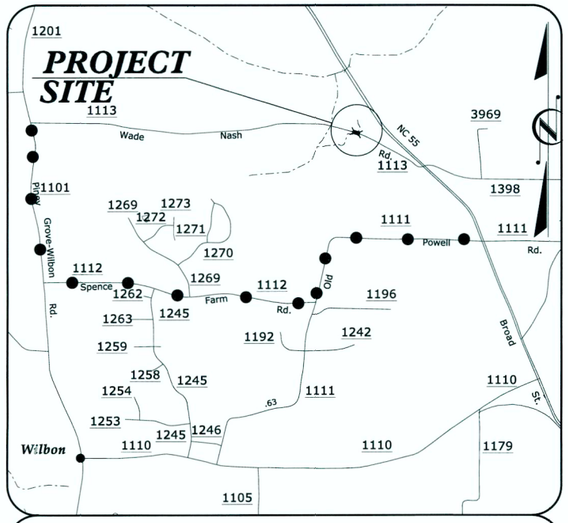
09/08/99

TIP PROJECT: 17BP.5.R.20

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP

OFF–SITE DETOUR

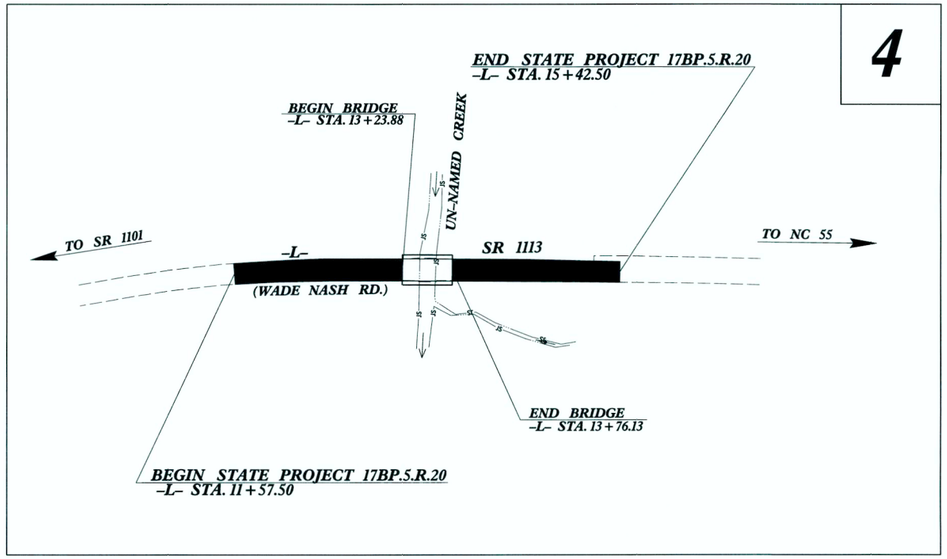
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.5.R.20	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
17BP.5.R.20		PE, R/W & UTIL.	

LOCATION: BRIDGE NO. 444 OVER UNNAMED TRIBUTARY TO BASAL CREEK ON SR 1113 (WADE NASH RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE



NOTE: A DESIGN EXCEPTION IS REQUIRED FOR THE SAG VERTICAL CURVE K VALUE.

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

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 2012 = 1465
ADT 2032 = 2565
DHV = 10 %
D = 50 %
T = 8 % *
V = 55 MPH
* TTST = 3% DUAL 5%
FUNC CLASS = LOCAL

SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY STATE PROJECT 17BP.5.R.20 = 0.063 MILES
LENGTH STRUCTURE STATE PROJECT 17BP.5.R.20 = 0.010 MILES
TOTAL LENGTH STATE PROJECT 17BP.5.R.20 = 0.073 MILES

WETHERILL ENGINEERING

Prepared for the North Carolina Department of Transportation in the Office of:

559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:
APRIL , 2013

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 23454 ENGINEER ANNE D. BAMBER

3/11/13

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS

3/11/13

SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

7:56:10 AM
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3/11/2013

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022979 ENGINEER G. S. PURVIS 3/19/13

GENERAL NOTES

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 III.

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.

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.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

END BENTS:

THE SURVEYOR 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 CENTURYLINK - TELEPHONE
(RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS)
TOWN OF FUQUAY VARINA - WATER
(RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY CONTRACTOR)

LIST OF ROADWAY STANDARD DRAWINGS

EFF. 01-17-12
REV.

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	
200.03	Method of Clearing - Method III
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	
422.11	Reinforced Bridge Approach Fills - Sub Regional Tier
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

INDEX OF SHEETS

8/17/99
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3/19/2013

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
17BP.5.R.20	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: Area or Site
- Potential Soil Contamination: Area 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 — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- 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.
17BP.5.R.20	2
R/W SHEET NO.	

NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS
3/19/13

WETHERILL ENGINEERING
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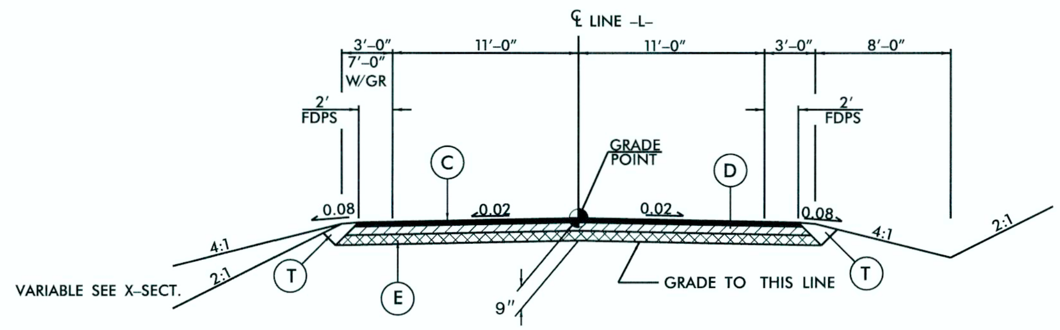
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION



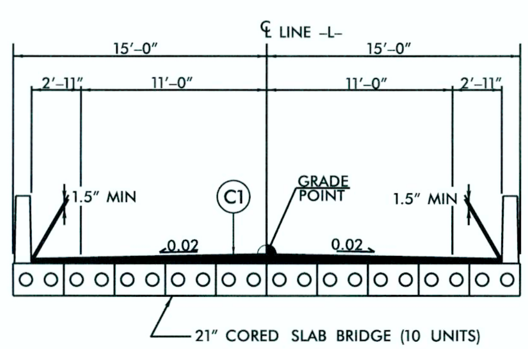
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:

-L- STA. 11+57.50 TO -L- STA. 13+23.88 (BEGIN BRIDGE)
-L- STA. 13+76.13 (END BRIDGE) TO -L- STA. 15+42.50

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C1	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 TO EXCEED 1½" IN DEPTH.
D	PROP. APPROX. 3½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.
D1	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	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 5½" IN DEPTH.
T	EARTH MATERIAL.

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



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS:

-L- STA. 13+23.88 (BEGIN BRIDGE) TO -L- STA. 13+76.13 (END BRIDGE)

REVISIONS

8/17/99

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3/19/2013

COMPUTED BY: bam	DATE: 8/15/11
CHECKED BY:	DATE:

PROJECT REFERENCE NO.	SHEET NO.
17BP.5.R.20	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-L- 11+57.50	-L- 13+23.88	75	48	39	66
SUBTOTALS:		75	48	39	66
-L- 13+76.13	-L- 15+42.50	86	22	9	73
SUBTOTALS:		86	22	9	73
PROJECT SUBTOTALS:		161	70	48	139
LOSS DUE TO CLEARING & GRUBBING					
PROJECT TOTALS:		161	70	48	139
ADJUSTMENT FOR PAVEMENT REMOVAL		-139			
5% TO REPLACE TOPSOIL ON BORROW PIT				2	
GRAND TOTALS:		22	70	50	139
SAY:		30		60	

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Shoulder Borrow, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-L-	11+57.50	13+40.09	CL	427
-L-	13+59.02	15+42.50	CL	428
			TOTAL:	855
			SAY:	860

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L- LT.	13+87.13	14+19.88	32.75'
-L- RT.	13+87.13	14+19.88	32.75'
		TOTAL:	65.50'
		SAY:	66.00'

RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING RT.	AREA REMAINING LT.	CONST. EASE.	PERM. DRAIN. EASE.	TEMP. DRAIN. EASE.
2	SPACE SAVER STORAGE, LLC						461.33 SF	

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

SUB-REGIONAL & REGIONAL LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & 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 or CSP) 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- 14+15.00	RT.	0402		363.6															
		0402	0401		360.9	360.1													
-L- 14+15.00	LT.	0401		363.6															
		0401	0403		360.1	360.0			28'										
									28'										

STATION	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"
-L- 14+15.00																						
																28'						
-L- 14+15.00																						
																28'						

STATION	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. 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
-L- 14+15.00								1			
-L- 14+15.00								1			
								2			

STATION	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	T.B.D.I. STD. 840.35	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	M.H. FRAME & COVER STD. 840.54	T.B.J.B. STD. 840.34	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-L- 14+15.00									1	1							
-L- 14+15.00									1	1							
									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.)	GRATED DROP INLET (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

"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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	SHOP CURVED	DOUBLE FACED	WARRANT POINT APPROACH END	TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	TRAILING END	W APPROACH END	TRAILING END
-L-	12+48.88	13+23.88	LT.	75.00'				13+23.88	4'-0"	6'-0"		50'-0"		1'-0"
-L-	12+48.88	13+23.88	RT.	75.00'			13+23.88		4'-0"	6'-0"	50'-0"		1'-0"	
-L-	13+76.13	14+69.88	LT.	93.75'			13+76.13		4'-0"	6'-0"	50'-0"		1'-0"	
-L-	13+76.13	14+69.88	RT.	93.75'				13+76.13	4'-0"	6'-0"		50'-0"		1'-0"
			PROJECT SUBTOTAL	337.50'										
		LESS ANCHOR DEDUCTIONS		(-)275.00'										
			PROJECT TOTAL	62.50'										
			SAY	62.50'										
						ADDITIONAL GUARDRAIL POSTS = 5 EACH								

SURVEY LINE	ANCHORS XI MOD	TYPE III	GRAU 350	M-350	B-77	CAT-1	VI MOD	BIC	AT-1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-		1	1													
-L-		1	1													
-L-		1	1													
-L-		1	1													
		4	4													
		GUARDRAIL ANCHOR DEDUCTIONS														
		TYPE III = 4 @ 18.75' = 75'														
		GRAU 350 = 4 @ 50' = 200'														
		TOTAL DEDUCTIONS = 275'														

PROJECT REFERENCE NO.	SHEET NO.
17BP.5.R.20	4
RW SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 022999, GREG S. PURVIS, 3/19/13

HYDRAULICS ENGINEER — SEAL 23454, ANNE D. GAMBER, 3-19-13

WETHERILL ENGINEERING
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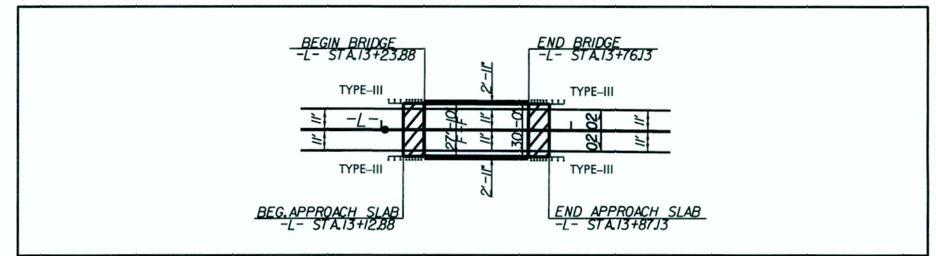
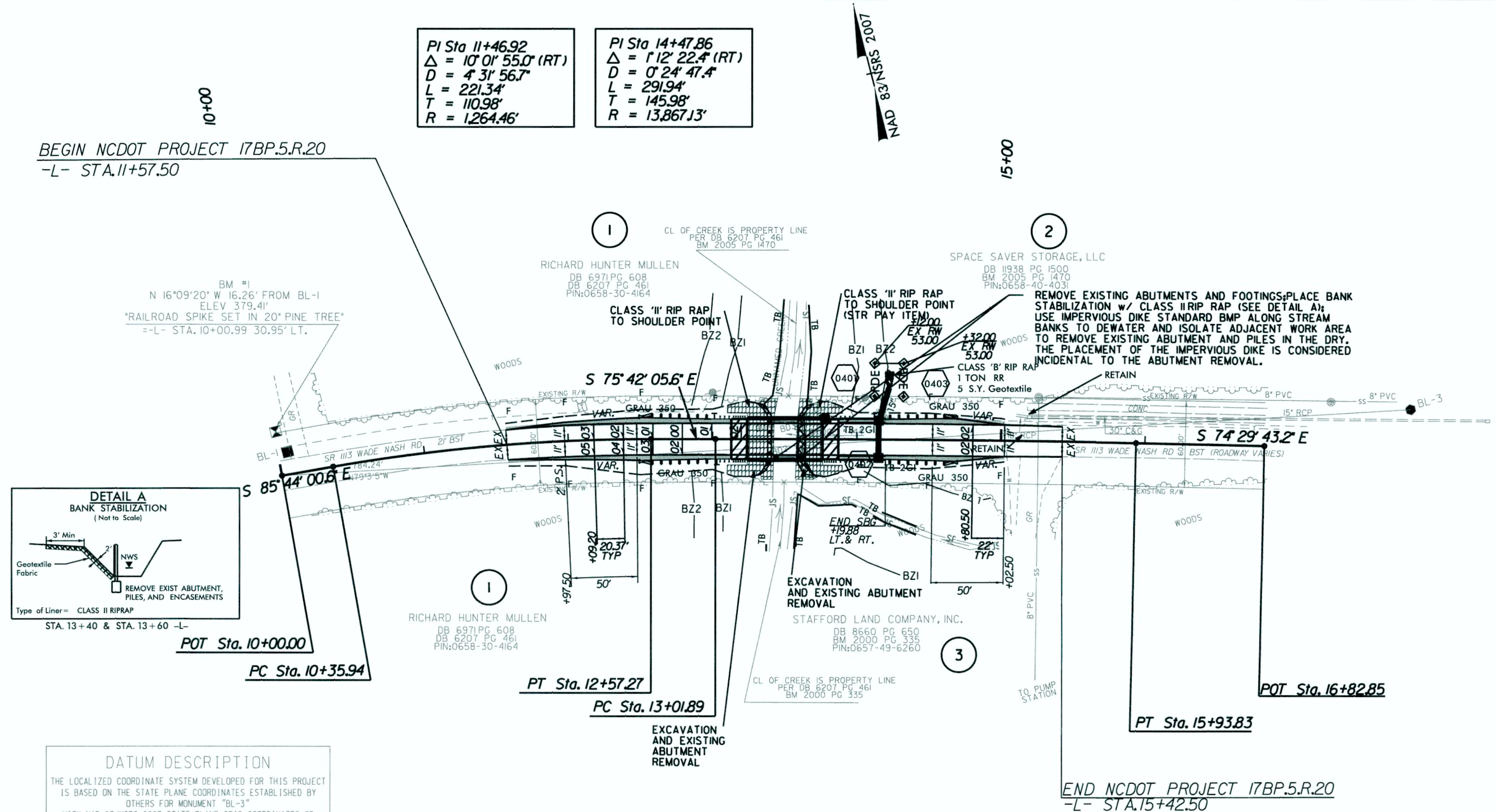
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION



SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP



PI Sta 11+46.92
Δ = 10° 01' 55.0" (RT)
D = 4° 31' 56.7"
L = 221.34'
T = 110.98'
R = 1,264.46'
PI Sta 14+47.86
Δ = 1° 12' 22.4" (RT)
D = 0° 24' 47.4"
L = 291.94'
T = 145.98'
R = 13,867.13'
NAD 83/NSRS 2007
BEGIN NCDOT PROJECT 17BP.5.R.20
-L- STA.11+57.50
BM #1
N 16°09'20" W 16.26' FROM BL-1
ELEV 379.41'
"RAILROAD SPIKE SET IN 20" PINE TREE"
=-L- STA. 10+00.99 30.95' LT.
RICHARD HUNTER MULLEN
DB 6971 PG 608
DB 6207 PG 461
PIN:0658-30-4164
CL OF CREEK IS PROPERTY LINE
PER DB 6207 PG 461
BM 2005 PG 1470
SPACE SAVER STORAGE, LLC
DB 11938 PG 1500
BM 2005 PG 1470
PIN:0658-40-4031
CLASS 'II' RIP RAP TO SHOULDER POINT
CLASS 'II' RIP RAP TO SHOULDER POINT (STR PAY ITEM)
REMOVE EXISTING ABUTMENTS AND FOOTINGS. PLACE BANK STABILIZATION w/ CLASS II RIP RAP (SEE DETAIL A). USE IMPERVIOUS DIKE STANDARD BMP ALONG STREAM BANKS TO DEWATER AND ISOLATE ADJACENT WORK AREA TO REMOVE EXISTING ABUTMENT AND PILES IN THE DRY. THE PLACEMENT OF THE IMPERVIOUS DIKE IS CONSIDERED INCIDENTAL TO THE ABUTMENT REMOVAL.
CLASS 'B' RIP RAP
1 TON RR
5 S.Y. Geotextile
RETAIN
S 75° 42' 05.6" E
S 74° 29' 43.2" E
S 85° 44' 00.6" E
SR 1113 WADE NASH RD
GRAU 350
WOODS
DETAIL A
BANK STABILIZATION
(Not to Scale)
3' Min
Geotextile Fabric
NWS
REMOVE EXIST ABUTMENT, PILES, AND ENCASEMENTS
Type of Liner = CLASS II RIPRAP
STA. 13+40 & STA. 13+60 -L-
POT Sta. 10+00.00
PC Sta. 10+35.94
RICHARD HUNTER MULLEN
DB 6971 PG 608
DB 6207 PG 461
PIN:0658-30-4164
PT Sta. 12+57.27
PC Sta. 13+01.89
EXCAVATION AND EXISTING ABUTMENT REMOVAL
END SBG +19.88 LT.& RT.
STAFFORD LAND COMPANY, INC.
DB 8660 PG 650
BM 2000 PG 335
PIN:0657-49-6260
CL OF CREEK IS PROPERTY LINE
PER DB 6207 PG 461
BM 2000 PG 335
TO PUMP STATION
POT Sta. 16+82.85
PT Sta. 15+93.83
END NCDOT PROJECT 17BP.5.R.20
-L- STA.15+42.50

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "BL-3"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 679741.527(ft) EASTING: 2054429.001(ft)
ELEVATION: 377.170(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999879013
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION 10+00.00
N 79° 03' 05" W 784.24'

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

DESC.	NORTHING	EASTING	ELEVATION
BL-1	679905.65	2053666.81	377.89
BL-2	679835.78	2054033.40	363.11
BL-3	679741.53	2054429.00	377.17

SEE SHEET 5 FOR -L- PROFILE
SEE SHEET S-1 THRU S-13 FOR STRUCTURE PLANS

PARCEL INDEX

PARCEL NO.	PROPERTY OWNER NAME
1	RICHARD HUNTER MULLEN
2	SPACE SAVER STORAGE, LLC.
3	STAFFORD LAND COMPANY, INC.

