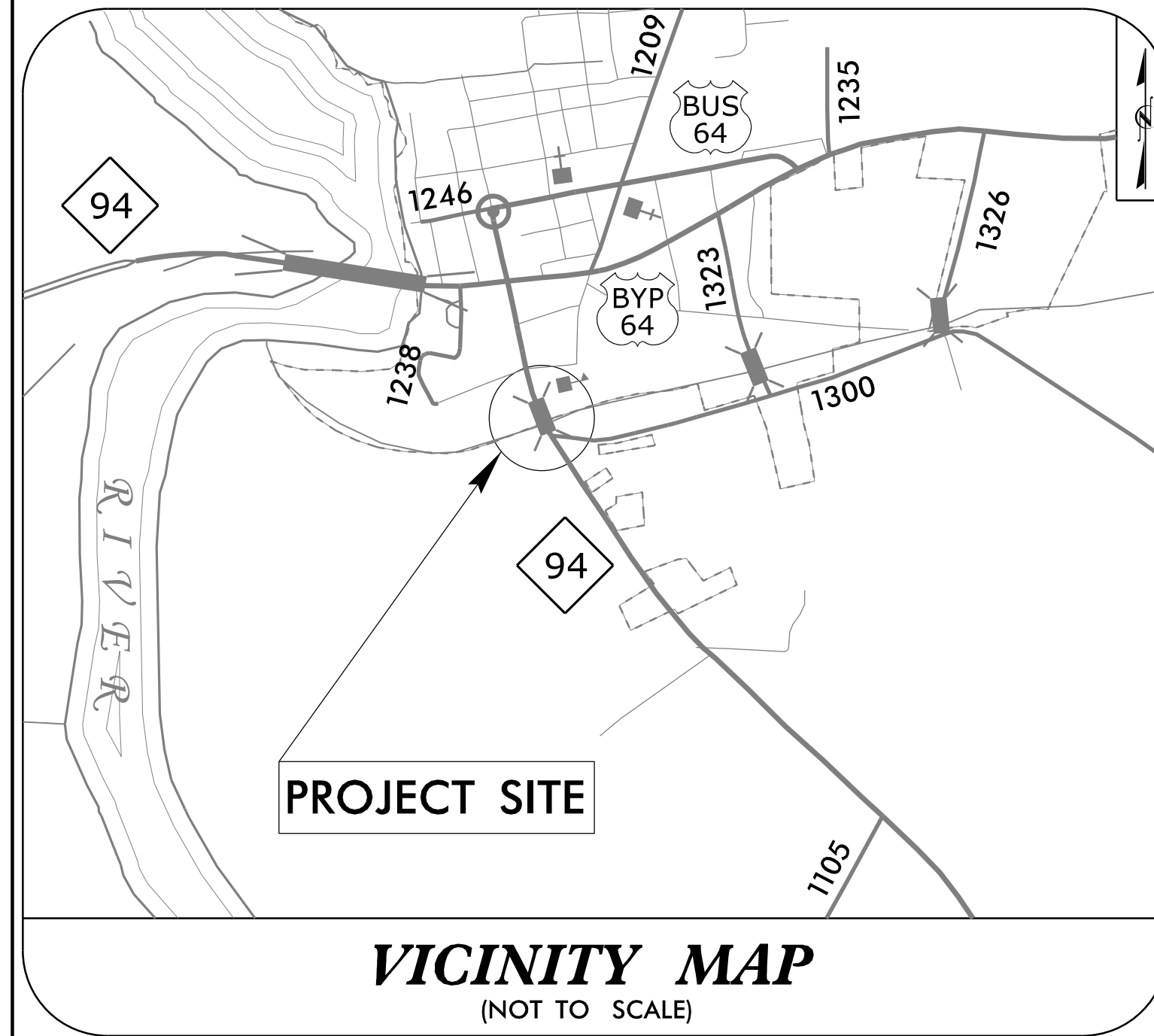


PROJECT: 17BP.1.R.59

CONTRACT:



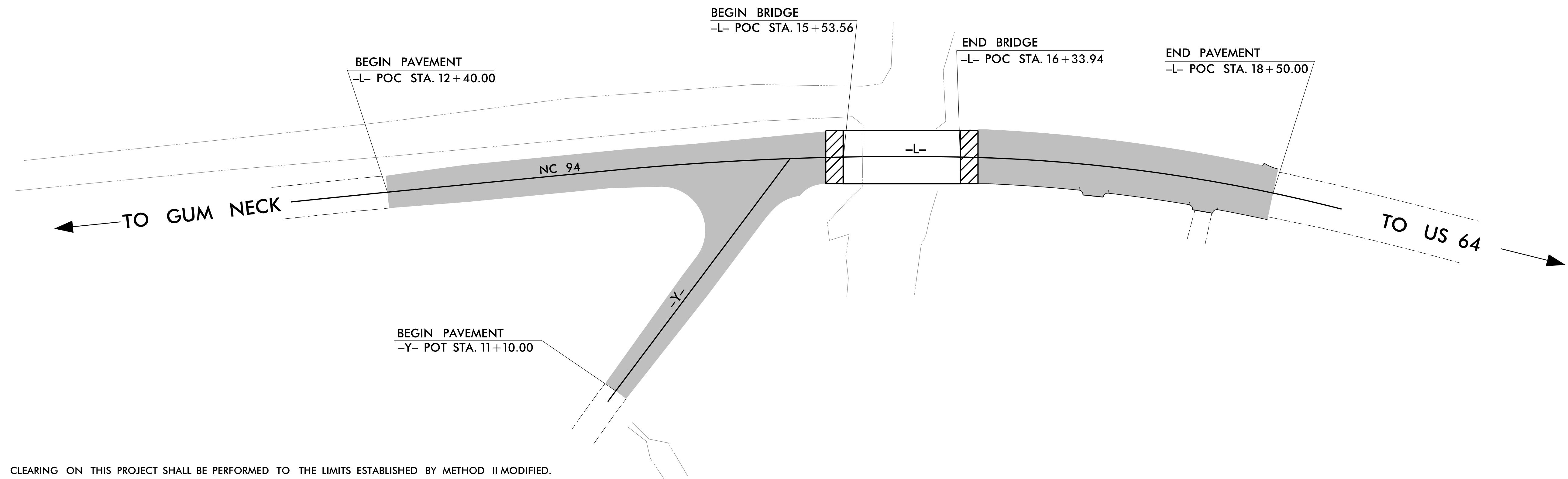
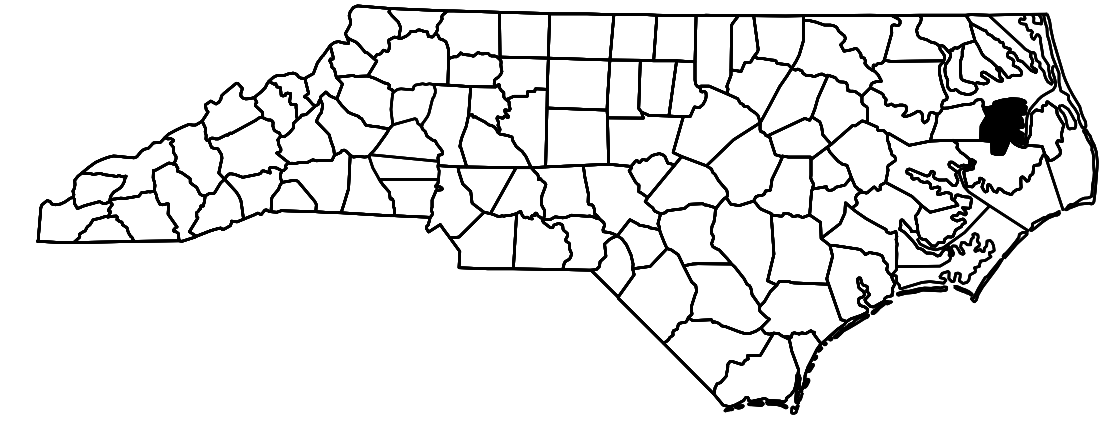
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TYRRELL COUNTY

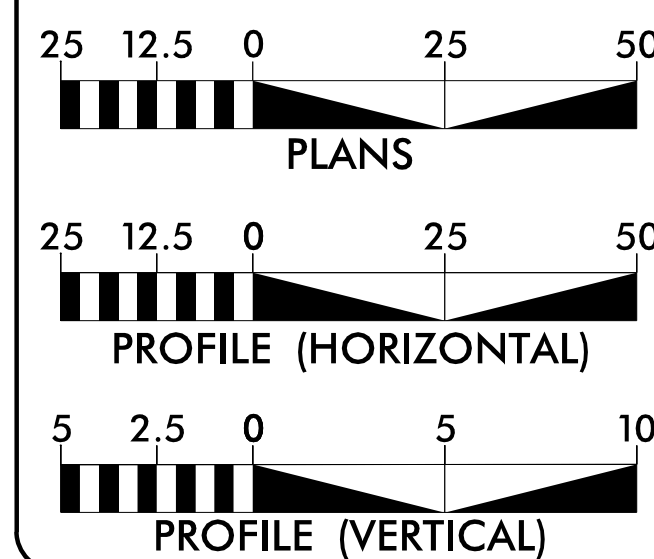
LOCATION: BRIDGE NO. 880009 OVER CANAL ON NC 94

TYPE OF WORK: PAVING, GRADING, DRAINAGE & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.1.R.59	1	57



GRAPHIC SCALES



DESIGN DATA

ADT 2010 = 2600

K = NA

D = NA

T = 7 %

V = 45/35 MPH

FUNC CLASSIFICATION = MAJOR COLLECTOR

REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT = 0.101 Miles

LENGTH OF STRUCTURE PROJECT = 0.015 Miles

TOTAL LENGTH OF PROJECT = 0.116 Miles

URS

Prepared In the Office of:
URS Corporation - North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415
NC LICENSE # C-2243

2012 STANDARD SPECIFICATIONS

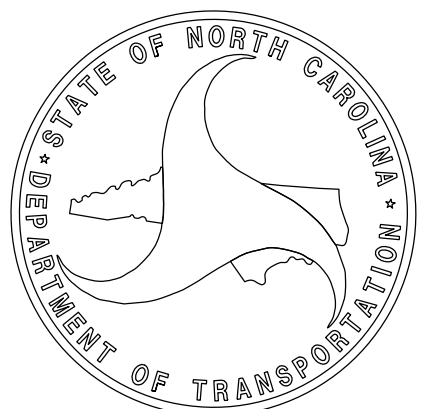
LETTING DATE:

DENNIS K. HOYLE, PE
PROJECT ENGINEER

JERRY B. JAVELLANA, PE
PROJECT DESIGN ENGINEER

PREPARED FOR
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
HIGHWAY DIVISION 1

NCDOT CONTACT:
JOHN S. ABEL, Jr.
Bridge Program Manager



6/2/99

7/1/2015
R:\Roadway\Pro\Tjrr\09_rdy_1-A.dgn
Jerry Javellana

		PROJECT REFERENCE NO.		SHEET NO.																																													
		17BP.J.R.59		1-A																																													
Prepared by URS URS Corporation - North Carolina 1600 Perimeter Park Drive, Suite 400 Morrisville, NC 27560 PHONE: 919/461-1100 FAX: 919/461-1415 NC L.I.C. # C-2243		ROADWAY DESIGN ENGINEER 7/9/2015  Seal 039831 ENGINEER JERRY B. JAVELLANA Documented by: <i>Jerry Javellana</i> 448880286A04007																																															
SHEET NUMBER	TITLE	GENERAL NOTES:	2012 SPECIFICATIONS	EFFECTIVE: 01-17-2012 REVISED: 10-31-2014	2012 ROADWAY ENGLISH STANDARD DRAWINGS EFF. 01-17-2012 REV. 10-30-2012																																												
1	TITLE SHEET	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.		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:																																												
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS																																																
1-B	CONVENTIONAL SYMBOLS																																																
2	TYPICAL SECTIONS, PAVEMENT SCHEDULE , AND WEDGING DETAIL																																																
2-A	DETAIL FOR STRUCTURE ANCHOR UNIT, TYPE III																																																
3-A	SUMMARY OF DRAINAGE QUANTITIES, SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, REMOVAL OF EXISTING ASPHALT PAVEMENT SUMMARY, AND BREAKING OF EXISTING ASPHALT PAVEMENT SUMMARY	CLEARING:	CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II (MODIFIED).		<table><tr><th>STD.NO.</th><th>TITLE</th></tr><tr><td colspan="2">DIVISION 2 - EARTHWORK</td></tr><tr><td>200.02</td><td>Method of Clearing - Method II Modified</td></tr><tr><td>225.02</td><td>Guide for Grading Subgrade - Secondary and Local</td></tr><tr><td>225.04</td><td>Method of Obtaining Superelevation - Two Lane Pavement</td></tr><tr><td colspan="2">DIVISION 3 - PIPE CULVERTS</td></tr><tr><td>300.01</td><td>Method of Pipe Installation</td></tr><tr><td colspan="2">DIVISION 4 - MAJOR STRUCTURES</td></tr><tr><td>422.10</td><td>Reinforced Bridge Approach Fills</td></tr><tr><td colspan="2">DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</td></tr><tr><td>560.01</td><td>Method of Shoulder Construction - High Side of Superelevated Curve - Method I</td></tr><tr><td colspan="2">DIVISION 8 - INCIDENTALS</td></tr><tr><td>840.00</td><td>Concrete Base Pad for Drainage Structures</td></tr><tr><td>840.01</td><td>Brick Catch Basin - 12" thru 54" Pipe</td></tr><tr><td>840.02</td><td>Concrete Catch Basin - 12" thru 54" Pipe</td></tr><tr><td>840.03</td><td>Frame, Grates and Hood - for Use on Standard Catch Basin</td></tr><tr><td>840.46</td><td>Traffic Bearing Precast Drainage Structure</td></tr><tr><td>846.01</td><td>Concrete Curb, Gutter and Curb & Gutter</td></tr><tr><td>848.02</td><td>Driveway Turnout - Radius Type</td></tr><tr><td>862.01</td><td>Guardrail Placement</td></tr><tr><td>862.02</td><td>Guardrail Installation</td></tr><tr><td>876.02</td><td>Guide for Rip Rap at Pipe Outlets</td></tr></table>	STD.NO.	TITLE	DIVISION 2 - EARTHWORK		200.02	Method of Clearing - Method II Modified	225.02	Guide for Grading Subgrade - Secondary and Local	225.04	Method of Obtaining Superelevation - Two Lane Pavement	DIVISION 3 - PIPE CULVERTS		300.01	Method of Pipe Installation	DIVISION 4 - MAJOR STRUCTURES		422.10	Reinforced Bridge Approach Fills	DIVISION 5 - SUBGRADE, BASES AND SHOULDERS		560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I	DIVISION 8 - INCIDENTALS		840.00	Concrete Base Pad for Drainage Structures	840.01	Brick Catch Basin - 12" thru 54" Pipe	840.02	Concrete Catch Basin - 12" thru 54" Pipe	840.03	Frame, Grates and Hood - for Use on Standard Catch Basin	840.46	Traffic Bearing Precast Drainage Structure	846.01	Concrete Curb, Gutter and Curb & Gutter	848.02	Driveway Turnout - Radius Type	862.01	Guardrail Placement	862.02	Guardrail Installation	876.02	Guide for Rip Rap at Pipe Outlets
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4	PLAN SHEET & PROFILE																																																
TMP-1 THRU TMP-4	TRAFFIC MANAGEMENT PLANS																																																
SD-1	SPECIAL SIGN DESIGN																																																
EC-1 THRU EC-4	EROSION CONTROL PLANS																																																
X-1 THRU X-7	CROSS-SECTIONS																																																
S-1 THRU S-32	STRUCTURE PLANS																																																
N/A	STRUCTURE STANDARD NOTES																																																
		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																																														
		DRIVEWAYS:	DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 900 MM RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.																																														
		GUARDRAIL:	THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.																																														
		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 MCNC (TELEPHONE) AND PNG (GAS).																																														
			ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.																																														

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin	
Property Corner	
Property Monument	
Parcel/Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Known Soil Contamination: Area or Site	
Potential Soil Contamination: Area or Site	

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

RIGHT OF WAY:

Baseline Control Point	
Existing Right of Way Marker	
Existing Right of Way Line	
Proposed Right of Way Line	
Proposed Right of Way Line with Iron Pin and Cap Marker	
Proposed Right of Way Line with Concrete or Granite RW Marker	
Proposed Control of Access Line with Concrete C/A Marker	
Existing Control of Access	
Proposed Control of Access	
Existing Easement Line	
Proposed Temporary Construction Easement	
Proposed Temporary Drainage Easement	
Proposed Permanent Drainage Easement	
Proposed Permanent Drainage / Utility Easement	
Proposed Permanent Utility Easement	
Proposed Temporary Utility Easement	
Proposed Aerial Utility Easement	
Proposed Permanent Easement with Iron Pin and Cap Marker	

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Curb Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	
Single Tree	
Single Shrub	
Hedge	
Woods Line	

VEGETATION:

Orchard	
Vineyard	

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	
MINOR:	
Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

UTILITIES:

POWER:	
Existing Power Pole	
Proposed Power Pole	
Existing Joint Use Pole	
Proposed Joint Use Pole	
Power Manhole	
Power Line Tower	
Power Transformer	
U/G Power Cable Hand Hole	
H-Frame Pole	
Recorded U/G Power Line	
Designated U/G Power Line (S.U.E.*)	

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

Gas Valve	
Gas Meter	
Recorded U/G Gas Line	
Designated U/G Gas Line (S.U.E.*)	
Above Ground Gas Line	

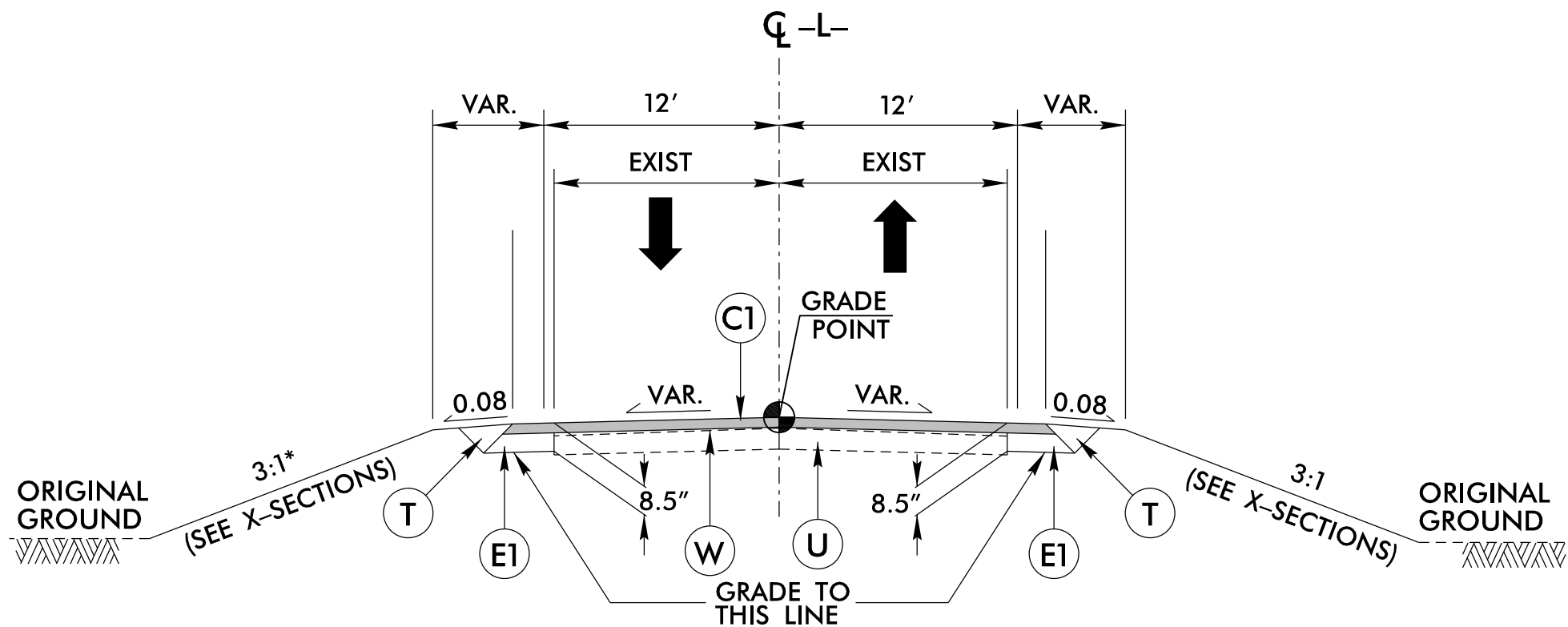
SANITARY SEWER:

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

MISCELLANEOUS:

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

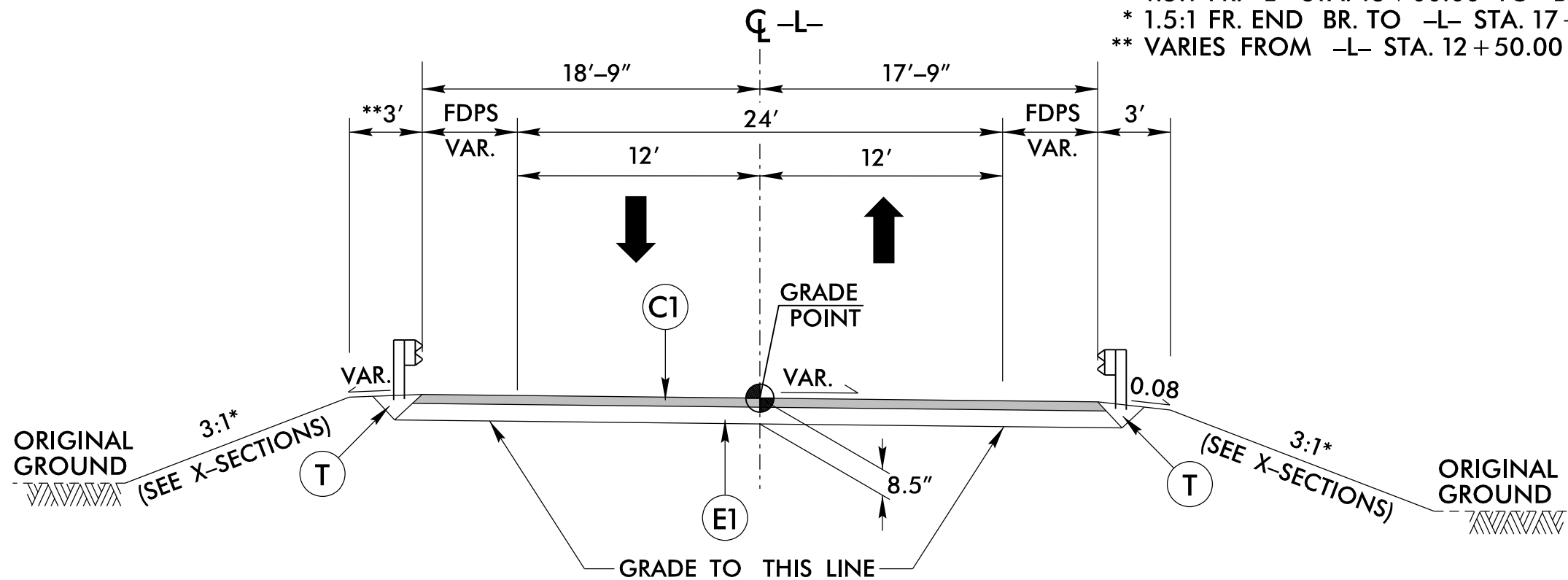
6/2/99



TYPICAL SECTION NO. 1

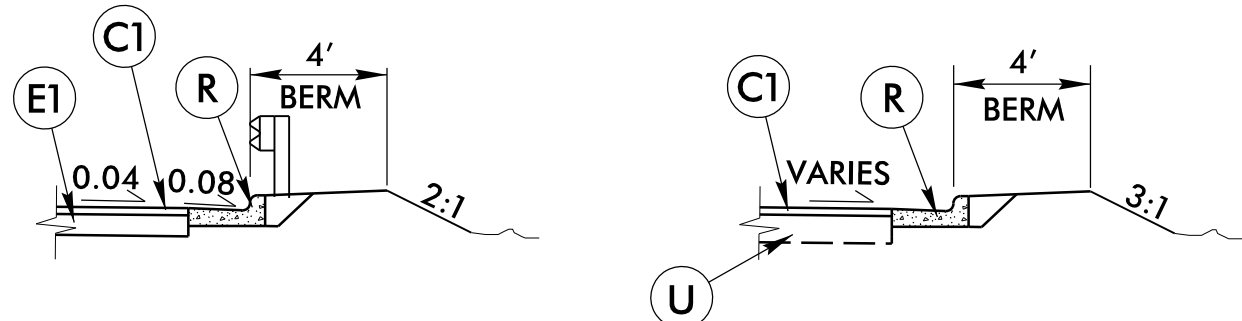
-L- STA. 12+40.00 TO -L- STA. 14+15.00
-L- STA. 17+60.00 TO -L- STA. 18+50.00

- * 2:1 @ -L- STA. 12+50.00 LT
- * 2:1 @ BEGIN BR. RT
- * 2:1 FR. END BR. TO -L- STA. 17+00.00 RT
- * 1.5:1 FR. -L- STA. 13+00.00 TO BEGIN BR. LT
- * 1.5:1 FR. END BR. TO -L- STA. 17+00.00 LT
- ** VARIES FROM -L- STA. 12+50.00 TO BEGIN BR. LT



TYPICAL SECTION NO. 2

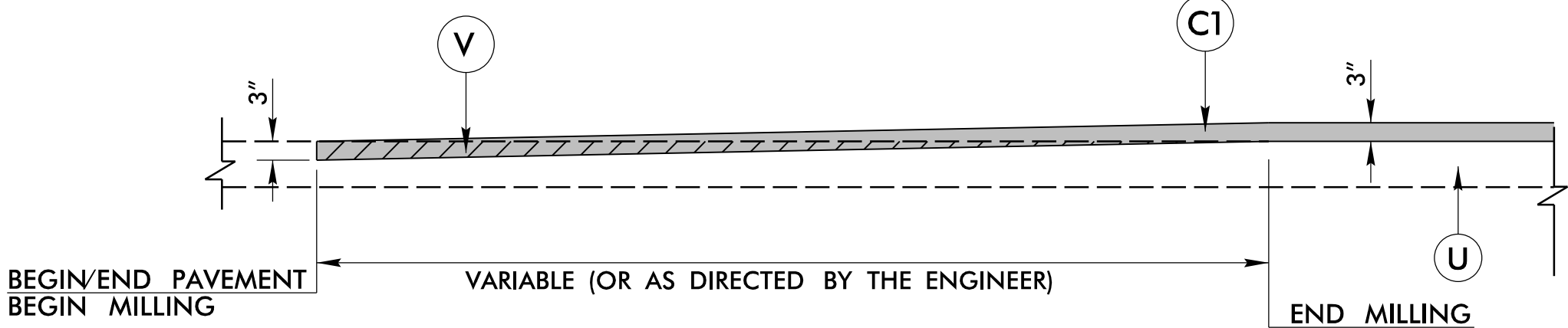
-L- STA. 14+15.00 TO -L- STA. 15+53.56 (BEGIN BRIDGE)
-L- STA. 16+33.94 (END BRIDGE) TO -L- STA. 17+60.00



FROM END APPROACH SLAB TO -L- STA. 17+25.00 RT
FROM -L- STA. 17+25.00 TO -L- STA. 18+50.00 RT

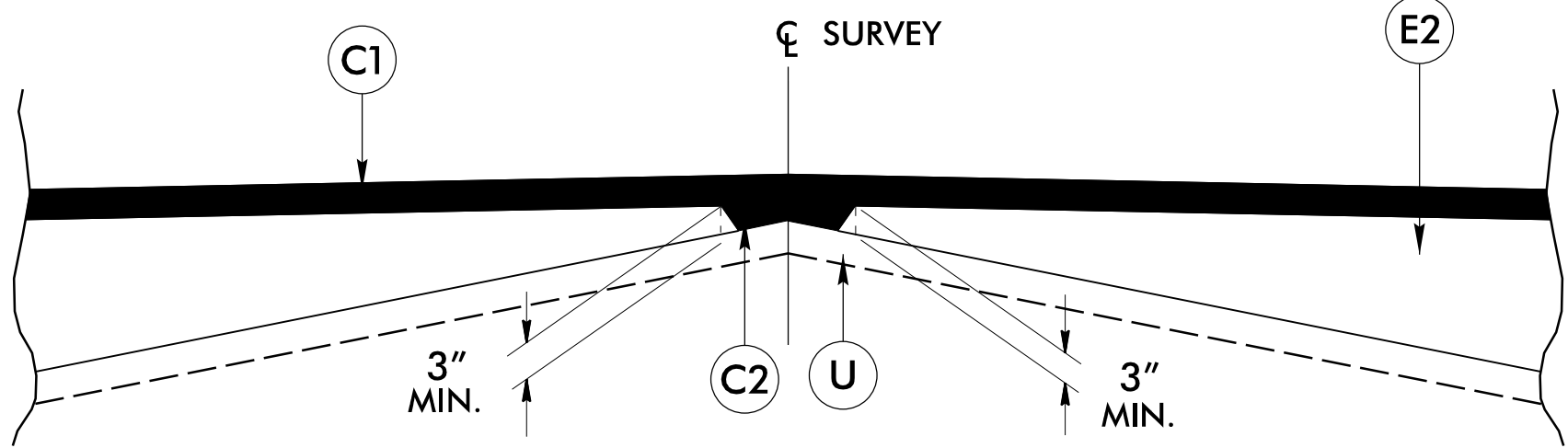
TYPICAL SECTION WITH 2'-6" C&G

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 1 & 2

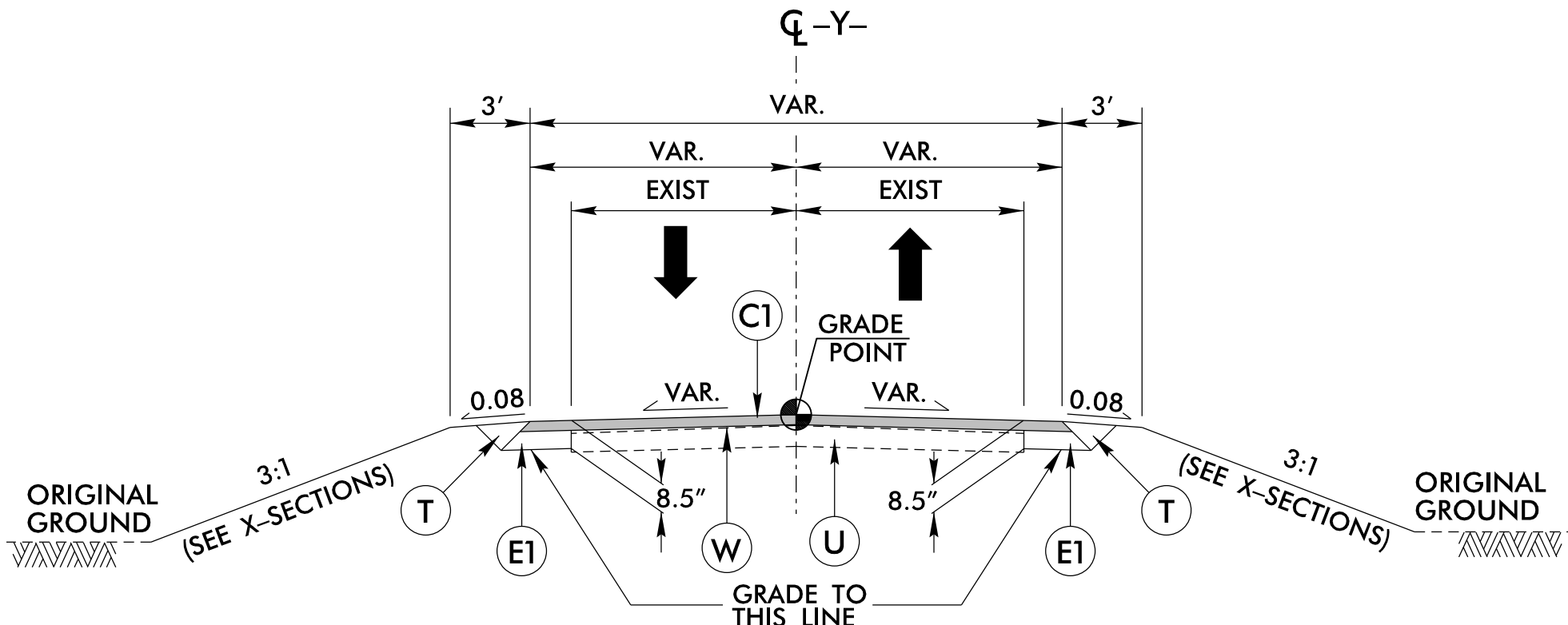


V TIE-IN MILLING DETAIL

NOTE: END MILLING WHERE PROPOSED GRADE IS 3" ABOVE EXISTING PAVEMENT

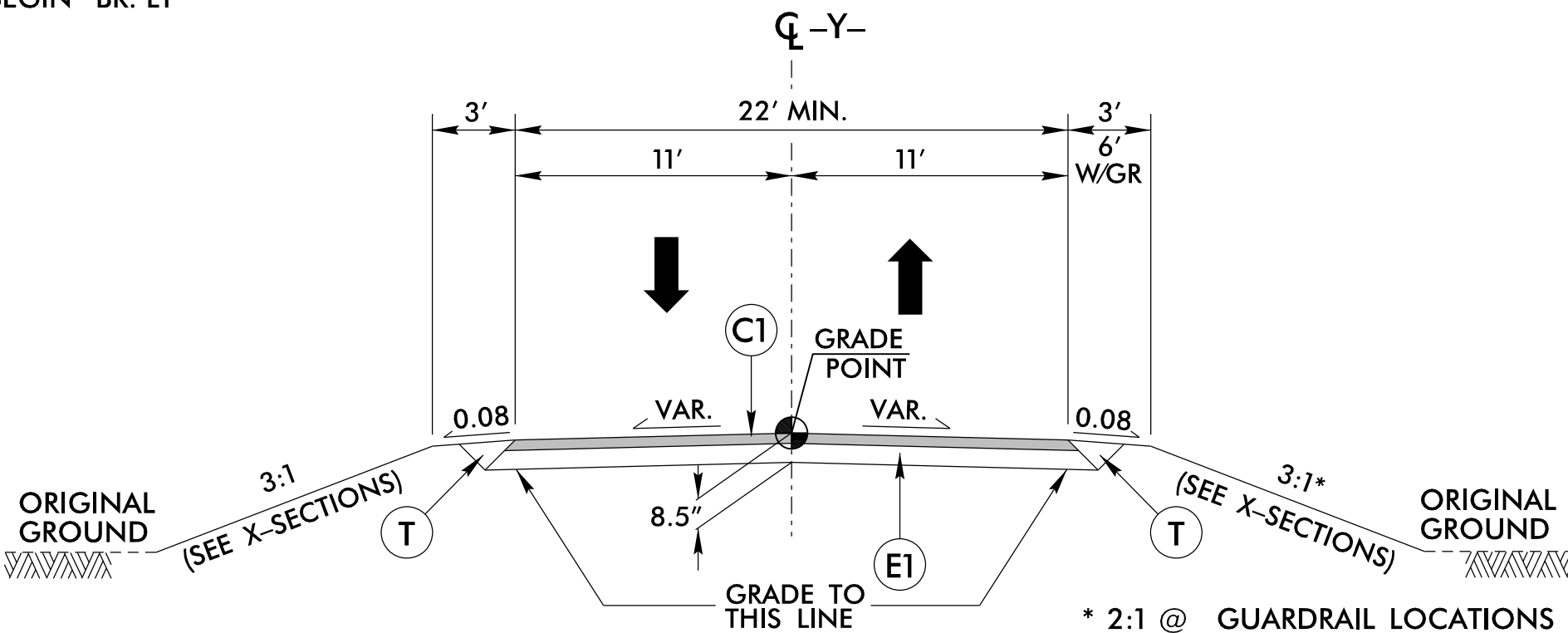


W DETAIL SHOWING METHOD OF WEDGING



TYPICAL SECTION NO. 3

-Y- STA. 11+10.00 TO -Y- STA. 12+15.00



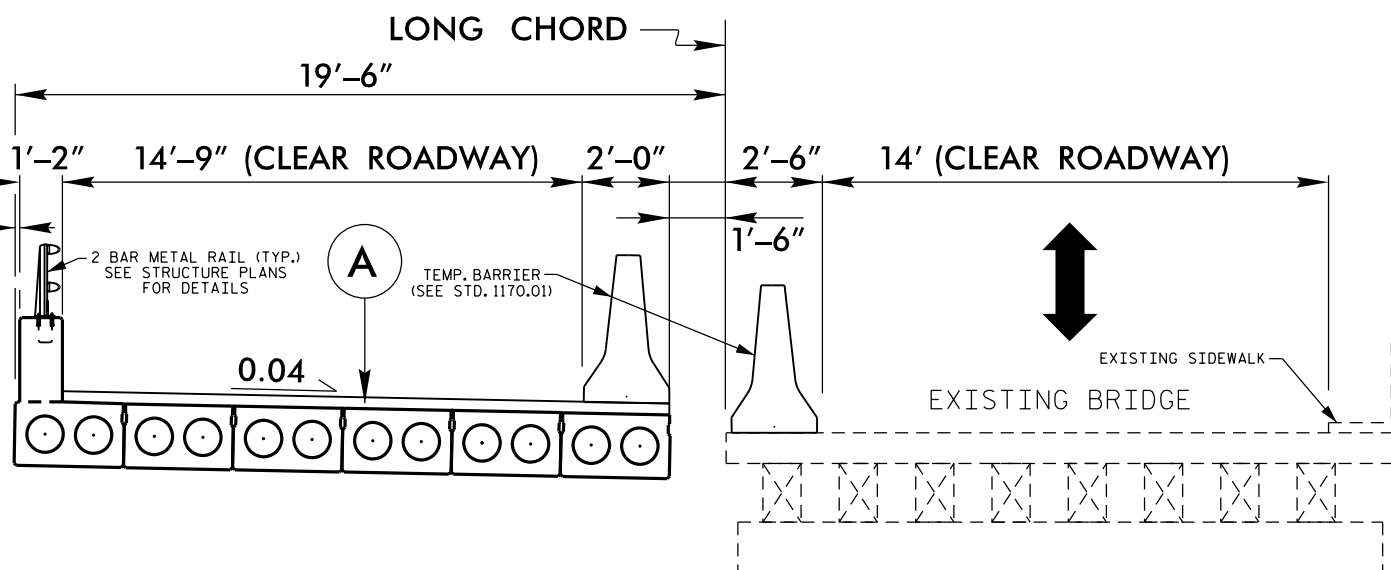
TYPICAL SECTION NO. 4

-Y- STA. 12+15.00 TO -Y- STA. 12+93.85

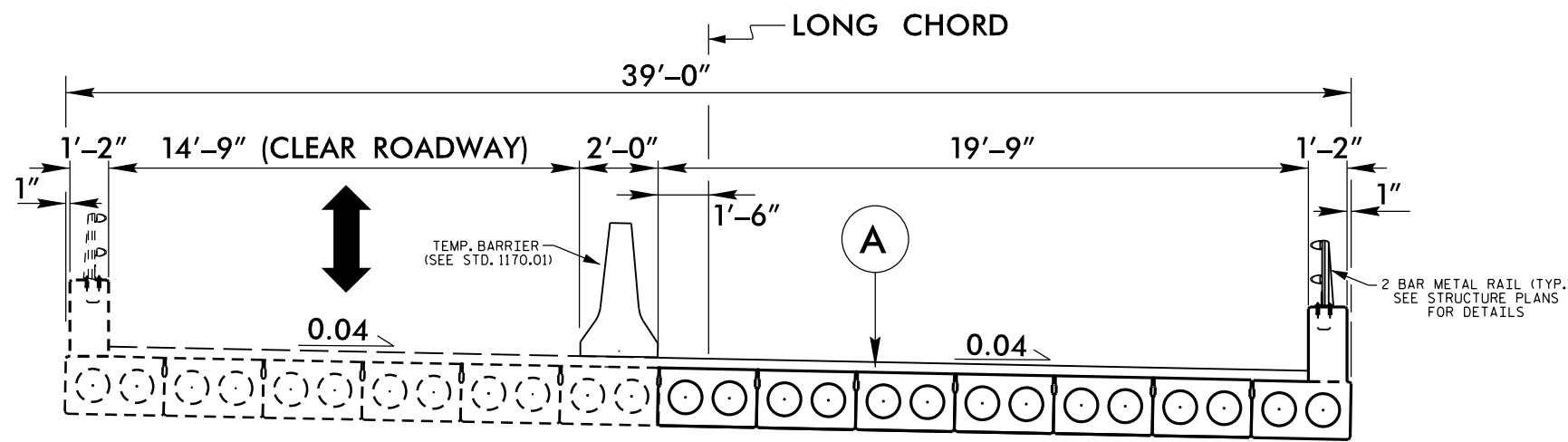
* 2:1 @ GUARDRAIL LOCATIONS

TYPICAL SECTION ON STRUCTURE
(SEE STRUCTURE PLANS)

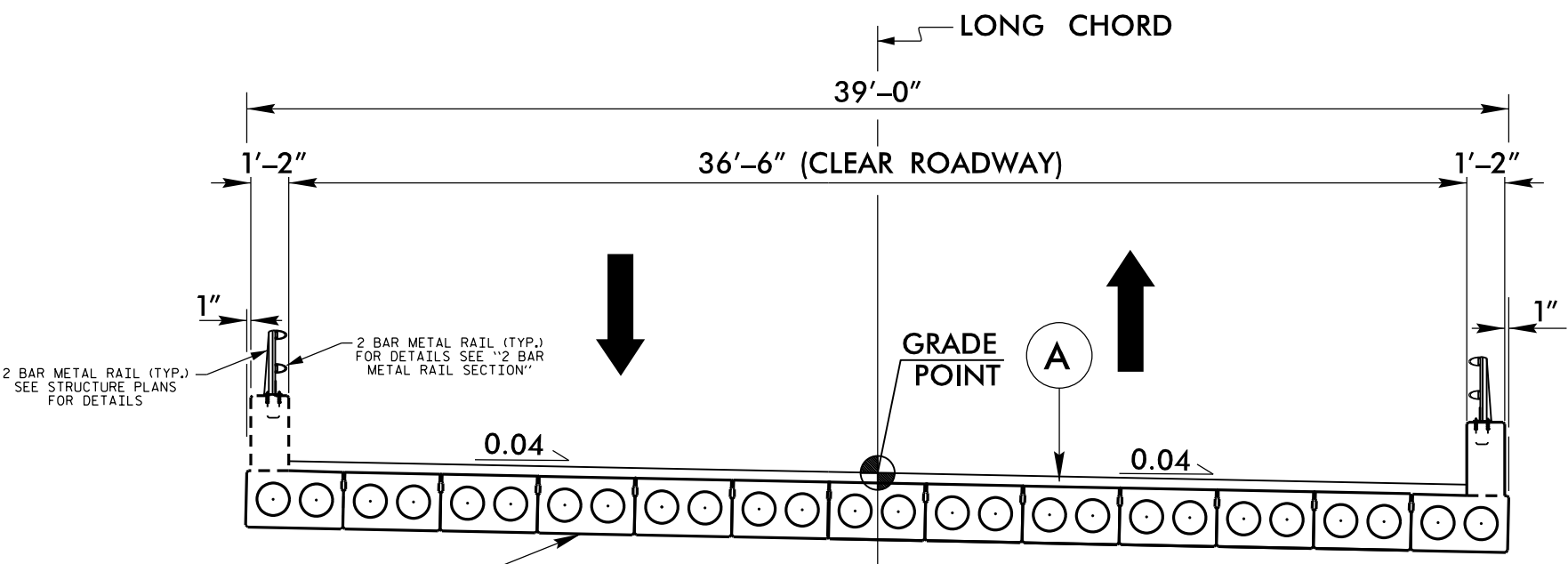
USE TYPICAL ON STRUCTURE
-L- STA. 15+53.56 (BEGIN BRIDGE)
TO -L- STA. 16+33.94 (END BRIDGE)



STAGE 1 CONSTRUCTION



STAGE 2 CONSTRUCTION



FINAL TYPICAL SECTION

Prepared by
URS
URS Corporation - North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
PHONE (919) 461-1100 FAX (919) 461-1415
NC L.I.C. # C-2243

PROJECT REFERENCE NO.	SHEET NO.
17BPJR.59	2
TYRRELL COUNTY BRIDGE NO. 880009	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
7/14/2015	
NORTH CAROLINA PROFESSIONAL SEAL 039831 JERRY JAVELLANA	

PAVEMENT SCHEDULE

A	PROP. VAR. DEPTH PORTLAND CEMENT CONCRETE WEARING SURFACE.
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 LESS THAN 1.0" IN DEPTH OR GREATER THAN 1.5" IN DEPTH.
E1	PROP. APPROX. 5.5" 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 5.5" IN DEPTH.
R	2'-6" CONCRETE CURB & GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	TIE-IN MILLING.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

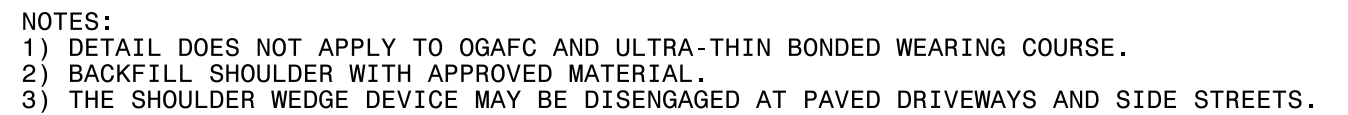
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

7/14/2015
R:\Roadway\Pro\N\Tyrrell\09_rdy_ttyp.dgn
JERRY JAVELLANA

SEE TITLE BLOCK

[illegible]

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III SHEET 3 OF 7862d03
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III SHEET 3 OF 7862d03
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III SHEET 3 OF 7862d03



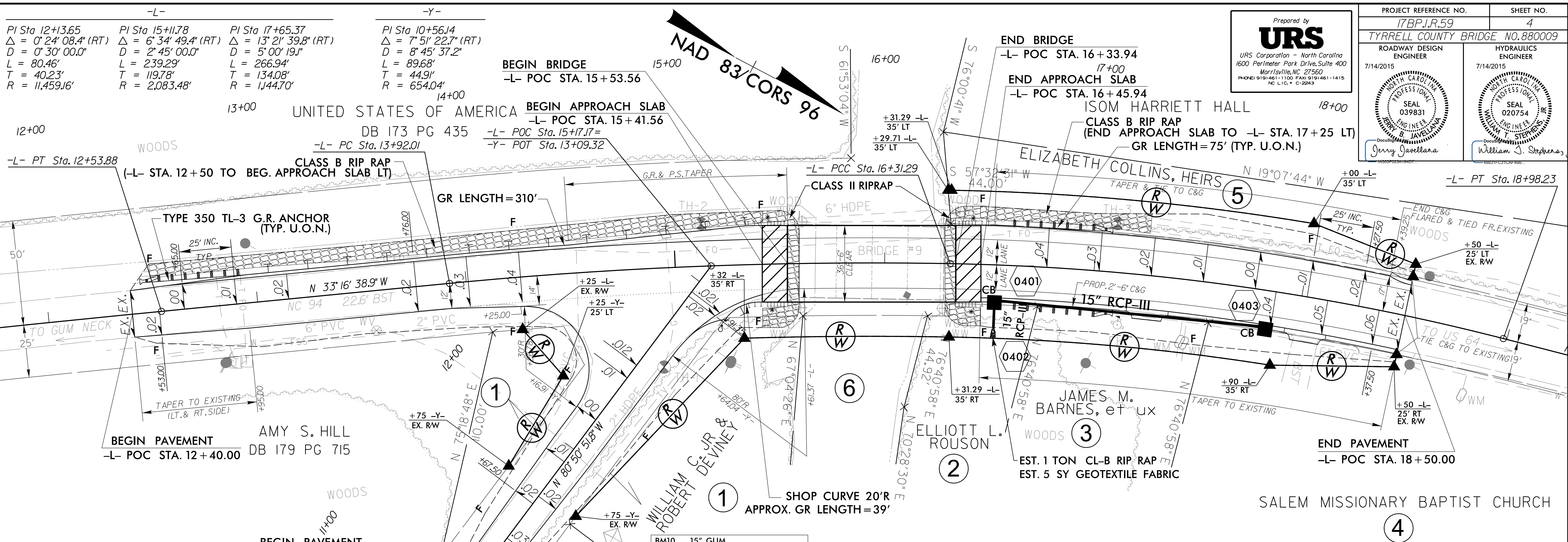
(Resurfacing Projects w/ Widening or
with Existing Paved Shoulder having no dropoffs)



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

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		

8/17/99



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE GRID COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "TYR-091"

WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 798214.3010(f+); EASTING: 798214.3010(f+)

ELEVATION: 2.92(f+)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000053013

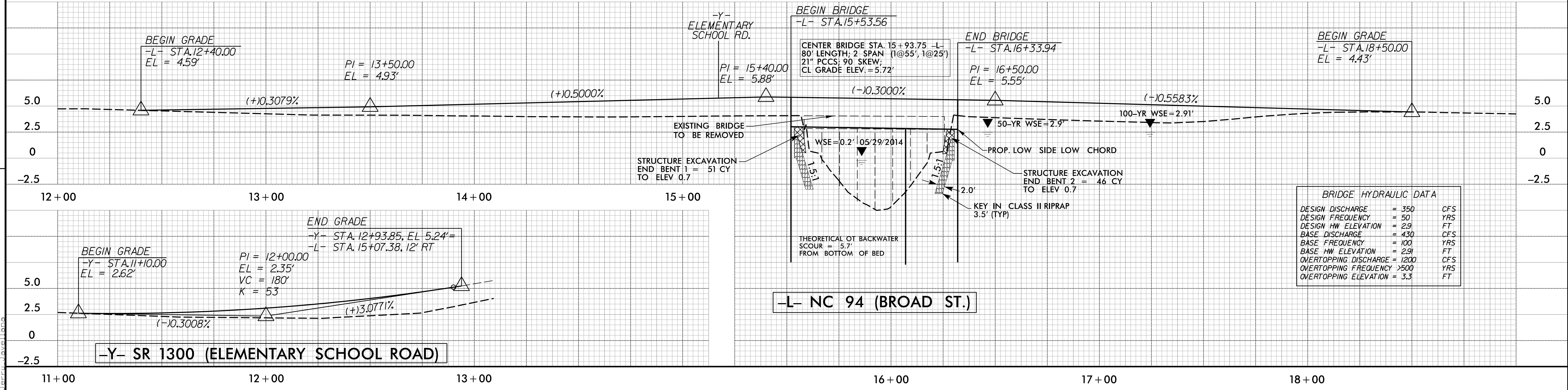
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "TYR-091" TO -L- STATION 12+40 IS

N 29° 48' 36.8" W 221.45'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NAVD 88

RIGHT OF WAY AREA DATA								
PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL AREA	AREA TAKEN	AREA REMAINING RT.	AREA REMAINING LT.	CONST. EASE.	PERM. DRAIN. EASE.	TEMP. DRAIN. EASE.
1	WILLIAM C. JR & ROBERT DEVINEY		0.037 acres					
2	ELLIOTT L. ROUSON		0.017 acres					
3	JAMES M. BARNES, et ux		0.030 acres					
4	SALEM MISSIONARY BAPTIST CHURCH		0.027 acres					
5	ELIZABETH COLLINS, HEIRS		0.076 acres					
6	NO DATA AVAILABLE		0.013 acres					



7/1/2015
R:\Roadway\Pro\Tyr09\rdy.psh_4.dgn
Jerry Javellana

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		'N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	TYPE III	GRAU 350 TL-3	M-350	XIII	CAT-I	VI MOD	BIC	AT-1	EA	G	NG				
-L-	12 + 45.00	15 + 54.10	LT	309.10'			BRIDGE		VAR.	VAR.		50.00'		1.00'		1	1													
-L-	15 + 19.66	15 + 53.40	RT		38.63'			BRIDGE	VAR.	VAR.	6.25'		1.00'		1						1									
-L-	16 + 33.38	17 + 07.14	LT	73.76'			BRIDGE		VAR.	VAR.	50.00'		1.00'		1	1														
-L-	16 + 34.11	17 + 10.32	RT	76.21'			BRIDGE		VAR.	VAR.		50.00'		1.00'		1	1													
TOTAL				459.07'	38.63'										4	3					1									
DEDUCTION FOR ANCHORS				-206.25'	-25.00'										DEDUCTION FOR ANCHORS: (GRAU 350 TL-3) 3 @ 50' = 150'															
PROJECT TOTAL				252.82'	13.63'										(TYPE IIIB) 4 @ 18.75' = 75'															
SAY				262.50'	25.00'										(TYPE AT-1) 1 @ 6.25' = 6.25'															
ADDITIONAL GUARDRAIL POST = 4 EACH															TOTAL DEDUCTIONS = 231.25'															

REMOVAL OF EXISTING ASPHALT PAVEMENT

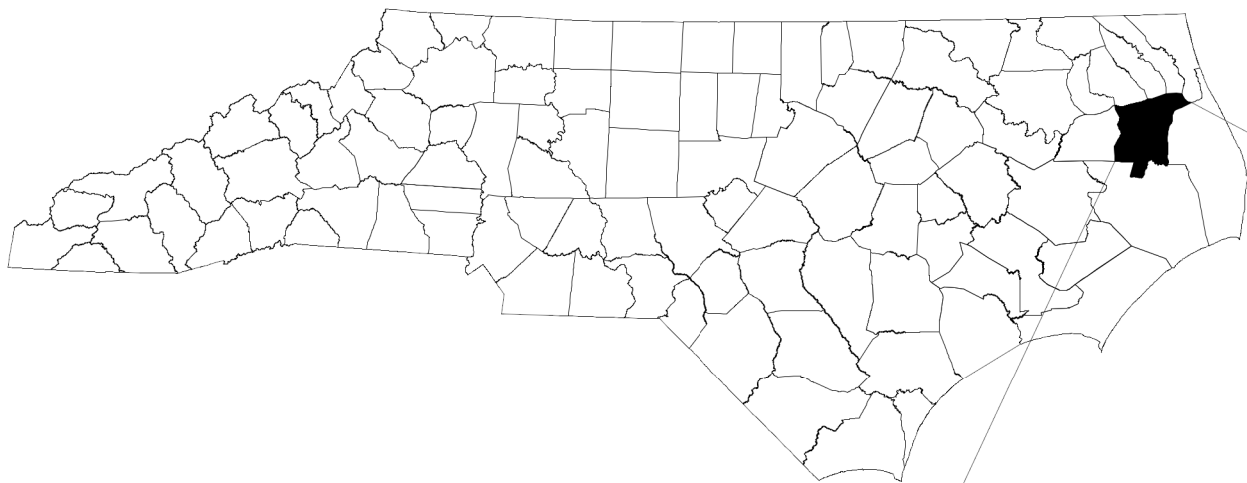
LINE	BEGIN STATION	END STATION	LOCATION	SQ. YD.
-L-	14 + 15.00	15 + 12.00	CL	264.17
-L-	16 + 33.75	17 + 60.00	CL	501.64
-Y-	12 + 15.00	12 + 55.00	CL	146.77
			TOTAL	912.58
			SAY	920

