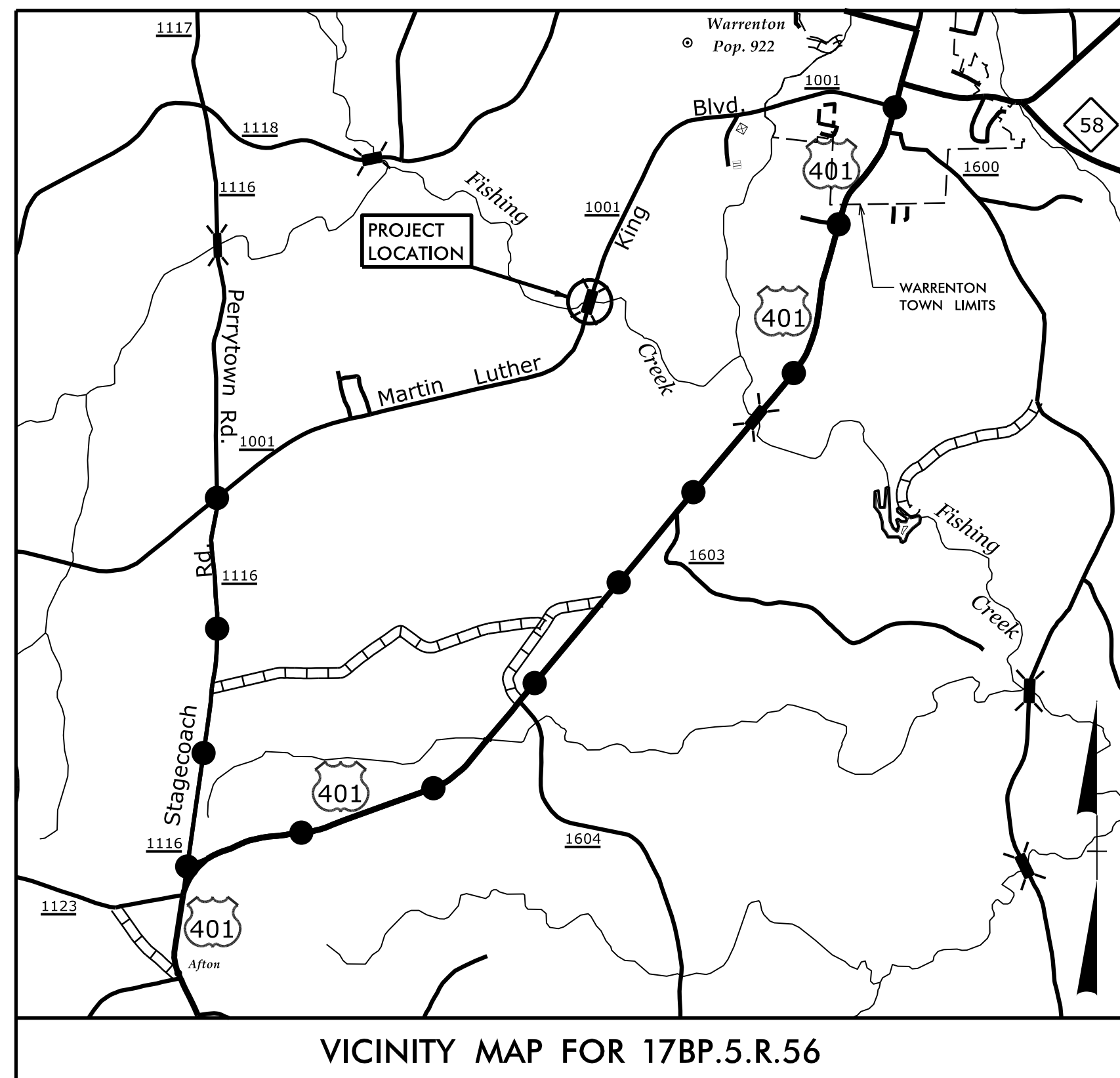


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with their signature on that page.**

**This file or an individual page
shall not be considered a certified document.**

T.I.P NO.: 17BP.5.R.56



VICINITY MAP FOR 17BP.5.R.56

●●●●● OFFSITE DETOUR ROUTE

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

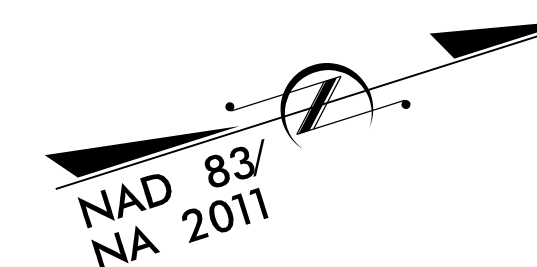
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WARREN COUNTY

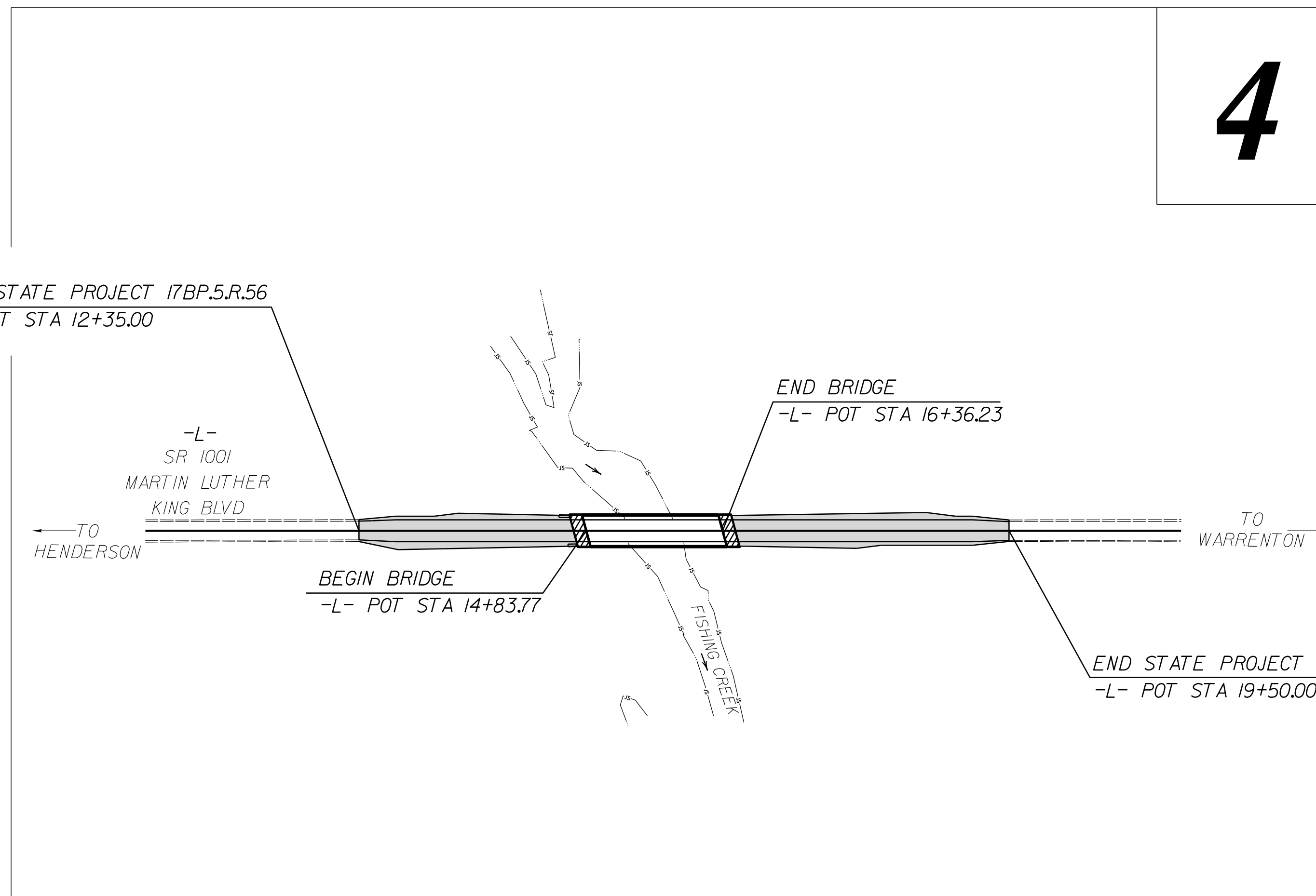
LOCATION: BRIDGE NO.3 OVER FISHING CREEK ON SR 1001 (MARTIN LUTHER KING BLVD.)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.5.R.56	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.5.R.56	N/A	PE	
17BP.5.R.56	N/A	ROW & UTILITY	
17BP.5.R.56	N/A	CONSTRUCTION	



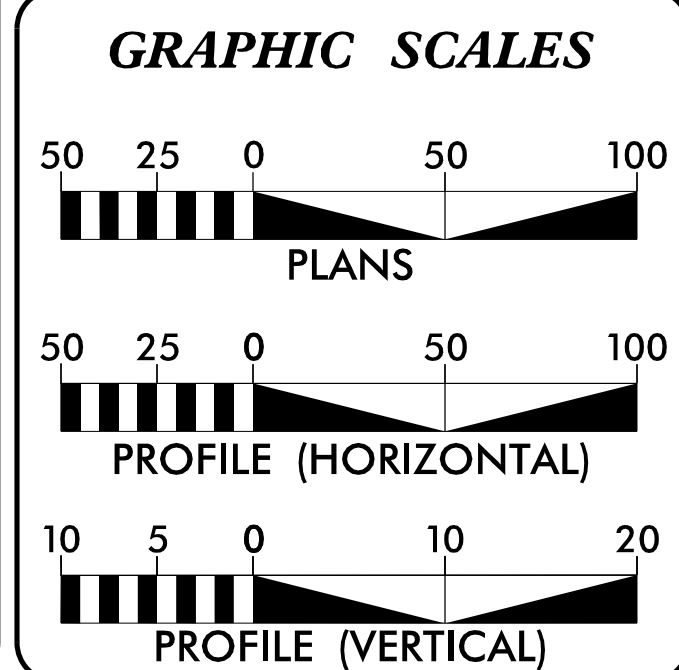
4



CONTRACT:

CLEARING ON THIS PROJECT SHALL BE TO LIMITS ESTABLISHED USING METHOD III.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA
ADT = 3500
V = 55 MPH
CLASS = MAJOR COLLECTOR
REGIONAL TIER

PROJECT LENGTH
LENGTH ROADWAY STATE PROJECT 17BP.5.R.56 = 0.106 mi.
LENGTH STRUCTURES STATE PROJECT 17BP.5.R.56 = 0.029 mi.
TOTAL LENGTH STATE PROJECT 17BP.5.R.56 = 0.135 mi.

Prepared in the Office of:
STEWART
For
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 7, 2015

RIGHT OF WAY COMPLETE:
PENDING

LETTING DATE:
AUGUST 10, 2016

ANDY YOUNG, PE
PROJECT ENGINEER

MICHAEL BURNS, EI
PROJECT DESIGN ENGINEER

LISA GILCHRIST, EI
NCDOT CONTACT

HYDRAULICS ENGINEER

DocuSigned by:
Brandon Barham
3/17/2016
P.E.

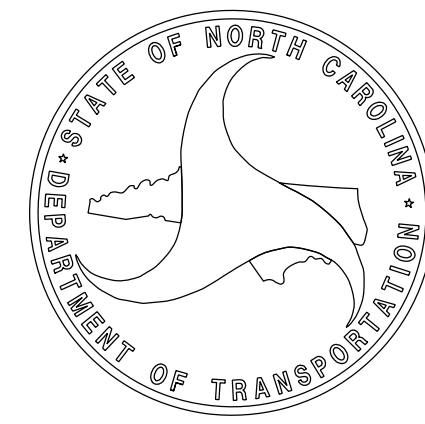
ROADWAY DESIGN ENGINEER

DocuSigned by:
Andrew P. Young
3/14/2016
P.E.

STEWART
421 FAVETTEVILLE ST., STE 400
RALEIGH, NC 27601
Firm License #: C-1051
www.stewartinc.com
PROJECT #114003.00

NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 557-0929

ECOLOGICAL ENGINEERING

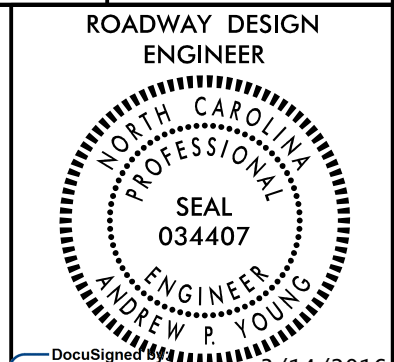


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**INDEX OF SHEETS, GENERAL NOTES, AND LIST OF
STANDARD DRAWINGS**

PROJECT REFERENCE NO. <i>17BP.5.R.56</i>	SHEET NO. <i>1-A</i>
---	-------------------------

ROADWAY DESIGN
ENGINEER



DocuSign
Andrew P. Young 3/14/2016

STEWART

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL DATA SHEET
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2C-1	GUARDRAIL ANCHOR DETAIL
3B-1	ROADWAY SUMMARY
3D-1	DRAINAGE SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-3	TRAFFIC CONTROL PLANS
PMP-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-08	EROSION CONTROL PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-6	CROSS-SECTIONS
S-1 THRU S-21	STRUCTURE PLANS

	EFF. 01-17-2012 REV. 10-30-2012
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	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
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
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches With Class 'B' Rip Rap

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 10-31-2014

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

GUARDRAIL:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE
DUKE ENERGY PROGRESS - POWER
CENTURY LINK - TELEPHONE/FIBEROPTICS
MCNC - TELEPHONE/FIBEROPTICS

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.

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

04/06/15

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	①23
Existing Fence Line	-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 ---
Existing Historic Property Boundary	--- HPB ---
Known Contamination Area: Soil	☠ ☠
Potential Contamination Area: Soil	?? ??
Known Contamination Area: Water	☠ ☠
Potential Contamination Area: Water	?? ??
Contaminated Site: Known or Potential	☠ ?

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

Single Tree	☀
Single Shrub	☀
Hedge	▬
Woods Line	▬

Orchard	☀ ☀ ☀ ☀
Vineyard	□ Vineyard

EXISTING STRUCTURES:

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

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	○ P
Power Line Tower	□
Power Transformer	▨
U/G Power Cable Hand Hole	○
H-Frame Pole	●
U/G Power Line LOS B (S.U.E.*)	--- P ---
U/G Power Line LOS C (S.U.E.*)	--- P ---
U/G Power Line LOS D (S.U.E.*)	--- P ---

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

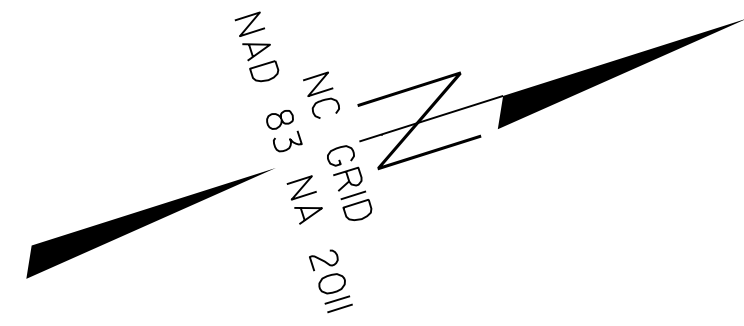
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	--- SS ---
Above Ground Sanitary Sewer	--- A/G Sanitary Sewer ---
SS Forced Main Line LOS B (S.U.E.*)	--- FSS ---
SS Forced Main Line LOS C (S.U.E.*)	--- FSS ---
SS Forced Main Line LOS D (S.U.E.*)	--- FSS ---

MISCELLANEOUS:

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

SURVEY CONTROL SHEET 92-0003

PROJECT REFERENCE NO.	SHEET NO.
17BP.5.R.56	1C
Location and Surveys	

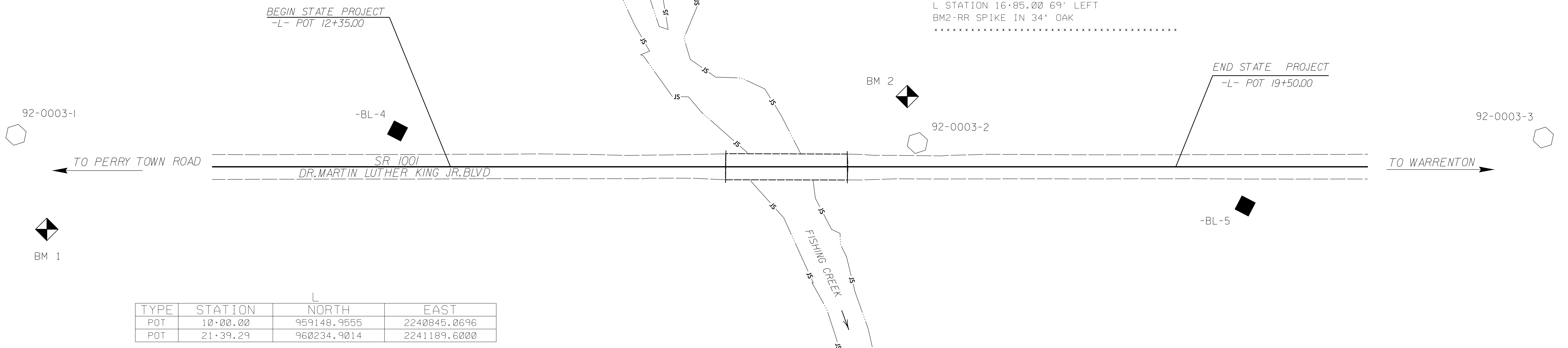


BASE LINE POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	92-0003-1	958744.0190	2240692.2010	266.41'	OUTSIDE PROJECT LIMITS	
2	92-0003-2	959816.1940	2241038.0670	263.43'	16+94.36	17.82' LT
3	92-0003-3	960521.8690	2241260.9840	296.67'	OUTSIDE PROJECT LIMITS	
4	BL-4	959333.8627	2240866.5719	259.49'	11+82.75	35.42' LT
5	BL-5	960107.8705	2241189.8383	283.42'	20+18.28	38.64' RT

BENCH MARK DATA

```

*****
BM1      ELEVATION = 267.08'
N 958794      E 2240774
L STATION 10+00.00
S 11°20'43.32" W DIST 361.72'
BM1-RR SPIKE IN 10" SYCAMORE
*****
BM2      ELEVATION = 267.30'
N 959823      E 2240986
L STATION 16+85.00 69' LEFT
BM2-RR SPIKE IN 34" OAK
*****
    
```



	L	NORTH	EAST
POT	10+00.00	959148.9555	2240845.0696
POT	21+39.29	960234.9014	2241189.6000

ROW MARKER CONCRETE OR GRANITE-E				
ALIGN	STATION	OFFSET	NORTH	EAST
L	12+15.00	50.00	959338.7685	2240957.7463
L	12+15.00	75.00	959331.2083	2240981.5757
L	12+35.00	-50.00	959388.0708	2240868.4759
L	12+35.00	-70.00	959394.1182	2240849.4121
L	16+75.00	75.00	959769.6704	2241120.6835
L	16+75.00	60.00	959774.2065	2241106.3858
L	19+50.00	-70.00	960075.6437	2241065.6349
L	19+50.00	-50.00	960069.5955	2241084.6985
L	19+50.00	50.00	960039.3547	2241100.0163
L	19+50.00	60.00	960036.3306	2241189.5481

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "92-0003-2" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 959816.194(ft) EASTING: 2241038.067(ft) ELEVATION: 263.431(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000059984

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "92-0003-2" TO -L- 12+35 IS S 15°22'52" W 459.71'

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

NOTES:

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

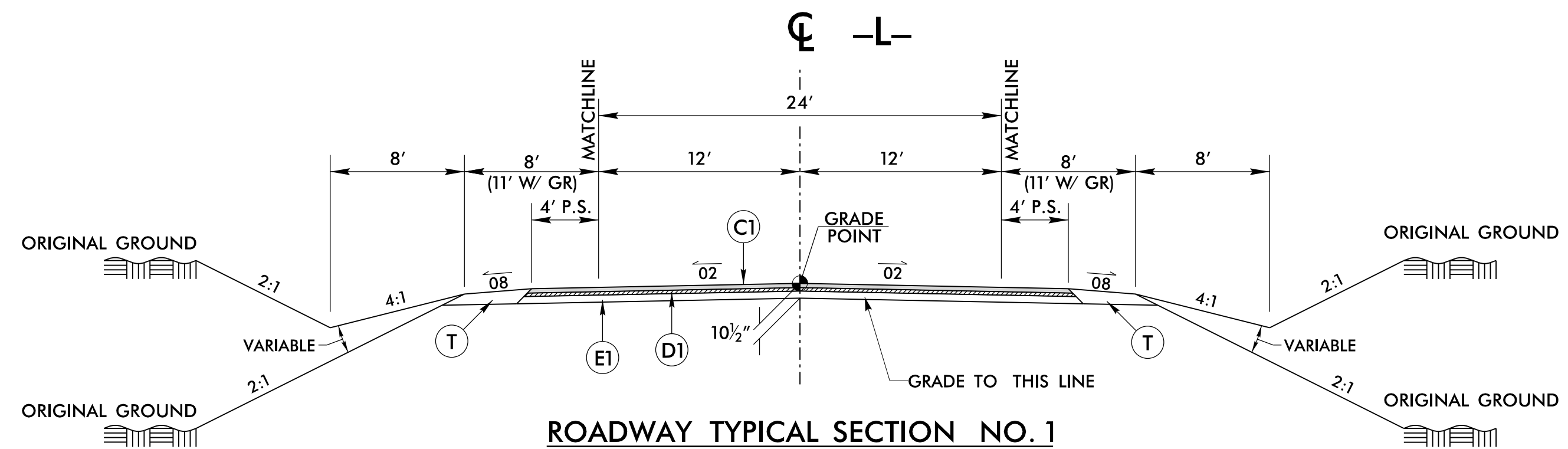
INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

GEOID G12NC
NOTE: DRAWING NOT TO SCALE

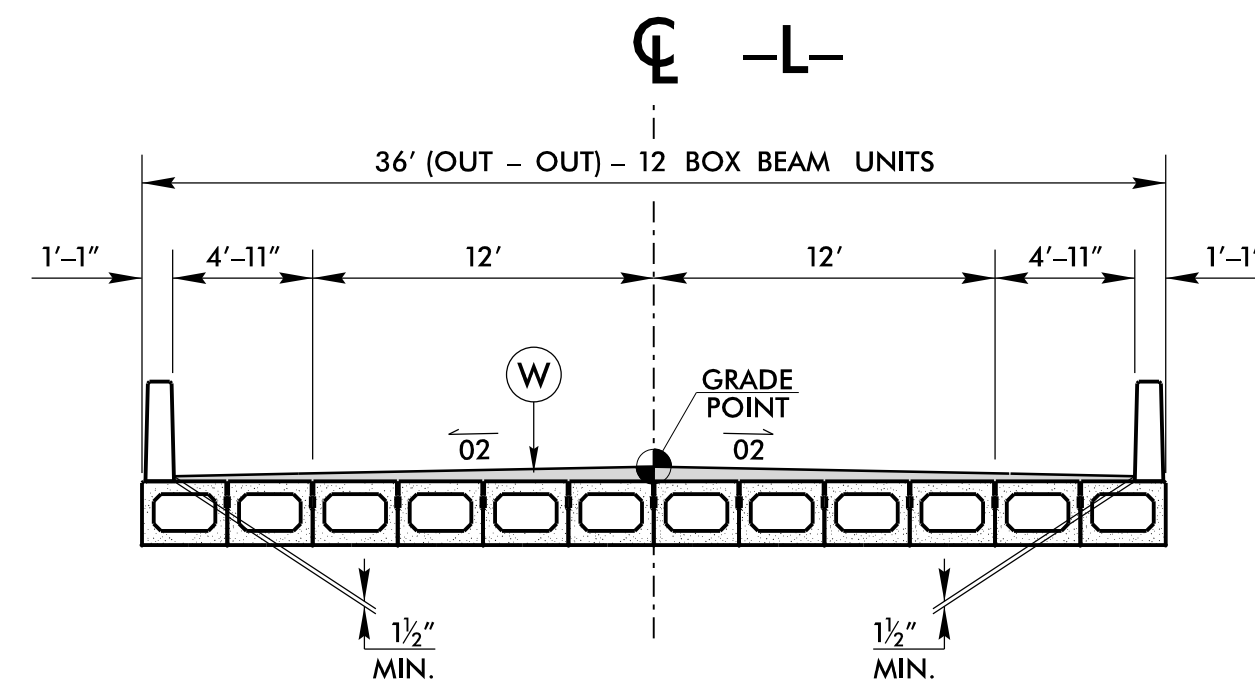
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 3½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
R1	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
W	WEDGING (SEE THIS SHEET FOR WEDGING DETAIL)

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



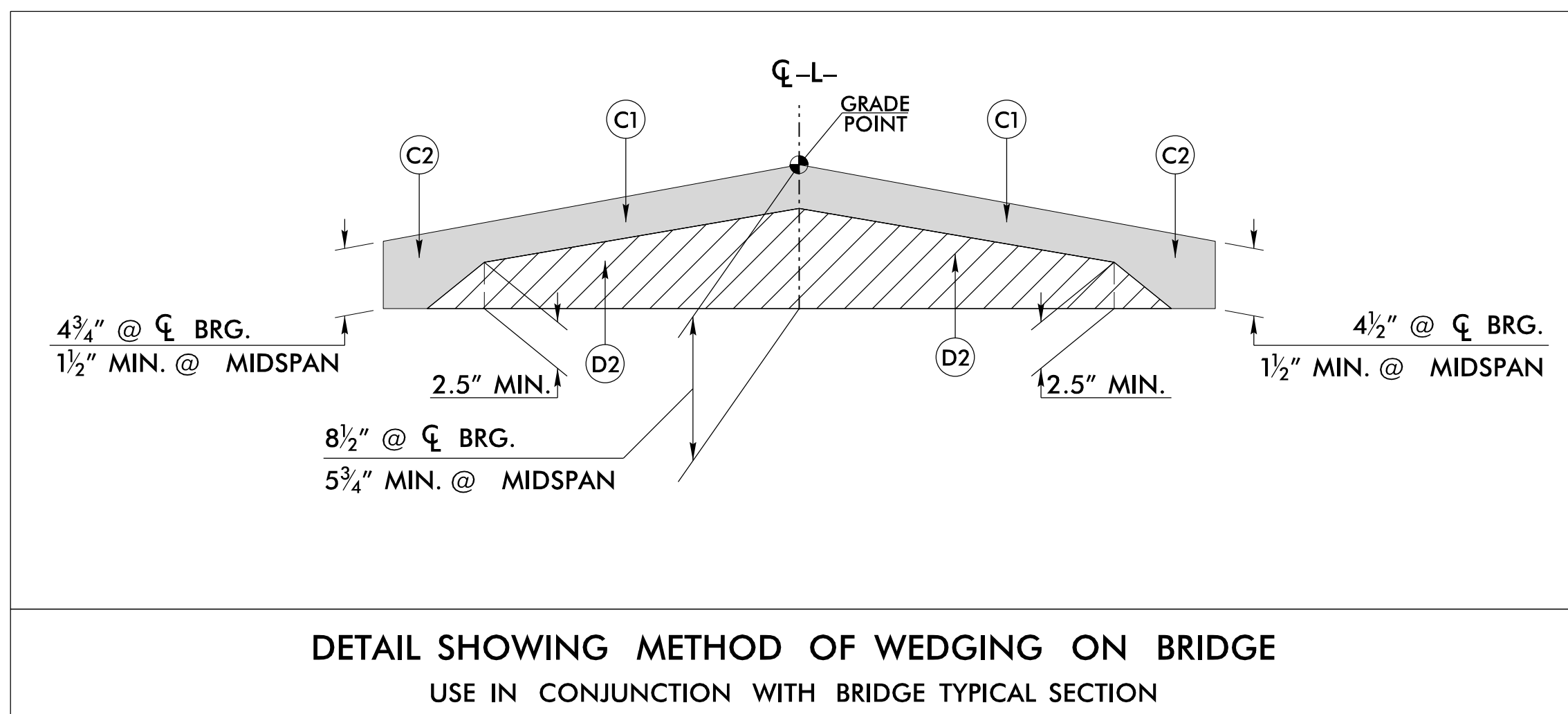
ROADWAY TYPICAL SECTION NO. 1

-L- STA. 12 + 35.00 TO -L- STA. 14 + 83.77 (BEGIN BRIDGE)
 -L- STA. 16 + 36.23 (END BRIDGE) TO -L- STA. 19 + 50.00

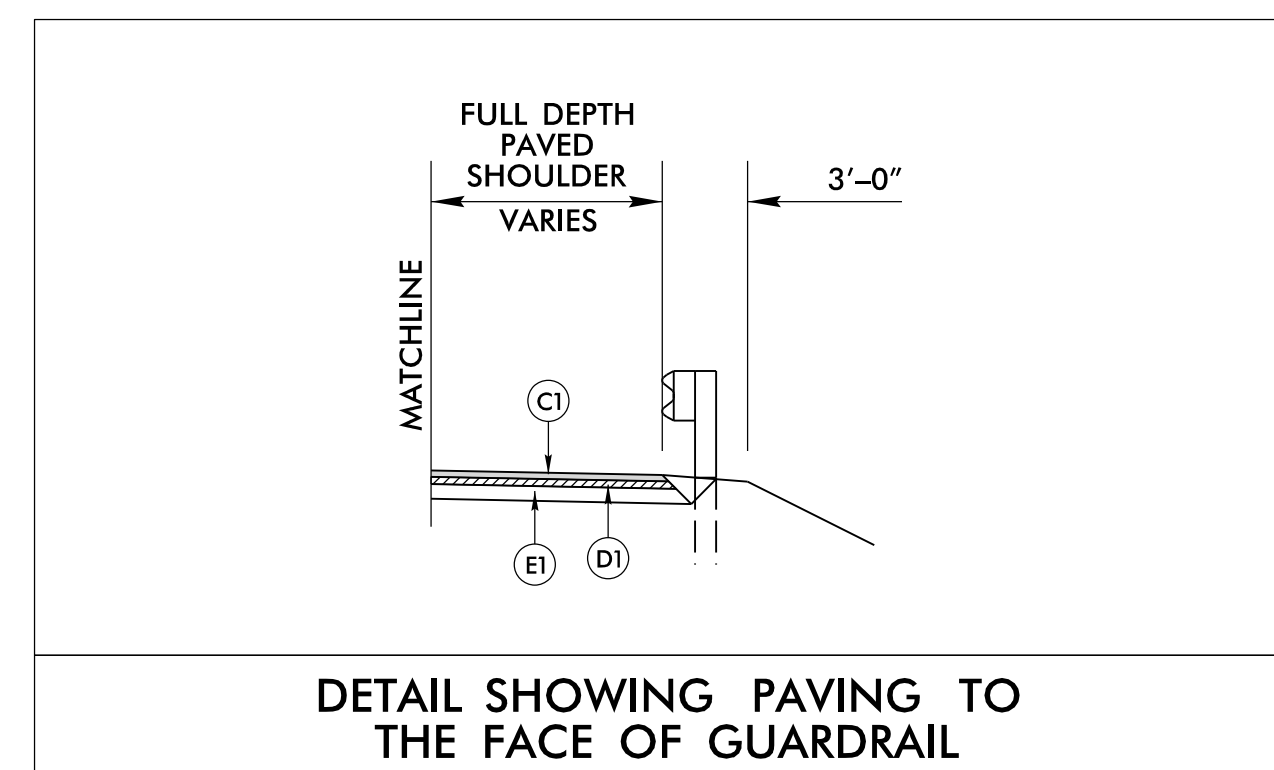


BRIDGE TYPICAL SECTION

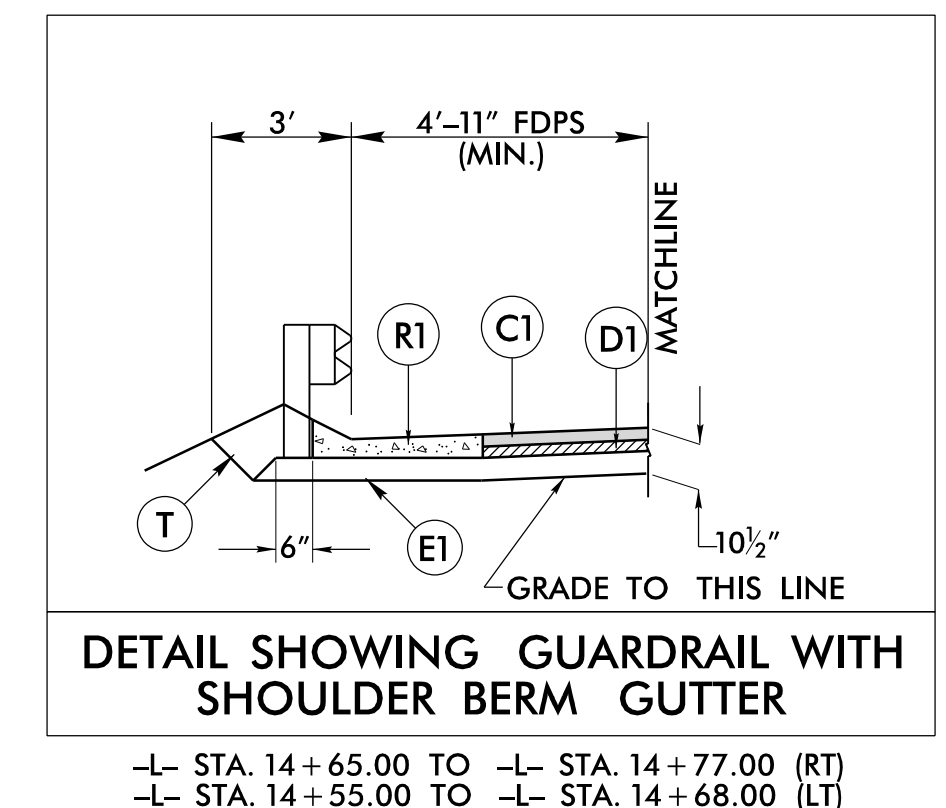
-L- STA. 14 + 83.77 TO -L- STA. 16 + 36.23
 NOTE: SEE STRUCTURE PLANS FOR ASPHALT WEARING SURFACE



DETAIL SHOWING METHOD OF WEDGING ON BRIDGE
 USE IN CONJUNCTION WITH BRIDGE TYPICAL SECTION



DETAIL SHOWING PAVING TO THE FACE OF GUARDRAIL

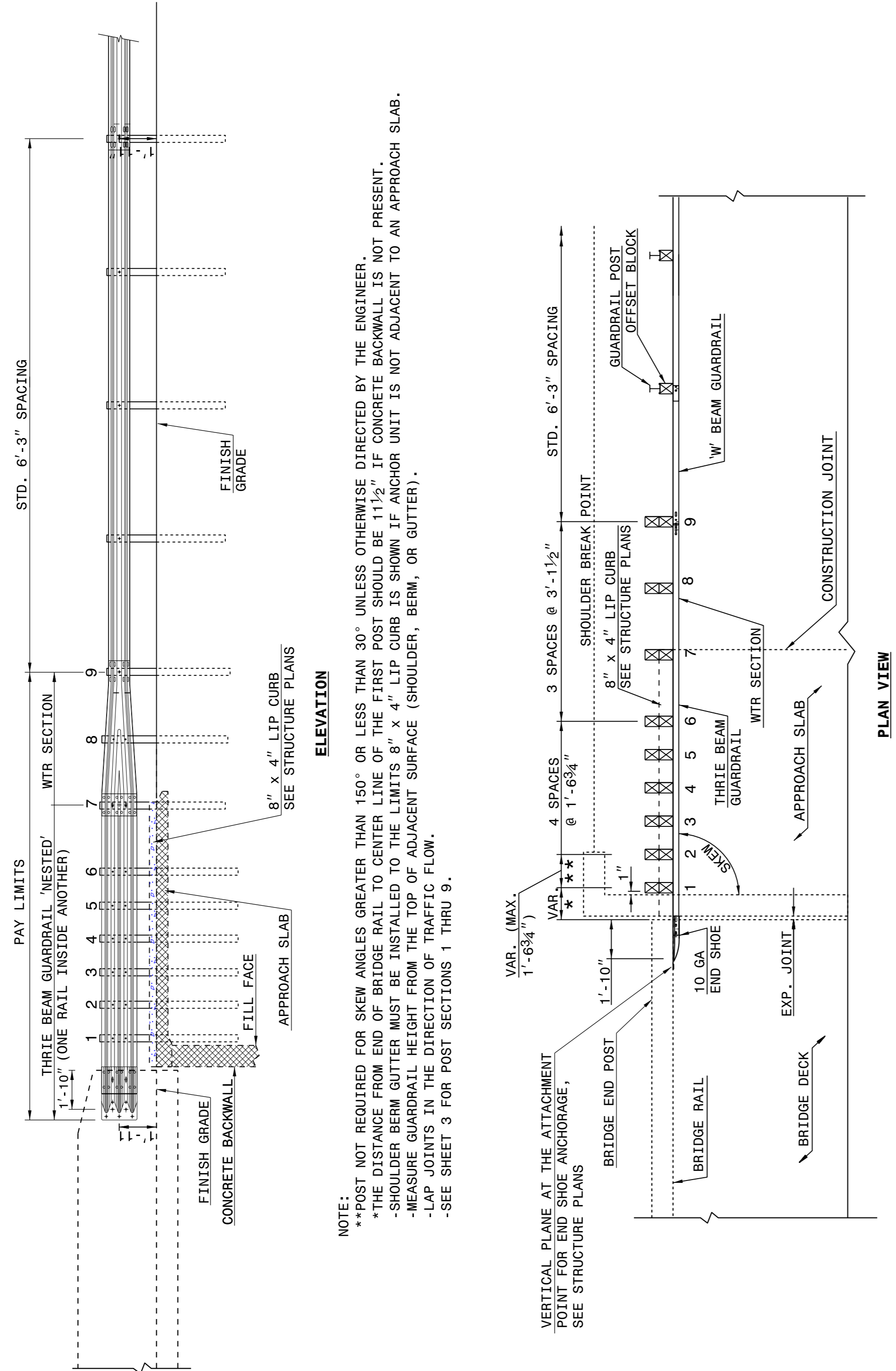


DETAIL SHOWING GUARDRAIL WITH SHOULDER BERM GUTTER

-L- STA. 14 + 65.00 TO -L- STA. 14 + 77.00 (RT)
 -L- STA. 14 + 55.00 TO -L- STA. 14 + 68.00 (LT)

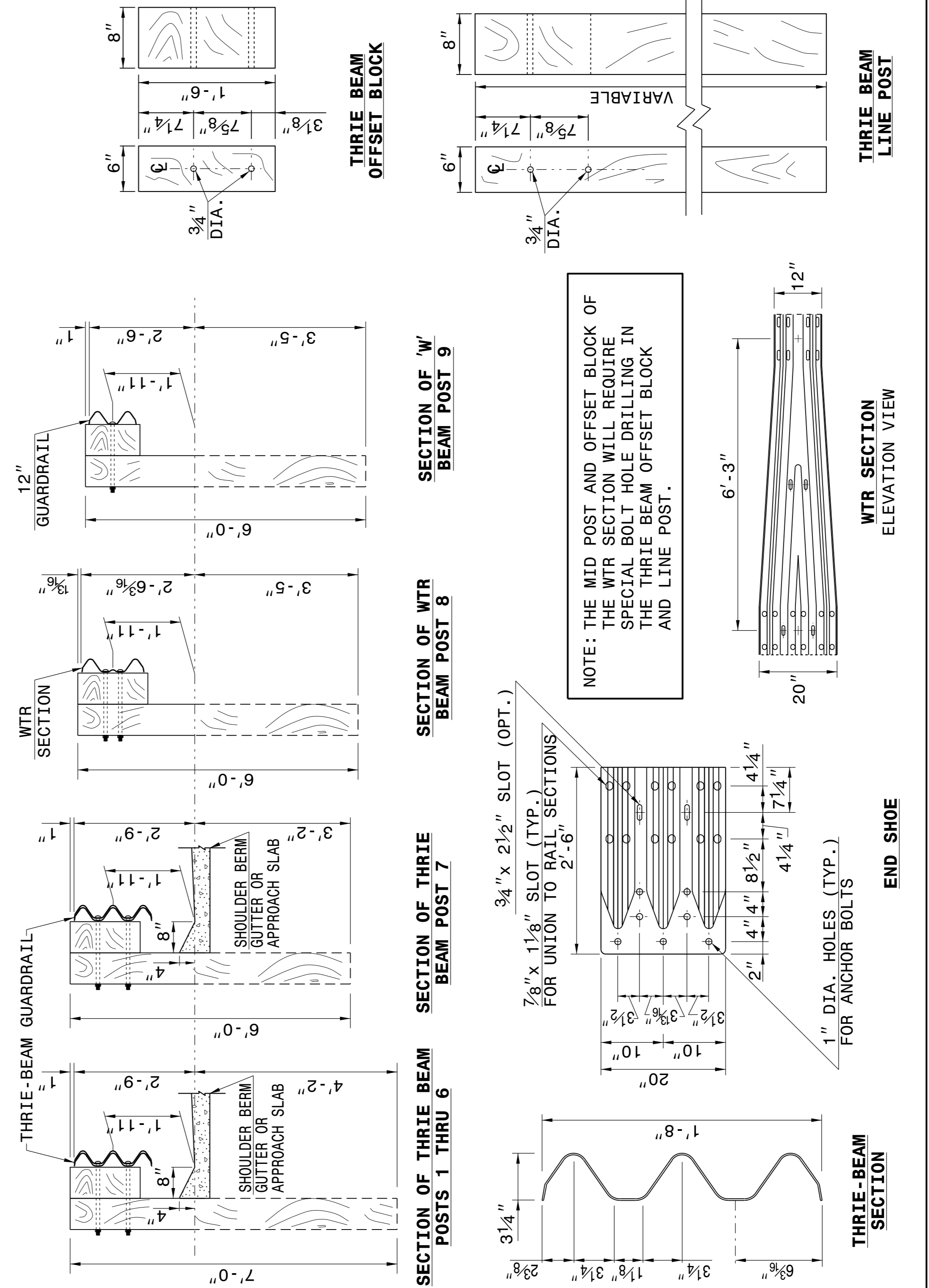
PROJECT REFERENCE NO. 17BP.5.R.56	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER Andrew P. Young 7/13/2016	PAVEMENT DESIGN ENGINEER Clark Morrison 7/15/2016
STEWART DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ENGLISH DETAIL DRAWING FOR GUARDRAIL ANCHOR UNITS, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER
SHEET 2 OF 7
862d03



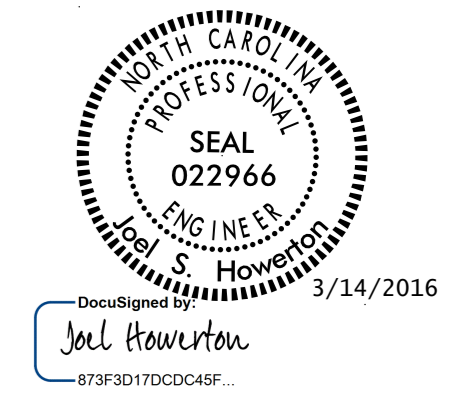
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ENGLISH DETAIL DRAWING FOR GUARDRAIL ANCHOR UNITS, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER
SHEET 2 OF 7
862d03

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ENGLISH DETAIL DRAWING FOR GUARDRAIL ANCHOR UNITS, TYPE III
SHEET 3 OF 7
862d03



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ENGLISH DETAIL DRAWING FOR GUARDRAIL ANCHOR UNITS, TYPE III
SHEET 3 OF 7
862d03

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.



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

ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: DATE: _____
CHECKED BY: DATE: _____
FILE SPEC.: DATE: _____

SUMMARY OF EARTHWORK

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
12+35.00	14+83.77 (BR)	916	79		837
16.36.23 (BR)	19+50.00	1237	278		959
GRAND TOTALS:		2153	357		1796
SAY:		2200			

Contingency Undercut = 400 CY
 Select Granular Material = 400 CY
 Geotextile for Soil Stabilization = 400 SY

PAVEMENT REMOVAL SUMMARY IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL
-L-	12+35.00	15+06.11	CL	719.11
-L-	16+26.75	19+50.00	CL	854.32
TOTAL:				1573.43
SAY:				1575

SHOULDER BERM GUTTER SUMMARY

LINE	Station	Station	LENGTH
-L-	14+55.00	14+67.09	12.09
-L-	14+65.00	14+75.71	10.71
TOTAL:			22.8
SAY:			25

APPROXIMATE QUANTITIES ONLY.
 UNCLASSIFIED EXCAVATION, BORROW
 EXCAVATION, FINE GRADING, CLEARING AND
 GRUBBING, AND REMOVAL OF EXISTING
 PAVEMENT WILL BE PAID FOR AT THE
 CONTRACT LUMP SUM PRICE FOR "GRADING"

GUARDRAIL SUMMARY

*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

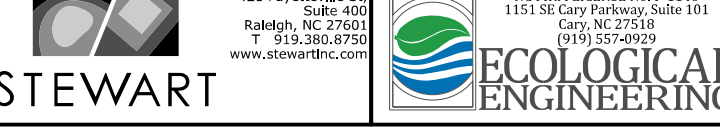
SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS								
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	XIII	CAT-1	VI MOD	BIC	TYPE III	G	NG												
-L-	12+77.02	14+89.52	RT	212.5			14+89.52		VAR.	11'-0"	193.75		3'-10"			1																			GRAU-350 TL-3		
-L-	13+42.97	14+80.47	LT	137.5				14+80.47	VAR.	11'-0"		118.75		2'-5"		1																			GRAU-350 TL-3		
-L-	16+39.53	17+89.53	RT	150				16+39.53	VAR.	11'-0"		131.25		2'-6"		1																				GRAU-350 TL-3	
-L-	16+30.47	19+05.47	LT	275			16+30.47		VAR.	11'-0"	256.25		4'-1"			1																				GRAU-350 TL-3	
SUBTOTALS				775												4																					
DEDUCTIONS FOR ANCHOR UNITS																																					
GRAU-350 TL-3 4 @ 50'				-200																																	
TYPE III 4 @ 18.75'				-75																																	
PROJECT TOTALS				500																																	
SAY				525																																	
ADDITIONAL GUARDRAIL POSTS = 5 EA																																					

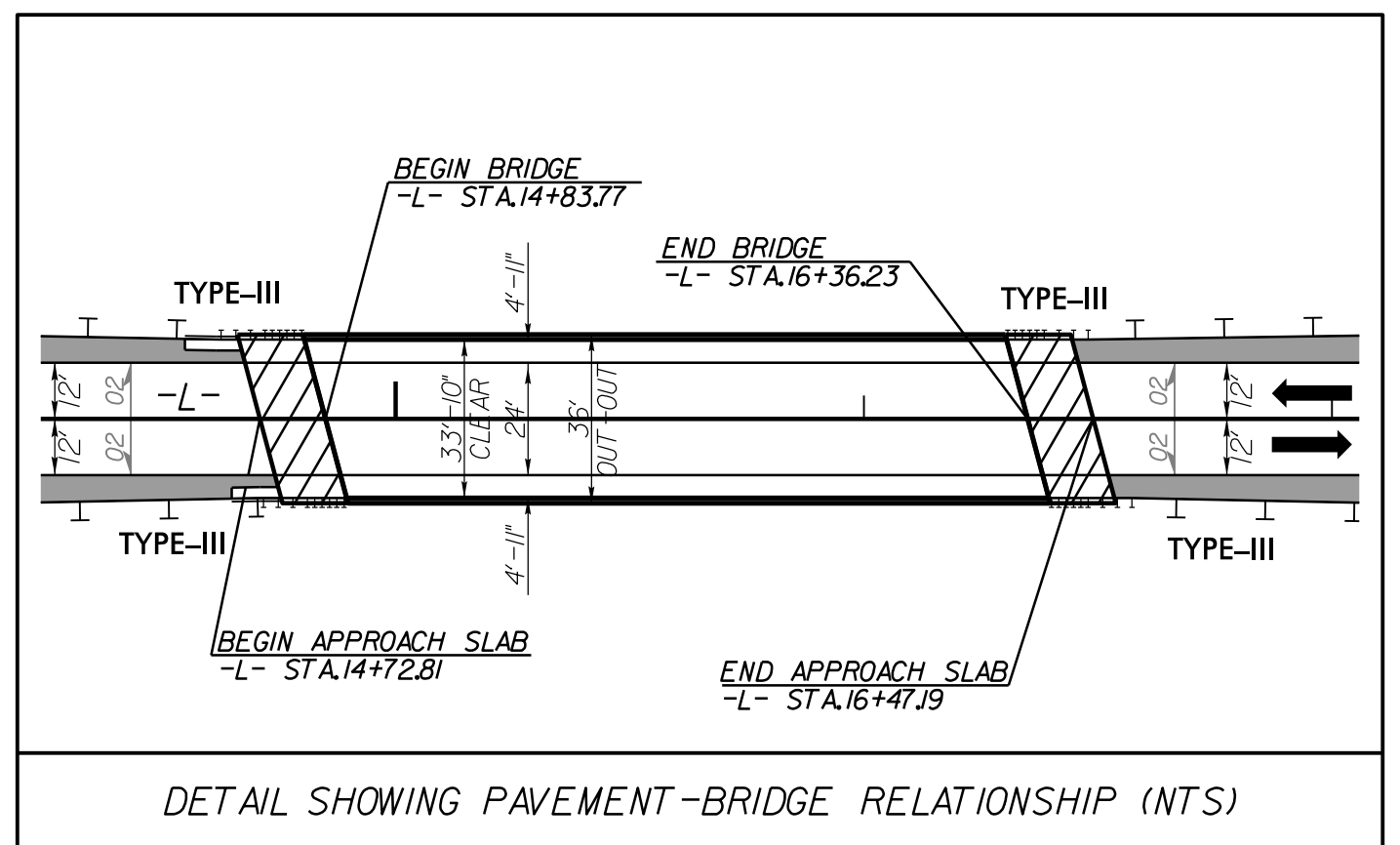
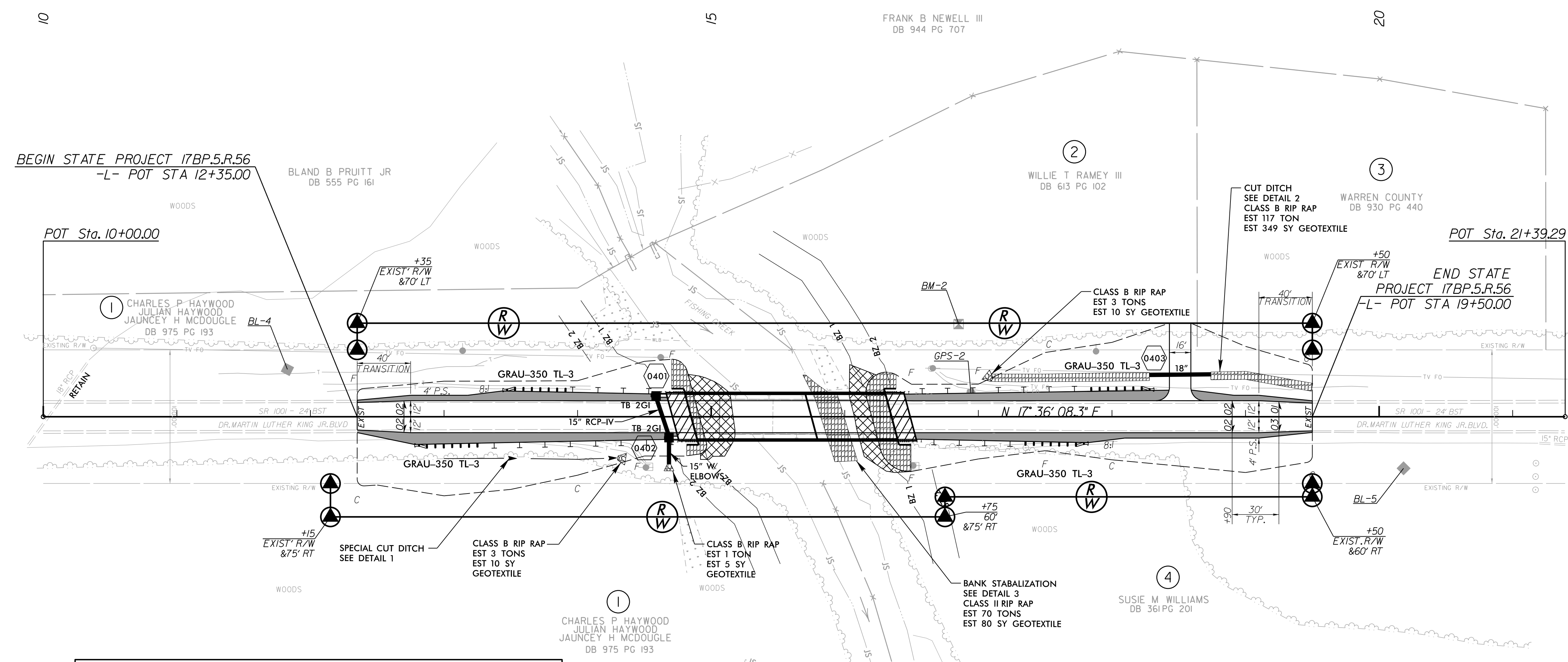
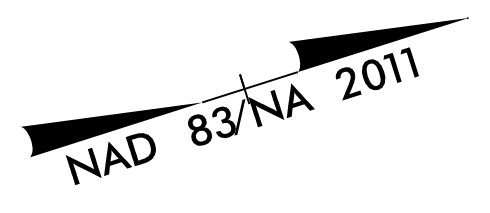
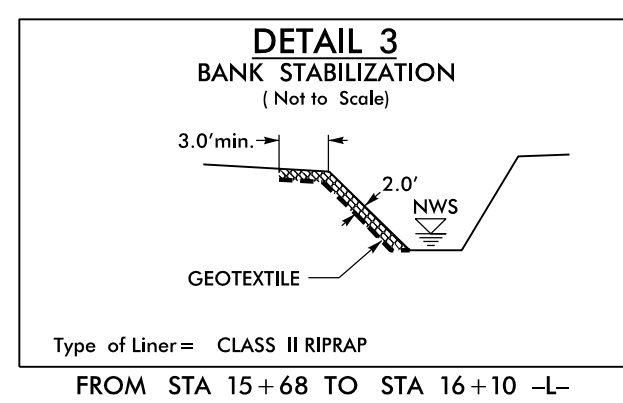
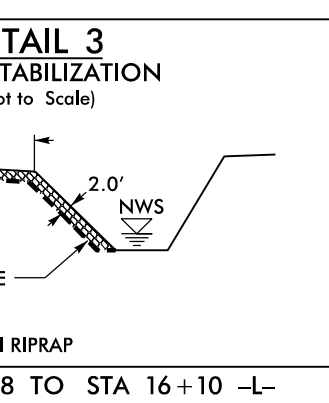
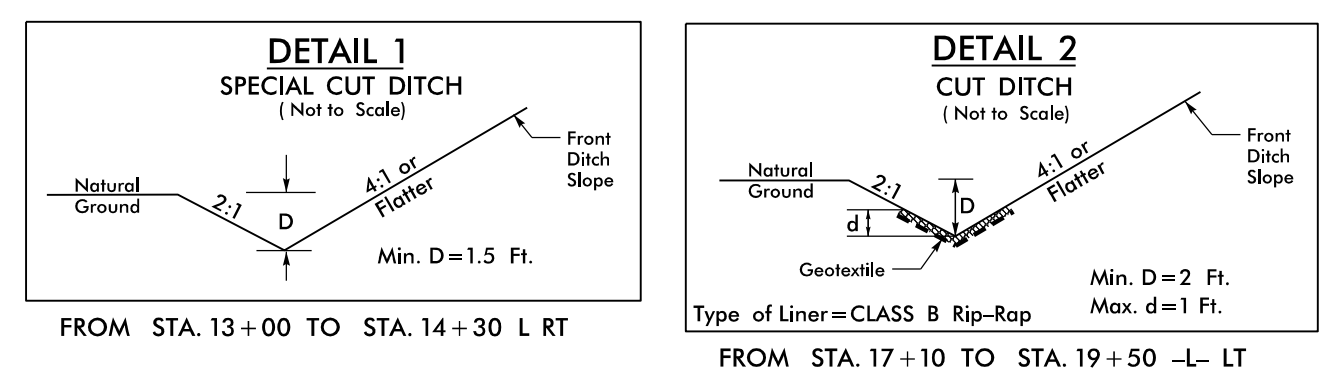
8/17/99

