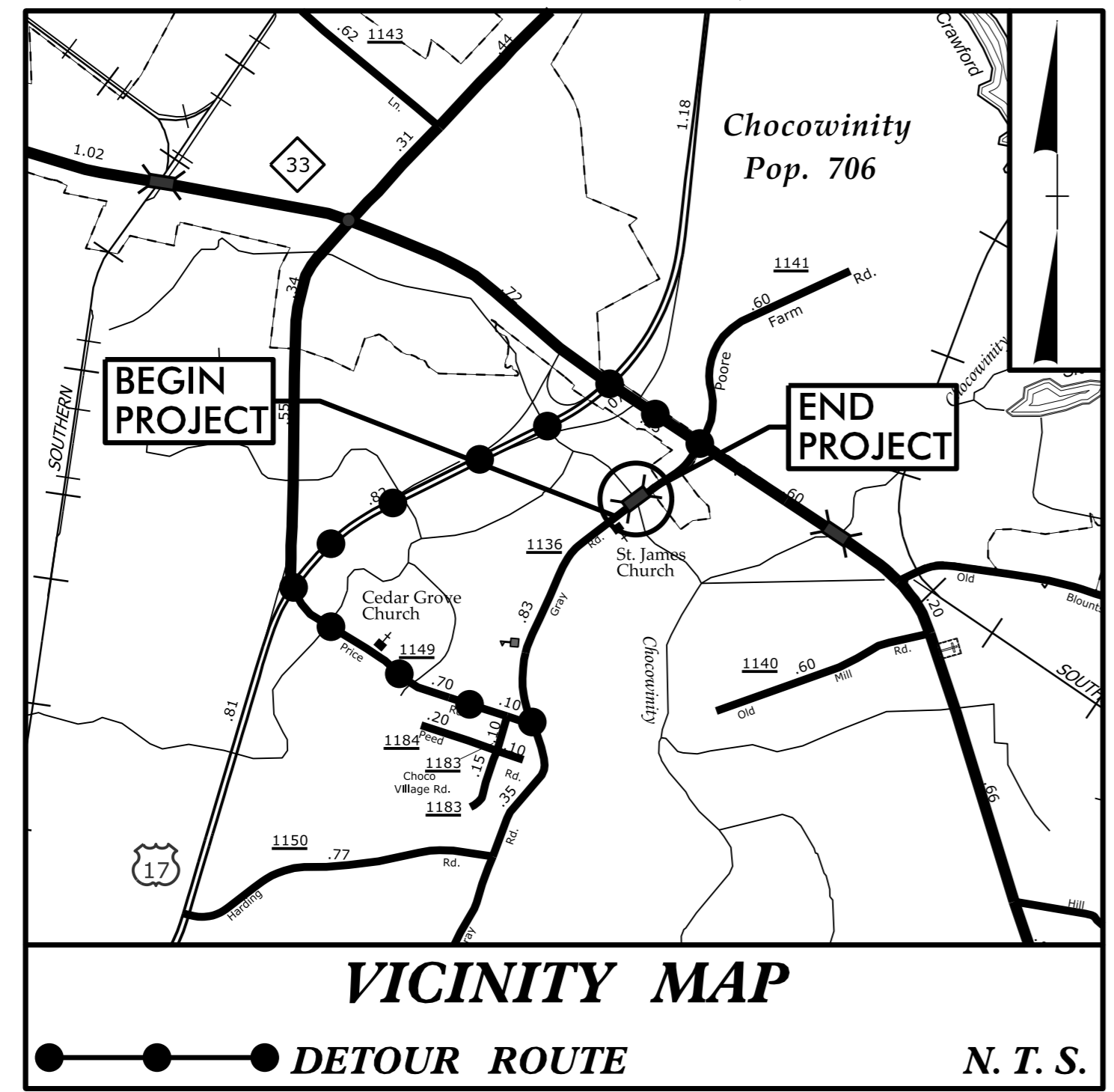


09/08/99

TIP PROJECT: 17BP.2.R.87

CONTRACT: DB00417

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



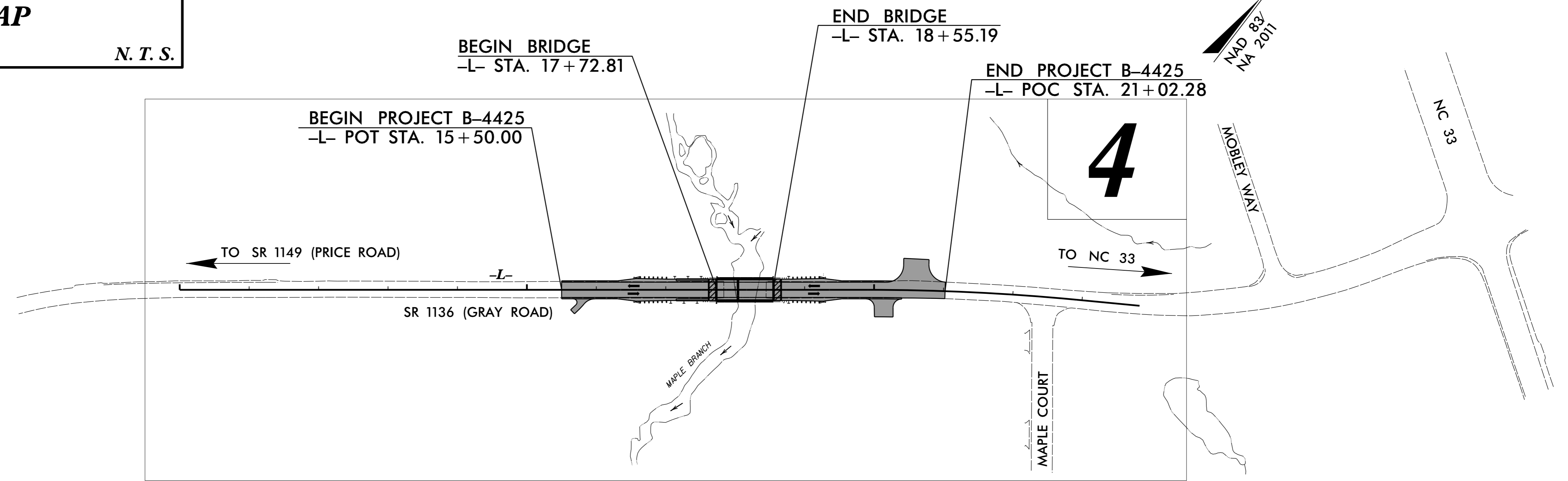
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BEAUFORT COUNTY

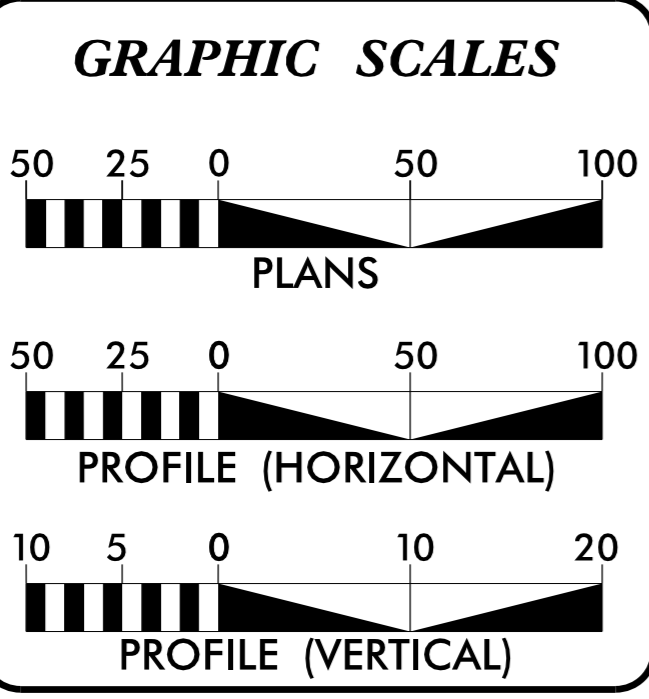
**LOCATION: REPLACE BRIDGE 69 OVER MAPLE BRANCH
ON SR 1136 (GRAY ROAD)**

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.2.R.87	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.2.R.87	N/A	P. E.	
17BP.2.R.87	N/A	ROW/UTIL.	
17BP.2.R.87	N/A	CONST.	



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2018 =	2800 VPD
ADT 2038 =	5000 VPD
K =	NA %
D =	NA %
T =	19 % *
V =	50 MPH
* TTST =	DUAL
FUNC CLASS =	
LOCAL	
SUB-REGIONAL TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4425	=	0.089 MILES
LENGTH BRIDGE TIP PROJECT B-4425	=	0.016 MILES
TOTAL LENGTH TIP PROJECT B-4425	=	0.105 MILES

Prepared in the Office of:
CDM Smith
CDM Smith Inc.
5400 Glenwood Avenue
Suite 400
Raleigh, NC 27612-3228
NC CDA No. F-1255

FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION
2018 STANDARD SPECIFICATIONS

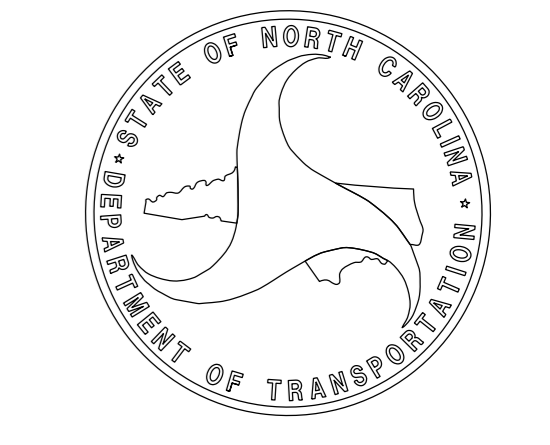
<p>RIGHT OF WAY DATE: MARCH 5, 2018</p> <p>LETTING DATE: DECEMBER 12, 2018</p>	<p>DAVID Z. KEISER, P. E. PROJECT ENGINEER</p> <p>KIT A. PERSIANI, P. E. PROJECT DESIGN ENGINEER</p> <p>HEATHER C. LANE, P. E. NCDOT CONTACT</p>
--	---

HYDRAULICS ENGINEER

A. T. Nottingham
7/25/2018

ROADWAY DESIGN ENGINEER

Kit Persiani
7/25/2018



8/17/19

PROJECT REFERENCE NO.	SHEET NO.
17BP.2.R.87	1A
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEET
2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
3B-1	ROADWAY SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4	PLAN AND PROFILE SHEET
TMP-1 THRU TMP-2	TRANSPORTATION MANAGEMENT PLANS
EC-1 THRU RF-1	EROSION CONTROL PLANS
UD-1 THRU UD-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-3	CROSS-SECTIONS
S-1 THRU S-20	STRUCTURE PLANS

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REV.

GENERAL NOTES:

GRADE LINE:
GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.01 AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:
DUKE ENERGY - POWER (DISTRIBUTION)
CENTURYLINK - COMMUNICATIONS
SUDDENLINK - COMMUNICATIONS
TOWN OF CHOCOVINITY - WATER
TOWN OF CHOCOVINITY - SEWER
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS

RIGHT-OF-WAY MARKERS:

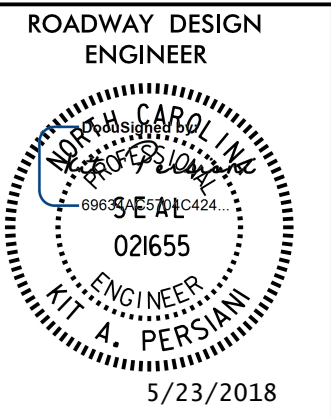
ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-16-2018
REV.

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.01	Guide for Grading Subgrade - Interstate and Freeway
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
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.02	Bridge Approach Fills - Type II Modified Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.36	Traffic Bearing Grated Drop Inlet - for Steel (640.37) Double Frame and Grates
840.66	Drainage Structure Steps
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 (Special Detail for Sheet 6 of 8)
862.03	Structure Anchor Units (Special Detail for Type III Anchor Units Sheets 1 of 7 and 2 of 7)
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap



STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

12/2/2016

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ _{EP}
Computed Property Corner	→
Property Monument	□ _{EDM}
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	----- _{MLB}
Proposed Wetland Boundary	----- _{MLB}
Existing Endangered Animal Boundary	----- _{EAB}
Existing Endangered Plant Boundary	----- _{EPB}
Existing Historic Property Boundary	----- _{HBP}
Known Contamination Area: Soil	---S---S---
Potential Contamination Area: Soil	---S---S---
Known Contamination Area: Water	---W---W---
Potential Contamination Area: Water	---W---W---
Contaminated Site: Known or Potential	☠ ?

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	◆
Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	◆
Exist Permanent Easement Pin and Cap	◇
New Permanent Easement Pin and Cap	◆
Vertical Benchmark	⊠
Existing Right of Way Marker	△
Existing Right of Way Line	-----
New Right of Way Line	----- _{RW}
New Right of Way Line with Pin and Cap	----- _{RW} ◆
New Right of Way Line with Concrete or Granite RW Marker	----- _{RW} ◆
New Control of Access Line with Concrete C/A Marker	----- _{C/A} ◆
Existing Control of Access	----- _{C/A}
New Control of Access	----- _{C/A}
Existing Easement Line	----- _E
New Temporary Construction Easement	----- _E
New Temporary Drainage Easement	----- _{TDE}
New Permanent Drainage Easement	----- _{PDE}
New Permanent Drainage / Utility Easement	----- _{DUE}
New Permanent Utility Easement	----- _{PUE}
New Temporary Utility Easement	----- _{TUE}
New Aerial Utility Easement	----- _{AUE}

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	○

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

Hedge	-----
Woods Line	-----
Orchard	-----
Vineyard	----- _{Vineyard}

EXISTING STRUCTURES:

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

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊠
Power Transformer	⊠
U/G Power Cable Hand Hole	○
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	⊕
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	⊕
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:

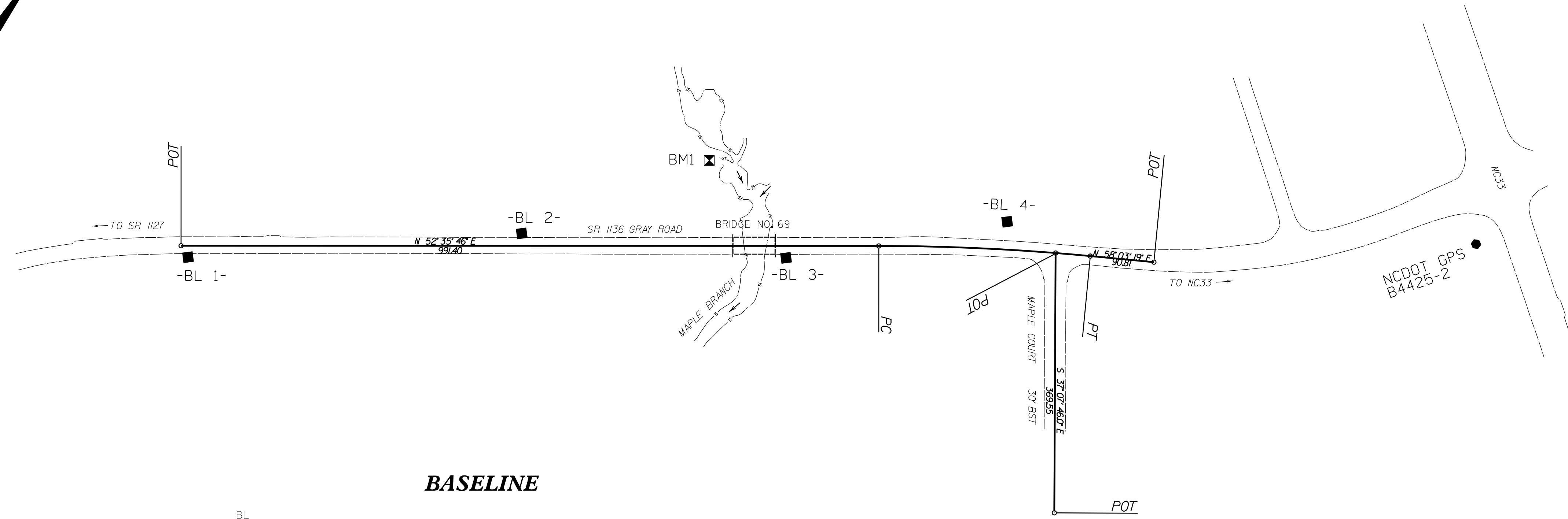
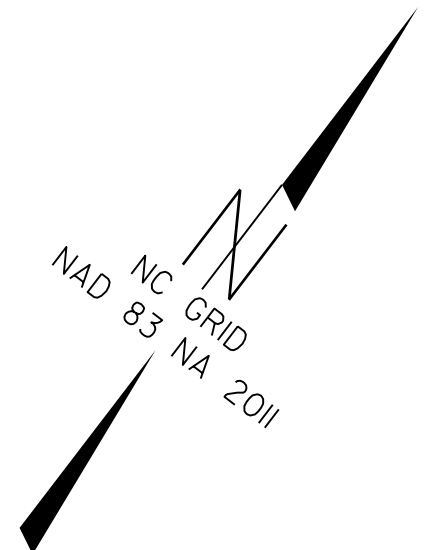
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	----- _{SS}
Above Ground Sanitary Sewer	----- _{A/G Sanitary Sewer}
SS Forced Main Line LOS B (S.U.E.*)	----- _{FSS}
SS Forced Main Line LOS C (S.U.E.*)	----- _{FSS}
SS Forced Main Line LOS D (S.U.E.*)	----- _{FSS}

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line LOS B (S.U.E.*)	----- _{U/L}
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊕
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 B-4425

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



BASELINE

BL	POINT	DESC.	NORTH	EAST	ELEVATION
	1	BL1	642972.5400	2568159.2850	21.04
	2	BL2	643287.5090	2568515.3390	12.66
	3	BL3	643488.0570	2568834.7520	9.35
	4	BL4	643719.7680	2569053.0630	14.25
GPS2		NCDOT GPS B4425	644099.3140	2569601.5770	23.45

BENCHMARK

.....
 BM1 ELEVATION = 8.53
 N 643532 E 2568664
 RR SPIKE SET IN 36" TWIN TRUNK HARDWOOD

EXISTING ALIGNMENTS

EL	POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
	POT	642979.444	2568141.655							
	LINE			N 52°36'45.7" E	991.40					
	PC	643581.652	2568929.197							
	CURVE			N 55°19'32.4" E	300.87	05°27'33.4"(RT)	01°48'49.7"	300.98	150.60	3158.85
	PT	643752.819	2569176.631							
	LINE			N 58°03'19.1" E	90.80					
	POT	643800.864	2569253.685							

EY	POINT	N	E	BEARING	DIST
	POT	643726.302	2569134.836		
	LINE			S 37°07'46.0" E	369.55
	POT	643431.672	2569357.901		

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4425-p5"
 WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
 NORTHING: 643192.208(ft) EASTING: 2568449.036(ft)
 ELEVATION: 15.077(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988671
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4425-p5" TO -L- STATION IS
 N 46°52'20.9" E 177.47'
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

NOTES:

- PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
- THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

REVISIONS

6/2/09

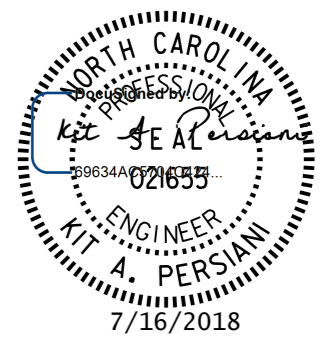
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 USER: ETP

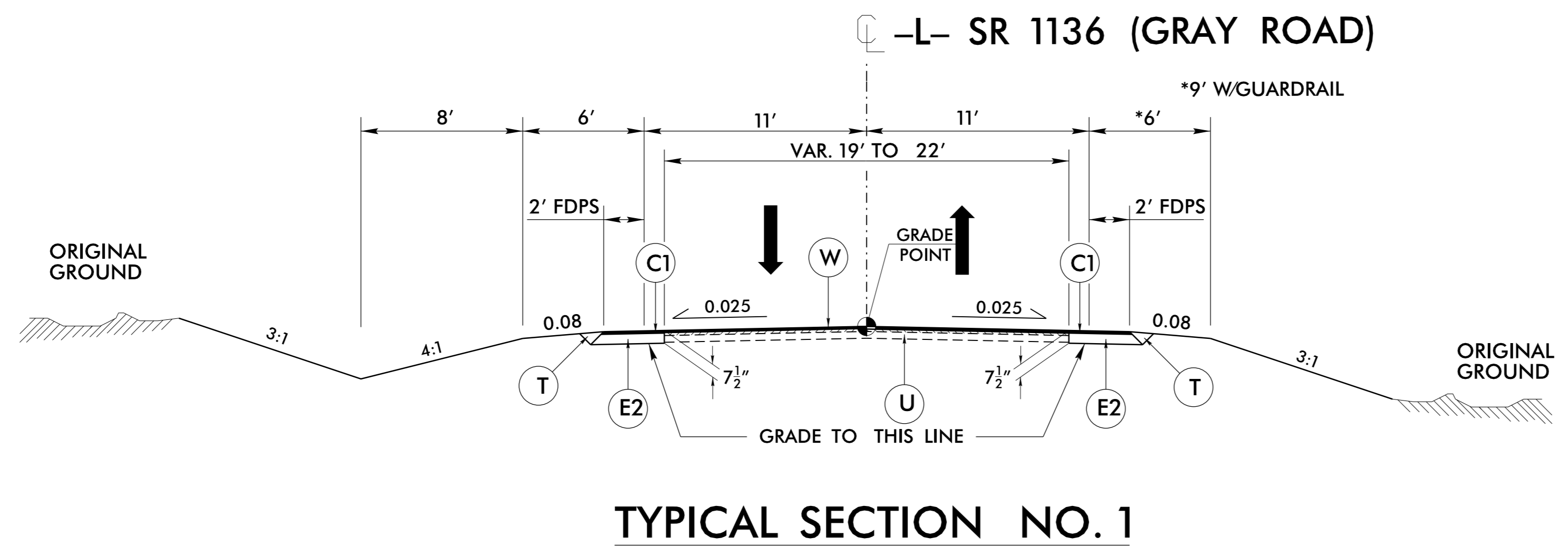
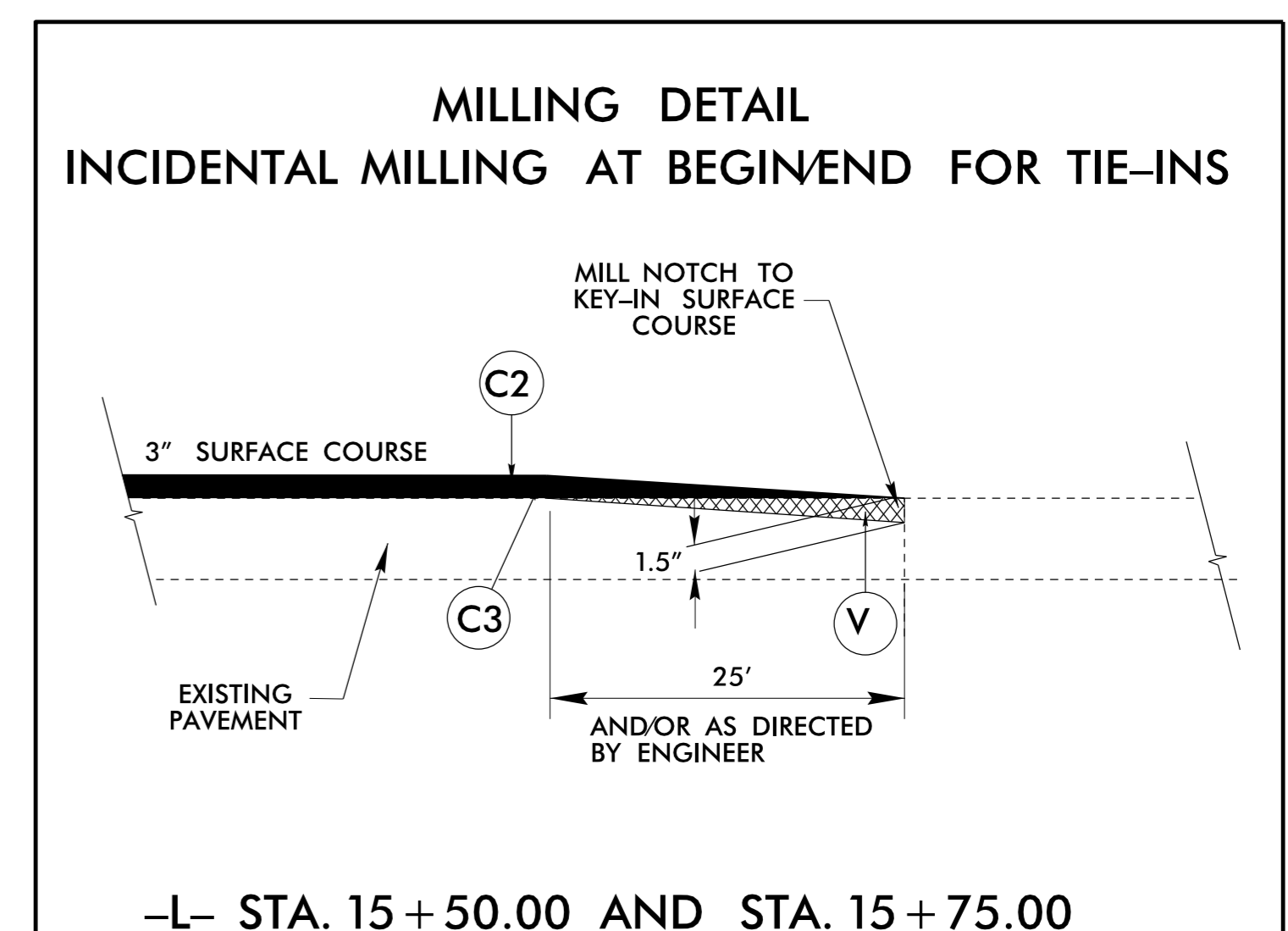
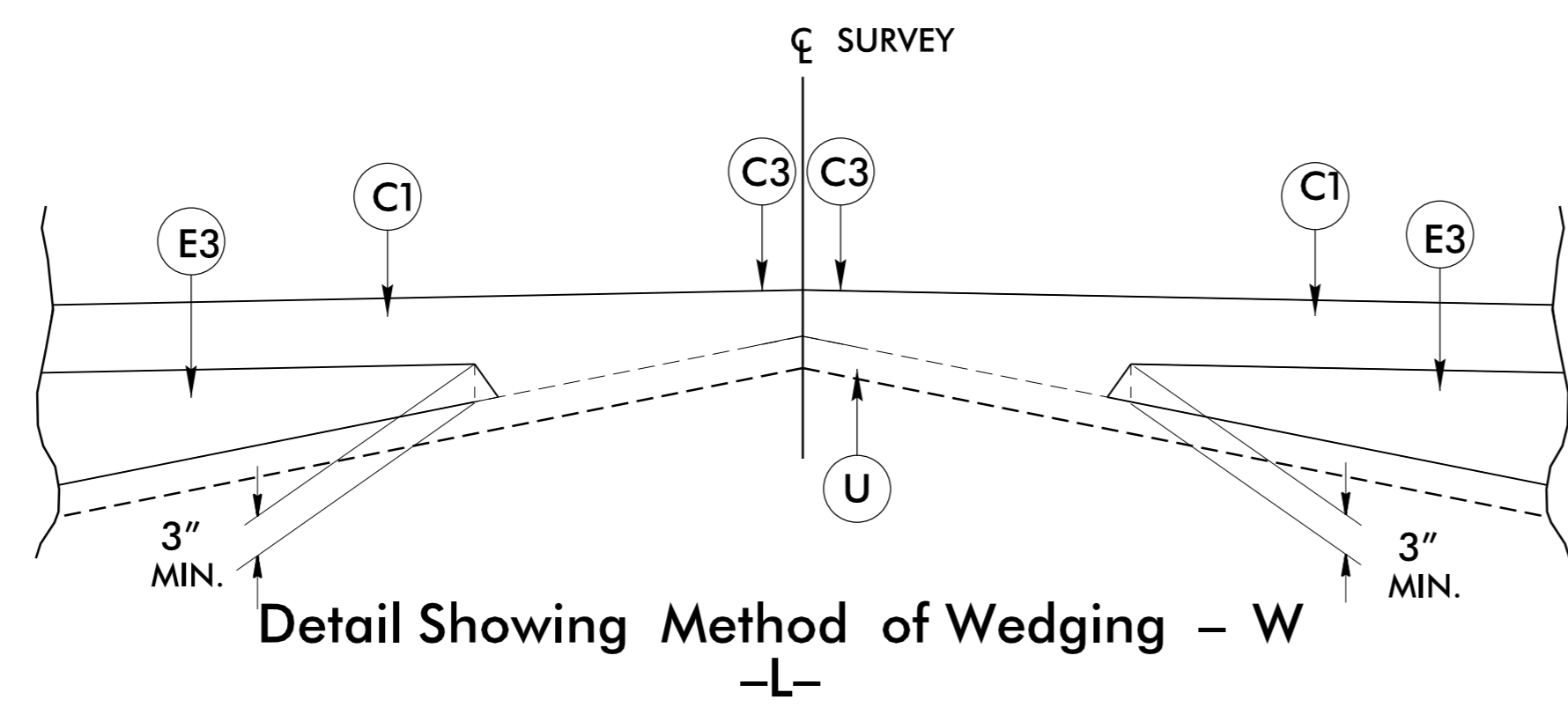
PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R1	SHOULDER BERM GUTTER.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1½" IN DEPTH.	T	EARTH MATERIAL.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
E2	PROP. APPROX. 6" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	V	MILLING BITUMINOUS PAVEMENT. 0" TO 1½" DEPTH.
		W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE -L- WEDGING DETAIL)

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

PROJECT REFERENCE NO. 17BP.2.R.87	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



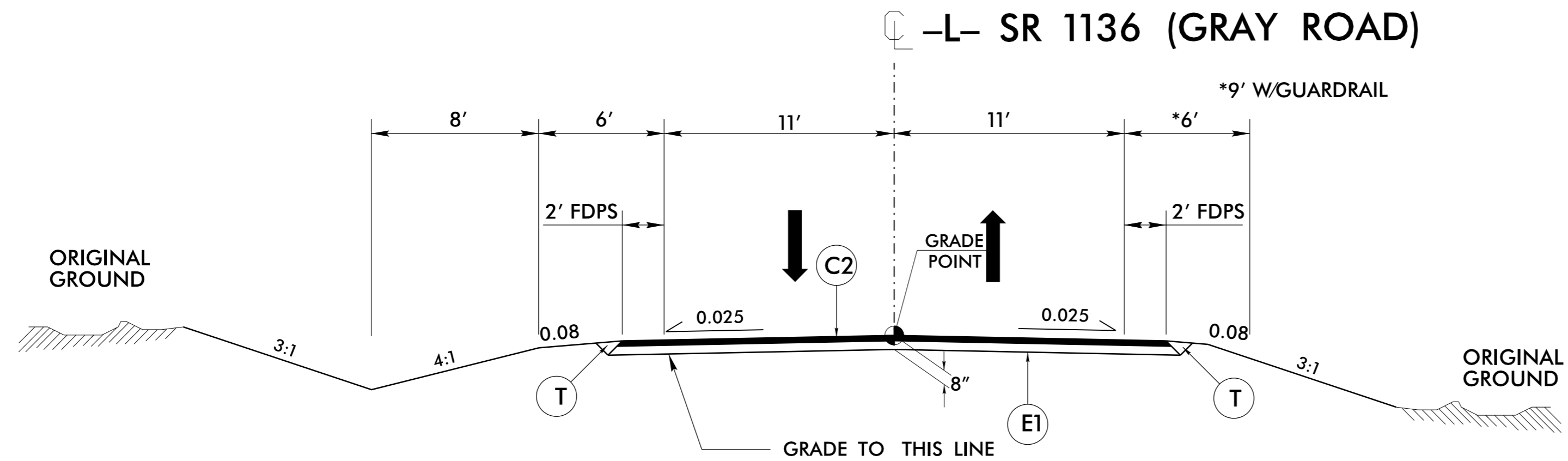
USE TYPICAL SECTION NO. 1

- L- STA. 15+50.00 TO 16+75.00
- L- STA. 19+55.00 TO 20+40.00

NOTE: PAVE TO FACE OF GUARDRAIL.
USE L PAVEMENT DESIGN FOR ALL WIDENING

6/2/99

PROJECT REFERENCE NO. 17BP.2.R.87	SHEET NO. 2A-2
ROADWAY DESIGN ENGINEER <i>Kit SE</i>	PAVEMENT DESIGN ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

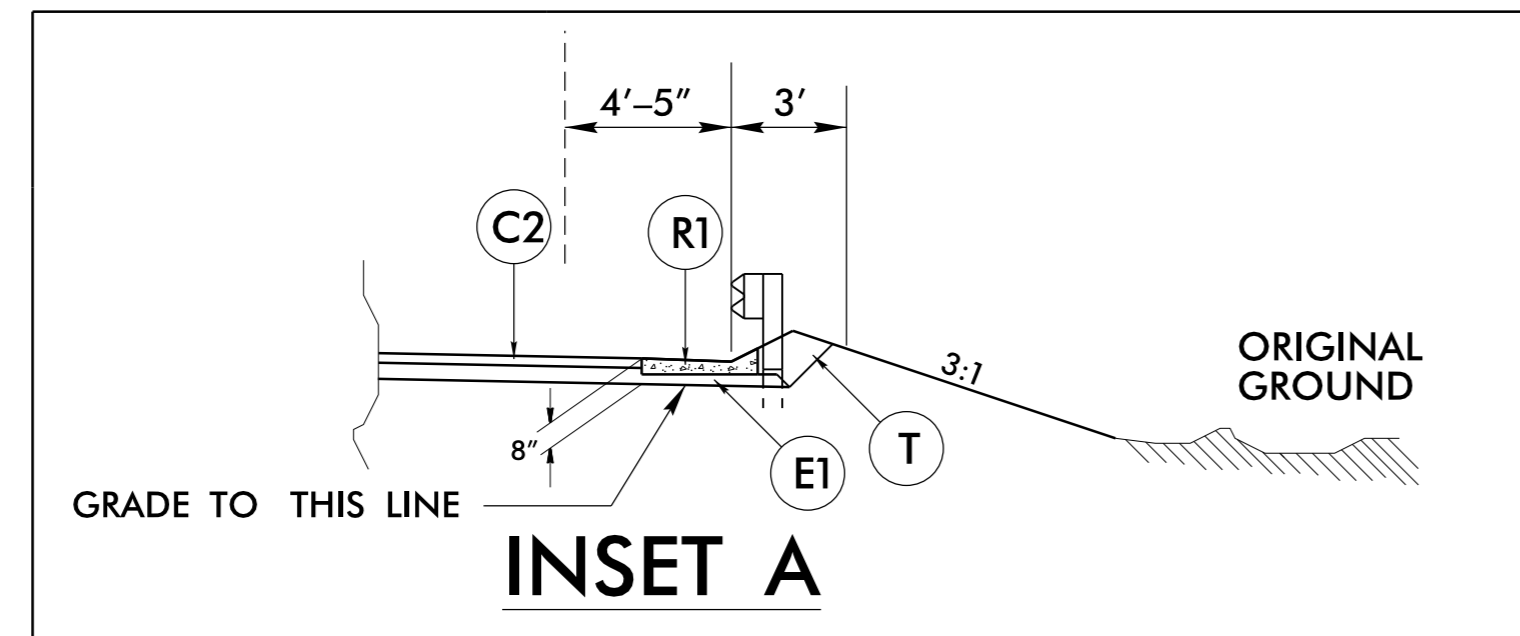


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA. 16+75.00 TO 17+72.81 (BEGIN BRIDGE)
-L- STA. 18+55.19 (END BRIDGE) TO 19+55.00

NOTE: PAVE TO FACE OF GUARDRAIL.
USE L PAVEMENT DESIGN FOR ALL WIDENING



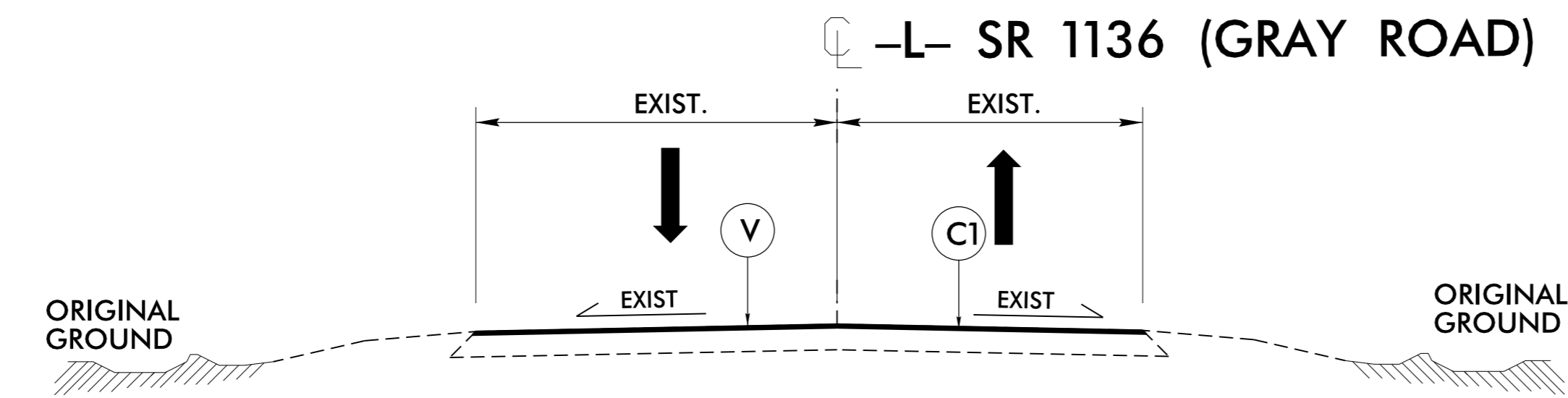
USE INSET A WITH TYPICAL SECTION NO. 2

-L- STA. 17+15.00 TO 17+61.94 RT/LT

PAVEMENT SCHEDULE

C1	1 1/2" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
E1	5" B25.0C
E2	6" B25.0C
E2	VAR. B25.0C
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	0" - 1 1/2" MILLING
W	WEDGING

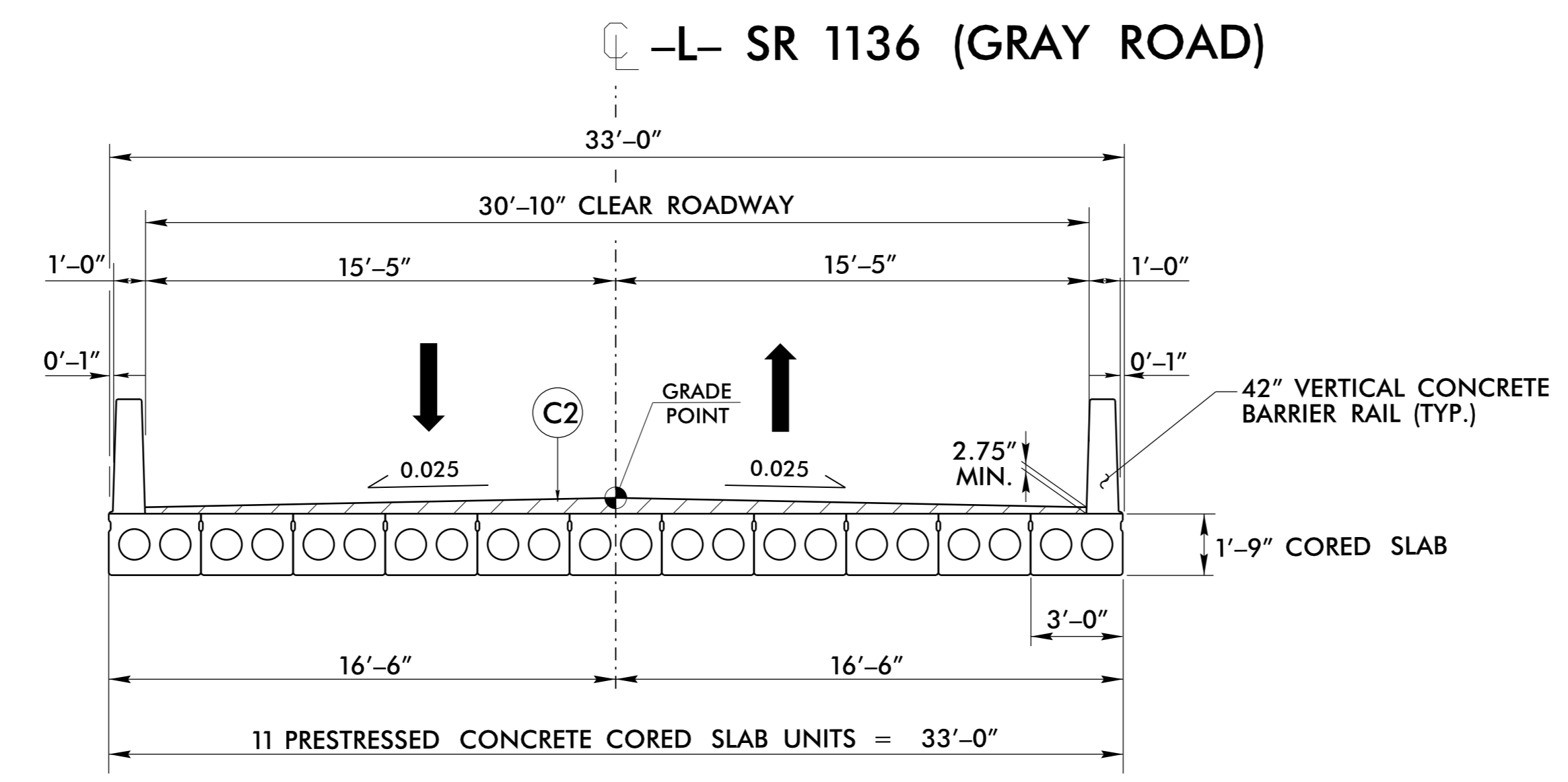
PAVEMENT EDGESLOPES 1:1
UNLESS NOTED OTHERWISE



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

-L- STA. 20+40.00 TO 21+02.28



TYPICAL BRIDGE SECTION NO. 1

USE TYPICAL BRIDGE SECTION NO. 1

-L- STA. 17+72.81 TO 18+55.19

-SYSTEM- \P-roj\B4425.Rdy.tup.dgn

6/21/2018

COMPUTED BY: H. HARKENRIDER DATE: 02/27/2018
CHECKED BY: K. PERSIANI DATE: 02/27/2018

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. 17BP.2.R.87
SHEET NO. 3B-1

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

Main table for pipes and endwalls with columns for Station, Location, Structure No., Invert Elevation, Pipe Size, Pipe Type, Endwalls, Grates, and Remarks.

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.

GUARDRAIL SUMMARY

W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

Guardrail Summary table with columns for Survey Line, Beg. Sta., End Sta., Location, Length, Warrant Point, Flare Length, W, Anchors, Impact Attenuator, and Remarks.

SUMMARY OF EARTHWORK

Summary of Earthwork table with columns for Station, Uncl. Excav., Embank. +%, Borrow, Waste, and Project Totals.

PAVEMENT REMOVAL SUMMARY

Pavement Removal Summary table with columns for Survey Line, Station, Location, and YD².

RIGHT OF WAY AREA DATA SUMMARY

Right of Way Area Data Summary table with columns for Parcel No., Property Owners Names, Total Acreage, Area Taken, Area Remaining, Const. Ease, Perm. Drain. Ease, Perm. Util. Ease, and Perm. Drain/Util. Ease.

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.
Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Shoulder Borrow, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

PER GEOTECH RECOMMENDATION, ESTIMATED 300 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

-SYTIME: 04.425_PdJ_sam_3B-1.dgn

COMPUTED BY: Tyler C. Bottoms DATE: 2/28/18
 CHECKED BY: _____ DATE: _____

(1-16-18)

PROJECT NO. B-4425	SHEET NO. 3G-1
-----------------------	-------------------

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	200
TOTAL LF:					200

*UD = Underdrain
 *BD = Blind Drain
 *SD = Subsurface Drain

**SUMMARY OF GEOTEXTILE
 FOR PAVEMENT STABILIZATION**

LINE	Station	Station	Geotextile for Pavement Stabilization SY	Class IV Subgrade Stabilization TONS
CONTINGENCY				
TOTAL SY/TONS:			0	0*

*Total tons of "Class IV Subgrade Stabilization" is only the estimated quantity for pavement stabilization and may only represent a portion of the subgrade stabilization quantity shown in the Item Sheets of the Proposal.

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY									
TOTAL CY/TONS/SY:					0	0**	0**	0	0

*ASU = Aggregate Subgrade
 *AST = Aggregate Stabilization
 **Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
TOTAL SY:								0

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL

LINE	Beginning Slope/ RSS (H:V)	Approx. Station	Ending Slope/ RSS (H:V)	Approx. Station	Location LT/RT	Reinforced Soil Slope (RSS) SY	Geocells SY	Coir Fiber Mat SY	Matting for Erosion Control SY
TOTAL SY:						0	0	0*	0**

*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.
 **Total square yards of "Matting for Erosion Control" is only the estimated quantity for RSS and may only represent a portion of the matting quantity shown in the Item Sheets of the Proposal.

SUMMARY OF PRE-SPLITTING OF ROCK

LINE	Beginning Rock Cut Slope (H:V)	Approx. Station	Ending Rock Cut Slope (H:V)	Approx. Station	Location LT/RT	Pre-splitting of Rock SY
TOTAL SY:						0

**SUMMARY OF SURCHARGES
 AND SURCHARGE WAITING PERIODS**

LINE	Station	Station	Surcharge Height FT	MONTHS
TOTAL SURCHARGE WAITING PERIODS:				

**SUMMARY OF
 SETTLEMENT GAUGES**

Gauge No.	LINE and Station	Offset	
		Distance FT	Direction LT/RT
TOTAL GAUGES (EACH):			

**SUMMARY OF EMBANKMENT
 WAITING PERIODS**

LINE	Station	Station	MONTHS
TOTAL EMBANKMENT WAITING PERIODS:			

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
TOTAL BRIDGE WAITING PERIODS:		

PROJECT REFERENCE NO. 17BP.2.R.87	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

END PROJECT B-4425
-L- POC STA. 21+02.28

RICK O. STEVENS, ET UX
DB 1300 PG 359
PC B, SLIDE 271

RICK O. STEVENS, ET UX
DB 1300 PG 359
PC B, SLIDE 271

WASHINGTON MOTORS, INC.
DB 1861 PG 797

ERNEST HARVEY HOLT II
DB 1853 PG 225

JOSEPH ROBERSON
DB 1557 PG 638

LEE CHEVROLET INC.
DB 1747 PG 441

IRON RIDGE INVESTMENTS, LLC
DB 1835 PG 853

IRON RIDGE INVESTMENTS, LLC
DB 1835 PG 853

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DB 1835 PG 853

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IRON RIDGE INVESTMENTS, LLC
DB 1835 PG 853

IRON RIDGE INVESTMENTS, LLC
DB 1835 PG 853

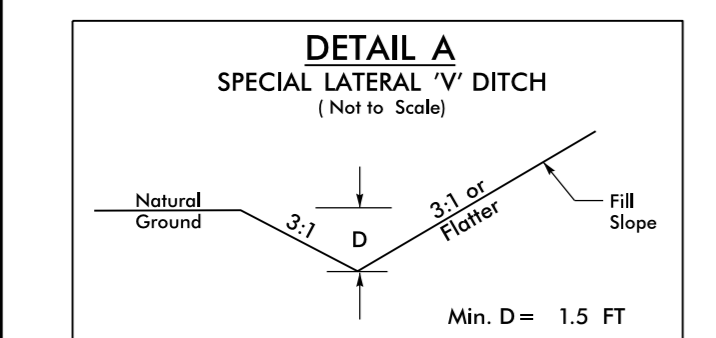
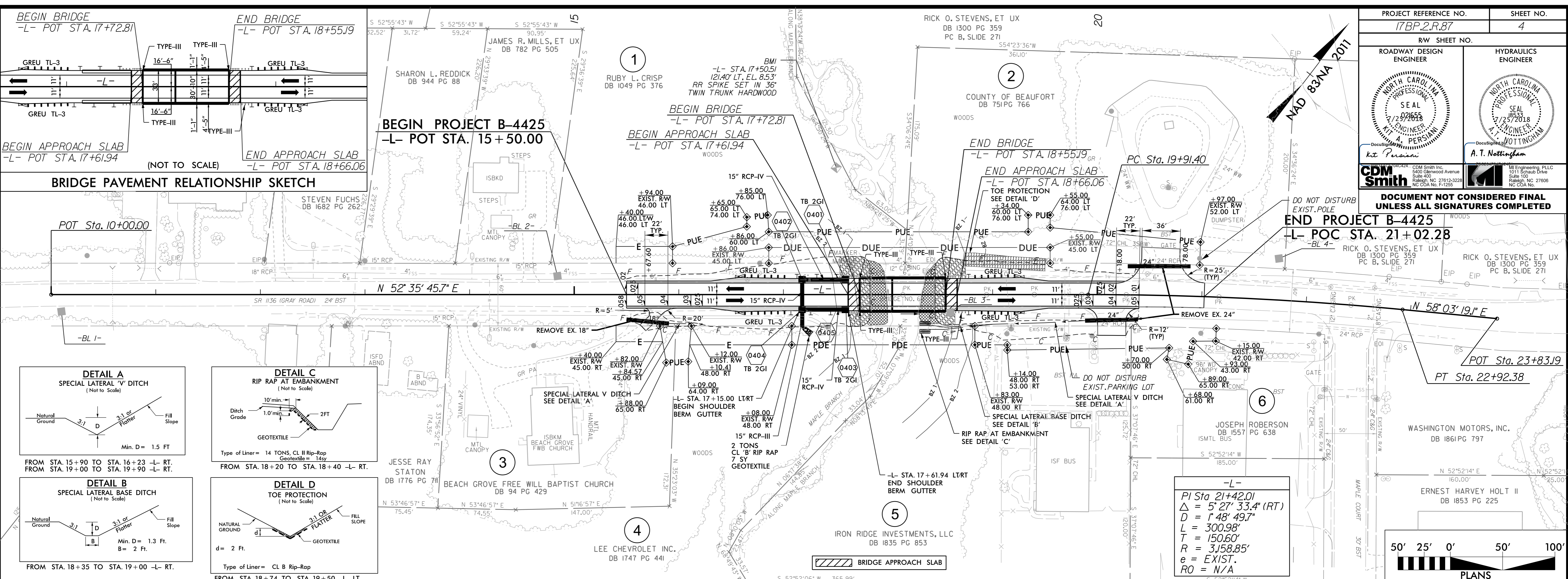
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DB 1835 PG 853

IRON RIDGE INVESTMENTS, LLC
DB 1835 PG 853

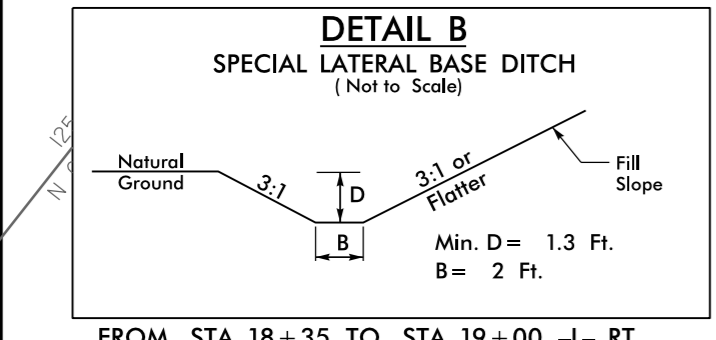
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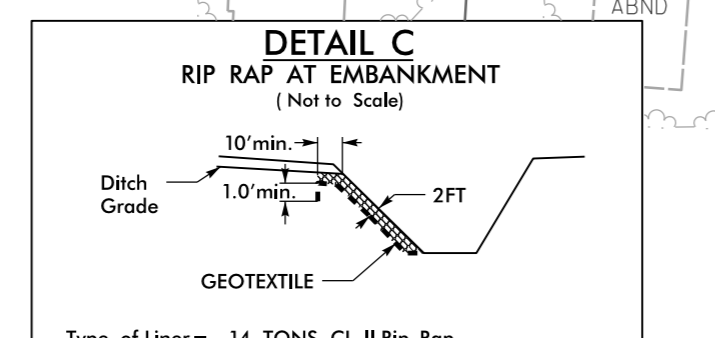
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DB 1835 PG 853



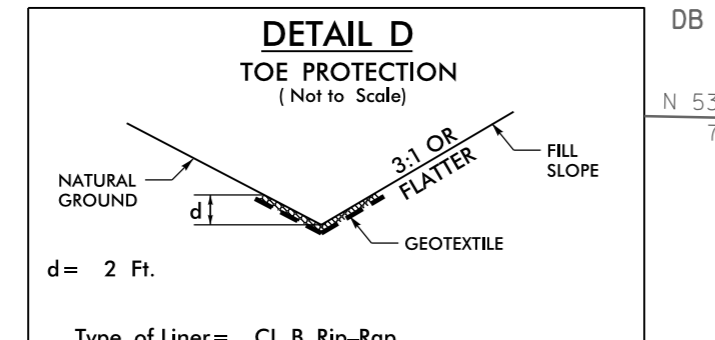
FROM STA. 15+90 TO STA. 16+23 -L- RT.
FROM STA. 19+00 TO STA. 19+90 -L- RT.



FROM STA. 18+35 TO STA. 19+00 -L- RT.



FROM STA. 18+20 TO STA. 18+40 -L- RT.



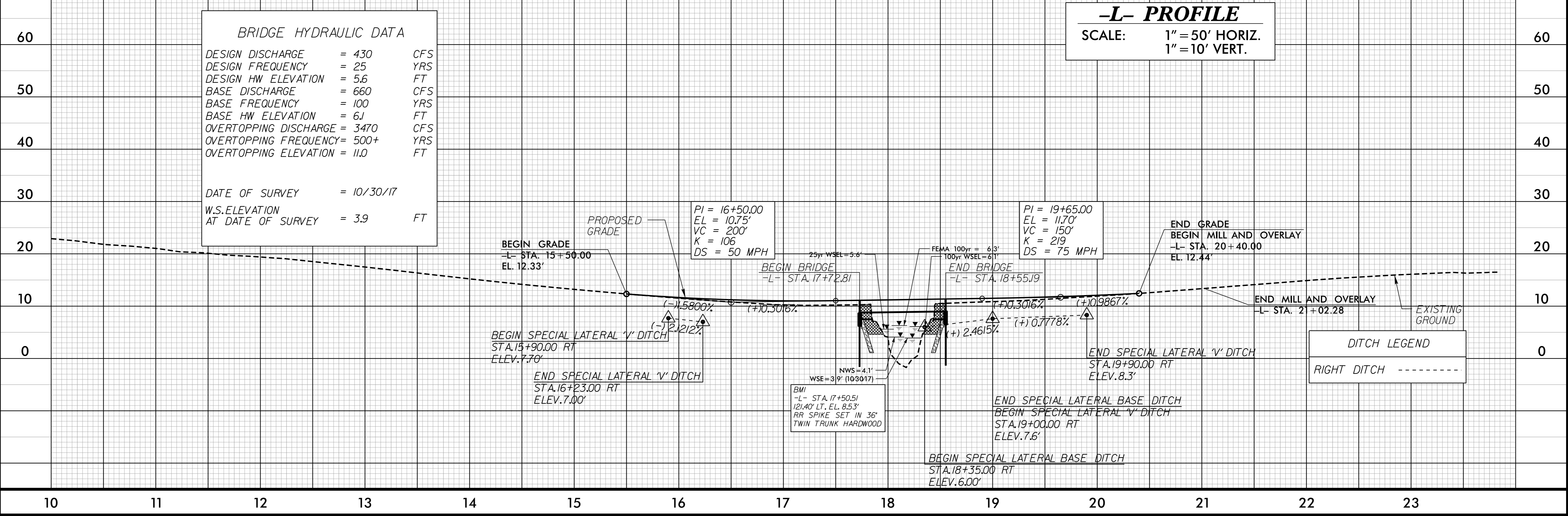
FROM STA. 18+74 TO STA. 19+50 -L- LT.

