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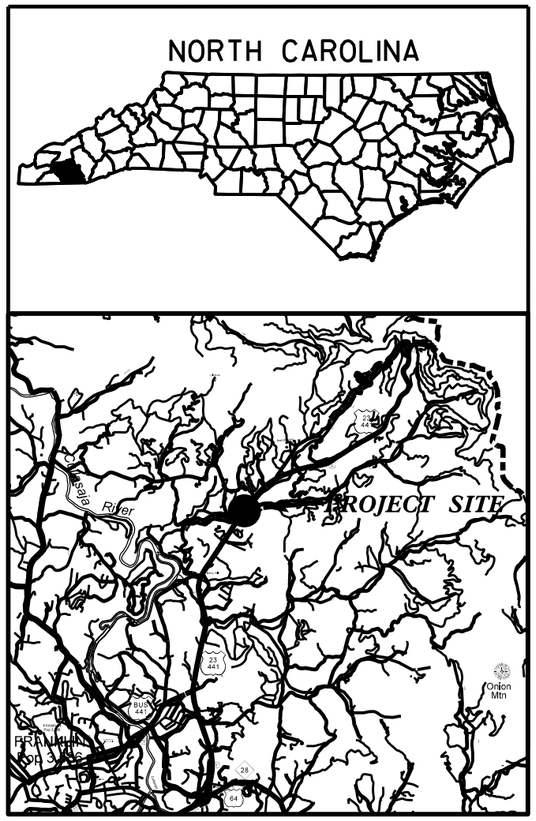
09/08/99

TIP PROJECT: R-4436ND

CONTRACT: 34625.2.61

See Sheet 1-A For Index of Sheets



VICINITY MAP

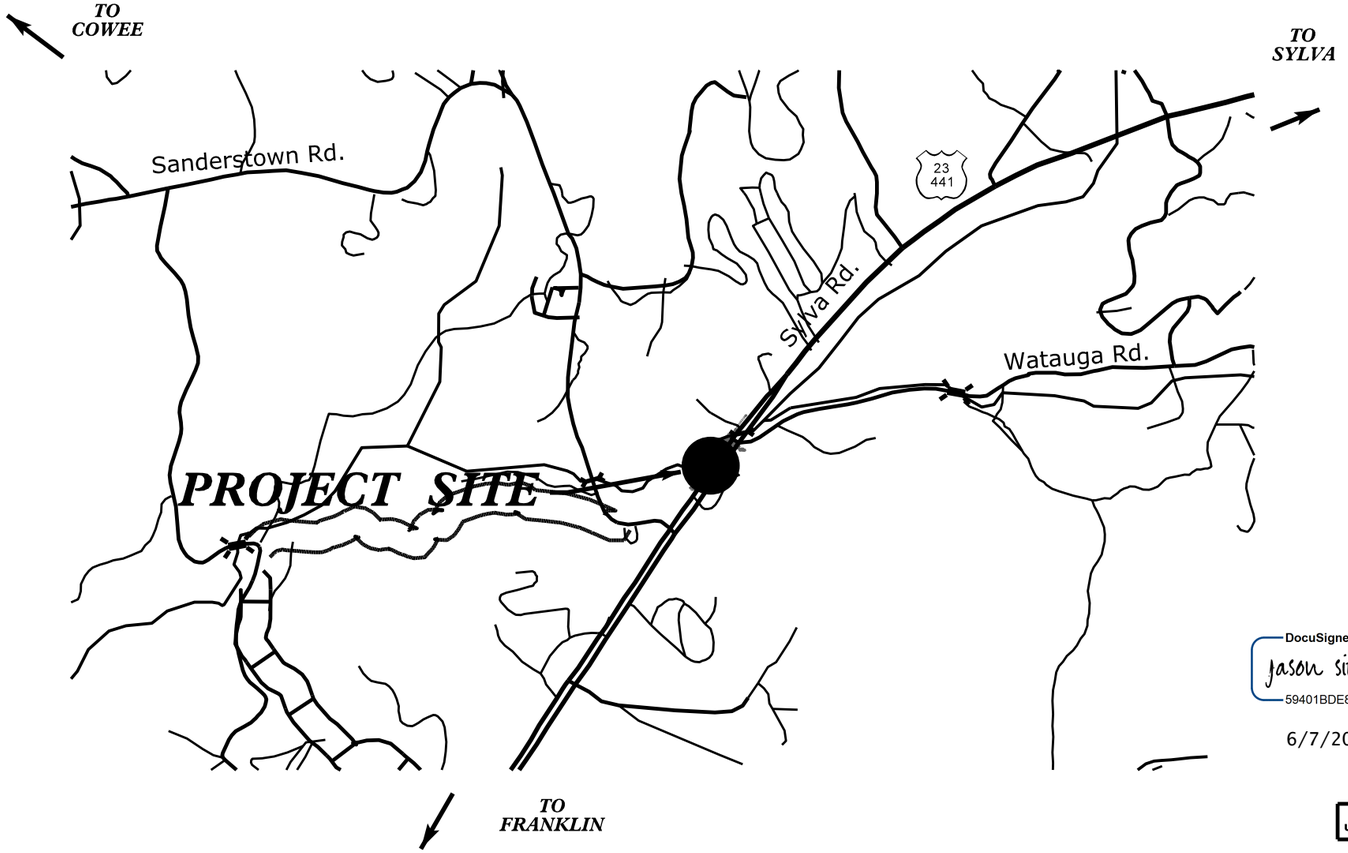
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MACON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4436ND	1	11
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34625.2.61	STP-0023(035)	CONSTRUCTION	PE

LOCATION: PARK AND RIDE LOT OFF US23/US441 SOUTHBOUND BETWEEN WATAUGA RD & SANDERSTOWN RD

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



NAD 83/2001

DocuSigned by:
jason sites
59401BDE863B4B0...
6/7/2016

NORTH CAROLINA PROFESSIONAL SEAL 035946 ENGINEER JASON S. SITES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

SCALE VARIES
SEE PLANS

NCDOT Highway Stormwater PROGRAM

LETTING DATE:
JULY 12, 2016

Prepared by
AECOM
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Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

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

6/2/2016
P:\Common_Projects\NCDOTStormwater\3-PCC\PCC-Retrofits\2016\Projects\Watauga\Working Documents\Drawings\R4436_Macon_drn_PSH_01.dgn
Wesley_Owens

INDEX OF SHEETS

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 3 - PIPE CULVERTS	
300.01	METHOD OF PIPE INSTALLATION
DIVISION 8 - INCIDENTALS	
840.66	DRAINAGE STRUCTURE STEPS
DIVISION 11 - WORK ZONE TRAFFIC CONTROL	
1101.01	WORK ZONE ADVANCE WARNING SIGNS FOR FACILITIES ≤ 55 MPH
1101.01	DETAIL DRAWING FOR TWO-WAY UNDIVIDED WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES - DIVIDED MULTI-LANE ROADWAY - 1 LANE CLOSED (FOR ROADWAYS < 60 MPH)
1101.02	TEMPORARY LANE CLOSURES - RIGHT LANE CLOSURES THRU EXIT RAMPS
DIVISION 16 - EROSION CONTROL AND ROADSIDE DEVELOPMENT	
1605.01	TEMPORARY SILT FENCE
1633.01	TEMPORARY ROCK SILT CHECK TYPE A

