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TIP PROJECT: 17BP.1.R.82

CONTRACT: DA000389

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.1.R.82	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.1.R.82		PE
17BP.1.R.82		ROW & UTIL
17BP.1.R.82		CONST.

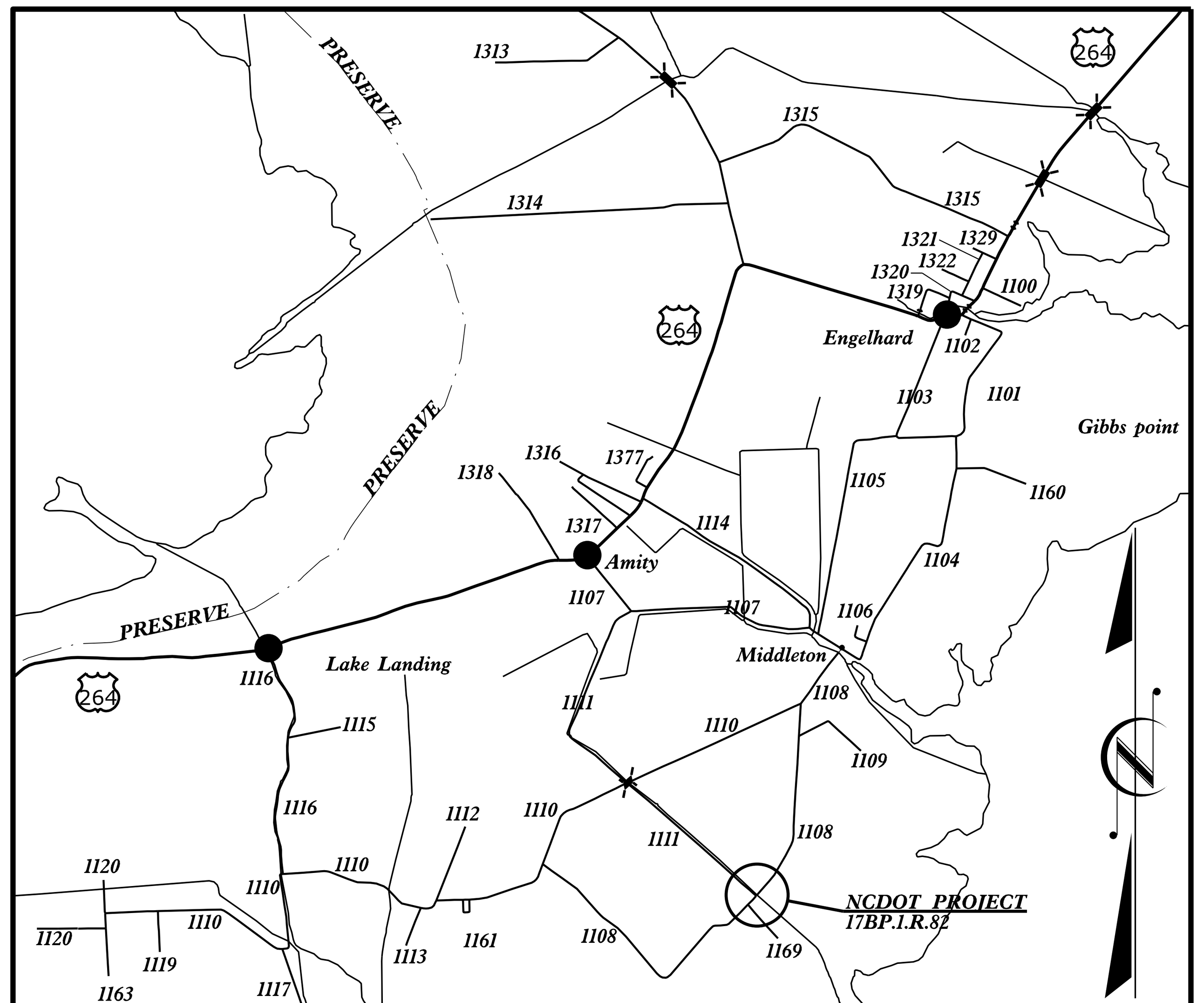
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HYDE COUNTY

LOCATION: BRIDGE NO. 14 OVER RATTLESNAKE CANAL ON SR 1108 (WHITE PLAIN RD.)

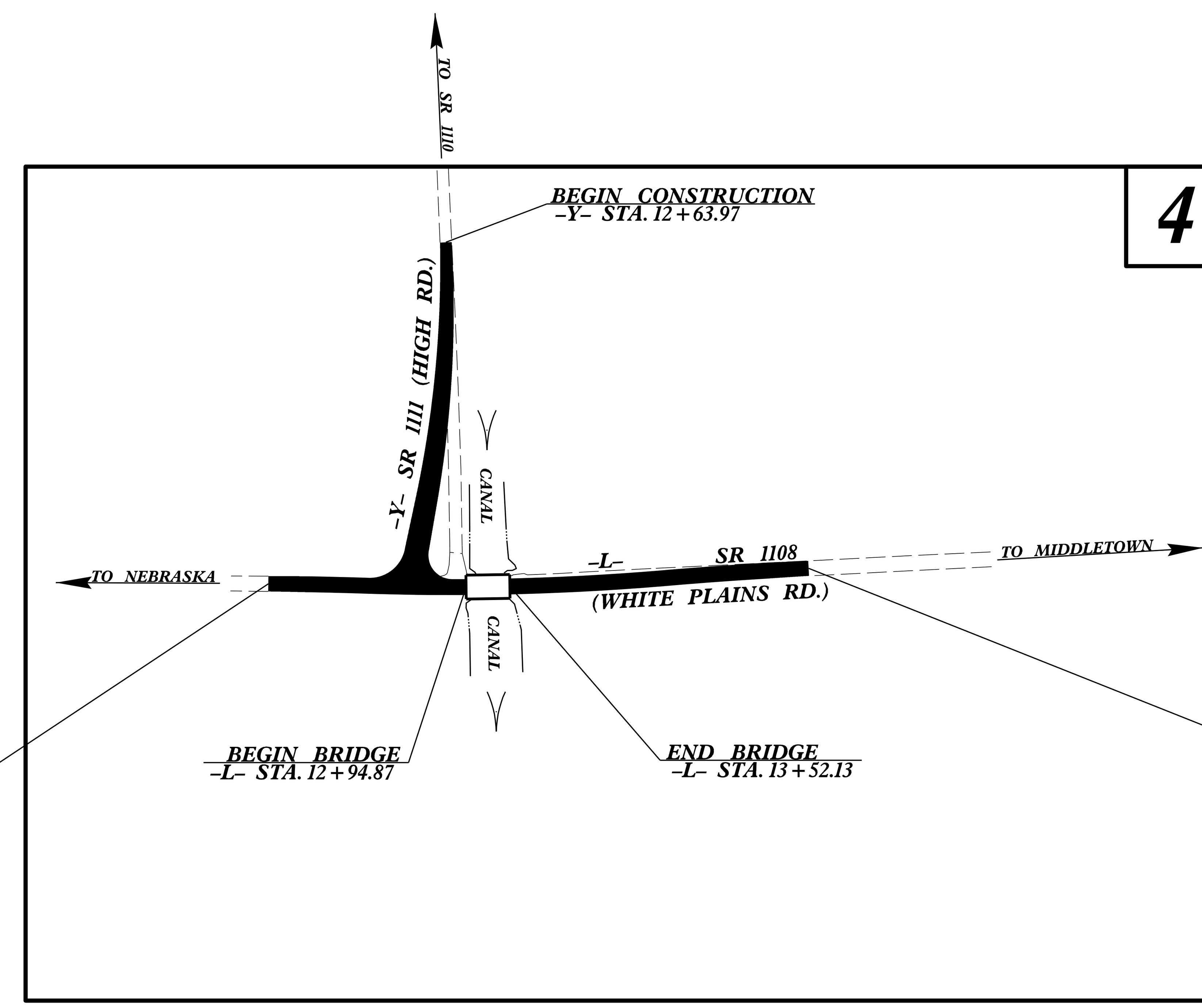
TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Convetional Symbols



VICINITY MAP

NAD 83/2011



BEGIN TIP PROJECT 17BP.1.R.82
-L- STA. 10+47.29

END TIP PROJECT 17BP.1.R.82
-L- STA. 17+26.93

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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 2016 = 130
ADT 2036 = 140
K = 10 %
D = 60 %
T = 6 % *
V = 40 MPH
* TTST = 2% DUAL 4%
FUNC CLASS = LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT 17BP.1.R.82	=	0.118 MILES
LENGTH STRUCTURE TIP PROJECT 17BP.1.R.82	=	0.011 MILES
TOTAL LENGTH TIP PROJECT 17BP.1.R.82	=	0.129 MILES

WETHERILL ENGINEERING
Prepared for the North Carolina Department of Transportation in the Office of:
1223 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: APRIL, 2017

LETTING DATE: OCTOBER, 2017

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

BOB A. MAY, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: JOHN S. ABEL, JR.
DIVISION 1 BRIDGE PROGRAM MANAGER

HYDRAULICS ENGINEER 8/9/2017
NORTH CAROLINA PROFESSIONAL SEAL 18462 ENGINEER JAMES C. DAVIS
SIGNATURE: James C. Davis P.E.

ROADWAY DESIGN ENGINEER 8/9/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
SIGNATURE: Bob A. May P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

09/08/99
8/7/2017
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USER:bmay

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PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.82	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY

8/9/2017

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EFF. 01-17-2012
REV. 05-24-2017

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch – N. C. Department of Transportation – Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO. TITLE

DIVISION 2 – EARTHWORK

200.02 Method of Clearing – Method II
225.02 Guide for Grading Subgrade – Secondary and Local
225.04 Method of Obtaining Superelevation – Two Lane Pavement
225.06 Method of Grading Sight Distance at Intersections

DIVISION 3 – PIPE CULVERTS

300.01 Method of Pipe Installation
310.10 Driveway Pipe Construction

DIVISION 4 – MAJOR STRUCTURES

422.11 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

815.03 Pipe Underdrain and Blind Drain
838.01 Concrete Endwall for Single and Double Pipe Culverts – 15" thru 48" Pipe 90 Skew
838.11 Brick Endwall for Single and Double Pipe Culverts – 15" thru 48" Pipe 90 Skew
838.80 Precast Endwalls – 12" thru 72" Pipe 90 Skew
846.01 Concrete Curb, Gutter and Curb & Gutter

GENERAL NOTES: 2012 SPECIFICATIONS

EFFECTIVE: 01-17-2012
REVISED: 01-24-2017

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

UNDERDRAINS:

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

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE HYDE COUNTY WATER AND CENTURY LINK.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

INDEX OF SHEETS

8/17/99

8/7/2017
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04/06/15

PROJECT REFERENCE NO.	SHEET NO.
I7BPJR.82	1-B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- 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 R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- 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
- 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 — HH
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

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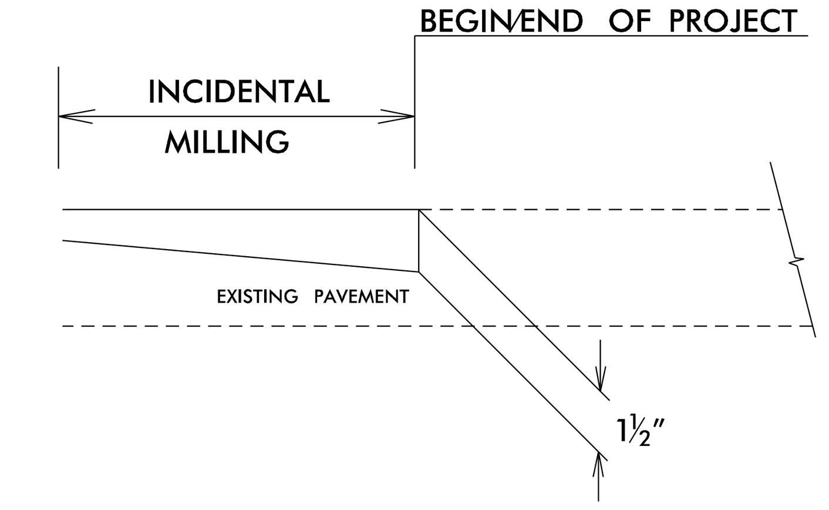
8/17/99

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	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 2″ IN DEPTH.
E1	PROP. APPROX. 5 ½″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.
J1	6″ AGGREGATE BASE COURSE
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)

NOTES TO CONTRACTOR

Perform the work in accordance with Section 607 of the January 2012 North Carolina Department of Transportation Standard Specifications for Roads and Structures. Resurfacing will be accomplished at the same time as the milling operation.



NOTE: UTILIZE INCIDENTAL MILLING TO MAKE PAVEMENT TIE-INS
-L- STA. 10+47.29 TO -L- STA. 11+22.29
-L- STA. 16+54.93 TO -L- STA. 17+29.93

PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.82	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DocuSigned by: Bob A. May 513D84424...

NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY 8/9/2017

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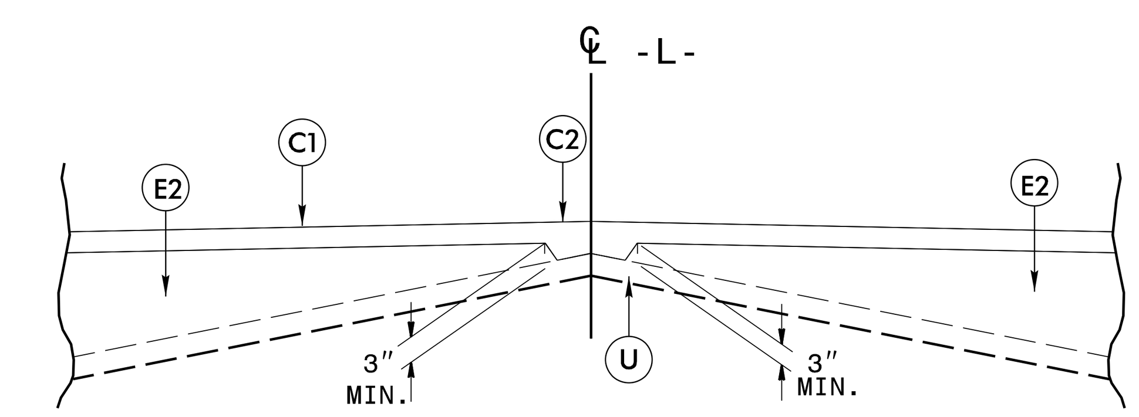
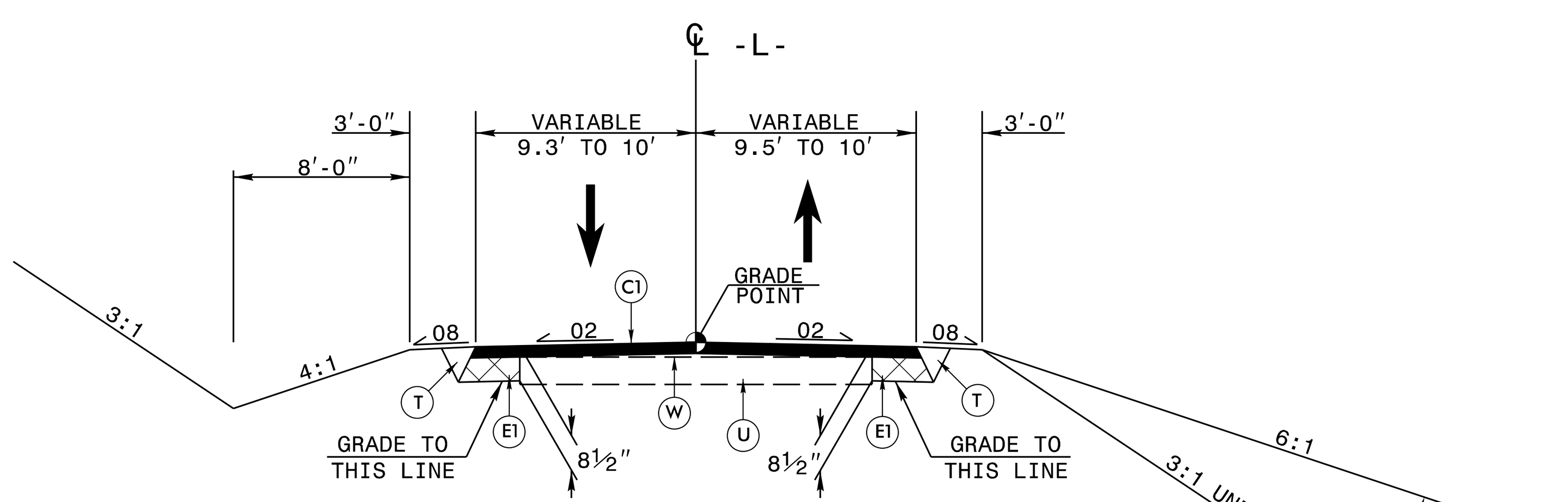
WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

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

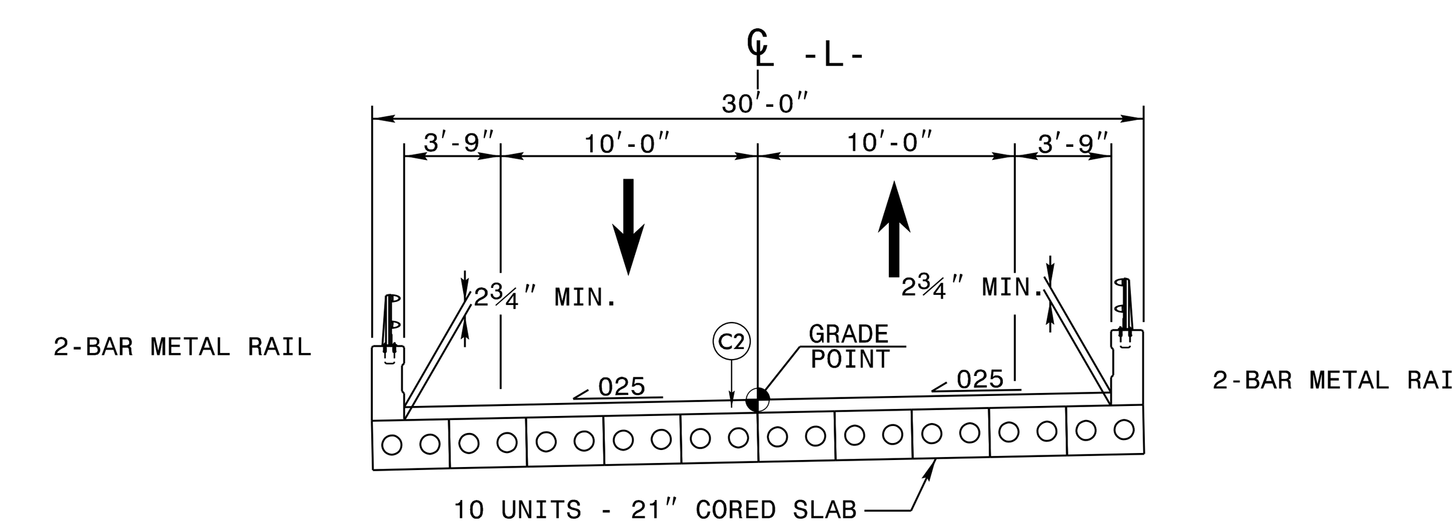


Detail Showing Method of Wedging



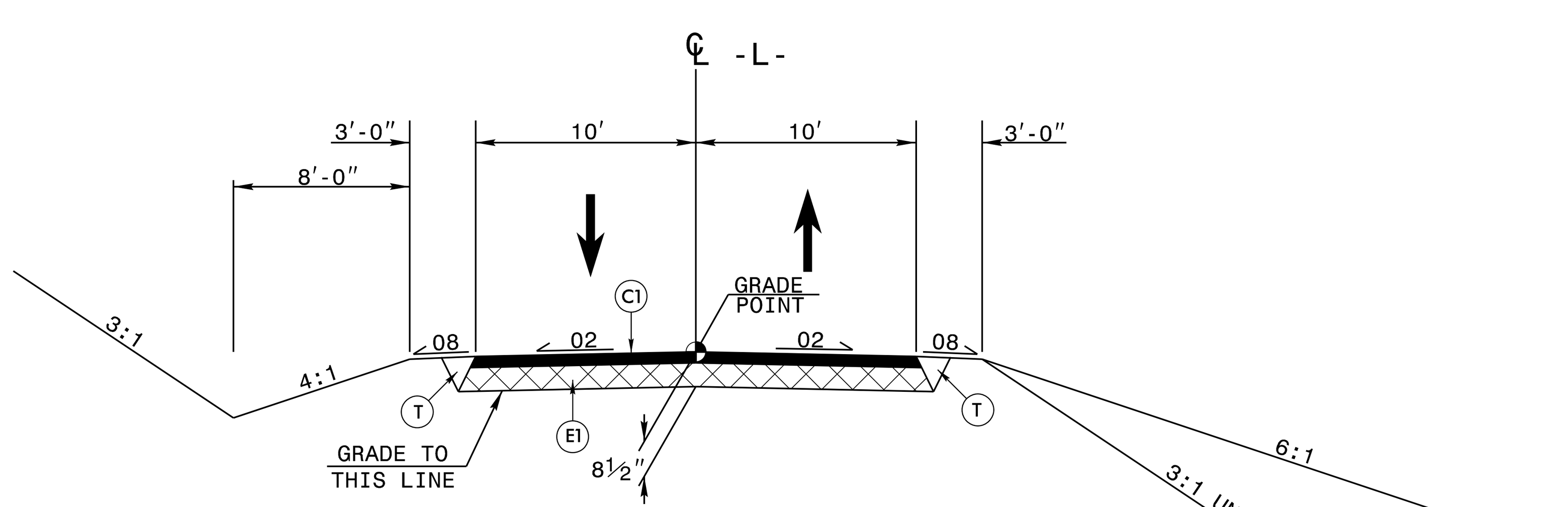
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:
-L- STA. 10+47.29 TO -L- STA. 12+80.00
-L- STA. 13+70.00 TO -L- STA. 17+26.93



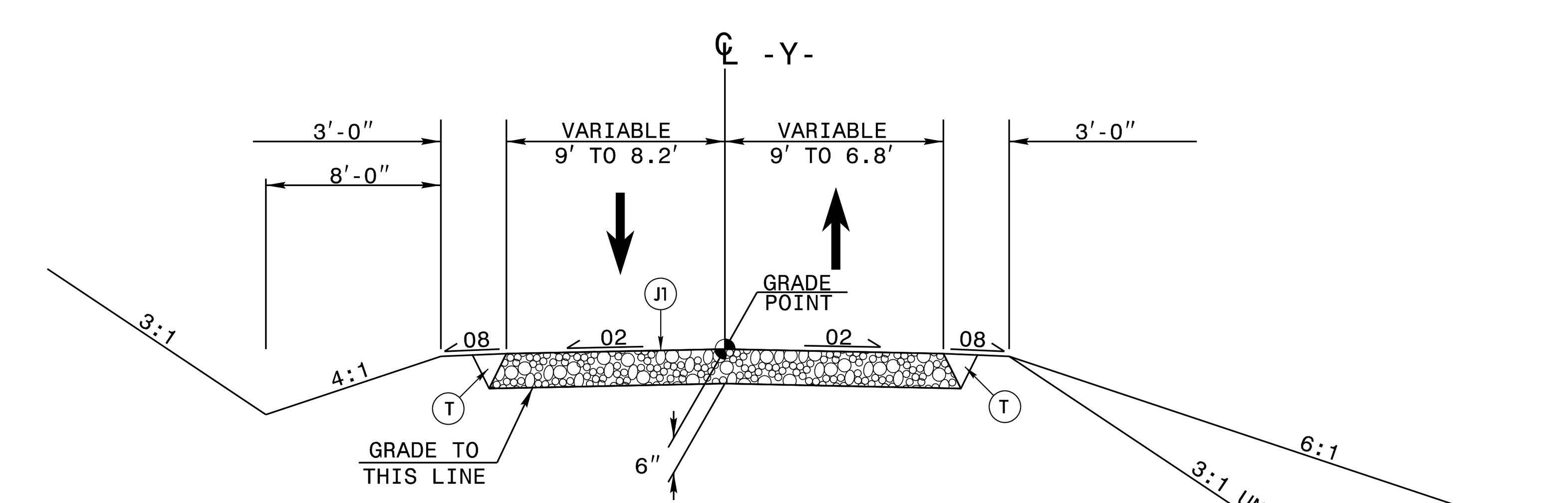
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS:
-L- STA. 12+94.87 TO -L- STA. 13+52.13



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS:
-L- STA. 12+80.00 TO -L- STA. 12+94.87 (BEGIN BRIDGE)
-L- STA. 13+52.13 (END BRIDGE) TO -L- STA. 13+70.00



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AS FOLLOWS:
-Y- STA. 12+63.97 TO -Y- STA. 15+53.06

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.82	3B-1

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-L- 10+47.99	-L- 12+94.87	6	165	159	
-Y- 12+63.97	-Y- 15+53.06	45	195	150	
SUBTOTALS:		51	360	309	
-L- 13+52.13	-L- 17+26.93	6	118	112	
SUBTOTALS:		6	118	112	
PROJECT TOTALS:		57	478	421	
EST. 5% TO REPLACE TOPSOIL ON BORROW PIT				21	
GRAND TOTALS:		57		442	
SAY:		100		500	

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	11+13	12+35	LT	14.89
-L-	12+80	EX. BR.	CL	124.51
-L-	EX. BR.	13+70	CL	60.62
			TOTAL:	200.02
			SAY:	250.00

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 lump sum price for "Grading".

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.
1	THADEOUS LEE SELBY, JR.	1.14 AC.	2,137.66 SF		1.09 AC.			
2	ERSEL M. SELBY	1.37 AC.		1.37 AC.			420.74 SF	
3	WYSOCKING WILDLIFE SANCTUARY	82.44 AC.		82.44 AC.		1,418.86 SF		
4	DAVID C. MCLAWHORN	1.87 AC.		1.87 AC.		683.52 SF		
5	CATHERINE & LARRY GIBBS	11.29 AC.			11.29 AC.	1,292.01 SF		

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

Column headings: STATION; SIZE; THICKNESS OR GAUGE; LOCATION (LT,RT, OR CL); STRUCTURE NO. (FROM, TO); TOP ELEVATION; INVERT ELEVATION; INVERT ELEVATION; SLOPE CRITICAL; DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" 15" 18" 24" 30" 36" 42" 48"; C.S. PIPE (UNLESS NOTED OTHRWISE) 12" (.064) 15" (.064) 18" (.064) 24" (.064) 30" (.079) 36" (.079) 42" (.109) 48" (.109); CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12" 15" 18" 24" 30" 36" 42" 48"; 15" SIDE DRAIN PIPE; 18" SIDE DRAIN PIPE; 24" 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 * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') — PER EACH (0' THRU 5.0'), LIN. *FT. A 5.0' THRU 10.0', B 10.0' AND ABOVE; C.B. STD. 840.01 OR STD. 840.02; FRAME, GRATES AND HOOD STANDARD 840.03 — TYPE OF GRATE E, F, G; D.I. STD. 840.14 OR STD. 840.15; D.I. FRAME & GRATE STD. 840.16; G.D.I. TYPE "A" STD. 840.17 OR 840.26; G.D.I. TYPE "B" STD. 840.18 OR 840.27; G.D.I. TYPE "D" STD. 840.19 OR 840.28; G.D.I. FRAME WITH GRATE STD. 840.22; G.D.I. FRAME WITH TWO GRATES STD. 840.22; G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24; G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24; J.B. STD. 840.31 OR 840.32; 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

STATION	LOCATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	DRAINAGE PIPE 18"	CLASS III R.C. PIPE 30"	ENDWALLS R.C.P. CU. YDS.	REMARKS
-Y- 15+34	CL	0401			-1.50	-2.60		144	2.798	
-L- 13+67	LT	0402					20			
TOTAL							20	144	2.798	
SAY							20	144	3.0	

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

12/06/07

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WETHERILL ENGINEERING
1223 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
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Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.82	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER 8/15/2017 — NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY — DocuSigned by: Bob A. May

HYDRAULICS ENGINEER 8/15/2017 — NORTH CAROLINA PROFESSIONAL SEAL 18462 ENGINEER JAMES C. DAVIS — DocuSigned by: James C. Davis

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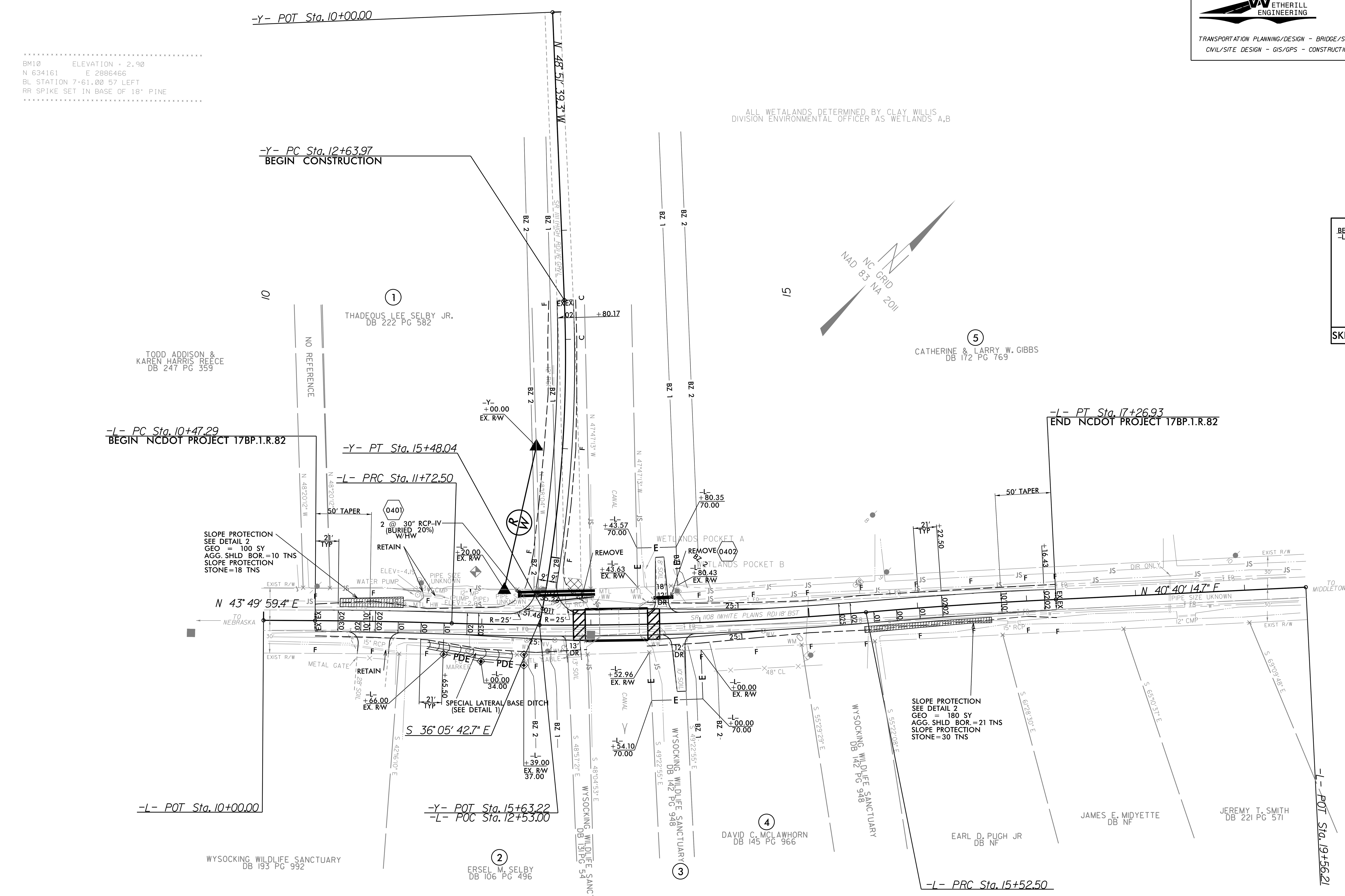
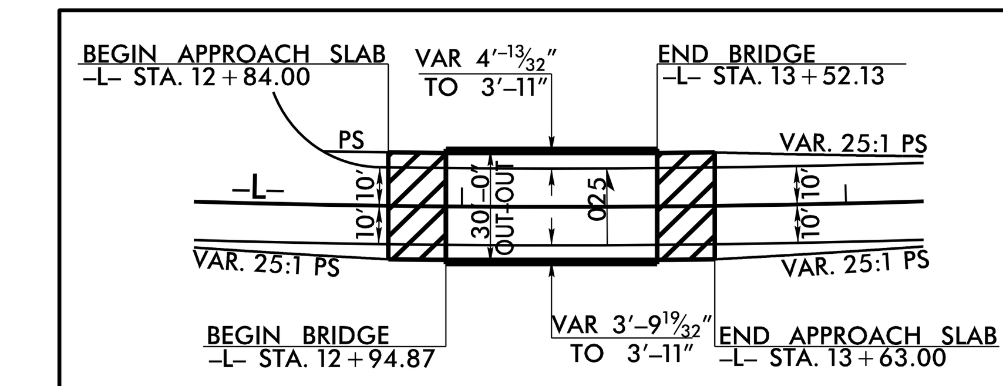
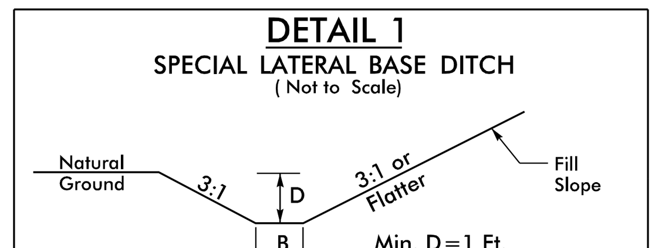

5/14/99
BM10 ELEVATION = 2.90
N 634161 E 2886466
BL STATION 7+61.00 57 LEFT
RR SPIKE SET IN BASE OF 18" PINE
-Y- POT Sta. 10+00.00
N 48° 51' 39.3" W
ALL WETLANDS DETERMINED BY CLAY WILLIS
DIVISION ENVIRONMENTAL OFFICER AS WETLANDS A,B
-Y- PC Sta. 12+63.97
BEGIN CONSTRUCTION
NC GRID NAD 83 NA 2011
THADEOUS LEE SELBY JR.
DB 222 PG 582
TODD ADDISON &
KAREN HARRIS REECE
DB 247 PG 359
NO REFERENCE
CATHERINE & LARRY W. GIBBS
DB 172 PG 769
-L- PC Sta. 10+47.29
BEGIN NCDOT PROJECT 17BP.1.R.82
-Y- PT Sta. 15+48.04
-L- PRC Sta. 11+72.50
-L- PT Sta. 17+26.93
END NCDOT PROJECT 17BP.1.R.82
50' TAPER
SLOPE PROTECTION
SEE DETAIL 2
GEO = 100 SY
AGG. SHLD BOR. =10 TNS
SLOPE PROTECTION
STONE=18 TNS
2 @ 30" RCP-IV
(BURIED 20%)
W/HW
RETAIN
REMOVE
WETLANDS POCKET A
WETLANDS POCKET B
N 43° 49' 59.4" E
N 40° 40' 14.7" E
TO NEBRASKA
TO MIDDLETOWN
SR 1108 (WHITE PLAINS RD) 18' BST
S 36° 05' 42.7" E
SPECIAL LATERAL BASE DITCH
(SEE DETAIL 1)
SLOPE PROTECTION
SEE DETAIL 2
GEO = 180 SY
AGG. SHLD BOR. =21 TNS
SLOPE PROTECTION
STONE=30 TNS
-L- POT Sta. 10+00.00
-Y- POT Sta. 15+63.22
-L- POC Sta. 12+53.00
-L- POT Sta. 19+56.21
-L- PRC Sta. 15+52.50
WYSOCKING WILDLIFE SANCTUARY
DB 193 PG 992
ERSEL M. SELBY
DB 106 PG 496
WYSOCKING WILDLIFE SANCTUARY
DB 131 PG 54
WYSOCKING WILDLIFE SANCTUARY
DB 142 PG 948
DAVID C. MCLAWHORN
DB 145 PG 966
EARL D. PUGH JR
DB NF
JAMES E. MIDYETTE
DB NF
JEREMY T. SMITH
DB 221 PG 571



SKETCH SHOWING PAVEMENT/STRUCTURE RELATIONSHIP

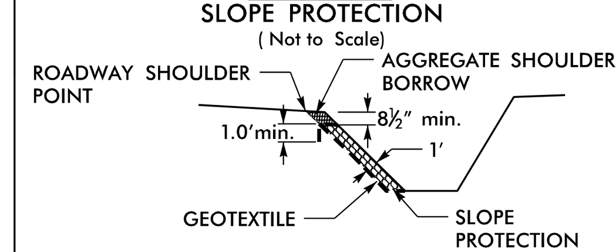
SEE SHTS S-1 THRU S-17 FOR STRUCTURE PLANS
SEE SHT 5 FOR PROFILES

DETAIL 1
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 11+50 TO STA. 12+28 -L- RT.

