLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF TAPLES/STAKES 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES SPACED 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS DOWN THE SLOPE. ALL BLANKETS MUST BE SECURELY FASTENED TO THE SOIL SURFACE BY PLACING STAPLES IN APPROPRIATE LOCATIONS AS SHOWN ON THE STAPLE PATTERN GUIDE.
4. STAPLE LENGTHS SHALL BE A MINIMUM OF 8 INCHES.
5. EROSION CONTROL BLANKETS SHALL BE BORTH AMERICAN GREEN C125 BN OR EQUAL.

**EROSION CONTROL BLANKET INSTALLATION FOR STEEP SLOPES**  
NO SCALE



- NOTE:**  
HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE. REFER TO GENERAL STAPLE PATTERN GUIDE FOR CORRECT STAPLE RECOMMENDATIONS FOR CHANNELS.
- CRITICAL POINTS**  
A. OVERLAPS AND SEAMS  
B. PROJECTED WATER LINE  
C. CHANNEL BOTTOM/SIDE SLOPE VERTICIES
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF LIME, FERTILIZER, AND SEED.
  2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
  3. ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW ON BOTTOM OF CHANNEL.
  4. PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH A 6" OVERLAP. USE A DOUBLE ROW OF STAGGERED STAPLES 4" APART TO SECURE BLANKETS.
  5. FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED IN 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
  6. BLANKETS ON SIDE SLOPES MUST BE OVERLAPPED 4" OVER THE CENTER BLANKET AND STAPLED.
  7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A ROW OF STAPLES 4" APART OVER THE ENTIRE WIDTH OF THE CHANNEL. PLACE A SECOND ROW 4" BELOW THE FIRST ROW IN A STAGGERED PATTERN.
  8. TERMINAL END OF THE BLANKETS MUST BE ANCHORED IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
  9. EROSION CONTROL BLANKETS SHALL BE BORTH AMERICAN GREEN C125 BN OR EQUAL.

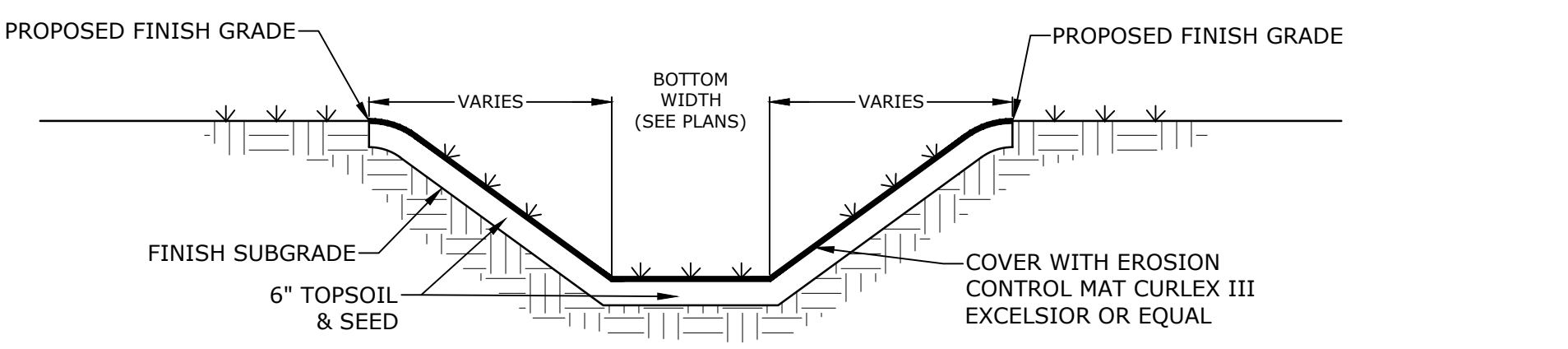
**EROSION CONTROL BLANKET INSTALLATION**  
NO SCALE



PIPE DIA.	METAL GAGE	DIMENSIONS			
		A (1" TOL.)	B (1" TOL.)	H (1" TOL.)	W (2" TOL.)
12"	16	6"	6"	6"	21"
15"	16	7"	8"	6"	26"
18"	16	8"	13"	6"	31"
24"	16	10"	16"	6"	41"
30"	14	12"	16"	8"	51"
36"	14	14"	19"	9"	60"
42"	12	16"	22"	11"	69"
48"	12	18"	27"	12"	78"

- NOTES:**  
1. END SECTION FOR 12" TO 30" DIA. PIPE IN ONE PIECE, FOR 36" TO 48" DIA. PIPE TO BE MADE FROM TWO SHEETS JOINED BY RIVETING OR BOLTING ON CENTER LINE.  
2. CONNECTOR SECTION, CORNER PLATE AND TOE PLATE TO BE SAME THICKNESS AS END SECTION AND EACH TO BE GALVANIZED.

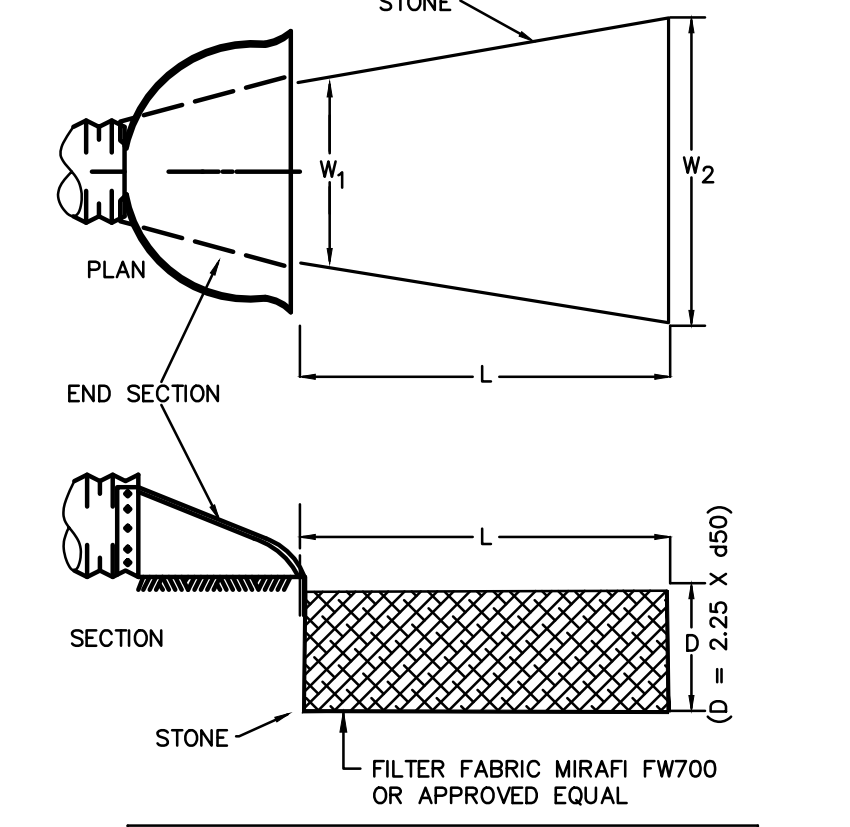
**METAL FLARED END SECTION**  
NO SCALE



- NOTES:**  
1. THE FOUNDATION AREA OF THE WATERWAY SHALL BE CLEARED AND GRUBBED OF ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL. MATERIALS REMOVED SHALL BE DISPOSED OF SO THEY WILL NOT INTERFERE WITH THE CONSTRUCTION OR PROPER FUNCTIONING OF THE WATERWAY.  
2. THE WATERWAY SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND CROSS-SECTION AS REQUIRED TO MEET THE DESIGN CRITERIA. THE WATERWAY SHALL BE FREE OF IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.  
3. EARTH FILLS REQUIRED TO MEET SUBGRADE REQUIREMENTS BECAUSE OF OVER EXCAVATION OR TOPOGRAPHY SHALL BE COMPACTED TO THE SAME DENSITY AS THE SURROUNDING SOIL TO PREVENT UNEQUAL SETTLEMENT THAT COULD CAUSE DAMAGE TO THE COMPLETED WATERWAY. EARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE SPREAD OR DISPOSED OF SO IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE WATERWAY.  
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER AS TO MINIMIZE EROSION AND AIR AND WATER POLLUTION. ALL APPROPRIATE STATE AND LOCAL LAWS AND REGULATIONS SHALL BE COMPLIED WITH FOR INSTALLATION.  
5. VEGETATION SHALL BE ESTABLISHED IN THE SWALE PRIOR TO ALLOWING STORMWATER RUNOFF TO FLOW THROUGH THE SWALE.  
6. MAINTENANCE OF THE VEGETATION IN THE GRASSED WATERWAY IS EXTREMELY IMPORTANT IN ORDER TO PREVENT RILLING, EROSION, AND FAILURE OF THE WATERWAY. MOWING SHOULD BE DONE FREQUENTLY ENOUGH TO CONTROL ENCRAGEMENT OF WEEDS AND WOODY VEGETATION AND TO KEEP THE GRASSES IN A VIGOROUS CONDITION. THE VEGETATION SHOULD NOT BE MOWED TOO CLOSELY SO AS TO REDUCE THE EROSION RESISTANCE IN THE WATERWAY.  
7. THE WATERWAY SHOULD BE INSPECTED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE THE CONDITION OF THE WATERWAY. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND REVEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.

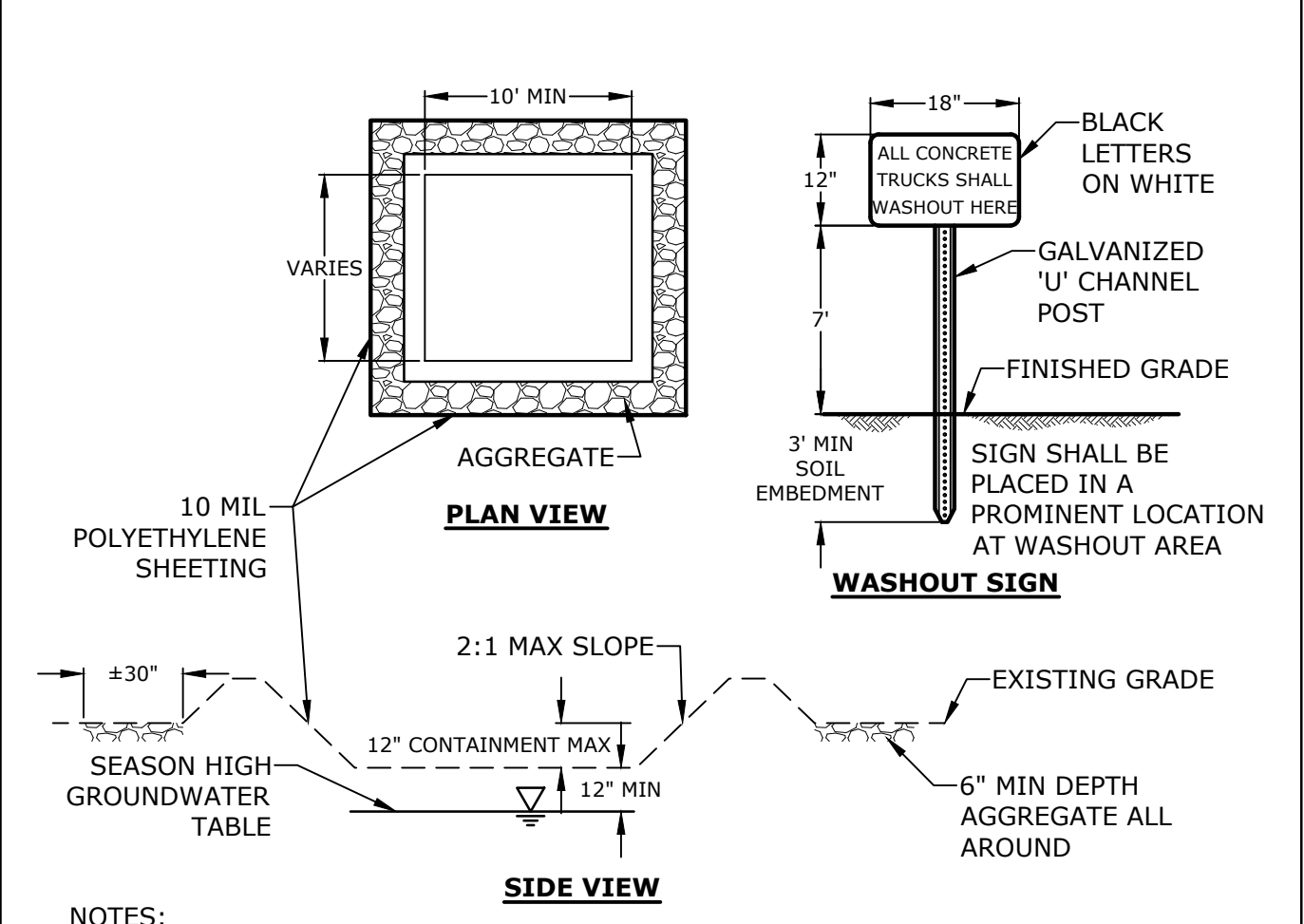
**GRASSED LINED SWALE**  
NO SCALE

- NOTES:**  
1. STONE SIZE AND MAT DIMENSIONS DETAILED ON TABLE BELOW.  
2. STONE SHALL CONSIST OF SUB-ANGULAR FIELD STONE OR ROUGH UNIFORM QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. FLAT OR ROUND ROCKS ARE NOT ACCEPTABLE. THE STONE SHALL BE HARD AND OF SUCH QUALITY THAT IT WILL NOT DISINTEGRATE ON EXPOSURE TO WATER OR WEATHERING, BE CHEMICALLY STABLE AND IT SHALL BE SUITABLE IN ALL OTHER RESPECTS FOR THE PURPOSE INTENDED. THE BULK SPECIFIC GRAVITY (SATURATED SURFACE-DRY BASIS) OF THE INDIVIDUAL STONES SHALL BE AT LEAST 2.5.  
3. THE STONE SHALL BE COMPOSED OF A WELL-GRADED MIXTURE DOWN TO THE ONE-INCH SIZE PARTICLE SUCH THAT 50 PERCENT OF THE MIXTURE BY WEIGHT SHALL BE LARGER THAN THE D50 SIZE SPECIFIED. A WELL-GRADED MIXTURE IS DEFINED AS A MIXTURE COMPOSED PRIMARILY OF THE LARGER STONE SIZE BUT WITH A SUFFICIENT MIXTURE OF OTHER SIZES TO FILL THE PROGRESSIVELY SMALLER VOIDS BETWEEN THE STONES. THE DIAMETER OF THE LARGEST STONE SIZE IN SUCH A MIXTURE SHALL BE 1.5 TIMES THE D50 SIZE.



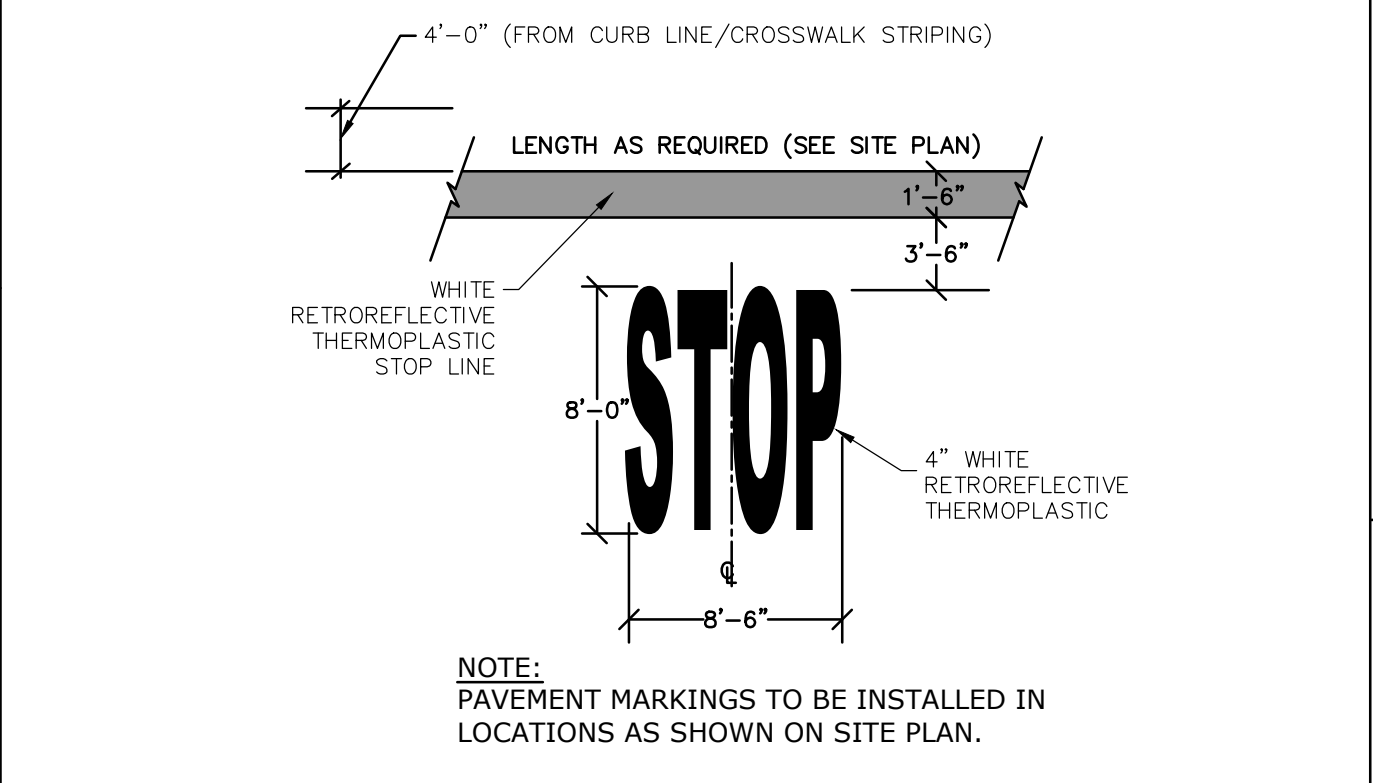
FES #	W		L	D <sub>50</sub>	D
	W <sub>1</sub>	W <sub>2</sub>			
FES #1	6'	32'	26'	7"	15"
FES #2	3'	15'	12'	6"	14"
FES #3	3'	19'	16'	6"	14"
FES #4	5'	19'	14'	6"	14"
FES #5	5'	23'	18'	6"	14"

**RIP-RAP APRON**  
NO SCALE

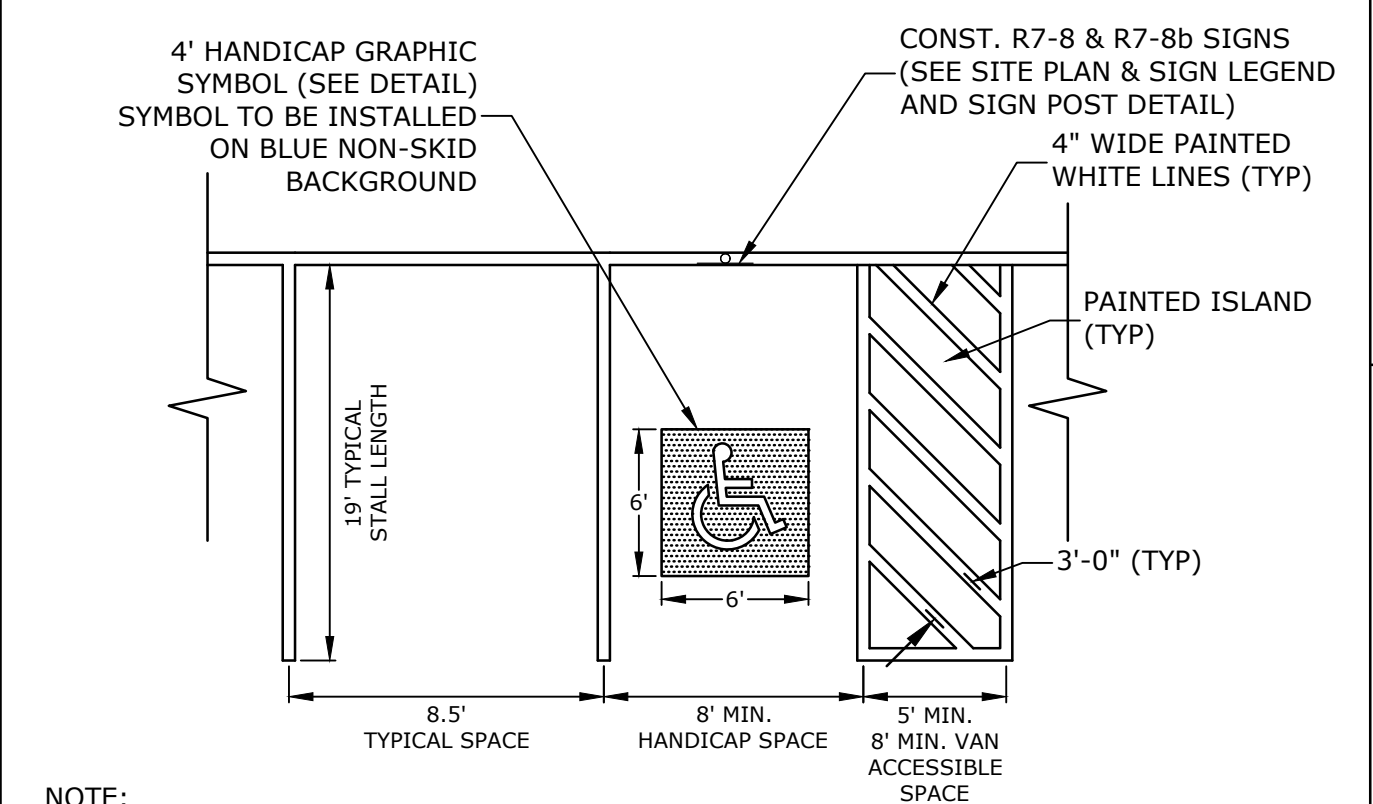


- NOTES:**  
1. CONTAINMENT SHALL BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.  
2. CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.  
3. WASHOUT SHALL BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE WASHOUT IS 75% FULL.  
4. WASHOUT AREA(S) SHALL BE INSTALLED IN A LOCATION EASILY ACCESSIBLE BY CONCRETE TRUCKS  
5. ONE OR MORE AREAS MAY BE INSTALLED ON THE CONSTRUCTION SITE AND MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.  
6. AT LEAST WEEKLY, REMOVE ACCUMULATION OF SAND AND AGGREGATE AND DISPOSE OF PROPERLY.

**CONCRETE WASHOUT AREA**  
NO SCALE

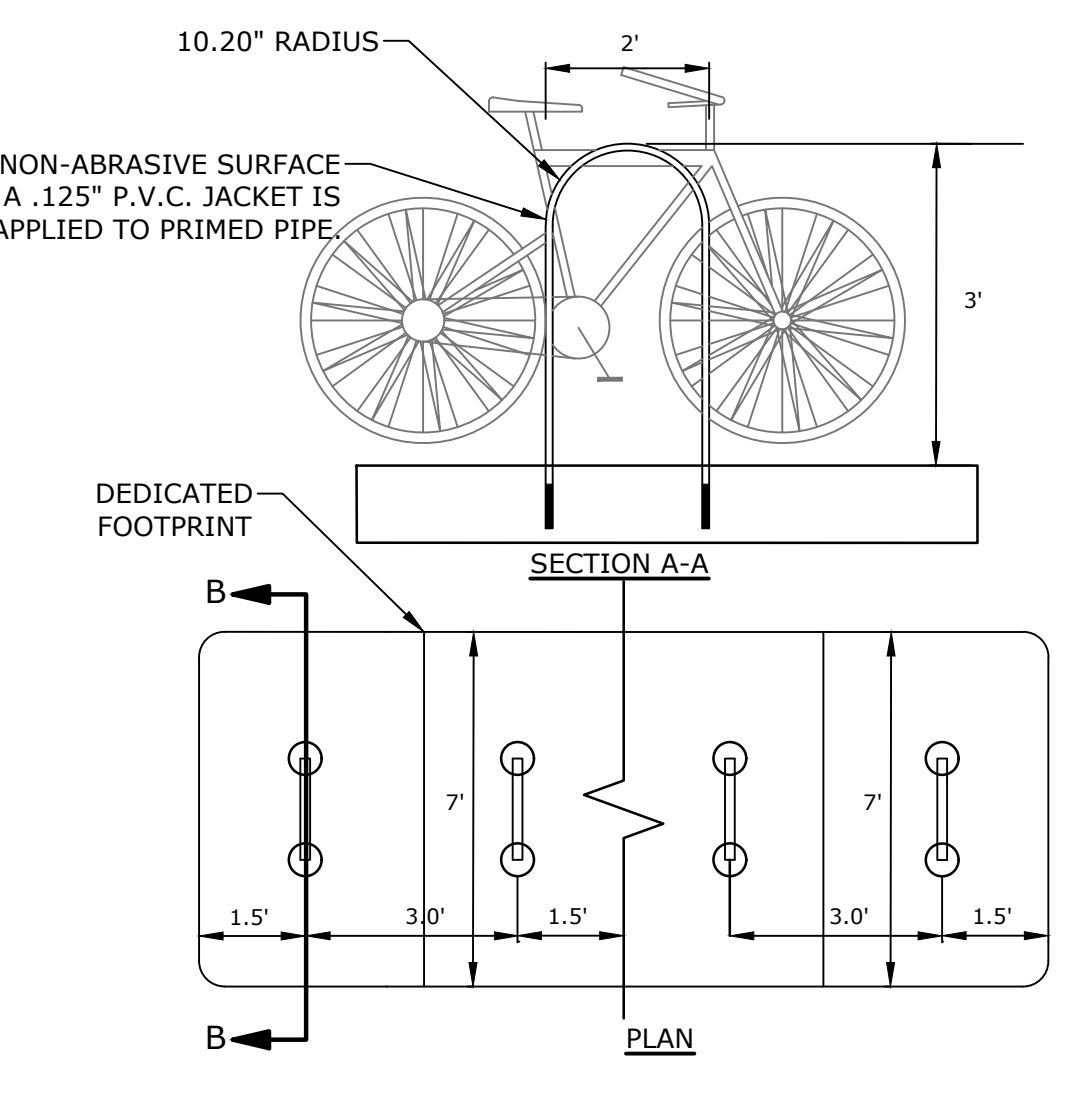


**STOP BAR & LEGEND**  
NO SCALE

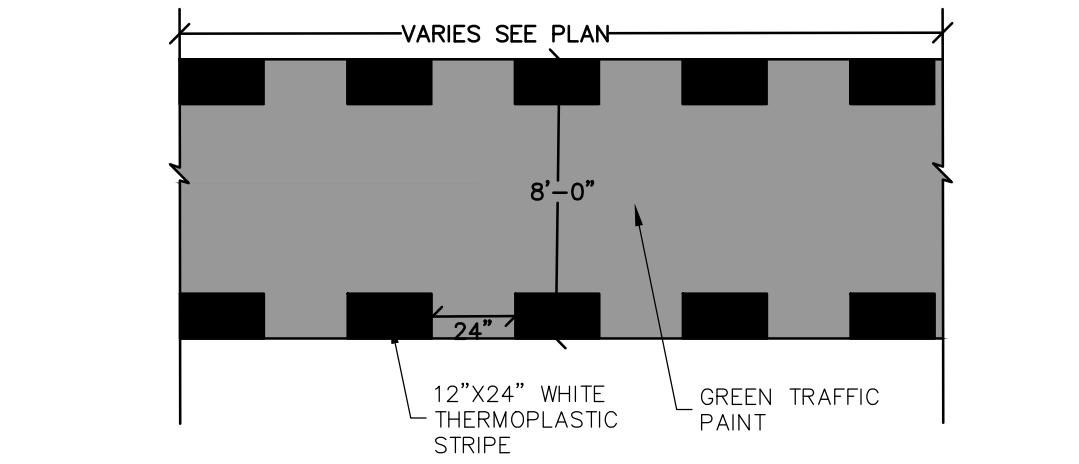


- NOTE:**  
1. ALL PAINT SHALL BE FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.  
2. SYMBOLS & PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.  
3. FINISH PAVEMENT GRADES AT ALL HANDICAP ACCESSIBLE STALLS AND PAINTED ACCESS AISLES SHALL NOT EXCEED 2% IN ANY DIRECTION.

**STALL STRIPING-SINGLE STRIPE**  
NO SCALE

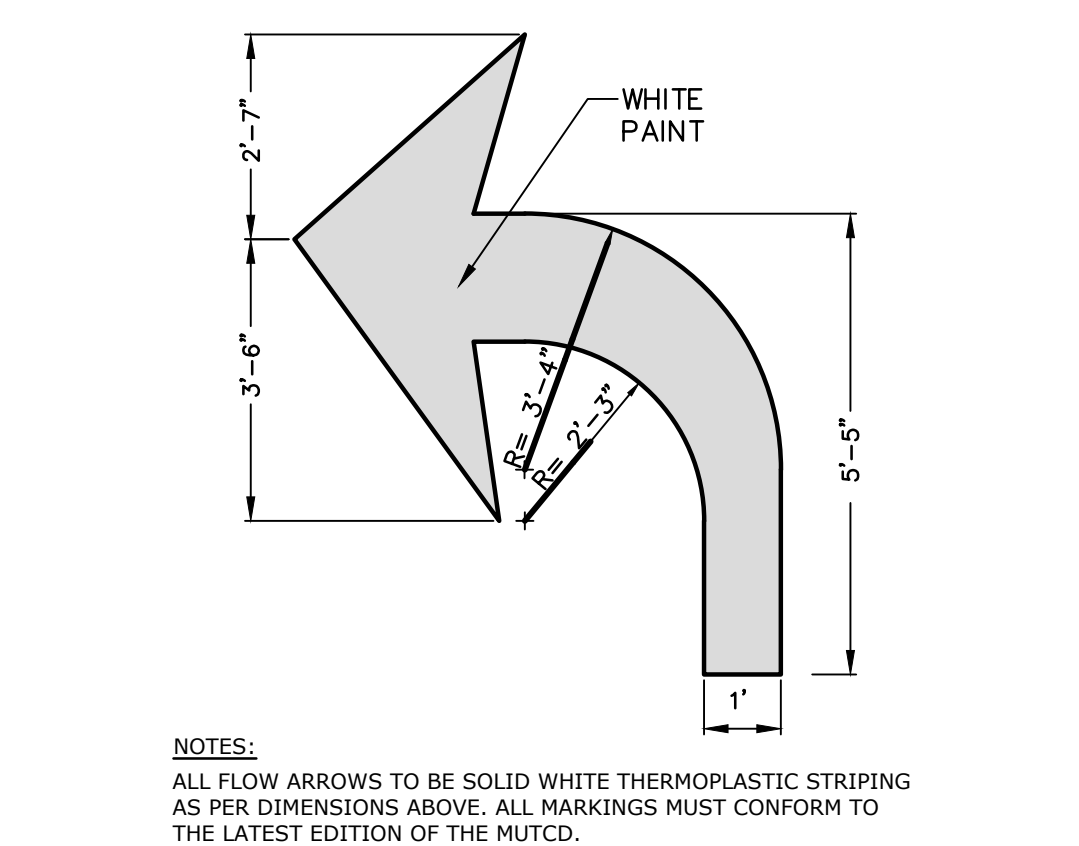


**BIKE RACK**  
NO SCALE

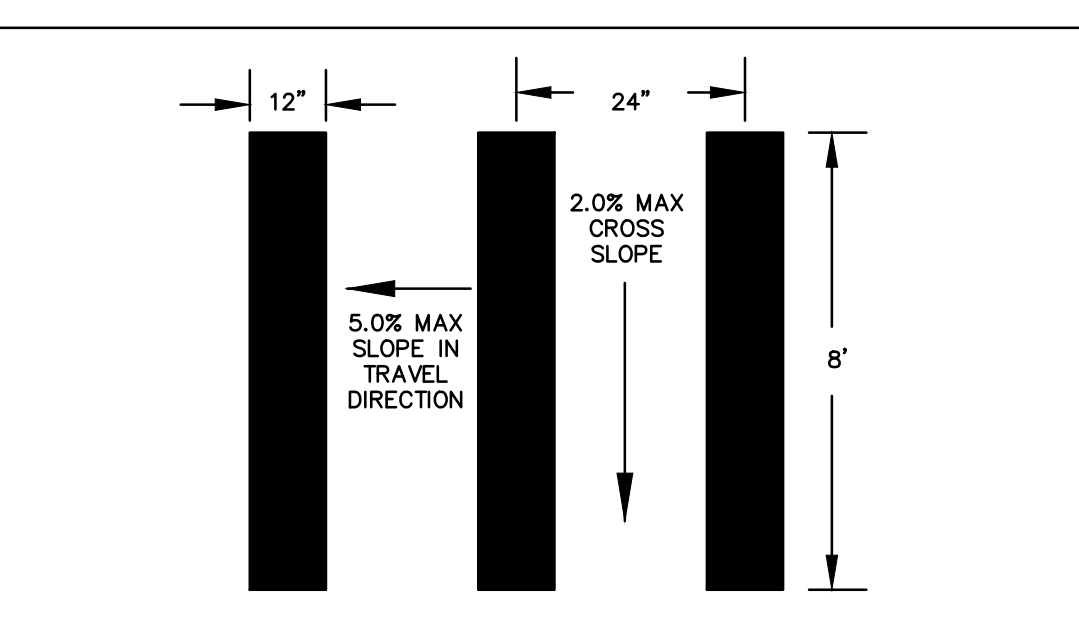


- NOTE:**  
1. STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTORIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D-4505.  
2. ALL PAINT SHALL BE FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY THE MANUFACTURER.

**BIKE CROSSING BOX**  
NO SCALE

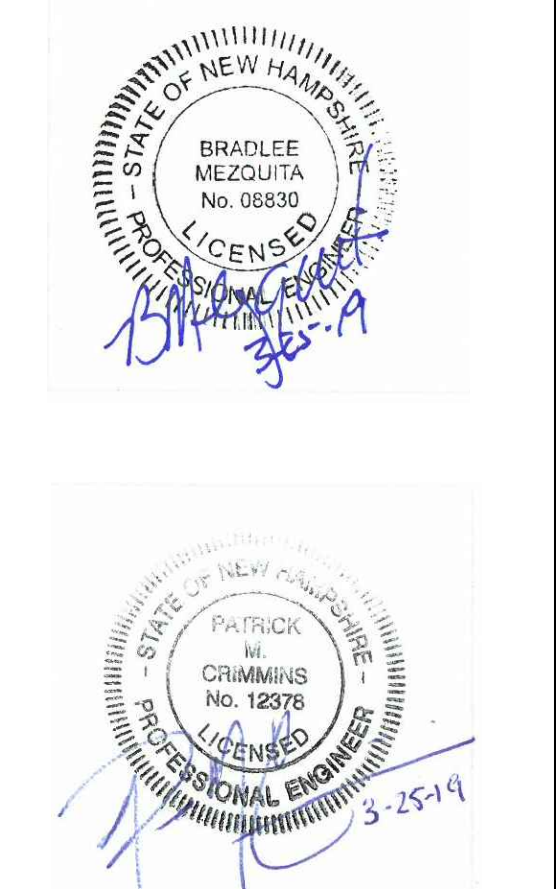


**TRAFFIC DIRECTIONAL MARKINGS**  
NO SCALE



**CROSSWALK STRIPING**  
NO SCALE

- NOTE:**  
STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTORIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505



**Proposed Subdivision Road & Office Building Development**

Borthwick Forest, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	3/25/2019	Construction Drawings
J	3/20/2019	Revised GMP Submission
I	3/4/2019	Rev Pricing Drawings / Admin Approval
H	5/8/2018	Submitted for Final Approval
G	2/26/2018	GMP Submission
F	2/6/2018	Planning Board Submission
E	1/12/2018	GMP Submission
D	6/2/2017	AoT Submission
C	5/11/2017	Planning Board Submission
B	4/24/2017	TAC & ConCom Submission
A	3/20/2017	TAC Submission

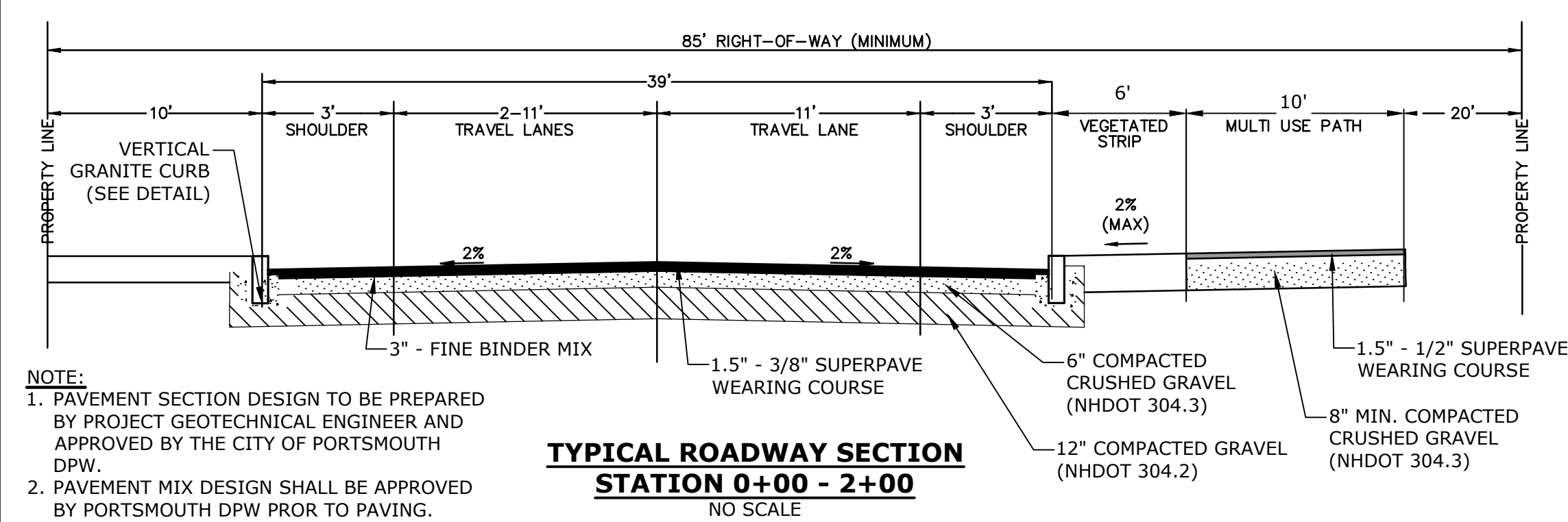
PROJECT NO: K0076-13  
DATE: 3/20/2017  
FILE: K0076-13.DTL.DWG  
DRAWN BY: CML  
CHECKED: PMC  
APPROVED: BLM

**DETAILS SHEET**

SCALE: AS SHOWN

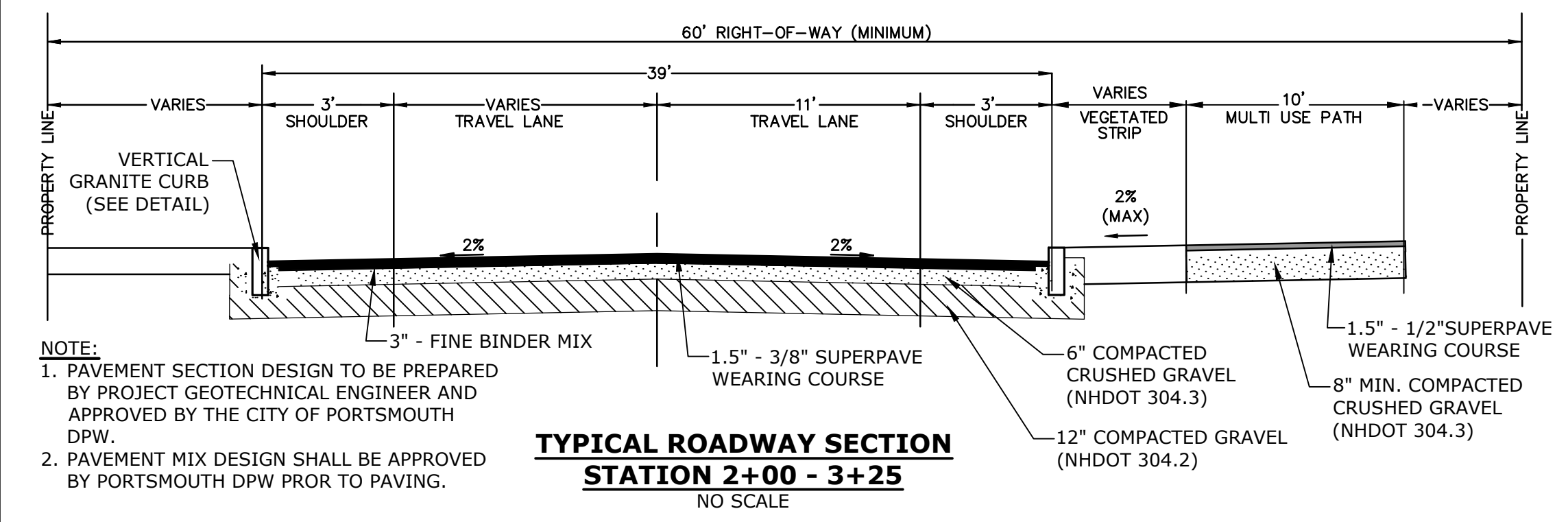
Last Save Date: March 25, 2019 11:13 AM By: CML  
Plot Date: Monday, March 25, 2019 Plotted by: Craig M. Langton  
File Location: J:\K0076-13 Borthwick Forest\Drawings - General Proposals\0076-13 Borthwick Forest\Drawings - General Proposals\0076-13 Borthwick Forest.dwg Layout Tab: C-502





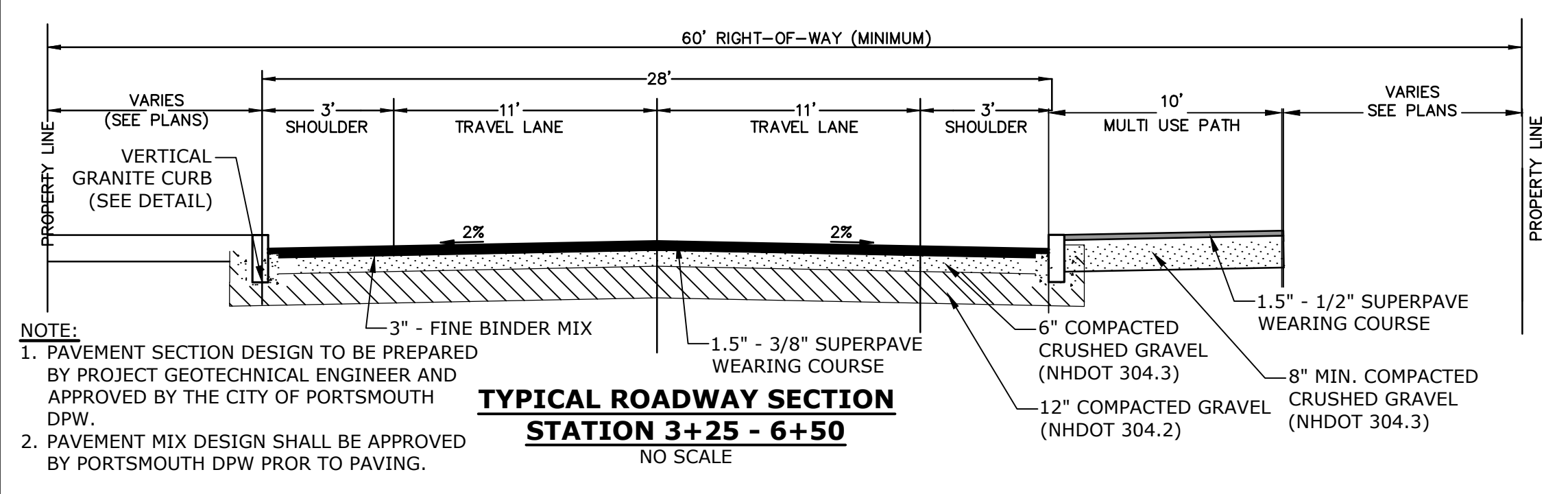
**NOTE:**  
1. PAVEMENT SECTION DESIGN TO BE PREPARED BY PROJECT GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF PORTSMOUTH DPW.  
2. PAVEMENT MIX DESIGN SHALL BE APPROVED BY PORTSMOUTH DPW PRIOR TO PAVING.

**TYPICAL ROADWAY SECTION  
STATION 0+00 - 2+00**  
NO SCALE



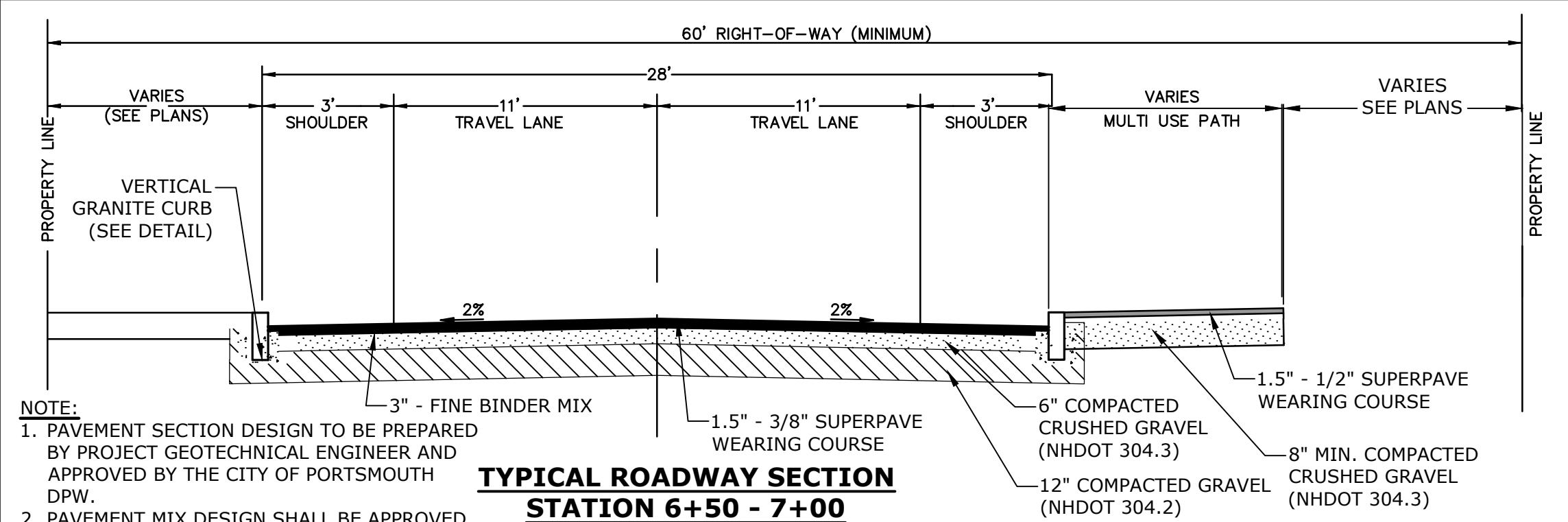
**NOTE:**  
1. PAVEMENT SECTION DESIGN TO BE PREPARED BY PROJECT GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF PORTSMOUTH DPW.  
2. PAVEMENT MIX DESIGN SHALL BE APPROVED BY PORTSMOUTH DPW PRIOR TO PAVING.

