

E-5065-001
July 24, 2024

Mr. Rick Chellman, Chairman
City of Portsmouth Planning Board
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: **Site Review Permit Application (LU-24-114)**
Ethos Veterinary Health, 231 Corporate Drive – Portsmouth, NH

Dear Chairman Chellman:

On behalf of Ethos Veterinary Health, we are pleased to submit the following information to support a request to the Planning Board for a recommendation for approval to the Pease Development Authority (PDA) for Site Plan Review and Wetland Buffer Conditional Use Permit for a proposed building expansion, located at 231 Corporate Drive:

- One (1) copy of the PDA Application for Site Review, dated June 17, 2024;
- One (1) full-size & one (1) half-size copy of the Site Plan Set, last revised July 24, 2024;
- One (1) copy of the Drainage Analysis, last revised July 24, 2024;
- One (1) copy of the Operations and Maintenance Plan, dated June 17, 2024;
- One (1) copy of the Site Plan Review Application Fee Form;
- TAC Stipulation Response, dated July 24, 2024;

The proposed project is located at 231 Corporate Drive which is identified as Map 314 Lot 2 on the City of Portsmouth Tax Maps. The existing site currently consists of a 2-story building, previously occupied by Southern New Hampshire University, with associated parking and site improvements.

The proposed project consists of the construction of a 2,340 SF addition for a linear accelerator vault to support the recently opened veterinary hospital. In addition to the building expansion, the project proposes to remove a row of parking which will reduce overall impervious surface impacts within the wetland buffer by approximately 8,801 SF.

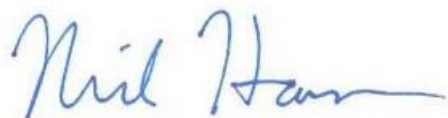
The project will consist of associated site improvements such as lighting, landscaping, and stormwater management that will include stormwater treatment via a Contech Jellyfish unit to treat the proposed pavement section and building addition.



We respectfully request to be placed on the Planning Board (PB) meeting agenda for August 15, 2024. If you have any questions or need any additional information, please contact Neil Hansen by phone at (603) 294-9213 or by email at nahansen@tighebond.com.

Sincerely,

TIGHE & BOND, INC.



Neil A. Hansen, PE
Project Manager



Patrick M. Crimmins, PE
Vice President

Copy: Ethos Veterinary Health (via email)
The Kane Company (via email)
Capone Architecture (via email)
Pease Development Authority

J:\E\E5065 Ethos Veterinary Health\001_231 Corporate Drive\Report - Evaluation\Applications\City of Portsmouth\20240724_PB Submission\E-5065-001 PB Cover Letter.docx



Application for Site Review

For PDA Use Only			
Date Submitted: _____	Municipal Review: _____	Fee: _____	
Application Complete: _____	Date Forwarded: _____	Paid: _____	Check #: _____

Applicant Information

Applicant: Ethos Veterinary Health	Agent: Tighe & Bond
Address: 150 Presidential Way, Suite 200 Woburn, MA 01801	Address: 177 Corporate Dr Portsmouth, NH 03801
Business Phone:	Business Phone: 603-433-8818
Mobile Phone:	Mobile Phone:
Fax:	Fax:

Site Information

Portsmouth Tax Map: 314	Lot #: 2	Zone: Business & Commercial
Site Address / Location : 231 Corporate Drive Portsmouth, NH 03801		
Site Address / Location :		Area of On-site Wetlands:

Activity Information

Change of Use: Yes [] No []	Existing Use: <u>Office Space</u>
	Proposed Use: <u>Veterinary Clinic</u>
Description of Project: <u>The proposed project consists of converting the existing 2-story building to a veterinary clinic and the construction of a 2,340 SF addition for a linear accelerator vault. In addition to the building expansion, the project proposes to remove a row of parking which will reduce the overall surface impacts within the wetland buffer by approximately 8,800 SF. The project will consist of associated site improvements such as lighting, landscaping, and stormwater management that will include stormwater treatment via a Contech Jellyfish unit to treat the proposed pavement section, building addition and pet relief areas.</u>	
<i>All above information shall be shown on a site plan submitted with this application. Provide 3 full size hard copies and one PDF copy of all application materials as well as one half-size set of drawings to PDA. Applicant shall supply additional copies as may be required by applicable municipality. Refer to Chapter 400 of PDA land Use Controls for additional information.</i>	

Certification

I hereby certify under the penalties of perjury that the foregoing information and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I hereby apply for Site Review and acknowledge I will comply with all regulations and any conditions established by the Review Committee(s) and PDA Board in the development and construction of this project.	
<u>Douglas Berry</u> Signature of Applicant	<u>06/17/24</u> Date
<u>Douglas Berry</u> Printed Name	

N:\Engineer\ ApplicationforSiteReview.xlsx

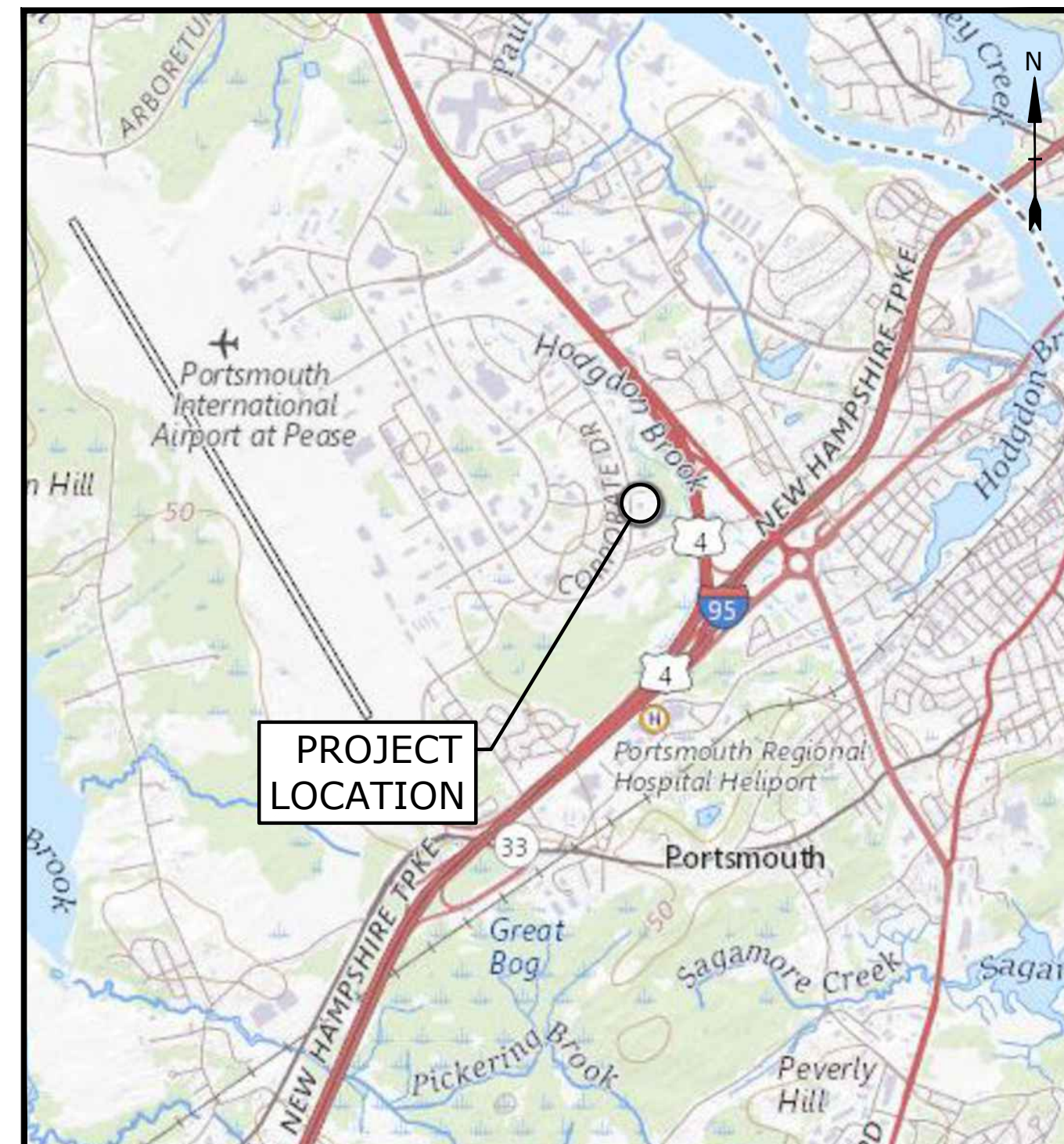
231 CORPORATE DRIVE PROPOSED VETERINARY OFFICE

PORTSMOUTH, NEW HAMPSHIRE

JUNE 17, 2024

LAST REVISED: JULY 24, 2024

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	7/24/2024
1 OF 1	EXISTING CONDITIONS - TOPOGRAPHIC PLAN	12/22/2022
G-100	GENERAL NOTES AND LEGEND SHEET	7/24/2024
C-101	EXISTING CONDITIONS & DEMOLITION PLAN	7/24/2024
C-102	SITE PLAN	7/24/2024
C-103	GRADING, DRAINAGE, AND EROSION CONTROL PLAN	7/24/2024
C-104	UTILITY PLAN	7/24/2024
C-105	LANDSCAPE PLAN	7/24/2024
C-106	PHOTOMETRIC PLAN	7/24/2024
C-501	EROSION CONTROL NOTES AND DETAILS SHEET	7/24/2024
C-502	DETAILS SHEET	7/24/2024
C-503	DETAILS SHEET	7/24/2024
C-504	DETAILS SHEET	7/24/2024
C-505	DETAILS SHEET	7/24/2024
A1-02	LINAC ADDITION PROPOSED FLOOR PLAN	5/14/2024



LOCATION MAP
SCALE: 1" = 3000'

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

177 CORPORATE DRIVE
PORTSMOUTH, NH 03801
603-433-8818

APPLICANT:

ETHOS VETERINARY HEALTH
150 Presidential Way, Suite 200
Woburn, MA 01801

ARCHITECT:

CAPONE ARCHITECTURE
18 Shipyard Dr #2a
Hingham, MA 02043

LESSOR:

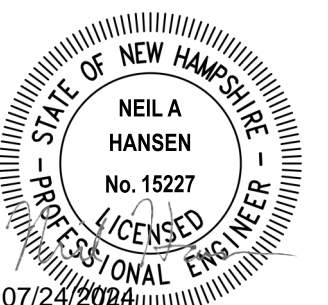
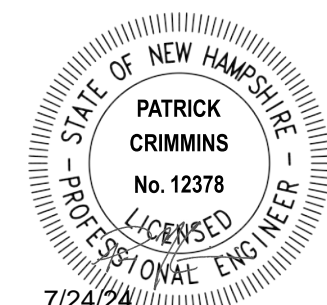
PEASE DEVELOPMENT AUTHORITY
55 International Drive
Portsmouth, NH 03801

LESSEE:

THE KANE COMPANY
210 Commerce Way, Suite 300
Portsmouth, NH 03801

SURVEYOR:

DOUCET SURVEY LLC
102 Kent Place
Newmarket, NH 03857



**PB SUBMISSION
COMPLETE SET 15 SHEETS**



NOTES:

- REFERENCE: TAX MAP 314, LOT 2
231 CORPORATE DRIVE LLC
210 COMMERCE WAY, SUITE 300
PORTSMOUTH, NEW HAMPSHIRE 03801
- FIELD SURVEY PERFORMED BY J.H.H. & M.A.W. (DOUCET SURVEY) DURING DECEMBER 2022 USING A TRIMBLE S5 TOTAL STATION WITH A TRIMBLE TSC3 DATA COLLECTOR AND A TRIMBLE DINI DIGITAL LEVEL. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.
- HORIZONTAL DATUM BASED ON NAD83(2011) NEW HAMPSHIRE STATE PLANE COORDINATE ZONE (2800) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK.
- VERTICAL DATUM IS BASED ON NAVD88 PER NHDOT DISK 379-0740 WITH A PUBLISHED ELEVATION OF 38.17'.
- WETLAND DELINEATIONS WERE CONDUCTED BY JEREMY DEGLER (CWS #301, PWS #2809) ON NOVEMBER 29, 2022, FOLLOWING THE METHODOLOGIES OUTLINED IN THE U.S. ARMY CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL, TECHNICAL REPORT Y-87-1 (JANUARY, 1987), AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTH-CENTRAL AND NORTHEAST REGION (JANUARY, 2012).
- PROPER FIELD PROCEDURES WERE FOLLOWED IN ORDER TO GENERATE CONTOURS AT 2' INTERVALS. ANY MODIFICATION OF THIS INTERVAL WILL DIMINISH THE INTEGRITY OF THE DATA. DOUCET SURVEY WILL NOT BE RESPONSIBLE FOR ANY SUCH ALTERATION PERFORMED BY THE USER.
- UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON OBSERVED PHYSICAL EVIDENCE AND PAINT MARKS FOUND ON-SITE.
- THE ACCURACY OF MEASURED UTILITY INVERTS AND PIPE SIZES/TYPES IS SUBJECT TO NUMEROUS FIELD CONDITIONS, INCLUDING: THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS ELEMENTS, MANHOLE CONFIGURATION, ETC.
- ALL UNDERGROUND UTILITIES (ELECTRIC, GAS, TEL. WATER, SEWER DRAIN SERVICES) ARE SHOWN IN SCHEMATIC FASHION, THEIR LOCATIONS ARE NOT PRECISE OR NECESSARILY ACCURATE. NO WORK WHATSOEVER SHALL BE UNDERTAKEN 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.
- OVERALL PARCEL BOUNDARIES AS SHOWN HEREON ARE BASED ON GIS DATA AND ARE IN THEIR ORIGINAL LOCATION.

TAX MAP 303, LOT 6
PEASE DEVELOPMENT AUTHORITY
WASTEWATER TREATMENT PLANT
135 CORPORATE DR
PORTSMOUTH, NH 03801

TAX MAP 303, LOT 6
PEASE DEVELOPMENT AUTHORITY
WASTEWATER TREATMENT PLANT
135 CORPORATE DR
PORTSMOUTH, NH 03801

CONC. HDWL.
W/30" RCP INV.=22.7'
PAD MOUNTED TRANSFORMER
AT&T WITNESS POST
AT&T TEST STATION
MW
420/44/H41
OHWC
G
DYL
(A)
(B)
(C)
SMH 3114
RIM ELEV.=29.1'
(NOT OPENED)
DMH 3109
RIM ELEV.=30.0'
(A) 30" RCP INV.=23.0'
(B) 24" RCP INV.=23.2'
(C) U.T.M. RECESSED

CB 3005
RIM ELEV.=28.7'
(NO PIPES TO SITE)
X 28.9
STOP
OHWC
VGC
6" PE UNTL
CORPORATE DRIVE

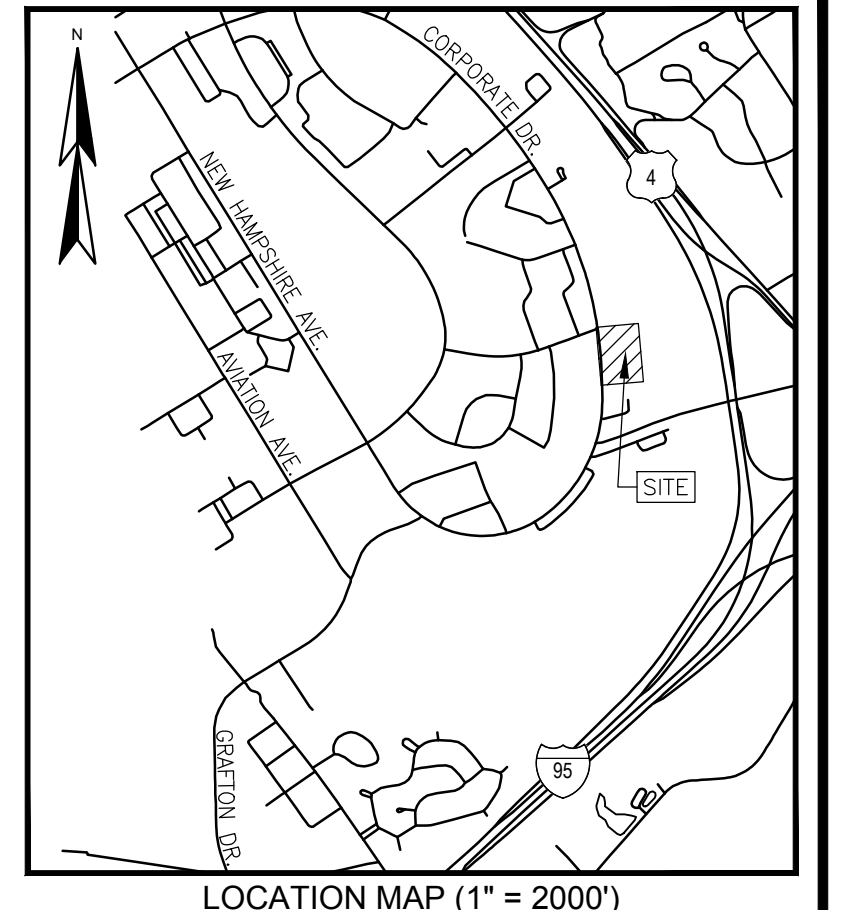
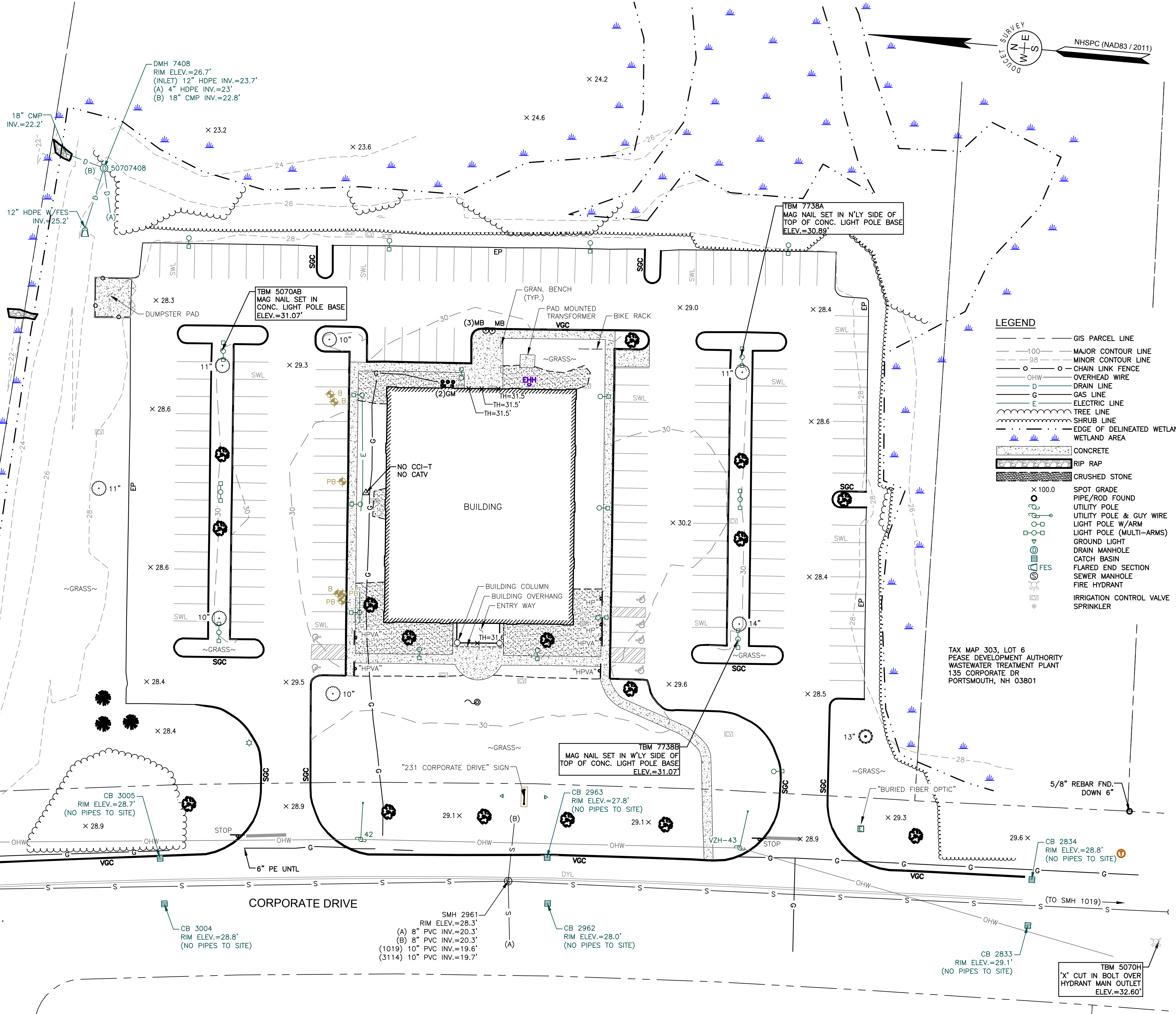
SMH 2961
RIM ELEV.=28.3'
(A) 8" PVC INV.=20.3'
(B) 8" PVC INV.=20.3'
(1019) 10" PVC INV.=19.6'
(3114) 10" PVC INV.=19.7'
CB 3004
RIM ELEV.=28.8'
(NO PIPES TO SITE)
CB 2962
RIM ELEV.=28.0'
(NO PIPES TO SITE)

CB 2833
RIM ELEV.=29.1'
(NO PIPES TO SITE)
TBM 5070H
"X" CUT IN BOLT OVER
HYDRANT MAIN OUTLET
ELEV.=32.60'

TAX MAP 315, LOT 3
230 CORPORATE DRIVE LLC
C/O THE KANE COMPANY
210 COMMERCE WAY STE 300
PORTSMOUTH, NH 03801

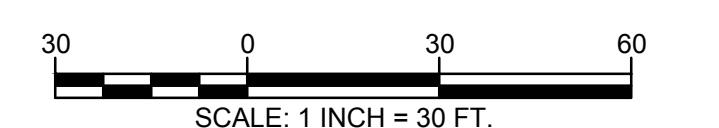
TAX MAP 313, LOT 3
162 CORPORATE DRIVE LLC
210 COMMERCE WAY SUITE 300
PORTSMOUTH, NH 03801

OAK AVENUE



LEGEND

- GIS PARCEL LINE
- 100' MAJOR CONTOUR LINE
- 98' MINOR CONTOUR LINE
- CHAIN LINK FENCE
- OHW OVERHEAD WIRE
- D DRAIN LINE
- G GAS LINE
- E ELECTRIC LINE
- T TREE LINE
- S SHRUB LINE
- EDGE OF DELINEATED WETLAND
- WETLAND AREA
- CONCRETE
- RIP RAP
- CRUSHED STONE
- X 100.0 SPOT GRADE
- PIPE/ROD FOUND
- UTILITY POLE
- UTILITY POLE & GUY WIRE
- LIGHT POLE W/ARM
- LIGHT POLE (MULTI-ARMS)
- GROUND LIGHT
- DRAIN MANHOLE
- CATCH BASIN
- FLARED END SECTION
- SEWER MANHOLE
- FIRE HYDRANT
- IRRIGATION CONTROL VALVE
- SPRINKLER
- GM GAS METER
- OHH HAND HOLE
- EMH ELECTRIC MANHOLE
- EB ELECTRIC BOX
- TMH TELEPHONE MANHOLE
- CB CABLE BOX
- S SIGN
- B BOLLARD
- F FLAG POLE
- M MAIL BOX
- STAKE
- CONIFEROUS TREE LESS THAN 10" DIA.
- DECIDUOUS TREE 10" DIA. OR GREATER
- DECIDUOUS TREE LESS THAN 10" DIA.
- B BORING LOCATION
- MW MONITORING WELL LOCATION
- CMP CORRUGATED METAL PIPE
- CONC. CONCRETE
- DYL DOUBLE YELLOW LINE
- EP EDGE OF PAVEMENT
- "HP" HANDICAP PARKING SIGN
- "HPVA" HANDICAP PARKING/VAN ACCESSIBLE SIGN
- HDPE HIGH DENSITY POLYETHYLENE PIPE
- HDWL HEADWALL
- SGC SLOPED GRANITE CURB
- SWL SINGLE WHITE LINE
- TH THRESHOLD ELEVATION
- TYP. TYPICAL
- VGC VERTICAL GRANITE CURB



TOPOGRAPHIC PLAN
FOR
CAPONE ARCHITECTURE
OF
TAX MAP 314, LOT 2
231 CORPORATE DRIVE
PORTSMOUTH, NEW HAMPSHIRE

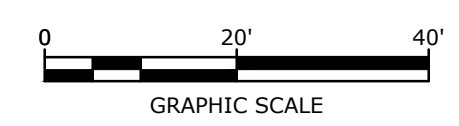
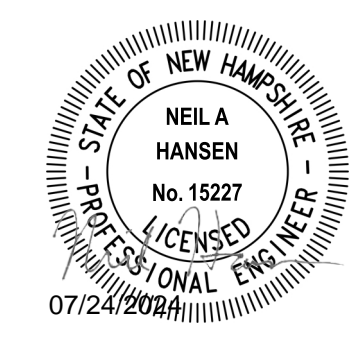
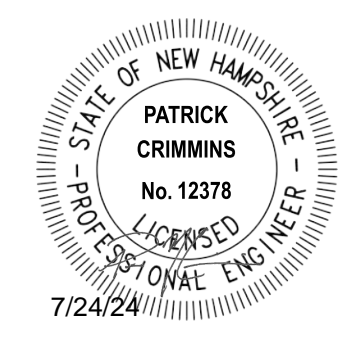
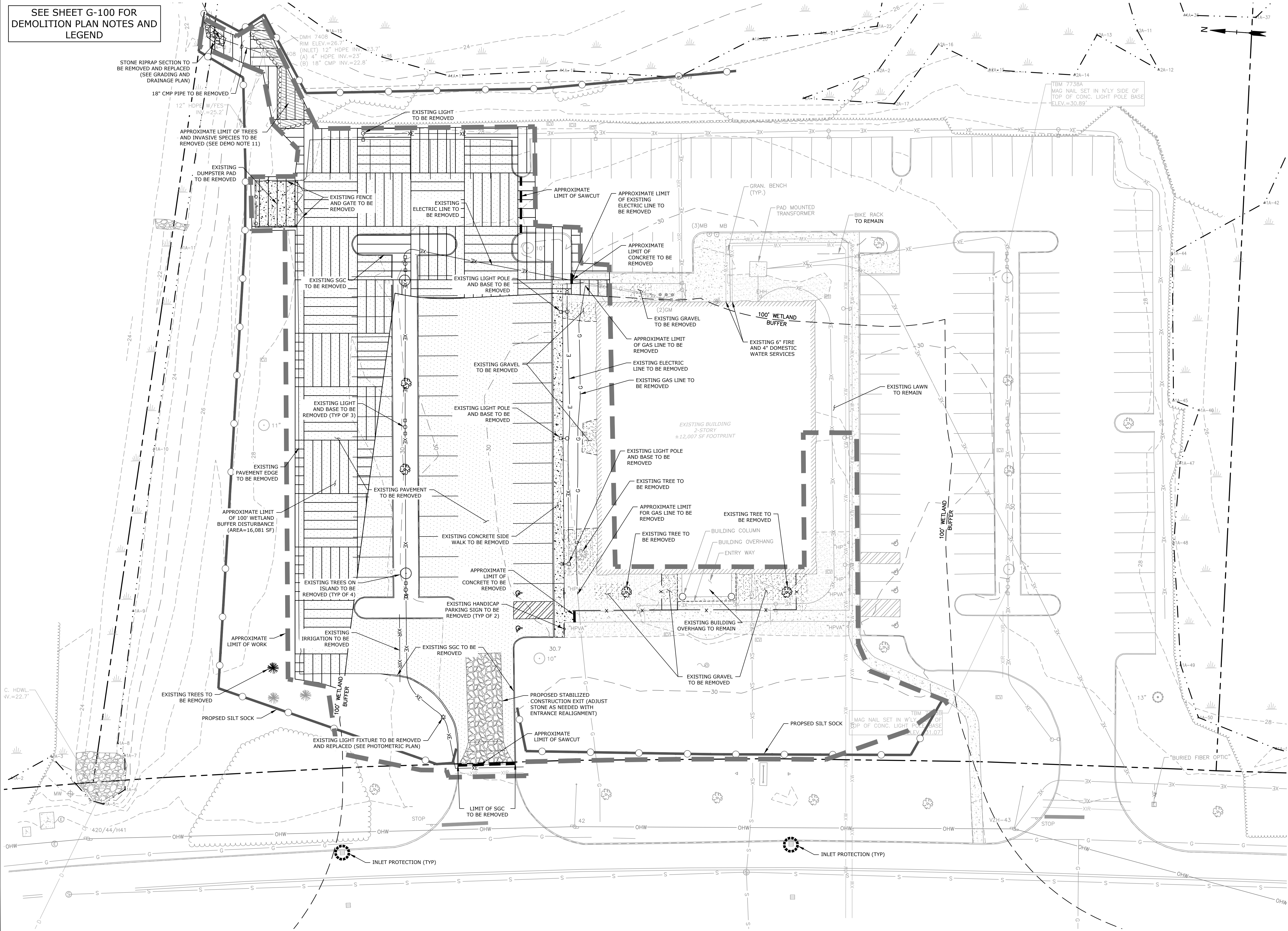
NO.	DATE	DESCRIPTION	BY

DRAWN BY: W.D.C.	DATE: DECEMBER 22, 2022
CHECKED BY: J.F.K.	DRAWING NO. 7738A
JOB NO. 7738	SHEET 1 OF 1

DOUCET SURVEY
Serving Your Professional Surveying & Mapping Needs
102 Kent Place, Newmarket, NH 03857 (603) 659-6560
Offices in Bedford & Keene, NH and Kennebunk, ME
http://www.doucetsurvey.com

FILE NAME: J:\103060 - Stone Veterinary Hospital\103060 - Stone Veterinary Hospital.dwg; PLOT DATE: 12/22/2022 10:58:45 AM; PLOT SCALE: 1" = 30 FT.; PLOT SHEET: 1 OF 1; PLOT TITLE: TOPOGRAPHIC PLAN FOR CAPONE ARCHITECTURE OF TAX MAP 314, LOT 2, 231 CORPORATE DRIVE, PORTSMOUTH, NH 03801

SEE SHEET G-100 FOR
DEMOLITION PLAN NOTES AND
LEGEND



**Proposed
Veterinary
Office**

Ethos Veterinary
Health

231 Corporate Drive
Portsmouth, New
Hampshire

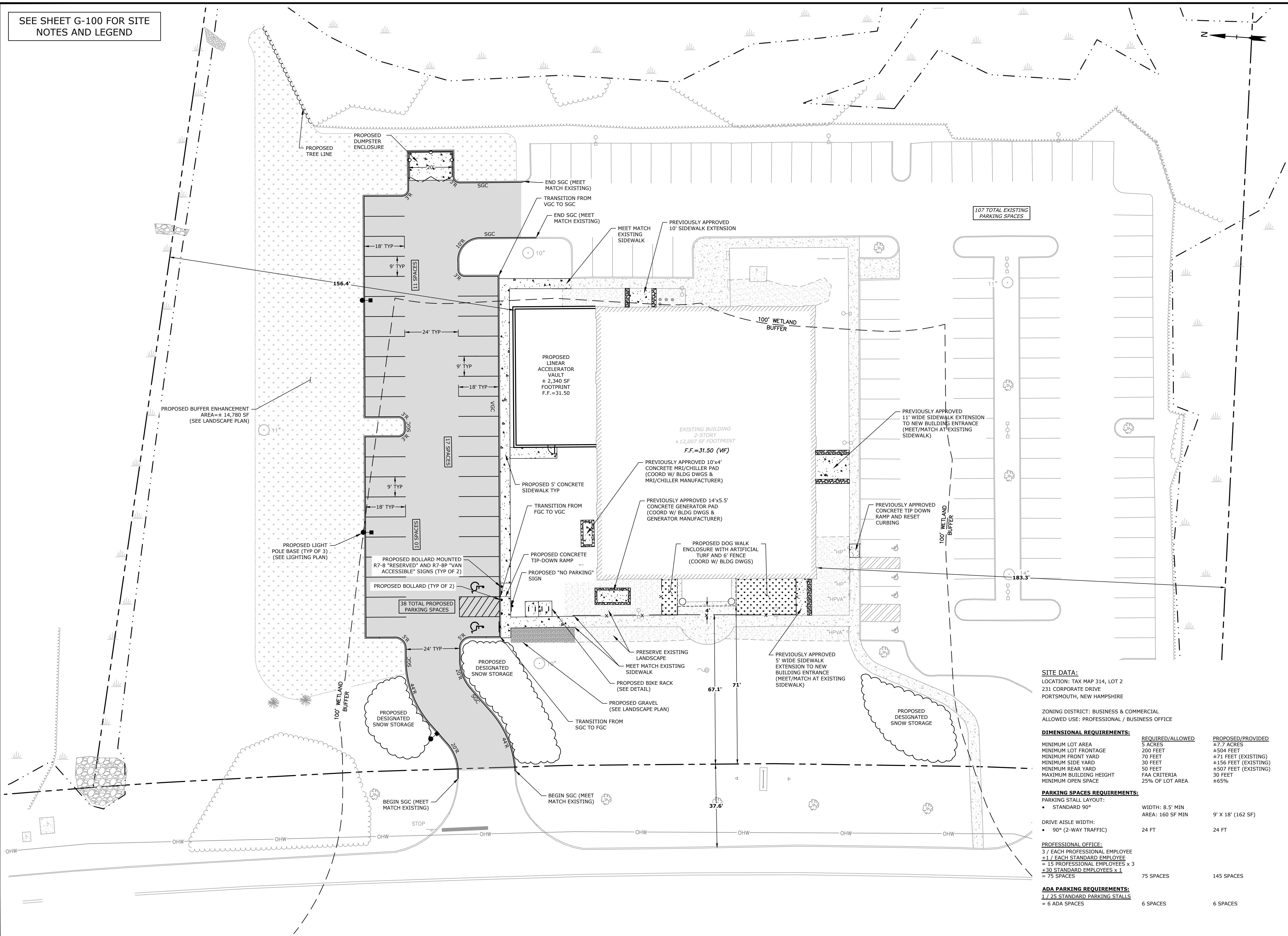
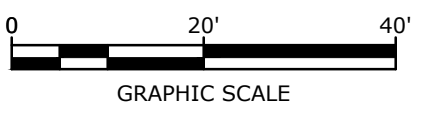
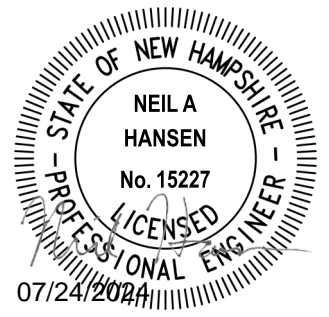
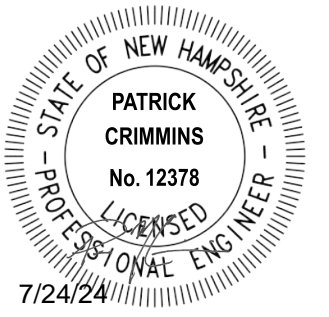
MARK	DATE	DESCRIPTION
A	7/24/2024	PB SUBMISSION
PROJECT NO: ES065-001		
DATE: 07/24/2024		
FILE: ES065-001_C-DSGN.DWG		
DRAWN BY: NWH		
CHECKED: NAH		
APPROVED: PMC		

**EXISTING CONDITIONS &
DEMOLITION PLAN**

SCALE: AS SHOWN

Last Saved: 7/19/2024 4:33pm By: J.Bowman
 Plotted On: 7/19/2024 4:33pm
 Tighe & Bond 231 Corporate Drive Portsmouth, NH 03801
 File: ES065-001_C-DSGN.DWG

SEE SHEET G-100 FOR SITE NOTES AND LEGEND



Proposed Veterinary Office

Ethos Veterinary Health

231 Corporate Drive
Portsmouth, New Hampshire

SITE DATA:
 LOCATION: TAX MAP 314, LOT 2
 231 CORPORATE DRIVE
 PORTSMOUTH, NEW HAMPSHIRE

ZONING DISTRICT: BUSINESS & COMMERCIAL
 ALLOWED USE: PROFESSIONAL / BUSINESS OFFICE

DIMENSIONAL REQUIREMENTS:		
	REQUIRED/ALLOWED	PROPOSED/PROVIDED
MINIMUM LOT AREA	5 ACRES	±7.7 ACRES
MINIMUM LOT FRONTAGE	±504 FEET	±504 FEET
MINIMUM FRONT YARD	70 FEET	±71 FEET (EXISTING)
MINIMUM SIDE YARD	30 FEET	±156 FEET (EXISTING)
MINIMUM REAR YARD	50 FEET	±507 FEET (EXISTING)
MAXIMUM BUILDING HEIGHT	FAA CRITERIA	30 FEET
MINIMUM OPEN SPACE	25% OF LOT AREA	±65%

PARKING SPACES REQUIREMENTS:
 PARKING STALL LAYOUT:
 • STANDARD 90°

	WIDTH: 8.5' MIN AREA: 160 SF MIN	9' X 18' (162 SF)
DRIVE AISLE WIDTH: • 90° (2-WAY TRAFFIC)	24 FT	24 FT

PROFESSIONAL OFFICE:
 3 / EACH PROFESSIONAL EMPLOYEE
 ±1 / EACH STANDARD EMPLOYEE
 = 15 PROFESSIONAL EMPLOYEES x 3
 +30 STANDARD EMPLOYEES x 1
 = 75 SPACES

ADA PARKING REQUIREMENTS:
 1 / 25 STANDARD PARKING STALLS
 = 6 ADA SPACES

	75 SPACES	145 SPACES
	75 SPACES	145 SPACES
	6 SPACES	6 SPACES

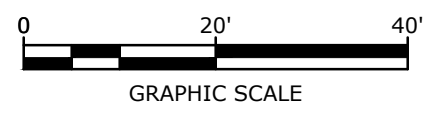
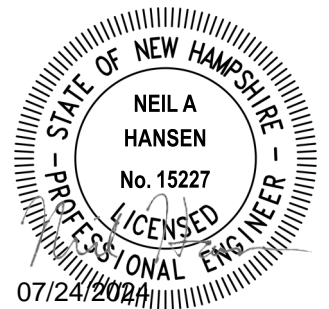
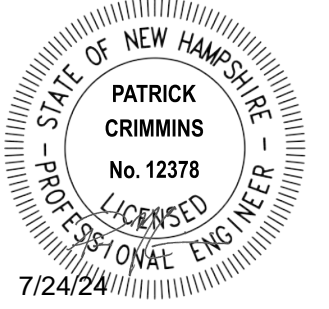
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DATE:	07/24/2024
FILE:	E5065-001_C-DSGN.DWG
DRAWN BY:	NHW
CHECKED:	NAH
APPROVED:	PMC

SITE PLAN

SCALE: AS SHOWN

SEE SHEET G-100 FOR
GRADING, DRAINAGE, AND
EROSION CONTROL
NOTES AND LEGEND



**Proposed
Veterinary
Office**

Ethos Veterinary
Health

231 Corporate Drive
Portsmouth, New
Hampshire

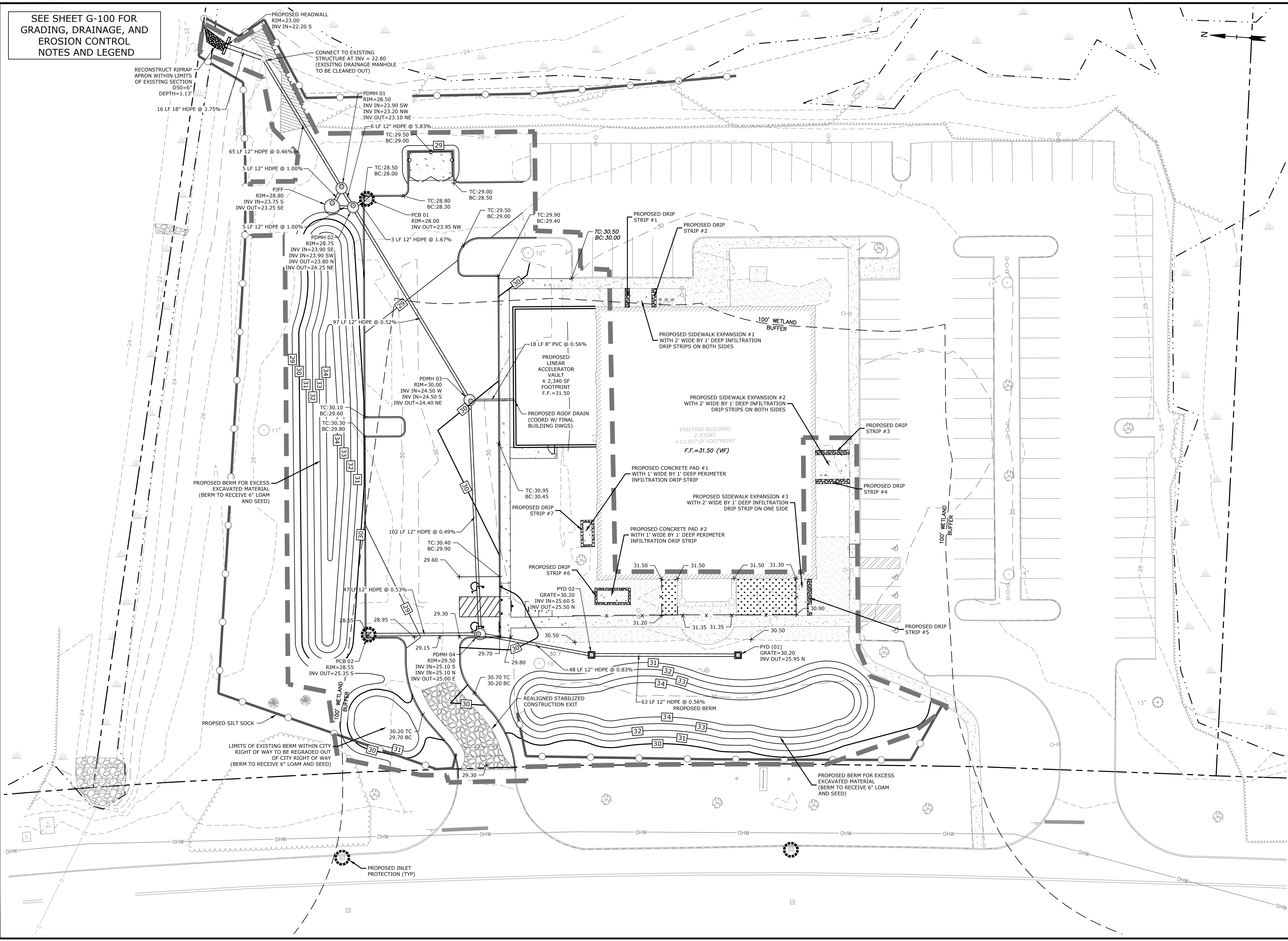
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DRAWN BY: NWH		
CHECKED BY: NAH		
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GRADING, DRAINAGE, AND
EROSION CONTROL PLAN

