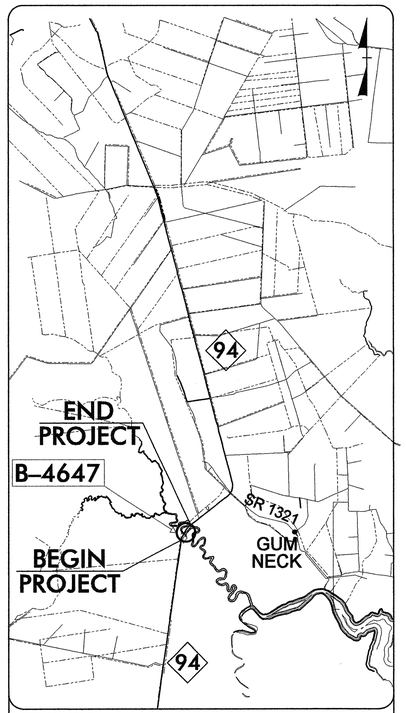
09/08/99

TIP PROJECT: B–4647

CONTRACT: C203000

See Sheet 1–A For Index of Sheets
See Sheet 1–B For Conventional Symbols



PROJECT VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

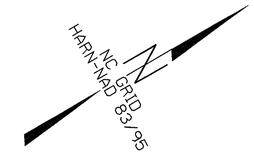
TYRRELL COUNTY

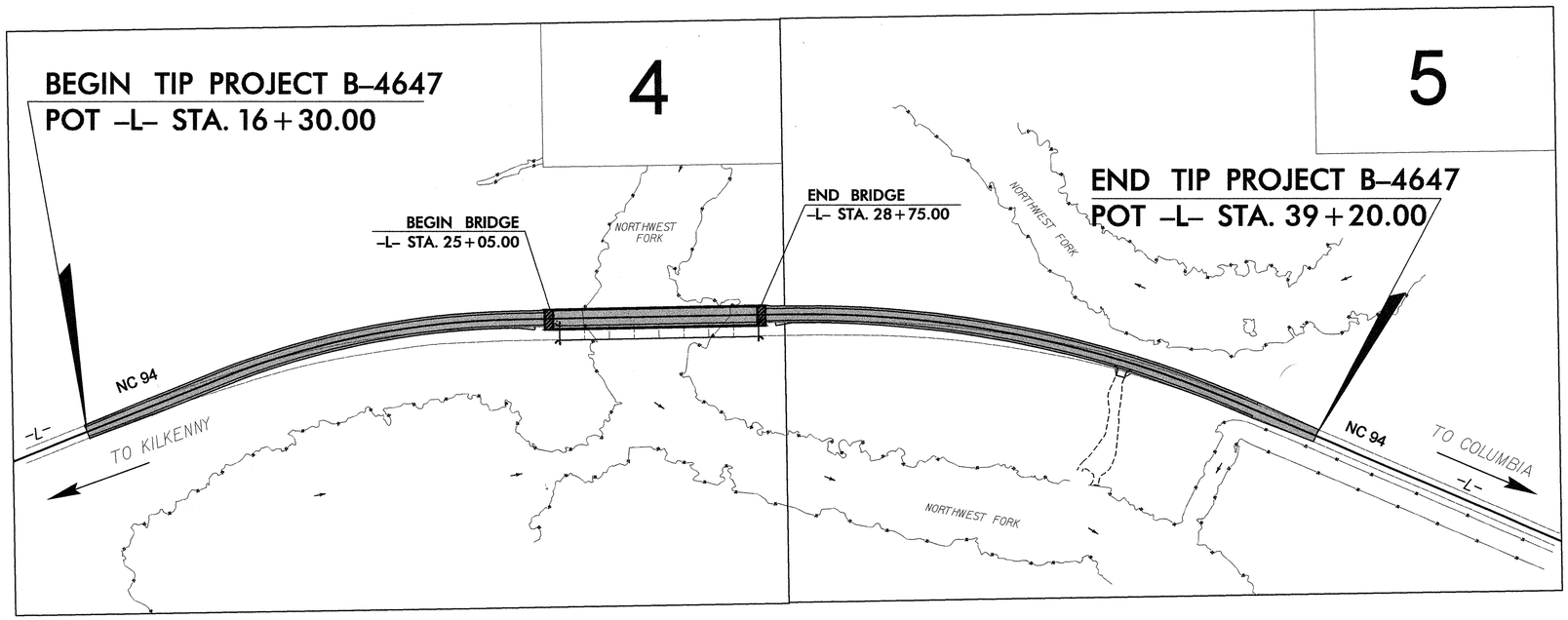
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4647	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33813.1.1	BRSTP–94(1)	P.E.
33813.2.1	BRSTP–94(1)	R/W & UTILITY
33813.3.1	BRSTP–94(1)	CONST.

LOCATION: BRIDGE NO. 6 OVER NORTHWEST FORK ON NC 94.

TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE





NCDOT Contact: Brenda L. Moore, PE
Roadway Design–Engineering Coordination

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2011 = 870
ADT 2031 = 1330
DHV = 10 %
D = 60 %
T = 6% (TTST 3%, DUAL 3%)
V = 60 MPH

FUNC CLASS = MAJOR COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–4647	=	0.364 MILE
LENGTH STRUCTURE TIP PROJECT B–4647	=	0.070 MILE
TOTAL LENGTH TIP PROJECT B–4647	=	0.434 MILE

Prepared In the Office of
DYER, RIDDLE, MILLS & PRECOURT, INC. (DRMP)
5950 FAIRVIEW ROAD., SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332–2289 NC LICENSE NO. C–2213

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 7, 2010

LETTING DATE:
MARCH 20, 2012

James E. Beck, PE
PROJECT ENGINEER

Phillip D. Hutcherson, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21656 ENGINEER ROGER S. MEADOR
SIGNATURE: 10/21/11

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26815 ENGINEER JAMES E. BECK P.E.
SIGNATURE: 10/20/2011

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •
art McMillan P.E.
STATE HIGHWAY DESIGN ENGINEER

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4647	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26615 ENGINEER JAMES E. BECK

11/1/2014

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2A-2D	STANDARD TEMPORARY SHORING
2-E	TEMPORARY GUARDRAIL ANCHOR UNIT TYPE III MODIFIED
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, AND ASPHALT PAVEMENT REMOVAL SUMMARY
3-B	SUMMARY OF DRAINAGE QUANTITIES
4 THRU 5	PLAN SHEETS
6 THRU 7	PROFILE SHEETS
TMP-1 THRU TMP-6	TRANSPORTATION MANAGEMENT PLANS
PM-1 THRU PM-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL
UC-1 THRU UC-4	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-1 THRU X-13	CROSS-SECTIONS
S-1 THRU S-30	STRUCTURE PLANS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 08/31/11

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED 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.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE CT&T, NC Power, and Tyrrell County

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE 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., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
838.02	Concrete Endwall and Sluice Gate - 15" thru 36" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.25	Anchorage for Frames - Brick or Concrete
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

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NC LICENSE NO. C-2213

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04/16/11

PROJECT REFERENCE NO.	SHEET NO.
B-4647	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 — EIP
- 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
- Known Soil Contamination: Boundary or Site
- Potential Soil Contamination: Boundary or Site

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:

- 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 Marker
- Existing Control of Access — CA
- Proposed Control of Access — CA
- 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
- Curb Cut Future Ramp — CCFR
- 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 — HH
- 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 — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- 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:

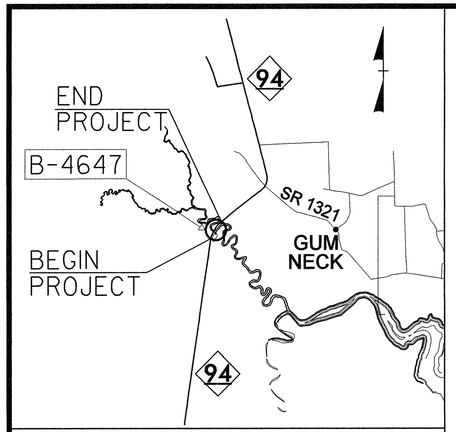
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?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 (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
B-4647	1-C
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET B-4647

