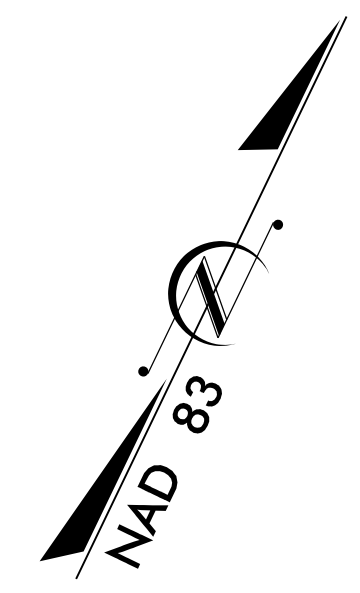
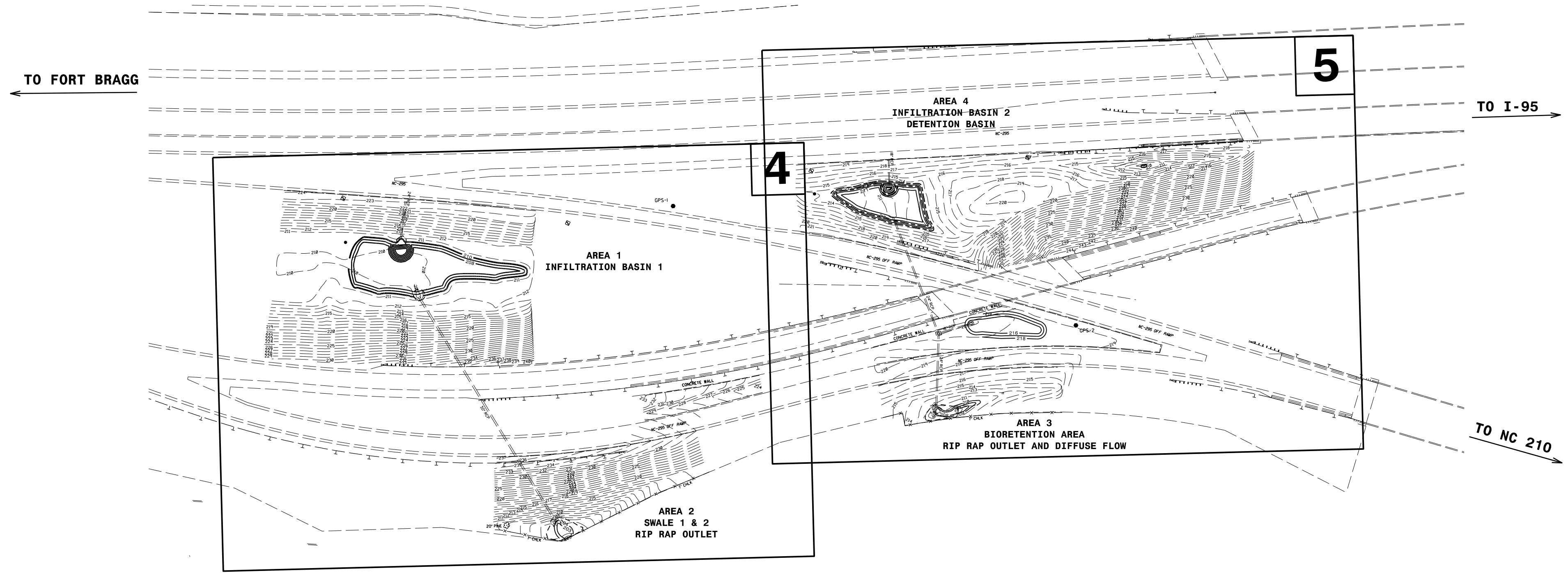
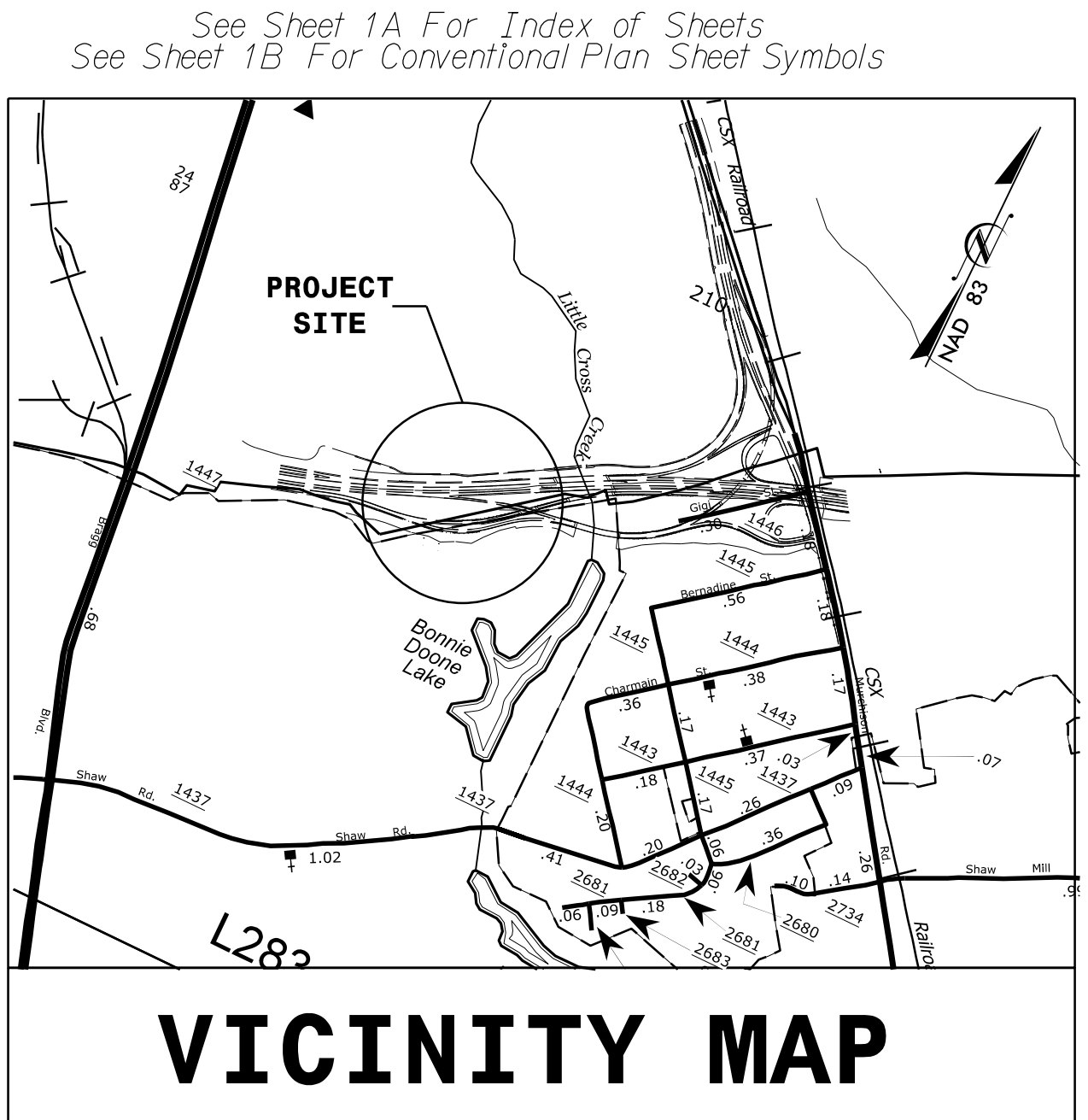
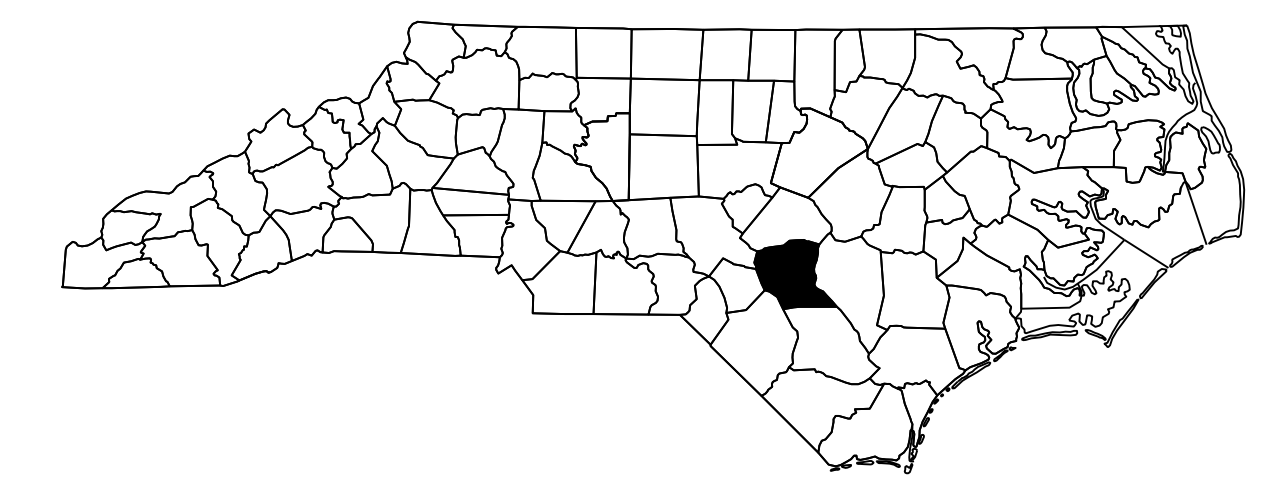


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4436FD	1	17
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34625.2.70	STP-0295(004)		

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CUMBERLAND COUNTY

LOCATION: NC-295 at Little Cross Creek

TYPE OF WORK: RETROFIT STORMWATER CONTROL MEASURES INCLUDING; GRADING, DRAINAGE, RIP RAP PLACEMENT, EROSION CONTROL, GUARDRAIL AND TRAFFIC CONTROL



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

SCALE VARIES
SEE PLANS

NCDOT CONTACT:
BRIAN LIPSCOMB, PE
HIGHWAY STORMWATER PROGRAM

REVISION SCHEDULE:
30% DESIGN SUBMITTAL - 01/20/17
90% DESIGN SUBMITTAL - 02/10/17
100% DESIGN SUBMITTAL - 03/21/17

Plans Prepared for NCDOT by:
AMEC Foster Wheeler Environment & Infrastructure, Inc.
4021 Stirrup Creek Drive, Suite 100
Durham, North Carolina 27703
NC Engineering F-1253 NC Geology C-247
(919) 381-9900

2012 STANDARD SPECIFICATIONS

BRIAN C. LOWTHER, PE
PROJECT ENGINEER

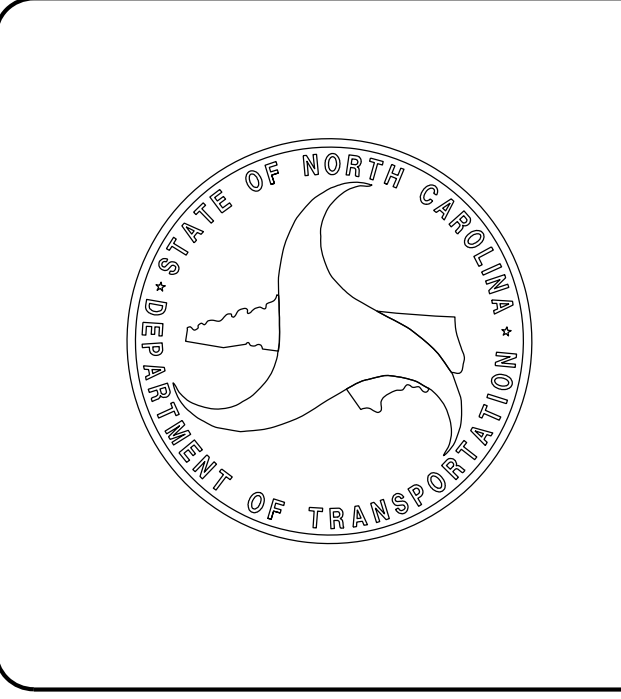
BRIAN C. LOWTHER, PE
PROJECT DESIGN ENGINEER

LETTING DATE:
JUNE 7, 2017

PROJECT ENGINEER

BRIAN C. LOWTHER 3/21/17

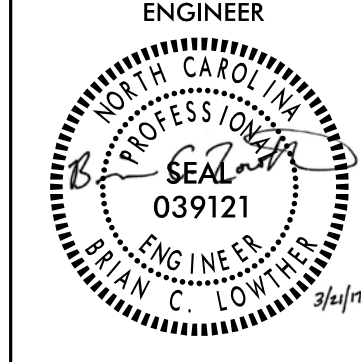
Brian C. Lowther
SIGNATURE: P.E.



CONTRACT: R-4436FD TIP PROJECT: DF00154

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8/17/99
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PROJECT REFERENCE NO. R-4436FD	SHEET NO. 1A
PROJECT ENGINEER 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

STANDARD DRAWINGS LIST

2012 ROADWAY ENGLISH STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" HIGHWAY DESIGN BRANCH - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., JANUARY, 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED PART OF THESE PLANS.

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	METHOD OF CLEARING - METHOD II

DIVISION 8 - INCIDENTALS	
840.66	DRAINAGE STRUCTURE STEPS
850.01	CONC. PAVED DITCHES

DIVISION 11 - WORK ZONE TRAFFIC CONTROL	
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURE
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1150.01	FLAGGING DEVICES

DIVISION 16 - EROSION CONTROL AND ROADSIDE DEVELOPMENT	
1605.01	TEMPORARY SILT FENCE
1606.01	SPECIAL SEDIMENT CONTROL FENCE
1632.02	ROCK INLET SEDIMENT TRAP TYPE B
1633.01	TEMPORARY ROCK SILT CHECK TYPE A
1633.02	TEMPORARY ROCK SILT CHECK TYPE B
1635.01	ROCK PIPE INLET SEDIMENT TRAP TYPE A

GENERAL NOTES:

SURVEY

LOCATIONS AND ELEVATIONS SHOULD BE FIELD VERIFIED. CONSULT WITH ENGINEER IF SIGNIFICANT DEVIATIONS FROM THE PLAN ARE REQUIRED

UTILITIES

THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATIONS AS TO THE LOCATION OF UTILITIES. EXISTING UTILITIES AND STRUCTURES UNDERGROUND, SURFACE, OR OVERHEAD) ARE INDICATED ONLY TO THE EXTENT THAT SUCH INFORMATION WAS KNOWN, MADE AVAILABLE TO, OR DISCOVERED BY THE ENGINEER IN PREPARING THE DRAWINGS. THE LOCATIONS, CONFIGURATIONS, AND ELEVATIONS OF SUBSURFACE FACILITIES AND UTILITIES ARE APPROXIMATE, AND NOT ALL UTILITIES AND FACILITIES MAY BE INDICATED.

GRADING

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED OR FUTURE SURFACING AT GRADE POINTS SHOWN ON THE PLANS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

TRAFFIC CONTROL

USE APPROPRIATE STANDARDS PER DIVISION 11 AS REQUIRED TO COMPLETE WORK. COORDINATE TRAFFIC CONTROL WITH THE DIVISION.

SHEET NUMBER	INDEX OF SHEETS
	INDEX OF SHEETS
	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEET
2B-1 THRU 2B-4	DETAILS
3B/3D	ROADWAY EARTHWORK, DRAINAGE AND EROSION CONTROL SUMMARIES
4 THRU 5	PLAN SHEETS
TC-1 THRU TC-3	TRAFFIC MANAGEMENT PLANS
EC-1 THRU EC-3	EROSION CONTROL PLANS

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

12/2/2016

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Computed Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	⑩ 23
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	--- WLB ---
Proposed Wetland Boundary	WLB
Existing Endangered Animal Boundary	--- EAB ---
Existing Endangered Plant Boundary	--- EPB ---
Existing Historic Property Boundary	--- HPB ---
Known Contamination Area: Soil	--- S ---
Potential Contamination Area: Soil	--- S ---
Known Contamination Area: Water	--- W ---
Potential Contamination Area: Water	--- W ---
Contaminated Site: Known or Potential	☠ ?

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	▬

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
Jurisdictional Stream	--- JS ---
Buffer Zone 1	--- BZ 1 ---
Buffer Zone 2	--- BZ 2 ---
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	▽
Proposed Lateral, Tail, Head Ditch	▬
False Sump	▽

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	◆
Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	◆
Exist Permanent Easement Pin and Cap	◇
New Permanent Easement Pin and Cap	◆
Vertical Benchmark	▲
Existing Right of Way Marker	△
Existing Right of Way Line	-----
New Right of Way Line	○ R W
New Right of Way Line with Pin and Cap	○ R W ▲
New Right of Way Line with Concrete or Granite R/W Marker	▲ R W
New Control of Access Line with Concrete C/A Marker	△ C/A
Existing Control of Access	△ C/A
New Control of Access	△ C/A
Existing Easement Line	--- E ---
New Temporary Construction Easement	--- E ---
New Temporary Drainage Easement	--- TDE ---
New Permanent Drainage Easement	--- PDE ---
New Permanent Drainage / Utility Easement	--- DUE ---
New Permanent Utility Easement	--- PUE ---
New Temporary Utility Easement	--- TUE ---
New Aerial Utility Easement	--- AUE ---

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	--- C ---
Proposed Slope Stakes Fill	--- F ---
Proposed Curb Ramp	--- CR ---
Existing Metal Guardrail	--- T ---
Proposed Guardrail	--- T ---
Existing Cable Guiderail	--- T ---
Proposed Cable Guiderail	--- T ---
Equality Symbol	⊕
Pavement Removal	▨

VEGETATION:

Single Tree	○
Single Shrub	○

Note: Not to Scale *S.U.E. = *Subsurface Utility Engineering*

Hedge	-----
Woods Line	-----
Orchard	○ ○ ○ ○
Vineyard	□ Vineyard

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	--- CONC ---
Bridge Wing Wall, Head Wall and End Wall	--- CONC WW ---
MINOR:	
Head and End Wall	--- CONC HW ---
Pipe Culvert	-----
Footbridge	--- ---
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	○ S
Storm Sewer	--- S ---

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	○ P
Power Line Tower	□
Power Transformer	▣
U/G Power Cable Hand Hole	○
H-Frame Pole	●
U/G Power Line LOS B (S.U.E.*)	--- P ---
U/G Power Line LOS C (S.U.E.*)	--- P ---
U/G Power Line LOS D (S.U.E.*)	--- P ---

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○ T
Telephone Pedestal	□
Telephone Cell Tower	⬇
U/G Telephone Cable Hand Hole	○
U/G Telephone Cable LOS B (S.U.E.*)	--- T ---
U/G Telephone Cable LOS C (S.U.E.*)	--- T ---
U/G Telephone Cable LOS D (S.U.E.*)	--- T ---
U/G Telephone Conduit LOS B (S.U.E.*)	--- TC ---
U/G Telephone Conduit LOS C (S.U.E.*)	--- TC ---
U/G Telephone Conduit LOS D (S.U.E.*)	--- TC ---
U/G Fiber Optics Cable LOS B (S.U.E.*)	--- T FO ---
U/G Fiber Optics Cable LOS C (S.U.E.*)	--- T FO ---
U/G Fiber Optics Cable LOS D (S.U.E.*)	--- T FO ---

WATER:

Water Manhole	○ W
Water Meter	○
Water Valve	⊗
Water Hydrant	○
U/G Water Line LOS B (S.U.E.*)	--- W ---
U/G Water Line LOS C (S.U.E.*)	--- W ---
U/G Water Line LOS D (S.U.E.*)	--- W ---
Above Ground Water Line	--- A/G Water ---

TV:

TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	○
U/G TV Cable LOS B (S.U.E.*)	--- TV ---
U/G TV Cable LOS C (S.U.E.*)	--- TV ---
U/G TV Cable LOS D (S.U.E.*)	--- TV ---
U/G Fiber Optic Cable LOS B (S.U.E.*)	--- TV FO ---
U/G Fiber Optic Cable LOS C (S.U.E.*)	--- TV FO ---
U/G Fiber Optic Cable LOS D (S.U.E.*)	--- TV FO ---

GAS:

Gas Valve	◇
Gas Meter	◇
U/G Gas Line LOS B (S.U.E.*)	--- G ---
U/G Gas Line LOS C (S.U.E.*)	--- G ---
U/G Gas Line LOS D (S.U.E.*)	--- G ---
Above Ground Gas Line	--- A/G Gas ---

SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	--- SS ---
Above Ground Sanitary Sewer	--- A/G Sanitary Sewer ---
SS Forced Main Line LOS B (S.U.E.*)	--- FSS ---
SS Forced Main Line LOS C (S.U.E.*)	--- FSS ---
SS Forced Main Line LOS D (S.U.E.*)	--- FSS ---

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	□
Utility Unknown U/G Line LOS B (S.U.E.*)	--- 7UTL ---
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	□ UST
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	○
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