PROJECT: 17BP.5.R.20
COUNTY: WAKE
STATION: 13+50.00 -L- (90 SKEW)
REPLACE BRIDGE NO. 444 OVER UN-NAMED CREEK ON SR 1113 (WADE NASH ROAD)

REVISIONS

8/17/99

8:50:47 AM
P:\2012\Wake #444\Roadway\Proj\BR#444_Rdy_psh4.dgn
3/19/2013

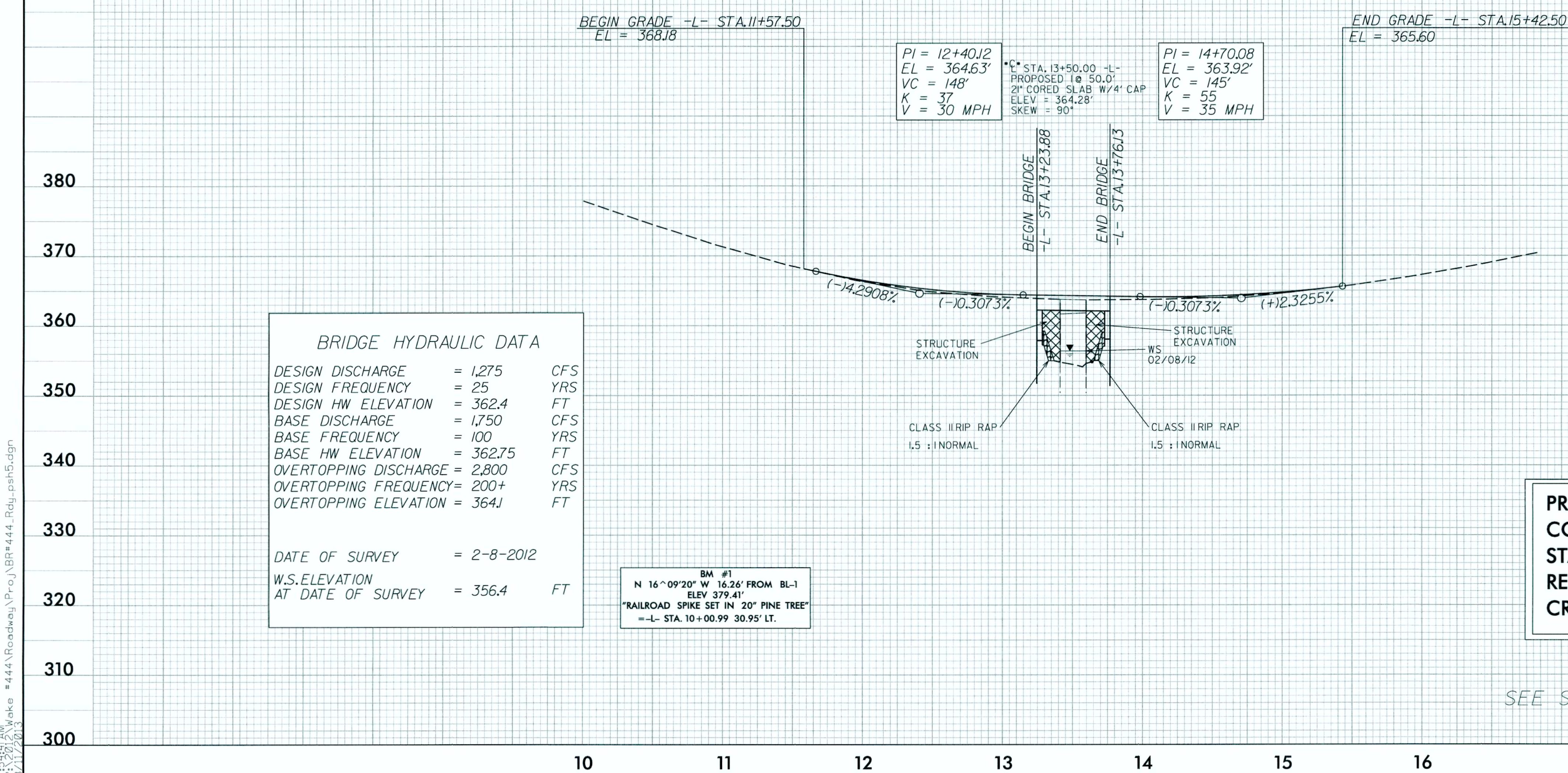
PROJECT REFERENCE NO.	SHEET NO.
17BP.5.R.20	5

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022999 GREG S. PURVIS 3/11/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23454 ANNE D. GAMBER 3/11/13

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

* NOTE: A DESIGN EXCEPTION IS REQUIRED FOR THE SAG VERTICAL CURVE K VALUE.



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	1,275	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	362.4	FT
BASE DISCHARGE	=	1,750	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	362.75	FT
OVERTOPPING DISCHARGE	=	2,800	CFS
OVERTOPPING FREQUENCY	=	200+	YRS
OVERTOPPING ELEVATION	=	364.1	FT
DATE OF SURVEY	=	2-8-2012	
W.S. ELEVATION AT DATE OF SURVEY	=	356.4	FT

BM #1
N 16^09'20" W 16.26' FROM BL-1
ELEV 379.41'
"RAILROAD SPIKE SET IN 20" PINE TREE"
=-L- STA. 10+00.99 30.95' LT.

PROJECT: 17BP.5.R.20
COUNTY: WAKE
STATION: 13+50.00 -L- (90 SKEW)
REPLACE BRIDGE NO. 444 OVER UN-NAMED CREEK ON SR 1113 (WADE NASH ROAD)

SEE SHEET 4 FOR -L- PLAN

PROJ. REFERENCE NO.	SHEET NO.
17BP.5.R.20	TCP-1

TRAFFIC CONTROL PLAN

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

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

A) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

B) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

C) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

D) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

E) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

F) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

G) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE ACCORDING TO THE ROADWAY STANDARD DRAWINGS.

H) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 1113 (WADE NASH RD.)	THERMOPLASTIC	N/A

I) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

J) MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEEN THE CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION.

NCDOT ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1135.01	CONES
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL & BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL & BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

INDEX OF SHEETS

PHASING

STEP 1. USING ROADWAY STANDARD DRAWING 1101.04, SHT. 1 OF 1, INSTALL AND COVER DETOUR SIGNING.

INSTALL CHANGEABLE MESSAGE SIGNS FOR 7-DAY COUNTDOWN TO ROAD CLOSURE AT DETOUR POINTS AS SHOWN ON TCP-2.

STEP 2. USING ROADWAY STANDARD DRAWING 1101.03, SHT. 1 OF 9, UNCOVER OFF-SITE DETOUR SIGNING AND CLOSE WADE NASH ROAD TO THRU TRAFFIC.

STEP 3. PERFORM PROPOSED BRIDGE AND ROADWAY CONSTRUCTION. PLACE PAVEMENT MARKINGS.

STEP 4. REMOVE TYPE III BARRICADES FROM WADE NASH ROAD AND REOPEN ROADWAY TO THRU TRAFFIC. REMOVE ALL DETOUR SIGNING.

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	PAY ITEM QUANTITY BREAKDOWN	TOTAL QUANTITY
		PAVEMENT MARKINGS	
		THERMOPLASTIC (4", 90 MILS)	
TA	WHITE EDGELINE	800 LF	800 LF
		THERMOPLASTIC (4", 120 MILS)	
TI	YELLOW DOUBLE CENTER	800 LF	800 LF
		TOTAL	1600 LF

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: DATE: 3/11/13

SEAL

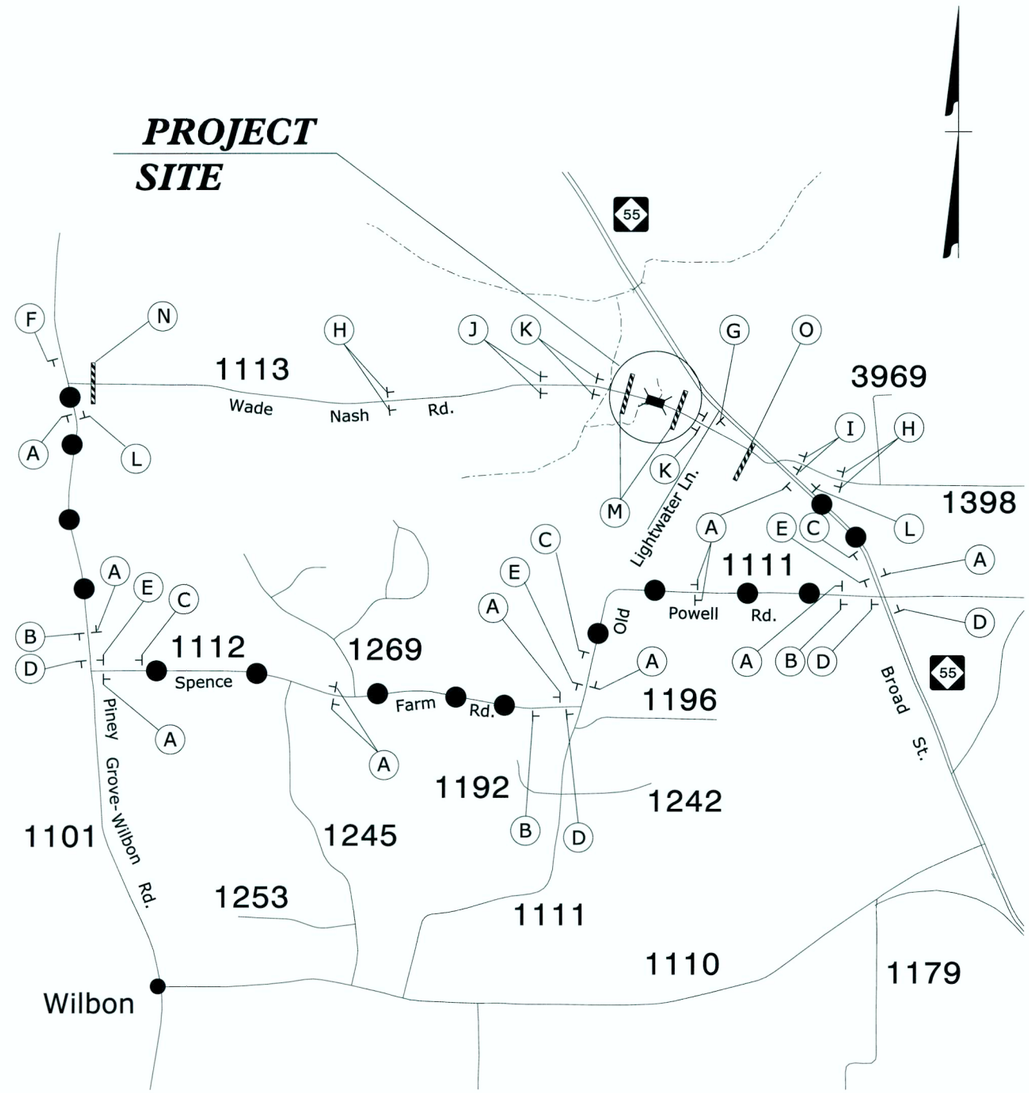
NORTH CAROLINA PROFESSIONAL SEAL 032999 ENGINEER GREG S. PURVIS 3/11/13

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

GENERAL NOTES, ROADWAY STANDARD DRAWINGS, PHASING, INDEX OF SHEETS, PAVEMENT MARKING SCHEDULE

10:52:41 AM
P:\2012\Wake #444\Traffic\TrafficControl\TCP\Br #444_TC_TCP_1.dgn
3/11/2013

PROJ. REFERENCE NO.	SHEET NO.
17BP.5.R.20	TCP-2



NOTES: REFER TO ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9, FOR SIGNING AND SPACING REQUIREMENTS.

* REFER TO TCP-3 FOR TEMPORARY WADE NASH ROAD SIGN DESIGN.

LEGEND

- NORTH ARROW
- TYPE III BARRICADE
- STATIONARY SIGN
- OFF-SITE DETOUR

CHANGEABLE MESSAGE SIGN

MESSAGE NO. 1	MESSAGE NO. 2
CHANGEABLE MESSAGE SIGN	

USE CHANGEABLE MESSAGE SIGNS FOR A 7-DAY COUNTDOWN ROAD CLOSURE NOTICE PRIOR TO CLOSING WADE NASH RD. TO THRU TRAFFIC.

INSTALL CHANGEABLE MESSAGE SIGNS AT THE DETOUR POINTS AND AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL TEMPORARY SIGNING AND DEVICES

A
DETOUR M4-8 24" X 12"
Wade Nash Rd *
M6-3 21" X 15"

B
DETOUR M4-8 24" X 12"
Wade Nash Rd *
M5-1 21" X 15"

C
DETOUR M4-8 24" X 12"
Wade Nash Rd *
M5-1 R 21" X 15"

D
DETOUR M4-8 24" X 12"
Wade Nash Rd *
M6-1 L 21" X 15"

E
DETOUR M4-8 24" X 12"
Wade Nash Rd * 24" X 12"
M6-1 21" X 15"

F
ROAD CLOSED AHEAD W20-3 48" X 48"
NEXT LEFT SP-4L 48" X 12"

G
ROAD CLOSED AHEAD W20-3 48" X 48"
NEXT RIGHT SP-4R 48" X 12"

H
ROAD CLOSED AHEAD W20-3 48" X 48"

I
DETOUR AHEAD W20-2 48" X 48"

J
ROAD CLOSED 1000 FT W20-3 48" X 48"

K
ROAD CLOSED 500 FT W20-3 48" X 48"

L
END DETOUR M4-8 A 24" X 18"

M
R11-2 48" x 30"
ROAD CLOSED
TYPE III BARRICADE(S)

N
R11-3 60" x 30"
ROAD CLOSED
1 MILE AHEAD
LOCAL TRAFFIC ONLY
DETOUR
M4-10R 48" x 18"
TYPE III BARRICADE

O
R11-4 60" x 30"
ROAD CLOSED TO THRU TRAFFIC
DETOUR
M4-10L 48" x 18"
TYPE III BARRICADE

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: _____ DATE: 3/11/13

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS
3/11/13

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

WADE NASH ROAD OFF-SITE DETOUR

10:53:06 AM
P:\2012\Wake #444\Traffic\TrafficControl\TCP\Br #444_TC_TCP_2.dgn
3/11/2013

PROJ. REFERENCE NO.	SHEET NO.
17BP.5.R.20	TCP-3

SIGN NUMBER: TEMPORARY
TYPE: D
QUANTITY: SEE PLANS

SIGN WIDTH: 2′-0″
HEIGHT: 1′-0″
TOTAL AREA: 2.0 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0.31″
WIDTH: 0.31″
RADII: 1.81″

NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Color 239

SYMBOL	X	Y	WID	HT

MAT′L: 0.080″ (2.0 mm) ALUMINUM

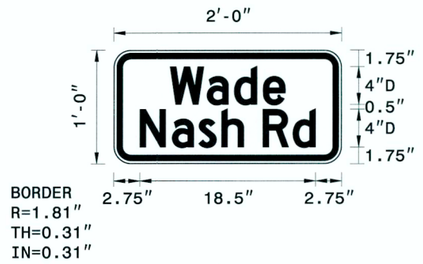
USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be NC GRADE B fluoresent orange retroreflective sheeting.

DESIGN BY: CLM
PROJECT ID: 17BP.5.R.20

CHECKED BY: BAM
DIV: 5

DATE: May 21, 2012



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter widths are shown

W	a	d	e																							Series/Size Text Length
3.6	2.3	2.4	2.4																							D 2000 12.2
N	a	s	h		R	d																				D 2000
2.7	2.3	1.9	2.4		2.7	2.4																				18.5

FILENAME: Guidesign6

NORTH CAROLINA D.O.T. SIGN DETAIL

NOTE: TO BE PAID FOR UNDER "STATIONARY WORK ZONE SIGNS"

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: DATE: 3/11/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS 3/11/13

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

SIGN DESIGN

10:53:27 AM
P:\2012\Wake #444\Traffic\TrafficControl\TCP\Br #444_TC_TCP_3.dgn
3/11/2013

ANNE GAMBER, PE, CFM
LEVEL IIIA NAME

3022
LEVEL IIIA CERTIFICATION NO.

EROSION CONTROL PLAN

PROJECT REFERENCE NO.	SHEET NO.
17BP.5.R.20	EC-1/CONST.4
R/W SHEET NO.	

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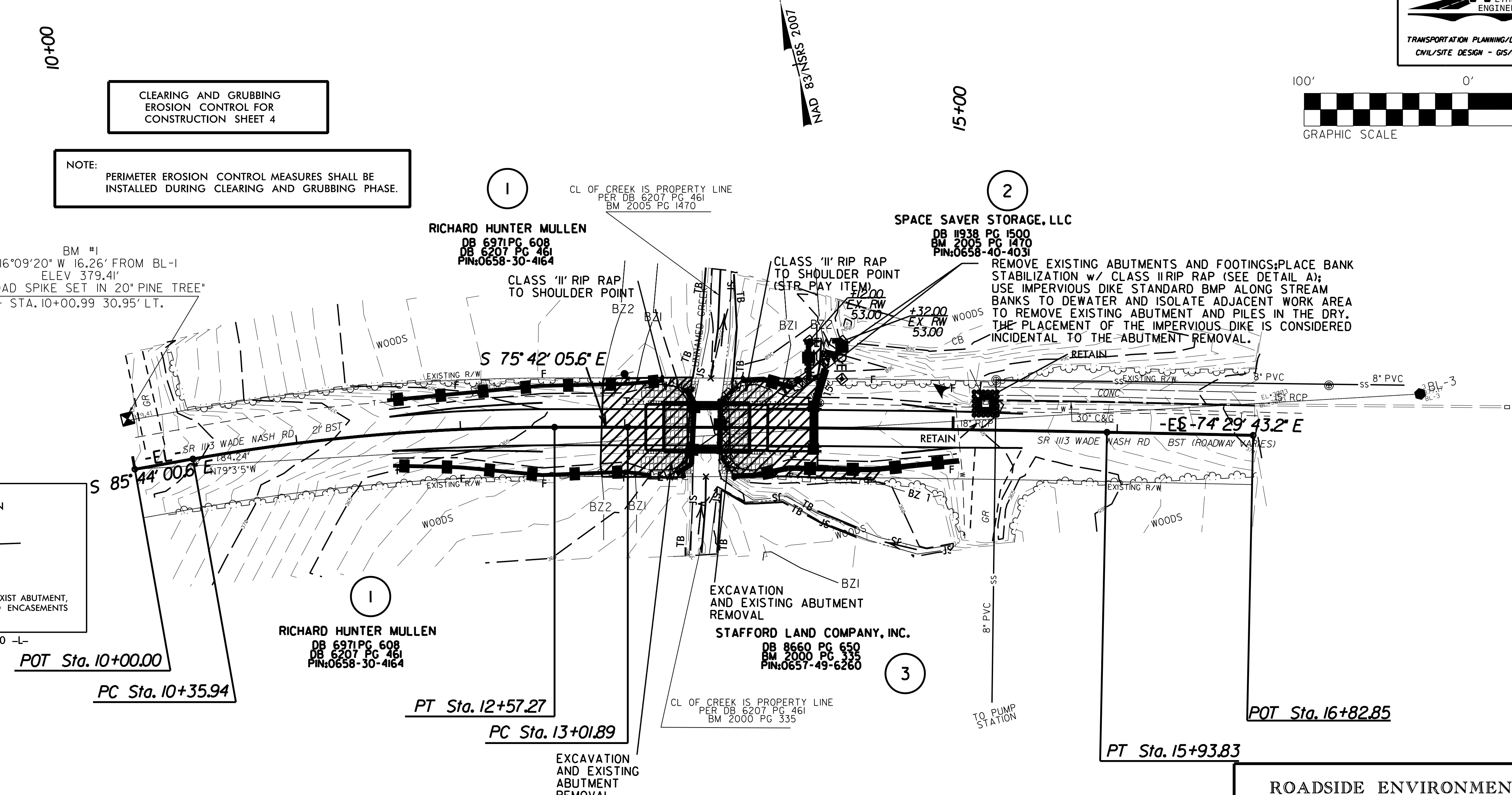
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

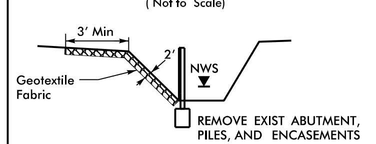
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.