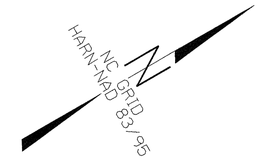


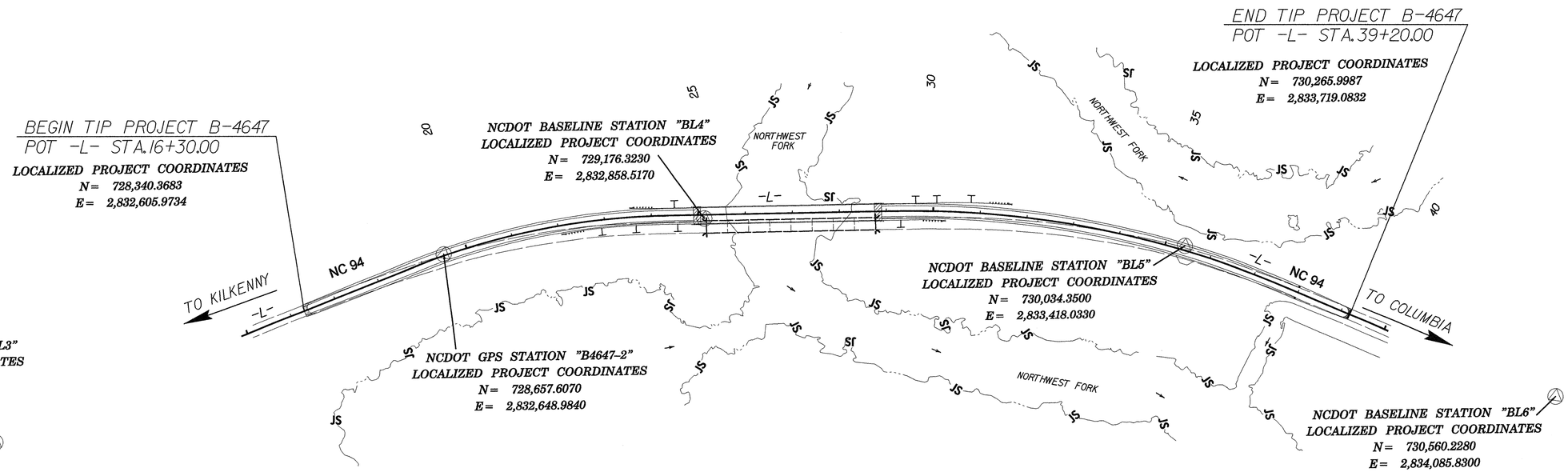
PROJECT VICINITY MAP

CONTROL DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B46471	GPS MON B4647-1	726425.5880	2832319.6480	0.90	OUTSIDE PROJECT LIMITS	
BL3	BL3	727632.9480	2832519.1270	1.19	OUTSIDE PROJECT LIMITS	
B46472	GPS MON B4647-2	728657.6070	2832648.9840	2.58	19+50.02	3.22 LT
BL4	BL4	729176.3230	2832858.5170	6.97	25+12.71	7.21 RT
BL5	BL5	730034.3500	2833418.0330	1.56	35+40.79	9.91 LT
BL6	BL6	730560.2280	2834085.8300	0.40	43+90.01	12.90 LT





DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4647-1"
WITH HARN-NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 726425.588(ft) EASTING: 2832319.648(ft)
ELEVATION: 0.90(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991096
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4647-1" TO -L- STATION 16+30.00 IS
S 08°30'16.8" 1,936.07'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BENCHMARK DATA

NORTHFORK1 ELEVATION = 0.96
N 729871 E 2833578
L STATION 35+44 219 RIGHT
BRIDGE NAIL AT BOAT ACCESS AREA

NOTE: DRAWING NOT TO SCALE

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING HTTP:\WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT

FILE: b4647_ls_control_090728.txt

SITE CALIBRATION PARAMETERS HAVE NOT BEEN DETERMINED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

△ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*

PROJECT CONTROL ESTABLISHED UTILIZING GLOBAL POSITIONING SYSTEM.

NETWORK FOR GPS "B4647-1" ESTABLISHED FROM NGS ONLINE POSITIONING USER SERVICE (OPUS)

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4647	2

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26815 ENGINEER JAMES E. BECK 10/28/2011

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22898 ENGINEER CLARK S. MORRISON 10/27/11

DRMP ENGINEERS · PLANNERS · SCIENTISTS
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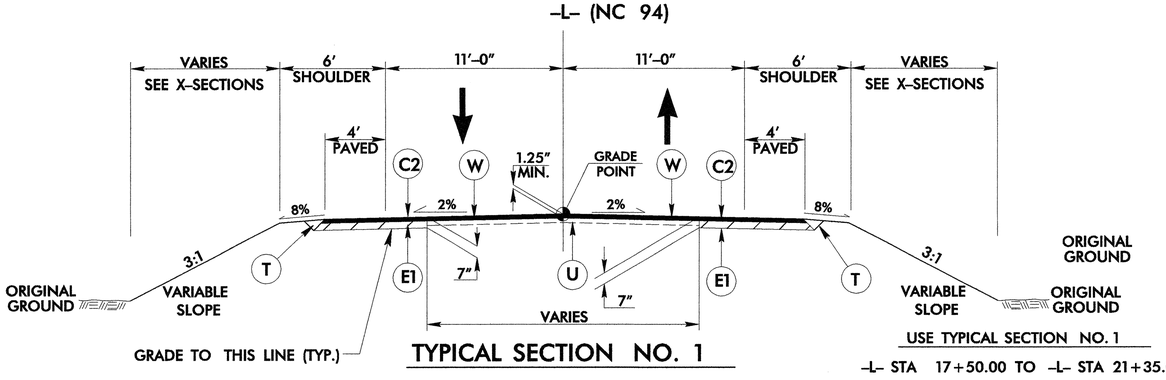
NC LICENSE NO. C-2213

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.0" IN DEPTH OR GREATER THAN 1.5" IN DEPTH.
E1	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING. (SEE WEDGING DETAIL, THIS SHEET)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



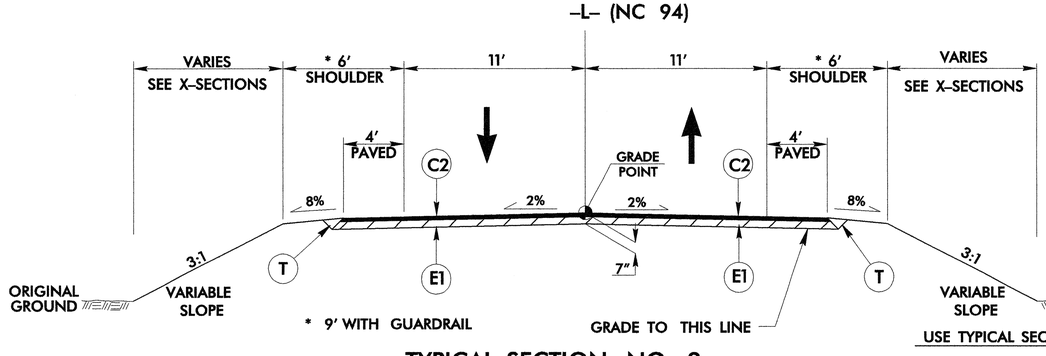
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

–L– STA 17+50.00 TO –L– STA 21+35.00
–L– STA 32+50.00 TO –L– STA 38+00.00

TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING (INCLUDES FEATHERING)

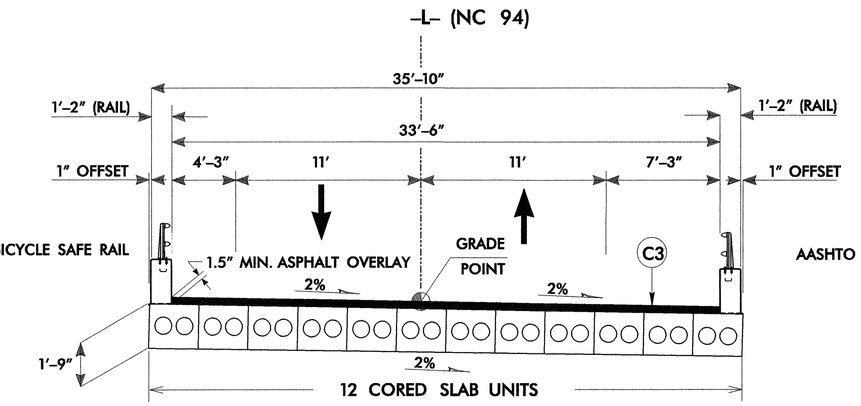
–L– STA 16+30.00 (BEGIN PROJECT) TO –L– STA 17+50.00
–L– STA 38+00.00 TO –L– STA 39+20.00 (END PROJECT)