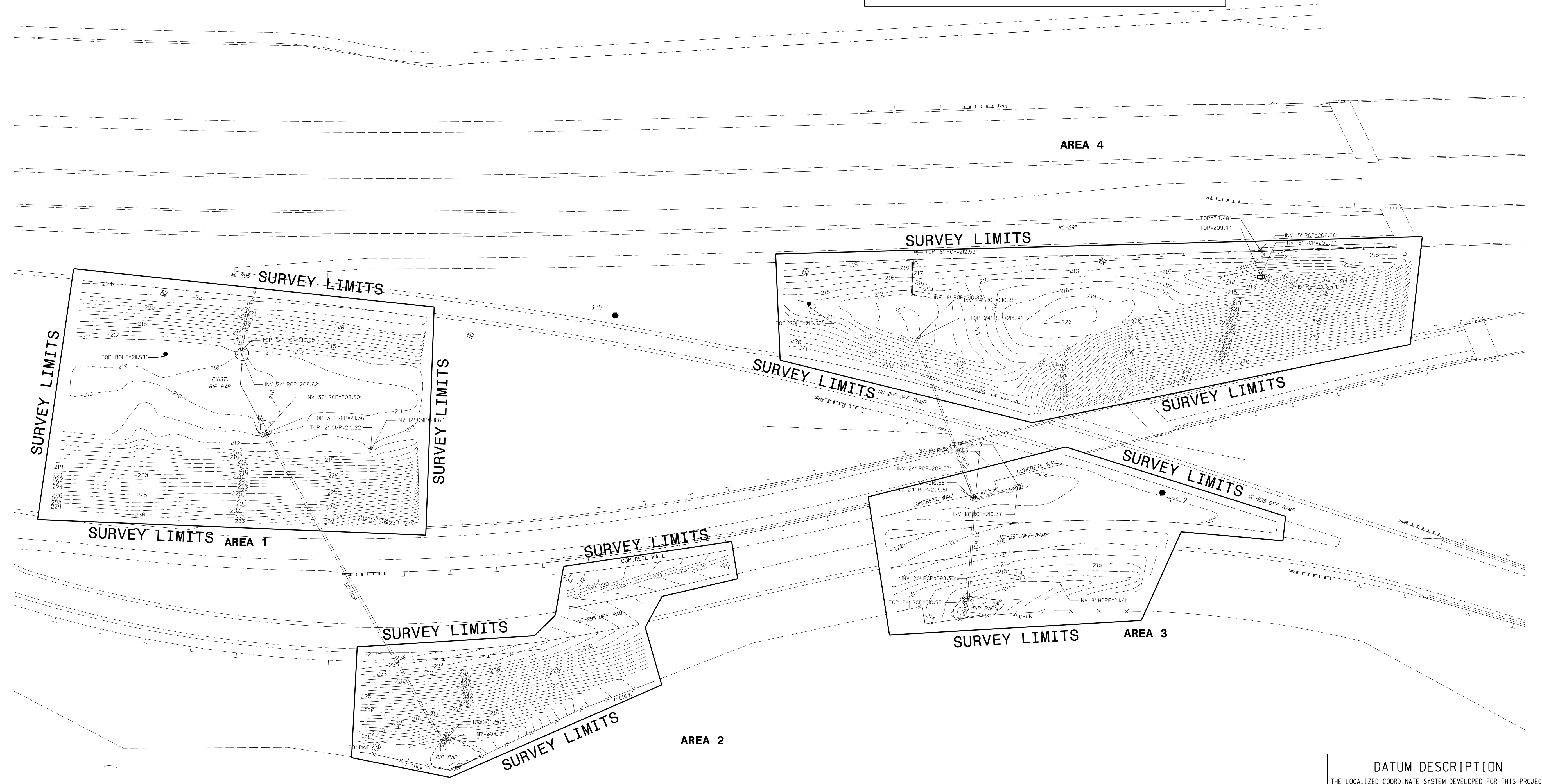
SURVEY CONTROL

EXISTING CONDITIONS SURVEY
 SITE COORDINATE CONTROL AND EXISTING CONDITIONS FOR PROJECT
 ARE FROM A TOPOGRAPHIC SURVEY PERFORMED IN DECEMBER OF 2016 BY:
 AMEC FOSTER WHEELER
 GEOMATICS GROUP

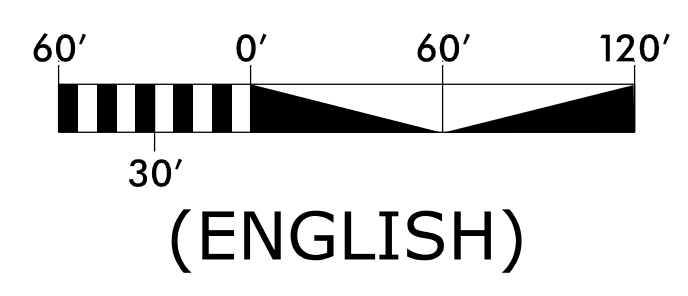
EXISTING ROAD
 EXISTING ROADWAY OUTSIDE OF THE SURVEY LIMITS WAS OBTAINED
 FROM THE TIP PROJECT X-0002B, PLAN SHEETS 5-7, SIGNED AND
 SEALED ON 03/17/09 AND SUPPLIED BY STV INCORPORATED.



PROJECT REFERENCE NO. R-4436FD	SHEET NO. IC-1
PROJECT ENGINEER 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
GPS-1	497588.146	2015501.599	221.697	GPS-1
GPS-2	497690.140	2016132.876	218.836	GPS-2



DATUM DESCRIPTION
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "X208"
 WITH NAD 83 STATE PLANE GRID COORDINATES OF
 NORTHING: 507897.725(±); EASTING: 2051616.472(±)
 ELEVATION: (±)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .999874791
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "X208" TO -L- STATION 49+80.00 IS
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NGVD 29

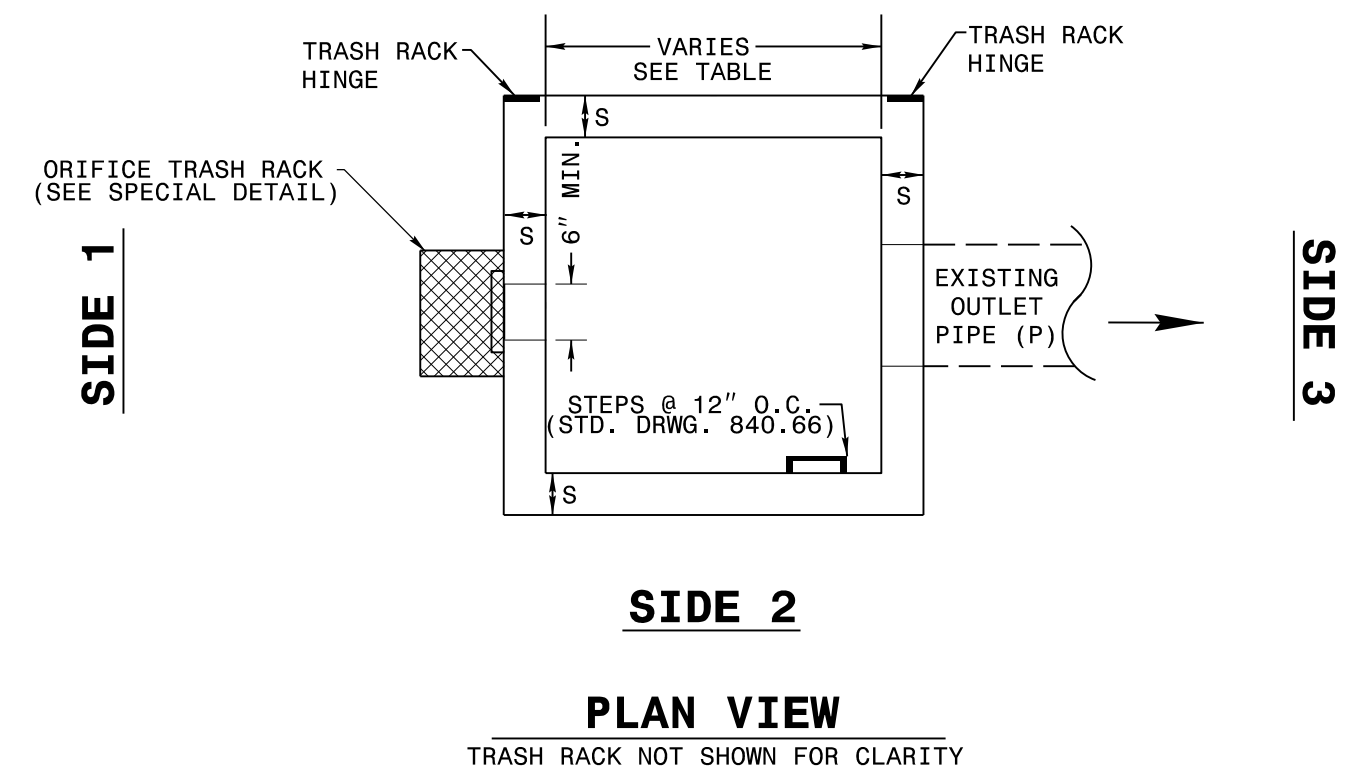
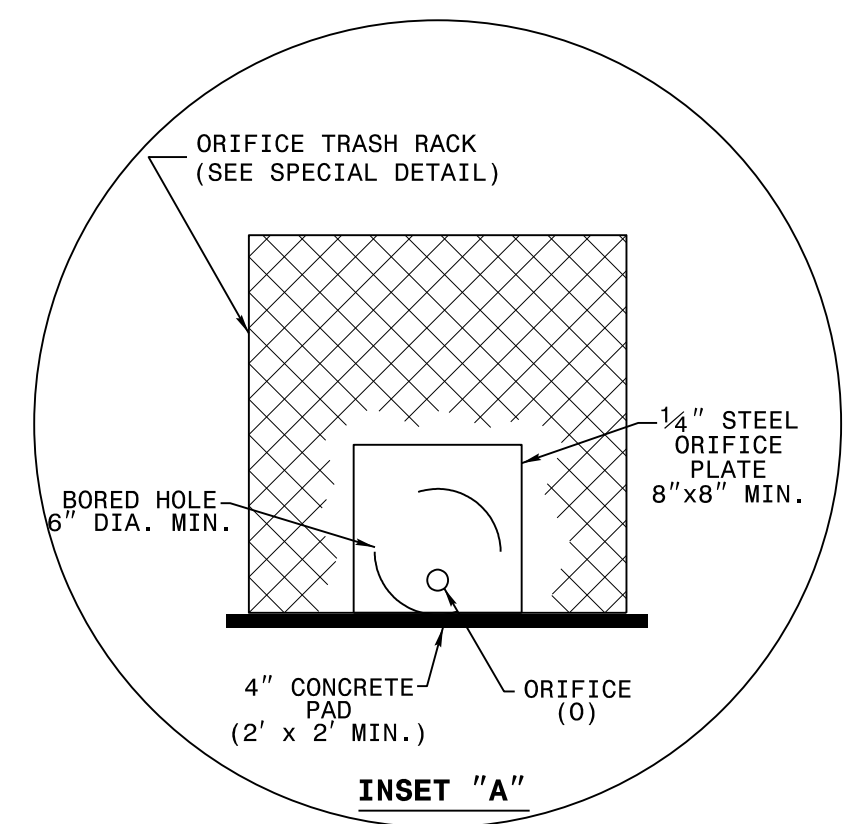
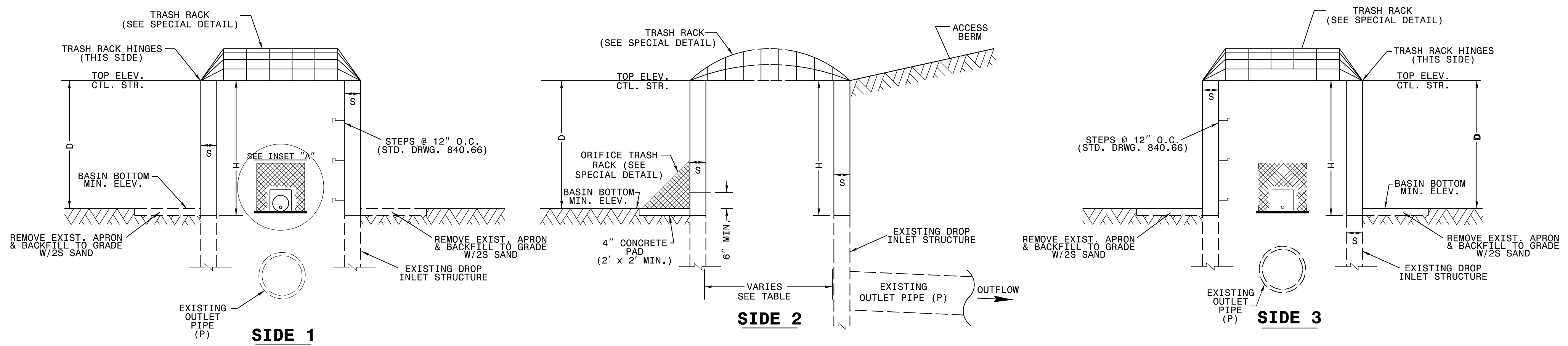
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PROJECT REFERENCE NO. R-4436FD	SHEET NO. 2B-1
PROJECT ENGINEER	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAILS




- NOTES:**
1. DEMO AND REMOVE EXISTING APRON AND GRATE.
 2. REMOVE EXISTING APRON AND GRATE. RAISE CONTROL STRUCTURE ON TOP OF EXISTING WITH PRECAST RISER SECTIONS OR BRICK.
 3. SEAL JOINTS WITH APPROVED SEALANT. SEE SECTION 840 OF THE STANDARD SPECIFICATIONS.
 4. TOP ELEVATION OF CONTROL STRUCTURE (WEIR ELEV. = 213.0') SET AT THE WOV ELEVATION.
 5. EXISTING OUTLET IS A 15" RCP DIAMETER PIPE WITH INVERT AT ELEV. 206.71'
 6. ENSURE TRASH RACK OPENS FREELY.

DRY DETENTION BASIN DRAWDOWN STRUCTURE
NOT TO SCALE

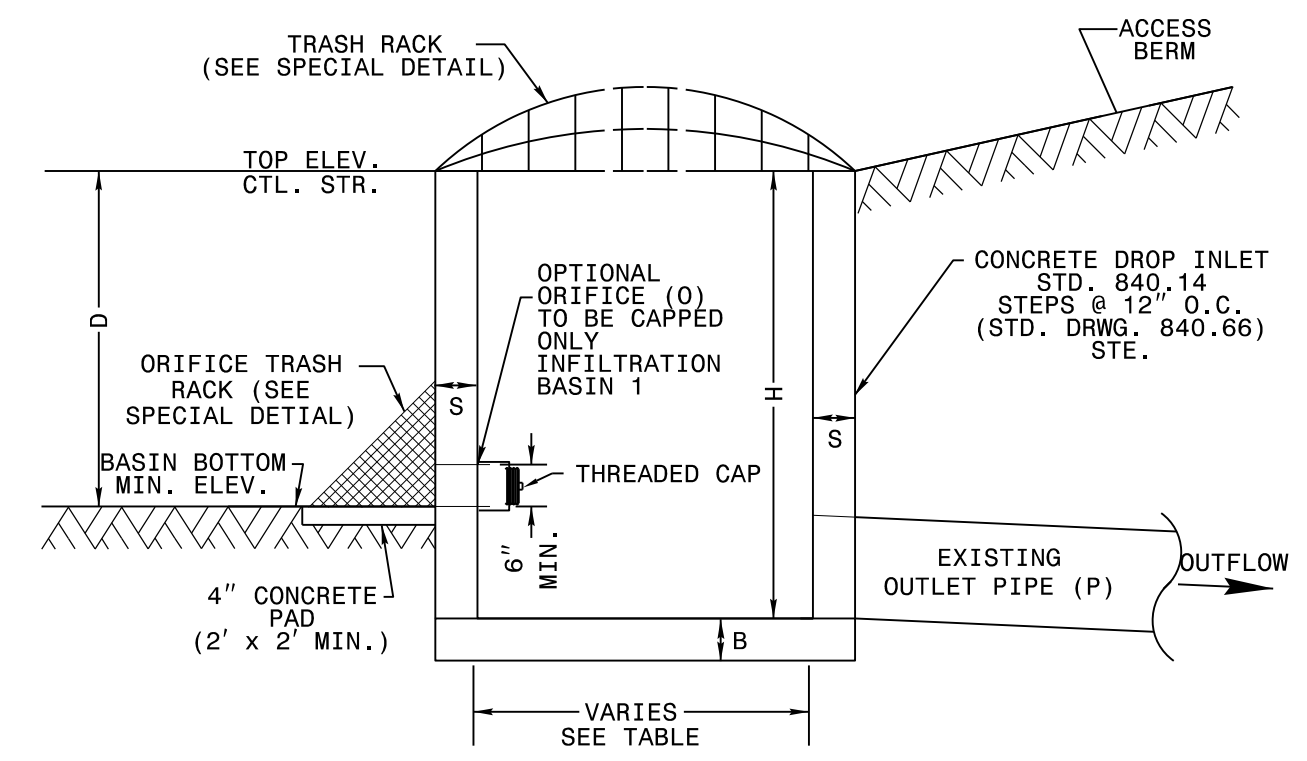
MINIMUM DIMENSIONS FOR DRY DETENTION BASIN DRAWDOWN STRUCTURE											
SCM	STRUCTURE NUMBER	S (INCHES) 6" MIN.	B (INCHES) 6" MIN.	BASIN BOTTOM MINIMUM ELEV.	TOP ELEVATION CONTROL STRUCTURE	MAX. STORAGE DEPTH (D) FEET	INV. ELEV. CTL. STR.	CTL. STR. DIMENSIONS (W x L x H)	ORIFICE DIAMETER (O) INCHES	ORIFICE INV. ELEV.	OUTLET PIPE DIAMETER (P) INCHES
DETENTION BASIN	0503	6	6	210.0	213.0	3	209.41	3' x 2' x 3'-4"	2	210.0	15

DETAILS

PROJECT REFERENCE NO. <i>R-4436FD</i>	SHEET NO. <i>2B-2</i>
PROJECT ENGINEER	
	
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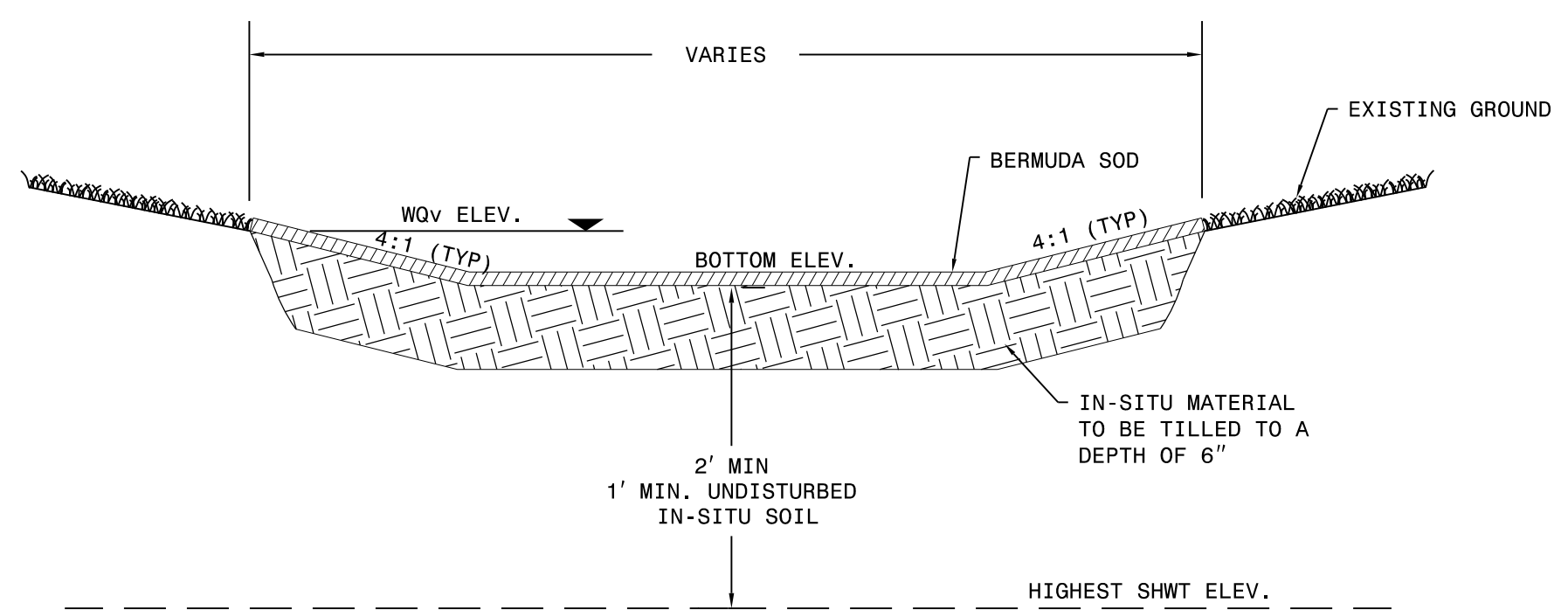
MINIMUM DIMENSIONS FOR INFILTRATION BASINS											
INFILTRATION BASIN	STRUCTURE NUMBER	S (INCHES) 6" MIN.	B (INCHES) 6" MIN.	BASIN BOTTOM MINIMUM ELEV.	WQV ELEV. TOP STRUCTURE	MAX. STORAGE DEPTH (D) FEET	SHWT TABLE ELEV.	CTL. STR. DIMENSIONS (W x L x H)	ORIFICE DIAMETER (O) INCHES	ORIFICE INV. ELEV.	OUTLET PIPE DIAMETER (P) INCHES
1	0401	6	6	208.0	210.0	2	202.67	3' x 2' x 3'	6" PVC*	208.0	30
2	0501	6	6	211.0	213.5	2.5	204.83	3' x 2' x 3'	NA	NA	24