PROJECT ENGINEER

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59401BDE863B450
6/7/2016

NORTH CAROLINA PROFESSIONAL SEAL 035946 ENGINEER JASON S. SITES

CONSTRUCTION SEQUENCE NOTES

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

1. ESTABLISH SIGNAGE AT PARK AND RIDE ENTRANCE TO INFORM PUBLIC OF PARTIAL LOT CLOSURE A MINIMUM OF 2 WEEKS PRIOR TO START OF CONSTRUCTION. INDICATE ANTICIPATED DATES OF PARTIAL CLOSURE ON THE SIGNAGE. SEE SHEET EC-1 FOR ADDITIONAL STAGING & LAYDOWN AREA.
2. PROVIDE SIGNAGE AT PARK AND RIDE ENTRANCE AND MAINTAIN SOFT BARRIERS, SUCH AS CONES OR DRUMS, TO CLOSE AND RESTRICT ACCESS TO PUBLIC TO THE CLOSED PORTION OF THE PARKING LOT.
3. INSTALL TEMPORARY SILT FENCE AND ROCK SILT CHECKS AS SHOWN ON PLANS.
4. CONSTRUCT FILTRATION BASINS AND OTHER IMPROVEMENTS.
5. FOLLOW SEEDING/ MULCHING GUIDELINES ON THE PLANS TO STABILIZE ALL REMAINING DISTURBED SURFACES.
6. INSPECT ALL INLETS, PIPES, AND OUTLETS FOR SEDIMENT AND REMOVE SEDIMENT AS REQUIRED.
7. 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. IF USED, 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.

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.
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.

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
R-4434HD	1-B

Note: Not to Scale

**S.U.E. = Subsurface Utility Engineering*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — IP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 23
- 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
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign
- Well
- 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:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite R/W Marker
- Proposed Control of Access Line with Concrete C/A Marker
- Existing Control of Access
- Proposed Control of Access
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

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
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — TH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — TV
- TV Tower
- U/G TV Cable Hand Hole — TH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (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
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
R-4436ND	1-C

PROJECT ENGINEER

DocuSigned by: jason sites 59401BDE863B4B6...

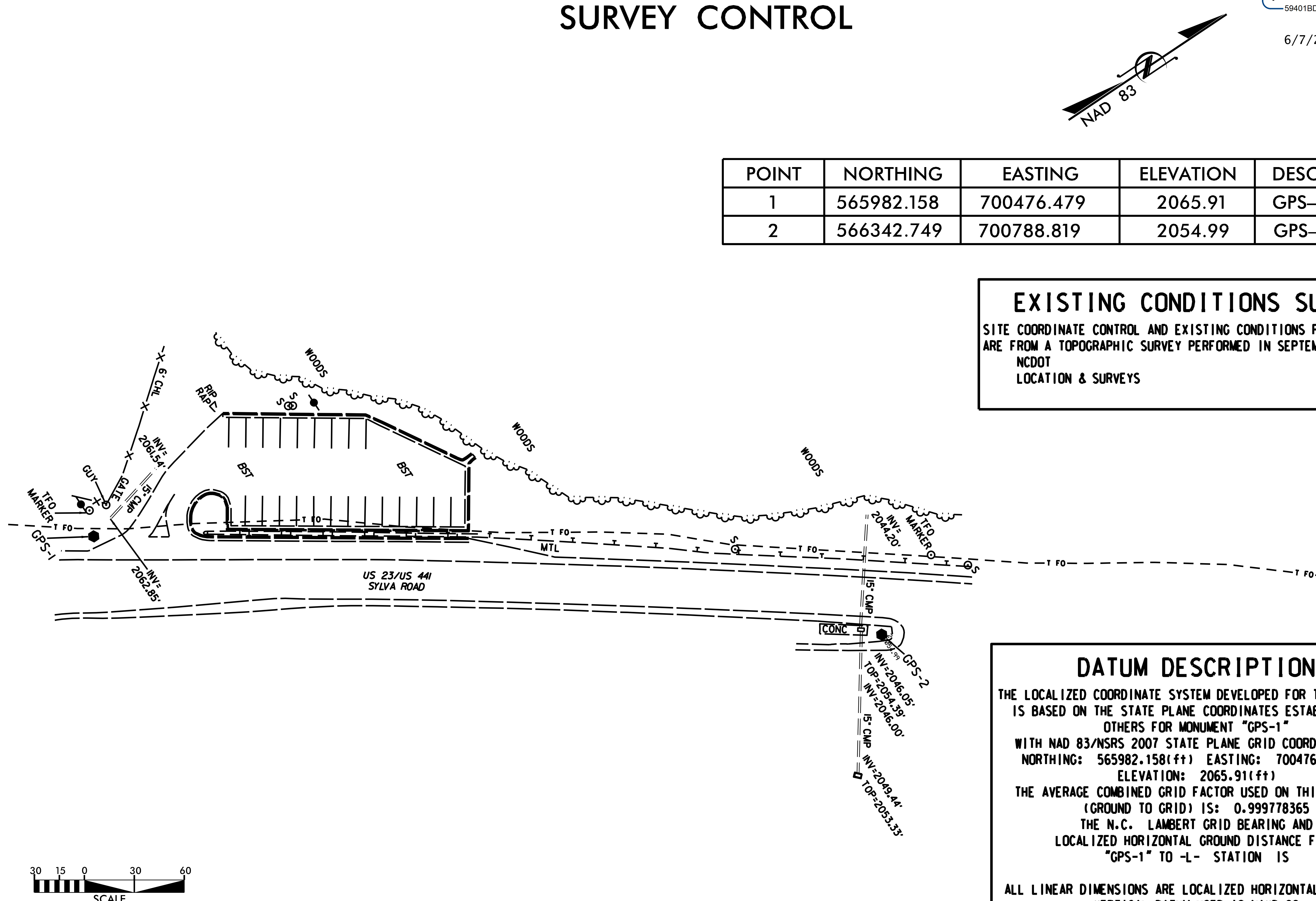
6/7/2016

SURVEY CONTROL

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	565982.158	700476.479	2065.91	GPS–1
2	566342.749	700788.819	2054.99	GPS–2

EXISTING CONDITIONS SURVEY

SITE COORDINATE CONTROL AND EXISTING CONDITIONS FOR PROJECT ARE FROM A TOPOGRAPHIC SURVEY PERFORMED IN SEPTEMBER 2015 BY:
NCDOT
LOCATION & SURVEYS



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: 565982.158(ft) EASTING: 700476.479(ft)
ELEVATION: 2065.91(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

