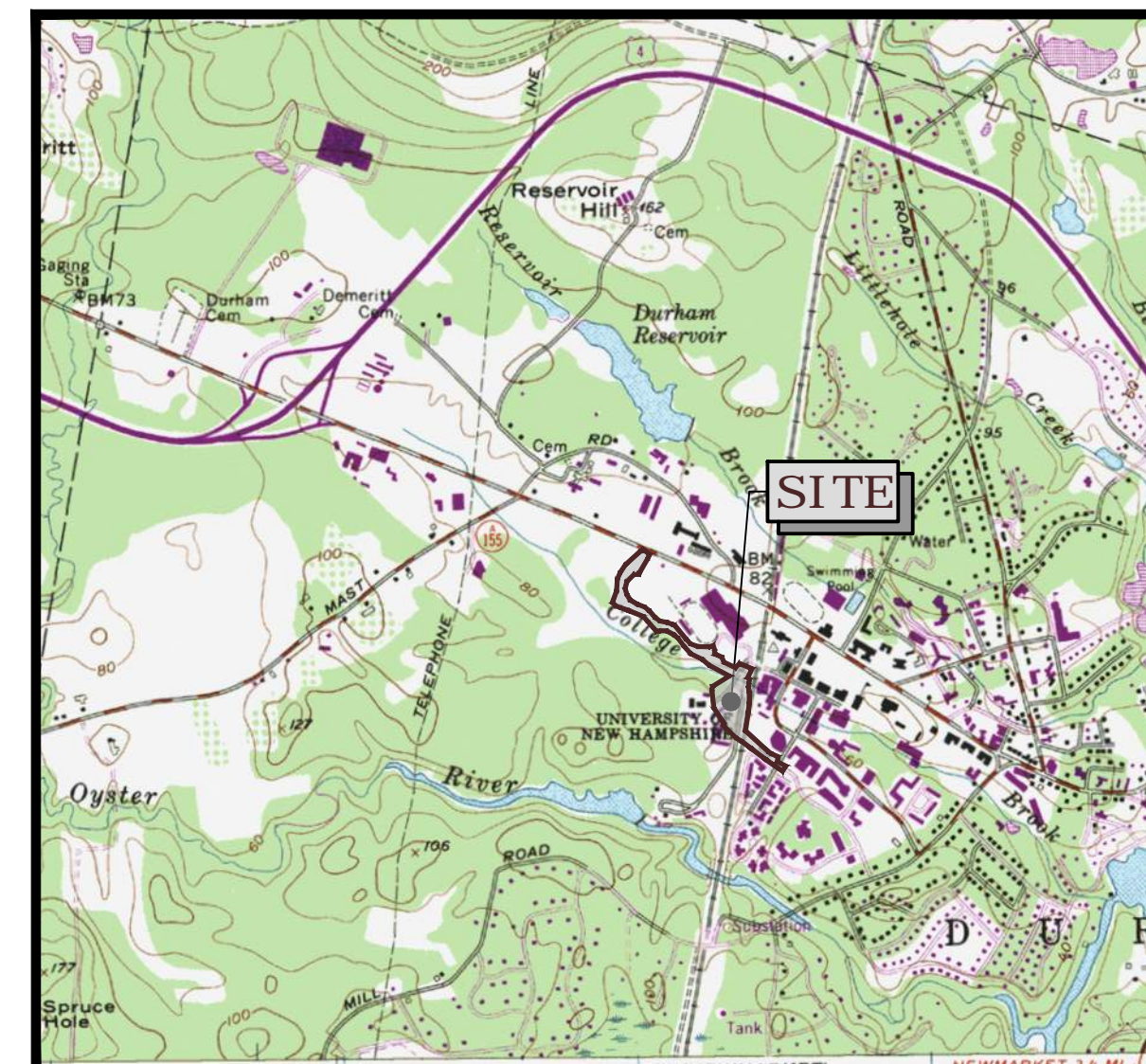


UNIVERSITY OF NEW HAMPSHIRE SOUTH DRIVE TOWN OF DURHAM, NEW HAMPSHIRE

MARCH 3, 2021


LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
-	COVER SHEET	3/3/2021
C.100	OVERALL LAYOUT PLAN	3/3/2021
C.300	OVERALL SITE PLAN	3/3/2021
C.401	GRADING, DRAINAGE & EROSION CONTROL PLAN	3/3/2021
C.402	GRADING, DRAINAGE & EROSION CONTROL PLAN	3/3/2021
C.403	GRADING, DRAINAGE & EROSION CONTROL PLAN	3/3/2021
C.601	WETLAND IMPACT PLAN	3/3/2021
C.602	WETLAND IMPACT PLAN	3/3/2021
C.603	WETLAND IMPACT, MITIGATION & DESIGN PLAN AT CAMPUS CROSSING	3/3/2021
C.604	WETLAND MITIGATION & DESIGN PLAN AT PCAC	3/3/2021
C.701	EROSION CONTROL NOTES & DETAILS SHEET	3/3/2021
C.702	DETAILS SHEET	3/3/2021
C.703	DETAILS SHEET	3/3/2021
C.704	DETAILS SHEET	3/3/2021
C.705	DETAILS SHEET	3/3/2021
C.706	COLLEGE BROOK STREAM CROSSING DETAILS SHEET	3/3/2021



LOCATION MAP
SCALE: 1" = 2,000'

PREPARED BY:
Tighe & Bond
Engineers | Environmental Specialists
177 Corporate Drive
Portsmouth, NH 03801
(603) 433-8818



PREPARED FOR:
UNIVERSITY OF
NEW HAMPSHIRE 
22 COLOVOS ROAD
DURHAM, NH 03824



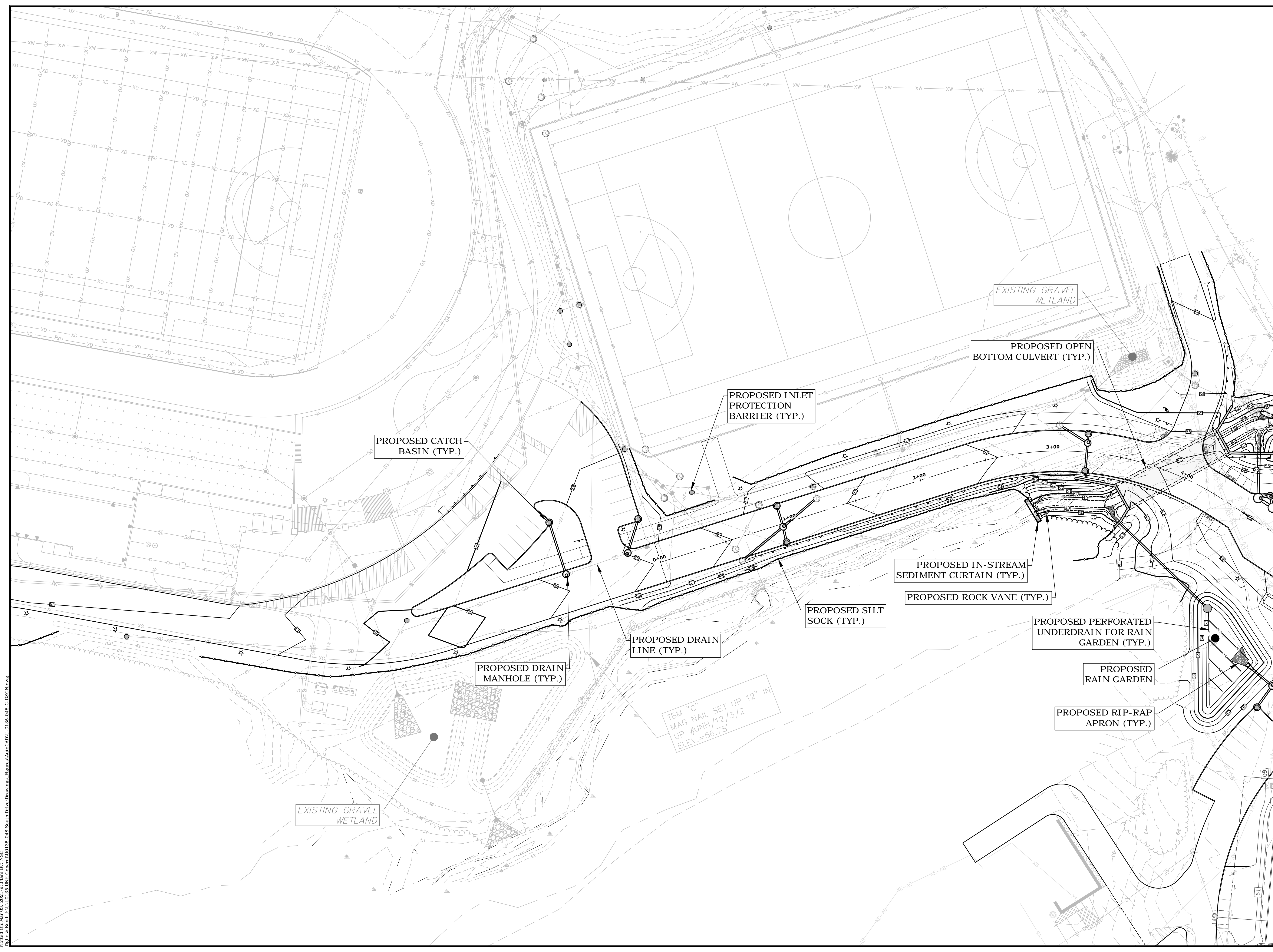
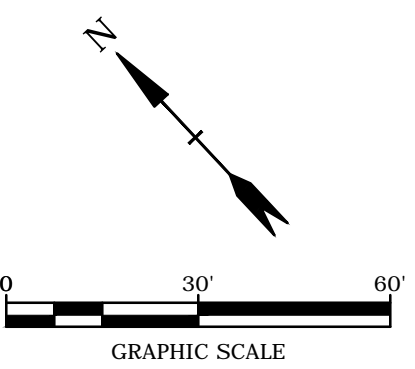
PERMIT DRAWINGS

SOUTH DRIVE

University of
New Hampshire

Tax Map: 13
Block: 7
Lot Number: 2UNH

Durham, NH



PROPOSED CATCH BASIN (TYP.)

PROPOSED INLET PROTECTION BARRIER (TYP.)

PROPOSED OPEN BOTTOM CULVERT (TYP.)

PROPOSED IN-STREAM SEDIMENT CURTAIN (TYP.)

PROPOSED ROCK VANE (TYP.)

PROPOSED SILT SOCK (TYP.)

PROPOSED PERFORATED UNDERDRAIN FOR RAIN GARDEN (TYP.)

PROPOSED RAIN GARDEN

PROPOSED RIP-RAP APRON (TYP.)

PROPOSED DRAIN LINE (TYP.)

PROPOSED DRAIN MANHOLE (TYP.)

TBM "C"
MAG NAIL SET UP 12" IN
UP #UNH/12/3/2
ELEV. = 56.78'

EXISTING GRAVEL WETLAND

EXISTING GRAVEL WETLAND

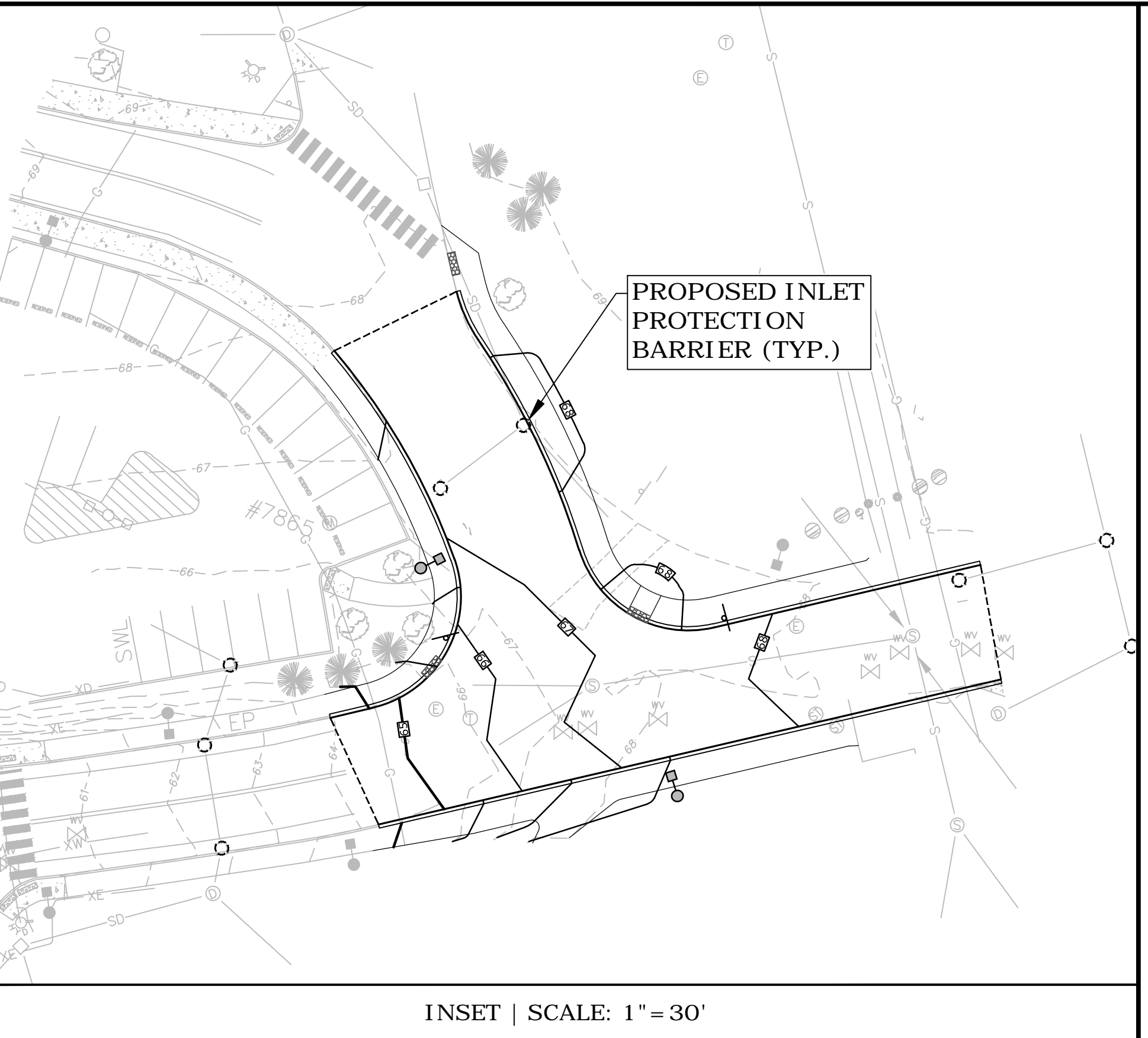
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PROJECT NO: U-0135-048		
DATE: March 3, 2021		
FILE: U-0135-048-C-DSGN.DWG		
DRAWN BY: NSC/BKC		
CHECKED BY: JMP		
APPROVED BY: BIM		

GRADING, DRAINAGE & EROSION CONTROL PLAN

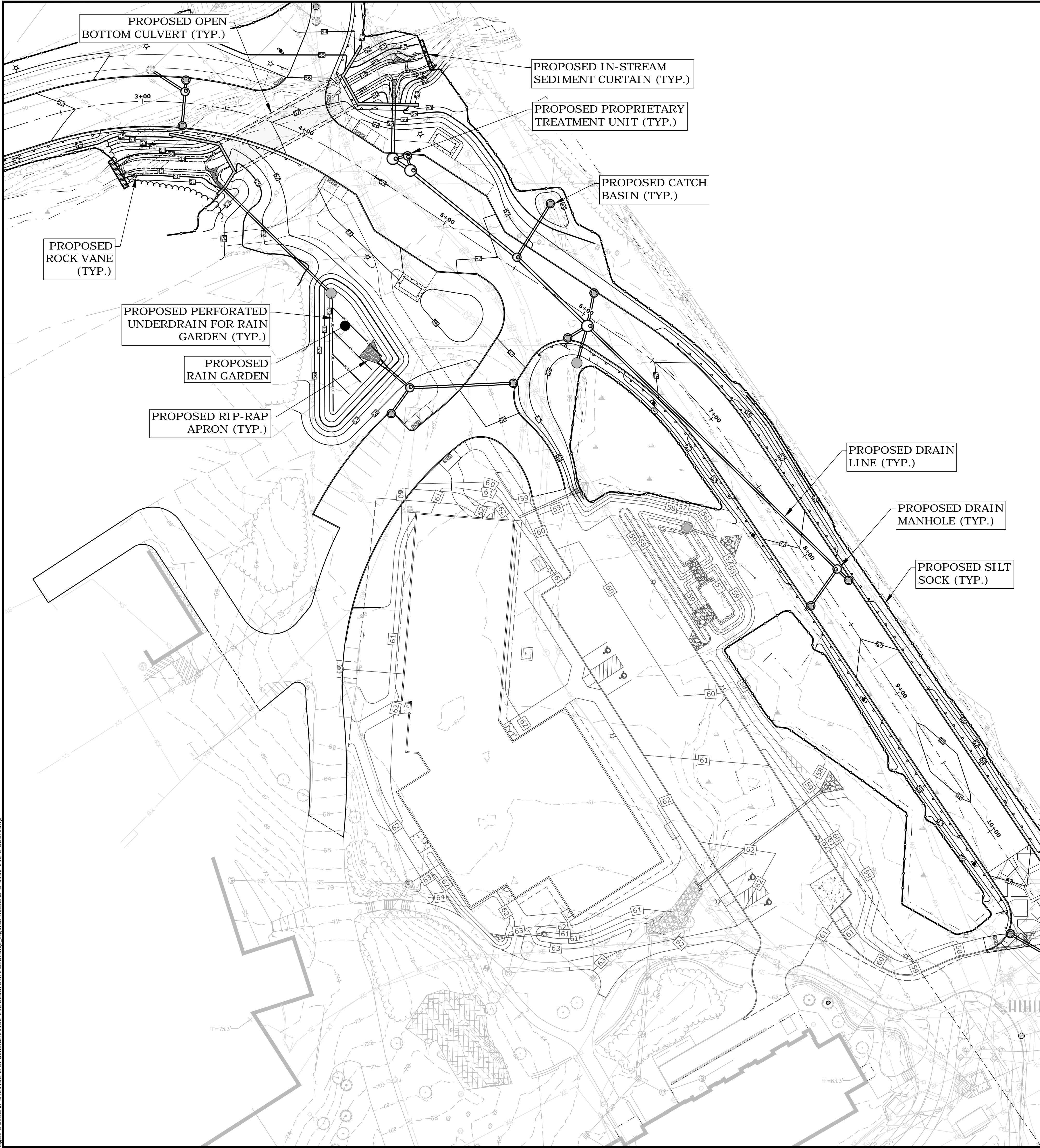
SCALE: AS SHOWN

C.402

Plot: C.402, 3/22/2021 9:34am By: NSC
 Printed On: Mar 03, 2021 9:34am By: NSC
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INSET | SCALE: 1" = 30'