*WITH THREADED CAP

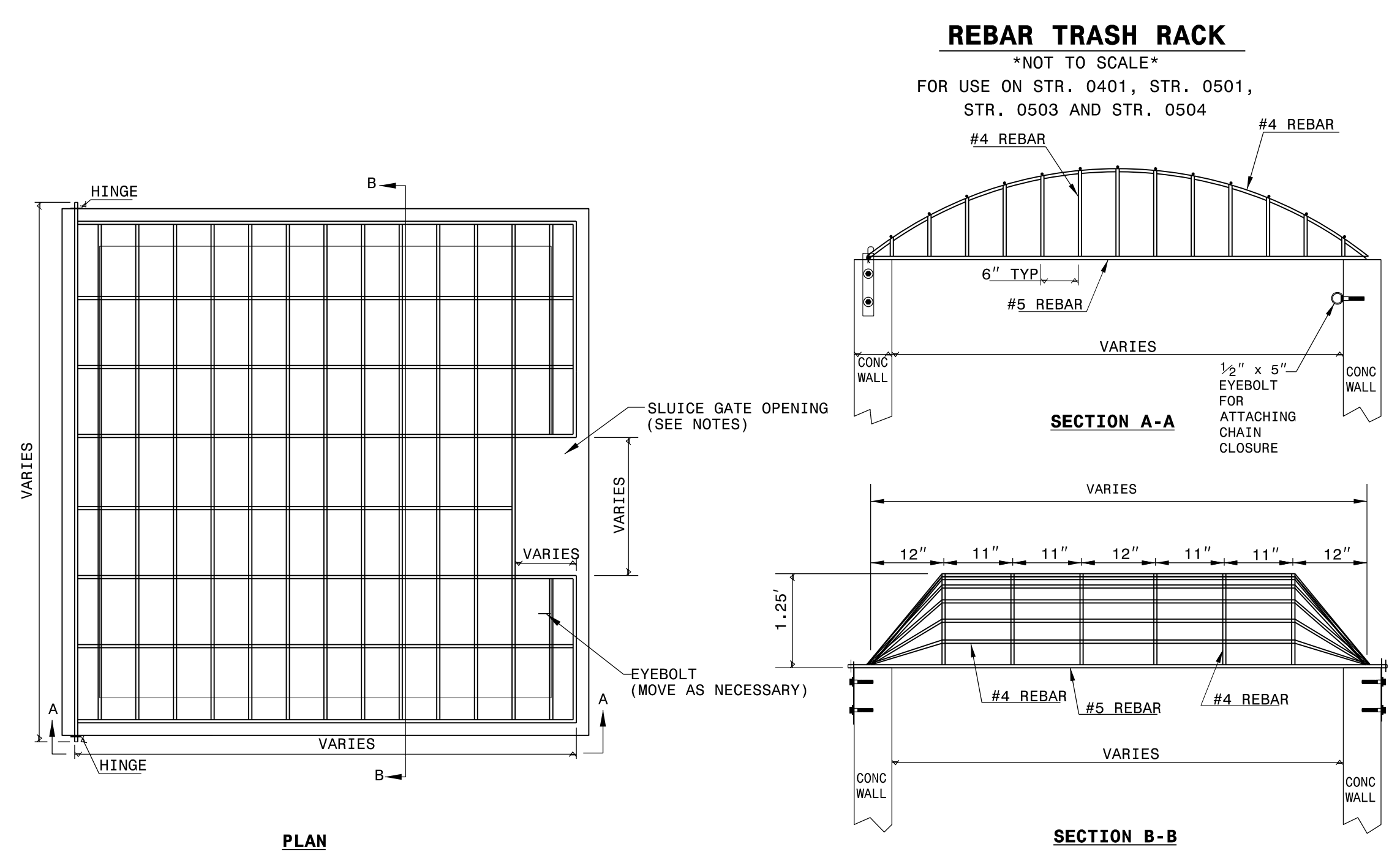
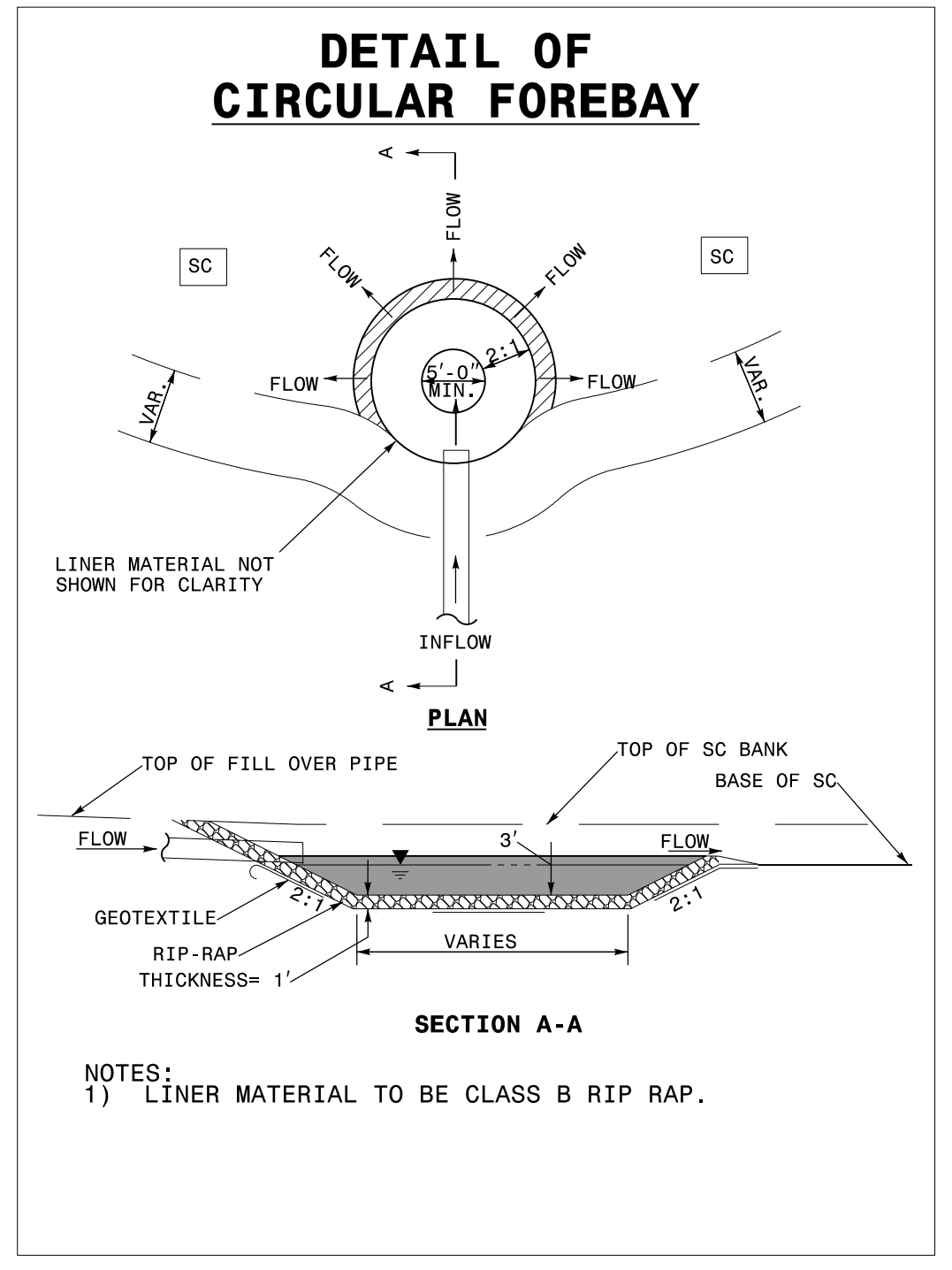


INFILTRATION BASIN OUTLET
NOT TO SCALE

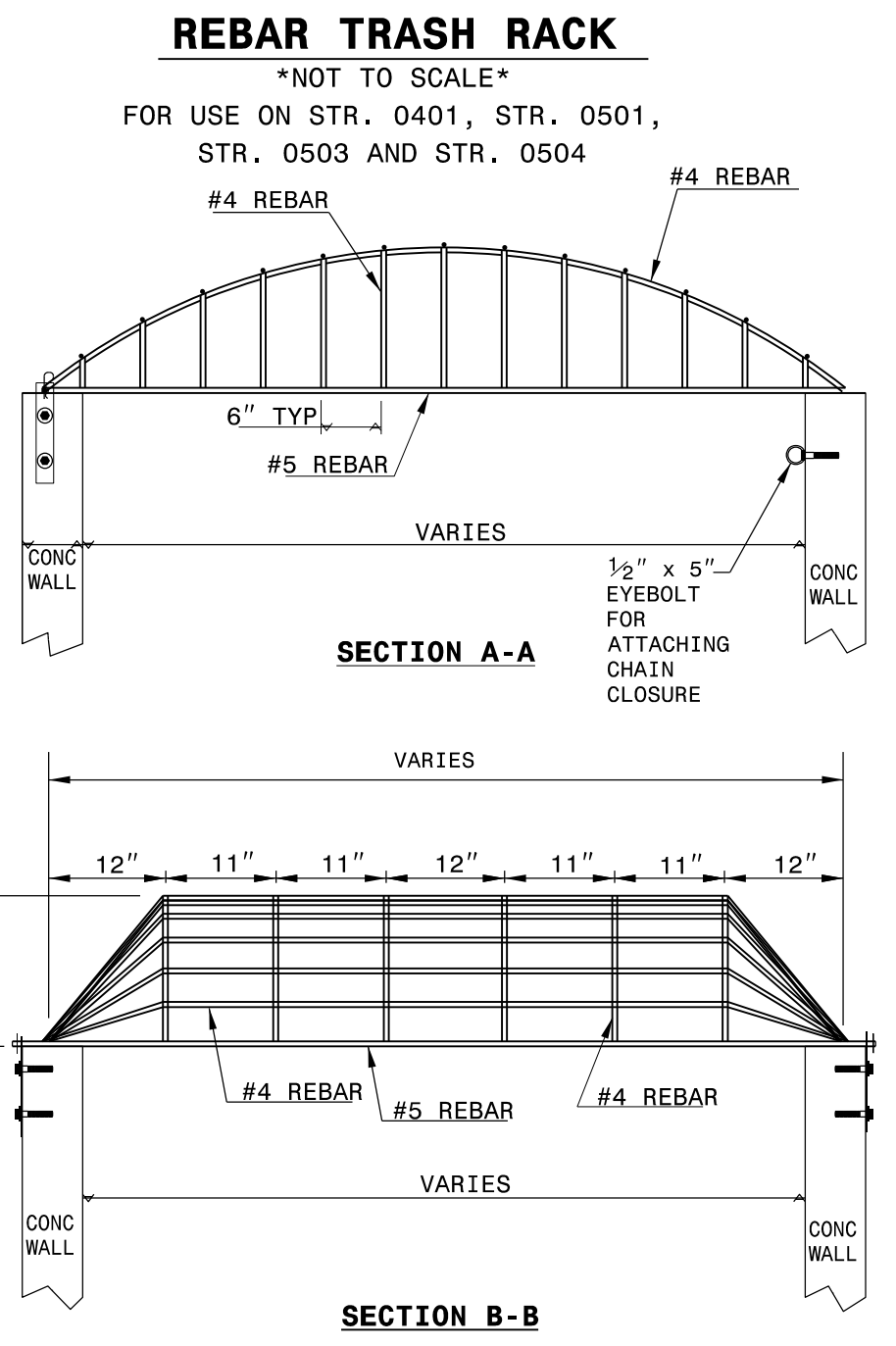
- NOTES:**
1. PLACE BERMUDA SOD ON BASIN BOTTOM AND SIDE SLOPES.
 2. BERMUDA SOD MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH SECTION 1664 OF THE STANDARD SPECIFICATIONS, AND PLAN SHEETS 4, 5, EC-1 AND EC-2. THE BERMUDA SOD SOIL LAYER SHALL BE SAND BASED AND CONTAIN MINIMAL CLAY CONTENT IN ORDER TO FACILITATE INFILTRATION. THE SOD MATERIAL SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. WATER SOD AREAS 1" PER WEEK FOR 8 WEEKS AFTER INSTALLATION.
 3. THE PIPE, VALVES, AND FITTING MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH SECTION 1036 OF THE STANDARD SPECIFICATIONS, AND THE DESIGN PLAN SHEETS. THE PIPING, VALVES, AND FITTINGS LINE ITEM SHALL INCLUDE ALL JOINTS, FASTENERS, STEMS, STEM WHEELS, VALVES, ELBOWS, SEALS, CONNECTION/TRANSITIONS FROM PLASTIC PIPING, AND PIPE NECESSARY TO CONSTRUCT THE DRAWDOWN DEVICES AS DETAILED ON PLAN SHEETS 4 AND 5.



INFILTRATION BASIN SECTION
NOT TO SCALE



REMOVABLE ORIFICE TRASH RACK
NOT TO SCALE
FOR USE ON STR. 0401 AND STR. 0503

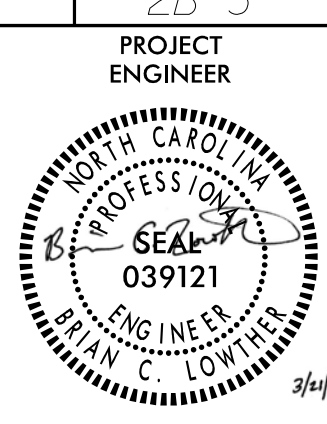


REBAR TRASH RACK
NOT TO SCALE
FOR USE ON STR. 0401, STR. 0501, STR. 0503 AND STR. 0504

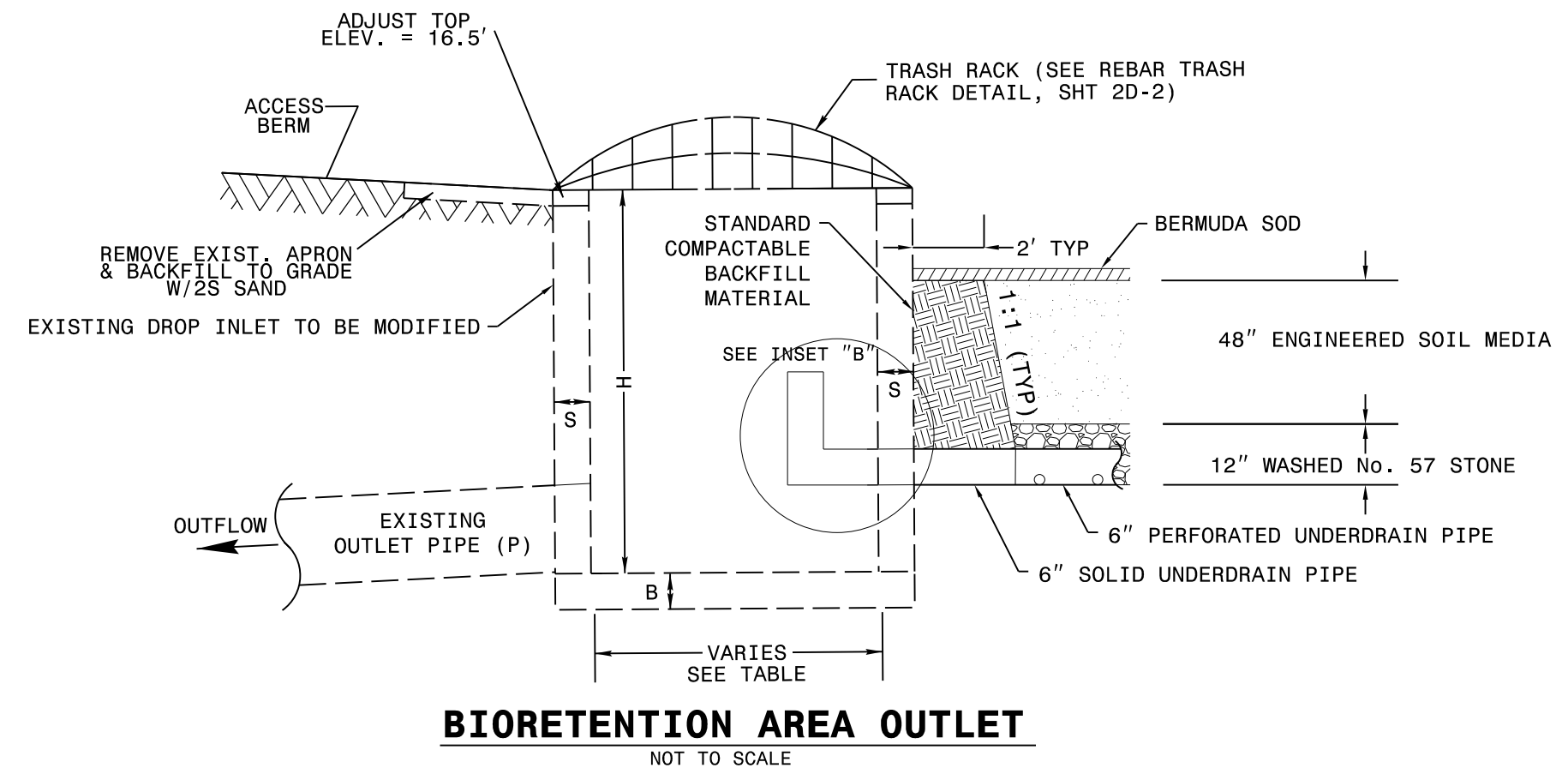
- RISER TRASH RACK NOTES:**
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A 1/4" BEAD.
 2. IF BOLTS ARE ANCHORED IN CONCRETE, FOLLOW STD. DWG. 862.03 AND 862.04 FOR ANCHORING PROCEDURE.
 3. EYEBOLT FOR CHAIN CLOSURE SHALL BE INSTALLED BY THE SAME METHOD AS THE HINGE PLATE BOLTS.
 4. RACK AND HARDWARE SHALL BE ALUMINUM OR REBAR AND GALVANIZED IN ACCORDANCE WITH ASTM A-153.
 5. PROVIDE OPENING IN TRASH RACK TO ACCOMMODATE SLUICE GATE ON THE OUTLET PIPE. ENSURE TRASH RACK OPENS FREELY AND WITHOUT INTERFERENCE WITH SLUICE GATES.

- ORIFICE TRASH RACK NOTES:**
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A 1/4" BEAD.
 2. IF BOLTS ARE ANCHORED IN CONCRETE, FOLLOW STD. DWG. 862.03 AND 862.04 FOR ANCHORING PROCEDURE.
 3. REMOVABLE ORIFICE TRASH RACK SHALL BE ATTACHED TO CONCRETE BOX BY HINGE OR SLIDE RAIL SYSTEM.
 4. RACK AND HARDWARE SHALL BE ALUMINUM OR GALVANIZED IN ACCORDANCE WITH ASTM A-153.

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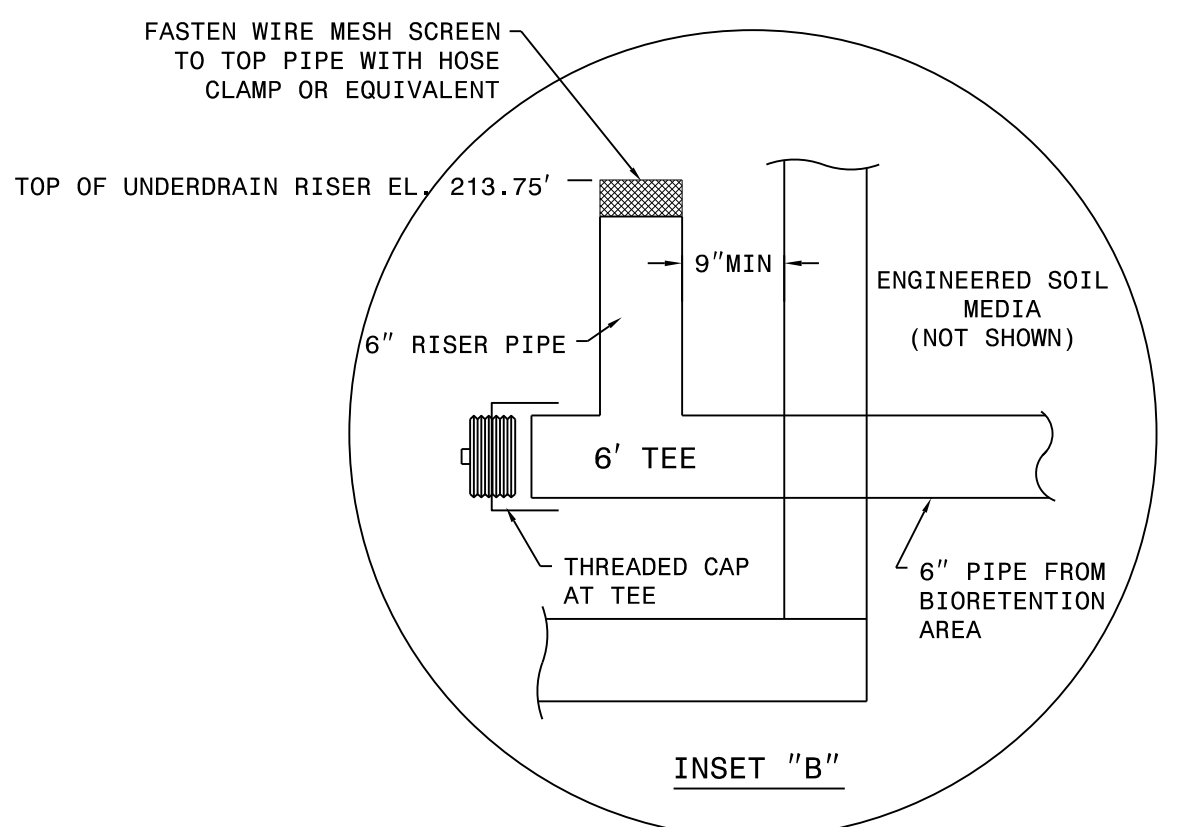
PROJECT REFERENCE NO. R-4436FD	SHEET NO. 2B-3
PROJECT ENGINEER	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