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE = 430 CFS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = 5.6 FT
BASE DISCHARGE = 660 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 6J FT
OVERTOPPING DISCHARGE = 3470 CFS
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING ELEVATION = 11.0 FT

DATE OF SURVEY = 10/30/17
W.S. ELEVATION AT DATE OF SURVEY = 3.9 FT

-L- PROFILE
SCALE: 1" = 50' HORIZ.
1" = 10' VERT.



DITCH LEGEND
RIGHT DITCH - - - - -

REVISIONS

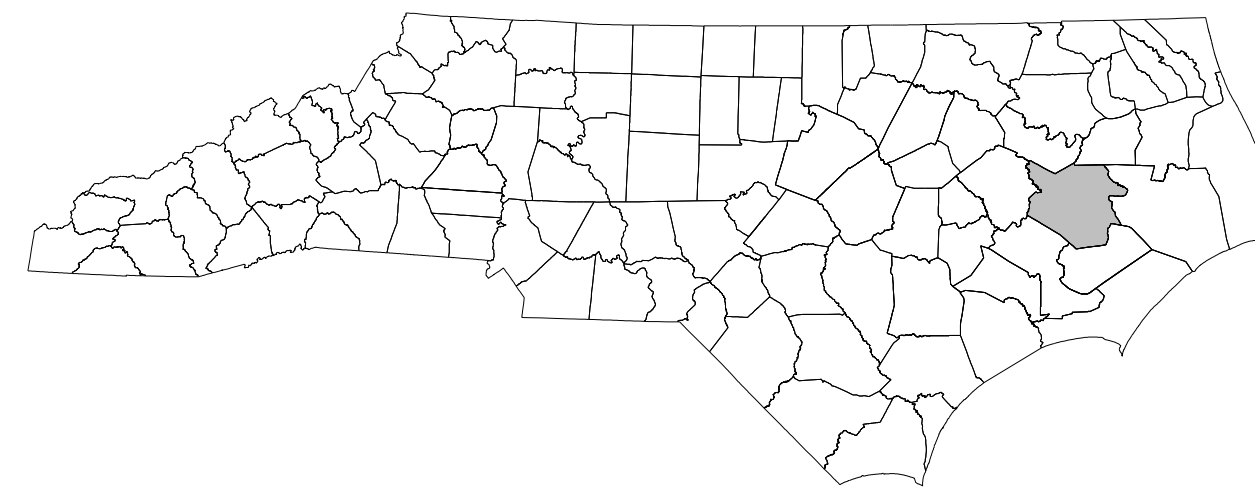
8/17/19

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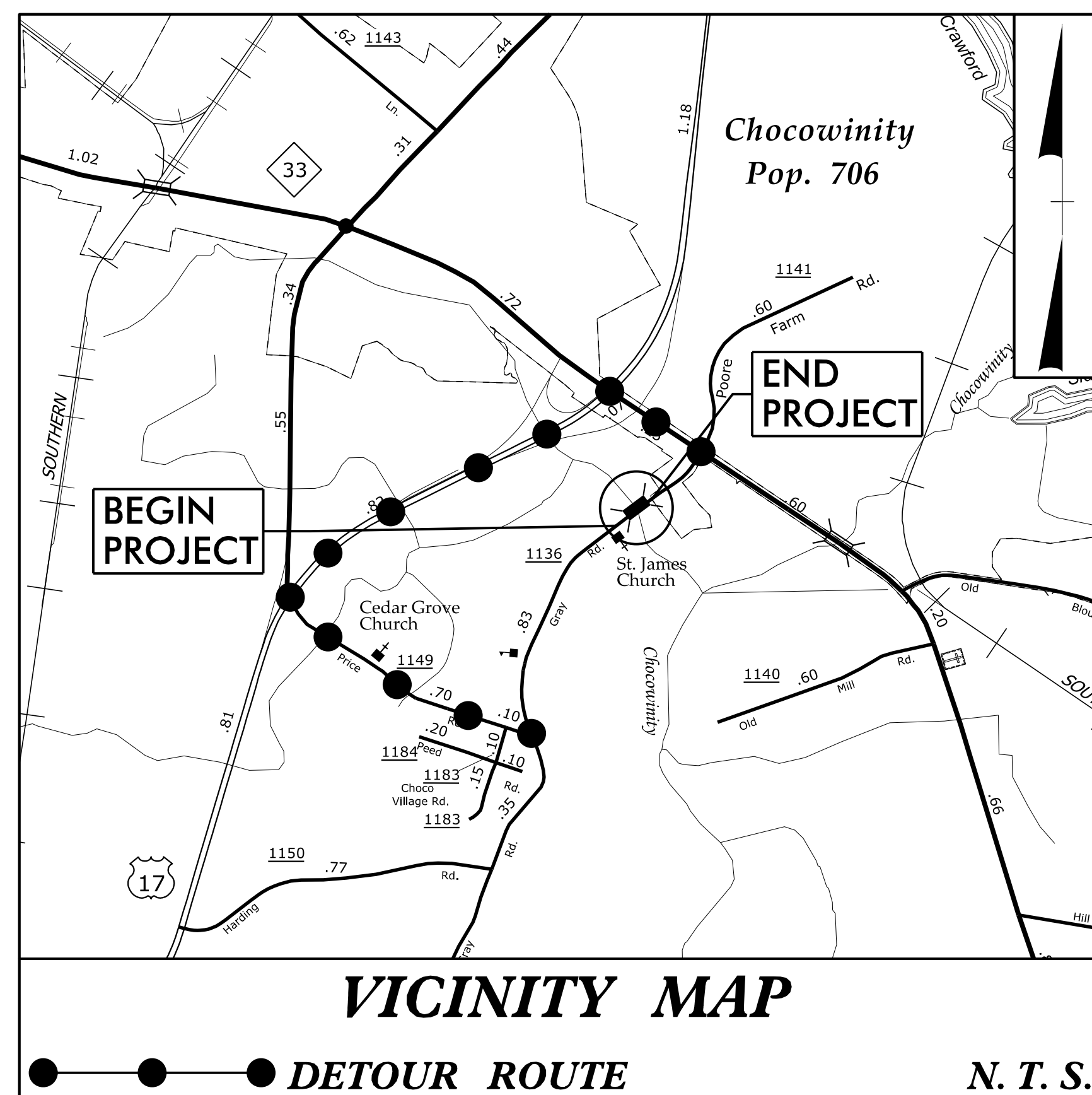
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

BEAUFORT COUNTY



**LOCATION: REPLACE BRIDGE NO. 69 OVER MAPLE BRANCH
ON SR 1136 (GRAY ROAD)**



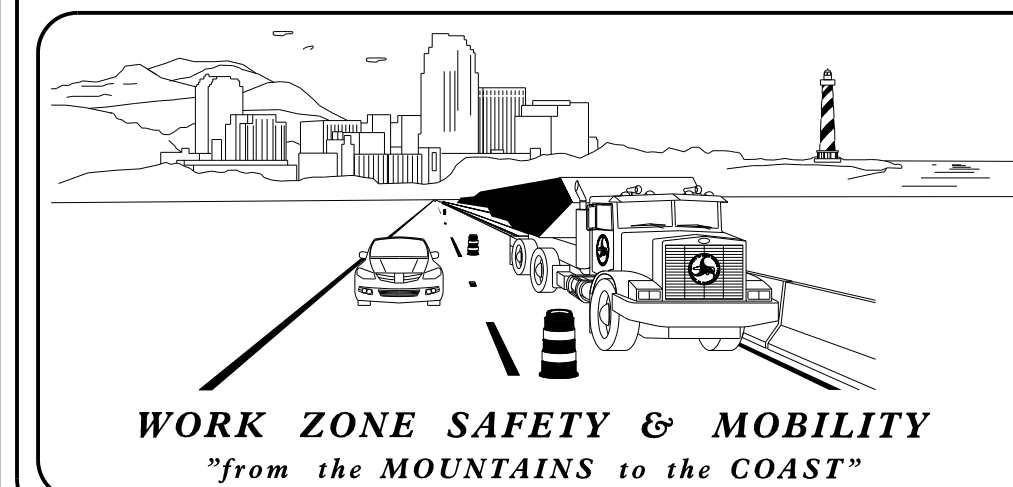
INDEX OF SHEETS	
<u>SHEET NO.</u>	<u>TITLE</u>
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES)
TMP-2	OFF-SITE DETOUR

SHEET NO.
TMP-1

17BP.2.R.87

TIP PROJECT:

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

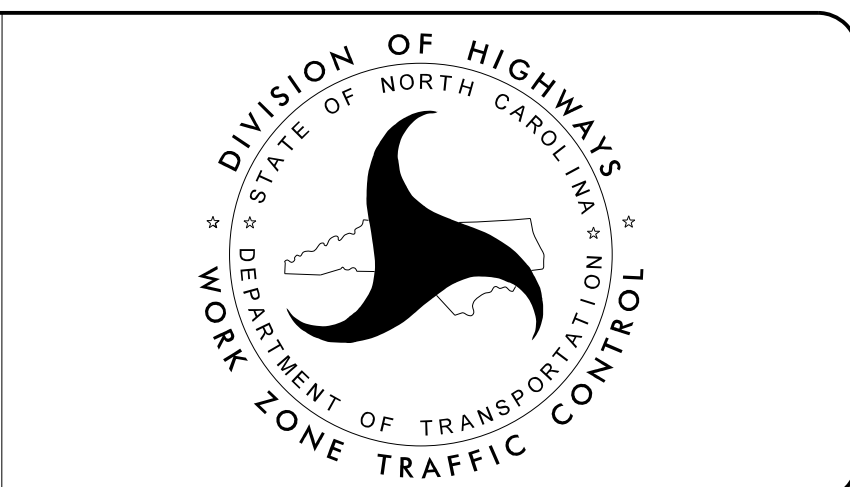


PLANS PREPARED BY:
HEATHER HARKENRIDER, P.E.

DAVID KEISER, P.E.

NCDOT CONTACTS:
HEATHER LANE, P.E.
PROJECT ENGINEER

PROJECT DESIGN ENGINEER



CDM Smith
CDM Smith Inc.
5400 Glenwood Avenue
Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

APPROVED: *kt Peraini*
DocuSigned by:
kt Peraini
69634AC5704C424
DATE: 5/23/2018

SEAL

5/22/2018
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User:HE112

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1101.11	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



USER DEFINED (IF NEEDED)



USER DEFINED (IF NEEDED)

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

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

TEMPORARY PAVEMENT MARKING

5/22/2018 10:51:12 AM User:LETT2 P:\p\cdmsmith.com\PLN\Documents\17240\22298\10 Transportation\04 Client Folder Structure\B4425\Traffic\TrafficControl\TCP\B4425_TMP_psh TMP-1A.dgn



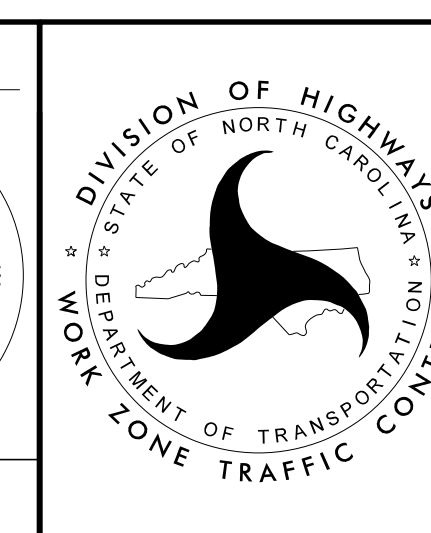
CDM Smith Inc.
5400 Glenwood Avenue
Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

APPROVED: 69834AC5704C4E4

DATE: 5/23/2018

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ROADWAY STANDARD
DRAWINGS & LEGEND

MANAGEMENT STRATEGIES

1. CLOSE SR 1136 (GRAY ROAD) TO TRAFFIC AND DETOUR TRAFFIC OFF-SITE.
2. LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES WILL BE MAINTAINED BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION.

PHASING

- STEP 1: USING NCDOT ROADWAY STD. DRAWING 1101.03 (SHEETS 1 AND 2 OF 9), INSTALL DETOUR ROUTE SIGNING TO CLOSE SR 1136 (GRAY ROAD) FROM STA. 15+50+/- TO STA. 20+40+/-.
- STEP 2: AWAY FROM TRAFFIC, COMPLETE CONSTRUCTION OF PROPOSED BRIDGE AND ROADWAY APPROACHES INCLUDING DRAINAGE, GUARDRAIL AND FINAL PAVEMENT ON PROPOSED -L- FROM STA. 15+50+/- TO STA. 20+40+/-.
- STEP 3: REMOVE TEMPORARY TRAFFIC CONTROL DEVICES AND OPEN -L- TO PROPOSED TWO-LANE, TWO-WAY TRAFFIC PATTERN.

LOCAL NOTES

1. NOTIFY BEAUFORT COUNTY EMERGENCY SERVICES AND PUBLIC SCHOOLS AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE.
2. STATE FORCES WILL INSTALL AND MAINTAIN THE PROJECT DETOUR AND THE TYPE III BARRICADES AT THE PROJECT LIMITS. STATE FORCES WILL INSTALL PAINT AND MARKERS ON THE FINISHED PROJECT. CONTACT JEFF DUNNING AT 252-830-3493 TWO WEEKS PRIOR TO CLOSING THE ROAD FOR THE DETOUR INSTALLATION.

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 UNDESIRABLE 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.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

- B) 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.

- C) 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.

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

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

- F) STATE FORCES WILL INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE.

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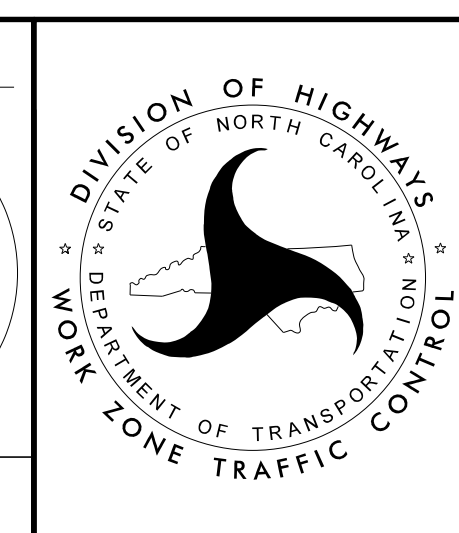


APPROVED: *kt Purni*
DocuSigned by: kt Purni 69834AC5704E424

DATE: 5/23/2018

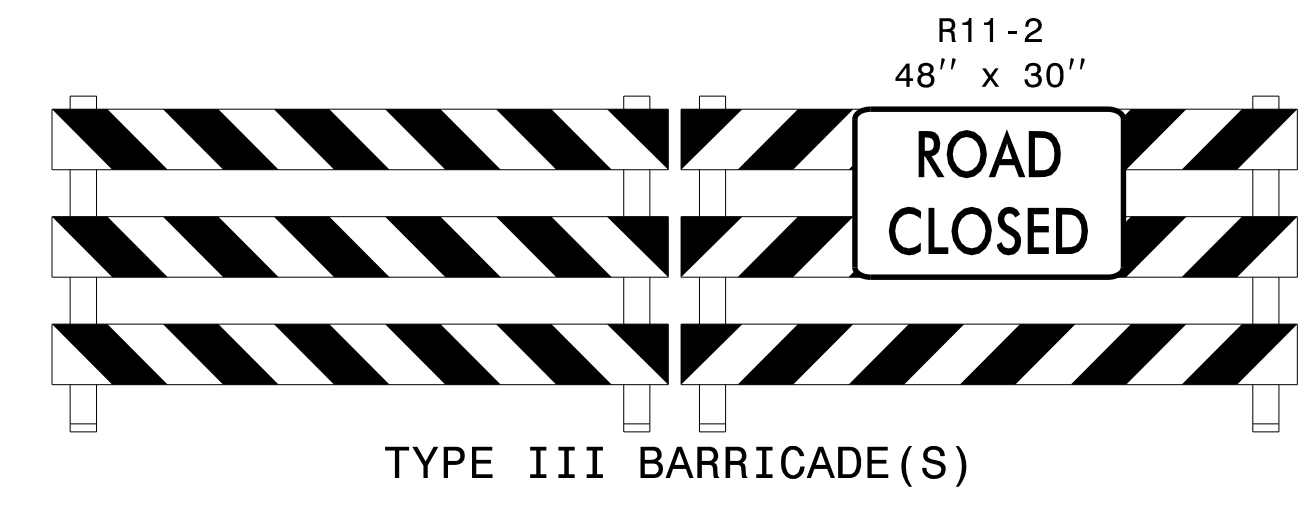
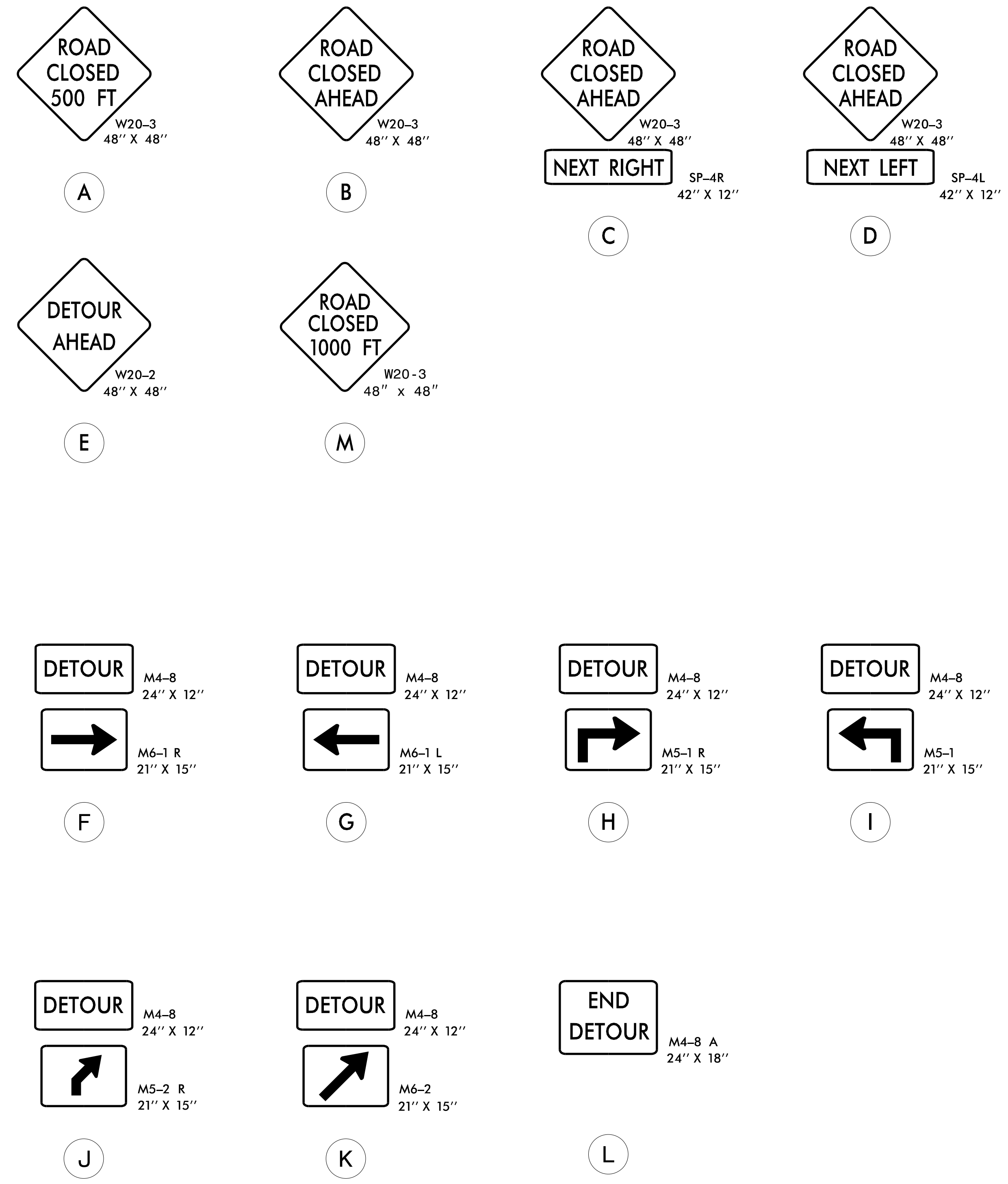
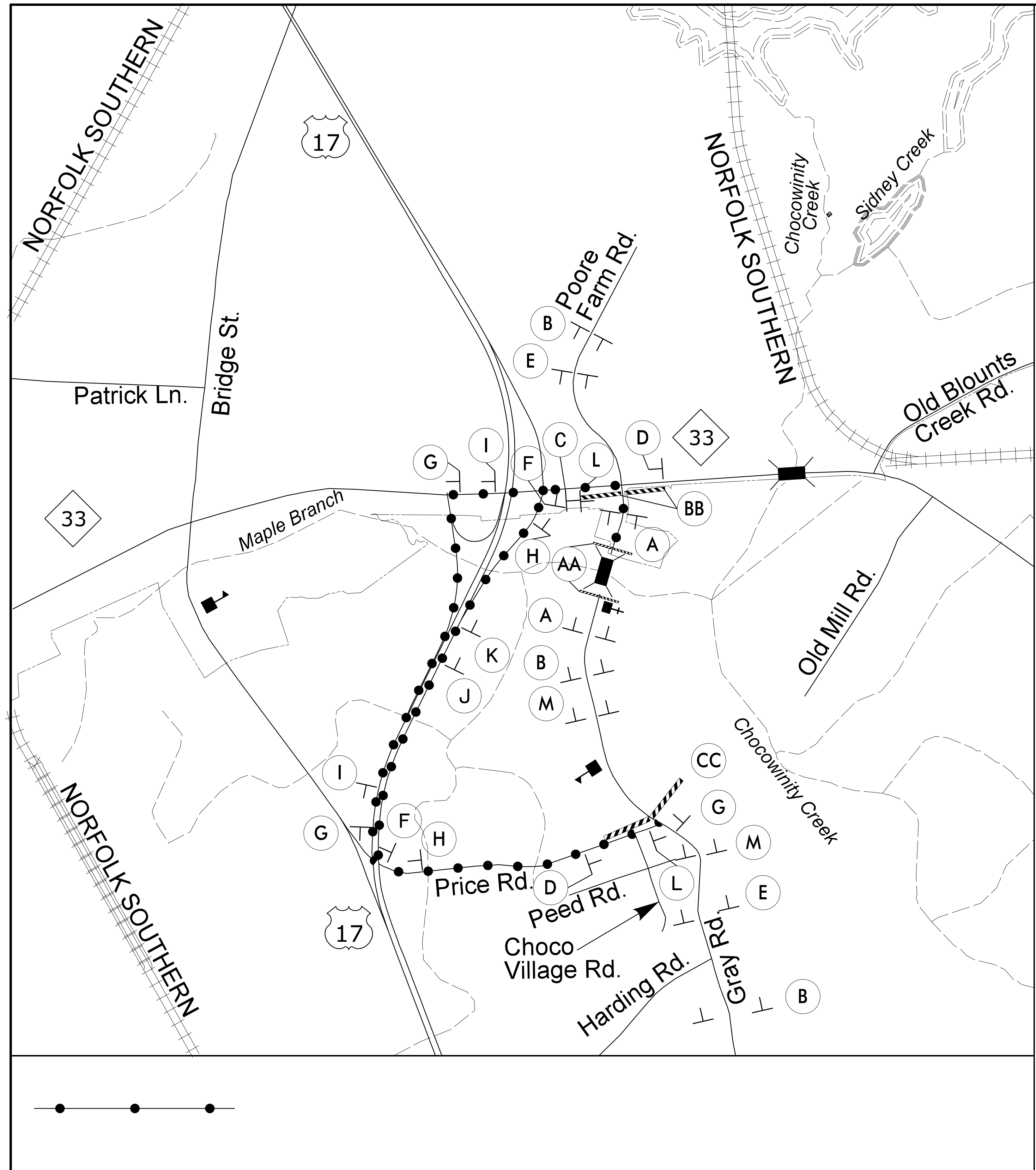
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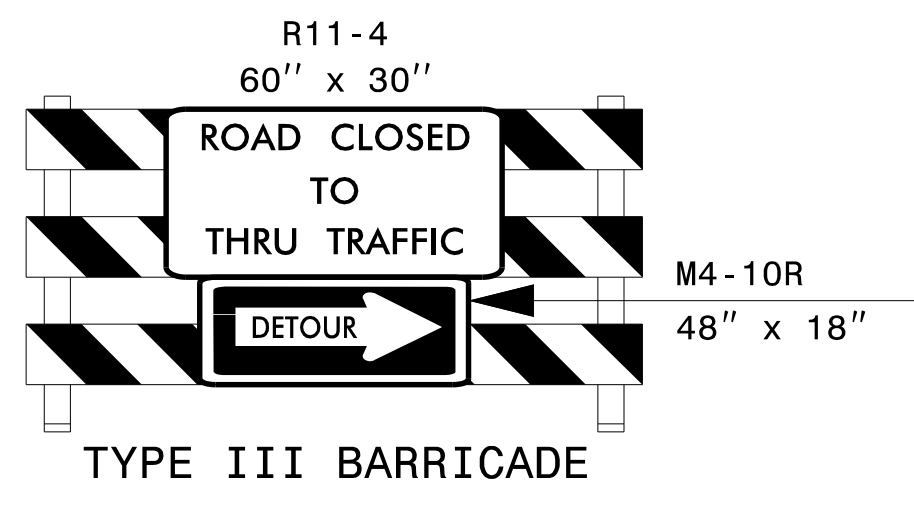


TRANSPORTATION OPERATIONS PLAN

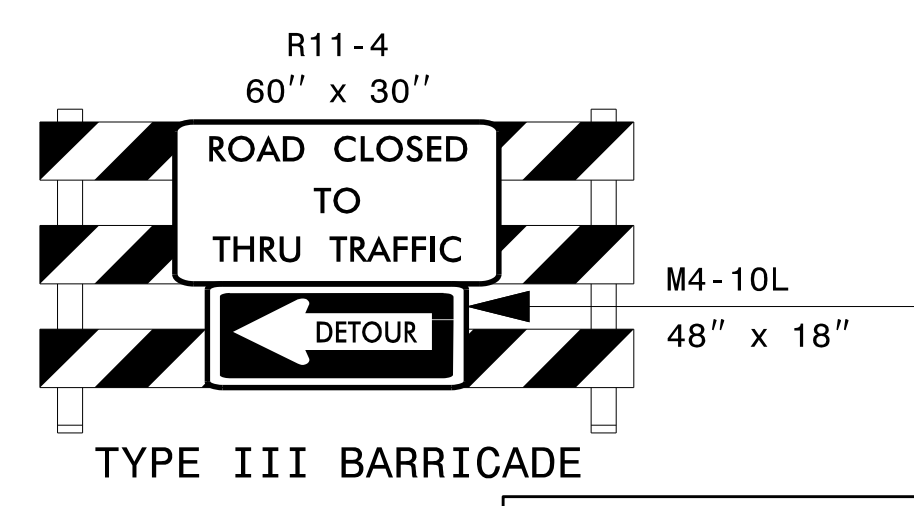
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AA



BB



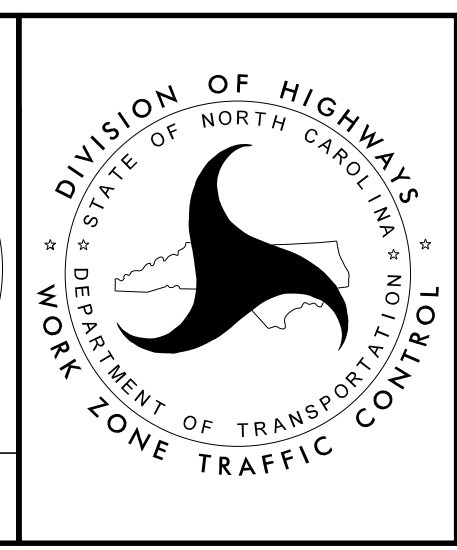
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APPROVED: *Kt Peraini*
 DATE: 5/23/2018

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 UNLESS ALL SIGNATURES COMPLETED

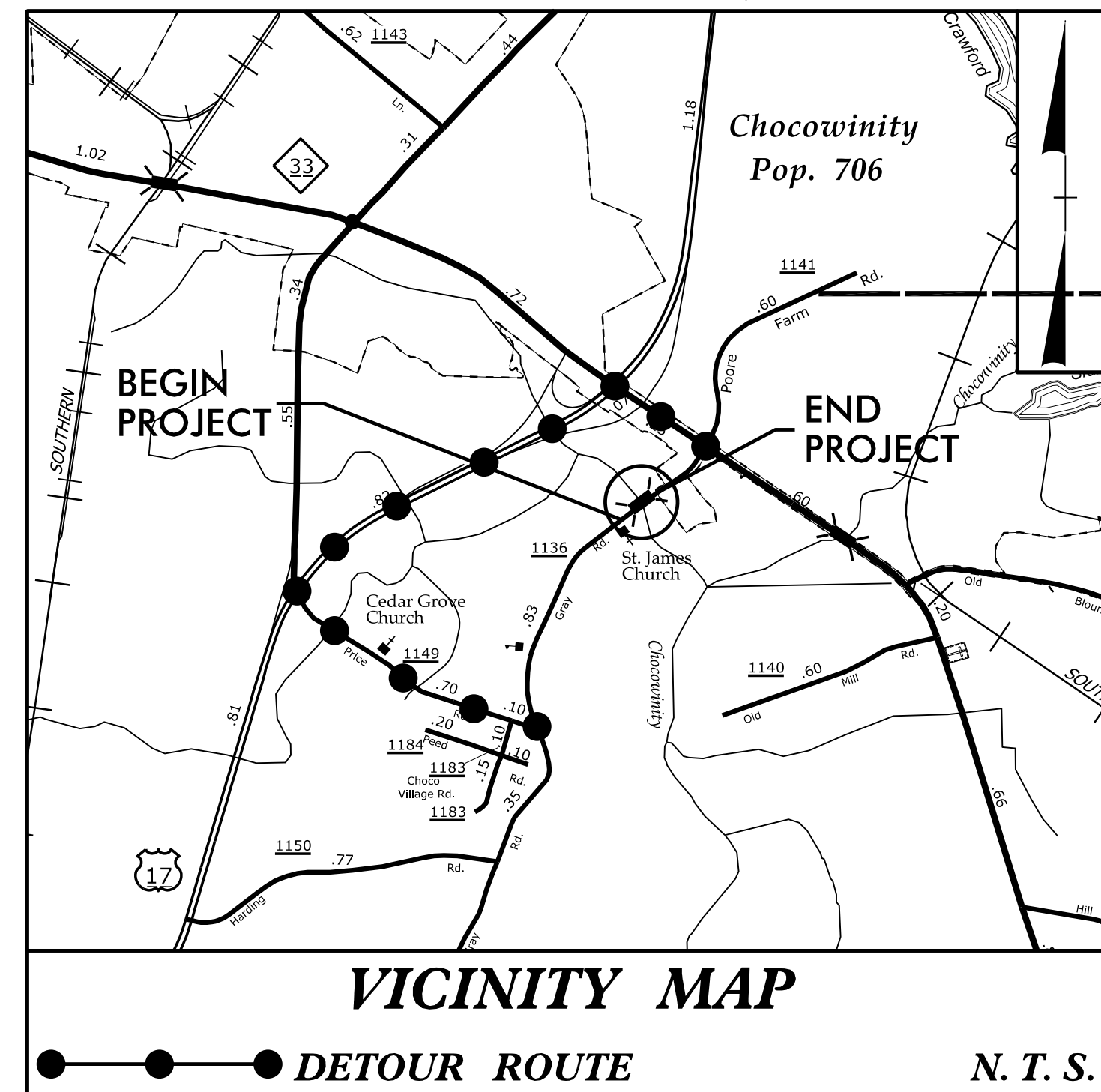


TEMPORARY OFF-SITE DETOUR

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4425	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.2.R.87		P.E.	

TIP PROJECT: B-4425

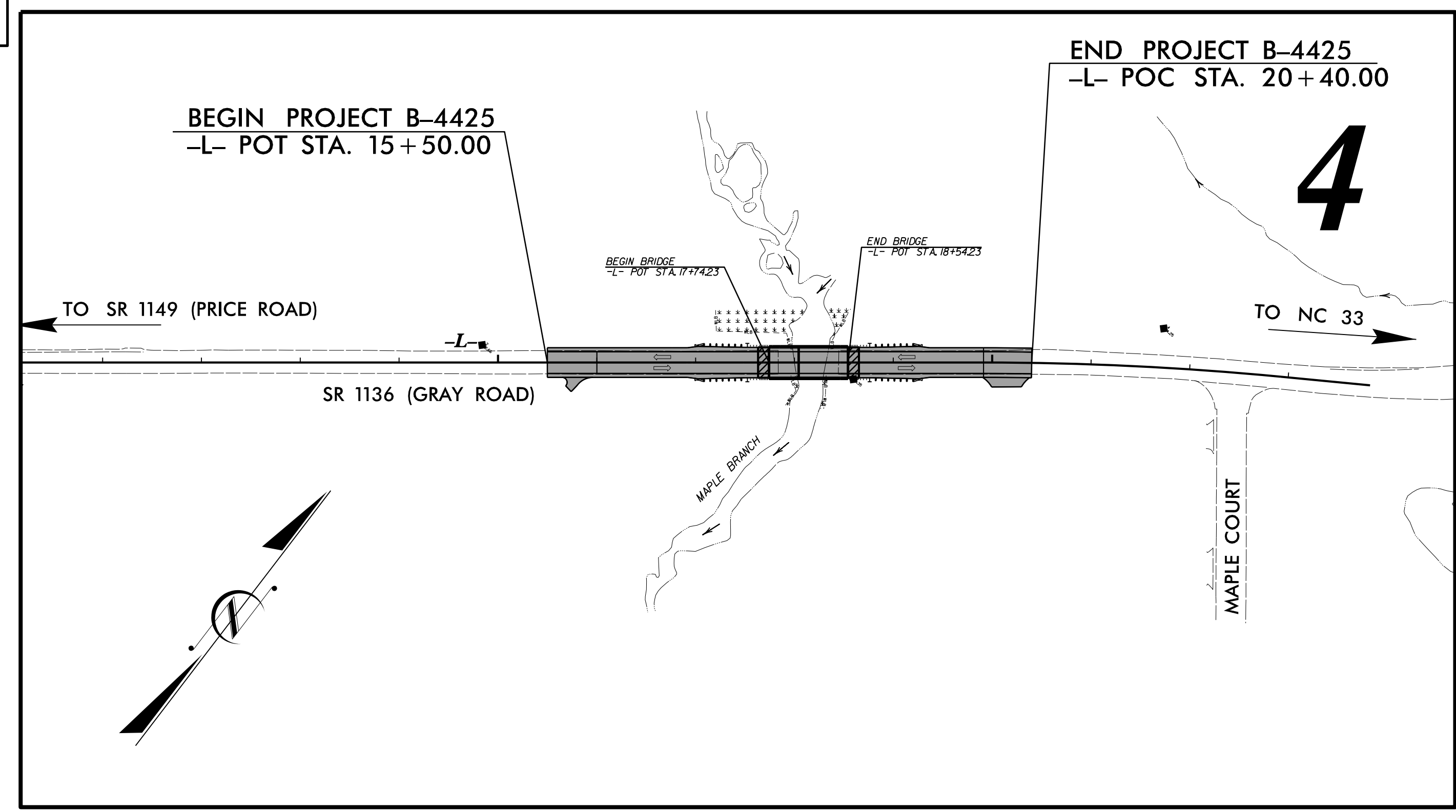
See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



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

**LOCATION: REPLACE BRIDGE 69 OVER MAPLE BRANCH
ON SR 1136 (GRAY ROAD)**

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



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

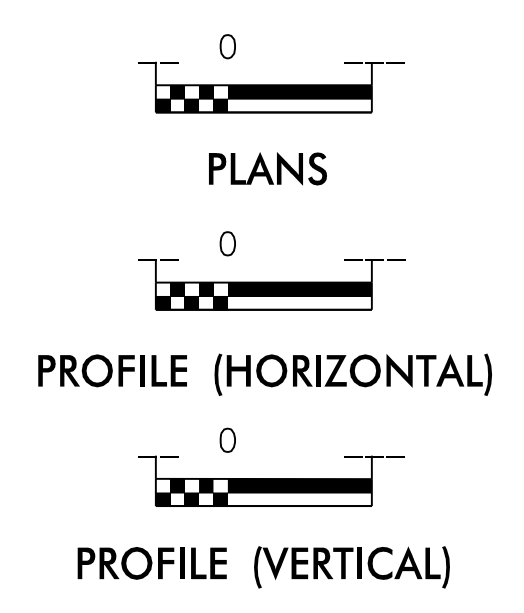
EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	III III III
1606.01	Special Sediment Control Fence	III III III
1622.01	Temporary Berms and Slope Drains	III III III
1650.02	Silt Basin Type B	III III III
1633.01	Temporary Rock Silt Check Type-A	III III III
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	III III III
1633.02	Temporary Rock Silt Check Type-B	III III III
	Wattle/Coir Fiber Wattle	III III III
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	III III III
1634.01	Temporary Rock Sediment Dam Type-A	III III III
1634.02	Temporary Rock Sediment Dam Type-B	III III III
1635.01	Rock Pipe Inlet Sediment Trap Type-A	III III III
1635.02	Rock Pipe Inlet Sediment Trap Type-B	III III III
1630.04	Stilling Basin	III III III
1630.06	Special Stilling Basin	III III III
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	III III III
	Tiered Skimmer Basin	III III III
	Infiltration Basin	III III III

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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

GRAPHIC SCALE



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2016 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

Prepared in the Office of:
MI ENGINEERING, PLLC
1011 SCHAUB DR SUITE 100
RALEIGH NC 27606

Designed by:
GREGORY COLS 3187
NAME LEVEL III CERTIFICATION NO.

Reviewed in the Office of:
ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington St.
Raleigh, NC 27611

2018 STANDARD SPECIFICATIONS

Reviewed by:
ANDREW BLANKENSHIP, PE, CPESC

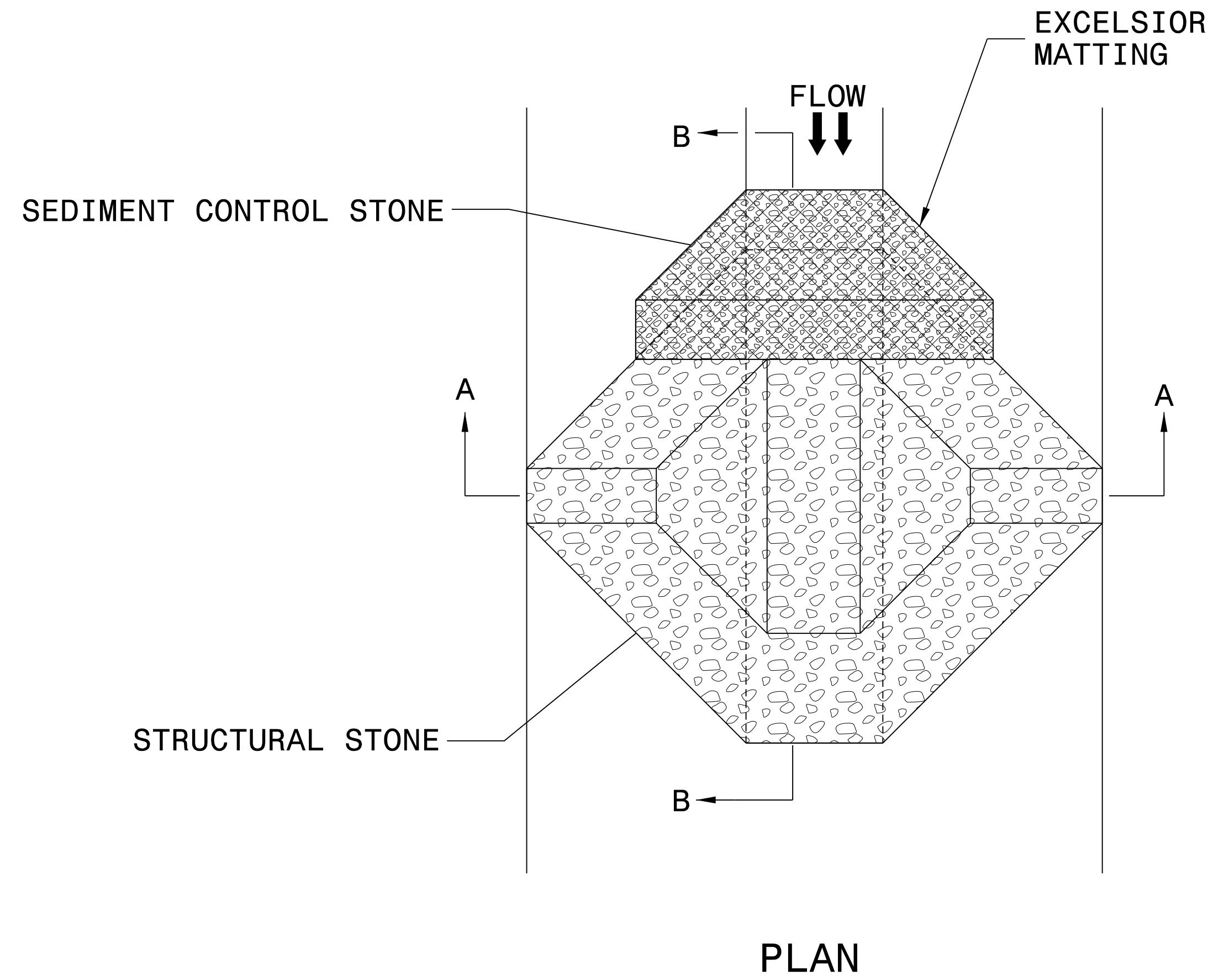
Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2018 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 C
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type A
1622.01 Temporary Berms and Slope Drains	1633.02 Temporary Rock Silt Check Type B
1630.01 Riser Basin	1633.03 Temporary Rock Silt Check Type C
1630.02 Silt Basin Type 3	1634.01 Temporary Rock Sediment Dam Type A
1630.03 Temporary Silt Ditch	1634.02 Temporary Rock Sediment Dam Type B
1630.04 Stilling Basin	1635.01 Rock Pipe Inlet Sediment Trap Type A
1630.05 Temporary Diversion	1635.02 Rock Pipe Inlet Sediment Trap Type B
1630.06 Special Stilling Basin	1640.01 Coir Fiber Wattle
1631.01 Matting Installation	1645.01 Temporary Stream Crossing

PROJECT REFERENCE NO. B-4425	SHEET NO. EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



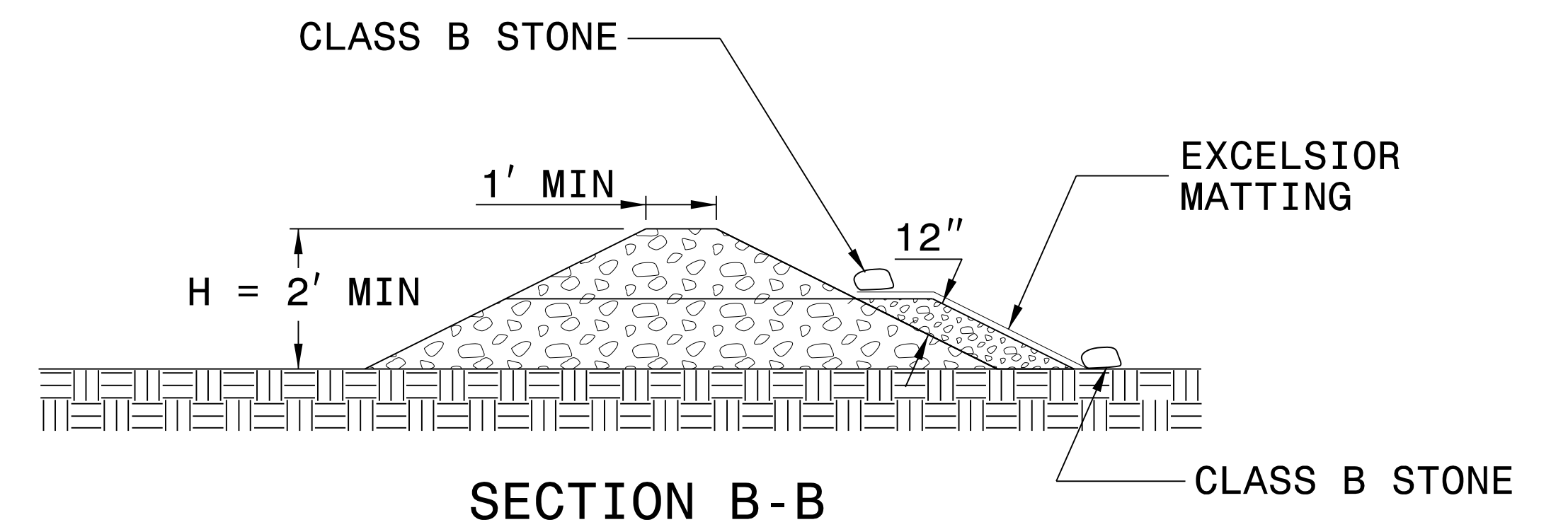
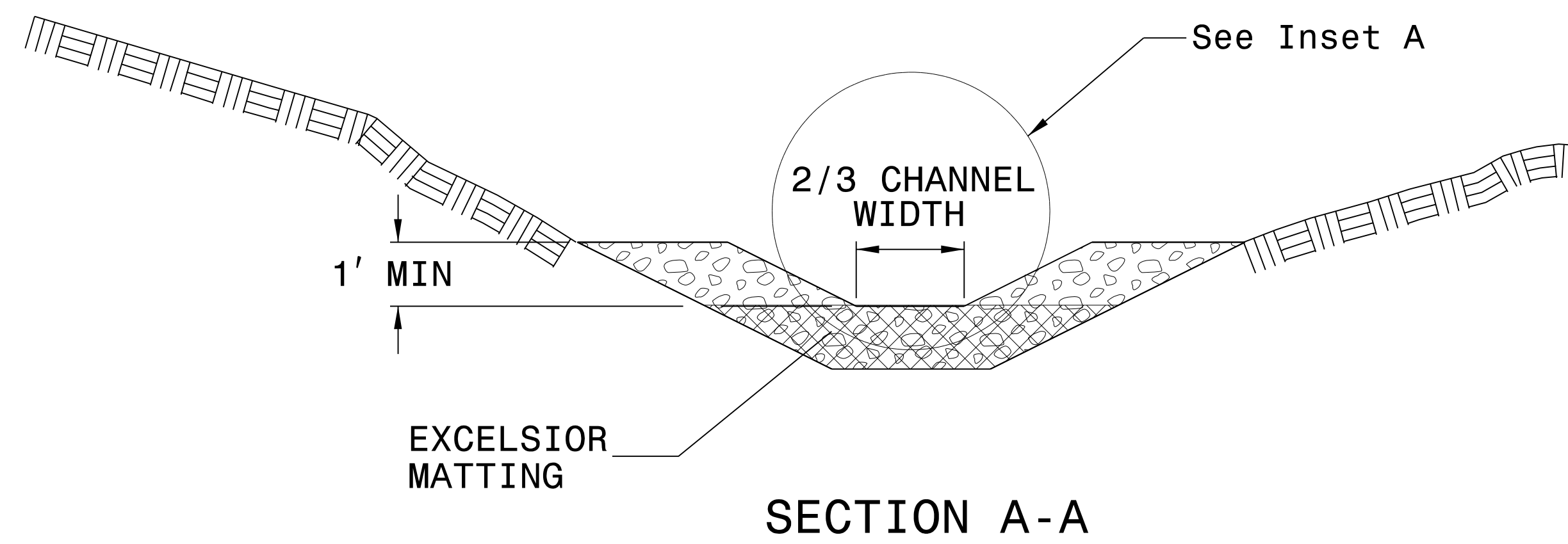
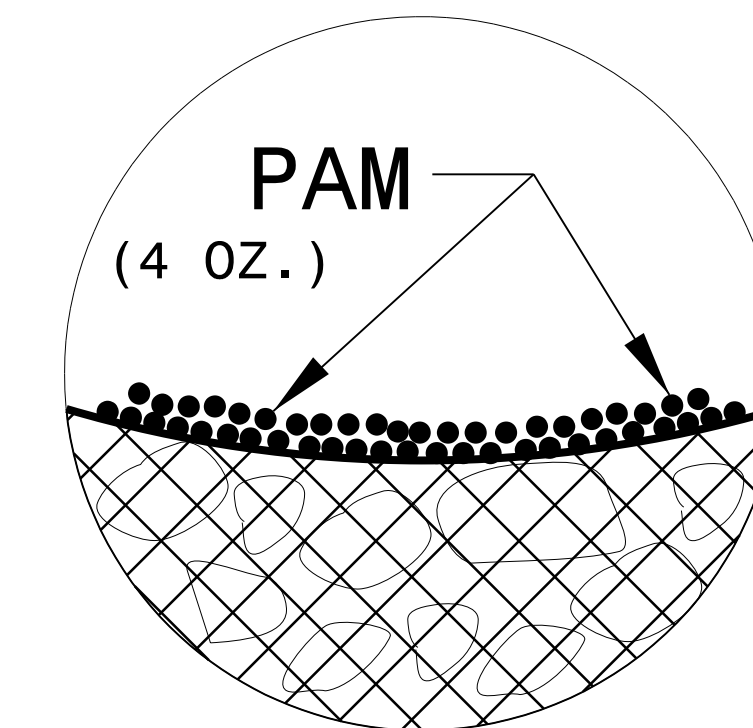
NOTES:

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.