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USER: jlp

8/17/99

PROJECT REFERENCE NO.		SHEET NO.	
17BP.5.R.56		4	
ROADWAY DESIGN ENGINEER ANDREW P. YOUNG PROFESSIONAL SEAL 034407 DocuSigned by: Andrew P. Young 3/14/2016	HYDRAULICS ENGINEER BRANDON T. BARNUM PROFESSIONAL SEAL 039102 DocuSigned by: Brandon Barnum 3/17/2016		
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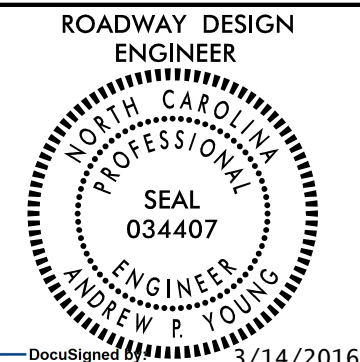
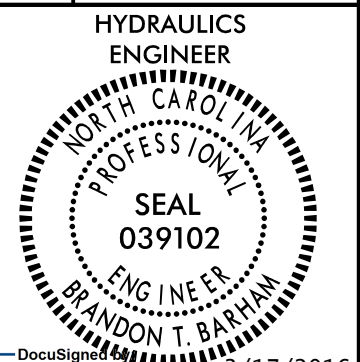

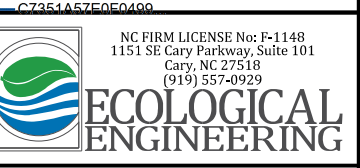
REVISIONS

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USER:andrew

FOR -L- PROFILE, SEE SHEET 5

SEE S-1 THRU S-21 FOR STRUCTURE PLANS

8.17.99

PROJECT REFERENCE NO. 17BP.5.R.56	SHEET NO. 5
ROADWAY DESIGN ENGINEER  Andrew P. Young 3/14/2016	HYDRAULICS ENGINEER  Brandon Barham 3/17/2016
	
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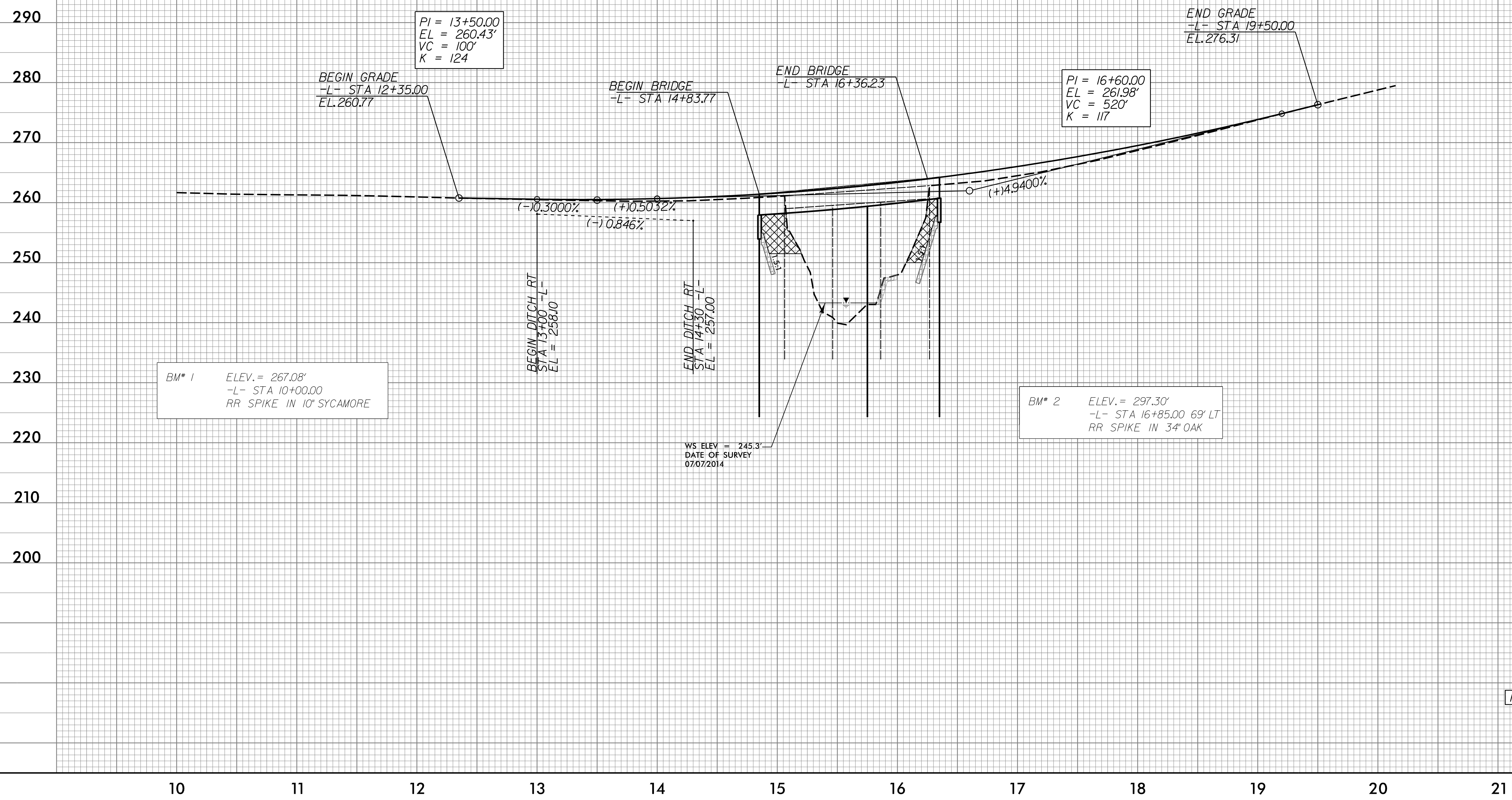
BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE = 6600 CFS
 DESIGN FREQUENCY = 50 YR
 DESIGN HW ELEVATION = 258.0 FT
 BASE DISCHARGE = 8510 CFS
 BASE FREQUENCY = 100 YR
 BASE HW ELEVATION = 259.80 FT
 OVERTOPPING DISCHARGE = 8920 CFS
 OVERTOPPING FREQUENCY = 100+ YR
 OVERTOPPING ELEVATION = 260.5 FT

DATE OF SURVEY = 07/07/2014
 W.S. ELEVATION AT DATE OF SURVEY = 245.3 FT

-L-

REVISIONS



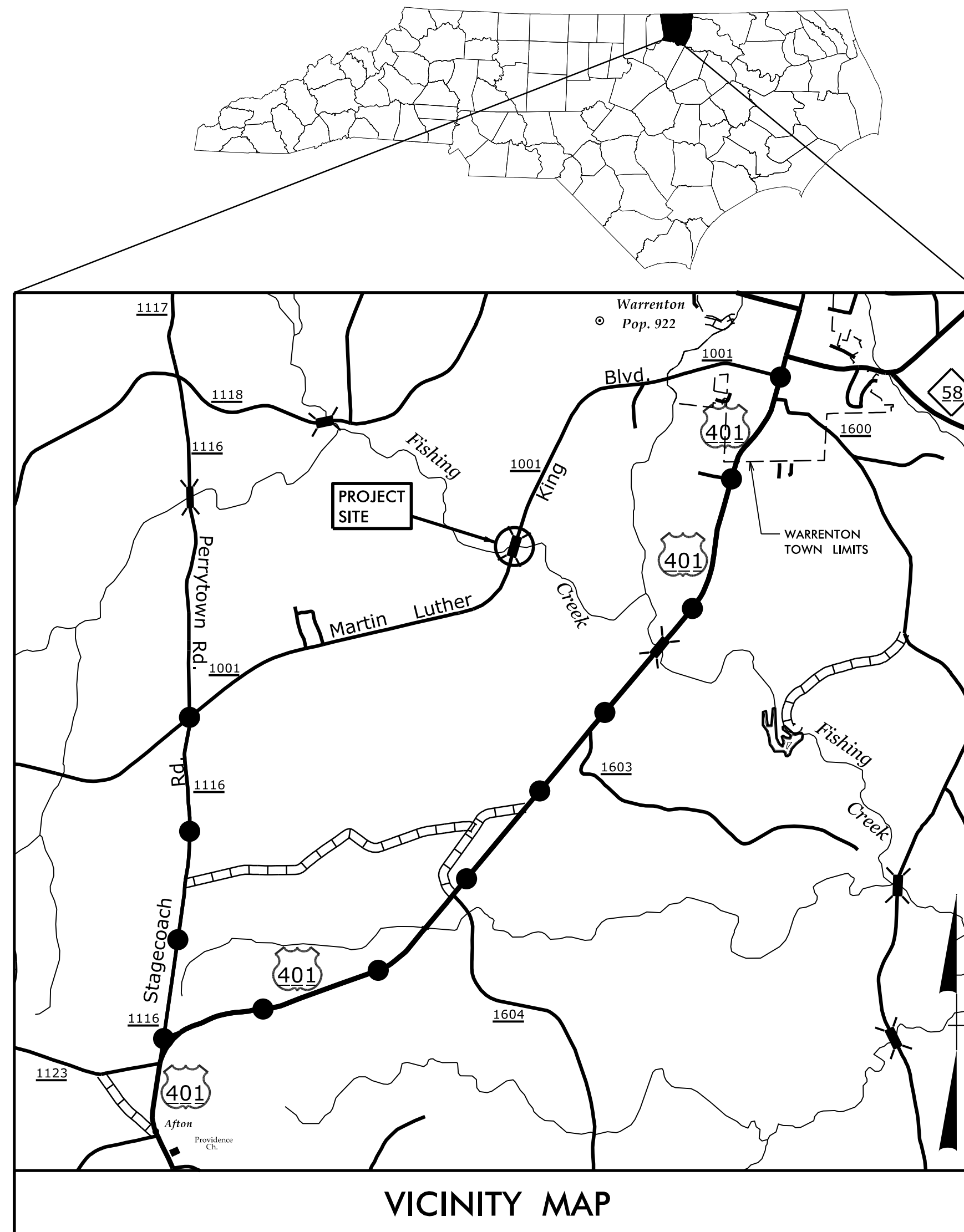
FOR -L- PLAN VIEW, SEE SHEET 4

3/14/2016 9:20:03 AM RDY_PSH05.dgn

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

WARREN COUNTY



—●●●●● OFFSITE DETOUR ROUTE

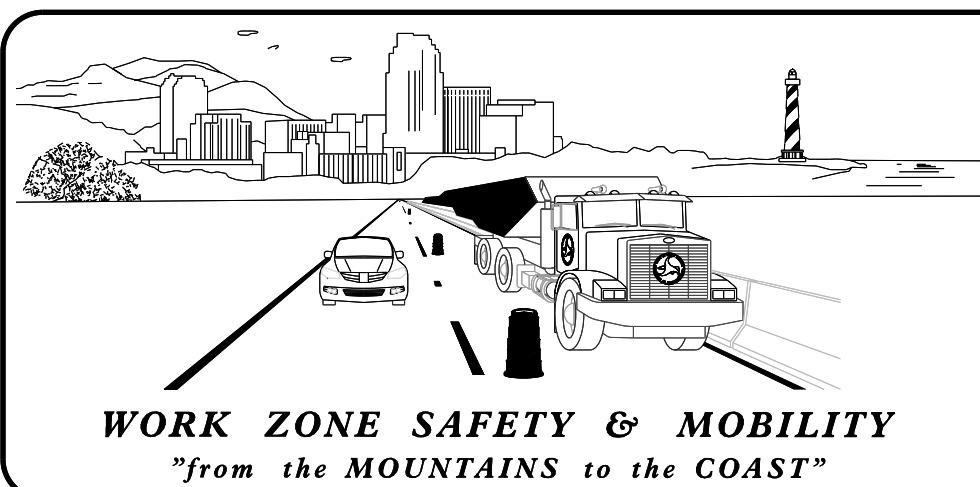
SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (GENERAL NOTES, MANAGEMENT STRATEGIES, AND PHASING)
TMP-2	SPECIAL SIGN DESIGN
TMP-3	OFF-SITE DETOUR

SHEET NO.
TMP-1

17BP.5.R.56

TIP PROJECT:

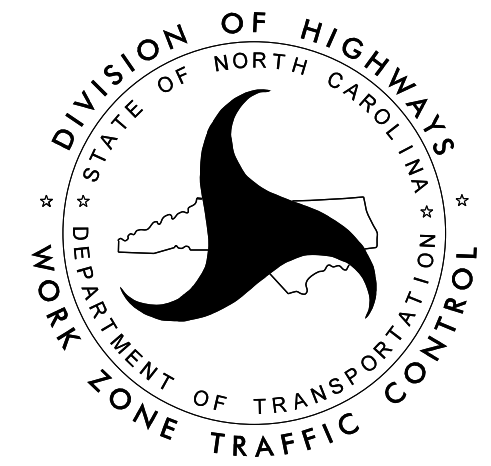
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N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773-2800 FAX: (919) 771-2745

DAVID RUGGLES, PE **TRAFFIC CONTROL PROJECT ENGINEER**

HANAN ASSFOURA, EI **TRAFFIC CONTROL DESIGN ENGINEER**



PLANS PREPARED BY:

APPROVED: *David Ruggles*
DATE: 3/25/2016

SEAL

3/8/2016
N:\CP\720003_TC_TCP_01.dgn
USER:hassfoura

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES

LEGEND

GENERAL

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

WORK AREA

REMOVAL

SIGNALS

- EXISTING
- PROPOSED
- T
- E TEMPORARY
- M
- P

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM
- SKINNY DRUM
- TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

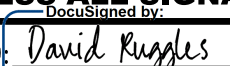
PAVEMENT MARKING SYMBOLS


- PAVEMENT MARKING SYMBOLS

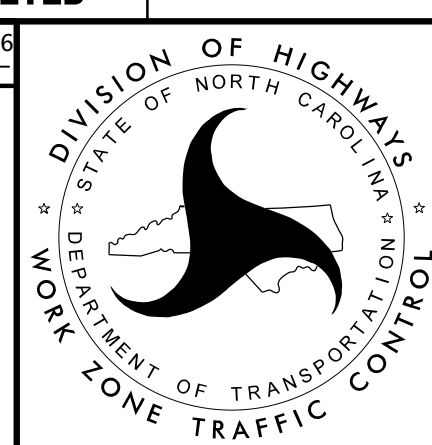
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 USER:hossfour


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APPROVED:  DATE: 3/25/2016

SEAL 



ROADWAY STANDARD DRAWINGS & LEGEND

MANAGEMENT STRATEGIES

DURING CONSTRUCTION OF PROPOSED STRUCTURE BRIDGE No. 3 OVER FISHING CREEK, SR 1001 (MARTIN LUTHER KING BOULEVARD) WILL BE CLOSED TO THROUGH TRAFFIC. LOCAL TRAFFIC ON SR 1001 WILL BE MAINTAINED USING AN OFFSITE DETOUR.

ACCESS TO ALL RESIDENCES AND BUSINESSES WITHIN THE PROJECT LIMITS MUST BE MAINTAINED AT ALL TIMES.

NOTIFY THE ENGINEER, WARREN COUNTY EMERGENCY SERVICES, AND WARREN COUNTY SCHOOLS OR BRIDGE REMOVAL THIRTY (30) CALENDAR DAYS PRIOR TO ROAD CLOSURE.

STEP 1:

PROVIDE CHANGEABLE MESSAGE SIGN WITH COUNTDOWN FOURTEEN (14) DAYS PRIOR TO CLOSURE OF SR 1001 (MARTIN LUTHER KING BOULEVARD) AT BOTH POINTS OF ROAD CLOSURE.

STEP 2:

USING RSD 1101.03, SHEET 1 OF 9, SHEETS TMP-2 AND TMP-3, INSTALL DETOUR SIGNS, PLACE TYPE III BARRICADES TO CLOSE SR 1001 (MARTIN LUTHER KING BOULEVARD) TO THROUGH TRAFFIC, AND DETOUR TRAFFIC OFFSITE.

STEP 3:

BEFORE BEGINNING WORK, LOCATE LIMITS OF PAVEMENT MARKING SKIP LINES AT NORTH END AND SOUTH END OF PROJECT

PHASING

STEP 4:

AWAY FROM TRAFFIC, COMPLETE THE FOLLOWING: (SEE ROADWAY AND STRUCTURE PLANS).

- 1) REMOVE EXISTING STRUCTURE No. 3 AND CONSTRUCT THE PROPOSED STRUCTURE FROM -L- STA. 14+83.77 TO -L- STA 16+36.23.
- 2) CONSTRUCT THE PROPOSED ROADWAY UP TO AND INCLUDING THE FINAL LAYER OF SURFACE COURSE FROM -L- STA. 12+35.00 TO -L- STA. 14+83.77 AND -L- STA 16+36.23 TO -L- STA 19+50.00.
- 3) USING THE FINAL PAVEMENT MARKING PLAN, PLACE FINAL PAVEMENT MARKINGS AND MARKERS, FROM -L- STA. 12+35.00 TO -L- STA. 19+50.00 AND TIE TO EXISTING PAVEMENT MARKINGS.

STEP 5:

OPEN ROADWAY TO TRAFFIC AND REMOVE ALL WORK ZONE SIGNAGE.

GENERAL NOTES

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

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

PAVEMENT EDGE DROP OFF REQUIREMENTS

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

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

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

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

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

- F) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- G) 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.

- H) 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.

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


TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

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

3/8/2016 11:20:03.TC.TCP_01B.dgn USER:hossfour9




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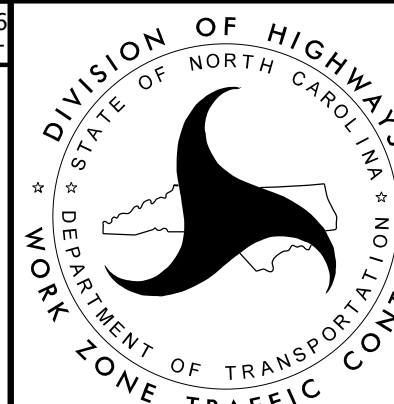
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APPROVED: *David Ruggles* DATE: 3/25/2016

SEAL





TRANSPORTATION OPERATIONS PLAN

SIGN NUMBER: MARTIN LUTHER KING BLVD
BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

TYPE: STATIONARY

QUANTITY: SEE PLANS

SIGN WIDTH: 4'-0"
HEIGHT: 2'-0"
TOTAL AREA: 8.0 Sq.Ft.

BORDER TYPE: INSET

RECESS: 0.38"
WIDTH: 0.63"
RADII: 1.5"

NO. Z BARS:
LENGTH:

SYMBOL	X	Y	WID	HT

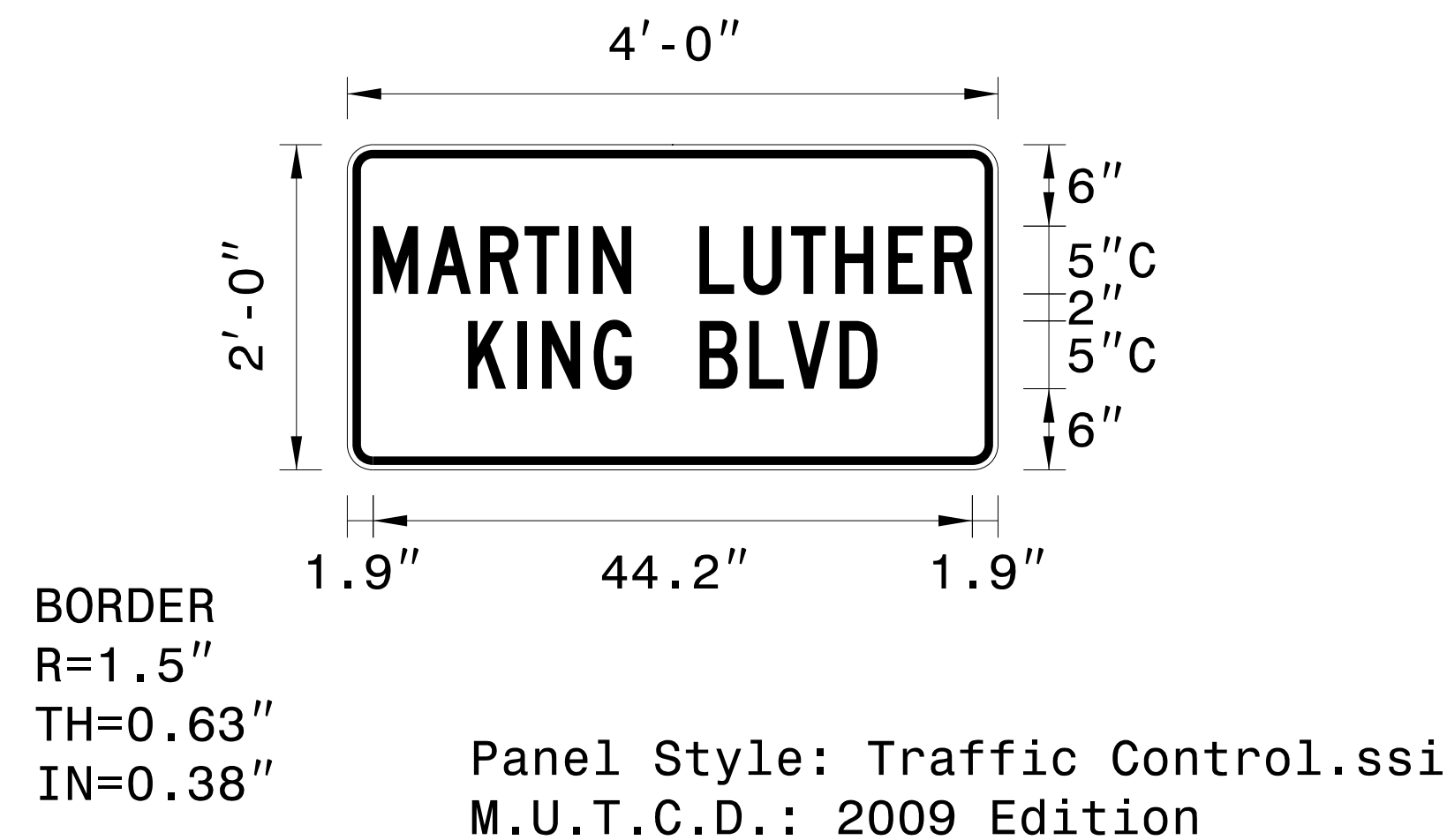
MAT'L: 0.080" (2.0 mm) ALUMINUM

USE NOTES: 1,2

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

DESIGN BY: MSB **CHECKED BY:** DRR **DATE:** Mar 03, 2015

PROJECT ID: 17BP.5.R.56 **DIV:** 5



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter locations are panel edge to lower left corner														Series/Size Text Length		
M	A	R	T	I	N	L	U	T	H	E	R					C 2000
1.9	5.9	9.8	13.1	16.3	18.1	20.9	26	29.2	32.7	36	39.9	43.3				44.2
K	I	N	G	B	L	V	D									C 2000
8.9	12.6	14.4	18.2	21	26	29.6	32.5	36.3								30.2

FILENAME: 720003_TC_TCP_02

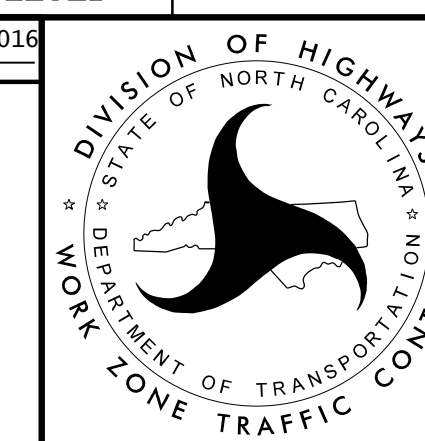
NORTH CAROLINA D.O.T. SIGN DETAIL

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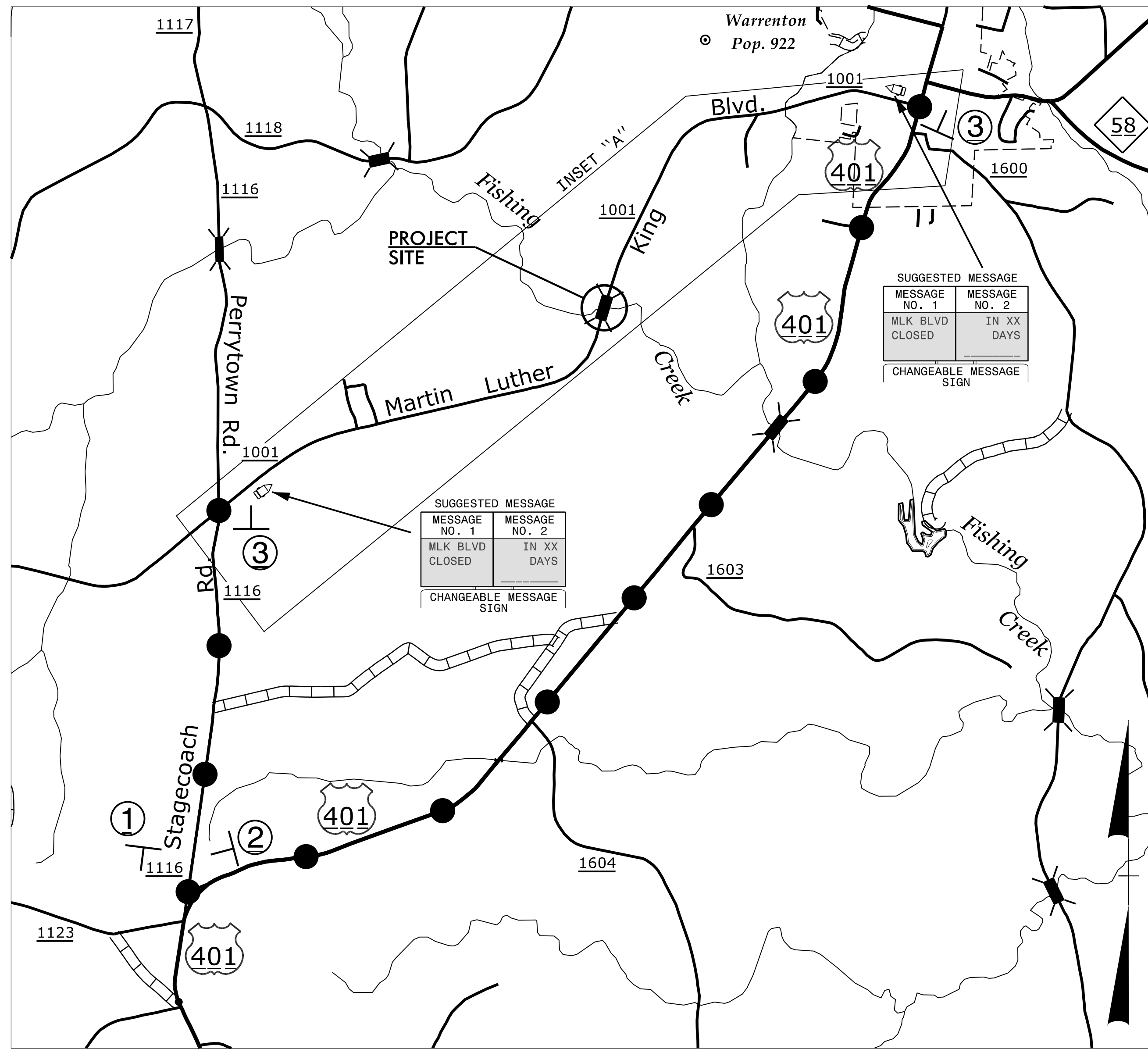
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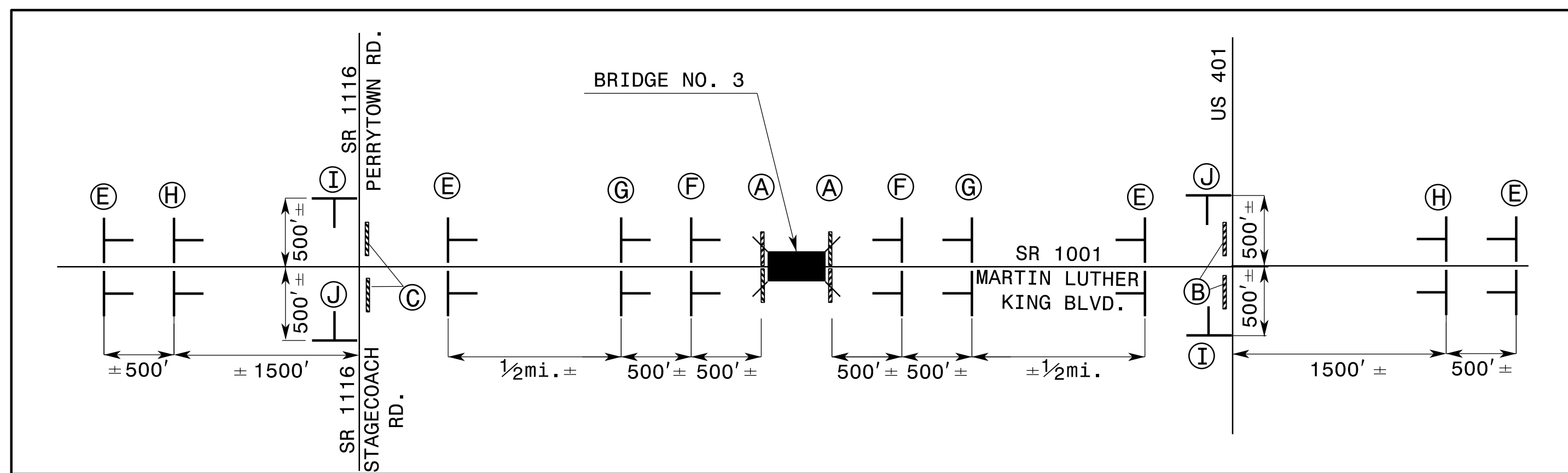
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**SPECIAL SIGN
DESIGN**

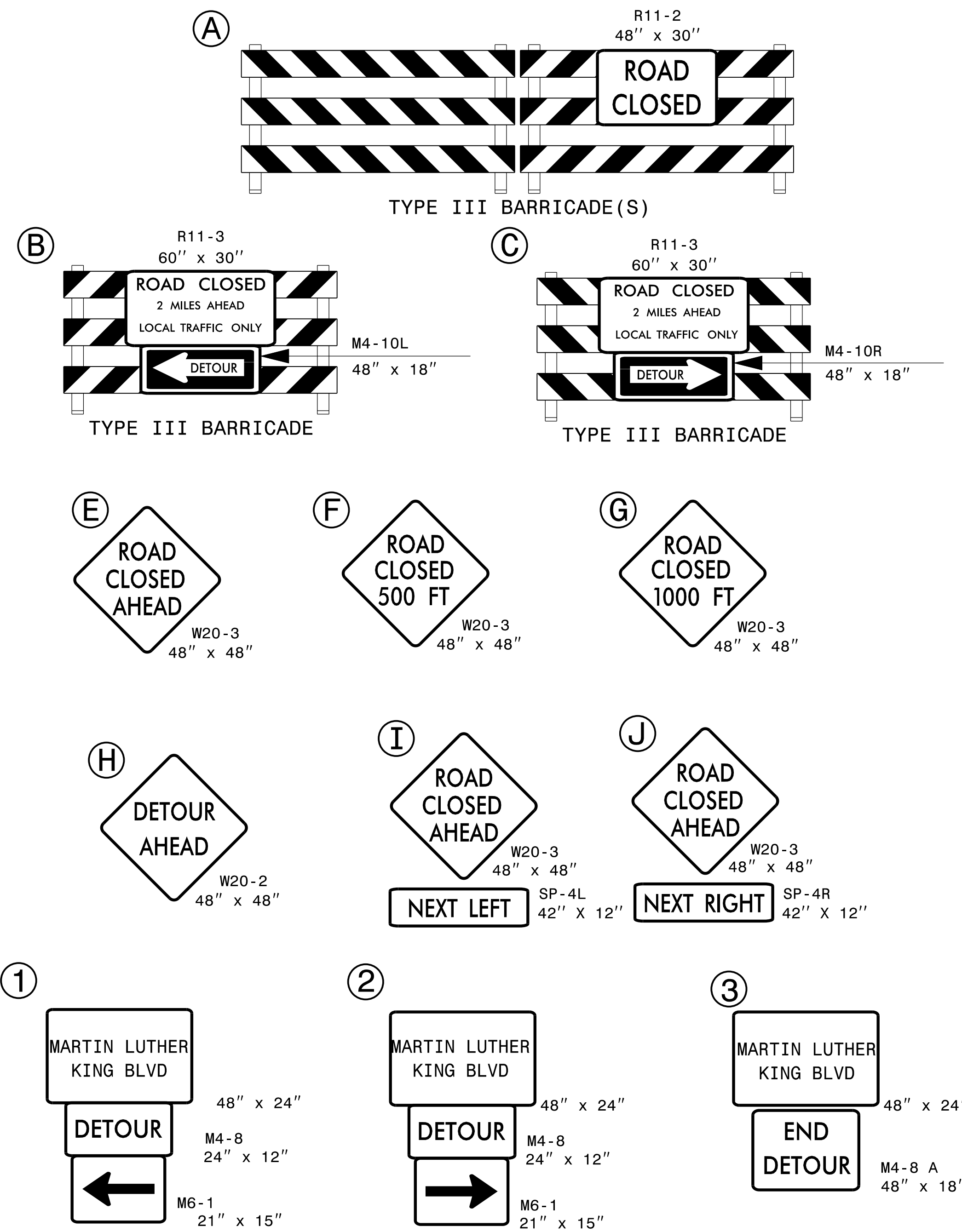


OFFSITE DETOUR SIGNING



INSET "A"

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



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APPROVED: *David Ruggles* DATE: 3/25/2016

SEAL

DAVID RUGGLES
 PROFESSIONAL ENGINEER
 NO. 11725

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

OFF-SITE DETOUR

T.I.P.: 17BP.5.R.56

CONTRACT:

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
WARREN COUNTY**

**LOCATION: BRIDGE NO.3 OVER FISHING CREEK ON
SR 1001 (MARTIN LUTHER KING BLVD.)**

<small>TIP NO.</small> 17BP.5.R.56	<small>SHEET NO.</small> PMP - 1
<small>APPROVED:</small>	
<small>DATE:</small> 3/25/2016	
<small>SEAL:</small> 	
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ROADWAY STANDARD DRAWING

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:

<u>STD. NO.</u>	<u>TITLE</u>
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

PAVEMENT MARKING SCHEDULE

<u>SYMBOL</u>	<u>DESCRIPTION</u>
TA	THERMOPLASTIC WHITE EDGELINE (4", 90 MILS)
TF	THERMOPLASTIC - 10FT-YELLOW SKIP (4", 120 MILS)
TH	THERMOPLASTIC - YELLOW SINGLE CENTER (4", 120 MILS)
MA	YELLOW & YELLOW, PERMANENT RAISED PAVEMENT MARKERS

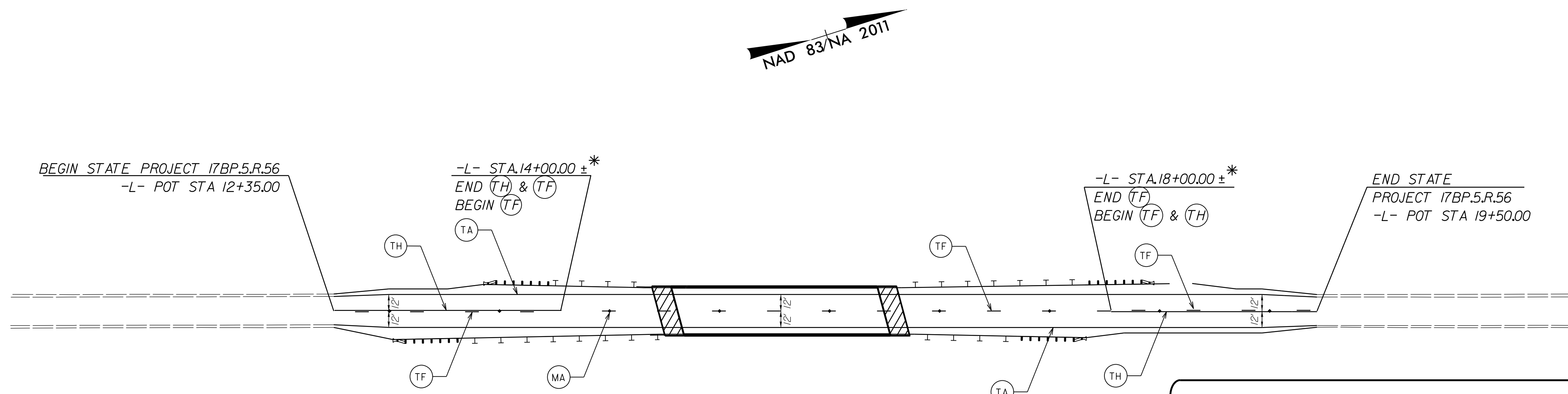
GENERAL NOTES

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.

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

<u>ROAD NAME</u>	<u>MARKING</u>	<u>MARKER</u>
MARTIN LUTHER KING BLVD BRIDGE	THERMOPLASTIC THERMOPLASTIC	RAISED RAISED

- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS.
- D) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.



* NOTE: CONTRACTOR TO MATCH EXISTING PAVEMENT MARKING

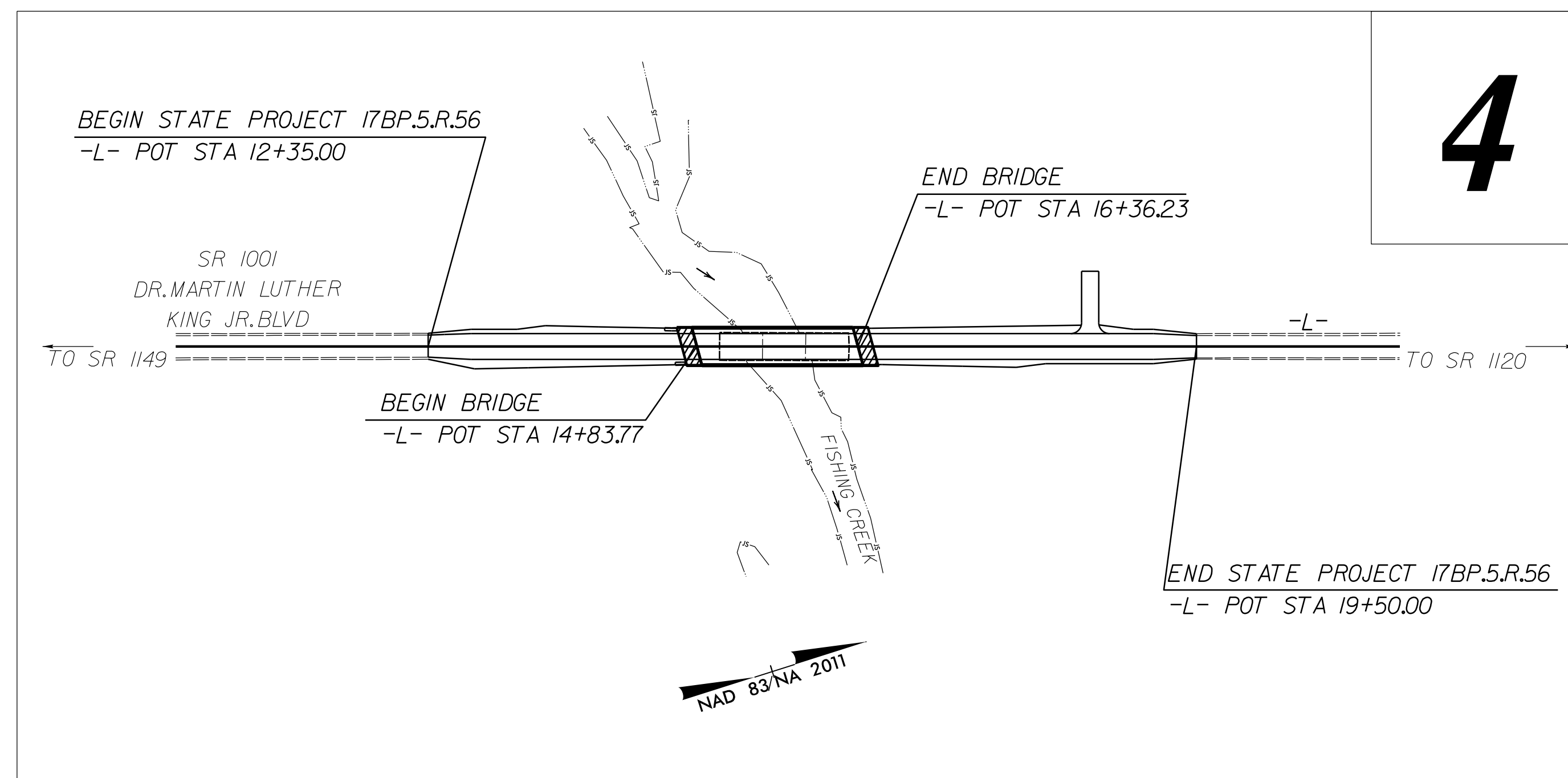
PLAN PREPARED BY: STEWART		<small>Firm License No. C-1051 421 Fayetteville St. Suite 400 Raleigh, NC 27601 T 919.380.8750 www.stewartinc.com</small>
DAVID RUGGLES, PE	PROJECT ENGINEER	
HANAN ASSFOURA, EI	PROJECT DESIGN ENGINEER	

TIP PROJECT: 17BP.5.R.56

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
**PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL**

LOCATION: BRIDGE NO. 003 ON SR 1001 (DR. MARTIN LUTHER KING JR. BLVD.) OVER FISHING CREEK

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



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.5.R.56	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1650.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	III III III
1606.01	Special Sediment Control Fence	▲▲▲▲▲▲▲▲
1622.01	Temporary Berms and Slope Drains	▲
1650.02	Silt Basin Type B	▨
1633.01	Temporary Rock Silt Check Type-A	▨
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	▨
1635.02	Temporary Rock Silt Check Type-B	▶
	Wattle / Coir Fiber Wattle	◐
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	◐
1634.01	Temporary Rock Sediment Dam Type-A	▨
1634.02	Temporary Rock Sediment Dam Type-B	▨
1635.01	Rock Pipe Inlet Sediment Trap Type-A	⊂
1635.02	Rock Pipe Inlet Sediment Trap Type-B	⊂
1650.04	Stilling Basin	▭
1650.06	Special Stilling Basin	▭
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	▭
	Tiered Skimmer Basin	▭
	Infiltration Basin	▭

BRANDON BARHAM
LEVEL IIIA NAME

3368
LEVEL III CERTIFICATION NO.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

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

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT
Refer To E. C. Special Provisions for Special Considerations.

GRAPHIC SCALE

50 0 100
PLANS

50 0 100
PROFILE (HORIZONTAL)

0
PROFILE (VERTICAL)

PREPARED IN ACCORDANCE WITH STANDARDS SET BY:
**ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

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

Prepared in the Office of:

2012 STANDARD SPECIFICATIONS

NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

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 J
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 J
1630.01 Riser Basin	1634.01 Temporary Rock Sediment Dam Type A
1630.02 Silt Basin Type J	1634.02 Temporary Rock Sediment Dam Type J
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 J
1630.05 Temporary Diversion	1640.01 Coir Fiber Jaffle
1630.06 Special Stilling Basin	1645.01 Temporary Stream Crossing
1631.01 Matting Installation	

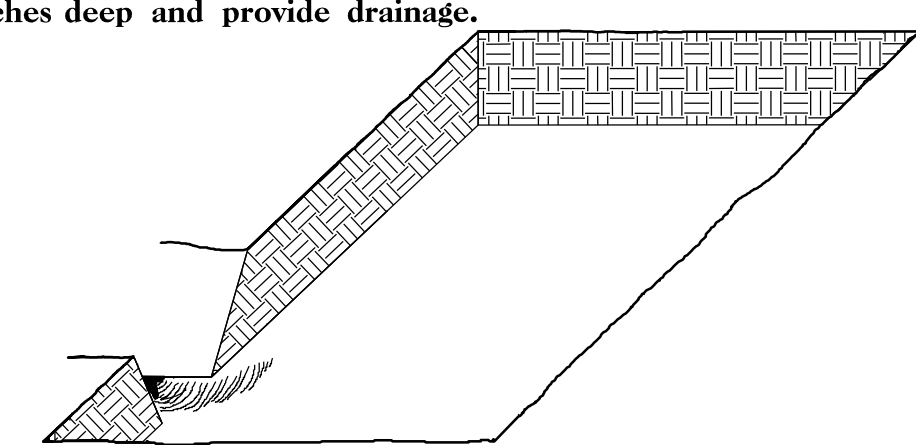
2/2/2016 09:20:03 Revu-1.dgn
USFHSE011

PLANTING DETAILS

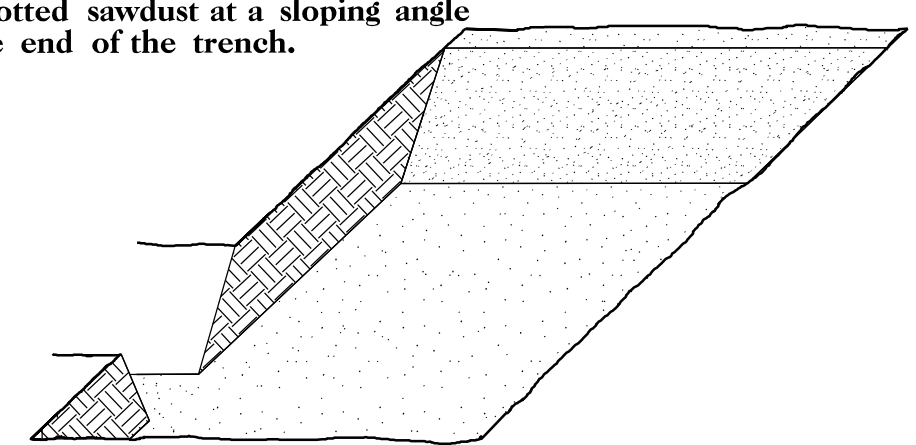
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

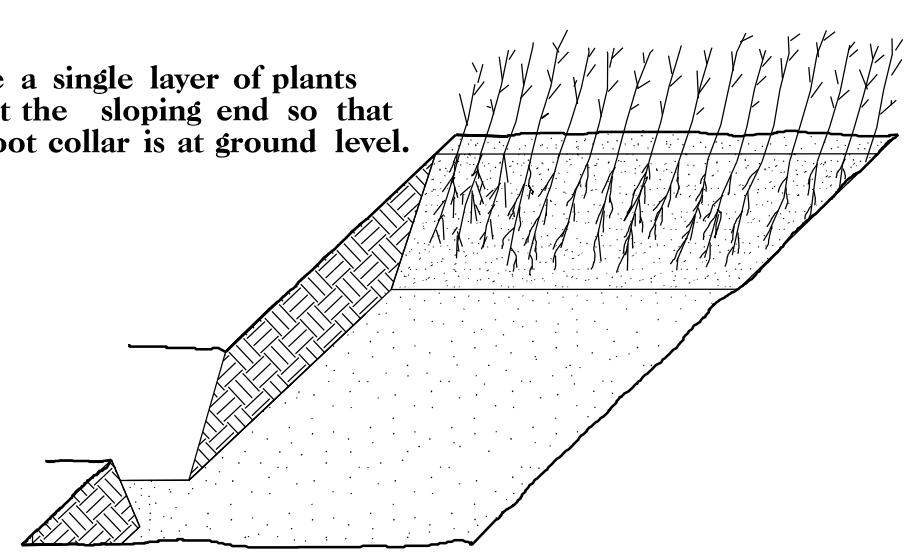
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



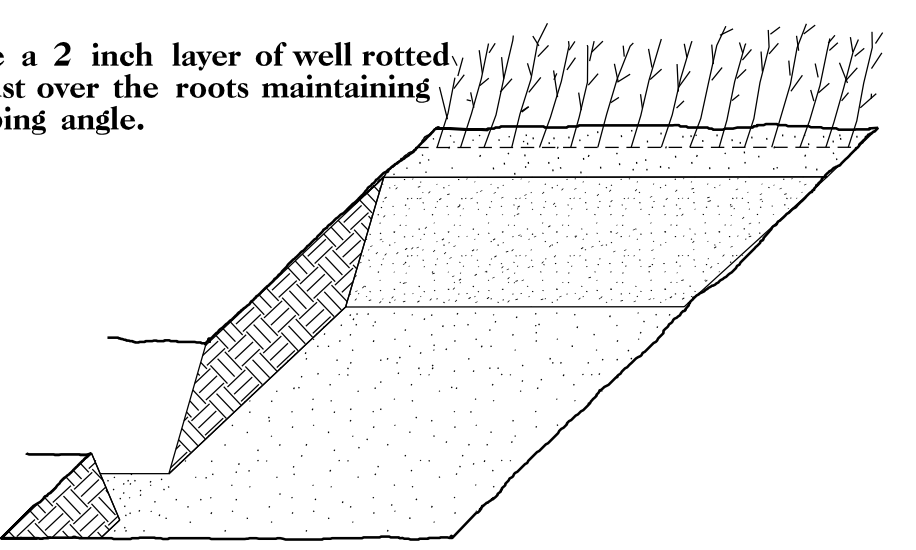
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

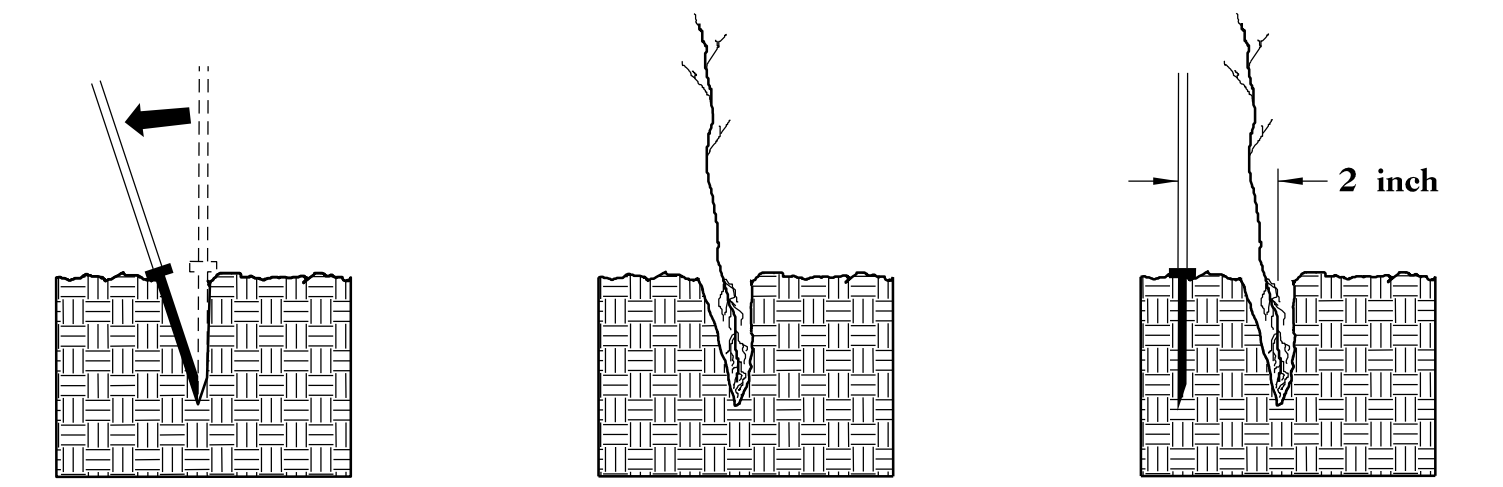


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

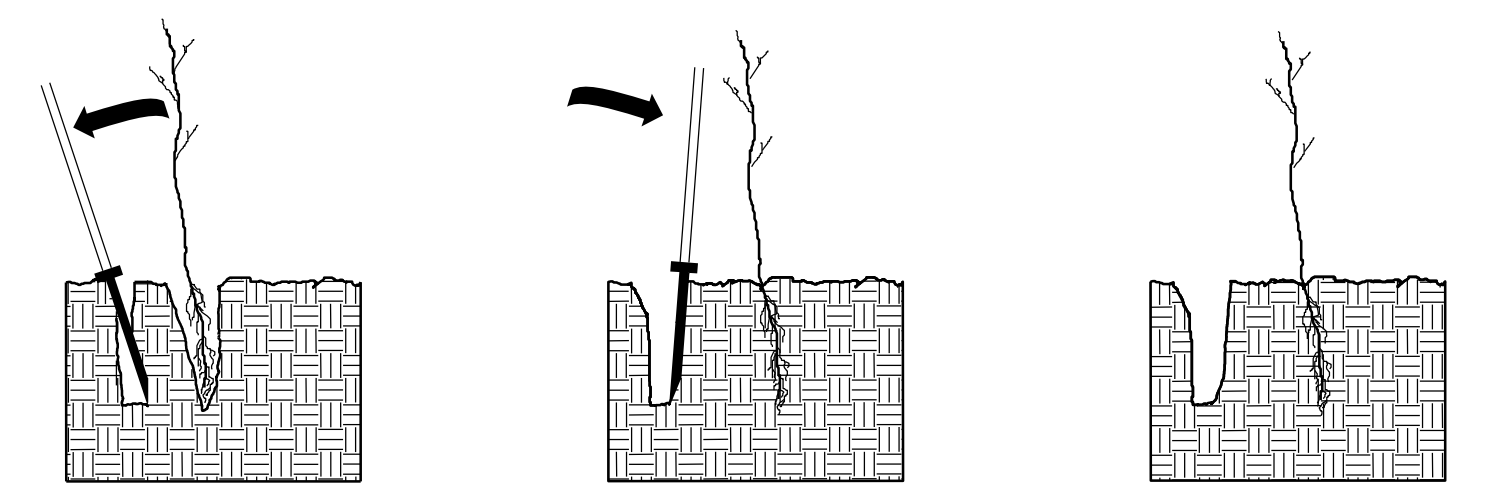


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

DOUBLE PLANTING METHOD USING THE K3C PLANTING BAR



1. Insert planting bar as shown and pull handle toward planter.
2. Remove planting bar and place seedling at correct depth.
3. Insert planting bar 2 inches toward planter from seedling.