DETAILS

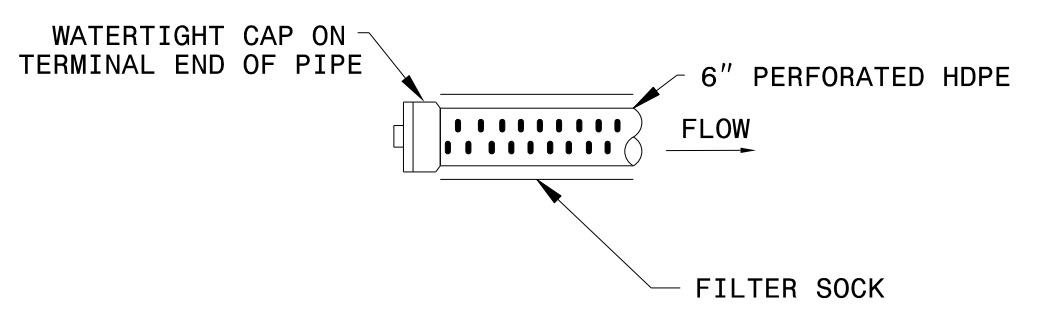


BIORETENTION AREA OUTLET
NOT TO SCALE

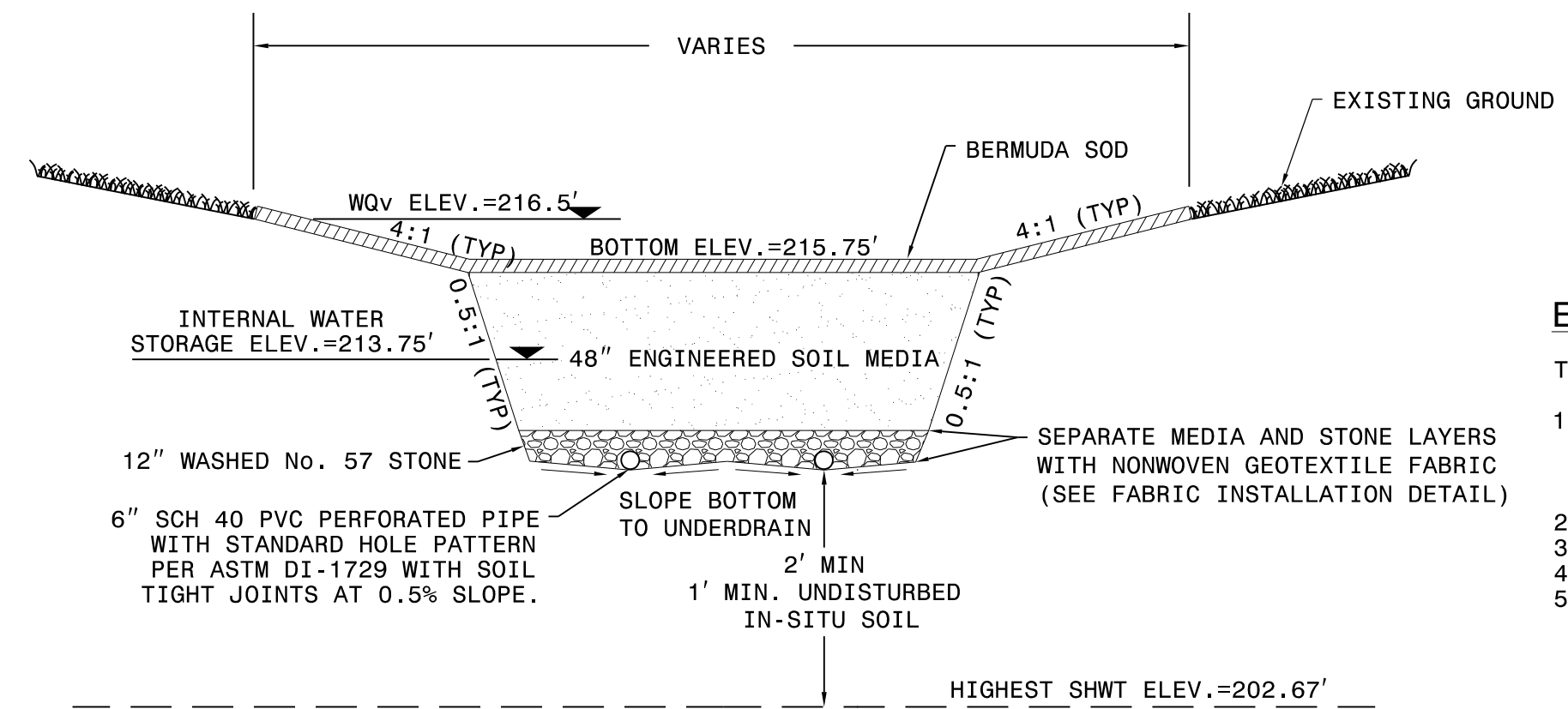
NOTES:
1. REMOVE EXISTING APRON AND GRATE



UNDERDRAIN UPTURNED ELBOW
NOT TO SCALE

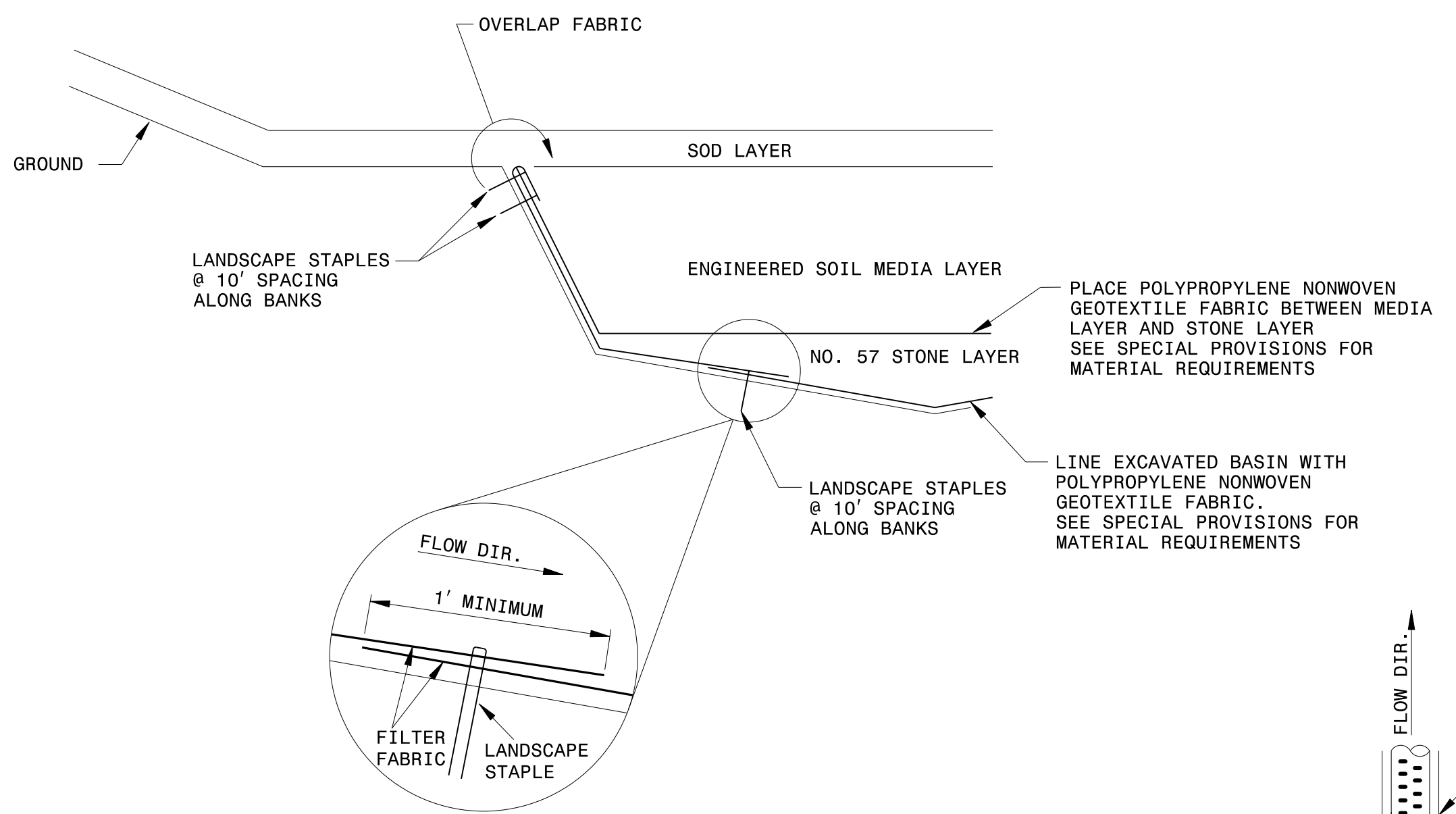


CAP DETAIL
NOT TO SCALE



BIORETENTION AREA SECTION
NOT TO SCALE

NOTES:
1. PLACE BERMUDA SOD ON BASIN BOTTOM AND SIDE SLOPES
2. BERMUDA SOD MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH SECTION 1664 OF THE STANDARD SPECIFICATIONS, AND PLAN SHEETS 4, 5, EC-1 AND EC-2. THE BERMUDA SOD SOIL LAYER SHALL BE SAND BASED AND CONTAIN MINIMAL CLAY CONTENT IN ORDER TO FACILITATE INFILTRATION. THE SOD MATERIAL SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
3. TILL THE ENTIRE AREA TO 6 INCHES DEPTH. REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS LEAVING SURFACES REASONABLY SMOOTH AND UNIFORM.
4. SEE SHEET 2B-4 FOR UNDERDRAIN CONFIGURATION
5. FILTER FABRIC SHOULD BE OVERLAPPED A MINIMUM OF 12 INCHES AND SECURED WITH STAPLES.
6. LAY FABRIC IN A WAY TO PREVENT WATER FROM FLOWING BETWEEN OVERLAPPING PIECES.
7. NO OVERLAPPING SHOULD OCCUR UNDER DRAIN PIPES.
8. THE UNDERDRAIN LAYER OF WASHED, NO. 57 STONE SHALL IN ACCORDANCE WITH SECTION 1005 OF THE STANDARD SPECIFICATIONS.



NOTES:
1. LINING FABRIC SHOULD BE FOLDED BACK TO OVERLAP DIVIDING FABRIC AND SECURED WITH LANDSCAPE STAPLES TO ENSURE SEALING THE STONE FROM SOIL.
2. FABRIC SHOULD BE LAYED IN A WAY TO PREVENT WATER FROM FLOWING BETWEEN OVERLAPPED PIECES. (SEE BLOWUP)
3. FABRIC SHOULD BE OVERLAPPED A MINIMUM OF 12 INCHES AND SECURED WITH STAPLES.
4. NO OVERLAPPING SHOULD OCCUR UNDER DRAIN PIPES.

FABRIC INSTALLATION DETAIL
NOT TO SCALE

ENGINEERED BIORETENTION AREA MEDIA:

THE ENGINEERED SOIL MEDIA (ESM) SHALL MEET THE FOLLOWING PHYSICAL PROPERTIES:

1. HOMOGENOUS SOIL MIX OF 85-88 PERCENT BY WEIGHT SAND (USDA SOIL TEXTURAL CLASSIFICATION), 8 TO 12 PERCENT FINES (SILT AND CLAY), AND 2 TO 5 PERCENT ORGANIC MATTER (ORGANIC MATTER SHALL BE LEAF OR BARK COMPOST, OR SIMILAR, AND SHALL NOT BE ANIMAL MANURE).
2. P-INDEX BETWEEN 10 - 30
3. PH VALUE BETWEEN 5.5 - 7.5
4. PERMEABILITY SHOULD BE GREATER THAN 1 INCHES/HOUR
5. BE UNIFORM AND FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR MATERIAL GREATER THAN 2 INCHES

ALL THE INDIVIDUAL COMPONENTS AS WELL AS THE ESM SHALL BE REASONABLY FREE OF WEED SEED OR TOXIC SUBSTANCES OR ANY OTHER MATERIAL WHICH WOULD BE HARMFUL TO PLANT GROWTH, AND SHALL BE MAINTAINED FREE FROM SUCH DURING STOCKPILING, TRANSPORT, AND INSTALLATION

MIXING
THE ESM COMPONENTS SHALL BE THOROUGHLY MIXED BY A MECHANICAL DEVICE DESIGNED SPECIFICALLY FOR PRODUCING UNIFORM ESM. THE PROCESS FOR MIXING SHALL BE SUBMITTED IN WRITING TO THE ENGINEER PRIOR TO MIXING. AN ON SITE INSPECTION OF THE MIXING PROCEDURE MAY BE REQUIRED PRIOR TO APPROVAL OF THE MIXING PROCESS. NO SAMPLES SHALL BE PREPARED PRIOR TO RECEIVING APPROVAL OF THE MIXING PROCESS.

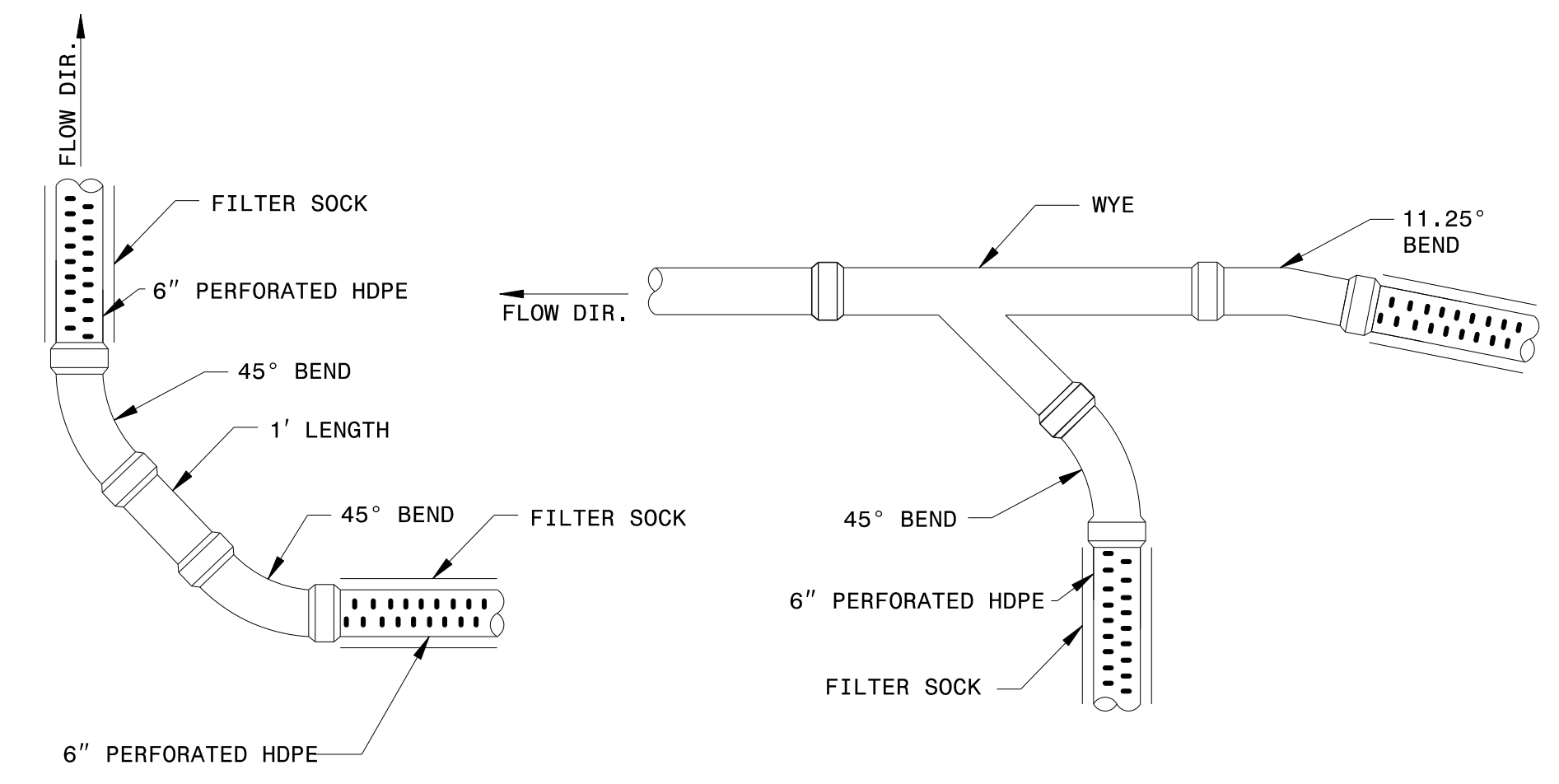
TESTING
THE CONTRACTOR WILL BE RESPONSIBLE FOR ENSURING THAT THE ESM MEETS THE MATERIAL REQUIREMENTS PRESENTED HEREIN. PRIOR TO PLACEMENT OF THE ESM, THE CONTRACTOR WILL SUBMIT A SOILS TEST REPORT DEMONSTRATING THAT THE ESM MEETS THE MATERIAL REQUIREMENTS. RANDOM SAMPLES MAY BE TAKEN BY THE ENGINEER IN ORDER TO TEST FOR MIX UNIFORMITY AND TO VERIFY THAT IT REMAINS WITHIN THE SPECIFIED RANGES FOR THE PHYSICAL PROPERTIES. THE ESM SHALL NOT BE PLACED UNTIL APPROVED BY THE ENGINEER.

STOCKPILING
IF THE ESM IS TO BE STOCKPILED, THE LOCATION CHOSEN FOR STOCKPILING SHALL BE REASONABLY FREE OF WEED SEED, VEGETATION, TOXIC SUBSTANCES, OR ANY OTHER MATERIAL WHICH WOULD BE HARMFUL TO PLANT GROWTH. PRIOR TO STOCKPILING, THE ENGINEER SHALL APPROVE THE STOCKPILE LOCATION.

CONSTRUCTION METHODS
FILTRATION FACILITY SHALL NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREAS ARE STABILIZED AS SHOWN ON THE PLANS AND TO THE SATISFACTION OF THE ENGINEER. NO HEAVY EQUIPMENT SHALL OPERATE WITHIN THE PERIMETER OF A FILTRATION FACILITY DURING EXCAVATION, UNDERDRAIN PLACEMENT, BACKFILLING, PLANTING, OR MULCHING OF THE FACILITY.


EXCAVATION
THE FILTRATION FACILITY SHALL BE EXCAVATED TO THE DIMENSIONS, SIDE SLOPES, AND ELEVATIONS SHOWN ON THE PLANS. THE METHOD OF EXCAVATION SHALL MINIMIZE THE COMPACTION OF THE BOTTOM OF THE FILTRATION FACILITY (THE "RAKE" METHOD OF WORKING THE BUCKET SHOULD BE USED). PRIOR TO PLACING THE UNDERDRAIN AND THE ESM, THE BOTTOM OF THE EXCAVATION SHALL BE TILLED TO A MINIMUM DEPTH OF 12" TO ALLEVIATE ANY COMPACTION OF THE FACILITY BOTTOM.

PLACEMENT AND COMPACTION OF THE ENGINEERED SOIL MEDIA
THE ESM SHALL BE PLACED AND GRADED USING LOW GROUND-CONTACT PRESSURE EQUIPMENT OR BY EXCAVATORS AND/OR BACKHOES OPERATING ON THE GROUND ADJACENT TO THE FILTRATION FACILITY. THE ESM SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED 12" FOR THE ENTIRE AREA OF THE FILTRATION FACILITY. IF THE ESM BECOMES CONTAMINATED DURING THE CONSTRUCTION OF THE FACILITY, THE CONTAMINATED MATERIAL SHALL BE REMOVED AND REPLACED WITH UNCONTAMINATED MATERIAL. FINAL GRADING OF THE ESM SHALL BE PERFORMED AFTER A 24-HOUR SETTLING PERIOD. FINAL ELEVATION SHALL BE WITHIN 1 INCH OF THE ELEVATION SHOWN ON THE PLANS.

