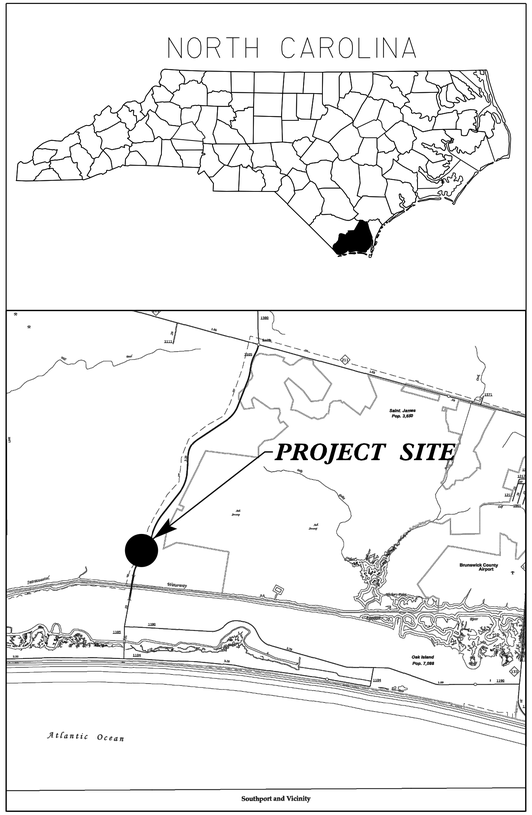
09/08/99

TIP PROJECT: R-4436CH

CONTRACT: 34625.2.66

See Sheet 1-A For Index of Sheets



VICINITY MAP

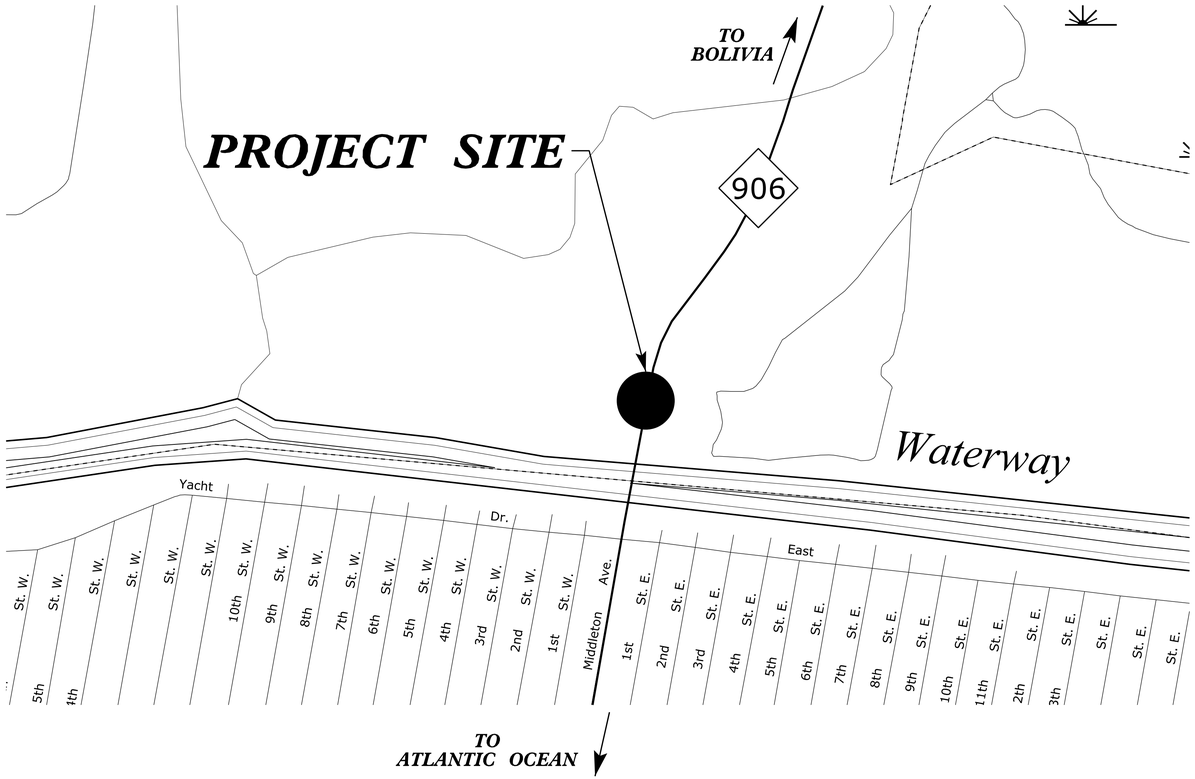
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4436CH	1	10
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
34625.2.66			

LOCATION: NC 906 NORTH OF INTRACOASTAL WATERWAY

TYPE OF WORK: GRADING, STORM DRAINAGE, INFILTRATION BASIN, EROSION CONTROL, AND SEEDING & MULCHING



NAD 83/2001

SEAL 035946 ENGINEER JASON S. SITES NORTH CAROLINA PROFESSIONAL

2/22/2017

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GRAPHIC SCALES

SCALE VARIES
SEE PLANS

NCDOT Highway Stormwater PROGRAM

LETTING DATE:
MAY 18, 2017

Prepared by

AECOM

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JASON SITES, PE
PROJECT ENGINEER

PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: ***P.E.***

NCDOT CONTACT

BRIAN LIPSCOMB, P.E.
HIGHWAY STORMWATER PROGRAM

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
HYDRAULICS UNIT
STORMWATER GROUP

PROJECT ENGINEER

2/22/2017
01_Rdy_psh-01.dgn
lisa.jamison

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-4436CH	1-A

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 035946 JASON S SITES

2/22/2017

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INDEX OF SHEETS

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

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 11 - WORK ZONE TRAFFIC CONTROL	
1101.01	WORK ZONE ADVANCE WARNING SIGNS FOR FACILITIES ≤ 55 MPH
1101.02	TEMPORARY LANE CLOSURES - DIVIDED MULTI-LANE ROADWAY - 1 LANE CLOSED (FOR ROADWAYS < 60 MPH)
1101.04	TEMPORARY SHOULDER CLOSURES
DIVISION 16 - EROSION CONTROL AND ROADSIDE DEVELOPMENT	
1605.01	TEMPORARY SILT FENCE
1607.01	GRAVEL CONSTRUCTION ENTRANCE

CONSTRUCTION SEQUENCE NOTES

PROJECT REQUIRES A PRE-CONSTRUCTION CONFERENCE PRIOR TO INITIATING ANY EARTH DISTURBANCE ACTIVITIES.

1. INSTALL TEMPORARY SILT FENCE AND GRAVEL CONSTRUCTION ENTRANCE AS SHOWN ON PLANS.
2. CONSTRUCT INFILTRATION BASIN AND OTHER IMPROVEMENTS.
3. FOLLOW SEEDING/ MULCHING GUIDELINES ON THE PLANS TO STABILIZE ALL REMAINING DISTURBED SURFACES.
4. INSPECT OUTLETS FOR SEDIMENT AND REMOVE SEDIMENT AS REQUIRED.
5. 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 EROSION CONTROL MEASURES AS NECESSARY TO PREVENT SEDIMENT FROM MIGRATING INTO BASIN BOTTOM OR SODDED AREAS.
6. ALL STREETS ADJACENT TO THIS PROJECT SHALL REMAIN CLEAN AT ALL TIMES OR A WASH STATION MAY BE REQUIRED.
7. IF USED, SILT FENCE SHALL BE MAINTAINED ON THE SITE UNTIL ALL SITE WORK IS COMPLETED AND THE FINAL SITE INSPECTION IS COMPLETE.
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.