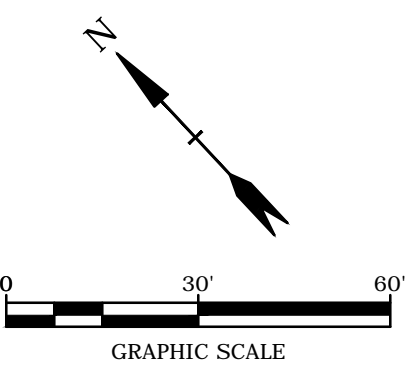
PERMIT DRAWINGS

SOUTH DRIVE

University of
New Hampshire

Tax Map: 13
Block: 7
Lot Number: 2UNH

Durham, NH



Mark	Date	Description
0	3/3/21	NHDES Wetlands Application

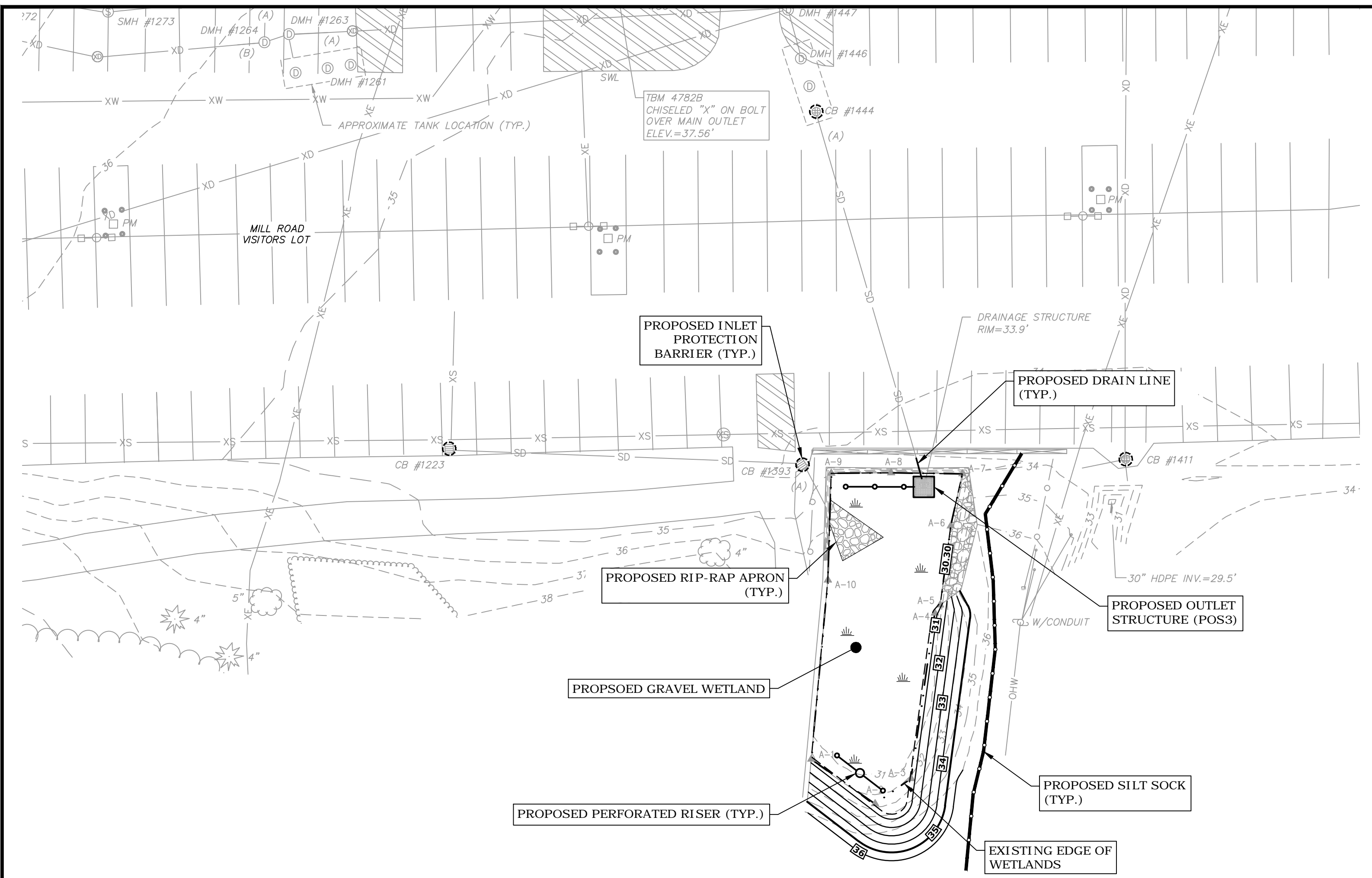
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DATE:	March 3, 2021
FILE:	U-0135-048-C-DSGN.DWG
DRAWN BY:	NSC/BKC
CHECKED BY:	JMP
APPROVED BY:	BLM

GRADING, DRAINAGE & EROSION CONTROL PLAN

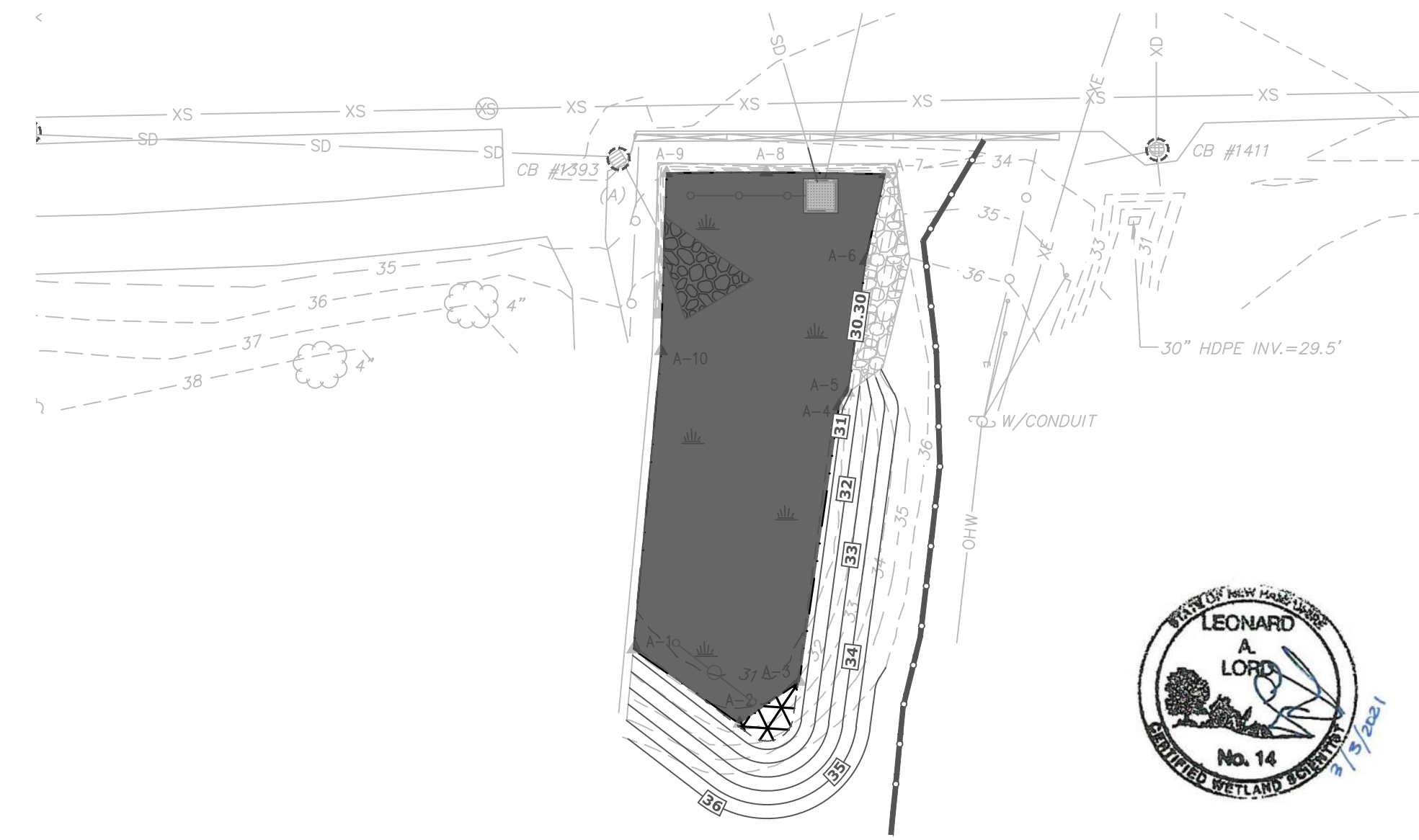
SCALE: AS SHOWN

C.403

Plot: C:\Users\jg200921\OneDrive\Documents\Tighe & Bond\Projects\2021\03\35\South Drive Drawings\Figures\AutoCAD\U-0135-048-C-DSGN.dwg
 Titled & Bored: F:\A\U\0135 UNH General\U-0135-048 South Drive Drawings\Figures\AutoCAD\U-0135-048-C-DSGN.dwg
 Date: 3/3/21 9:55am By: NSC
 Plot: 3/3/21 9:55am By: NSC



PROPOSED CONDITIONS PLAN



LEGEND

■ PROPOSED TEMPORARY WETLAND IMPACTS
 ■ PROPOSED STREAM/WETLAND CREATION

TOTAL: 2,029± SF
PROPOSED STREAM/WETLAND CREATION
TOTAL: 16± SF

***TOTAL WETLAND IMPACTS/CREATION**
 TEMPORARY: 5,118± SF
 PERMANENT: 14,008± SF
 TOTAL IMPACTS: 19,126± SF
 TOTAL STREAM/WETLAND CREATION: 527± SF

***TOTAL WETLAND/STREAM IMPACTS/MITIGATION SHOWN ABOVE INCLUDE IMPACTS/MITIGATION AT ALONG PROPOSED SOUTH DRIVE. SEE SHEETS C.601 AND C.602 FOR MORE INFORMATION.**

- NOTES:**
- JURISDICTIONAL WETLANDS REVIEWED AND DELINEATED ON NOVEMBER 9, 2020 BY LEONARD A. LORD, PH.D., NHCWS #14, NHCSS #19 OF TIGHE & BOND. WETLAND CRITERIA USED INCLUDED:
 - US ARMY CORPS OF ENGINEERS WETLANDS DELINEATIONS MANUAL, TECHNICAL REPORT Y-87-1 (JANUARY 1987)
 - REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION (JANUARY 2012)
 - FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4 (2018)
 - US ARMY CORPS OF ENGINEERS NORTHCENTRAL AND NORTHEAST 2016 REGIONAL WETLAND PLANT LIST (LICHVAR ET AL., 2016)
 - NHDES WETLANDS BUREAU ADMINISTRATIVE RULES (2020)

WETLAND IMPACT PLAN

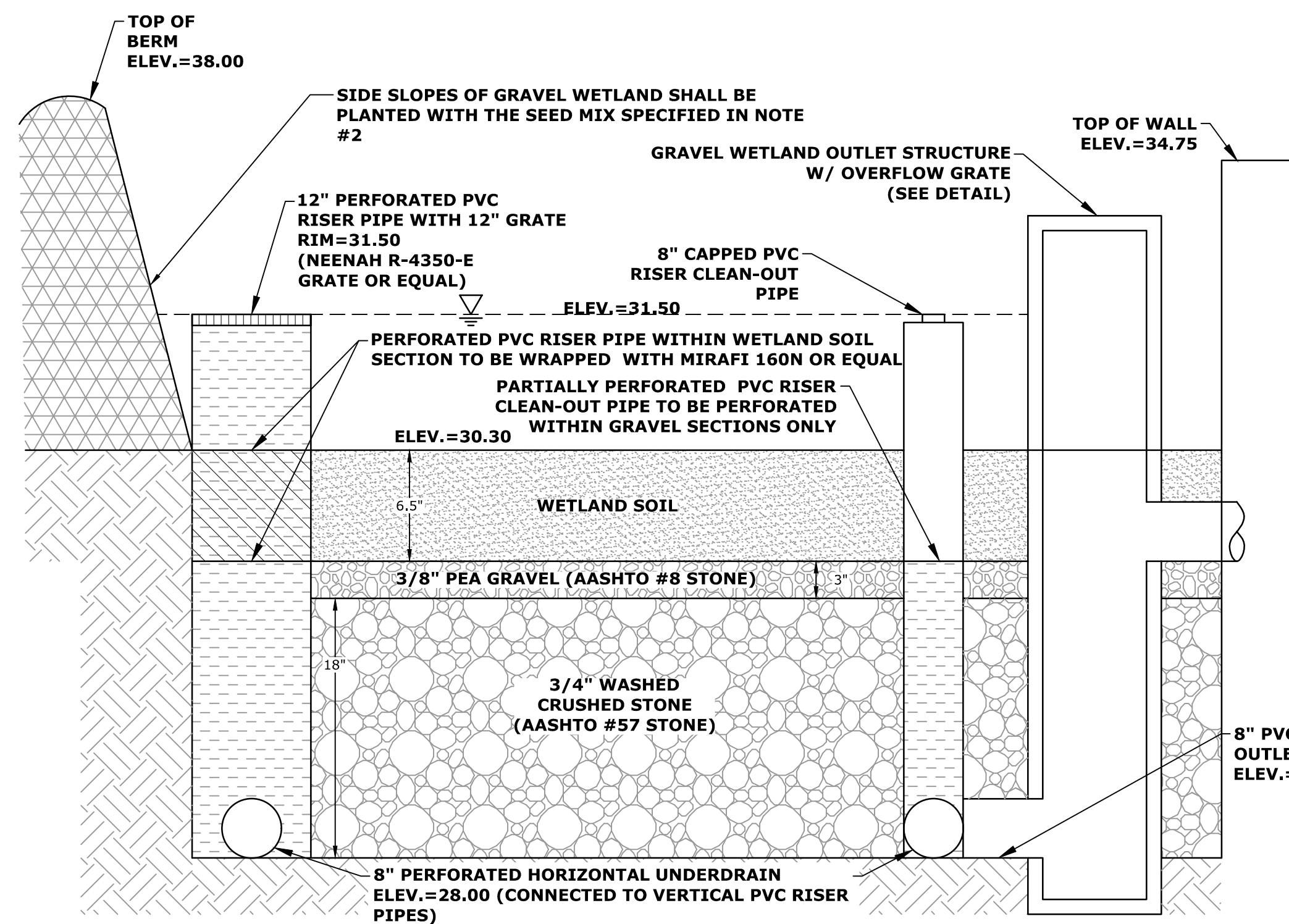
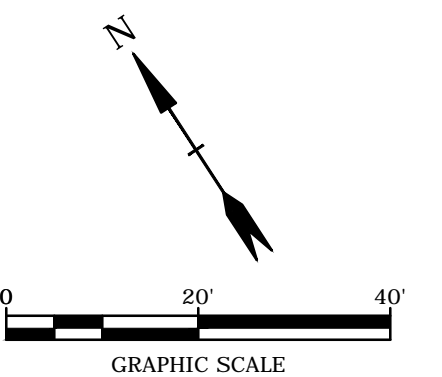
PERMIT DRAWINGS

SOUTH DRIVE

University of New Hampshire

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Durham, NH



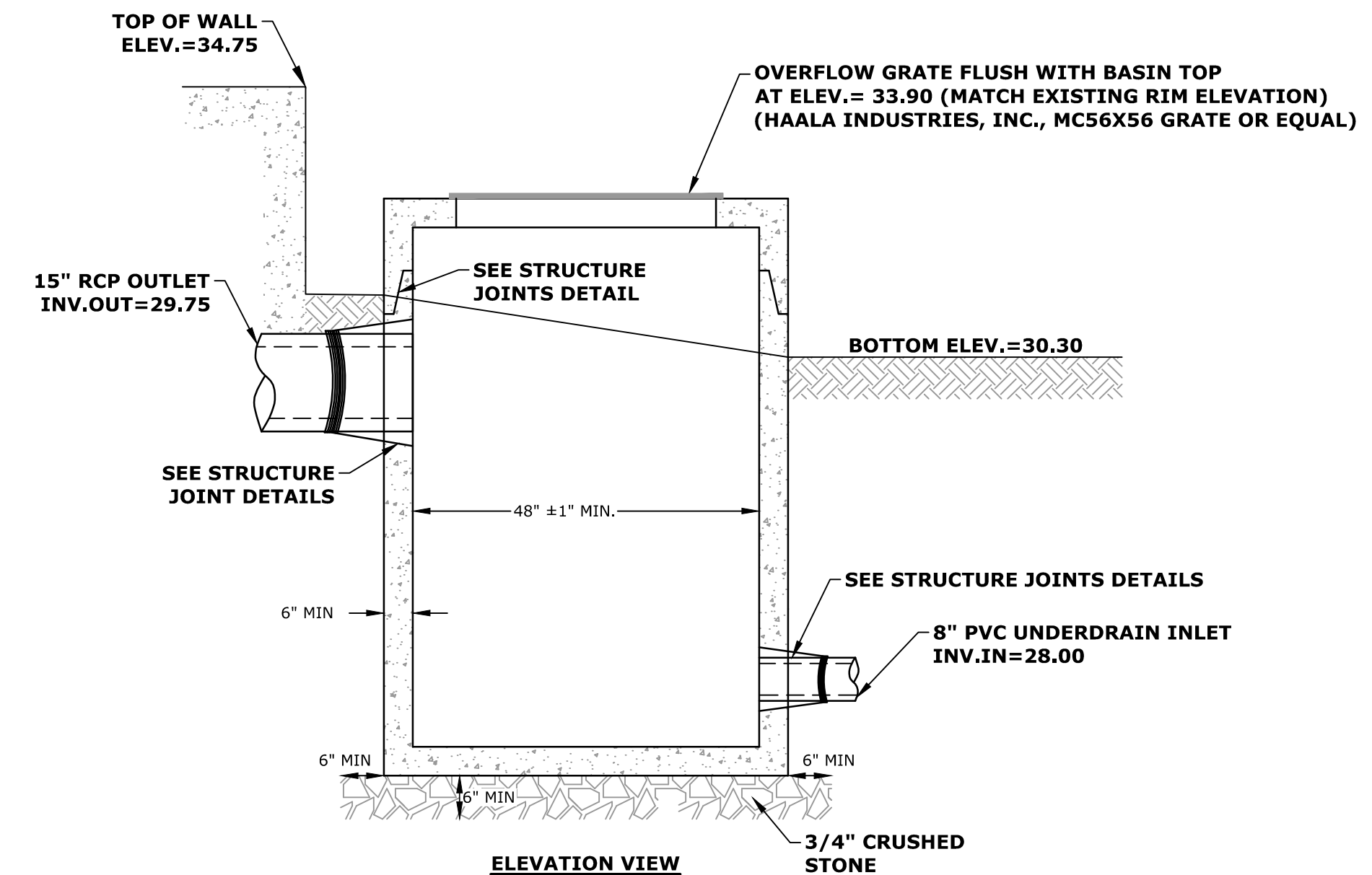
GRAVEL WETLAND CROSS SECTION
NO SCALE

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

- NOTES:**
- WETLAND SOIL SHALL BE A SANDY CLAY LOAM WITH A HYDRAULIC CONDUCTIVITY OF 0.1-0.01 FT/DAY. ORGANIC CONTENT SHALL BE GREATER THAN 15% BY VOLUME. CLAY CONTENT SHALL BE LESS THAN 15% BY VOLUME.
 - GRAVEL WETLAND SOIL AND AND EMBANKMENTS SHALL BE SEEDDED USING NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES FROM NEW ENGLAND PLANTS (NEWPCOM) OR EQUIVALENT AT A RATE OF AT LEAST 35 LB/AC. THE MIX SHALL BE APPLIED BY HYDRO-SEEDER WITH TACKIFIER AND MULCH. SEED SHALL BE APPLIED BETWEEN APRIL 20th AND MAY 30th, OR BETWEEN AUGUST 15th AND SEPTEMBER 10th. LATE FALL AND WINTER DORMANT SEEDING SHALL BE APPLIED AT A MINIMUM RATE OF 50 LB/AC.
 - PERFORATED PVC RISERS SHALL HAVE VERTICAL SLOTS CUT INTO PVC RISERS ABOVE GRADE MEASURING 3"x1/8".
 - INFILTRATION TESTING OF THE NATIVE SOILS AT THE SUBGRADE OF THE PROPOSED GRAVEL WETLAND SHALL OCCUR PRIOR TO THE INSTALLATION OF THE GRAVEL WETLAND AND SHALL BE COORDINATED WITH THE ENGINEER. IF THE NATIVE SOILS EXCEED A PERMEABILITY RATE OF 0.03 FT/DAY THE SOILS SHOULD AMENDED OR LINER ADDED AS DETERMINED BY THE ENGINEER.
 - CONTRACTOR SHALL VERIFY ALL INVERTS AND ELEVATIONS PRIOR TO CONSTRUCTION.