DETAIL 2
SLOPE PROTECTION
(Not to Scale)



-L- STA. 10+70 TO STA. 11+28(LT)
-L- STA. 15+50 TO STA. 16+67(RT)

-L-

PI Sta 11+09.90	PI Sta 13+62.72	PI Sta 16+39.73
Δ = 1° 30' 14.4" (RT)	Δ = 6° 45' 41.8" (LT)	Δ = 2° 05' 42.7" (RT)
D = 1° 12' 04.2"	D = 1° 46' 45.7"	D = 1° 12' 04.2"
L = 125.21'	L = 380.00'	L = 174.43'
T = 62.61'	T = 190.22'	T = 87.22'
R = 4,770.00'	R = 3,220.00'	R = 4,770.00'
SE = NC	SE = 0.02 FT/FT	SE = NC
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS
DS = 40 MPH	DS = 40 MPH	DS = 40 MPH

-Y-

PI Sta 14+06.59
Δ = 12° 45' 56.6" (RT)
D = 4° 29' 37.6"
L = 284.08'
T = 142.63'
R = 1,275.00'
SE = 0.02 FT/FT
RO = SEE PLANS
DS = STOP CONDITION

8/15/2017
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PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.82	5

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Bob A. May — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21116 — 8/9/2017	James C. Davis — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18462 — 8/9/2017

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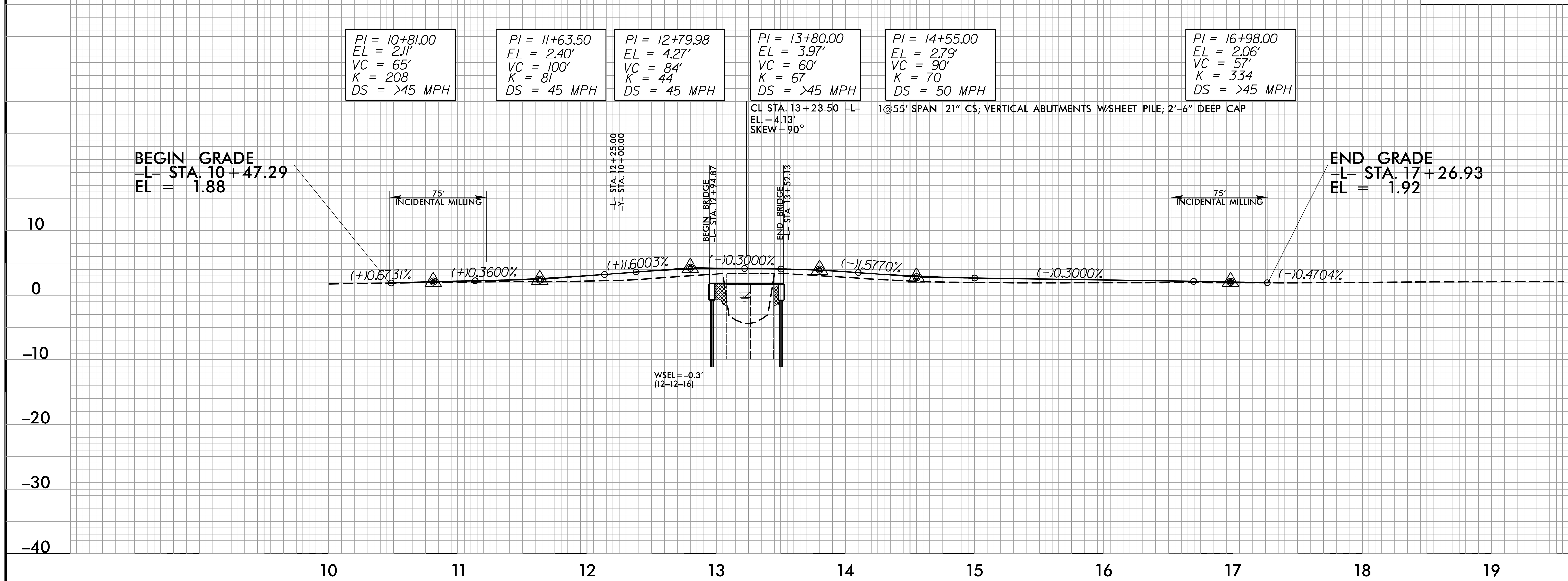
–L–

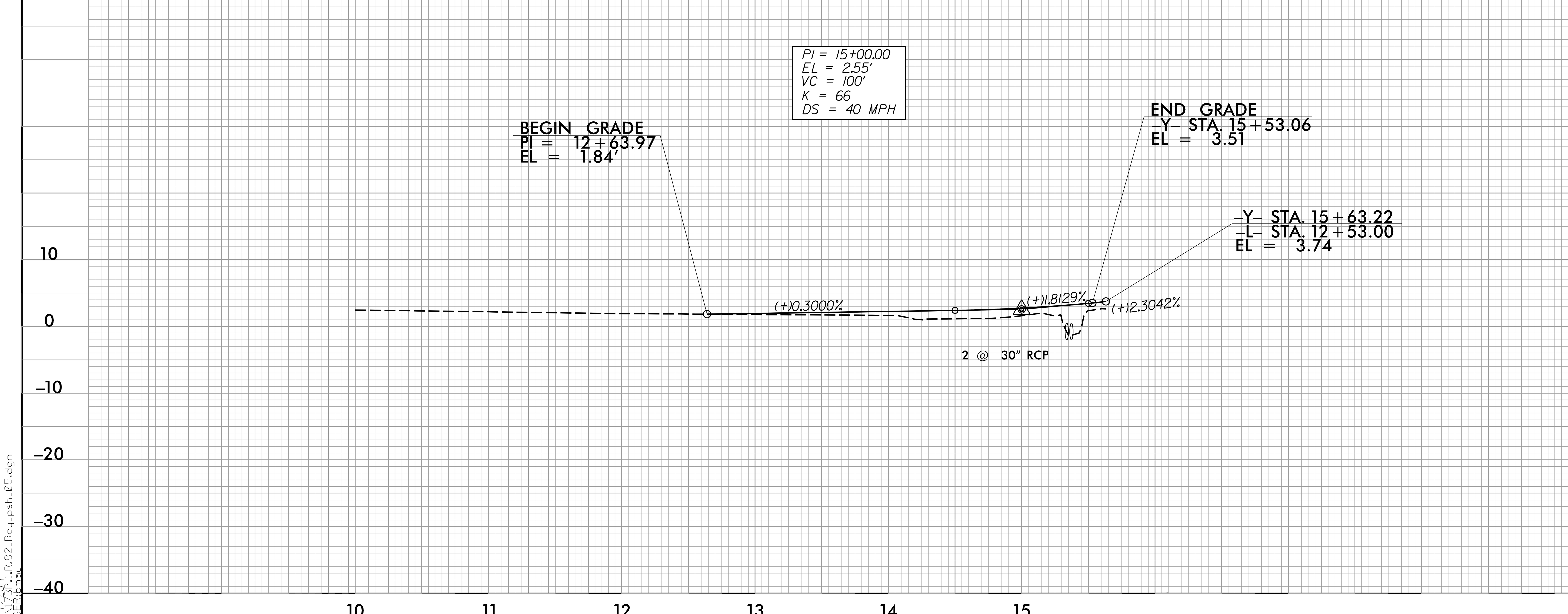


BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	500	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	0.7	FT
BASE DISCHARGE	=	800	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	1.1	FT
OVERTOPPING DISCHARGE	=	1150	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	1.7	FT
DATE OF SURVEY	=	12-12-2016	
W.S.ELEVATION AT DATE OF SURVEY	=	0.3	FT

SEE SHT 4 FOR L ALIGNMENT

–Y–



PIPE HYDRAULIC DATA
–Y– Sta.15+34

DRAINAGE AREA	=	200	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	42	CFS
DESIGN HW ELEVATION	=	1.3	FT
100 YEAR DISCHARGE	=	67	CFS
100 YEAR HW ELEVATION	=	3.5	FT
OVERTOPPING FREQUENCY	=	50+	YRS
OVERTOPPING DISCHARGE	=	57	CFS
OVERTOPPING ELEVATION	=	2.4	FT

SEE SHT 4 FOR Y ALIGNMENT

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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
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1180.01	SKINNY-DRUM

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM
- SKINNY DRUM
- FLAGGER

TEMPORARY SIGNING

- STATIONARY SIGN

PHASING

PHASE I

STEP 1: - USING ROADWAY STANDARD DRAWING NO. 1101.03, SHEET 1 OF 9 AND SHEET TMP-2 CLOSE WHITE PLAIN RD. (-L- / SR 1108) FROM STA. 13+00 +/- -L- TO STA. 13+60 +/- -L- TO TRAFFIC.

NOTE: INSTALL ADDITIONAL TYPE III BARRICADES TO CLOSE DRIVEWAY LEFT OF STA. 13+60 +/- -L-.

STEP 2: - USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 15, CONSTRUCT TEMPORARY DRIVEWAY & PROPOSED -Y- AND OPEN TO TRAFFIC (SEE ROADWAY PLANS AND SHEET TMP-2).

NOTE: AS DIRECTED BY THE ENGINEER, MOVE TYPE III BARRICADES ON -L- TO MAINTAIN ACCESS TO TEMPORARY DRIVEWAY & PROPOSED -Y- AND INSTALL ADDITONAL TYPE III BARRICADES TO CLOSE EXISTING DRIVEWAY AND EXISTING -Y- TO TRAFFIC.

- MAY BEGIN REMOVAL OF EXISTING BRIDGE (SEE ROADWAY PLANS).

STEP 3: - KEEPING -L- CLOSED AND USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 15, AS REQUIRED:

-- CONSTRUCT PROPOSED -L- FROM STA. 10+47 +/- -L- TO STA. 17+29 +/- -L-, INCLUDING PROPOSED BRIDGE & APPROACHES, UP TO & INCLUDING THE FINAL LAYER OF SURFACE COURSE (SEE ROADWAY PLANS).

-- PLACE FINAL PAVEMENT MARKINGS ON PROPOSED -L- IN THE EXISTING TRAFFIC PATTERN.

-- CONSTRUCTION PROPOSED DRIVEWAYS (SEE ROADWAY PLANS).

STEP 4: - OPEN WHITE PLAINS ROAD (-L-, SR 1108) TO THE FINAL TRAFFIC PATTERN AND REMOVE ALL TRAFFIC CONTROL DEVICES FROM THE PROJECT.

PROJ. REFERENCE NO.	SHEET NO.
17BP.1.R.82	TMP-1

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 DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED, OR AS DIRECTED BY THE ENGINEER.

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

C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

F) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS A DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

G) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 200 FT. IN ADVANCE AND A MINIMUM OF ONCE EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

H) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

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

STATE FORCES WILL BE RESPONSIBLE FOR PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

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

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

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

TRAFFIC CONTROL DEVICES

L) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

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

PAVEMENT MARKINGS AND MARKERS

N) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
1. ALL PAVED ROADS	PAINT	NONE

O) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

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

Q) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

INDEX OF SHEETS

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WETHERILL ENGINEERING

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: _____ DATE: _____

8/2/2017

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A MAY

Digitally Signed by Bob A. May

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

ROADWAY STANDARD DRAWINGS, LEGEND, GENERAL NOTES, PHASING AND INDEX OF SHEETS

8/2/2017
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User:skennedy

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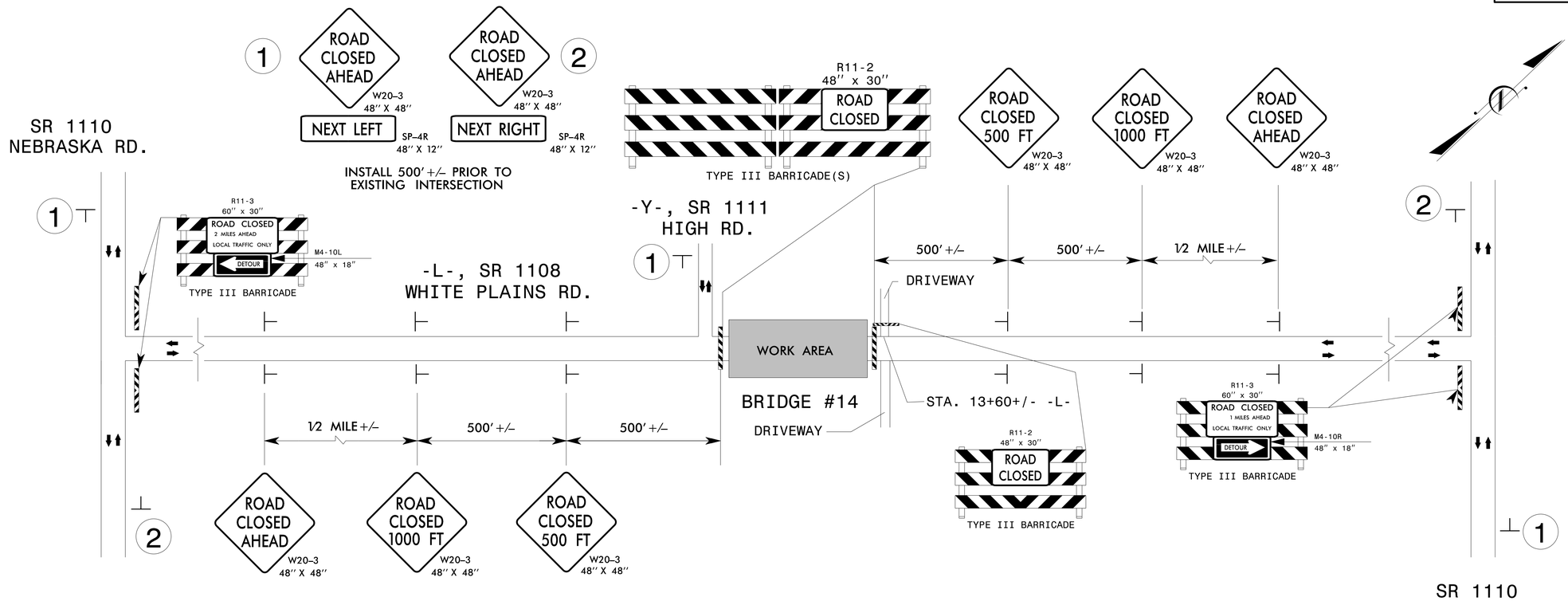
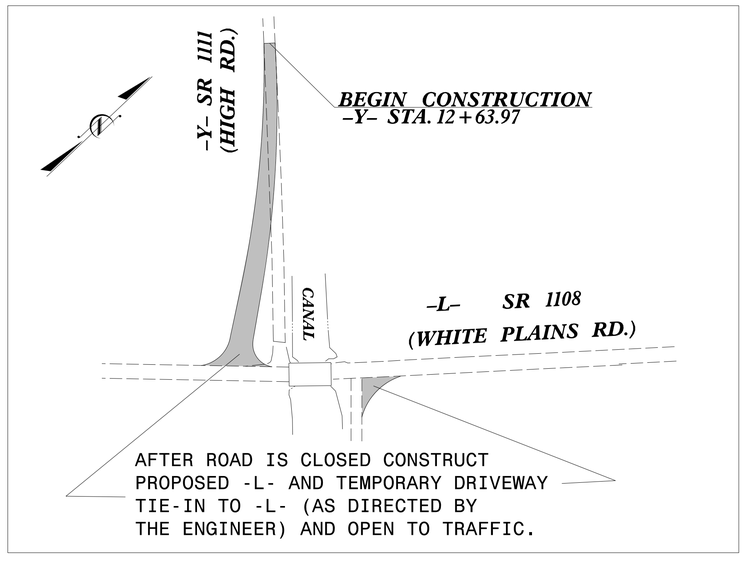
PROJ. REFERENCE NO.	SHEET NO.
17BP.1.R.82	TMP-2





GENERAL NOTES

1. INSTALLATION OF TEMPORARY ROUTE MARKERS, DESTINATION SIGNS, AND ANY NECESSARY MODIFICATIONS TO EXISTING OR PROPOSED REGULATORY OR WARNING SIGNS WILL BE MADE BY OTHERS (STATE OR CITY FORCES) UNLESS OTHERWISE DESIGNATED IN PLANS. PROVIDE A MINIMUM 21 CALENDAR DAY NOTICE TO STATE FORCES BEFORE A ROADWAY IS CLOSED TO TRAFFIC SUCH THAT THE NECESSARY PROVISIONS CAN BE MADE TO INFORM LOCAL EMERGENCY AND LAW ENFORCEMENT PERSONNEL, SCHOOLS OR ANY OTHER PARTIES AFFECTED BY THE ROAD CLOSURE.
2. INSTALL SIGNS BEFORE THE BARRICADES WHEN CLOSING THE ROADWAY TO TRAFFIC. REMOVE BARRICADES BEFORE SIGNS WHEN OPENING THE ROADWAY TO TRAFFIC. INSTALL/REMOVE SIGNS AND BARRICADES WITHIN THE SAME CALENDAR DAY.
3. POSITION WING BARRICADES ON THE SHOULDERS AND SLOPE THE STRIPES DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING.
4. USE ADDITIONAL TYPE III BARRICADES IN STAGGERED LOCATIONS SUPPLEMENTED WITH SIGN R11-4 "ROAD CLOSED TO THRU TRAFFIC" IN THE EVENT THAT TRAFFIC MUST BE MAINTAINED BEYOND THE DETOUR POINT.
5. SEE RSD 1101.03 SHEET 1 OF 9 FOR TEMPORARY ROAD CLOSURE.

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APPROVED: _____ DATE: _____

8/2/2017

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A MAY

DocuSigned by: Bob A. May

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

ROAD CLOSURE SR 1108 (WHITE PLAINS ROAD)

8/2/2017
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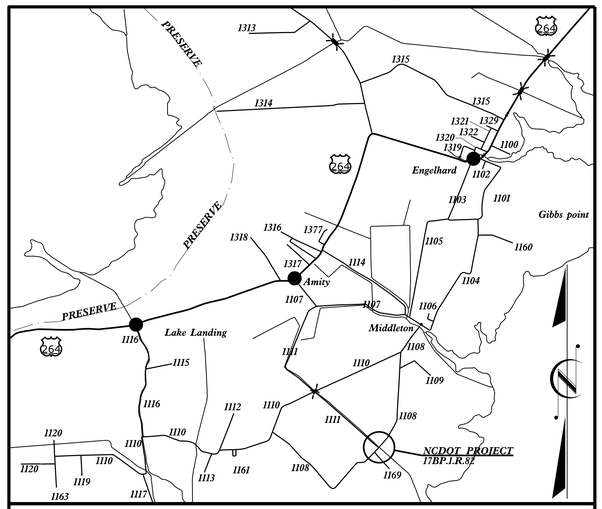
User:skennedy

TIP PROJECT: 17BP.1.R.82

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Convetional Symbols



VICINITY MAP

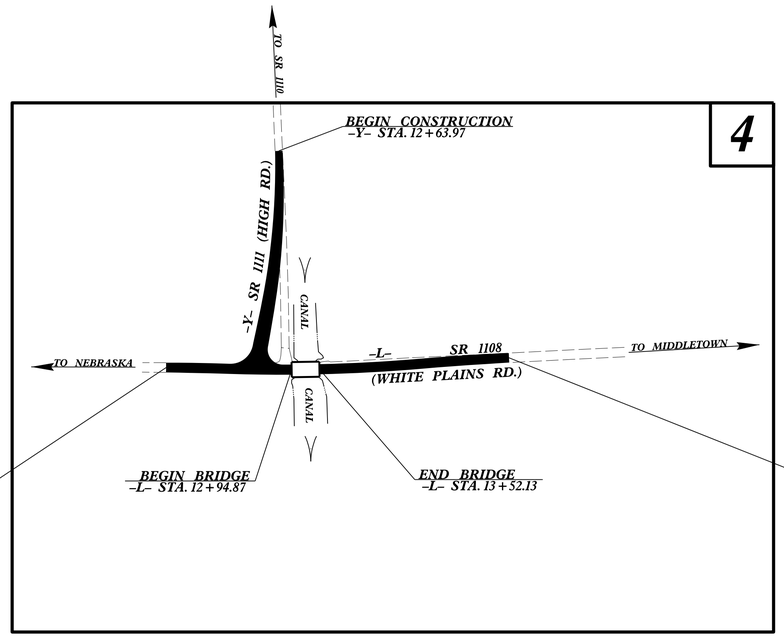
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HYDE COUNTY

LOCATION: BRIDGE NO. 14 OVER RATTLESNAKE CANAL ON SR 1108 (WHITE PLAIN RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.1.R.82	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.1.R.82		

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	EW CFW
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	SK
	Tiered Skimmer Basin	SK
	Infiltration Basin	

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

GRAPHIC SCALE

0
PLANS
0
PROFILE (HORIZONTAL)
0
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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.

Prepared for the North Carolina Department of Transportation in the Office of:
WETHERILL ENGINEERING
1223 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

Designed by:

DUSTIN D. CREECH, PE CFM 3019
NAME *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

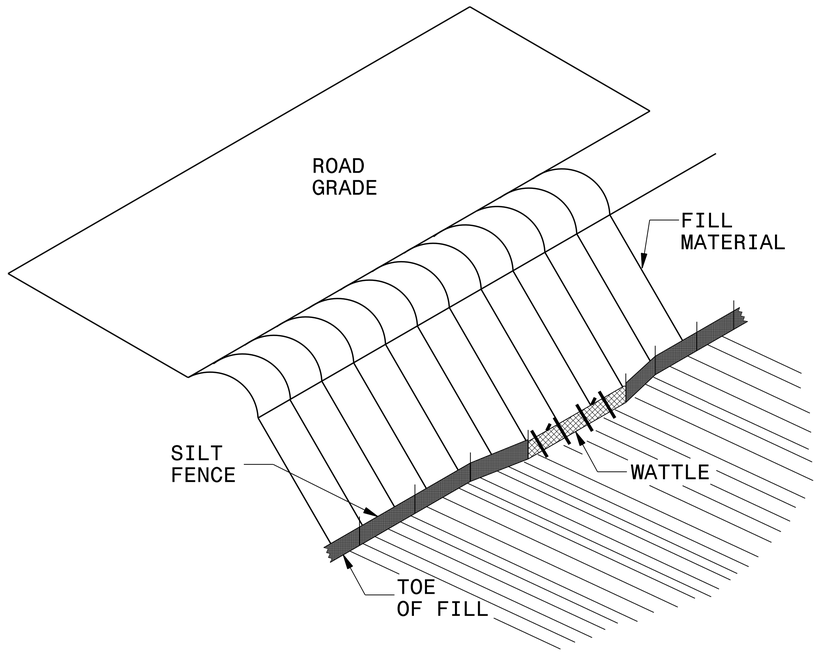
The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

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		

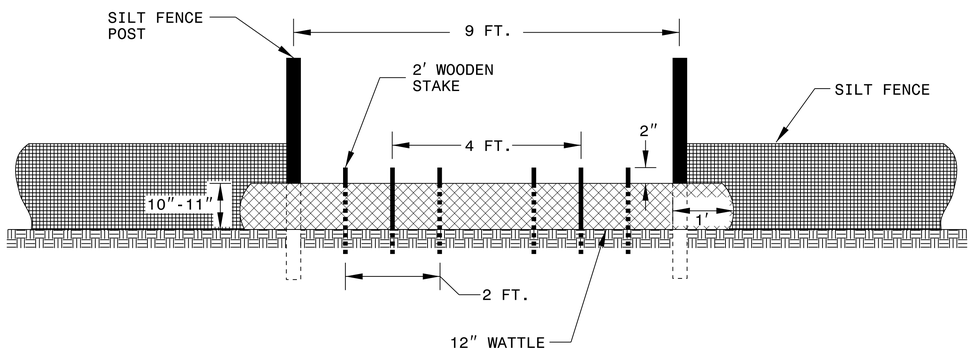
8/1/2017 3:58:48 PM
Hyde-14\Erosion Control\Hyde_14_EC_dsn_tsh.dgn

SILT FENCE COIR FIBER WATTLE BREAK DETAIL

PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.82	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

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

DO NOT PLACE WATTLE 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.

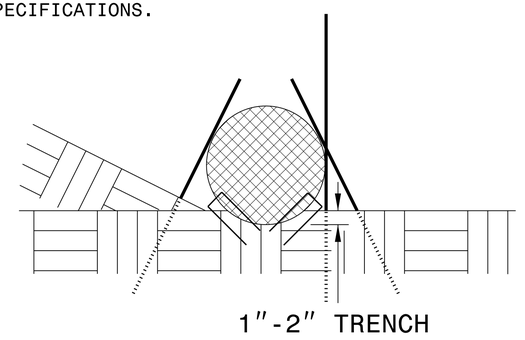
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

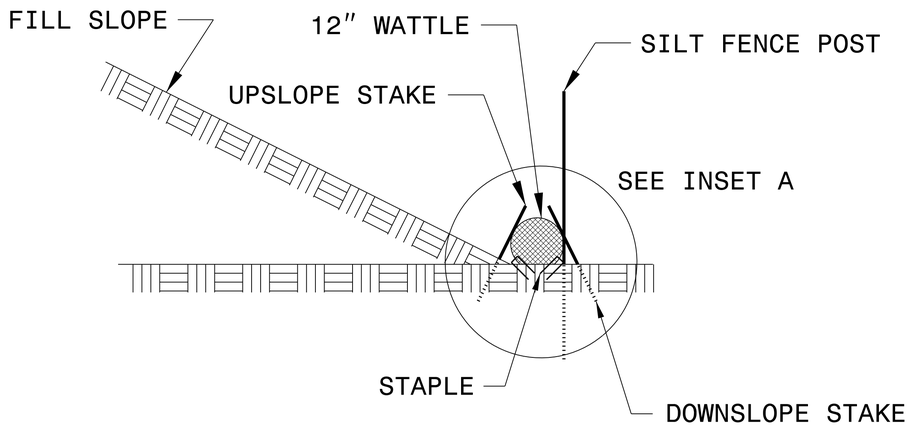
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A

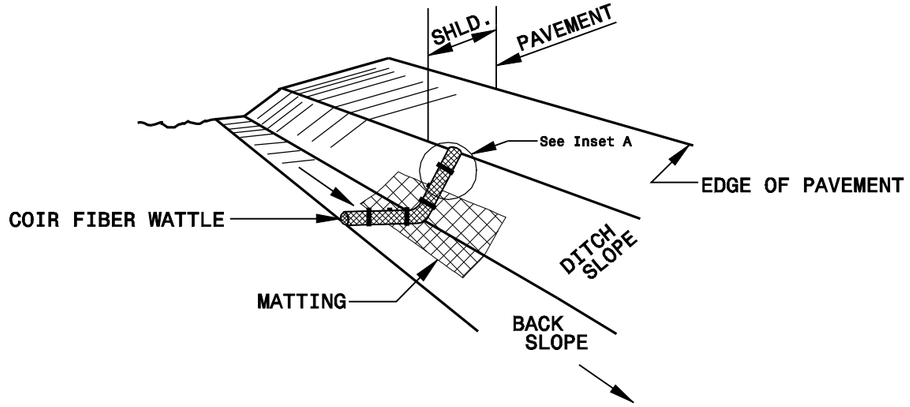




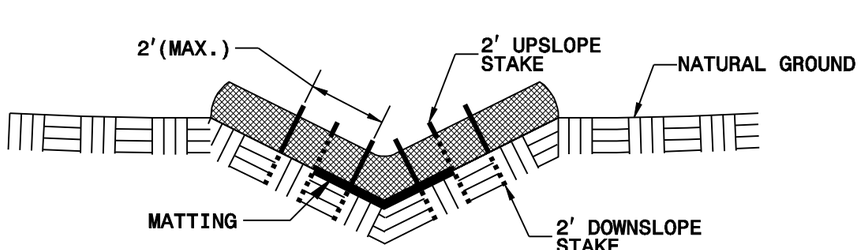
SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.82	EC-2G
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

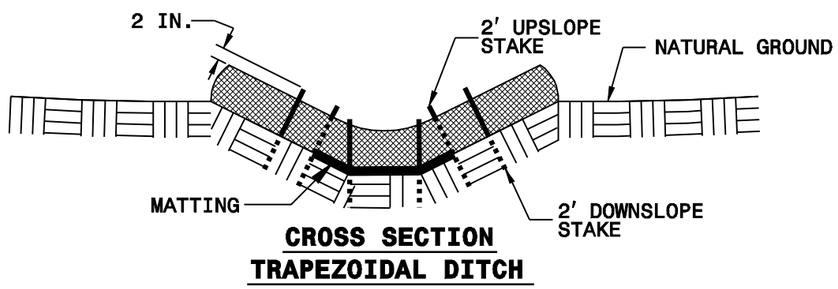
COIR FIBER WATTLE DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

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

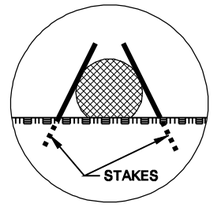
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

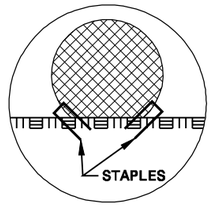
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

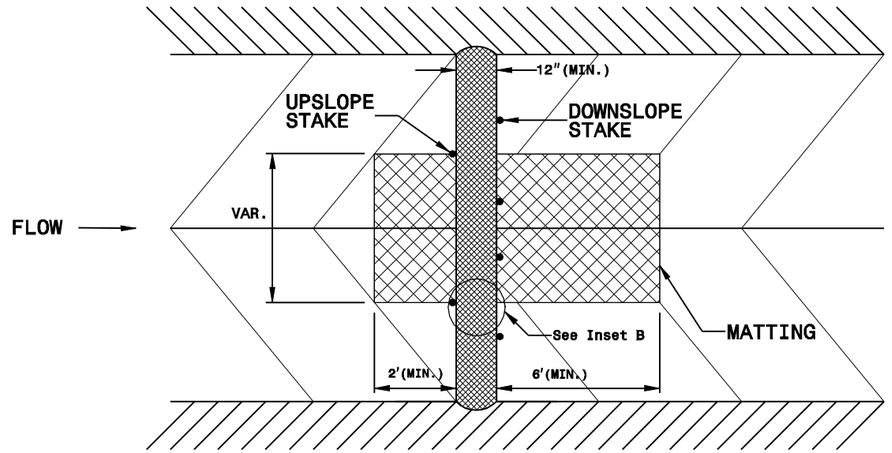
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



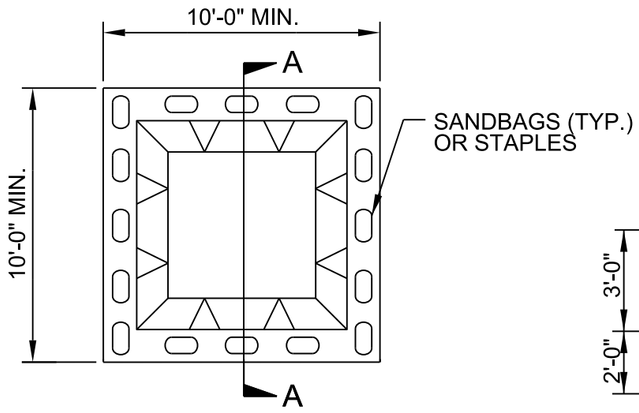
INSET B

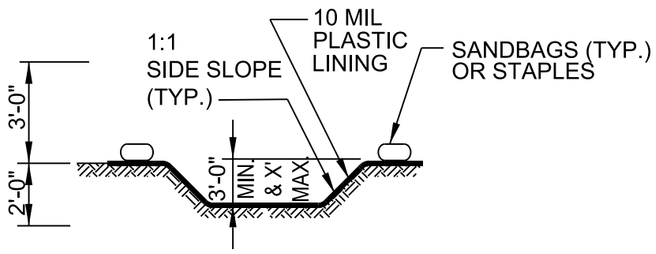


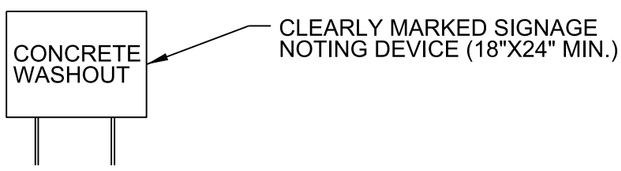
TOP VIEW

WITH LINER, NO GRAVEL APPROACH

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER







PLAN

SECTION A-A

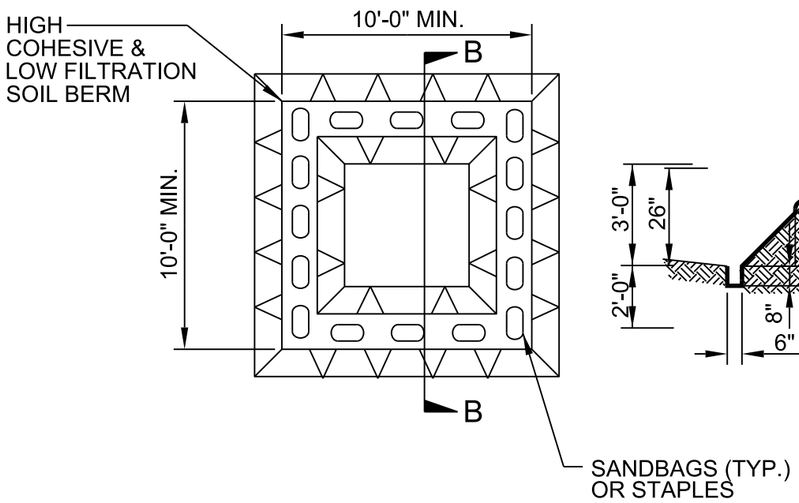
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

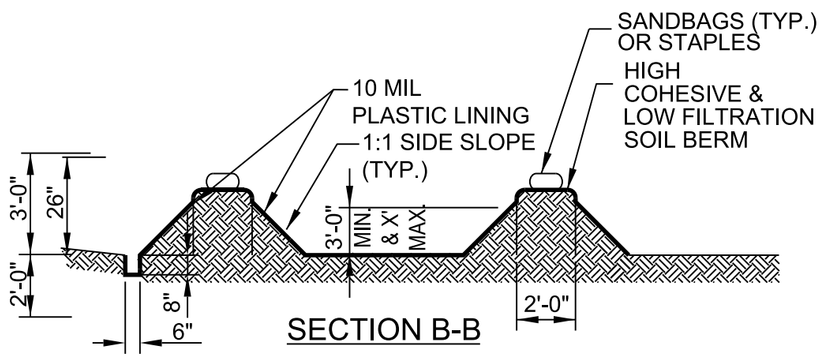
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

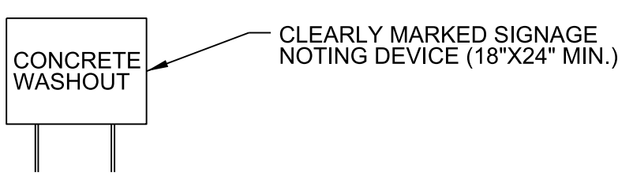
BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE





SECTION B-B



PLAN

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

		PRELIMINARY DESIGN NOT FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.82	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