5/14/99

6/2/2016
Wesley Owens

PROJECT REFERENCE NO.	SHEET NO.
R-4436ND	2-A

PROJECT ENGINEER

DocuSigned by:
jason sites
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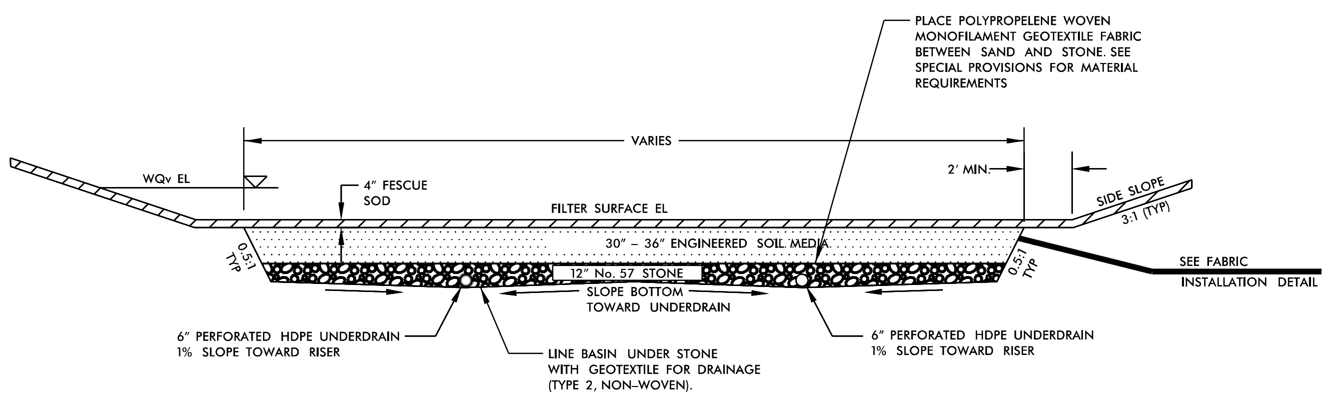
NORTH CAROLINA PROFESSIONAL SEAL 035946 ENGINEER JASON S. SITES

6/7/2016

BMP DETAILS 1

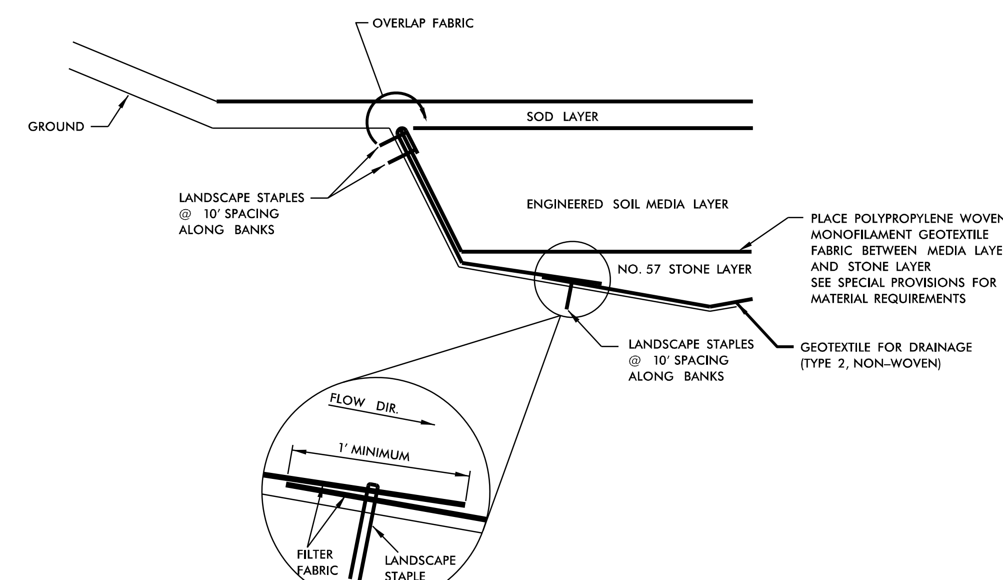


TYPICAL SECTION – FILTER BASIN MEDIA

N.T.S.

NOTE:

1. STONE TO BE STD. SIZE #57 (DIVISION 10 SECTION 1005), WASHED.
2. PLACE FESCUE SOD ON BASIN BOTTOMS, BERMS, AND SIDE SLOPES.
3. SEE SHEET 2-C FOR UNDERDRAIN CONFIGURATION.
4. SEE SPECIAL PROVISIONS FOR ENGINEERED SOIL MEDIA REQUIREMENTS.

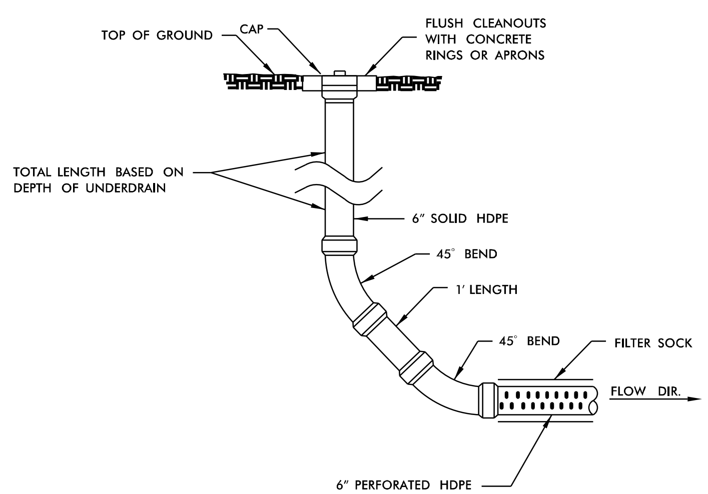


NOTES:

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

N.T.S

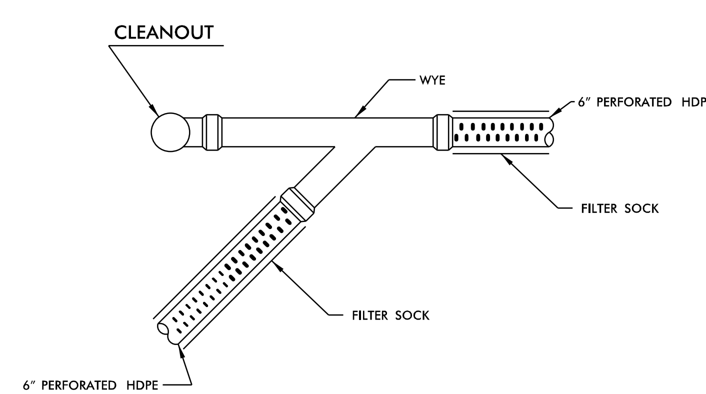


NOTES:

1. ONLY UNDERDRAIN PIPE (LOCATED BENEATH ENGINEERED SOIL MEDIA) SHOULD BE PERFORATED.
2. PROVIDE THREADED SCREW CAP.

CLEANOUT DETAIL

N.T.S.



BEND CONNECTION DETAIL

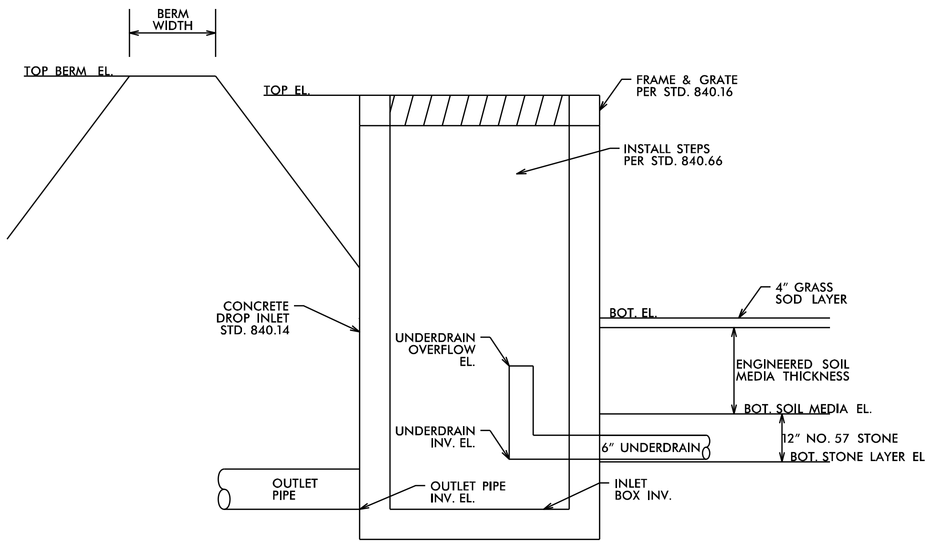
N.T.S.