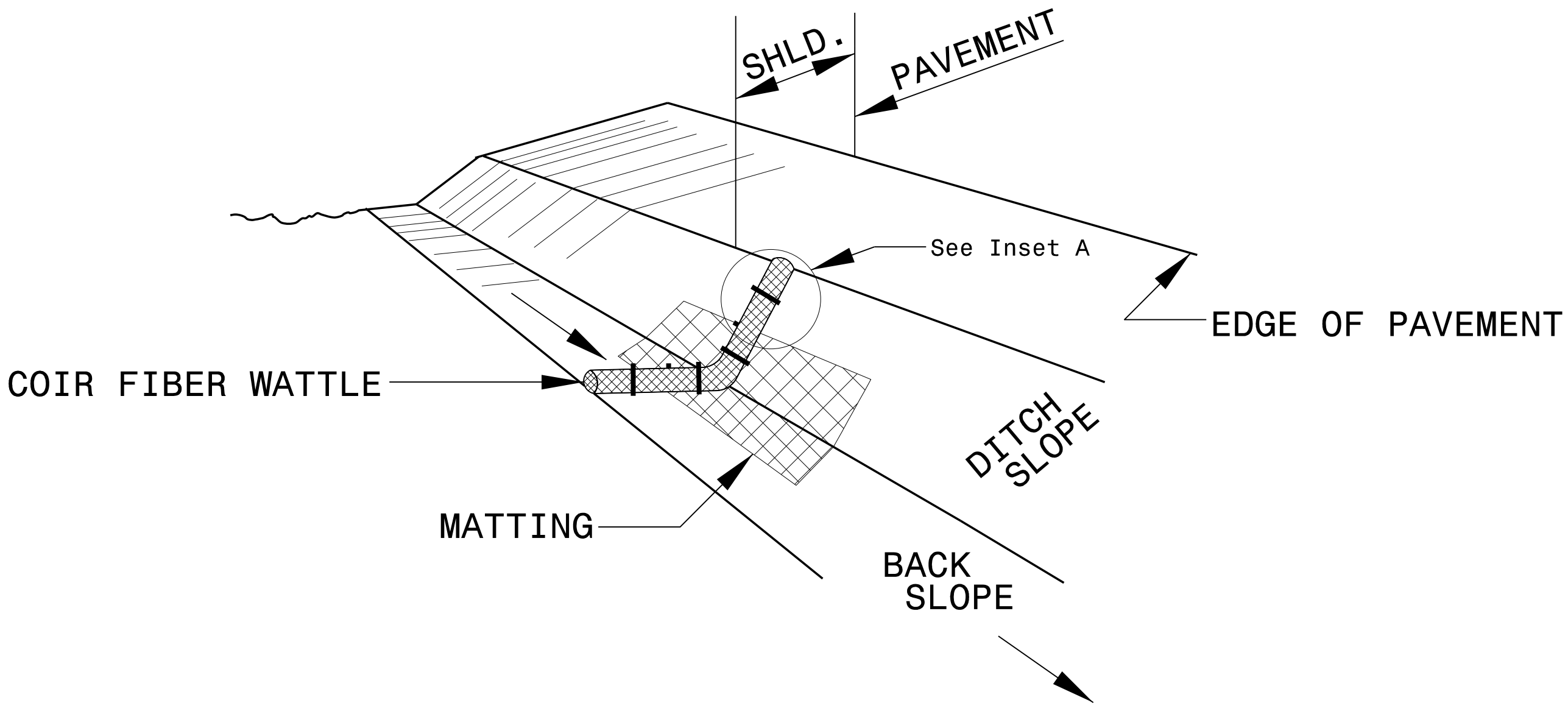
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



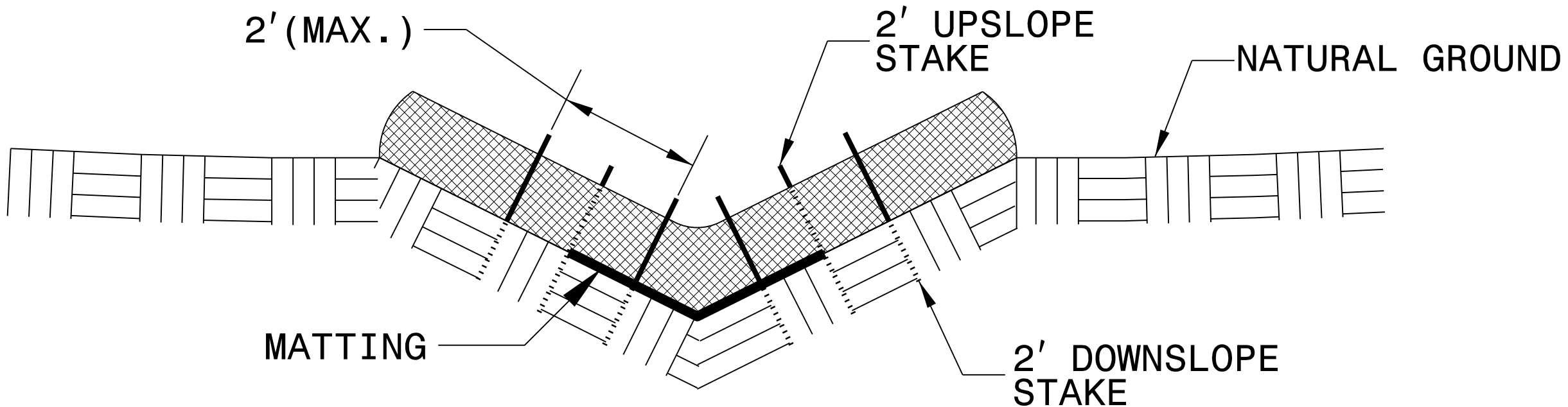
NOT TO SCALE

PROJECT REFERENCE NO. B-4425	SHEET NO. EC-2A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

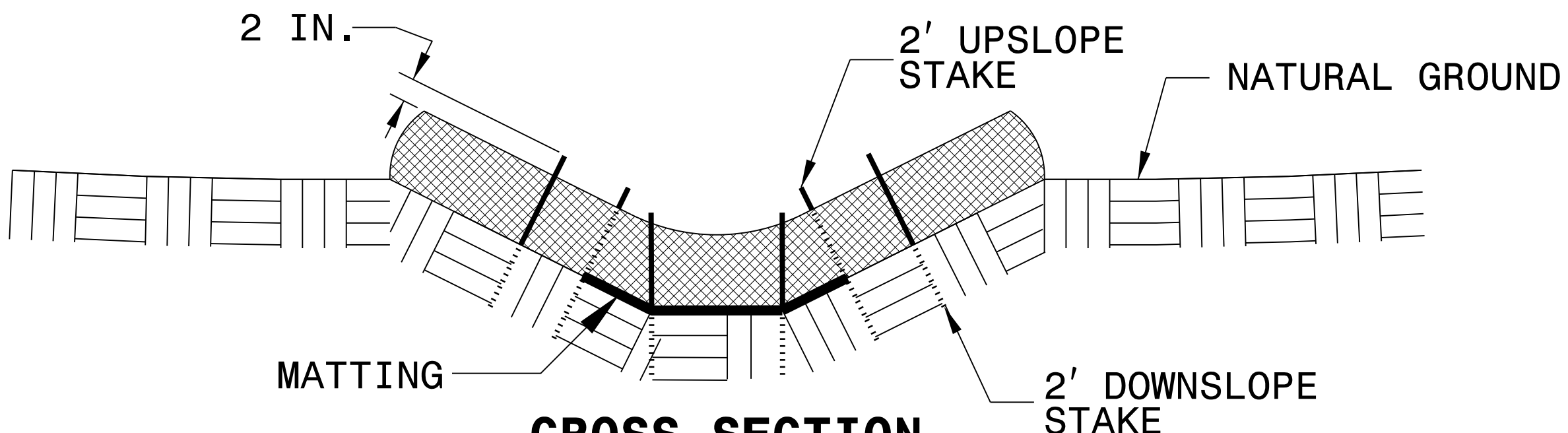
COIR FIBER WATTLE DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

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

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

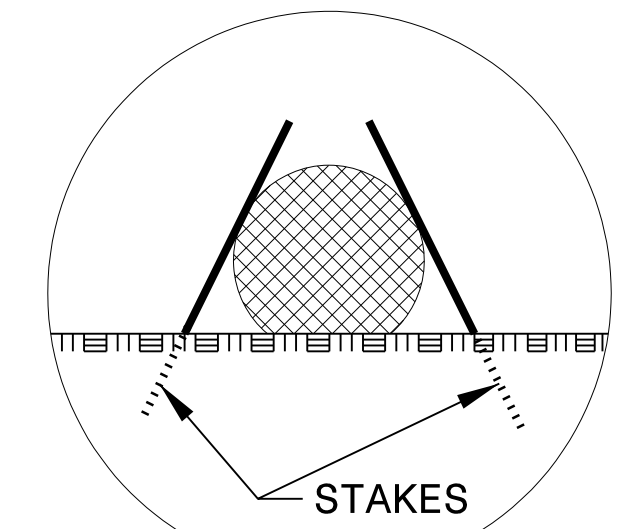
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

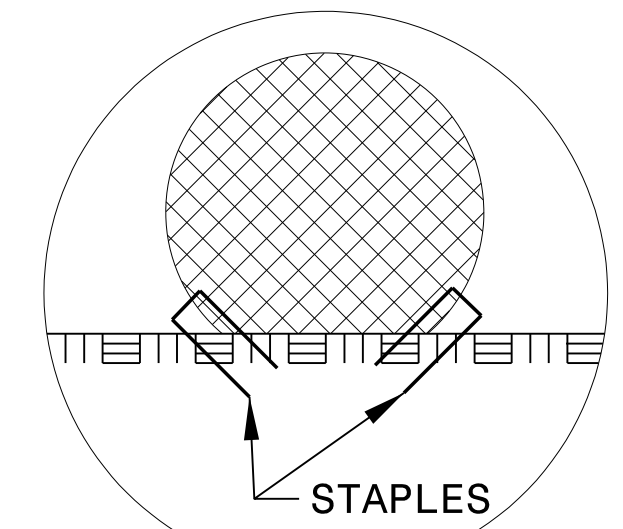
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

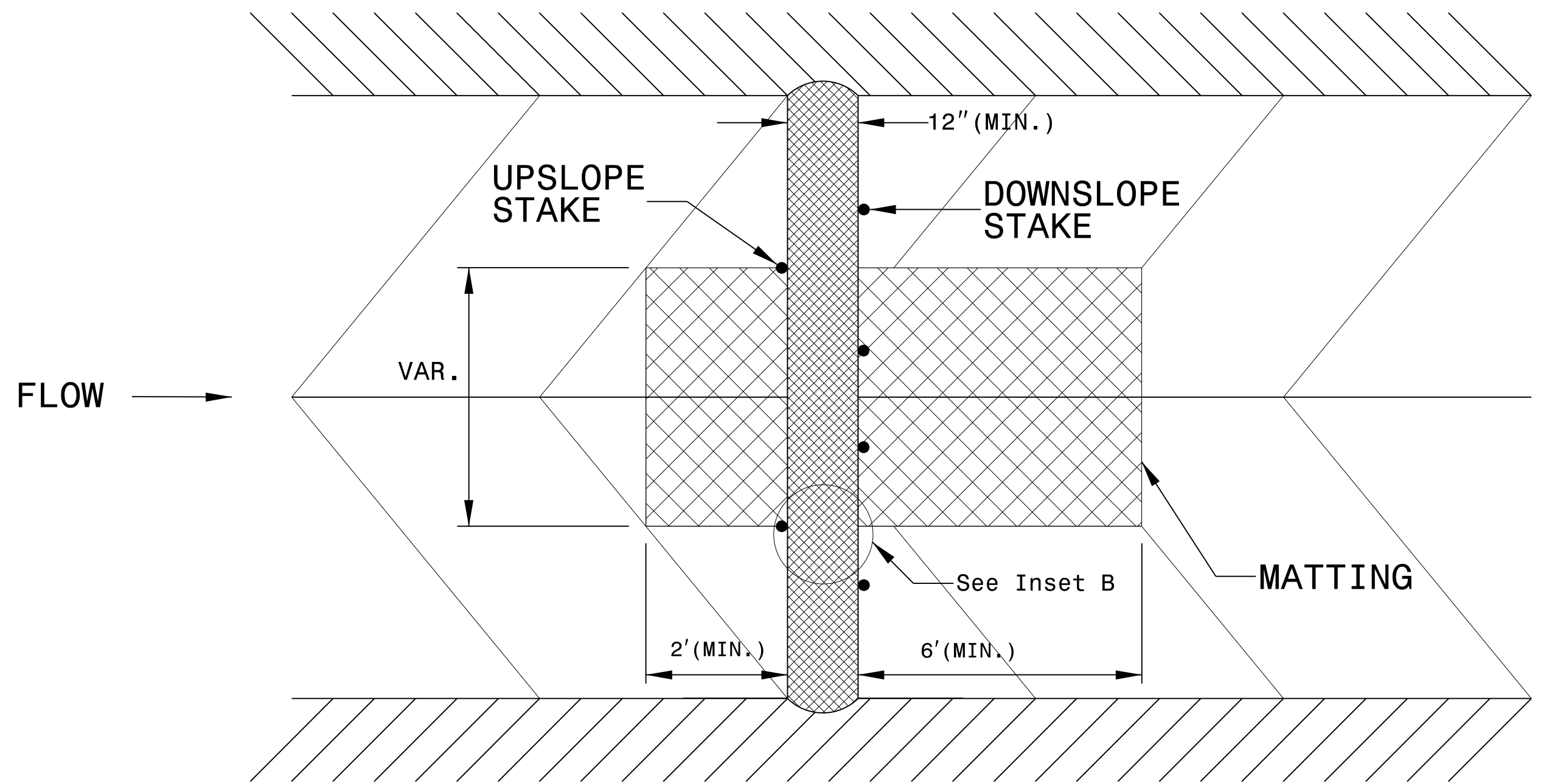
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



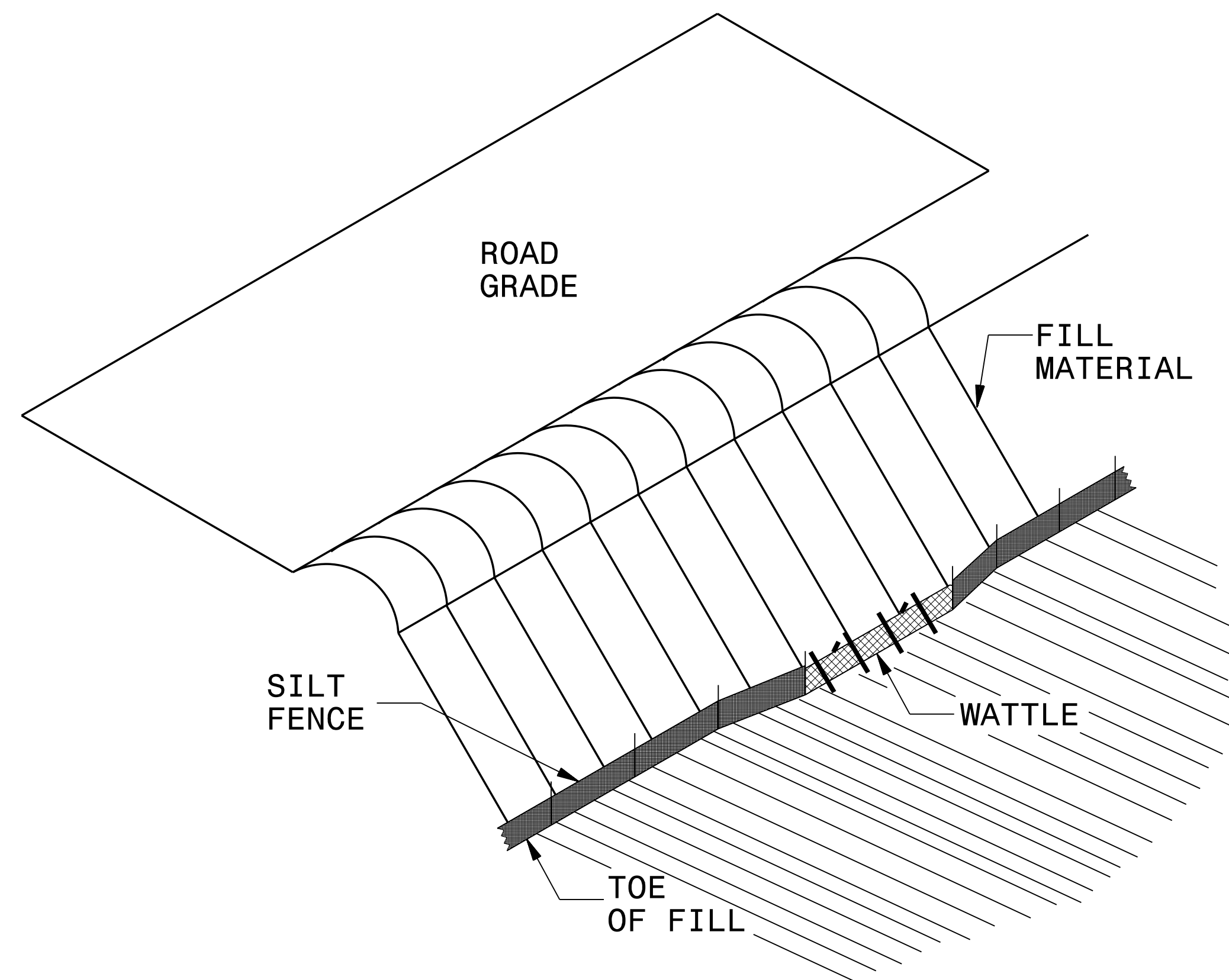
INSET B



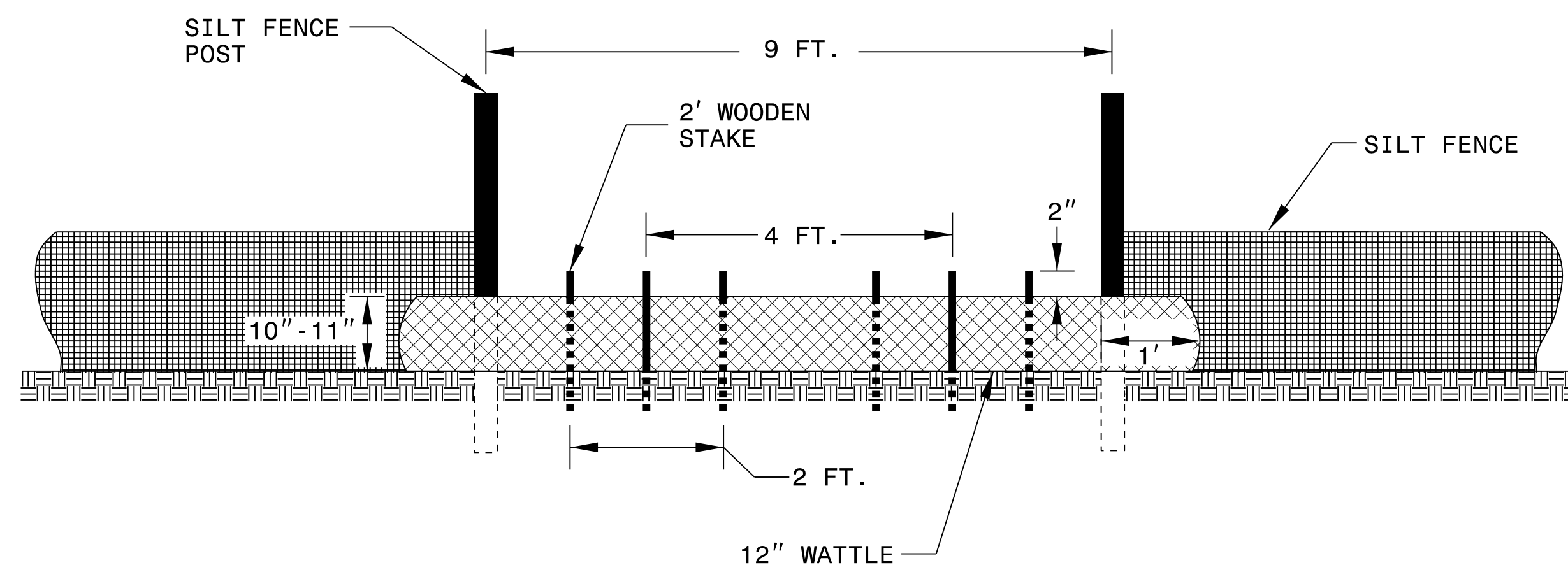
TOP VIEW

SILT FENCE COIR FIBER WATTLE BREAK DETAIL

PROJECT REFERENCE NO. B-4425	SHEET NO. EC-2B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

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

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

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

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

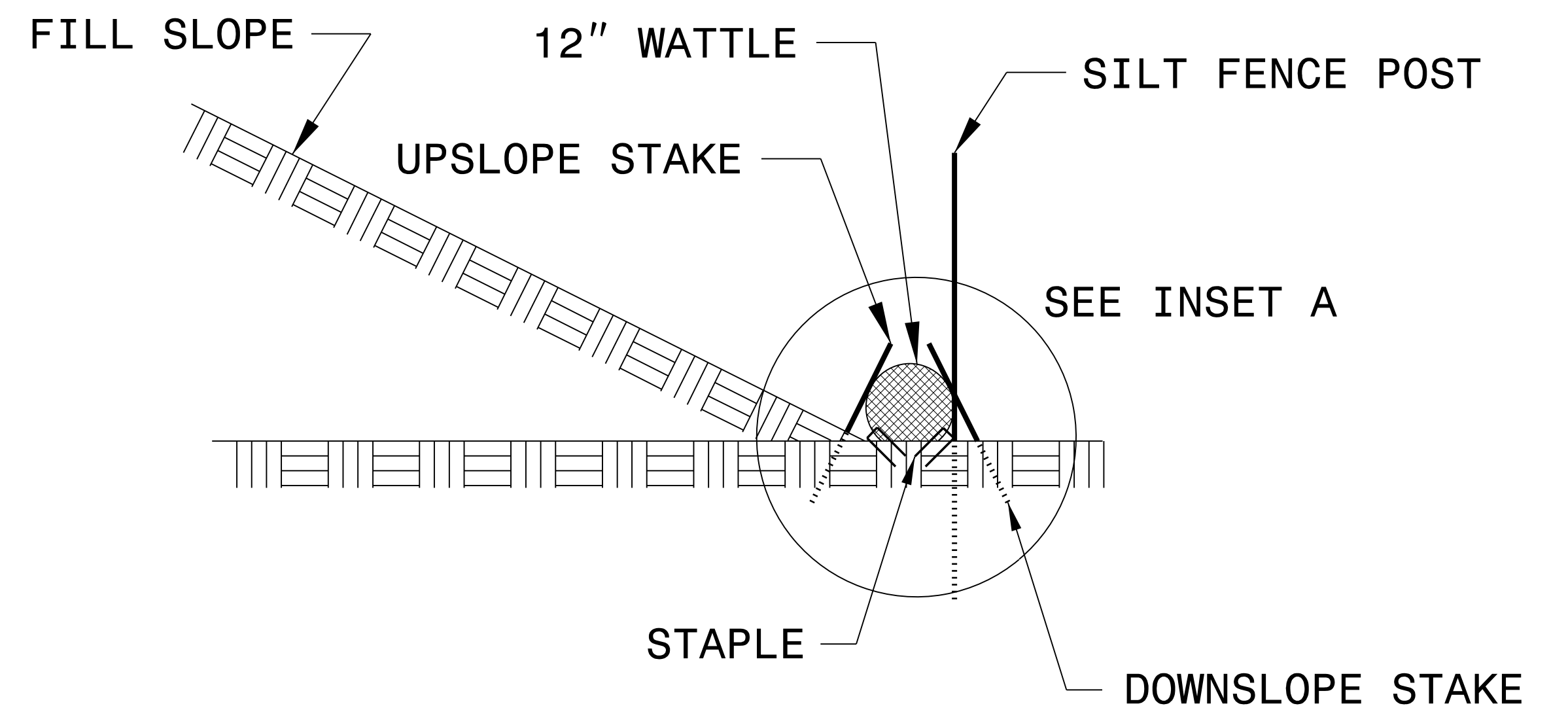
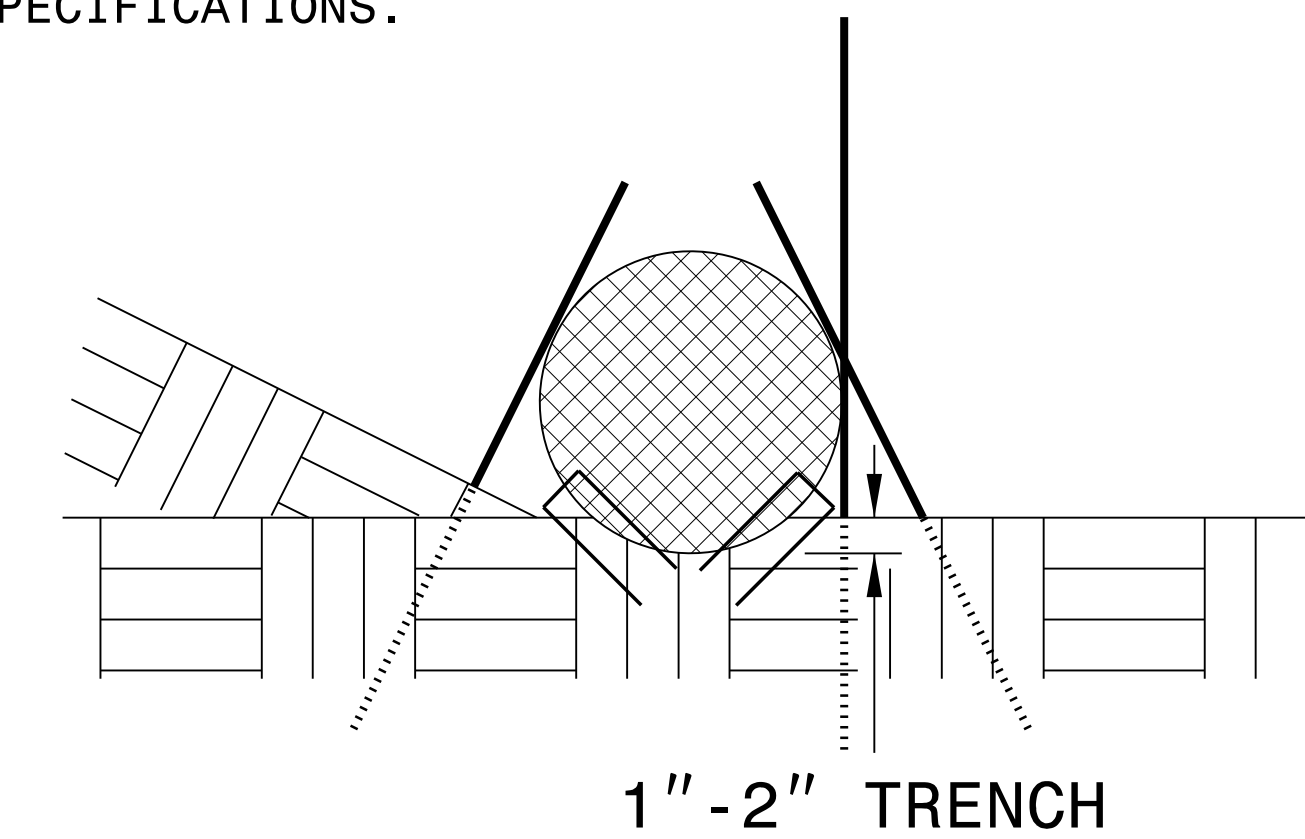
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

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

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

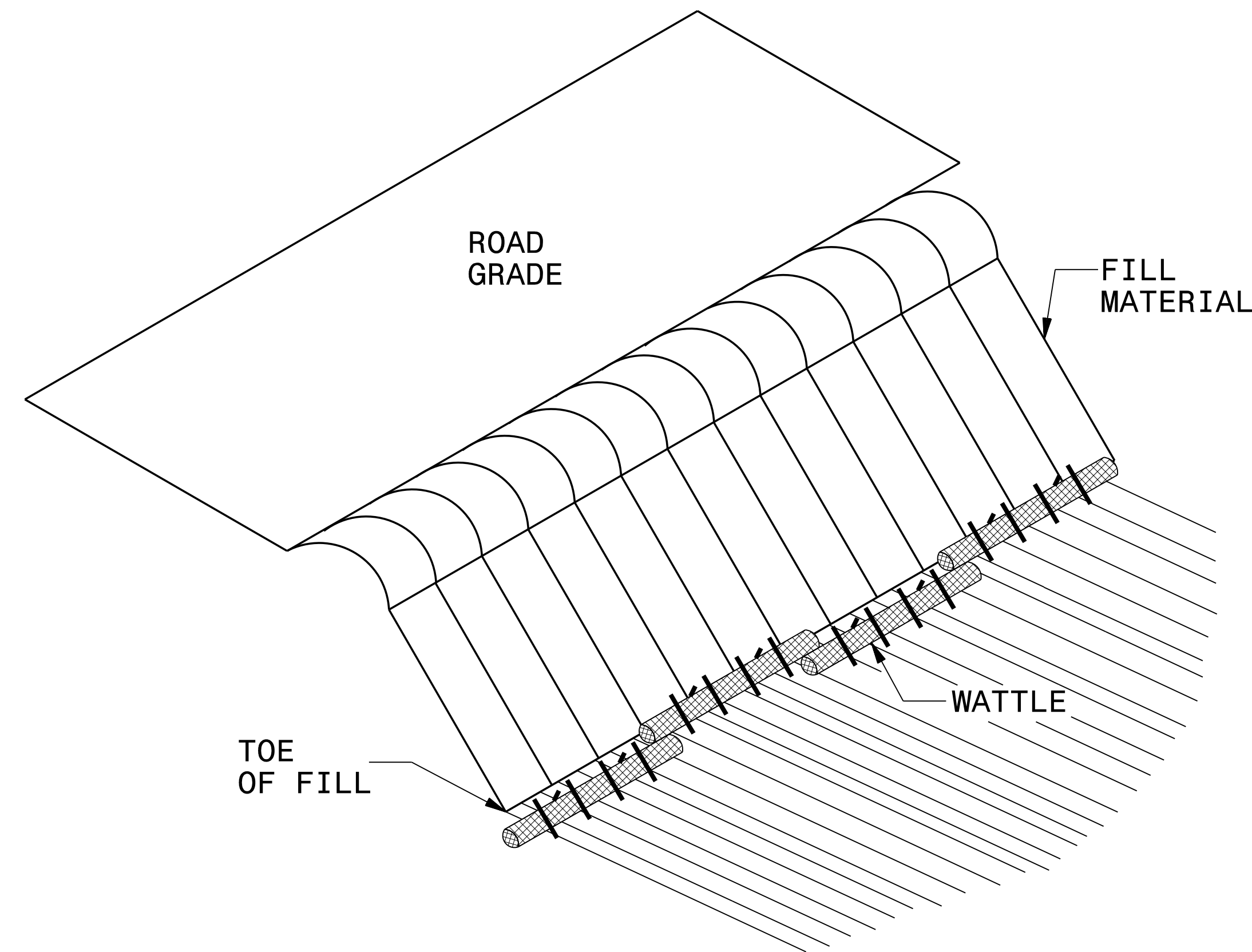
INSET A



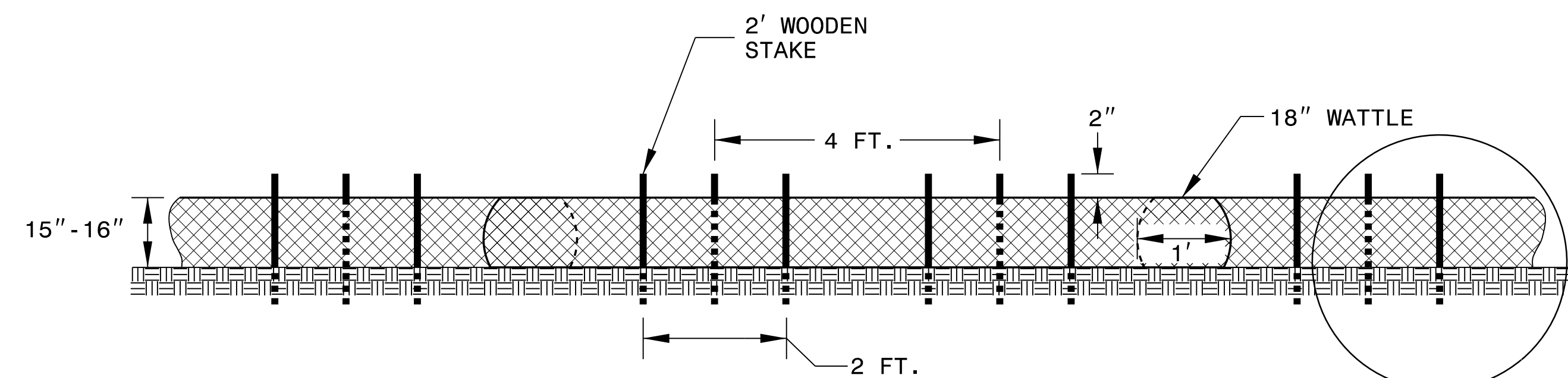
SIDE VIEW

PROJECT REFERENCE NO. B-4425	SHEET NO. EC-2C
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

COIR FIBER WATTLE BARRIER DETAIL



ISOMETRIC VIEW



FRONT VIEW

SEE INSET A

NOTES:

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

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

DO NOT PLACE WATTLES ON TOE OF SLOPE.

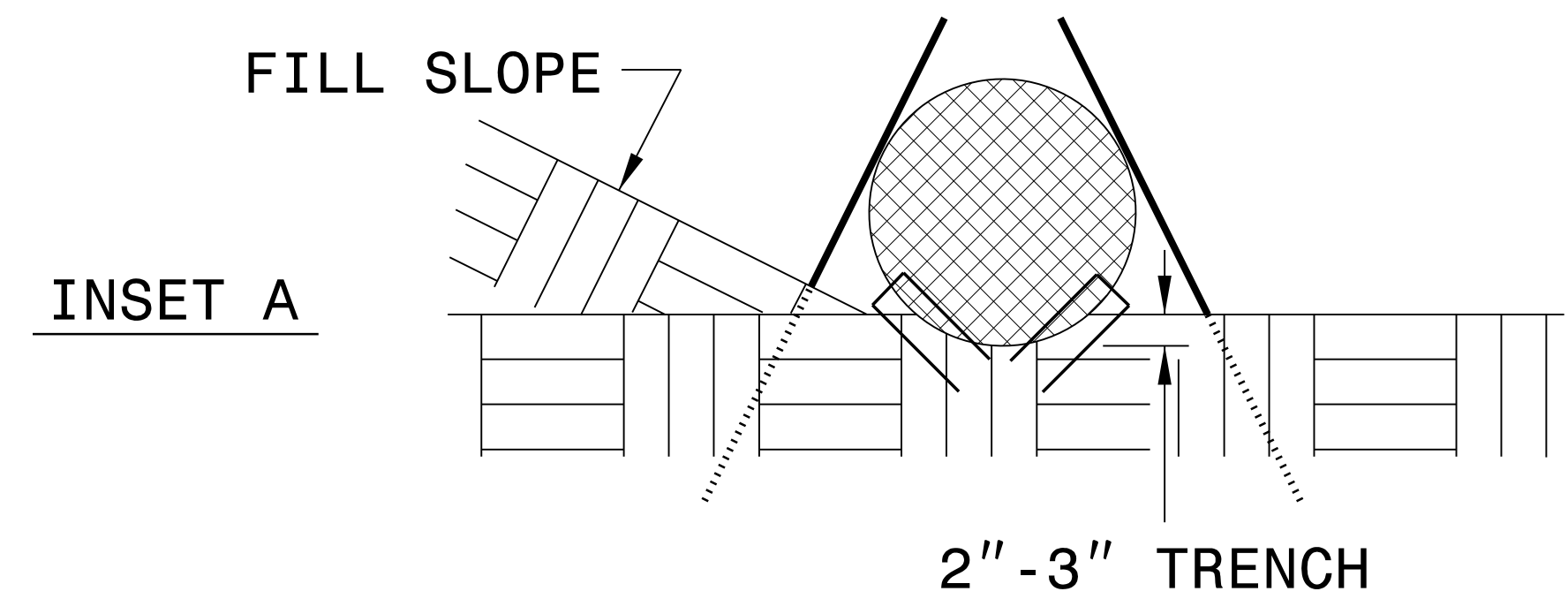
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

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

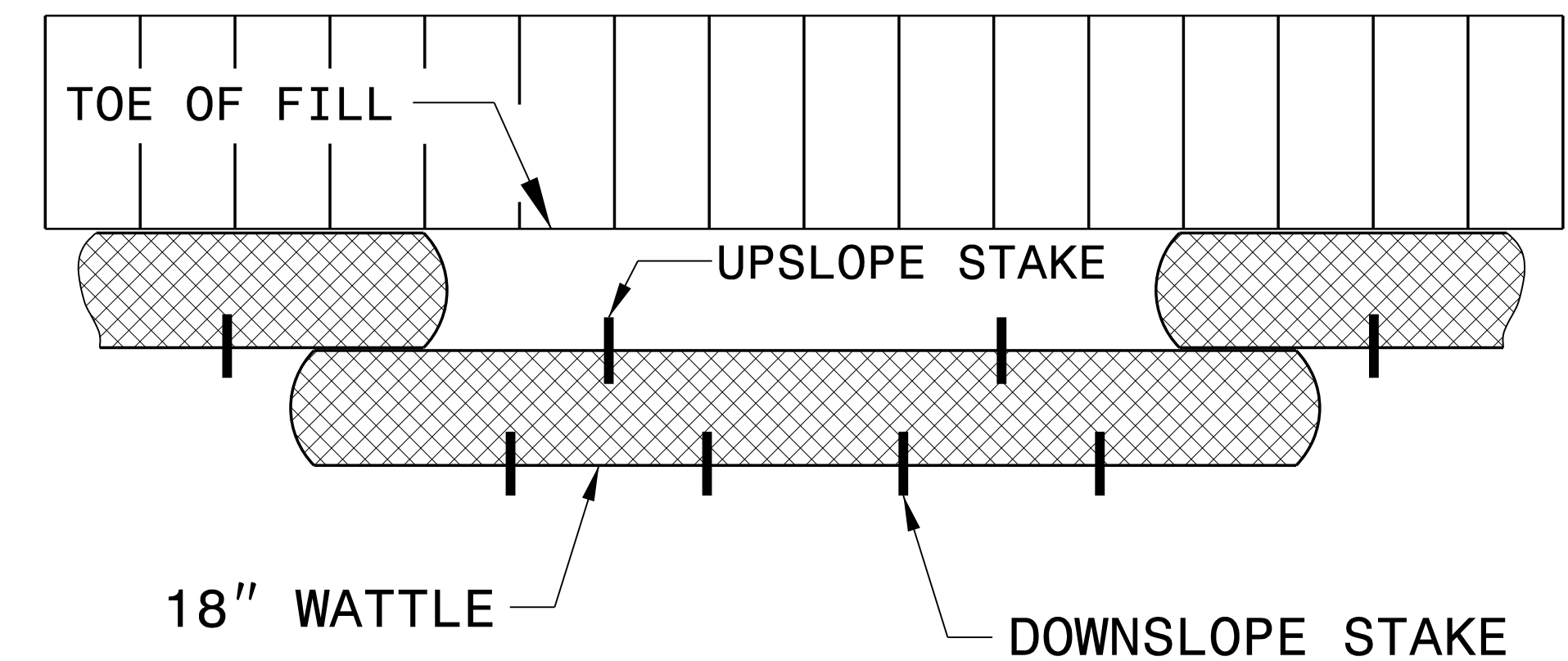
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

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



INSET A



TOP VIEW

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

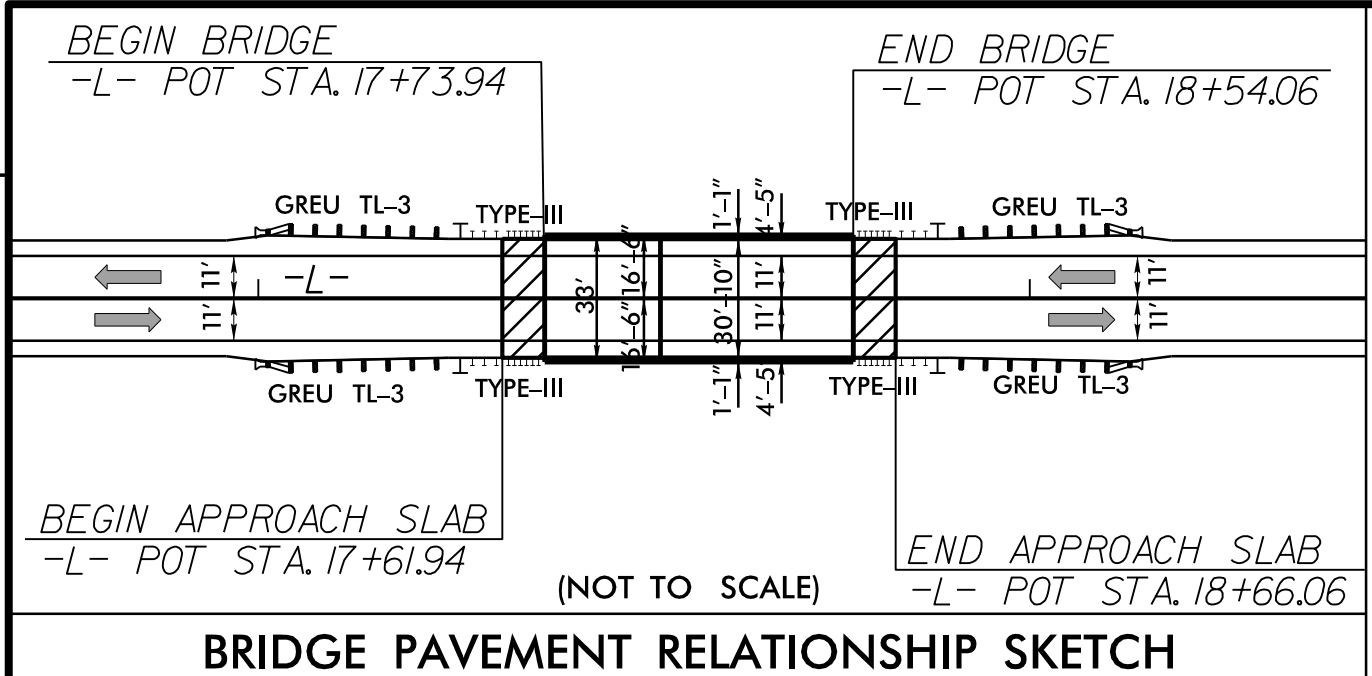
PROJECT REFERENCE NO. <i>B-4425</i>	SHEET NO. <i>EC-3A</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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.

CLEARING & GRUBBING PLAN

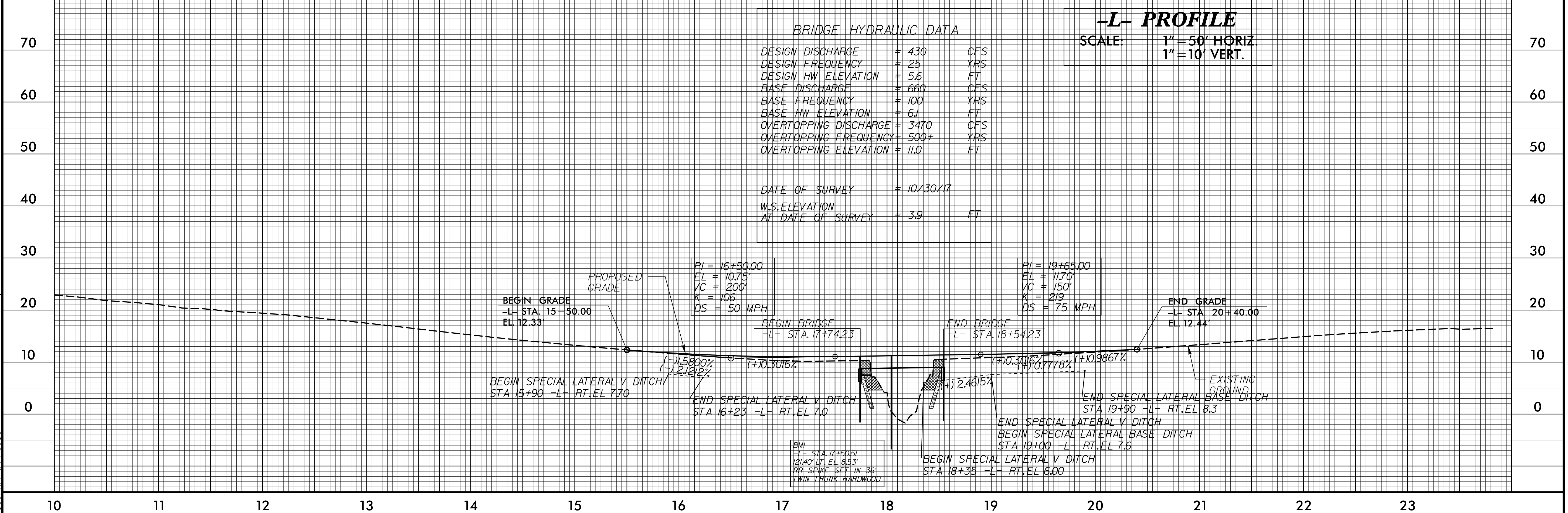
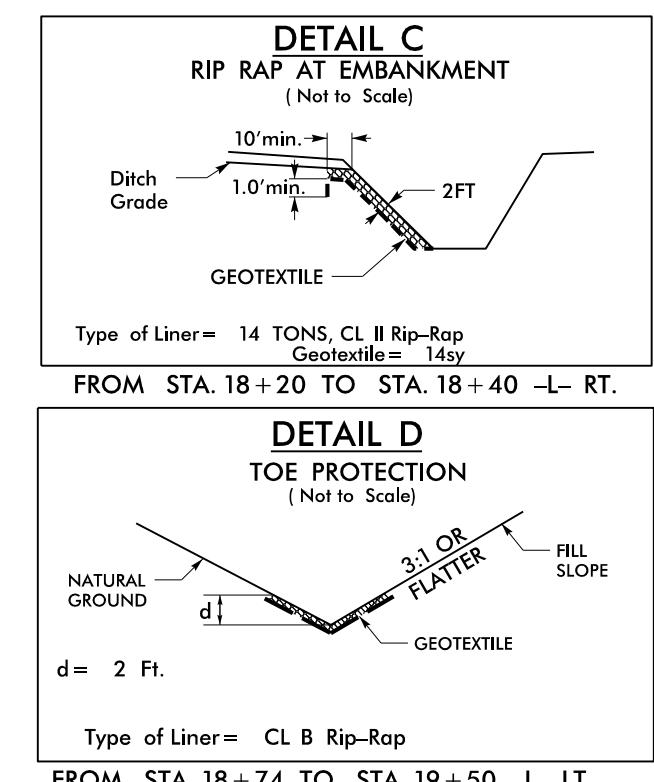
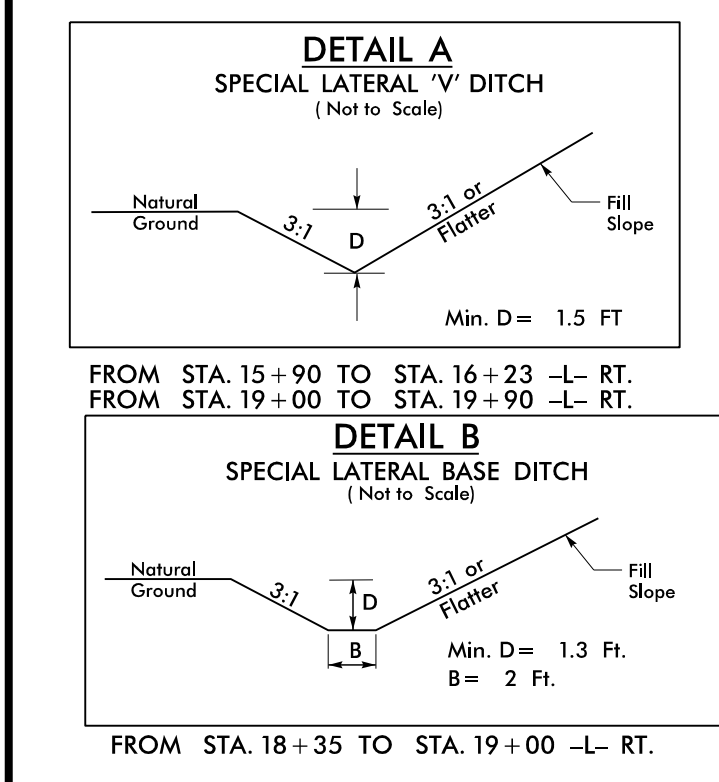
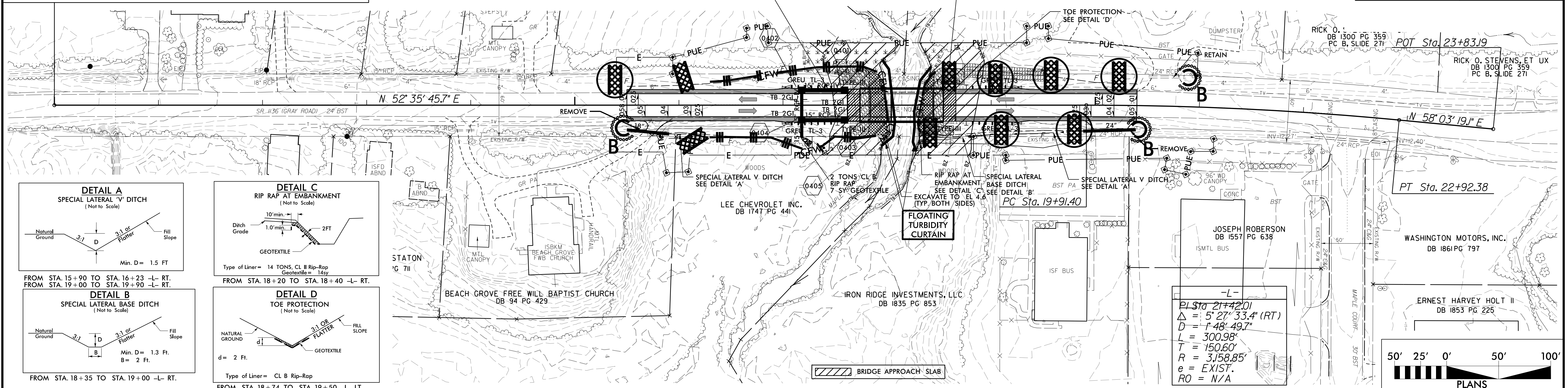
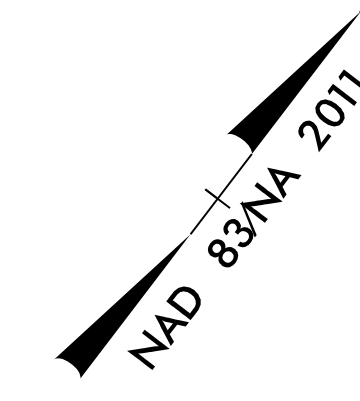
PROJECT REFERENCE NO. B-4425	SHEET NO. EC-4/CONST.04
RW SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
CDM Smith 4401 Glenwood Avenue Suite 400 Raleigh, NC 27612-3228 NC CCR No. F-1255	MF Engineering, PLLC 101 S. Hargett Drive Suite 100 Raleigh, NC 27606 NC CCR No. P-0671



CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

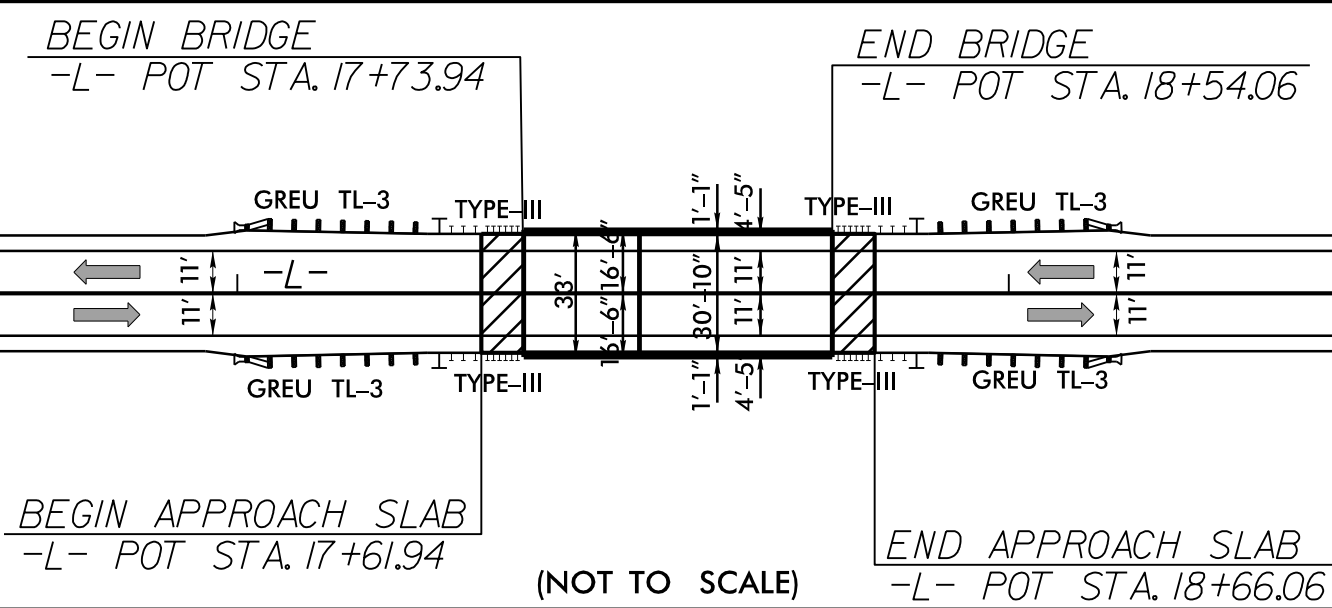
NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE
INSTALLED DURING CLEARING AND GRUBBING PHASE.



REVISIONS

8/17/19

8/17/99

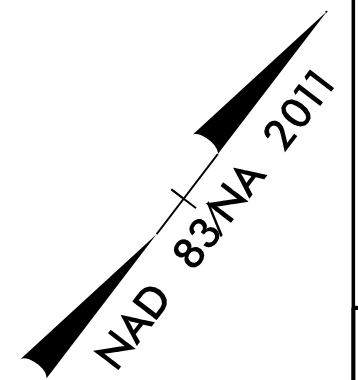


FINAL GRADE PLAN

NOTE: EXCELSIOR MATTING MAY NOT BE USED WITHIN 25FT OF STREAM BANK

Place Matting for Erosion Control on Slope as Work Allows. Sta. 15+50 TO 17+65 -L- LT/RT

Place Matting for Erosion Control on Slope as Work Allows. Sta. 18+64 TO 20+40 -L- LT/RT

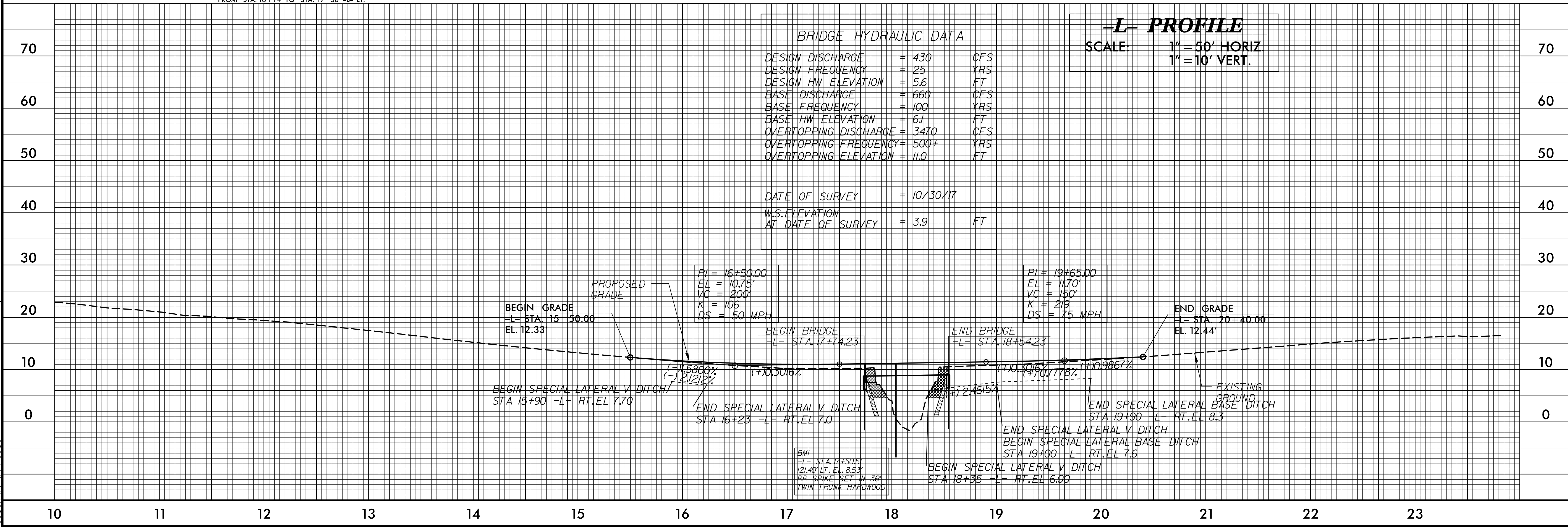
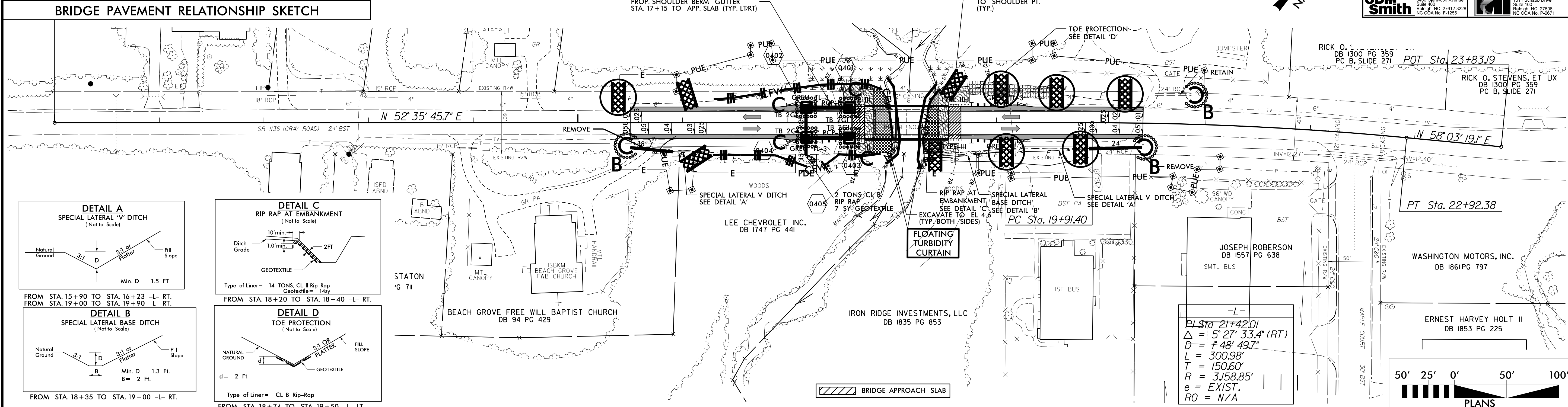


PROJECT REFERENCE NO. B-4425 SHEET NO. EC-5/CONST.04

RW SHEET NO. ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

CDM Smith CDM Smith Inc. 5400 Glenwood Avenue Suite 400 Raleigh, NC 27612-3228 NC CDA No. F-1255

ME Engineering, PLLC 1011 Spruce Drive Suite 100 Raleigh, NC 27606 NC CDA No. P-0871



REVISIONS

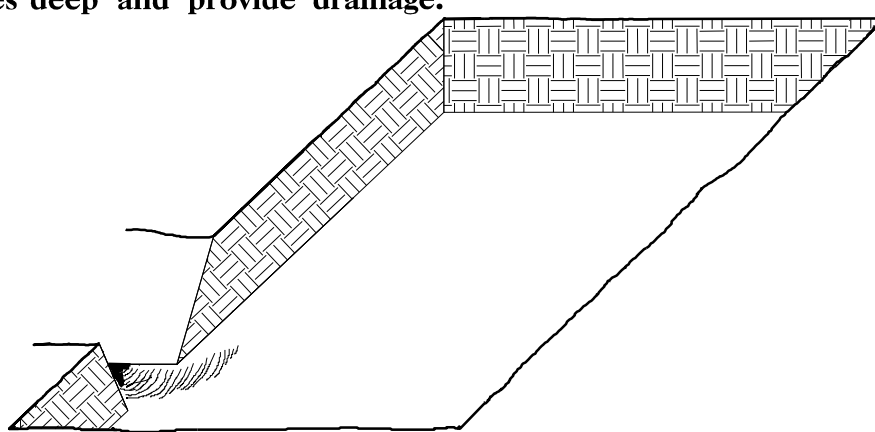
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PLANTING DETAILS

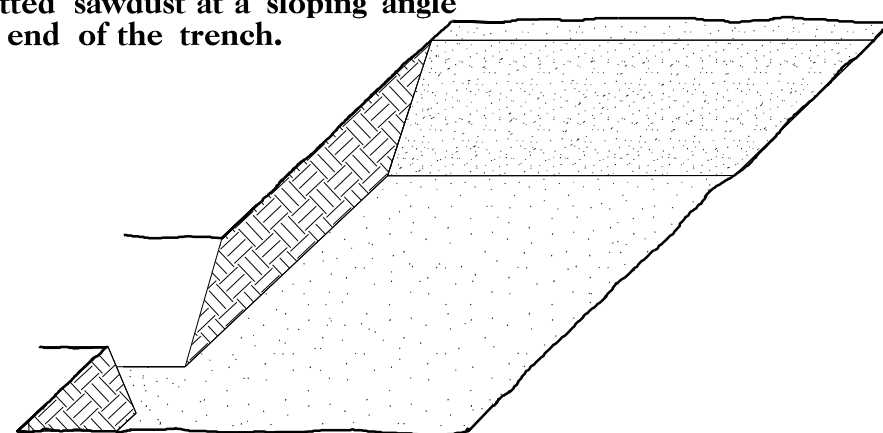
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

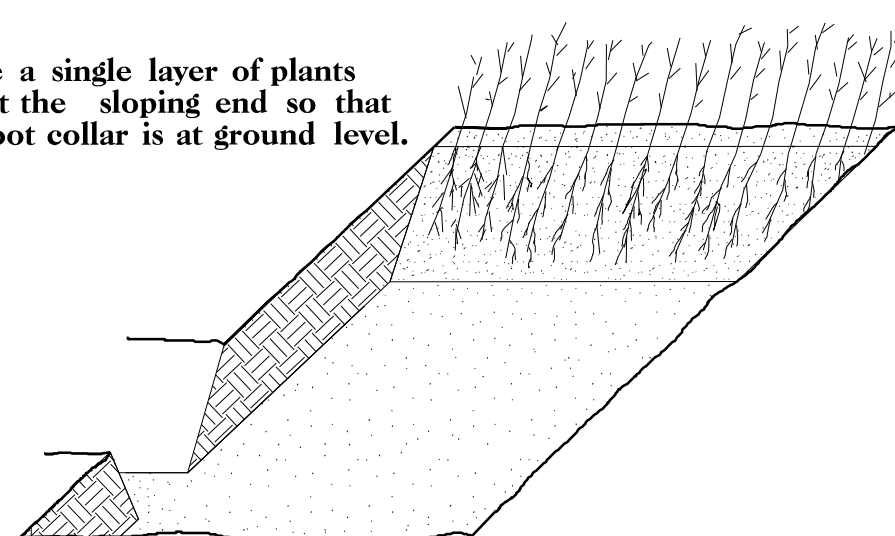
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



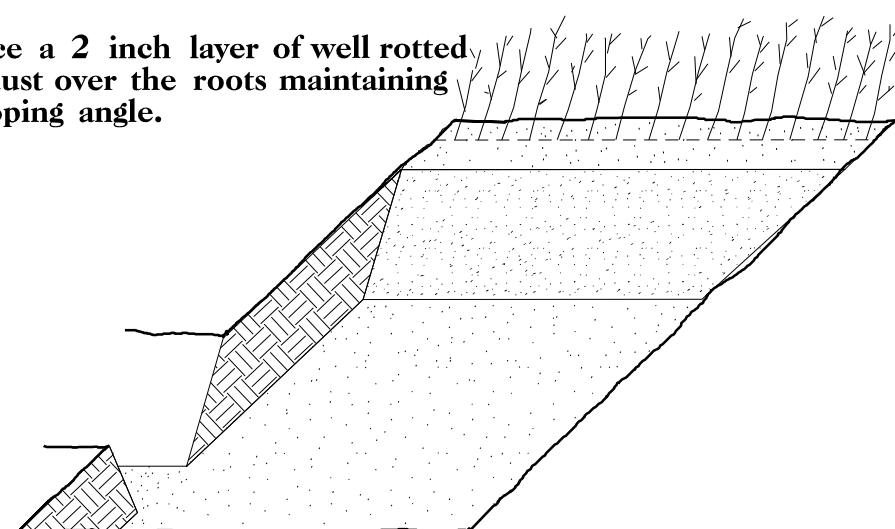
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

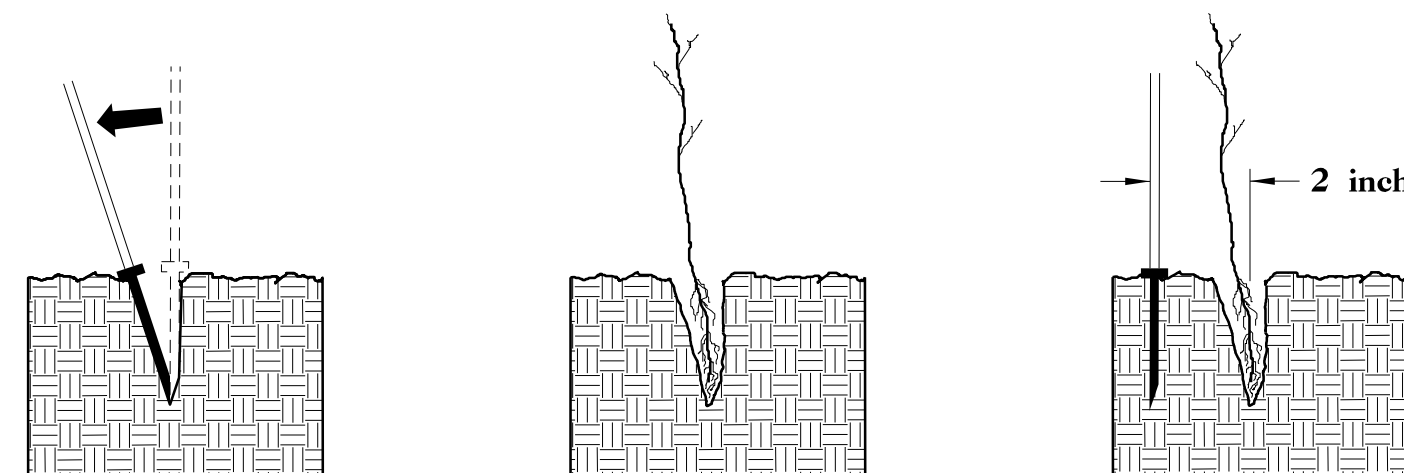


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.