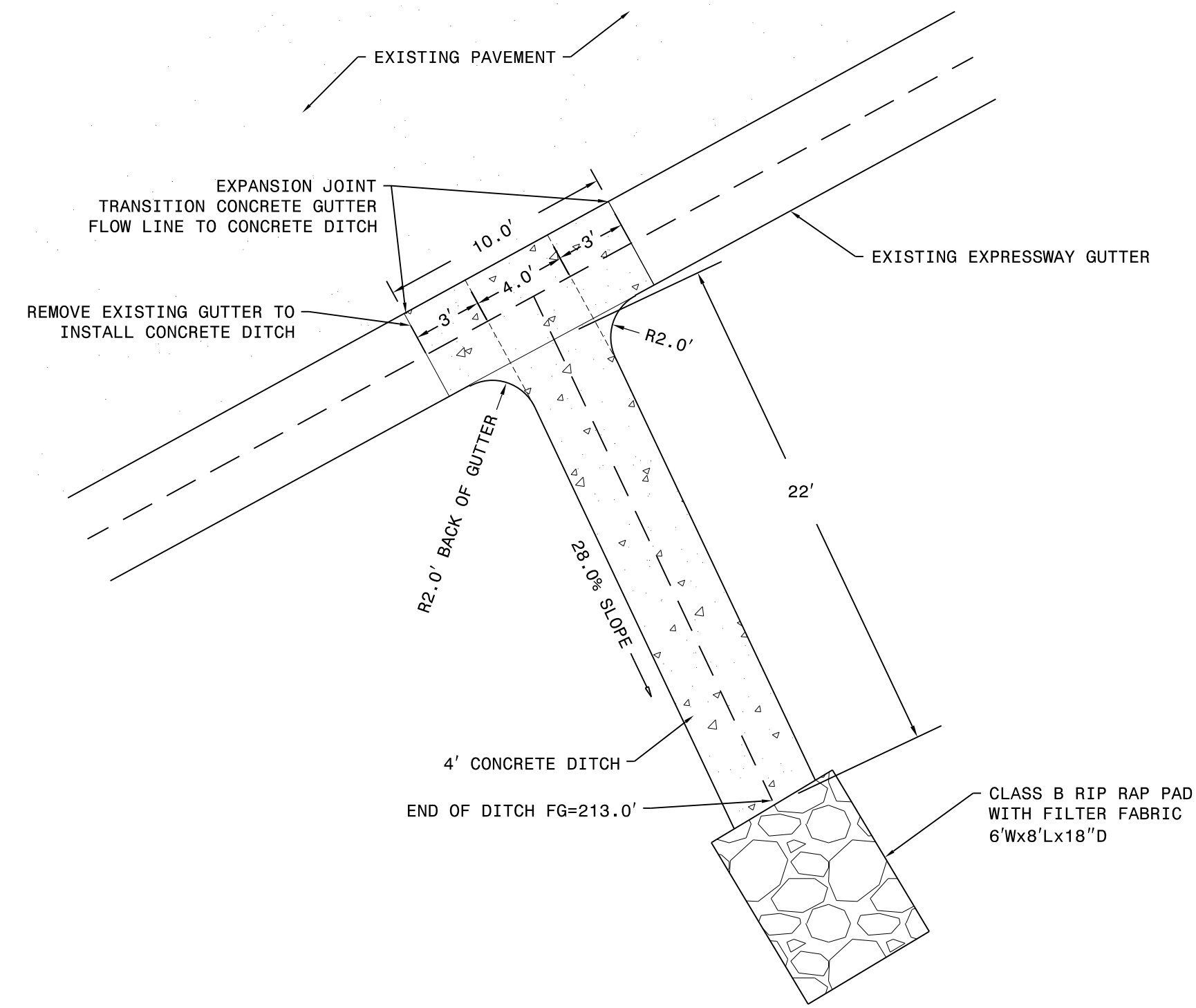


BEND CONNECTIONS DETAIL
NOT TO SCALE

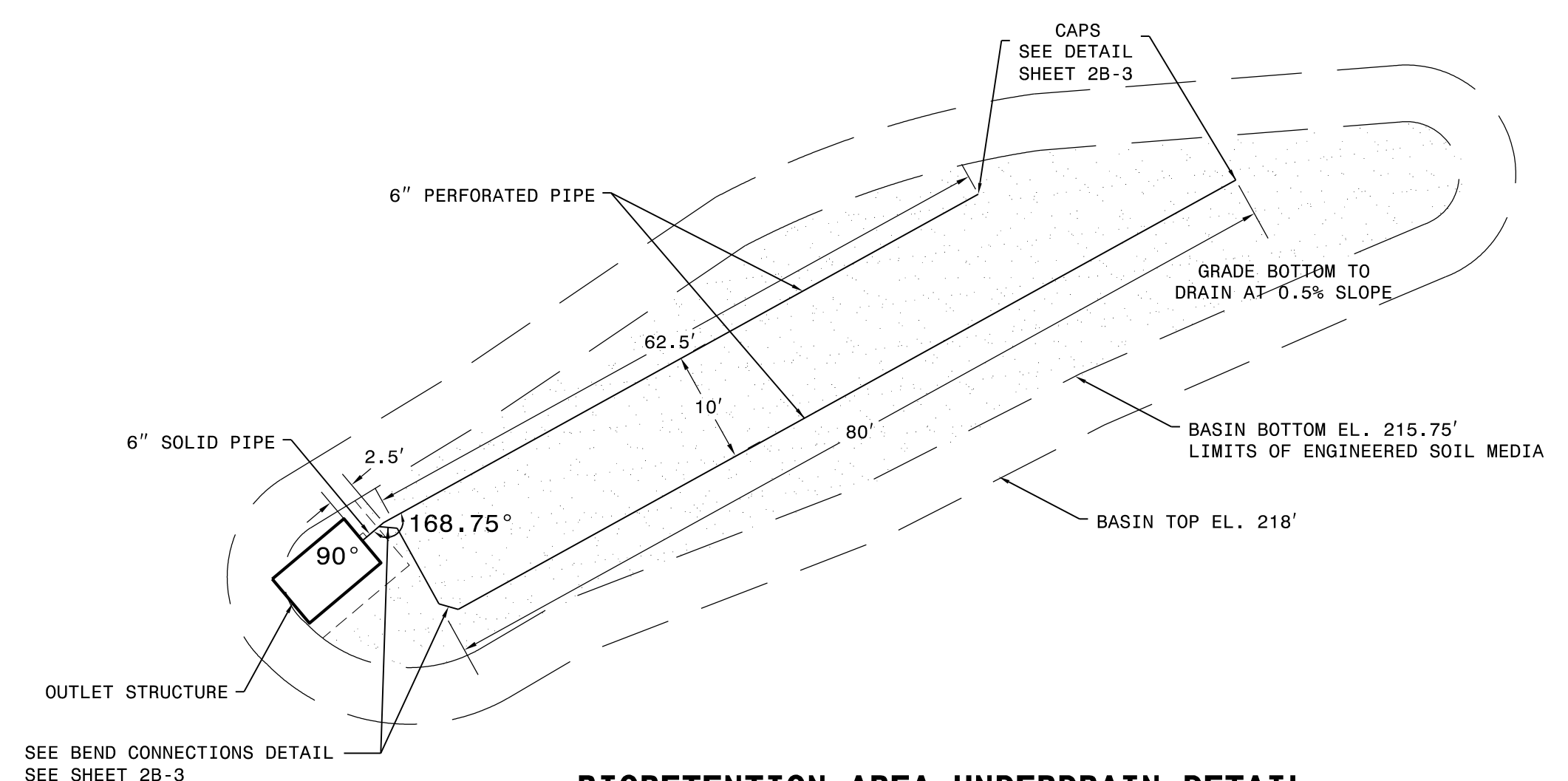
DIMENSIONS FOR BIORETENTION AREA									
SCM	STRUCTURE NUMBER	S (INCHES) 6" MIN.	B (INCHES) 6" MIN.	BASIN BOTTOM MINIMUM ELEV.	TOP ELEVATION CONTROL STRUCTURE	MAX. STORAGE DEPTH (D) FEET	EXISTING OUTLET INVERT ELEV.	BOTTOM UNDERDRAIN ELEVATION	UPTURNED UNDERDRAIN ELEV.
BIORETENTION AREA	0504	EXIST.	EXIST.	215.75	216.5	0.75	210.37	210.75	213.75

PROJECT REFERENCE NO. R-4436FD	SHEET NO. 2B-4
PROJECT ENGINEER	
	
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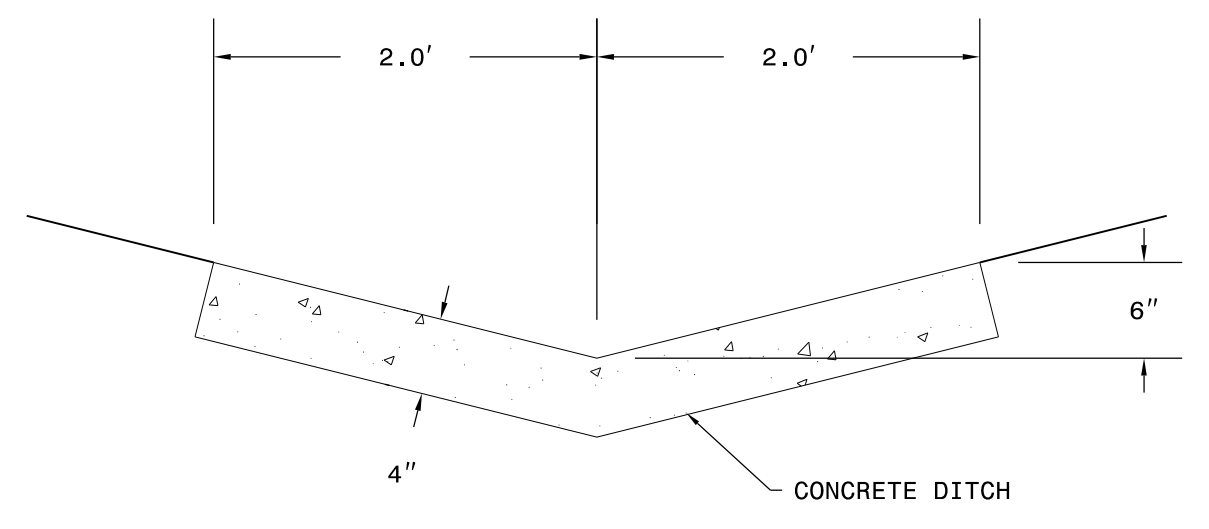
DETAILS



CONCRETE DITCH PLAN
NOT TO SCALE

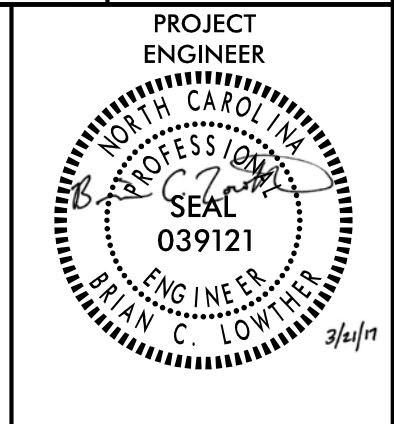


BIORETENTION AREA UNDERDRAIN DETAIL
NOT TO SCALE



- NOTES:**
1. PLACE 1/2" EXPANSION JOINTS AT 30' INTERVALS.
 2. PLACE GROOVED JOINTS 1" DEEP AT 10' INTERVALS BETWEEN EXPANSION JOINTS.
 3. FILL ALL CONSTRUCTION JOINTS WITH JOINT FILLER AND SEALER.
 4. RIP RAP SHALL BE PLACED SUCH THAT ITS TOP FINISH GRADE ELEVATION IS 1.5" BELOW FINISH GRADE ELEVATION.
- CONCRETE DITCH TYPICAL SECTION**
NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. <i>R-4436FD</i>	SHEET NO. <i>3B/3D</i>
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SUMMARY OF EARTHWORK
(for Stormwater BMP's)

ITEM DESCRIPTION	UNIT	QUANTITY						
		INFILTRATION BASIN 1	INFILTRATION BASIN 2	BIORETENTION BASIN	DETENTION BASIN	AREA 2 OUTLET/DITCHES	AREA 3 OUTLET	PROJECT TOTALS
UNCLASSIFIED EXCAVATION	CY	920	500	560		20	50	2050
SELECT FILL (BIORETENTION SOIL MEDIA)	CY			290				290
No. 57 WASHED STONE	TON			145				145
RIP RAP CLASS B	TON	92	53		5	274	156	580

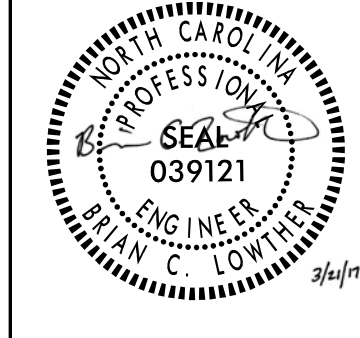
DRAINAGE SUMMARY
(for Stormwater BMP's)

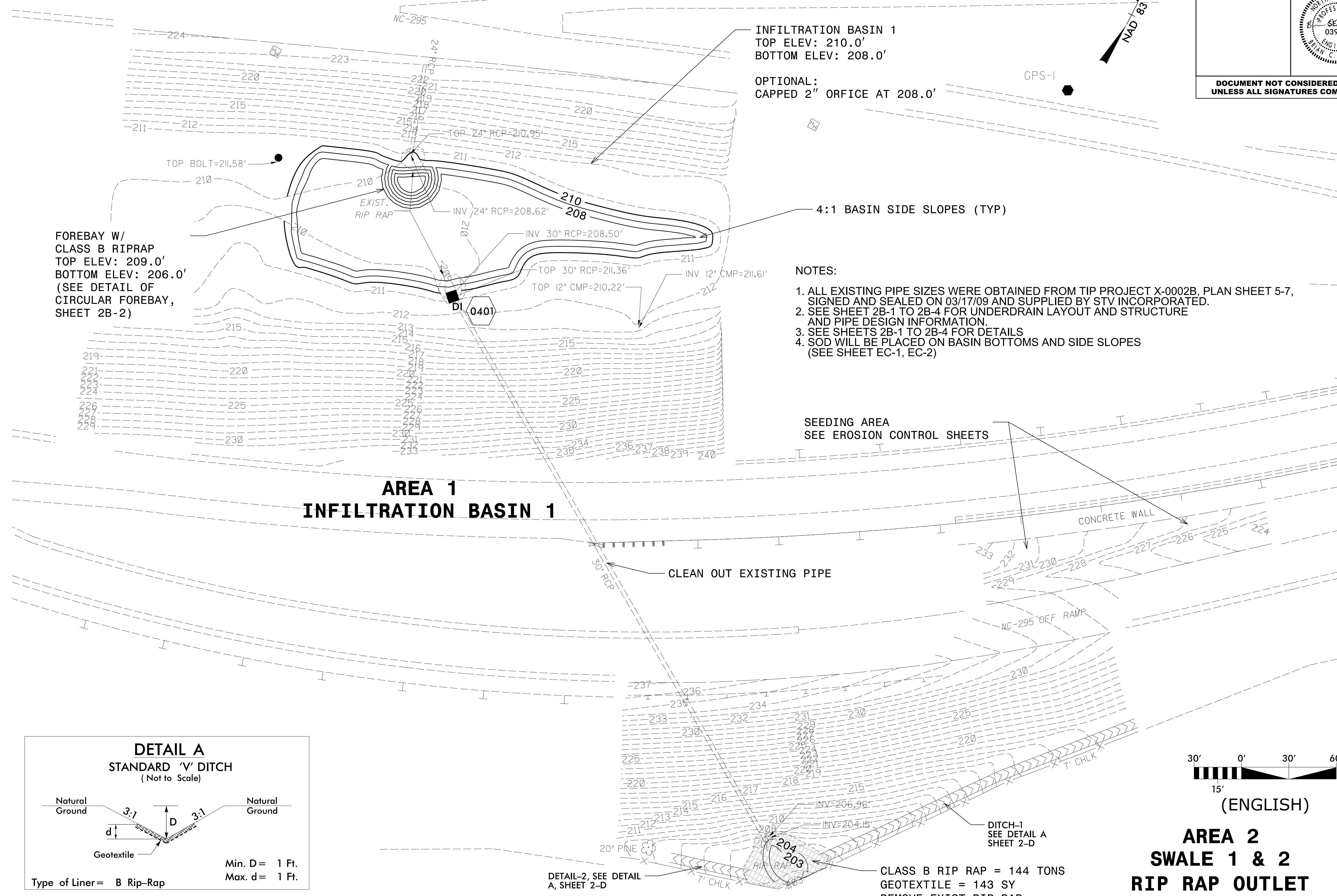
ITEM DESCRIPTION	UNIT	QUANTITY						
		INFILTRATION BASIN 1	INFILTRATION BASIN 2	BIORETENTION BASIN	DETENTION BASIN	AREA 2 OUTLET/DITCHES	AREA 3 OUTLET	PROJECT TOTALS
DRAINAGE PIPE - 6" HDPE PIPE	LF			22				22
DRAINAGE PIPE - 6" HDPE PERFORATED PIPE WITH FILTER SOCK	LF			151				151
MASONRY DRAINAGE STRUCTURE	EA	1	1		1			3
POLYPROPYLENE NONWOVEN GEOTEXTILE FABRIC	SY			700				700
TRASH RACK - RISER	EA	1	1	1	1			4
TRASH RACK - ORIFICE	EA	1			1			2
GEOTEXTILE FOR DRAINAGE	SY	95	55		6	238	56	450
4" CONCRETE PAVED DITCH	SY				16			16
6" CLEANOUT CAP (THREADED)	EA	1		3				4
6" HDPE 45° BEND	EA			3				3
6" HDPE 11.25° BEND	EA			1				1
6" x 6" x 6" HDPE TEE	EA			1				1
6" HDPE WYE	EA			1				1

SUMMARY FOR EROSION CONTROL
(for Stormwater BMP's)

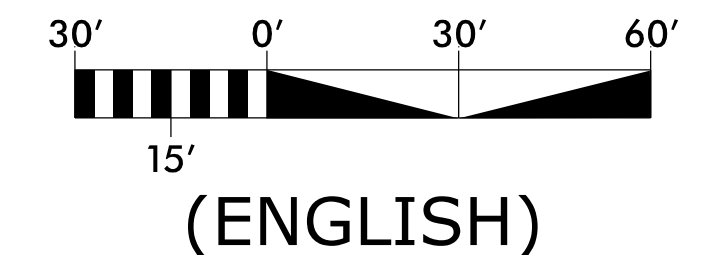
ITEM DESCRIPTION	UNIT	QUANTITY
TEMPORARY SILT FENCE	LF	425
EROSION CONTROL STONE CLASS A	TONS	120
EROSION CONTROL STONE CLASS B	TONS	100
SEDIMENT CONTROL STONE	TONS	40
WATTLE	LF	50
SEEDING AND MULCHING	AC	0.2
COMPOST BLANKET	AC	0.2
SODDING	SY	2950
WATER	MG	176
SILT EXCAVATION	CY	10
1/4" HARDWARE CLOTH	LF	10

SITE & GRADING PLAN - BMP AREA 1 & 2

PROJECT REFERENCE NO. R-4436FD	SHEET NO. 4
PROJECT ENGINEER	
	
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MATCHLINE SHEET 5

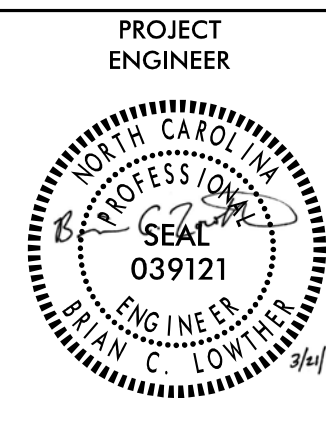


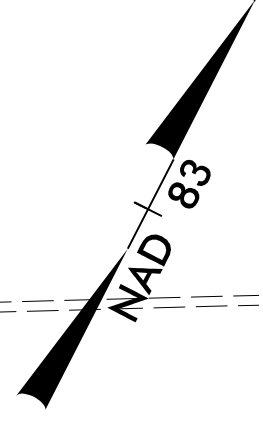
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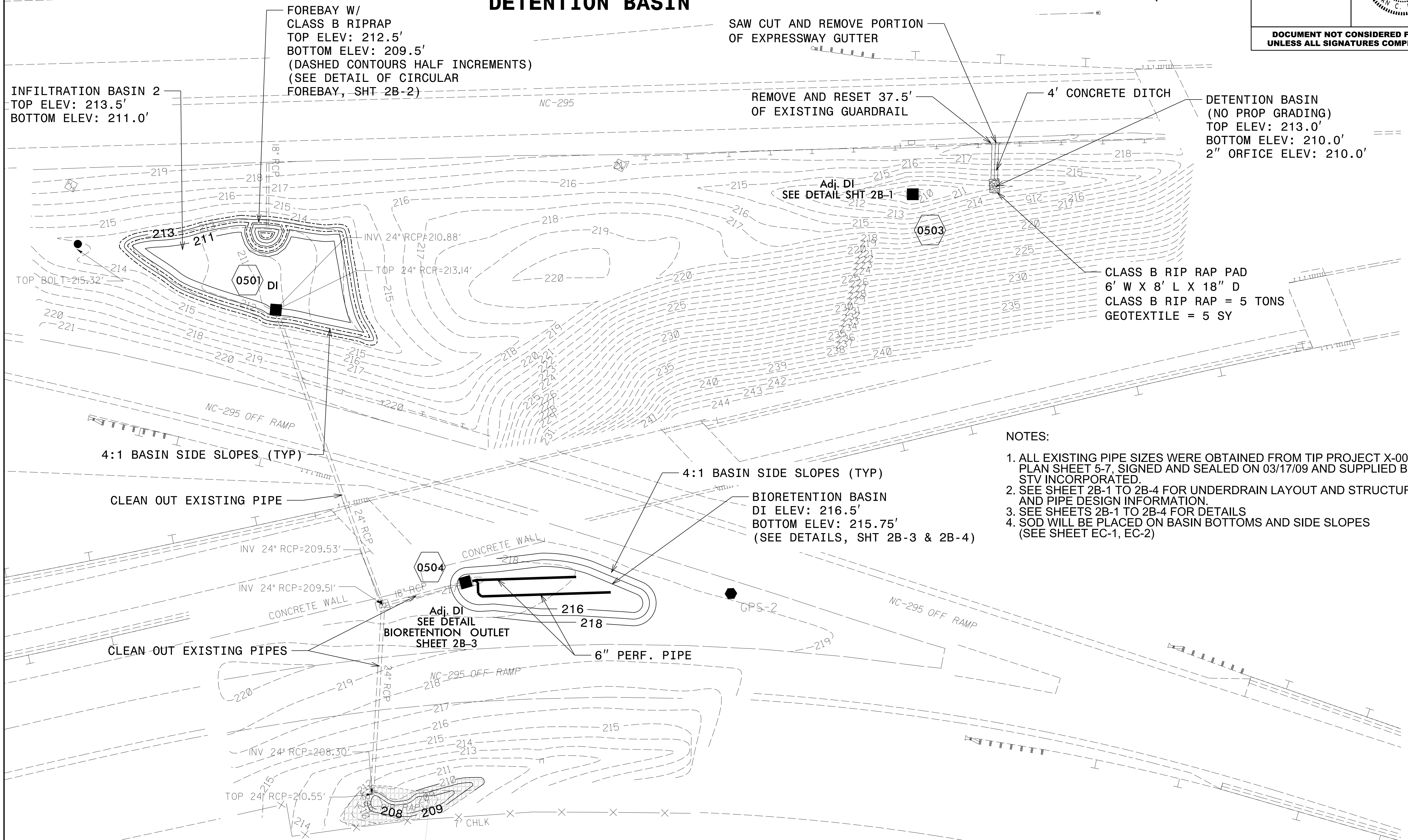
SITE & GRADING PLAN - BMP AREA 3 & 4

AREA 4 INFILTRATION BASIN 2 DETENTION BASIN

PROJECT REFERENCE NO. R-4436FD	SHEET NO. 5
RW SHEET NO.	
PROJECT ENGINEER	
	
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MATCHLINE SHEET 4



INFILTRATION BASIN 2
TOP ELEV: 213.5'
BOTTOM ELEV: 211.0'

FOREBAY W/
CLASS B RIPRAP
TOP ELEV: 212.5'
BOTTOM ELEV: 209.5'
(DASHED CONTOURS HALF INCREMENTS)
(SEE DETAIL OF CIRCULAR
FOREBAY, SHT 2B-2)

SAW CUT AND REMOVE PORTION
OF EXPRESSWAY GUTTER

REMOVE AND RESET 37.5'
OF EXISTING GUARDRAIL

4' CONCRETE DITCH

DETENTION BASIN
(NO PROP GRADING)
TOP ELEV: 213.0'
BOTTOM ELEV: 210.0'
2" ORFICE ELEV: 210.0'

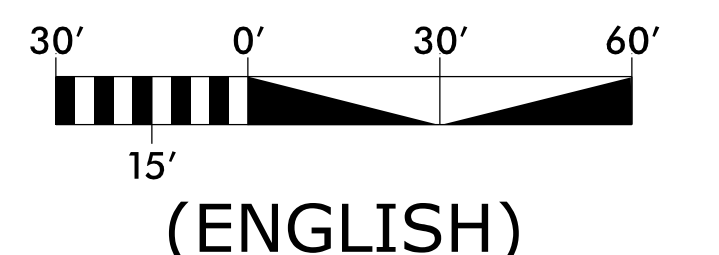
CLASS B RIP RAP PAD
6' W X 8' L X 18" D
CLASS B RIP RAP = 5 TONS
GEOTEXTILE = 5 SY

NOTES:

1. ALL EXISTING PIPE SIZES WERE OBTAINED FROM TIP PROJECT X-0002B, PLAN SHEET 5-7, SIGNED AND SEALED ON 03/17/09 AND SUPPLIED BY STV INCORPORATED.
2. SEE SHEET 2B-1 TO 2B-4 FOR UNDERDRAIN LAYOUT AND STRUCTURE AND PIPE DESIGN INFORMATION.
3. SEE SHEETS 2B-1 TO 2B-4 FOR DETAILS
4. SOD WILL BE PLACED ON BASIN BOTTOMS AND SIDE SLOPES (SEE SHEET EC-1, EC-2)

CLASS B RIP RAP = 156 TONS
GEOTEXTILE = 156 SY
REMOVE EXIST RIP RAP
REGRADE TO PROP CONTOURS
REPLACE & EXTEND RIP RAP

AREA 3 BIORETENTION AREA RIP RAP OUTLET AND DIFFUSE FLOW



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 Resources\NC_DOT\64666166138-1295_Stormwater\References\R4436_Hyd_psh_05.dgn
 \$\$\$\$ USER NAME \$\$\$

TRAFFIC CONTROL PLAN ADVANCE SIGNING, LANE CLOSURE

GENERAL NOTES

THE FOLLOWING GENERAL NOTES SHALL APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED ON THE PLAN, OR AS DIRECTED BY THE ENGINEER.