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

–L– STA 21+35.00 TO –L– STA 25+05.00 (BEGIN BRIDGE)
–L– STA 28+75.00 (END BRIDGE) TO –L– STA 32+50.00

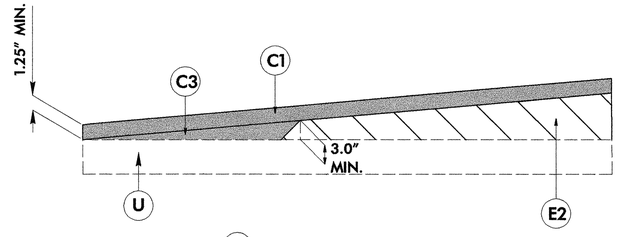


TYPICAL SECTION NO. 3

SEE STRUCTURE PLANS FOR DETAILS

USE TYPICAL SECTION NO. 3

–L– STA 25+05.00 (BEGIN BRIDGE) TO
–L– STA 28+75.00 (END BRIDGE)



(W) – Wedging Detail

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PROJECT REFERENCE NO.	SHEET
B-4647	2-A

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A HIDDEN

scotta hidden 10/7/11
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

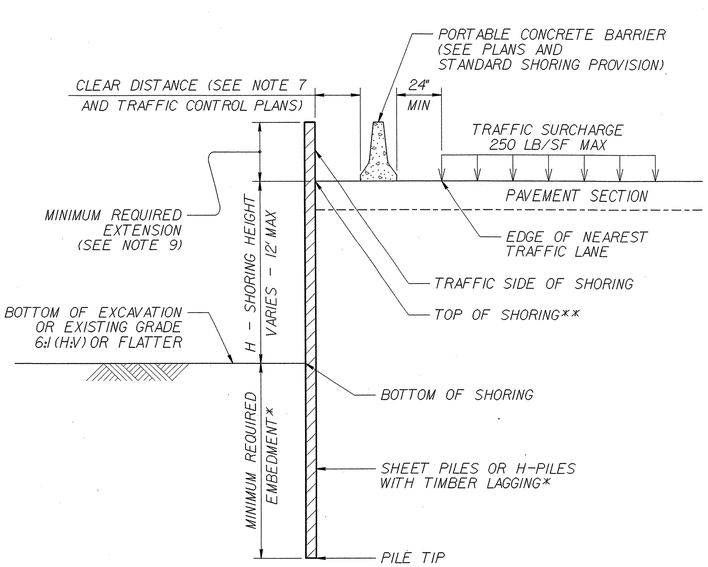
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

***DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "—".**

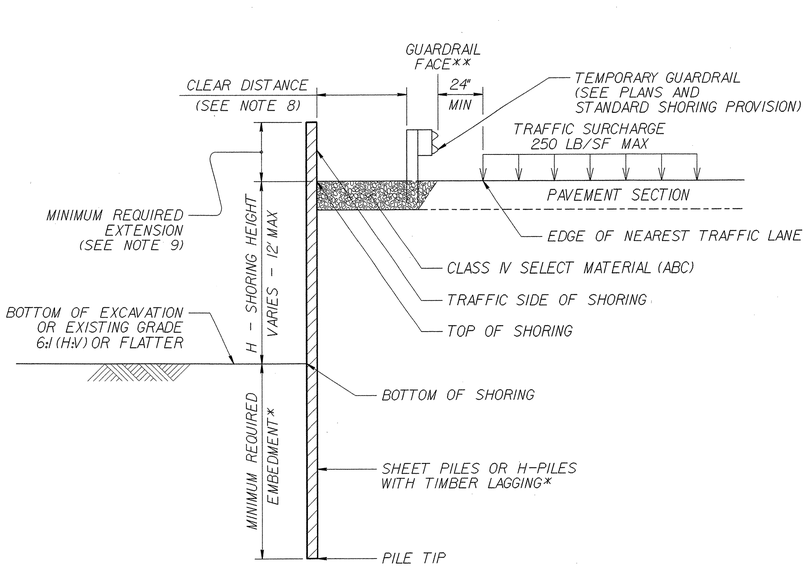
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR PORTABLE CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM.
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



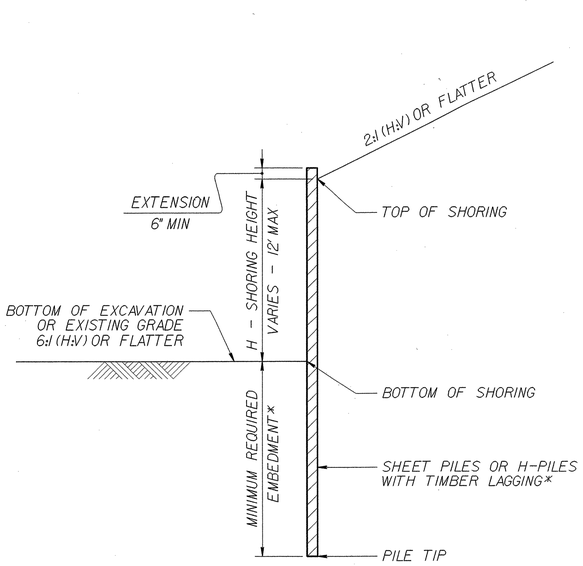
PORTABLE CONCRETE BARRIER

****TOP OF SHORING = EDGE OF PAVEMENT**



TEMPORARY GUARDRAIL

****GUARDRAIL FACE = EDGE OF PAVEMENT**



STANDARD TEMPORARY SHORING

(SLOPE CASE)

***SEE TABLE ABOVE.**

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)

***SEE TABLE ABOVE.**

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 1-17-12

PROJECT REFERENCE NO.	SHEET
B-4647	2-B

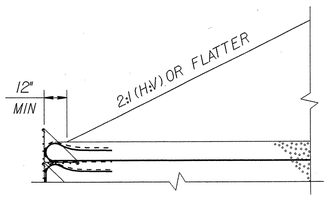
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A HIDDEN