DETAIL A

BANK STABILIZATION
(Not to Scale)



STA. 13+40 & STA. 13+60 -L-

ENVIRONMENTALLY SENSITIVE AREA
PLEASE SEE NOTE

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2012 STANDARD SPECIFICATIONS

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.

2012 STANDARD DRAWINGS

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	–III–III–III–
1632.03	Rock Inlet Sediment Trap Type C	
1633.02	Temporary Rock Silt Check Type-B	▶
	Excelsior Wattle Barrier	–EW–

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.

REVISIONS

8/17/99

$$$$$$SYSTIME$$$$$ $$$$$$$$$$$$$$$$DGN$$$$ $$$$USERNAME$$$$

8/17/99

REVISIONS

ANNE GAMBER, PE, CFM
LEVEL IIIA NAME

3022
LEVEL IIIA CERTIFICATION NO.

EROSION CONTROL PLAN

PROJECT REFERENCE NO.	SHEET NO.
17BP.5.R.20	EC-2/CONST.4
R/W SHEET NO.	

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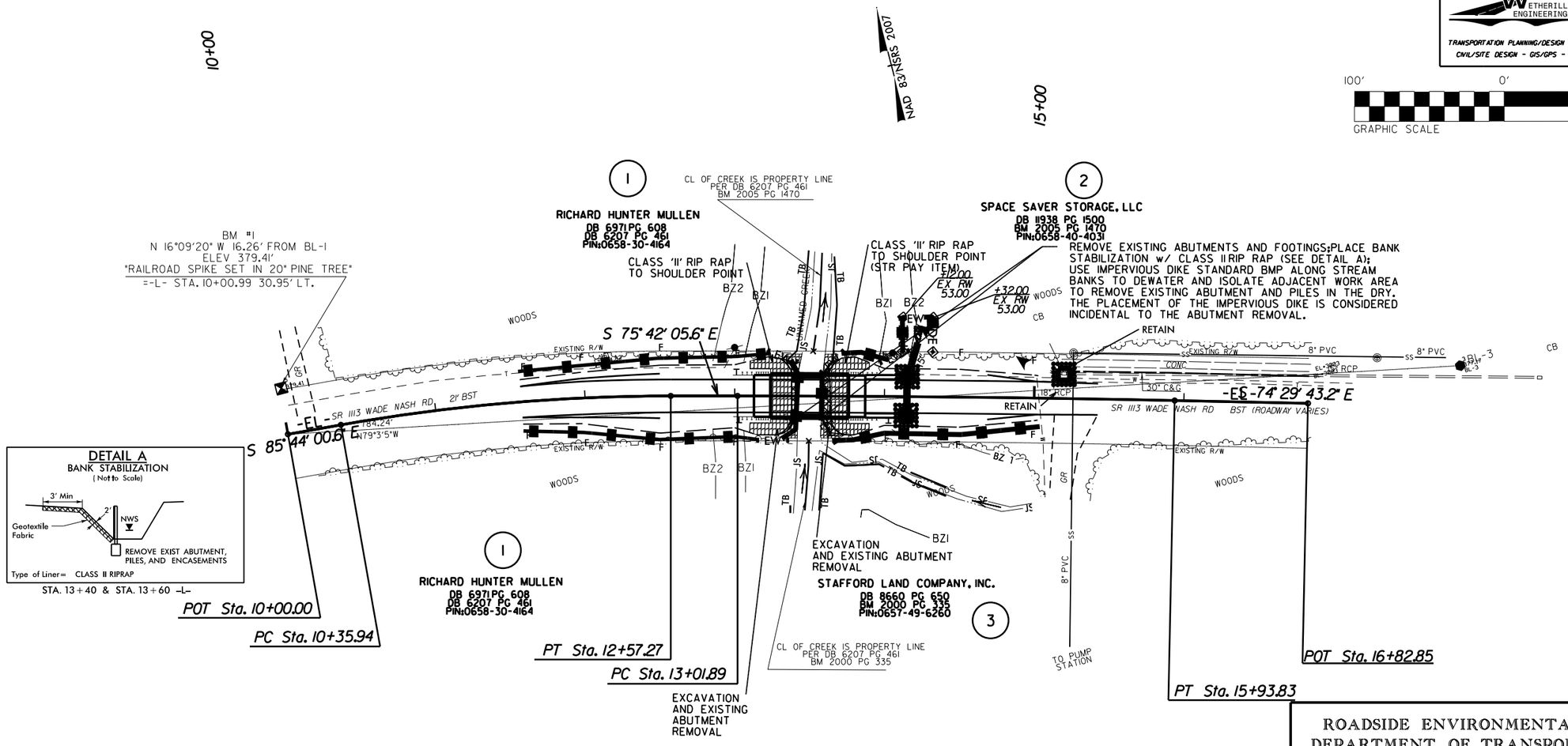
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

100' 0' 100'
GRAPHIC SCALE



DETAIL A
BANK STABILIZATION
(Not to Scale)

Type of Liner= CLASS II RIPRAP
STA. 13+40 & STA. 13+60 -L-

ENVIRONMENTALLY SENSITIVE AREA
PLEASE SEE NOTE

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2012 STANDARD SPECIFICATIONS

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.

2012 STANDARD DRAWINGS

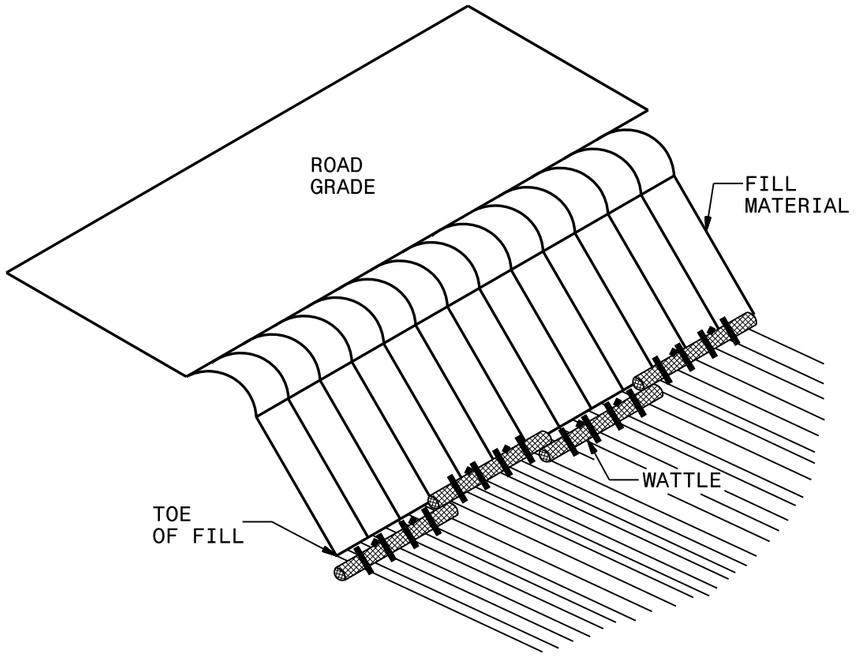
1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1632.03	Rock Inlet Sediment Trap Type C	
1633.02	Temporary Rock Silt Check Type-B	
	Excelsior Wattle Barrier	-EW-

$$$$$$$SYSTIME$$$$$$$
$$$$$$$DGN$$$$$$$
$$$$$$$DRGNAME$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
17BP.5.R.20	EC-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WATTLE BARRIER DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLES ON TOE OF SLOPE.

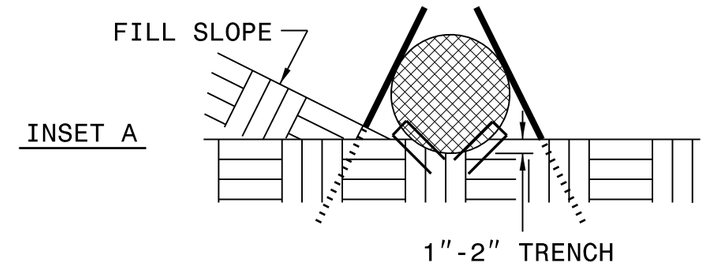
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

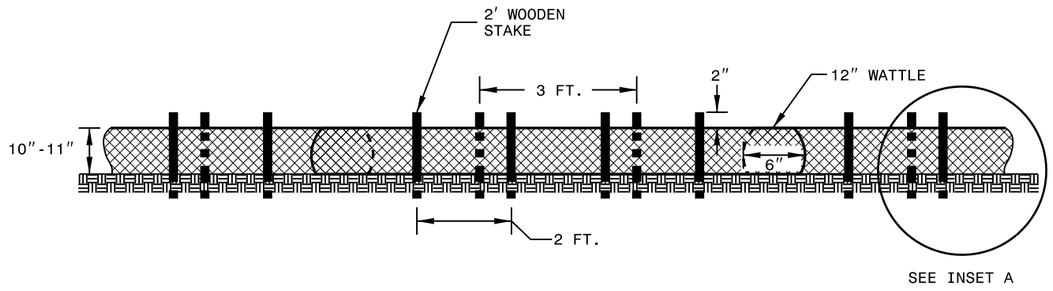
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

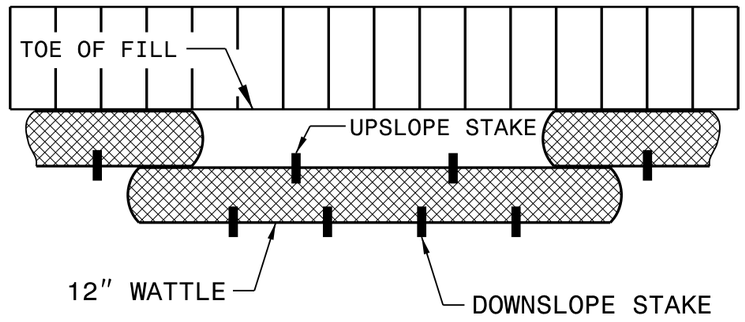
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 20 FT.





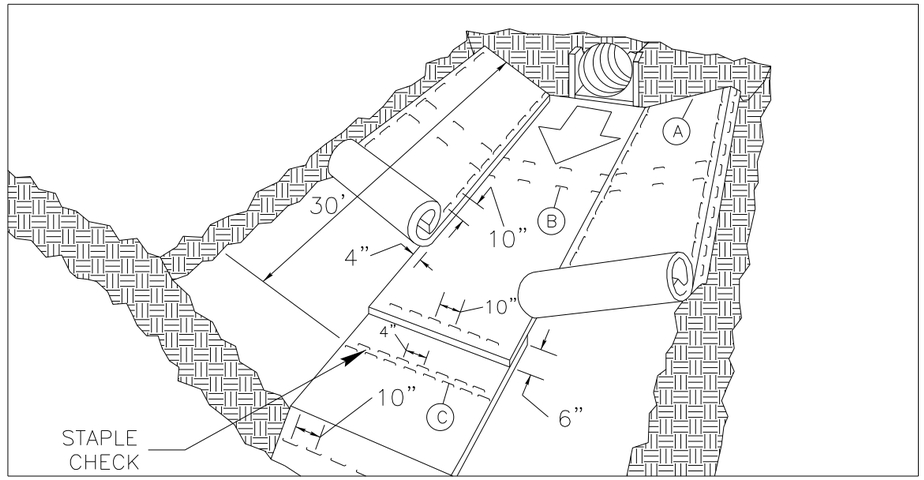
FRONT VIEW



TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
17BP.5.R.20	EC-3A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

MATTING INSTALLATION DETAIL



MATTING IN DITCHES

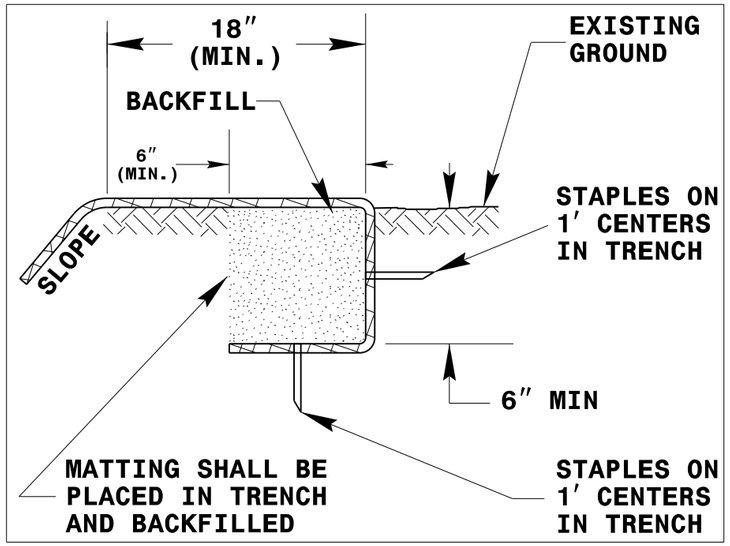
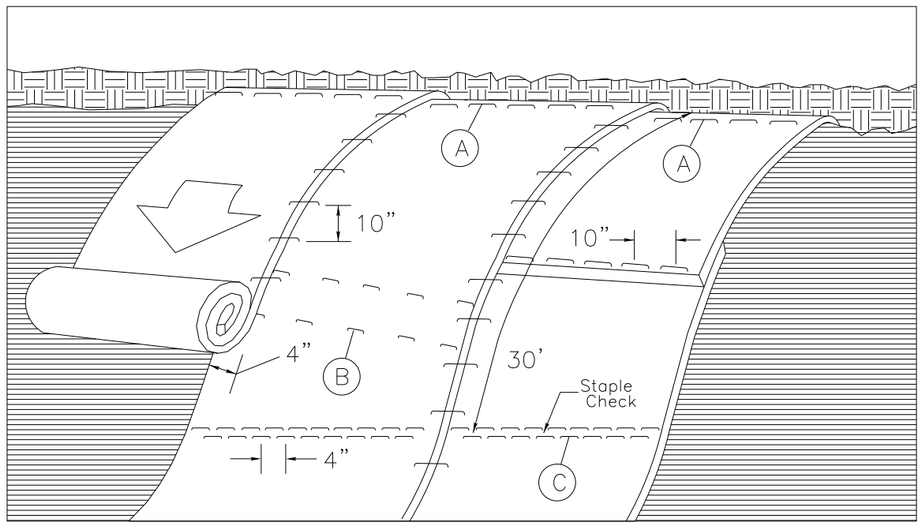


DIAGRAM (A)



MATTING ON SLOPES

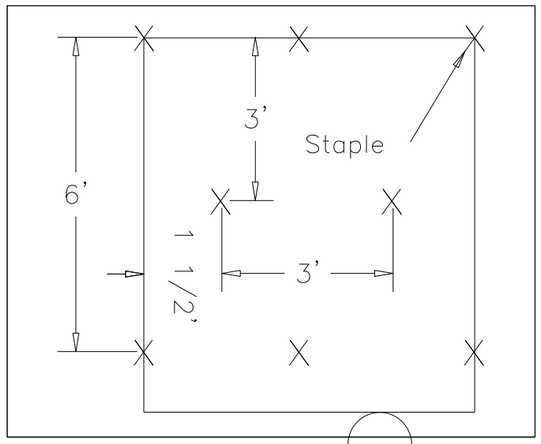


DIAGRAM (B)

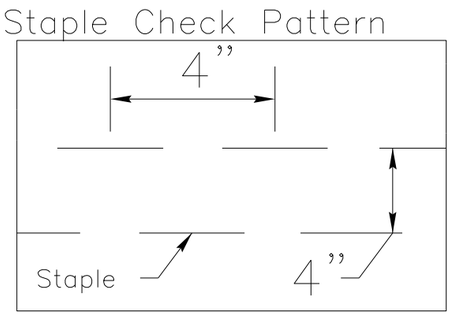


DIAGRAM (C)

NOTES:

THIS DETAIL APPLIES TO STRAW, EXCELSIOR, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.

STAPLES SHALL BE NO. 11 GAUGE STEEL WIRE FORMED INTO A "U" SHAPE WITH A MINIMUM THROAT WIDTH OF 1 INCH AND NOT LESS THAN 6 INCHES IN LENGTH.

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
I7BP.5.R.20	EC-4

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL (SLOPES)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	12+50	13+25	LT	35
4	-L-	12+50	13+25	RT	39
4	-L-	13+75	14+50	LT	12
4	-L-	13+75	14+50	RT	23
				SUBTOTAL	109
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					26
				TOTAL	135
				SAY	135

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

PROJECT REFERENCE NO.	SHEET NO.
17BP.5.R.20	EC-5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

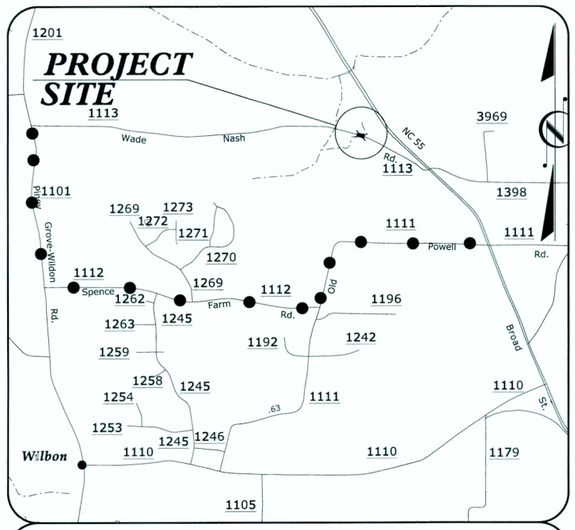
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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.

T.I.P. NO.	SHEET NO.
17BP.5.R.20	UO–1

TIP PROJECT: 17BP.5.R.20



VICINITY MAP

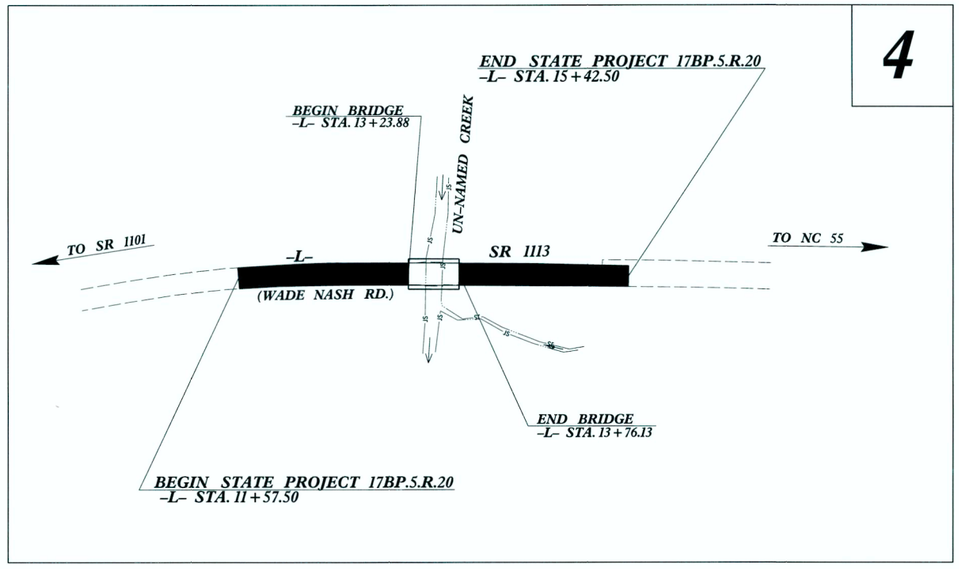
OFF–SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
WAKE COUNTY

LOCATION: BRIDGE NO. 444 OVER UN–NAMED TRIBUTARY TO BASAL CREEK ON SR 1113 (WADE NASH RD.)