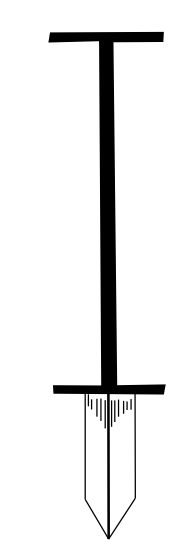
4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

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



K3C PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



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

REFORESTATION

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

REFORESTATION

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

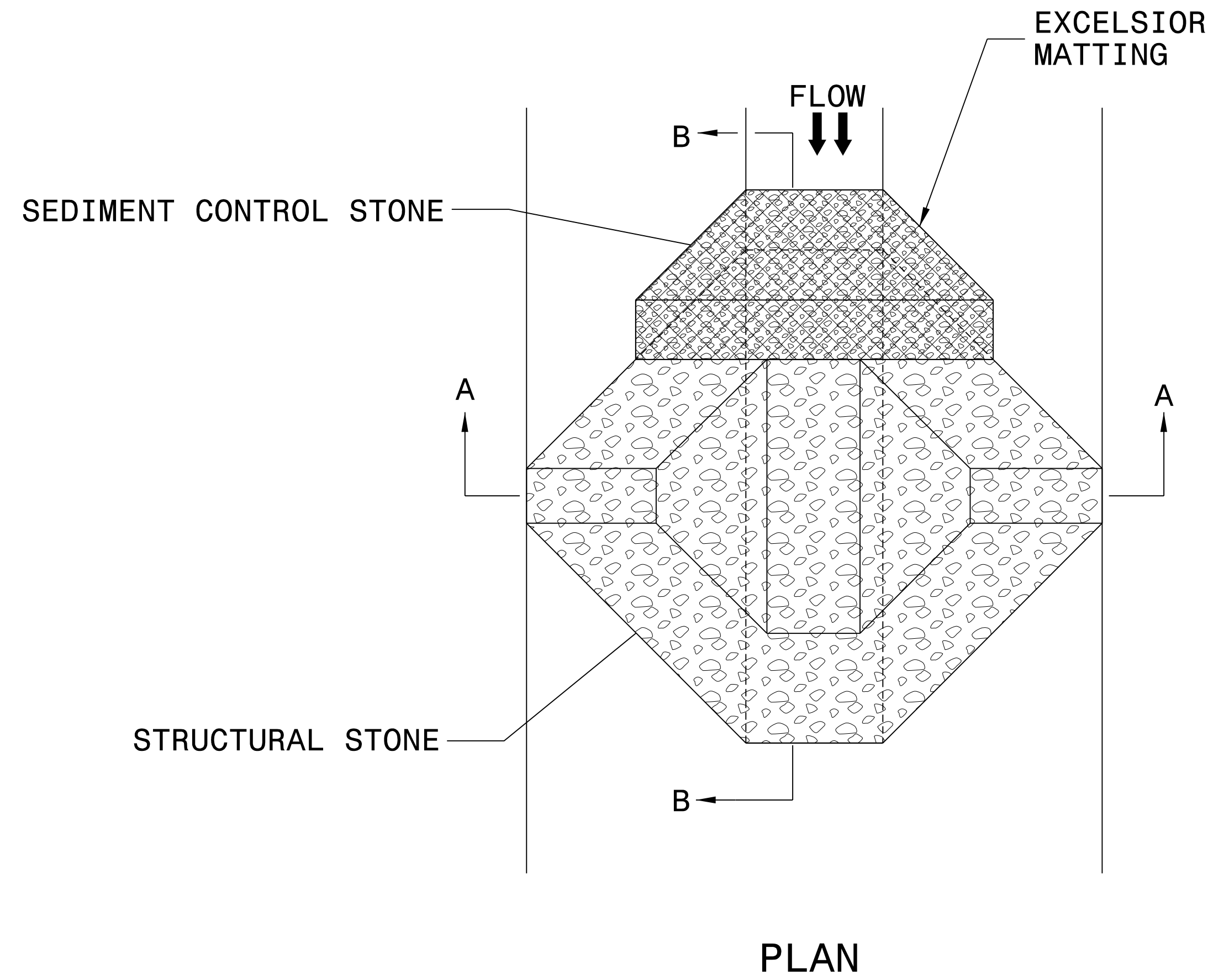
25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in 3R
25% PLATANUS OCCIDENTALIS	SYCAMORE	12 in - 18 in 3R
25% FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in 3R
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in 3R

REFORESTATION DETAIL SHEET

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

PROJECT REFERENCE NO. 17BP.5.R.56	SHEET NO. EC-03
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



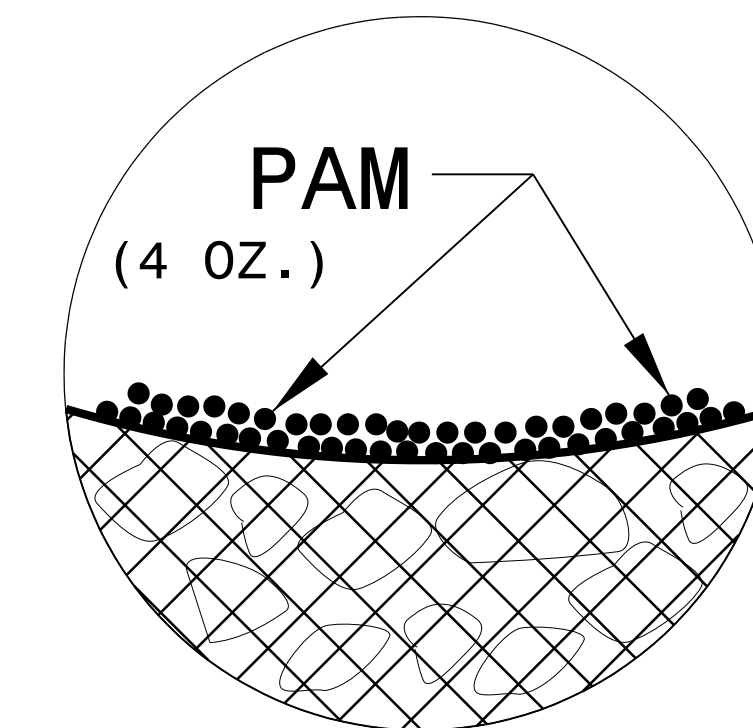
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

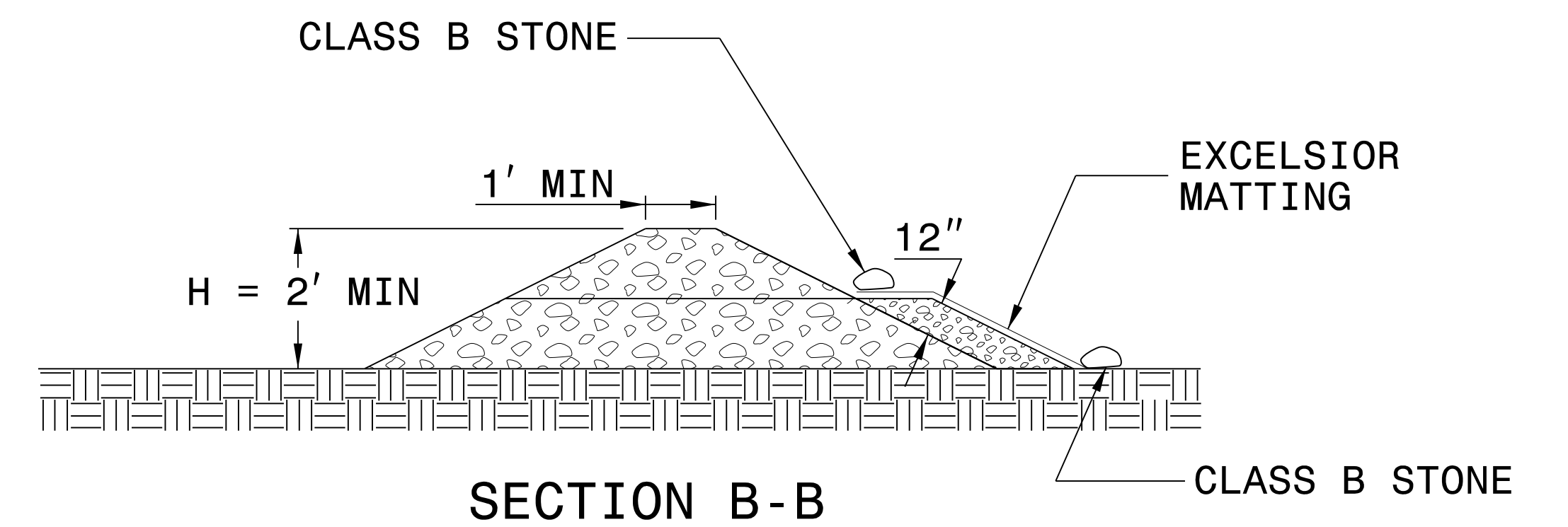
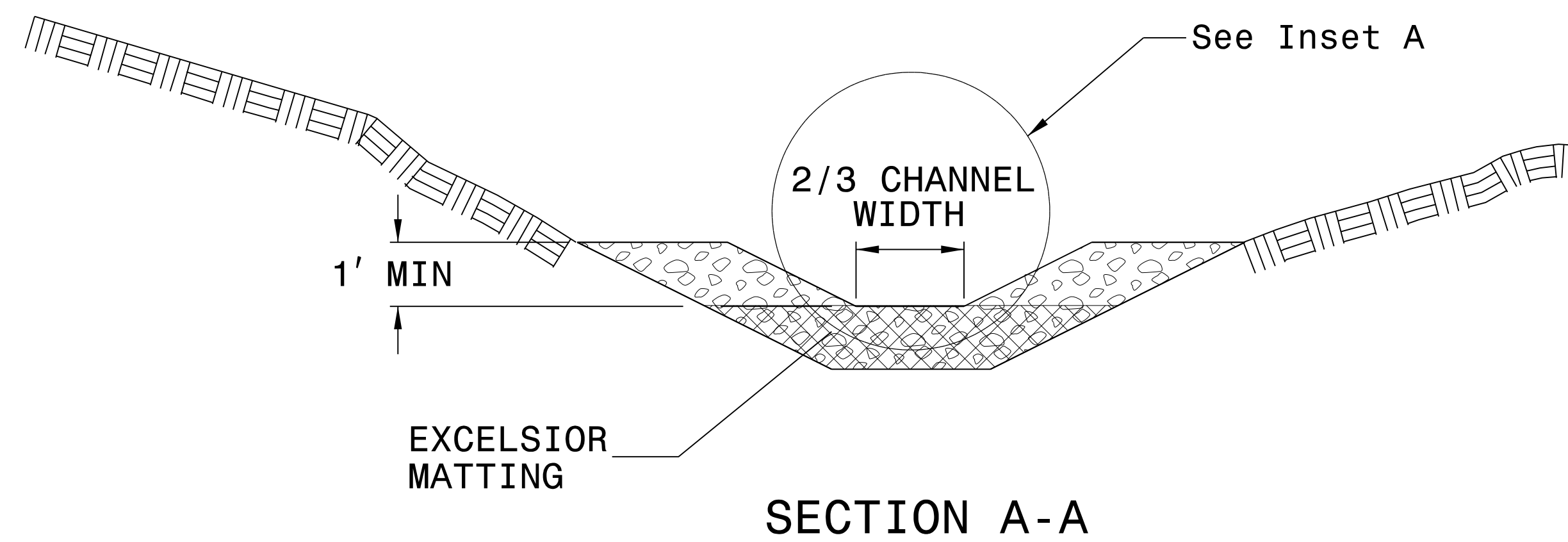
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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 ROCK SILT CHECK.

INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



NOT TO SCALE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

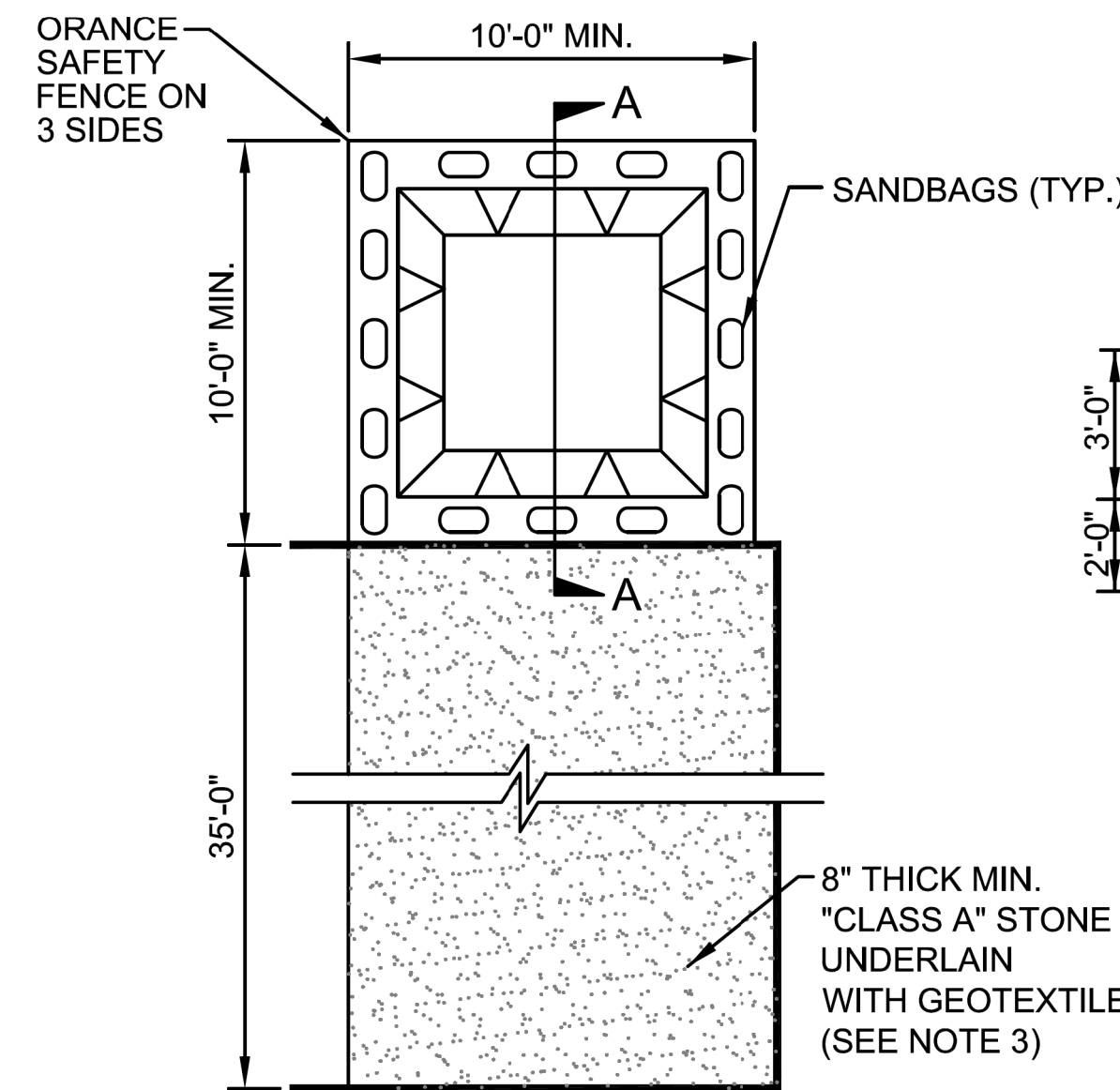
PROJECT REFERENCE NO.	SHEET NO.
17BP.5.R.56	EC-04
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

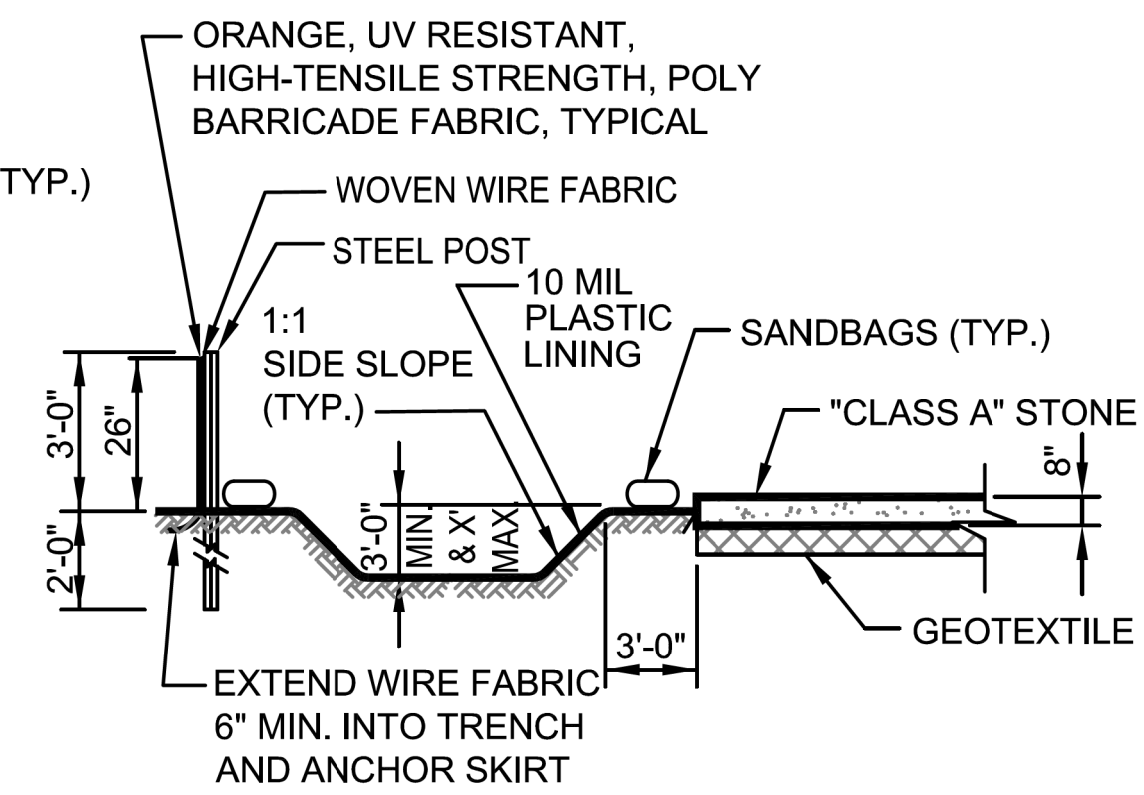
<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES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

PROJECT REFERENCE NO.	SHEET NO.
17BP.5.R.56	EC-6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE



PLAN

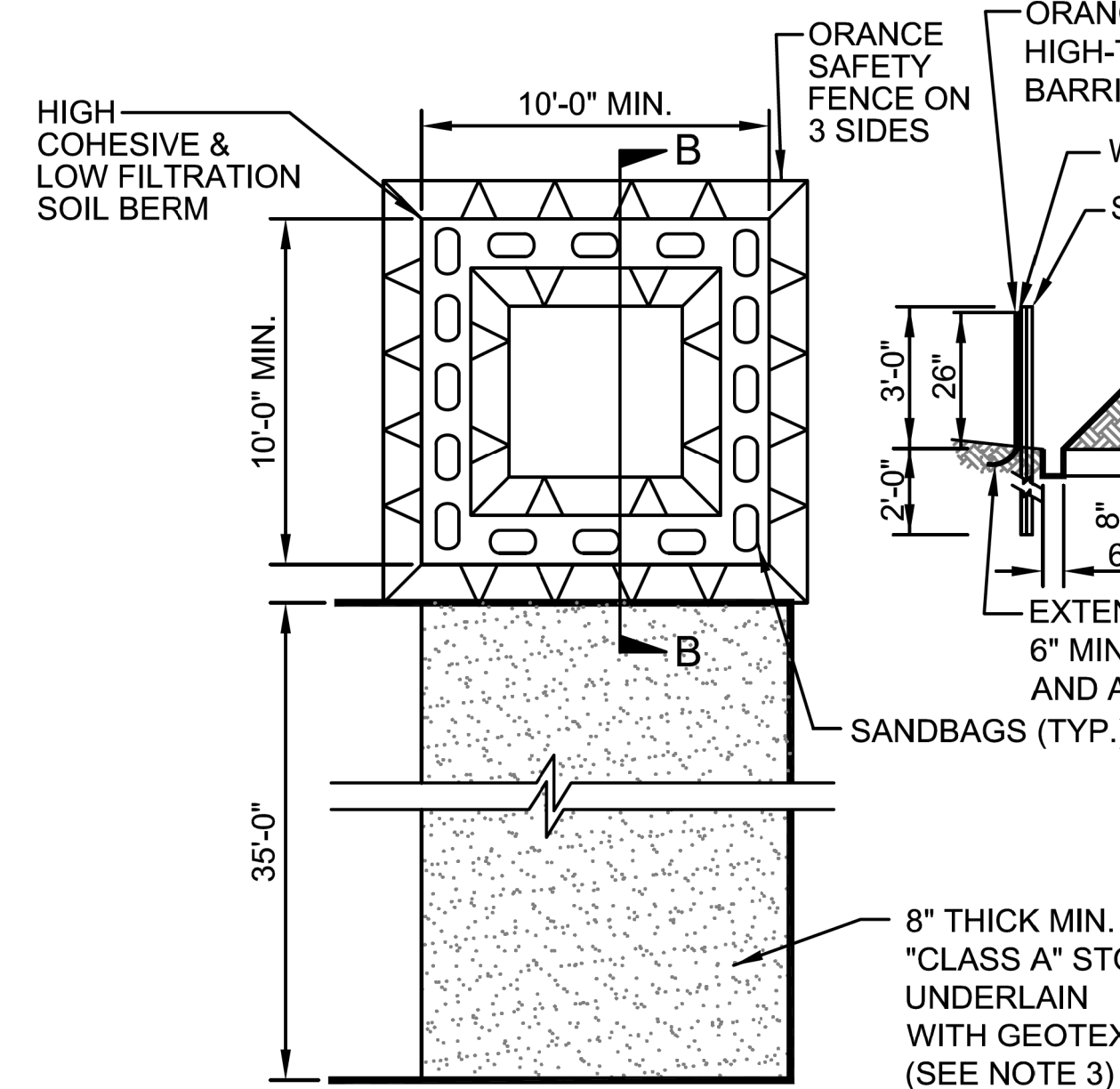


SECTION A-A

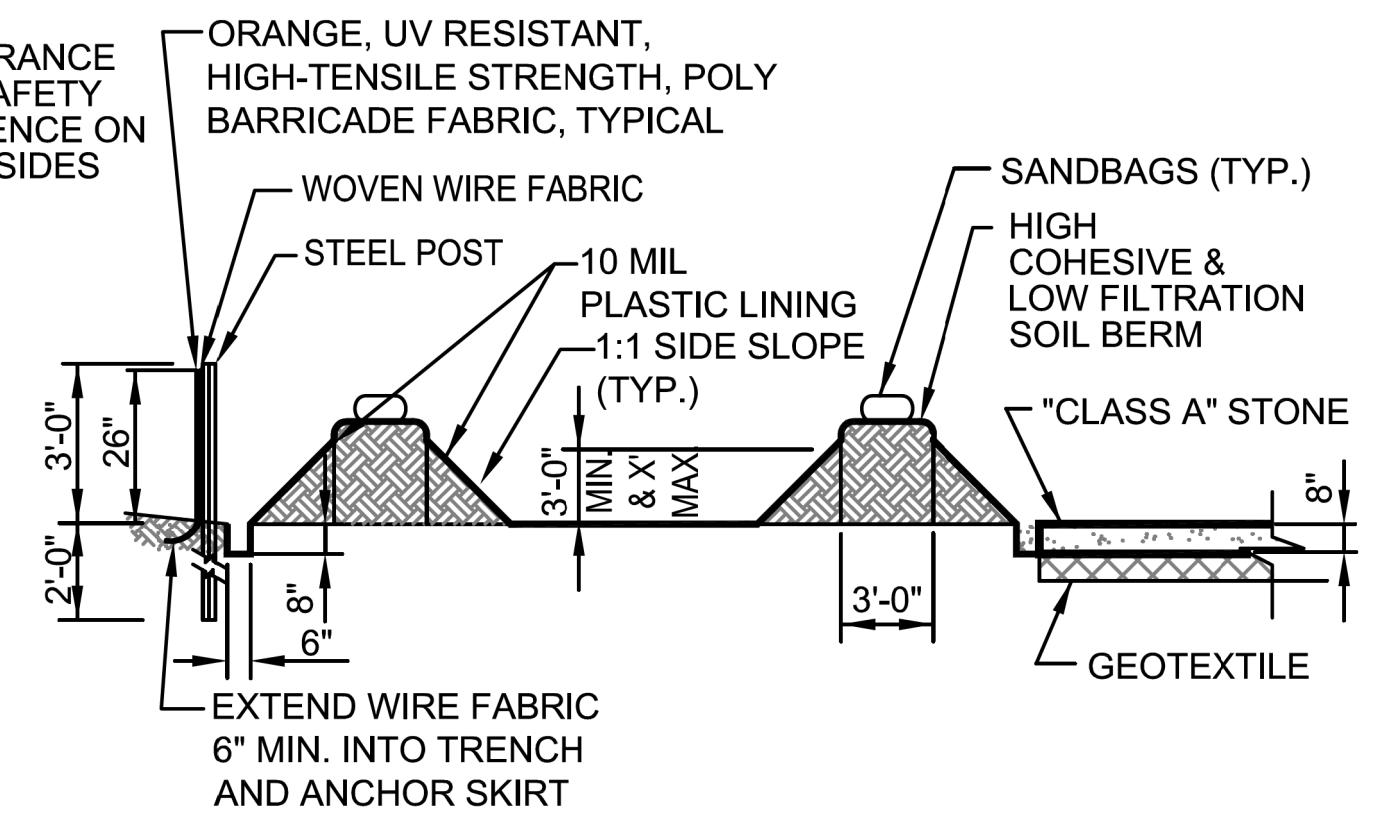
- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM FREEBOARD OF 12 INCHES.
 3. STONE GRAVEL PAD CONSTRUCTED WITH "CLASS A" STONE OR OTHER AGGREGATE MATERIAL APPROVED BY ENGINEER.

BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE



PLAN




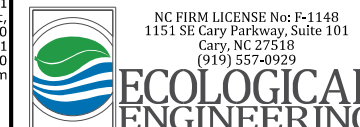
SECTION B-B

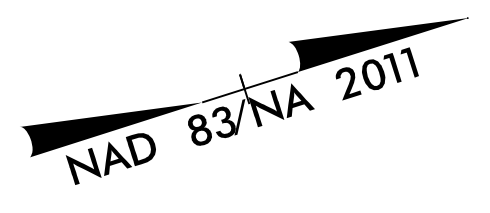
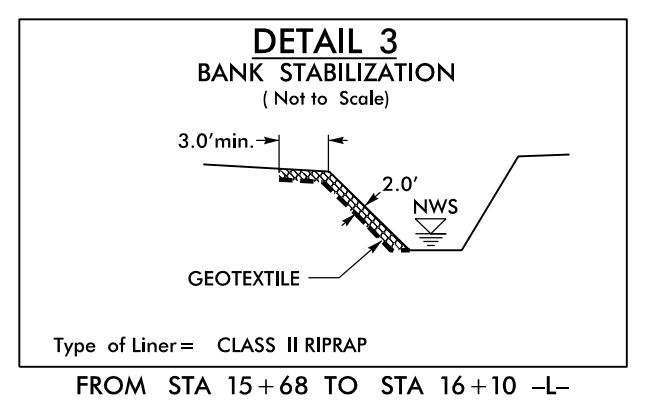
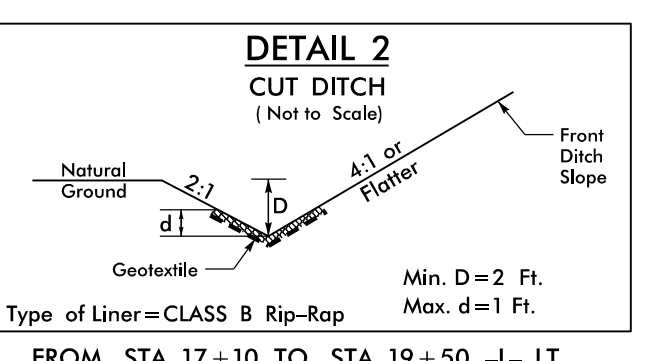
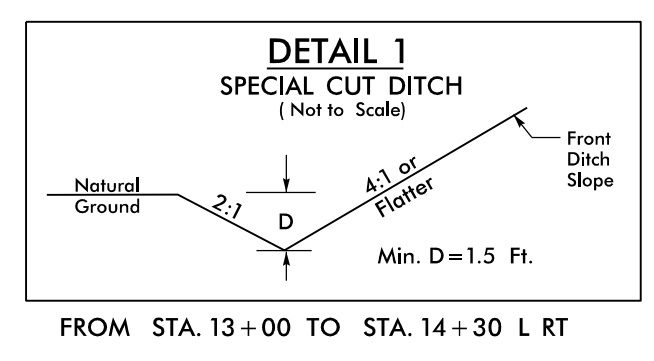
- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM FREEBOARD OF 12 INCHES.
 3. STONE GRAVEL PAD CONSTRUCTED WITH "CLASS A" STONE OR OTHER AGGREGATE MATERIAL APPROVED BY ENGINEER.

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

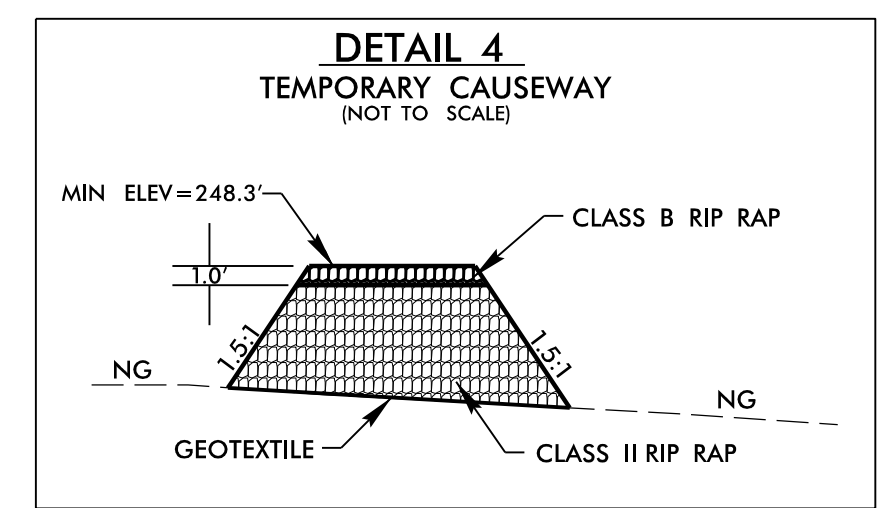
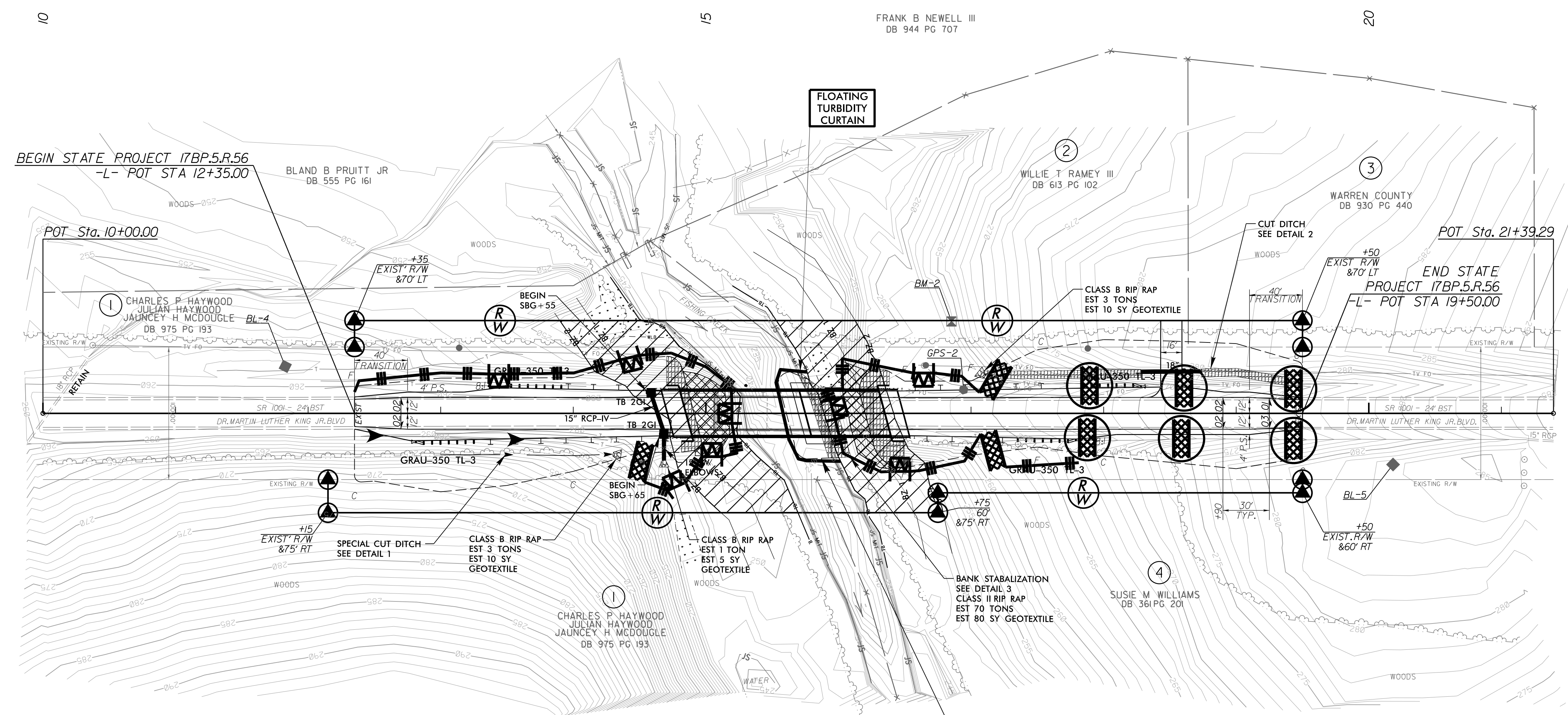
8/17/99

PROJECT REFERENCE NO. 17BP.5.R.56	SHEET NO. EC-07/CONST.04
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 STEWART	 ECOLOGICAL ENGINEERING



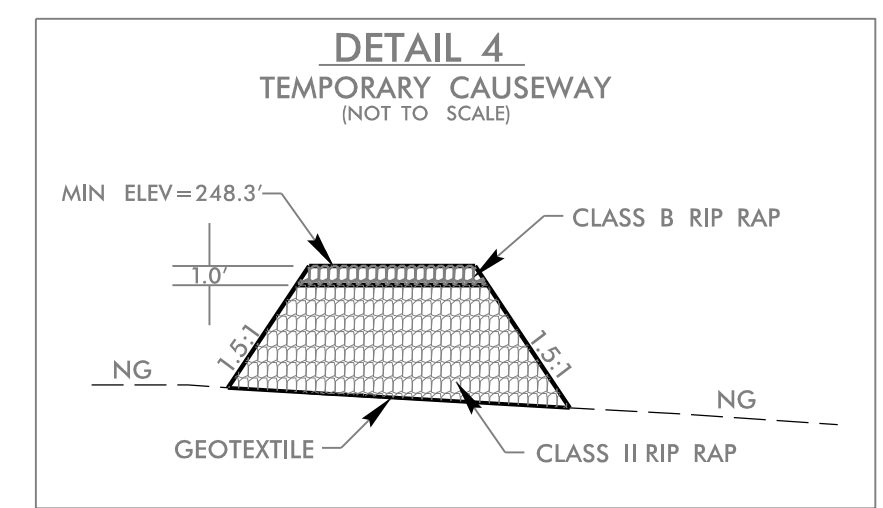
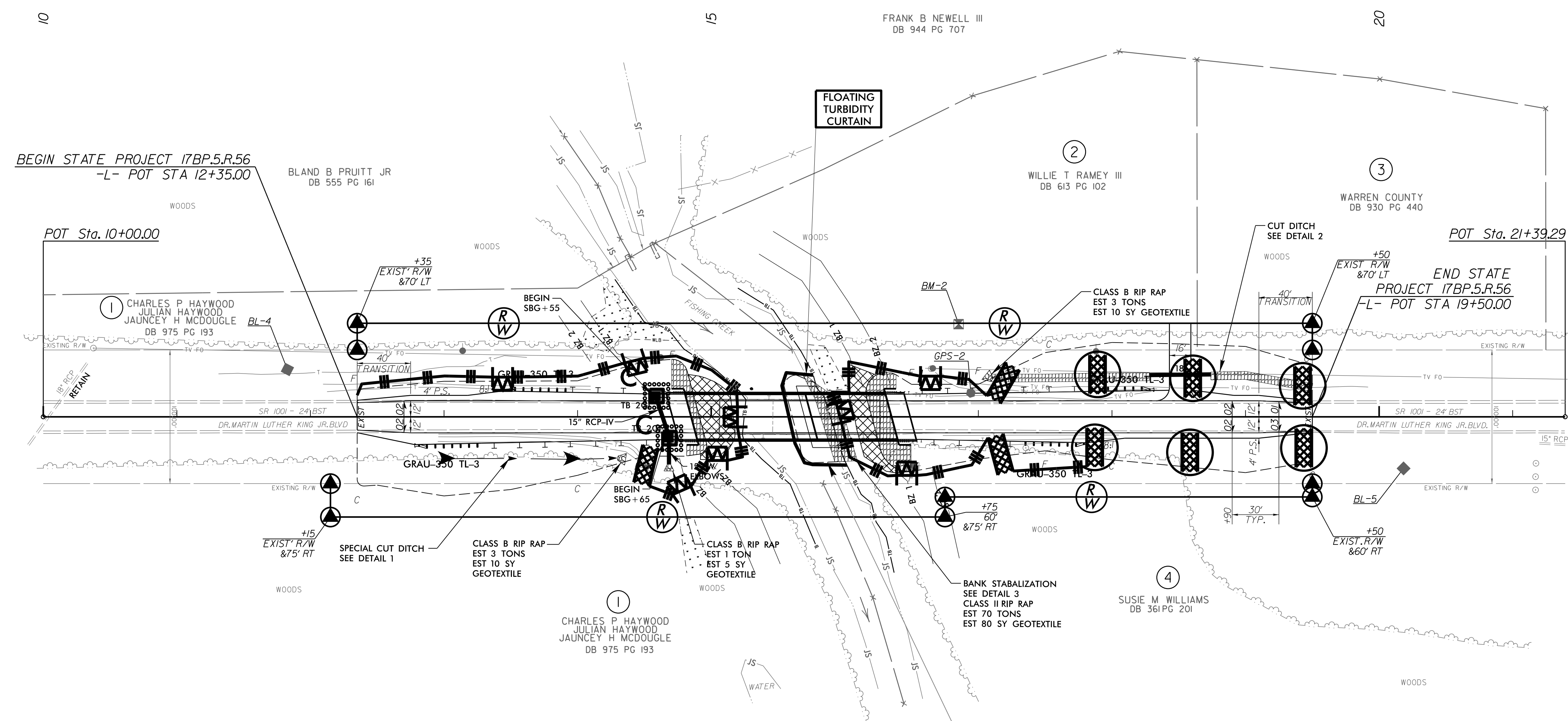
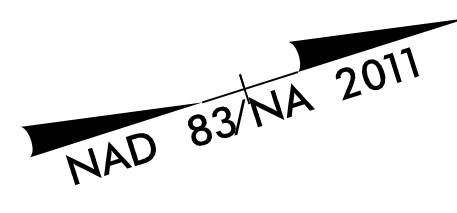
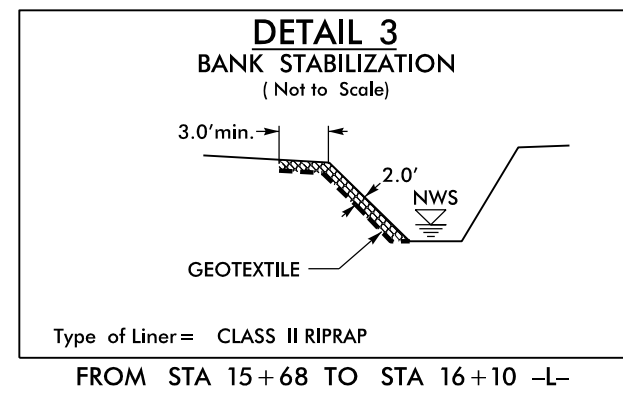
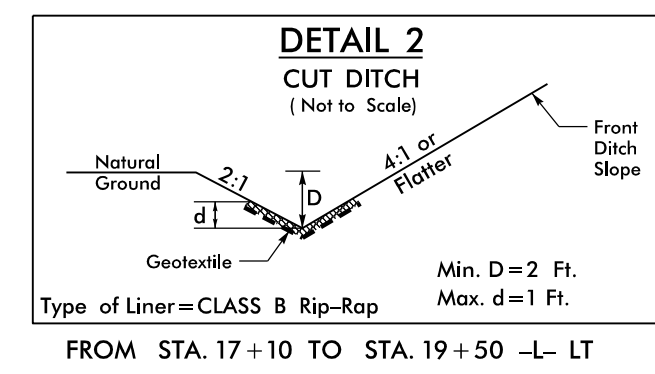
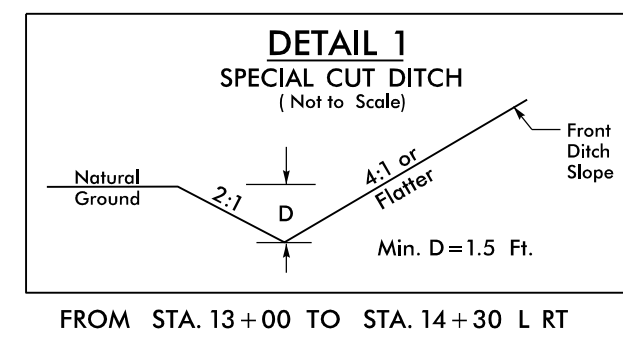
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

REVISIONS



TEMPORARY CAUSEWAY
SEE DETAIL 4

2/2/2003 Rev. psh04_C&G.dgn
11/11/2003



TEMPORARY CAUSEWAY
SEE DETAIL 4

FOR -L- PROFILE, SEE SHEET 5

REVISIONS

8/17/99
2/2/2003 Rev. psh05.Final.dgn
11/15/2005

09,08/99

TIP PROJECT: 17BP.5.R.56

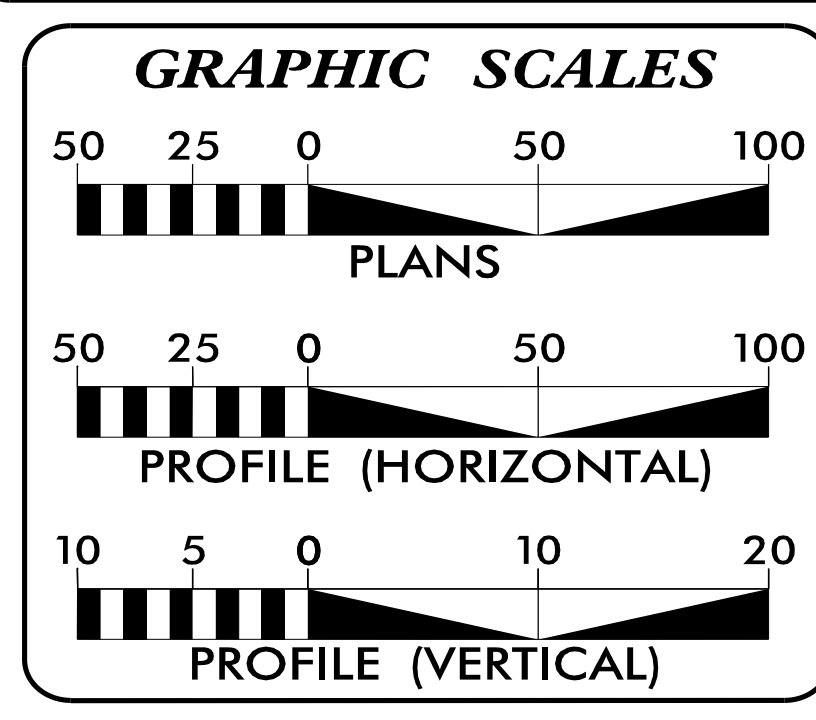
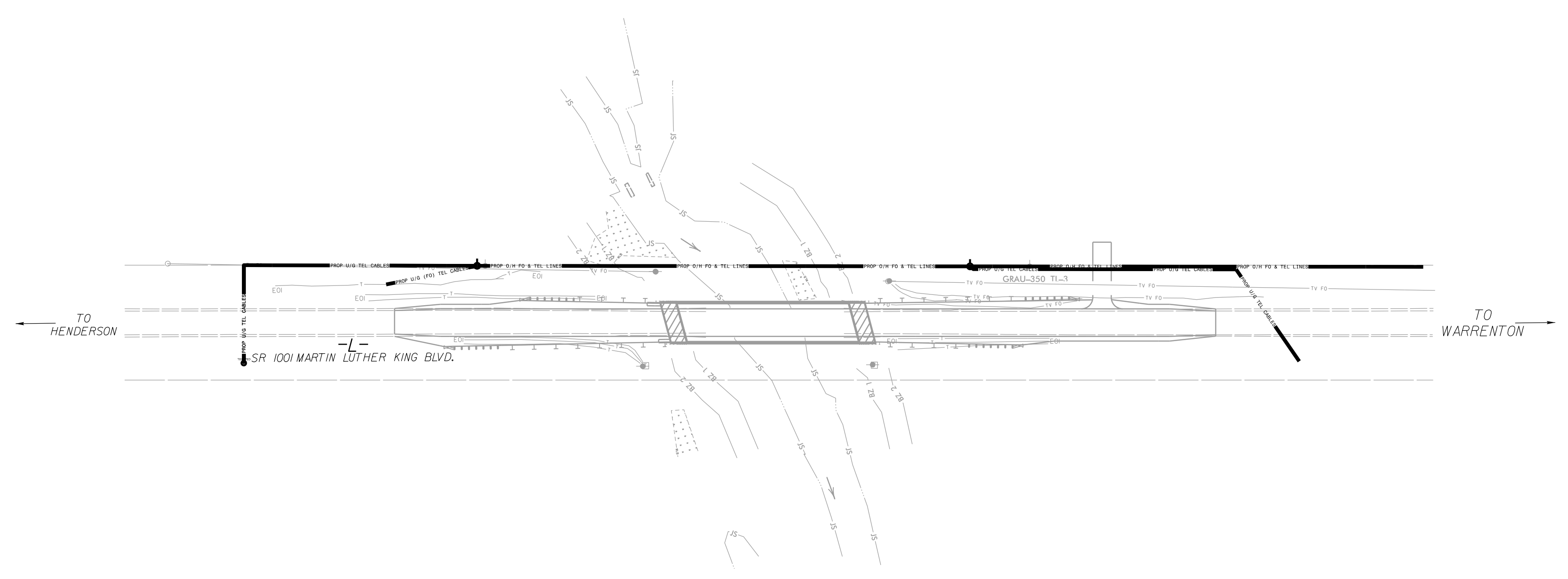
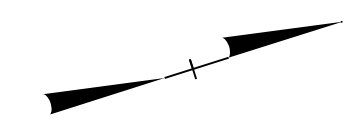
T.I.P. NO.	SHEET NO.
17BP.5.R.56	UO-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**UTILITIES BY OTHERS PLANS
WARREN COUNTY**