**TYPICAL ROADWAY SECTION  
STATION 2+00 - 3+25**  
NO SCALE



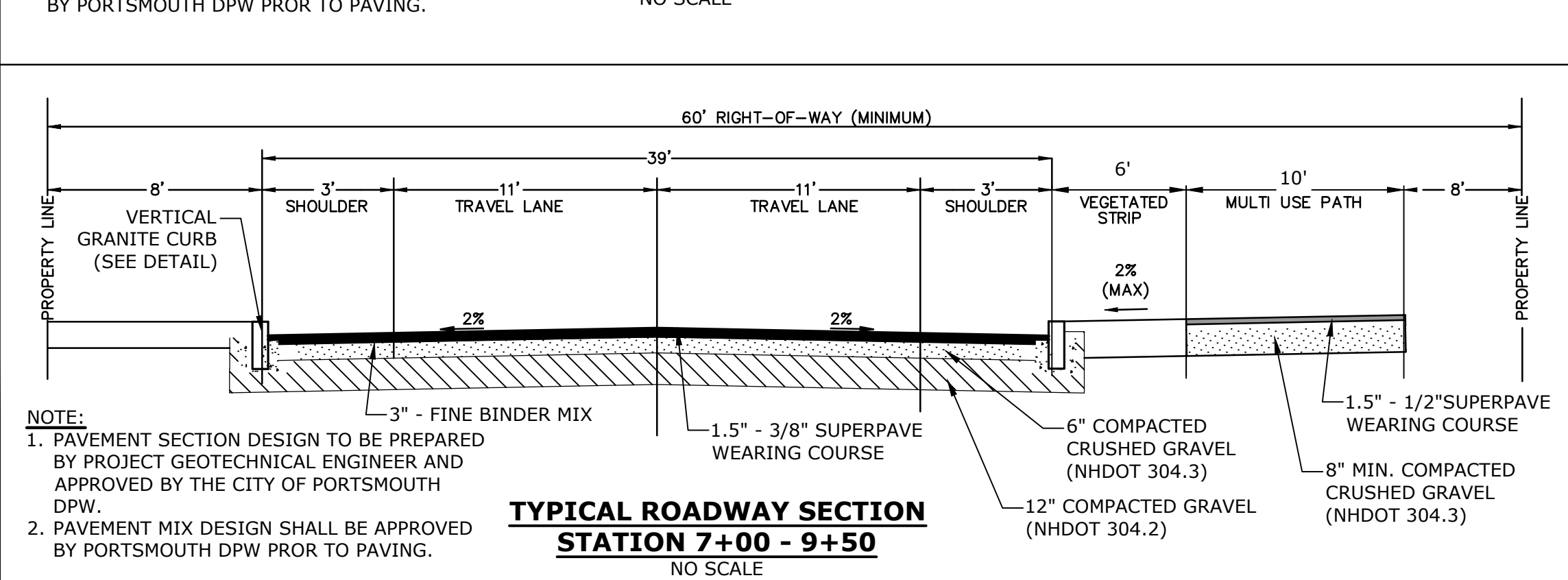
**NOTE:**  
1. PAVEMENT SECTION DESIGN TO BE PREPARED BY PROJECT GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF PORTSMOUTH DPW.  
2. PAVEMENT MIX DESIGN SHALL BE APPROVED BY PORTSMOUTH DPW PRIOR TO PAVING.

**TYPICAL ROADWAY SECTION  
STATION 3+25 - 6+50**  
NO SCALE



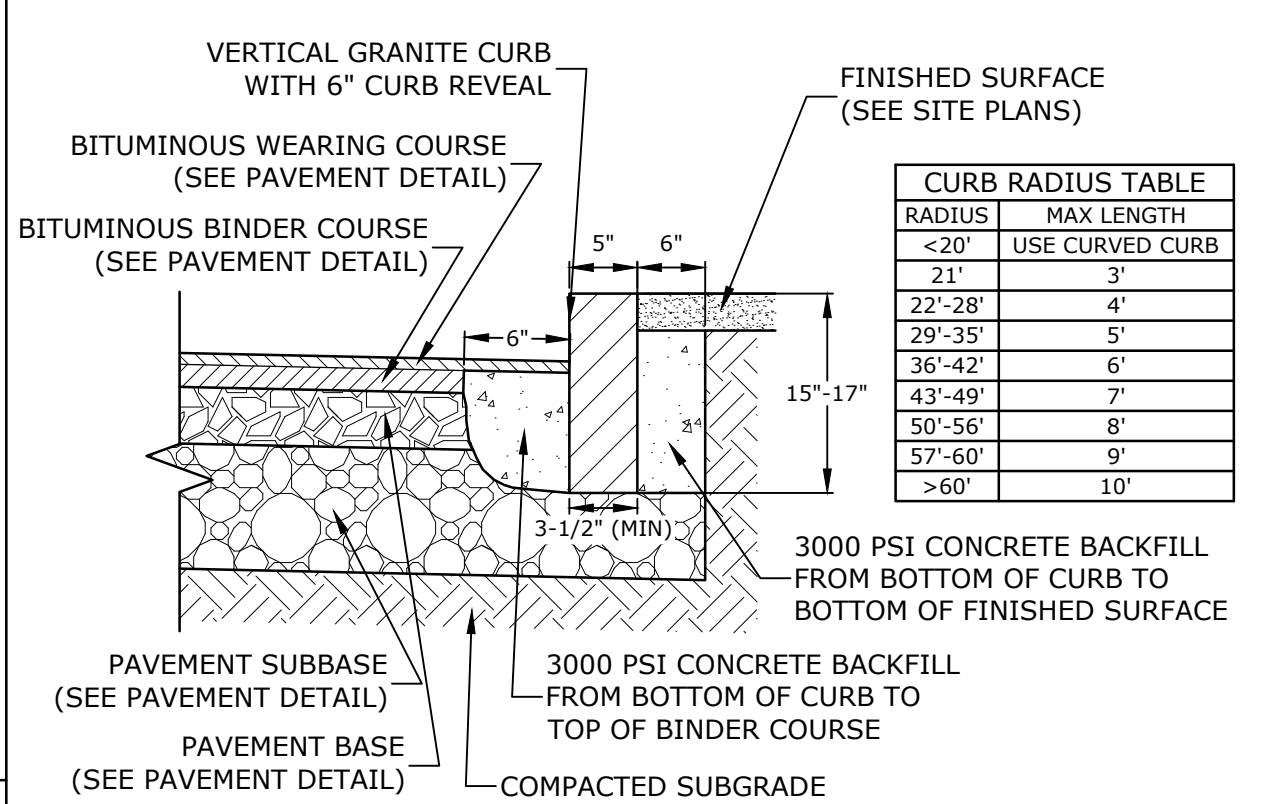
**NOTE:**  
1. PAVEMENT SECTION DESIGN TO BE PREPARED BY PROJECT GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF PORTSMOUTH DPW.  
2. PAVEMENT MIX DESIGN SHALL BE APPROVED BY PORTSMOUTH DPW PRIOR TO PAVING.

**TYPICAL ROADWAY SECTION  
STATION 6+50 - 7+00**  
NO SCALE



**NOTE:**  
1. PAVEMENT SECTION DESIGN TO BE PREPARED BY PROJECT GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF PORTSMOUTH DPW.  
2. PAVEMENT MIX DESIGN SHALL BE APPROVED BY PORTSMOUTH DPW PRIOR TO PAVING.

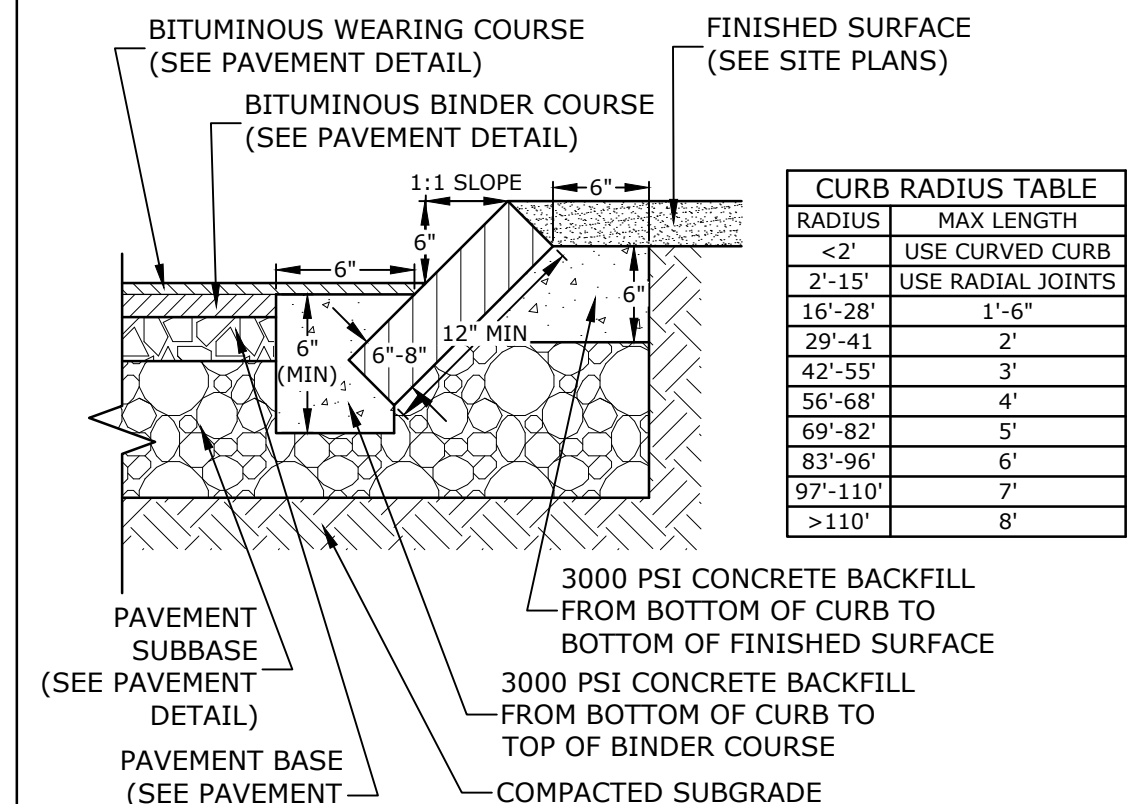
**TYPICAL ROADWAY SECTION  
STATION 7+00 - 9+50**  
NO SCALE



RADIUS	MAX LENGTH
<20'	USE CURVED CURB
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
>60'	10'

**NOTES:**  
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).  
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.  
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'.  
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'.  
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).  
6. ALL RADII 20 FEET AND SMALLER SHALL BE CONSTRUCTED USING CURVED SECTIONS.  
7. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

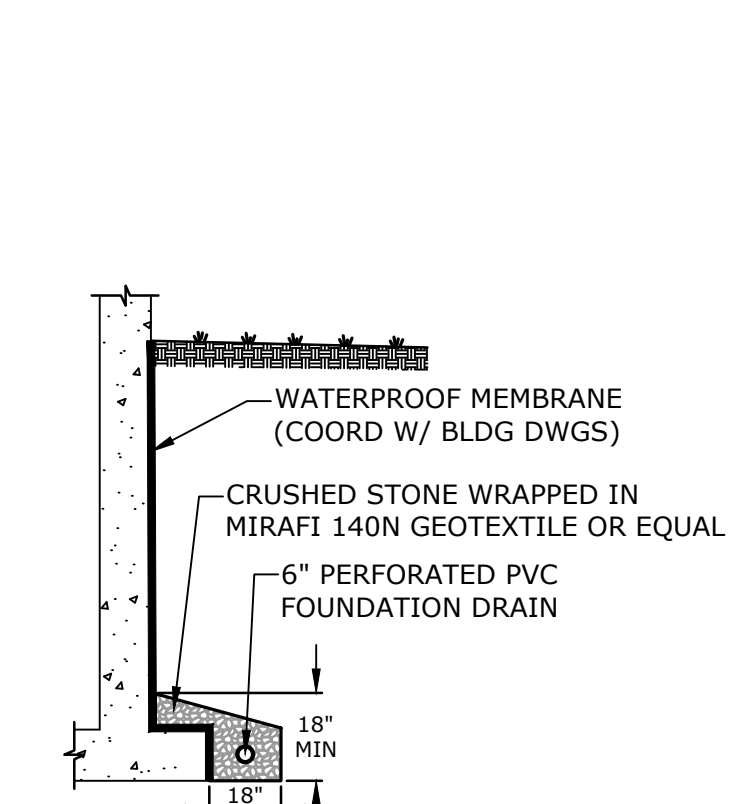
**VERTICAL GRANITE CURB**  
NO SCALE



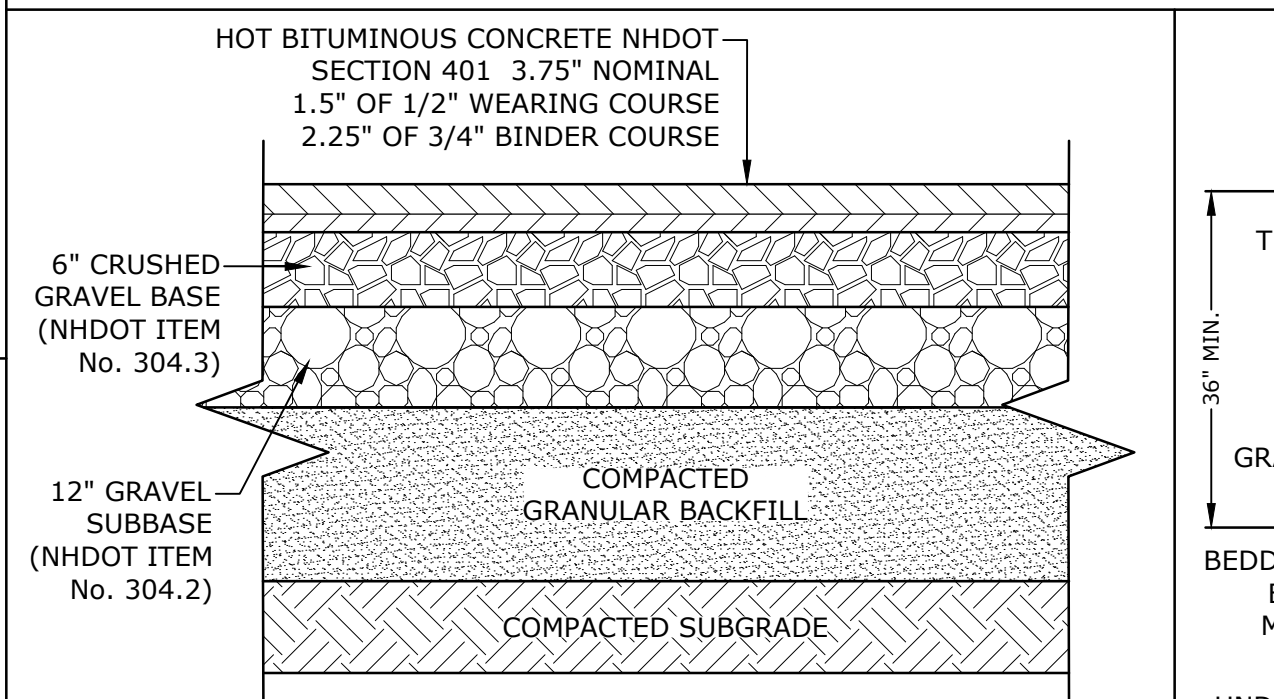
RADIUS	MAX LENGTH
<2'	USE CURVED CURB
2'-15'	USE RADIAL JOINTS
16'-28'	1'-6"
29'-41'	2'
42'-55'	3'
56'-68'	4'
69'-82'	5'
83'-96'	6'
97'-110'	7'
>110'	8'

**NOTES:**  
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).  
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.  
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 18".  
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'.  
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).  
6. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

**SLOPED GRANITE CURB**  
NO SCALE

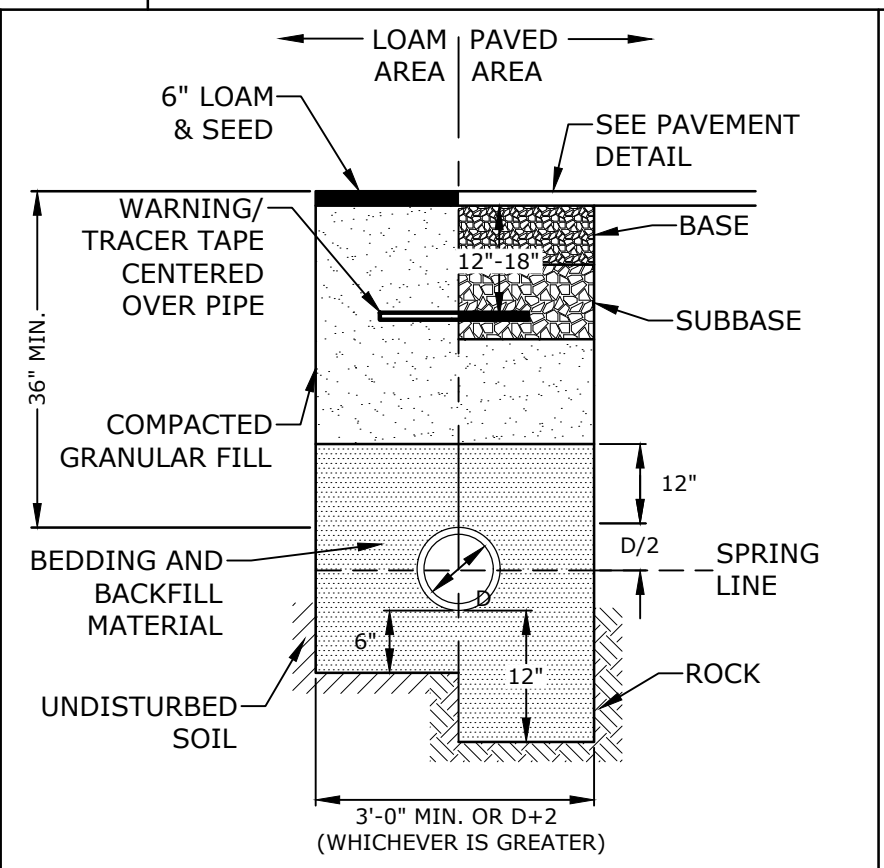


**TYPICAL FOUNDATION DRAIN SECTION**  
NO SCALE



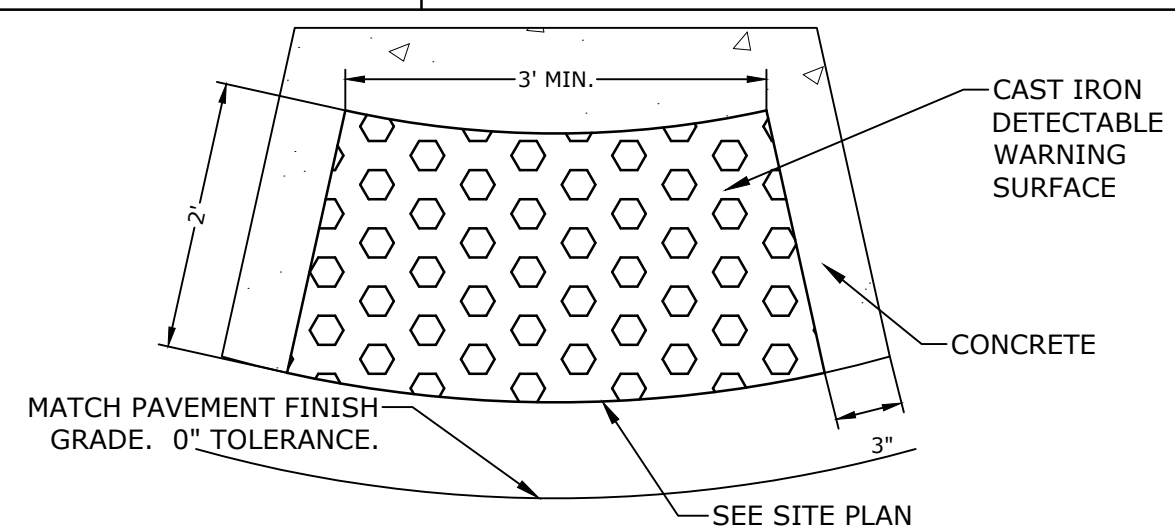
**NOTES:**  
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.  
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.  
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.

**TYPICAL PARKING LOT PAVEMENT SECTION**  
NO SCALE



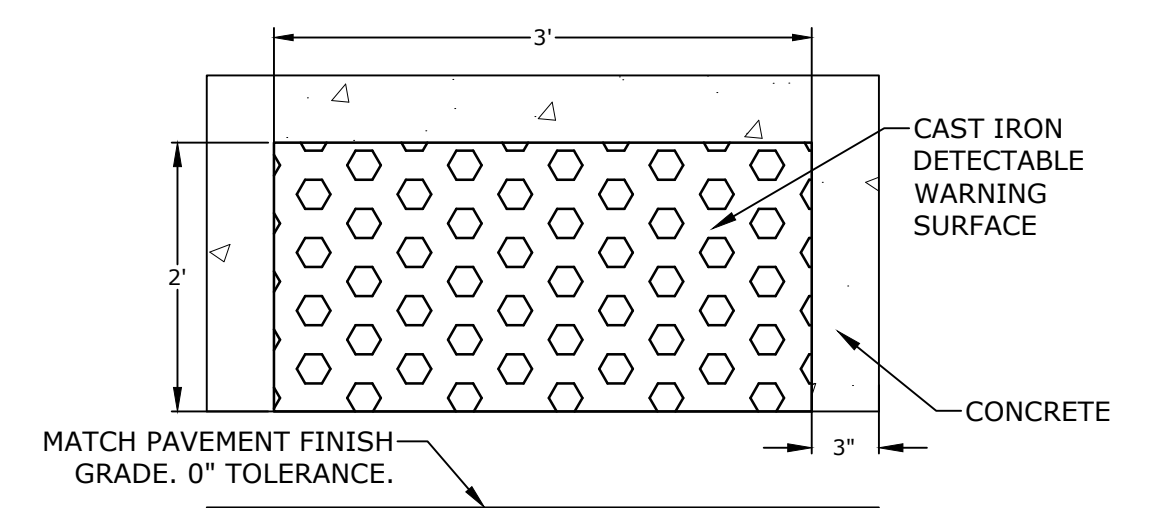
**NOTE:**  
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.  
2. GAS SHALL BE INSTALLED PER UNTIL STANDARDS. COORDINATE ALL INSTALLATIONS WITH UNTIL AND THE CITY OF PORTSMOUTH.

**GAS TRENCH**  
NO SCALE



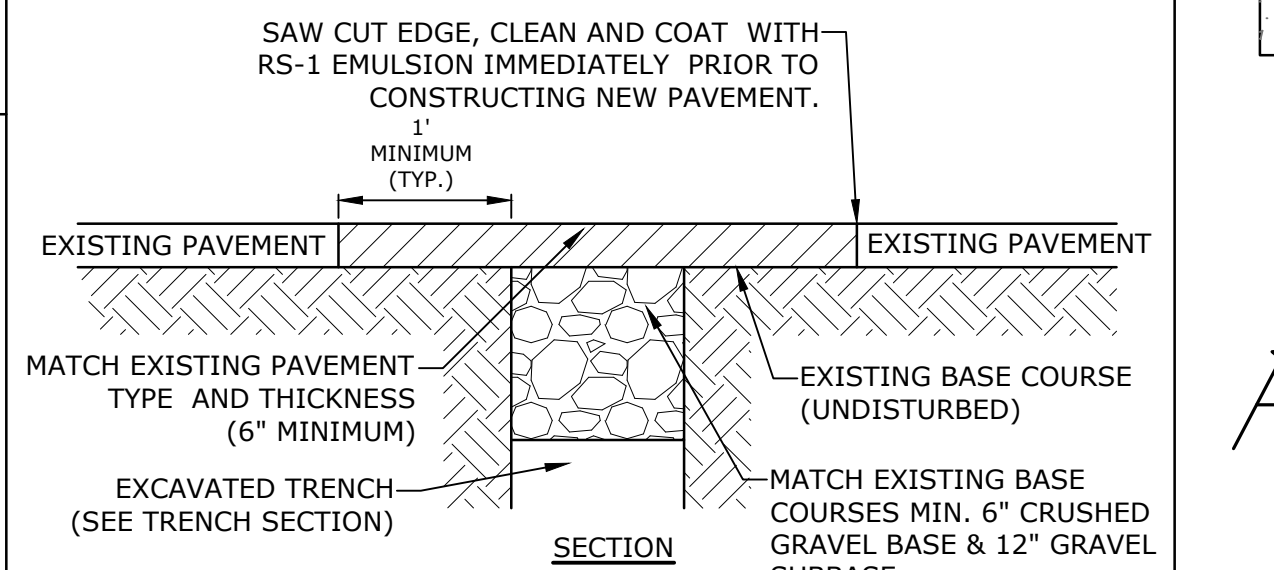
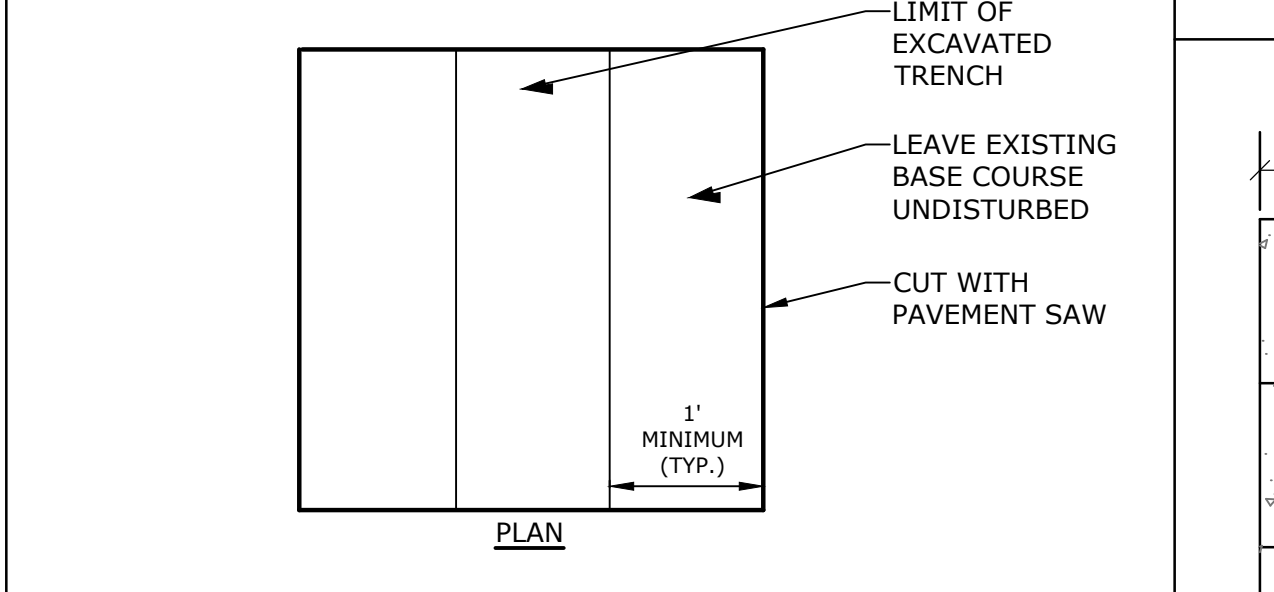
**NOTES:**  
1. DETECTABLE WARNING SURFACE SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.  
2. DETECTABLE WARNING SURFACE SHALL BE CAST IRON WITHIN THE FUTURE CITY OF PORTSMOUTH RIGHT OF WAY. CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR DETECTABLE WARNING SURFACE MATERIAL TYPE FOR ON SITE WARNING PANELS.

**RADIUS TYPE CAST IRON DETECTABLE WARNING SURFACE**  
NO SCALE



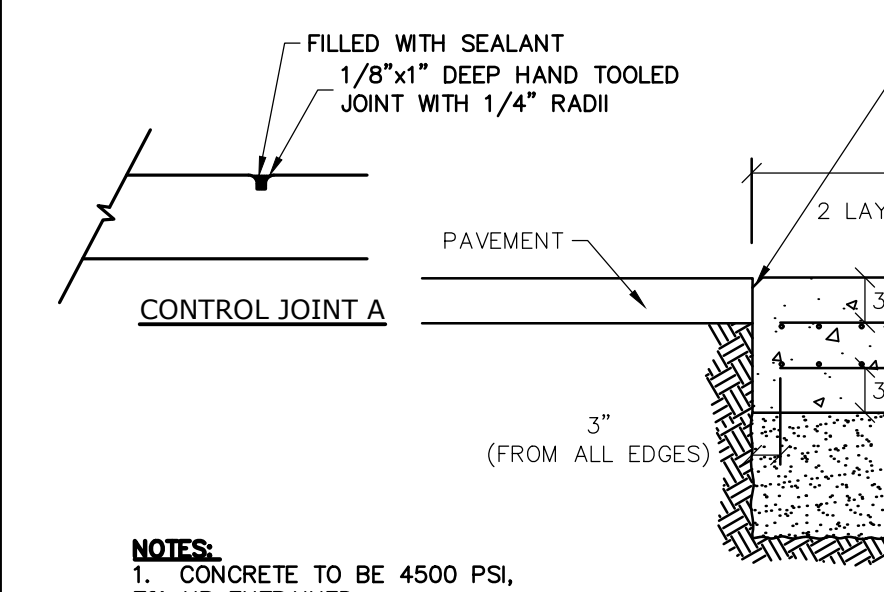
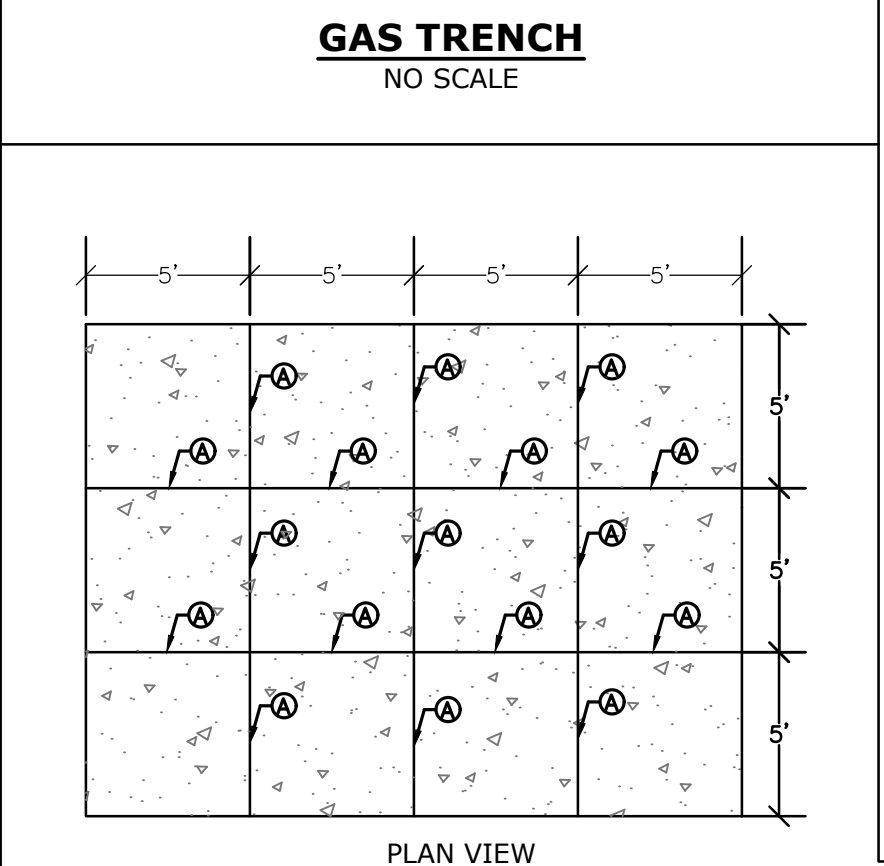
**NOTES:**  
1. DETECTABLE WARNING SURFACE SHALL BE 2' X 3' CAST IRON PANEL SET IN CONCRETE.  
2. DETECTABLE WARNING SURFACE SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.  
3. DETECTABLE WARNING SURFACE SHALL BE CAST IRON WITHIN THE FUTURE CITY OF PORTSMOUTH RIGHT OF WAY. CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR DETECTABLE WARNING SURFACE MATERIAL TYPE FOR ON SITE WARNING PANELS.

**CAST IRON DETECTABLE WARNING SURFACE**  
NO SCALE



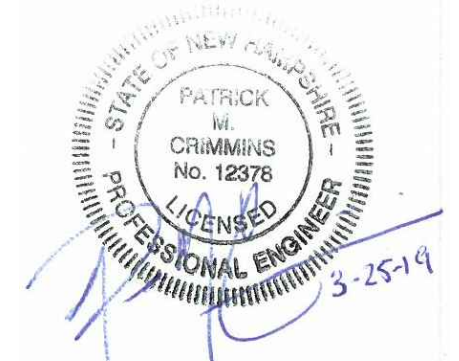
**NOTE:**  
COORDINATE AND OBTAIN APPROVAL FOR ALL TRENCHING AND PATCHING WITHIN CITY RIGHT OF WAY WITH CITY OF PORTSMOUTH DPW PRIOR TO COMMENCING WORK.

**ROADWAY TRENCH PATCH**  
NO SCALE



**NOTES:**  
1. CONCRETE TO BE 4500 PSI, 7% AIR ENTRAINED.  
2. STANDARD BROOM FINISH.

**DUMPSTER PAD**  
NO SCALE



**Proposed  
Subdivision Road  
& Office Building  
Development**

Borthwick Forest, LLC

Portsmouth,  
New Hampshire

MARK	DATE	DESCRIPTION
L	3/25/2019	Construction Drawings
K	3/20/2019	Revised GMP Submission
J	3/4/2019	Rev Pricing Drawings / Admin Approval
I	5/8/2018	Submitted for Final Approval
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G	2/6/2018	Planning Board Submission
F	1/12/2018	GMP Submission
E	8/31/2017	Revised TAC Submission
D	6/2/2017	AOI Submission
C	5/11/2017	Planning Board Submission
B	4/24/2017	TAC & ConCom Submission
A	3/20/2017	TAC Submission

PROJECT NO:	K0076-13
DATE:	3/20/2017
FILE:	K0076-13.DTLS.DWG
DRAWN BY:	CML
CHECKED:	PMC
APPROVED:	BLM

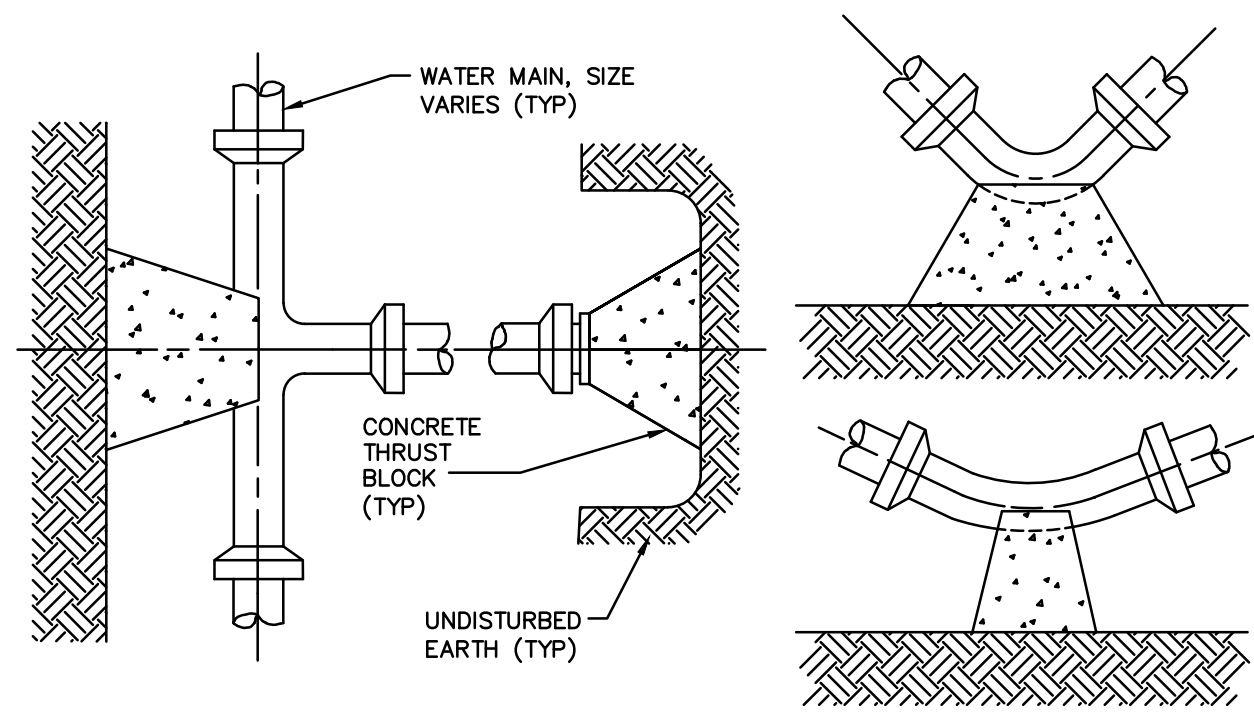
**DETAILS SHEET**

SCALE: AS SHOWN

**C-503**

Last Save Date: March 25, 2019 11:13 AM By: CML  
 Plot Date: Monday, March 25, 2019 Plotted By: Craig M. Langton  
 File Location: \\K:\0076 The Kennebec Company - General Proposals\0076-13 Borthwick Forest\Drawings\0076-13 DTLS.dwg Layout Tab: C-503

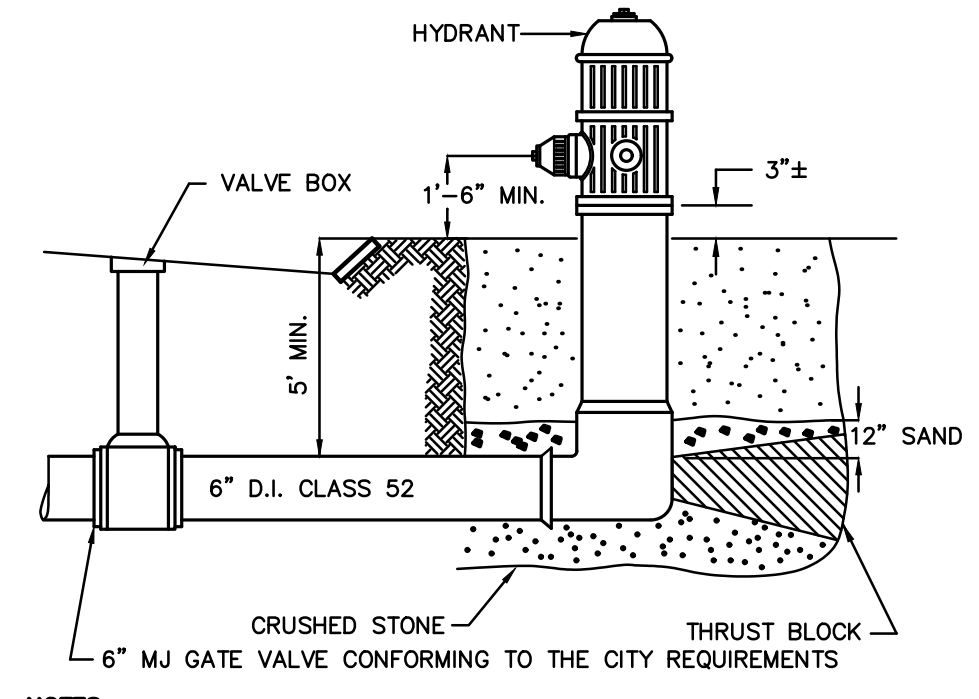




**THRUST BLOCKING DETAIL**  
NOT TO SCALE

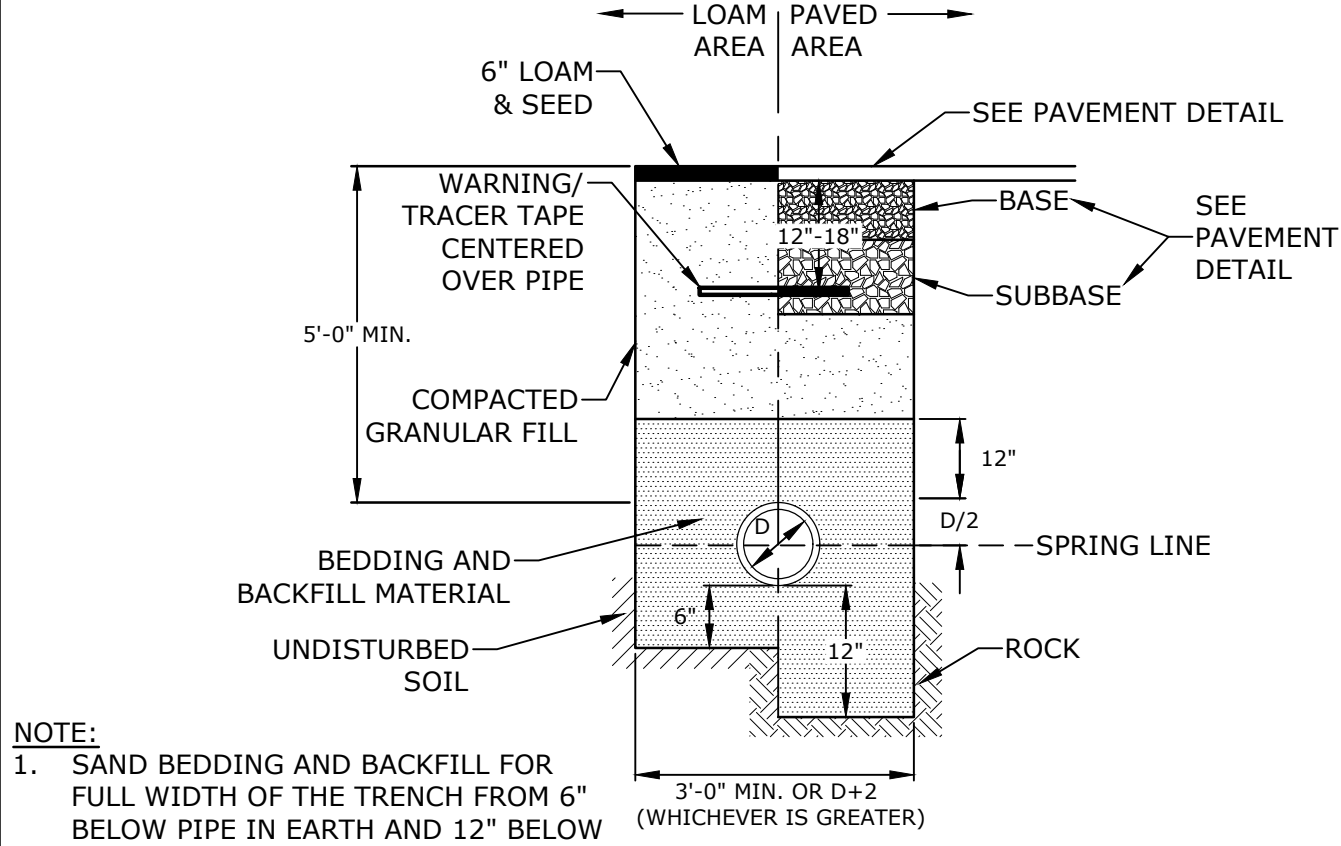
REACTION TYPE	PIPE SIZE				
	4"	6"	8"	10"	12"
A 90°	0.89	2.19	3.82	11.14	17.24
B 180°	0.65	1.55	2.78	8.38	12.00
C 45°	0.48	1.19	2.12	6.02	9.32
D 22-1/2"	0.25	0.60	1.06	3.08	4.74
E 11-1/4"	0.13	0.30	0.54	1.54	2.38

**NOTES:**  
1. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL, WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.  
2. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.  
3. PLACE BOARD IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCKS.  
4. WHERE M.J. PIPE IS USED, M.J. PLUG WITH RETAINER GLAND MAY BE SUBSTITUTED FOR END BLOCKINGS.  
5. INSTALLATION AND STANDARD DIMENSIONAL REQUIREMENTS SHALL BE WITH CITY OF PORTSMOUTH WATER DEPARTMENT STANDARDS.



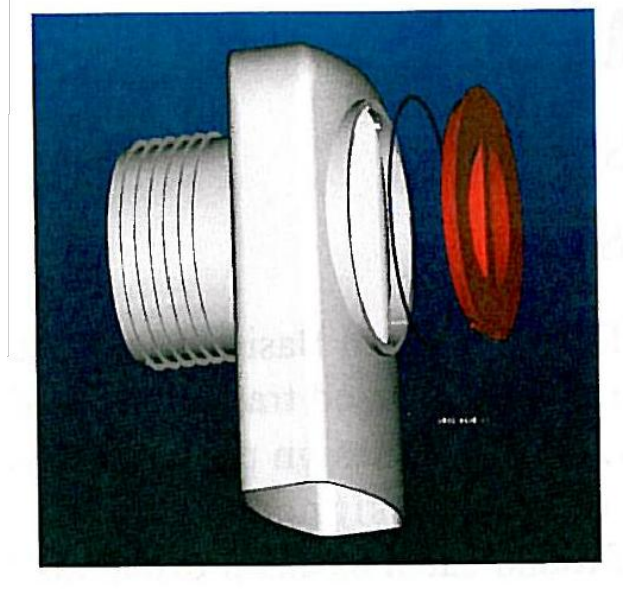
**FIRE HYDRANT DETAIL**  
NOT TO SCALE

**NOTES:**  
1. HYDRANT TO BE KENNEDY TYPE K-81, RIGHT OPEN (NO EQUAL). COORDINATE WITH CITY OF PORTSMOUTH WATER DEPARTMENT AND CITY OF PORTSMOUTH FIRE DEPARTMENT.  
2. PAINT HYDRANT IN ACCORDANCE WITH CITY STANDARD SPECIFICATIONS AFTER INSTALLATION.