SPECIAL NOTE:

- DREDGING OF THE STORMWATER DETENTION BASIN FOR RENOVATION WILL BE DURING DURING LOW FLOW/DRY CONDITIONS. DREDGED MATERIALS SHALL BE PROPERLY



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

OUTLET STRUCTURE #3 (POS3) (CAMPUS CROSSING)
NO SCALE

WETLAND IMPACT,
MITIGATION & DESIGN PLAN
AT CAMPUS CROSSING

SCALE: AS SHOWN

C.603

GENERAL PROJECT INFORMATION

PROJECT OWNER: UNIVERSITY OF NEW HAMPSHIRE
DURHAM, NH 03823
PROJECT NAME: SOUTH DRIVE
PROJECT MAP / LOT: MAP 13/ BLOCK 7/ LOT 2UNH
PROJECT LATITUDE: 43°-08'-14"N
PROJECT LONGITUDE: 70°-56'-22"W

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF AN APPROXIMATELY 3,000 FT EXTENSION OF SOUTH DRIVE. OTHER IMPROVEMENTS INCLUDE ADDITIONAL PARKING, ACCESS, UTILITIES, AND LIGHTING.

DISTURBED AREA

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 7.0 ACRES.

SOIL CHARACTERISTICS

BASED ON THE SITE SPECIFIC SOIL SURVEY CONDUCTED BY STONEY RIDGE ENVIRONMENTAL, LLC, THE SITE SOILS CONSIST OF BOXFORD SILT LOAM, SCITICO SILT LOAM, MAYBID SILT LOAM, HOLLIS-ROCK OUTCROP-CHATFIELD COMPLEX, AND UDORTHTENS. THE SOILS RANGE FROM VERY POORLY DRAINED TO WELL DRAINED.

NAME OF RECEIVING WATERS

THE STORMWATER RUNOFF FROM THE SITE WILL ULTIMATELY DISCHARGE INTO COLLEGE BROOK OR AN EXISTING CLOSED DRAINAGE SYSTEM. PRIOR TO DISCHARGING TO COLLEGE BROOK, STORMWATER RUNOFF WILL BE COLLECTED AND TREATED BY GRAVEL WETLANDS, RAIN GARDENS, OR PROPRIETARY TREATMENT UNITS.

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

- 1. CUT AND CLEAR TREES.
- 2. CONSTRUCT TEMPORARY AND PERMANENT SEDIMENT, EROSION AND DETENTION CONTROL FACILITIES. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS THAT WILL INFLUENCE STORMWATER RUNOFF SUCH AS:
 - NEW CONSTRUCTION
 - DEVELOPMENT OF BORROW PIT AREAS
 - DISPOSAL OF SEDIMENT SPOIL, STUMP AND OTHER SOLID WASTE
 - FLOOD PLAIN EXCAVATION WORK
 - STREAM CHANNEL MODIFICATIONS
 - CONTROL OF DUST
 - CONSTRUCTION OF ACCESS AND HAUL ROAD
 - NEARNESS OF CONSTRUCTION SITE TO RECEIVING WATERS
 - CONSTRUCTION DURING LATE WINTER AND EARLY SPRING
- 3. ALL FILL SHALL BE CLEAN AND SHALL NOT CONTAIN MATERIALS THAT COULD CONTAMINATE SURFACE OR GROUNDWATER.
- 4. BMPS REGARDING INVASIVE PLANT MATERIALS ON EQUIPMENT AND IN RESTORATION REVEGETATION SHALL BE UTILIZED DURING CONSTRUCTION (BMPS FOR CONTROL OF INVASIVE SPECIES, NHDOT 2018).
- 5. ALL PERMANENT DITCHES, SWALES, DETENTION, RETENTION AND SEDIMENTATION BASINS TO BE STABILIZED USING THE VEGETATIVE AND NON-STRUCTURAL BMPS PRIOR TO DIRECTING RUNOFF TO THEM.
- 6. CLEAR AND DISPOSE OF DEBRIS.
- 7. CONSTRUCT TEMPORARY CULVERTS AND DIVERSION CHANNELS AS REQUIRED.
- 8. GRADE AND GRAVEL ROADWAYS AND PARKING AREAS - ALL ROADS AND PARKING AREA SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
- 9. BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
- 10. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, PERIMETER EROSION CONTROL MEASURES, SEDIMENT TRAPS, ETC., MULCH AND SEED AS REQUIRED.
- 11. SEDIMENT TRAPS AND/OR BASINS SHALL BE USED AS NECESSARY TO CONTAIN RUNOFF UNTIL SOILS ARE STABILIZED.
- 12. FINISH PAVING ALL ROADWAYS AND PARKING LOTS.
- 13. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
- 14. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
- 15. WHERE EROSION CONTROL BLANKETS ARE UTILIZED, THEY SHALL BE BIODEGRADABLE AND SHALL NOT CONTAIN PLASTIC NETTING TO HELP AVOID WILDLIFE ENTANGLEMENT.
- 16. REMOVE TRAPPED SEDIMENTS FROM COLLECTOR DEVICES AS APPROPRIATE AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.

SPECIAL CONSTRUCTION NOTES:

- 1. THE CONSTRUCTION SEQUENCE MUST LIMIT THE DURATION AND AREA OF DISTURBANCE.
- 2. THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

EROSION CONTROL NOTES:

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

STABILIZATION:

- 1. AN AREA SHALL BE CONSIDERED STABLE WHEN ONE OF THE FOLLOWING HAS OCCURRED:
 - A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
 - B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
 - C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED;
 - D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.;
 - E. 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.
- 2. WINTER STABILIZATION PRACTICES:
 - A. ALL BROAD VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS;
 - B. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS;
 - C. AFTER 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;
- 3. STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES, AND DISTURBED AREAS, WHERE CONSTRUCTION ACTIVITY SHALL NOT OCCUR FOR MORE THAN TWENTY-ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA. STABILIZATION MEASURES TO BE USED INCLUDE:
 - A. TEMPORARY SEEDING;
 - B. MULCHING.
- 4. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
- 5. 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 OCTOBER 15.

DUST CONTROL:

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

STOCKPILES:

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

OFF SITE VEHICLE TRACKING:

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

VEGETATION:

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

TRIPLEX BLUEGRASS MIX	PERCENTAGE BY VOLUME
BARON KENTUCKY BLUEGRASS	40
MERIT KENTUCKY BLUEGRASS	50
GEORGETOWN KENTUCKY BLUEGRASS	10

TRIPLEX RYEGRASS MIX	PERCENTAGE BY VOLUME
PALMER PERENNIAL RYEGRASS	40
PRELUDE PERENNIAL RYEGRASS	40
YORKTOWN III PERENNIAL RYEGRASS	20

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.

- 3. DORMANT SEEDING (SEPTEMBER 15 TO FIRST SNOWFALL):
 - A. FOLLOW PERMANENT MEASURES SLOPE, LIME, FERTILIZER AND GRADING REQUIREMENTS. APPLY SEED MIXTURE AT TWICE THE INDICATED RATE. APPLY MULCH AS INDICATED FOR PERMANENT MEASURES.

CONCRETE WASHOUT AREA:

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

ALLOWABLE NON-STORMWATER DISCHARGES:

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

WASTE DISPOSAL:

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

SPILL PREVENTION:

- 1. CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY LOCAL, STATE AND FEDERAL AGENCIES. AT A MINIMUM, CONTRACTOR SHALL FOLLOW THE BEST MANAGEMENT SPILL PREVENTION PRACTICES OUTLINED BELOW.
- 2. THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
 - A. GOOD HOUSEKEEPING - THE FOLLOWING GOOD HOUSEKEEPING PRACTICE SHALL BE FOLLOWED ON SITE DURING CONSTRUCTION:
 - a. ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB SHALL BE STORED ON SITE;
 - b. ALL REGULATED 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, ON AN IMPERVIOUS SURFACE;
 - c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED;
 - d. THE SITE SUPERINTENDENT SHALL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS;
 - e. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER;
 - f. WHENEVER POSSIBLE ALL OF A PRODUCT SHALL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
 - g. THE TRAINING OF ON-SITE EMPLOYEES AND THE ON-SITE POSTING OF RELEASE RESPONSE INFORMATION DESCRIBING WHAT TO DO IN THE EVENT OF A SPILL OF REGULATED SUBSTANCES.
 - B. HAZARDOUS PRODUCTS - THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
 - a. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE;
 - b. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHALL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION;
 - c. SURPLUS PRODUCT THAT MUST BE DISPOSED OF SHALL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.
 - C. PRODUCT SPECIFIC PRACTICES - THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ON SITE:
 - a. PETROLEUM PRODUCTS:
 - i. ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE;
 - ii. 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.
 - iii. SECURE FUEL STORAGE AREAS AGAINST UNAUTHORIZED ENTRY;
 - iv. INSPECT FUEL STORAGE AREAS WEEKLY;
 - v. WHEREVER POSSIBLE, KEEP REGULATED CONTAINERS THAT ARE STORED OUTSIDE MORE THAN 50 FEET FROM SURFACE WATER AND STORM DRAINS, 75 FEET FROM PRIVATE WELLS, AND 400 FEET FROM PUBLIC WELLS;
 - vi. COVER REGULATED CONTAINERS IN OUTSIDE STORAGE AREAS;
 - vii. SECONDARY CONTAINMENT IS REQUIRED FOR CONTAINERS CONTAINING REGULATED SUBSTANCES STORED OUTSIDE, EXCEPT FOR ON PREMISE USE HEATING FUEL TANKS, OR ABOVEGROUND OR UNDERGROUND STORAGE TANKS OTHERWISE REGULATED.
 - viii. THE FUEL HANDLING REQUIREMENTS SHALL INCLUDE:
 - (1) EXCEPT WHEN IN USE, KEEP CONTAINERS CONTAINING REGULATED SUBSTANCES CLOSED AND SEALED;
 - (2) PLACE DRIP PANS UNDER SPIGOTS, VALVES, AND PUMPS;
 - (3) HAVE SPILL CONTROL AND CONTAINMENT EQUIPMENT READILY AVAILABLE IN ALL WORK AREAS;
 - (4) USE FUNNELS AND DRIP PANS WHEN TRANSFERRING REGULATED SUBSTANCES;
 - (5) PERFORM TRANSFERS OF REGULATED SUBSTANCES OVER AN IMPERVIOUS SURFACE;
 - ix. FUELING AND MAINTENANCE OF EXCAVATION, EARTHMOVING AND OTHER CONSTRUCTION RELATED EQUIPMENT SHALL COMPLY WITH THE REGULATIONS OF THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES THESE REQUIREMENTS ARE SUMMARIZED IN WD-DWGB-22-6 BEST MANAGEMENT PRACTICES FOR FUELING AND MAINTENANCE OF EXCAVATION AND EARTHMOVING EQUIPMENT, OR ITS SUCCESSOR DOCUMENT. [HTTPS://WWW.DES.NH.GOV/ORGANIZATION/COMMISSIONER/PIP/FACTSHEETS/DWGB/DOCUMENTS/DWGB-22-6.PDF](https://www.des.nh.gov/organization/commissioner/PIP/FACTSHEETS/DWGB/DOCUMENTS/DWGB-22-6.PDF)
 - D. FERTILIZERS:
 - i. FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS;
 - ii. ONCE APPLIED FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER;
 - iii. 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.
 - E. PAINTS:
 - i. ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE;
 - ii. EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM;
 - iii. EXCESS PAINT SHALL BE DISPOSED OF PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
 - D. SPILL CONTROL PRACTICES - IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION, THE FOLLOWING PRACTICES SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
 - a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES;
 - b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS SHALL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE;
 - c. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY;
 - d. THE SPILL AREA SHALL BE KEPT WELL VENTILATED AND PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE;
 - e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL SHALL BE REPORTED TO THE APPROPRIATE LOCAL, STATE OR FEDERAL AGENCIES AS REQUIRED;
 - f. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS SHALL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.
 - E. VEHICLE FUELING AND MAINTENANCE PRACTICE:
 - a. CONTRACTOR SHALL MAKE AN EFFORT TO PERFORM EQUIPMENT/VEHICLE FUELING AND MAINTENANCE AT AN OFF-SITE FACILITY;
 - b. CONTRACTOR SHALL PROVIDE AN ON-SITE FUELING AND MAINTENANCE AREA THAT IS CLEAN AND DRY;
 - c. IF POSSIBLE THE CONTRACTOR SHALL KEEP AREA COVERED;
 - d. CONTRACTOR SHALL KEEP A SPILL KIT AT THE FUELING AND MAINTENANCE AREA;
 - e. CONTRACTOR SHALL REGULARLY INSPECT VEHICLES FOR LEAKS AND DAMAGE;
 - f. CONTRACTOR SHALL USE DRIP PANS, DRIP CLOTHS, OR ABSORBENT PADS WHEN REPLACING SPENT FUEL.

EROSION CONTROL OBSERVATIONS AND MAINTENANCE PRACTICES

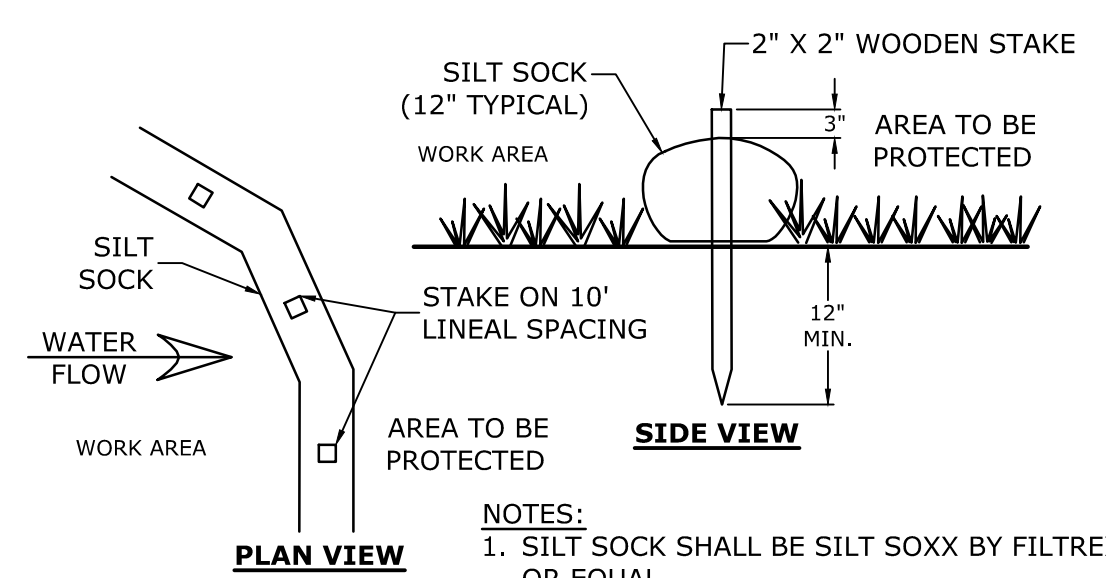
- 1. THIS PROJECT EXCEEDS ONE (1) ACRE OF DISTURBANCE AND THUS REQUIRE(S) A SWPPP. THE SWPPP SHALL BE PREPARED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE FAMILIAR WITH THE SWPPP AND KEEP AN UPDATED COPY OF THE SWPPP ONSITE AT ALL TIMES.
- 2. THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES THAT SHALL BE FOLLOWED AS PART OF THIS PROJECT:
 - A. OBSERVATIONS OF THE PROJECT FOR COMPLIANCE WITH THE SWPPP SHALL BE MADE BY A 3RD PARTY INSPECTOR AT LEAST ONCE A WEEK OR WITHIN 24 HOURS OF A STORM 0.25 INCHES OR GREATER;
 - B. AN OBSERVATION REPORT SHALL BE MADE AFTER EACH OBSERVATION AND DISTRIBUTED TO THE ENGINEER, THE OWNER, AND THE CONTRACTOR;
 - C. A REPRESENTATIVE OF THE SITE CONTRACTOR, SHALL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR ACTIVITIES;
 - D. IF A REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT.

BLASTING NOTES:

- 1. CONTRACTOR SHALL CONTACT THE NHDES PRIOR TO COMMENCING ANY BLASTING ACTIVITIES
- 2. FOR ANY PROJECT FOR WHICH BLASTING OF BEDROCK IS ANTICIPATED, THE APPLICANT SHALL SUBMIT:
 - A. A BLASTING PLAN THAT IDENTIFIES:
 - a. WHERE THE BLASTING ACTIVITIES ARE ANTICIPATED TO OCCUR;
 - b. THE ESTIMATED QUANTITY OF BLAST ROCK IN CUBIC YARDS; AND
 - c. SITE-SPECIFIC BLASTING BEST MANAGEMENT PRACTICES.
- 3. IF MORE THAN 5000 CUBIC YARDS OF BLAST ROCK WILL BE GENERATED AND THERE ARE ONE OR MORE PUBLIC DRINKING WATER WELLS WITHIN 2000 FEET OF THE BLASTING ACTIVITIES, A PLAN TO MONITOR GROUNDWATER TO DETECT ANY CONTAMINATION IN SUFFICIENT TIME TO PROTECT THE WATER SUPPLY WELLS SHALL BE PROVIDED TO THE NHDES. THE GROUNDWATER MONITORING PLAN

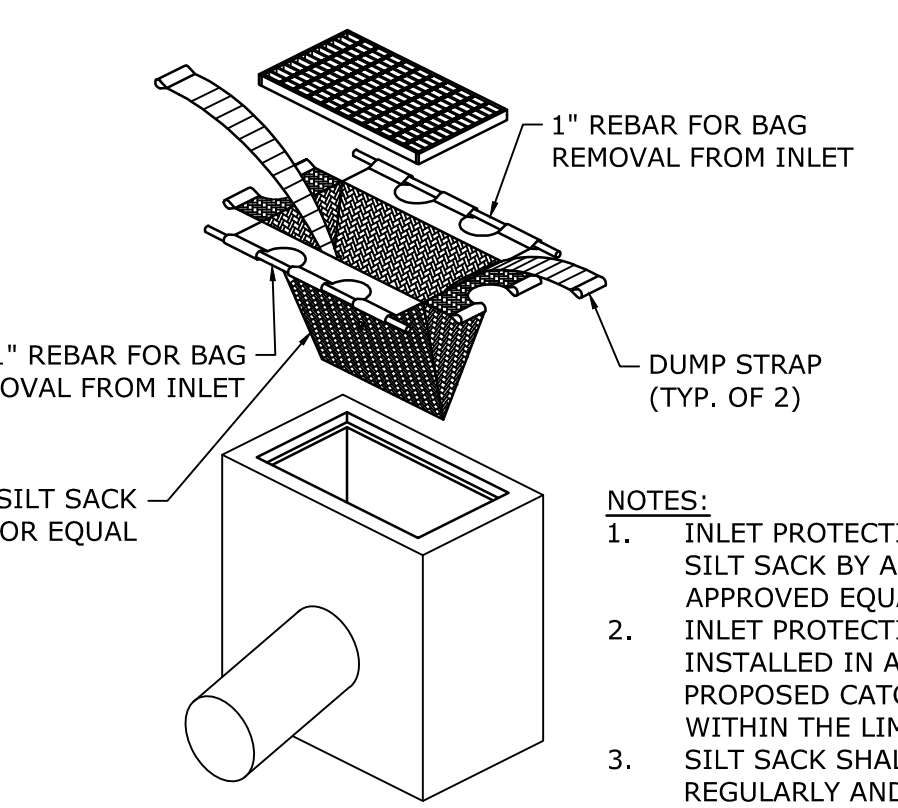
SHALL INCLUDE:

- A. MONITORING FOR NITRATE AND NITRITE EITHER IN THE DRINKING WATER SUPPLY WELLS OR IN OTHER WELLS THAT ARE REPRESENTATIVE OF THE DRINKING WATER SUPPLY WELLS IN THE AREA:
 - a. THE GROUNDWATER SAMPLING PROGRAM MUST BE IMPLEMENTED ONCE APPROVED BY THE NHDES.
- B. THE FOLLOWING BEST MANAGEMENT PROCEDURES FOR BLASTING SHALL BE COMPLIED WITH:
 - a. LOADING PRACTICES - THE FOLLOWING BLASTHOLE LOADING PRACTICES TO MINIMIZE ENVIRONMENTAL EFFECTS SHALL BE FOLLOWED:
 - i. DRILLING LOGS SHALL BE MAINTAINED BY THE DRILLER AND COMMUNICATED DIRECTLY TO THE BLASTER. THE LOGS SHALL INDICATE DEPTHS AND LENGTHS OF VOIDS, CAVITIES, AND FAULT ZONES OR OTHER WEAK ZONES ENCOUNTERED AS WELL AS GROUNDWATER CONDITIONS;
 - ii. EXPLOSIVE PRODUCTS SHALL BE MANAGED ON-SITE SO THAT THEY ARE EITHER USED IN THE BOREHOLE, RETURNED TO THE DELIVERY VEHICLE, OR PLACED IN SECURE CONTAINERS FOR OFF-SITE DISPOSAL;
 - iii. SPILLAGE AROUND THE BOREHOLE SHALL EITHER BE PLACED IN THE BOREHOLE OR CLEANED UP AND RETURNED TO AN APPROPRIATE VEHICLE FOR HANDLING OR PLACEMENT IN SECURED CONTAINERS FOR OFF-SITE DISPOSAL;
 - iv. LOADED EXPLOSIVES SHALL BE DETONATED AS SOON AS POSSIBLE AND SHALL NOT BE LEFT IN THE BLASTHOLES OVERNIGHT, UNLESS WEATHER OR OTHER SAFETY CONCERNS REASONABLY DICTATE THAT DETONATION SHOULD BE POSTPONED;
 - v. LOADING EQUIPMENT SHALL BE CLEANED IN AN AREA WHERE WASTEWATER CAN BE PROPERLY CONTAINED AND HANDLED IN A MANNER THAT PREVENTS RELEASE OF CONTAMINANTS TO THE ENVIRONMENT;
 - vi. EXPLOSIVES SHALL BE LOADED TO MAINTAIN GOOD CONTINUITY IN THE COLUMN LOAD TO PROMOTE COMPLETE DETONATION. INDUSTRY ACCEPTED LOADING PRACTICES FOR PRIMING, STEMMING, DECKING AND COLUMN RISE NEED TO BE ATTENDED TO
 - b. EXPLOSIVE SELECTION - THE FOLLOWING BMPS SHALL BE FOLLOWED TO REDUCE THE POTENTIAL FOR GROUNDWATER CONTAMINATION WHEN EXPLOSIVES ARE USED:
 - i. EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT ARE APPROPRIATE FOR SITE CONDITIONS AND SAFE BLAST EXECUTION;
 - ii. EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT HAVE THE APPROPRIATE WATER RESISTANCE FOR THE SITE CONDITIONS PRESENT TO MINIMIZE THE POTENTIAL FOR HAZARDOUS EFFECT OF THE PRODUCT UPON GROUNDWATER
 - c. PREVENTION OF MISFIRES. APPROPRIATE PRACTICES SHALL BE DEVELOPED AND IMPLEMENTED TO PREVENT MISFIRES.
 - d. MUCK PILES MANAGEMENT - MUCK PILES (THE BLASTED PIECES OF ROCK) AND ROCK PILES SHALL BE MANAGED IN A MANNER TO REDUCE THE POTENTIAL FOR CONTAMINATION BY IMPLEMENTING THE FOLLOWING MEASURES:
 - i. REMOVE THE MUCK PILE FROM THE BLAST AREA AS SOON AS REASONABLY POSSIBLE;
 - ii. MANAGE THE INTERACTION OF BLASTED ROCK PILES AND STORMWATER TO PREVENT CONTAMINATION OF WATER SUPPLY WELLS OR SURFACE WATER.
- C. SPILL PREVENTION AND SPILL MITIGATION MEASURES SHALL BE IMPLEMENTED TO PREVENT THE RELEASE OF FUEL AND OTHER RELATED SUBSTANCES TO THE ENVIRONMENT DURING BLASTING OPERATIONS. THE MEASURES TO PREVENT SUCH RELEASES SHALL BE DETAILED IN THE GROUNDWATER MONITORING REPORT AND COMPLY WITH THE MEASURES AND BEST MANAGEMENT PRACTICES LISTED ON THIS SHEET.



- NOTES:
 - 1. SILT SOCK SHALL BE SILT SOXX BY FILTREXX OR EQUAL.
 - 2. INSTALL SILT SOCK IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

SILT SOCK
NO SCALE



- NOTES:
 - 1. INLET PROTECTION BARRIER SHALL BE SILT SACK BY ACF ENVIRONMENTAL OR APPROVED EQUAL.
 - 2. INLET PROTECTION BARRIER SHALL BE INSTALLED IN ALL EXISTING AND PROPOSED CATCH BASINS LOCATED WITHIN THE LIMIT OF WORK.
 - 3. SILT SACK SHALL BE INSPECTED REGULARLY AND MAINTAIN IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

INLET PROTECTION BARRIER
NO SCALE



PERMIT DRAWINGS

SOUTH DRIVE

University of New Hampshire

Tax Map: 13
Block: 7
Lot Number: 2UNH

Durham, NH

Mark	Date	Description
0	3/3/21	NHDES Wetlands Application

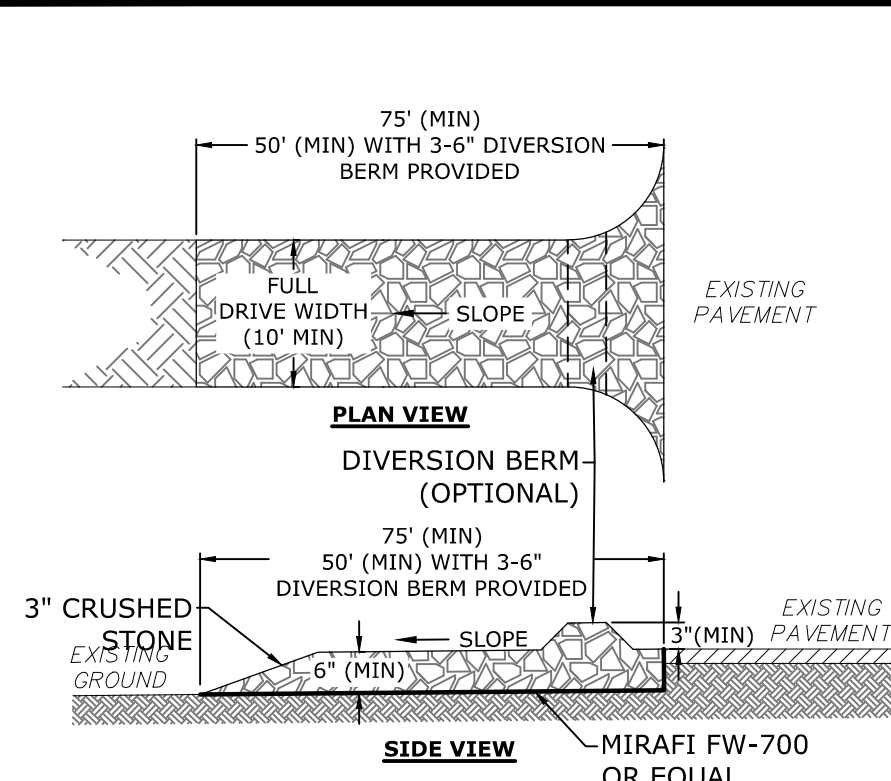
PROJECT NO:	U-0135-048
DATE:	March 3, 2021
FILE:	U-0135-048-C-DTLS.DWG
DRAWN BY:	NSC/BKC
CHECKED:	JMP
APPROVED BY:	BLM

EROSION CONTROL NOTES & DETAILS SHEET

SCALE: AS SHOWN

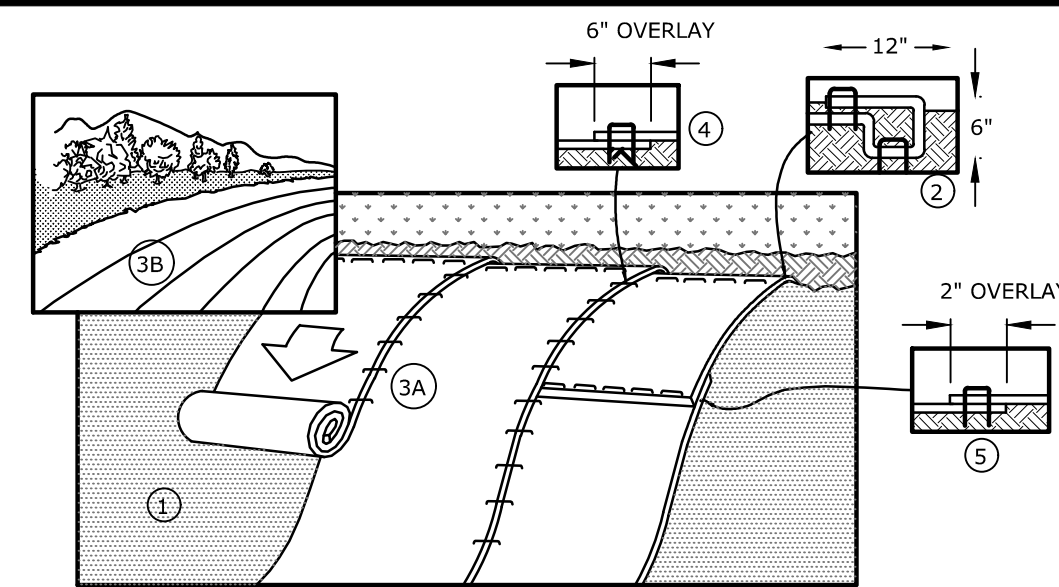
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Issue: 03/04/2021 8:29am By: NSC
Project On: 04/01/2021 10:18am By: NSC
Tighe & Bond: I:\A\U\0135-048 South Drive Drawings_Engineers\AutoCAD\U-0135-048-C-DTLS.dwg



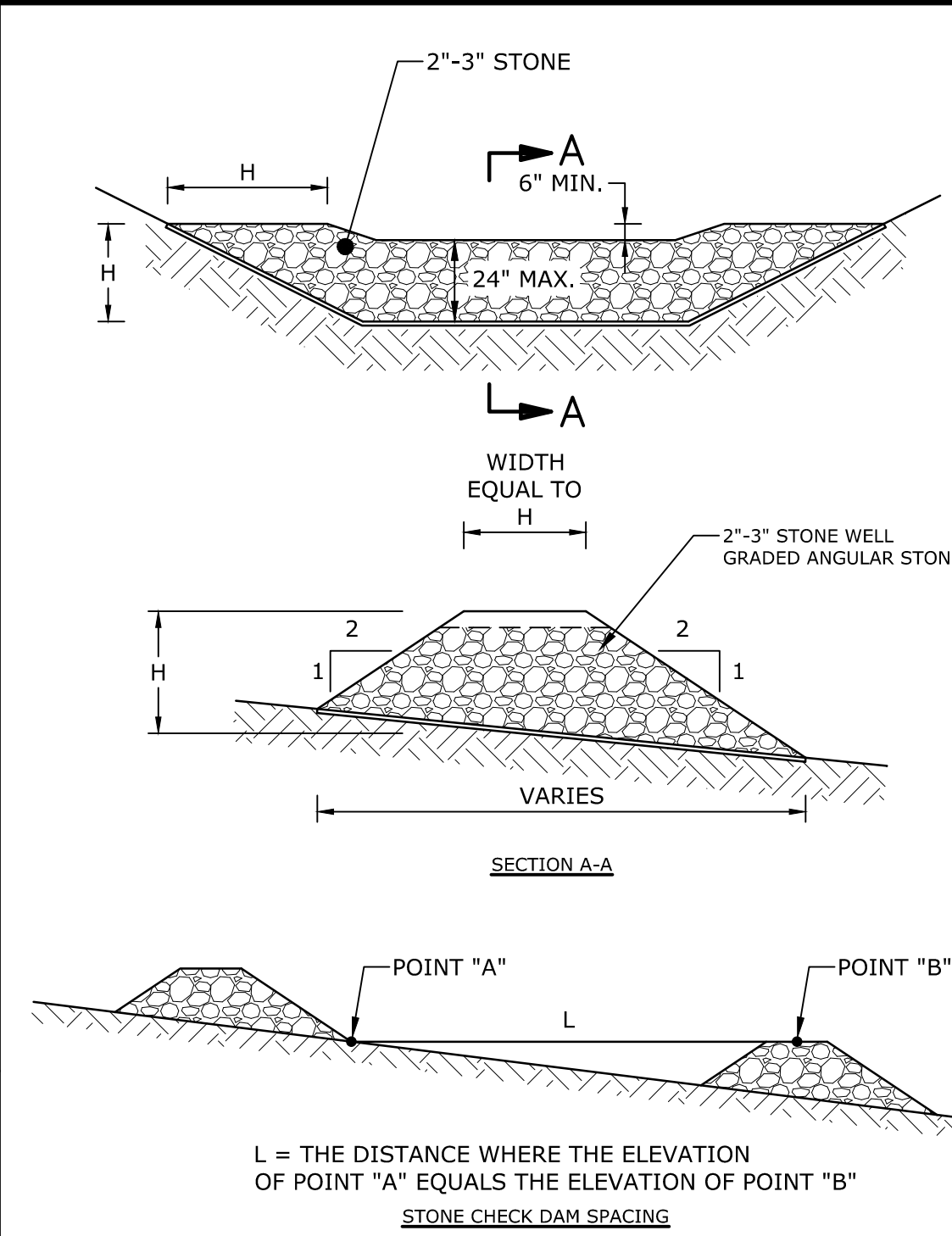
NOTE:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT FROM THE SITE. WHEN WASHING IS REQUIRED, IT SHALL BE DONE SO RUNOFF DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT MUST BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS

STABILIZED CONSTRUCTION EXIT
NO SCALE



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

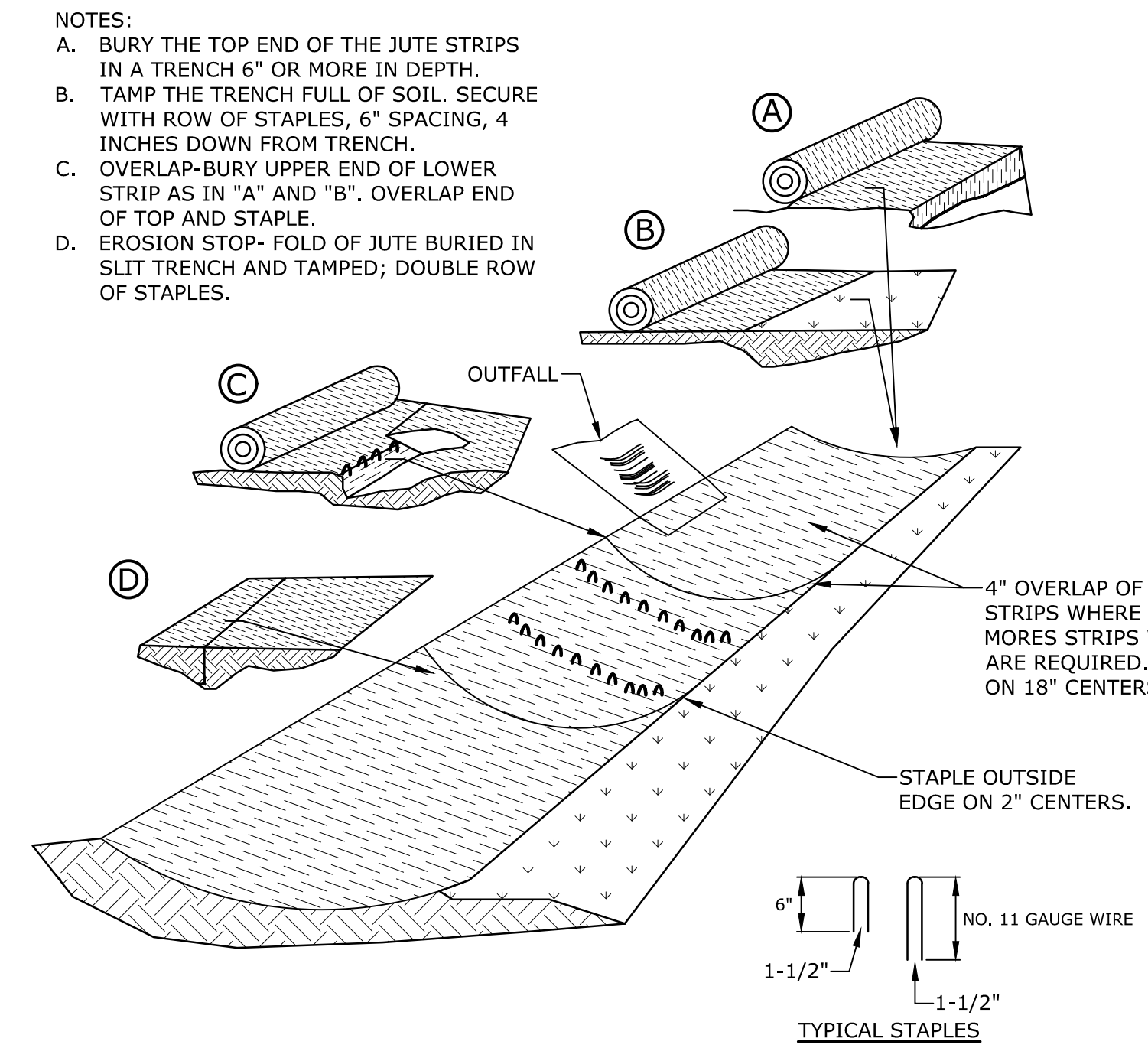
STABILIZATION BLANKET
NO SCALE



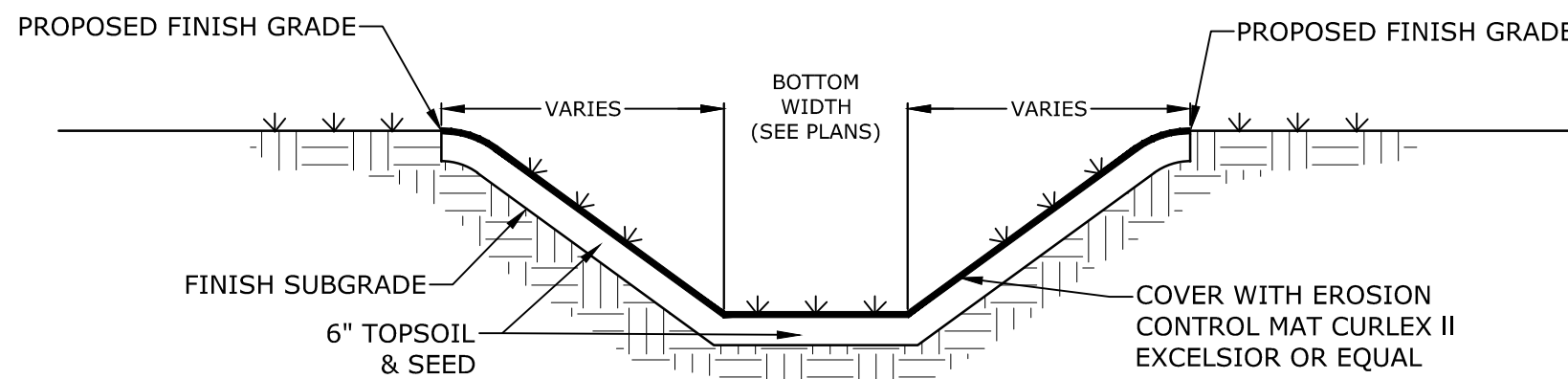
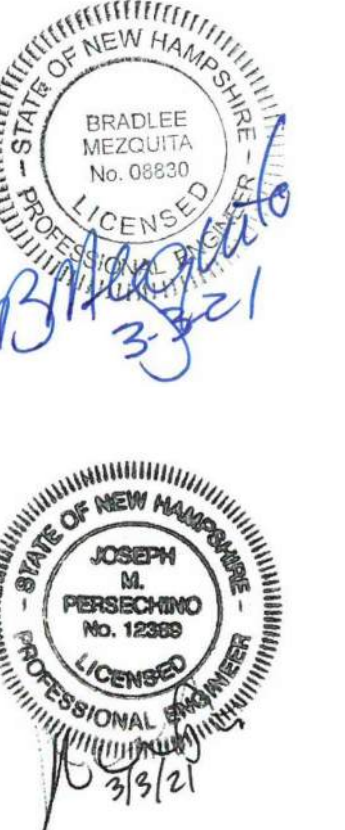
BERM STONE SIZE	
SIEVE DESIGNATION (US CUSTOMARY)	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
12 IN	100
6 IN	84-100
3 IN	68-83
1 IN	42-55
NO. 4	8-12

NOTES:
1. CHECK DAMS SHOULD BE INSTALLED BEFORE RUNOFF IS DIRECTED TO THE SWALE OR DRAINAGE DITCH.
2. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE DAM SHOULD BE LESS THAN ONE ACRE.
3. THE CHECK DAM SHOULD NOT BE USED IN A FLOWING STREAM.
4. CHECK DAMS SHOWN ON THE DRAWINGS SHALL BE LEFT IN PLACE PERMANENTLY.
5. CHECK DAMS INSTALLED AS PART OF TEMPORARY EROSION CONTROL MEASURE SHALL BE REMOVED ONCE THE SWALE OR DITCH HAS BEEN STABILIZED:
a. IN TEMPORARY DITCHES AND SWALES, CHECK DAMS SHOULD BE REMOVED AND THE DITCH FILLED IN WHEN IT IS NO LONGER NEEDED
b. IN PERMANENT STRUCTURES, CHECK DAMS SHOULD BE REMOVED WHEN PERMANENT LINING HAS BEEN ESTABLISHED. IF THE PERMANENT LINING IS VEGETATION, THEN THE CHECK DAM SHOULD BE RETAINED UNTIL THE GRASS HAS MATURED TO PROTECT THE DITCH OR SWALE. THE AREA BENEATH THE CHECK DAM MUST BE SEED AND MULCHED IMMEDIATELY AFTER REMOVAL.