**LOCATION: BRIDGE NO. 3 OVER FISHING CREEK
ON SR 1001 (MARTIN LUTHER KING BLVD.)**

**TYPE OF WORK: PERMANENT POWER RELOCATION
PERMANENT CABLE TV RELOCATION
PERMANENT FIBER OPTICS RELOCATION**



INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2	UTILITY BY OTHERS PLAN SHEETS

UTILITY OWNERS ON PROJECT

- (A) DUKE ENERGY - POWER
- (B) CENTURY LINK - CABLE TV & FIBER OPTICS
- (C) MCNC - FIBER OPTICS

PREPARED IN THE OFFICE OF:

STEWART

421 FAYETTEVILLE ST., STE. 400
RALEIGH, NC 27601
F 919.386.8750

Firm License #: C1051
www.stewartinc.com
PROJECT # 1811001

DAVID RUGGLES, PE PROJECT ENGINEER
MICHAEL BURNS, EI PROJECT DESIGN ENGINEER

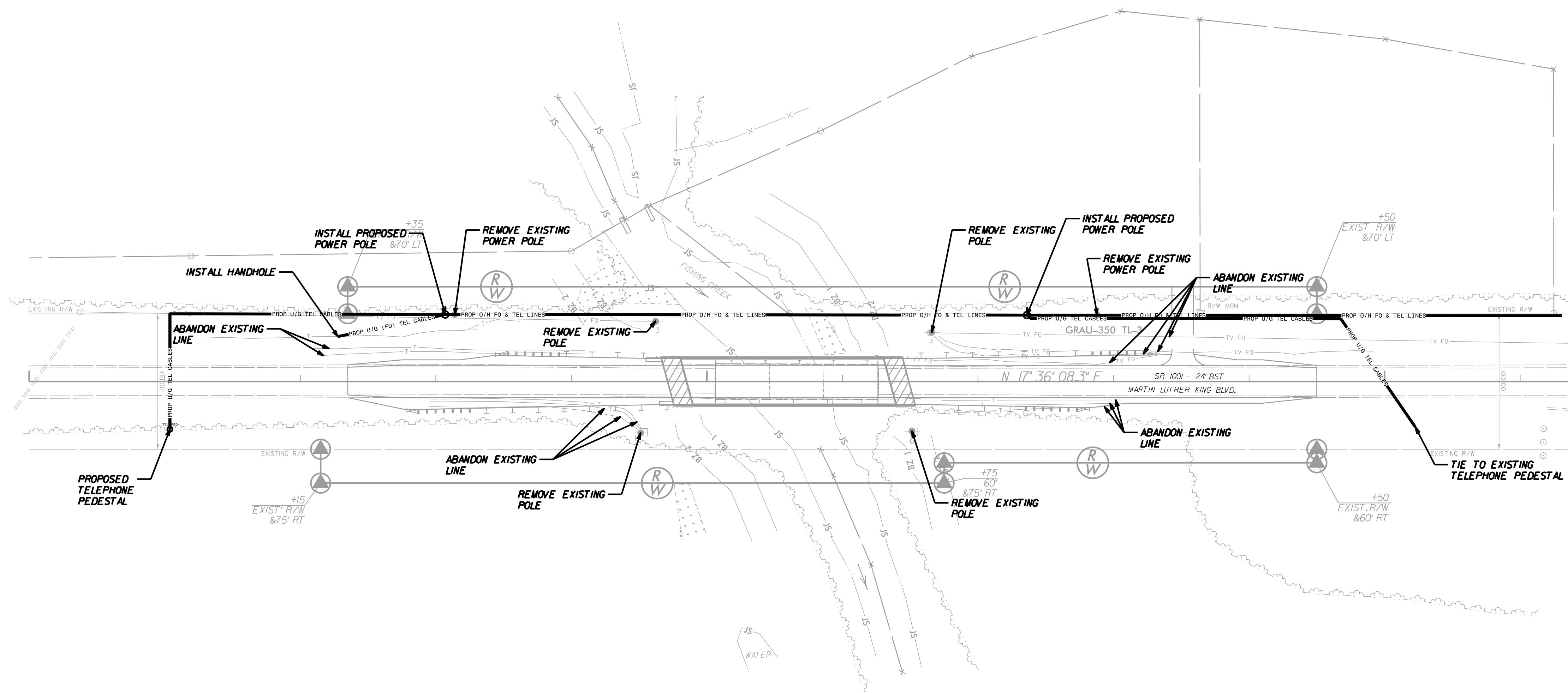
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UTILITIES BY OTHERS

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



NAD 83/NA 2011



8/17/99

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**STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS**

PROJ. REFERENCE NO.	SHEET NO.
17BP.5R.56	X-1A
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
12+00.00	0	0
12+35.00	0	0
12+50.00	72	0
13+00.00	303	1
13+50.00	313	5
14+00.00	173	16
14+50.00	55	44

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
16+50.00	0	0
17+00.00	0	110
17+50.00	53	70
18+00.00	192	38
18+50.00	331	10
19+00.00	394	2
19+50.00	267	2
20+00.00	0	0

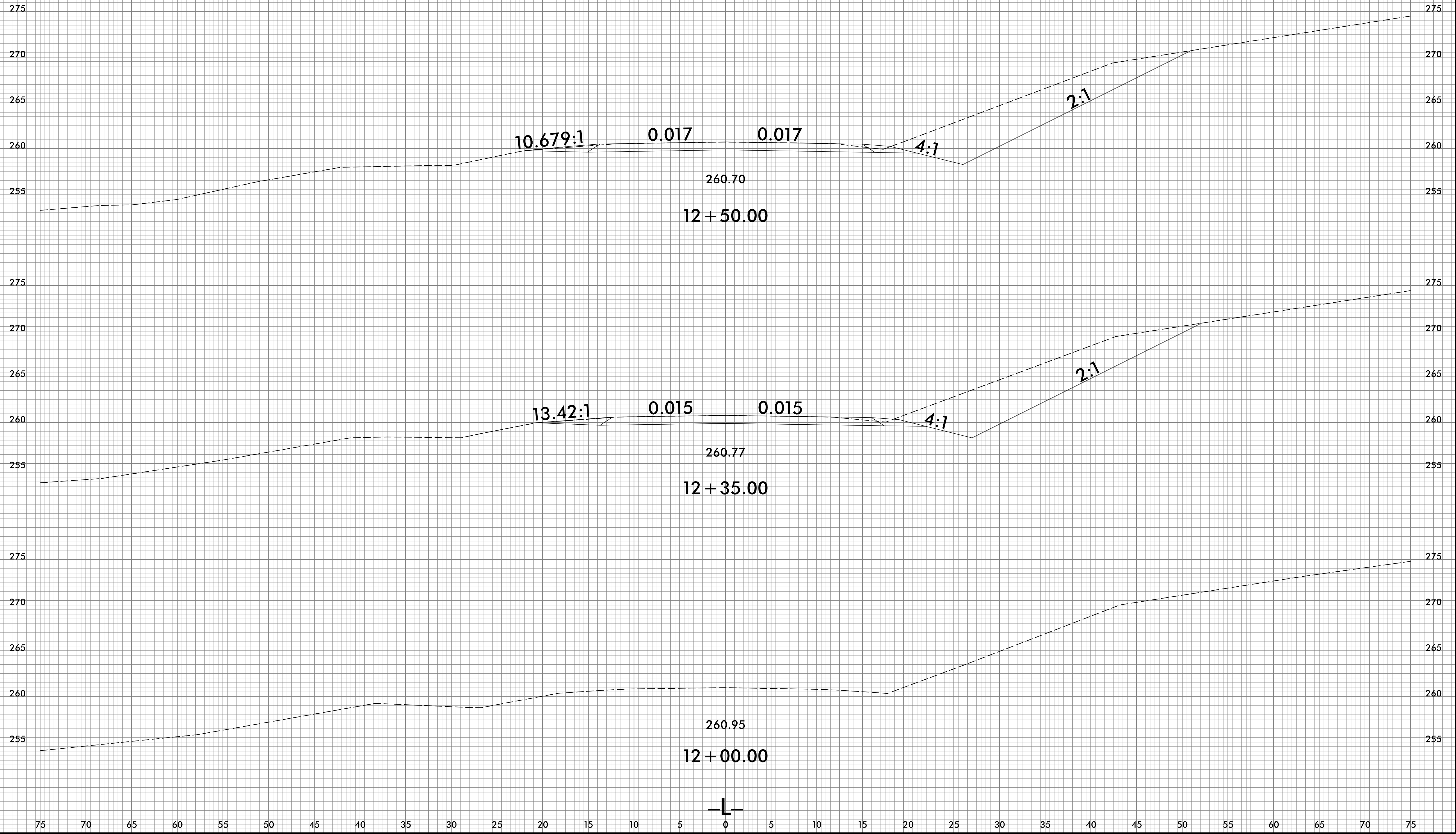
8/23/99



PROJ. REFERENCE NO.	SHEET NO.
17.BP.5.R.56	X-1

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**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



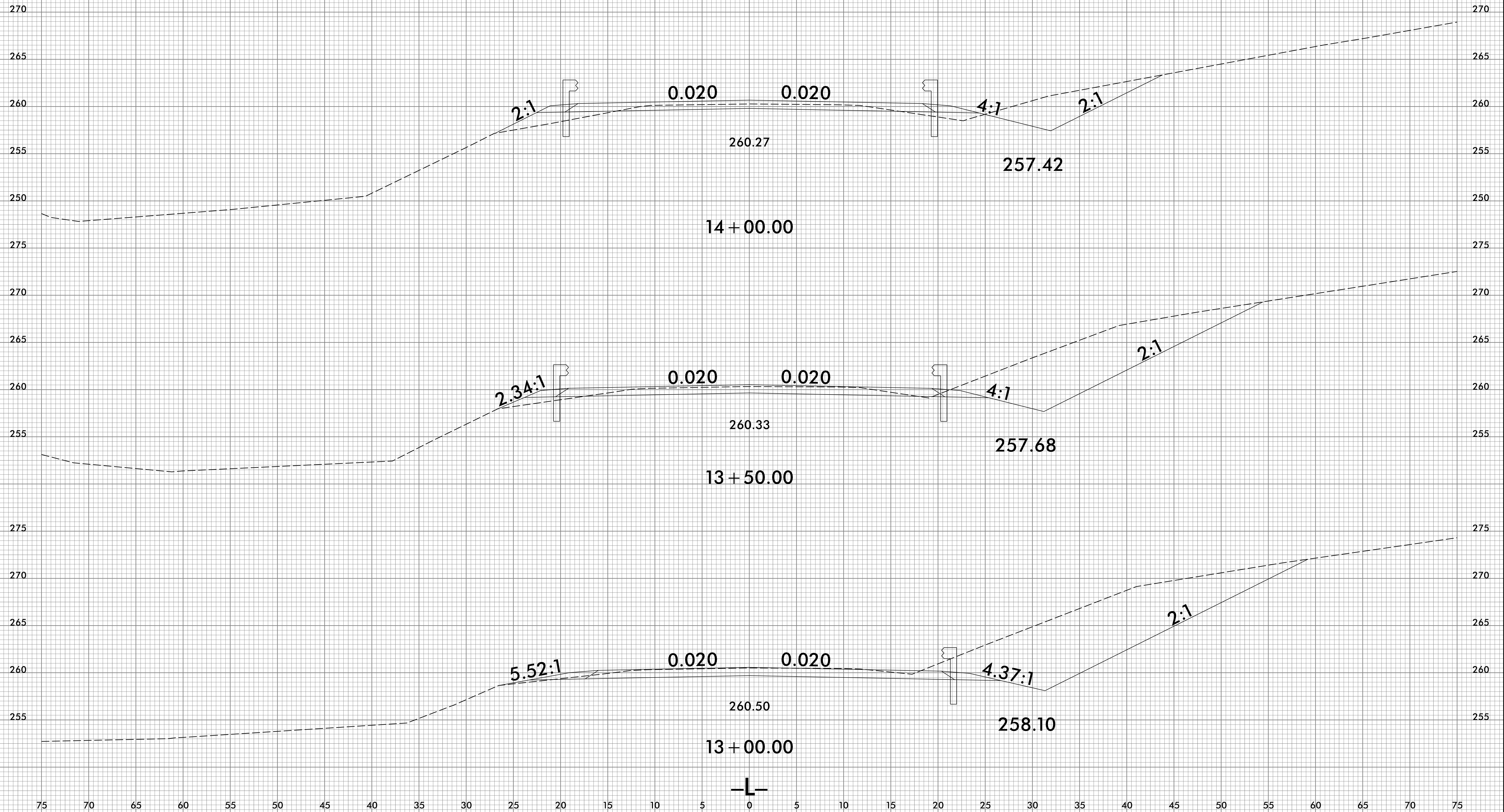
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8/23/99



PROJ. REFERENCE NO.	SHEET NO.
17.BP.5.R.56	X-2

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3/14/2016
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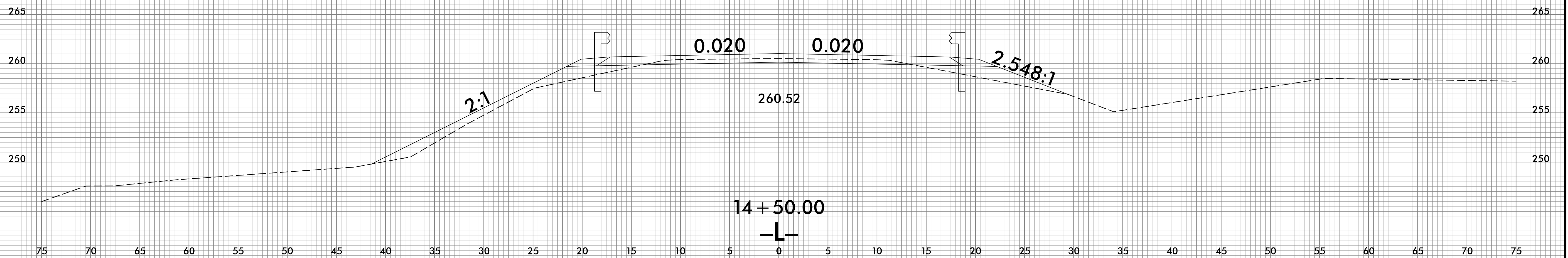
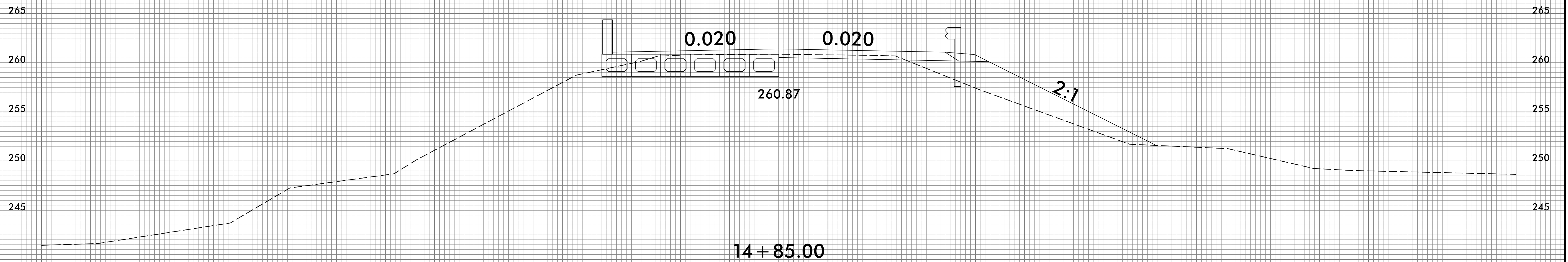
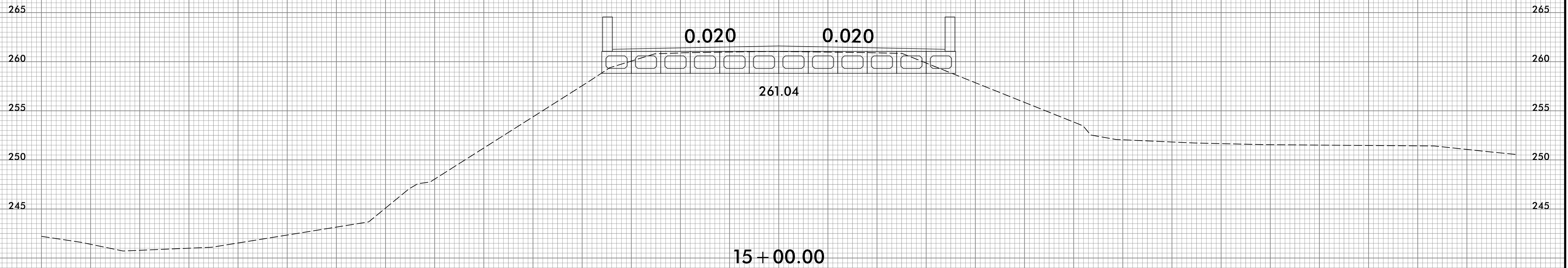
8/23/99



PROJ. REFERENCE NO.
17.BP.5.R.56

SHEET NO.
X-3

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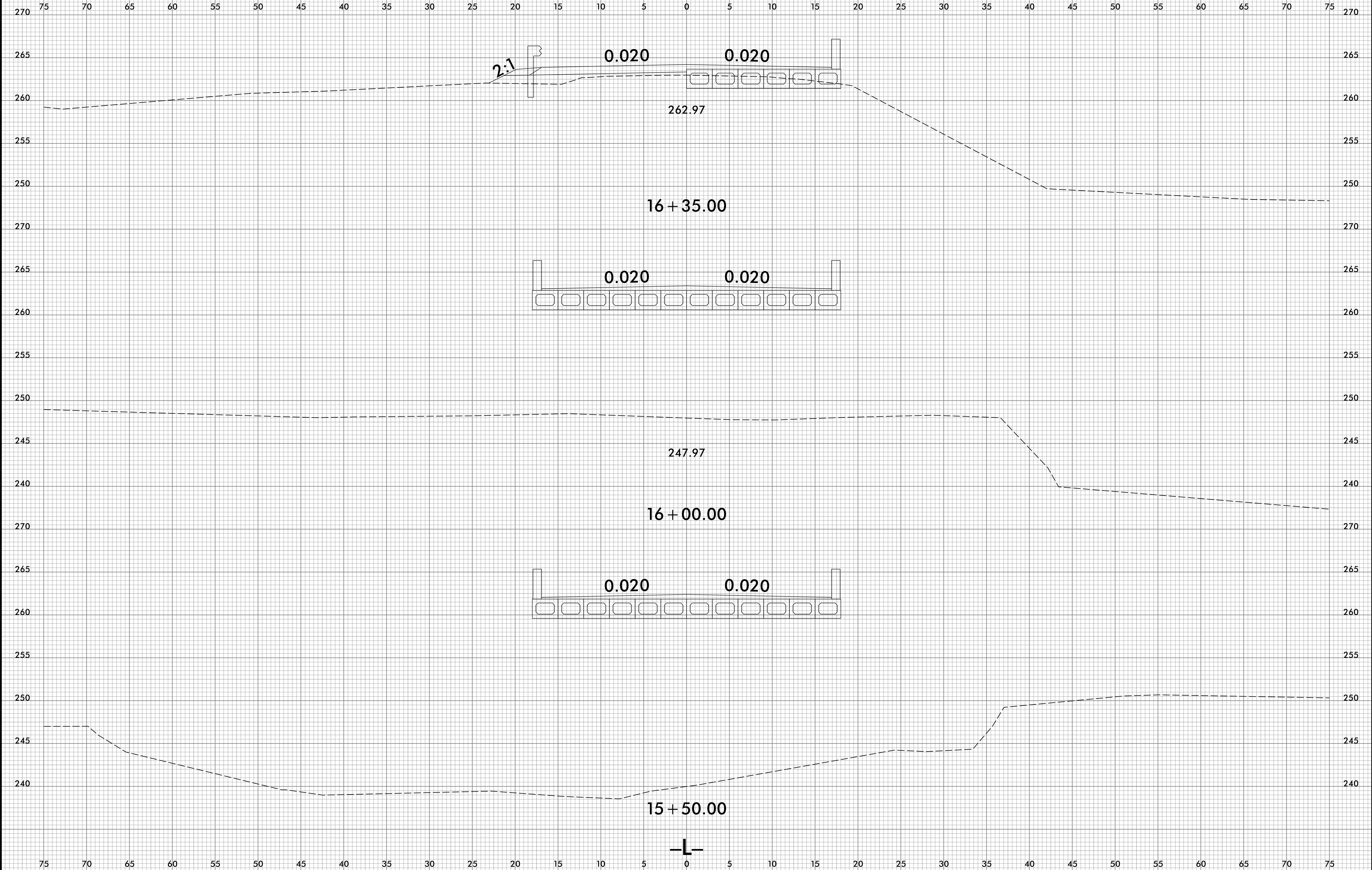
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TJ:ETB/BJB

8/23/99



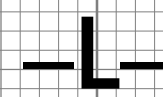
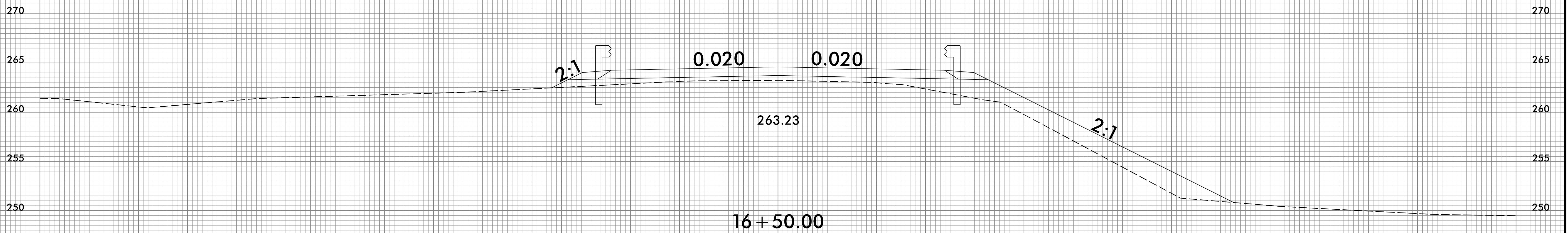
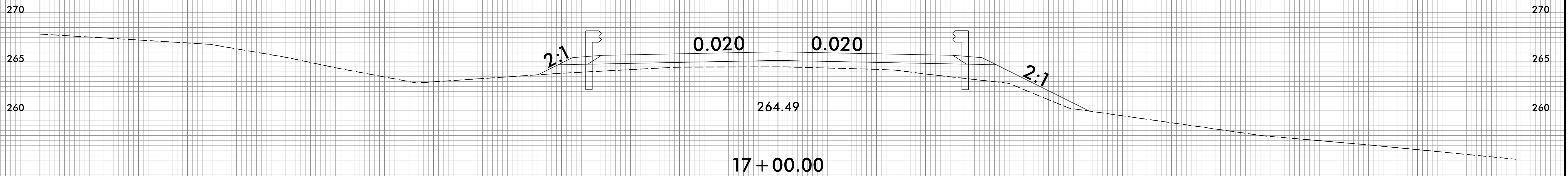
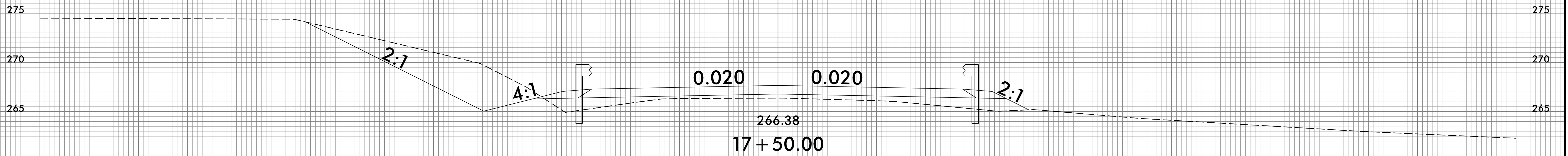
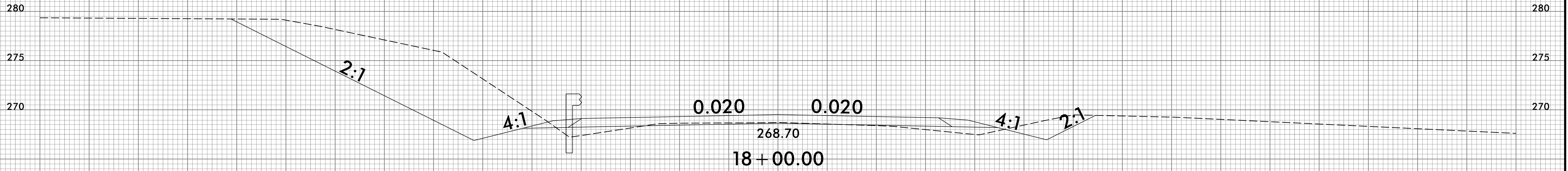
PROJ. REFERENCE NO.	SHEET NO.
17.BP.5.R.56	X-4



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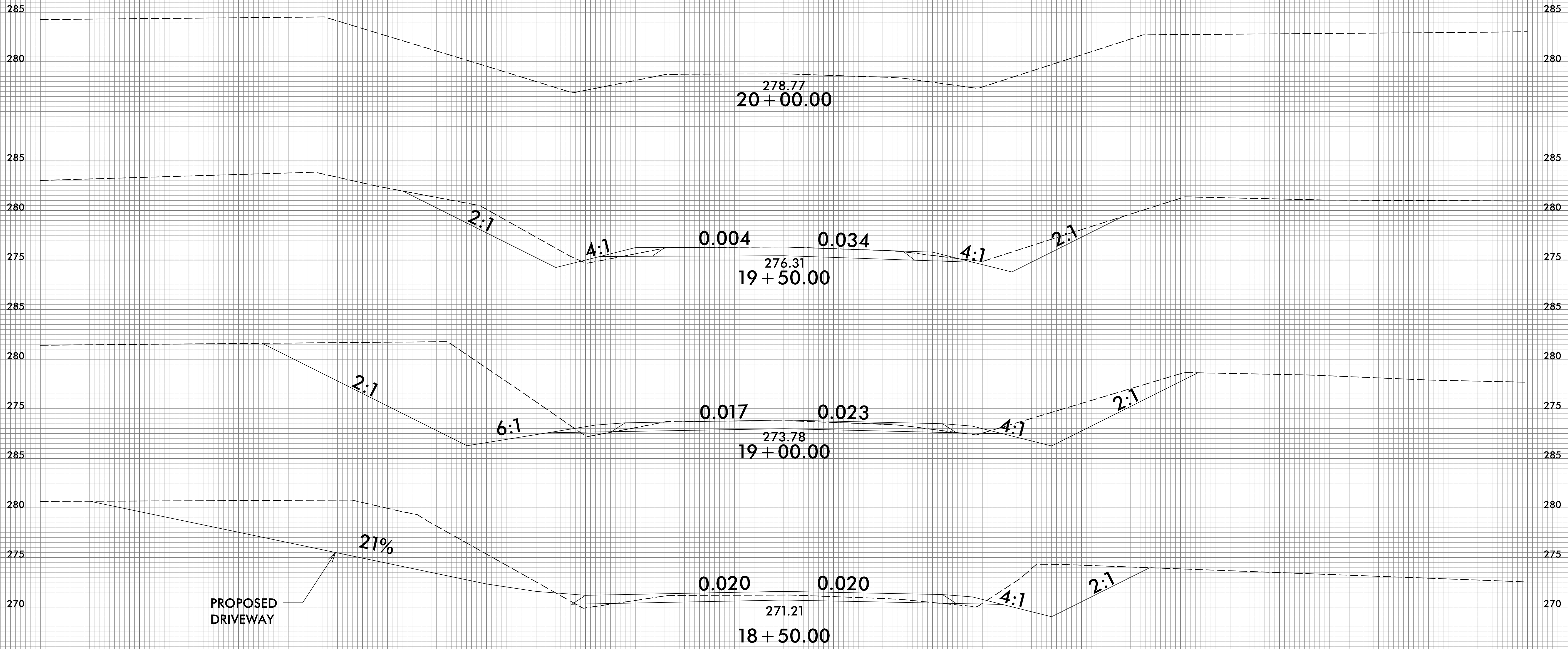
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8/23/99



PROJ. REFERENCE NO.	SHEET NO.
17.BP.5.R.56	X-6

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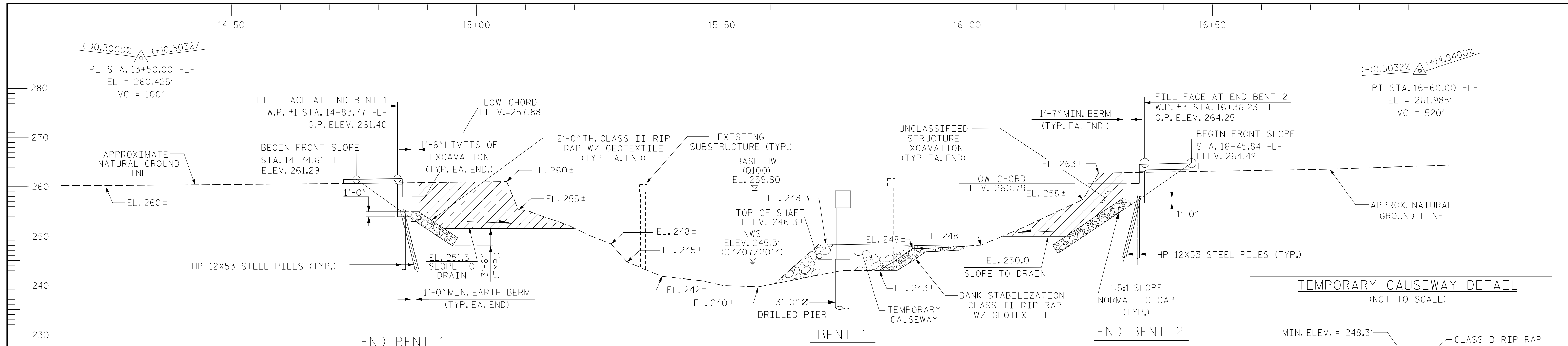


PROPOSED DRIVEWAY

—L—

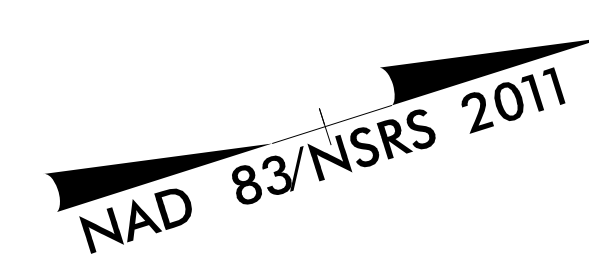
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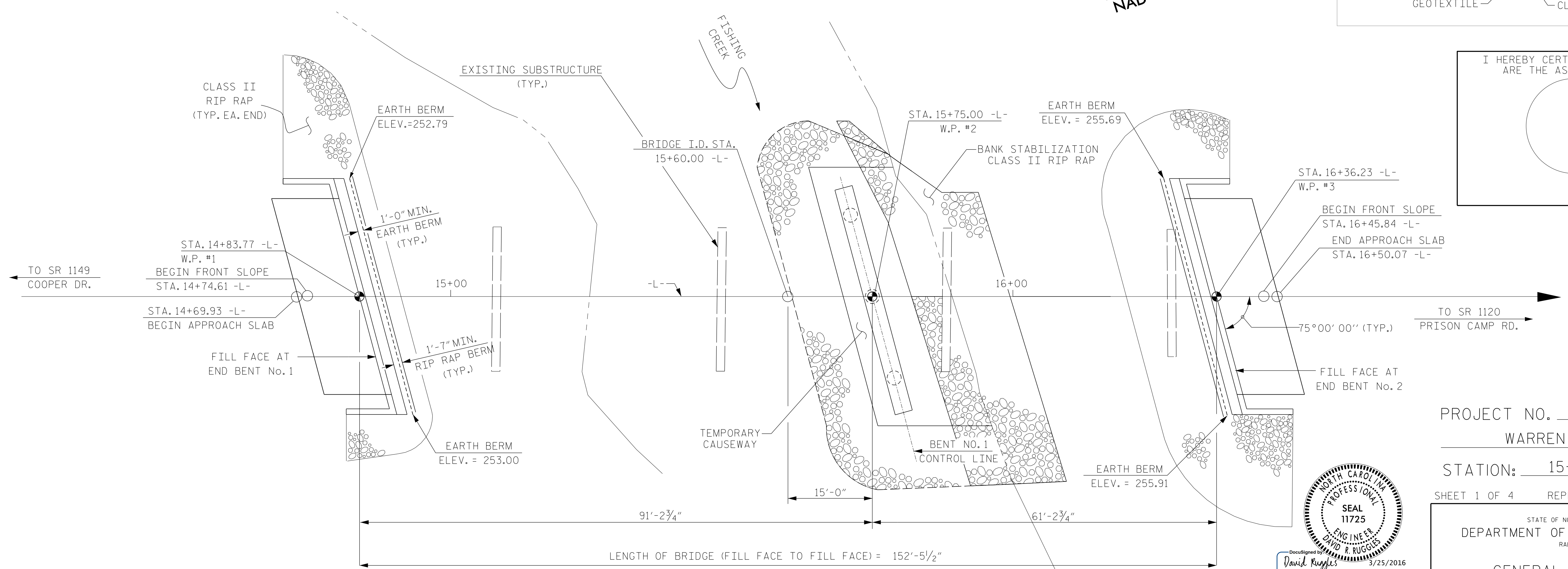
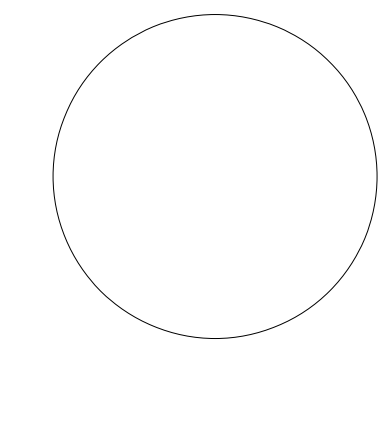


SECTION ALONG -L-

(SECTIONS AT END BENTS AND BENT ARE AT RIGHT ANGLES)



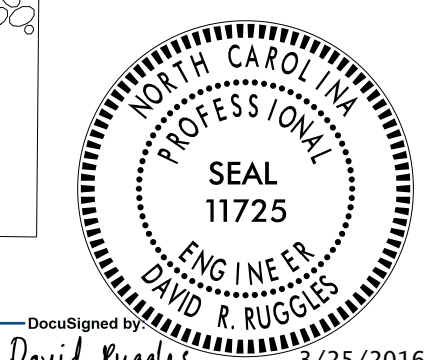
I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PLAN

(PILES NOT SHOWN FOR CLARITY)

PROJECT NO. 17BP.5.R.56
 WARREN COUNTY
 STATION: 15+60.00 -L-
 SHEET 1 OF 4 REPLACES BRIDGE 920003



DOCUMENT NO. 17BP.5.R.56
 NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

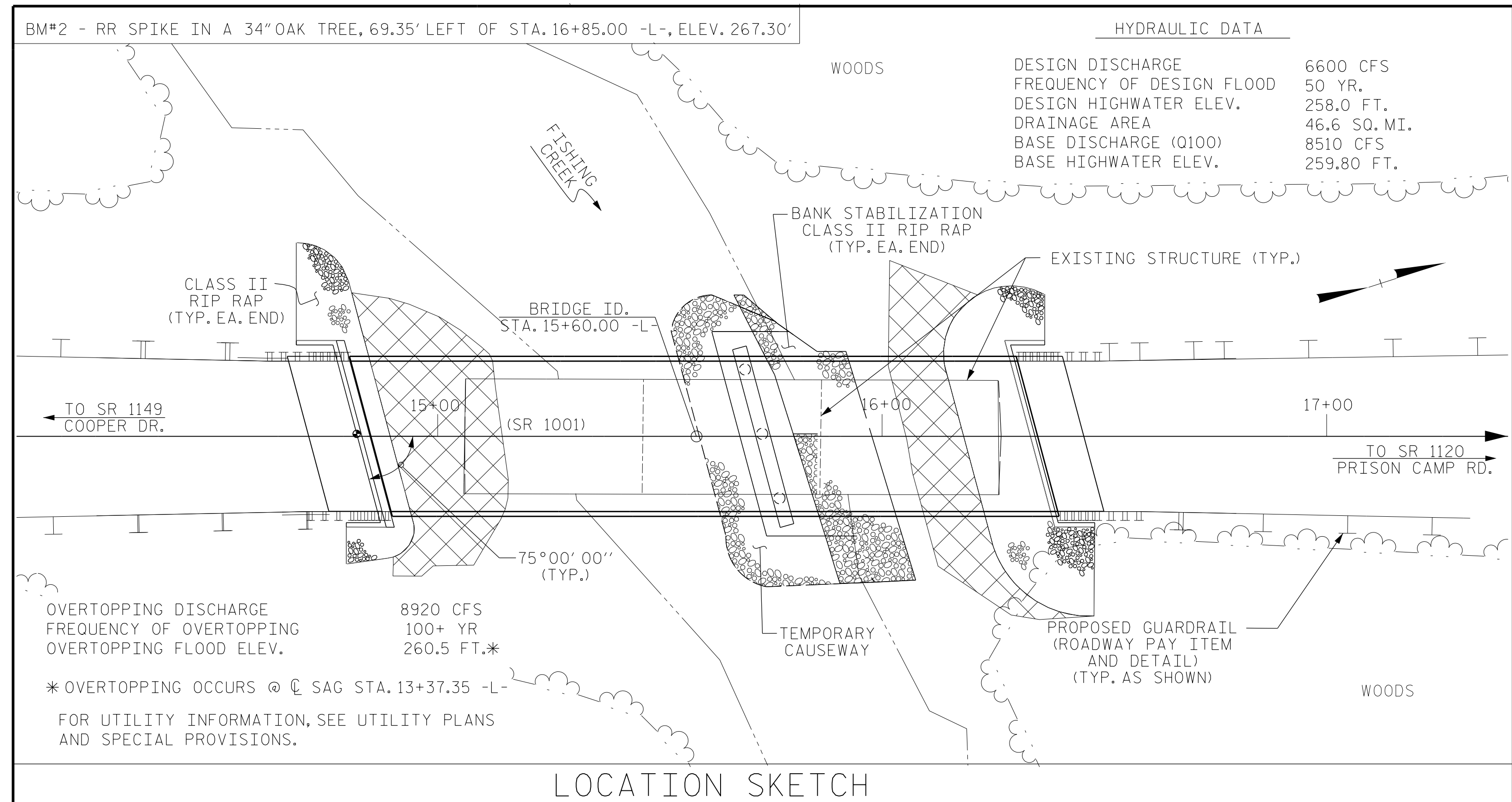
Firm License No. C-1051
 421 Fayetteville St., Suite 400
 Raleigh, NC 27601
 T 919.380.8750
 www.stewartinc.com

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 BRIDGE OVER FISHING CREEK
 ON SR 1001
 BETWEEN SR 1149 AND SR 1120

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

3/8/2016
 \\400_001_17BP5R56_SMU_CD01.dgn
 USER: jloftus

DRAWN BY: H.ASSFOURA DATE: 09/14
 CHECKED BY: P.JACOB DATE: 11/14
 DESIGN ENGINEER OF RECORD: D.RUGGLES DATE: 11/15



- NOTES**
1. ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING
 2. THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
 3. THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
 4. THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES."
 5. THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCE BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
 6. THE EXISTING STRUCTURE CONSISTING OF THREE SPANS (40'-3", 40'-0", 40'-6"); STEEL PLANK FLOOR ON I-BEAMS; 26.5' CLEAR ROADWAY WIDTH SUPPORTED ON TIMBER CAPS AND TIMBER PILES AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED IN ITS ENTIRETY, INCLUDING ALL TIMBER PILES. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
 7. REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
 8. FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET S-21.
 9. FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 10. FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 11. FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 12. FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 13. FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 14. FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.
 15. ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
 16. THE MATERIAL SHOWN IN THE CROSS HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
 17. AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 15+60.00 -L-.
 18. INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 15+60.00 -L-."

LOCATION SKETCH

TOTAL BILL OF MATERIAL

	CONST. MAINT. & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	3'-0" DIA. DRILLED PIERS IN SOIL	3'-0" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" DIA. DRILLED PIER	SID INSPECTION	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	HP 12X53 STEEL PILES	STEEL PILE POINTS	VERTICAL PRESTRESSED CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" x 2'-9" PRESTRESSED CONCRETE BOX BEAMS	ASBESTOS ASSESSMENT		
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	CY. YDS.	LUMP SUM	LBS	LBS	No.	LIN. FT.	EACH	LIN. FT.	TON	SQ. YDS.	LUMP SUM	No.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE											LUMP SUM					300.25				LUMP SUM	24	1,800	
END BENT No. 1									LUMP SUM	28.3		3,890		7	122.5	7		171	190				
BENT No. 1			50	29	49					19.9		11,543	1,896										
END BENT No. 2									LUMP SUM	28.3		3,890		7	105	7		327	360				
TOTAL	LUMP SUM	LUMP SUM	50	29	49	1	1	1	LUMP SUM	76.5	LUMP SUM	19,323	1,896	14	227.5	14	300.25	498	550	LUMP SUM	24	1,800	LUMP SUM

FOUNDATION NOTES

1. FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
2. PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.
3. DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.
4. PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.
5. DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.
6. STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO.1 AND END BENT NO.2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
7. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
8. DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 415 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 40 TSF.
9. PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT NO.1. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 230 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
10. INSTALL DRILLED PIERS AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 220 FT AND WITH THE REQUIRED TIP RESISTANCE.
11. THE SCOUR CRITICAL ELEVATION AT BENT NO.1 IS ELEVATION 227 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
12. SPT MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SPT. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
13. CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.1. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
14. SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. 17BP.5.R.56
 WARREN COUNTY
 STATION: 15+60.00 -L-
 SHEET 2 OF 4



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STEWART

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE OVER FISHING CREEK
 ON SR 1001
 BETWEEN SR 1149 AND SR 1120

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

3/8/2016
 \\400_002-17BP5R56_SMUL_0002.dgn
 USER: jloftus

DRAWN BY: H.ASSFOURA DATE: 09/14
 CHECKED BY: P.JACOB DATE: 11/14
 DESIGN ENGINEER OF RECORD: D.RUGGLES DATE: 11/15

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	1.126	--	1.75	0.267	1.49	A	EL	44.224	0.584	1.15	A	EL	8.845	0.80	0.267	1.13	A	EL	44.224		
	HL-93(Opr)	N/A	--	1.488	--	1.35	0.267	1.94	A	EL	44.224	0.584	1.49	A	EL	8.845	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.491	53.666	1.75	0.267	2.03	A	EL	44.224	0.584	1.49	A	EL	8.845	0.80	0.267	1.53	A	EL	44.224		
	HS-20(Opr)	36.000	--	1.932	69.567	1.35	0.267	2.63	A	EL	44.224	0.584	1.93	A	EL	8.845	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.573	48.237	1.4	0.267	5.92	A	EL	44.224	0.584	4.53	A	EL	8.845	0.80	0.267	3.57	A	EL	44.224	
		SNGARBS2	20.000	--	2.611	52.229	1.4	0.267	4.33	A	EL	44.224	0.584	3.19	A	EL	8.845	0.80	0.267	2.61	A	EL	44.224	
		SNAGRIS2	22.000	--	2.452	53.948	1.4	0.267	4.07	A	EL	44.224	0.584	2.95	A	EL	8.845	0.80	0.267	2.45	A	EL	44.224	
		SNCOTTS3	27.250	--	1.777	48.412	1.4	0.267	2.95	A	EL	44.224	0.584	2.26	A	EL	8.845	0.80	0.267	1.78	A	EL	44.224	
		SNAGGRS4	34.925	--	1.465	51.163	1.4	0.267	2.43	A	EL	44.224	0.584	1.85	A	EL	8.845	0.80	0.267	1.46	A	EL	44.224	
		SNS5A	35.550	--	1.434	50.974	1.4	0.267	2.38	A	EL	44.224	0.584	1.87	A	EL	8.845	0.80	0.267	1.43	A	EL	44.224	
		SNS6A	39.950	--	1.307	52.234	1.4	0.267	2.17	A	EL	44.224	0.584	1.69	A	EL	8.845	0.80	0.267	1.31	A	EL	44.224	
	SNS7B	42.000	--	1.245	52.283	1.4	0.267	2.06	A	EL	44.224	0.584	1.65	A	EL	8.845	0.80	0.267	1.24	A	EL	44.224		
	TTST	TNAGRIT3	33.000	--	1.592	52.537	1.4	0.267	2.64	A	EL	44.224	0.584	2.02	A	EL	8.845	0.80	0.267	1.59	A	EL	44.224	
		TNT4A	33.075	--	1.597	52.815	1.4	0.267	2.65	A	EL	44.224	0.584	1.98	A	EL	8.845	0.80	0.267	1.60	A	EL	44.224	
		TNT6A	41.600	--	1.298	53.997	1.4	0.267	2.15	A	EL	44.224	0.584	1.74	A	EL	8.845	0.80	0.267	1.30	A	EL	44.224	
		TNT7A	42.000	--	1.3	54.619	1.4	0.267	2.16	A	EL	44.224	0.584	1.71	A	EL	8.845	0.80	0.267	1.30	A	EL	44.224	
		TNT7B	42.000	--	1.335	56.09	1.4	0.267	2.21	A	EL	44.224	0.584	1.62	A	EL	8.845	0.80	0.267	1.34	A	EL	44.224	
		TNAGRIT4	43.000	--	1.278	54.943	1.4	0.267	2.12	A	EL	44.224	0.584	1.57	A	EL	8.845	0.80	0.267	1.28	A	EL	44.224	
TNAGT5A		45.000	--	1.208	54.37	1.4	0.267	2	A	EL	44.224	0.584	1.55	A	EL	8.845	0.80	0.267	1.21	A	EL	44.224		
TNAGT5B	45.000	3	1.197	53.852	1.4	0.267	1.98	A	EL	44.224	0.584	1.5	A	EL	8.845	0.80	0.267	1.20	A	EL	44.224			

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)

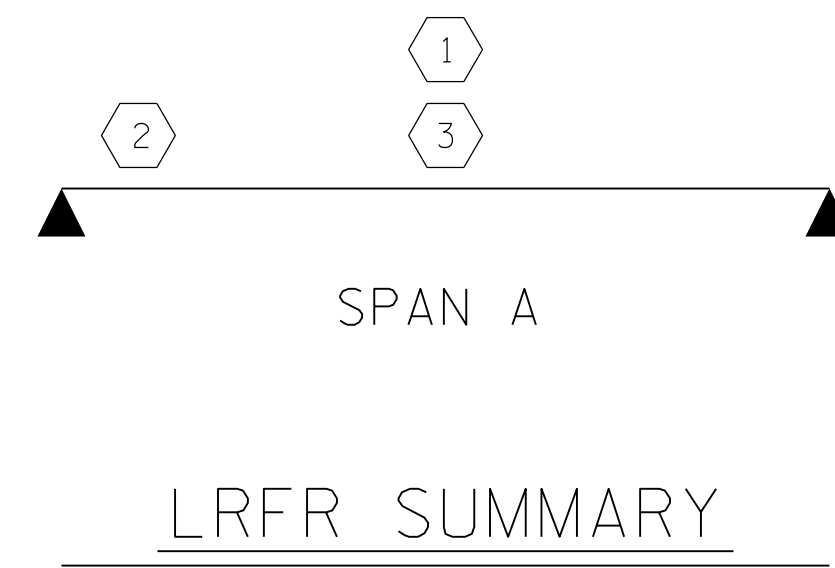
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

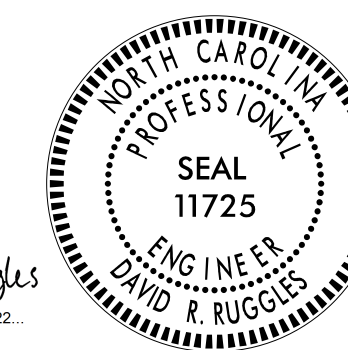
GIRDER LOCATION

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



PROJECT NO. 17BP.5.R.56
WARREN COUNTY
 STATION: 15+60.00 -L-

SHEET 3 OF 4



DocuSigned by:
David Ruggies
C402780DF412422

3/25/2016

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SIGNATURES COMPLETED

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 90' BOX BEAM UNIT
 75° SKEW & 105° SKEW
 (NON-INTERSTATE TRAFFIC)

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

3/8/2016
 ...\\400_003_17BP5R56_SMULLRFR03.dgn
 USER: jloftus

ASSEMBLED BY : <u>H.ASSEOURA</u>	DATE : <u>11/14</u>
CHECKED BY : <u>P.JACOB</u>	DATE : <u>11/14</u>
DRAWN BY : <u>TMG</u>	DATE : <u>11/11</u>
CHECKED BY : <u>AAC</u>	DATE : <u>11/11</u>

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	1.12	--	1.75	0.278	1.52	B	EL	29.20	0.484	1.39	B	EL	5.20	0.80	0.278	1.12	B	EL	29.20		
	HL-93(Opr)	N/A	--	1.85	--	1.35	0.278	1.97	B	EL	29.20	0.484	1.85	B	EL	5.20	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.43	51.48	1.75	0.278	1.93	B	EL	29.20	0.594	1.73	B	EL	5.20	0.80	0.278	1.43	B	EL	29.20		
	HS-20(Opr)	36.000	--	2.29	82.44	1.35	0.278	2.51	B	EL	29.20	0.594	2.29	B	EL	5.20	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.15	42.52	1.4	0.278	5.32	B	EL	29.20	0.594	5.33	B	EL	5.20	0.80	0.278	3.15	B	EL	29.20	
		SNGARBS2	20.000	--	2.38	47.60	1.4	0.278	4.01	B	EL	29.20	0.594	3.78	B	EL	5.20	0.80	0.278	2.38	B	EL	29.20	
		SNAGRIS2	22.000	--	2.25	49.50	1.4	0.278	3.80	B	EL	29.20	0.594	3.52	B	EL	5.20	0.80	0.278	2.25	B	EL	29.20	
		SNCOTTS3	27.250	--	1.55	42.23	1.4	0.278	2.62	B	EL	29.20	0.594	2.59	B	EL	5.20	0.80	0.278	1.55	B	EL	29.20	
		SNAGGRS4	34.925	--	1.31	45.75	1.4	0.278	2.21	B	EL	29.20	0.594	2.15	B	EL	5.20	0.80	0.278	1.31	B	EL	29.20	
		SNS5A	35.550	--	1.28	45.50	1.4	0.278	2.17	B	EL	29.20	0.594	2.19	B	EL	5.20	0.80	0.278	1.28	B	EL	29.20	
		SNS6A	39.950	--	1.19	47.54	1.4	0.278	2.01	B	EL	29.20	0.594	2.00	B	EL	5.20	0.80	0.278	1.19	B	EL	29.20	
	SNS7B	42.000	--	1.13	47.46	1.4	0.278	1.91	B	EL	29.20	0.594	1.98	B	EL	5.20	0.80	0.278	1.13	B	EL	29.20		
	TTST	TNAGRIT3	33.000	--	1.46	48.18	1.4	0.278	2.46	B	EL	29.20	0.594	2.40	B	EL	5.20	0.80	0.278	1.46	B	EL	29.20	
		TNT4A	33.075	--	1.46	48.28	1.4	0.278	2.47	B	EL	29.20	0.594	2.32	B	EL	5.20	0.80	0.278	1.46	B	EL	29.20	
		TNT6A	41.600	--	1.20	49.92	1.4	0.278	2.02	B	EL	29.20	0.594	2.15	B	EL	5.20	0.80	0.278	1.20	B	EL	29.20	
		TNT7A	42.000	--	1.21	50.82	1.4	0.278	2.04	B	EL	29.20	0.594	2.05	B	EL	5.20	0.80	0.278	1.21	B	EL	29.20	
		TNT7B	42.000	--	1.26	52.92	1.4	0.278	2.12	B	EL	29.20	0.594	1.92	B	EL	5.20	0.80	0.278	1.26	B	EL	29.20	
		TNAGRIT4	43.000	--	1.19	51.17	1.4	0.278	2.01	B	EL	29.20	0.594	1.85	B	EL	5.20	0.80	0.278	1.19	B	EL	29.20	
TNAGT5A		45.000	--	1.12	50.40	1.4	0.278	1.89	B	EL	29.20	0.594	1.85	B	EL	5.20	0.80	0.278	1.12	B	EL	29.20		
TNAGT5B	45.000	3	1.10	49.50	1.4	0.278	1.86	B	EL	29.20	0.594	1.75	B	EL	5.20	0.80	0.278	1.10	B	EL	29.20			

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

- ALL RATINGS BASED UPON 0 PSI TENSION IN THE PRE-COMPRESSED TENSILE ZONE.
- LOSSES WERE CALCULATED USING THE AASHTO REFINED METHOD FOR CALCULATING TIME DEPENDENT LOSSES. LOSSES ARE AS FOLLOWS:
 INITIAL LOSSES - 9.09 KSI (4.49%)
 TOTAL LOSSES - 27.72 KSI (13.69%)

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

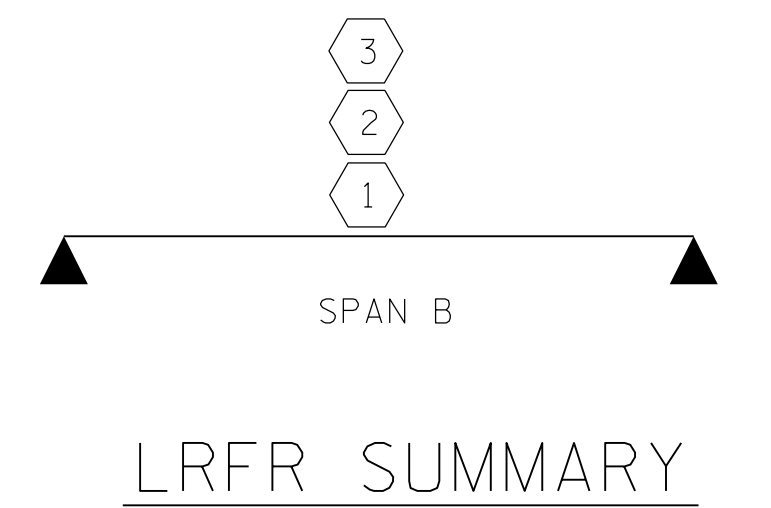
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

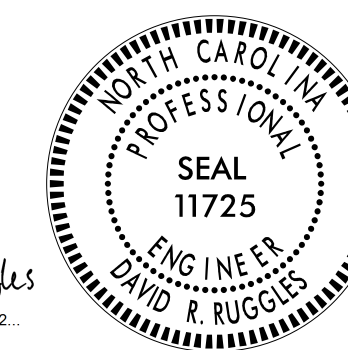


PROJECT NO. 17BP.5.R.56

WARREN COUNTY

STATION: 15+60.00 -L-

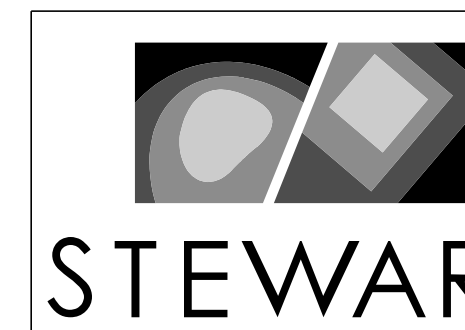
SHEET 4 OF 4



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C462788DF412422
3/25/2016

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR
60' BOX BEAM UNIT
75° SKEW & 105° SKEW
(NON-INTERSTATE TRAFFIC)

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

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 BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

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

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

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI FOR 90' UNITS AND 4000 PSI FOR 60' UNITS.