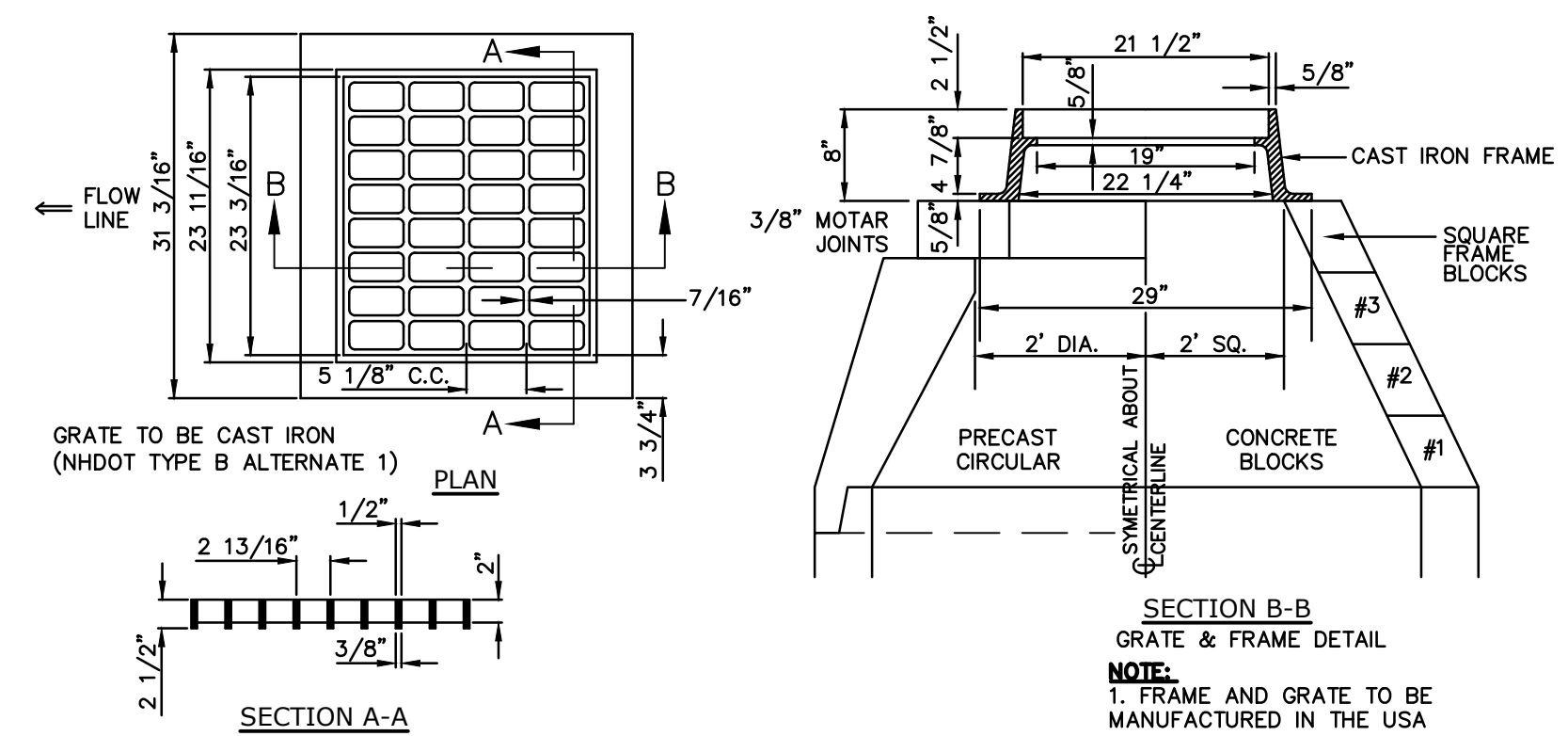
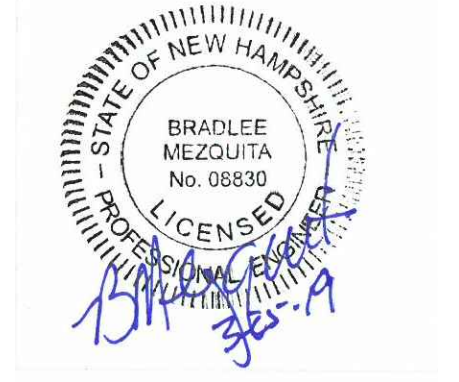
**WATER TRENCH**  
NO SCALE

**NOTE:**  
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.  
2. WATER MAIN SHALL BE INSTALLED PER CITY OF PORTSMOUTH STANDARDS. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

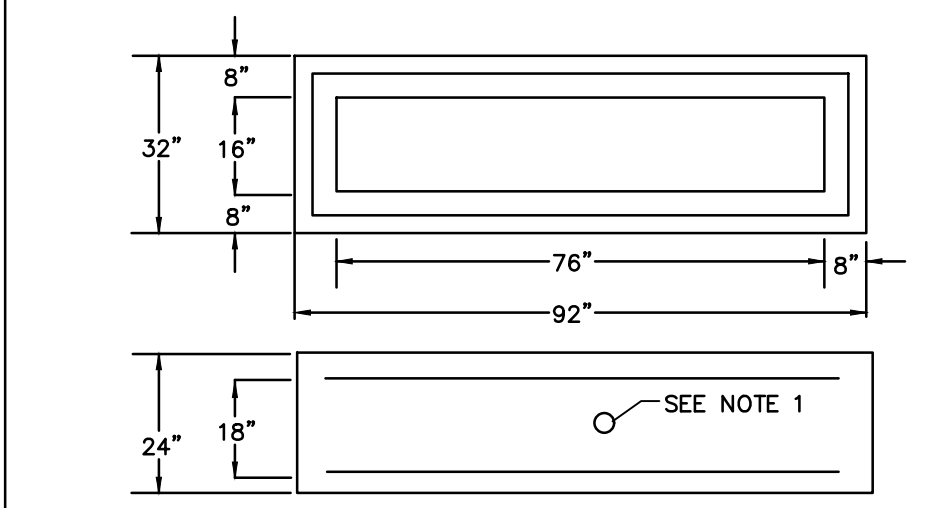


**NOTES:**  
1. ALL CATCH BASIN OUTLETS WITHIN CITY OF PORTSMOUTH RIGHT OF WAY TO HAVE "ELIMINATOR" OIL AND FLOATING DEBRIS TRAP MANUFACTURED BY KLEANSTREAM (NO EQUAL)

**"ELIMINATOR" OIL & FLOATING DEBRIS TRAP**  
NOT TO SCALE



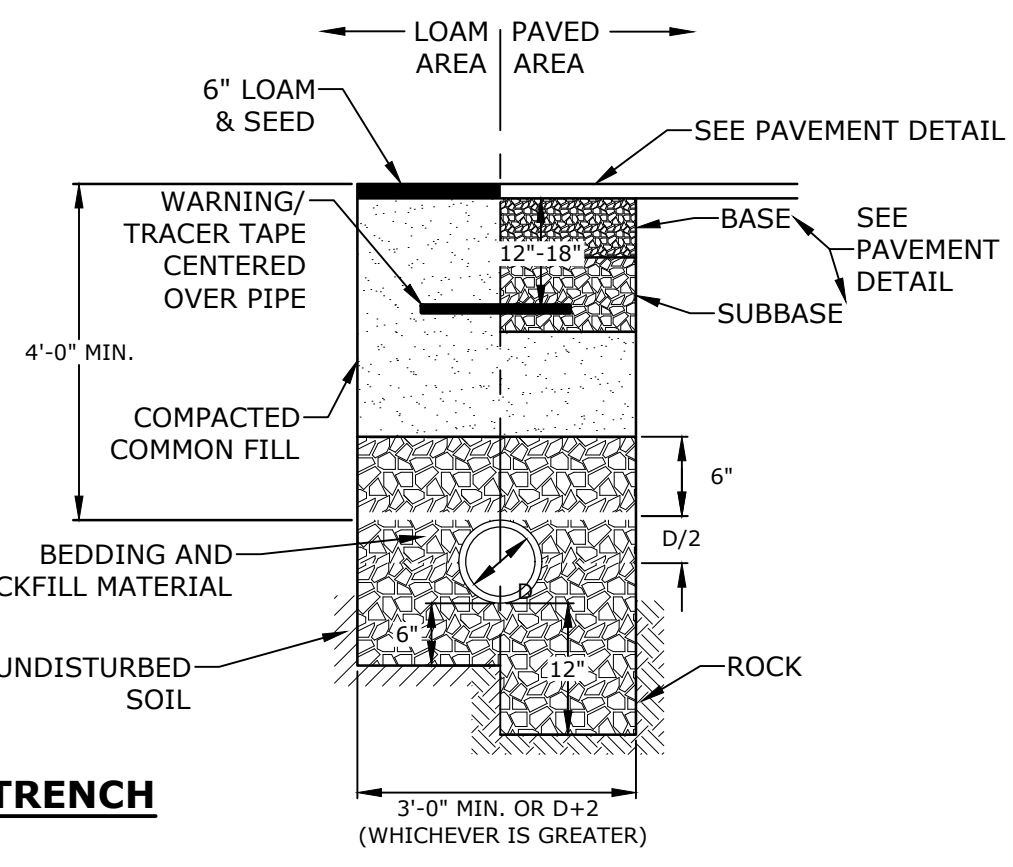
**CATCHBASIN FRAME & GRATE**  
NOT TO SCALE



**TYPICAL THREE PHASE SECTOR CABINET FOUNDATION DETAIL**  
NOT TO SCALE

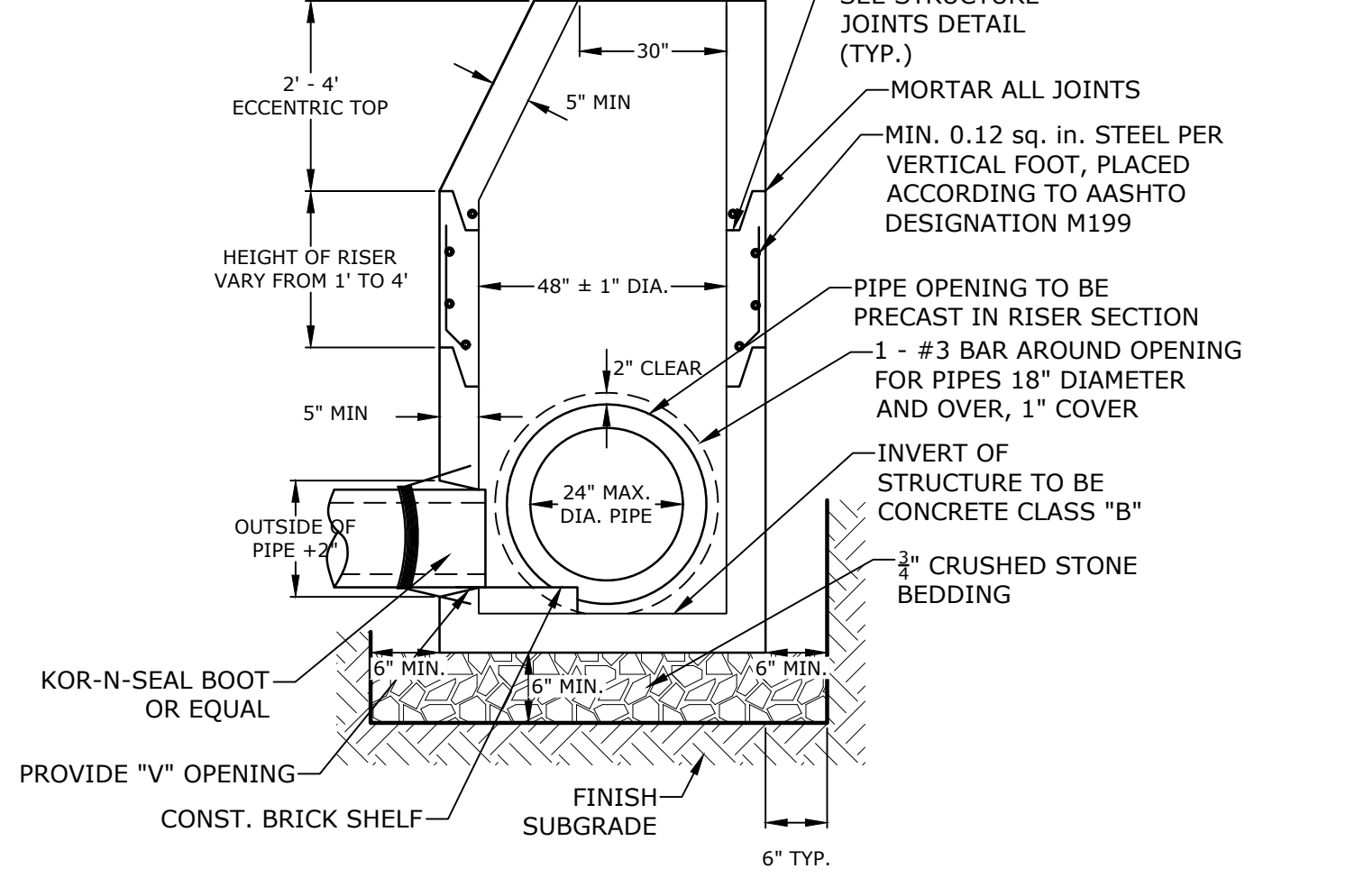
**NOTES:**  
1. 1" PVC CONDUIT SLEEVE THROUGH FOUNDATION FOR GROUNDING LEADS.  
2. ALL REBAR TO BE #5.  
3. TOP OF FOUNDATION SHOULD BE EXPOSED 3 TO 6 INCHES ABOVE GROUND LEVEL.  
4. CONCRETE SHALL HAVE A MINIMUM COMPRESSION STRENGTH OF 3500 PSI.  
5. ALL REINFORCING SHALL BE TIED AS ONE UNIT.  
6. CHAMFER ALL EXPOSED CONCRETE EDGES 1 INCH.  
7. REMOVE ALL ORGANIC MATERIAL UNDER FOUNDATION.  
8. MINIMUM OF 3 INCHES OF CONCRETE OVER REINFORCING STEEL.  
9. SECTOR CABINET LOCATIONS AND DETAILS SHALL BE APPROVED BY EVERSOURCE PRIOR TO CONSTRUCTION.

**NOTE:**  
1. CRUSHED STONE BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 6" ABOVE TOP OF PIPE.  
2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE CITY OF PORTSMOUTH.



**STORM DRAIN TRENCH**  
NO SCALE

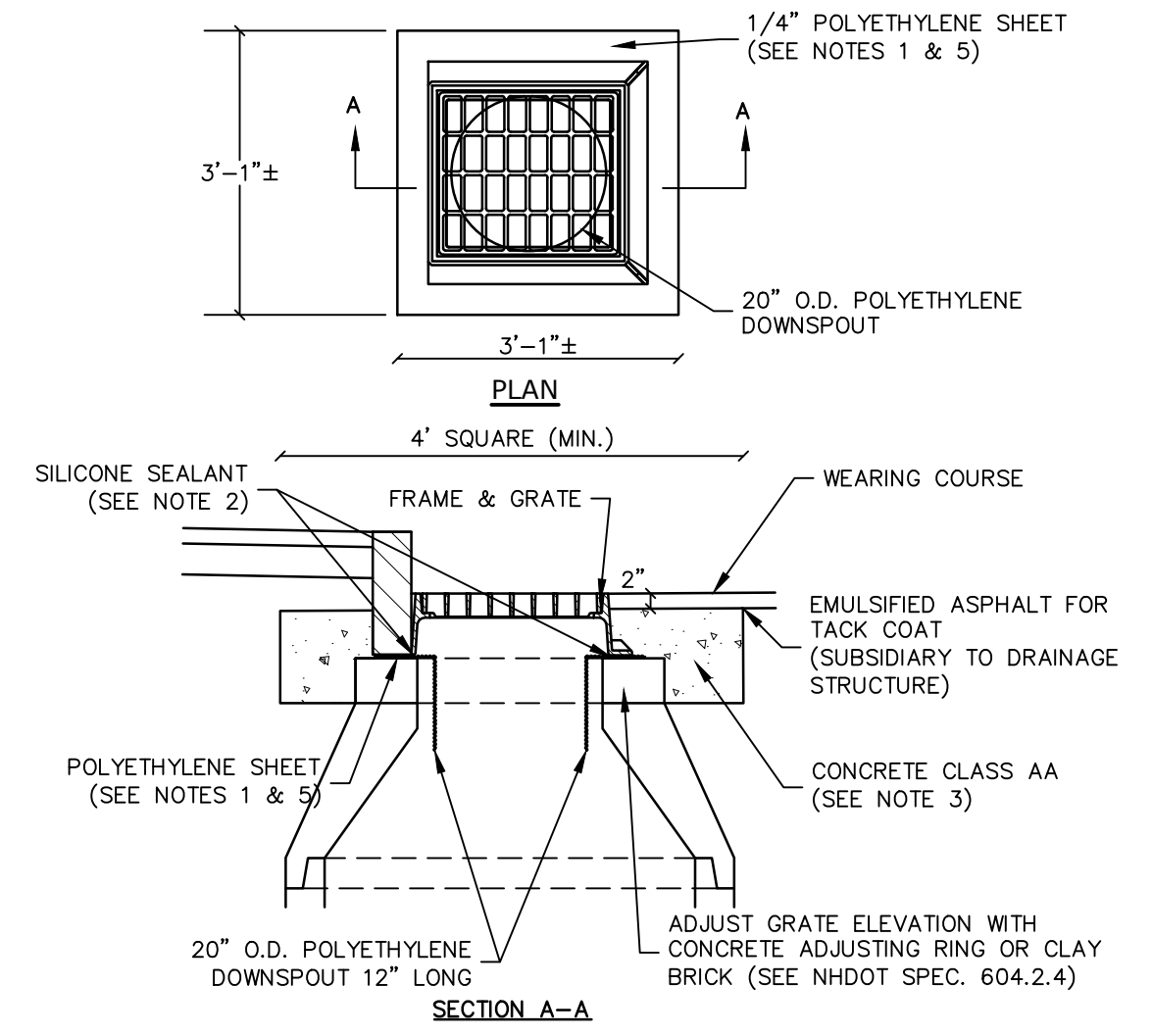
MANHOLE FRAME AND COVER SHALL BE JORDAN IRON WORKS HINGE COVER PER CITY OF PORTSMOUTH STANDARD



**4' DIAMETER DRAIN MANHOLE**  
NO SCALE

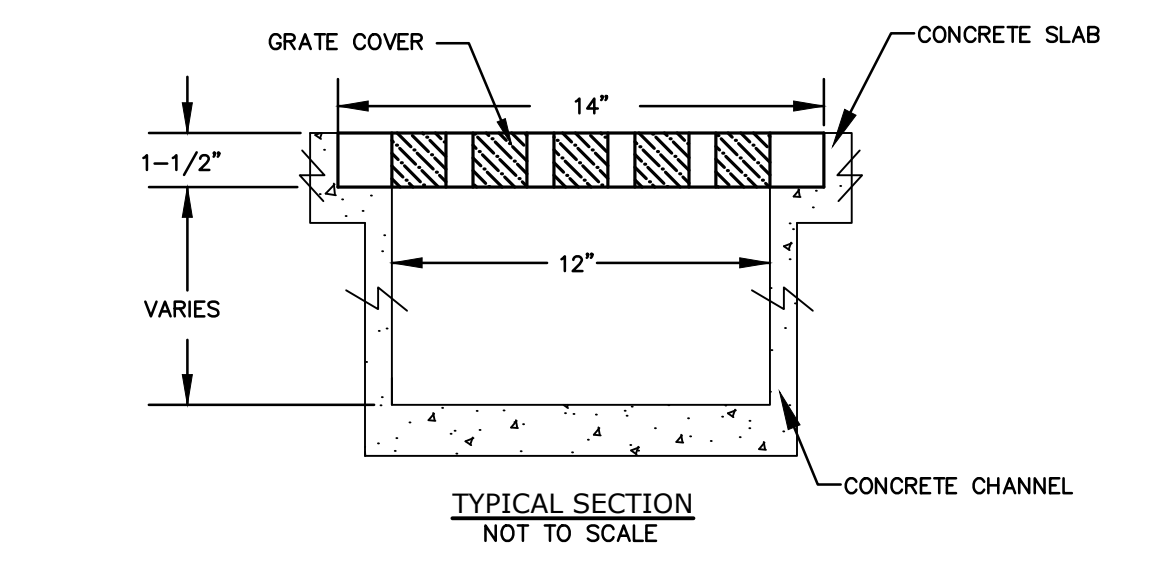
**NOTES:**  
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.  
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.  
3. THE TONGUE AND GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.  
4. CONSTRUCT CRUSHED STONE BEDDING AND BACKFILL UNDER (6" MINIMUM THICKNESS) THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.  
5. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.  
6. FITTING FRAME TO GRADE MAY BE DONE WITH PREFABRICATED ADJUSTMENT RINGS OR CLAY BRICKS (2 COURSES MAX.).  
7. CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE AND WHERE PERMITTED.  
8. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.  
9. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.  
10. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.  
11. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.  
12. "ELIMINATOR" OIL/WATER SEPARATOR SHALL BE INSTALLED TIGHT TO INSIDE OF CATCHBASINS WITHIN THE FUTURE CITY OF PORTSMOUTH RIGHT OF WAY.  
13. SUMP FOR CATCH BASINS WITHIN THE FUTURE CITY OF PORTSMOUTH RIGHT OF WAY SHALL BE 4". THERE SHALL BE NO SUMPS FOR CATCH BASINS ON SITE.

**DRAIN MANHOLE**  
NO SCALE

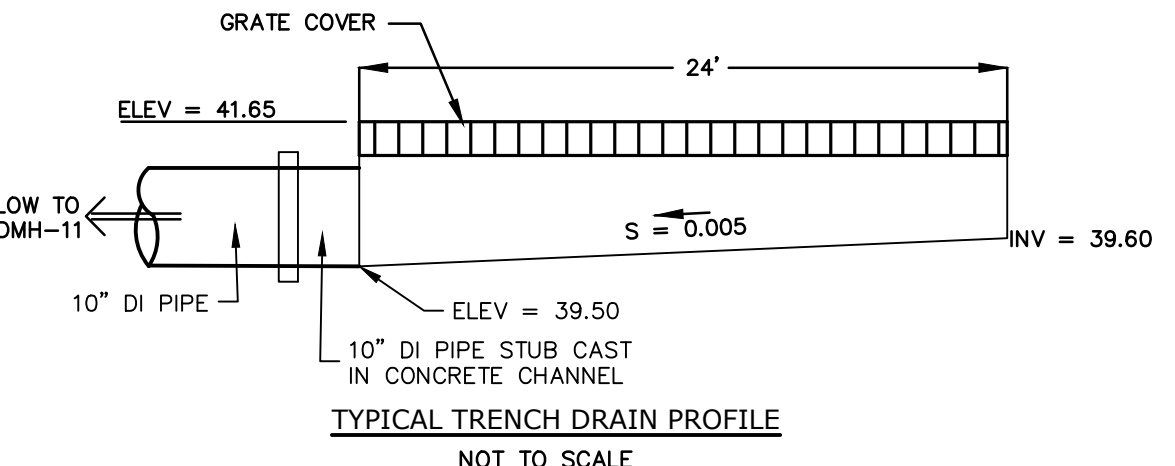


**POLYETHYLENE LINER**  
NO SCALE

**NOTES:**  
1. POLYETHYLENE LINER (NHDOT ITEM 604.0007) SHALL BE FABRICATED AT THE SHOP. DOWNSPOUT SHALL BE EXTRUSION FILLET WELDED TO THE POLYETHYLENE SHEET.  
2. PLACE A CONTINUOUS BEAD OF AN APPROVED SILICONE SEALANT (SUBSIDIARY TO NHDOT ITEM 604.0007) BETWEEN FRAME AND POLYETHYLENE SHEET.  
3. PLACE CLASS AA CONCRETE TO 2" BELOW THE TOP OF THE GRATE ELEVATION.  
4. USE ON DRAINAGE STRUCTURES 4" MIN. DIAMETER ONLY.  
5. TRIM POLYETHYLENE SHEET A MAXIMUM OF 4" OUTSIDE THE FLANGE ON THE FRAME FOR THE CATCH BASIN BEFORE PLACING CONCRETE (EXCEPT AS SHOWN WHEN USED WITH 3-FLANGE FRAME AND CURB).  
6. THE CENTER OF THE GRATE & FRAME MAY BE SHIFTED A MAXIMUM OF 6" FROM THE CENTER OF THE DOWNSPOUT IN ANY DIRECTION.  
7. PLACED ONLY IN DRAINAGE STRUCTURES IN PAVEMENT WITHIN THE CITY OF PORTSMOUTH RIGHT OF WAY.  
8. SEE NHDOT DR-04, "DI-DB, UNDERDRAIN FLUSHING BASIN AND POLYETHYLENE LINER DETAILS", FOR ADDITIONAL INFORMATION.



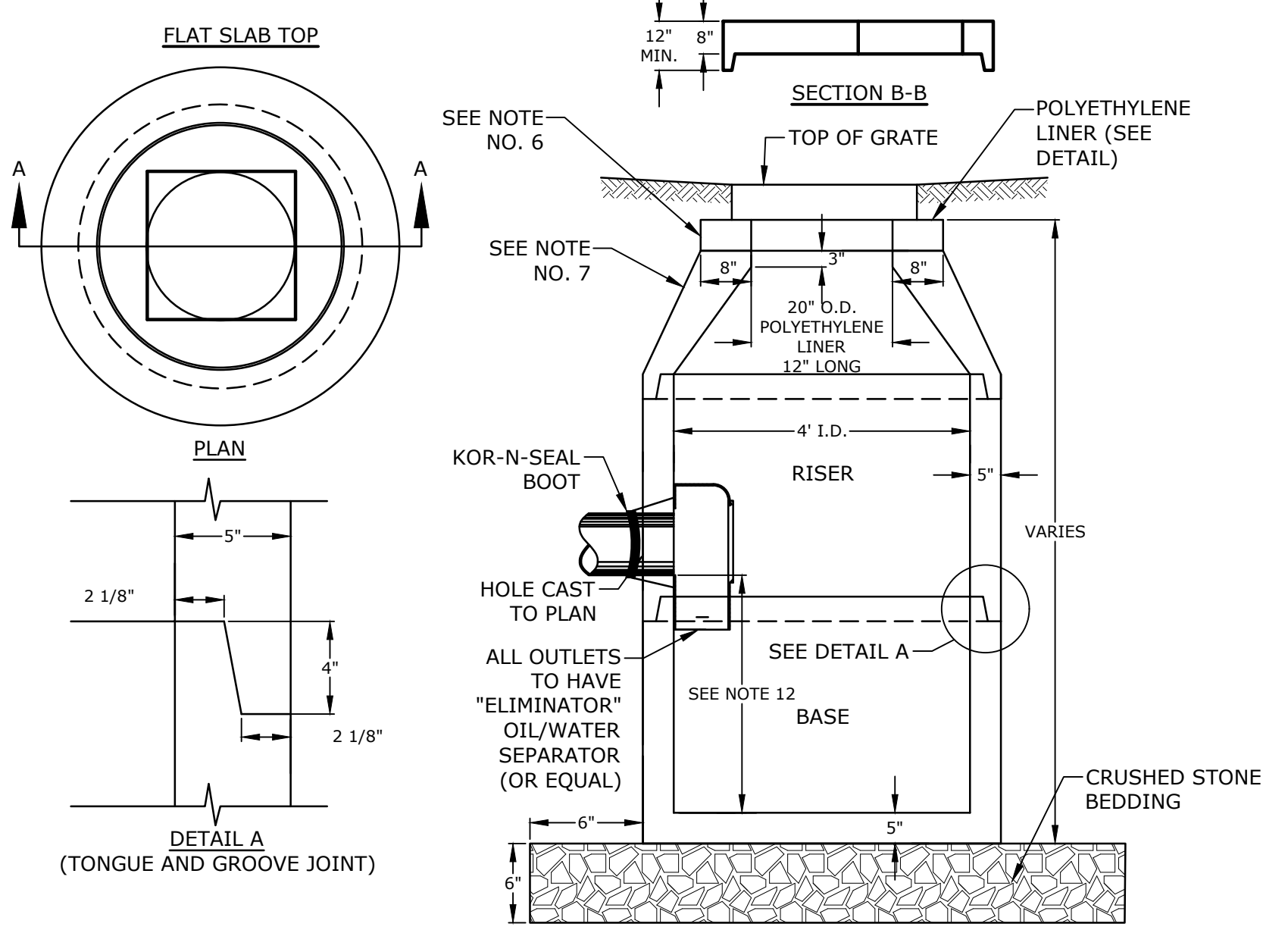
**TYPICAL SECTION**  
NOT TO SCALE



**TRENCH DRAIN PROFILE**  
NOT TO SCALE

**NOTES:**  
1. TRENCH DRAIN FRAME AND GRATE SHALL BE MULTIDRAIN ECONODRAIN SERIES #12 OR EQUAL WITH ADA COMPLIANT GRATE.  
2. CONCRETE CHANNEL TO BE CAST AS PART OF SLAB (COORDINATE WITH BUILDING DRAWINGS).

**TRENCH DRAIN DETAIL**  
NOT TO SCALE



**4' DIAMETER CATCHBASIN**  
NO SCALE

**NOTES:**  
1. ALL SECTIONS SHALL BE CONCRETE CLASS AA(4000 psi).  
2. 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.  
3. THE TONGUE AND GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.  
4. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.  
5. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.  
6. FITTING FRAME TO GRADE MAY BE DONE WITH PREFABRICATED ADJUSTMENT RINGS OR CLAY BRICKS (2 COURSES MAX.).  
7. CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE AND WHERE PERMITTED.  
8. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.  
9. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.  
10. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.  
11. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.  
12. "ELIMINATOR" OIL/WATER SEPARATOR SHALL BE INSTALLED TIGHT TO INSIDE OF CATCHBASINS WITHIN THE FUTURE CITY OF PORTSMOUTH RIGHT OF WAY.  
13. SUMP FOR CATCH BASINS WITHIN THE FUTURE CITY OF PORTSMOUTH RIGHT OF WAY SHALL BE 4". THERE SHALL BE NO SUMPS FOR CATCH BASINS ON SITE.

**Proposed Subdivision Road & Office Building Development**

Borthwick Forest, LLC

Portsmouth, New Hampshire

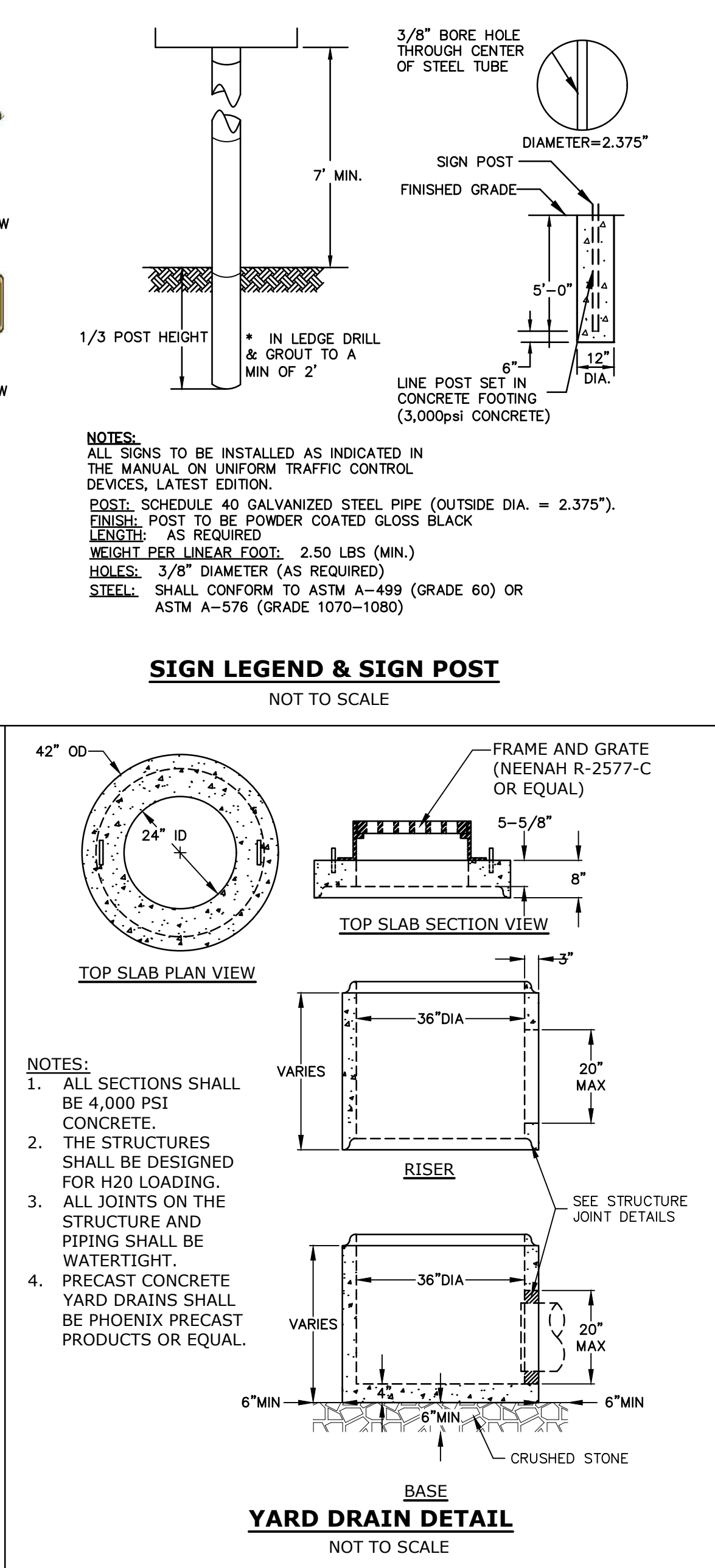
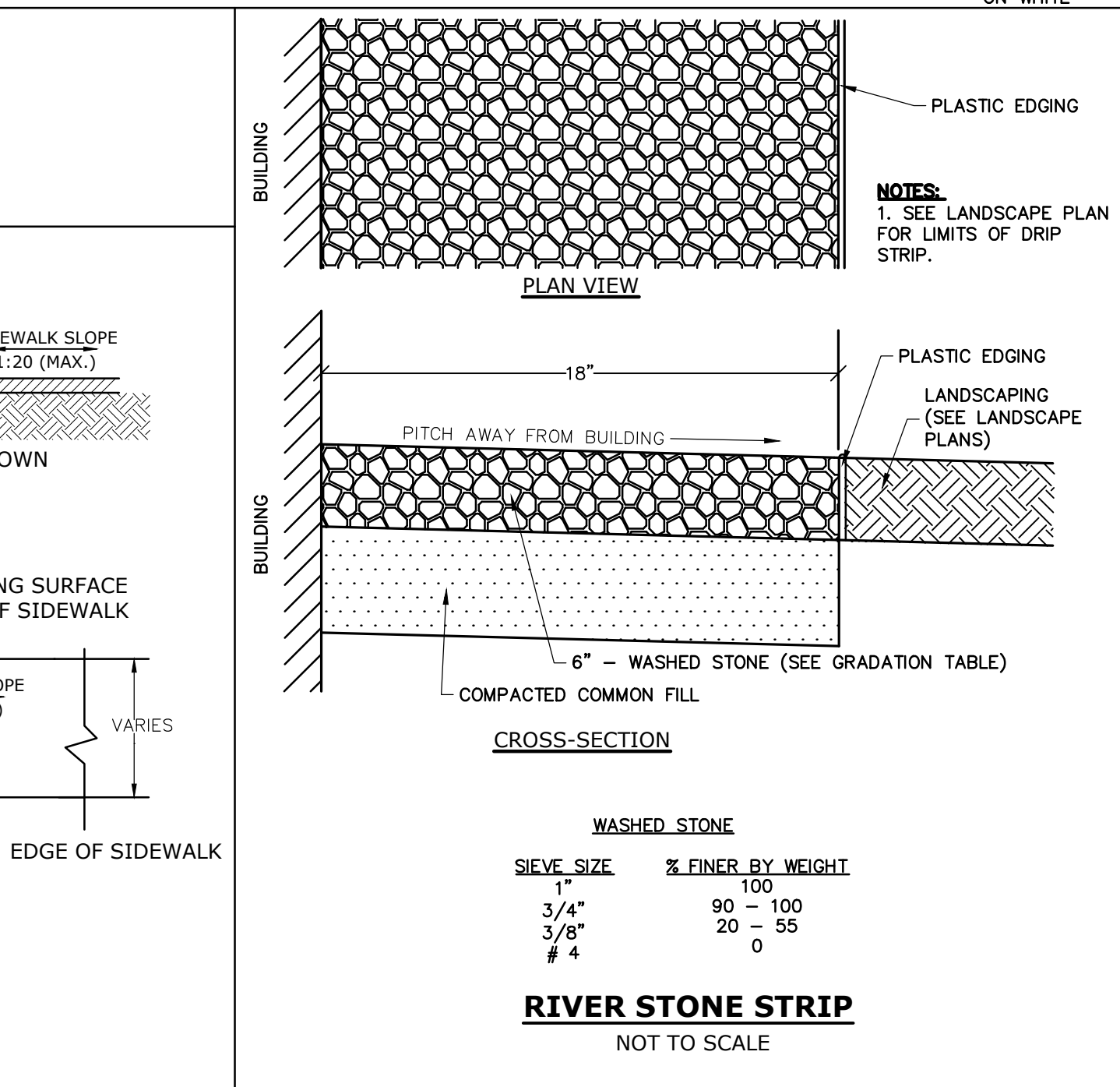
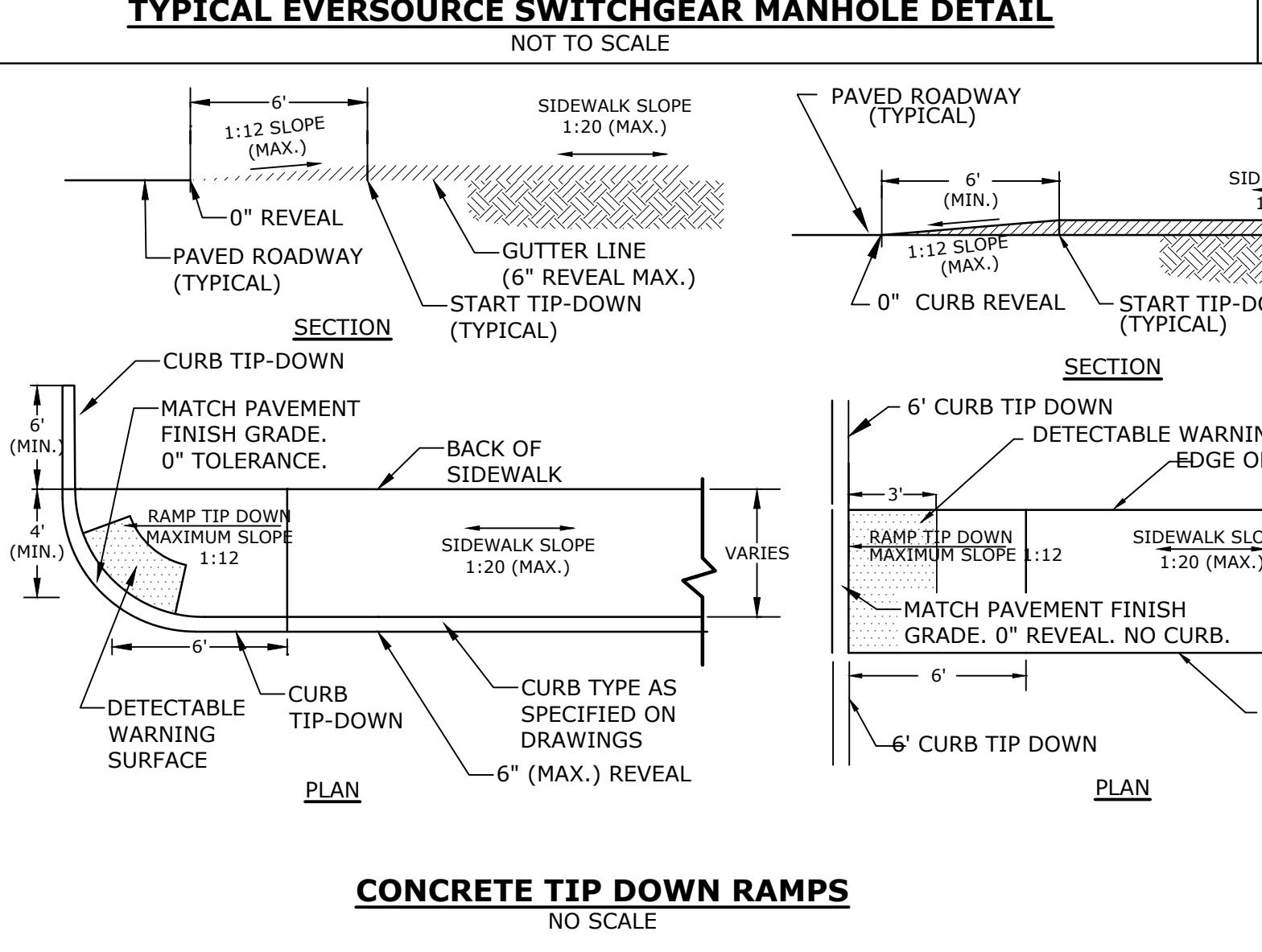
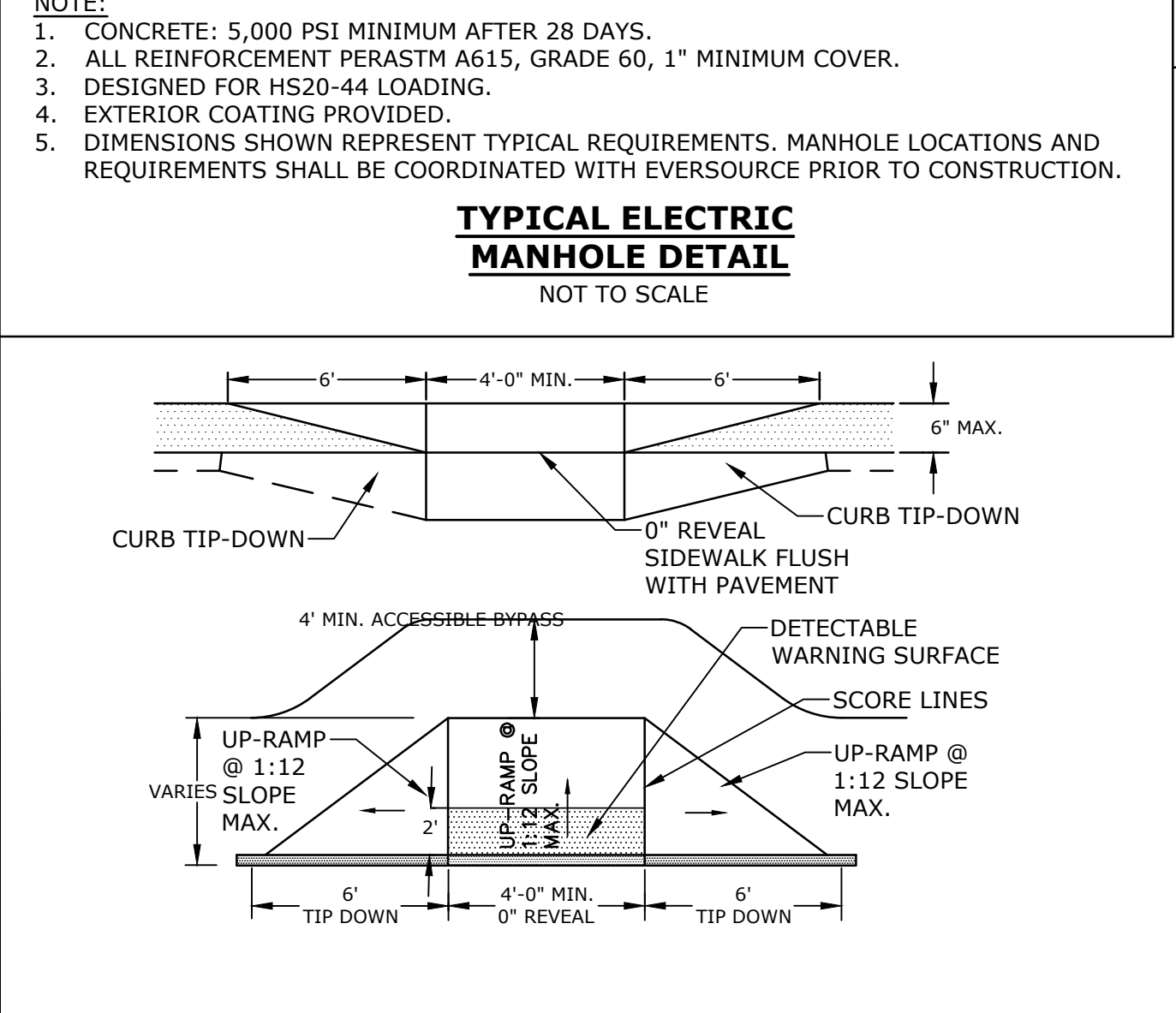
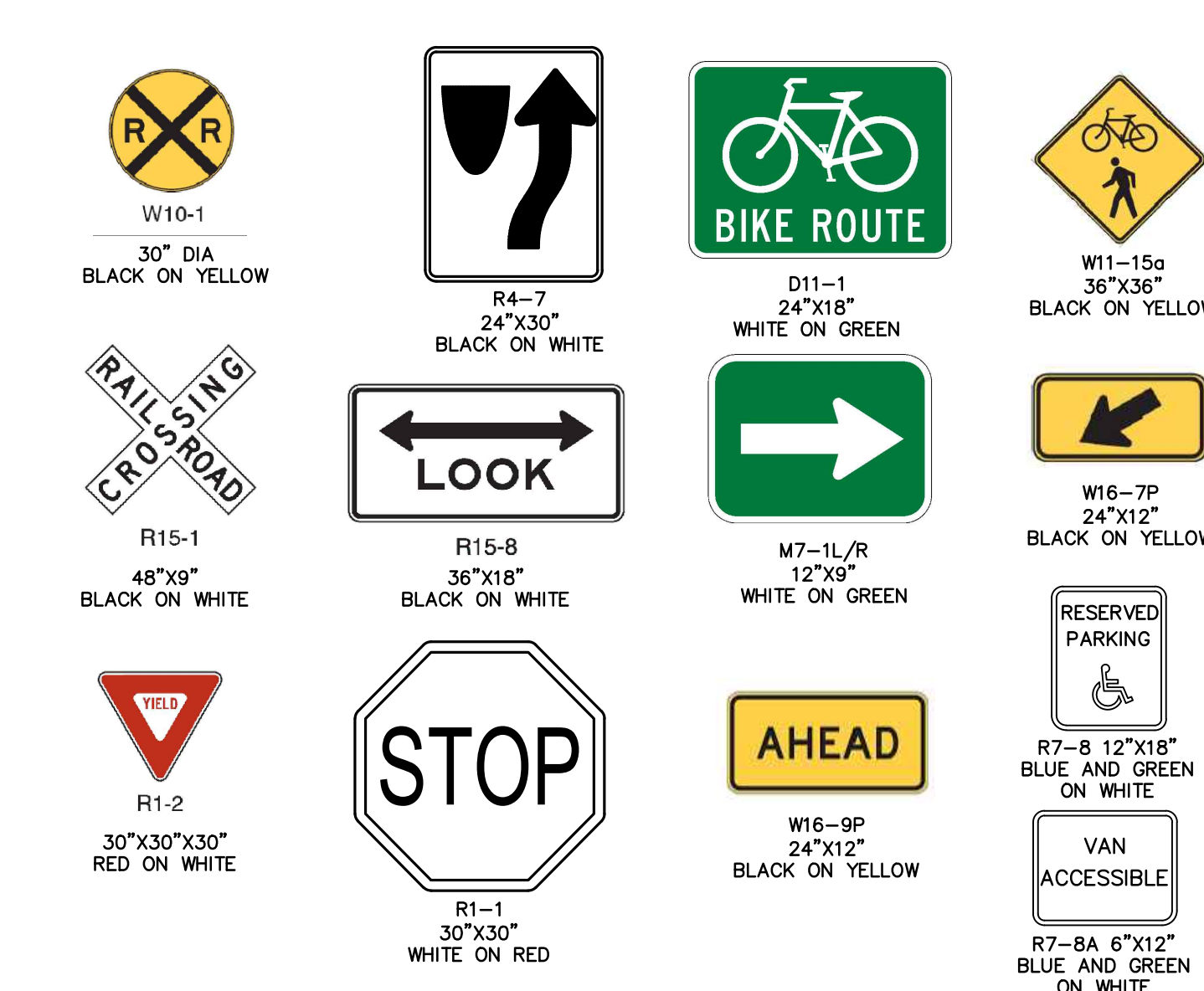
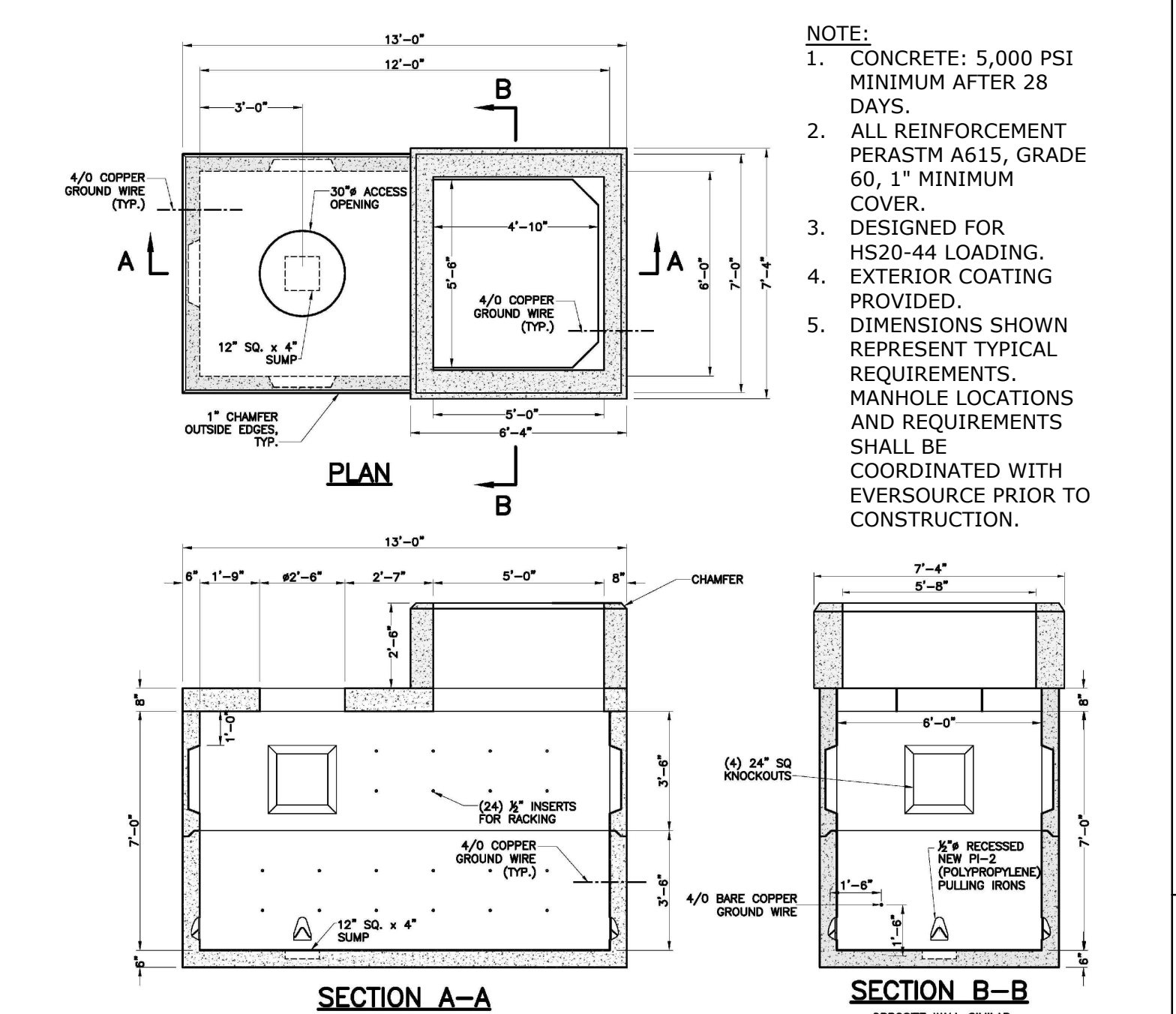
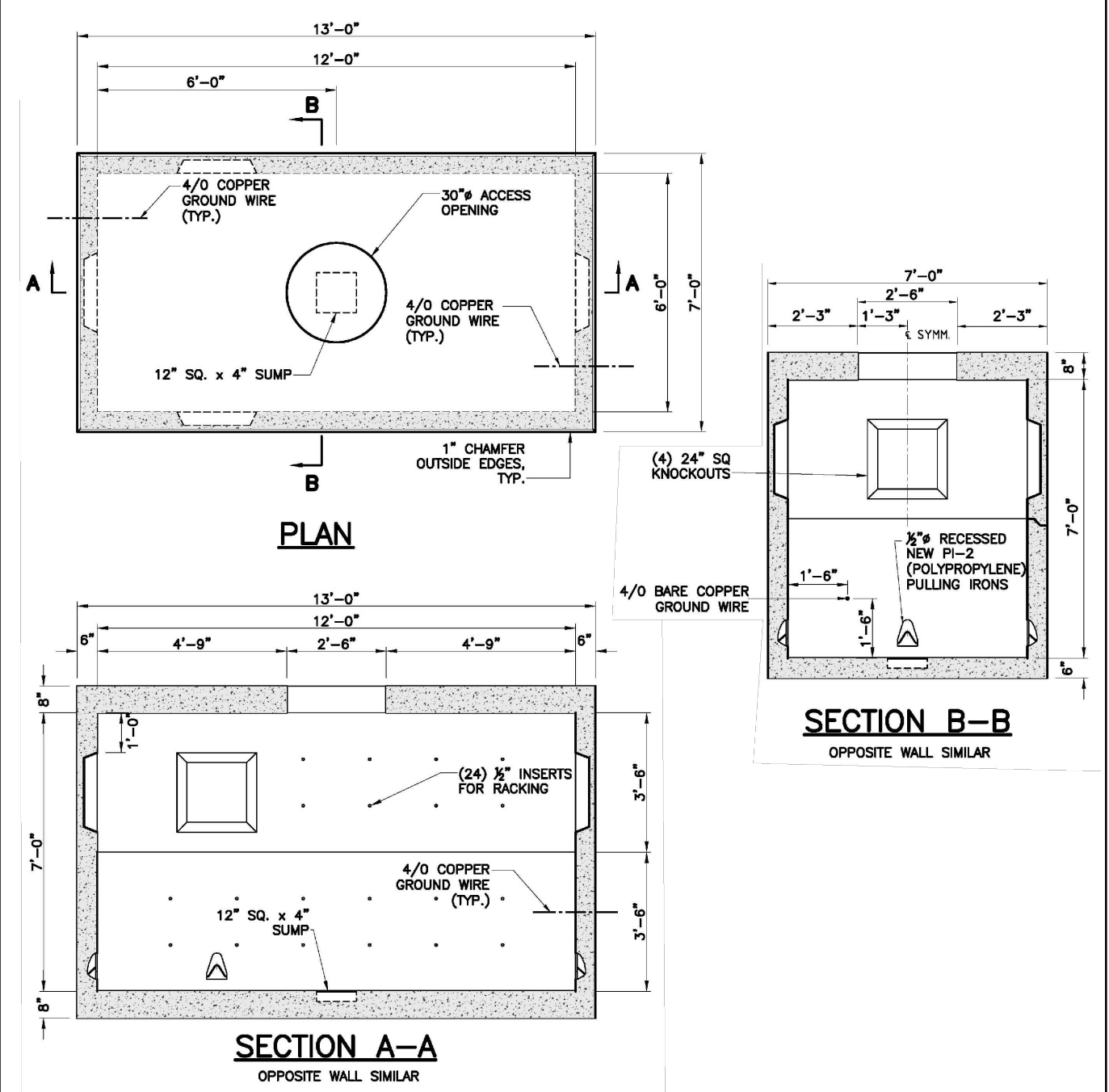
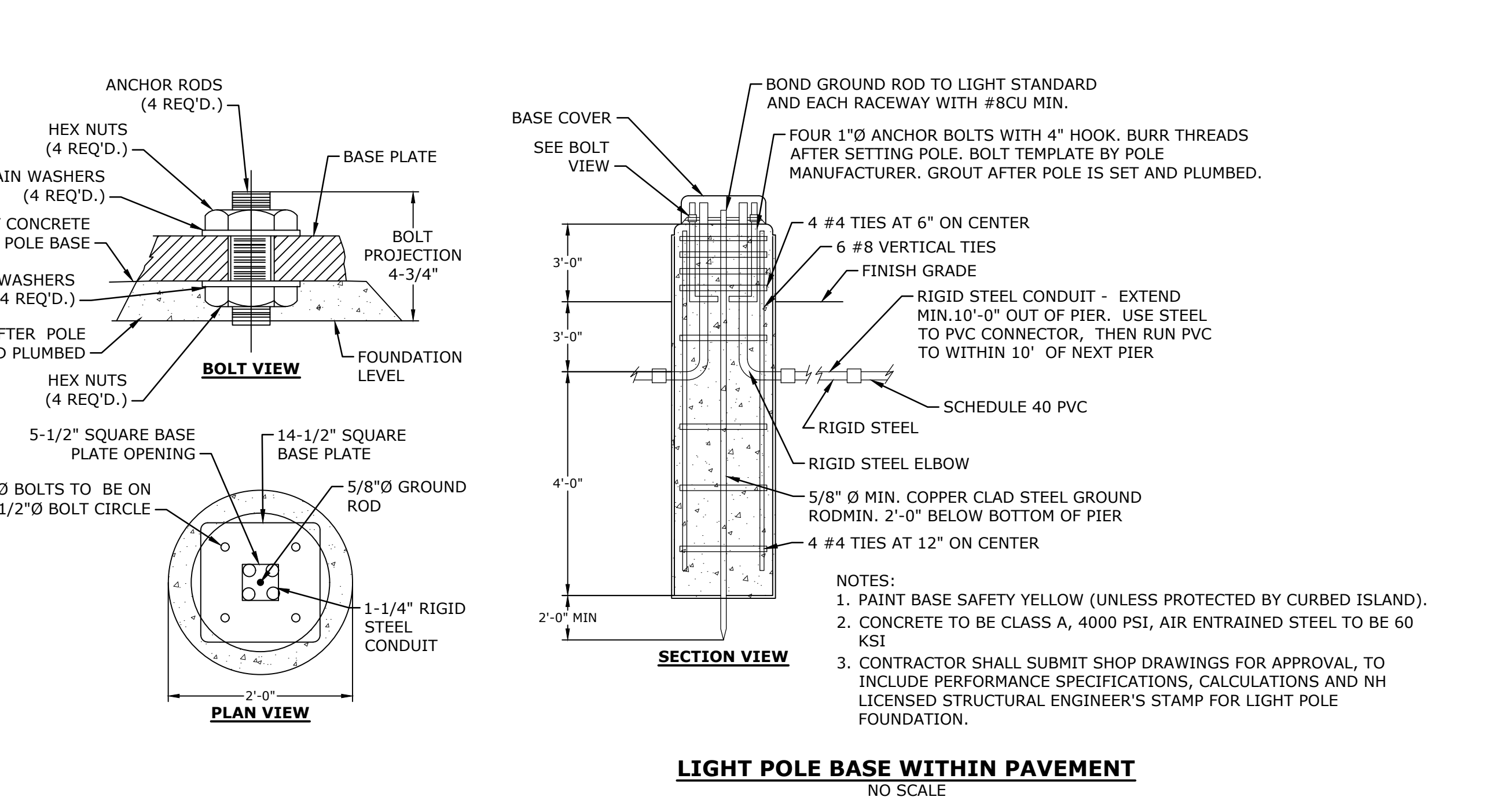
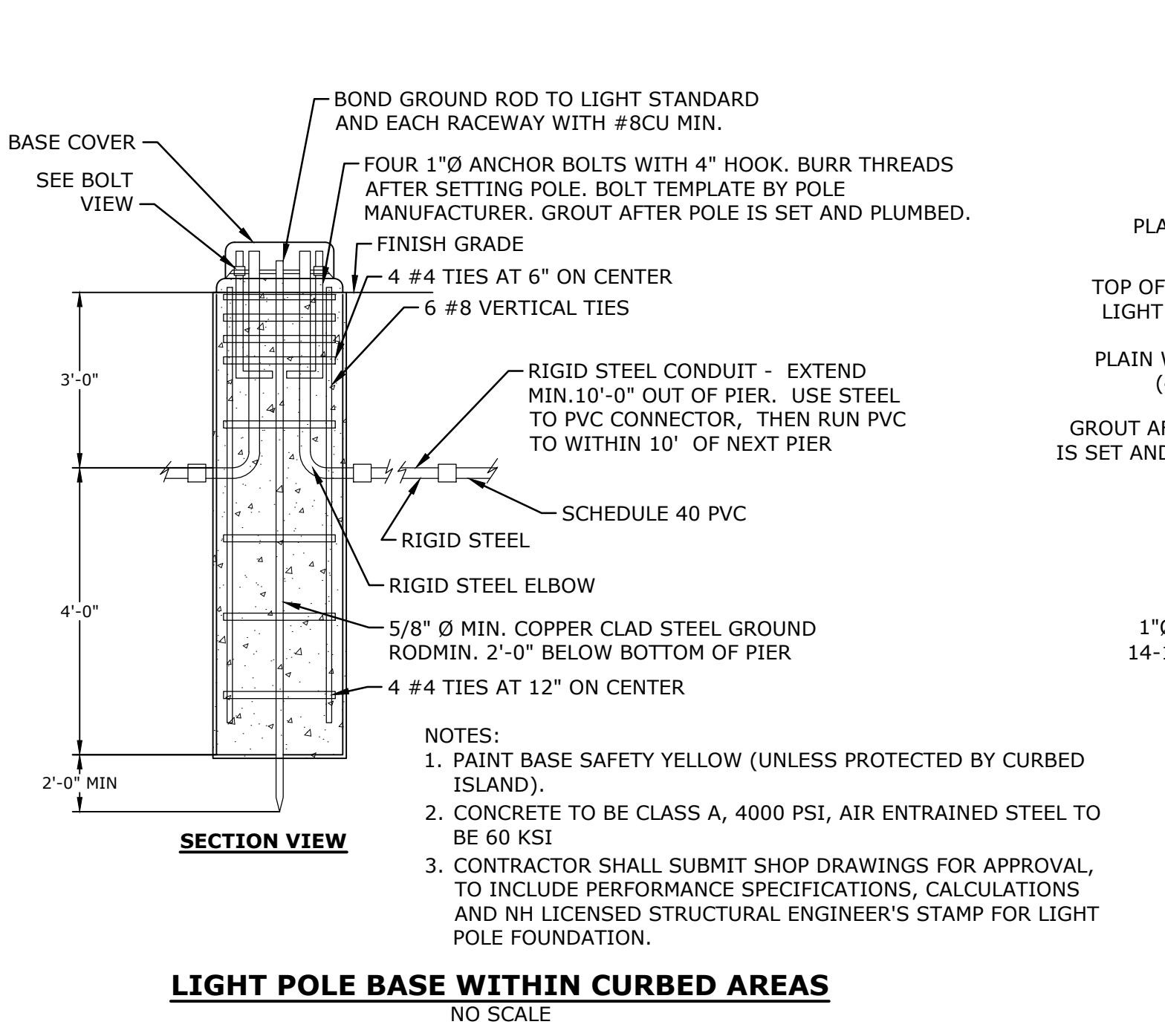
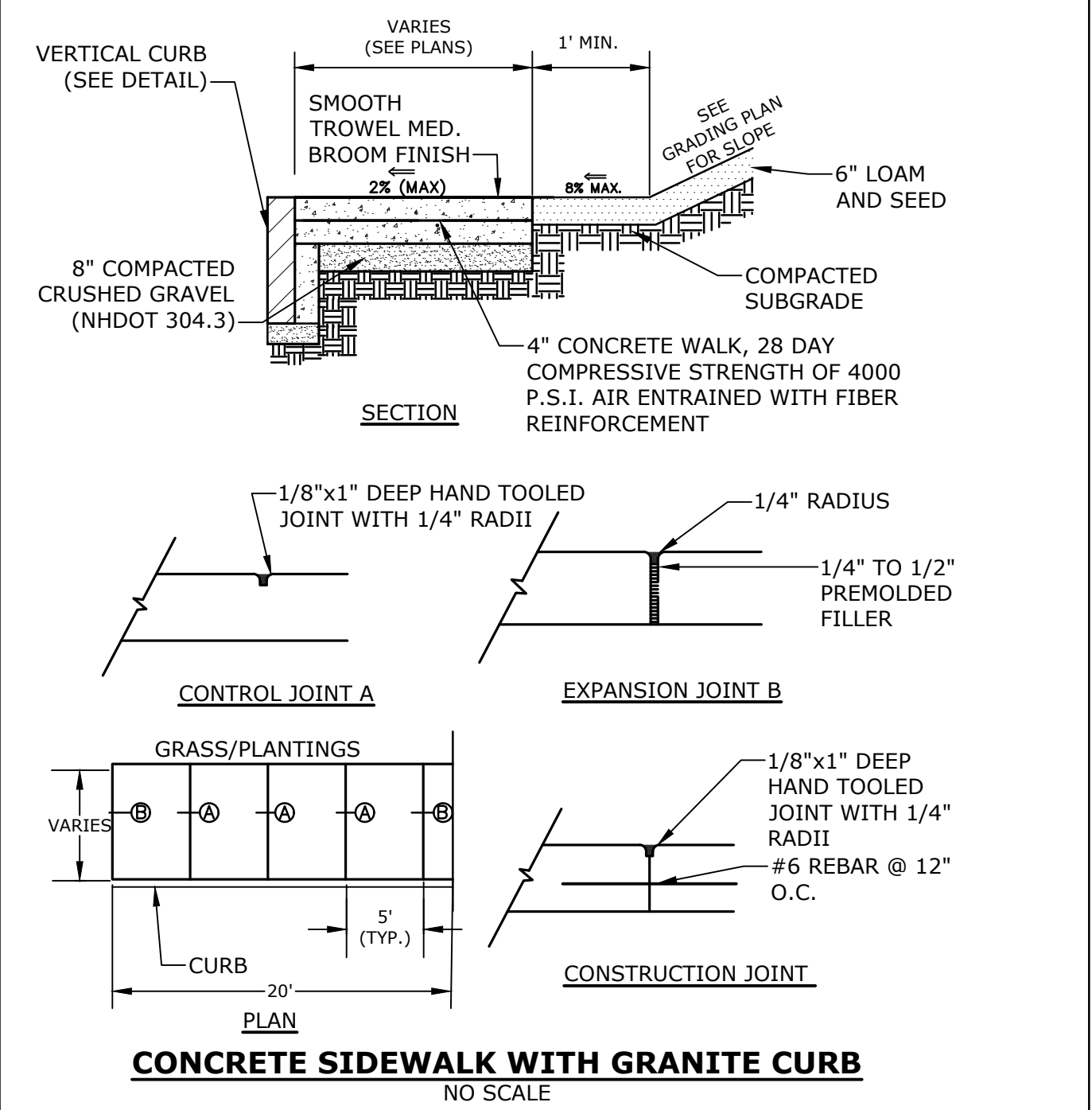
MARK	DATE	DESCRIPTION
K	3/25/2019	Construction Drawings
J	3/20/2019	Revised GMP Submission
I	3/4/2019	Rev Pricing Drawings / Admin Approval
H	5/8/2018	Submitted for Final Approval
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C	5/11/2017	Planning Board Submission
B	4/24/2017	TAC & ConCom Submission
A	3/20/2017	TAC Submission