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 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.

GENERAL NOTES

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.

SEEDBED PREPARATION

1. PREPARE AND SEED ONLY DISTURBED AREAS. DO NOT SPREAD SEED ON AREAS TO RECEIVE SOD, SEE SHEET 2-A FOR 3-D GEOTEXTILE & SOD INSTALLATION.
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
SUPERPHOSPHATE - 500 LBS/ACRE - 20%
MULCH - 2 TONS/ACRE - SMALL GRAIN STRAW
ANCHOR - ASPHALT EMULSION @ 300 GAL. ACRE

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.

2/22/2017
01A.dgn
lisa.jamison

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
R-4436CH	1-B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

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 — 123
- Existing Fence Line
- 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 — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- 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 — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- 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
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- 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 — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- 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 — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- 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 — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- 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.

PROJECT REFERENCE NO.	SHEET NO.
R-4436CH	I-C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 035946 ENGINEER JASON S. SITES 2/22/2017

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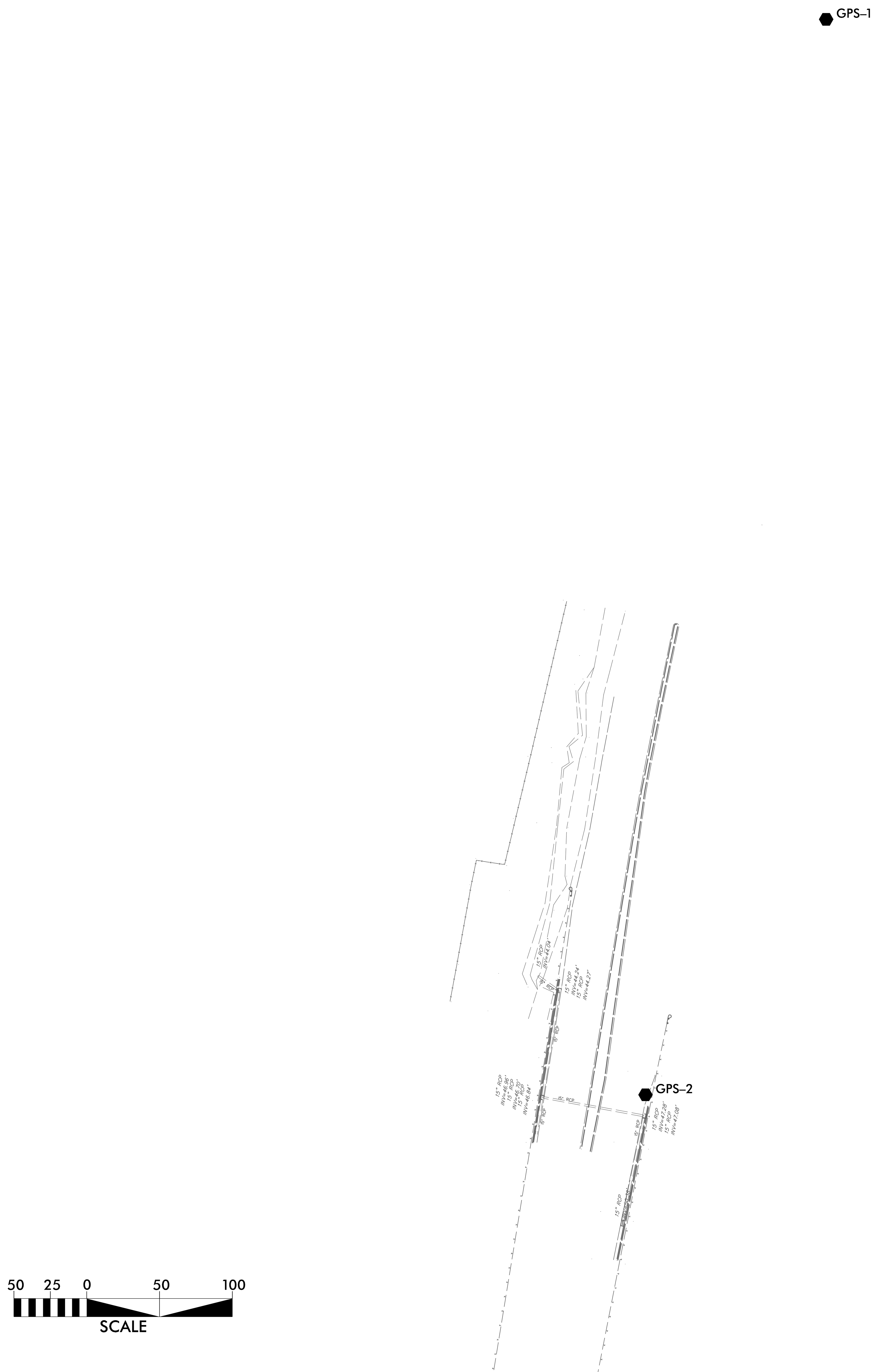
SURVEY CONTROL

NAD 83/2011



POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	67165.866	2255366.092	33.665	GPS-1
2	66427.477	2255241.994	49.93	GPS-2

EXISTING CONDITIONS SURVEY

SITE COORDINATE CONTROL AND EXISTING CONDITIONS FOR PROJECT ARE FROM A TOPOGRAPHIC SURVEY PERFORMED IN NOVEMBER 2016 BY: AECOM

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "GPS-1"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 67165.866(ft) EASTING: 2255366.092(ft)
ELEVATION: 33.665(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999778365
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-1" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

REVISIONS

8/17/99

2/20/2017 01_Rdy_psh-01C.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-4436CH	2-A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 035946 ENGINEER JASON S. SITES