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

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL 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 VERTICAL 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.

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

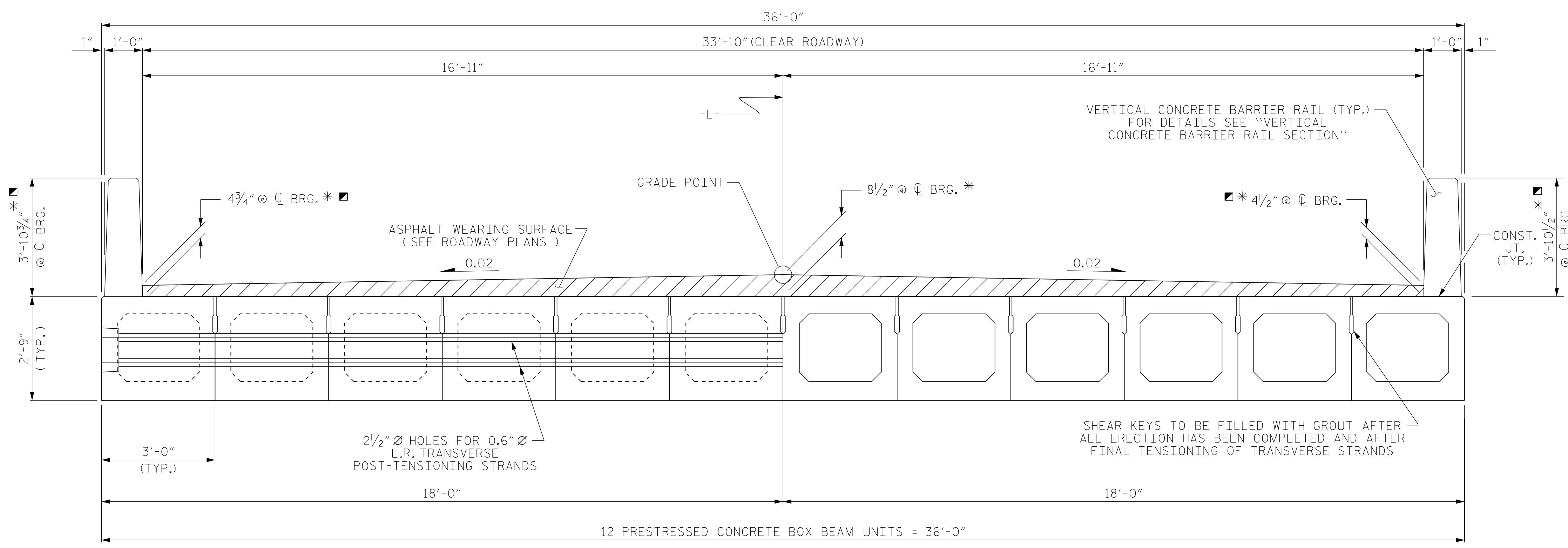
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

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



HALF SECTION AT INTERMEDIATE DIAPHRAGMS

HALF SECTION THROUGH VOIDS

TYPICAL SECTION

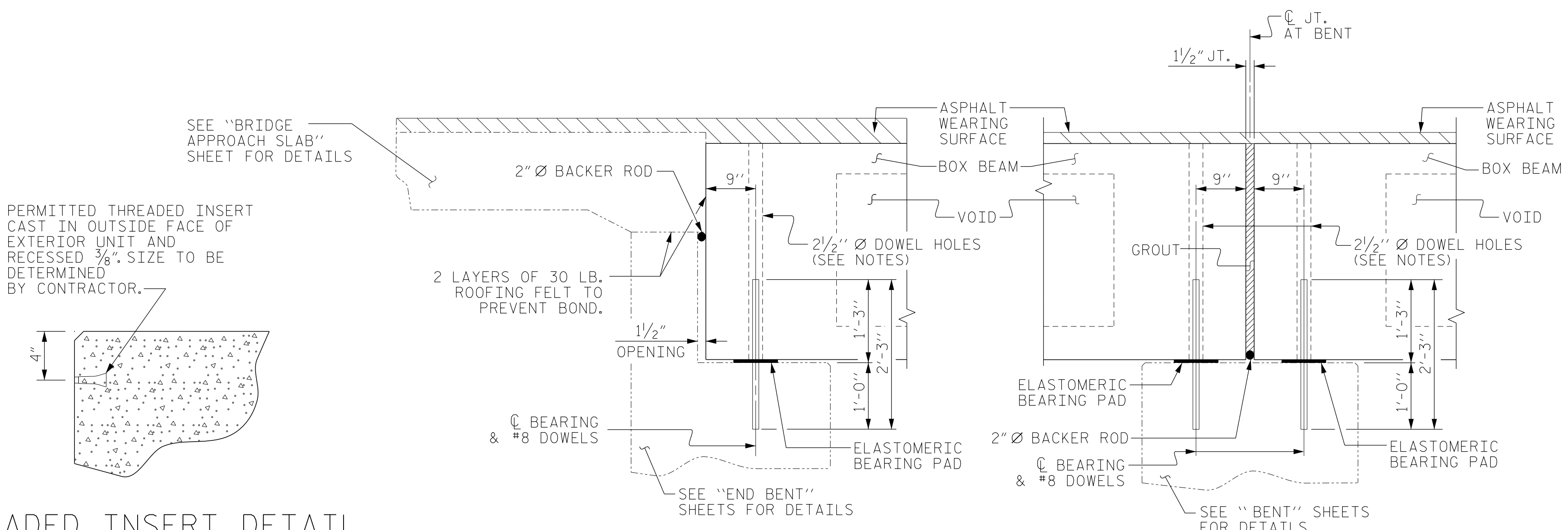
*THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

■ - ASPHALT THICKNESS VARIES FROM STANDARD PLANS DUE TO THE EFFECT OF BRIDGE SKEW

FIXED END

FIXED END

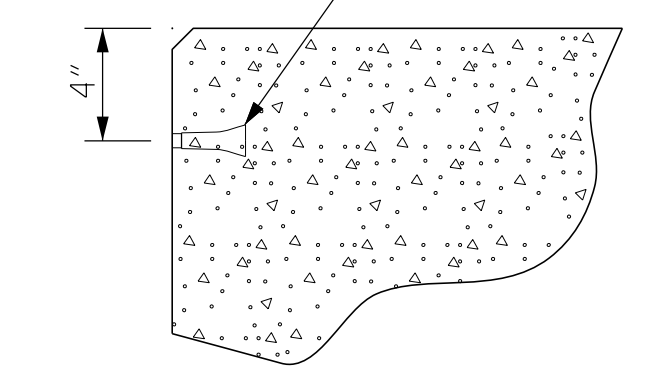
FIXED END



SECTION AT END BENT

SECTION AT BENT

PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



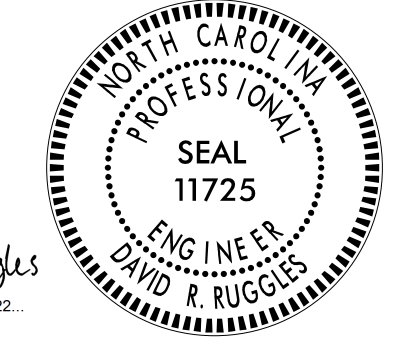
THREADED INSERT DETAIL

PROJECT NO. 17BP.5.R.56

WARREN COUNTY

STATION: 15+60.00 -L-

SHEET 1 OF 7



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3/25/2016

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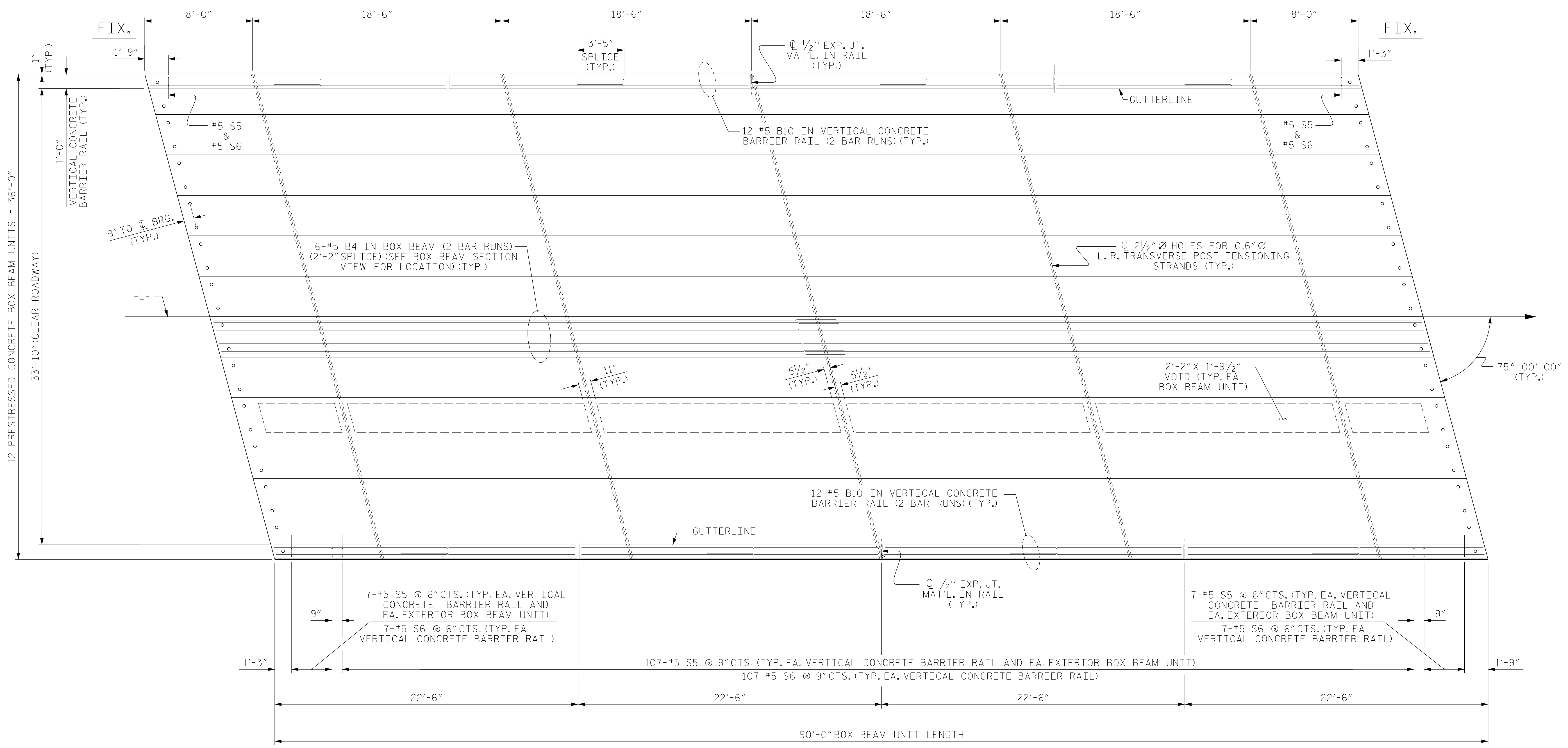
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			21

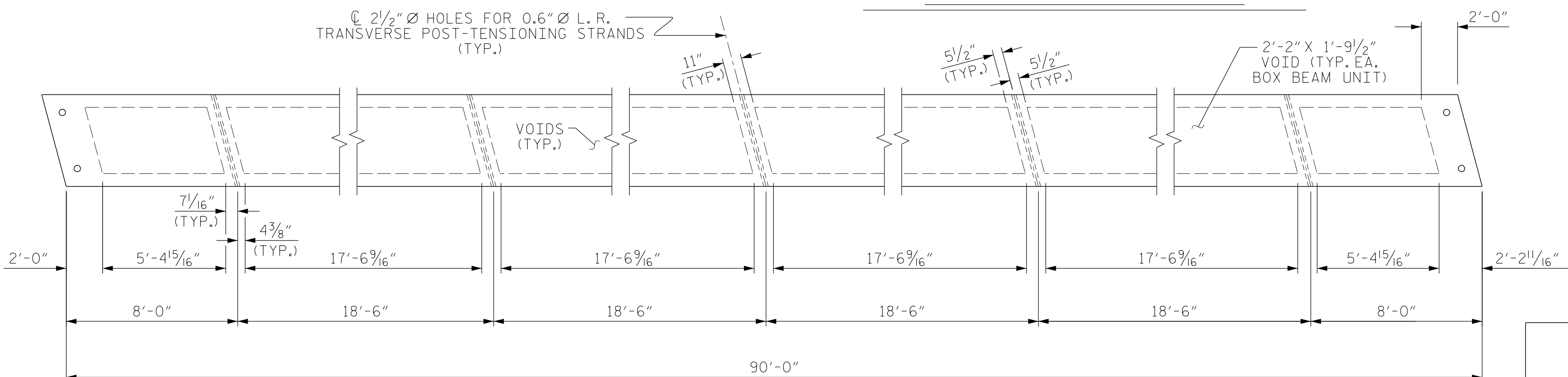


3/8/2016
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USER: jloftus

DRAWN BY: H.ASSFOURA DATE: 10/14
CHECKED BY: P.JACOB DATE: 11/14
DESIGN ENGINEER OF RECORD: D.RUGGLES DATE: 11/15



PLAN OF UNIT



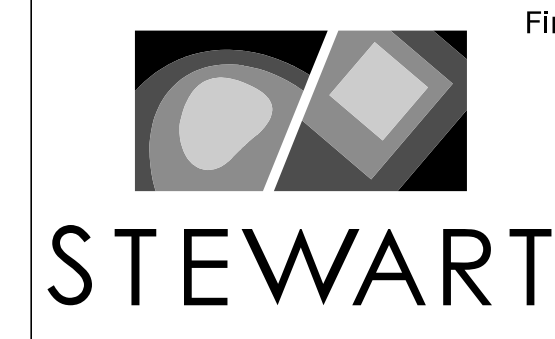
DIAPHRAGM AND VOID LAYOUT

PROJECT NO. 17BP.5.R.56
 WARREN COUNTY
 STATION: 15+60.00 -L-
 SHEET 2 OF 7



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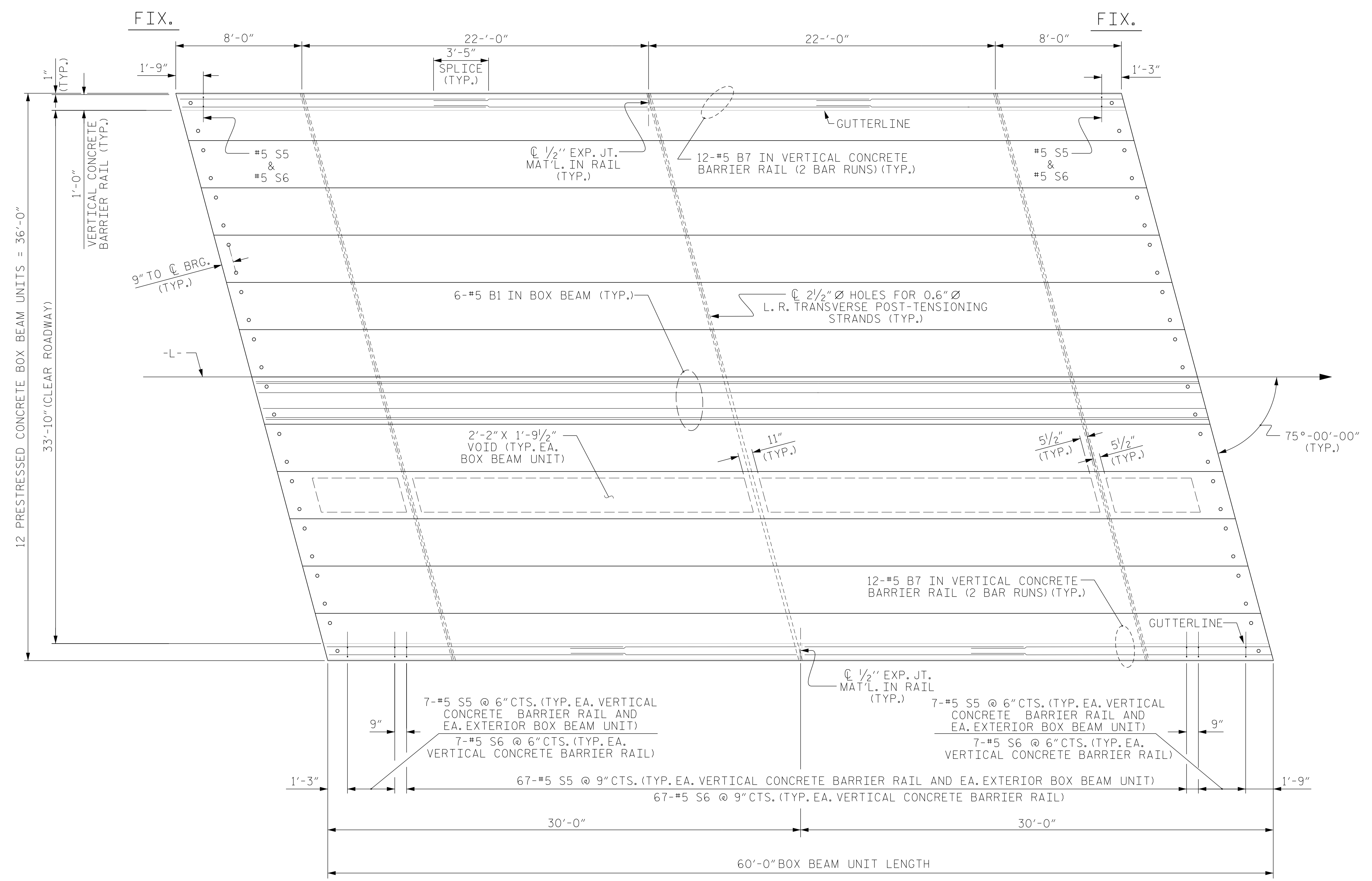
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 PLAN OF 90' UNIT
 33'-10" CLEAR ROADWAY
 75° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			21

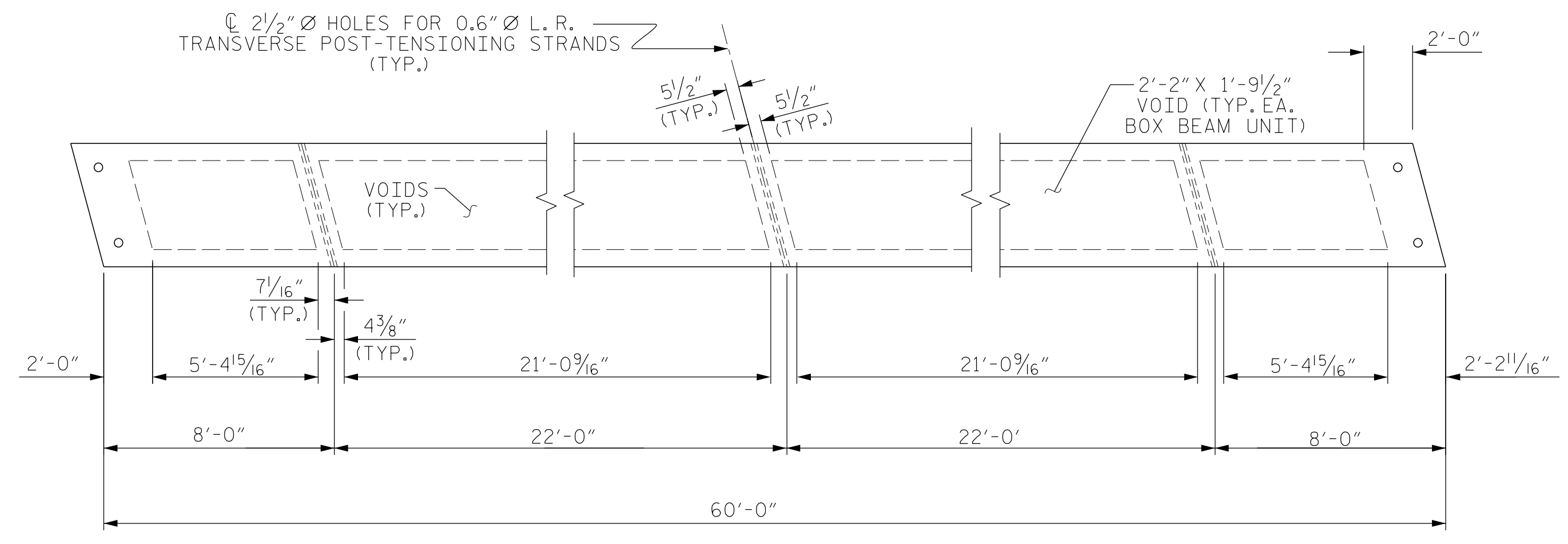
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3/8/2016
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 USER: jloftus

ASSEMBLED BY : H.ASSFOURA	DATE : 11/14
CHECKED BY : P.JACOB	DATE : 11/14
DRAWN BY : DGE 8/11	REV. 8/14
CHECKED BY : TMG 11/11	MAA/TMG



PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. 17BP.5.R.56
 WARREN COUNTY
 STATION: 15+60.00 -L-
 SHEET 3 OF 7

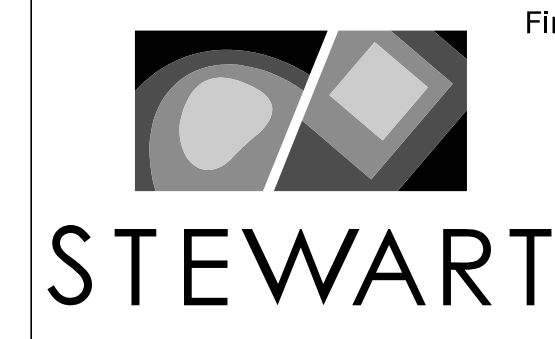


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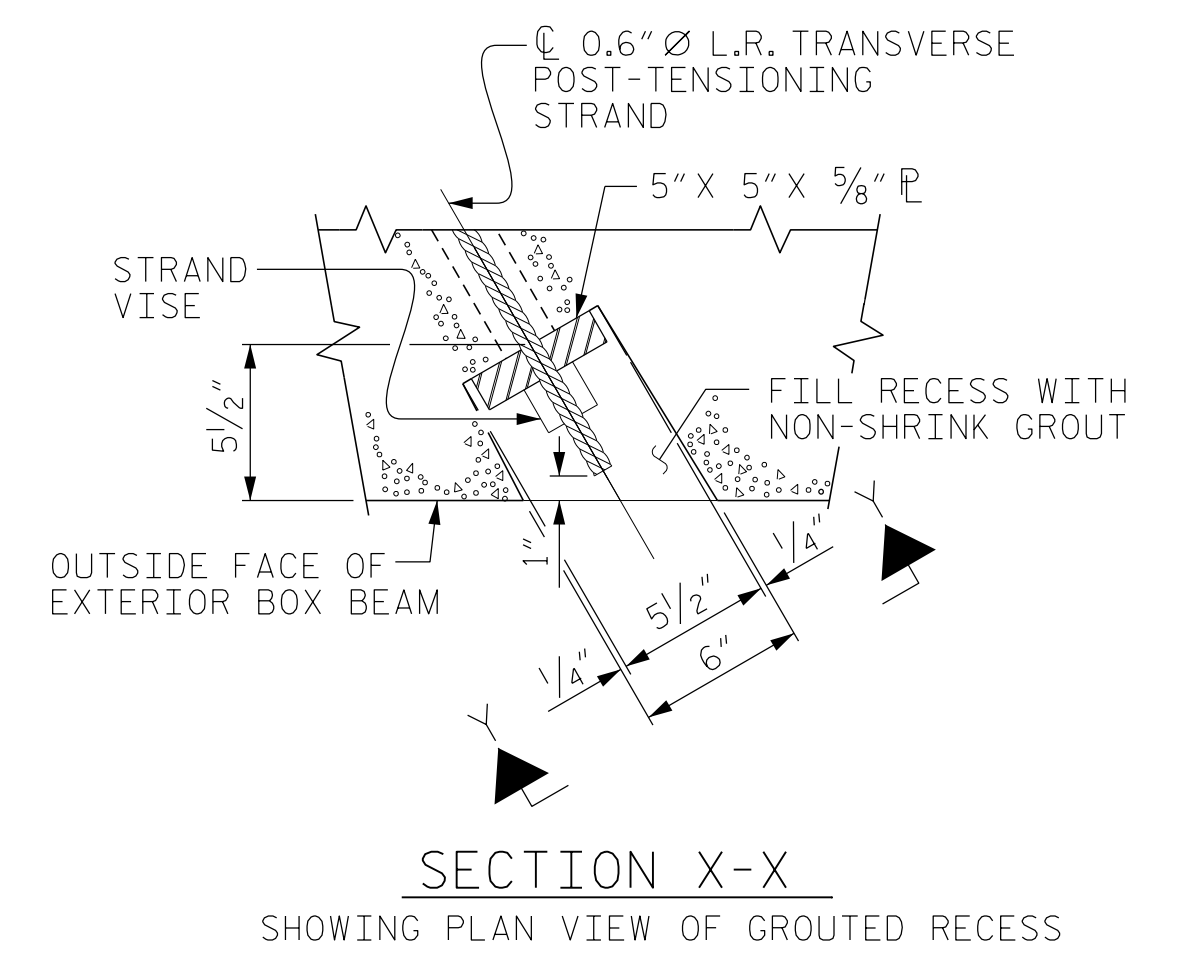
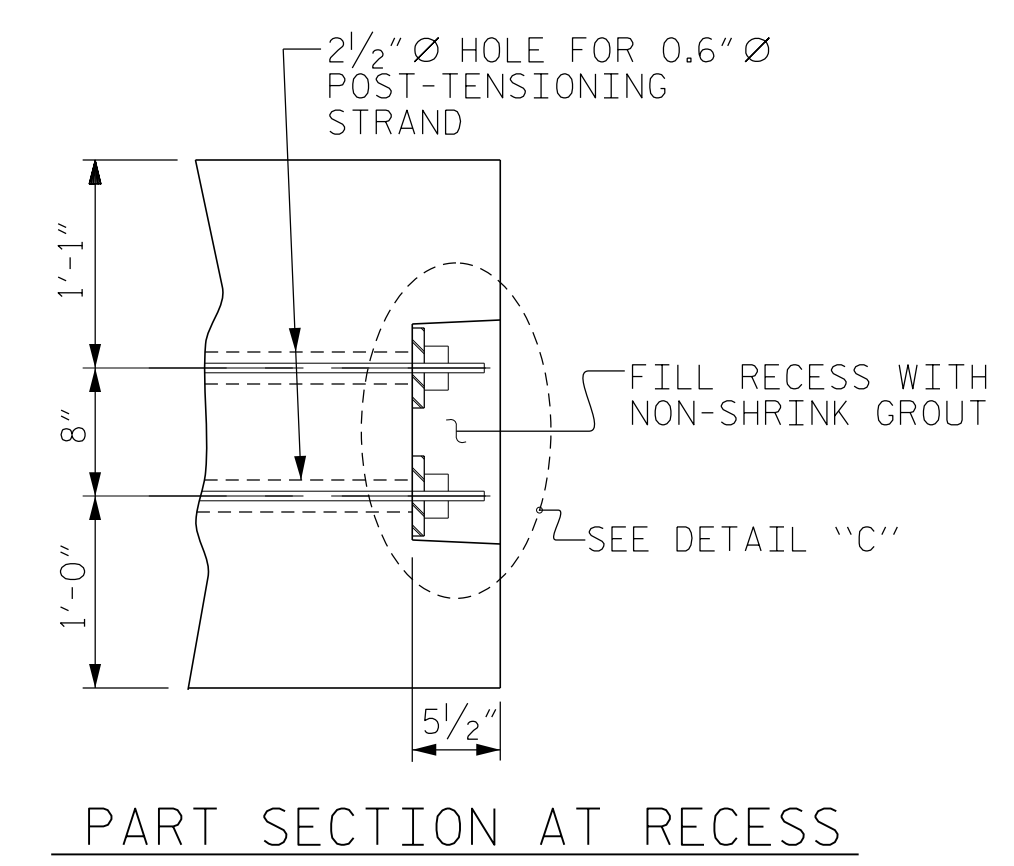
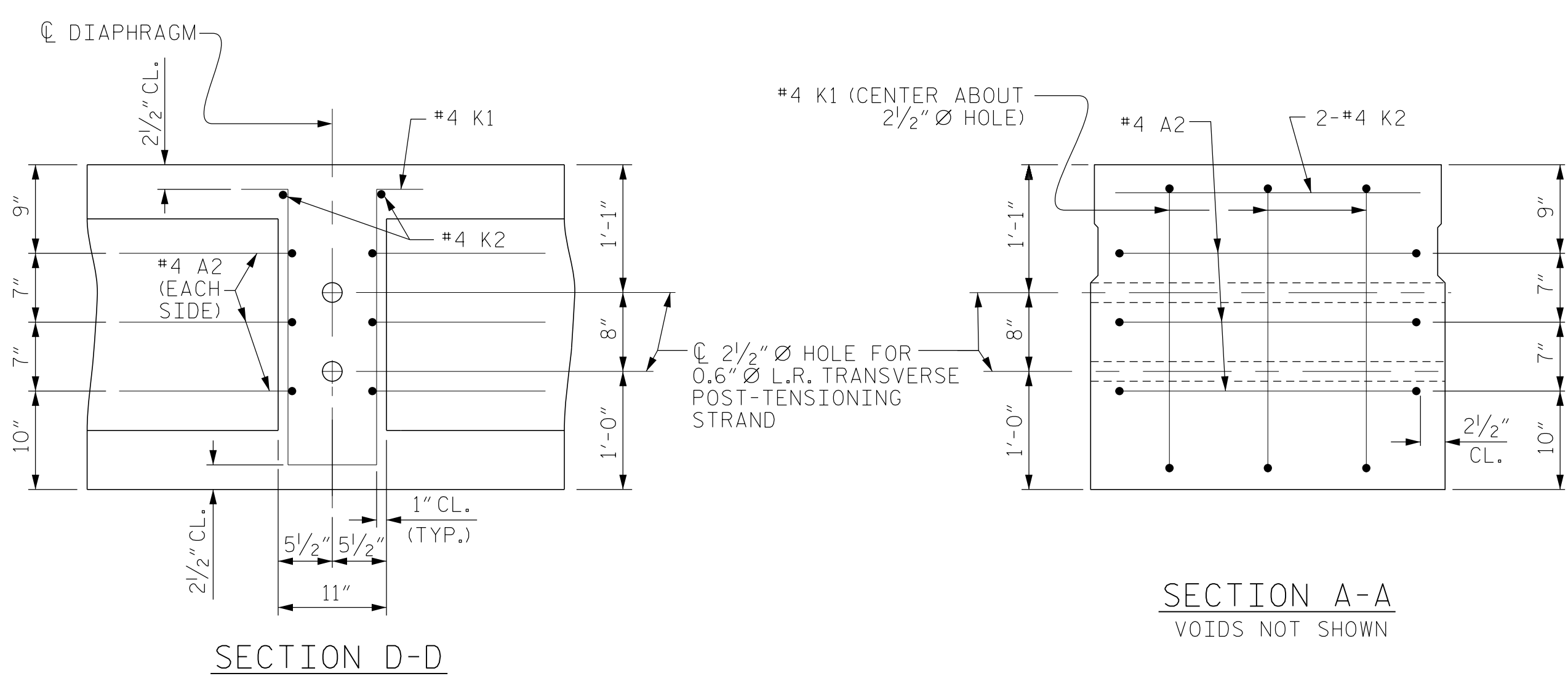
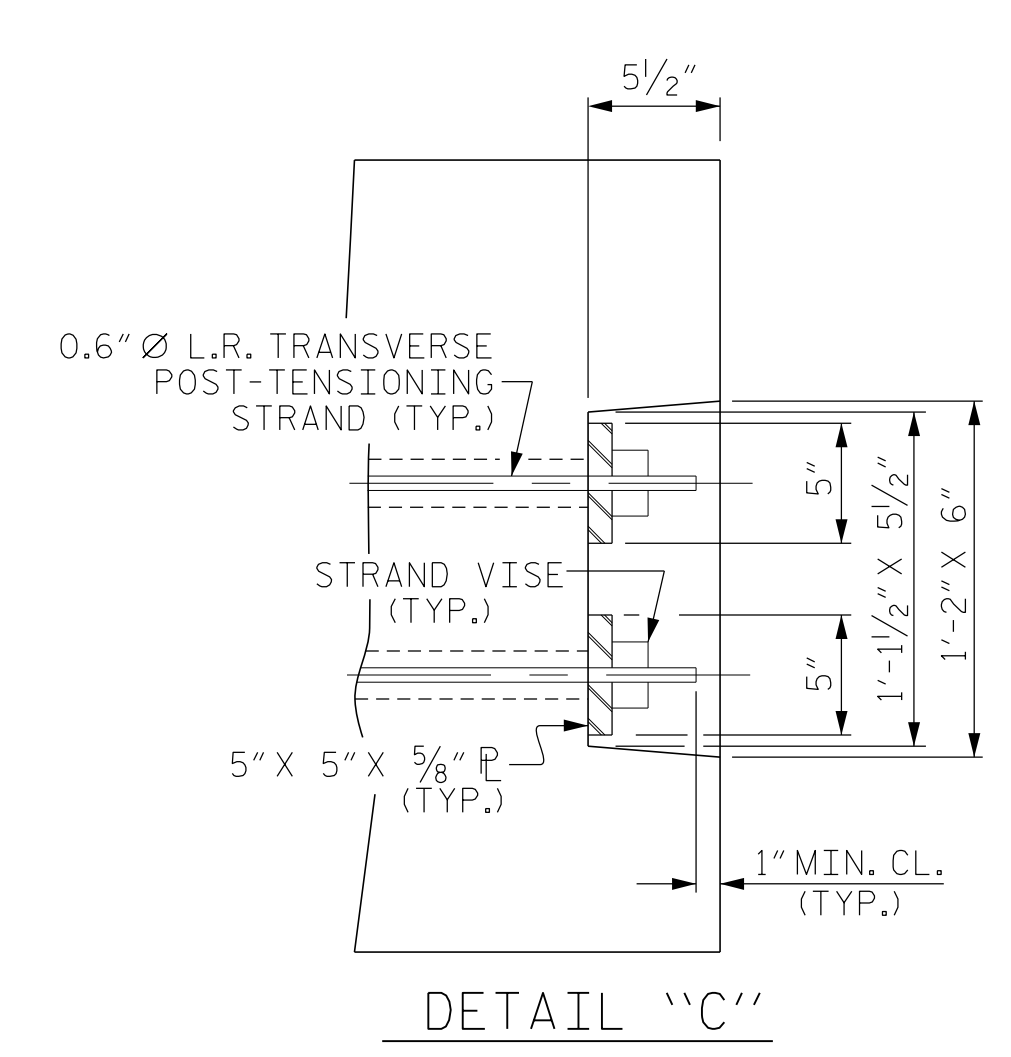
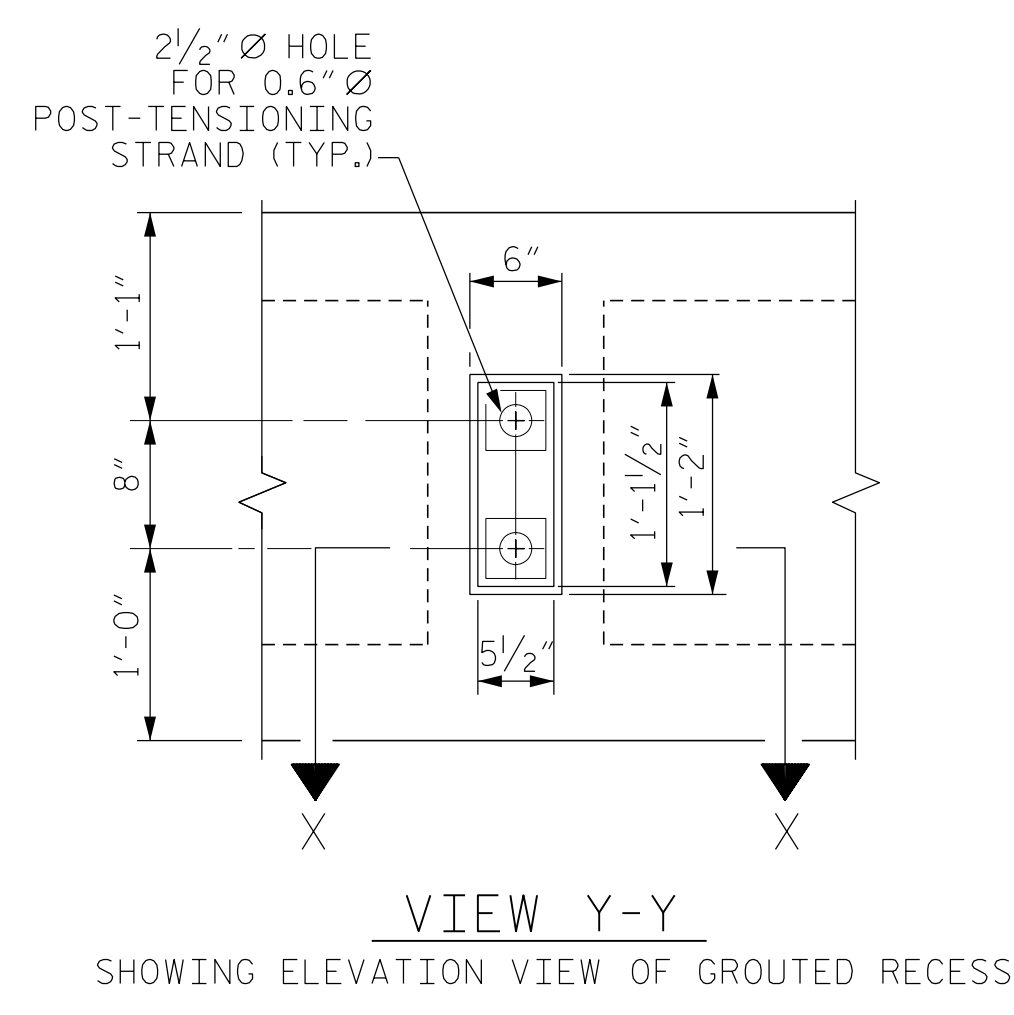
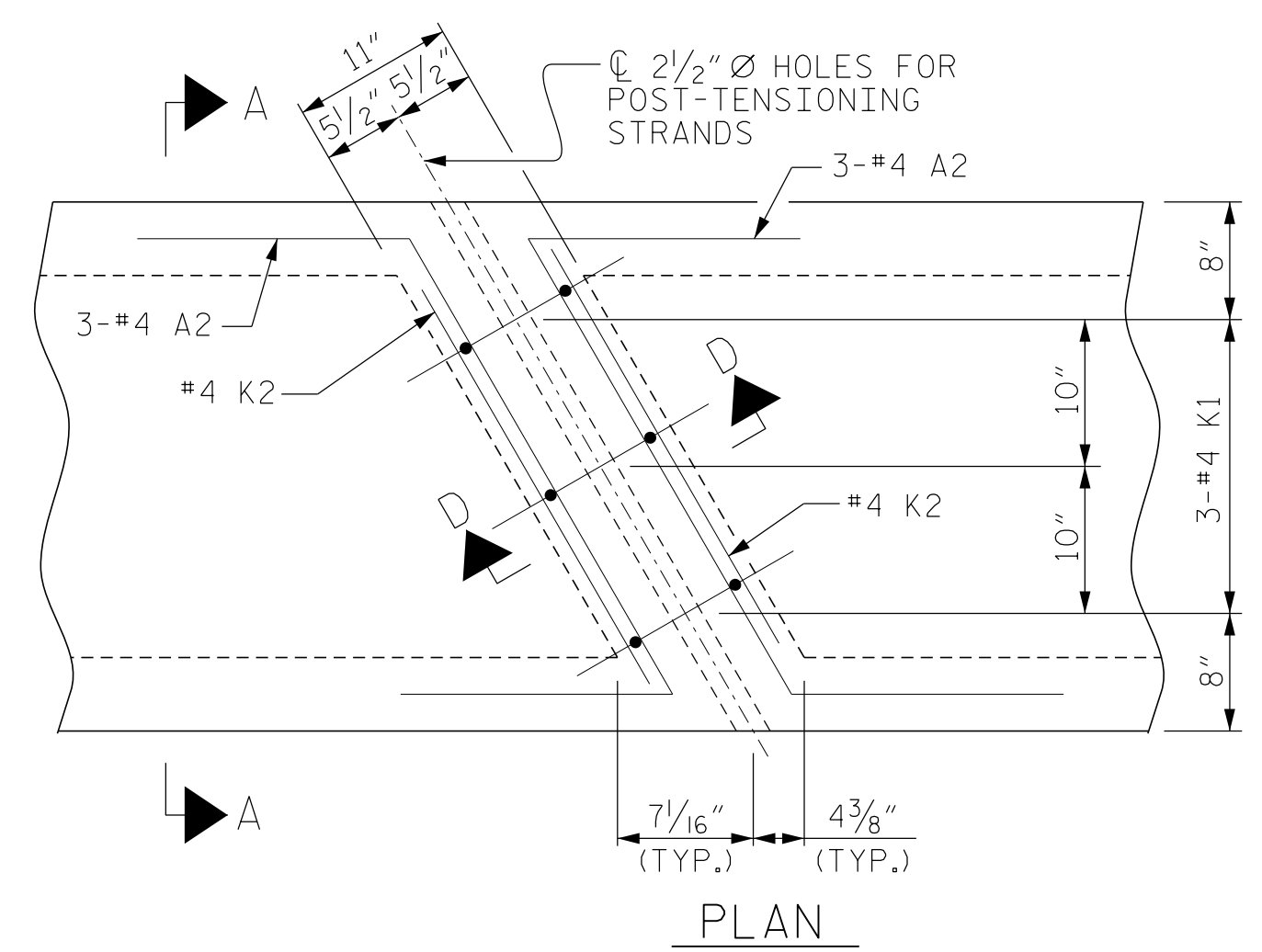
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF 60' UNIT
 33'-10" CLEAR ROADWAY
 75° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			21



3/8/2016
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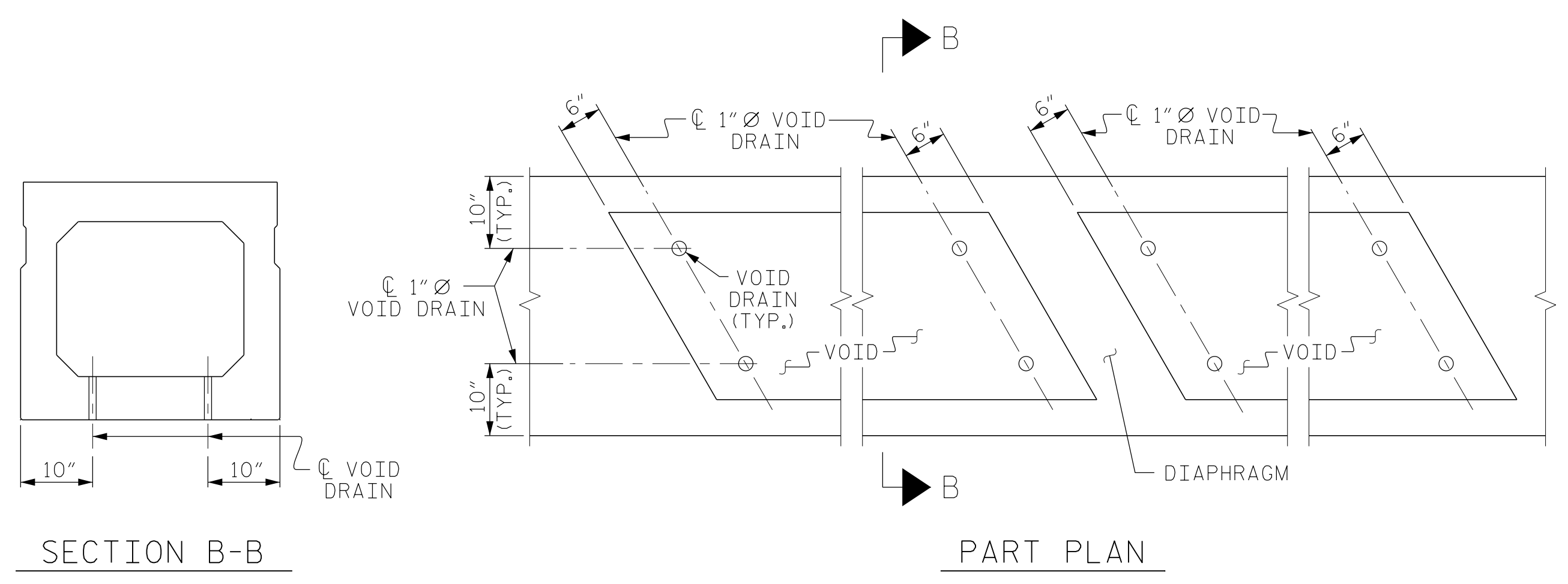
DRAWN BY: H.ASSFOURA DATE: 11/14
 CHECKED BY: P.JACOB DATE: 11/14
 DESIGN ENGINEER OF RECORD: D.RUGGLES DATE: 11/15



DOUBLE DIAPHRAGM DETAILS

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2 1/2" Ø HOLE.

