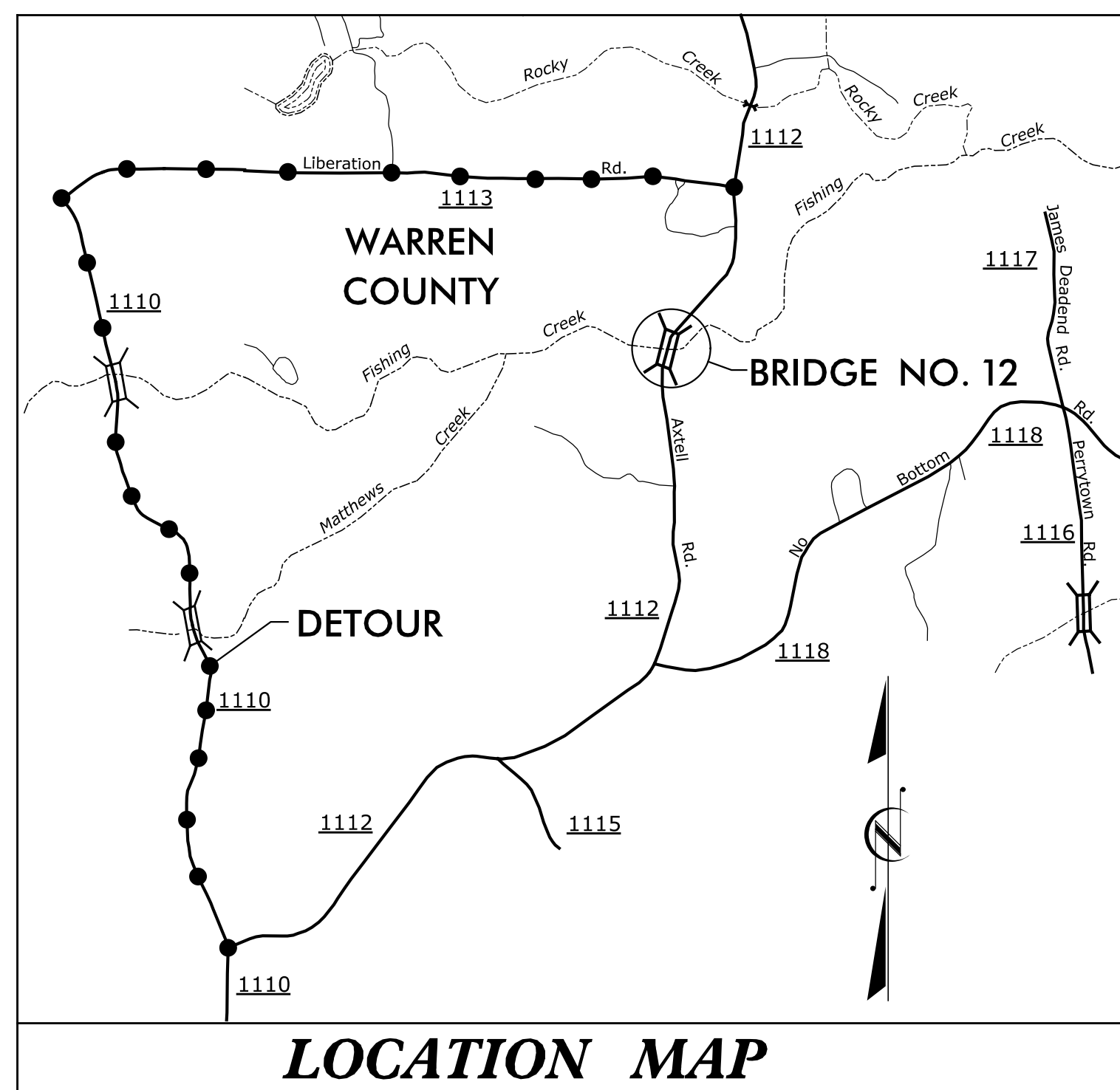


09/08/09

CONTRACT: 45351.1.24 TIP PROJECT: BD-5105X

See Sheet 1-A For Index of Sheets



LOCATION MAP

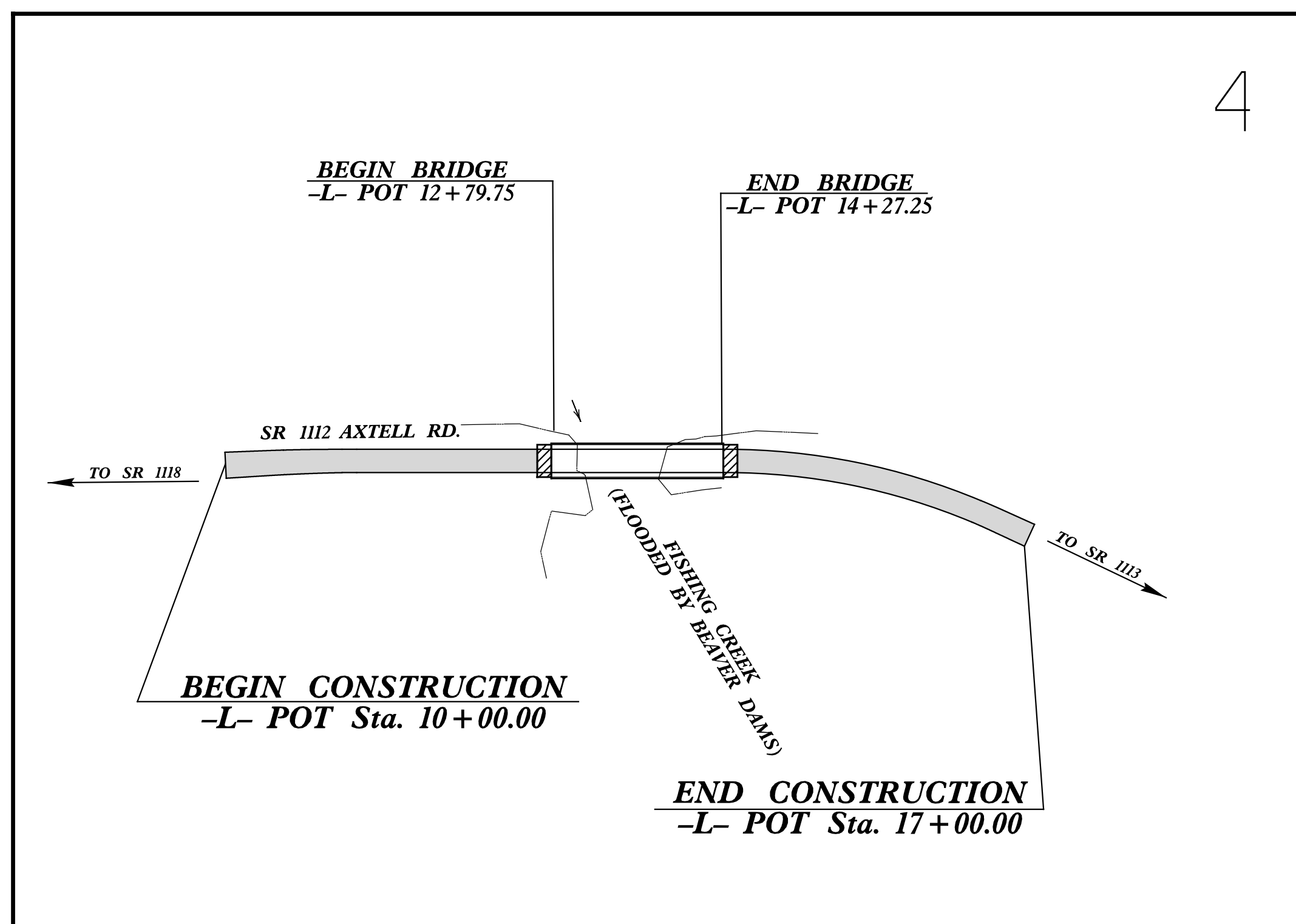
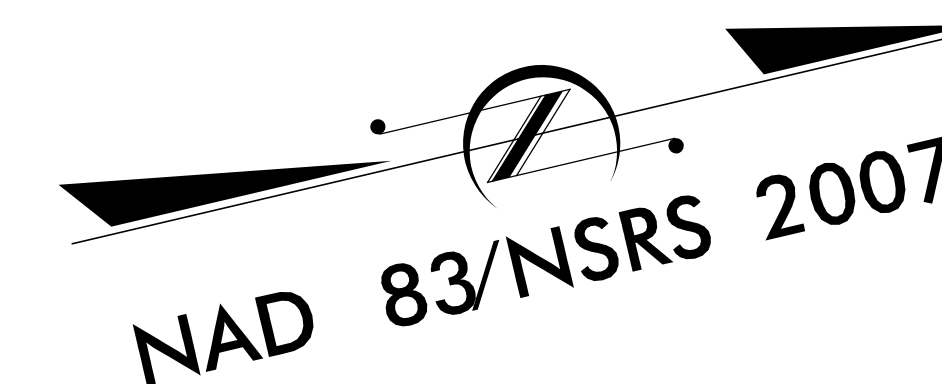
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WARREN COUNTY

LOCATION: BRIDGE NO. 12 ON SR 1112 (AXTELL ROAD)
OVER FISHING CREEK

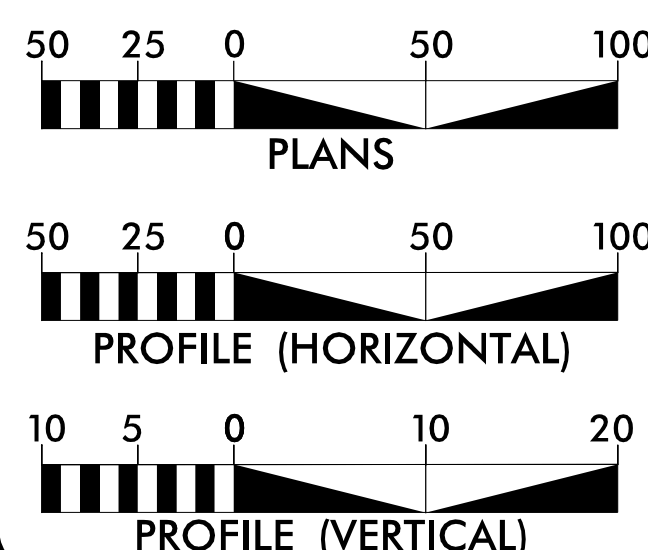
TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BD-5105X	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45351.1.24	BRZ-1112 (14)	P.E.	
45351.2.24	BRZ-1112 (14)	R/W	
45351.3.24	BRZ-1112 (14)	CONST.	



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

GRAPHIC SCALES



DESIGN DATA

ADT 2011 = 810
 ADT 2031 = 1460
 DHV = 10 %
 D = 50 %
 T = 6 % *
 V = 55 MPH
 * TTST = N/A DUAL N/A
 FUNC CLASS = LOCAL
 SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY STATE PROJECT BD-5105X = 0.105 MILES
 LENGTH STRUCTURES STATE PROJECT BD-5105X = 0.028 MILES
 TOTAL LENGTH STATE PROJECT BD-5105X = 0.133 MILES

PREPARED FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION IN THE OFFICE OF:



2012 STANDARD SPECIFICATIONS

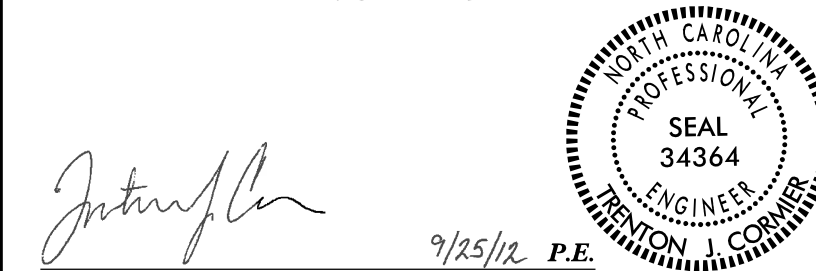
RIGHT OF WAY DATE: MARCH 2012

LETTING DATE: NOVEMBER 2012

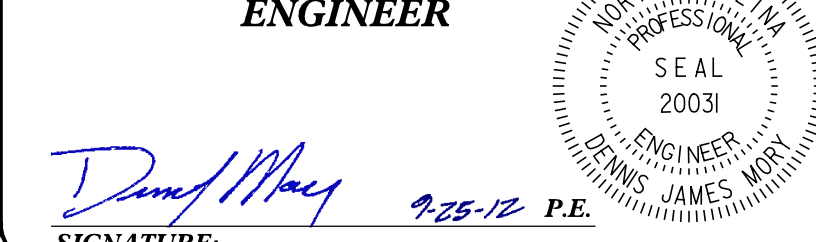
DENNIS MORY, PE
PROJECT ENGINEER

HENRY BARE
PROJECT DESIGN ENGINEER

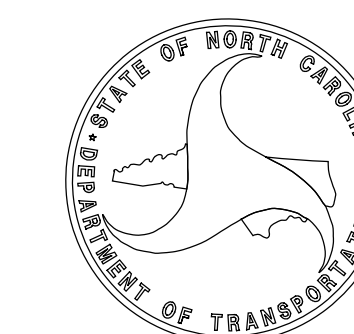
HYDRAULICS ENGINEER



ROADWAY DESIGN ENGINEER




DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA



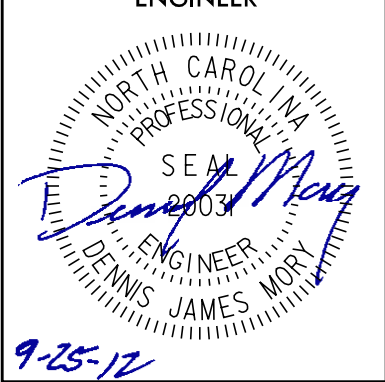
STATE HIGHWAY DESIGN ENGINEER

\$\$\$\$\$ SYSTEMS \$\$\$
 \$\$\$ CDN \$\$\$
 \$\$\$ USERNAME \$\$\$

8/17/99

PROJECT REFERENCE NO. <i>BD-5105X</i>	SHEET NO. <i>1-A</i>
 Florence & Hutcheson An ICA Company <small>5121 Kingdom Way, Raleigh, NC 27607 NC License No. F40258</small>	

ROADWAY DESIGN ENGINEER



GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01-17-12

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SHOULDER CONSTRUCTION:

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

GUARDRAIL:

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

END BENTS:

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

UTILITIES:

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

ROADWAY STANDARD DRAWINGS

2012 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.11	Bridge Approach Fills - Sub Regional Tier
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
840.20	Frames and Wide Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS GENERAL NOTES LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
3	DRAINAGE SUMMARY GUARDRAIL SUMMARY SUMMARY OF EARTHWORK SUMMARY OF PAVEMENT REMOVAL SUMMARY OF SHOULDER BERM GUTTER
4	PLAN & PROFILE TYPICAL SECTIONS & PAVEMENT SCHEDULE PARCEL INDEX DRAINAGE DITCH DETAILS
TCP-1 THRU TCP-2	TRAFFIC CONTROL PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
X-1 THRU X-4	CROSS-SECTIONS
S-1 THRU S-19	STRUCTURE PLANS
SN	STANDARD NOTES

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	○ EP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	⑫③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	---WLB---
Proposed Wetland Boundary	---WLB---
Existing Endangered Animal Boundary	---EAB---
Existing Endangered Plant Boundary	---EPB---

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	⋈
Foundation	□
Area Outline	□
Cemetery	↑
Building	□
School	□
Church	⊕
Dam	▭

HYDROLOGY:

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

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	○ RW
Proposed Right of Way Line with Iron Pin and Cap Marker	○ RW ▲
Proposed Right of Way Line with Concrete or Granite Marker	▲ RW
Existing Control of Access	○ CA
Proposed Control of Access	○ CA
Existing Easement Line	---E---
Proposed Temporary Construction Easement	---E---
Proposed Temporary Drainage Easement	---TDE---
Proposed Permanent Drainage Easement	---PDE---
Proposed Permanent Drainage / Utility Easement	---DUE---
Proposed Permanent Utility Easement	---PUE---
Proposed Temporary Utility Easement	---TUE---
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	---C---
Proposed Slope Stakes Fill	---F---
Proposed Wheel Chair Ramp	○ WCR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	▨

VEGETATION:

Single Tree	○
Single Shrub	○
Hedge	-----
Woods Line	-----
Orchard	○
Vineyard	□ Vineyard

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	○ S
Storm Sewer	---S---

UTILITIES:

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

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	□
Telephone Pedestal	⊕
Telephone Cell Tower	⊗
U/G Telephone Cable Hand Hole	□ PH
Recorded U/G Telephone Cable	---T---
Designated U/G Telephone Cable (S.U.E.*)	---T---
Recorded U/G Telephone Conduit	---TC---
Designated U/G Telephone Conduit (S.U.E.*)	---TC---
Recorded U/G Fiber Optics Cable	---TFO---
Designated U/G Fiber Optics Cable (S.U.E.*)	---TFO---

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line	---TU/L---
U/G Tank; Water, Gas, Oil	□
A/G Tank; Water, Gas, Oil	□
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

SUMMARY OF EARTHWORK

Table with 6 columns: STATION, STATION, UNCL. EXCAV., EMBANK. +%, BORROW, WASTE. Rows include station ranges and totals for waste to be used in lieu of borrow, shoulder construction, project totals, 5% to replace topsoil, and grand totals.

PAVEMENT REMOVAL SUMMARY

Table with 5 columns: SURVEY LINE, STATION, STATION, LOCATION LT/RT/CL, YD'. Rows show station ranges and total quantities for pavement removal.

SHOULDER BERM GUTTER SUMMARY

Table with 4 columns: SURVEY LINE, STATION, STATION, LENGTH. Rows show station ranges and total length for shoulder berm gutter.

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

Large table listing pipes, endwalls, and structures. Columns include Station, Location, Structure No., Invert Elevation, Slope, Pipe Size (12" to 48"), Material (DRAINAGE PIPE, C.S. PIPE, CLASS IV R.C. PIPE), ENDWALLS, QUANTITIES, TYPE OF GRATE, and REMARKS.

"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

Table summarizing guardrail details. Columns include Survey Line, Beg. Sta., End Sta., Location, Length (Straight, Shop Curved, Double Faced), Warrant Point (Approach End, Trailing End), "N" Dist., Total Shoulder Width, Flare Length, W (Approach End, Trailing End), Anchors (Type III, XI, GRAU 350, M-350, XIII, CAT-1, VI MOD, BIC, AT-1), Impact Attenuator (Type 350, EA, G, NG), Single Faced Guardrail, Remove Existing Guardrail, and Remarks.

12/06/07

8/17/99

DATUM DESCRIPTION

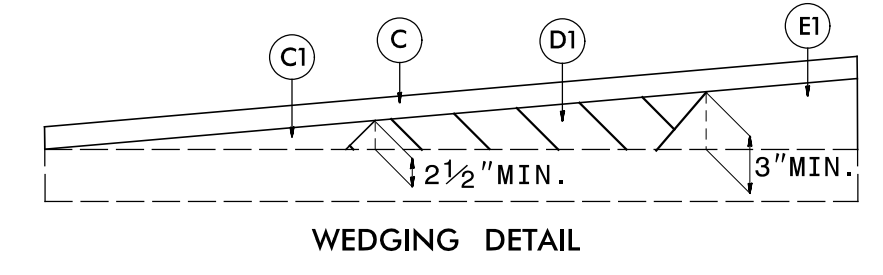
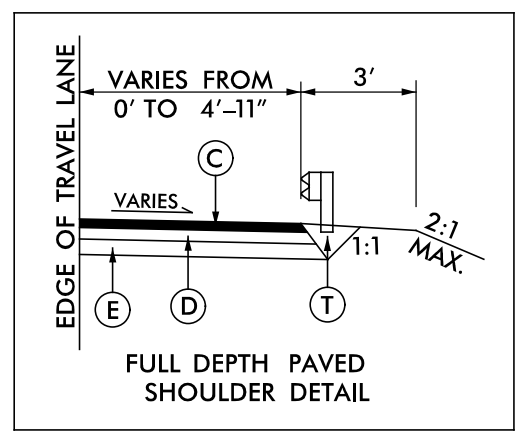
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "BL-3"

WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 965761.444(ft) EASTING: 2225095.192(ft) ELEVATION: 286.52(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.00006513

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION IS

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



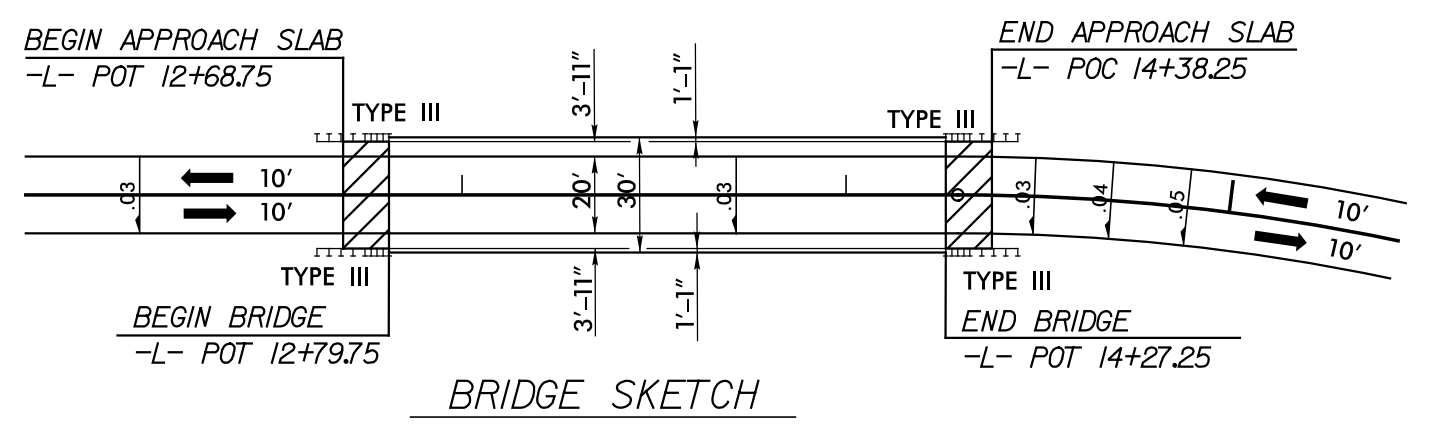
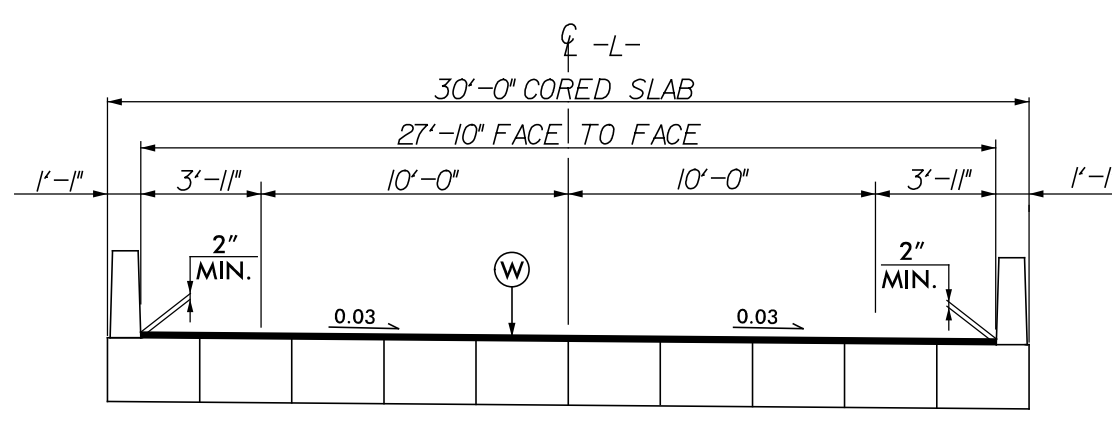
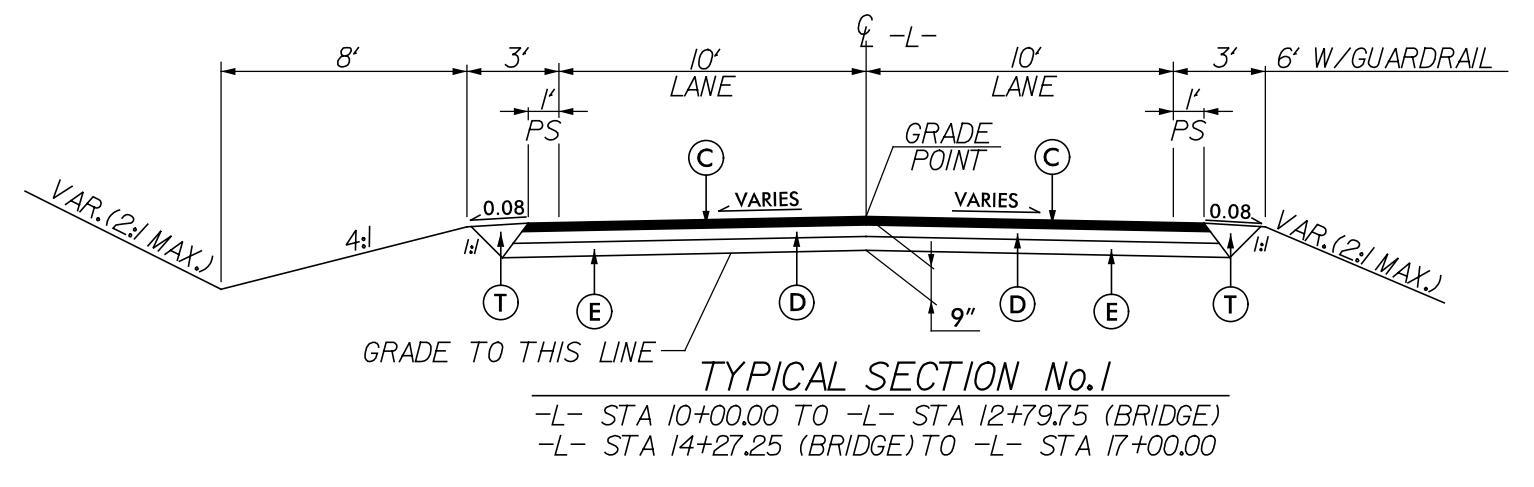
-L- COORDINATE LIST	
STATION	NORTH EAST
10+00	N 965105.56 E 2224900.34
11+00	N 965203.67 E 2224919.64
12+00	N 965301.03 E 2224942.47
13+00	N 965398.37 E 2224965.36
14+00	N 965495.72 E 2224988.24
15+00	N 965591.85 E 2225015.47
16+00	N 965681.86 E 2225058.73
17+00	N 965763.27 E 2225116.66

BL NO.	NORTH	EAST	ELEVATION	-L- STATION	OFFSET
BL-1	N 965105.45	E 2224886.69	293.43'	16+85.40	15.84 LT
BL-2	N 965383.08	E 2224948.64	287.55'	12+81.29	12.78' LT
BL-3	N 965761.44	E 2225095.19	286.52'	-	-

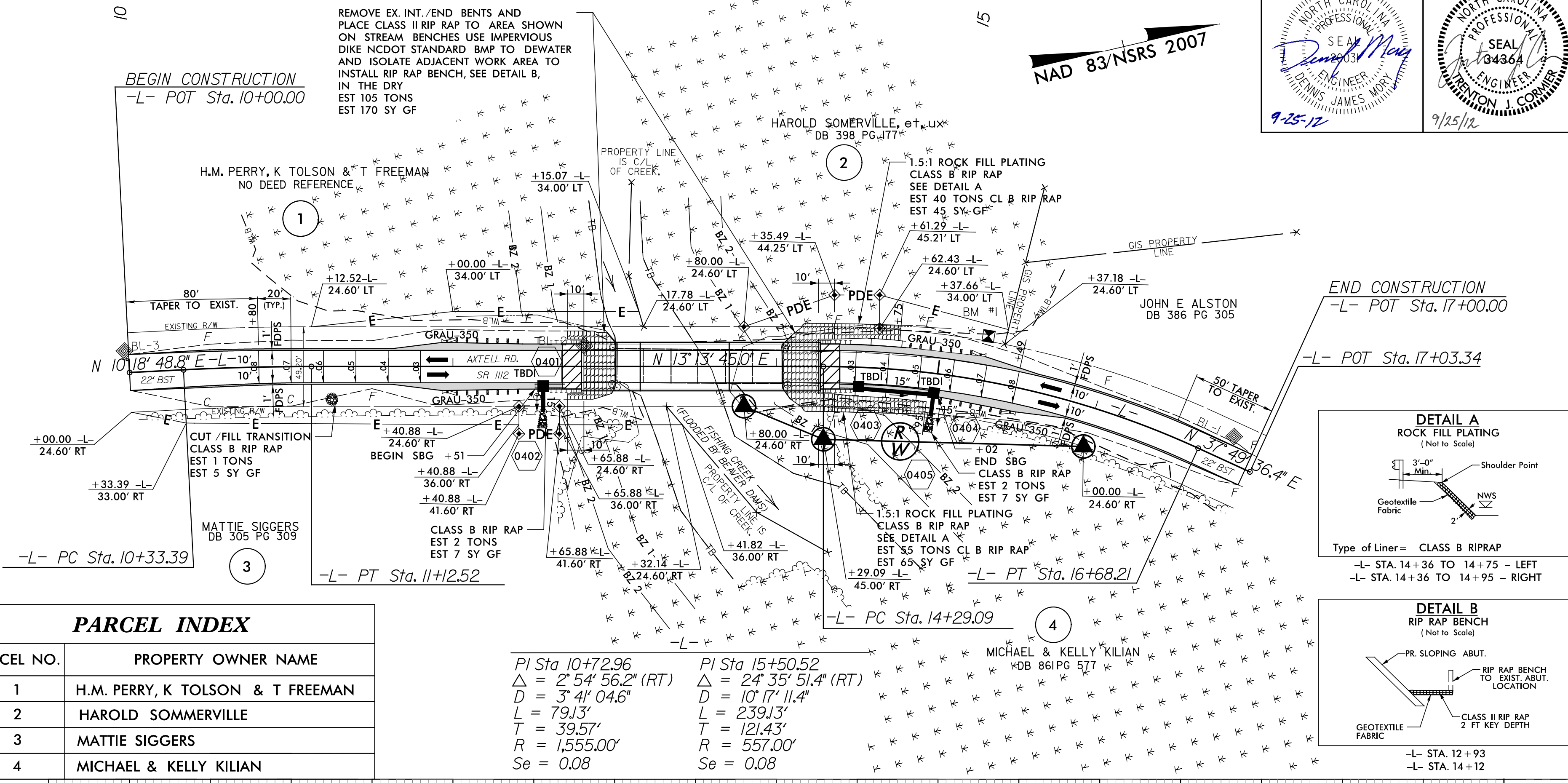
PAVEMENT SCHEDULE

(C)	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
(CI)	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
(D)	PROP. APPROX. 3 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.
(DI)	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
(E)	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
(EI)	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 1/2" IN DEPTH.
(T)	EARTH MATERIAL
(W)	PAVEMENT WEDGING

NOTE: FULL DEPTH PAVED SHOULDER REQUIRED AT GUARDRAIL LOCATIONS (SEE FULL DEPTH PAVED SHOULDER DETAIL)

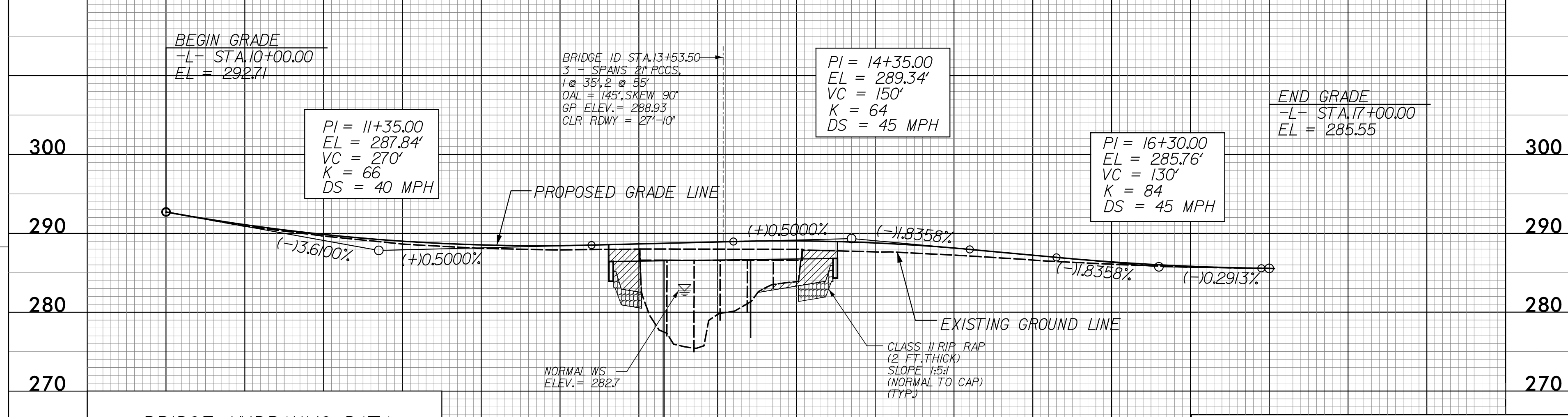


NOTE: TOP DOWN CONSTRUCTION - NO CAUSEWAYS PERMITTED



PARCEL INDEX

PARCEL NO.	PROPERTY OWNER NAME
1	H.M. PERRY, K TOLSON & T FREEMAN
2	HAROLD SOMMERVILLE
3	MATTIE SIGGERS
4	MICHAEL & KELLY KILIAN



BRIDGE HYDRAULIC DATA

260	DESIGN DISCHARGE = 3300 CFS
260	DESIGN FREQUENCY = 25 YRS
260	DESIGN HW ELEVATION = 286.9 FT
260	BASE DISCHARGE = 4987 CFS
260	BASE FREQUENCY = 100 YRS
260	BASE HW ELEVATION = 288.2 FT
260	OVERTOPPING DISCHARGE = 4930 CFS
260	OVERTOPPING FREQUENCY = 100 - YRS
260	OVERTOPPING ELEVATION = 288.5 FT
250	DATE OF SURVEY = 9/05/11
250	W.S. ELEVATION AT DATE OF SURVEY = 282.7 FT

PROJECT NO. BD-5105X
 COUNTY: WARREN
 STATION: 13+53.50 -L- (90 SKEW)
 REPLACES BRIDGE NO. 12

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE NO. 12 ON SR 1112
 OVER FISHING CREEK

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

FH Florence & Hutcheson
 An ICA Company
 5121 Kingdom Way, Raleigh, NC 27607
 NC License No: F-0258

PROJECT REFERENCE NO. **BD-5105X** SHEET NO. **4**

R/W SHEET NO.

ROADWAY DESIGN ENGINEER: [Signature]

HYDRAULICS ENGINEER: [Signature]

SEAL 134364

9-25-12

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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 OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) 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.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.
- D) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.
- E) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKING AND MARKERS

- G) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING
SR 1112 (AXTELL RD)	PAINT

- H) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE ACCORDING TO THE ROADWAY STANDARDS.

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

MISCELLANEOUS

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

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1110.02	PORTABLE WORK ZONE SIGNS
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

PHASING

STEP 1

USING ROADWAY STANDARD DRAWING NUMBER 1101.04, SHEET 1 OF 1, INSTALL ALL DETOUR SIGNING KEEPING SIGNS COVERED.

STEP 2

PRIOR TO CLOSING SR 1112 (AXTELL ROAD), UNCOVER ALL DETOUR SIGNING AND OPEN DETOUR TO TRAFFIC.

USING ROADWAY STANDARD DRAWING NUMBER 1101.03, SHEET 1 OF 9, CLOSE SR 1112 (AXTELL RD.).

STEP 3

DISMANTLE AND REMOVE EXISTING BRIDGE.

STEP 4

COMPLETE CONSTRUCTION OF PROPOSED STRUCTURE, APPROACH ROADWAY TIE-INS, AND ASSOCIATED ITEMS.

STEP 5

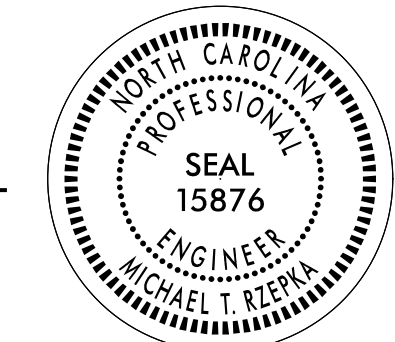

PLACE FINAL PAVEMENT MARKINGS ON SR 1112 (AXTELL RD.) AND OPEN TO TRAFFIC.

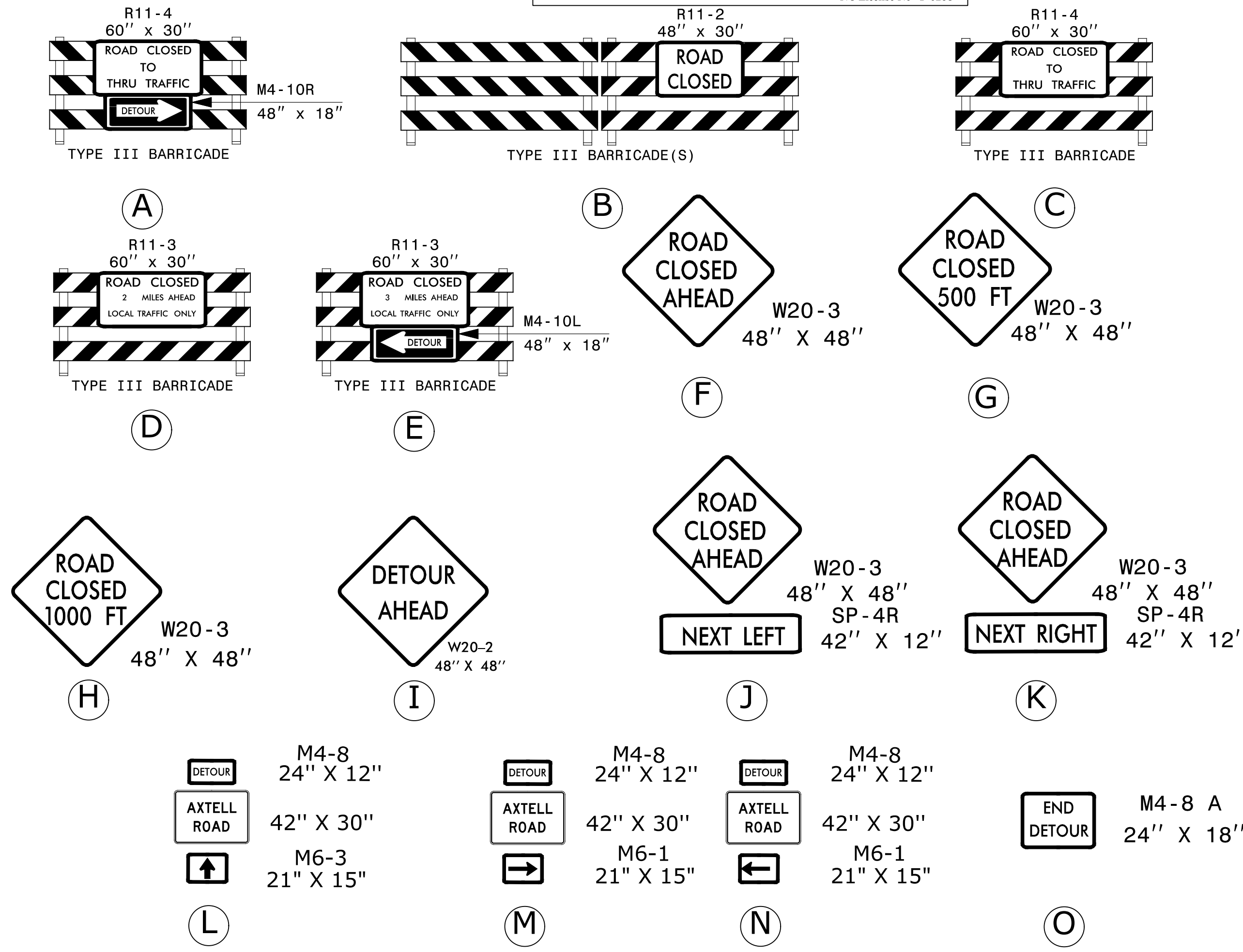
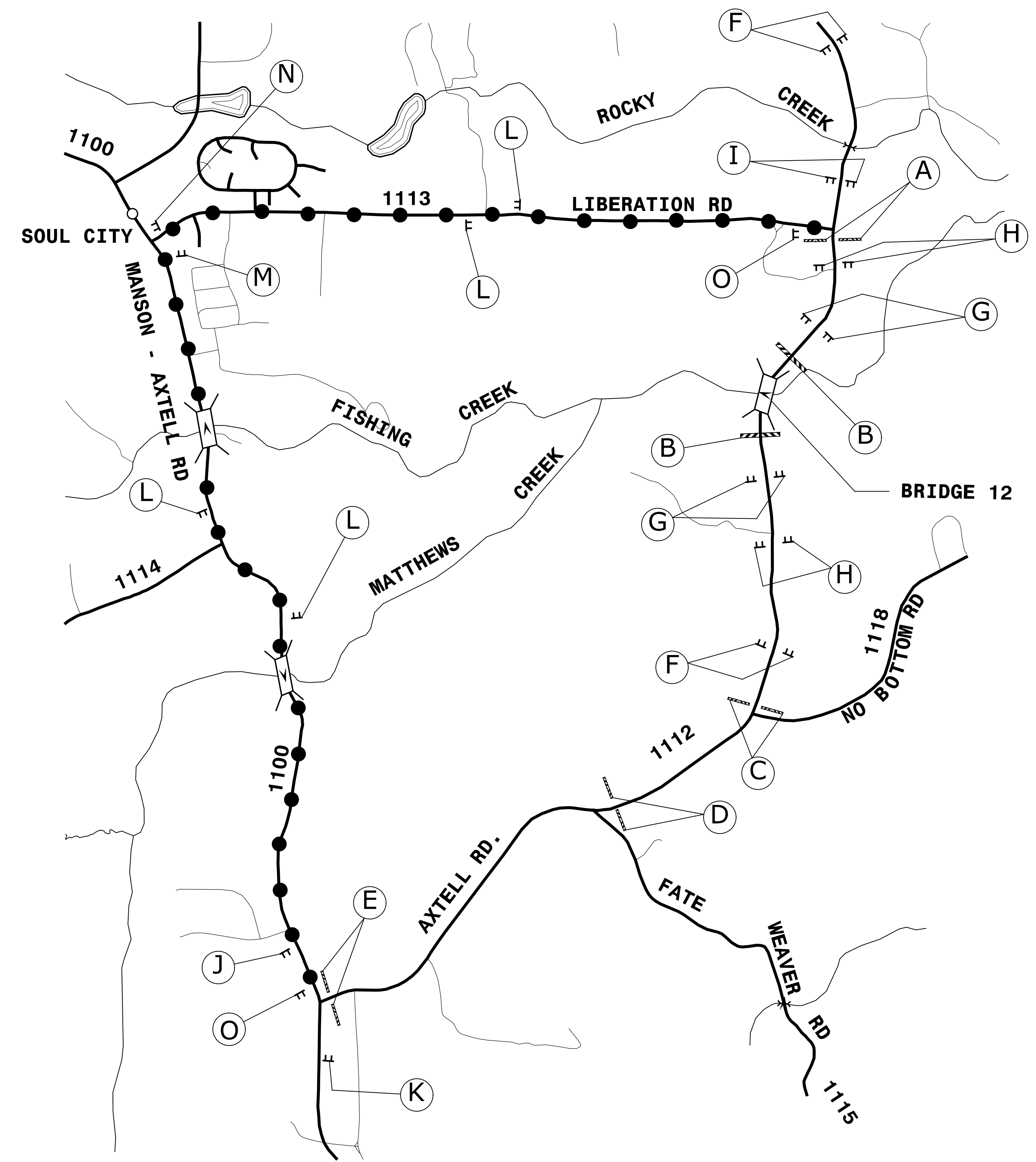
STEP 6

USING ROADWAY STANDARD DRAWING NUMBER 1101.04, SHEET 1 OF 1, REMOVE ALL DETOUR SIGNING AND ALL TRAFFIC CONTROL DEVICES.