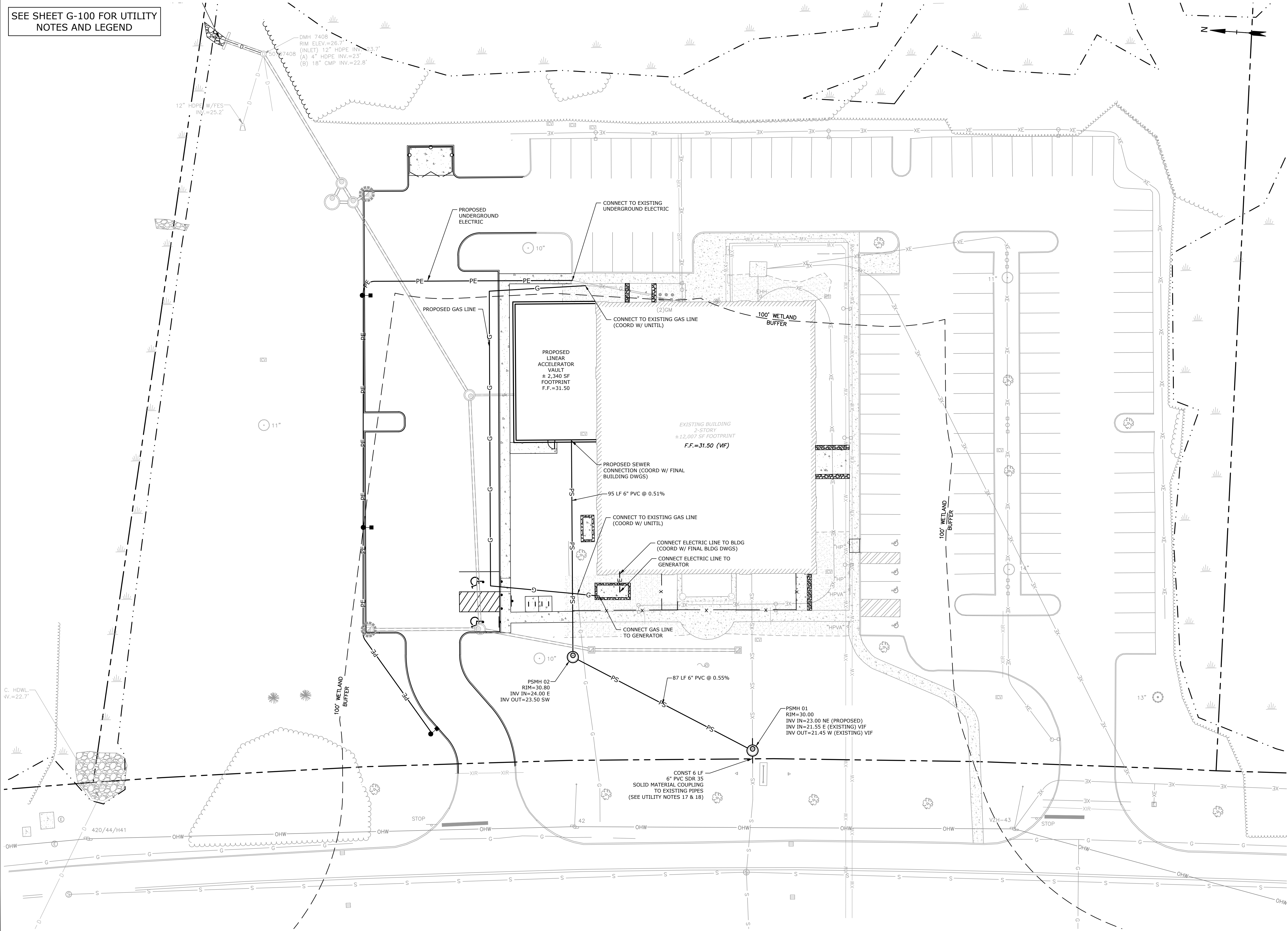
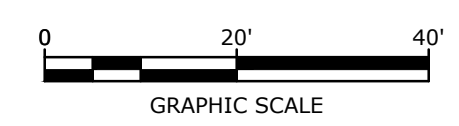
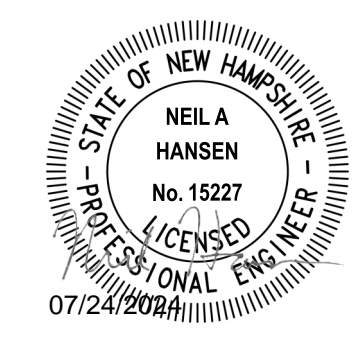
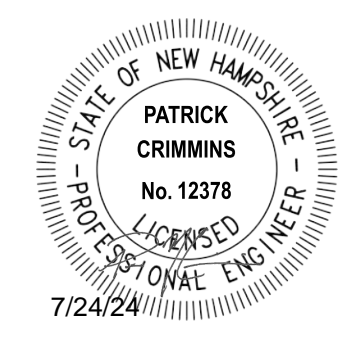
SCALE: AS SHOWN

C-103

Last Saved: 7/19/2024 4:24pm By: J.Bowman
 Plotted On: 7/19/2024 4:24pm
 Tighe & Bond 231 Corporate Drive Portsmouth, NH 03801
 Ethos Veterinary Health 231 Corporate Drive Portsmouth, NH 03801



SEE SHEET G-100 FOR UTILITY NOTES AND LEGEND



Proposed Veterinary Office

Ethos Veterinary Health

231 Corporate Drive
Portsmouth, New Hampshire

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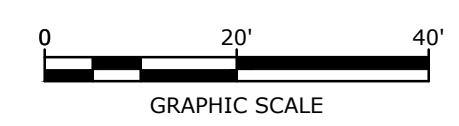
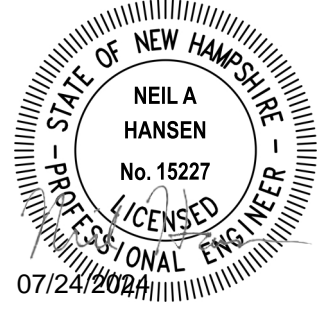
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APPROVED:	PMC

UTILITY PLAN

SCALE: AS SHOWN

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 File: E:\Projects\231 Corporate Drive\Drawings\AutoCAD\Sheet\E5065-001_C-DSGN.dwg

SEE SHEET G-100 FOR
LANDSCAPE NOTES AND
LEGEND



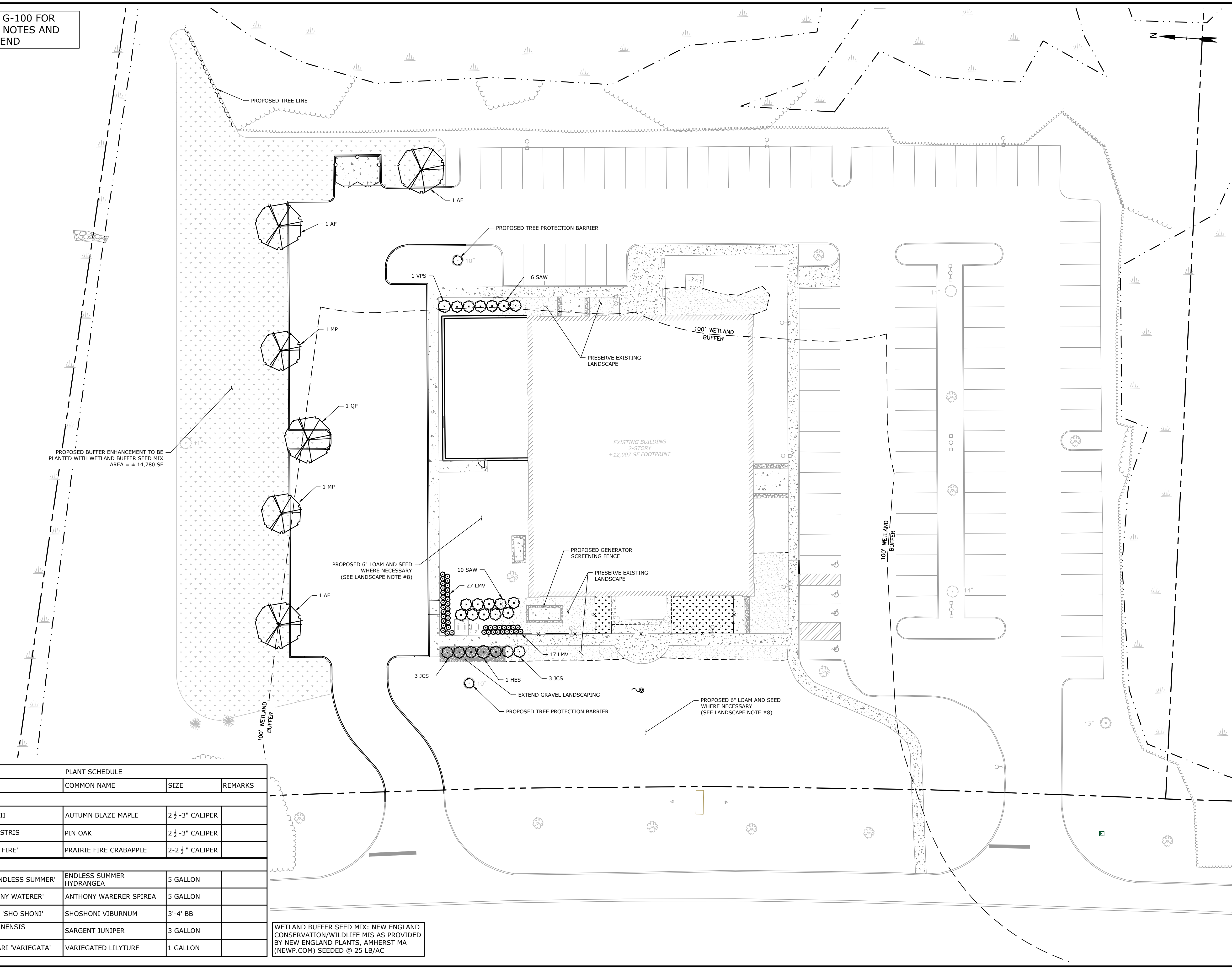
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231 Corporate Drive
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A	7/24/2024	PB SUBMISSION
PROJECT NO: E5065-001		
DATE: 07/24/2024		
FILE: E5065-001_C-DSGN.DWG		
DRAWN BY: NHW		
CHECKED: NAH		
APPROVED: PMC		

LANDSCAPE PLAN
SCALE: AS SHOWN
C-105



PROPOSED BUFFER ENHANCEMENT TO BE
PLANTED WITH WETLAND BUFFER SEED MIX
AREA = ± 14,780 SF

PROPOSED 6" LOAM AND SEED
WHERE NECESSARY
(SEE LANDSCAPE NOTE #8)

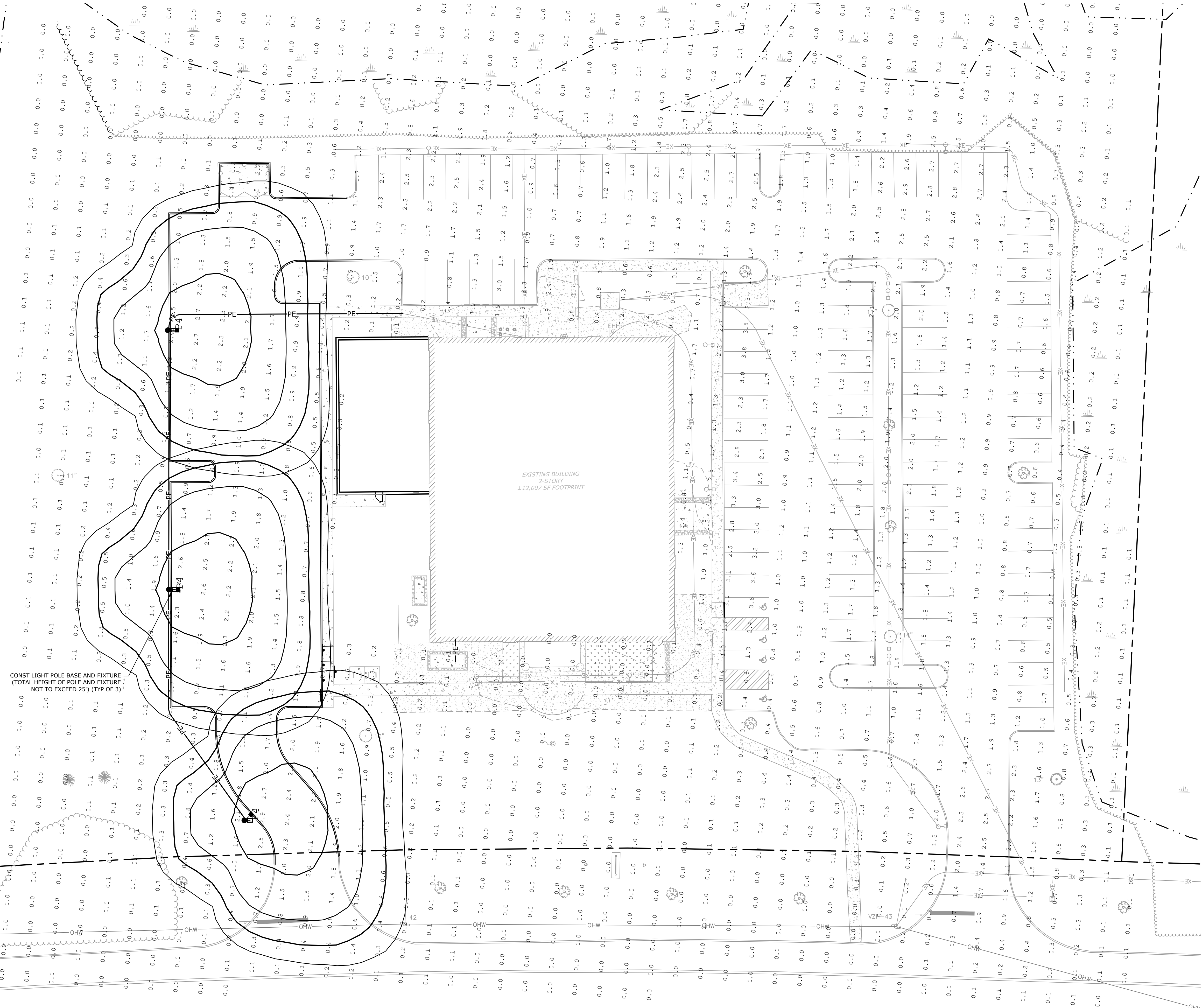
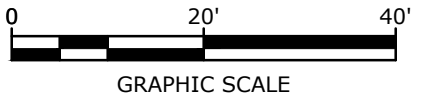
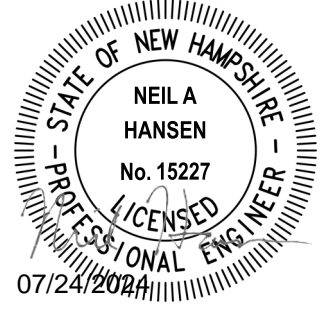
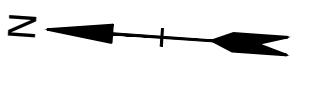
PROPOSED 6" LOAM AND SEED
WHERE NECESSARY
(SEE LANDSCAPE NOTE #8)

WETLAND BUFFER SEED MIX: NEW ENGLAND
CONSERVATION/WILDLIFE MIS AS PROVIDED
BY NEW ENGLAND PLANTS, AMHERST MA
(NEWP.COM) SEEDED @ 25 LB/AC

PLANT SCHEDULE				
CODE	COMMON NAME	SIZE	REMARKS	
TREES				
AF	ACER FREEMANII	AUTUMN BLAZE MAPLE	2 1/2 - 3" CALIPER	
QP	QUERCUS PALUSTRIS	PIN OAK	2 1/2 - 3" CALIPER	
MP	MALUS 'PRAIRE FIRE'	PRAIRIE FIRE CRABAPPLE	2-2 1/2" CALIPER	
SHRUBS				
HES	HYDRANGEA 'ENDLESS SUMMER'	ENDLESS SUMMER HYDRANGEA	5 GALLON	
SAW	SPIREA 'ANTHONY WATERER'	ANTHONY WARERER SPIREA	5 GALLON	
VPS	VIBURNUM P.T. 'SHO SHONI'	SHOSHONI VIBURNUM	3'-4" BB	
JCS	JUNIPERUS CHINENSIS 'SARGENTII'	SARGENT JUNIPER	3 GALLON	
LMV	LIRIOPE MUSCARI 'VARIEGATA'	VARIEGATED LILYTURF	1 GALLON	

Last Saved: 7/19/2024 4:25pm By: J.Bowman
 Plotted On: 7/19/2024 4:25pm
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PROPOSED LIGHT FIXTURES SHALL BE DARK SKY COMPLIANT



CONST LIGHT POLE BASE AND FIXTURE (TOTAL HEIGHT OF POLE AND FIXTURE NOT TO EXCEED 25') (TYP OF 3)

EXISTING BUILDING 2-STORY ±12,007 SF FOOTPRINT

Last Saved: 7/19/2024 4:35pm By: JBoorman
 Project: 15_2024_Ethos Veterinary Health
 File: E:\15_2024_Ethos Veterinary Health\001_231 Corporate Drive\Drawings\AutoCAD\Sheet\ES065-001_C-DSGN.dwg

Proposed Veterinary Office

Ethos Veterinary Health

231 Corporate Drive
 Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
A	7/24/2024	PB SUBMISSION

PROJECT NO:	ES065-001
DATE:	07/24/2024
FILE:	ES065-001_C-DSGN.DWG
DRAWN BY:	NHW
CHECKED:	NAH
APPROVED:	PMC

PHOTOMETRIC PLAN

SCALE: AS SHOWN

GENERAL PROJECT INFORMATION

PROJECT APPLICANT: CAPONE ARCHITECTURE
 PROJECT NAME: PROPOSED VETERINARY OFFICE
 PROJECT ADDRESS: 231 CORPORATE DRIVE, PORTSMOUTH NH
 PROJECT MAP / LOT: TAX MAP 314, LOT 2
 PROJECT LATITUDE: 43°-04'-33.62"N
 PROJECT LONGITUDE: 70°-47'-33.12"W

PROJECT DESCRIPTION

THE PROPOSED PROJECT CONSISTS OF CONVERTING THE EXISTING 2-STORY BUILDING TO A VETERINARY CLINIC AND CONSTRUCTION OF A 2,320 SF ADDITION FOR A LINEAR ACCELERATOR VAULT. IN ADDITION TO THE BUILDING EXPANSION, THE PROJECT PROPOSES TO REMOVE A ROW OF PARKING WHICH WILL REDUCE OVERALL IMPVIOUS SURFACE IMPACTS WITHIN THE WETLAND BUFFER.

DISTURBED AREA

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 1.03 ACRES.

SOIL CHARACTERISTICS

BASED ON THE NRCS WEB SOIL SURVEY FOR STRAFFORD COUNTY - NEW HAMPSHIRE, THE SOILS ON SITE CONSIST OF URBAN LAND-CANTON GRAVELLY FINE SANDY LOAM SOILS WHICH HAVE A FAST INFILTRATION RATE WHEN THOROUGHLY WET. THESE SOILS HAVE A HYDROLOGIC SOIL GROUP RATING OF A.

NAME OF RECEIVING WATERS

THE STORM WATER RUNOFF WILL ULTIMATELY DISCHARGE INTO THE WETLAND TO THE EAST OF THE SITE

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

- CUT AND CLEAR TREES.
- 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
 - CONTROL OF DUST
 - NEARNESS OF CONSTRUCTION SITE TO RECEIVING WATERS
 - CONSTRUCTION DURING LATE WINTER AND EARLY SPRING
- 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.
- CLEAR AND DISPOSE OF DEBRIS.
- CONSTRUCT TEMPORARY CULVERTS AND DIVERSION CHANNELS AS REQUIRED.
- GRADE AND GRAVEL ROADWAYS AND PARKING AREAS - ALL ROADS AND PARKING AREA SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
- BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
- DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, PERIMETER EROSION CONTROL MEASURES, SEDIMENT TRAPS, ETC., MULCH AND SEED AS REQUIRED.
- SEDIMENT TRAPS AND/OR BASINS SHALL BE USED AS NECESSARY TO CONTAIN RUNOFF UNTIL SOILS ARE STABILIZED.
- FINISH PAVING ALL ROADWAYS AND PARKING LOTS.
- INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
- COMPLETE PERMANENT SEEDING AND LANDSCAPING.
- REMOVE TRAPPED SEDIMENTS FROM COLLECTOR DEVICES AS APPROPRIATE AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.

SPECIAL CONSTRUCTION NOTES:

- THE CONSTRUCTION SEQUENCE MUST LIMIT THE DURATION AND AREA OF DISTURBANCE.
- 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.

EROSION CONTROL NOTES:

- 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.
- PRIOR TO ANY WORK OR SOIL DISTURBANCE, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EROSION CONTROL MEASURES AS REQUIRED IN THE PROJECT MANUAL.
- 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.
- 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.
- 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.
- THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
- ALL DISTURBED AREAS NOT OTHERWISE BEING TREATED SHALL RECEIVE 6" LOAM, SEED AND FERTILIZER.
- 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.
- CONSTRUCT EROSION CONTROL BLANKETS ON ALL SLOPES STEEPER THAN 3:1.

STABILIZATION:

- AN AREA SHALL BE CONSIDERED STABLE WHEN ONE OF THE FOLLOWING HAS OCCURRED:
 - BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
 - A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
 - A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED;
 - EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.;
 - 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.
- WINTER STABILIZATION PRACTICES:
 - 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;
 - 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;
 - AFTER OCTOBER 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;
- 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:
 - TEMPORARY SEEDING;
 - MULCHING.

- ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
- 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:

- THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST THROUGHOUT THE CONSTRUCTION PERIOD.
- 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.
- DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.

STOCKPILES:

- LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CATCH BASINS, SWALES, AND CULVERTS.
- ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY EROSION CONTROL MEASURES PRIOR TO THE ONSET OF PRECIPITATION.
- 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.
- 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:

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

VEGETATION:

- TEMPORARY GRASS COVER:
 - SEEDBED PREPARATION:
 - 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;
 - SEEDING:
 - UTILIZE ANNUAL RYE GRASS AT A RATE OF 40 LBS/ACRE;
 - WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF TWO (2) INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED;
 - 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;
 - MAINTENANCE:
 - 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.).
 - VEGETATIVE PRACTICE:
 - FOR PERMANENT MEASURES AND PLANTINGS:
 - 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 7.6;
 - 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;
 - 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;
 - 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;
 - HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AS INDICATED ABOVE;
 - 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 RESEEDDED, AND ALL NOXIOUS WEEDS REMOVED;
 - THE CONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL ACCEPTED;
 - A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL BE APPLIED AT THE INDICATED RATE:

SEED MIX	APPLICATION RATE
CREeping RED FESCUE	20 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
REDTOP	2 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.
- DORMANT SEEDING (SEPTEMBER 15 TO FIRST SNOWFALL):
 - 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:

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

ALLOWABLE NON-STORMWATER DISCHARGES:

- FIRE-FIGHTING ACTIVITIES;
- FIRE HYDRANT FLUSHING;
- WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED;
- WATER USED TO CONTROL DUST;
- POTABLE WATER INCLUDING UNCONTAMINATED WATER LINE FLUSHING;
- ROUTINE EXTERNAL BUILDING WASH DOWN WHERE DETERGENTS ARE NOT USED;
- PAVEMENT WASH WATERS WHERE DETERGENTS ARE NOT USED;
- UNCONTAMINATED AIR CONDITIONING/COMPRESSOR CONDENSATION;
- UNCONTAMINATED GROUND WATER OR SPRING WATER;
- FOUNDATION OR FOOTING DRAINS WHICH ARE UNCONTAMINATED;
- LANDSCAPE IRRIGATION.

WASTE DISPOSAL:

- WASTE MATERIAL:
 - 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;
 - NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
 - ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
- HAZARDOUS WASTE:
 - ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER;
 - SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
- SANITARY WASTE:
 - 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:

- 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.
- 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:
 - GOOD HOUSEKEEPING - THE FOLLOWING GOOD HOUSEKEEPING PRACTICE SHALL BE FOLLOWED ON SITE DURING CONSTRUCTION:
 - ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB SHALL BE STORED ON SITE;
 - 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;
 - MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED;
 - THE SITE SUPERINTENDENT SHALL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS;
 - SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER;
 - WHENEVER POSSIBLE ALL OF A PRODUCT SHALL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
 - HAZARDOUS PRODUCTS - THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
 - PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE;
 - ORIGINAL LABELS AND MATERIAL SAFETY DATA SHALL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION;
 - SURPLUS PRODUCT THAT MUST BE DISPOSED OF SHALL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.
 - PRODUCT SPECIFIC PRACTICES - THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ON SITE:
 - 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.
 - 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.
 - 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:
 - 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;
 - 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;
 - ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY AND REPORTED TO PEASE DEVELOPMENT AUTHORITY;
 - THE SPILL AREA SHALL BE KEPT WELL VENTILATED AND PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE;
 - SPILLS OF TOXIC OR HAZARDOUS MATERIAL SHALL BE REPORTED TO THE APPROPRIATE LOCAL, STATE OR FEDERAL AGENCIES AS REQUIRED;
 - THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS SHALL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.
 - VEHICLE FUELING AND MAINTENANCE PRACTICE:
 - CONTRACTOR SHALL MAKE AN EFFORT TO PERFORM EQUIPMENT/VEHICLE FUELING AND MAINTENANCE AT AN OFF-SITE FACILITY;
 - CONTRACTOR SHALL PROVIDE AN ON-SITE FUELING AND MAINTENANCE AREA THAT IS CLEAN AND DRY;
 - IF POSSIBLE THE CONTRACTOR SHALL KEEP AREA COVERED;
 - CONTRACTOR SHALL KEEP A SPILL KIT AT THE FUELING AND MAINTENANCE AREA;
 - CONTRACTOR SHALL REGULARLY INSPECT VEHICLES FOR LEAKS AND DAMAGE;
 - CONTRACTOR SHALL USE DRIP PANS, DRIP CLOTHS, OR ABSORBENT PADS WHEN REPLACING SPENT FLUID.

EROSION CONTROL OBSERVATIONS AND MAINTENANCE PRACTICES

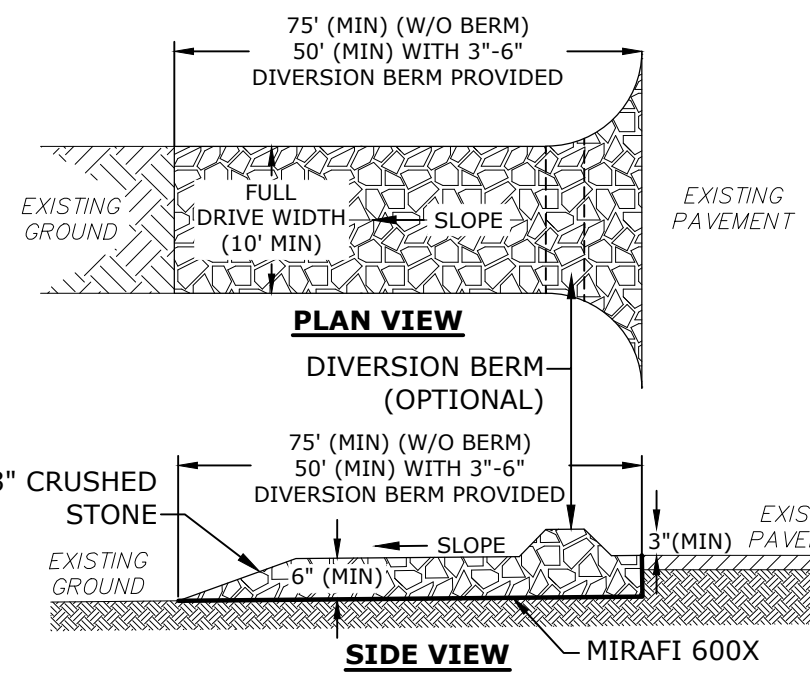
THIS PROJECT DOES NOT EXCEED ONE (1) ACRE OF DISTURBANCE AND THUS DOES NOT REQUIRE A SWPPP.

- THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES THAT SHALL BE FOLLOWED AS PART OF THIS PROJECT:
- AN OBSERVATION REPORT SHALL BE MADE AFTER EACH OBSERVATION AND DISTRIBUTED TO THE ENGINEER, THE OWNER, AND THE CONTRACTOR;
 - A REPRESENTATIVE OF THE SITE CONTRACTOR, SHALL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR ACTIVITIES;
 - IF A REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT;
 - AN NPDES NOTICE OF INTENT SHALL BE SUBMITTED.



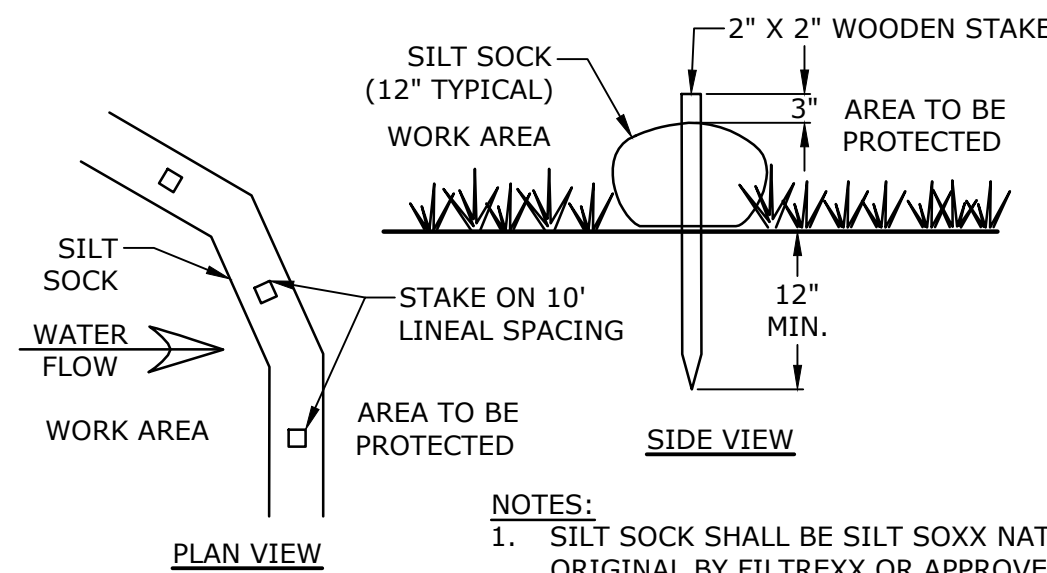
- NOTES:
- CONCRETE WASHOUT SHALL BE "JESCRRAFT" STACKABLE CONCRETE WASHOUT PAN (72"x72"x14") OR APPROVED EQUAL.
 - INSTALL AND MAINTAIN CONCRETE WASHOUT IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
 - CONCRETE WASHOUT SHALL NOT BE PLACED WITHIN 100' WETLAND BUFFER.

CONCRETE WASHOUT DETAIL
NO SCALE



- NOTES:
- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT FROM THE SITE. WHEN WASHING IS REQUIRED, IT SHALL BE DONE SO RUNOFF DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS

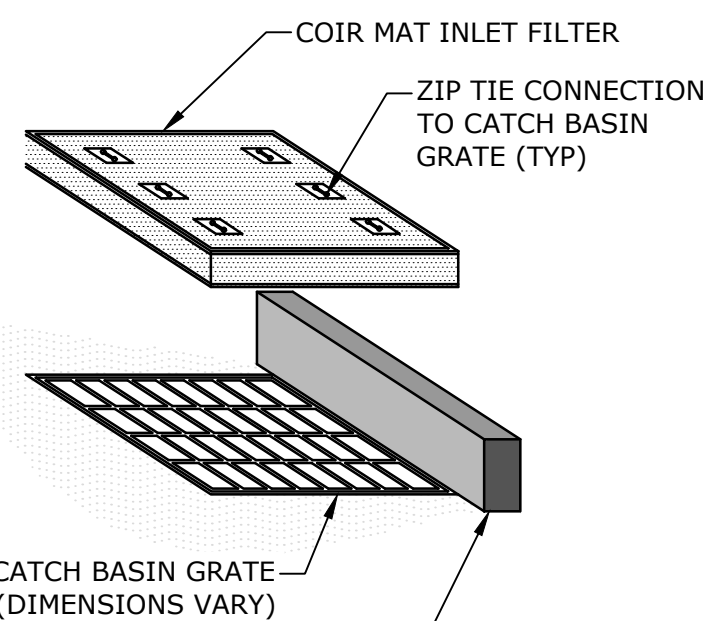
STABILIZED CONSTRUCTION EXIT
NO SCALE



- NOTES:
- SILT SOCK SHALL BE SILT SOCK NATURAL ORIGINAL BY FILTREXX OR APPROVED EQUAL.
 - INSTALL SILT SOCK IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

SILT SOCK

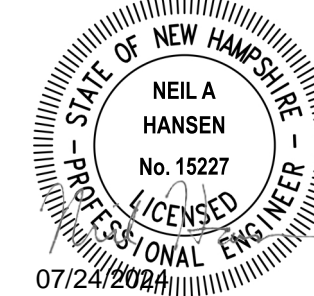
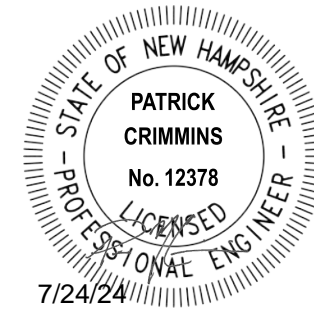
NO SCALE



- NOTES:
- COIR MAT INLET FILTER SHALL BE STORM WATER INLET FILTER BY BLOCKSOM & CO. OR APPROVED EQUAL.
 - INSTALL AND MAINTAIN INLET PROTECTION IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