2/22/2017

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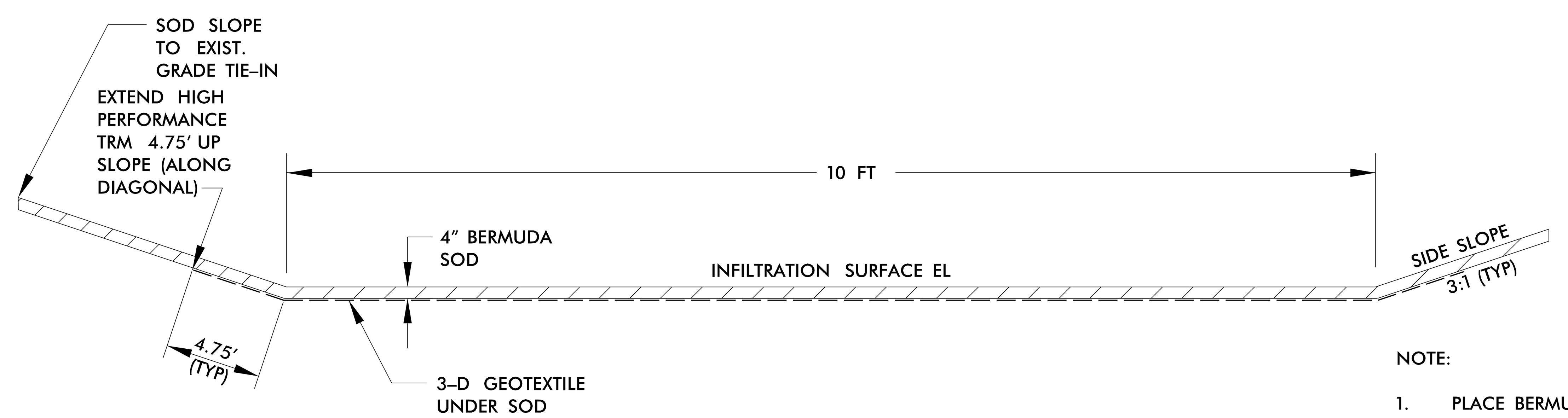
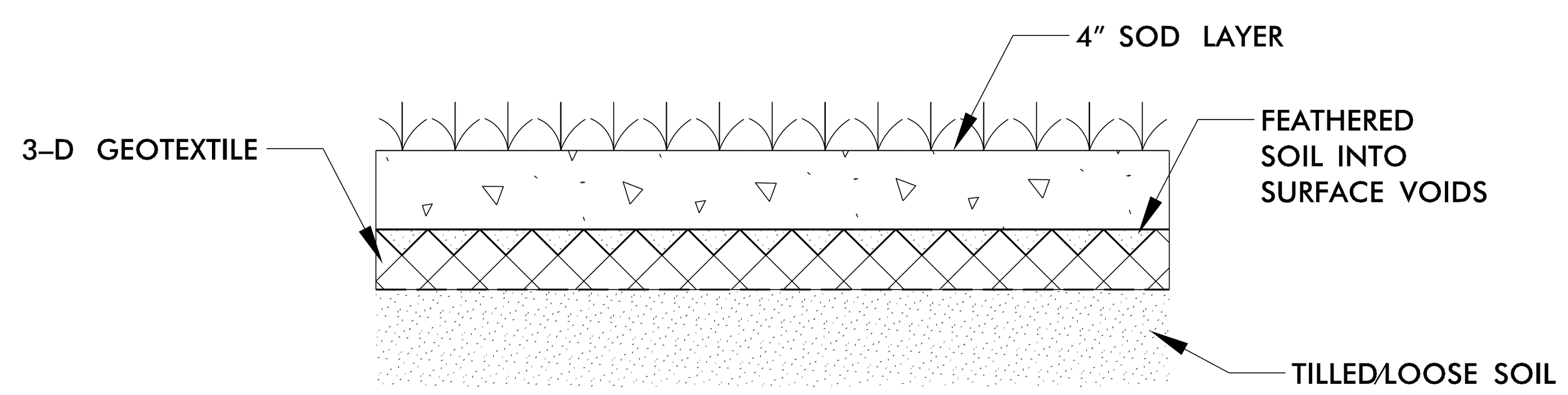
BMP DETAILS 1 & PROFILE



TYPICAL SECTION – INFILTRATION BASIN

N.T.S.

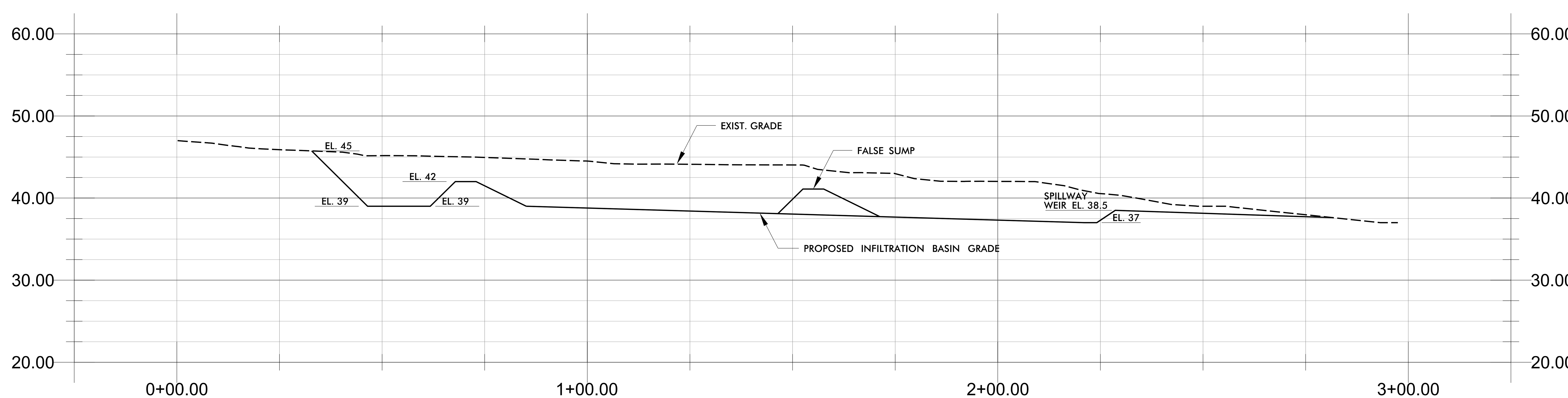


3-D GEOTEXTILE & SOD INSTALLATION

N.T.S.

NOTE:

1. PLACE BERMUDA SOD ON BASIN BOTTOMS, BERMS, AND SIDE SLOPES.
2. SEE SPECIAL PROVISIONS FOR 3-D GEOTEXTILE. ANCHOR ON SIDE SLOPES PER MANUFACTURE'S INSTRUCTIONS.
3. 3-D GEOTEXTILE & SOD INSTALLATION METHOD
   a. LOOSEN SURFACE SOIL (TILL)
   b. LAY 3-D GEOTEXTILE SO THAT LOOSENED SOIL FILLS UNDERSIDE VOIDS
   c. FEATHER SOIL ON TOP OF 3-D GEOTEXTILE TO FILL TOP VOIDS
   d. ANCHOR PER MANUFACTURER'S RECOMMENDATION.
   e. LAY SOD & WATER PER STD. SPECIFICATION 1664 UNLESS OTHERWISE NOTED ON THESE PLANS. DO NOT APPLY LIME OR FERTILIZER.
4. MAINTAIN EXISTING INFILTRATION RATE. NO HEAVY CONSTRUCTION EQUIPMENT PERMITTED ON BASIN BOTTOM. CONTACT ENGINEER IF CLAYEY SOILS ARE ENCOUNTERED DURING CONSTRUCTION.
5. CONTRACTOR SHALL CONDUCT HYDRAULIC CONDUCTIVITY TESTS AT 2 LOCATIONS IN THE BASIN BOTTOM PRIOR TO INSTALLATION OF GEOTEXTILE AND SOD. RESULTS SHALL BE REPORTED TO THE ENGINEER PRIOR TO INSTALLATION OF GEOTEXTILE AND SOD.



SECTION A-A – INFILTRATION BASIN

N.T.S.