GROUDED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM



VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER SPAN A	
90' BOX BEAM UNIT (NC)	3'-0" x 2'-9" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 5/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1 1/8" ↓
FINAL CAMBER	1 1/2" ↑

DEAD LOAD DEFLECTION AND CAMBER SPAN B	
60' BEAM UNIT (NC)	3'-0" x 2'-9" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	3/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/4" ↓
FINAL CAMBER	1/2" ↑

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. 17BP.5.R.56
WARREN COUNTY
STATION: 15+60.00 -L-
SHEET 6 OF 7



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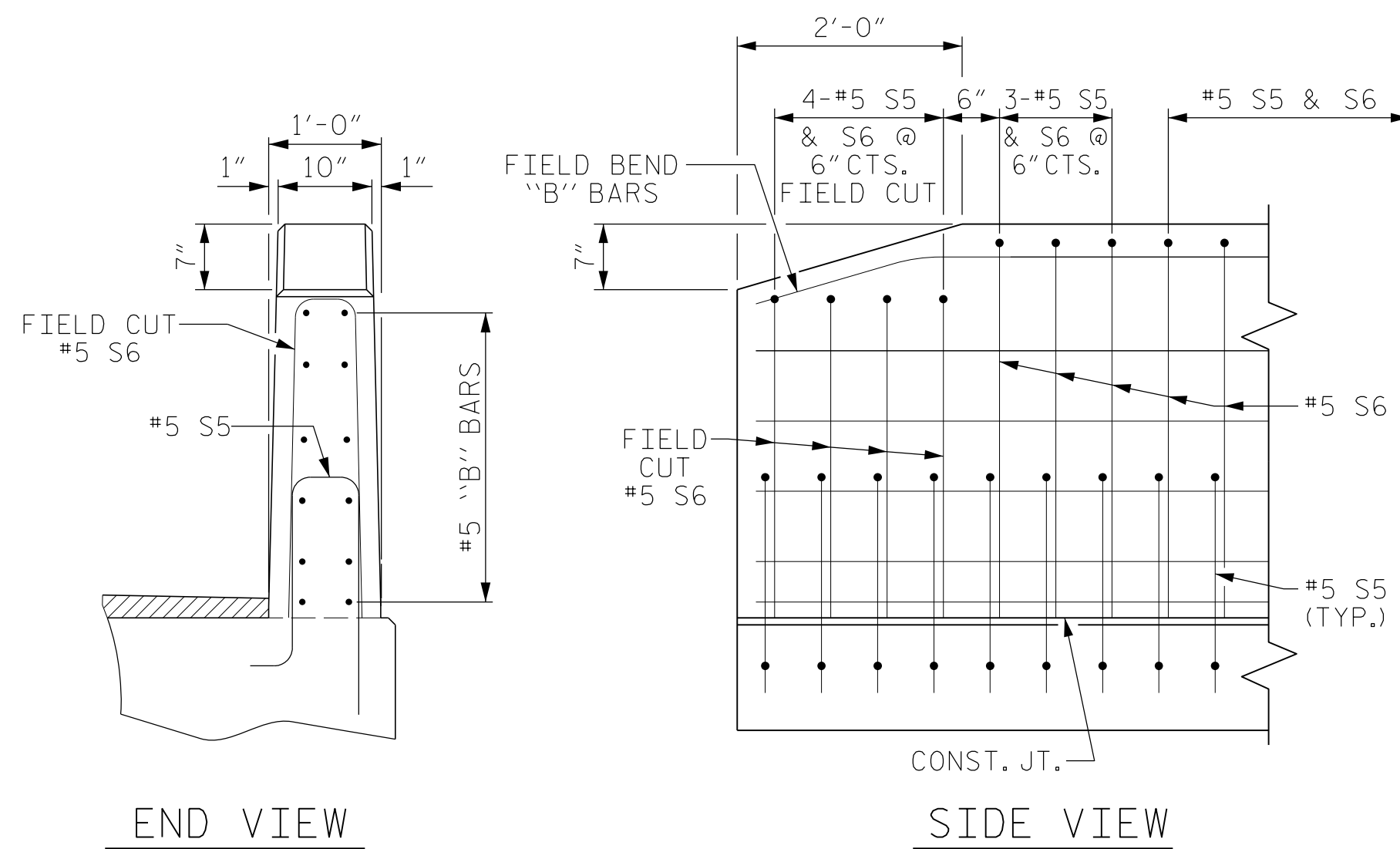
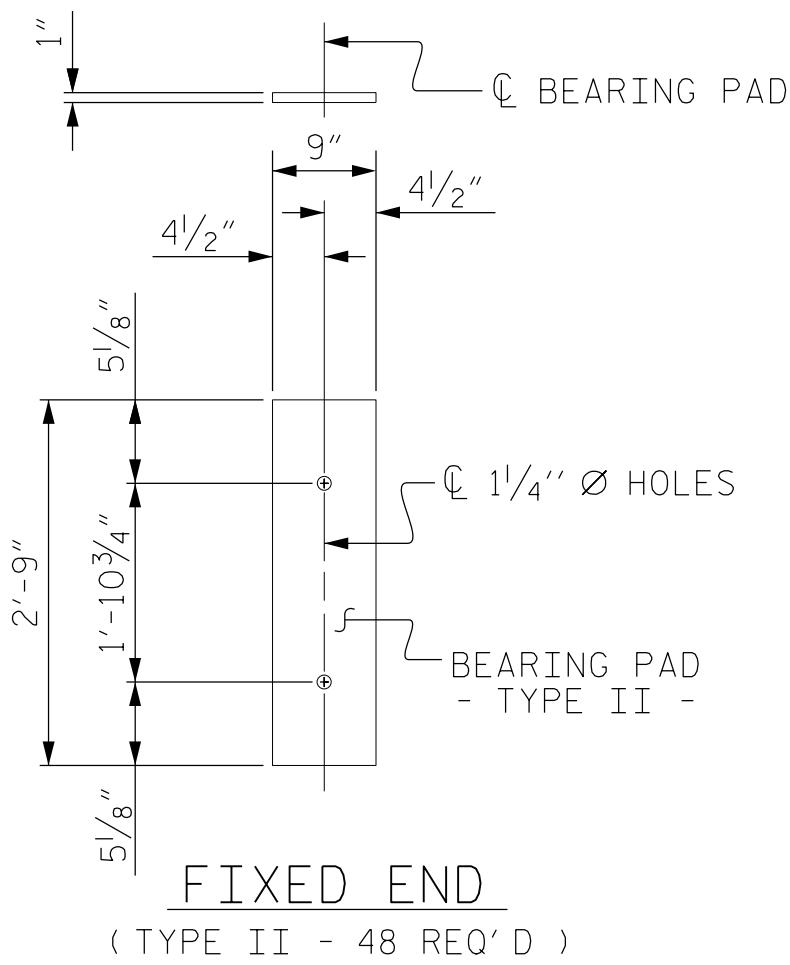


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT

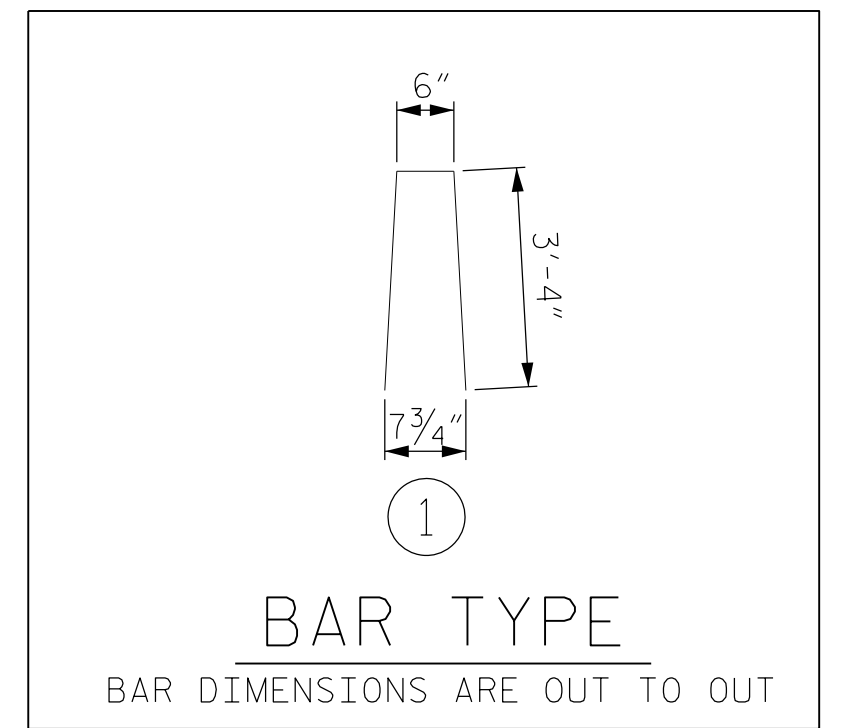
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			21

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USER: jloftus

ASSEMBLED BY : HASSFOURA	DATE : 11/14
CHECKED BY : P. JACOB	DATE : 11/14
DRAWN BY : DCE 11/11	REV. 8/14
CHECKED BY : TMG 11/11	MAA/TMG



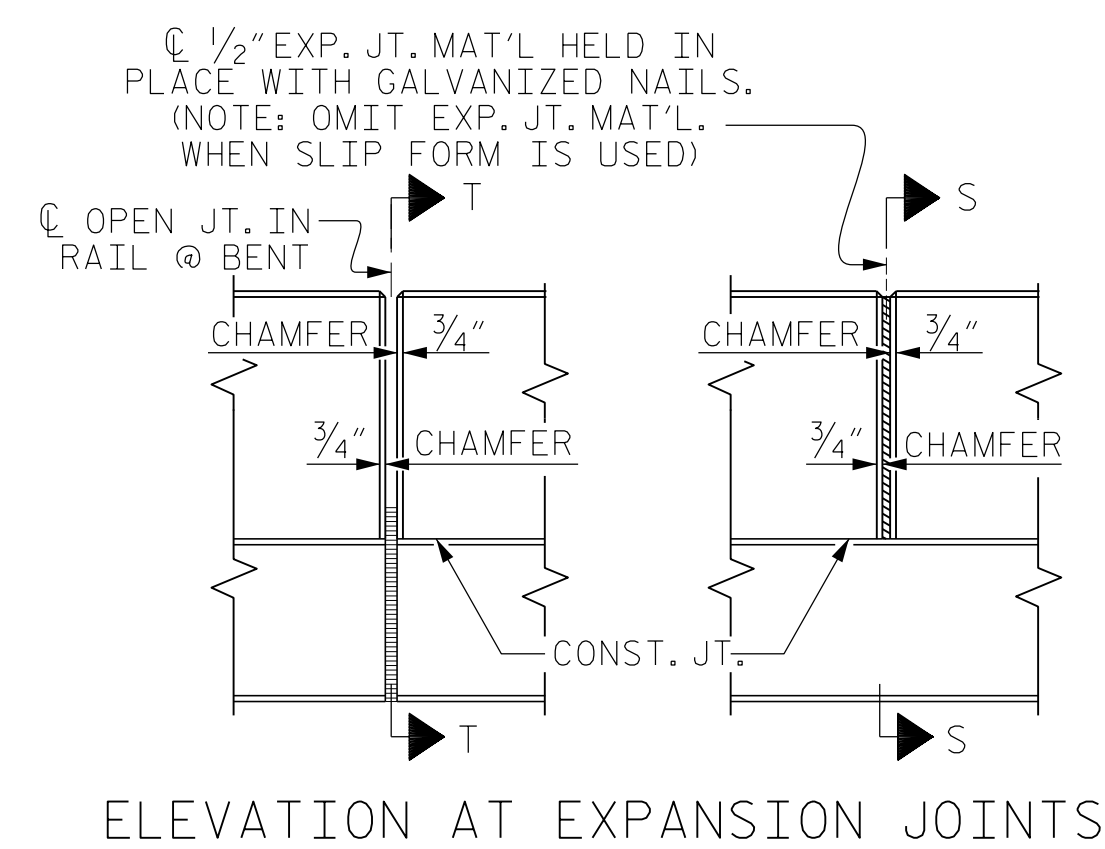
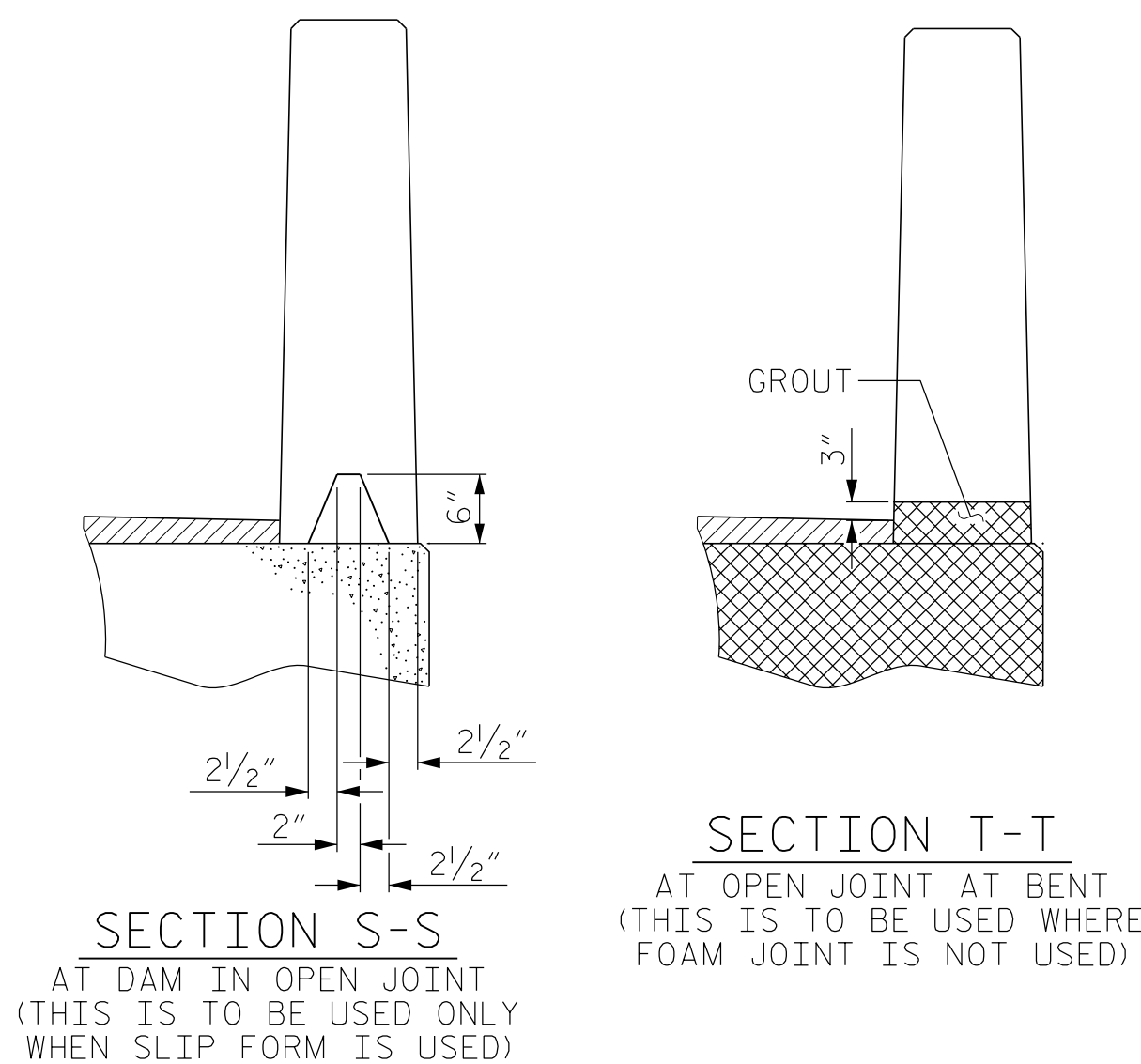
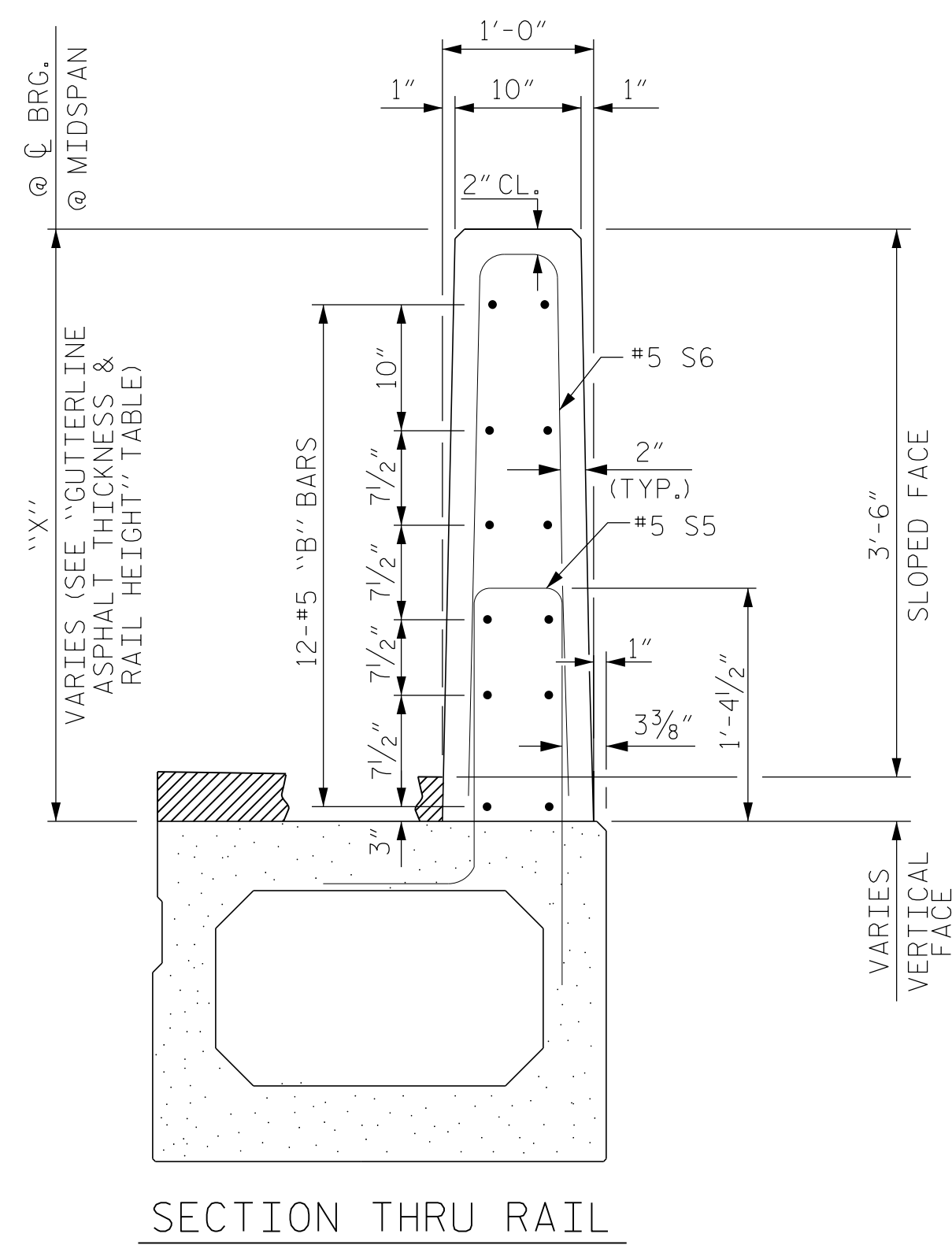
BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
90' UNIT			
EXTERIOR B.B.	2	90'-0"	180'-0"
INTERIOR B.B.	10	90'-0"	900'-0"
TOTAL	12		1080'-0"
60' UNIT			
EXTERIOR B.B.	2	60'-0"	120'-0"
INTERIOR B.B.	10	60'-0"	600'-0"
TOTAL	12		720'-0"



ELASTOMERIC BEARING DETAILS

END OF RAIL DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



VERTICAL CONCRETE BARRIER RAIL DETAILS

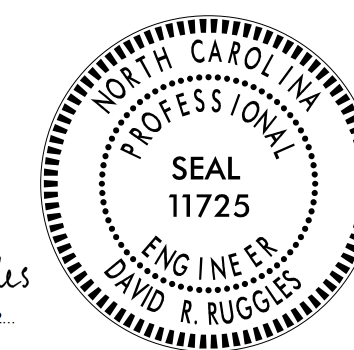
BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL-SPAN A					
BAR	BARS PER PAIR OF EXTERIOR UNITS	SIZE	TYPE	LENGTH	WEIGHT
90' UNIT					
*B10	192	#5	STR	12'-10"	2570
*S6	242	#5	1	7'-2"	1809
* EPOXY COATED REINFORCING STEEL					LBS. 4379
CLASS AA CONCRETE					CU.YDS. 23.1
TOTAL VERTICAL CONCRETE BARRIER RAIL					LN. FT. 180.1
BAR	BARS PER PAIR OF EXTERIOR UNITS	SIZE	TYPE	LENGTH	WEIGHT
60' UNIT					
*B7	96	#5	STR	16'-8"	1669
*S6	162	#5	1	7'-2"	1211
* EPOXY COATED REINFORCING STEEL					LBS. 2880
CLASS AA CONCRETE					CU.YDS. 15.7
TOTAL VERTICAL CONCRETE BARRIER RAIL					LN. FT. 120.1

36' (SE)	ASPHALT OVERLAY THICKNESS @ MID-SPAN		RAIL HEIGHT @ MID-SPAN	
	LEFT **	RIGHT **	LEFT **	RIGHT **
60' UNITS	2 1/2"	2 7/8"	3'-8 1/2"	3'-8 7/8"
90' UNITS	1 3/4"	1 1/2"	3'-7 3/4"	3'-7 1/2"

	RAIL HEIGHT @ C. BRG. "X"		
	EB1	B1	EB2
LT.**	3'-10 3/4"	3'-10 3/8"	3'-8 1/2"
RT.**	3'-10"	3'-10 1/2"	3'-9 1/8"

**LT. AND RT. DESIGNATIONS TAKEN LOOKING UPSTATION.

PROJECT NO. 17BP.5.R.56
WARREN COUNTY
STATION: 15+60.00 -L-
SHEET 7 OF 7



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3/25/2016

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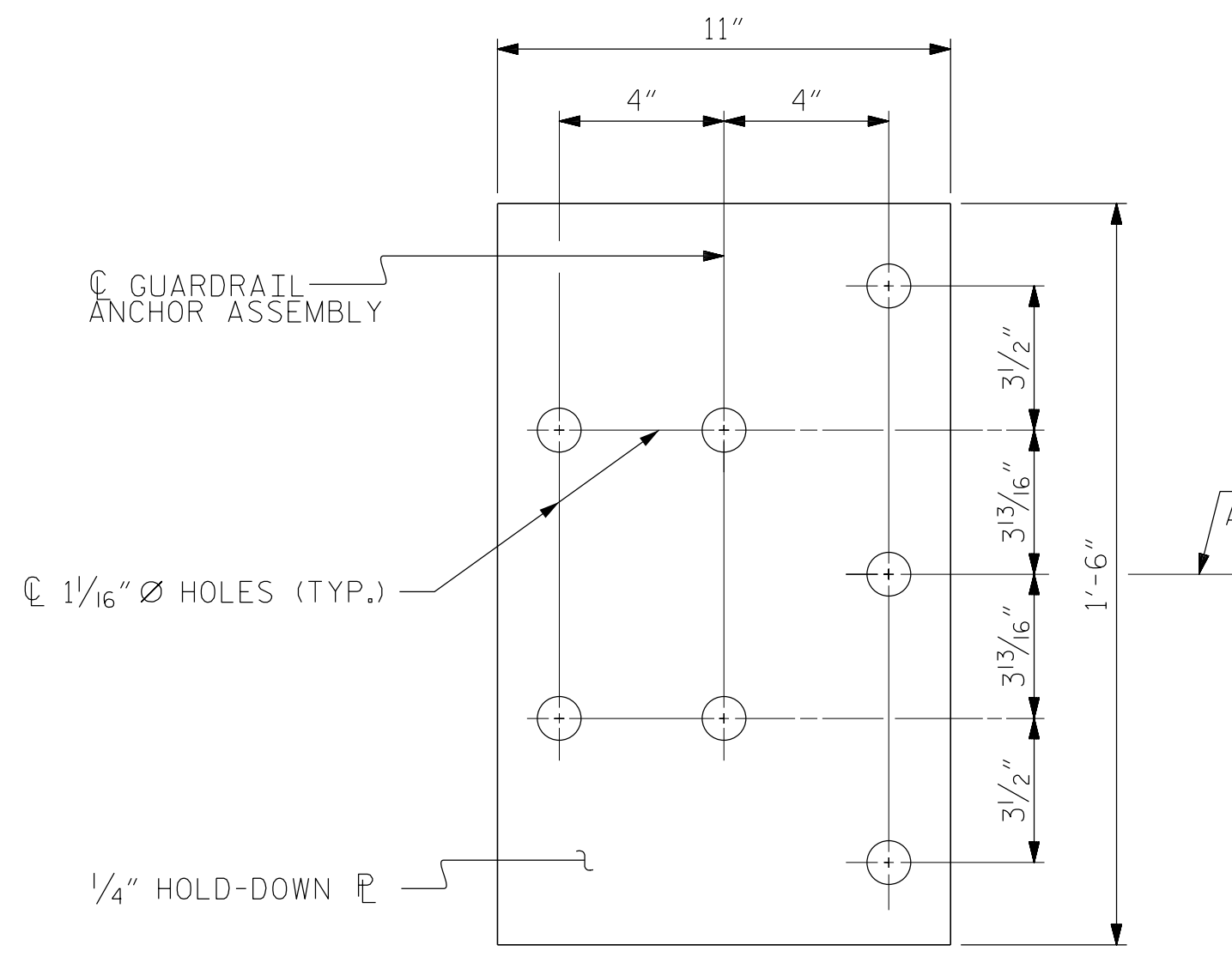
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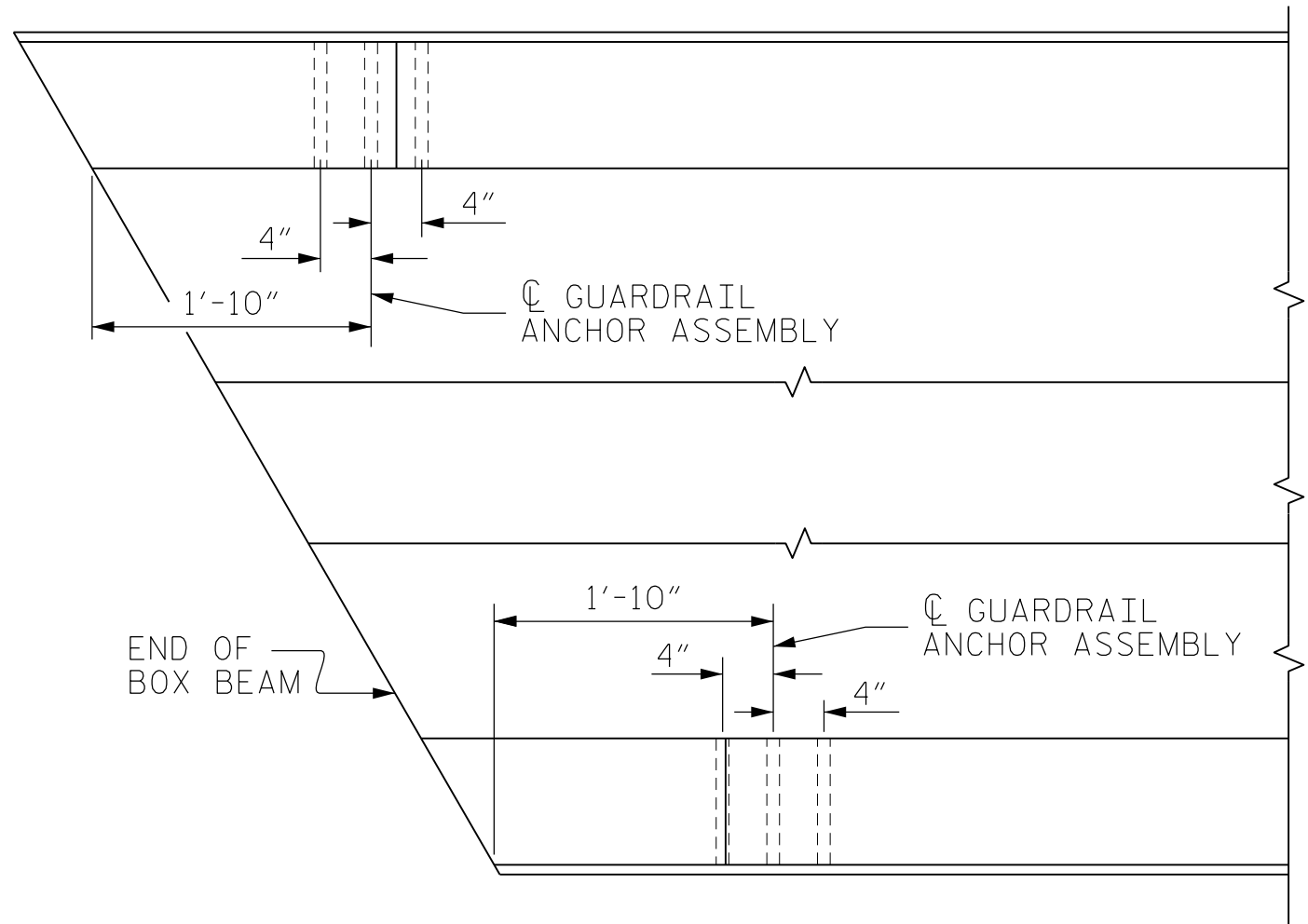
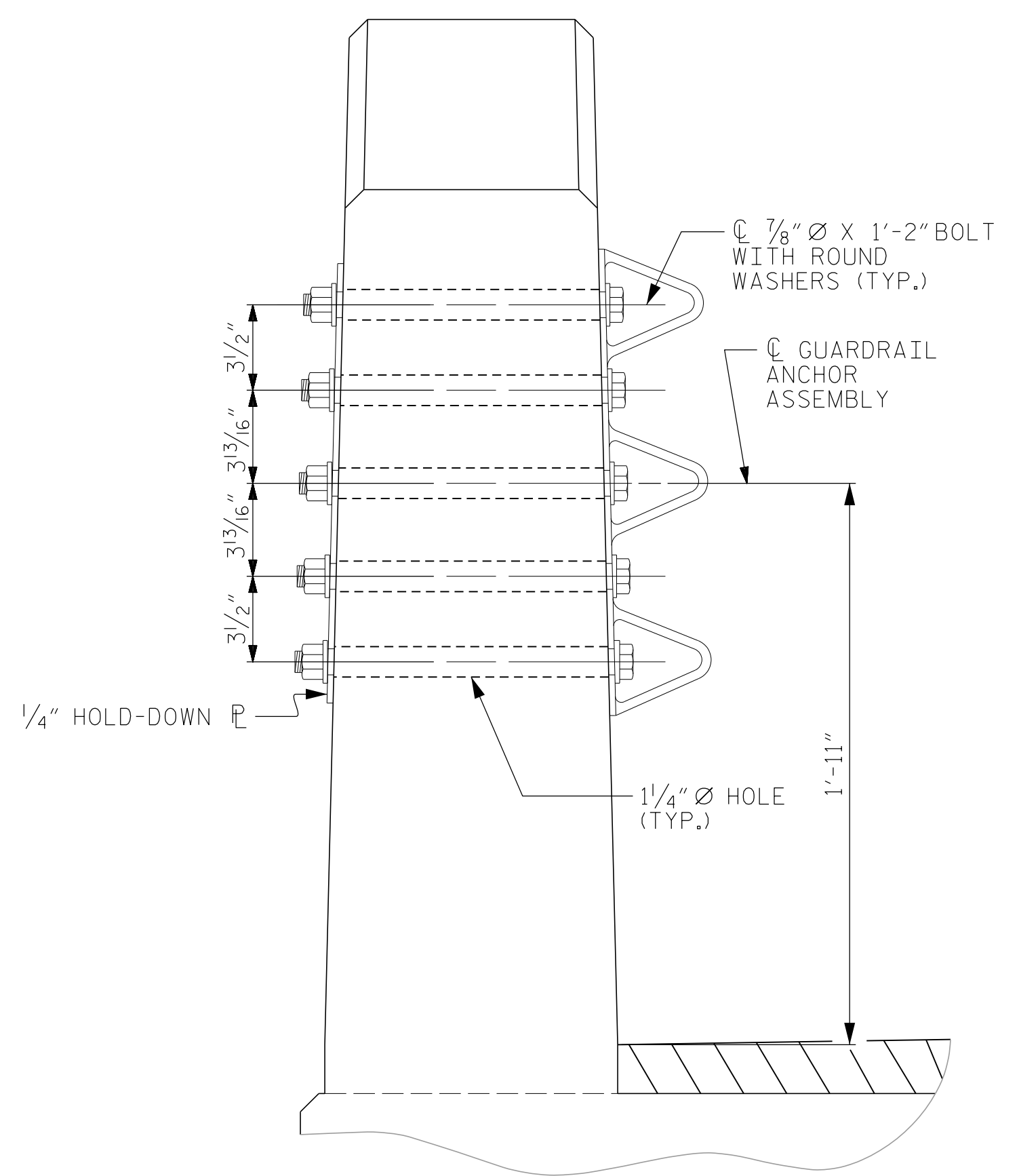
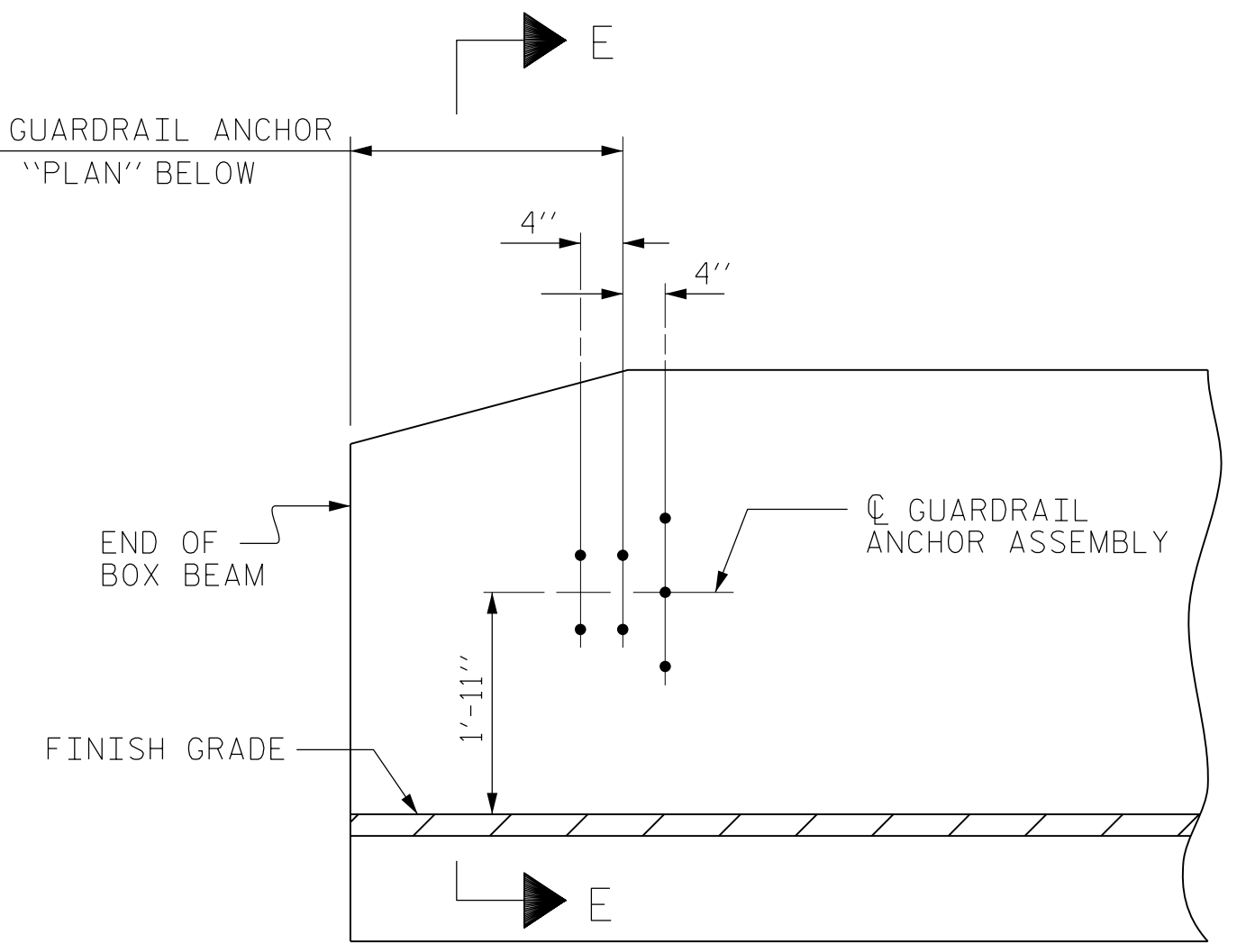
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT

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

TOTAL SHEETS 21

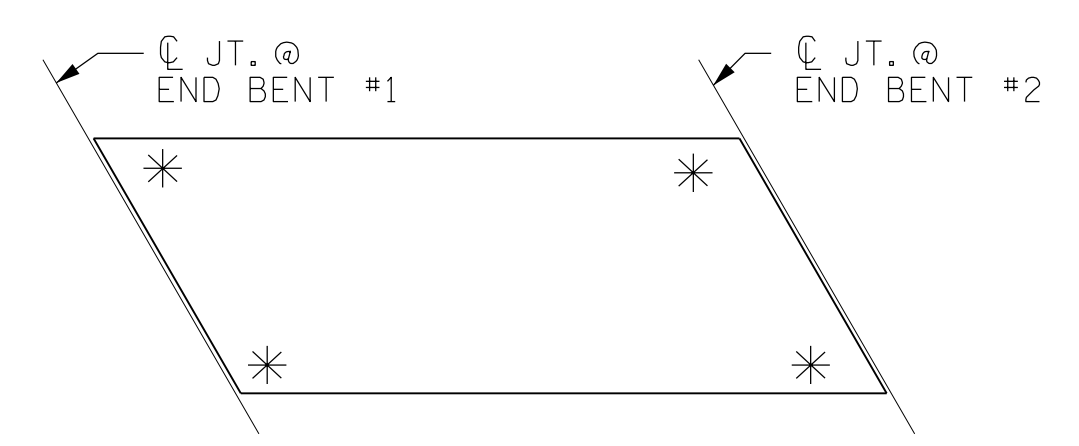


FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



LOCATION OF ANCHORS FOR GUARDRAIL

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



* DENOTES GUARDRAIL ANCHOR ASSEMBLY

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.

PROJECT NO. 17BP.5.R.56
WARREN COUNTY
STATION: 15+60.00 -L-

DocuSigned by:
David Ruggles
C462768DF412422
3/25/2016

STATE OF NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL 11725
DAVID R. RUGGLES

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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-12
1			3			TOTAL SHEETS
2			4			21

3/8/2016
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USER: jloftus

ASSEMBLED BY: H.ASSFOURA	DATE: 11/14
CHECKED BY: P.JACOB	DATE: 11/14
DRAWN BY: MAA 5/10	REV. 10/1/11 MAA/GM
CHECKED BY: GM 5/10	REV. 12/5/11 MAA/GM
	REV. 6/13 MAA/GM

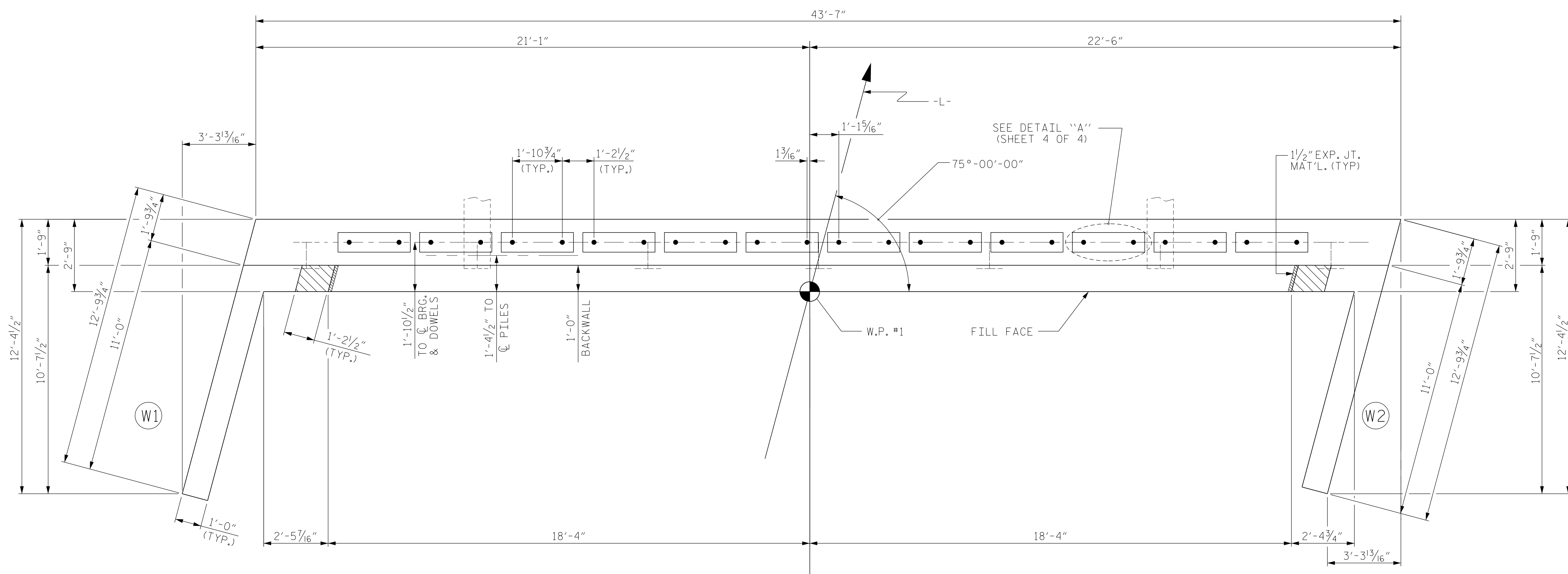
NOTES

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

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

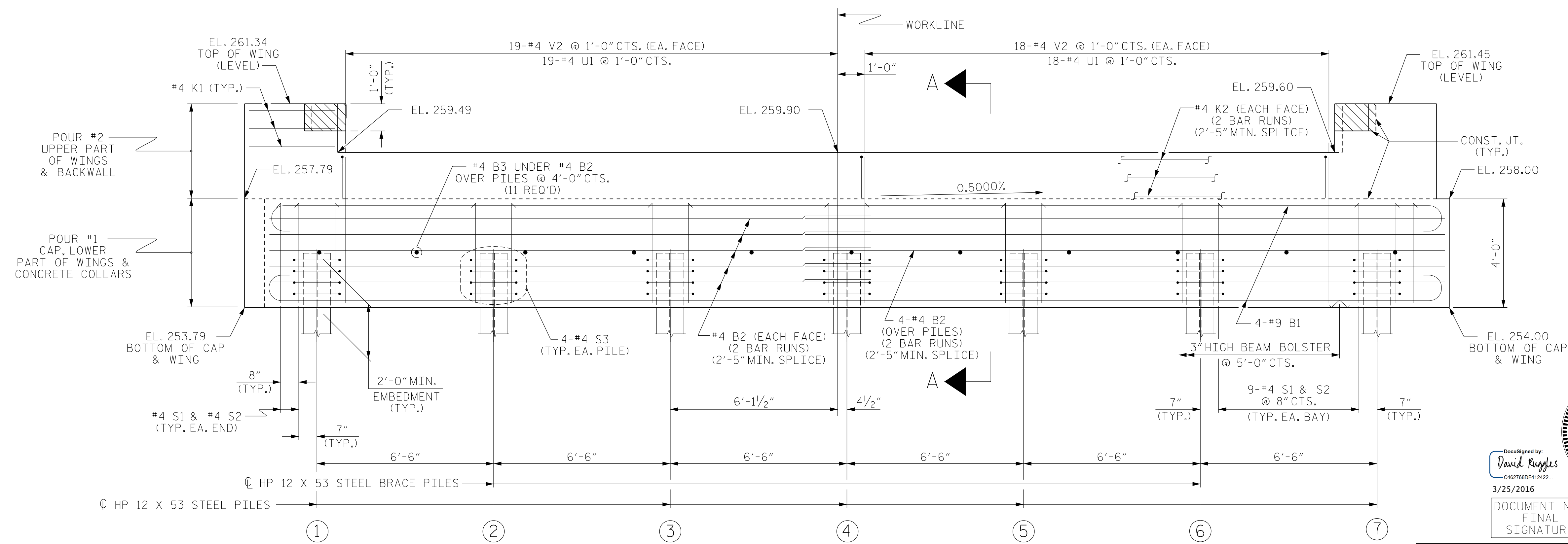
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

TOP OF PILE ELEVATIONS	
①	255.74
②	255.77
③	255.80
④	255.83
⑤	255.87
⑥	255.90
⑦	255.93



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. 17BP.5.R.56
 WARREN COUNTY
 STATION: 15+60.00 -L-
 SHEET 1 OF 4



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SUBSTRUCTURE END BENT No. 1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-13
					TOTAL SHEETS 21

3/8/2016
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 USER: jloftus

ASSEMBLED BY: H.ASSFOURA DATE: 11/14
 CHECKED BY: P.JACOB DATE: 11/14
 DRAWN BY: WJH 12/11 REV. 8/14 MAA/TMG
 CHECKED BY: AAC 12/11

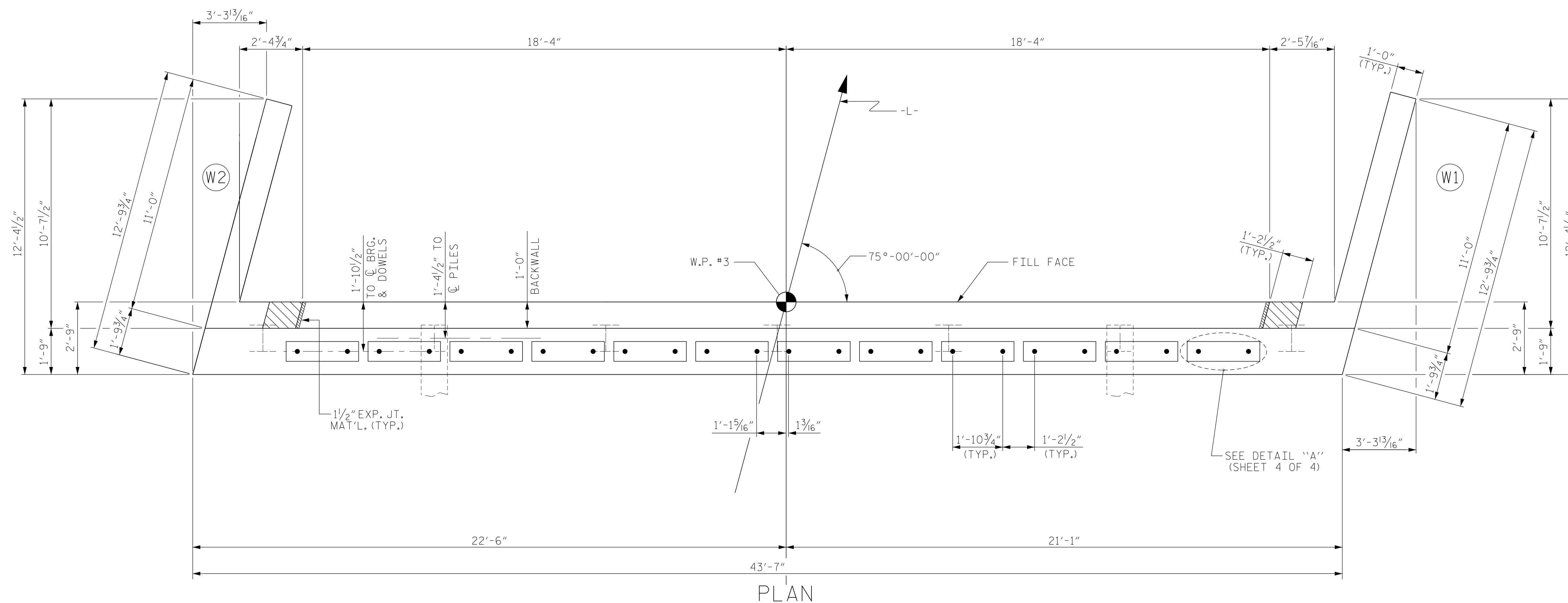
NOTES

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

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

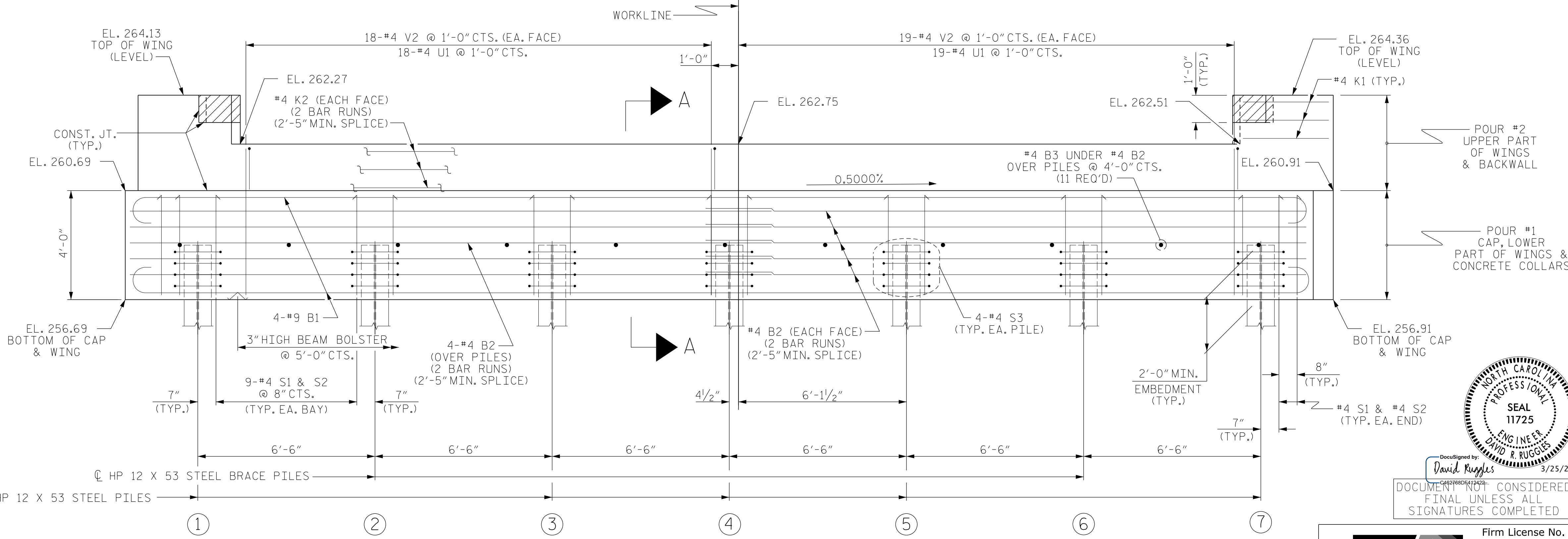
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

TOP OF PILE ELEVATIONS	
①	258.54
②	258.57
③	258.60
④	258.63
⑤	258.67
⑥	258.70
⑦	258.73



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. 17BP.5.R.56
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STATION: 15+60.00 -L-
SHEET 2 OF 4