INLET PROTECTION
NO SCALE

Tighe & Bond



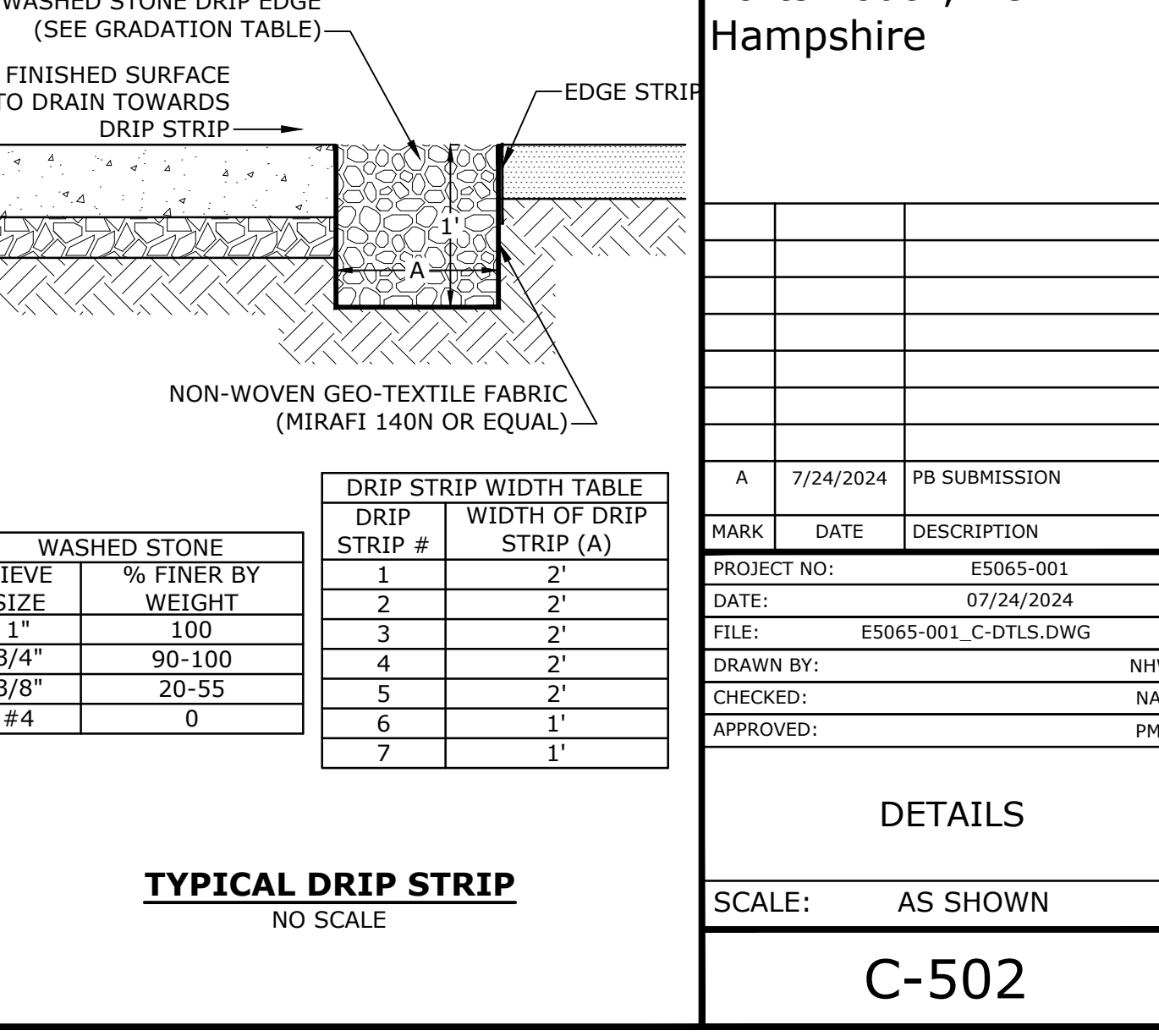
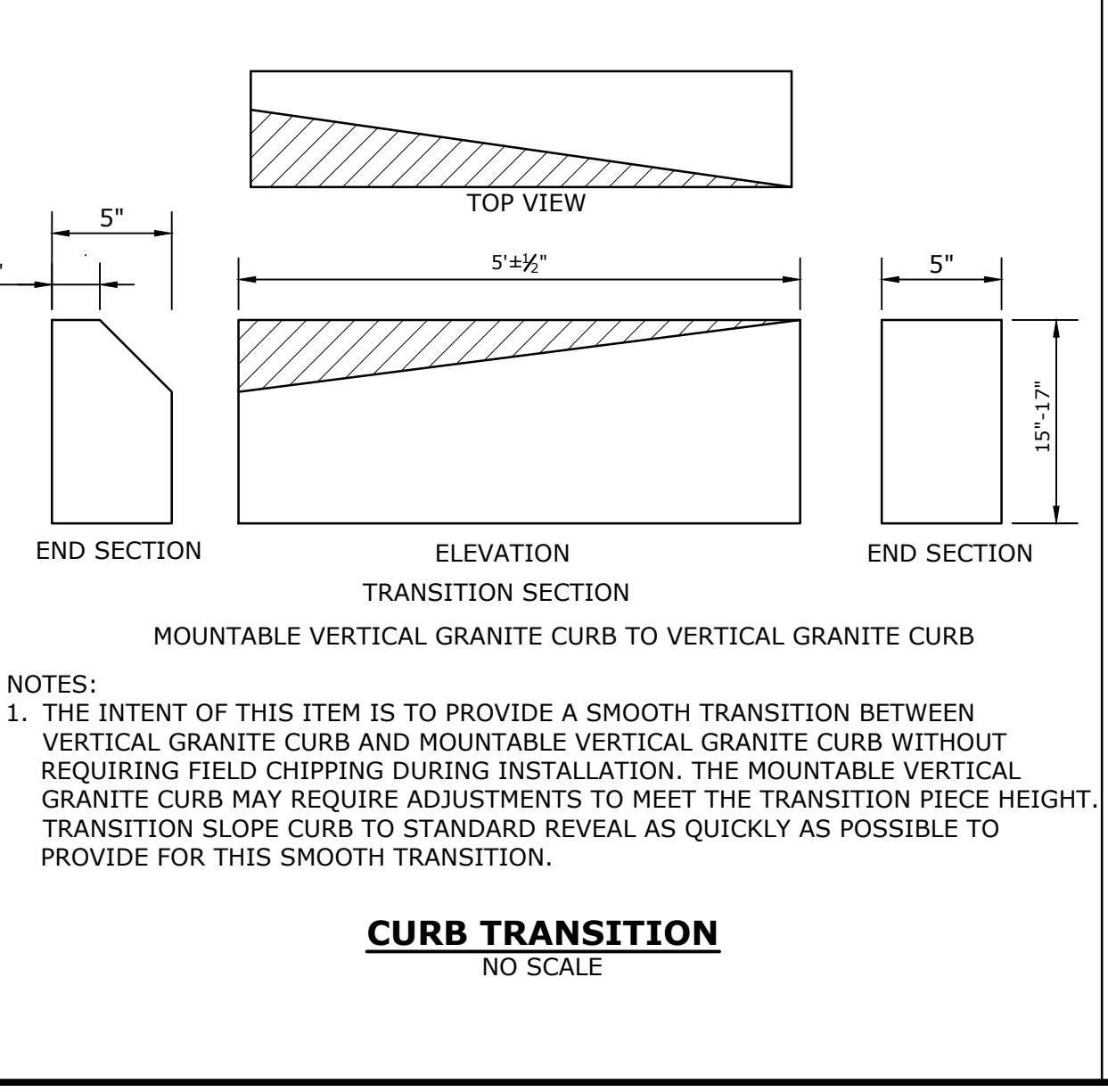
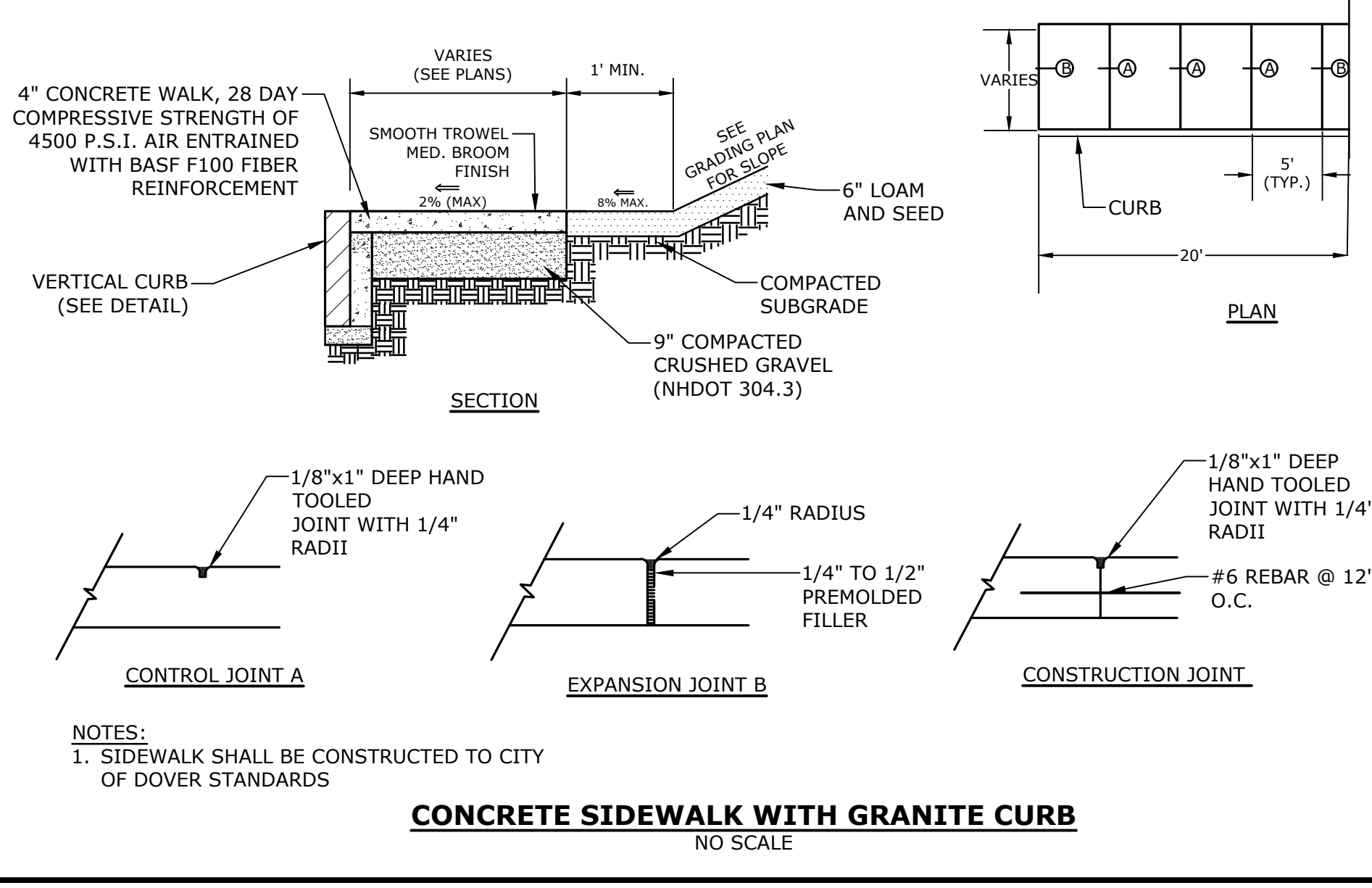
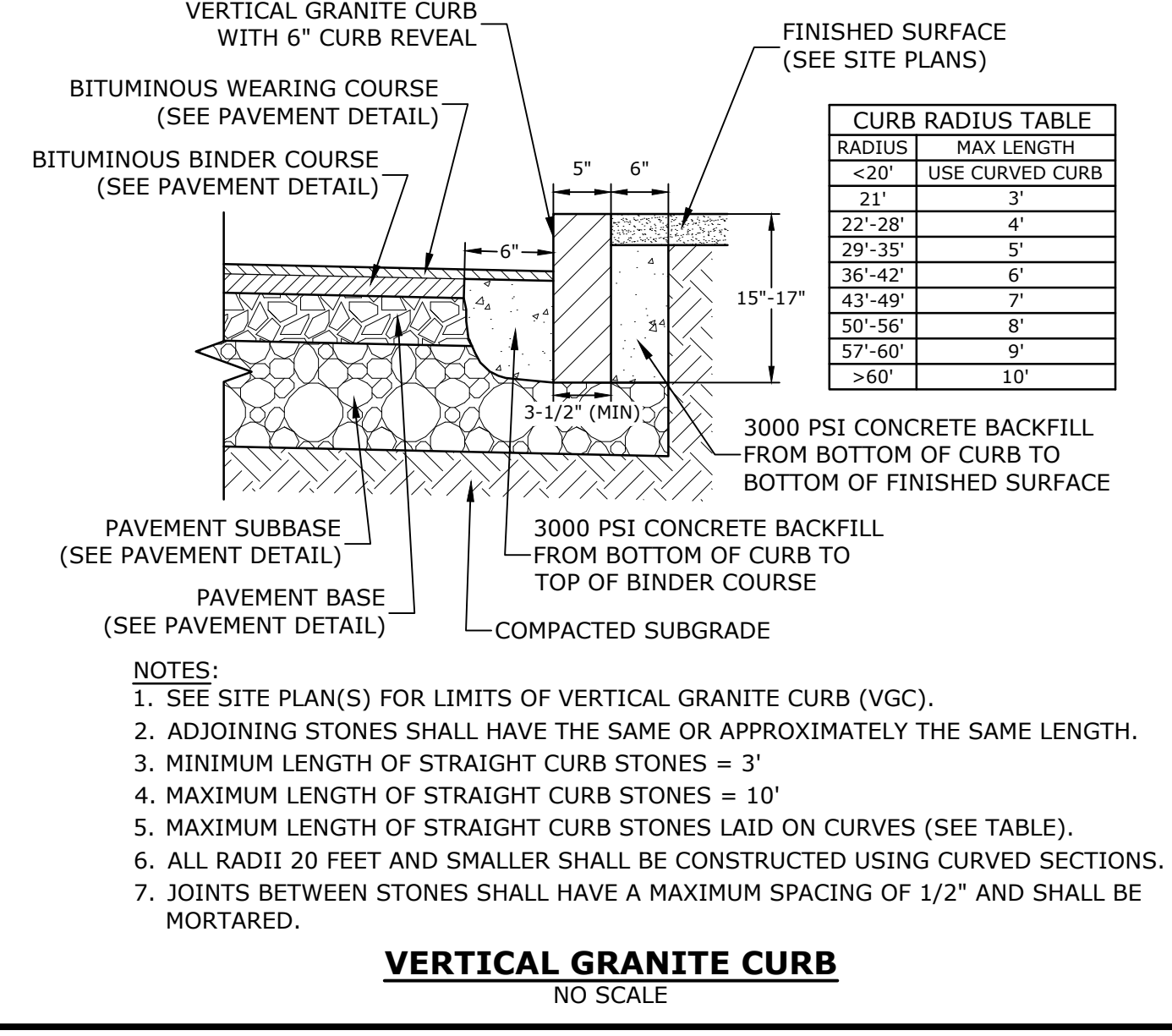
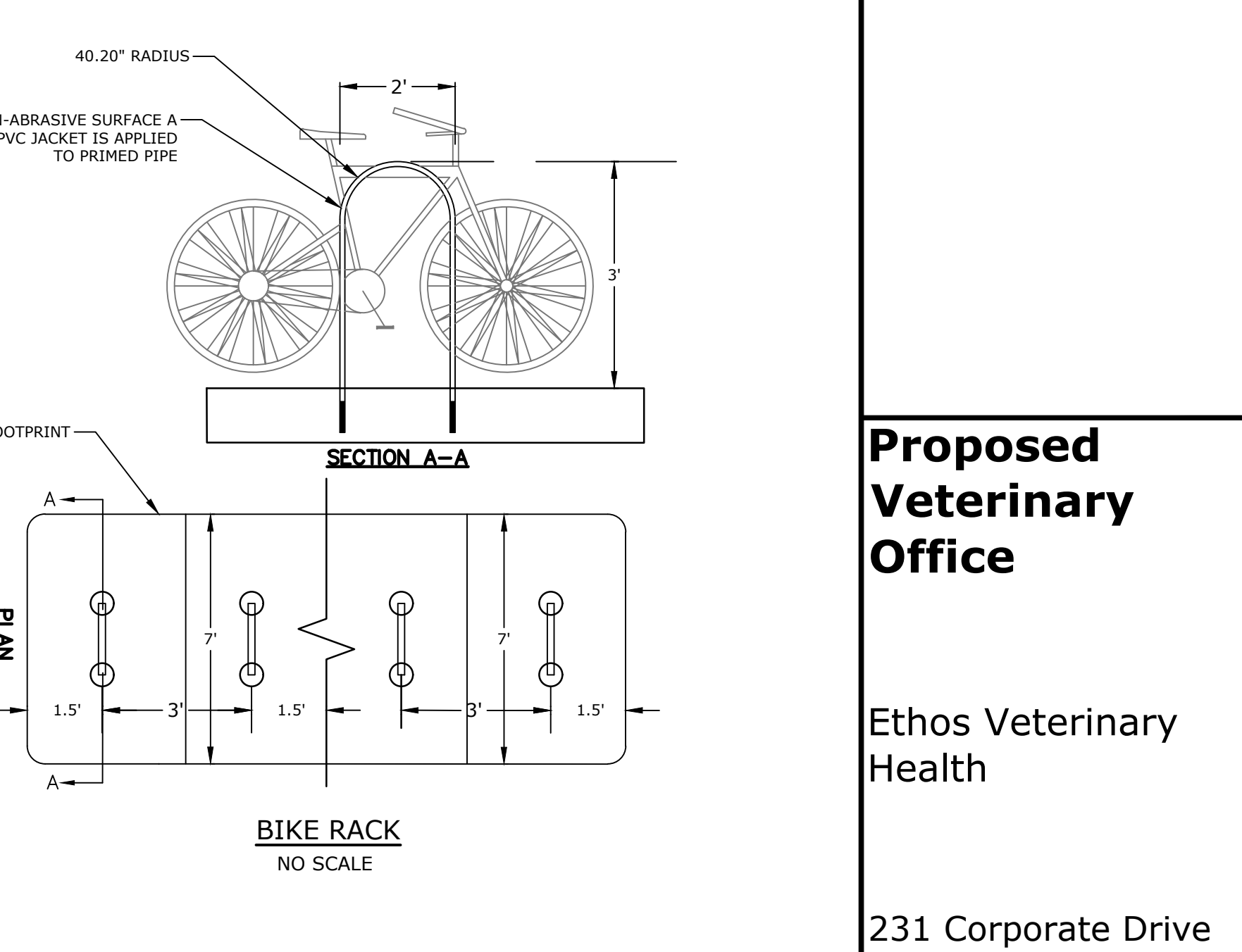
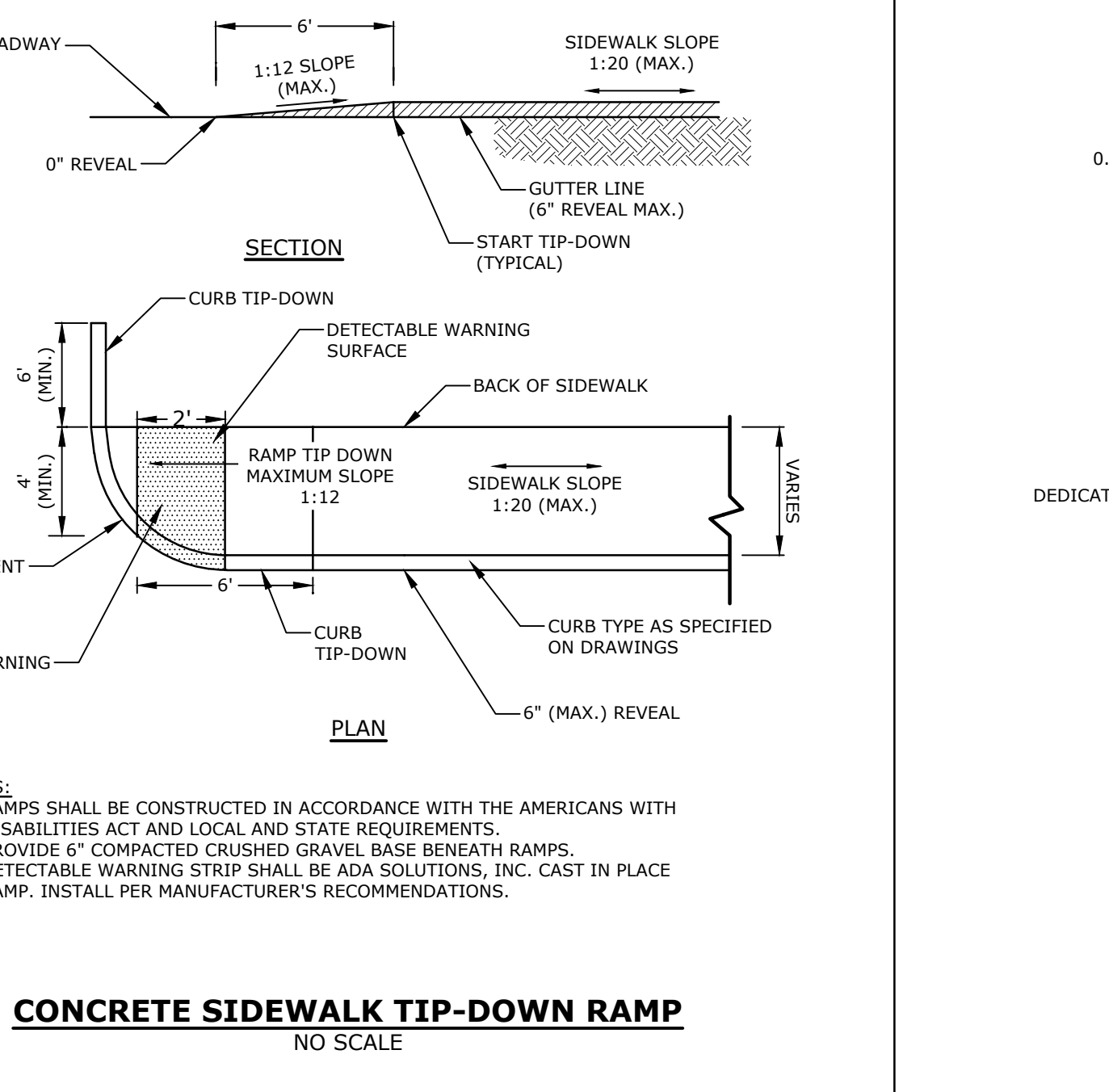
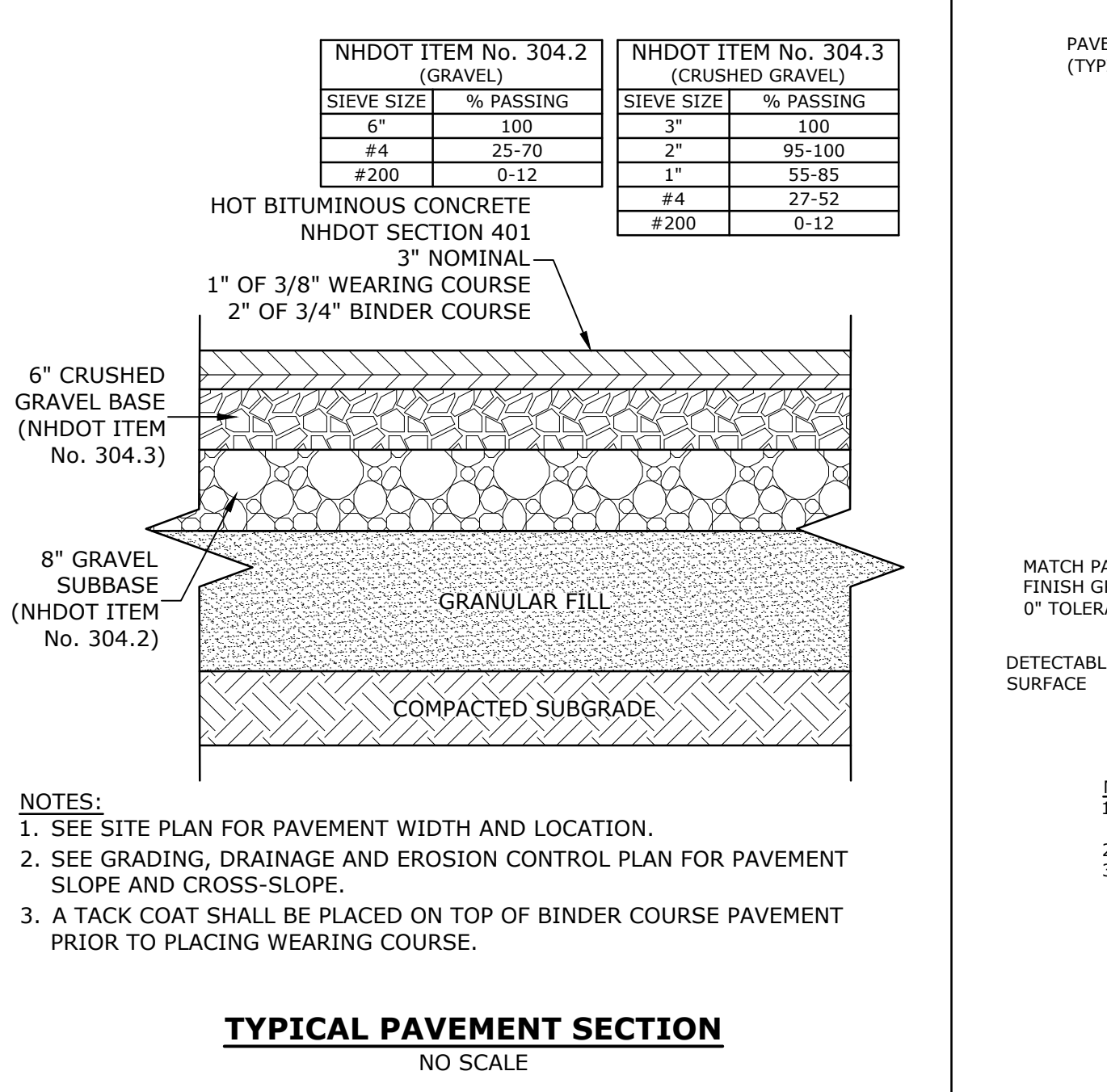
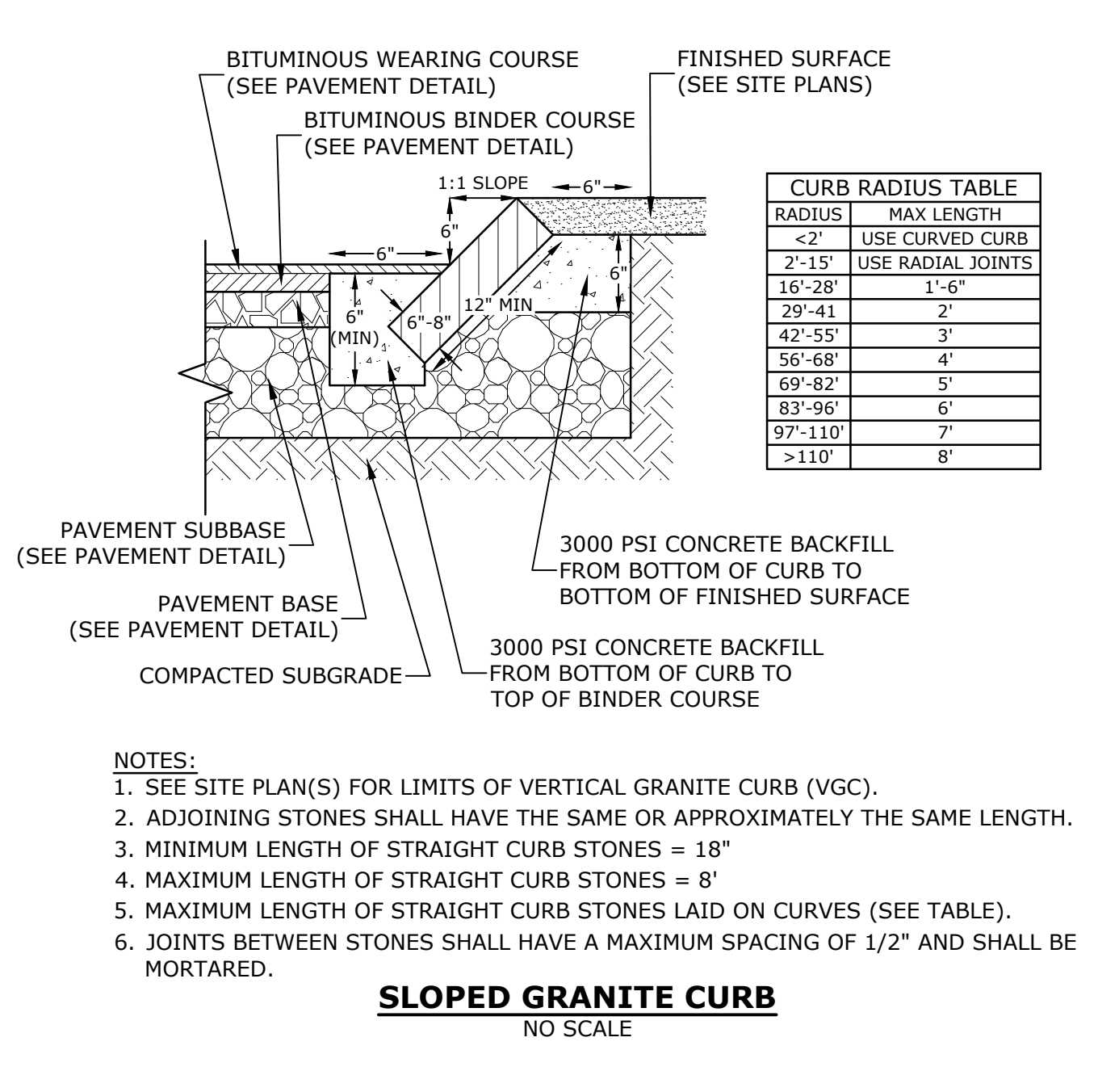
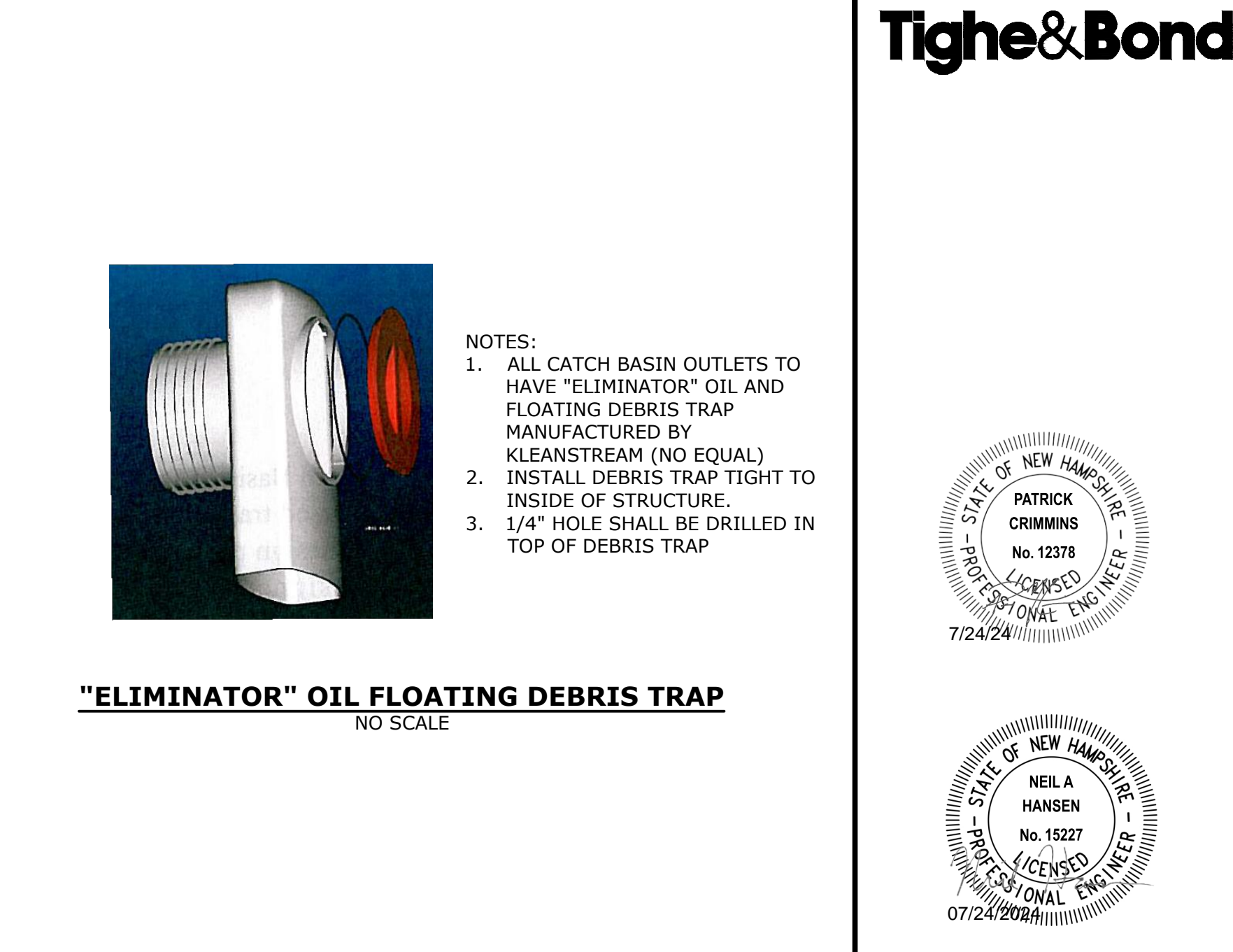
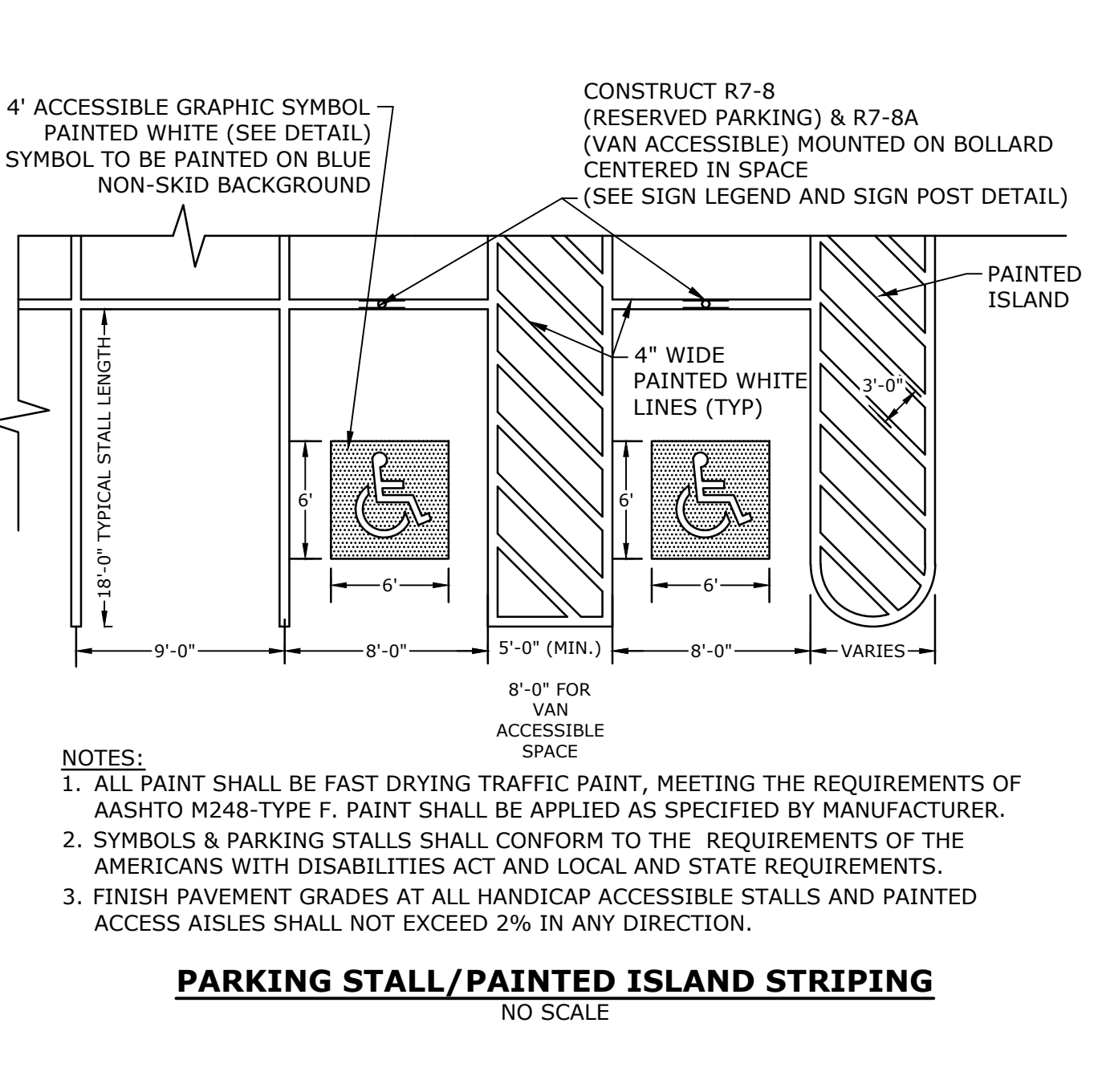
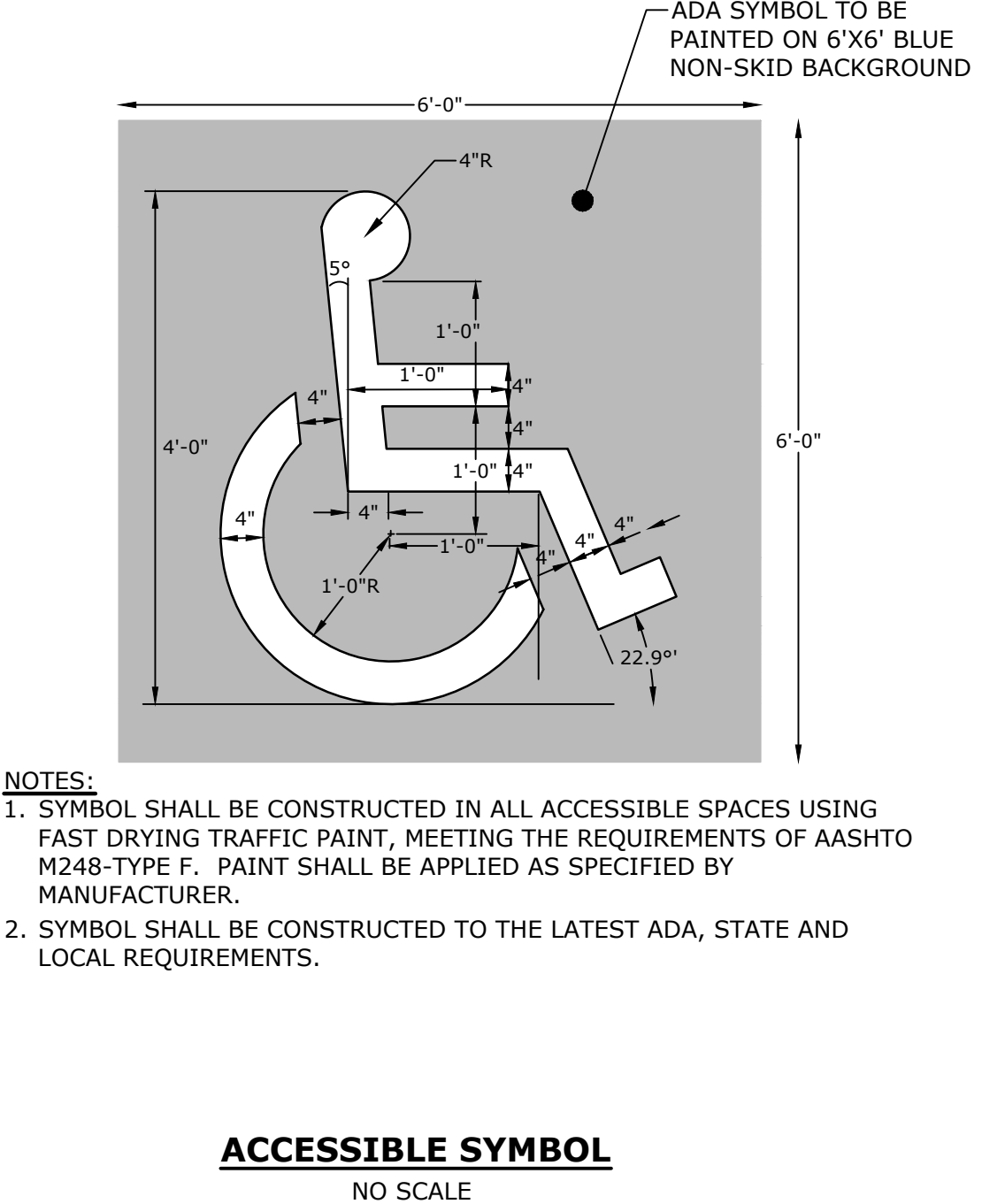
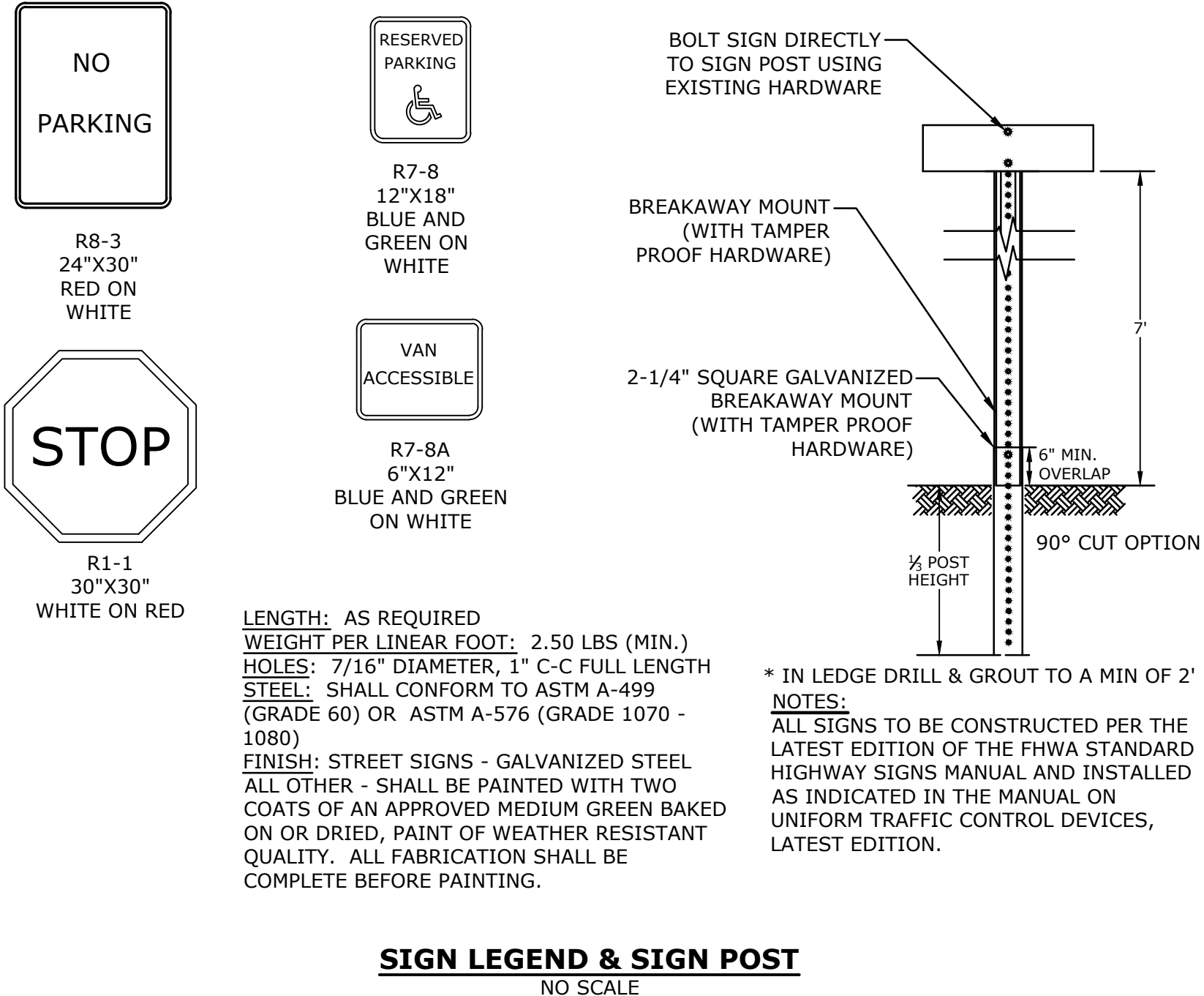
Proposed Veterinary Office

Ethos Veterinary Health

231 Corporate Drive
Portsmouth, New Hampshire

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DATE:	07/24/2024	
FILE:	E5065-001_C-DTLS.DWG	
DRAWN BY:	NHW	
CHECKED:	NAH	
APPROVED:	PMC	
EROSION CONTROL NOTES & DETAILS		
SCALE:	AS SHOWN	
C-501		

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 Project On: 7/19/2024 4:38pm
 Tighe & Bond 231 Corporate Drive, Portsmouth, NH 03801
 Drawing Title: 231 Corporate Drive, Portsmouth, NH 03801 - C-DTLS.dwg



Proposed Veterinary Office

Ethos Veterinary Health

231 Corporate Drive
Portsmouth, New Hampshire

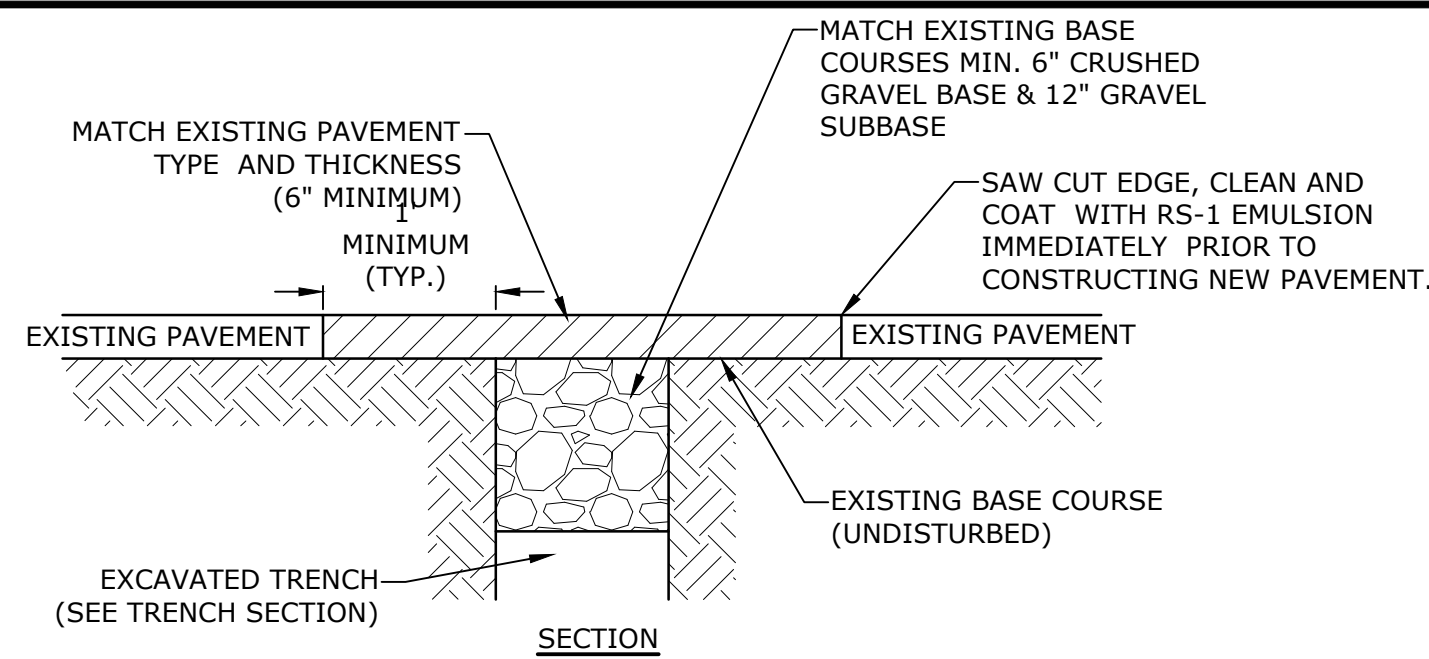
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PROJECT NO:	E5065-001	
DATE:	07/24/2024	
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DRAWN BY:	NHW	
CHECKED:	NAH	
APPROVED:	PMC	