REVISIONS

8/17/99

2/20/2017 01_Rdy-psh-02A.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-4436CH	2-B

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 035946 ENGINEER JASON S. SITES 2/22/2017

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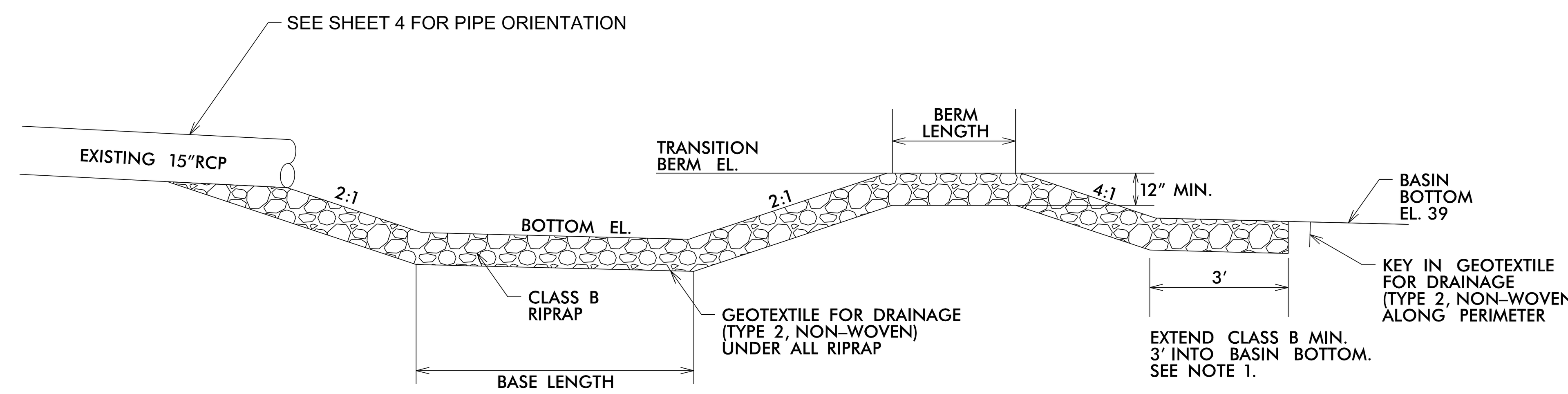
BMP DETAILS 2



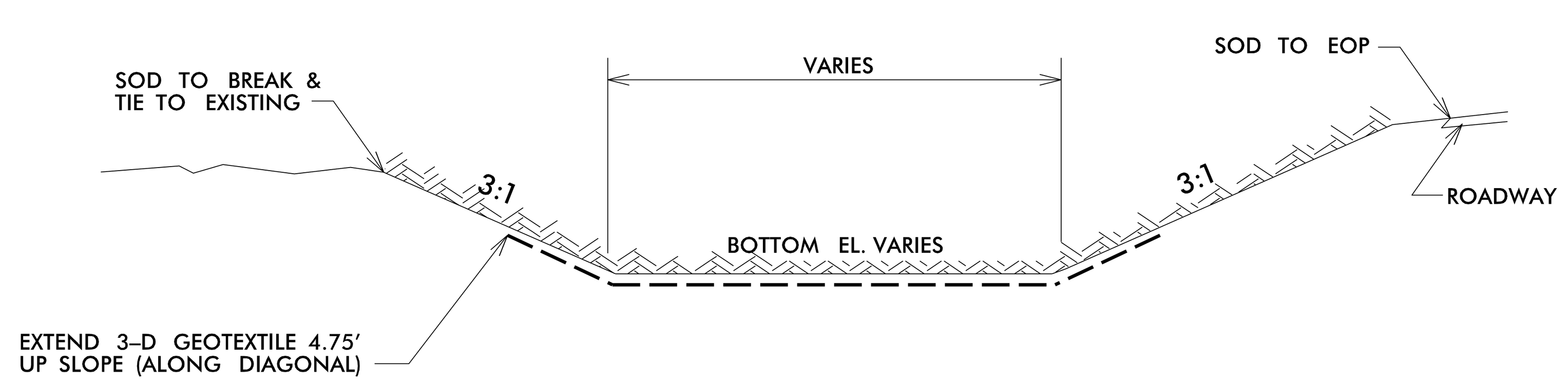
INFILTRATION BASIN FOREBAY

N.T.S.

NOTE:

1. DO NOT PLACE CLEAN SAND UNDERNEATH RIPRAP.
2. ELEVATIONS INDICATE TOP OF RIPRAP.

BASIN REF.	TOP TRANSITION BERM	BERM LENGTH	BOTTOM EL.	BASE LENGTH	LINING
1	42	5	39	15	CLASS B RIPRAP

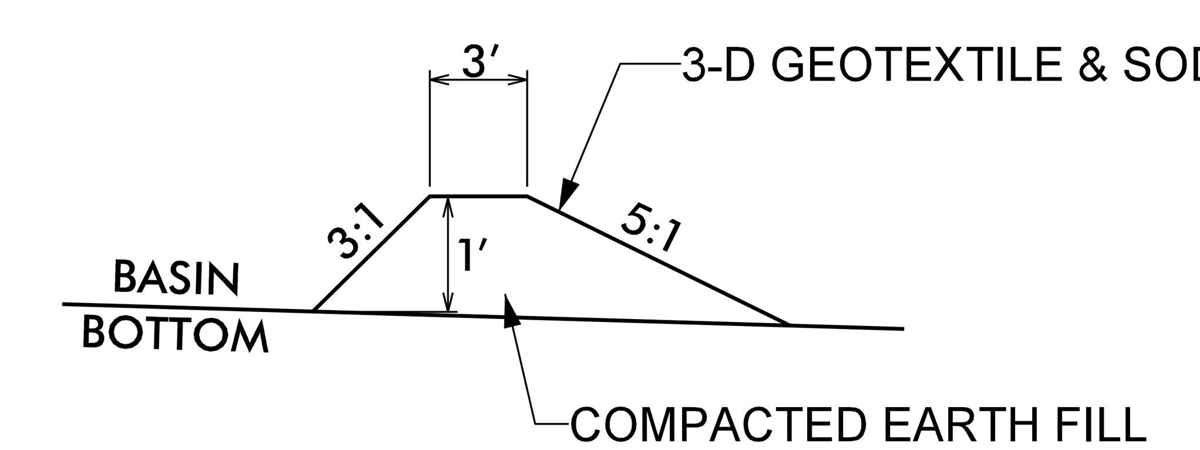


INFILTRATION SPILLWAY OUTLET

N.T.S.

NOTE:

1. COMPACTED EMBANKMENT TO MEET SECTION 235 OF NCDOT STANDARD SPECIFICATIONS.



FALSE SUMP

N.T.S.

REVISIONS

8/17/99

2/20/2017 01_Rdy-psh-02B.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-4436CH	3B / 3D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 035946 ENGINEER JASON S. SITES

2/22/2017

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

REVISIONS

SUMMARY OF EARTHWORK
(for Stormwater BMP's)

ITEM DESCRIPTION	UNIT	QUANTITY PROJECT TOTALS
UNCLASSIFIED EXCAVATION	CY	900
CLEARING AND GRUBBING	ACR	0.23
RIPRAP, CL. B	TON	160

DRAINAGE SUMMARY
(for Stormwater BMP's)

ITEM DESCRIPTION	UNIT	QUANTITY PROJECT TOTALS
GEOTEXTILE FOR DRAINAGE (TYPE 2, NON-WOVEN)	SY	275
3-D GEOTEXTILE	SY	575

SUMMARY FOR EROSION CONTROL
(for Stormwater BMP's)

ITEM DESCRIPTION	UNIT	QUANTITY PROJECT TOTALS
TEMP. SILT FENCE	LF	275
SEEDING & MULCHING	ACR	0.1
SODDING	SY	925
WATER	MG	20
EROSION CONTROL STONE CL. A	TON	26

