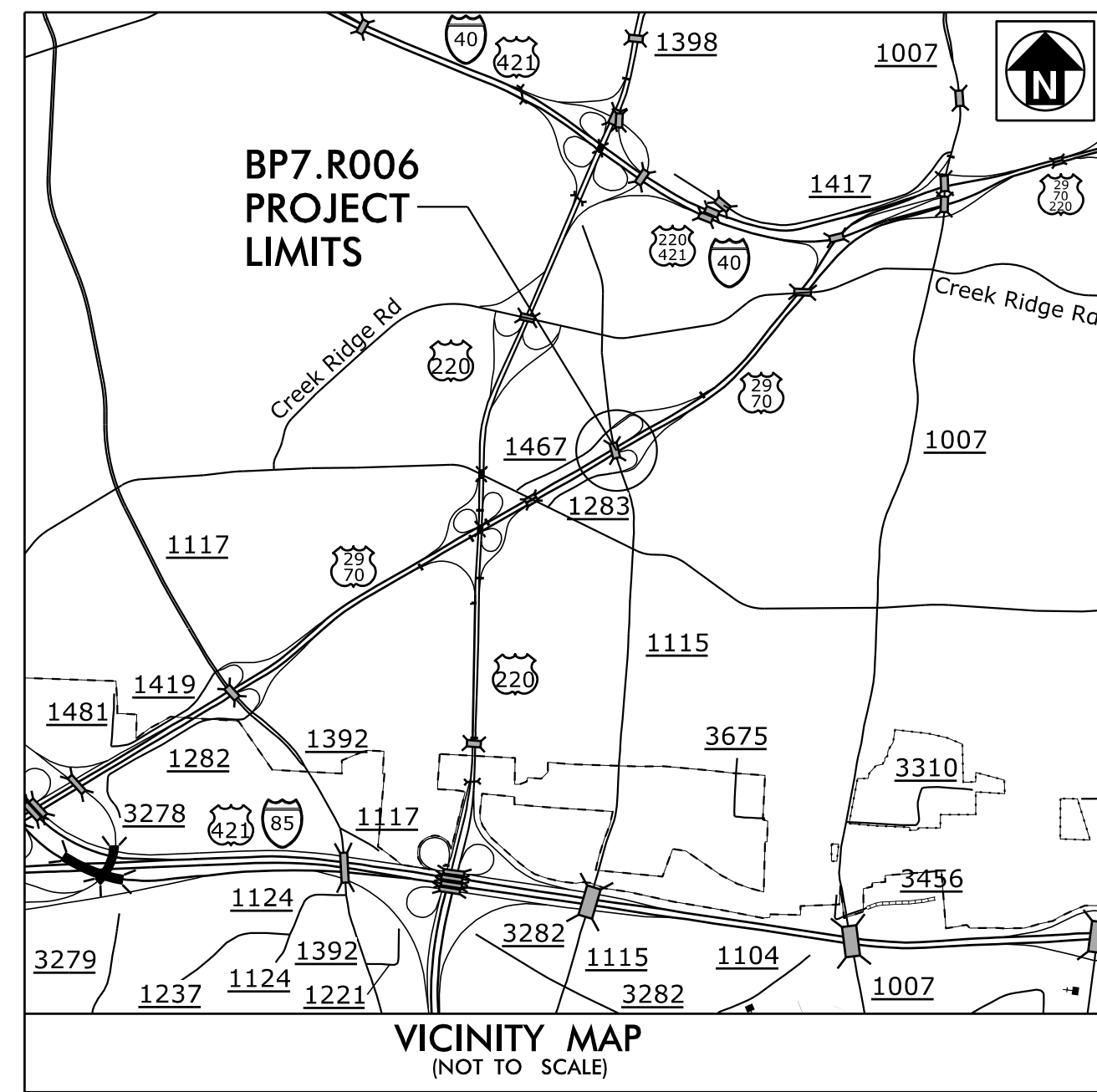


09\_08/2019

PROJECT: BP7.R006

CONTRACT: C204813



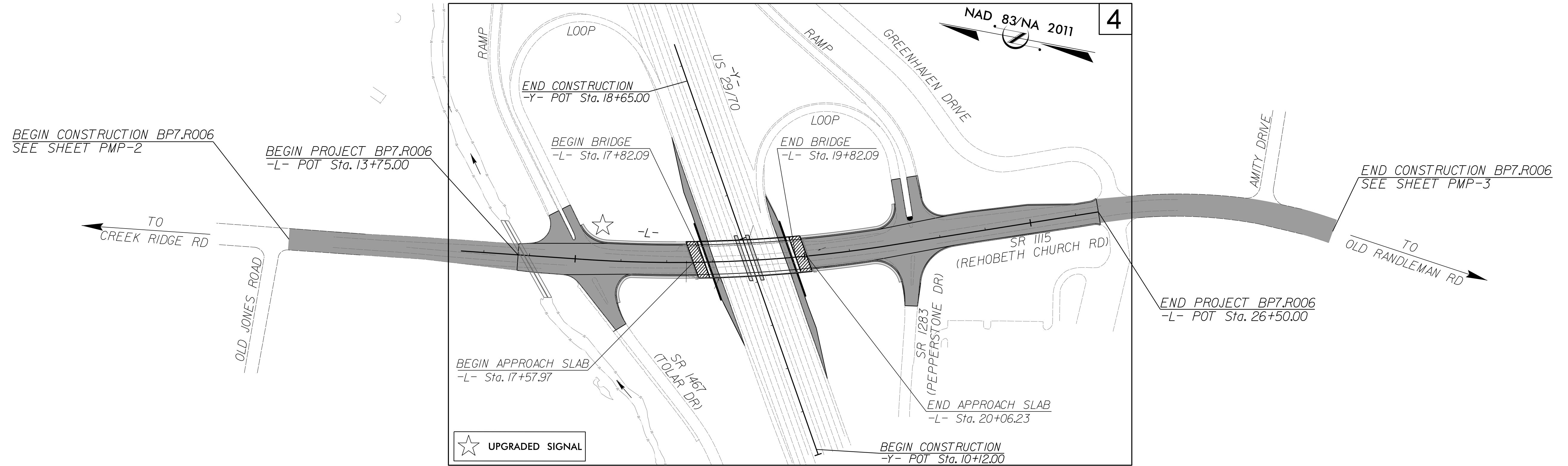
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**GUILFORD COUNTY**

LOCATION: BRIDGE NO. 225 OVER US 29/70 ON SR 1115  
(REHOBETH CHURCH ROAD) IN GREENSBORO

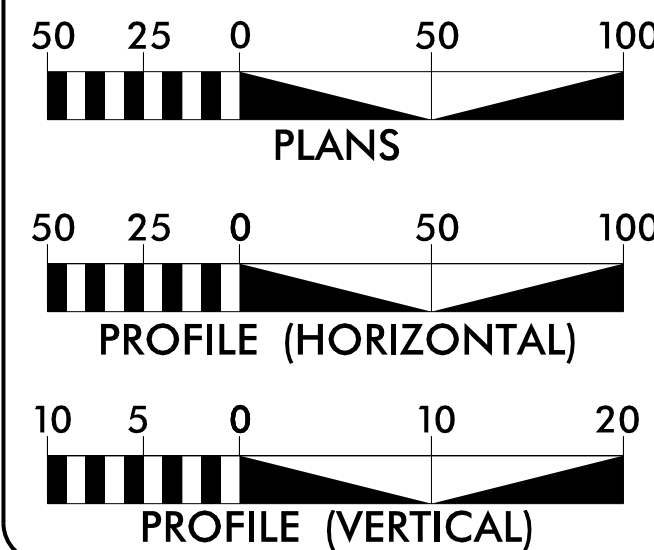
TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURE,  
RETAINING WALL & SIGNALS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP7.R006	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP7.R006.1		PE	
BP7.R006.3		CONSTRUCTION	



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT (2023)= 7,140  
ADT (2043)= 8,570

V = 35 MPH

FUNC CLASS =  
SUB REGIONAL TIER  
COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY PROJECT = 0.203 MILES

LENGTH STRUCTURE PROJECT = 0.038 MILES

TOTAL LENGTH PROJECT = 0.241 MILES

Prepared in the Office of WGI for  
**DIVISION 7**  
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: N/A

LETTING DATE: APRIL 18, 2023

NCDOT CONTACT: TIM POWERS, PE  
DIVISION BRIDGE PROGRAM MANAGER

DAVID SIMPSON, PE  
PROJECT ENGINEER

REID B. ROBOL, PE  
HYDRAULIC ENGINEER

ROADWAY DESIGN ENGINEER

SEAL 21102

SIGNATURE: [Signature]

HYDRAULICS ENGINEER

SEAL 043870

SIGNATURE: [Signature]

PLANS PREPARED BY:

WGI

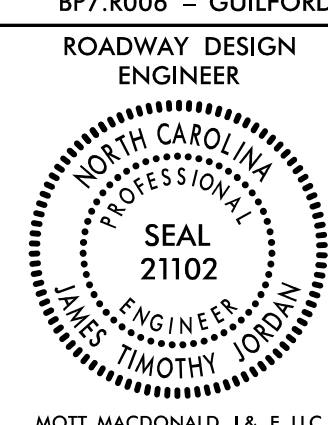

5640 Dillard Drive  
Suite 200  
Cary, NC 27518  
(919) 852-0468  
(919) 852-0598 (Fax)  
www.wginc.com

LICENSE NO. C-4434

vhb

VHB Engineering NC, P.C. (C-3705)  
940 Main Campus Drive, Suite 500  
Raleigh, NC 27606

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PROJECT REFERENCE	SHEET NO.
BP7.R006 - GUILFORD 225	1A
ROADWAY DESIGN ENGINEER	
	
MOTT MACDONALD I & E, LLC LICENSE NO. F-0669	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
Prepared in the Office of:	 MOTT MACDONALD 7621 Purfoy Road, Suite 115 Fuquay-Varina, NC 27526 www.mottmac.com