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

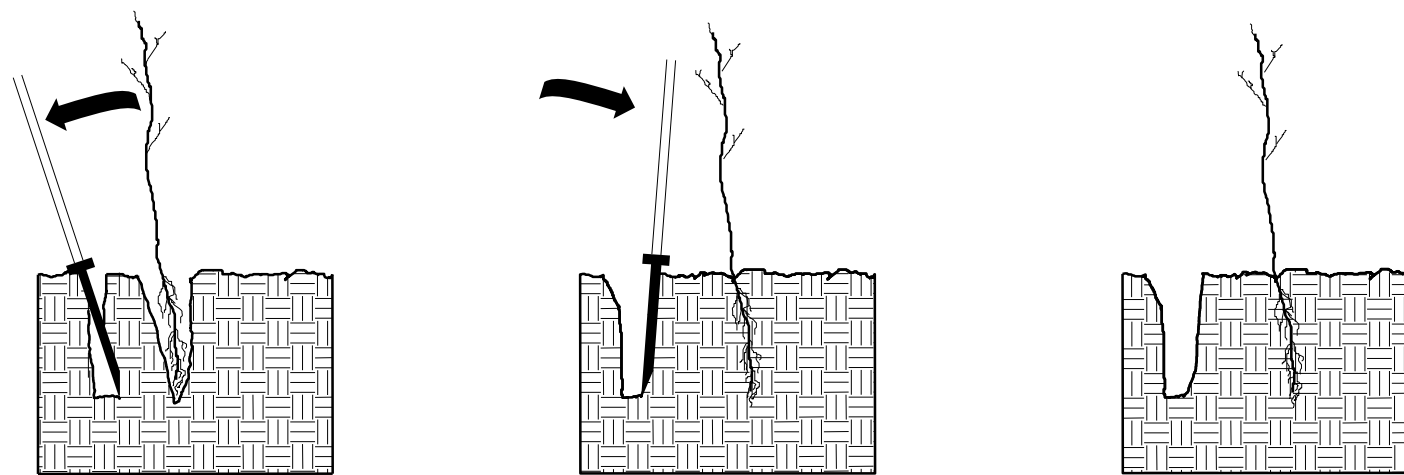
DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



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

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

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



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

5. Push handle forward firming soil at top.

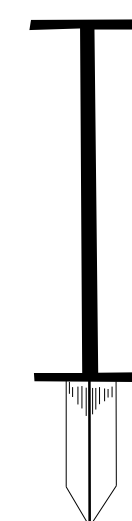
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

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



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



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

REFORESTATION

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

REFORESTATION

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

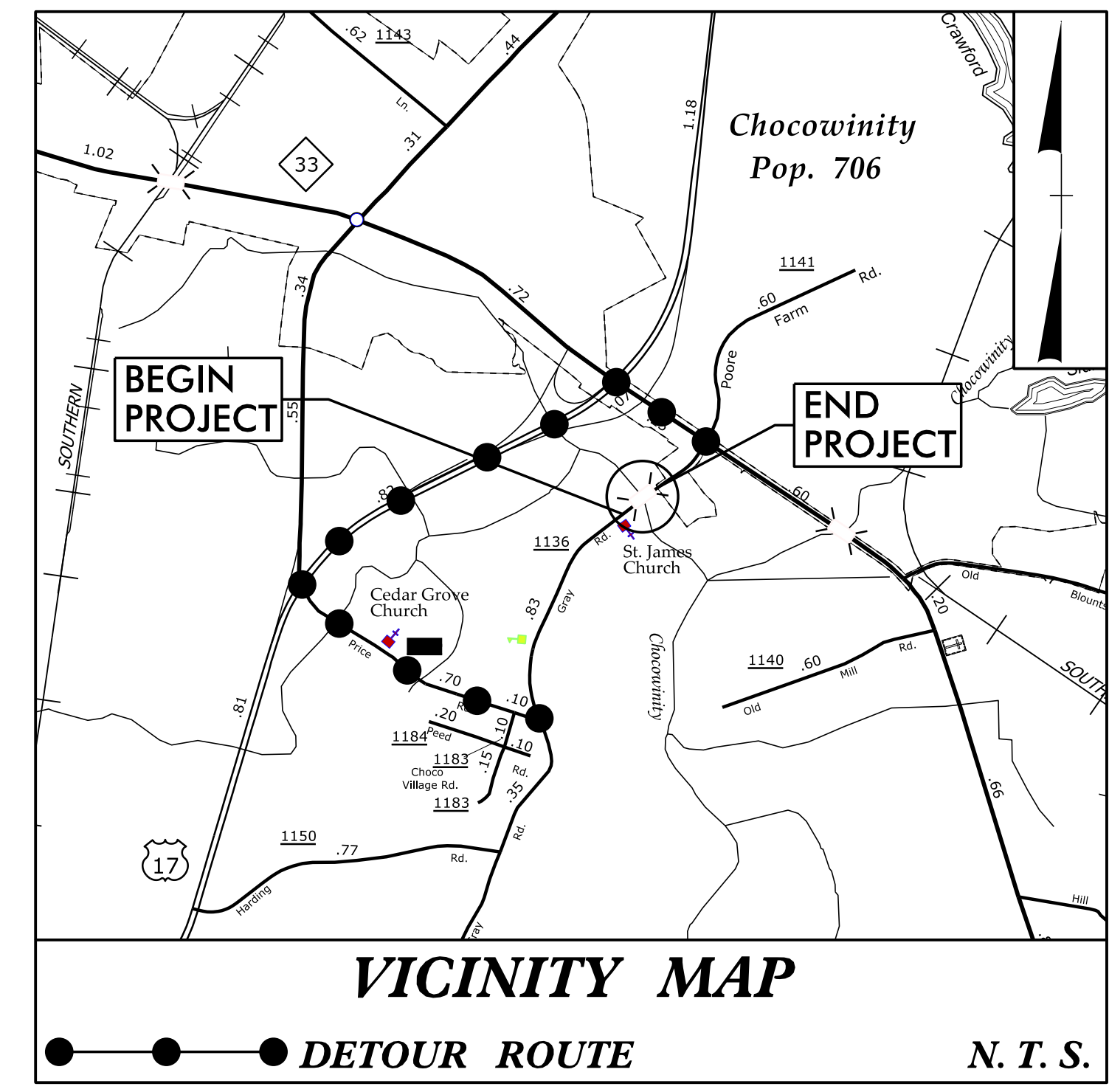
25%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
25%	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
25%	FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

REFORESTATION DETAIL SHEET

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

17-APR-2018 11:55 Y:\Projects\NC DOT\Utility On-Call Contract\B-4425_17BP_2.R.87 Beaufor+Utilities\B4425_ut_tsh_U01_psh.dgn AT CARYLNEWSOME

TIP PROJECT: B-4425



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

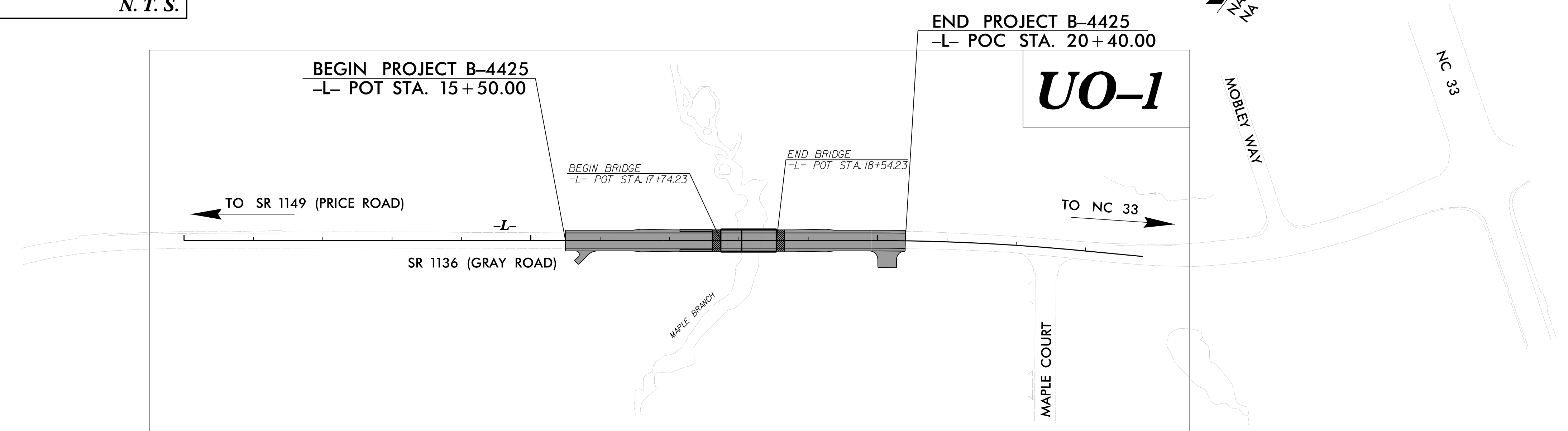
UTILITIES BY OTHERS PLANS BEAUFORT COUNTY

**LOCATION: REPLACE BRIDGE 69 OVER MAPLE BRANCH
ON SR 1136 (GRAY ROAD)**

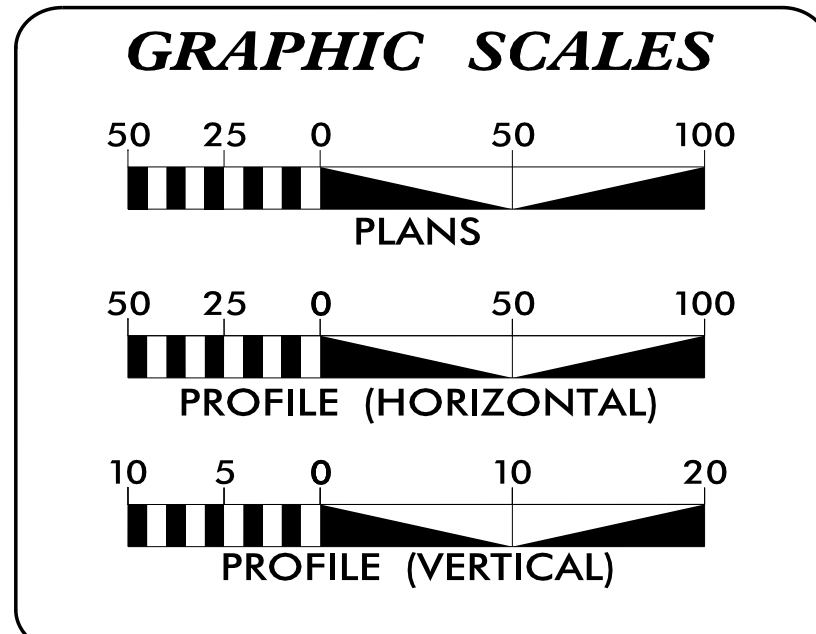
**TYPE OF WORK: POWER, TELEPHONE, CABLE TV,
WATER AND SEWER RELOCAITON**

T.I.P. NO.	SHEET NO.
B-4425	UO-1

NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.



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



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO-1	TITLE SHEET
UO-2	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

(A) POWER DISTRIBUTION - DUKE ENERGY
(B) COMMUNICATIONS - CENTURYLINK
(C) COMMUNICATIONS - SUDDENLINK
(D) WATER - TOWN OF CHOCOWINITY
(E) SEWER - TOWN OF CHOCOWINITY

PREPARED IN THE OFFICE OF:

Michael Baker
INTERNATIONAL

Michael Baker Engineering, Inc.
8000 Regency Parkway, Suite 600
Cary, NC 27518
919-463-5488

<i>Daniel Oliver</i>	UTILITY PROJECT MANAGER
<i>Daniel Oliver</i>	PROJECT UTILITY COORDINATOR
<i>Christina Newsome</i>	PROJECT UTILITY TECHNICIAN

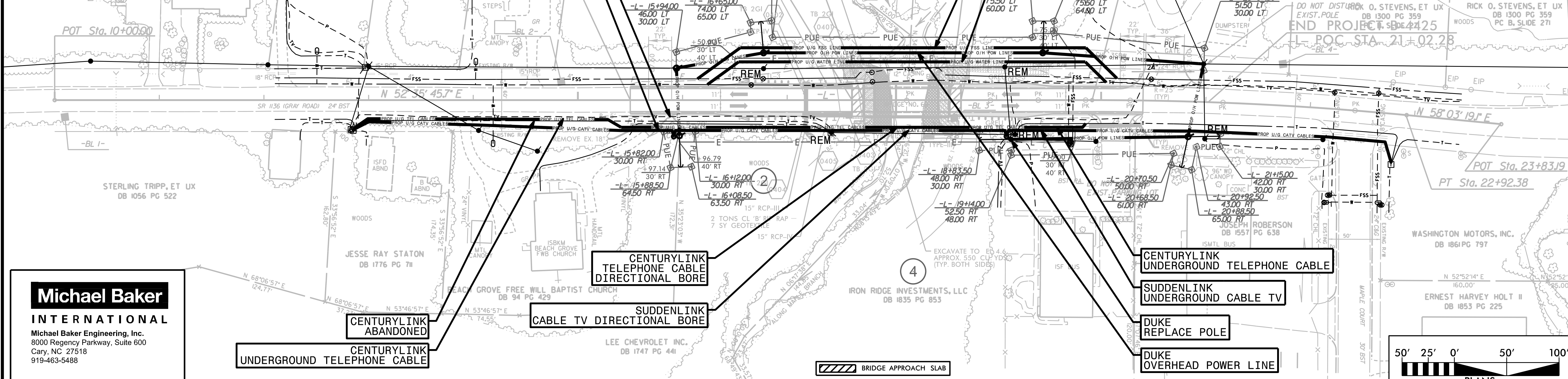
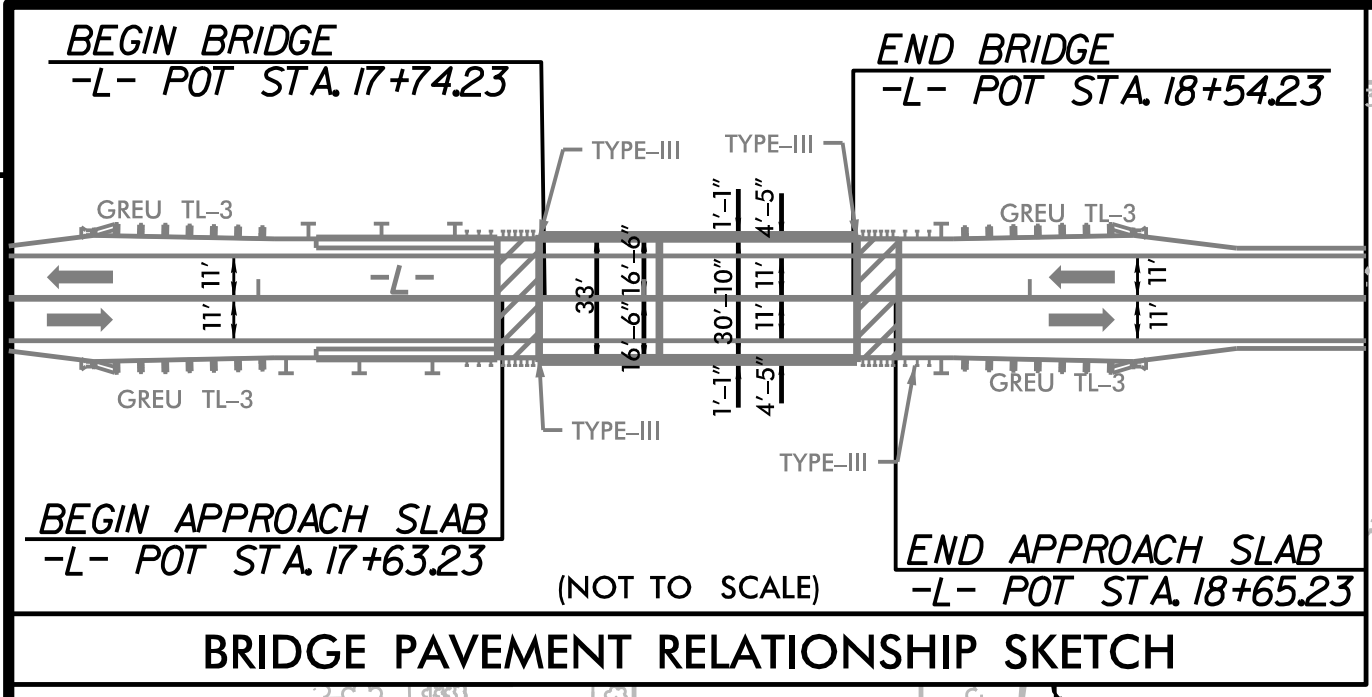
**DIVISION OF HIGHWAYS
DIVISION 2**

2815 ROUSE ROAD EXTENSION
KINSTON, NC 28504
252-775-6100

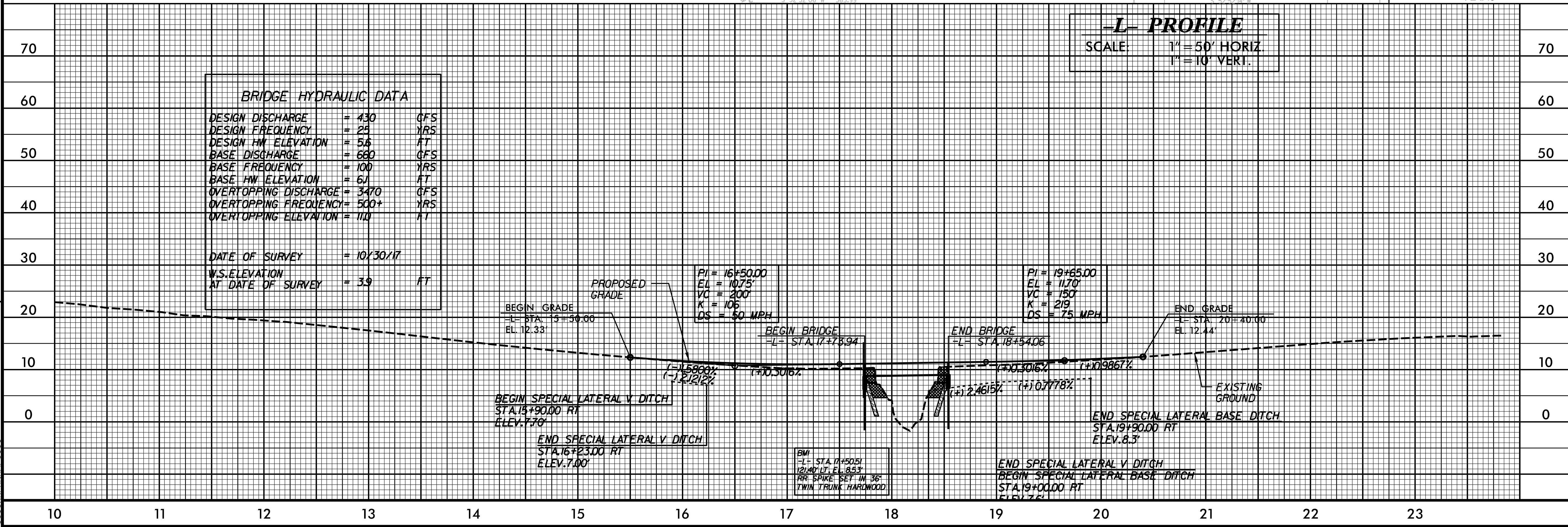
<i>Heather Lane, P.E.</i>	DIV. BRIDGE PROGRAM MANAGER
<i>David Kramer</i>	DIV. UTILITY ENGINEER

UTILITIES BY OTHERS

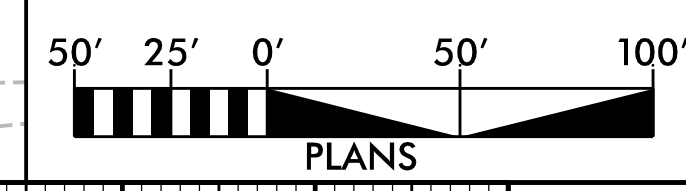
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.



Michael Baker INTERNATIONAL
Michael Baker Engineering, Inc.
8000 Regency Parkway, Suite 600
Cary, NC 27518
919-463-5488



REVISIONS



**STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS**

PROJ. REFERENCE NO.	SHEET NO.
17BP.2.R.87	X1-A

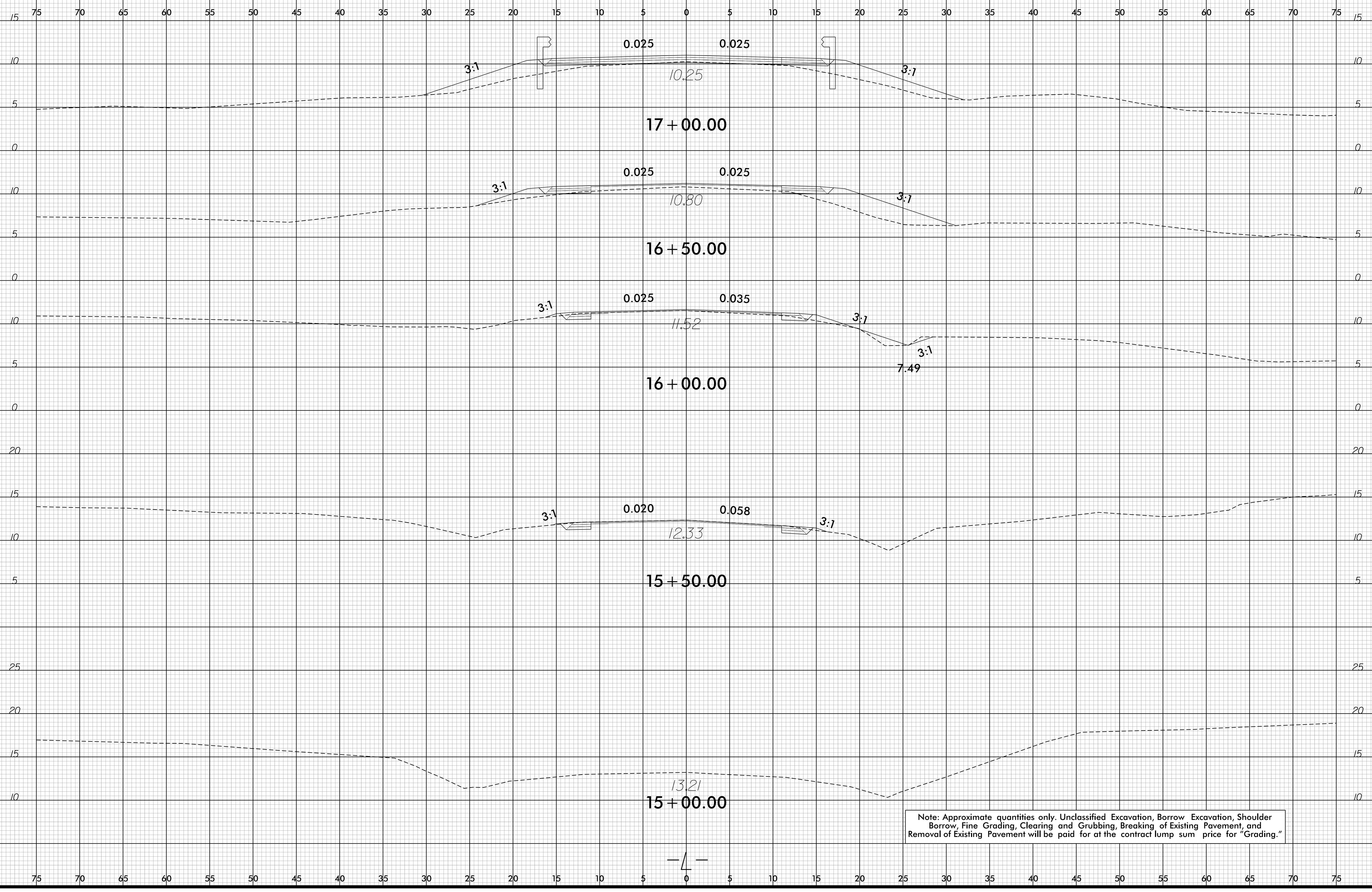
NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

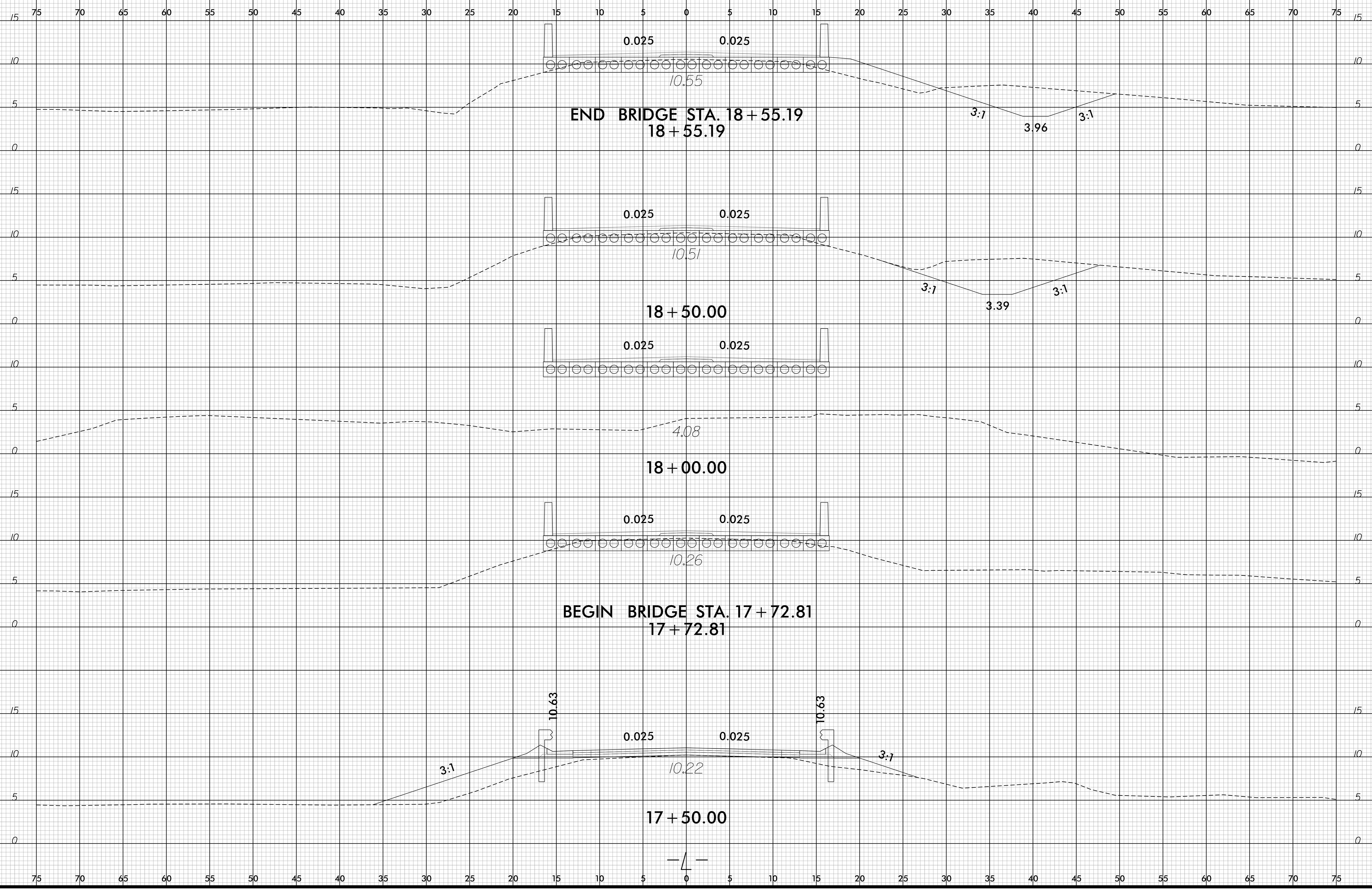
Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)												
15+50.00	0	0												
16+00.00	8	11												
16+50.00	4	57												
17+00.00	1	84												
17+50.00	0	85												
17+72.81	0	43												
Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)												
L														
18+55.19	0	0												
19+00.00	75	57												
19+50.00	18	55												
20+00.00	11	14												
20+40.00	6	6												

Approximate quantities only. Unclassified excavation, borrow excavation, shoulder borrow, fine grading, clearing and grubbing, breaking of existing pavement and removal of existing pavement will be paid for at the lump sum price for "Grading".

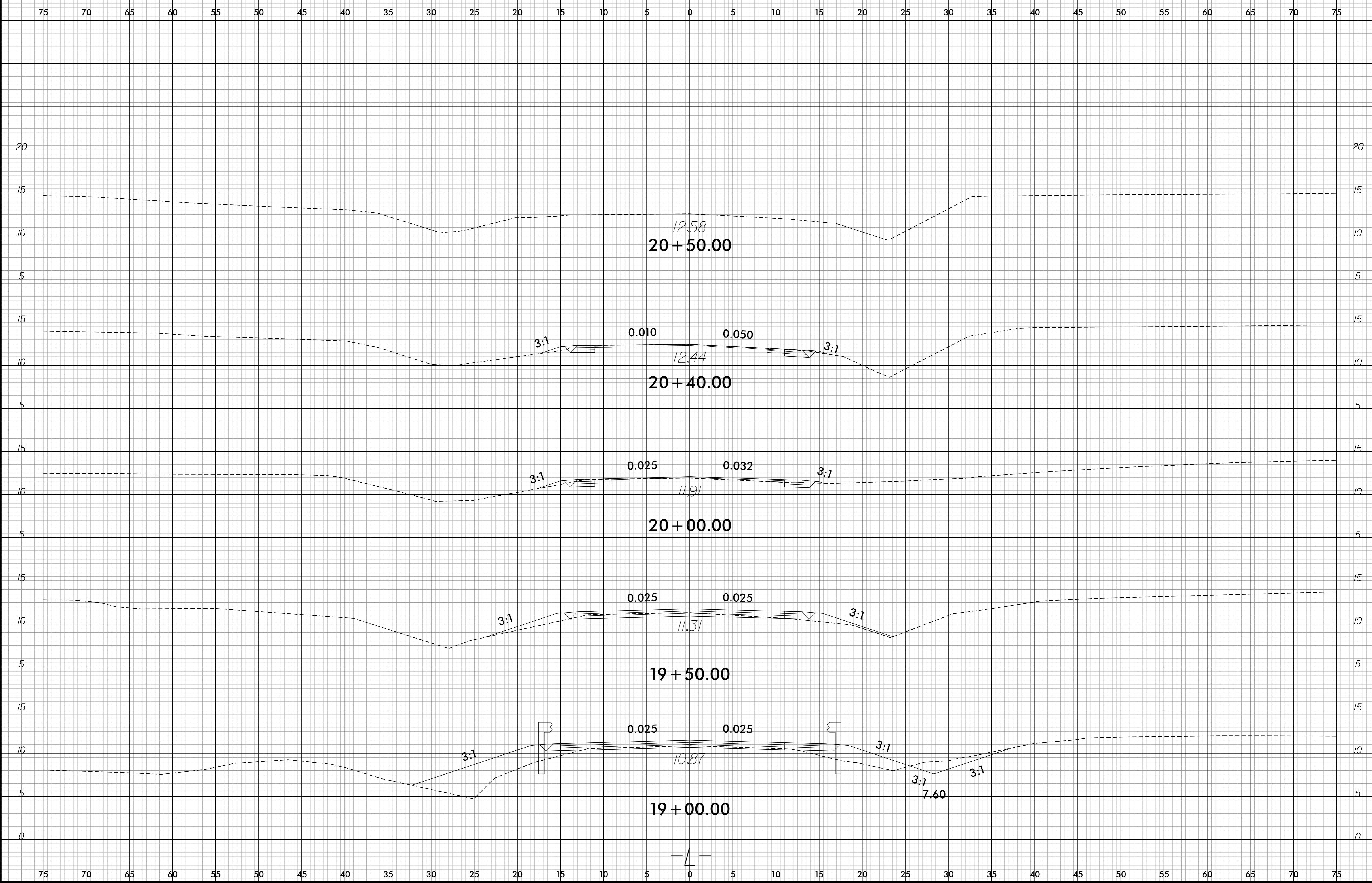
6/23/16



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i:\SERLETT2



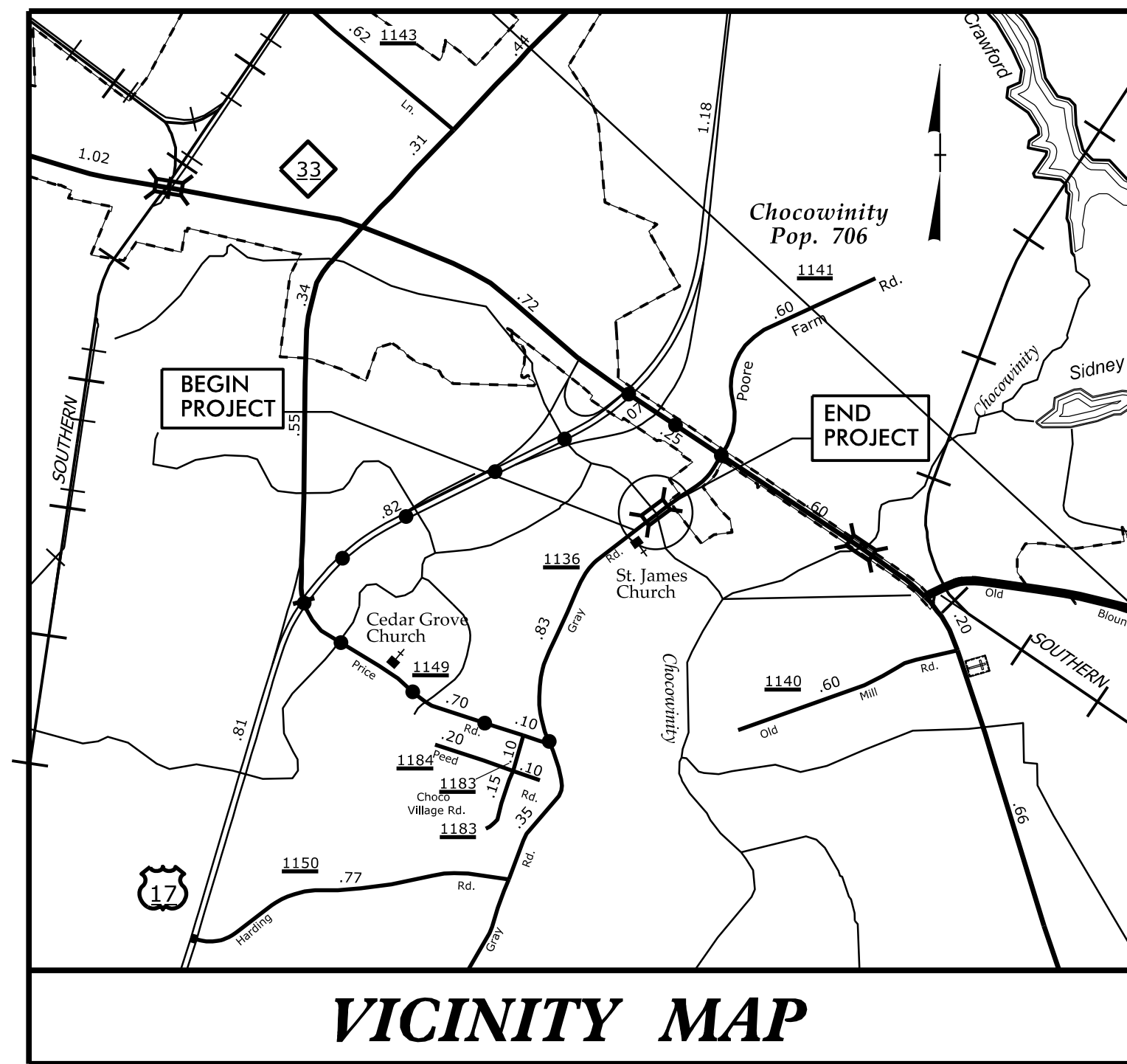
6/23/16



-SYSTEME... i:\SERLETT2

CONTRACT: DB00417 PROJECT: 17BP.2.R.87

STRUCTURE



VICINITY MAP

—•—•—•—•— OFF-SITE DETOUR ROUTE

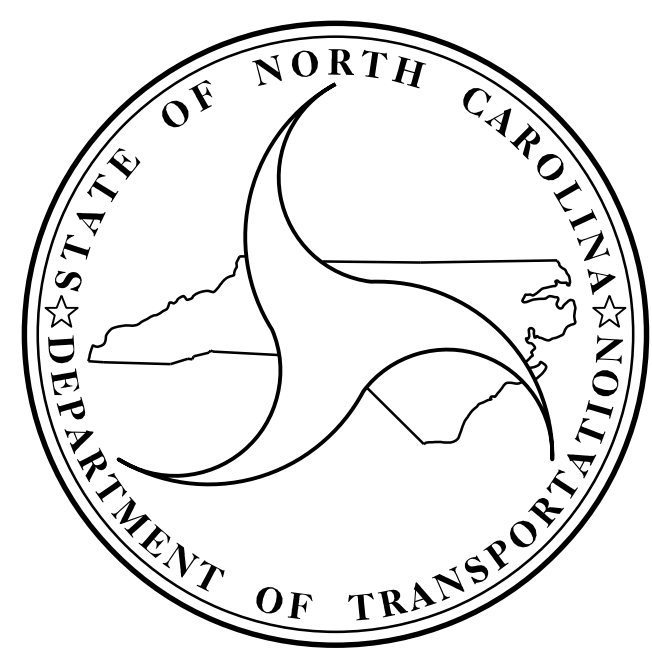
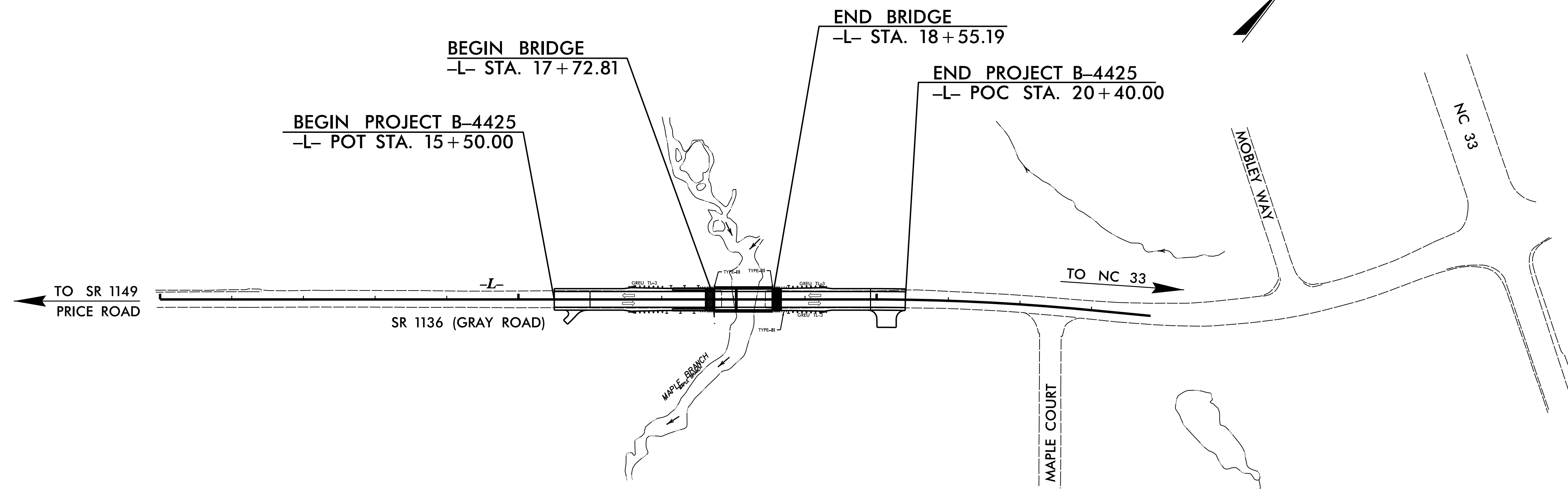
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BEAUFORT COUNTY

LOCATION: REPLACE BRIDGE 69 OVER MAPLE BRANCH ON SR 1136 (GRAY ROAD)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.2.R.87		20
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.2.R.87	N/A	P.E.	
17BP.2.R.87	N/A	UTIL & R/W	
17BP.2.R.87	N/A	CONST.	



DESIGN DATA

ADT 2018 = 2800 VPD
 ADT 2038 = 5000 VPD
 K = N/A %
 D = N/A %
 T = 19 %
 V = 50 MPH
 FUNC CLASS = LOCAL
 SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.2.R.87 = 0.077 MILES
 LENGTH STRUCTURE PROJECT 17BP.2.R.87 = 0.016 MILES
 TOTAL LENGTH OF PROJECT 17BP.2.R.87 = 0.093 MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS
 STRUCTURES MANAGEMENT UNIT
 1000 BIRCH RIDGE DR.
 RALEIGH, N.C. 27610

2018 STANDARD SPECIFICATIONS

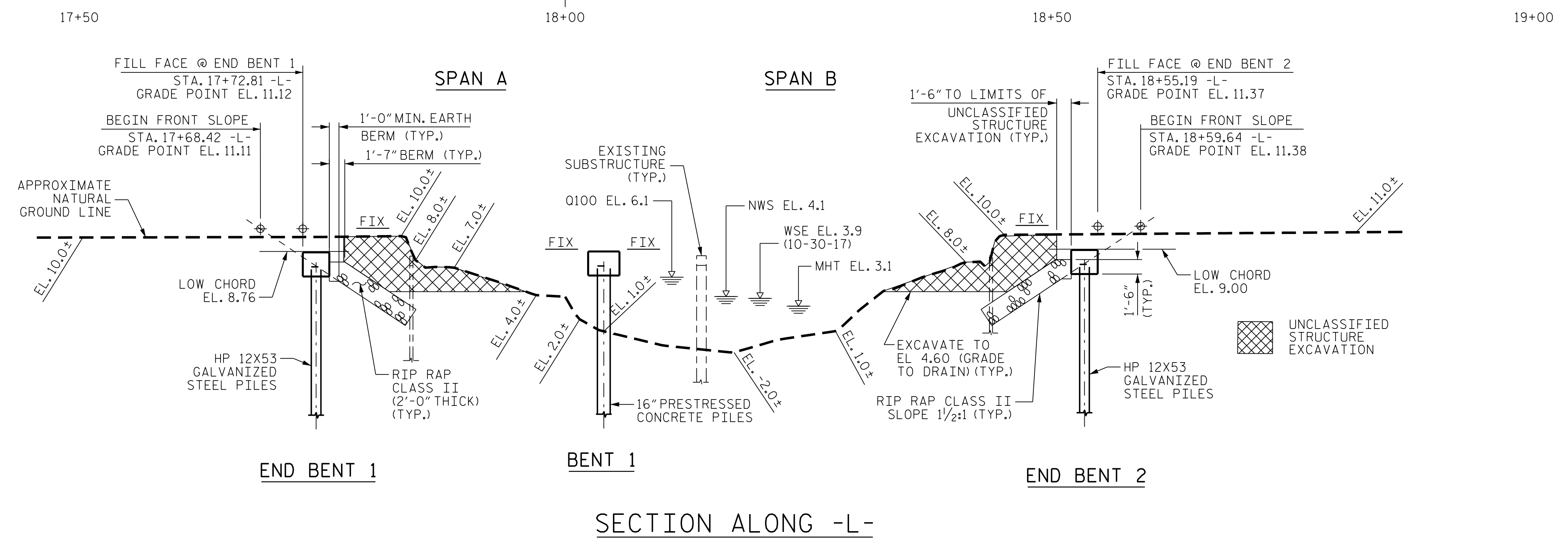
LETTING DATE : SEPT 5, 2018

DAVID Z. KEISER, P.E.
 PROJECT ENGINEER

TING H. FANG, P.E.
 PROJECT DESIGN ENGINEER



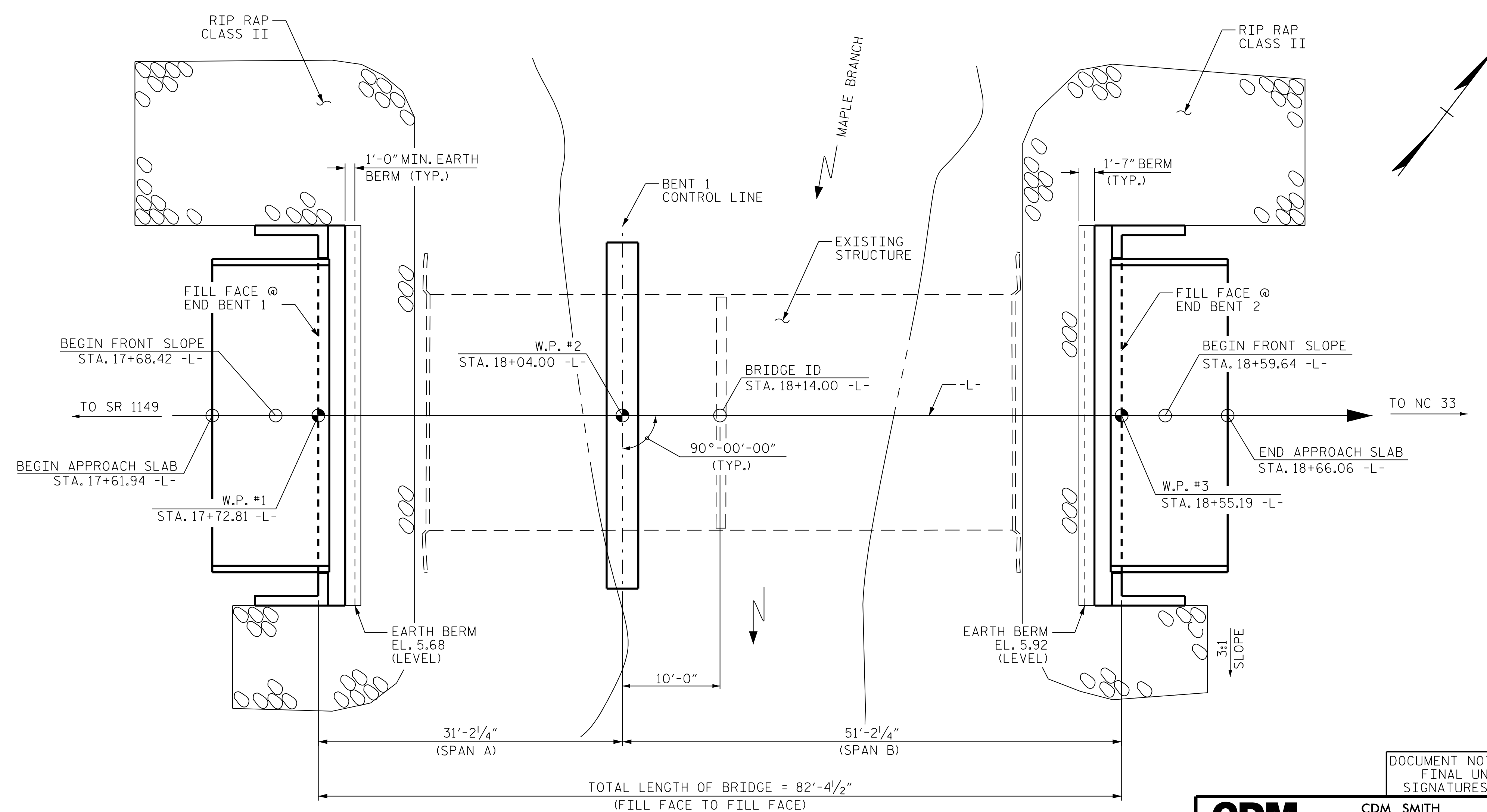
CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255



+0.3016% +0.9867%

PVI STA. = 19+65.00 -L-
 PVI EL. = 11.70'
 V.C. = 150'

GRADE DATA -L-



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. 17BP.2.R.87
BEAUFORT COUNTY
 STATION: 18+14.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE #69

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
 MAPLE BRANCH ON SR 1136
 BETWEEN SR 1149
 & NC 33

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

DRAWN BY: VDK DATE: 3/18
 CHECKED BY: THF DATE: 3/18
 DESIGN ENGINEER: VDK DATE: 3/18

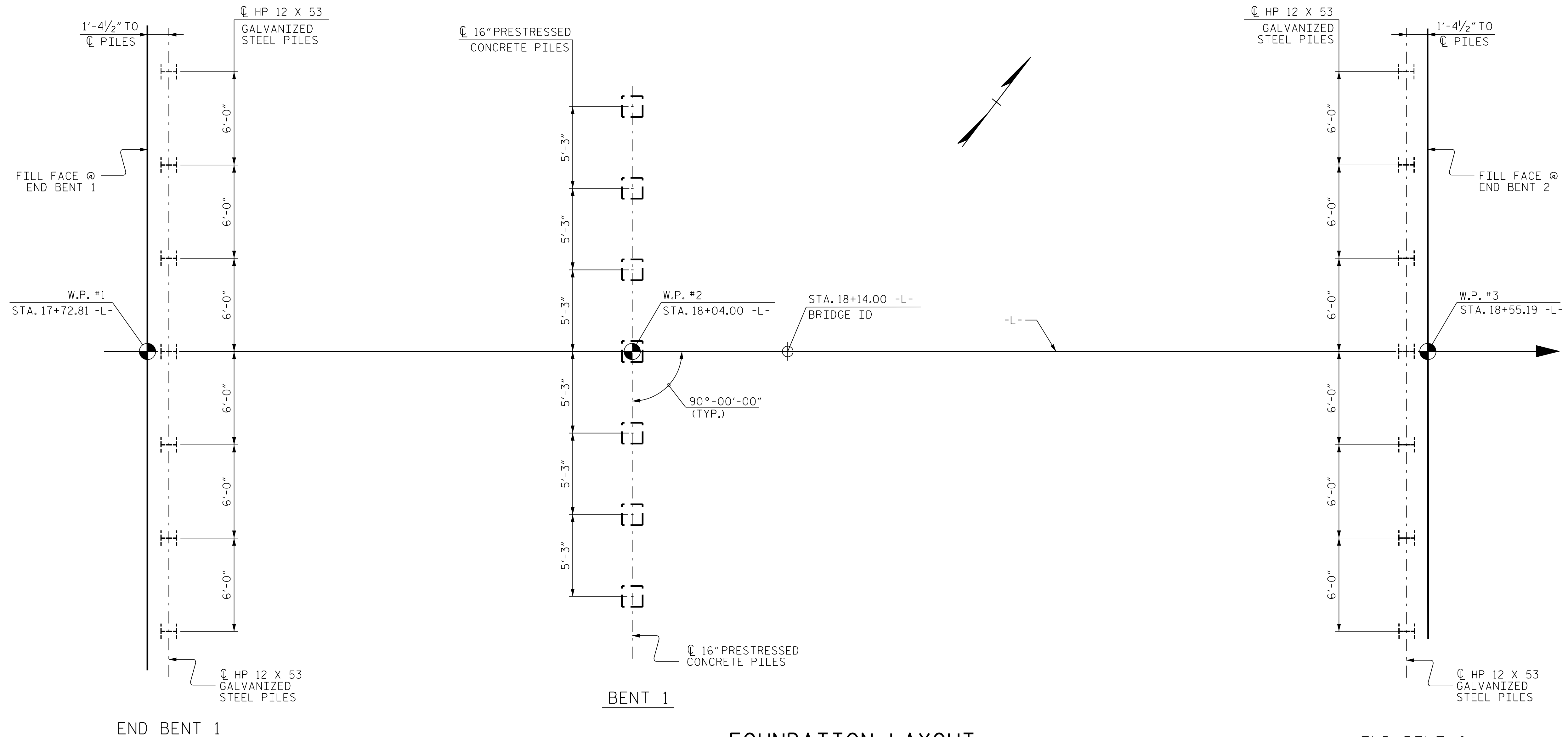
DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING FANG

5/11/2018 6:18:41 AM

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-01	
1			3			TOTAL SHEETS	
2			4			20	

FILE: c:\pwworking\cdm\2018\17BP2R87\17BP2R87_S&U_GDDI_001_040069.dgn
 DATE: 4/24/2018 11:24:09 AM



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES.
ALL PILES ARE VERTICAL.