5/14/99

6/7/2016
CC-Retrofits\2016\Projects\Watauga\Working Documents\Drawings\R4436_Macon_drn_PSH_02A.dgn
Wesley Owens

PROJECT ENGINEER
DocuSigned by: jason sites
59401BDE863B430
SEAL 035946 NORTH CAROLINA PROFESSIONAL ENGINEER JASON S. SITES
6/7/2016

BMP DETAILS 2



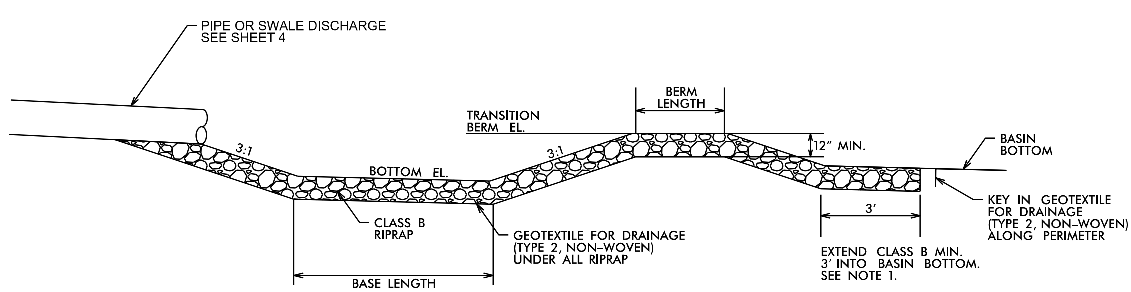
NOTES:

1. PROVIDE WATER TIGHT CONNECTIONS USING WATERSTOP OR COMPRESSION GASKET APPROVED BY ENGINEER ON ALL OUTLET STRUCTURE PENETRATIONS.
2. INSTALL STEPS IN ACCORDANCE WITH STD. 840.66
3. FOR UNDERDRAIN, USE SOLID (NON-PERFORATED) PIPE OUTSIDE OF FILTER.
4. SEE ENGINEERED SOIL MEDIA DETAIL SHEET 2-A.
5. SEE DETAIL THIS SHEET FOR UNDERDRAIN UPTURNED ELBOW / OVERFLOW.

FILTRATION BASIN OUTLET STRUCTURE DETAIL

N.T.S.

BASIN REF.	TOP BOX EL.	TOP BERM EL.	TOP BERM WIDTH	BOTTOM EL.	BOTTOM SOIL MEDIA EL.	SOIL MEDIA THICKNESS	BOTTOM STONE EL.	UNDERDRAIN INVERT	BOX / OUTLET PIPE INVERT	UNDERDRAIN OVERFLOW EL.
1	2061.25	2062.50	6.0	2060.00	2057.17	30"	2056.17	2056.17	2056.10	2058.17
2	2056.50	2058.00	5.0	2055.00	2051.67	36"	2050.67	2050.67	2050.25	2052.67



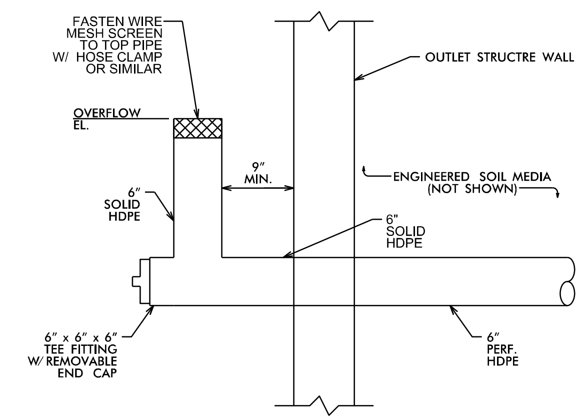
FILTRATION BASIN FOREBAY

N.T.S.

NOTE:

1. DO NOT PLACE ENGINEERED SOIL MEDIA UNDERNEATH RIPRAP.
2. ELEVATIONS INDICATE TOP OF RIPRAP.

BASIN REF.	TOP TRANSITION BERM	BERM LENGTH	BOTTOM EL.	BASE LENGTH	LINING
1	2061.00	3.00	2060.00	7.50	CLASS B RIPRAP
2	2055.75	3.00	2055.00	6.00	CLASS B RIPRAP



UNDERDRAIN UPTURNED ELBOW / OVERFLOW

N.T.S.