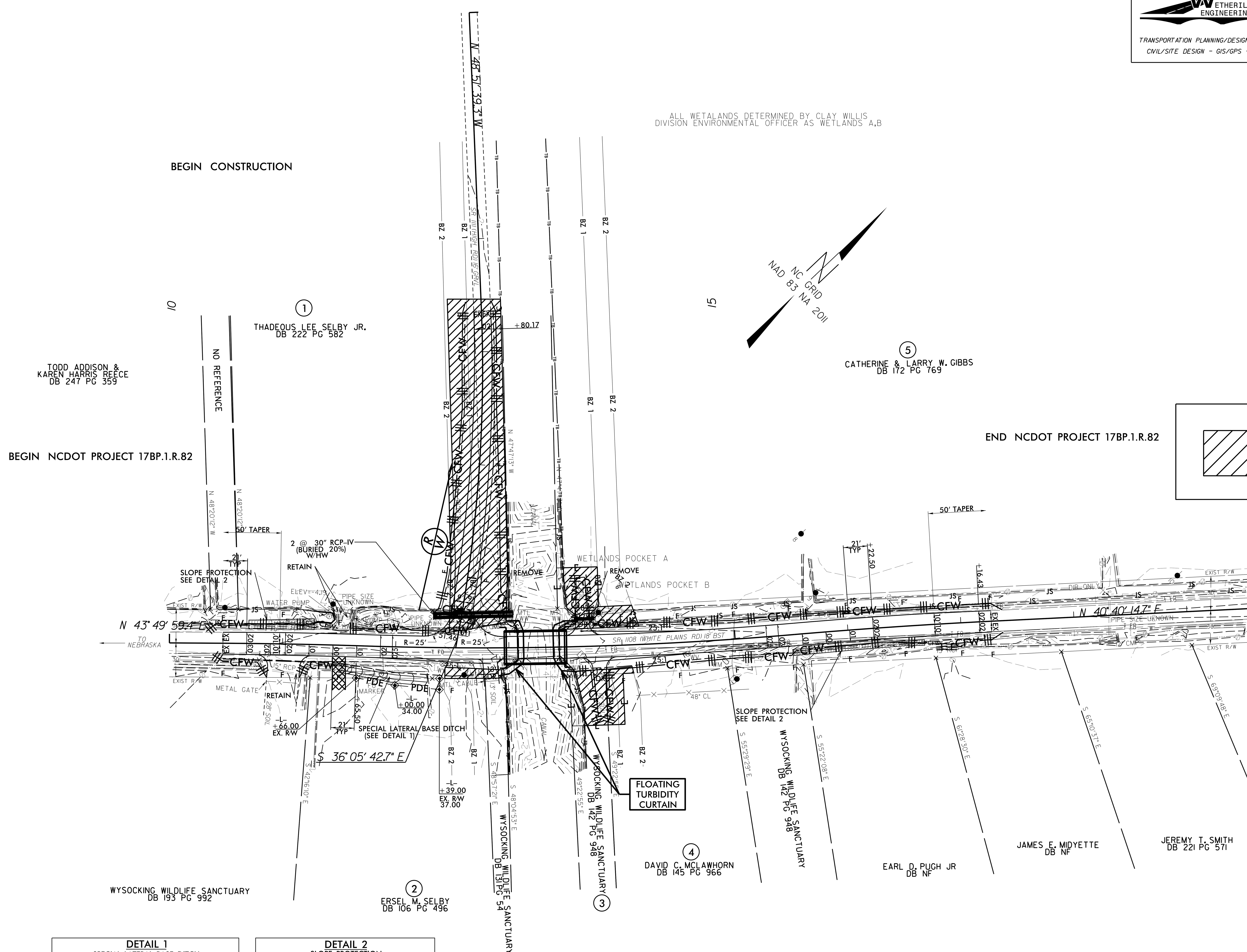
SOIL STABILIZATION TIMEFRAMES

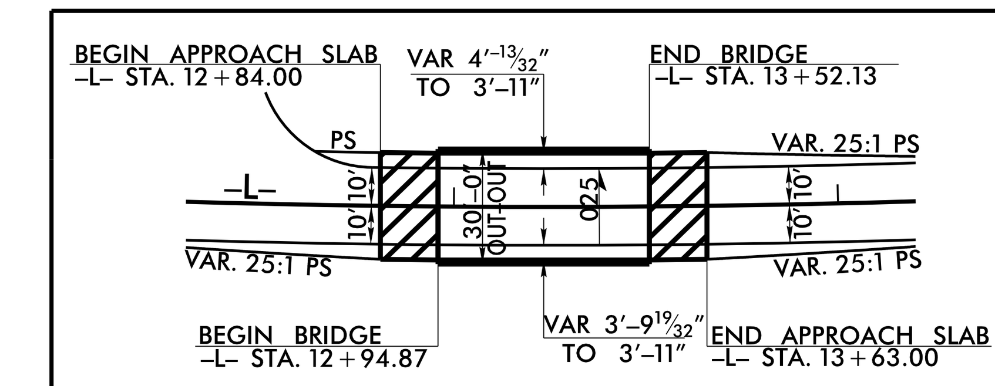
SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS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

PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.82	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WETHERILL ENGINEERING
1223 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Liscense No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED


ALL WETALANDS DETERMINED BY CLAY WILLIS
DIVISION ENVIRONMENTAL OFFICER AS WETLANDS A,B
BEGIN CONSTRUCTION
BEGIN NCDOT PROJECT 17BP.1.R.82
END NCDOT PROJECT 17BP.1.R.82
NC GRID NAD 83 NA 2011
THADEOUS LEE SELBY JR. DB 222 PG 582
TODD ADDISON & KAREN HARRIS REECE DB 247 PG 359
CATHERINE & LARRY W. GIBBS DB 172 PG 769
NO REFERENCE
50' TAPER
2 @ 30" RCP-IV (BURIED 20%) W/HW
RETAIN
SLOPE PROTECTION SEE DETAIL 2
WETLANDS POCKET A
WETLANDS POCKET B
REMOVE
N 43° 49' 59.4" E
N 40° 40' 14.7" E
TO NEBRASKA
TO MIDDLETOWN
SR 1108 (WHITE PLAINS RD) 18' BST
CFW
PDE
METAL GATE
SPECIAL LATERAL BASE DITCH (SEE DETAIL 1)
S 36° 05' 42.7" E
FLOATING TURBIDITY CURTAIN
WYSOCKING WILDLIFE SANCTUARY DB 193 PG 992
ERSEL M. SELBY DB 106 PG 496
WYSOCKING WILDLIFE SANCTUARY DB 131 PG 54
WYSOCKING WILDLIFE SANCTUARY DB 142 PG 948
DAVID C. MCLAWHORN DB 145 PG 966
EARL D. PUGH JR DB NF
JAMES E. MIDYETTE DB NF
JEREMY T. SMITH DB 221 PG 571
BZ 1
BZ 2

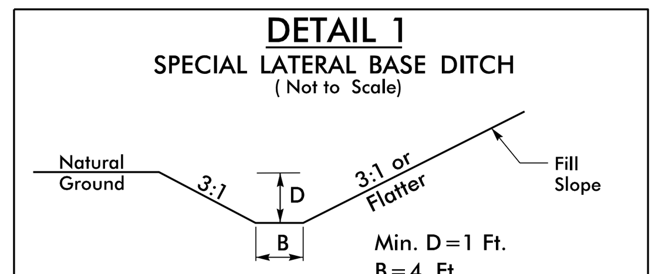


SKETCH SHOWING PAVEMENT/STRUCTURE RELATIONSHIP

SEE SHTS S-1 THRU S-17 FOR STRUCTURE PLANS
SEE SHT 5 FOR PROFILES

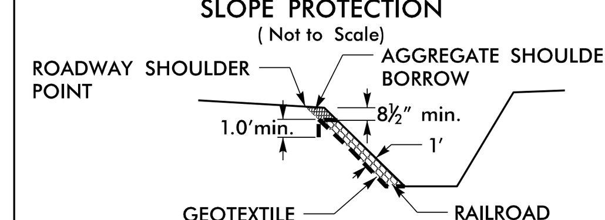
ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

DETAIL 1
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 11+50 TO STA. 12+28 -L- RT.

DETAIL 2
SLOPE PROTECTION
(Not to Scale)



Type of Liner= 34 TONS,RAILROAD BALLAST
12 TONS,AGGR. SH. BORROW; Geotextile= 171sy
-L- STA. 10+70 TO STA. 11+28(LT)
-L- STA. 15+50 TO STA. 16+67(RT)

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

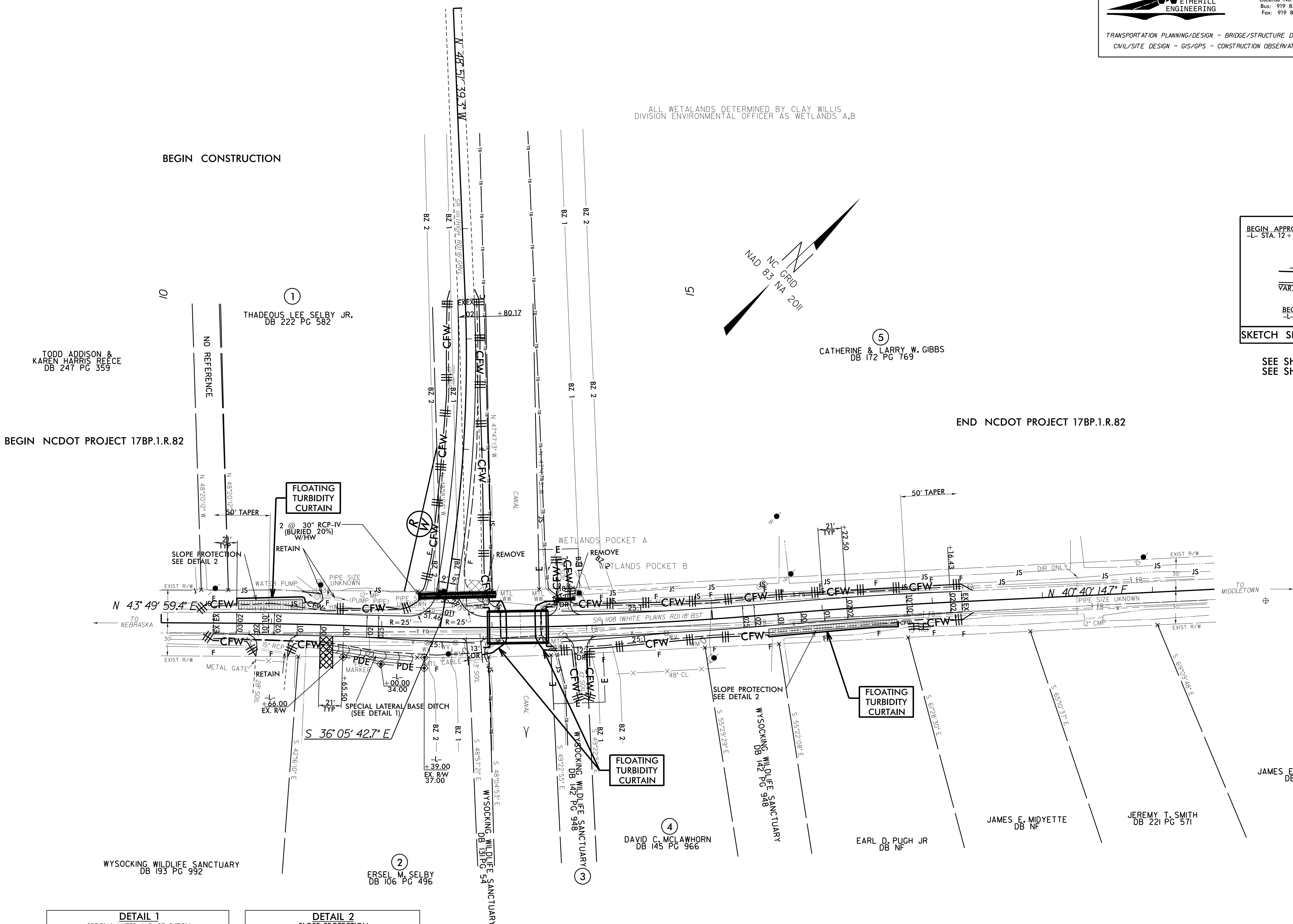
NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

WETHERILL ENGINEERING
1223 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

PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.82	EC-05/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



ALL WETLANDS DETERMINED BY CLAY WILLIS
DIVISION ENVIRONMENTAL OFFICER AS WETLANDS A,B
BEGIN CONSTRUCTION
BEGIN NCDOT PROJECT 17BP.1.R.82
END NCDOT PROJECT 17BP.1.R.82
NC GRID NAD 83 NA 2011
THADEOUS LEE SELBY JR. DB 222 PG 582
TODD ADDISON & KAREN HARRIS REECE DB 247 PG 359
CATHERINE & LARRY W. GIBBS DB 172 PG 769
NO REFERENCE
FLOATING TURBIDITY CURTAIN
2 @ 30" RCP-IV (BURIED 20%) W/HW
50' TAPER
SLOPE PROTECTION SEE DETAIL 2
RETAIN
REMOVE
WETLANDS POCKET A
WETLANDS POCKET B
N 43° 49' 59.4" E
N 40° 40' 14.7" E
TO NEBRASKA
TO MIDDLETOWN
SR 1108 (WHITE PLAINS RD) 18' BST
SPECIAL LATERAL BASE DITCH (SEE DETAIL 1)
S 36° 05' 42.7" E
CANAL
WYSOCKING WILDLIFE SANCTUARY DB 193 PG 992
ERSEL M. SELBY DB 106 PG 496
WYSOCKING WILDLIFE SANCTUARY DB 13 PG 54
WYSOCKING WILDLIFE SANCTUARY DB 142 PG 948
DAVID C. MCLAWHORN DB 145 PG 966
EARL D. PUGH JR DB NF
JAMES E. MIDYETTE DB NF
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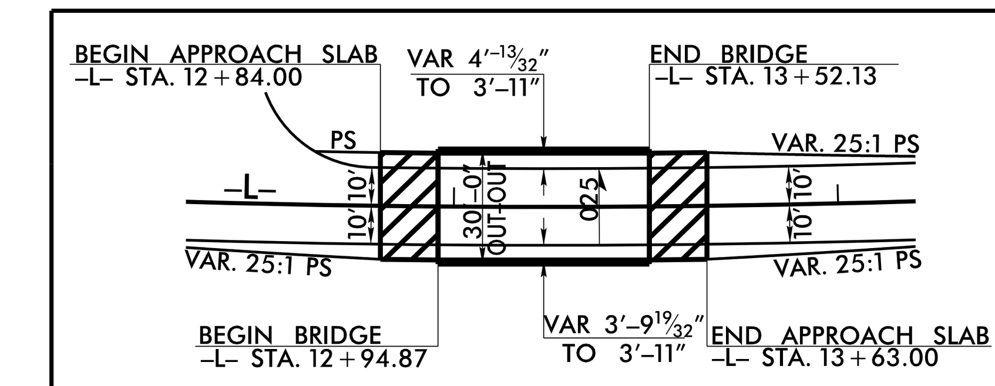
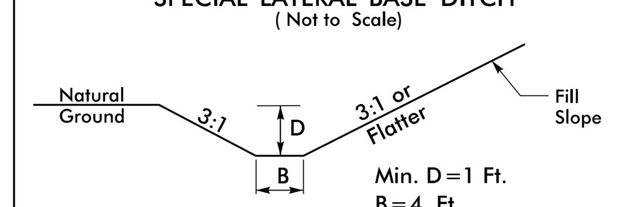


SKETCH SHOWING PAVEMENT/STRUCTURE RELATIONSHIP

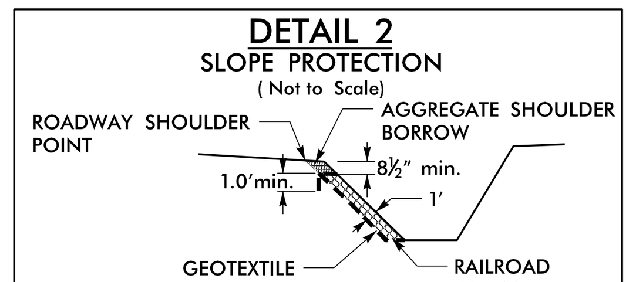
SEE SHTS S-1 THRU S-17 FOR STRUCTURE PLANS
SEE SHT 5 FOR PROFILES

DETAIL 1
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 11+50 TO STA. 12+28 -L- RT.

DETAIL 2
SLOPE PROTECTION
(Not to Scale)



Type of Liner= 34 TONS,RAILROAD BALLAST
12 TONS,AGGR. SH. BORROW; Geotextile= 171sy
-L- STA. 10+70 TO STA. 11+28(LT)
-L- STA. 15+50 TO STA. 16+67(RT)

8/1/2017 4:21:03 PM

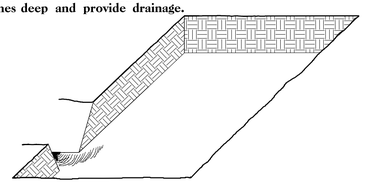
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.1.R.82	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

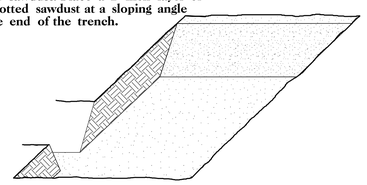
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

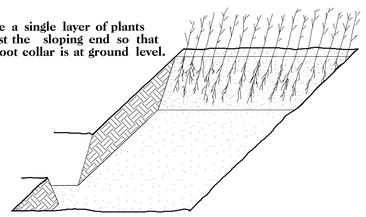
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



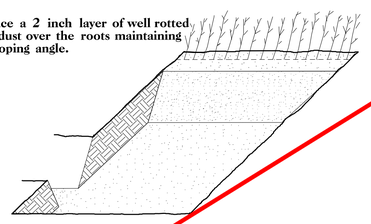
3. Backfill the trench with 2 inches well rotted sawdust. Placee a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

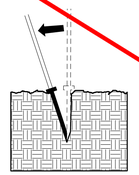


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

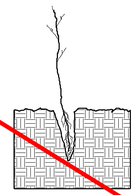


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

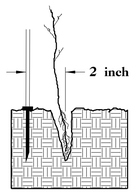
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



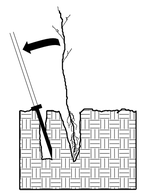
1. Insert planting bar as shown and pull handle toward planter.



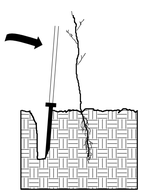
2. Remove planting bar and place seedling at correct depth.



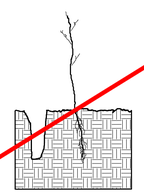
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
25% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in – 18 in BR
25% FRAXINUS PENNSYLVANICA	GREEN ASH	12 in – 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR

REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

RAL-WS065 8/7/2017 R:\Roadway\CorridorModeling\Earthwork XSC Volume Summary.xls
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PROJ. REFERENCE NO.	SHEET NO.
17BP.1.R.82	X-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

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 lump sum price for "Grading".

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+47.29	0	0
10+50.00	0	0
11+00.00	3	4
11+50.00	2	5
12+00.00	1	23
12+50.00	0	47

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
14+00.00	0	0
14+50.00	0	19
15+00.00	1	8
15+50.00	1	6
16+00.00	0	14
16+50.00	1	14
17+00.00	2	6
17+26.93	1	1

Station Y	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
12+63.97	0	0
13+00.00	15	8
13+50.00	15	16
14+00.00	8	24
14+50.00	5	34
15+00.00	2	32
15+50.00	0	33
15+53.06	0	3

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PROJ. REFERENCE NO.	SHEET NO.
17BP.1.R.82	X-2

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	17BP.1.R.82	X–3

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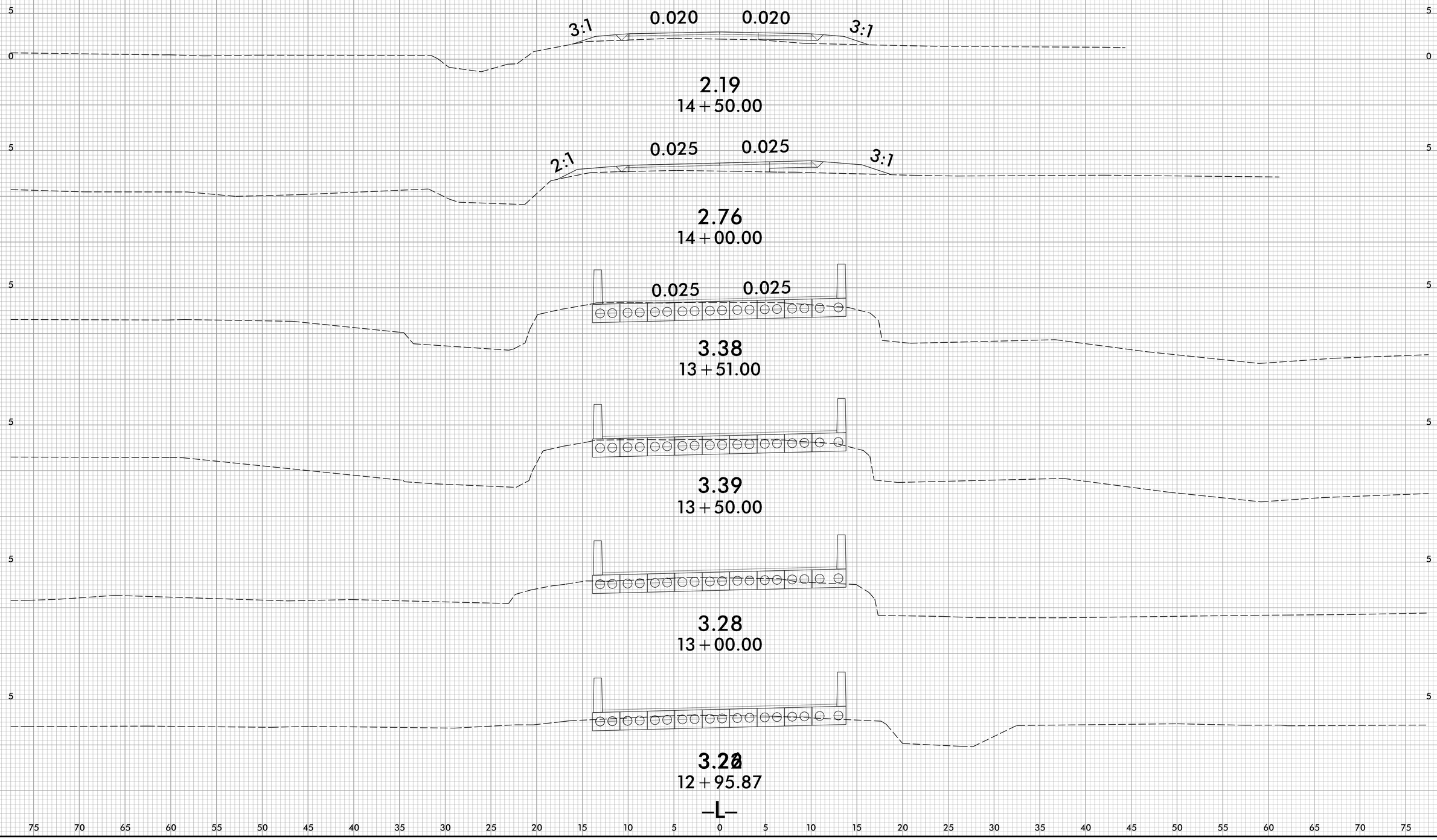

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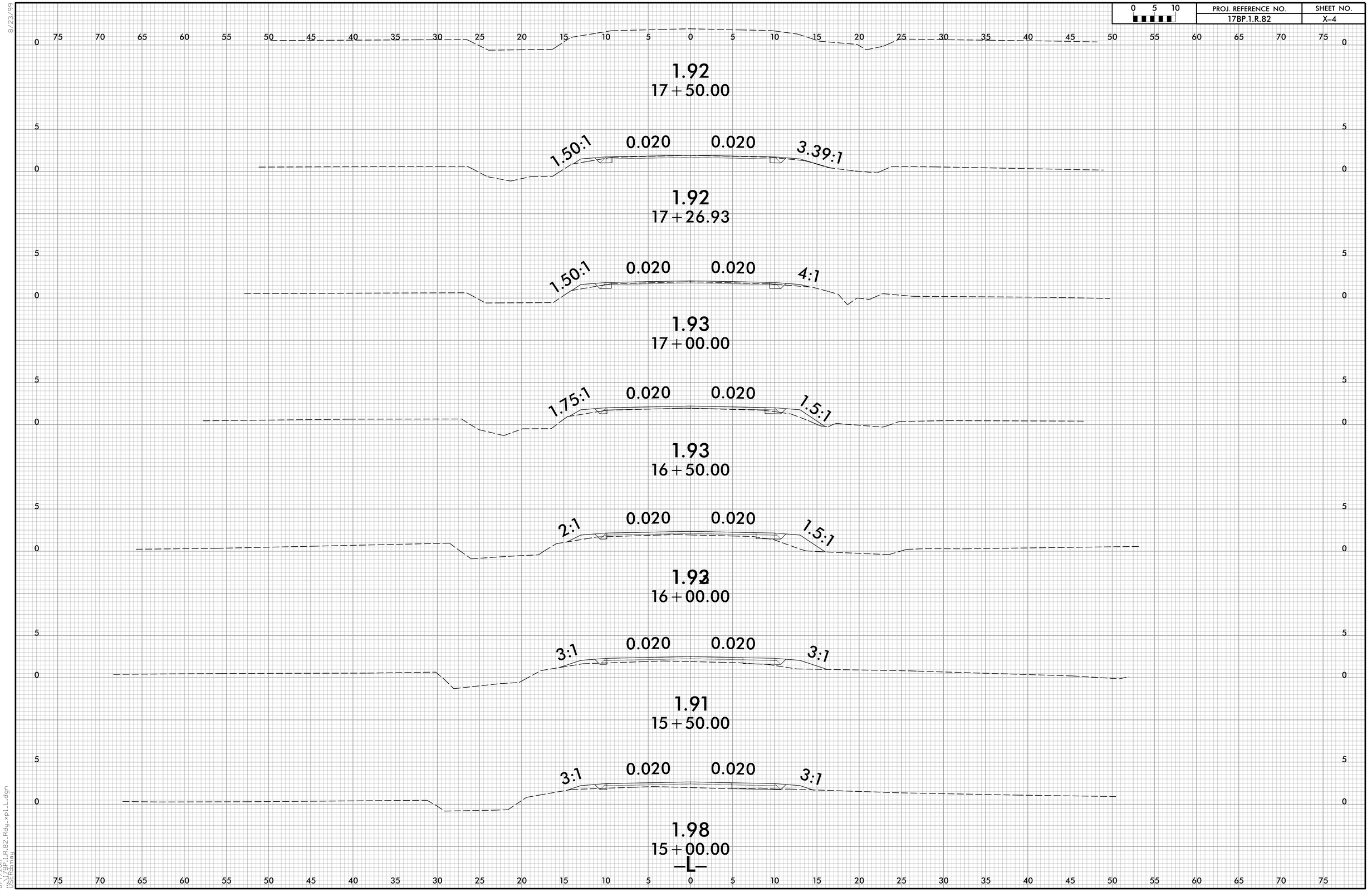

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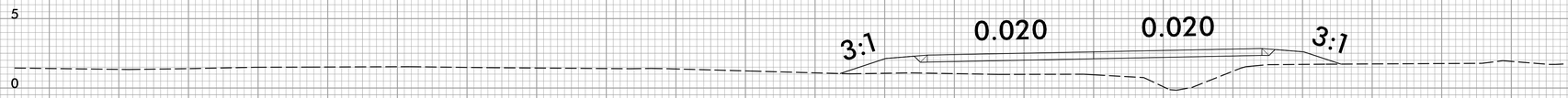
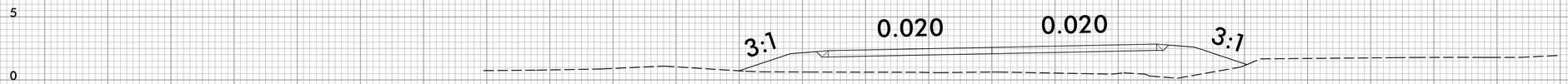
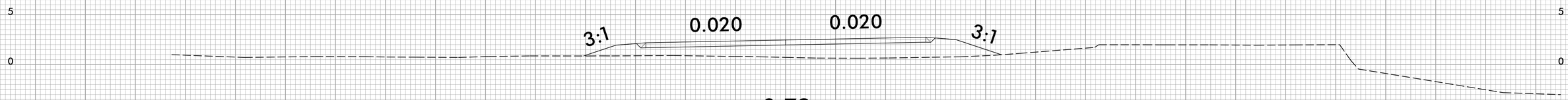


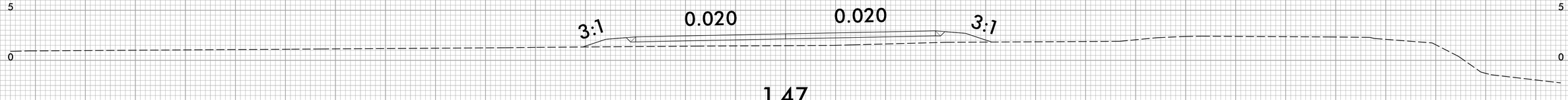
0.95
12+00.00



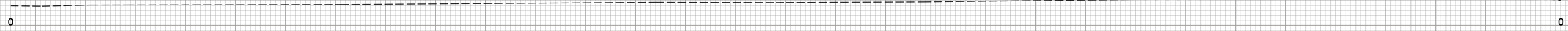
0.62
11+50.00



0.72
11+00.00



1.47
10+50.00



2.29
10+00.00
–Y–

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.1.R.82	X–6

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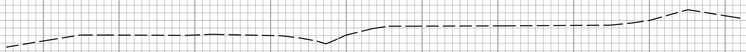
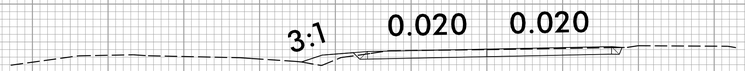
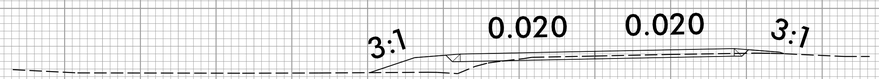


2.14
14+50.00

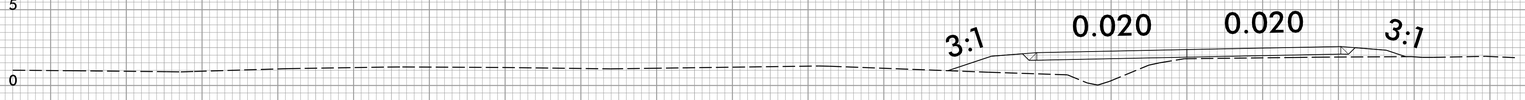
2.12
14+36.32



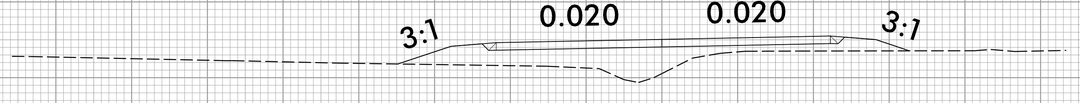
2.00
14+00.00



1.86
13+50.00



1.77
13+00.00



0.27
12+50.00

–Y–

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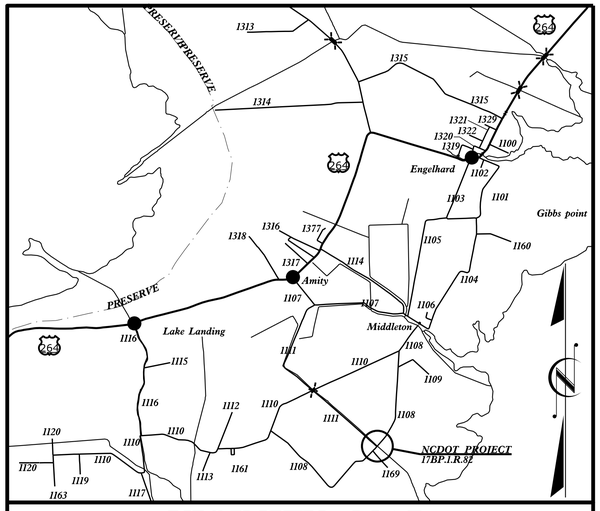
TIP PROJECT: 17BP.1.R.82

CONTRACT: DA00389



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HYDE COUNTY

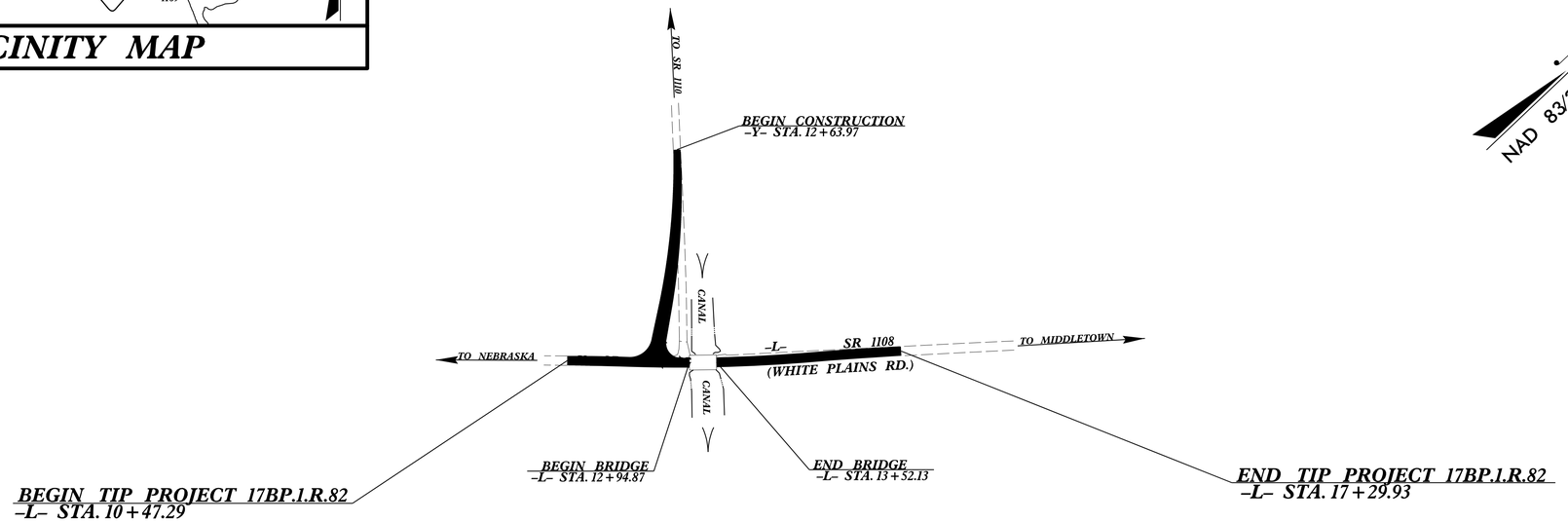
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.1.R.82	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.1.R.82		PE
17BP.1.R.82		ROW & UTIL
17BP.1.R.82		CONST.