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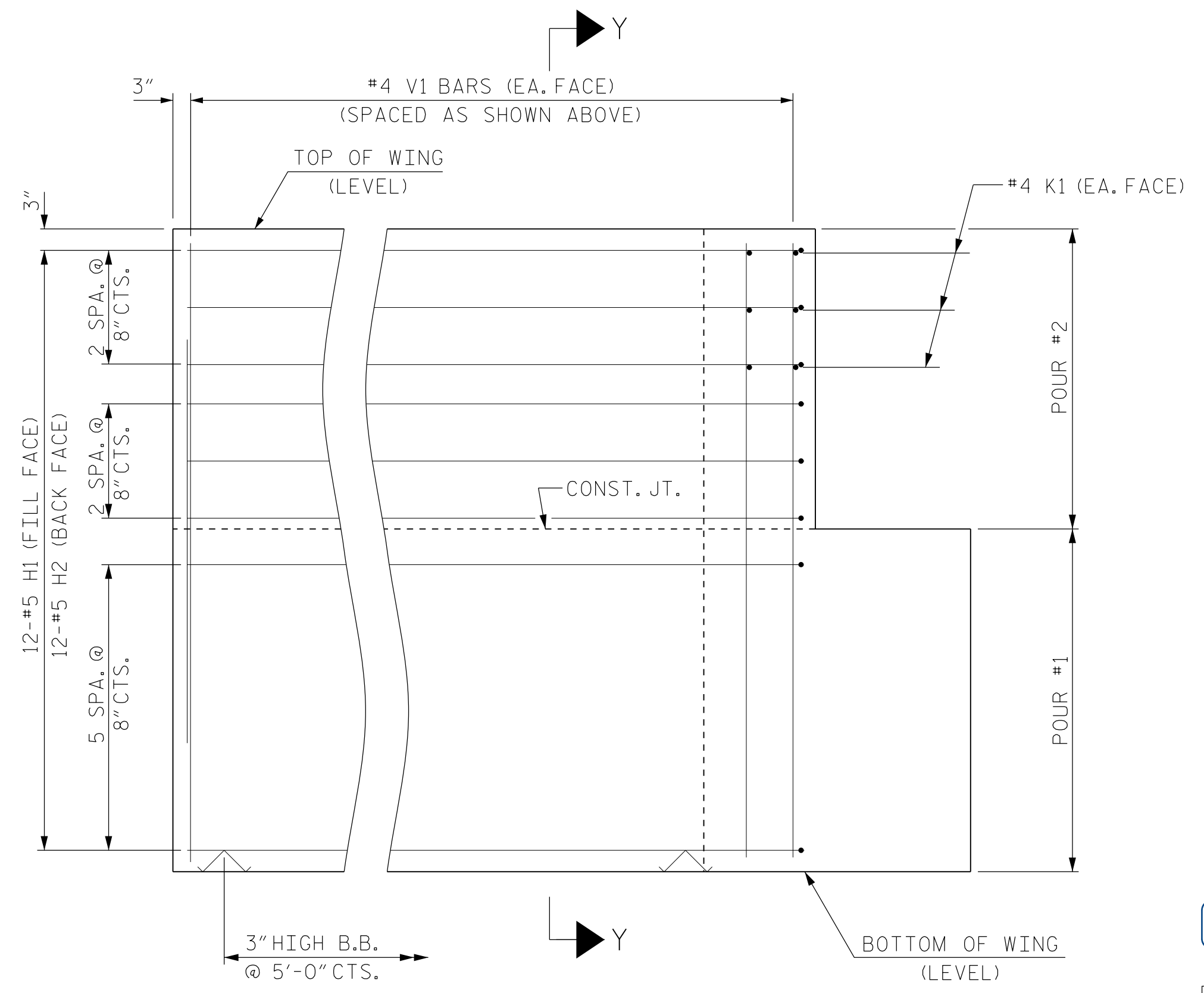
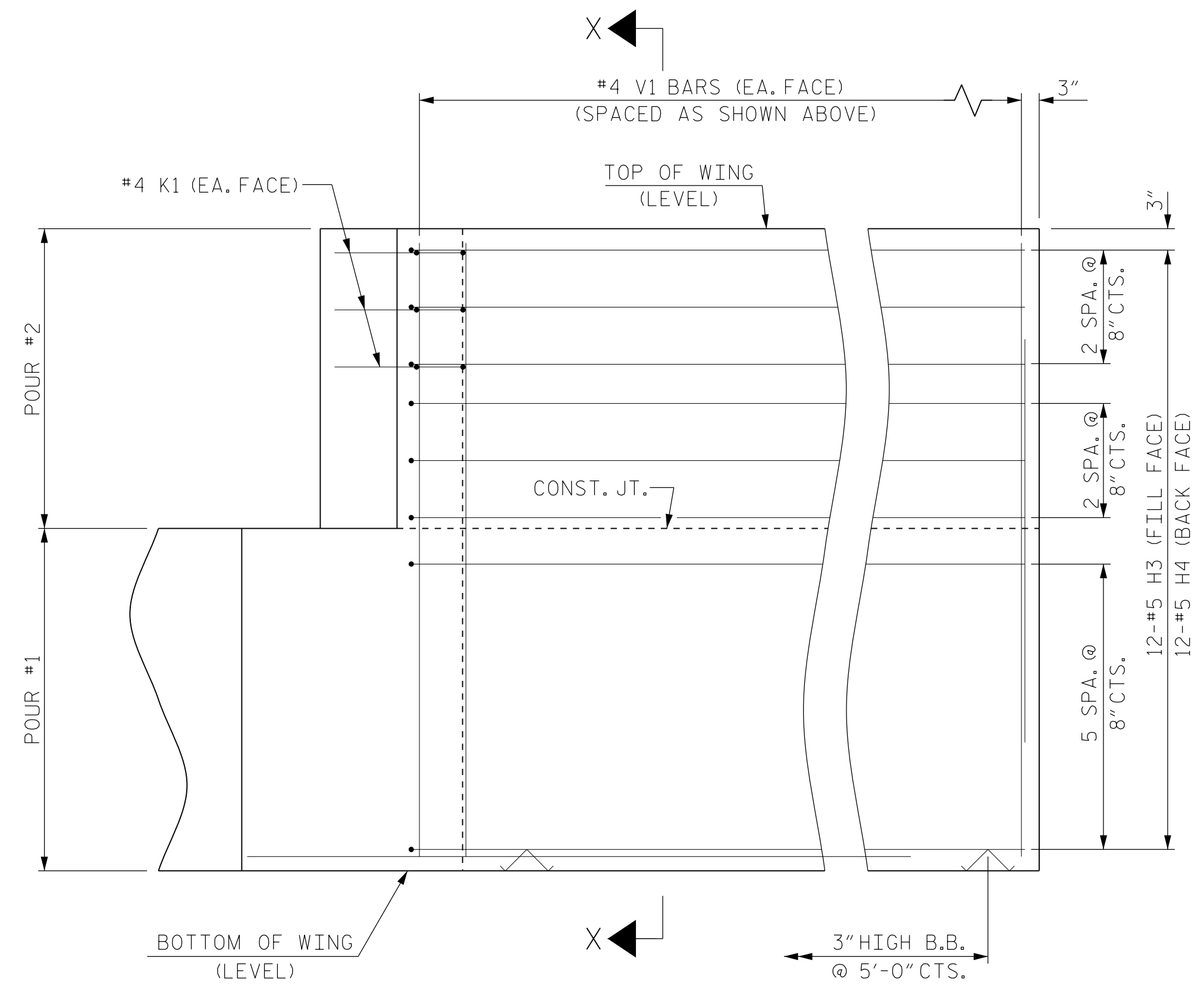
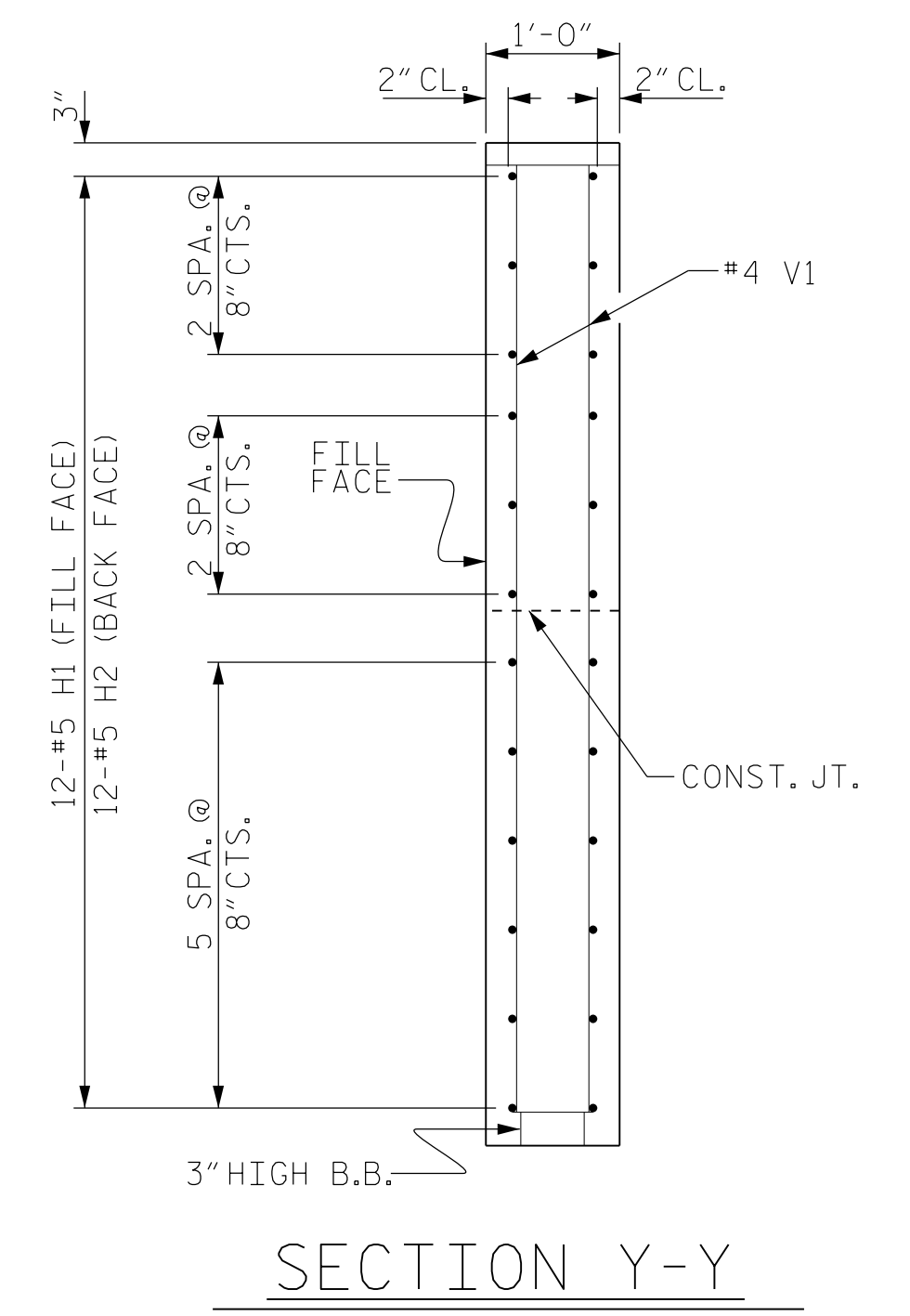
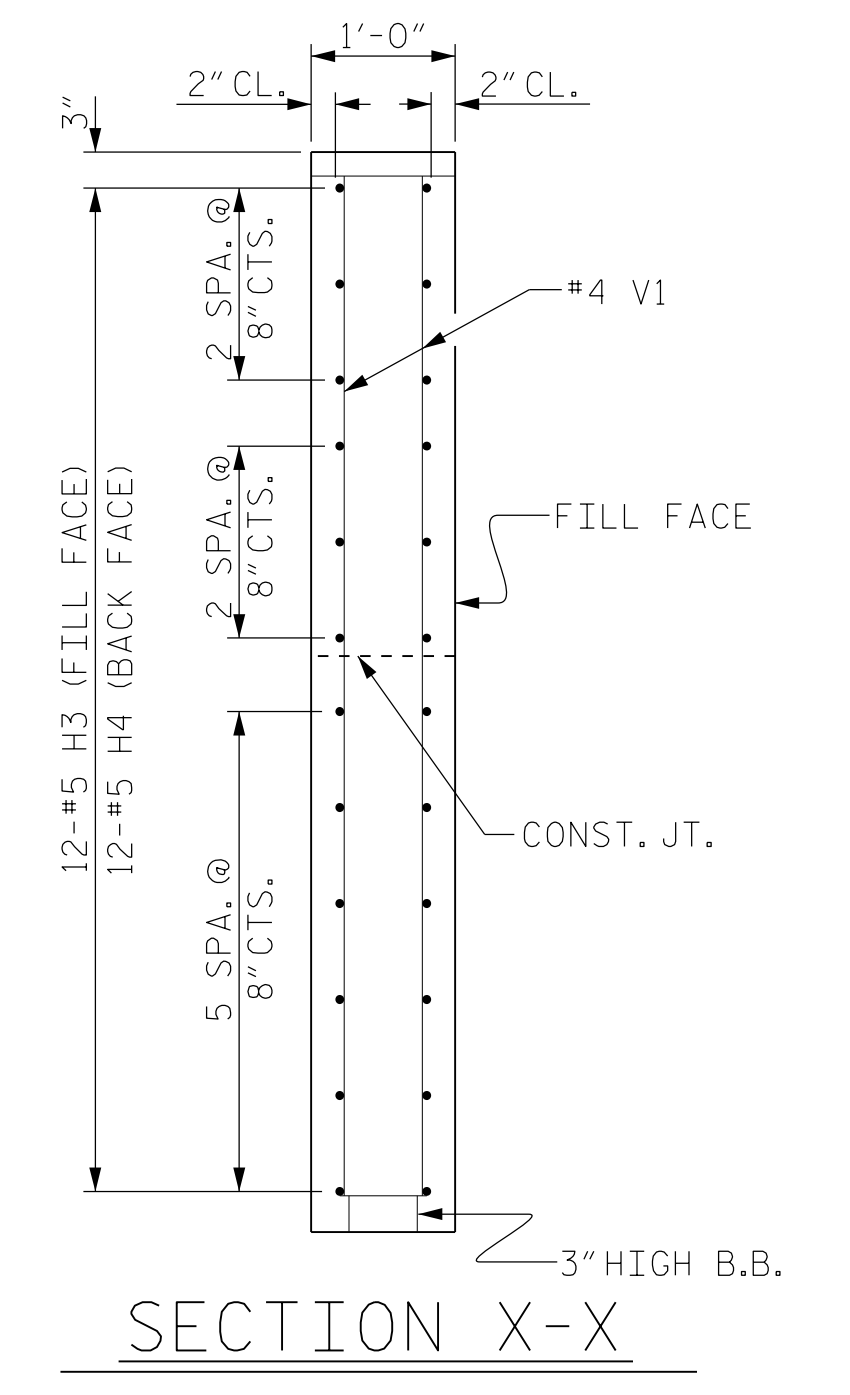
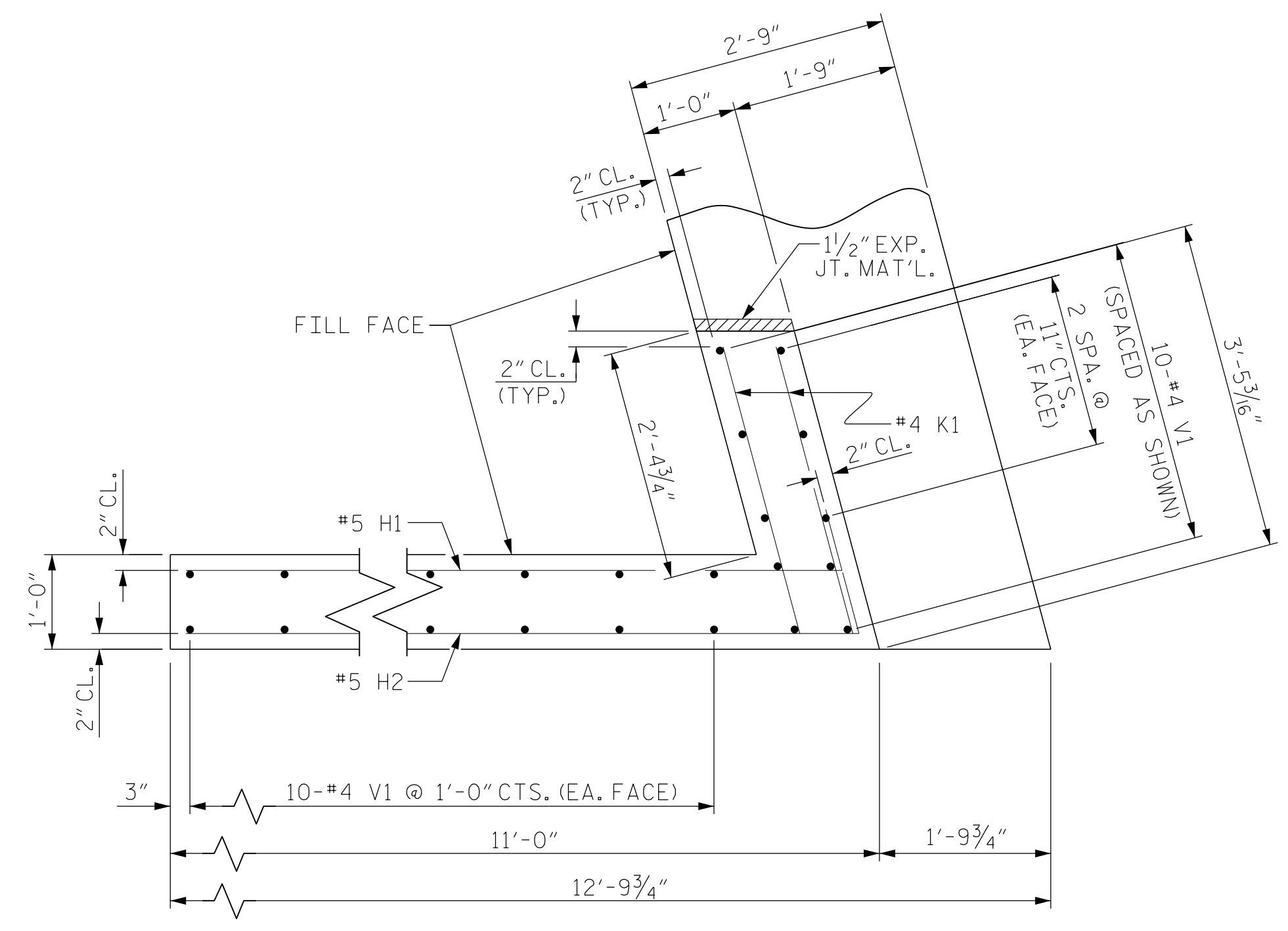
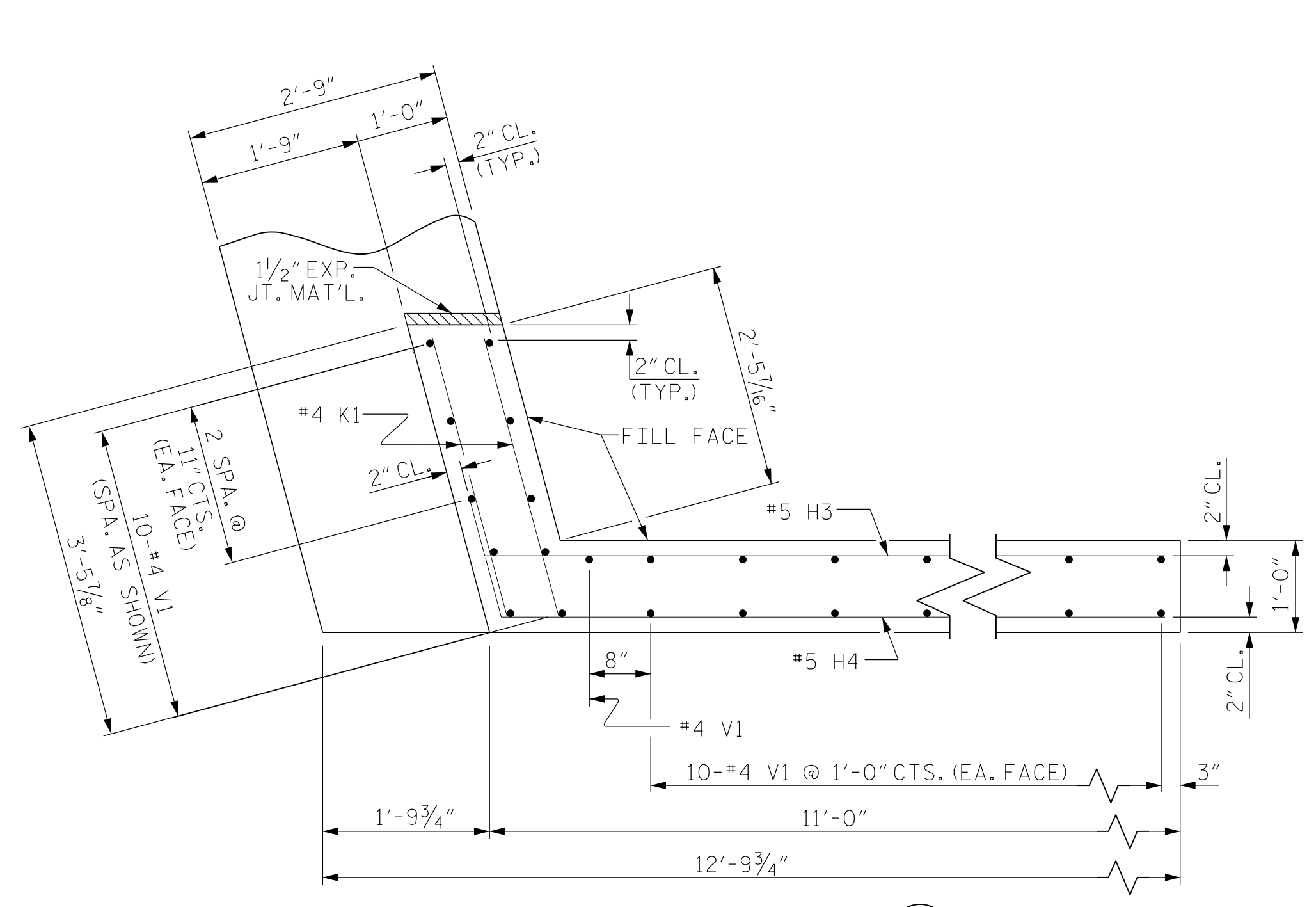
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STANDARD SUBSTRUCTURE END BENT No. 2					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 21

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ASSEMBLED BY : HASSFOURA	DATE : 11/14
CHECKED BY : P. JACOB	DATE : 11/14
DRAWN BY : WJH 12/11	REV. 8/14
CHECKED BY : AAC 12/11	MAA/TMG



ELEVATION OF WING (W1)

ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. 17BP.5.R.56
 WARREN COUNTY
 STATION: 15+60.00 -L-
 SHEET 3 OF 4



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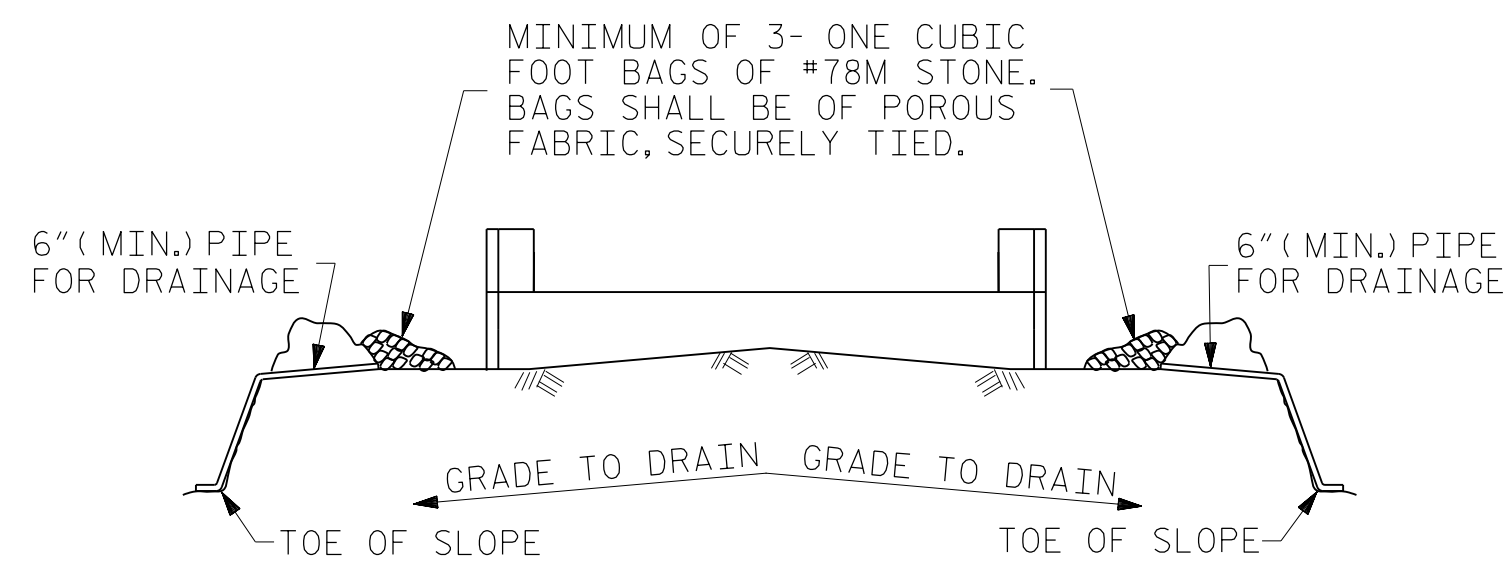
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STANDARD SUBSTRUCTURE END BENT WING DETAILS					
REVISIONS					
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1			3		
2			4		
SHEET NO. S-15					TOTAL SHEETS 21

3/8/2016
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ASSEMBLED BY : H.ASSEFOURA	DATE : 11/14
CHECKED BY : P.JACOB	DATE : 11/14
DRAWN BY : WJH 12/11	REV. 8/14
CHECKED BY : AAC 12/11	MAA/TMG

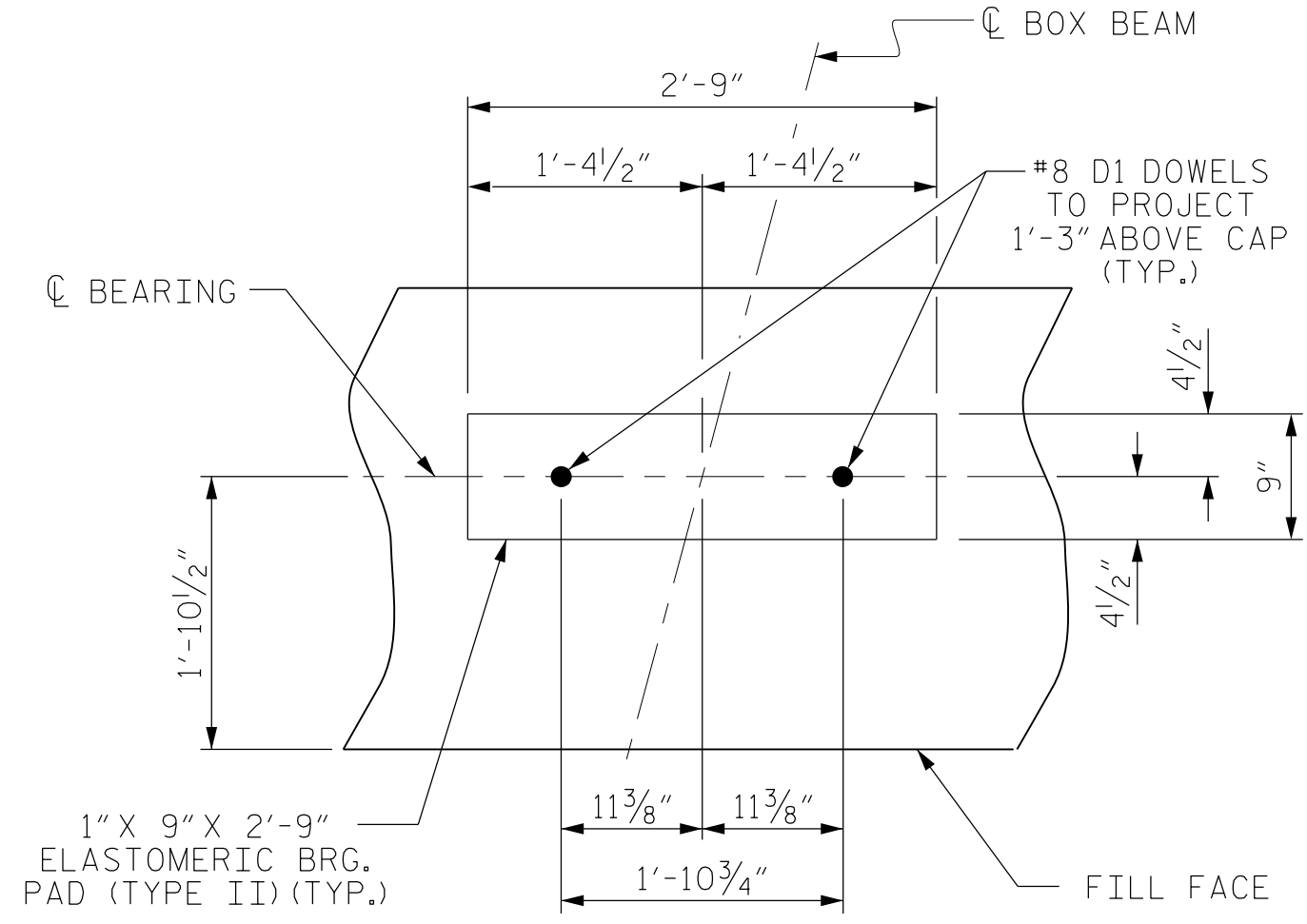


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

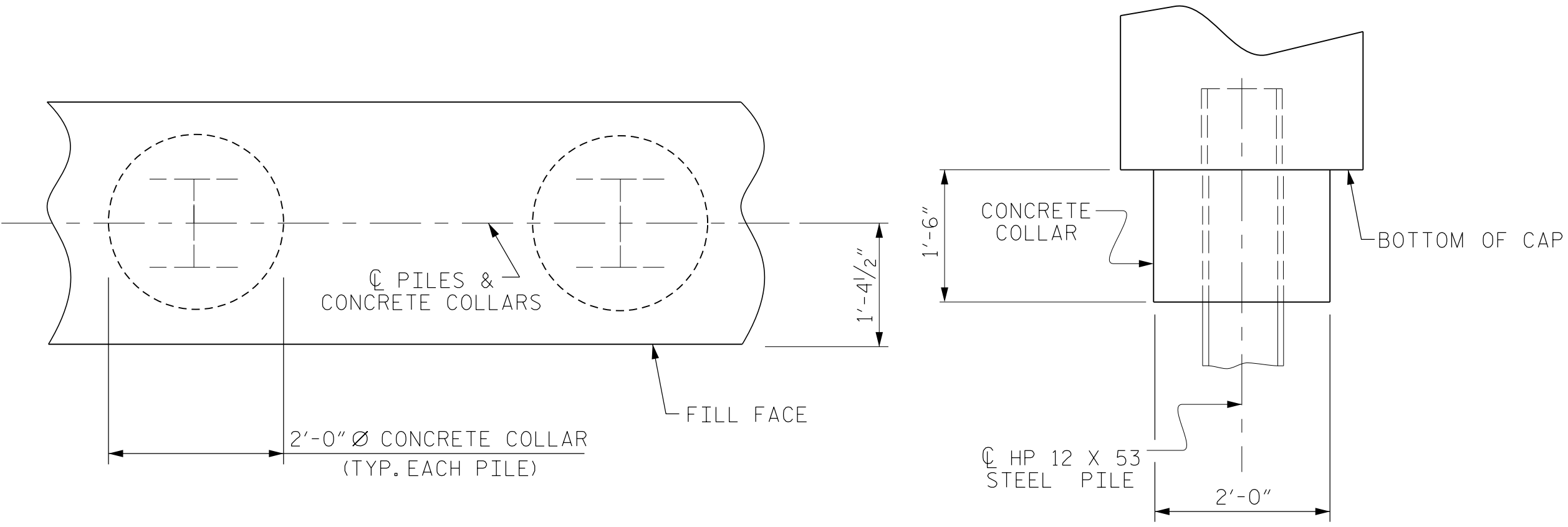
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



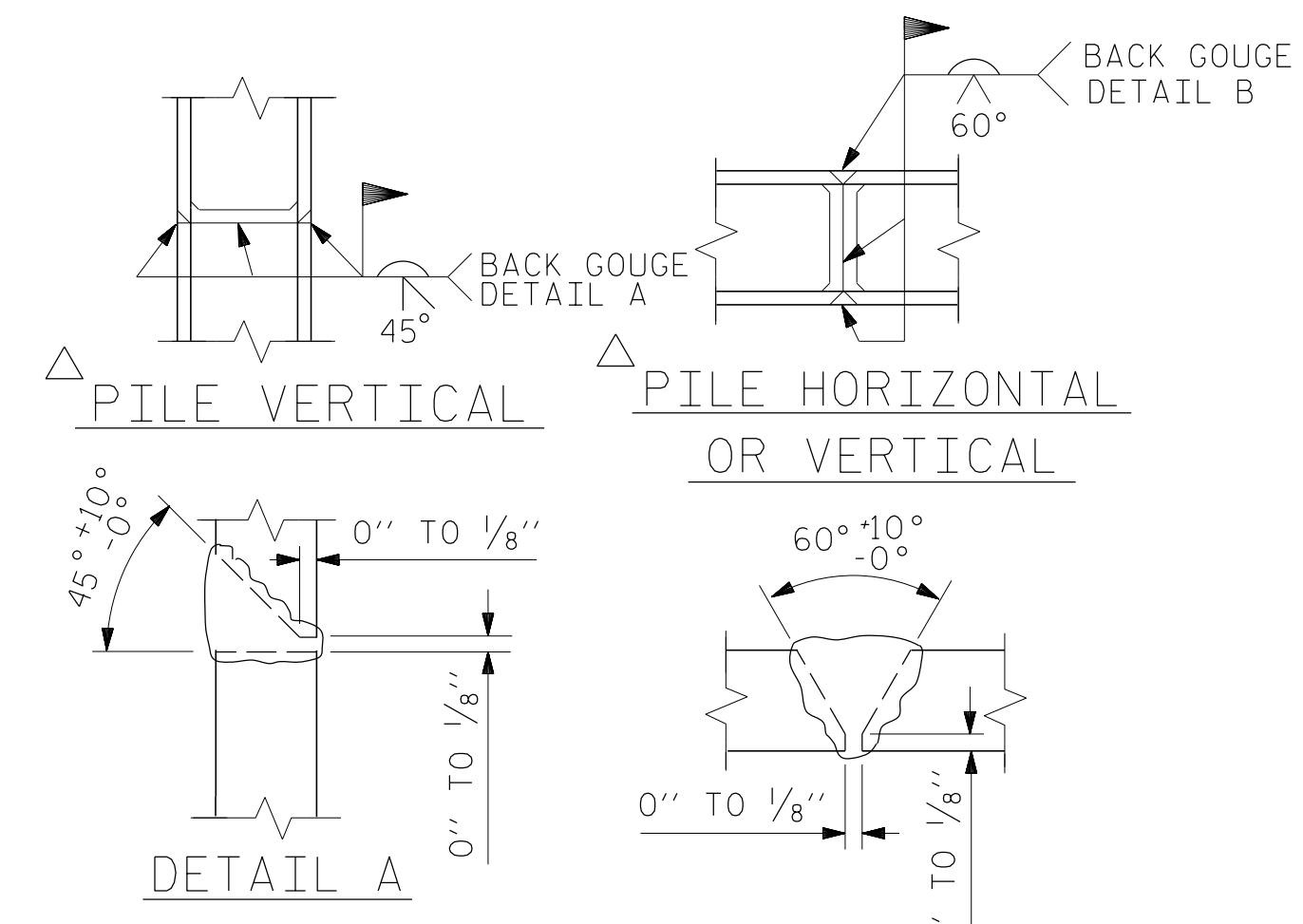
DETAIL "A"

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



CORROSION PROTECTION FOR STEEL PILES DETAIL

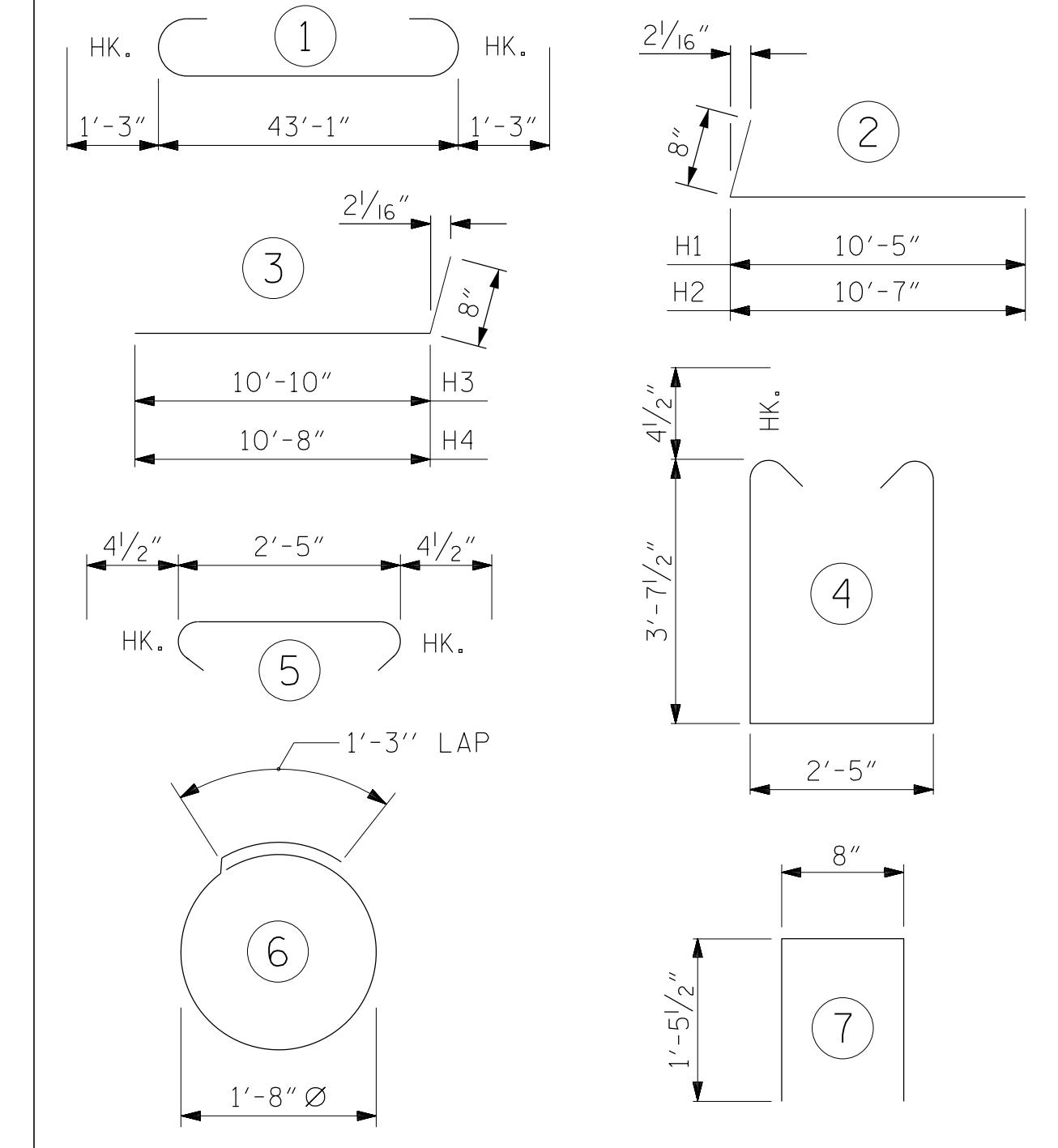
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



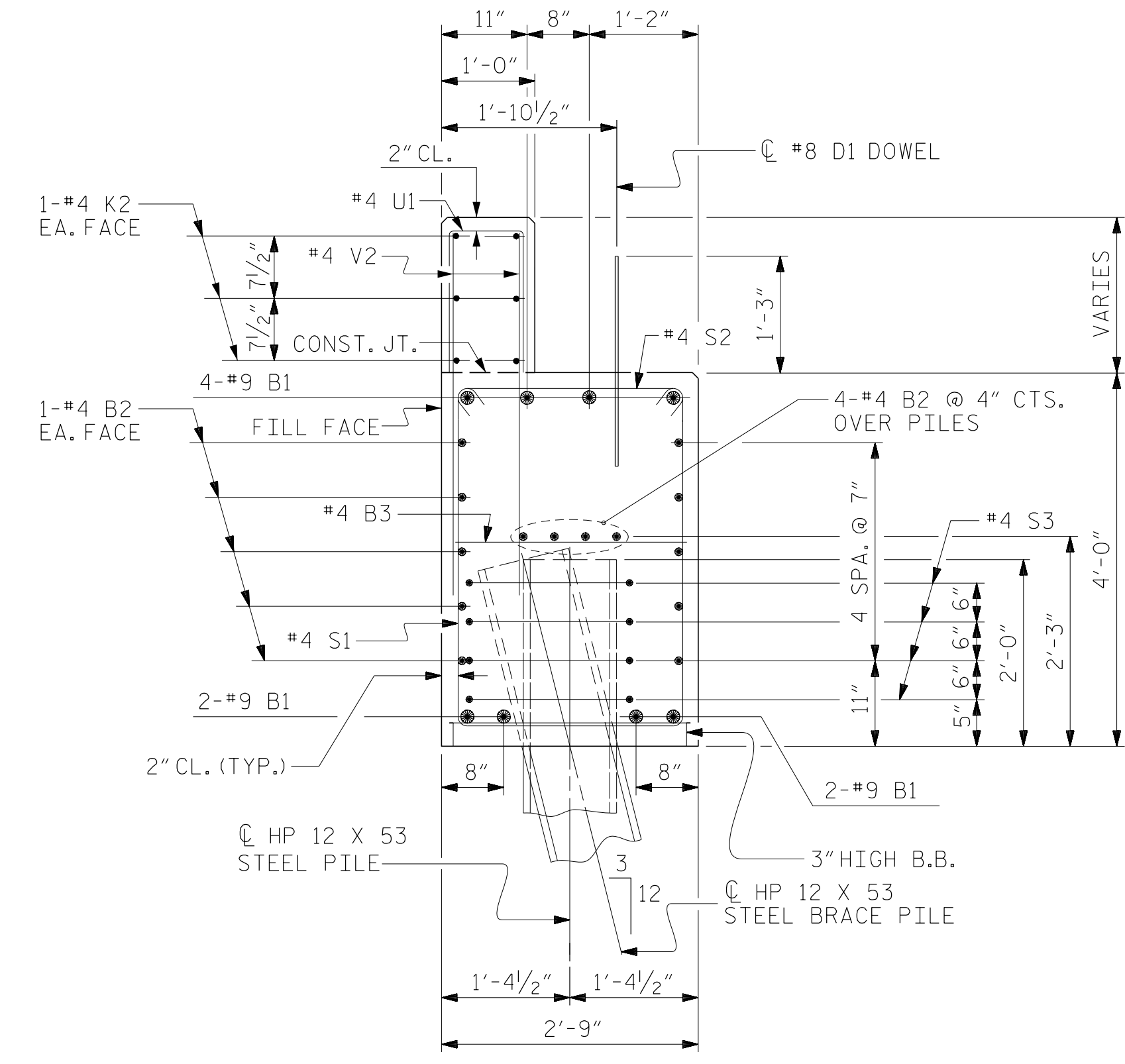
POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BILL OF MATERIAL FOR ONE END BENT					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	45'-7"	1240
B2	28	#4	STR	22'-10"	427
B3	11	#4	STR	2'-5"	18
D1	24	#8	STR	2'-3"	144
H1	12	#5	2	11'-1"	139
H2	12	#5	2	11'-3"	141
H3	12	#5	3	11'-6"	144
H4	12	#5	3	11'-4"	142
K1	12	#4	STR	3'-1"	25
K2	12	#4	STR	22'-10"	183
S1	58	#4	4	10'-5"	404
S2	58	#4	5	3'-2"	123
S3	28	#4	6	6'-6"	122
U1	37	#4	7	3'-7"	89
V1	61	#4	STR	7'-1"	289
V2	74	#4	STR	5'-3"	260
REINFORCING STEEL (FOR ONE END BENT)				3890 LBS.	
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				22.0 C.Y.	
POUR #2 BACKWALL & UPPER PART OF WINGS				6.3 C.Y.	
TOTAL CLASS A CONCRETE				28.3 C.Y.	



END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES
NO: 7	NO: 7
STEEL PILE POINTS	STEEL PILE POINTS
LIN. FT. = 122.5	LIN. FT. = 105
NO: 7	NO: 7



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



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WARREN COUNTY
STATION: 15+60.00 -L-
SHEET 4 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION					
STANDARD SUBSTRUCTURE					
END BENT No. 1 & 2 DETAILS					
REVISIONS					
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1			3		
2			4		

SHEET NO. S-16
TOTAL SHEETS 21

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ASSEMBLED BY: H. ASSFOURA	DATE: 11/14
CHECKED BY: P. JACOB	DATE: 11/14
DRAWN BY: WJH	12/11
CHECKED BY: AAC	12/11
REV. 8/14	MAA/TMG

NOTES

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

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

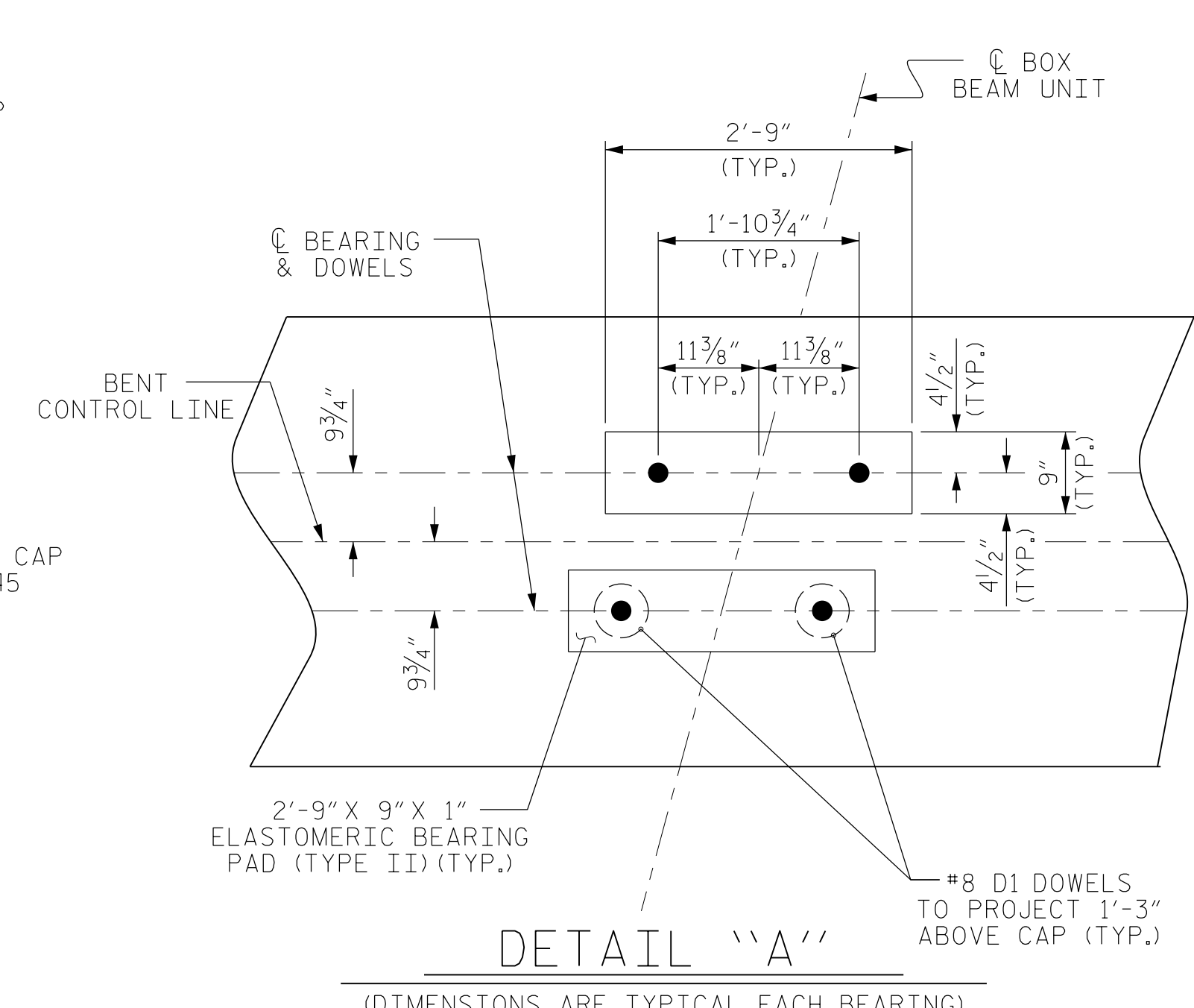
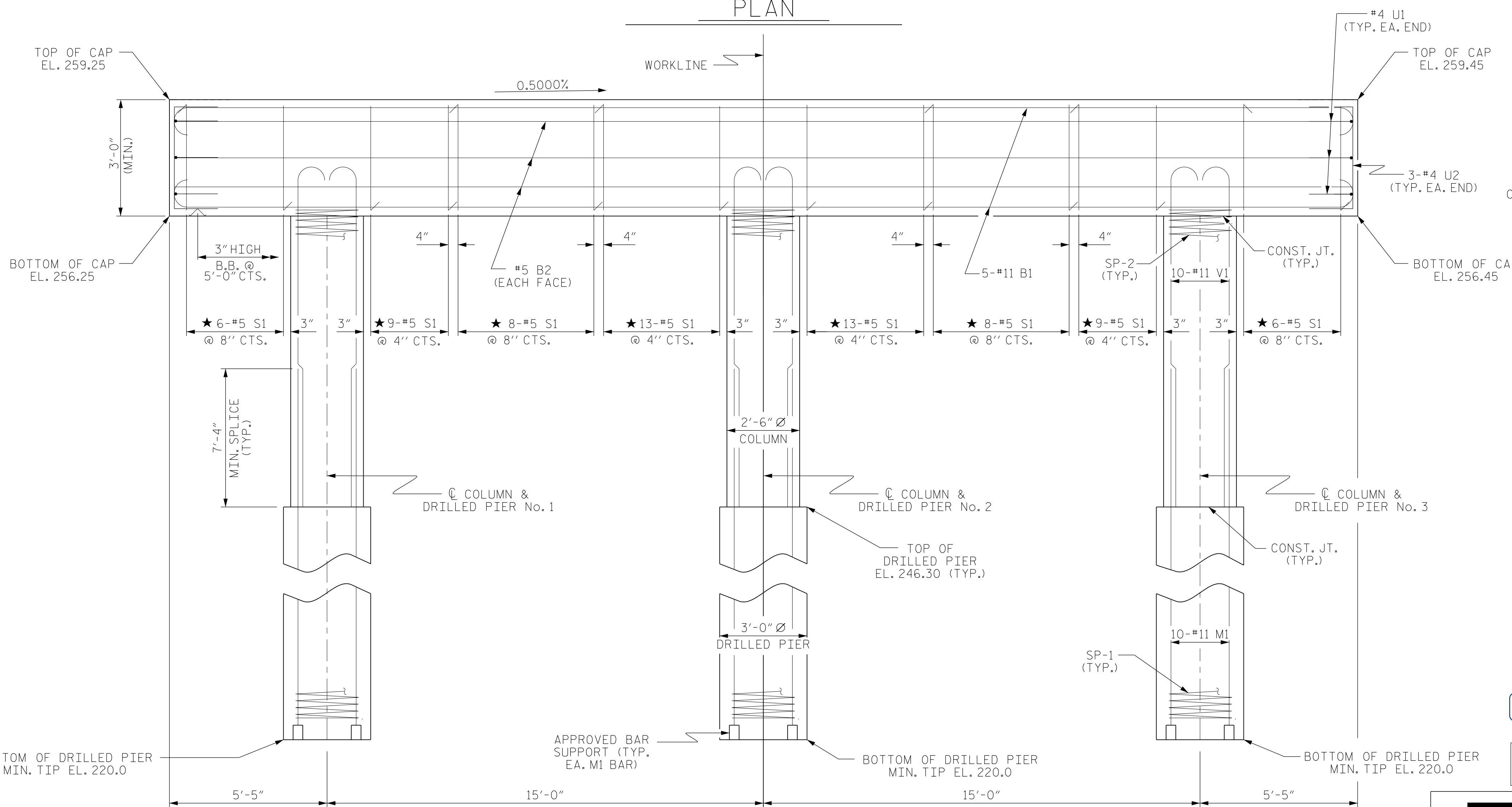
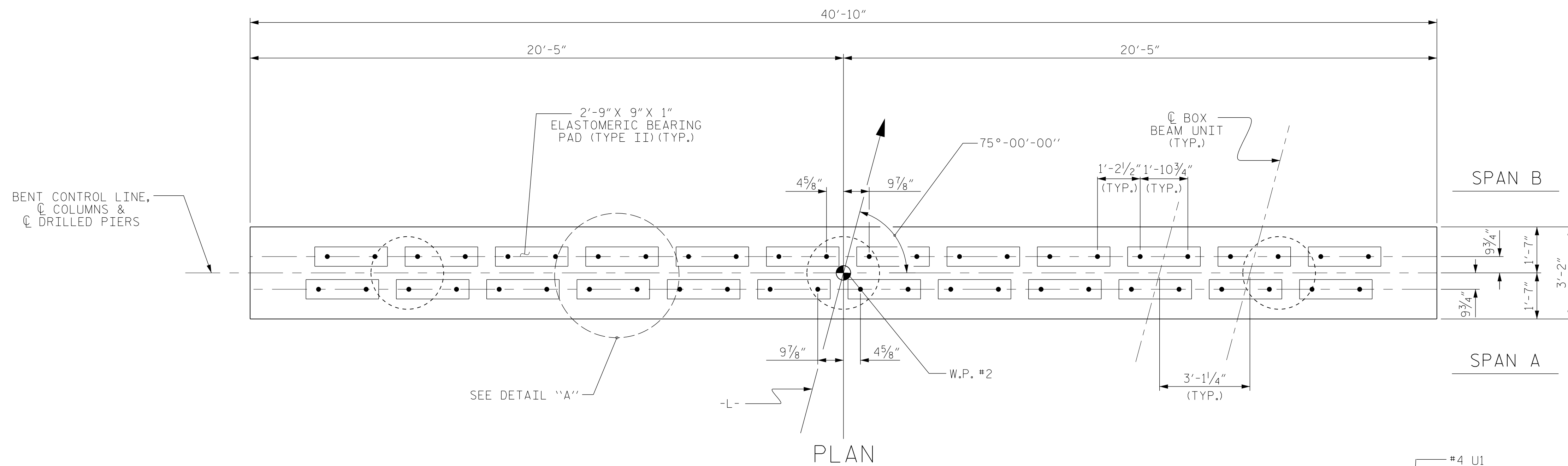
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★INVERT ALTERNATE STIRRUPS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



PROJECT NO. 17BP.5.R.56

WARREN COUNTY

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SHEET 1 OF 2



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RALEIGH

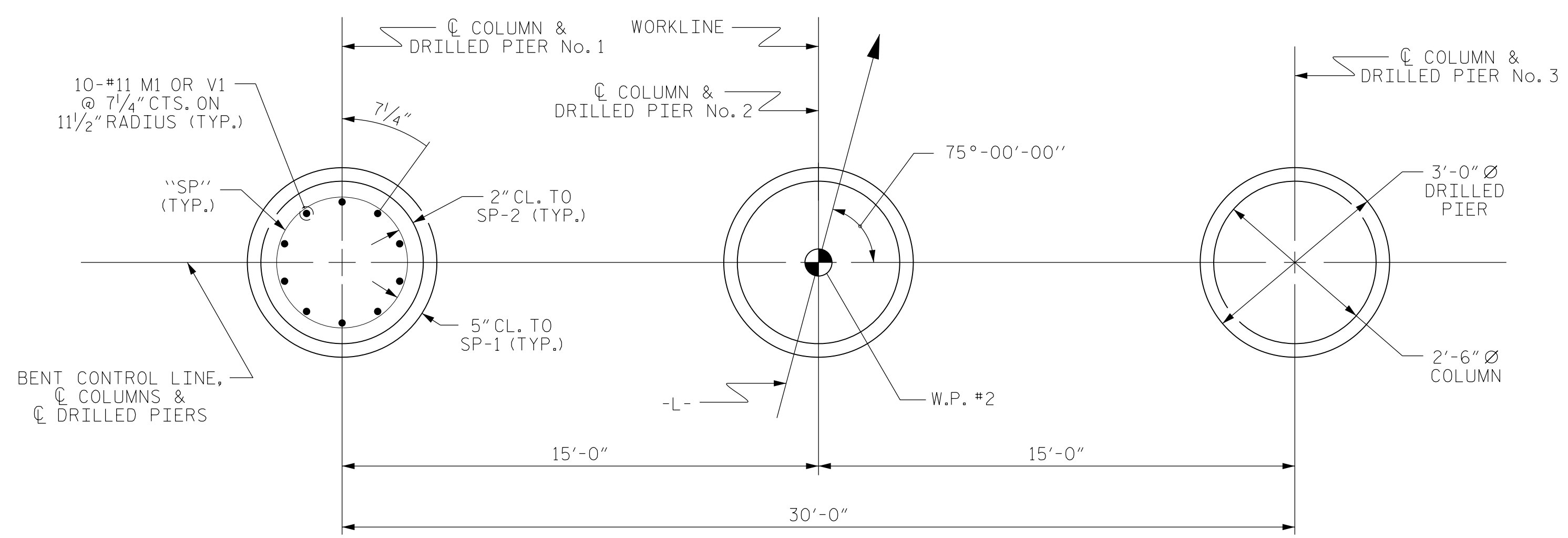
SUBSTRUCTURE
BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			21