DETAILS

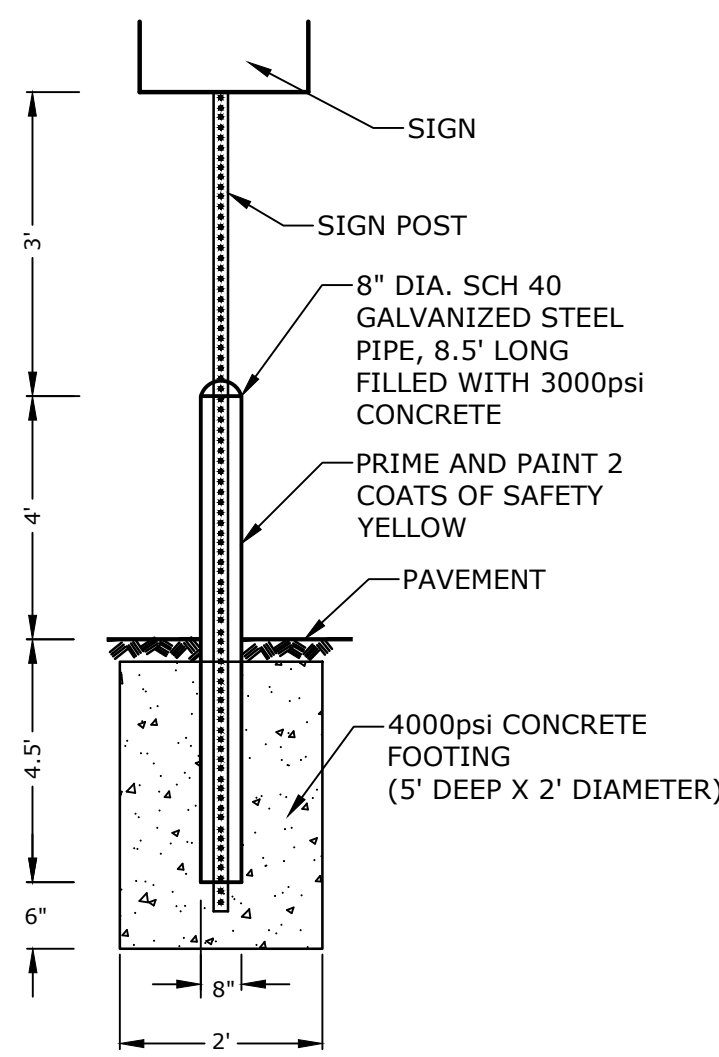
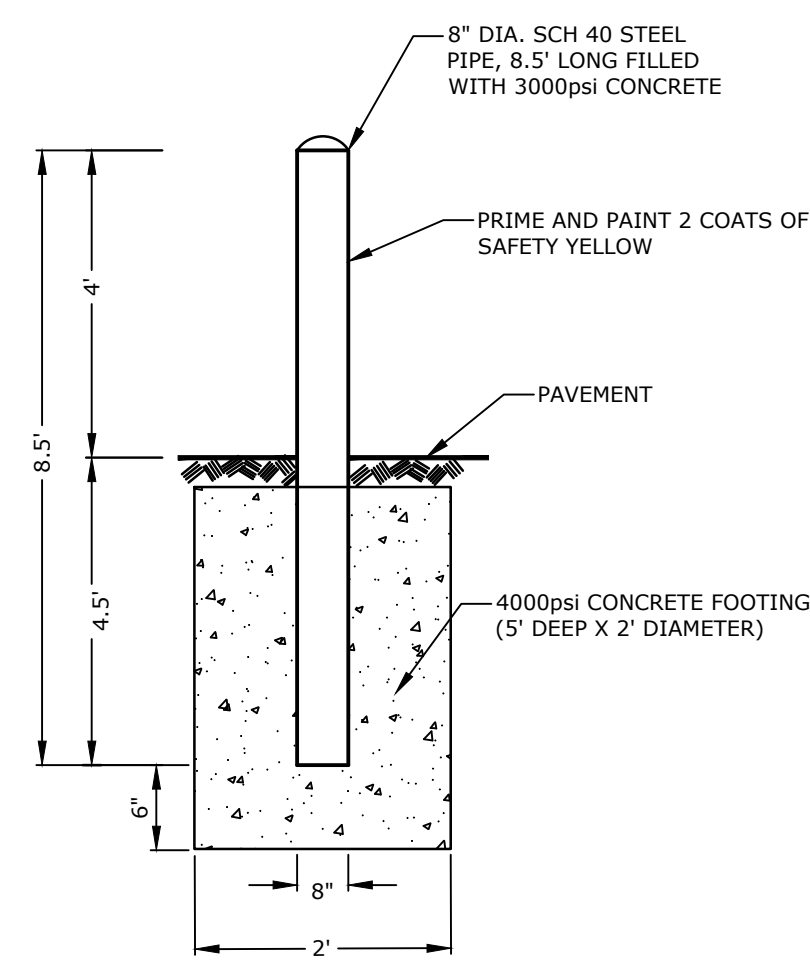
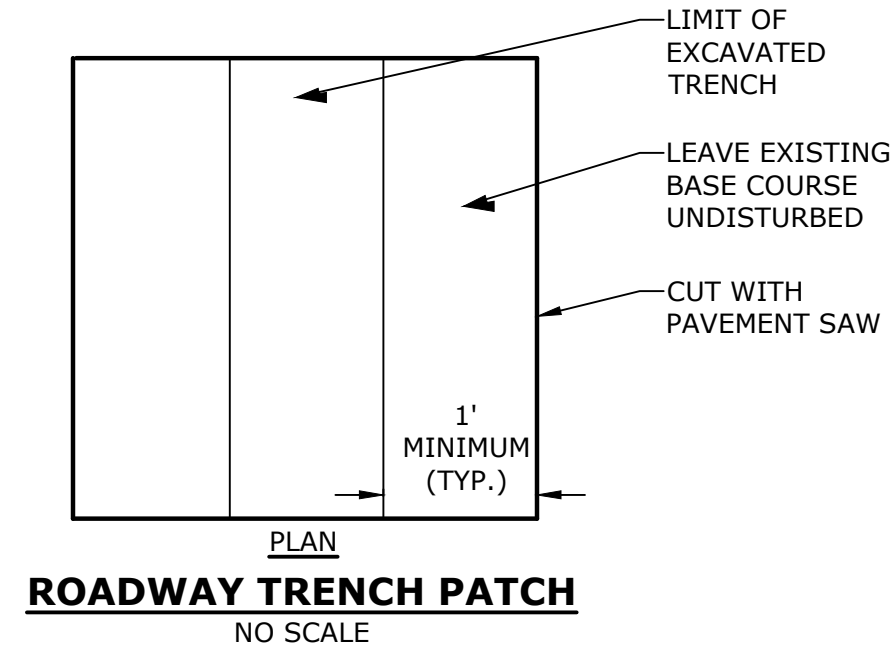
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C-502

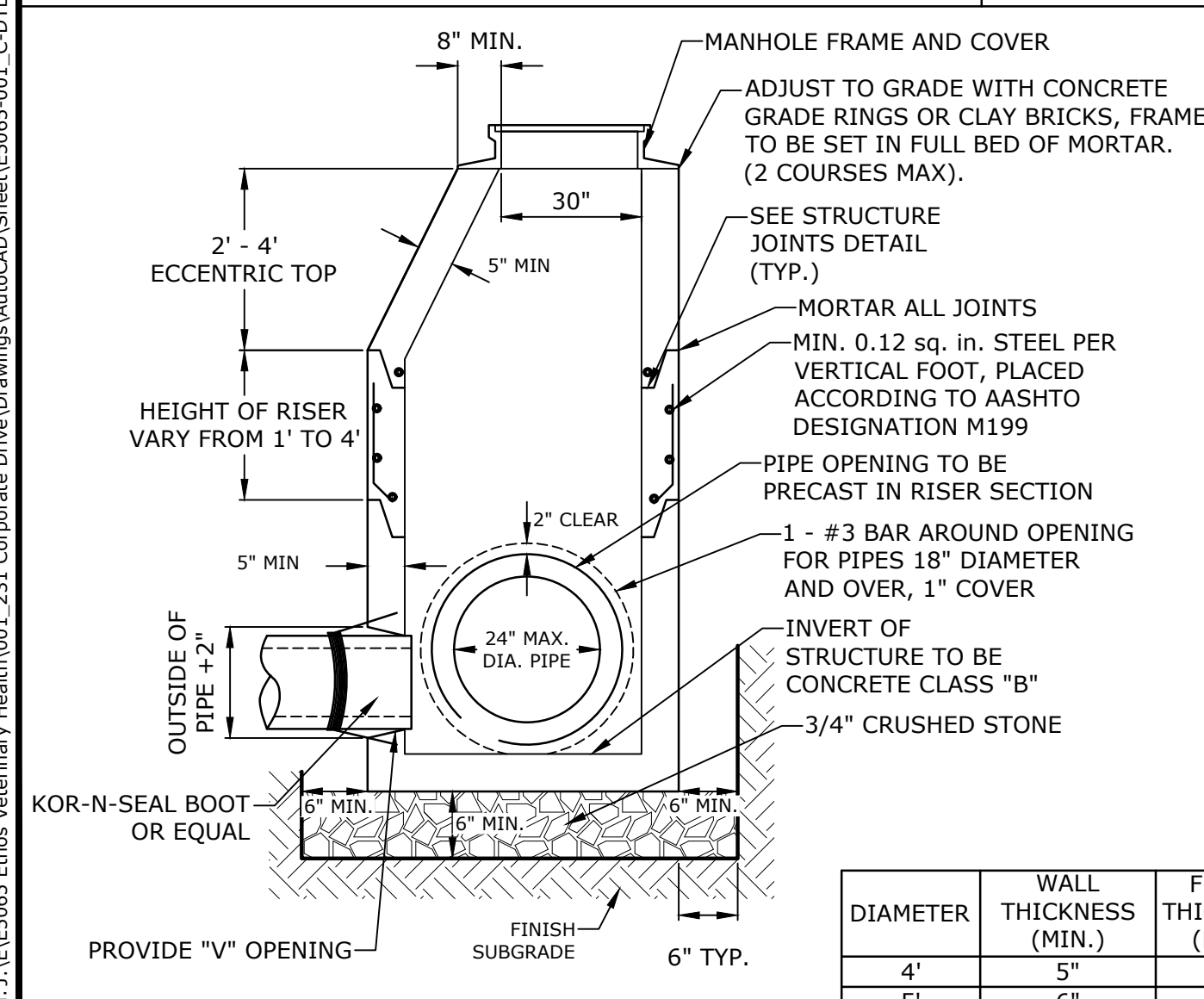
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 Project On: July 19, 2024 07:02:06
 Tighe & Bond 231 Corporate Drive, Portsmouth, NH 03801
 Tighe & Bond 231 Corporate Drive, Portsmouth, NH 03801



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

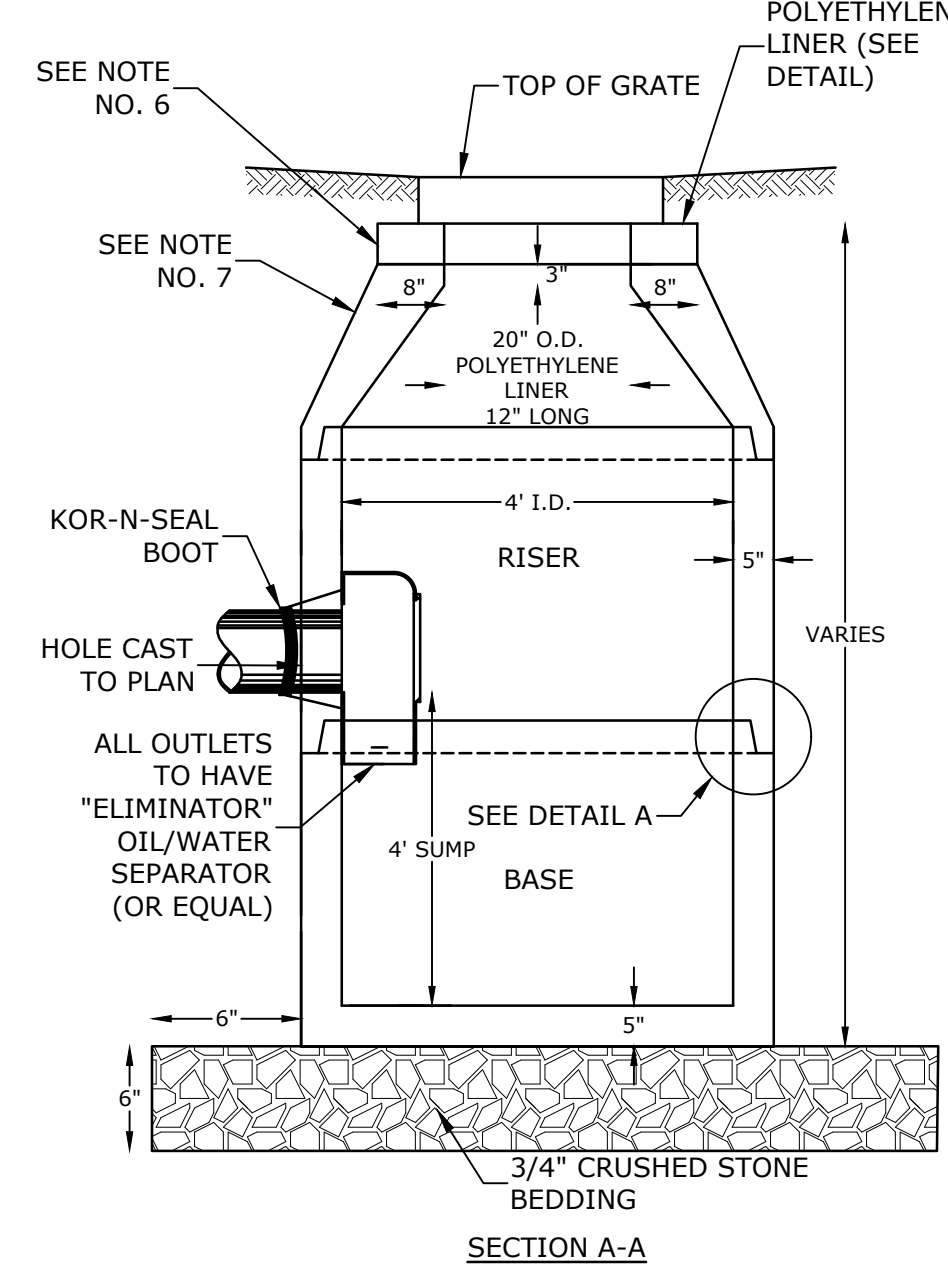
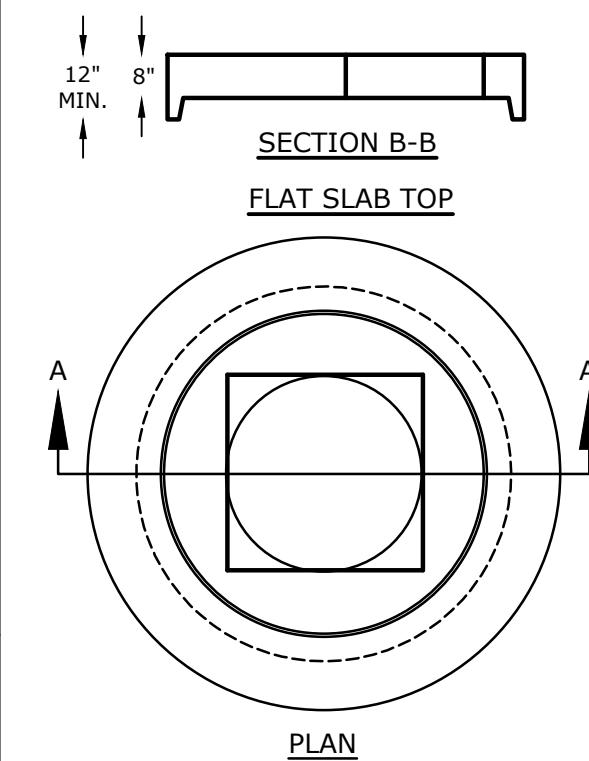
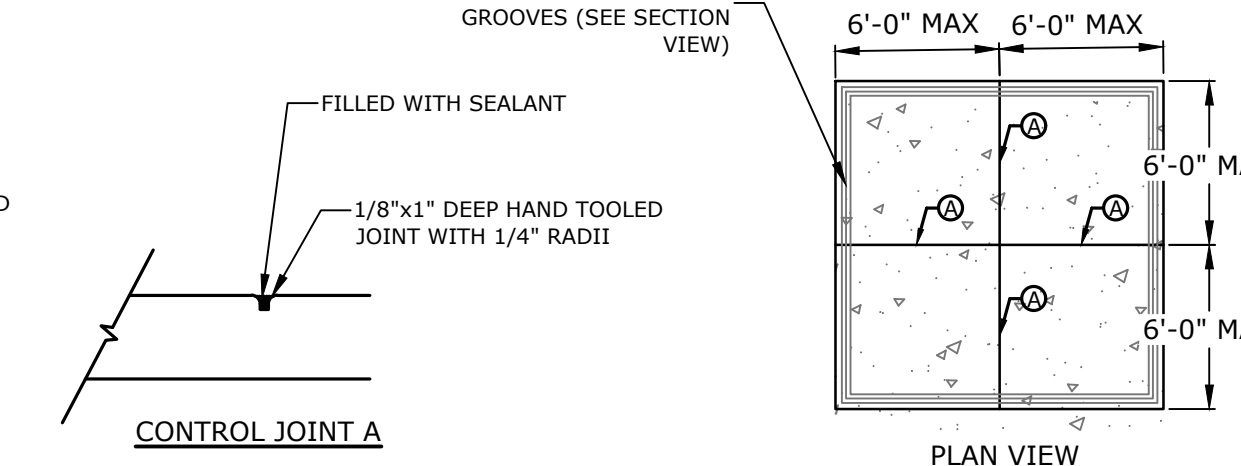
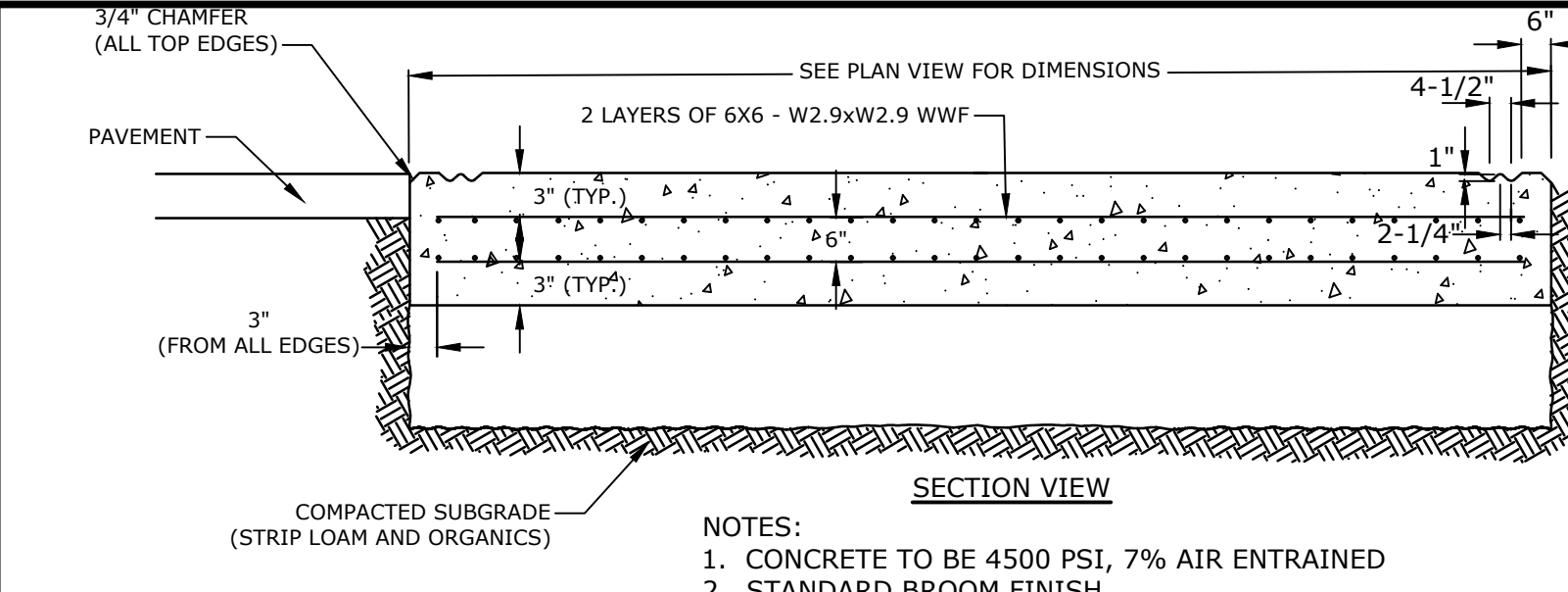


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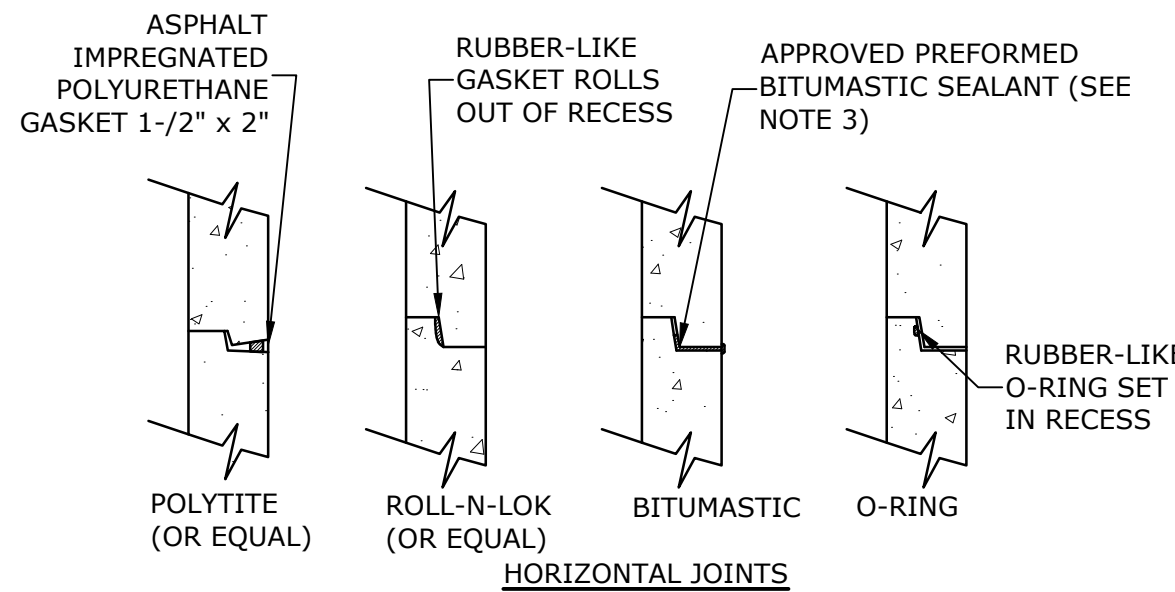
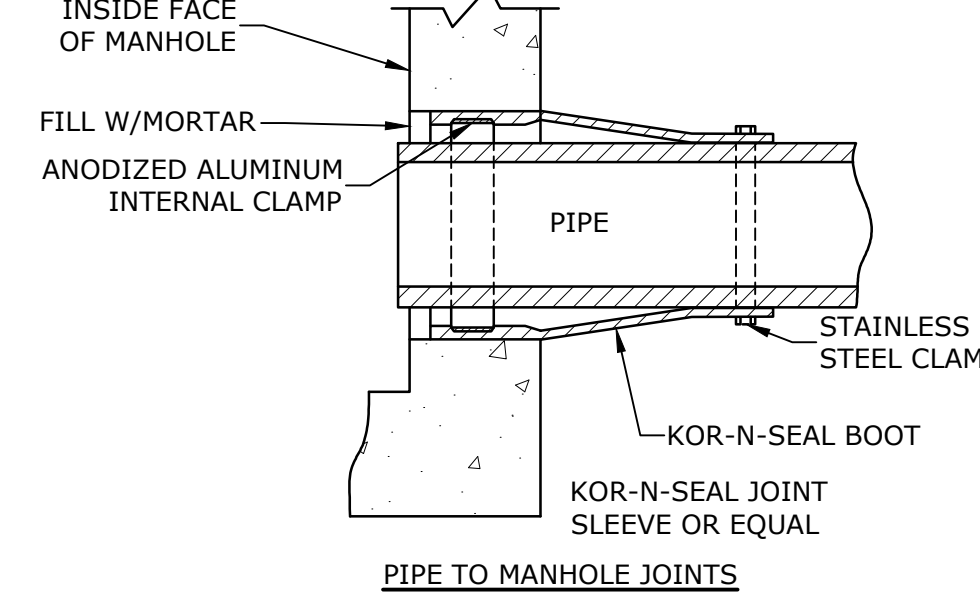
NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H2O LOADING.
5. CONSTRUCT CRUSHED STONE BEDDING AND BACKFILL UNDER (6" MINIMUM THICKNESS)
6. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
7. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
8. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
9. 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.
10. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZONTAL CROSS SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.

CORE HOLE SIZE				
DIAMETER	WALL THICKNESS (MIN.)	FLOOR THICKNESS (MIN.)	PIPE SIZE	
			RCP CORE HOLE DIA.	PLASTIC CORE HOLE DIA.
4"	5"	6"	6	7
5"	6"	8"	12	18
			15	22
			18	26
			24	34
			30	42



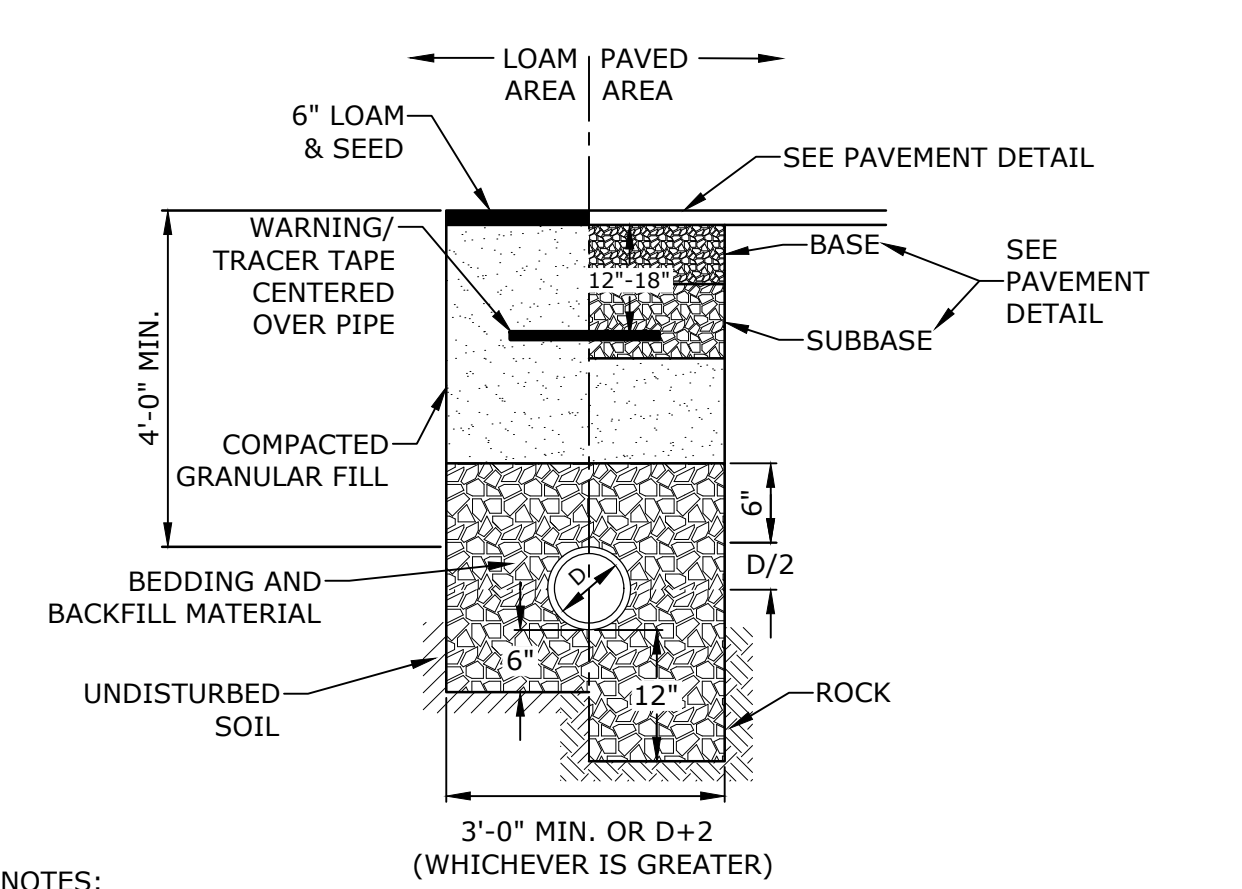
NOTES:
1. ALL SECTIONS SHALL BE CONCRETE CLASS AA(4000 psi).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 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 H2O 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 CATCHBASIN.

4' DIAMETER CATCHBASIN
NO SCALE



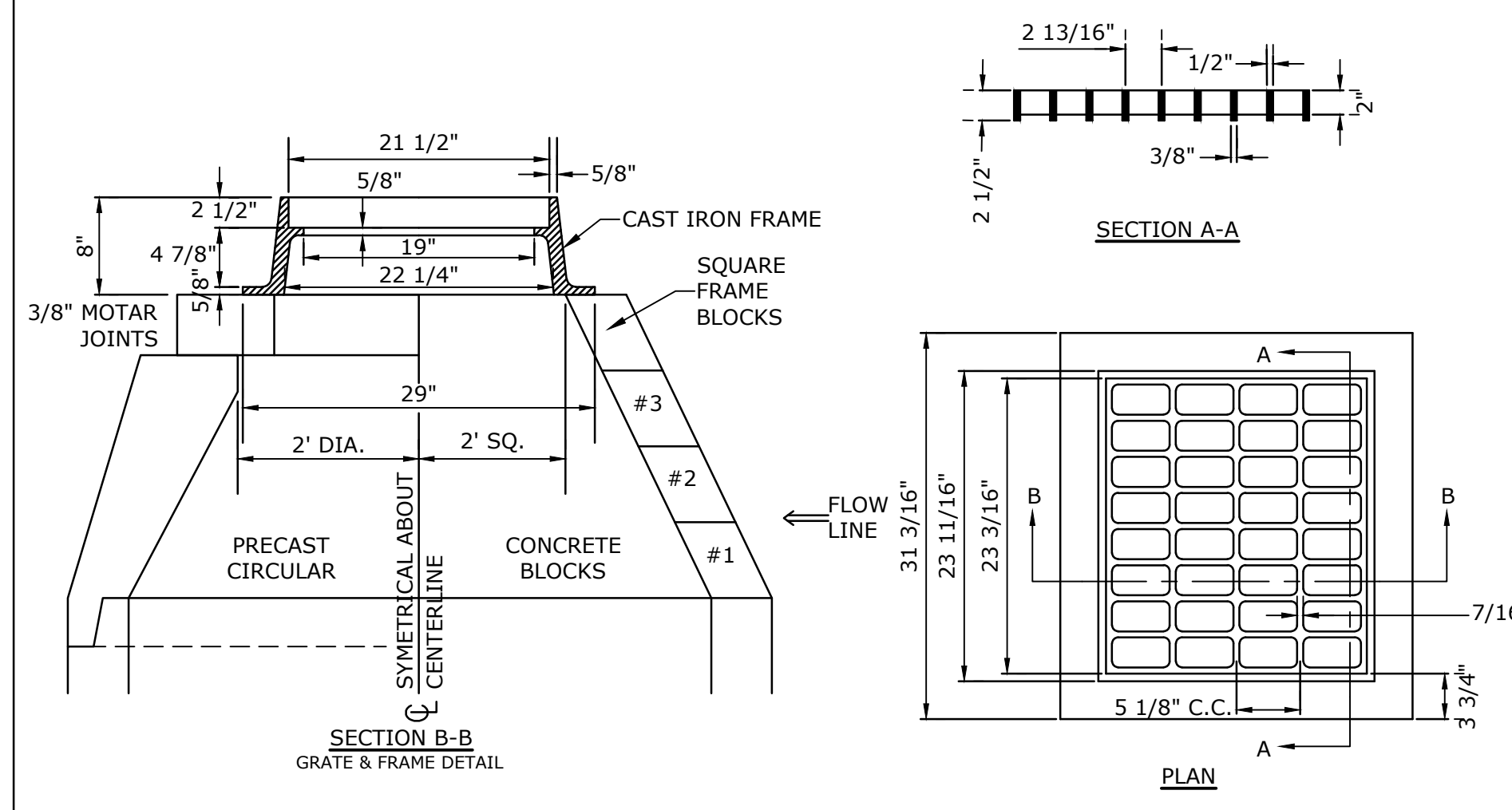
NOTES:
1. HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER CITY OF DOVER COMMUNITY DEVELOPMENT DEPARTMENT STANDARDS AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW ELASTOMERIC OR MASTIC-LIKE GASKET.
2. PIPE TO MANHOLE JOINTS SHALL BE PER CITY OF DOVER STANDARDS.
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



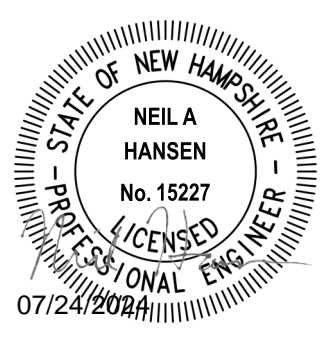
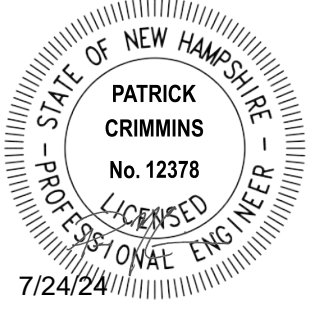
NOTES:
1. CRUSHED STONE BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 6" ABOVE TOP OF PIPE.
2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE CITY OF PORTSMOUTH.
3. DRAIN LINE SHALL BE INSULATED WHERE THERE IS LESS THAN 6' OF COVER IN PAVED AREAS AND LESS THAN 4' OF COVER IN NON-PAVED AREAS.

STORM DRAIN TRENCH
NO SCALE



NOTES:
1. GRATE TO BE CAST IRON (NHDOT TYPE B ALTERNATE 1)
2. FRAME AND GRATE TO BE MANUFACTURED IN THE USA

CATCH BASIN FRAME & GRATE
NO SCALE



Proposed Veterinary Office

Ethos Veterinary Health

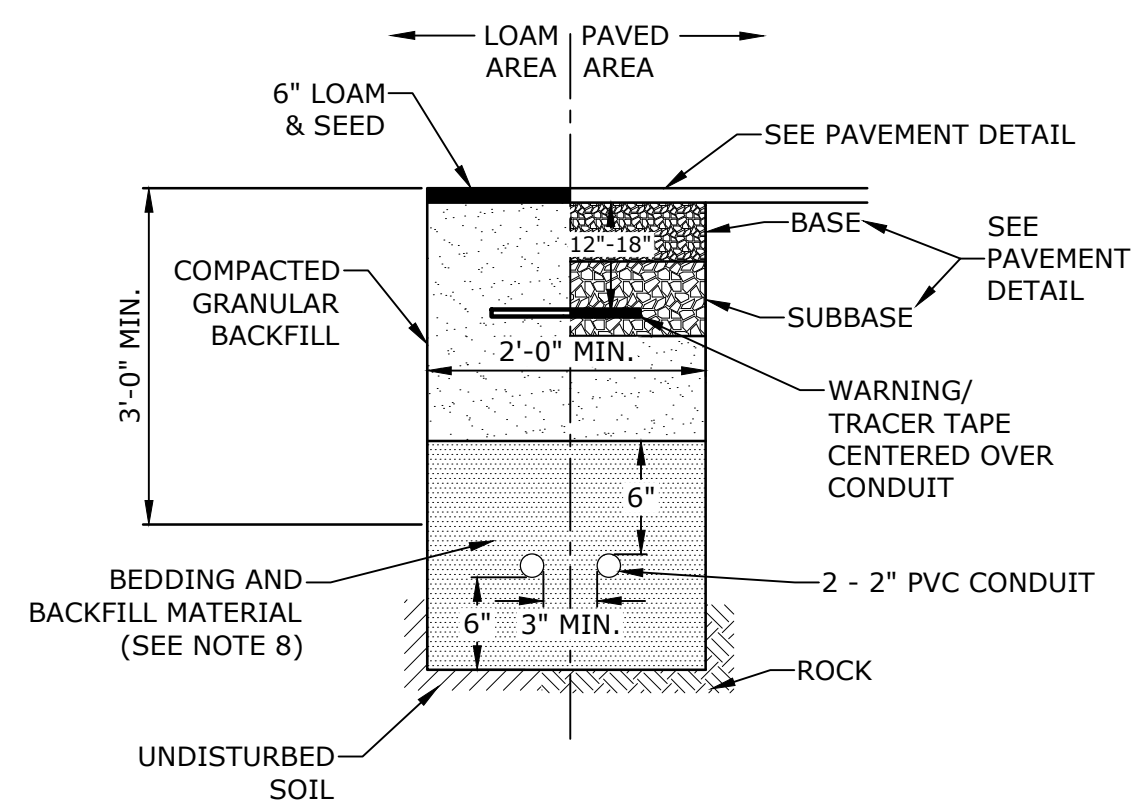
231 Corporate Drive
Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
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PROJECT NO:	E5065-001	
DATE:	07/24/2024	
FILE:	E5065-001_C-DTLS.DWG	
DRAWN BY:	NHW	
CHECKED:	NAH	
APPROVED:	PMC	

DETAILS

SCALE: AS SHOWN

C-503

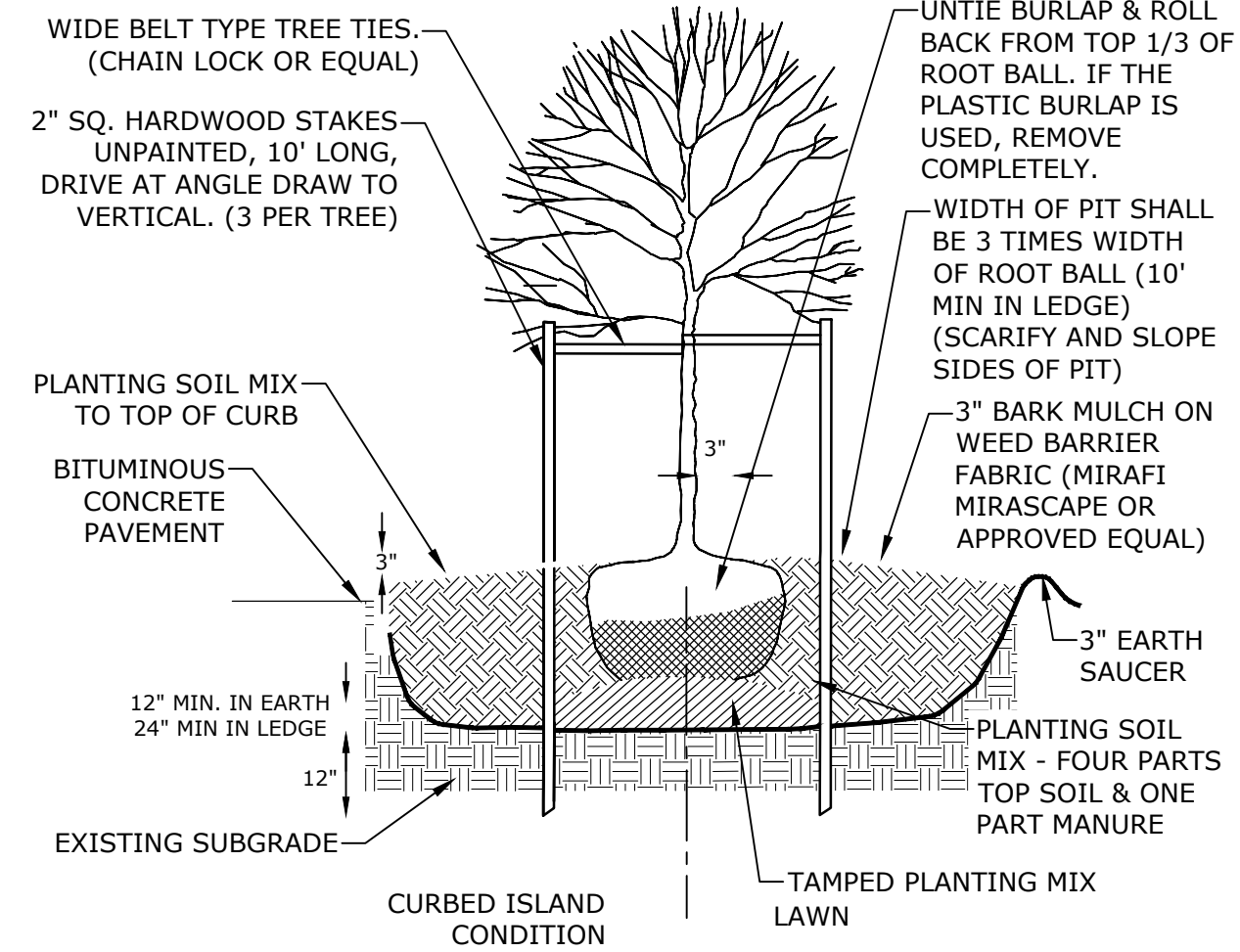


GRANULAR FILL (GRAVEL)	
SIEVE SIZE	% PASSING
3"	95-100
#4	25-70

SAND BEDDING	
SIEVE SIZE	% PASSING
1/2"	100
#200	15 MAX

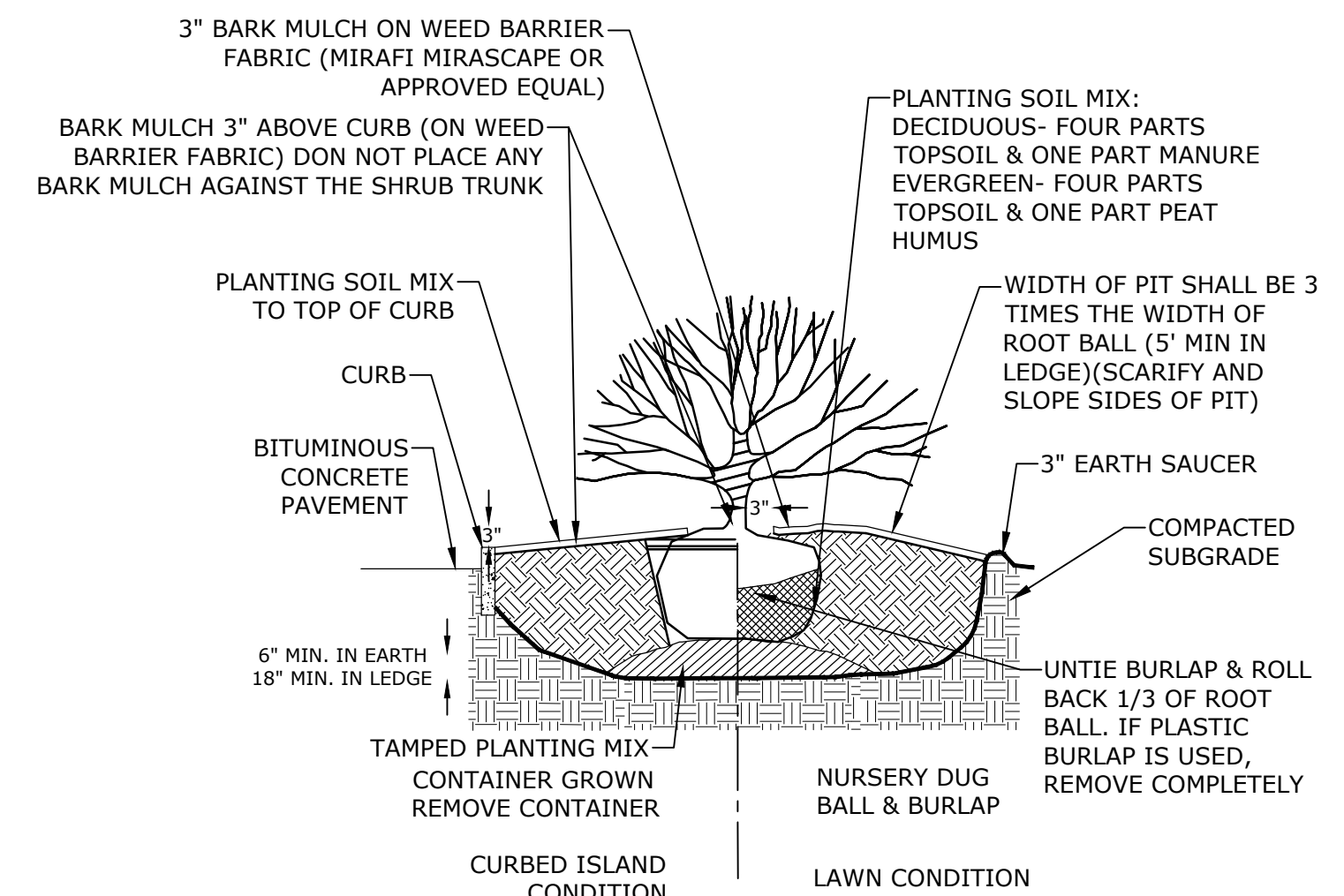
- NOTES:**
- NUMBER, MATERIAL, AND SIZE OF UTILITY CONDUITS TO BE DETERMINED AS SHOWN ON ELECTRICAL DRAWINGS. CONTRACTOR TO PROVIDE ONE SPARE CONDUIT FOR EACH UTILITY TO BUILDING.
 - DIMENSIONS SHOWN REPRESENT MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS MAY BE GREATER BASED ON UTILITY COMPANY STANDARDS, BUT SHALL NOT BE LESS THAN THOSE SHOWN.
 - NO CONDUIT RUN SHALL EXCEED 360 DEGREES IN TOTAL BENDS.
 - 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.
 - 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.
 - 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.
 - ALL 90° SWEEPS WILL BE MADE USING RIGID GALVANIZED STEEL. SWEEPS WITH A 36 TO 48 INCH RADIUS.
 - SAND BEDDING TO BE REPLACED WITH CONCRETE ENCASEMENT WHERE COVER IS LESS THAN 3 FEET, WHEN LOCATED BELOW PAVEMENT, OR WHERE SHOWN ON THE UTILITIES PLAN.
 - SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW CONDUIT UP TO 6" ABOVE TOP OF CONDUIT.