LOCATION: BRIDGE NO. 14 OVER RATTLESNAKE CANAL ON SR 1108 (WHITE PLAIN RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STRUCTURE PLANS



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DESIGN DATA

ADT 2016 = 130
ADT 2036 = 140
K = 10 %
D = 60 %
T = 6 % *
V = 40 MPH
* TTST = 2% DUAL 4%
FUNC CLASS = LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT 17BP.1.R.82 = 0.118 MILES
LENGTH STRUCTURE TIP PROJECT 17BP.1.R.82 = 0.011 MILES
TOTAL LENGTH TIP PROJECT 17BP.1.R.82 = 0.129 MILES

Prepared for the North Carolina Department of Transportation in the Office of:
WETHERILL ENGINEERING
1223 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
license No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

2012 STANDARD SPECIFICATIONS

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

LETTING DATE:

G. M. GILLAND, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT:

JOHN S. ABEL, JR.
DIVISION 1 BRIDGE PROGRAM MANAGER

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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GRADE DATA
1.6003% -0.3000%
PI = 12+79.98 -L-
EL. = 4.27
VC = 84'
13+00
SPAN "A"
13+50
GRADE DATA
-0.3000% -1.5770%
PI = 13+80.00 -L-
EL. = 3.97
VC = 60'
10
0
-10
FILL FACE @ END BENT 1
STA. 12+94.87 -L-
GRADE POINT EL. = 4.14
UNCLASSIFIED STRUCTURE EXCAVATION (TYP.)
FIXED
EL. 3±
EL. -3±
N.W.S. EL. -0.30 (12/12/16)
100 YR. W.S. EL. 1.10
25 YR. W.S. EL. 0.70
1'-6" TO EXCAVATION (TYP.)
EL. 3±
EXISTING SUBSTRUCTURE (TYP.)
EL. -3±
FIXED
FILL FACE @ END BENT 2
STA. 13+52.13 -L-
GRADE POINT EL. = 4.05
APPROXIMATE NATURAL GROUND LINE
EL. 3±
EL. 3±
12" PRESTRESSED CONCRETE PILES (TYP.)
LOW CHORD EL. = 1.79 @ ℄ BRG. LEFT END END BENT 1
EL. -4±
LOW CHORD EL. = 1.70 @ ℄ BRG. LEFT END END BENT 2
GALVANIZED STEEL SHEET PILING (TYP.)
END BENT 1
END BENT 2

SECTION ALONG -L-

NAD 83
HORIZONTAL CURVE DATA
PI = 13+62.72 -L-
Δ = 6°-45'-41.8" (LT)
D = 1°-46'-45.7"
L = 380.00'
T = 190.22'
R = 3,220.00'
UNNAMED CANAL
EXISTING SUBSTRUCTURE (TYP.)
℄ BRIDGE
STA. 13+23.50 -L-
W.P. #1
STA. 12+94.87 -L-
W.P. #2
STA. 13+52.13 -L-
TO SR 1111
LONG CHORD
-L-
TO SR 1110
BEGIN APPROACH SLAB
STA. 12+84.00 -L-
90°-00'-00" TO LONG CHORD (TYP.)
END APPROACH SLAB
STA. 13+63.00 -L-
FILL FACE @ END BENT 1
FILL FACE @ END BENT 2
28'-7½"
28'-7½"
TOTAL BRIDGE LENGTH = 57'-3"
(FILL FACE @ END BENT 1 TO FILL FACE @ END BENT 2) (ALONG LONG CHORD)

PLAN

(12" PRESTRESSED CONCRETE PILES NOT SHOWN FOR CLARITY)

PROJECT NO. 17BP.1.R.82

HYDE COUNTY

STATION: 13+23.50 -L-

SHEET 1 OF 2

REPLACES BRIDGE #14

ENGINEER OF RECORD:

Gregory M. Gilland

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND 8/11/2017

WETHERILL ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
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LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON SR 1108 (WHITE PLAINS RD.) OVER UNNAMED CANAL BETWEEN SR 1111 & SR 1110

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

SHEET NO. S-1

TOTAL SHEETS 17

DRAWN BY : G.M. GILLAND DATE : 6-26-17
CHECKED BY : B.C. HUNT DATE : 7-2017

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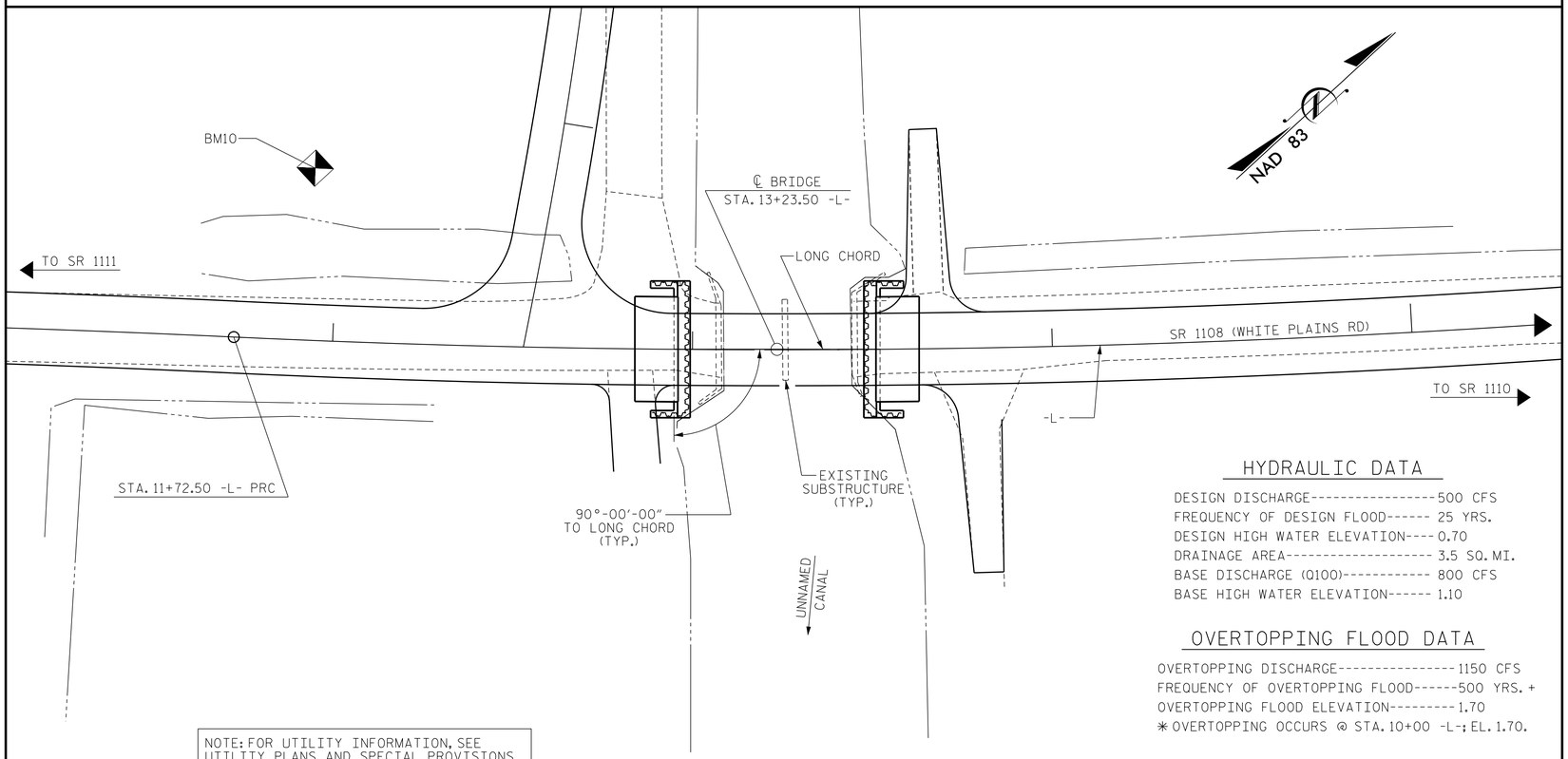
BM10: RR SPIKE SET IN BASE OF 18" PINE; STA. 11+93.23 -L-; 57' LT.; EL. 2.90 N 634161, E 2886466



NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE---------- 500 CFS
FREQUENCY OF DESIGN FLOOD------ 25 YRS.
DESIGN HIGH WATER ELEVATION---- 0.70
DRAINAGE AREA---------- 3.5 SQ. MI.
BASE DISCHARGE (Q100)---------- 800 CFS
BASE HIGH WATER ELEVATION------ 1.10

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE---------- 1150 CFS
FREQUENCY OF OVERTOPPING FLOOD------ 500 YRS. +
OVERTOPPING FLOOD ELEVATION--------- 1.70
* OVERTOPPING OCCURS @ STA. 10+00 -L-; EL. 1.70.

NOTES :

ASSUMED LIVE LOAD = HL93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION REQUIRED FOR A CORROSIVE SITE.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE EXISTING STRUCTURE CONSISTING OF 2 SPANS @ 17'-6" WITH AN ASHPHALT WEARING SURFACE ON TIMBER DECK WITH TIMBER JOIST AND A CLEAR ROADWAY WIDTH OF 24'-0" ON A SUBSTRUCTURE CONSISTING OF TIMBER CAPS ON JACKETED 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 30 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".

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.

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE END BENT CAPS AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR.

ALL BAR SUPPORTS USED IN THE PARAPET, END BENT CAPS AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONCRETE IN THE END BENT CAPS AND PILES SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

LOCATION SKETCH

FOUNDATION NOTES :

FOR PILES, SEE SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.

DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 145 TONS PER PILE.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

FOR GALVANIZED STEEL SHEET PILES, SEE SPECIAL PROVISIONS.

PZ-27 SHEETING IS TO BE DRIVEN IN FRONT OF 12 INCH CONCRETE PILES AT END BENT 1 AND 2.

SHEET PILES AT END BENT 1 AND 2 SHOULD BE DRIVEN TO A TIP ELEVATION OF -24.0 FT.

THE SCOUR CRITICAL ELEVATION FOR END BENT 1 AND END BENT 2 IS ELEVATION -9.0 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	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS AA CONCRETE	BRIDGE APPROACH SLABS	EPOXY REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR 12" PRESTRESSED CONCRETE PILES	12" PRESTRESSED CONCRETE PILES		2 BAR METAL RAIL	2'-8¾" x 1'-3" CONCRETE PARAPET	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS		ASBESTOS ASSESSMENT	GALVANIZED STEEL SHEET PILES
	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EACH	NO.	LIN. FT.	LIN. FT.	LIN. FT.	LUMP SUM	NO.	LIN. FT.	LUMP SUM	SQ. FT.
SUPERSTRUCTURE										95.00	110.00		10	550.00		
END BENT 1				17.4		2,883	5	5	200							1140.0
END BENT 2				17.4		2,883	5	5	200							1135.6
TOTAL	LUMP SUM	1	LUMP SUM	34.8	LUMP SUM	5.766	10	10	400	95.00	110.00	LUMP SUM	10	550.00	LUMP SUM	2275.6

PROJECT NO. 17BP.1.R.82
HYDE COUNTY
STATION: 13+23.50 -L-

SHEET 2 OF 2

ENGINEER OF RECORD:
Designed by Gregory M. Gilland
NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND
8/16/2017

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
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LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON
SR 1108 (WHITE PLAINS RD.)
OVER UNNAMED CANAL
BETWEEN SR 1111 & SR 1110

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			17

DRAWN BY : G.M. GILLAND DATE : 6-26-17
CHECKED BY : B.C. HUNT DATE : 7-2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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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	1.055	--	1.75	0.275	1.23	55′	EL	27	0.523	1.23	55′	EL	5.4	0.80	0.275	**1.05**	55′	EL	**27**	
		HL-93(Opr)	N/A	--	1.591	--	1.35	0.275	1.59	55′	EL	27	0.523	1.59	55′	EL	5.4	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.322	47.585	1.75	0.275	1.54	55′	EL	27	0.523	1.47	55′	EL	5.4	0.80	0.275	**1.32**	55′	EL	**27**	
		HS-20(Opr)	36.000	--	1.9	68.396	1.35	0.275	1.99	55′	EL	27	0.523	1.9	55′	EL	5.4	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.776	37.476	1.4	0.275	4.04	55′	EL	27	0.523	4.17	55′	EL	5.4	0.80	0.275	2.78	55′	EL	27	
		SNGARBS2	20.000	--	2.155	43.095	1.4	0.275	3.14	55′	EL	27	0.523	3.02	55′	EL	5.4	0.80	0.275	2.15	55′	EL	27	
		SNAGRIS2	22.000	--	2.079	45.734	1.4	0.275	3.03	55′	EL	27	0.523	2.83	55′	EL	5.4	0.80	0.275	2.08	55′	EL	27	
		SNCOTTS3	27.250	--	1.384	37.708	1.4	0.275	2.01	55′	EL	27	0.523	2.09	55′	EL	5.4	0.80	0.275	1.38	55′	EL	27	
		SNAGGRS4	34.925	--	1.189	41.527	1.4	0.275	1.73	55′	EL	27	0.523	1.77	55′	EL	5.4	0.80	0.275	1.19	55′	EL	27	
		SNS5A	35.550	--	1.16	41.255	1.4	0.275	1.69	55′	EL	27	0.523	1.82	55′	EL	5.4	0.80	0.275	1.16	55′	EL	27	
		SNS6A	39.950	--	1.079	43.102	1.4	0.275	1.57	55′	EL	27	0.523	1.68	55′	EL	5.4	0.80	0.275	1.08	55′	EL	27	
		SNS7B	42.000	--	1.028	43.175	1.4	0.275	1.5	55′	EL	27	0.523	1.67	55′	EL	5.4	0.80	0.275	1.03	55′	EL	27	
	TTST	TNAGRIT3	33.000	--	1.32	43.556	1.4	0.275	1.92	55′	EL	27	0.523	1.98	55′	EL	5.4	0.80	0.275	1.32	55′	EL	27	
		TNT4A	33.075	--	1.33	43.979	1.4	0.275	1.94	55′	EL	27	0.523	1.91	55′	EL	5.4	0.80	0.275	1.33	55′	EL	27	
		TNT6A	41.600	--	1.101	45.811	1.4	0.275	1.6	55′	EL	27	0.523	1.83	55′	EL	5.4	0.80	0.275	1.10	55′	EL	27	
		TNT7A	42.000	--	1.114	46.804	1.4	0.275	1.62	55′	EL	27	0.523	1.71	55′	EL	5.4	0.80	0.275	1.11	55′	EL	27	
		TNT7B	42.000	--	1.163	48.848	1.4	0.275	1.69	55′	EL	27	0.523	1.62	55′	EL	5.4	0.80	0.275	1.16	55′	EL	27	
		TNAGRIT4	43.000	--	1.101	47.33	1.4	0.275	1.6	55′	EL	27	0.523	1.56	55′	EL	5.4	0.80	0.275	1.10	55′	EL	27	
		TNAGT5A	45.000	--	1.031	46.405	1.4	0.275	1.5	55′	EL	27	0.523	1.58	55′	EL	5.4	0.80	0.275	1.03	55′	EL	27	
		TNAGT5B	45.000	3	1.013	45.582	1.4	0.275	1.47	55′	EL	27	0.523	1.48	55′	EL	5.4	0.80	0.275	**1.01**	55′	EL	**27**	

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.

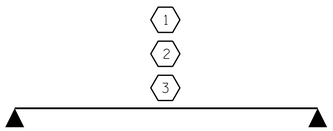
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

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

PROJECT NO. 17BP.1.R.82

HYDE COUNTY

STATION: 13+23.50 -L-

DRAWN BY : D. HODGE DATE : 3/17

CHECKED BY : G.M. GILLAND DATE : 3/17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD:
Docusigned by: Gregory M. Gilland
NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND
8/11/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 55′ CORED SLAB UNIT 90° SKEW (NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			17

STD. NO. 21LRFR1_90S_55L

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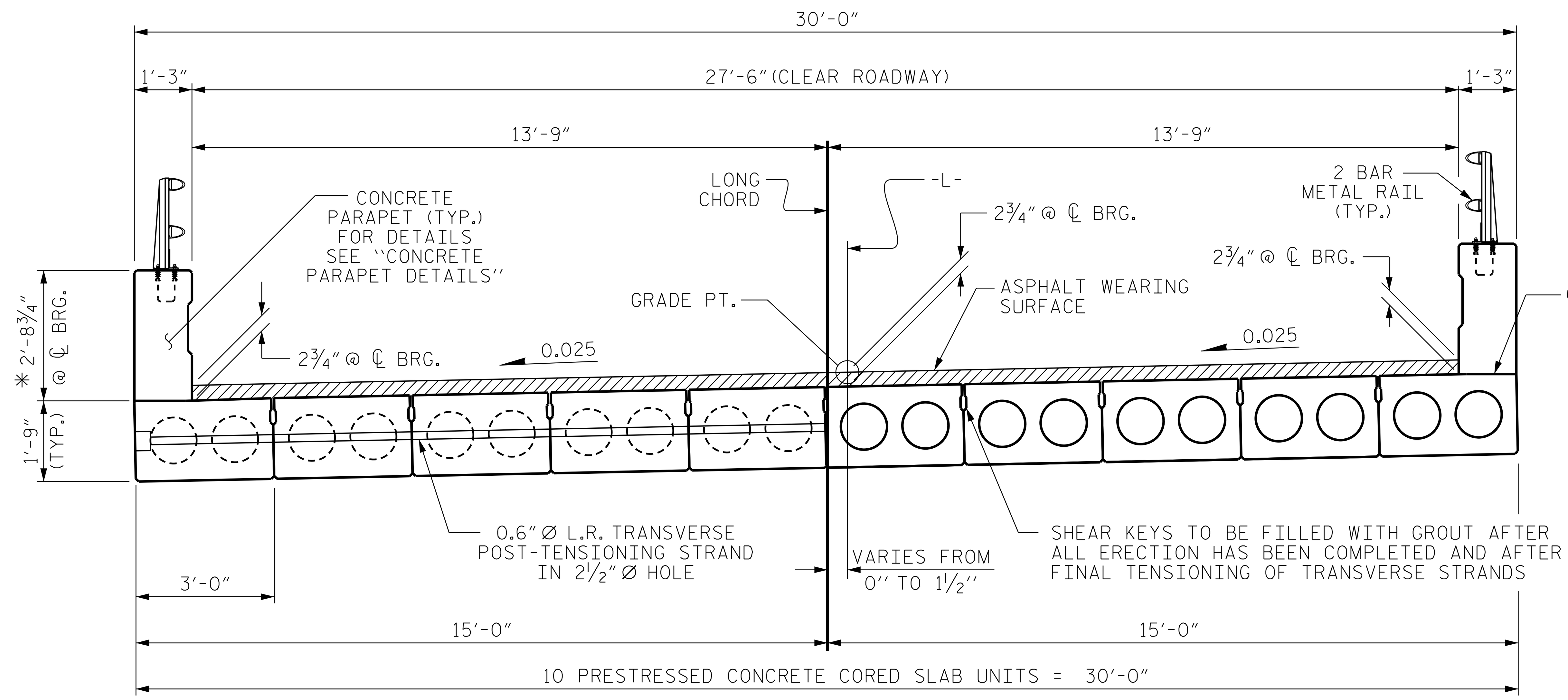
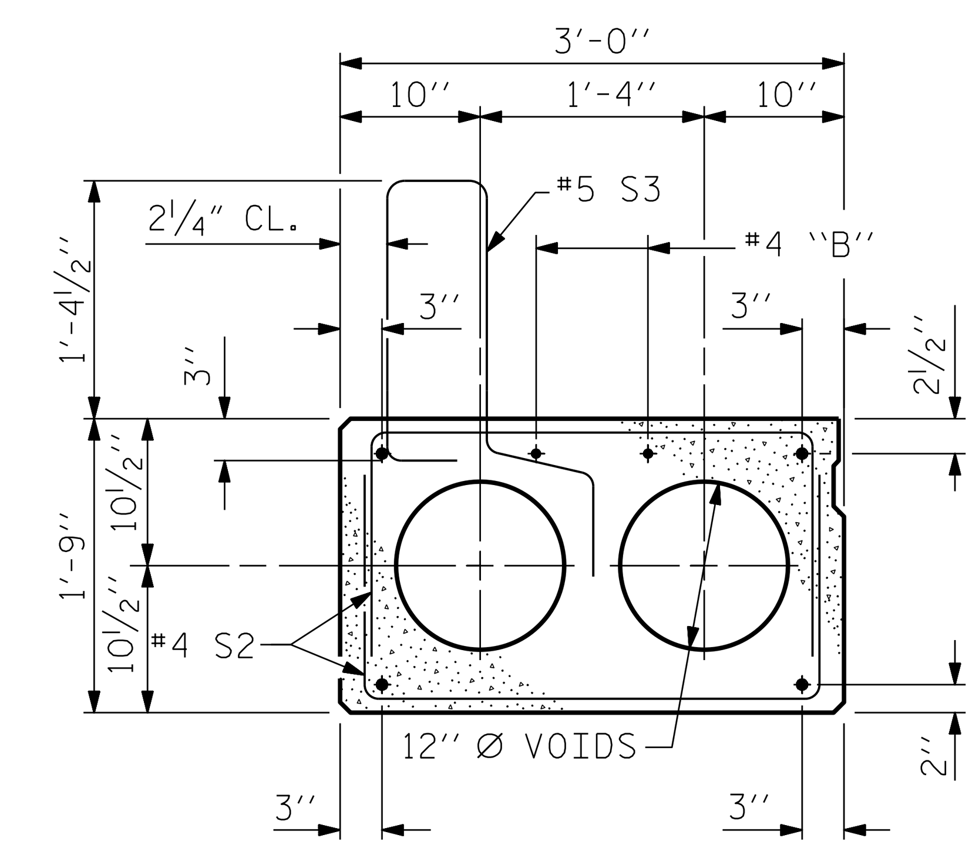


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

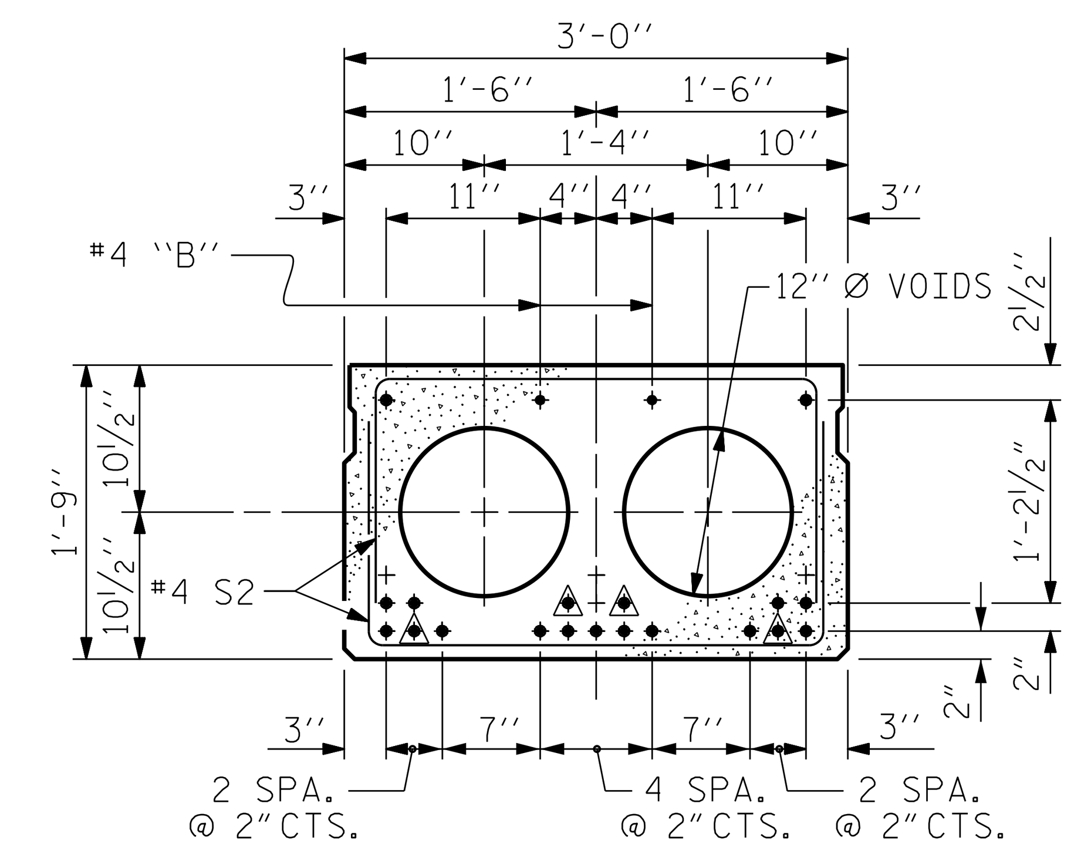
TYPICAL SECTION

✱ - THE MAXIMUM CONCRETE PARAPET HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE CONCRETE PARAPET AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE CONCRETE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR PARAPET HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "CONCRETE PARAPET DETAILS".



EXT. SLAB SECTION

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



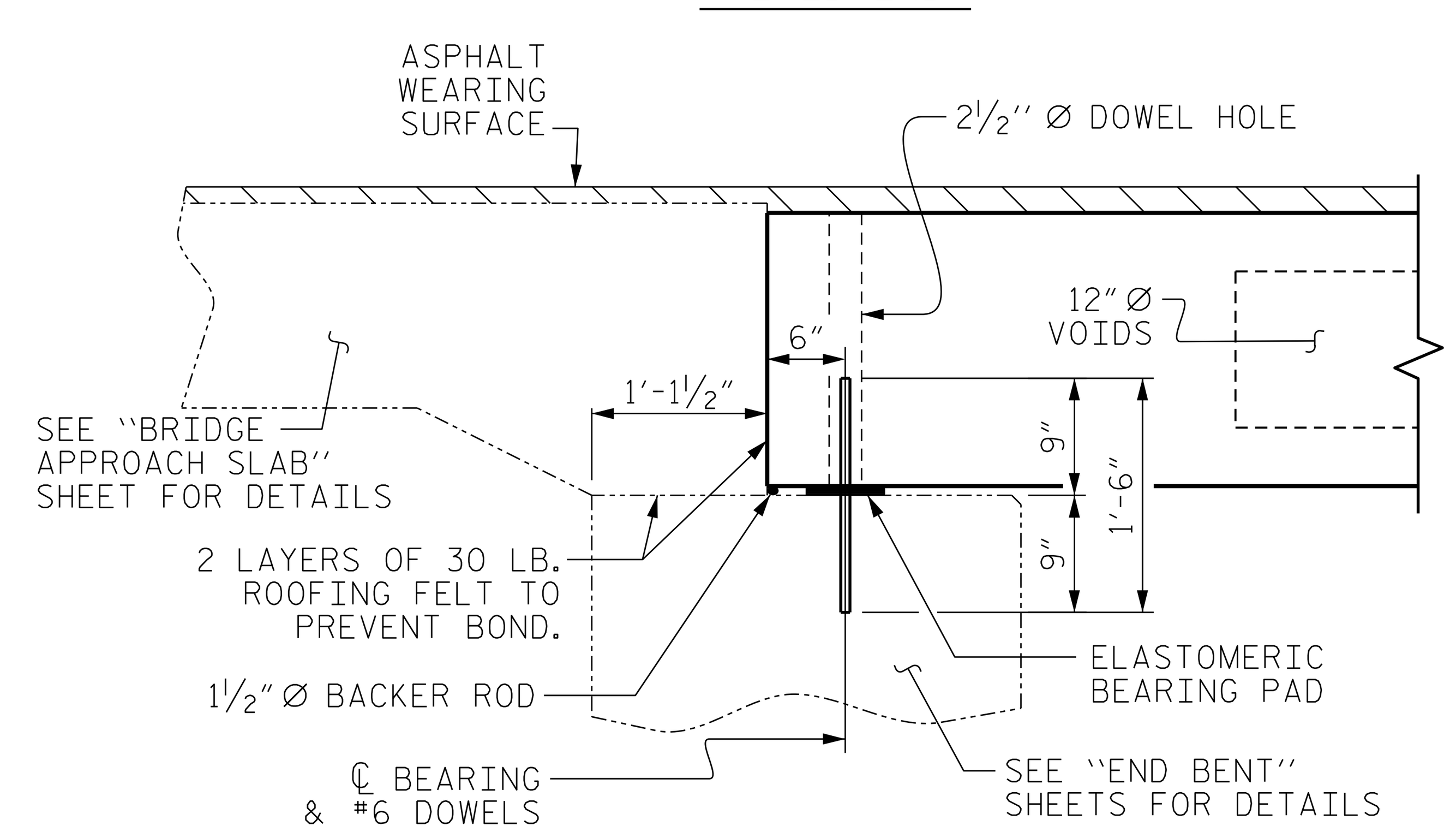
INTERIOR SLAB SECTION
(55' UNIT)
(19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

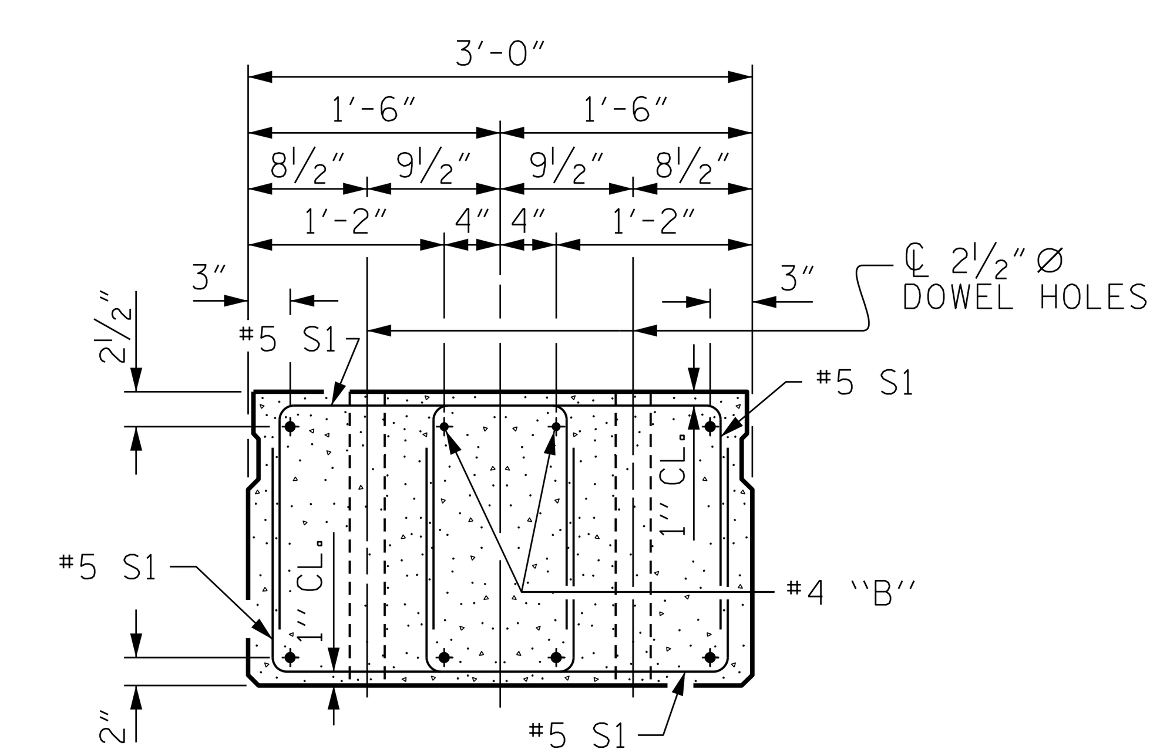
BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

FIXED END

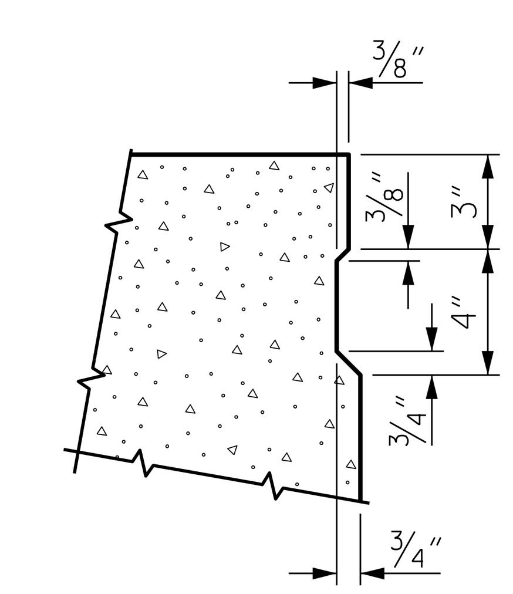


SECTION AT END BENT



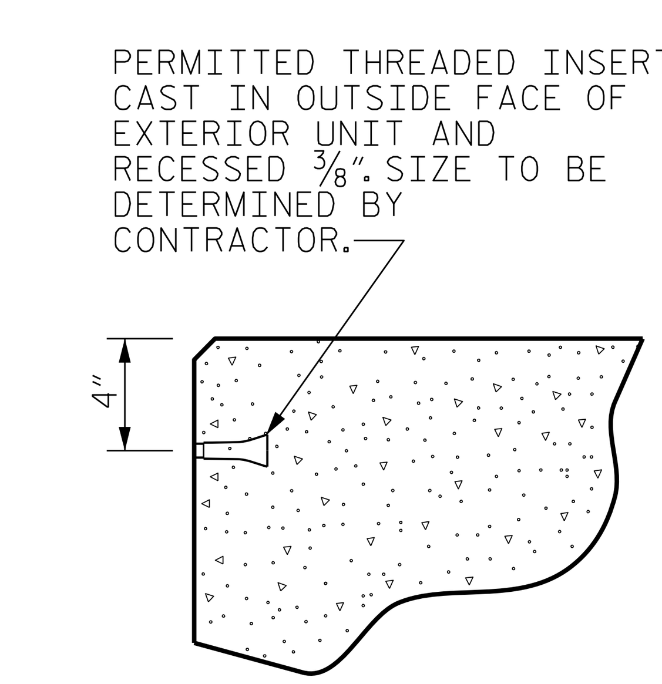
END ELEVATION

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.