## GENERAL NOTES

GENERAL NOTES: 2018 SPECIFICATIONS EFFECTIVE: 01-16-18

**GRADING AND SURFACING OR RESURFACING AND WIDENING:**

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

**CLEARING:**

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

**SUPERELEVATION:**

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

**SHOULDER CONSTRUCTION:**

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

**SIDE ROADS:**

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

**STREET TURNOUT:**

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

**TEMPORARY SHORING:**

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

**GUARDRAIL:**

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

**END BENTS:**

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

**UTILITIES:**

UTILITY OWNERS ON THIS PROJECT ARE CITY OF GREENSBORO AND PNG.  
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

## LIST OF ROADWAY STANDARD DRAWINGS

2018 ROADWAY ENGLISH STANDARD DRAWINGS	EFF. 01-16-2018
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
<b>DIVISION 2 - EARTHWORK</b>	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	Method of Pipe Installation
<b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b>	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
<b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b>	
610.04	Guide for Paving Shoulders Under Bridges - Method IV
<b>DIVISION 8 - INCIDENTALS</b>	
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.54	Manhole Frame and Cover
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
850.01	Concrete Paved Ditches
852.01	Concrete Islands
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

## INDEX OF SHEETS

SHEET NUMBER	DESCRIPTION
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	GUARDRAIL INSTALLATION DETAIL
2C-2	GUARDRAIL ANCHOR UNITS DETAIL
2C-3	TYPE III REINFORCED APPROACH FILLS DETAIL
2C-4	CONVERT DI TO CB DETAIL
2G-1	TEMPORARY SHORING DETAIL
3B-1	GUARDRAIL AND TEMPORARY GUARDRAIL SUMMARY
3B-2	EARTHWORK AND PAVEMENT REMOVAL SUMMARY
3D-1	DRAINAGE SUMMARY
3G-1	GEOTECHNICAL SUMMARY
4	PLAN SHEET
5 THRU 6	PROFILE SHEETS
TMP-1 THRU TMP-9	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-5	SIGNING PLANS
SIG-1 THRU SIG-4.1	SIGNAL PLANS
SIG-M1 THRU SIG-M8	STANDARD METAL POLE SHEETS
SCP-1 THRU SCP-11	SIGNAL COMMUNICATION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY
X-1 THRU X-10	CROSS-SECTIONS
S-1 THRU S-58	STRUCTURE PLANS
SN	STRUCTURE NOTES
W-1 THRU W-5	WALL PLANS

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# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

## BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin (EIP)	○
Computed Property Corner	×
Existing Concrete Monument (ECM)	□
Parcel/Sequence Number	(123)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	WLB
Proposed Wetland Boundary	WLB
Existing Endangered Animal Boundary	EAB
Existing Endangered Plant Boundary	EPB
Existing Historic Property Boundary	HPB
Known Contamination Area: Soil	☠-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	○
Well	○
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	WLB
Proposed Lateral, Tail, Head Ditch	-----
False Sump	▽

## RAILROADS:

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

## RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Secondary Horiz and Vert Control Point	◆
Vertical Benchmark	⊠
Existing Right of Way Monument	△
Proposed Right of Way Monument (Rebar and Cap)	▲
Proposed Right of Way Monument (Concrete)	▲
Existing Permanent Easement Monument	◇
Proposed Permanent Easement Monument (Rebar and Cap)	◇
Existing C/A Monument	△
Proposed C/A Monument (Rebar and Cap)	▲
Proposed C/A Monument (Concrete)	▲
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Existing Control of Access Line	-----
Proposed Control of Access Line	-----
Proposed ROW and CA Line	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	E
Proposed Temporary Drainage Easement	TDE
Proposed Permanent Drainage Easement	PDE
Proposed Permanent Drainage/Utility Easement	DUE
Proposed Permanent Utility Easement	PUE
Proposed Temporary Utility Easement	TUE
Proposed Aerial Utility Easement	AUE

## 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	T
Proposed Guardrail	T
Existing Cable Guiderail	□
Proposed Cable Guiderail	□
Equality Symbol	⊕
Pavement Removal	⊗
<b>VEGETATION:</b>	
Single Tree	○
Single Shrub	○
Hedge	-----

Woods Line	-----
Orchard	○
Vineyard	□

## EXISTING STRUCTURES:

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

## UTILITIES:

\* SUE - Subsurface Utility Engineering  
LOS - Level of Service - A,B,C or D (Accuracy)

<b>POWER:</b>	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	○
Power Line Tower	⊠
Power Transformer	⊠
U/G Power Cable Hand Hole	PH
H-Frame Pole	●
U/G Power Line Test Hole (SUE - LOS A)*	⊗
U/G Power Line (SUE - LOS B)*	-----
U/G Power Line (SUE - LOS C)*	-----
U/G Power Line (SUE - LOS D)*	-----

## TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	PH
U/G Telephone Test Hole (SUE - LOS A)*	⊗
U/G Telephone Cable (SUE - LOS B)*	-----
U/G Telephone Cable (SUE - LOS C)*	-----
U/G Telephone Cable (SUE - LOS D)*	-----
U/G Telephone Conduit (SUE - LOS B)*	-----
U/G Telephone Conduit (SUE - LOS C)*	-----
U/G Telephone Conduit (SUE - LOS D)*	-----
U/G Fiber Optics Cable (SUE - LOS B)*	-----
U/G Fiber Optics Cable (SUE - LOS C)*	-----
U/G Fiber Optics Cable (SUE - LOS D)*	-----

## WATER:

Water Manhole	○
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line Test Hole (SUE - LOS A)*	⊗
U/G Water Line (SUE - LOS B)*	-----
U/G Water Line (SUE - LOS C)*	-----
U/G Water Line (SUE - LOS D)*	-----
Above Ground Water Line	A/G Water
<b>TV:</b>	
TV Pedestal	⊠
TV Tower	⊗
U/G TV Cable Hand Hole	PH
U/G TV Test Hole (SUE - LOS A)*	⊗
U/G TV Cable (SUE - LOS B)*	-----
U/G TV Cable (SUE - LOS C)*	-----
U/G TV Cable (SUE - LOS D)*	-----
U/G Fiber Optic Cable (SUE - LOS B)*	-----
U/G Fiber Optic Cable (SUE - LOS C)*	-----
U/G Fiber Optic Cable (SUE - LOS D)*	-----

## GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line Test Hole (SUE - LOS A)*	⊗
U/G Gas Line (SUE - LOS B)*	-----
U/G Gas Line (SUE - LOS C)*	-----
U/G Gas Line (SUE - LOS D)*	-----
Above Ground Gas Line	A/G Gas