LIGHTING CONDUIT TRENCH
NO SCALE



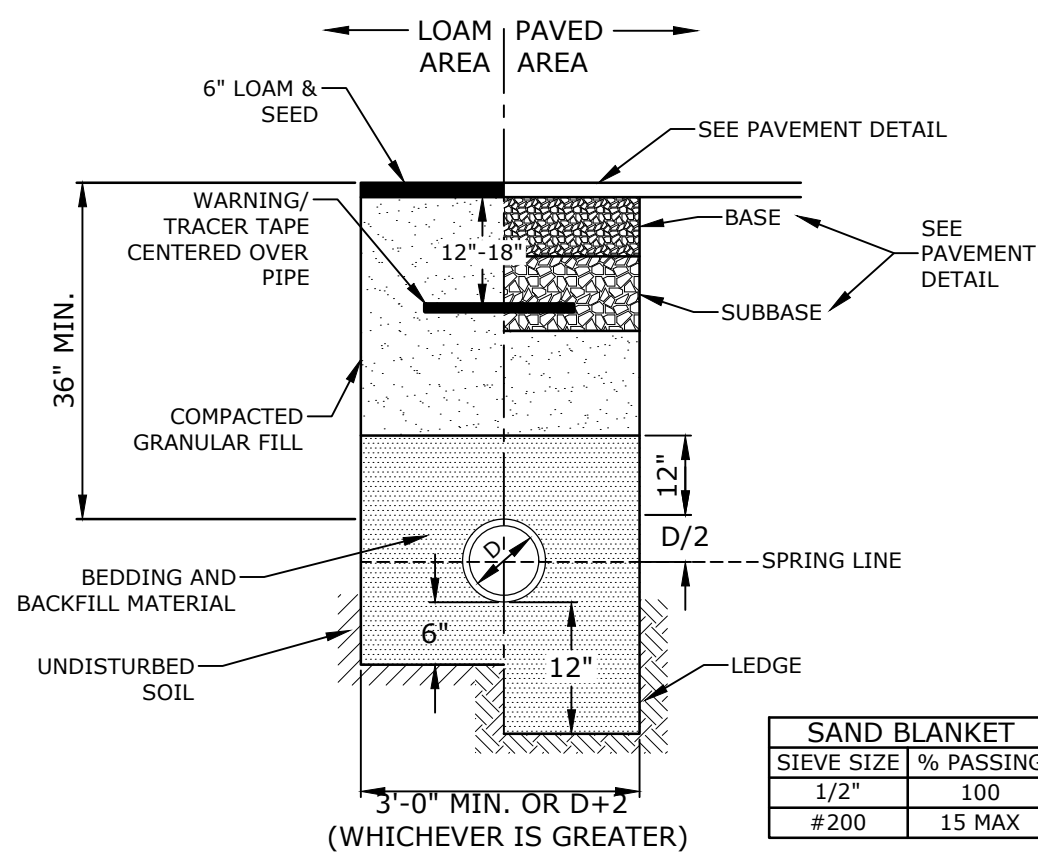
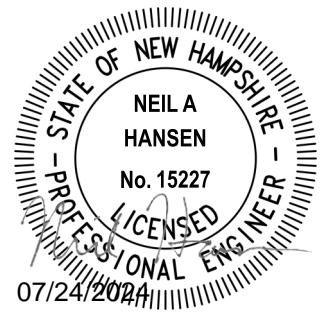
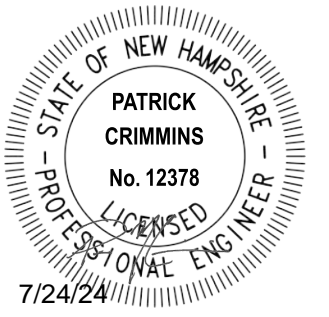
- NOTES:**
- PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED OR WITHIN 2" ABOVE.
 - NEW TREE ROOT FLARES SHALL BE PLANTED AT FINISH GRADE.

DECIDUOUS TREE PLANTING
NO SCALE



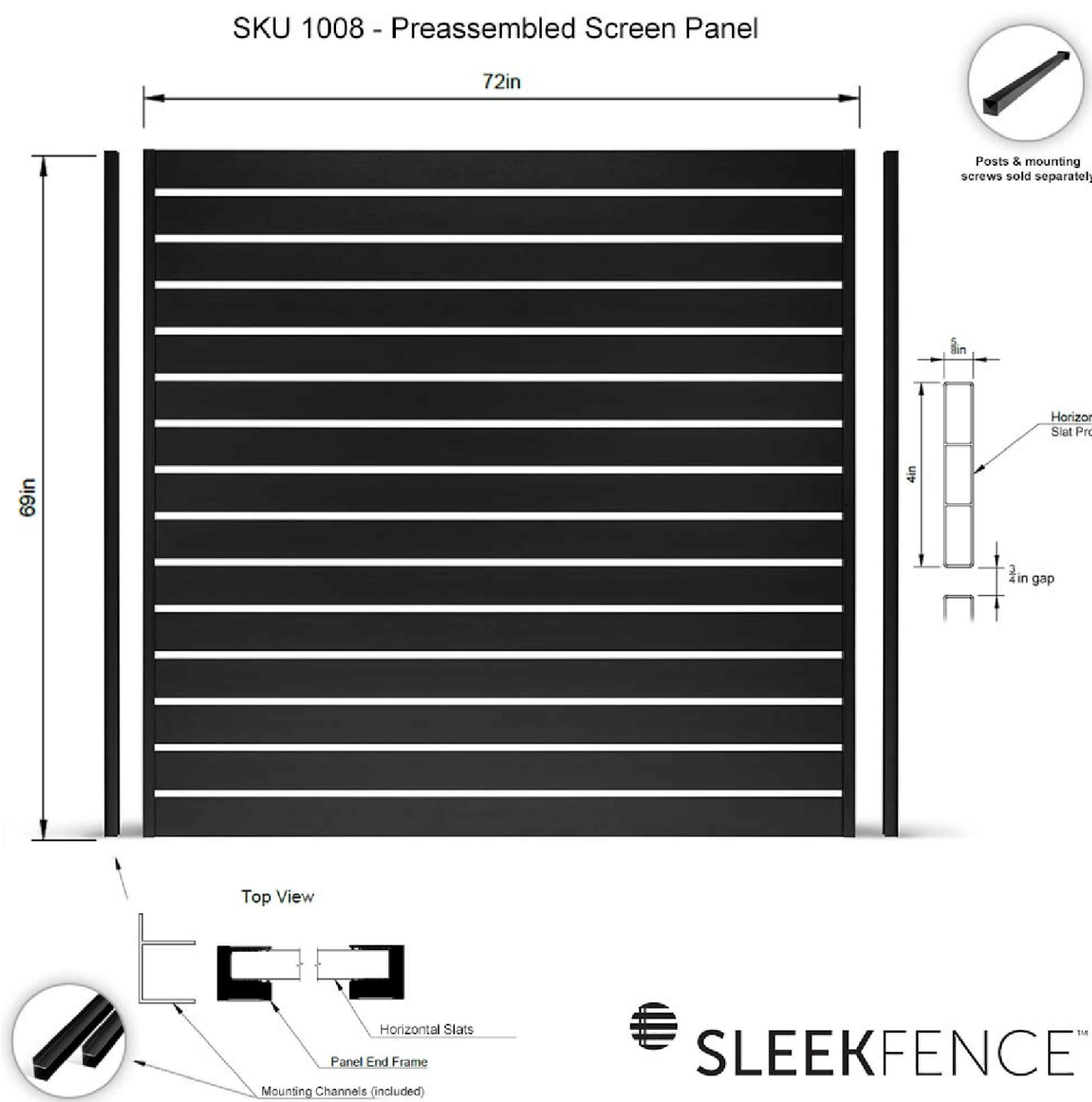
- NOTE:**
- PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED, OR WITHIN 2" ABOVE.

SHRUB PLANTING
NO SCALE



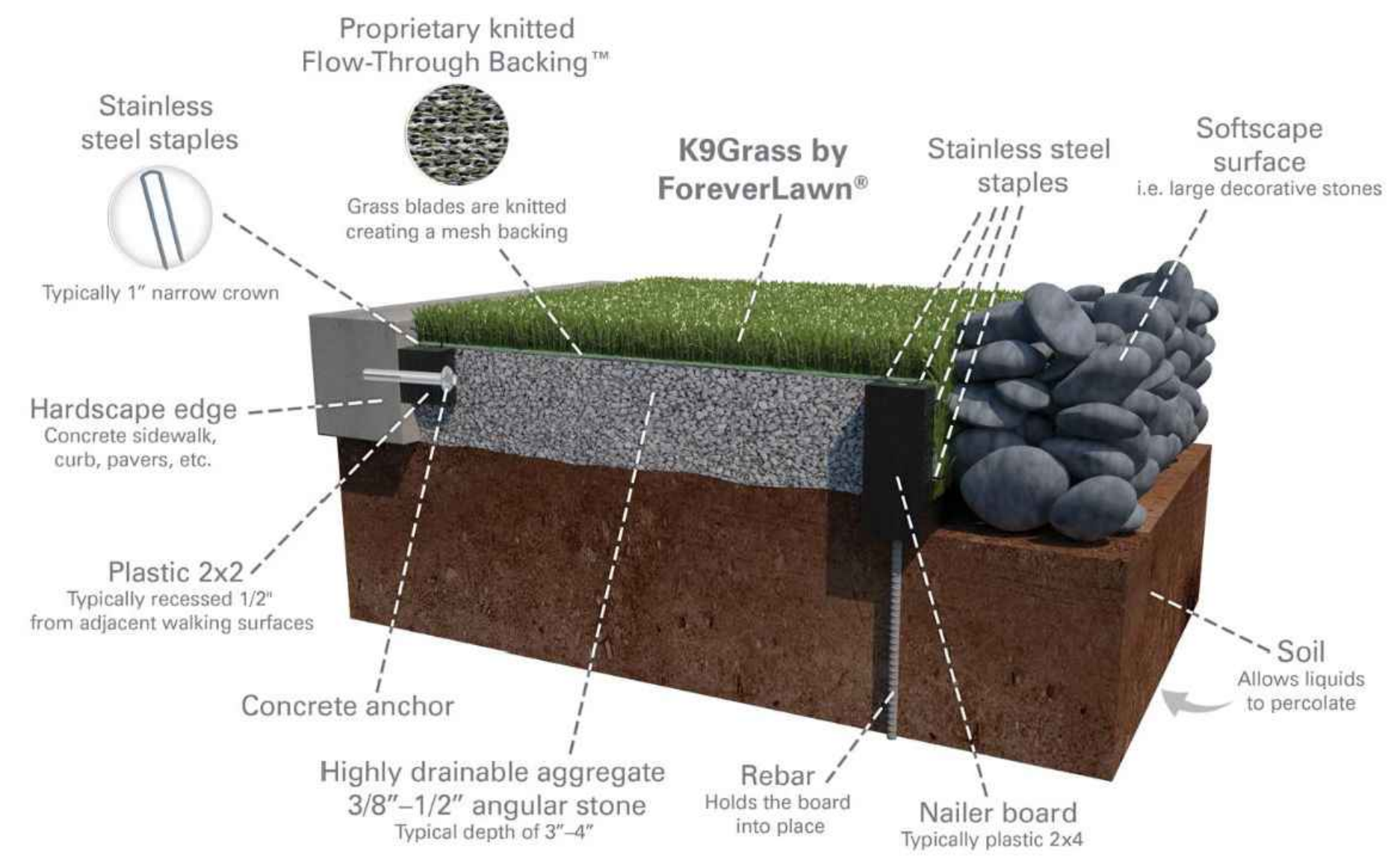
- NOTE:**
- SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
 - GAS LINE SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE CITY/TOWN OF ????

GAS TRENCH
NO SCALE



- NOTES:**
- DOG WALK ENCLOSURE FENCE SHALL BE SLEEFENCE ALUMINUM SCREEN FENCE PANELS - 72" WIDE x 69" HIGH OR EQUAL.
 - FENCE TO BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

DOG WALK ENCLOSURE FENCE
NO SCALE



- NOTES:**
- ARTIFICIAL TURF SHALL BE K9GRASS SYSTEM BY FOREVER LAWN OR EQUAL

ARTIFICIAL TURF DETAIL
NO SCALE

Proposed Veterinary Office

Ethos Veterinary Health

231 Corporate Drive
Portsmouth, New Hampshire

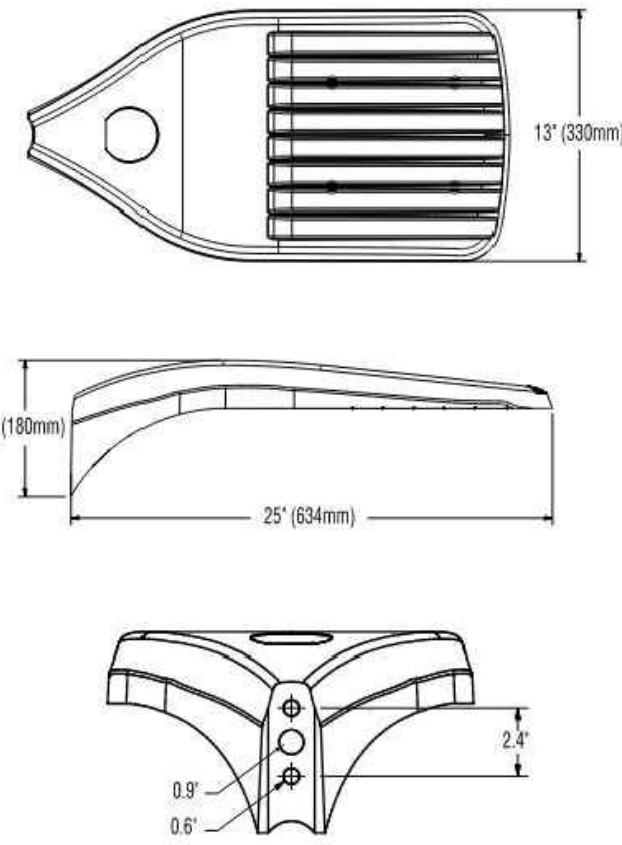
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PROJECT NO:	E5065-001	
DATE:	07/24/2024	
FILE:	E5065-001_C-DTLS.DWG	
DRAWN BY:	NHW	
CHECKED:	NAH	
APPROVED:	PMC	

DETAILS

SCALE: AS SHOWN

C-504

Mirada Small Area (MRS)

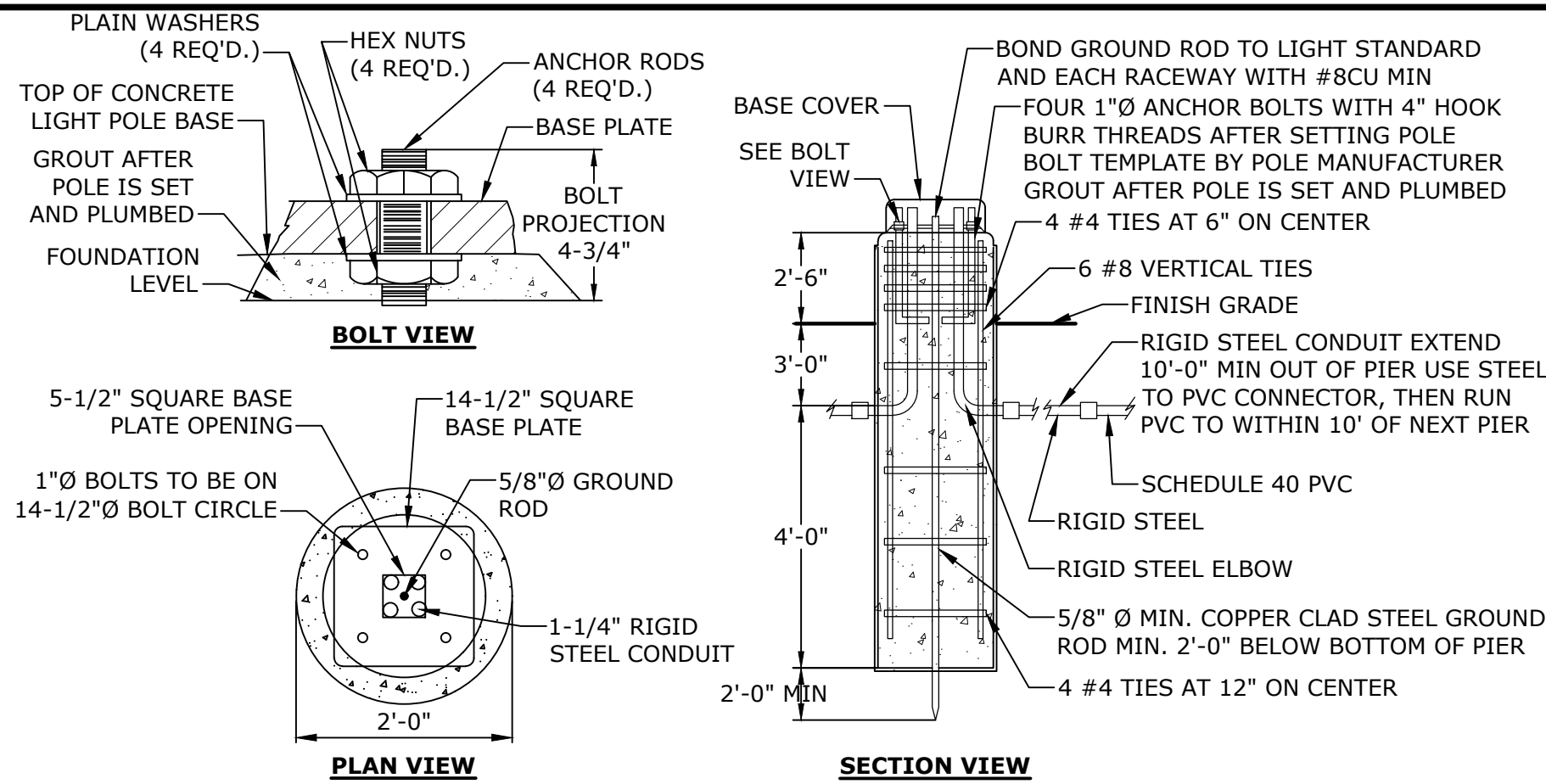


Prefix	Light Source	Lumen Package	Lens	Distribution	Orientation ²	Voltage	Driver
MRS - Mirada Small Area Light	LED	6L - 6,000 lms 9L - 9,000 lms 12L - 12,000 lms 15L - 15,000 lms 18L - 18,000 lms 21L - 21,000 lms 24L - 24,000 lms (Custom Lumen Packages)	SIL - Silicone 2 - Type 2 3 - Type 3 SW - Type 5 Wide FT - Forward Throw	(Blank) - standard L - Optics rotated left 90° R - Optics rotated right 90°	UNV - Universal Voltage (120-277V) HV - High Voltage (347-480V)	DIM - 0-10V Dimming (0-100%)	

Color Temp	Color Rendering	Controls (Choose One)	Finish	Options
50-5,000 CCT	70CRI - 70 CRI	(Blank) - None	BLK - Black BRZ - Dark Bronze GMC - Gun Metal Gray GPT - Graphite MSV - Metallic Silver PLP - Platinum Plus SVG - Satin Verde Green WHI - White	(Blank) - None IN - Integral Half Louver (Moderate Spill Light Cutoff) IL - Integral Louver (Sharp Spill Light Cutoff) ²

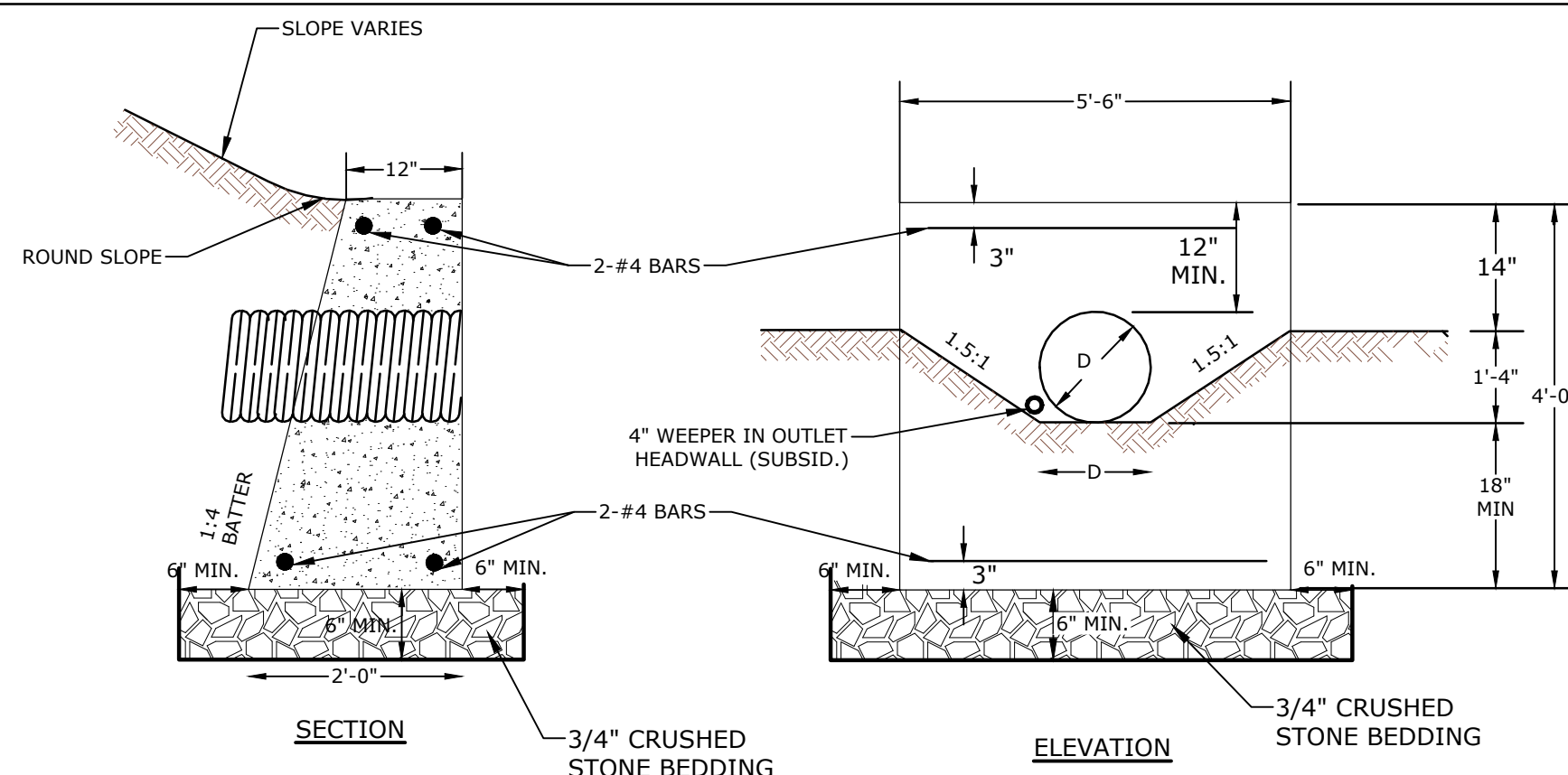
Tilt Degree	0	45	90	135	180
Single	0.5	1.3	1.8	2.3	2.6
D180°	0.9	1.3	1.8	1.9	2.3
D90°	0.9	1.8	2.2	1.4	2.3

PARKING LOT LIGHTING DETAIL
NO SCALE

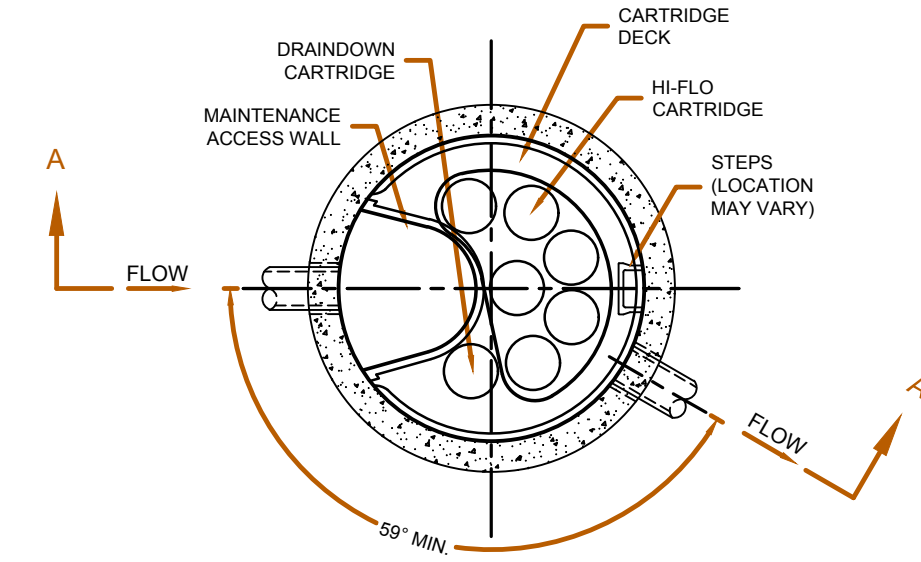


- NOTES**
1. PAINT BASE SAFETY YELLOW (UNLESS PROTECTED BY CURBED ISLAND).
 2. CONCRETE TO BE CLASS A, 4000 PSI, AIR ENTRAINED STEEL TO BE 60 KSI
 3. REFER TO ELECTRICAL PLANS FOR WIRING DETAILS.

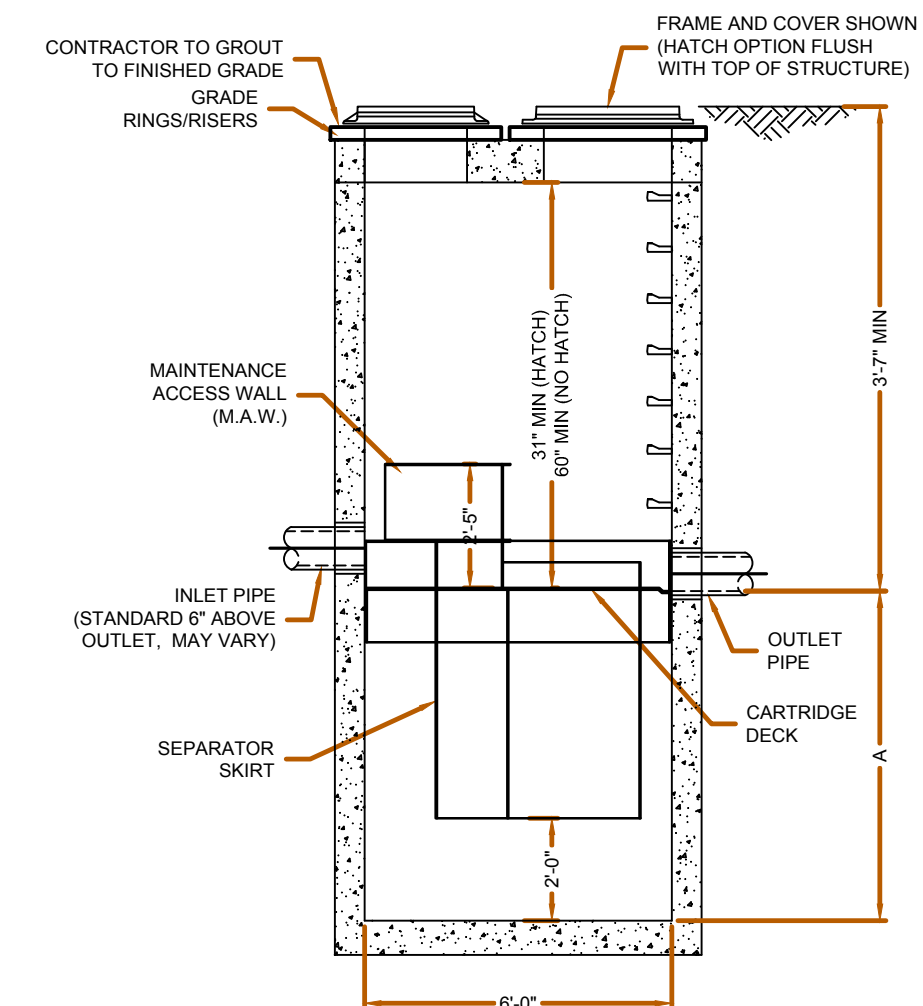
TYPICAL LIGHT POLE BASE
NO SCALE



PRECAST CONCRETE HEADWALL
NO SCALE



PLAN VIEW



SECTION A-A

JELLYFISH DESIGN NOTES

JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD MANHOLE STYLE IS SHOWN. Ø72" MANHOLE JELLYFISH PEAK TREATMENT CAPACITY IS 1.16 CFS. IF THE SITE CONDITIONS EXCEED 1.16 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION	54"	40"	27"	15"
CARTRIDGE DEPTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-5"	5'-3"	4'-2"	3'-2"
FLOW RATE HIGH-FLO / DRAINDOWN (cfs) (per cart)	0.18 / 0.09	0.13 / 0.065	0.09 / 0.045	0.05 / 0.025
MAX. CARTS HIGH-FLO / DRAINDOWN	8 / 1			

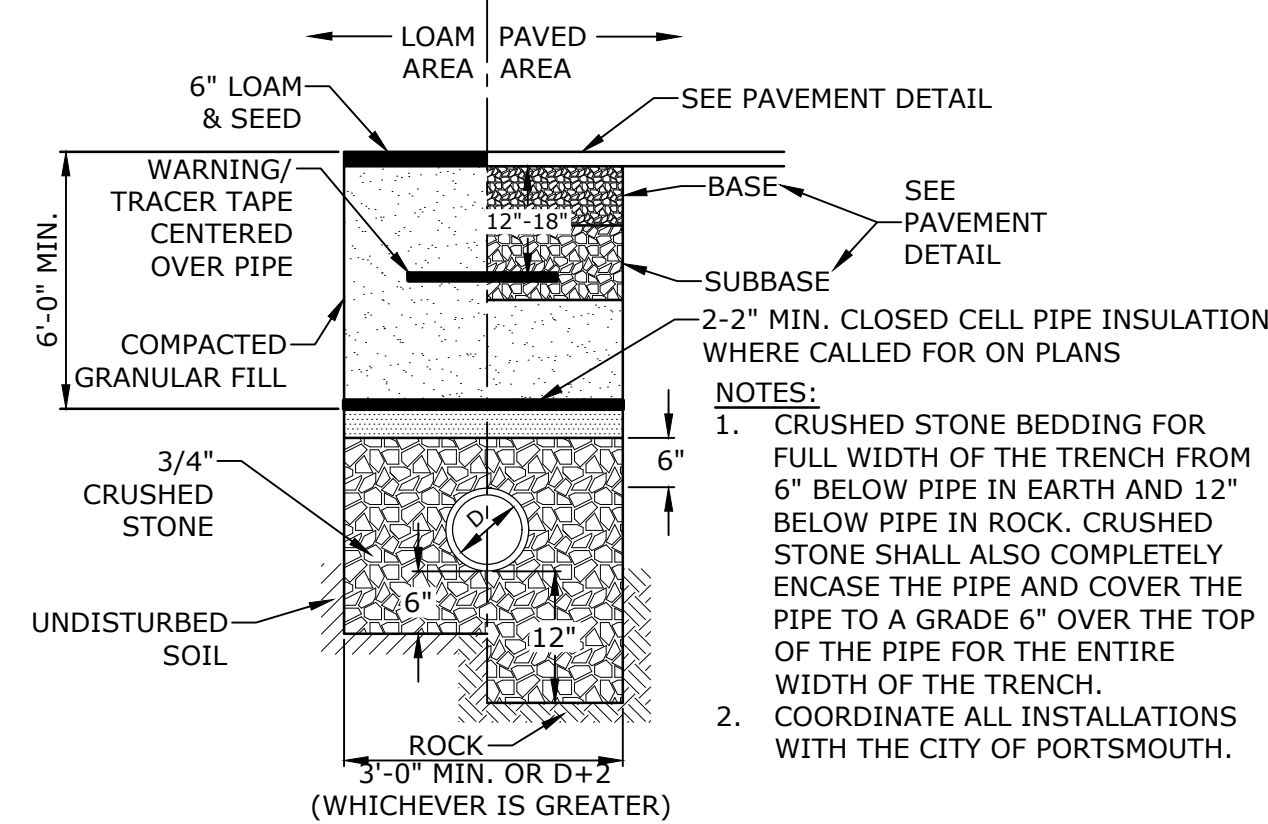


FRAME AND COVER (DIAMETER VARIES)
NO SCALE

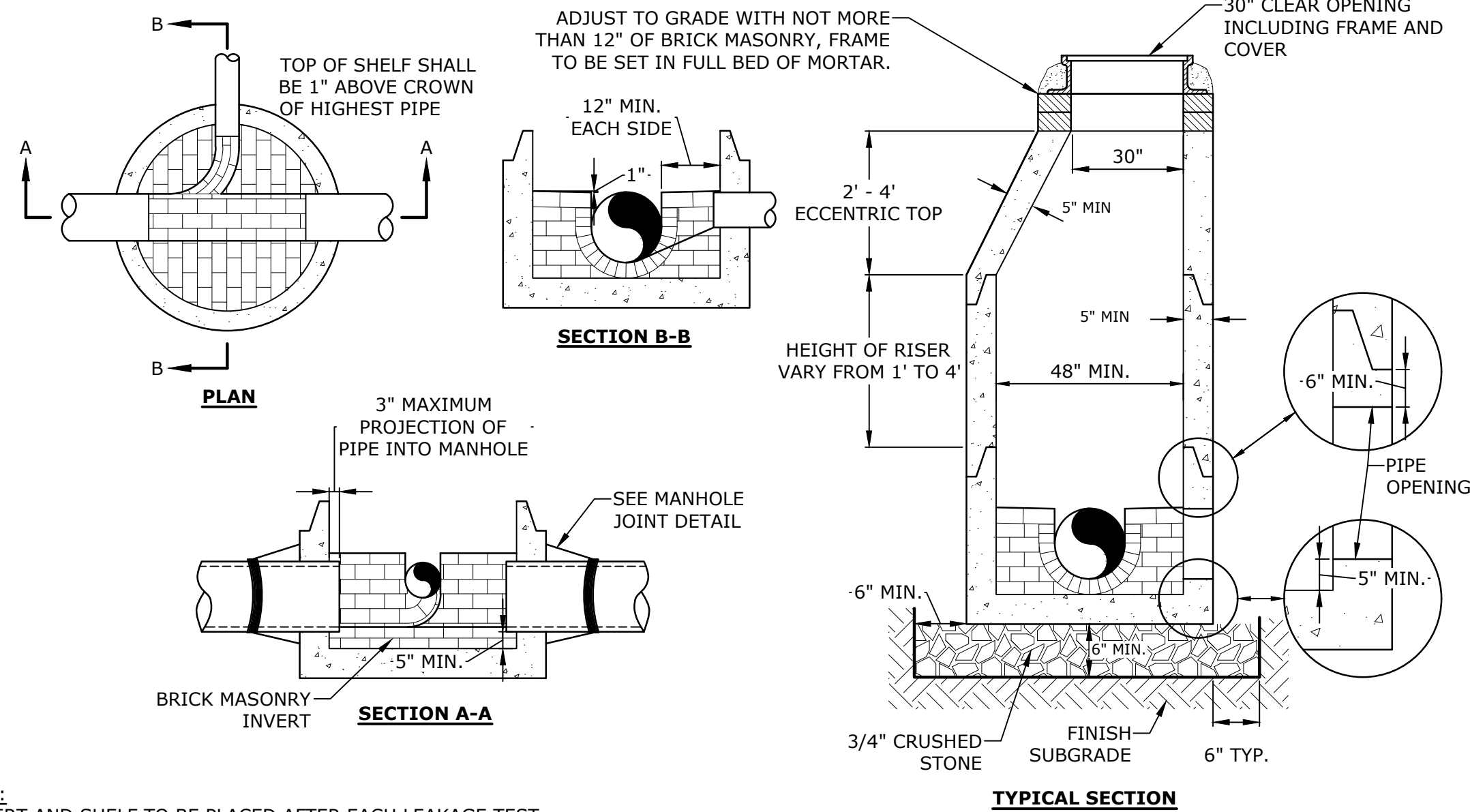
PJFF1	6-3-1
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- GENERAL NOTES:**
1. TREATMENT UNIT SHALL BE CONTECH JELLYFISH FILTER UNIT OR APPROVED EQUAL. ANY PROPOSED SUBSTITUTION SHALL BE REVIEWED AND APPROVED BY THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES AND THE DESIGN ENGINEER.
 2. CONTECH TO PROVIDE FINAL DIMENSIONS BASED ON APPROVED FLOWS AND ALL MATERIALS UNLESS NOTED OTHERWISE.
 3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
 4. STRUCTURE SHALL MEET AASHTO HS-20 LOADING REQUIREMENTS. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
 5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.
- INSTALLATION NOTES:**
- A. CONTRACTOR SHALL PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED).
 - B. CONTRACTOR SHALL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
 - C. CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
 - D. CARTRIDGE INSTALLATION BY CONTECH SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION AT (866) 740-3318.

JELLYFISH JF6 STANDARD DETAIL
NO SCALE

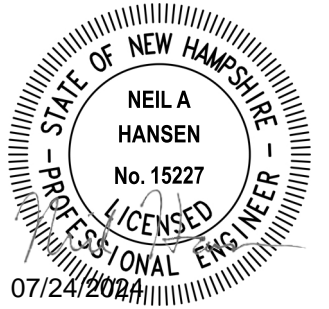
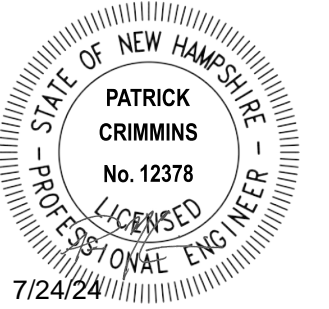


SEWER SERVICE TRENCH
NO SCALE



SEWER MANHOLE
NO SCALE

- 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. TWO (2) COATS OF BITUMINOUS WATERPROOF COATING SHALL 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 EJ. FRAMES AND COVERS WILL BE PURCHASED FROM THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS. ALL OTHER MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A 3-INCH (MINIMUM HEIGHT) WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
 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.