PROJECT ENGINEER
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Jason Sites
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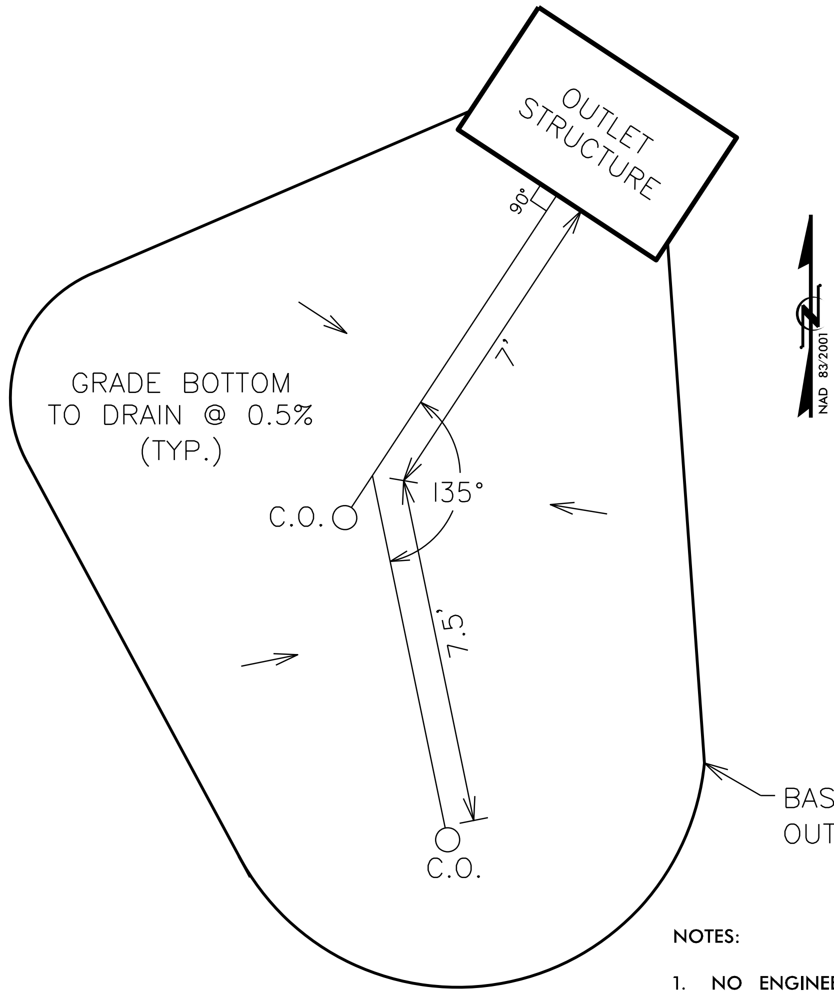
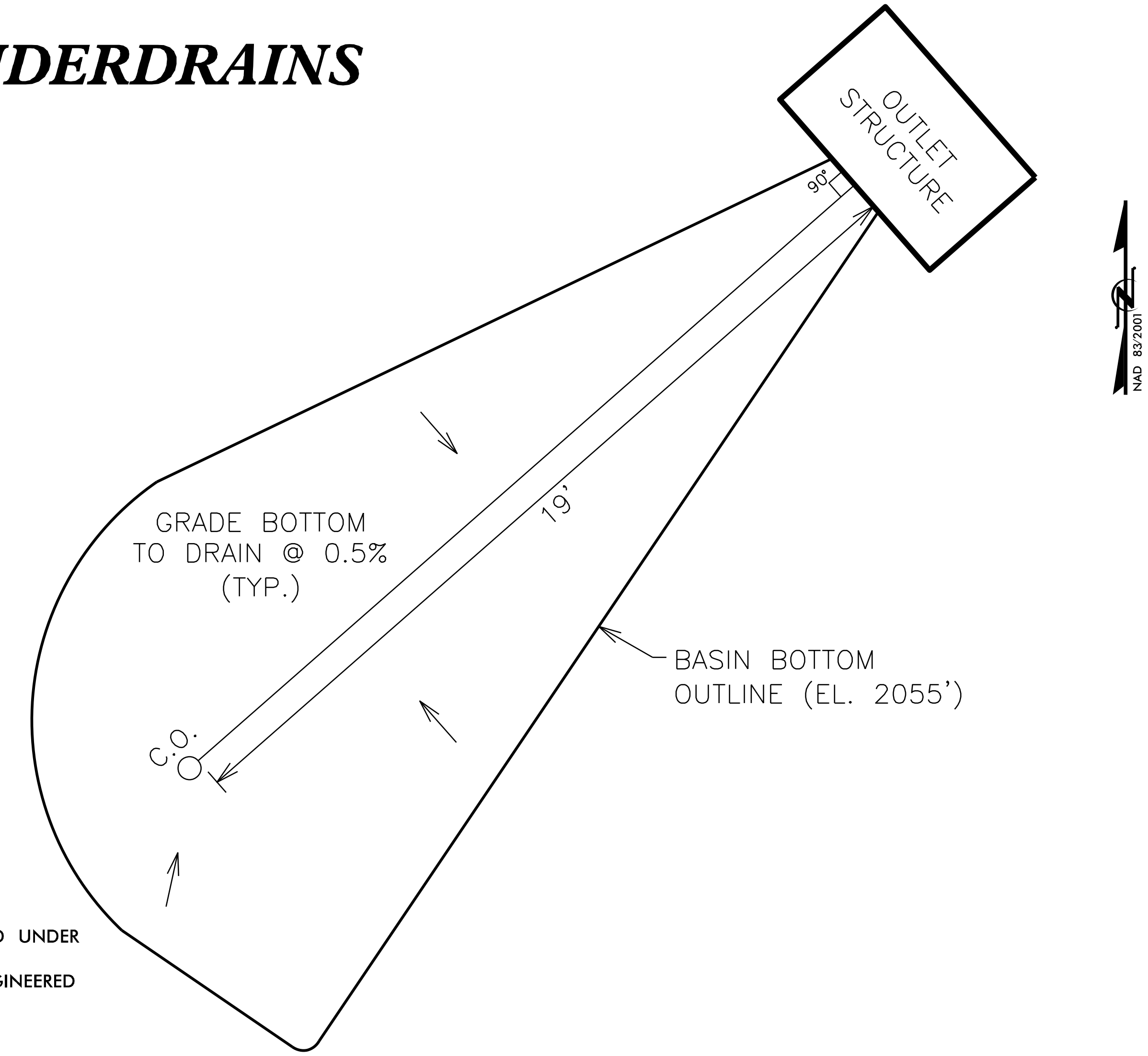
6/7/2016
NORTH CAROLINA PROFESSIONAL SEAL 035946 ENGINEER JASON S. SITES

UNDERDRAINS





NOTES:

1. NO ENGINEERED SOIL MEDIA WILL BE PLACED UNDER RIPRAP (NOT SHOWN).
2. USE ONLY SOLID HDPE PIPE OUTSIDE OF ENGINEERED SOIL MEDIA.

BASIN 1 UNDERDRAIN DETAIL

N.T.S

BASIN 2 UNDERDRAIN DETAIL

N.T.S

LIST OF PIPES

	REFERENCE	HDPE PIPE (UNDERDRAIN)				REMARKS
		6" PERFORATED HDPE	6" HDPE	18" HDPE	24" CMP	
	BASIN 1	15	10			SEE DETAIL ON SHEET 2-C
	BASIN 2	19	5			SEE DETAIL ON SHEET 2-C
P-1	BASIN 1 TO JB-1			58		
P-2	JB-1 TO CGDI			102		
P-3	CGDI TO BASIN 2			11		
P-4	BASIN 2 TO JB-2			200		
P-5	JB-2 TO OUTLET				19	
	TOTALS (FEET)	34	15	371	19	PIPE LENGTH MEASURED FROM CENTER OF STRUCTURE

STRUCTURES

STRUCTURE NO.	STRUCTURE	TOP ELEV	BOX INVERT*	STD. 840.31	STD. 840.14 & STD. 840.16	STD. 840.18	STD. 840.24	INVERT IN	INVERT OUT	COMMENT
BASIN 1	OUTLET STRUCTURE	2061.25	2056.10	–	1	–	–	–	2056.10	SEE DETAIL ON SHEET 2-B
BASIN 2	OUTLET STRUCTURE	2056.50	2050.25	–	1	–	–	–	2050.25	SEE DETAIL ON SHEET 2-B. EXTRA DEPTH BOX PER EACH (0' THRU 5.0')=1 (5.0' THRU 10.0')=1.25 LIN. FT.
JB-1	JUNCTION BOX	2059.50	2055.72	1	–	–	–	2055.82	2055.72	
CGDI	CONCRETE GRATED DROP INLET TYPE B	2058.30	2055.11	–	–	1	1	2055.21	2055.11	
JB-2	JUNCTION BOX	2054.50	2044.75	1	–	–	–	2049.75 (18" RCP)	2044.75*	*INV. OUT EST. EX. 24" CMP. EXTRA DEPTH BOX(FIELD VERIFY) PER EACH (0' THRU 5.0')=1 (5.0' THRU 10.0')=3.62 LIN. FT.
TOTALS				2	2	1	1	–	–	

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Wesley Owens

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4436ND	3B / 3D

PROJECT ENGINEER

DocuSigned by:
Jason Sites
59401BDE863B4ED...