THE TRAFFIC CONTROL PLAN FOR THIS PROJECT CONSISTS OF STANDARD DETAIL DRAWINGS. THESE DRAWINGS ARE TYPICAL SITUATIONS AND SHOULD BE ADAPTED TO THE ACTUAL FIELD CONDITIONS, SUCH AS WHEN PHYSICAL DIMENSIONS ARE NOT ATTAINABLE OR WHEN MORE THAN ONE DRAWING IS APPLIED SIMULTANEOUSLY. RESULTING IN DUPLICATE SIGNING OR UNDESIRED OVERLAPPING OF DEVICES. CONTRACTOR SHALL BE RESPONSIBLE FOR ADAPTING THE TRAFFIC CONTROL PLAN TO FIELD CONDITIONS TO PROVIDE SAFE AND EFFICIENT TRAFFIC MOVEMENT.

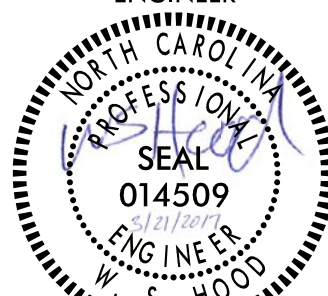
SHOULDER CLOSURE REQUIREMENTS

- A. SHOULDER CLOSURES SHALL BE REMOVED AS SOON AS PRACTICAL AFTER WORK BEHIND THE CLOSURE IS COMPLETED OR WHEN SHOULDER CLOSURE IS NO LONGER NEEDED.
- B. CONTRACTOR SHALL MAINTAIN EXISTING TRAFFIC PATTERNS AND LANE CONFIGURATIONS AT THE END OF EACH DAYS OPERATION AND DURING CONSTRUCTION INACTIVITY, EXCEPT AS OTHERWISE INDICATED IN THE PHASING PLAN (IF APPLICABLE).
- C. WHEN SHOULDER CLOSURES ARE NOT IN EFFECT, CHANNELIZING DEVICES IN WORK AREAS SHALL BE SPACED NO GREATER THAN TWICE THE POSTED SPEED LIMIT, EXCEPT 10-FEET ON CENTER IN RADII, AND SHALL BE SET 3' OFF THE EDGE OF AN EXISTING TRAVEL LANE.
- D. DURING SHOULDER CLOSURES, FLAGGERS SHALL BE USED WHEN DELIVERING MATERIALS TO LOCATIONS CLOSE TO THE PAVEMENT. FLAGGERS AND PROPOSER VEHICLE ACCESS TECHNIQUES SHALL BE USED FOR AREAS WHERE CONSTRUCTION TRAFFIC IS UTILIZING STANDARD CONSTRUCTION ENTRANCES.

SIGNING

- E. EXISTING TRAFFIC SIGNAGE SHALL BE MOVED, COVERED, OR OTHERWISE MAINTAINED BY THE CONTRACTOR AS APPROPRIATE DURING CONSTRUCTION. THIS WORK IS CONSIDERED INCIDENTAL TO OTHER ITEMS IN THE CONTRACT.
- F. ALL NECESSARY TRAFFIC CONTROL SIGNING SHALL BE IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

FOR ADDITIONAL TRAFFIC CONTROL DETAILS SEE NCDOT ROADWAY STANDARD DRAWINGS, SECTIONS 1100.

PROJECT REFERENCE NO. <i>R-4436FD</i>	SHEET NO. <i>TC-1</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

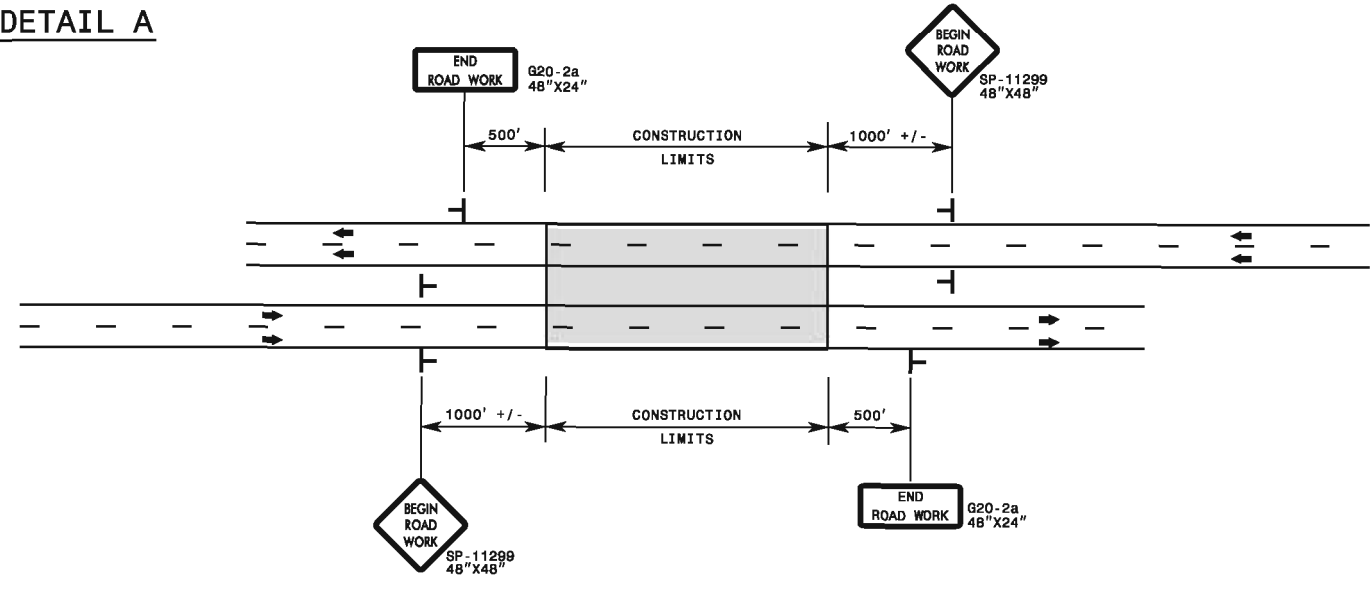
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

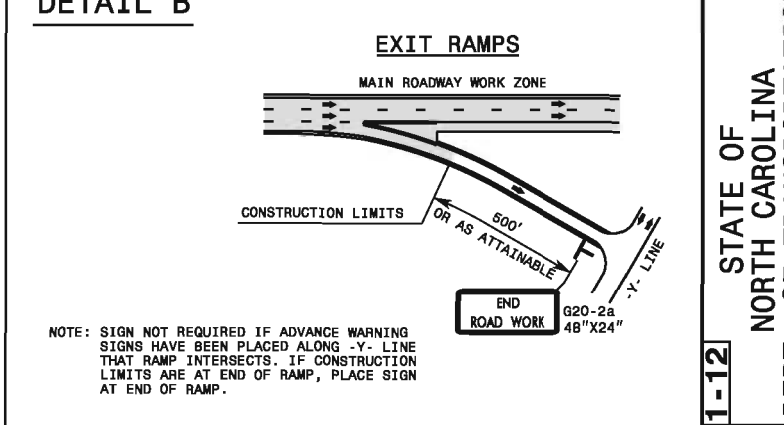
ENGLISH STANDARD DRAWING FOR
WORK ZONE ADVANCE WARNING SIGNS FOR
FACILITIES ≤ 55 MPH

SHEET 2 OF 3
1101.01

DETAIL A

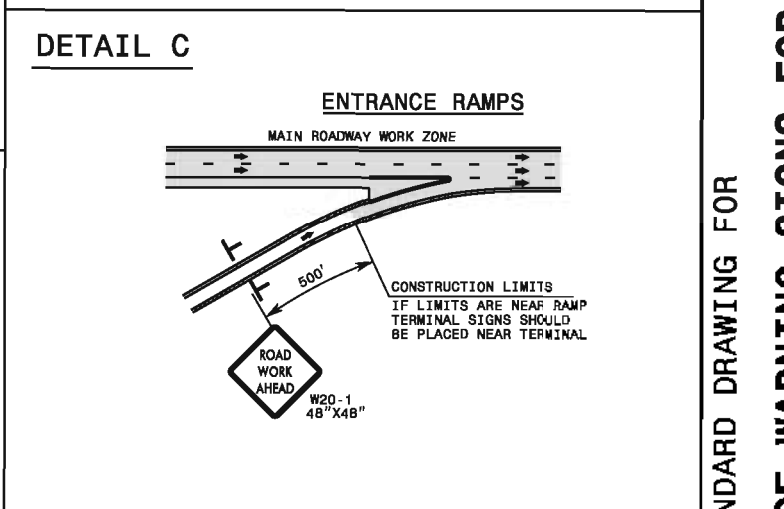


DETAIL B



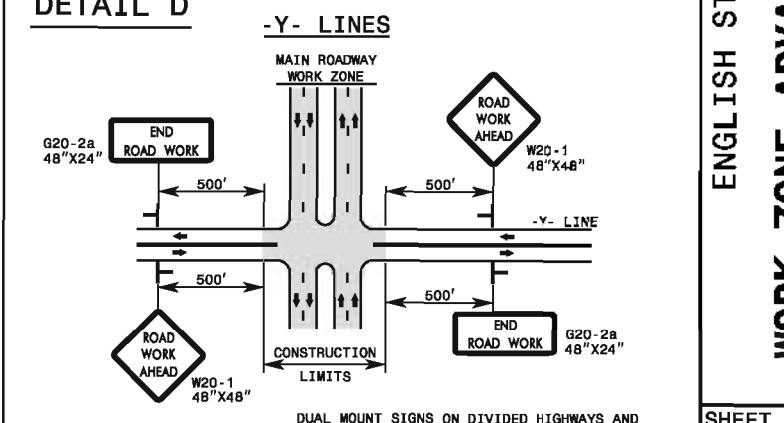
NOTE: SIGN NOT REQUIRED IF ADVANCE WARNING SIGNS HAVE BEEN PLACED ALONG A LANE THAT RAMP INTERSECTS. IF CONSTRUCTION LIMITS END AT END OF RAMP, PLACE SIGN AT END OF RAMP.

DETAIL C



IF LIMITS FOR TRAP RAMP TERMINAL SIGNS SHOULD BE PLACED NEAR TERMINAL.

DETAIL D



DUAL MOUNT SIGNS ON DIVIDED HIGHWAYS AND INCREASE SIGN SPACING TO 1000'.

GENERAL NOTES

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCED WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK UNLESS COVERED.
- SIGNS SHOWN ARE REQUIRED FOR WORK ZONES THAT WILL REMAIN IN EFFECT OVERNIGHT. FOR SHORT-TERM DAILY MAINTENANCE TYPE OPERATIONS, THIS SIGNING APPLICATION IS OPTIONAL; MAY USE ONLY APPLICABLE ROADWAY STANDARD DRAWINGS INSTEAD. HOWEVER, IF THIS SIGNING APPLICATION IS USED, SIGNS MAY BE PORTABLE MOUNTED.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE 3LB STEEL U-CHEMEL POST OR 4" X 4" WOOD POST FOR ALL WORK ZONE SIGNS. 3LB STEEL U-CHEMEL POSTS MUST MEET THE REQUIREMENTS OF STANDARD SPECIFICATION SECTION 1094-1(B). MAY BE GALVANIZED STEEL, OR MAY BE PAINTED GREEN BY THE POST MANUFACTURER. SQUARE STEEL TUBING POSTS HAVING EQUIVALENT STRENGTH OF THE 3 LB STEEL U-CHEMEL POST ARE ALSO ACCEPTABLE FOR USE. ERECT SIGNS PER ROADWAY STANDARD DRAWING 1110.01. PAYMENT FOR WOOD POSTS, 3LB STEEL U-CHEMEL AND SQUARE STEEL TUBING POSTS WITH SIGNS WILL BE MADE ACCORDING TO STANDARD SPECIFICATION "WORK ZONE SIGNS" SECTION 1110.
- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1110.01.
- DO NOT BACK BRACE SIGN SUPPORTS.
- TWO-WAY UNDIVIDED ADVANCE WARNING SIGN CONFIGURATION MAY BE USED ON URBAN MULTI-LANE FACILITIES WHERE CONDITIONS LIMIT THE USE OF DUAL MOUNTED SIGNS AS DETERMINED BY THE ENGINEER.

LEGEND

□ STATIONARY SIGN
→ DIRECTION OF TRAFFIC FLOW

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR
WORK ZONE ADVANCE WARNING SIGNS FOR
FACILITIES ≤ 55 MPH

SHEET 2 OF 3
1101.01

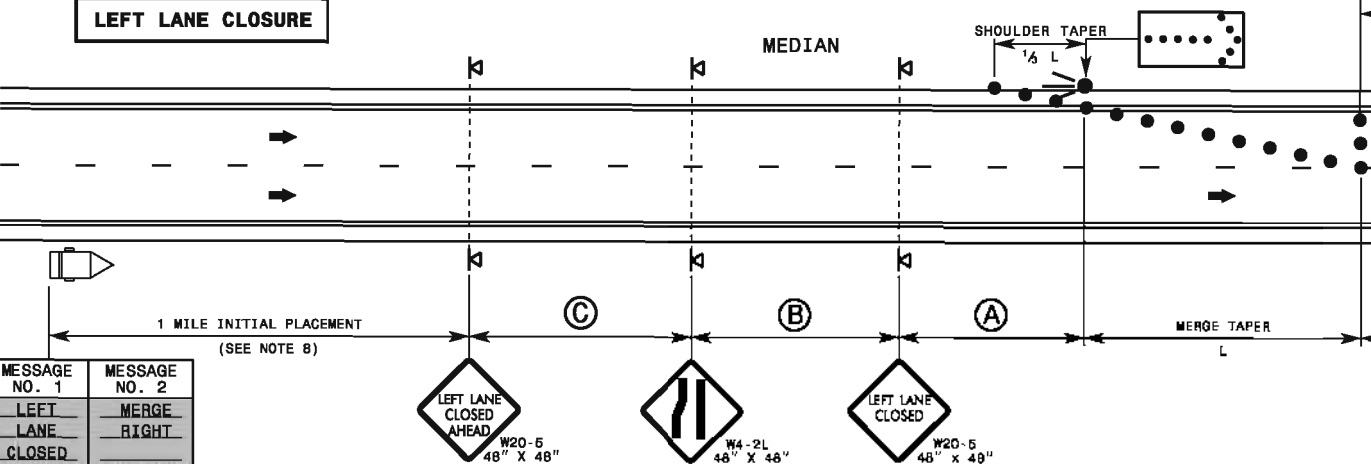
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DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

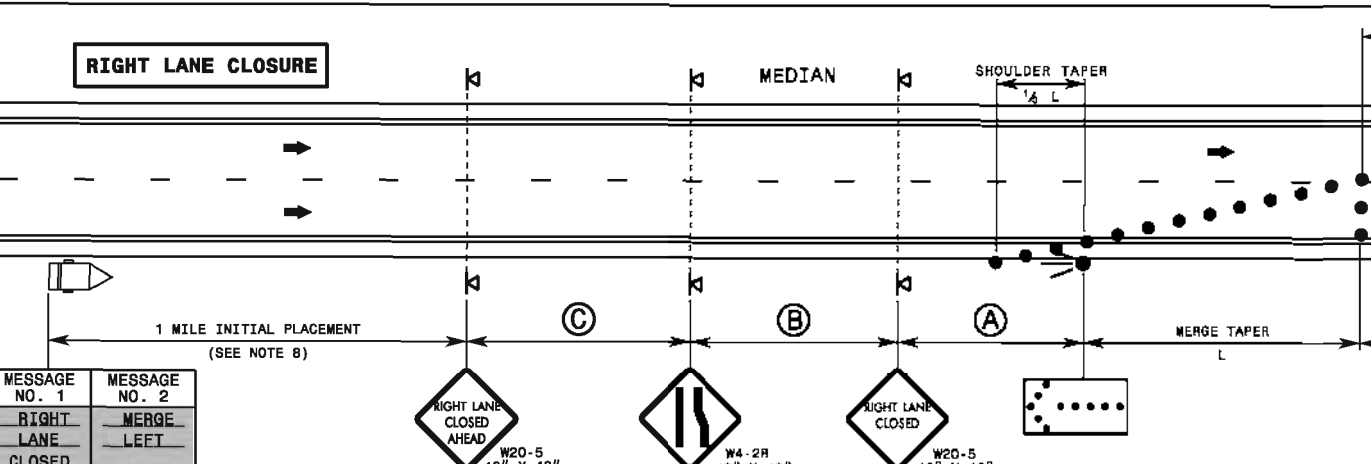
ENGLISH STANDARD DRAWING FOR
TEMPORARY LANE CLOSURES
DIVIDED MULTI-LANE ROADWAY-1 LANE CLOSED
(FOR ROADWAYS < 60 MPH)

SHEET 3 OF 15
1101.02

LEFT LANE CLOSURE



RIGHT LANE CLOSURE



GENERAL NOTES

- IF NECESSARY USE THIS STD. FOR ONE-WAY CITY TYPE STREETS WHERE SIGNS MAY BE MOUNTED ON BOTH SIDES OF THE ROADWAY.
- PLACE ARROW BOARDS ON THE SHOULDER (PAVED OR UNPAVED). PLACE ARROW BOARDS WITHIN THE TAPER IF SHOULDERS DO NOT EXIST. MEET THE REQUIREMENTS FOR STOPPING SIGHT DISTANCE AT THE ARROW BOARD LOCATION. IF NEEDED, EXTEND LANE CLOSURES AT THE BUFFER SPACE SUCH THAT STOPPING SIGHT DISTANCE TO THE ARROW BOARD IS MET (SEE STD. 1101.11 SHEET 2).
- PLACE DRUMS IN TAPERS AT THE MAXIMUM SPACING EQUAL IN FEET TO THE POSTED SPEED LIMIT. PLACE DRUMS ALONG THE WORK AREA AT THE MAXIMUM SPACING EQUAL IN FEET TO 2 TIMES THE POSTED SPEED LIMIT.
- REFER TO STD. 1101.11 FOR "L" DISTANCE, SIGN SPACING, AND BUFFER SPACE.
- REFER TO STD. 1101.02 SHEETS 9 AND 10 FOR TREATMENT OF LANE CLOSURES THRU INTERCHANGES.
- INSTALL LANE CLOSURES WITH THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE UPSTREAM SIDE OF TRAFFIC. REMOVE LANE CLOSURES AGAINST THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE DOWNSTREAM SIDE OF TRAFFIC.
- POSITION THE TMA TO MAINTAIN A ROLL-AHEAD DISTANCE AS RECOMMENDED BY THE MANUFACTURER AND CONTINUOUSLY ADVANCE TMA'S AS WORK PROGRESSES.

LEGEND

→ FLASHING ARROW BOARD (TYPE C)
 □ FLASHING ARROW BOARD, TYPE "C" (96"X48" MIN.), "CAUTION MODE"
 □ TRUCK MOUNTED ATTENUATOR (TMA)
 □ CHANGEABLE MESSAGE SIGN (CMS)
 ● DRUM
 □ PORTABLE SIGN
 → DIRECTION OF TRAFFIC FLOW

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR
TEMPORARY LANE CLOSURES
DIVIDED MULTI-LANE ROADWAY-1 LANE CLOSED
(FOR ROADWAYS < 60 MPH)

SHEET 3 OF 15
1101.02

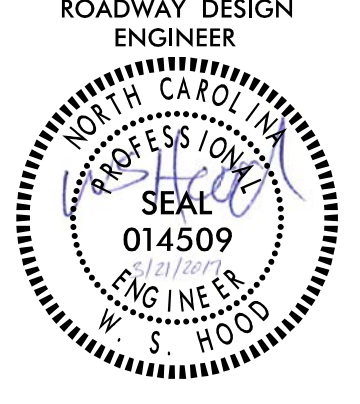
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TRAFFIC CONTROL PLAN TEMPORARY SHOULDER CLOSURES, WORK ZONE ACCESS, DESIGN TABLES, SIGN SPACING

SEE SHEET TC-1 FOR NOTES

PROJECT REFERENCE NO. R-4436FD	SHEET NO. TC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
TEMPORARY SHOULDER CLOSURES

1-12

SHOULDER CLOSURE ON CONTROLLED ACCESS FACILITIES - ≥ 60 MPH

SHOULDER CLOSURE ON DIVIDED FACILITIES - ≤ 55 MPH

SHOULDER CLOSURE ON UNDIVIDED ROADWAYS (SEE NOTE 5)

GENERAL NOTES

- PLACE SHOULDER CLOSURE SIGNS ON THE SAME SIDE AS THE SHOULDER THAT IS CLOSED.
- PLACE DRUMS IN THE SHOULDER TAPER AT THE MAXIMUM SPACING EQUAL IN FEET TO THE POSTED SPEED LIMIT. THE MAXIMUM SPACING OF DRUMS ALONG THE WORK AREA IS EQUAL IN FEET TO 2 TIMES THE POSTED SPEED LIMIT.
- USE STATIONARY SIGNS FOR LONG TERM OPERATIONS (LONGER THAN 3 DAYS).
- REFER TO STD. 1101.11 FOR "L" DISTANCE AND SIGN SPACING.
- THE TWO-LANE, TWO-WAY DRAWING MAY BE APPLIED TO UNDIVIDED, MULTI-LANE FACILITIES.