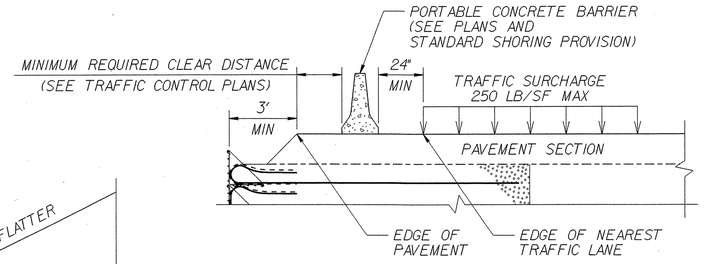
Scott A. Hidden 10/7/11
SIGNATURE DATE

ENGINEER

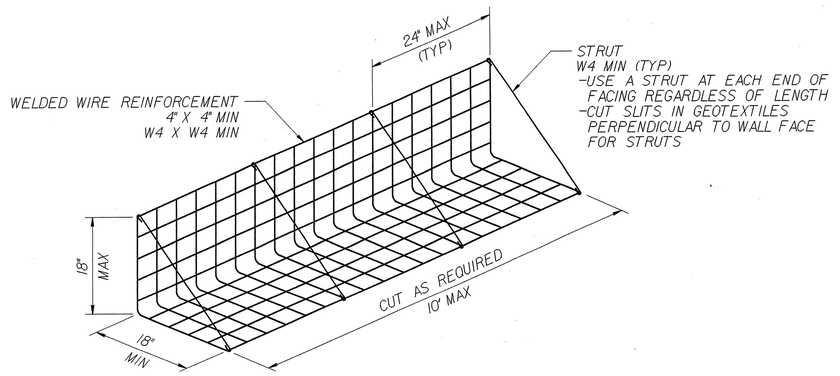
SIGNATURE DATE



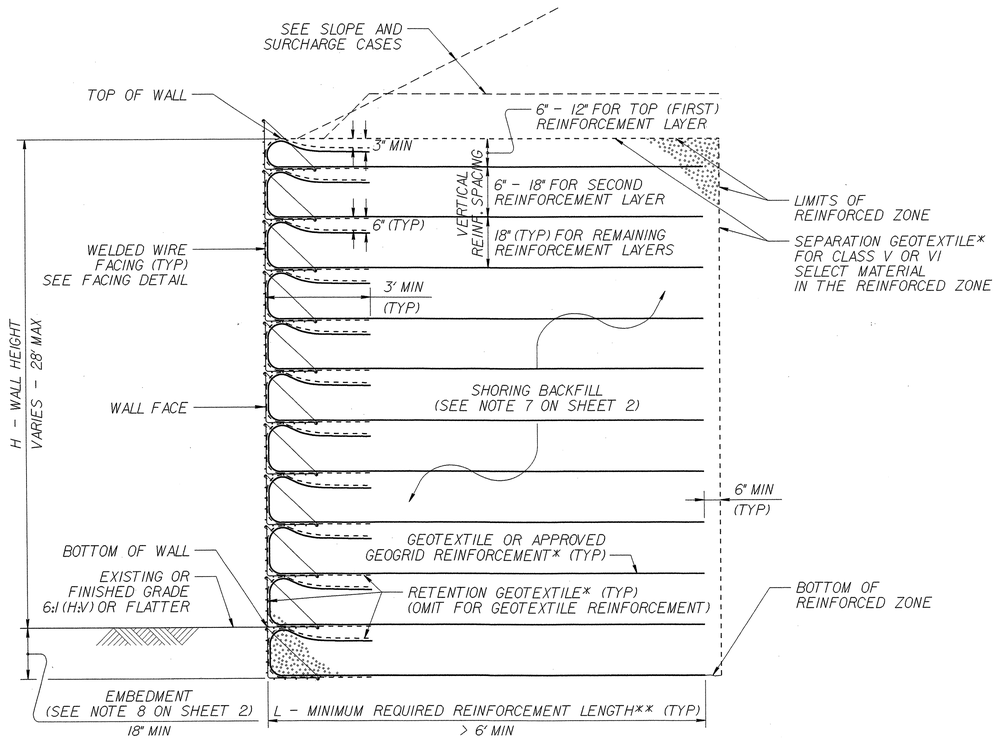
SLOPE CASE



SURCHARGE CASE

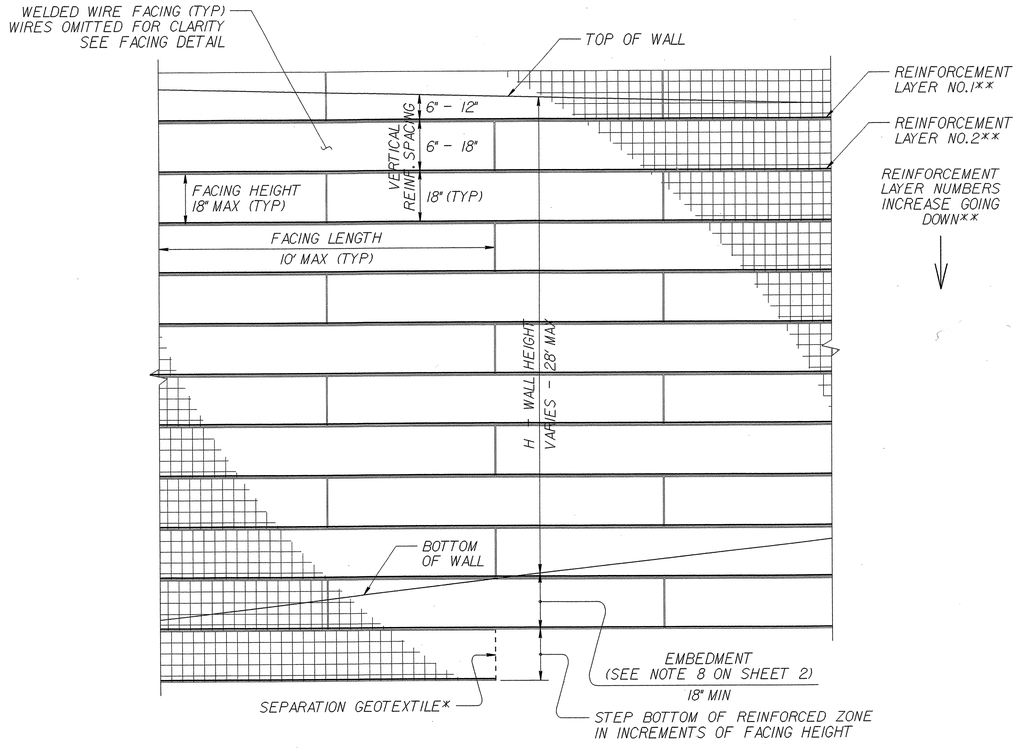


FACING DETAIL



STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
***SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.**
****SEE REINFORCEMENT TABLES ON SHEET 3.**



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

***SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.**
****SEE REINFORCEMENT TABLES ON SHEET 3.**

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY WALL
Sheet 1 of 3

DATE: 1-17-12

PROJECT REFERENCE NO.	SHEET
B-4647	2-C

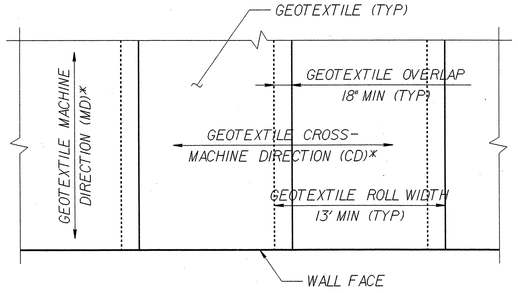
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A Hidden 10/7/11
SIGNATURE DATE

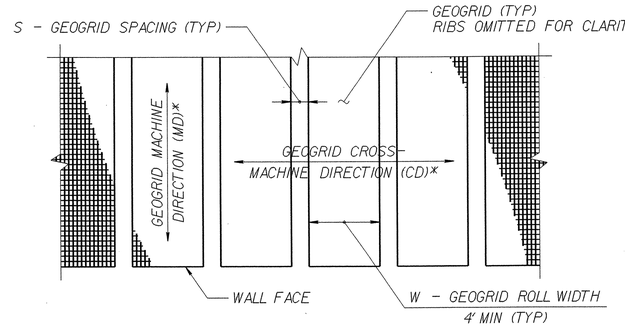
ENGINEER

SIGNATURE DATE



GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

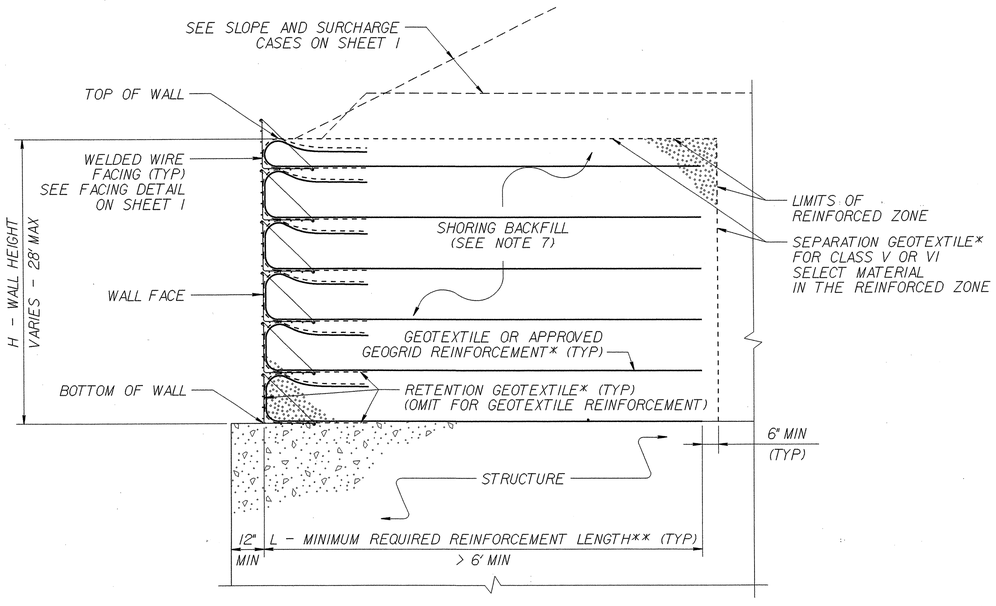


GEOGRID PLACEMENT

(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT – $\frac{W}{W+S}$ x 100 ≥ 80%, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
***SEE NOTE 12.**