NOTES

- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 51 TONS PER PILE.
- PILES AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.
- PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 67 TONS PER PILE.
- DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 85 TONS PER PILE.
- DRIVE PILES AT BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR SCOUR.
- DRIVE PILES AT END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 115 TONS PER PILE.
- INSTALL PILES AT BENT 1 TO A TIP ELEVATION NO HIGHER THAN -31.0 FT.
- THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION -7.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEM DURING THE LIFE OF THE STRUCTURE.
- TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENT 1. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. 17BP.2.R.87
BEAUFORT COUNTY
 STATION: 18+14.00 -L-

SHEET 2 OF 3

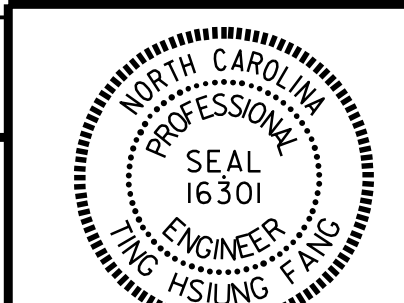
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
 MAPLE BRANCH ON SR 1136
 BETWEEN SR 1149 &
 NC 33

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255



DWG. No. _____
 DRAWN BY : VDK DATE : 3/18
 CHECKED BY : THF DATE : 3/18
 DESIGN ENGINEER : VDK DATE : 3/18

Ting Fang
 5/11/2018 6:18:41 AM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-02
1			3			TOTAL SHEETS
2			4			20

FILE: c:\pwworking\cdm\17071401_003_17BP2R87_SMU_CDD2_002_060609.dgn
 DATE: 4/24/2018 12:12:16 PM

TOTAL BILL OF MATERIAL																					
	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS AA CONCRETE	BRIDGE APPROACH SLABS	EPOXY COATED REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR 16" PRESTRESSED CONCRETE PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 GALVANIZED STEEL PILES	16" PRESTRESSED CONCRETE PILES	HP 12 X 53 GALVANIZED STEEL PILES	PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0' X 1'-9" PRESTRESSED CONCRETE CORED SLABS				
	LUMP SUM	LUMP SUM	EA.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EA.	EA.	NO.	LIN. FT.	NO.	LIN. FT.	EA.	LIN. FT.	TON	SO. YD.	LUMP SUM	NO.	LIN. FT.	
SUPERSTRUCTURE																160.25			LUMP SUM	22	880
END BENT 1				LUMP SUM	14.2		2,076		7					4		130	145				
BENT 1					10.2		2,097	7		7	455.0			4							
END BENT 2				LUMP SUM	14.2		2,076		7							105	115				
TOTAL	LUMP SUM	LUMP SUM	2	LUMP SUM	38.6	LUMP SUM	6,249	7	14	7	455.0	14	875.0	12	160.25	235	260	LUMP SUM	22	880	

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN. FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

THIS BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.

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

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

FOR END BENTS 1 & 2, ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE END BENT SHEETS FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.

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

PRESTRESSED CONCRETE CORED SLAB UNITS AND PRESTRESSED CONCRETE PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR.

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

ALL BAR SUPPORTS AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE THE STANDARD SPECIFICATIONS.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. BOTH SIDES, AT END BENTS 1 AND 2 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.

THE EXISTING STRUCTURE CONSISTING OF 2 SPANS: 1 @ 30'-6" AND 1 @ 30'-6" WITH A 7 1/2" AWS CLEAR ROADWAY WIDTH OF 24'-3" AND PRESTRESSED CONCRETE CHANNELS; SUBSTRUCTURE CONSISTING OF RC CAPS ON TIMBER PILES AT END BENTS AND INTERIOR BENT LOCATED AT THE SITE OF THE PROPOSED BRIDGE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

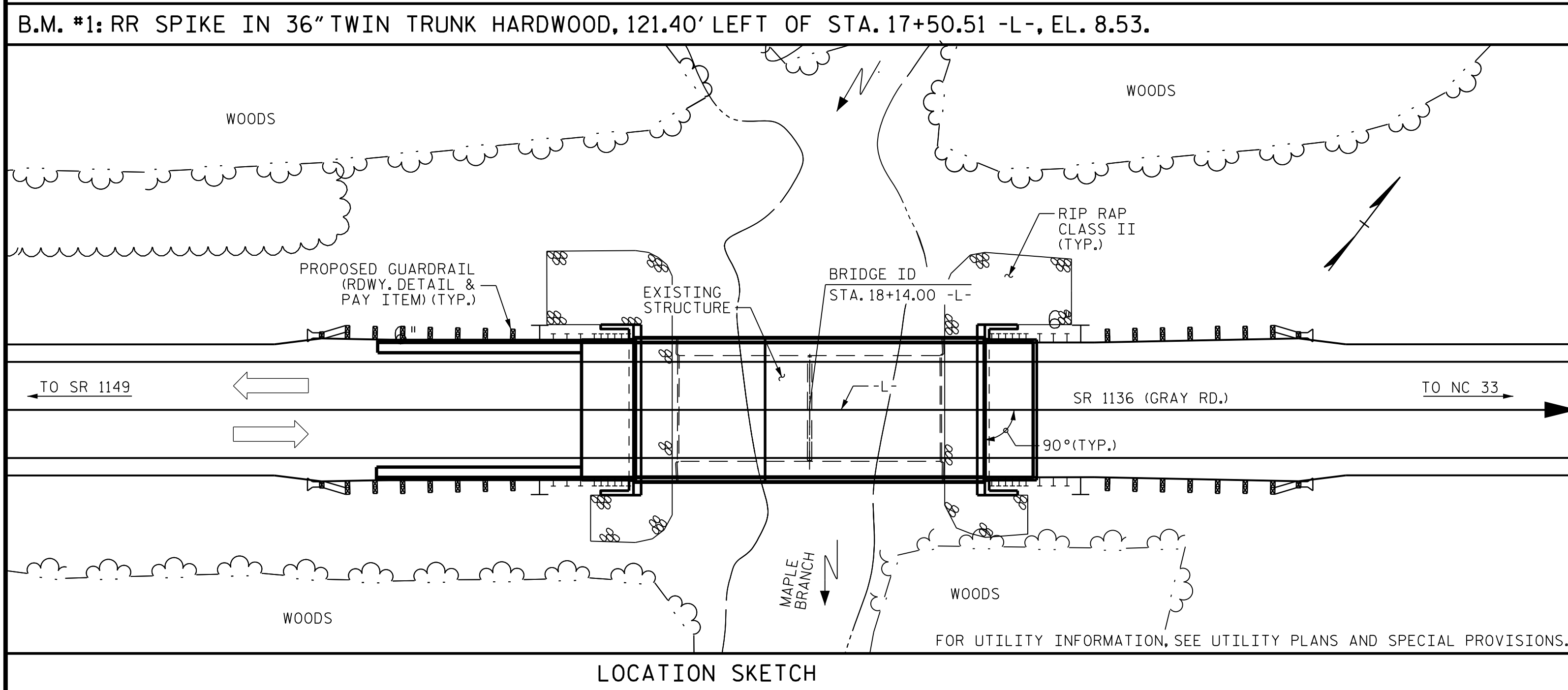
FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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



HYDRAULIC DATA

DESIGN DISCHARGE	= 430 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YR.
DESIGN HIGH WATER ELEVATION	= 5.6 FT.
DRAINAGE AREA	= 2.64 SQ. MI.
BASE DISCHARGE (Q100)	= 660 CFS
BASE HIGH WATER ELEVATION	= 6.1 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 3470 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YRS.
OVERTOPPING FLOOD ELEVATION	= 11 FT. *

* ELEVATION IS TAKEN AT STA. 17+17.9 -L- SAG POINT.

PROJECT NO. 17BP.2.R.87
BEAUFORT COUNTY
STATION: 18+14.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 MAPLE BRANCH ON SR 1136
 BETWEEN SR 1149 &
 NC 33

REVISIONS

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

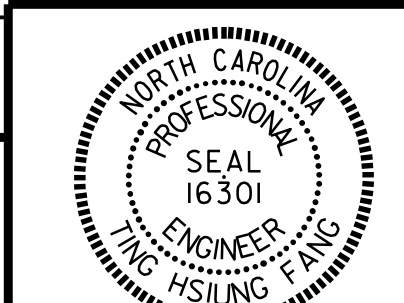
SHEET NO.

S-03

TOTAL SHEETS
20

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255



DWG. No.
 DRAWN BY: VDK DATE: 3/18
 CHECKED BY: THF DATE: 3/18
 DESIGN ENGINEER: VDK DATE: 3/18

5/11/2018 6:18:41 AM

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE CORED SLAB UNITS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	①	1.037	--	1.75	0.283	1.83	30'	EL	14.5	0.574	1.04	30'	EL	1.45	0.80	0.283	1.58	30'	EL	14.5		
	HL-93(0pr)	N/A	--	1.344	--	1.35	0.283	2.38	30'	EL	14.5	0.574	1.34	30'	EL	1.45	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	②	1.183	42.587	1.75	0.283	2.53	30'	EL	11.6	0.574	1.18	30'	EL	1.45	0.80	0.283	2.20	30'	EL	11.6		
	HS-20(0pr)	36.000	--	1.533	55.205	1.35	0.283	3.28	30'	EL	11.6	0.574	1.53	30'	EL	1.45	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.895	39.081	1.4	0.283	5.18	30'	EL	14.5	0.574	2.89	30'	EL	1.45	0.80	0.283	3.56	30'	EL	14.5	
		SNGARBS2	20.000	--	2.240	44.792	1.4	0.283	4.53	30'	EL	11.6	0.574	2.24	30'	EL	1.45	0.80	0.283	3.15	30'	EL	11.6	
		SNAGRIS2	22.000	--	2.157	47.463	1.4	0.283	4.60	30'	EL	11.6	0.574	2.16	30'	EL	1.45	0.80	0.283	3.20	30'	EL	11.6	
		SNCOTTS3	27.250	--	1.462	39.849	1.4	0.283	2.60	30'	EL	14.5	0.574	1.46	30'	EL	1.45	0.80	0.283	1.79	30'	EL	14.5	
		SNAGGRS4	34.925	--	1.346	46.999	1.4	0.283	2.50	30'	EL	14.5	0.574	1.35	30'	EL	1.45	0.80	0.283	1.72	30'	EL	14.5	
		SNS5A	35.550	--	1.427	50.733	1.4	0.283	2.42	30'	EL	14.5	0.574	1.43	30'	EL	1.45	0.80	0.283	1.67	30'	EL	14.5	
		SNS6A	39.950	--	1.341	53.590	1.4	0.283	2.29	30'	EL	14.5	0.574	1.34	30'	EL	1.45	0.80	0.283	1.58	30'	EL	14.5	
	TTST	SNS7B	42.000	--	1.369	57.505	1.4	0.283	2.23	30'	EL	14.5	0.574	1.37	30'	EL	1.45	0.80	0.283	1.53	30'	EL	14.5	
		TNAGRIT3	33.000	--	1.593	52.580	1.4	0.283	2.97	30'	EL	14.5	0.574	1.59	30'	EL	1.45	0.80	0.283	2.04	30'	EL	14.5	
		TNT4A	33.075	--	1.483	49.043	1.4	0.283	2.82	30'	EL	14.5	0.574	1.48	30'	EL	1.45	0.80	0.283	1.94	30'	EL	14.5	
		TNT6A	41.600	--	1.433	59.622	1.4	0.283	2.56	30'	EL	14.5	0.574	1.43	30'	EL	1.45	0.80	0.283	1.76	30'	EL	14.5	
		TNT7A	42.000	--	1.363	57.264	1.4	0.283	2.64	30'	EL	14.5	0.574	1.36	30'	EL	1.45	0.80	0.283	1.82	30'	EL	14.5	
		TNT7B	42.000	--	1.331	55.915	1.4	0.283	2.49	30'	EL	14.5	0.574	1.33	30'	EL	1.45	0.80	0.283	1.72	30'	EL	14.5	
		TNAGRIT4	43.000	--	1.287	55.356	1.4	0.283	2.58	30'	EL	14.5	0.574	1.29	30'	EL	1.45	0.80	0.283	1.78	30'	EL	14.5	
TNACT5A	45.000	--	1.381	62.151	1.4	0.283	2.50	30'	EL	14.5	0.574	1.38	30'	EL	1.45	0.80	0.283	1.72	30'	EL	14.5			
TNACT5B	45.000	③	1.212	54.540	1.4	0.283	2.41	30'	EL	11.6	0.574	1.21	30'	EL	1.45	0.80	0.283	1.66	30'	EL	11.6			

LOAD FACTORS:

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

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

③ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

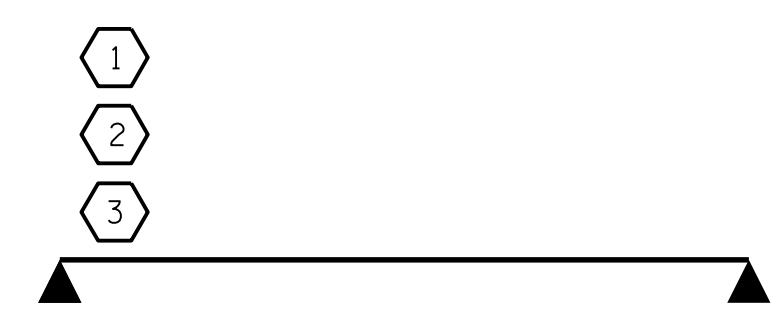
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY
FOR SPAN A

PROJECT NO. 17BP.2.R.87
BEAUFORT COUNTY
STATION: 18+14.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**LRFR SUMMARY FOR
30' CORED SLAB UNIT
90° SKEW
SPAN A
(NON-INTERSTATE TRAFFIC)**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-04
1			3			TOTAL SHEETS
			4			20

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

CDM Smith

CDM SMITH
5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

DRAWN BY : VDK	DATE : 3/18	DWG. No.
CHECKED BY : THF	DATE : 3/18	
DESIGN ENGINEER : VDK	DATE : 3/18	

NORTH CAROLINA
PROFESSIONAL
SEAL
16301
ENGINEER
TUNG FANG

Tung Fang
5/11/2018 6:18:41 AM

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE CORED SLAB UNITS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.394	--	1.75	0.276	1.57	50'	EL	24.5	0.531	1.39	50'	EL	2.45	0.80	0.276	1.44	50'	EL	24.5		
	HL-93(0pr)	N/A	--	1.807	--	1.35	0.276	2.03	50'	EL	24.5	0.531	1.81	50'	EL	2.45	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.667	60.007	1.75	0.276	1.95	50'	EL	24.5	0.531	1.67	50'	EL	2.45	0.80	0.276	1.79	50'	EL	24.5		
	HS-20(0pr)	36.000	--	2.161	77.787	1.35	0.276	2.52	50'	EL	24.5	0.531	2.16	50'	EL	2.45	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.635	49.079	1.4	0.276	4.95	50'	EL	24.5	0.531	4.70	50'	EL	2.45	0.80	0.276	3.64	50'	EL	24.5	
		SNGARBS2	20.000	--	2.871	57.420	1.4	0.276	3.91	50'	EL	24.5	0.531	3.42	50'	EL	2.45	0.80	0.276	2.87	50'	EL	24.5	
		SNAGRIS2	22.000	--	2.778	61.109	1.4	0.276	3.78	50'	EL	19.6	0.531	3.21	50'	EL	2.45	0.80	0.276	2.78	50'	EL	24.5	
		SNCOTTS3	27.250	--	1.814	49.418	1.4	0.276	2.47	50'	EL	24.5	0.531	2.36	50'	EL	2.45	0.80	0.276	1.81	50'	EL	24.5	
		SNAGGRS4	34.925	--	1.577	55.063	1.4	0.276	2.15	50'	EL	24.5	0.531	2.01	50'	EL	2.45	0.80	0.276	1.58	50'	EL	24.5	
		SNS5A	35.550	--	1.537	54.657	1.4	0.276	2.09	50'	EL	24.5	0.531	2.07	50'	EL	2.45	0.80	0.276	1.54	50'	EL	24.5	
		SNS6A	39.950	--	1.438	57.430	1.4	0.276	1.96	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.44	50'	EL	24.5	
	SNS7B	42.000	--	1.370	57.540	1.4	0.276	1.87	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.37	50'	EL	24.5		
	TTST	TNAGRIT3	33.000	--	1.761	58.118	1.4	0.276	2.40	50'	EL	24.5	0.531	2.25	50'	EL	2.45	0.80	0.276	1.76	50'	EL	24.5	
		TNT4A	33.075	--	1.777	58.759	1.4	0.276	2.42	50'	EL	24.5	0.531	2.17	50'	EL	2.45	0.80	0.276	1.78	50'	EL	24.5	
		TNT6A	41.600	--	1.480	61.558	1.4	0.276	2.01	50'	EL	24.5	0.531	2.08	50'	EL	2.45	0.80	0.276	1.48	50'	EL	24.5	
		TNT7A	42.000	--	1.502	63.087	1.4	0.276	2.05	50'	EL	24.5	0.531	1.94	50'	EL	2.45	0.80	0.276	1.50	50'	EL	24.5	
		TNT7B	42.000	--	1.566	65.773	1.4	0.276	2.13	50'	EL	24.5	0.531	1.84	50'	EL	2.45	0.80	0.276	1.57	50'	EL	24.5	
		TNAGRIT4	43.000	--	1.486	63.902	1.4	0.276	2.02	50'	EL	24.5	0.531	1.77	50'	EL	2.45	0.80	0.276	1.49	50'	EL	24.5	
TNAGT5A		45.000	--	1.388	62.470	1.4	0.276	1.89	50'	EL	24.5	0.531	1.80	50'	EL	2.45	0.80	0.276	1.39	50'	EL	24.5		
TNAGT5B	45.000	3	1.360	61.206	1.4	0.276	1.85	50'	EL	24.5	0.531	1.68	50'	EL	2.45	0.80	0.276	1.36	50'	EL	2.45			

LOAD FACTORS:

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

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

-
-
-
-

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

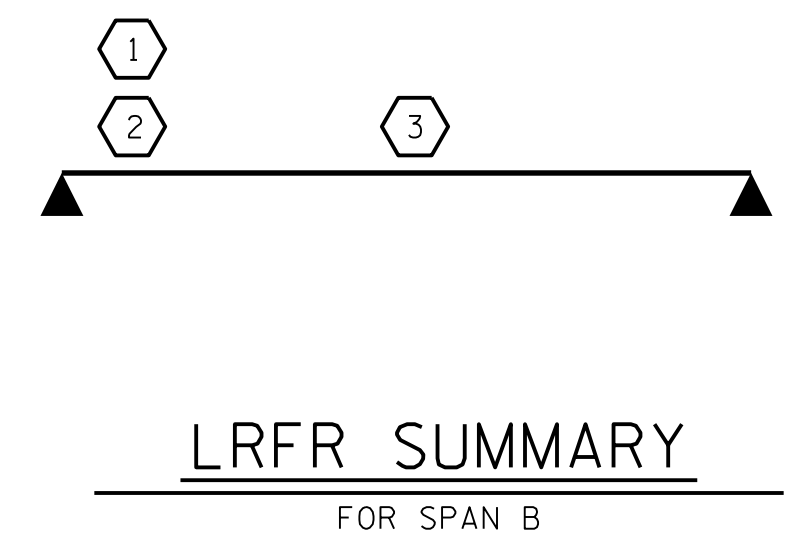
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



PROJECT NO. 17BP.2.R.87
BEAUFORT COUNTY
 STATION: 18+14.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**LRFR SUMMARY FOR
 50' CORED SLAB UNIT
 90° SKEW
 SPAN B
 (NON-INTERSTATE TRAFFIC)**

DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED

CDM Smith
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 Raleigh, NC 27612-3228
 NC COA No. F-1255

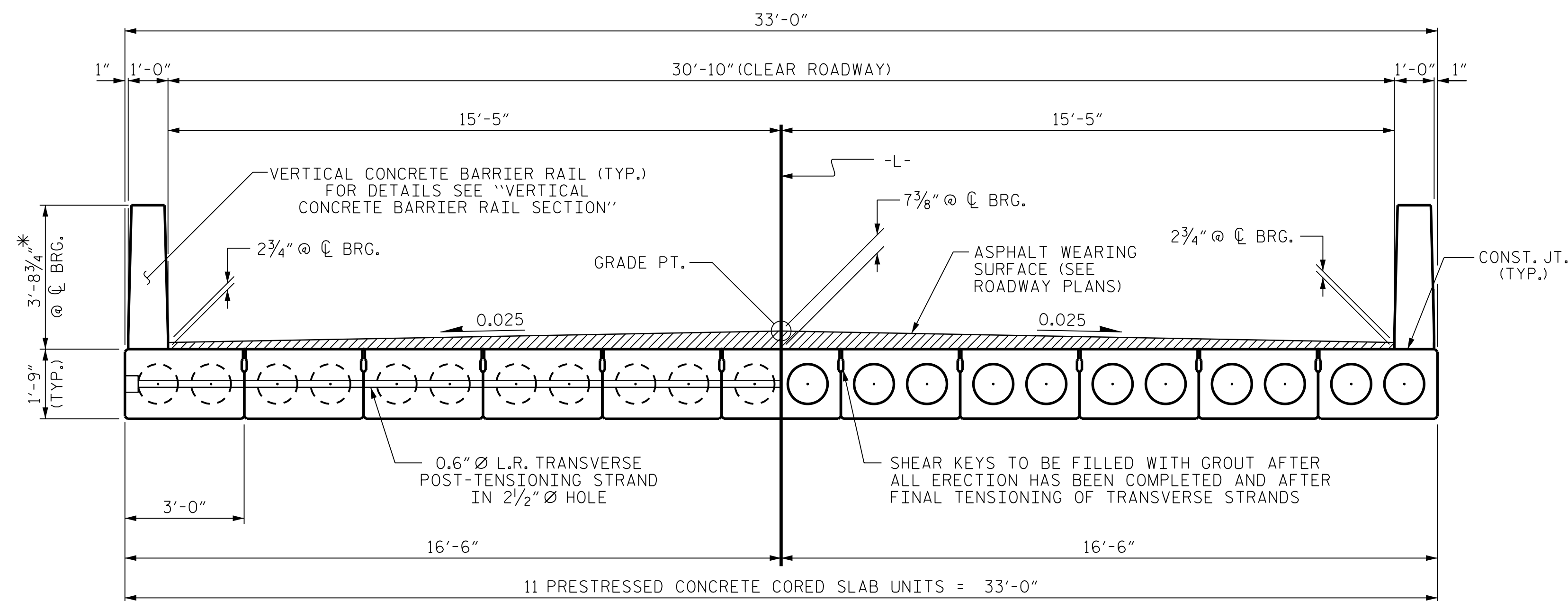
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 CHECKED BY : THF DATE : 3/18
 DESIGN ENGINEER : VDK DATE : 3/18

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NORTH CAROLINA
 PROFESSIONAL
 SEAL
 16301
 ENGINEER
 TUNG HSUNG FANG

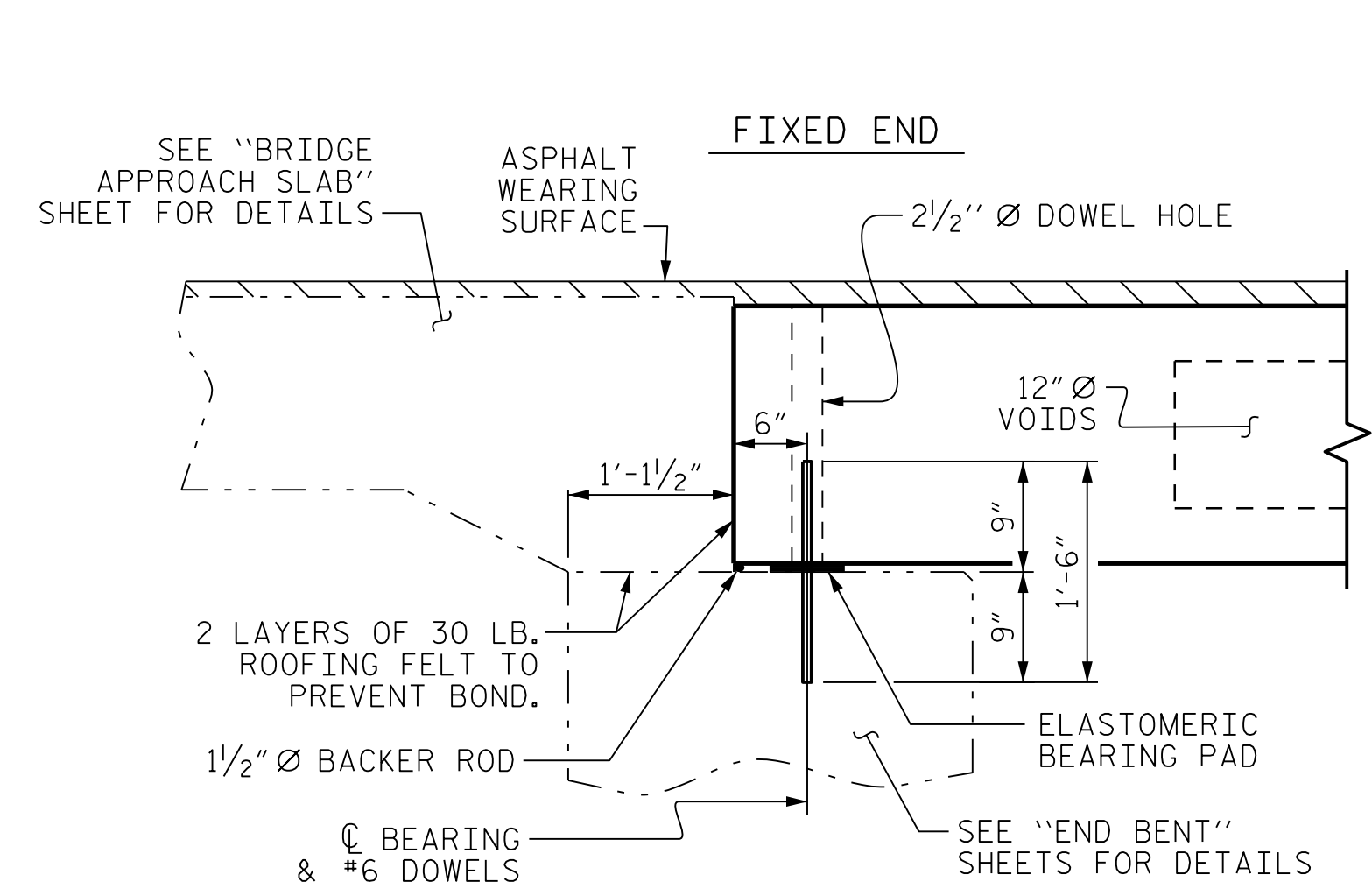
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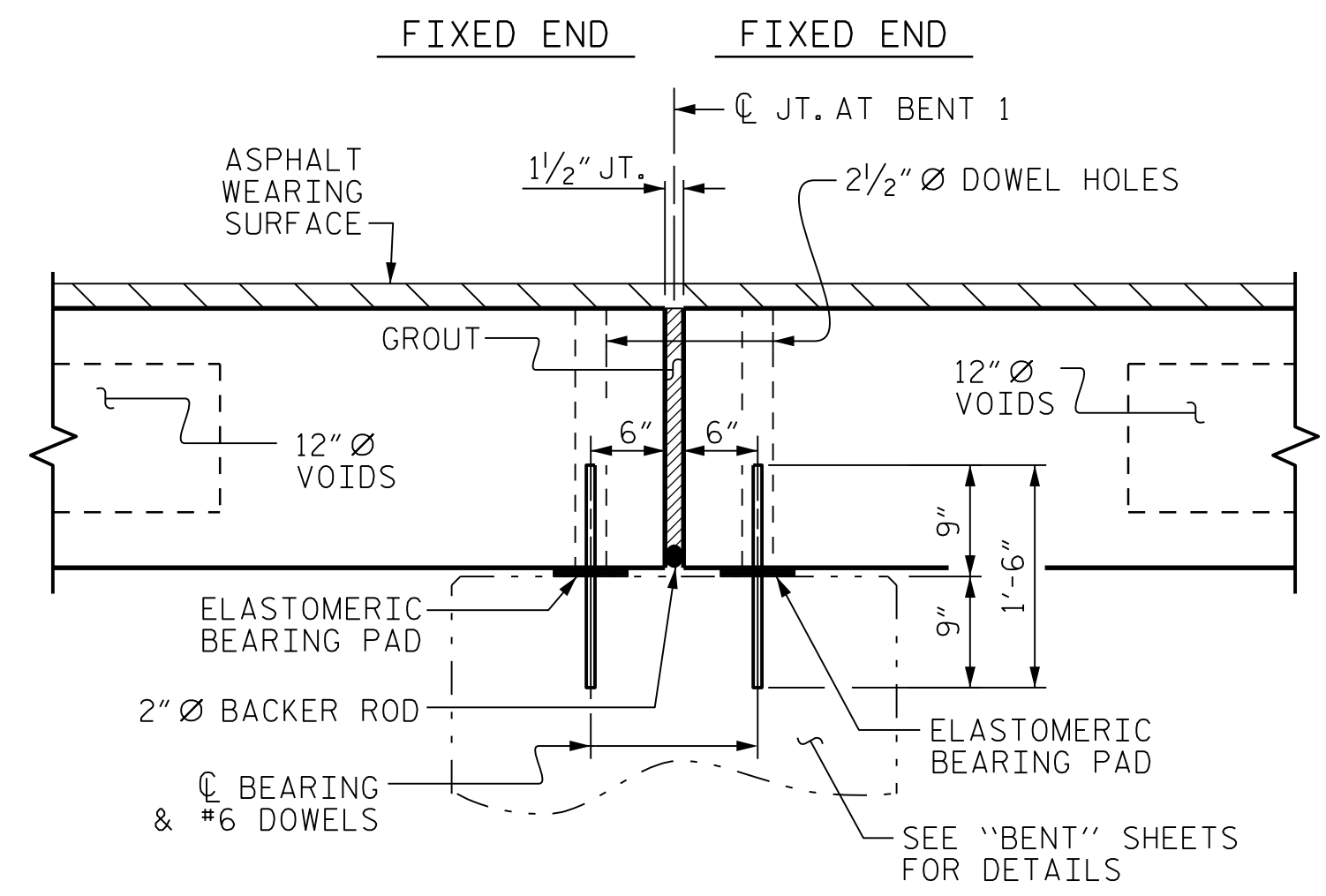


HALF SECTION AT INTERMEDIATE DIAPHRAGMS
 HALF SECTION THROUGH VOIDS
TYPICAL SECTION

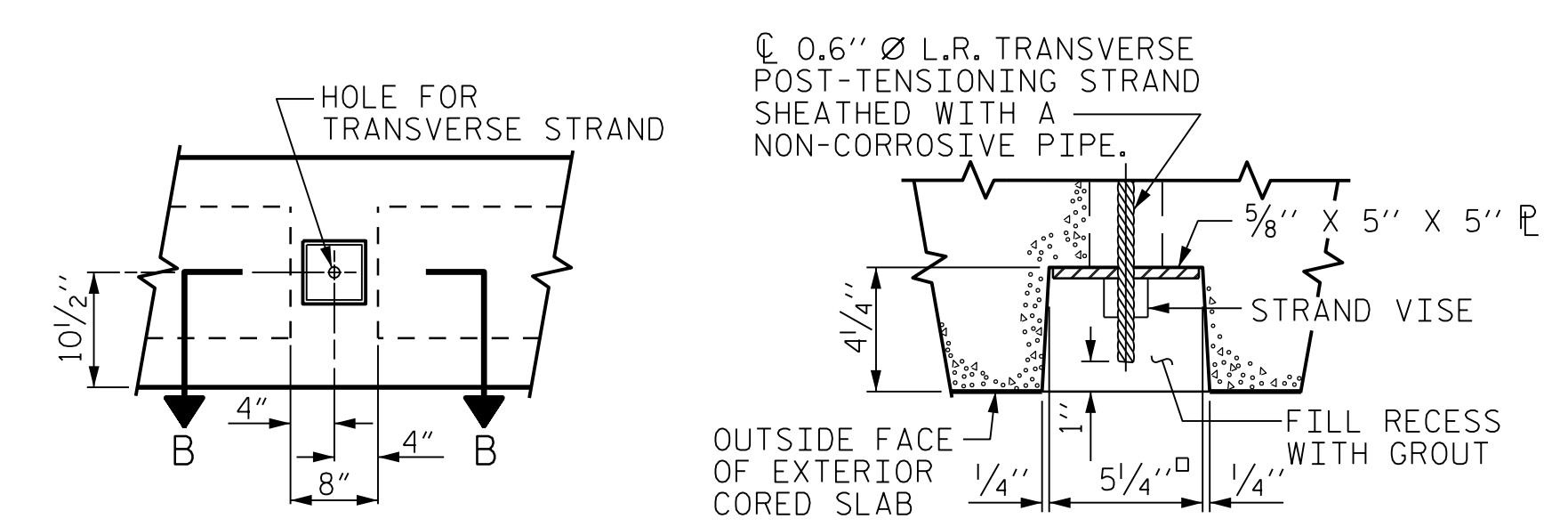
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



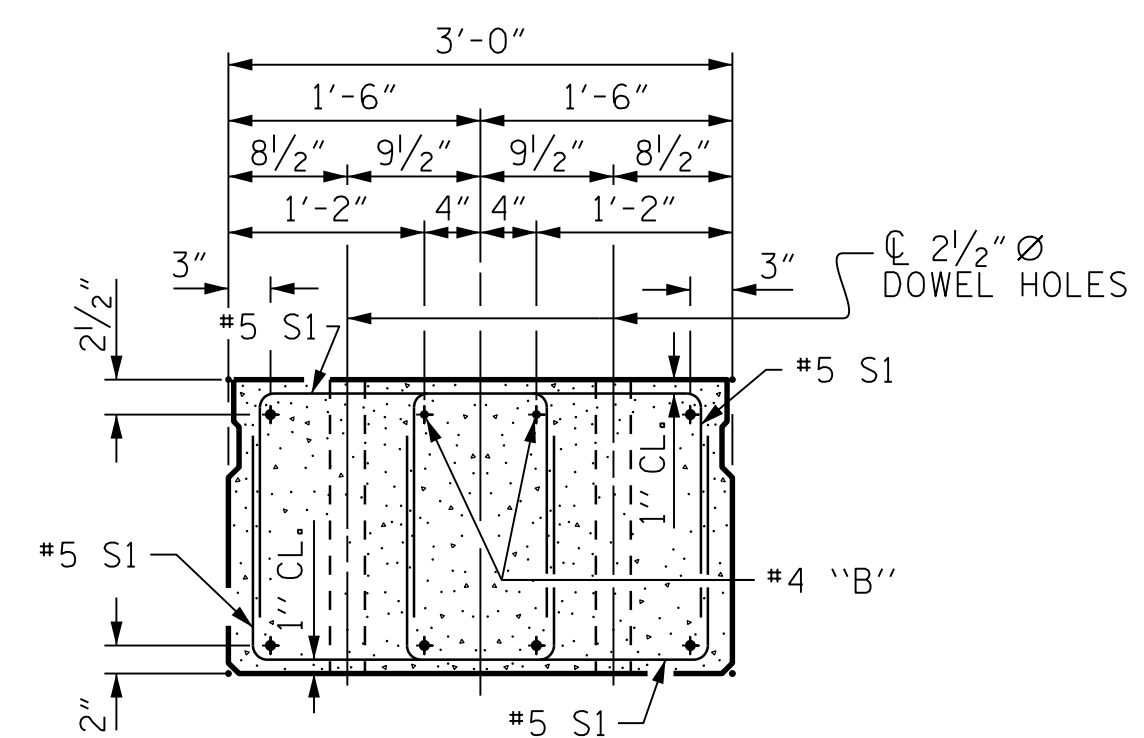
SECTION AT END BENT



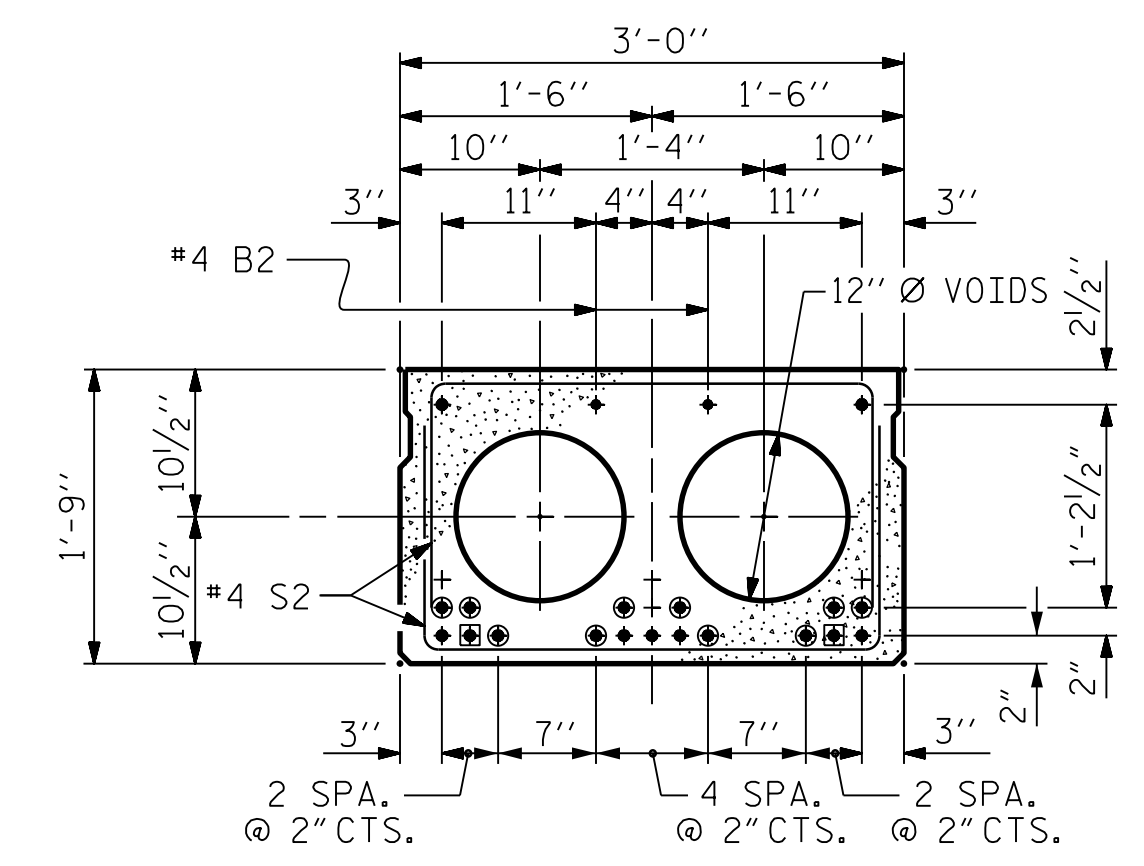
SECTION AT BENT 1



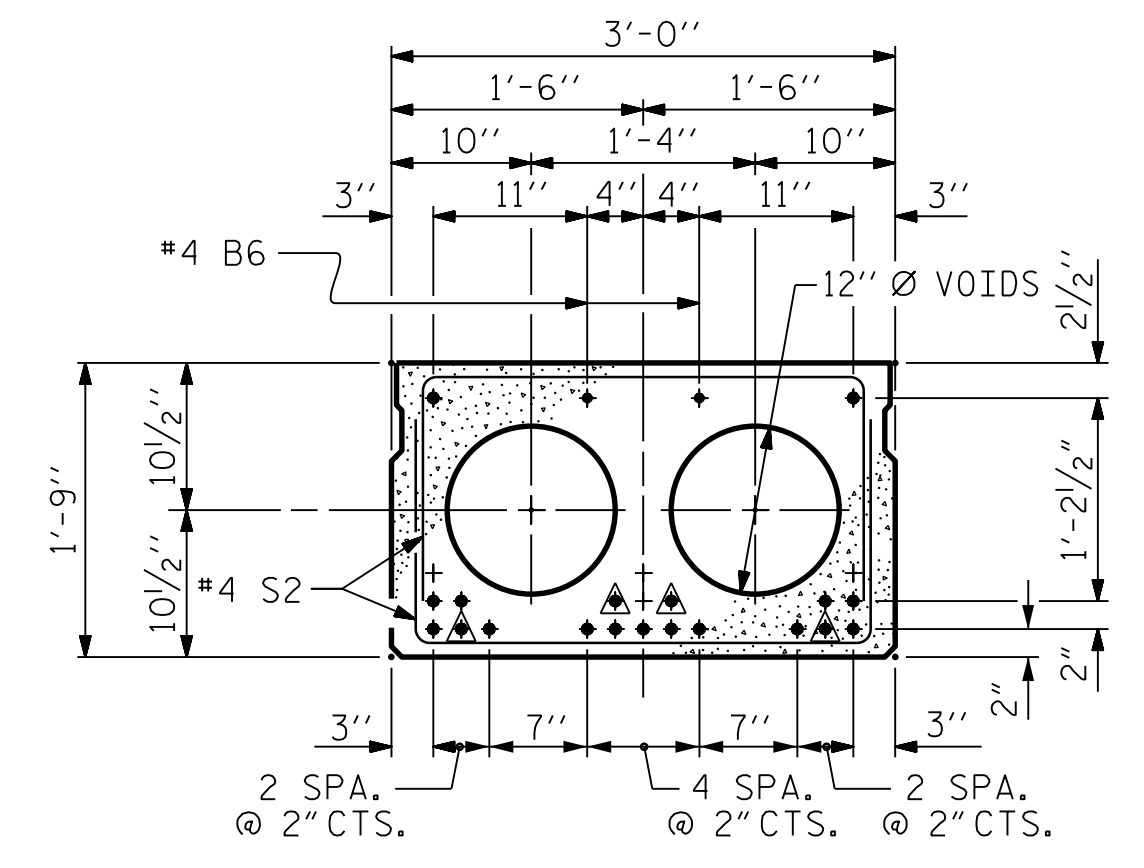
ELEVATION VIEW
SECTION B-B
GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



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

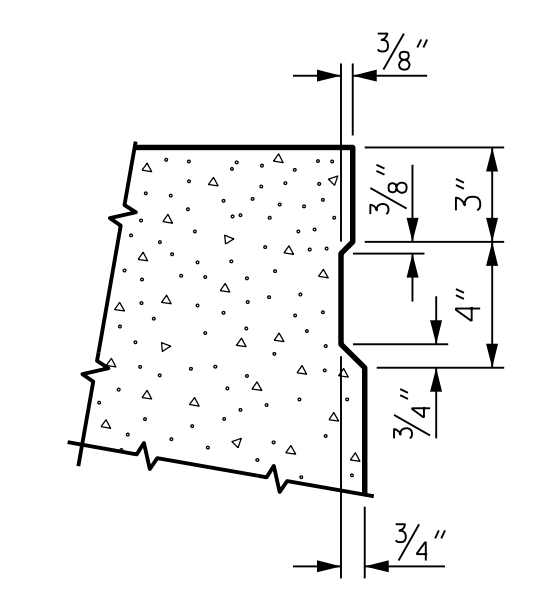


INTERIOR SLAB SECTION (30' UNIT)
 (9 STRANDS REQUIRED)

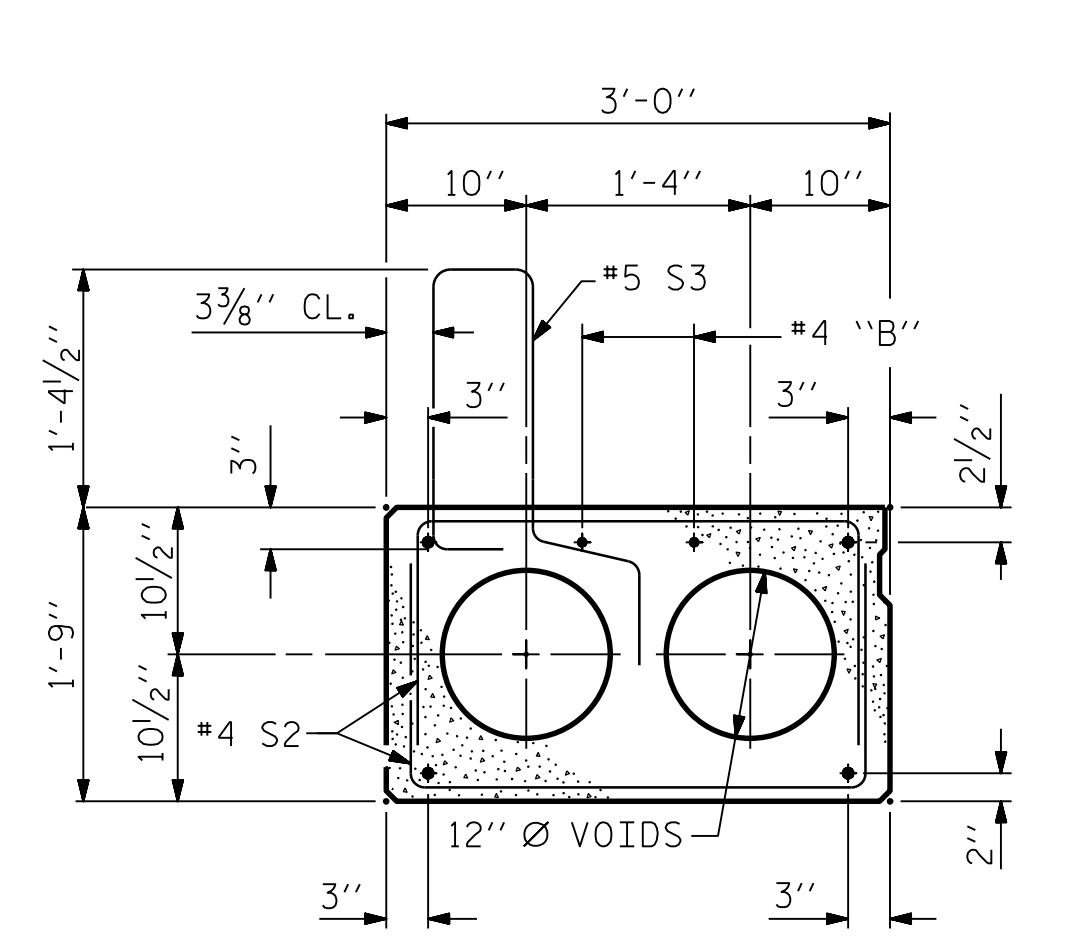


INTERIOR SLAB SECTION (50' UNIT)
 (19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT



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

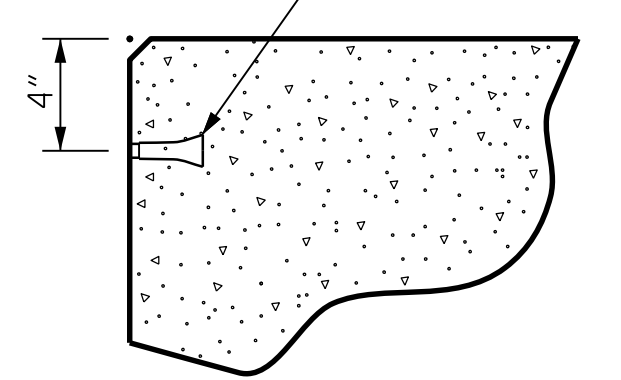


EXT. SLAB SECTION
 (FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

- ▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED, IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

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.2.R.87**
BEAUFORT COUNTY
 STATION: **18+14.00 -L-**

SHEET 1 OF 5

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 Raleigh, NC 27612-3228
 NC COA No. F-1255

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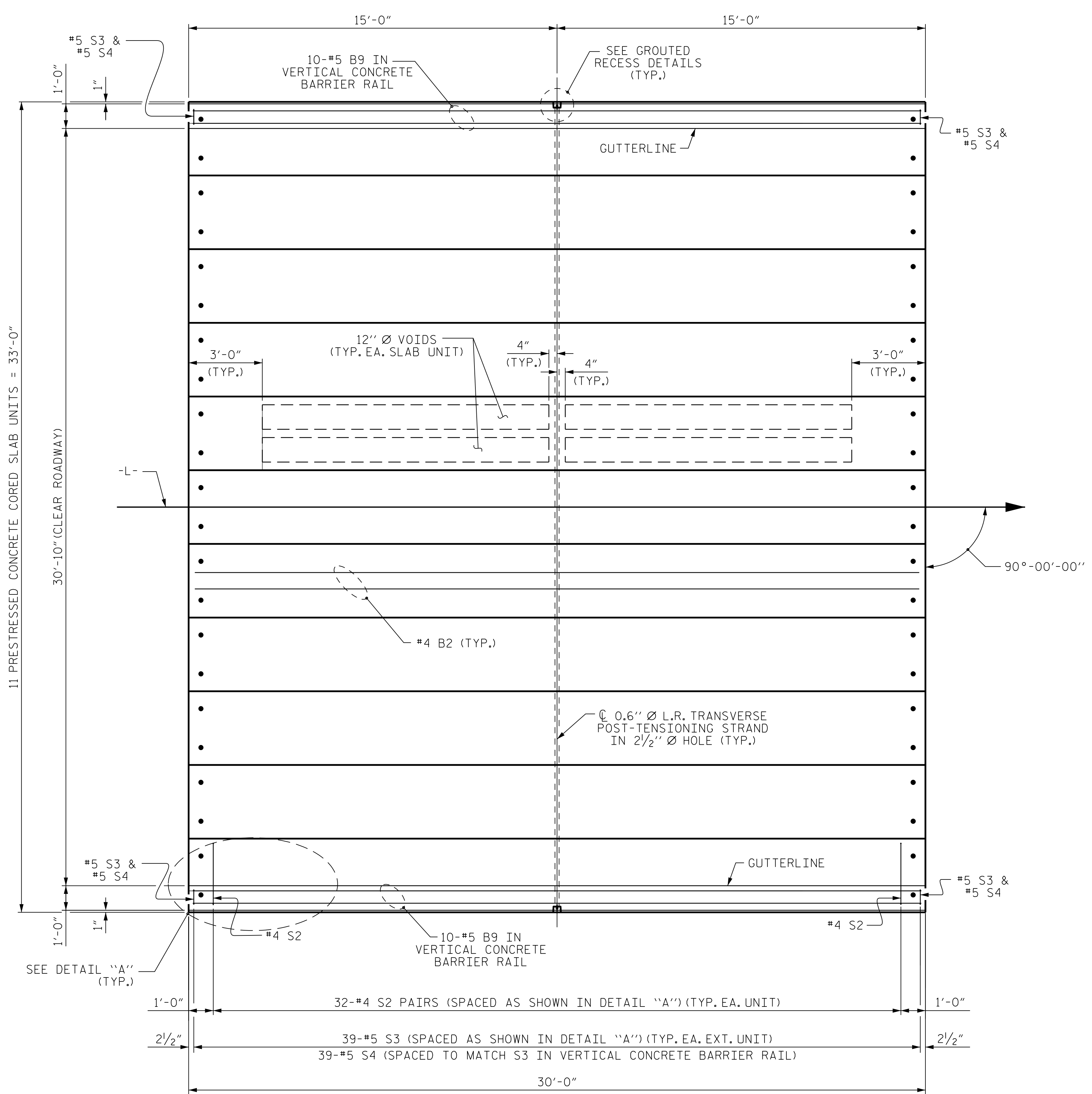
DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING FANG

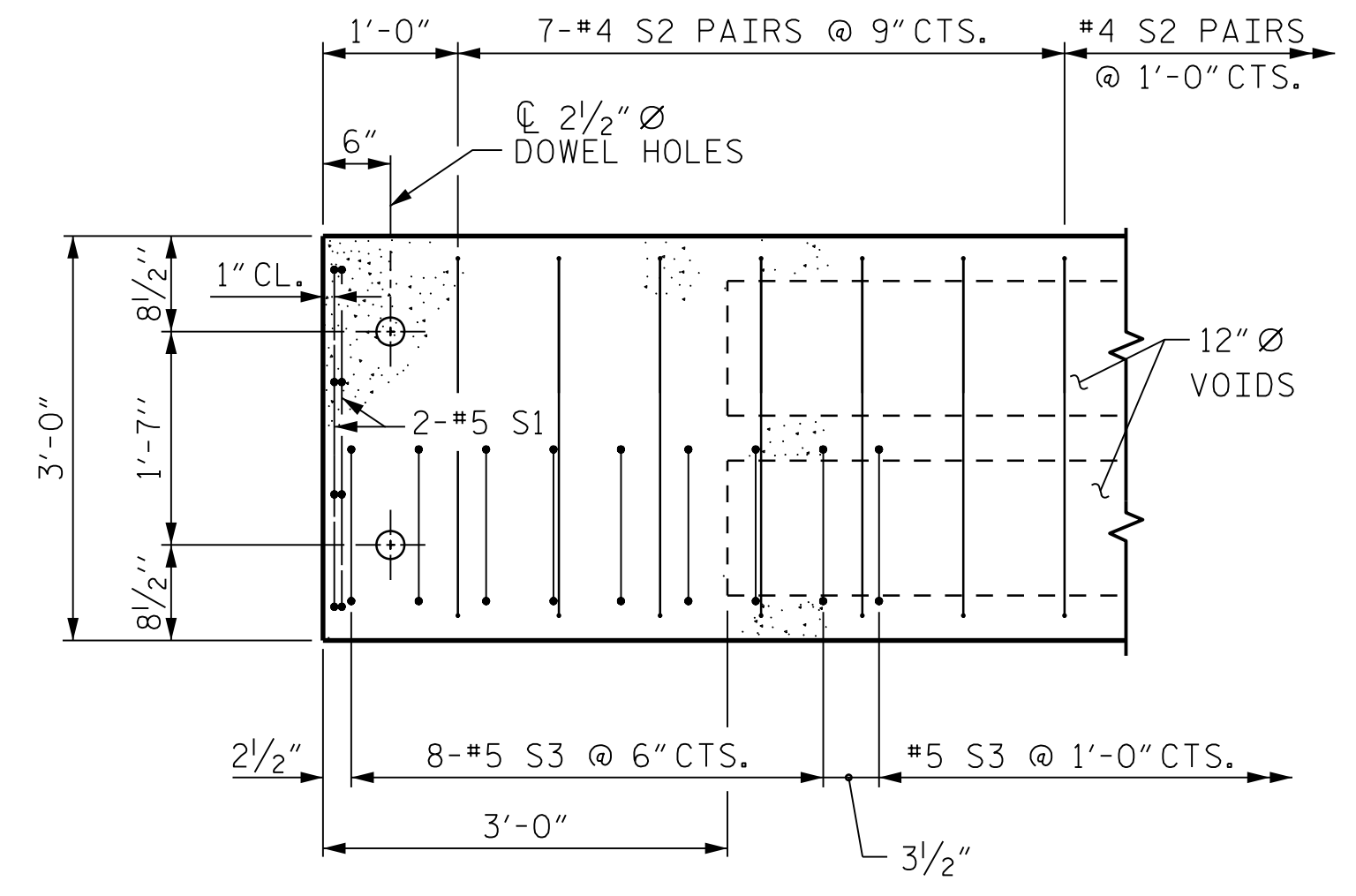
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PLAN OF SPAN A



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

PRESTRESSED CONCRETE CORED SLAB UNITS, SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR.