TYPE OF WORK: UTILITIES BY OTHERS RELOCATION



NAD 83/
NSRS 2007

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

UTILITY OWNERS ON PROJECT

(1) CENTURYLINK (TELEPHONE)

Prepared in the Office of:
WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

UTILITY COORDINATOR JOHN D. SCHRINER, PLS

PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
UTILITIES ENGINEERING SECTION
1591 MAIL SERVICES CENTER
RALEIGH NC 27699–1591
PHONE (919) 707–6690
FAX (919) 250–4151

Roger Worthington, P.E. UTILITIES SECTION ENGINEER
Xxxxx Xxxxx, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER
Xxxxx Xxxxx UTILITIES PROJECT DESIGNER

PROJECT REFERENCE NO.	SHEET NO.
17BP.5.R.20	UO-2

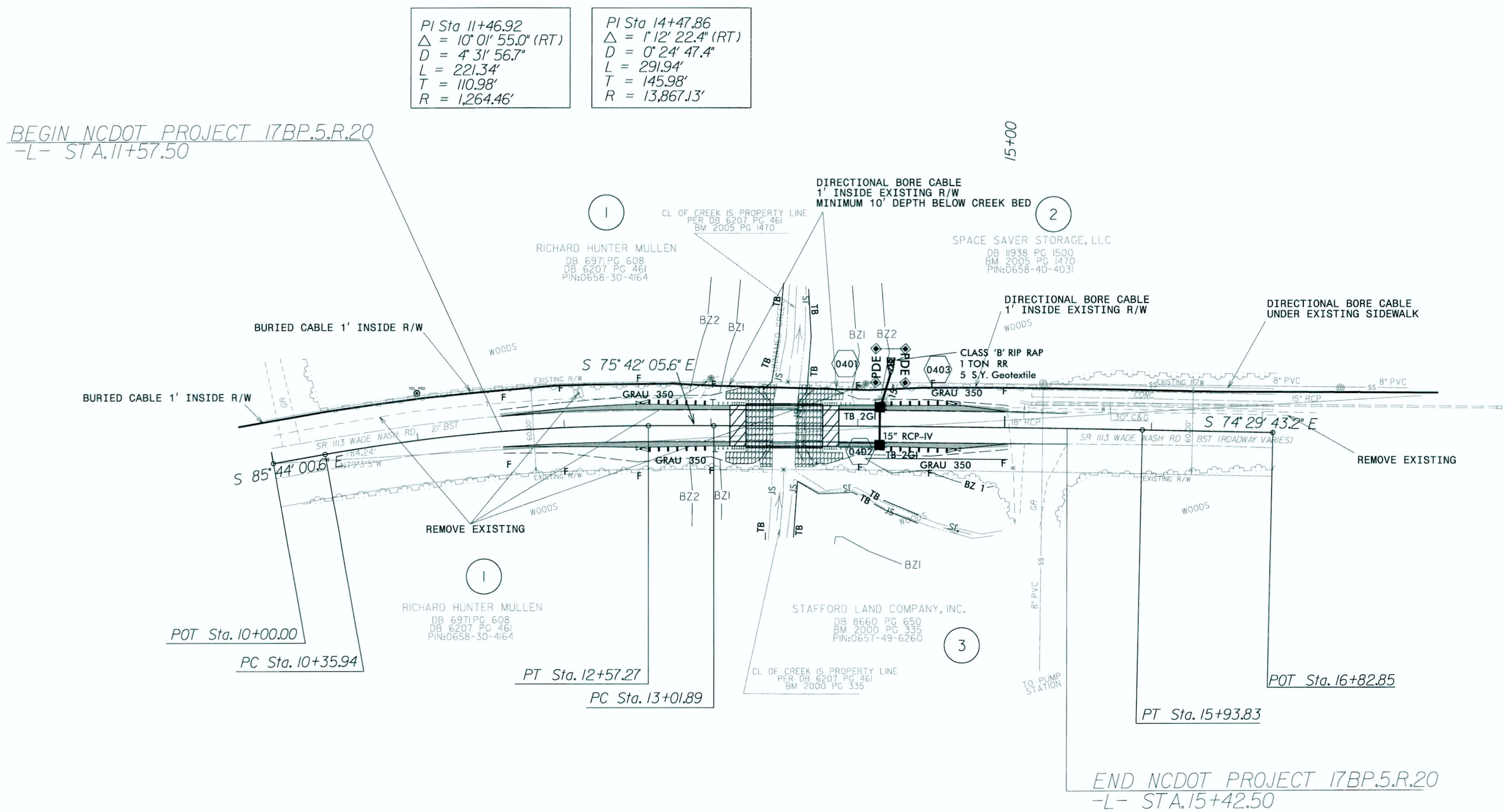
UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

NAD 83/NSRS 2007



PARCEL INDEX	
PARCEL NO.	PROPERTY OWNER NAME
1	RICHARD HUNTER MULLEN
2	SPACE SAVER STORAGE, LLC.
3	STAFFORD LAND COMPANY, INC.

PROJECT: 17BP.5.R.20
COUNTY: WAKE
STATION: 13+50.00 -L- (90 SKEW)
REPLACE BRIDGE NO. 444 OVER UN-NAMED CREEK ON SR 1113 (WADE NASH ROAD)

REVISIONS

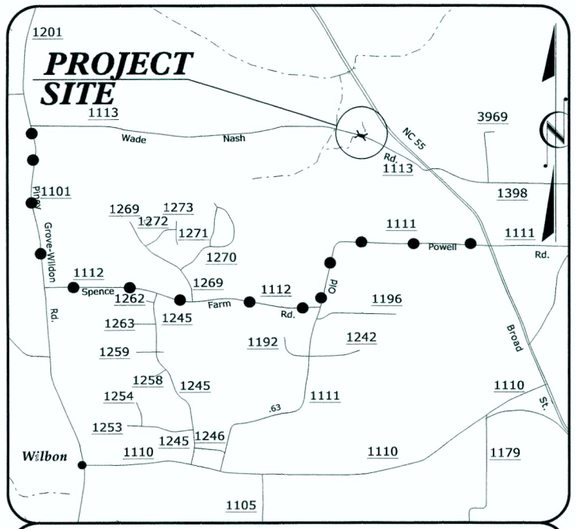
8/17/99

7:28:56 AM
P:\2012\Wake #444\Utilities\BR#444_ubo_psh4.dgn
11/30/2012

09/08/99

TIP PROJECT: 17BP.5.R.20

T.I.P. NO.	SHEET NO.
17BP.5.R.20	UC–1



VICINITY MAP

OFF–SITE DETOUR

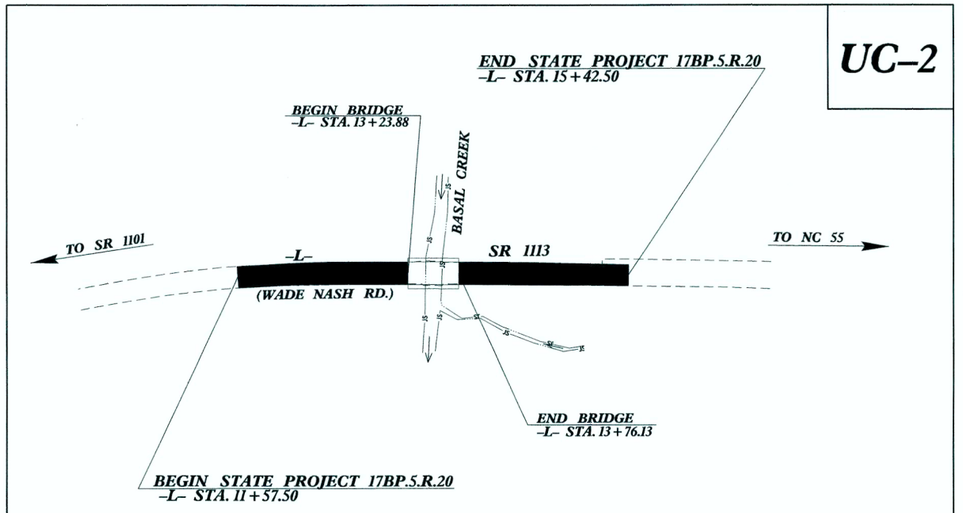
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS
WAKE COUNTY

LOCATION: BRIDGE NO. 444 OVER UNNAMED TRIBUTARY TO BASAL CREEK ON SR 1113 (WADE NASH RD.)

TYPE OF WORK: WATER LINE RELOCATION

UC–2



NAD 83/ NSRS 2007

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC–1	TITLE SHEET
UC–2	UTILTIY CONSTRUCTION SHEETS

WATER OWNER ON PROJECT

(1) WATER ; FUQUAY–VARINA

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 10157 ENGINEER RONALD B. WILKINS

PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
UTILITIES UNIT
UTILITIES ENGINEERING

1591 MAIL SERVICES CENTER
RALEIGH NC 27699–1591
PHONE (919) 707–6690
FAX (919) 250–4151

Roger Worthington, P.E. — UTILITIES SECTION ENGINEER
R.B.Wilkins, P.E. — UTILITIES SQUAD LEADER PROJECT ENGINEER
Jong–Tae Yoon — UTILITIES PROJECT DESIGNER

13-SEP-2012 08:04
S:\Engineering\Utilities\rbw\Jty\BR#444\BR#444_UT_Title_UC1_psh.dgn
$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.5.R.20	UC-2
DESIGNED BY: JTY	
DRAWN BY: JTY	
CHECKED BY: RBW	
APPROVED BY: RBW	
REVISED:	

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

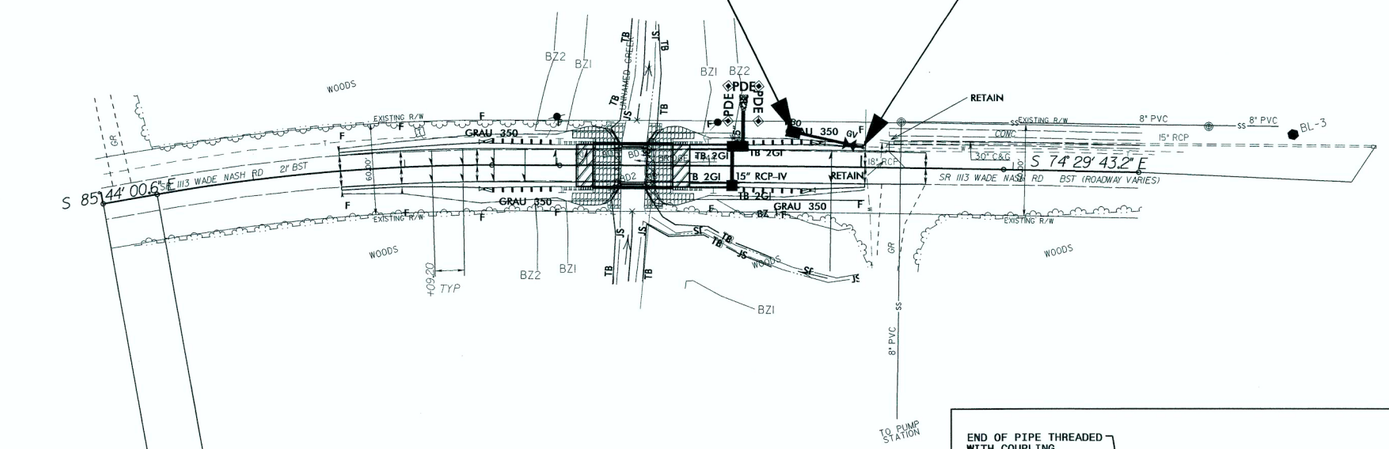
NORTH CAROLINA PROFESSIONAL SEAL 20157 ENGINEER RONALD B. WICKER

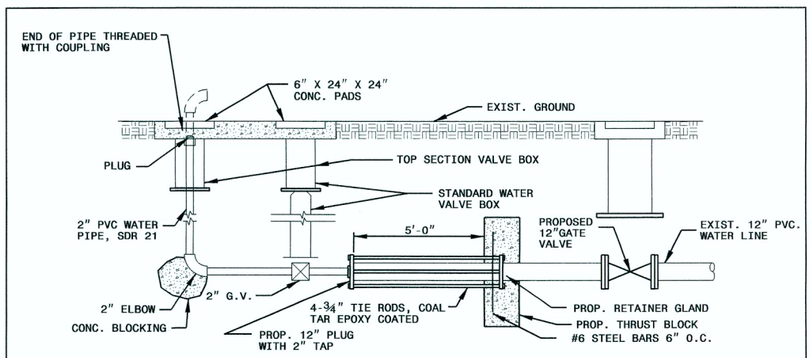
UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

NAD 83/NSRS 2007

PROP. 47' - 12" WATER LINE
PROP. 1 - 12" VALVE
PROP. 1 - 2" BLOW OFF
PROP. 83'- ABANDON 12" UTILITY PIPE





2" BLOW OFF ASSEMBLY

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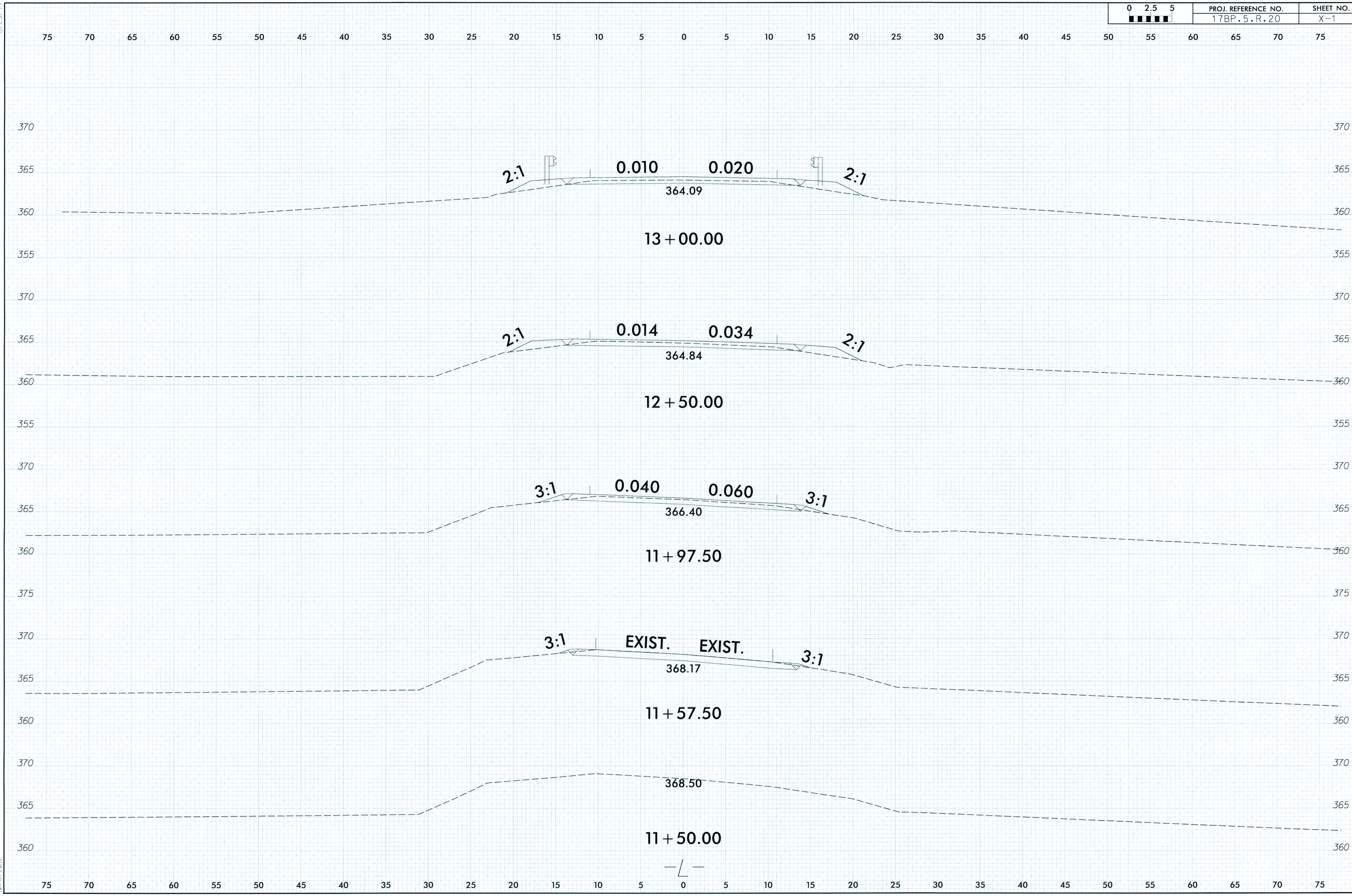
$$$$USERNAME$$$$


PROJ. REFERENCE NO.
17BP.5.R.20
SHEET NO.
X-1
0 2.5 5
2:1
0.010
0.020
2:1
364.09
13+00.00
2:1
0.014
0.034
2:1
364.84
12+50.00
3:1
0.040
0.060
3:1
366.40
11+97.50
3:1
EXIST.
EXIST.
3:1
368.17
11+57.50
368.50
11+50.00

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.5.R.20	X-2

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

370
365
360
355

2:1 0.020 0.020 2:1

363.98

14+50.00

2:1 0.020 0.020 2:1

363.73

14+00.00

0.020 0.020

363.70

13+76.13

0.020 0.020

354.31

13+50.00

0.020 0.020

363.89

13+23.88

8/23/99

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10/8/2012

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.5.R.20	X-3

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370
365
360

365.79

15+50.00

370
365
360

EXIST. EXIST.

365.60

15+42.50

370
365
360

2:1 0.010 0.030 4:1

364.69

15+02.50

355
370
365
360

3:1 0.011 0.029 4:1

364.65

15+00.00

355

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

11:26 AM
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10/8/2012

13+00 13+25 13+50 13+75 14+00 14+25

GRADE DATA -L-

PI = 12+40.12
EL = 364.63'
VC = 148'
(-)4.2908% (-)0.3073%

370 360 350

W.P. #1
STA. 13+23.88 -L-
GRADE POINT EL. 364.37

BEGIN FRONT SLOPE
STA. 13+16.48 -L-
GRADE POINT EL. 364.40

EL. 364.0 ±

1'-7" BERM (TYP.)
1'-0" MIN. EARTH BERM (TYP.)

FIXED

SPAN A

UNCLASSIFIED STRUCTURE EXCAVATION

EL. 364.0 ±

EXISTING STRUCTURE

25 YR. W.S.E. 362.4

N.W.S. 355.7
2-8-12

EL. 354.0 ±

EL. 355.0 ±

1'-0"

CONCRETE COLLAR

1.5:1 SLOPE NORMAL TO CAP (TYP.)

℄ HP 12 X 53 STEEL PILES

CLASS II RIP RAP W/ GEOTEXTILE

1'-6" (TYP.) TO EXCAVATION

UNCLASSIFIED STRUCTURE EXCAVATION

EL. 364.0 ±

FIXED

W.P. #2
STA. 13+76.13 -L-
GRADE POINT EL. 364.21

BEGIN FRONT SLOPE
STA. 13+83.53 -L-
GRADE POINT EL. 364.19

APPROXIMATE NATURAL GROUND LINE

EL. 364.0 ± EL. 364.0 ±

EL. 355.0 ±

1'-0"

CONCRETE COLLAR

℄ HP 12 X 53 STEEL PILES

CLASS II RIP RAP W/ GEOTEXTILE

END BENT #1 — END BENT #2

SECTION ALONG -L-

END BENT ON SECTION AT RIGHT ANGLE TO END BENTS

HYDRAULIC DATA

DESIGN DISCHARGE _____ = 1275 C.F.S.
FREQUENCY OF DESIGN FLOOD____ = 25 YRS.
DESIGN HIGH WATER ELEVATION__ = 362.4 FT.
DRAINAGE AREA _____ = 3.0 SQ. MI.
BASE DISCHARGE (Q100) _____ = 1750 C.F.S.
BASE HIGH WATER ELEVATION __ = 362.75 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE _____ => 2800 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD__ = 200 YRS. +
OVERTOPPING FLOOD ELEVATION ____ = 364.1 FT.