LINE	BEGIN STATION	END STATION	LOCATION	SQ. YD.
-L-	15 + 12.00	15 + 53.74	CL	125.79
-Y-	12 + 55.00	12 + 93.85	CL	182.68
			TOTAL	308.47
			SAY	310

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

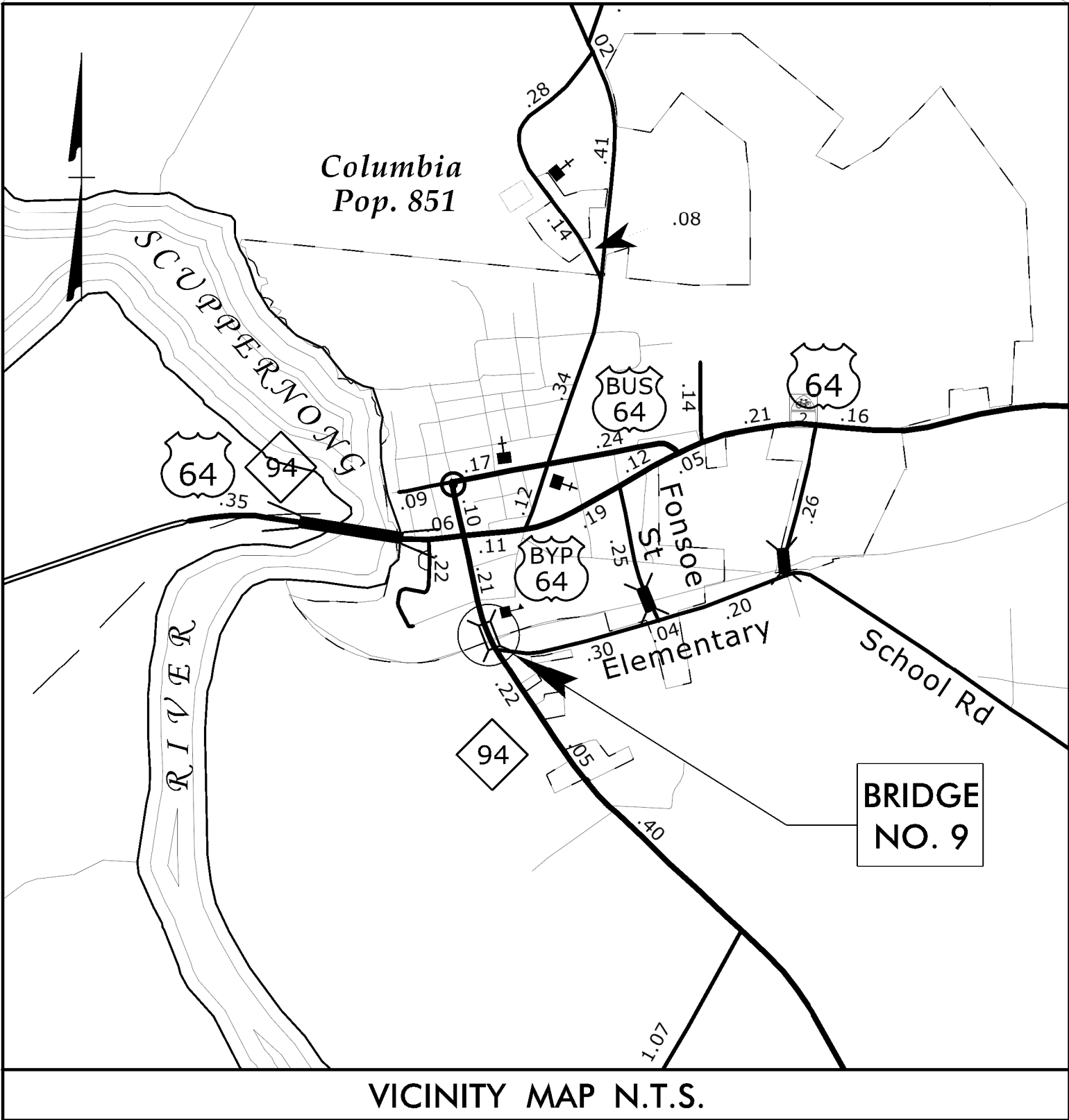
TRANSPORTATION MANAGEMENT PLAN
TYRRELL COUNTY



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
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION



INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP AND INDEX OF SHEETS
TMP-1A	TRANSPORTATION OPERATIONS PLAN: (GENERAL NOTES AND TEMPORARY TRAFFIC CONTROL PHASING)
TMP-2	TEMPORARY TRAFFIC CONTROL PHASE I DETAIL
TMP-3	TEMPORARY TRAFFIC CONTROL PHASE II DETAIL
TMP-4	OFF-SITE DETOUR ROUTE AND BARRICADE PLACEMENT
SD-1	SPECIAL SIGN DESIGN(S)

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)
- WORK AREA
- REMOVAL

TRAFFIC CONTROL DEVICES

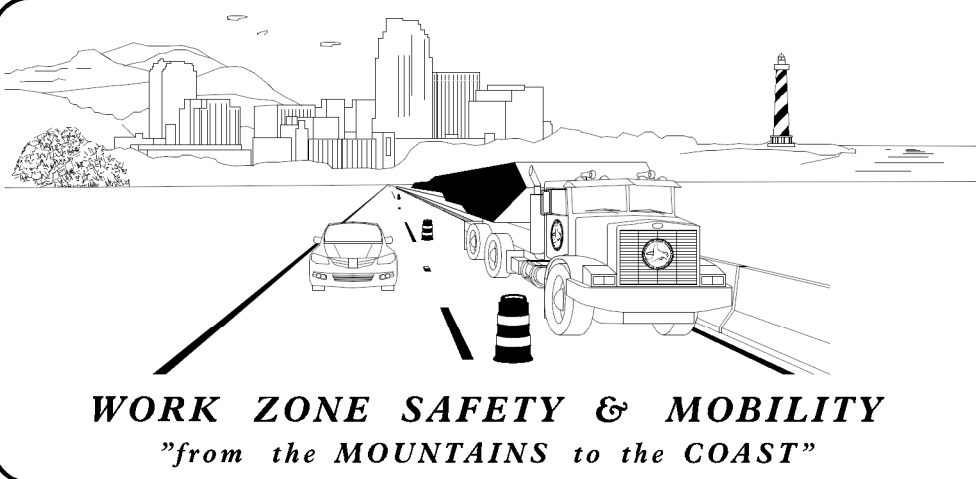
- BARRICADE (TYPE III)
- DRUM
- TEMPORARY CRASH CUSHION
- FLAGGER
- TRUCK MOUNTED ATTENUATOR (TMA)
- TEMPORARY SIGNAL

TEMPORARY SIGNING

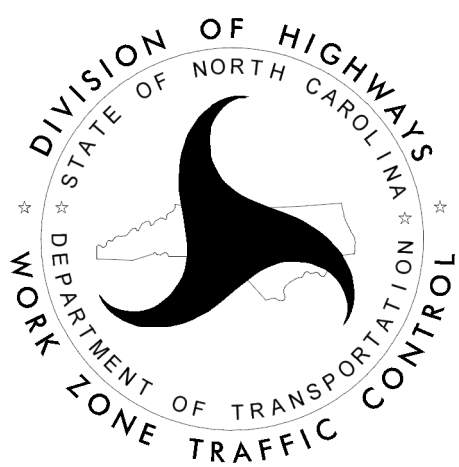
- PORTABLE SIGN
- STATIONARY SIGN

TEMPORARY PAVEMENT MARKING

P2 WHITE STOPBAR (24") PAINT



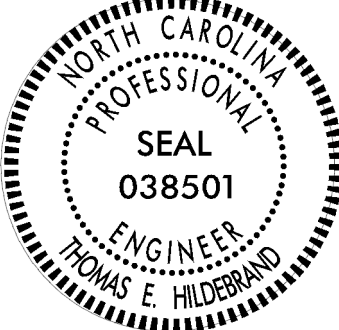
T.E. HILDEBRAND, PE TRAFFIC CONTROL ENGINEER
L.H. JAMISON TRAFFIC CONTROL PROJECT DESIGNER



Prepared by
AECOM
AECOM Corporation - North Carolina
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PHONE(919)461-1100 FAX(919)461-1416
NC LIC.# C-2243

APPROVED: _____
DATE: 7/9/2015

SEAL



SHEET NO.
TMP-1

17BP.1.R.59

TIP PROJECT:

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 UNDESIRE

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 STANDARD DRAWING 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 AN EDGE OF PAVEMENT 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) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.
- H) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

TRAFFIC BARRIER

- I) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE / RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

- J) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45 - 50	20 FT
55	25 FT
60 MPH or HIGHER	30 FT

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

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

ROAD TYPE	MARKING	MARKER
ASPHALT	PAINT	N/A

- N) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS SHOWN IN PAVEMENT MARKING PLAN.
- O) STATE FORCES WILL INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE.
- P) 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.
- Q) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- R) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

PROJ. REFERENCE NO.	SHEET NO.
17BP.1.R.59	TMP-1A

TRAFFIC CONTROL PHASING

PHASE I

STEP 1:

ERECT ADVANCED WORK ZONE SIGNS ON NC 94 AND ELEMENTARY SCHOOL ROAD IN ACCORDANCE WITH RDWY STD 1101.01 SHEET 3, AND TMP-2. USING RSD 1101.03, SHEET 1 OF 9, SHEETS TMP-4 AND SD-1, INSTALL ROAD CLOSURE AND DETOUR SIGNS. PLACE TYPE III BARRICADES TO CLOSE SR 1300 (ELEMENTARY SCHOOL RD.) TO THROUGH TRAFFIC, AND DETOUR TRAFFIC OFF-SITE. USING RDW STD 1101.02 (SHEET 1 OF 15) AND FLAGGERS FOR TEMPORARY LANE CLOSURE, INSTALL PORTABLE CONCRETE BARRIER AND TEMPORARY SIGNALS AND PLACE TEMPORARY PAVEMENT MARKING (PAINT) AS SHOWN IN TMP-02.

STEP 2:

WORKING BEHIND BARRIER, REMOVE THE SECTION OF EXISTING BRIDGE NO. 9, CONSTRUCT STAGE I STRUCTURE, AND CONSTRUCT ROADWAY APPROACHES FROM -L- STA 12+40 TO -L- STA 18+50, UP TO EDGE AND ELEVATION OF THE EXISTING NC 94 PAVEMENT, (SEE TMP-2, ROADWAY PLANS, AND STRUCTURE PLANS).

NOTE:

COMPLETE THE WORK REQUIED IN PHASE I, STEP 2 IN CONTINUOUS OPERATION.

PHASE II

STEP 1:

USING RDWY STD 1101.02 (SHEET 1 of 15) (ALTERNATING LANE CLOSURES), WEDGE/PLACE REMAINING PAVEMENT AND TEMPORARY PAVEMENT MARKINGS AND SHIFT NC 94 TRAFFIC ONTO THE COMPLETED STAGE I STRUCTURE AND ROADWAY APPROACHES, (SEE TMP-3). USING RDW STD 1101.02 (SHEET 1 OF 15) FOR ALTERNATING LANE CLOSURES, RESET PCB, AND WEDGE/PLACE REMAINING PAVEMENT AND TEMPORARY PAVEMENT MARKINGS. USING FLAGGER, SHIFT NC 94 TRAFFIC ONTO THE COMPLETED STAGE I STRUCTURE AND ROADWAY APPROACHES (SEE TMP-3).

STEP 2:

REMOVE REMAINING EXISTING BRIDGE NO. 9 AND CONSTRUCT STAGE II STRUCTURE AND ROADWAY APPROACHES FROM -L- STA 12+40 TO -L- STA 18+50, EXCLUDING THE FINAL LAYER OF SURFACE COURSE, (SEE TMP-3, ROADWAY PLANS, AND STRUCTURE PLANS).

NOTE:

COMPLETE THE WORK REQUIED IN PHASE II, STEP 2 IN CONTINUOUS OPERATION.

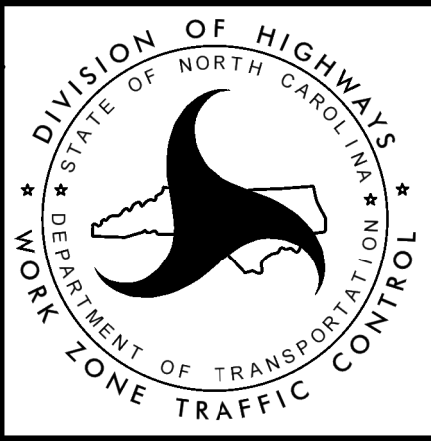
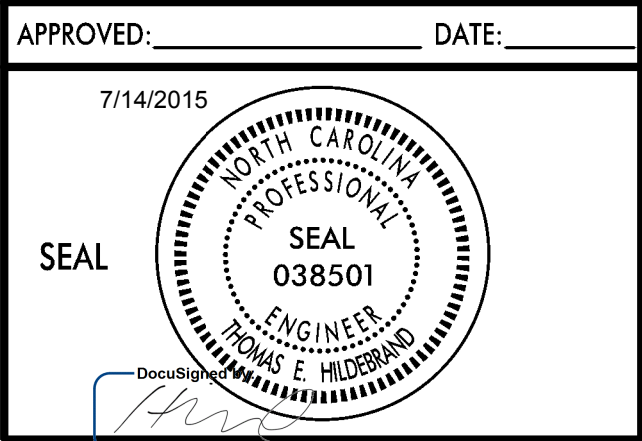
PHASE III

STEP 1:

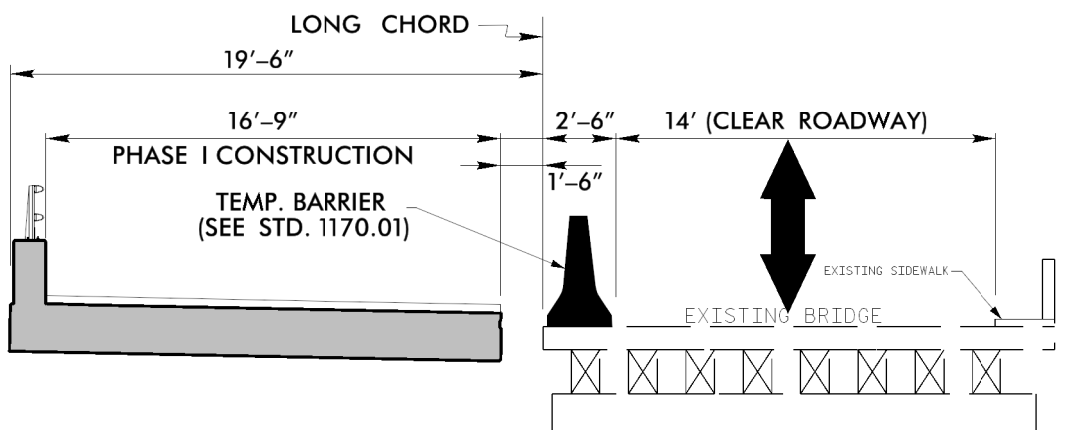
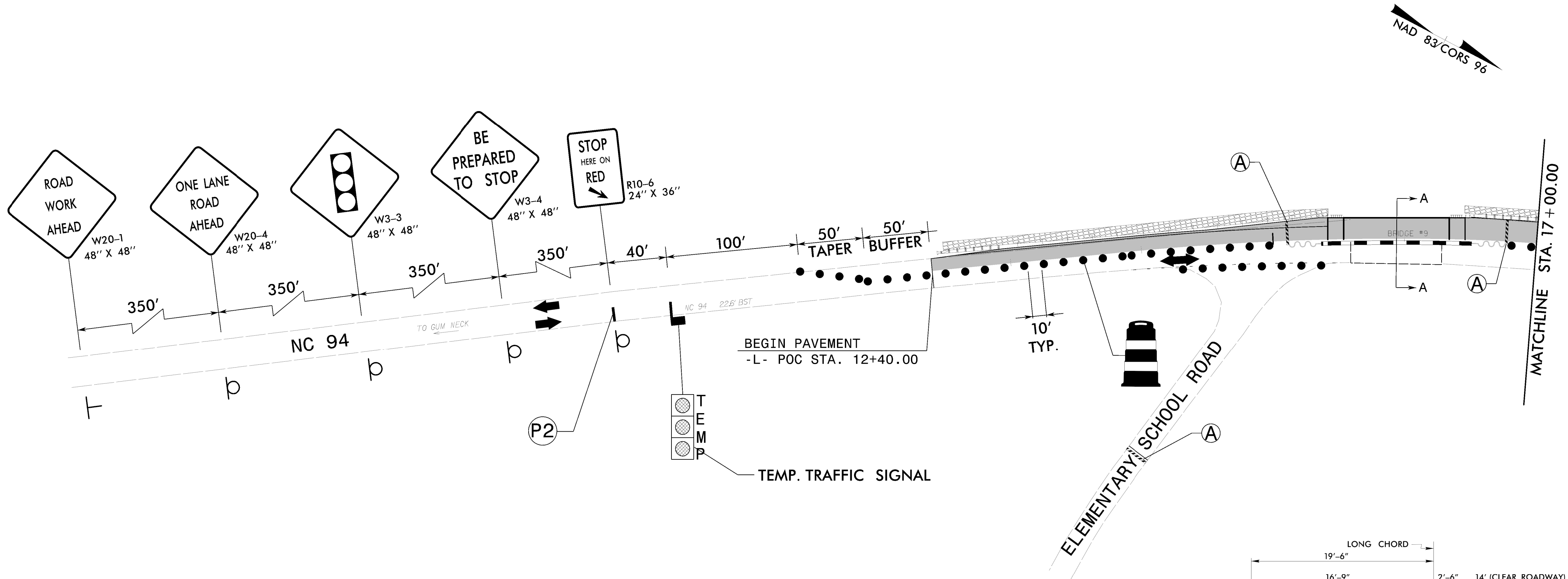
USING RDWY STD 1101.02 SHEET 1 (ALTERNATING LANE CLOSURES), PLACE THE FINAL LAYER OF SURFACE COURSE AND PLACE FINAL PAVEMENT MARKINGS FROM -L- STA 12+40 TO -L- STA 18+50 IN THE ORIGNAL 2-LANE, 2-WAY PATTERN.

STEP 2:

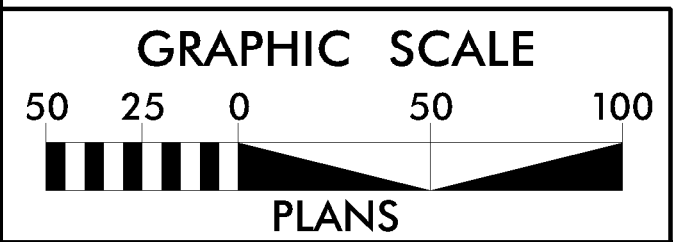
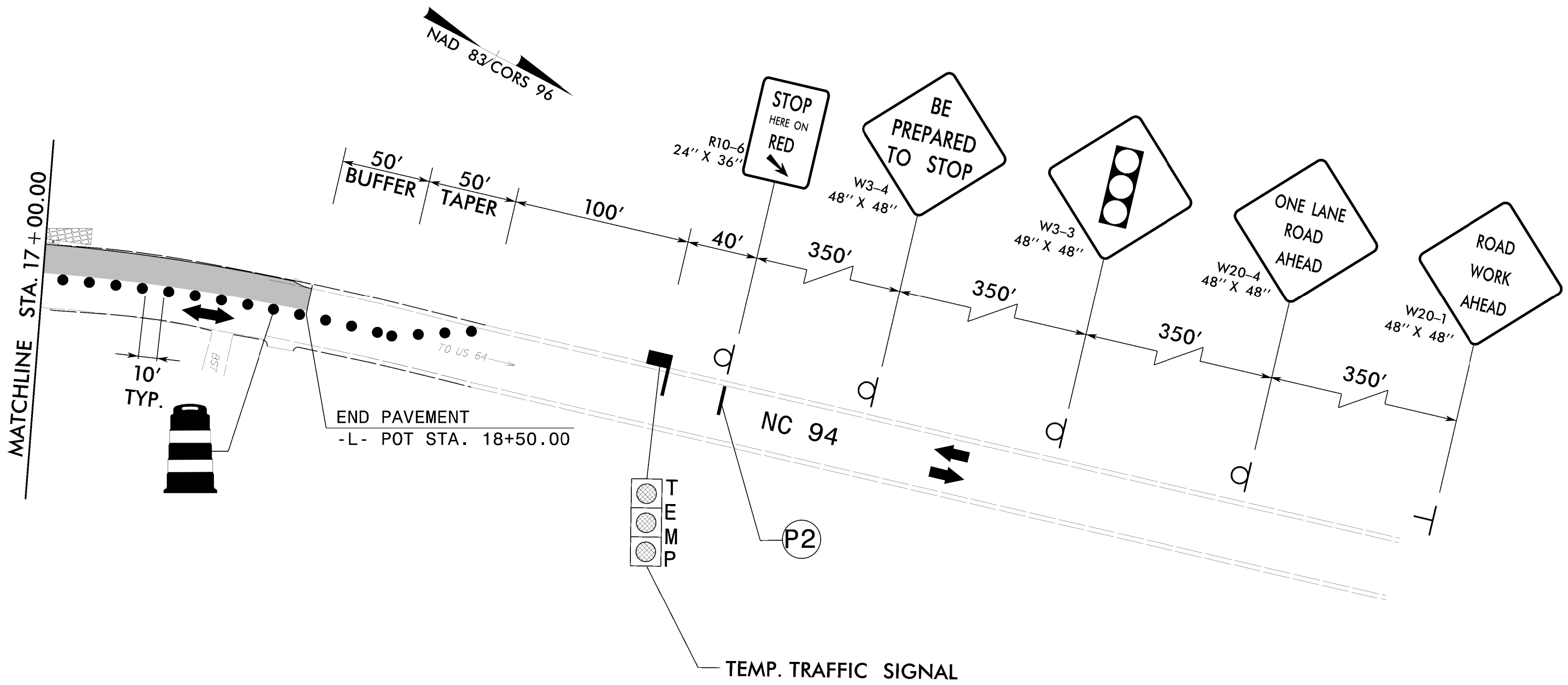
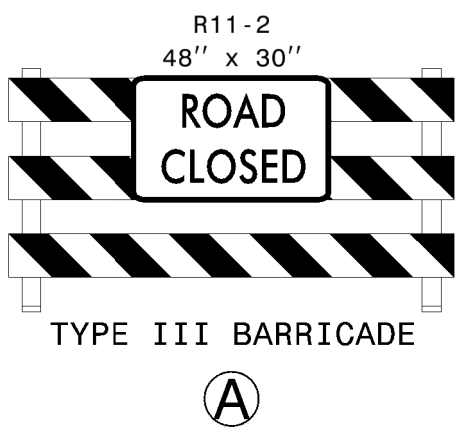
REMOVE TRAFFIC CONTROL DEVICES AND OPEN NC 94 AND SR 1300 (ELEMENTARY SCHOOL RD.) TO ITS FINAL TRAFFIC PATTERN.



PROJ. REFERENCE NO.	SHEET NO.
17BP.1.R.59	TMP-2



SECTION A-A



AECOM

AECOM Corporation - North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
PHONE(919)461-1100 FAX(919)461-1415
NC LIC.# C-2243

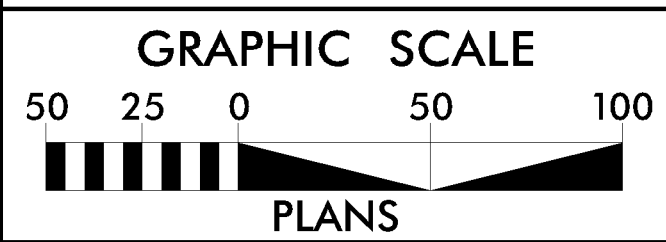
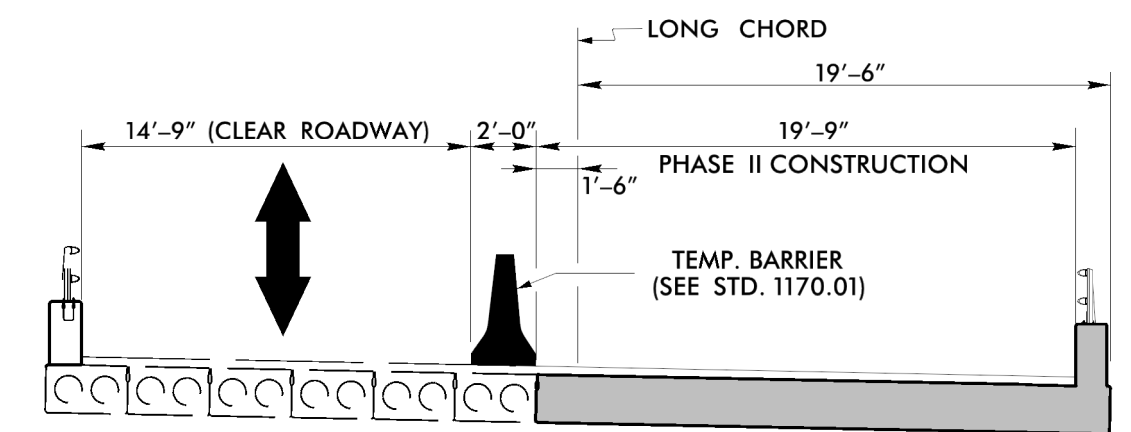
APPROVED: 7/9/2015

DATE:

SEAL



PHASE I DETAIL



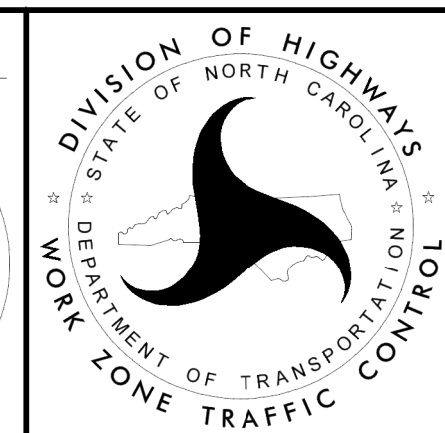
APPROVED: _____ 7/9/2015

DATE: _____

SEAL

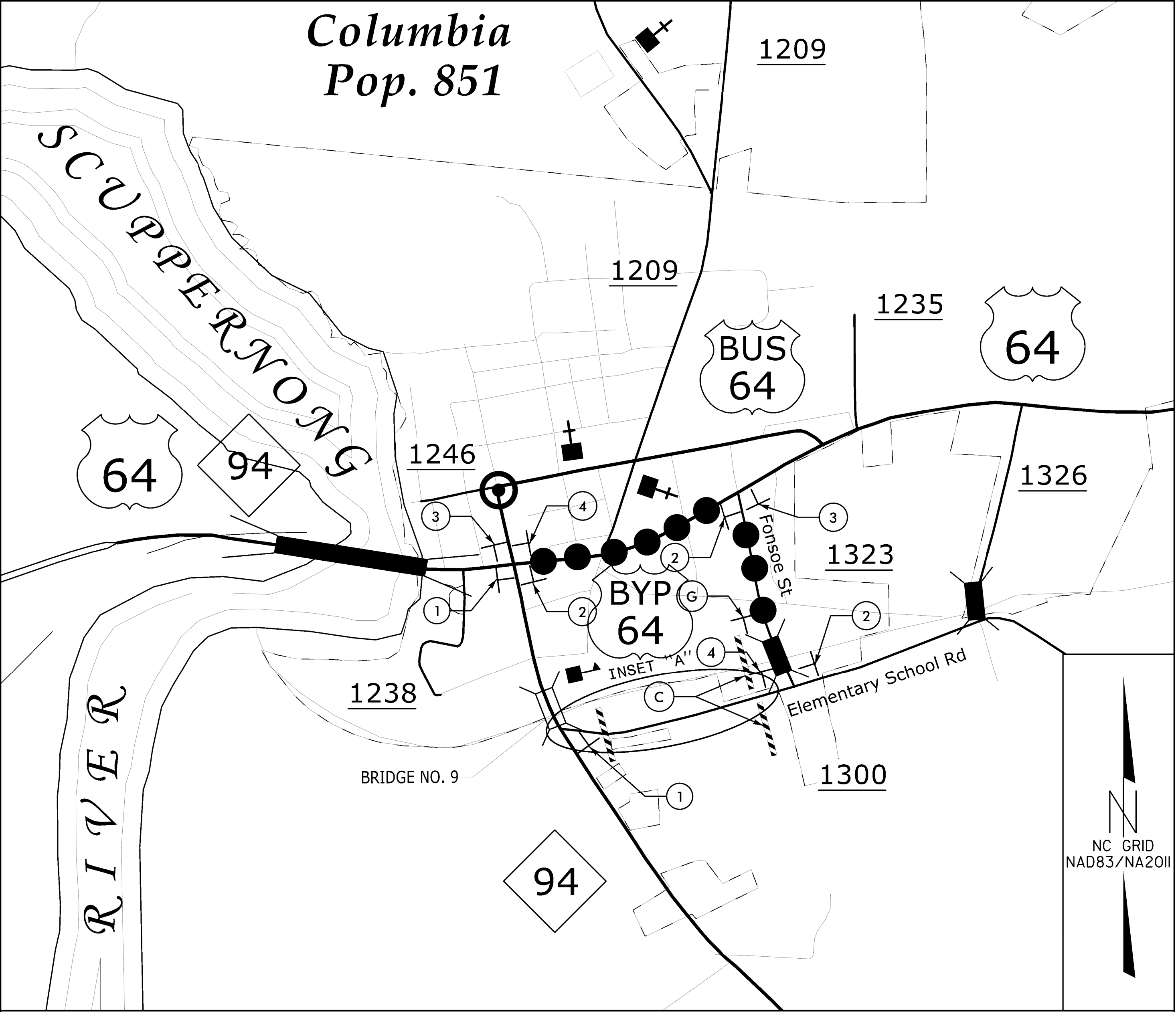


The seal is circular with a double-lined border. The outer ring contains the text "NORTH CAROLINA" at the top and "PROFESSIONAL" at the bottom. The center of the seal contains the word "SEAL" above the license number "038501", which is above the word "ENGINEER". The name "THOMAS E. HILDEBRAND" is written in a curved path along the bottom inner edge of the seal.



PHASE II DETAIL

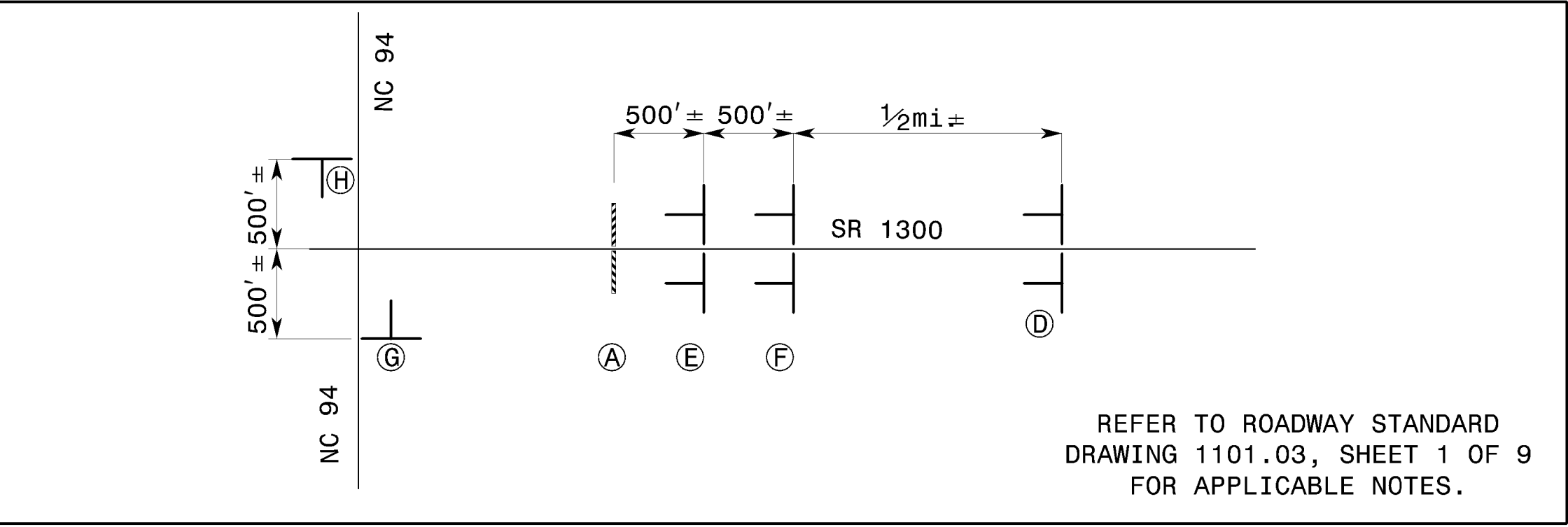
PROJ. REFERENCE NO.	SHEET NO.
17BP.1.R.59	TMP-4



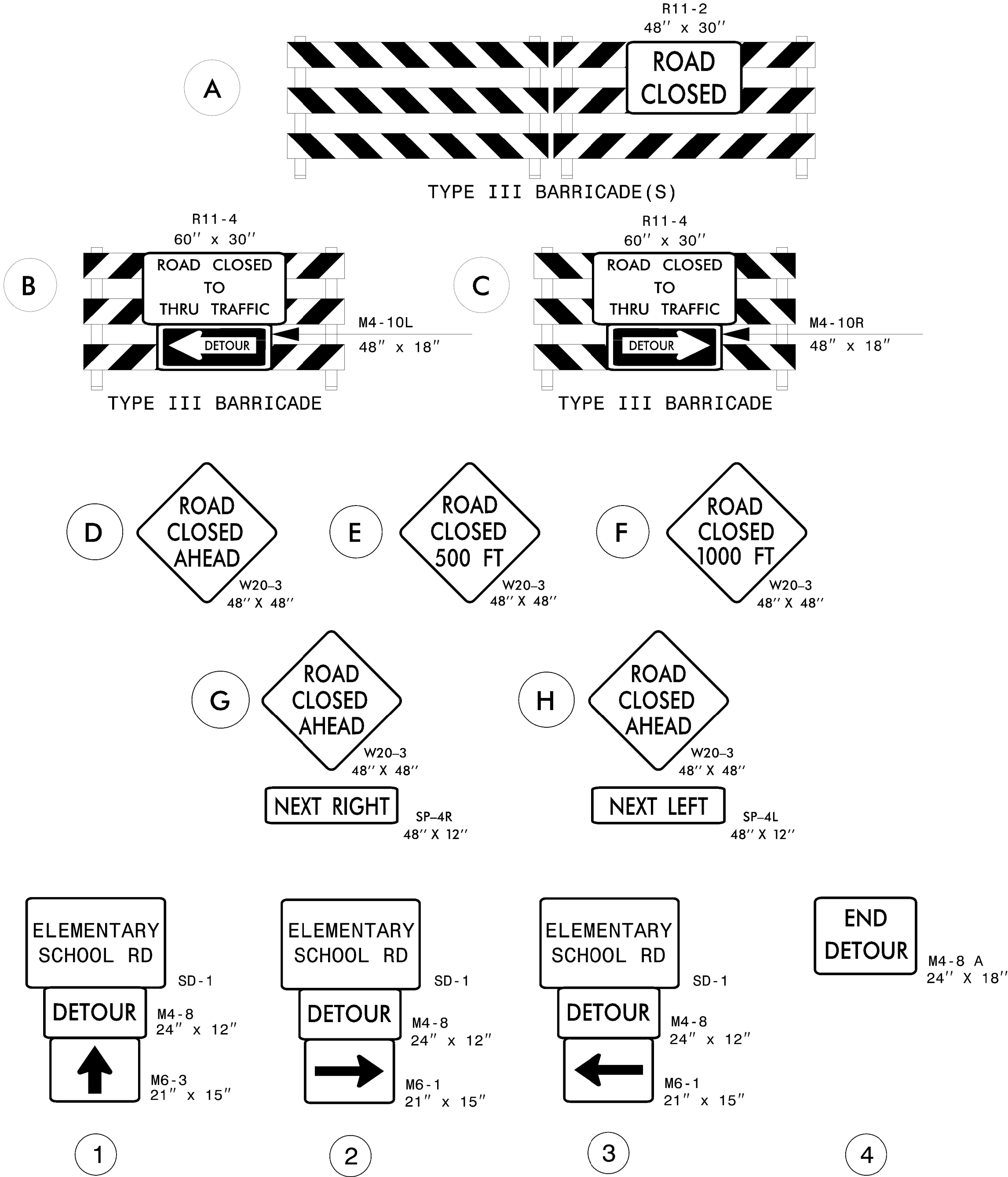
PROJECT VICINITY MAP

● DETOUR ROUTE

INSET "A"



REFER TO ROADWAY STANDARD
DRAWING 1101.03, SHEET 1 OF 9
FOR APPLICABLE NOTES.

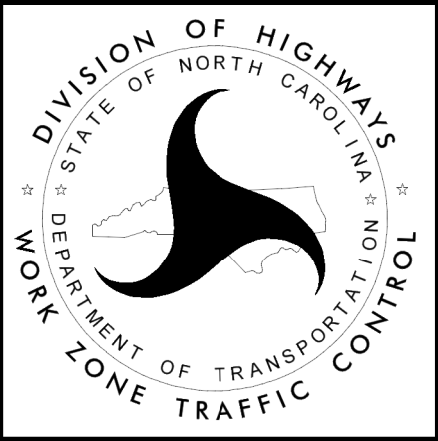


- NOTES:
- SEE SHEET SD-1 FOR THE SPECIAL SIGN DESIGNS.
 - ALL DETOUR SIGN LOCATIONS ARE APPROXIMATE.

AECOM

AECOM Corporation - North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
PHONE(919)461-1100 FAX(919)461-1415
NC LIC.# C-2243

APPROVED: 7/9/2015
DATE:
SEAL



OFF-SITE DETOUR ROUTE
AND BARRICADE PLACEMENT

DATE: Jul 01, 2015

PROJECT ID: 17BP.1.R.59

DIV: 1

[illegible]

HEIGHT: 2'-6"

TOTAL AREA: 11.3 Sq.Ft.

RECESS: 0.38"

WIDTH: 0.63"

RADII: 1.5"

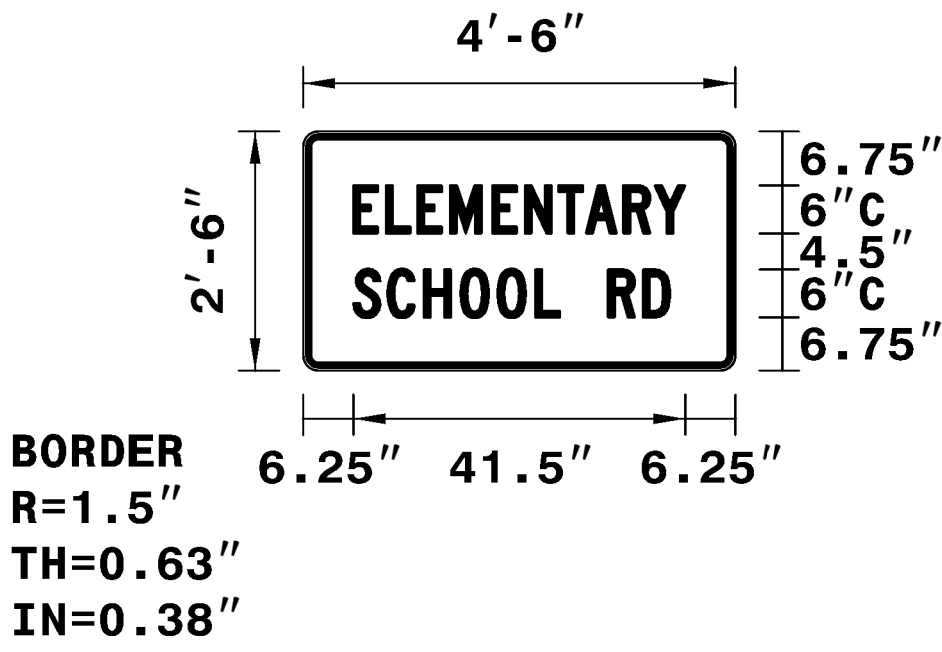
NO. Z BARS:

MAT'L: 0.080" (2.0 mm) ALUMINUM

LENGTH:

USE NOTES: 1,2

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



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

[illegible]

FILENAME: Guidsign_English

NORTH CAROLINA D.O.T. SIGN DETAIL

SPECIAL SIGN DESIGN(S)

7/1/2015
Q:\NCDOT_Div_on-call\Tyrrell 09\Traffic\TrafficControl\TCP\17BP.1R.59.TC_TMP_SDI.dgn

WBS # 17BP.1.R.59

CONTRACT #:

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: 17BP.1.R.59

TYRRELL COUNTY

STATION: 15+93.75 -L-

REPLACES BRIDGE NO. 880009

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EROSION CONTROL PLAN

BRIDGE #880009
OVER CANAL

36'-6" CLEAR ROADWAY - 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	EC-1
1			1			TOTAL SHEETS
2			2			4

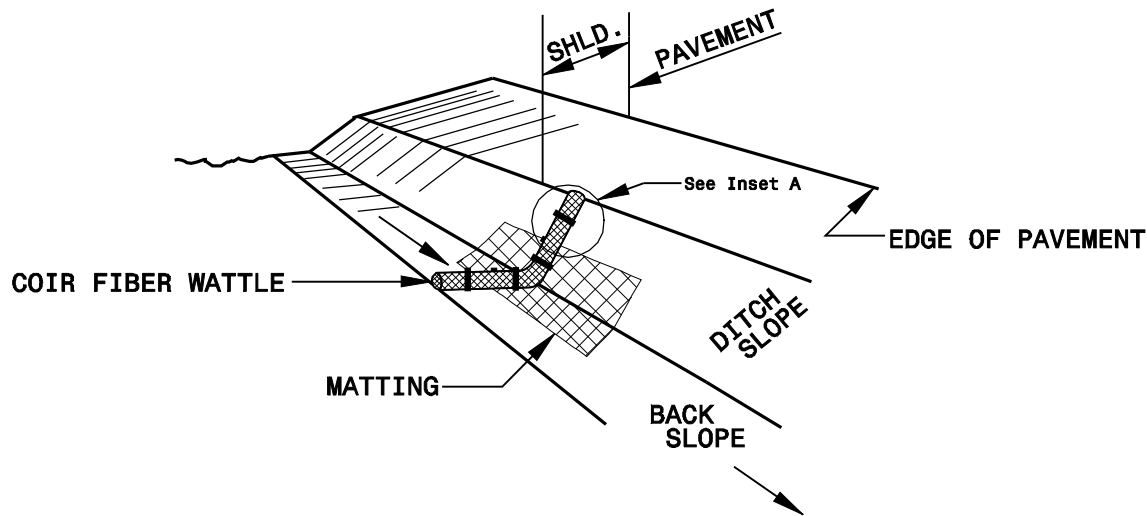
WBS # 17BP.1.R.59

CONTRACT #:

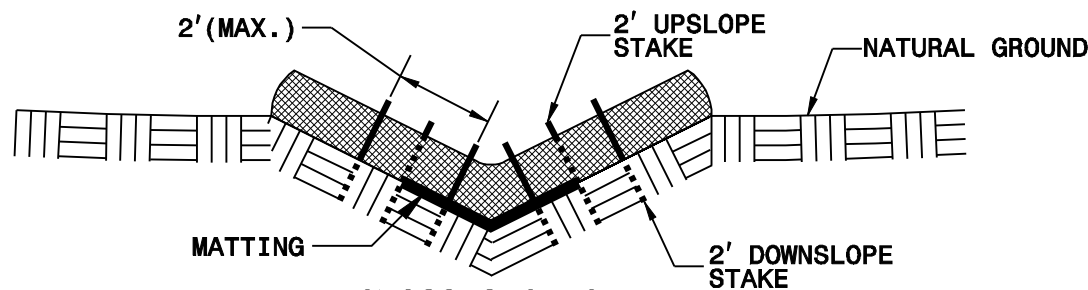
Prepared by
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1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
PHONE: (919) 461-1100 FAX: (919) 461-1415
NC LIC. # C-2243

COIR FIBER WATTLE DETAIL

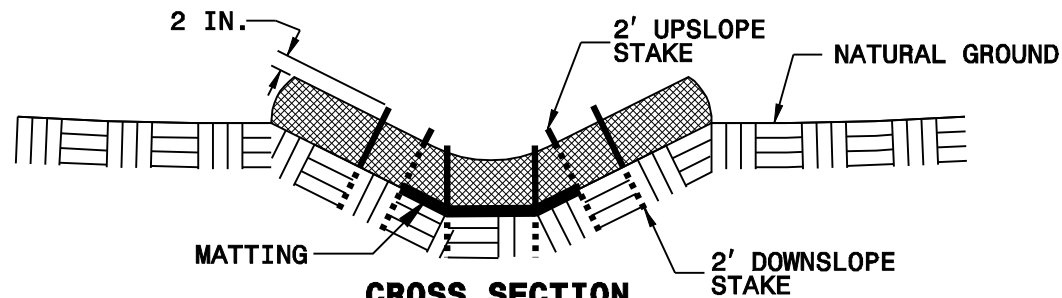
PROJECT REFERENCE NO.	SHEET NO.
X-XXXX	EC-26
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



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.

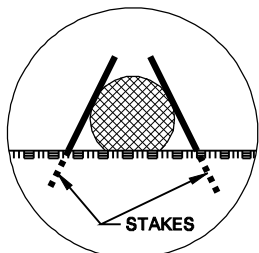
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

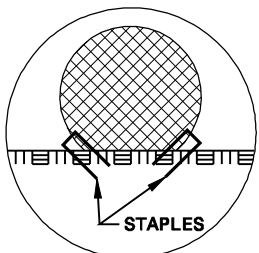
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

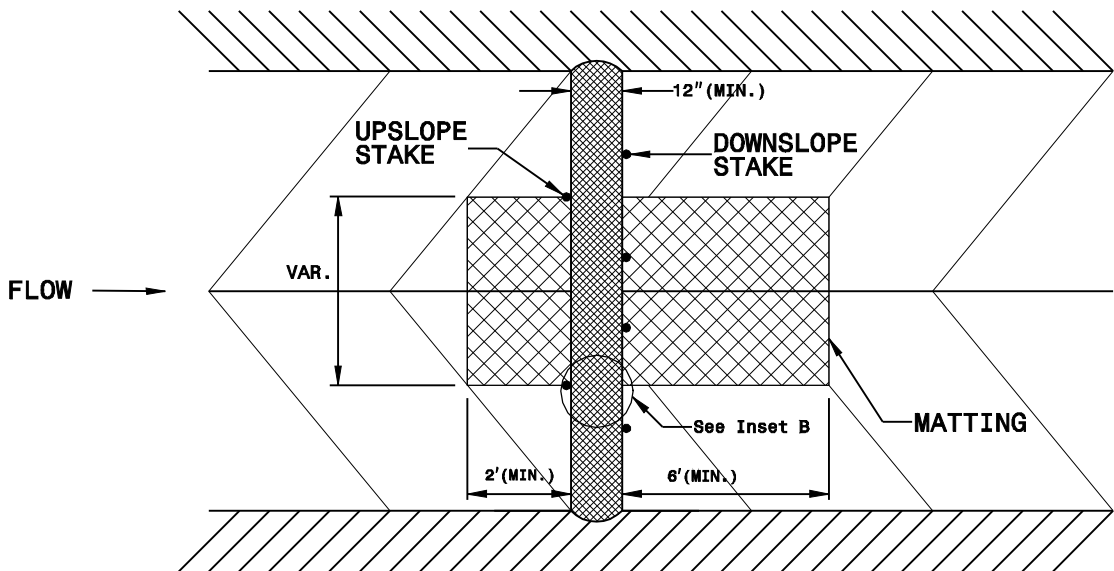
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



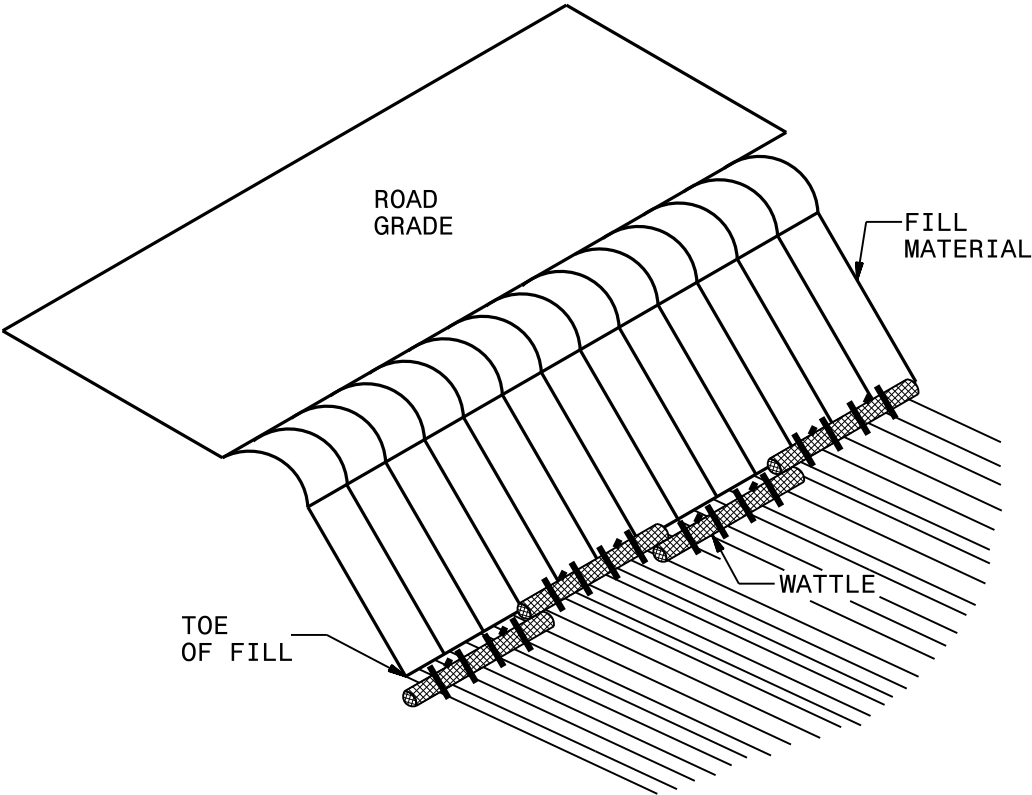
INSET B



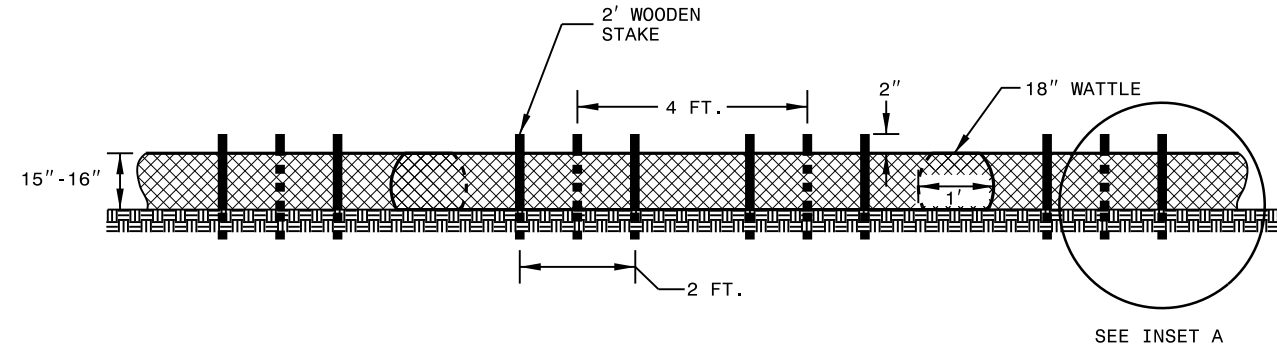
TOP VIEW

COIR FIBER WATTLE BARRIER DETAIL

PROJECT REFERENCE NO.	SHEET NO.
X-XXXX	EC-2H
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



ISOMETRIC VIEW



FRONT VIEW

NOTES:

USE MINIMUM 18 IN. NOMINAL DIAMETER COIR FIBER (COCONUT) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLES ON TOE OF SLOPE.

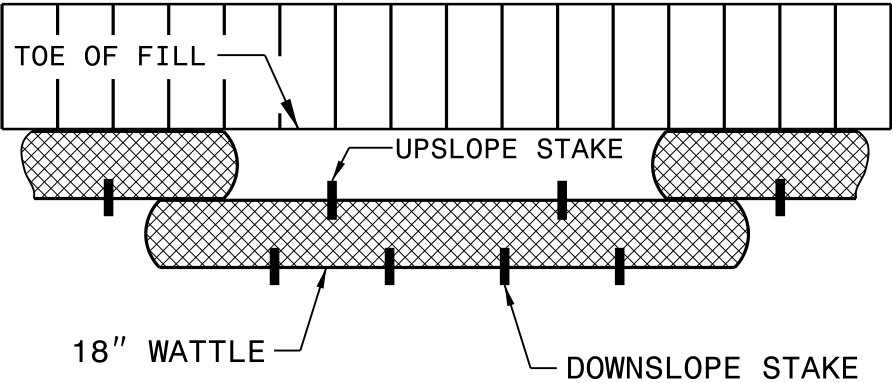
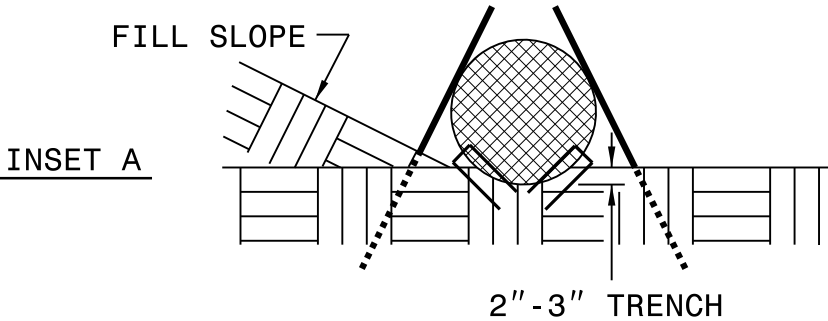
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

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

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

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

FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.