PROJECT NO. 17BP.2.R.87
BEAUFORT COUNTY
STATION: 18+14.00 -L-

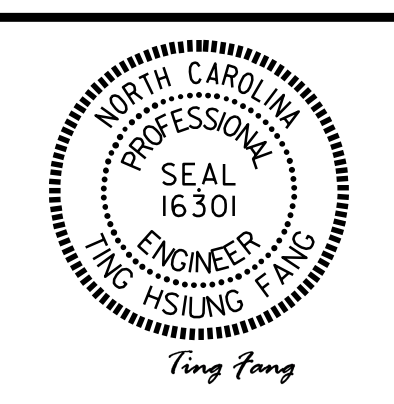
SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
PLAN OF 30' UNIT
30'-10" CLEAR ROADWAY
90° SKEW
SPAN A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

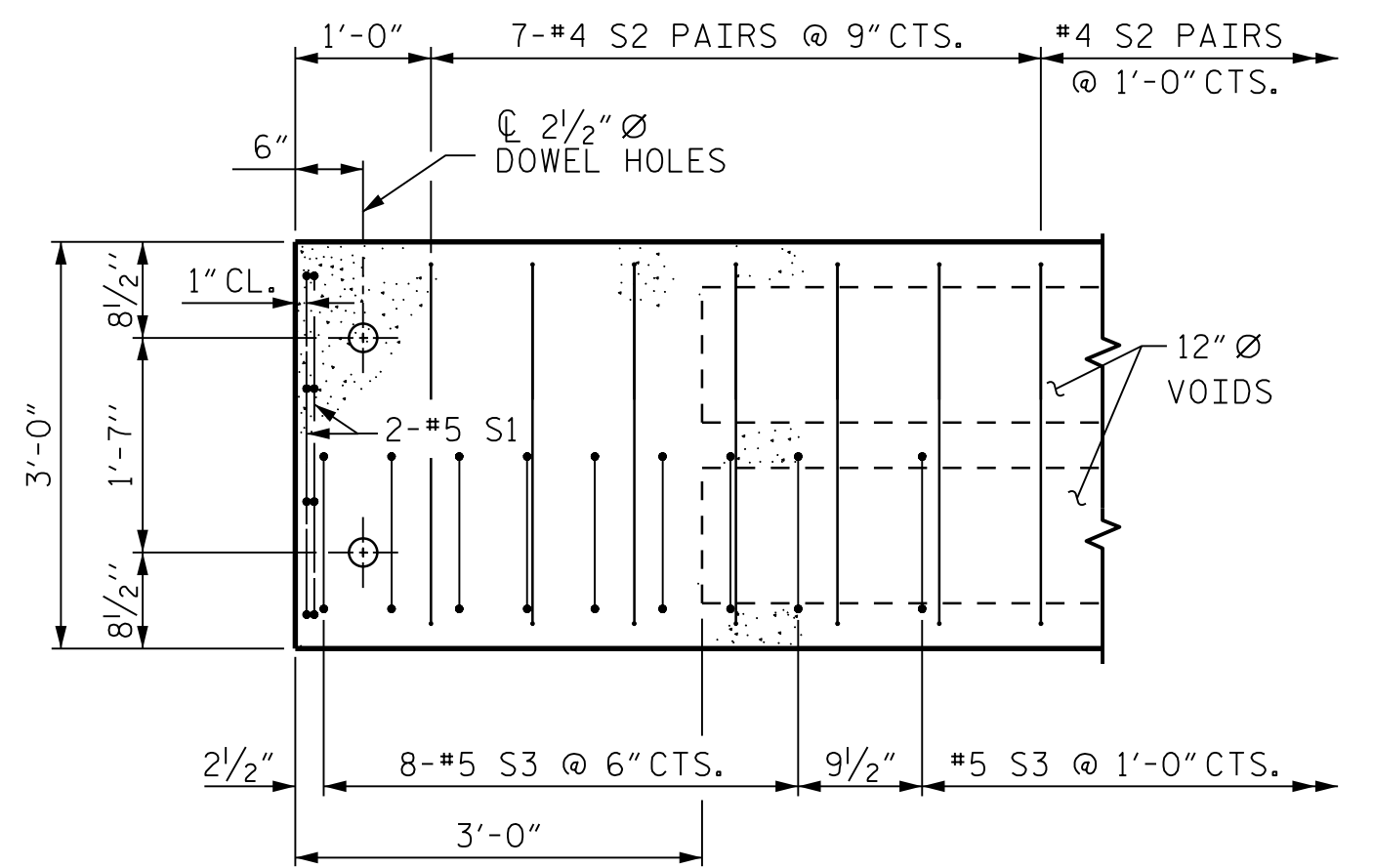
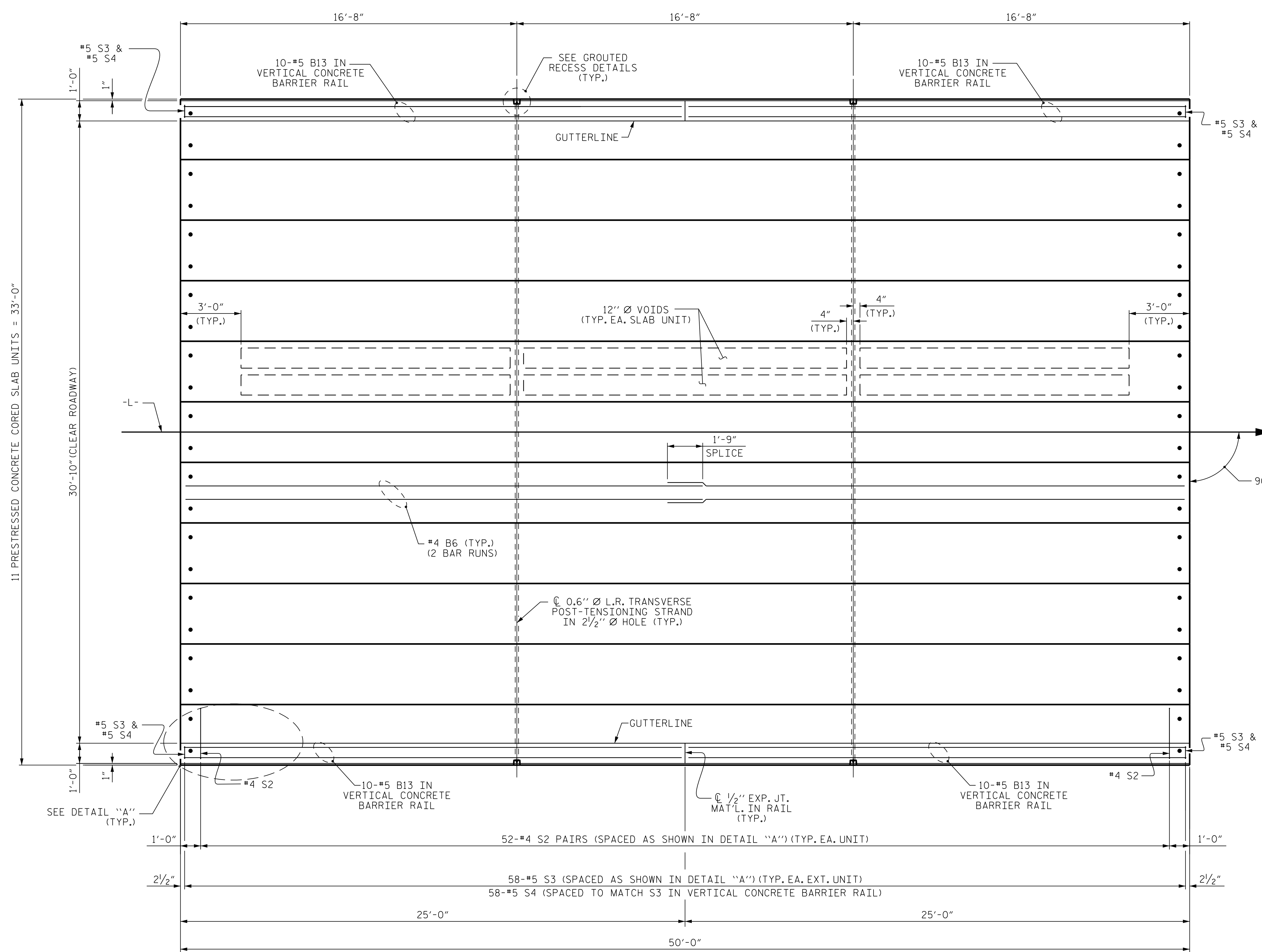
CDM Smith
CDM SMITH
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Raleigh, NC 27612-3228
NC COA No. F-1255

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

PLAN OF SPAN B

PROJECT NO. 17BP.2.R.87
BEAUFORT COUNTY
 STATION: 18+14.00 -L-
 SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**PLAN OF 50' UNIT
 30'-10" CLEAR ROADWAY
 90° SKEW
 SPAN B**

REVISIONS						SHEET NO.
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2			4			

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 NC COA No. F-1255

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 DESIGN ENGINEER : VDK DATE : 3/18

PROFESSIONAL SEAL
 16301
 ENGINEER
 KING HSIUNG FANG
 King Fang
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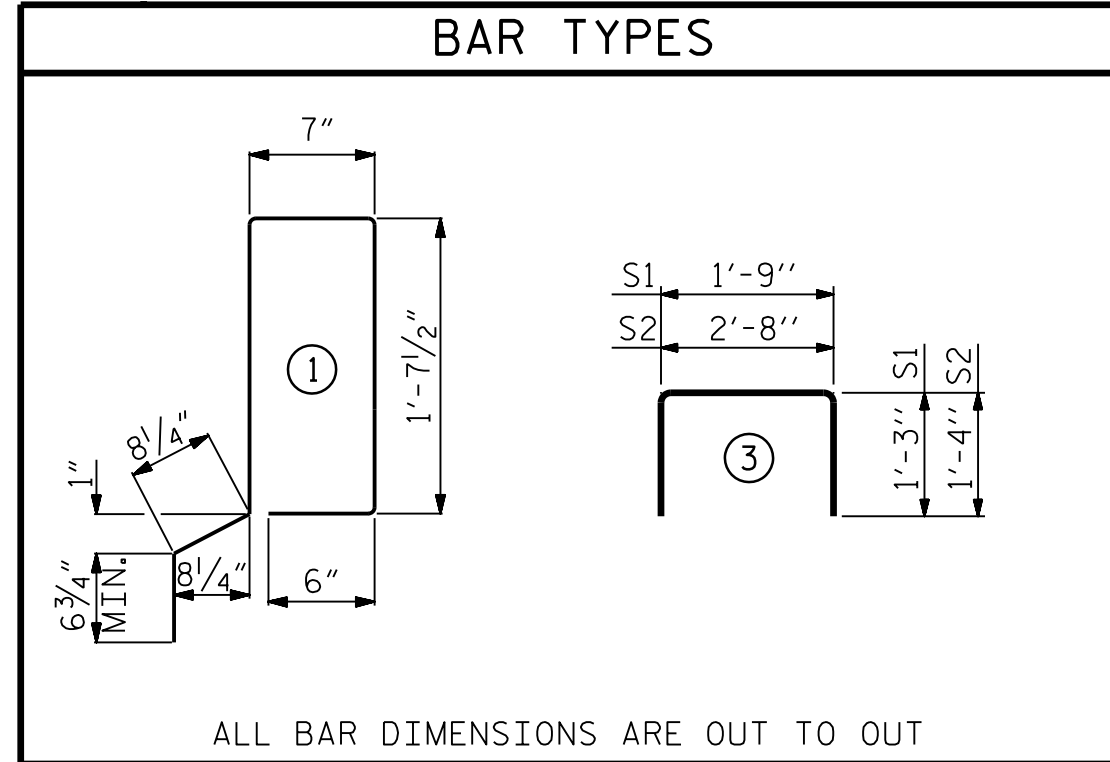
CONCRETE RELEASE STRENGTH	
UNIT	PSI
SPAN A (30' UNITS)	4000
SPAN B (50' UNITS)	4900

DEAD LOAD DEFLECTION AND CAMBER		
ALL UNITS, 0.6" Ø L.R. STRAND	SPAN A 30' - 21" CS UNIT	SPAN B 50' - 21" CS UNIT
CAMBER (SLAB ALONE IN PLACE)	1/4" ↑	1 1/2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	1/8" ↓	3/8" ↓
FINAL CAMBER	1/8" ↑	1 1/8" ↑

** INCLUDES FUTURE WEARING SURFACE

GRADE 270 STRANDS	
0.6" Ø L.R.	
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

CORED SLABS REQUIRED			
SPAN A (30' UNITS)			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	30'-0"	60'-0"
INTERIOR C.S.	9	30'-0"	270'-0"
TOTAL	11	30'-0"	330'-0"
SPAN B (50' UNITS)			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	50'-0"	100'-0"
INTERIOR C.S.	9	50'-0"	450'-0"
TOTAL	11	50'-0"	550'-0"



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE CORED SLAB UNIT							
SPAN A (30' - 21" CORED SLAB UNIT)							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B2	2	#4	STR	29'-8"	40	29'-8"	40
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	64	#4	3	5'-4"	228	5'-4"	228
* S3	39	#5	1	5'-7"	227		
REINFORCING STEEL				LBS.	303		303
* EPOXY COATED REINFORCING STEEL				LBS.	227		
5000 P.S.I. CONCRETE				CU. YDS.	4.4		4.4
0.6" Ø L.R. STRANDS				No.	9		9
SPAN B (50' - 21" CORED SLAB UNIT)							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B6	4	#4	STR	25'-9"	69	25'-9"	69
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	104	#4	3	5'-4"	371	5'-4"	371
* S3	58	#5	1	5'-7"	338		
REINFORCING STEEL				LBS.	475		475
* EPOXY COATED REINFORCING STEEL				LBS.	338		
6500 P.S.I. CONCRETE				CU. YDS.	7.1		7.1
0.6" Ø L.R. STRANDS				No.	19		19

NOTES

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

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

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

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

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

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

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

PRESTRESSED CONCRETE CORED SLAB UNITS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR.

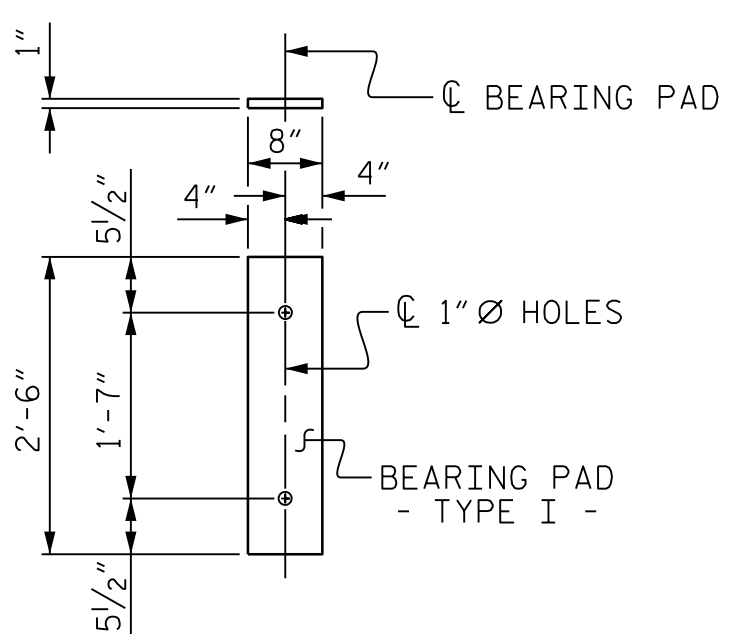
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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.



FIXED END (TYPE I - 44 REQ'D)

ELASTOMERIC BEARING DETAILS
ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

PROJECT NO. 17BP.2.R.87
BEAUFORT COUNTY
STATION: 18+14.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
3'-0" x 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW
SPANS A & B

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-09
1			3			TOTAL SHEETS 20
2			4			

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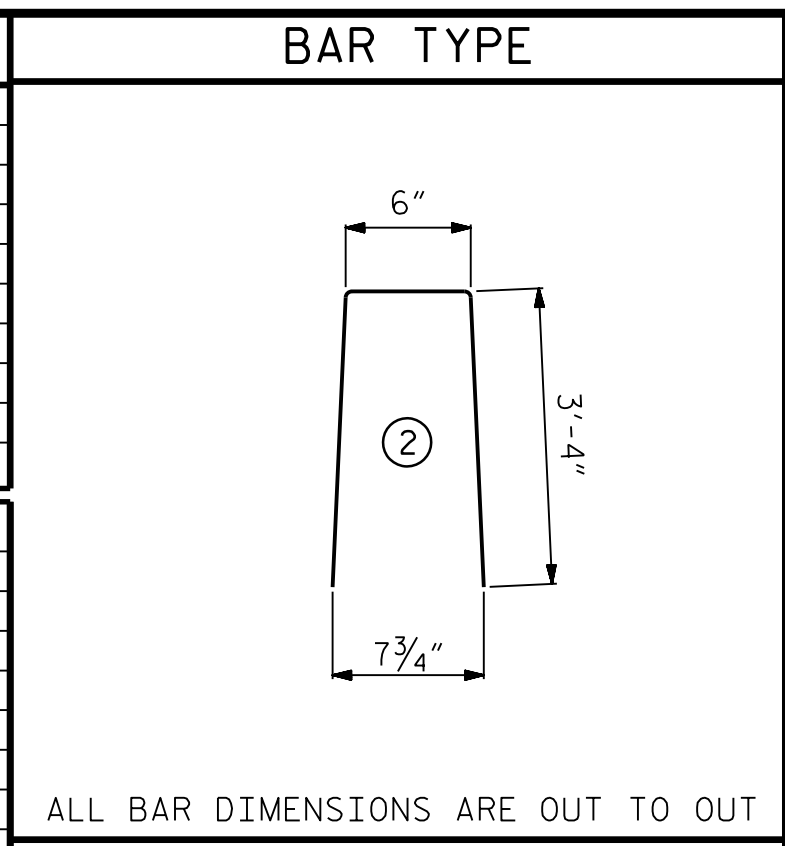
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DESIGN ENGINEER: VDK DATE: 3/18

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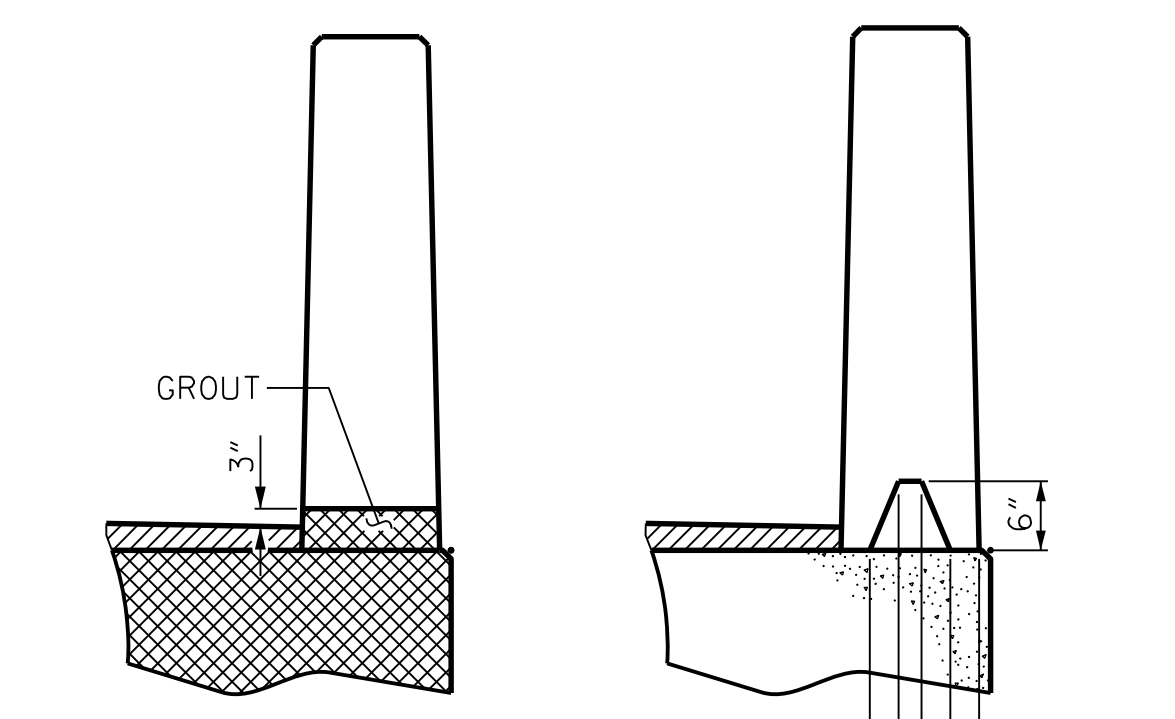
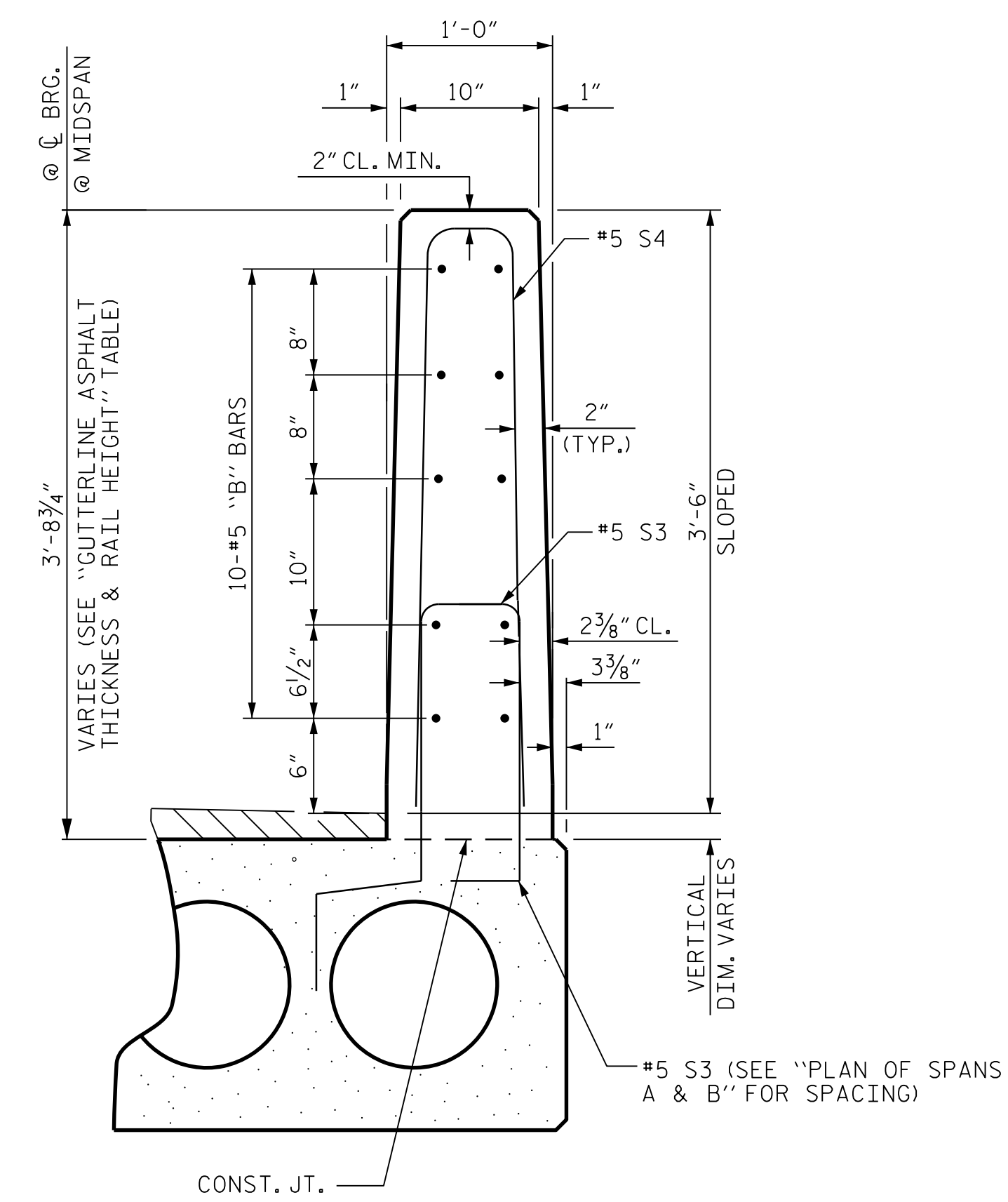
BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
SPAN A (30' UNIT)						
* B9	20	20	#5	STR	29'-7"	617
* S4	78	78	#5	2	7'-2"	583
* EPOXY COATED REINFORCING STEEL					LBS.	1200
CLASS AA CONCRETE					CU.YDS.	7.7
TOTAL VERTICAL CONCRETE BARRIER RAIL					LN. FT.	60.125

SPAN B (50' UNIT)						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
* B13	40	40	#5	STR	24'-7"	1026
* S4	116	116	#5	2	7'-2"	867
* EPOXY COATED REINFORCING STEEL					LBS.	1893
CLASS AA CONCRETE					CU.YDS.	12.8
TOTAL VERTICAL CONCRETE BARRIER RAIL					LN. FT.	100.125

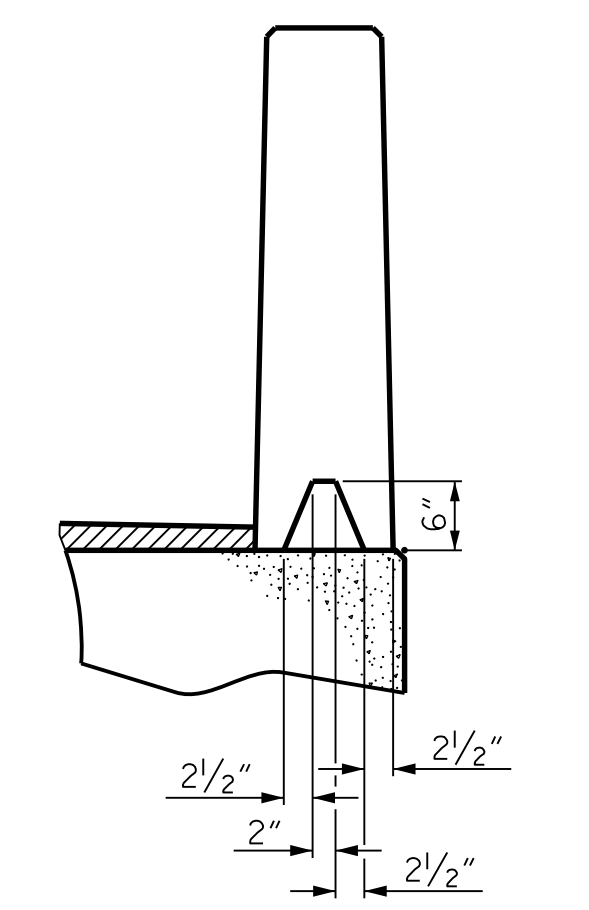


TOTAL VERTICAL CONCRETE BARRIER RAIL FOR ENTIRE BRIDGE: 160.25 LN.FT.

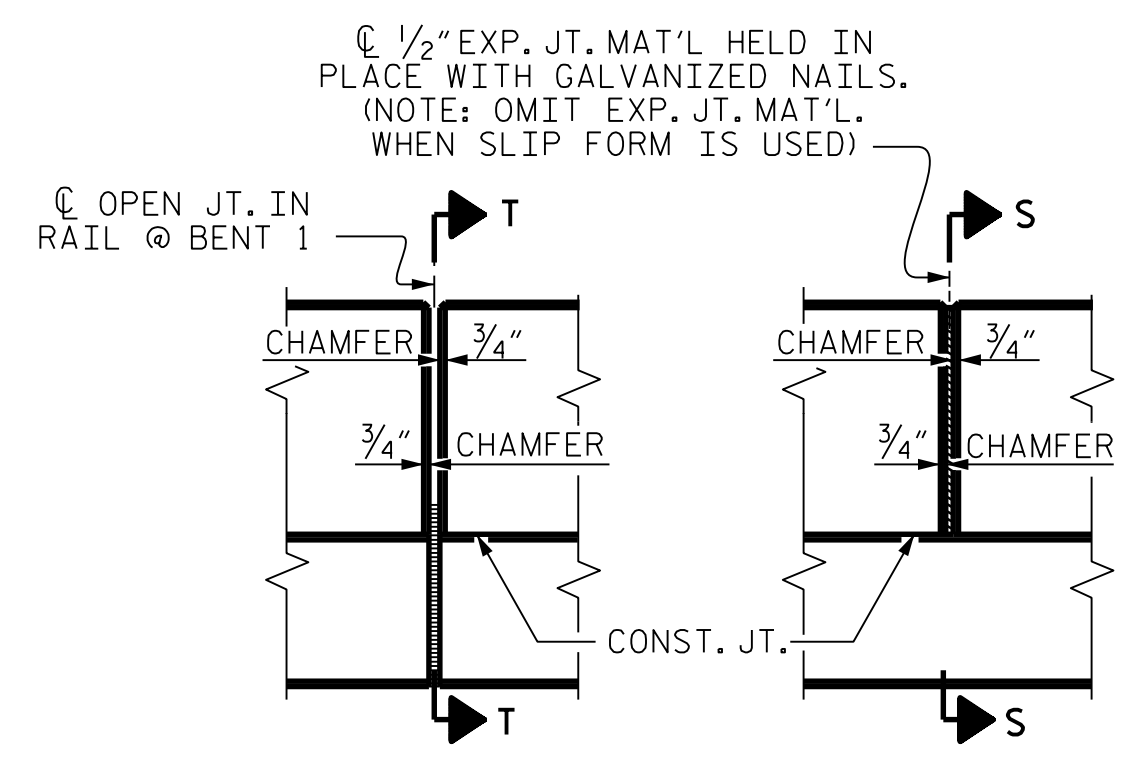
GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
SPAN A (30' UNITS)	2 5/8"	3'-8 5/8"
SPAN B (50' UNITS)	1 5/8"	3'-7 5/8"



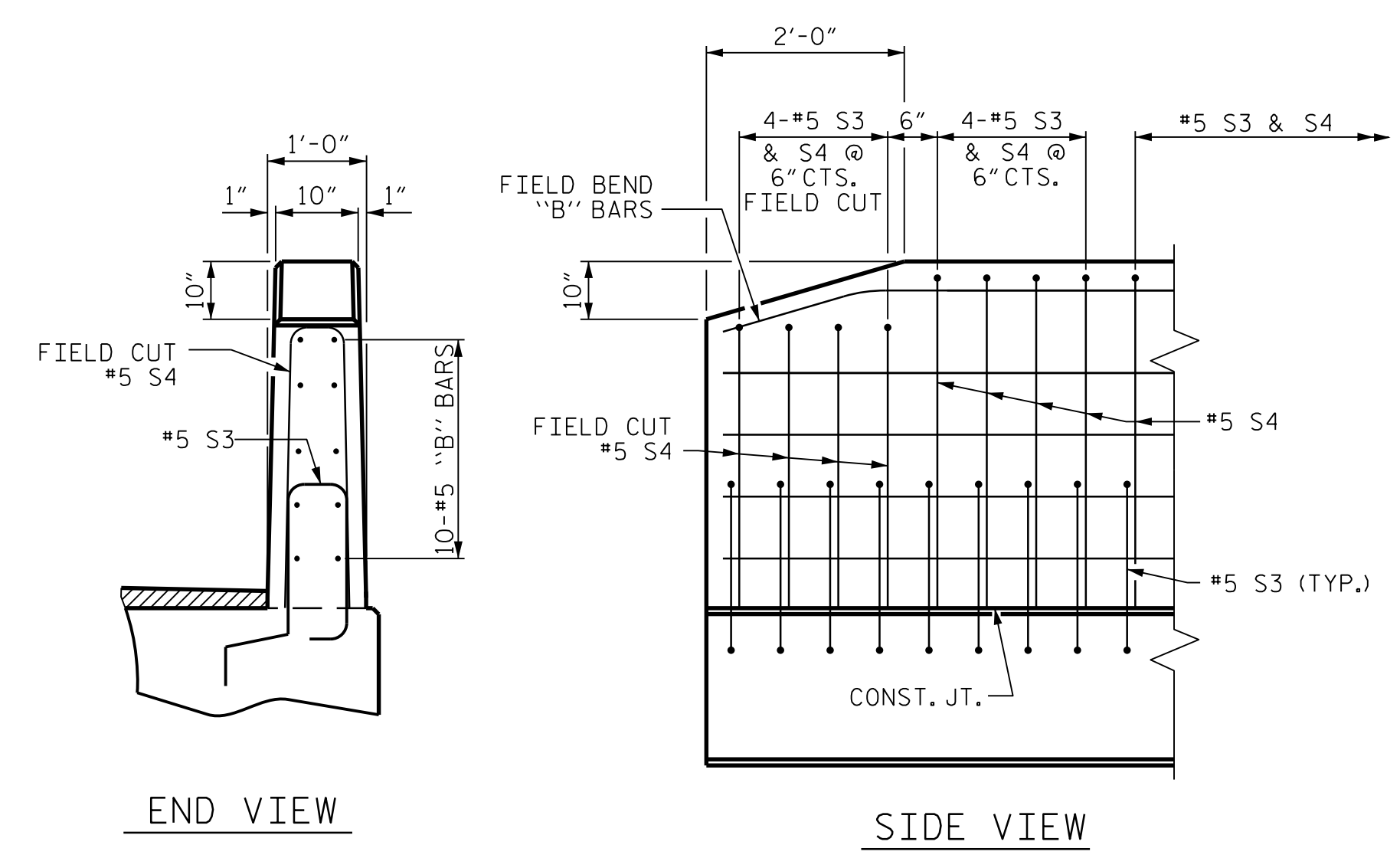
SECTION T-T
AT OPEN JOINT AT BENT
(THIS IS TO BE USED WHERE
FOAM JOINT IS NOT USED)



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



ELEVATION AT EXPANSION JOINTS



END OF RAIL DETAILS

VERTICAL CONCRETE BARRIER RAIL SECTION

PROJECT NO. 17BP.2.R.87
BEAUFORT COUNTY
STATION: 18+14.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

VERTICAL CONCRETE BARRIER RAIL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS 20
2			4			

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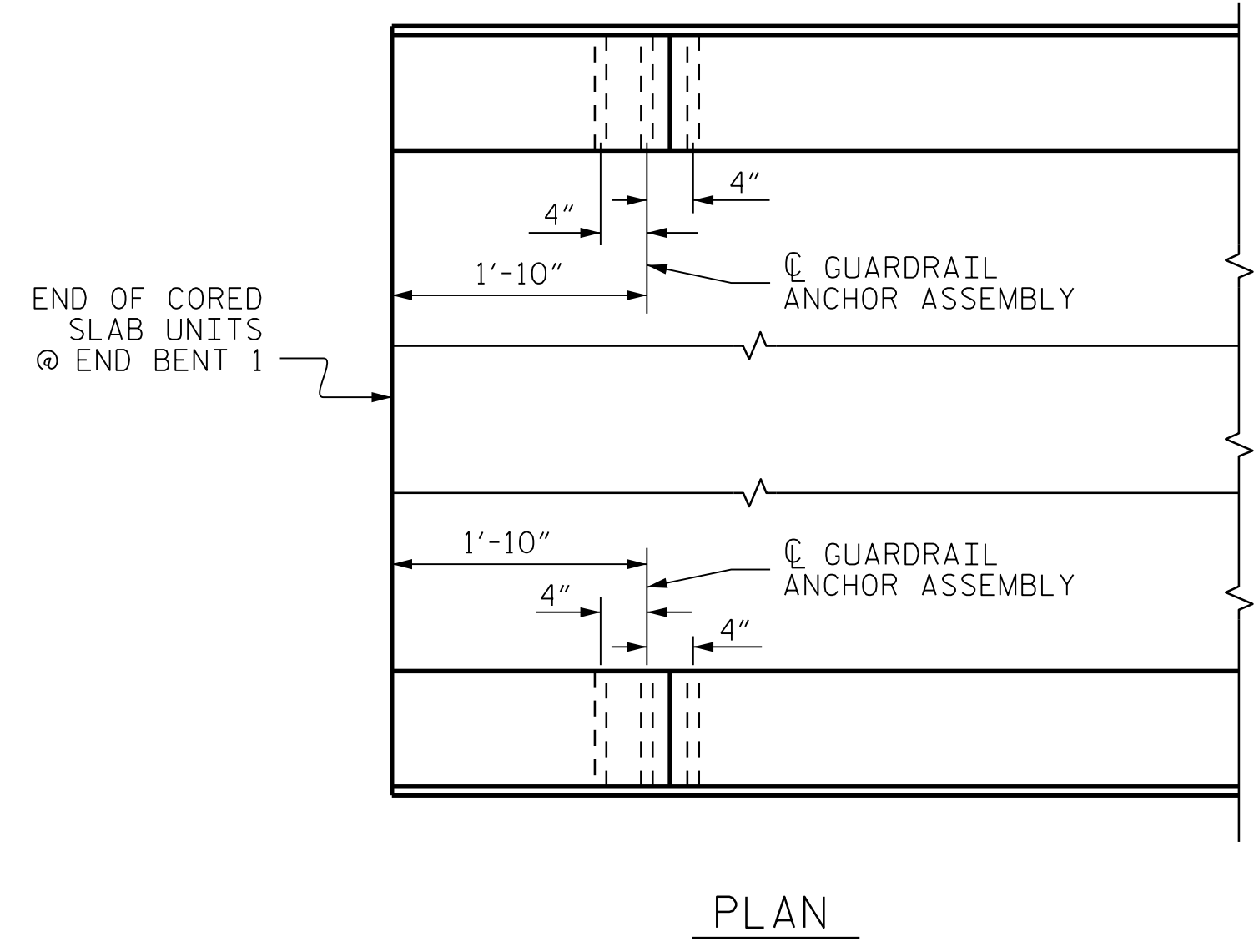
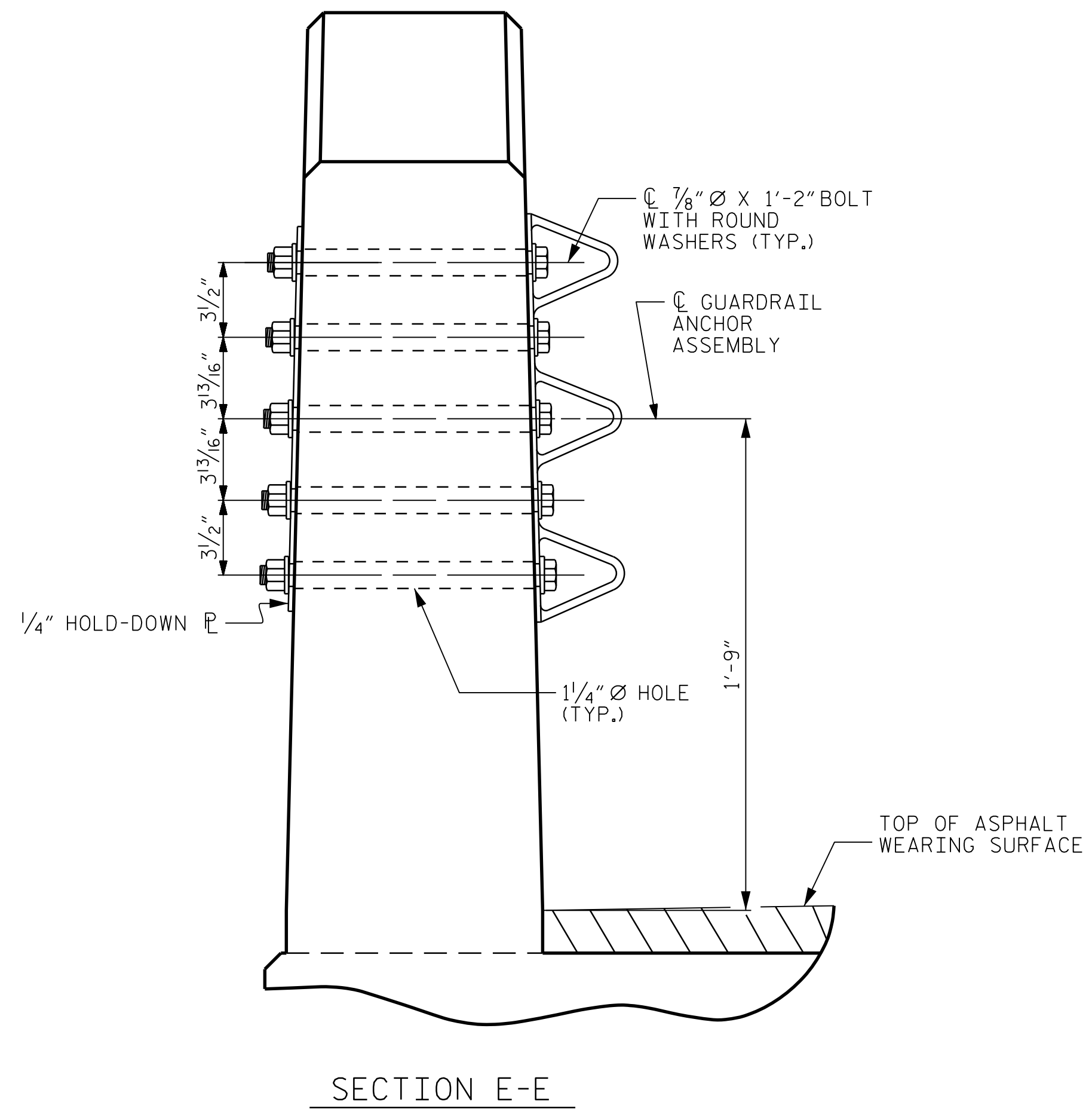
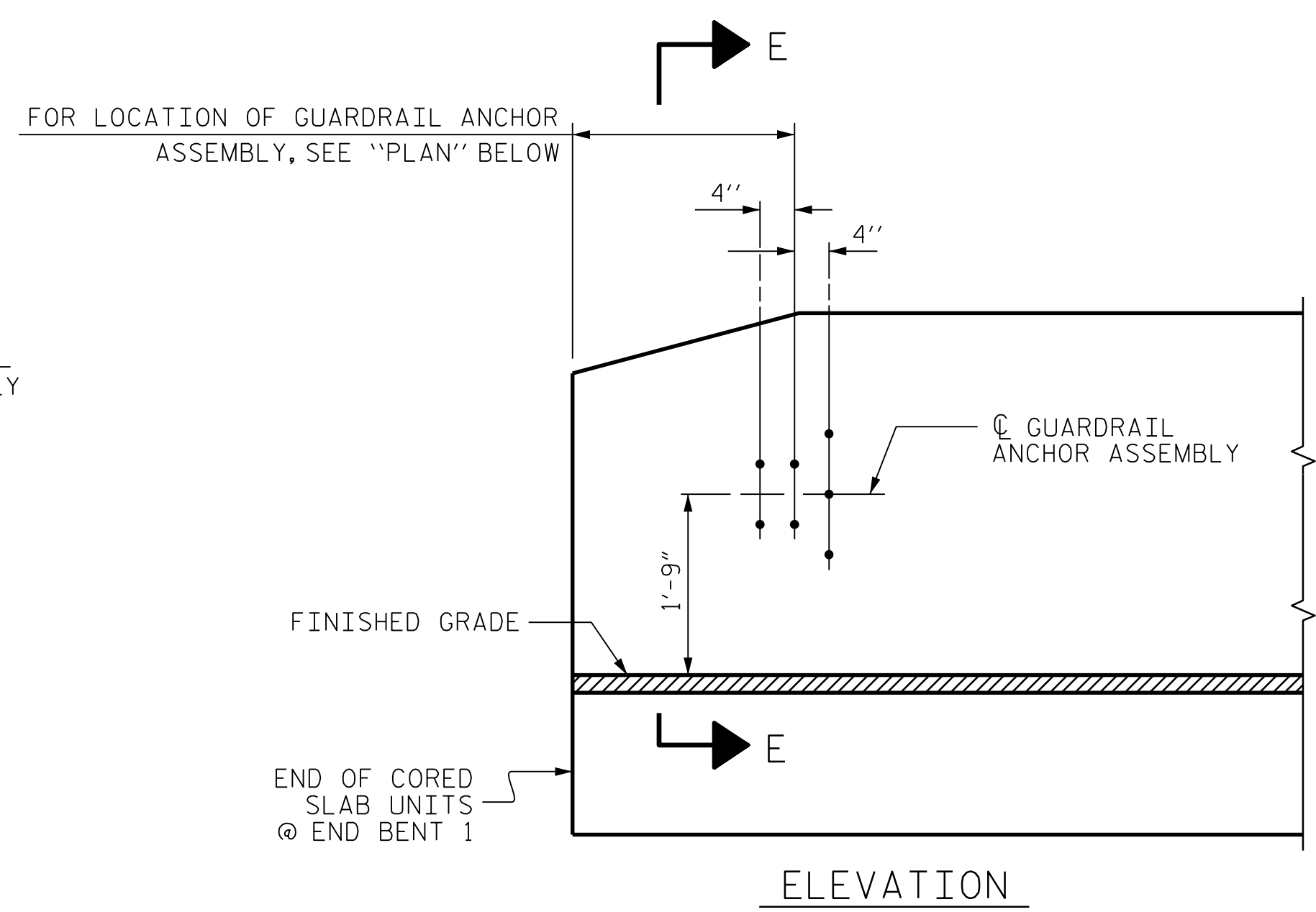
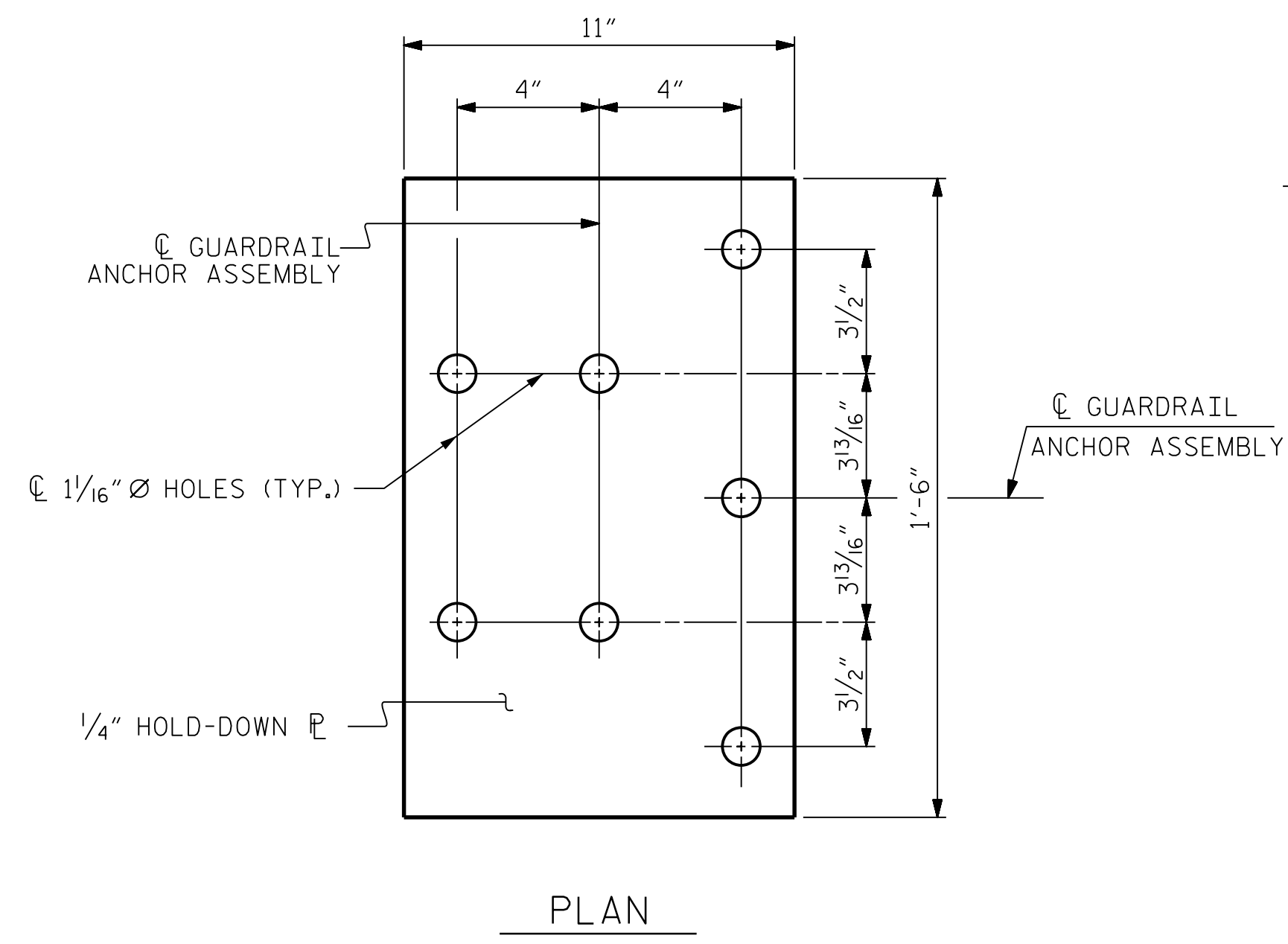
CDM Smith
CDM SMITH
5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

DRAWN BY: VDK DATE: 3/18
CHECKED BY: THF DATE: 3/18
DESIGN ENGINEER: VDK DATE: 3/18

DWG. No.

PROFESSIONAL SEAL
16301
ENGINEER
TING FANG

Ting Fang
5/11/2018 6:18:41 AM



LOCATION OF ANCHORS FOR GUARDRAIL
END BENT 1 SHOWN, END BENT 2 SIMILAR.

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.)

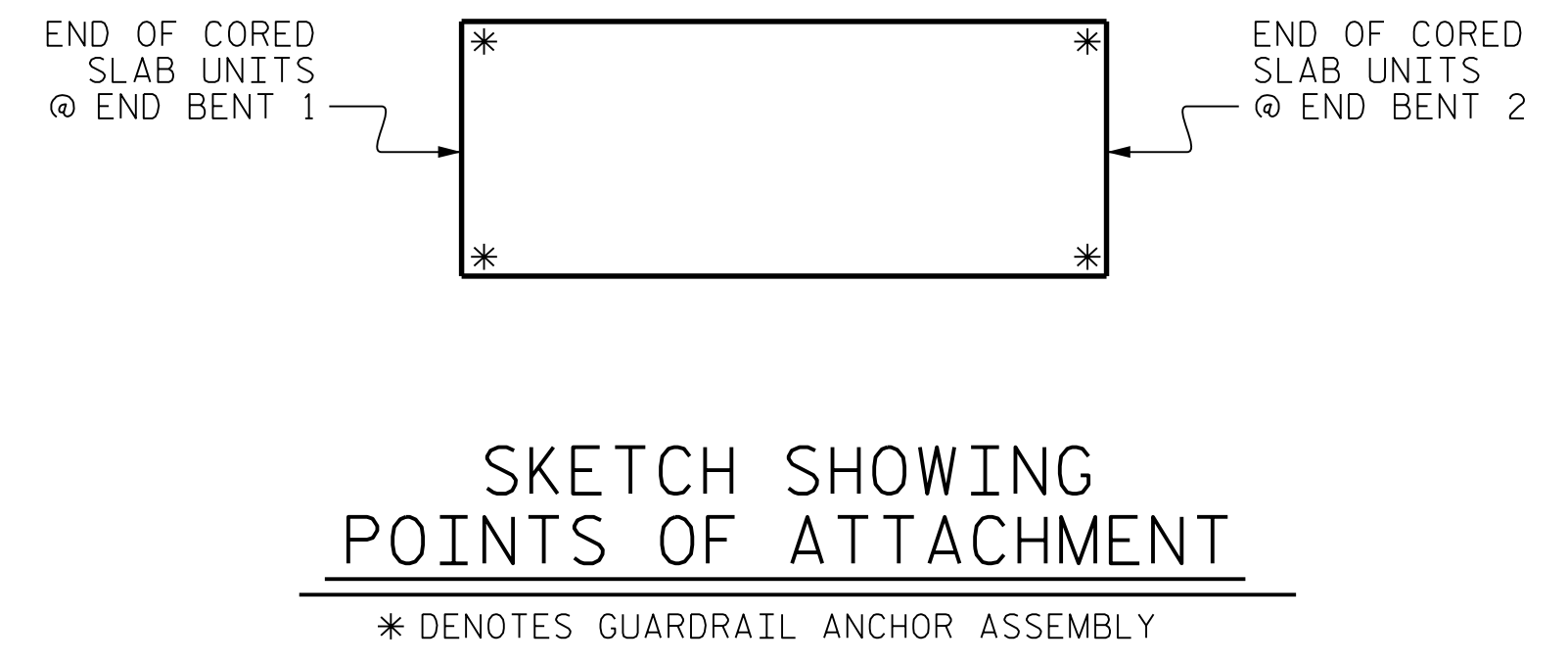
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.2.R.87
BEAUFORT COUNTY
 STATION: 18+14.00 -L-

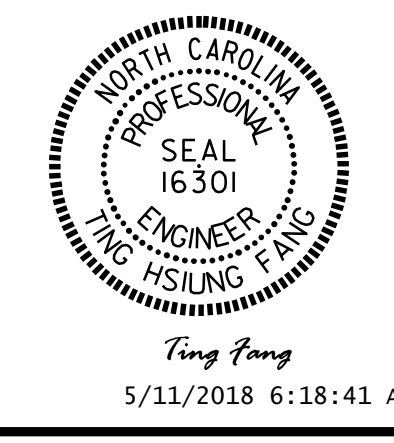
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CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

DRAWN BY: VDK DATE: 3/18
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 DESIGN ENGINEER: VDK DATE: 3/18

DWG. No.



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

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

TOTAL SHEETS: 20

NOTES

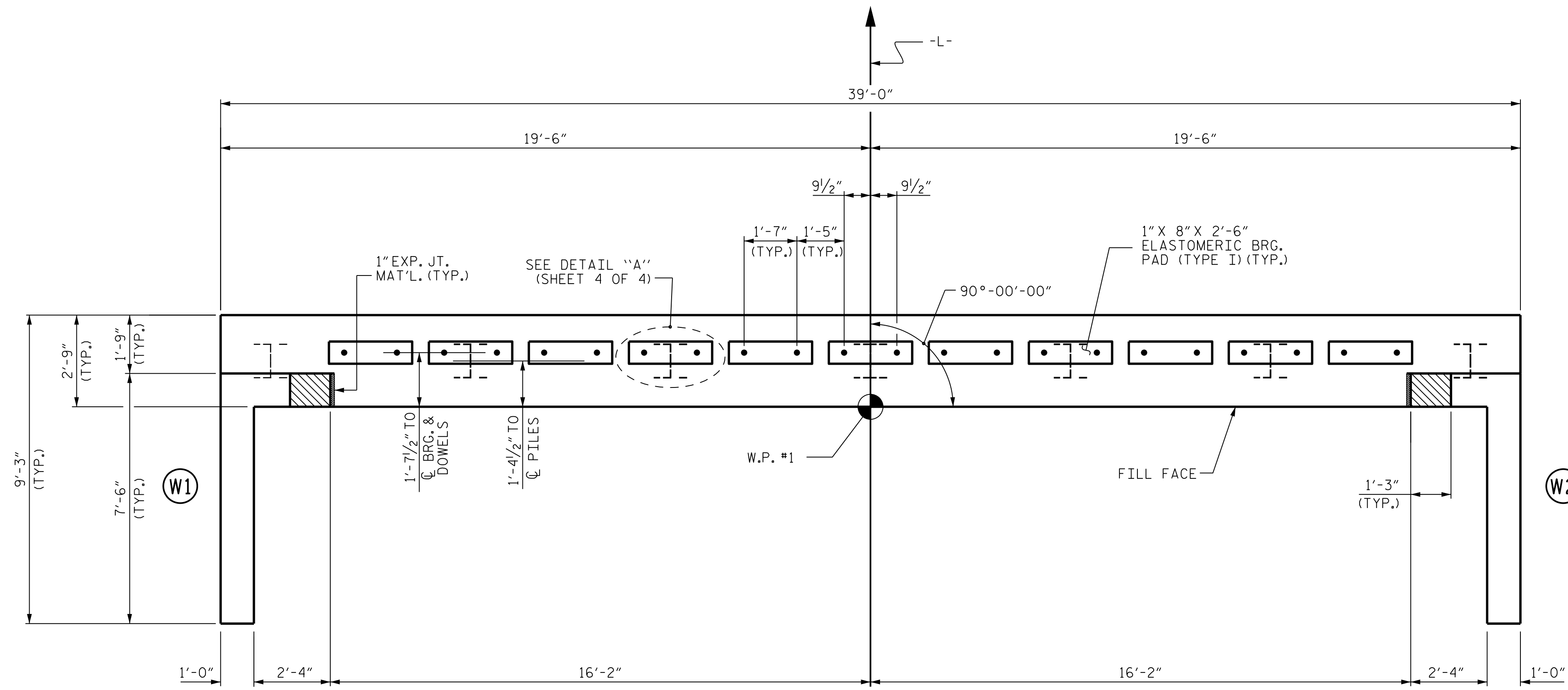
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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.