FINAL PAVEMENT MARKING SCHEDULE

DESCRIPTION	PAY ITEM
WHITE EDGELINE (2X)	PAINT (4")
DOUBLE YELLOW CENTER LINE (2X)	PAINT (4")

APPROVED: <i>Michael T. Zienka</i> DATE: 9-17-12	GENERAL NOTES, PHASING, ROADWAY STANDARD DRAWINGS FINAL PAVEMENT MARKING SCHEDULE	
SEAL 	SCALE: NONE	
	DATE: SEPT. '12	
	DWG. BY: GEP	
	DESIGN BY: MTR	
REVIEWED BY: MTR	CADD FILE	REVISIONS



SIGN NUMBER: name	BACKG COLOR: Fluorescent Orange	DESIGN BY: GEP	CHECKED BY: DIV	DATE: Jan 04, 2012
TYPE: D	COPY COLOR: Black	PROJECT ID: BD - 5105X	DIV: DIV	
QUANTITY: SEE PLANS				
SIGN WIDTH: 3'-6"				
HEIGHT: 2'-6"				
TOTAL AREA: 8.8 Sq.Ft.				
BORDER TYPE: RECESS				
RECESS: 0.50"				
WIDTH: 0.75"				
RADII: 1.875"				
NO. Z BARS:				
LENGTH:				

USE NOTES: 1 & 2

- Legend and border shall be direct applied black non-reflective sheeting.
- Background shall be Type VII, VIII, or IX (prismatic) fluorescent orange retroreflective sheeting.

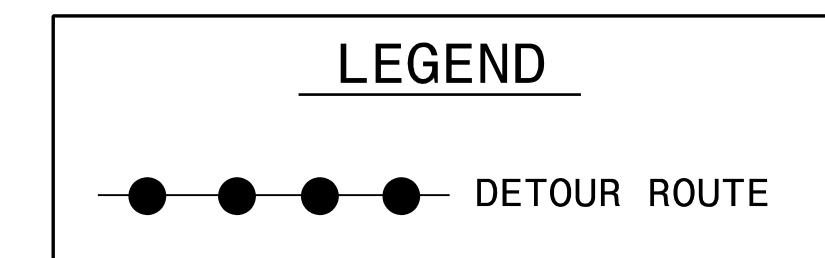
MAT'L: 0.080" (2.0 mm) ALUMINUM

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter locations are panel edge to lower left corner

Letter	X	Y	Text Length
A	7.1	12.7	27.8
X	12.7	17.2	27.8
T	17.2	21.8	27.8
E	21.8	26.6	27.8
L	26.6	31.2	27.8
L	31.2	35.8	27.8
R	0	15.9	20.1
O	15.9	21	20.1
A	21	27	20.1
D	27	33	20.1



APPROVED: *Michael J. Rzepka* DATE: 9-17-12

SEAL

DETOUR FOR AXTELL RD CLOSURE

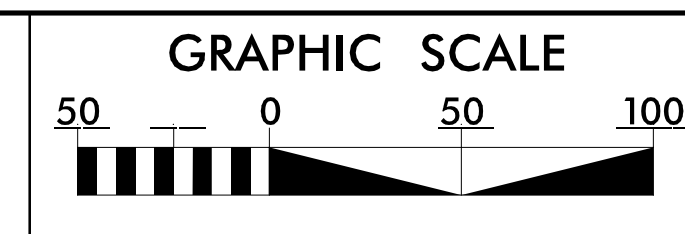
SCALE: NONE
 DATE: SEPT. '12
 DWG. BY: GEP
 DESIGN BY: MTR
 REVIEWED BY: MTR

REVISIONS

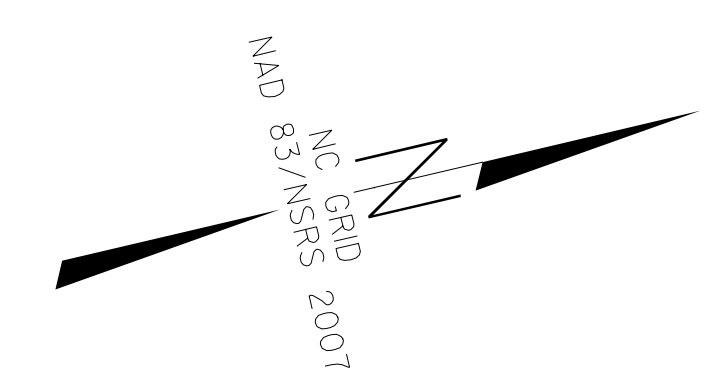
NO.	DESCRIPTION

CADD FILE

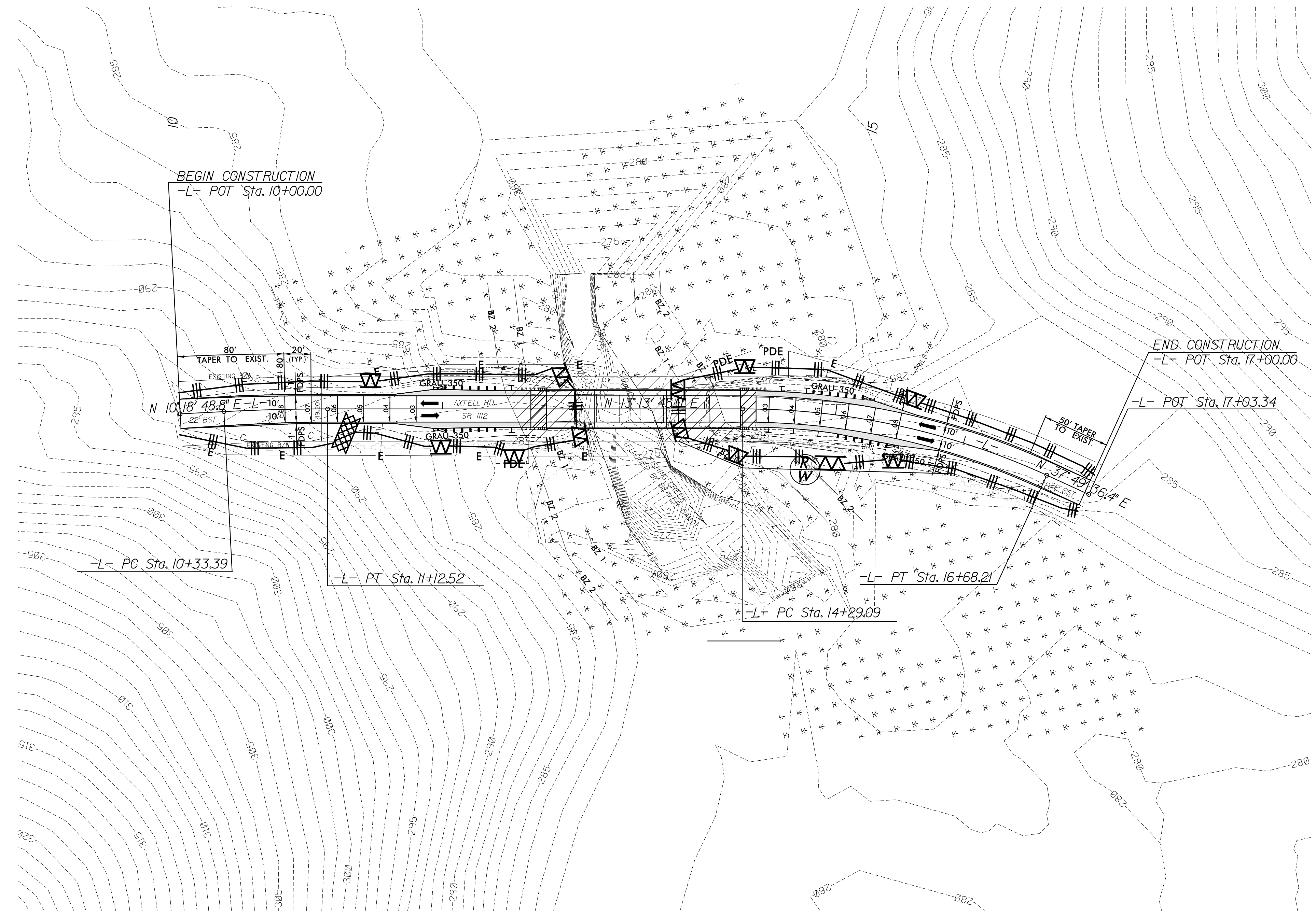
9/17/2012 P:\LIBR\Projects\Div05\BD-5105X\Traffic\TrafficControl\TCP\DETOUR.dgn



PROJECT REFERENCE NO.	SHEET NO.
BD-5105X	EC-1/CONST.4
RW SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	
LEVEL III CERTIFIED BY: ALEXANDER SNIDER, E.I. CERTIFICATION NUMBER: 3064 ISSUED: SEPTEMBER 28, 2012	



CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	▲▲▲▲▲
1633.01	Temporary Rock Silt Check Type-A	▨
	Coir Fiber Wattle	-CFW-

COIR FIBER WATTLE SHALL BE USED
IN LIEU OF SPECIAL SEDIMENT CONTROL
FENCE AS DIRECTED BY ENGINEER

ALEXANDER SNIDER, E.I.
ROADSIDE ENVIRONMENTAL ENGINEER
3064
LEVEL III CERTIFICATION NUMBER

TRENTON J. CORMIER, P.E.
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER
118
LEVEL III CERTIFICATION NUMBER

 ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

NOTE:
ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED
WITHIN EXISTING RW OR EASEMENT.

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY
WITH THE REGULATIONS SET FORTH BY THE
NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011
ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND
NATURAL RESOURCES DIVISION OF WATER QUALITY.

Prepared in the Office of:
FLORENCE & HUTCHESON
5121 KINGDOM WAY, SUITE 100
RALEIGH NC 27607
NC License No: F-0258
2012 STANDARD SPECIFICATIONS

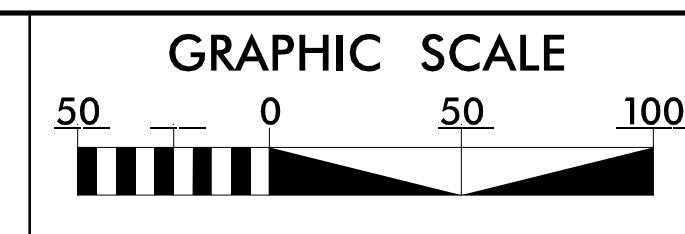
Roadway Standard Drawings

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

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



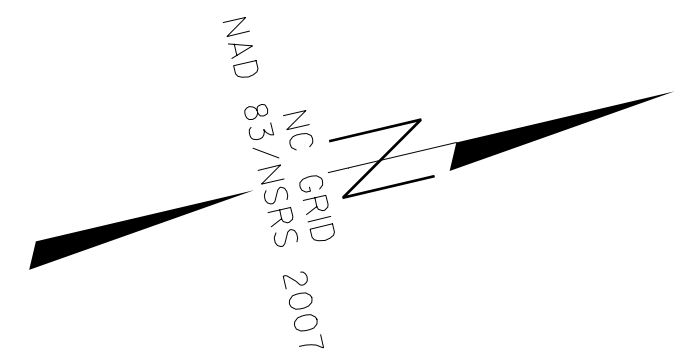
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 K. R. Associates, P.C.



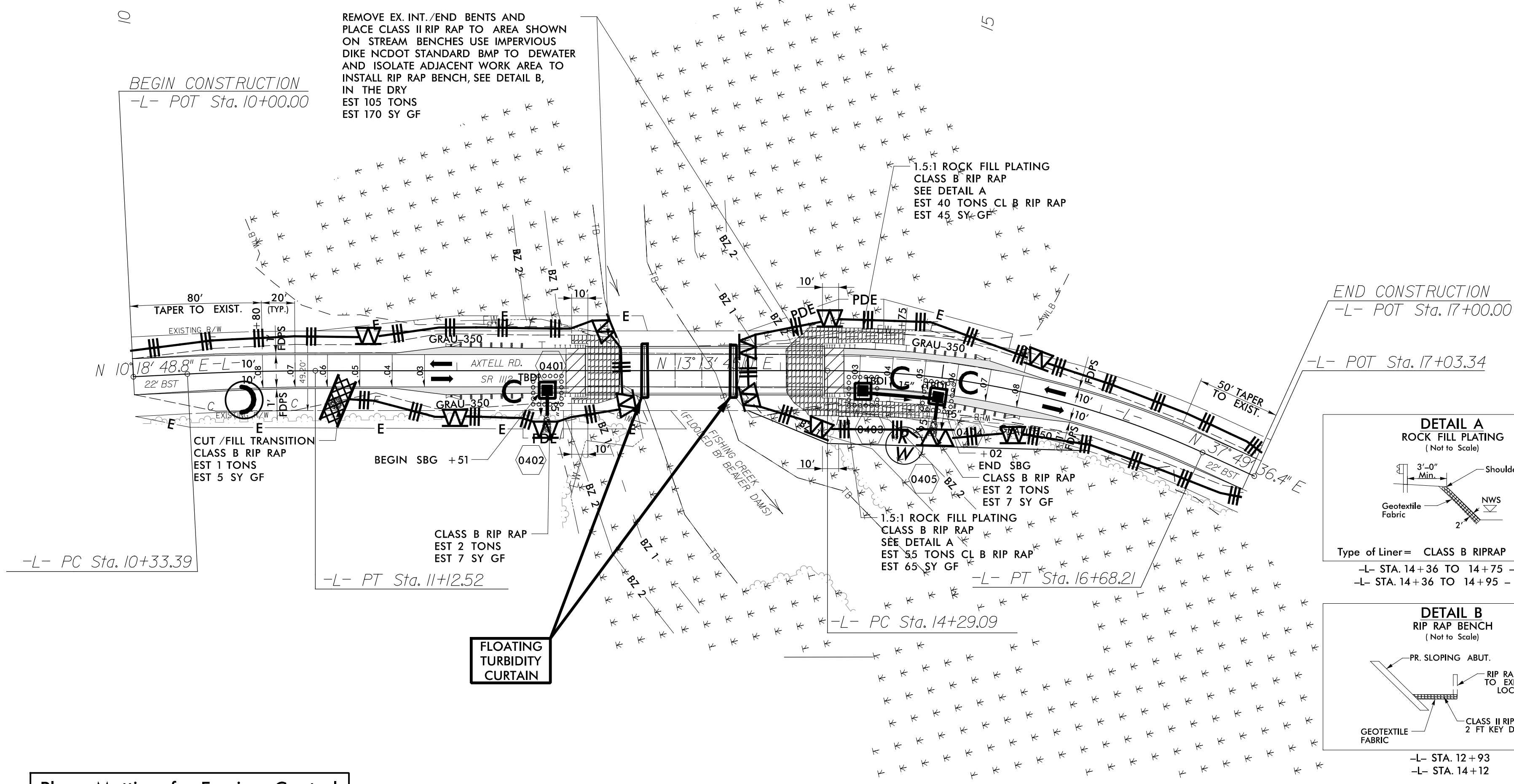
PROJECT REFERENCE NO. BD-5105X SHEET NO. EC-2/CONST.4
 RW SHEET NO. _____
 ROADSIDE ENVIRONMENTAL PROJECT ENGINEER

LEVEL III CERTIFIED BY:
 ALEXANDER SNIDER, E.I.
 CERTIFICATION NUMBER: 3064
 ISSUED: SEPTEMBER 28, 2012

NOTE: TOP DOWN CONSTRUCTION - NO CAUSEWAYS PERMITTED



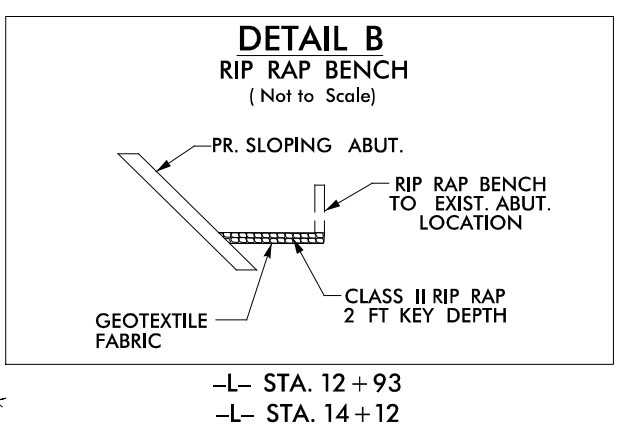
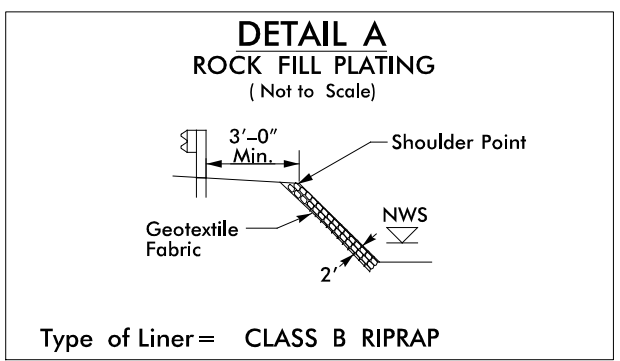
FINAL EROSION CONTROL FOR
 CONSTRUCTION SHEET 4



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	▲▲▲▲▲▲▲▲
1632.03	Rock Inlet Sediment Trap: Type C	C
1633.01	Temporary Rock Silt Check Type-A	⊗
1635.02	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM) Coir Fiber Wattle	⊙ -CFW-

COIR FIBER WATTLE SHALL BE USED IN LIEU OF SPECIAL SEDIMENT CONTROL FENCE AS DIRECTED BY ENGINEER



Place Matting for Erosion Control on 2:1 Slope

Contractor will install impervious dike to dewater both streambanks to allow for removal of existing concrete footers in the dry
 Use "NCDOT Best Management Practices for Construction and Maintenance Activities" manual for isolation and dewatering operations

NOTE: IMPERVIOUS DIKE SHALL BE CONSIDERED INCIDENTAL TO THE REMOVAL OF THE EXISTING STRUCTURE.

ALEXANDER SNIDER, E.I.
 ROADSIDE ENVIRONMENTAL ENGINEER

3064
 LEVEL III CERTIFICATION NUMBER

TRENTON J. CORMIER, P.E.
 ROADSIDE ENVIRONMENTAL PROJECT ENGINEER

118
 LEVEL III CERTIFICATION NUMBER

NOTE: ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING RW OR EASEMENT.

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

Prepared in the Office of:
FLORENCE & HUTCHESON
 5121 KINGDOM WAY, SUITE 100
 RALEIGH NC 27607
 NC License No: F-0258

2012 STANDARD SPECIFICATIONS

Roadway Standard Drawings

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

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1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type A
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1630.01 Riser Basin	1634.01 Temporary Rock Sediment Dam Type A
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1630.03 Temporary Silt Ditch	1635.01 Rock Pipe Inlet Sediment Trap Type A
1630.04 Stilling Basin	1635.02 Rock Pipe Inlet Sediment Trap Type B
1630.05 Temporary Diversion	1640.01 Coir Fiber Baffle
1630.06 Special Stilling Basin	1645.01 Temporary Stream Crossing
1631.01 Matting Installation	



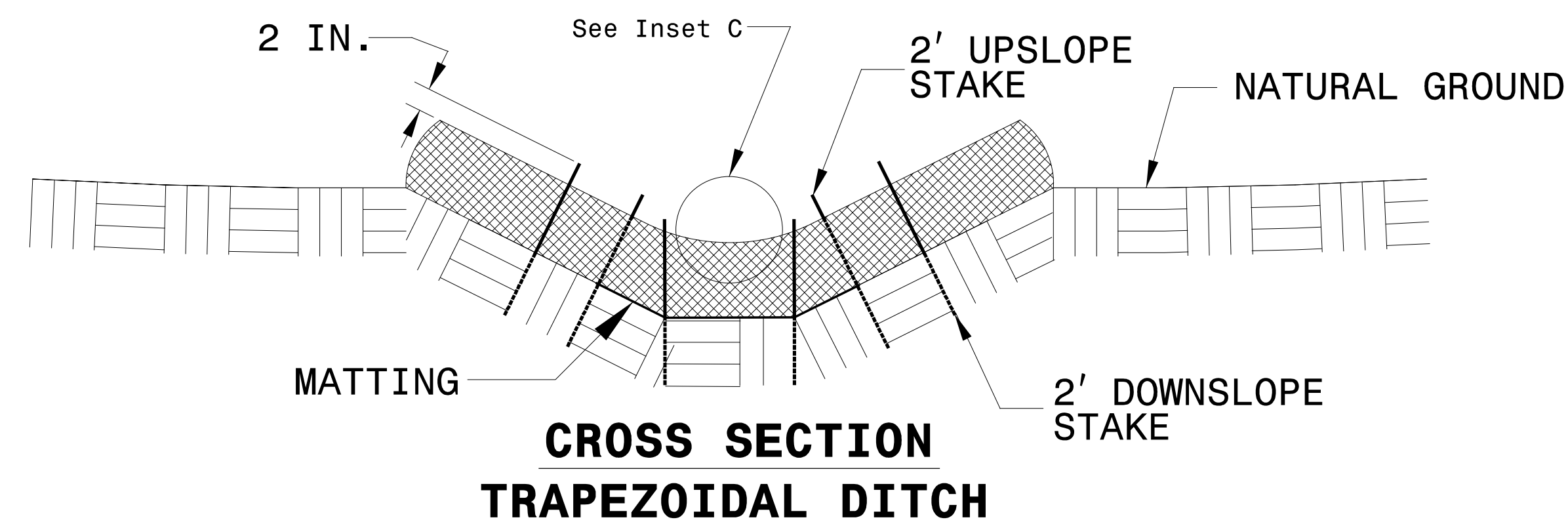
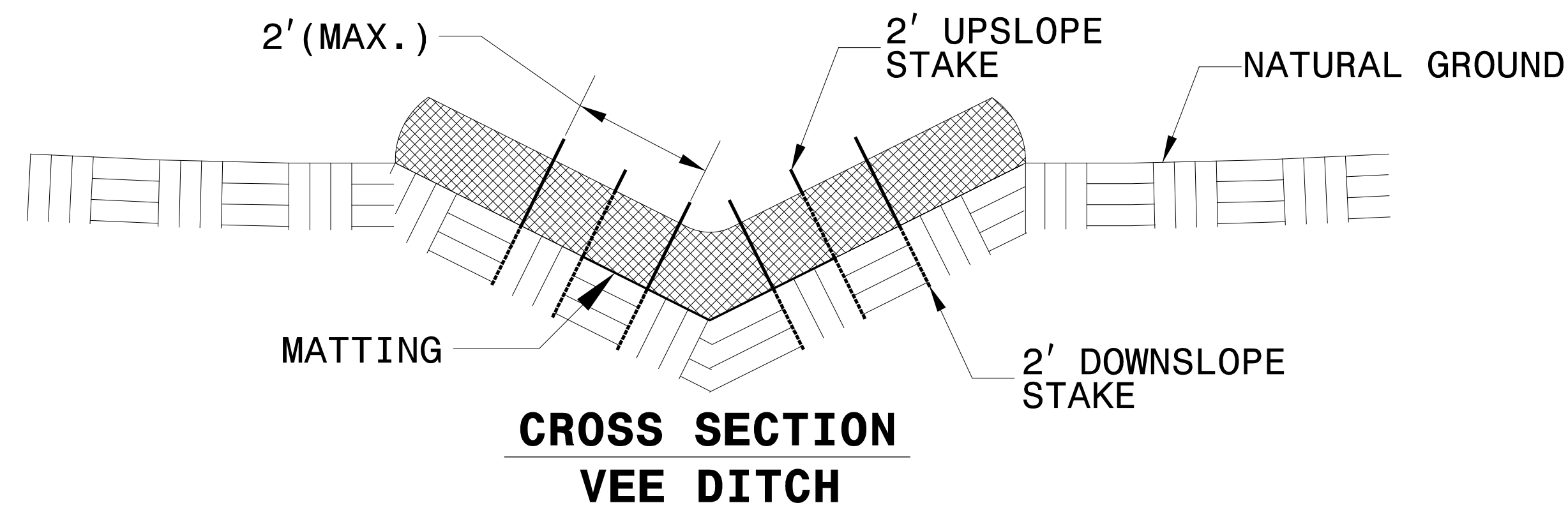
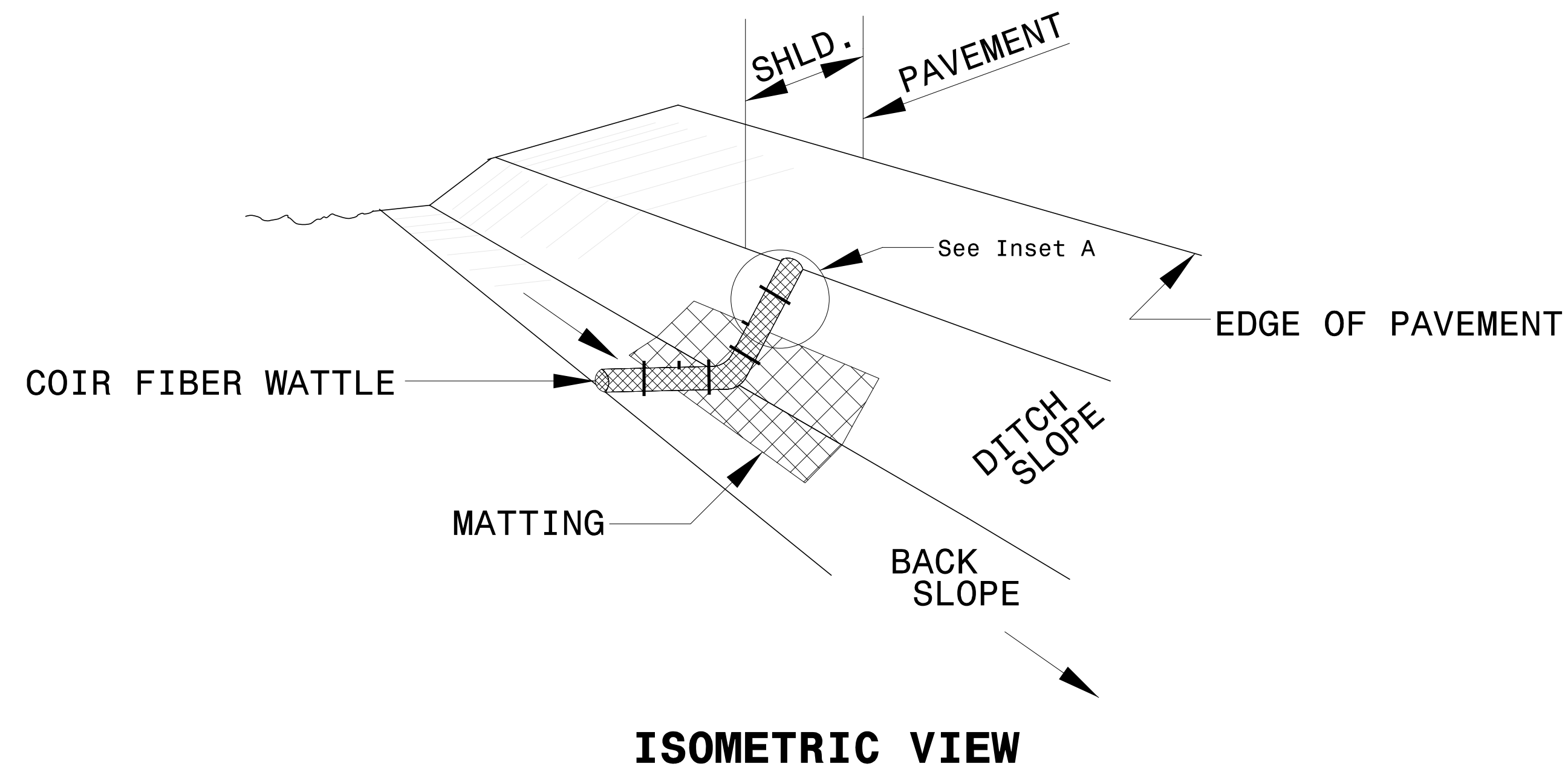
10/1/2012
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 K. R. Associates, P.C.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
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.

COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



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.

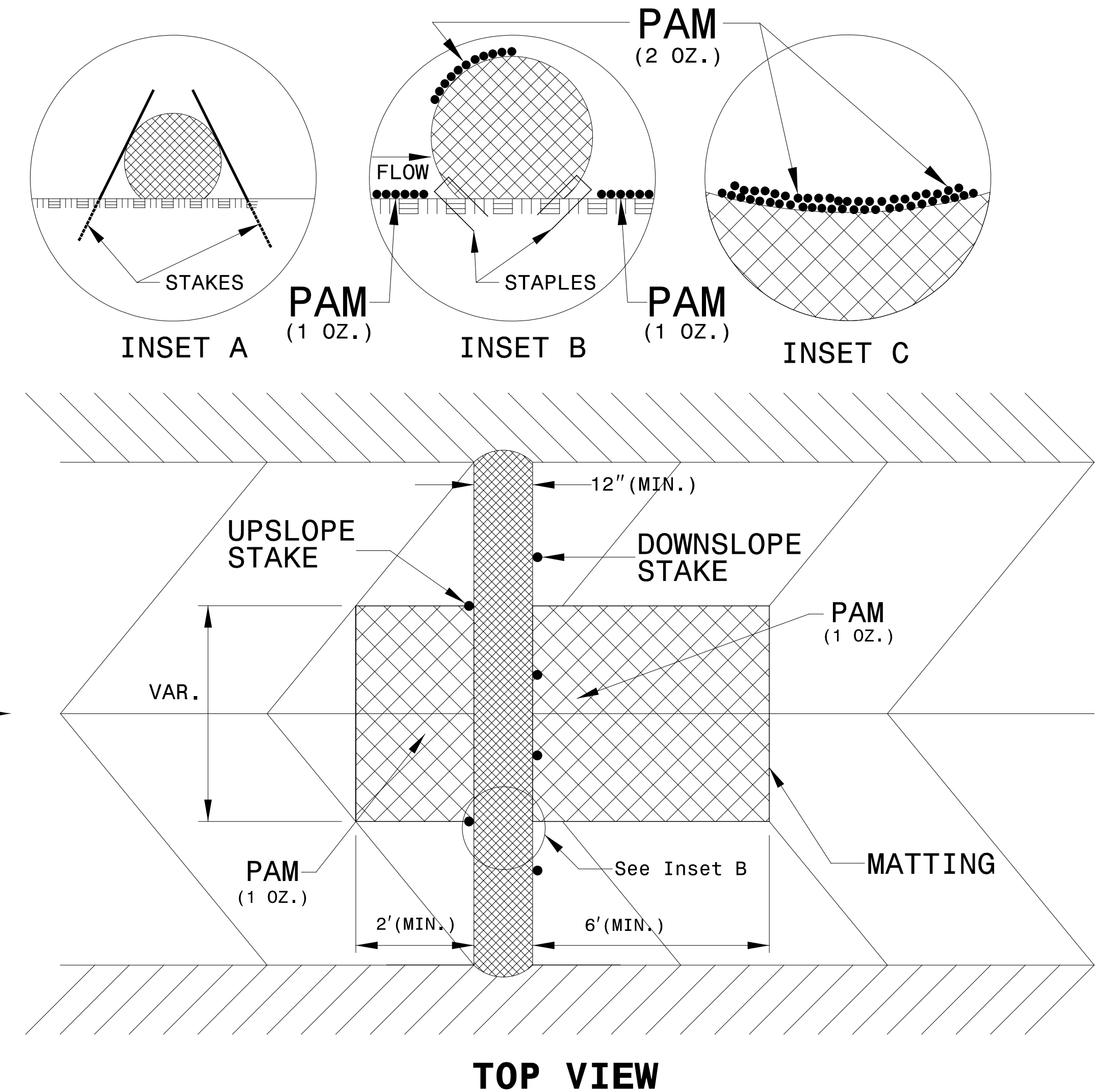
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

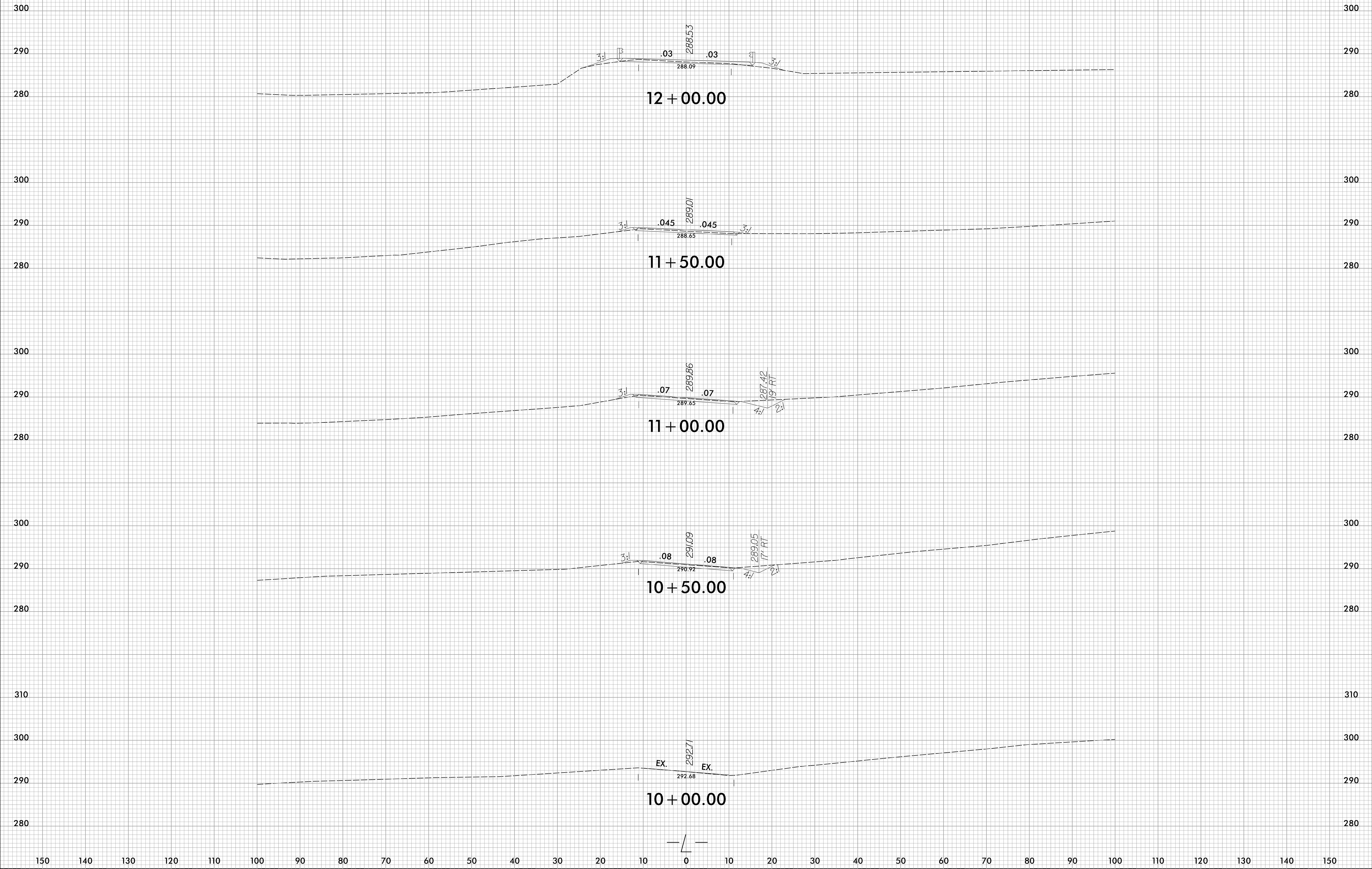
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



8/23/99



DATE: 8/23/99
BY: JML
CHECKED: JML
SCALE: AS SHOWN
PROJECT: BD-5105X
SHEET: X-1

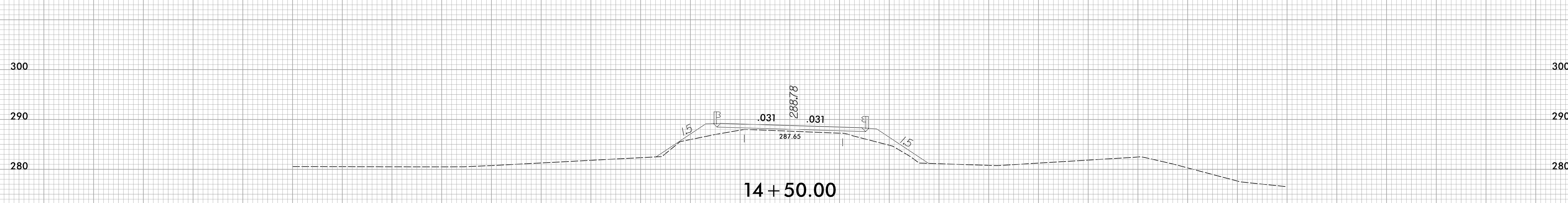
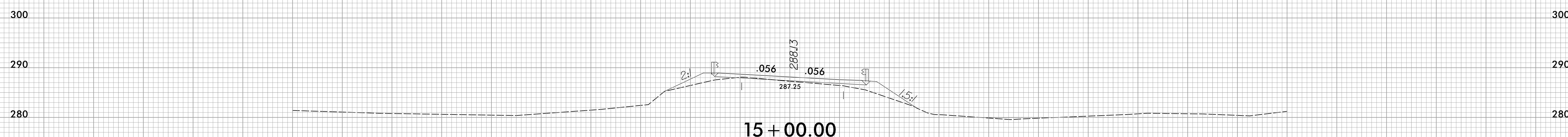
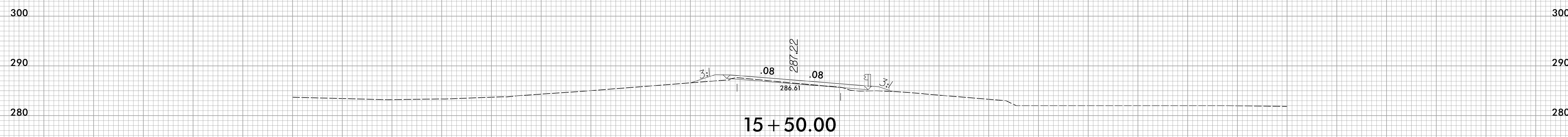
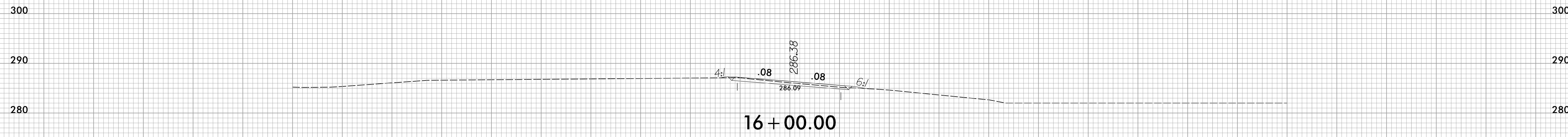
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8/23/99

0 5 10

PROJ. REFERENCE NO.
BD-5105X

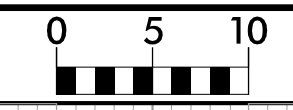
SHEET NO.
X-3



DATE: 8/23/99
BY: J.M.L.
CHECKED: [signature]
SCALE: AS SHOWN
PROJECT: [signature]

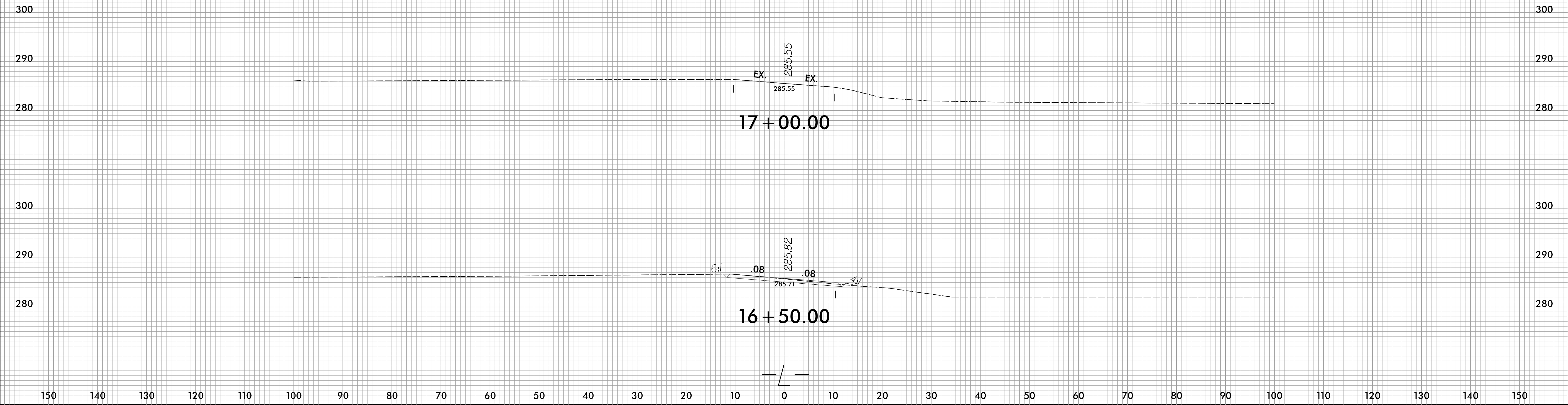
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8/23/99