PROJECT NO: K0076-13  
DATE: 3/20/2017  
FILE: K0076-13.DTL.DWG  
DRAWN BY: CML  
CHECKED: PMC  
APPROVED: BLM

DETAILS SHEET  
SCALE: AS SHOWN  
C-504

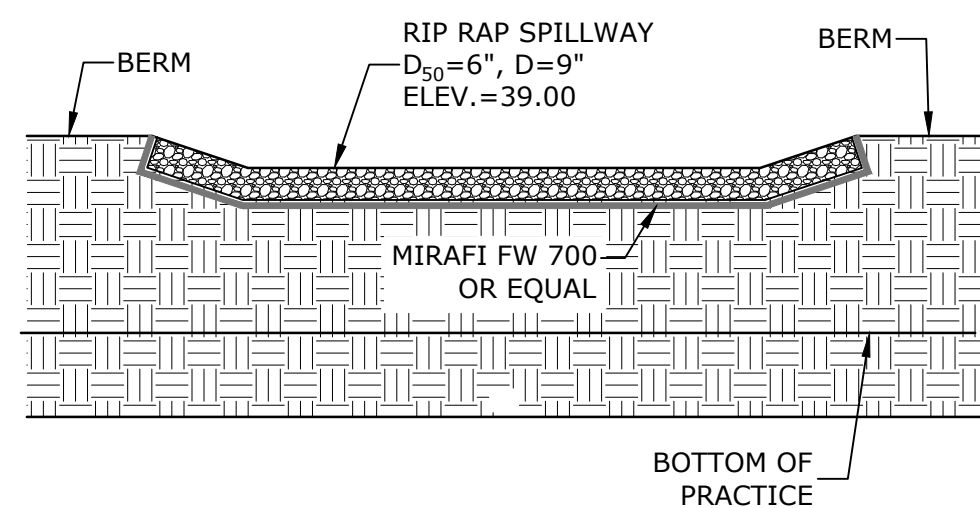
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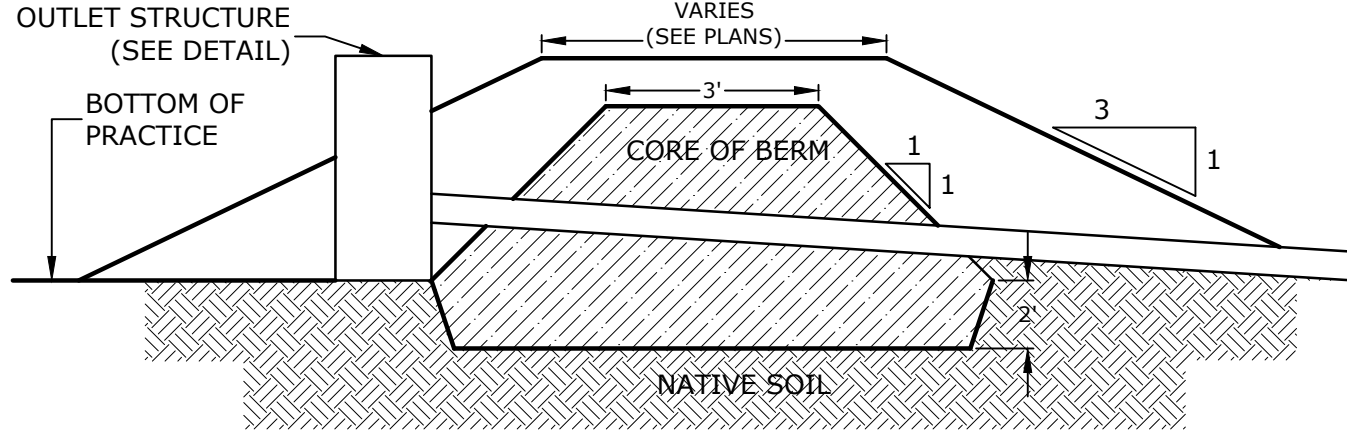
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NOTES:  
1. SEE GRADING & DRAINAGE PLAN(S) FOR LOCATION(S) AND DIMENSIONS.

**RIP RAP SPILLWAY**  
NO SCALE

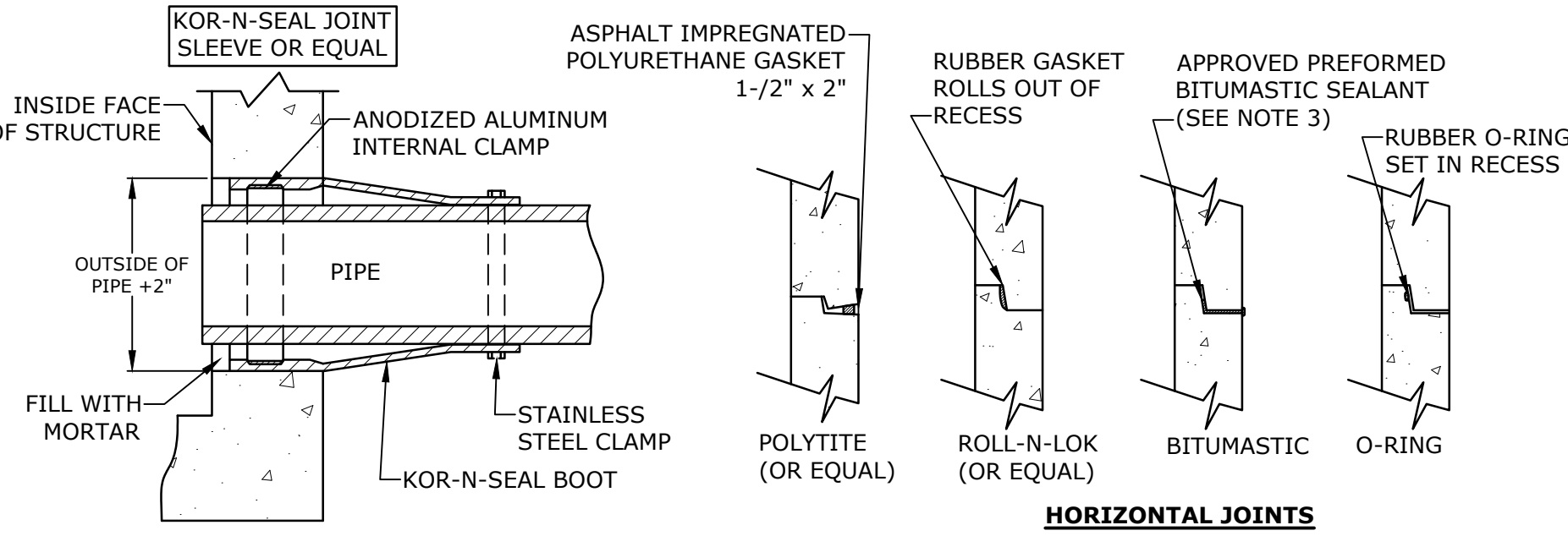


NOTES:  
1. CORE MATERIAL SHALL MEET USGS CLASSIFICATION SC, SM, CL OR ML AND HAVE A MAXIMUM PARTICLE SIZE OF 3" AND A PERMEABILITY LESS THAN 0.000005 CM/S, AND MEET THE FOLLOWING GRADATION:

SIEVE SIZE	PERCENT FINER BY WEIGHT
3 INCH	100
# 200	50 -100.

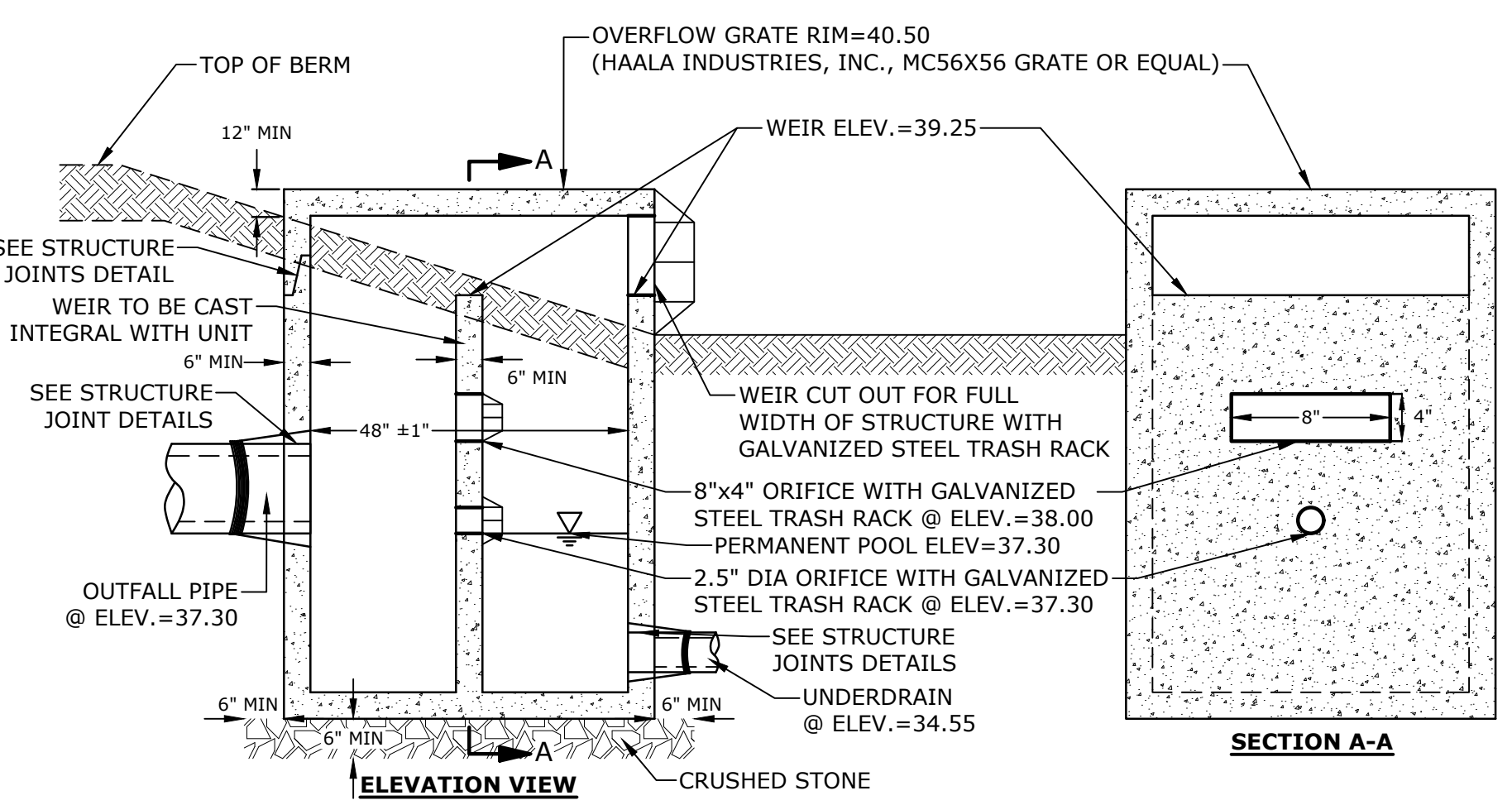
2. PIPE SHALL BE FULLY EMBEDDED IN CORE TO ELIMINATE SEEPAGE

**CLAY CORE BERM**  
NO SCALE



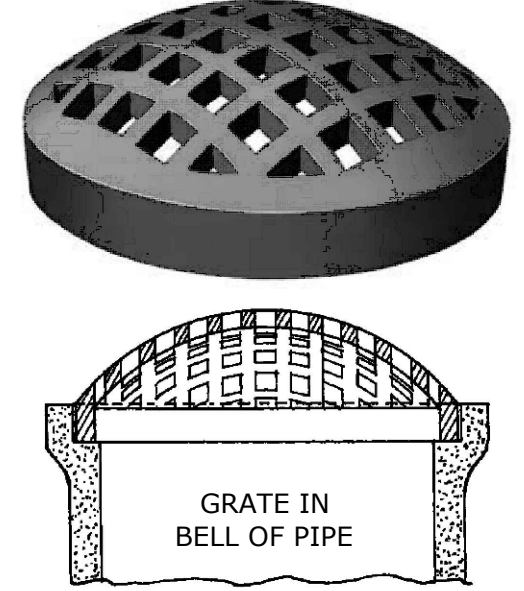
NOTES:  
1. HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER CITY OF PORTSMOUTH DPW STANDARD AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW ELASTOMERIC OR MASTIC-LIKE GASKET.  
2. PIPE TO MANHOLE JOINTS SHALL BE PER CITY OF PORTSMOUTH STANDARD.  
3. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY.  
4. ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

**STRUCTURE JOINTS**  
NO SCALE



NOTES:  
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE (TYPE II CEMENT).  
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER OF THE THIRD WALL.  
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.  
4. THE STRUCTURES SHALL BE DESIGNED FOR H2O LOADING.  
5. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.

**OUTLET STRUCTURE**  
NO SCALE

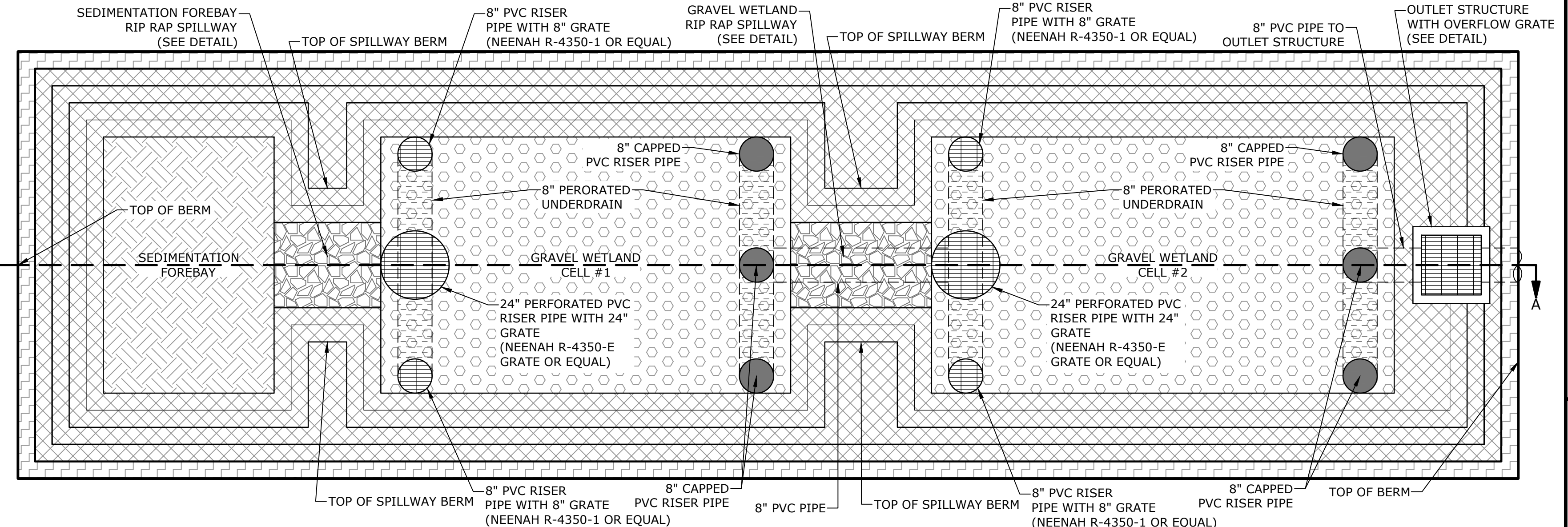


NOTES:  
1. 8" GRAVEL WETLAND GRATES SHALL NEENAH R-4350-1 GRATE OR EQUAL.  
2. 24" GRAVEL WETLAND GRATES SHALL NEENAH R-4350-E GRATE OR EQUAL.

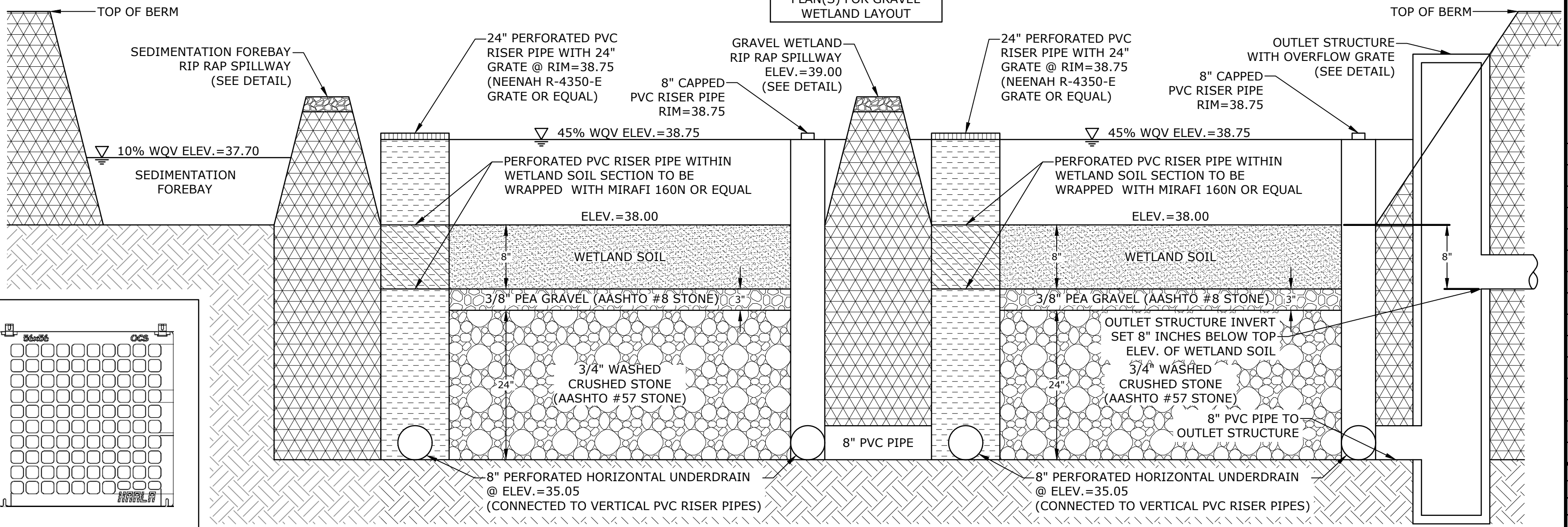
**NEENAH R-4350 SERIES GRATE**  
NO SCALE

GRAVEL WETLAND INSPECTION / MAINTENANCE REQUIREMENTS		
INSPECTION / MAINTENANCE	FREQUENCY	ACTION
MONITOR TO ENSURE THAT GRAVEL WETLAND FUNCTIONS EFFECTIVELY AFTER STORMS	FOUR (4) TIMES ANNUALLY (QUARTERLY) AND AFTER ANY RAINFALL EVENT EXCEEDING 2.5" IN A 24-HR PERIOD	- TRASH AND DEBRIS TO BE REMOVED - ANY REQUIRED MAINTENANCE SHALL BE ADDRESSED - INSPECT SOIL AND REPAIR ERODED AREAS, ESPECIALLY ON SLOPES. - CHECK INLETS, OUTLETS, AND OVERFLOW SPILLWAY FOR BLOCKAGE, STRUCTURAL INTEGRITY AND EVIDENCE OF EROSION.
INSPECT VEGETATION	ANNUALLY	- INSPECT THE CONDITION OF ALL GRAVEL WETLAND VEGETATION - PRUNE BACK OVERGROWTH - REPLACE DEAD VEGETATION - REMOVE ANY INVASIVE SPECIES - COORDINATE WITH UNH STORMWATER CENTER FOR FURTHER VEGETATION MANAGEMENT GUIDELINES
INSPECT DRAWDOWN TIME - THE SYSTEM SHALL DRAWDOWN WITHIN 48-HOURS FOLLOWING A RAINFALL EVENT.	ANNUALLY	- HIRE QUALIFIED PROFESSIONAL TO ASSESS AND IMPLEMENT THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE THE FILTRATION FUNCTION, INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER.

GRAVEL WETLAND PLANTING PLAN			
SPECIES	PLANT SIZE	QUANTITY/SPACING	
NEW ENGLAND EROSION CONTROL/RESTORATION MIX OR EQUIVALENT		35LB/ACRE	
"RED OSIER DOGWOOD" CORNUS SERICEA	2'-3'	8'-10' ON CENTER	
"SILKY DOGWOOD" CORNUS AMMOMUM			
AND	2'-3'	8'-10' ON CENTER	
"HIGHBUSH BLUEBERRY" VACCINIUM CORYBOSSUSUM			



**TYPICAL PLAN VIEW**



**TYPICAL SECTION A-A VIEW**

NOTES:  
1. OUTLET STRUCTURE GRATE SHALL BE HAALA INDUSTRIES, INC., MC56X56 TOP MOUNT GRATE OR EQUAL.  
2. GRATE TO BE SECURED TO CONCRETE STRUCTURE.

**HAALA MC56X56 GRATE**  
NO SCALE

NOTES:  
1. 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.  
2. INFILTRATION TESTING OF THE NATIVE SOILS AT THE SUBGRADE AND WITHIN THE VICINITY OF THE PROPOSED GRAVEL WETLAND SHALL OCCUR PRIOR TO THE INSTALLATION OF THE GRAVEL WETLAND AND SHALL BE COORDINATED WITH THE ENGINEER. IF THE NATIVE SOILS EXCEED A PERMEABILITY RATE OF 0.03 FT/DAY OR IF EXCESSIVELY FRACTURED BEDROCK IS ENCOUNTERED THE SOILS SHOULD AMENDED OR LINER ADDED AS DETERMINED BY THE ENGINEER.  
3. PERFORATED PVC RISERS SHALL HAVE VERTICAL SLOTS CUT INTO PVC RISERS ABOVE GRADE MEASURING 3"x1/8".

**TYPICAL GRAVEL WETLAND**  
NO SCALE

AASHTO #57 STONE (#4 to 1")		AASHTO #8 STONE (#8 to 3/8")	
SIEVE SIZE	% PASSING	SIEVE SIZE	% PASSING
1-1/2"	100	1/2"	100
1"	95-100	3/8"	85-100
1/2"	25-60	#4	10-30
#4	0-10	#8	0-10
#8	0-5	#16	0-5



**Proposed Subdivision Road & Office Building Development**

Borthwick Forest, LLC

Portsmouth, New Hampshire

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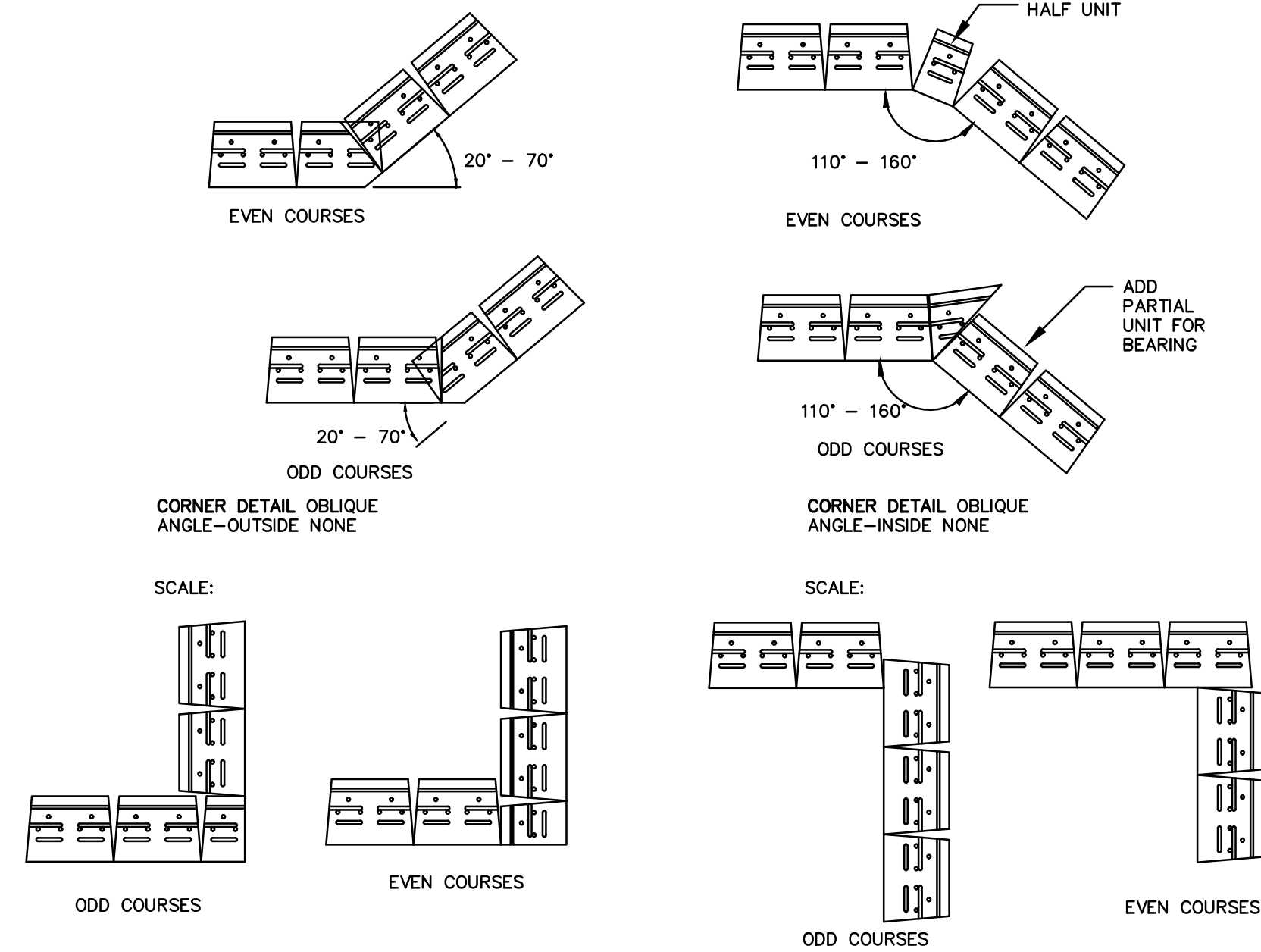
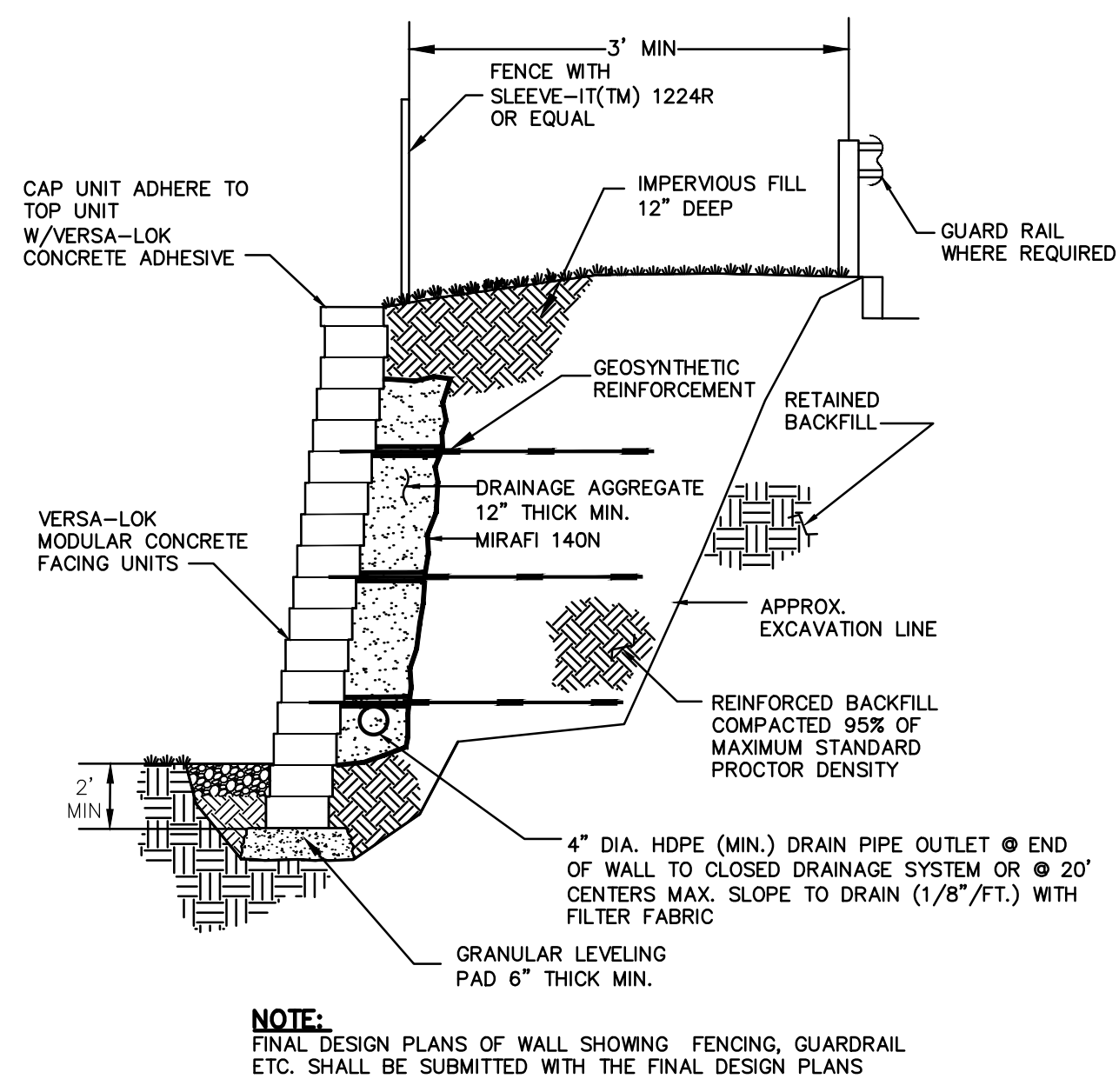
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DATE:	3/20/2017
FILE:	K0076-13_DTLS.DWG
DRAWN BY:	CML
CHECKED:	PMC
APPROVED:	BLM

**DETAILS SHEET**

SCALE: AS SHOWN

C-506





**DRAINAGE FILL**  
DRAINAGE FILL SHALL BE CLEAN 1 INCH MINUS CRUSHED STONE OR GRANULAR FILL MEETING THE FOLLOWING GRADATION:

SIEVE SIZE	% PASSING BY WEIGHT
1 INCH	75-100
3/4 INCH	50-75
No. 4	0-60
No. 40	0-50
No. 200	0-5

**MINIMUM PARAMETERS**

SOIL	SOIL UNIT WEIGHT	$\phi$
FOUNDATION SOIL	130	32°

APPLIED SURCHARGE LOADING = 0.31 TIMES THE VERTICAL SURCHARGE LOAD UNIFORMLY DISTRIBUTED OVER THE HEIGHT OF THE WALL  
STATIC ACTIVE LATERAL EARTH PRESSURE = 40 PSF/FT  
OVERTURNING F.S. = 2.0  
SLIDING F.S. = 1.5

- MANUFACTURER'S DESIGN:**
- CONCRETE UNIT RETAINING WALL SHALL BE BY VERSA-LOK OR APPROVED EQUAL
  - DESIGN SHALL BE FROM THE WALL MANUFACTURER AND SHALL INCLUDE A GLOBAL STABILITY ANALYSIS.
  - MANUFACTURER DESIGN ENGINEER SHALL BE LICENSED IN THE STATE OF NEW HAMPSHIRE.
  - DESIGN CALCULATIONS AND PLANS SHALL BE SUBMITTED TO THE WALL DESIGN ENGINEER SHALL COMPLETE SUFFICIENT INSPECTIONS DURING CONSTRUCTION TO CERTIFY WORK IS COMPLETE IN ACCORDANCE WITH DESIGN.
  - SUBMIT AS-BUILT DRAWINGS OF WALL WITH WALL DESIGNER'S CERTIFICATION TO OWNER.