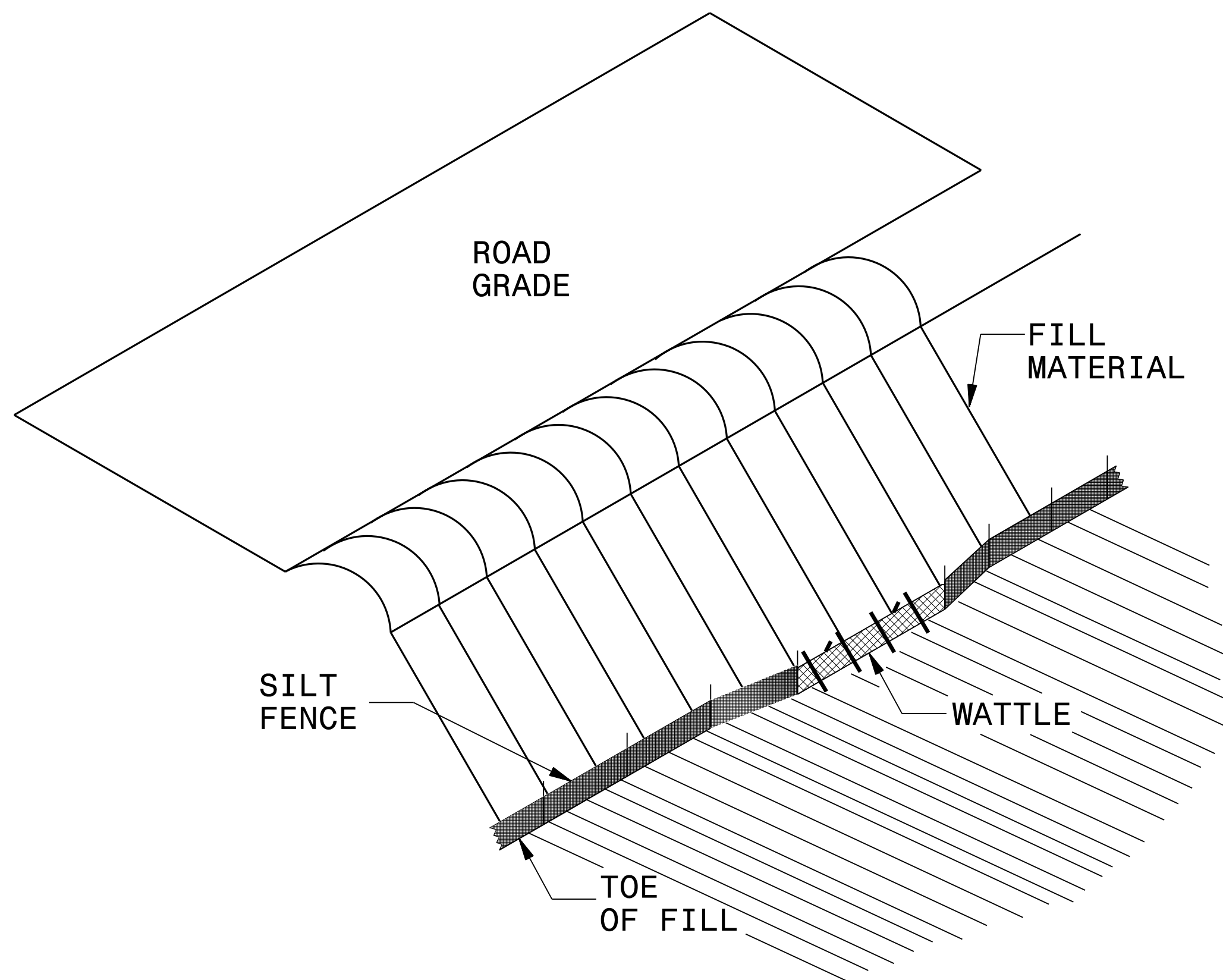


TOP VIEW

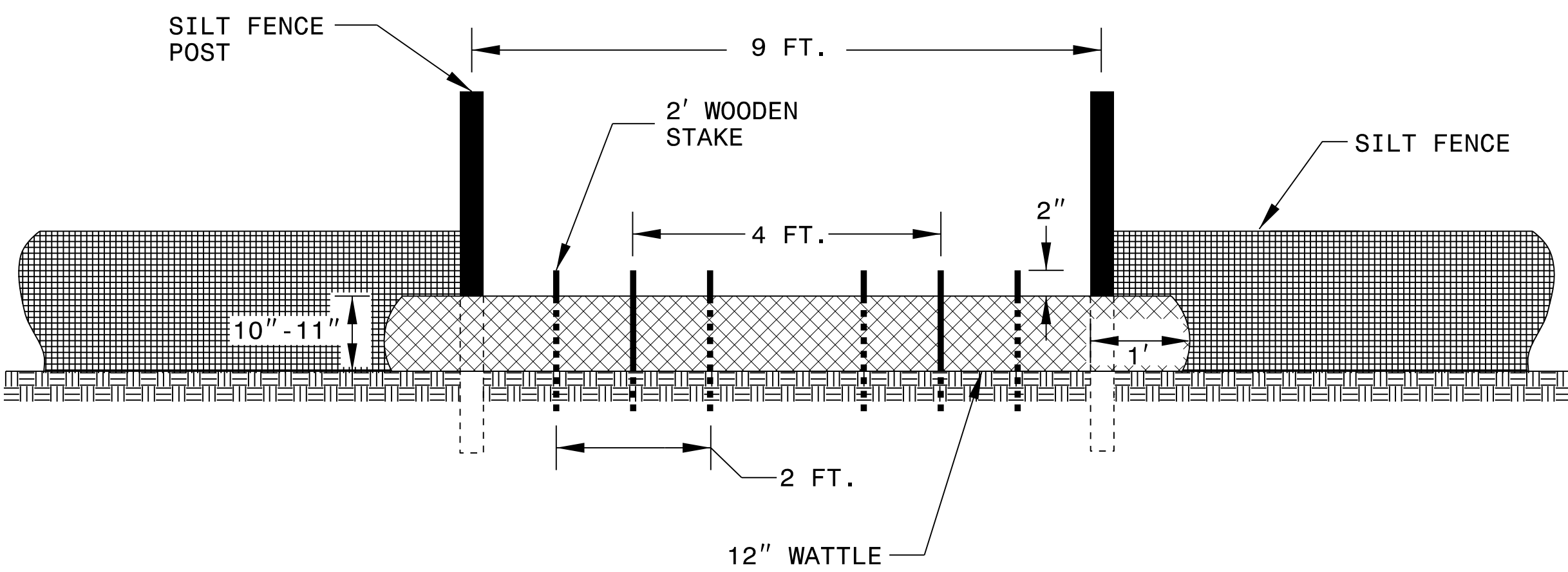
WBS # 17BP.1.R.59

CONTRACT #:

SILT FENCE COIR FIBER WATTLE BREAK DETAIL

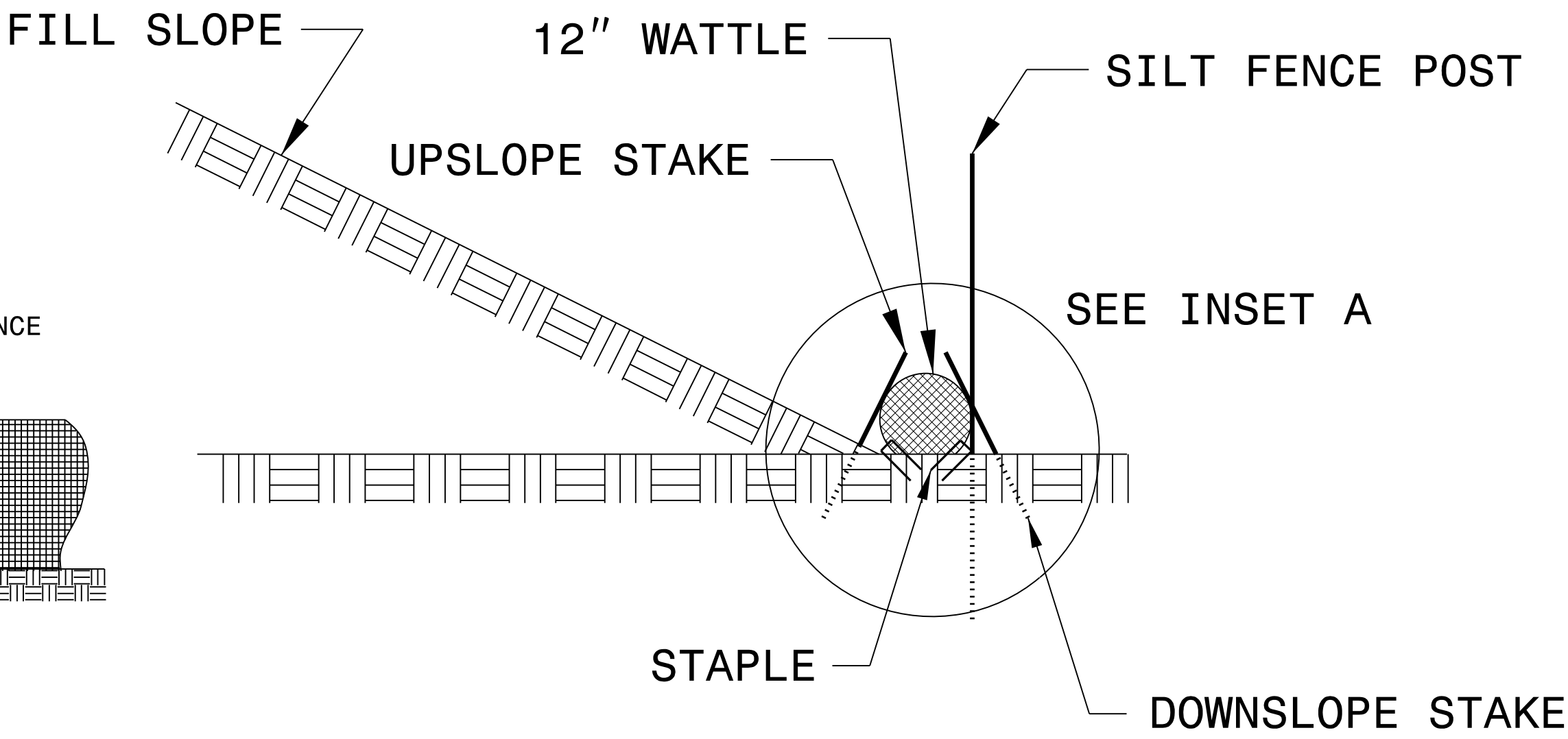
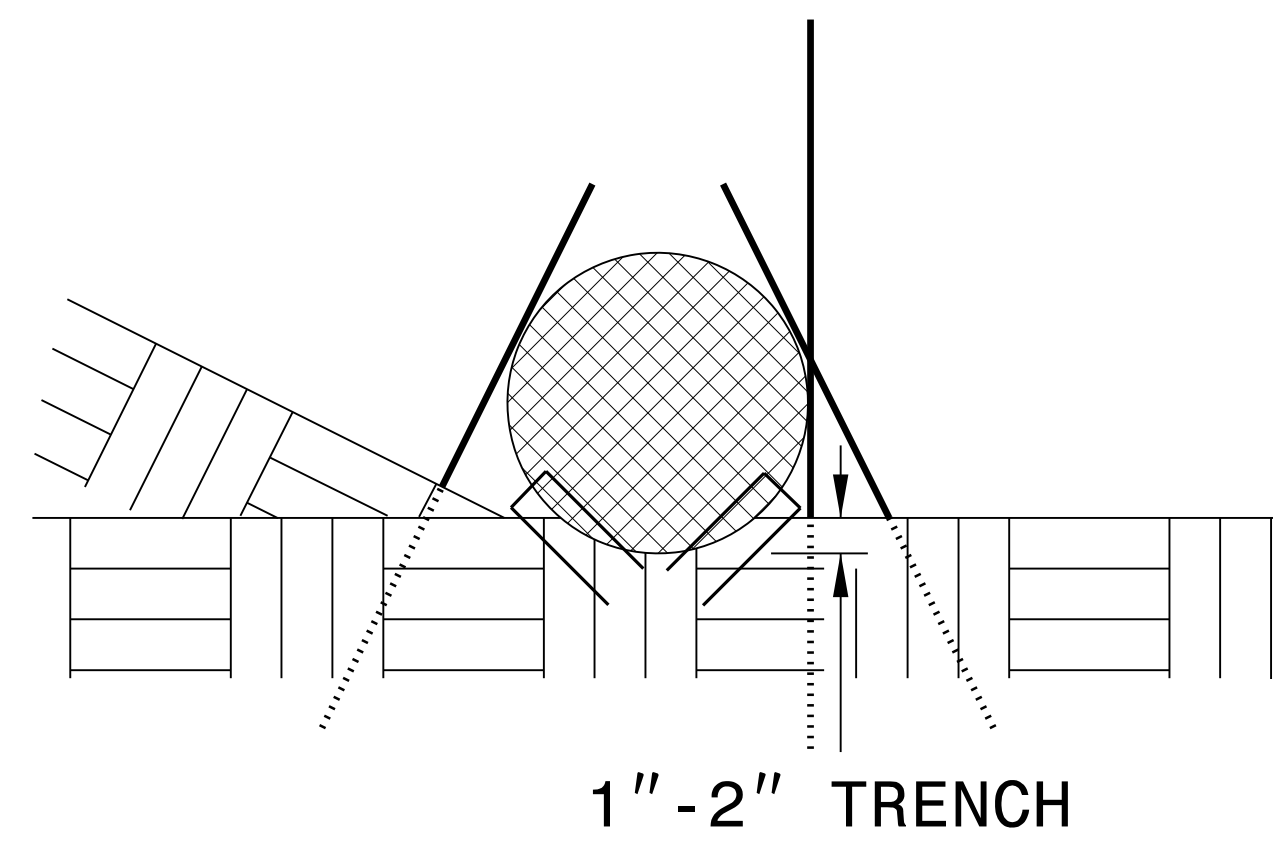


ISOMETRIC VIEW



VIEW FROM SLOPE

INSET A



SIDE VIEW

NOTES:

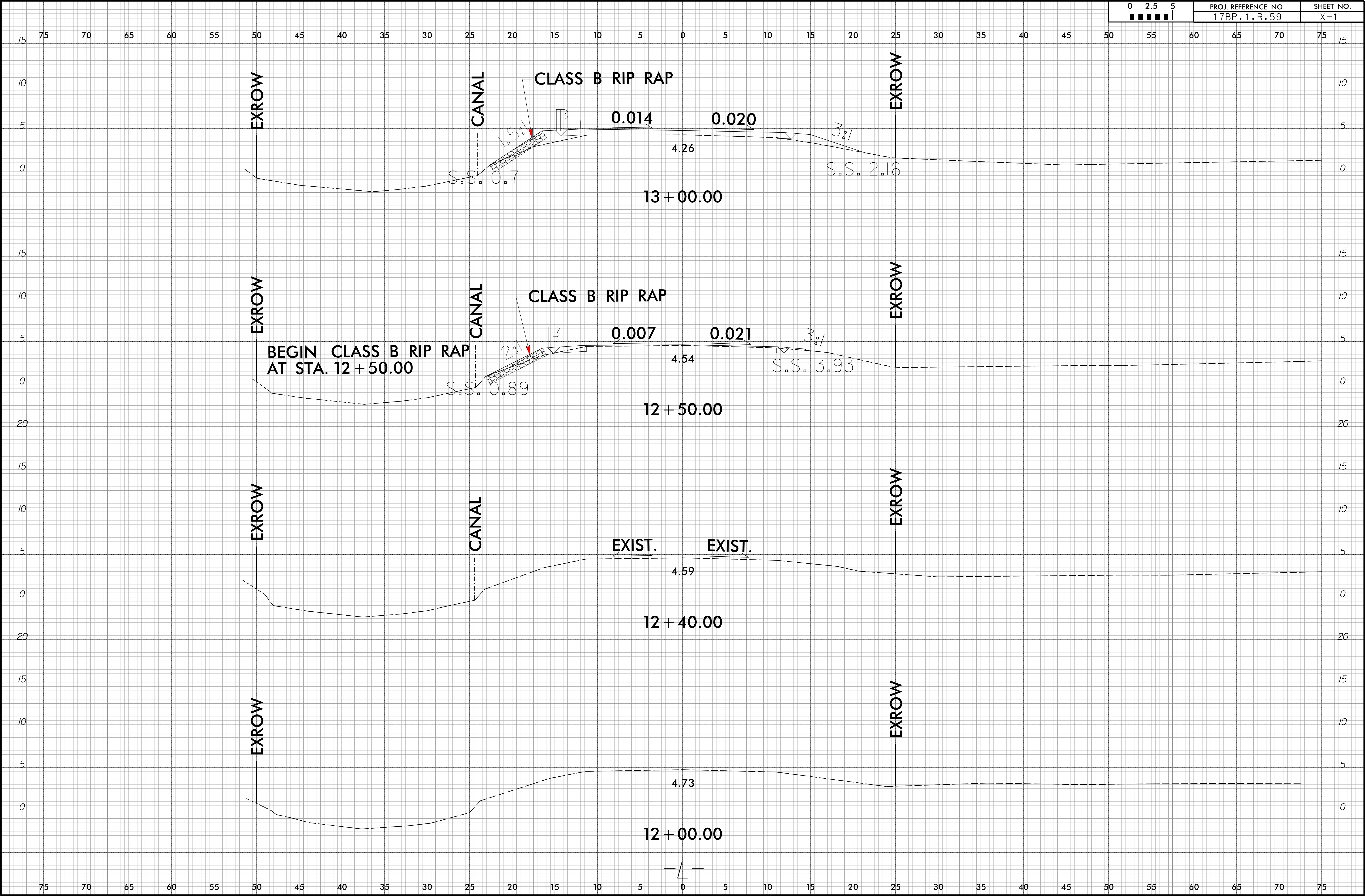
- USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.
- EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.
- DO NOT PLACE WATTLE ON TOE OF SLOPE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE 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.

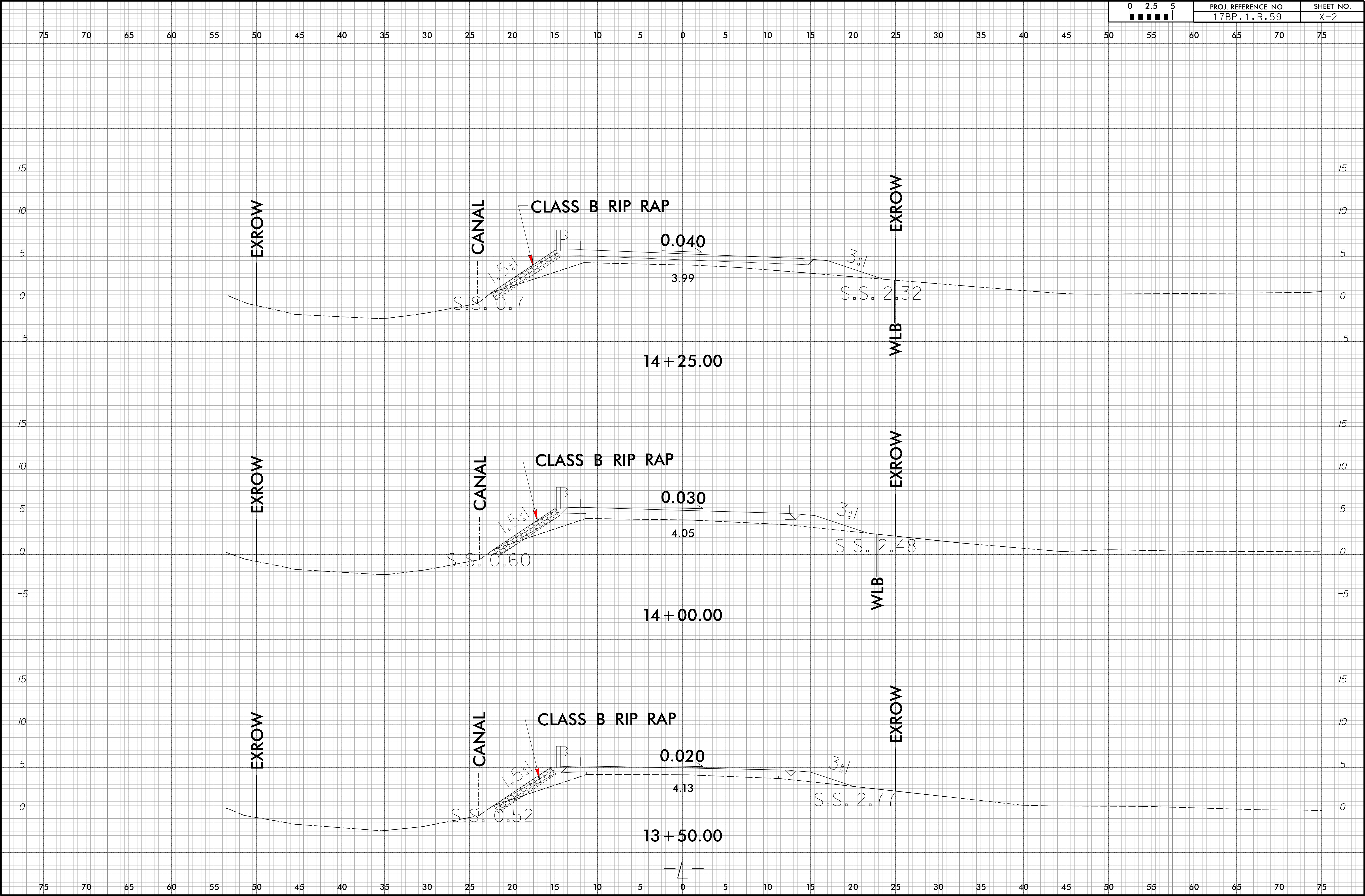
PROJECT: 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-
REPLACES BRIDGE NO. 880009
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
EROSION CONTROL PLAN
BRIDGE #880009
OVER CANAL
36'-6" CLEAR ROADWAY - 90° SKEW

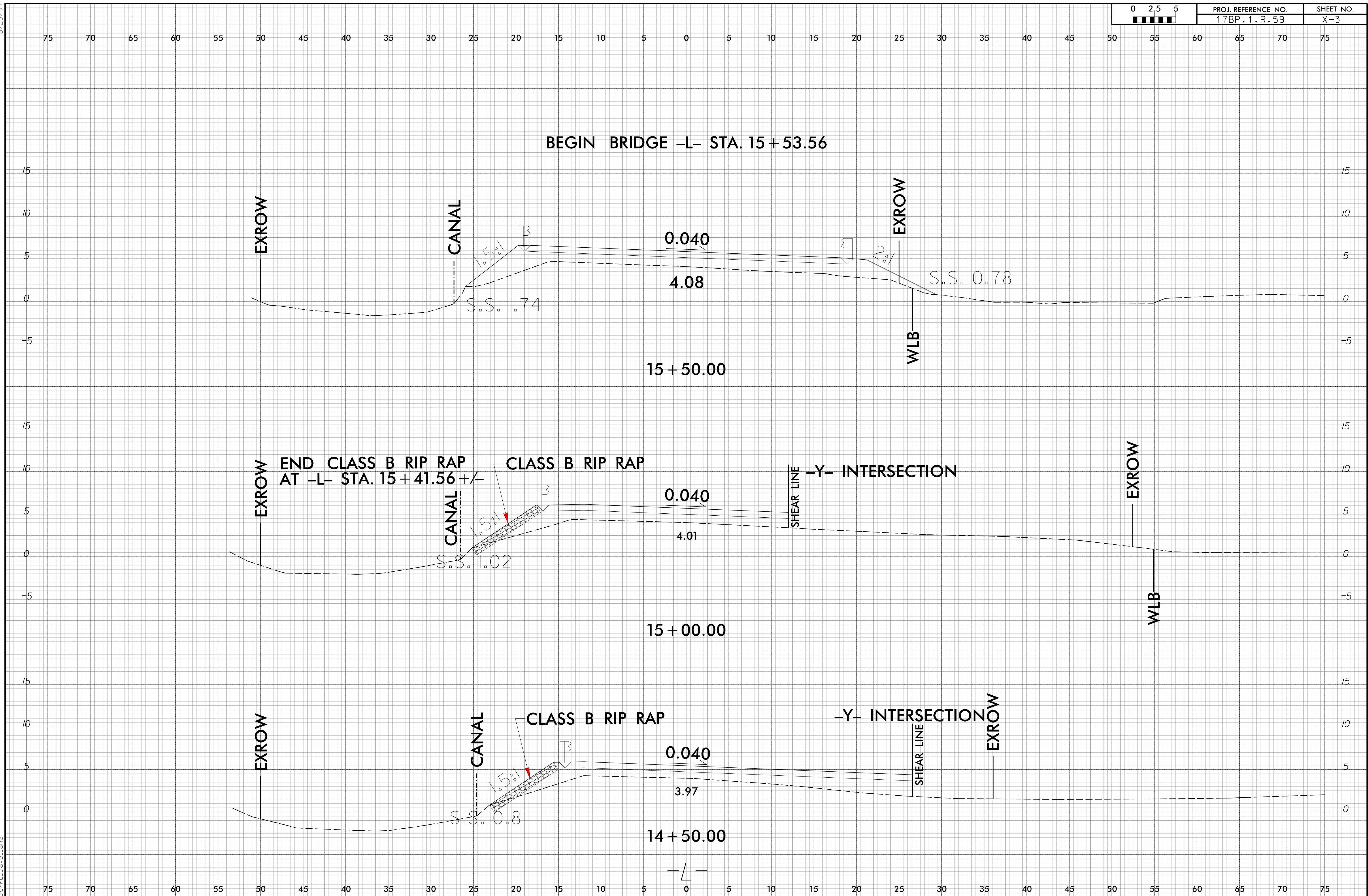
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	EC-4
1			1			TOTAL SHEETS
2			2			4

8/23/99

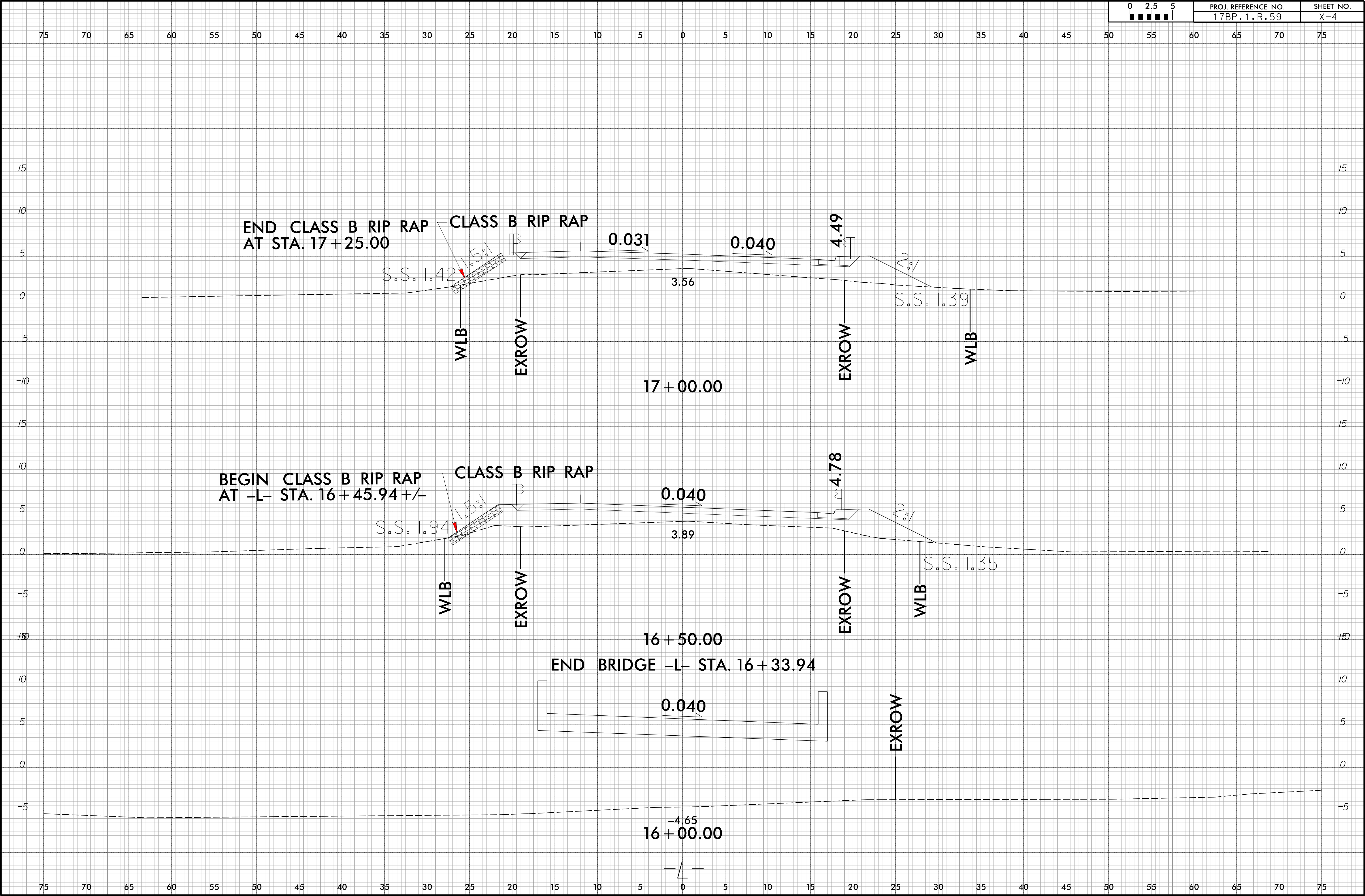
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	17BP.1.R.59	X-1



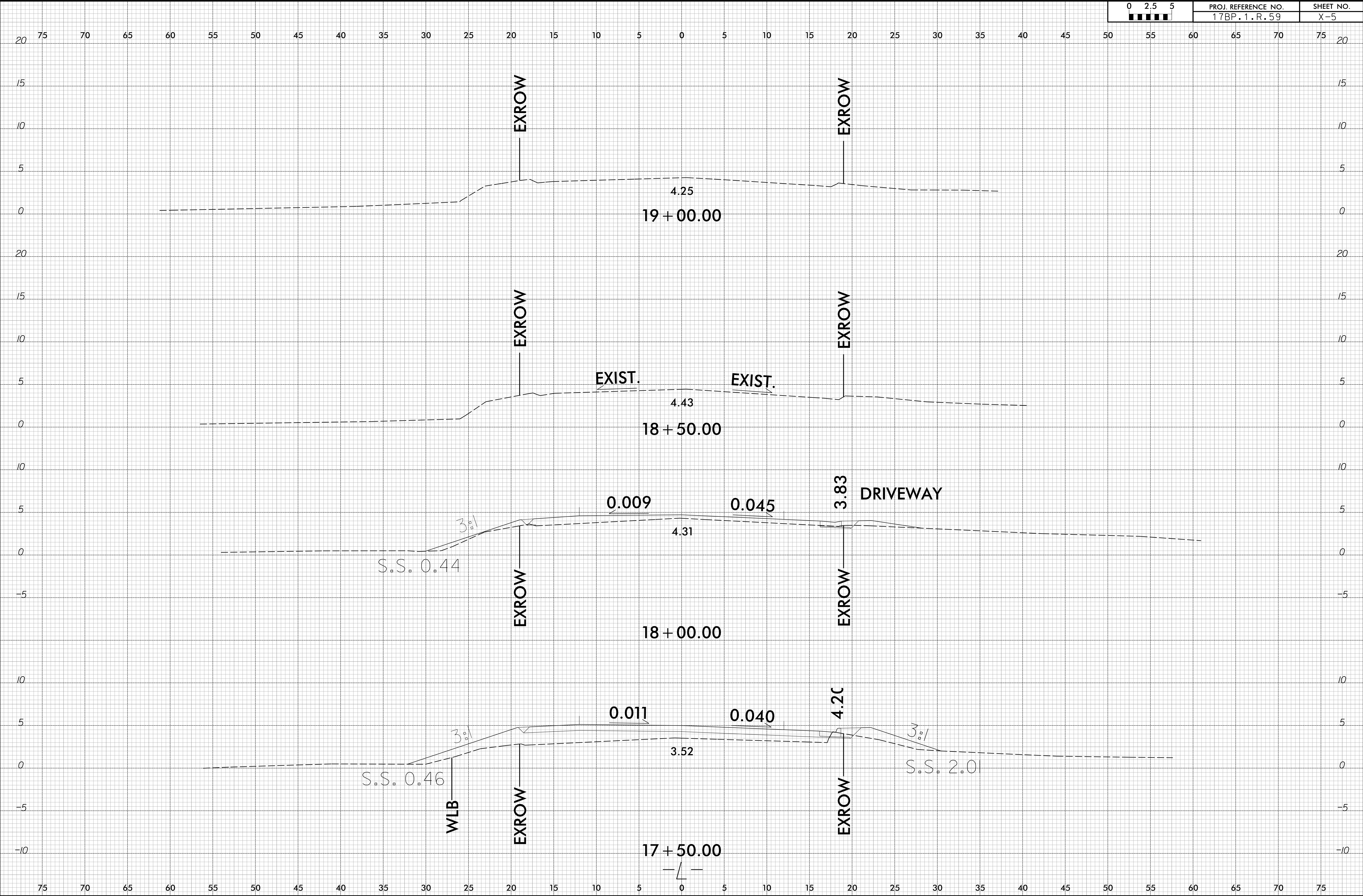




8/23/99



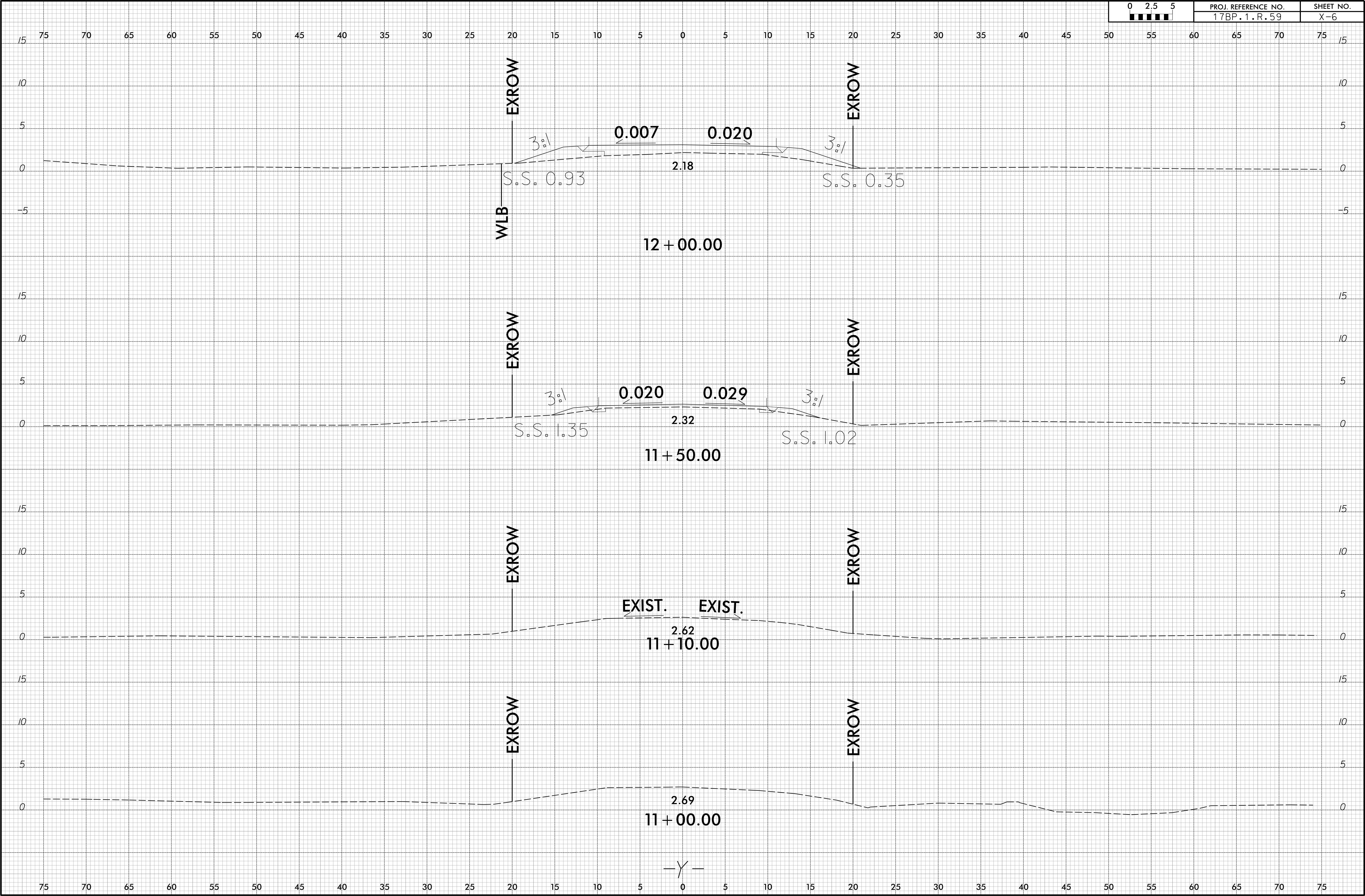
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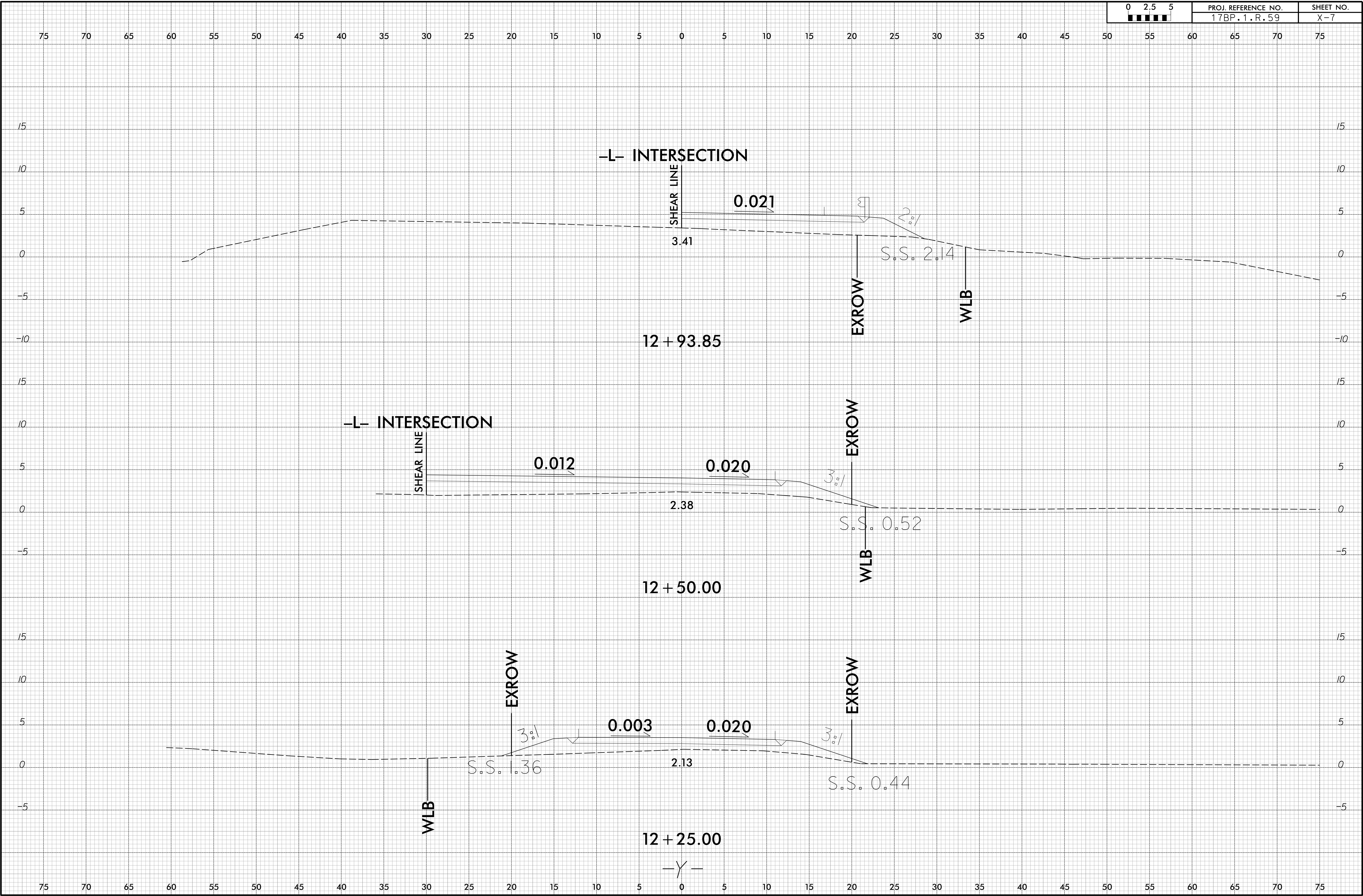


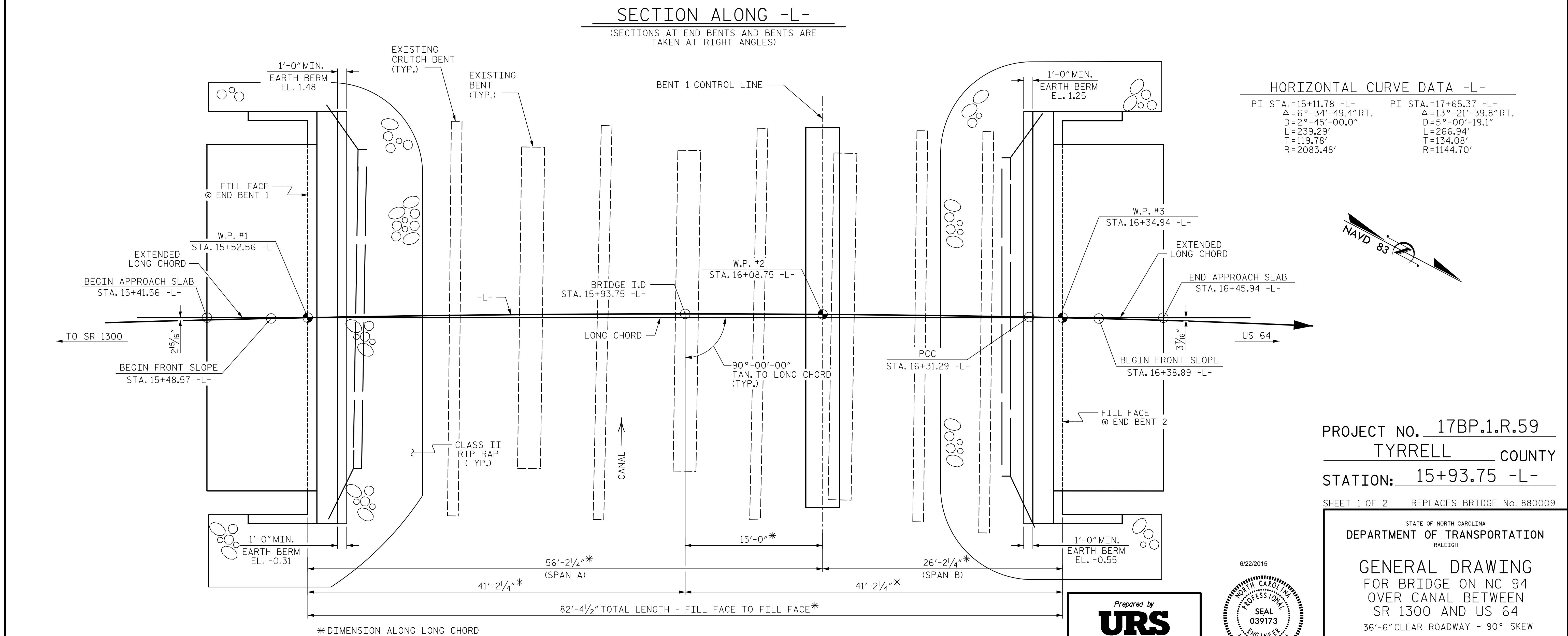
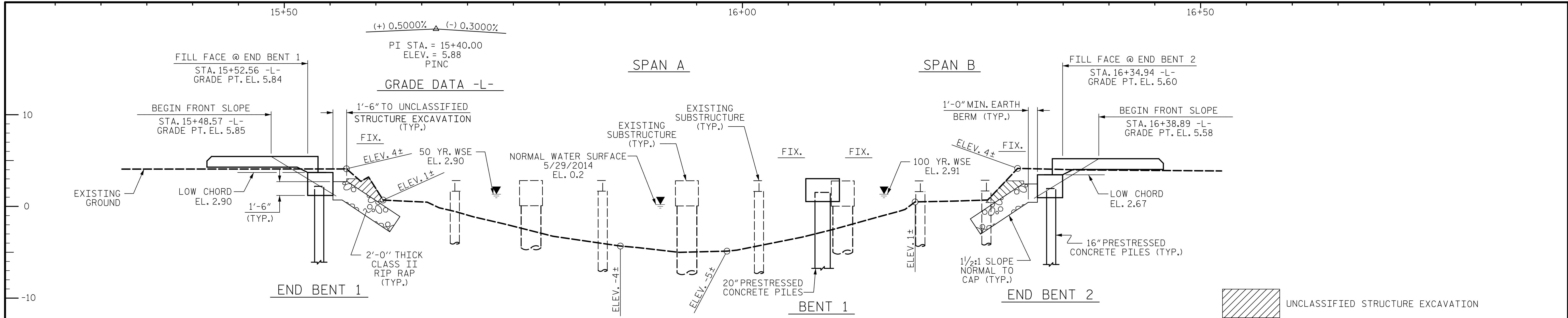
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	17BP.1.R.59	X-5

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.1.R.59	X-6







DRAWN BY : Z. H. BROWN DATE : 3/16/15
CHECKED BY : R. L. WHITCHER DATE : 3/16/15
DESIGNED BY : M. K. TOM DATE : 7/22/14

6/17/2015
S:\Tyrrell\09\Structures\Submittals\2015.05.19 FinalDesign and Tracings\Drawings\01 Tyrrell 09.GD.01.dgn
matt.tom

PLAN

PILES AND DRILLED SHAFTS ARE NOT SHOWN IN PLAN VIEW

Prepared by
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PHONE: 919/461-1100 FAX: 919/461-1415
NC LIC. # C-2243

6/22/2015
NORTH CAROLINA
PROFESSIONAL
SEAL
039173
ENGINEER
MATTHEW K. TOM
DocuSigned by:
Matthew K. Tom
740EF30B8442A...

PROJECT NO. 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

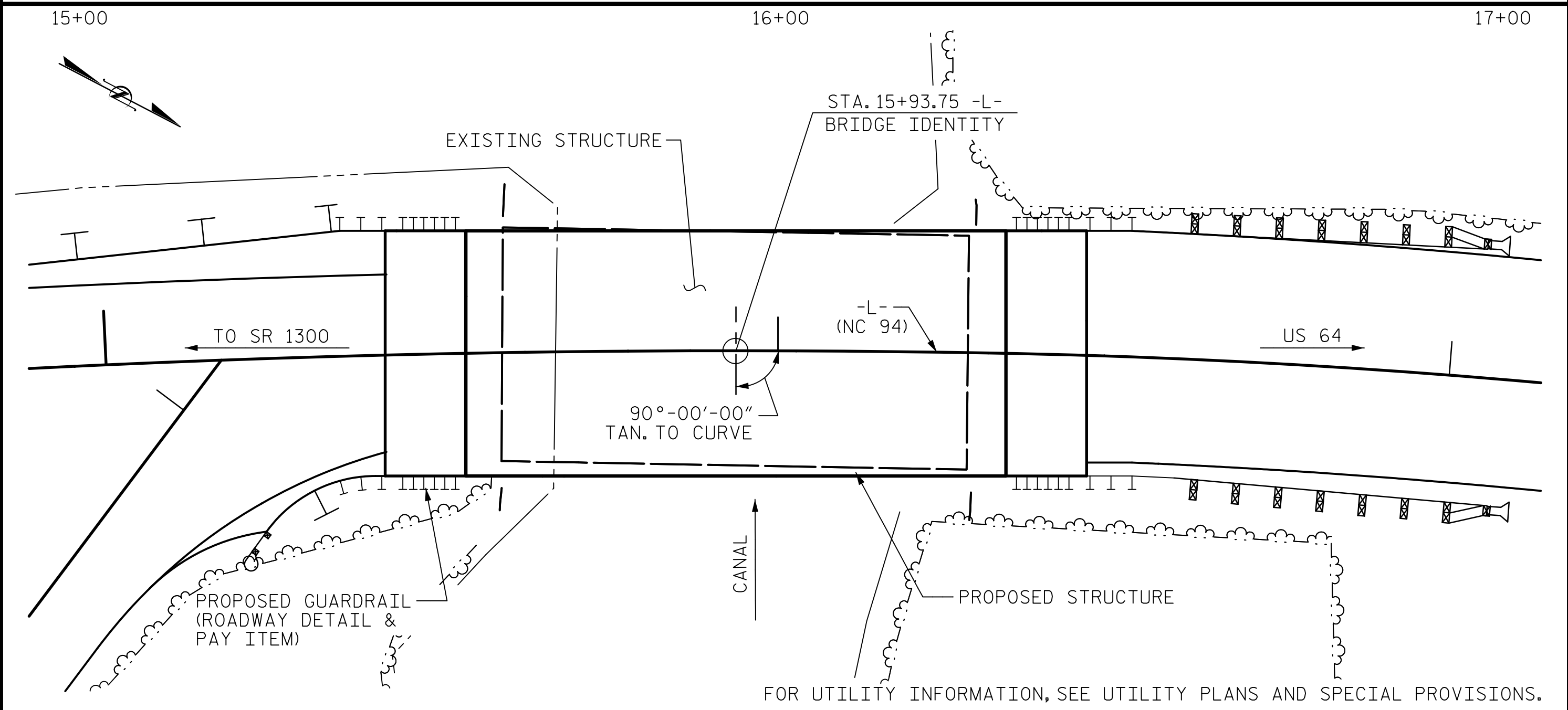
SHEET 1 OF 2 REPLACES BRIDGE No. 880009

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

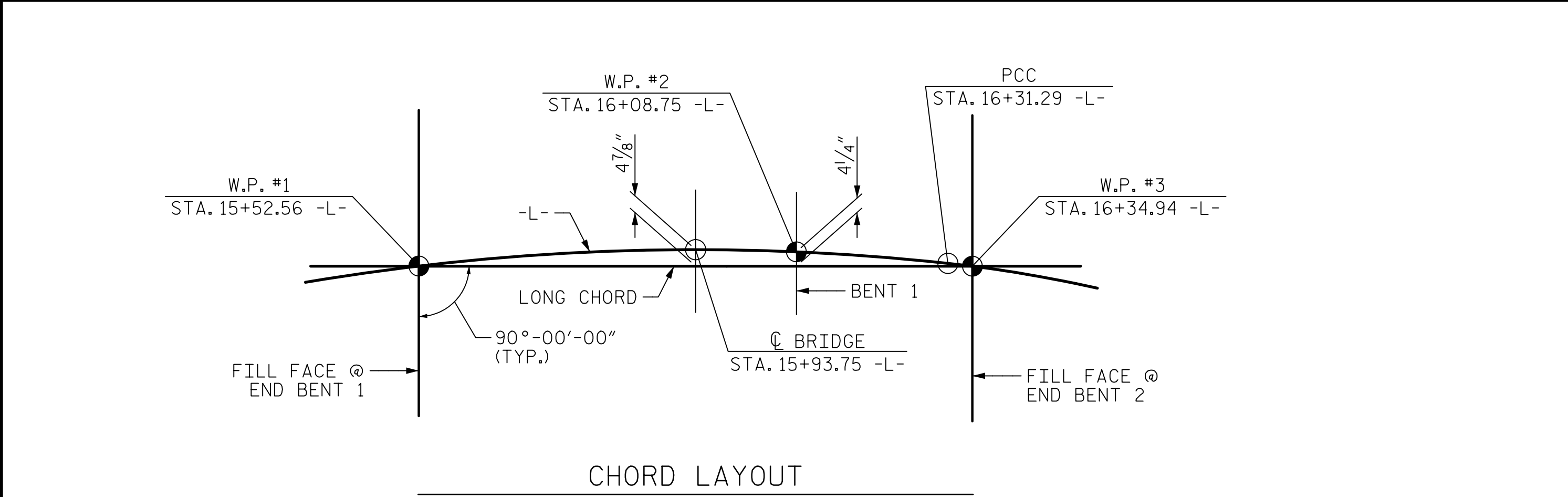
GENERAL DRAWING
FOR BRIDGE ON NC 94
OVER CANAL BETWEEN
SR 1300 AND US 64
36'-6" CLEAR ROADWAY - 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			32

BM10: SPIKE IN BASE OF 15" SWEETGUM, 40.25' RT. -Y- STATION 11+77.54, EL. 2.07, N 798659 E 2814028



LOCATION SKETCH



CHORD LAYOUT

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASTHO LRFD BRIDGE DESIGN SPECIFICATIONS FOR SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURE, SEE SPECIAL PROVISIONS.

MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCATED FOR A DISTANCE OF 24 FT TO THE LEFT AND 22 FT TO THE RIGHT OF THE CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICAITONS.

ALL METALLIZED SURFACES SHALL RECEIVE A SEAL COATING AS SPECIFIED IN THE SPECIAL PROVISIONS FOR THERMAL SPRAYED COATINGS (METALLIZATION).

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

FOR CALCIUM NITRITE CORROSION INHIBITOR, SEE THE STANDARD SPECIFICATIONS.

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

THE CONCRETE IN THE BENT CAP, END BENT CAPS, AND PILES OF BENT NO.1 AND END BENTS NO.1 & 2 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF 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.

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF 8 SPANS TOTALING 67'-0", WITH REINFORCED CONCRETE FLOORS AND TIMBER JOISTS, ON REINFORCED CONCRETE CAPS WITH TIMBER PILES, AND 35'-2' CLEAR ROADWAY TO BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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 TRANSPORATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENTS No.1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 AND 50 TONS PER PILE, RESPECTIVELY.

DRIVE PILES AT END BENTS No.1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 135 AND 85 TONS PER PILE.

PILES AT BENT No.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 95 TONS PER PILE.

DRIVE PILES AT BENT No.1 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESITANCE FOR DOWNDAG OR SCOUR.