PROJ. REFERENCE NO.
BD-5105X

SHEET NO.
X-4



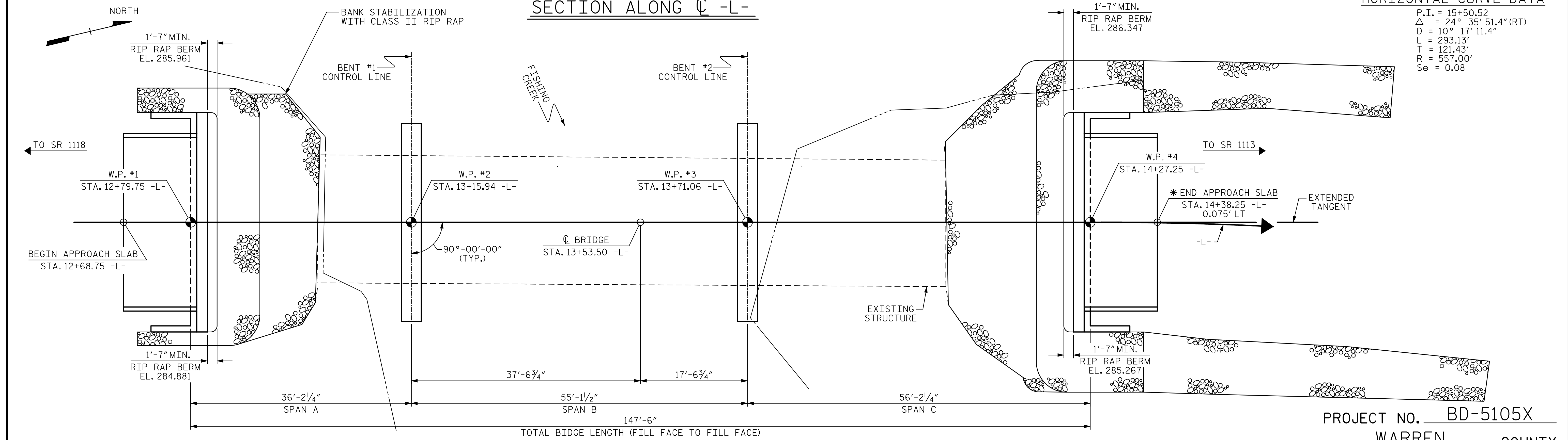
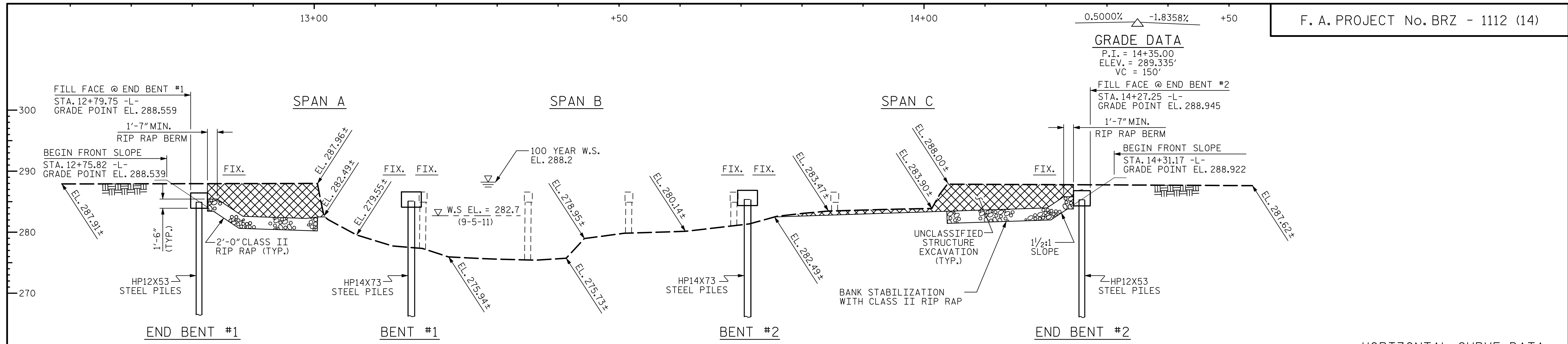
SYTIME
SUN
99

GRADE DATA
 P.I. = 14+35.00
 ELEV. = 289.335'
 VC = 150'

FILL FACE @ END BENT #2
 STA. 14+27.25 -L-
 GRADE POINT EL. 288.945

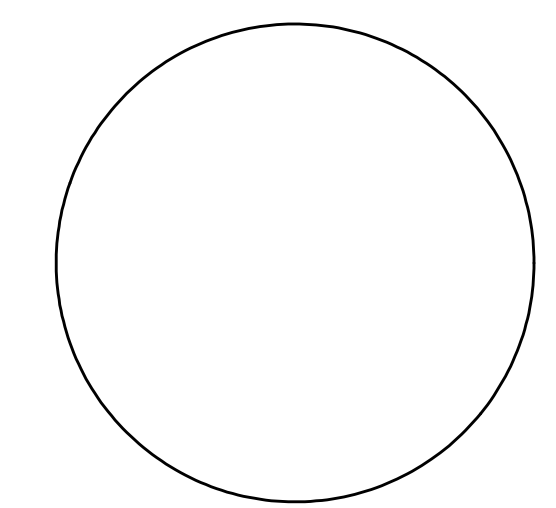
BEGIN FRONT SLOPE
 STA. 14+31.17 -L-
 GRADE POINT EL. 288.922

HORIZONTAL CURVE DATA
 P.I. = 15+50.52
 Δ = 24° 35' 51.4" (RT)
 D = 10° 17' 11.4"
 L = 293.13'
 T = 121.43'
 R = 557.00'
 Se = 0.08



PROJECT NO. BD-5105X
 WARREN COUNTY
 STATION: 13+53.50 -L-
 SHEET 1 OF 2 REPLACES BRIDGE NO. 12

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



Florence & Hutcheson
 An ICA Company
 5121 Kingdom Way, Suite 100 Raleigh, NC 27607
 NC License No. P-0268

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING					
BRIDGE ON SR 1112 OVER FISHING CREEK					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-1
					TOTAL SHEETS 19

9/24/2012
 C:\Users\jcarter\Documents\Projects\BD-5105X\sd.gcdgn
 Florence & Hutcheson - An ICA Company

DRAWN BY: D. H. CARTER DATE: 8/12
 CHECKED BY: J. E. MONDOLFI DATE: 8/12

8-2-12

BENCH MARK: BM#1, STA. 15+26.94 -L-, 27.8' LT, ELEV. 287.24'

HYDRAULIC DATA

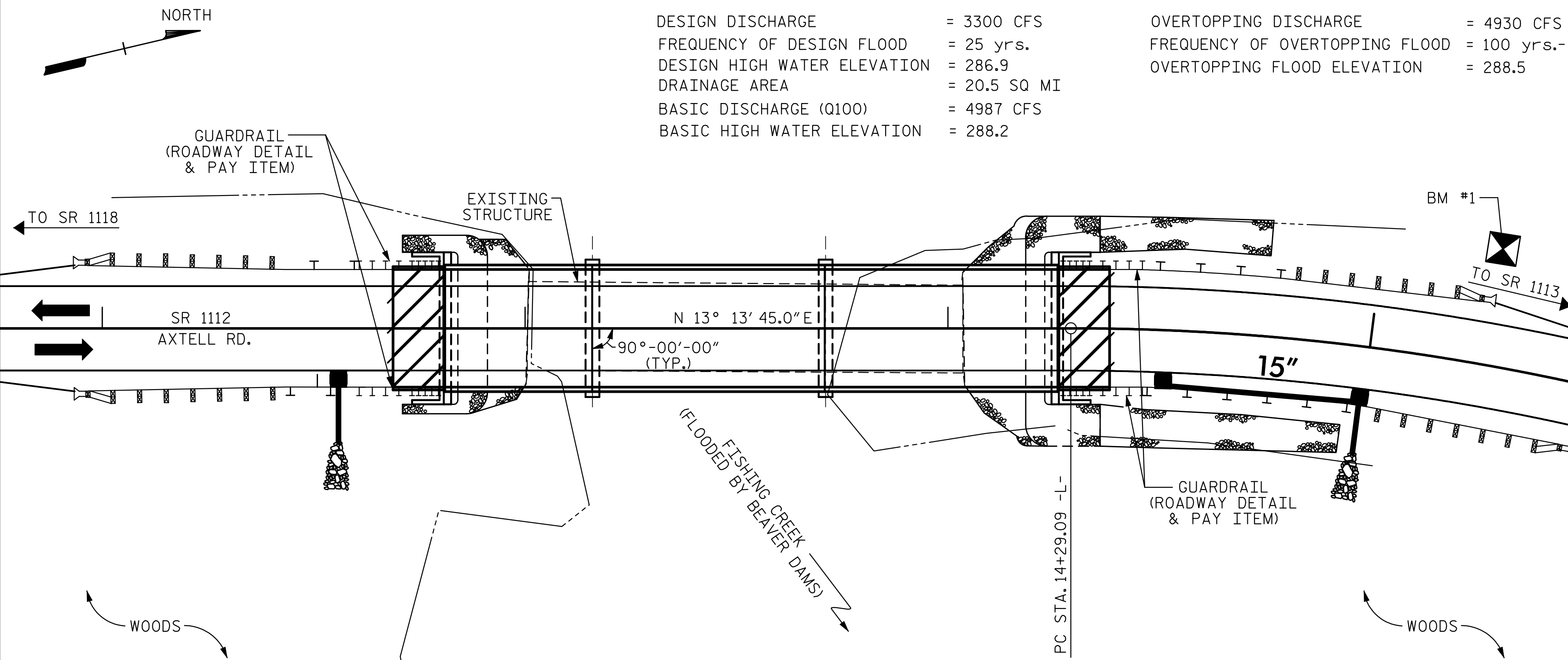
DESIGN DISCHARGE = 3300 CFS
 FREQUENCY OF DESIGN FLOOD = 25 yrs.
 DESIGN HIGH WATER ELEVATION = 286.9
 DRAINAGE AREA = 20.5 SQ MI
 BASIC DISCHARGE (Q100) = 4987 CFS
 BASIC HIGH WATER ELEVATION = 288.2

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 4930 CFS
 FREQUENCY OF OVERTOPPING FLOOD = 100 yrs.-
 OVERTOPPING FLOOD ELEVATION = 288.5

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS; FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
 THE MATERIAL IN THE CROSS HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FEET EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AS UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 13+53.50, LUMP SUM.
 BOTTOM OF EXCAVATION IS AT APPROXIMATE ELEVATION 275.9 AND 280.5 AT END BENT 1 AND END BENT 2, RESPECTIVELY.
 THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON 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.
 THE EXISTING STRUCTURE CONSISTING OF SIX TIMBER JOIST SPANS; 1 AT 17.25', 17.75', 16.5', 17.25', 16.5' & 18.25'; 1/2" ASPHALT WEARING SURFACE ON TIMBER FLOORING; ON TIMBER END BENT AND TIMBER BENT CAPS ON TIMBER PILES LOCATED ON THE PROPOSED ALIGNMENT SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT.
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 FOUNDATION RECOMMENDATIONS:
 FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 66 TONS PER PILE.
 DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 110 TONS PER PILE.
 PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.
 DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 145 TONS PER PILE.
 PILES AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.
 DRIVE PILES AT BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 175 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.
 PILES AT BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 118 TONS PER PILE.
 DRIVE PILES AT BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.
 INSTALL PILES AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 255 FT.
 INSTALL PILES AT BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 256 FT.
 THE SCOUR CRITICAL ELEVATIONS FOR BENT NO.1 AND BENT NO.2 ARE ELEVATION 266 AND 275 FT, RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
 ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR BRIDGE APPROACH FILLS, SEE SPECIAL PROVISIONS.



LOCATION SKETCH

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

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 13+53.50 -L-	BRIDGE APPROACH FILL SUBREGIONAL TIER AT STA. 13+53.50 -L-	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 13+53.50 -L-	CLASS A CONCRETE	BRIDGE APPROACH SLABS AT STA. 13+53.50 -L-	REINFORCING STEEL	HP 12 X 53 STEEL PILES	HP 14 X 73 GALVANIZED STEEL PILES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS			
	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LB.	NO.	LIN. FT.	NO.	LIN. FT.	LIN. FT.	TON	SQ. YD.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE															30	1,450
END BENT NO. 1				13.1		1,977	5	125				104	120			
BENT NO. 1				9.9		1,959			7	245						
BENT NO. 2				9.9		1,959			7	210						
END BENT NO. 2				13.1		1,977	5	175				126	145			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	46.0	LUMP SUM	7,872	10	300	14	455	290.75	230	265	LUMP SUM	30	1,450

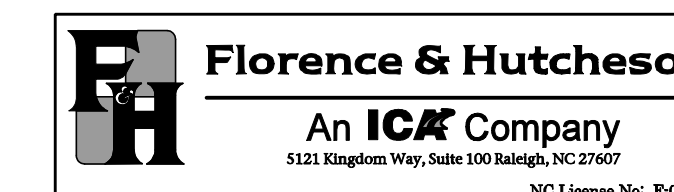
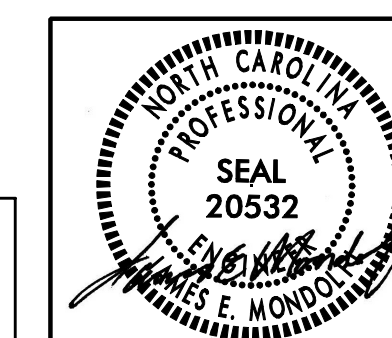
PROJECT NO. BD-5105X
WARREN COUNTY
 STATION: 13+53.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

BRIDGE ON SR 1112
 OVER FISHING CREEK



REVISIONS

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

SHEET NO.
 S-2
 TOTAL SHEETS
 19

DRAWN BY: D. H. CARTER DATE: 8/12
 CHECKED BY: J. E. MONDOLFI DATE: 8/12

9/24/2012 9:45:05 AM C:\Users\jmondolfi\Documents\Projects\105\105X.sd.dgn
 J. E. Mondolfi, P.E.
 Florence & Hutcheson, Inc.

8-2-12

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.032	--	1.75	0.28	1.36	35'	EL	17	0.561	1.03	35'	EL	1.7	0.80	0.28	1.05	35'	EL	17		
	HL-93(0pr)	N/A	--	1.338	--	1.35	0.28	1.77	35'	EL	17	0.561	1.34	35'	EL	1.7	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.189	42.810	1.75	0.28	1.79	35'	EL	13.6	0.561	1.19	35'	EL	1.7	0.80	0.28	1.39	35'	EL	17		
	HS-20(0pr)	36.000	--	1.542	55.494	1.35	0.28	2.32	35'	EL	13.6	0.561	1.54	35'	EL	1.7	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.400	32.402	1.4	0.28	3.89	35'	EL	17	0.561	3.06	35'	EL	1.7	0.80	0.28	2.40	35'	EL	17	
		SNGARBS2	20.000	--	2.052	41.044	1.4	0.28	3.29	35'	EL	13.6	0.561	2.32	35'	EL	1.7	0.80	0.28	2.05	35'	EL	13.6	
		SNAGRIS2	22.000	--	2.053	45.174	1.4	0.28	3.26	35'	EL	13.6	0.561	2.21	35'	EL	1.7	0.80	0.28	2.05	35'	EL	13.6	
		SNCOTTS3	27.250	--	1.202	32.744	1.4	0.28	1.95	35'	EL	17	0.561	1.54	35'	EL	1.7	0.80	0.28	1.20	35'	EL	17	
		SNAGGRS4	34.925	--	1.111	38.816	1.4	0.28	1.8	35'	EL	17	0.561	1.38	35'	EL	1.7	0.80	0.28	1.11	35'	EL	17	
		SNS5A	35.550	--	1.079	38.354	1.4	0.28	1.75	35'	EL	17	0.561	1.46	35'	EL	1.7	0.80	0.28	1.08	35'	EL	17	
		SNS6A	39.950	--	1.041	41.601	1.4	0.28	1.69	35'	EL	17	0.561	1.37	35'	EL	1.7	0.80	0.28	1.04	35'	EL	17	
	SNS7B	42.000	3	1.000	41.734	1.4	0.28	1.61	35'	EL	17	0.561	1.4	35'	EL	1.7	0.80	0.28	1.00	35'	EL	17		
	TTST	TNAGRIT3	33.000	--	1.286	42.439	1.4	0.28	2.08	35'	EL	17	0.561	1.6	35'	EL	1.7	0.80	0.28	1.29	35'	EL	17	
		TNT4A	33.075	--	1.285	42.512	1.4	0.28	2.08	35'	EL	17	0.561	1.51	35'	EL	1.7	0.80	0.28	1.29	35'	EL	17	
		TNT6A	41.600	--	1.126	46.84	1.4	0.28	1.82	35'	EL	17	0.561	1.48	35'	EL	1.7	0.80	0.28	1.13	35'	EL	17	
		TNT7A	42.000	--	1.163	48.833	1.4	0.28	1.89	35'	EL	17	0.561	1.37	35'	EL	1.7	0.80	0.28	1.16	35'	EL	17	
		TNT7B	42.000	--	1.144	48.061	1.4	0.28	1.85	35'	EL	17	0.561	1.33	35'	EL	1.7	0.80	0.28	1.14	35'	EL	17	
		TNAGRIT4	43.000	--	1.158	49.810	1.4	0.28	1.86	35'	EL	13.6	0.561	1.28	35'	EL	1.7	0.80	0.28	1.16	35'	EL	17	
TNAGT5A		45.000	--	1.068	48.071	1.4	0.28	1.73	35'	EL	17	0.561	1.35	35'	EL	1.7	0.80	0.28	1.07	35'	EL	17		
TNAGT5B	45.000	--	1.031	46.373	1.4	0.28	1.67	35'	EL	17	0.561	1.21	35'	EL	1.7	0.80	0.28	1.03	35'	EL	17			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	Y _{DC}	Y _{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.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

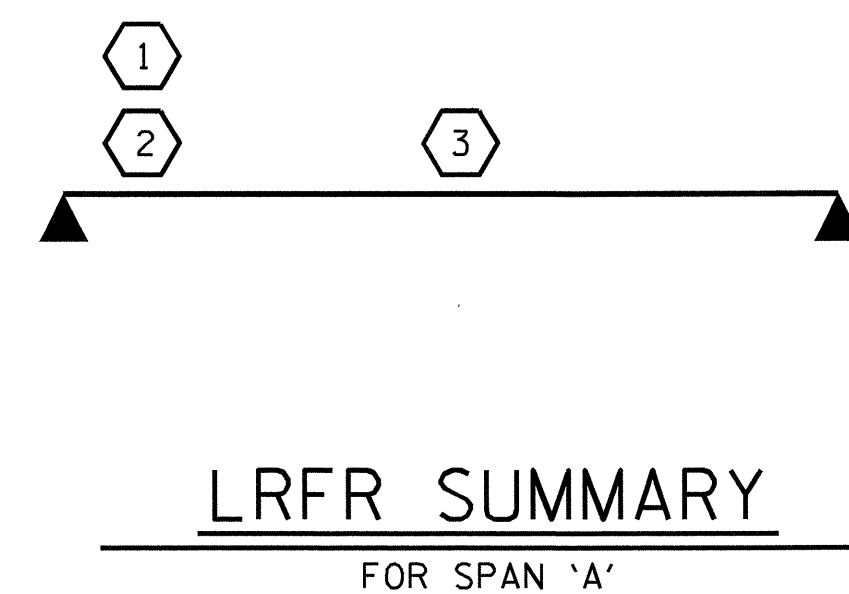
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

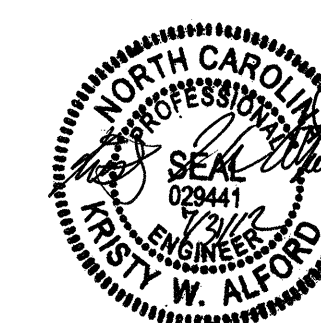
** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



PROJECT NO. BD-5105X
WARREN COUNTY
STATION: 13+53.50 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

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

ASSEMBLED BY : A.C. OUTLAW DATE : 1/11/12
CHECKED BY : K. W. ALFORD DATE : 2/12

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

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	①	1.055	--	1.75	0.275	1.23	55'	EL	27	0.523	1.23	55'	EL	5.4	0.80	0.275	1.05	55'	EL	27		
	HL-93(Opr)	N/A	--	1.591	--	1.35	0.275	1.59	55'	EL	27	0.523	1.59	55'	EL	5.4	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	②	1.322	47.585	1.75	0.275	1.54	55'	EL	27	0.523	1.47	55'	EL	5.4	0.80	0.275	1.32	55'	EL	27		
	HS-20(Opr)	36.000	--	1.9	68.396	1.35	0.275	1.99	55'	EL	27	0.523	1.9	55'	EL	5.4	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.776	37.476	1.4	0.275	4.04	55'	EL	27	0.523	4.17	55'	EL	5.4	0.80	0.275	2.78	55'	EL	27	
		SNGARBS2	20.000	--	2.155	43.095	1.4	0.275	3.14	55'	EL	27	0.523	3.02	55'	EL	5.4	0.80	0.275	2.15	55'	EL	27	
		SNAGRIS2	22.000	--	2.079	45.734	1.4	0.275	3.03	55'	EL	27	0.523	2.83	55'	EL	5.4	0.80	0.275	2.08	55'	EL	27	
		SNCOTTS3	27.250	--	1.384	37.708	1.4	0.275	2.01	55'	EL	27	0.523	2.09	55'	EL	5.4	0.80	0.275	1.38	55'	EL	27	
		SNAGGRS4	34.925	--	1.189	41.527	1.4	0.275	1.73	55'	EL	27	0.523	1.77	55'	EL	5.4	0.80	0.275	1.19	55'	EL	27	
		SNS5A	35.550	--	1.16	41.255	1.4	0.275	1.69	55'	EL	27	0.523	1.82	55'	EL	5.4	0.80	0.275	1.16	55'	EL	27	
		SNS6A	39.950	--	1.079	43.102	1.4	0.275	1.57	55'	EL	27	0.523	1.68	55'	EL	5.4	0.80	0.275	1.08	55'	EL	27	
	SNS7B	42.000	--	1.028	43.175	1.4	0.275	1.5	55'	EL	27	0.523	1.67	55'	EL	5.4	0.80	0.275	1.03	55'	EL	27		
	TTST	TNAGRIT3	33.000	--	1.32	43.556	1.4	0.275	1.92	55'	EL	27	0.523	1.98	55'	EL	5.4	0.80	0.275	1.32	55'	EL	27	
		TNT4A	33.075	--	1.33	43.979	1.4	0.275	1.94	55'	EL	27	0.523	1.91	55'	EL	5.4	0.80	0.275	1.33	55'	EL	27	
		TNT6A	41.600	--	1.101	45.811	1.4	0.275	1.6	55'	EL	27	0.523	1.83	55'	EL	5.4	0.80	0.275	1.10	55'	EL	27	
		TNT7A	42.000	--	1.114	46.804	1.4	0.275	1.62	55'	EL	27	0.523	1.71	55'	EL	5.4	0.80	0.275	1.11	55'	EL	27	
		TNT7B	42.000	--	1.163	48.848	1.4	0.275	1.69	55'	EL	27	0.523	1.62	55'	EL	5.4	0.80	0.275	1.16	55'	EL	27	
		TNAGRIT4	43.000	--	1.101	47.33	1.4	0.275	1.6	55'	EL	27	0.523	1.56	55'	EL	5.4	0.80	0.275	1.10	55'	EL	27	
TNAGT5A		45.000	--	1.031	46.405	1.4	0.275	1.5	55'	EL	27	0.523	1.58	55'	EL	5.4	0.80	0.275	1.03	55'	EL	27		
TNAGT5B	45.000	③	1.013	45.582	1.4	0.275	1.47	55'	EL	27	0.523	1.48	55'	EL	5.4	0.80	0.275	1.01	55'	EL	27			

LOAD FACTORS:

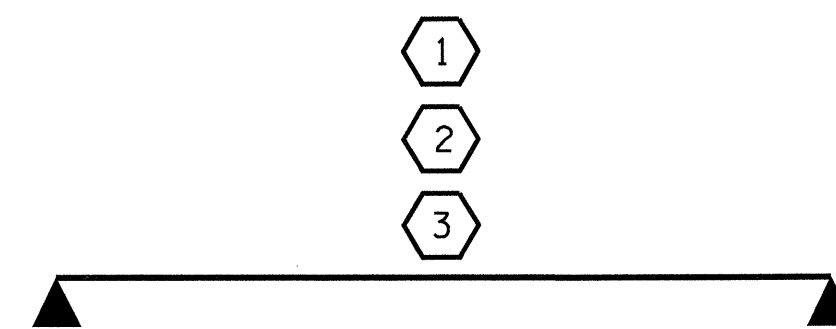
DESIGN LOAD RATING FACTORS	LIMIT STATE	γ _{DC}	γ _{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

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

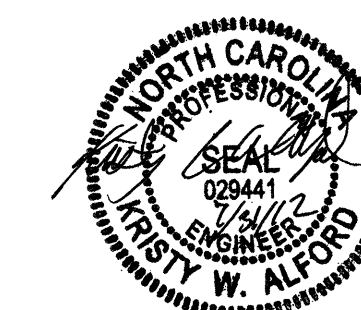
⊛	CONTROLLING LOAD RATING
①	DESIGN LOAD RATING (HL-93)
②	DESIGN LOAD RATING (HS-20)
③	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
I - INTERIOR GIRDER EL - EXTERIOR LEFT GIRDER ER - EXTERIOR RIGHT GIRDER	



LRFR SUMMARY

FOR SPAN 'B' OR 'C'

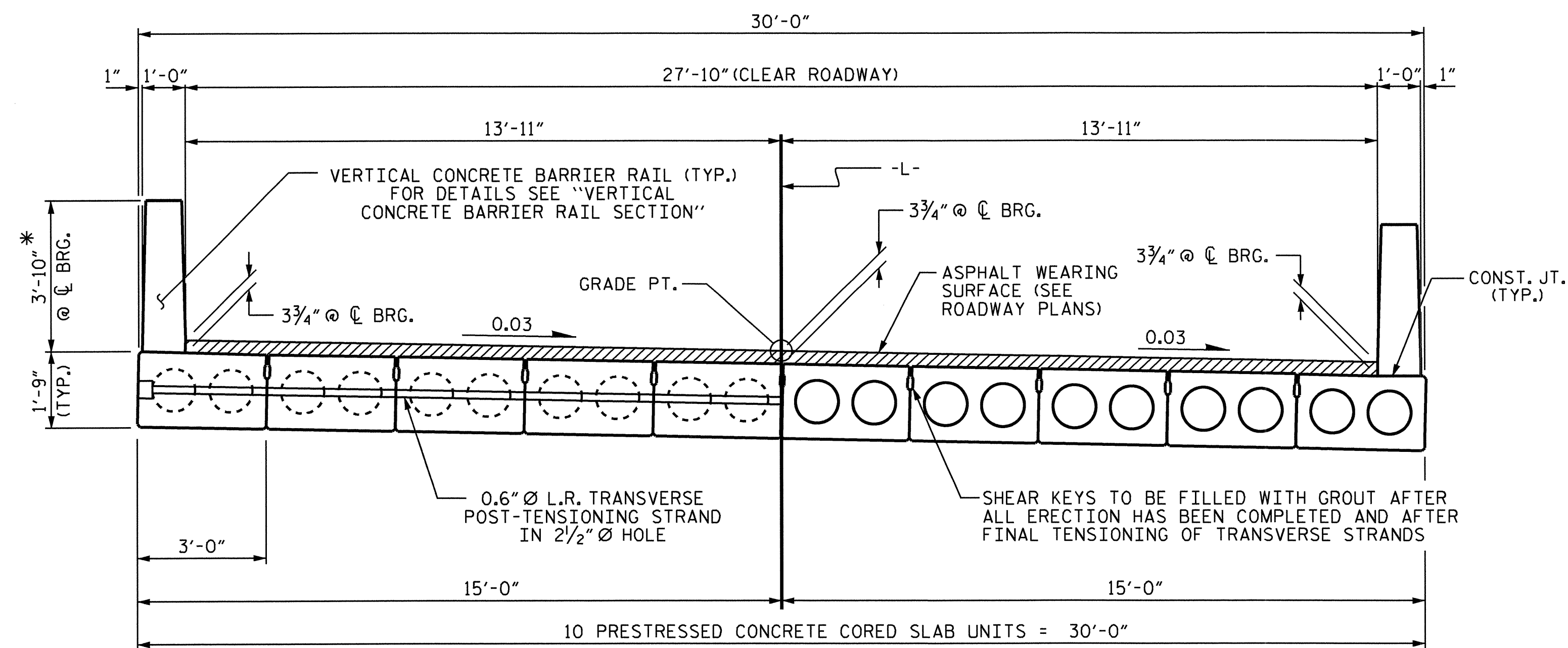
PROJECT NO. BD-5105X
WARREN COUNTY
 STATION: 13+53.50 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 55' CORED SLAB UNIT
 90° SKEW
 (NON-INTERSTATE TRAFFIC)

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

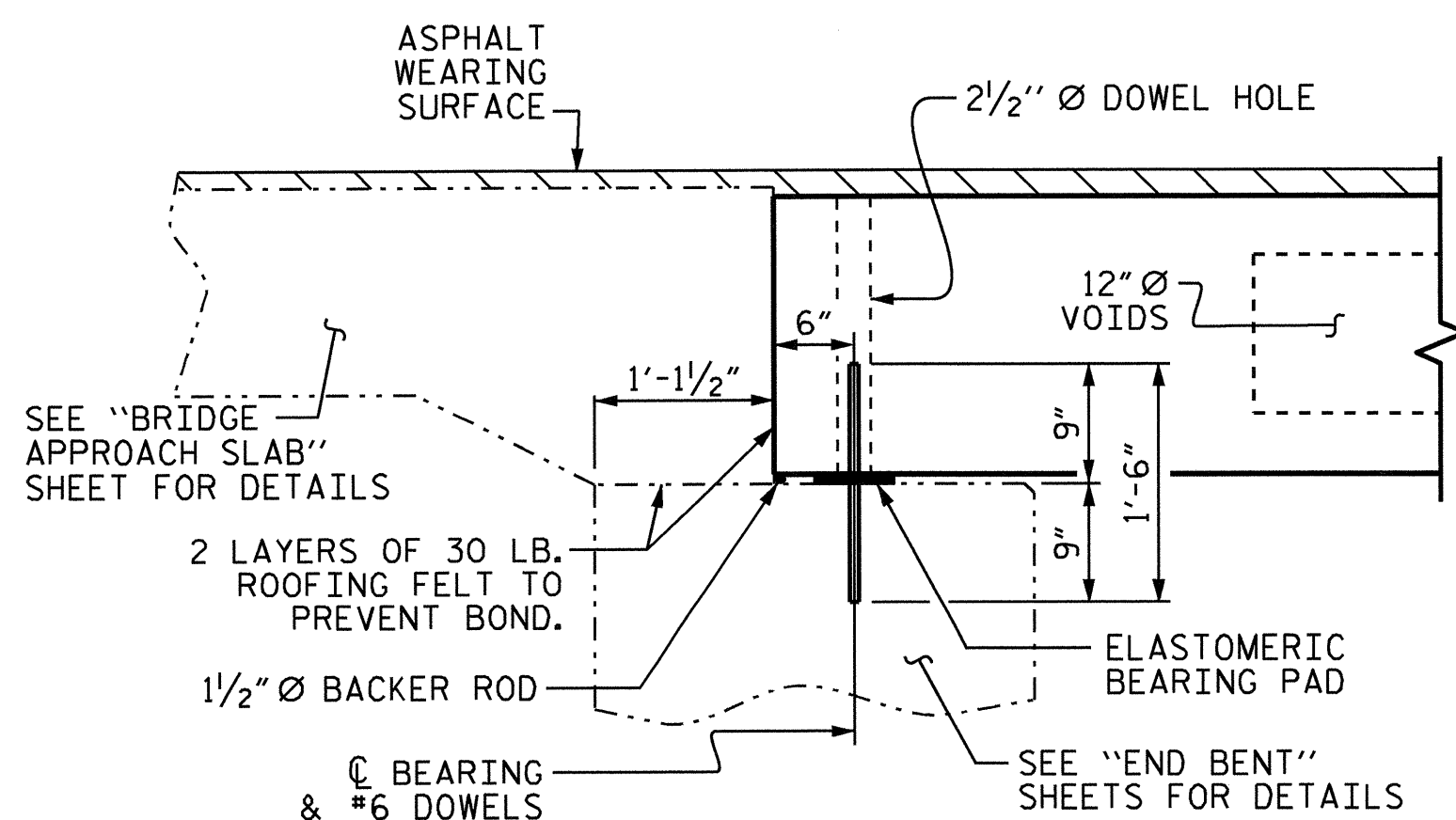
ASSEMBLED BY : A.C. OUTLAW DATE : 1/11/12
 CHECKED BY : K. W. ALFORD DATE : 2/12
 DRAWN BY : CVC 6/10
 CHECKED BY : DNS 6/10



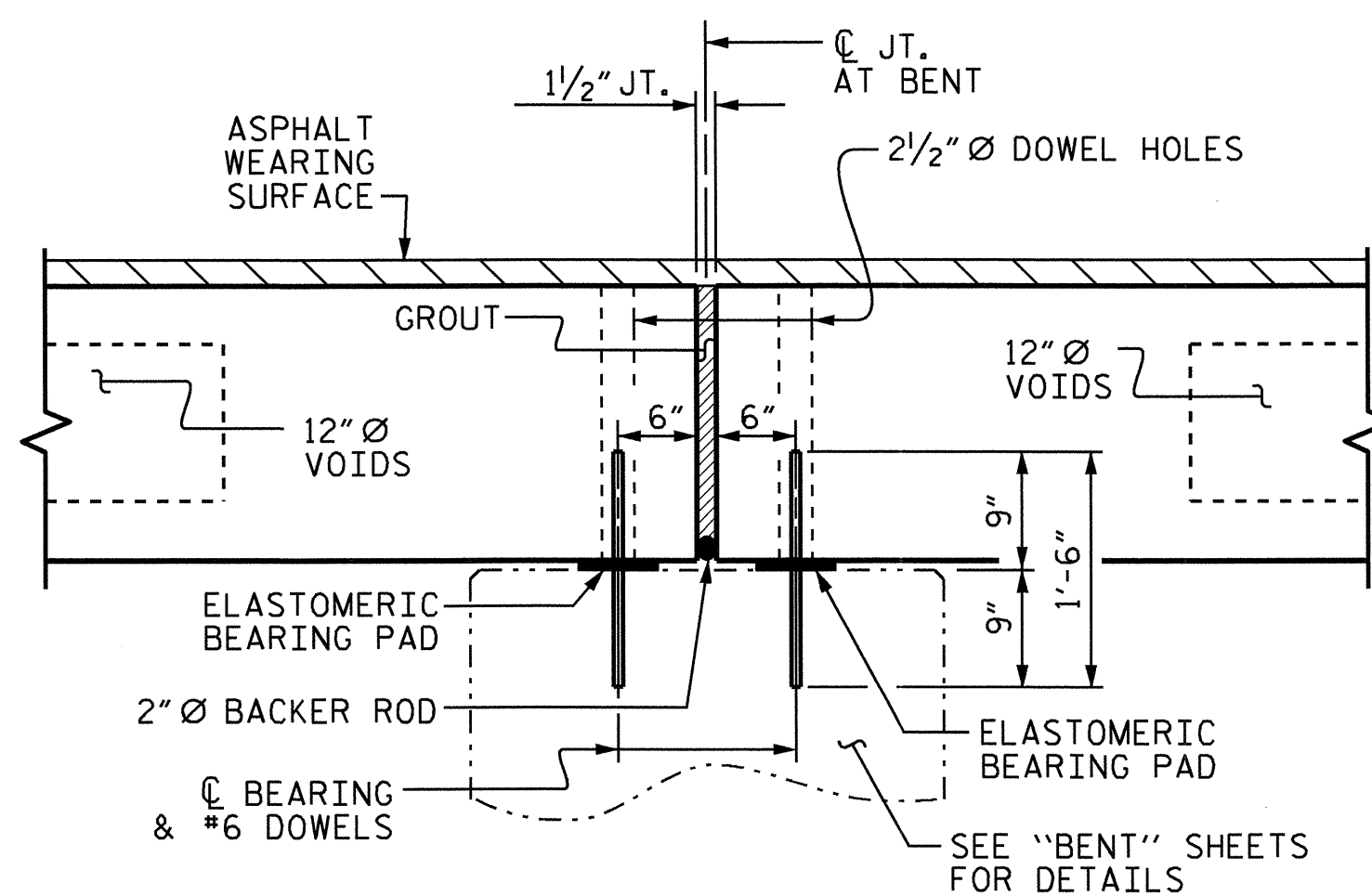
HALF SECTION AT INTERMEDIATE DIAPHRAGMS
 HALF SECTION THROUGH VOIDS
TYPICAL SECTION