CLASS II RIP RAP W/ GEOTEXTILE

1'-0" MIN. EARTH BERM NORMAL TO CAP EL. 356.95

STA. 13+10.00 -L-

BRIDGE IDENTITY
STA. 13+50.00 -L-

EXISTING STRUCTURE

CLASS II RIP RAP W/ GEOTEXTILE

1'-0" MIN. EARTH BERM NORMAL TO CAP EL. 356.80

STA. 13+90.00 -L-

FILL FACE @ END BENT 1

W.P. #1
STA. 13+23.88 -L-

BEGIN APPROACH SLAB
STA. 13+12.88 EXT. CHORD
LT. 0.025'
EXTENDED LONG CHORD

PC STA. 13+01.89

TO SR 1101

-L-

BEGIN FRONT SLOPE
STA. 13+16.48 -L-

LONG CHORD, WORKLINE & ℄ BRIDGE

SR 1113

90°-00'-00" (TO LONG CHORD) (TYP.)

90°-00'-00" (TANGENT TO CURVE)

FILL FACE @ END BENT 2

W.P. #2
STA. 13+76.13 -L-

EXTENDED LONG CHORD

END APPROACH SLAB
STA. 13+87.13 EXT. CHORD
LT. 0.025'

TO NC 55

-L-

BEGIN FRONT SLOPE
STA. 13+83.53 -L-

NAD 83/NSRS 2007

STA. 13+10.00 -L-

UNNAMED CREEK

STA. 13+90.00 -L-

26'-1½" 26'-1½"

52'-3" (ALONG LONG CHORD)

PLAN

(PILES NOT SHOWN FOR CLARITY)

HORIZONTAL CURVE DATA -L-

PI Sta 14+47.86
Δ = 1° 12' 22.4" (RT)
D = 0° 24' 47.4"
L = 291.94'
T = 145.98'
R = 13,867.13'

DRAWN BY : J. PENDERGRAFT DATE : 6/12
CHECKED BY : J. DILWORTH DATE : 6/12

P:\2012\Wake #444\Structures\DGN\BR #444_STR_GD1.dgn
9/20/2012 11:46:12 AM

PROJECT NO. 17BP.5.R.20
WAKE COUNTY
STATION: 13+50.00 -L-

SHEET 1OF 2 REPLACES BRIDGE NO. 444

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1113
OVER UNNAMED TRIBUTARY
CREEK TO BASAL CREEK
BETWEEN SR 1101 AND NC55

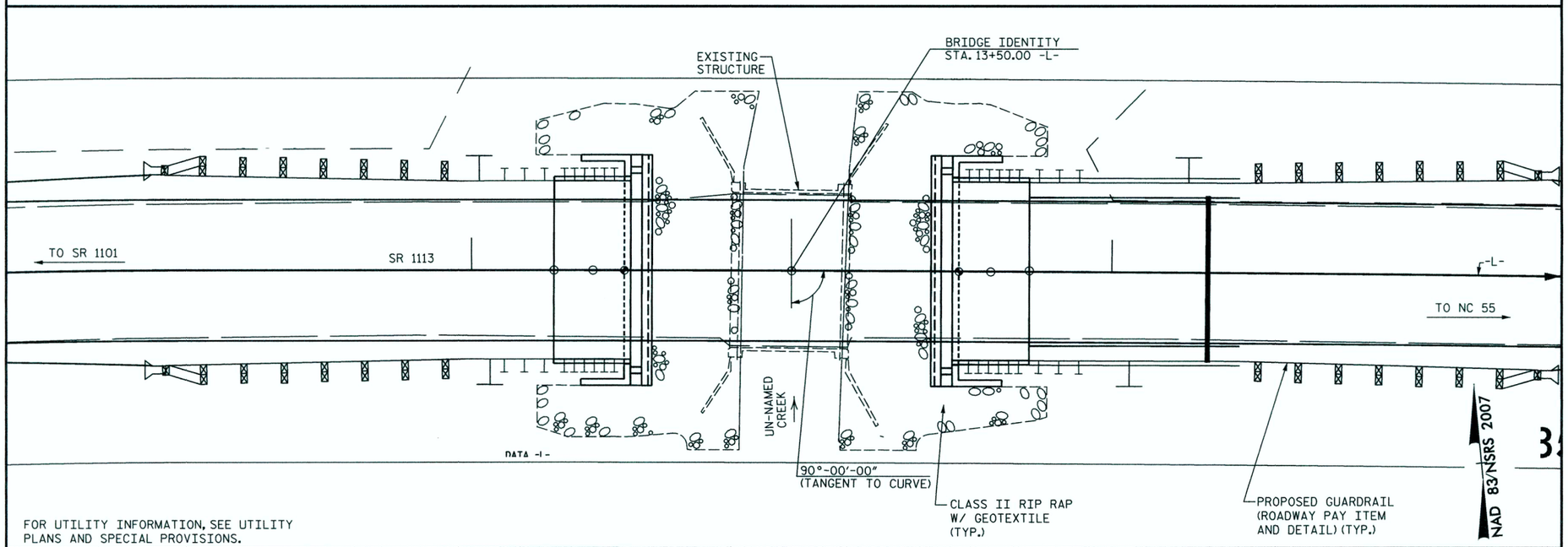
NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 9-2012

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
License: F-0377

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			13

BM #1, R/R SPIKE IN 20"PINE; N 16°09'20"W 16.26' FROM BL-1 = -L- STA. 10+00.99 30.95' LT. EL. 379.41



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR SEISMIC PERFORMANCE ZONE 1.

THE EXISTING STRUCTURE CONSISTING OF 1 SPAN @ 18'-6" WITH A REINFORCED CONCRETE FLOOR ON TIMBER JOIST SUPERSTRUCTURE AND A CLEAR ROADWAY WIDTH OF 24'-0" ON A SUBSTRUCTURE CONSISTING OF TIMBER CAPS ON TIMBER PILES AND LOCATED AT THE PROPOSED STRUCTURE LOCATION SHALL BE REMOVED.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCE BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY 2001.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR PILE DRIVING CRITERIA, SEE SPECIAL PROVISIONS.

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 81 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 135 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO. 1 AND END BENT NO. 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

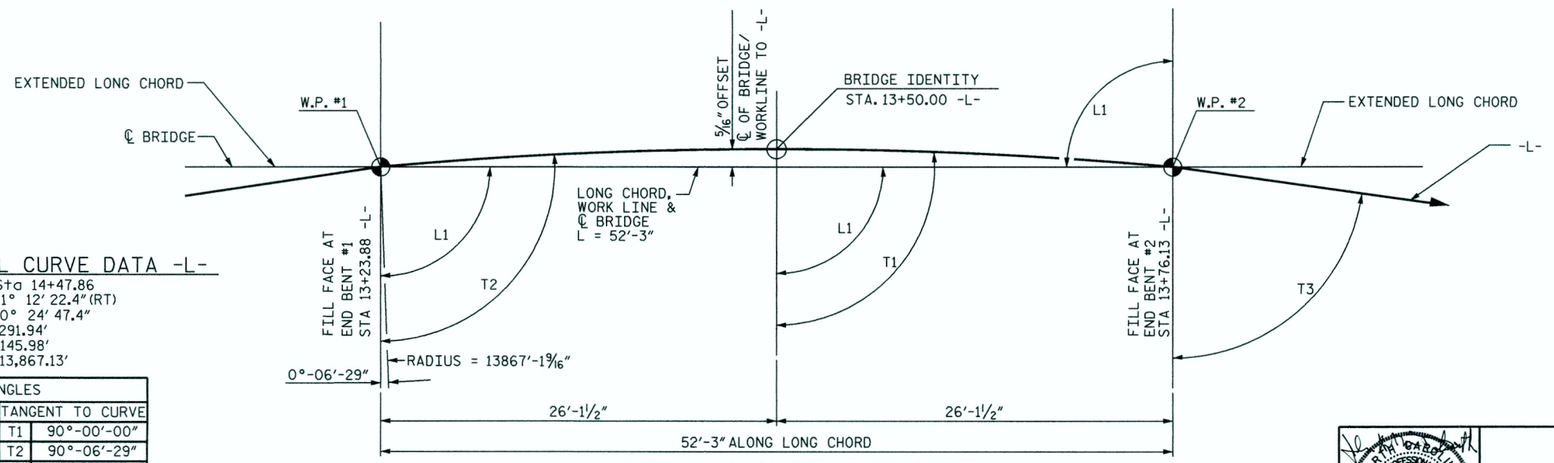
PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT NO. 1 AND END BENT NO. 2. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 348 FT. FOR PILE EXCAVATION, SEE SECTION 450 OF STANDARD SPECIFICATIONS.

CONCRETE OR GROUT IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT END BENT NO. 1 AND END BENT NO. 2.

THE SCOUR CRITICAL ELEVATION FOR END BENT NO. 1 AND END BENT NO. 2 IS ELEVATION 352 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 x 53 STEEL PILES		STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LIN. FT.	LIN. FT.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EACH	LIN. FT.	TONS	SQ. YD.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE	LUMP SUM					LUMP SUM					100.25				10	500'-0"
END BENT 1		17	33	LUMP SUM	20.0		2449	5	60	5		180	200			
END BENT 2		20	30	LUMP SUM	20.0		2449	5	60	5		185	205			
TOTAL	LUMP SUM	37	63	LUMP SUM	40.0	LUMP SUM	4898	10	120	10	100.25	365	405	LUMP SUM	10	500'-0"



LONG CHORD LAYOUT

NOTE: END BENTS ARE PARALLEL

HORIZONTAL CURVE DATA -L-

PI Sta 14+47.86
△ = 1° 12' 22.4"(RT)
D = 0° 24' 47.4"
L = 291.94'
T = 145.98'
R = 13,867.13'

ANGLES			
LONG CHORD		TANGENT TO CURVE	
L1	90°-00'-00"	T1	90°-00'-00"
		T2	90°-06'-29"
		T3	89°-53'-31"

PROJECT NO. 17BP.5.R.20
WAKE COUNTY
STATION: 13+50.00 -L-

SHEET 2 OF 2 REPLACES BRIDGE NO. 444

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1113
OVER UNNAMED TRIBUTARY
CREEK TO BASAL CREEK
BETWEEN SR 1101 AND NC55

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			13

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 9-2012

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

DRAWN BY : J. PENDERGRAFT DATE : 6/12
CHECKED BY : J. DILWORTH DATE : 6/12

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LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.394	--	1.75	0.276	1.57	50′	EL	24.5	0.531	**1.39**	50′	EL	**2.45**	0.80	0.276	1.44	50′	EL	24.5	
		HL-93(Opr)	N/A	--	1.807	--	1.35	0.276	2.03	50′	EL	24.5	0.531	1.81	50′	EL	2.45	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.667	60.007	1.75	0.276	1.95	50′	EL	24.5	0.531	**1.67**	50′	EL	**2.45**	0.80	0.276	1.79	50′	EL	24.5	
		HS-20(Opr)	36.000	--	2.161	77.787	1.35	0.276	2.52	50′	EL	24.5	0.531	2.16	50′	EL	2.45	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.635	49.079	1.4	0.276	4.95	50′	EL	24.5	0.531	4.7	50′	EL	2.45	0.80	0.276	3.64	50′	EL	24.5	
		SNGARBS2	20.000	--	2.871	57.42	1.4	0.276	3.91	50′	EL	24.5	0.531	3.42	50′	EL	2.45	0.80	0.276	2.87	50′	EL	24.5	
		SNAGRIS2	22.000	--	2.778	61.109	1.4	0.276	3.78	50′	EL	19.6	0.531	3.21	50′	EL	2.45	0.80	0.276	2.78	50′	EL	24.5	
		SNCOTTS3	27.250	--	1.814	49.418	1.4	0.276	2.47	50′	EL	24.5	0.531	2.36	50′	EL	2.45	0.80	0.276	1.81	50′	EL	24.5	
		SNAGGRS4	34.925	--	1.577	55.063	1.4	0.276	2.15	50′	EL	24.5	0.531	2.01	50′	EL	2.45	0.80	0.276	1.58	50′	EL	24.5	
		SNS5A	35.550	--	1.537	54.657	1.4	0.276	2.09	50′	EL	24.5	0.531	2.07	50′	EL	2.45	0.80	0.276	1.54	50′	EL	24.5	
		SNS6A	39.950	--	1.438	57.43	1.4	0.276	1.96	50′	EL	24.5	0.531	1.91	50′	EL	2.45	0.80	0.276	1.44	50′	EL	24.5	
		SNS7B	42.000	--	1.370	57.54	1.4	0.276	1.87	50′	EL	24.5	0.531	1.91	50′	EL	2.45	0.80	0.276	1.37	50′	EL	24.5	
	TTST	TNAGRIT3	33.000	--	1.761	58.118	1.4	0.276	2.4	50′	EL	24.5	0.531	2.25	50′	EL	2.45	0.80	0.276	1.76	50′	EL	24.5	
		TNT4A	33.075	--	1.777	58.759	1.4	0.276	2.42	50′	EL	24.5	0.531	2.17	50′	EL	2.45	0.80	0.276	1.78	50′	EL	24.5	
		TNT6A	41.600	--	1.480	61.558	1.4	0.276	2.01	50′	EL	24.5	0.531	2.08	50′	EL	2.45	0.80	0.276	1.48	50′	EL	24.5	
		TNT7A	42.000	--	1.502	63.087	1.4	0.276	2.05	50′	EL	24.5	0.531	1.94	50′	EL	2.45	0.80	0.276	1.50	50′	EL	24.5	
		TNT7B	42.000	--	1.566	65.773	1.4	0.276	2.13	50′	EL	24.5	0.531	1.84	50′	EL	2.45	0.80	0.276	1.57	50′	EL	24.5	
		TNAGRIT4	43.000	--	1.486	63.902	1.4	0.276	2.02	50′	EL	24.5	0.531	1.77	50′	EL	2.45	0.80	0.276	1.49	50′	EL	24.5	
		TNAGT5A	45.000	--	1.388	62.47	1.4	0.276	1.89	50′	EL	24.5	0.531	1.8	50′	EL	2.45	0.80	0.276	1.39	50′	EL	24.5	
		TNAGT5B	45.000	3	1.360	61.206	1.4	0.276	1.85	50′	EL	24.5	0.531	1.68	50′	EL	2.45	0.80	0.276	**1.36**	50′	EL	**24.5**	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1.
2.
3.
4.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

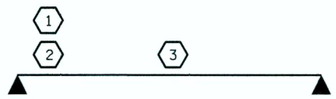
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

FOR SPAN 'A'

PROJECT NO. 17BP.5.R.20

WAKE COUNTY

STATION: 13+50.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR 50′ CORED SLAB UNIT 90° SKEW

ETHERILL ENGINEERING
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Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
License: F-0377
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			13

ASSEMBLED BY : J. PENDERGRAFT	DATE : 6-12
CHECKED BY : J. DILWORTH	DATE : 6-12
DRAWN BY : CVC 6/10	
CHECKED BY : DNS 6/10	

STD. NO. 21LRFR1_90S_50L

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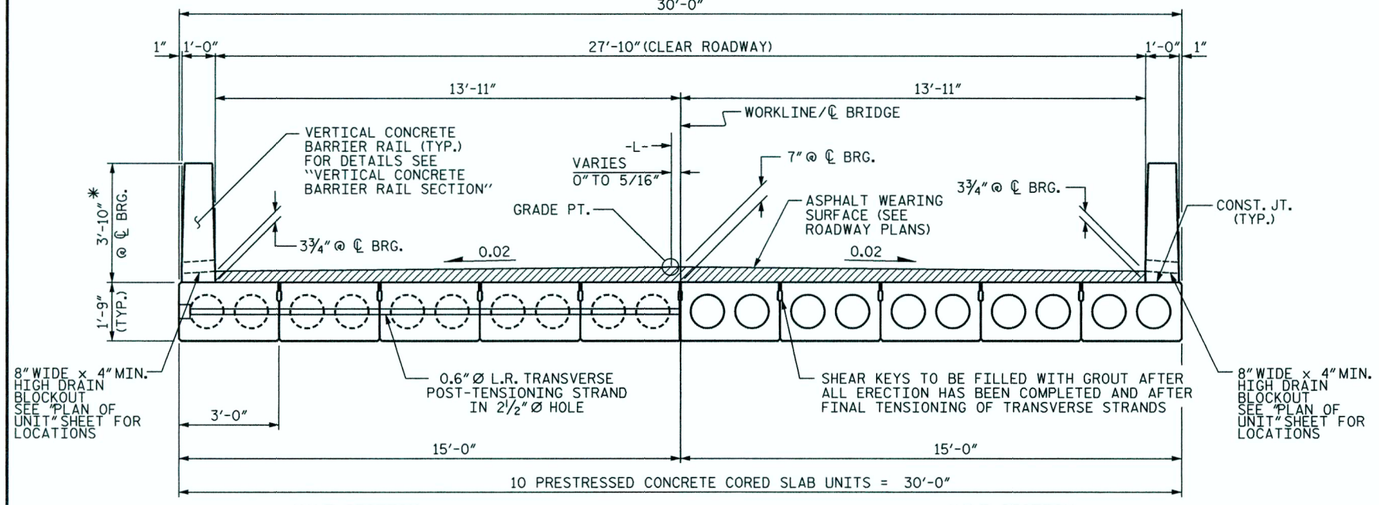
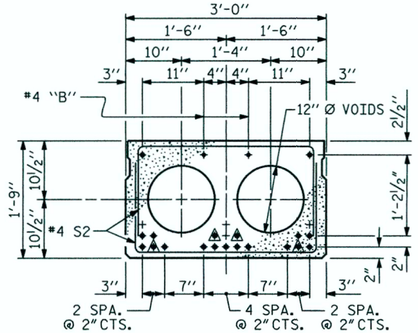


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

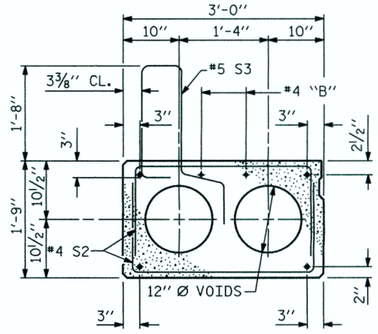
TYPICAL SECTION

* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



INTERIOR SLAB SECTION
(50' UNIT)
(19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT



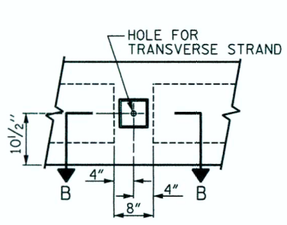
EXT. SLAB SECTION
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

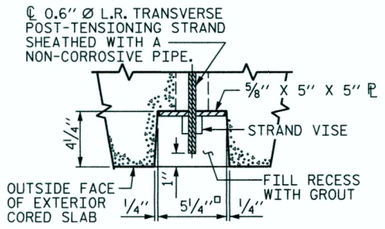
■ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