LEGEND

- DRUM
- ▢ STATIONARY OR PORTABLE SIGN
- DIRECTION OF TRAFFIC FLOW

SHEET 1 OF 1
1101.04

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
TEMPORARY SHOULDER CLOSURES

1-12

SHEET 1 OF 1
1101.04

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
TRAFFIC CONTROL DESIGN TABLES
"L" DISTANCE AND CHANNELIZING
DEVICE TAPER CRITERIA

1-12

EXAMPLE OF "L" & "W" DESIGNATIONS

TAPER LENGTH CRITERIA FOR CHANNELIZING DEVICES IN WORK ZONES

TYPES OF TAPERS

TAPER LENGTH

UPSTREAM TAPER	L MINIMUM
MERGING TAPER	L MINIMUM
SHIFTING TAPER	1/2 L MINIMUM
SHOULDER TAPER	1/2 L MINIMUM
TWO WAY TRAFFIC TAPER	60 - 100 FEET MAXIMUM
DOWNSTREAM TAPER	100 FEET MAXIMUM

QUICK REFERENCE - "L" DISTANCE TABLE

POSTED SPEED (MPH)	MINIMUM LONGITUDINAL DISTANCE "L" (FEET) (ROUNDED VALUES)											
	LATERAL WIDTH "W" (FEET)											
	1	2	3	4	5	6	7	8	9	10	11	12
20	10	15	20	30	35	40	50	55	60	70	75	80
25	15	25	35	45	55	65	75	85	95	105	115	125
30	15	30	45	60	75	90	105	120	135	150	165	180
35	25	45	65	85	105	125	145	165	185	205	225	245
40	30	55	80	110	135	160	180	215	240	270	295	320
45	45	90	135	180	225	270	315	360	405	450	495	540
50	50	100	150	200	250	300	350	400	450	500	550	600
55	55	110	165	220	275	330	385	440	495	550	605	660
60	60	120	180	240	300	360	420	480	540	600	660	720
65	65	130	195	260	325	390	455	520	585	650	715	780
70	70	140	210	280	350	420	490	560	630	700	770	840

GENERAL NOTES

- TABLE FOR "L" DISTANCE IS BASED ON CHANNELIZATION TAPER FORMULA FROM THE M.U.T.C.D. WHERE:
 SPEED LIMIT FORMULA
 $L_{MIN} = \frac{W \times S^2}{60}$
 40 MPH OR LESS
 $L_{MIN} = W \times S$
 45 MPH OR GREATER
 L = MINIMUM TAPER LENGTH IN FEET (LONGITUDINAL DISTANCE)
 W = WIDTH OF OFFSET IN FEET (LATERAL DISTANCE)
 S = POSTED SPEED LIMIT, OR OFF-PEAK 85 PERCENTILE SPEED IN MPH PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH
- "L" DISTANCE IS FOR APPLICATION WITH CHANNELIZING DEVICE AND PAVEMENT MARKING TAPERS AND TRANSITIONS. CHANNELIZING DEVICES INCLUDE DRUMS, CONES, TUBULAR MARKERS, BARRICADES, RAISED ASPHALT ISLANDS, AND VERTICAL PANELS.

SHEET 1 OF 4
1101.11

STATE OF NORTH CAROLINA
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ENGLISH STANDARD DRAWING FOR
TRAFFIC CONTROL DESIGN TABLES
"L" DISTANCE AND CHANNELIZING
DEVICE TAPER CRITERIA

1-12

SHEET 1 OF 4
1101.11

STATE OF NORTH CAROLINA
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
WORK ZONE VEHICLE ACCESSSES

1-12

ROADSIDE ACCESS POINT

ACCESS THROUGH TEMPORARY BARRIER

HAUL ROADS FOR 2-LANE, 2-WAY ROADWAYS

GENERAL NOTES

- MOUNT SIGNS ON BOTH LEFT AND RIGHT SIDES ON DIVIDED ROADWAYS. SIGNS ARE REQUIRED ONLY ON THE RIGHT SIDE OF THE ROADWAY FOR UNDIVIDED ROADWAYS.
- PROVIDE MINIMUM STOPPING SIGHT DISTANCE FOR EACH FLAGGER LOCATION.
- REFER TO STD. 1101.11 SHEETS 2 & 4 FOR STOPPING SIGHT DISTANCE AND SIGN SPACING.
- UPON COMPLETION OF EACH HAULING OPERATION, REPAIR, SWEEP, AND RESTORE THE ROADWAY TO BE SAFELY TRAVERSABLE AT NORMAL OPERATING SPEEDS.
- "BUMP" SIGNS (W9-11) ARE REQUIRED ONLY IF A BUMP OVER THE ROADWAY EXISTS AS A RESULT OF IMPLEMENTING THE HAUL ROAD. USE FLAGGERS AT ALL TIMES TO STOP TRAFFIC WHEN BUMPS ARE LOCATED ACROSS THE ROADWAY. CONSTRUCT BUMPS TO PROVIDE A SMOOTH TRANSITION FOR TRAFFIC CROSSING THEM. REMOVE BUMPS PRIOR TO ALLOWING TRAFFIC TO RESUME NORMAL OPERATING SPEEDS.
- WHEN NOT SPECIFIED IN THE PLANS OR BY THE ENGINEER, PAYMENT FOR CONVENIENCE WILL NOT BE MADE FOR FLAGGERS.

LEGEND

- ▬ PORTABLE CONCRETE BARRIER
- ▬ TEMPORARY CRASH CUSHION
- DRUM
- ▢ STATIONARY SIGN
- ▢ PORTABLE SIGN
- ▢ FLAGGER
- DIRECTION OF TRAFFIC FLOW

SHEET 1 OF 1
1101.05

STATE OF NORTH CAROLINA
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ENGLISH STANDARD DRAWING FOR
WORK ZONE VEHICLE ACCESSSES

1-12

SHEET 1 OF 1
1101.05

STATE OF NORTH CAROLINA
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ENGLISH STANDARD DRAWING FOR
TRAFFIC CONTROL DESIGN TABLES
SPACING OF TEMPORARY SIGNS IN SERIES

1-12

ADVANCE WARNING SIGN SPACING CHART

POSTED SPEED LIMIT (MPH)	RECOMMENDED DISTANCE BETWEEN SIGNS (FEET)		
	(A)	(B)	(C)
≤ 35	200	200	200
40-50	350	350	350
55	500	500	500
CONTROLLED ACCESS ROADS (≥ 55)	1000	1500	2700

STATIONARY OR PORTABLE SIGNS

GENERAL NOTES

- REFER TO 2009 MUTCD.
- USE THIS STANDARD DRAWING IN CONJUNCTION WITH OTHER TRAFFIC CONTROL ROADWAY STANDARD DRAWINGS WHERE SIGN SPACING DISTANCES A, B, C, ARE SPECIFIED.
- APPLY THE ADVANCE WARNING SIGN SPACING CHART WHERE A SERIES OF 2 OR MORE SIGNS ARE USED. ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE. FIELD ADJUST AS VARIOUS CONDITIONS OCCUR, SUCH AS LIMITED SIGHT DISTANCE, OBSTRUCTION INTERFERENCE, ETC.

SHEET 4 OF 4
1101.11

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
TRAFFIC CONTROL DESIGN TABLES
SPACING OF TEMPORARY SIGNS IN SERIES

1-12

SHEET 4 OF 4
1101.11

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TRAFFIC CONTROL PLAN SIGN MOUNTING, DRUM, FLAGGING DEVICES

PROJECT REFERENCE NO. R-4436FD	SHEET NO. TC-3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SEE SHEET TC-1 FOR NOTES

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-12 ENGLISH STANDARD DRAWING FOR STATIONARY WORK ZONE SIGNS MOUNTING HEIGHT & LATERAL CLEARANCE

GENERAL NOTES

- DIMENSIONS SHOWN ARE MINIMUM VALUES. WHEN SIGNS ARE MOUNTED BEHIND TRAFFIC CONTROL DEVICES SUCH AS DRUMS, BARRIERS, OR OTHER OBJECTS THAT DETRACT FROM THEIR VISIBILITY, MOUNT THE SIGNS AT AN APPROPRIATE HEIGHT SUCH THAT THEY ARE CLEARLY VISIBLE TO APPROACHING TRAFFIC.
- MOUNT SIGNS THAT ARE LARGER THAN 10 SQUARE FEET IN AREA ON TWO OR MORE WOOD OR U-CHANNEL SUPPORTS. PERFORATED SQUARE TUBING SUPPORT SYSTEMS MAY SUPPORT LARGER AREAS ON A SINGLE SUPPORT. FOLLOW MANUFACTURER'S RECOMMENDATIONS. THESE SYSTEMS SHALL BE NCHRP 350 COMPLIANT AND NCDOT APPROVED.
- SEE STANDARD SPECIFICATION 1089-1 FOR WORK ZONE SIGNS.
- SEE STANDARD SPECIFICATION 1089-2 FOR WORK ZONE SIGN SUPPORTS.
- SEE ROADWAY STANDARD DRAWING 903.20 FOR WOOD POSTS.
- SEE STANDARD SPECIFICATION 903-1 FOR WOOD SUPPORTS.

SHEET 1 OF 3
1110.01

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-12 ENGLISH STANDARD DRAWING FOR PORTABLE WORK ZONE SIGNS MOUNTING HEIGHT & LATERAL CLEARANCE

GENERAL NOTES

- DIMENSIONS SHOWN ARE MINIMUM VALUES. MOUNT SIGNS SO THEY WILL BE CLEARLY VISIBLE TO APPROACHING TRAFFIC EVEN WHEN SIGNS ARE MOUNTED BEHIND TRAFFIC CONTROL DEVICES SUCH AS DRUMS, BARRIER, OR OTHER OBJECTS.
- ALL PORTABLE SIGNS AND STANDS MUST MEET OR EXCEED THE REQUIREMENTS OF NCHRP 350 FOR CATEGORY II DEVICES. USE PORTABLE WORK ZONE SIGNS AND STANDS SPECIFICALLY DESIGNED FOR ONE ANOTHER.
- ALL PORTABLE WORK ZONE SIGNS AND STANDS MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST AT <https://apps.dot.state.nc.us/vendor/approvedproducts>.

SHEET 1 OF 1
1110.02

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-12 ENGLISH STANDARD DRAWING FOR DRUM

GENERAL NOTES

- BALLASTING SHALL BE ACHIEVED BY THE SAND BAG, TIRE-SIDEWALL, OR PERFORMED WEIGHTED BASE METHODS. USE THE TIRE BALLAST AS SPECIFIED BY THE MANUFACTURER. DO NOT PLACE BALLAST ON TOP OF THE DRUM.
- IF NECESSARY PLACE THE NAME OF THE AGENCY, CONTRACTOR, OR SUPPLIER ON NON-RETROREFLECTIVE DRUM SURFACES. SHOW THE LETTERS AND NUMBERS USING A NON-RETROREFLECTIVE COLOR AND NOT OVER 2" IN HEIGHT.
- USE TYPE 3 OR HIGHER HIGH INTENSITY PRISMATIC SHEETING.
- SEE THE DEPARTMENT'S APPROVED PRODUCT LIST AT <https://apps.dot.state.nc.us/vendor/approvedproducts>.
- REFER THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES FOR ADDITIONAL INFORMATION.

SHEET 1 OF 1
1130.01

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

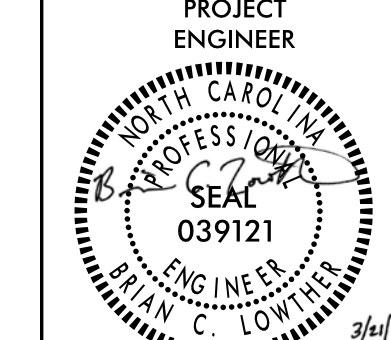
1-12 ENGLISH STANDARD DRAWING FOR FLAGGERS

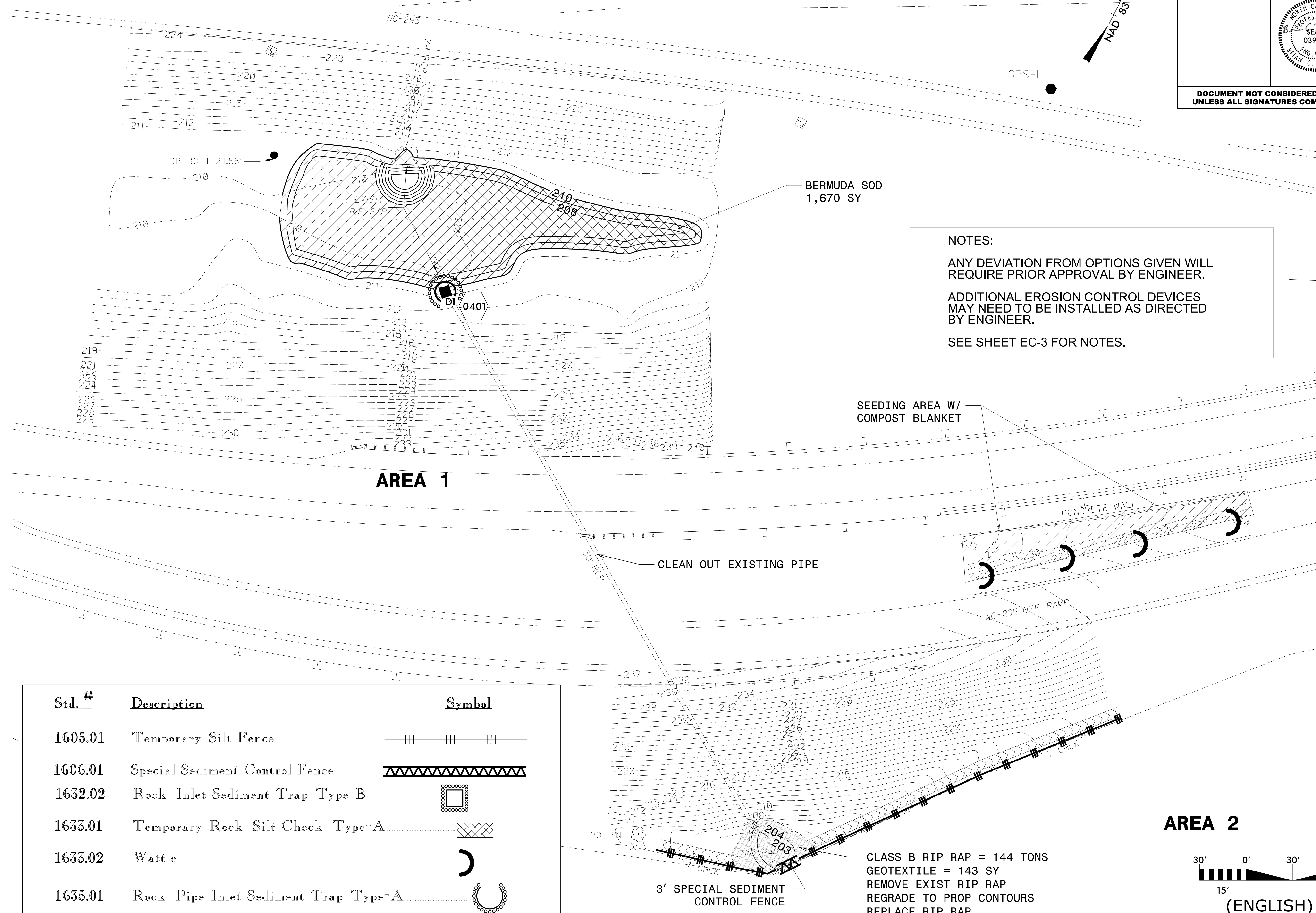
GENERAL NOTES

- USE HAND SIGNALING DEVICES SUCH AS STOP-SLOW PADDLES, FLASHLIGHTS TO CONTROL TRAFFIC. USE STOP-SLOW PADDLES AS THE PRIMARY DEVICE.
- FABRICATE STOP-SLOW PADDLES FROM SHEET METAL OR OTHER LIGHT SEMI RIGID MATERIAL. PROVIDE A RIGID HANDLE OF SUFFICIENT LENGTH SO THE PADDLE IS HELD AT 7 FEET ABOVE GROUND LEVEL.
- PROVIDE STOPPING SIGHT DISTANCE TO EACH FLAGGER STATION (REFER TO STD. 1101.11 SHEET 2).
- ILLUMINATE FLAGGER STATIONS DURING NIGHT OPERATIONS.
- FOLLOW FLAGGER QUALIFICATIONS AND METHODS OF HAND-SIGNALING PROCEDURES IN ACCORDANCE WITH PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- ALL FLAGGERS MUST BE CERTIFIED BY AN NCDOT APPROVED SOURCE.

SHEET 1 OF 1
1150.01

EROSION CONTROL PLAN - BMP AREA 1 & 2

PROJECT REFERENCE NO. <i>R-4436FD</i>	SHEET NO. <i>EC-1</i>
RW SHEET NO.	
PROJECT ENGINEER	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



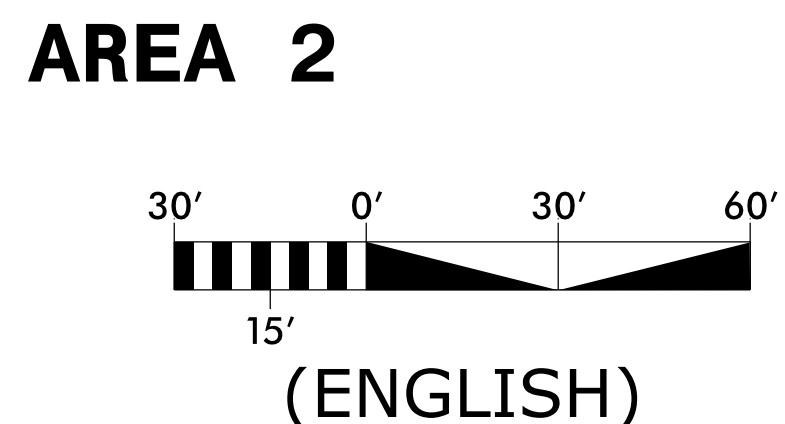
NOTES:

ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY ENGINEER.

SEE SHEET EC-3 FOR NOTES.

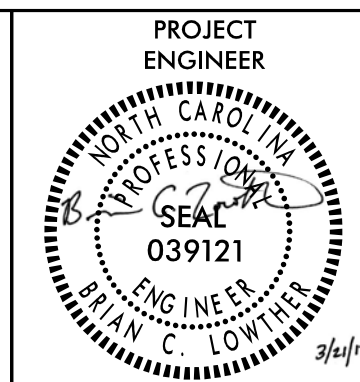
Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	▄▄▄▄▄▄▄▄▄▄▄
1632.02	Rock Inlet Sediment Trap Type B	◻
1633.01	Temporary Rock Silt Check Type-A	▨▨▨▨▨▨▨▨▨
1633.02	Wattle) (
1635.01	Rock Pipe Inlet Sediment Trap Type-A	◌

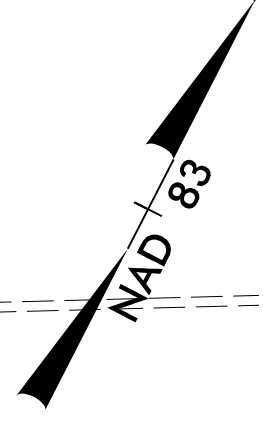


MATCHLINE SHEET EC-2

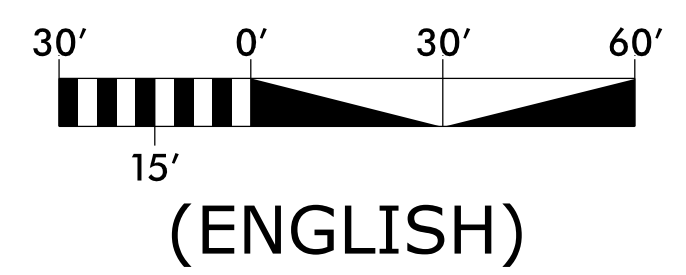
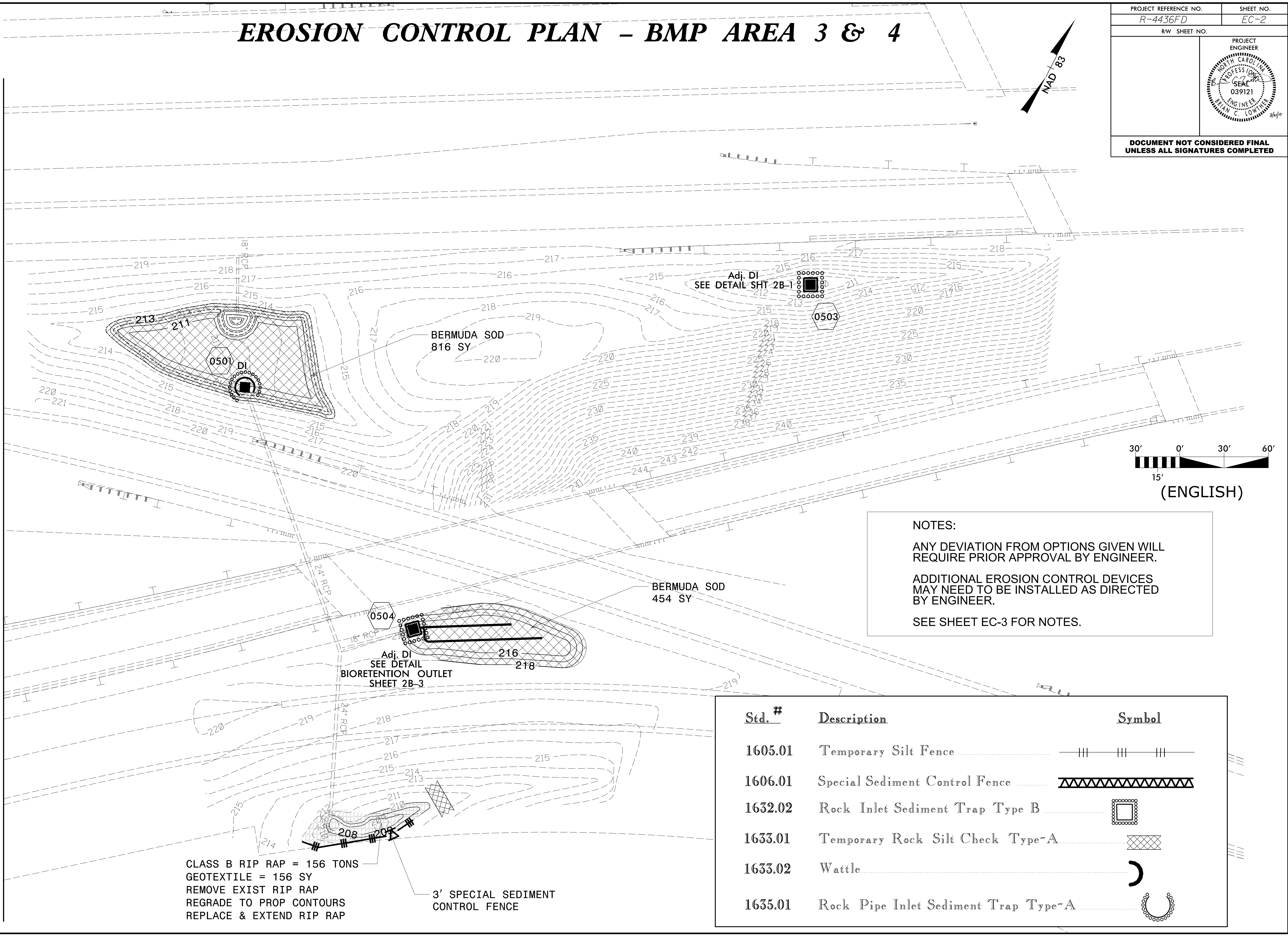
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EROSION CONTROL PLAN - BMP AREA 3 & 4

PROJECT REFERENCE NO. R-4436FD	SHEET NO. EC-2
RW SHEET NO.	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE SHEET EC-1



NOTES:
 ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.
 ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY ENGINEER.
 SEE SHEET EC-3 FOR NOTES.