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

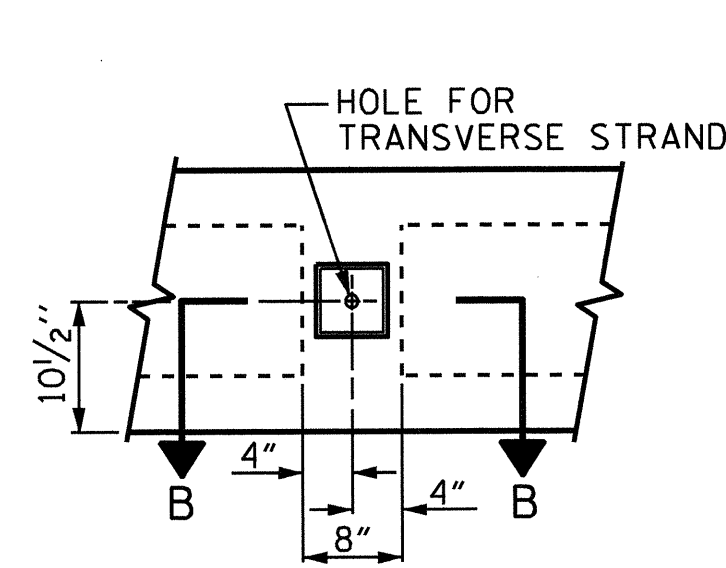
FIXED END
 FIXED END
 FIXED END



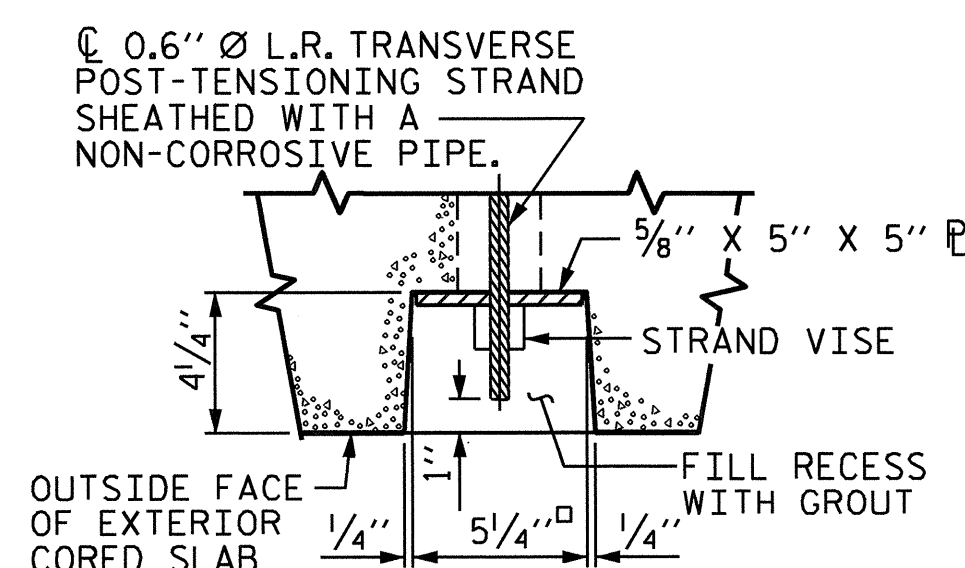
SECTION AT END BENT



SECTION AT BENT

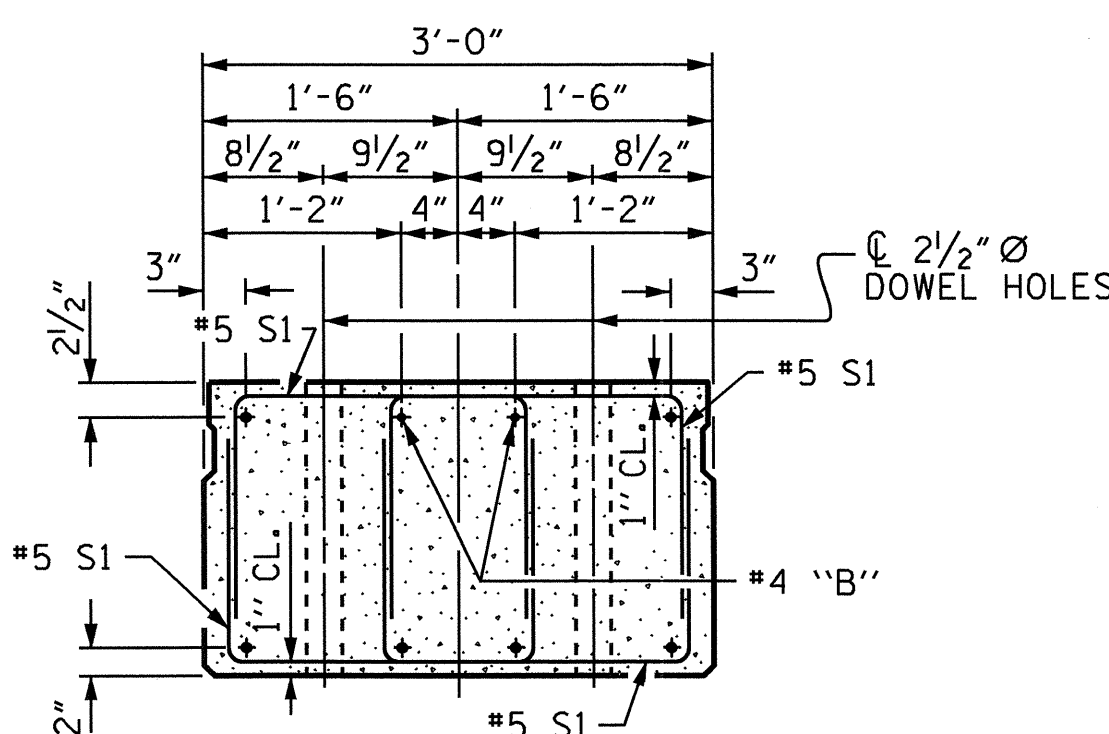


ELEVATION VIEW



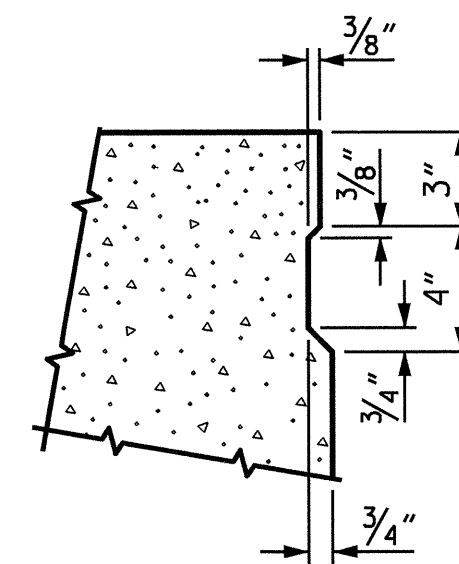
SECTION B-B

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

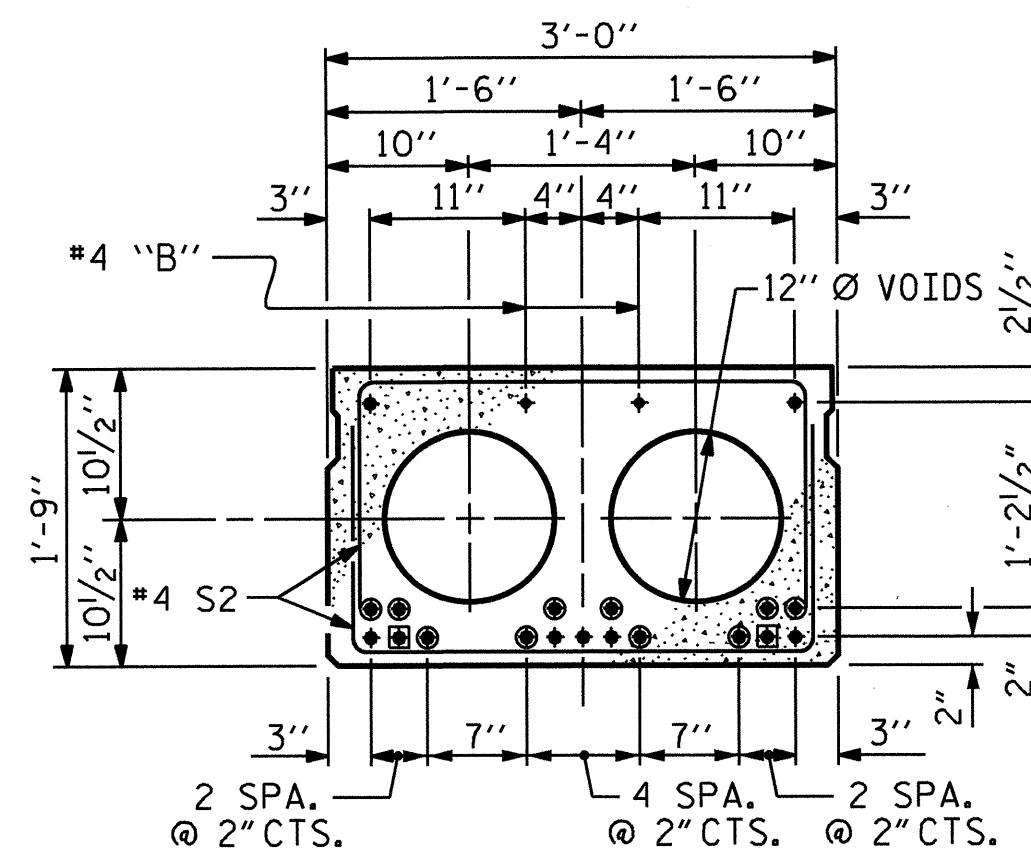


END ELEVATION

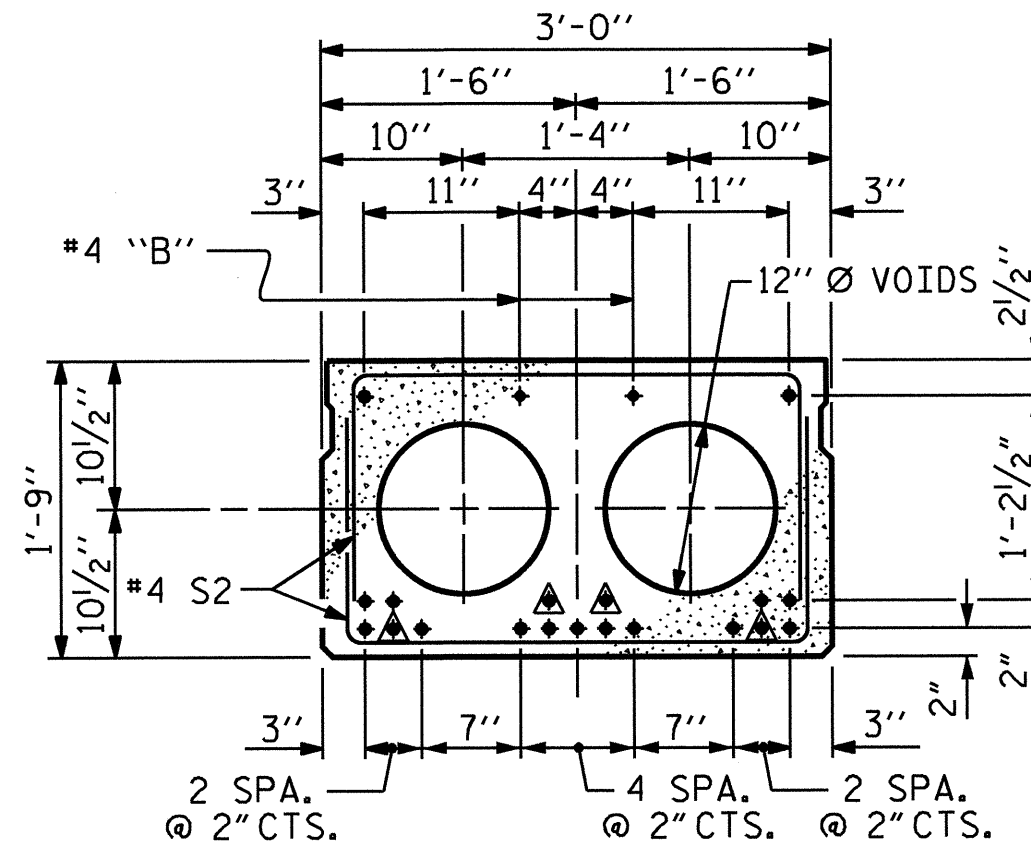
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



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



INTERIOR SLAB SECTION (35' UNIT)
 (9 STRANDS REQUIRED)

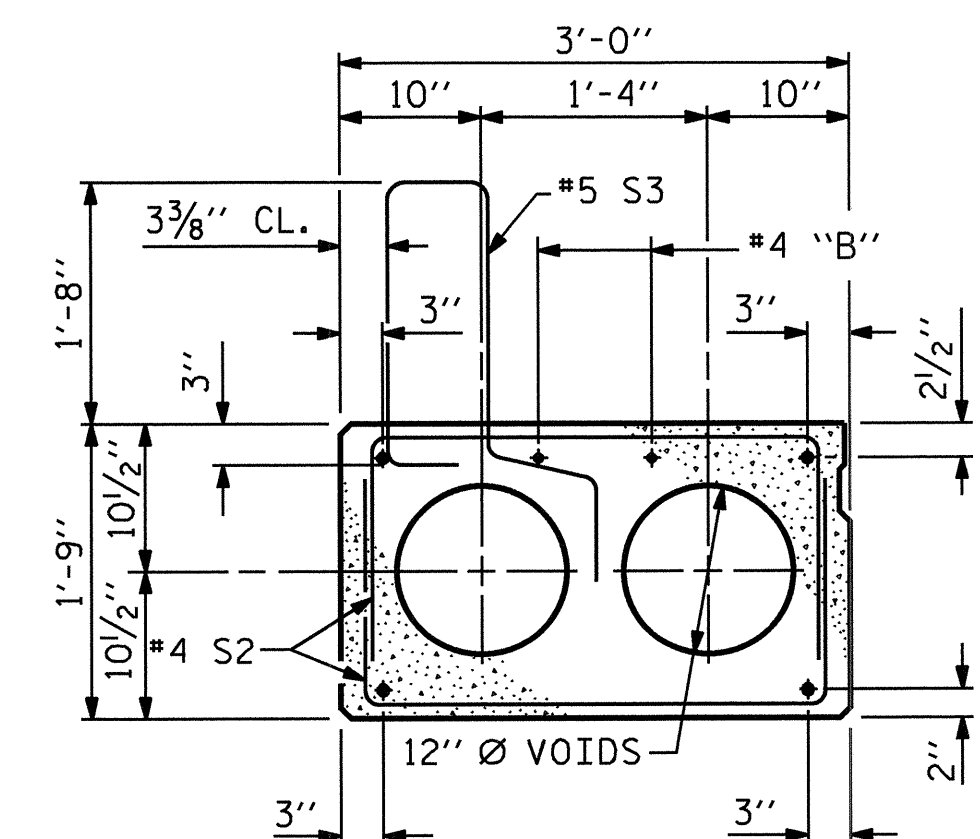


INTERIOR SLAB SECTION (55' UNIT)
 (19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

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



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

PROJECT NO. BD-5105X
 WARREN COUNTY
 STATION: 13+53.50 -L-

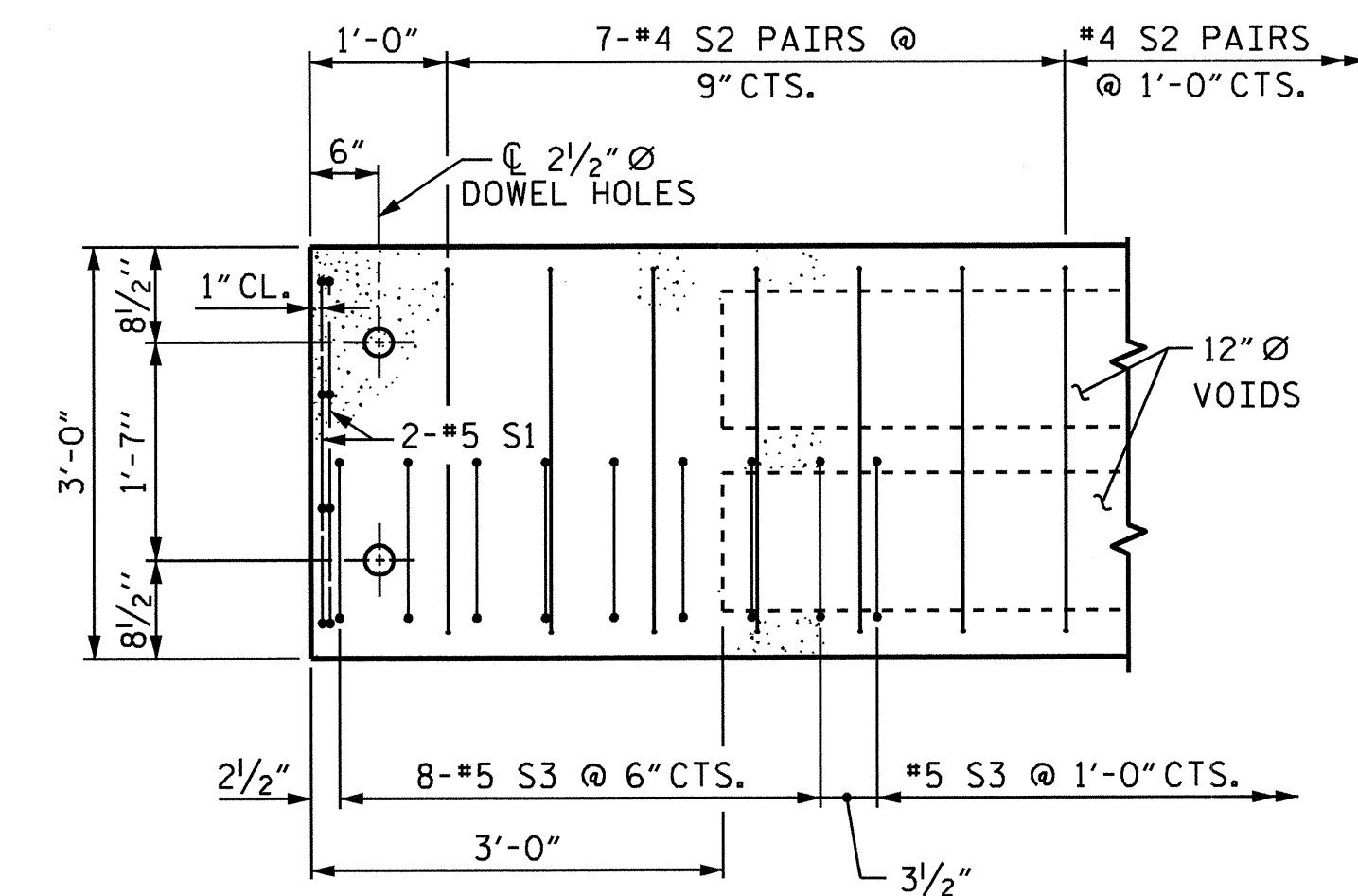
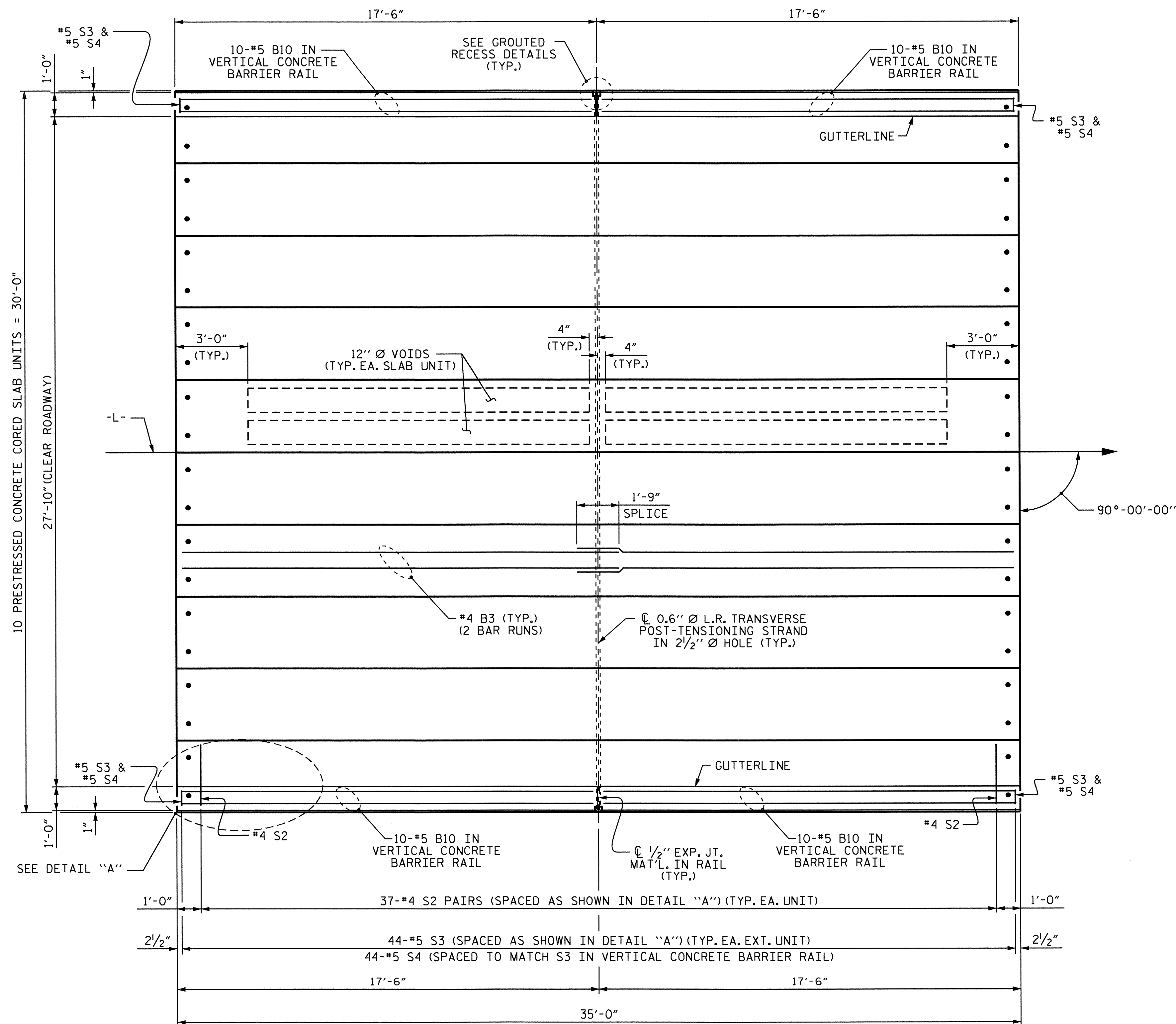
SHEET 1 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 90° SKEW

ASSEMBLED BY : A.C. OUTLAW	DATE : 1/10/12
CHECKED BY : K.W. ALFORD	DATE : 2/12
DRAWN BY : DGE 5/09	REV. 12/11
CHECKED BY : BCH 6/09	MAA/AAC

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			19



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

PLAN OF SPAN A

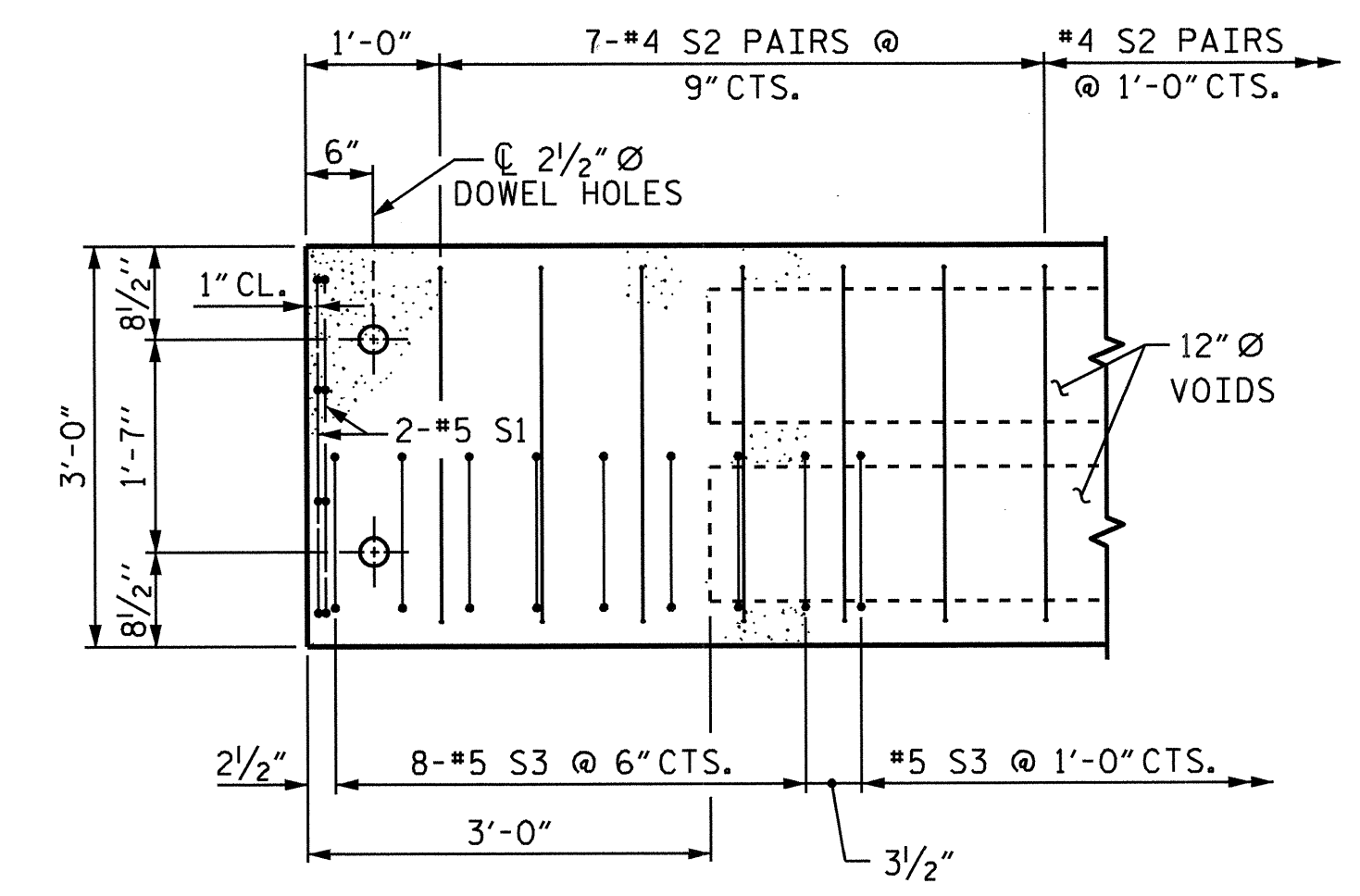
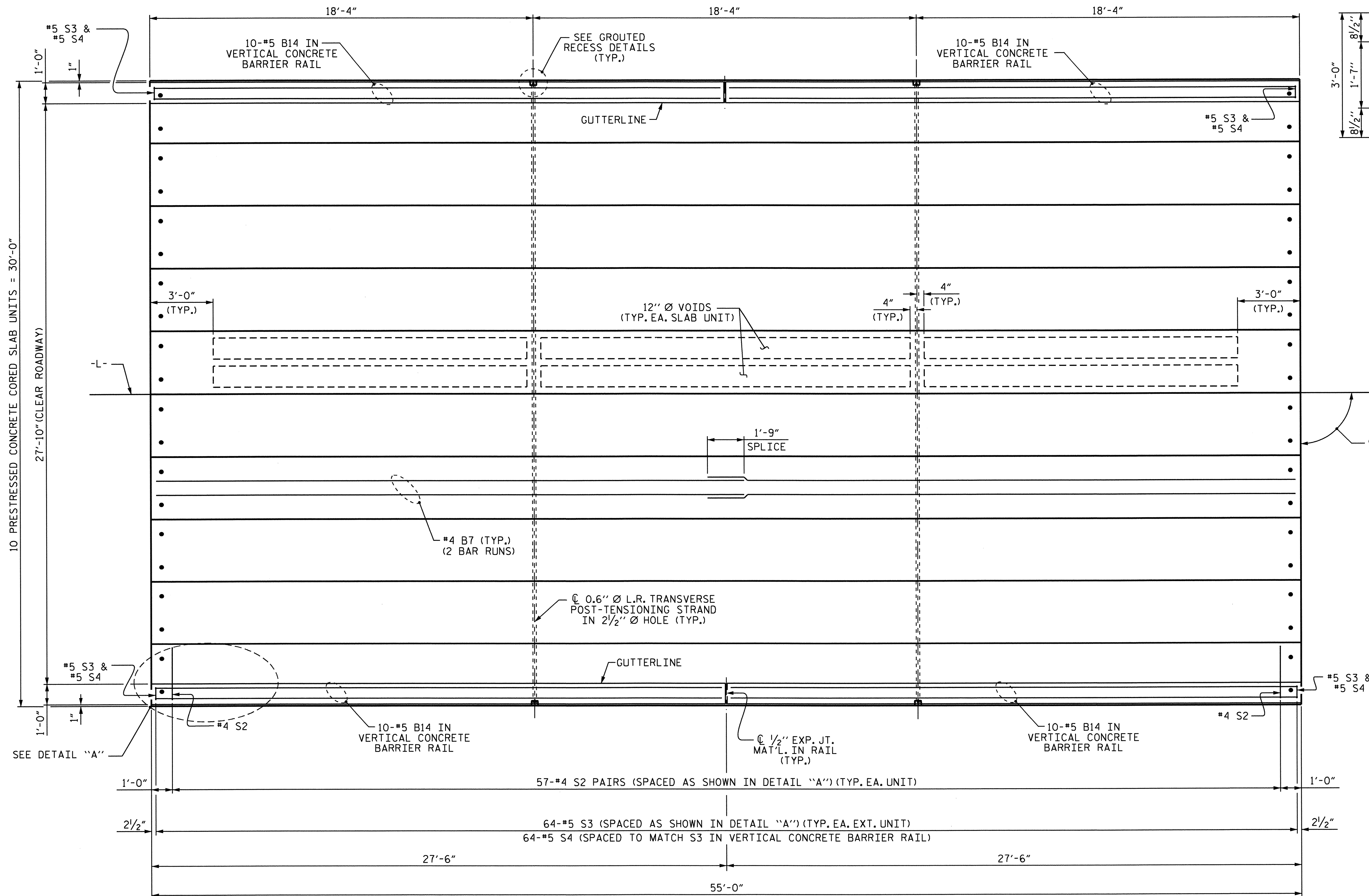
PROJECT NO. BD-5105X
WARREN COUNTY
 STATION: 13+53.50 -L
 SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF 35' UNIT
 27'-10" CLEAR ROADWAY
 90° SKEW



ASSEMBLED BY : A.C. OUTLAW	DATE : 1/11/12
CHECKED BY : K.W. ALFORD	DATE : 2/12
DRAWN BY : DGE 3/09	REV. 12/5/11 MAA/AAC
CHECKED BY : BCH 3/09	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			19



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

PLAN OF SPAN B OR C

PROJECT NO. BD-5105X
WARREN COUNTY
 STATION: 13+53.50 -L-

SHEET 3 OF 5

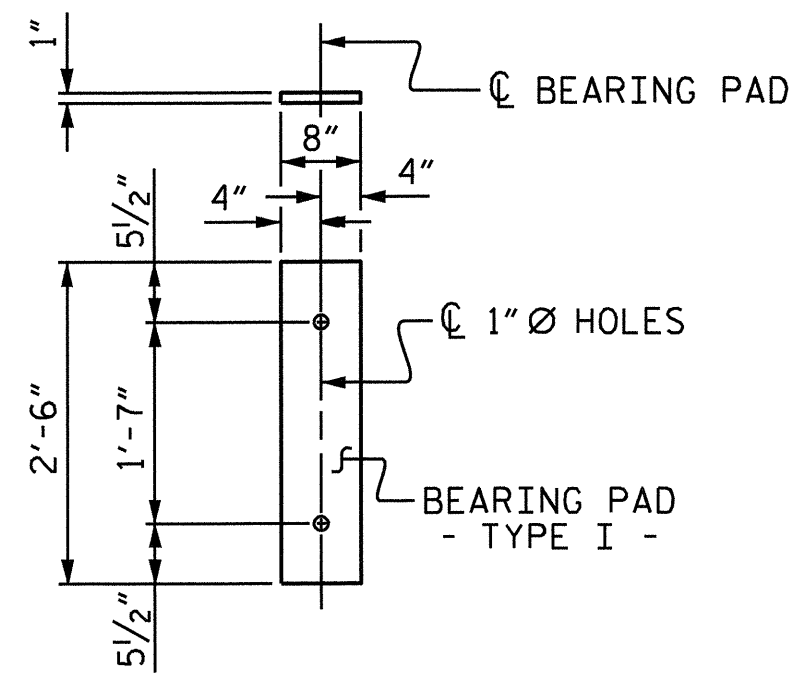
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 55' UNIT
 27'-10" CLEAR ROADWAY
 90° SKEW



ASSEMBLED BY : A.C. OUTLAW	DATE : 1/11/12
CHECKED BY : K. W. ALFORD	DATE : 2/12
DRAWN BY : DGE 3/09	REV. 12/5/11 MAA/AAC
CHECKED BY : BCH 3/09	

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7	
1			3			TOTAL SHEETS	
2			4			19	



FIXED END
(TYPE I - 60 REO'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

CONCRETE RELEASE STRENGTH	
UNIT	PSI
35' UNITS	4000
55' UNITS	4900

GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.6" Ø L.R.
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

CORED SLABS REQUIRED			
35' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	35'-0"	70'-0"
INTERIOR C.S.	8	35'-0"	280'-0"
TOTAL	10	35'-0"	350'-0"

CORED SLABS REQUIRED			
55' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	4	55'-0"	220'-0"
INTERIOR C.S.	16	55'-0"	880'-0"
TOTAL	20	55'-0"	1100'-0"

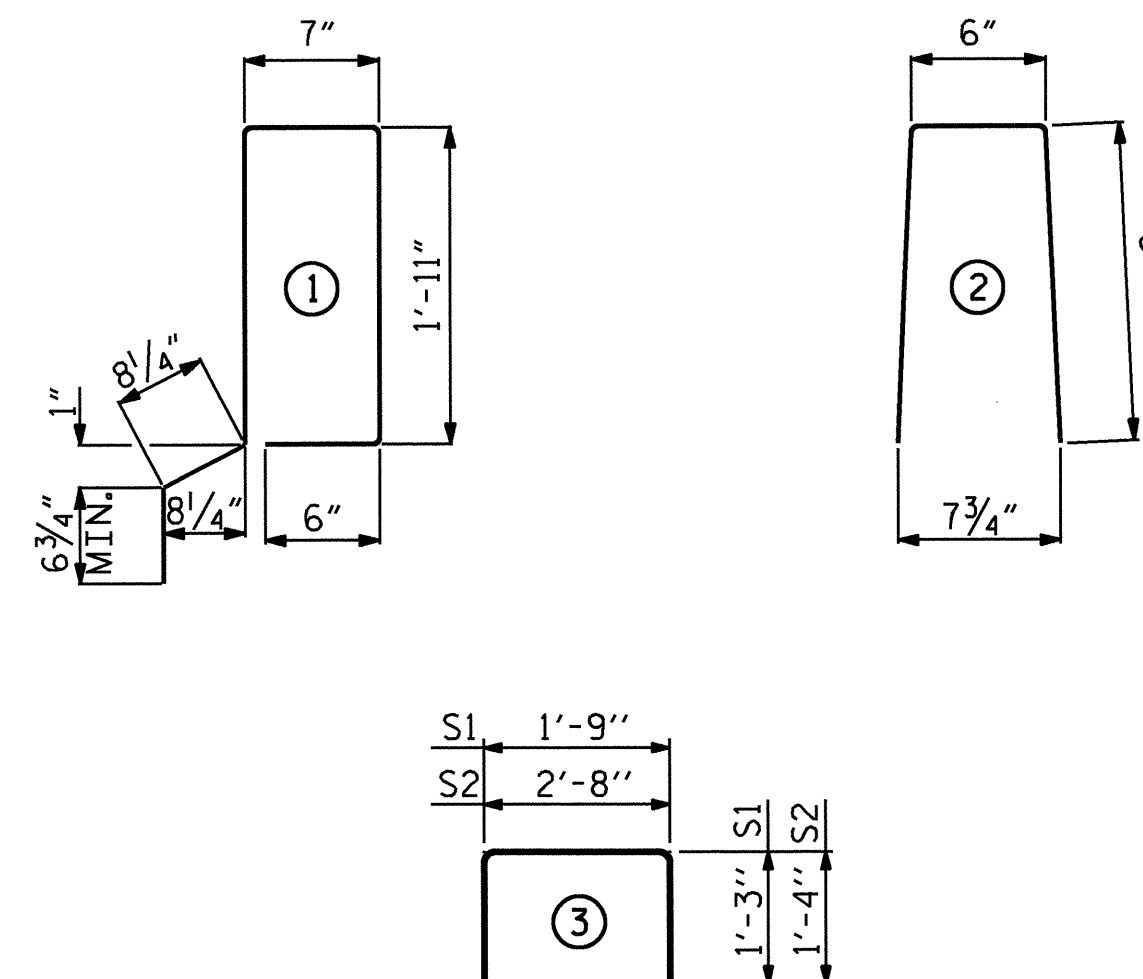
DEAD LOAD DEFLECTION AND CAMBER		3'-0" x 1'-9"
35' CORED SLAB UNIT	0.6" Ø L.R. STRAND	
CAMBER (SLAB ALONE IN PLACE)		1/2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**		1/8" ↓
FINAL CAMBER		3/8" ↑

** INCLUDES FUTURE WEARING SURFACE

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)		2 1/2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**		1/4" ↓
FINAL CAMBER		2 1/4" ↑

** INCLUDES FUTURE WEARING SURFACE

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE 35' CORED SLAB UNIT

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B3	4	#4	STR	18'-3"	49	18'-3"	49
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	74	#4	3	5'-4"	264	5'-4"	264
*S3	44	#5	1	6'-2"	283		
REINFORCING STEEL				LBS.	348		348
* EPOXY COATED REINFORCING STEEL				LBS.	283		
5000 P.S.I. CONCRETE				CU. YDS.	5.1		5.1
0.6" Ø L.R. STRANDS				No.	9		9

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B7	4	#4	STR	28'-3"	75	28'-3"	75
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	114	#4	3	5'-4"	406	5'-4"	406
*S3	64	#5	1	6'-2"	412		
REINFORCING STEEL				LBS.	516		516
* EPOXY COATED REINFORCING STEEL				LBS.	412		
6500 P.S.I. CONCRETE				CU. YDS.	7.8		7.8
0.6" Ø L.R. STRANDS				No.	19		19

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
35' UNIT						
*B10	40	40	#5	STR	17'-1"	713
*S4	88	88	#5	2	7'-2"	658
* EPOXY COATED REINFORCING STEEL				LBS.		1371
CLASS AA CONCRETE				CU. YDS.		9.2
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		70.25

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
55' UNIT						
*B14	40	80	#5	STR	27'-1"	2260
*S4	128	256	#5	2	7'-2"	1914
* EPOXY COATED REINFORCING STEEL				LBS.		4174
CLASS AA CONCRETE				CU. YDS.		28.8
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		220.50

NOTES

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

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

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

THE 2 1/2" 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.

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

27'-10" CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS		RAIL HEIGHT
	@ MID-SPAN		@ MID-SPAN
35' UNITS	3 3/8"		3'-9 5/8"
55' UNITS	1 1/2"		3'-7 3/4"



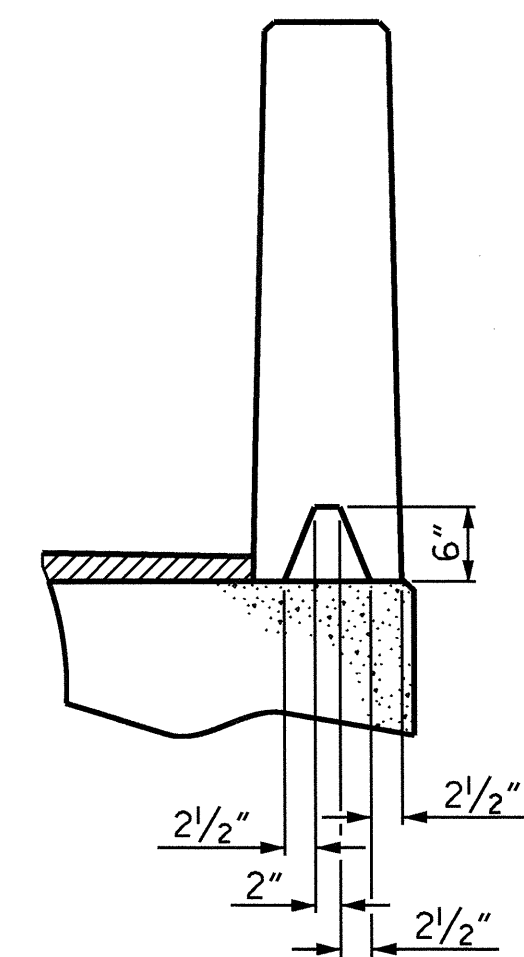
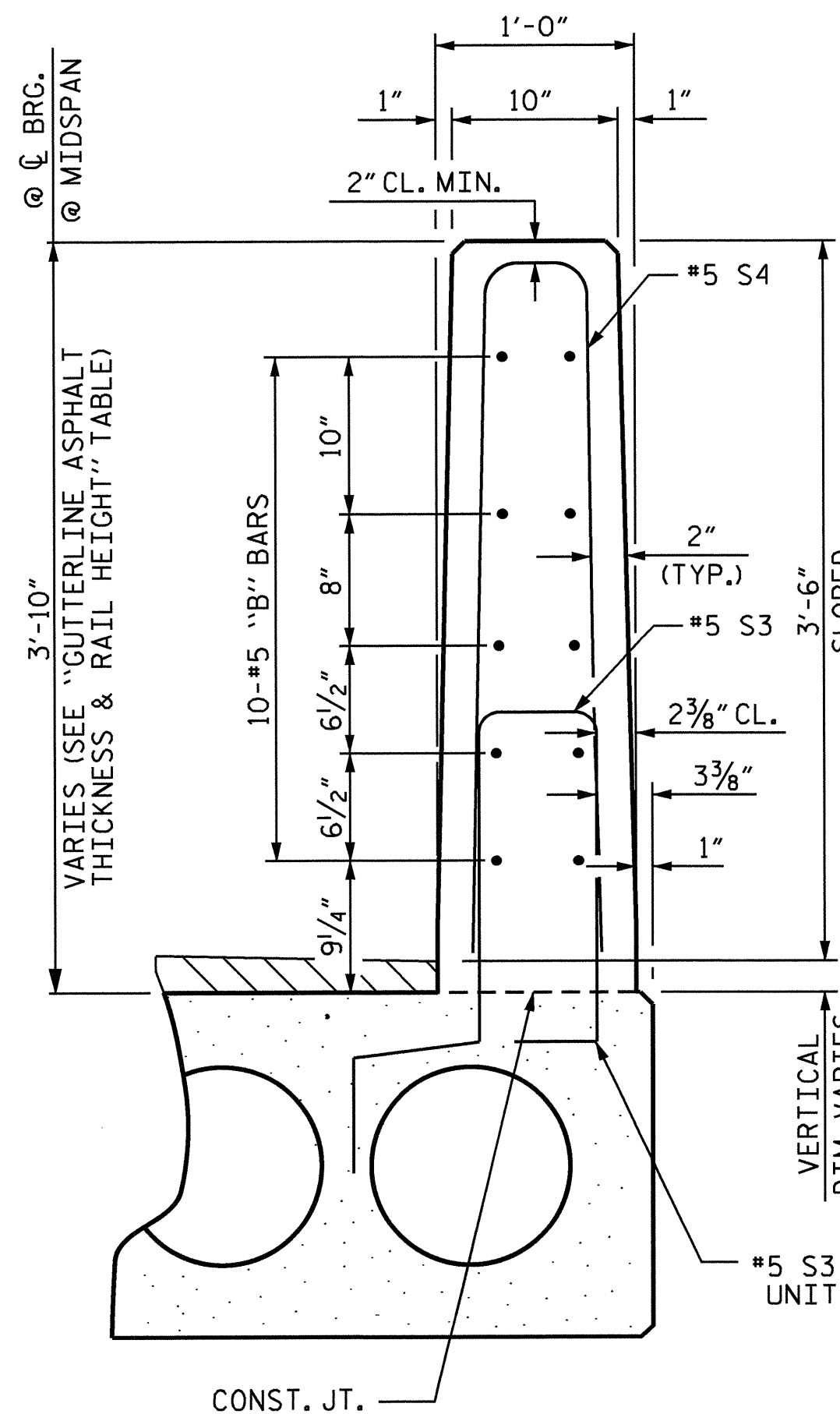
PROJECT NO. BD-5105X
WARREN COUNTY
 STATION: 13+53.50 -L-

SHEET 4 OF 5

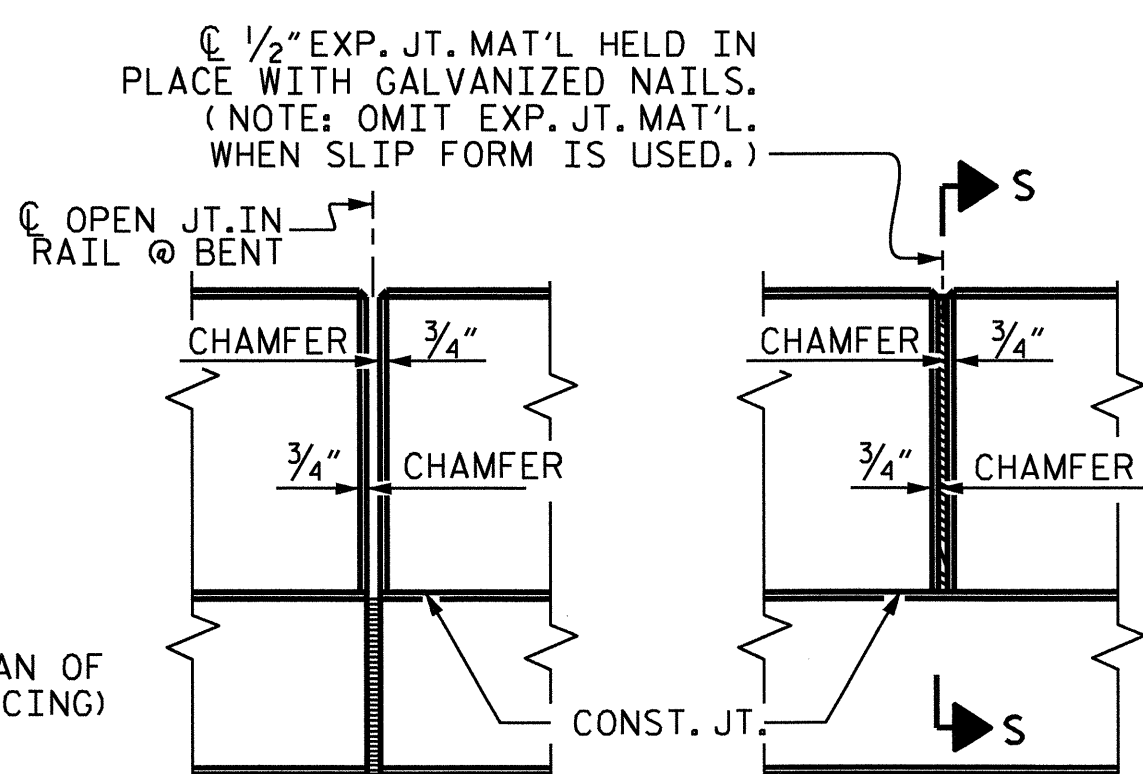
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			19