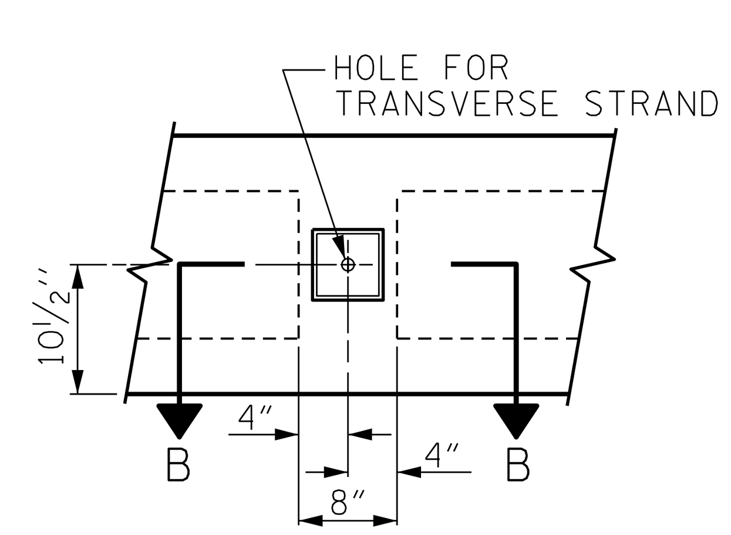


SHEAR KEY DETAIL

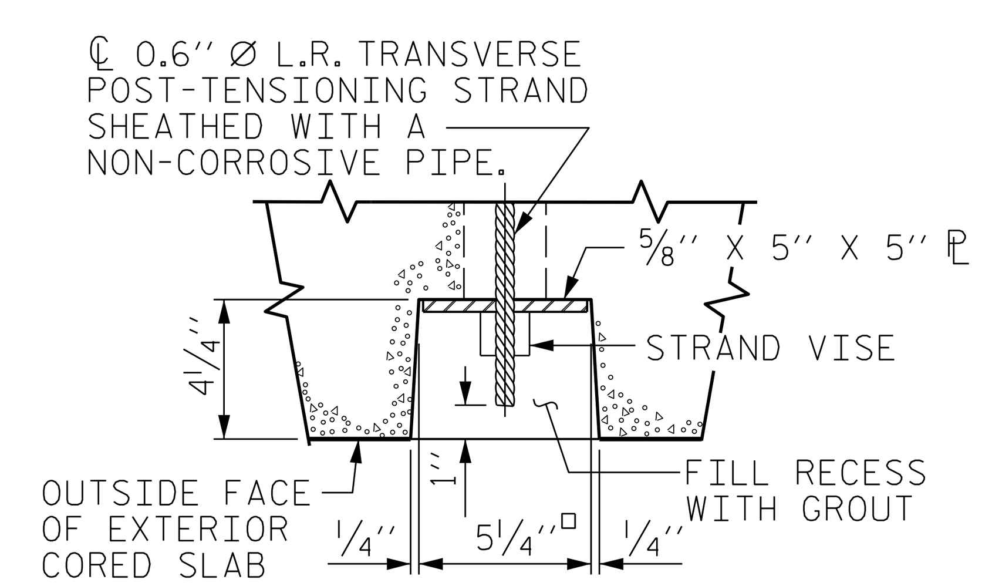
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



THREADED INSERT DETAIL



ELEVATION VIEW



SECTION B-B

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

PROJECT NO. 17BP.1.R.82
HYDE COUNTY
STATION: 13+23.50 -L-

SHEET 1 OF 4

ENGINEER OF RECORD:
DocuSigned by: Gregory M. Gilland

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 37400 GREGORY M. GILLAND 8/11/2017

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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-4
1			3					TOTAL SHEETS 17
2			4					

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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CHECKED BY :	G.M. GILLAND	DATE :	3/17

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STD. NO. 21"PCS2_30_90S

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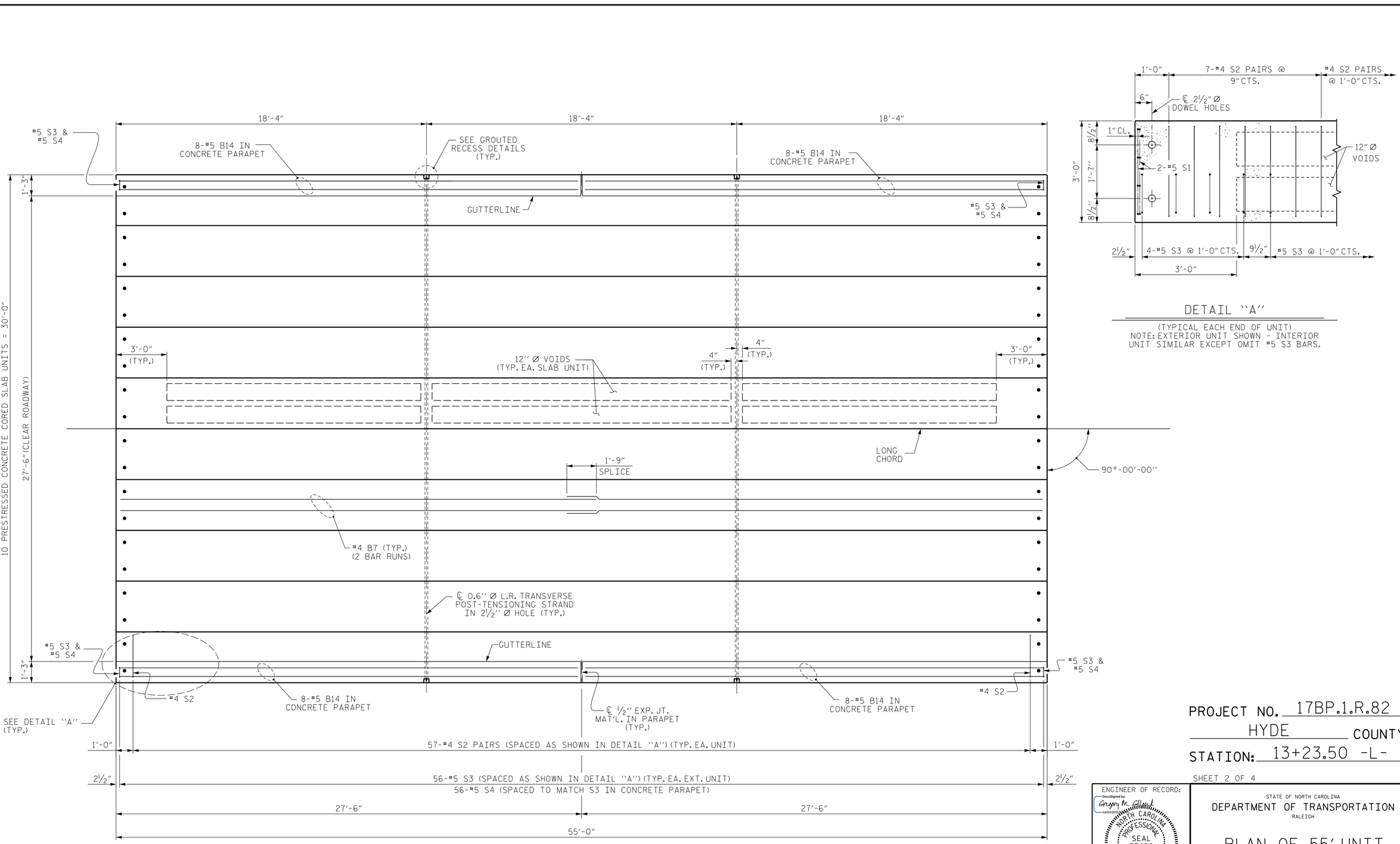

PLAN OF UNIT

DETAIL ″A″

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PROJECT NO. 17BP.1.R.82
HYDE COUNTY
STATION: 13+23.50 -L-

SHEET 2 OF 4

ENGINEER OF RECORD:
DocuSigned by: Gregory M. Gilland
NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 55′ UNIT 27′-6″ CLEAR ROADWAY 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			17

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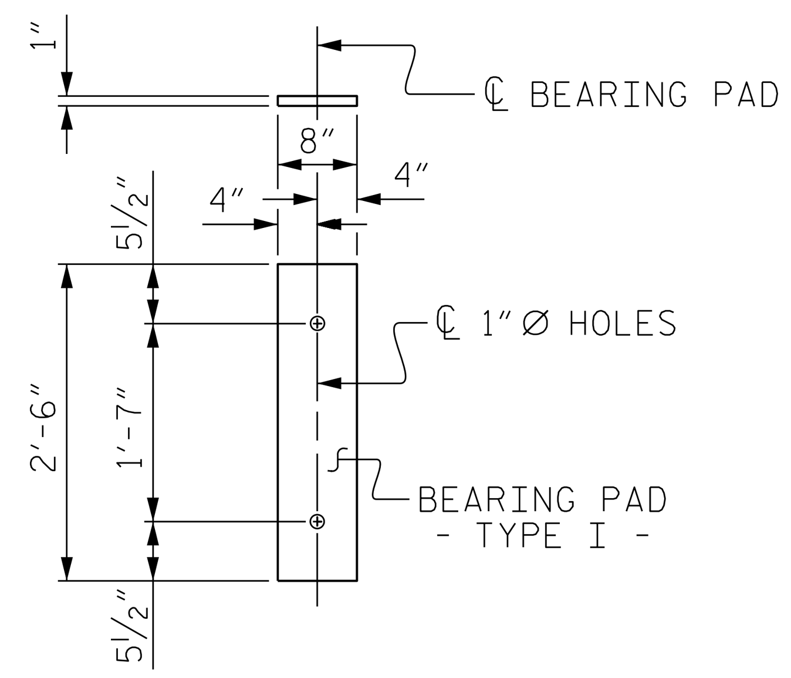
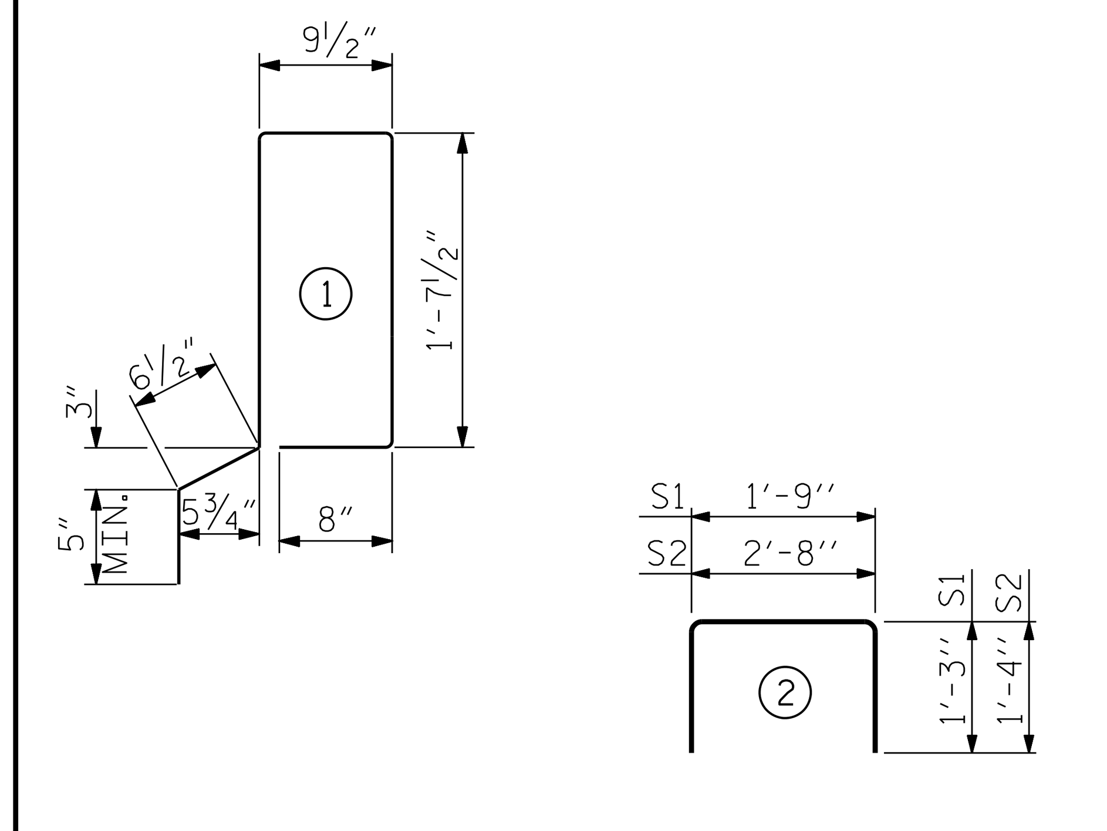


FIXED END
(TYPE I - 20 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" × 1'-9"
55' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1½" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	⅜" ↓
FINAL CAMBER	1⅛" ↑

** INCLUDES FUTURE WEARING SURFACE

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B7	4	#4	STR	28'-3"	75	28'-3"	75
S1	8	#5	2	4'-3"	35	4'-3"	35
S2	114	#4	2	5'-4"	406	5'-4"	406
* S3	56	#5	1	5'-8"	331		
REINFORCING STEEL	LBS.				516		516
* EPOXY COATED REINFORCING STEEL	LBS.				331		
6500 P.S.I. CONCRETE	CU. YDS.				7.8		7.8
0.6" Ø L.R. STRANDS	No.				19		19

CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
55' UNIT			
EXTERIOR C.S.	2	55'-0"	110'-0"
INTERIOR C.S.	8	55'-0"	440'-0"
TOTAL	10		550'-0"

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

CONCRETE RELEASE STRENGTH

UNIT	PSI
55' UNITS	4900

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 CONCRETE PARAPET 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 PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

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.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

PRESTRESSED CONCRETE CORED SLAB UNITS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

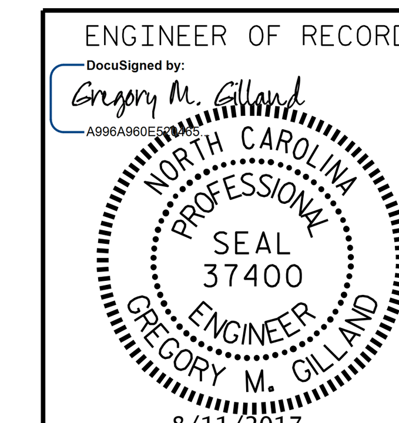
PROJECT NO. 17BP.1.R.82

HYDE COUNTY

STATION: 13+23.50 -L-

SHEET 3 OF 4

ENGINEER OF RECORD:



WETHERILL ENGINEERING
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" × 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				17

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DRAWN BY : D. HODGE DATE : 3/17
CHECKED BY : G.M. GILLAND DATE : 3/17

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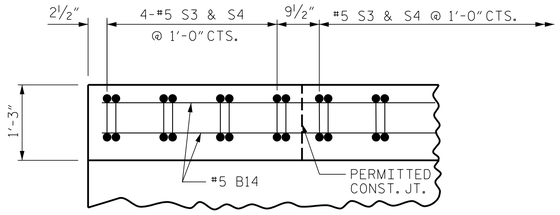
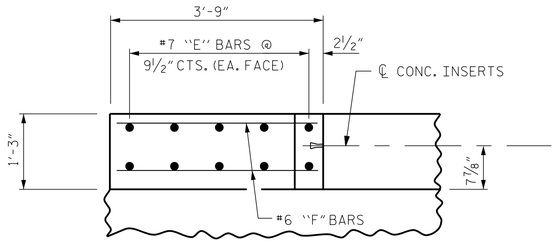
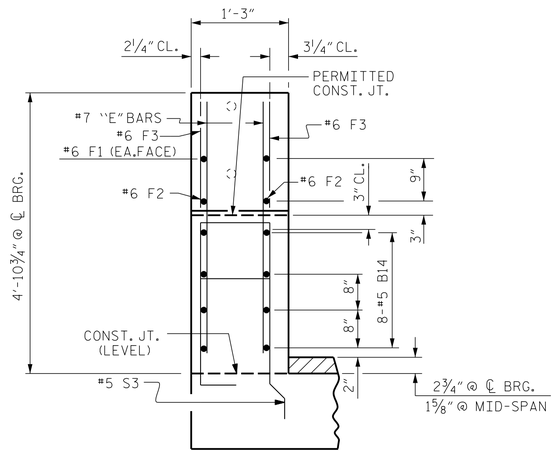


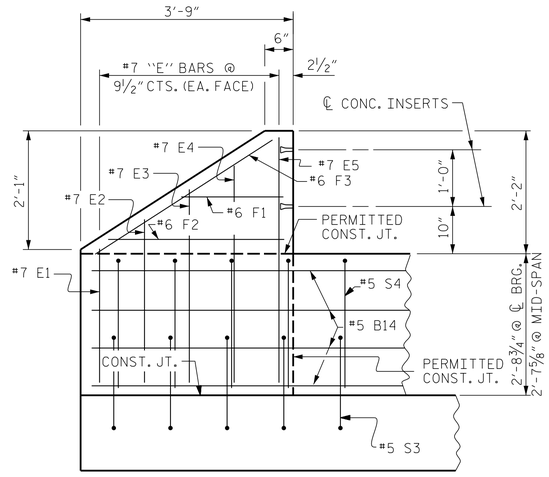
PLAN OF PARAPET



PLAN OF END POST



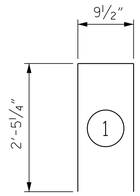
END VIEW



ELEVATION

PARAPET AND END POST FOR TWO BAR RAIL

BAR TYPE

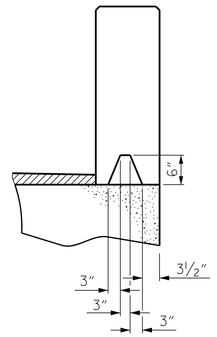


ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR PARAPETS AND END POSTS

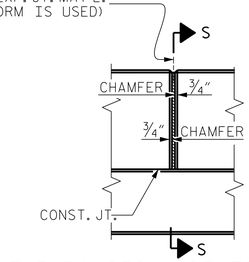
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
✳ B14	32	#5	STR	27'-1"	904
✳ E1	8	#7	STR	2'-7"	42
✳ E2	8	#7	STR	3'-1"	50
✳ E3	8	#7	STR	3'-7"	59
✳ E4	8	#7	STR	4'-1"	67
✳ E5	8	#7	STR	4'-6"	74
✳ F1	8	#6	STR	1'-10"	22
✳ F2	8	#6	STR	3'-0"	36
✳ F3	8	#6	STR	3'-4"	40
✳ S4	112	#5	1	5'-8"	662

✳ EPOXY COATED REINFORCING STEEL LBS.	1,956
CLASS AA CONCRETE CU. YDS.	14.5
2'-8¾" X 1'-3" CONC. PARAPET	110.0



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

PROJECT NO. 17BP.1.R.82
HYDE COUNTY
STATION: 13+23.50 -L-

SHEET 4 OF 4

ENGINEER OF RECORD:
Gregory M. Gilland
NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND
8/11/2017

ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
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LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE PARAPET DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			17

DRAWN BY : D. HODGE DATE : 4/17
CHECKED BY : J. DILWORTH DATE : 4/17

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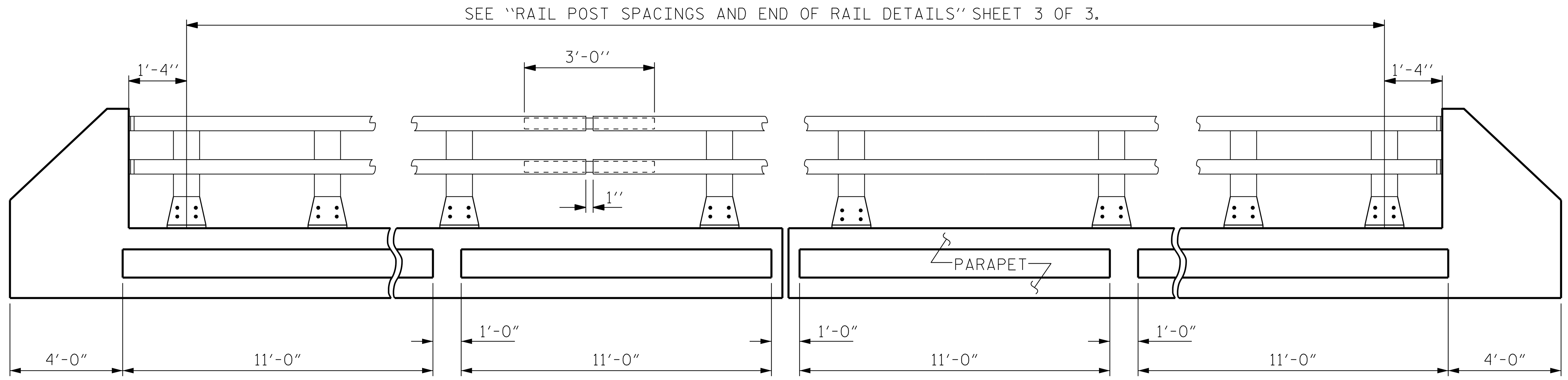
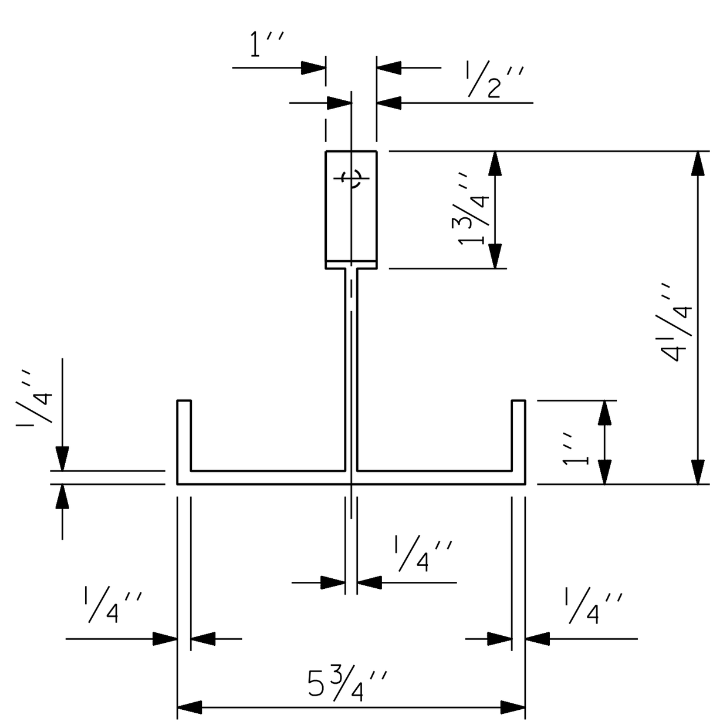
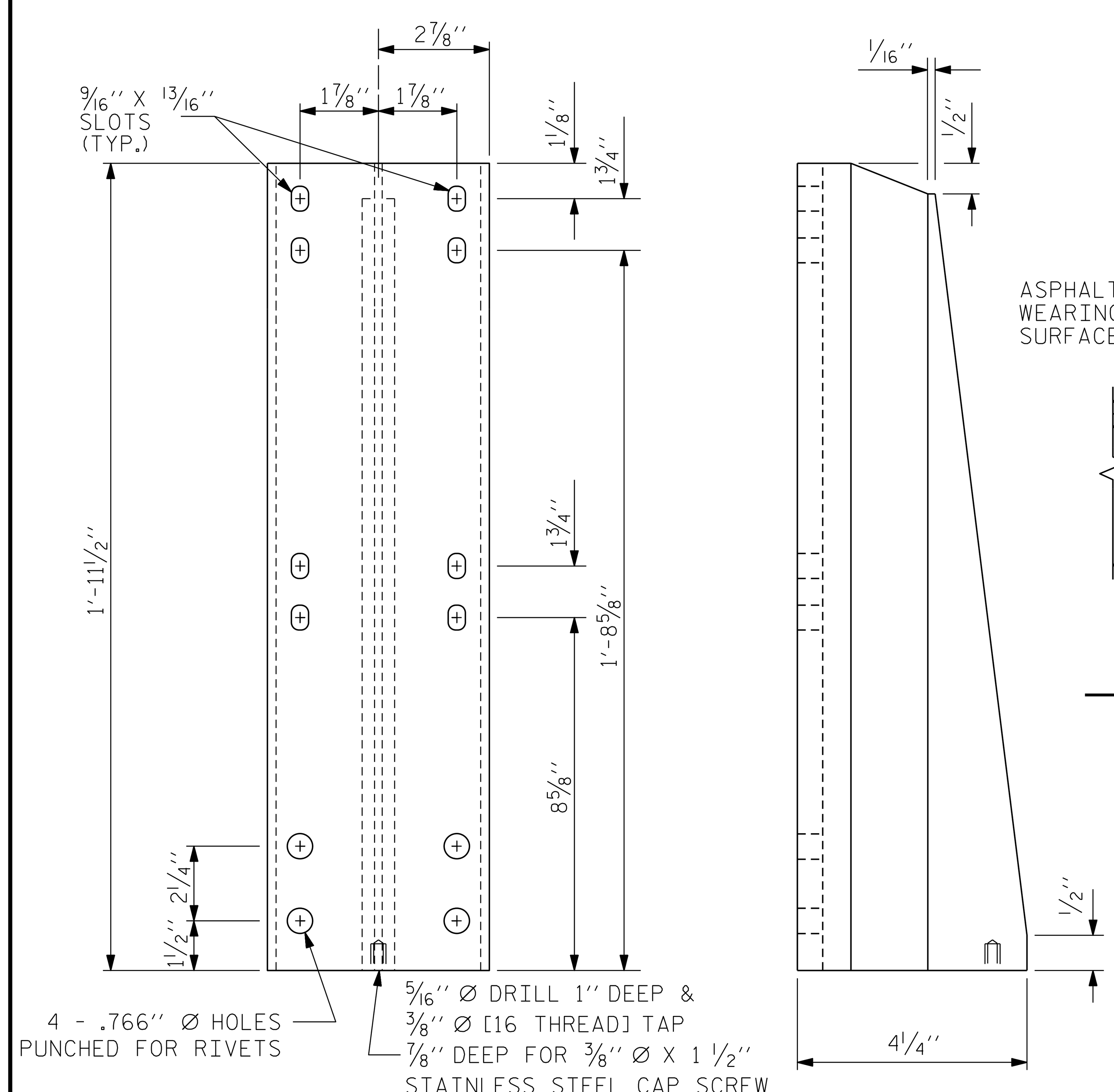


ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET 3 OF 3.

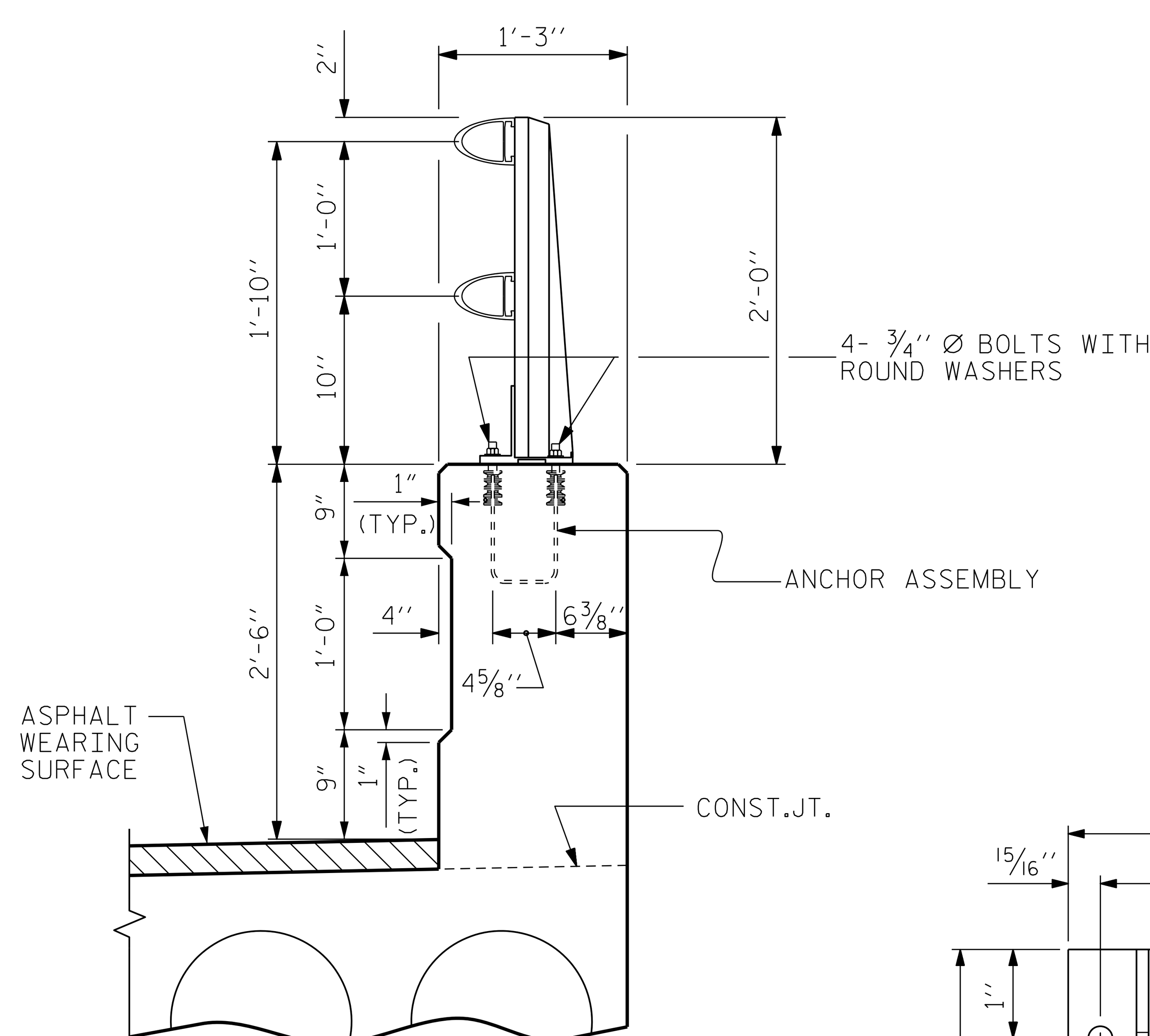


PLAN

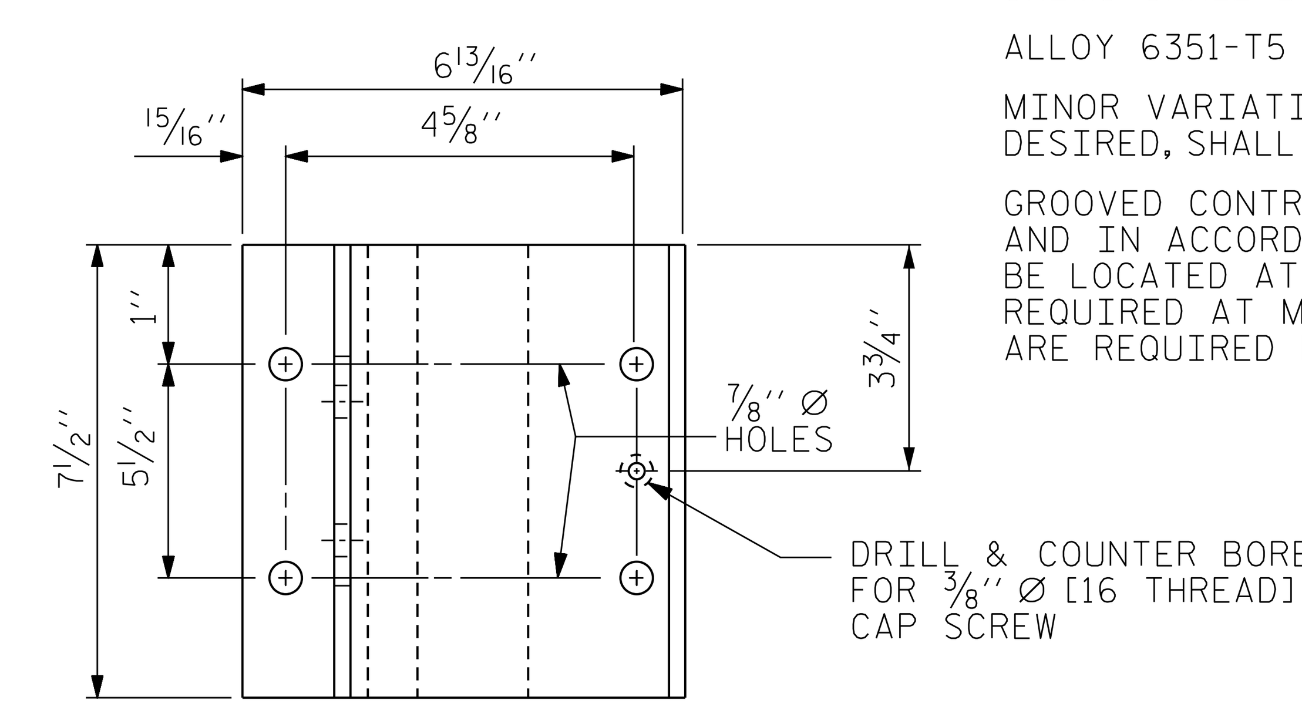


FRONT ELEVATION SIDE ELEVATION

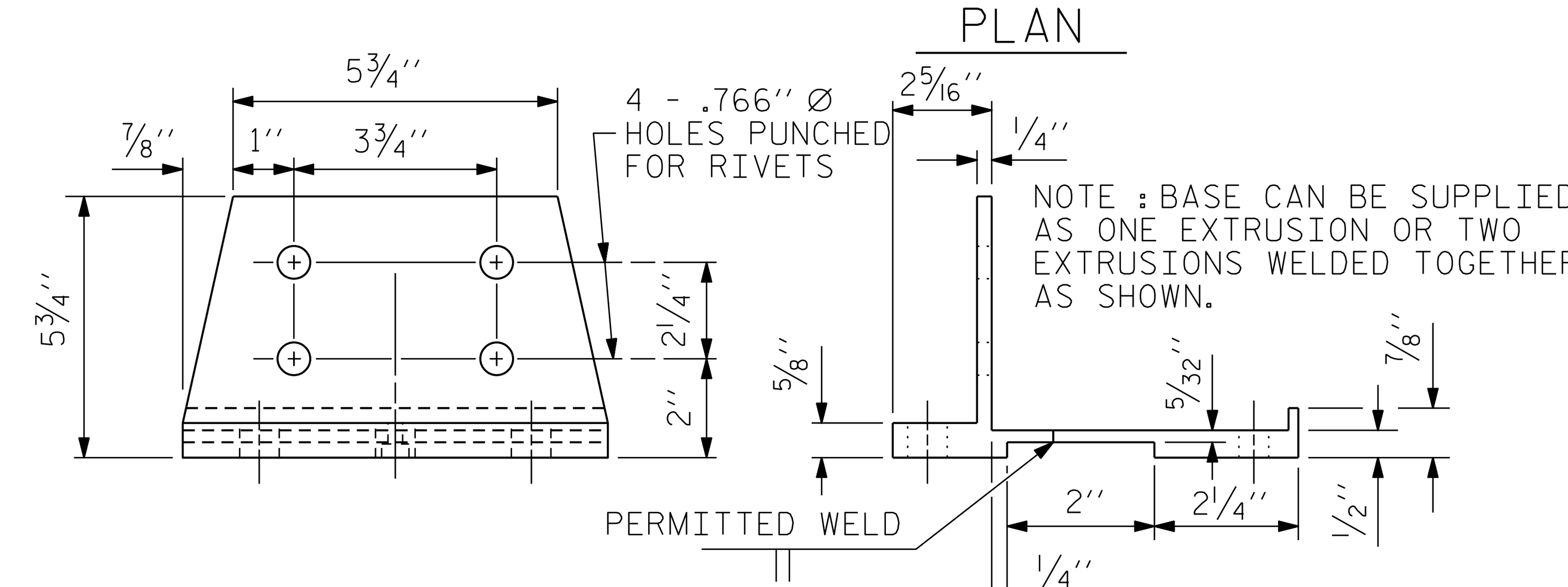
DETAILS OF POST



SECTION THRU PARAPET AND RAIL

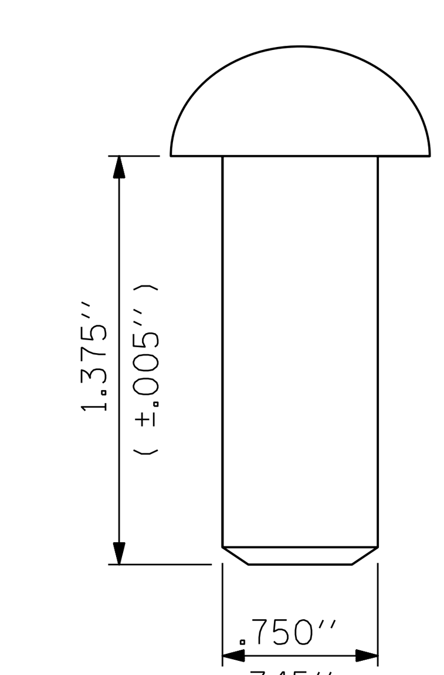


PLAN



FRONT ELEVATION SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 95.00 LIN. FT.

PROJECT NO. 17BP.1.R.82

HYDE COUNTY

STATION: 13+23.50 -L-

ENGINEER OF RECORD:

DocuSigned by: Gregory M. Gilland

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

8/11/2017

WETHERILL ENGINEERING

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

REVISIONS								SHEET NO.
NO.	BY:	DATE:		NO.	BY:	DATE:		S-8
1				3				TOTAL SHEETS
2				4				17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : D. HODGE	DATE : 4/17		
CHECKED BY : J. DILWORTH	DATE : 4/17		
DRAWN BY : EEM 6/94		REV. 5/1/06	TLA/GM
CHECKED BY : RGW 6/94		REV. 10/1/11	MAA/GM
		REV. 6/13	MAA/GM

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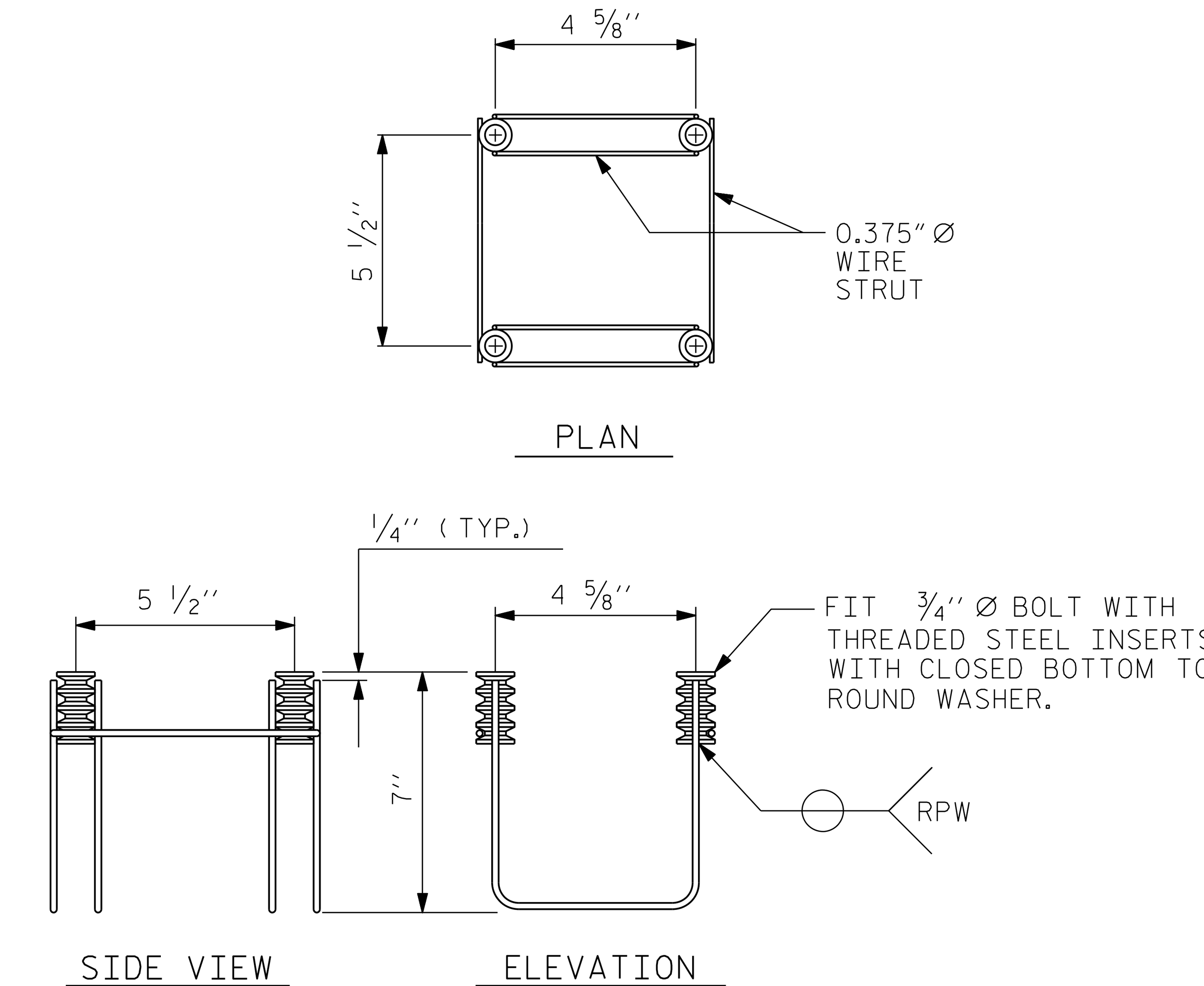


4-BOLT METAL RAIL ANCHOR ASSEMBLY

(20 ASSEMBLIES REQUIRED)

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2'' FOR 3/4'' FERRULES.