TEMPORARY WALL ON STRUCTURE DETAIL

***SEE GEOSYNTHETIC PLACEMENT DETAILS.**
****SEE REINFORCEMENT TABLES ON SHEET 3.**

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS ARE APPROVED FOR SHORT-TERM DESIGN STRENGTHS FOR A 3-YEAR DESIGN LIFE IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) BASED ON MATERIAL TYPE. FOR DETAILS OF APPROVED GEOGRIDS AND SHORT-TERM DESIGN STRENGTHS, SEE www.ncdot.org/doh/operations/materials/soils/gep.html
    DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE I OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH THE FOLLOWING CONDITIONS OCCUR:
    - W (REINFORCEMENT ROLL WIDTH) ≥ L (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
    - REINFORCEMENT STRENGTH IN CD ≥ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION.
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY WALL
Sheet 2 of 3

DATE: 1-17-12

PROJECT REFERENCE NO.	SHEET
B-4647	2-D

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 10/7/11
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H WALL HEIGHT (FT)																								
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
SLOPE CASE	> 0	CLASS II,TYPE I, CLASS III,CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H ≥ 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21
	> 7 FOR H < 20' > 10 FOR H ≥ 20'	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15	16	16	17	17	18	19	19	20
		CLASS II,TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	19
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	16	16	17	18	18

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT
SHORT-TERM DESIGN STRENGTH (LB/FT)
(SEE NOTE 10 ON SHEET 2.)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD
(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

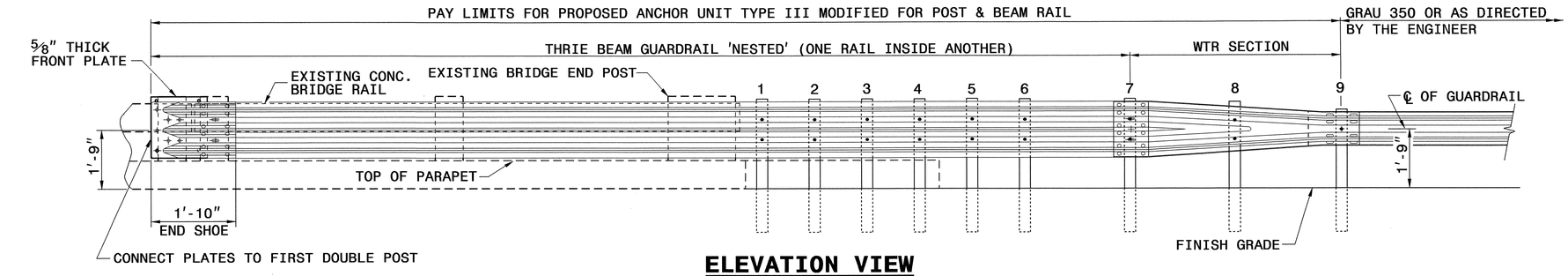
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

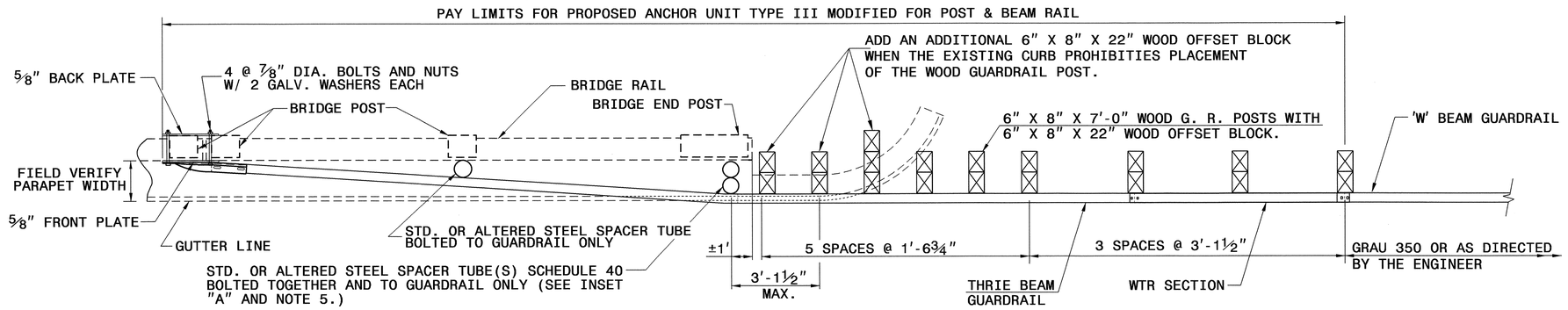
STANDARD
TEMPORARY WALL
Sheet 3 of 3

DATE: 1-17-12

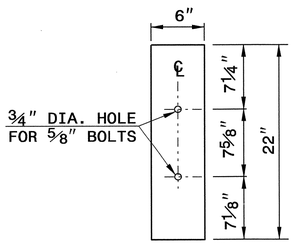
PROJECT REFERENCE NO.	SHEET NO.
B-4647	2-E



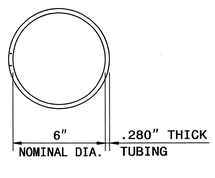
ELEVATION VIEW



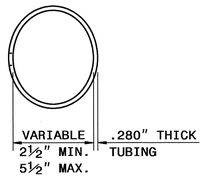
PLAN VIEW



FRONT VIEW

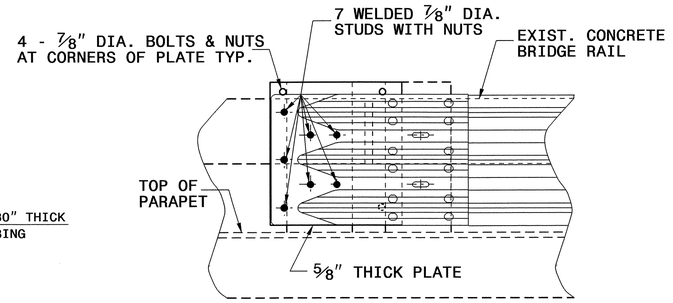


PLAN VIEW

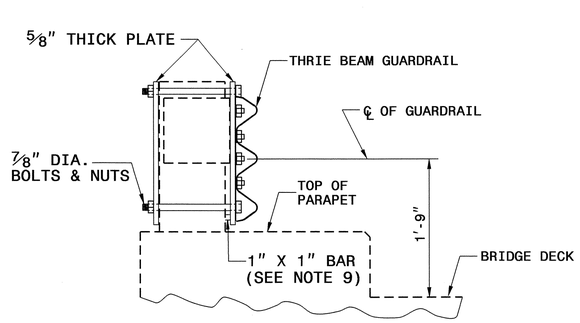


PLAN VIEW
INSET "A"

STEEL SPACER TUBE

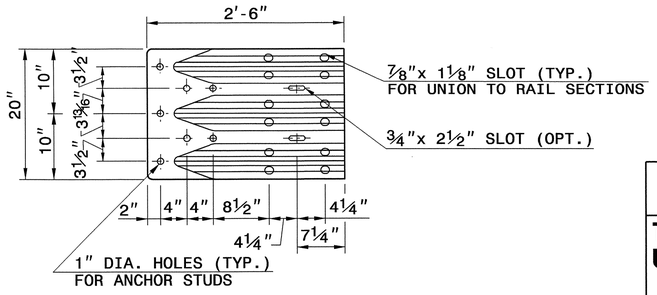


ELEVATION VIEW



SECTION VIEW

GUARDRAIL ATTACHMENT TO BRIDGE POST



END SHOE

GENERAL NOTES:

1. USE NUTS, BOLTS, AND WASHERS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-307 AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
2. TAP NUTS FOR THE 7/8" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
3. USE PLATES AND TUBES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
4. ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
5. INSTALL FACE OF GUARDRAIL AS NEAR AS POSSIBLE TO PLUMB WITH THE PARAPET FACE AT BRIDGE END POST SPACER TUBE LOCATION BY USING STANDARD OR ALTERED SPACER TUBES OR A COMBINATION THEREOF OR AS DIRECTED BY THE ENGINEER. FOR VERY SMALL PARAPET WIDTHS, GUARDRAIL MAY BE INSTALLED AGAINST BRIDGE RAIL WITHOUT SPACER TUBES.
6. DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
7. USE THIS DETAIL ONLY FOR BRIGES WITH POST AND BEAM TYPE RAIL.
8. ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH 1/4" WELDS ALL AROUND.
9. 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.
10. PROVIDE SHOP DRAWINGS OF THE PLATES TO THE ENGINEER FOR APPROVAL BEFORE FABRICATING THE PLATES.
11. LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
12. SEE ROADWAY STARDARD DRAWING 862.03 SHEET 1 FOR ADDITIONAL INFORMATION ON THE TYPE III ANCHOR UNIT

NORTH CAROLINA PROFESSIONAL SEAL 022968 ENGINEER JOHN S. HOUSTON
10/3/11

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-250-4128 FAX 919-250-4119

TEMP. GUARDRAIL ANCHOR UNIT TYPE III MODIFIED FOR POST & BEAM RAIL

ORIGINAL BY: E.E. WARD DATE: 01-03
MODIFIED BY: E.E. WARD DATE: 02-04
CHECKED BY: DATE: 9/23/11
FILE SPEC.: s:\details\stand\bpiii originial.dgn

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$$USERNAME$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4647	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202750

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (26+90)
0036000000-E	225	1,375	CY	UNDERCUT EXCAVATION
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0063000000-N	SP	Lump Sum		GRADING
0106000000-E	230	4,010	CY	BORROW EXCAVATION
0194000000-E	SP	2,900	CY	SELECT GRANULAR MATERIAL, CLASS III
0196000000-E	270	1,300	SY	GEOTEXTILE FOR SOIL STABILIZATION
0199000000-E	SP	1,500	SF	TEMPORARY SHORING
0318000000-E	300	77	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES
0320000000-E	300	210	SY	FOUNDATION CONDITIONING GEOTEXTILE
0335200000-E	305	44	LF	15" DRAINAGE PIPE
0366000000-E	310	60	LF	15" RC PIPE CULVERTS, CLASS III
1121000000-E	520	2	TON	AGGREGATE BASE COURSE
1489000000-E	610	1,620	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1525000000-E	610	750	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1575000000-E	620	125	TON	ASPHALT BINDER FOR PLANT MIX
1693000000-E	654	20	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	815	112	CY	SUBDRAIN EXCAVATION
2033000000-E	815	84	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	500	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	815	1	EA	SUBDRAIN PIPE OUTLET
2077000000-E	815	6	LF	6" OUTLET PIPE
2209000000-E	838	1.4	CY	ENDWALLS
2286000000-N	840	2	EA	MASONRY DRAINAGE STRUCTURES
2367000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29
2462000000-E	SP	2	EA	**" SLUICE GATE (15")
2556000000-E	846	40	LF	SHOULDER BERM GUTTER
3030000000-E	862	600	LF	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3380000000-E	862	275	LF	TEMPORARY STEEL BM GUARDRAIL
3387000000-N	862	2	EA	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ********** (III MOD)
3389100000-N	SP	2	EA	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE 350
3649000000-E	876	5	TON	RIP RAP, CLASS B
3656000000-E	876	465	SY	GEOTEXTILE FOR DRAINAGE
4400000000-E	1110	284	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	96	SF	WORK ZONE SIGNS (PORTABLE)
4430000000-N	1130	45	EA	DRUMS
4455000000-N	1150	60	DAY	FLAGGER
4465000000-N	1160	2	EA	TEMPORARY CRASH CUSHIONS
4470000000-N	1160	2	EA	RESET TEMPORARY CRASH CUSHION
4485000000-E	1170	525	LF	PORTABLE CONCRETE BARRIER
4500000000-E	1170	200	LF	RESET PORTABLE CONCRETE BARRIER
4609000000-N	SP	365	DAY	GENERIC TRAFFIC CONTROL ITEM TEMPORARY TRAFFIC SIGNAL SYSTEM
4650000000-N	1251	166	EA	TEMPORARY RAISED PAVEMENT MARKERS
4810000000-E	1205	25,140	LF	PAINT PAVEMENT MARKING LINES (4")
4850000000-E	1205	2,000	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
5325600000-E	1510	1,940	LF	6" WATER LINE
5540000000-E	1515	2	EA	6" VALVE
5800000000-E	1530	1,900	LF	ABANDON 6" UTILITY PIPE
5871400000-E	1550	1,200	LF	TRENCHLESS INSTALLATION OF 6" IN SOIL
5871410000-E	1550	125	LF	TRENCHLESS INSTALLATION OF 6" NOT IN SOIL
6000000000-E	1605	5,595	LF	TEMPORARY SILT FENCE
6006000000-E	1610	225	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	60	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	135	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	3.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	150	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	1	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
6029000000-E	SP	4,300	LF	SAFETY FENCE
6030000000-E	1630	500	CY	SILT EXCAVATION
6036000000-E	1631	1,515	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	770	SY	COIR FIBER MAT
6042000000-E	1632	560	LF	1/4" HARDWARE CLOTH
6048000000-E	SP	500	SY	FLOATING TURBIDITY CURTAIN
6071012000-E	SP	75	LF	COIR FIBER WATTLE
6071030000-E	1640	220	LF	COIR FIBER BAFFLE
6071050000-E	SP	2	EA	**" SKIMMER (1-1/2")
6084000000-E	1660	3	ACR	SEEDING & MULCHING
6087000000-E	1660	3	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	75	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	2	TON	FERTILIZER TOPDRESSING
6114500000-N	1667	10	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	18	EA	RESPONSE FOR EROSION CONTROL
6129000000-E	1670	0.52	ACR	WETLAND REFORESTATION
6131000000-E	1670	0.52	ACR	GENERIC EROSION CONTROL ITEM DISKING
6131000000-E	1670	0.52	ACR	GENERIC EROSION CONTROL ITEM RIPPING

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COMPUTED BY: GSM DATE: 10/7/2011
CHECKED BY: JEB DATE: 10/7/2011

PROJECT NO.	SHEET NO.
B-4647	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

	Station	Station	Total Unclass. Excav.	Undercut	Embank. +%	Borrow	Waste
PHASE I	16+30.00	25+05.00 (BEG. BRIDGE)	7		1,236	1,229	
PHASE I	18+25.00	19+75.00		702	913	913	702
PHASE II	16+30.00	25+05.00 (BEG. BRIDGE)	1,439		79		1,360
	SUBTOTAL:		1,446	702	2,228	2,142	2,062
PHASE I	28+75.00 (END BRIDGE)	39+20.00	3		2,591	2,588	
PHASE II	28+75.00 (END BRIDGE)	39+20.00	252		432	180	
	SUBTOTAL:		255		3,023	2,768	
	SUMMARIES SUBTOTAL:		1,701	702	5,251	4,910	2,062
	SELECT GRANULAR CLASS III IN LIEU OF BORROW				-913	-913	
PHASE II	WASTE IN LIEU OF BORROW					-180	-180
	PROJECT TOTALS:		1,701	702	4,338	3,817	1,882
	EST. 5% FOR REPLACING TOP SOIL ON BORROW PITS					191	
	ADDITIONAL UNDERCUT			650			
	GRAND TOTALS:		1,701	1,352		4,008	1,882
	SAY:		1,710	1,375		4,010	

SUMMARY OF PAVEMENT REMOVAL/BREAKING

LINE	STATION TO STATION	LOC	ASPHALT REMOVAL (SY)	ASPHALT BREAKING (SY)
-L-	20+00 TO 25+05	RT	1156	
-L-	28+75 TO 34+50	RT	354	
-L-	29+00 TO 32+50	RT		397
	GRAND TOTAL:		1510	397
	SAY:		1510	400

SHOULDER BERM GUTTER SUMMARY

LINE	STATION	STATION	LOCATION	LENGTH (LF)
-L-	24+71	APPROACH SLAB	RT	20
-L-	APPROACH SLAB	29+09	RT	20
			TOTAL:	40
			SAY:	40

EST. SELECT GRANULAR MATERIAL = 2,900 CY (CONTINGENCY FROM GEOTECHNICAL REPORT)
EST. GEOTEXTILE FOR SOIL STABILIZATION = 1,300 SY (CONTINGENCY FROM GEOTECHNICAL REPORT)

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.
APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL AND BREAKUP OF EXISTING PAVEMENT WILL BE PAID AT THE LUMP SUM PRICE FOR "GRADING".