PROJECT REFERENCE NO.	SHEET NO.
R-4436CH	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 035946 ENGINEER JASON S. SITES 2/22/2017

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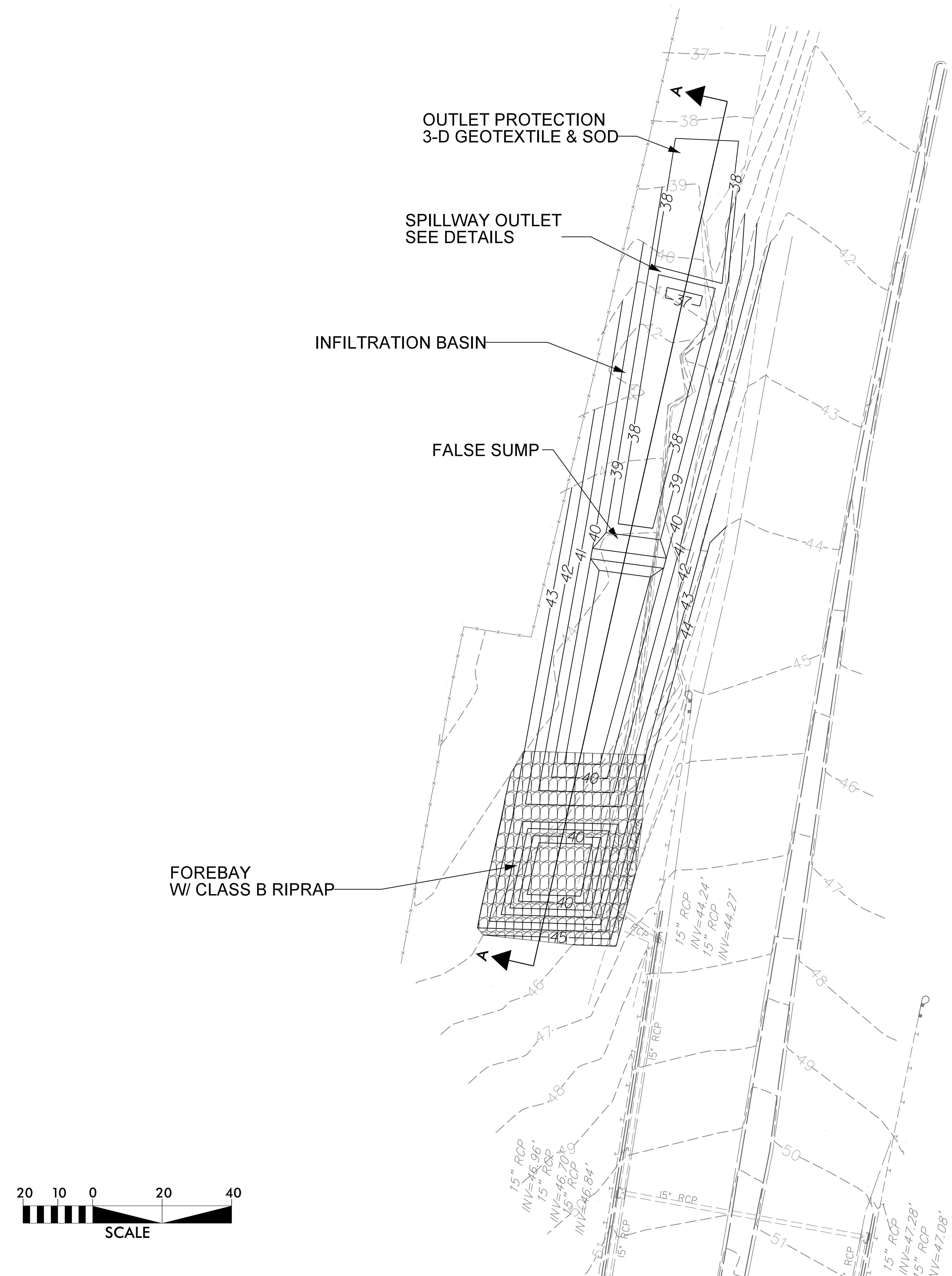
PLAN VIEW



NOTES:
1. SEE SHEETS 2-A AND 2-B FOR PROFILE & DETAILS.
2. SOD WILL BE PLACED ON BASIN BOTTOM AND SIDES UNLESS OTHERWISE NOTED.

REVISIONS

8/17/99

8/17/99

REVISIONS

EROSION CONTROL PLAN

NAD 83/2011

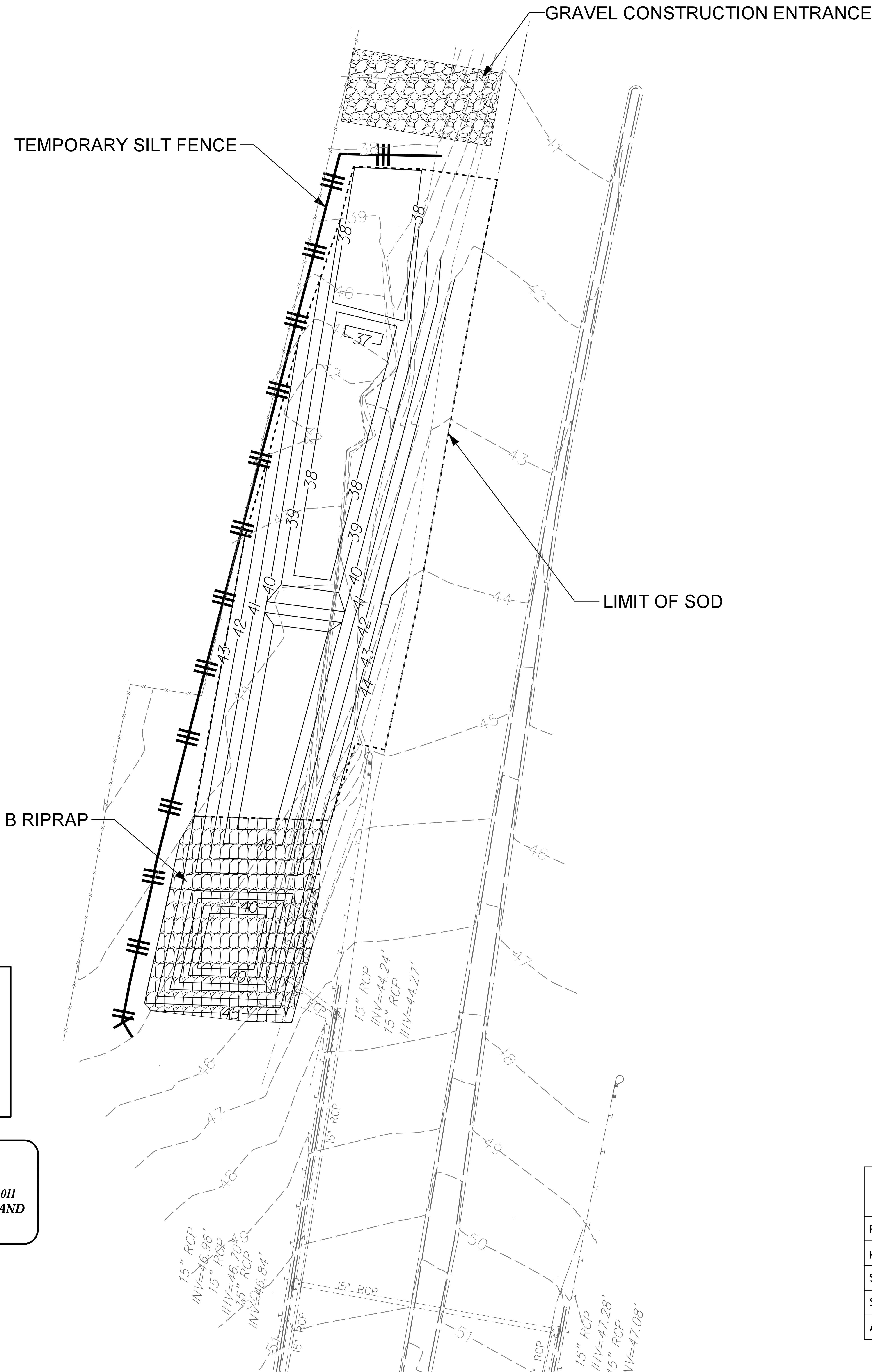
PROJECT REFERENCE NO.	SHEET NO.
R-4436CH	EC-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DocuSigned by: Jason Sites 59401BDE863B4B0...