NORTH CAROLINA PROFESSIONAL SEAL 035946 ENGINEER JASON S. SITES

6/7/2016

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DRAINAGE SUMMARY
(for Stormwater BMP's)

ITEM DESCRIPTION	UNIT	QUANTITY		
		BASIN 1	BASIN 2	PROJECT TOTALS
UNDERDRAIN PIPE – 6″ HDPE PERFORATED	LF	15	19	34
UNDERDRAIN PIPE – 6″ HDPE NONPERFORATED	LF	10	5	15
18″ HDPE	LF	171	200	371
24″ CMP	LF	0	19	19
6″ CLEANOUT CAP (THREADED)	EA	3	2	5
6″ HDPE 45° BEND	EA	4	2	6
6″ x 6″ x 6″ HDPE TEE	EA	1	1	2
6″ HDPE WYE	EA	1	0	1
GEOTEXTILE FOR DRAINAGE (TYPE 2, NON-WOVEN)	SY	136	77	213
POLYPROPYLENE WOVEN MONOFILAMENT GEOTEXTILE FABRIC	SY	50	50	100
FRAME WITH COVER, STD. 840.54 (MANHOLE)	EA	1	1	2
CONCRETE JUNCTION BOX (840.31)	EA	1	1	2
OUTLET STRUCTURE BOX (840.14)	EA	1	1	2
CONCRETE GRATED DROP INLET TYPE B (840.18)	EA	1	0	1
FRAME WITH 2 GRATES, STD. 840.16	EA	1	2	3
FRAME WITH 2 GRATES, STD. 840.24	EA	1	0	1

SUMMARY OF EARTHWORK
(for Stormwater BMP's)

ITEM DESCRIPTION	UNIT	QUANTITY		
		BASIN 1	BASIN 2	PROJECT TOTALS
UNCLASSIFIED EXCAVATION	CY	55	135	190
ENGINEERED SOIL MEDIA	CY	25	21	46
WASHED NO. 57 STONE	TON	13	9	22
CLEARING AND GRUBBING	ACR	0.09	0.02	0.11
RIPRAP, CL. B	TON	27	5	32

SUMMARY FOR EROSION CONTROL
(for Stormwater BMP's)

ITEM DESCRIPTION	UNIT	QUANTITY
		PROJECT TOTALS
SEDIMENT CONTROL STONE NO. 57	TON	2
TEMP. SILT FENCE	LF	470
SEEDING & MULCHING	ACR	0.1
SODDING	SY	460
WATER	MG	15
EROSION CONTROL STONE CL. B	TON	10

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Wesley Owens

PROJECT REFERENCE NO.	SHEET NO.
R-4436ND	4

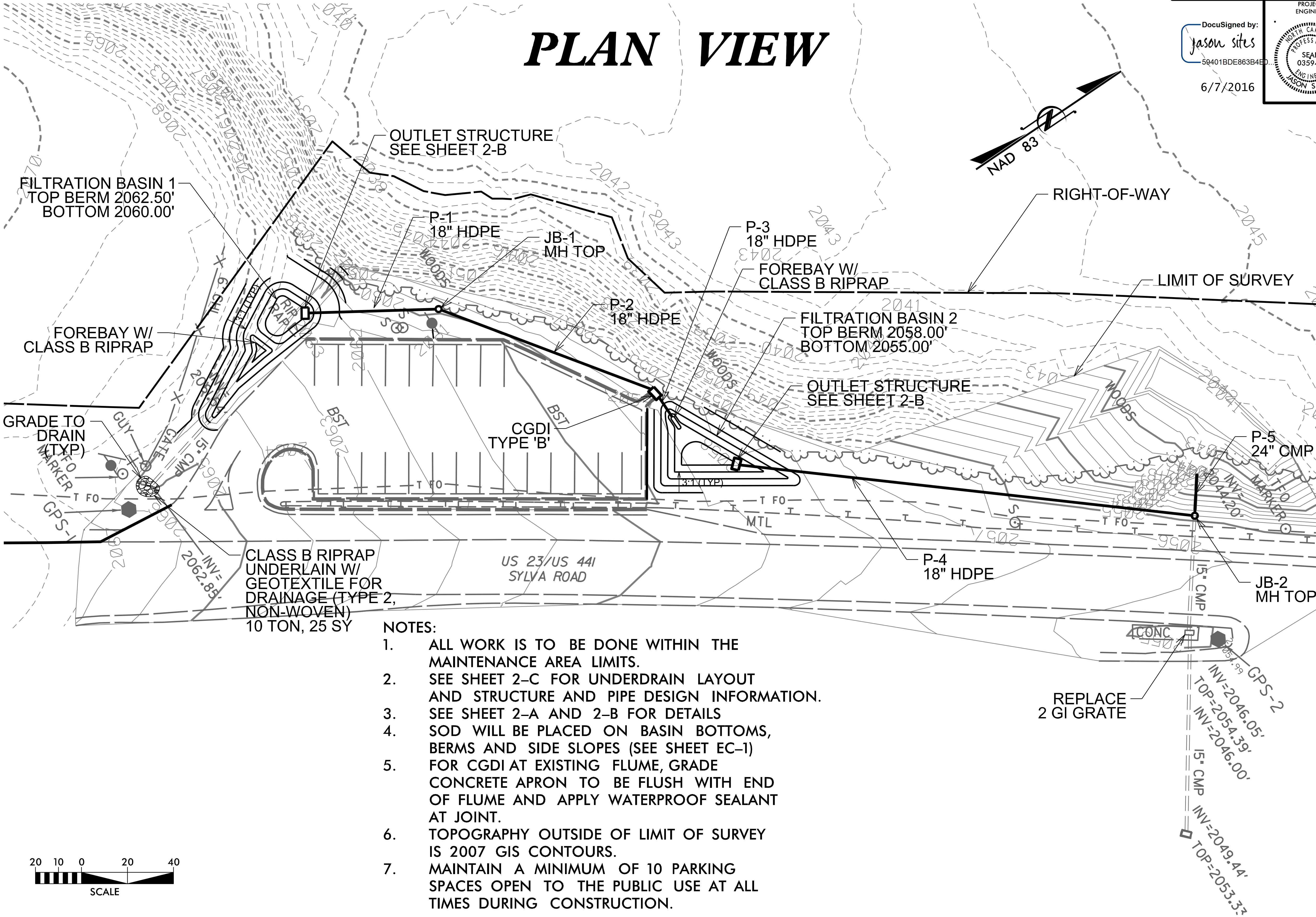
PROJECT ENGINEER

DocuSigned by: Jason Sites 59401BDE863B4ED...

NORTH CAROLINA PROFESSIONAL SEAL 035946 ENGINEER JASON S. SITES

6/7/2016

PLAN VIEW



NOTES:

1. ALL WORK IS TO BE DONE WITHIN THE MAINTENANCE AREA LIMITS.
2. SEE SHEET 2–C FOR UNDERDRAIN LAYOUT AND STRUCTURE AND PIPE DESIGN INFORMATION.
3. SEE SHEET 2–A AND 2–B FOR DETAILS
4. SOD WILL BE PLACED ON BASIN BOTTOMS, BERMS AND SIDE SLOPES (SEE SHEET EC–1)
5. FOR CGDI AT EXISTING FLUME, GRADE CONCRETE APRON TO BE FLUSH WITH END OF FLUME AND APPLY WATERPROOF SEALANT AT JOINT.
6. TOPOGRAPHY OUTSIDE OF LIMIT OF SURVEY IS 2007 GIS CONTOURS.
7. MAINTAIN A MINIMUM OF 10 PARKING SPACES OPEN TO THE PUBLIC USE AT ALL TIMES DURING CONSTRUCTION.