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC.	LENGTH STRAIGHT	LENGTH SHOP CURVED	TEMPORARY STRAIGHT	WARRANT POINT APPR. END	WARRANT POINT TRAIL. END	"N" DIST FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH APPR. END	FLARE LENGTH TRAIL. END	W APPR. END	W TRAIL. END	ANCHORS	GRAU 350	III	TEMPORARY ANCHORS	GRAU 350	TYPE III MOD	IMP. ATTEN. TYPE 350 EA	G	NG	REMOVE EXISTING GRDRAIL		REMARKS
-L-	22+17.50	25+05.00	RT	287.50			25+05.00		7.25	10.25	50		1			1	1									
-L-	23+67.50	25+05.00	LT	137.50				25+05.00	4.25	9		137.5		1		1	1									
-L-	28+75.00	30+12.50	RT	137.50				28+75.00	7.25	10.25		50		1		1	1									
-L-	28+75.00	31+62.50	LT	287.50			28+75.00		6	9	50		1			1	1									
-L-	23+05.00	25+05.00	RT			200.00	25+05.00			9									1	1					50 MPH	TEMPORARY GUARDRAIL FOR STAGE 1
-L-	28+75.00	30+75.00	RT			200.00	28+75.00			9									1	1					50 MPH	TEMPORARY GUARDRAIL FOR STAGE 1
			SUBTOTAL	850.00		400.00																				

ANCHOR UNIT DEDUCTIONS

GRAU 350 =	4 x 50	=	-200.00	
TYPE III =	4 x 18.75	=	-75.00	
TEMP GRAU 350 =	2 x 50	=		-100.00
TEMP B-77 =	2 X 25	=		-50.00
		TOTAL	575.00	250.00
(5 ADDITIONAL GUARDRAIL POSTS)		SAY	600.00	275.00

DRMP ENGINEERS • PLANNERS • SCIENTISTS
DYER, RIDDLE, MILLS & PRECOURT, INC.
5950 FAIRVIEW ROAD., S-320
CHARLOTTE, NC 28210
704-332-2289 NC LICENSE NO. C-2213

COMPUTED BY:	GSM	DATE:	10/19/2011
CHECKED BY:	JEB	DATE:	10/19/2011

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-4647	3-B

CHA-JBECK1

**Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".**

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
-L- 24+76	RT	1		6.6															
		1	OUT		3.8	2.9			20								X		
-L- 29+04	RT	2		7.3															
		2	OUT		3.7	2.9			24								X		
-L- 24+22	RT	3																	
-L- 29+78	RT	4																	
SHEET TOTALS									44										

STATION	STRUCTURE NO.	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
-L- 24+76	1																								
	1 – OUT																								
-L- 29+04	2																								
	2 – OUT																								
-L- 24+22	3										28														
-L- 29+78	4										32														
SHEET TOTALS											60														

STATION	STRUCTURE NO.	** R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	SLUICE GATE W/HDWL STD. 838.02				DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 24+76	1								1												1					1											
	1 – OUT																																				
-L- 29+04	2								1												1					1											
	2 – OUT																																				
-L- 24+22	3						0.7																					1									Use Standard 838.02 endwall
-L- 29+78	4						0.7																					1									Use Standard 838.02 endwall
SHEET TOTALS							1.4		2												2					2		2									

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

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PROJECT REFERENCE NO.	SHEET NO.
B-4647	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26815 ENGINEER JAMES E. BECK

10/20/2011

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21656 ENGINEER ROGER S. WEADON

10/21/11

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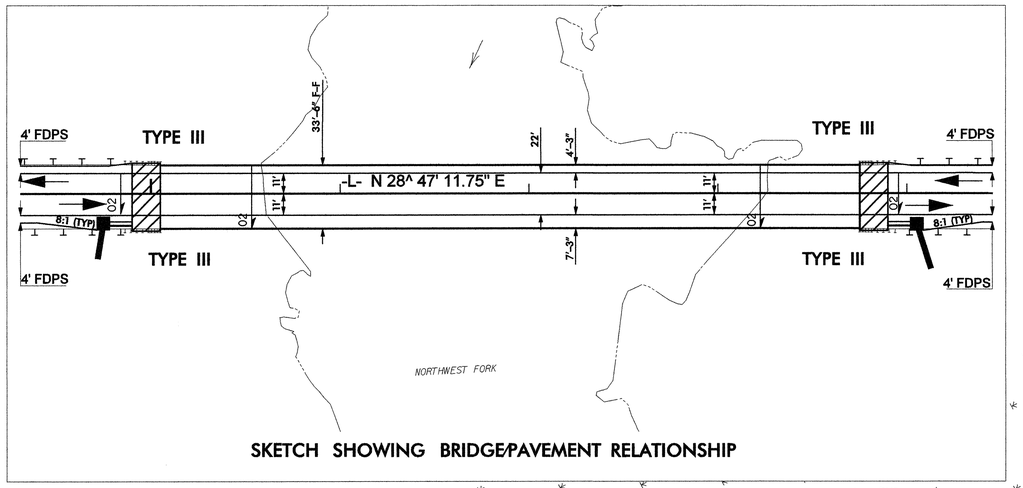
NC License No. P-0160



SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

HARN NAD 83/95 NC GRID

BEGIN TIP PROJECT B-4647
POT -L- STA. 16+30.00

-BL- B4647-2

-BL- 4

BEGIN BRIDGE
-L- STA. 25+05.00

BEGIN APPR. SLAB
-L- STA. 24+91.00

END BRIDGE
-L- STA. 28+75.00

END APPR. SLAB
-L- STA. 28+89.00

-L- N 28^ 47' 11.75" E

NC 94
-L- N 8^ 04' 18.69" E

120' TAPER TO EXISTING EOP

RUTH HETHCOX WOODLEY
DB 116 PG 429

EVERETT H. ELLINWOOD III
DB 21 PG 766

STATE OF NORTH CAROLINA
DB 08 PG 300

NORTHWEST FORK CREEK

BRIDGE# 6
LOWEST SEAT ELEV. 4.90'
HIGH WATER MARK
1.8' HURRICANE ISABEL 2003

CLASS II RIP RAP (TYP.) STRUCTURE PAY ITEM EST. 46'5I" W 90.63'

SHOULDER BERM GUTTER BEGIN @ STA. -L- 24+71 RT

SHOULDER BERM GUTTER END @ STA. -L- 29+09 RT

PROP. EXCAVATION TO ELEV. 0.50 STRUCTURE PAY ITEM EST. 50 C.Y.

PROP. EXCAVATION TO ELEV. 0.50 STRUCTURE PAY ITEM EST. 150 C.Y.

HAZARD SPILL BASIN SEE DETAIL A

HAZARD SPILL BASIN SEE DETAIL B

MITIGATION AREA GRADE TO EXISTING WETLAND ELEVATION

CLASS 'B' RIPRAP EST. 2 TONS EST. 7 F.F.S.Y.