NORTH CAROLINA PROFESSIONAL SEAL 035946 ENGINEER JASON S. SITES

2/22/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEEDING SCHEDULE SHOULDERS, SIDE DITCHES, SLOPES (MAX. 3:1)

DATE	TYPE	PLANTING RATE
AUG 15-NOV 1	TALL FESCUE	300 LBS/ACRE
NOV 1-MAR 1	TALL FESCUE AND ABRUZZIRYE	300 LBS/ACRE
MAR 1-APR 15	TALL FESCUE	300 LBS/ACRE
APR 15-JUNE 20	HULLED COMMON BERMUDAGRASS	25 LBS/ACRE
JUNE 30-AUG 15	TALL FESCUE AND	35 LBS/ACRE
	***BROWNTOP MILLET	
	***OR SORGHUM-SUDAN HYBRIDS	

SLOPES (3:1 TO 2:1)

DATE	TYPE	PLANTING RATE
MAR 1-JUN 1	SERICEA LESPEDEZA (SCARIFIED)	50 LBS/ACRE
	AND	
MAR 1-APR 15	ADD TALL FESCUE	120 LBS/ACRE
	AND	
MAR 1-JUNE 30	ADD WEEPING LOVEGRASS	10 LBS/ACRE
	OR	
MAR 1-JUNE 30	ADD HULLED COMMON BERMUDAGRASS	25 LBS/ACRE
JUNE 1-SEP 1	***TALL FESCUE AND	120 LBS/ACRE
	***BROWNTOP MILLET	35 LBS/ACRE
	***OR SORGHUM-SUDAN HYBRIDS	30 LBS/ACRE
SEP 1-MAR 1	SERICEA LESPEDEZA (UNHULLED-UNSCARIFIED)	70 LBS/ACRE
	AND TALL FESCUE	120 LBS/ACRE
NOV 1-MAR 1	ADD ABRUZZIRYE	25 LBS/ACRE

CONSULT EROSION CONTROL ENGINEER OR SOIL CONSERVATION SERVICE FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DENUDED AREAS. THE ABOVE VEGETATION RATES ARE THOSE WHICH DO WELL UNDER LOCAL CONDITIONS; OTHER SEEDING RATES COMBINATIONS ARE POSSIBLE.

***TEMPORARY-RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW OVER 12 INCHES IN HEIGHT BEFORE MOWING, OTHERWISE FESCUE MAY BE SHADED OUT.

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1607.01	Gravel Construction Entrance	

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

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

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

20 10 0 20 40

SCALE

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

2/20/2017 01_Rdy-psh_ec-1.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-4436CH	TC-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 035946 JASON S. SITES 2/22/2017