STD. NO. 21" PCS3-30-90S



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



ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL SECTION

ASSEMBLED BY : A.C. OUTLAW DATE : 1/10/12
 CHECKED BY : K.W. ALFORD DATE : 2/12
 DRAWN BY : DGE 5/09 REV. 12/11 MAA/AAC
 CHECKED BY : BCH 6/09

NOTES

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

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

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

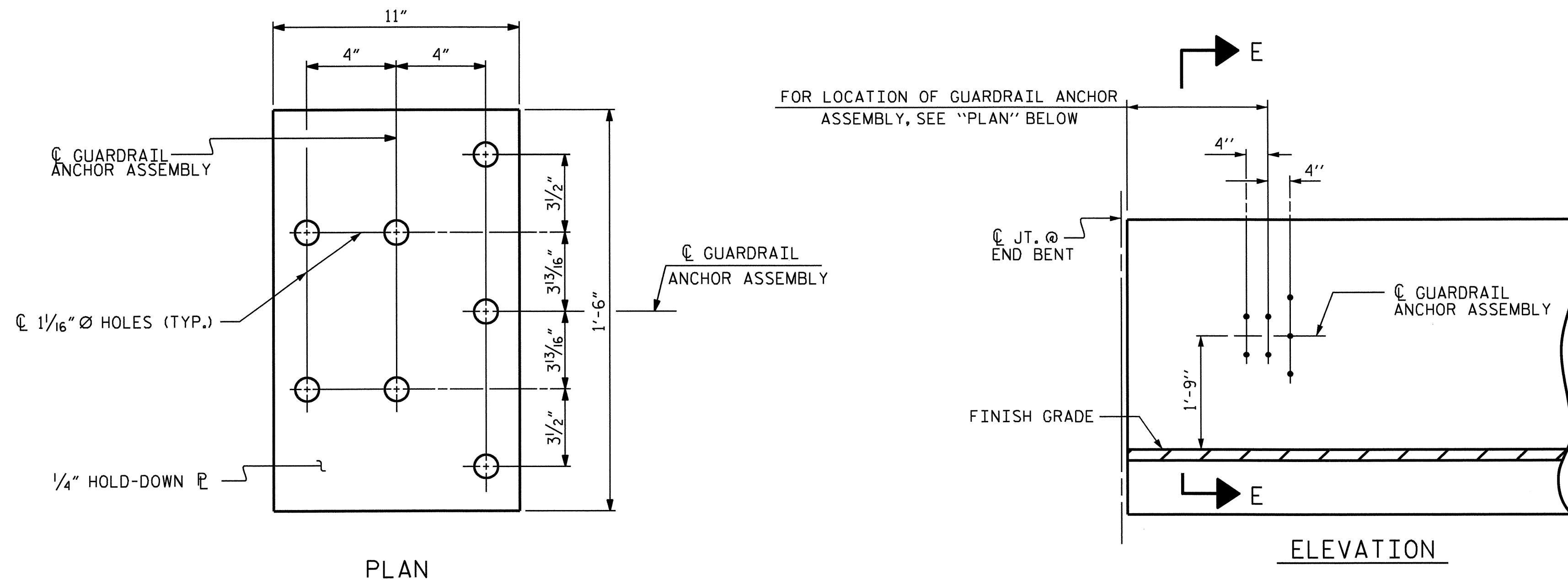
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

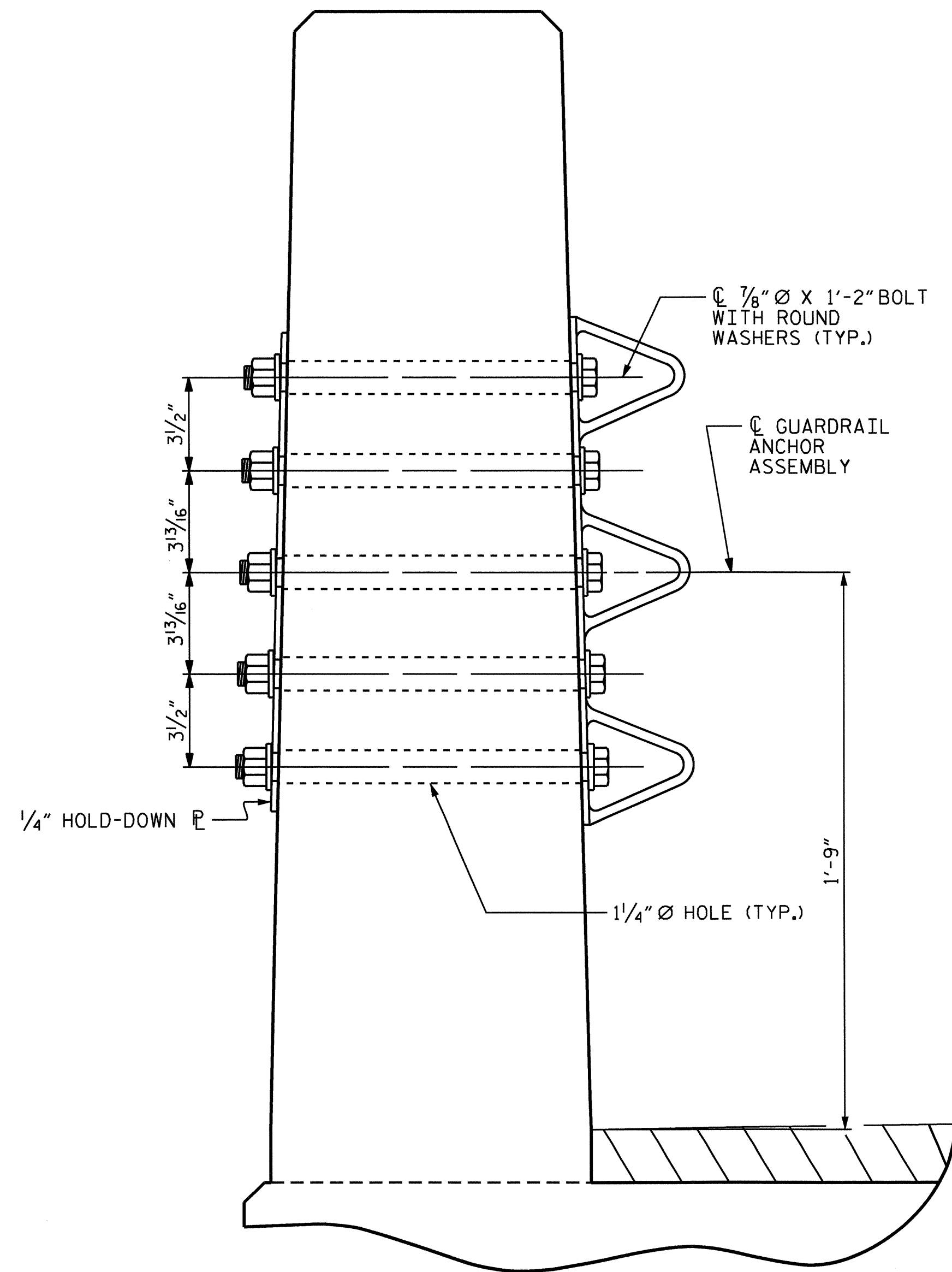
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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

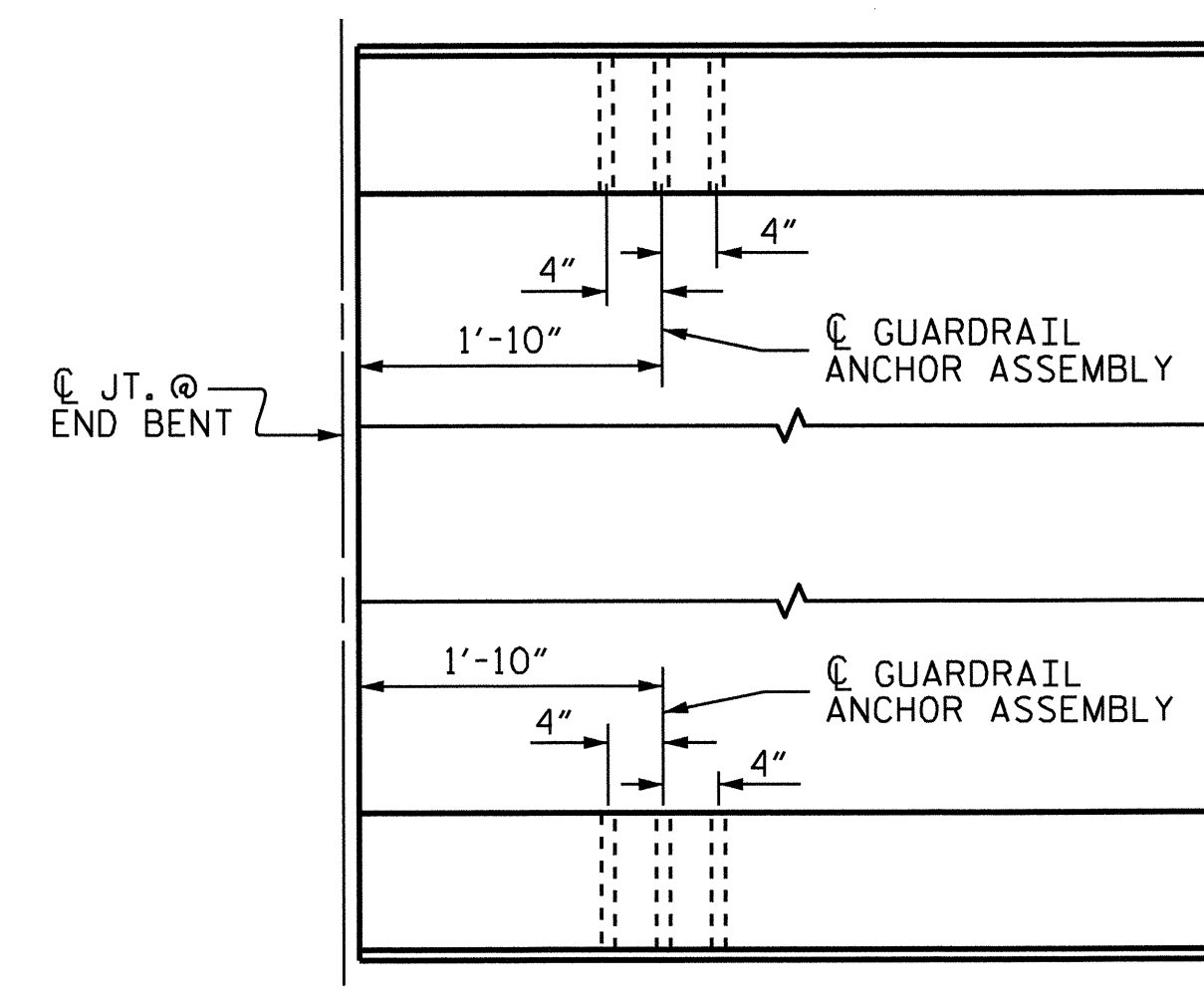


PLAN

ELEVATION



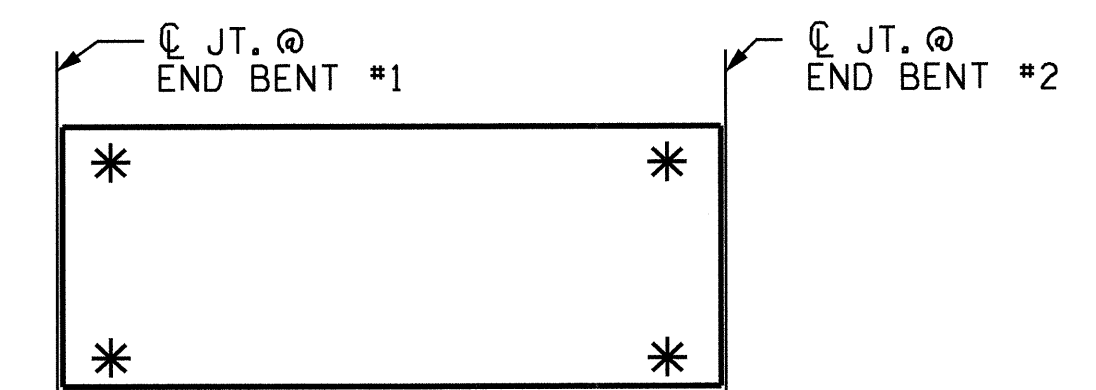
SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. BD-5105X
WARREN COUNTY
 STATION: 13+53.50 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR VERTICAL CONCRETE
 BARRIER RAIL



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS 19
2			4			

ASSEMBLED BY : A.C. OUTLAW	DATE : 1/11/12
CHECKED BY : K. W. ALFORD	DATE : 2/12
DRAWN BY : MAA 5/10	ADDED 5/6/10
CHECKED BY : GM 5/10	REV. 10/1/11
	REV. 12/5/11

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 kalford

NOTES

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

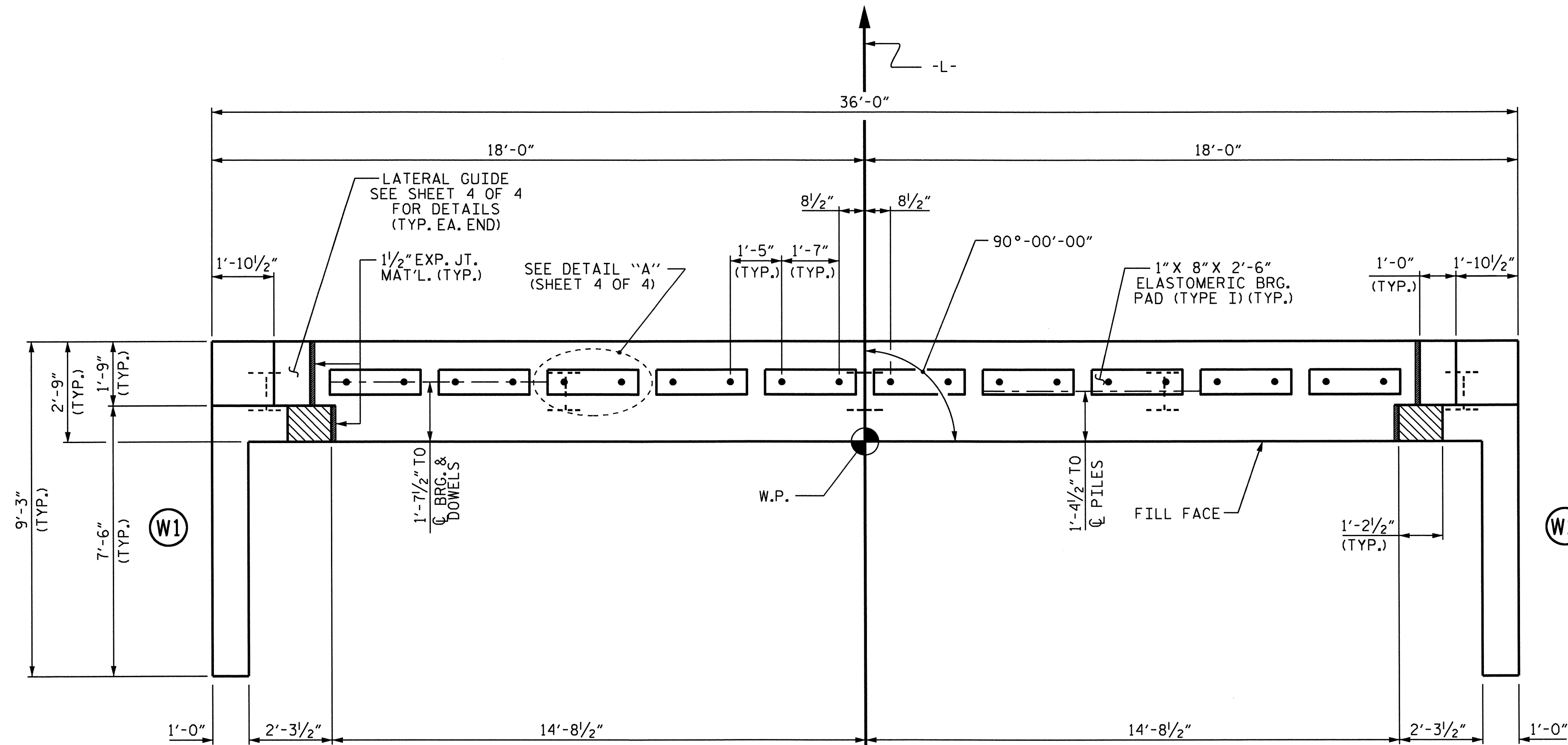
THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

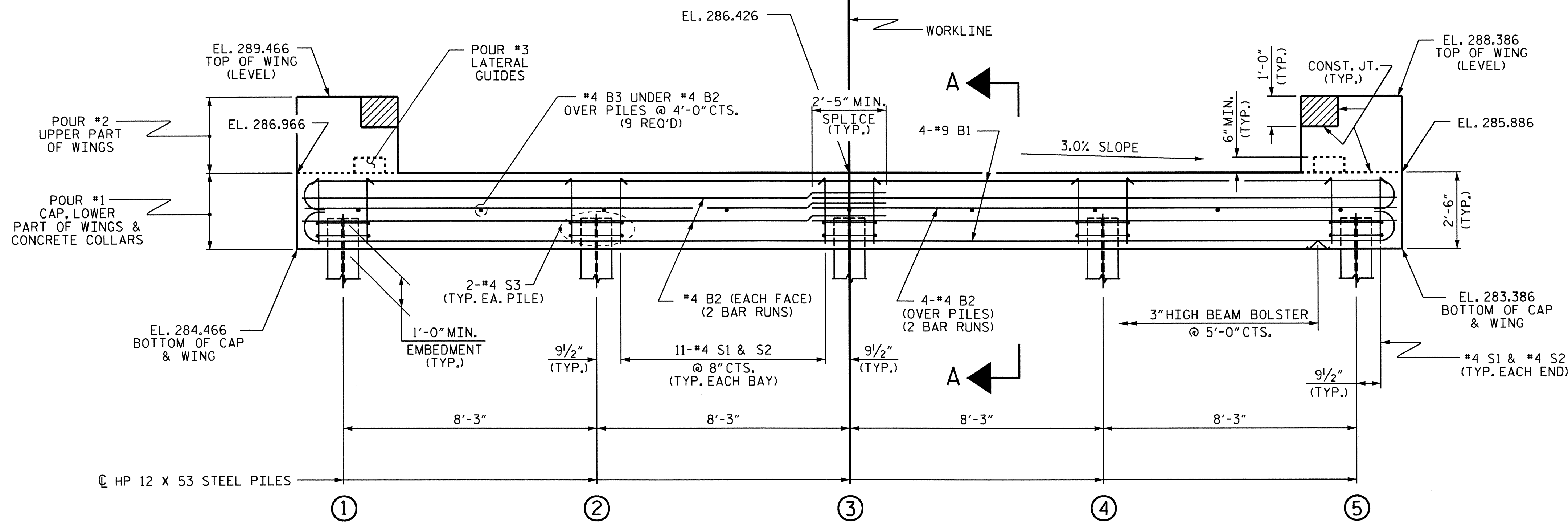
FOR WING DETAILS, SEE SHEET 3 OF 4.

THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.



PLAN

TOP OF PILE ELEVATIONS	
①	285.436
②	285.189
③	284.941
④	284.694
⑤	284.446



ELEVATION

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

PROJECT NO. BD-5105X
WARREN COUNTY
STATION: 13+53.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1



REVISIONS						SHEET NO. S-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 19
2			4			

ASSEMBLED BY : A.C. OUTLAW DATE : 1/11/12
CHECKED BY : K.W. ALFORD DATE : 2/12
DRAWN BY : DGE 02/10
CHECKED BY : MKT 02/10

NOTES

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

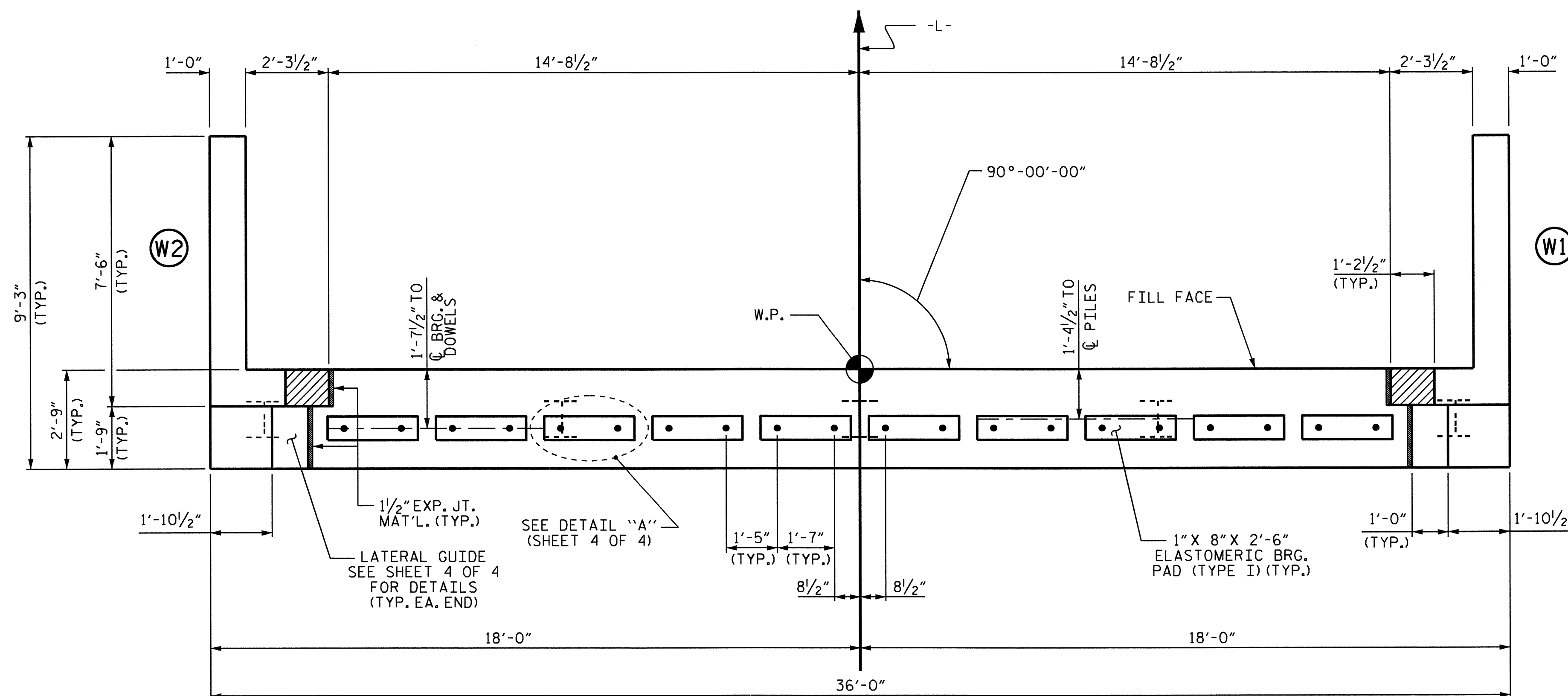
THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

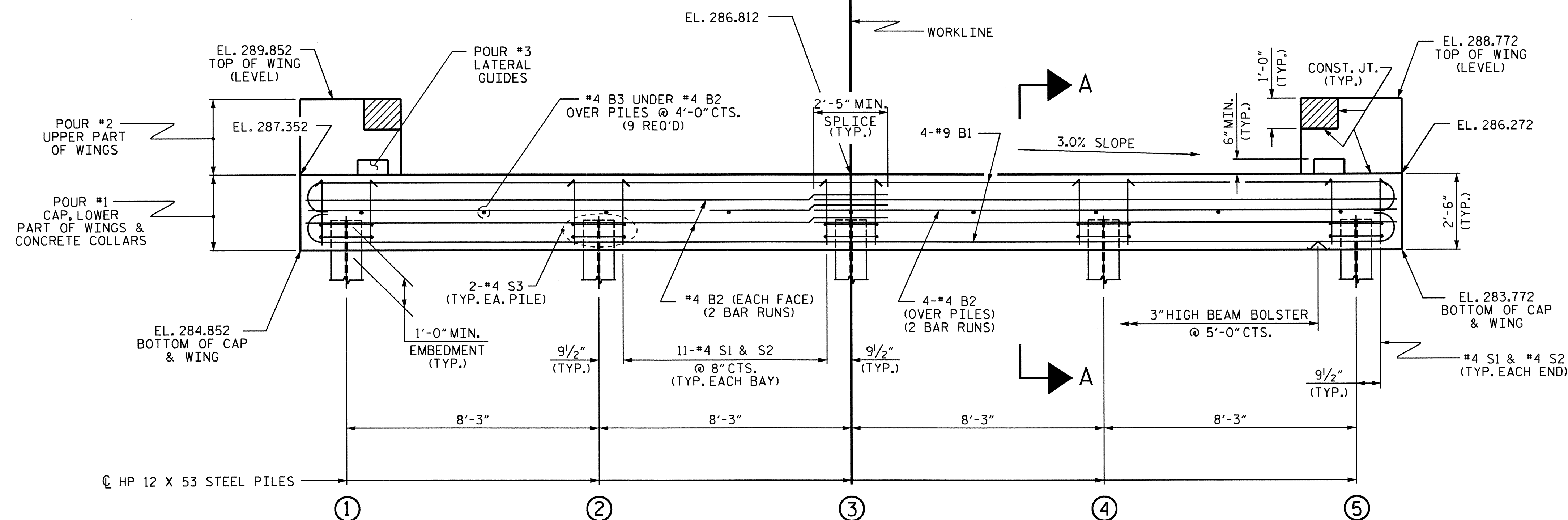
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.



PLAN



ELEVATION

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

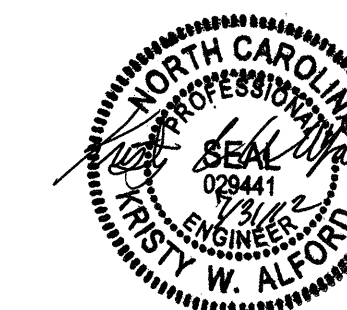
TOP OF PILE ELEVATIONS	
①	285.822
②	285.575
③	285.327
④	285.080
⑤	284.832

PROJECT NO. BD-5105X
WARREN COUNTY
 STATION: 13+53.50 -L-

SHEET 2 OF 4

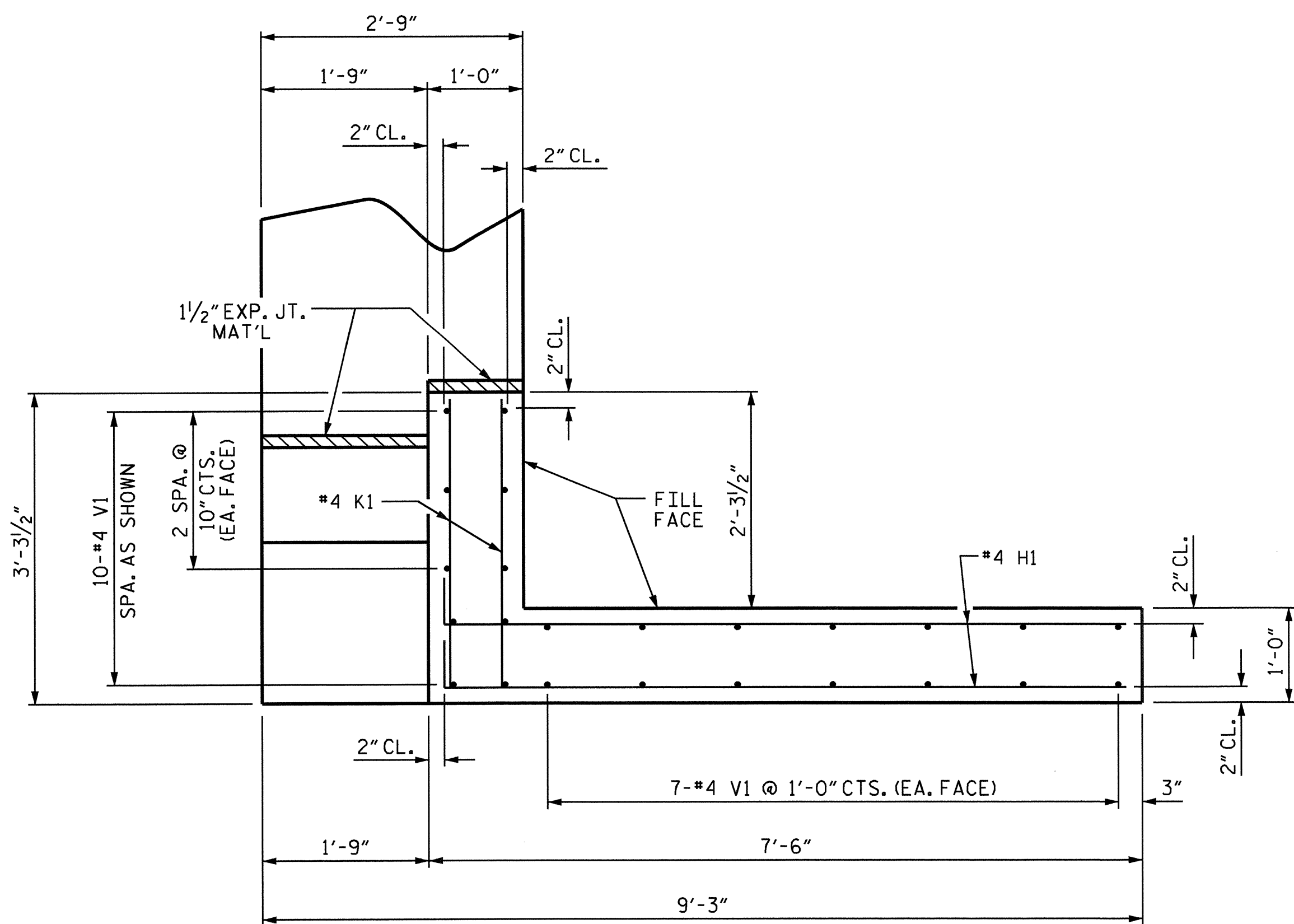
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2

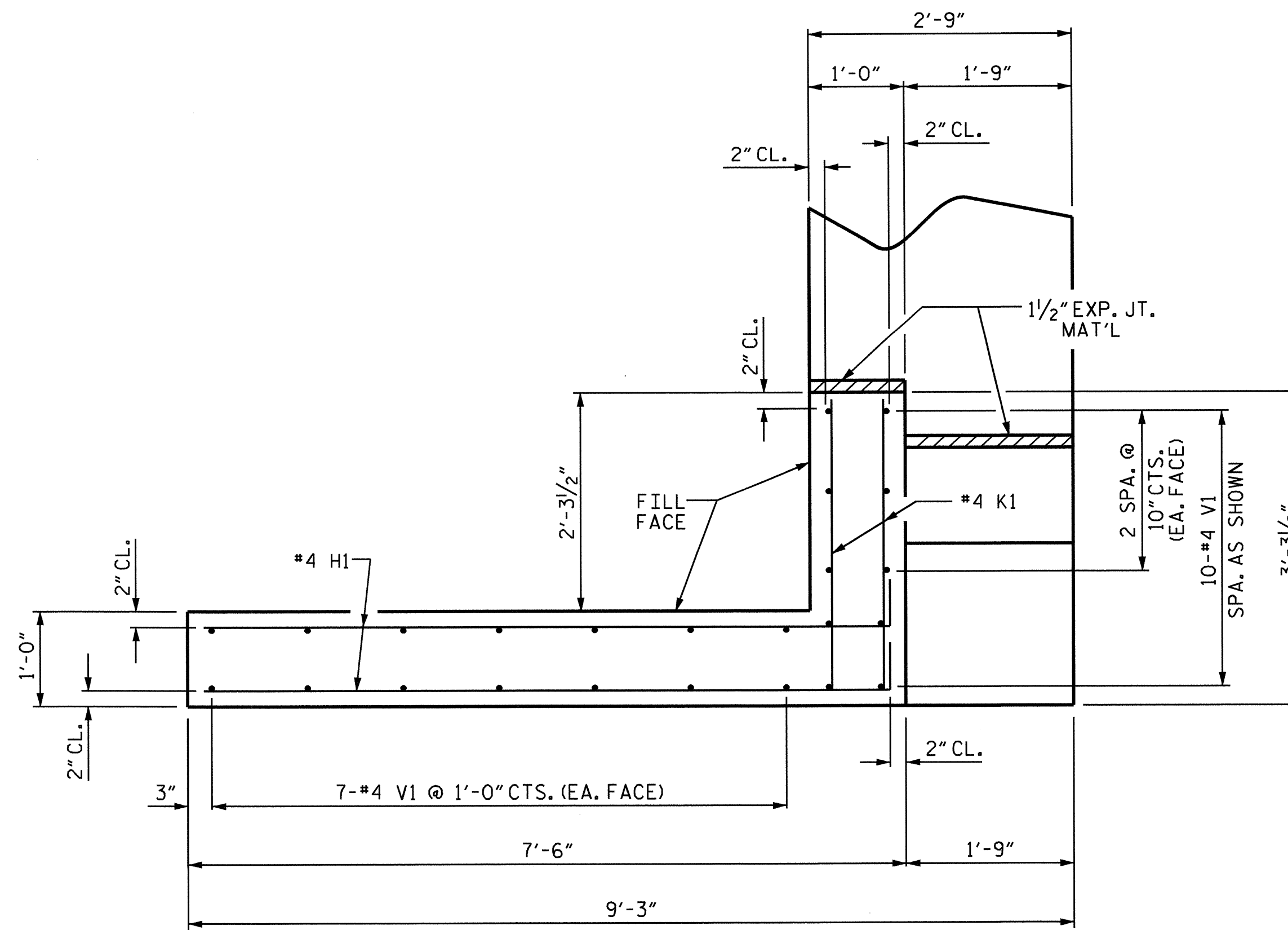


REVISIONS						SHEET NO. S-11
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 19
2			4			

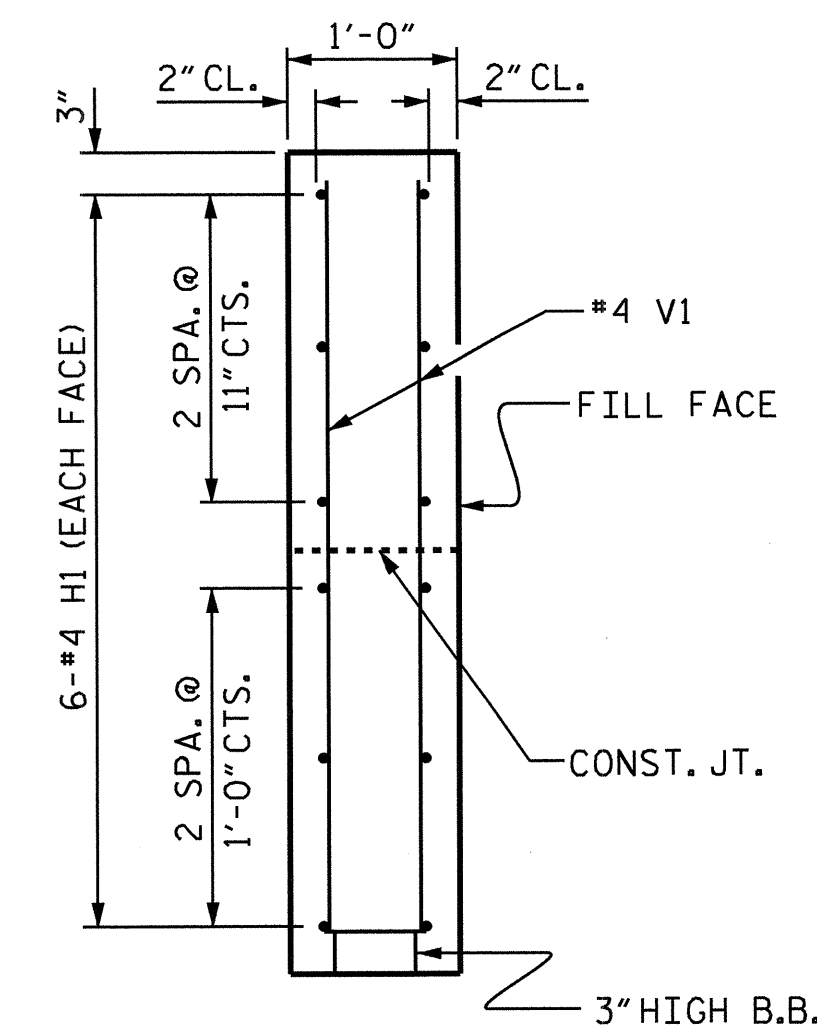
ASSEMBLED BY : A.C. OUTLAW DATE : 1/11/12
 CHECKED BY : K.W. ALFORD DATE : 2/12
 DRAWN BY : DGE 02/10
 CHECKED BY : MKT 02/10



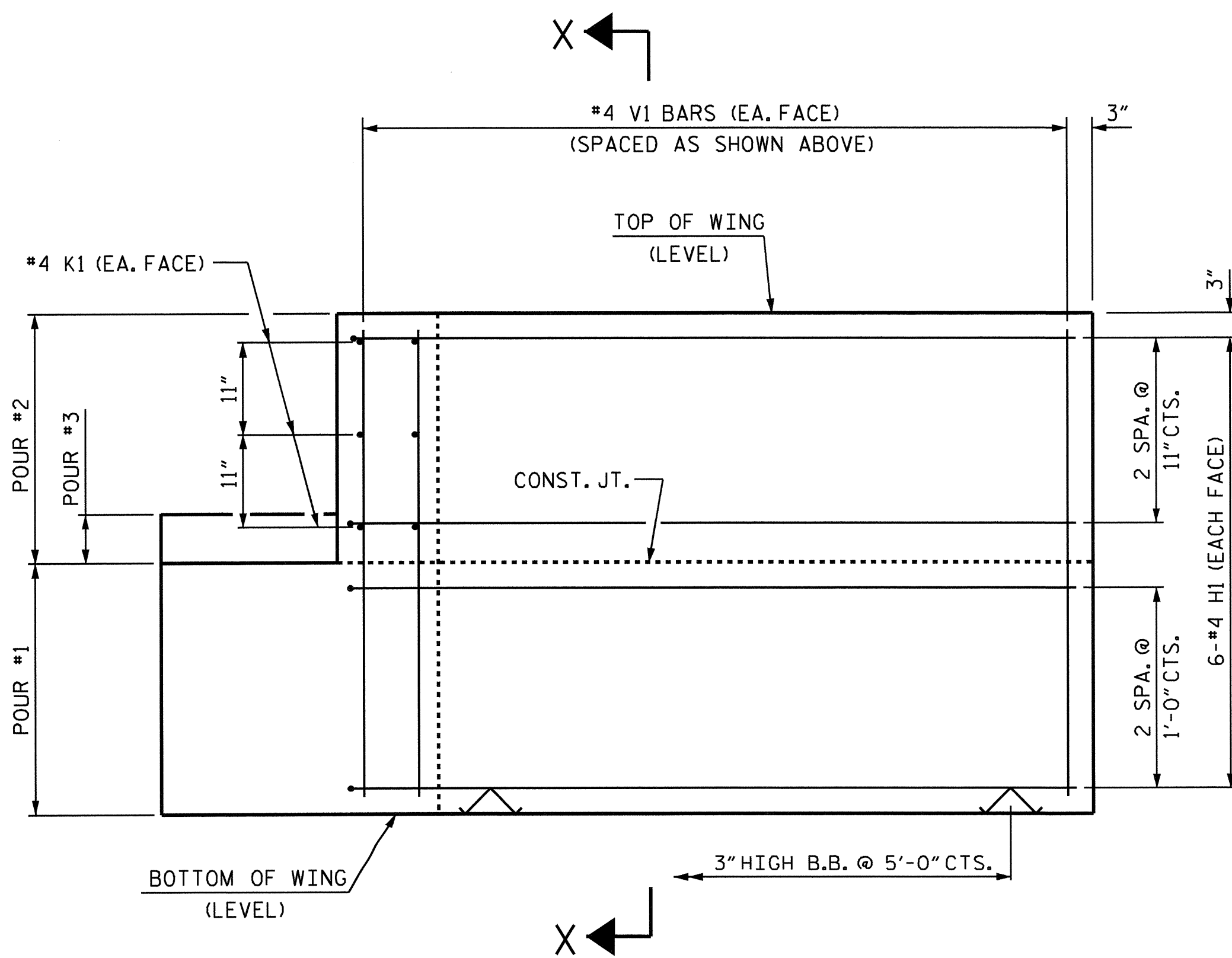
PLAN OF WING (W1)