B. 4 - 3/4'' Ø X 2 1/2'' BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4'' Ø X 2 1/2'' GALVANIZED BOLTS 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.

C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16'' Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

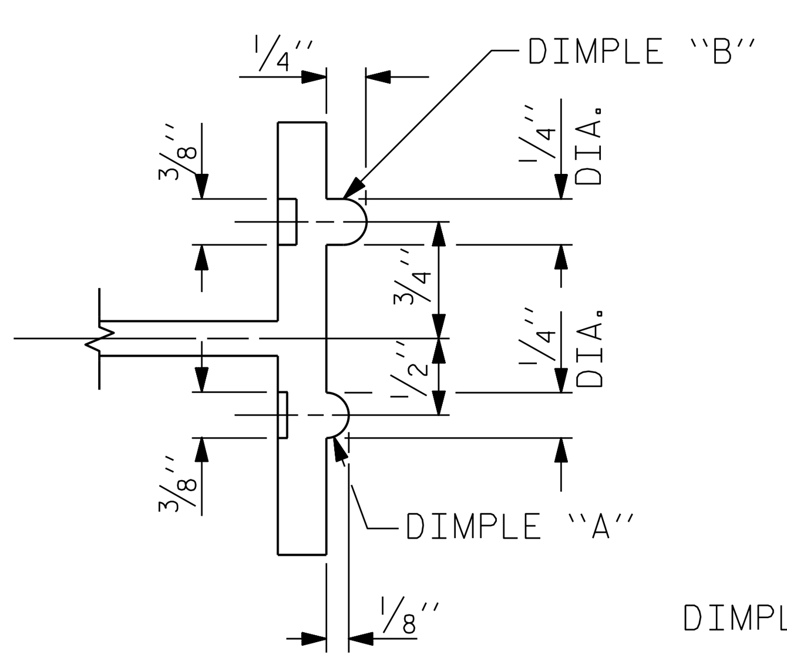
D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.

E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.

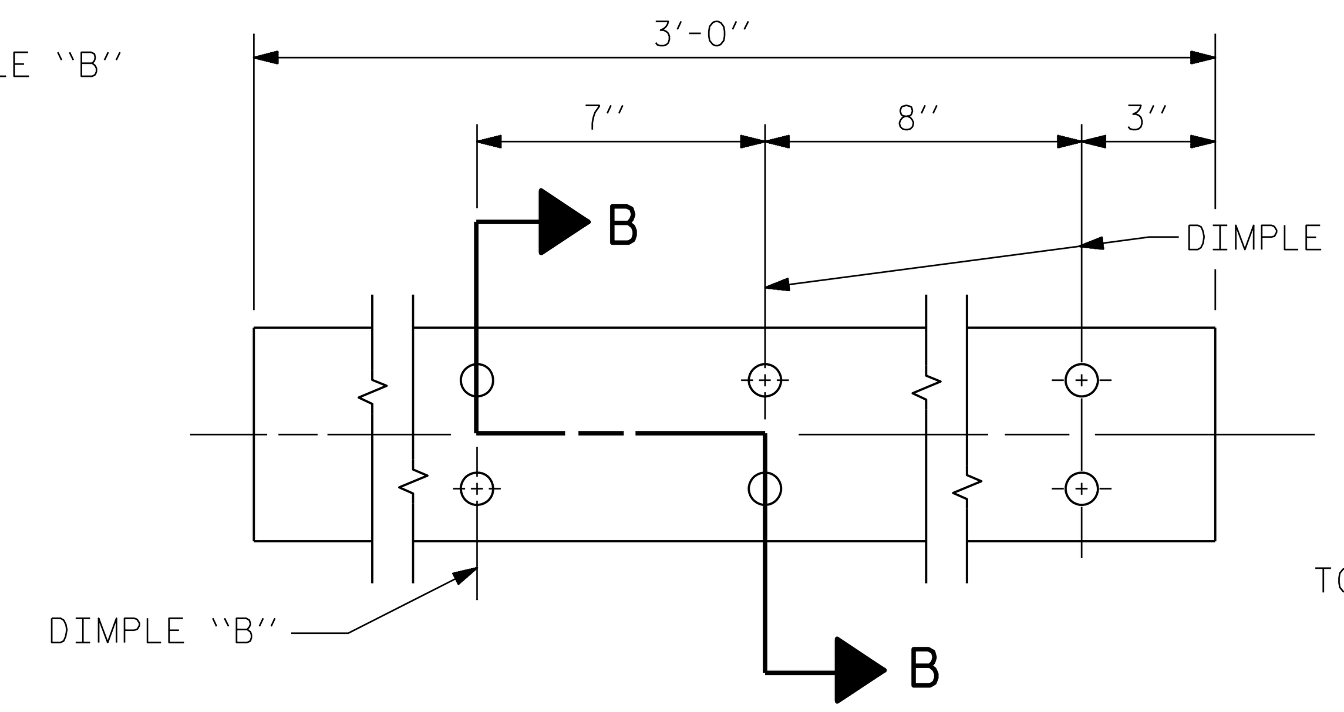
F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4'' Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

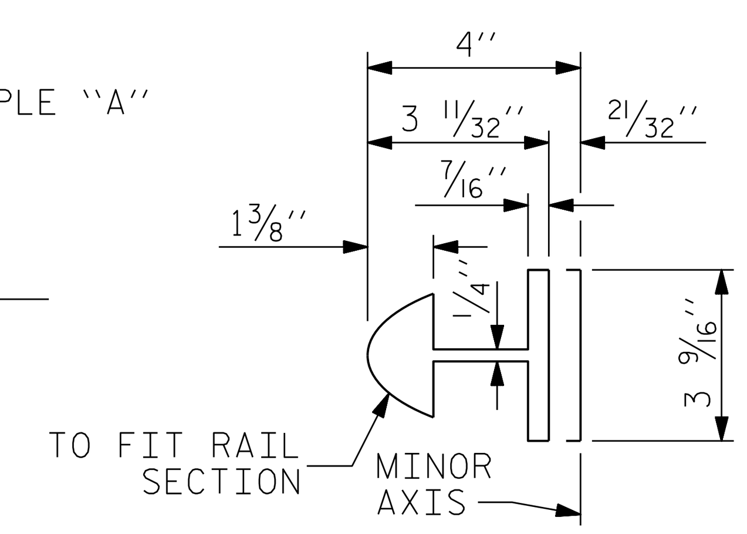
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



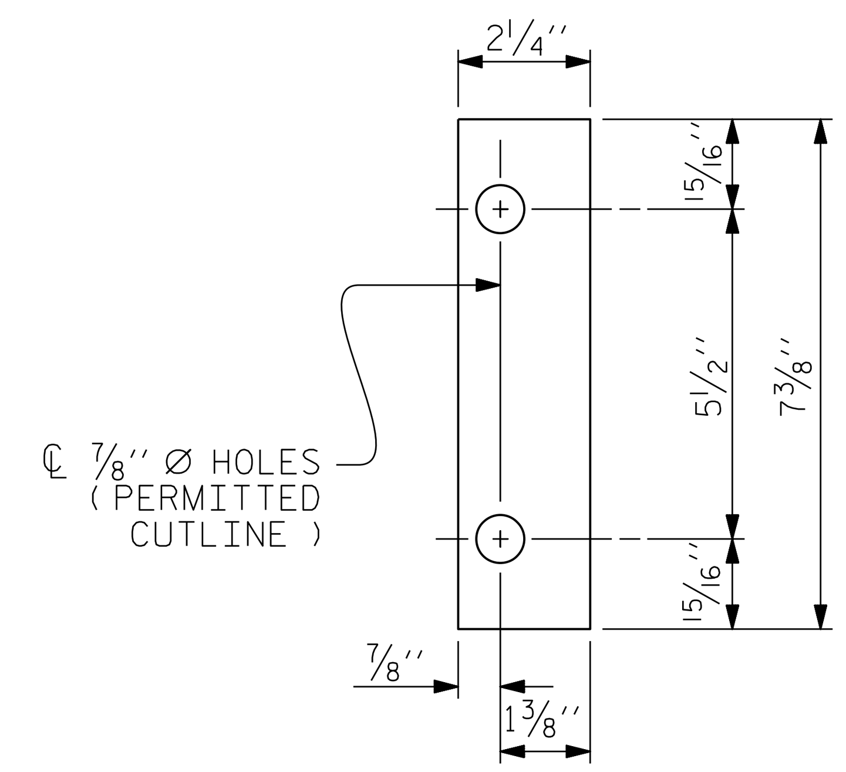
SECTION B - B



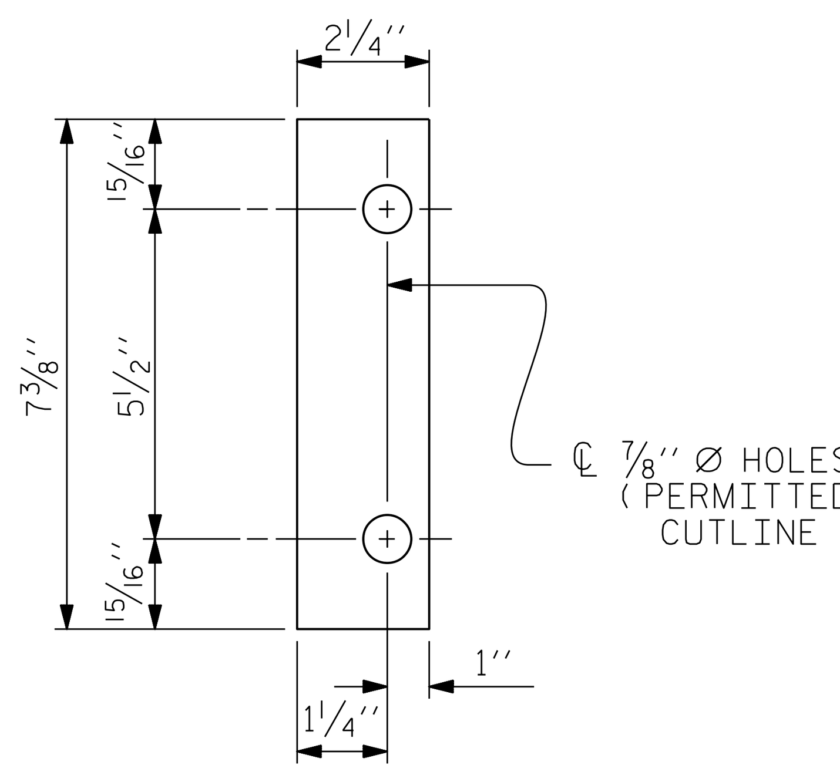
EXPANSION BAR DETAILS



BAR SECTION



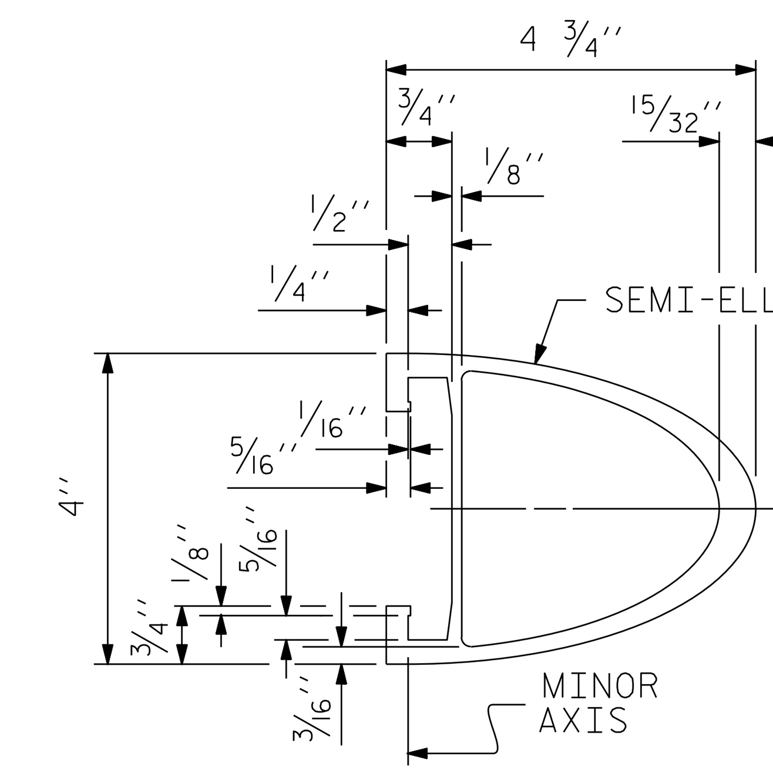
FRONT PLATE



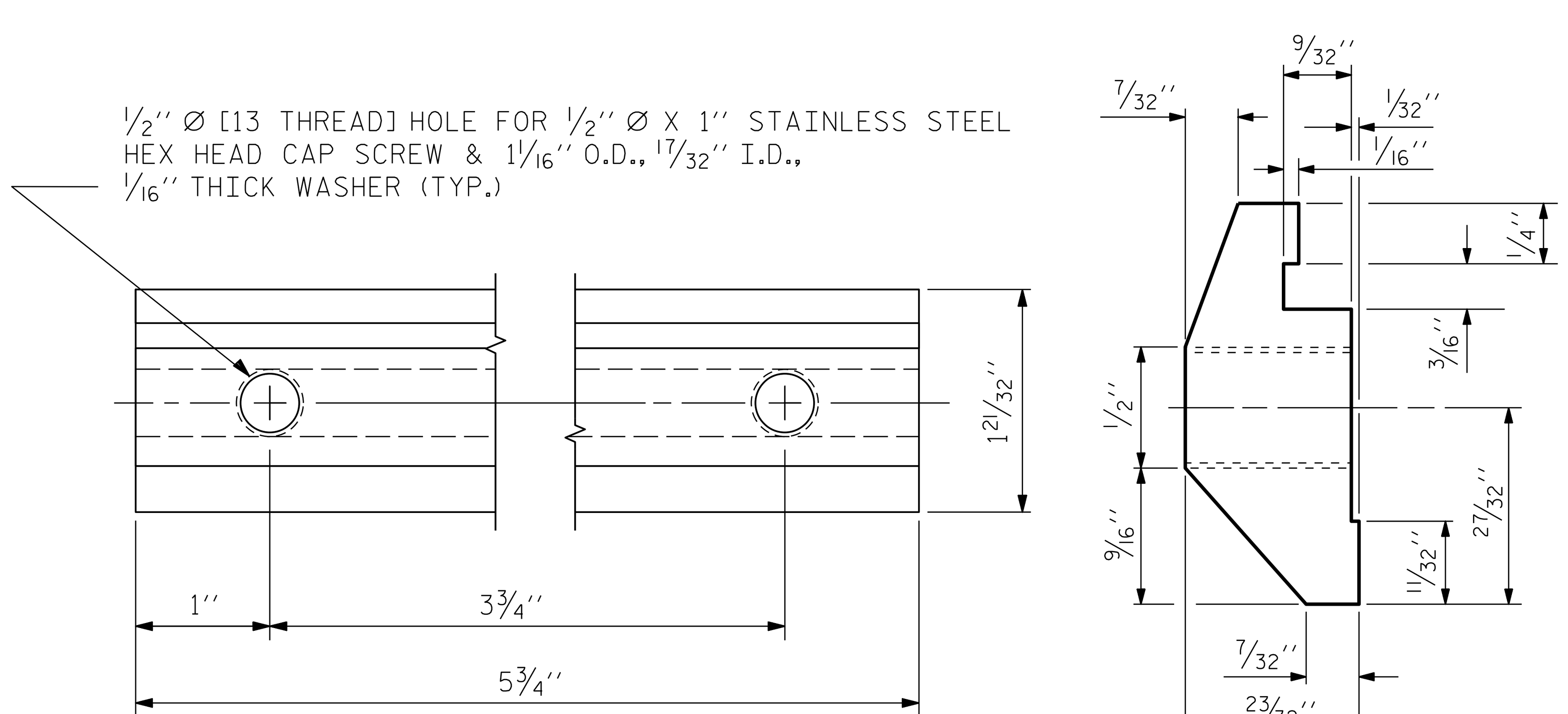
REAR PLATE

SHIM DETAILS

NOTE :
SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.

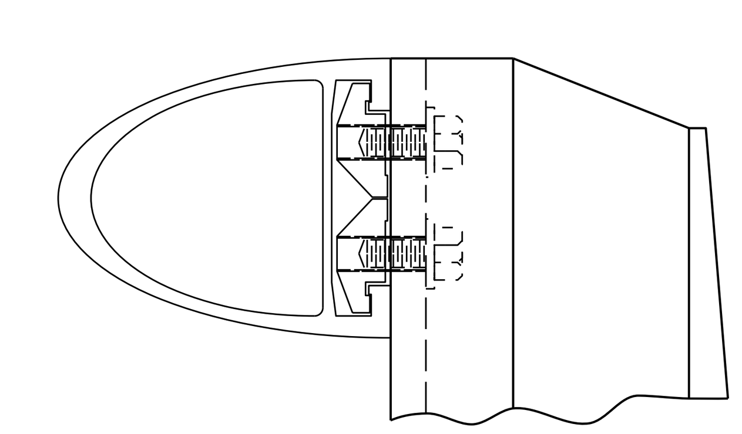


RAIL SECTION

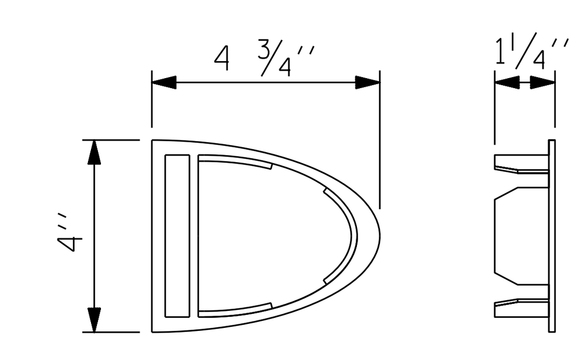


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY

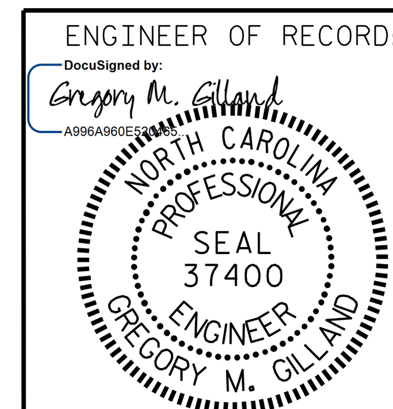


RAIL CAP

PROJECT NO. 17BP.1.R.82
HYDE COUNTY
STATION: 13+23.50 -L-

SHEET 2 OF 3

ENGINEER OF RECORD:



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

ASSEMBLED BY : D. HODGE	DATE : 4/17
CHECKED BY : J. DILWORTH	DATE : 4/17

DRAWN BY : EEM 6/94	REV. 8/16/99	MAB/LES
CHECKED BY : RGW 6/94	REV. 5/1/06R	KMM/GM
	REV. 10/1/11	MAA/GM

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REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-9
TOTAL SHEETS 17

STD. NO. BMR4

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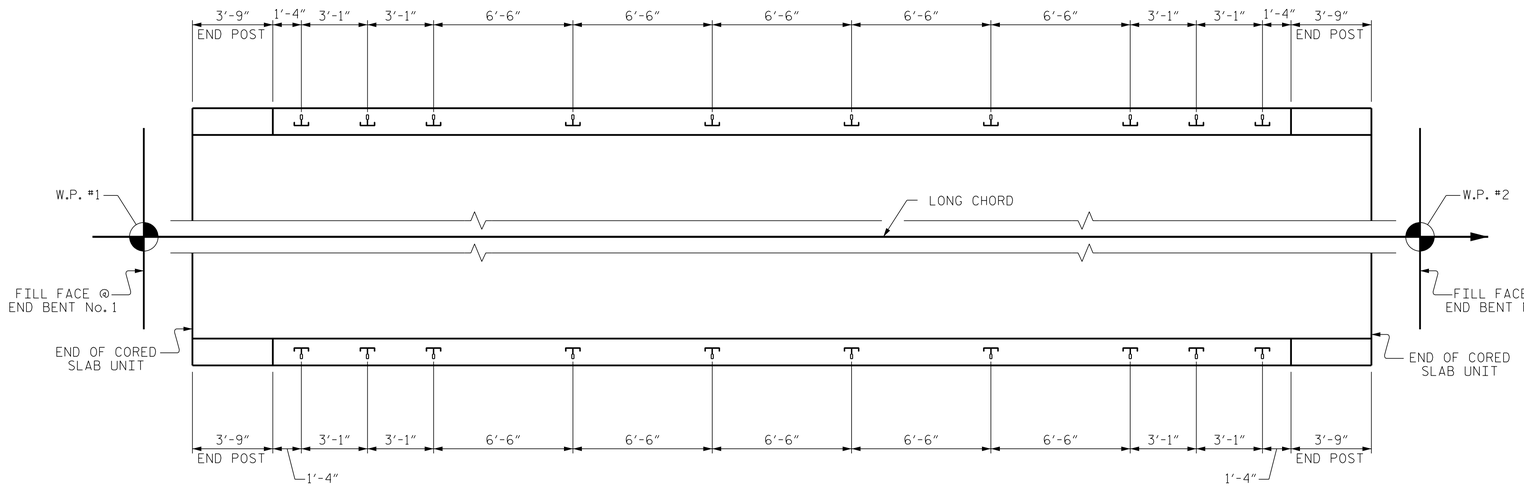
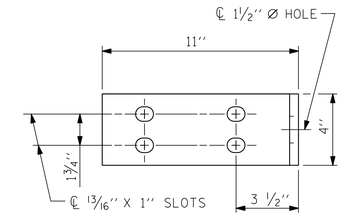
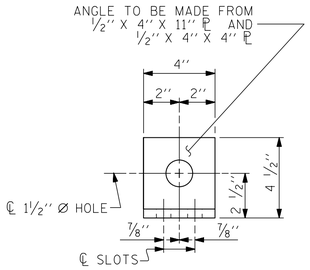


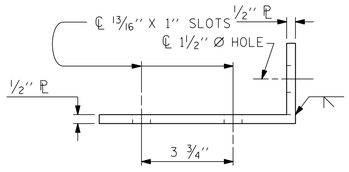
PLAN OF RAIL POST SPACINGS



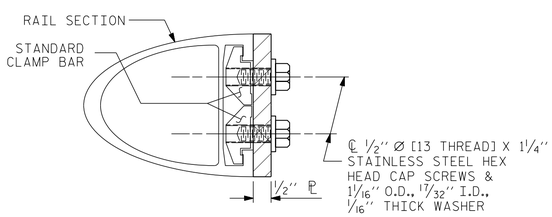
ELEVATION



END VIEW (FIX AND EXP.)



TOP VIEW



SECTION H-H (FIX)

FIXED

DETAILS FOR ATTACHING METAL RAIL TO END POST

NOTES

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".

B. 1 - ¾" Ø X 1⅝" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ¾" Ø X 1⅝" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. ½" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.

B. ¾" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾"Ø X 1⅝" BOLT WITH 2" O.D. WASHER IN PLACE. THE ¾"Ø X 1⅝" BOLT SHALL HAVE N. C. THREADS.

C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.

D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).

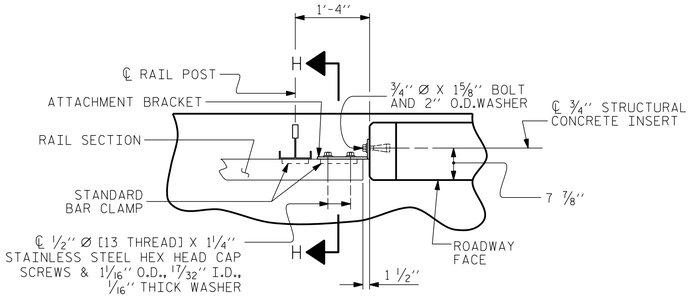
E. ½" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

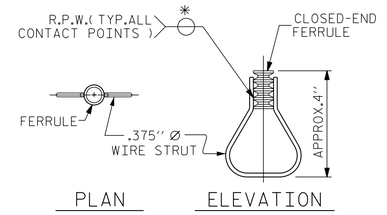
THE ¾" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE ½" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾" Ø X 1⅝" BOLT WITH WASHER SHALL BE REPLACED WITH A ¾"Ø X 6½" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE ¾" Ø X 1⅝" BOLT SHALL APPLY TO THE ¾"Ø X 6 ½" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



PLAN - RAIL AND END POST



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. 17BP.1.R.82

HYDE COUNTY

STATION: 13+23.50 -L-

SHEET 3 OF 3

ENGINEER OF RECORD:
Designed by: Gregory M. Gilland
NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND
8/11/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

RAIL POST SPACINGS AND END OF RAIL DETAILS
FOR TWO BAR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			17

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ASSEMBLED BY : D. HODGE		DATE : 4/17	
CHECKED BY : J. DILWORTH		DATE : 4/17	
DRAWN BY : FCJ 1/88	REV. 5/7/03	RWW/JTE	
CHECKED BY : CRK 3/89	REV. 5/1/06	TLA/GM	
	REV. 10/1/11	MAA/GM	

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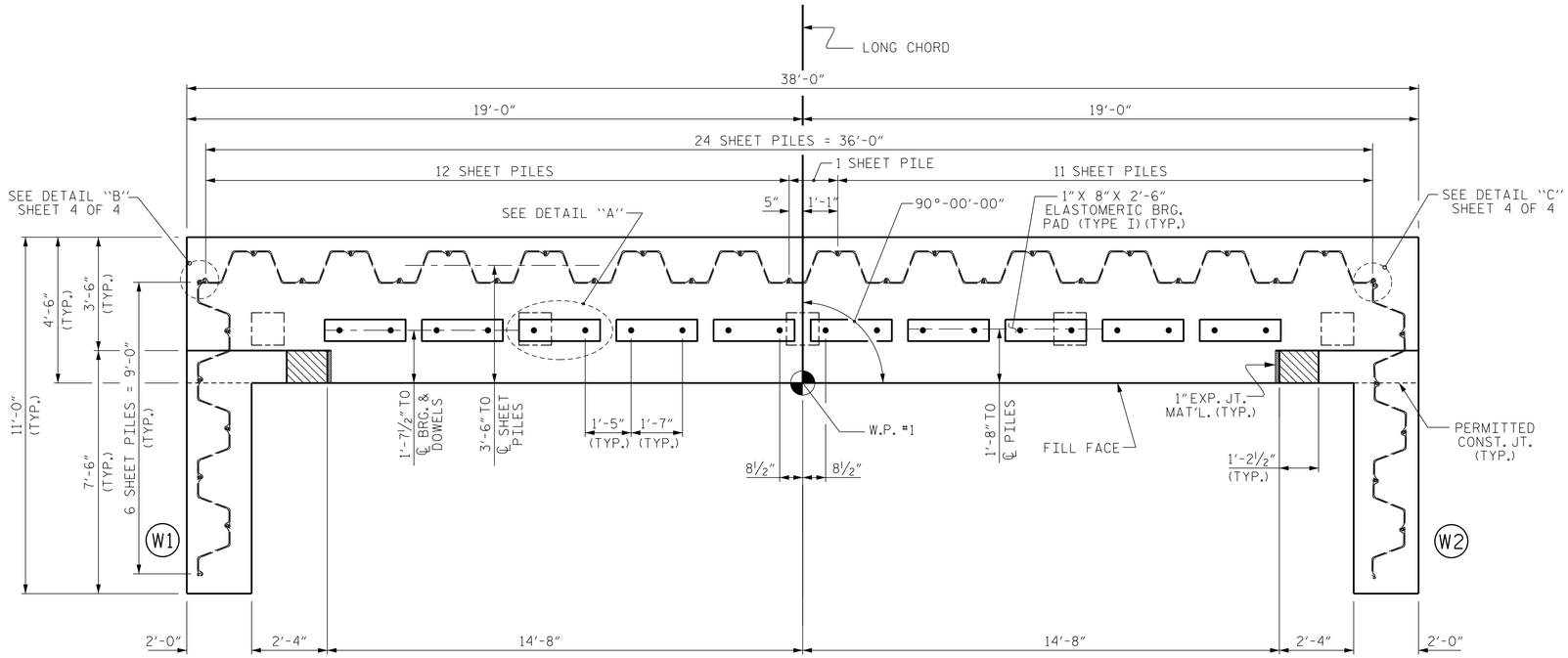
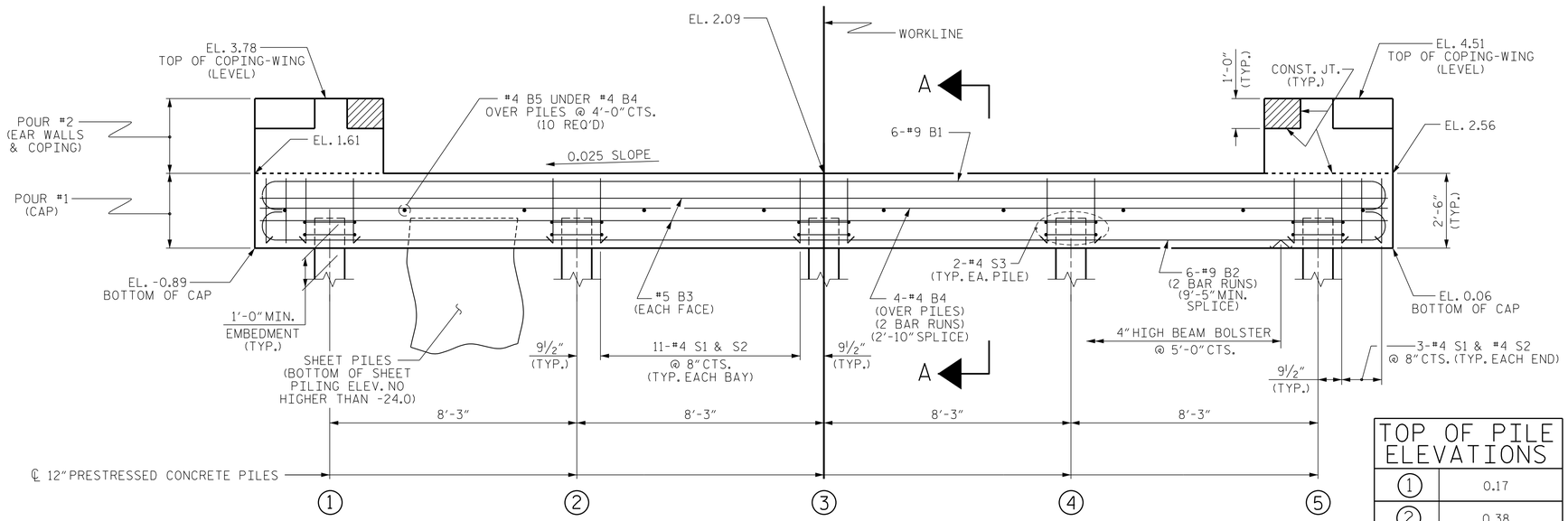


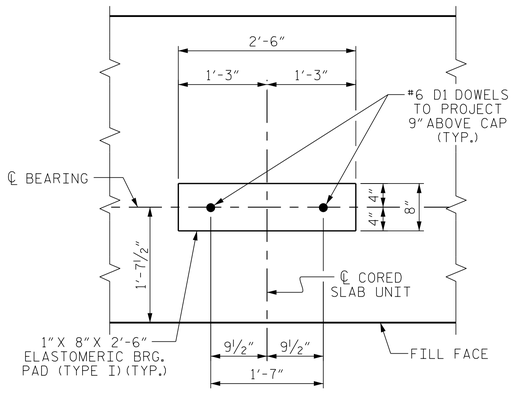
PLAN



ELEVATION

(SHEET PILES PARTIALLY OMITTED IN ELEVATION VIEW FOR CLARITY)

TOP OF PILE ELEVATIONS	
1	0.17
2	0.38
3	0.58
4	0.79
5	1.00



DETAIL "A"

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 CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

INSTALL THE 4"Ø DRAIN THROUGH THE SHEET PILES AS REQUIRED. FOR REINFORCED BRIDGE APPROACH FILLS. SEE ROADWAY PLANS.

PZ-27 STEEL SHEET PILES SHALL BE GALVANIZED. FOR GALVANIZED STEEL SHEET PILES, SEE SPECIAL PROVISIONS.

THE STEEL SHEET PILES SHALL HAVE A MINIMUM SECTION MODULUS OF 30 IN^3/FT.

THE CONCRETE SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

FOR COPING-WING DETAILS, SEE SHEET 3 OF 4.

FOR SECTION A-A, SEE SHEET 4 OF 4.