INSTALL PILES AT BENT No.1 TO A TIP ELEVATION NO HIGHER THAN -48 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT No.1 IS ELEVATION -12 FT. SCOUR CRITICAL ELEVATION IS USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 15 TO 25 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT No.1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40 TO 50 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT No.1. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

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 AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION.

STEEL PILE TIPS ARE REQUIRED FOR PRESTRESSED CONCRETE PILES AT END BENTS No.1 AND 2, AND BENT No.1. FOR STEEL PILE TIPS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

HYDRAULIC DATA

DESIGN DISCHARGE..... = 350 CFS.
FREQUENCY OF DESIGN FLOOD..... = 50 YR.
DESIGN HIGH WATER ELEVATION..... = 2.90 FT.
DRAINAGE AREA..... = 1.23 SQ. MI.
BASE FLOOD DISCHARGE (Q100)..... = 430 CFS.
BASE HIGH WATER ELEVATION..... = 2.91 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE..... = 1200 CFS
FREQUENCY OF OVERTOPPING FLOOD..... = 500(+) YR.
OVERTOPPING FLOOD ELEVATION..... = 3.3 FT.*

* ROADWAY LOW POINT STA. 20+85.00 -L-

TOTAL BILL OF MATERIAL

TOTAL BILL OF MATERIAL											
	REMOVAL OF EXISTING STRUCTURE AT STA 15+93.75 -L-	UNCLASSIFIED STRUCTURE EXCAVATION	GROOVING BRIDGE FLOORS	16"PRESTRESSED CONCRETE PILES		20"PRESTRESSED CONCRETE PILES		RIP RIP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	CONSTRUCTION OF SUBSTRUCTURE	CONSTRUCTION OF SUPERSTRUCTURE
	LUMP SUM	LUMP SUM	SQ. FT	No.	LIN. FT.	No.	LIN. FT.	TON	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			3359								
END BENT 1				8	440.0			133	150		
BENT 1						8	440.0				
END BENT 2				8	440.0			139	155		
TOTAL	LUMP SUM	LUMP SUM	3359	16	880	8	440	272	305	LUMP SUM	LUMP SUM

DRAWN BY : Z. H. BROWN DATE : 12/16/14
CHECKED BY : R. L. WHITCHER DATE : 1/15/15
DESIGNED BY : M. K. TOM DATE : 7/22/14

Prepared by
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NC L.C. # C-2243



PROJECT NO. 17BP.1.R.59

TYRRELL COUNTY

STATION: 15+93.75 -L-

SHEET 2 OF 2 REPLACES BRIDGE NO. 880009

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON NC 94 OVER
CANAL BETWEEN
SR 1300 AND US 64
36'-6" CLEAR ROADWAY - 90° SKEW

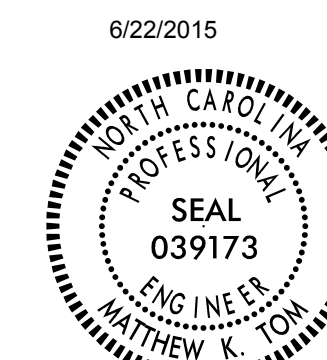
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			32



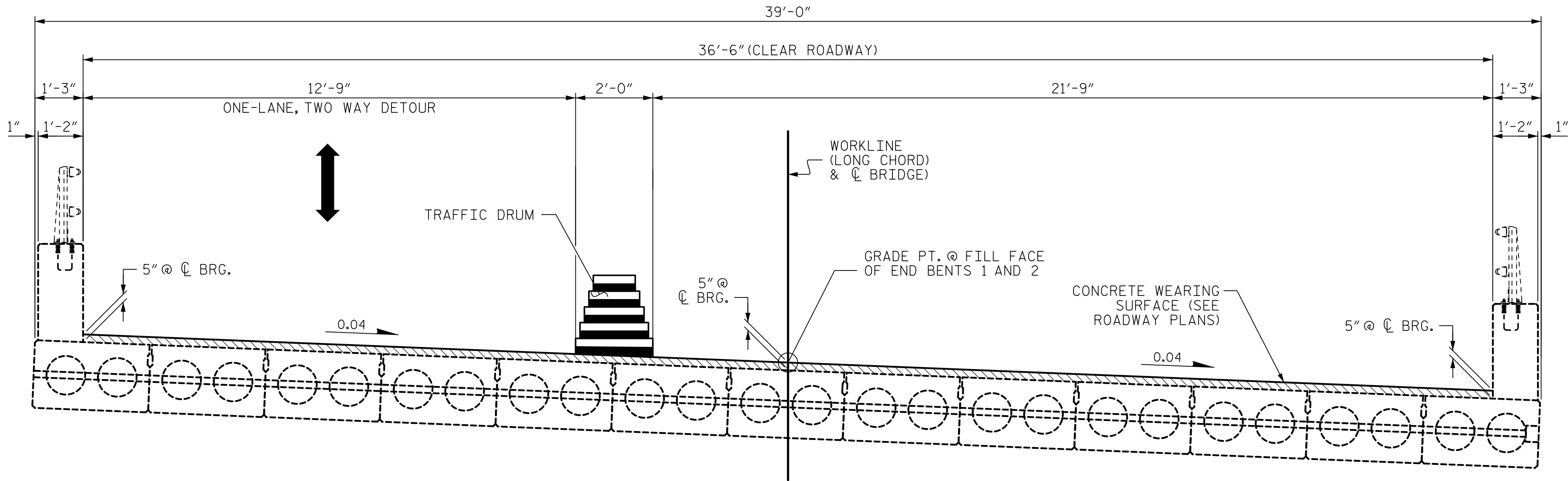
STAGE II CONSTRUCTION

REVISONS						SHEET NO. S-3
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 32
2			4			

Prepared by
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URS Corporation - North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
PHONE (919) 461-1100 FAX (919) 461-1415
NC LIC. # C-2243

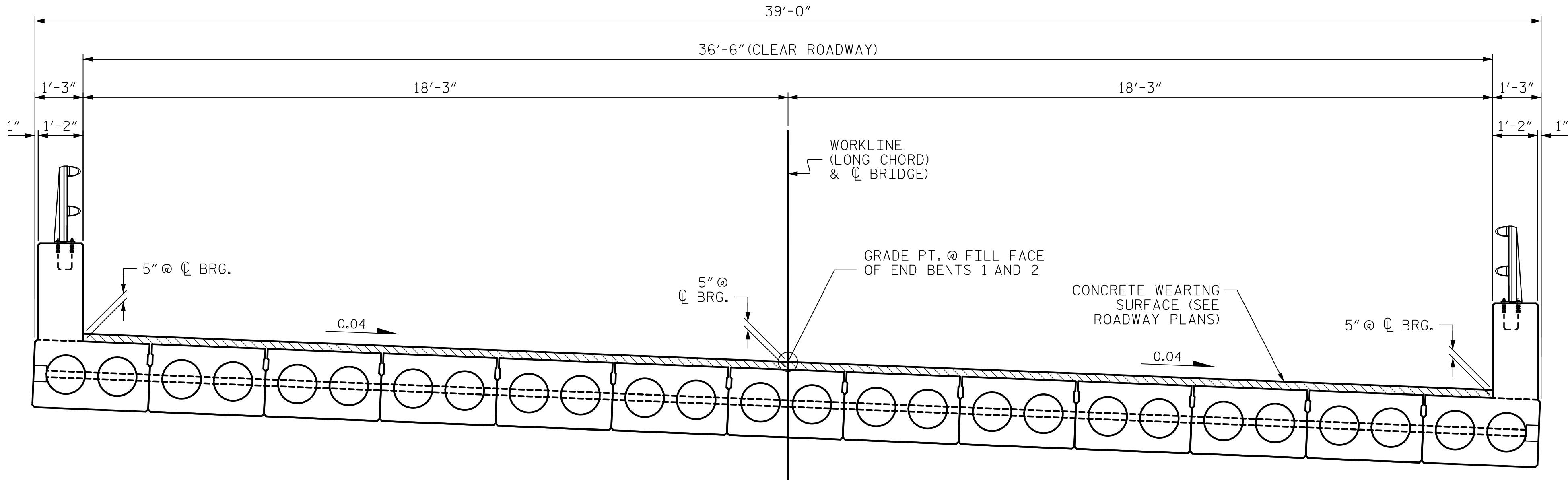


DocuSigned by:
Matthew E. Tolson
749E8E30B64442A



STAGE III CONSTRUCTION

PLACE TRAFFIC DRUMS AS SHOWN AND REMOVE TEMPORARY ANCHORED PORTABLE CONCRETE BARRIER IN STAGE I. FILL CONCRETE INSERTS WITH GROUT, PLACE REMAINING CONCRETE WEARING SURFACE.



FINAL CONSTRUCTION

RELOCATE TRAFFIC DRUMS AS NECESSARY.

PROJECT NO. 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

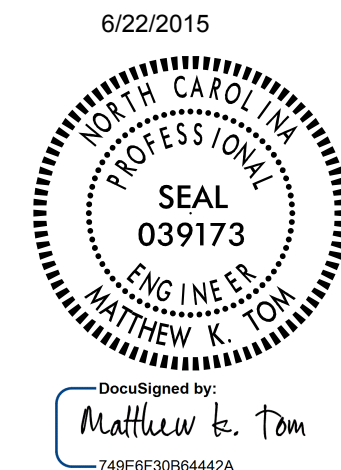
CONSTRUCTION SEQUENCE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			32

DRAWN BY : Z. H. BROWN DATE : 12/2/14
CHECKED BY : R. L. WHITCHER DATE : 1/15/15
DESIGNED BY : M. K. TOM DATE : 7/22/14

6/17/2015
S:\Tyrrell\09\Structures\Submittals\2015.05.19 FinalDesign and Tracings\Drawings\04 Tyrrell 09_CS_02.dgn
matt_tom

Prepared by
URS
URS Corporation - North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
PHONE: 919/461-1100 FAX: 919/461-1415
NC L.C. # C-2243



+

+

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	
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							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)		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(0pr)	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(0pr)	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:

-
-
-
-

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

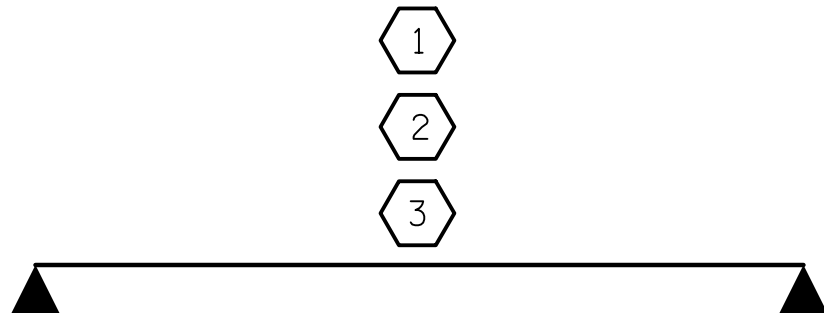
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

FOR SPAN "A"

ASSEMBLED BY : M. K. TOM DATE : 12/23/14
CHECKED BY : R. L. WHITCHER DATE : 2/11/15
DESIGNED BY : M. K. TOM DATE : 12/23/14

DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10



PROJECT NO. 17BP.1.R.59

TYRRELL COUNTY

STATION: 15+93.75 -L-

SHEET 1 OF 2

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:	
1			3			S-5
2			4			TOTAL SHEETS 32

STD. NO. 21LRFR1_90S_55L

+

+

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	
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							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)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.018	--	1.75	0.284	2.53	25'	EL	12	0.591	1.02	25'	EL	1.2	0.80	0.284	2.34	25'	EL	12		
	HL-93(Opr)	N/A	--	1.319	--	1.35	0.284	3.29	25'	EL	12	0.591	1.32	25'	EL	1.2	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.178	42.397	1.75	0.284	3.76	25'	EL	12	0.591	1.18	25'	EL	1.2	0.80	0.284	3.46	25'	EL	12		
	HS-20(Opr)	36.000	--	1.527	54.959	1.35	0.284	4.87	25'	EL	12	0.591	1.53	25'	EL	1.2	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.728	36.833	1.4	0.284	6.83	25'	EL	12	0.591	2.73	25'	EL	1.2	0.80	0.284	5.04	25'	EL	12	
		SNGARBS2	20.000	--	2.186	43.718	1.4	0.284	6.39	25'	EL	12	0.591	2.19	25'	EL	1.2	0.80	0.284	4.72	25'	EL	12	
		SNAGRIS2	22.000	--	2.141	47.107	1.4	0.284	6.83	25'	EL	12	0.591	2.14	25'	EL	1.2	0.80	0.284	5.04	25'	EL	12	
		SNCOTTS3	27.250	--	1.385	37.731	1.4	0.284	3.57	25'	EL	12	0.591	1.38	25'	EL	1.2	0.80	0.284	2.64	25'	EL	12	
		SNAGGRS4	34.925	--	1.332	46.511	1.4	0.284	3.56	25'	EL	12	0.591	1.33	25'	EL	1.2	0.80	0.284	2.62	25'	EL	12	
		SNS5A	35.550	--	1.392	49.477	1.4	0.284	3.45	25'	EL	12	0.591	1.39	25'	EL	1.2	0.80	0.284	2.54	25'	EL	12	
		SNS6A	39.950	--	1.334	53.31	1.4	0.284	3.23	25'	EL	12	0.591	1.33	25'	EL	1.2	0.80	0.284	2.39	25'	EL	12	
	TTST	SNS7B	42.000	--	1.344	56.455	1.4	0.284	3.23	25'	EL	12	0.591	1.34	25'	EL	1.2	0.80	0.284	2.37	25'	EL	12	
		TNAGRIT3	33.000	--	1.634	53.934	1.4	0.284	4.55	25'	EL	12	0.591	1.63	25'	EL	1.2	0.80	0.284	3.36	25'	EL	12	
		TNT4A	33.075	--	1.483	49.049	1.4	0.284	3.95	25'	EL	12	0.591	1.48	25'	EL	1.2	0.80	0.284	2.92	25'	EL	12	
		TNT6A	41.600	--	1.398	58.138	1.4	0.284	3.71	25'	EL	12	0.591	1.4	25'	EL	1.2	0.80	0.284	2.74	25'	EL	12	
		TNT7A	42.000	--	1.391	58.419	1.4	0.284	3.84	25'	EL	12	0.591	1.39	25'	EL	1.2	0.80	0.284	2.83	25'	EL	12	
		TNT7B	42.000	--	1.343	56.385	1.4	0.284	3.46	25'	EL	12	0.591	1.34	25'	EL	1.2	0.80	0.284	2.55	25'	EL	12	
		TNAGRIT4	43.000	--	1.340	57.604	1.4	0.284	3.71	25'	EL	12	0.591	1.34	25'	EL	1.2	0.80	0.284	2.73	25'	EL	12	
		TNAGT5A	45.000	--	1.367	61.501	1.4	0.284	3.71	25'	EL	12	0.591	1.37	25'	EL	1.2	0.80	0.284	2.73	25'	EL	12	
		TNAGT5B	45.000	3	1.239	55.766	1.4	0.284	3.65	25'	EL	9.6	0.591	1.24	25'	EL	1.2	0.80	0.284	2.71	25'	EL	9.6	

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)

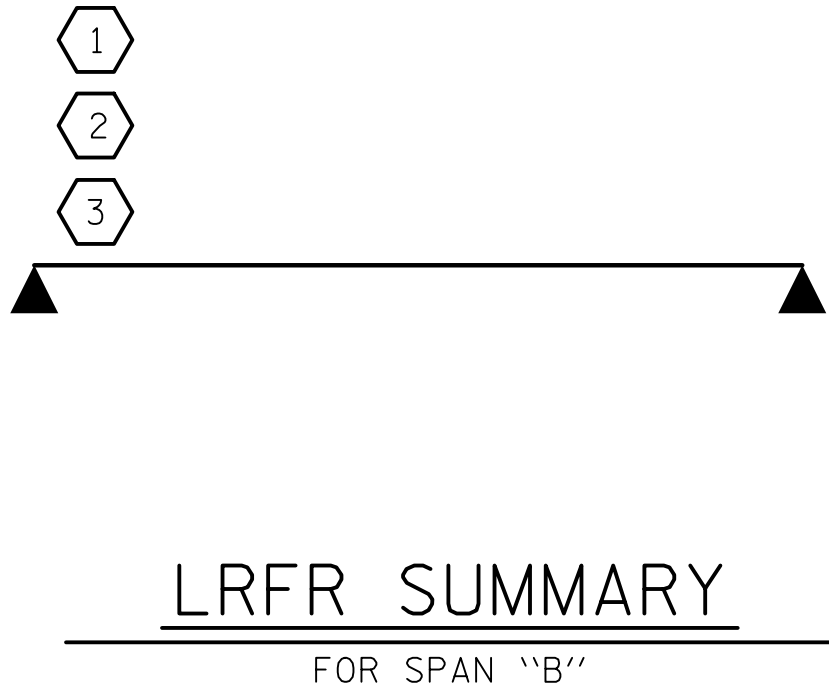
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



PROJECT NO. 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

SHEET 2 OF 2

ASSEMBLED BY :	M. K. TOM	DATE : 12/23/14
CHECKED BY :	R. L. WHITCHER	DATE : 2/11/15
DESIGNED BY :	M. K. TOM	DATE : 12/23/14
DRAWN BY :	CVC 6/10	
CHECKED BY :	DNS 6/10	

Prepared by

URS

URS Corporation - North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
PHONE: 919/461-1100 FAX: 919/461-1415
NC L.I.C. • C-2243

6/22/2015

NORTH CAROLINA
PROFESSIONAL
SEAL
039173
ENGINEER

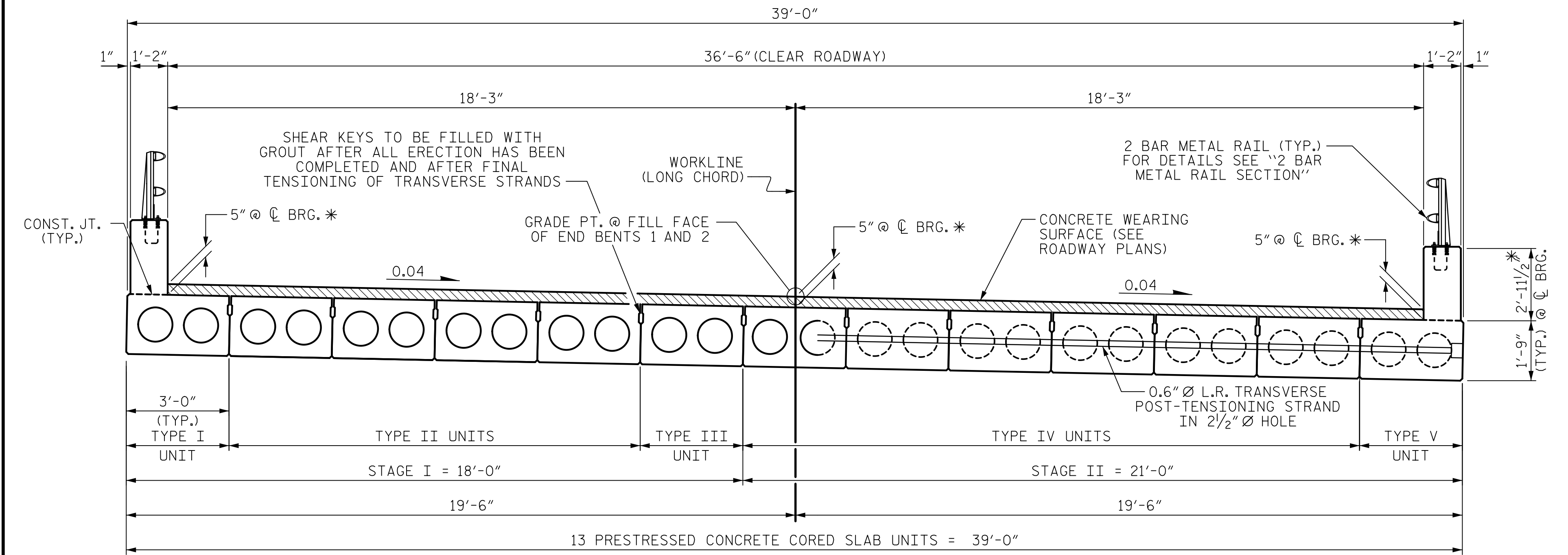
Matthew K. Tom

748E9F30B84442A...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

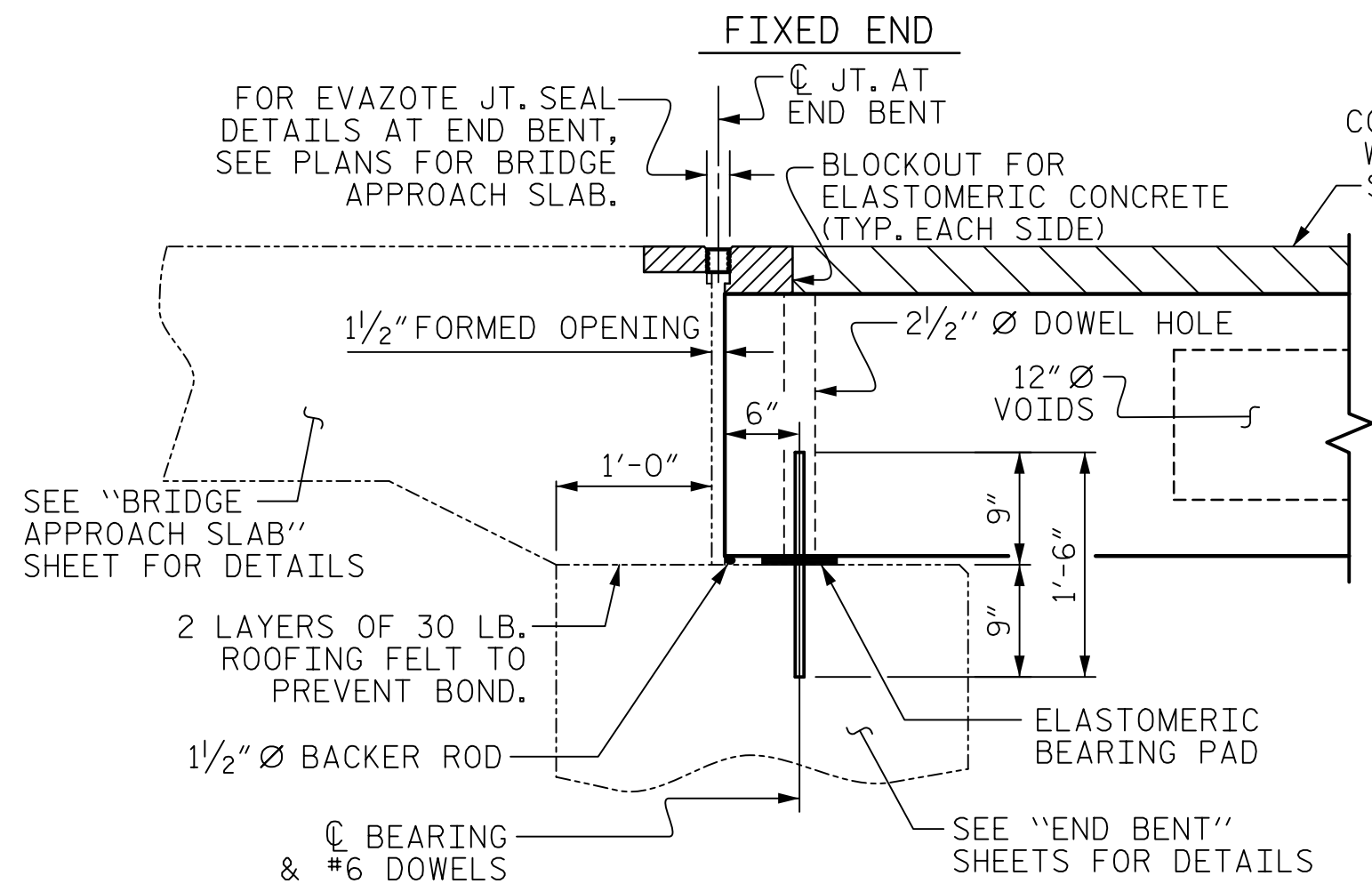
STANDARD
LRFR SUMMARY FOR
25' CORED SLAB UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-6
2			4			TOTAL SHEETS 32

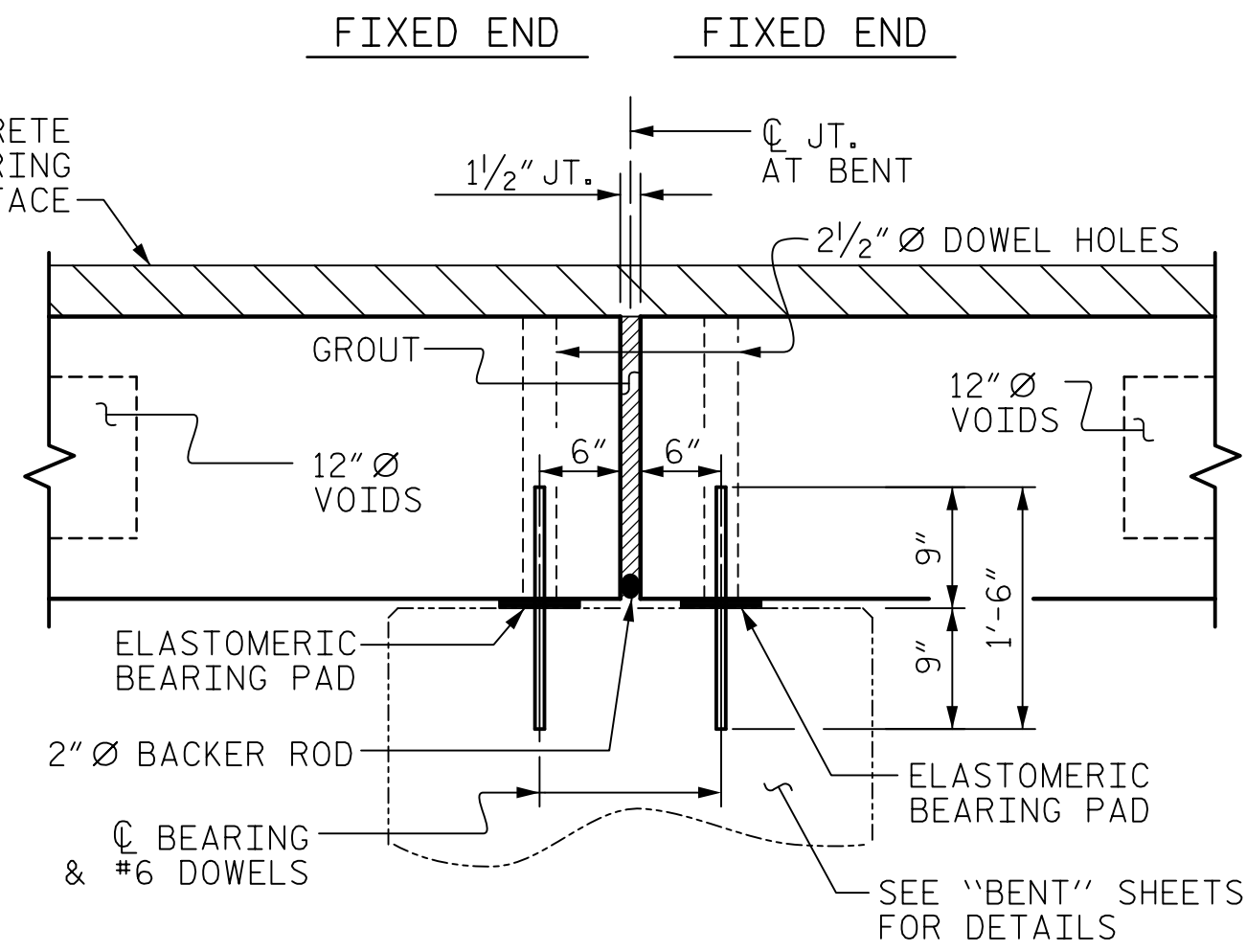


TYPICAL SECTION

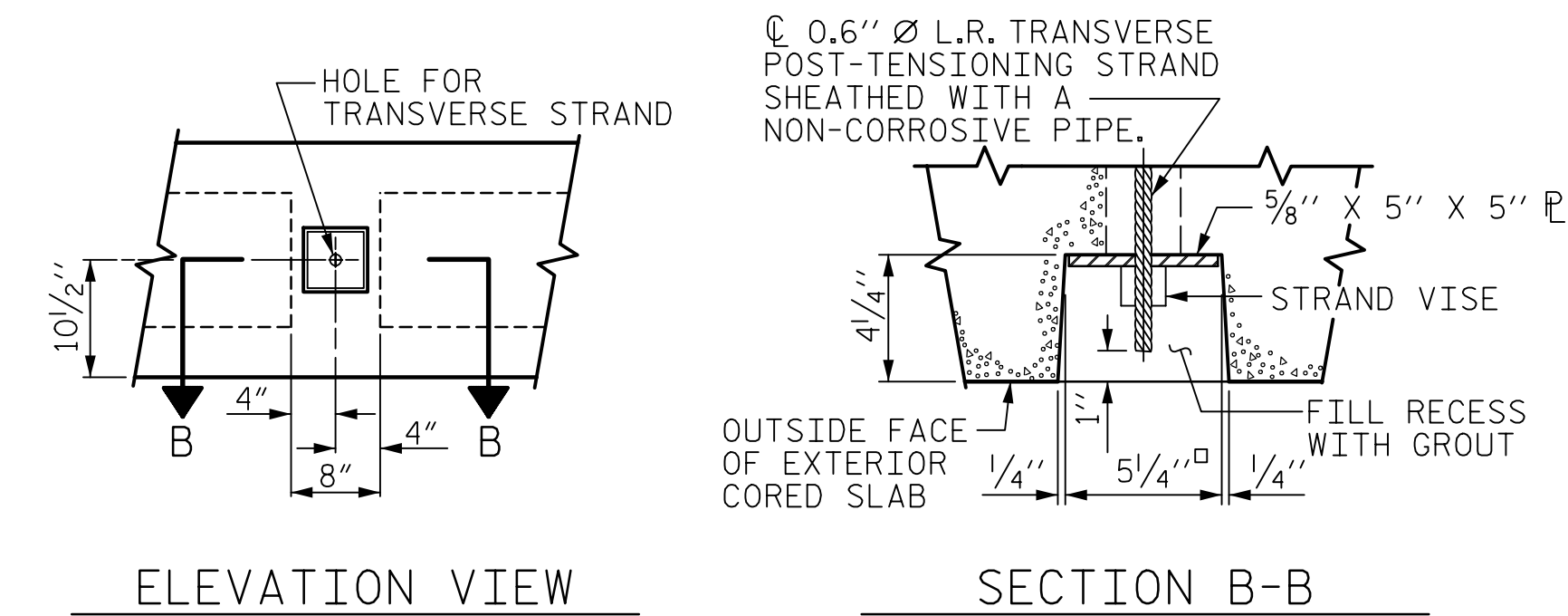
*-THE MAXIMUM BARRIER RAIL HEIGHT AND CONCRETE WEARING SURFACE THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND CONCRETE WEARING SURFACE THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND CONCRETE WEARING SURFACE THICKNESS SEE THE "2 BAR METAL RAIL SECTION" DETAIL.



SECTION AT END BENT



SECTION AT BENT



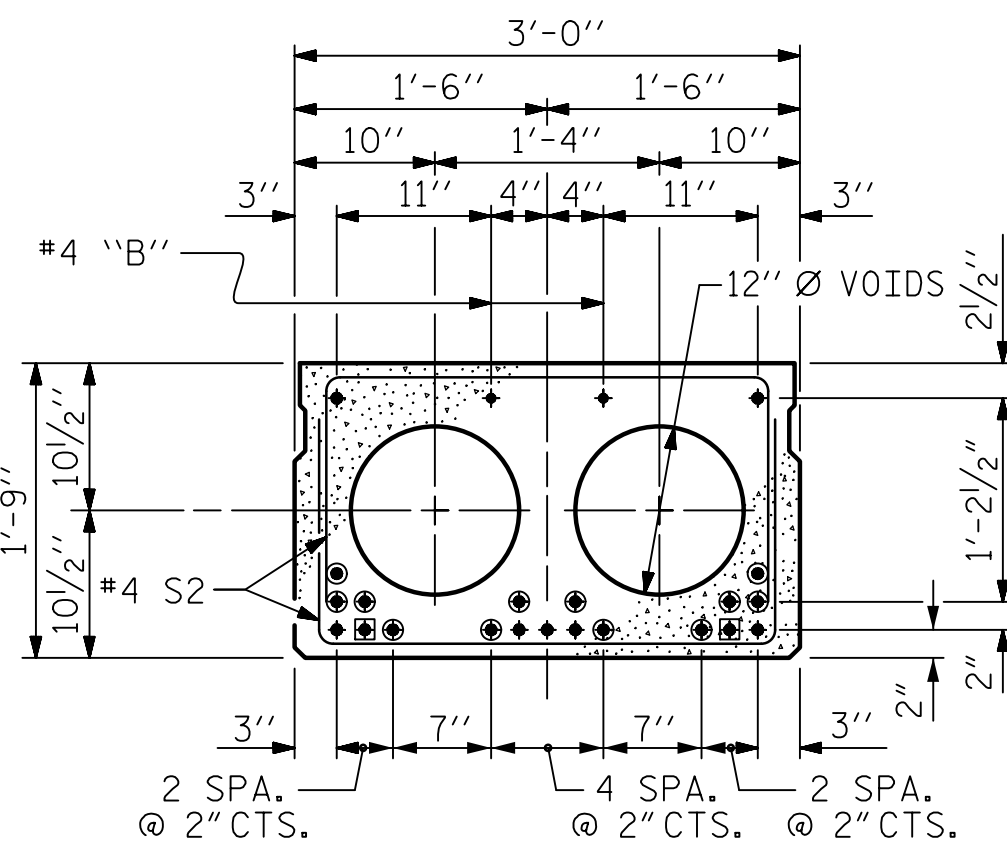
GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS

(STAGE II)

ASSEMBLED BY : R. L. WHITCHER DATE : 10/29/14
CHECKED BY : M. K. TOM DATE : 12/29/14
DESIGNED BY : M. K. TOM DATE : 9/12/14

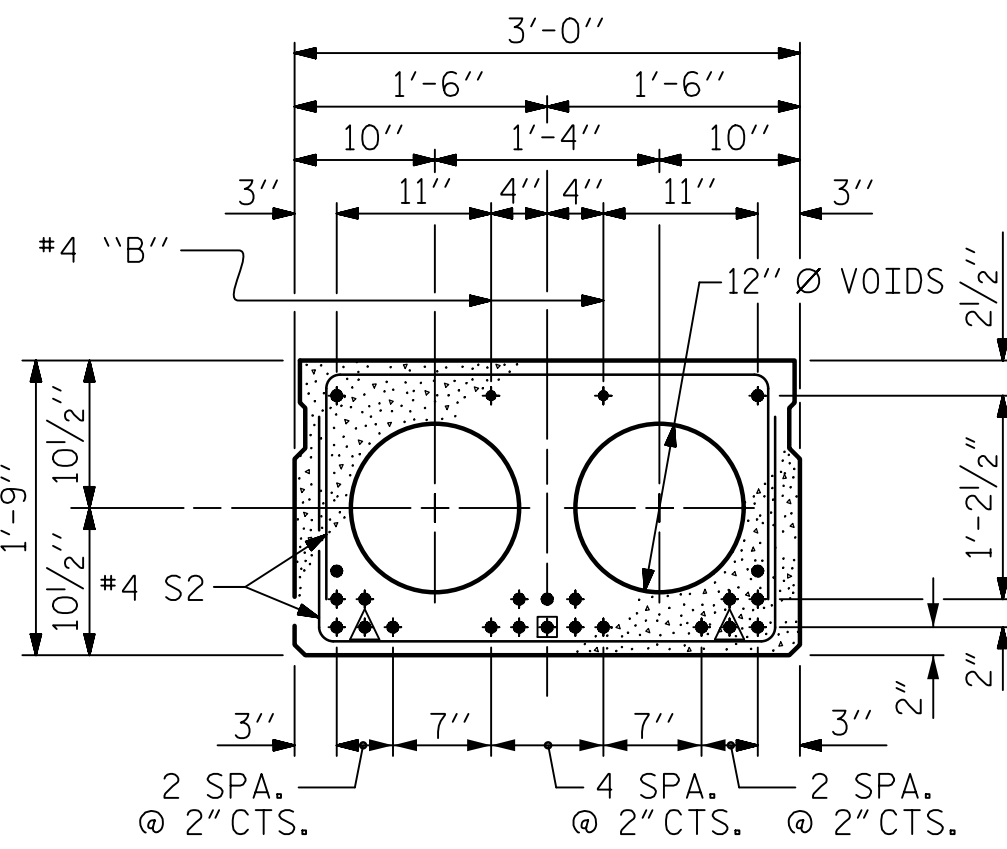
DRAWN BY : DGE 5/09
CHECKED BY : BCH 6/09
REV. 9/14 MAA/TMG

6/17/2015
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matt.tom



INTERIOR SLAB SECTION (25' UNIT)

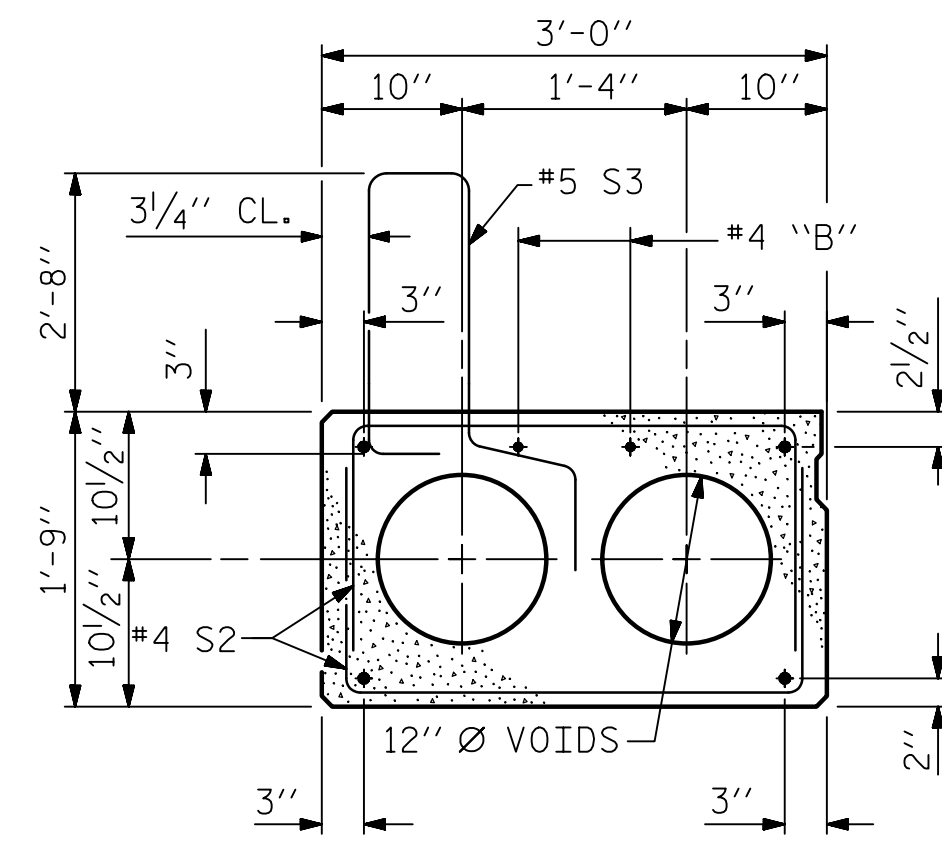
(9 STRANDS REQUIRED)



INTERIOR SLAB SECTION (55' UNIT)

(22 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT



EXT. SLAB SECTION

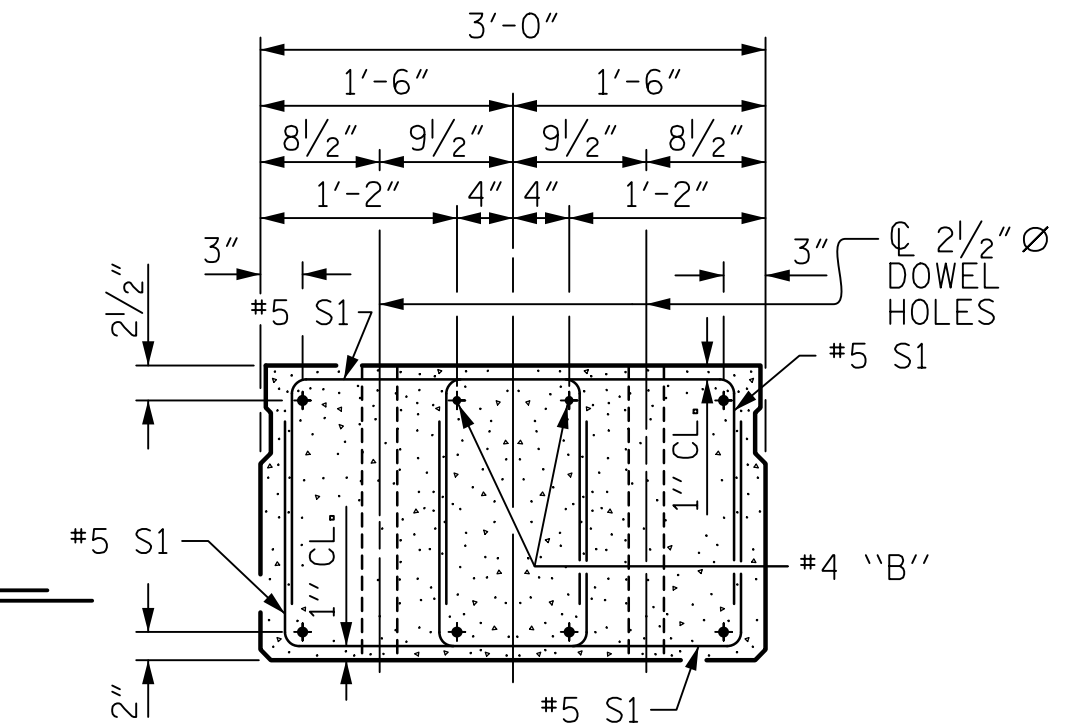
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 10'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

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

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

DEBONDING LEGEND



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.

PROJECT NO. 17BP.1.R.59

TYRRELL COUNTY

STATION: 15+93.75 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

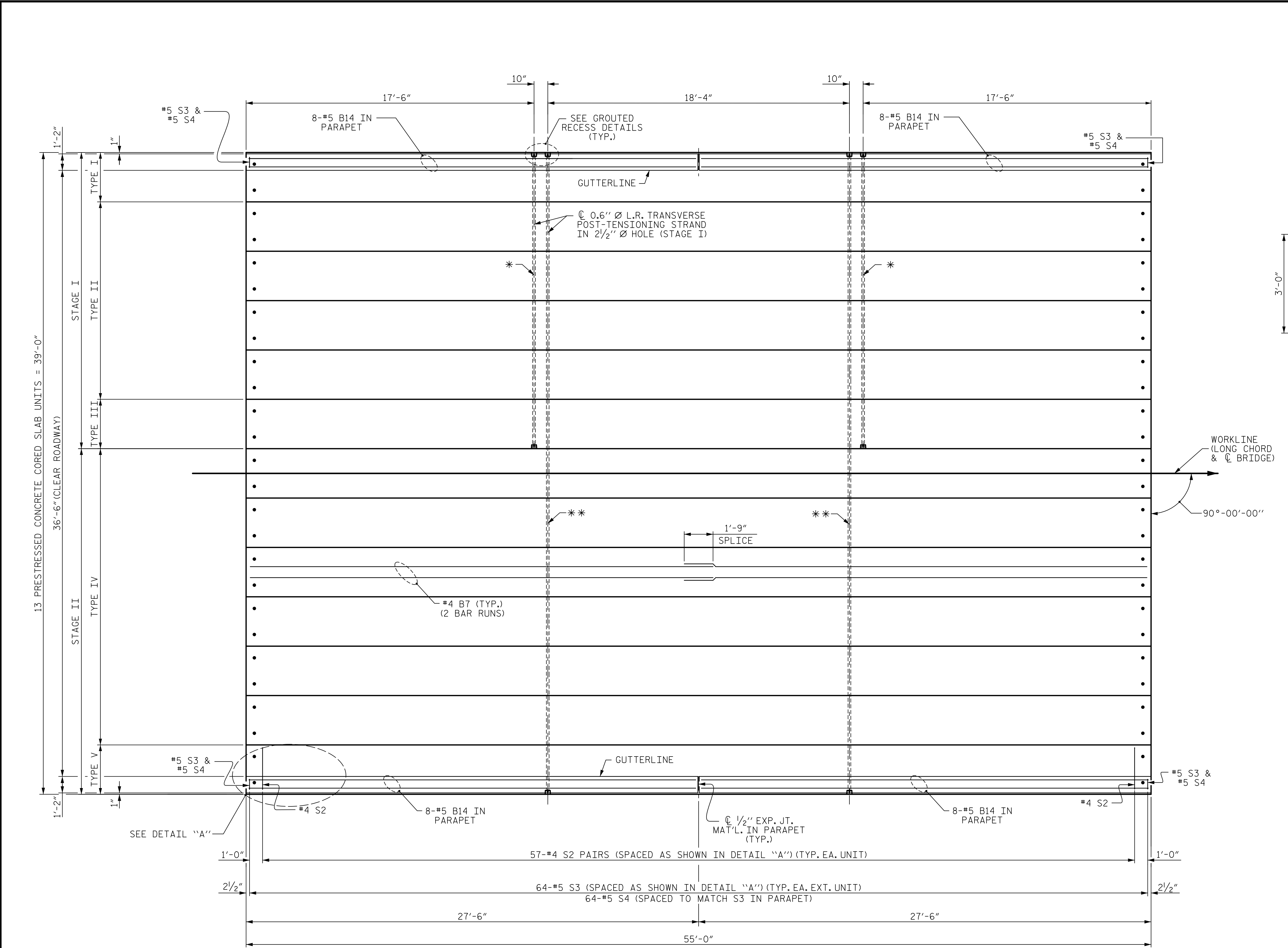
STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 32
2			4			

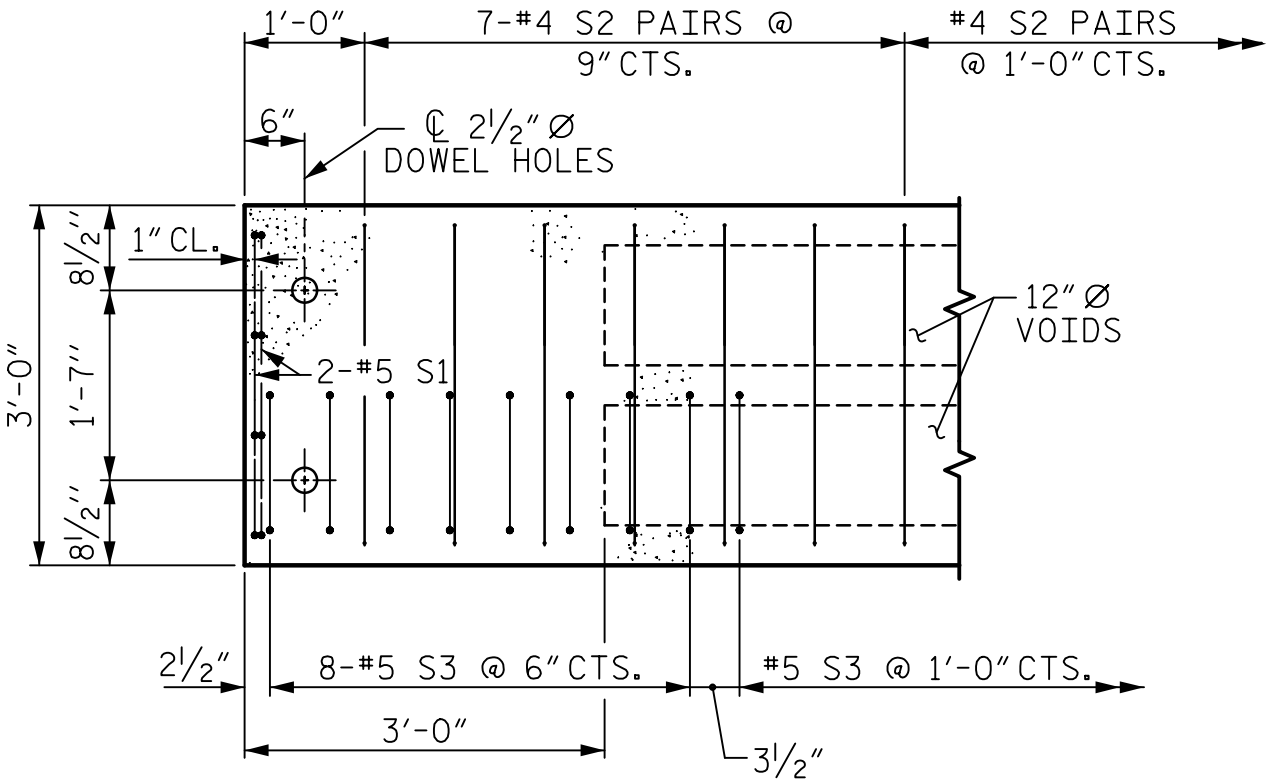
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URS Corporation - North Carolina
1600 Perimeter Park Drive, Suite 400
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PHONE: 919/461-1100 FAX: 919/461-1415
NC LIC. # C-2243

6/22/2015
NORTH CAROLINA
PROFESSIONAL
SEAL
039173
ENGINEER
MATTHEW K. TOM
Designed by:
Matthew K. Tom
7486F30B6442A

STD. NO. 21" PCS2_39_90S



- * STRAND #1 GOES THRU 6 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE I CONSTRUCTION)
- * * STRAND #2 GOES THRU ALL CORED SLAB UNITS (TO BE TENSIONED DURING STAGE II CONSTRUCTION)



DETAIL "A"

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

WORKLINE (LONG CHORD & CL BRIDGE)

90°-00'-00"

PLAN OF SPAN A

DRAWN BY : R. L. WHITCHER DATE : 10/29/14
CHECKED BY : M. K. TOM DATE : 12/29/14
DESIGNED BY : M. K. TOM DATE : 9/11/14

6/17/2015
S:\Tyrrell\09\Structures\Submittals\2015.05.19 Final Design and Tracings\Drawings\08 Tyrrell 09_PS-01.dgn
matt_tom



PROJECT NO. 17BP.1.R.59

TYRRELL COUNTY

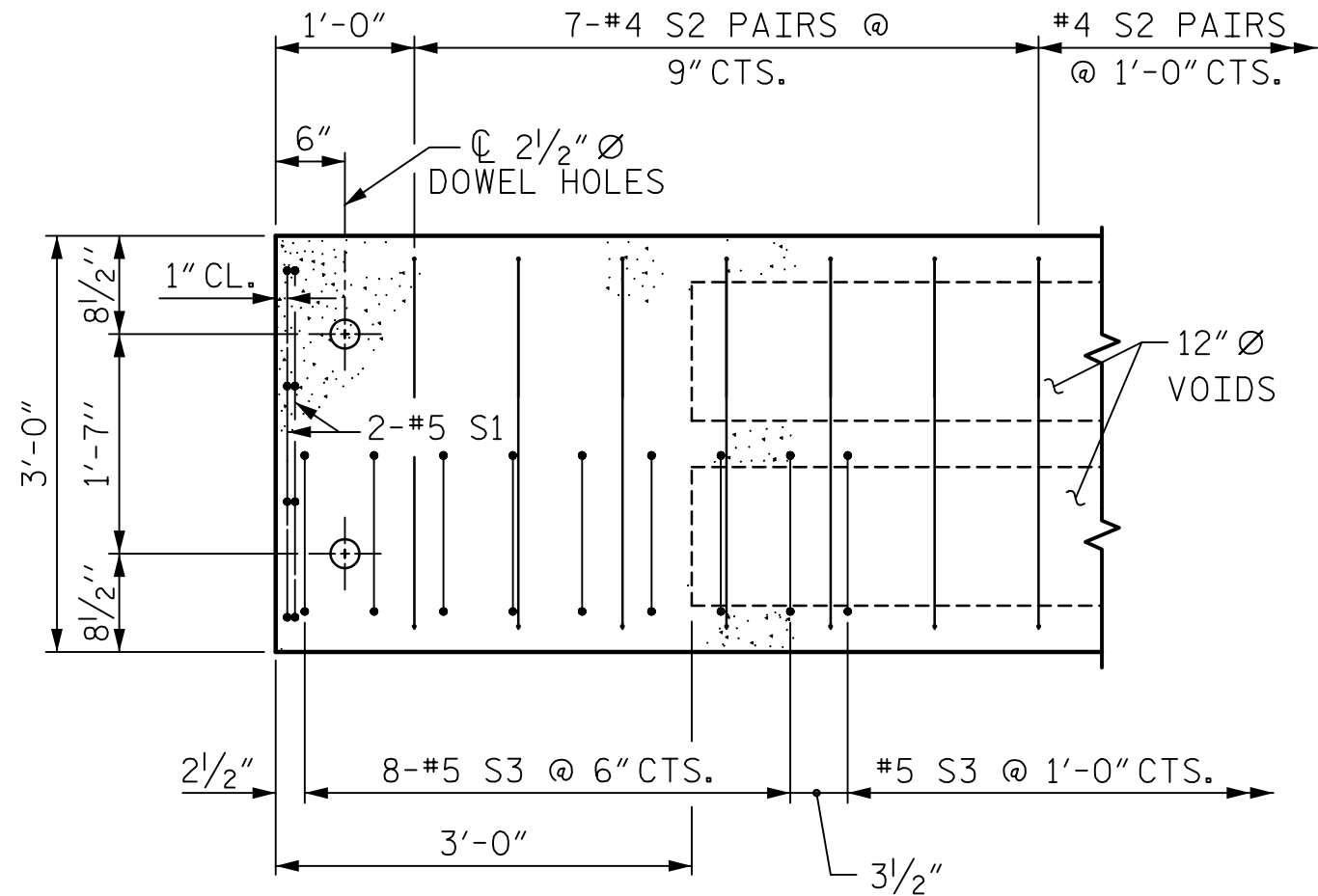
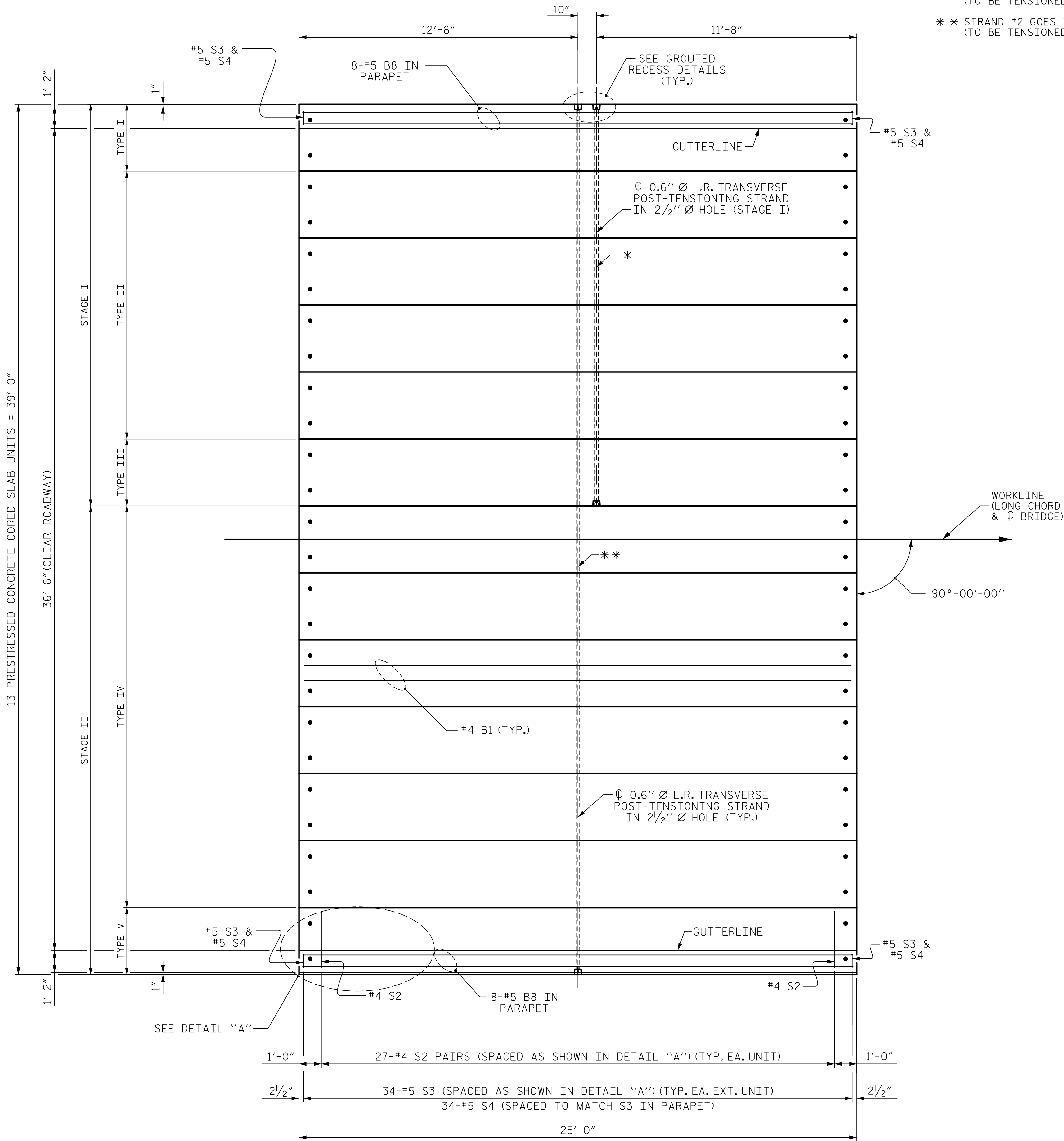
STATION: 15+93.75 -L-

SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN A
36'-6" CLEAR ROADWAY
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			32



DETAIL "A"

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

PROJECT NO. 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

SHEET 2 OF 6

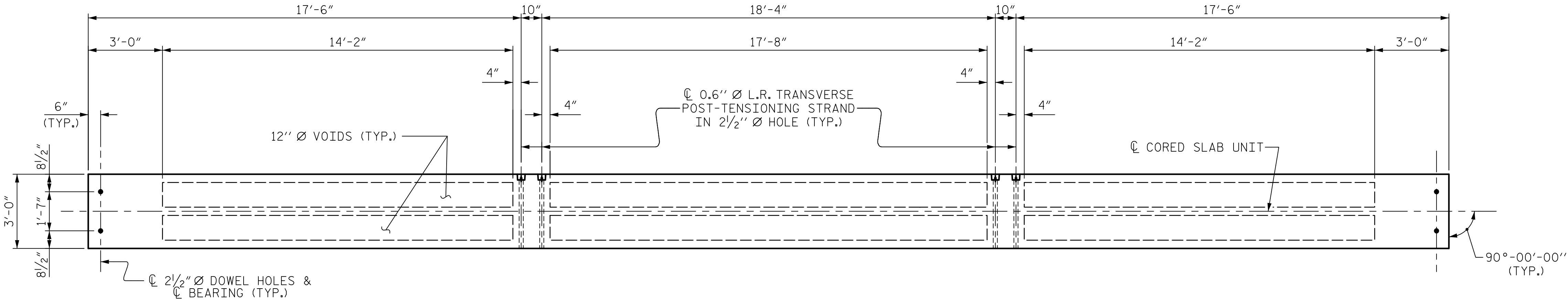
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPAN B
36'-6" CLEAR ROADWAY
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			32

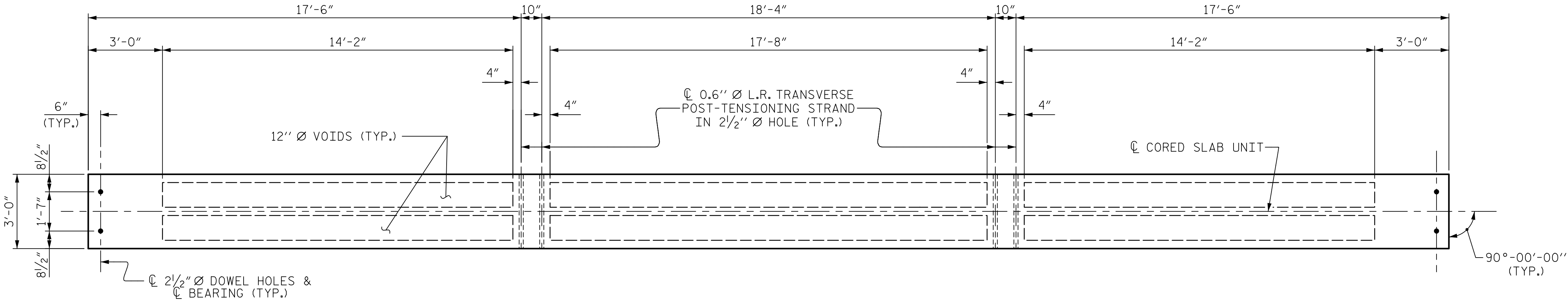
Prepared by
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URS Corporation - North Carolina
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Morrisville, NC 27560
PHONE: (919) 461-1100 FAX: (919) 461-1415
NC L.C. • C-2243

6/22/2015
NORTH CAROLINA
PROFESSIONAL
SEAL
039173
ENGINEER
MATTHEW K. TOM
Designed by:
Matthew K. Tom
7486EF30B64442A...