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TRAFFIC CONTROL PLAN

REVISIONS

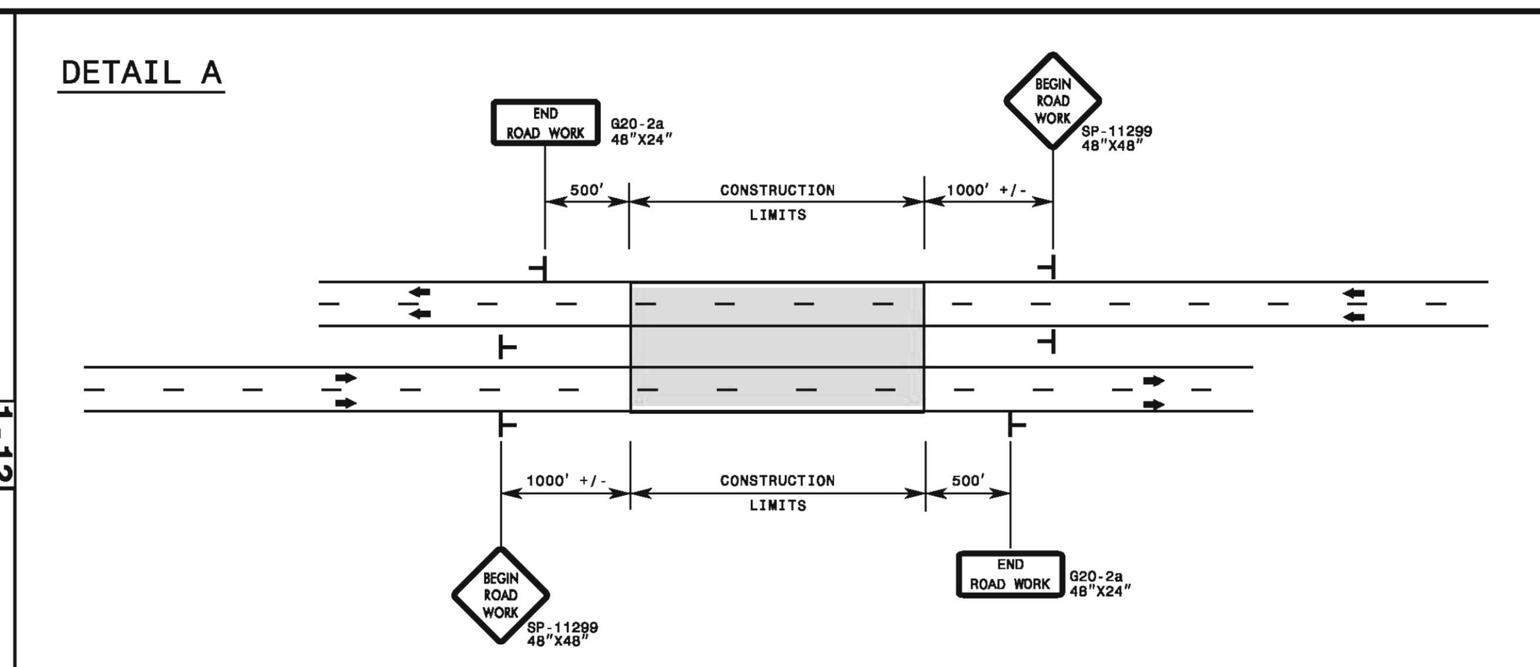
8/17/99

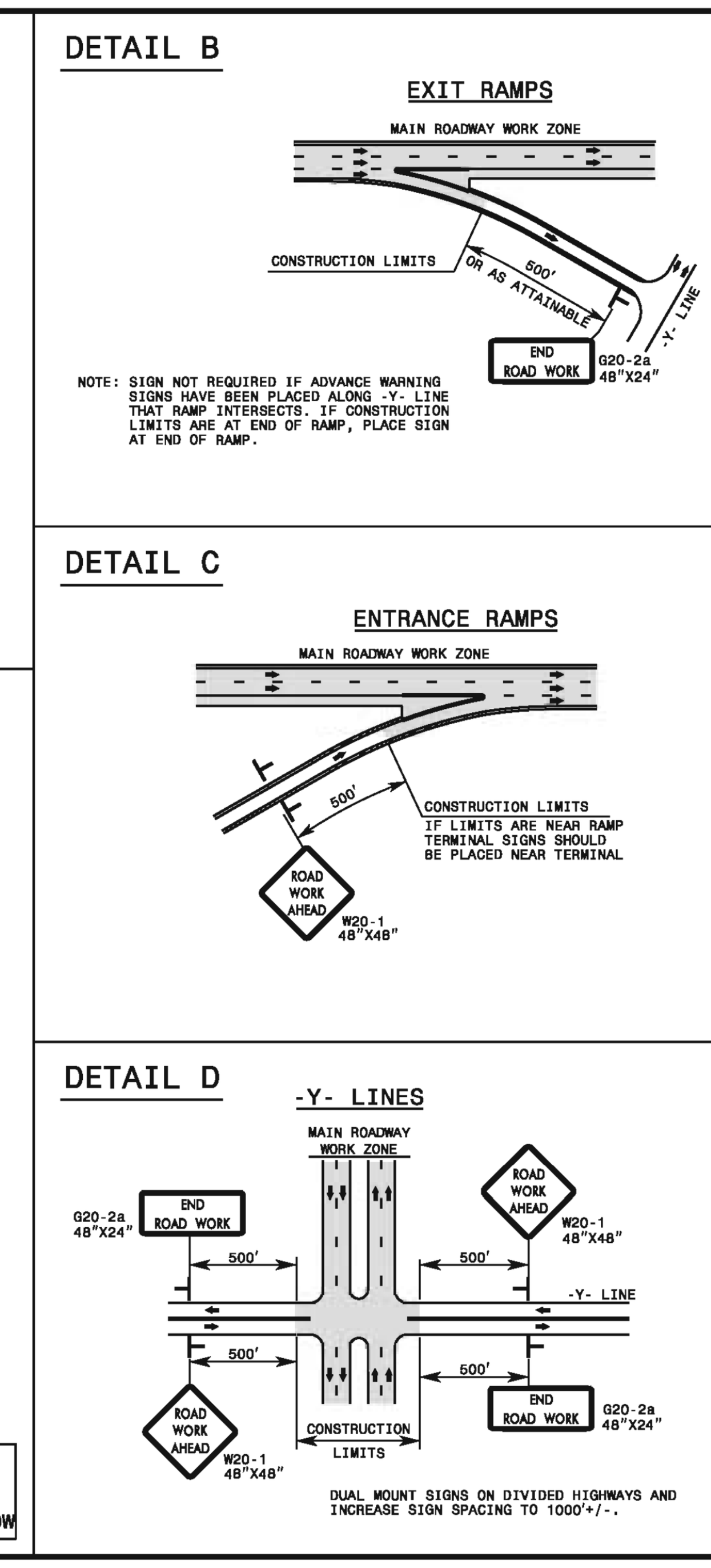
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

1-12

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

DETAIL A





GENERAL NOTES

1- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCED WORK ZONE SIGNS.

2- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK UNLESS COVERED.

3- 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.

4- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.

5- USE 3LB STEEL U-CHANNEL POST OR 4" X 4" WOOD POST FOR ALL WORK ZONE SIGNS. 3LB STEEL U-CHANNEL 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-CHANNEL POST ARE ALSO ACCEPTABLE FOR USE. ERECT SIGNS PER ROADWAY STANDARD DRAWING 1110.01. PAYMENT FOR WOOD POSTS, 3LB STEEL U-CHANNEL AND SQUARE STEEL TUBING POSTS WITH SIGNS WILL BE MADE ACCORDING TO STANDARD SPECIFICATION "WORK ZONE SIGNS" SECTION 1110.

6- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1110.01.

7- DO NOT BACK BRACE SIGN SUPPORTS.

8- 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.

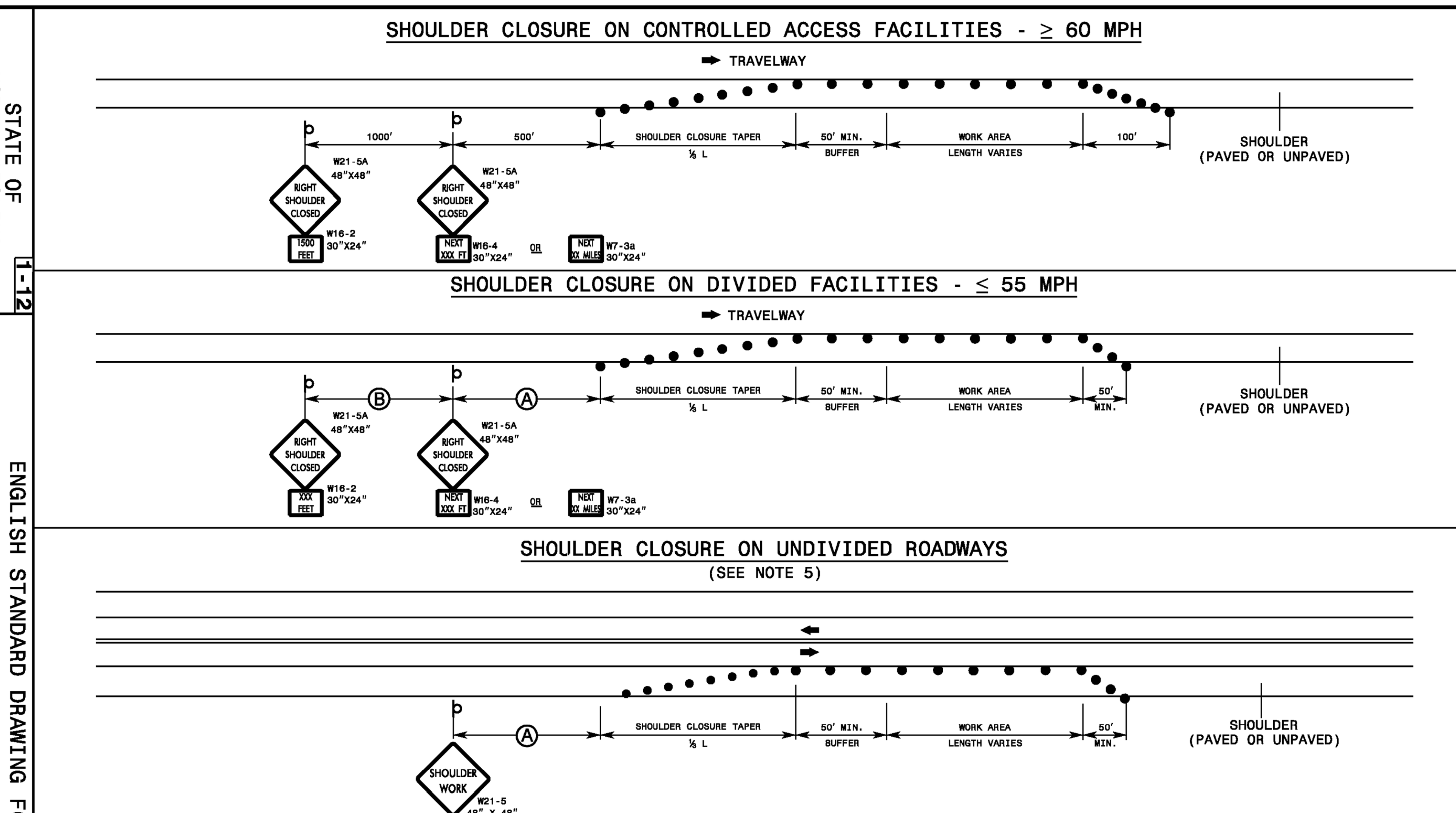
LEGEND
- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW

SHEET 2 OF 3
1101.01

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

1-12

ENGLISH STANDARD DRAWING FOR
TEMPORARY SHOULDER CLOSURES



GENERAL NOTES

1- PLACE SHOULDER CLOSURE SIGNS ON THE SAME SIDE AS THE SHOULDER THAT IS CLOSED.

2- 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.

3- USE STATIONARY SIGNS FOR LONG TERM OPERATIONS (LONGER THAN 3 DAYS).

4- REFER TO STD. 1101.11 FOR "L" DISTANCE AND SIGN SPACING.

5- THE TWO-LANE, TWO-WAY DRAWING MAY BE APPLIED TO UNDIVIDED, MULTI-LANE FACILITIES.

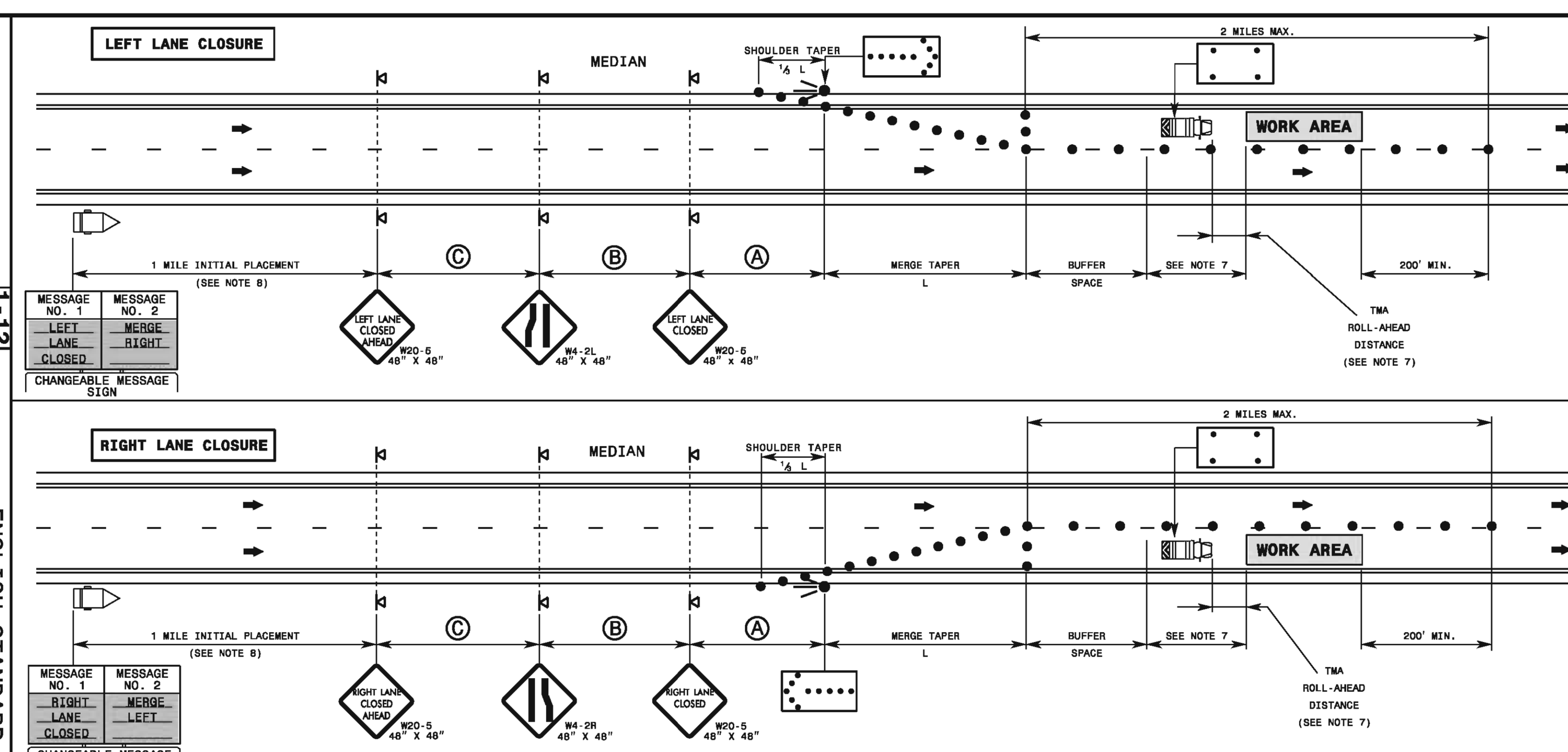
LEGEND
- DRUM
- STATIONARY OR PORTABLE SIGN
- DIRECTION OF TRAFFIC FLOW

SHEET 1 OF 1
1101.04

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

1-12

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



GENERAL NOTES

1- IF NECESSARY USE THIS STD. FOR ONE-WAY CITY TYPE STREETS WHERE SIGNS MAY BE MOUNTED ON BOTH SIDES OF THE ROADWAY.

2- 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).

3- 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.

4- REFER TO STD. 1101.11 FOR "L" DISTANCE, SIGN SPACING, AND BUFFER SPACE.

5- REFER TO STD. 1101.02 SHEETS 9 AND 10 FOR TREATMENT OF LANE CLOSURES THRU INTERCHANGES.

6- 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.

7- POSITION THE TMA TO MAINTAIN A ROLL-AHEAD DISTANCE AS RECOMMENDED BY THE MANUFACTURER AND CONTINUOUSLY ADVANCE TMA'S AS WORK PROGRESSES.

8- PLACE CHANGEABLE MESSAGE SIGN (CMS) ON THE OUTSIDE OF THE TRAVELWAY AS DIRECTED BY THE ENGINEER. PLACE CMS APPROXIMATELY 1 MILE IN ADVANCE OF THE W20-5 SIGNS. IF TRAFFIC BACKS UP TO WHERE THE CMS IS INITIALLY PLACED, RELOCATE CMS 1/2 MILE IN ADVANCE OF ANTICIPATED BACKUP. CONTINUE TO MONITOR TRAFFIC, MOVE CMS APPROXIMATELY 1/2 MILE IN ADVANCE OF ANTICIPATED BACKUP.

9- DO NOT EXCEED A 2 MILE LANE CLOSURE LENGTH UNLESS OTHERWISE SHOWN IN THE TMP OR AS DIRECTED BY THE ENGINEER.

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

SHEET 3 OF 15
1101.02

2/20/2017
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