## SANITARY SEWER:

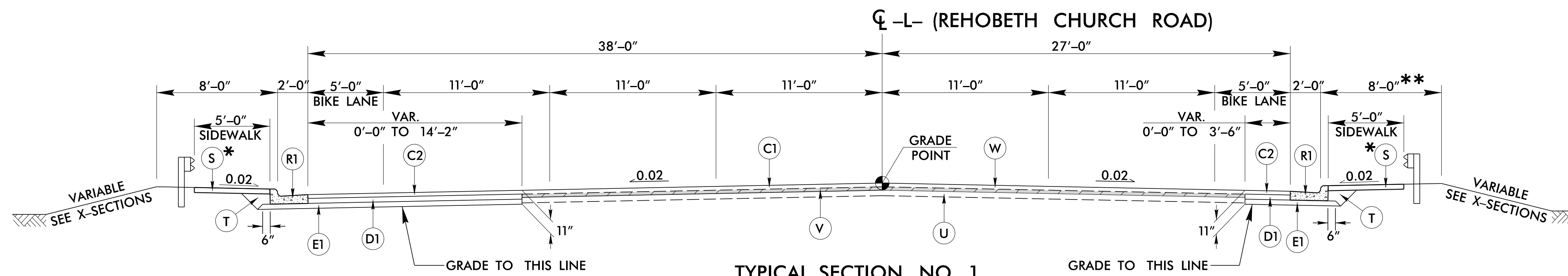
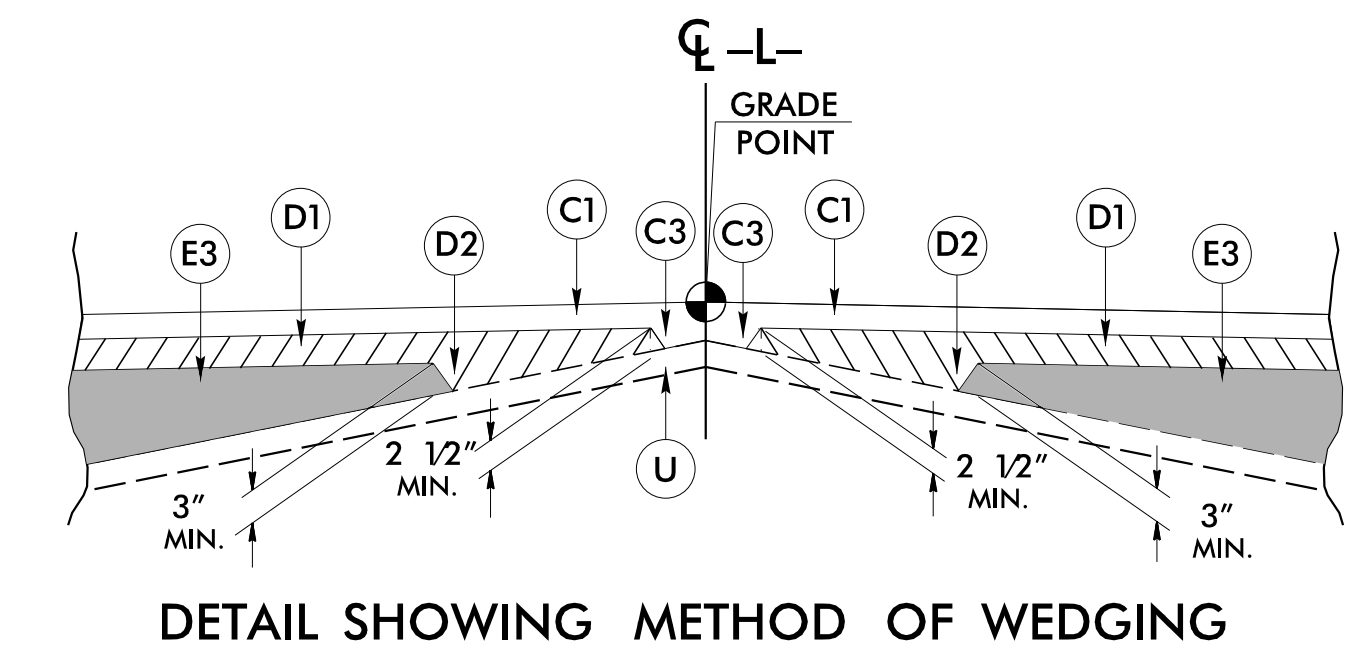
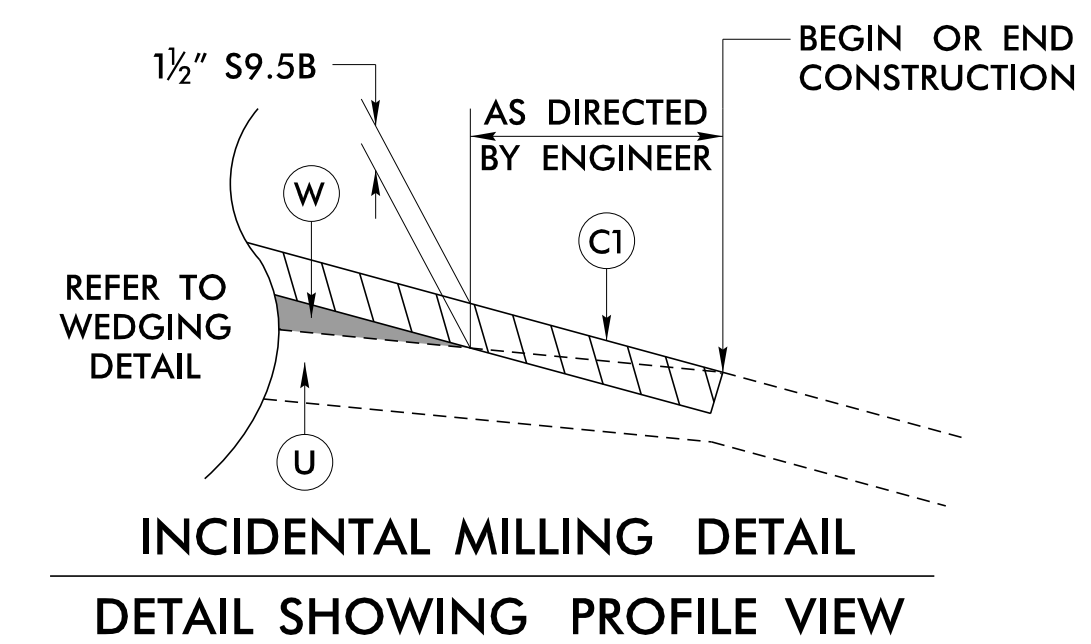
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	SS
Above Ground Sanitary Sewer	A/G Sanitary Sewer
SS Force Main Line Test Hole (SUE - LOS A)*	⊗
SS Force Main Line (SUE - LOS B)*	-----
SS Force Main Line (SUE - LOS C)*	-----
SS Force Main Line (SUE - LOS D)*	-----

## MISCELLANEOUS:

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

FINAL PAVEMENT SCHEDULE			
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	2'-6" CURB AND 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.	R2	PRECAST CONCRETE BARRIER, SINGLE FACED
C4	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	S	4" CONCRETE SIDEWALK
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	U	EXISTING PAVEMENT.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	V	1 1/2" MILLING
E2	PROP. APPROX. 8½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 484.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	W	WEDGING (SEE DETAIL SHOWING METHOD OF WEDGING).

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

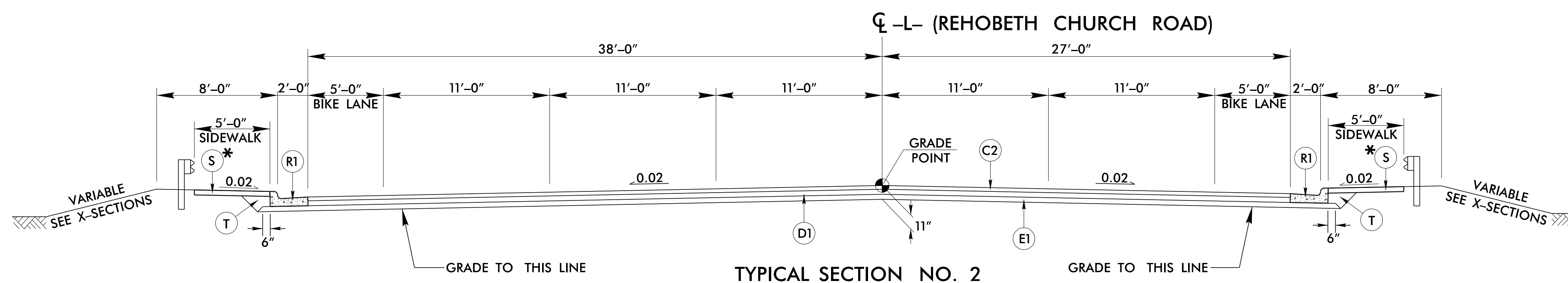


ADDITIONAL OVERLAY REQUIRED BEYOND SURVEYED AREA FOR PAVEMENT MARKINGS, SEE PMP PLANS FOR MILLING (V) AND OVERLAY LIMITS (C1).

USE TYPICAL SECTION NO. 1:

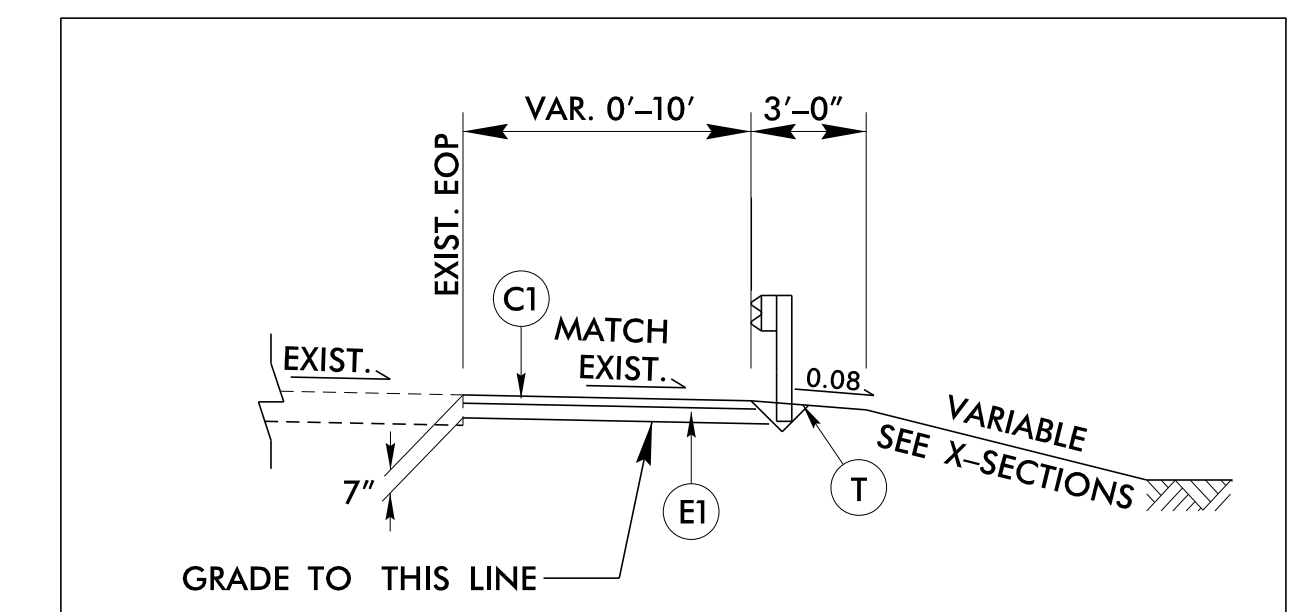
- L- STA 13+75.00 TO 16+00.00
- L- STA 21+10.00 TO 26+50.00

\*SEE PLANS FOR SIDEWALK LOCATIONS  
 \*\*VAR. 3'-0" TO 8'-0" (SEE X-SECTIONS)



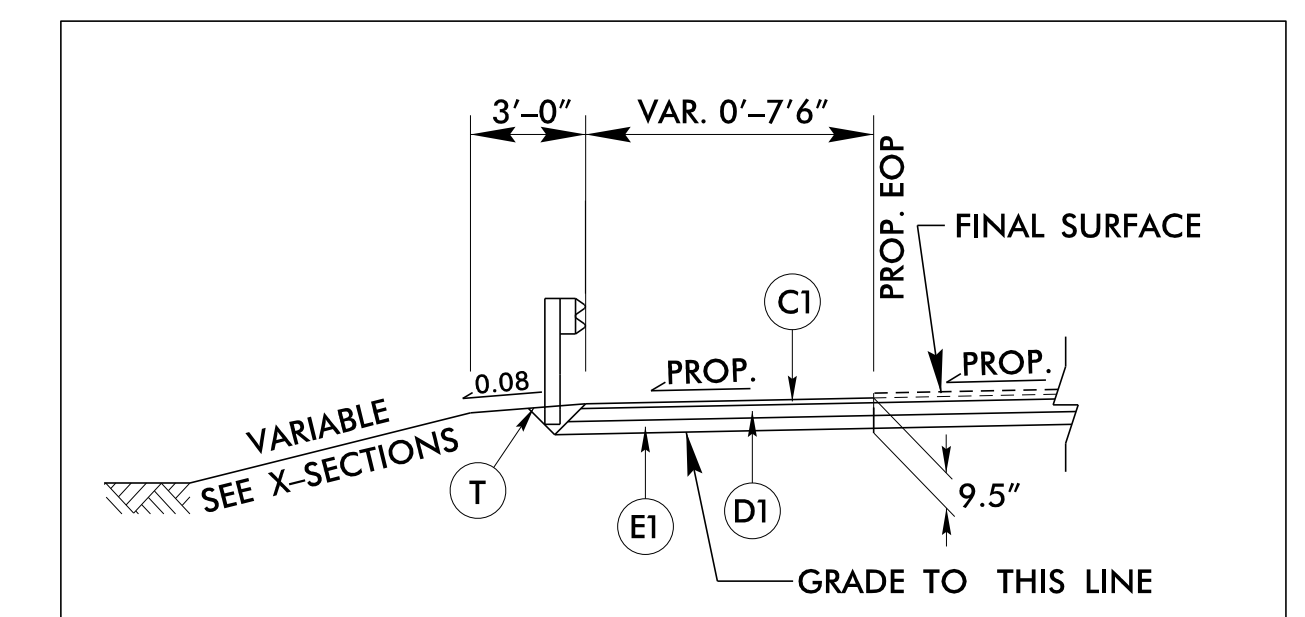
USE TYPICAL SECTION NO. 2:

- L- STA 16+00.00 TO 17+82.09 (BEGIN BRIDGE)
- L- STA 19+82.09 (END BRIDGE) TO 21+10.00



TEMPORARY PAVEMENT DETAIL

- L- STA 15+93.70 TO 16+81.02 RT
- L- STA 20+43.94 TO 21+99.09 RT

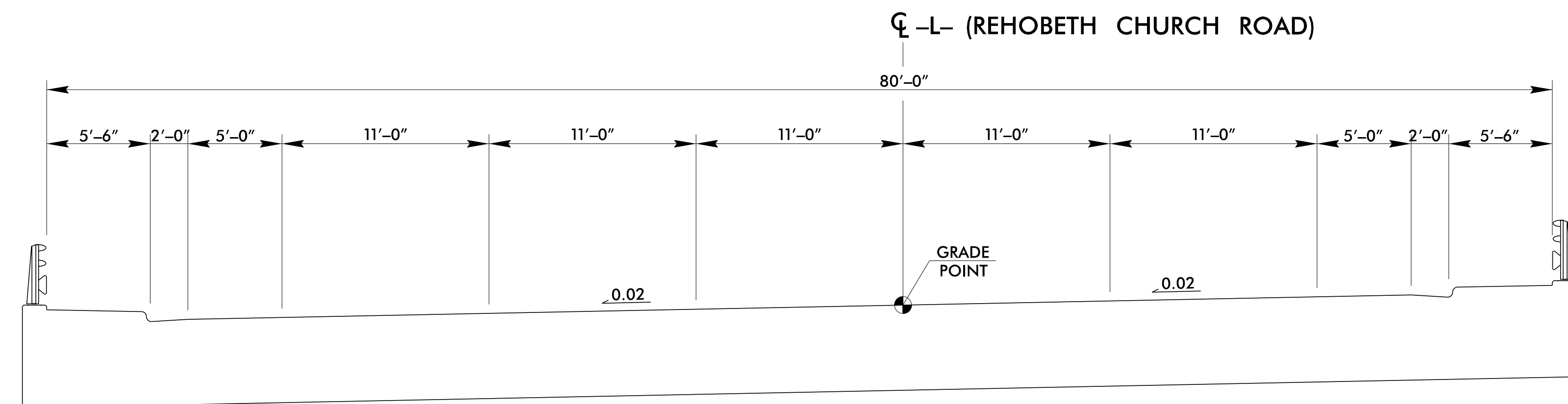


TEMPORARY PAVEMENT DETAIL

- L- STA 15+11.00 TO 16+00.00 LT
- L- STA 21+10.00 TO 22+12.84 LT

PROJECT REFERENCE BP7.R006 - GUILFORD 225	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER MOTT MACDONALD 1 & E, LLC LICENSE NO. F-0669	PAVEMENT DESIGN ENGINEER MOTT MACDONALD 1 & E, LLC LICENSE NO. F-0669
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21102 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896 MOTT MACDONALD 1 & E, LLC 7621 Purfoy Road, Suite 115 Fuquay-Varina, NC 27526 www.mottmac.com	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED Prepared in the Office of:	

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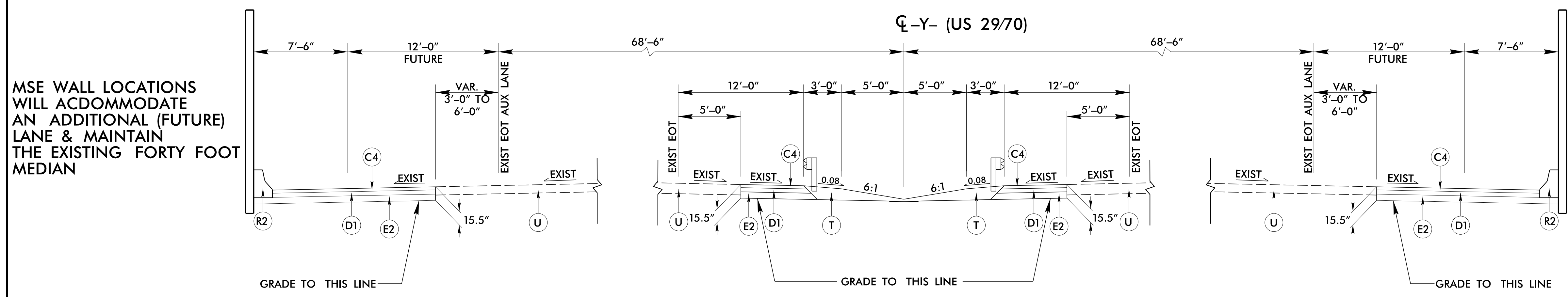


**TYPICAL SECTION NO. 3**

USE TYPICAL SECTION NO. 3:  
-L- STA 17+82.09 (BEGIN BRIDGE) TO 19+82.09 (END BRIDGE)

FINAL PAVEMENT SCHEDULE	
C4	3" S9.5C
D1	4" I19.0C
E2	8½" B25.0C
R2	PRECAST CONCRETE BARRIER, SINGLE FACED
T	EARTH MATERIAL
U	EXIST. PAVEMENT

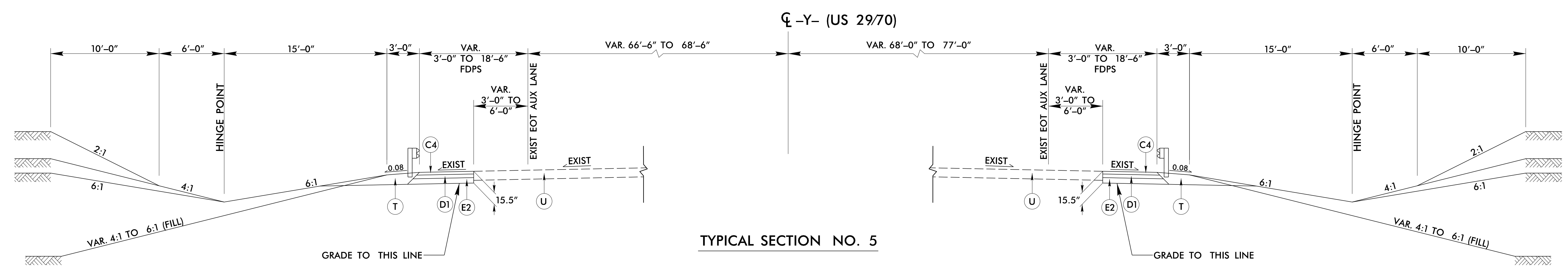
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



MSE WALL LOCATIONS WILL ACCOMMODATE AN ADDITIONAL (FUTURE) LANE & MAINTAIN THE EXISTING FORTY FOOT MEDIAN

**TYPICAL SECTION NO. 4**

USE TYPICAL SECTION NO. 4:  
-Y- STA 13+35.31 TO 15+09.40 RT  
-Y- STA 13+88.33 TO 15+67.80 LT



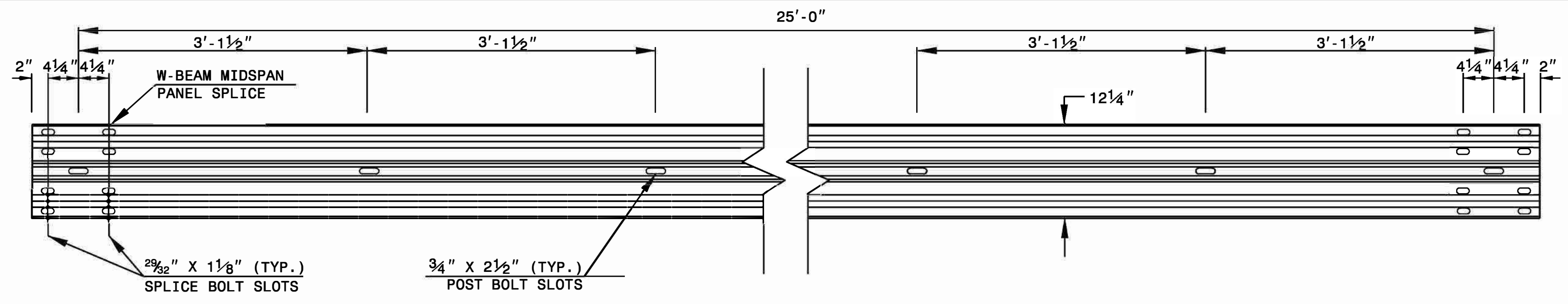
**TYPICAL SECTION NO. 5**

USE TYPICAL SECTION NO. 5:  
-Y- STA 11+50.00 TO 13+35.31 RT  
-Y- STA 15+09.40 TO 15+71.40 RT  
-Y- STA 12+77.79 TO 13+88.33 LT  
-Y- STA 15+67.80 TO 17+60.00 LT