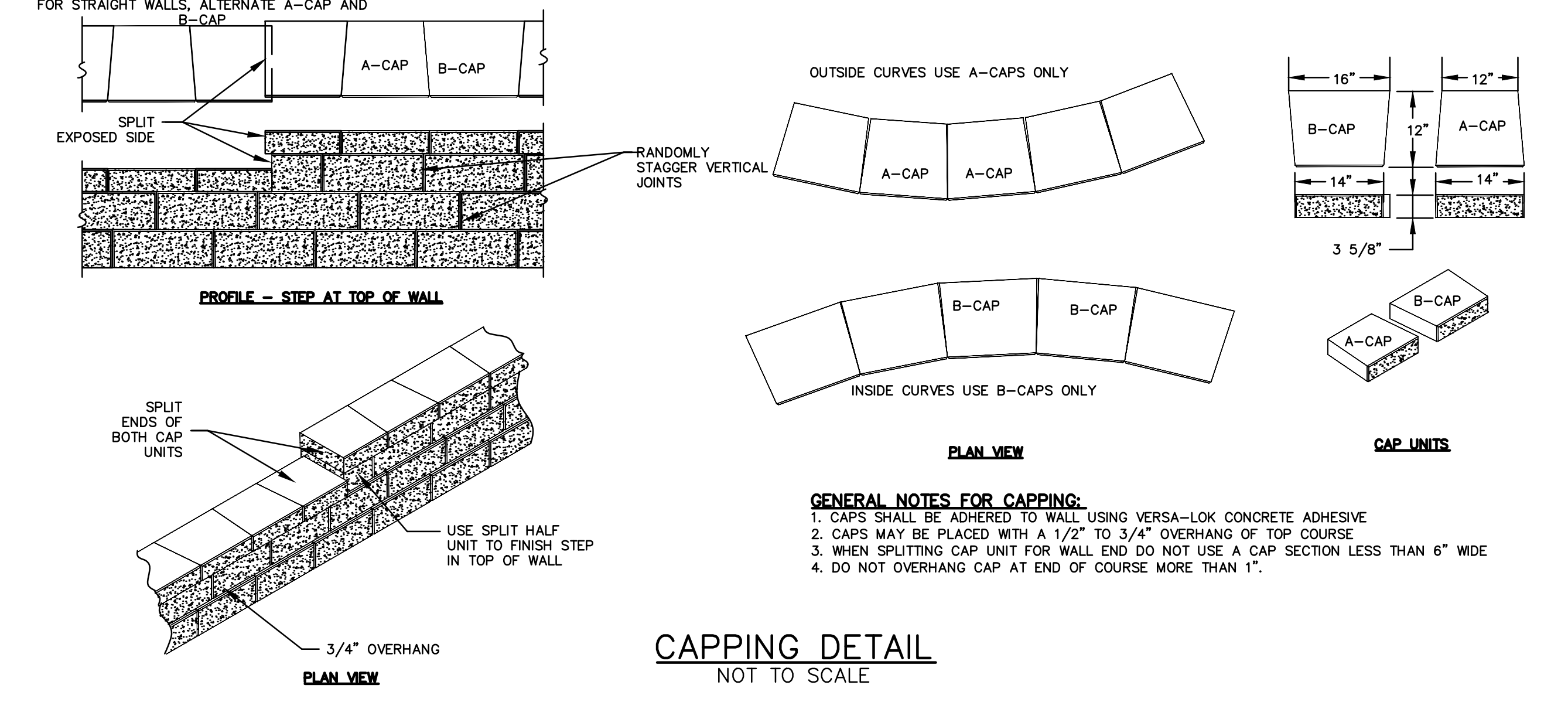
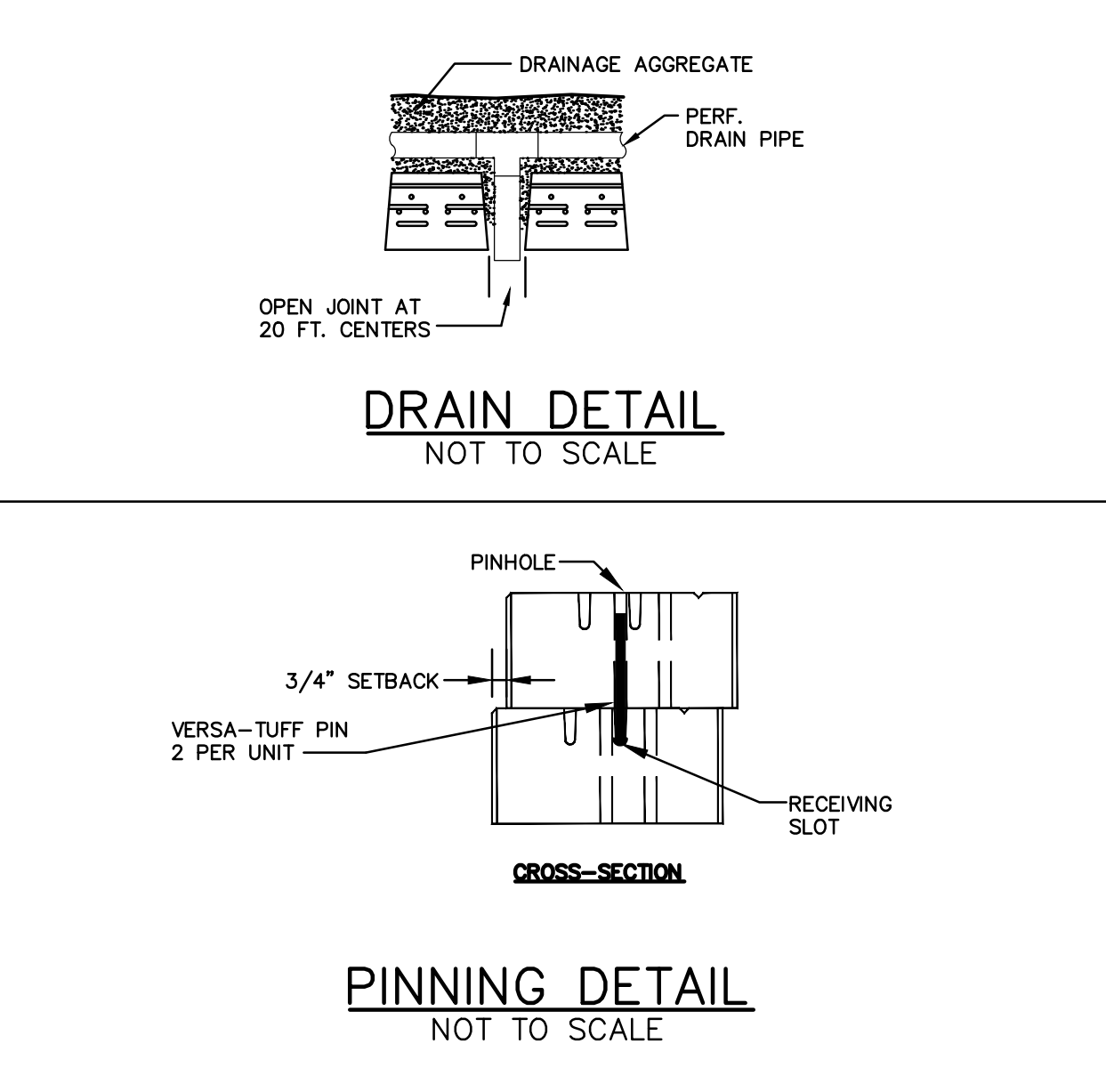
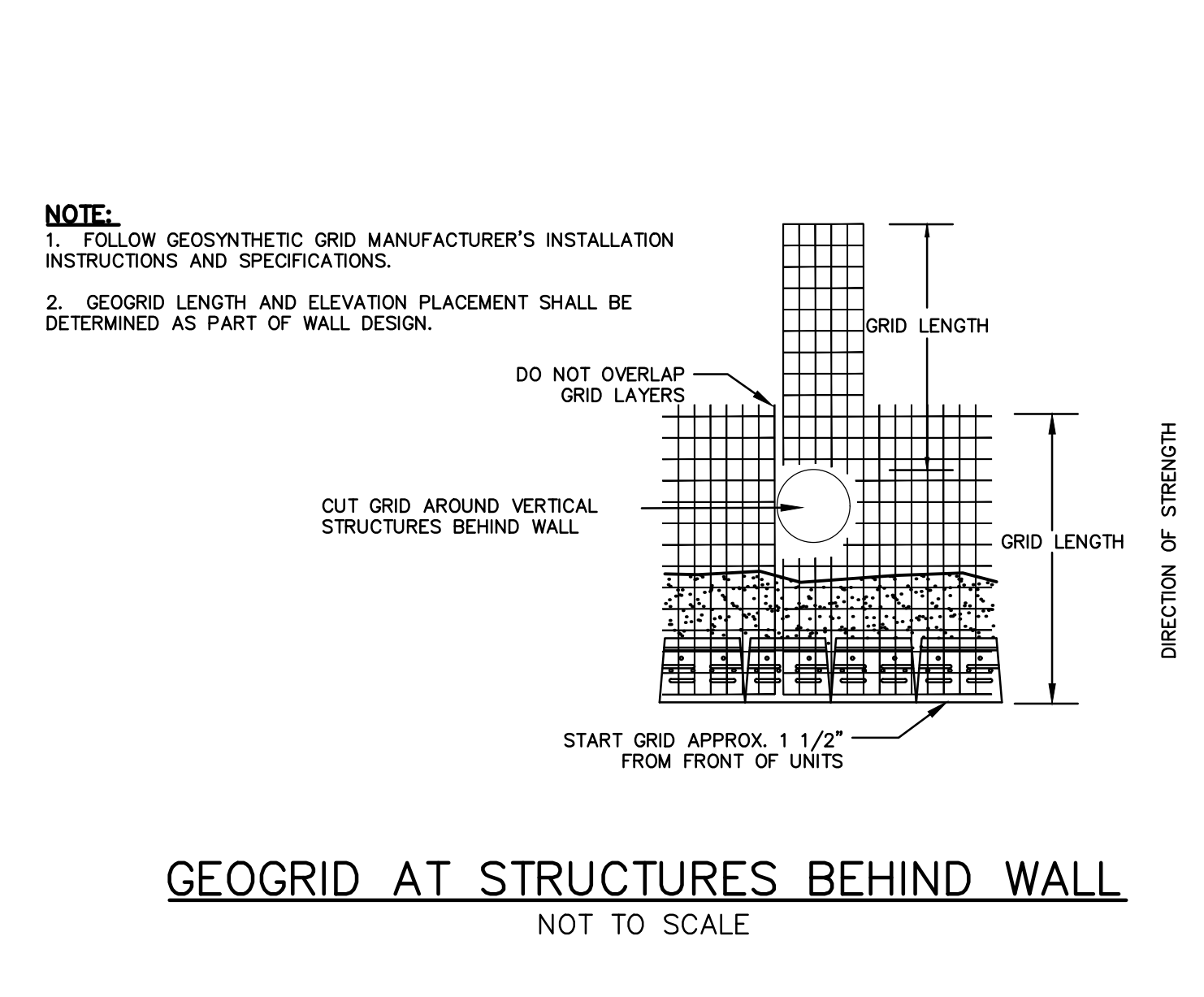
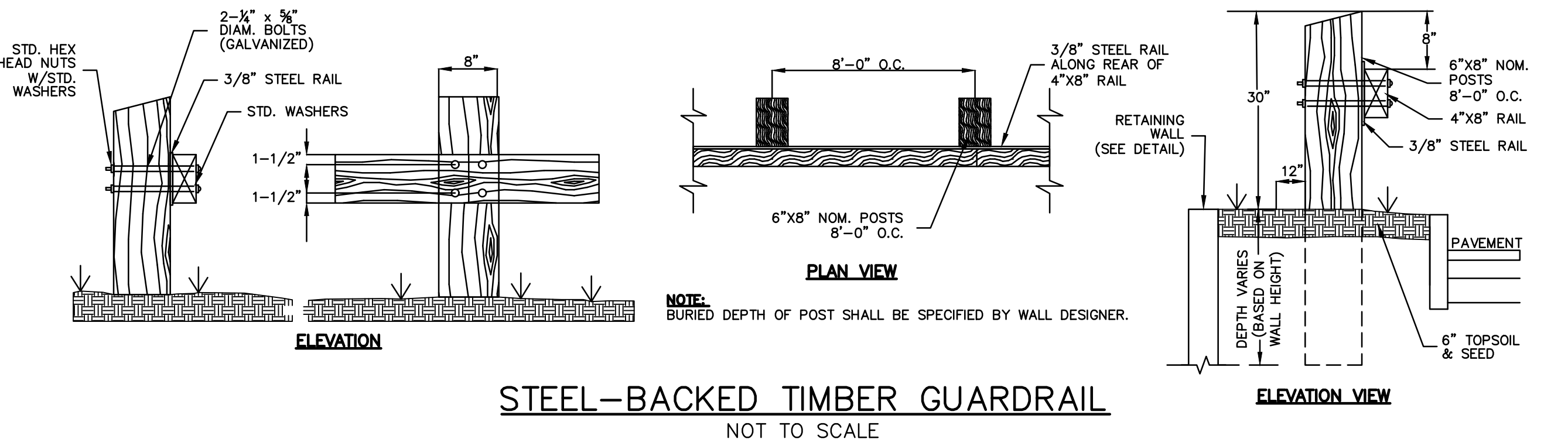
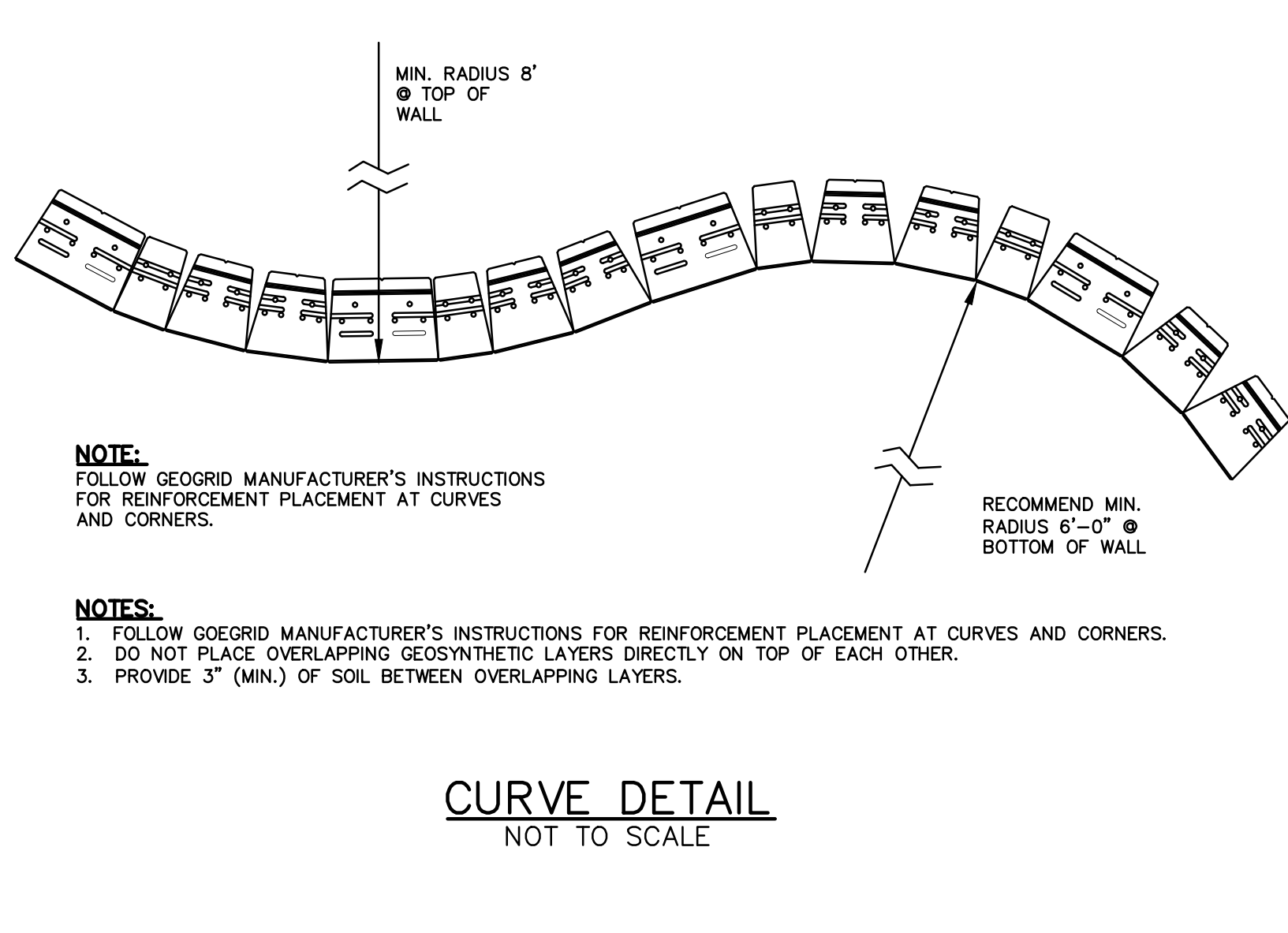
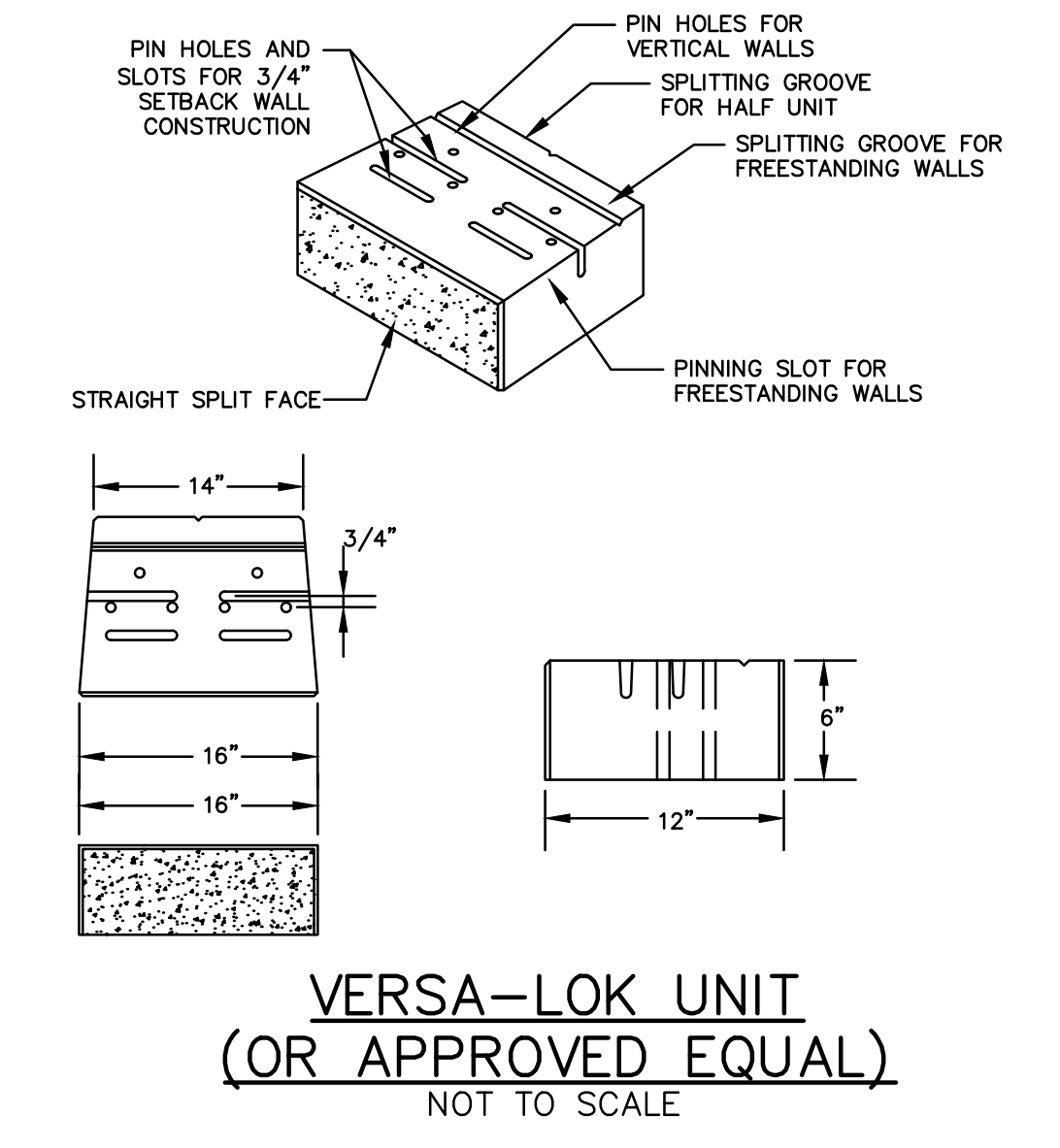
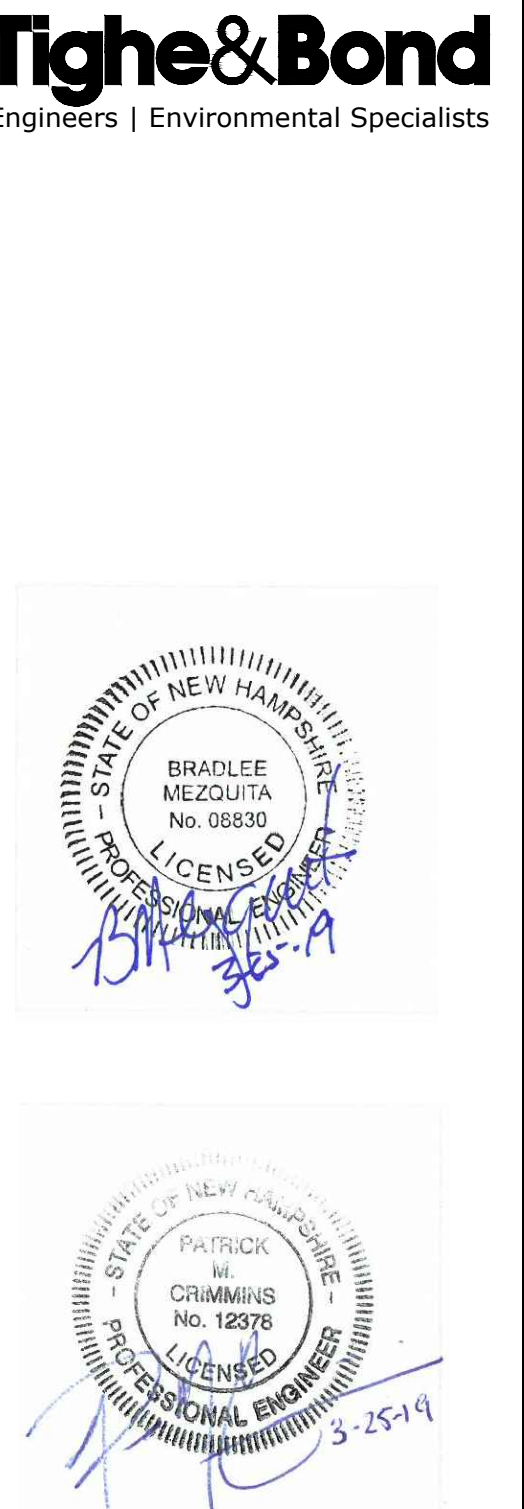
**LEVELING PAD**  
LEVELING PAD MATERIAL SHALL CONSIST OF HARD DURABLE PARTICLES OR FRAGMENTS OF STONE OR GRAVEL. FINE PARTICLES SHALL CONSIST OF NATURAL OR PROCESSED SAND. THE MATERIAL SHALL MEET THE FOLLOWING GRADATION:

SIEVE SIZE	% PASSING BY WEIGHT
3 INCH	100
1 INCH	55-85
No. 4	27-52
No. 200*	0-12

\* FRACTION PASSING THE No. 4 SIEVE

**REINFORCED BACKFILL**  
IMPORTED REINFORCED BACKFILL MATERIAL SHALL BE CLEAN, FREE-DRAINING WELL GRADED GRANULAR SOIL WITH A MAXIMUM PARTICLE SIZE OF 4" AND NOT MORE THAN 12% BY WEIGHT PASSING THE #200 SIEVE.  
ON-SITE MATERIAL SHALL NOT BE USED FOR REINFORCED BACKFILL MATERIAL UNLESS IT MEETS THE ABOVE NOTED REQUIREMENTS.

- DRAINAGE NOTES:**
- CONTRACTOR SHALL DIRECT SURFACE RUNOFF AWAY FROM THE WALL DURING CONSTRUCTION.
  - ANY SURFACE DRAINAGE FEATURES, FINISH GRADING, PAVEMENT OR OTHER SURFACE TREATMENT SHALL BE INSTALLED IN THE AREA OF THE WALL IMMEDIATELY AFTER THE WALL IS COMPLETE. OR OTHER MEASURES SHALL BE TAKE TO PROTECT THE WALL FROM RUNOFF.
- GENERAL NOTES:**
- ALL INSTALLATION PROCEDURES SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION "DESIGN & INSTALLATION GUIDELINES", BY VERSA-LOK. WHERE INFORMATION ON THESE PLANS CONFLICTS WITH THE GUIDELINES, THE PLANS SHALL SUPERSEDE.
  - STRIP ORGANIC SOILS FROM THE WALL AND GRID ALIGNMENT AREA.
  - BENCH CUT ALL EXCAVATED SLOPES.
  - DO NOT OVER EXCAVATE UNLESS DIRECTED TO DO SO BY THE GEOTECHNICAL ENGINEER.
  - GEOTECHNICAL ENGINEER SHALL VERIFY FOUNDATION SOILS AS BEING COMPETENT PER THE DESIGN STANDARDS AND PARAMETERS.
  - MINIMUM EMBEDMENT OF WALL BELOW FINISH GRADE SHALL BE INDICATED ON THE WALL DESIGN DRAWINGS.
  - WHERE PERFORATED DRAINS ARE USED, PROVIDE OUTLETS AT THE ENDS OF THE WALL TO CLOSED DRAINAGE SYSTEM OR AT 20' INTERVALS, SEE DETAILS.
  - BACKFILL AND COMPACT THE FILL MATERIAL BEHIND THE WALL IN 12 INCH MAXIMUM LIFTS AS THE WALL IS INSTALLED.
  - COMPACTION TESTS SHALL BE TAKEN AS THE WALL IS INSTALLED. EACH LIFT SHALL BE TESTED AT INTERVALS NOT EXCEEDING 100 FEET OF WALL LENGTH.
  - COMPACTION SHALL BE TO 95% OF MAXIMUM MODIFIED PROCTOR DENSITY OF THE FILL MATERIAL (ASTM D-1557).
  - PULL GEOGRID TIGHT PRIOR TO BACKFILLING.
  - SEE PROFILE FOR FINISH GRADE AT TOP AND ENDS OF WALL.
  - SEE PROFILE FOR WALL LAYOUT INFORMATION.
  - COMPACTION OF AREAS LOCATED WITHIN 15 FEET OF THE TOP OF THE WALL SHALL BE PERFORMED WITH NON-VIBRATORY ROLLING EQUIPMENT. PLATE VIBRATORY TAMPERS SHALL BE USED IN AREAS WITHIN 5 FEET OF THE WALL.
  - GEOGRID CUT LENGTHS ARE MEASURED FROM THE FACE OF THE RETAINING WALL.
  - GEOSYNTHETIC SHALL BE PLACED WITH STRONGER DIRECTION PERPENDICULAR TO WALL FACE.
  - WHERE GUARDRAIL OR FENCE POSTS ARE INSTALLED SUCH THAT THEY WILL PENETRATE A GEOGRID LAYER, THE GEOGRID SHALL BE PRE-CUT AND SLEEVED SO AS NOT TO DISTURB THE GEOGRID WITH THE INSERTION OF THE POST. THE POST SHALL NOT BE FORCED THROUGH ANY LAYER OF GEOGRID. FORCING A POST THROUGH A GEOGRID LAYER WOULD COMPROMISE THE STRUCTURAL INTEGRITY OF THE GEOGRID AND, HENCE, THE RETAINING WALL SYSTEM.
  - ANY PLANTINGS SET BEHIND THE WALLS SHALL BE PLACED WITHOUT CUTTING OF THE GEOGRID REINFORCING LAYERS. THIS CAN BE ACCOMPLISHED BY SETTING PLANTINGS ABOVE THE GEOGRID LAYERS OR BEYOND THE LIMITS OF THE GEOGRID LAYERS.
  - INSTALLATION OF A VERTICAL SEGMENTAL RETAINING WALL REQUIRES THAT EXTRA ATTENTION BE GIVEN TO LEVELING OF THE BLOCK, AT ALL ELEVATIONS AND IN ALL DIRECTIONS.
  - IF CONDITIONS ARE DIFFERENT THAN THOSE STATED IN THESE DRAWINGS AND SPECIFICATIONS, THE CONTRACTOR MUST CONTACT THE DESIGN ENGINEER PRIOR TO PROCEEDING WITH THE CONSTRUCTION OF THE WALL.
  - WALL DESIGNS SHALL CONSIDER EFFECTS OF SLOPE, TRAFFIC LOADS, AND/OR BUILDING LOADS AS REQUIRED.
  - ALL WALLS 4' OR GREATER REQUIRE INSTALLATION OF A SAFETY RAIL.



**Proposed Subdivision Road & Office Building Development**

Borthwick Forest, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
K	3/25/2019	Construction Drawings
J	3/20/2019	Revised GMP Submission
I	3/4/2019	Rev Pricing Drawings / Admin Approval
H	5/8/2018	Submitted for Final Approval
G	2/26/2018	GMP Submission
F	2/6/2018	Planning Board Submission
E	1/12/2018	GMP Submission
D	6/2/2017	AoT Submission
C	5/11/2017	Planning Board Submission
B	4/24/2017	TAC & ConCom Submission
A	3/20/2017	TAC Submission

PROJECT NO: K0076-13  
DATE: 3/20/2017  
FILE: K0076-13\_DTLS.DWG  
DRAWN BY: CML  
CHECKED: PMC  
APPROVED: BLM

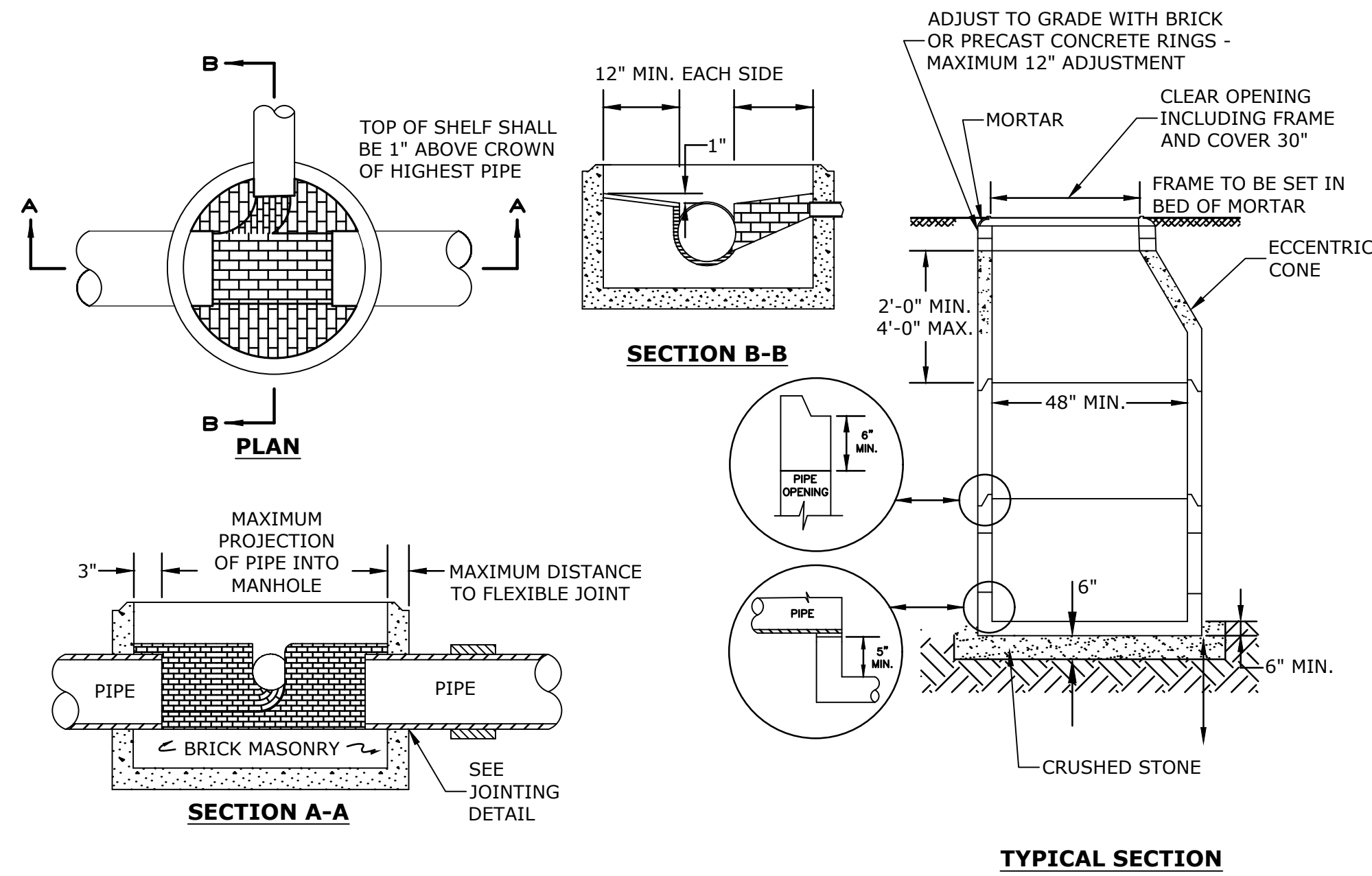
**DETAILS SHEET**

SCALE: AS SHOWN

**C-507**

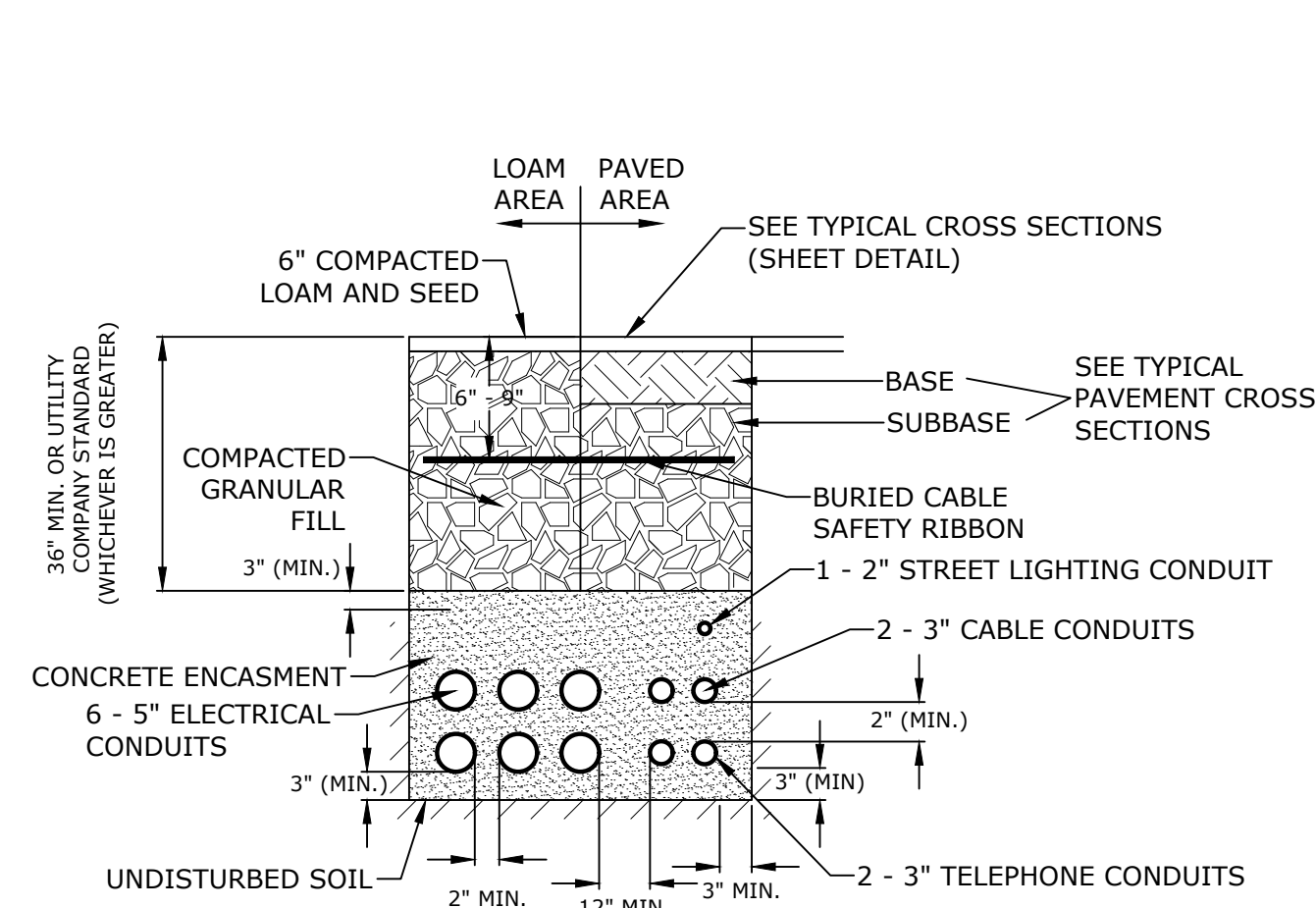
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 Plot Date: Monday, March 25, 2019 Plotted By: Craig M. Langton  
 P&E File Location: J:\K0076 The Kennebec Company - General Proposals\0076-13 Borthwick Forest\Drawings - Figures\Figures\CAD\Xref\K0076-13\_DTLS.dwg Layout Tab: C-507





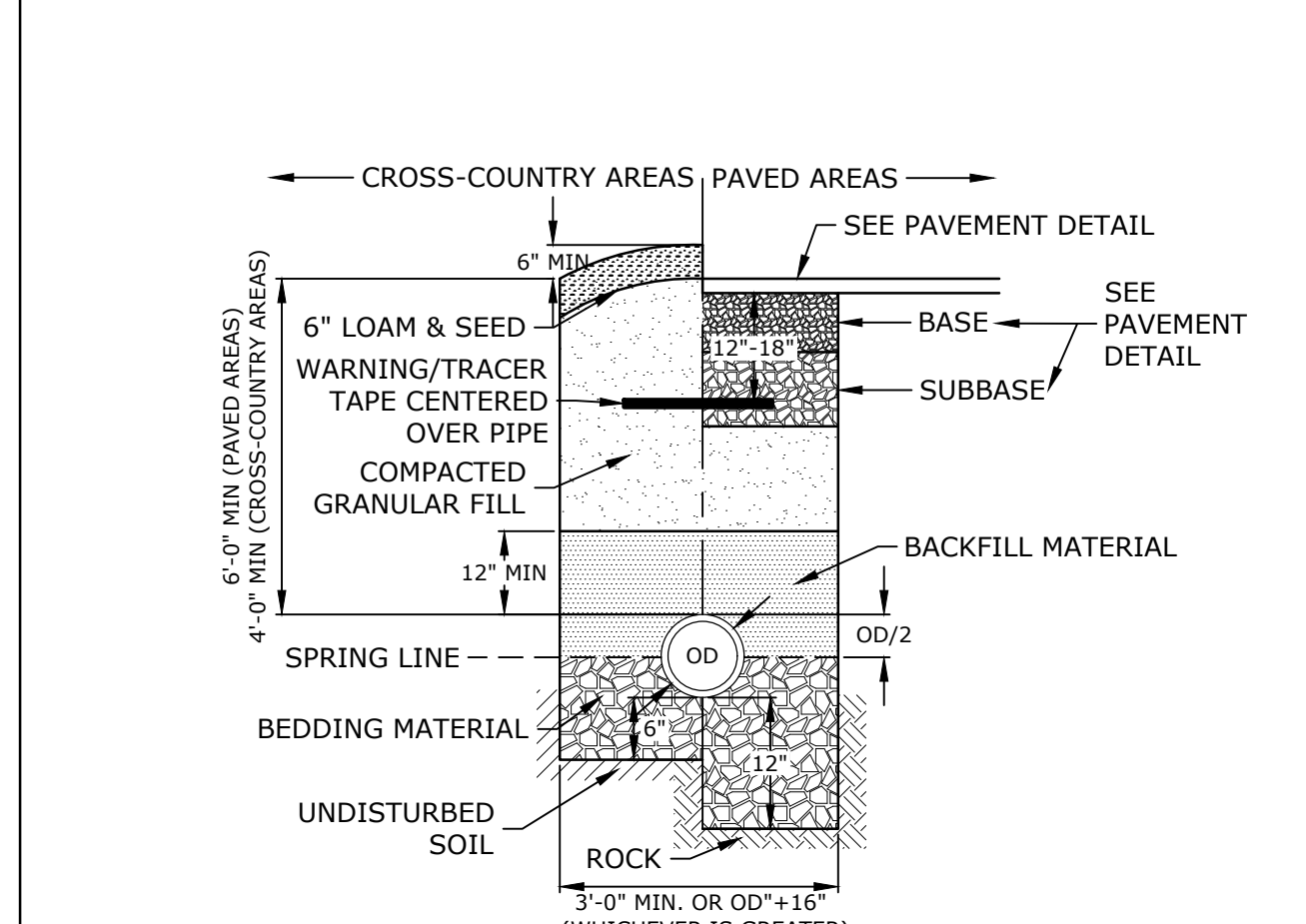
- NOTES:**
1. INVERT AND SHELF TO BE PLACED AFTER EACH LEAKAGE TEST.
  2. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT.
  3. INVERT BRICKS SHALL BE LAID ON EDGE.
  4. BITUMINOUS WATERPROOF COATING TO BE APPLIED TO ENTIRE EXTERIOR OF MANHOLE.
  5. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS WITHIN CITY RIGHT OF WAY SHALL BE CITY STANDARD HINGE COVERS MANUFACTURED BY E. FRAMES AND COVERS WILL BE PURCHASED FROM THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS.
  6. HORIZONTAL JOINTS SHALL BE SEALED FOR WATER TIGHTNESS USING A DOUBLE ROW OF ELASTOMERIC OR MASTIC-LIKE SEALANT.
  7. BARREL AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE DESIGNED FOR H20 LOADING, AND CONFORMING TO ASTM C478-06.

**SEWER MANHOLE**  
NO SCALE



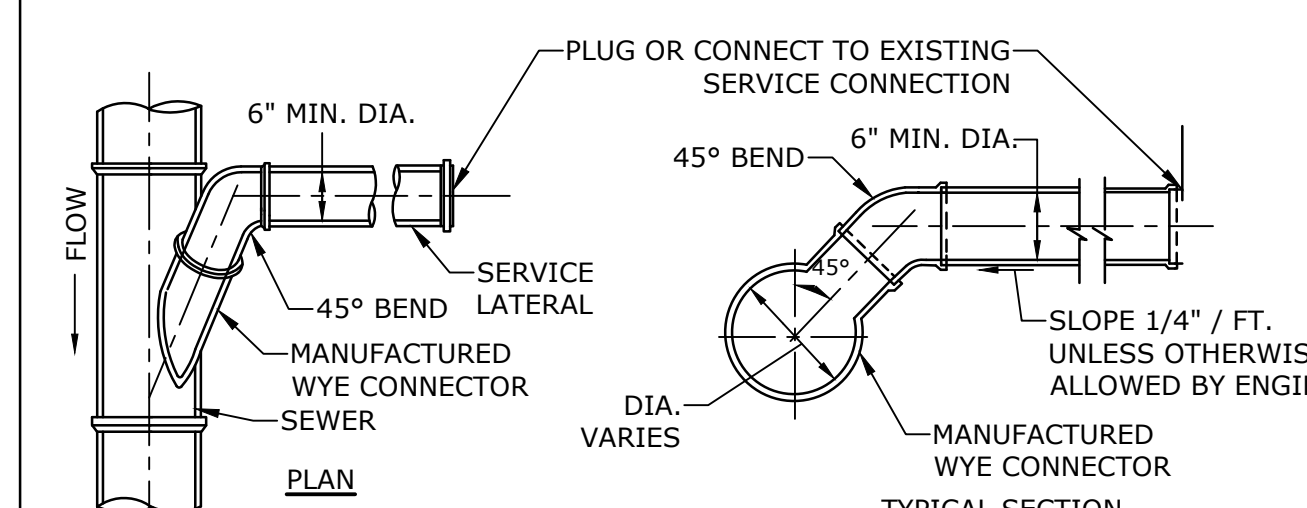
- NOTE:**
1. NUMBER, MATERIAL, AND SIZE OF UTILITY CONDUITS TO BE DETERMINED BY LOCAL UTILITY OR AS SHOWN ON CONDUIT PLAN (SHEET C-104.1 & C-104.2).
  2. DIMENSIONS SHOWN REPRESENT OWNERS MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS MAY BE GREATER BASED ON UTILITY COMPANY STANDARDS, BUT SHALL NOT BE LESS THAN THOSE SHOWN.
  3. NO CONDUIT RUN SHALL EXCEED 360 DEGREES IN TOTAL BENDS.
  4. A SUITABLE PULLING STRING, CAPABLE OF 200 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE UTILITY COMPANY IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT.
  5. UTILITY COMPANY MUST BE GIVEN THE OPPORTUNITY TO INSPECT THE CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD THE UTILITY COMPANY BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
  6. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND, WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE.
  7. ALL 90° SWEEPS WILL BE MADE USING RIGID GALVANIZED STEEL. SWEEPS WITH A 36 TO 48 INCH RADIUS.