◉ OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

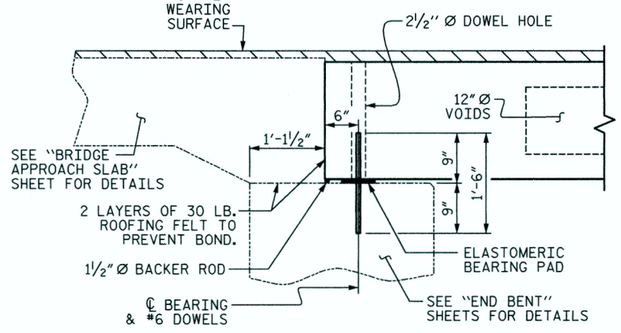


ELEVATION VIEW

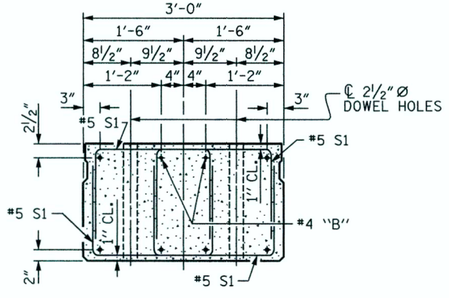


SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS

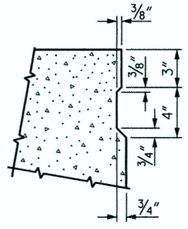


SECTION AT END BENT



END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

PROJECT NO. 17BP.5.R.20
WAKE COUNTY
STATION: 13+50.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			13

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 9-2012

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

DRAWN BY : J. PENDERGRAFT DATE : 6/12
CHECKED BY : J. DILWORTH DATE : 6/12

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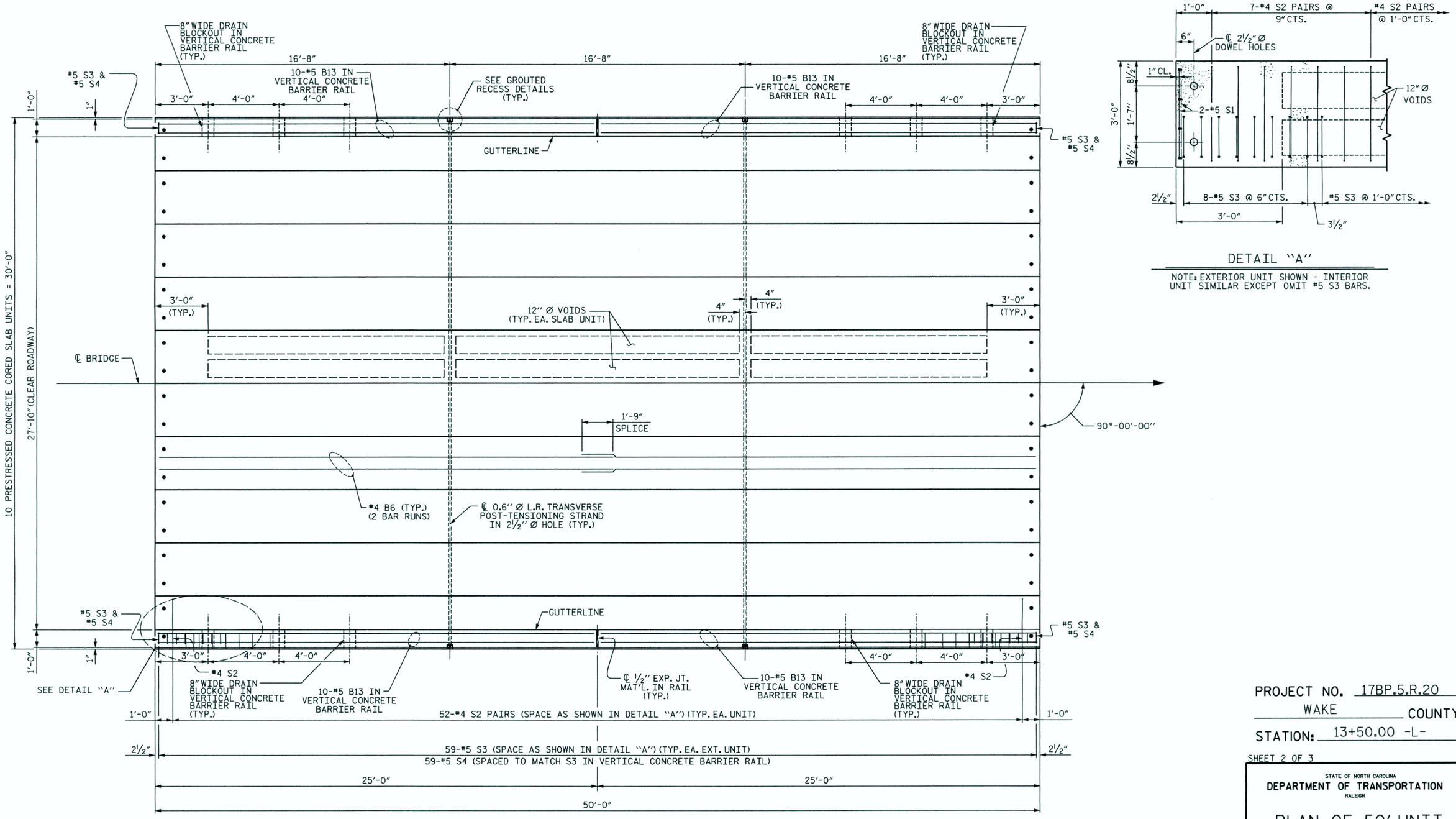
STD. NO. 21"PCS2_30_90S



PLAN OF UNIT

DETAIL "A"

NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PROJECT NO. 17BP.5.R.20

WAKE COUNTY

STATION: 13+50.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 50' UNIT
27'-10" CLEAR ROADWAY
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			13

ASSEMBLED BY : J. PENDERGRAFT	DATE : 4/12		
CHECKED BY : J. DILWORTH	DATE : 4/12		
DRAWN BY : DGE 3/09	REV. 12/5/11	MAA/AAC	
CHECKED BY : BCH 3/09			

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 9-2012

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

STD. NO. 21"PCS_30_90S_50L

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BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B6	4	#4	STR	25'-9"	69	25'-9"	69
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	104	#4	3	5'-4"	371	5'-4"	371
* S3	59	#5	1	6'-2"	379		
REINFORCING STEEL			LBS.		475		475
*EPOXY COATED REINFORCING STEEL			LBS.		379		
6500 P.S.I. CONCRETE			CU. YDS.		7.1		7.1
0.6" Ø L.R. STRANDS			No.		19		19

GRADE 270 STRANDS

	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

CORED SLABS REQUIRED

50' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	50'-0"	100'-0"
INTERIOR C.S.	8	50'-0"	400'-0"
TOTAL	10	—	500'-0"

DEAD LOAD DEFLECTION AND CAMBER

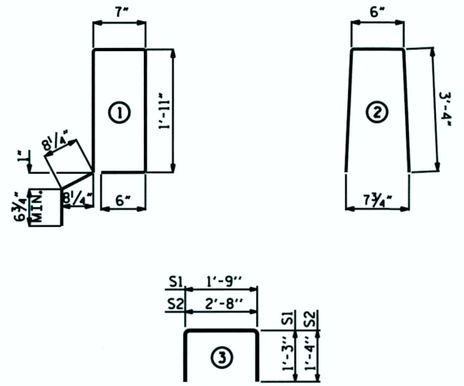
	3'-0" x 1'-9"
50' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2½" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	¼" ↓
FINAL CAMBER	2¼" ↑

** INCLUDES FUTURE WEARING SURFACE

CONCRETE RELEASE STRENGTH

UNIT	PSI
50' UNITS	4900

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

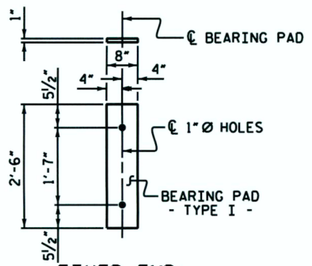
APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

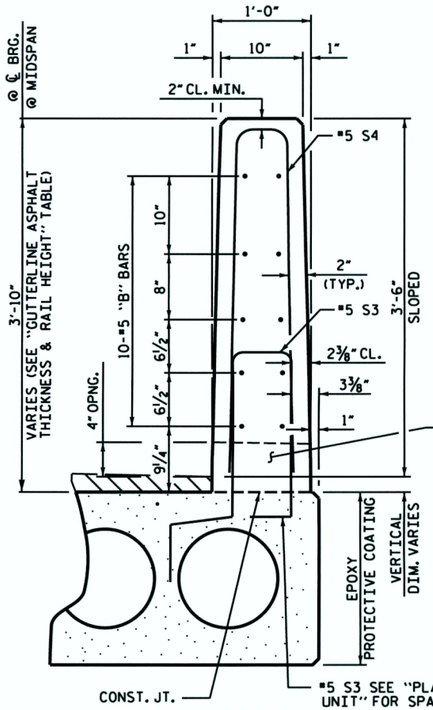
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.



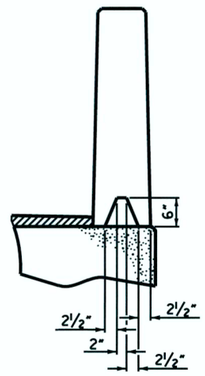
FIXED END
(TYPE I - 20 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.



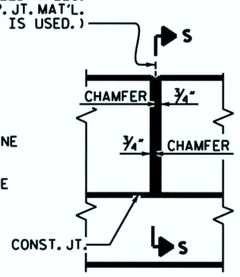
VERTICAL CONCRETE BARRIER RAIL SECTION



SECTION S-S

AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

℄ ½" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.
(NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



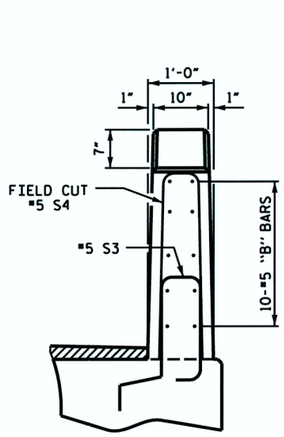
ELEVATION AT EXPANSION JOINTS

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

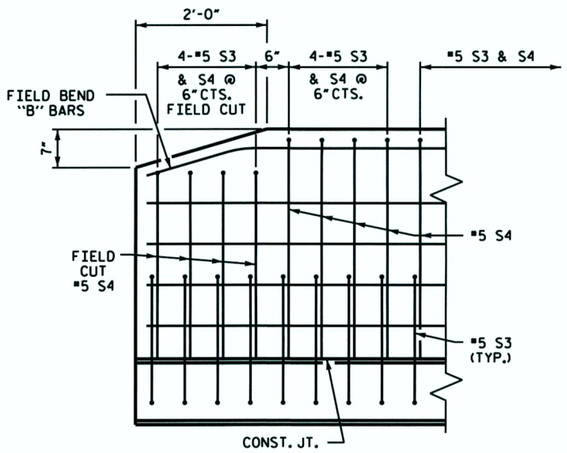
BAR	BARS PER PAIR OF EXTERIOR UNITS 50' UNIT	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
* B13	40	40	#5	STR	24'-7"	1026
* S4	118	118	#5	2	7'-2"	882
*EPOXY COATED REINFORCING STEEL				LBS.		1908
CLASS AA CONCRETE				CU.YDS.		13.1
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		100.25

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

27'-10" CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS @ MID-SPAN NORMAL CROWN SECTION	RAIL HEIGHT @ MID-SPAN
50' UNITS	1½"	3'-7¾"



END VIEW



SIDE VIEW

END OF RAIL DETAILS

PROJECT NO. 17BP.5.R.20
WAKE COUNTY
STATION: 13+50.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE CORED SLAB UNIT
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			13

STD. NO. 21"PCS3_30_90S

DRAWN BY : J. PENDERGRAFT DATE : 6/12
CHECKED BY : J. DILWORTH DATE : 6/12

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 2-1-13

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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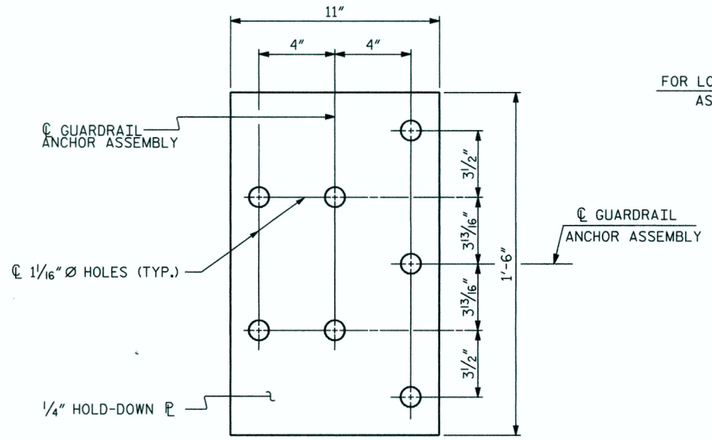
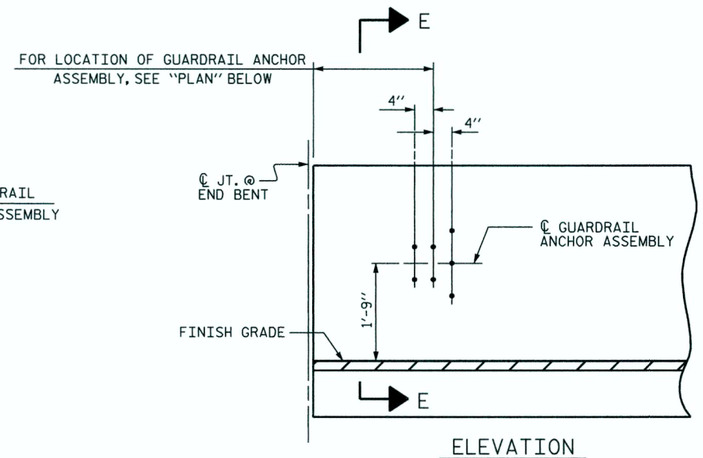


PLAN



ELEVATION

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

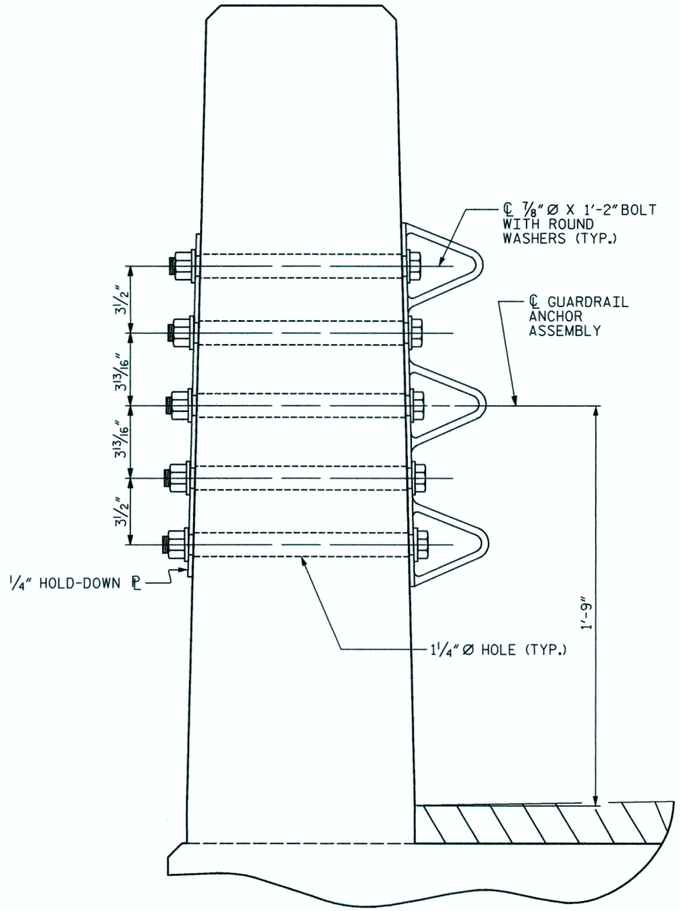
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

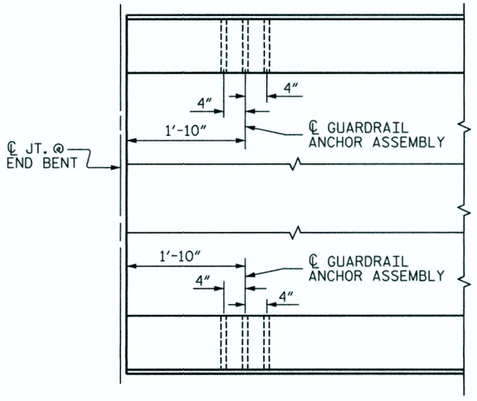
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



SECTION E-E

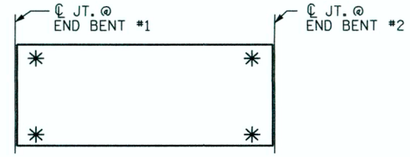
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 17BP.5.R.20

WAKE COUNTY

STATION: 13+50.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			13

STD. NO. GRA3 (SHT 1)

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

ASSEMBLED BY : J. PENDERGRAFT	DATE : 6/12	ADDED 5/6/10	
CHECKED BY : J. DILWORTH	DATE : 6/12	REV. 10/1/11	MAA/GM
DRAWN BY : MAA 5/10		REV. 12/5/11	MAA/GM
CHECKED BY : GM 5/10			