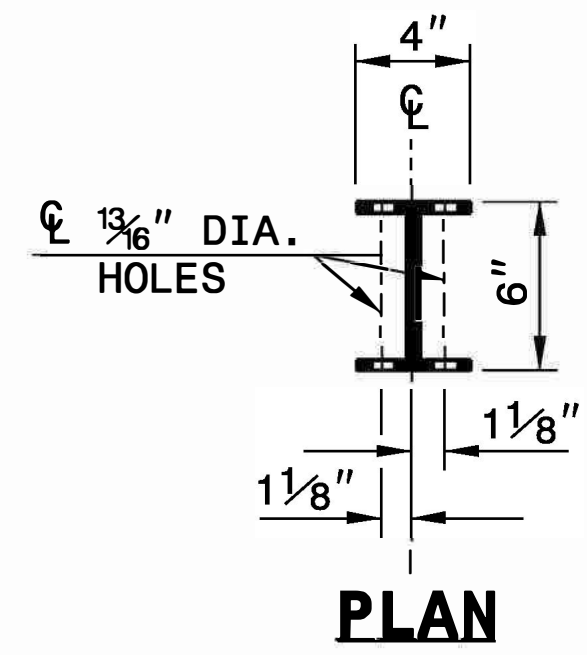
STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

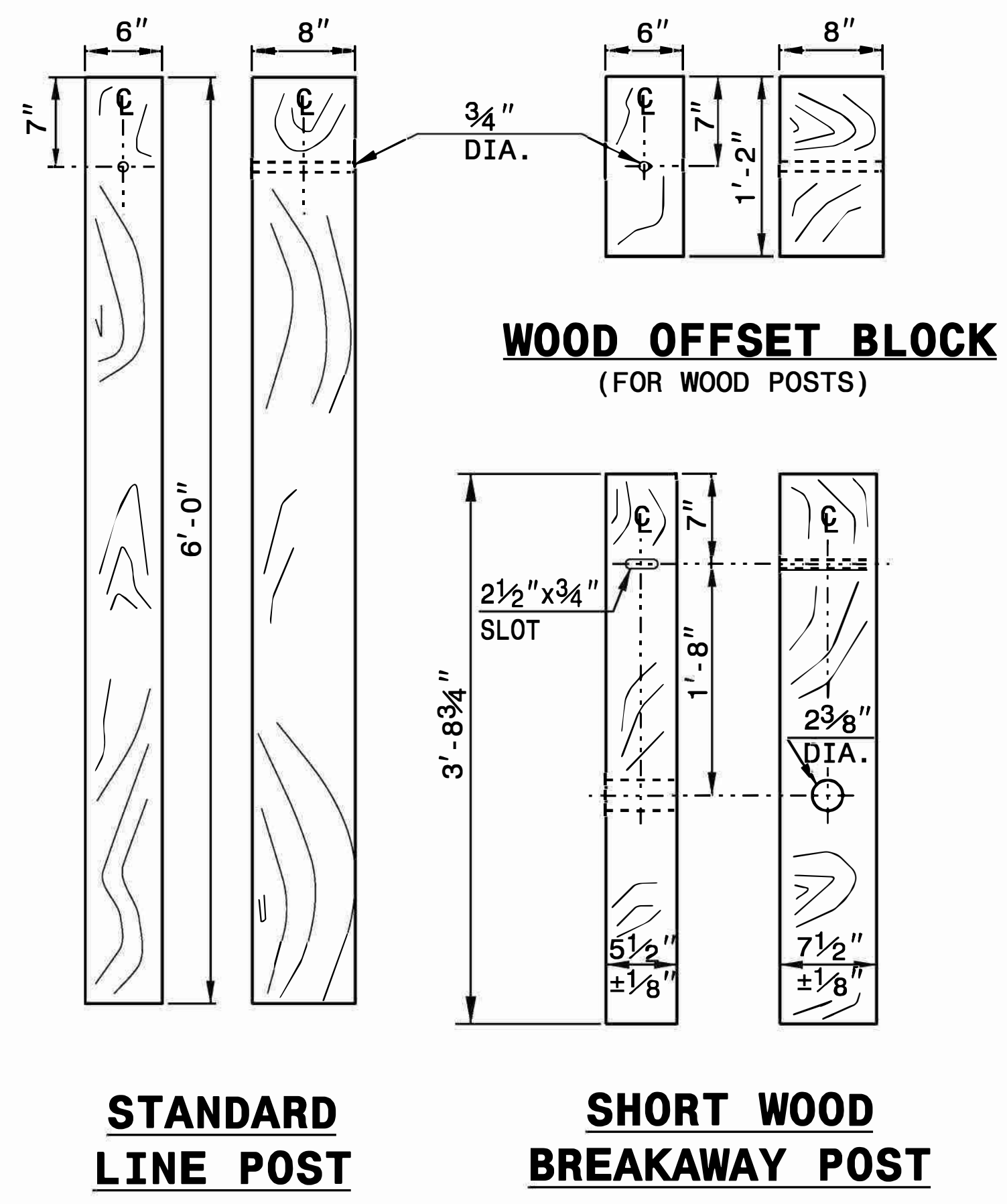
SHEET 6 OF 8  
**862D02**



**STANDARD W-BEAM GUARDRAIL**



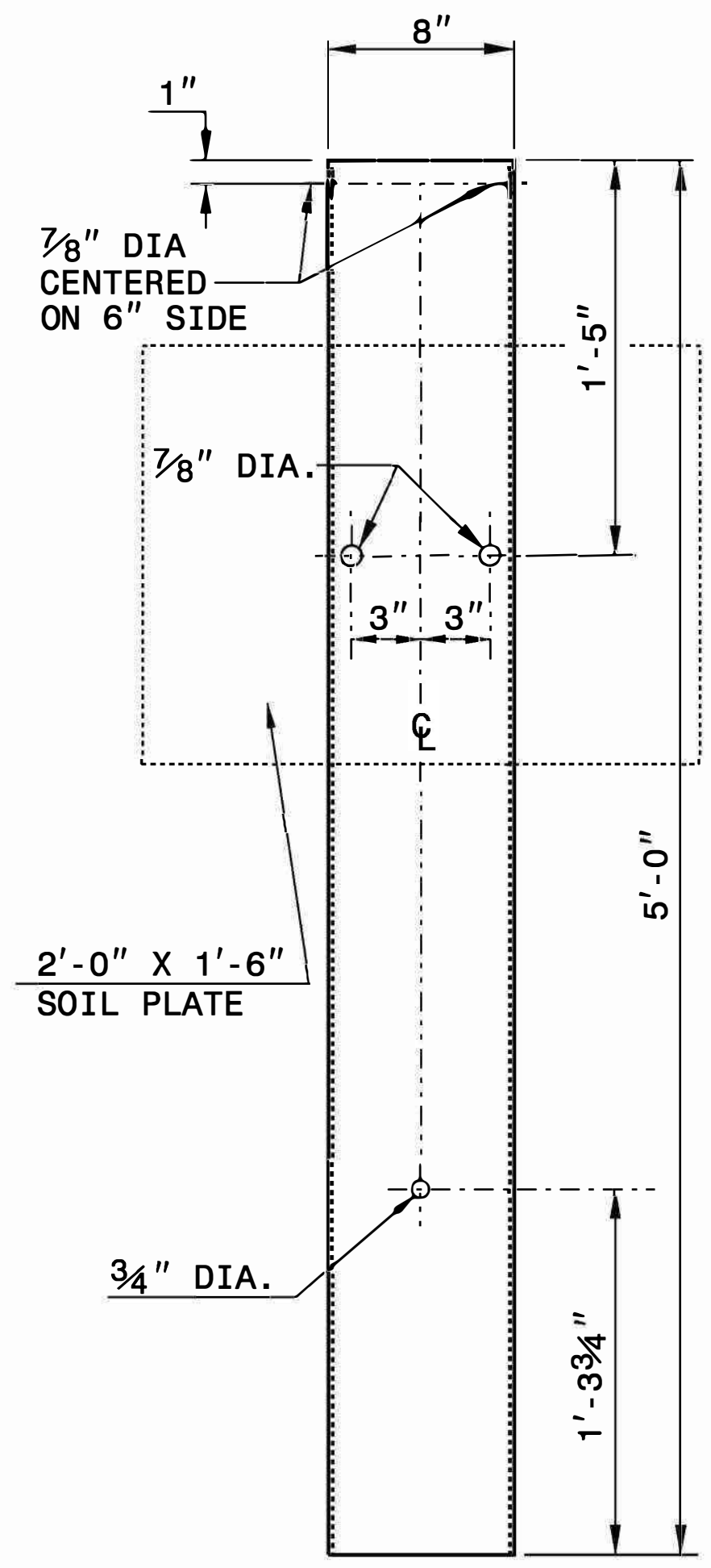
**PLAN**



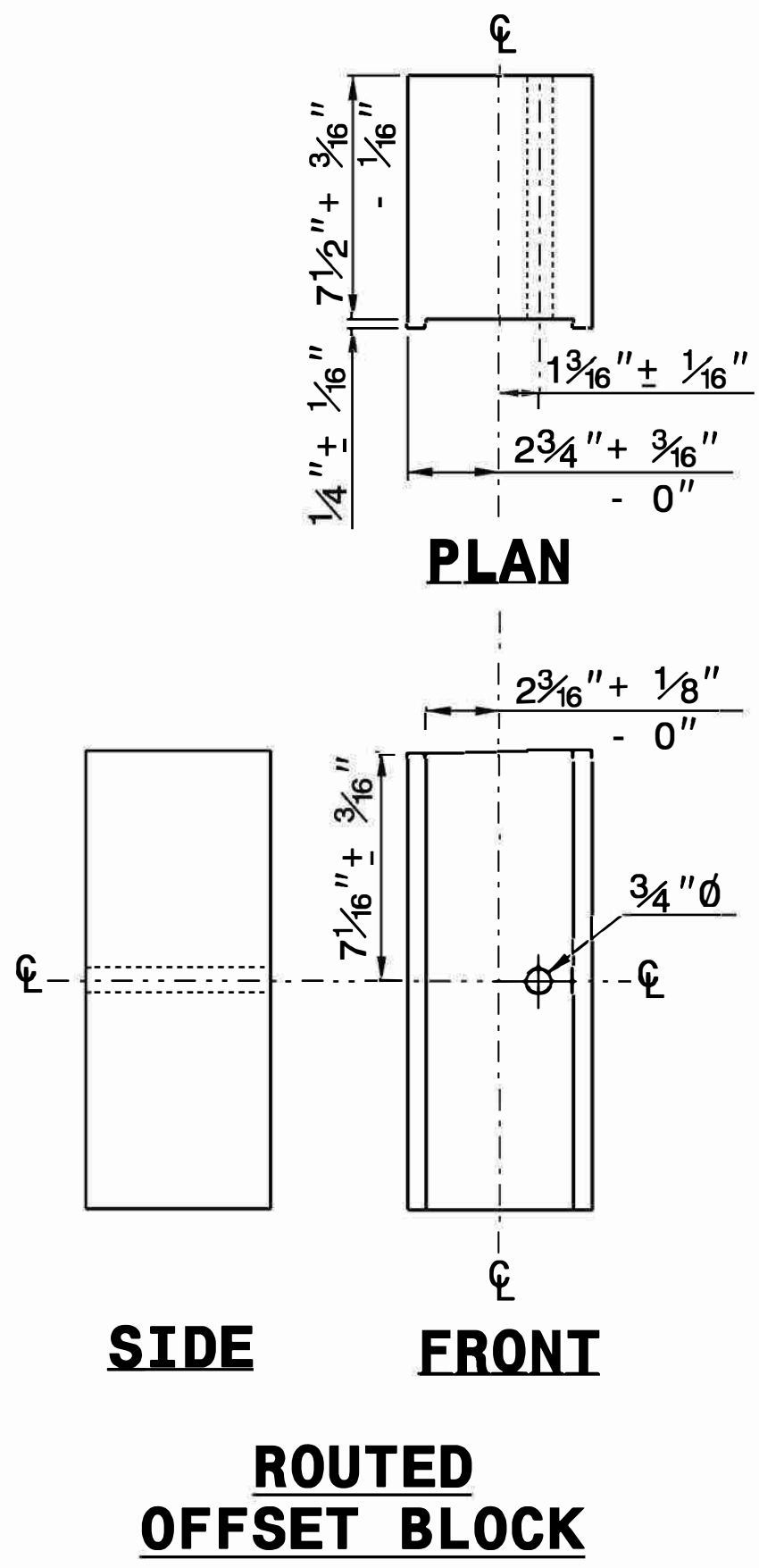
**WOOD OFFSET BLOCK**  
(FOR WOOD POSTS)

**STANDARD LINE POST**

**SHORT WOOD BREAKAWAY POST**



**STEEL TUBE**  
TS 6"x8"x0.1875"