**ELECTRICAL AND COMMUNICATION CONDUIT**  
NO SCALE

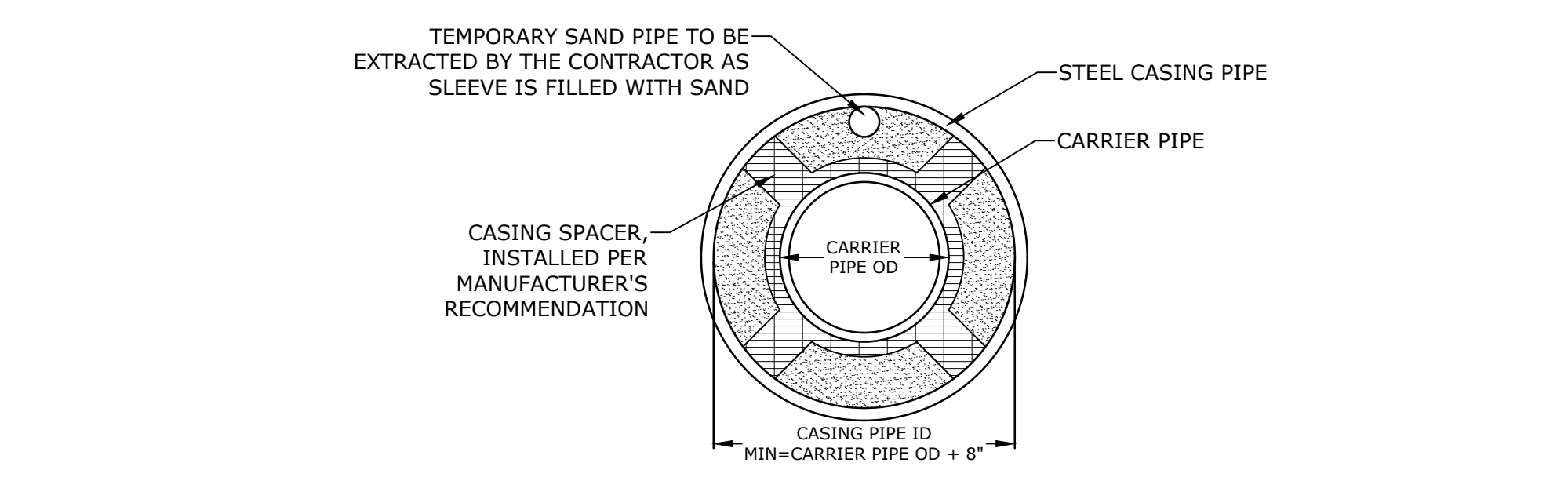
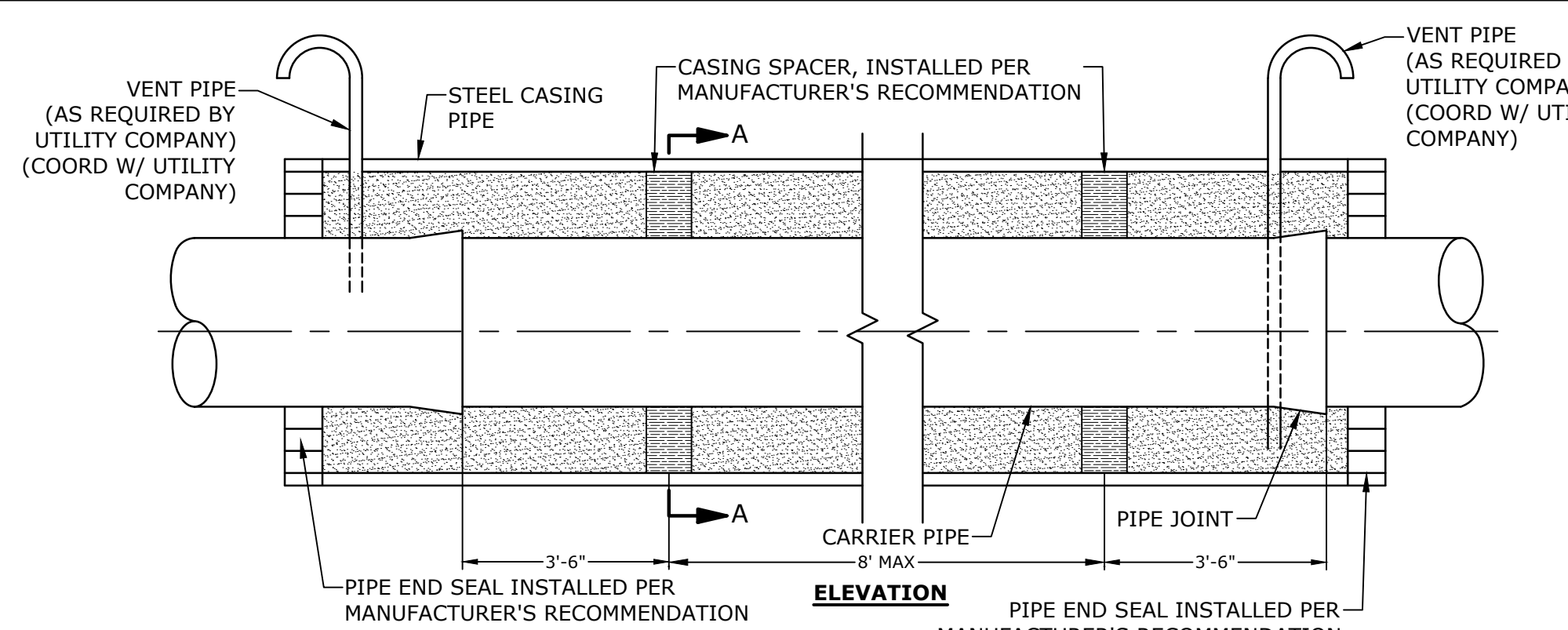


- NOTES:**
1. CRUSHED STONE BEDDING FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO SPRING LINE.
  2. SAND BLANKET BACKFILL FOR FULL WIDTH OF THE TRENCH FROM SPRING LINE UP TO 12" ABOVE TOP OF PIPE.
  3. SANITARY SEWER SHALL BE INSTALLED PER THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS STANDARDS. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

**SEWER TRENCH**  
NO SCALE

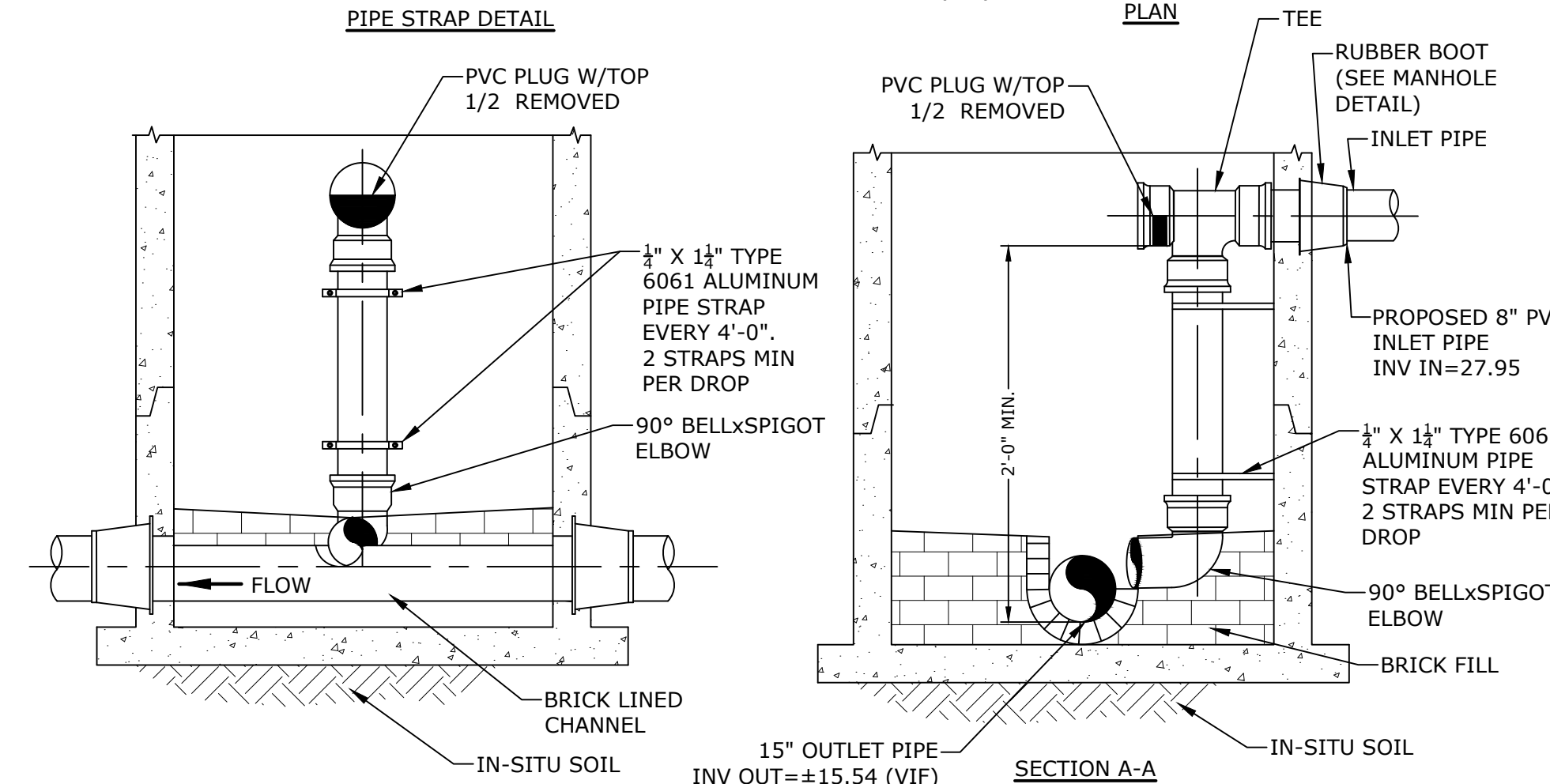
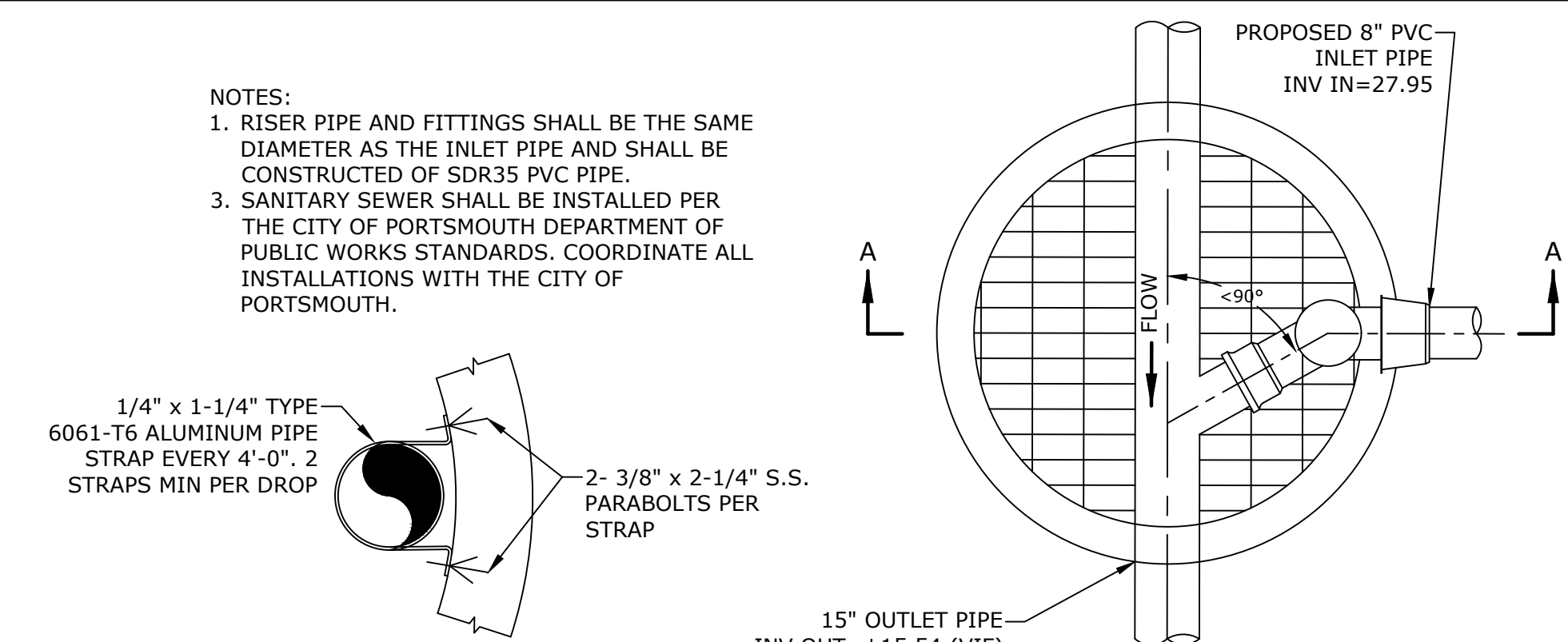


**STANDARD SERVICE LATERAL CONNECTION**  
NO SCALE

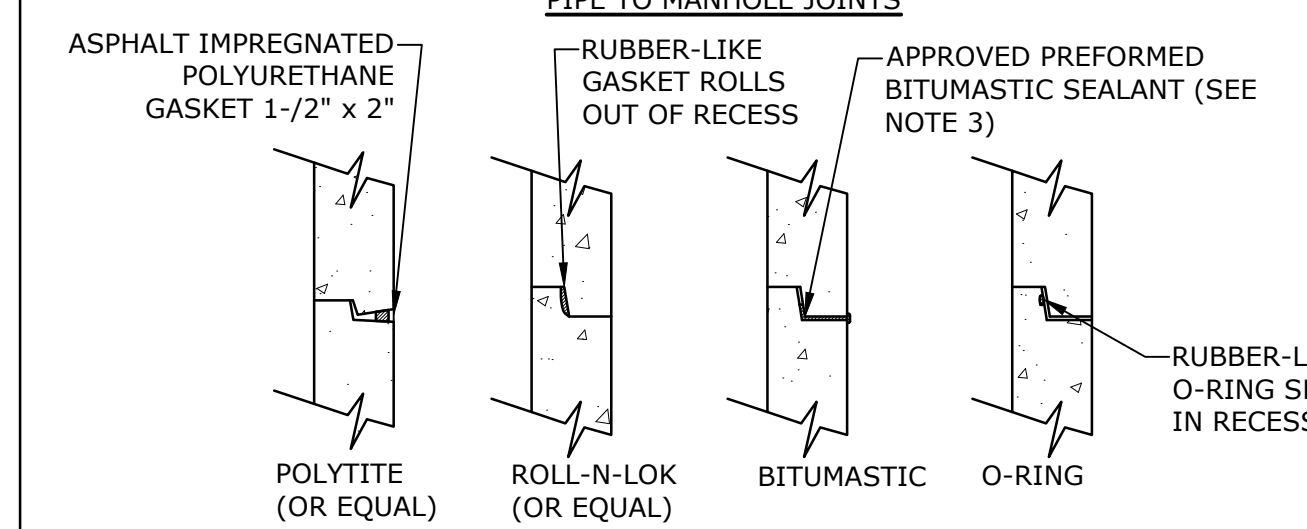
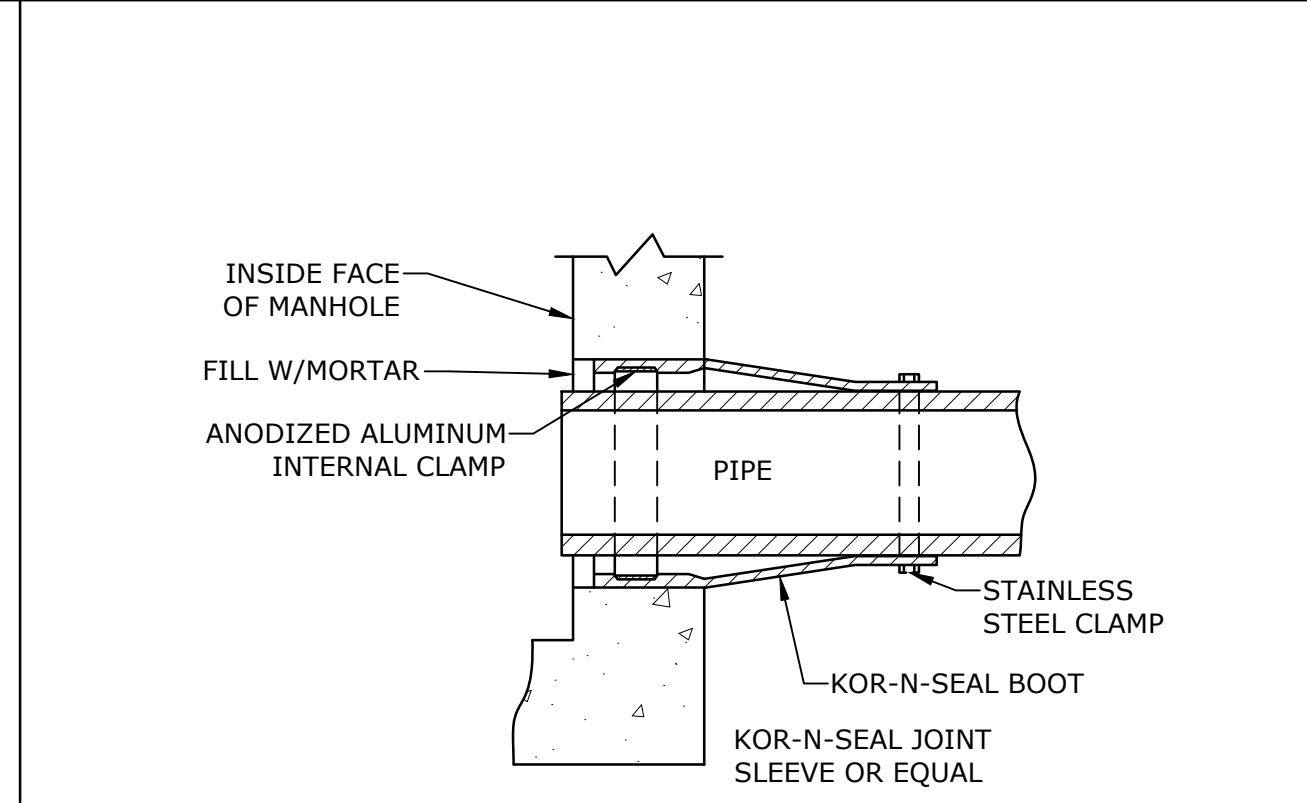


- NOTES:**
1. SEAL ENDS OF SLEEVE TO PREVENT MIGRATION OF MATERIAL AND WATER THROUGH ANNULAR SPACE BETWEEN CASING PIPE AND CARRIER PIPE
  2. STEEL CASING PIPE SHALL MEET COOPERS E-80 RAILROAD LOADING WITH A MINIMUM YIELD STRENGTH OF 35,000 PSI AND SHALL CONFORM TO THE LATEST REVISIONS OF THE REQUIREMENTS OF A.W.A. STANDARDS FOR FABRICATING ELECTRICALLY WELDED STEEL WATER PIPES OR ITS EQUIVALENT.
  3. STEEL CASING PIPE JOINTS SHALL BE FULLY WELDED AROUND THE COMPLETE CIRCUMFERENCE OF THE PIPE.
  4. CONTRACTOR SHALL COORDINATE ALL UTILITY AND CARRIER PIPE WORK WITHIN THE RAIL ROAD RIGHT OF WAY WITH PAN-AM, EVERSOURCE, UNITIL, & AND THE CITY PORTSMOUTH DPW PRIOR TO CONSTRUCTION.

**UTILITY PIPELINE SLEEVE DETAIL (CARRIER PIPE)**  
NO SCALE



**INSIDE DROP MANHOLE**  
NO SCALE



- NOTES:**
1. HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER CITY OF PORTSMOUTH DPW STANDARD AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW ELASTOMERIC OR MASTIC-LIKE GASKET.
  2. PIPE TO MANHOLE JOINTS SHALL BE PER CITY OF PORTSMOUTH STANDARD.
  3. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY.
  4. ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

**MANHOLE JOINTS**  
NO SCALE



**Proposed Subdivision Road & Office Building Development**

Borthwick Forest, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
H	3/20/2019	Revised GMP Submission
G	3/4/2019	Rev Pricing Drawings / Admin Approval
F	10/22/2018	Rev. per NHDES Sewer Connection Permit Comments
E	6/13/2018	Connection Permit Application
D	5/8/2018	Submitted for Final Approval
C	2/26/2018	GMP Submission
B	2/6/2018	Planning Board Submission
A	1/12/2018	GMP Submission

PROJECT NO:	K0076-13
DATE:	1/12/2018
FILE:	K0076-13.DTL5.DWG
DRAWN BY:	CML
CHECKED:	PMC
APPROVED:	BLM

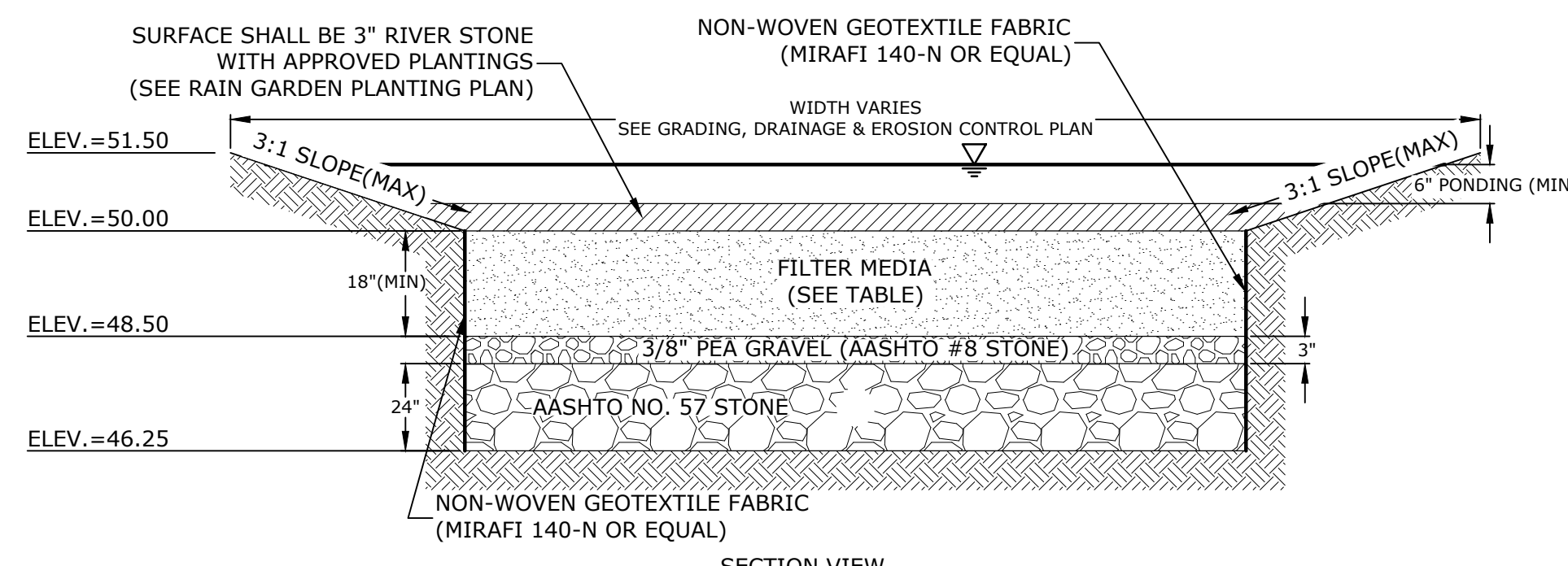
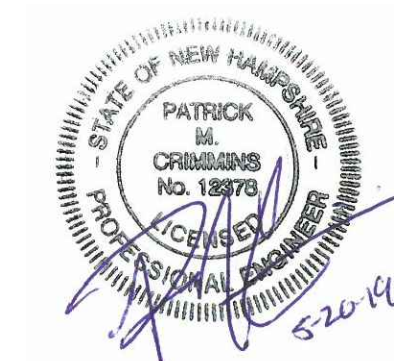
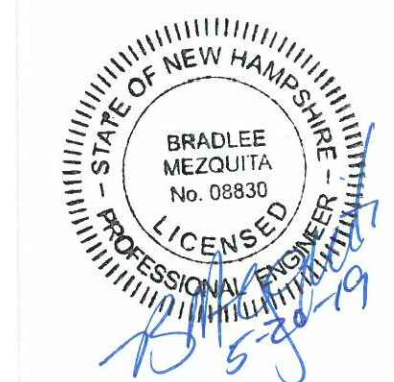
**DETAILS SHEET**

SCALE: AS SHOWN

C-508

Last Save Date: March 25, 2019 11:13 AM By: CML  
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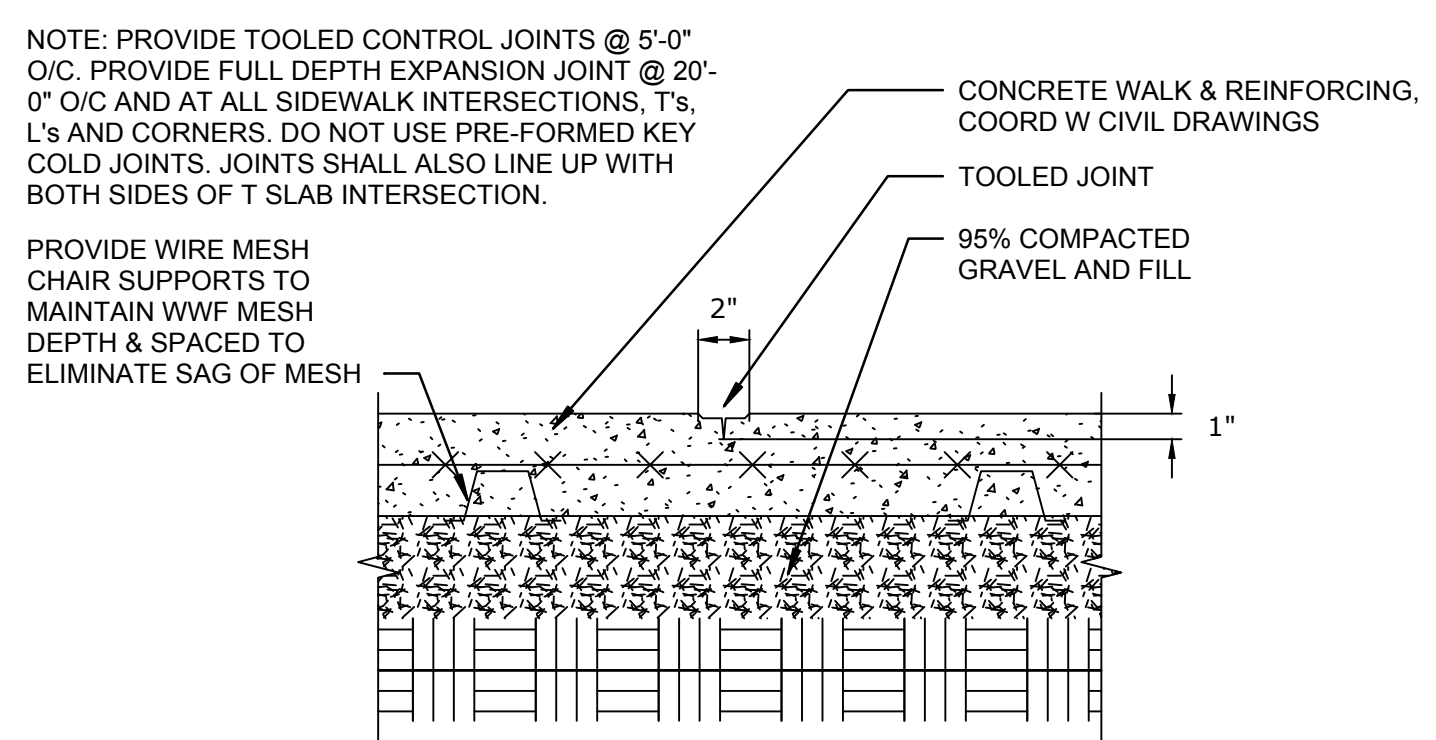


**FILTER MEDIA COMPOSITION:**

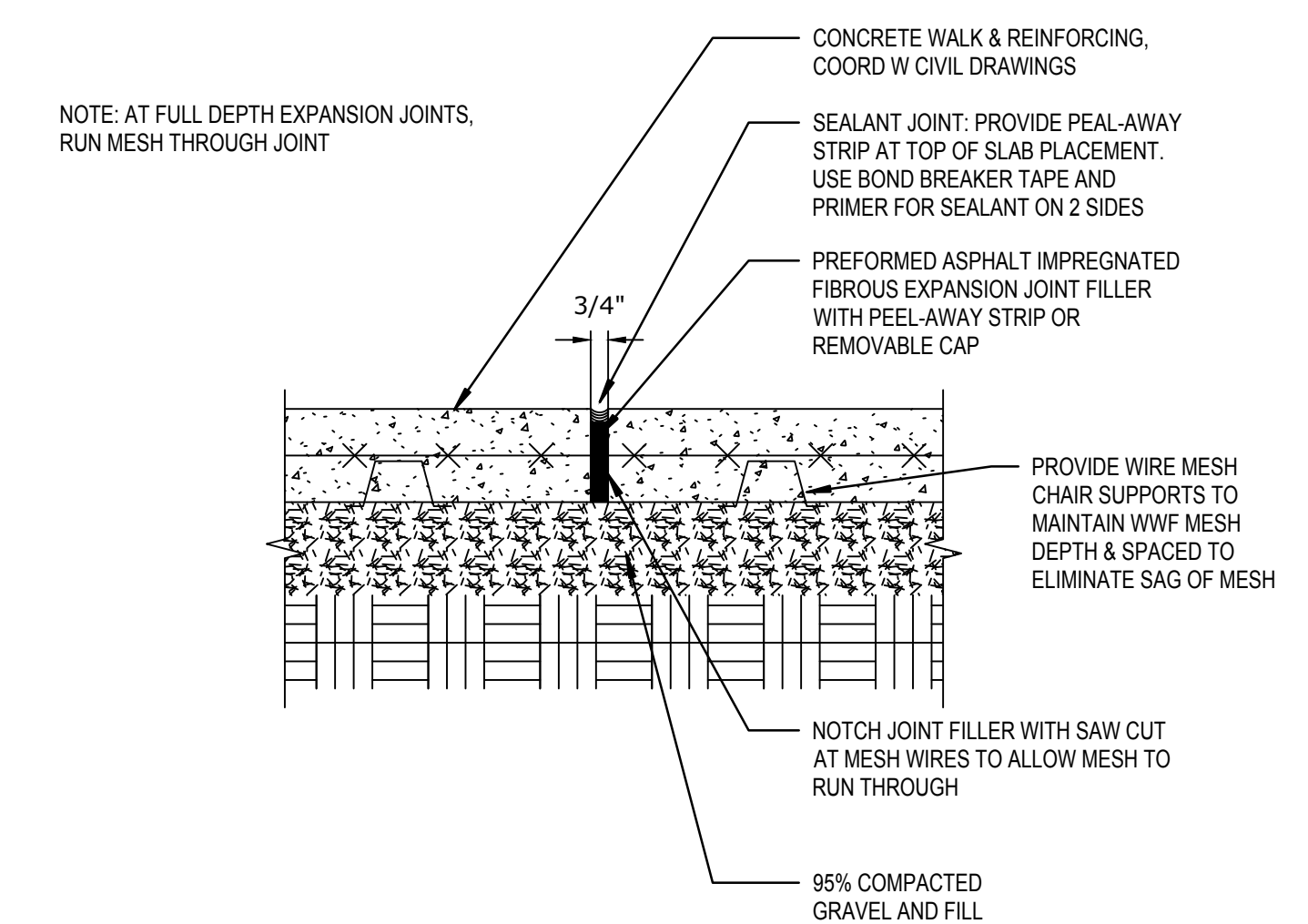
COMPONENT MATERIAL	PERCENT OF MIXTURE BY VOLUME	GRADATION OF MATERIAL SIEVE NO.	PERCENT PASSING
ASTM C-33 CONCRETE SAND	50-55	SEE NOTE #5	
LOAMY SAND TOPSOIL	20-30	200	15-25
MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH	20-30	200	5 MAX

- NOTES:**
- RAIN GARDENS SHALL NOT BE PLACED INTO SERVICE UNTIL THE PRACTICE HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
  - DO NOT TRAFFIC EXPOSED SOIL SURFACES WITH CONSTRUCTION EQUIPMENT. CONTRACTOR SHALL KEEP ALL EXCAVATION EQUIPMENT OUTSIDE OF THE LIMIT OF THE RAIN GARDEN.
  - SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR LOCATIONS, LAYOUTS, AND ELEVATIONS.
  - THE SAND PORTION OF THE FILTER MEDIA SHALL MEET THE FOLLOWING GRADATION (ASTM C-33):
- | SIEVE SIZE | PERCENT PASSING |
|------------|-----------------|
| 3/8"       | 100             |
| #4         | 95-100          |
| #8         | 80-100          |
| #16        | 50-85           |
| #30        | 25-60           |
| #50        | 5-30            |
| #100       | 0-10            |

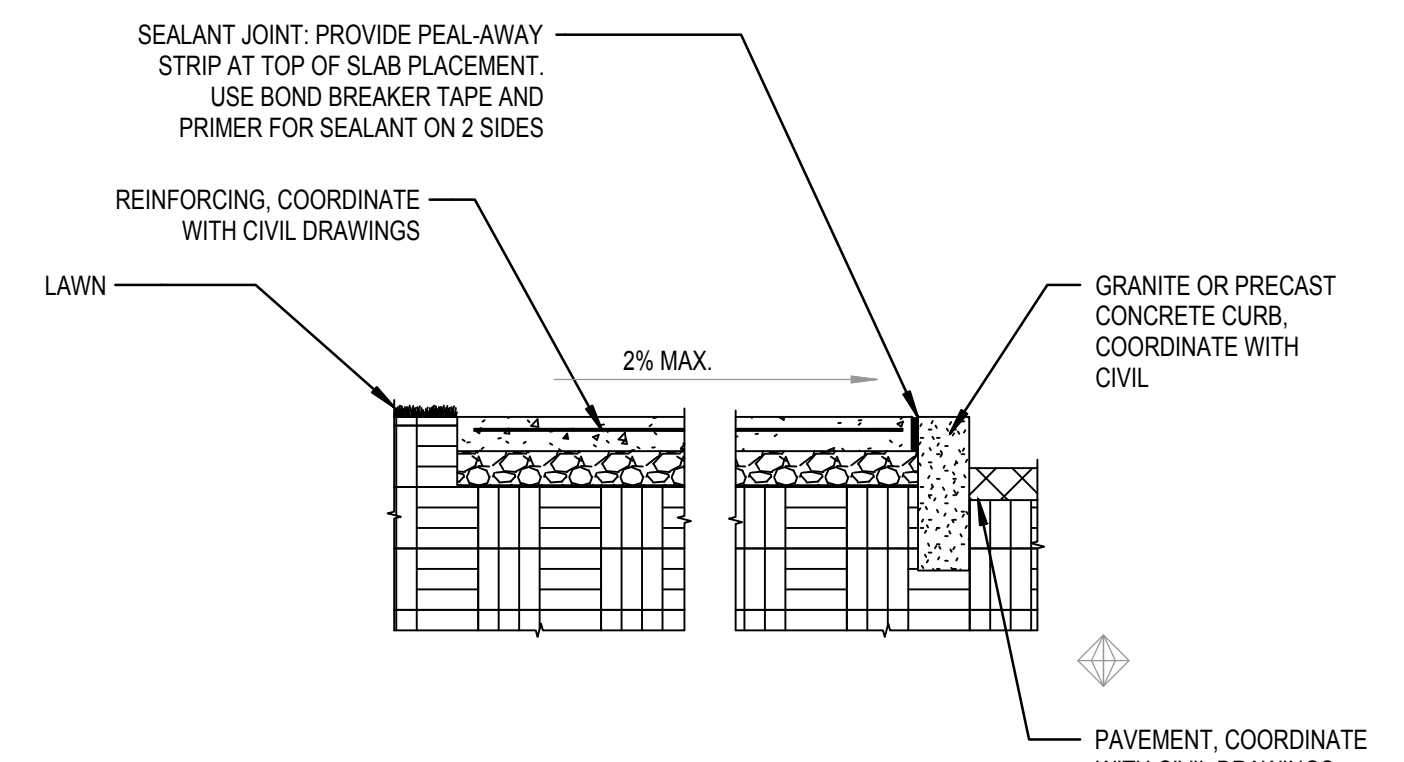
**FUTURE RAIN GARDENS**  
NO SCALE



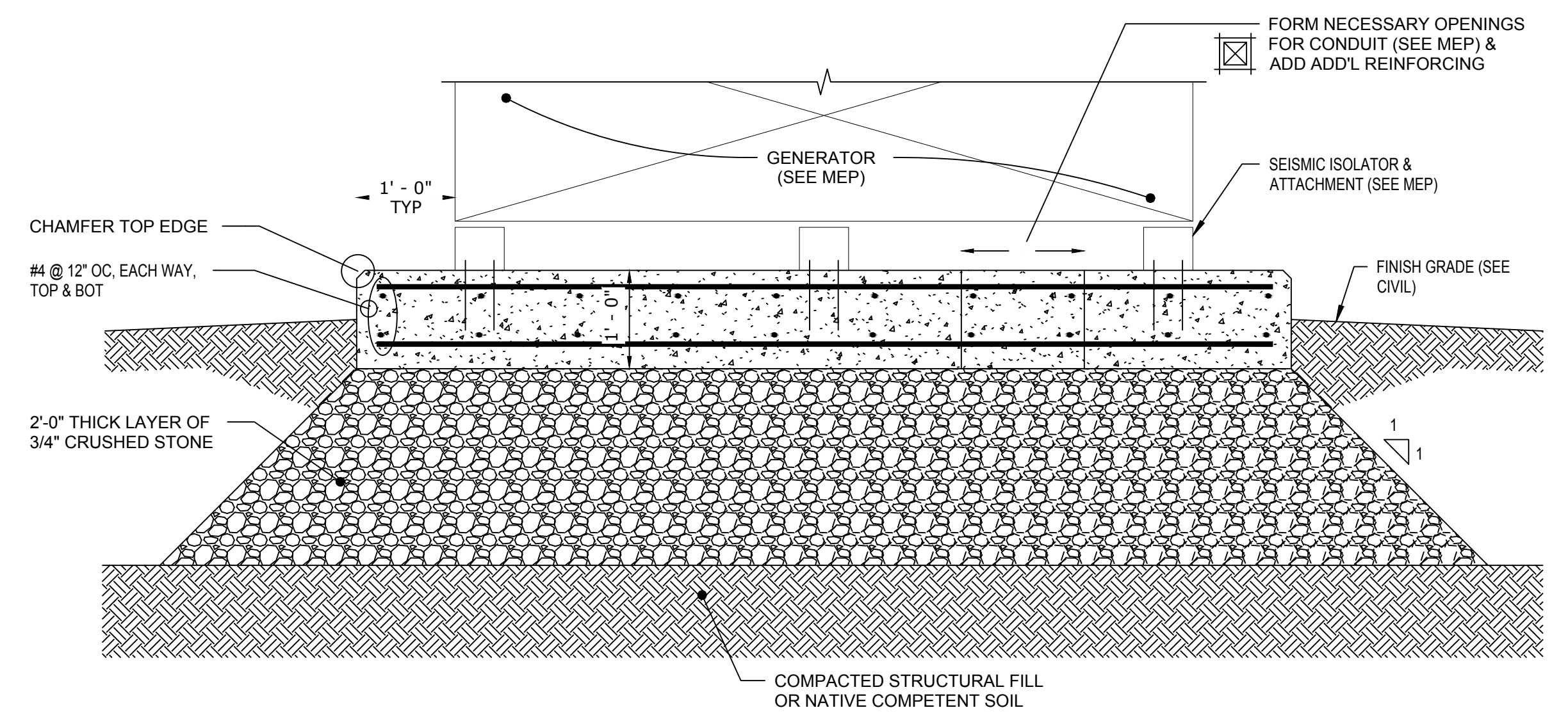
**FLATWORK DETAIL - SIDEWALK TOOLED JOINT**  
NOT TO SCALE



**FLATWORK DETAIL - SIDEWALK EXPANSION JOINT**  
NOT TO SCALE



**FLATWORK DETAIL - SIDEWALK SECTION @ GRANITE CURB**  
NOT TO SCALE



**FLATWORK DETAIL - GENERATOR PAD**  
NOT TO SCALE

**Proposed Subdivision Road & Office Building Development**

Borthwick Forest, LLC

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
C	5/20/2019	Amended Site Plan Approval
B	3/25/2019	Construction Drawings
A	3/20/2019	Revised GMP Submission

PROJECT NO:	K0076-13
DATE:	3/20/2019
FILE:	K0076-13_DTLS.DWG
DRAWN BY:	CML
CHECKED:	PMC
APPROVED:	BLM

**DETAILS SHEET**

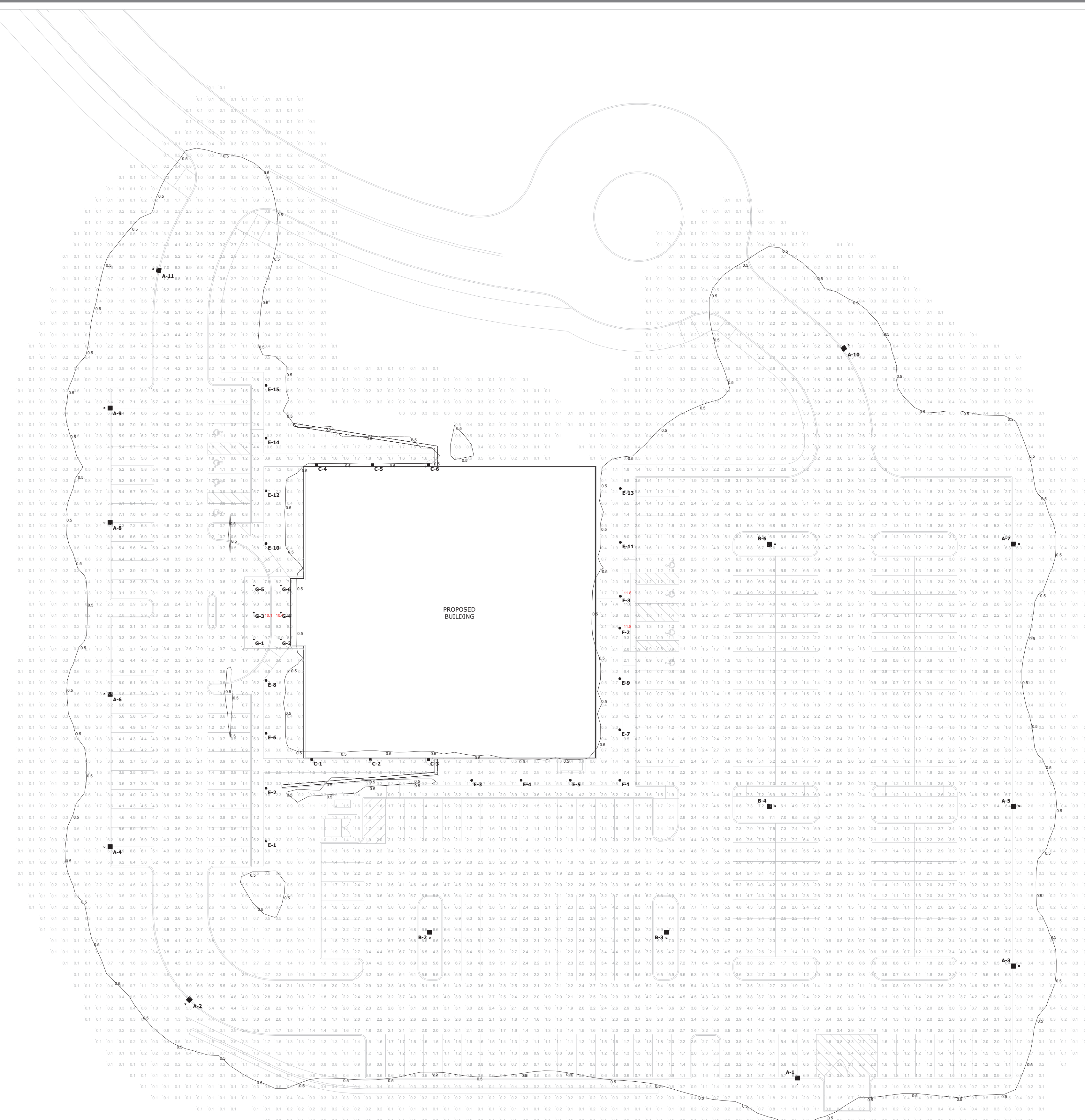
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FLATWORK DETAILS PROVIDED BY PROCON, INC. ON MARCH 14, 2019

**C-509**

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Plot Date: Monday, May 20, 2019 Plotted By: Craig M. Langston  
File Location: P:\K0076 The Kennebec Company - General Proposals\0076-13 Borthwick Forest\Drawings - Figures\AutoCAD\Xref\K0076-13 DTLS.dwg Layout Tab: C-509





**Statistics**

Description	Symbol	Avg	Max	Min
Front sidewalk	◇	3.2 fc	10.4 fc	0.4 fc
Parking	+	3.6 fc	10.1 fc	0.4 fc
Rear sidewalk	□	3.6 fc	11.8 fc	0.7 fc

**Luminaire Locations**

No.	Label	X	Y	Z	MH	Orientation	Tilt	X	Y	Z	
1	A	115.01	-181.45	19.50	360.00	0.00	-115.01	-180.20	0.00		
2	A	-157.73	-145.89	19.50	44.07	0.00	-158.86	-145.00	0.00		
3	A	213.68	-129.07	19.50	270.00	0.00	212.43	-129.07	0.00		
4	A	-193.79	-75.92	19.50	90.00	0.00	-192.54	-75.92	0.00		
5	A	213.68	-57.91	19.50	270.00	0.00	212.43	-57.91	0.00		
6	A	-193.79	-1.95	19.50	90.00	0.00	-192.54	-1.95	0.00		
7	A	213.68	58.93	19.50	270.00	0.00	212.43	58.93	0.00		
8	A	-193.79	68.49	19.50	90.00	0.00	-192.54	68.49	0.00		
9	A	-193.79	119.55	19.50	90.00	0.00	-192.54	119.55	0.00		
10	A	137.74	147.56	19.50	235.58	0.00	136.71	146.85	0.00		
11	A	-172.07	181.49	19.50	103.83	0.00	-170.86	181.19	0.00		
12	B	-48.84	-116.49	19.50	360.00	0.00	-48.84	-115.24	0.00		
13	B	56.60	-116.49	19.50	360.00	0.00	56.60	-115.24	0.00		
14	B	105.00	-57.91	19.50	270.00	0.00	103.75	-57.91	0.00		
15	B	104.99	58.93	19.50	270.00	0.00	103.74	58.93	0.00		
16	C	-101.39	-37.11	12.00	180.00	0.00	-101.39	-37.11	0.00		
17	C	-75.39	-37.11	12.00	180.00	0.00	-75.39	-37.11	0.00		
18	C	-49.39	-37.11	12.00	180.00	0.00	-49.39	-37.11	0.00		
19	C	-99.36	94.22	12.00	12.00	0.00	-99.36	94.22	0.00		
20	C	-74.36	94.22	12.00	12.00	0.00	-74.36	94.22	0.00		
21	C	-49.36	94.22	12.00	12.00	0.00	-49.36	94.22	0.00		
22	E	-121.79	-73.37	3.50	3.50	270.00	0.00	-121.79	-73.37	0.00	
23	E	-121.79	-49.87	3.50	3.50	270.00	0.00	-121.79	-49.87	0.00	
24	E	-20.14	-46.34	3.50	3.50	180.00	0.00	-20.14	-46.34	0.00	
25	E	-8.16	-46.31	3.50	3.50	180.00	0.00	-8.16	-46.31	0.00	
26	E	13.82	-46.31	3.50	3.50	180.00	0.00	13.82	-46.31	0.00	
27	E	-121.79	-25.37	3.50	3.50	270.00	0.00	-121.79	-25.37	0.00	
28	E	35.82	-25.37	3.50	3.50	90.00	0.00	35.82	-25.37	0.00	
29	E	-121.79	-1.87	3.50	3.50	270.00	0.00	-121.79	-1.87	0.00	
30	E	35.83	-1.03	3.50	3.50	90.00	0.00	35.83	-1.03	0.00	
31	E	-121.79	9.14	3.50	3.50	270.00	0.00	-121.79	9.14	0.00	
32	E	-121.79	82.64	3.50	3.50	270.00	0.00	-121.79	82.64	0.00	
33	E	36.10	82.64	3.50	3.50	90.00	0.00	36.10	82.64	0.00	
34	F	-121.79	106.44	3.50	3.50	270.00	0.00	-121.79	106.44	0.00	
35	F	-121.79	129.64	3.50	3.50	270.00	0.00	-121.79	129.64	0.00	
36	F	35.84	-46.32	3.50	3.50	0.00	0.00	35.84	-46.32	0.00	
37	F	35.84	21.48	3.50	3.50	0.00	0.00	35.84	21.48	0.00	
38	F	36.10	35.66	3.50	3.50	90.00	0.00	36.10	35.66	0.00	
39	G	-127.20	16.41	13.00	13.00	0.00	0.00	-127.20	16.41	0.00	
40	G	-115.20	16.41	13.00	13.00	0.00	0.00	-115.20	16.41	0.00	
41	G	-127.20	28.41	13.00	13.00	0.00	0.00	-127.20	28.41	0.00	
42	G	-115.20	28.41	13.00	13.00	0.00	0.00	-115.20	28.41	0.00	
43	G	-127.20	40.41	13.00	13.00	0.00	0.00	-127.20	40.41	0.00	
44	G	-115.20	40.41	13.00	13.00	0.00	0.00	-115.20	40.41	0.00	

**Schedule**

Symbol	Label	Quantity	Manufacturer	Description	Lamp	Number Lamps	File Name	Lumens Per Lamp	Light Loss Factor	Wattage	Catalog Number
○	A	11	Lithonia Lighting	DSX2 LED P1 50K T4M MVOLT with In-house die	LED	1	DSX2_LED_P1_50K_T4M_M_VOLT_HS.ies	14580	1	140	DSX2 LED P1 50K T4M MVOLT HS
□	B	4	Lithonia Lighting	DSX2 LED P4 50K TSM MVOLT	LED	1	DSX2_LED_P4_50K_TSM_M_VOLT.ies	35104	1	270	DSX2 LED P4 50K TSM MVOLT
□	C	6	Lithonia Lighting	DSXW1 LED WETH (1) 10 LED LIGHT ENGINES, TYPE T3M OPTIC, 5000K, @ 350mA	LED	1	DSXW1_LED_10C_350_50K_T3M_M_VOLT.ies	1497	1	13.3	DSXW1 LED 10C 350 50K T3M MVOLT
□	D	0	Lithonia Lighting	DSXW2 LED WETH (1) 10 LED LIGHT ENGINES, 20 LED's, 350mA DRIVER, 5000K LED, TYPE 4 MICROHM OPTIC	LED	1	DSXW2_LED_20C_350_50K_T4M_M_VOLT.ies	2977	1	25	DSXW2 LED 20C 350 50K T4M MVOLT
○	E	15	Lithonia Lighting	D-SERIES BOLLARD WITH 12 5000K LEDS OPERATED AT 350mA AND ASYMMETRIC DISTRIBUTION	LED	1	DSXB_LED_12C_350_50K_ASY.ies	1291	1	16	DSXB LED 12C 350 50K ASY
○	F	3	Lithonia Lighting	D-SERIES BOLLARD WITH 16 5000K LEDS OPERATED AT 350mA AND SYMMETRIC DISTRIBUTION	LED	1	DSXB_LED_16C_350_50K_SY.ies	1685	1	20	DSXB LED 16C 350 50K SYM
○	G	6	Lithonia Lighting	6IN LDN, 3500K, 1500LM, BOCR, CLEAR, MATTIE DIFFUSE REFLECTOR	LED	1	LDN6_35_15_LOGAR_LD.ies	1365	1	20.48	LDN6 35/15 LOGAR LD