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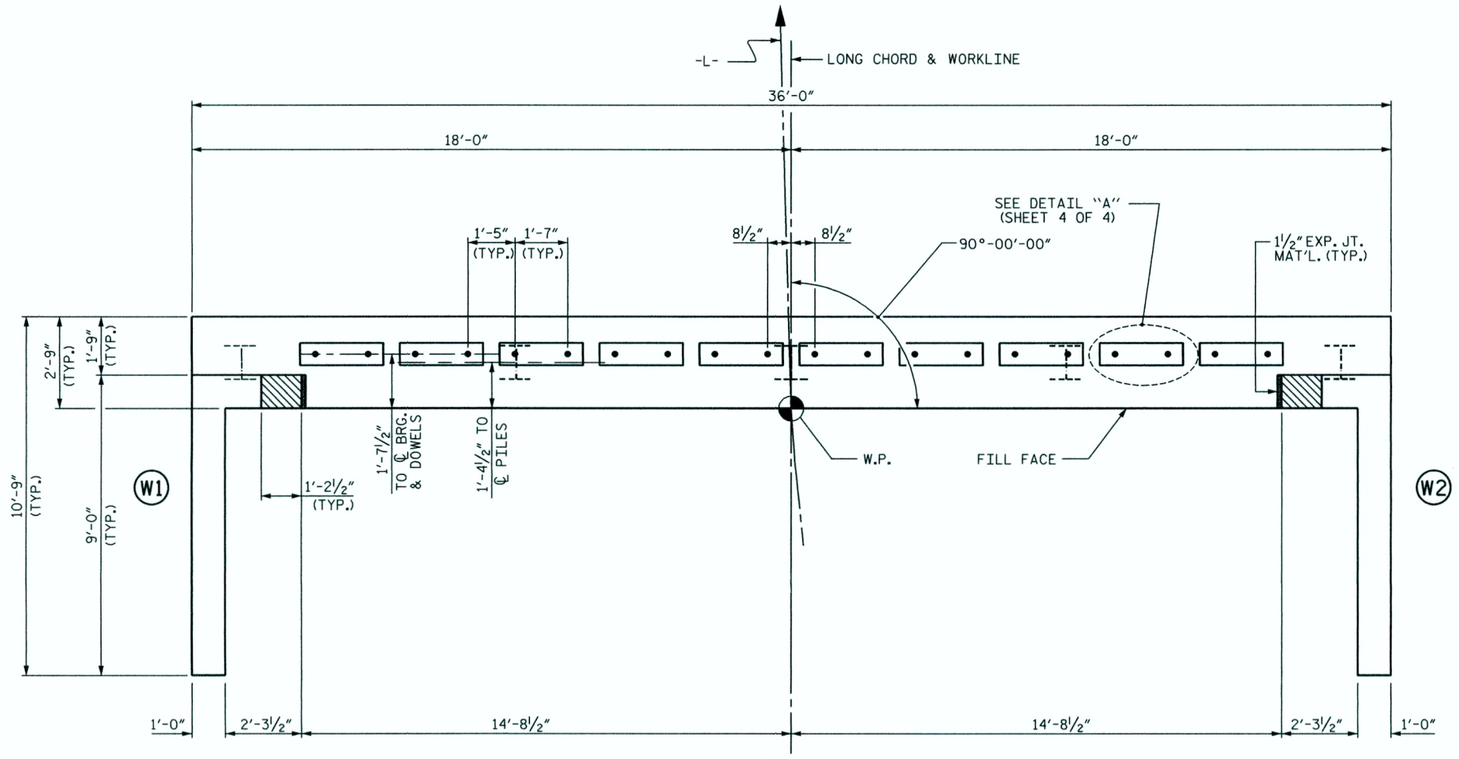
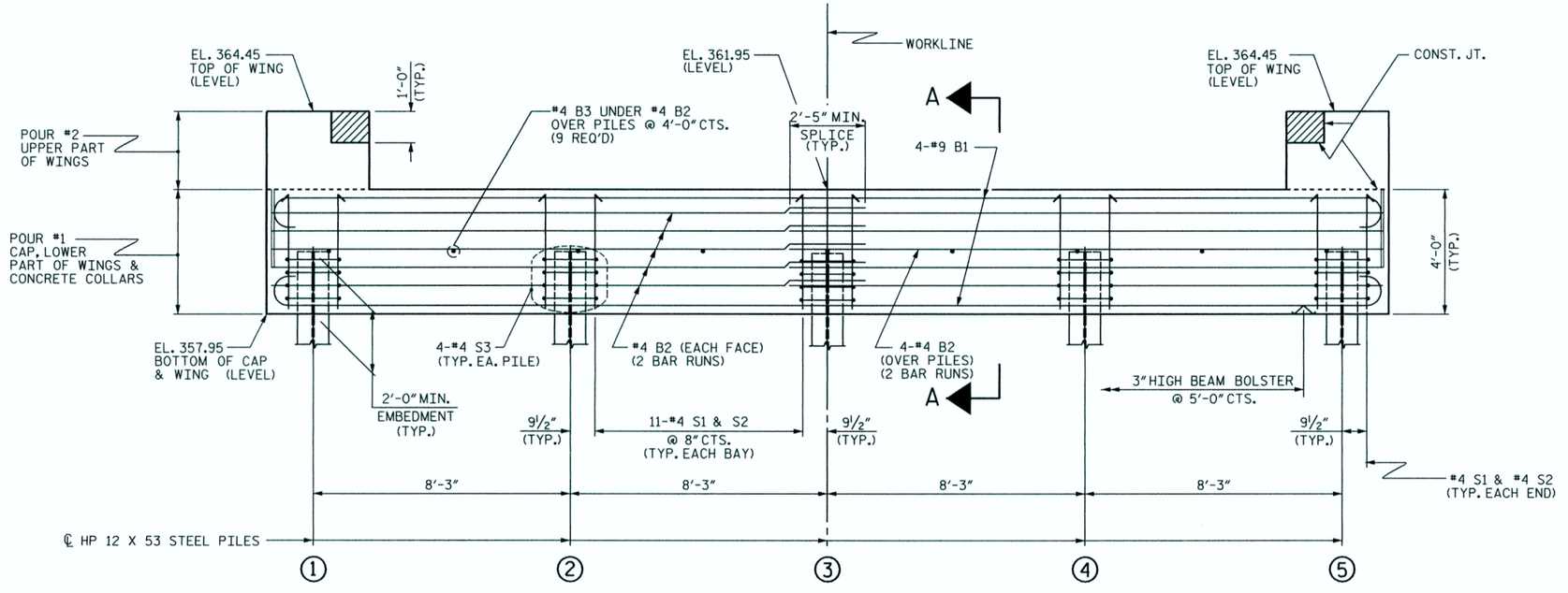


PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

PROJECT NO. 17BP.5.R.20
WAKE COUNTY
STATION: 13+50.00 -L-
SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			13

ASSEMBLED BY : J. PENDERGRAFT DATE : 6/12
CHECKED BY : J. DILWORTH DATE : 6/12
DRAWN BY : DGE 02/10
CHECKED BY : MKT 02/10

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 6-2012

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

STD. NO. EB_30_90S4

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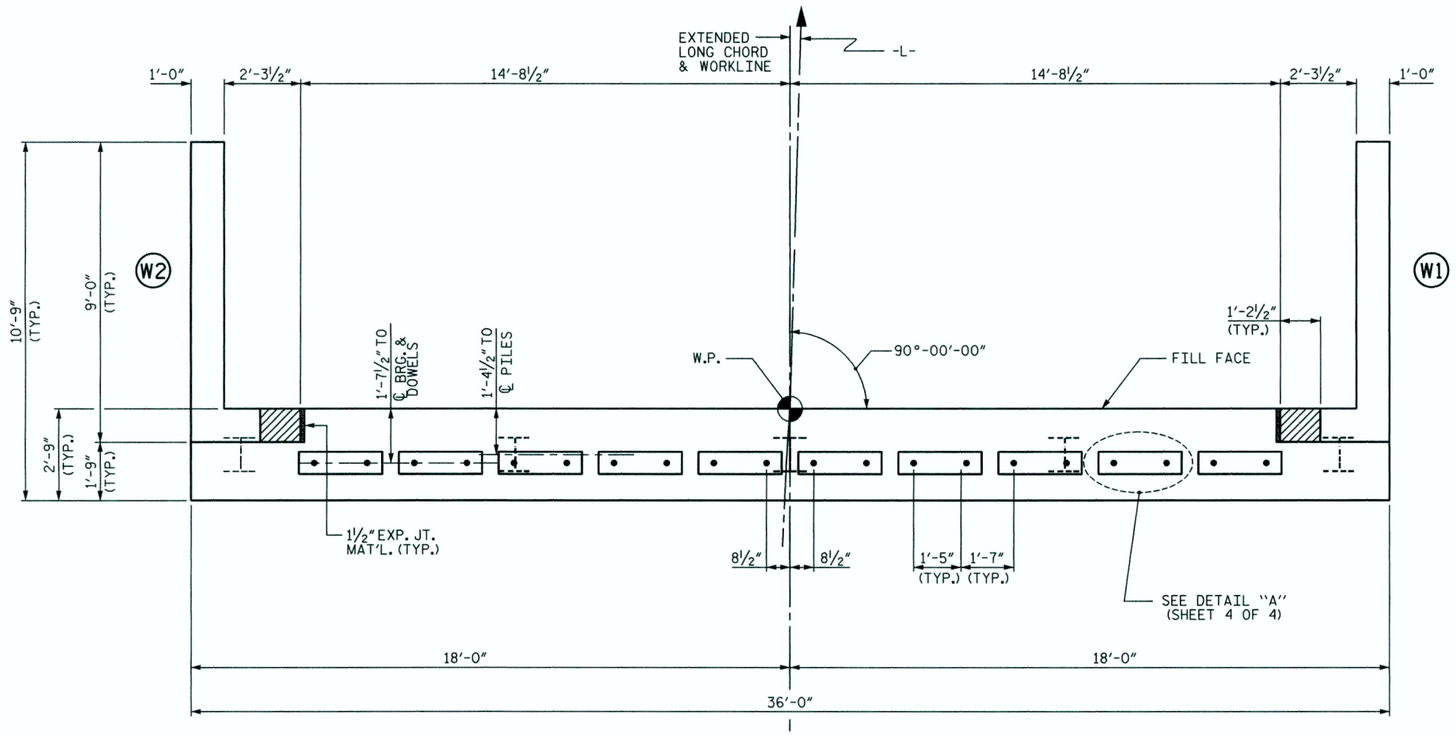
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

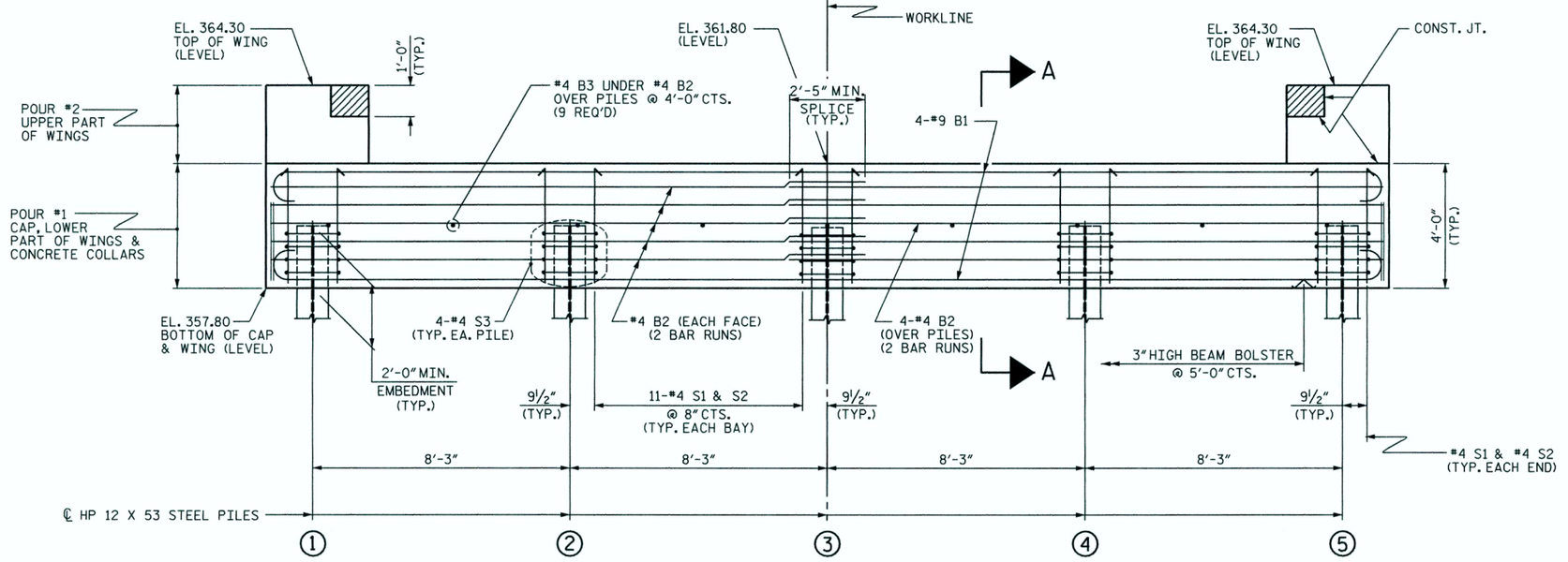
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

ASSEMBLED BY : J. PENDERGRAFT	DATE : 6/12
CHECKED BY : J. DILWORTH	DATE : 6/12
DRAWN BY : DGE	02/10
CHECKED BY : MKT	02/10

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH

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PROJECT NO. 17BP.5.R.20
WAKE COUNTY
STATION: 13+50.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			13

STD. NO. EB 30 90S4

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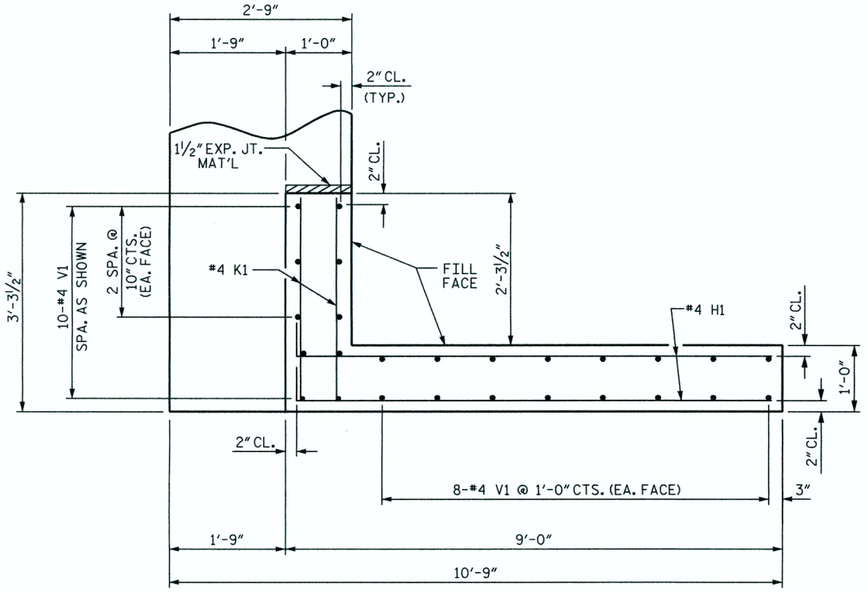
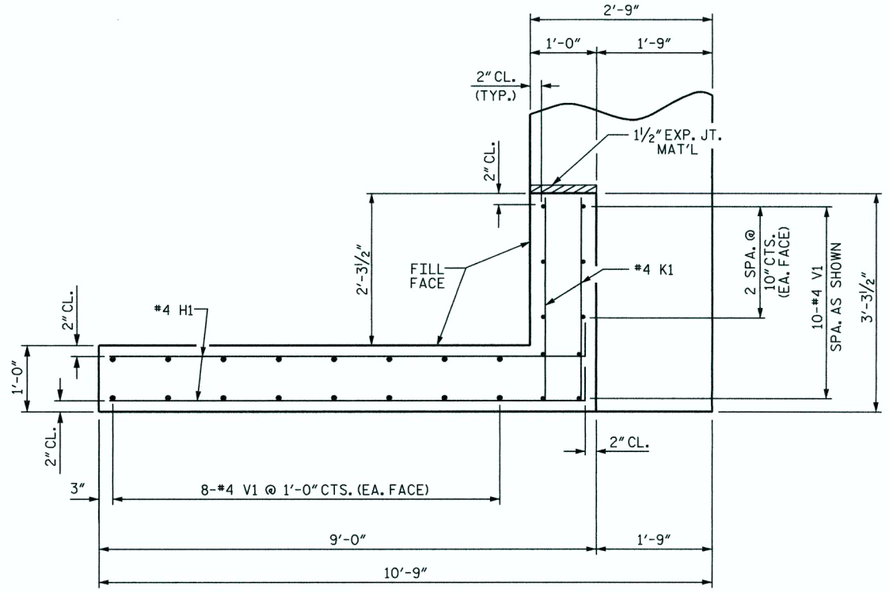
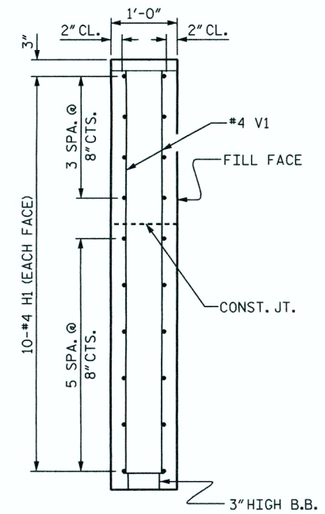


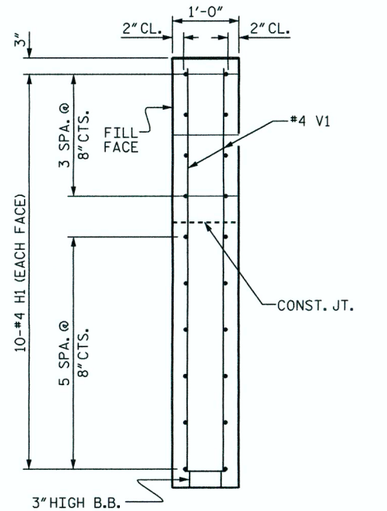
PLAN OF WING (W1)



PLAN OF WING (W2)

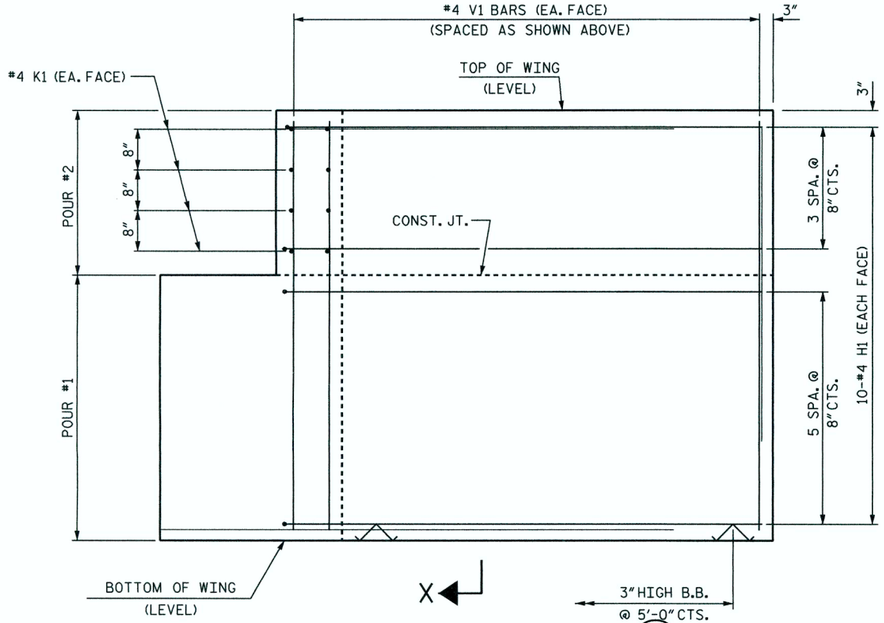


SECTION X-X

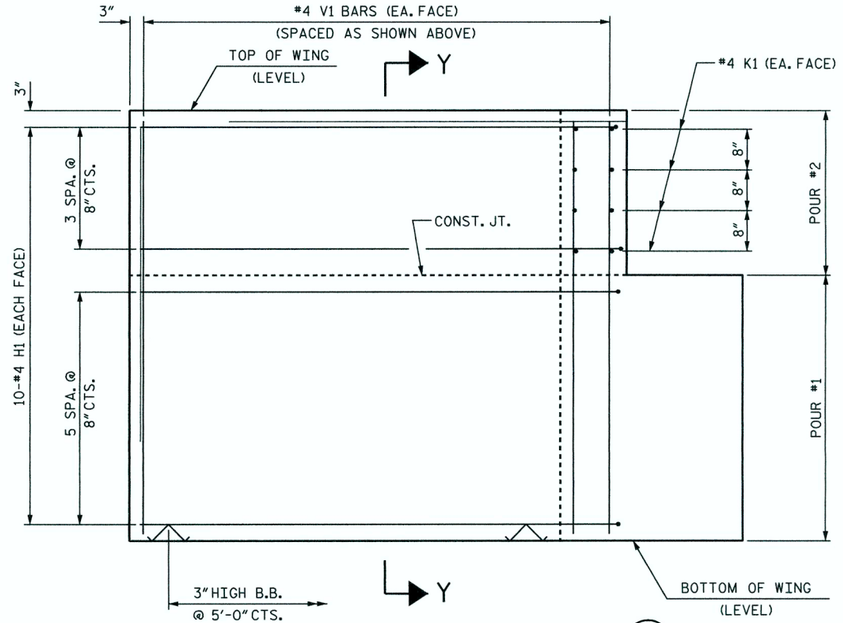


SECTION Y-Y

X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

ASSEMBLED BY :	J. PENDERGRAFT	DATE :	6/12
CHECKED BY :	J. DILWORTH	DATE :	6/12
DRAWN BY :	DGE	02/10	
CHECKED BY :	MKT	02/10	