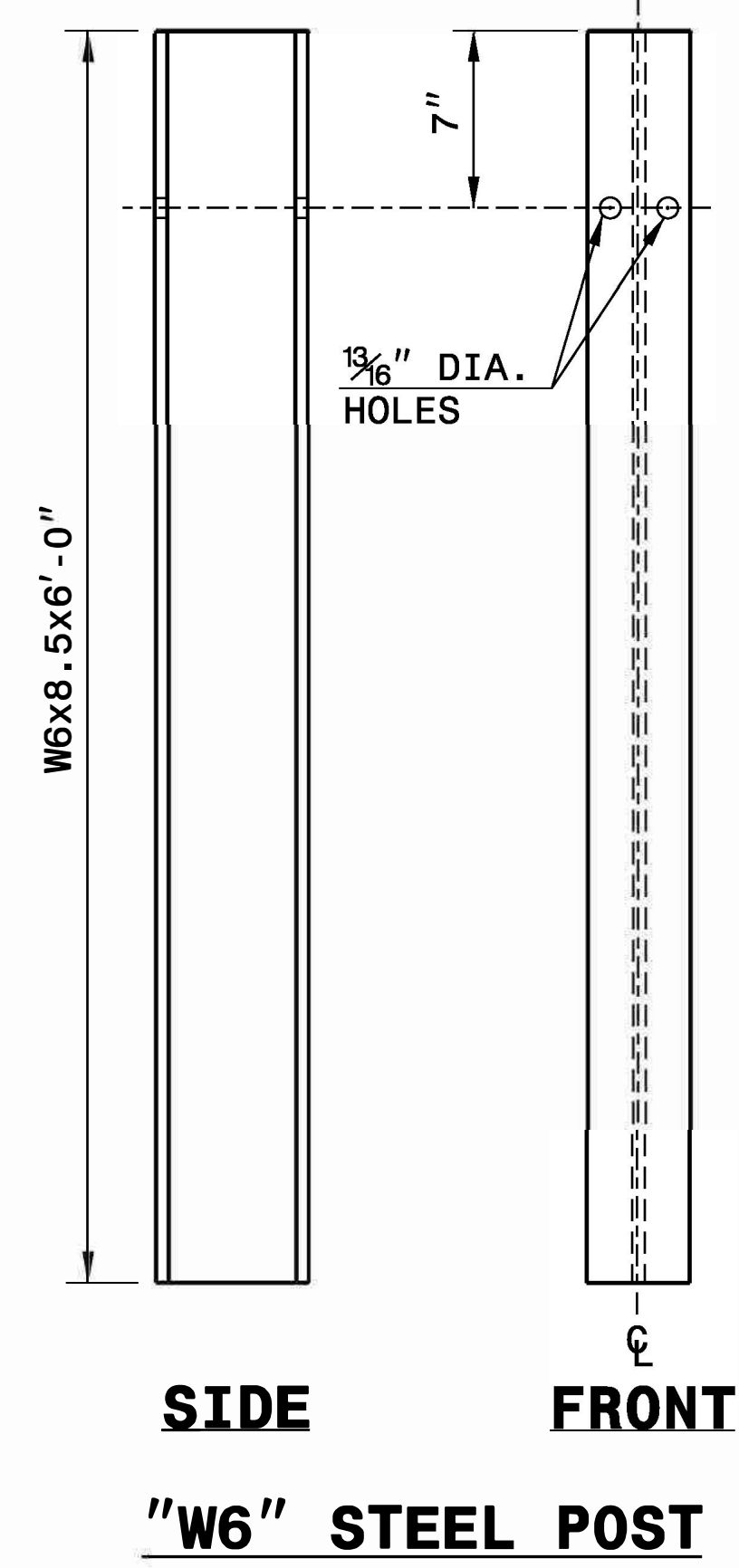


**PLAN**

**SIDE**

**FRONT**

**ROUTED OFFSET BLOCK**



**SIDE**

**FRONT**

**"W6" STEEL POST**

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 6 OF 8  
**862D02**



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

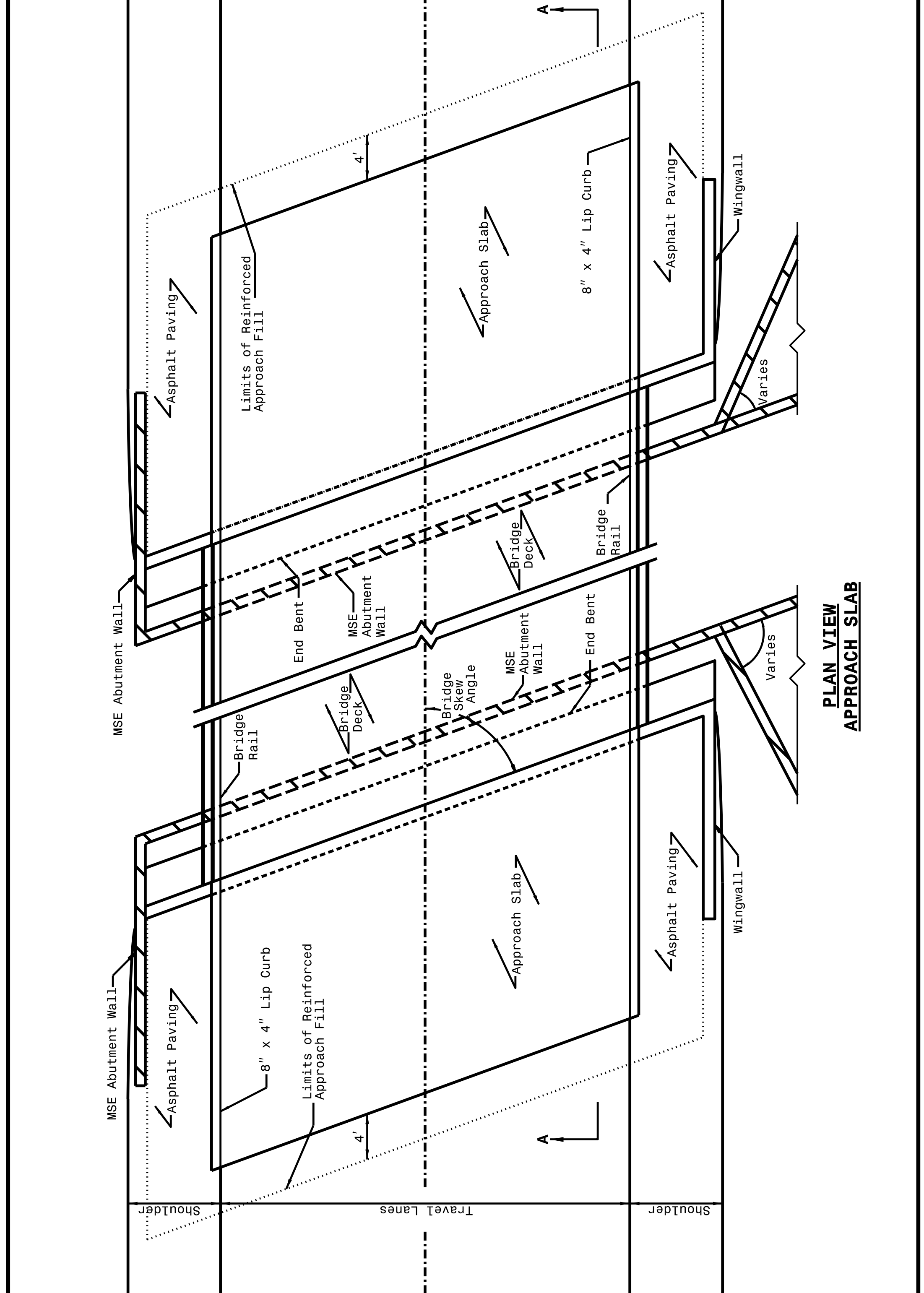
**SEE TITLE BLOCK**

ORIGINAL BY: J. HOWERTON DATE: 3-7-2018  
 MODIFIED BY: DATE: \_\_\_\_\_  
 CHECKED BY: DATE: \_\_\_\_\_  
 FILE SPEC.: \_\_\_\_\_