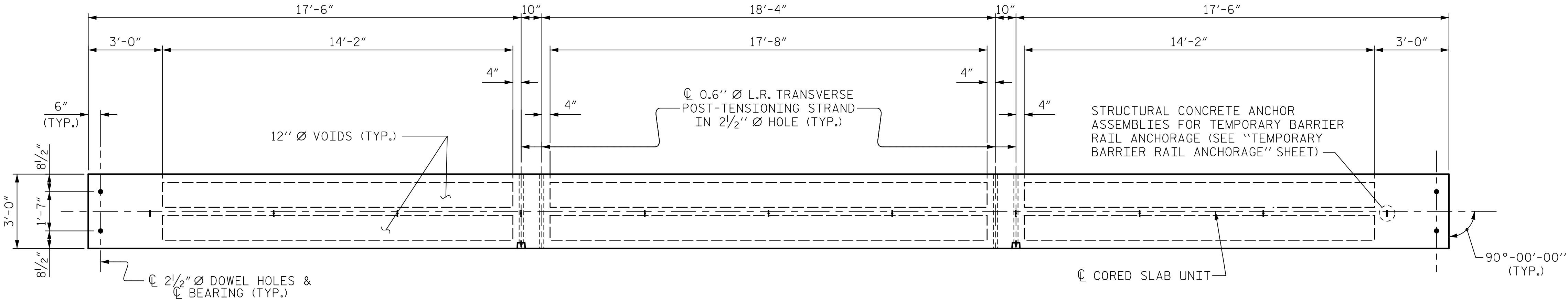
DRAWN BY : R. L. WHITCHER DATE : 10/29/14
CHECKED BY : M. K. TOM DATE : 12/29/14
DESIGNED BY : M. K. TOM DATE : 9/11/14



PLAN OF SPAN A EXTERIOR CORED SLAB UNIT - TYPE I



PLAN OF SPAN A INTERIOR CORED SLAB UNIT - TYPE II

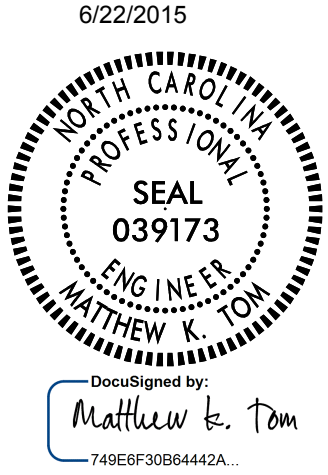


PLAN OF SPAN A INTERIOR CORED SLAB UNIT - TYPE III

DRAWN BY : L. H. JAMISON DATE : 12/3/14
CHECKED BY : M. K. TOM DATE : 12/3/14
DESIGNED BY : M. K. TOM DATE : 9/11/14

6/17/2015
S:\Tyrrell\09\Structures\Submittals\2015.05.19 FinalDesign and Tracings\Drawings\10 Tyrrell 09_PS_03.dgn
matt_tom

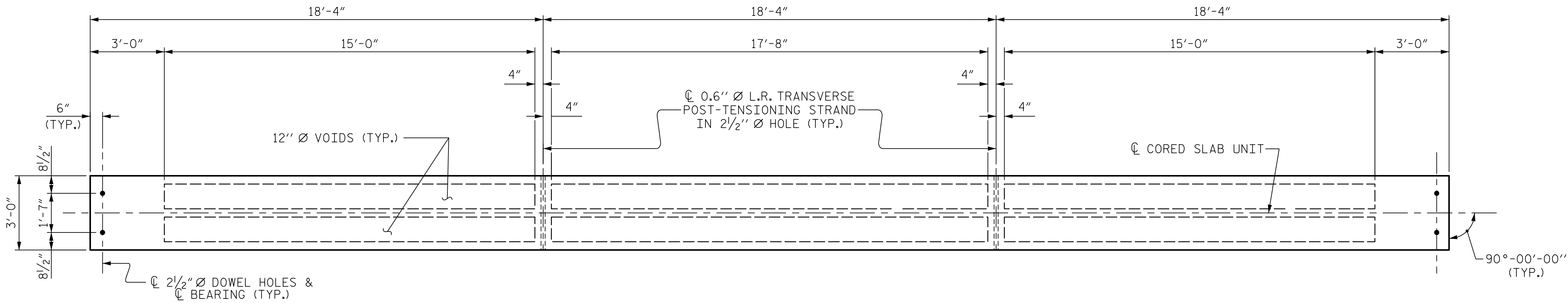
Prepared by
URS
URS Corporation - North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
PHONE: 919/461-1100 FAX: 919/461-1415
NC L.I.C. # C-2243



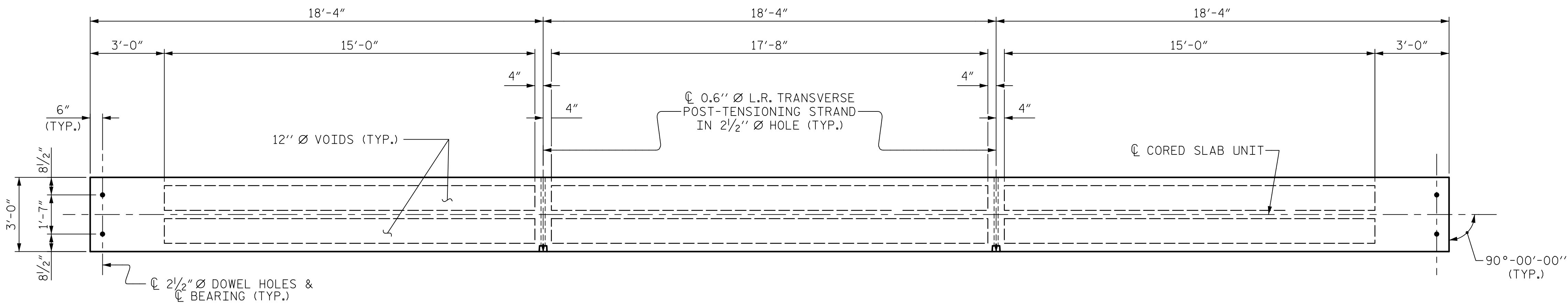
PROJECT NO. 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-10	
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS						TOTAL SHEETS 32	
REVISIONS						NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3				
2			4				



PLAN OF SPAN A INTERIOR CORED SLAB UNIT - TYPE IV



PLAN OF SPAN A EXTERIOR CORED SLAB UNIT - TYPE V

PROJECT NO. 17BP.1.R.59

TYRRELL COUNTY

STATION: 15+93.75 -L-

SHEET 4 OF 6

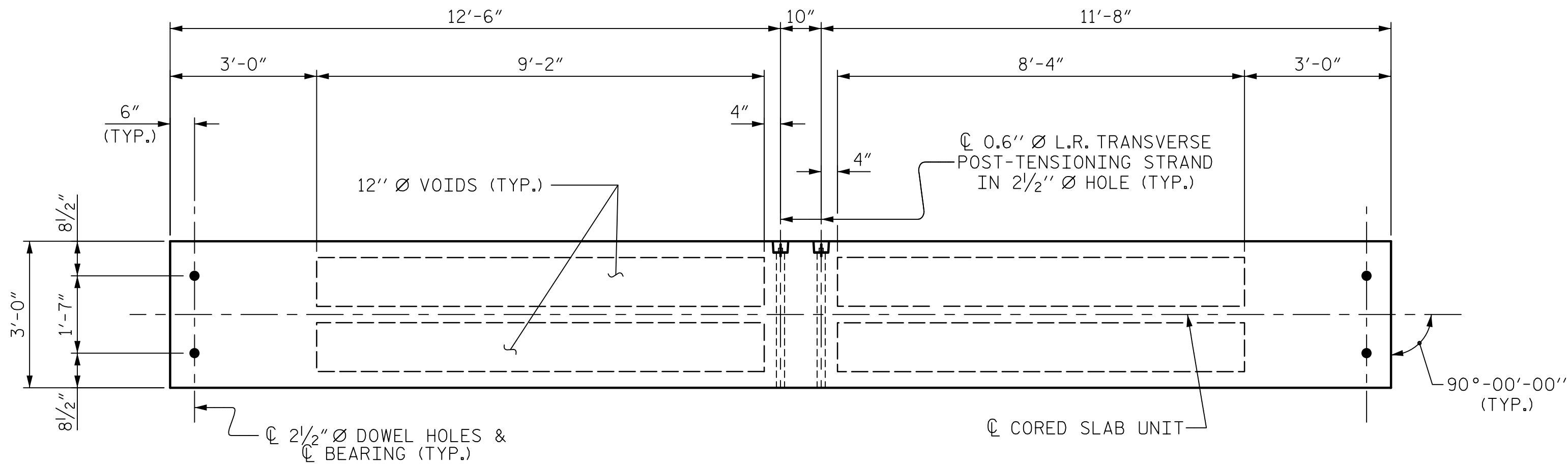
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					32

DRAWN BY : L. H. JAMISON DATE : 12/3/14
CHECKED BY : M. K. TOM DATE : 12/3/14
DESIGNED BY : M. K. TOM DATE : 9/11/14

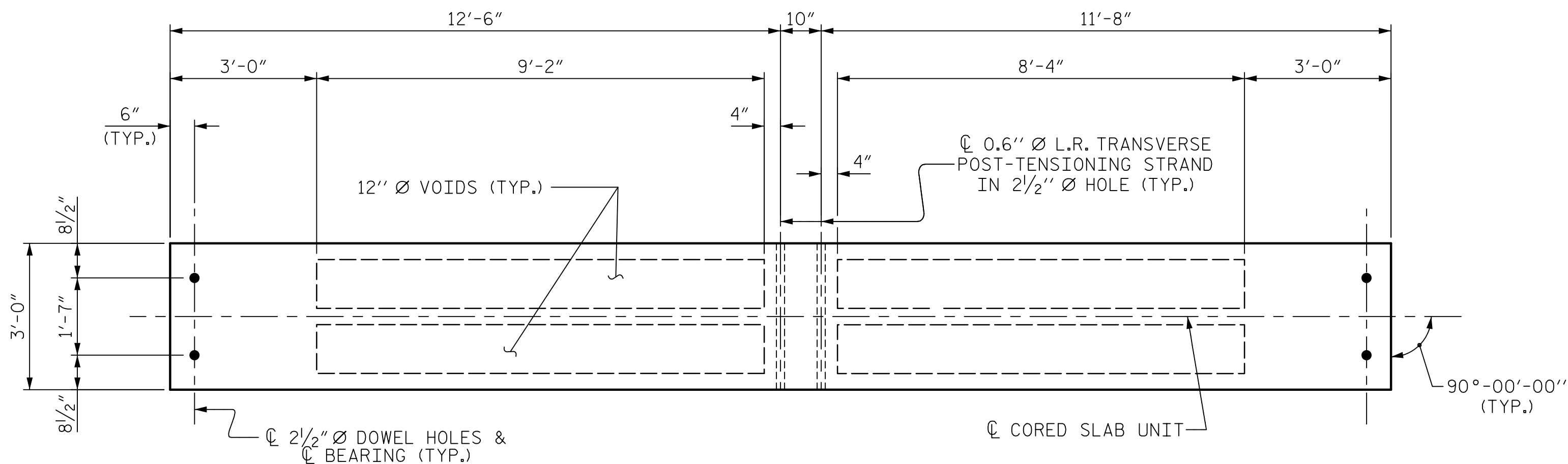
6/17/2015
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matt_tom

Prepared by
URS
URS Corporation - North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
PHONE: 919/461-1100 FAX: 919/461-1415
NC L.I.C. # C-2243

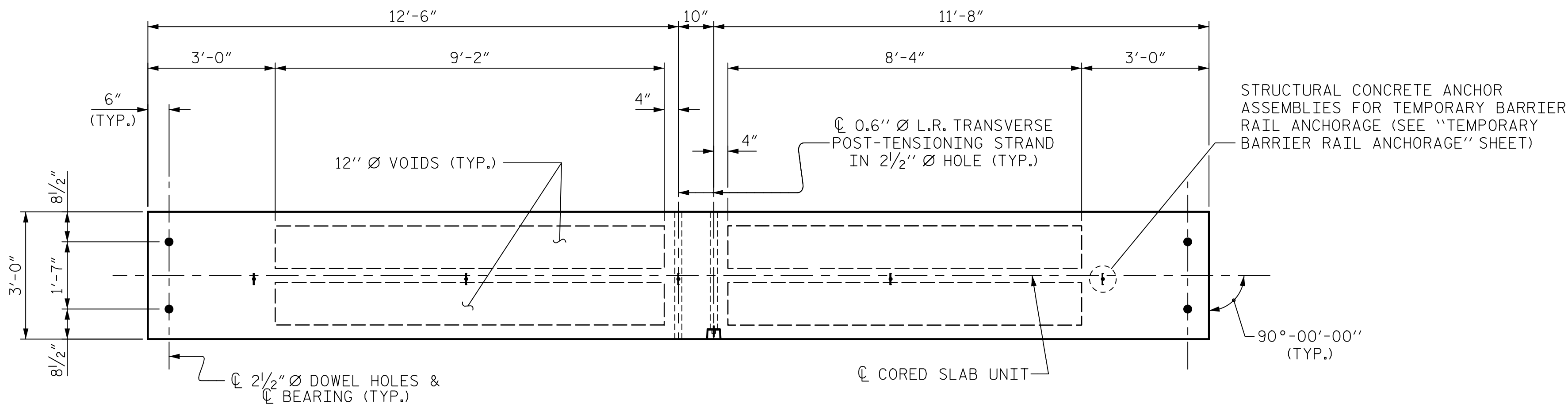
6/22/2015
NORTH CAROLINA
PROFESSIONAL
SEAL
039173
ENGINEER
MATTHEW K. TOM
DocuSigned by:
Matthew K. Tom
749E9F30B6442A...



PLAN OF SPAN B EXTERIOR CORED SLAB UNIT - TYPE I



PLAN OF SPAN B INTERIOR CORED SLAB UNIT - TYPE II



PLAN OF SPAN B INTERIOR CORED SLAB UNIT - TYPE III

DRAWN BY : L. H. JAMISON DATE : 12/3/14
CHECKED BY : M. K. TOM DATE : 12/3/14
DESIGNED BY : M. K. TOM DATE : 9/11/14

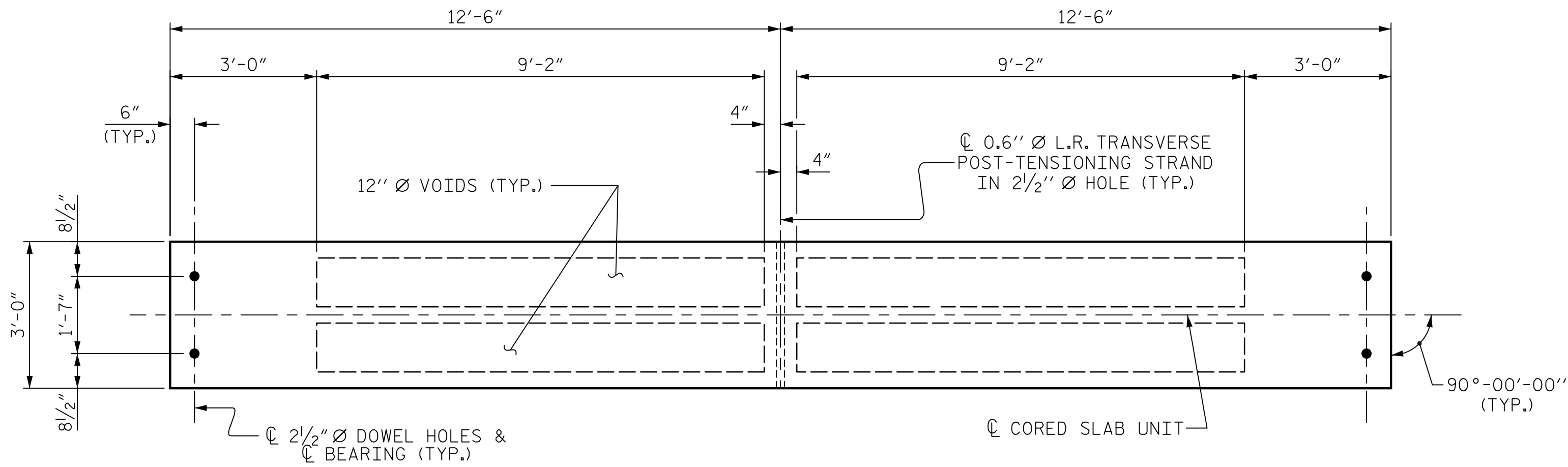
6/17/2015
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matt_tom



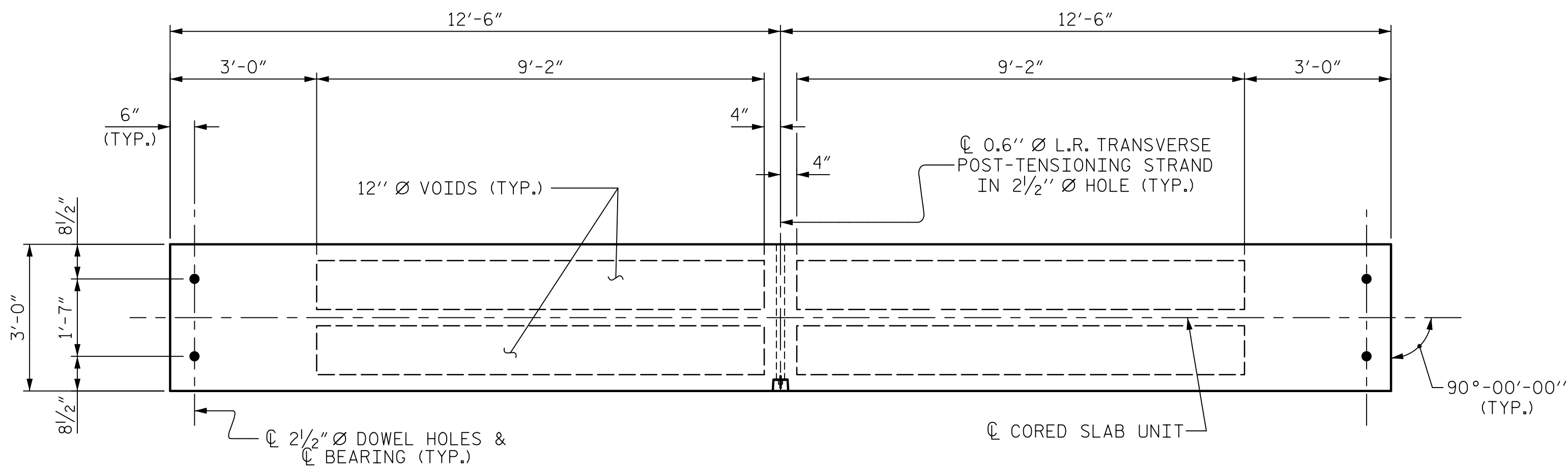
PROJECT NO. 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-12	
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS						TOTAL SHEETS 32	
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL	
1			3			SHEETS	
2			4			32	



PLAN OF SPAN B INTERIOR CORED SLAB UNIT - TYPE IV



PLAN OF SPAN B EXTERIOR CORED SLAB UNIT - TYPE V

PROJECT NO. 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

SHEET 6 OF 6

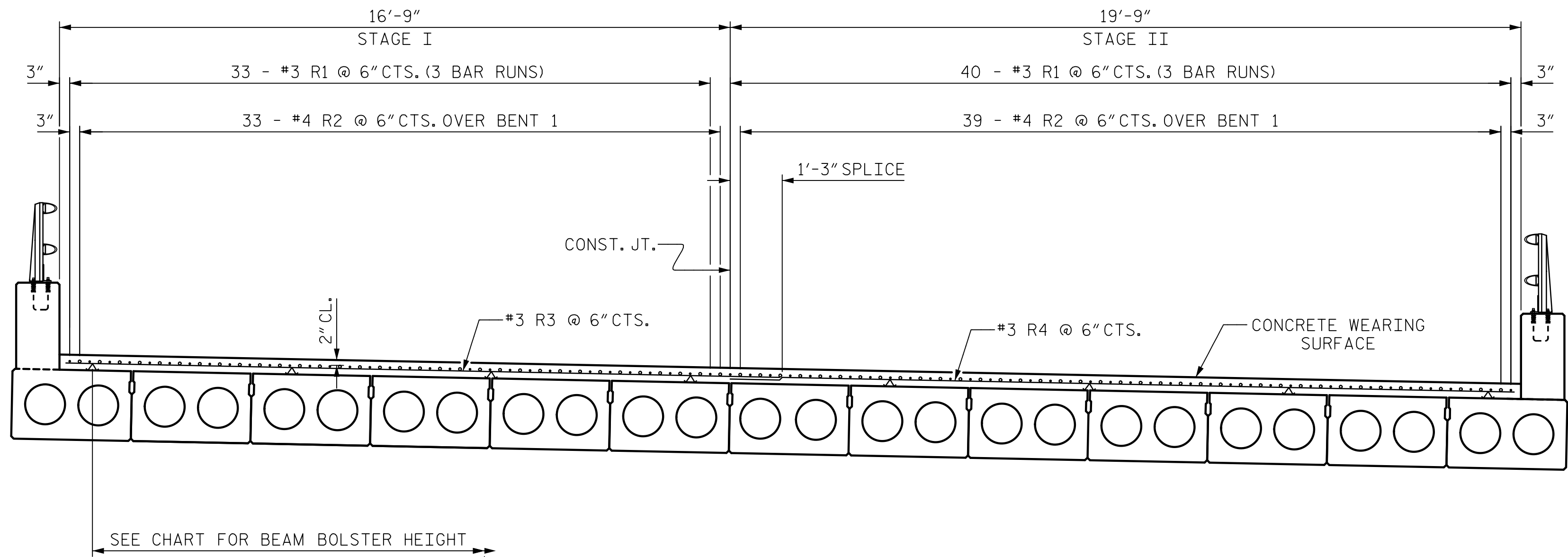
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-13					TOTAL SHEETS 32

DRAWN BY : L. H. JAMISON DATE : 12/3/14
CHECKED BY : M. K. TOM DATE : 12/3/14
DESIGNED BY : M. K. TOM DATE : 9/11/14

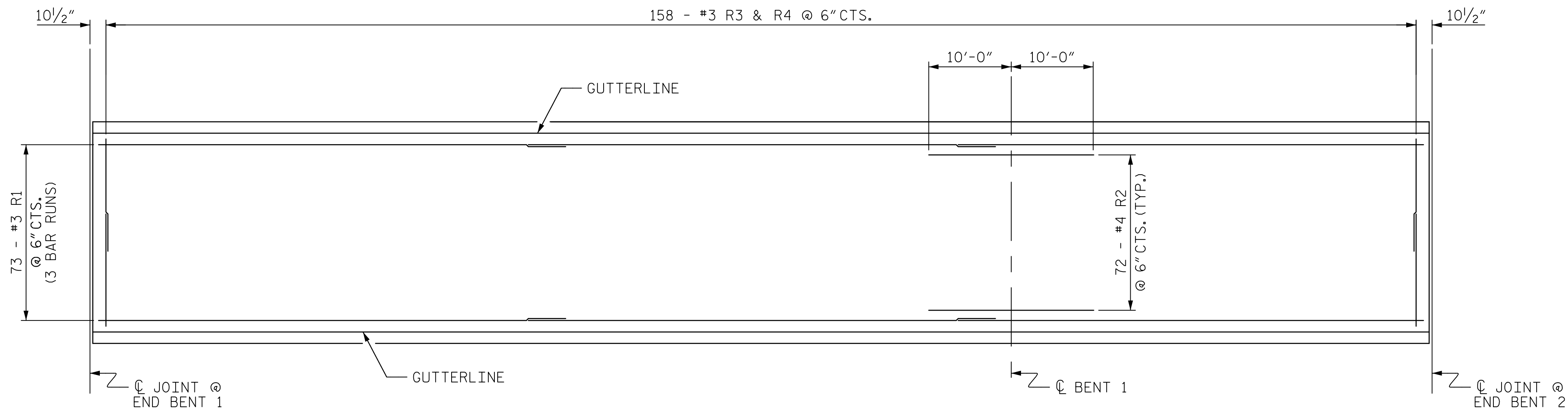
6/17/2015
S:\Tyrrell\09\Structures\Submittals\2015.05.19 Final Design and Tracings\Drawings\13 Tyrrell 09_PS_06.dgn
matt_tom

Prepared by
URS
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NC L.I.C. # C-2243

6/22/2015
NORTH CAROLINA
PROFESSIONAL
SEAL
039173
ENGINEER
MATTHEW K. TOM
DocuSigned by:
Matthew K. Tom
749E6F30B9442A...



REINFORCING STEEL FOR
CONCRETE WEARING SURFACE



PLAN OF CONCRETE WEARING SURFACE

NOTES:

PLACEMENT OF CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE PARAPET. THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE AND THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF SUPERSTRUCTURE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

ALL REINFORCING FOR THE CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

BILL OF MATERIAL											
CONCRETE WEARING SURFACE STAGE I						CONCRETE WEARING SURFACE STAGE II					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
* R1	99	3	STR.	27'-7"	1027	* R1	120	3	STR.	27'-7"	1245
* R2	33	4	STR.	20'-0"	441	* R2	39	4	STR.	20'-0"	521
* R3	158	3	STR.	17'-10"	1059	* R4	158	3	STR.	19'-7"	1163
* EPOXY COATED REINF. STEEL = 2,527 LBS.						* EPOXY COATED REINF. STEEL = 2,929 LBS.					
CONCRETE WEARING SURFACE = 1,342 SQ. FT.						CONCRETE WEARING SURFACE = 1,582 SQ. FT.					

SPLICE LENGTH CHART	
BAR SIZE	EPOXY COATED
#3	1'-3"

BEAM BOLSTER HEIGHT		
SPAN	CL. BRG.	MID. SPAN
55'	2"	3/4"
25'	2"	1 3/4"

GROOVING BRIDGE FLOORS	
APPROACH SLABS	717 SQ. FT.
BRIDGE DECK	2642 SQ. FT.
TOTAL	3359 SQ. FT.

PROJECT NO. 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE WEARING
SURFACE DETAILS

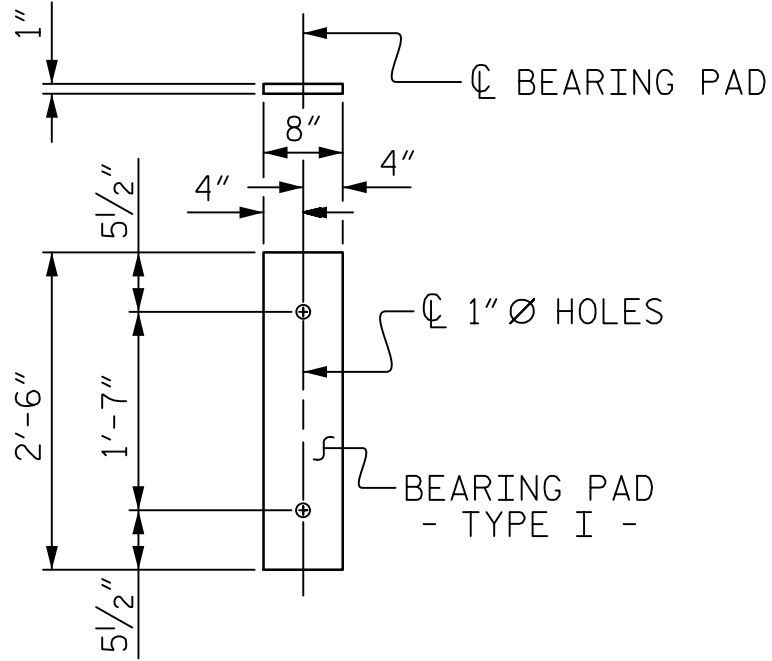
REVISIONS						SHEET NO. S-14
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			32

DRAWN BY : M. K. TOM DATE : 12/23/14
CHECKED BY : R. L. WHITCHER DATE : 1/20/15
DESIGNED BY : M. K. TOM DATE : 12/23/14

Prepared by
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1600 Perimeter Park Drive, Suite 400
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NC L.C. # C-2243



Designed by:
Matthew K. Tom
749E9F30B64442A



FIXED END
(TYPE I - 52 REQ'D)

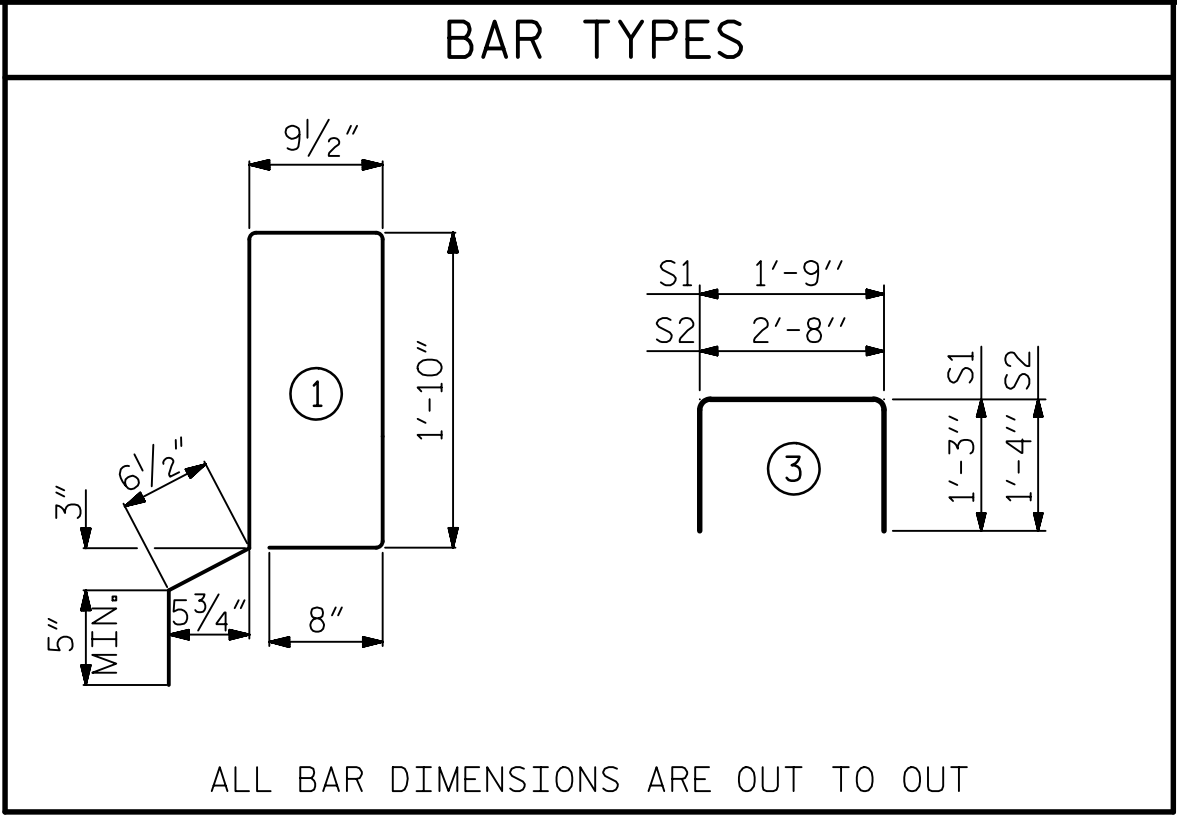
ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 1'-9"
55' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1 ⁵ / ₁₆ " ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	⁵ / ₁₆ " ↓
FINAL CAMBER	1 ⁵ / ₈ " ↑
	3'-0" x 1'-9"
25' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	³ / ₁₆ " ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	0" ↓
FINAL CAMBER	³ / ₁₆ " ↑

** INCLUDES ONLY CONCRETE WEARING SURFACE

CORED SLABS REQUIRED							
		55'-0" SPAN			25'-0" SPAN		
STAGE I	TYPE I	1	55'-0"	55'-0"	1	25'-0"	25'-0"
	TYPE II	4	55'-0"	220'-0"	4	25'-0"	100'-0"
	TYPE III	1	55'-0"	55'-0"	1	25'-0"	25'-0"
	STAGE I TOTAL	6		330'-0"	6		150'-0"
STAGE II	TYPE IV	6	55'-0"	330'-0"	6	25'-0"	150'-0"
	TYPE V	1	55'-0"	55'-0"	1	25'-0"	25'-0"
	STAGE II TOTAL	7		385'-0"	7		175'-0"
	TOTAL	13		715'-0"	13		325'-0"



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES

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

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR CONSTRUCTION OF SUPERSTRUCTURE.

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

THE 2/2" 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.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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 LUMP SUM BID PRICE FOR CONSTRUCTION OF SUPERSTRUCTURE.

PRESTRESSED CONCRETE CORED SLAB UNITS ARE DESIGNED FOR 0 PSI TENSION IN THE PRECOMPRESSED TENSILE ZONE UNDER ALL LOADING CONDITIONS.

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

CONCRETE RELEASE STRENGTH	
UNIT	PSI
55'-0" SPAN	4900
25'-0" SPAN	4000

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

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT													
				STAGE I				STAGE II					
				TYPE I		TYPE II		TYPE III		TYPE IV		TYPE V	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B7	4	#4	STR	28'-3"	75	28'-3"	75	28'-3"	75	28'-3"	75	28'-3"	75
S1	8	#5	3	4'-3"	35	4'-3"	35	4'-3"	35	4'-3"	35	4'-3"	35
S2	114	#4	3	5'-4"	406	5'-4"	406	5'-4"	406	5'-4"	406	5'-4"	406
* S3	64	#5	1	6'-1"	406							6'-1"	406
REINFORCING STEEL LBS.				516		516		516		516		516	
* EPOXY COATED REINFORCING STEEL LBS.				406								406	
6500 P.S.I. CONCRETE CU. YDS.				7.9		7.9		7.9		7.8		7.8	
0.6" Ø L.R. STRANDS No.				22		22		22		22		22	

BILL OF MATERIAL FOR ONE 25' CORED SLAB UNIT													
				STAGE I				STAGE II					
				TYPE I		TYPE II		TYPE III		TYPE IV		TYPE V	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	2	#4	STR	24'-8"	33	24'-8"	33	24'-8"	33	24'-8"	33	24'-8"	33
S1	8	#5	3	4'-3"	35	4'-3"	35	4'-3"	35	4'-3"	35	4'-3"	35
S2	54	#4	3	5'-4"	192	5'-4"	192	5'-4"	192	5'-4"	192	5'-4"	192
* S3	34	#5	1	6'-1"	216							6'-1"	216
REINFORCING STEEL LBS.				260		260		260		260		260	
* EPOXY COATED REINFORCING STEEL LBS.				216								216	
5000 P.S.I. CONCRETE CU. YDS.				3.8		3.8		3.8		3.7		3.7	
0.6" Ø L.R. STRANDS No.				9		9		9		9		9	

ASSEMBLED BY : R. L. WHITCHER DATE : 12/18/14
CHECKED BY : M. K. TOM DATE : 12/29/14
DESIGNED BY : M. K. TOM DATE : 9/12/14

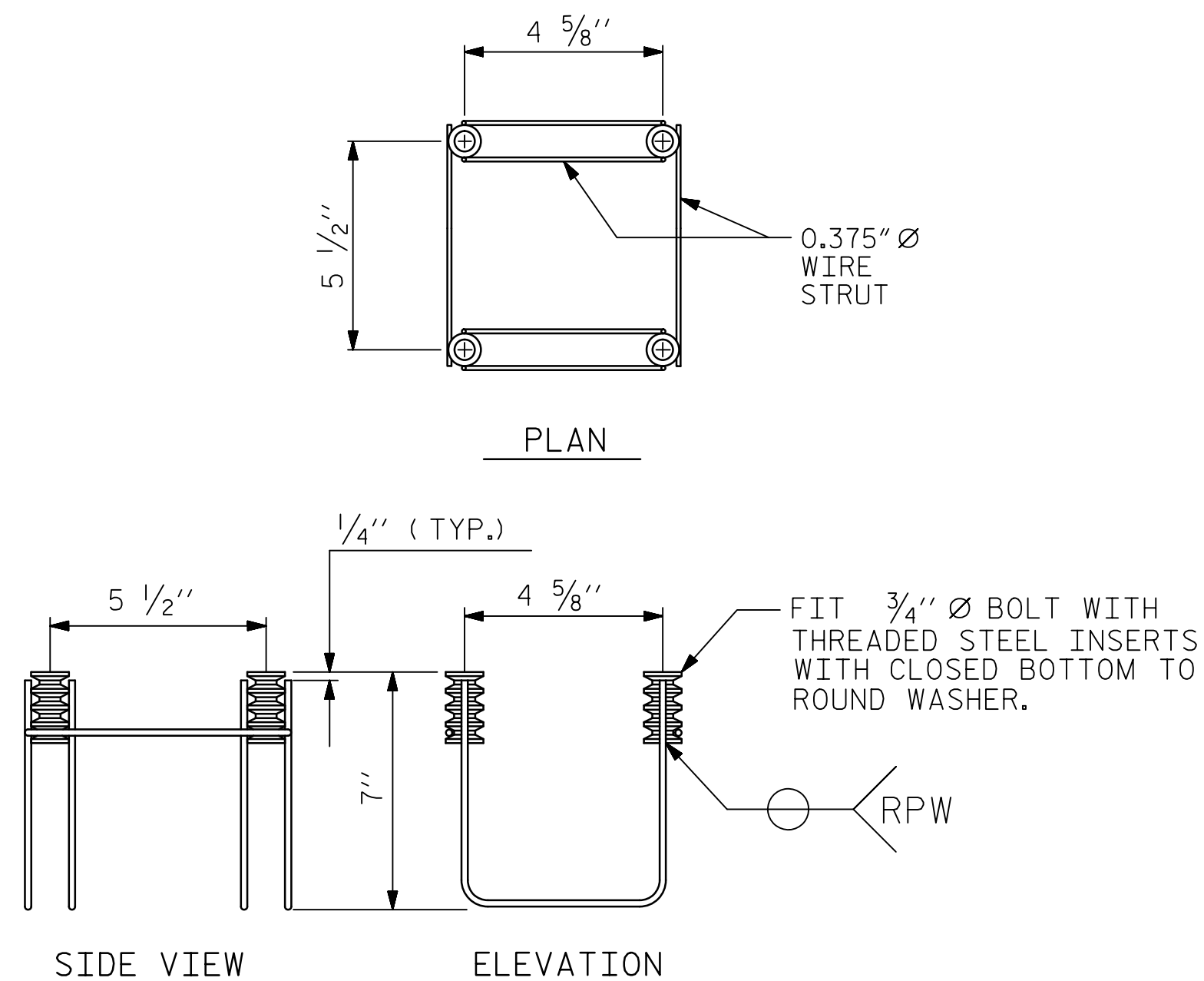
DRAWN BY : DGE 5/09 REV. 12/11 MAA/AAC
CHECKED BY : BCH 6/09 REV. 8/14 MAA/TMG



PROJECT NO. 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-15					TOTAL SHEETS 32

REVISONS						SHEET NO. S-16
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 32
2			4			



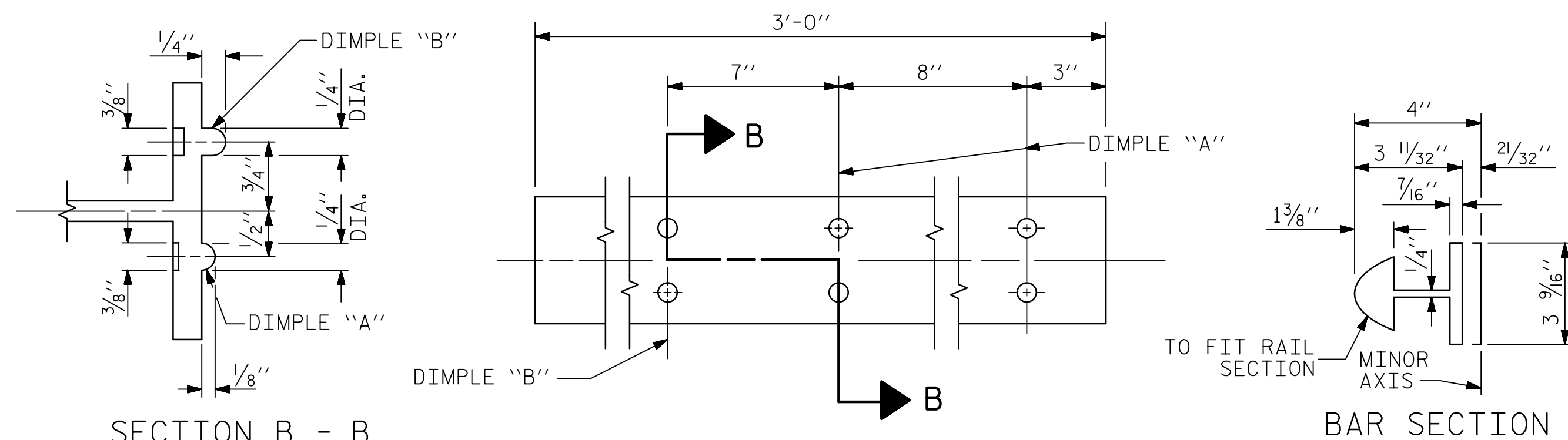
4-BOLT METAL RAIL ANCHOR ASSEMBLY

(24 ASSEMBLIES REQUIRED)

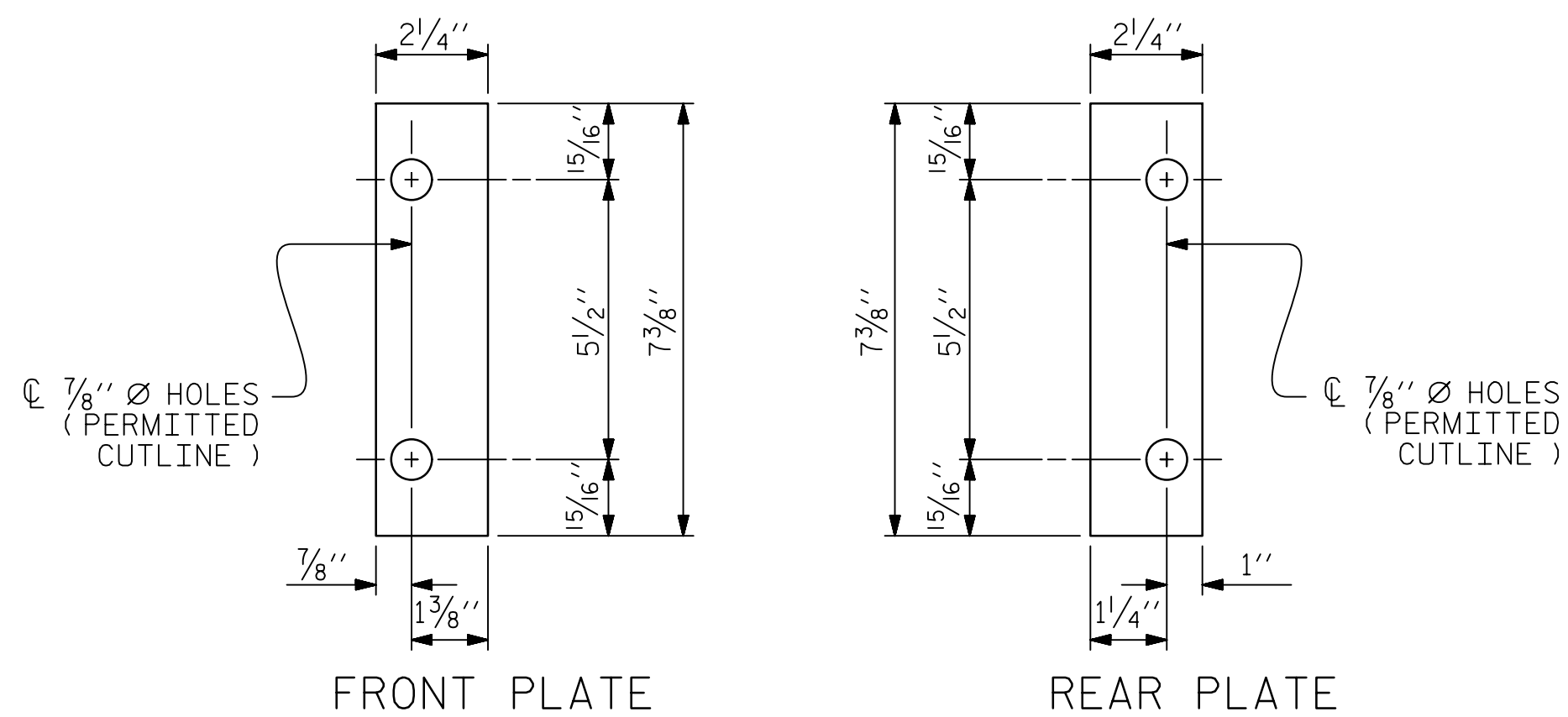
- ## NOTES
-
- STRUCTURAL CONCRETE ANCHOR ASSEMBLY
- THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR $\frac{3}{4}$ " FERRULES.
 - B. 4 - $\frac{3}{4}$ " $\times$ 2 $\frac{1}{2}$ " 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 $\frac{3}{4}$ " $\times$ 2 $\frac{1}{2}$ " 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 $\frac{7}{16}$ " $\times$ 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 $\frac{3}{4}$ " 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.