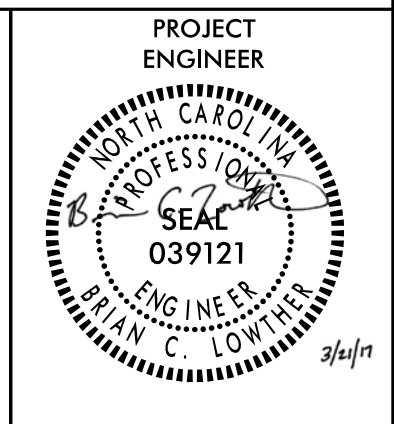
CLASS B RIP RAP = 156 TONS
 GEOTEXTILE = 156 SY
 REMOVE EXIST RIP RAP
 REGRADE TO PROP CONTOURS
 REPLACE & EXTEND RIP RAP

3' SPECIAL SEDIMENT CONTROL FENCE

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1632.02	Rock Inlet Sediment Trap Type B	
1633.01	Temporary Rock Silt Check Type-A	
1633.02	Wattle	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	

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EROSION CONTROL PLAN NOTES

PROJECT REFERENCE NO. <i>R-4436FD</i>	SHEET NO. <i>EC-3</i>
RW SHEET NO.	
PROJECT ENGINEER	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

NOTES

CONSTRUCTION SEQUENCE

1. PROJECT REQUIRES A PRE- CONSTRUCTION CONFERENCE PRIOR TO INITIATING ANY EARTH DISTURBANCE ACTIVITIES.
2. PER PROJECT AREA, INSTALL APPLICABLE EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO THE ONSET OF ANY LAND DISTURBING ACTIVITY.
3. INSTALL APPLICABLE CONTROL MEASURES INCLUDING: TEMPORARY SILT FENCE, ROCK INLET SEDIMENT TRAP, TEMPORARY ROCK SILT CHECKS, AND ROCK PIPE INLET SEDIMENT TRAP AS SHOWN ON PLANS. PROVIDE GRAVEL CONSTRUCTION ENTRANCE PER 1607.01 AS NEEDED TO PREVENT TRACKING OFFSITE.
4. CONSTRUCT INFILTRATION BASINS, DETENTION BASIN, BIORETENTION AREA, AND OTHER IMPROVEMENTS. ADJUST AND/OR INSTALL EROSION AND SEDIMENT CONTROL MEASURES AS WORK PROGRESSES. CHECK AND MAINTAIN MEASURES, OR PROVIDE TEMPORARY SEEDING UNTIL PERMANENT SEEDING/VEGETATION CAN BE INSTALLED.
5. MAINTAIN ALL EROSION CONTROL MEASURES AS NEEDED.
6. IMMEDIATELY AFTER CONSTRUCTION OF FINAL GRADES, FOLLOW SEED/SOD AND MULCHING GUIDELINES ON THE PLANS TO STABILIZE ALL REMAINING DISTURBED SURFACES.
7. INSPECT ALL INLETS, PIPES, AND OUTLETS FOR SEDIMENT AND REMOVE SEDIMENT AS REQUIRED.
8. REMOVE ALL REMAINING TEMPORARY EROSION CONTROL MEASURES AFTER PERMANENT PERENNIAL VEGETATION IS ESTABLISHED.

EROSION CONTROL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH NCDOT STANDARDS, SPECIFICATIONS, AND DETAILS, LATEST VERSION
2. CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL MEASURES DURING THE LIFE OF THE PROJECT UNLESS OTHERWISE INDICATED ON THE PLANS OR DIRECTED BY NCDOT INSPECTOR.
3. CONTRACTOR SHALL CONSTRUCT DIVERSION DITCHES AS NECESSARY TO ENSURE THAT ALL SEDIMENT IS DIRECTED INTO EROSION CONTROL MEASURES.
4. CUT AND FILL SLOPES SHALL BE STABILIZED WITHIN 14 DAYS OF ANY PHASE OF GRADING. SLOPES 3:1 OR STEEPER SHALL BE STABILIZED WITHIN 7 DAYS.
5. PROVIDE TEMPORARY MEASURES AS NECESSARY TO PREVENT SEDIMENT FROM MIGRATING INTO FILTER MEDIA OR SODDED AREAS.
6. ALL STREETS ADJACENT TO THIS PROJECT SHALL REMAIN CLEAN AT ALL TIMES OR A WASH STATION MAY BE REQUIRED.
7. SILT FENCE SHALL BE MAINTAINED ON THE SITE UNTIL ALL SITE WORK IS COMPLETED AND THE FINAL SITE INSPECTION IS SCHEDULED.
8. RESEED OF PERMANENT GROUND COVER WILL BE ESTABLISHED IN 15 WORKING DAYS OR 30 CALENDAR DAYS, WHICH EVER IS SHORTER.
9. EROSION CONTROL MATTING SHALL BE STRAW MATTING. USE STD. DWG. 1631.01 FOR MATTING INSTALLATION.
10. PROVIDE GRAVEL CONSTRUCTION ENTRANCE PER 1607.01 AS NEEDED TO PREVENT TRACKING OFFSITE.

MAINTENANCE PLAN

1. ALL EROSION AND SEDIMENTATION CONTROL PRACTICES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF PRODUCING RAINFALL BUT IN NO CASE LESS THAN ONCE A WEEK. ANY NEEDED REPAIRS WILL BE MADE IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED.
2. SEDIMENT WILL BE REMOVED FROM BEHIND THE SILT FENCE WHEN IT BECOMES ABOUT 6-INCHES DEEP AT THE FENCE. THE SILT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER.
3. INLET PROTECTION DEVICES SHALL BE INSPECTED AFTER EVERY RAINFALL EVENT. DAMAGED SILT FENCE SHALL BE REPLACED AND GRAVEL SHALL BE CLEANED OR REPLACED WHEN INLET NO LONGER DRAINS PROPERLY.

SEEDBED PREPARATION

1. PREPARE AND SEED ONLY DISTURBED AREAS. DO NOT SPREAD SEED ON AREAS TO RECEIVE SOD.
2. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS IF AVAILABLE.
3. RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
4. REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS LEAVING SURFACES REASONABLY SMOOTH AND UNIFORM.
5. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW*).
6. CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
7. SEED A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
8. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
9. INSPECT ALL SEEDED AREAS AND MAKE ALL NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 70% DAMAGED, REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
10. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

*APPLY: AGRICULTURAL LIMESTONE - 2 TONS/ACRE (34 TONS/ACRE ON CLAY SOILS)
 FERTILIZER - 1,000 LBS/ACRE - 10-10-10
 PERPHOSPHATE - 500 LBS/ACRE - 20%
 MULCH - 2 TONS/ACRE - SMALL GRAIN STRAW
 ANCHOR - ASPHALT EMULSION @ 300 GAL. ACRE

STABILIZATION REQUIREMENTS (3-11-2016)

STABILIZATION FOR THIS PROJECT SHALL COMPLY WITH THE TIME FRAME GUIDELINES AS SPECIFIED BY THE NCG- 10000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY. TEMPORARY OR PERMANENT GROUND COVER STABILIZATION SHALL OCCUR WITHIN 7 CALENDAR DAYS FROM THE LAST LAND-DISTURBING ACTIVITY, WITH THE FOLLOWING EXCEPTIONS IN WHICH TEMPORARY OR PERMANENT GROUND COVER SHALL BE PROVIDED IN 14 CALENDAR DAYS FROM THE LAST LAND-DISTURBING ACTIVITY:

- SLOPES BETWEEN 2:1 AND 3:1, WITH A SLOPE LENGTH OF 10 FT. OR LESS
- SLOPES 3:1 OR FLATTER, WITH A SLOPE OF LENGTH OF 50 FT. OR LESS
- SLOPES 4:1 OR FLATTER

THE STABILIZATION TIMEFRAME FOR HIGH QUALITY WATER (HQW) ZONES SHALL BE 7 CALENDAR DAYS WITH NO EXCEPTIONS FOR SLOPE GRADES OR LENGTHS. HIGH QUALITY WATER ZONES (HQW) ZONES ARE DEFINED BY NORTH CAROLINA ADMINISTRATIVE CODE 15A NCAC 04A.0105 (25). TEMPORARY AND PERMANENT GROUND COVER STABILIZATION SHALL BE ACHIEVED IN ACCORDANCE WITH THE PROVISIONS IN THIS CONTRACT AND AS DIRECTED.

COMPOST BLANKET

A WATER PERMEABLE COMPOST BLANKET SHALL BE USED TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON SOILS WHERE VEGETATION IS DIFFICULT TO ESTABLISH.

COMPOST USED FOR COMPOST BLANKETS SHALL BE WEED FREE AND DERIVED FROM A WELL-DECOMPOSED SOURCE OF ORGANIC MATTER. THE COMPOST SHALL BE PRODUCED USING AN AEROBIC COMPOSTING PROCESS MEETING CFR 503 REGULATIONS, INCLUDING TIME AND TEMPERATURE DATA INDICATING EFFECTIVE WEED SEED, PATHOGEN, AND INSECT LARVAE KILL. THE COMPOST SHALL BE FREE OF ANY REFUSE, CONTAMINANTS OR OTHER MATERIALS TOXIC TO PLANT GROWTH. NON-COMPOSTED PRODUCTS WILL NOT BE ACCEPTED. TEST METHODS FOR THE ITEMS BELOW SHOULD FOLLOW USCC TMECC GUIDELINES FOR LABORATORY PROCEDURES:

1. PH BETWEEN 5.0 AND 8.0 IN ACCORDANCE WITH TMECC 04.11-A, "ELECTROMETRIC PH DETERMINATIONS FOR COMPOST".
2. FOR SEEDED COMPOST BLANKETS, SEED SHOULD BE INCORPORATED AT THE TIME OF APPLICATION IN THE ENTIRE DEPTH OF THE COMPOST BLANKET, AT RATES PER FOOT, PER SQUARE YARD, OR PER ACRE, AS ACCEPTABLE TO THE ENGINEER. THE FOLLOWING PARTICLE SIZES SHALL ALSO BE FOLLOWED: 100% PASSING A 2" SIEVE; 99% PASSING A 1" SIEVE; MINIMUM OF 60% PASSING A " SIEVE. ALL OTHER TESTING PARAMETERS REMAIN THE SAME. THE SEEDING RATES ARE GENERALLY SIMILAR OR SLIGHTLY HIGHER THAN THOSE USED WHEN CONSIDERING APPLICATION OF SEED VIA HYDROSEEDING OR OTHER SEEDING METHODS.
3. MOISTURE CONTENT OF LESS THAN 60% IN ACCORDANCE WITH STANDARDIZED TEST METHODS FOR MOISTURE DETERMINATION.
4. MATERIAL SHALL BE RELATIVELY FREE (<1% BY DRY WEIGHT) OF INERT OR FOREIGN MAN MADE MATERIALS.
5. A SAMPLE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO BEING USED AND MUST COMPLY WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

COMPOST BLANKET CONSTRUCTION METHODS

1. COMPOST BLANKETS WILL BE PLACED AS DIRECTED. UNLESS OTHERWISE SPECIFIED, COMPOST BLANKETS SHOULD BE INSTALLED AT A MINIMUM DEPTH OF 1 INCH.
2. THE COMPOST BLANKET SHALL BE SEEDED AT TIME OF INSTALLATION FOR ESTABLISHMENT OF PERMANENT VEGETATION. COMPOST BLANKETS ARE NOT TO BE USED IN DIRECT FLOW SITUATIONS OR IN RUNOFF CHANNELS.
3. THE TYPE AND RATE OF SEED, FERTILIZER AND LIME SHALL BE IN ACCORDANCE WITH THE PROVISIONS PROVIDED HEREIN AND AS DIRECTED.

COMPOST BLANKET MAINTENANCE

1. THE CONTRACTOR SHALL PERFORM ROUTINE INSPECTIONS AND MAINTAIN THE COMPOST BLANKET IN A FUNCTIONAL CONDITION AT ALL TIMES.
2. WHERE THE COMPOST BLANKET FAILS, IT WILL BE ROUTINELY REPAIRED.
3. THE COMPOST BLANKET WILL BE SEEDED ON SITE, AT RATES AND SEED TYPES AS PROVIDED HEREIN OR DETERMINED BY THE ENGINEER. ONCE VEGETATION IS ESTABLISHED, FINAL SEEDING IS NOT REQUIRED.

COMPOST BLANKET PERFORMANCE

1. THE CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING PERMANENT VEGETATION IN THE COMPOST BLANKET AREA.
2. WHERE THE COMPOST BLANKET DETERIORATES OR FAILS, IT WILL BE REPAIRED OR REPLACED WITH A MORE EFFECTIVE APPROVED ALTERNATIVE.

SEEDING AND MULCHING

THE KINDS OF SEED AND FERTILIZER, AND THE RATES OF APPLICATION OF SEED, FERTILIZER, AND LIMESTONE, SHALL BE AS STATED BELOW. DURING PERIODS OF OVERLAPPING DATES, THE KIND OF SEED TO BE USED SHALL BE DETERMINED. ALL RATES ARE IN POUNDS PER ACRE.

MARCH 1 - AUGUST 31	SEPTEMBER 1 - FEBRUARY 28
15# CENTIPEDE	15#CENTIPEDE
25# BERMUDAGRASS (HULLED)	35# BERMUDAGRASS(UNHULLED)
500# FERTILIZER	500#FERTILIZER
4000# LIMESTONE	4000# LIMESTONE

APPROVED TALL FESCUE CULTIVARS

06 DUST	ESCALADE	JUSTICE	SERENGETI
2ND MILLENNIUM	ESSENTIAL	KALAHARI	SHELBY
3RD MILLENNIUM	EVERGREEN 2	KITTY HAWK 2000	SHERIDAN
APACHE III	FALCON IV	FALCON NG	LEGITIMATE
AVENGER	FALCON NG	FALCON V	LEXINGTON
BARLEXAS	FALCON V	FAITH	LSL
BARLEXAS II	FAT CAT	FESTNOVA	MAGELLAN
BAR FA	FIDELITY	FIDELITY	MATADOR
BARRERA	FIDELITY	MILLENNIUM SRP	MILLENNIUM SRP
BARRINGTON	FIDELITY	MONET	MONET
BARROBUSTO	FIDELITY	MUSTANG 4	MUSTANG 4
BARVADO	FIDELITY	NINJA 2	NINJA 2
BILTMORE	FIDELITY	OL' GLORY	OL' GLORY
BINGO	FIDELITY	OLYMPIC GOLD	OLYMPIC GOLD
BIZEM	FIDELITY	PADRE	PADRE
BLACKWATCH	FIDELITY	PATAGONIA	PATAGONIA
BLADE RUNNER II	FIDELITY	PEDIGREE	PEDIGREE
BONSAI	FIDELITY	PICASSO	PICASSO
BRAVEHEART	FIDELITY	PIEDMONT	PIEDMONT
BRAVO	FIDELITY	PLANTATION	PLANTATION
BULLSEYE	FIDELITY	PROSEEDS 5301	PROSEEDS 5301
CANNAVARO	FIDELITY	PROSPECT	PROSPECT
CATALYST	FIDELITY	PURE GOLD	PURE GOLD
CAYENNE	FIDELITY	QUEST	QUEST
CESSANE RZ	FIDELITY	RAPTOR II	RAPTOR II
CHIPPER	FIDELITY	REBEL EXEDA	REBEL EXEDA
COCHISE IV	FIDELITY	REBEL SENTRY	REBEL SENTRY
CONSTITUTION	FIDELITY	REBEL IV	REBEL IV
CORGI	FIDELITY	REGIMENT II	REGIMENT II
CORONA	FIDELITY	REGENERATE	REGENERATE
COYOTE	FIDELITY	RENDITION	RENDITION
DARLINGTON	FIDELITY	RHAMBLER 2 SRP	RHAMBLER 2 SRP
DAVINCI	FIDELITY	REMBRANDT	REMBRANDT
DESIRE	FIDELITY	REUNION	REUNION
DOMINION	FIDELITY	RIVERSIDE	RIVERSIDE
DYNAMIC	FIDELITY	RNP	RNP
DYANASTY	FIDELITY	ROCKET	ROCKET
ENDEAVOR	FIDELITY	SCORPION	SCORPION

FERTILIZER ANALYSIS SHALL BE 10-20-20. A DIFFERENT ANALYSIS OF FERTILIZER MAY BE USED PROVIDED THE 1-2-2 RATIO IS MAINTAINED AND THE RATE OF APPLICATION ADJUSTED TO PROVIDE THE SAME AMOUNT OF PLANT FOOD AS A 10-20-20 ANALYSIS AND AS DIRECTED. FERTILIZER SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE.

WATERING

WATER IN ACCORDANCE WITH SECTION 1664 OF THE STANDARD SPECIFICATIONS.WATER SOD AND SEEDED AREAS 1" PER WEEK FOR 8 WEEKS.

TEMPORARY SEEDING

FERTILIZER SHALL BE THE SAME ANALYSIS AS SPECIFIED FOR SEEDING AND MULCHING AND APPLIED AT THE RATE OF 400 POUNDS AND SEEDED AT THE RATE OF 50 POUNDS PER ACRE. SWEET SUDAN GRASS, GERMAN MILLET OR BROWNTOP MILLET SHALL BE USED IN SUMMER MONTHS AND RYE GRAIN DURING THE REMAINDER OF THE YEAR. THE ENGINEER WILL DETERMINE THE EXACT DATES FOR USING EACH KIND OF SEED.

FERTILIZER TOPDRESSING

FERTILIZER USED FOR TOPDRESSING ON ALL ROADWAY AREAS EXCEPT SLOPES 2:1 AND STEEPER SHALL BE 10-20-20 GRADE AND SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE. A DIFFERENT ANALYSIS OF FERTILIZER MAY BE USED PROVIDED THE 1-2-2 RATIO IS MAINTAINED AND THE RATE OF APPLICATION ADJUSTED TO PROVIDE THE SAME AMOUNT OF PLANT FOOD AS 10-20-20 ANALYSIS AND AS DIRECTED.

FERTILIZER USED FOR TOPDRESSING ON SLOPES 2:1 AND STEEPER AND WASTE AND BORROW AREAS SHALL BE 16-8-8 GRADE AND SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE. A DIFFERENT ANALYSIS OF FERTILIZER MAY BE USED PROVIDED THE 2-1-1 RATIO IS MAINTAINED AND THE RATE OF APPLICATION ADJUSTED TO PROVIDE THE SAME AMOUNT OF PLANT FOOD AS 16-8-8 ANALYSIS AND AS DIRECTED.

SUPPLEMENTAL SEEDING

THE KINDS OF SEED AND PROPORTIONS SHALL BE THE SAME AS SPECIFIED FOR SEEDING AND MULCHING, WITH THE EXCEPTION THAT NO CENTIPEDE SEED WILL BE USED IN THE SEED MIX FOR SUPPLEMENTAL SEEDING. THE RATE OF APPLICATION FOR SUPPLEMENTAL SEEDING MAY VARY FROM 25# TO 75# PER ACRE. THE ACTUAL RATE PER ACRE WILL BE DETERMINED PRIOR TO THE TIME OF TOPDRESSING AND THE CONTRACTOR WILL BE NOTIFIED IN WRITING OF THE RATE PER ACRE, TOTAL QUANTITY NEEDED, AND AREAS ON WHICH TO APPLY THE SUPPLEMENTAL SEED. MINIMUM TILLAGE EQUIPMENT, CONSISTING OF A SOD SEEDER SHALL BE USED FOR INCORPORATING SEED INTO THE SOIL AS TO PREVENT DISTURBANCE OF EXISTING VEGETATION. A CLODBUSTER (BALL AND CHAIN) MAY BE USED WHERE DEGREE OF SLOPE PREVENTS THE USE OF A SOD SEEDER.

MOWING

THE MINIMUM MOWING HEIGHT ON THIS PROJECT SHALL BE 4 INCHES.