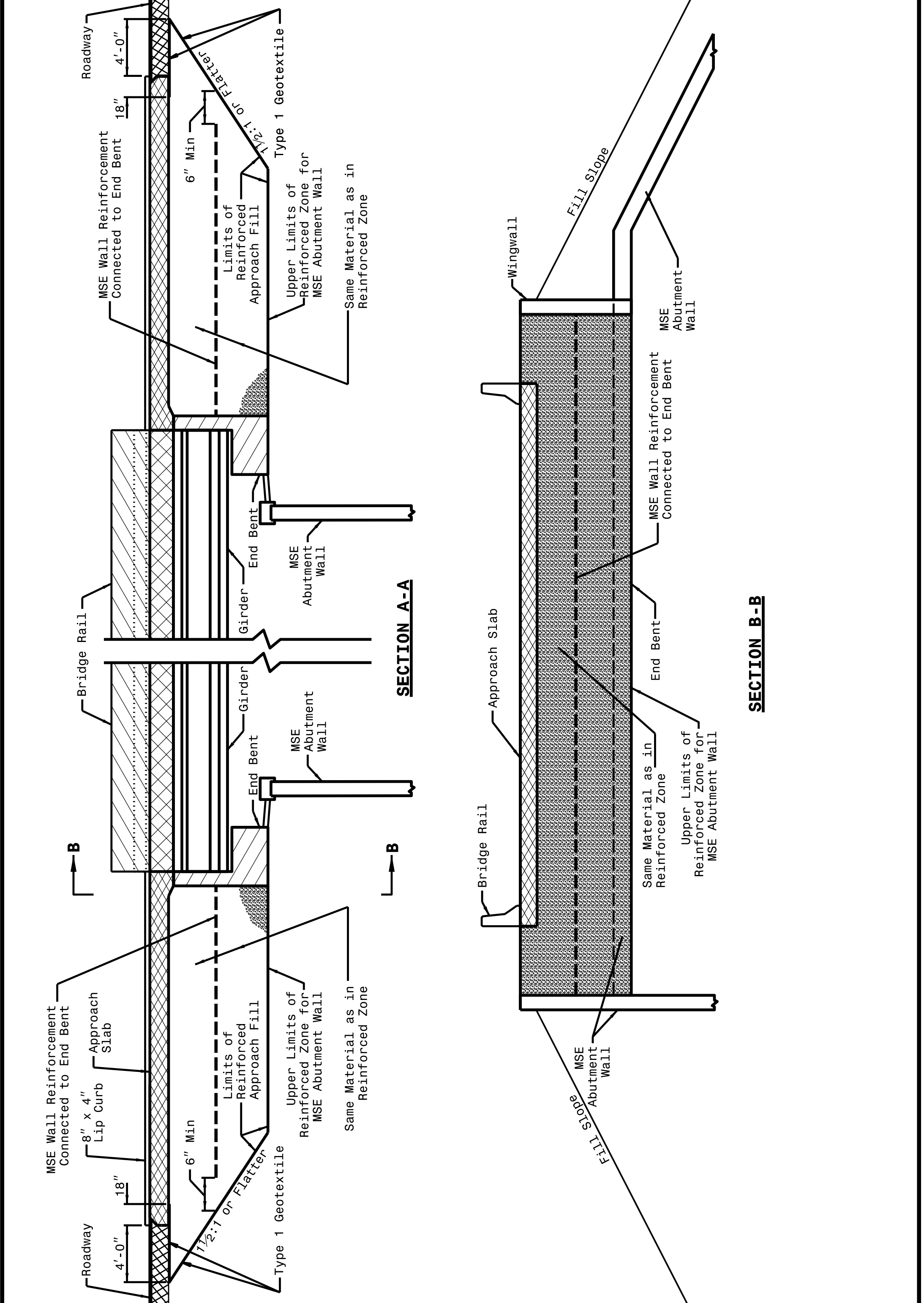


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.  
 ROADWAY DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
 TYPE III - REINFORCED APPROACH FILL FOR MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL  
 SHEET 1 OF 2  
**422D10**

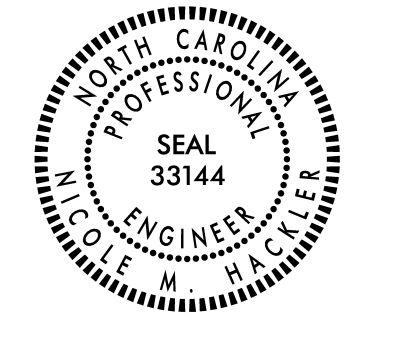


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.  
 ROADWAY DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
 TYPE III - REINFORCED APPROACH FILL FOR MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL  
 SHEET 1 OF 2  
**422D10**

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.  
 ROADWAY DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
 TYPE III - REINFORCED APPROACH FILL FOR MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL  
 SHEET 2 OF 2  
**422D10**



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.  
 ROADWAY DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
 TYPE III - REINFORCED APPROACH FILL FOR MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL  
 SHEET 2 OF 2  
**422D10**



DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

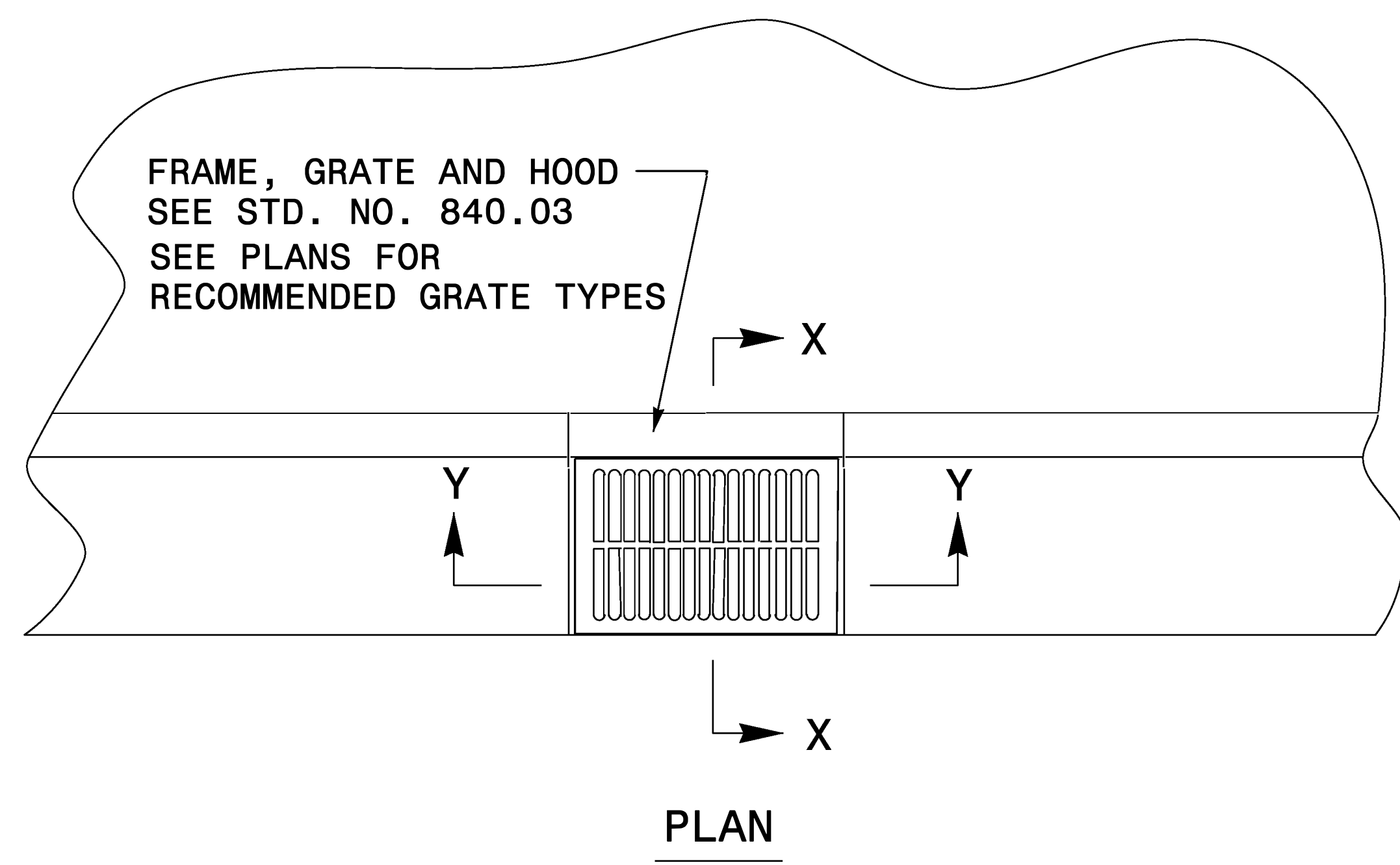
**CONTRACTS STANDARDS  
 AND DEVELOPMENT UNIT**  
 Office 919-707-6950 FAX 919-250-4119