Proposed Veterinary Office

Ethos Veterinary Health

231 Corporate Drive
Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
A	7/24/2024	PB SUBMISSION
PROJECT NO:	E5065-001	
DATE:	07/24/2024	
FILE:	E5065-001_C-DTLS.DWG	
DRAWN BY:	NHW	
CHECKED:	NAH	
APPROVED:	PMC	

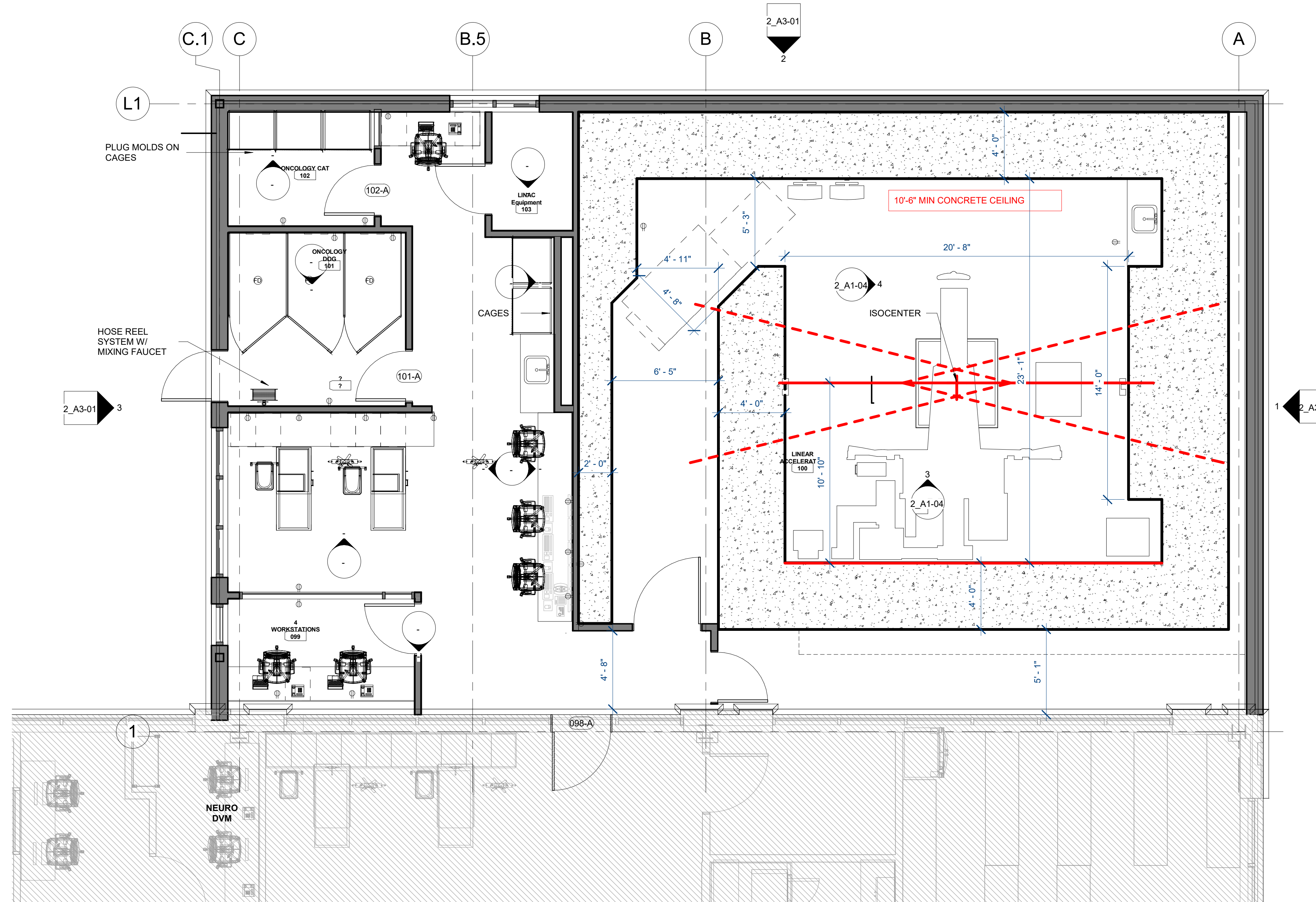
DETAILS

SCALE: AS SHOWN

C-505

FLOOR PLAN GENERAL NOTES:

1. DIMENSIONS ARE TO FACE OF STUD, CONCRETE, OR CMU UNO.
2. ALL DOORS TO BE LOCATED 4" FROM ADJACENT PARTITION WHERE DOOR IS INDICATED ADJACENT TO PARTITION UNO. PROVIDE LOW PROFILE BRUSHED STAINLESS DOME DOOR STOP (BALDWIN 4000.150 OR SIM)
3. SEE REFERENCED ENLARGED PLANS, FOR FURTHER DETAILS AND LAYOUT.
4. REFER TO A10-01 FOR DOOR AND WINDOW SCHEDULE AND ELEVATIONS.
5. REFER TO ELEVATIONS FOR ADDITIONAL WINDOWS/WALL OPENING INFORMATION.
6. OPENINGS FOR DOORS, WINDOWS, LOUVERS, ETC MUST BE VERIFIED WITH MFR ROUGH OPENING REQUIREMENTS. ARCHITECTURAL DIMENSION PLANS ARE INTENDED TO LOCATE FEATURES OF THE BUILDING AND ARE NOT INTENDED TO BE USED AS CONSTRUCTION COORDINATION DRAWINGS.



① LEVEL 1 - PROPOSED FLOOR PLAN
 LINAC ADDITION
 1/4" = 1'-0"

NOTE: REFER TO LINAC SITE SPECIFIC DRAWINGS FOR LINEAR ACCELERATOR, LINAC CONTROL AND LINAC EQUIPMENT MEP COORDINATION

GENERAL FLOOR PLAN NOTES:

1. ALL PARTITIONS TO BE TYPE A1 UNLESS NOTED OTHERWISE.

- • — 1 HR RATED WALL
- • • — 2 HR RATED WALL

EXISTING BUILDING LEGEND - N.I.C.



N.I.C.



617.875.0786 Boston, MA

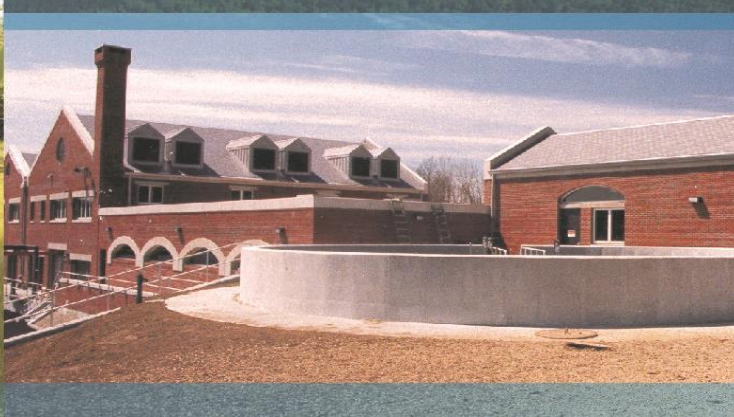
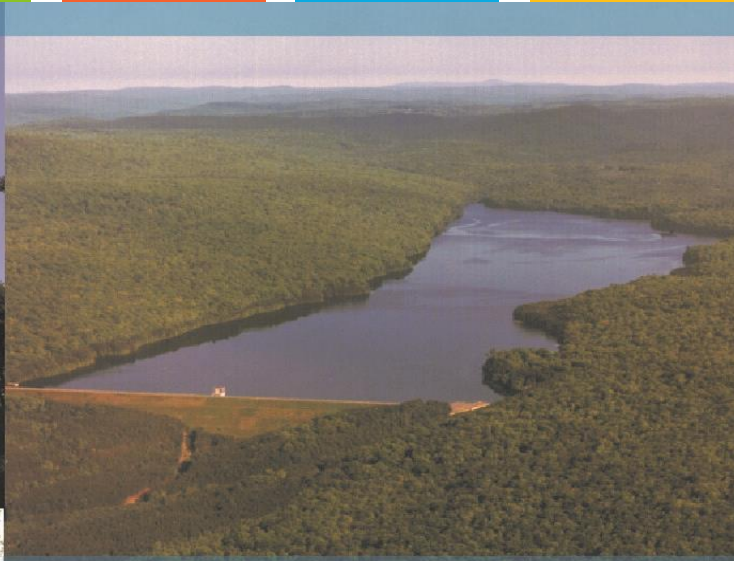
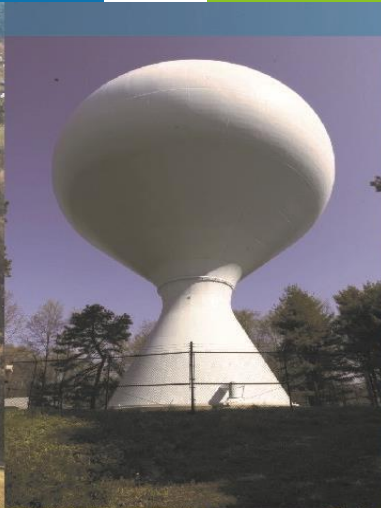
No.	Description	Date

231 CORPORATE DR.
 LINAC ADDITION
 PROPOSED FLOOR PLAN

Project number	Project Number
Date	06/06/2024
Drawn by	LAB
Checked by	NC

2_A1-02

Scale	1/4" = 1'-0"
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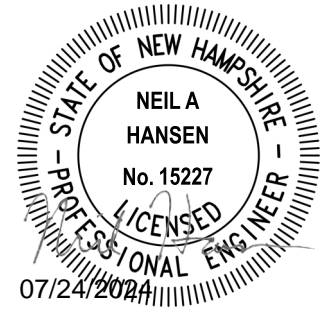
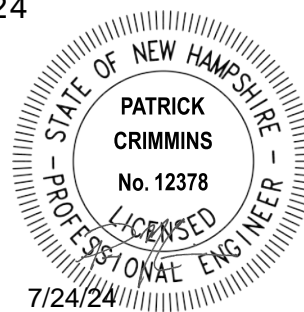


Proposed Veterinary Office
 231 Corporate Drive
 Portsmouth, NH

Drainage Analysis

Ethos Veterinary Health

July 24, 2024



Tighe & Bond

Drainage Analysis

To: City of Portsmouth Planning Board
FROM: Neil A. Hansen, PE
Patrick M. Crimmins, PE
COPY: Capone Architecture
DATE: July 24, 2024

1.0 Project Description

The proposed project is located at 231 Corporate Drive on a singular parcel which is identified as Map 314 Lot 2 on the City of Portsmouth Tax Maps. The proposed project consists of a 2,340 square foot veterinary building expansion with an updated parking layout. The project will include associated site improvements such as paving, stormwater management, utilities, lighting, and landscaping.

Runoff from the proposed surfaces will be directed to a stormwater treatment system prior to entering the existing wetland, located north of the site. Runoff from the proposed expansion and associated parking area are proposed to be treated by a Contech Jellyfish Filter filtration system. Description of the systems can be found in Section 2.2 of this memo.

2.0 Drainage Analysis

The stormwater management system for the proposed expansion has been designed to provide stormwater treatment for the additional impervious area as required by the Pease Development Authority (PDA) regulations including providing stormwater treatment for the proposed building addition and reconfigured parking area. The proposed project reduces the impervious surface on-site.

The watershed area that directs runoff to the proposed stormwater management system was analyzed to determine the Water Quality Volume (WQV) or Water Quality Flow (WQF) required to size the systems. The proposed project area was also analyzed for the pre- and post-development peak runoff rates for the 2-year, 10-year, 25-year and 50-year storm events.

2.1 Peak Rate Comparisons

The following table summarizes and compares the pre- and post-development peak runoff rates for the 2-year, 10-year, 25-year and 50-year storm events at each point of analysis. Point of Analysis 1 (PA-1) is located at the unnamed wetland, on the northern side of the site. Point of Analysis 2 (PA-2) is located at Corporate Drive, towards the northern entrance/exit of the site.

Table 2.1 – Comparison of Pre- and Post- Development Flows				
Point of Analysis	Pre/ Post 2-Year Storm (cfs)	Pre/ Post 10-Year Storm (cfs)	Pre/ Post 25-Year Storm (cfs)	Pre/ Post 50-Year Storm (cfs)
PA1	7.86/ 7.53	12.83/ 12.57	16.67/ 16.46	20.27/ 20.12
PA2	0.45/ 0.39	0.92/ 0.79	1.30/ 1.13	1.66/ 1.46

2.2 Stormwater Treatment

The stormwater management system has been designed to provide stormwater treatment as required by the Pease Development Authority. Stormwater treatment for the development area is detailed below.

The drainage system captures runoff from the proposed addition on the existing building, and runoff from the section parking lot that is to be reconfigured. Runoff from these areas will be collected through catch basins, yard drains, and a roof leader. The runoff captured will be treated by a Contech Jellyfish Filter filtration system. The Jellyfish Filter was sized to treat the Water Quality Flow (WQF), as shown in Table 2.2. The subcatchment area that was analyzed for this treatment practice (POST 1.0) can be referenced on the post-development watershed plan (Sheet C-802).

Table 2.2 - Treatment Area Proposed Filtration System		
Water Quality Flow Calculations		
VARIABLE	DESCRIPTION	VALUE
P	1 Inch of Rainfall	1 inch
A	Total Area Draining to Design Structure	0.80 AC
A _i	Impervious Area Draining to Design Structure	0.43 AC
I	% Impervious Area Draining to Design Structures	54%
R _v	Runoff Coefficient, $R_v = 0.05 + (0.9 \cdot I)$	0.54
WQV	Water Quality Volume, $WQV = P \cdot A \cdot R_v$	1,550 cf
T _c	Time of Concentration (min.)	6.5
q _u	Unit Peak Discharge (cfs/mi ² /in)	650
WQF	Total Treatment Flow, $WQF = WQV \cdot q_u$	0.434 cfs

3.0 Web Soil Survey Report



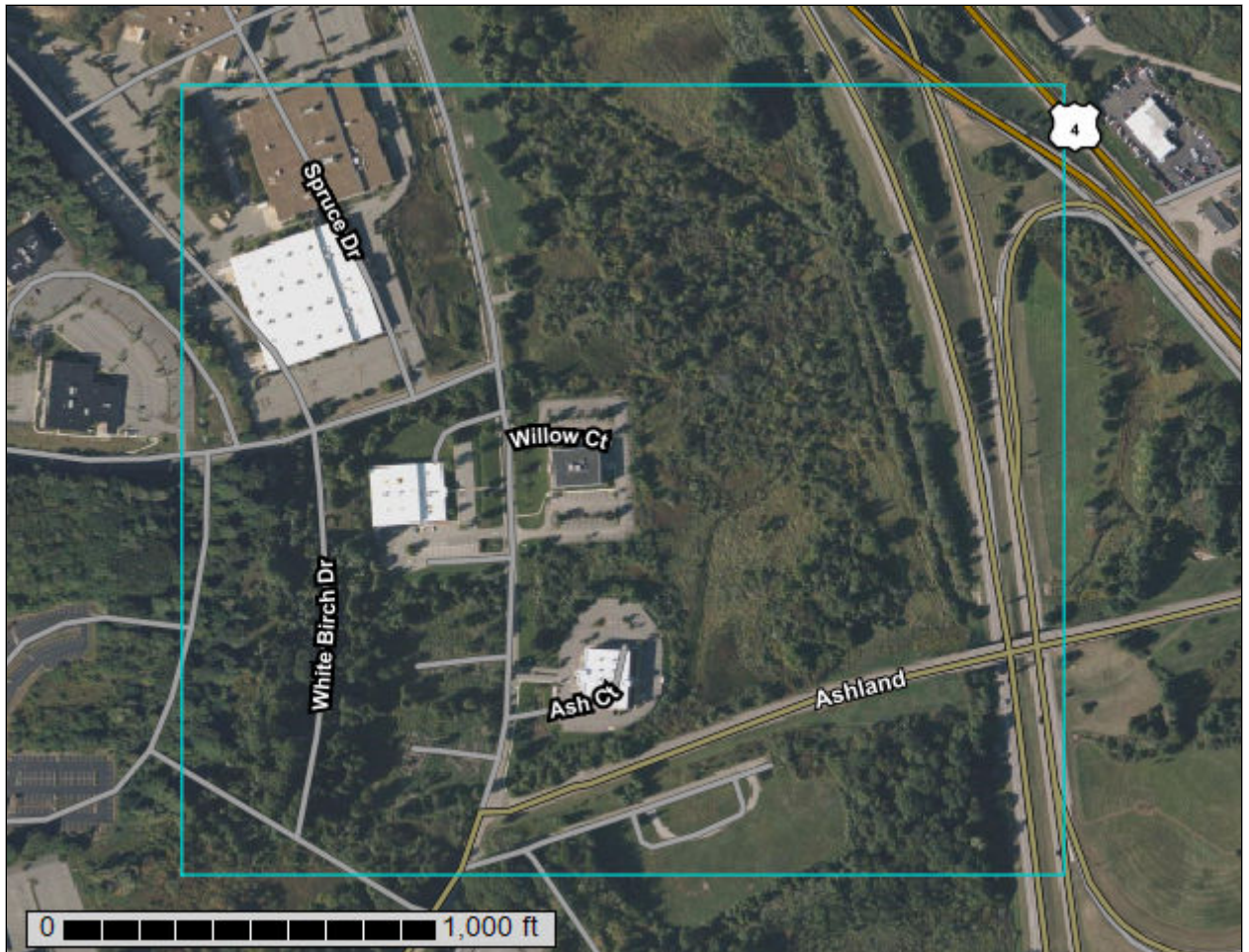
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Rockingham County, New Hampshire



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Map Scale: 1:5,460 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)


Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit


 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot


 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water


 Perennial Water

 Rock Outcrop


 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot


 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals


Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
 Survey Area Data: Version 25, Sep 12, 2022

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

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
134	Maybid silt loam	0.8	0.7%
299	Udorthents, smoothed	24.6	21.4%
799	Urban land-Canton complex, 3 to 15 percent slopes	89.9	77.9%
Totals for Area of Interest		115.4	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

Custom Soil Resource Report

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Rockingham County, New Hampshire

134—Maybid silt loam

Map Unit Setting

National map unit symbol: 9cmg
Elevation: 0 to 180 feet
Mean annual precipitation: 47 to 50 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 155 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Maybid and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Maybid

Setting

Landform: Marine terraces
Parent material: Silty and clayey marine deposits

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 26 inches: silty clay loam
H3 - 26 to 63 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: C/D
Ecological site: F144AY020MA - Very Wet Coastal Lake Plain
Hydric soil rating: Yes

Minor Components

Scitico

Percent of map unit: 10 percent
Landform: Marine terraces
Hydric soil rating: Yes

Ossipee

Percent of map unit: 10 percent

Landform: Swamps
Hydric soil rating: Yes

Not named wet

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

299—Udorthents, smoothed

Map Unit Setting

National map unit symbol: 9cmt
Elevation: 0 to 840 feet
Mean annual precipitation: 44 to 49 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 155 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Properties and qualities

Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

799—Urban land-Canton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cq0
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Canton and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Parent material: Till

Typical profile

H1 - 0 to 5 inches: gravelly fine sandy loam

H2 - 5 to 21 inches: gravelly fine sandy loam

H3 - 21 to 60 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: A

Ecological site: F144AY034CT - Well Drained Till Uplands

Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 5 percent

Hydric soil rating: No

Scituate and newfields

Percent of map unit: 4 percent

Hydric soil rating: No

Chatfield

Percent of map unit: 4 percent

Hydric soil rating: No

Boxford and eldridge

Percent of map unit: 4 percent

Hydric soil rating: No

Walpole

Percent of map unit: 4 percent

Landform: Depressions

Hydric soil rating: Yes

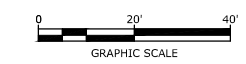
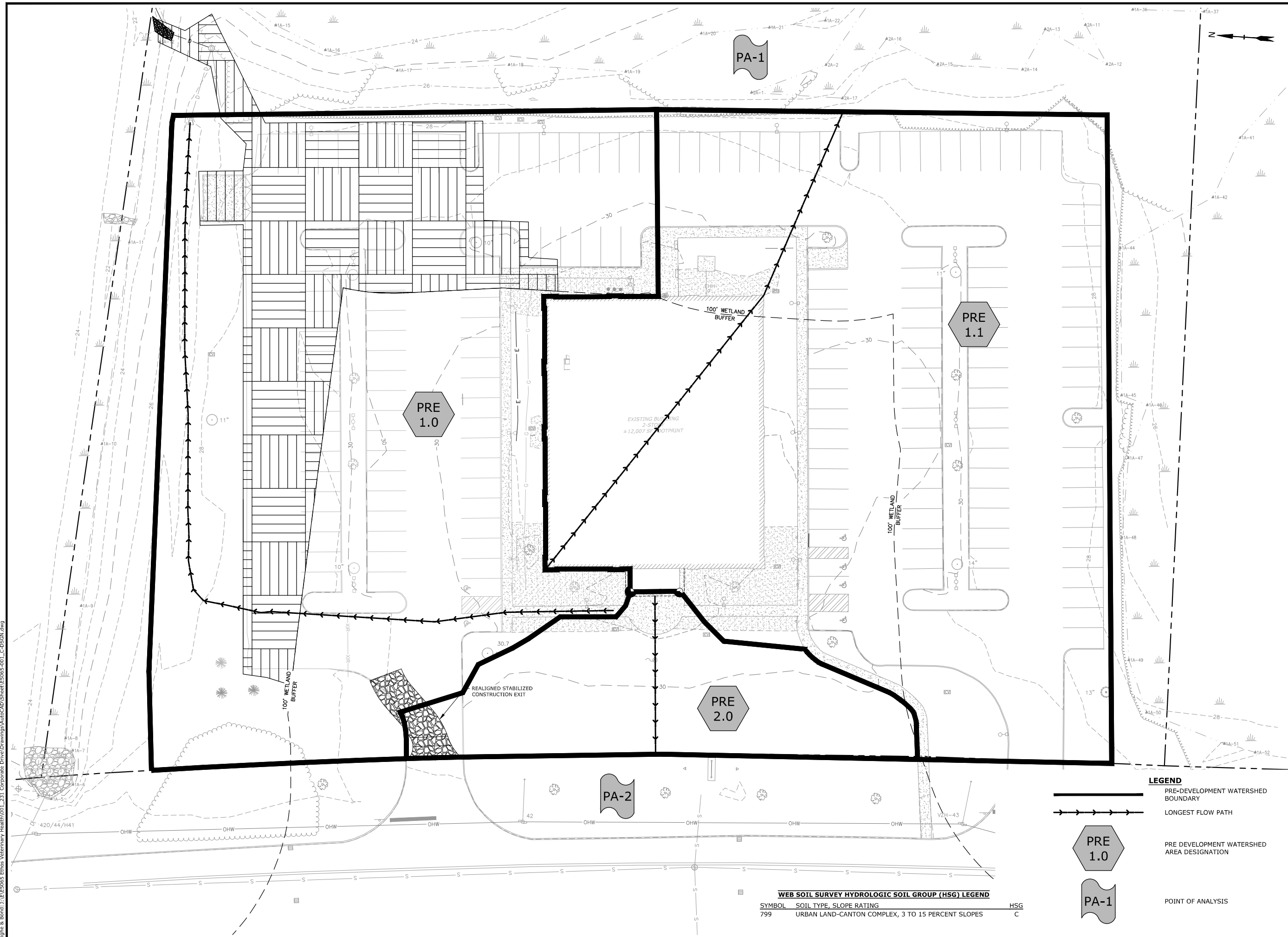
Squamscott and scitico

Percent of map unit: 4 percent

Landform: Marine terraces

Hydric soil rating: Yes

Custom Soil Resource Report



Proposed Veterinary Office

Ethos Veterinary Health

231 Corporate Drive
Portsmouth, New Hampshire

LEGEND

	PRE-DEVELOPMENT WATERSHED BOUNDARY
	LONGEST FLOW PATH
	PRE DEVELOPMENT WATERSHED AREA DESIGNATION
	POINT OF ANALYSIS

WEB SOIL SURVEY HYDROLOGIC SOIL GROUP (HSG) LEGEND

SYMBOL	SOIL TYPE, SLOPE RATING	HSG
799	URBAN LAND-CANTON COMPLEX, 3 TO 15 PERCENT SLOPES	C

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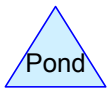
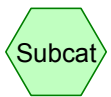
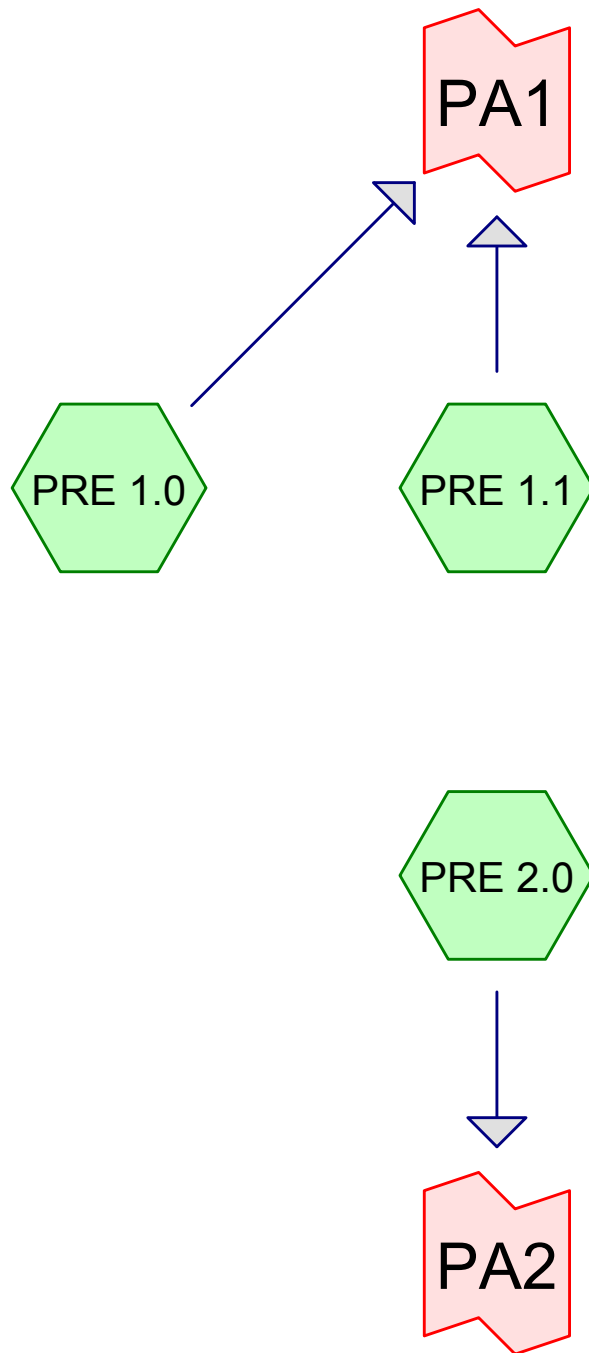
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A	7/24/2024	PB SUBMISSION

PROJECT NO: ES065-001
 DATE: 07/24/2024
 FILE: ES065-001_C-DSGN.DWG
 DRAWN BY: NHW
 CHECKED: NAH
 APPROVED: PMC

PRE-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-801



Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
40,188	74	>75% Grass cover, Good, HSG C (PRE 1.0, PRE 1.1, PRE 2.0)
4,088	96	Gravel surface, HSG C (PRE 1.0, PRE 1.1, PRE 2.0)
65,667	98	Paved parking, HSG C (PRE 1.0, PRE 1.1, PRE 2.0)
12,247	98	Roofs, HSG C (PRE 1.1)
1,619	70	Woods, Good, HSG C (PRE 1.0, PRE 1.1)
123,809	90	TOTAL AREA

E5065-001_PRE

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Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
123,809	HSG C	PRE 1.0, PRE 1.1, PRE 2.0
0	HSG D	
0	Other	
123,809		TOTAL AREA

E5065-001_PRE

Type III 24-hr 2-Yr Rainfall=3.68"

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Page 1

Time span=0.00-24.00 hrs, dt=0.05 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

SubcatchmentPRE 1.0: Runoff Area=53,021 sf 57.65% Impervious Runoff Depth>2.52"
Flow Length=401' Tc=6.0 min CN=89 Runoff=3.48 cfs 11,144 cf

SubcatchmentPRE 1.1: Runoff Area=59,650 sf 77.48% Impervious Runoff Depth>2.91"
Flow Length=246' Tc=6.0 min CN=93 Runoff=4.38 cfs 14,450 cf

SubcatchmentPRE 2.0: Runoff Area=11,138 sf 10.15% Impervious Runoff Depth>1.56"
Tc=6.0 min CN=77 Runoff=0.45 cfs 1,452 cf

Link PA1: Inflow=7.86 cfs 25,594 cf
Primary=7.86 cfs 25,594 cf

Link PA2: Inflow=0.45 cfs 1,452 cf
Primary=0.45 cfs 1,452 cf

Total Runoff Area = 123,809 sf Runoff Volume = 27,045 cf Average Runoff Depth = 2.62"
37.07% Pervious = 45,895 sf 62.93% Impervious = 77,914 sf

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Type III 24-hr 10-Yr Rainfall=5.59"

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Page 2

Time span=0.00-24.00 hrs, dt=0.05 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

SubcatchmentPRE 1.0: Runoff Area=53,021 sf 57.65% Impervious Runoff Depth>4.34"
Flow Length=401' Tc=6.0 min CN=89 Runoff=5.84 cfs 19,158 cf

SubcatchmentPRE 1.1: Runoff Area=59,650 sf 77.48% Impervious Runoff Depth>4.78"
Flow Length=246' Tc=6.0 min CN=93 Runoff=6.99 cfs 23,736 cf

SubcatchmentPRE 2.0: Runoff Area=11,138 sf 10.15% Impervious Runoff Depth>3.12"
Tc=6.0 min CN=77 Runoff=0.92 cfs 2,897 cf

Link PA1: Inflow=12.83 cfs 42,894 cf
Primary=12.83 cfs 42,894 cf

Link PA2: Inflow=0.92 cfs 2,897 cf
Primary=0.92 cfs 2,897 cf

Total Runoff Area = 123,809 sf Runoff Volume = 45,791 cf Average Runoff Depth = 4.44"
37.07% Pervious = 45,895 sf 62.93% Impervious = 77,914 sf

Summary for Subcatchment PRE 1.0:

Runoff = 5.84 cfs @ 12.09 hrs, Volume= 19,158 cf, Depth> 4.34"
 Routed to Link PA1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Yr Rainfall=5.59"

Area (sf)	CN	Description
19,473	74	>75% Grass cover, Good, HSG C
1,922	96	Gravel surface, HSG C
1,057	70	Woods, Good, HSG C
30,569	98	Paved parking, HSG C
53,021	89	Weighted Average
22,452		42.35% Pervious Area
30,569		57.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0250	1.40		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.68"
0.7	115	0.0163	2.59		Shallow Concentrated Flow, Paved Kv= 20.3 fps
2.3	236	0.0131	1.72		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
3.6	401	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment PRE 1.1:

Runoff = 6.99 cfs @ 12.09 hrs, Volume= 23,736 cf, Depth> 4.78"
 Routed to Link PA1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Yr Rainfall=5.59"

Area (sf)	CN	Description
12,247	98	Roofs, HSG C
11,028	74	>75% Grass cover, Good, HSG C
1,846	96	Gravel surface, HSG C
562	70	Woods, Good, HSG C
33,967	98	Paved parking, HSG C
59,650	93	Weighted Average
13,436		22.52% Pervious Area
46,214		77.48% Impervious Area

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Type III 24-hr 10-Yr Rainfall=5.59"

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Page 2

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	100	0.0050	0.85		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.68"
0.7	58	0.0050	1.44		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	12	0.0220	2.39		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	16	0.0220	2.22		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
0.0	5	0.0220	3.01		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.3	46	0.0220	3.01		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	9	0.0220	2.22		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
3.3	246	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment PRE 2.0:

Runoff = 0.92 cfs @ 12.09 hrs, Volume= 2,897 cf, Depth> 3.12"
Routed to Link PA2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.59"

Area (sf)	CN	Description
9,687	74	>75% Grass cover, Good, HSG C
320	96	Gravel surface, HSG C
1,131	98	Paved parking, HSG C
11,138	77	Weighted Average
10,007		89.85% Pervious Area
1,131		10.15% Impervious Area

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

Summary for Link PA1:

Inflow Area = 112,671 sf, 68.15% Impervious, Inflow Depth > 4.57" for 10-Yr event
Inflow = 12.83 cfs @ 12.09 hrs, Volume= 42,894 cf
Primary = 12.83 cfs @ 12.09 hrs, Volume= 42,894 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA2:

Inflow Area = 11,138 sf, 10.15% Impervious, Inflow Depth > 3.12" for 10-Yr event
Inflow = 0.92 cfs @ 12.09 hrs, Volume= 2,897 cf
Primary = 0.92 cfs @ 12.09 hrs, Volume= 2,897 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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Type III 24-hr 25-Yr Rainfall=7.08"

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Page 1

Time span=0.00-24.00 hrs, dt=0.05 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

SubcatchmentPRE 1.0: Runoff Area=53,021 sf 57.65% Impervious Runoff Depth>5.78"
Flow Length=401' Tc=6.0 min CN=89 Runoff=7.66 cfs 25,548 cf

SubcatchmentPRE 1.1: Runoff Area=59,650 sf 77.48% Impervious Runoff Depth>6.25"
Flow Length=246' Tc=6.0 min CN=93 Runoff=9.01 cfs 31,050 cf

SubcatchmentPRE 2.0: Runoff Area=11,138 sf 10.15% Impervious Runoff Depth>4.43"
Tc=6.0 min CN=77 Runoff=1.30 cfs 4,116 cf

Link PA1: Inflow=16.67 cfs 56,598 cf
Primary=16.67 cfs 56,598 cf

Link PA2: Inflow=1.30 cfs 4,116 cf
Primary=1.30 cfs 4,116 cf

Total Runoff Area = 123,809 sf Runoff Volume = 60,714 cf Average Runoff Depth = 5.88"
37.07% Pervious = 45,895 sf 62.93% Impervious = 77,914 sf

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Type III 24-hr 50-Yr Rainfall=8.49"

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Page 2

Time span=0.00-24.00 hrs, dt=0.05 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

SubcatchmentPRE 1.0: Runoff Area=53,021 sf 57.65% Impervious Runoff Depth>7.16"
Flow Length=401' Tc=6.0 min CN=89 Runoff=9.37 cfs 31,650 cf

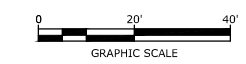
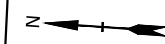
SubcatchmentPRE 1.1: Runoff Area=59,650 sf 77.48% Impervious Runoff Depth>7.64"
Flow Length=246' Tc=6.0 min CN=93 Runoff=10.90 cfs 37,998 cf

SubcatchmentPRE 2.0: Runoff Area=11,138 sf 10.15% Impervious Runoff Depth>5.72"
Tc=6.0 min CN=77 Runoff=1.66 cfs 5,310 cf

Link PA1: Inflow=20.27 cfs 69,648 cf
Primary=20.27 cfs 69,648 cf

Link PA2: Inflow=1.66 cfs 5,310 cf
Primary=1.66 cfs 5,310 cf

Total Runoff Area = 123,809 sf Runoff Volume = 74,958 cf Average Runoff Depth = 7.27"
37.07% Pervious = 45,895 sf 62.93% Impervious = 77,914 sf








Proposed Veterinary Office

Ethos Veterinary Health

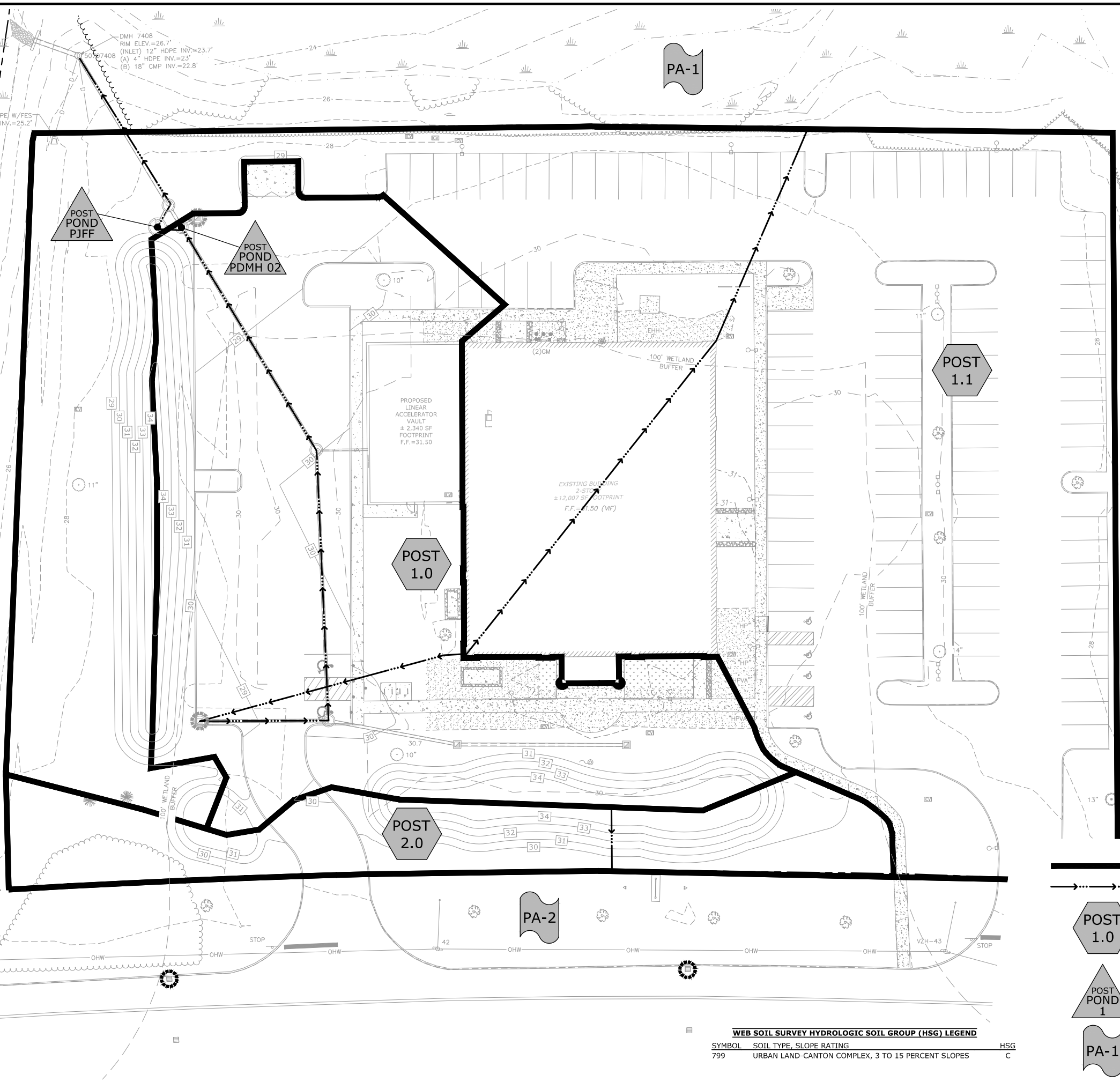
231 Corporate Drive
Portsmouth, New Hampshire

LEGEND

-  POST-DEVELOPMENT WATERSHED BOUNDARY
-  LONGEST FLOW PATH
-  POST 1.0
PRE DEVELOPMENT WATERSHED AREA DESIGNATION
-  POST POND 1
POST-DEVELOPMENT POND DESIGNATION
-  PA-1
POINT OF ANALYSIS

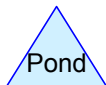
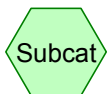
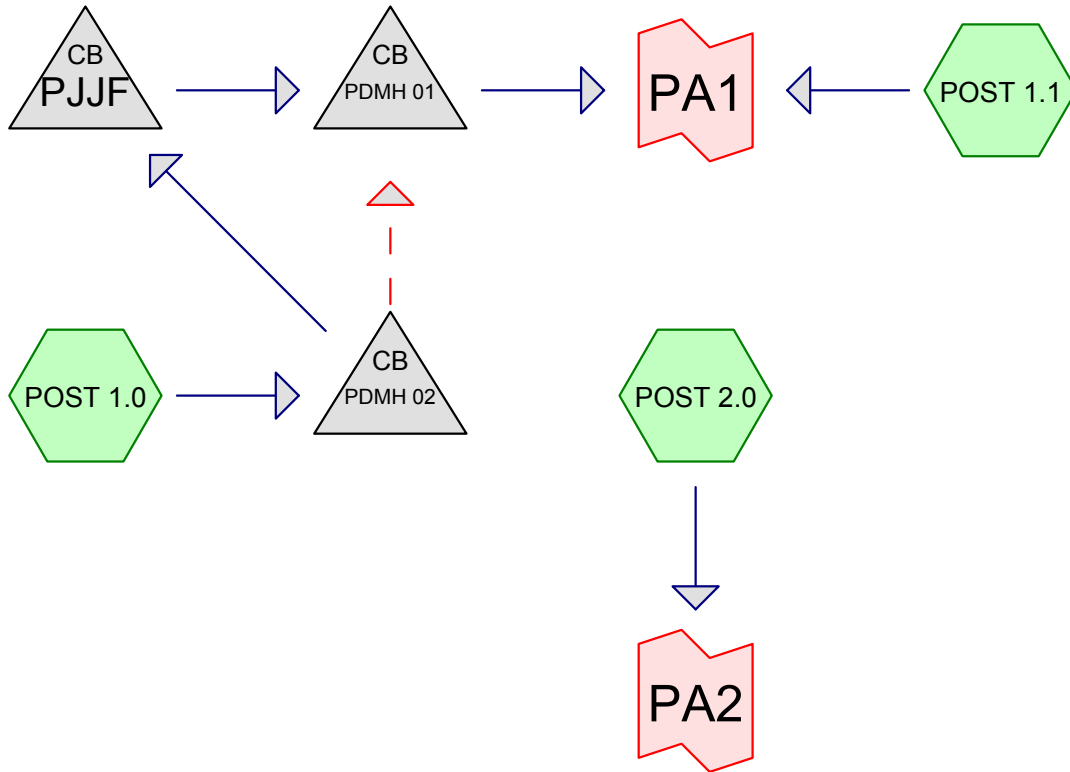
WEB SOIL SURVEY HYDROLOGIC SOIL GROUP (HSG) LEGEND