STONE CHECK DAM
NO SCALE

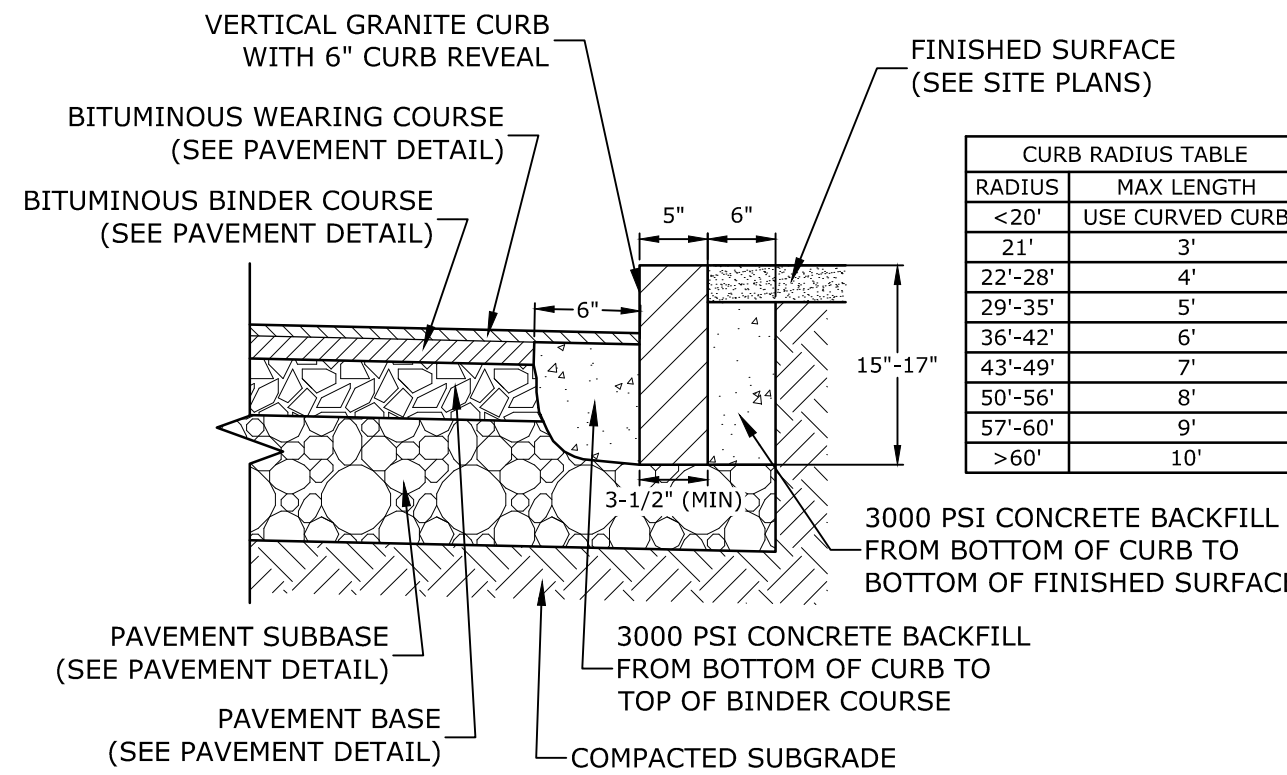


JUTE MATTING DETAIL
NO SCALE



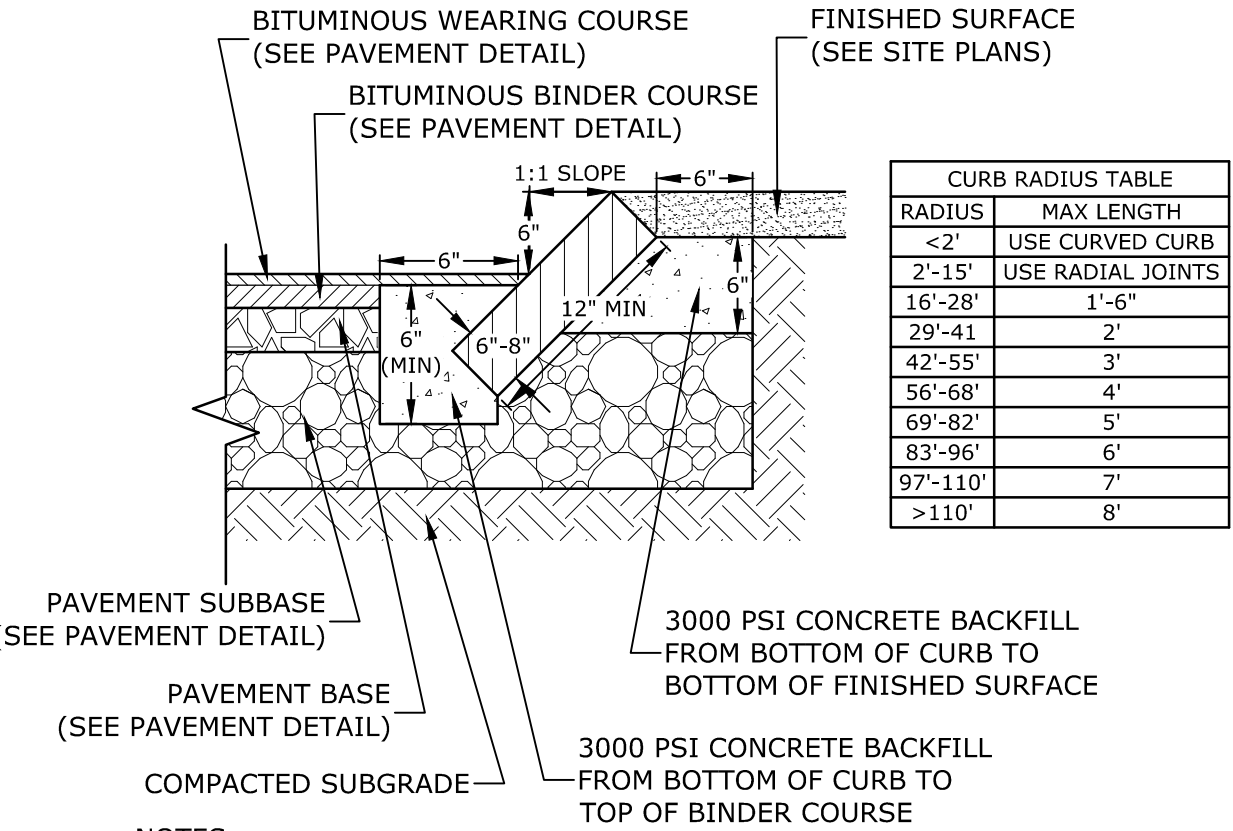
NOTES:
1. THE FOUNDATION AREA OF THE WATERWAY SHALL BE CLEARED AND GRUBBED OF ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL. MATERIALS REMOVED SHALL BE DISPOSED OF SO THEY WILL NOT INTERFERE WITH THE CONSTRUCTION OR PROPER FUNCTIONING OF THE WATERWAY.
2. THE WATERWAY SHALL BE EXCAVATED OR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

GRASSED LINED SWALE
NO SCALE



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

VERTICAL GRANITE CURB
NO SCALE



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

SLOPED GRANITE CURB
NO SCALE

PERMIT
DRAWINGS

SOUTH DRIVE

University of
New Hampshire

Tax Map: 13
Block: 7
Lot Number: 2UNH

Durham, NH

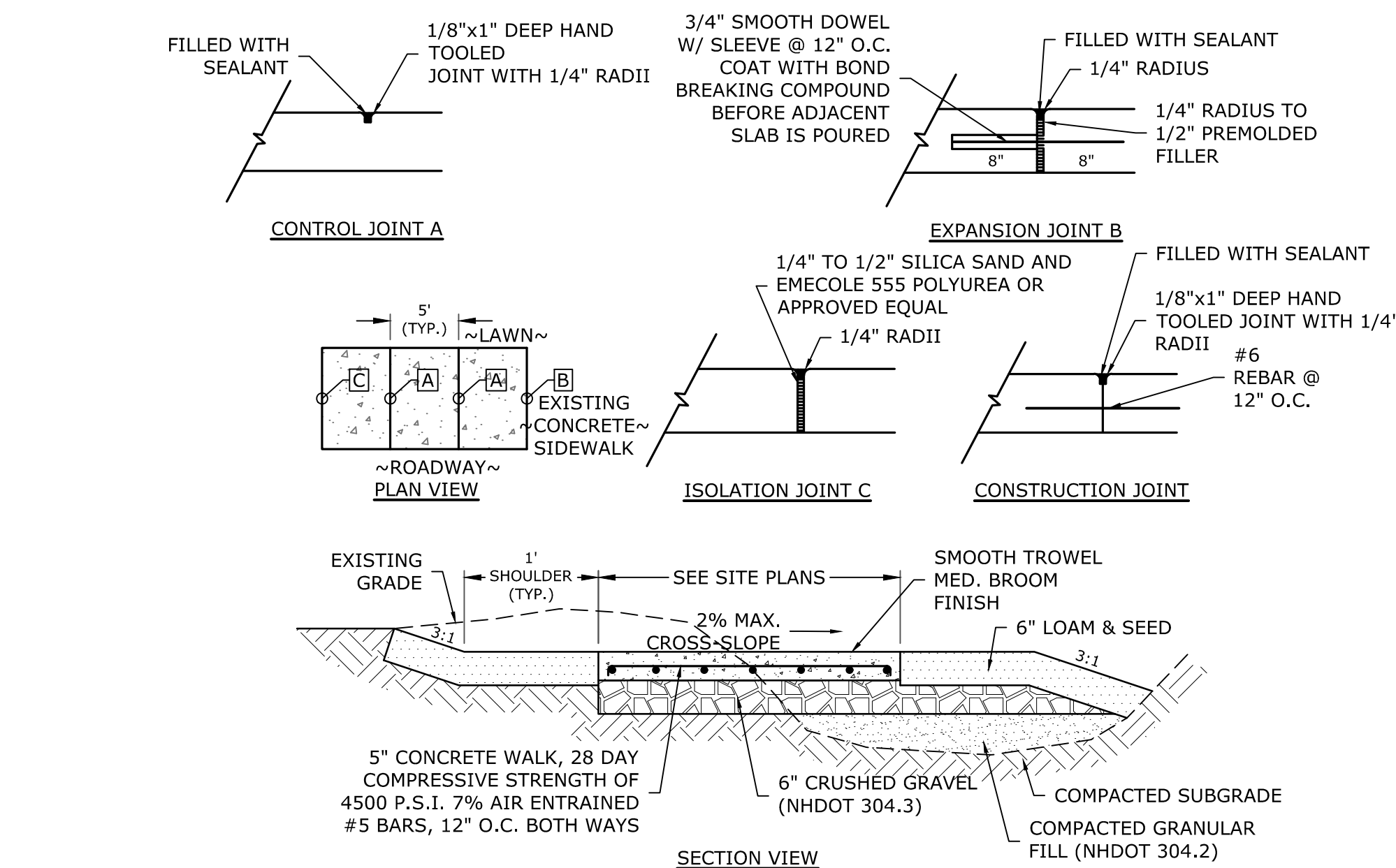
Mark	Date	Description
0	3/3/21	NHDES Wetlands Application

PROJECT NO:	U-0135-048
DATE:	March 3, 2021
FILE:	U-0135-048-C-DTLS.DWG
DRAWN BY:	NSC/BKC
CHECKED:	JMP
APPROVED BY:	BLM

DETAILS SHEET

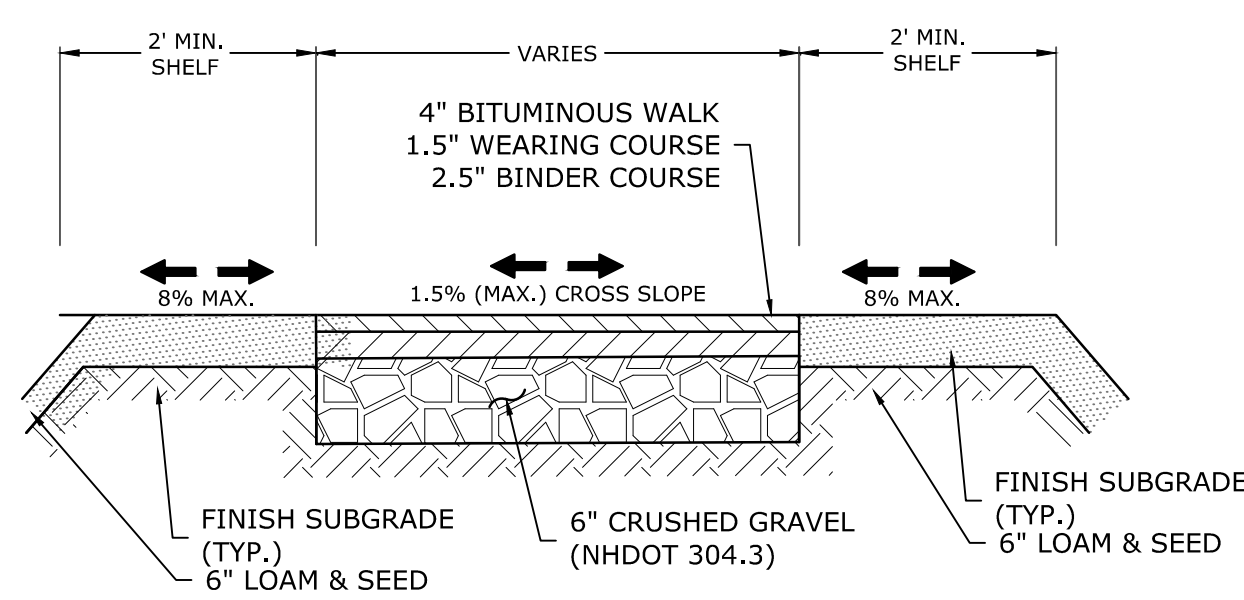
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C.702



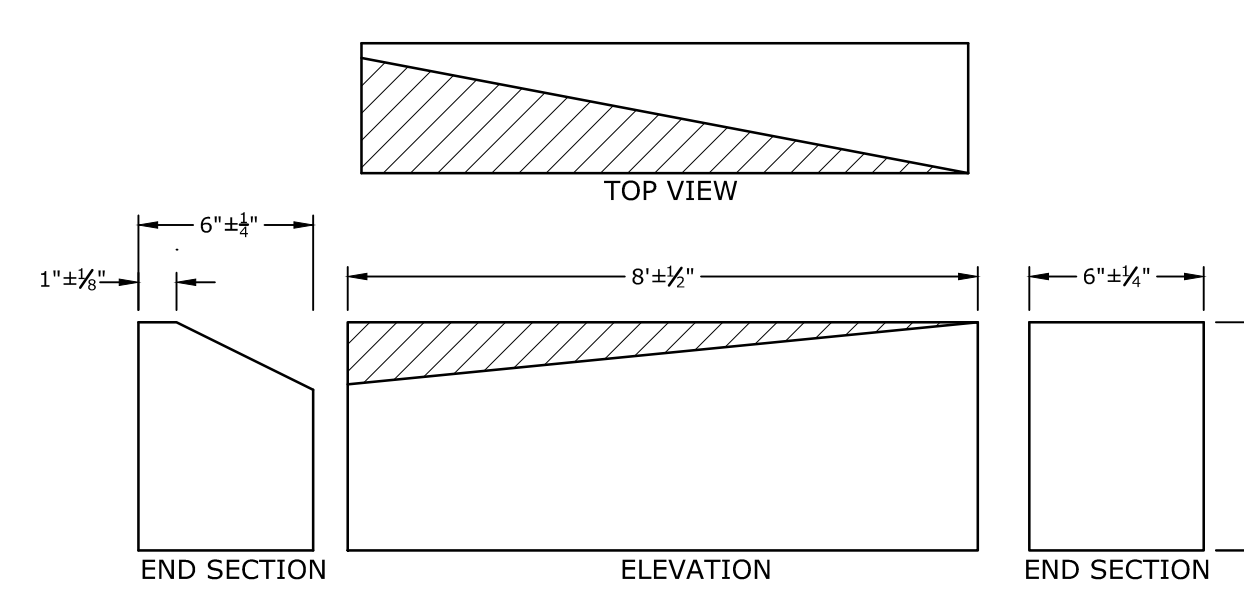
NOTES:
1. SEE SITE PLAN FOR SIDEWALK WIDTH AND LOCATIONS.

CONCRETE SIDEWALK
NO SCALE



NOTES:
1. SEE SITE PLAN FOR SIDEWALK WIDTH, LOCATIONS AND CURB TYPE.
2. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR WALK AND SIDESLOPE GRADES.

BITUMINOUS CONCRETE SIDEWALK
NO SCALE



NOTES:
1. THE INTENT OF THIS ITEM IS TO PROVIDE A SMOOTH TRANSITION BETWEEN STRAIGHT GRANITE CURB AND SLOPE CURB WITHOUT REQUIRING FIELD CHIPPING DURING INSTALLATION. THE SLOPE CURB MAY REQUIRE ADJUSTMENTS TO MEET THE TRANSITION PIECE HEIGHT. TRANSITION SLOPE CURB TO STANDARD REVEAL AS QUICKLY AS POSSIBLE TO PROVIDE FOR THIS SMOOTH TRANSITION.