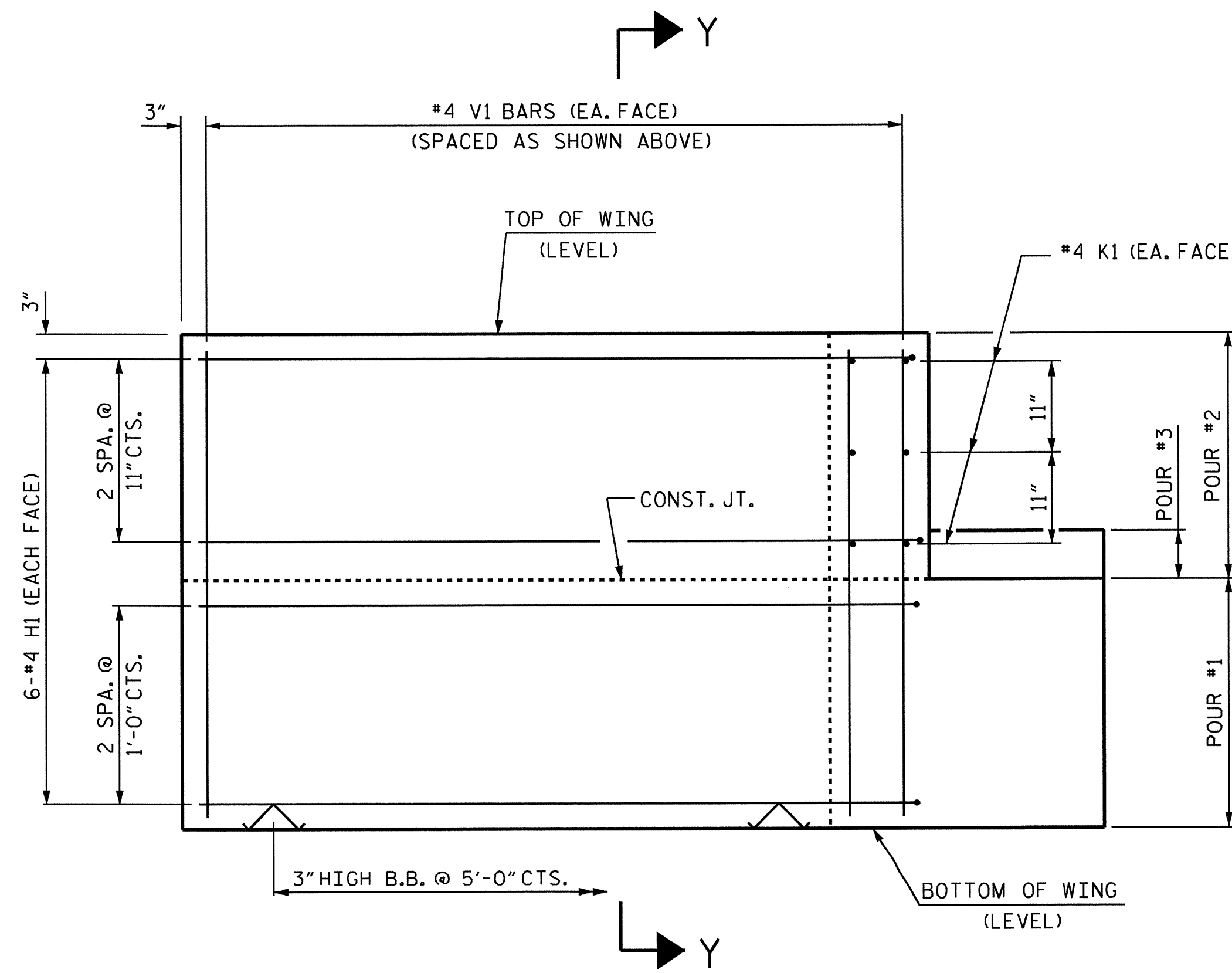
PLAN OF WING (W2)



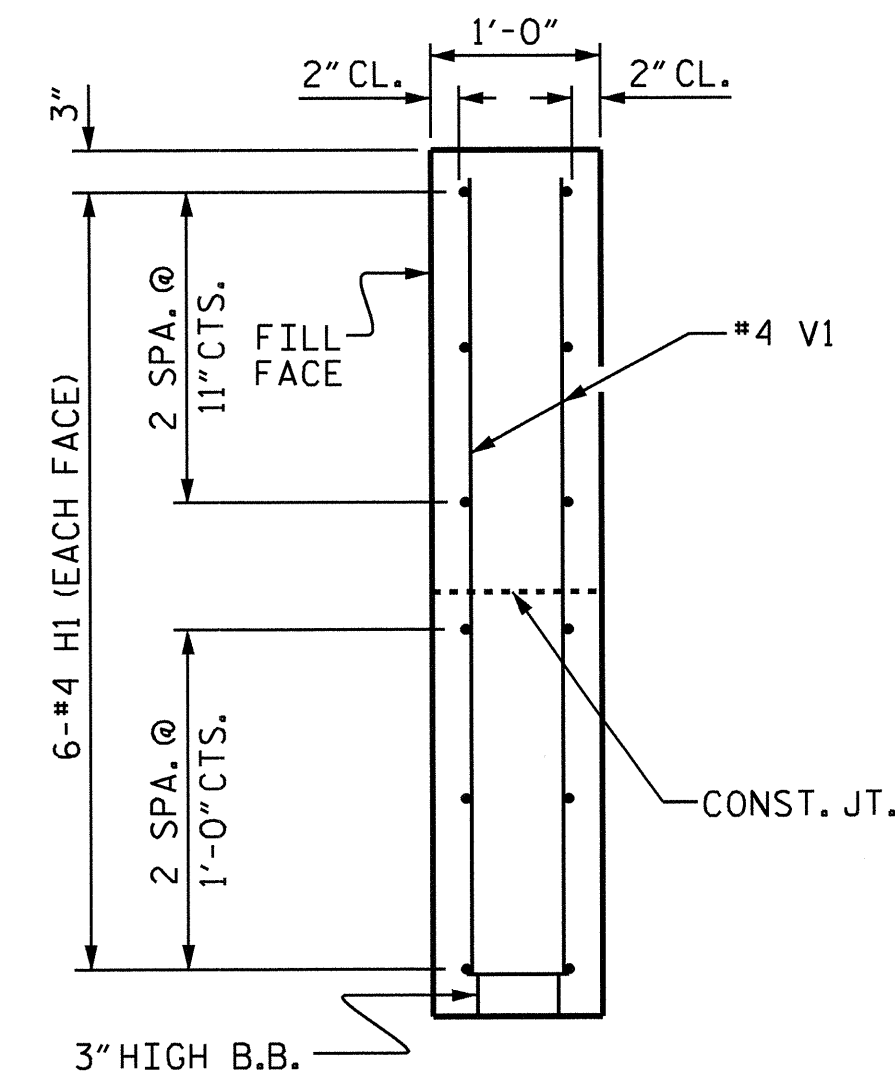
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

WING DETAILS

ASSEMBLED BY : A.C. OUTLAW DATE : 1/11/12
 CHECKED BY : K.W. ALFORD DATE : 2/12
 DRAWN BY : DGE 02/10
 CHECKED BY : MKT 02/10

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 Kalford



PROJECT NO. BD-5105X
WARREN COUNTY
 STATION: 13+53.50 -L-

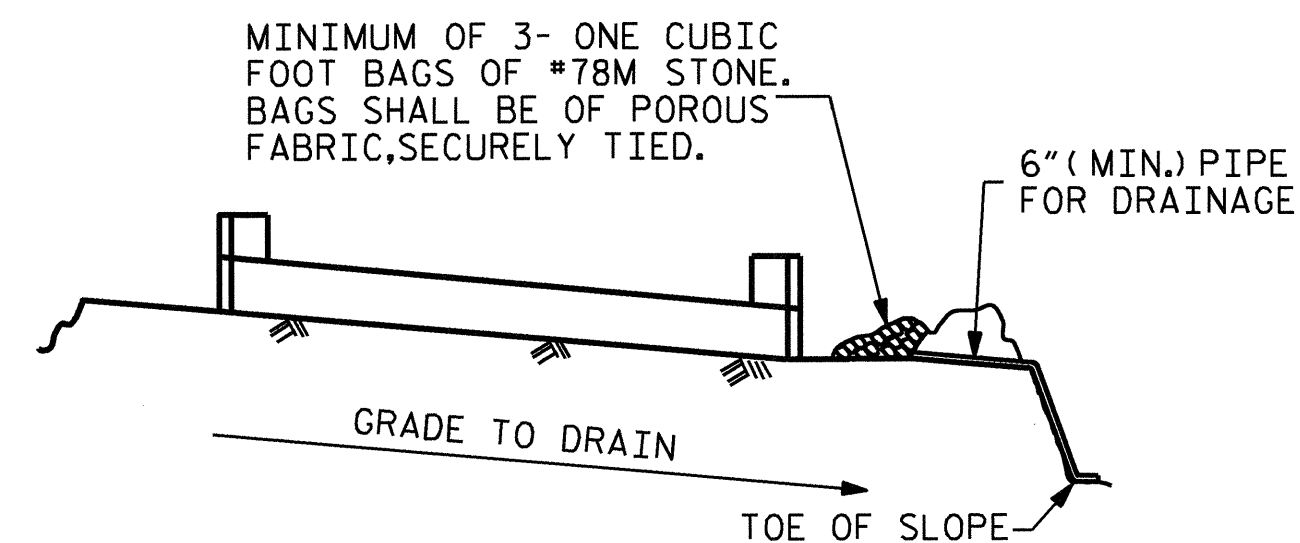
SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT
 WING DETAILS

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12	
1			3			TOTAL SHEETS	19
2			4				

STD. NO. EB_30_90S

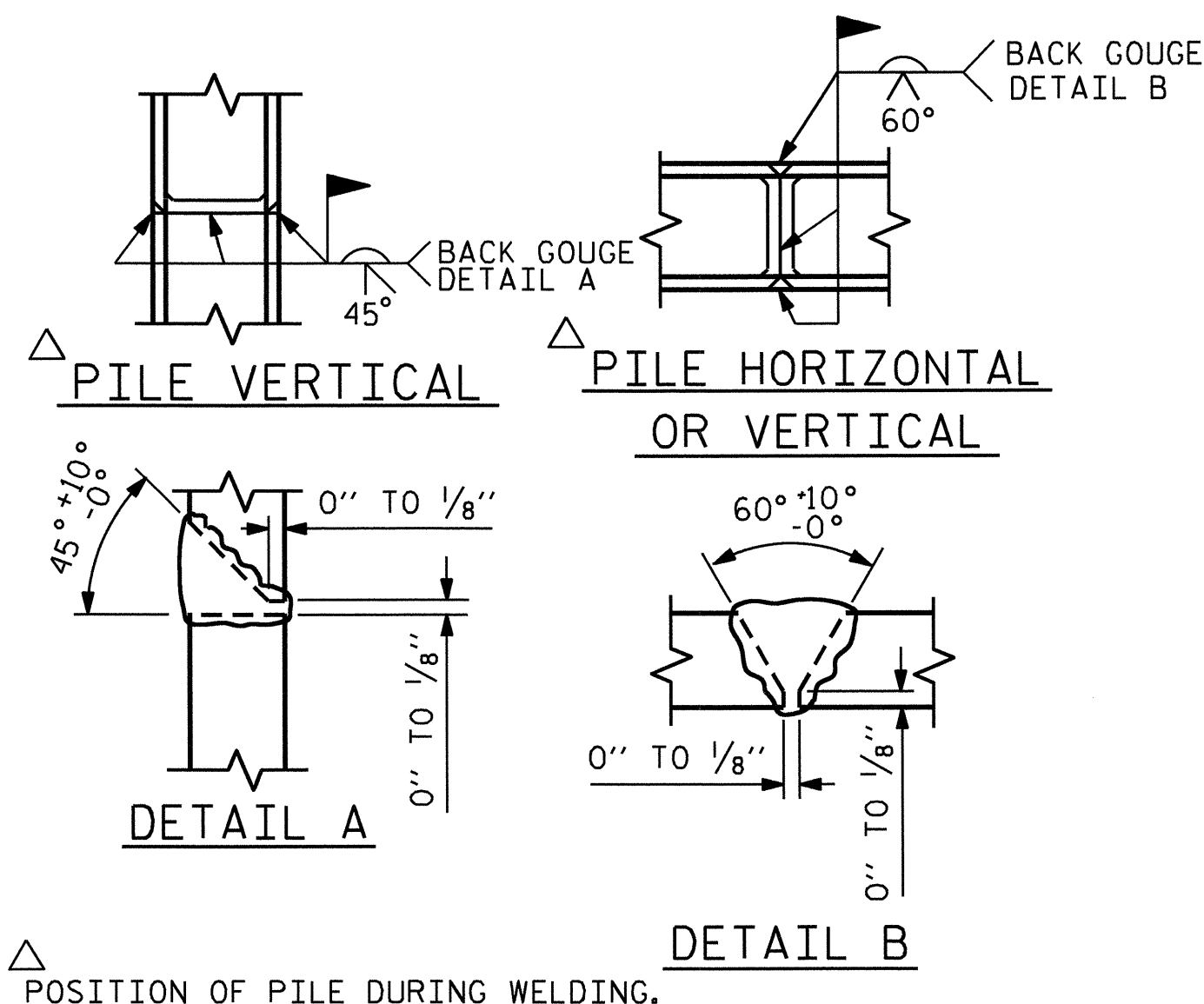


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

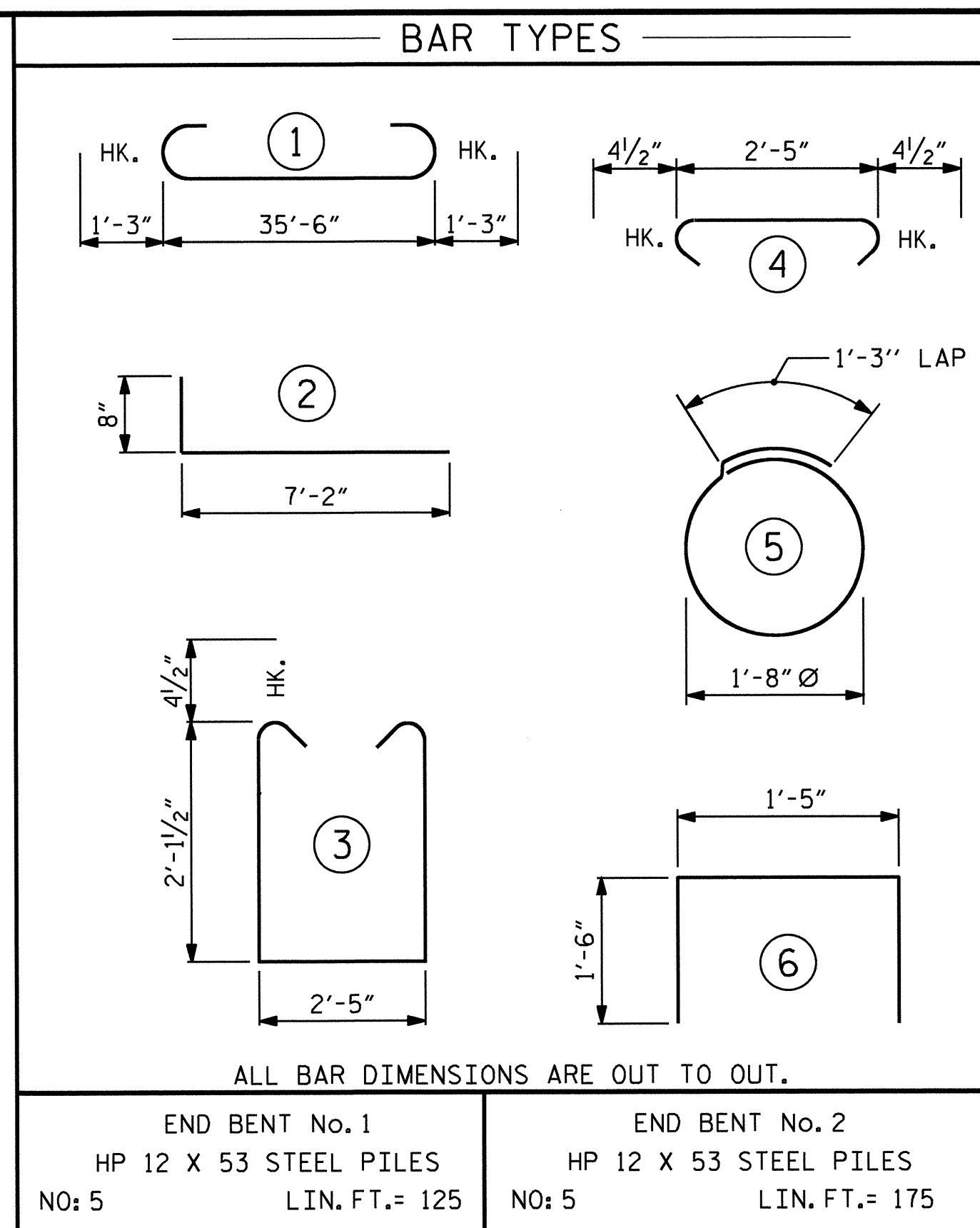
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

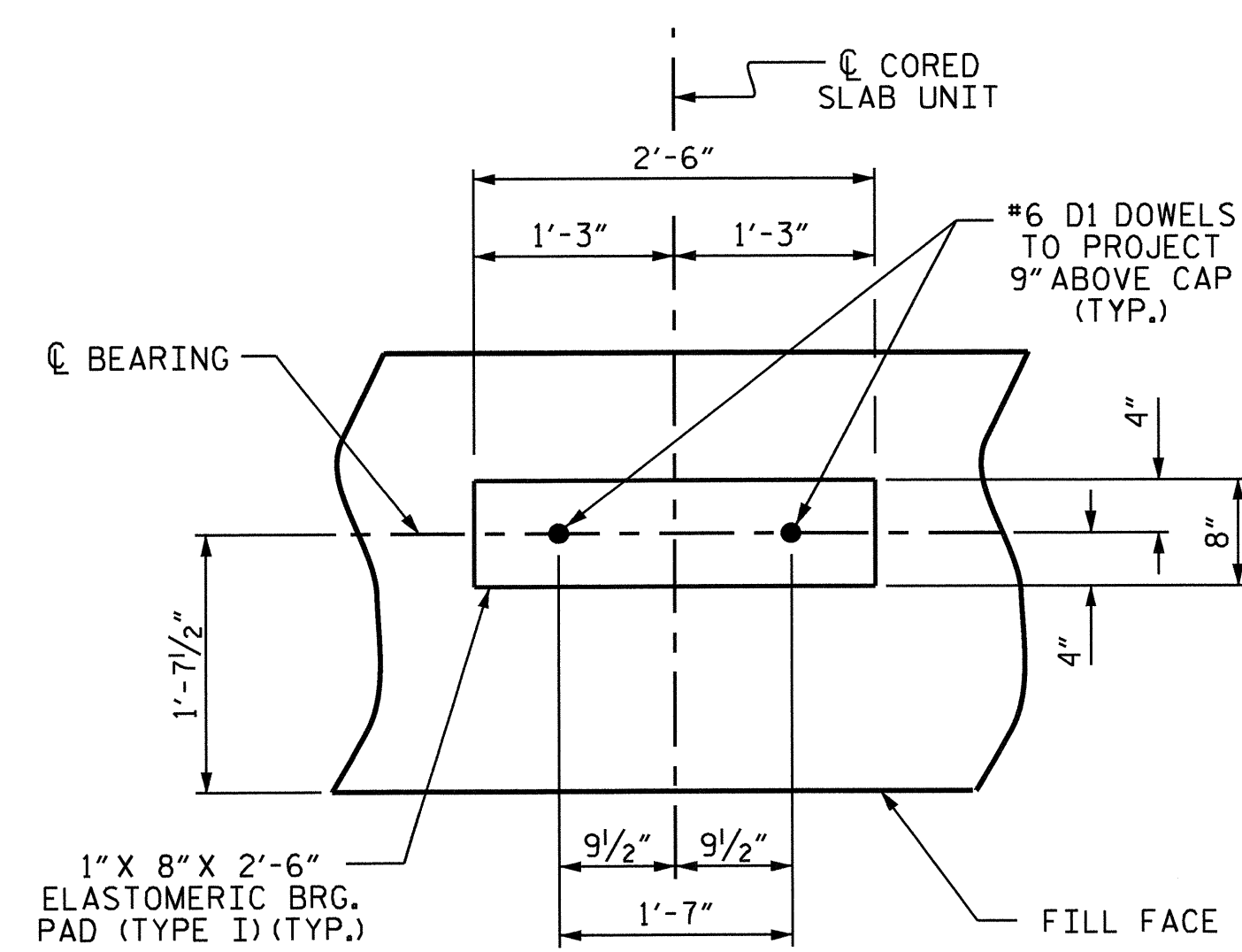
TEMPORARY DRAINAGE AT END BENT



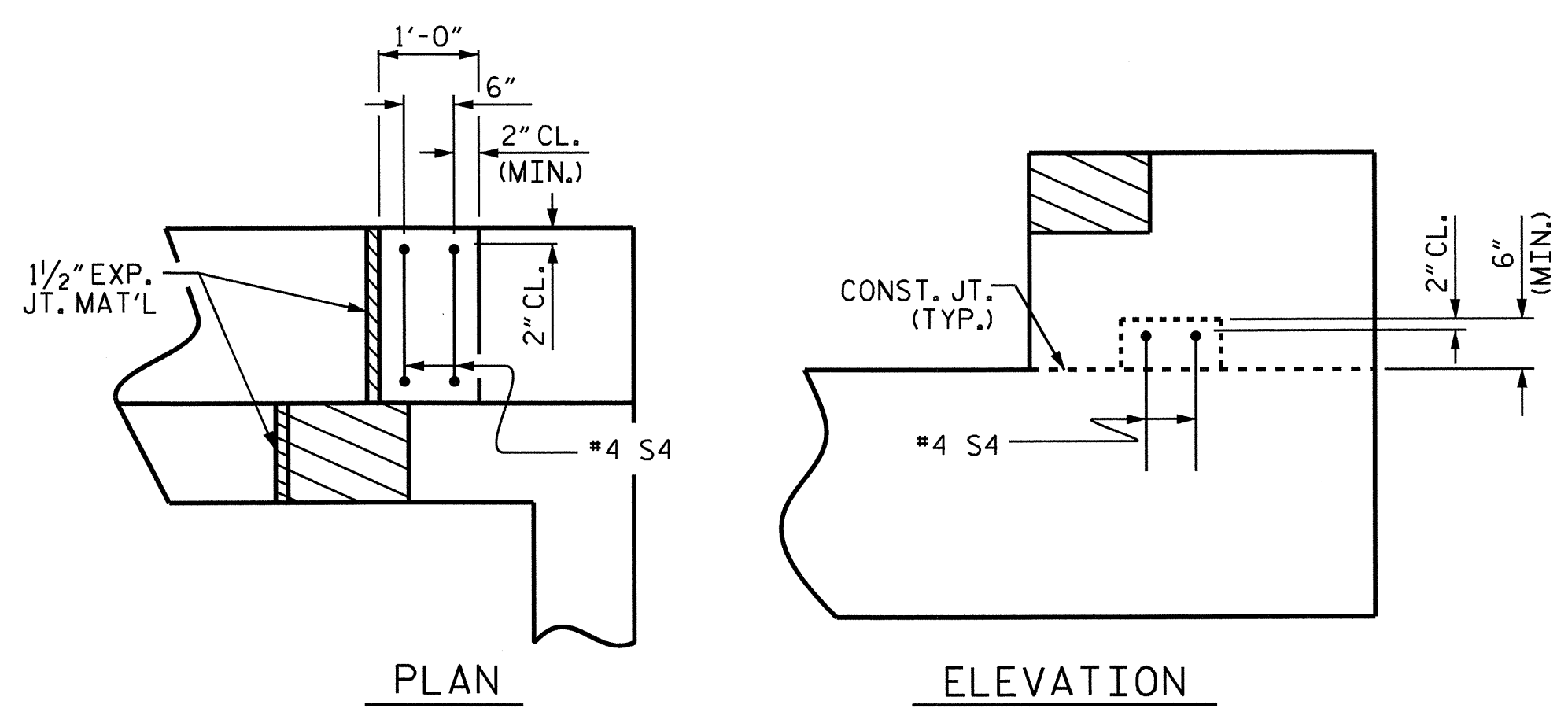
PILE SPLICE DETAILS



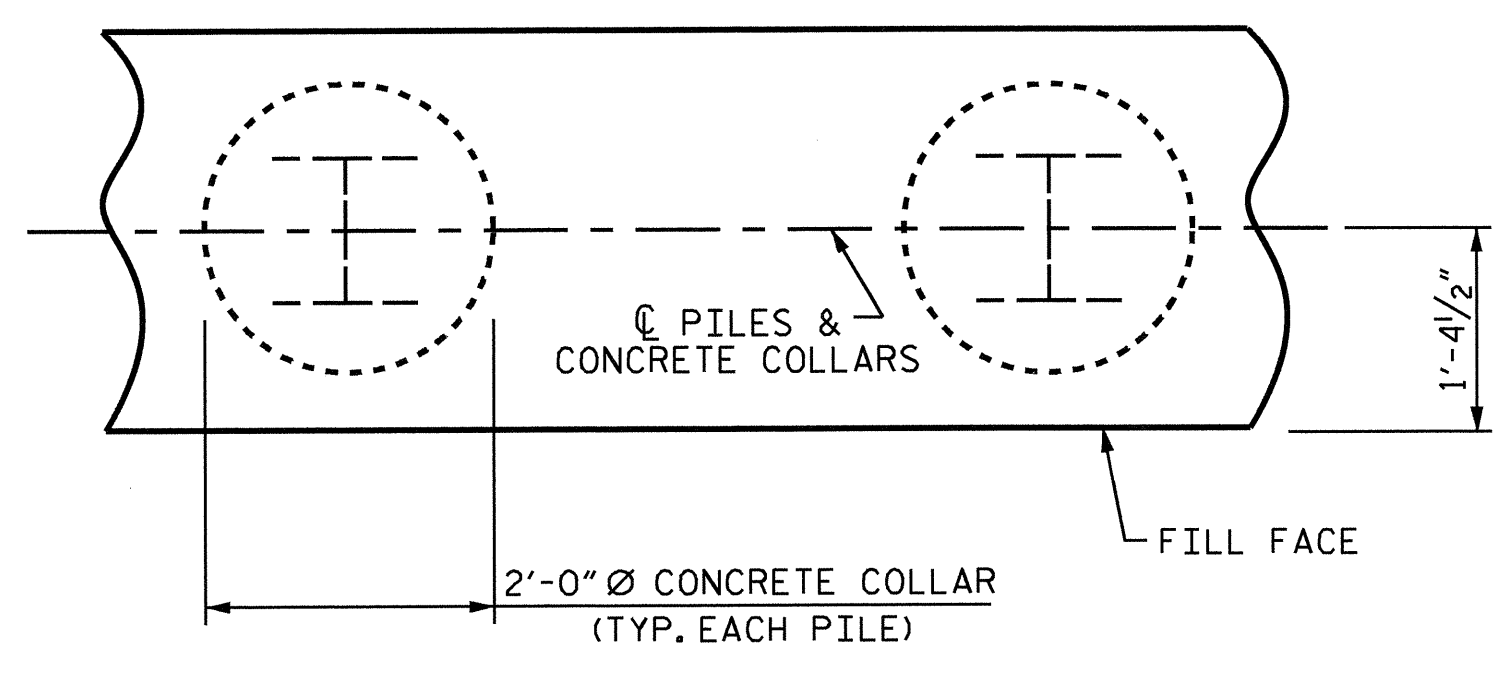
BILL OF MATERIAL					
FOR ONE END BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-0"	1034
B2	16	#4	STR	19'-1"	204
B3	9	#4	STR	2'-5"	15
D1	20	#6	STR	1'-6"	45
H1	24	#4	2	7'-10"	126
K1	12	#4	STR	2'-11"	23
S1	46	#4	3	7'-5"	228
S2	46	#4	4	3'-2"	97
S3	10	#4	5	6'-6"	43
S4	4	#4	6	4'-5"	12
V1	48	#4	STR	4'-8"	150
REINFORCING STEEL (FOR ONE END BENT)					1977 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS				11.2 C.Y.
POUR #2	UPPER PART OF WINGS				1.8 C.Y.
POUR #3	LATERAL GUIDES				0.1 C.Y.
TOTAL CLASS A CONCRETE					13.1 C.Y.



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

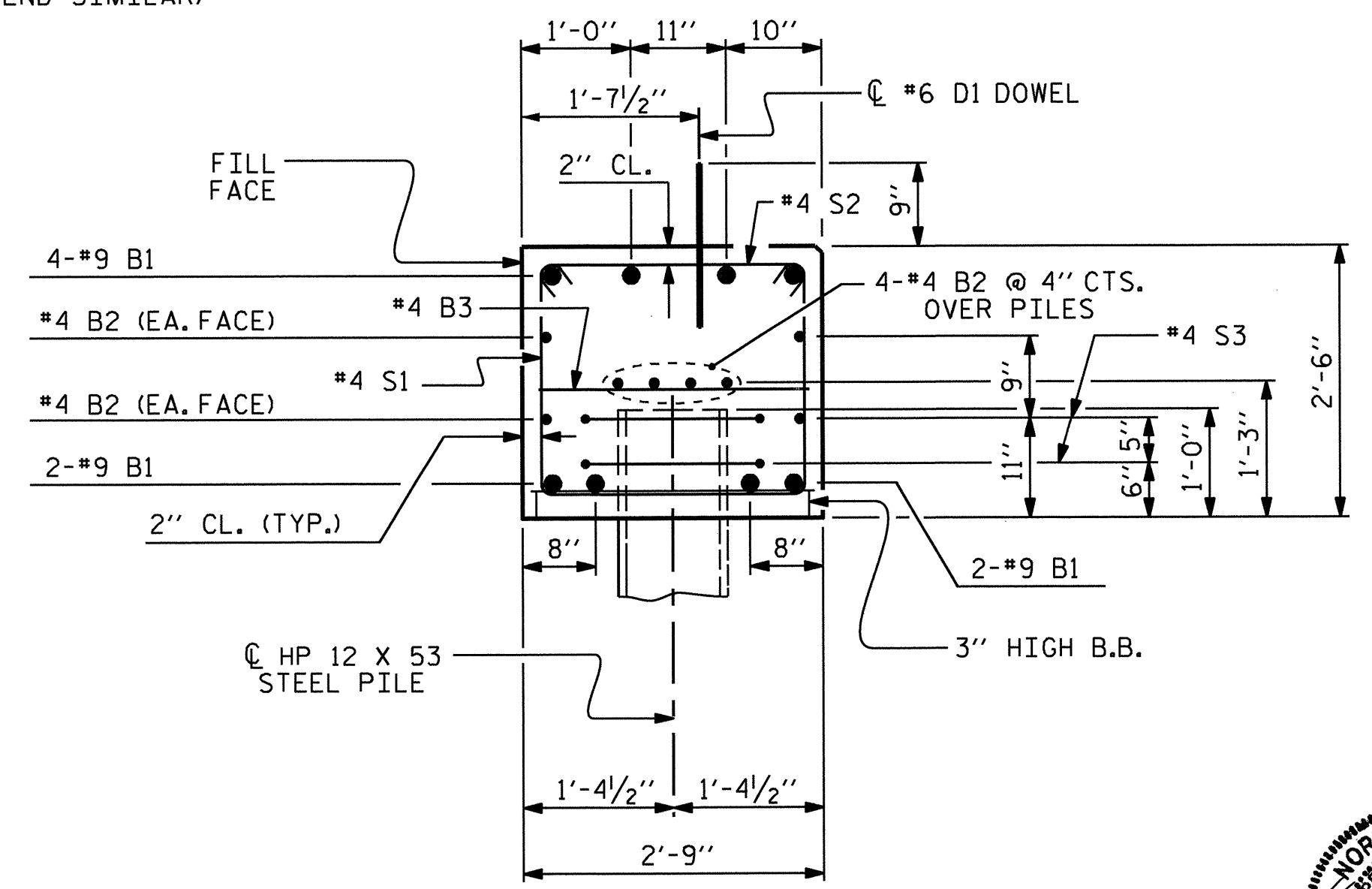
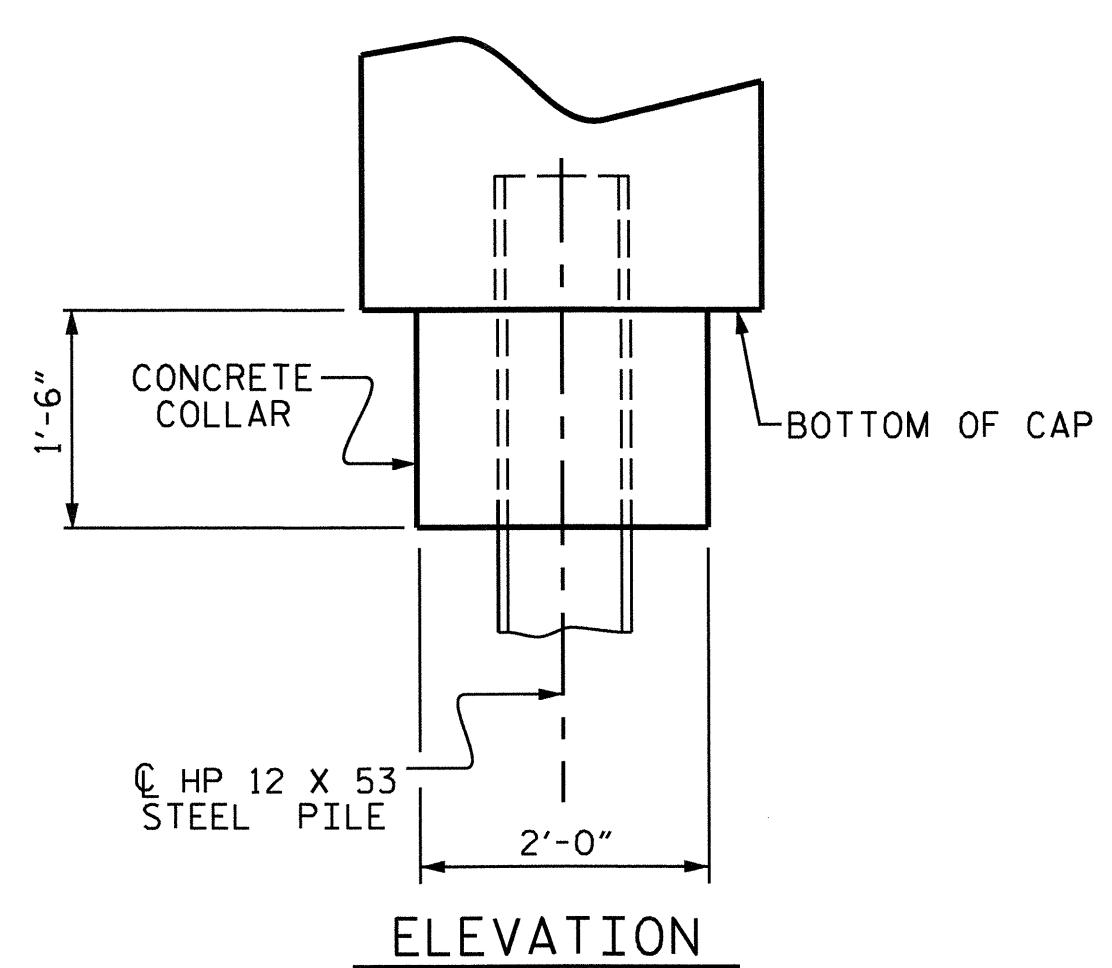


(RIGHT LATERAL GUIDE SHOWN, LEFT END SIMILAR)



CORROSION PROTECTION FOR STEEL PILES DETAIL

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



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

PROJECT NO. BD-5105X
WARREN COUNTY
 STATION: 13+53.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2
 DETAILS

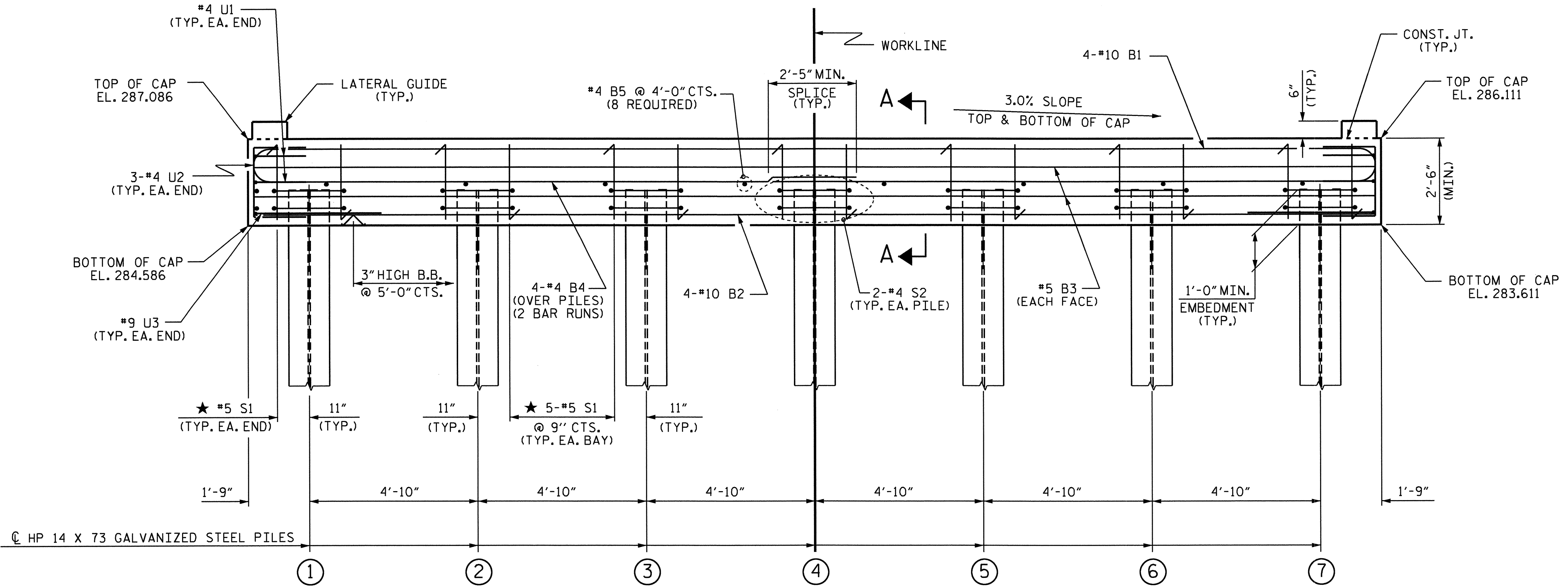
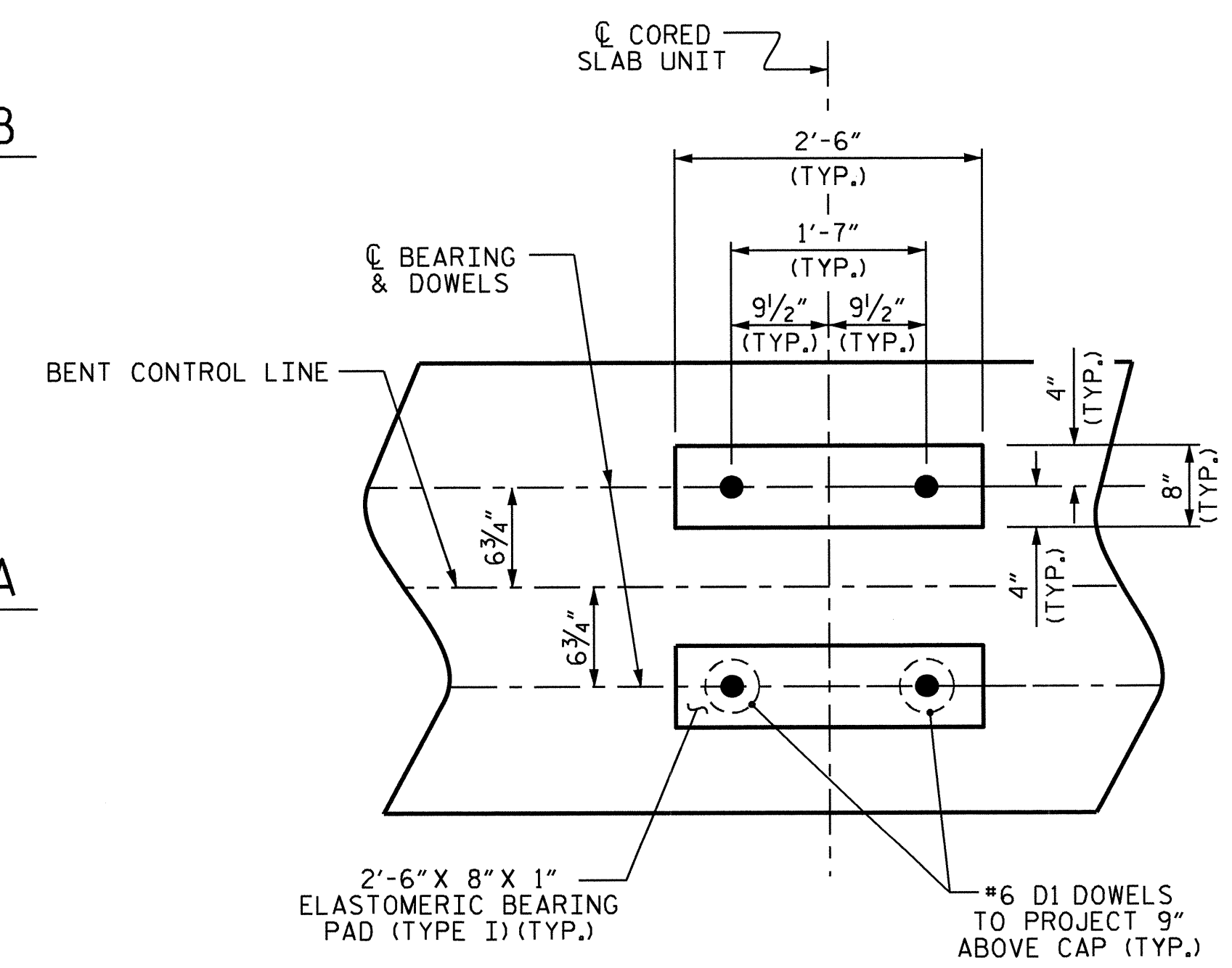
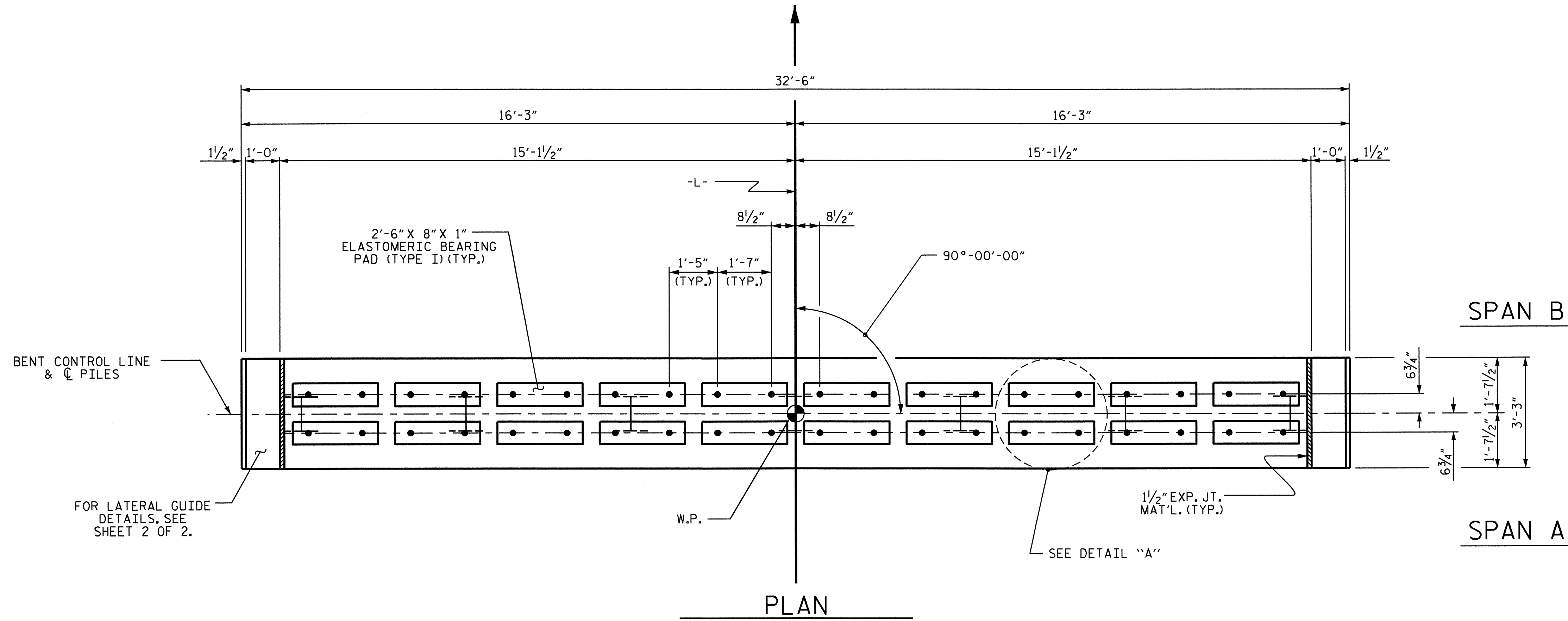


ASSEMBLED BY : A.C. OUTLAW	DATE : 1/11/12
CHECKED BY : K.W. ALFORD	DATE : 2/12
DRAWN BY : DGE	02/10
CHECKED BY : MKT	02/10

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			19

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.
- INVERT ALTERNATE STIRRUPS.
- GALVANIZE THE FULL LENGTH OF EACH INTERIOR BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.
- THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.