SYMBOL	SOIL TYPE, SLOPE RATING	HSG
799	URBAN LAND-CANTON COMPLEX, 3 TO 15 PERCENT SLOPES	C



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DATE: 07/24/2024		
FILE: ES065-001_C-DSGN.DWG		
DRAWN BY:		NHW
CHECKED:		NAH
APPROVED:		PMC
POST-DEVELOPMENT WATERSHED PLAN		
SCALE:		AS SHOWN
C-802		



E5065-001_POST

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Page 2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
49,369	74	>75% Grass cover, Good, HSG C (POST 1.0, POST 1.1, POST 2.0)
2,973	96	Gravel surface, HSG C (POST 1.0, POST 1.1)
17,246	98	Paved parking, HSG C (POST 1.0, POST 2.0)
14,587	98	Roofs, HSG C (POST 1.0, POST 1.1)
38,051	98	Unconnected pavement, HSG C (POST 1.1)
1,579	70	Woods, Good, HSG C (POST 1.1, POST 2.0)
123,805	88	TOTAL AREA

E5065-001_POST

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Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
123,805	HSG C	POST 1.0, POST 1.1, POST 2.0
0	HSG D	
0	Other	
123,805		TOTAL AREA

E5065-001_POST

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Type III 24-hr 2-Yr Rainfall=3.68"

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Page 4

Time span=0.00-24.00 hrs, dt=0.05 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

SubcatchmentPOST 1.0: Runoff Area=34,838 sf 53.82% Impervious Runoff Depth>2.43"
 Flow Length=438' Tc=6.5 min CN=88 Runoff=2.19 cfs 7,058 cf

SubcatchmentPOST 1.1: Runoff Area=79,034 sf 63.64% Impervious Runoff Depth>2.61"
 Flow Length=246' Tc=6.0 min CN=90 Runoff=5.35 cfs 17,222 cf

SubcatchmentPOST 2.0: Runoff Area=9,933 sf 8.43% Impervious Runoff Depth>1.50"
 Flow Length=24' Slope=0.1416 '/' Tc=6.0 min CN=76 Runoff=0.39 cfs 1,238 cf

Pond PDMH 01: Peak Elev=24.12' Inflow=2.19 cfs 7,058 cf
 12.0" Round Culvert n=0.013 L=65.0' S=0.0046 '/' Outflow=2.19 cfs 7,058 cf

Pond PDMH 02: Peak Elev=24.63' Inflow=2.19 cfs 7,058 cf
 Primary=1.62 cfs 6,669 cf Secondary=0.56 cfs 390 cf Outflow=2.19 cfs 7,058 cf

Pond PJJF: Peak Elev=24.27' Inflow=1.62 cfs 6,669 cf
 12.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=1.62 cfs 6,669 cf

Link PA1: Inflow=7.53 cfs 24,280 cf
 Primary=7.53 cfs 24,280 cf

Link PA2: Inflow=0.39 cfs 1,238 cf
 Primary=0.39 cfs 1,238 cf

Total Runoff Area = 123,805 sf Runoff Volume = 25,518 cf Average Runoff Depth = 2.47"
43.55% Pervious = 53,921 sf 56.45% Impervious = 69,884 sf

E5065-001_POST

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Type III 24-hr 10-Yr Rainfall=5.59"

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Page 5

Time span=0.00-24.00 hrs, dt=0.05 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

SubcatchmentPOST 1.0: Runoff Area=34,838 sf 53.82% Impervious Runoff Depth>4.23"
Flow Length=438' Tc=6.5 min CN=88 Runoff=3.72 cfs 12,276 cf

SubcatchmentPOST 1.1: Runoff Area=79,034 sf 63.64% Impervious Runoff Depth>4.44"
Flow Length=246' Tc=6.0 min CN=90 Runoff=8.85 cfs 29,269 cf

SubcatchmentPOST 2.0: Runoff Area=9,933 sf 8.43% Impervious Runoff Depth>3.03"
Flow Length=24' Slope=0.1416 '/' Tc=6.0 min CN=76 Runoff=0.79 cfs 2,505 cf

Pond PDMH 01: Peak Elev=25.03' Inflow=3.72 cfs 12,276 cf
12.0" Round Culvert n=0.013 L=65.0' S=0.0046 '/' Outflow=3.72 cfs 12,276 cf

Pond PDMH 02: Peak Elev=25.33' Inflow=3.72 cfs 12,276 cf
Primary=2.69 cfs 10,533 cf Secondary=2.36 cfs 1,743 cf Outflow=3.72 cfs 12,276 cf

Pond PJJF: Peak Elev=25.30' Inflow=2.69 cfs 10,533 cf
12.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=2.69 cfs 10,533 cf

Link PA1: Inflow=12.57 cfs 41,545 cf
Primary=12.57 cfs 41,545 cf

Link PA2: Inflow=0.79 cfs 2,505 cf
Primary=0.79 cfs 2,505 cf

Total Runoff Area = 123,805 sf Runoff Volume = 44,051 cf Average Runoff Depth = 4.27"
43.55% Pervious = 53,921 sf 56.45% Impervious = 69,884 sf

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Type III 24-hr 10-Yr Rainfall=5.59"

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Summary for Subcatchment POST 1.0:

[47] Hint: Peak is 148% of capacity of segment #3

Runoff = 3.72 cfs @ 12.09 hrs, Volume= 12,276 cf, Depth> 4.23"
 Routed to Pond PDMH 02 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Yr Rainfall=5.59"

Area (sf)	CN	Description
2,340	98	Roofs, HSG C
14,204	74	>75% Grass cover, Good, HSG C
1,885	96	Gravel surface, HSG C
16,409	98	Paved parking, HSG C
34,838	88	Weighted Average
16,089		46.18% Pervious Area
18,749		53.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	40	0.0200	0.15		Sheet Flow, Grass: Short n= 0.150 P2= 3.68"
0.4	66	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.7	332	0.0050	3.21	2.52	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
6.5	438	Total			

Summary for Subcatchment POST 1.1:

Runoff = 8.85 cfs @ 12.09 hrs, Volume= 29,269 cf, Depth> 4.44"
 Routed to Link PA1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Yr Rainfall=5.59"

Area (sf)	CN	Description
12,247	98	Roofs, HSG C
26,800	74	>75% Grass cover, Good, HSG C
1,088	96	Gravel surface, HSG C
848	70	Woods, Good, HSG C
38,051	98	Unconnected pavement, HSG C
79,034	90	Weighted Average
28,736		36.36% Pervious Area
50,298		63.64% Impervious Area
38,051		75.65% Unconnected

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Type III 24-hr 10-Yr Rainfall=5.59"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	100	0.0050	0.85		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.68"
0.7	58	0.0050	1.44		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	12	0.0220	2.39		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.1	16	0.0220	2.22		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
0.0	5	0.0220	3.01		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.3	46	0.0220	3.01		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	9	0.0220	2.22		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
3.3	246	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment POST 2.0:

Runoff = 0.79 cfs @ 12.09 hrs, Volume= 2,505 cf, Depth> 3.03"
Routed to Link PA2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=5.59"

Area (sf)	CN	Description
8,365	74	>75% Grass cover, Good, HSG C
731	70	Woods, Good, HSG C
837	98	Paved parking, HSG C
9,933	76	Weighted Average
9,096		91.57% Pervious Area
837		8.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	24	0.1416	0.72		Sheet Flow, Fallow n= 0.050 P2= 3.68"
0.6	24	Total, Increased to minimum Tc = 6.0 min			

Summary for Pond PDMH 01:

[80] Warning: Exceeded Pond PDMH 02 by 0.08' @ 12.10 hrs (0.84 cfs 151 cf)

[80] Warning: Exceeded Pond PJJF by 0.29' @ 12.05 hrs (2.05 cfs 368 cf)

Inflow Area = 34,838 sf, 53.82% Impervious, Inflow Depth > 4.23" for 10-Yr event
 Inflow = 3.72 cfs @ 12.09 hrs, Volume= 12,276 cf
 Outflow = 3.72 cfs @ 12.09 hrs, Volume= 12,276 cf, Atten= 0%, Lag= 0.0 min
 Primary = 3.72 cfs @ 12.09 hrs, Volume= 12,276 cf
 Routed to Link PA1 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 25.03' @ 12.10 hrs

Flood Elev= 28.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.10'	12.0" Round Culvert L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.10' / 22.80' S= 0.0046 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.68 cfs @ 12.09 hrs HW=25.00' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 3.68 cfs @ 4.68 fps)

Summary for Pond PDMH 02:

Inflow Area = 34,838 sf, 53.82% Impervious, Inflow Depth > 4.23" for 10-Yr event
 Inflow = 3.72 cfs @ 12.09 hrs, Volume= 12,276 cf
 Outflow = 3.72 cfs @ 12.09 hrs, Volume= 12,276 cf, Atten= 0%, Lag= 0.0 min
 Primary = 2.69 cfs @ 12.09 hrs, Volume= 10,533 cf
 Routed to Pond PJJF :
 Secondary = 2.36 cfs @ 12.18 hrs, Volume= 1,743 cf
 Routed to Pond PDMH 01 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 25.33' @ 12.16 hrs

Flood Elev= 28.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.80'	12.0" Round TREATMENT L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.80' / 23.75' S= 0.0100 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	24.25'	12.0" Round BYPASS L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.25' / 23.90' S= 0.0583 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=24.91' TW=25.02' (Dynamic Tailwater)

↑1=TREATMENT (Controls 0.00 cfs)

Secondary OutFlow Max=2.51 cfs @ 12.18 hrs HW=25.18' TW=24.34' (Dynamic Tailwater)

↑2=BYPASS (Inlet Controls 2.51 cfs @ 3.29 fps)

Summary for Pond PJJF:

[80] Warning: Exceeded Pond PDMH 02 by 0.29' @ 12.10 hrs (2.05 cfs 368 cf)

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Type III 24-hr 10-Yr Rainfall=5.59"

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Inflow Area = 34,838 sf, 53.82% Impervious, Inflow Depth > 3.63" for 10-Yr event
 Inflow = 2.69 cfs @ 12.09 hrs, Volume= 10,533 cf
 Outflow = 2.69 cfs @ 12.09 hrs, Volume= 10,533 cf, Atten= 0%, Lag= 0.0 min
 Primary = 2.69 cfs @ 12.09 hrs, Volume= 10,533 cf
 Routed to Pond PDMH 01 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 25.30' @ 12.12 hrs
 Flood Elev= 28.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.25'	12.0" Round Culvert L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.25' / 23.20' S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.99 cfs @ 12.09 hrs HW=25.02' TW=24.96' (Dynamic Tailwater)
 ←1=Culvert (Inlet Controls 0.99 cfs @ 1.27 fps)

Summary for Link PA1:

Inflow Area = 113,872 sf, 60.64% Impervious, Inflow Depth > 4.38" for 10-Yr event
 Inflow = 12.57 cfs @ 12.09 hrs, Volume= 41,545 cf
 Primary = 12.57 cfs @ 12.09 hrs, Volume= 41,545 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA2:

Inflow Area = 9,933 sf, 8.43% Impervious, Inflow Depth > 3.03" for 10-Yr event
 Inflow = 0.79 cfs @ 12.09 hrs, Volume= 2,505 cf
 Primary = 0.79 cfs @ 12.09 hrs, Volume= 2,505 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

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Type III 24-hr 25-Yr Rainfall=7.08"

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Time span=0.00-24.00 hrs, dt=0.05 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

SubcatchmentPOST 1.0: Runoff Area=34,838 sf 53.82% Impervious Runoff Depth>5.67"
Flow Length=438' Tc=6.5 min CN=88 Runoff=4.91 cfs 16,452 cf

SubcatchmentPOST 1.1: Runoff Area=79,034 sf 63.64% Impervious Runoff Depth>5.90"
Flow Length=246' Tc=6.0 min CN=90 Runoff=11.56 cfs 38,842 cf

SubcatchmentPOST 2.0: Runoff Area=9,933 sf 8.43% Impervious Runoff Depth>4.32"
Flow Length=24' Slope=0.1416 '/' Tc=6.0 min CN=76 Runoff=1.13 cfs 3,580 cf

Pond PDMH 01: Peak Elev=25.95' Inflow=4.91 cfs 16,452 cf
12.0" Round Culvert n=0.013 L=65.0' S=0.0046 '/' Outflow=4.91 cfs 16,452 cf

Pond PDMH 02: Peak Elev=26.33' Inflow=4.91 cfs 16,452 cf
Primary=3.08 cfs 13,594 cf Secondary=3.02 cfs 2,857 cf Outflow=4.91 cfs 16,452 cf

Pond PJJF: Peak Elev=26.25' Inflow=3.08 cfs 13,594 cf
12.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=3.08 cfs 13,594 cf

Link PA1: Inflow=16.46 cfs 55,294 cf
Primary=16.46 cfs 55,294 cf

Link PA2: Inflow=1.13 cfs 3,580 cf
Primary=1.13 cfs 3,580 cf

Total Runoff Area = 123,805 sf Runoff Volume = 58,874 cf Average Runoff Depth = 5.71"
43.55% Pervious = 53,921 sf 56.45% Impervious = 69,884 sf

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Type III 24-hr 50-Yr Rainfall=8.49"

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Time span=0.00-24.00 hrs, dt=0.05 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

SubcatchmentPOST 1.0: Runoff Area=34,838 sf 53.82% Impervious Runoff Depth>7.04"
 Flow Length=438' Tc=6.5 min CN=88 Runoff=6.03 cfs 20,445 cf

SubcatchmentPOST 1.1: Runoff Area=79,034 sf 63.64% Impervious Runoff Depth>7.28"
 Flow Length=246' Tc=6.0 min CN=90 Runoff=14.10 cfs 47,970 cf

SubcatchmentPOST 2.0: Runoff Area=9,933 sf 8.43% Impervious Runoff Depth>5.60"
 Flow Length=24' Slope=0.1416 '/' Tc=6.0 min CN=76 Runoff=1.46 cfs 4,636 cf

Pond PDMH 01: Peak Elev=27.03' Inflow=6.03 cfs 20,445 cf
 12.0" Round Culvert n=0.013 L=65.0' S=0.0046 '/' Outflow=6.03 cfs 20,445 cf

Pond PDMH 02: Peak Elev=27.67' Inflow=6.03 cfs 20,445 cf
 Primary=3.90 cfs 16,523 cf Secondary=3.70 cfs 3,923 cf Outflow=6.03 cfs 20,445 cf

Pond PJJF: Peak Elev=27.58' Inflow=3.90 cfs 16,523 cf
 12.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=3.90 cfs 16,523 cf

Link PA1: Inflow=20.12 cfs 68,415 cf
 Primary=20.12 cfs 68,415 cf

Link PA2: Inflow=1.46 cfs 4,636 cf
 Primary=1.46 cfs 4,636 cf

Total Runoff Area = 123,805 sf Runoff Volume = 73,052 cf Average Runoff Depth = 7.08"
43.55% Pervious = 53,921 sf 56.45% Impervious = 69,884 sf

4.0 Conclusion

The proposed project will result in a reduction to the post-development peak runoff rates from the pre-development condition for all points of analysis. There is a net decrease in impervious areas resulting from the proposed project. The proposed stormwater filtration system will treat 18,800 SF of impervious surface runoff from the project area prior to ultimately discharging to the unnamed wetland, defined as PA-1. The proposed project results in an improvement to the stormwater runoff discharging from the site due to existing conditions providing no advanced stormwater treatment.

Appendices

- A. Extreme Precipitation Tables
- B. Contech Jellyfish Sizing Memo
- C. Plan Set (Bound Separately)



Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.793 degrees West
Latitude	43.076 degrees North
Elevation	0 feet
Date/Time	Mon, 09 Jan 2023 08:29:39 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.04	1yr	0.70	0.98	1.21	1.56	2.03	2.66	2.91	1yr	2.35	2.80	3.21	3.93	4.54	1yr
2yr	0.32	0.50	0.62	0.81	1.02	1.30	2yr	0.88	1.18	1.51	1.93	2.48	3.20	3.56	2yr	2.84	3.42	3.93	4.67	5.31	2yr
5yr	0.37	0.58	0.73	0.97	1.24	1.60	5yr	1.07	1.46	1.88	2.42	3.13	4.06	4.57	5yr	3.59	4.39	5.02	5.92	6.69	5yr
10yr	0.41	0.64	0.81	1.11	1.44	1.88	10yr	1.24	1.72	2.22	2.88	3.74	4.86	5.52	10yr	4.30	5.30	6.06	7.09	7.96	10yr
25yr	0.47	0.75	0.96	1.32	1.76	2.32	25yr	1.52	2.13	2.76	3.61	4.72	6.16	7.08	25yr	5.45	6.81	7.77	9.00	10.03	25yr
50yr	0.53	0.85	1.09	1.52	2.05	2.73	50yr	1.77	2.51	3.26	4.30	5.64	7.38	8.56	50yr	6.53	8.23	9.38	10.78	11.96	50yr
100yr	0.59	0.95	1.23	1.75	2.39	3.22	100yr	2.06	2.96	3.87	5.12	6.74	8.84	10.36	100yr	7.82	9.96	11.32	12.92	14.26	100yr
200yr	0.67	1.09	1.41	2.02	2.79	3.79	200yr	2.41	3.49	4.57	6.08	8.04	10.59	12.52	200yr	9.37	12.04	13.67	15.50	17.01	200yr
500yr	0.79	1.29	1.69	2.45	3.43	4.70	500yr	2.96	4.34	5.70	7.64	10.17	13.46	16.11	500yr	11.91	15.49	17.56	19.71	21.48	500yr

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.73	0.89	1yr	0.63	0.87	0.92	1.32	1.66	2.22	2.51	1yr	1.97	2.41	2.84	3.16	3.88	1yr
2yr	0.31	0.49	0.60	0.81	1.00	1.19	2yr	0.86	1.16	1.37	1.82	2.34	3.05	3.45	2yr	2.70	3.32	3.81	4.54	5.06	2yr
5yr	0.35	0.54	0.67	0.92	1.17	1.40	5yr	1.01	1.37	1.61	2.12	2.74	3.79	4.19	5yr	3.35	4.03	4.70	5.53	6.24	5yr
10yr	0.38	0.59	0.73	1.02	1.32	1.60	10yr	1.14	1.56	1.81	2.40	3.07	4.37	4.87	10yr	3.87	4.68	5.44	6.41	7.19	10yr
25yr	0.44	0.67	0.83	1.18	1.56	1.90	25yr	1.35	1.86	2.10	2.78	3.56	4.69	5.91	25yr	4.15	5.68	6.65	7.80	8.69	25yr
50yr	0.48	0.73	0.91	1.31	1.76	2.17	50yr	1.52	2.12	2.35	3.10	3.96	5.29	6.83	50yr	4.68	6.57	7.74	9.05	10.03	50yr
100yr	0.54	0.81	1.01	1.47	2.01	2.47	100yr	1.73	2.42	2.63	3.45	4.39	5.94	7.90	100yr	5.26	7.59	9.01	10.52	11.57	100yr
200yr	0.59	0.89	1.13	1.63	2.28	2.82	200yr	1.97	2.75	2.93	3.83	4.85	6.65	9.13	200yr	5.89	8.78	10.48	12.24	13.38	200yr
500yr	0.69	1.02	1.31	1.91	2.72	3.37	500yr	2.34	3.30	3.41	4.38	5.55	7.73	11.05	500yr	6.84	10.62	12.80	14.98	16.18	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	1yr	0.76	1.06	1.25	1.75	2.21	2.99	3.14	1yr	2.65	3.02	3.58	4.37	5.04	1yr
2yr	0.33	0.52	0.64	0.86	1.06	1.26	2yr	0.92	1.24	1.48	1.96	2.51	3.42	3.68	2yr	3.03	3.54	4.07	4.82	5.63	2yr
5yr	0.40	0.61	0.76	1.04	1.33	1.61	5yr	1.15	1.58	1.88	2.53	3.24	4.33	4.93	5yr	3.83	4.74	5.36	6.34	7.12	5yr
10yr	0.46	0.71	0.89	1.24	1.60	1.96	10yr	1.38	1.92	2.27	3.10	3.93	5.33	6.16	10yr	4.71	5.92	6.76	7.79	8.71	10yr
25yr	0.57	0.87	1.08	1.54	2.03	2.55	25yr	1.75	2.49	2.94	4.05	5.11	7.78	8.28	25yr	6.89	7.96	9.05	10.27	11.35	25yr
50yr	0.66	1.01	1.26	1.81	2.43	3.10	50yr	2.10	3.03	3.57	4.97	6.25	9.74	10.36	50yr	8.62	9.96	11.29	12.64	13.89	50yr
100yr	0.78	1.18	1.47	2.13	2.92	3.77	100yr	2.52	3.68	4.34	6.11	7.66	12.19	12.98	100yr	10.79	12.48	14.09	15.58	17.00	100yr
200yr	0.91	1.37	1.73	2.51	3.50	4.59	200yr	3.02	4.49	5.29	7.52	9.39	15.30	16.27	200yr	13.54	15.64	17.60	19.19	20.81	200yr
500yr	1.12	1.67	2.15	3.13	4.45	5.95	500yr	3.84	5.81	6.86	9.92	12.31	20.67	21.93	500yr	18.29	21.09	23.63	25.29	27.21	500yr

Coastal and Great Bay Region Precipitation Increase		
	24-hr Storm Event (in.)	24-hr Storm Event + 15% (in.)
2 Year	3.20	3.68
10 Year	4.86	5.59
25 Year	6.16	7.08
50 Year	7.38	8.49

Tighe&Bond

APPENDIX B



Jellyfish Filter Design Calculation

Contech Engineered Solutions, LLC Engineer:
Date Prepared:

DRA
6/12/2024

Site Information

Project Name	Ethos Veterinary Office
Project City	Portsmouth
Project State	NH
Site Designation	PJFF
Total Drainage Area, Ad	0.69 ac
Post Development Impervious Area, Ai	0.43 ac
Pervious Area, Ap	0.26 ac
% Impervious	63%
Runoff Coefficient, Rc	0.61

Mass Loading Calculations

Mean Annual Rainfall, P	48 in
Agency Required % Removal	80%
Percent Runoff Capture	90%
Mean Annual Runoff, Vt	66,133 ft ³
Event Mean Concentration of Pollutant, EMC	70 mg/l
Annual Mass Load, M total	289 lbs

Filter System

Filtration Brand	Jellyfish
Cartridge Length	54 in

Jellyfish Sizing

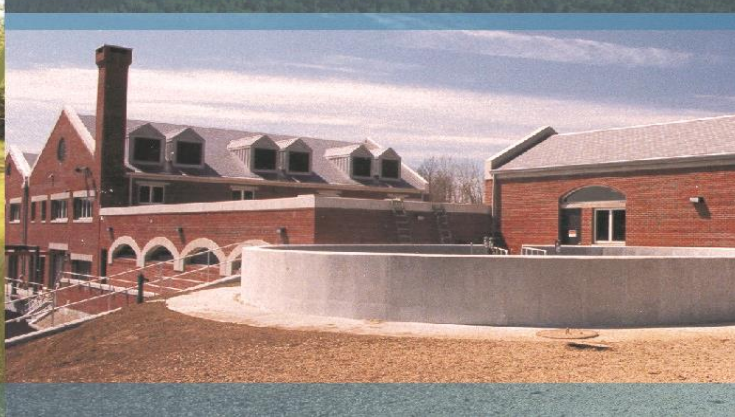
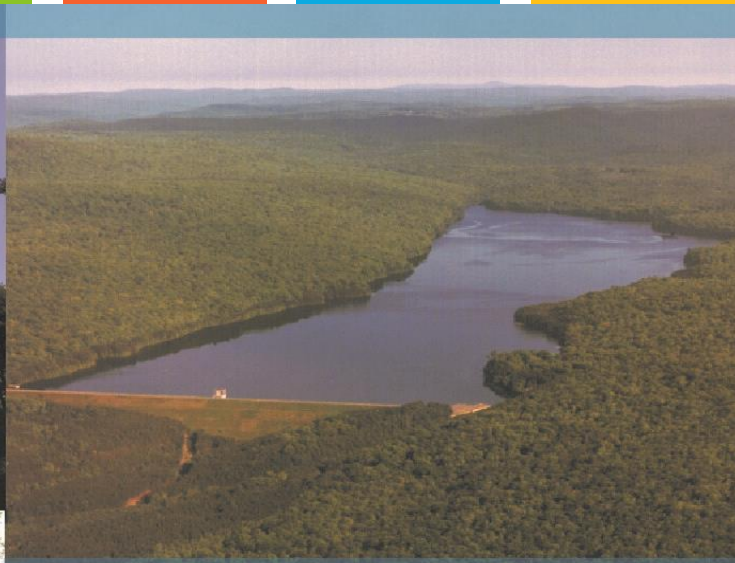
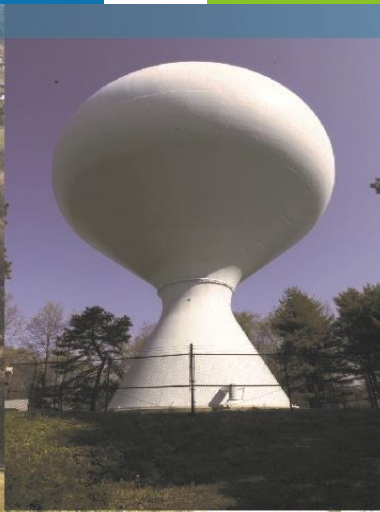
Mass removed by pretreatment system	144 lbs
Mass load to filters after pretreatment	144 lbs
Mass to be Captured by System	116 lbs
Water Quality Flow	0.47 cfs

Method to Use

FLOW BASED

Summary		
	Treatment Flow Rate	0.62 cfs
Flow	Required Size	JF6-3-1
	Mass Capture provided	438 lbs





Proposed Veterinary Office
231 Corporate Drive
Portsmouth, NH

Long-Term Operation & Maintenance Plan

June 17, 2024

Tighe&Bond

Section 1 Long-Term Operation & Maintenance Plan

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Section 2 Invasive Species

Section 3 Annual Updates and Log Requirements

Section 1

Long-Term Operation & Maintenance Plan

It is the intent of this Operation and Maintenance Plan to identify the areas of this site that need special attention and consideration, as well as implementing a plan to assure routine maintenance. By identifying the areas of concern as well as implementing a frequent and routine maintenance schedule the site will maintain a high-quality stormwater runoff.

1.1 Contact/Responsible Party

The Kane Company
210 Commerce Way
Portsmouth, NH 03801

(Note: The contact information for the Contact/Responsible Party shall be kept current. If ownership changes, the Operation and Maintenance Plan must be transferred to the new party.)

1.2 Maintenance Items

Maintenance of the following items shall be recorded:

- Litter/Debris Removal
- Landscaping
- Catchbasin Cleaning
- Pavement Sweeping
- Contech Jellyfish Filtration System
- Detention Basin

The following maintenance items and schedule represent the minimum action required. Periodic site inspections shall be conducted, and all measures must be maintained in effective operating condition. The following items shall be observed during site inspection and maintenance:

- Inspect vegetated areas, particularly slopes and embankments for areas of erosion. Replant and restore as necessary
- Inspect catch basins for sediment buildup
- Inspect site for trash and debris

1.3 Overall Site Operation & Maintenance Schedule

Maintenance Item	Frequency of Maintenance
Litter/Debris Removal	Weekly
Pavement Sweeping - Sweep impervious areas to remove sand and litter.	Annually
Landscaping - Landscaped islands to be maintained and mulched.	Maintained as required and mulched each Spring
Catch Basin (CB) Cleaning - CB to be cleaned of solids and oils.	Annually
Contech Jelly Fish Units	In accordance with Manufacturer's Recommendations (See section 1.5)
Detention Basin	Bi-Annually

1.3.1 Disposal Requirements

Disposal of debris, trash, sediment and other waste material should be done at suitable disposal/recycling sites and in compliance with all applicable local, state and federal waste regulations.

1.4 Detention Basin Maintenance Requirements

Detention Basin Inspection/Maintenance Requirements		
Inspection/Maintenance	Frequency	Action
Monitor Sediment Accumulation	Annually	- Install and maintain a staff gage or other measuring devise, to indicate depth of sediment accumulation and level at which clean-out is required.
Visual Inspection	Annually	- Remove trash and debris as needed - Remove any woody vegetation - Inspect and repair embankments - Inspect check dam
Mowing	Periodically (At least two (2) times annually)	- Embankments shall be mowed

1.5 Contech Jellyfish Filter System Maintenance Requirements

Contech Jellyfish Filter System Inspection/Maintenance Requirements		
Inspection/ Maintenance	Frequency	Action
Inspect vault for sediment build up, static water, plugged media and bypass condition	Quarterly during the first year of operation, Minimum of annually in subsequent years	- See section 4 & 5 of Jellyfish Filter Owner's Manual
Replace Cartridges	As required by inspection, 1-5 years.	- See section 6 & 7 of Jellyfish Filter Owner's Manual

**Jellyfish[®] Filter
Owner's Manual**



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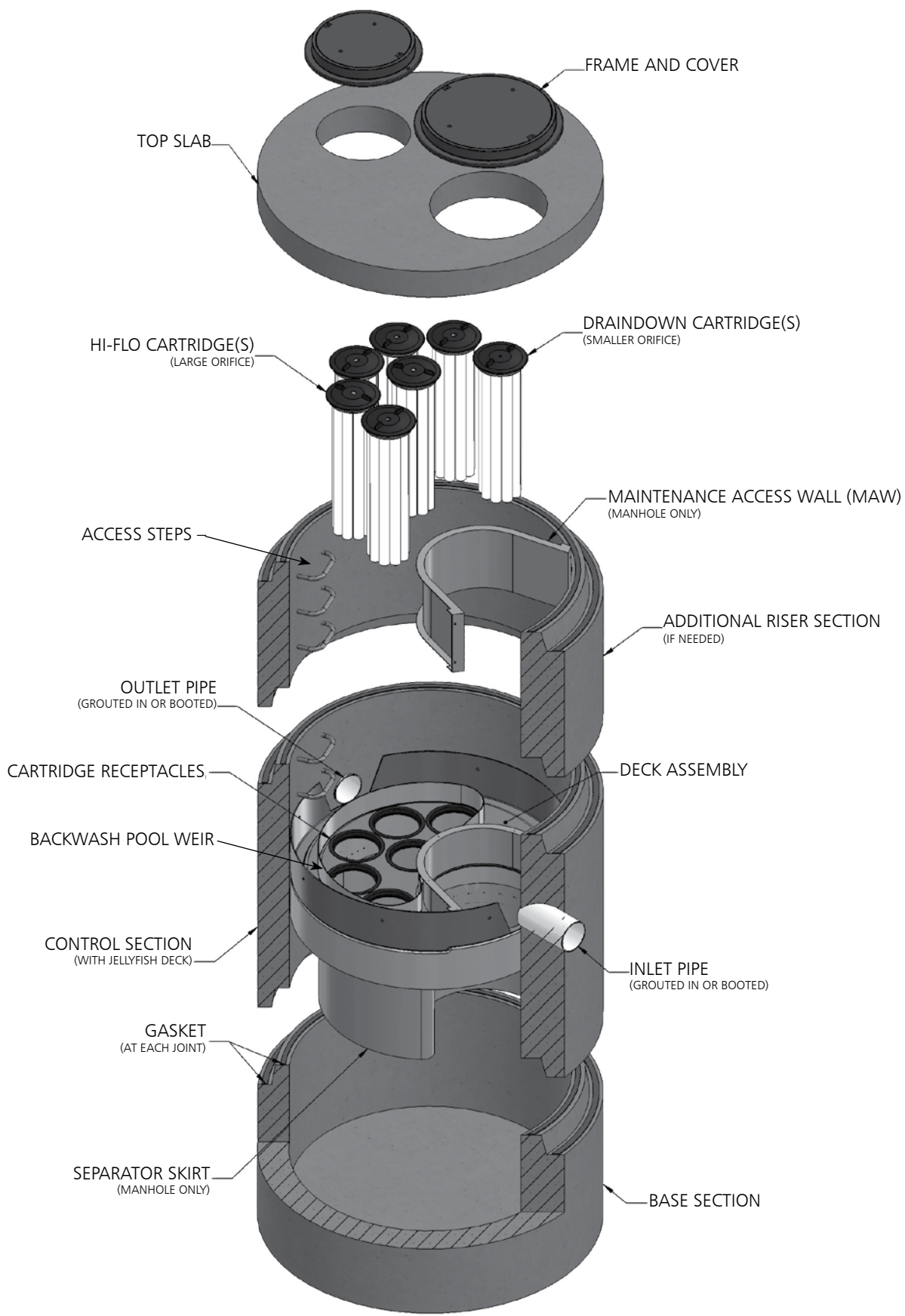
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THANK YOU FOR PURCHASING THE JELLYFISH® FILTER!

Contech Engineered Solutions would like to thank you for selecting the Jellyfish Filter to meet your project’s stormwater treatment needs. With proper inspection and maintenance, the Jellyfish Filter is designed to deliver ongoing, high levels of stormwater pollutant removal.

If you have any questions, please feel free to call us or e-mail us:

Contech Engineered Solutions
9025 Centre Pointe Drive, Suite 400 | West Chester, OH 45069
513-645-7000 | 800-338-1122
www.ContechES.com
info@conteches.com



WARNINGS / CAUTION

1. FALL PROTECTION may be required.
2. WATCH YOUR STEP if standing on the Jellyfish Filter Deck at any time; Great care and safety must be taken while walking or maneuvering on the Jellyfish Filter Deck. Attentive care must be taken while standing on the Jellyfish Filter Deck at all times to prevent stepping onto a lid, into or through a cartridge hole or slipping on the deck.
3. The Jellyfish Filter Deck can be SLIPPERY WHEN WET.
4. If the Top Slab, Covers or Hatches have not yet been installed, or are removed for any reason, great care must be taken to NOT DROP ANYTHING ONTO THE JELLYFISH FILTER DECK. The Jellyfish Filter Deck and Cartridge Receptacle Rings can be damaged under high impact loads. This type of activity voids all warranties. All damaged items to be replaced at owner's expense.
5. Maximum deck load 2 persons, total weight 450 lbs.

Safety Notice

Jobsite safety is a topic and practice addressed comprehensively by others. The inclusions here are intended to be reminders to whole areas of Safety Practice that are the responsibility of the Owner(s), Manager(s) and Contractor(s). OSHA and Canadian OSH, and Federal, State/Provincial, and Local Jurisdiction Safety Standards apply on any given site or project. The knowledge and applicability of those responsibilities is the Contractor's responsibility and outside the scope of Contech Engineered Solutions.

Confined Space Entry

Secure all equipment and perform all training to meet applicable local and OSHA regulations regarding confined space entry. It is the Contractor's or entry personnel's responsibility to proceed safely at all times.

Personal Safety Equipment

Contractor is responsible to provide and wear appropriate personal protection equipment as needed including, but not limited to safety boots, hard hat, reflective vest, protective eyewear, gloves and fall protection equipment as necessary. Make sure all equipment is staffed with trained and/or certified personnel, and all equipment is checked for proper operation and safety features prior to use.

- Fall protection equipment
- Eye protection
- Safety boots
- Ear protection
- Gloves
- Ventilation and respiratory protection
- Hard hat
- Maintenance and protection of traffic plan

Chapter 1

1.0 – Owner Specific Jellyfish Filter Product Information

Below you will find a reference page that can be filled out according to your Jellyfish Filter specification to help you easily inspect, maintain and order parts for your system.

Owner Name:	
Phone Number:	
Site Address:	
Site GPS Coordinates/unit location:	
Unit Location Description:	
Jellyfish Filter Model No.:	
Contech Project & Sequence Number	
No. of Hi-Flo Cartridges	
No. of Cartridges:	
Length of Draindown Cartridges:	
No. of Blank Cartridge Lids:	
Bypass Configuration (Online/Offline):	

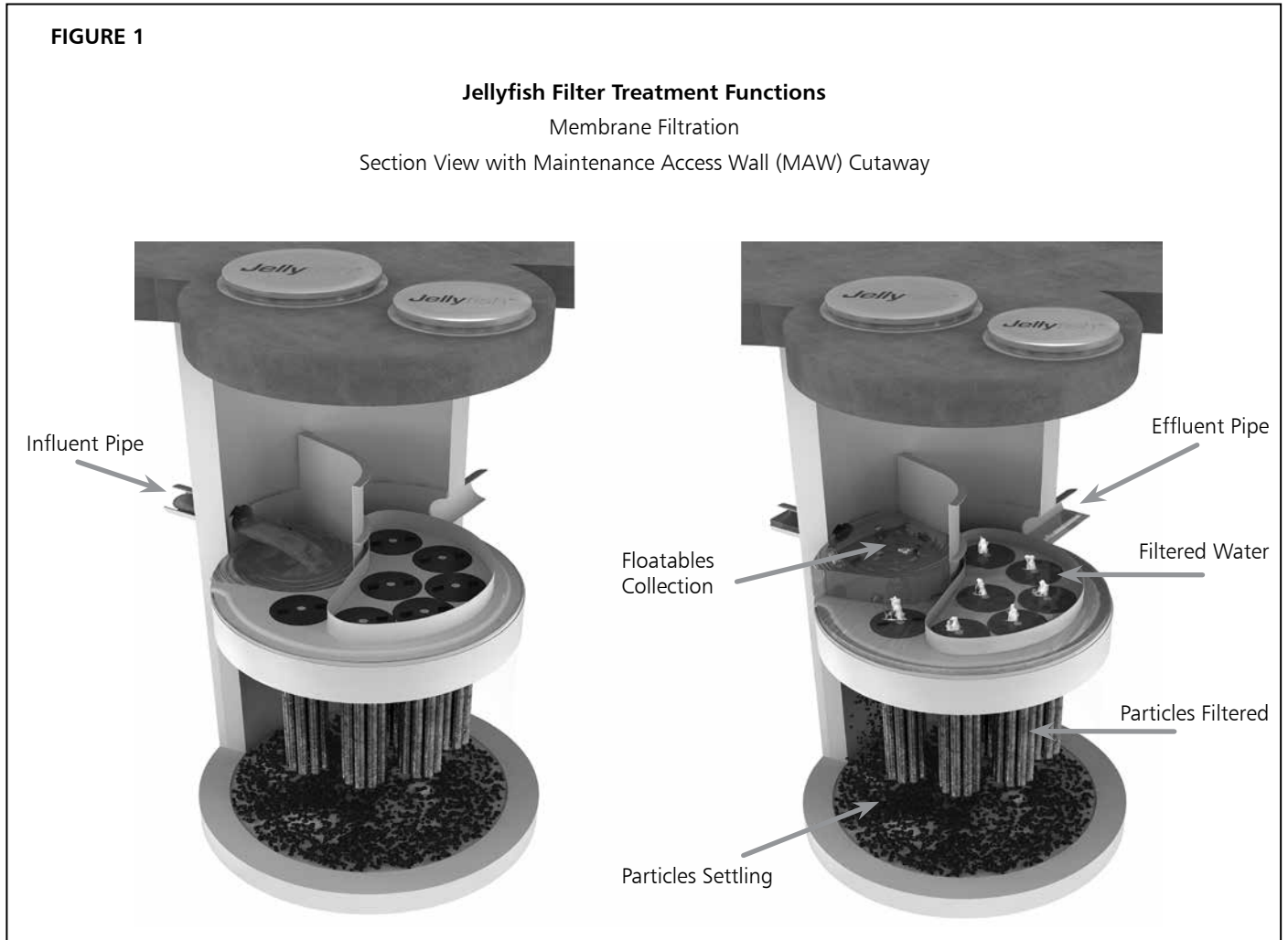
Notes:

Chapter 2

2.0 – Jellyfish Filter System Operations and Functions

The Jellyfish Filter is an engineered stormwater quality treatment technology that removes a high level and wide variety of stormwater pollutants. Each Jellyfish Filter cartridge consists of eleven membrane - encased filter elements (“filtration tentacles”) attached to a cartridge head plate. The filtration tentacles provide a large filtration surface area, resulting in high flow and high pollutant removal capacity.

The Jellyfish Filter functions are depicted in Figure 1 below.



Jellyfish Filter cartridges are backwashed after each peak storm event, which removes accumulated sediment from the membranes. This backwash process extends the service life of the cartridges and increases the time between maintenance events.