Plan View  
Scale: 1" = 20'

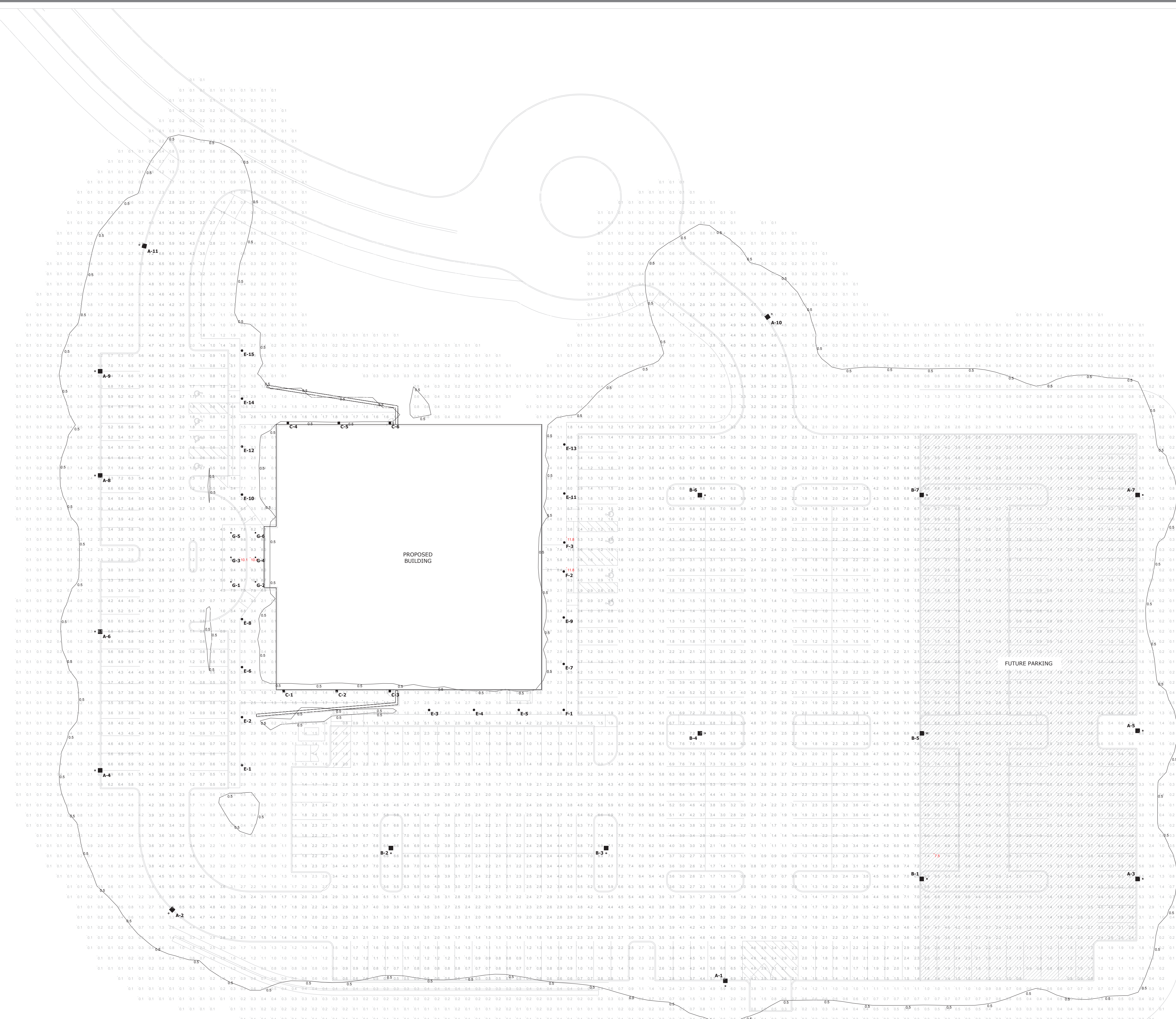
Portsmouth Medical Park  
Portsmouth NH  
Primary Parking Area

Designer  
REMcCarthy  
Date  
05/13/2019  
Scale  
Not to Scale  
Drawing No.  
Summary





Portsmouth Medical Park  
Portsmouth NH  
Future Parking Area Included



Description	Symbol	Avg	Max	Min
Front sidewalk	○	3.2 ft	10.4 ft	0.4 ft
Future Parking	×	3.0 ft	7.5 ft	0.7 ft
parking	+	3.2 ft	10.1 ft	0.4 ft
Rear sidewalk	□	3.6 ft	11.8 ft	0.7 ft

**Luminaire Locations**

No.	Label	X	Y	Z	MH	Orientation	Tilt	X	Y	Z
1	A	115.01	-181.45	19.50	90.00	0.00	0.00	115.01	-180.20	0.00
2	A	-157.73	-145.89	19.50	90.00	0.00	0.00	-156.86	-145.00	0.00
3	A	319.46	-129.07	19.50	90.00	0.00	0.00	318.21	-129.07	0.00
4	A	-193.79	-75.92	19.50	90.00	0.00	0.00	-192.54	-75.92	0.00
5	A	319.46	-56.51	19.50	90.00	0.00	0.00	318.21	-56.51	0.00
6	A	-193.79	-7.95	19.50	90.00	0.00	0.00	-192.54	-7.95	0.00
7	A	319.46	58.93	19.50	90.00	0.00	0.00	318.21	58.93	0.00
8	A	-193.79	68.49	19.50	90.00	0.00	0.00	-192.54	68.49	0.00
9	A	-193.79	119.55	19.50	90.00	0.00	0.00	-192.54	119.55	0.00
10	A	137.74	147.56	19.50	90.00	0.00	0.00	136.71	146.85	0.00
11	A	-127.01	181.49	19.50	90.00	0.00	0.00	-126.88	181.19	0.00
12	A	213.69	-129.07	19.50	90.00	0.00	0.00	212.44	-129.07	0.00
13	B	-48.84	-116.49	19.50	90.00	0.00	0.00	-48.84	-115.24	0.00
14	B	56.60	-116.49	19.50	90.00	0.00	0.00	56.60	-115.24	0.00
15	B	104.99	-57.79	19.50	90.00	0.00	0.00	103.74	-57.79	0.00
16	B	213.78	-57.79	19.50	90.00	0.00	0.00	212.53	-57.79	0.00
17	B	104.99	58.83	19.50	90.00	0.00	0.00	103.74	58.83	0.00
18	B	213.69	58.83	19.50	90.00	0.00	0.00	212.44	58.83	0.00
19	C	-101.39	-37.11	12.00	180.00	0.00	0.00	-101.39	-37.11	0.00
20	C	-75.39	-37.11	12.00	180.00	0.00	0.00	-75.39	-37.11	0.00
21	C	-49.39	-37.11	12.00	180.00	0.00	0.00	-49.39	-37.11	0.00
22	C	-99.36	94.22	12.00	180.00	0.00	0.00	-99.36	94.22	0.00
23	C	-74.36	94.22	12.00	180.00	0.00	0.00	-74.36	94.22	0.00
24	C	-49.36	94.22	12.00	180.00	0.00	0.00	-49.36	94.22	0.00
25	E	-121.79	-73.37	3.50	350.00	0.00	0.00	-121.79	-73.37	0.00
26	E	-121.79	-49.87	3.50	350.00	0.00	0.00	-121.79	-49.87	0.00
27	E	-30.14	-46.34	3.50	180.00	0.00	0.00	-30.14	-46.34	0.00
28	E	-8.16	-46.31	3.50	350.00	0.00	0.00	-8.16	-46.31	0.00
29	E	13.82	-46.31	3.50	350.00	0.00	0.00	13.82	-46.31	0.00
30	E	-121.79	-25.37	3.50	350.00	0.00	0.00	-121.79	-25.37	0.00
31	E	35.82	-23.83	3.50	350.00	0.00	0.00	35.82	-23.83	0.00
32	E	-121.79	-1.87	3.50	350.00	0.00	0.00	-121.79	-1.87	0.00
33	E	35.83	-1.03	3.50	90.00	0.00	0.00	35.83	-1.03	0.00
34	E	-121.79	59.14	3.50	350.00	0.00	0.00	-121.79	59.14	0.00
35	E	36.10	59.66	3.50	350.00	0.00	0.00	36.10	59.66	0.00
36	E	-121.79	82.64	3.50	350.00	0.00	0.00	-121.79	82.64	0.00
37	E	36.10	83.66	3.50	90.00	0.00	0.00	36.10	83.66	0.00
38	E	-121.79	106.14	3.50	350.00	0.00	0.00	-121.79	106.14	0.00
39	E	-121.79	129.64	3.50	350.00	0.00	0.00	-121.79	129.64	0.00
40	F	35.84	-46.32	3.50	350.00	0.00	0.00	35.84	-46.32	0.00
41	F	35.84	21.48	3.50	350.00	0.00	0.00	35.84	21.48	0.00
42	F	36.10	35.66	3.50	350.00	0.00	0.00	36.10	35.66	0.00
43	G	-127.20	16.41	13.00	13.00	0.00	0.00	-127.20	16.41	0.00
44	G	-115.20	16.41	13.00	13.00	0.00	0.00	-115.20	16.41	0.00
45	G	-127.20	28.41	13.00	13.00	0.00	0.00	-127.20	28.41	0.00
46	G	-115.20	28.41	13.00	13.00	0.00	0.00	-115.20	28.41	0.00
47	G	-127.20	40.41	13.00	13.00	0.00	0.00	-127.20	40.41	0.00
48	G	-115.20	40.41	13.00	13.00	0.00	0.00	-115.20	40.41	0.00

**Schedule**

Symbol	Label	Quantity	Manufacturer	Description	Lamp	Number Lenses	File Name	Lumens Per Lamp	Light Loss Factor	Wattage	Catalog Number
○	A	11	Lithonia Lighting	DSX2 LED P1 50K T4M MVOLT with hoodside shield	LED	1	DSX2_LED_P1_50K_T4M_MVOLT.iies	14580	1	140	DSX2 LED P1 50K T4M MVOLT HS
□	B	7	Lithonia Lighting	DSX2 LED P4 50K TSM MVOLT	LED	1	DSX2_LED_P4_50K_TSM_MVOLT.iies	35104	1	270	DSX2 LED P4 50K TSM MVOLT
□	C	6	Lithonia Lighting	DSXW1 LED WETH (1) 10 LED LIGHT ENGINES, TYPE T3M OPTIC, 5000K, @ 350mA	LED	1	DSXW1_LED_10C_350_50K_T3M_MVOLT.iies	1497	1	13.3	DSXW1 LED 10C 350 50K T3M MVOLT
□	D	0	Lithonia Lighting	DSXW2 LED WETH (1) 20 LED LIGHT ENGINES, TYPE T3M OPTIC, 5000K, @ 350mA	LED	1	DSXW2_LED_20C_350_50K_T3M_MVOLT.iies	2977	1	25	DSXW2 LED 20C 350 50K T4M MVOLT
○	E	15	Lithonia Lighting	D-SERIES BOLLARD WITH 12 5000K LEDS OPERATED AT 350mA AND SYMMETRIC DISTRIBUTION	LED	1	DSXB_LED_12C_350_50K_ASY.iies	1291	1	16	DSXB LED 12C 350 50K ASY
○	F	3	Lithonia Lighting	D-SERIES BOLLARD WITH 16 5000K LEDS OPERATED AT 350mA AND SYMMETRIC DISTRIBUTION	LED	1	DSXB_LED_16C_350_50K_SYM.iies	1685	1	20	DSXB LED 16C 350 50K SYM
○	G	6	Lithonia Lighting	6IN LDM, 3500K, 1500LM, BOCR, CLEAR, MATTE DIFFUSE REFLECTOR	LED	1	LDM6_35_15_LOGAR_LD.iies	1365	1	20.48	LDM6 35/15 LOGAR LD

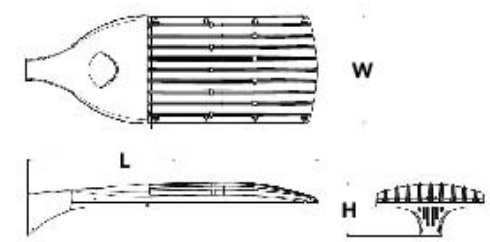
Blank View  
Scale: 1" = 20'

Designer  
REMcCarthy  
Date  
05/13/2019  
Scale  
Not to Scale  
Drawing No.  
Schedule





Specifications  
EPA: 1.1 ft<sup>2</sup> (0.10 m<sup>2</sup>)  
Length: 42" (106.7 cm)  
Width: 15" (38.1 cm)  
Height: 1.4" (3.5 cm)  
Weight (max): 36 lbs (16.3 kg)

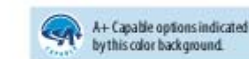


Product information form with fields for Catalog Number, Notes, and Type.

Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability. All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency. This luminaire is A+ Certified when ordered with DTL controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability. This luminaire is part of an A+ Certified solution for ROAM or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background.

To learn more about A+, visit www.acuitybrands.com/aplus. 1. See ordering tree for details. 2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately. Link to Roam; Link to DTL DLL.



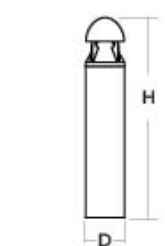
Ordering Information

Table with columns: Series, LEDs, Color Temperature, Distribution, Voltage, Mounting, Shipped included, Other options, Finish required.

Table with columns: Shipped installed, Other options, Finish required.



Specifications  
Diameter: 8" Round (20.3 cm)  
Height: 42" (106.7 cm)  
Weight (max): 27 lbs (12.2 kg)



Product information form with fields for Catalog Number, Notes, and Type.

Introduction

The D-Series LED Bollard is a stylish, energy-saving, long-life solution designed to perform the way a bollard should—with zero uplight. An optical leap forward, this full cut-off luminaire will meet the most stringent of lighting codes. The D-Series LED Bollard's rugged construction, durable finish and long-lasting LEDs will provide years of maintenance-free service.

Ordering Information

Table with columns: Series, LEDs, Drive Current, Color Temperature, Distribution, Voltage, Control options, Other options, Finish required.

Accessories

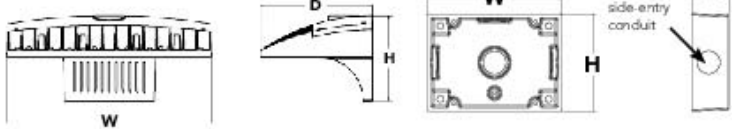
Table listing accessories like AMBU, AMBLW, AMBLS, AMBLV, AMBLW, AMBLV, AMBLW, AMBLV.

NOTES: 1. Only available in the US, CAN, and MEX. 2. Only available in the US, CAN, and MEX. 3. Only available with 400 AMB/W version. 4. Not available with ELCW. 5. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz). Specify 200, 240, 277 or 347 volts only when ordering with MVOLT (DF, DP, or DP) control or photocontrol (PC) control. 6. Not available with 347V. Not available with 347V. Not available with 400 AMB/W. 7. Single line DP requires 120, 277, or 347 voltage option. Double line (DF) requires 200 or 240 voltage option. 8. MBLW not available with LMBL option.



Specifications  
Luminaire  
Width: 18-1/2" (46.0 cm)  
Depth: 10" (25.4 cm)  
Height: 7-5/8" (19.4 cm)

Back Box (BBW)  
Width: 5-1/2" (14.0 cm)  
Depth: 1-1/2" (3.8 cm)  
Height: 4" (10.2 cm)

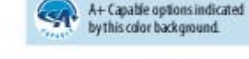


Product information form with fields for Catalog Number, Notes, and Type.

Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability. All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency. This luminaire is A+ Certified when ordered with DTL controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability. This luminaire is part of an A+ Certified solution for ROAM or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background.

To learn more about A+, visit www.acuitybrands.com/aplus. 1. See ordering tree for details. 2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately. Link to Roam; Link to DTL DLL.



Ordering Information

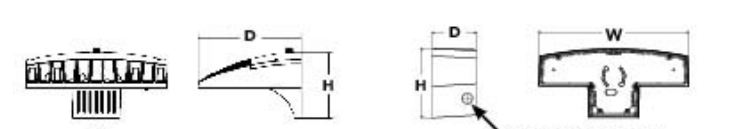
Table with columns: Series, LEDs, Drive Current, Color Temperature, Distribution, Voltage, Mounting, Shipped included, Other options, Finish required.

Table with columns: Shipped installed, Other options, Finish required.



Specifications  
Luminaire  
Width: 13-3/4" (34.9 cm)  
Depth: 10" (25.4 cm)  
Height: 6-3/8" (16.2 cm)

Back Box (BBW, ELCW)  
Width: 13-3/4" (34.9 cm)  
Depth: 10" (25.4 cm)  
Height: 6-3/8" (16.2 cm)



Product information form with fields for Catalog Number, Notes, and Type.

Introduction

The D-Series Wall luminaire is a stylish, fully integrated LED solution for building-mount applications. It features a sleek, modern design and is carefully engineered to provide long-lasting, energy-efficient lighting with a variety of optical and control options for customized performance. With an expected service life of over 20 years of nighttime use and up to 74% in energy savings over comparable 250W metal halide luminaires, the D-Series Wall is a reliable, low-maintenance lighting solution that produces sites that are exceptionally illuminated.

Ordering Information

Table with columns: Series, LEDs, Drive Current, Color Temperature, Distribution, Voltage, Mounting, Shipped included, Other options, Finish required.

NOTES: 1. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz). Specify 120, 208, 240 or 277 volts only when ordering with fusing (SF, DF, options), or photocontrol (PC) option. 2. Only available with 200, 240 or 277 volt systems. Not available with 347V or 347V. 3. Back box ships installed in black. Connectors field installed. Cannot be ordered as an accessory. 4. Photocontrol (PC) requires 120, 208, 240, 277 or 347 voltage system. Not available with motion-sensored light sensor (MS) or PIR. 5. PIR specifies the Sensor Switch (SS) or DP control. PIR specifies the Sensor Switch (SS) or DP control. See Sensor Switch for details. Includes ambient light sensor. Not available with PC option. Ambient light sensor. Emergency driver standard. Not available with 200V or 240V configuration. 6. Color rendering (CRI) is 90. Not compatible with outdoor applications. Not available with BWW mounting option. Not available with fusing. Not available with 347 or 480 voltage system. Emergency components located in back box housing. Emergency mode (EM) located on product page at www.lithonia.com. 7. Single line (DF) requires 120, 277 or 347 voltage option. Double line (DF) requires 200, 240 or 480 voltage system. Not available with ELCW. 8. Also available as a separate accessory; see Accessories information. 9. See the electrical section on page 3 for more details.

Accessories

Table listing accessories like AMBLS, AMBLV, AMBLW, AMBLV, AMBLW, AMBLV.



FEATURES & SPECIFICATIONS

INTERMEDIATE — Typical application in retail, offices, libraries, conference rooms and private offices. CONSTRUCTION — Galvanized steel mounting bracket base; galvanized steel junction box with bottom hinged access covered spring latch. Reflector is retained by torsion springs. Internally adjustable mounting brackets with commercial bar hangers provide 3/4" total adjustment. Two combination 1/4" and four 1/2" knockouts for straight through conductors. Capacity 8 (4in, 4 web, No. 12 AWG) conductors, rated for 90°C. Accommodates 1/2" x 1/2" junction boxes. Positive cooling thermal management for 25°C standard, high ambient (40°C) option available. Light engine and drivers are accessible from above or below opening. Mounting thickness 1.12". OPTICS — LEDs are based on a 3-step SDCR, 80 CRI minimum. LED light source concealed with diffusing optics. General illumination lighting with 1.5 SDCR and 15° cutoff to source and source image. Self-damped and/or reflectors in specular, semi-specular, or matte diffuse finishes. Also available in white and black painted reflectors. ELECTRICAL — Made with 120-277V, 50/60Hz (0-10V dimming) drivers mounted to junction box, 10% or 7% minimum dimming level available. 0-10V dimming fixture requires two 1/2" additional low-voltage wires to be pulled. 10% lumen maintenance at 50,000 hours. LISTINGS — Certified to UL and Canadian safety standards. Dump location standard (wet location, covered unless optional). ENERGY STAR® certified product. WARRANTY — 5-year limited warranty. Complete warranty terms located at www.lithonia.com. See our website for terms and conditions. Note: Actual performance may differ as a result of ambient environment and application. All values are design or typical values, measured under laboratory conditions at 25°C. Specifications subject to change without notice.



Ordering Information

Table with columns: Series, Color Temperature, Lumens, Aperture/Tint/Color, Finish, Voltage.

Table with columns: Driver, Options.

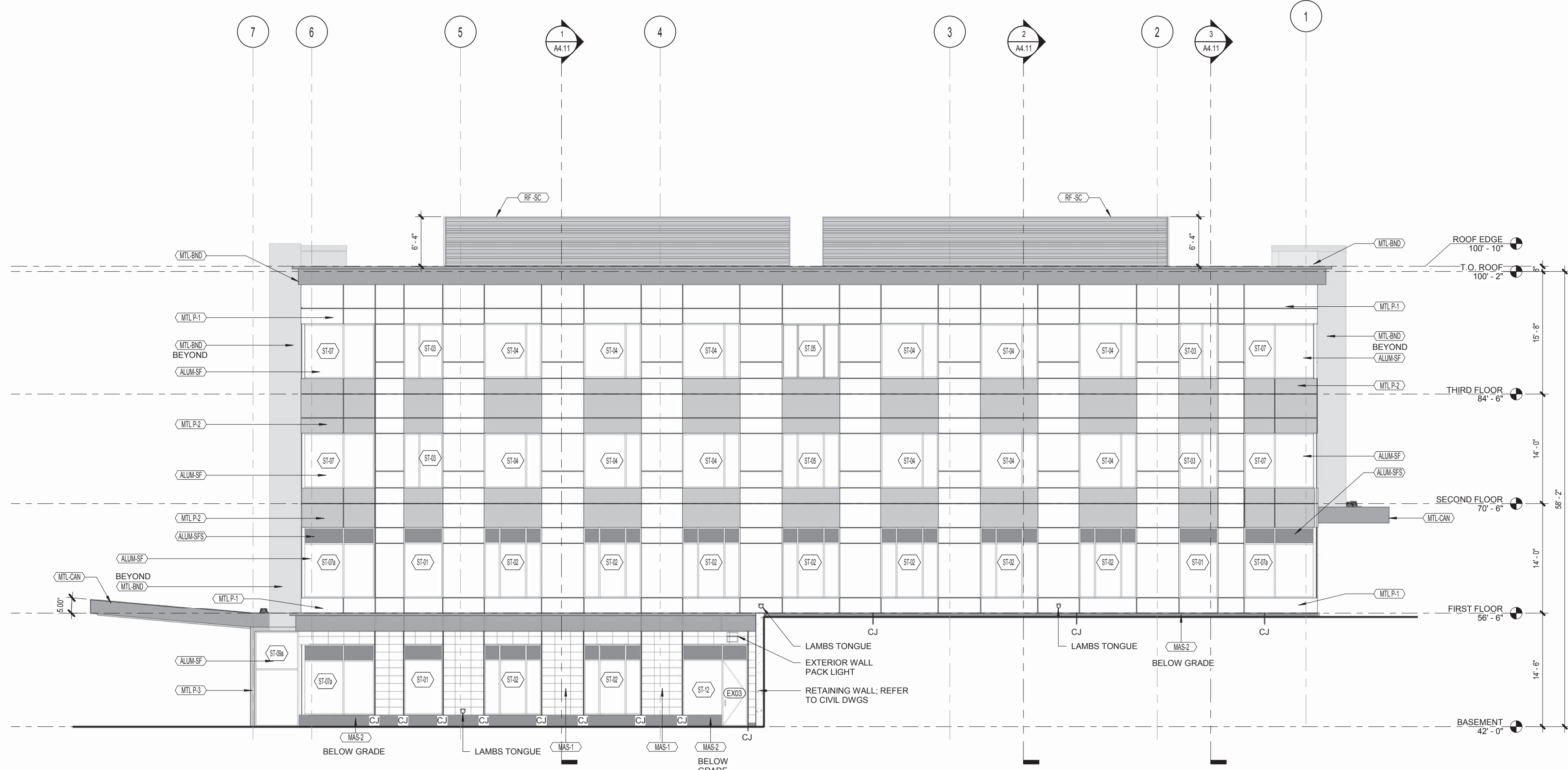
Table with columns: Accessories, Notes.



Portsmouth Medical Park  
Portsmouth NH  
Future Parking Area Included

Designer  
REMcCarthy  
Date  
05/09/2019  
Scale  
Not to Scale  
Drawing No.  
Summary

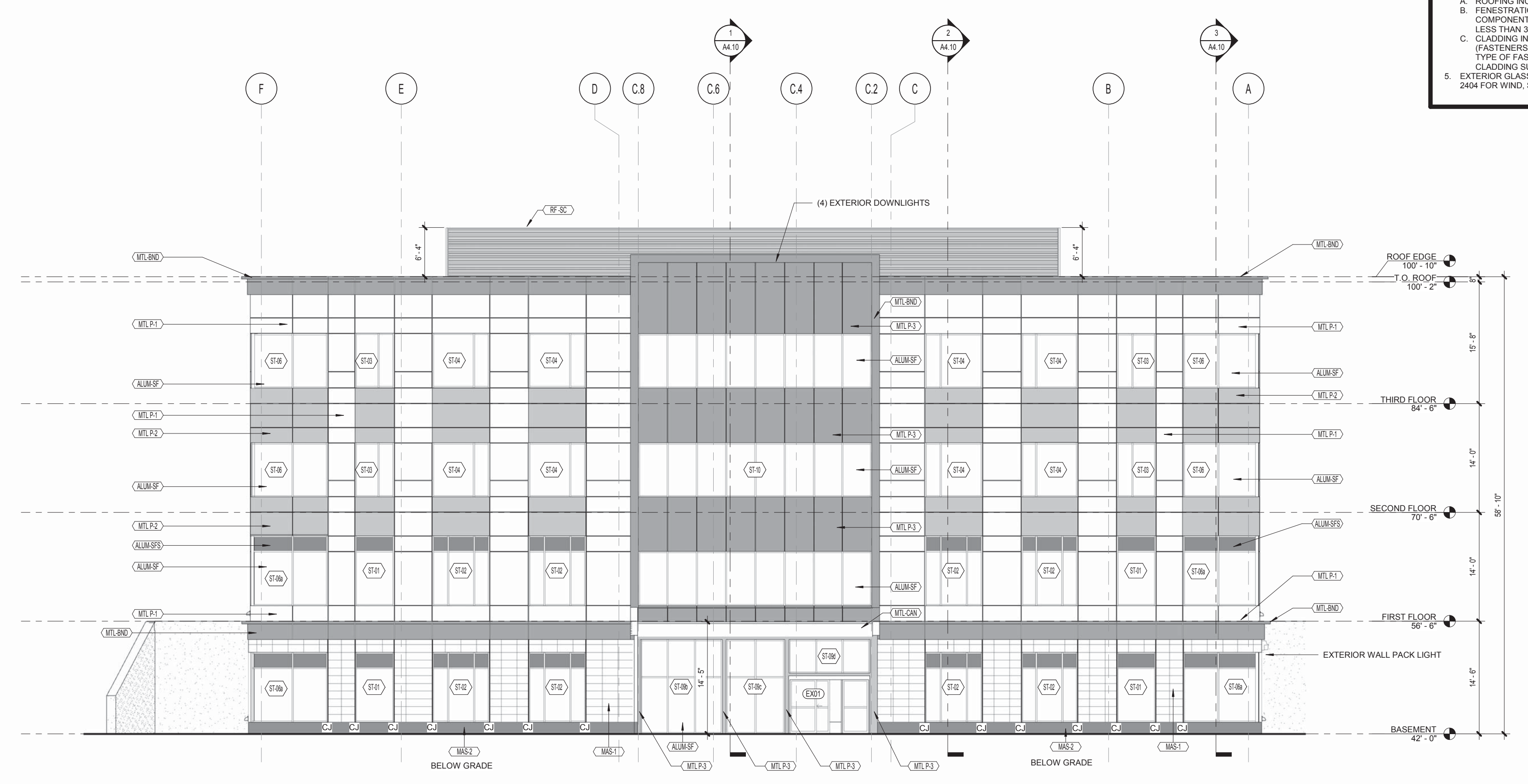




**2** EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0" RE SHEET: 1 / A1.00

**GENERAL NOTES - EXTERIOR ELEVATIONS**

- COMPONENT AND CLADDING ELEMENTS SHALL BE INSTALLED TO SATISFY THE REQUIREMENTS OF THE -2009 INTERNATIONAL BUILDING CODE - WINDLOADS.
- BUILDING "COMPONENTS AND CLADDING" WHICH ARE ELEMENTS OF THE BUILDING ENVELOPE THAT DO NOT QUALIFY AS PART OF THE MAIN WINDFORCE RESISTING SYSTEM SHALL BE DESIGNED AND INSTALLED TO SATISFY THE WINDLOAD CRITERIA FOR THE BUILDING. THIS SHALL INCLUDE INCREASES FOR EXPOSURE PER ASCE 7-05 AS WELL AS FOR HEIGHT, EDGE STRIPS, AND END ZONE CONDITIONS AS DEFINED BY FIGURE 6.3 OF ASCE 7-05.
- FOR THIS BUILDING DESIGN WINDLOAD IS TO BE **100 MPH EXPOSURE B** - REFER TO DRAWING S0.1 FOR WIND PRESSURES.
- THESE COMPONENTS AND CLADDING SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
  - ROOFING INCLUDING SHEATHING, TRIM, SHINGLES, MEMBRANE ROOFING, ETC.
  - FENESTRATIONS INCLUDING WINDOWS, STOREFRONT, ENTRANCES, DOORS, ETC. (MANUFACTURED COMPONENTS SHALL BE LABELED TO CLEARLY INDICATE THE WINDLOAD DESIGN PRESSURE BUT NOT LESS THAN 31 PSF.)
  - CLADDING INCLUDING VINYL SIDING, FIBER CEMENT SIDING, BRICK, TRIM, FLASHINGS, AND GUTTERS. (FASTENERS SHALL BE DIRECTLY INTO STUDS OR OTHER STRUCTURAL COMPONENT WITH SPACING AND TYPE OF FASTENER DESIGNED TO INDIVIDUALLY SUPPORT THE TRIBUTARY AREA OF THE COMPONENT OR CLADDING SUPPORTED BY AND INDIVIDUAL FASTENER.)
- EXTERIOR GLASS AND GLAZING IN WINDOWS AND STOREFRONTS SHALL COMPLY WITH MA 780 CMR SECTION 2404 FOR WIND, SNOW, SEISMIC AND DEAD LOADING.



**1** EXTERIOR ELEVATION - EAST  
1/8" = 1'-0" RE SHEET: 1 / A1.00

**EXTERIOR ELEVATION FINISHES**

MS1	MASONRY VENEER: ARRISCRRAFT RENAISSANCE COLOR: WHITE
MS2	BELOW GRADE MASONRY VENEER: ADAIR LESTONE COLOR: BLUE GREY VEINED
MTL.P1	METAL PANEL: ALUCOBOND COLOR: RUSTED METAL REFER TO EXTERIOR ELEVATIONS FOR REVEALS SEALANT COLOR: TO BE DETERMINED
MTL.P2	METAL PANEL: ALUCOBOND COLOR: BRILLIANT SILVER METALLIC REFER TO EXTERIOR ELEVATIONS FOR REVEALS SEALANT COLOR: TO BE DETERMINED
MTL.P3	METAL PANEL: ALUCOBOND COLOR: BRUSHED 50 REFER TO EXTERIOR ELEVATIONS FOR REVEALS SEALANT COLOR: TO BE DETERMINED
MTL.BND	METAL PANEL BAND: ALUCOBOND COLOR: BRUSHED 50 REFER TO EXTERIOR ELEVATIONS FOR REVEALS SEALANT COLOR: TO BE DETERMINED
MTL.FAS	METAL FASCIA ALUCOBOND COLOR: BRUSHED 50 REFER TO EXTERIOR ELEVATIONS FOR REVEALS SEALANT COLOR: TO BE DETERMINED
MTL.CAN	METAL CANOPY ALUCOBOND COLOR: BRUSHED 50 REFER TO EXTERIOR ELEVATIONS FOR REVEALS SEALANT COLOR: TO BE DETERMINED
ALUM.SP	KAWNEER STOREFRONT SYSTEM COLOR: TO BE DETERMINED OR AS APPROVED FROM MANUF. FULL RANGE OF COLOR SAMPLES
ALUM.SP.S	KAWNEER STOREFRONT SYSTEM SPANDRAL OR AS APPROVED FROM MANUF. FULL RANGE OF COLOR SAMPLES
HLR	HOLLOW METAL DOOR & FRAME (INSULATED) COLOR: TO BE DETERMINED REFER TO DOOR SCHEDULE FOR MORE INFORMATION
GRDR	INSULATED ROLL UP DOOR COLOR: GREY REFER TO DOOR SCHEDULE FOR MORE INFORMATION
RF.SC	ROOF SCREEN COLOR: GREY REFER TO SPECIFICATION FOR MORE INFORMATION
LOUVER	LOUVER COLOR: GREY REFER TO SPECIFICATION FOR MORE INFORMATION

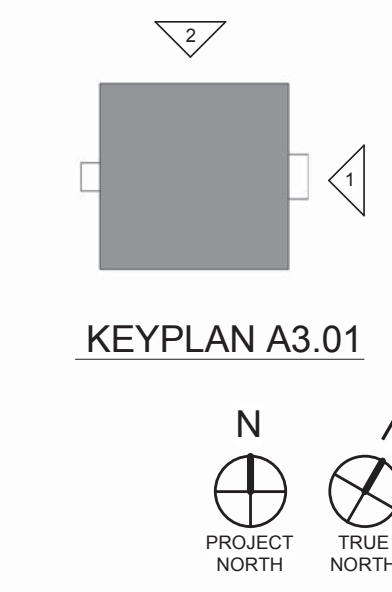
**PORTSMOUTH MEDICAL PARK, BUILDING A**  
BORTHWICK AVE  
PORTSMOUTH, NEW HAMPSHIRE

Date	Issue Description
02/20/2019	ISSUED FOR GMP
AS3.005.15/15/2019	AS3.005

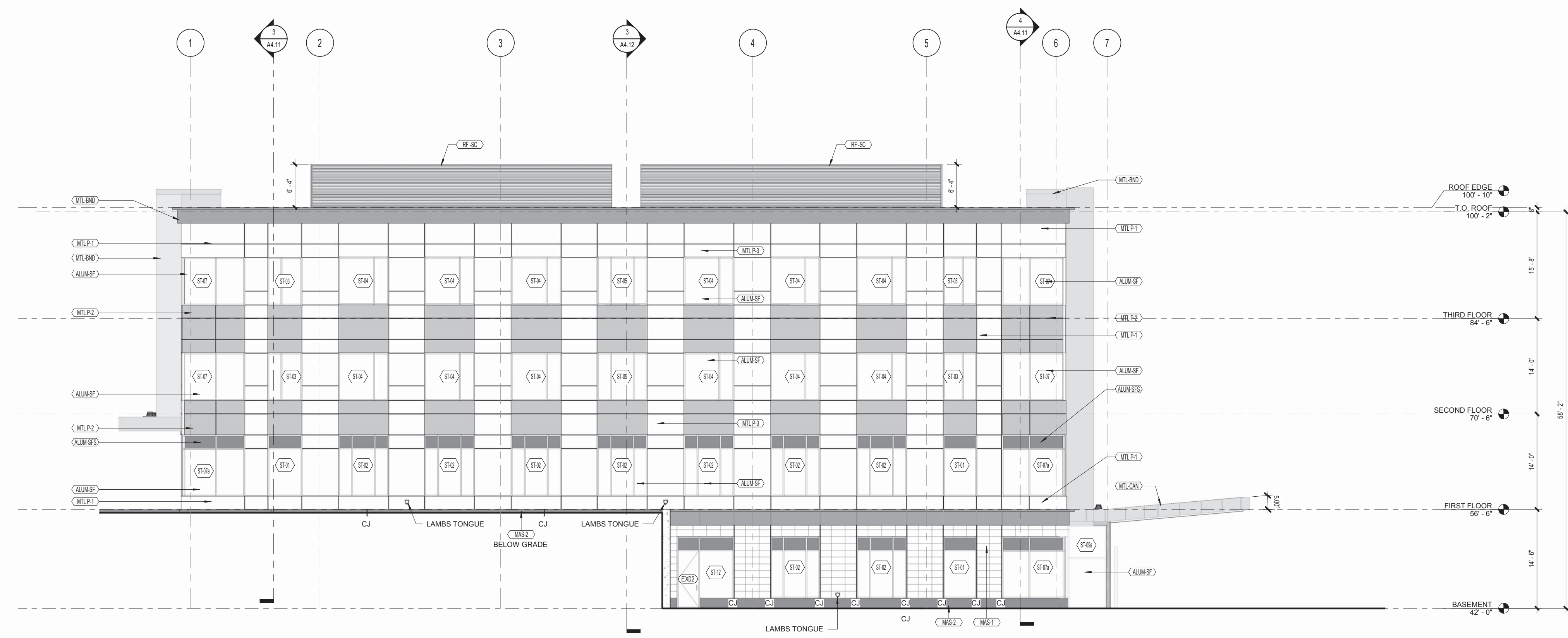
Architect: JAL  
Drawn By: JW  
Project No.: 301701  
Copyright: 2019 PROCON, LLC.

Drawing Sheet Title:  
**EXTERIOR ELEVATIONS**

Drawing Sheet Number:  
**A3.01**



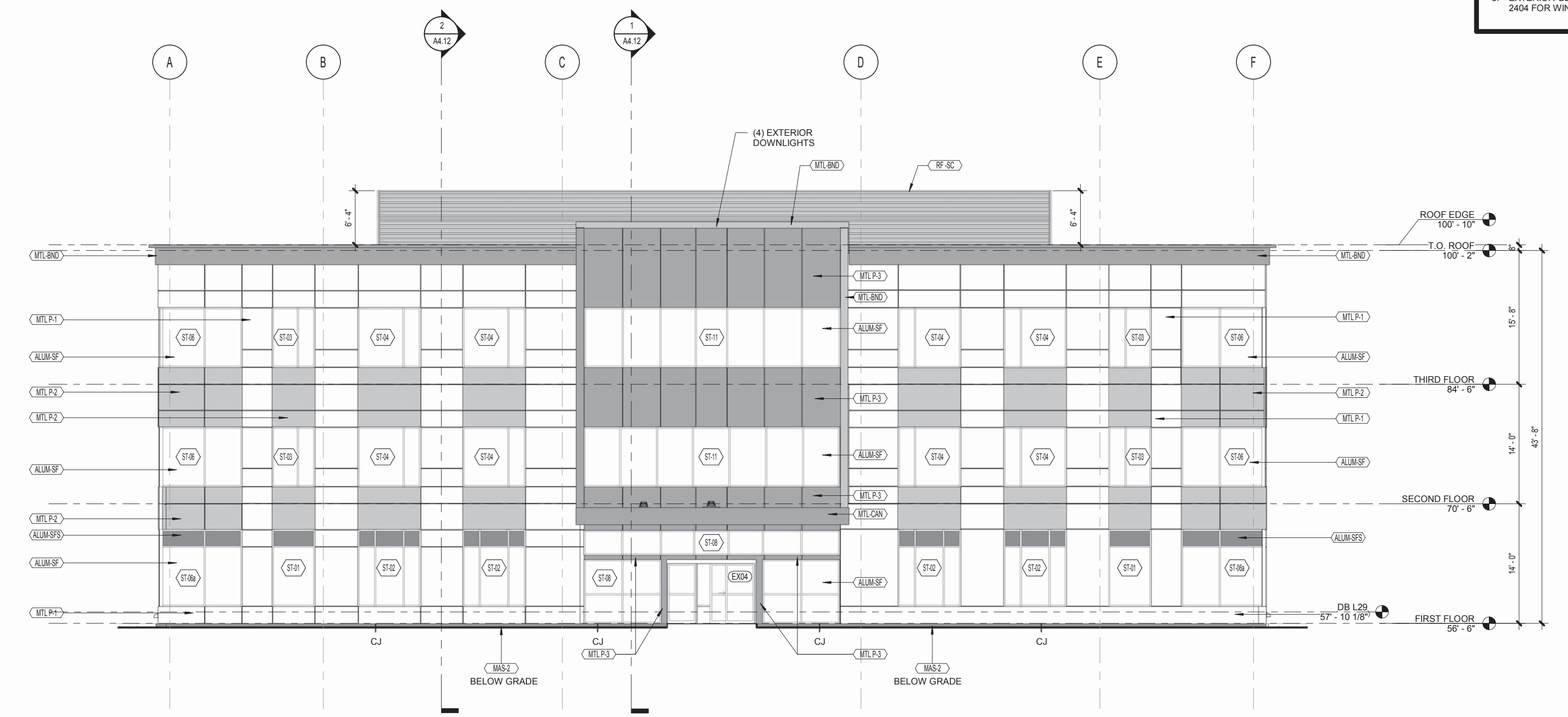




**2** EXTERIOR ELEVATION - SOUTH  
1/8" = 1'-0" RE SHEET: 1 / A1.00

**GENERAL NOTES - EXTERIOR ELEVATIONS**

- COMPONENT AND CLADDING ELEMENTS SHALL BE INSTALLED TO SATISFY THE REQUIREMENTS OF THE - 2009 INTERNATIONAL BUILDING CODE - WIND LOADS.
- BUILDING "COMPONENTS AND CLADDING" WHICH ARE ELEMENTS OF THE BUILDING ENVELOPE THAT DO NOT QUALIFY AS PART OF THE MAIN WINDFORCE RESISTING SYSTEM, SHALL BE DESIGNED AND INSTALLED TO SATISFY THE WINDLOAD CRITERIA FOR THE BUILDING. THIS SHALL INCLUDE INCREASES FOR EXPOSURE PER ASCE 7-05 AS WELL AS FOR HEIGHT, EDGE STRIPS, AND END ZONE CONDITIONS AS DEFINED BY FIGURE 6.3 OF ASCE 7-05.
- FOR THIS BUILDING DESIGN WINDLOAD IS TO BE **100 MPH EXPOSURE B** - REFER TO DRAWING S0.1 FOR WIND PRESSURES.
- THESE COMPONENTS AND CLADDING SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
  - ROOFING INCLUDING SHEATHING, TRIM, SHINGLES, MEMBRANE ROOFING, ETC.
  - FENESTRATIONS INCLUDING WINDOWS, STOREFRONT, ENTRANCES, DOORS, ETC. (MANUFACTURED COMPONENTS SHALL BE LABELED TO CLEARLY INDICATE THE WINDLOAD DESIGN PRESSURE BUT NOT LESS THAN 31 PSF.)
  - CLADDING INCLUDING VINYL SIDING, FIBER CEMENT SIDING, BRICK, TRIM, FLASHINGS, AND GUTTERS. (FASTENERS SHALL BE DIRECTLY INTO STUDS OR OTHER STRUCTURAL COMPONENT WITH SPACING AND TYPE OF FASTENER DESIGNED TO INDIVIDUALLY SUPPORT THE TRIBUTARY AREA OF THE COMPONENT OR CLADDING SUPPORTED BY AND INDIVIDUAL FASTENER.)
- EXTERIOR GLASS AND GLAZING IN WINDOWS AND STOREFRONTS SHALL COMPLY WITH MA 780 CMR SECTION 2404 FOR WIND, SNOW, SEISMIC AND DEAD LOADING.



**1** EXTERIOR ELEVATION - WEST  
1/8" = 1'-0" RE SHEET: 1 / A1.00

**EXTERIOR ELEVATION FINISHES**

MVS.1	MASONRY VENEER: ARRISCRRAFT RENAISSANCE COLOR: WHITE
MVS.2	BELOW GRADE MASONRY VENEER: ADAIR LIMESTONE COLOR: BLUE-GRAY VENEER
MFL.P1	METAL PANEL: ALUCOBOND COLOR: RUSTED METAL REFER TO EXTERIOR ELEVATIONS FOR REVEALS SEALANT COLOR: TO BE DETERMINED
MFL.P2	METAL PANEL: ALUCOBOND COLOR: BRILLIANT SILVER METALLIC REFER TO EXTERIOR ELEVATIONS FOR REVEALS SEALANT COLOR: TO BE DETERMINED
MFL.P3	METAL PANEL: ALUCOBOND COLOR: BRUSHED 50 REFER TO EXTERIOR ELEVATIONS FOR REVEALS SEALANT COLOR: TO BE DETERMINED
MFL.BND	METAL PANEL BAND: ALUCOBOND COLOR: BRUSHED 50 REFER TO EXTERIOR ELEVATIONS FOR REVEALS SEALANT COLOR: TO BE DETERMINED
MFL.FAS	METAL FASCIA ALUCOBOND COLOR: BRUSHED 50 REFER TO EXTERIOR ELEVATIONS FOR REVEALS SEALANT COLOR: TO BE DETERMINED
MFL.CAN	METAL CANOPY ALUCOBOND COLOR: BRUSHED 50 REFER TO EXTERIOR ELEVATIONS FOR REVEALS SEALANT COLOR: TO BE DETERMINED
ALUM.SFS	KAWNEER STOREFRONT SYSTEM SPANDRAL OR AS APPROVED FROM MANUF. FULL RANGE OF COLOR SAMPLES
HRDR	HOLLOW METAL DOOR & FRAME (INSULATED) COLOR: TO BE DETERMINED REFER TO DOOR SCHEDULE FOR MORE INFORMATION
DRDR	INSULATED ROLL-UP DOOR COLOR: GREY REFER TO DOOR SCHEDULE FOR MORE INFORMATION
RF.SC	ROOF SCREEN COLOR: GREY REFER TO SPECIFICATION FOR MORE INFORMATION
LOUVER	LOUVER COLOR: GREY REFER TO SPECIFICATION FOR MORE INFORMATION

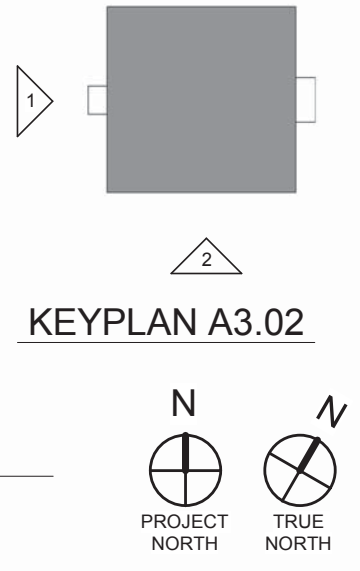
**PORTSMOUTH MEDICAL PARK, BUILDING A**  
BORTHWICK AVE  
PORTSMOUTH, NEW HAMPSHIRE

Date	Issue Description
12/20/2019	ISSUED FOR GMP
AS3.005.15/15/2019	AS3.005

Architect: JAL  
Drawn By: JW  
Project No.: 301701  
Copyright: 2019 PROCON, LLC.

Drawing Sheet Title:  
**EXTERIOR ELEVATIONS**

Drawing Sheet Number:  
**A3.02**





## Drainage Analysis

**To:** City of Portsmouth Technical Advisory Committee (TAC)  
**FROM:** Patrick M. Crimmins, P.E., Tighe & Bond  
**CC:** Borthwick Forest, LLC  
**DATE:** March 20, 2017  
**LAST REVISED:** May 20, 2019

---

### 1.0 Project Description

The proposed project is for a subdivision and site development that includes the construction of a 1,100-foot roadway with 50-foot cul-de-sac off Borthwick Avenue, a public access path from Islington Street at the location of the existing WBBX Road to the proposed cul-de-sac, as well as the construction of a, four (4) story, 67,000 SF office building. The proposed project includes the former WBBX radio station property off Islington Street, three undeveloped parcels of land adjacent to WBBX, a residential property along Islington Street, and an access easement located on an undeveloped parcel of land along Borthwick Avenue. The proposed project will result in approximately 9 acres of disturbance.