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 9-2012

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PROJECT NO. 17BP.5.R.20
WAKE COUNTY
STATION: 13+50.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			13

STD. NO. EB_30_90S4

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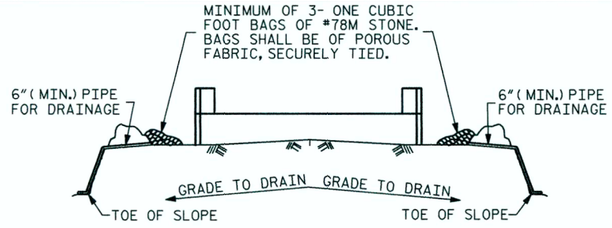
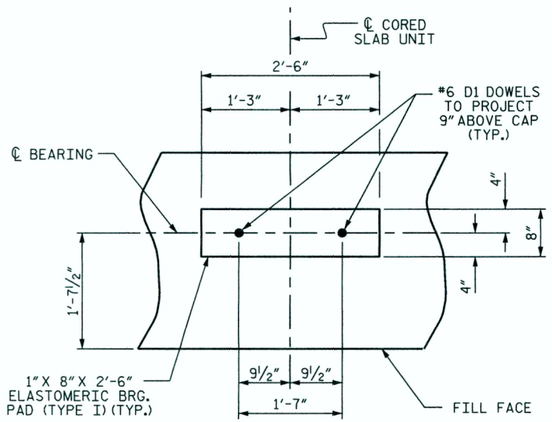


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

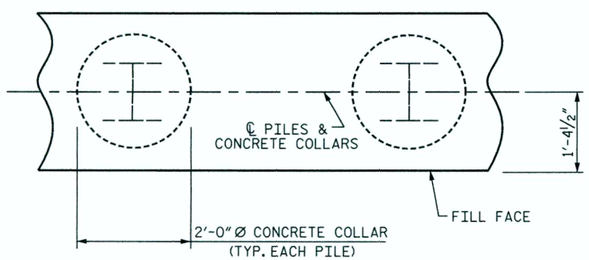
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

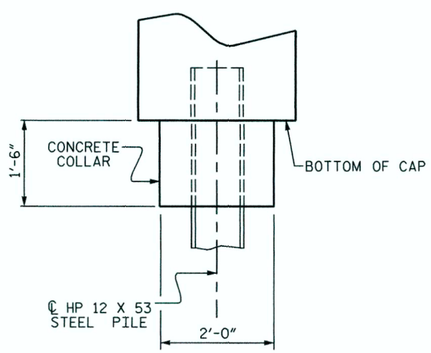


DETAIL "A"

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



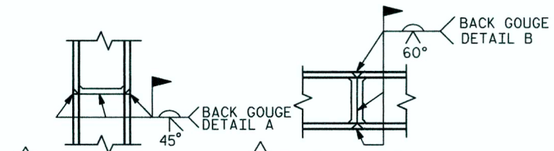
PLAN



ELEVATION

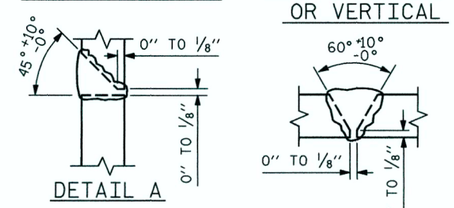
CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



△ PILE VERTICAL

△ PILE HORIZONTAL OR VERTICAL



DETAIL A

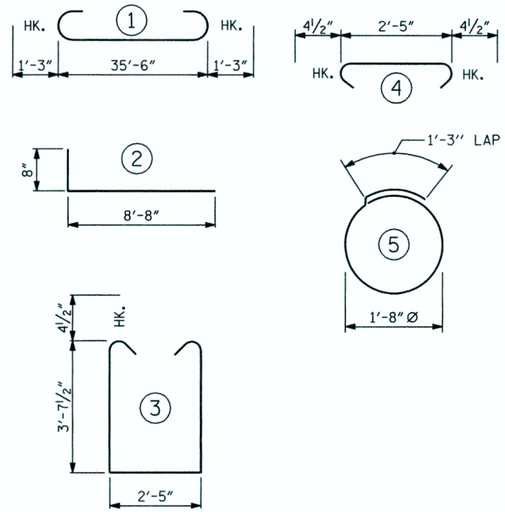
DETAIL B

△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

SCALE- 7/16" = 1'-0"

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES NO: 5 LIN. FT. = 60	HP 12 X 53 STEEL PILES NO: 5 LIN. FT. = 60
PILE EXCAVATION IN SOIL LIN. FT. = 17.0	PILE EXCAVATION IN SOIL LIN. FT. = 20.0
PILE EXCAVATION NOT IN SOIL LIN. FT. = 33.0	PILE EXCAVATION NOT IN SOIL LIN. FT. = 30.0
STEEL PILE POINTS NO: 5	STEEL PILE POINTS NO: 5

BILL OF MATERIAL

FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-0"	1034
B2	28	#4	STR	19'-1"	357
B3	9	#4	STR	2'-5"	15
D1	20	#6	STR	1'-6"	45
H1	40	#4	2	9'-4"	249
K1	16	#4	STR	2'-11"	31
S1	46	#4	3	10'-5"	320
S2	46	#4	4	3'-2"	97
S3	20	#4	5	6'-6"	87
V1	52	#4	STR	6'-2"	214

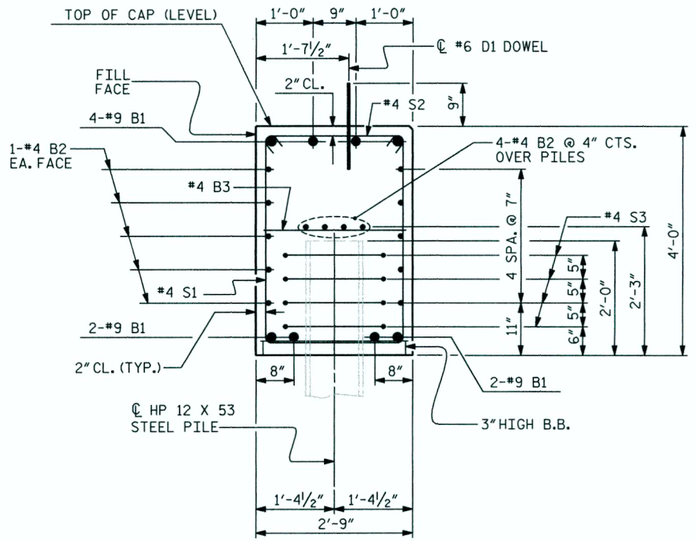
REINFORCING STEEL (FOR ONE END BENT) 2449 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 17.9 C.Y.

POUR #2 UPPER PART OF WINGS 2.1 C.Y.

TOTAL CLASS A CONCRETE 20.0 C.Y.



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

PROJECT NO. 17BP.5.R.20

WAKE COUNTY

STATION: 13+50.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

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Bus: 919 851 8077
Fax: 919 851 8107
License: F-0377
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			13

STD. NO. EB_30_90S4

ASSEMBLED BY : J. PENDERGRAFT	DATE : 6/12
CHECKED BY : J. DILWORTH	DATE : 6/12
DRAWN BY : DGE	02/10
CHECKED BY : MKT	02/10

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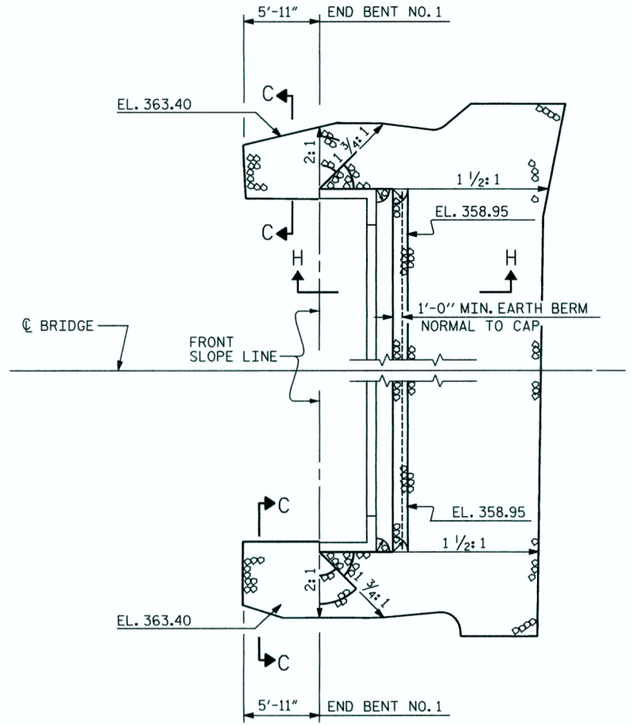
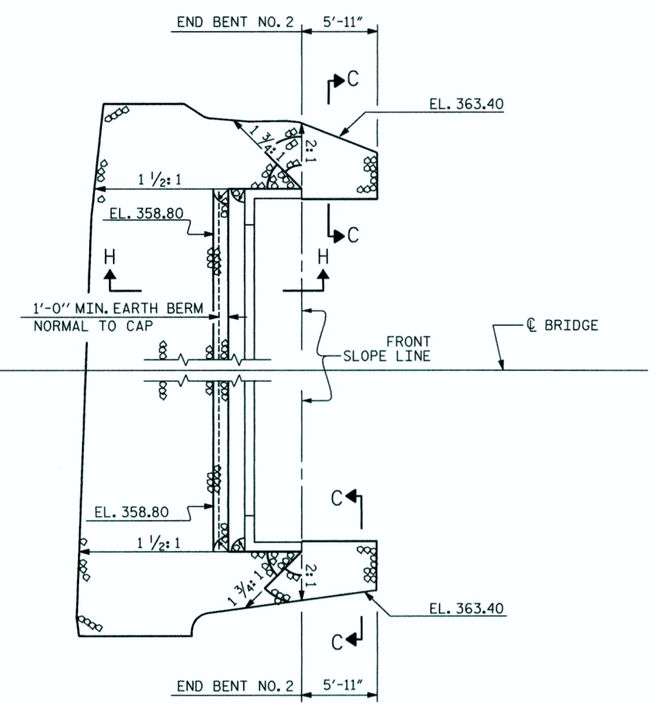
NOTES :

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



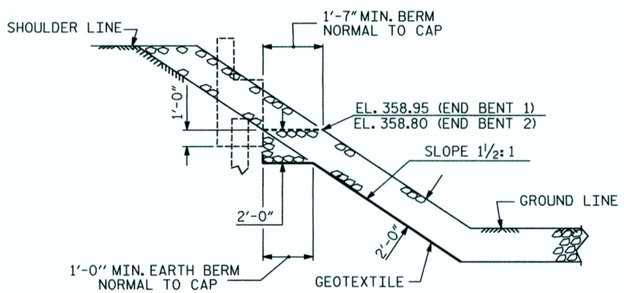
END BENT 1



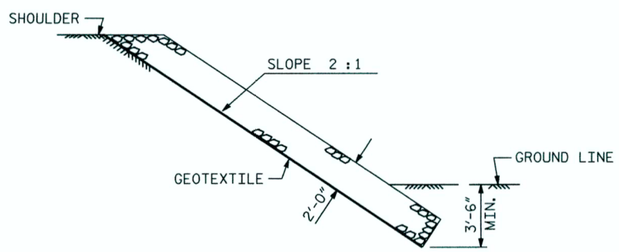
END BENT 2

PLAN OF RIP RAP

ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+50.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	180	200
END BENT 2	185	205



SECTION H-H



SECTION C-C

PROJECT NO. 17BP.5.R.20

WAKE COUNTY

STATION: 13+50.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

ETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
License: F-0377

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			13

ASSEMBLED BY : J. PENDERGRAFT	DATE : 6/12	
CHECKED BY : J. DILWORTH	DATE : 6/12	
DRAWN BY : REK 1/84	REV. 5/1/06R	TLA/GM
CHECKED BY : RDU 1/84	REV. 10/1/11	MAA/GM
	REV. 12/21/11	MAA/GM

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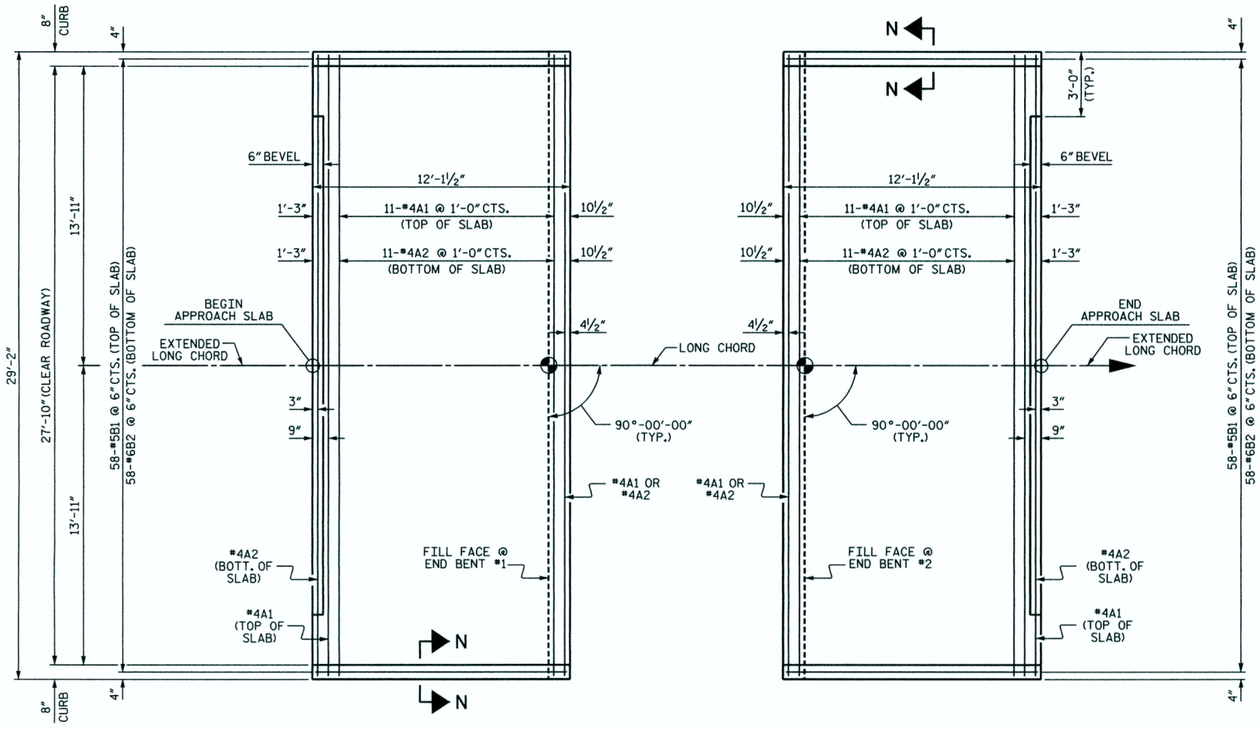
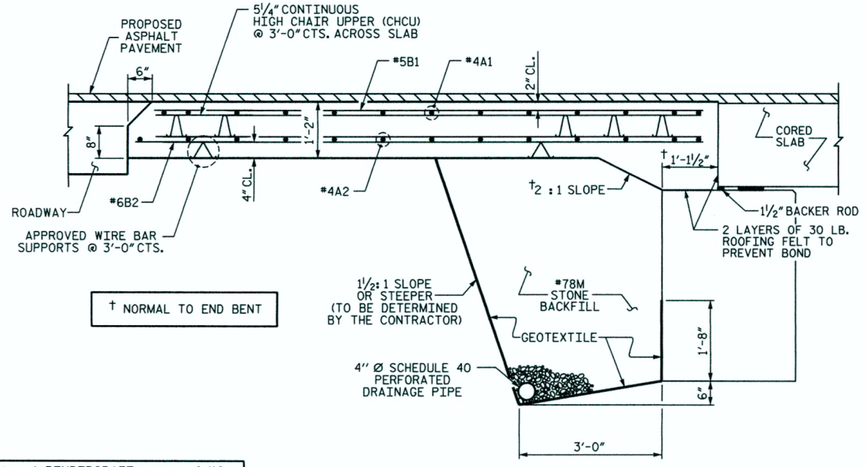
STD. NO. RR1 (Sht 2)



PLAN @ END BENT #1 PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

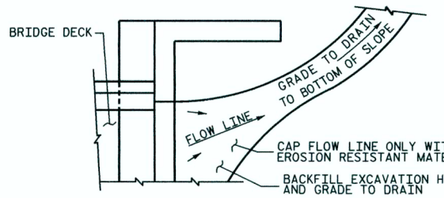
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

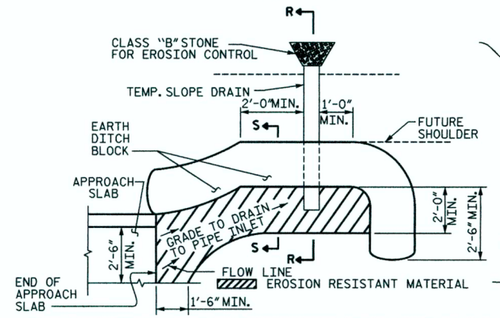
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



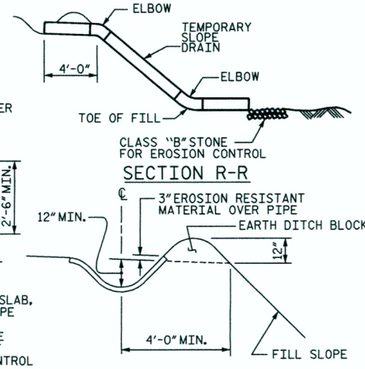
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL



NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

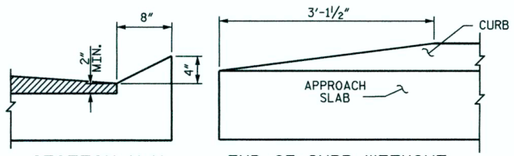
PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION N-N END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	13	#4	STR	28'-10"	250
A2	13	#4	STR	28'-10"	250
✳ B1	58	#5	STR	11'-2"	676
B2	58	#6	STR	11'-8"	1016
REINFORCING STEEL				LBS.	1266
✳ EPOXY COATED REINFORCING STEEL				LBS.	926
CLASS AA CONCRETE				C. Y.	16.9
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	13	#4	STR	28'-10"	250
A2	13	#4	STR	28'-10"	250
✳ B1	58	#5	STR	11'-2"	676
B2	58	#6	STR	11'-8"	1016
REINFORCING STEEL				LBS.	1266
✳ EPOXY COATED REINFORCING STEEL				LBS.	926
CLASS AA CONCRETE				C. Y.	16.9

PROJECT NO. 17BP.5.R.20

WAKE COUNTY

STATION: 13+50.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT
(SUB-REGIONAL TIER)
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			13

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH

ETHERILL ENGINEERING
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

ASSEMBLED BY : J. PENDERGRAFT DATE : 6/12
CHECKED BY : J. DILWORTH DATE : 6/12
DRAWN BY : SHS/MAA 5-09
CHECKED BY : BCH 5-09
REV. 12-11 MAA/AAC

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STD. NO. BAS_30_90S

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF	
STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION	
GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR	
UNTREATED - EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN

REV. 6-16-95 EEM (W) RGW REV. 5-7-03 RWW (W) JTE REV. 10-1-11 MAA (W) GM
REV. 8-16-99 RWW (W) LES REV. 5-1-06 TLA (W) GM

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