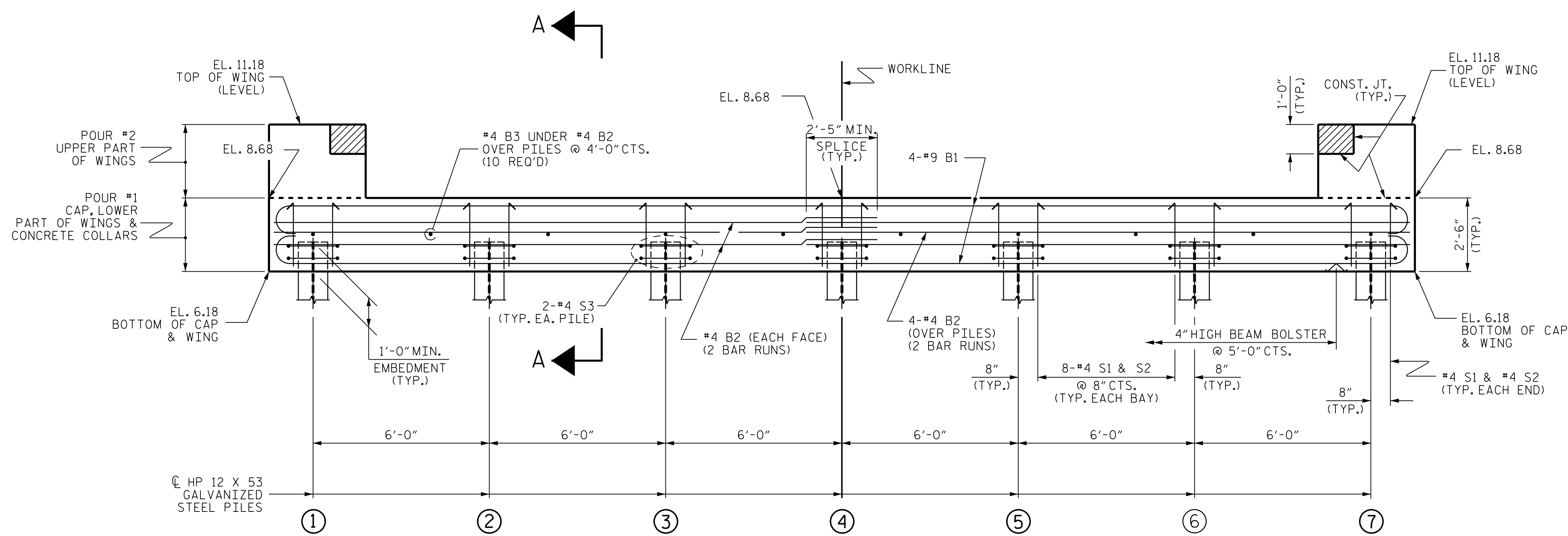
GALVANIZED THE TOP 20 FEET OF EACH END BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

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

PROJECT NO. 17BP.2.R.87
 BEAUFORT COUNTY
 STATION: 18+14.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS 20
2			4			

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 CDM SMITH
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 Raleigh, NC 27612-3228
 NC COA No. F-1255

DWG. No. _____

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 CHECKED BY: THF DATE: 3/18
 DESIGN ENGINEER: VDK DATE: 3/18

PROFESSIONAL SEAL
 16301
 ENGINEER
 TING FANG
 5/11/2018 6:18:41 AM

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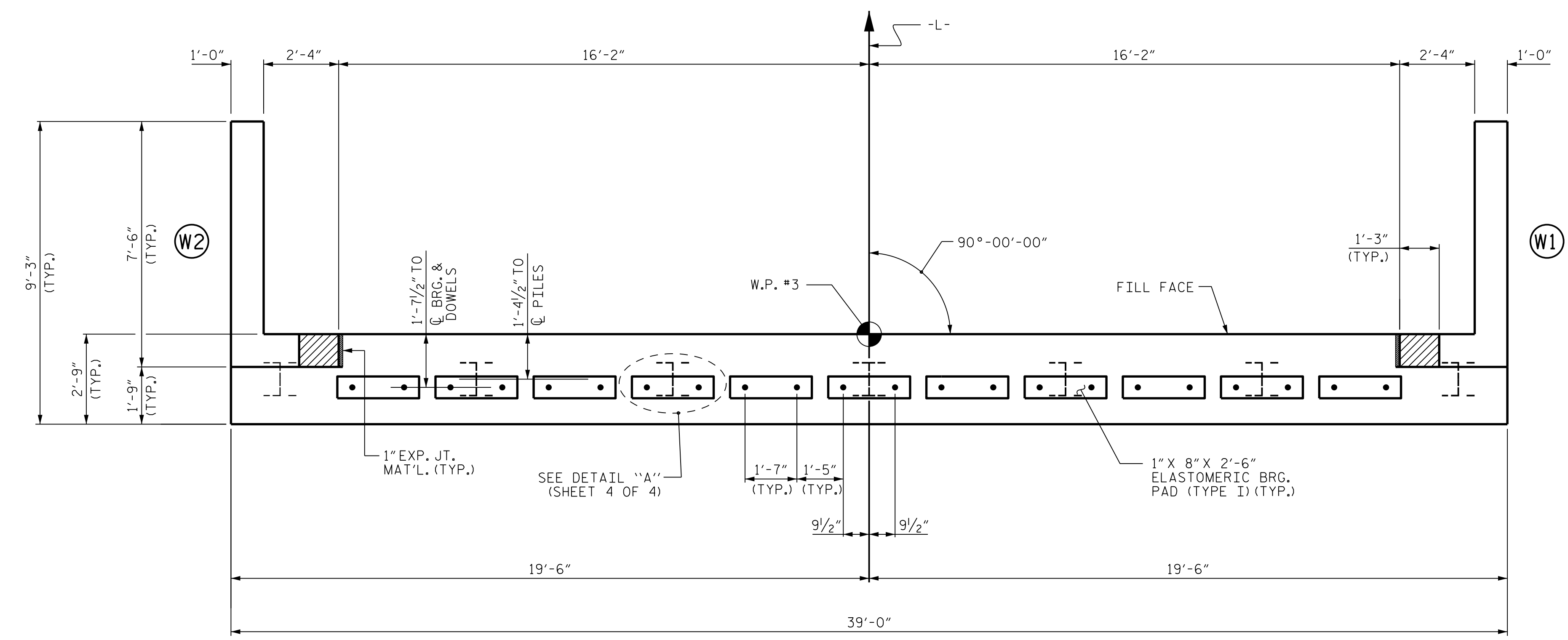
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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.

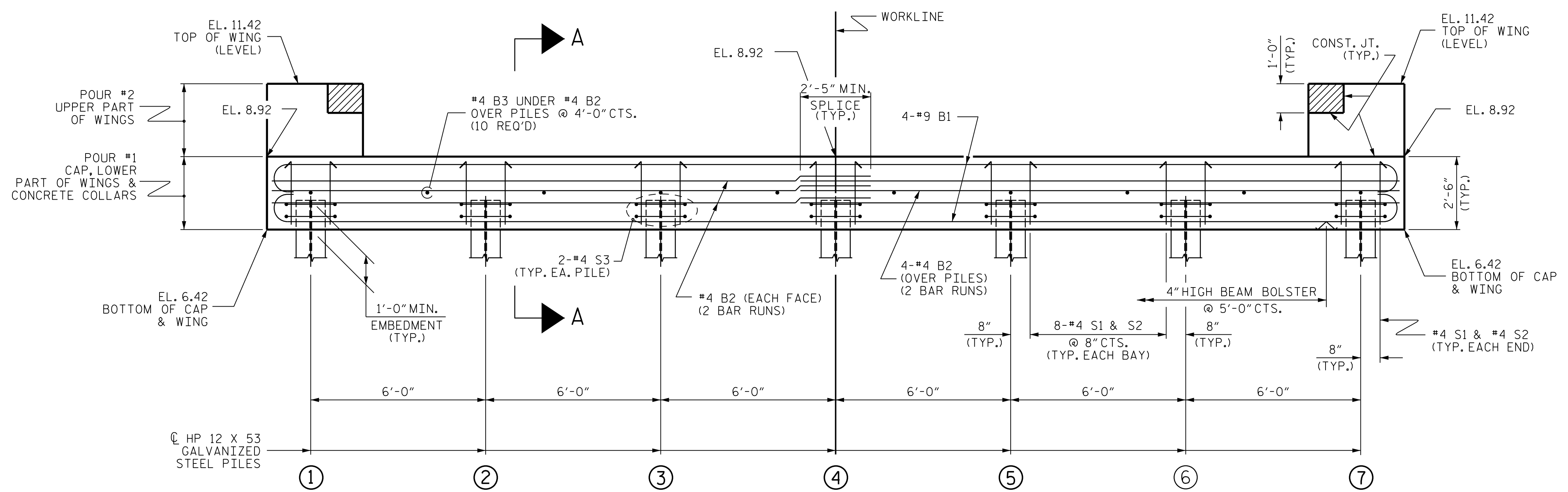
GALVANIZED THE TOP 20 FEET OF EACH END BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

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

PROJECT NO. 17BP.2.R.87
BEAUFORT COUNTY
 STATION: 18+14.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS 20
2			4			

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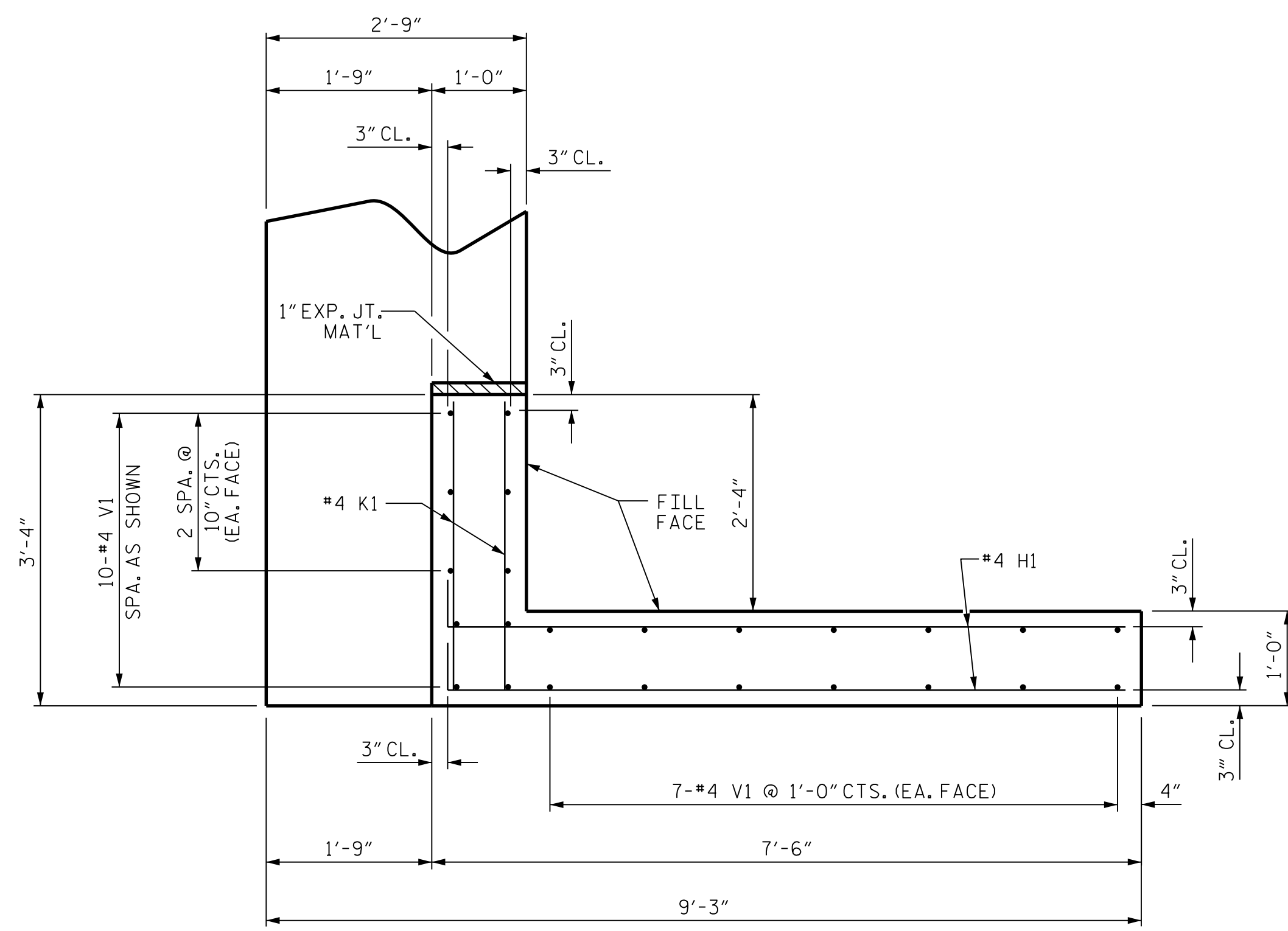
CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

DRAWN BY: VDK DATE: 3/18
 CHECKED BY: THF DATE: 3/18
 DESIGN ENGINEER: VDK DATE: 3/18

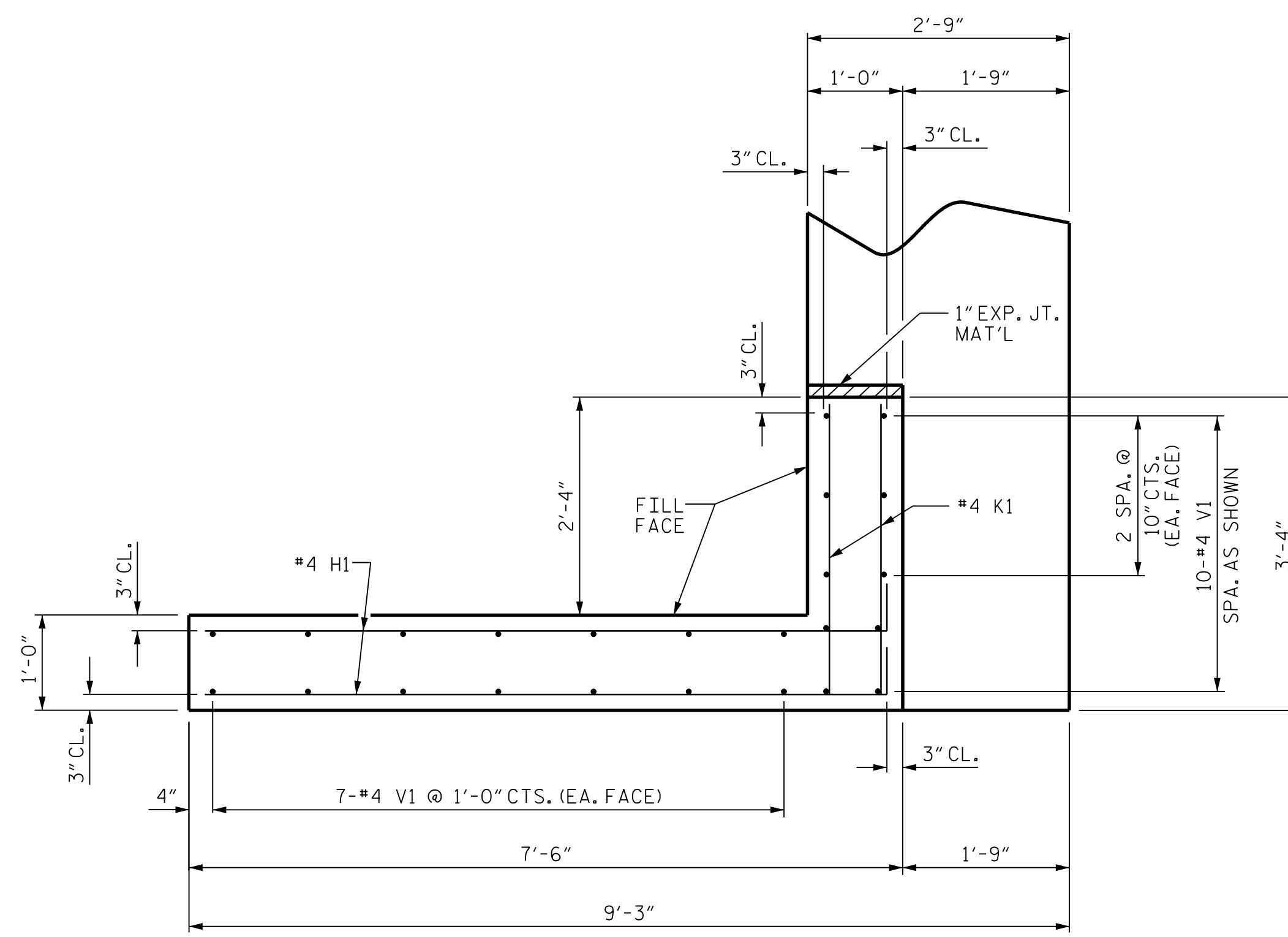
DWG. No.

PROFESSIONAL SEAL
 16301
 ENGINEER
 TUNG FANG
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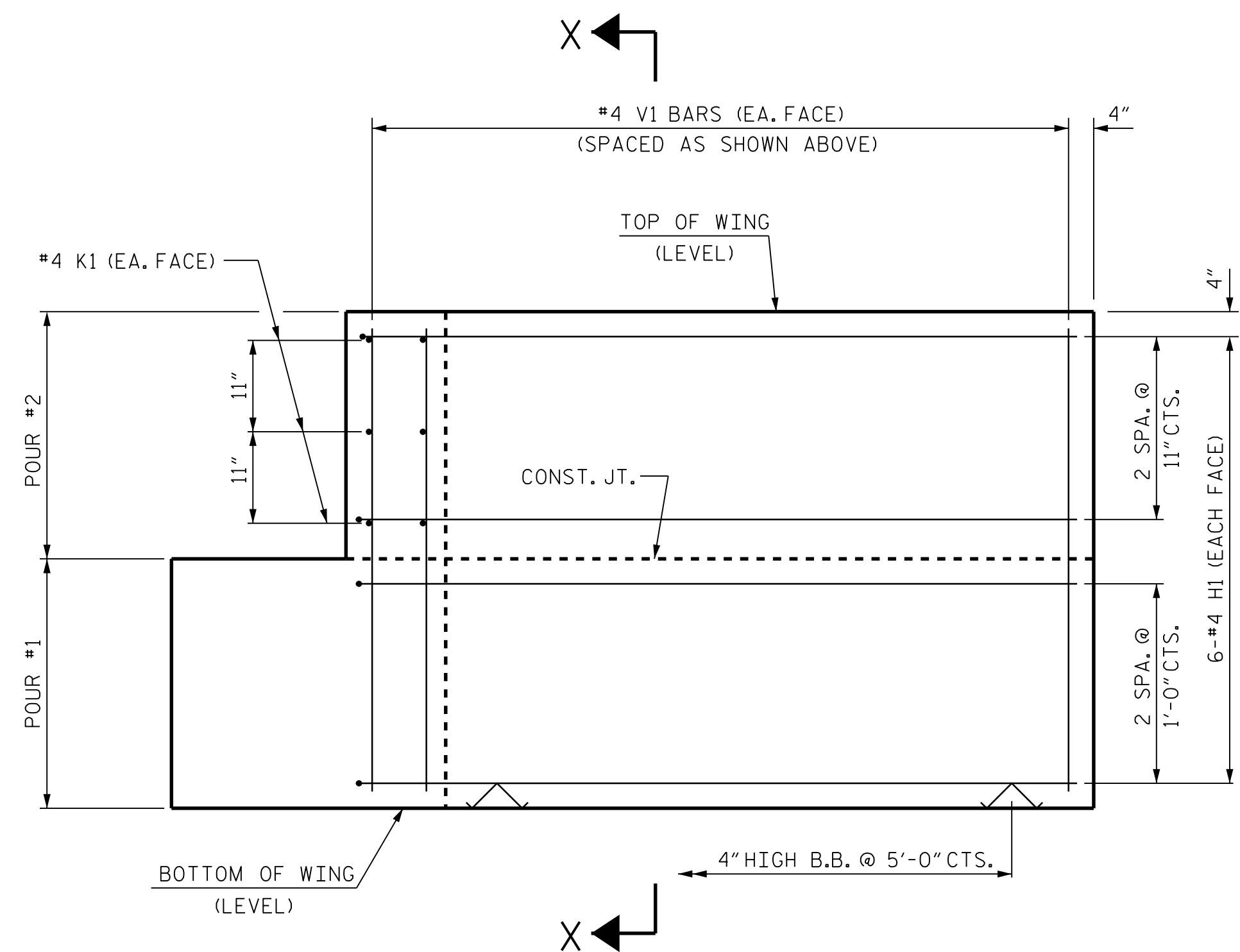
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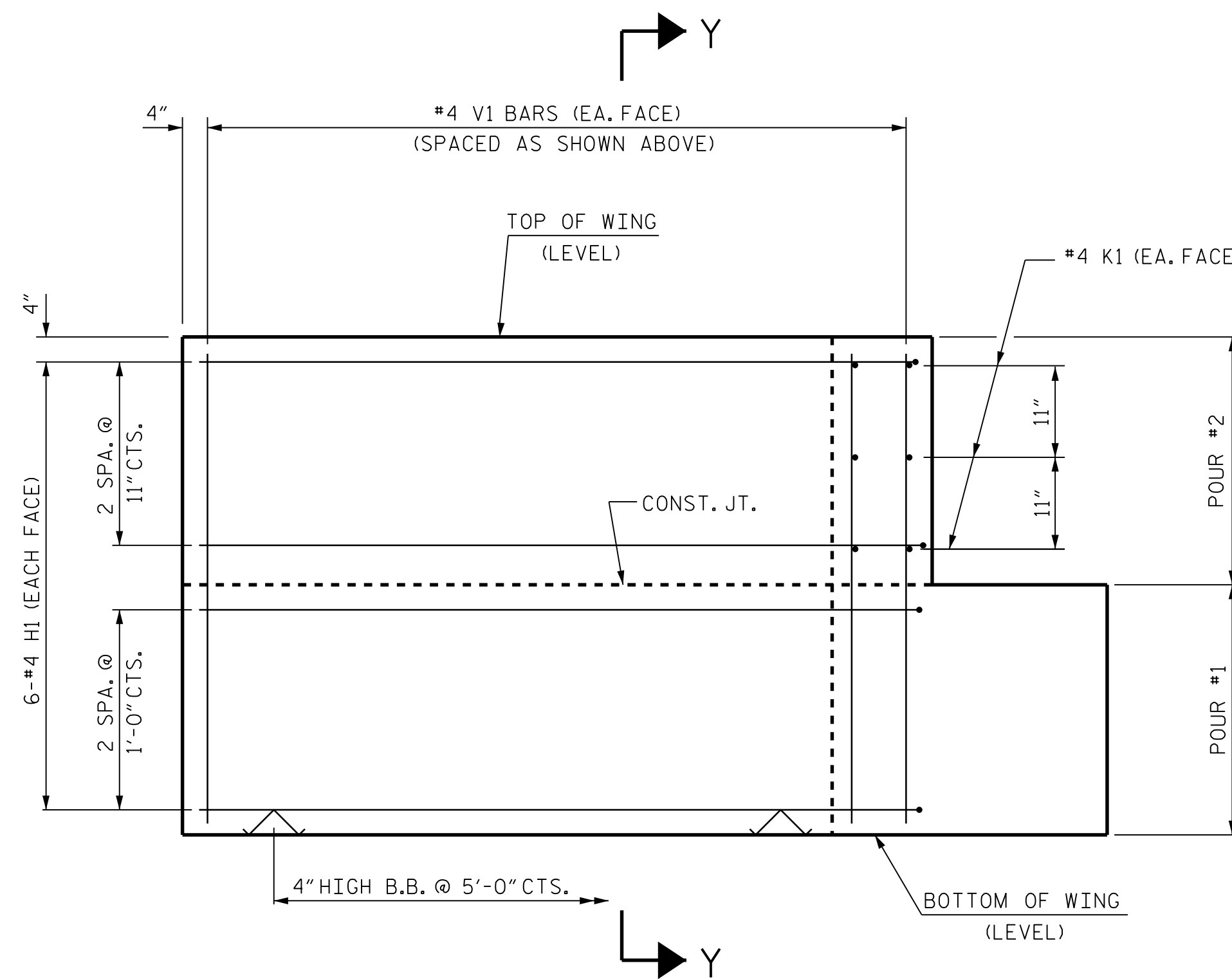
PLAN OF WING (W1)



PLAN OF WING (W2)

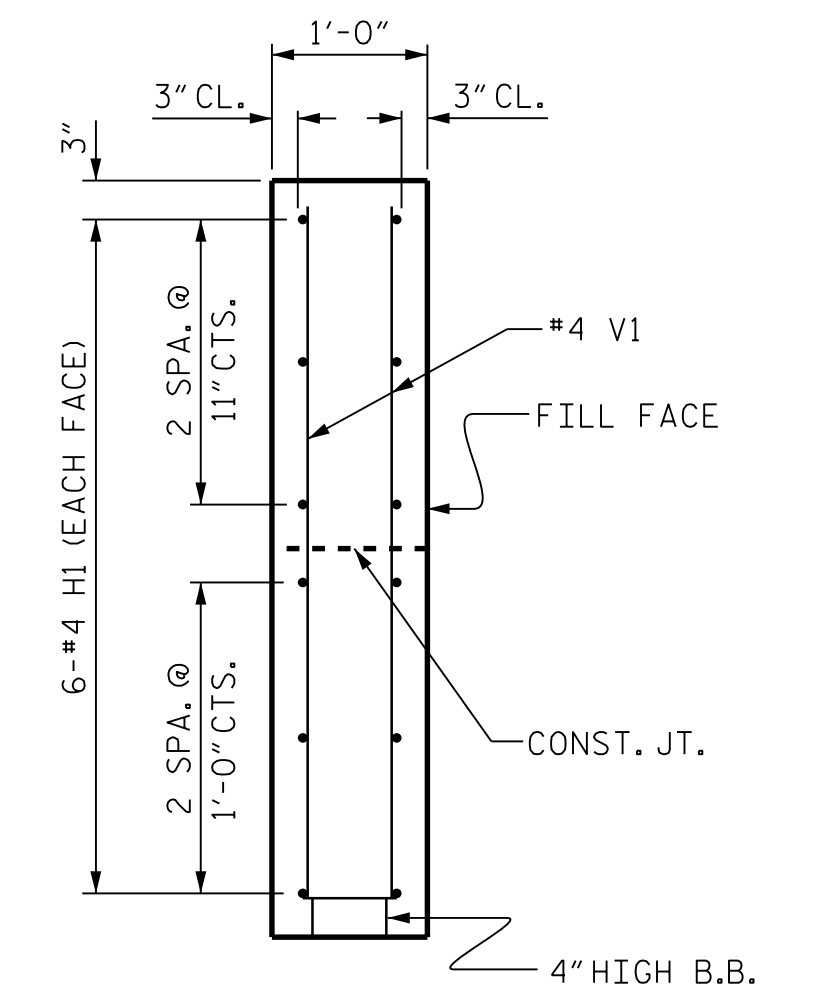


ELEVATION OF WING (W1)

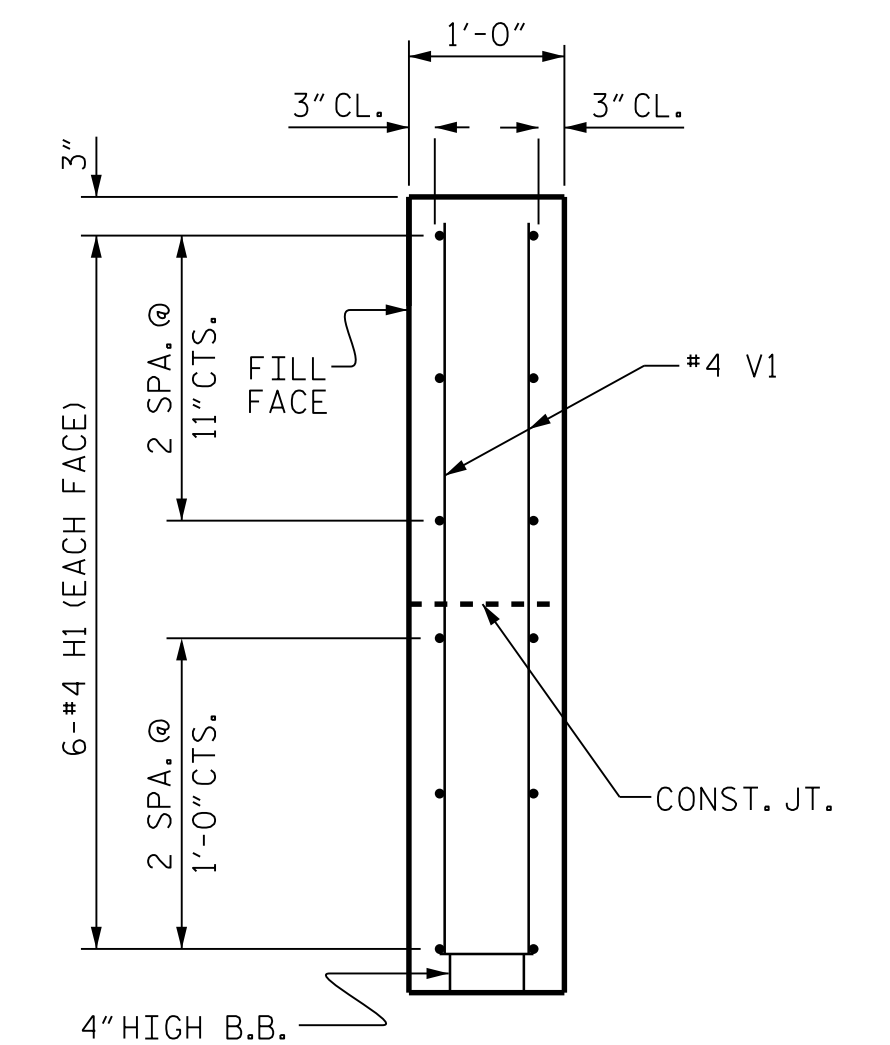


ELEVATION OF WING (W2)

WING DETAILS



SECTION X-X



SECTION Y-Y

PROJECT NO. 17BP.2.R.87
 BEAUFORT COUNTY
 STATION: 18+14.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE

END BENTS 1 & 2
 WING DETAILS

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 SIGNATURES COMPLETED

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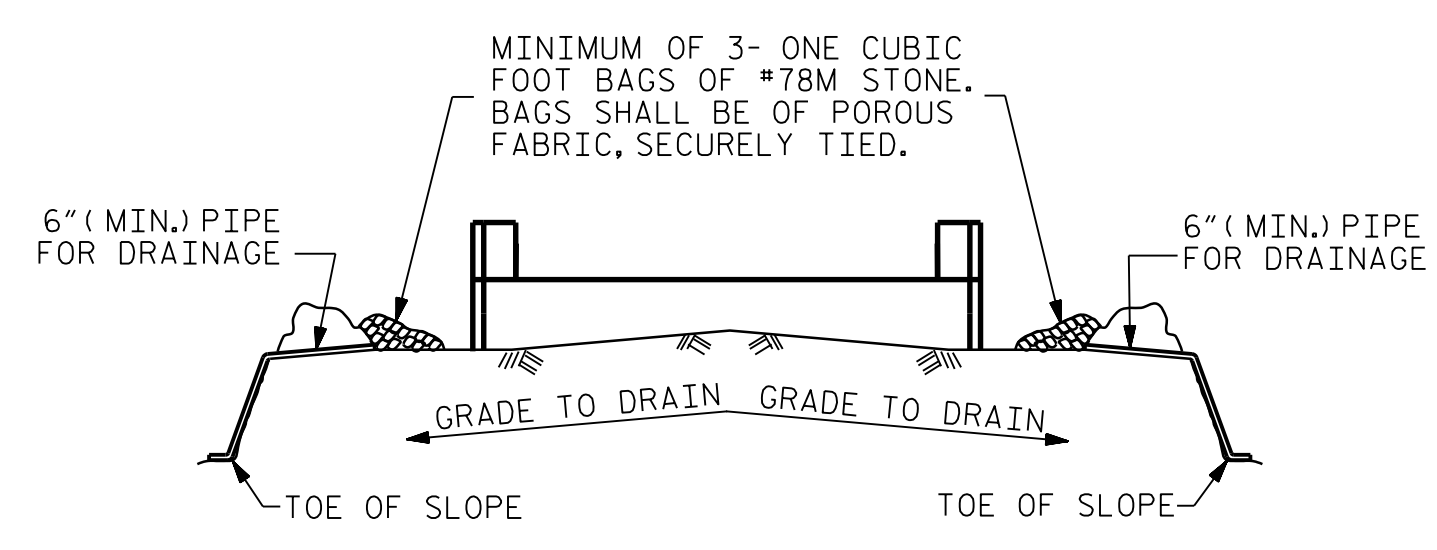


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 CHECKED BY : THF DATE : 3/18
 DESIGN ENGINEER : VDK DATE : 3/18

DWG. No.

Ting Pong
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS 20
2			4			

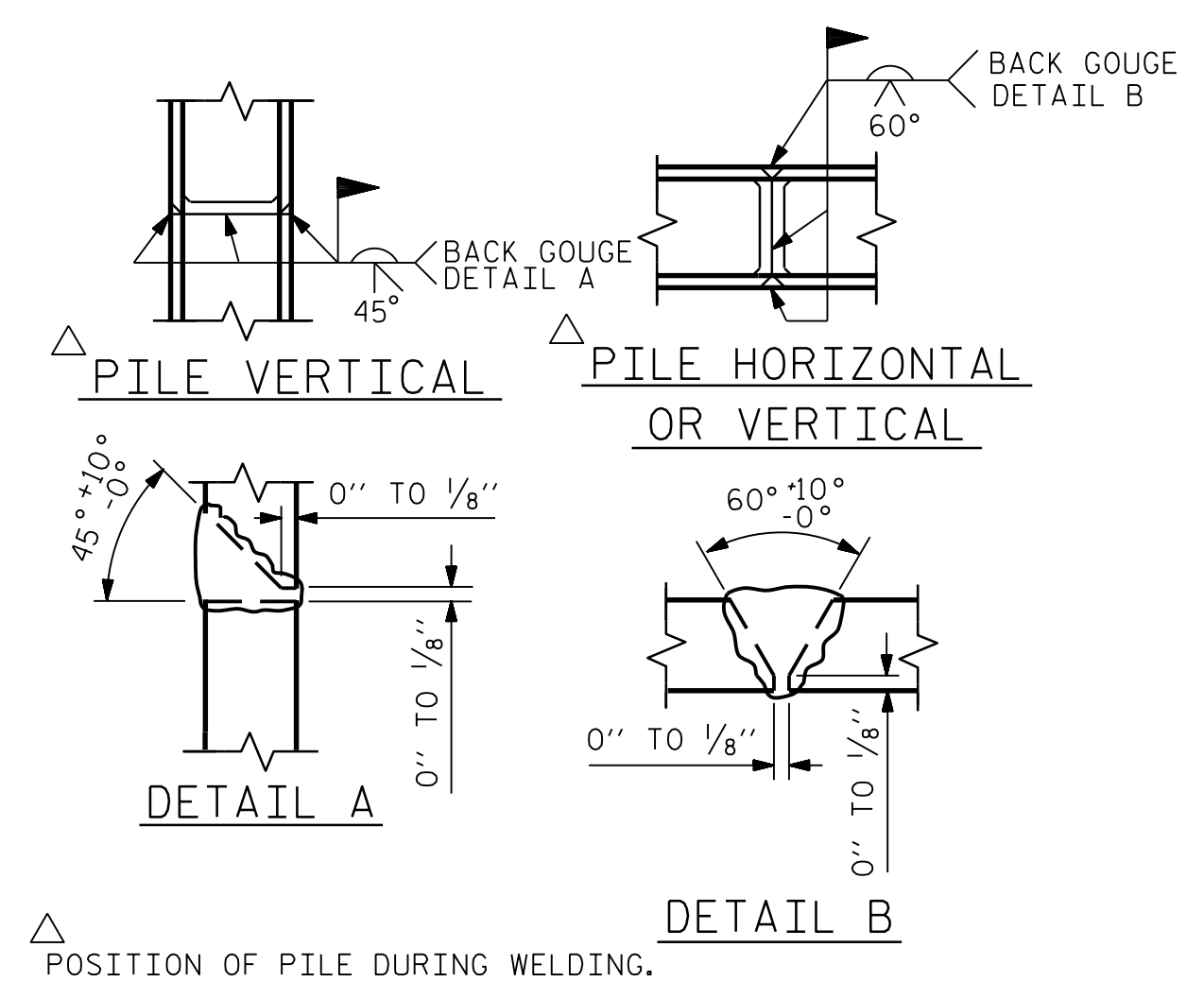


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

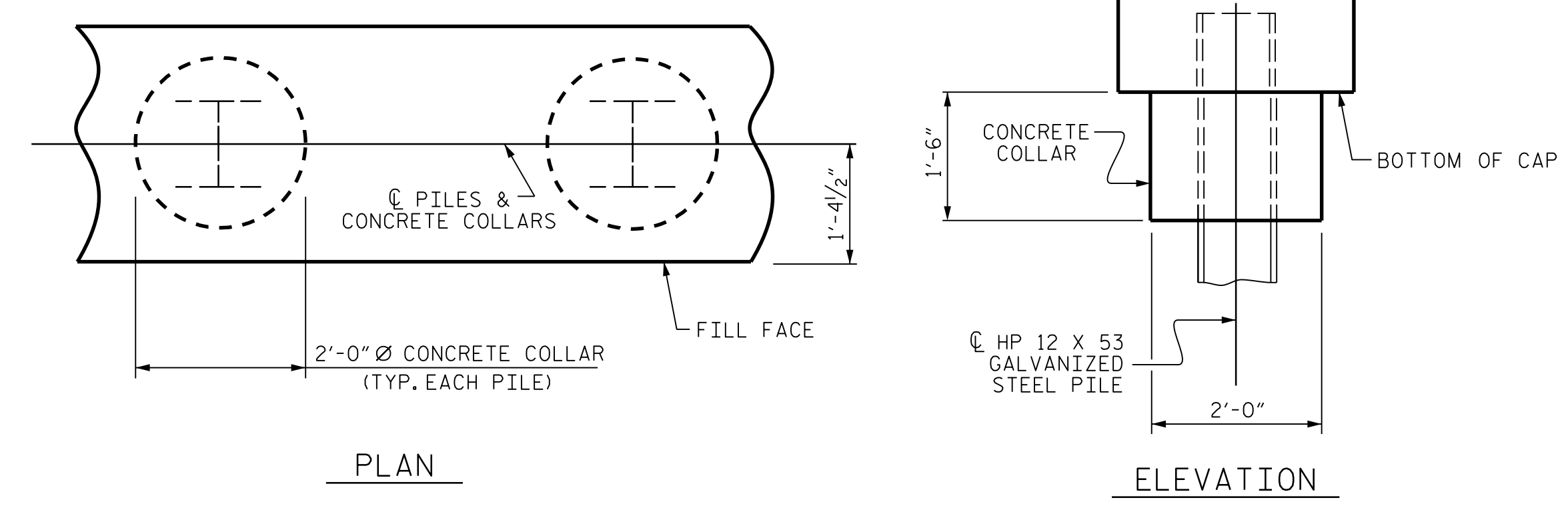
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

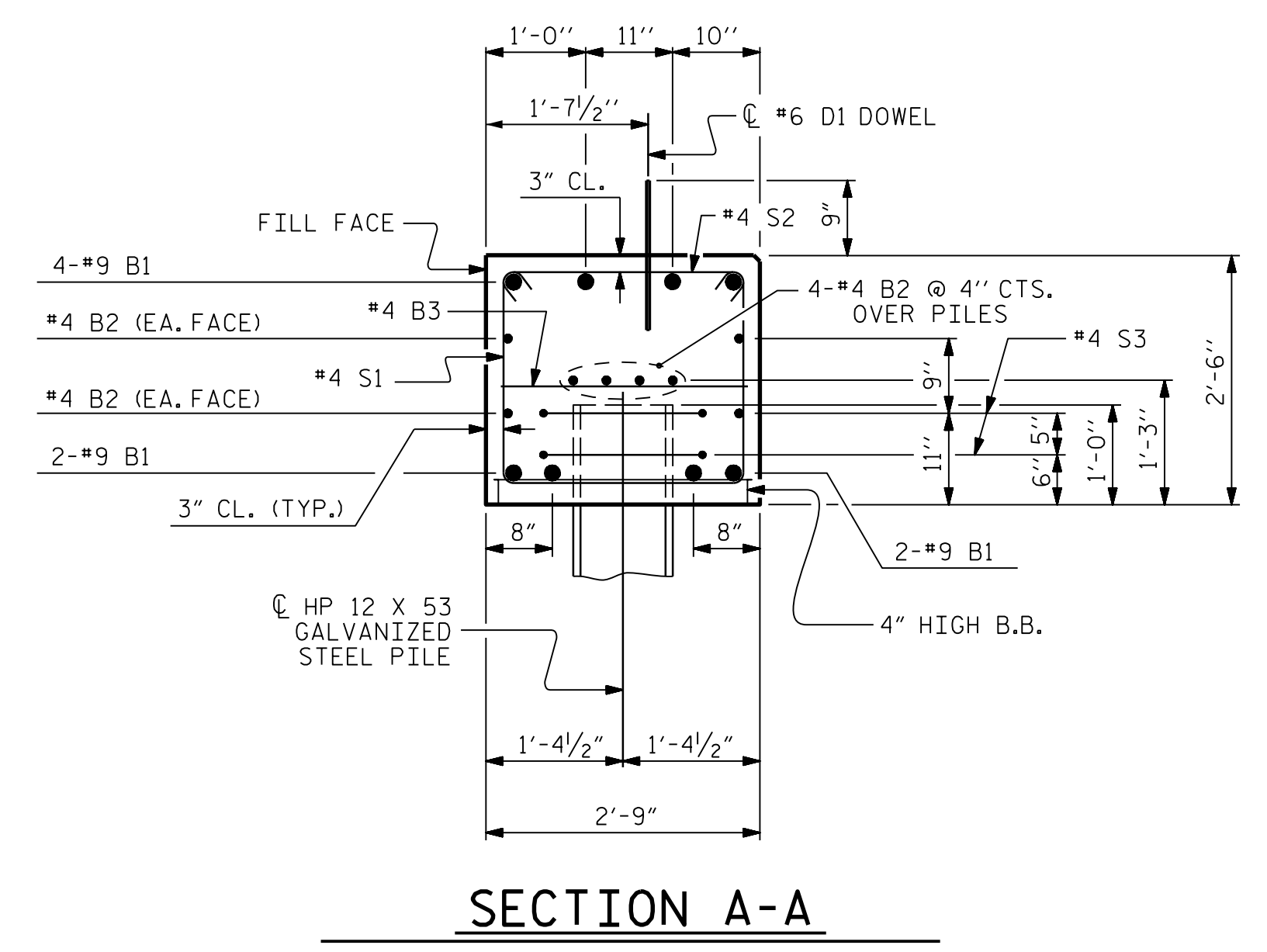
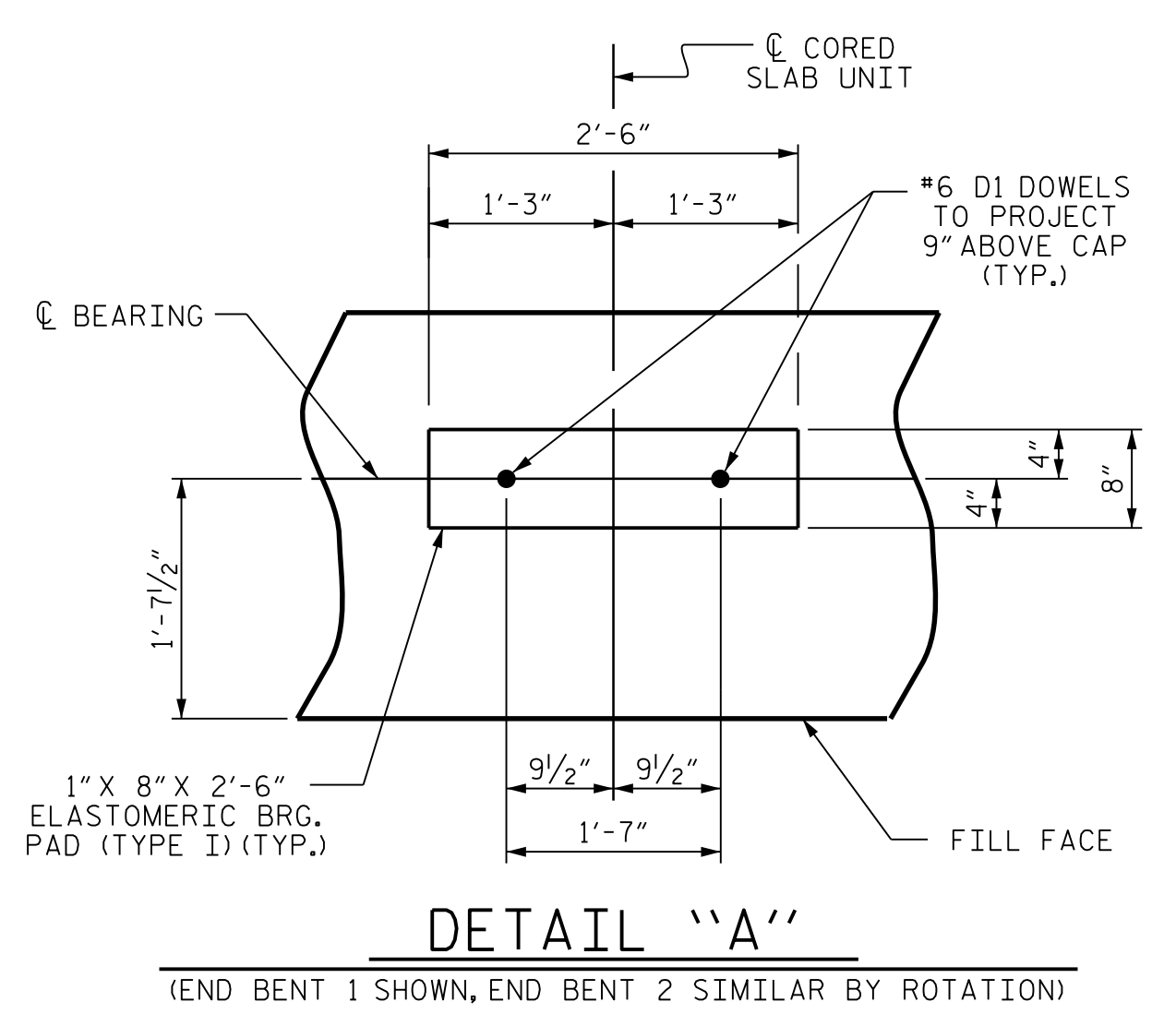


PILE SPLICE DETAILS

BAR TYPES						BILL OF MATERIAL FOR ONE END BENT (2 REQUIRED)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	40'-10"	1111	B1	8	#9	1	40'-10"	1111
B2	16	#4	STR	20'-5"	219	B2	16	#4	STR	20'-5"	219
B3	10	#4	STR	2'-3"	15	B3	10	#4	STR	2'-3"	15
D1	22	#6	STR	1'-6"	50	D1	22	#6	STR	1'-6"	50
H1	24	#4	2	7'-8"	123	H1	24	#4	2	7'-8"	123
K1	12	#4	STR	2'-9"	22	K1	12	#4	STR	2'-9"	22
S1	50	#4	3	6'-11"	231	S1	50	#4	3	6'-11"	231
S2	50	#4	4	3'-0"	100	S2	50	#4	4	3'-0"	100
S3	14	#4	5	6'-6"	61	S3	14	#4	5	6'-6"	61
V1	48	#4	STR	4'-6"	144	V1	48	#4	STR	4'-6"	144
						EPOXY COATED REINFORCING STEEL 2076 LBS.					
						CLASS AA CONCRETE BREAKDOWN:					
						POUR #1 CAP, LOWER PART OF WINGS & COLLARS 12.4 C.Y.					
						POUR #2 UPPER PART OF WINGS 1.8 C.Y.					
						TOTAL 14.2 C.Y.					



CORROSION PROTECTION FOR STEEL PILES DETAIL
(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



PROJECT NO. 17BP.2.R.87
BEAUFORT COUNTY
STATION: 18+14.00 -L-
SHEET 4 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENTS 1 & 2 DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-15					TOTAL SHEETS 20

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NC COA No. F-1255

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DWG. No.