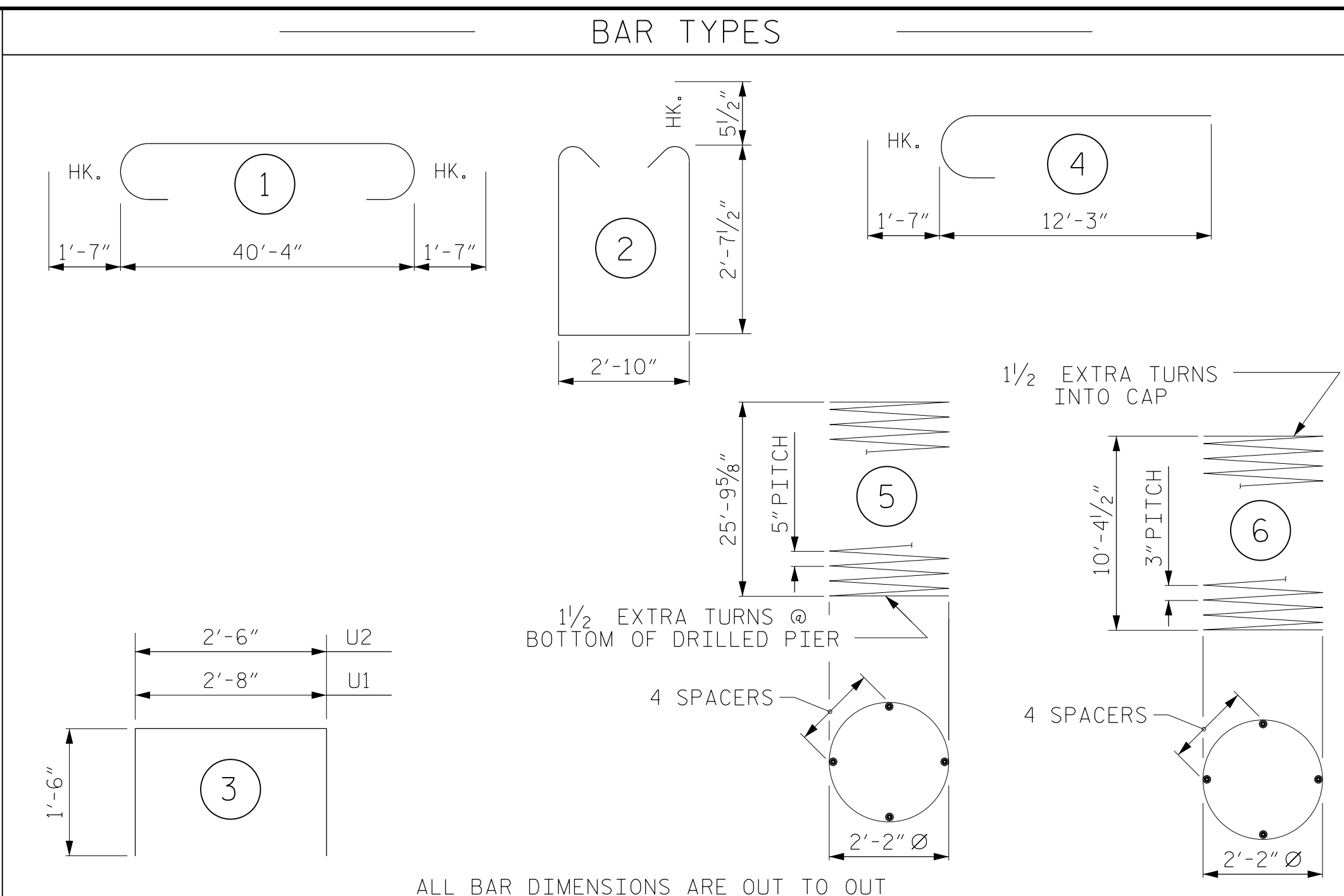
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DRAWN BY: H.ASSFOURA DATE: 11/14
CHECKED BY: P.JACOB DATE: 11/14
DESIGN ENGINEER OF RECORD: D.RUGGLES DATE: 11/15

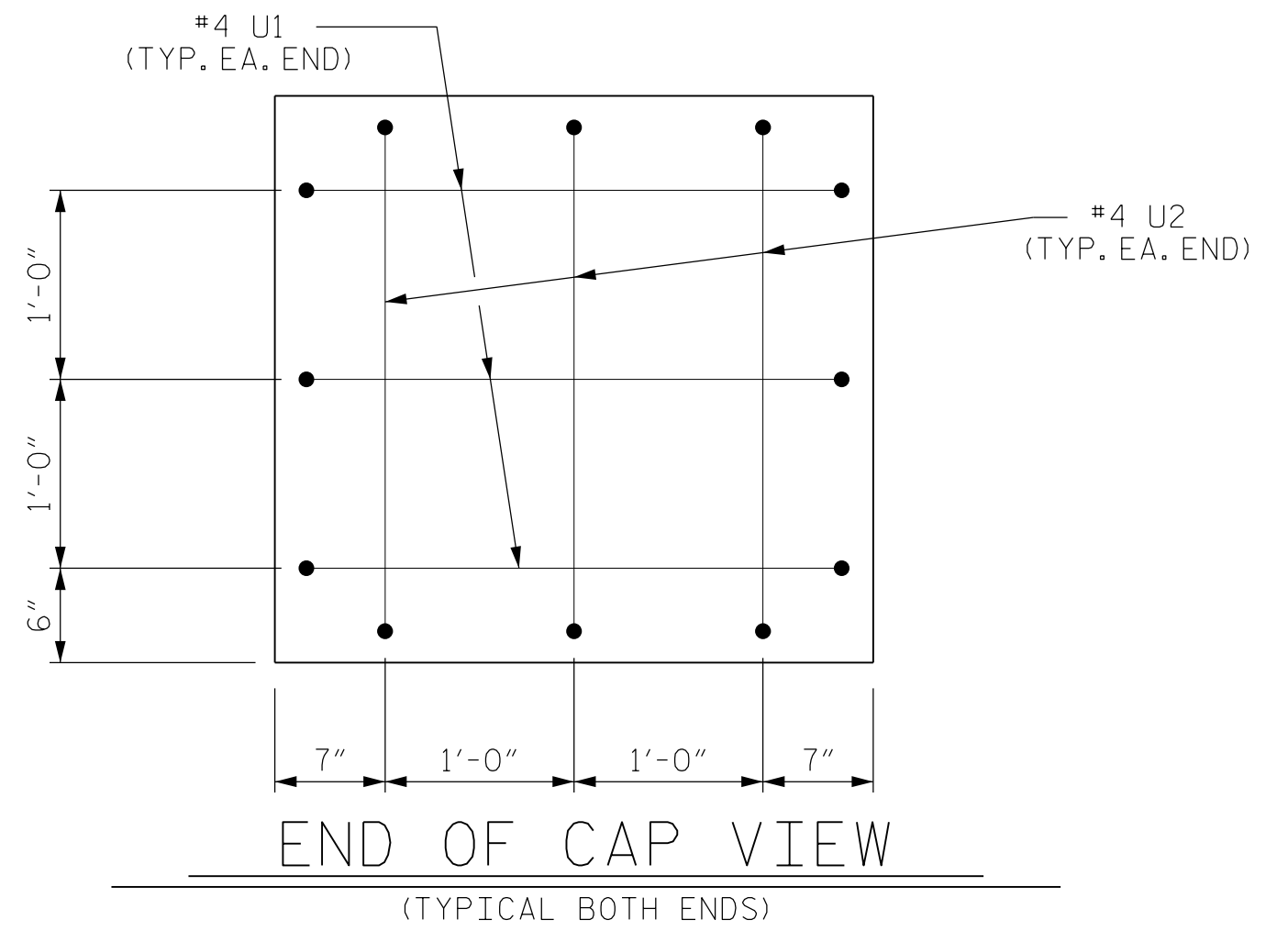
ELEVATION
DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.



PLAN OF DRILLED PIERS & COLUMNS



ALL BAR DIMENSIONS ARE OUT TO OUT



END OF CAP VIEW
(TYPICAL BOTH ENDS)

BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	43'-6"	2311
B2	6	#5	STR	40'-6"	253
D1	48	#8	STR	2'-3"	288
M1	30	#11	STR	36'-2"	5765
S1	72	#5	2	9'-0"	676
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22
V1	30	#11	4	13'-10"	2205

REINFORCING STEEL (FOR ONE BENT) 11543 LBS.

SP-1	3	*	5	422'-2"	1321
SP-2	3	**	6	287'-2"	575

SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT) 1896 LBS.

* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR
 ** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)	
POUR #2 (COLUMNS)	5.5 C.Y.
POUR #3 (CAP)	14.4 C.Y.
TOTAL CLASS A CONCRETE	19.9 C.Y.

DRILLED PIERS: (FOR ONE BENT)	
DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	20.7 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL	29 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL	50 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	49 LIN. FT.
CSL TUBES	333.6 LIN. FT.

	"X"
COLUMN 1	9'-11 3/4"
COLUMN 2	10'-0 5/8"
COLUMN 3	10'-1 1/2"

PROJECT NO. 17BP.5.R.56
 WARREN COUNTY
 STATION: 15+60.00 -L-
 SHEET 2 OF 2

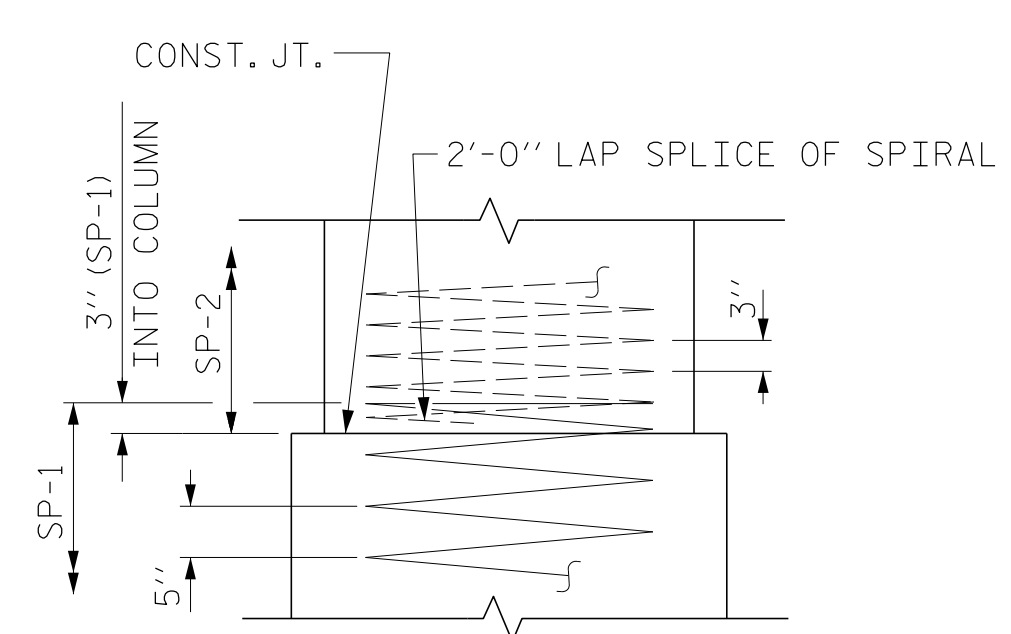
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



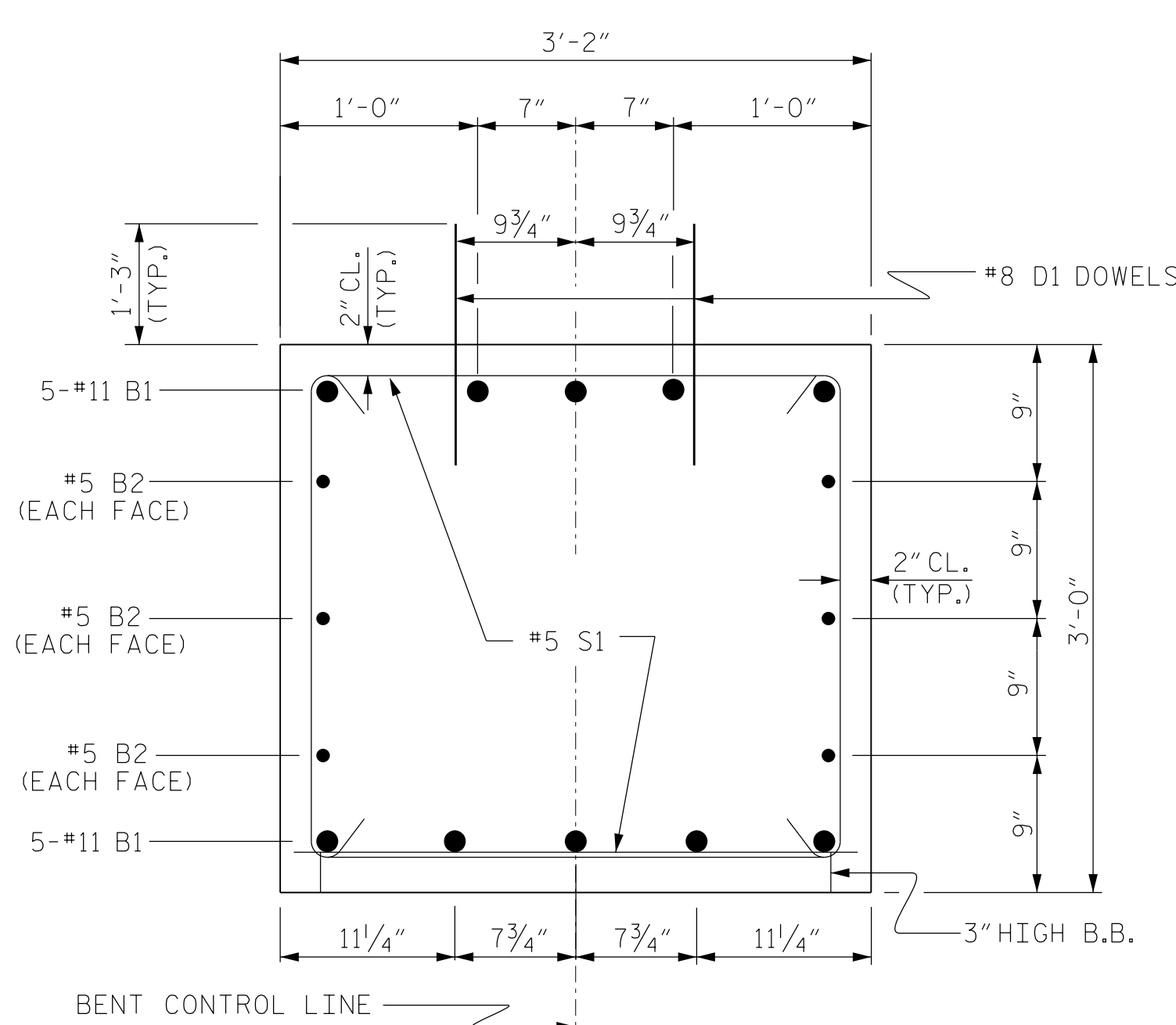
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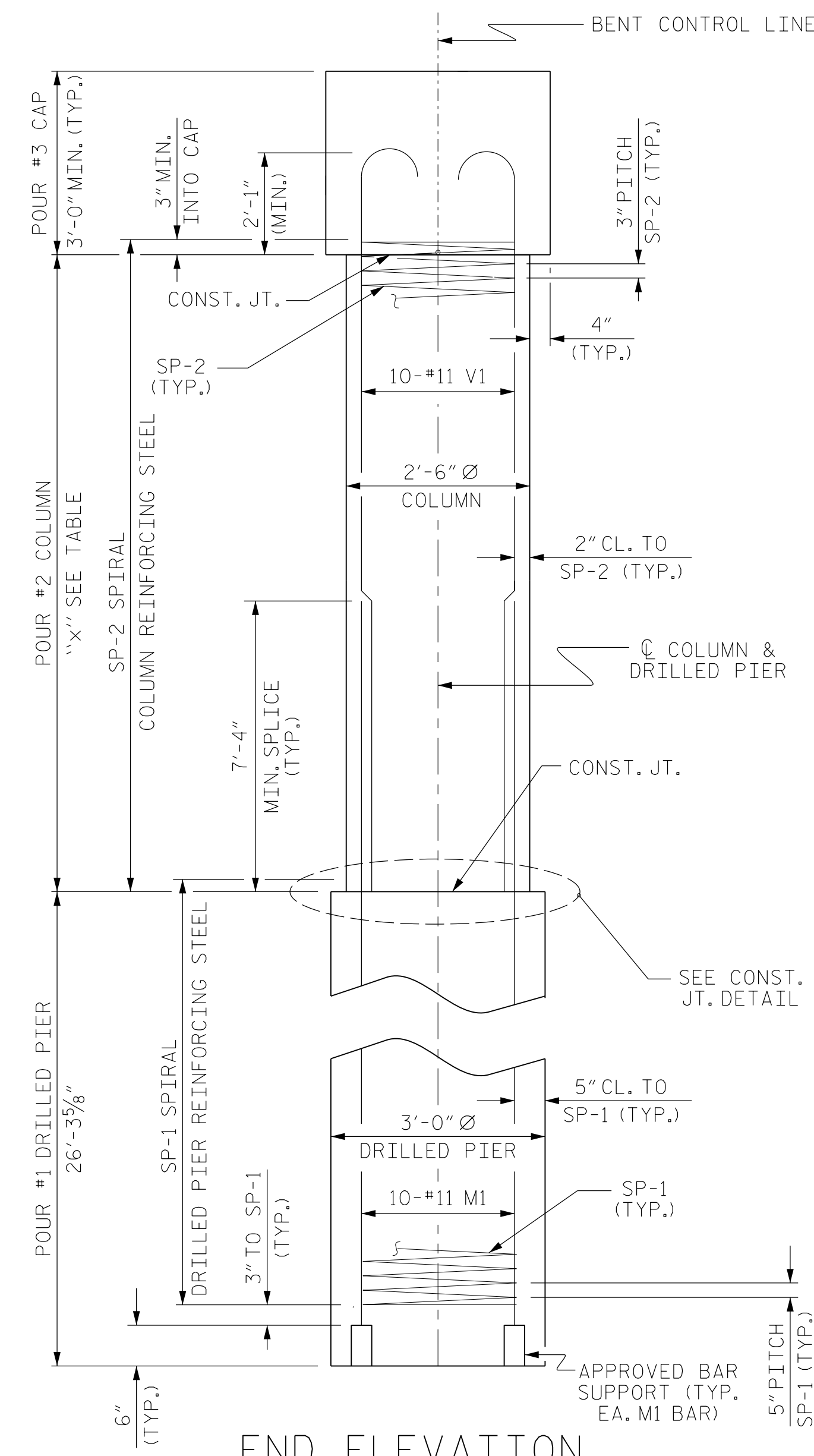
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CONSTRUCTION JOINT DETAIL



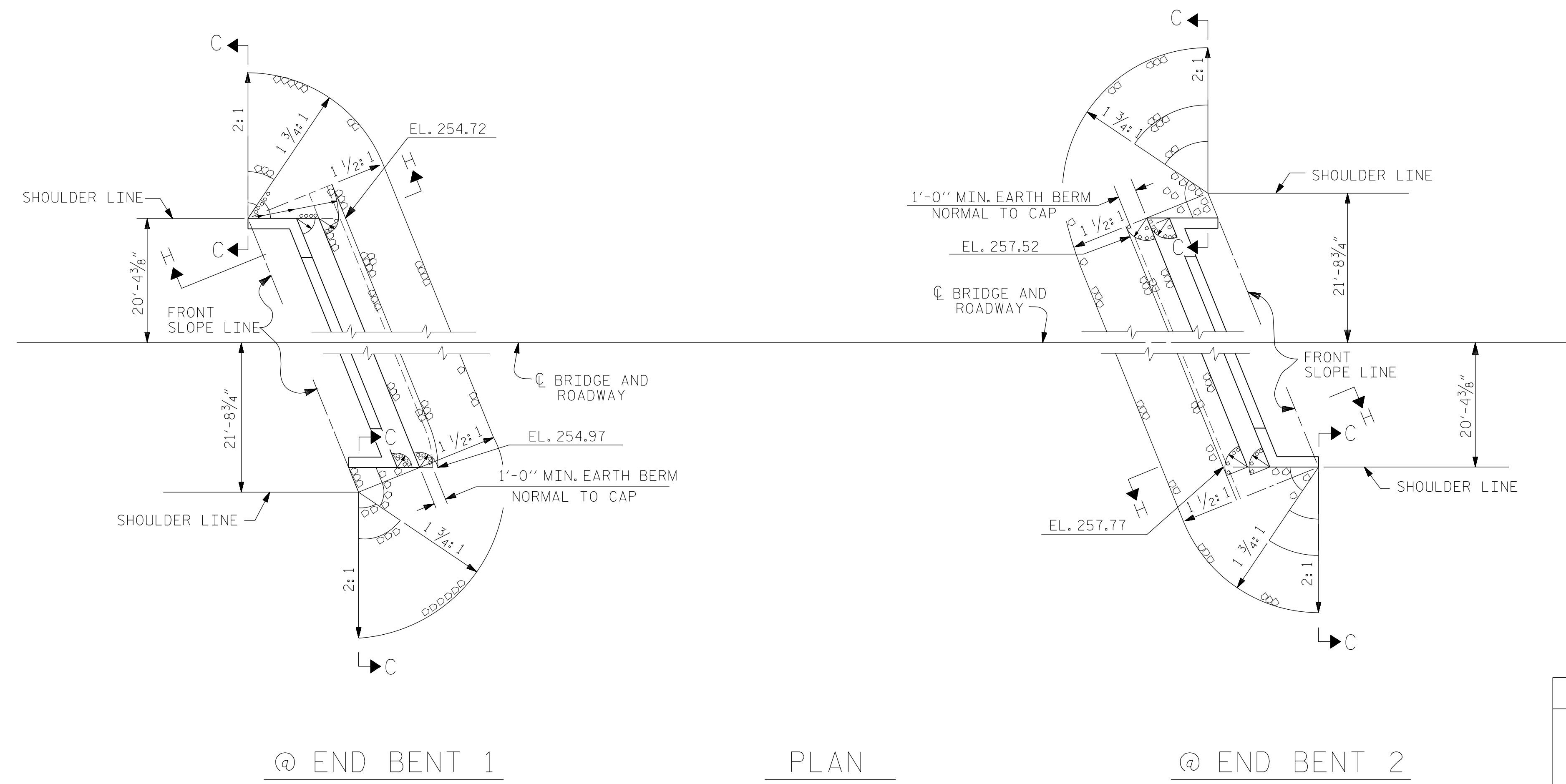
SECTION THRU CAP



END ELEVATION

DRAWN BY: H.ASSFOURA	DATE: 11/14
CHECKED BY: P.JACOB	DATE: 11/14
DESIGN ENGINEER OF RECORD: D.RUGGLES	DATE: 11/15

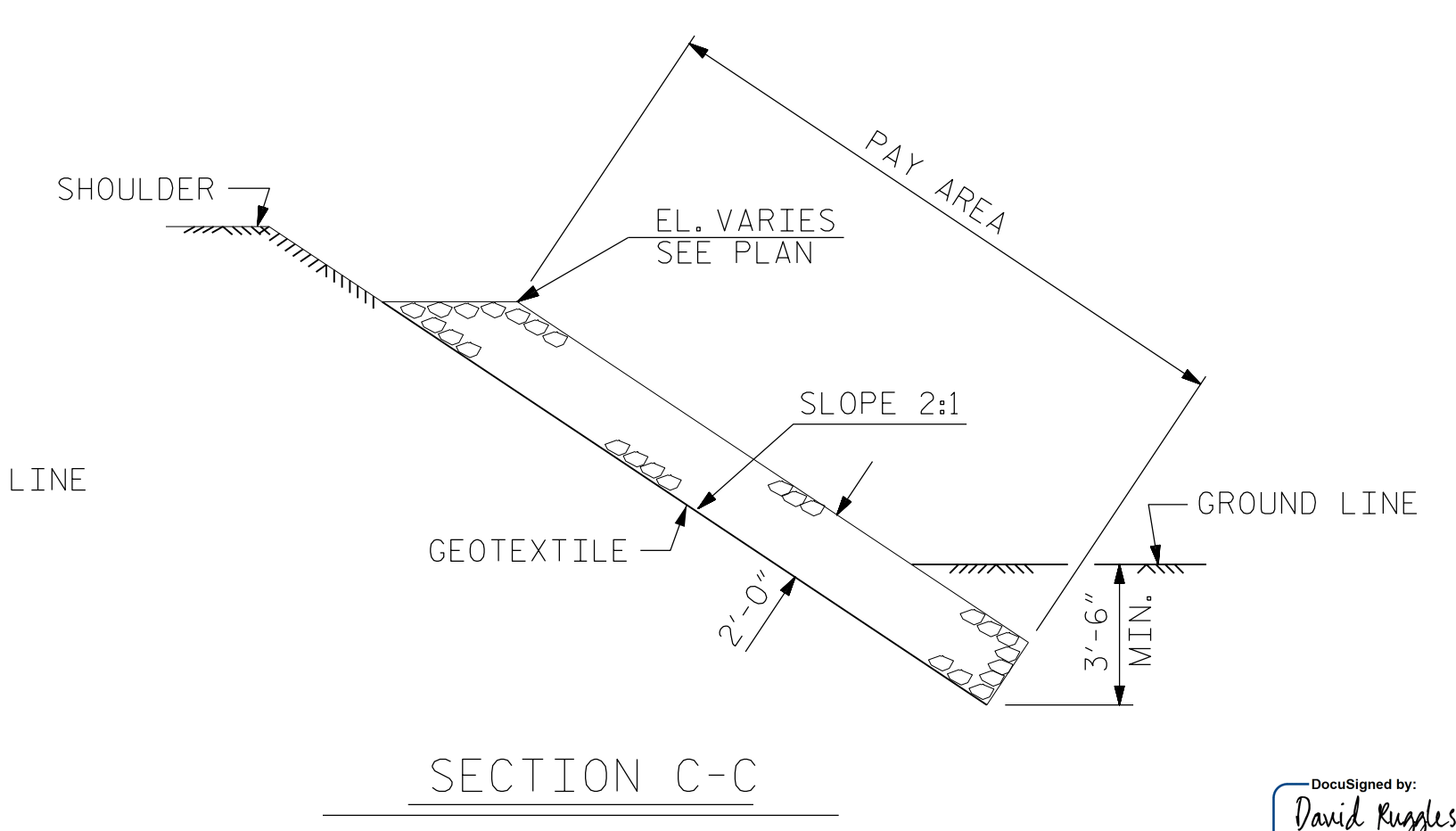
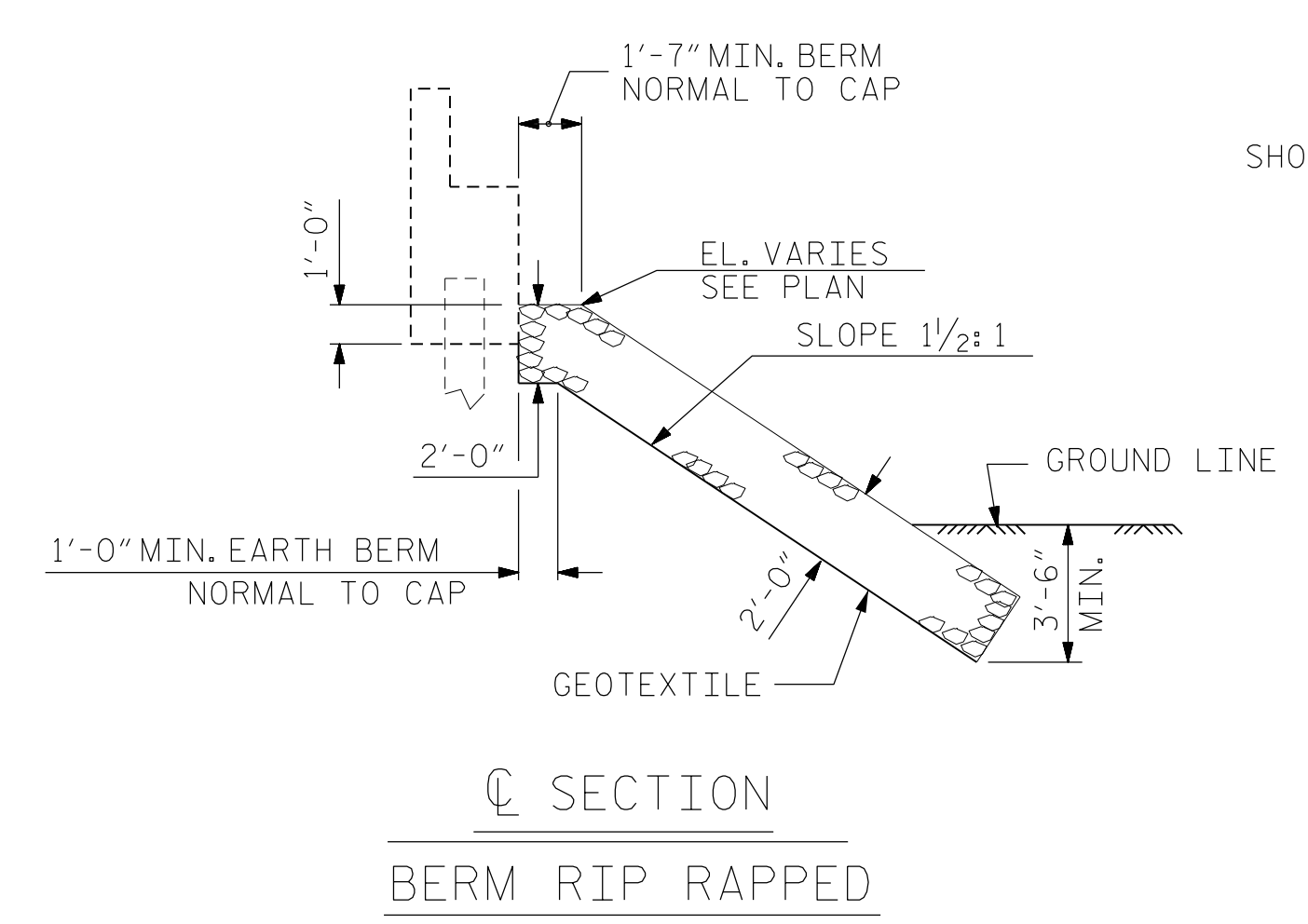
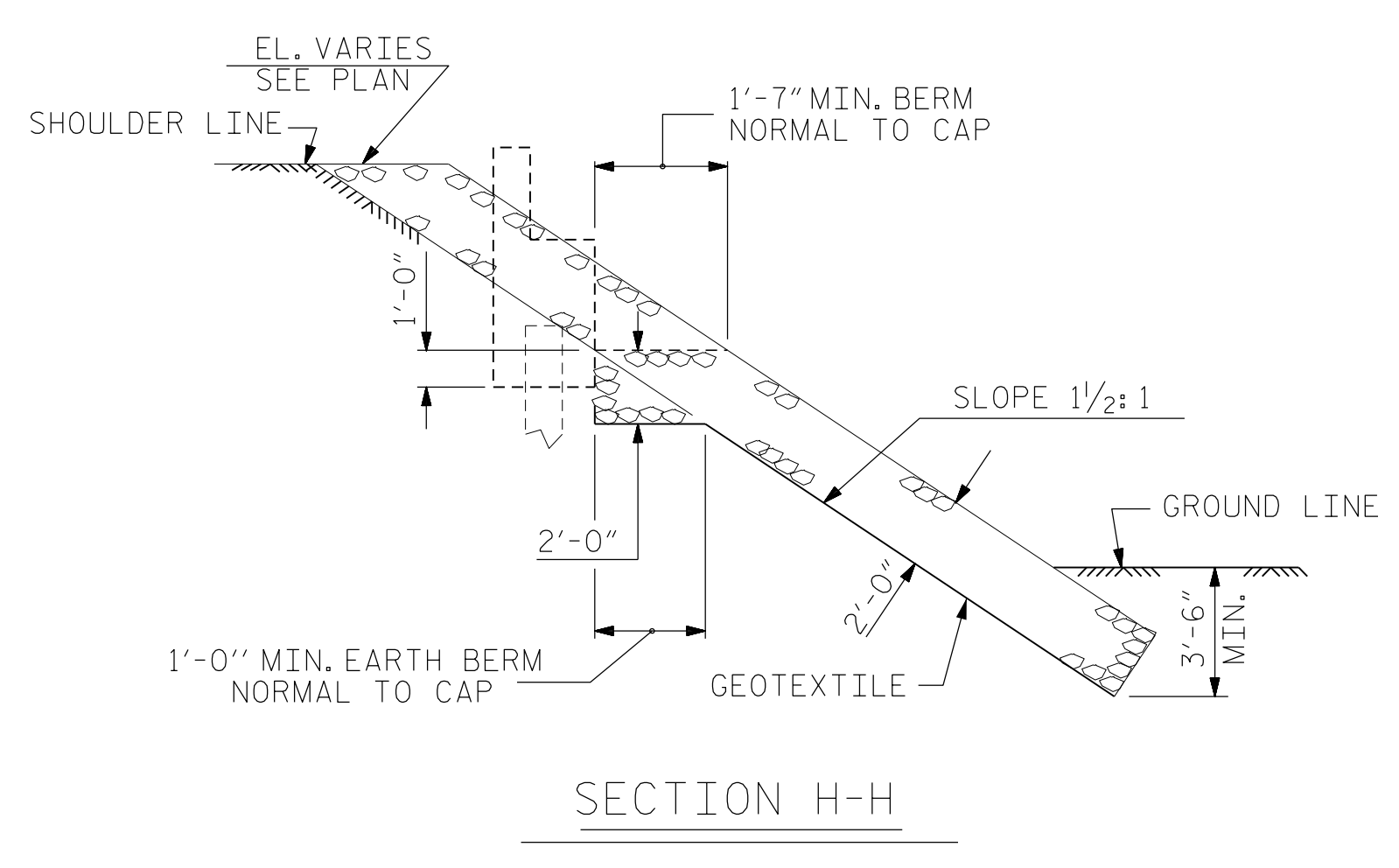
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 USER: jloftus



NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

ESTIMATED QUANTITIES		
BRIDGE @ STA. 15+60.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	171	190
END BENT 2	207	230
BANK STAB. - END BENT 2	* 120	* 130

* SEE GENERAL PLAN DWG FOR LIMITS OF BANK STABILIZATION CLASS II RIP RAP



PROJECT NO. 17BP.5.R.56
WARREN COUNTY
STATION: 15+60.00 -L-



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David Ruggies
C462788DF412422
3/25/2016
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

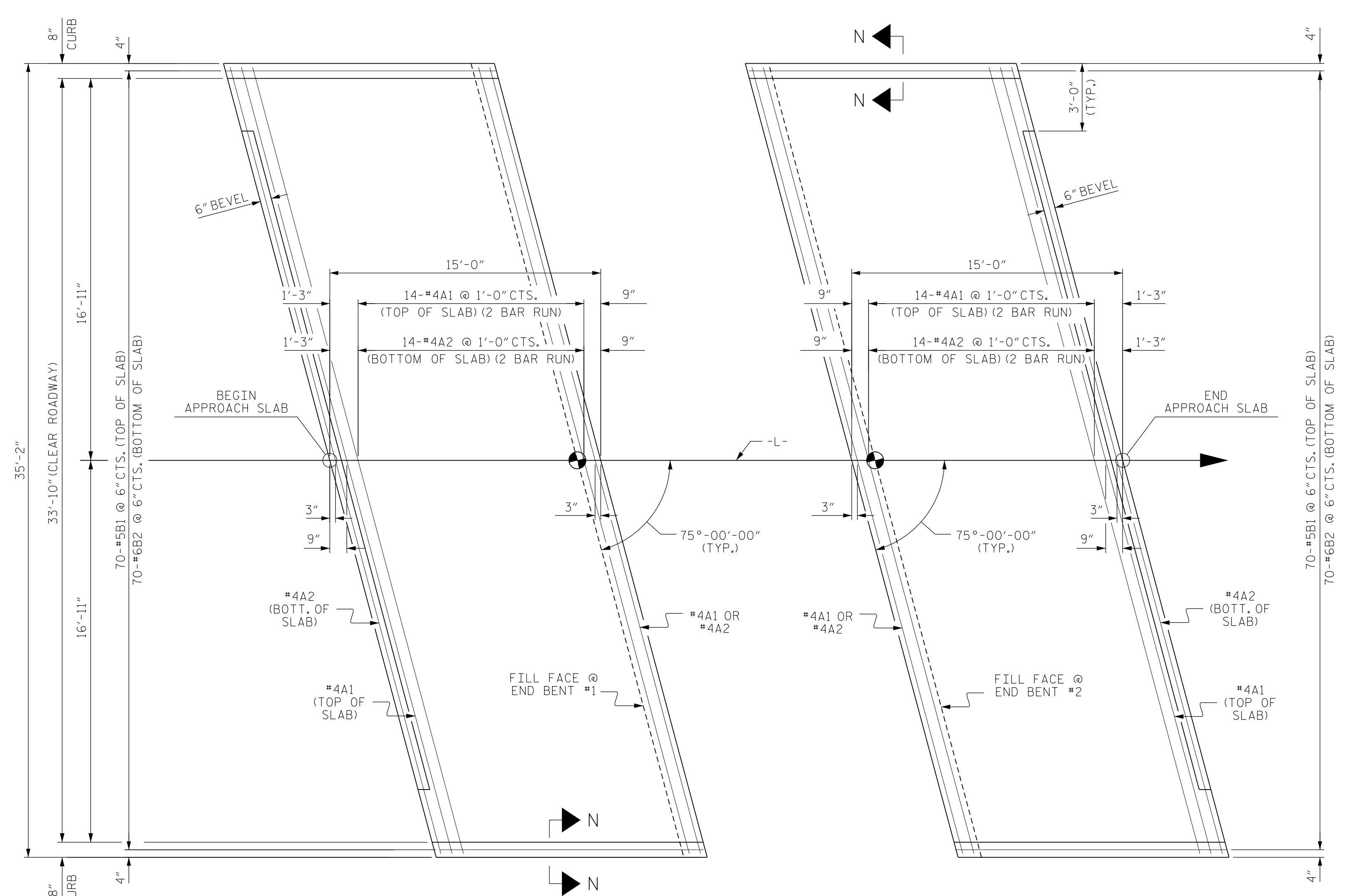
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RIP RAP DETAILS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			21

3/8/2016
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USER: jloftus

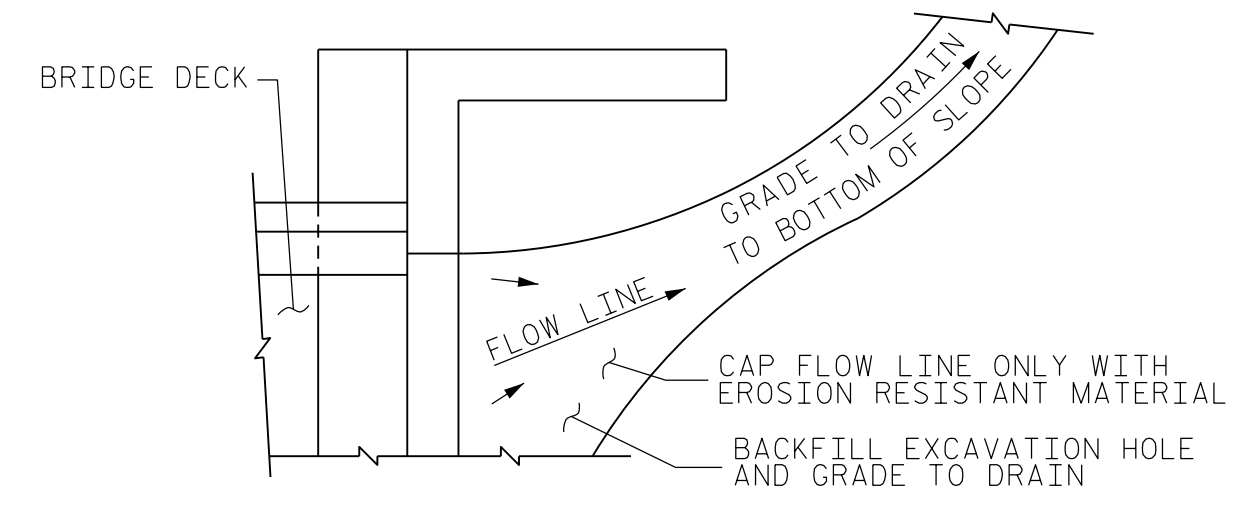
ASSEMBLED BY : HASSFOURA	DATE : 11/14
CHECKED BY : P. JACOB	DATE : 11/14
DRAWN BY : REK 1/84	REV. 5/1/06R TLA/GM
CHECKED BY : RDU 1/84	REV. 10/1/11 MAA/GM
	REV. 12/21/11 MAA/GM



PLAN @ END BENT #1
 PLAN @ END BENT #2
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

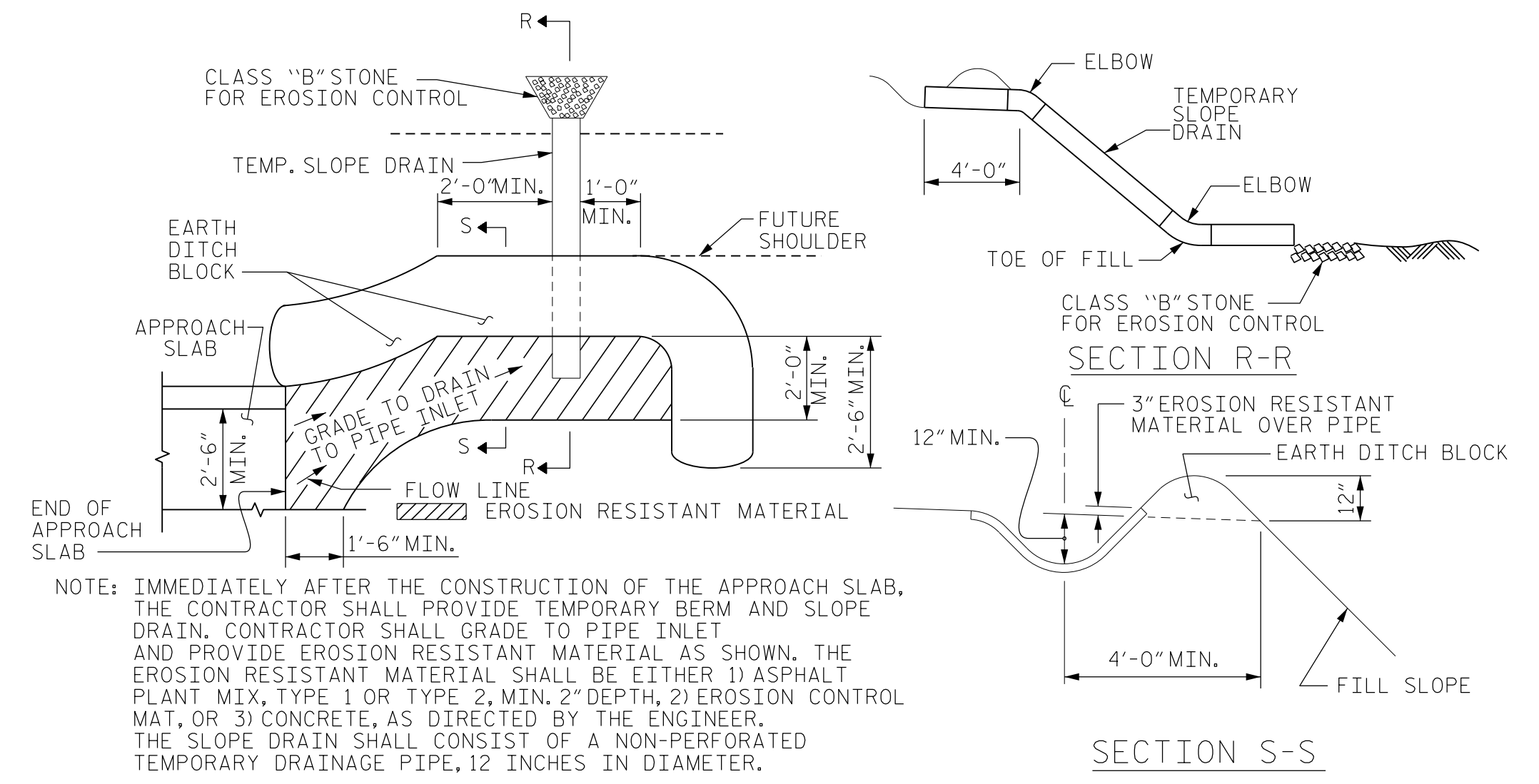
NOTES

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.
 AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
 APPROACH SLAB GROOVING IS NOT REQUIRED.



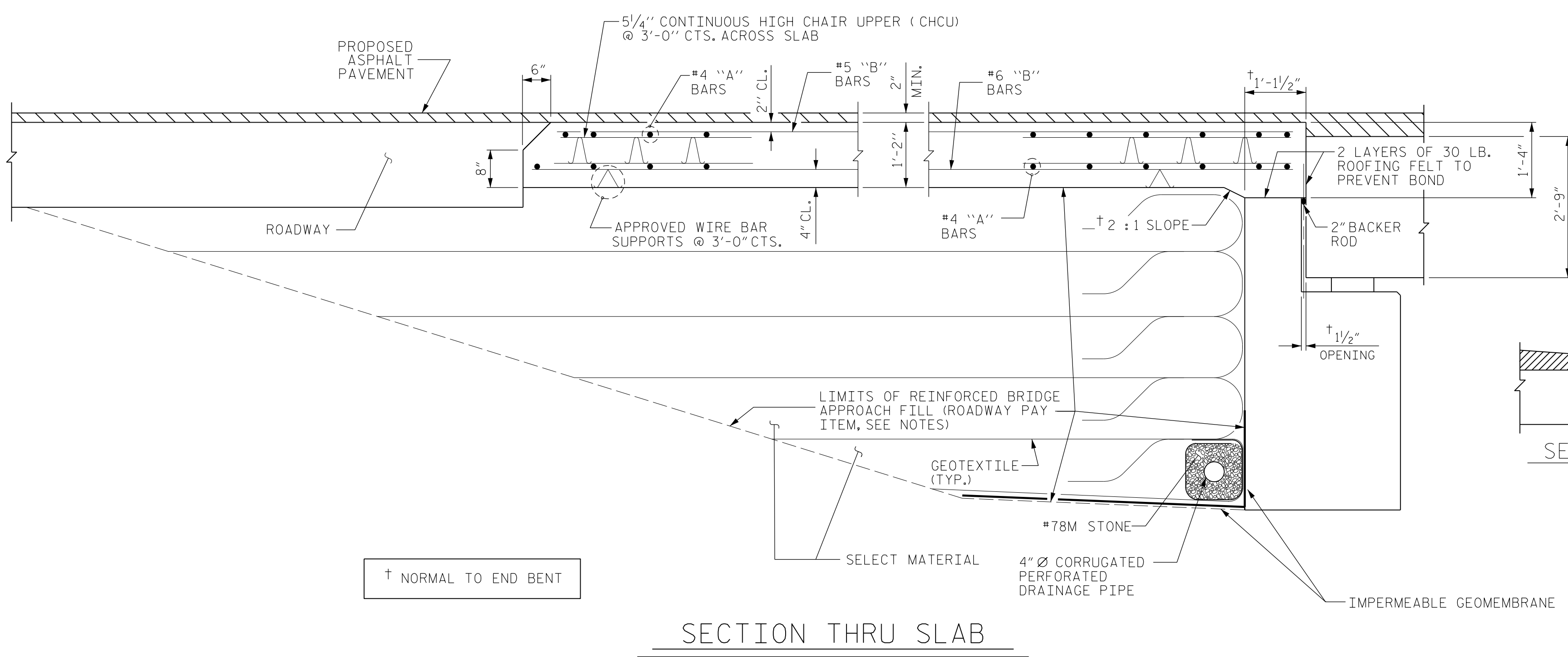
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

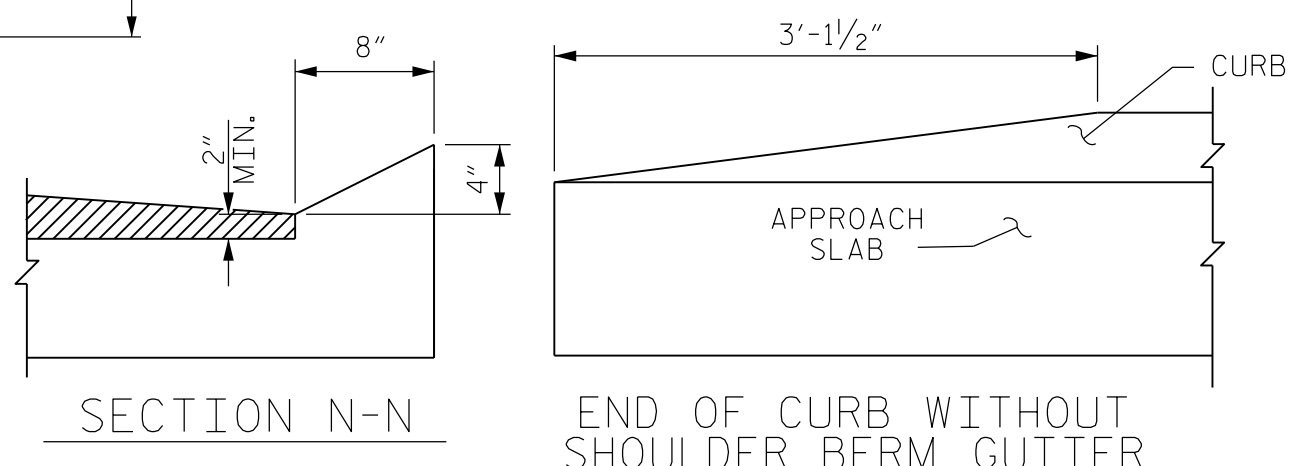


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

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

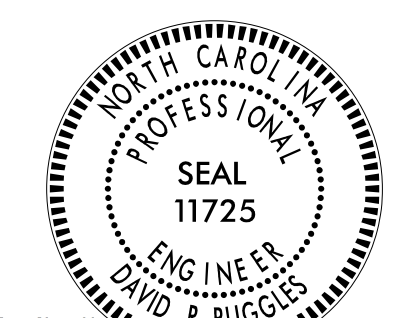


SECTION THRU SLAB

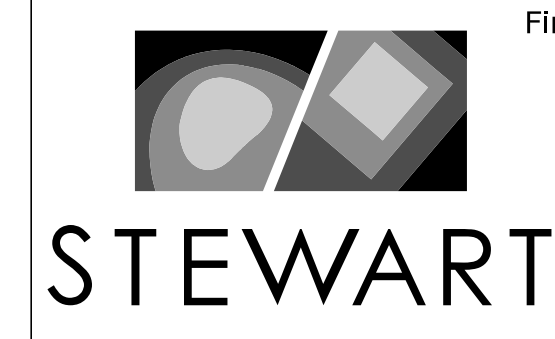


CURB DETAILS

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



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 David Ruggles
 3/25/2016
 DOCUMENT NO. 17BP.5.R.56
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BILL OF MATERIAL						
APPROACH SLAB AT EB #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	32	#4	STR	19'-1"	408	
A2	32	#4	STR	18'-11"	404	
*B1	70	#5	STR	14'-1"	1028	
B2	70	#6	STR	14'-7"	1533	
REINFORCING STEEL					LBS.	1937
*EPOXY COATED REINFORCING STEEL					LBS.	1436
CLASS AA CONCRETE					C. Y.	23.4
APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	32	#4	STR	19'-1"	408	
A2	32	#4	STR	18'-11"	404	
*B1	70	#5	STR	14'-1"	1028	
B2	70	#6	STR	14'-7"	1533	
REINFORCING STEEL					LBS.	1937
*EPOXY COATED REINFORCING STEEL					LBS.	1436
CLASS AA CONCRETE					C. Y.	23.4

PROJECT NO. 17BP.5.R.56
 WARREN COUNTY
 STATION: 15+60.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 BOX BEAM UNIT
 75° SKEW

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

SHEET NO. S-20
 TOTAL SHEETS 21

3/8/2016
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 USER: jloftus
 DRAWN BY: J. LOFTUS DATE: 01/16
 CHECKED BY: J. LOFTUS DATE: 01/16
 DESIGN ENGINEER OF RECORD: D. RUGGLES DATE: 01/16

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

SPECIAL NOTES:

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

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NOTES					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					21

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