TOP OF PILE ELEVATIONS	
①	285.549
②	285.404
③	285.258
④	286.114
⑤	284.969
⑥	284.823
⑦	284.679

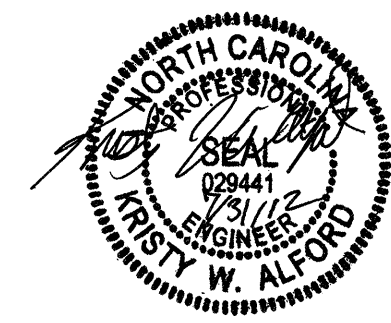
PROJECT NO. BD-5105X
WARREN COUNTY
 STATION: 13+53.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

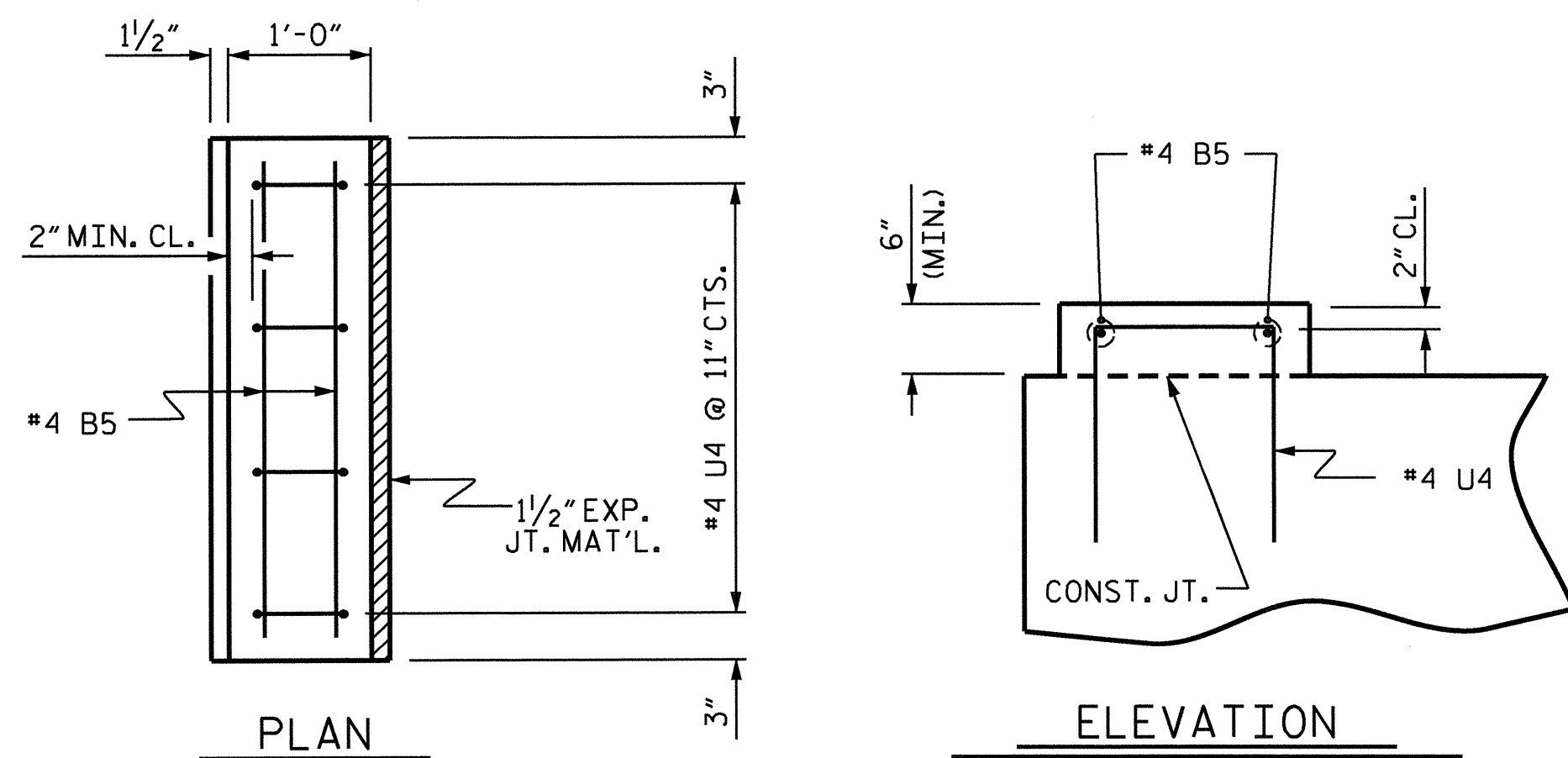
SUBSTRUCTURE
 BENT No. 1

REVISIONS						SHEET NO. S-14
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 19
2			4			

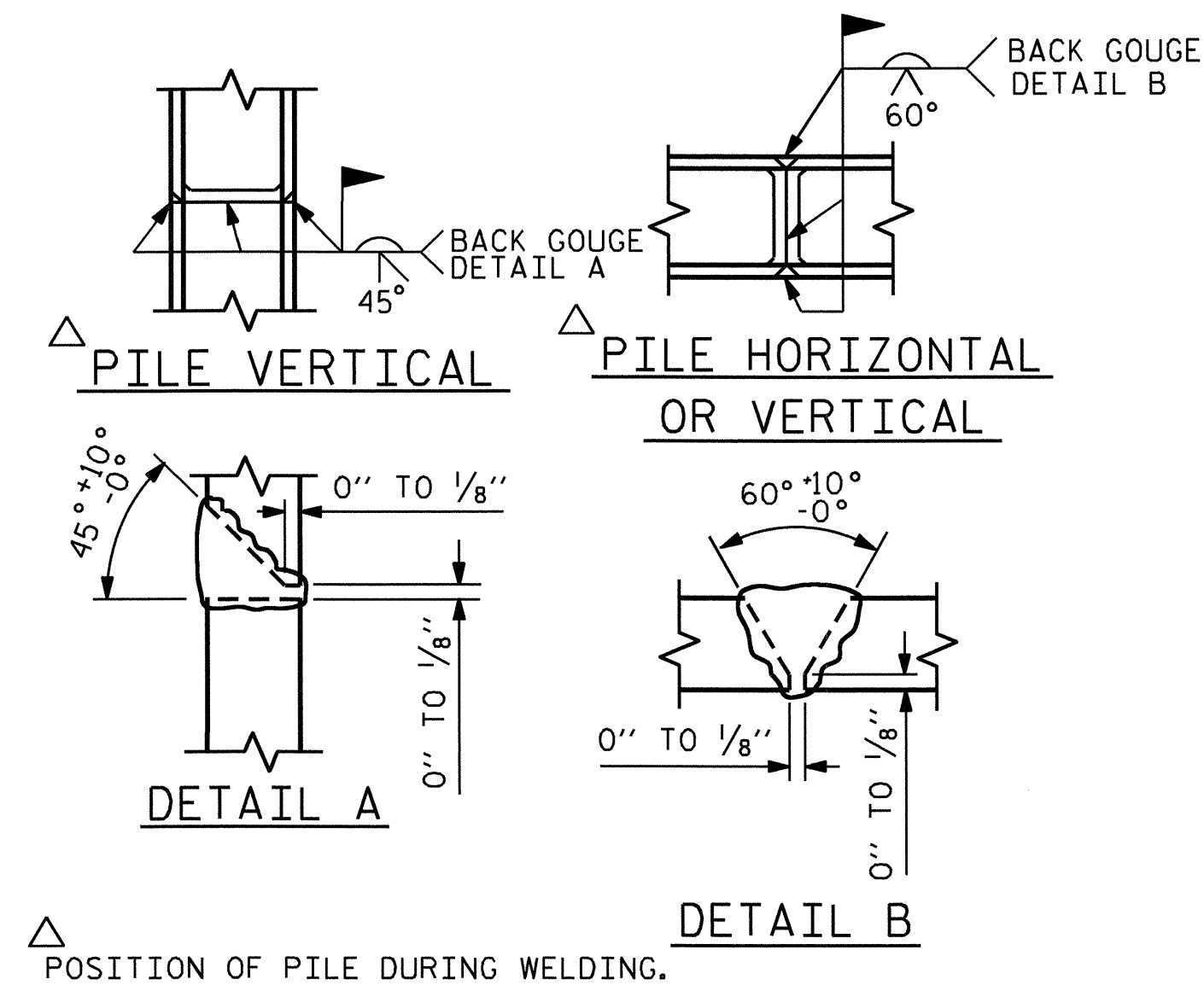


ASSEMBLED BY : A.C. OUTLAW DATE : 1/11/12
 CHECKED BY : K.W. ALFORD DATE : 2/12
 DRAWN BY : DGE 05/10
 CHECKED BY : MKT 05/10

30-JUL-2012 11:40
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 kalford



LATERAL GUIDE DETAILS
(LEFT LATERAL GUIDE SHOWN, RIGHT SIDE SIMILAR)

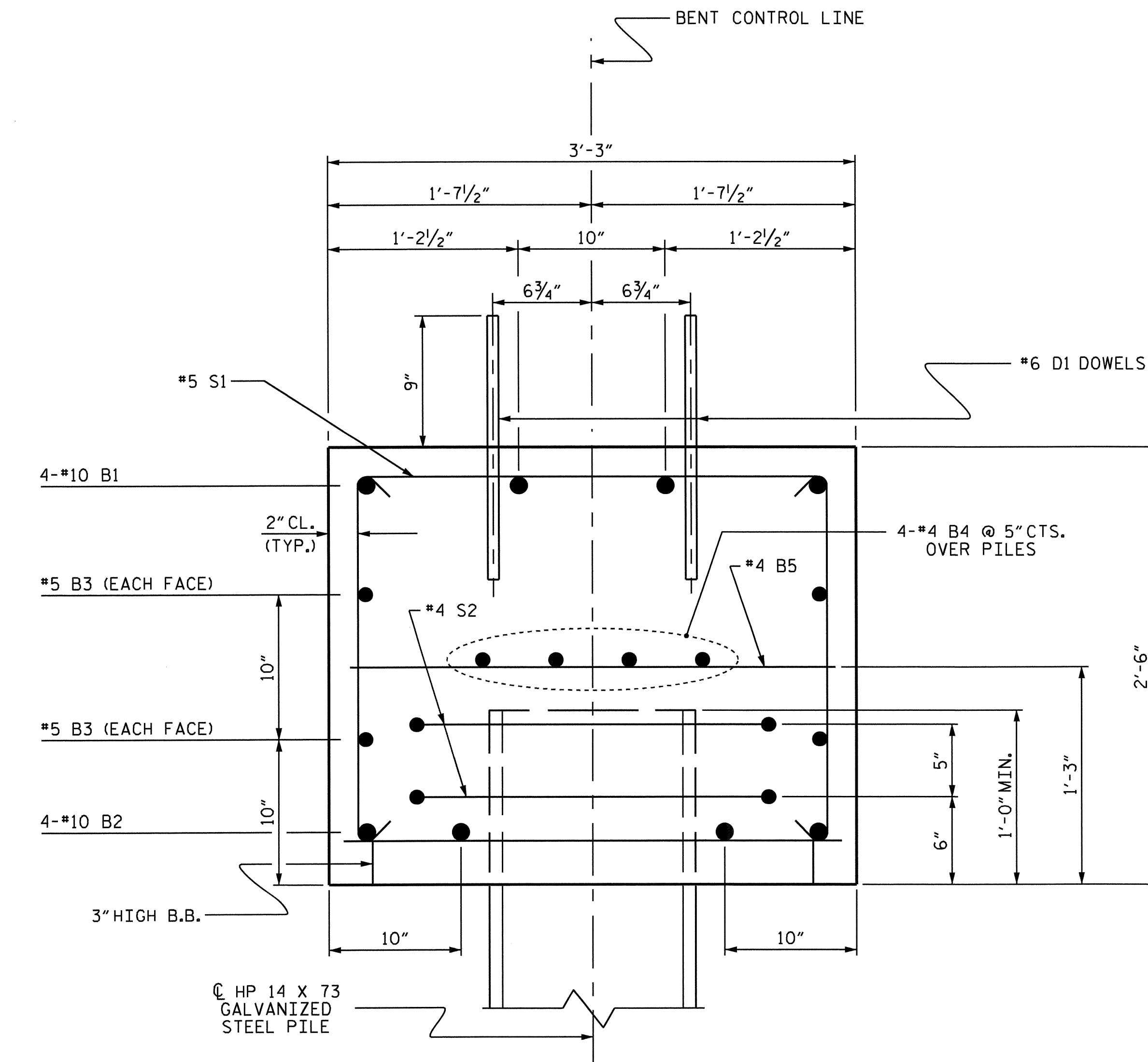


PILE SPLICE DETAILS

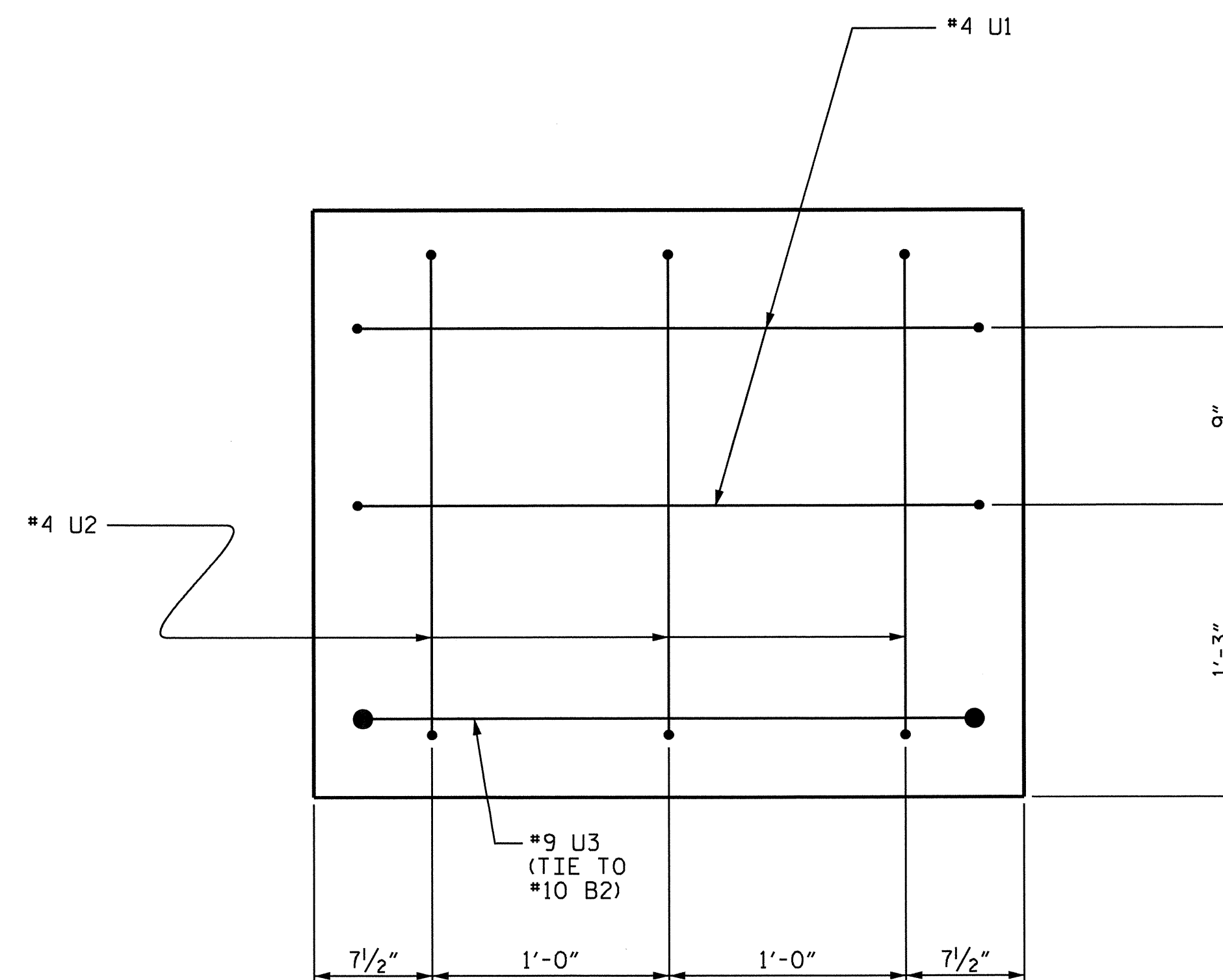
— BAR TYPES —

BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	34'-10"	600
B2	4	#10	STR	32'-2"	554
B3	4	#5	STR	32'-2"	134
B4	8	#4	STR	17'-4"	93
B5	12	#4	STR	2'-11"	23
D1	40	#6	STR	1'-6"	90
S1	32	#5	2	8'-1"	270
S2	14	#4	3	7'-7"	71
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69
U4	8	#4	4	3'-6"	19
REINFORCING STEEL (FOR ONE BENT)				1959 LBS	
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
POUR #1 (CAP)				9.8 C.Y.	
POUR #2 (LATERAL GUIDES)				0.1 C.Y.	
TOTAL CLASS A CONCRETE				9.9 C.Y.	
HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)					
No. 7				LIN. FT. 245	

ALL BAR DIMENSIONS ARE OUT TO OUT.



SECTION A-A



END OF CAP VIEW
(TYPICAL BOTH ENDS)

PROJECT NO. BD-5105X
WARREN COUNTY
 STATION: 13+53.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 1

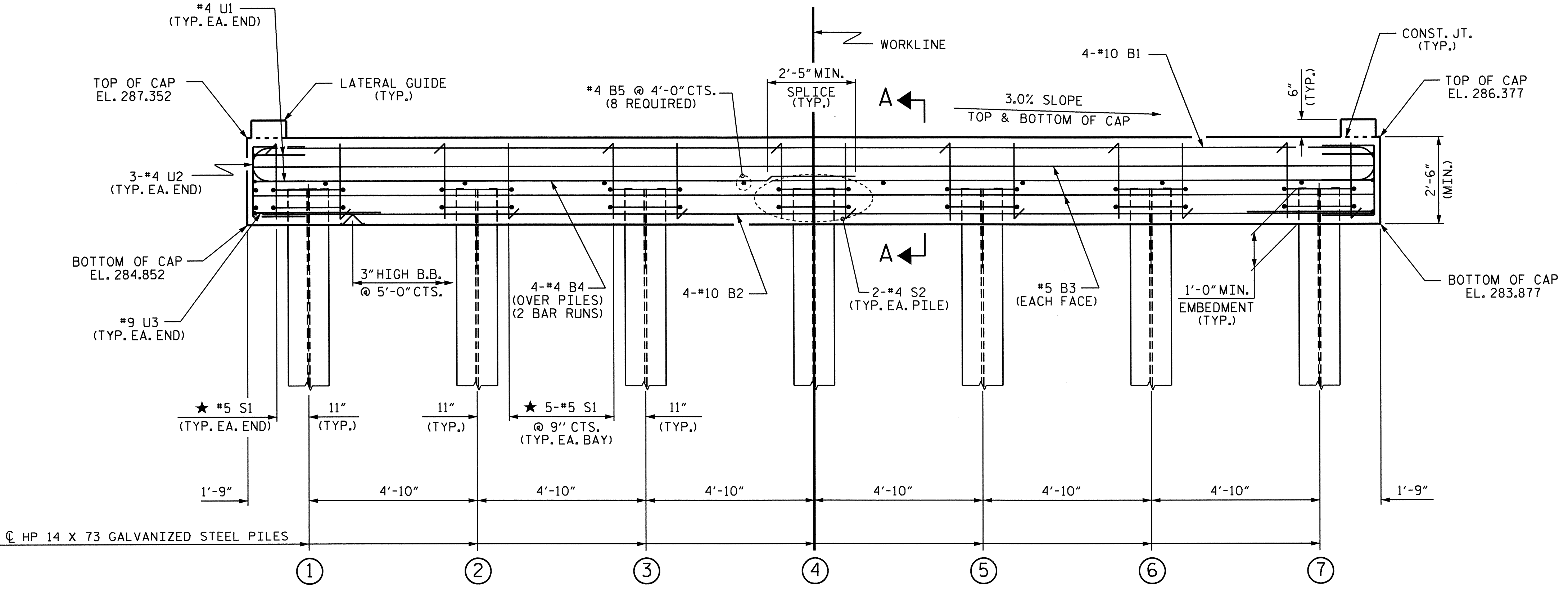
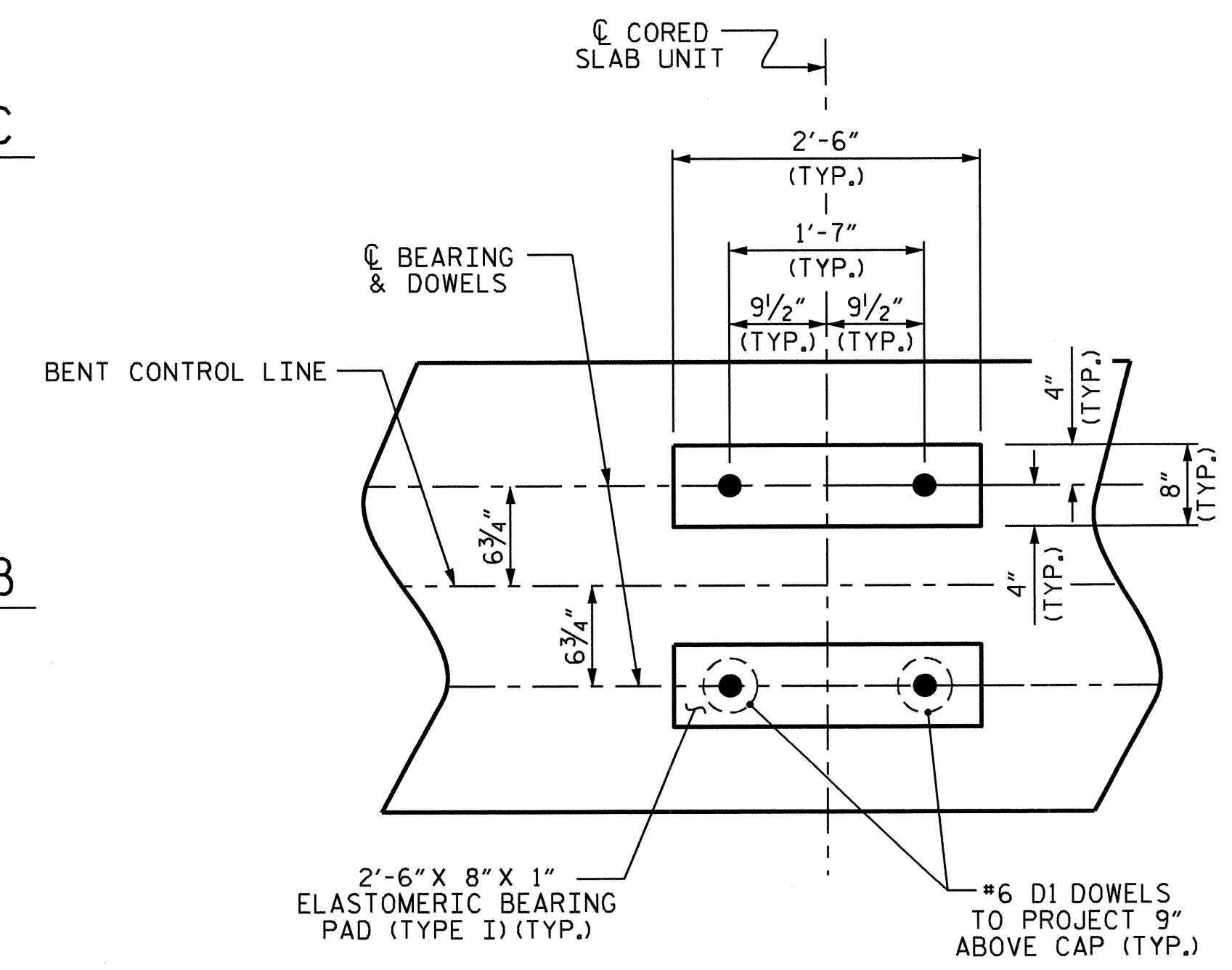
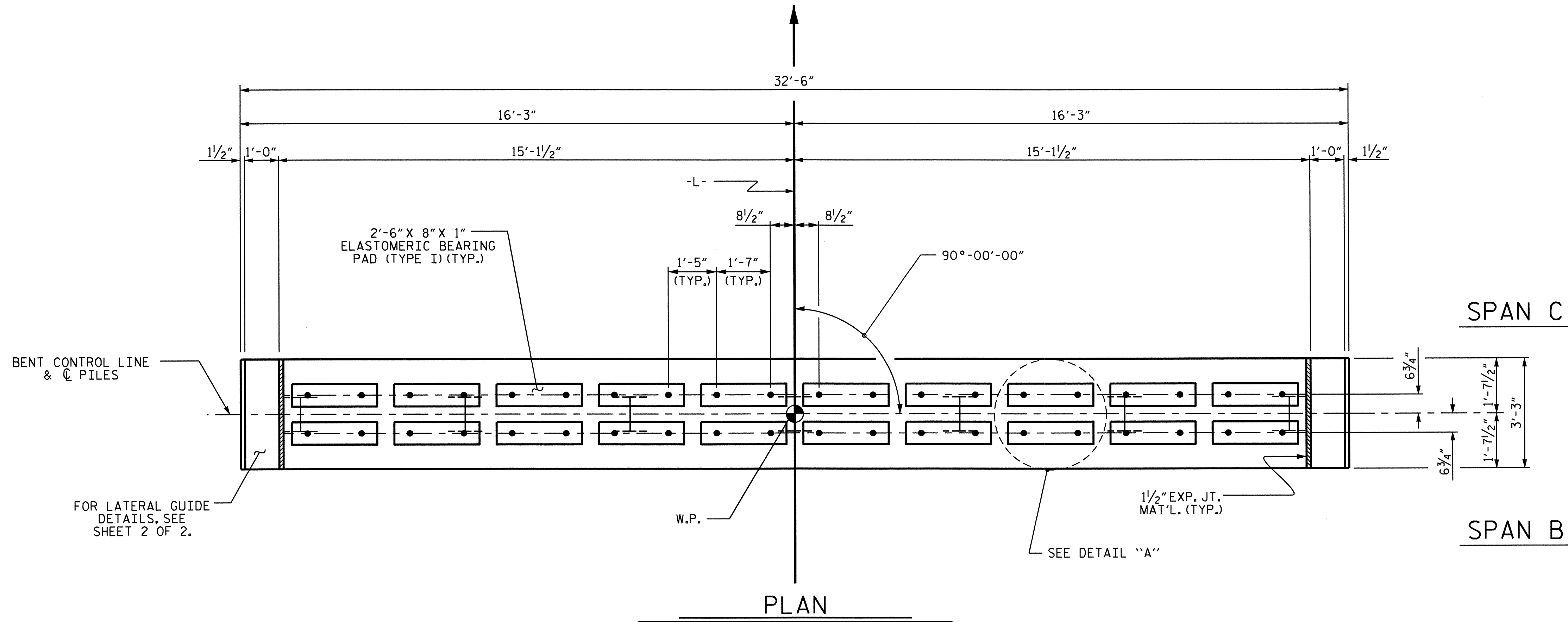


REVISIONS						SHEET NO. S-15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 19
2			4			

DRAWN BY : A.C. OUTLAW DATE : 1/11/12
 CHECKED BY : K. W. ALFORD DATE : 2/12
 DRAWN BY : DGE 05/10
 CHECKED BY : MKT 05/10

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.
- ★ INVERT ALTERNATE STIRRUPS.
- GALVANIZE THE FULL LENGTH OF EACH INTERIOR BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.
- THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.



TOP OF PILE ELEVATIONS	
①	285.817
②	285.672
③	285.527
④	285.382
⑤	285.237
⑥	285.092
⑦	284.947

PROJECT NO. BD-5105X
WARREN COUNTY
 STATION: 13+53.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

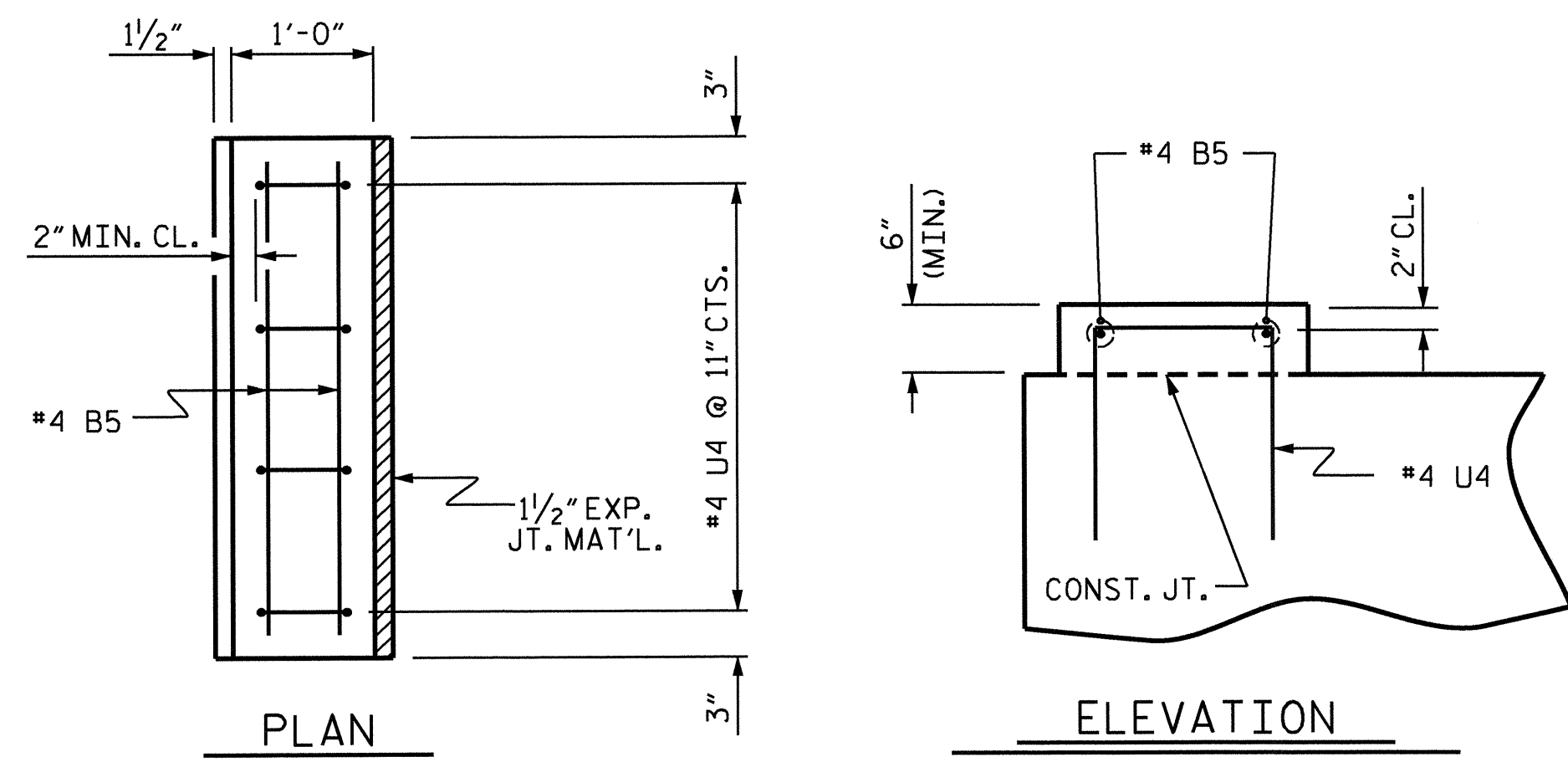
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 BENT No. 2



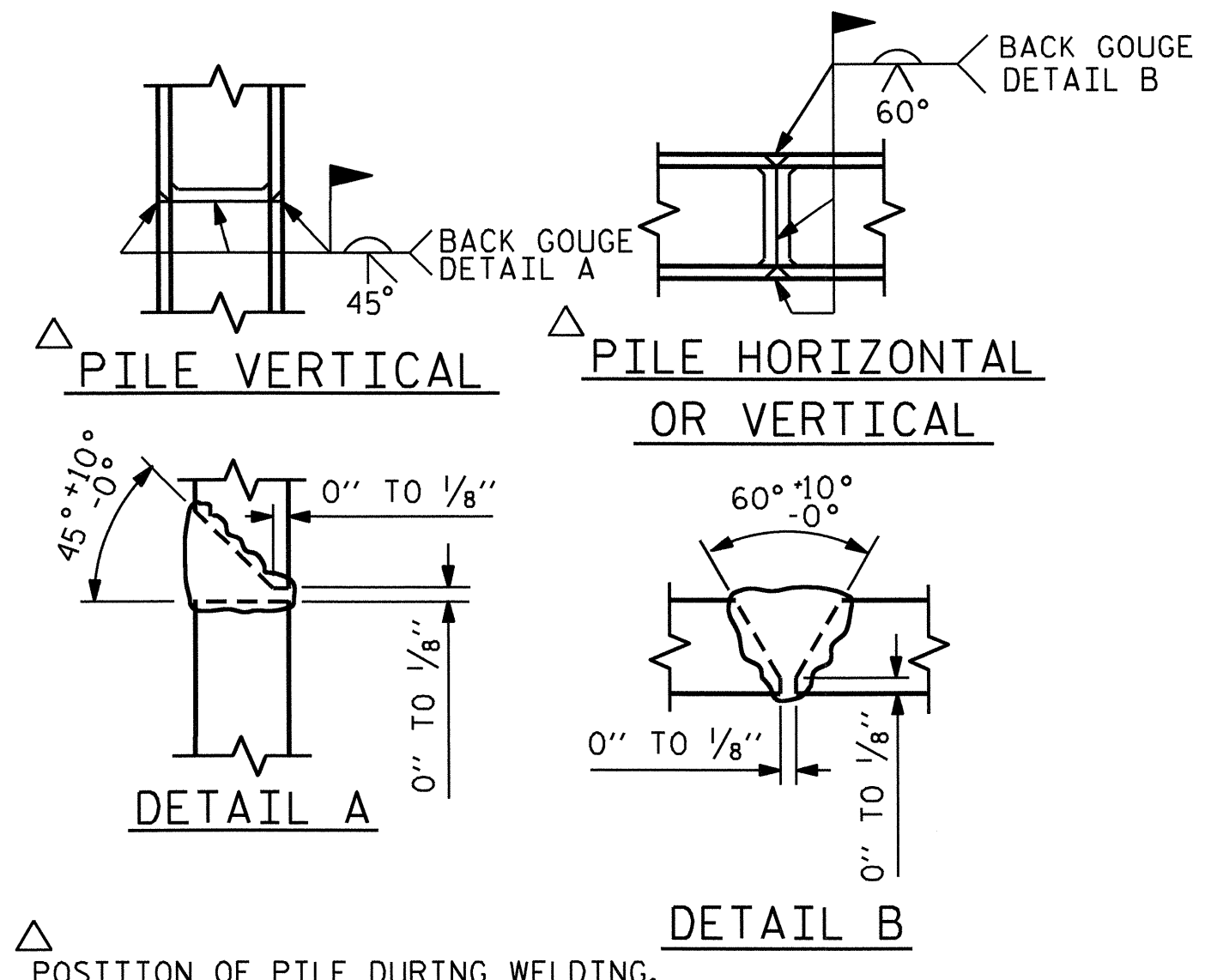
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			19

ASSEMBLED BY : A.C. OUTLAW DATE : 1/11/12
 CHECKED BY : K. W. ALFORD DATE : 2/12
 DRAWN BY : DGE 05/10
 CHECKED BY : MKT 05/10

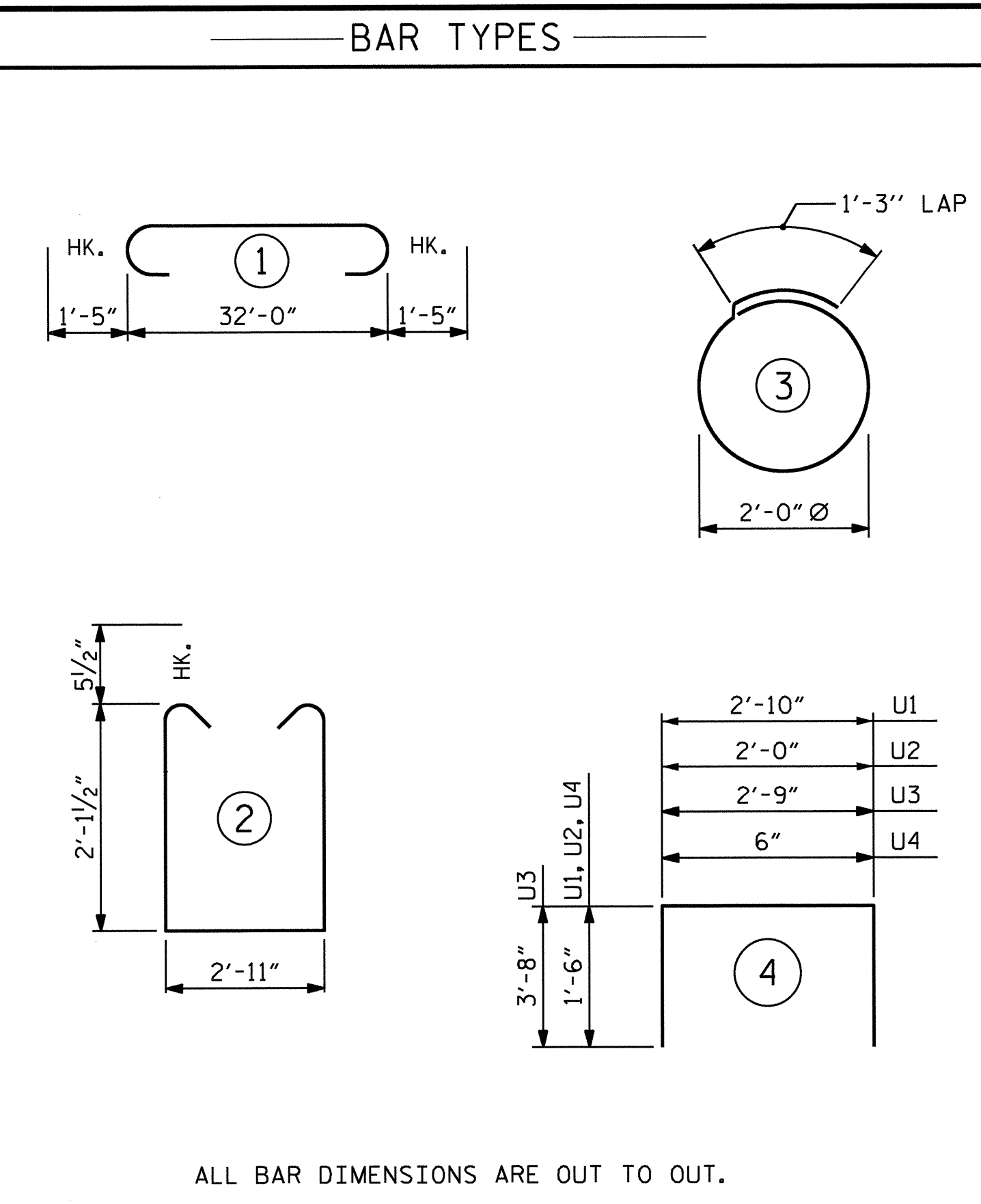
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 kaiford



LATERAL GUIDE DETAILS
(LEFT LATERAL GUIDE SHOWN, RIGHT SIDE SIMILAR)