5/14/99

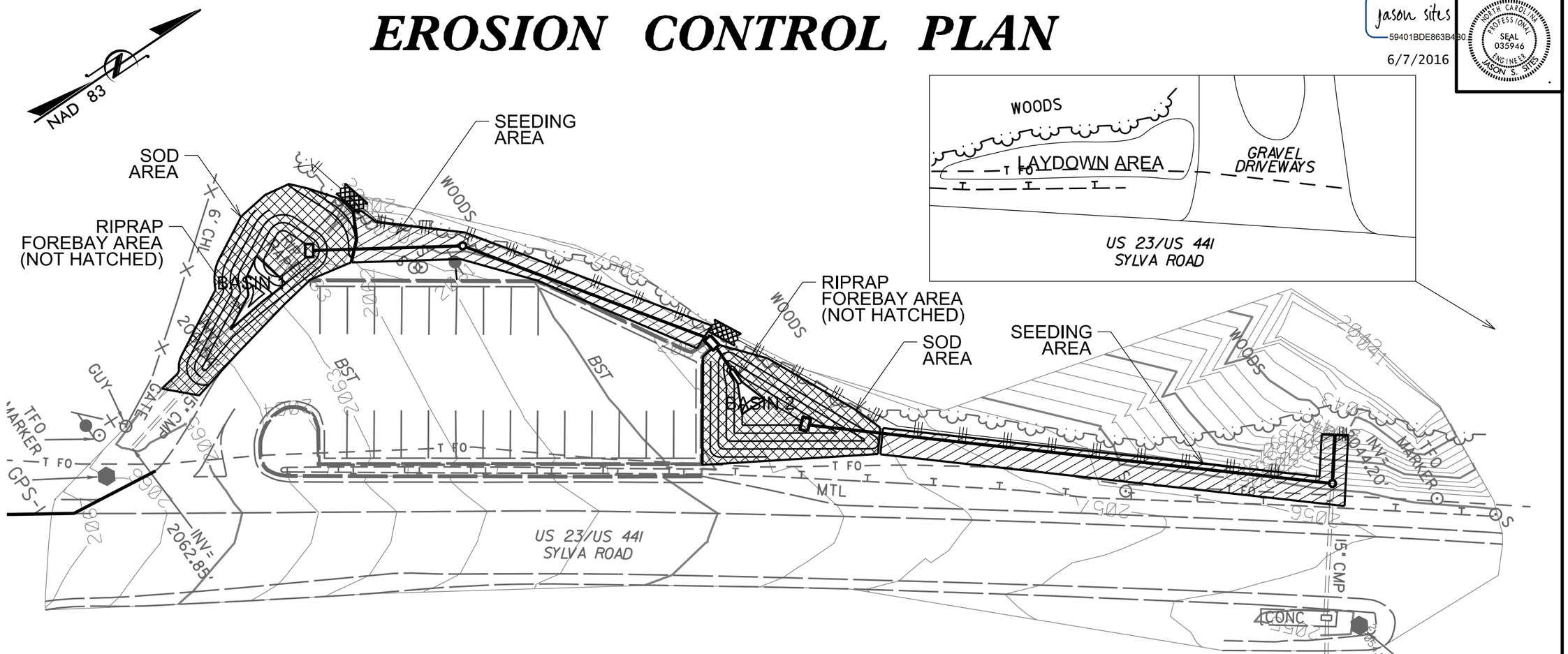
PROJECT REFERENCE NO.	SHEET NO.
R-4436ND	EC-1

PROJECT ENGINEER

DocuSigned by:
jason sites
59401BDE863B480...
6/7/2016

NORTH CAROLINA PROFESSIONAL SEAL 035946 ENGINEER JASON S. SITES

EROSION CONTROL PLAN



NOTES:

1. ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.
2. ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY 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.

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 ABRUZZI RYE	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 •••BROWNTOP MILLET •••OR SORGHUM-SUDAN HYBRIDS	35 LBS/ACRE

SLOPES (3:1 TO 2:1)

DATE	TYPE	PLANTING RATE
MAR 1-JUN 1	SERICEA LESPEDEZA (SCARIFIED) AND	50 LBS/ACRE
MAR 1-APR 15	ADD TALL FESCUE AND	120 LBS/ACRE
MAR 1-JUNE 30	ADD WEEPING LOVEGRASS OR	10 LBS/ACRE
MAR 1-JUNE 30	ADD HULLED COMMON BERMUDAGRASS	25 LBS/ACRE
JUNE 1-SEP 1	•••TALL FESCUE AND •••BROWNTOP MILLET •••OR SORGHUM-SUDAN HYBRIDS	120 LBS/ACRE 35 LBS/ACRE 30 LBS/ACRE
SEP 1-MAR 1	SERICEA LESPEDEZA (UNHULLED-UNSCARIFIED) AND TALL FESCUE	70 LBS/ACRE 120 LBS/ACRE
NOV 1-MAR 1	ADD ABRUZZI RYE	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
1606.01	Temporary Silt Fence	
1633.01	Temporary Rock Silt Check Type-A	

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 LEGTH 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

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SCALE

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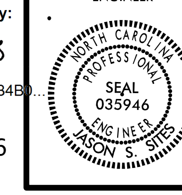
EC-Retrofits
Version Users

TRAFFIC CONTROL PLAN

PROJECT ENGINEER

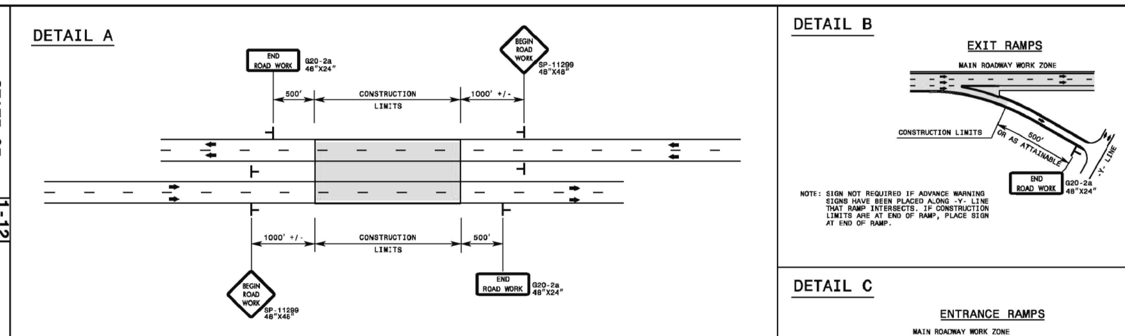
DocuSigned by: Jason Sites 59401BDE863B4B0...

6/7/2016



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

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



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.