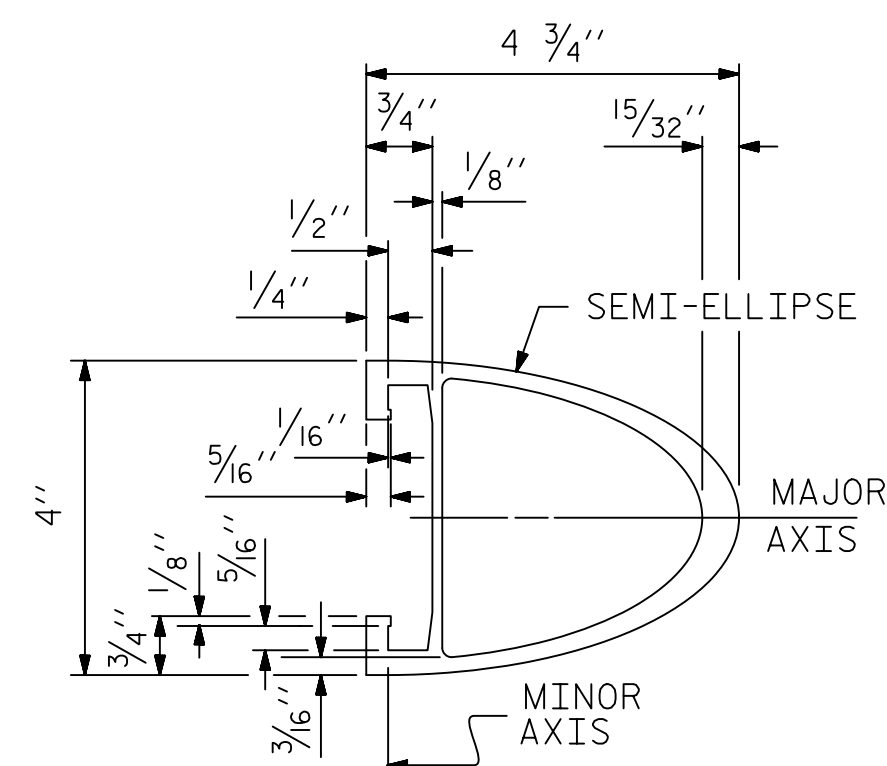


EXPANSION BAR DETAILS



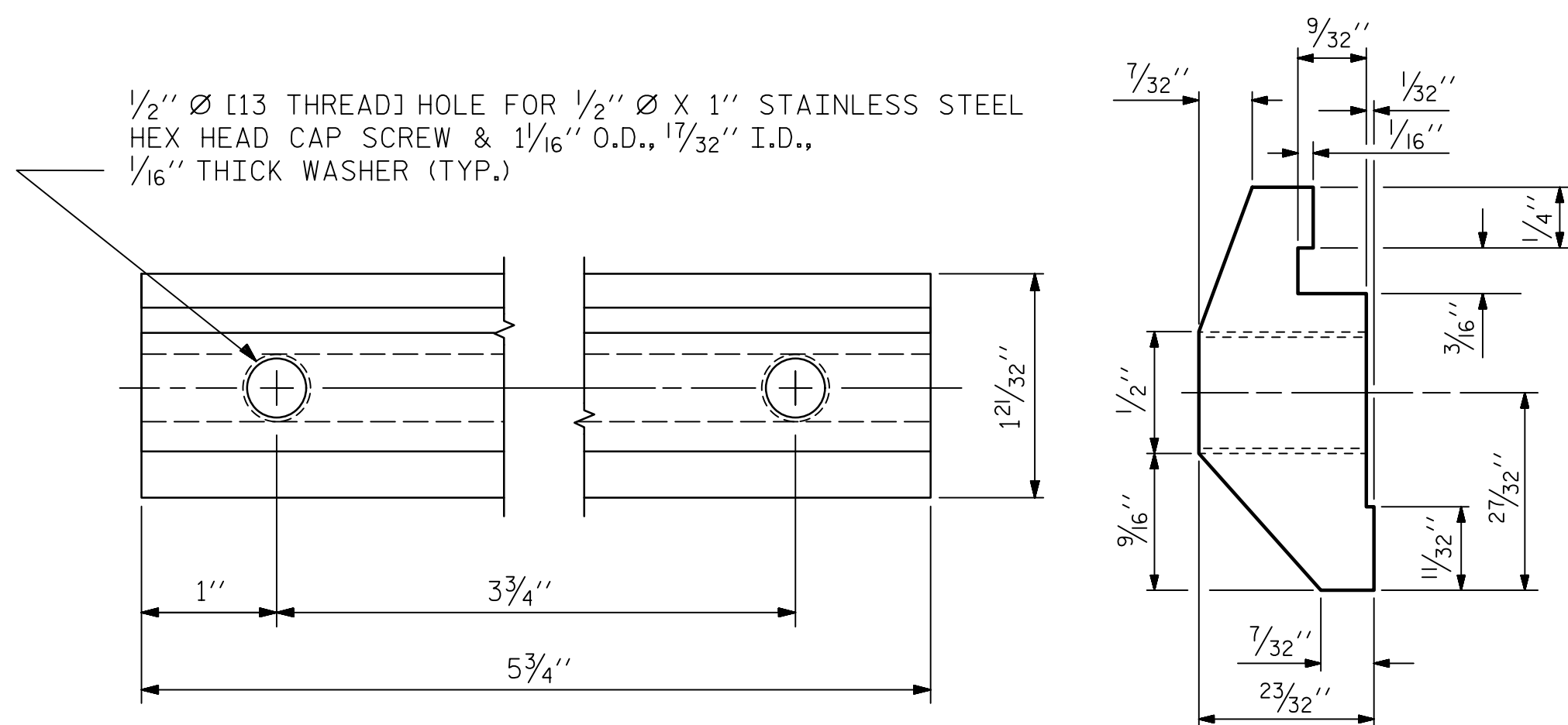
SHIM DETAILS

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



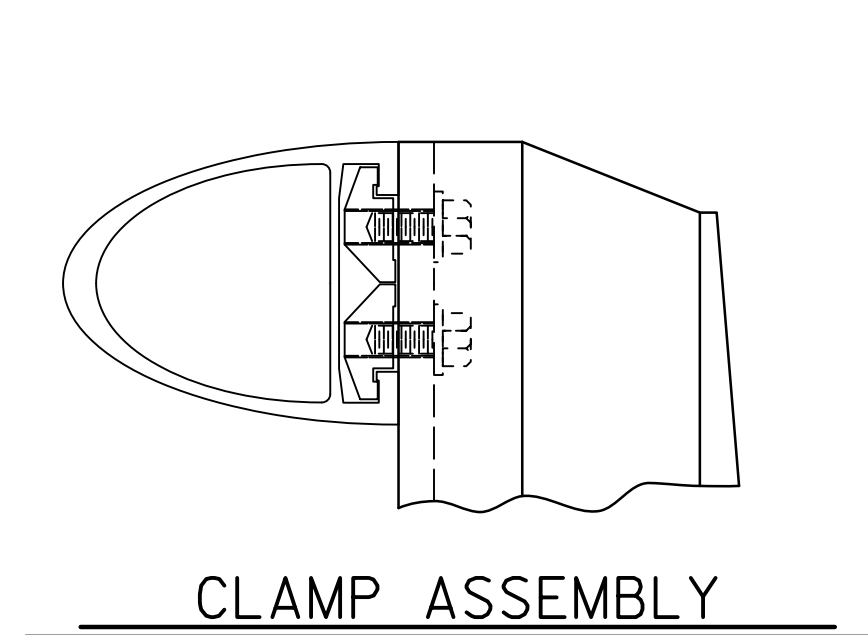
RAIL SECTION

1/2" Ø [13 THREAD] HOLE FOR 1/2" Ø X 1" STAINLESS STEEL
HEX HEAD CAP SCREW & 1/16" O.D., 17/32" I.D.,
1/16" THICK WASHER (TYP.)

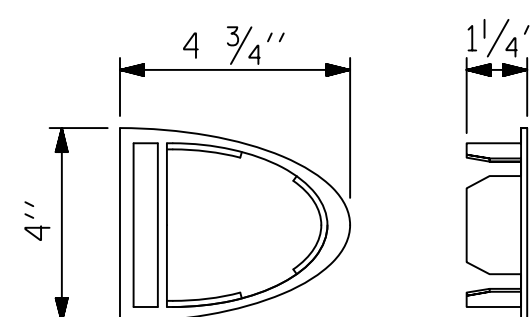


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



RAIL CAP



ASSEMBLED BY : R. L. WHITCHER DATE : 12/15/14
CHECKED BY : M. K. TOM DATE : 12/15/14
DESIGNED BY : R. L. WHITCHER DATE : 12/15/14

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

REV. 8/16/99	MAB/LES
REV. 5/1/06R	KMM/GM
REV. 10/1/11	MAA/GM

6/17/2015
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matt.tom



PROJECT NO. 17BP.1.R.59

TYRRELL COUNTY

STATION: 15+93.75 -L-

SHEET 2 OF 2

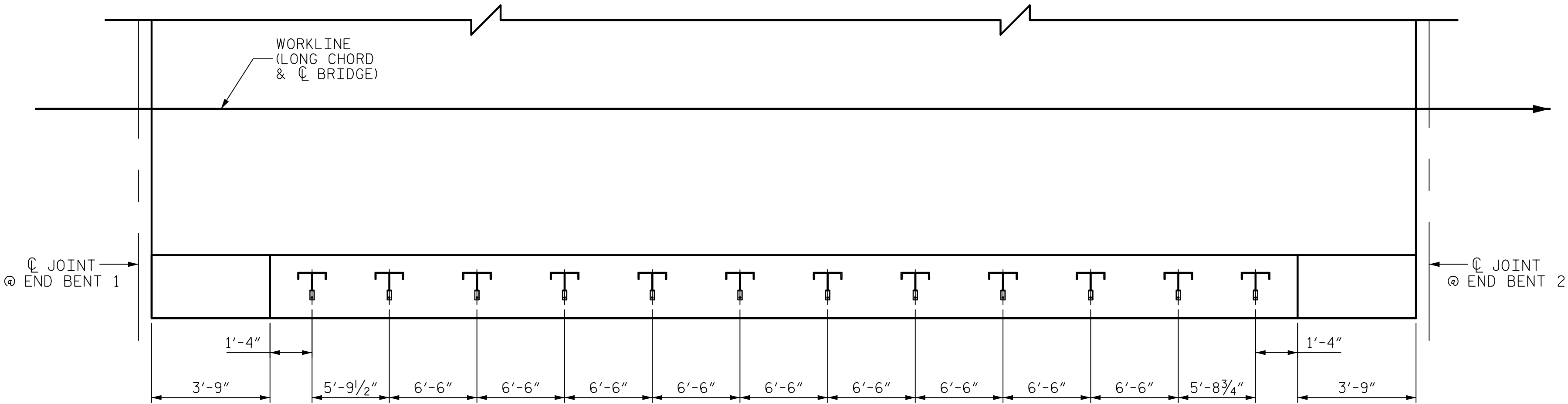
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

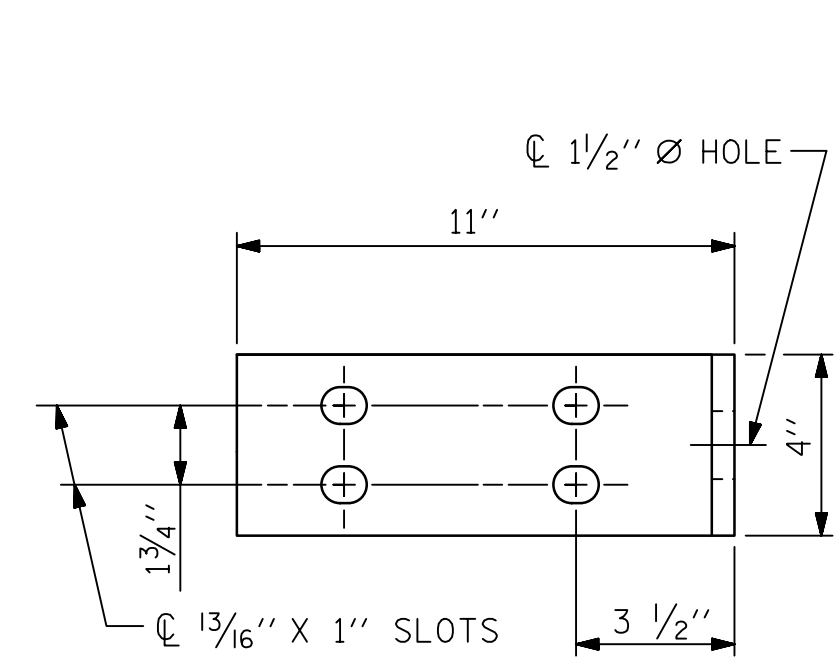
REVISIONS						SHEET NO. S-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 32
2			4			

STD. NO. BMR4

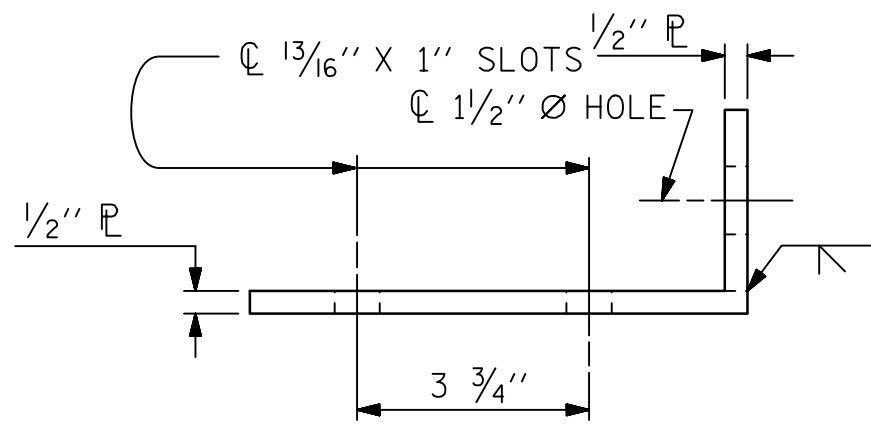


PLAN OF RAIL POST SPACINGS

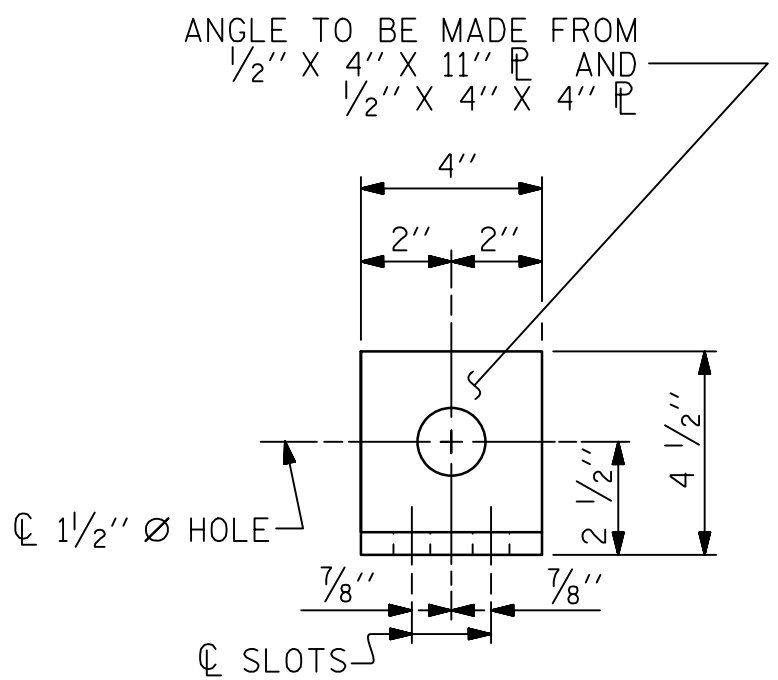
RIGHT SIDE SHOWN, LEFT SIDE SIMILAR



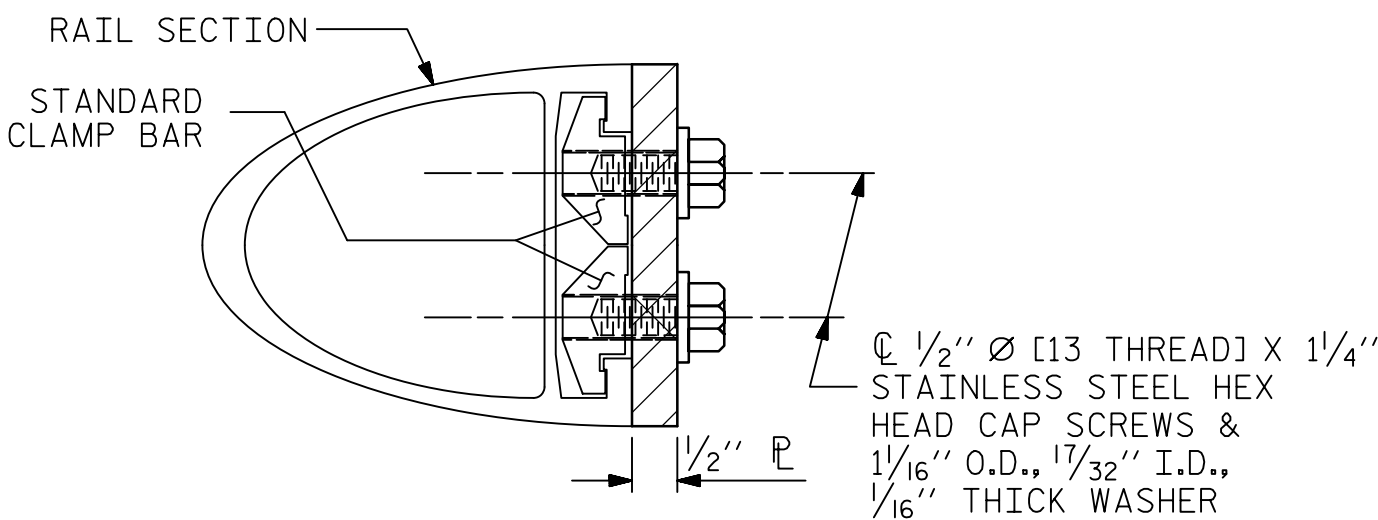
ELEVATION



TOP VIEW



END VIEW (FIX AND EXP.)



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 1 1/2".
- B. 1 - 3/4" Ø X 1 5/8" 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 3/4" Ø X 1 5/8" 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 1/16" 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:

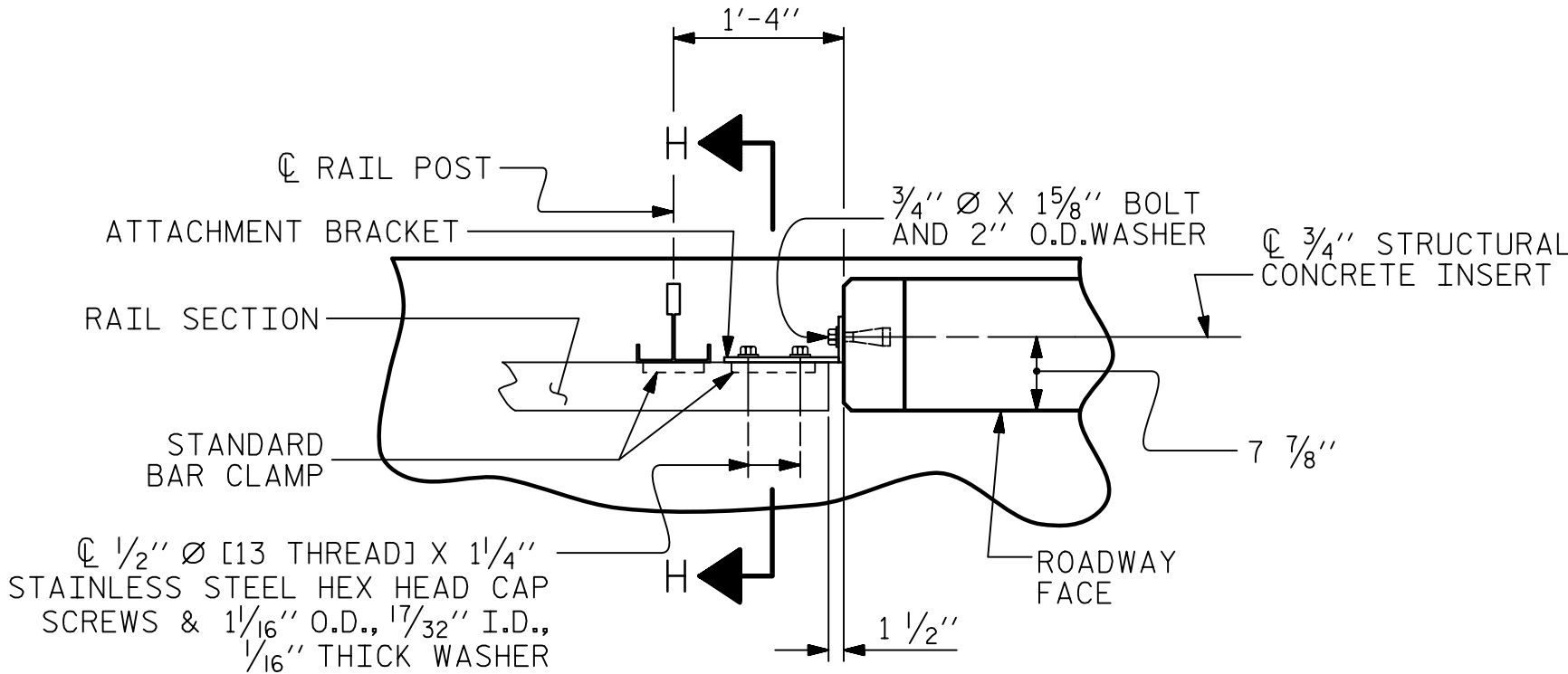
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE 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. 1/2" 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 LUMP SUM PRICE BID FOR CONSTRUCTION OF SUPERSTRUCTURE.

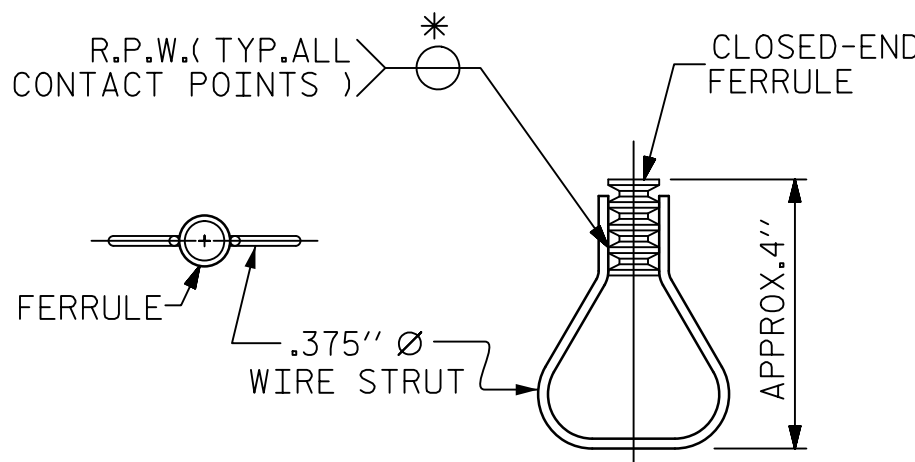
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE SUM PRICE BID FOR CONSTRUCTION OF SUPERSTRUCTURE.

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 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" 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.59

TYRRELL COUNTY

STATION: 15+93.75 -L-

ASSEMBLED BY : R. L. WHITCHER	DATE : 12/15/14
CHECKED BY : M. K. TOM	DATE : 12/29/14
DESIGNED BY : R. L. WHITCHER	DATE : 12/15/14
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

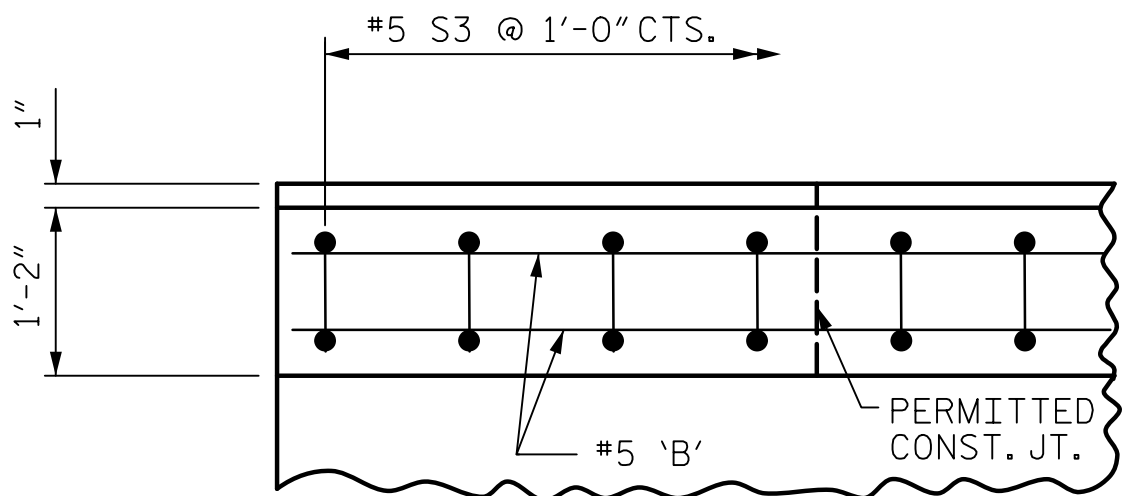
6/17/2015
S:\Tyrrell\09\Structures\Submittals\2015.05.19 Final Design and Tracings\Drawings\19 Tyrrell 09.2BMR.03.dgn
matt_tom



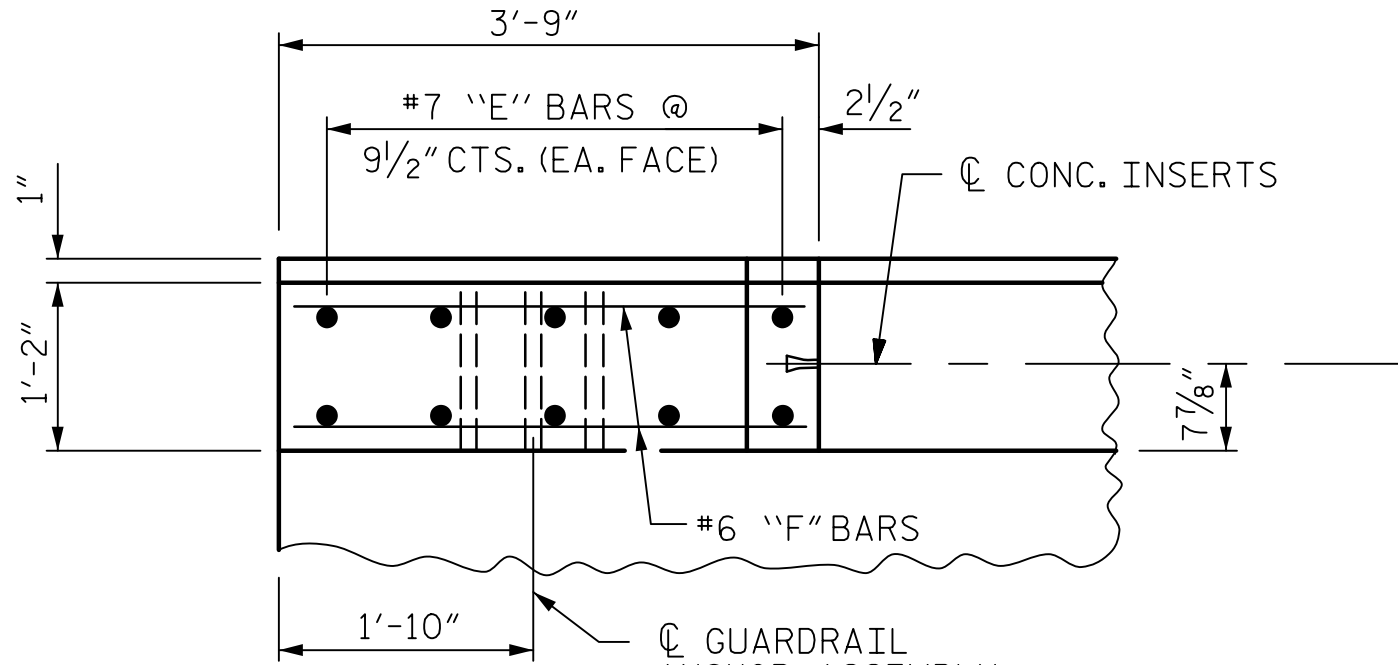
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RAIL POST SPACINGS
AND
END OF RAIL DETAILS
FOR ONE OR TWO BAR METAL RAILS

REVISIONS						SHEET NO. S-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 32
2			4			

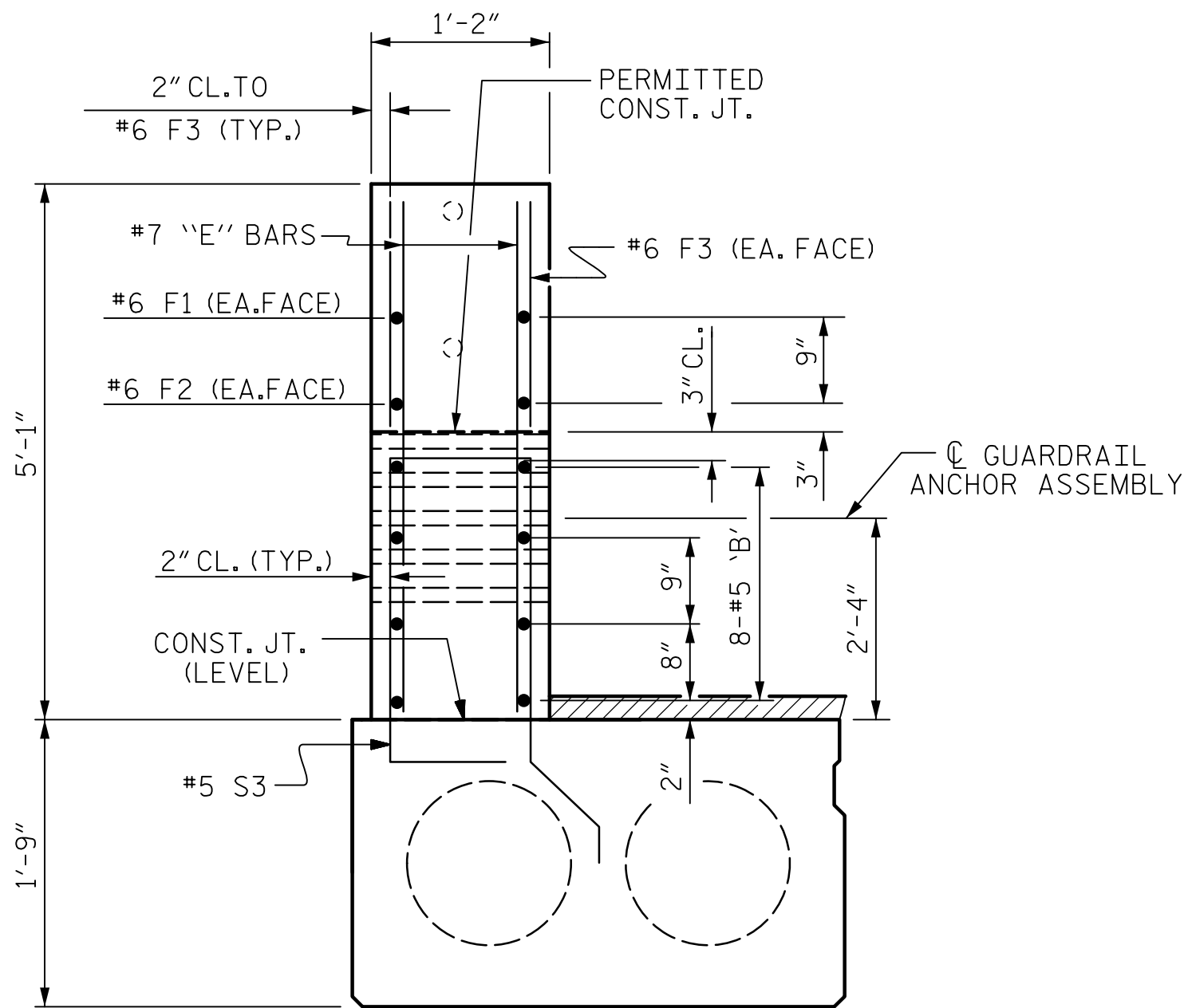
STD. NO. BMR2



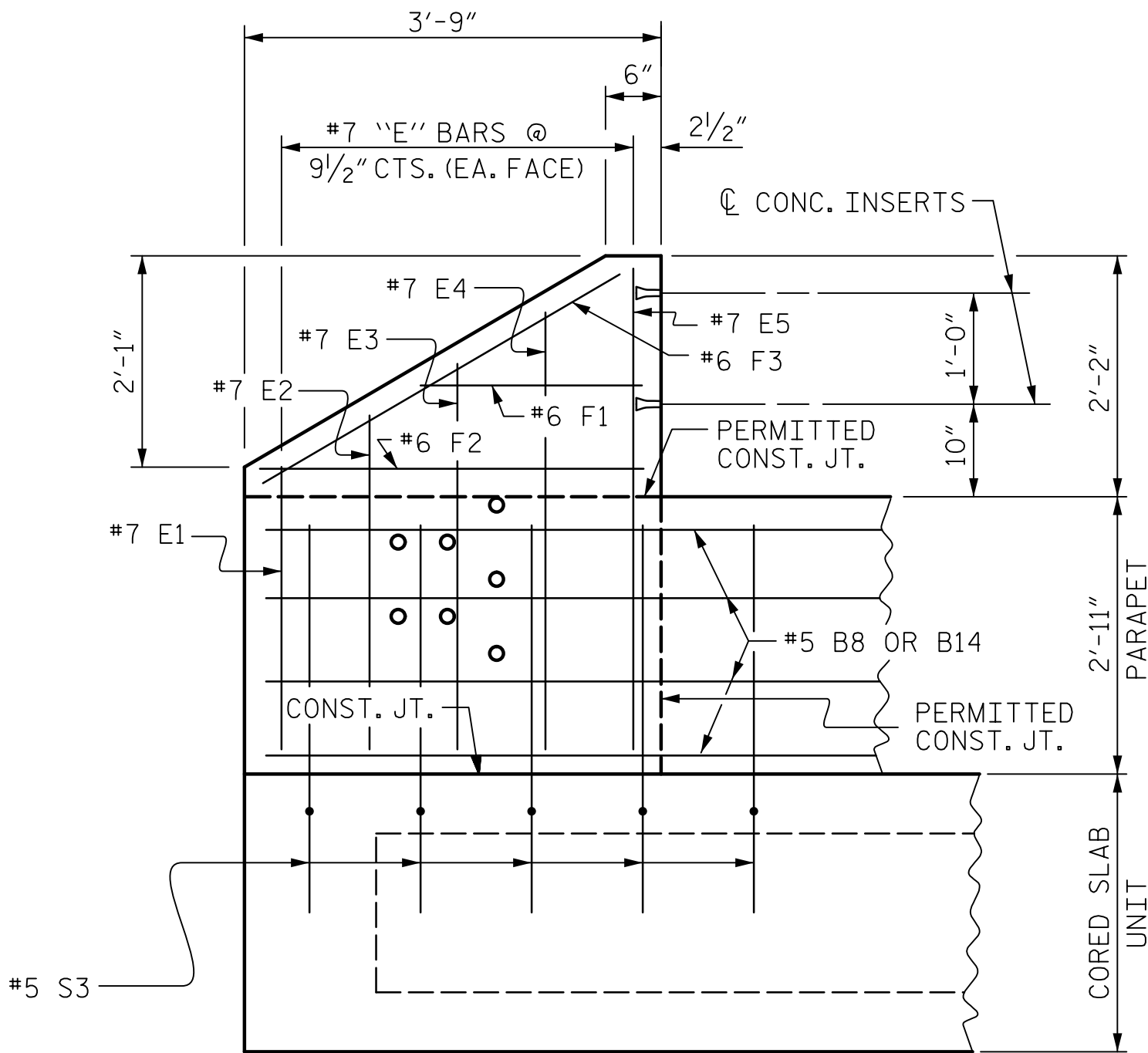
PLAN OF PARAPET



PLAN OF END POST



END VIEW



ELEVATION

PARAPET AND END POST FOR TWO BAR RAIL

NOTES

FOR DETAILS OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEETS.

ALL REINFORCING STEEL IN CONCRETE PARAPET SHALL BE EPOXY COATED.

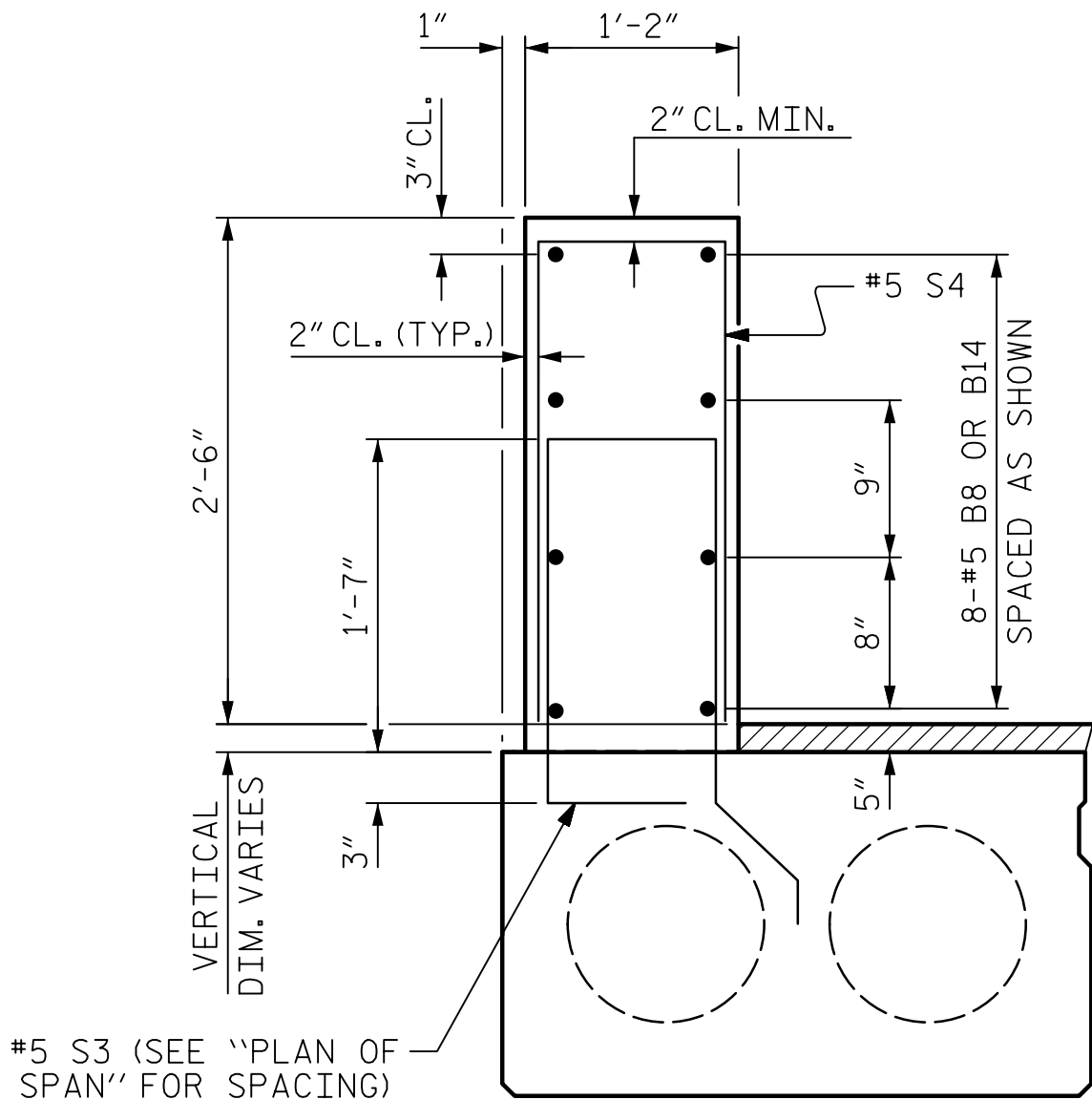
THE REINFORCING STEEL AND CONCRETE IN THE END POSTS IS INCLUDED IN THE LUMP SUM PRICE BID FOR THE CONSTRUCTION OF SUPERSTRUCTURE.

#5 S3 BARS ARE INCLUDED IN THE BILL OF MATERIAL FOR CORED SLAB UNITS.

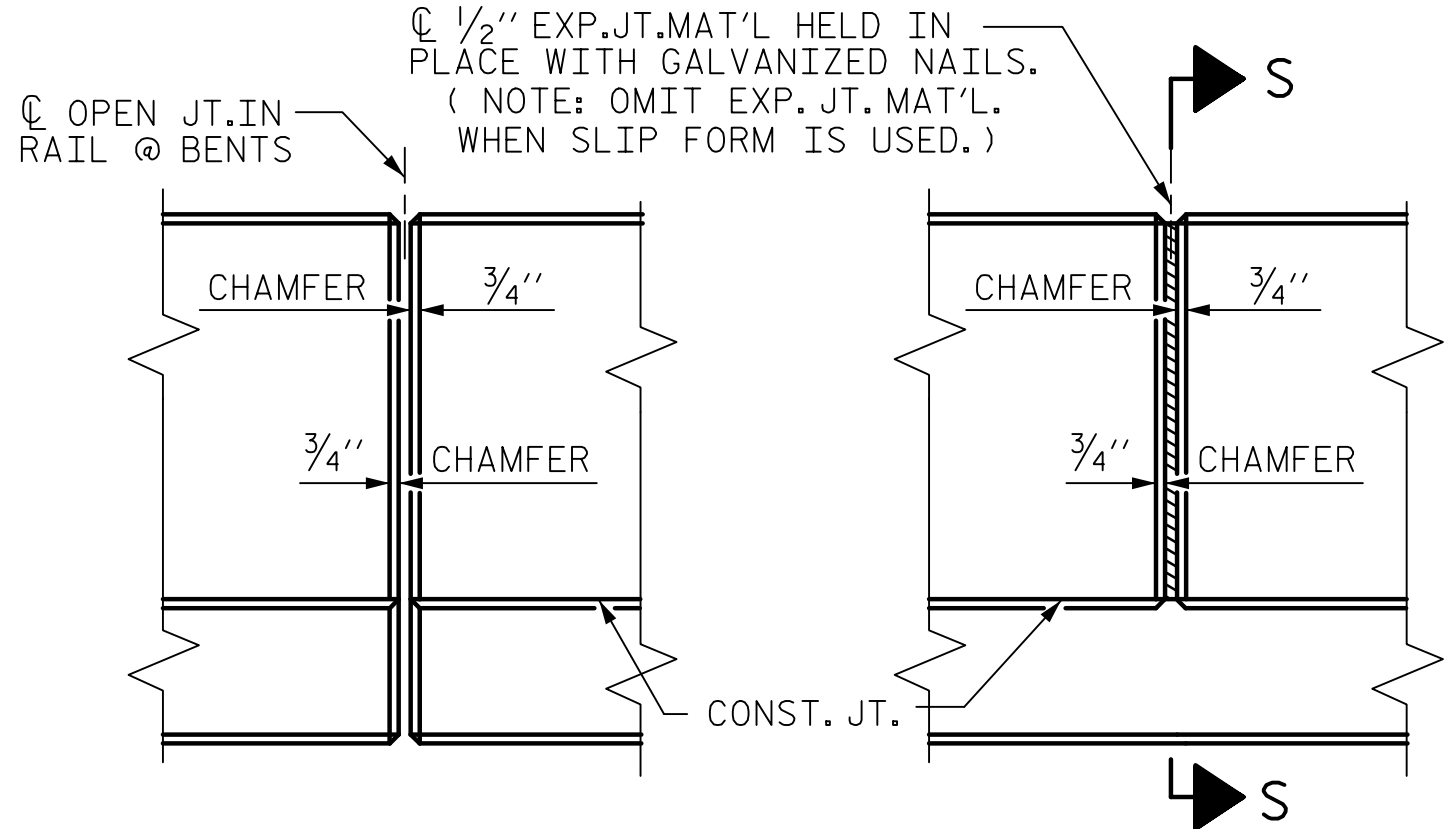
ALL BARS SUPPORTS USED IN THE PARAPET AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

DRAWN BY : M. K. TOM DATE : 12/23/14
CHECKED BY : R. L. WHITCHER DATE : 1/15/15
DESIGNED BY : M. K. TOM DATE : 12/23/14

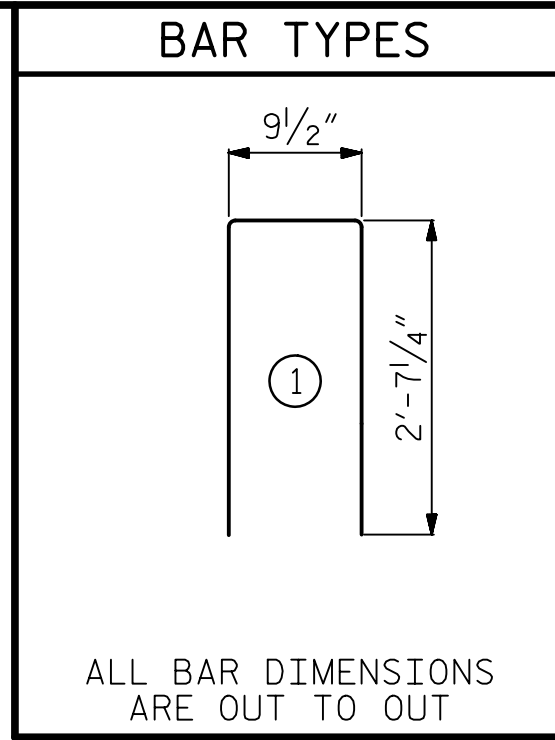
6/17/2015
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matt_tom



TWO BAR METAL
RAIL PARAPET SECTION

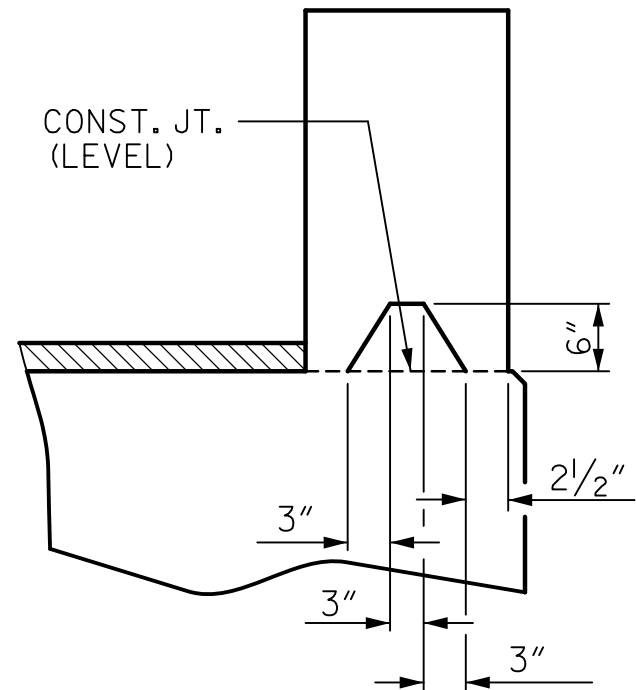


ELEVATION AT EXPANSION JOINTS



ALL BAR DIMENSIONS
ARE OUT TO OUT

TWO BAR METAL RAIL					
BILL OF MATERIAL FOR 2 PARAPETS AND 4 END POSTS					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
* B8	16	5	STR.	24'-7"	410
* B14	32	5	STR.	27'-1"	904
* E1	8	7	STR.	2'-10"	46
* E2	8	7	STR.	3'-4"	55
* E3	8	7	STR.	3'-10"	63
* E4	8	7	STR.	4'-4"	71
* E5	8	7	STR.	4'-9"	78
* F1	8	6	STR.	1'-10"	22
* F2	8	6	STR.	3'-0"	36
* F3	8	6	STR.	3'-8"	44
* S4	196	5	1	6'-0"	1227
* EPOXY COATED REINFORCING STEEL					2,956 LBS.
CLASS AA CONCRETE					20.6 CU. YDS.
CONCRETE PARAPET					160.5 L.F.
TWO BAR METAL RAIL					145.5 L.F.



SECTION S-S

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

TWO BAR METAIL RAIL PARAPET SECTION

PROJECT NO. 17BP.1.R.59

TYRRELL COUNTY

STATION: 15+93.75 -L-

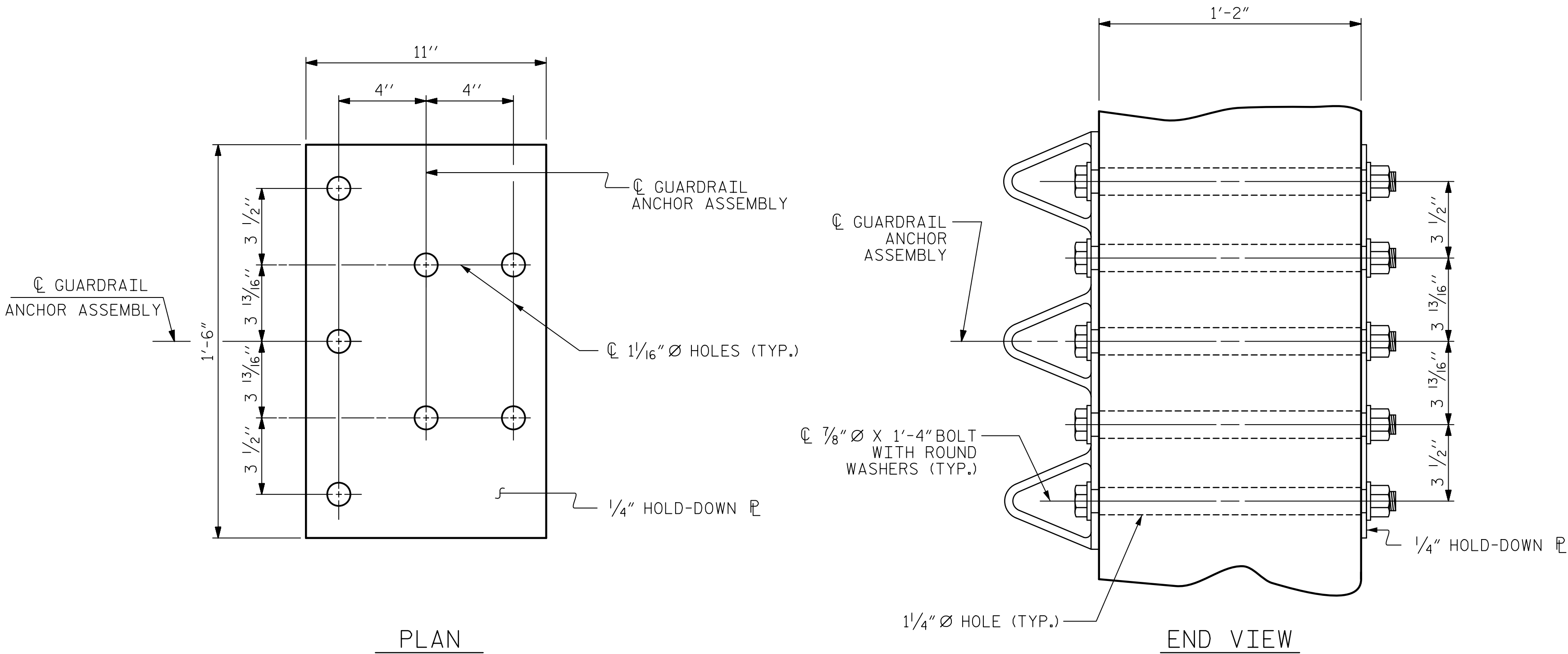
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

CONCRETE PARAPET
AND END POST
DETAILS

REVISIONS						SHEET NO. S-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 32
2			4			

Prepared by
URS
URS Corporation - North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
PHONE: 919/461-1100 FAX: 919/461-1415
NC L.I.C. # C-2243

6/22/2015
NORTH CAROLINA
PROFESSIONAL
SEAL
039173
ENGINEER
MATTHEW K. TOM
DocuSigned by:
Matthew K. Tom
749EDF30B64443A

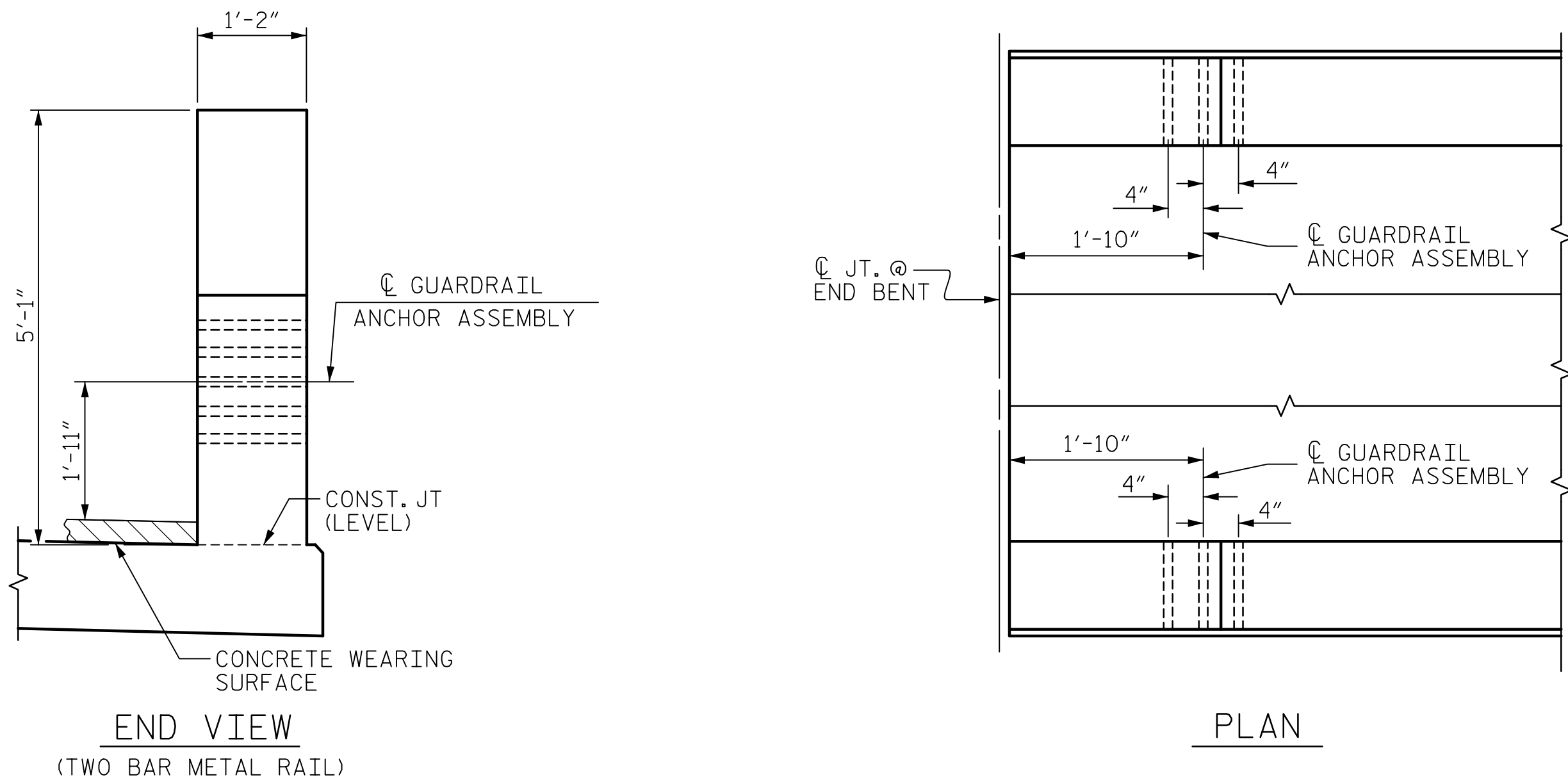


GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

NOTES (FOR METAL RAILS)

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

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

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

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

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

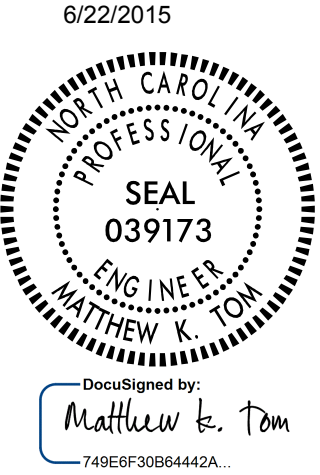
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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