PROJECT NO. 17BP.1.R.82

HYDE COUNTY

STATION: 13+23.50 -L-

SHEET 1 OF 4

DRAWN BY : G.M. GILLAND DATE : 2-27-17

CHECKED BY : D. HODGE DATE : 3-17

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ENGINEER OF RECORD:

DocuSigned by: Gregory M. Gilland

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

8/11/2017

ETHERILL ENGINEERING

1223 Jones Franklin Rd.
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LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			17

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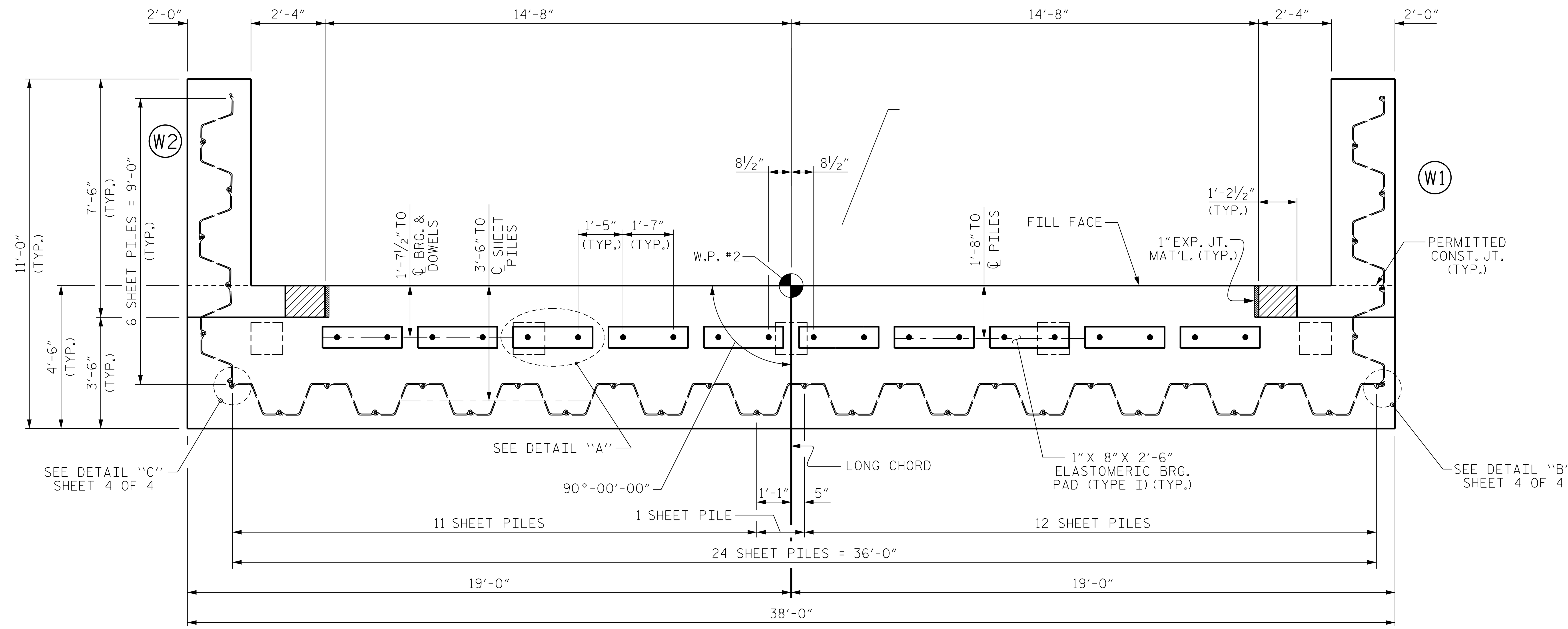
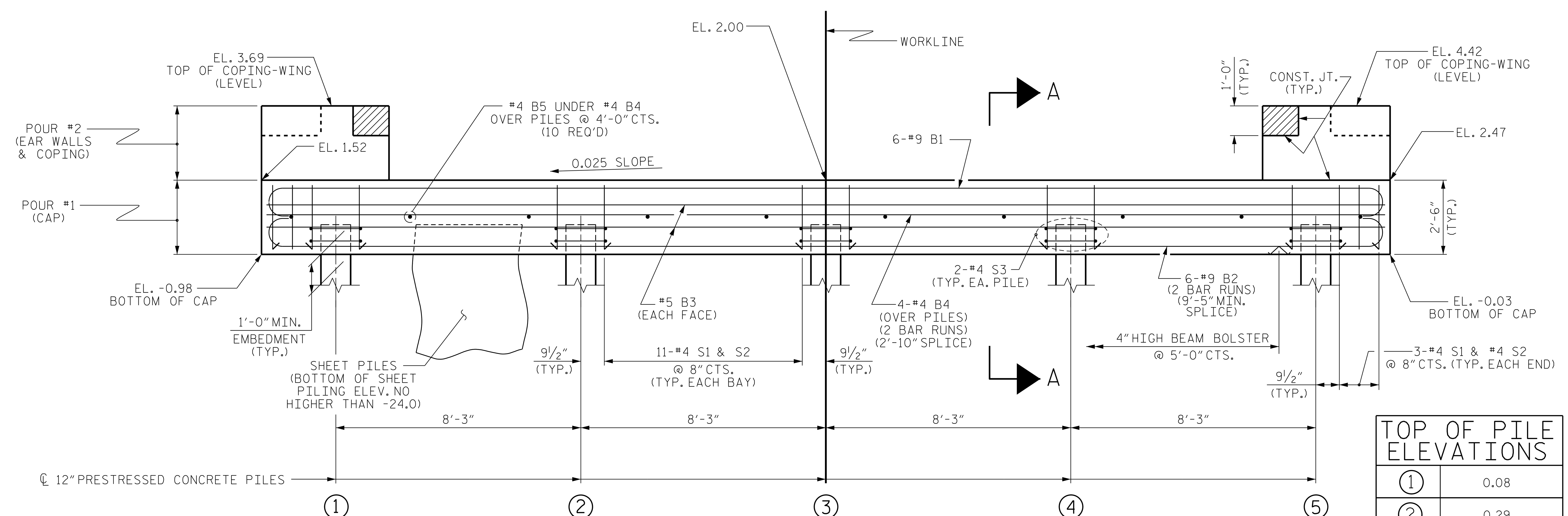


PLAN



ELEVATION

(SHEET PILES PARTIALLY OMITTED IN ELEVATION VIEW FOR CLARITY)

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 CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

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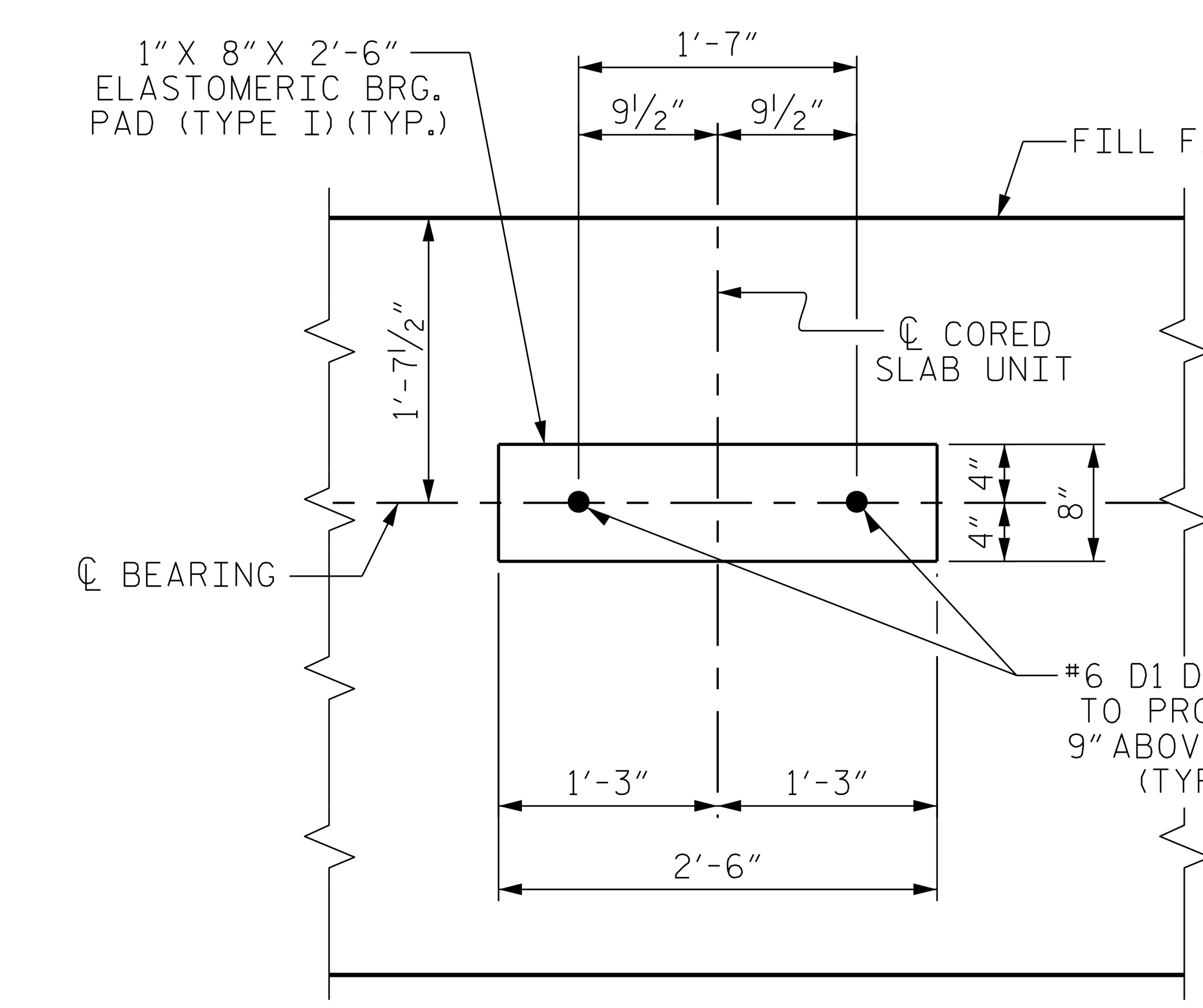
FOR COPING-WING DETAILS, SEE SHEET 3 OF 4.

FOR SECTION A-A, SEE SHEET 4 OF 4.



DETAIL "A"

TOP OF PILE ELEVATIONS	
1	0.08
2	0.29
3	0.49
4	0.70
5	0.91

PROJECT NO. 17BP.1.R.82

HYDE COUNTY

STATION: 13+23.50 -L-

SHEET 2 OF 4

ENGINEER OF RECORD:

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND 8/11/2017

WETHERILL ENGINEERING
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LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

SHEET NO. S-12

TOTAL SHEETS 17

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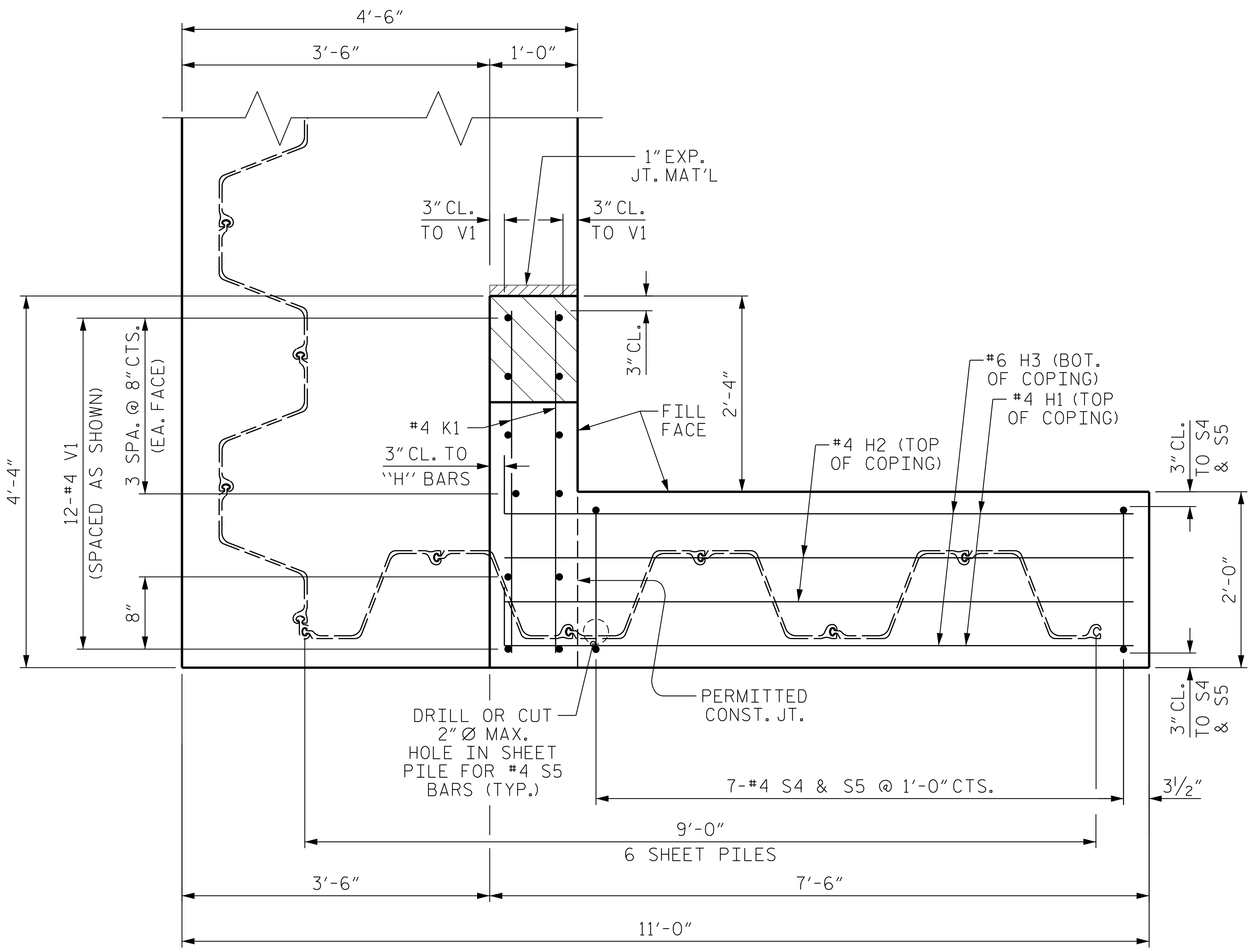
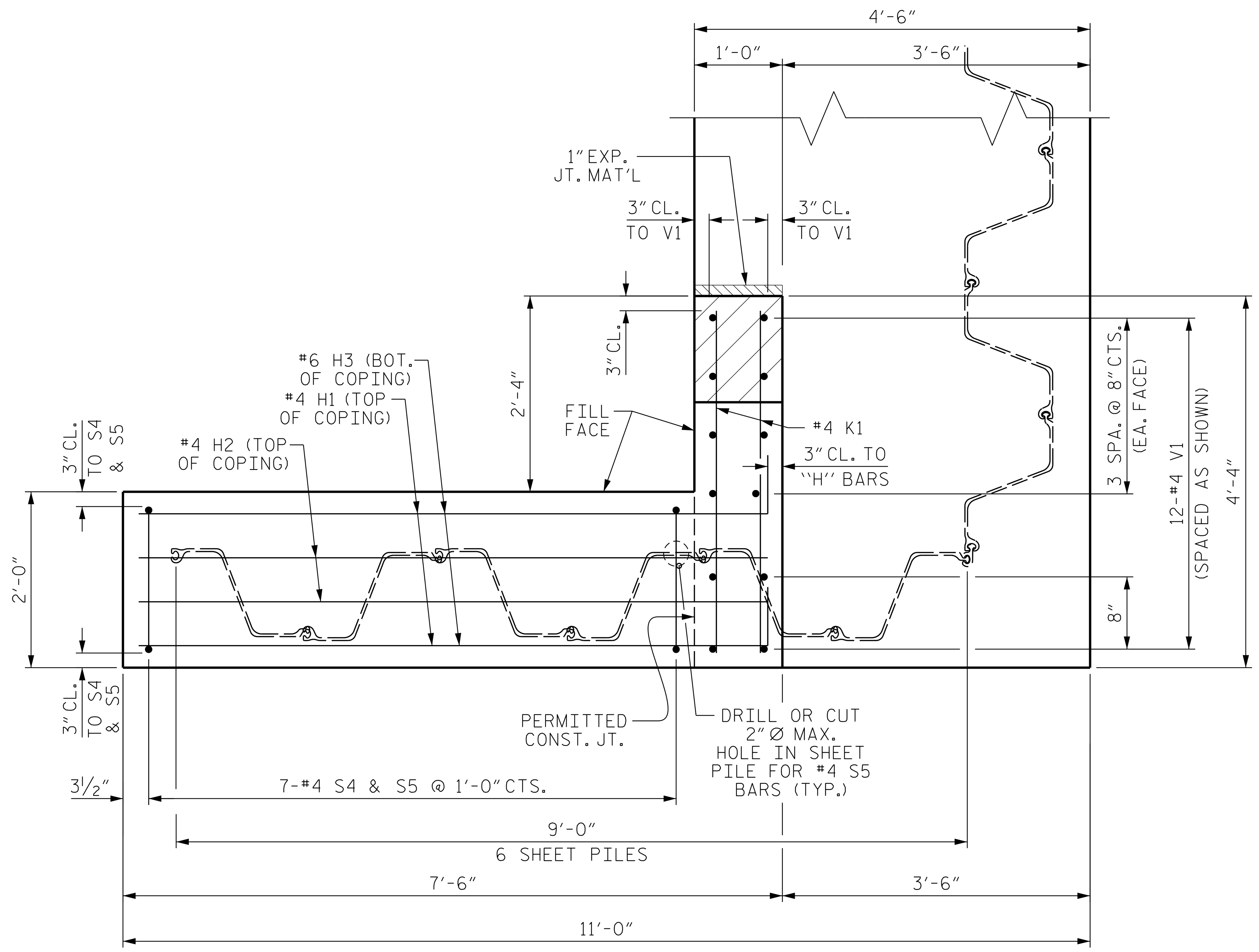
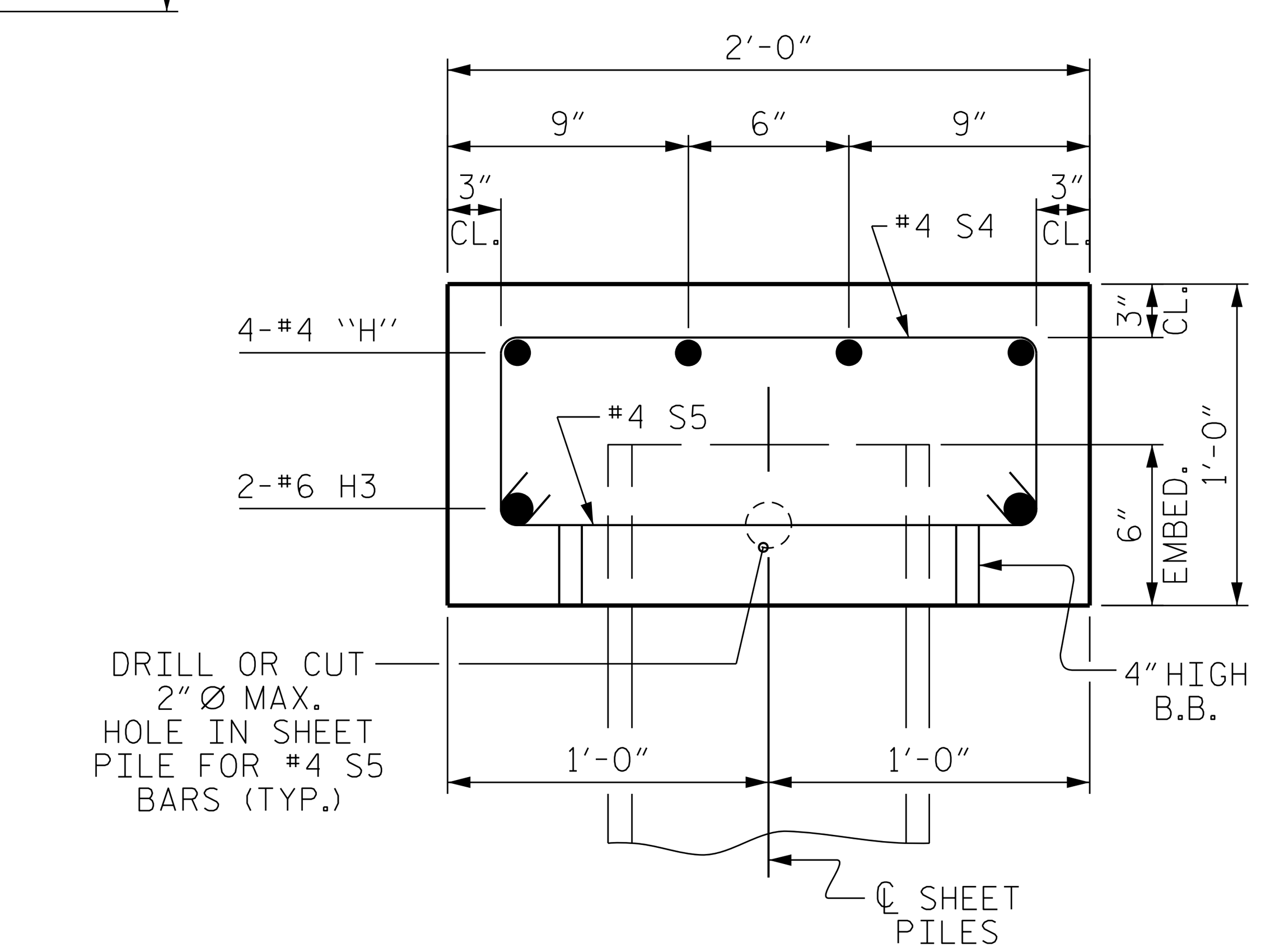


PLAN OF COPING-WING (W1)



PLAN OF COPING-WING (W2)



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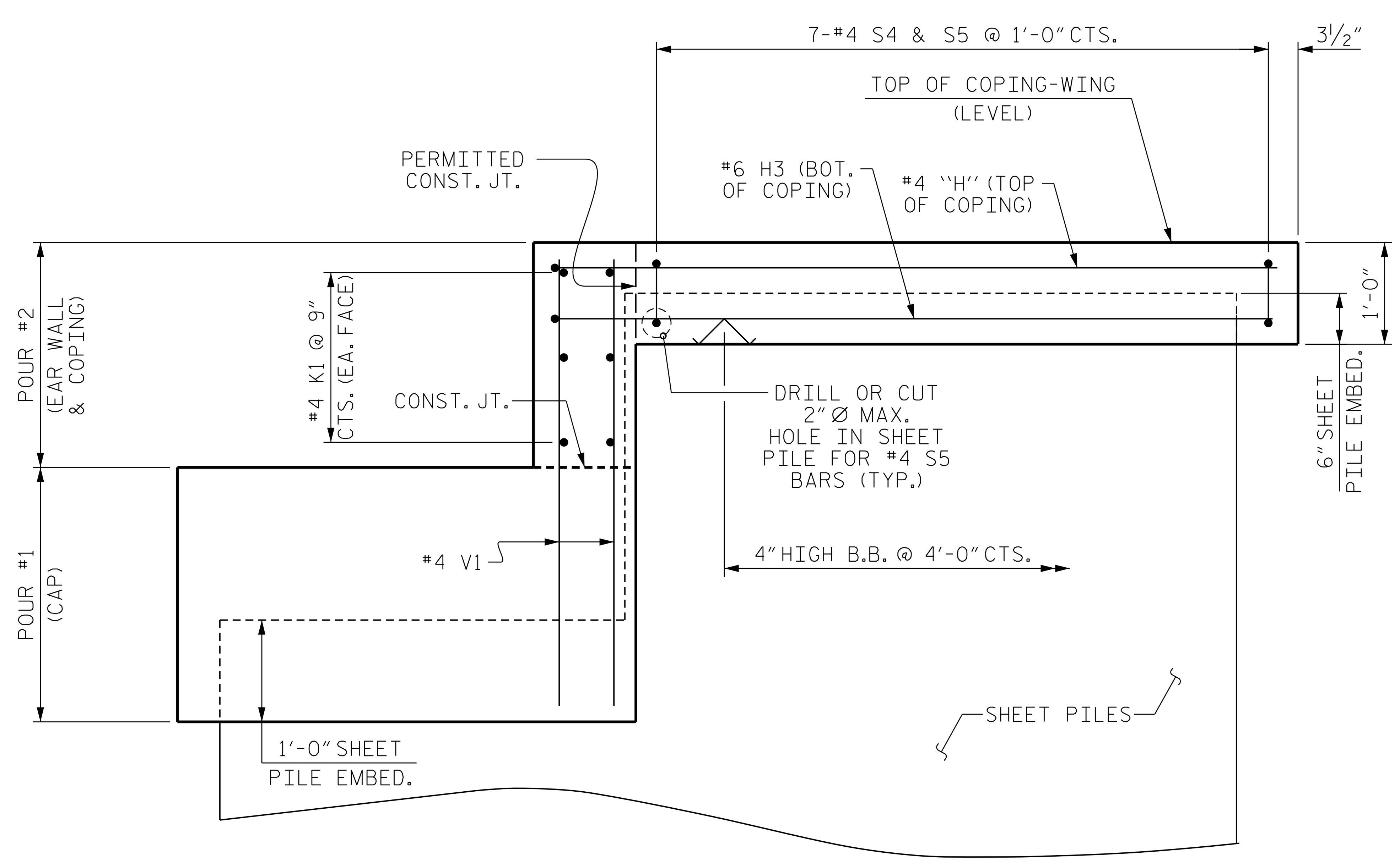
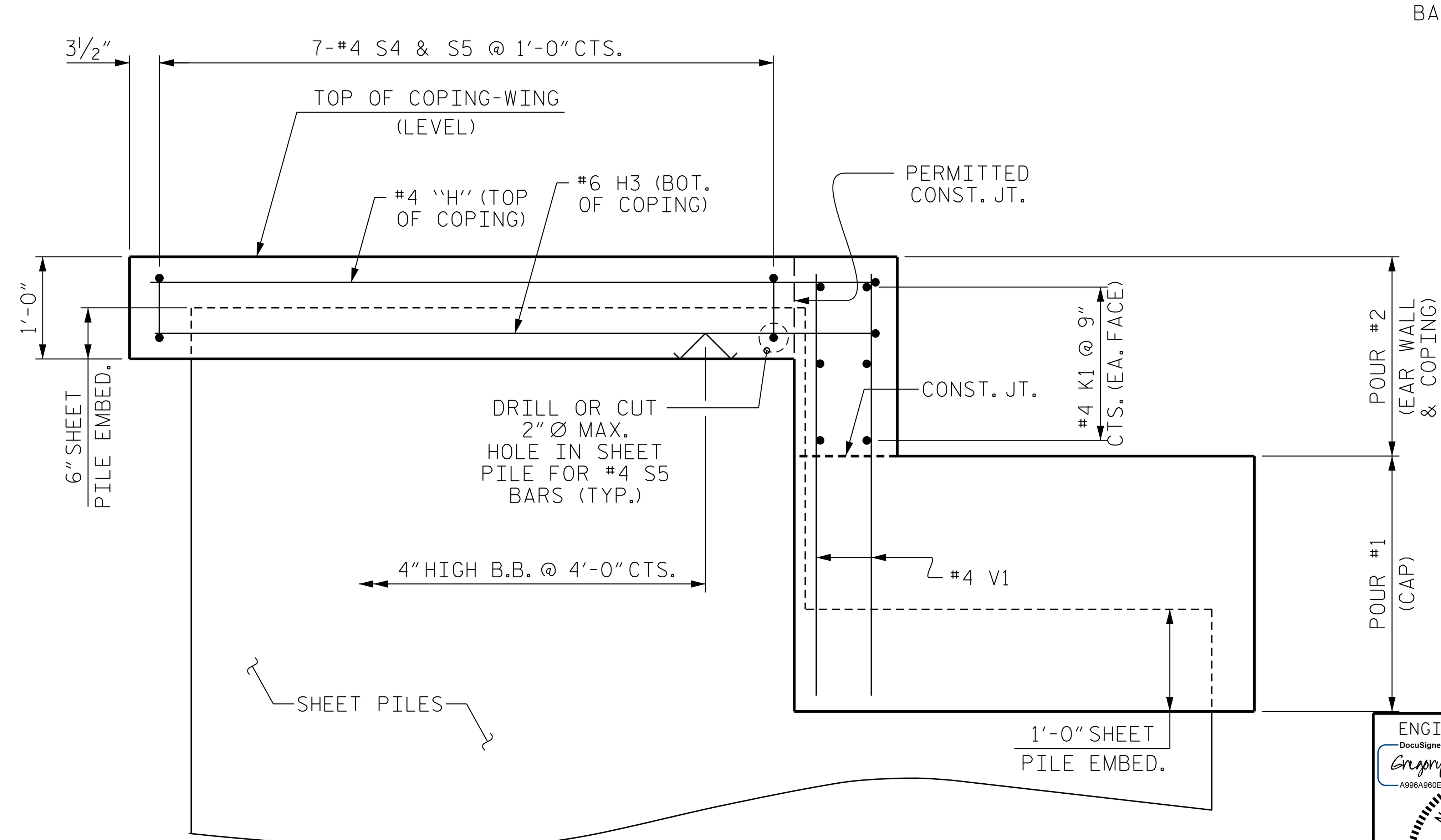


ELEVATION OF COPING-WING (W1)



ELEVATION OF COPING-WING (W2)

PROJECT NO. 17BP.1.R.82
HYDE COUNTY
STATION: 13+23.50 -L-

SHEET 3 OF 4

ENGINEER OF RECORD:
DocuSigned by: Gregory M. Gilland
NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND
8/11/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			17

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DRAWN BY : G.M. GILLAND DATE : 2-27-17
CHECKED BY : D. HODGE DATE : 3-17

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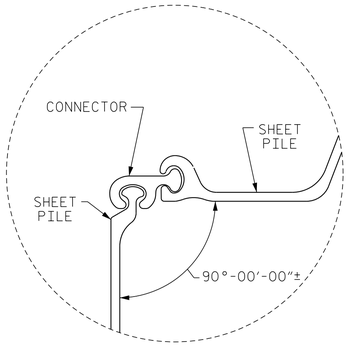
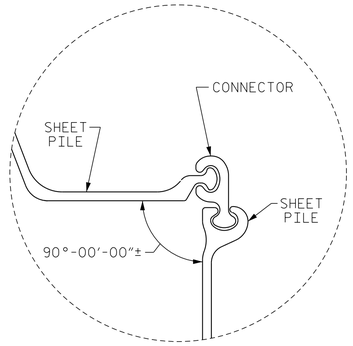
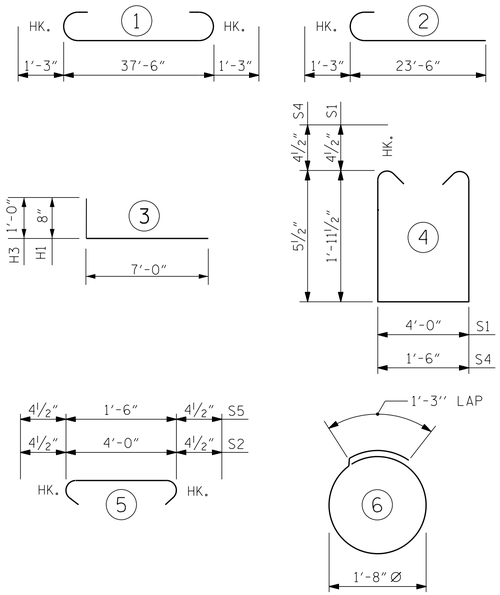


DETAIL "B"



DETAIL "C"

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
FOR ONE END BENT

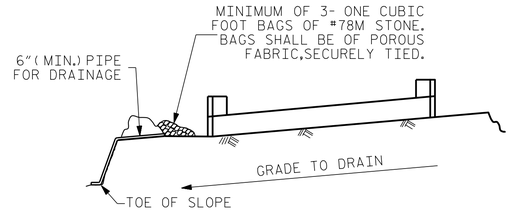
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B1	6	#9	1	40'-0"	816
✳B2	12	#9	2	24'-9"	1010
✳B3	4	#5	STR	37'-6"	156
✳B4	8	#4	STR	20'-2"	108
✳B5	10	#4	STR	4'-0"	27
✳D1	20	#6	STR	1'-6"	45
✳H1	4	#4	3	7'-8"	20
✳H2	4	#4	STR	7'-0"	19
✳H3	4	#6	3	8'-0"	48
✳K1	12	#4	STR	3'-10"	31
✳S1	50	#4	4	8'-8"	289
✳S2	50	#4	5	4'-9"	159
✳S3	10	#4	6	6'-6"	43
✳S4	14	#4	4	3'-2"	30
✳S5	14	#4	5	2'-3"	21
✳V1	24	#4	STR	3'-10"	61

✳EPOXY COATED REINFORCING STEEL	LBS	2,883

CLASS AA CONCRETE:

POUR #1: CAP	15.8 C.Y.
POUR #2: EAR WALLS & COPING	1.6 C.Y.
TOTAL	17.4 C.Y.

END BENT No. 1	END BENT No. 2
12" PRESTRESSED CONCRETE PILES NO: 5 LIN. FT.= 200	12" PRESTRESSED CONCRETE PILES NO: 5 LIN. FT.= 200
PILE DRIVING EQUIPMENT SETUP FOR 12" PRESTRESSED CONCRETE PILES EACH: 5	PILE DRIVING EQUIPMENT SETUP FOR 12" PRESTRESSED CONCRETE PILES EACH: 5
GALVANIZED STEEL SHEET PILES	GALVANIZED STEEL SHEET PILES
NO. = 36 SQ. FT. 1132.1	NO. = 36 SQ. FT. 1127.8
NO. CONNECTOR = 2 SQ. FT. 7.9	NO. CONNECTOR = 2 SQ. FT. 7.8
TOTAL NO. = 38 SQ. FT. 1140.0	TOTAL NO. = 38 SQ. FT. 1135.6

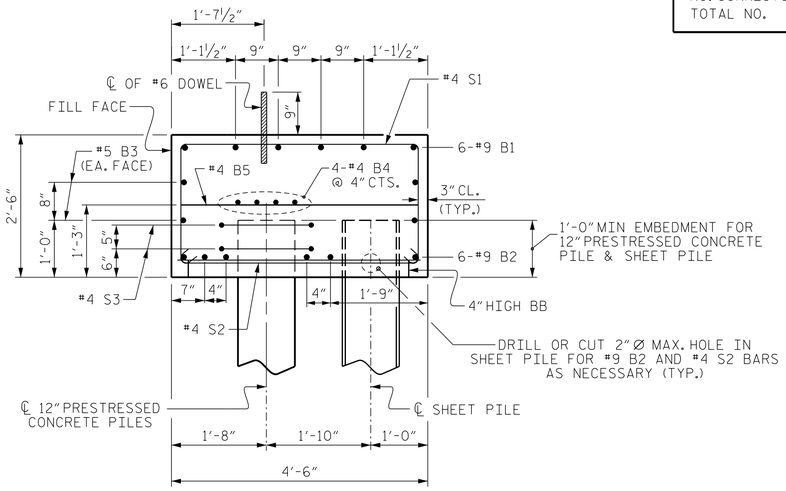


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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



SECTION A-A

PROJECT NO. 17BP.1.R.82

HYDE COUNTY

STATION: 13+23.50 -L-

SHEET 4 OF 4

ENGINEER OF RECORD:
Docusigned by: Gregory M. Gilland
NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND
8/11/2017

ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
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LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			17