CURB TRANSITIONS
NO SCALE

Plot: C:\cad\02\0604
 Project On: Mar 03, 2021 09:37am By: NSC
 Tighe & Bond: I:\A\U\135_048_South Drive Drawings_Eigenes\AutoCAD\U-0135-048-C-DTLS.dwg



PERMIT DRAWINGS

SOUTH DRIVE

University of New Hampshire

Tax Map: 13
Block: 7
Lot Number: 2UNH

Durham, NH

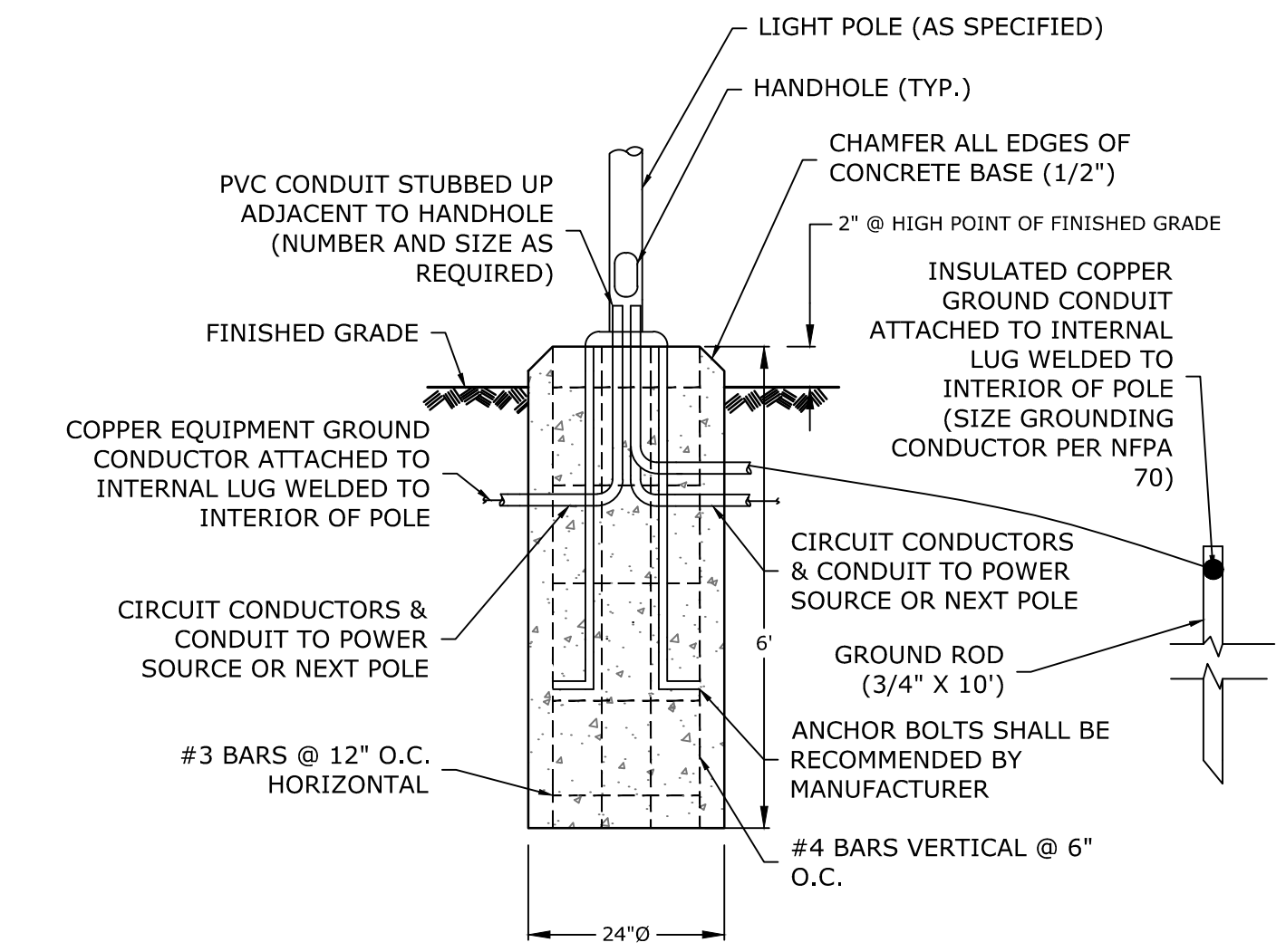
0 3/3/21 NHDES Wetlands Application

PROJECT NO: U-0135-048
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DRAWN BY: NSC/BKC
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DETAILS SHEET

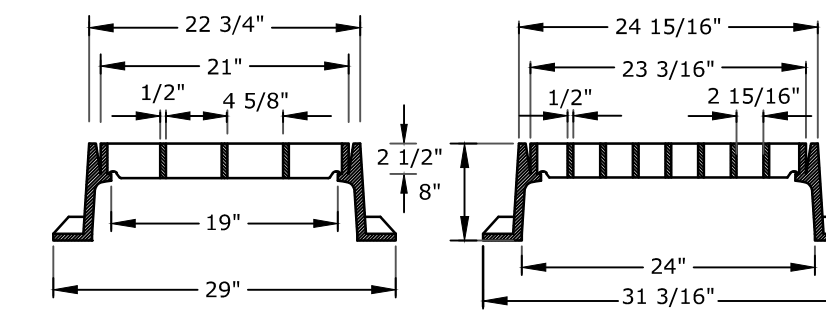
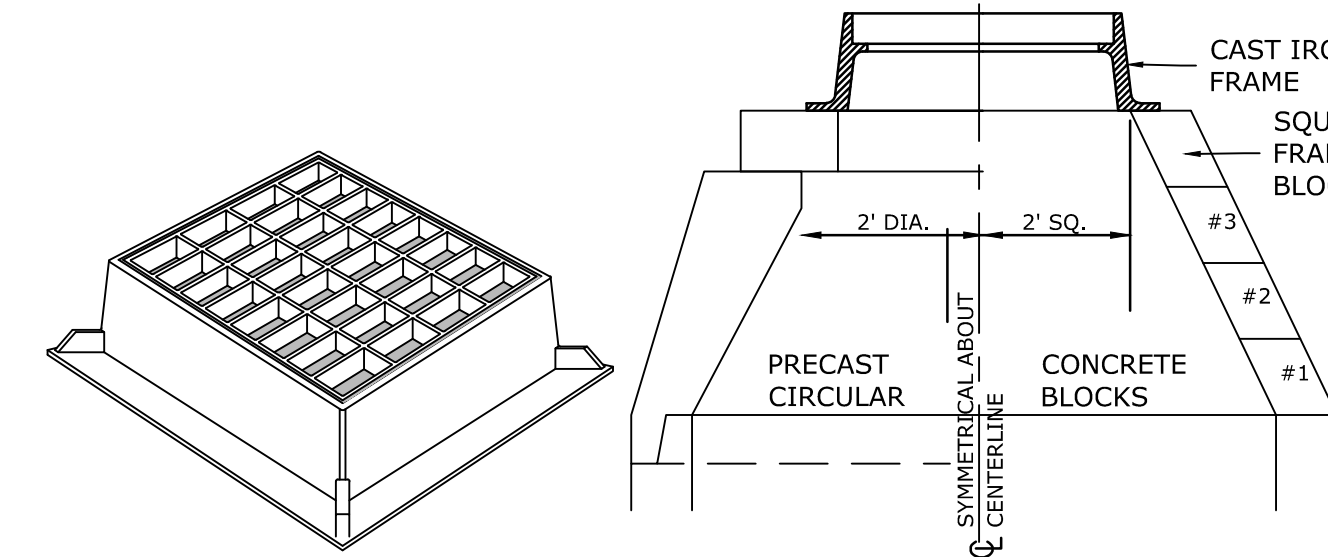
SCALE: AS SHOWN

C.704



- NOTES:**
1. CONCRETE TO BE CLASS AAA, 4000 PSI.
 2. LIGHT POLE AND FIXTURE SHALL BE MCGRAW-EDISON TALON MEDIUM LED MODEL NUMBER TLM-E02-LED-E1-SL3 / SS54A205FM1 (20 AFC).
 3. CONTRACTOR TO VERIFY BOLT TEMPLATE AND ANCHOR BOLT SIZE WITH POLE MANUFACTURER.

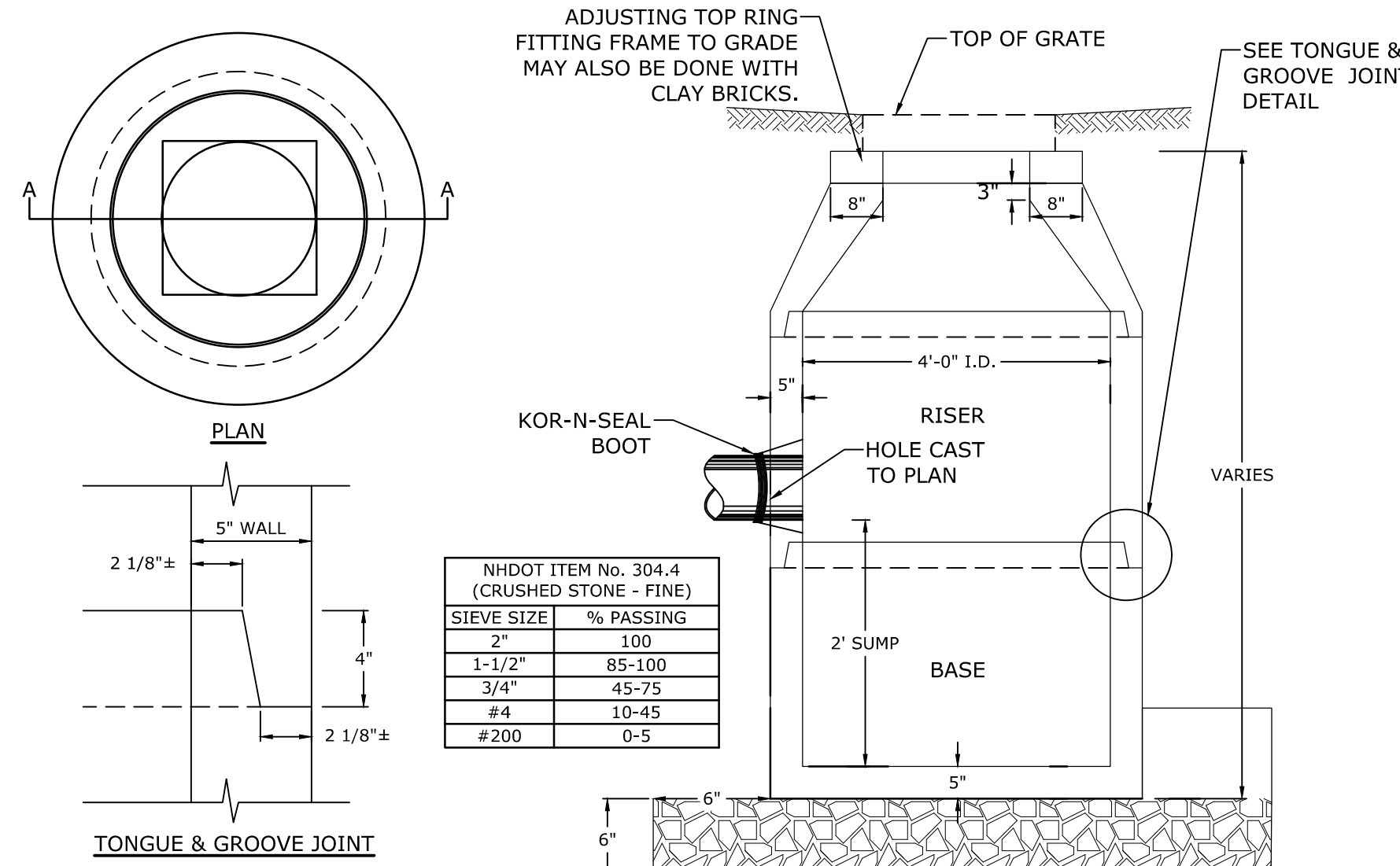
LIGHT POLE BASE
NO SCALE



CATALOG NUMBER	GRATE TYPE	SQ. FEET OPEN	WEIR PERIMETER LINEAR FEET
R-3570	A	2.4	7.4

NOTE:
FRAME AND GRATE SHALL BE NEENAH FOUNDRIES MODEL NUMBER R-3570.

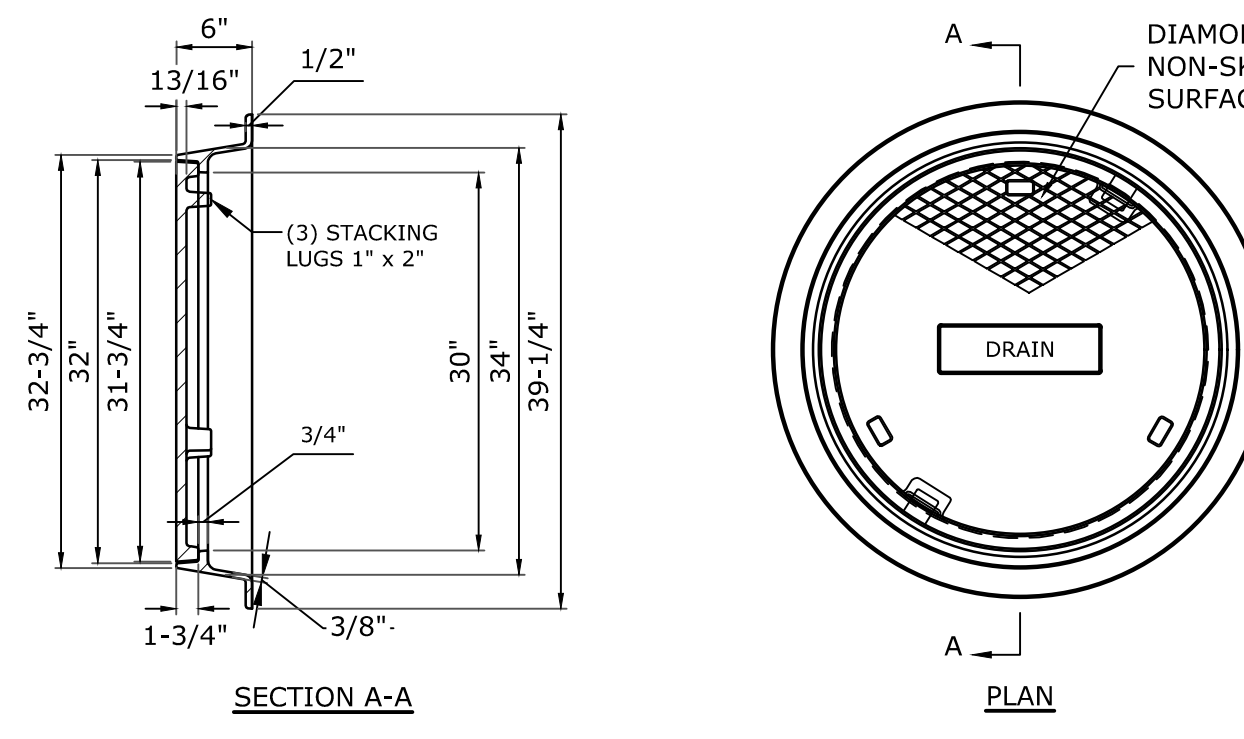
CATCH BASIN FRAME & GRATE
NO SCALE



NHDOT ITEM No. 304.4 (CRUSHED STONE - FINE)		
SIEVE SIZE	% PASSING	
2"	100	
1-1/2"	85-100	
3/4"	45-75	
#4	10-45	
#200	0-5	

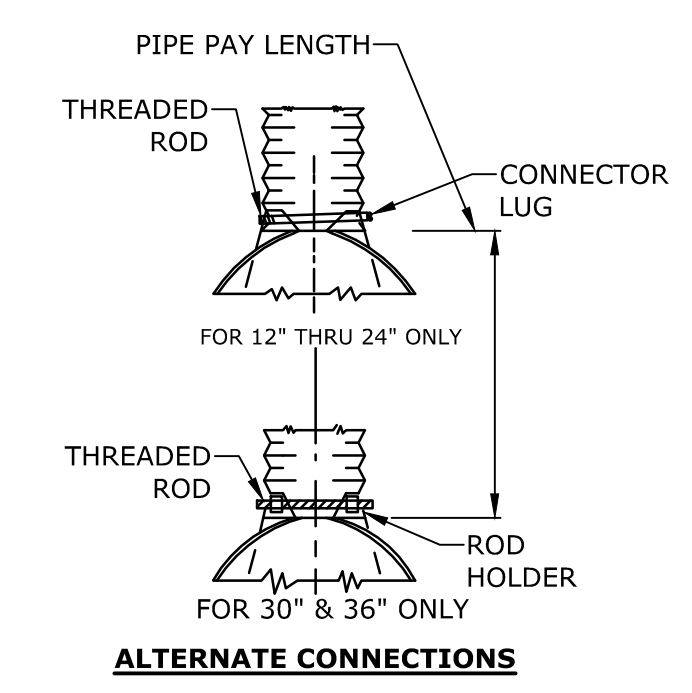
- NOTES:**
1. ALL SECTIONS SHALL BE CONCRETE CLASS AAA (4000 PSI).
 2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF WALL.
 3. THE TONGUE AND GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL 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 DESIGN FOR H2O LOADING.
 6. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.

DEEP SUMP CATCH BASIN
NO SCALE

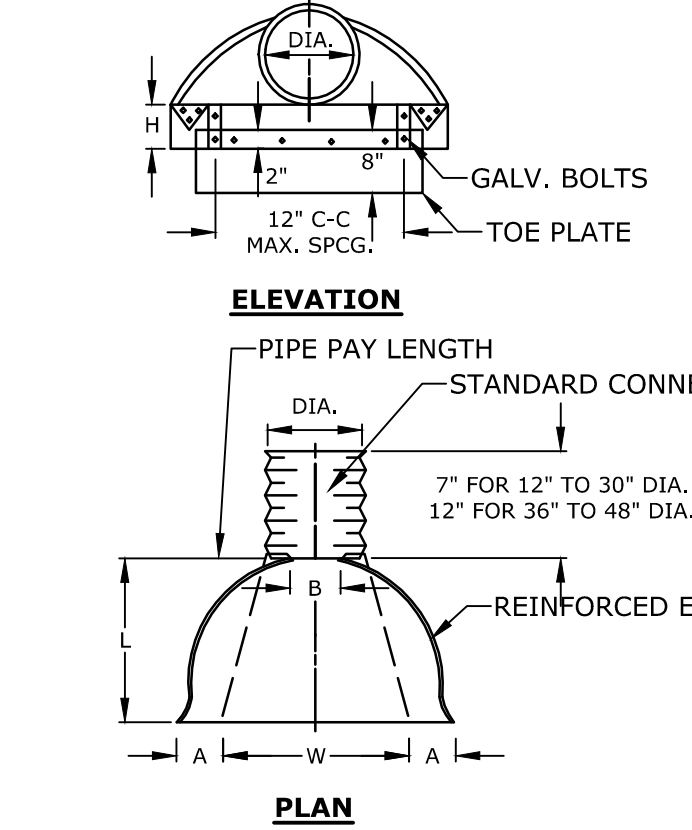


- NOTES:**
1. ALL DIMENSIONS ARE NOMINAL.
 2. FRAMES USING NARROWER DIMENSIONS FOR THICKNESS ARE ALLOWED PROVIDED:
 - 2.A. THE FRAMES MEET OR EXCEED THE SPECIFIED LOAD RATING.
 - 2.B. THE INTERIOR PERIMETER (SEAT AREA) DIMENSIONS OF THE FRAMES REMAIN THE SAME TO ALLOW CONTINUED USE OF EXISTING GRATES/COVERS AS THE EXISTING FRAMES ALLOW, WITHOUT SHIMS OR OTHER MODIFICATIONS OR ACCOMMODATIONS.
 - 2.C. ALL OTHER PERTINENT REQUIREMENTS OF THE SPECIFICATIONS ARE MET.
 3. LABEL TYPE OF MANHOLE WITH 3" HIGH LETTERS IN THE CENTER OF THE COVER.