PROJECT NO. 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

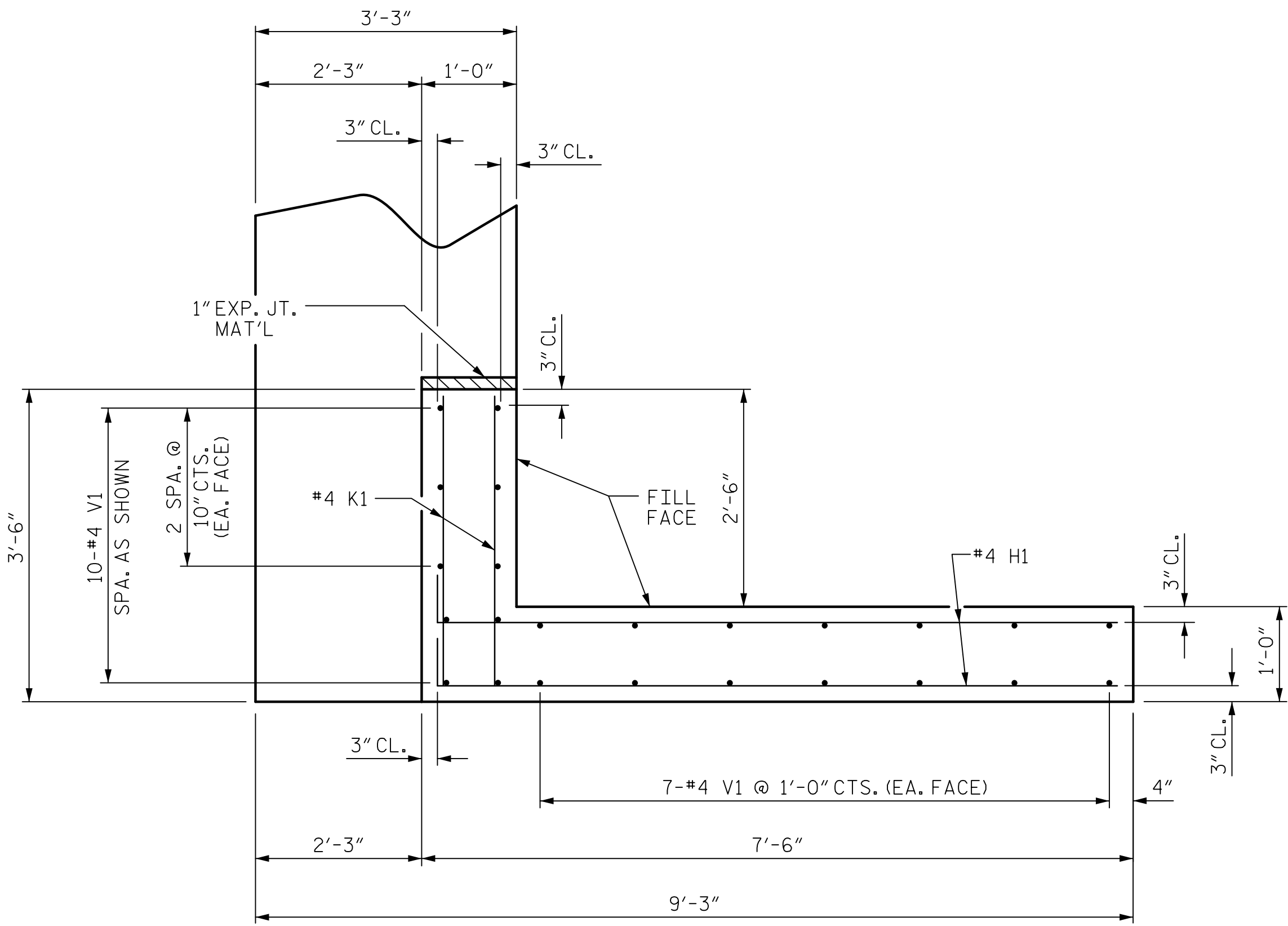
ASSEMBLED BY :	R. L. WHITCHER	DATE :	12/15/14
CHECKED BY :	M. K. TOM	DATE :	12/29/14
DESIGNED BY :	R. L. WHITCHER	DATE :	12/15/14
DRAWN BY :	MAA 5/10	REV. 10/1/II	MAA/GM
CHECKED BY :	GM 5/10	REV. 12/5/II	MAA/GM
		REV. 6/13	MAA/GM



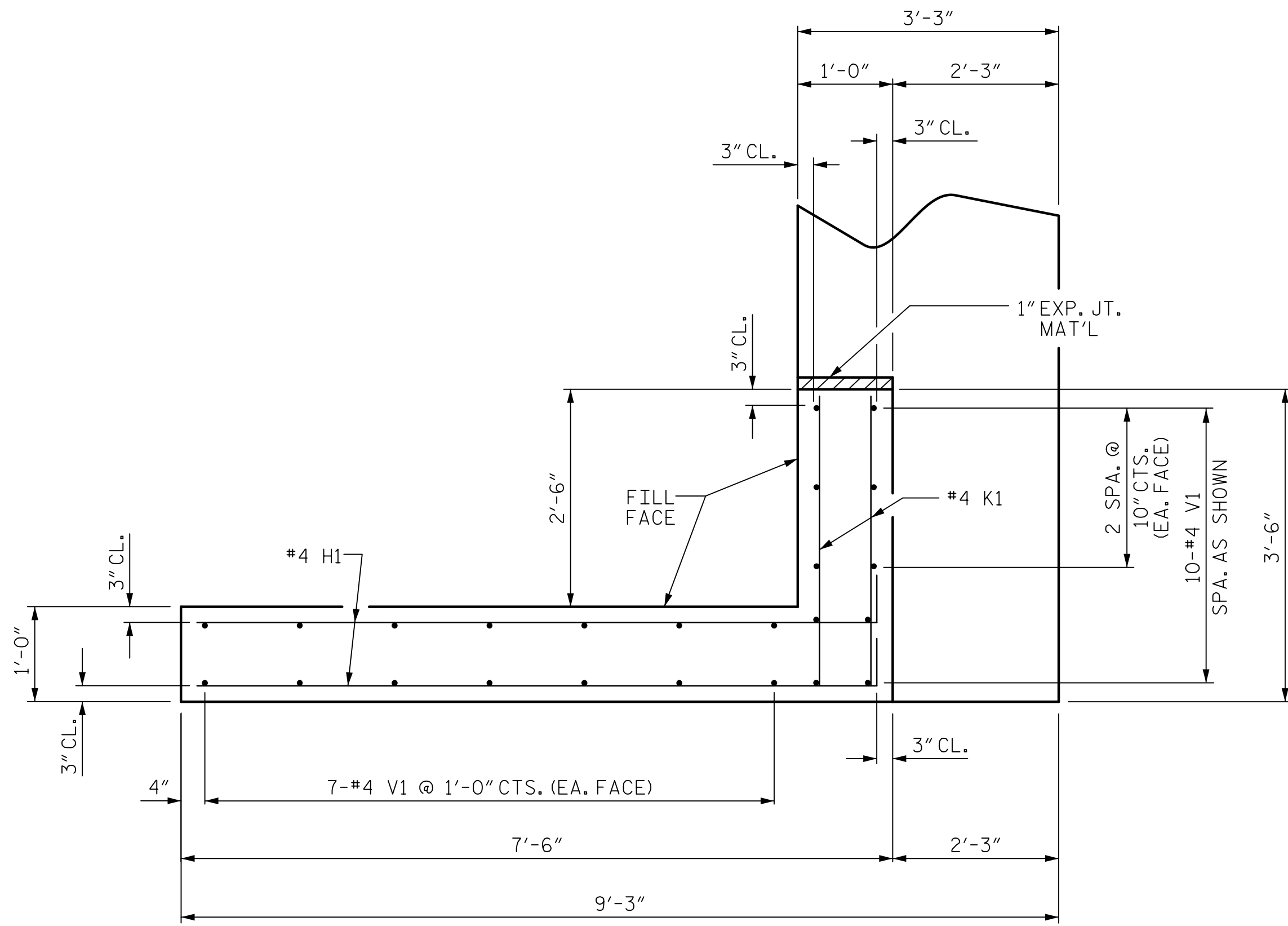
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
DETAILS FOR METAL
RAILS & VERTICAL
CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			32

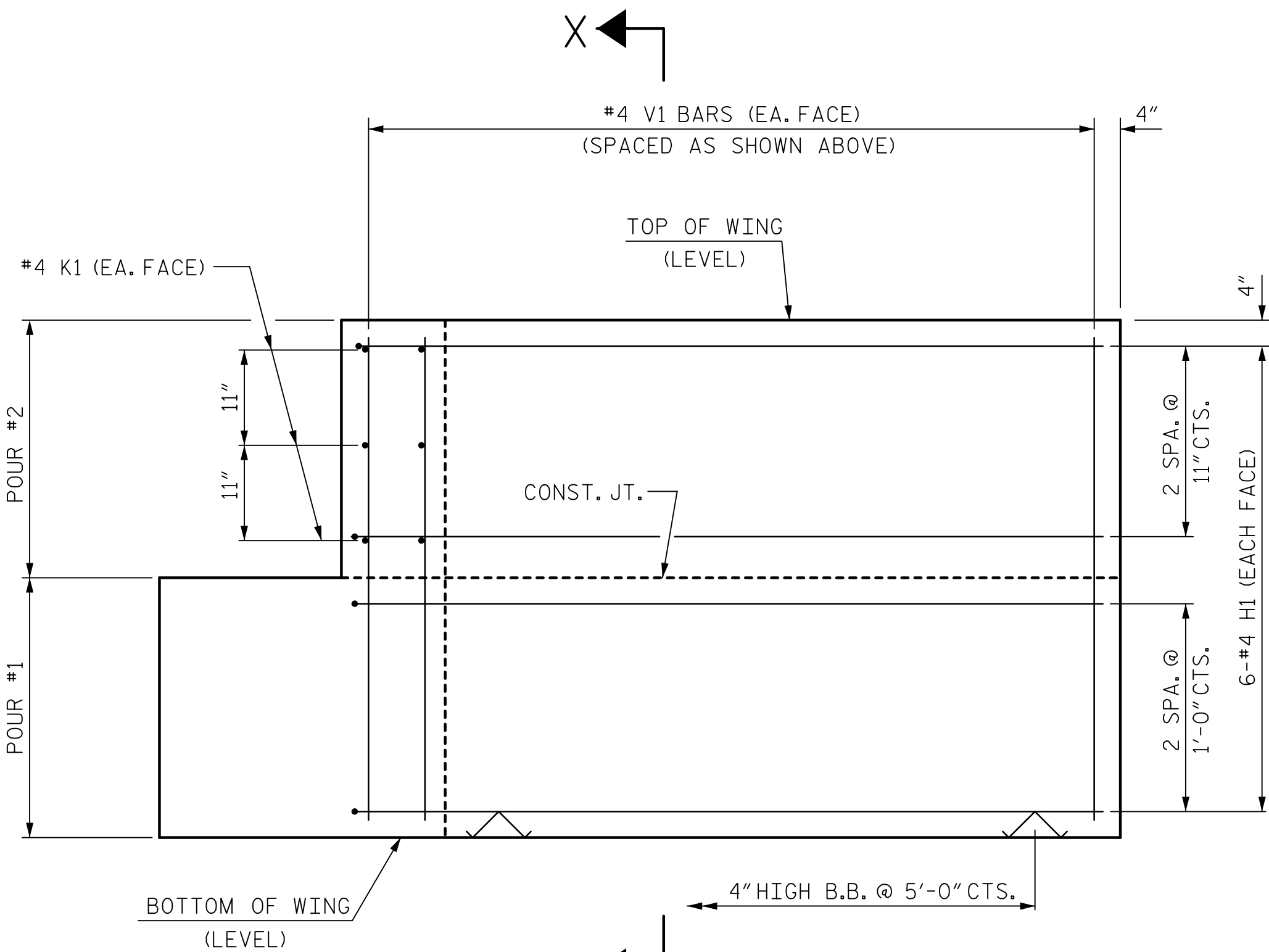
STD. NO. GRA3



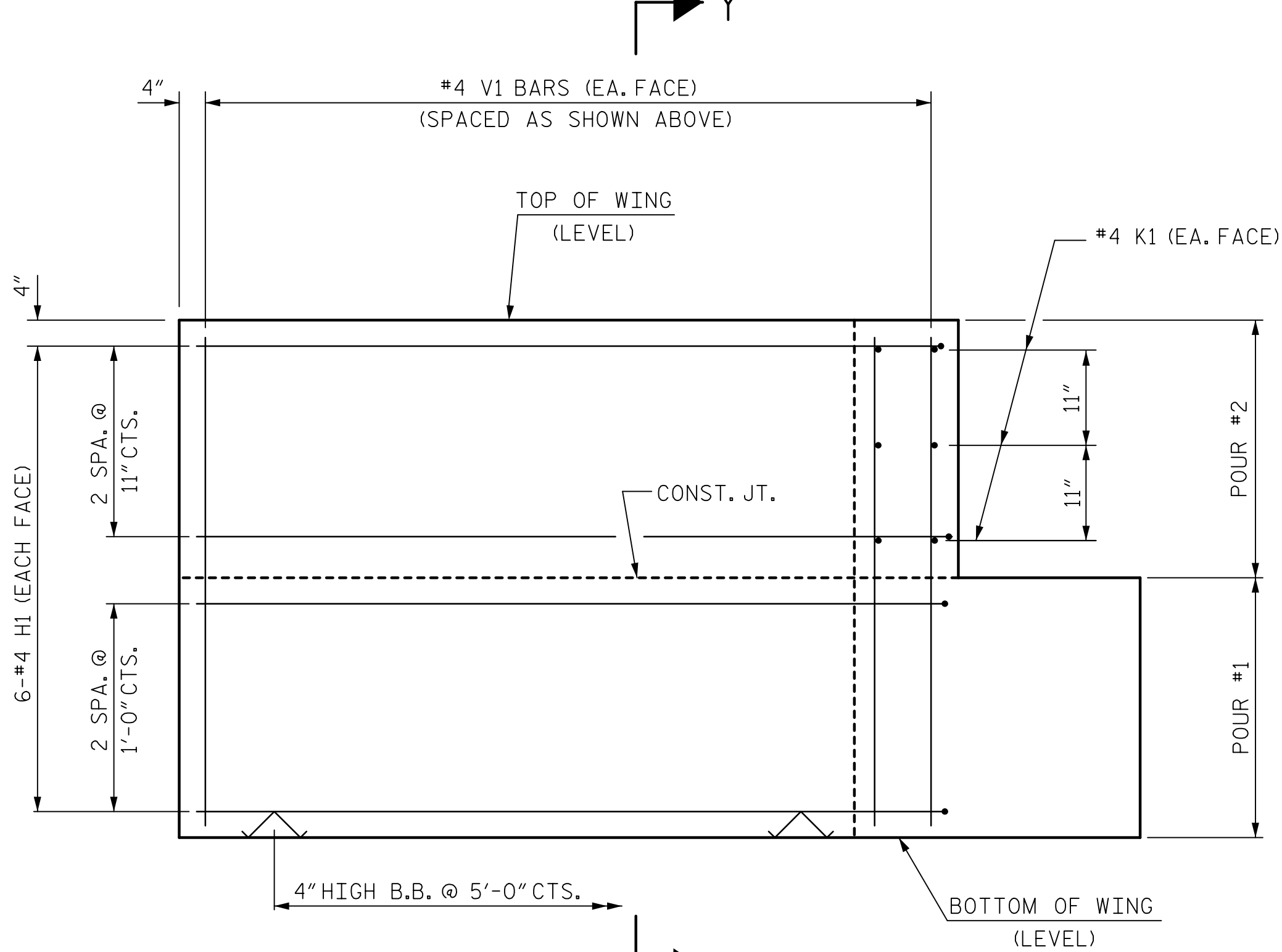
PLAN OF WING (W1)



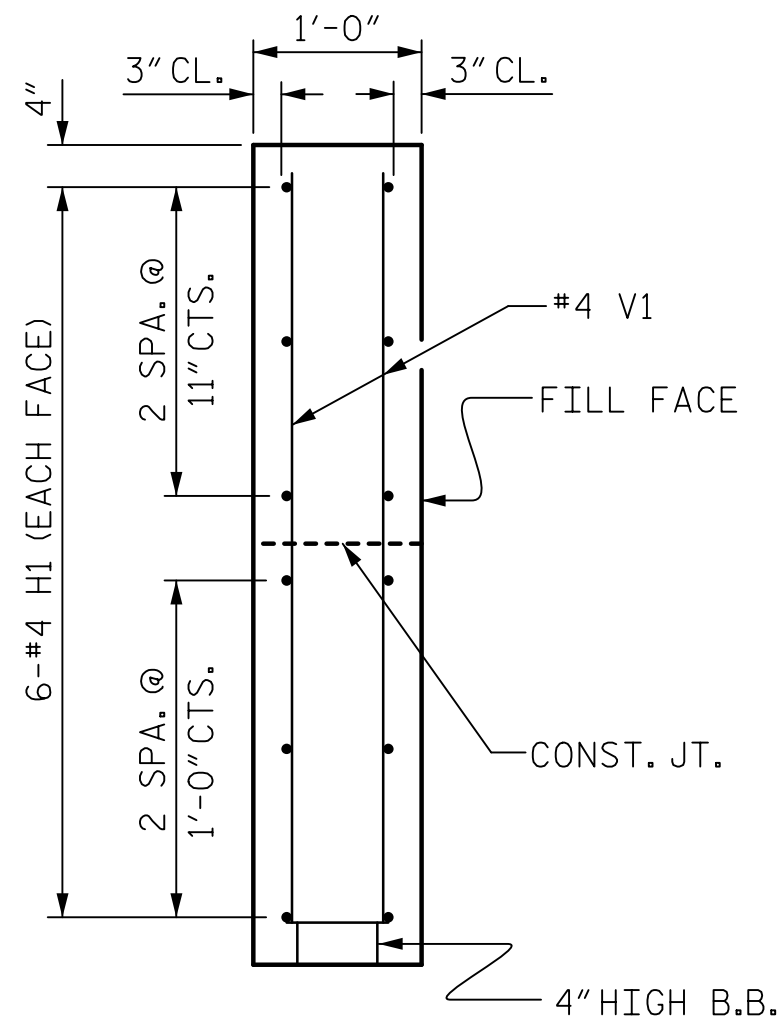
PLAN OF WING (W2)



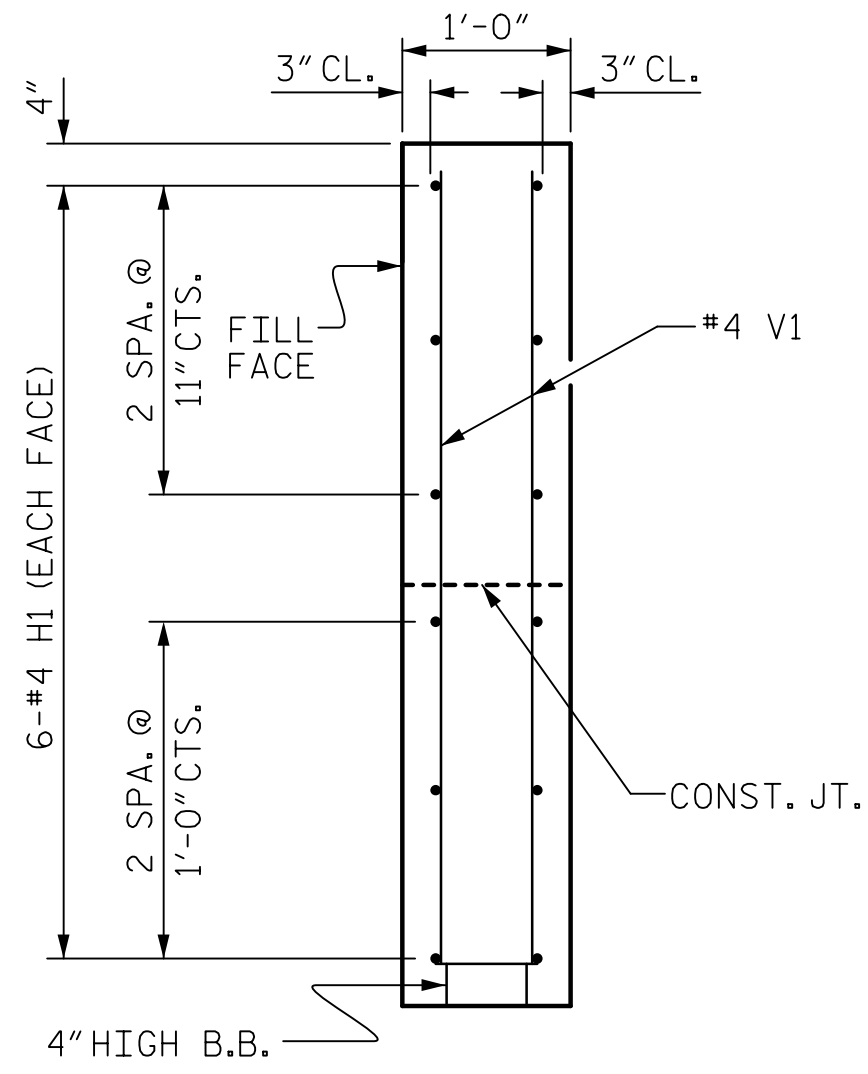
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X



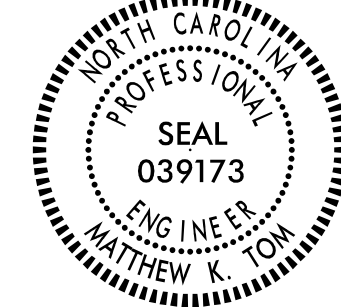
SECTION Y-Y

PROJECT NO. 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

SHEET 3 OF 4



6/22/2015



DocuSigned by:
Matthew K. Tom
748E6F30B8442A...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

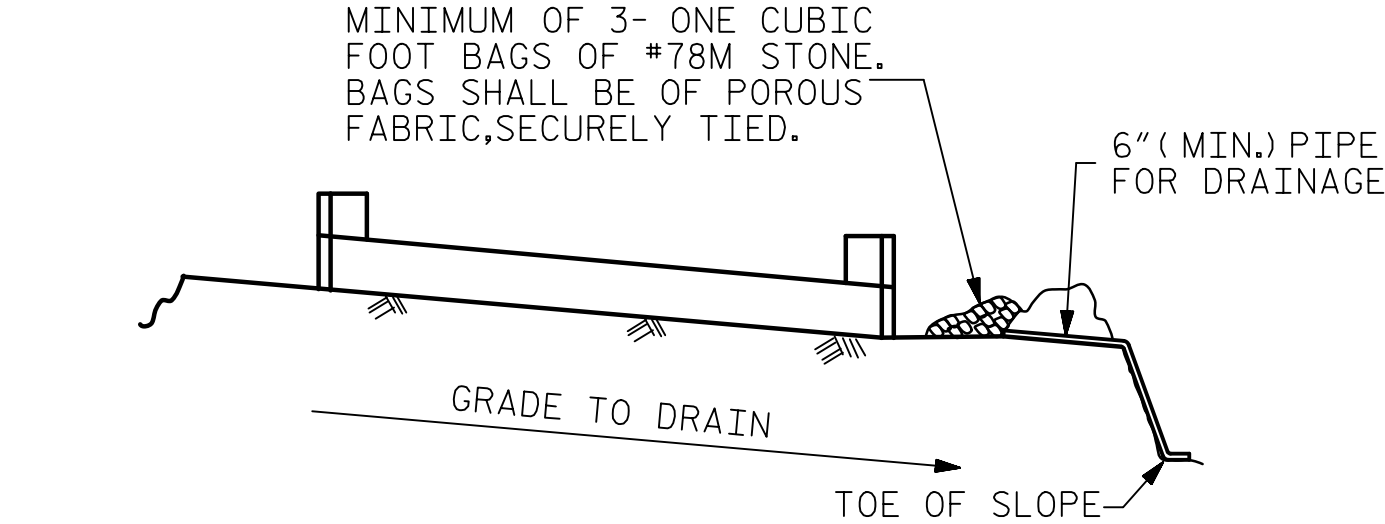
SUBSTRUCTURE
END BENT
WING DETAILS

REVISIONS						SHEET NO. S-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 32
2			4			

ASSEMBLED BY : R. L. WHITCHER DATE : 1/26/15
CHECKED BY : M. K. TOM DATE : 2/20/15
DESIGNED BY : M. K. TOM DATE : 1/26/15

DRAWN BY : DGE 02/10
CHECKED BY : MKT 02/10

WING DETAILS

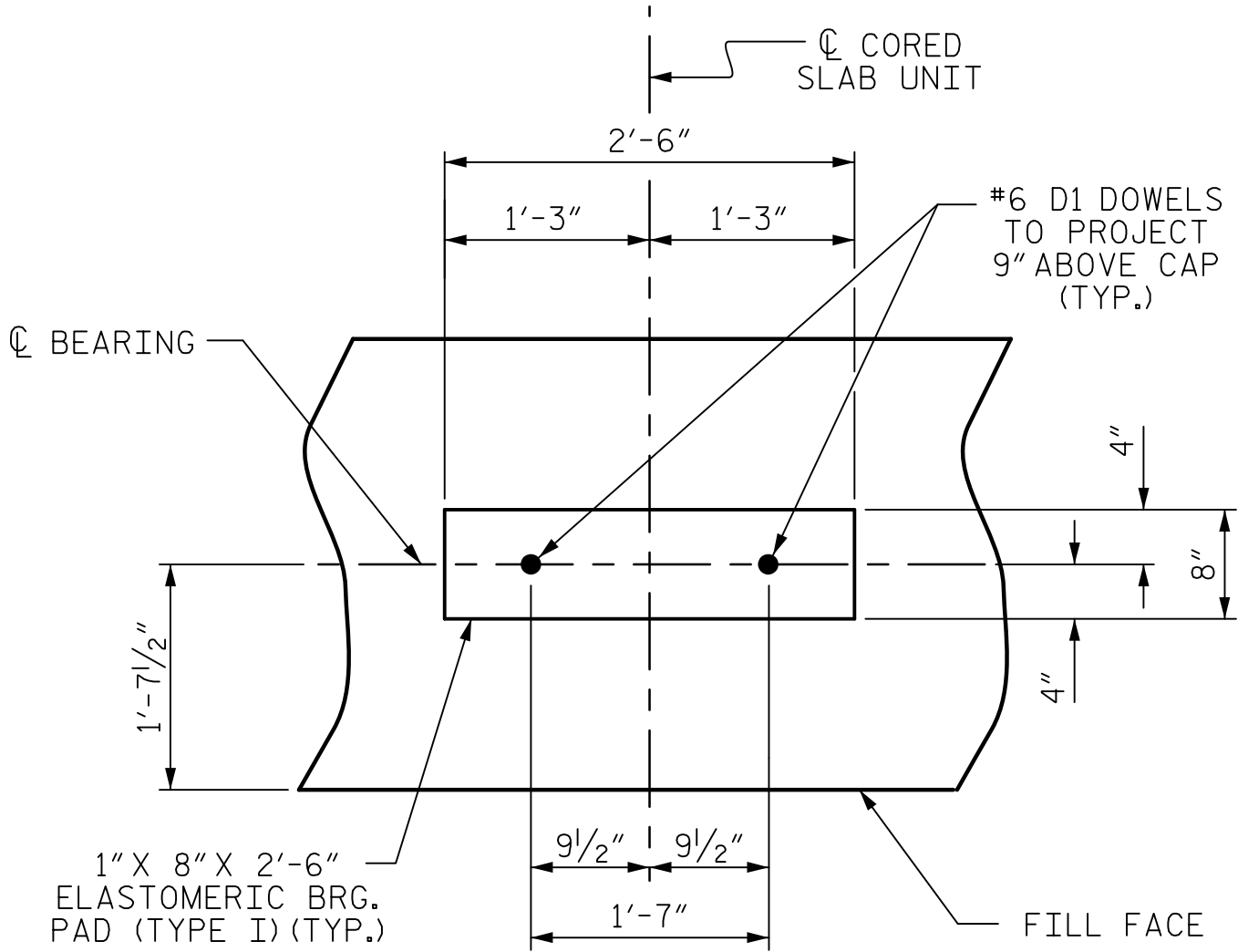


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

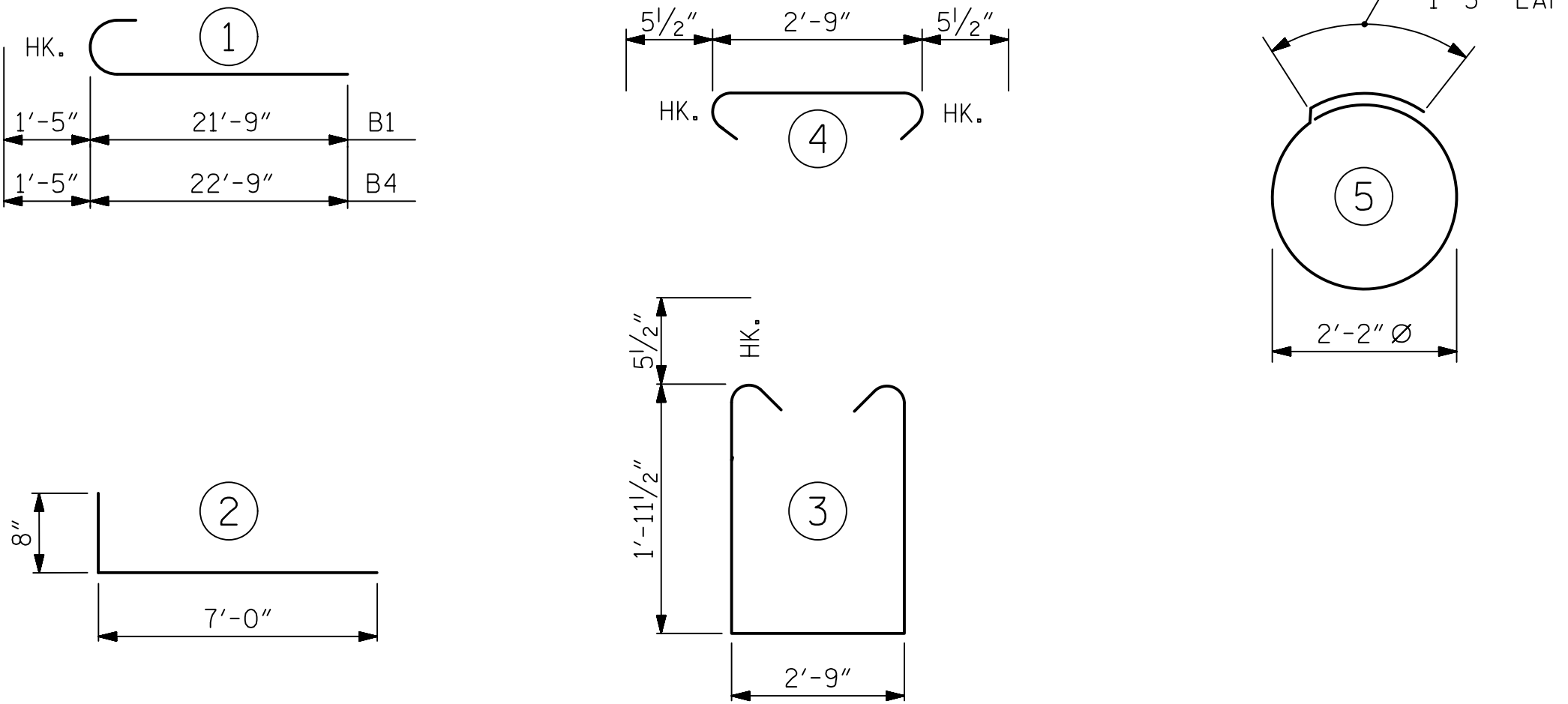
TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

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

BAR TYPES

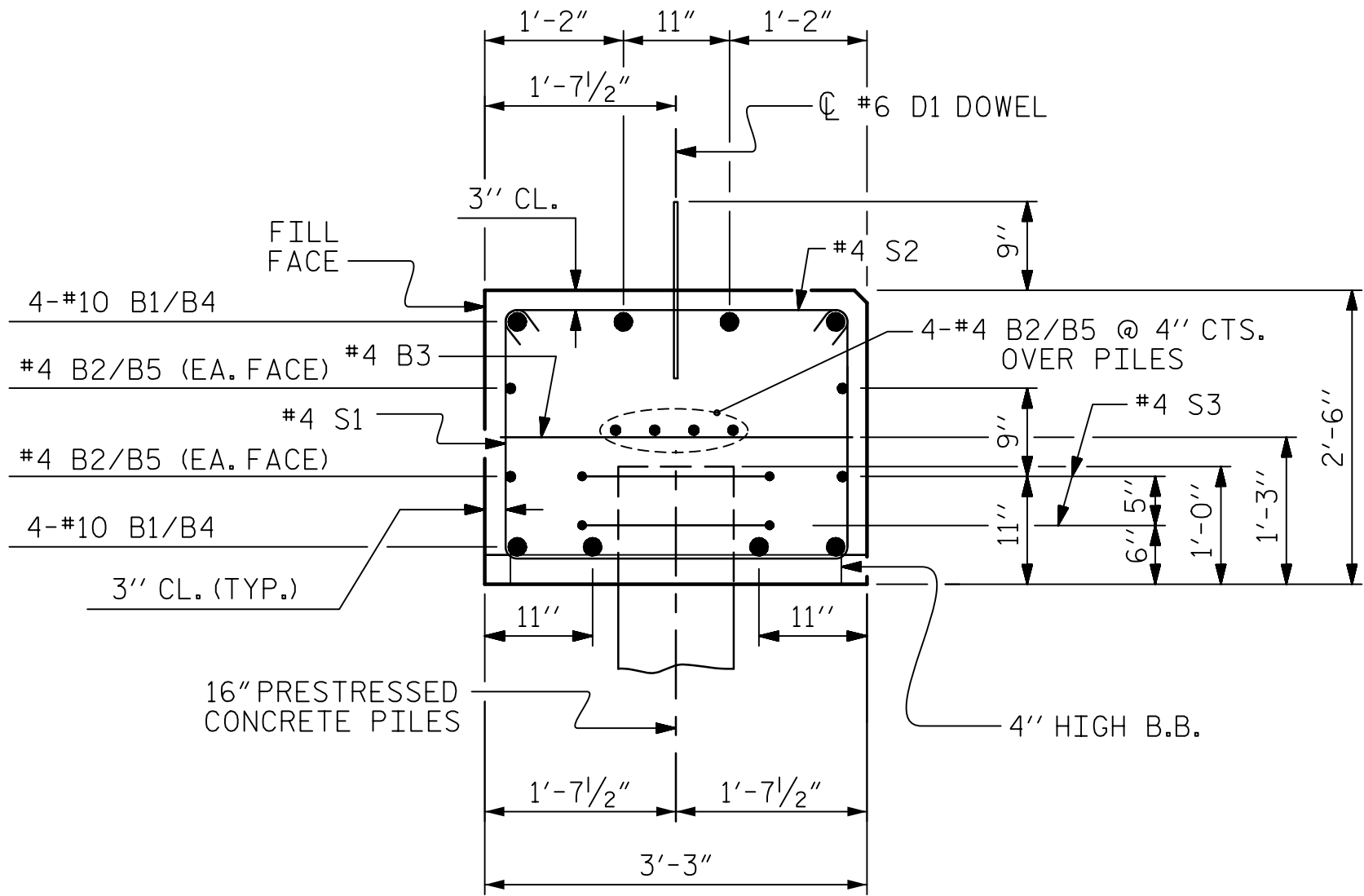


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL - FOR ONE END BENT

STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	8	10	1	23'-2"	797	* B3	6	4	STR.	2'-9"	11
* B2	8	4	STR.	21'-9"	116	* B4	8	10	1	24'-2"	832
* B3	6	4	STR.	2'-9"	11	* B5	8	4	STR.	22'-9"	122
* D1	12	6	STR.	1'-6"	27	* D1	12	6	STR.	1'-6"	27
* H1	12	4	2	7'-8"	61	* H1	12	4	2	7'-8"	61
* K1	6	4	STR.	3'-0"	12	* K1	6	4	STR.	3'-0"	12
* S1	24	5	3	7'-7"	190	* S1	27	5	3	7'-7"	214
* S2	24	5	4	3'-8"	92	* S2	27	5	4	3'-8"	103
* S3	8	4	5	8'-1"	43	* S3	8	4	5	8'-1"	43
* V1	24	4	STR.	4'-5"	71	* V1	24	4	STR.	4'-5"	71
EPOXY REINFORCING STEEL (FOR ONE END BENT)						EPOXY REINFORCING STEEL (FOR ONE END BENT)					
1420 LBS.						1496 LBS.					
CLASS AA CONCRETE BREAKDOWN (FOR ONE END BENT)						CLASS AA CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1 CAP, LOWER PART OF WINGS ▲ 6.66 C.Y.						POUR #1 CAP, LOWER PART OF WINGS ▲ 7.56 C.Y.					
POUR #2 UPPER PART OF WINGS 0.93 C.Y.						POUR #2 UPPER PART OF WINGS 0.93 C.Y.					
TOTAL CLASS AA CONCRETE 7.58 C.Y.						TOTAL CLASS AA CONCRETE 8.49 C.Y.					
16" PRESTRESSED CONCRETE PILES (FOR ONE END BENT)						16" PRESTRESSED CONCRETE PILES (FOR ONE END BENT)					
No. 4 LIN. FT. 220						No. 4 LIN. FT. 220					

▲ CONCRETE DISPLACED BY THE 16" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



SECTION A-A

PROJECT NO. 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

SHEET 4 OF 4

ASSEMBLED BY : R. L. WHITCHER DATE : 1/26/15
CHECKED BY : M. K. TOM DATE : 2/20/15
DESIGNED BY : M. K. TOM DATE : 1/26/15

6/17/2015
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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25	
1			3			TOTAL SHEETS	
2			4			32	

STD. NO. EB_39_90S

NOTES

★ INVERT ALTERNATE STIRRUPS.

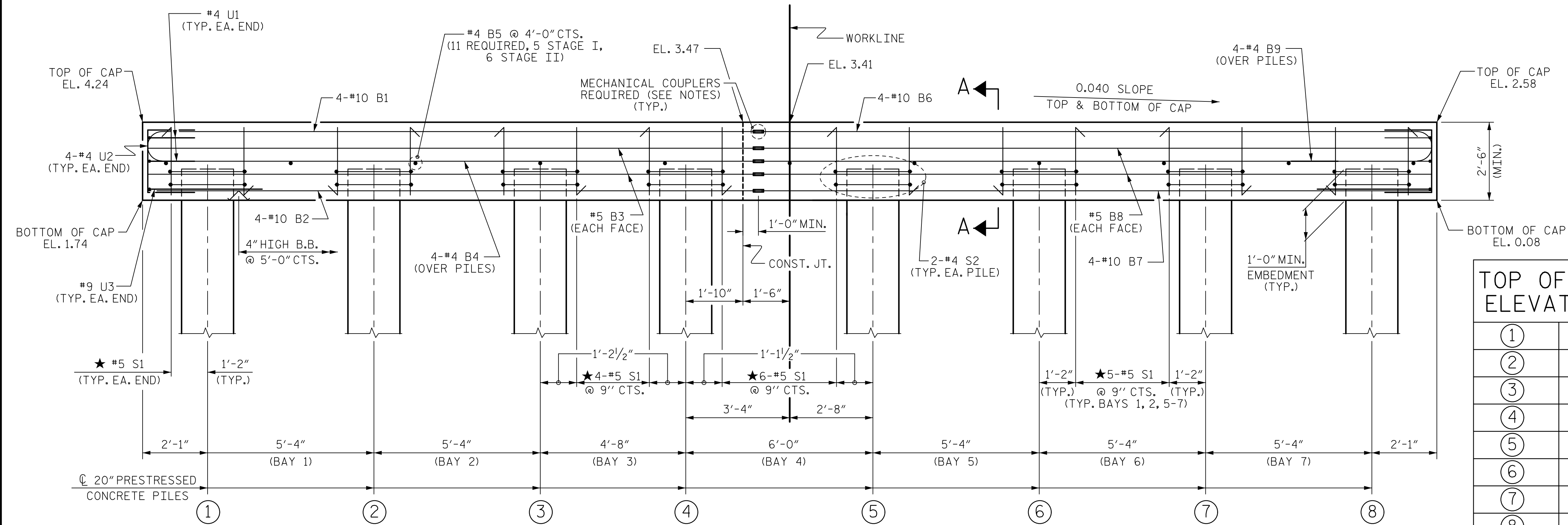
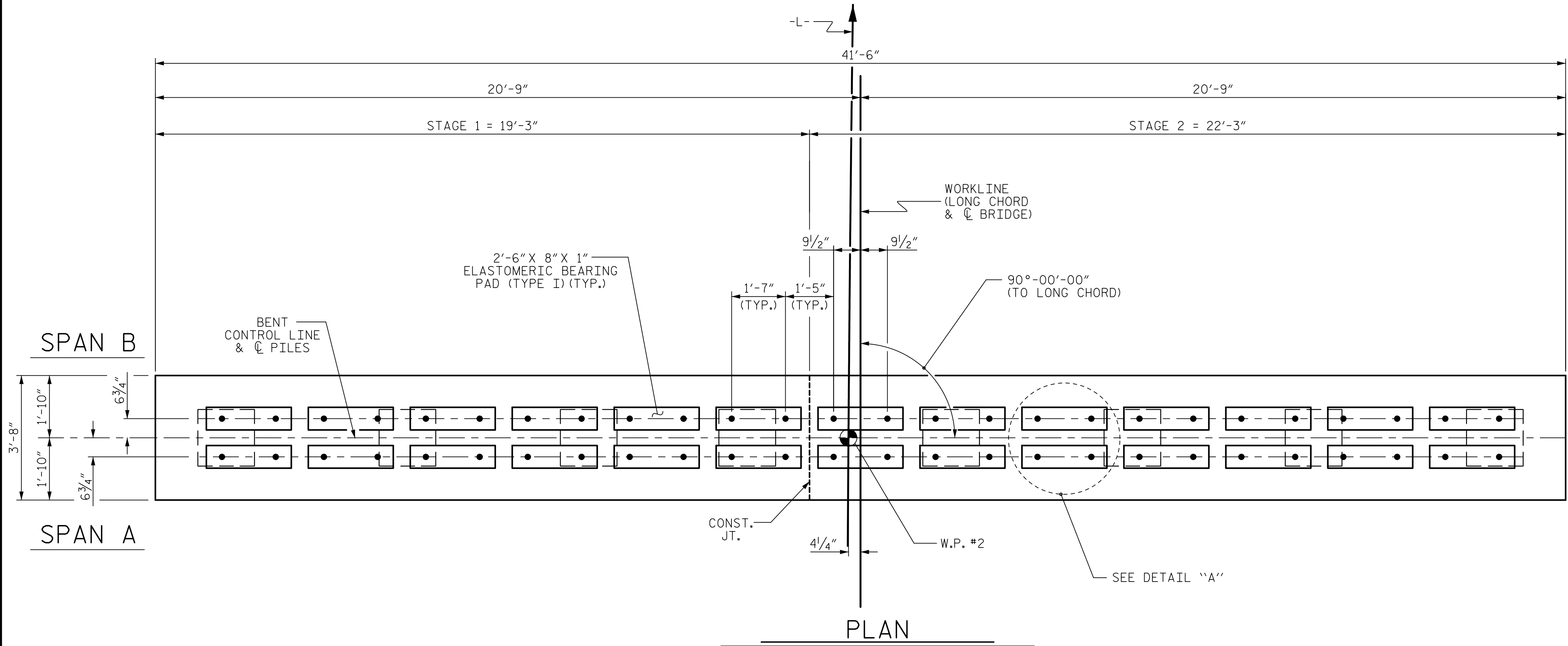
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

MECHANICAL COUPLERS SHALL BE USED TO JOIN THE #4, #5 AND #10 "B" BARS IN STAGE I WITH THE #4, #5 AND #10 "B" IN STAGE II.

FOR MECHANICAL COUPLERS, SEE MECHANICAL BUTT SPLICES FOR REINFORCING STEEL IN STANDARD SPECIFICATIONS.

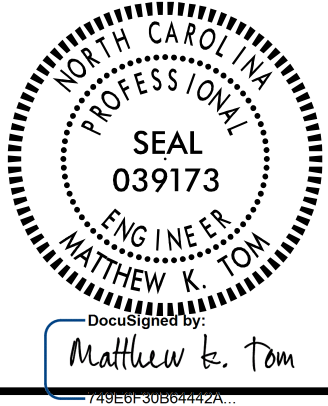
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LENGTHS OF THE #5 AND #10 "B" BARS AT THE STAGED CONSTRUCTION JOINT MAY NEED TO BE ADJUSTED DUE TO THE TYPE OF MECHANICAL BUTT SPLICE CHOSEN BY THE CONTRACTOR. NO ADDITIONAL PAYMENT WILL BE MADE FOR ANY ADJUSTMENTS.

THE CONCRETE IN THE BENT CAPS OF BENT NO.1 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 LUMP SUM PRICE BID FOR CONSTRUCTION OF SUBSTRUCTURE.



TOP OF PILE ELEVATIONS	
①	2.66
②	2.44
③	2.23
④	2.04
⑤	1.80
⑥	1.59
⑦	1.38
⑧	1.16

6/22/2015



PROJECT NO. 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

SHEET 1 OF 2

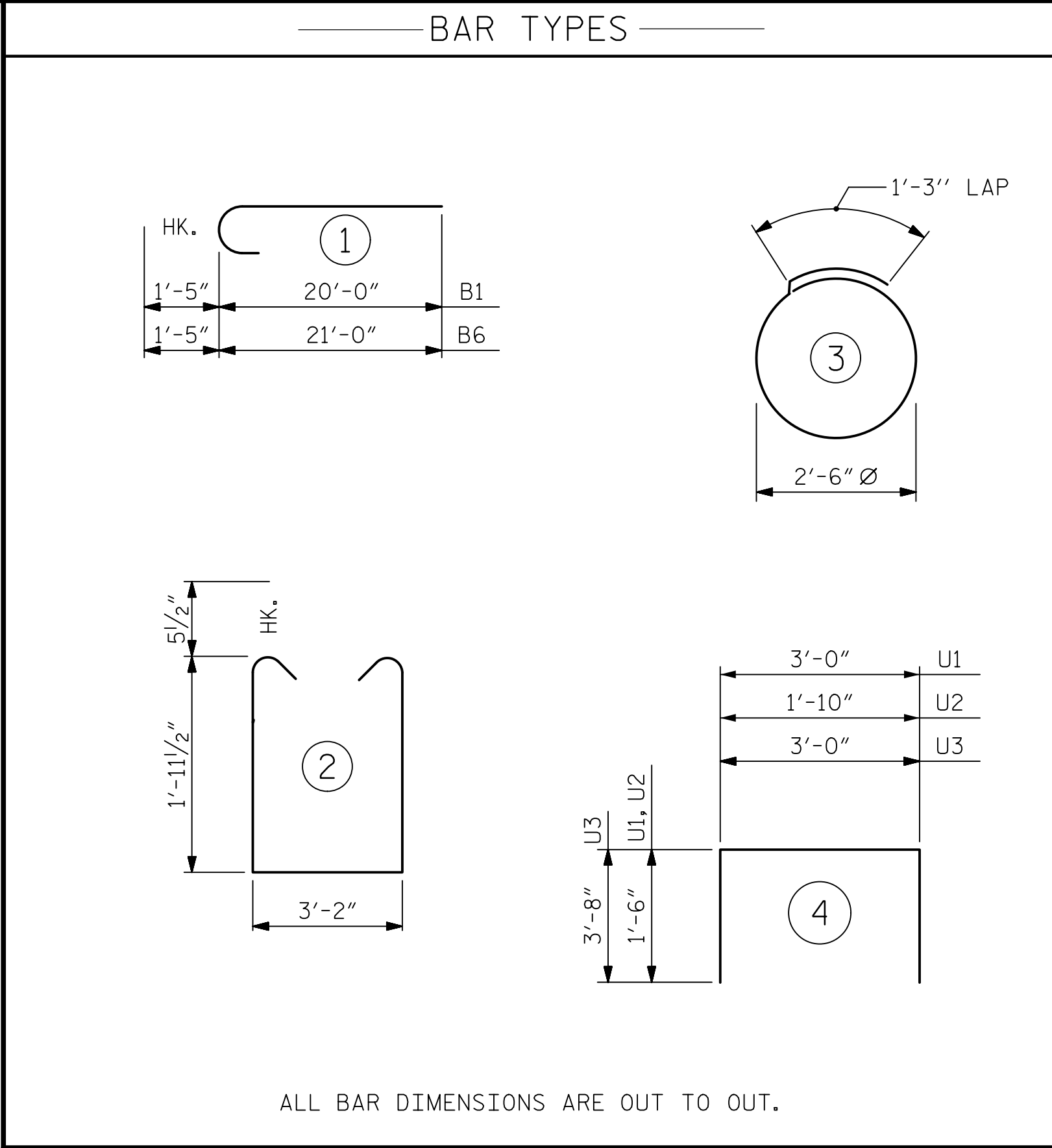
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1

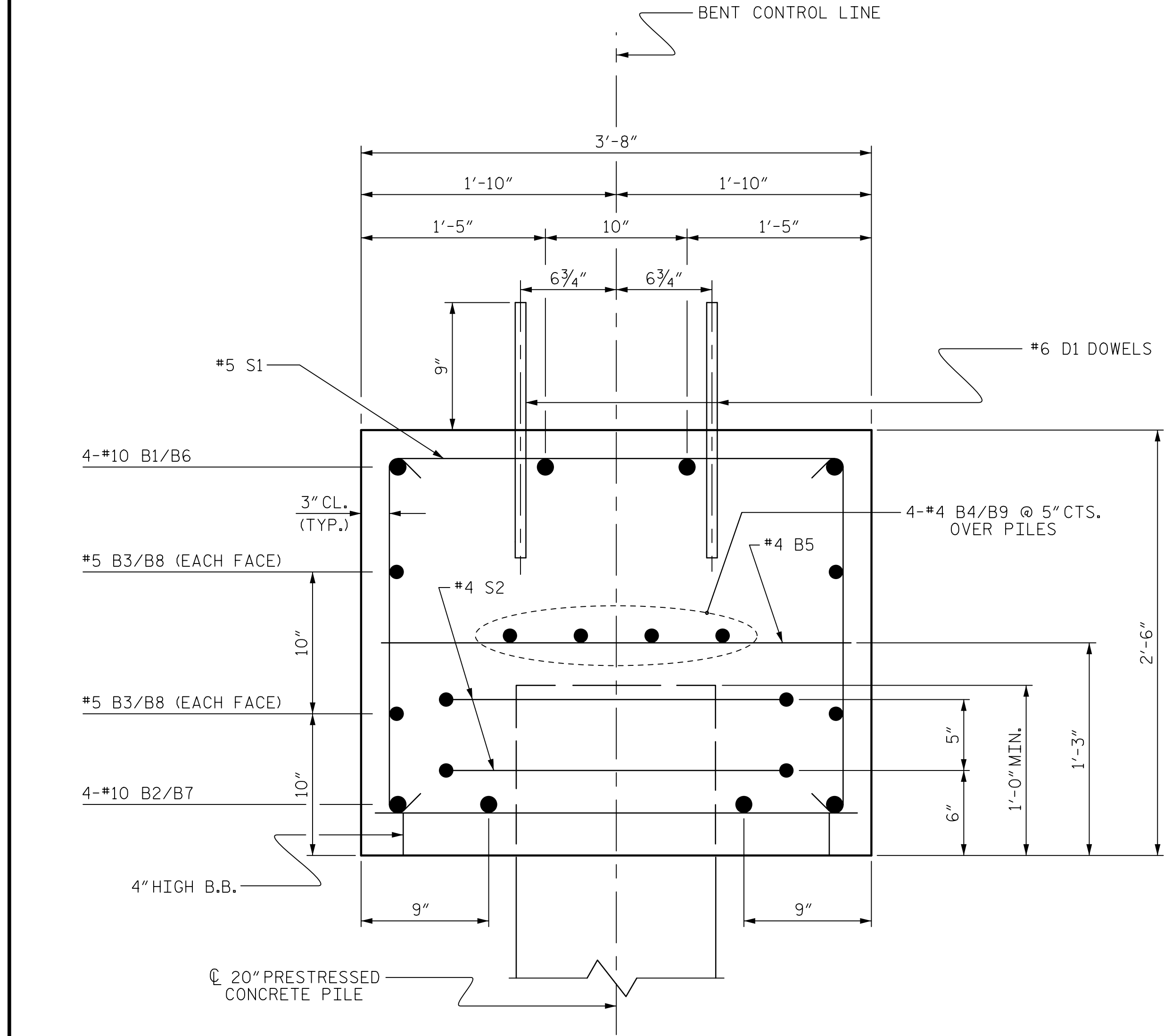
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			32

DRAWN BY : R. L. WHITCHER DATE : 1/22/15
CHECKED BY : M. K. TOM DATE : 1/28/15
DESIGNED BY : M. K. TOM DATE : 1/22/15

BENT 1 - BILL OF MATERIAL											
STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	4	10	1	21'-5"	369	* B5	6	4	STR	3'-2"	13
* B2	4	10	STR	20'-0"	344	* B6	4	10	1	22'-5"	386
* B3	4	5	STR	20'-0"	83	* B7	4	10	STR	21'-0"	361
* B4	4	4	STR	20'-0"	53	* B8	4	5	STR	21'-0"	88
* B5	5	4	STR	3'-2"	11	* B9	4	4	STR	21'-0"	56
* D1	24	6	STR	1'-6"	54	* D1	28	6	STR	1'-6"	63
* S1	16	5	2	8'-0"	134	* S1	21	5	2	8'-0"	175
* S2	8	4	3	9'-2"	49	* S2	8	4	3	9'-2"	49
* U1	2	4	4	6'-0"	8	* U1	2	4	4	6'-0"	8
* U2	4	4	4	4'-10"	13	* U2	4	4	4	4'-10"	13
* U3	2	9	4	10'-4"	70	* U3	2	9	4	10'-4"	70
EPOXY REINFORCING STEEL STEEL (FOR ONE BENT)					1,188 LBS.	EPOXY REINFORCING STEEL STEEL (FOR ONE BENT)					1,282 LBS.
CLASS AA CONCRETE BREAKDOWN (FOR ONE BENT)						CLASS AA CONCRETE BREAKDOWN (FOR ONE BENT)					
POUR #1 (CAP)					▲ 6.12 C.Y	POUR #1 (CAP)					▲ 7.14 C.Y.
TOTAL CLASS AA CONCRETE					6.12 C.Y	TOTAL CLASS AA CONCRETE					7.14 C.Y.
20"PRESTRESSED CONCRETE PILES (FOR ONE BENT)						20"PRESTRESSED CONCRETE PILES (FOR ONE BENT)					
No. 4					LIN. FT. 220	No. 4					LIN. FT. 220

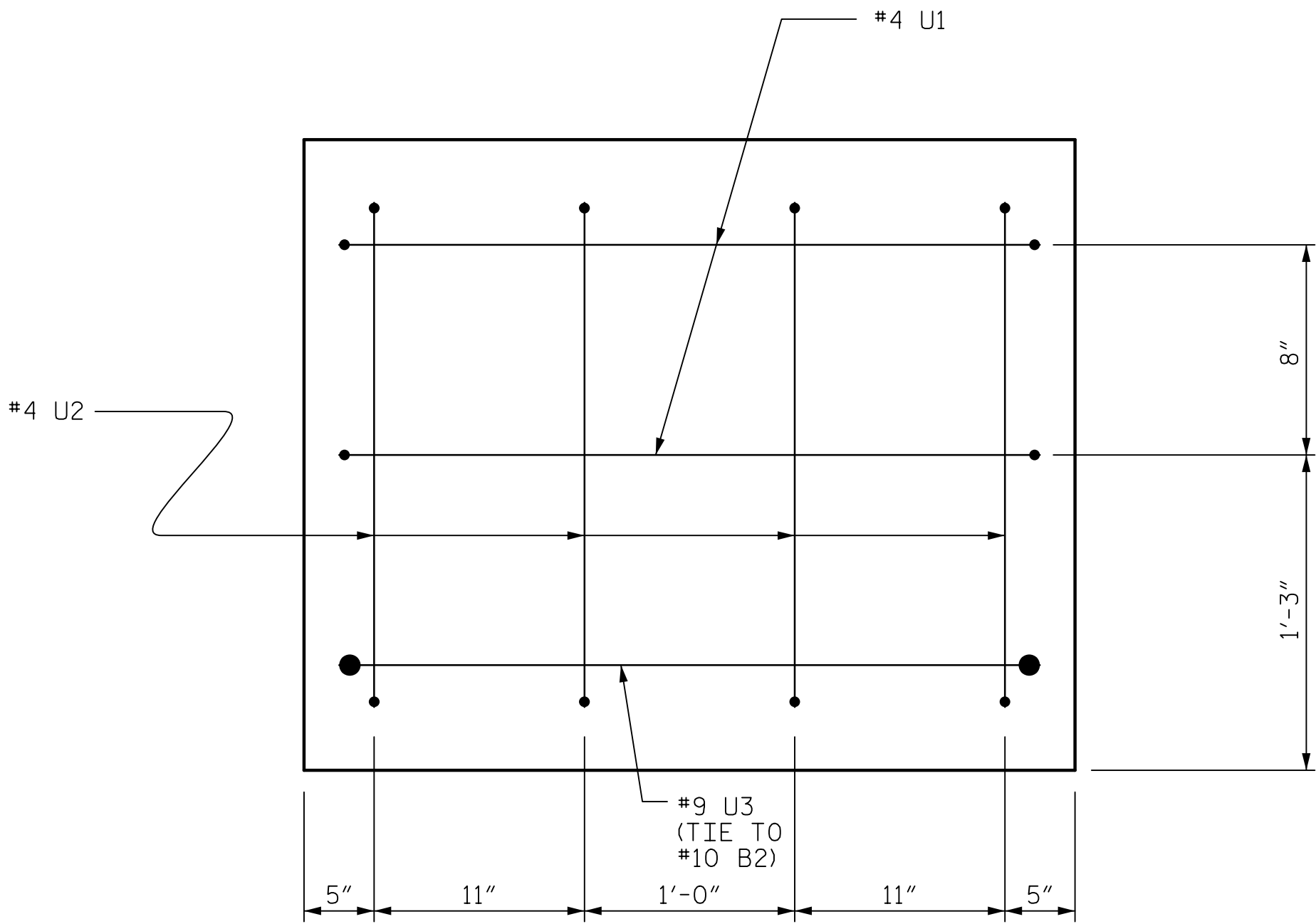


ALL BAR DIMENSIONS ARE OUT TO OUT.