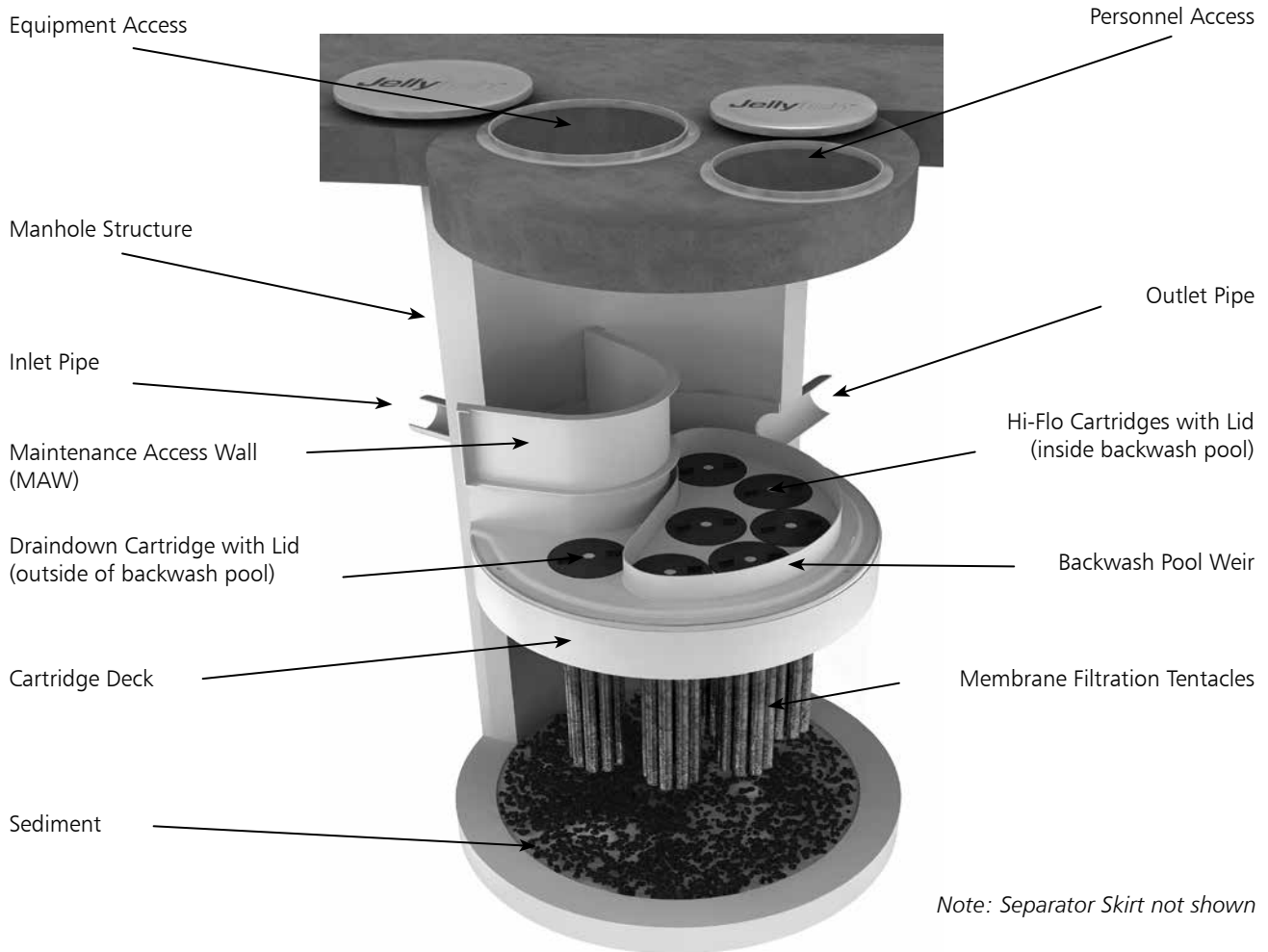
For additional details on the operation and pollutant capabilities of the Jellyfish Filter please refer to additional details on our website at www.ContechES.com.

2.1 – Components and Cartridges

The Jellyfish Filter and components are depicted in Figure 2 below.

FIGURE 2

Jellyfish Filter Components



Tentacles are available in various lengths as depicted in Table 1 below.

Table 1 – Cartridge Lengths / Weights and Cartridge Lid Orifice Diameters

Cartridge Lengths	Dry Weight	Hi-Flo Orifice Diameter	Draindown Orifice Diameter
15 inches (381 mm)	10 lbs (4.5 kg)	35 mm	20 mm
27 inches (686 mm)	14.5 lbs (6.6 kg)	45 mm	25 mm
40 inches (1,016 mm)	19.5 lbs (8.9 kg)	55 mm	30 mm
54 inches (1,372 mm)	25 lbs (11.4 kg)	70 mm	35 mm

2.2 – Jellyfish Membrane Filtration Cartridge Assembly

The Jellyfish Filter utilizes multiple membrane filtration cartridges. Each cartridge consists of removable cylindrical filtration “tentacles” attached to a cartridge head plate. Each filtration tentacle has a threaded pipe nipple and o-ring. To attach, insert the top pipe nipples with the o-ring through the head plate holes and secure with locking nuts. Hex nuts to be hand tightened and checked with a wrench as shown below.

2.3 – Jellyfish Membrane Filtration Cartridge Installation

- Cartridge installation will be performed by trained individuals and coordinated with the installing site Contractor. Flow diversion devices are required to be in place until the site is stabilized (final paving and landscaping in place). Failure to address this step completely will reduce the time between required maintenance.
- Descend to the cartridge deck (see Safety Notice and page 3).
- Refer to Contech's submittal drawings to determine proper quantity and placement of Hi-Flo, Draindown and Blank cartridges with appropriate lids. Lower the Jellyfish membrane filtration cartridges into the cartridge receptacles within the cartridge deck. It is possible that not all cartridge receptacles will be filled with a filter cartridge. In that case, a blank headplate and blank cartridge lid (no orifice) would be installed.



Cartridge Assembly

Do not force the tentacles down into the cartridge receptacle, as this may damage the membranes. Apply downward pressure on the cartridge head plate to seat the lubricated rim gasket (thick circular gasket surrounding the circumference of the head plate) into the cartridge receptacle. (See Figure 3 for details on approved lubricants for use with rim gasket.)

- Examine the cartridge lids to differentiate lids with a small orifice, a large orifice, and no orifice.
 - Lids with a small orifice are to be inserted into the Draindown cartridge receptacles, outside of the backwash pool weir.
 - Lids with a large orifice are to be inserted into the Hi-Flo cartridge receptacles within the backwash pool weir.
 - Lids with no orifice (blank cartridge lids) and a blank headplate are to be inserted into unoccupied cartridge receptacles.
- To install a cartridge lid, align both cartridge lid male threads with the cartridge receptacle female threads before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation.

3.0 Inspection and Maintenance Overview

The primary purpose of the Jellyfish® Filter is to capture and remove pollutants from stormwater runoff. As with any filtration system, these pollutants must be removed to maintain the filter's maximum treatment performance. Regular inspection and maintenance are required to insure proper functioning of the system. Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion or extreme runoff events. It is a good practice to inspect the system after major storm events.

Inspection activities are typically conducted from surface observations and include:

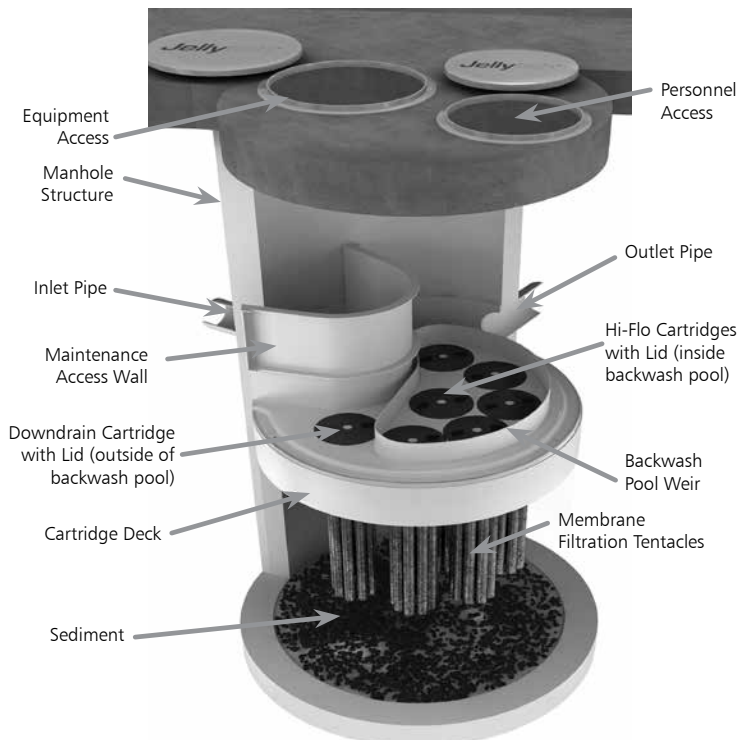
- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

Maintenance activities include:

- Removal of oil, floatable trash and debris
- Removal of collected sediments
- Rinsing and re-installing the filter cartridges
- Replace filter cartridge tentacles, as needed

4.0 Inspection Timing

Inspection of the Jellyfish Filter is key in determining the maintenance requirements for, and to develop a history of, the site's pollutant loading characteristics. In general, inspections should be performed at the times indicated below; *or per the approved project stormwater quality documents (if applicable), whichever is more frequent.*



Note: Separator Skirt not shown

1. A minimum of quarterly inspections during the first year of operation to assess the sediment and floatable pollutant accumulation, and to ensure proper functioning of the system.
2. Inspection frequency in subsequent years is based on the inspection and maintenance plan developed in the first year of operation. Minimum frequency should be once per year.
3. Inspection is recommended after each major storm event.
4. Inspection is required immediately after an upstream oil, fuel or other chemical spill.

5.0 Inspection Procedure

The following procedure is recommended when performing inspections:

1. Provide traffic control measures as necessary.
2. Inspect the MAW or inlet bay for floatable pollutants such as trash, debris, and oil sheen.
3. Measure oil and sediment depth in several locations, by lowering a sediment probe until contact is made with the floor of the structure. Record sediment depth, and presences of any oil layers.
4. Inspect cartridge lids. Missing or damaged cartridge lids to be replaced.
5. Inspect the MAW (where appropriate), cartridge deck and receptacles, and backwash pool weir, for damaged or broken components.

5.1 Dry weather inspections

- Inspect the cartridge deck for standing water, and/or sediment on the deck.
- No standing water under normal operating conditions.
- Standing water inside the backwash pool, but not outside the backwash pool indicates, that the filter cartridges need to be rinsed.



Inspection Utilizing Sediment Probe

- Standing water outside the backwash pool is not anticipated and may indicate a backwater condition caused by high water elevation in the receiving water body, or possibly a blockage in downstream infrastructure.
- Any appreciable sediment ($\geq 1/16''$) accumulated on the deck surface should be removed.

5.2 Wet weather inspections

- Observe the rate and movement of water in the unit. Note the depth of water above deck elevation within the MAW or inlet bay.
- Less than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges (i.e. cartridges located outside the backwash pool).
- Greater than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges and each of the hi-flo cartridges (i.e. cartridges located inside the backwash pool), and water should be overflowing the backwash pool weir.
- 18 inches or greater and relatively little flow is exiting the cartridge lids and outlet pipe, this condition indicates that the filter cartridges need to be rinsed.

6.0 Maintenance Requirements

Required maintenance for the Jellyfish Filter is based upon results of the most recent inspection, historical maintenance records, or the site specific water quality management plan; whichever is more frequent. In general, maintenance requires some combination of the following:

1. Sediment removal for depths reaching 12 inches or greater, or within 3 years of the most recent sediment cleaning, whichever occurs sooner.
2. Floatable trash, debris, and oil removal.
3. Deck cleaned and free from sediment.
4. Filter cartridges rinsed and re-installed as required by the most recent inspection results, or within 12 months of the most recent filter rinsing, whichever occurs sooner.
5. Replace tentacles if rinsing does not restore adequate hydraulic capacity, remove accumulated sediment, or if damaged or missing. It is recommended that tentacles should remain in service no longer than 5 years before replacement.
6. Damaged or missing cartridge deck components must be repaired or replaced as indicated by results of the most recent inspection.
7. The unit must be cleaned out and filter cartridges inspected immediately after an upstream oil, fuel, or chemical spill. Filter cartridge tentacles should be replaced if damaged or compromised by the spill.

7.0 Maintenance Procedure

The following procedures are recommended when maintaining the Jellyfish Filter:

1. Provide traffic control measures as necessary.
2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures. *Caution: Dropping objects onto the cartridge deck may cause damage.*
3. Perform Inspection Procedure prior to maintenance activity.

4. To access the cartridge deck for filter cartridge service, descend into the structure and step directly onto the deck. *Caution: Do not step onto the maintenance access wall (MAW) or backwash pool weir, as damage may result. Note that the cartridge deck may be slippery.*
5. Maximum weight of maintenance crew and equipment on the cartridge deck not to exceed 450 lbs.

7.1 Filter Cartridge Removal

1. Remove a cartridge lid.
2. Remove cartridges from the deck using the lifting loops in the cartridge head plate. Rope or a lifting device (available from Contech) should be used. *Caution: Should a snag occur, do not force the cartridge upward as damage to the tentacles may result. Wet cartridges typically weigh between 100 and 125 lbs.*
3. Replace and secure the cartridge lid on the exposed empty receptacle as a safety precaution. Contech does not recommend exposing more than one empty cartridge receptacle at a time.

7.2 Filter Cartridge Rinsing

1. Remove all 11 tentacles from the cartridge head plate. Take care not to lose or damage the O-ring seal as well as the plastic threaded nut and connector.
2. Position tentacles in a container (or over the MAW), with the



Cartridge Removal & Lifting Device



threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.

3. Using the Jellyfish rinse tool (available from Contech) or a low-pressure garden hose sprayer, direct water spray onto the tentacle membrane, sweeping from top to bottom along the length of the tentacle. Rinse until all sediment is removed from the membrane. *Caution: Do not use a high pressure sprayer or focused stream of water on the membrane. Excessive water pressure may damage the membrane.*
4. Collected rinse water is typically removed by vacuum hose.

5. Reassemble cartridges as detailed later in this document. Reuse O-rings and nuts, ensuring proper placement on each tentacle.

7.3 Sediment and Floatables Extraction

1. Perform vacuum cleaning of the Jellyfish Filter only after filter cartridges have been removed from the system. Access the lower chamber for vacuum cleaning only through the maintenance access wall (MAW) opening. Be careful not to damage the flexible plastic separator skirt that is attached to the underside of the deck on manhole systems. Do not lower the vacuum wand through a cartridge receptacle, as damage to the receptacle will result.
2. Vacuum floatable trash, debris, and oil, from the MAW opening or inlet bay. Alternatively, floatable solids may be removed by a net or skimmer.
3. Pressure wash cartridge deck and receptacles to remove all



Rinsing Cartridge with Contech Rinse Tool

sediment and debris. Sediment should be rinsed into the sump area. Take care not to flush rinse water into the outlet pipe.

4. Remove water from the sump area. Vacuum or pump equipment should only be introduced through the MAW or inlet bay.
5. Remove the sediment from the bottom of the unit through the MAW or inlet bay opening.
6. For larger diameter Jellyfish Filter manholes (≥ 8 -ft) and some



Vacuuming Sump Through MAW

vaults complete sediment removal may be facilitated by removing a cartridge lid from an empty receptacle and inserting a jetting wand (not a vacuum wand) through the receptacle. Use the sprayer to rinse loosened sediment toward the vacuum hose in the MAW opening, being careful not to damage the receptacle.

7.4 Filter Cartridge Reinstallation and Replacement

1. Cartridges should be installed after the deck has been cleaned. It is important that the receptacle surfaces be free from grit and debris.
2. Remove cartridge lid from deck and carefully lower the filter cartridge into the receptacle until head plate gasket is seated squarely in receptacle. *Caution: Do not force the cartridge downward; damage may occur.*
3. Replace the cartridge lid and check to see that both male threads are properly seated before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation. See next page for additional details.
4. If rinsing is ineffective in removing sediment from the tentacles, or if tentacles are damaged, provisions must be made to replace the spent or damaged tentacles with new tentacles. Contact Contech to order replacement tentacles.

7.5 Chemical Spills

Caution: If a chemical spill has been captured, do not attempt maintenance. Immediately contact the local hazard response agency and contact Contech.

7.6 Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads. Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Jellyfish Filter Components & Filter Cartridge Assembly and Installation

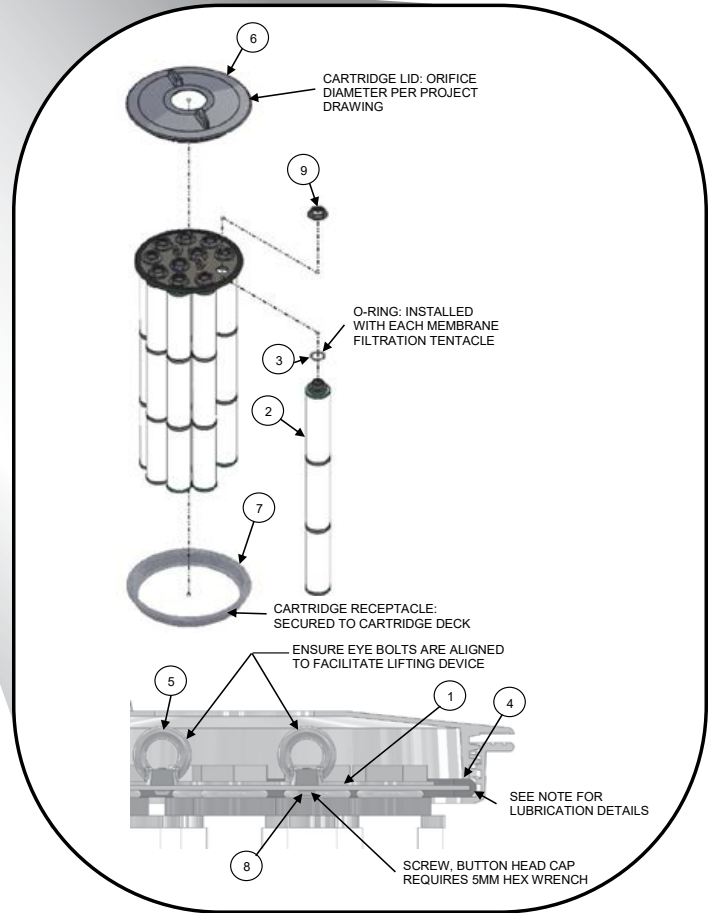
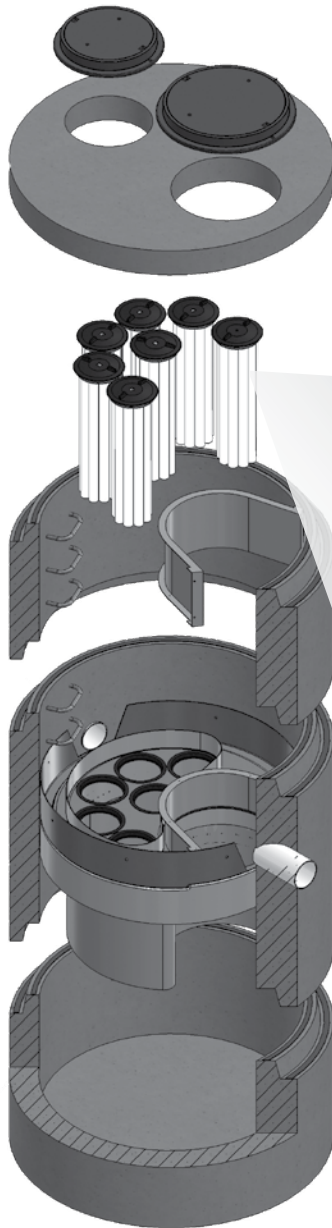


TABLE 1: BOM

ITEM NO.	DESCRIPTION
1	JF HEAD PLATE
2	JF TENTACLE
3	JF O-RING
4	JF HEAD PLATE GASKET
5	JF CARTRIDGE EYELET
6	JF 14IN COVER
7	JF RECEPTACLE
8	BUTTON HEAD CAP SCREW M6X14MM SS
9	JF CARTRIDGE NUT

TABLE 2: APPROVED GASKET LUBRICANTS

PART NO.	MFR	DESCRIPTION
78713	LA-CO	LUBRI-JOINT
40501	HERCULES	DUCK BUTTER
30600	OATEY	PIPE LUBRICANT
PSLUBXL1Q	PROSELECT	PIPE JOINT LUBRICANT

NOTES:

Head Plate Gasket Installation:

Install Head Plate Gasket (Item 4) onto the Head Plate (Item 1) and liberally apply a lubricant from Table 2: Approved Gasket Lubricants onto the gasket where it contacts the Receptacle (Item 7) and Cartridge Lid (Item 6). Follow Lubricant manufacturer's instructions.

Lid Assembly:

Rotate Cartridge Lid counter-clockwise until both male threads drop down and properly seat. Then rotate Cartridge Lid clock-wise approximately one-third of a full rotation until Cartridge Lid is firmly secured, creating a watertight seal.

Jellyfish Filter Inspection and Maintenance Log

Owner: _____ Jellyfish Model No.: _____

Location: _____ GPS Coordinates: _____

Land Use: Commercial: _____ Industrial: _____ Service Station: _____

 Road/Highway: _____ Airport: _____ Residential: _____ Parking Lot: _____

Date/Time:					
Inspector:					
Maintenance Contractor:					
Visible Oil Present: (Y/N)					
Oil Quantity Removed					
Floatable Debris Present: (Y/N)					
Floatable Debris removed: (Y/N)					
Water Depth in Backwash Pool					
Cartridges externally rinsed/re-commissioned: (Y/N)					
New tentacles put on Cartridges: (Y/N)					
Sediment Depth Measured: (Y/N)					
Sediment Depth (inches or mm):					
Sediment Removed: (Y/N)					
Cartridge Lids intact: (Y/N)					
Observed Damage:					
Comments:					

1.6 Snow & Ice Management for Standard Asphalt and Walkways

As shown on the Site Plans, the site has reasonable accommodations for on-site snow storage. If required, the property manager will be responsible for timely snow removal from all private sidewalks, driveways, and parking areas. Salt storage areas shall be covered or located such that no direct untreated discharges are possible to receiving waters from the storage site. Salt storage is not permitted within the 100' wetland buffer. Salt and sand shall be used to the minimum extent practical (refer to the attached for de-icing application rate guideline from the New Hampshire Stormwater Management Manual, Volume 2,).

Deicing Application Rate Guidelines

24' of pavement (typical two-lane road)

These rates are not fixed values, but rather the middle of a range to be selected and adjusted by an agency according to its local conditions and experience.

Pavement Temp. (°F) and Trend (↑↓)	Weather Condition	Maintenance Actions	Pounds per two-lane mile			
			Salt Prewetted / Pretreated with Salt Brine	Salt Prewetted / Pretreated with Other Blends	Dry Salt*	Winter Sand (abrasives)
> 30° ↑	Snow	Plow, treat intersections only	80	70	100*	Not recommended
	Freezing Rain	Apply Chemical	80 - 160	70 - 140	100 - 200*	Not recommended
30° ↓	Snow	Plow and apply chemical	80 - 160	70 - 140	100 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↑	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↓	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↑	Snow or Freezing Rain	Plow and apply chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↓	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↑	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↓	Snow or Freezing Rain	Plow and apply chemical	240 - 320	210 - 280	300 - 400*	500 for freezing rain
0° - 15° ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	300 - 400	Not recommended	500 - 750 spot treatment as needed
< 0°	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	400 - 600**	Not recommended	500 - 750 spot treatment as needed

* Dry salt is not recommended. It is likely to blow off the road before it melts ice.

** A blend of 6 - 8 gal/ton MgCl₂ or CaCl₂ added to NaCl can melt ice as low as -10°.

Anti-icing Route Data Form				
Truck Station:				
Date:				
Air Temperature	Pavement Temperature	Relative Humidity	Dew Point	Sky
Reason for applying:				
Route:				
Chemical:				
Application Time:				
Application Amount:				
Observation (first day):				
Observation (after event):				
Observation (before next application):				
Name:				

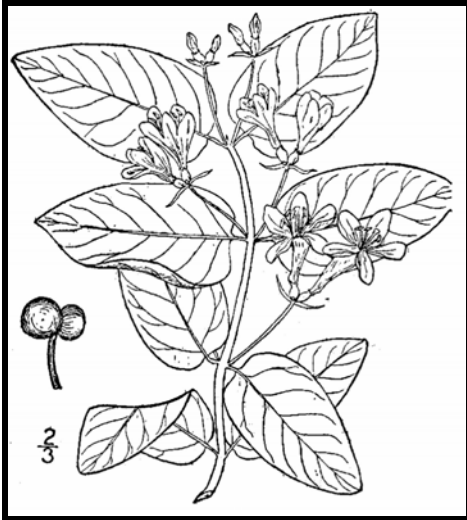
Section 2

Invasive Species

With respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem is classified as an invasive species. Refer to the following fact sheet prepared by the University of New Hampshire Cooperative Extension entitled Methods for Disposing Non-Native Invasive Plants for recommended methods to dispose of invasive plant species.



Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle

Lonicera tatarica

USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine

the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag “head first” at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarpping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.






Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database /
Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Be diligent looking for seedlings for years in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

Woody Plants	Method of Reproducing	Methods of Disposal
Norway maple <i>(Acer platanoides)</i> European barberry <i>(Berberis vulgaris)</i> Japanese barberry <i>(Berberis thunbergii)</i> autumn olive <i>(Elaeagnus umbellata)</i> burning bush <i>(Euonymus alatus)</i> Morrow's honeysuckle <i>(Lonicera morrowii)</i> Tatarian honeysuckle <i>(Lonicera tatarica)</i> showy bush honeysuckle <i>(Lonicera x bella)</i> common buckthorn <i>(Rhamnus cathartica)</i> glossy buckthorn <i>(Frangula alnus)</i>	Fruit and Seeds 	<p>Prior to fruit/seed ripening</p> <p>Seedlings and small plants</p> <ul style="list-style-type: none"> ▪ Pull or cut and leave on site with roots exposed. No special care needed. <p>Larger plants</p> <ul style="list-style-type: none"> ▪ Use as firewood. ▪ Make a brush pile. ▪ Chip. ▪ Burn. <hr/> <p>After fruit/seed is ripe</p> <p>Don't remove from site.</p> <ul style="list-style-type: none"> ▪ Burn. ▪ Make a covered brush pile. ▪ Chip once all fruit has dropped from branches. ▪ Leave resulting chips on site and monitor.
oriental bittersweet <i>(Celastrus orbiculatus)</i> multiflora rose <i>(Rosa multiflora)</i>	Fruits, Seeds, Plant Fragments 	<p>Prior to fruit/seed ripening</p> <p>Seedlings and small plants</p> <ul style="list-style-type: none"> ▪ Pull or cut and leave on site with roots exposed. No special care needed. <p>Larger plants</p> <ul style="list-style-type: none"> ▪ Make a brush pile. ▪ Burn. <hr/> <p>After fruit/seed is ripe</p> <p>Don't remove from site.</p> <ul style="list-style-type: none"> ▪ Burn. ▪ Make a covered brush pile. ▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.

Non-Woody Plants	Method of Reproducing	Methods of Disposal
<p>garlic mustard (<i>Alliaria petiolata</i>)</p> <p>spotted knapweed (<i>Centaurea maculosa</i>)</p> <ul style="list-style-type: none"> ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. <p>black swallow-wort (<i>Cynanchum nigrum</i>)</p> <ul style="list-style-type: none"> ▪ May cause skin rash. Wear gloves and long sleeves when handling. <p>pale swallow-wort (<i>Cynanchum rossicum</i>)</p> <p>giant hogweed (<i>Heracleum mantegazzianum</i>)</p> <ul style="list-style-type: none"> ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. <p>dame's rocket (<i>Hesperis matronalis</i>)</p> <p>perennial pepperweed (<i>Lepidium latifolium</i>)</p> <p>purple loosestrife (<i>Lythrum salicaria</i>)</p> <p>Japanese stilt grass (<i>Microstegium vimineum</i>)</p> <p>mile-a-minute weed (<i>Polygonum perfoliatum</i>)</p>	<p>Fruits and Seeds</p> 	<p>Prior to flowering</p> <p>Depends on scale of infestation</p> <p>Small infestation</p> <ul style="list-style-type: none"> ▪ Pull or cut plant and leave on site with roots exposed. <p>Large infestation</p> <ul style="list-style-type: none"> ▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. <hr/> <p>During and following flowering</p> <p>Do nothing until the following year or remove flowering heads and bag and let rot.</p> <p>Small infestation</p> <ul style="list-style-type: none"> ▪ Pull or cut plant and leave on site with roots exposed. <p>Large infestation</p> <ul style="list-style-type: none"> ▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material.
<p>common reed (<i>Phragmites australis</i>)</p> <p>Japanese knotweed (<i>Polygonum cuspidatum</i>)</p> <p>Bohemian knotweed (<i>Polygonum x bohemicum</i>)</p>	<p>Fruits, Seeds, Plant Fragments</p> <p>Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.</p>	<p>Small infestation</p> <ul style="list-style-type: none"> ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn. <p>Large infestation</p> <ul style="list-style-type: none"> ▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. ▪ Monitor and remove any sprouting material. ▪ Pile, let dry, and burn.

January 2010

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Managing Invasive Plants

Methods of Control

by Christopher Mattrick

They're out there. The problem of invasive plants is as close as your own backyard.

Maybe a favorite dogwood tree is struggling in the clutches of an Oriental bittersweet vine. Clawlike canes of multiflora rose are scratching at the side of your house. That handsome burning bush you planted few years ago has become a whole clump in practically no time ... but what happened to the azalea that used to grow right next to it?

If you think controlling or managing invasive plants on your property is a daunting task, you're not alone. Though this topic is getting lots of attention from federal, state, and local government agencies, as well as the media, the basic question for most homeowners is simply, "How do I get rid of the invasive plants in my own landscape?" Fortunately, the best place to begin to tackle this complex issue is in our own backyards and on local conservation lands. We hope the information provided here will help you take back your yard. We won't kid you—there's some work involved, but the payoff in beauty, wildlife habitat, and peace of mind makes it all worthwhile.

PLAN OF ATTACK

Three broad categories cover most invasive plant control: mechanical, chemical, and biological. Mechanical control means physically removing plants from the environment



Spraying chemicals to control invasive plants.

through cutting or pulling. Chemical control uses herbicides to kill plants and inhibit regrowth. Techniques and chemicals used will vary depending on the species. Biological controls use plant diseases or insect predators, typically from the targeted species' home range. Several techniques may be effective in controlling a single species, but there is usually one preferred method—the one that is most resource efficient with minimal impact on non-target species and the environment.

MECHANICAL CONTROL METHODS

Mechanical treatments are usually the first ones to look at when evaluating an invasive plant removal project. These procedures do not require special licensing or introduce chemicals into the environment. They do require permits in some situations, such as wetland zones. [See sidebar on page 23.] Mechanical removal is highly labor intensive and creates a significant amount of site disturbance, which can lead to rapid reinvasion if not handled properly.

Pulling and digging

Many herbaceous plants and some woody species (up to about one inch in diameter), if present in limited quantities, can be pulled out or dug up. It's important to remove as much of the root system as possible; even a small portion can restart the infestation. Pull plants by hand or use a digging fork, as shovels can shear off portions of the root system, allowing for regrowth. To remove larger woody stems (up to about three inches in diameter), use a Weed Wrench™, Root Jack, or Root Talon. These tools, available from several manufacturers, are designed to remove the aboveground portion of the plant as well as the entire root system. It's easiest to undertake this type of control in the spring or early summer when soils are moist and plants come out more easily.



Using tools to remove woody stems.



Volunteers hand pulling invasive plants.

Suffocation

Try suffocating small seedlings and herbaceous plants. Place double or triple layers of thick UV-stabilized plastic sheeting, either clear or black (personally I like clear), over the infestation and secure the plastic with stakes or weights. Make sure the plastic extends at least five feet past the edge of infestation on all sides. Leave the plastic in place for at least two years. This technique will kill everything beneath the plastic—invasive and non-invasive plants alike. Once the plastic is removed, sow a cover crop such as annual rye to prevent new invasions.

Cutting or mowing

This technique is best suited for locations you can visit and treat often. To be effective, you will need to mow or cut infested areas three or four times a year for up to five years. The goal is to interrupt the plant's ability to photosynthesize by removing as much leafy material as possible. Cut the plants at ground level and remove all resulting debris from the site. With this treatment, the infestation may actually appear to get worse at first, so you will need to be as persistent as the invasive plants themselves. Each time you cut the plants back, the root system gets slightly larger, but must also rely on its energy reserves to push up new growth. Eventually, you will exhaust these reserves and the plants will die. This may take many years, so you have to remain committed to this process once you start; otherwise the treatment can backfire, making the problem worse.

CHEMICAL CONTROL METHODS

Herbicides are among the most effective and resource-efficient tools to treat invasive species. Most of the commonly known invasive plants can be treated using only two herbicides—glyphosate (the active ingredient in Roundup™ and Rodeo™) and triclopyr (the active ingredient in Brush-B-Gone™ and Garlon™). Glyphosate is non-selective, meaning it kills everything it contacts. Triclopyr is selective and does not injure monocots (grasses, orchids, lilies, etc.). Please read labels and follow directions precisely for both environmental and personal safety. These are relatively benign herbicides, but improperly used they can still cause both short- and long-term health and environmental problems. Special aquatic formulations are required when working in wetland zones. You are required to have a state-issued pesticide applicator license when applying these chemicals on land you do not own. To learn more about the pesticide regulations in your state, visit or call your state's pesticide control division, usually part of the state's Department of Agriculture. In wetland areas, additional permits are usually required by the Wetlands Protection Act. [See sidebar on page 23.]

Foliar applications

When problems are on a small scale, this type of treatment is usually applied with a backpack sprayer or even a small handheld spray bottle. It is an excellent way to treat large monocultures of herbaceous plants, or to spot-treat individual plants that are difficult to remove mechanically, such as goutweed, swallowwort, or purple loosestrife. It is also an effective treatment for some woody species, such as Japanese barberry, multiflora rose, Japanese honeysuckle, and Oriental bittersweet that grow in dense masses or large numbers over many acres. The herbicide mixture should contain no more than five percent of the active ingredient, but it is important to follow the instructions on the product label. This treatment is most effective when the plants are actively growing, ideally when they are flowering or beginning to form fruit. It has been shown that plants are often more susceptible to this type of treatment if the existing stems are cut off and the regrowth is treated. This is especially true for Japanese knotweed. The target plants should be thoroughly wetted with the herbicide on a day when there is no rain in the forecast for the next 24 to 48 hours.

Cut stem treatments

There are several different types of cut stem treatments, but here we will review only the one most commonly used. All treatments of this type require a higher concentration of the active ingredient than is used in foliar applications. A 25 to 35 percent solution of the active ingredient should be used for cut stem treatments, but read and follow all label instructions. In most cases, the appropriate herbicide is glyphosate, except for Oriental bittersweet, on which triclopyr should be used. This treatment can be used on all woody stems, as well as phragmites and Japanese knotweed.

For woody stems, treatments are most effective when applied in the late summer and autumn—between late August and November. Stems should be cut close to the ground, but not so close that you will lose track of them. Apply herbicide directly to the cut surface as soon as possible after cutting. Delaying the application will reduce the effectiveness of the treatment. The herbicide can be applied with a sponge, paintbrush, or spray bottle.



Cut stem treatment tools.

For phragmites and Japanese knotweed, treatment is the same, but the timing and equipment are different. Plants should be treated anytime from mid-July through September, but the hottest, most humid days of the summer are best

for this method. Cut the stems halfway between two leaf nodes at a comfortable height. Inject (or squirt) herbicide into the exposed hollow stem. All stems in an infestation should be treated. A wash bottle is the most effective application tool, but you can also use an eyedropper, spray bottle, or one of the recently developed high-tech injection systems.

It is helpful to mix a dye in with the herbicide solution. The dye will stain the treated surface and mark the areas that have been treated, preventing unnecessary reapplication. You can buy a specially formulated herbicide dye, or use food coloring or laundry dye.

There is not enough space in this article to describe all the possible ways to control invasive plants. You can find other treatments, along with more details on the above-described methods, and species-specific recommendations on The Nature Conservancy Web site (tncweeds.ucdavis.edu). An upcoming posting on the Invasive Plant Atlas of New England (www.ipane.org) and the New England Wild Flower Society (www.newfs.org) Web sites will also provide further details.



Hollow stem injection tools.

Biological controls—still on the horizon

Biological controls are moving into the forefront of control methodology, but currently the only widely available and applied biocontrol relates to purple loosestrife. More information on purple loosestrife and other biological control projects can be found at www.invasiveplants.net.

DISPOSAL OF INVASIVE PLANTS

Proper disposal of removed invasive plant material is critical to the control process. Leftover plant material can cause new infestations or reinfest the existing project area. There are many appropriate ways to dispose of invasive plant debris. I've listed them here in order of preference.

- 1. Burn it**—Make a brush pile and burn the material following local safety regulations and restrictions, or haul it to your town's landfill and place it in their burn pile.
- 2. Pile it**—Make a pile of the woody debris. This technique will provide shelter for wildlife as well.
- 3. Compost it**—Place all your herbaceous invasive plant debris in a pile and process as compost. Watch the pile closely for resprouts and remove as necessary. Do not use the resulting compost in your garden. The pile is for invasive plants only.



Injecting herbicide into the hollow stem of phragmites.

4. Dry it/cook it—Place woody debris out on your driveway or any asphalt surface and let it dry out for a month. Place herbaceous material in a doubled-up black trash bag and let it cook in the sun for one month. At the end of the month, the material should be non-viable and you can dump it or dispose of it with the trash. The method assumes there is no viable seed mixed in with the removed material.

Care should be taken in the disposal of all invasive plants, but several species need extra attention. These are the ones that have the ability to sprout vigorously from plant fragments and should ideally be burned or dried prior to disposal: Oriental bittersweet, multiflora rose, Japanese honeysuckle, phragmites, and Japanese knotweed.

Christopher Mattrick is the former Senior Conservation Programs Manager for New England Wild Flower Society, where he managed conservation volunteer and invasive and rare plant management programs. Today, Chris and his family work and play in the White Mountains of New Hampshire, where he is the Forest Botanist and Invasive Species Coordinator for the White Mountain National Forest.



Controlling Invasive Plants in Wetlands

Special concerns; special precautions

Control of invasive plants in or around wetlands or bodies of water requires a unique set of considerations. Removal projects in wetland zones can be legal and effective if handled appropriately. In many cases, herbicides may be the least disruptive tools with which to remove invasive plants. You will need a state-issued pesticide license to apply herbicide on someone else's property, but all projects in wetland or aquatic systems fall under the jurisdiction of the Wetlands Protection Act and therefore require a permit. *Yes, even hand-pulling that colony of glossy buckthorn plants from your own swampland requires a permit.* Getting a permit for legal removal is fairly painless if you plan your project carefully.

1. Investigate and understand the required permits and learn how to obtain them. The entity charged with the enforcement of the Wetlands Protection Act varies from state to state. For more information in your state, contact:

ME: Department of Environmental Protection
www.state.me.us/dep/blwq/docstand/nrpapage.htm

NH: Department of Environmental Services
www.des.state.nh.us/wetlands/

VT: Department of Environmental Conservation
www.anr.state.vt.us/dec/waterq/permits/htm/pm_cud.htm

MA: Consult your local town conservation commission

RI: Department of Environmental Management
www.dem.ri.gov/programs/benviron/water/permits/fresh/index.htm

CT: Consult your local town Inland Wetland and Conservation Commission

2. Consult an individual or organization with experience in this area. Firsthand experience in conducting projects in wetland zones and navigating the permitting process is priceless. Most states have wetland scientist societies whose members are experienced in working in wetlands and navigating the regulations affecting them. A simple Web search will reveal the contact point for these societies. Additionally, most environmental consulting firms and some nonprofit organizations have skills in this area.

3. Develop a well-written and thorough project plan. You are more likely to be successful in obtaining a permit for your project if you submit a project plan along with your permit application. The plan should include the reasons for the project, your objectives in completing the project, how you plan to reach those objectives, and how you will monitor the outcome.

4. Ensure that the herbicides you plan to use are approved for aquatic use. Experts consider most herbicides harmful to water quality or aquatic organisms, but rate some formulations as safe for aquatic use. Do the research and select an approved herbicide, and then closely follow the instructions on the label.

5. If you are unsure—research, study, and most of all, ask for help. Follow the rules. The damage caused to aquatic systems by the use of an inappropriate herbicide or the misapplication of an appropriate herbicide not only damages the environment, but also may reduce public support for safe, well-planned projects.

Section 3

Annual Updates and Log Requirements

The Owner and/or Contact/Responsible Party shall review this Operation and Maintenance Plan once per year for its effectiveness and adjust the plan and deed as necessary.

A log of all preventative and corrective measures for the stormwater system shall be kept on-site and be made available upon request by any public entity with administrative, health environmental or safety authority over the site including NHDES.

Copies of the Stormwater Maintenance report shall be submitted to the City of Portsmouth on an annual basis.

Stormwater Management Report						
Proposed Addition	Veterinary Building	231 Corporate Drive – Map 314 Lot 2				
BMP Description	Date of Inspection	Inspector	BMP Installed and Operating Properly?	Cleaning / Corrective Action Needed	Date of Cleaning / Repair	Performed By
Detention Basin			<input type="checkbox"/> Yes <input type="checkbox"/> No			
Contech Jellyfish 01			<input type="checkbox"/> Yes <input type="checkbox"/> No			

Site Plan Review Application Fee

Project: Ethos Veterinary Health

Map/Lot: 314/2

Applicant: Ethos Veterinary Health

All development

Base fee \$600

\$600.00

Plus \$5.00 per \$1,000 of site costs

Site costs

\$400,000

+ **\$2,000.00**

Plus \$10.00 per 1,000 S.F. of site development area

Site development area

45,000 S.F.

+ **\$450.00**

Fee \$3,050.00

Maximum fee: \$20,000.00

Fee received by: _____

Date: _____

Note: Initial application fee may be based on the applicant's estimates of site costs and site development area. Following site plan approval, the application fee will be recalculated based on the approved site plan and site engineer's corresponding site cost estimate as approved by the Department of Public Works, and any additional fee shall be paid prior to the issuance of a building permit.

City of Portsmouth TAC, June 17, 2024:			
	TAC Stipulation	Applicant Response	Sheet
TAC Stipulations from 7/6 Letter of Decision:			
1	The door off of the new addition should be tied into the surrounding sidewalk	5' concrete sidewalk has been added off of the new addition to tie in to the adjacent sidewalk.	C-102
2	PSMH 01 should be cut in and not a doghouse manhole.	PSMH 01 has been revised to be cut into the existing 6" sewer line.	C-104
3	Sewer service from new addition should be 6".	6" PVC sewer lines have been proposed.	C-104
4	State sizes of existing fire and domestic water services.	Existing 6" fire and 4" domestic water services callout added.	C-101
5	All proposed lighting shall be Dark Sky compliant.	Note calling out that all proposed light fixtures shall be dark sky compliant has been added.	C-106