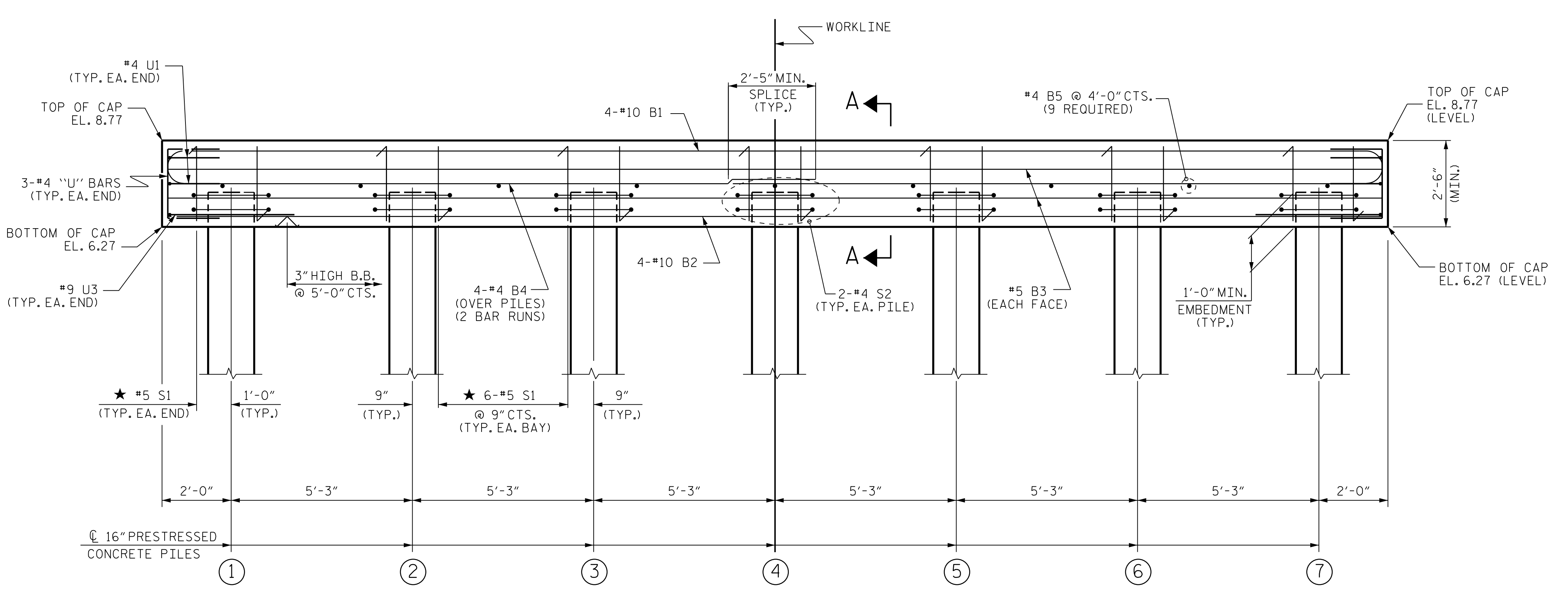
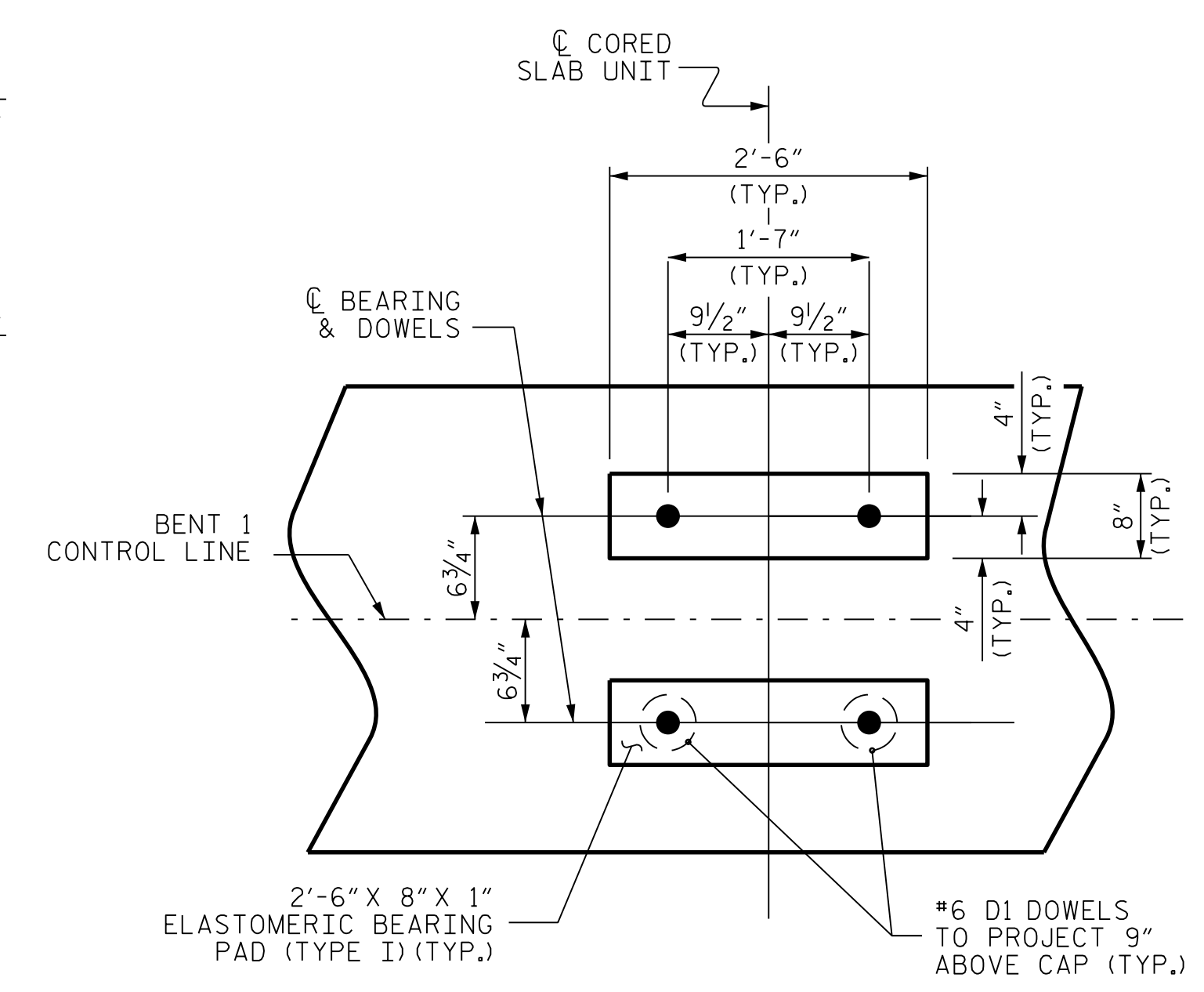
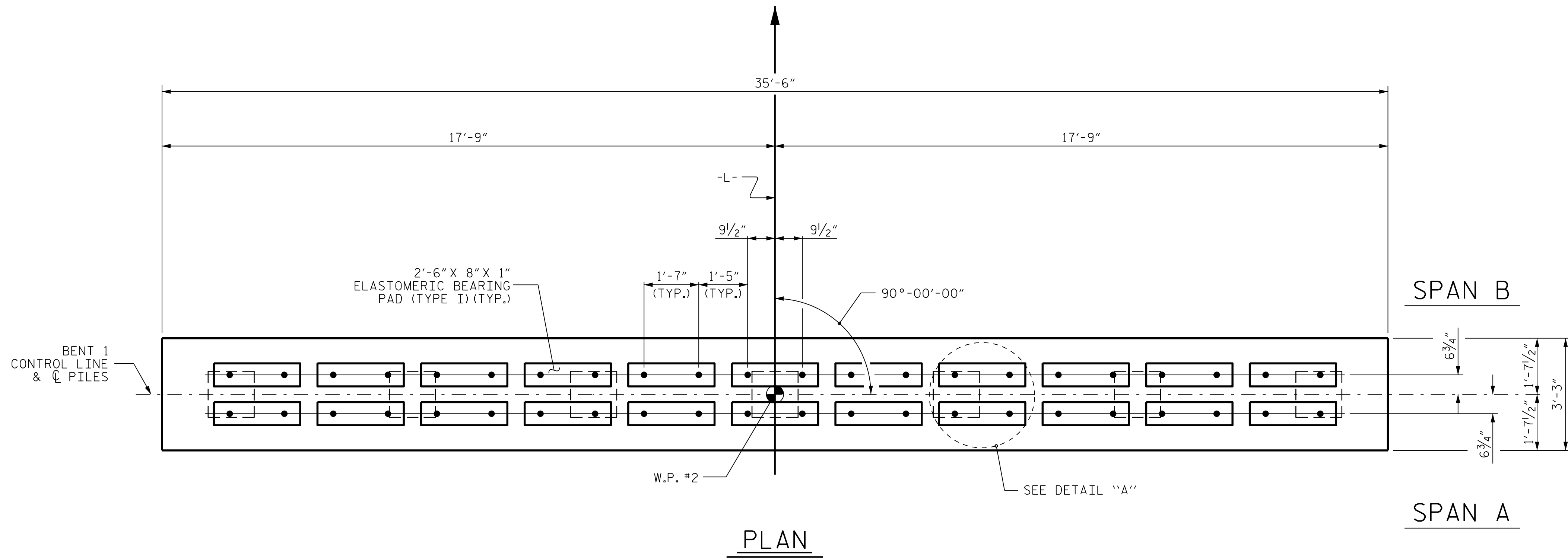
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Tung Fang
5/11/2018 6:18:41 AM

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NOTES

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



ELEVATION
 FOR SECTION A-A, SEE SHEET 2 OF 2

PROJECT NO. 17BP.2.R.87
 BEAUFORT COUNTY
 STATION: 18+14.00 -L-

SHEET 1 OF 3

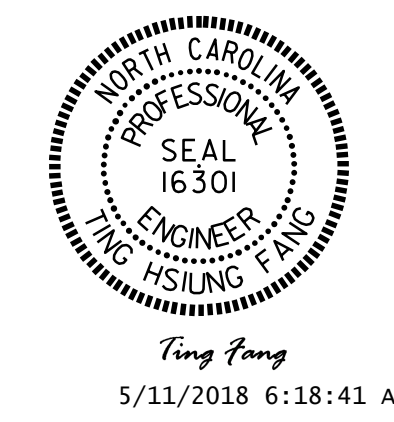
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1

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 Raleigh, NC 27612-3228
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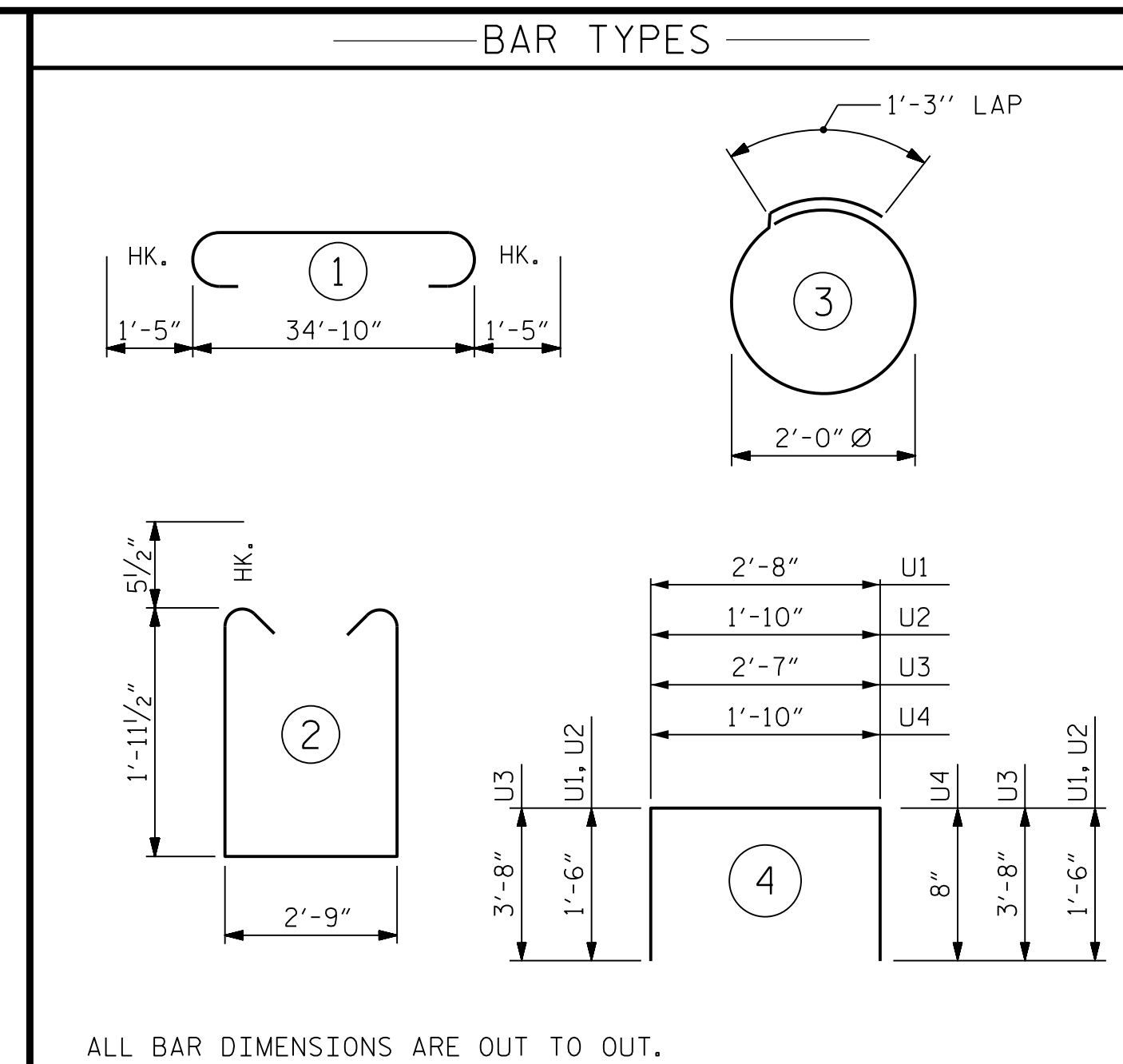
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DWG. No.



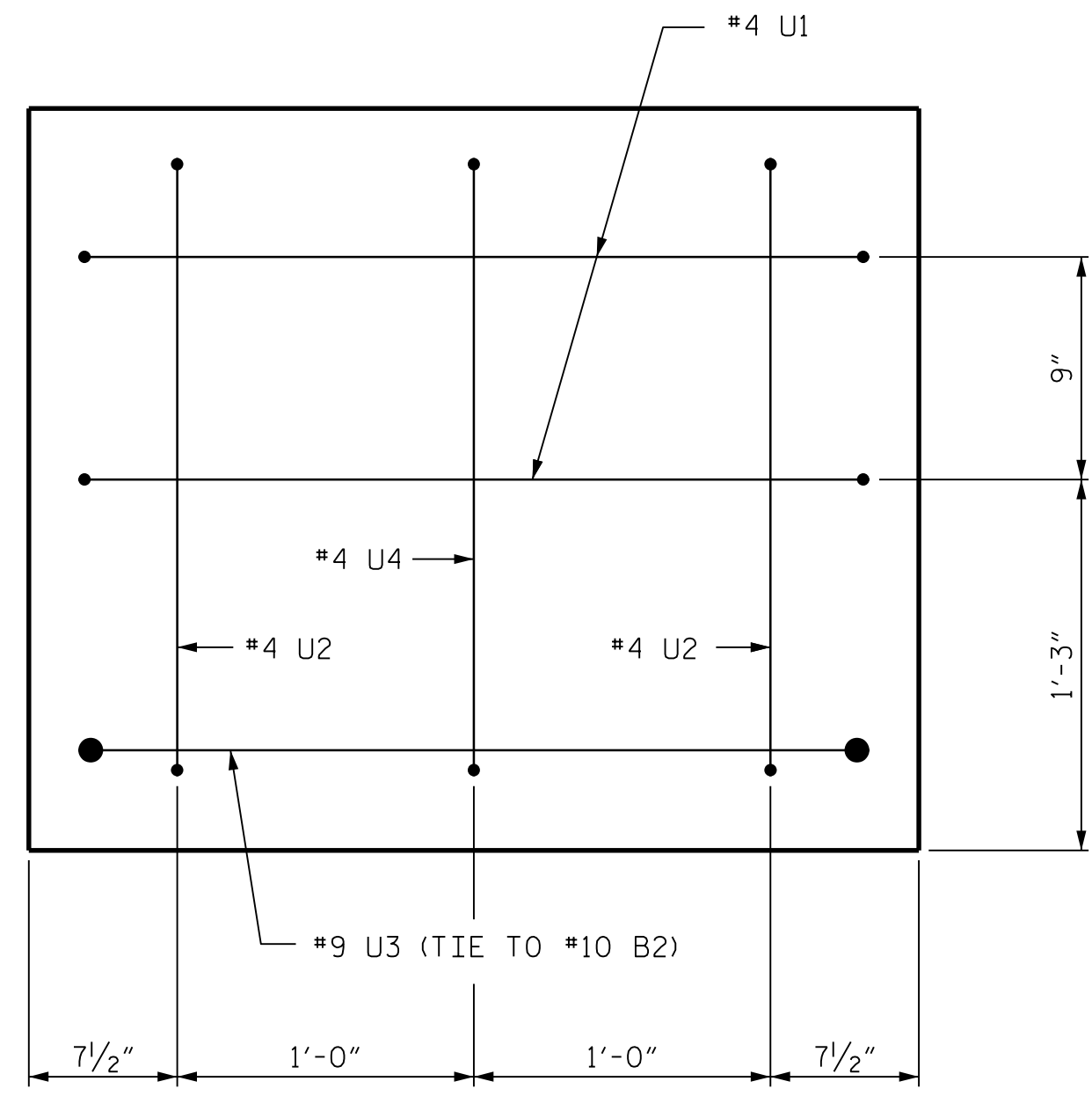
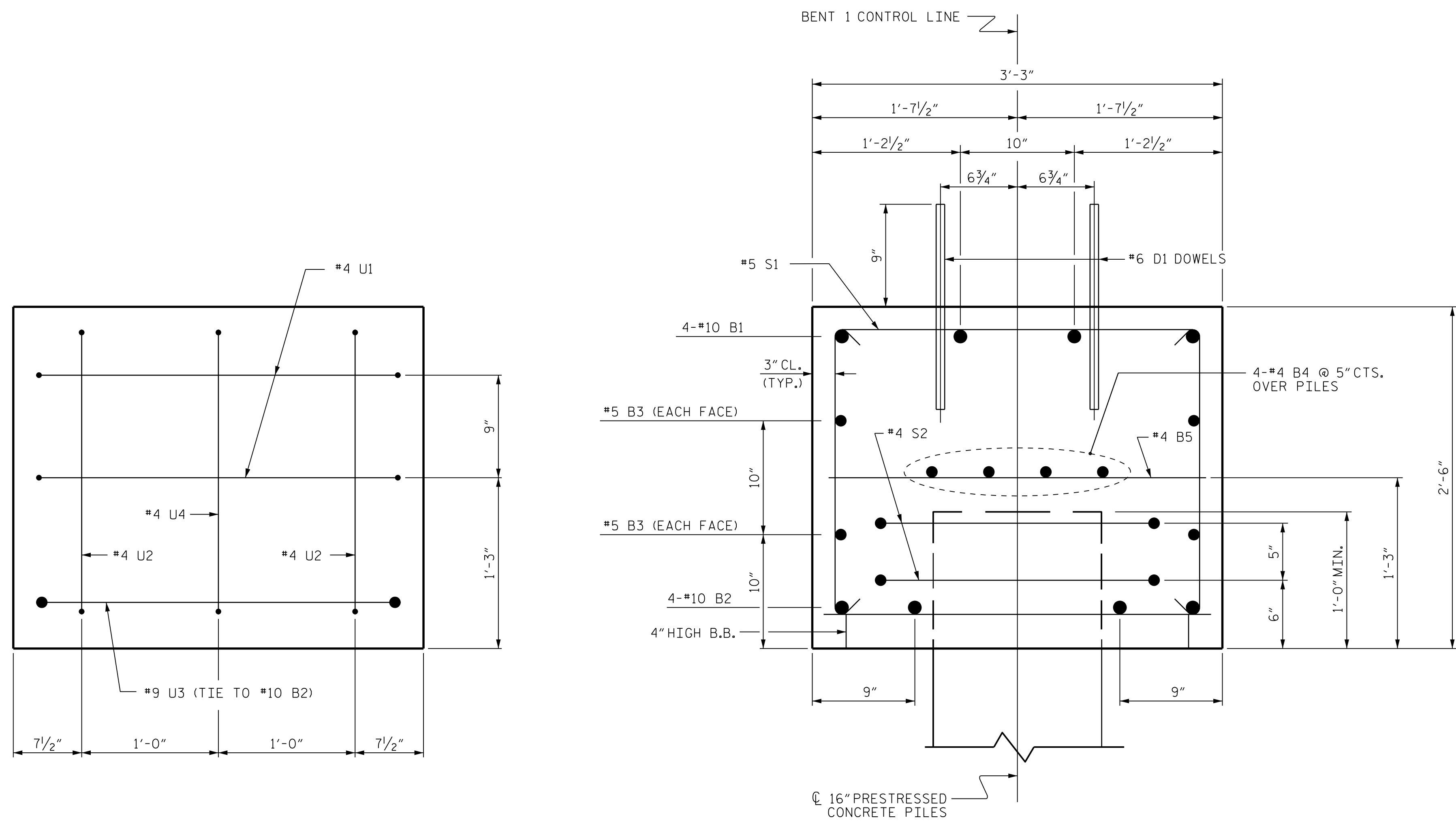
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
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2			4			20

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BILL OF MATERIAL					
BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	37'-8"	648
B2	4	#10	STR	35'-0"	602
B3	4	#5	STR	35'-0"	146
B4	8	#4	STR	18'-8"	100
B5	9	#4	STR	2'-9"	17
D1	44	#6	STR	1'-6"	99
S1	38	#5	2	7'-11"	314
S2	14	#4	3	7'-7"	71
U1	4	#4	4	5'-8"	15
U2	4	#4	4	4'-10"	13
U3	2	#9	4	9'-11"	67
U4	2	#4	4	4'-0"	5
EPOXY COATED REINFORCING STEEL					2097 LBS
TOTAL CLASS AA CONCRETE					▲ 10.2 C.Y.
16" PRESTRESSED CONCRETE PILES					
No. 7					LIN. FT. 455
PILE DRIVING EQUIPMENT SETUP FOR 16" PRESTRESSED CONCRETE PILES					EA. 7
PILE REDRIVES					EA. 4

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



PROJECT NO. 17BP.2.R.87
 BEAUFORT COUNTY
 STATION: 18+14.00 -L-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1

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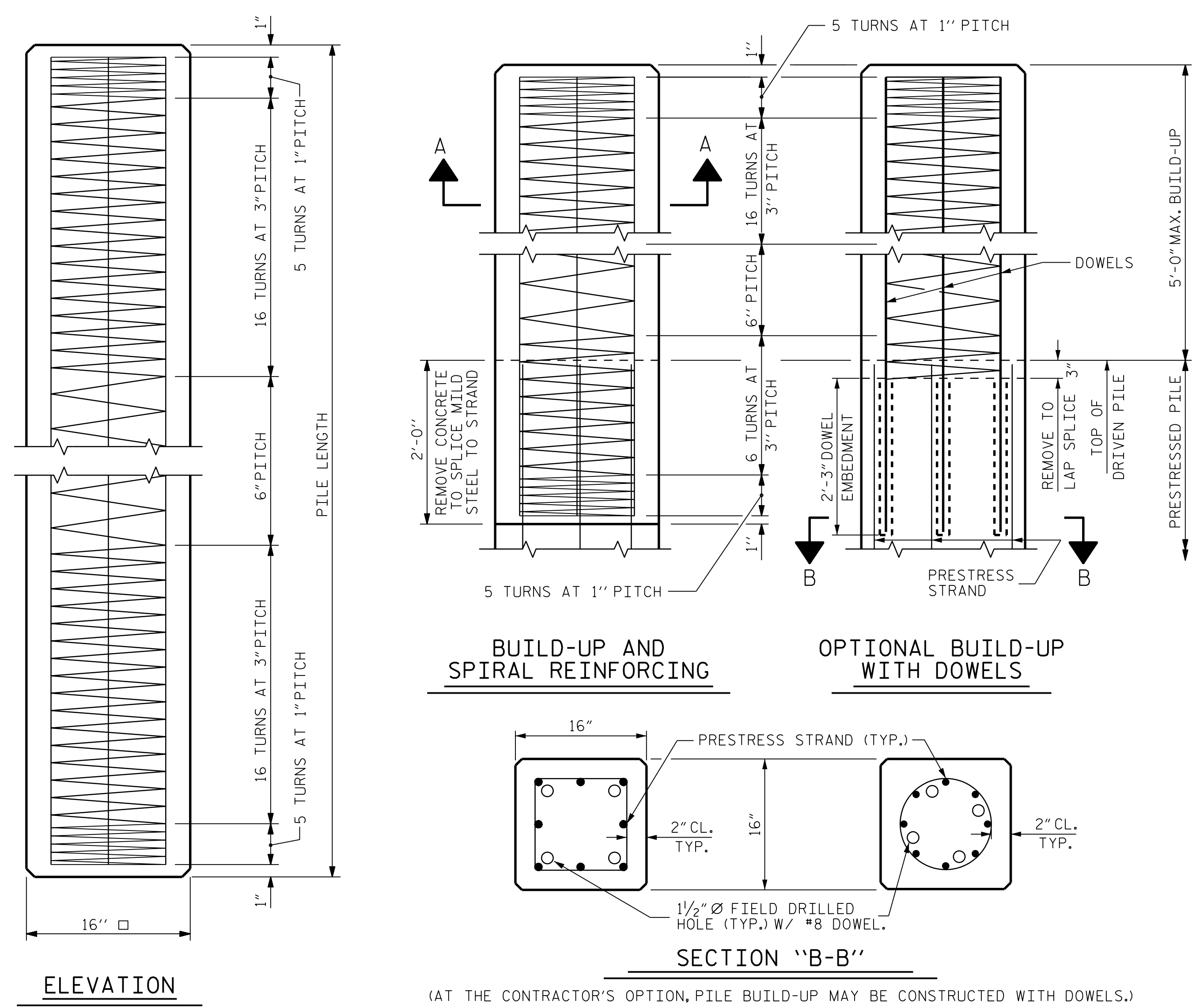
CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

DRAWN BY: VDK DATE: 3/18
 CHECKED BY: THF DATE: 3/18
 DESIGN ENGINEER: VDK DATE: 3/18

DWG. No.

NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL
 16301
 FENG HSIUNG FANG
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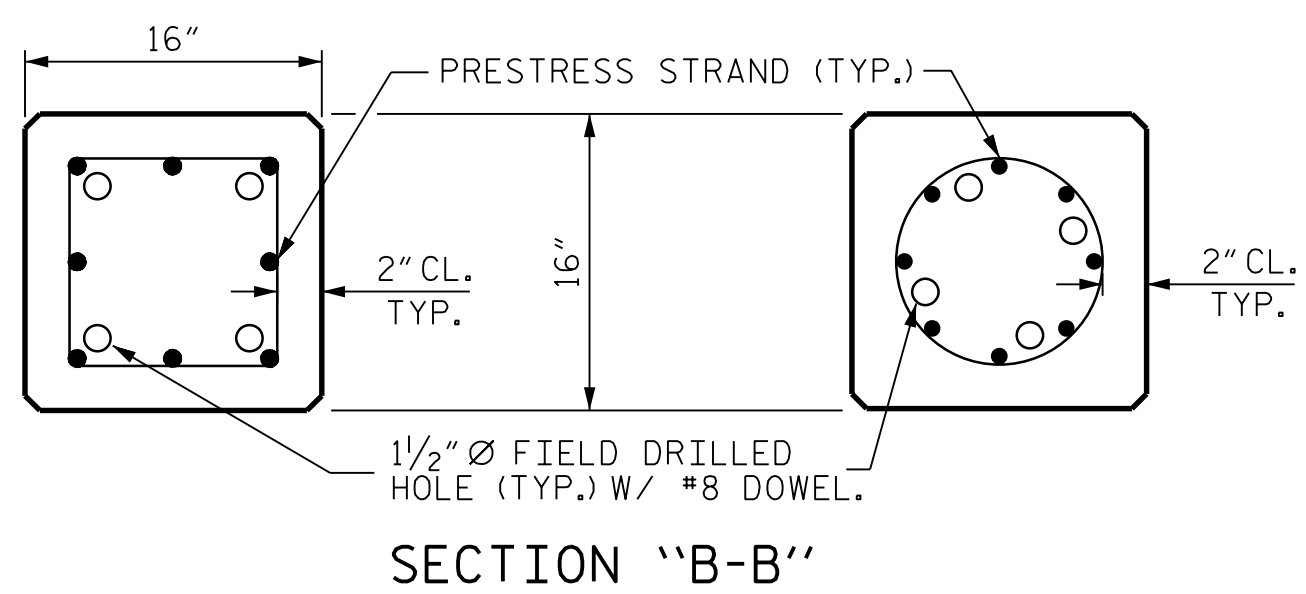
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS 20
2			4			



ELEVATION

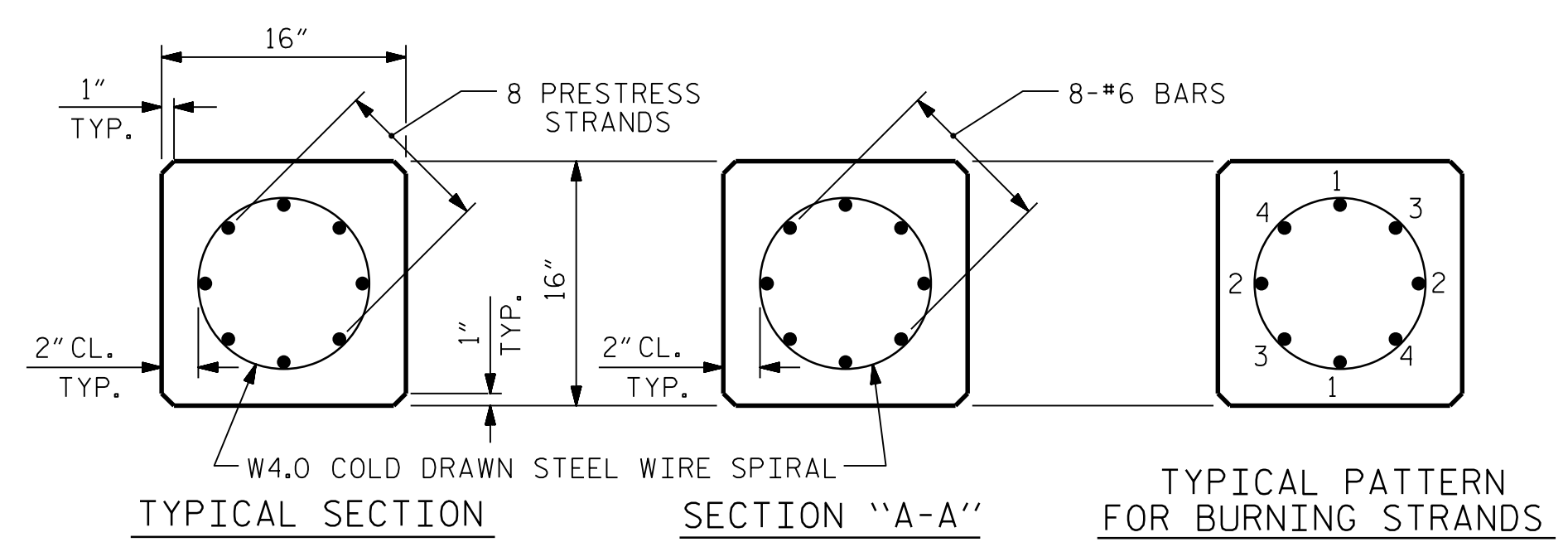
BUILD-UP AND SPIRAL REINFORCING

OPTIONAL BUILD-UP WITH DOWELS

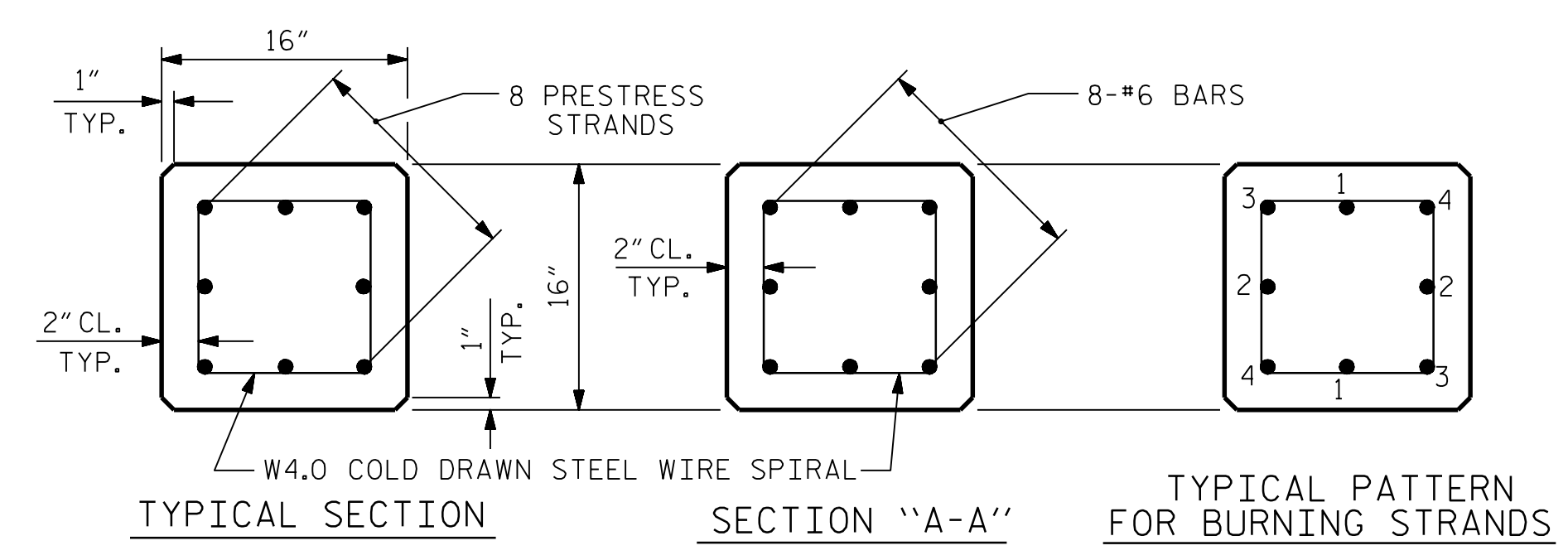


SECTION "B-B"

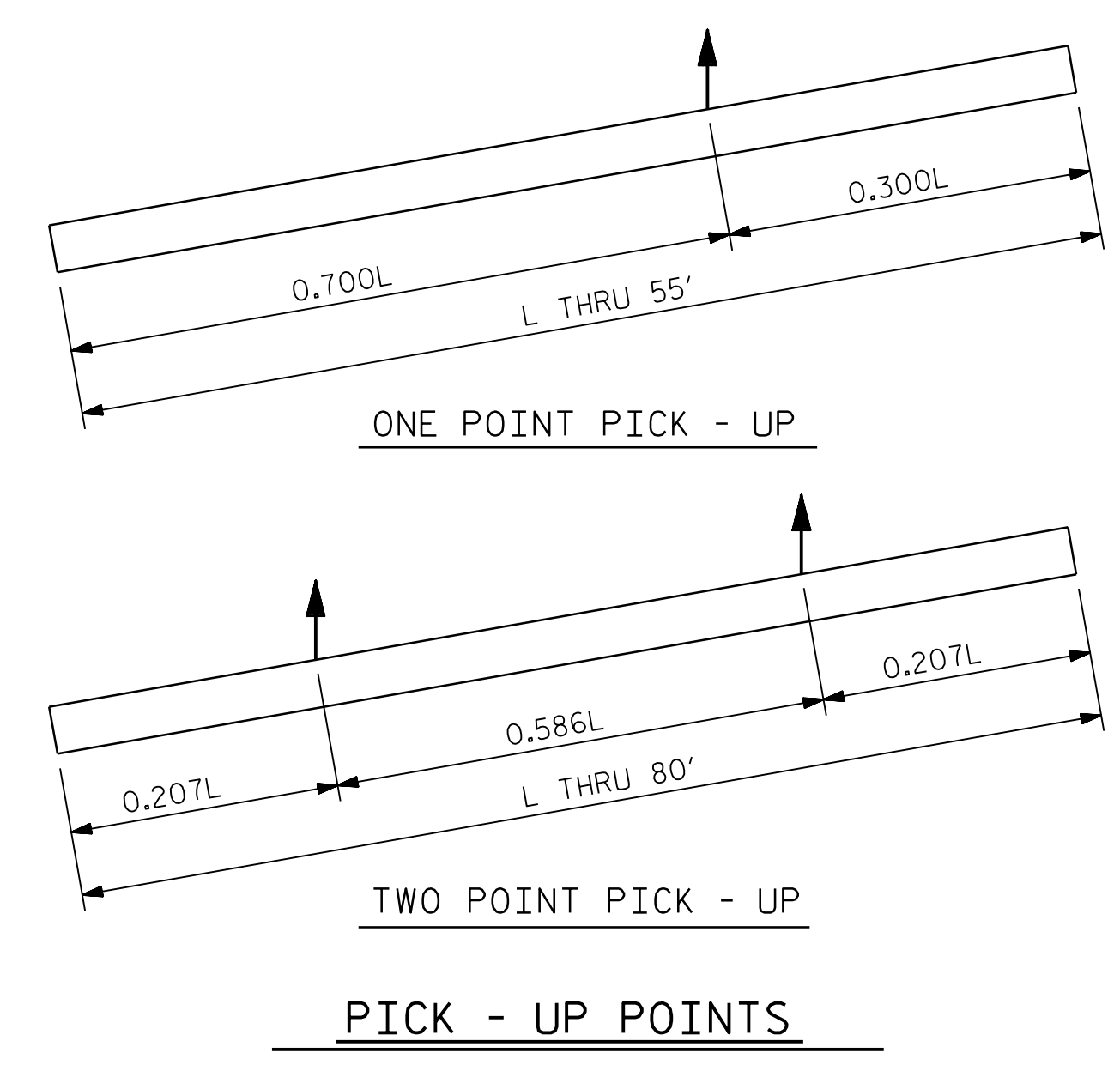
(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)



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



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



PICK - UP POINTS

QUANTITIES FOR ONE 16" PRESTRESSED PILE						
LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP		TWO POINT PICK-UP	
			0.300L	0.700L	0.207L	0.586L
25'-0"	1.63	3.31	7'-6"	17'-6"	5'-2"	14'-8"
30'-0"	1.96	3.97	9'-0"	21'-0"	6'-2 1/2"	17'-7"
35'-0"	2.29	4.63	10'-6"	24'-6"	7'-3"	20'-6"
40'-0"	2.61	5.29	12'-0"	28'-0"	8'-3 1/2"	23'-5"
45'-0"	2.94	5.95	13'-6"	31'-6"	9'-4"	26'-4"
50'-0"	3.27	6.61	15'-0"	35'-0"	10'-4"	29'-4"
55'-0"	3.59	7.28	16'-6"	38'-6"	11'-4 1/2"	32'-3"
60'-0"	3.92	7.94			12'-5"	35'-2"
65'-0"	4.25	8.60			13'-5 1/2"	38'-1"
70'-0"	4.57	9.26			14'-6"	41'-0"
75'-0"	4.90	9.92			15'-6 1/2"	43'-11"
80'-0"	5.23	10.58			16'-7"	46'-10"

NOTE FOR CORROSION PROTECTION

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSION STRENGTH: f'c = 5,000 PSI

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

DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN 1/2" CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

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

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

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

NOTES

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

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
1/2"	270 L.R.	0.153	41,300# PER STRAND	30,980# PER STRAND
0.6"	270 L.R.	0.217	58,600# PER STRAND	43,940# PER STRAND

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

AT THE CONTRACTOR'S OPTION, 1/2" OR 0.6" STRANDS MAY BE USED IN EITHER STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

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

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

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS, BURN IN OPPOSITE PAIRS AND SYMMETRICALLY ABOUT BOTH THE VERTICAL AND HORIZONTAL AXES. STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 3-3 AND 4-4, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

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

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

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

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

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

ALL BAR SUPPORTS USED IN THE PRESTRESSED CONCRETE PILES, AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

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

PROJECT NO. **17BP.2.R.87**
 BEAUFORT COUNTY
 STATION: **18+14.00 -L-**

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
16" PRESTRESSED CONCRETE PILE
 BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS 20
2			4			

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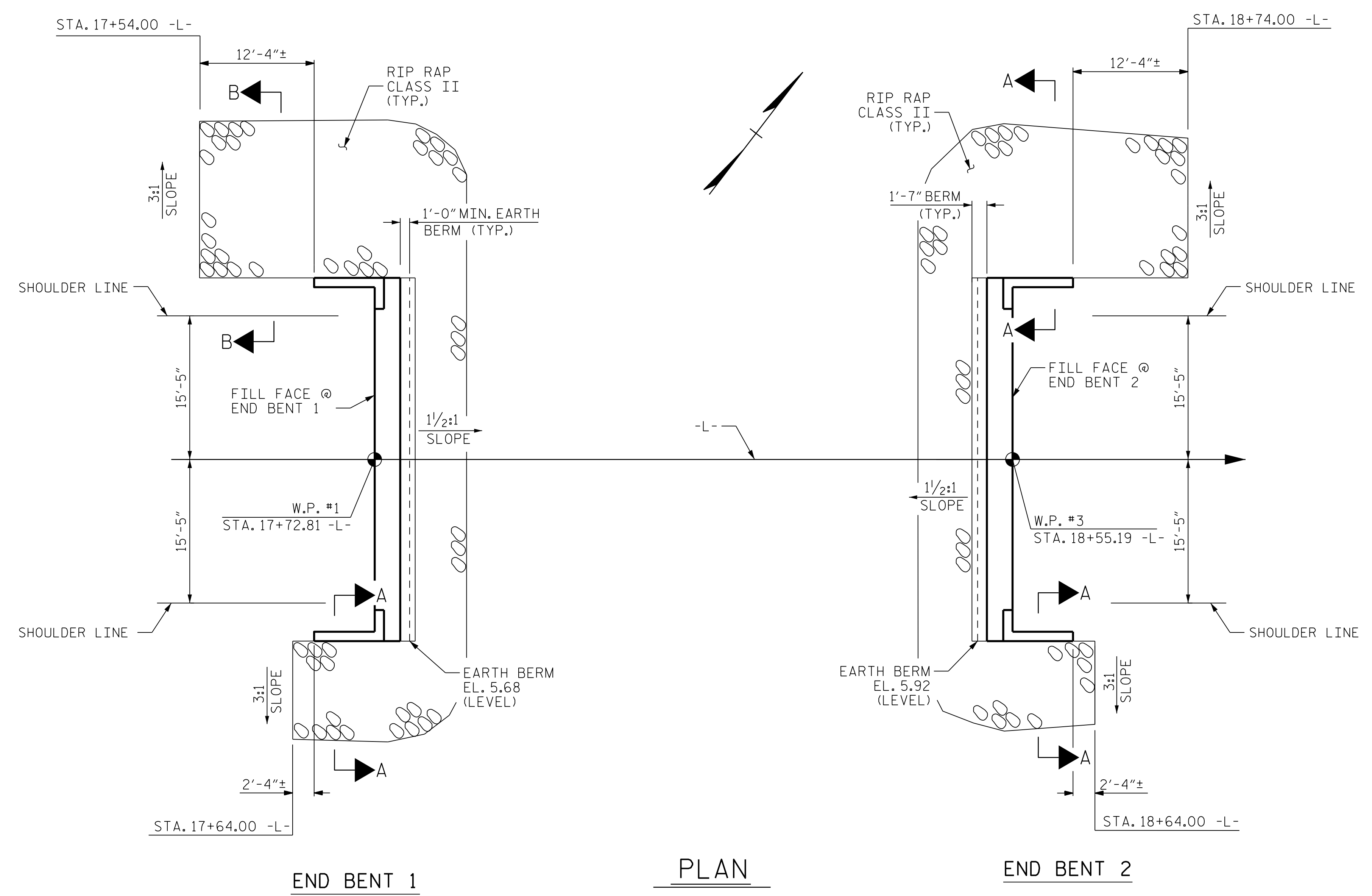
CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

DRAWN BY: VDK DATE: 3/18
 CHECKED BY: THF DATE: 3/18
 DESIGN ENGINEER: VDK DATE: 3/18

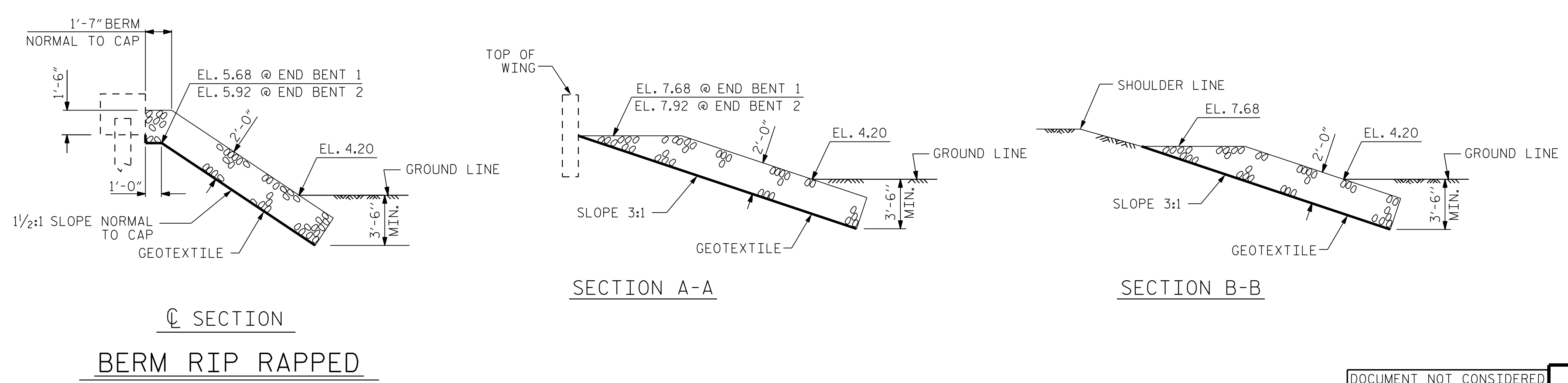
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ESTIMATED QUANTITIES		
BRIDGE @ STA. 18+14.00 -L-	RIP RAP CLASS II	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	130	145
END BENT 2	105	115
TOTAL	235	260



PROJECT NO. 17BP.2.R.87
BEAUFORT COUNTY
 STATION: 18+14.00 -L-

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 20
2			4			

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CDM Smith
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 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
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DRAWN BY: VDK DATE: 3/18
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NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING FENG
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NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

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

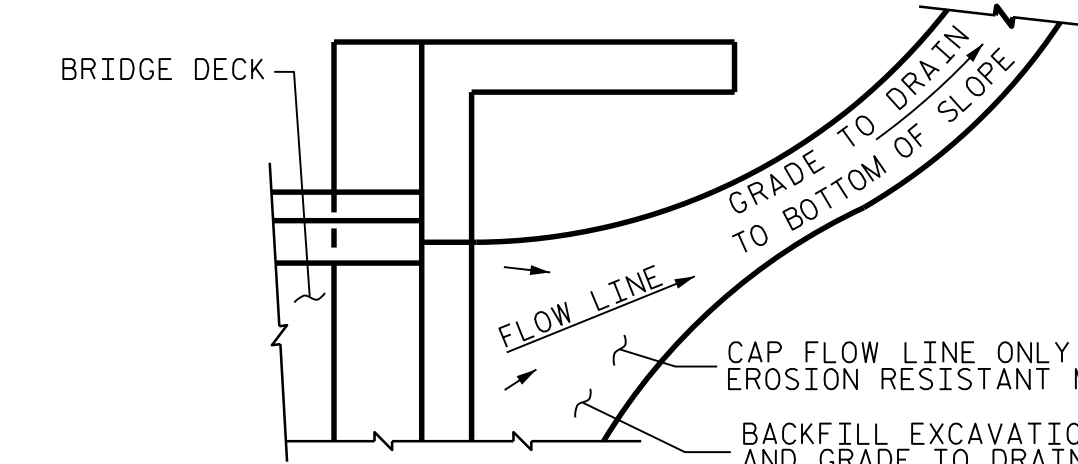
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

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

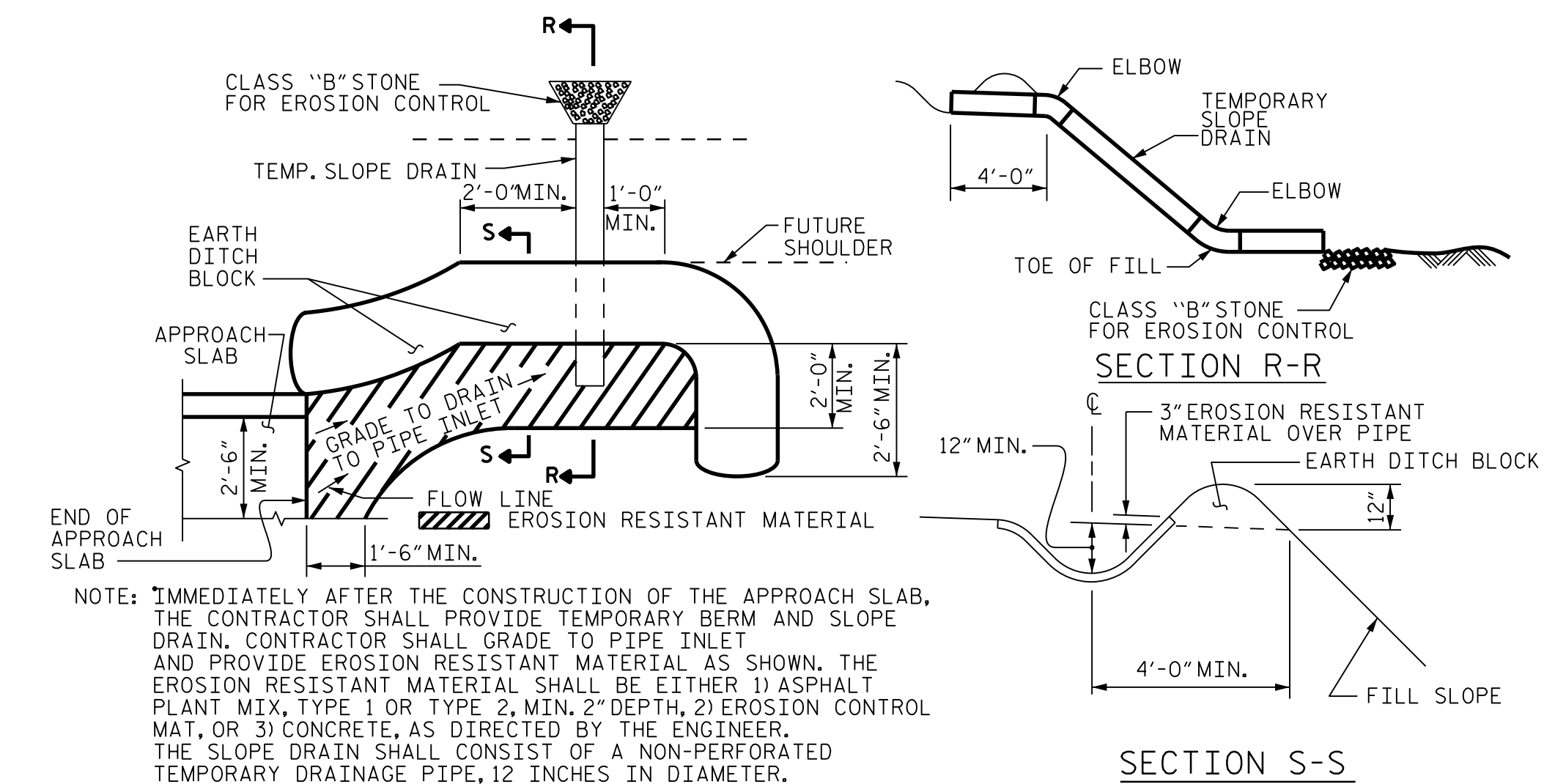
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



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

TEMPORARY DRAINAGE DETAIL



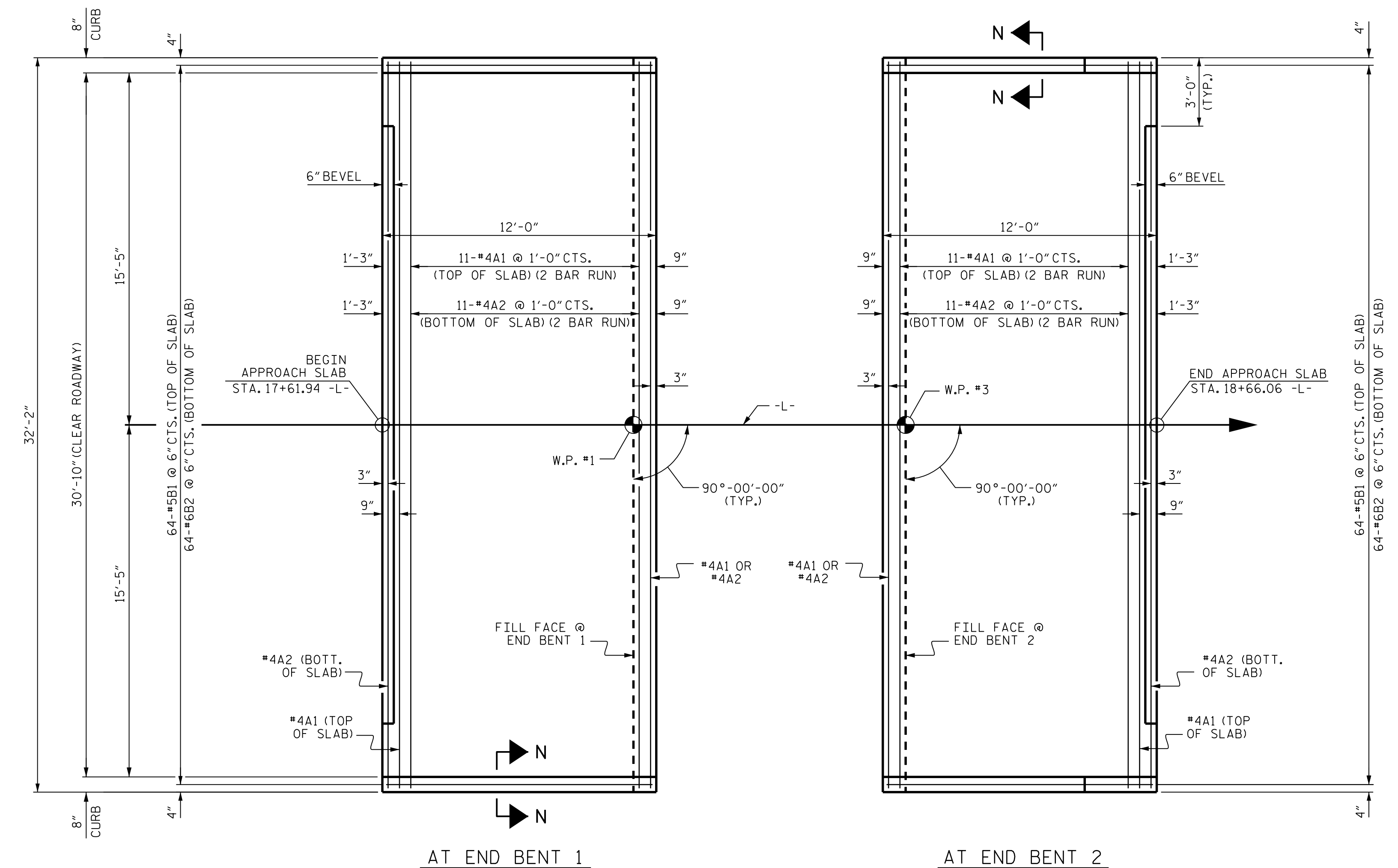
TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. 17BP.2.R.87
BEAUFORT COUNTY
STATION: 18+14.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
90° SKEW

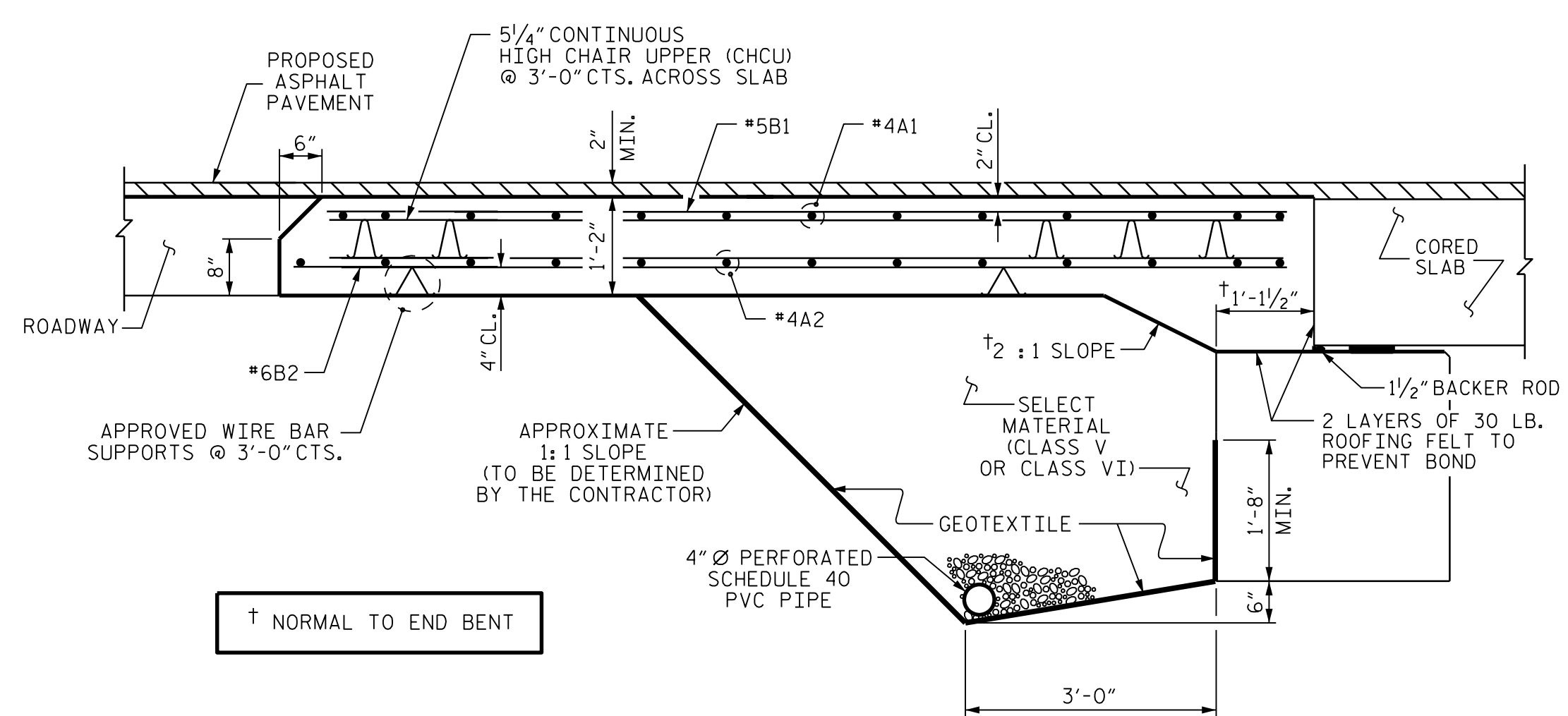
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TOTAL SHEETS: 20

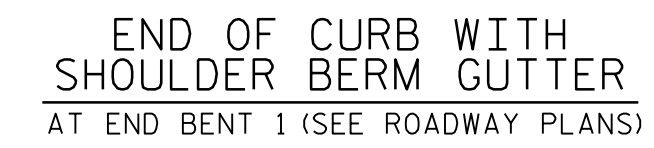
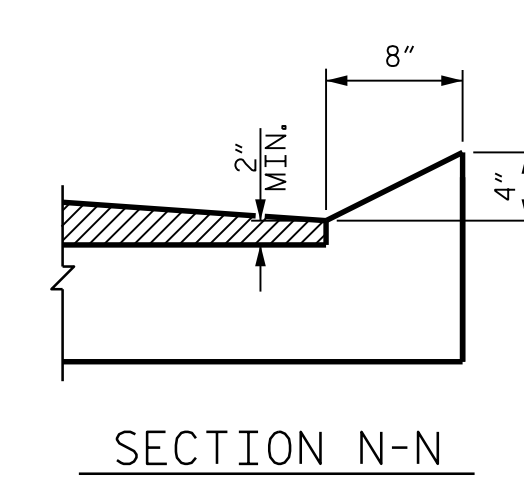


PLAN

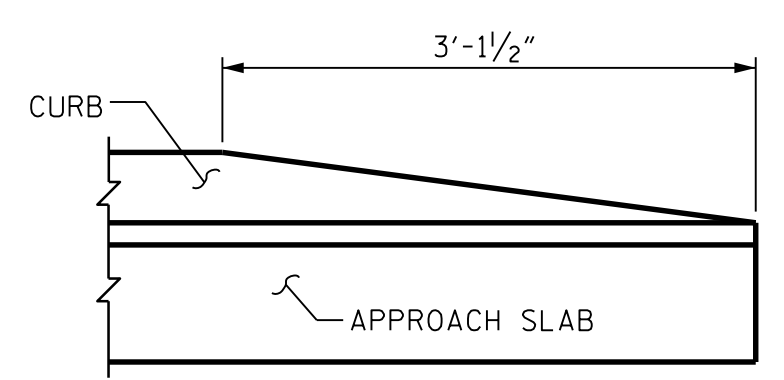
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB
(TYPE II - MODIFIED APPROACH FILL)



END OF CURB WITH SHOULDER BERM GUTTER AT END BENT 1 (SEE ROADWAY PLANS)



END OF CURB WITHOUT SHOULDER BERM GUTTER AT END BENT 2 (SEE ROADWAY PLANS)

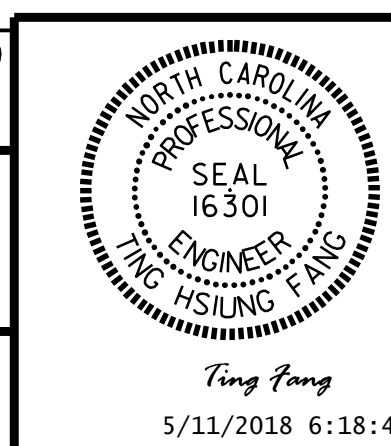
CURB DETAILS

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Ting Fang
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DATE: 4/24/2018 11:26:29 AM

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 2018 "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.

ENGLISH

JANUARY, 1990