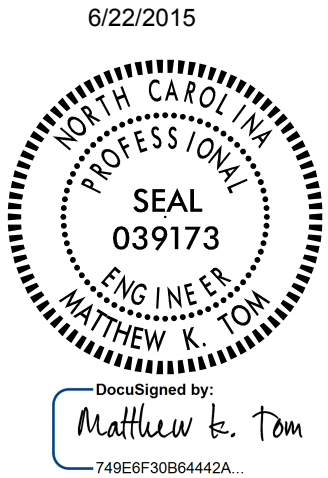
DRAWN BY : R. L. WHITCHER DATE : 1/22/15
CHECKED BY : M. K. TOM DATE : 1/28/15
DESIGND BY : M. K. TOM DATE : 1/22/15

SECTION A-A



END OF CAP VIEW

(TYPICAL BOTH ENDS)

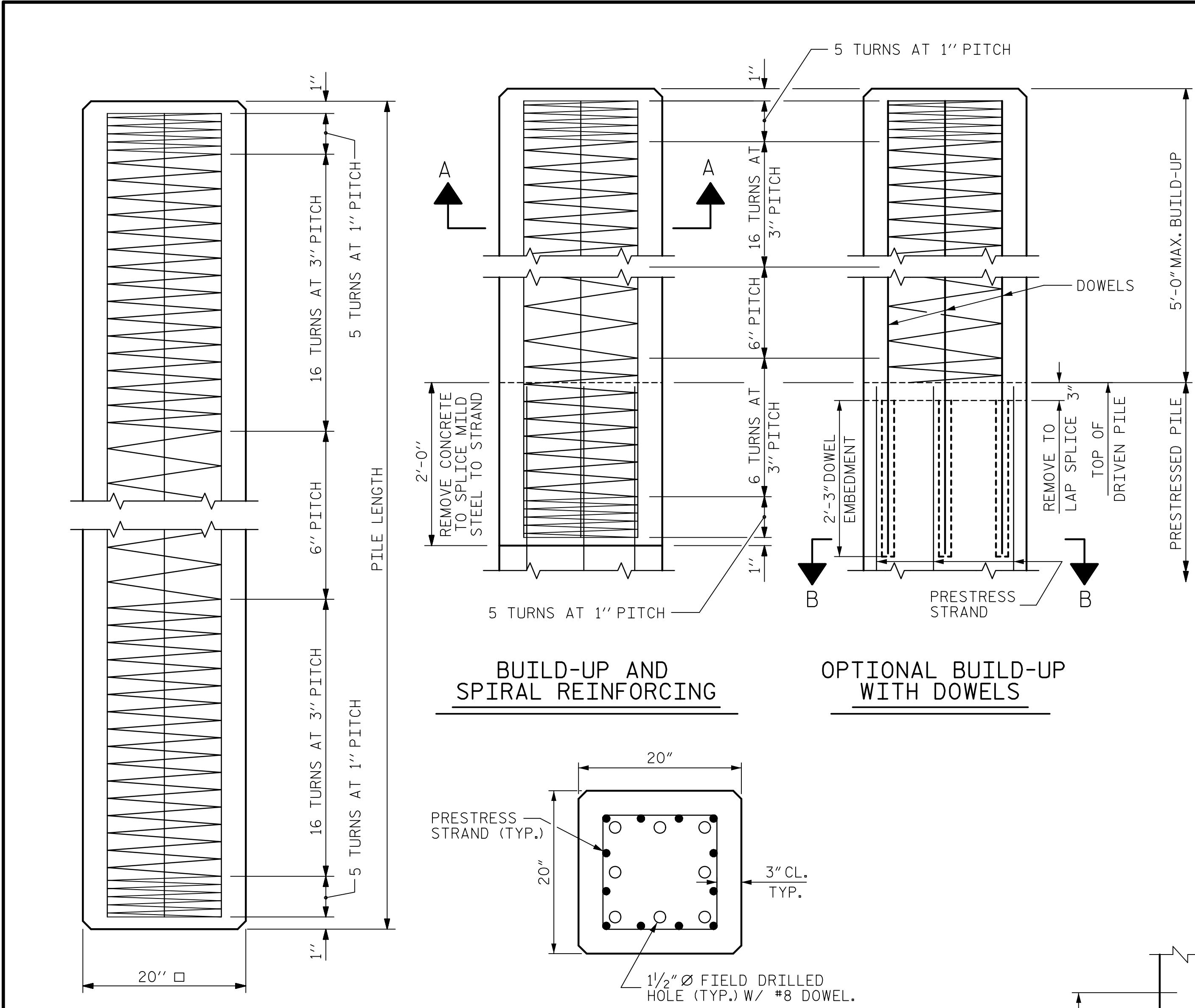


PROJECT NO. 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SUBSTRUCTURE BENT No. 1		
REVISIONS						SHEET NO. S-27		
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 32		
1			3					
2			4					

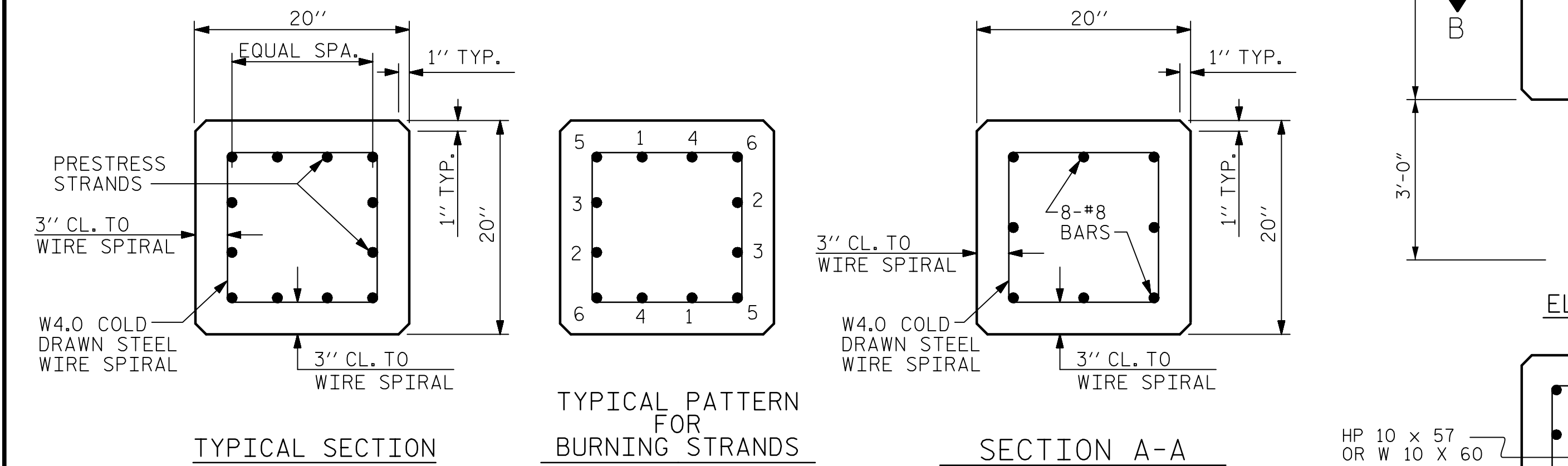
STD.NO. 20" PS_BT_39_90S_<60'



ELEVATION

SECTION "B-B"

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



TYPICAL SECTION

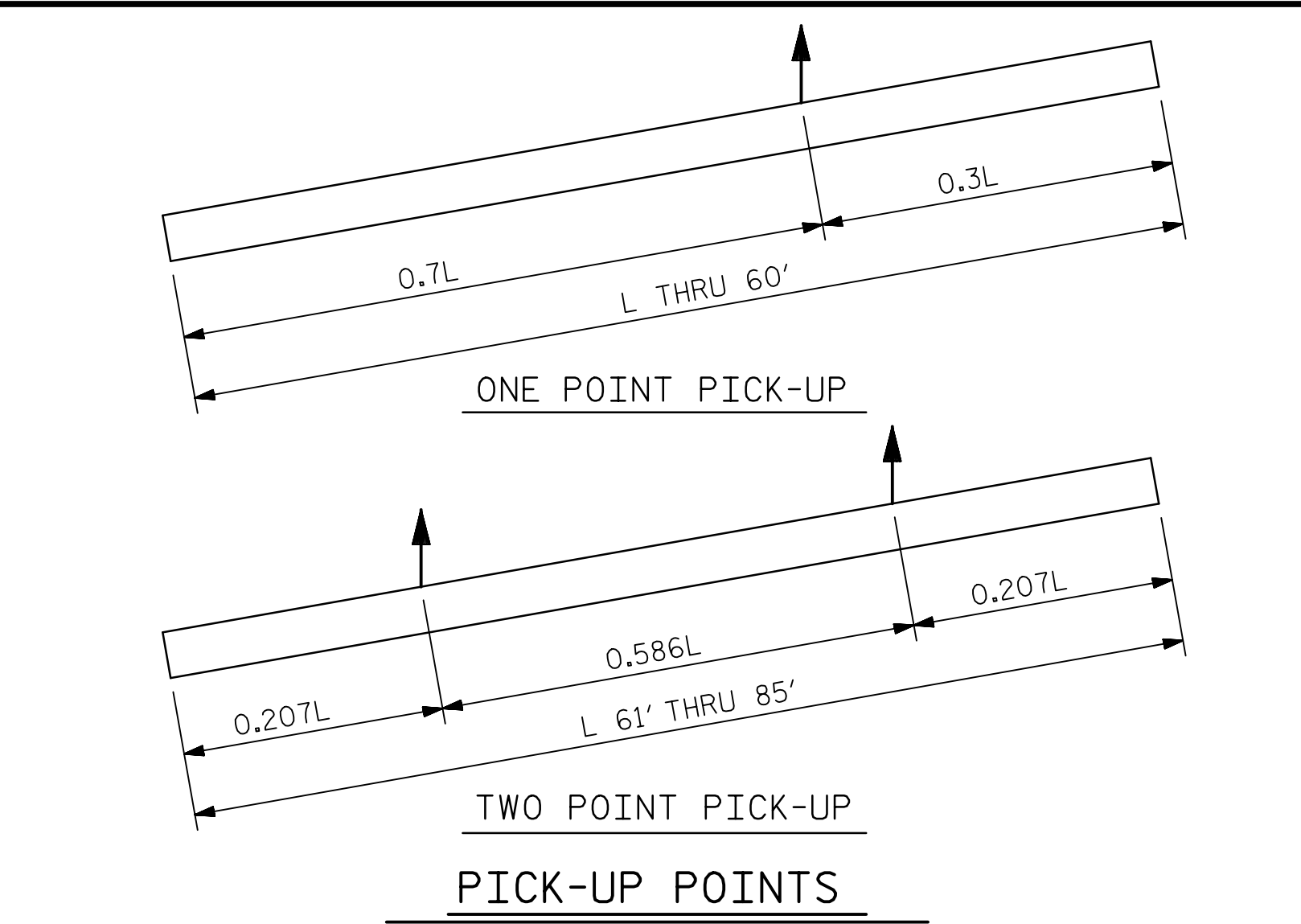
TYPICAL PATTERN FOR BURNING STRANDS

SECTION A-A

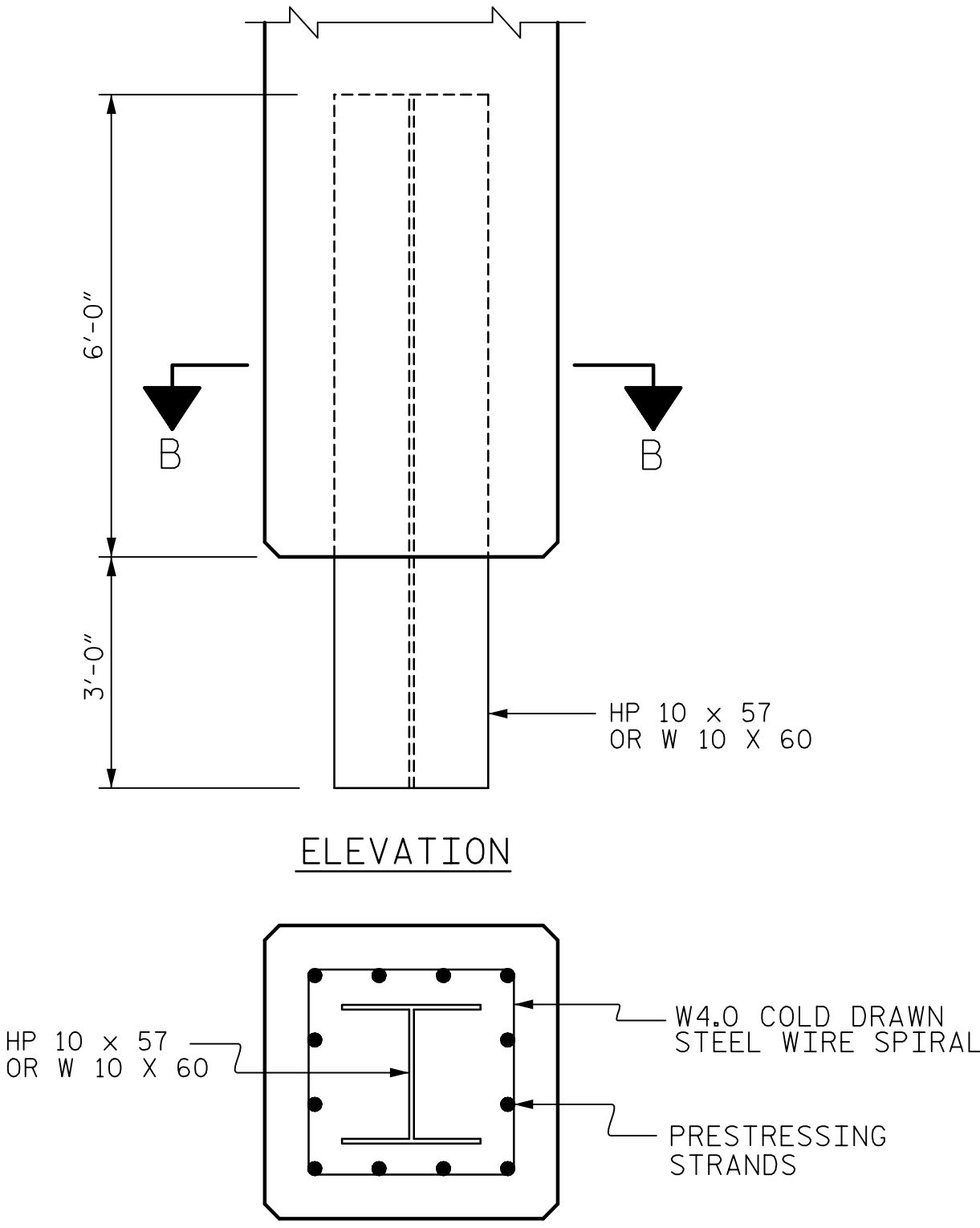
1/2" OR 0.6" Ø GRADE 270 L.R. PRESTRESS STRANDS

ASSEMBLED BY :	M. K. TOM	DATE :	1/22/15
CHECKED BY :	R. L. WHITCHER	DATE :	3/2/15
DESIGNED BY :	M. K. TOM	DATE :	1/22/15
DRAWN BY :	WJH 1/89	REV. 11/30/10	WMC/GM
CHECKED BY :	CRK 3/89	REV. 10/1/11	MAA/GM
		REV. 12/14	MAA/TMG

6/17/2015
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QUANTITIES FOR ONE 20" SQUARE PILE						
LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP		TWO POINT PICK-UP	
			0.3L	0.7L	0.207L	0.586L
25'-0"	2.56	5.18	7'-6"	17'-6"		
30'-0"	3.07	6.22	9'-0"	21'-0"		
35'-0"	3.58	7.26	10'-6"	24'-6"		
40'-0"	4.09	8.29	12'-0"	28'-0"		
45'-0"	4.61	9.33	13'-6"	31'-6"		
50'-0"	5.12	10.36	15'-0"	35'-0"		
55'-0"	5.63	11.40	16'-6"	38'-6"		
60'-0"	6.14	12.44	18'-0"	42'-0"		
65'-0"	6.65	13.47			13'-5 1/2"	38'-1"
70'-0"	7.17	14.51			14'-6"	41'-0"
75'-0"	7.68	15.55			15'-6 1/2"	43'-11"
80'-0"	8.19	16.58			16'-6 1/2"	46'-11"
85'-0"	8.70	17.62			17'-7"	49'-10"



ELEVATION

SECTION B-B

PILE TIP DETAILS

FOR 20" SQUARE PRESTRESSED CONCRETE PILE

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
1/2"	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, 1#2" OR 0.6" STRANDS MAY BE USED IN THE 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 OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS, BURN IN OPPOSITE PAIRS AND SYMMETRICALLY ABOUT BOTH THE VERTICAL AND HORIZONTAL AXES. STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 5-5 AND 6-6, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF 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 BENT NO. 1 AND 2 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 LUMP SUM PRICE BID FOR CONSTRUCTION OF SUBSTRUCTURE.

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 1/2" 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.

PROJECT NO. 17BP.1.R.59

TYRRELL COUNTY

STATION: 15+93.75 -L-

SHEET 2 OF 2

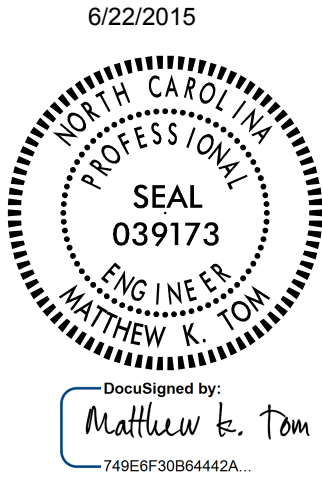
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

20" PRESTRESSED
CONCRETE PILE

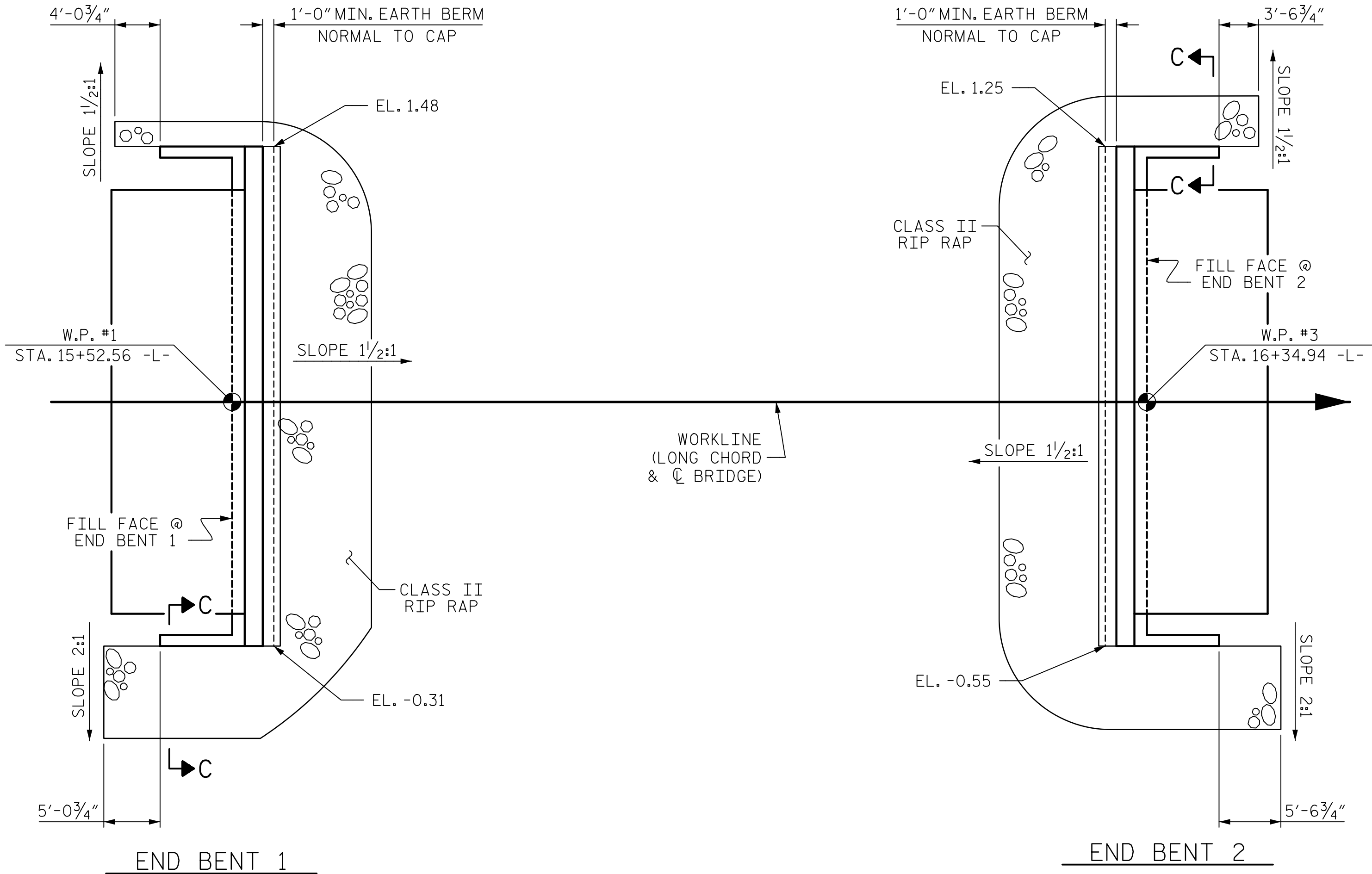
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 32
2			4			

STD. NO. PCP3



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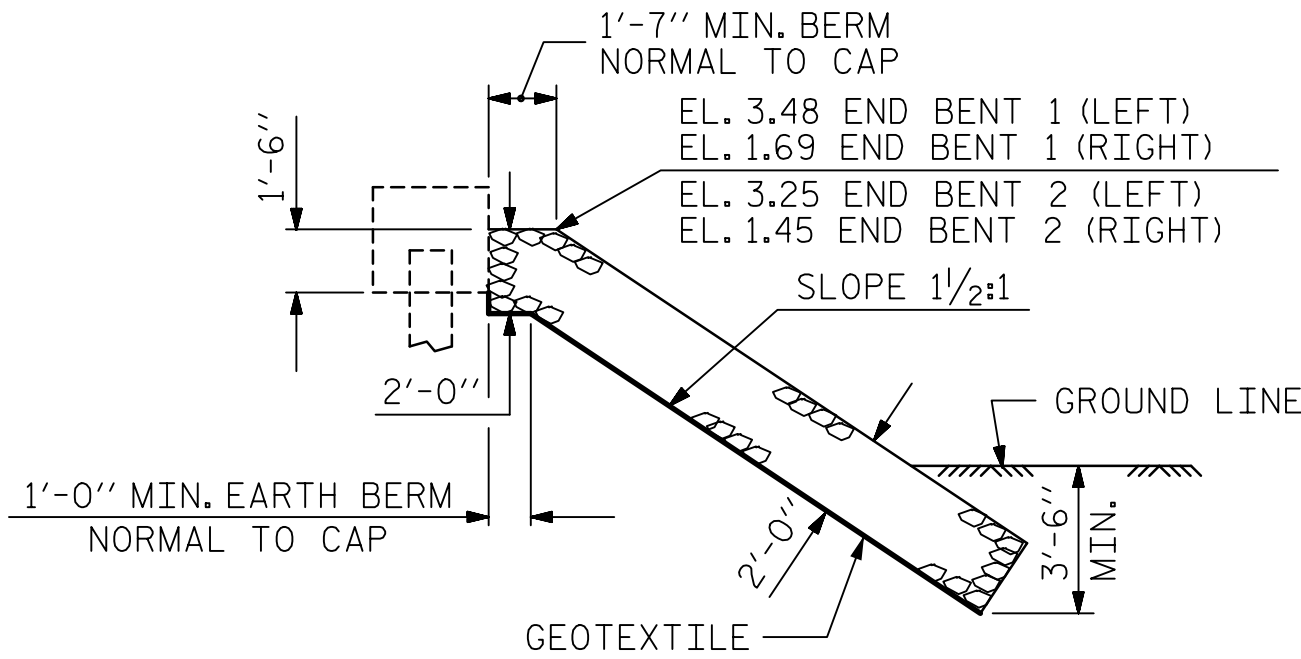
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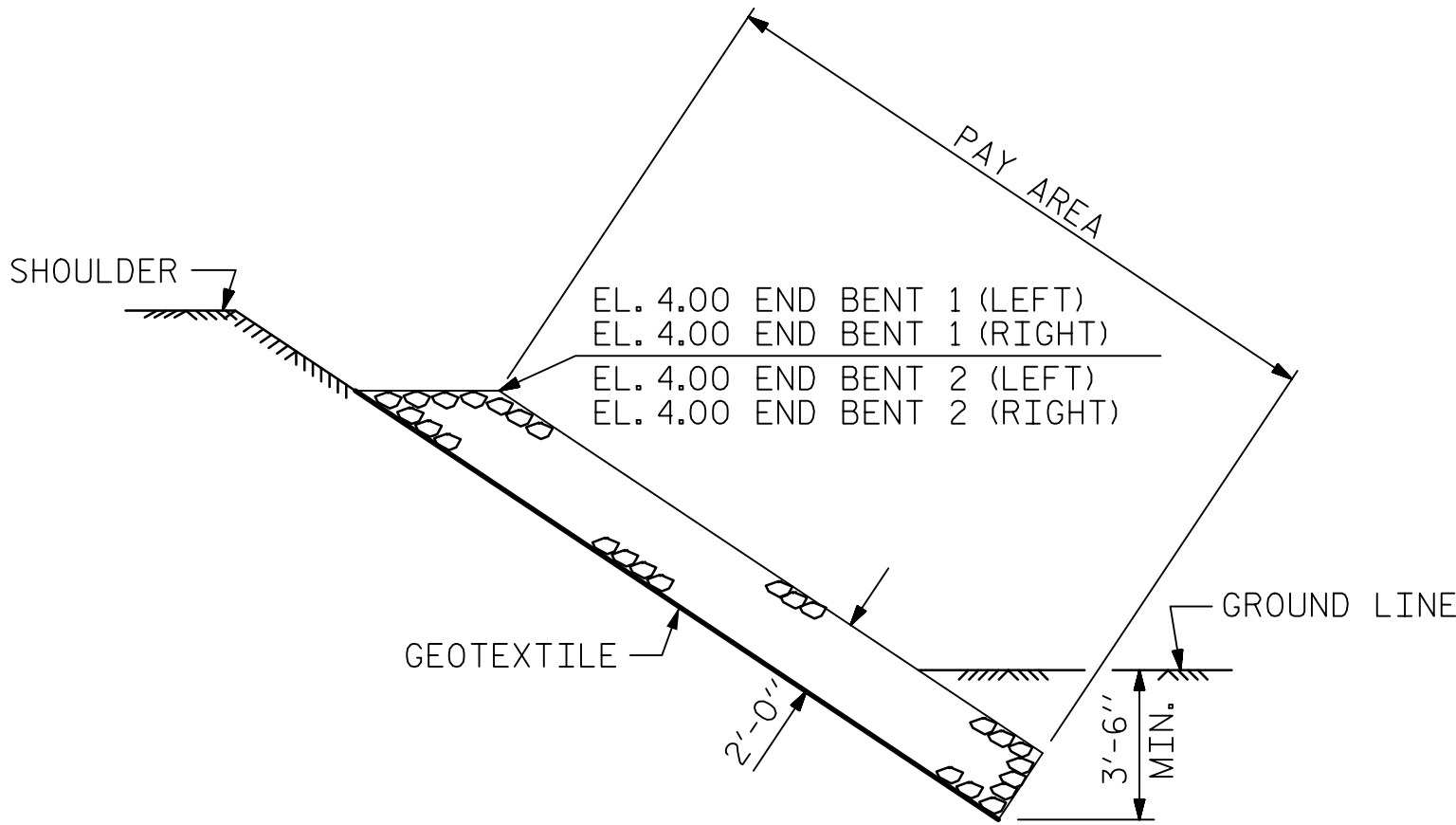
PLAN OF RIP RAP

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

ESTIMATED QUANTITIES		
BRIDGE @ STA. 15+93.75 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	133	150
END BENT 2	139	155



SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. 17BP.1.R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

DRAWN BY : M. K. TOM DATE : 2/3/15
CHECKED BY : R. L. WHITCHER DATE : 2/6/15
DESIGNED BY : M. K. TOM DATE : 2/3/15

6/17/2015
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matt_tom

Prepared by
URS
URS Corporation - North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
PHONE: 919/461-1100 FAX: 919/461-1415
NC L.I.C. # C-2243

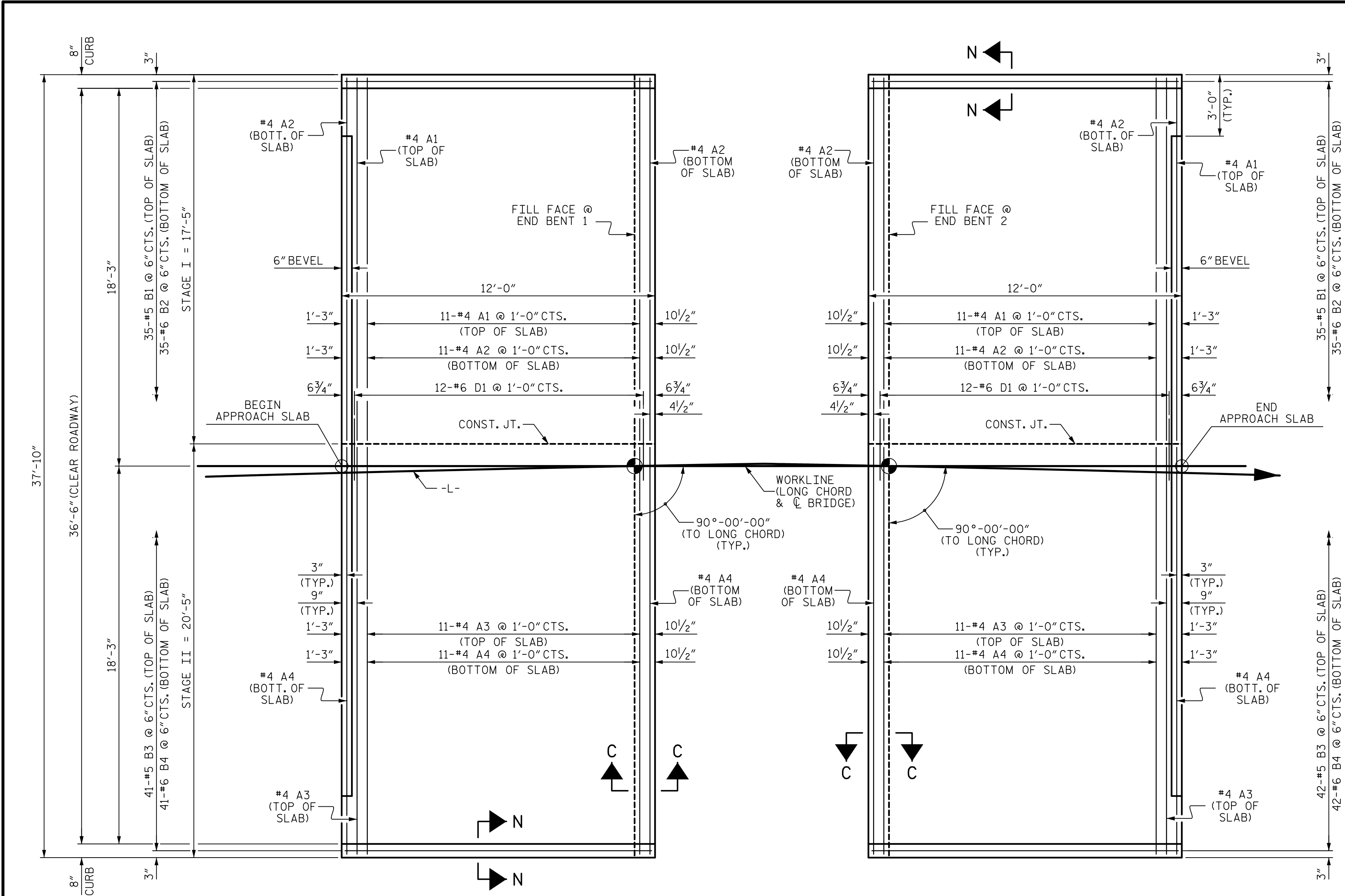


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

==RIP RAP DETAILS==

REVISIONS						SHEET NO. S-30
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 32
2			4			

STD. NO. RR1



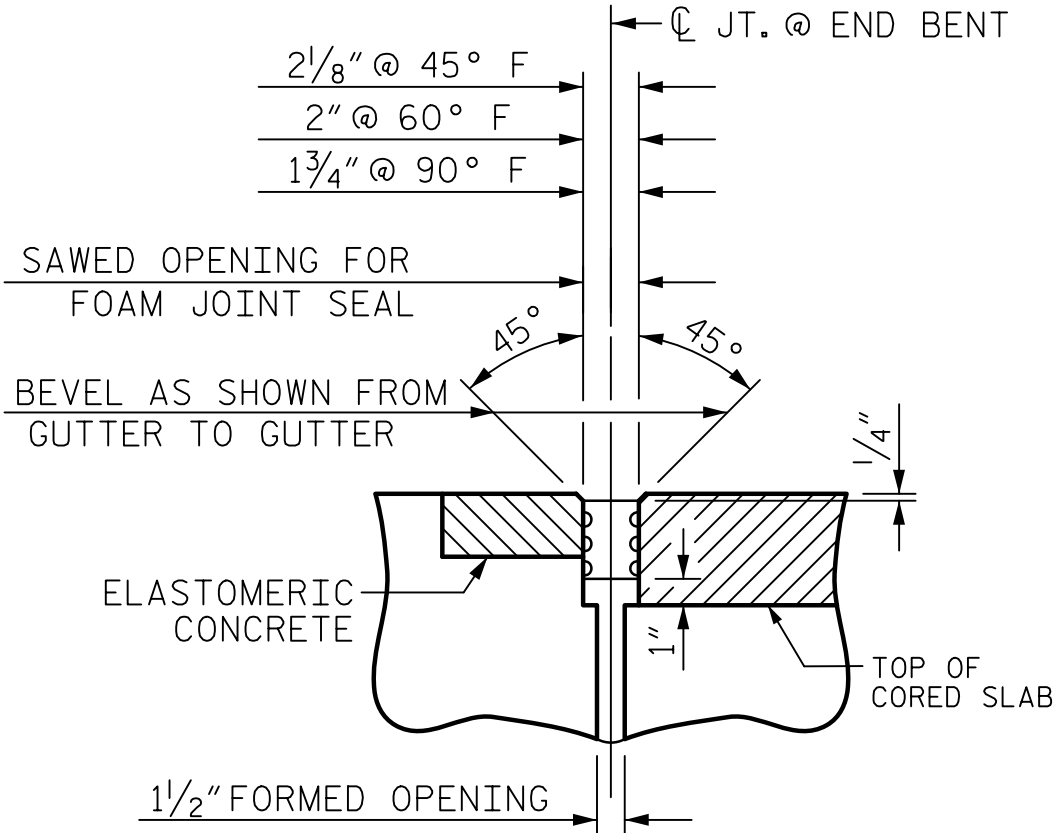
PLAN @ END BENT 1

PLAN @ END BENT 2

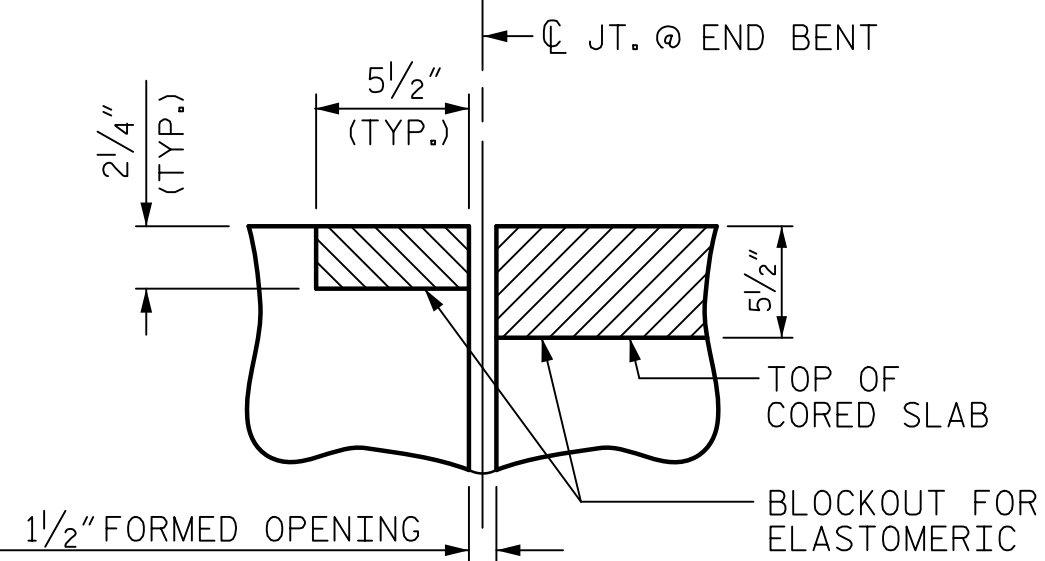
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	11.2
2	11.2
TOTAL	22.4

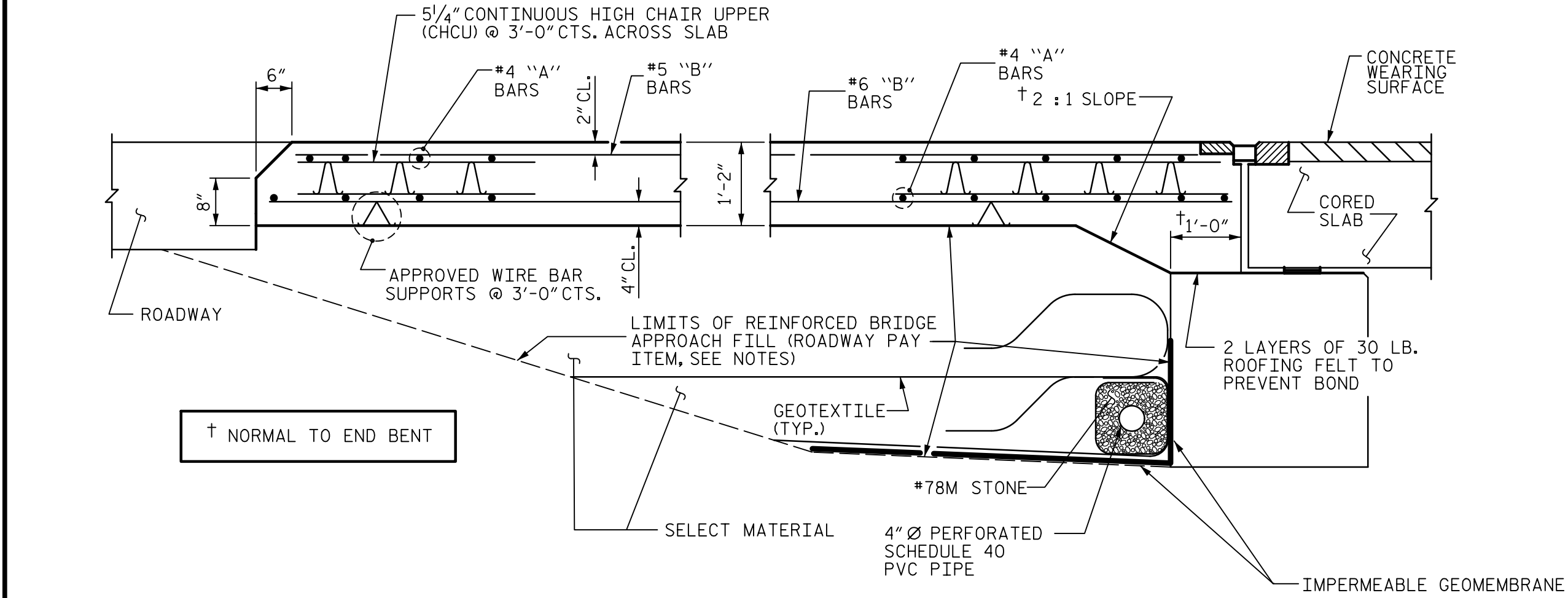
* BASED ON THE MINIMUM BLOCKOUT SHOWN.



SECTION C-C
FOAM JOINT SEAL
(EXPANSION)

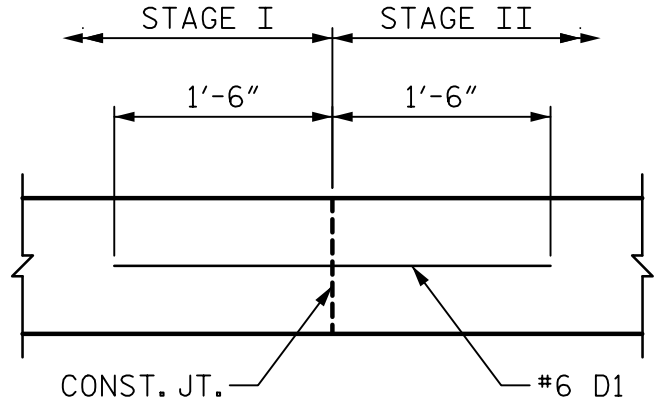


SECTION C-C
FOAM JOINT SEAL
(PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)

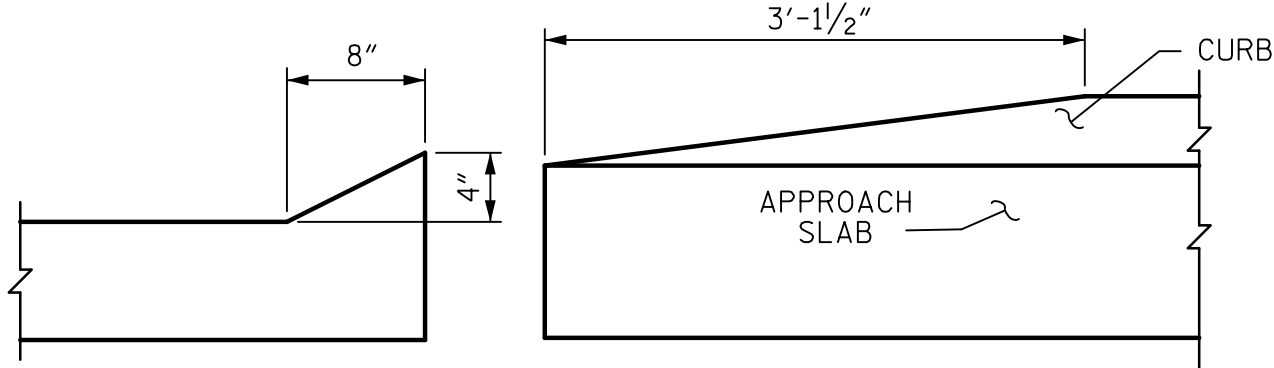


SECTION THRU SLAB

ASSEMBLED BY : R. L. WHITCHER	DATE : 10/28/14
CHECKED BY : M. K. TOM	DATE : 12/29/14
DESIGNED BY : R. L. WHITCHER	DATE : 10/28/14
DRAWN BY : SHS/MAA 5-09	REV. 12-11 MAA/AAC
CHECKED BY : BCH 5-09	REV. 8-14 MAA/TMG



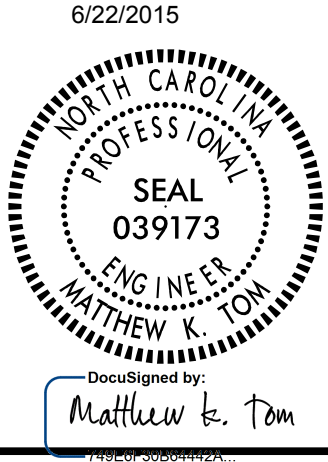
DOWEL DETAIL
(ELEVATION VIEW)



SECTION N-N

END OF CURB WITHOUT
SHOULDER BERM GUTTER

CURB DETAILS

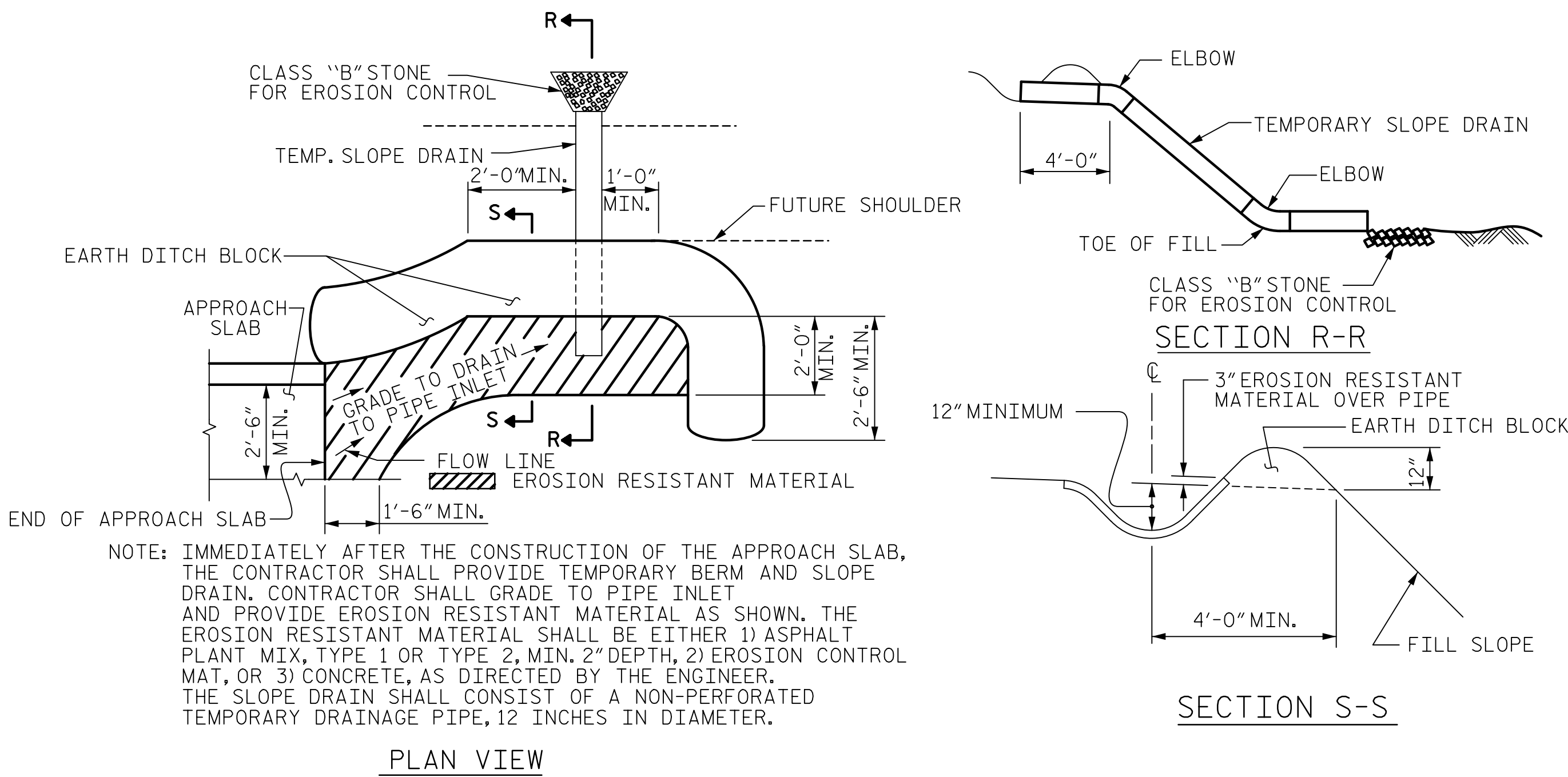


PROJECT NO. 17BP.1R.59
TYRRELL COUNTY
STATION: 15+93.75 -L-

SHEET 1 OF 2

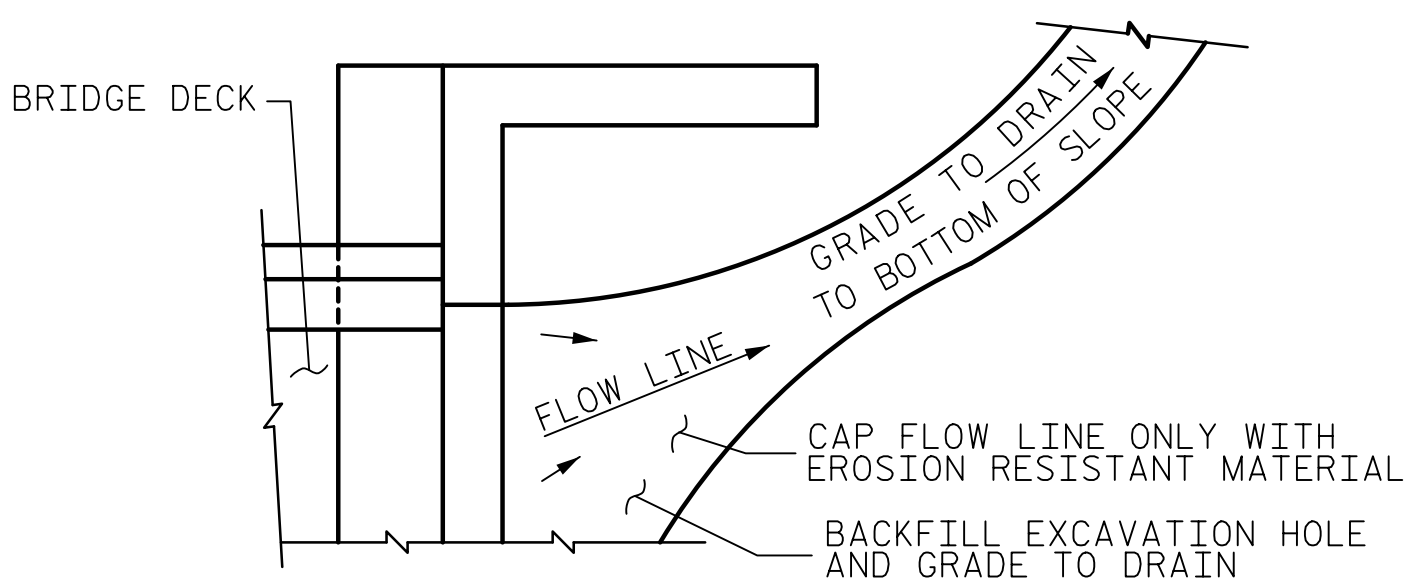
REVISIONS						SHEET NO. S-31
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			32

STD. NO. BAS_39_90S



TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. 17BP.1.R.59

TYRRELL COUNTY

STATION: 15+93.75 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH
SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			32

ASSEMBLED BY : R. L. WHITCHER DATE : 10/28/14
CHECKED BY : M. K. TOM DATE : 12/29/14
DESIGNED BY : R. L. WHITCHER DATE : 10/28/14

DRAWN BY : FCJ 11/88
CHECKED BY : ARB 11/88

REV. 10/1/11 MAA/GM
REV. 7/12 MAA/GM
REV. 6/13 MAA/GM

6/17/2015
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matt_tom



STD. NO. BAS4

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 METALIZING.

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. FINIS 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.

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