6" PLASTIC (BORE UNDER CREEK)
6" D.I. (SUSPENDED FROM BRIDGE)
ABANDONED NO INFORMATION FOR FIBER OPTIC

ABAND ISFD

GRAU 350

STAGE 1 SLOPE STAKE

4' FDPS

26.67' INCR

CONC WING WALL

2GI

PC Sta. 18+88.57

PT Sta. 24+30.89

PC Sta. 29+25.69

MATCHLINE STA. 29+50

N 3°04'44" W

N 2°38'34" W 89.82'

N 43°25'43" W 146.89'

S 87°03'39" E 62.37'

S 28°07'54" E

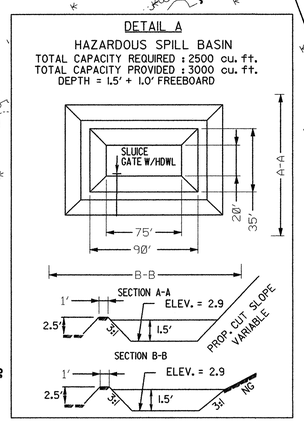
S 78°04'49" E 113.37'

S 45°02'59" E

DETAIL A

HAZARDOUS SPILL BASIN

TOTAL CAPACITY REQUIRED : 2500 cu. ft.
TOTAL CAPACITY PROVIDED : 3000 cu. ft.
DEPTH = 1.5' + 1.0' FREEBOARD



STA. -L- 24+50 RT

-L- CURVE DATA

CURVE 1
PI -L- Sta 21+62.72
Δ = 20° 42' 53.06" (RT)
D = 3° 49' 10.99"
L = 542.31'
T = 274.15
R = 1,500.00'
e = 6%
RUNOFF = 160'
DESIGN SPEED = 60 MPH

FOR STRUCTURE PLANS SEE SHEET NOS. S-1 THRU S-30

FOR -L- PROFILE SEE SHEET NO.6

ASPHALT PAVEMENT REMOVAL

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
B-4647	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26815 ENGINEER JAMES E. BECK 10/24/11

NORTH CAROLINA PROFESSIONAL SEAL 21656 ENGINEER ROGER S. WEAVER 10/24/11

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NC License No. P-0560

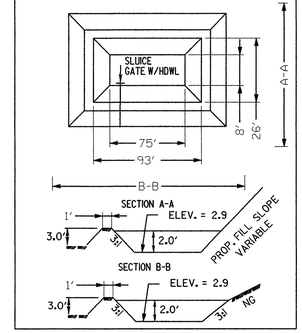
REVISIONS

8/17/99

DETAIL B

HAZARDOUS SPILL BASIN

TOTAL CAPACITY REQUIRED : 2090 cu. ft.
TOTAL CAPACITY PROVIDED : 2340 cu. ft.
DEPTH = 2' + 1.0' FREEBOARD



STA. -L- 29+50 RT

FOR -L- PROFILE SEE SHEET NO.7

DRIVEWAY RADII ARE 3' UNLESS OTHERWISE NOTED

NC GRID HARN-NAD 83/86

END TIP PROJECT B-4647
POT -L- STA. 39+20.00

MATCHLINE STA. 29+50

WOODS

EVERETT H. ELLINWOOD III
DB 211 PG 766

NORTHWEST FORK CREEK

-BL- 5

-L-

STAGE 1 SLOPE STAKE

GRAU 350

4' FDPS

NC 94

6"PVC

CLASS 'B' RIPRAP
EST. 2 TONS
EST. 7 F.F.S.Y.

HAZARD SPILL BASIN
SEE DETAIL B

MITIGATION AREA GRADE TO EXISTING WETLAND ELEVATION

MARSH

TIE TO EXISTING 16' SOIL DRIVEWAY

STATE OF NORTH CAROLINA
DB 08 PG 300

WOOD PIER

NORTHFORK 1
BL -47+00 223' RT
BRIDGE NAIL AT BOAT ACCESS AERA

PT STA 37+65.06

S 39°29'17" E

-L- 39+00.00

-L- 39+20.00

120' TAPER TO EXISTING EOP

-L- N 52° 49' 57.40" E

STATE HIGHWAY AND PUBLIC WORKS COMMISSION
(NCDOT)
DB 109 PG 103

-BL- 6

S 37°23'35" E

ASPHALT PAVEMENT REMOVAL

-L- CURVE DATA

CURVE 2
PI -L- Sta 33+51.64
Δ = 24° 02' 45.65" (RT)
D = 2° 51' 53.24"
L = 839.36'
T = 425.95'
R = 2,000.00'
e = 5.4%
RUNOFF = 144'
DESIGN SPEED = 60 MPH

R:\Roadway\Proj\B4647_Rdy_psh2.dgn
11/2/2011 AM
11/2/2011

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4647	6

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26815 ENGINEER JAMES E. BECK

15/09/2011

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21656 ENGINEER ROGER S. WEAD JR.

10/21/11

DRMP ENGINEERS • PLANNERS • SCIENTISTS
DYER, RIDDLE, MILLS & PRECOURT, INC.
5950 FAIRVIEW ROAD, SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332-2289
NC LICENSE NO. C-2213

MA Engineering CONSULTANTS, INC.
208 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221
NC License No. P-0160

—L—

BM #1

ELEV= 0.90
36" REBAR WITH CAP
N: 726426 E: 2832320

PROPOSED 8-SPAN CORED SLAB BRIDGE
1@50', 6@45', 1@50'
C/L STA. 26+90.00
DEPTH = 2'
SKEW = 90°

BEGIN GRADE
-L- STA. 17+50.00
EL. 2.5'

RESURFACE

+30.00

+45.00

+50.00

FEATHER TO MATCH EXISTING

EXISTING GROUND

PI = 19+00.00
EL = 3.93'
VC = 200'
K = 309
DS > 60 mph

(+)0.8514%

(+)0.9467%

(+)0.3001%

(+)0.3018%

PI = 22+25.00
EL = 4.91'
VC = 200'
K = 374
DS > 60 mph

(+)0.3001%

(+)0.8354%

BEGIN BRIDGE
-L- STA. 25+05.00

100 YR STORM EL 3.0± FROM FEMA MAP

PROPOSED GRADE

PROPOSED BRIDGE

PI = 27+75.00
EL = 9.50'
VC = 400'
K = 200
DS > 60 mph

(+)0.8354%

(-)1.1632%

END BRIDGE
-L- STA. 28+75.00

MATCHLINE STA. 29+50

2:1 SLOPE NORMAL CLASS II RIP RAP (TYP.) STRUCTURE PAY ITEM

5'-4" TYP.

PROPOSED EXCAVATION STRUCTURAL PAY ITEM

OHW EL 1.8' 2003 ISABEL

NWS EL -0.3± WAES SURVEY AUGUST 2008

EXISTING GROUND

BEGIN PROJECT
-L- STA. 16+30.00

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= NA (TIDAL) CFS
DESIGN FREQUENCY	= NA (TIDAL) YRS
DESIGN HW ELEVATION	= NA (TIDAL) FT
BASE DISCHARGE	= NA (TIDAL) CFS
BASE FREQUENCY	= NA (TIDAL) YRS
BASE HW ELEVATION	= NA (TIDAL) FT
OVERTOPPING DISCHARGE	= NA (TIDAL) CFS
OVERTOPPING FREQUENCY	= NA (TIDAL) YRS
OVERTOPPING ELEVATION	= NA (TIDAL) FT
DATE OF SURVEY	
W.S. ELEVATION AT DATE OF SURVEY	= NA (TIDAL) FT

FOR -L- PLAN
SEE SHEETS NO. 4

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4647	7

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26815 ENGINEER JAMES E. BECK

10/20/2011

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21656 ENGINEER ROGER S. WEAVER

10/21/11

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-L-

MATCHLINE STA 29+50

PROPOSED GRADE

EXISTING GROUND

(-)1.1632%

(-)1.1632%

(-)0.3000%

(+)0.3000%

(-)0.3809%

(-)0.3000%

PI = 33+50.00
EL = 2.81'
VC = 200'
K = 232
DS > 60 mph

PI = 35+00.00
EL = 2.36'
VC = 100'
K = 167
DS > 60 mph

PI = 36+25.00
EL = 2.74'
VC = 150'
K = 220
DS > 60 mph

RESURFACE

FEATHER TO MATCH EXISTING

+00.00

-L- 2.0%

+20.00

END GRADE
-L- STA 38+00.00
EL 1.99

END PROJECT
-L- STA 39+20.00

BM #2

ELEV= 0.96
BRIDGE NAIL AT BOAT ACCESS AREA
N: 729871 E: 2833578

FOR -L- PLAN
SEE SHEETS NO.5

29 30 31 32 33 34 35 36 37 38 39 40 41

30 20 10 0

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11/2/11 8:33 AM
10/20/2011