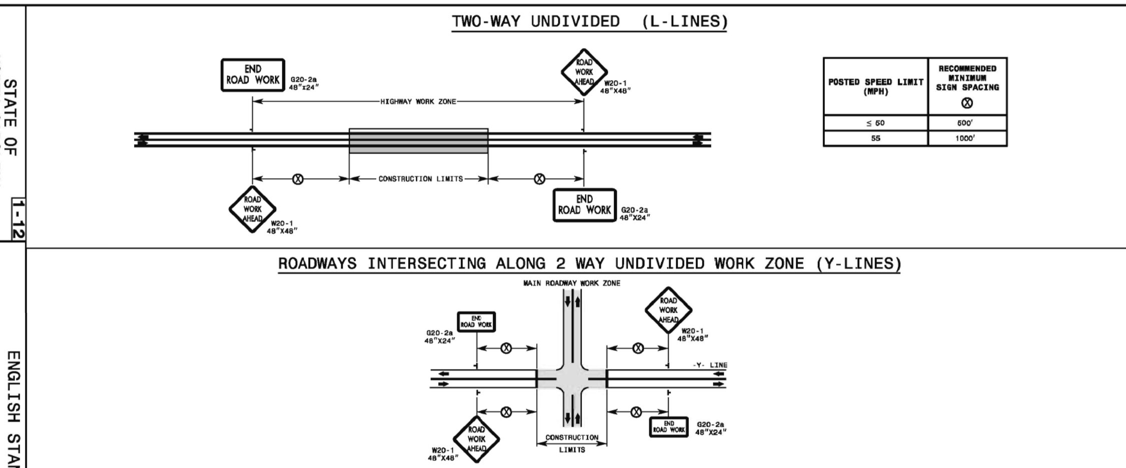
8- TWO-WAY UNDIVIDED ADVANCE WARNING SIGN CONFIGURATION MAY BE USED ON URBAN MULTI-LANE FACILITIES WHERE CONDITIONS LIMIT THE USE OF DUAL MOUNTED SIGNS AS DETERMINED BY THE ENGINEER.

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.

ENGLISH STANDARD DRAWING FOR DETAIL DRAWING FOR TWO-WAY UNDIVIDED WORK ZONE WARNING SIGNS



POSTED SPEED LIMIT (MPH)	RECOMMENDED MINIMUM SIGN SPACING Ⓧ
≤ 50	500'
55	1000'

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.

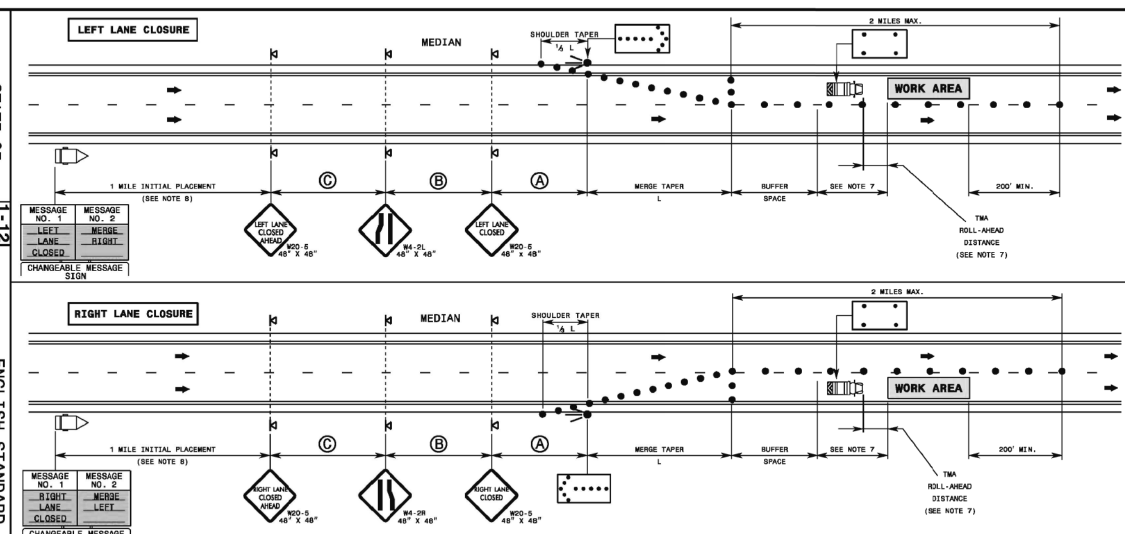
7- DO NOT BACK BRACE SIGN SUPPORTS.

LEGEND
- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW

SHEET 3 OF 3 — 1101.01

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

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.

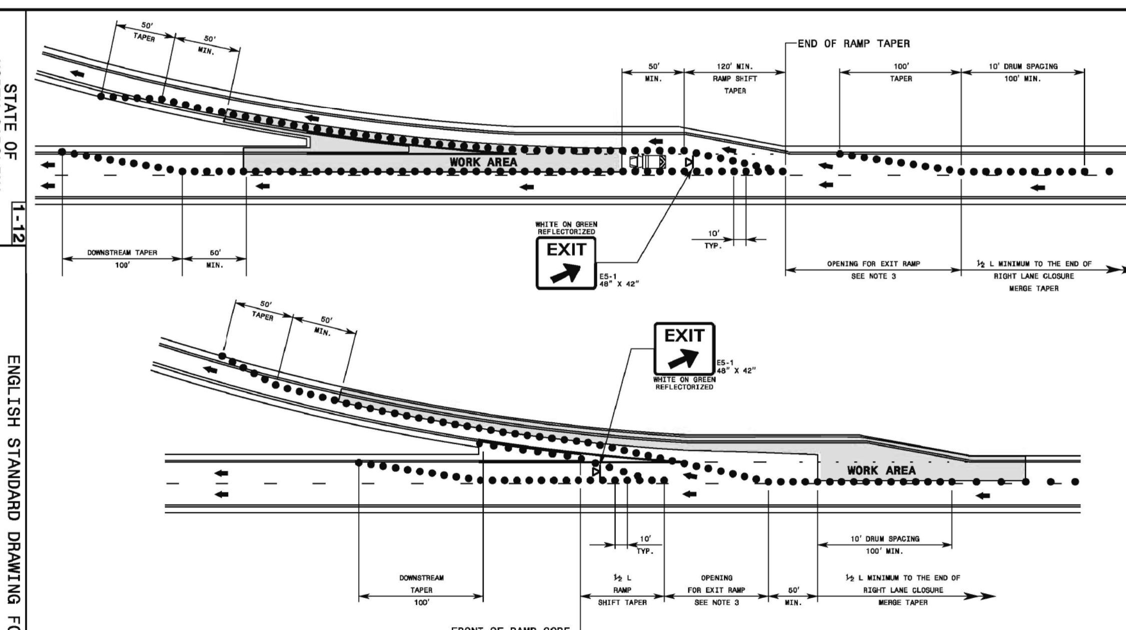
9- DO NOT EXCEED A 2 MILE LANE CLOSURE LENGTH UNLESS OTHERWISE SHOWN IN THE TMP OR AS DIRECTED BY THE ENGINEER.

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

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

ENGLISH STANDARD DRAWING FOR TEMPORARY LANE CLOSURES RIGHT LANE CLOSURES THRU EXIT RAMPS



GENERAL NOTES

1- USE THE ABOVE DETAILS IN CONJUNCTION WITH A RIGHT LANE CLOSURE AS SHOWN ON STD. 1101.02 SHEET 3.

2- MOUNT EXIT SIGNS A MINIMUM OF 5 FEET ABOVE THE PAVEMENT ELEVATION.

3- USE EXISTING RAMP OPENING LENGTH, BUT NO LESS THAN ½ ORIGINAL LENGTH. CONSIDER CLOSING RAMP IF ½ ORIGINAL LENGTH CANNOT BE OBTAINED, AS DIRECTED BY THE ENGINEER.

LEGEND
- TRUCK MOUNTED ATTENUATOR
- DRUM
- PORTABLE SIGN
- DIRECTION OF TRAFFIC FLOW

SHEET 10 OF 15 — 1101.02

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