DRAIN MANHOLE FRAME & COVER
NO SCALE



ALTERNATE CONNECTIONS

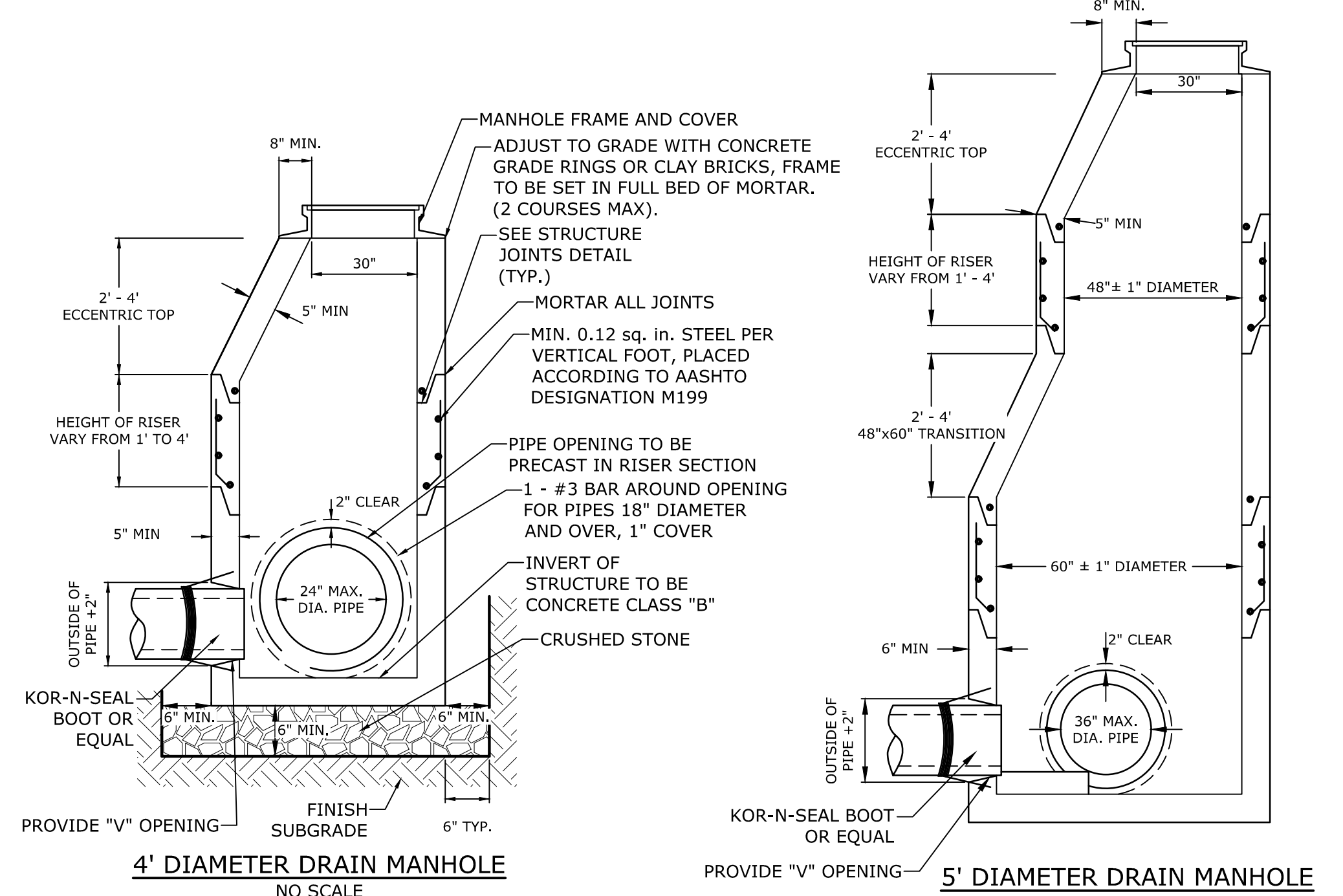


TYPICAL CROSS-SECTION

PIPE Ø	METAL GAGE	DIMENSIONS				
		A(1" TOL.)	B MAX	H(1" TOL.)	L(1" TOL.)	W(2" TOL.)
12"	16	6"	6"	6"	21"	24"
15"	16	7"	8"	6"	26"	30"
18"	16	8"	13"	6"	31"	36"
24"	16	10"	16"	6"	41"	48"
30"	14	12"	16"	8"	51"	60"
36"	14	14"	19"	9"	60"	72"
42"	12	16"	22"	11"	69"	84"
48"	12	18"	27"	12"	78"	90"

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

METAL FLARED END SECTION
NO SCALE

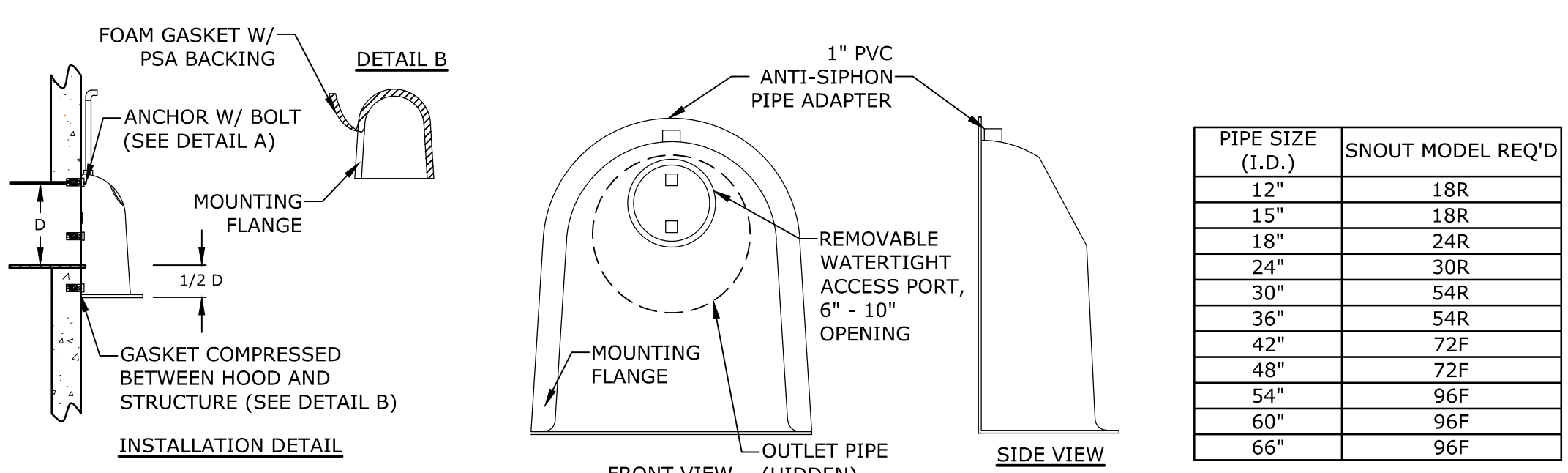


4' DIAMETER DRAIN MANHOLE
NO SCALE

5' DIAMETER DRAIN MANHOLE
NO SCALE

- NOTES:**
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
 2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF 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.

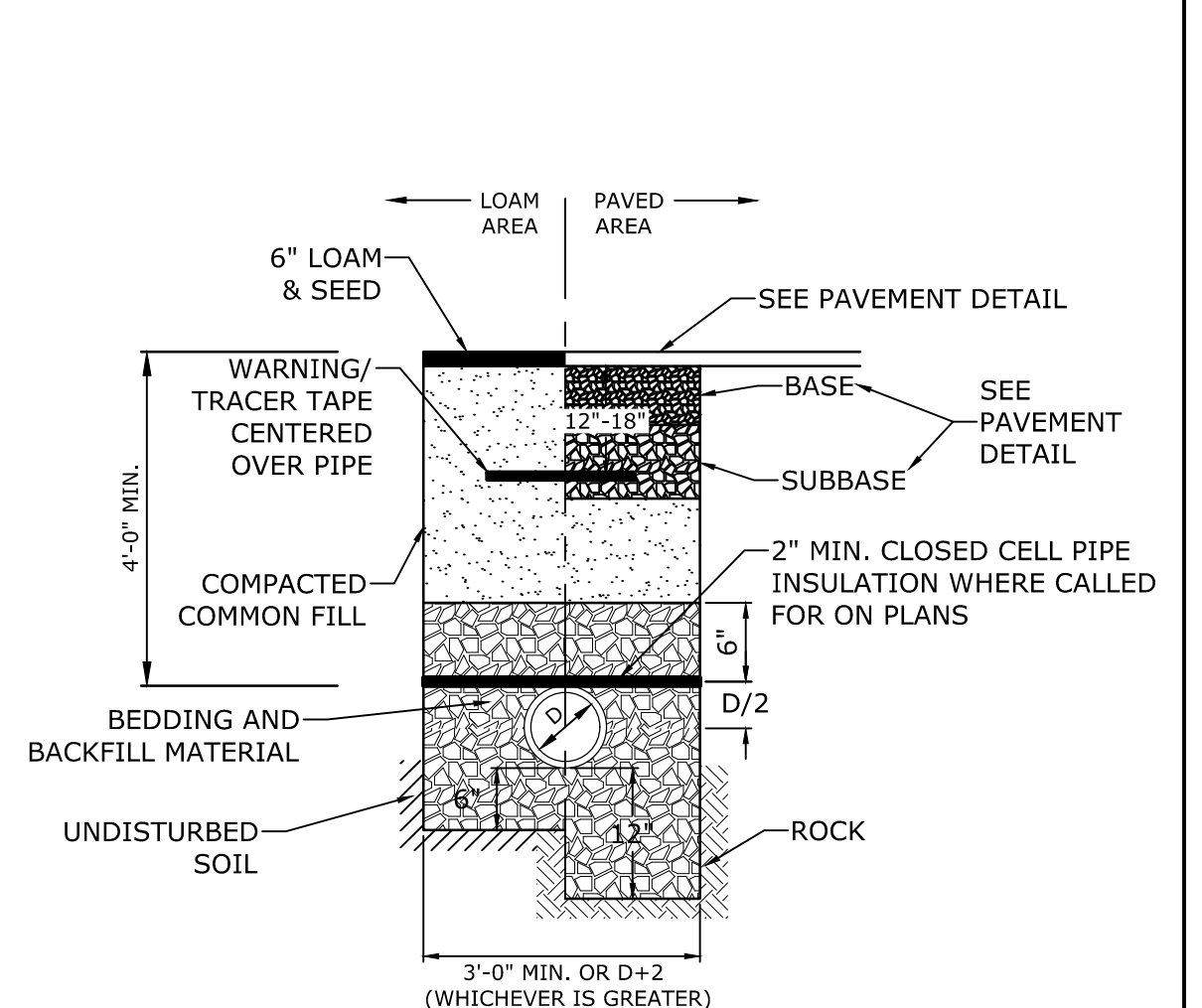
DRAIN MANHOLE
NO SCALE



PIPE SIZE (I.D.)	SNOUT MODEL REQ'D
12"	18R
15"	18R
18"	24R
24"	30R
30"	54R
36"	54R
42"	72F
48"	72F
54"	96F
60"	96F
66"	96F

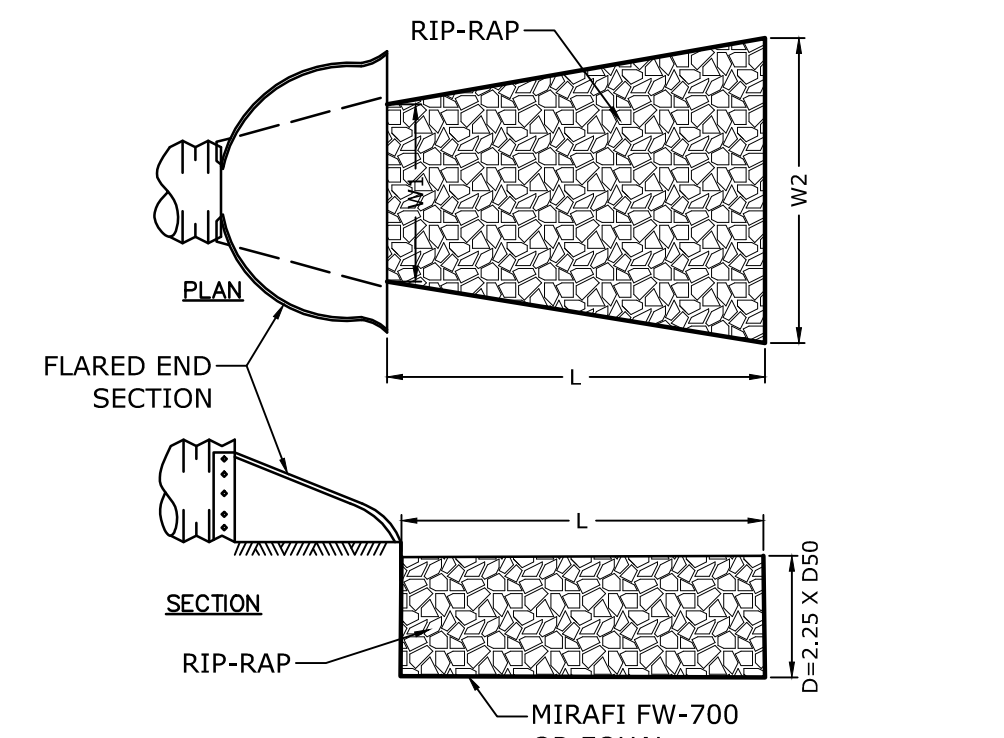
F=SQUARE STRUCTURE
R=CIRCULAR STRUCTURE

OIL-WATER-DEBRIS SEPARATOR
NO SCALE



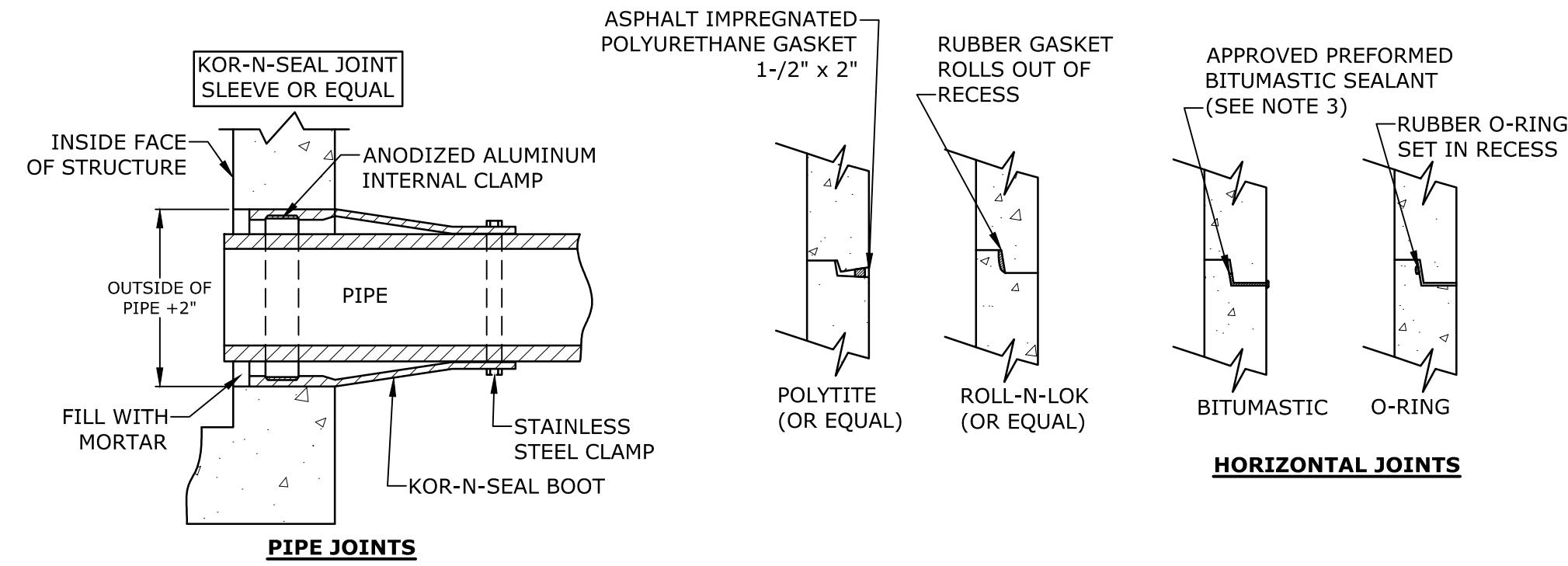
STORM DRAIN TRENCH
NO SCALE

- 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. CLOSED CELL INSULATION TO BE OWENS CORNING FOAMULAR 600 OR APPROVED EQUAL



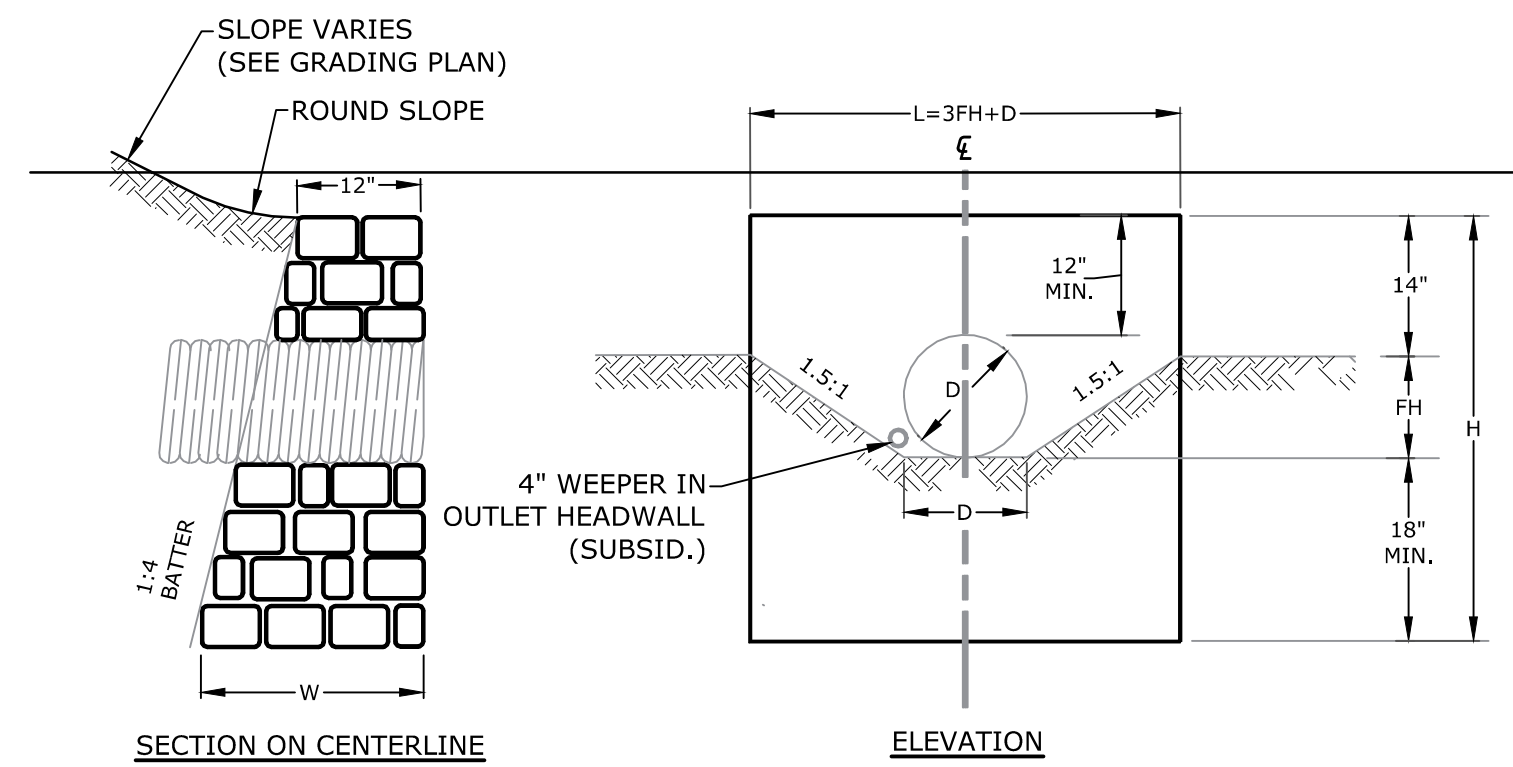
RIP-RAP APRON DETAIL
NO SCALE

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



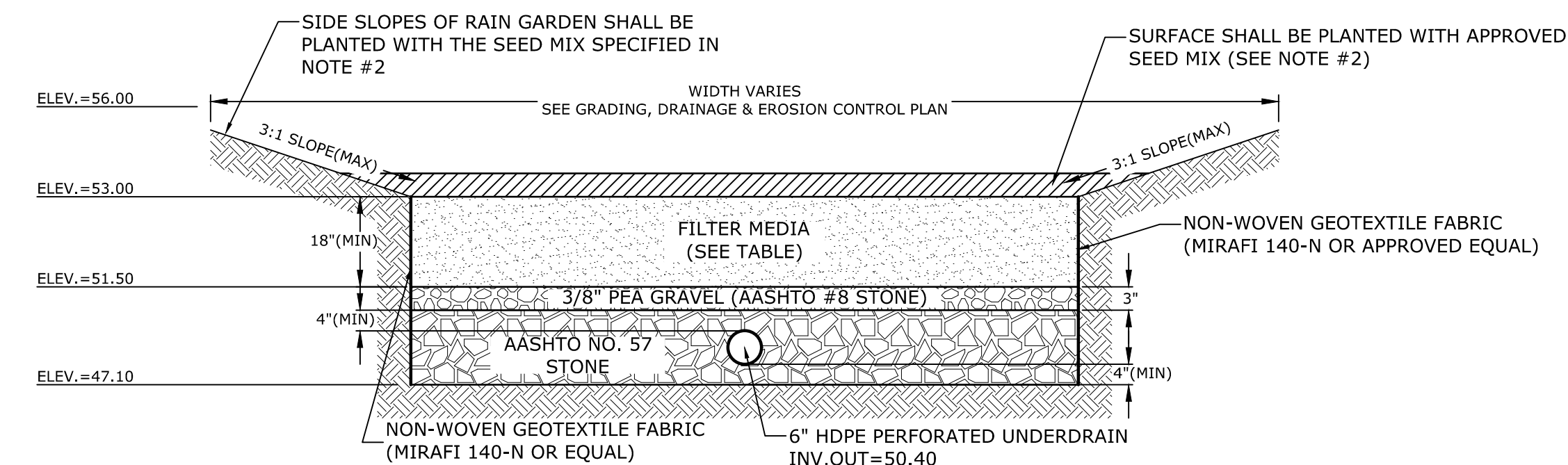
- PIPE JOINTS**
- NOTES:
- HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER TOWN OF DURHAM AND UNIVERSITY OF NEW HAMPSHIRE STANDARD AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW ELASTOMERIC OR MASTIC-LIKE GASKET.
 - PIPE TO MANHOLE JOINTS SHALL BE PER TOWN OF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