DRAWN BY : G.M. GILLAND DATE : 2-27-17
CHECKED BY : D. HODGE DATE : 3-17

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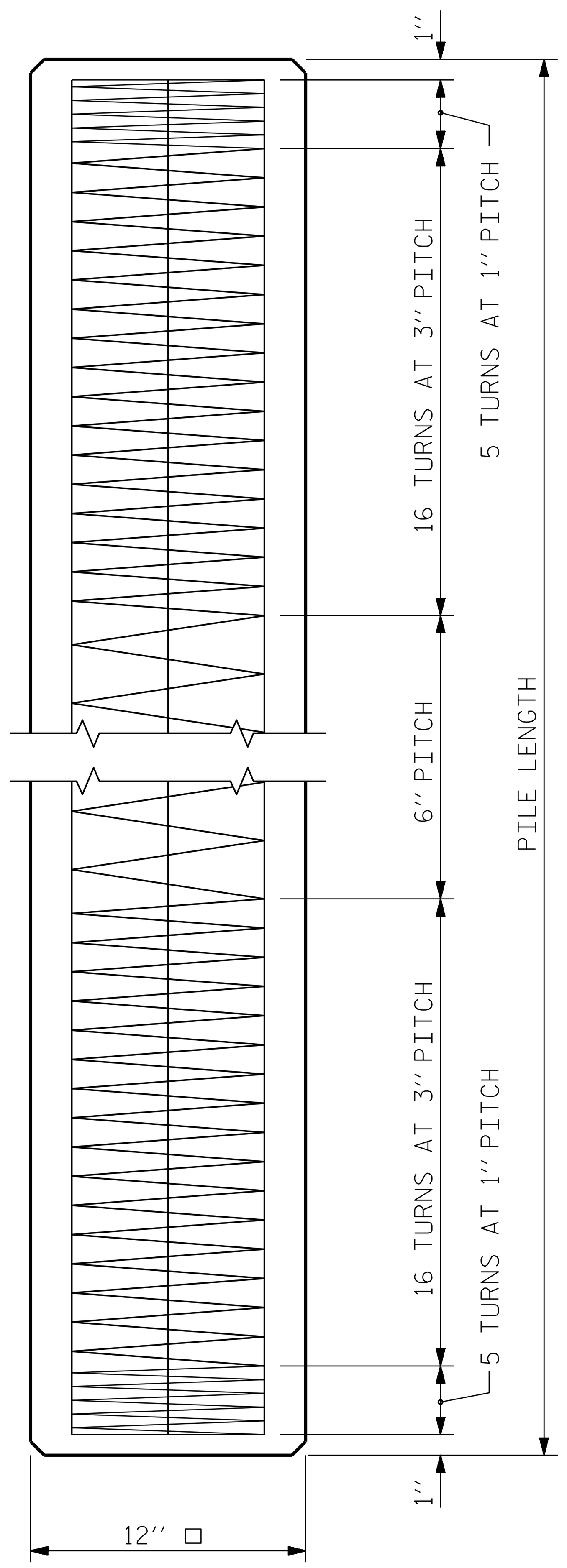
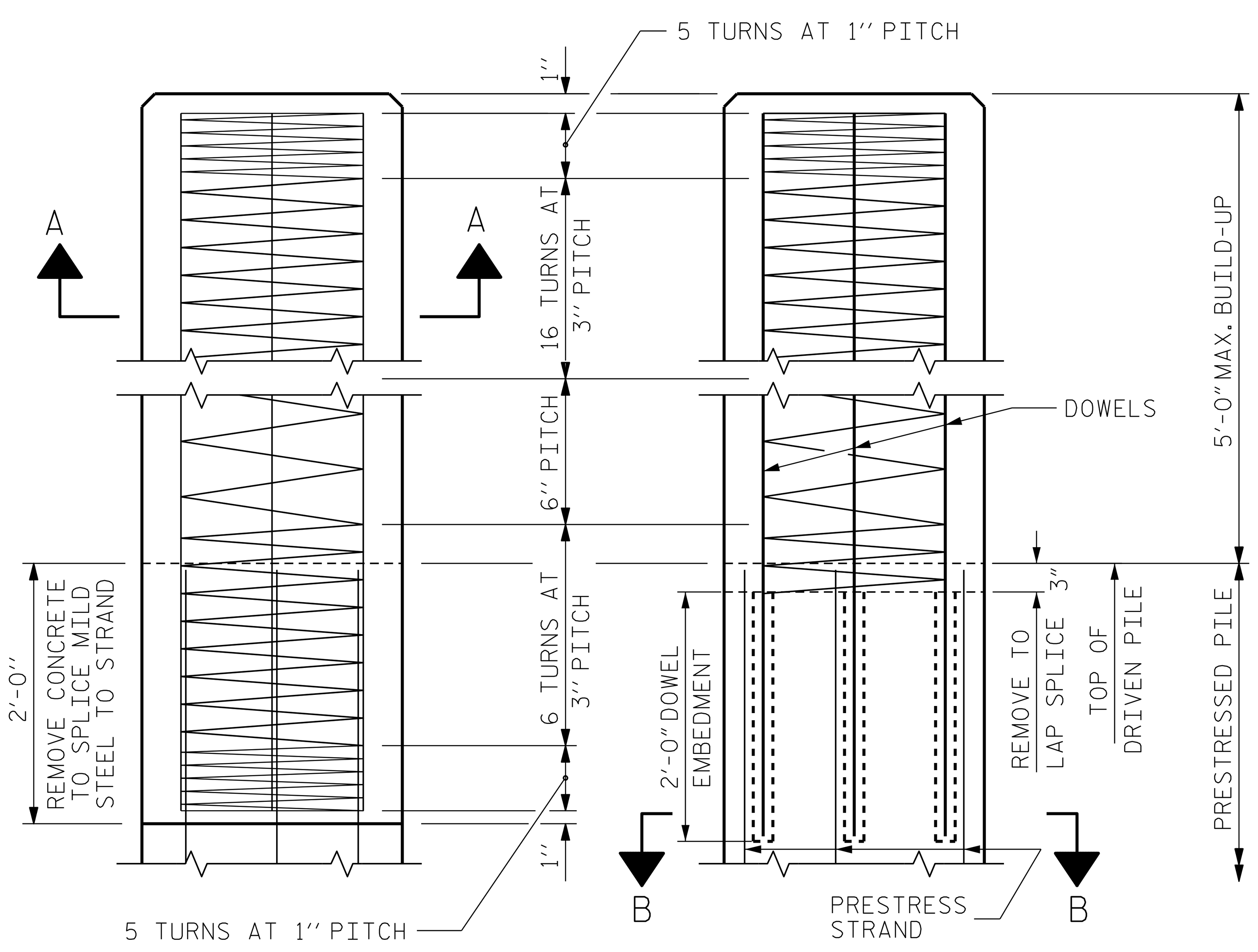
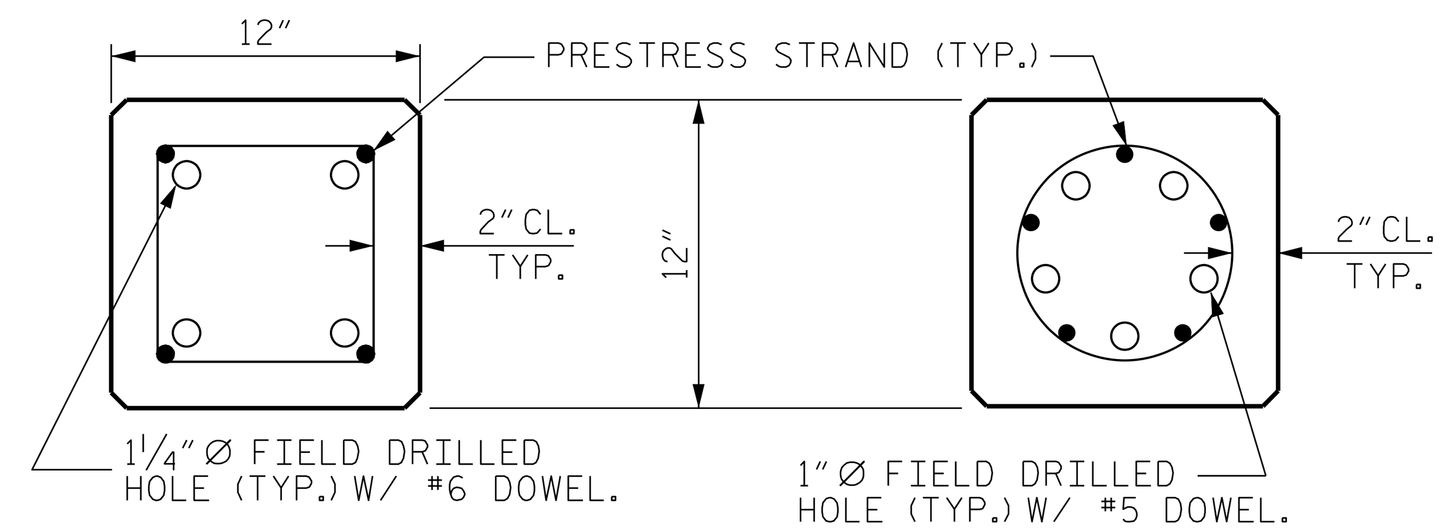


ELEVATION



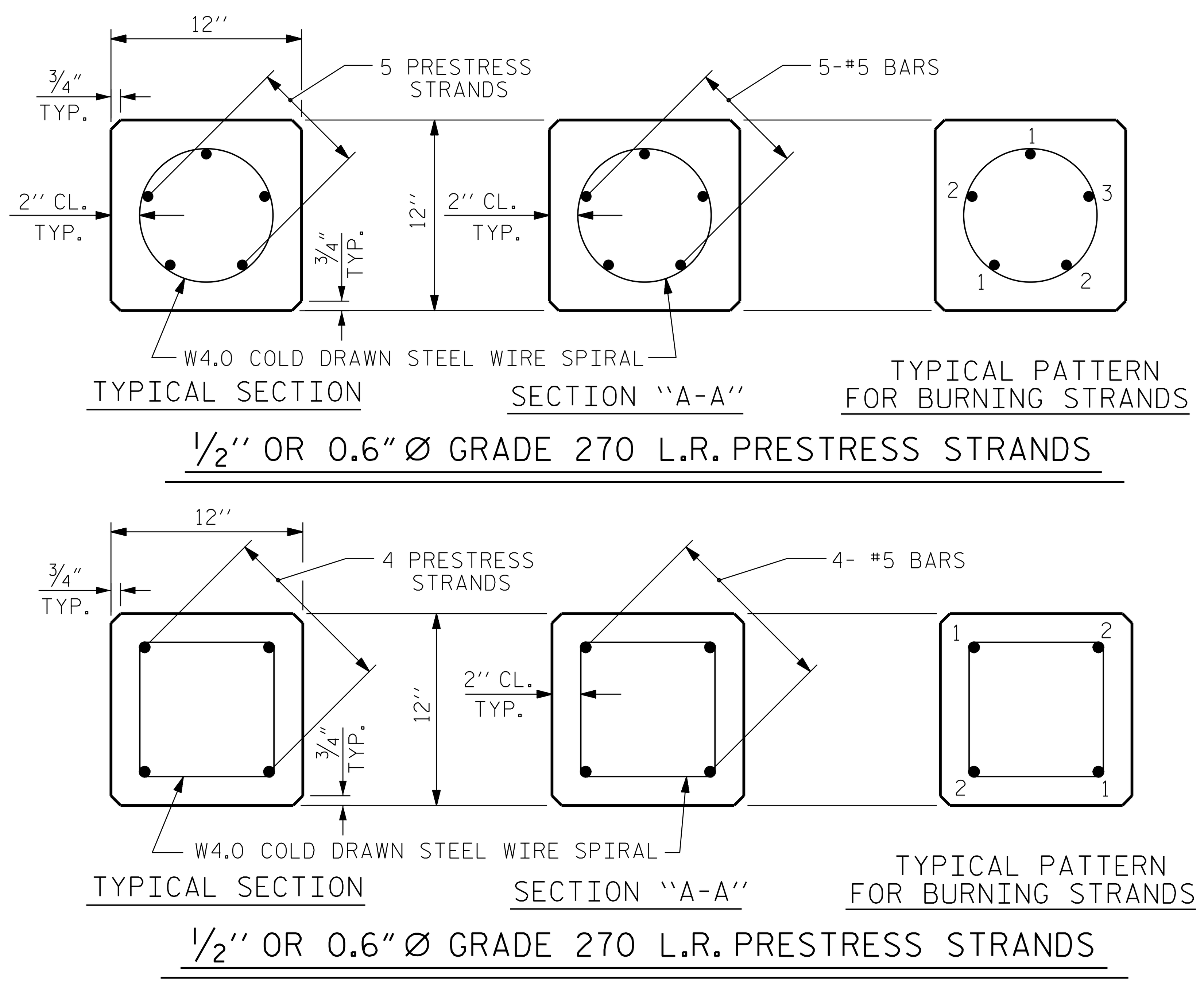
BUILD-UP AND SPIRAL REINFORCING

OPTIONAL BUILD-UP WITH DOWELS



SECTION "B-B"

(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)



NOTES

PRESTRESSED CONCRETE STRENGTH : f′c= 7,500 PSI

BUILD-UP CONCRETE STRENGTH : f′c= 7,500 PSI

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
½″	270 L.R.	0.153	41,300# PER STRAND	30,980# PER STRAND
0.6″	270 L.R.	0.217	58,600# PER STRAND	43,940# PER STRAND

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, ½″ OR 0.6″ STRANDS MAY BE USED IN EITHER THE 4 OR 5 STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED, THE LAST STRAND MAY BE BURNED SINGLY ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2″ WIDE BLACK MARK.

DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 5,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

THE WATER/CEMENT RATIO FOR CONCRETE PILES SHALL NOT EXCEED 0.40.

PRESTRESSED PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONCRETE IN THE PILES OF END BENTS SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: f′c= 5,000 PSI

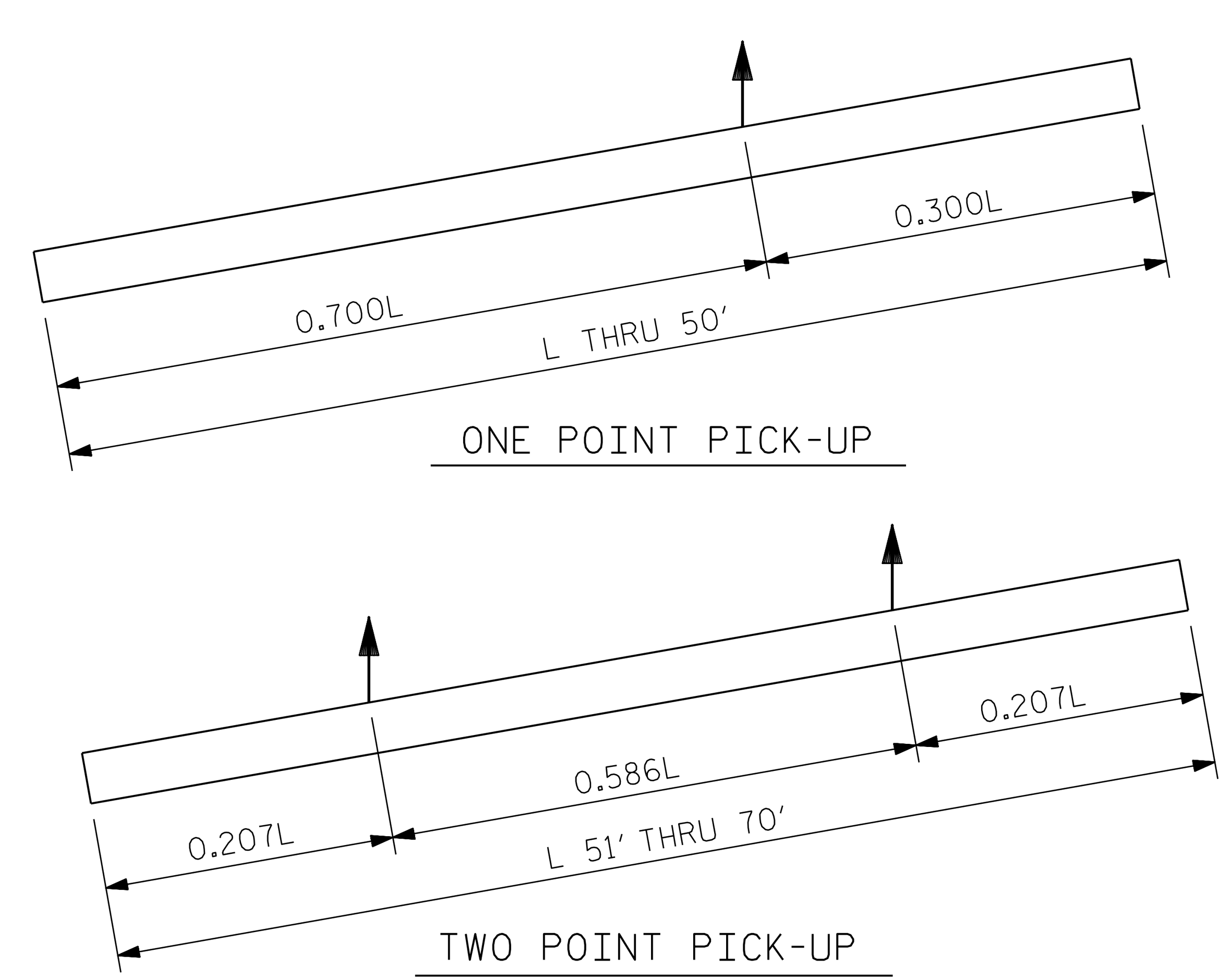
BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3″ OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN ½″ CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE W4.0 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.



PICK-UP POINTS

PROJECT NO. 17BP.1.R.82

HYDE COUNTY

STATION: 13+23.50 -L-

QUANTITIES FOR ONE 12″ PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP 0.300L	ONE POINT PICK-UP 0.700L	TWO POINT PICK-UP 0.207L	TWO POINT PICK-UP 0.586L
25′-0″	0.91	1.85	7′-6″	17′-6″		
30′-0″	1.10	2.22	9′-0″	21′-0″		
35′-0″	1.28	2.59	10′-6″	24′-6″		
40′-0″	1.46	2.96	12′-0″	28′-0″		
45′-0″	1.64	3.33	13′-6″	31′-6″		
50′-0″	1.83	3.72	15′-0″	35′-0″		
55′-0″	2.01	4.09			11′-4½″	32′-3″
60′-0″	2.19	4.46			12′-5″	35′-2″
65′-0″	2.38	4.81			13′-5½″	38′-1″
70′-0″	2.57	5.18			14′-6″	41′-0″

ENGINEER OF RECORD:
DocuSigned by: Gregory M. Gilland

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND 8/11/2017

WETHERILL ENGINEERING
1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

12″ PRESTRESSED CONCRETE PILE

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-15
1			3				TOTAL SHEETS
2			4				17

ASSEMBLED BY : D. HODGE DATE : 6/17
CHECKED BY : G. M. GILLAND DATE : 6/17

DRAWN BY : FCJ 7/88
CHECKED BY : CRK 3/89

REV. 11/30/10 WMC/GM
REV. 10/1/11 MAA/GM
REV. 12/14 MAA/TMG

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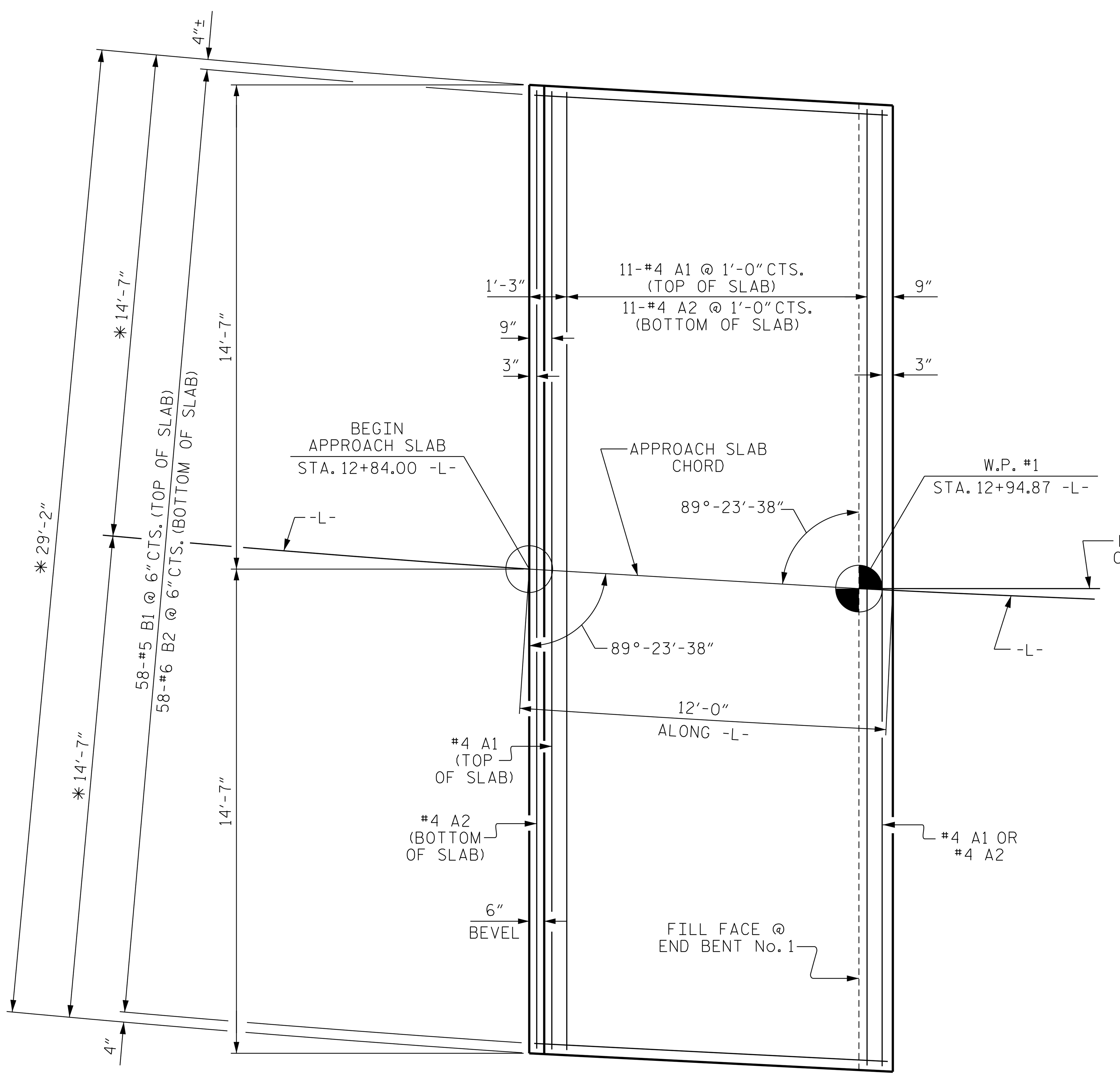

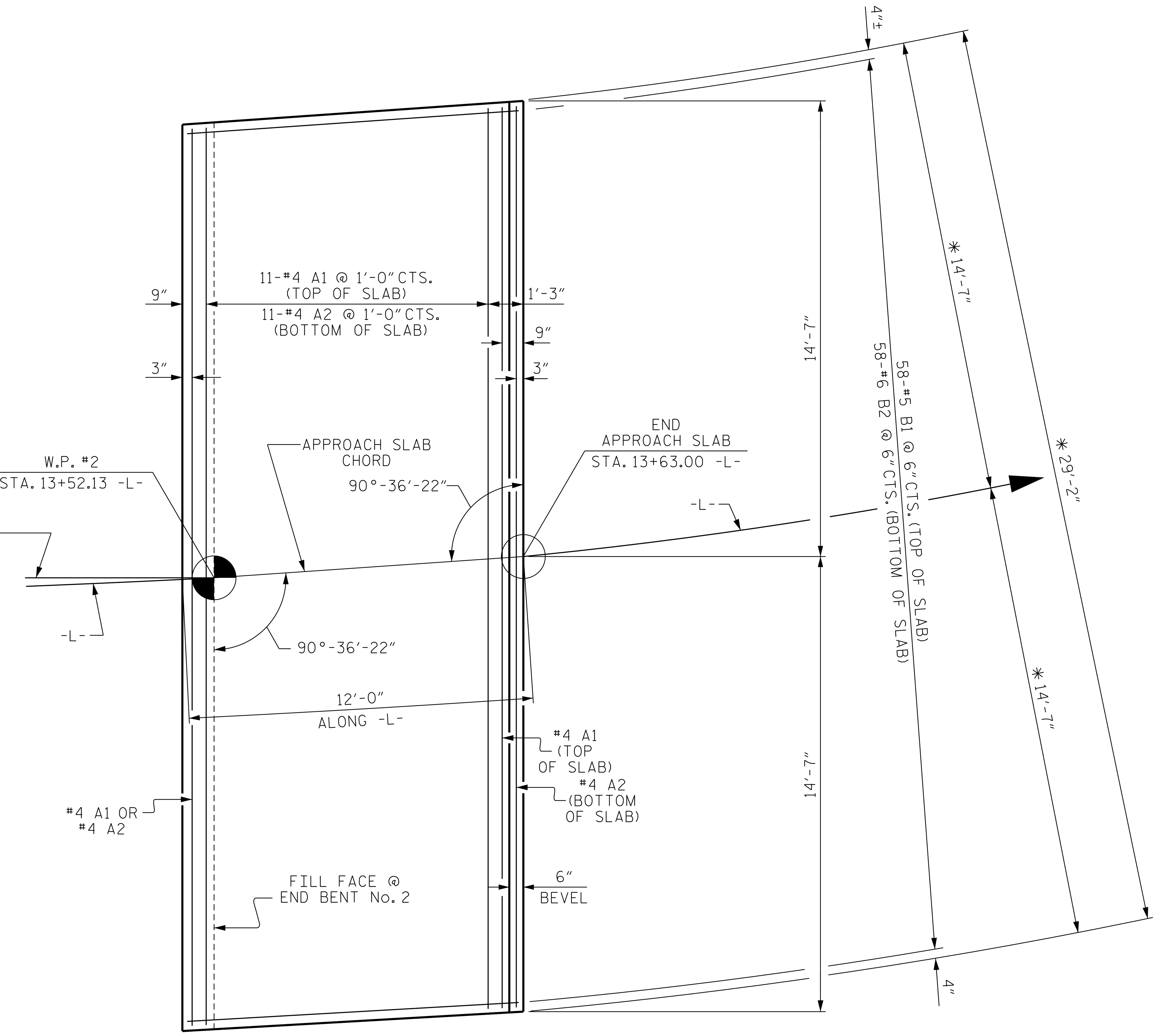

PLAN @ END BENT No. 1

✻ DENOTES RADIAL DIMENSION

PLAN @ END BENT No. 2

✻ DENOTES RADIAL DIMENSION

PROJECT NO. 17BP.1.R.82

HYDE COUNTY

STATION: 13+23.50 -L-

SHEET 1 OF 2

ENGINEER OF RECORD:

DocuSigned by: Gregory M. Gilland

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND 8/11/2017

WETHERILL ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : D. HODGE DATE : 3/17
CHECKED BY : G.M. GILLAND DATE : 3/17

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NOTES

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

GEOTEXTILE SHALL BE TYPE 1 IN 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.

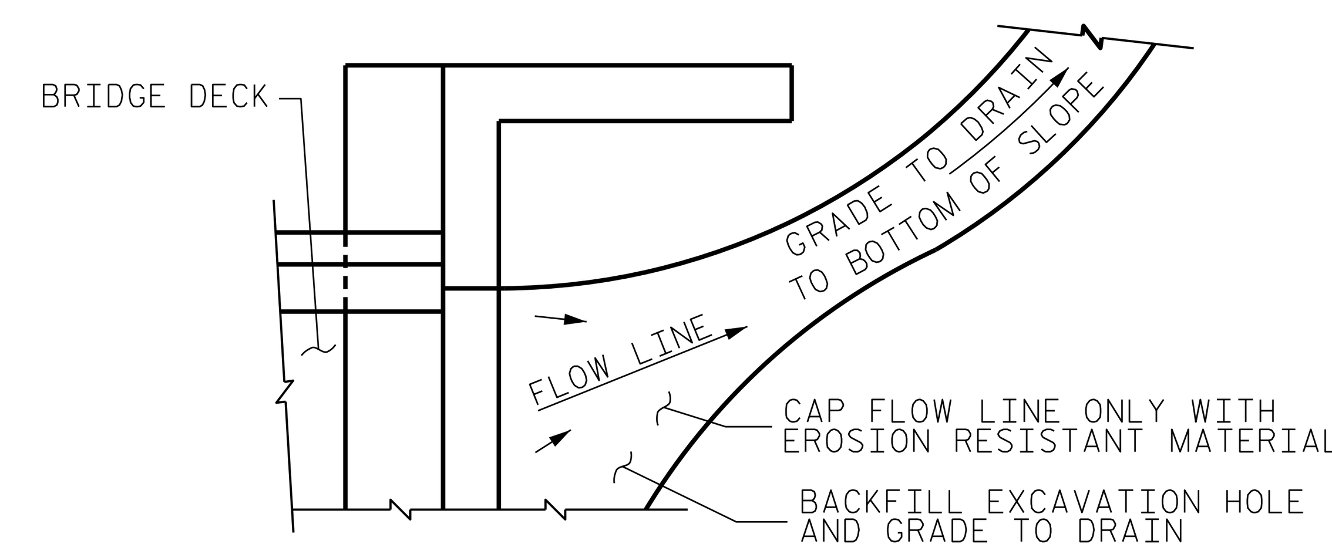
BILL OF MATERIAL

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
* EPOXY COATED REINFORCING STEEL				LBS.	2,192
CLASS AA CONCRETE				C. Y.	16.6

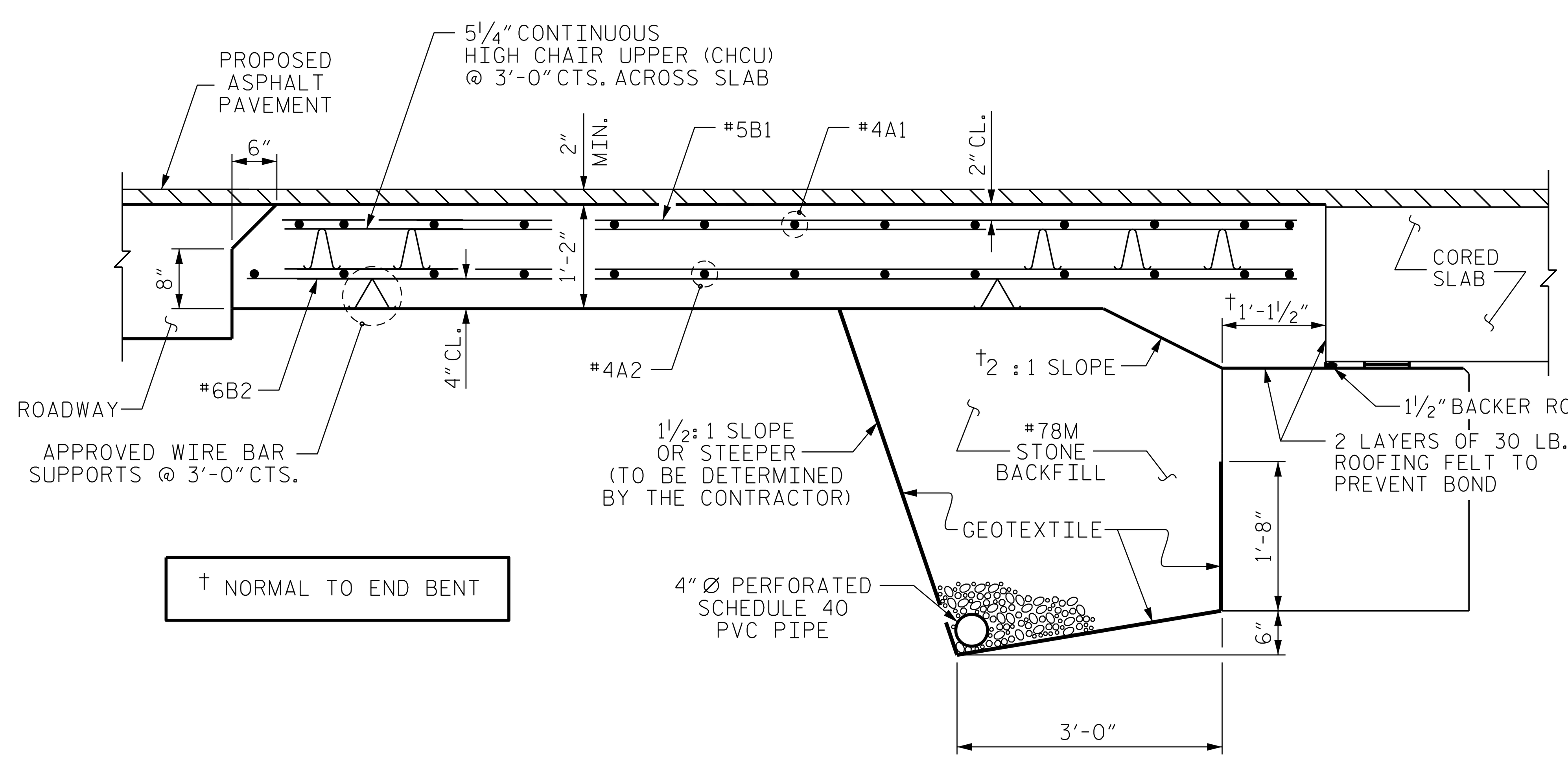
APPROACH SLAB AT EB #2

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
* EPOXY COATED REINFORCING STEEL				LBS.	2,192
CLASS AA CONCRETE				C. Y.	16.6



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



SECTION THRU SLAB

PROJECT NO. 17BP.1.R.82

HYDE COUNTY

STATION: 13+23.50 -L-

SHEET 2 OF 2

ENGINEER OF RECORD: Gregory M. Gilland — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 37400, GREGORY M. GILLAND, 8/11/2017

WETHERILL ENGINEERING, 1223 Jones Franklin Rd. Raleigh, N.C. 27606, Bus: 919 851 8077, Fax: 919 851 8107, LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			17

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DRAWN BY : D. HODGE DATE : 3/17
CHECKED BY : G.M. GILLAND DATE : 3/17

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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.

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

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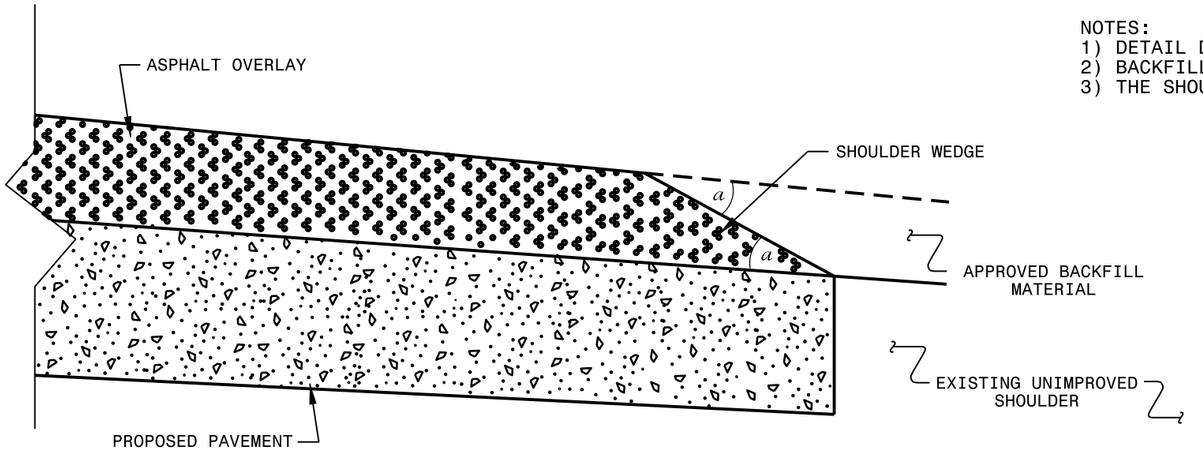
ENGLISH

JANUARY, 1990

STD. NO. SN

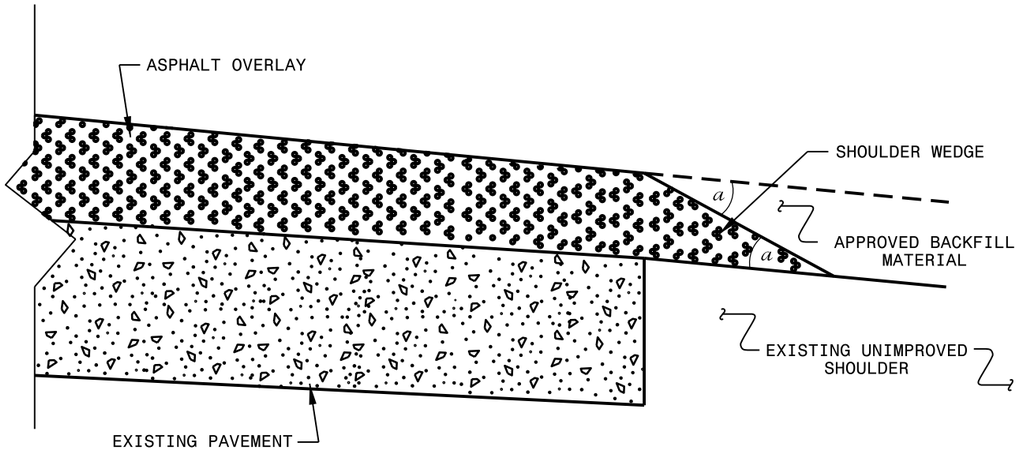
PROJECT REFERENCE NO.	SHEET NO.



NOTES:
1) DETAIL DOES NOT APPLY TO OGAFC AND ULTRA-THIN BONDED WEARING COURSE.
2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.

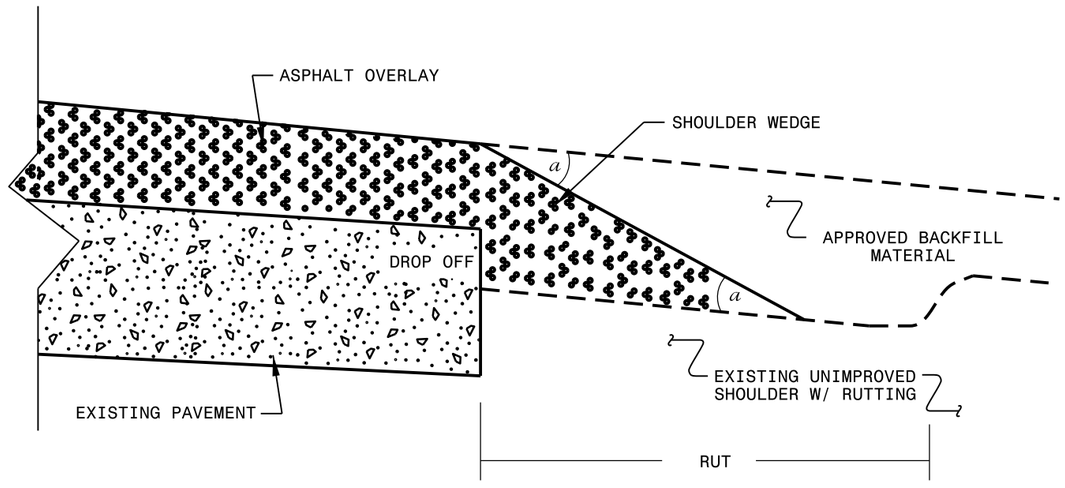
SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ Widening or with Existing Paved Shoulder having no dropoffs)



SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ NO Widening)



SHOULDER WEDGE DETAIL

(Resurfacing Adjacent to Rutted Shoulder)

- SHOULDER WEDGE ANGLE = 30°

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SHOULDER WEDGE DETAILS

ORIGINAL BY:	T.SPELL	DATE:	7-19-11
MODIFIED BY:		DATE:	10/16/12
CHECKED BY:		DATE:	
FILE SPEC.:	s:usr/details/stand/shoulderwedgedetail.dgn		

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