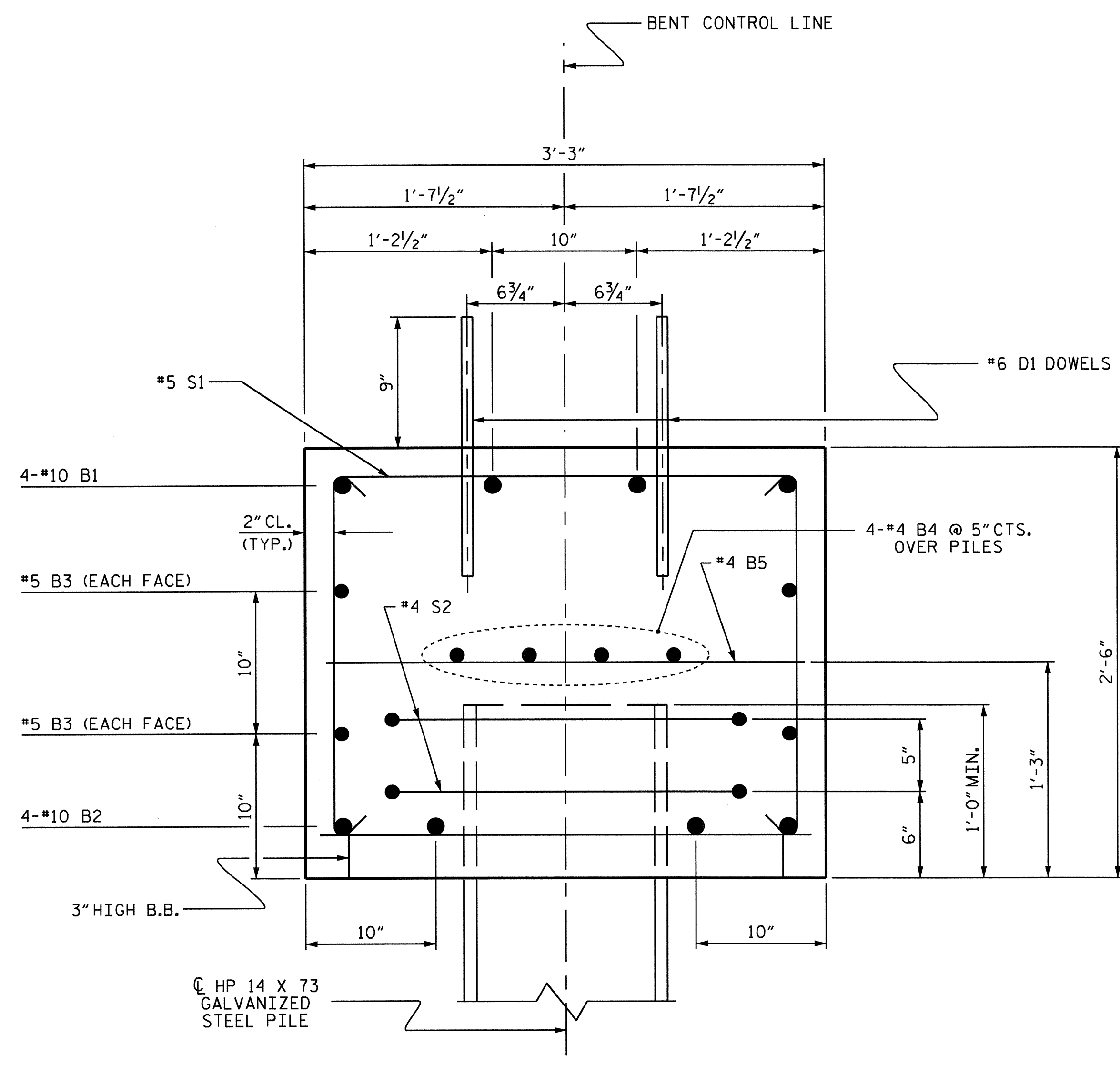


PILE SPLICE DETAILS

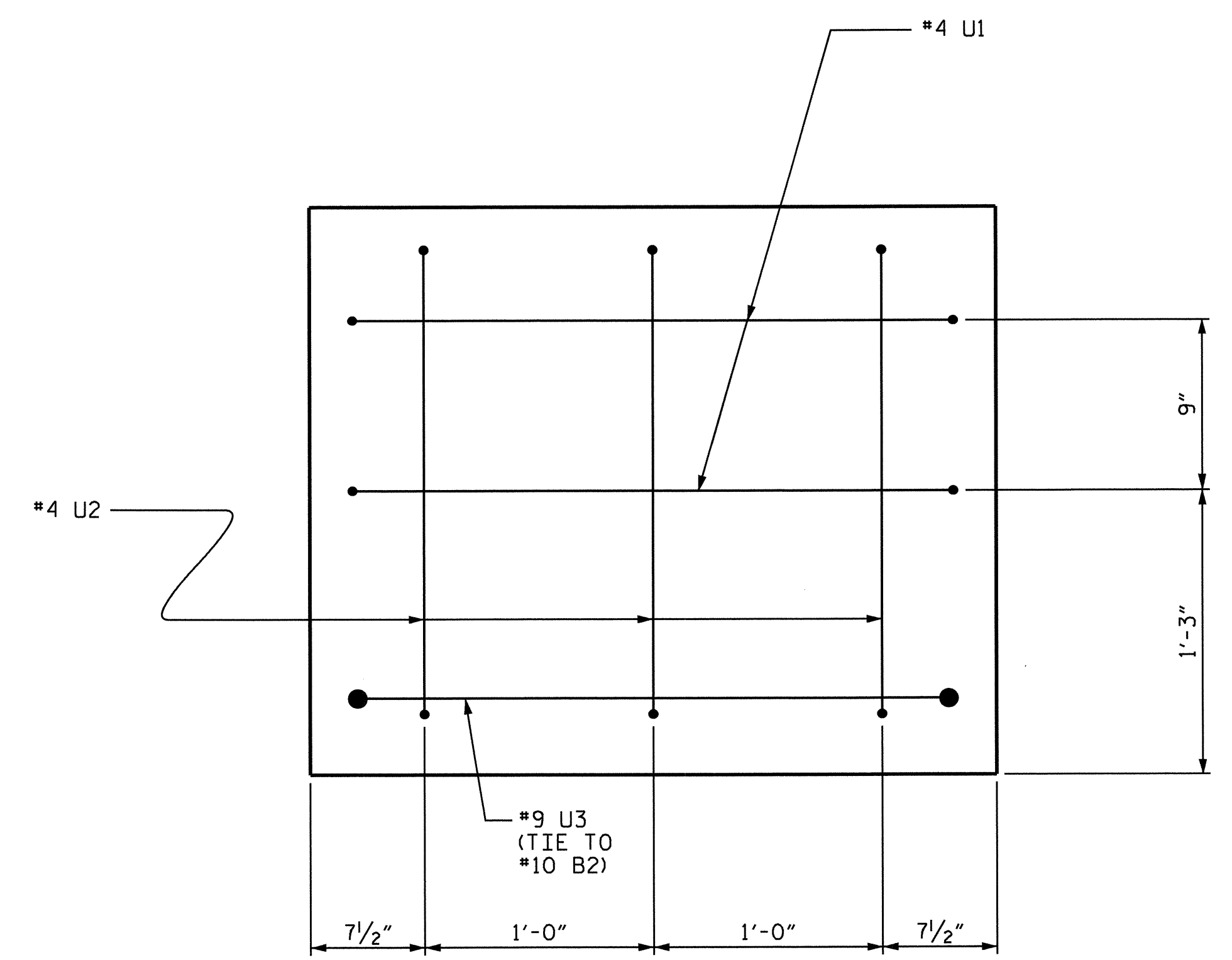


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	34'-10"	600
B2	4	#10	STR	32'-2"	554
B3	4	#5	STR	32'-2"	134
B4	8	#4	STR	17'-4"	93
B5	12	#4	STR	2'-11"	23
D1	40	#6	STR	1'-6"	90
S1	32	#5	2	8'-1"	270
S2	14	#4	3	7'-7"	71
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69
U4	8	#4	4	3'-6"	19
REINFORCING STEEL (FOR ONE BENT)				1959 LBS	
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
POUR #1 (CAP)				9.8 C.Y.	
POUR #2 (LATERAL GUIDES)				0.1 C.Y.	
TOTAL CLASS A CONCRETE				9.9 C.Y.	
HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)					
No. 7				LIN. FT. 210	



SECTION A-A



END OF CAP VIEW
(TYPICAL BOTH ENDS)

PROJECT NO. BD-5105X
WARREN COUNTY
 STATION: 13+53.50 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 2

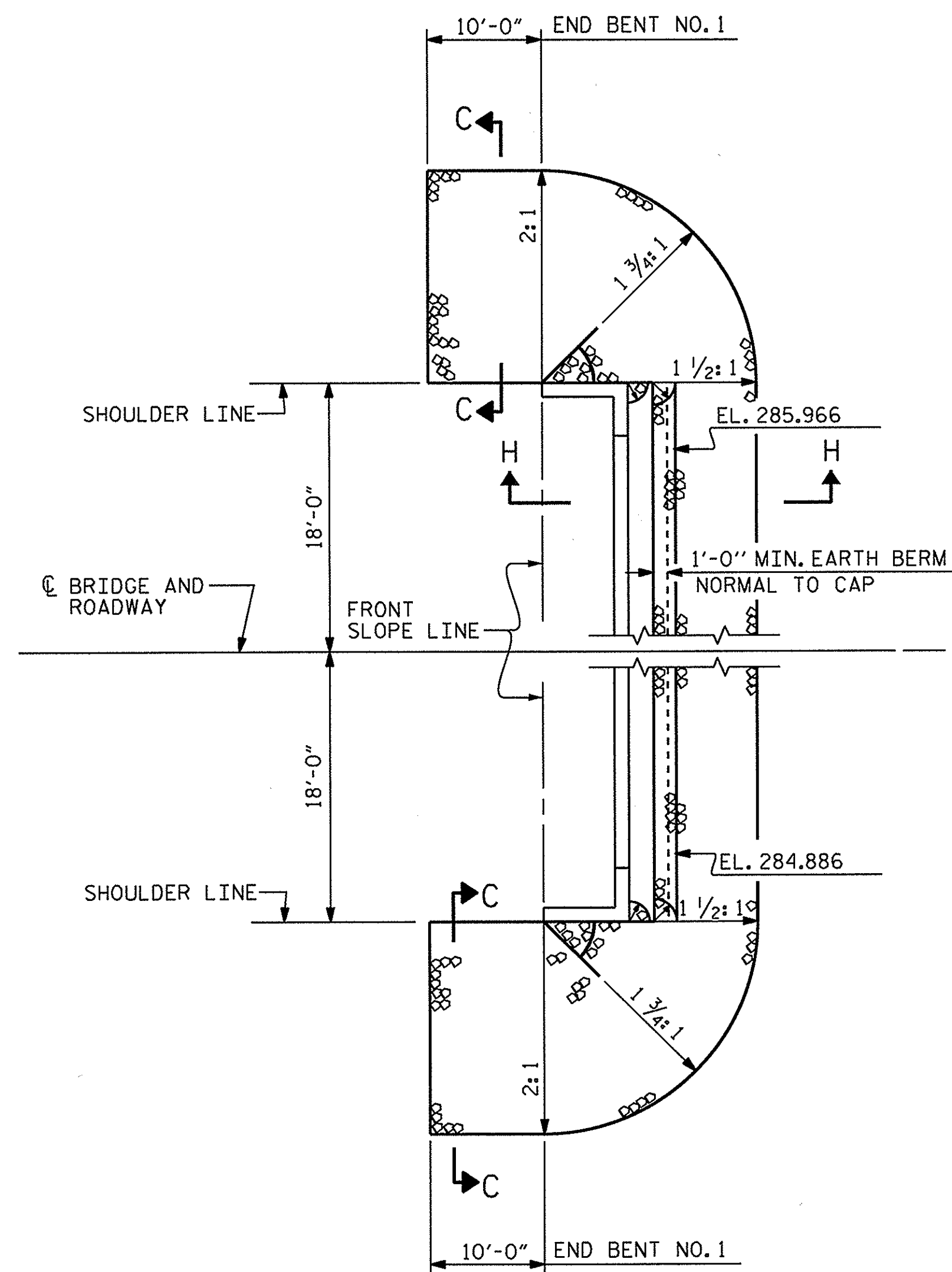


REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

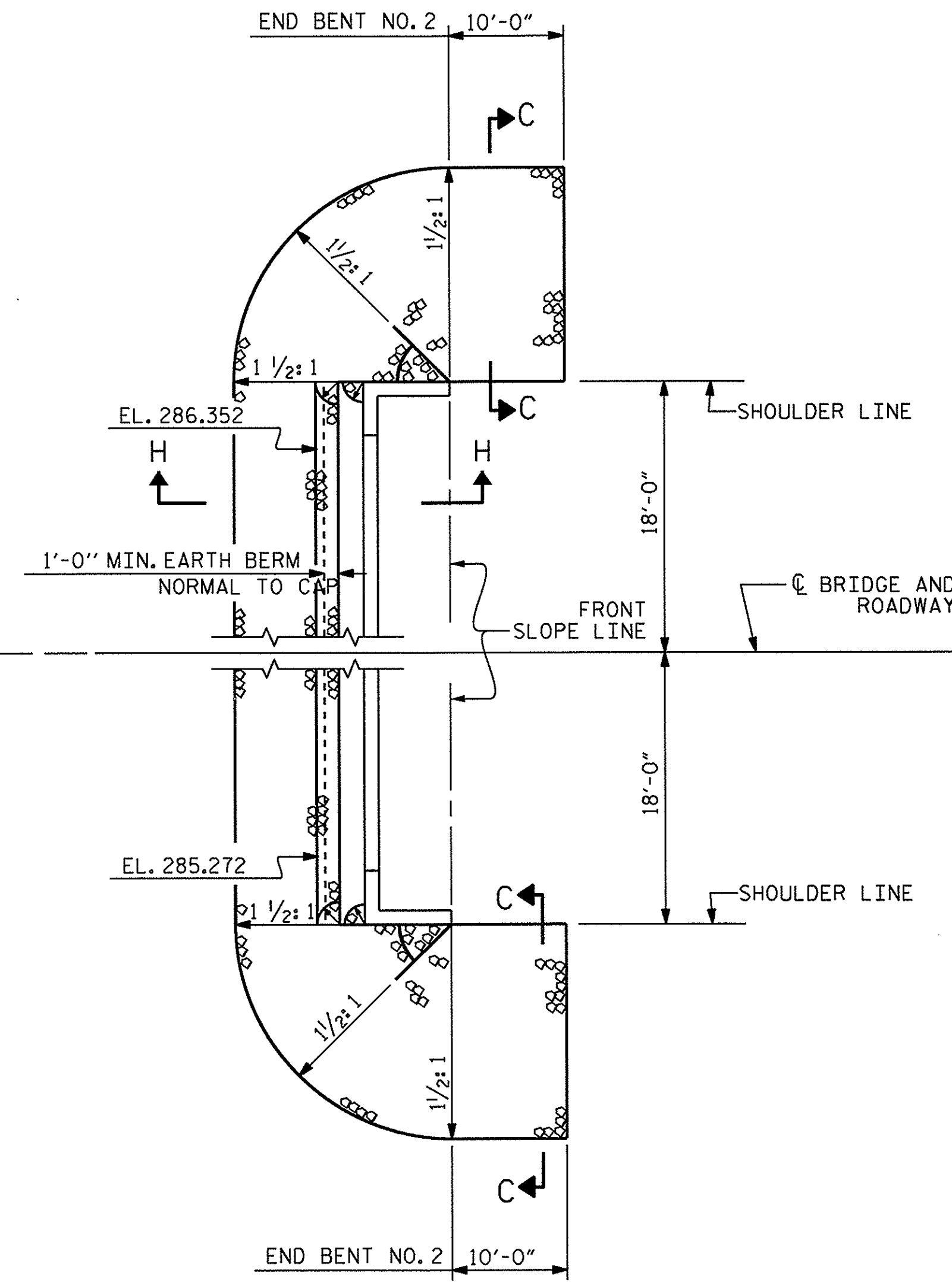
SHEET NO. S-17				
TOTAL SHEETS 19				

DRAWN BY: A.C. OUTLAW DATE: 1/11/12
 CHECKED BY: K.W. ALFORD DATE: 2/12
 DRAWN BY: DGE 05/10
 CHECKED BY: MKT 05/10

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

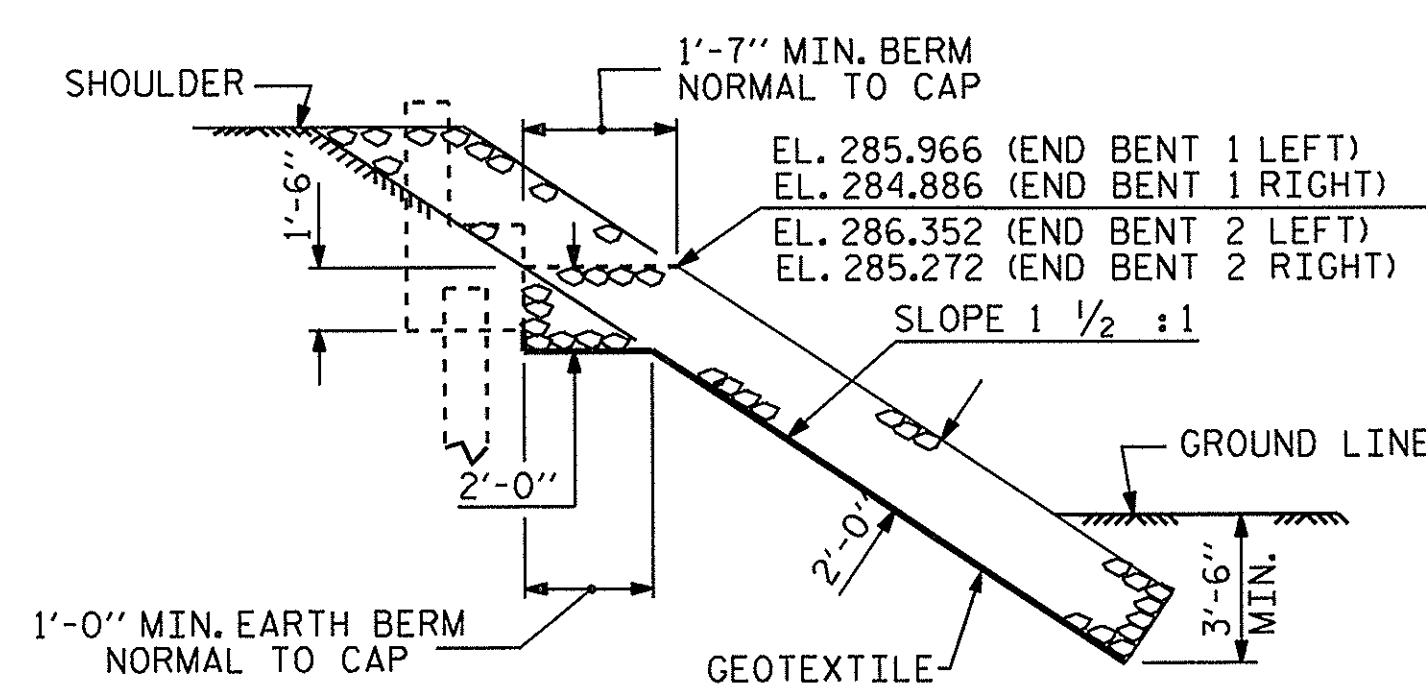


SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP

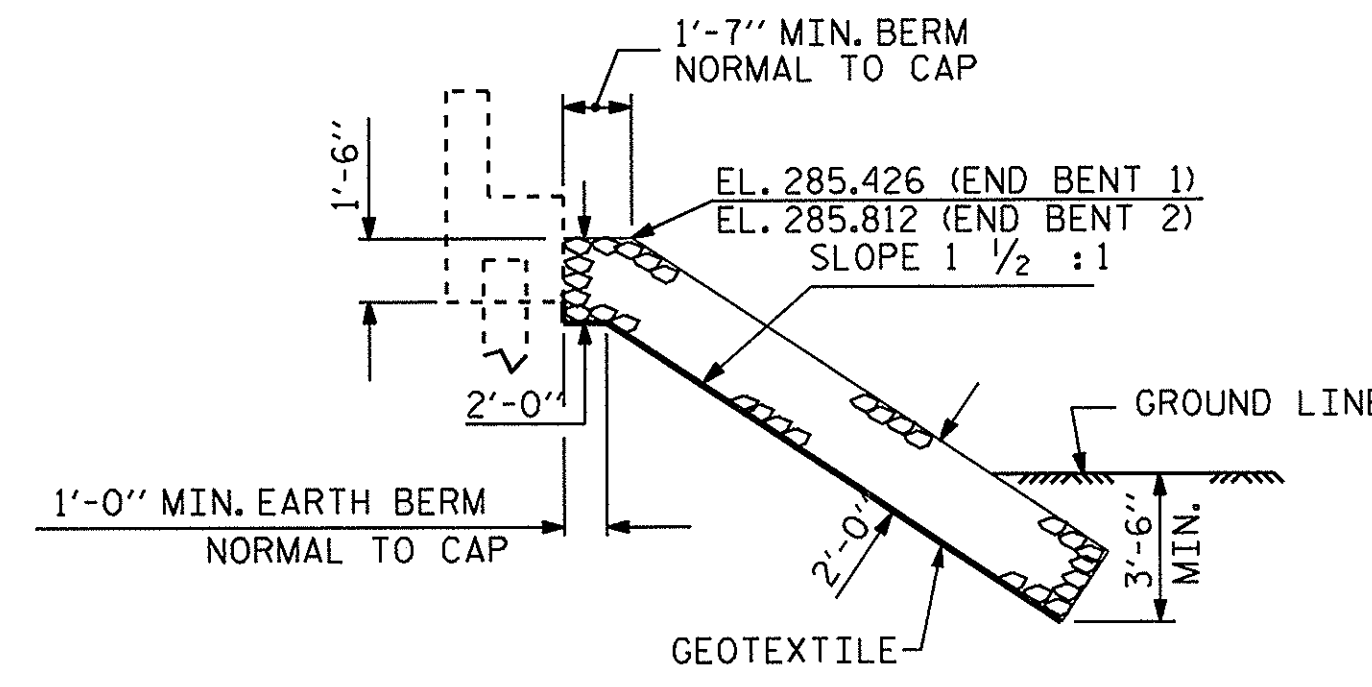


SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP

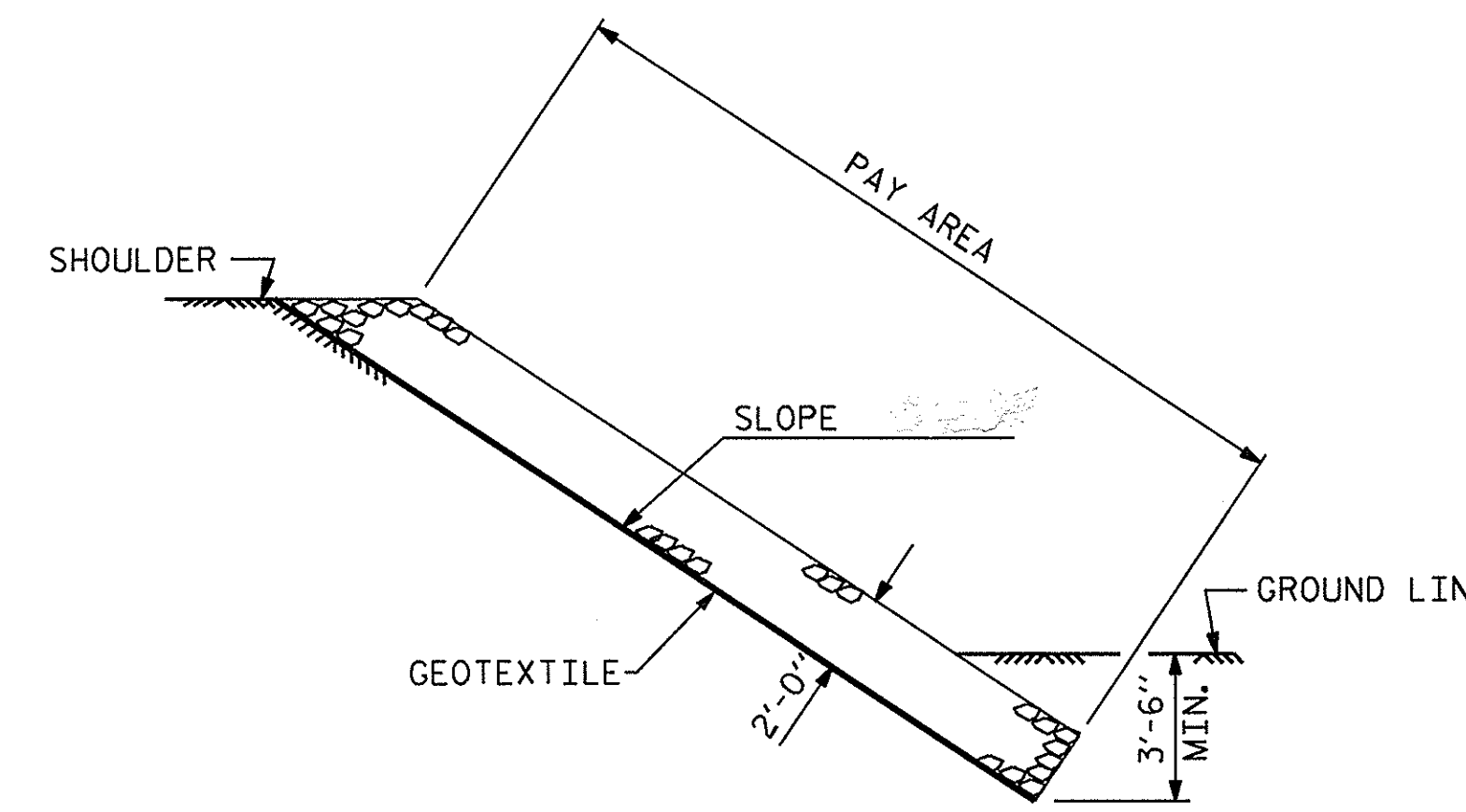
ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+53.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	104	120
END BENT 2	126	145



SECTION H-H



SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. BD-5105X
WARREN COUNTY
STATION: 13+53.50 -L-

SHEET 1 OF 1

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
RIP RAP DETAILS



ASSEMBLED BY : A.C. OUTLAW DATE : 1/11/12
CHECKED BY : K.W. ALFORD DATE : 2/12
DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES
CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES
REV. 5/1/06R TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			19

NOTES

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

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

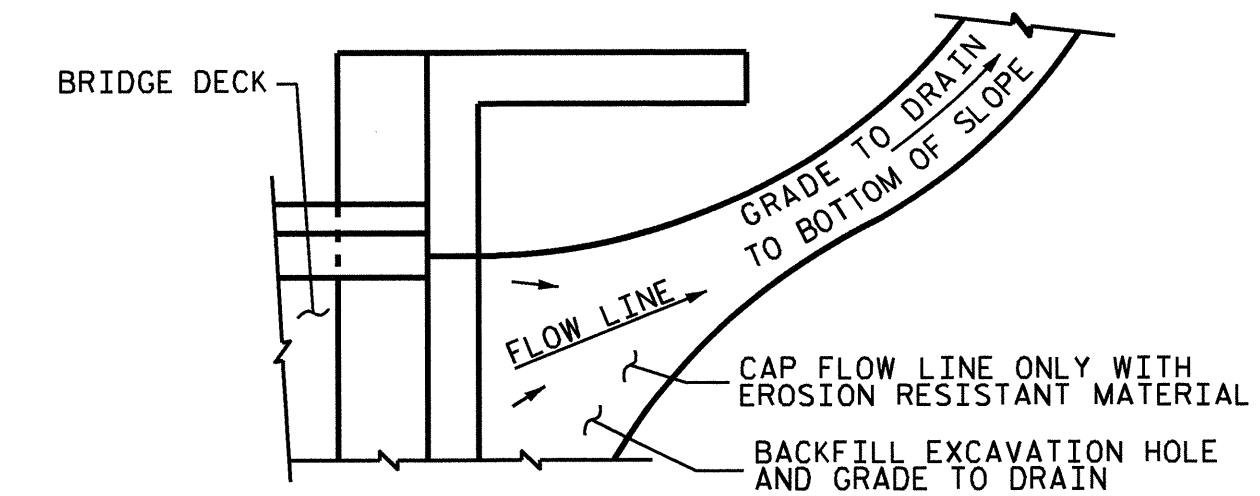
*78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

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

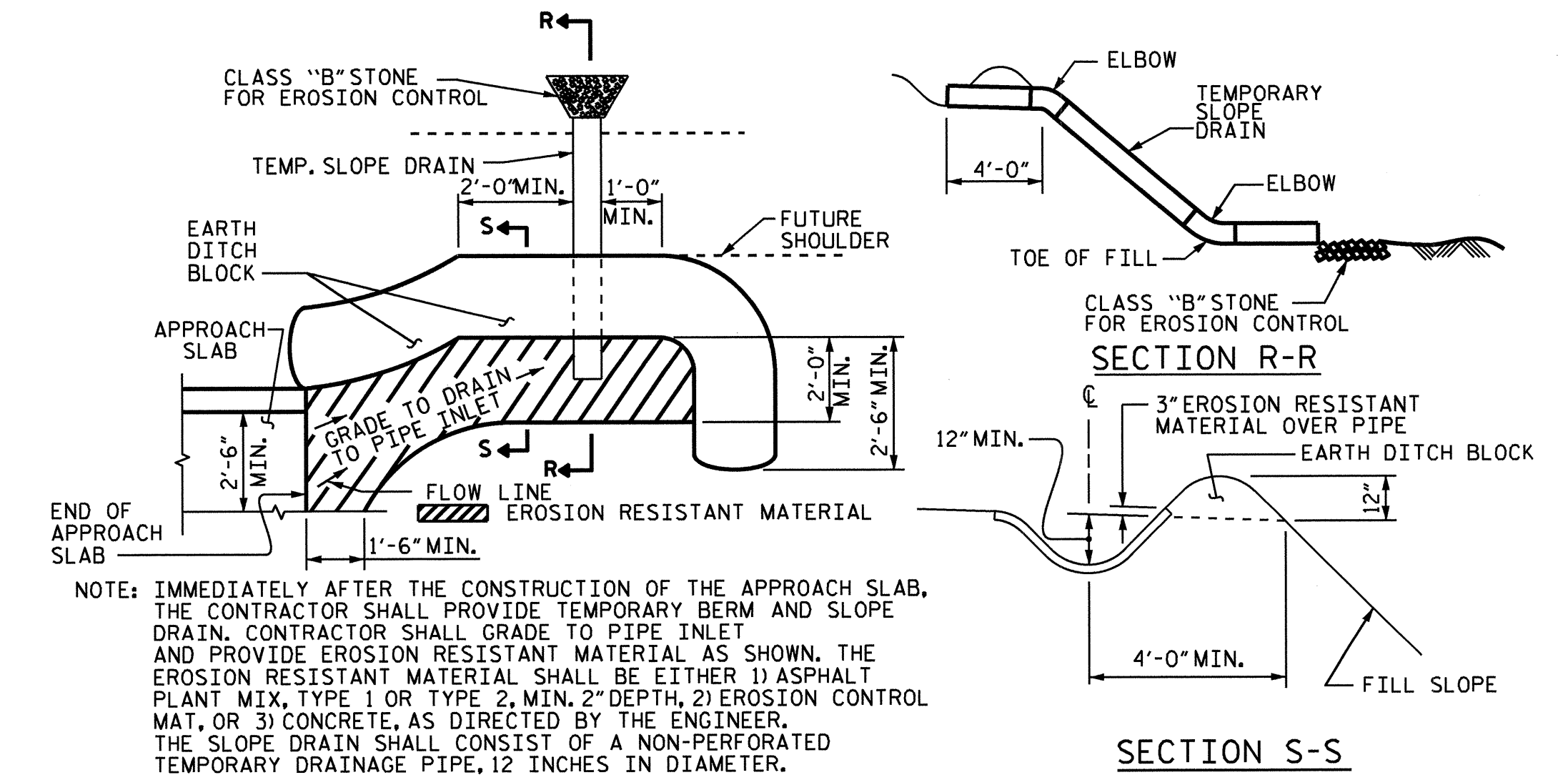
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED, SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

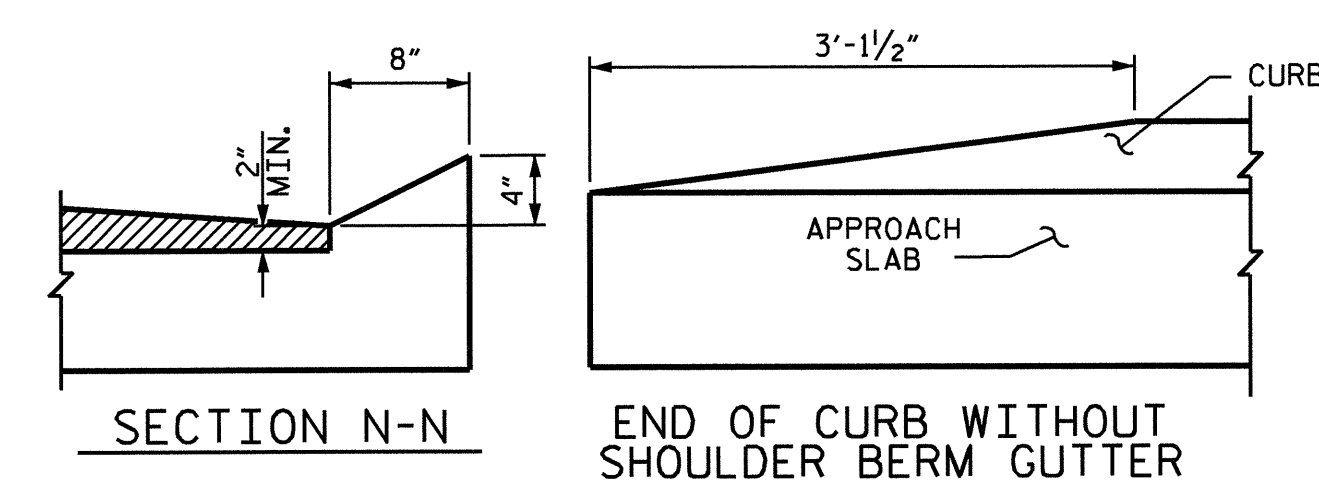


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

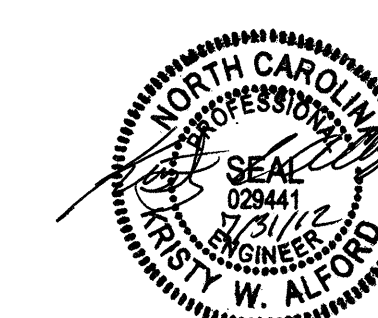


TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



CURB DETAILS

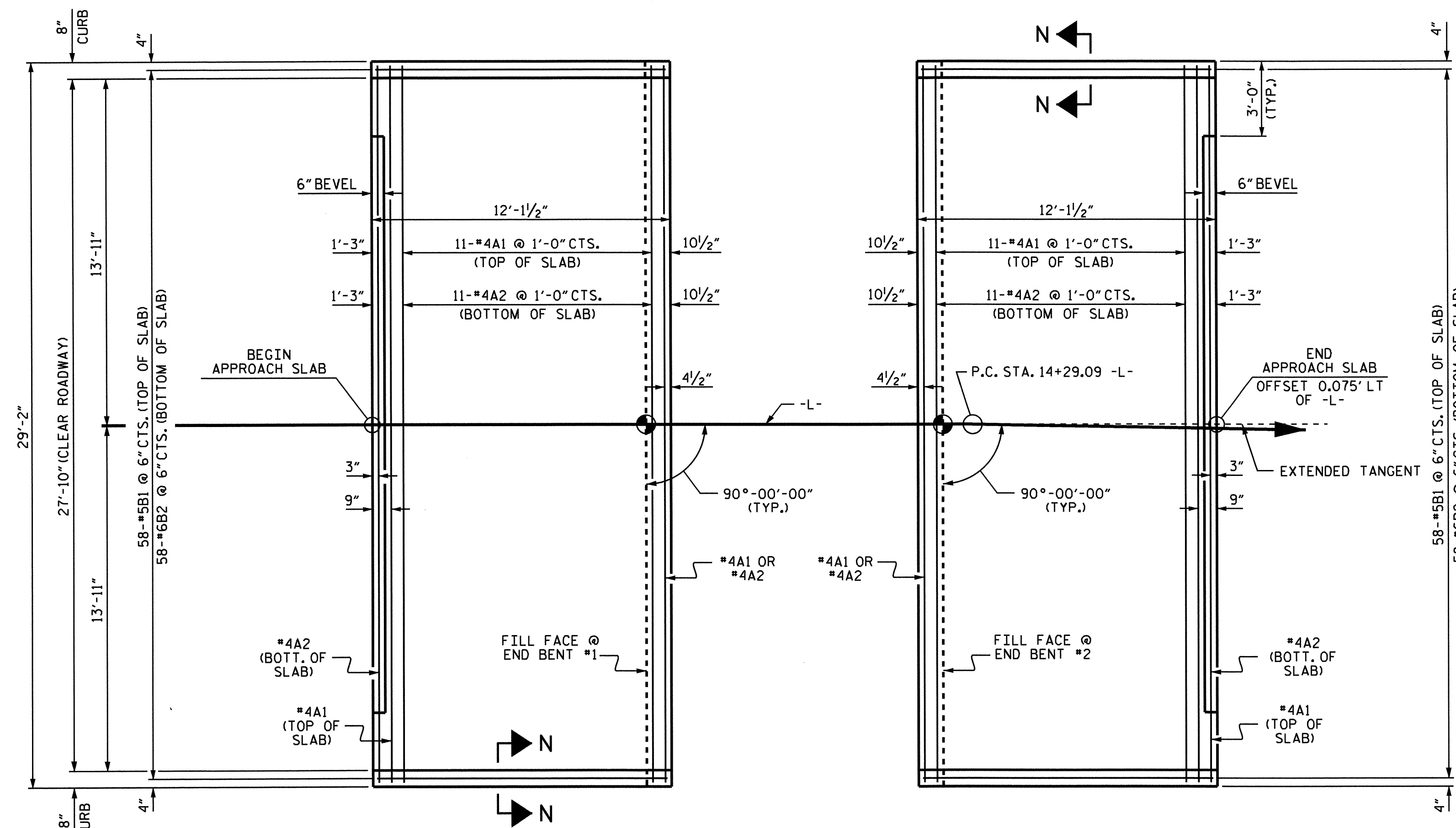
SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



PROJECT NO. BD-5105X
WARREN COUNTY
STATION: 13+53.50 -L-

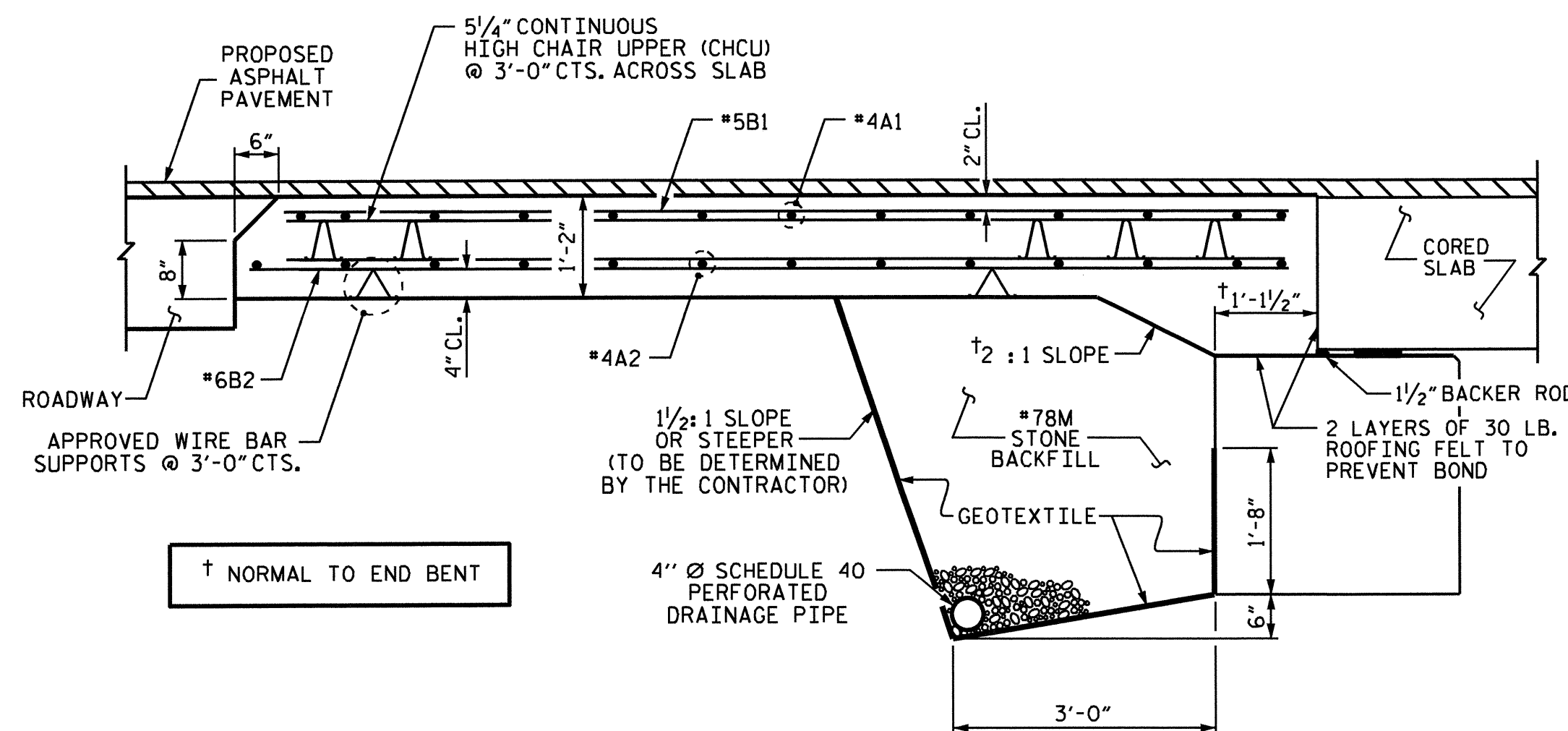
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB CORED SLAB UNIT (SUB-REGIONAL TIER) 90° SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	
S-19	TOTAL SHEETS 19



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

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

ASSEMBLED BY: A.C. OUTLAW DATE: 1/11/12
CHECKED BY: K.W. ALFORD DATE: 2/12
DRAWN BY: SHS/MAA 5-09 REV. 12-11 MAA/AAC
CHECKED BY: BCH 5-09

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

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