STRUCTURE JOINTS
NO SCALE



DIAMETER D INCHES	MASONRY PER FOOT OF WALL CU. YD.	MASONRY PER STANDARD HEADER CU. YD.	EXC. FOR 1' DEPTH CU. YD.	HEADER LENGTH L	HEADER HEIGHT H	FILL HEIGHT FH	WIDTH AT BOTTOM OF HEADER W	"L" HEADWALL	
								MASONRY IN CORNER FRUSTUM CU. YD.	EXC. FOR 1' DEPTH CU. YD.
12	0.186	0.61	0.798	3'-6"	3'-6"	0'-10"	1'-10 1/4"	0.28	1.057
15	0.202	0.85	0.947	4'-6"	3'-9"	1'-1"	1'-11 1/4"	0.31	1.232
18	0.222	1.13	1.111	5'-6"	4'-0"	1'-4"	2'-0"	0.35	1.406
24	0.260	1.78	1.451	7'-6"	4'-6"	1'-10"	2'-1 1/2"	0.42	1.776

MORTAR RUBBLE MASONRY HEADWALL
NO SCALE



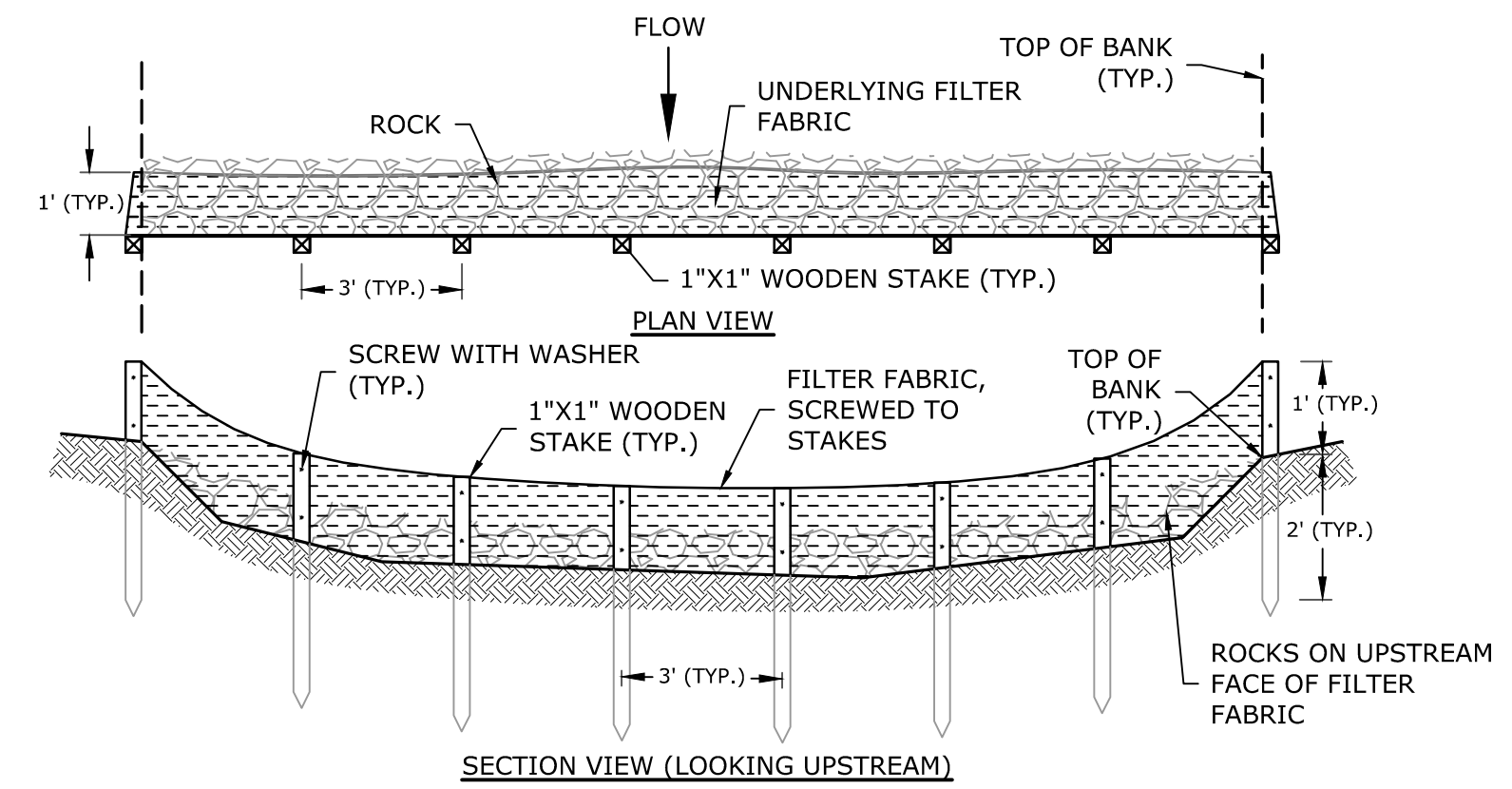
- NOTES:
- BARK MULCH SHALL BE AGED A MINIMUM OF 12 MONTHS AND SHALL NOT FLOAT.
 - RAIN GARDEN SURFACE AND EMBANKMENTS SHALL BE SEEDDED USING NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES FROM NEW ENGLAND PLANTS (NEWPCOM) OR EQUIVALENT AT A RATE OF AT LEAST 35 LB/AC. THE MIX SHALL BE APPLIED BY HYDRO-SEEDER WITH TACKIFIER AND MULCH. SEED SHALL BE APPLIED BETWEEN APRIL 20th AND MAY 30th, OR BETWEEN AUGUST 15th AND SEPTEMBER 10th. LATE FALL AND WINTER DORMANT SEEDING SHALL BE APPLIED AT A MINIMUM RATE OF 50 LB/AC.
 - RAIN GARDENS SHALL NOT BE PLACED INTO SERVICE UNTIL THE PRACTICE HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
 - DO NOT TRAFFIC EXPOSED SOIL SURFACES WITH CONSTRUCTION EQUIPMENT. CONTRACTOR SHALL KEEP ALL EXCAVATION EQUIPMENT OUTSIDE OF THE LIMIT OF THE RAIN GARDEN.
 - SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR LOCATIONS, LAYOUTS, AND ELEVATIONS.
 - THE SAND PORTION OF THE FILTER MEDIA SHALL MEET THE FOLLOWING GRADATION (ASTM C-33):

SIEVE SIZE	PERCENT PASSING
1/4"	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#50	5-30
#100	0-10

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

FILTER MEDIA COMPOSITION:			
COMPONENT MATERIAL	PERCENT OF MIXTURE BY VOLUME	SIEVE NO.	GRADATION OF MATERIAL PERCENT PASSING
ASTM C-33 CONCRETE SAND	50-55		SEE NOTE #6
LOAMY SAND TOPSOIL	20-30	200	15-25
MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH	20-30	200	5 MAX.

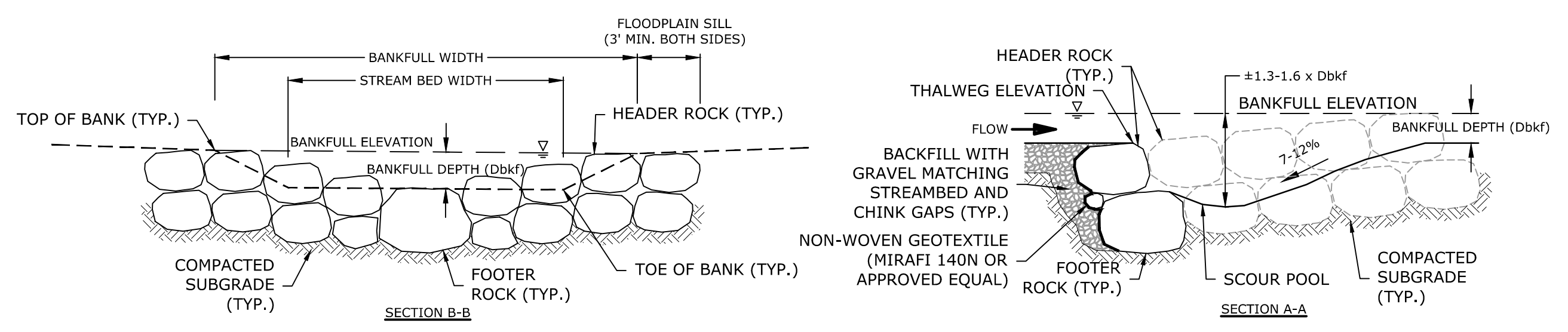
RAIN GARDEN CROSS SECTION
NO SCALE



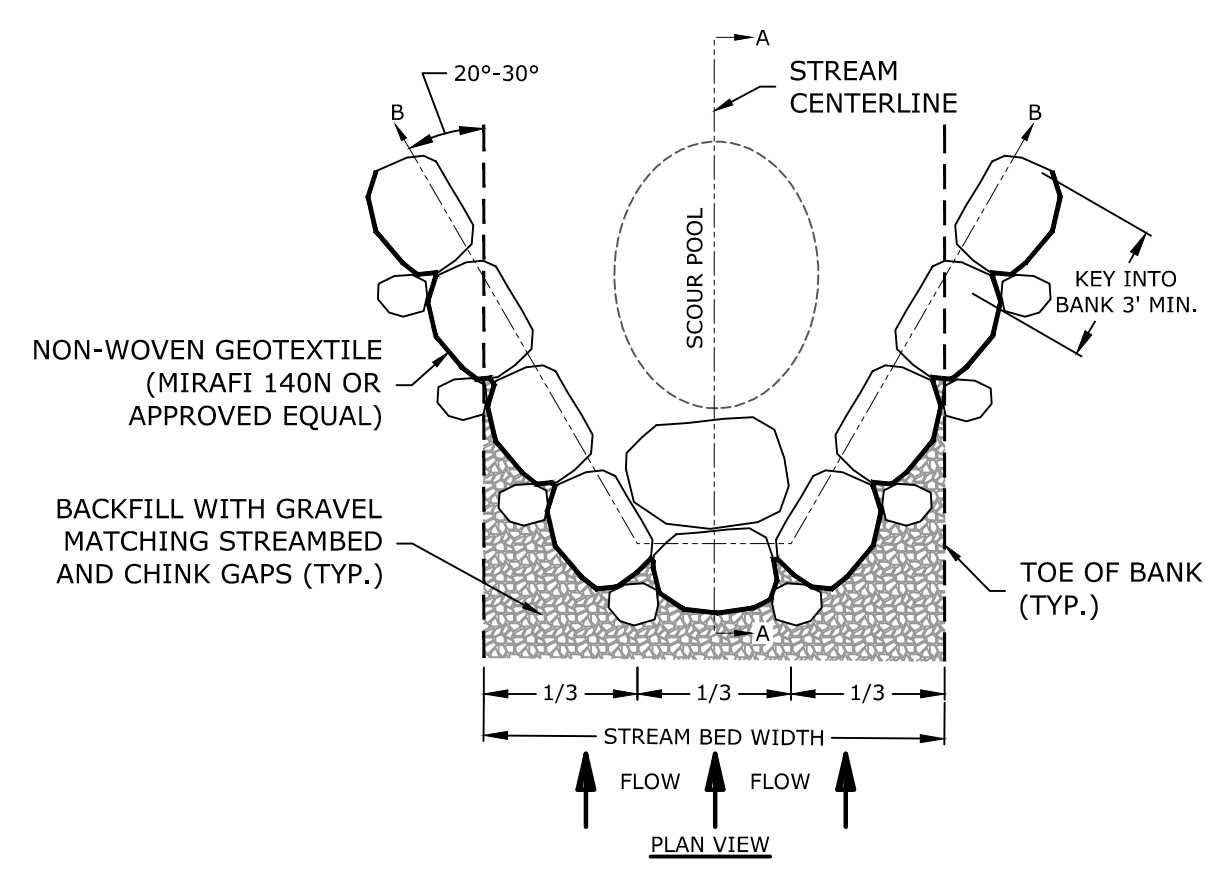
- MATERIALS:**
- THE SEDIMENT CURTAIN SHALL BE COMPOSED OF:
- FILTER FABRIC (MIRAFI 140N OR APPROVED EQUAL)
 - BOTTOM ANCHORING WEIGHT (STONE)
 - ANCHORING POSTS (WOODEN STAKES)
 - AND SECURING MECHANISM (SCREWS, ZIP TIES)
 - ROCK (RIPRAP: D50=6")

- CONSTRUCTION DETAILS:**
- INSTALLATION
 - THE SEDIMENT CURTAIN SHALL BE INSTALLED WHERE SHOWN ON THE PLANS.
 - STAKES (1 in BY 1 in) SHALL BE INSTALLED FROM ONE BANK TO THE OTHER, ON 3 ft CENTERS. STAKES SHALL BE DRIVEN AT LEAST 2 ft INTO THE GROUND, AND BE EXPOSED NO MORE THAN 12 in WHERE THEY ARE IN WATER.
 - A SCREW WITH WASHER SHALL CONNECT THE GEOTEXTILE TO THE STAKES (STAKES ON THE DOWNSTREAM SIDE OF THE FABRIC). SCREWS POSITIONED 6 in ON CENTERS. AT THE TOP OF THE STAKES, CABLE TIES MAY BE USED IF NEEDED TO FASTEN A FLAP OF GEOTEXTILE OVER THE TOP OF THE STAKE.
 - AT THE STREAMBED, A GEOTEXTILE FLAP SHALL EXTEND AT LEAST 1 ft UPSTREAM OF THE STAKES. STONE SHALL SIT ON THIS FLAP TO ANCHOR THE GEOTEXTILE TO THE BED.
 - MAINTENANCE
 - THE SEDIMENT CURTAIN SHALL BE INSPECTED DAILY, WITH ADDITIONAL MONITORING OF PERFORMANCE DURING STORMS OR SIGNIFICANT FLOW EVENTS.
 - BED LOAD SEDIMENT ESCAPING THE DOWNSTREAM-MOST SEDIMENT CURTAIN SHALL CONSTITUTE INADEQUATE PERFORMANCE. THE CONTRACTOR SHALL IMMEDIATELY MODIFY, ADJUST, REPAIR OR REPLACE THE SEDIMENT CURTAIN TO CORRECT INADEQUACIES.
 - THE SEDIMENT CURTAIN SHALL BE REMOVED EITHER WHEN MORE THAN 0.25 in OF RAIN IS FORECAST OR HAS FALLEN IN A 4 hr - OR SHORTER - PERIOD; OR WHEN IN-STREAM CONSTRUCTION ACTIVITIES WILL CEASE FOR MORE THAN 16 hrs (E.G. OVER WEEKENDS).
 - THE SEDIMENT CURTAIN SHALL REMAIN IN PLACE UNTIL THE PROTECTED CONSTRUCTION ACTIVITIES HAVE CEASED AND THE TURBIDITY OF THE WATER ENCLOSED IS REDUCED TO ACCEPTABLE LEVELS. THE CURTAIN SHALL BE REMOVED WITHIN 72 HOURS OF THIS CONDITION BEING MET.

IN-STREAM SEDIMENT CURTAIN
NO SCALE



- SINGLE ROCK VANE CONSTRUCTION SEQUENCE:**
- EXCAVATE A TRENCH FOR THE VANE.
 - SET THE FOOTER ROCKS.
 - SET THE HEADER ROCKS.
 - EXCAVATE A TRENCH FOR THE GEOTEXTILE FABRIC ON THE UPSTREAM SIDE OF THE VANE. THE TRENCH SHALL BE AT LEAST 3' DEEP.
 - INSTALL NON-WOVEN GEOTEXTILE (MIRAFI 140N OR APPROVED EQUAL) UPSTREAM OF ROCK CROSS VANE FROM THE TOP OF THE TOP ROCK TO THE BOTTOM OF THE FOOTER ROCK AND EXTEND TO THE END OF BOTH ROCK VANES.
 - BACKFILL THE UPSTREAM SIDE OF THE VANE WITH GRAVEL MATCHING STREAMBED MATERIAL.
 - EXCAVATE A SILL TRENCH (MINIMUM LENGTH OF 3') AT THE BANK-END OF THE VANE.
 - CONSTRUCT THE SILL: CONTINUE ROCK VANE FOR MINIMUM OF 3' INTO SILL TRENCH, COVER WITH GEOTEXTILE (MIRAFI 140N OR APPROVED EQUAL), AND BACKFILL.
 - WEAVE ONE CONTINUOUS GEOTEXTILE ALONG VANE AND SILL.



- GENERAL NOTES:**
- FOOTER ROCKS SHALL BE ROUNDED STONE WITH BOULDERS NO SMALLER THAN 18" AND WITH AN AVERAGE SIZE OF AT LEAST 24".
 - HEADER ROCKS SHALL BE ROUNDED STONE WITH BOULDERS NO SMALLER THAN 12" AND WITH AN AVERAGE SIZE OF AT LEAST 18"
 - VANE ARM ROCKS SHALL BE KEYPED INTO THE BANK WITH A SILL OF A MINIMUM LENGTH OF 3'.
 - INSTALL NON-WOVEN GEOTEXTILE (MIRAFI 140N OR APPROVED EQUAL) UPSTREAM OF ROCK CROSS VANE FROM THE TOP OF THE TOP ROCK TO THE BOTTOM OF THE FOOTER ROCK AND EXTEND A MINIMUM OF 1' BEYOND TOP OF BANK ON BOTH SIDES OF STREAM.
 - SET THE ELEVATION OF THE TOP OF THE ROCK VANE TO THE DESIGNED THALWEG (CENTERLINE) ELEVATION OF THE STREAMBED.
 - SCOUR POOLS SHALL BE $\pm 1.3-1.6 \times$ THE BANKFULL DEPTH.

ROCK CROSS VANE
NO SCALE



PERMIT DRAWINGS

SOUTH DRIVE
University of New Hampshire

Tax Map: 13
Block: 7
Lot Number: 2UNH
Durham, NH

Mark	Date	Description
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DETAILS SHEET

SCALE: AS SHOWN

C.705