The site consists of terrain that slopes from the south to north at grades of  $\pm 0$  - 50 percent. The topography of the site has a high point of elevation 60 on Islington Street and a low point of elevation 30 in unnamed wetlands on the northern side of the proposed road.

For the purposes of this analysis, runoff generated by the site has been analyzed at two (2) distinct points of analysis (PA-1 and PA-2). PA-1 is located in the northwestern side of the Boston Maine Railroad PA-2 is located in an unnamed wetland on the southeast side of the proposed development. The proposed project includes the use of multiple stormwater Best Management Practices (BMP's), including three (3) treatment swales, a gravel wetland, two (2) rain gardens, and deep sump catch basins.

The proposed project will disturb over 100,000 SF of the site. Thus, the project will require a New Hampshire Department of Environmental Services (NHDES) Alteration of Terrain (AoT) Permit.

### 2.0 Drainage Analysis

#### 2.1 Calculation Methods

The parcels on-site watersheds were analyzed under this section. The design storms analyzed in this study are the 2-year, 10-year, 25-year, and 50-year 24-hour duration storm as per NHDES AoT Regulations (Env-Wq 1500), last revised August 15, 2017. The stormwater modeling system, HydroCAD 10.0 was utilized to predict the peak runoff rates from these storm events. A Type III storm pattern was used in the model.

The time of concentration was computed using the TR-55 Method, which provides a means of determining the time for an entire watershed to contribute runoff to a specific location via sheet flows, shallow concentrated flow, and channel flow. Runoff curve numbers were calculated by estimating the coverage areas and then summing the curve number for the coverage area as a percent of the entire watershed.



## References

1. HydroCAD Stormwater Modeling System, by HydroCAD Software Solutions LLC, Chocorua, New Hampshire.
2. New Hampshire Stormwater Management Manual, Volume 2, Post-Construction Best Management Practices Selection and Design, December 2008.
3. "Extreme Precipitation in New York & New England." Extreme Precipitation in New York & New England by Northeast Regional Climate Center (NRCC), 26 June 2012.

## 2.2 Pre-Development Conditions

To analyze the pre-development condition, the site has been divided into two (2) distinct points of analysis (PA-1 and PA-2). These points of analysis and watersheds are depicted on the plan entitled "Pre-Development Watershed Plan", Sheet WS-1.

Each of the points of analysis and their contributing watershed areas are described below:

### **Point of Analysis One (PA-1)**

Pre-Development Watershed Area 1 has been divided into one area (Pre-1) in order to separate areas with proposed disturbance from areas not scheduled to be disturbed. This area includes the areas within the existing access easements as well as the remainder of the areas proposed to be disturbed.

### **Point of Analysis Two (PA-2)**

Pre-Development Watershed Area 2 has been divided into one area (Pre-2) in order to separate areas with proposed disturbance from areas not scheduled to be disturbed. This watershed area is located in the mostly grass area to the west of the existing WBBX development.

## 2.3 Post-Development Conditions

The post-development drainage condition is characterized by six (6) watershed areas modeled at the same two (2) points of analysis as the pre-development condition. These points of analysis and watersheds are depicted on the plan entitled "Post Development Watershed Plan", Sheets WS-2.

Each of the points of analysis and their contributing watershed areas are described below:

### **Point of Analysis One (PA-1)**

Point of analysis 1 is comprised of Post; 1.1, 1.2, 1.3, 1.4, & 1.5, as depicted on the plan entitled "Post Development Watershed Plan", Sheets WS-2.

### **Point of Analysis One (PA-2)**

Point of analysis 2 is comprised of Post; 2, 2A, & 2B, as depicted on the plan entitled "Post Development Watershed Plan", Sheets WS-2.



## 2.4 Peak Rate Comparisons

Table 2.4.1 summarizes and compares the pre- and post-development peak runoff rates for the 1-year, 2-year, 10-year, 25-year, and 50-year storm events at each discharge point.

**Table 2.4.1 - Comparison of Pre- and Post-Development flows (cfs)**

Point of Analysis	Pre/Post 2-Year Storm Peak Flow (cfs)	Pre/Post 10-Year Storm Peak Flow (cfs)	Pre/Post 25-Year Storm Peak Flow (cfs)	Pre/Post 50-Year Storm Peak Flow (cfs)
PA1	4.28/ <b>3.46</b>	11.42/ <b>8.45</b>	17.9/ <b>13.75</b>	24.31/ <b>18.36</b>
PA2	1.17/ <b>0.83</b>	3.96/ <b>3.90</b>	6.63/ <b>5.86</b>	9.34/ <b>6.74</b>

As depicted in Table 2.4.1, the post-development peak runoff rates are less than the pre-development rates.

## 2.4 Stormwater Treatment

The stormwater management system has been designed to provide stormwater treatment as required by the City of Portsmouth Site Review Regulations and NHDES AoT Regulations (Env-Wq 1500).




The stormwater management system includes Best Management Practices (BMP) to provide stormwater treatment. These BMP's have been designed in accordance with the New Hampshire Stormwater Manual. Pretreatment for the roadway and office building development will be provided by catch basins equipped with deep sumps and oil separator hoods. Stormwater treatment will be provided by three (3) treatment swales, one (1) gravel wetland, and two (2) rain gardens. Runoff generated by the proposed roadway and cul-de-sac will be conveyed into a closed drainage system and directed to the stormwater treatment swales. The proposed Gravel Wetland will treat runoff generated from the proposed office building and associated parking areas.

## 3.0 Conclusion

The proposed project will result in a reduction in post-development peak runoff rates from the pre-development condition. The impervious area resulting from the proposed project will be treated by proposed treatment swales a gravel wetland, and two (2) rain gardens. The project will require an amendment to an NHDES AoT Permit. A copy of the amended AoT Permit Application will be provided to the City of Portsmouth when it is submitted to NHDES.

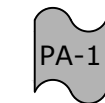


**LEGEND**

-  PRE-DEVELOPMENT WATERSHED BOUNDARY
-  SITE SPECIFIC SOIL SURVEY BOUNDARIES
-  LONGEST FLOW PATH



PRE DEVELOPMENT WATERSHED AREA DESIGNATION



POINT OF ANALYSIS

**SITE SPECIFIC SOIL SURVEY HYDROLOGIC SOIL GROUP (HSG) LEGEND**

SYMBOL	SOIL TYPE	SLOPE RATING	HSG
32	BOXFORD	8-15%	C
256	CHATFIELD-CANTON COMPLEX	3-8%	B
194/VP	CATDEN	15-25%	D
900/P	ENDOQUENTS, SANDY OR GRAVELLY	15-25%	D (INTERPRETED)
656/P	RIDGEBURY	8-15%	C
33	SCITICO	8-15%	C
300	UDIPSAMMENTS	0-3%	A (INTERPRETED)
350	UDIPSAMMENTS, WET SUBSTRATUM	15-25%	D (INTERPRETED)
299	UDORTMENTS, SMOOTHED	3-8%	B (INTERPRETED)
29	WOODBIDGE	8-15%	C

**NOTES:**

1. SSSS PREPARED BY GOVE ENVIRONMENTAL SERVICES, INC., DATED AUGUST 25, 2015.



**Proposed  
Subdivision Road  
& Office Building  
Development**

Borthwick Forest, LLC

Portsmouth,  
New Hampshire

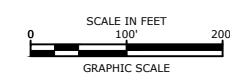
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C	8/21/2017	Revised Planning Board Submission
B	6/2/2017	AsT Submission
A	3/20/2017	TAC Submission
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DATE: 3/20/2017		
FILE: 20190520_WATERSHED PLANS.DWG		
DRAWN BY: CML		
CHECKED: PMC		
APPROVED: BLM		

**PRE-DEVELOPMENT  
WATERSHED PLAN**

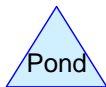
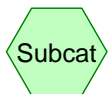
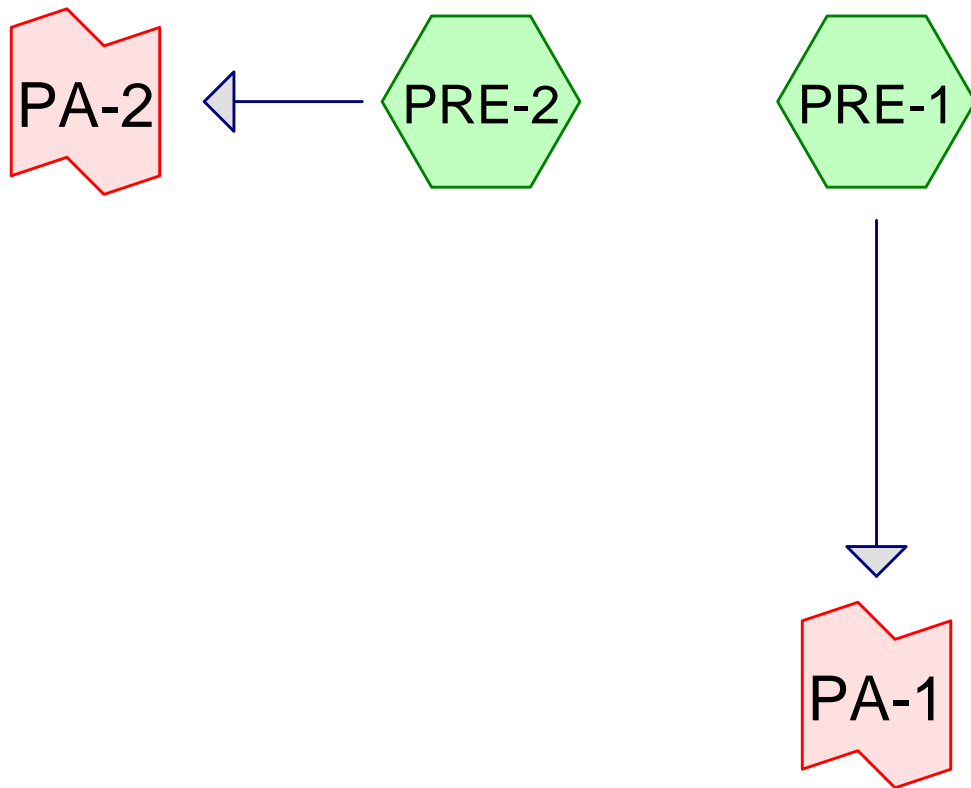
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WS-1

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**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
1.306	69	50-75% Grass cover, Fair, HSG B (299) (PRE-1, PRE-2)
1.810	61	>75% Grass cover, Good, HSG B (256) (PRE-1, PRE-2)
0.822	74	>75% Grass cover, Good, HSG C (29) (PRE-1, PRE-2)
0.125	96	Gravel surface, HSG C (Rail Road) (PRE-1)
0.444	98	Paved parking, HSG C (PRE-1)
0.078	60	Woods, Fair, HSG B (299) (PRE-1)
1.539	55	Woods, Good, HSG B (256) (PRE-1, PRE-2)
0.558	55	Woods, Good, HSG B (256) - Additional Area (PRE-1, PRE-2)
0.755	70	Woods, Good, HSG C (29) (PRE-1)
0.497	70	Woods, Good, HSG C (29) - Additional Area (PRE-1)
0.577	70	Woods, Good, HSG C (29) - Amended Site Plan (PRE-1)
<b>8.511</b>	<b>66</b>	<b>TOTAL AREA</b>



**K0076-13-PRE**

Prepared by Tighe & Bond

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Printed 5/16/2019

Page 3

**Soil Listing (all nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
5.290	HSG B	PRE-1, PRE-2
3.221	HSG C	PRE-1, PRE-2
0.000	HSG D	
0.000	Other	
<b>8.511</b>		<b>TOTAL AREA</b>



**K0076-13-PRE**

Prepared by Tighe &amp; Bond

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*Type III 24-hr 2-YR Rainfall=3.22"*

Printed 5/16/2019

Page 4

Time span=0.00-48.00 hrs, dt=0.10 hrs, 481 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PRE-1:** Runoff Area=255,559 sf 7.57% Impervious Runoff Depth=0.74"  
Flow Length=288' Slope=0.0594 '/ Tc=5.0 min CN=68 Runoff=4.28 cfs 0.363 af

**Subcatchment PRE-2:** Runoff Area=115,185 sf 0.00% Impervious Runoff Depth=0.53"  
Flow Length=391' Slope=0.0588 '/ Tc=5.0 min CN=63 Runoff=1.17 cfs 0.116 af

**Link PA-1:** Inflow=4.28 cfs 0.363 af  
Primary=4.28 cfs 0.363 af

**Link PA-2:** Inflow=1.17 cfs 0.116 af  
Primary=1.17 cfs 0.116 af

**Total Runoff Area = 8.511 ac Runoff Volume = 0.480 af Average Runoff Depth = 0.68"**  
**94.78% Pervious = 8.067 ac 5.22% Impervious = 0.444 ac**



**K0076-13-PRE**

Prepared by Tighe &amp; Bond

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*Type III 24-hr 10-YR Rainfall=4.88"*

Printed 5/16/2019

Page 5

Time span=0.00-48.00 hrs, dt=0.10 hrs, 481 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PRE-1:** Runoff Area=255,559 sf 7.57% Impervious Runoff Depth=1.79"  
Flow Length=288' Slope=0.0594 '/ Tc=5.0 min CN=68 Runoff=11.42 cfs 0.877 af

**Subcatchment PRE-2:** Runoff Area=115,185 sf 0.00% Impervious Runoff Depth=1.43"  
Flow Length=391' Slope=0.0588 '/ Tc=5.0 min CN=63 Runoff=3.96 cfs 0.316 af

**Link PA-1:** Inflow=11.42 cfs 0.877 af  
Primary=11.42 cfs 0.877 af

**Link PA-2:** Inflow=3.96 cfs 0.316 af  
Primary=3.96 cfs 0.316 af

**Total Runoff Area = 8.511 ac Runoff Volume = 1.193 af Average Runoff Depth = 1.68"**  
**94.78% Pervious = 8.067 ac 5.22% Impervious = 0.444 ac**



**K0076-13-PRE**

Prepared by Tighe &amp; Bond

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*Type III 24-hr 25-YR Rainfall=6.19"*

Printed 5/16/2019

Page 6

Time span=0.00-48.00 hrs, dt=0.10 hrs, 481 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PRE-1:** Runoff Area=255,559 sf 7.57% Impervious Runoff Depth=2.77"  
Flow Length=288' Slope=0.0594 '/ Tc=5.0 min CN=68 Runoff=17.90 cfs 1.353 af

**Subcatchment PRE-2:** Runoff Area=115,185 sf 0.00% Impervious Runoff Depth=2.31"  
Flow Length=391' Slope=0.0588 '/ Tc=5.0 min CN=63 Runoff=6.63 cfs 0.509 af

**Link PA-1:** Inflow=17.90 cfs 1.353 af  
Primary=17.90 cfs 1.353 af

**Link PA-2:** Inflow=6.63 cfs 0.509 af  
Primary=6.63 cfs 0.509 af

**Total Runoff Area = 8.511 ac Runoff Volume = 1.862 af Average Runoff Depth = 2.63"**  
**94.78% Pervious = 8.067 ac 5.22% Impervious = 0.444 ac**



**K0076-13-PRE**

Prepared by Tighe & Bond

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Type III 24-hr 50-YR Rainfall=7.41"

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Page 7

Time span=0.00-48.00 hrs, dt=0.10 hrs, 481 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PRE-1:** Runoff Area=255,559 sf 7.57% Impervious Runoff Depth=3.74"  
Flow Length=288' Slope=0.0594 '/ Tc=5.0 min CN=68 Runoff=24.31 cfs 1.831 af

**Subcatchment PRE-2:** Runoff Area=115,185 sf 0.00% Impervious Runoff Depth=3.21"  
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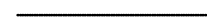
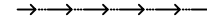





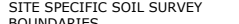
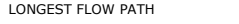


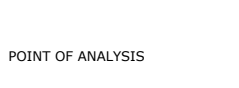

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Primary=24.31 cfs 1.831 af

**Link PA-2:** Inflow=9.34 cfs 0.708 af  
Primary=9.34 cfs 0.708 af

**Total Runoff Area = 8.511 ac Runoff Volume = 2.538 af Average Runoff Depth = 3.58"**  
**94.78% Pervious = 8.067 ac 5.22% Impervious = 0.444 ac**



**LEGEND**

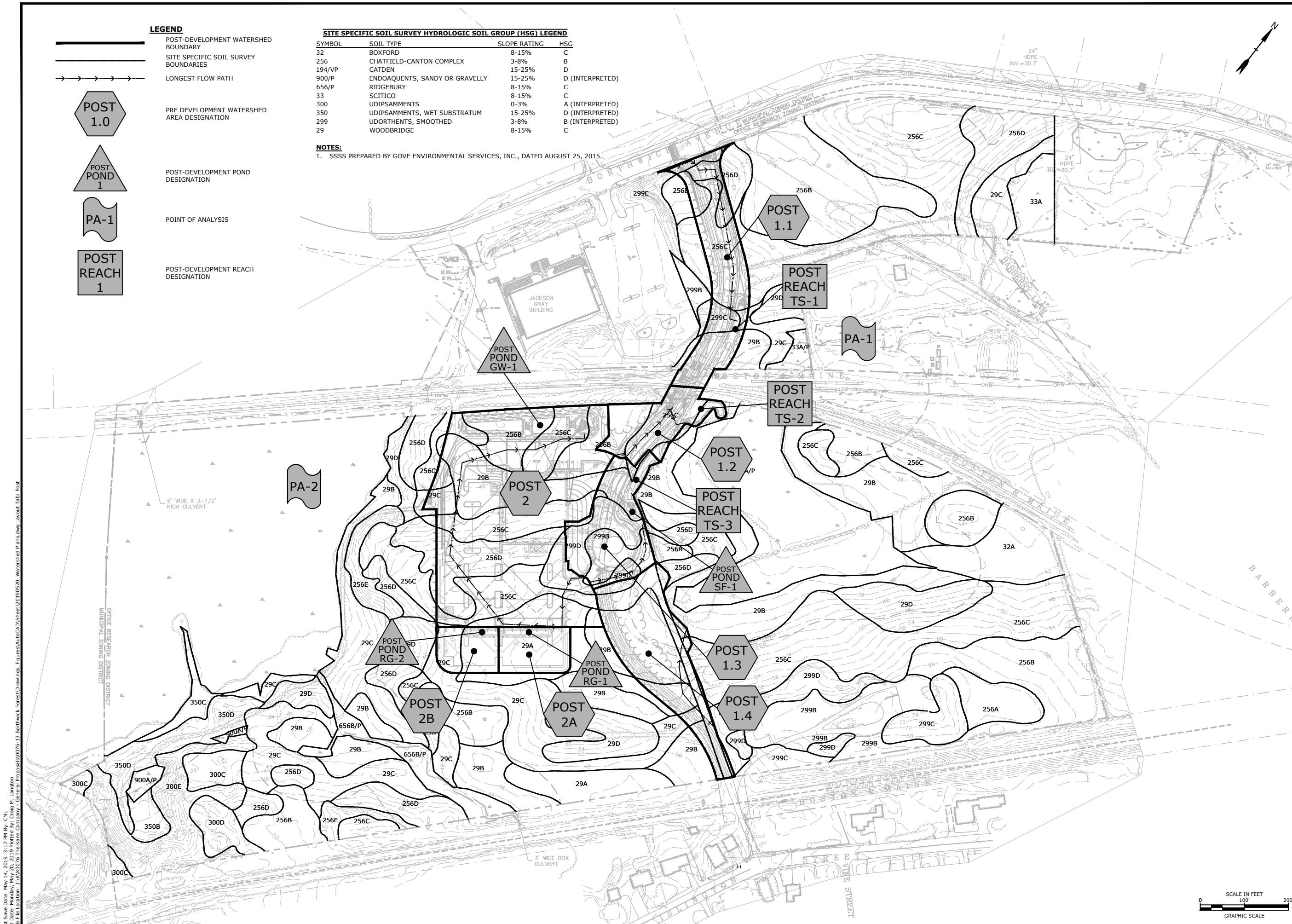
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-  SITE SPECIFIC SOIL SURVEY BOUNDARIES
-  LONGEST FLOW PATH
-  POST 1.0
-  POST POND 1
-  PA-1
-  POST REACH 1
-  POST-DEVELOPMENT WATERSHED BOUNDARY
-  SITE SPECIFIC SOIL SURVEY BOUNDARIES
-  LONGEST FLOW PATH
-  PRE DEVELOPMENT WATERSHED AREA DESIGNATION
-  POST-DEVELOPMENT POND DESIGNATION
-  POINT OF ANALYSIS
-  POST-DEVELOPMENT REACH DESIGNATION

**SITE SPECIFIC SOIL SURVEY HYDROLOGIC SOIL GROUP (HSG) LEGEND**

SYMBOL	SOIL TYPE	SLOPE RATING	HSG
32	BOXFORD	8-15%	C
256	CHATFIELD-CANTON COMPLEX	3-8%	B
194/VP	CATDEN	15-25%	D
900/P	ENDOQUENTS, SANDY OR GRAVELLY	15-25%	D (INTERPRETED)
656/P	RIDGEBURY	8-15%	C
33	SCITICO	8-15%	C
300	UDIPSAMMENTS	0-3%	A (INTERPRETED)
350	UDIPSAMMENTS, WET SUBSTRATUM	15-25%	D (INTERPRETED)
299	UDORTMENTS, SMOOTHED	3-8%	B (INTERPRETED)
29	WOODBRIDGE	8-15%	C

**NOTES:**

1. SSSS PREPARED BY GOVE ENVIRONMENTAL SERVICES, INC., DATED AUGUST 25, 2015.



**Proposed  
Subdivision Road  
& Office Building  
Development**

Borthwick Forest, LLC

Portsmouth,  
New Hampshire

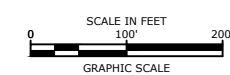
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A	3/20/2017	TAC Submission
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APPROVED: BLM		

**POST-DEVELOPMENT  
WATERSHED PLAN**

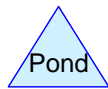
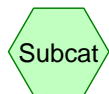
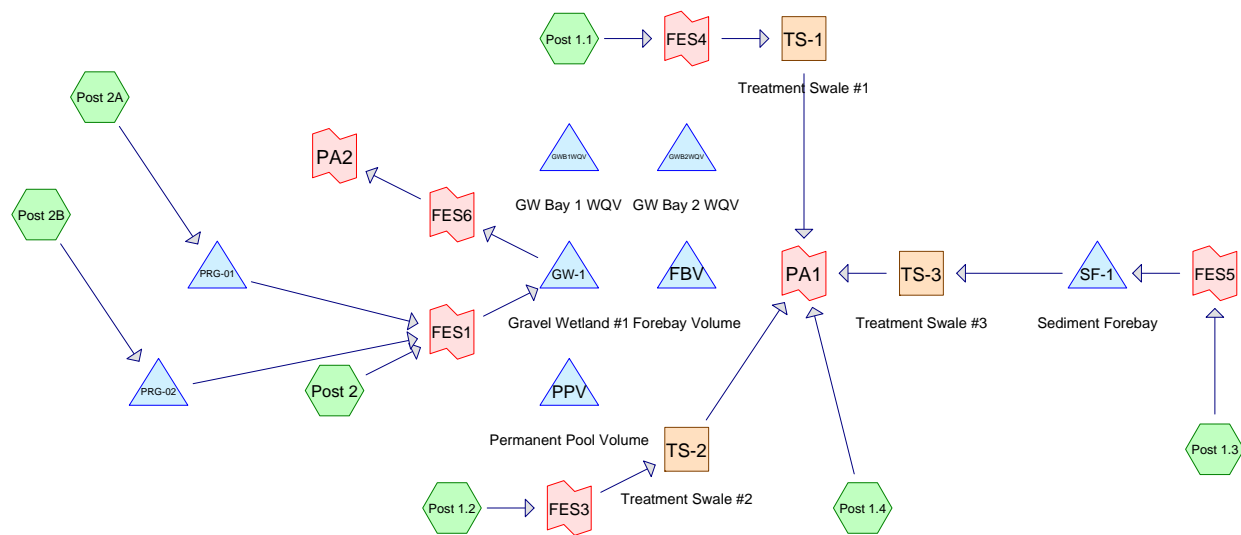
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WS-2

Last Save Date: May 14, 2019 3:17 PM By: CML  
 Plot Date: Monday, May 20, 2019 Plotted By: Craig M. Langton  
 P28 File Location: J:\Projects\2019\0520\Borthwick Forest\Drawings - Figures\AutoCAD\Sheet\20190520\_Watershed Plans.dwg Layout Tab: Post







**Routing Diagram for K0076-13-POST**  
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**K0076-13-POST**

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**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.673	69	50-75% Grass cover, Fair, HSG B (299) (Post 1.1, Post 1.2, Post 1.3, Post 1.4, Post 2)
1.712	61	>75% Grass cover, Good, HSG B (256) (Post 1.1, Post 1.2, Post 1.3, Post 1.4, Post 2)
1.455	74	>75% Grass cover, Good, HSG C (29) (Post 1.1, Post 1.2, Post 1.3, Post 1.4, Post 2, Post 2A, Post 2B)
0.349	74	>75% Grass cover, Good, HSG C (29) - Additional Area (Post 1.4)
0.055	96	Gravel surface, HSG C (Rail Road) (Post 1.1, Post 1.2)
3.280	98	Paved parking, HSG C (Post 1.1, Post 1.2, Post 1.3, Post 1.4, Post 2, Post 2A, Post 2B)
0.544	98	Paved parking, HSG C - Additional Area (Post 2)
0.013	60	Woods, Fair, HSG B (299) (Post 1.4)
0.274	55	Woods, Good, HSG B (256) (Post 1.2, Post 1.4, Post 2)
0.156	70	Woods, Good, HSG C (29) (Post 1.4)
<b>8.511</b>	<b>81</b>	<b>TOTAL AREA</b>



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**Soil Listing (all nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
2.672	HSG B	Post 1.1, Post 1.2, Post 1.3, Post 1.4, Post 2
5.839	HSG C	Post 1.1, Post 1.2, Post 1.3, Post 1.4, Post 2, Post 2A, Post 2B
0.000	HSG D	
0.000	Other	
<b>8.511</b>		<b>TOTAL AREA</b>



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Type III 24-hr 2-YR Rainfall=3.22"

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Time span=0.00-60.00 hrs, dt=0.10 hrs, 601 points x 2  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment Post 1.1:** Runoff Area=47,167 sf 50.65% Impervious Runoff Depth=1.55"  
 Flow Length=483' Tc=5.0 min CN=82 Runoff=1.86 cfs 0.140 af

**Subcatchment Post 1.2:** Runoff Area=28,752 sf 31.34% Impervious Runoff Depth=1.17"  
 Flow Length=213' Tc=5.0 min CN=76 Runoff=0.83 cfs 0.064 af

**Subcatchment Post 1.3:** Runoff Area=42,156 sf 28.79% Impervious Runoff Depth=1.23"  
 Flow Length=229' Tc=5.0 min CN=77 Runoff=1.29 cfs 0.099 af

**Subcatchment Post 1.4:** Runoff Area=61,172 sf 7.80% Impervious Runoff Depth=0.94"  
 Flow Length=238' Tc=5.0 min CN=72 Runoff=1.38 cfs 0.110 af

**Subcatchment Post 2:** Runoff Area=154,617 sf 61.84% Impervious Runoff Depth=1.77"  
 Flow Length=951' Tc=5.0 min CN=85 Runoff=6.97 cfs 0.525 af

**Subcatchment Post 2A:** Runoff Area=19,925 sf 57.73% Impervious Runoff Depth=2.01"  
 Flow Length=951' Tc=5.0 min CN=88 Runoff=1.01 cfs 0.077 af

**Subcatchment Post 2B:** Runoff Area=16,954 sf 56.89% Impervious Runoff Depth=2.01"  
 Flow Length=951' Tc=5.0 min CN=88 Runoff=0.86 cfs 0.065 af

**Reach TS-1: Treatment Swale #1** Avg. Flow Depth=0.44' Max Vel=0.36 fps Inflow=1.86 cfs 0.140 af  
 n=0.150 L=150.0' S=0.0050 '/ Capacity=6.46 cfs Outflow=1.49 cfs 0.140 af

**Reach TS-2: Treatment Swale #2** Avg. Flow Depth=0.30' Max Vel=0.29 fps Inflow=0.83 cfs 0.064 af  
 n=0.150 L=110.0' S=0.0050 '/ Capacity=5.79 cfs Outflow=0.67 cfs 0.064 af

**Reach TS-3: Treatment Swale #3** Avg. Flow Depth=0.12' Max Vel=0.17 fps Inflow=0.35 cfs 0.049 af  
 n=0.150 L=115.0' S=0.0052 '/ Capacity=6.60 cfs Outflow=0.18 cfs 0.049 af

**Pond FBV: Forebay Volume** Peak Elev=0.00' Storage=0 cf  
 12.0" Round Culvert n=0.013 L=1.0' S=0.0500 '/ Primary=0.00 cfs 0.000 af

**Pond GW-1: Gravel Wetland #1** Peak Elev=38.55' Storage=11,740 cf Inflow=6.97 cfs 0.539 af  
 Outflow=0.83 cfs 0.517 af

**Pond GWB1WQV: GW Bay 1 WQV** Peak Elev=0.00' Storage=0 cf  
 Primary=0.00 cfs 0.000 af

**Pond GWB2WQV: GW Bay 2 WQV** Peak Elev=0.00' Storage=0 cf  
 Primary=0.00 cfs 0.000 af

**Pond PPV: Permanent Pool Volume** Peak Elev=0.00' Storage=0 cf  
 8.0" Round Culvert n=0.013 L=1.0' S=0.0000 '/ Primary=0.00 cfs 0.000 af

**Pond PRG-01:** Peak Elev=51.01' Storage=2,342 cf Inflow=1.01 cfs 0.077 af  
 Discarded=0.02 cfs 0.065 af Primary=0.02 cfs 0.002 af Outflow=0.04 cfs 0.067 af



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Type III 24-hr 2-YR Rainfall=3.22"

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**Pond PRG-02:** Peak Elev=51.03' Storage=1,639 cf Inflow=0.86 cfs 0.065 af  
Discarded=0.02 cfs 0.046 af Primary=0.08 cfs 0.012 af Outflow=0.09 cfs 0.058 af

**Pond SF-1: Sediment Forebay** Peak Elev=40.15' Storage=1,951 cf Inflow=1.29 cfs 0.099 af  
Discarded=0.01 cfs 0.031 af Primary=0.35 cfs 0.049 af Outflow=0.36 cfs 0.080 af

**Link FES1:** Inflow=6.97 cfs 0.539 af  
Primary=6.97 cfs 0.539 af

**Link FES3:** Inflow=0.83 cfs 0.064 af  
Primary=0.83 cfs 0.064 af

**Link FES4:** Inflow=1.86 cfs 0.140 af  
Primary=1.86 cfs 0.140 af

**Link FES5:** Inflow=1.29 cfs 0.099 af  
Primary=1.29 cfs 0.099 af

**Link FES6:** Inflow=0.83 cfs 0.517 af  
Primary=0.83 cfs 0.517 af

**Link PA1:** Inflow=3.46 cfs 0.363 af  
Primary=3.46 cfs 0.363 af

**Link PA2:** Inflow=0.83 cfs 0.517 af  
Primary=0.83 cfs 0.517 af

**Total Runoff Area = 8.511 ac Runoff Volume = 1.081 af Average Runoff Depth = 1.52"**  
**55.07% Pervious = 4.687 ac 44.93% Impervious = 3.824 ac**



**K0076-13-POST**

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Type III 24-hr 10-YR Rainfall=4.88"

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Time span=0.00-60.00 hrs, dt=0.10 hrs, 601 points x 2  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment Post 1.1:** Runoff Area=47,167 sf 50.65% Impervious Runoff Depth=2.97"  
 Flow Length=483' Tc=5.0 min CN=82 Runoff=3.54 cfs 0.268 af

**Subcatchment Post 1.2:** Runoff Area=28,752 sf 31.34% Impervious Runoff Depth=2.44"  
 Flow Length=213' Tc=5.0 min CN=76 Runoff=1.78 cfs 0.134 af

**Subcatchment Post 1.3:** Runoff Area=42,156 sf 28.79% Impervious Runoff Depth=2.52"  
 Flow Length=229' Tc=5.0 min CN=77 Runoff=2.70 cfs 0.203 af

**Subcatchment Post 1.4:** Runoff Area=61,172 sf 7.80% Impervious Runoff Depth=2.11"  
 Flow Length=238' Tc=5.0 min CN=72 Runoff=3.25 cfs 0.246 af

**Subcatchment Post 2:** Runoff Area=154,617 sf 61.84% Impervious Runoff Depth=3.26"  
 Flow Length=951' Tc=5.0 min CN=85 Runoff=12.59 cfs 0.963 af

**Subcatchment Post 2A:** Runoff Area=19,925 sf 57.73% Impervious Runoff Depth=3.56"  
 Flow Length=951' Tc=5.0 min CN=88 Runoff=1.74 cfs 0.136 af

**Subcatchment Post 2B:** Runoff Area=16,954 sf 56.89% Impervious Runoff Depth=3.56"  
 Flow Length=951' Tc=5.0 min CN=88 Runoff=1.48 cfs 0.115 af

**Reach TS-1: Treatment Swale #1** Avg. Flow Depth=0.65' Max Vel=0.46 fps Inflow=3.54 cfs 0.268 af  
 n=0.150 L=150.0' S=0.0050 '/' Capacity=6.46 cfs Outflow=2.99 cfs 0.268 af

**Reach TS-2: Treatment Swale #2** Avg. Flow Depth=0.48' Max Vel=0.38 fps Inflow=1.78 cfs 0.134 af  
 n=0.150 L=110.0' S=0.0050 '/' Capacity=5.79 cfs Outflow=1.52 cfs 0.134 af

**Reach TS-3: Treatment Swale #3** Avg. Flow Depth=0.45' Max Vel=0.38 fps Inflow=2.27 cfs 0.152 af  
 n=0.150 L=115.0' S=0.0052 '/' Capacity=6.60 cfs Outflow=1.60 cfs 0.152 af

**Pond FBV: Forebay Volume** Peak Elev=0.00' Storage=0 cf  
 12.0" Round Culvert n=0.013 L=1.0' S=0.0500 '/' Primary=0.00 cfs 0.000 af

**Pond GW-1: Gravel Wetland #1** Peak Elev=39.58' Storage=21,743 cf Inflow=13.20 cfs 1.079 af  
 Outflow=3.90 cfs 1.056 af

**Pond GWB1WQV: GW Bay 1 WQV** Peak Elev=0.00' Storage=0 cf  
 Primary=0.00 cfs 0.000 af

**Pond GWB2WQV: GW Bay 2 WQV** Peak Elev=0.00' Storage=0 cf  
 Primary=0.00 cfs 0.000 af

**Pond PPV: Permanent Pool Volume** Peak Elev=0.00' Storage=0 cf  
 8.0" Round Culvert n=0.013 L=1.0' S=0.0000 '/' Primary=0.00 cfs 0.000 af

**Pond PRG-01:** Peak Elev=51.16' Storage=2,582 cf Inflow=1.74 cfs 0.136 af  
 Discarded=0.02 cfs 0.069 af Primary=0.83 cfs 0.056 af Outflow=0.86 cfs 0.125 af



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Type III 24-hr 10-YR Rainfall=4.88"

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**Pond PRG-02:** Peak Elev=51.21' Storage=1,837 cf Inflow=1.48 cfs 0.115 af  
Discarded=0.02 cfs 0.048 af Primary=1.20 cfs 0.060 af Outflow=1.22 cfs 0.108 af

**Pond SF-1: Sediment Forebay** Peak Elev=40.56' Storage=2,511 cf Inflow=2.70 cfs 0.203 af  
Discarded=0.01 cfs 0.032 af Primary=2.27 cfs 0.152 af Outflow=2.28 cfs 0.184 af

**Link FES1:** Inflow=13.20 cfs 1.079 af  
Primary=13.20 cfs 1.079 af

**Link FES3:** Inflow=1.78 cfs 0.134 af  
Primary=1.78 cfs 0.134 af

**Link FES4:** Inflow=3.54 cfs 0.268 af  
Primary=3.54 cfs 0.268 af

**Link FES5:** Inflow=2.70 cfs 0.203 af  
Primary=2.70 cfs 0.203 af

**Link FES6:** Inflow=3.90 cfs 1.056 af  
Primary=3.90 cfs 1.056 af

**Link PA1:** Inflow=8.45 cfs 0.801 af  
Primary=8.45 cfs 0.801 af

**Link PA2:** Inflow=3.90 cfs 1.056 af  
Primary=3.90 cfs 1.056 af

**Total Runoff Area = 8.511 ac Runoff Volume = 2.066 af Average Runoff Depth = 2.91"**  
**55.07% Pervious = 4.687 ac 44.93% Impervious = 3.824 ac**



**K0076-13-POST**

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Type III 24-hr 25-YR Rainfall=6.19"

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Time span=0.00-60.00 hrs, dt=0.10 hrs, 601 points x 2  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment Post 1.1:** Runoff Area=47,167 sf 50.65% Impervious Runoff Depth=4.16"  
 Flow Length=483' Tc=5.0 min CN=82 Runoff=4.90 cfs 0.376 af

**Subcatchment Post 1.2:** Runoff Area=28,752 sf 31.34% Impervious Runoff Depth=3.54"  
 Flow Length=213' Tc=5.0 min CN=76 Runoff=2.58 cfs 0.195 af

**Subcatchment Post 1.3:** Runoff Area=42,156 sf 28.79% Impervious Runoff Depth=3.65"  
 Flow Length=229' Tc=5.0 min CN=77 Runoff=3.89 cfs 0.294 af

**Subcatchment Post 1.4:** Runoff Area=61,172 sf 7.80% Impervious Runoff Depth=3.15"  
 Flow Length=238' Tc=5.0 min CN=72 Runoff=4.89 cfs 0.369 af

**Subcatchment Post 2:** Runoff Area=154,617 sf 61.84% Impervious Runoff Depth=4.48"  
 Flow Length=951' Tc=5.0 min CN=85 Runoff=17.09 cfs 1.326 af

**Subcatchment Post 2A:** Runoff Area=19,925 sf 57.73% Impervious Runoff Depth=4.81"  
 Flow Length=951' Tc=5.0 min CN=88 Runoff=2.32 cfs 0.183 af

**Subcatchment Post 2B:** Runoff Area=16,954 sf 56.89% Impervious Runoff Depth=4.81"  
 Flow Length=951' Tc=5.0 min CN=88 Runoff=1.98 cfs 0.156 af

**Reach TS-1: Treatment Swale #1** Avg. Flow Depth=0.79' Max Vel=0.51 fps Inflow=4.90 cfs 0.376 af  
 n=0.150 L=150.0' S=0.0050 '/' Capacity=6.46 cfs Outflow=4.22 cfs 0.376 af

**Reach TS-2: Treatment Swale #2** Avg. Flow Depth=0.60' Max Vel=0.43 fps Inflow=2.58 cfs 0.195 af  
 n=0.150 L=110.0' S=0.0050 '/' Capacity=5.79 cfs Outflow=2.26 cfs 0.195 af

**Reach TS-3: Treatment Swale #3** Avg. Flow Depth=0.65' Max Vel=0.47 fps Inflow=3.50 cfs 0.242 af  
 n=0.150 L=115.0' S=0.0052 '/' Capacity=6.60 cfs Outflow=3.03 cfs 0.242 af

**Pond FBV: Forebay Volume** Peak Elev=0.00' Storage=0 cf  
 12.0" Round Culvert n=0.013 L=1.0' S=0.0500 '/' Primary=0.00 cfs 0.000 af

**Pond GW-1: Gravel Wetland #1** Peak Elev=40.18' Storage=28,765 cf Inflow=20.61 cfs 1.527 af  
 Outflow=5.86 cfs 1.504 af

**Pond GWB1WQV: GW Bay 1 WQV** Peak Elev=0.00' Storage=0 cf  
 Primary=0.00 cfs 0.000 af

**Pond GWB2WQV: GW Bay 2 WQV** Peak Elev=0.00' Storage=0 cf  
 Primary=0.00 cfs 0.000 af

**Pond PPV: Permanent Pool Volume** Peak Elev=0.00' Storage=0 cf  
 8.0" Round Culvert n=0.013 L=1.0' S=0.0000 '/' Primary=0.00 cfs 0.000 af

**Pond PRG-01:** Peak Elev=51.30' Storage=2,815 cf Inflow=2.32 cfs 0.183 af  
 Discarded=0.02 cfs 0.070 af Primary=2.01 cfs 0.102 af Outflow=2.03 cfs 0.173 af



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Type III 24-hr 25-YR Rainfall=6.19"

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**Pond PRG-02:** Peak Elev=51.27' Storage=1,915 cf Inflow=1.98 cfs 0.156 af  
Discarded=0.02 cfs 0.049 af Primary=1.81 cfs 0.099 af Outflow=1.83 cfs 0.149 af

**Pond SF-1: Sediment Forebay** Peak Elev=40.74' Storage=2,784 cf Inflow=3.89 cfs 0.294 af  
Discarded=0.01 cfs 0.033 af Primary=3.50 cfs 0.242 af Outflow=3.51 cfs 0.275 af

**Link FES1:** Inflow=20.61 cfs 1.527 af  
Primary=20.61 cfs 1.527 af

**Link FES3:** Inflow=2.58 cfs 0.195 af  
Primary=2.58 cfs 0.195 af

**Link FES4:** Inflow=4.90 cfs 0.376 af  
Primary=4.90 cfs 0.376 af

**Link FES5:** Inflow=3.89 cfs 0.294 af  
Primary=3.89 cfs 0.294 af

**Link FES6:** Inflow=5.86 cfs 1.504 af  
Primary=5.86 cfs 1.504 af

**Link PA1:** Inflow=13.75 cfs 1.181 af  
Primary=13.75 cfs 1.181 af

**Link PA2:** Inflow=5.86 cfs 1.504 af  
Primary=5.86 cfs 1.504 af

**Total Runoff Area = 8.511 ac Runoff Volume = 2.898 af Average Runoff Depth = 4.09"**  
**55.07% Pervious = 4.687 ac 44.93% Impervious = 3.824 ac**



**K0076-13-POST**

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Type III 24-hr 50-YR Rainfall=7.41"

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Time span=0.00-60.00 hrs, dt=0.10 hrs, 601 points x 2  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment Post 1.1:** Runoff Area=47,167 sf 50.65% Impervious Runoff Depth=5.30"  
 Flow Length=483' Tc=5.0 min CN=82 Runoff=6.18 cfs 0.478 af

**Subcatchment Post 1.2:** Runoff Area=28,752 sf 31.34% Impervious Runoff Depth=4.62"  
 Flow Length=213' Tc=5.0 min CN=76 Runoff=3.35 cfs 0.254 af

**Subcatchment Post 1.3:** Runoff Area=42,156 sf 28.79% Impervious Runoff Depth=4.74"  
 Flow Length=229' Tc=5.0 min CN=77 Runoff=5.02 cfs 0.382 af

**Subcatchment Post 1.4:** Runoff Area=61,172 sf 7.80% Impervious Runoff Depth=4.18"  
 Flow Length=238' Tc=5.0 min CN=72 Runoff=6.49 cfs 0.489 af

**Subcatchment Post 2:** Runoff Area=154,617 sf 61.84% Impervious Runoff Depth=5.65"  
 Flow Length=951' Tc=5.0 min CN=85 Runoff=21.26 cfs 1.670 af

**Subcatchment Post 2A:** Runoff Area=19,925 sf 57.73% Impervious Runoff Depth=5.99"  
 Flow Length=951' Tc=5.0 min CN=88 Runoff=2.86 cfs 0.228 af

**Subcatchment Post 2B:** Runoff Area=16,954 sf 56.89% Impervious Runoff Depth=5.99"  
 Flow Length=951' Tc=5.0 min CN=88 Runoff=2.43 cfs 0.194 af

**Reach TS-1: Treatment Swale #1** Avg. Flow Depth=0.91' Max Vel=0.55 fps Inflow=6.18 cfs 0.478 af  
 n=0.150 L=150.0' S=0.0050 '/ Capacity=6.46 cfs Outflow=5.39 cfs 0.478 af

**Reach TS-2: Treatment Swale #2** Avg. Flow Depth=0.69' Max Vel=0.47 fps Inflow=3.35 cfs 0.254 af  
 n=0.150 L=110.0' S=0.0050 '/ Capacity=5.79 cfs Outflow=2.97 cfs 0.254 af

**Reach TS-3: Treatment Swale #3** Avg. Flow Depth=0.77' Max Vel=0.52 fps Inflow=4.22 cfs 0.329 af  
 n=0.150 L=115.0' S=0.0052 '/ Capacity=6.60 cfs Outflow=4.09 cfs 0.329 af

**Pond FBV: Forebay Volume** Peak Elev=0.00' Storage=0 cf  
 12.0" Round Culvert n=0.013 L=1.0' S=0.0500 '/ Primary=0.00 cfs 0.000 af

**Pond GW-1: Gravel Wetland #1** Peak Elev=40.81' Storage=36,961 cf Inflow=25.93 cfs 1.953 af  
 Outflow=6.74 cfs 1.930 af

**Pond GWB1WQV: GW Bay 1 WQV** Peak Elev=0.00' Storage=0 cf  
 Primary=0.00 cfs 0.000 af

**Pond GWB2WQV: GW Bay 2 WQV** Peak Elev=0.00' Storage=0 cf  
 Primary=0.00 cfs 0.000 af

**Pond PPV: Permanent Pool Volume** Peak Elev=0.00' Storage=0 cf  
 8.0" Round Culvert n=0.013 L=1.0' S=0.0000 '/ Primary=0.00 cfs 0.000 af

**Pond PRG-01:** Peak Elev=51.34' Storage=2,889 cf Inflow=2.86 cfs 0.228 af  
 Discarded=0.02 cfs 0.072 af Primary=2.54 cfs 0.146 af Outflow=2.57 cfs 0.218 af



**K0076-13-POST**

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Type III 24-hr 50-YR Rainfall=7.41"

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**Pond PRG-02:** Peak Elev=51.31' Storage=1,966 cf Inflow=2.43 cfs 0.194 af  
Discarded=0.02 cfs 0.050 af Primary=2.24 cfs 0.137 af Outflow=2.26 cfs 0.187 af

**Pond SF-1: Sediment Forebay** Peak Elev=40.86' Storage=2,967 cf Inflow=5.02 cfs 0.382 af  
Discarded=0.01 cfs 0.033 af Primary=4.22 cfs 0.329 af Outflow=4.23 cfs 0.362 af

**Link FES1:** Inflow=25.93 cfs 1.953 af  
Primary=25.93 cfs 1.953 af

**Link FES3:** Inflow=3.35 cfs 0.254 af  
Primary=3.35 cfs 0.254 af

**Link FES4:** Inflow=6.18 cfs 0.478 af  
Primary=6.18 cfs 0.478 af

**Link FES5:** Inflow=5.02 cfs 0.382 af  
Primary=5.02 cfs 0.382 af

**Link FES6:** Inflow=6.74 cfs 1.930 af  
Primary=6.74 cfs 1.930 af

**Link PA1:** Inflow=18.36 cfs 1.551 af  
Primary=18.36 cfs 1.551 af

**Link PA2:** Inflow=6.74 cfs 1.930 af  
Primary=6.74 cfs 1.930 af

**Total Runoff Area = 8.511 ac Runoff Volume = 3.697 af Average Runoff Depth = 5.21"**  
**55.07% Pervious = 4.687 ac 44.93% Impervious = 3.824 ac**



## Owner's/Agent Letter of Authorization

I, Michael Kane, of Borthwick Forest, LLC c/o The Kane Company (Applicant) hereby give Tighe & Bond (Civil Engineer) permission to be my agent in all matters concerning all state and local permitting for the proposed project off Borthwick Avenue in Portsmouth, New Hampshire. This project includes the construction of a ±67,000 SF office building and subdivision road with associated site improvements. This authorization shall include any required signatures for all state and local permit applications.

  
Signature

Michael Kane  
Print Name

May 17, 2019  
Date



## Owner's/Agent Letter of Authorization

I, Michael Kane, of Borthwick Forest, LLC c/o The Kane Company (Applicant) hereby give Tighe & Bond (Civil Engineer) permission to be my agent in all matters concerning all state and local permitting for the proposed project off Borthwick Avenue in Portsmouth, New Hampshire. This project includes the construction of a ±67,000 SF office building and subdivision road with associated site improvements. This authorization shall include any required signatures for all state and local permit applications.

  
Signature

Michael Kane  
Print Name

May 17, 2019  
Date