**TYPE III  
 REINFORCED  
 APPROACH FILLS**

ORIGINAL BY: K. A. KEMPF DATE: JULY 2017  
 MODIFIED BY: DATE:  
 CHECKED BY: DATE:  
 FILE SPEC.: 2018 standard drawings\division 422d10.dgn

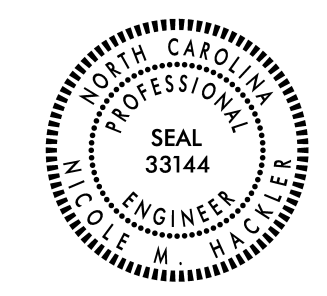
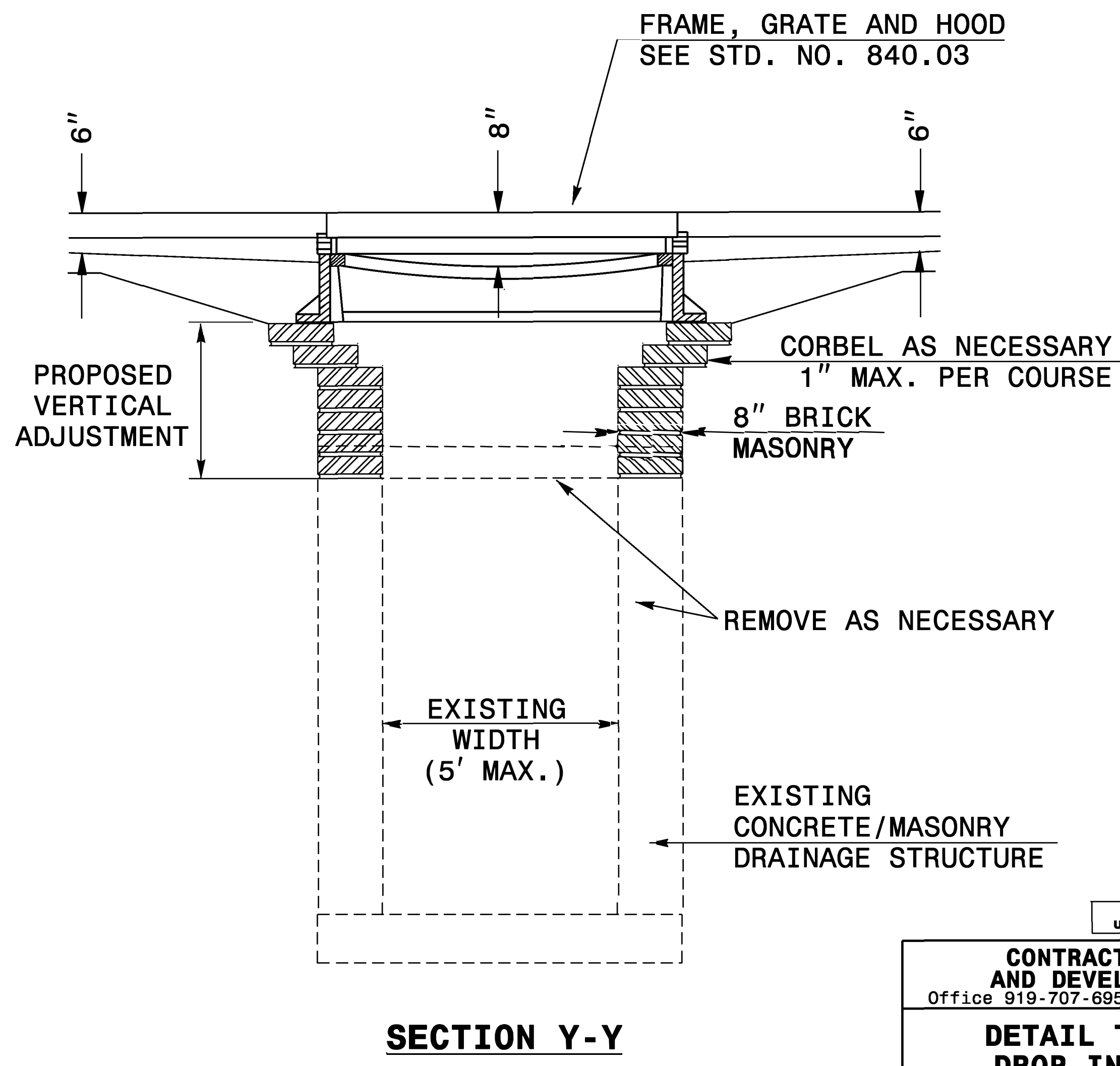
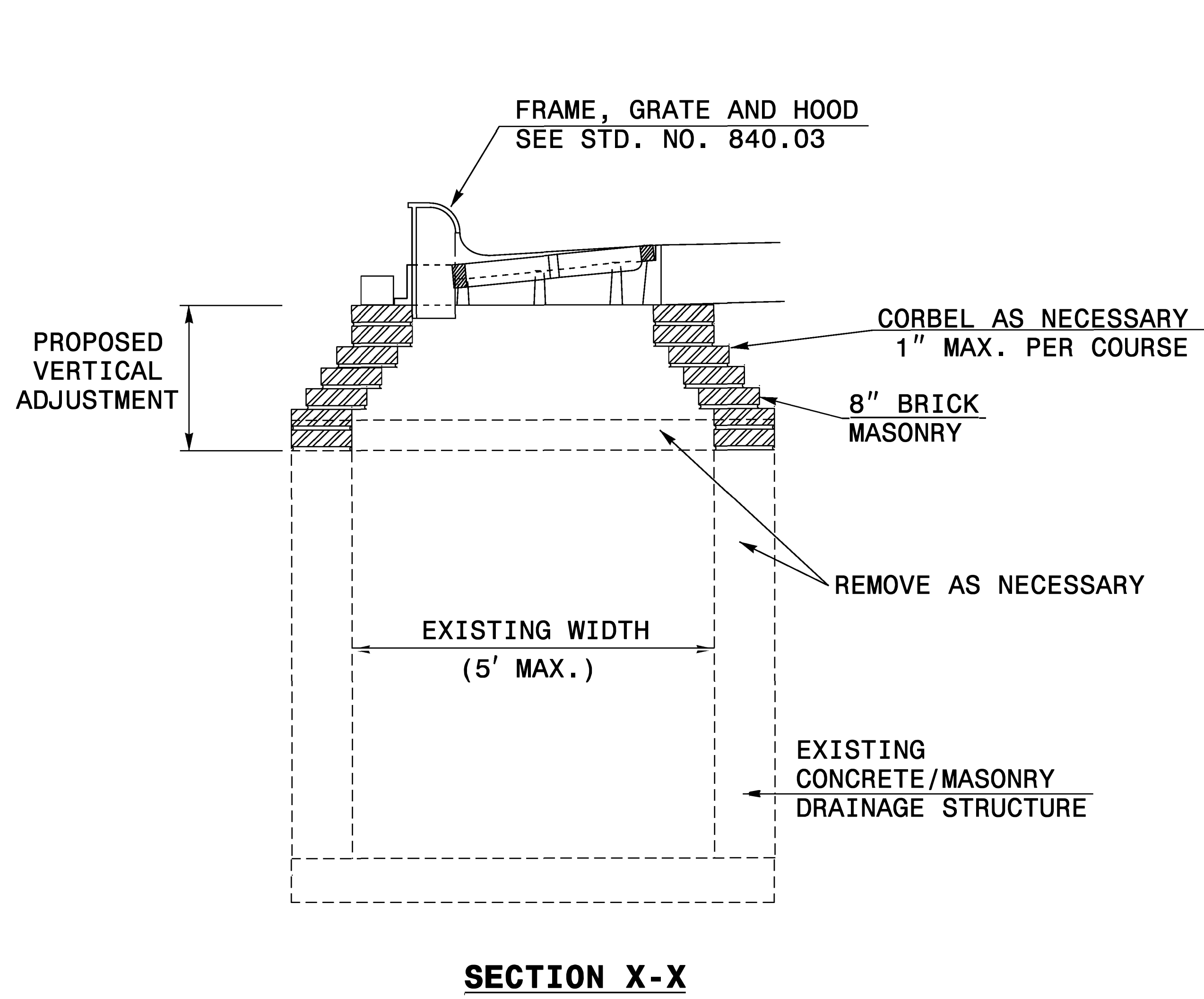


5/14/99



**GENERAL NOTES:**

- THE ROADWAY PLANS INDICATE STRUCTURES TO BE CONVERTED.
- AFTER REMOVAL, STORE GRATES AND FRAMES AS DIRECTED BY THE ENGINEER.
- 4" SOLID CLAY BRICK, JUMBO BRICK, CONCRETE, OR 4" SOLID CONCRETE BLOCK MAY BE USED FOR VERTICAL ADJUSTMENT OF THE STRUCTURE.
- CONVERT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.



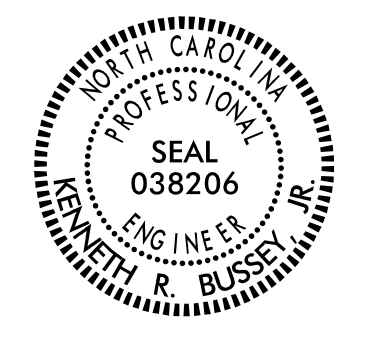
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

**DETAIL TO CONVERT DROP INLET OR JB TO CATCH BASIN**

ORIGINAL BY: E.E. WARD DATE: 11-97  
 MODIFIED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 FILE SPEC.: DS37:usr\details\stand\jbtocb.dgn

26-JUN-2017 10:42  
 S:\Contracts\Special Details\howerton\convert Di or JB to CB.dgn  
 howerton AT USD-292595

<b>PROJECT REFERENCE NO.</b> BP7.R006	<b>SHEET NO.</b> 2G-1
GEOTECHNICAL ENGINEER  Kenneth R. Bussey, Jr. 2/3/2023 SIGNATURE DATE	ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

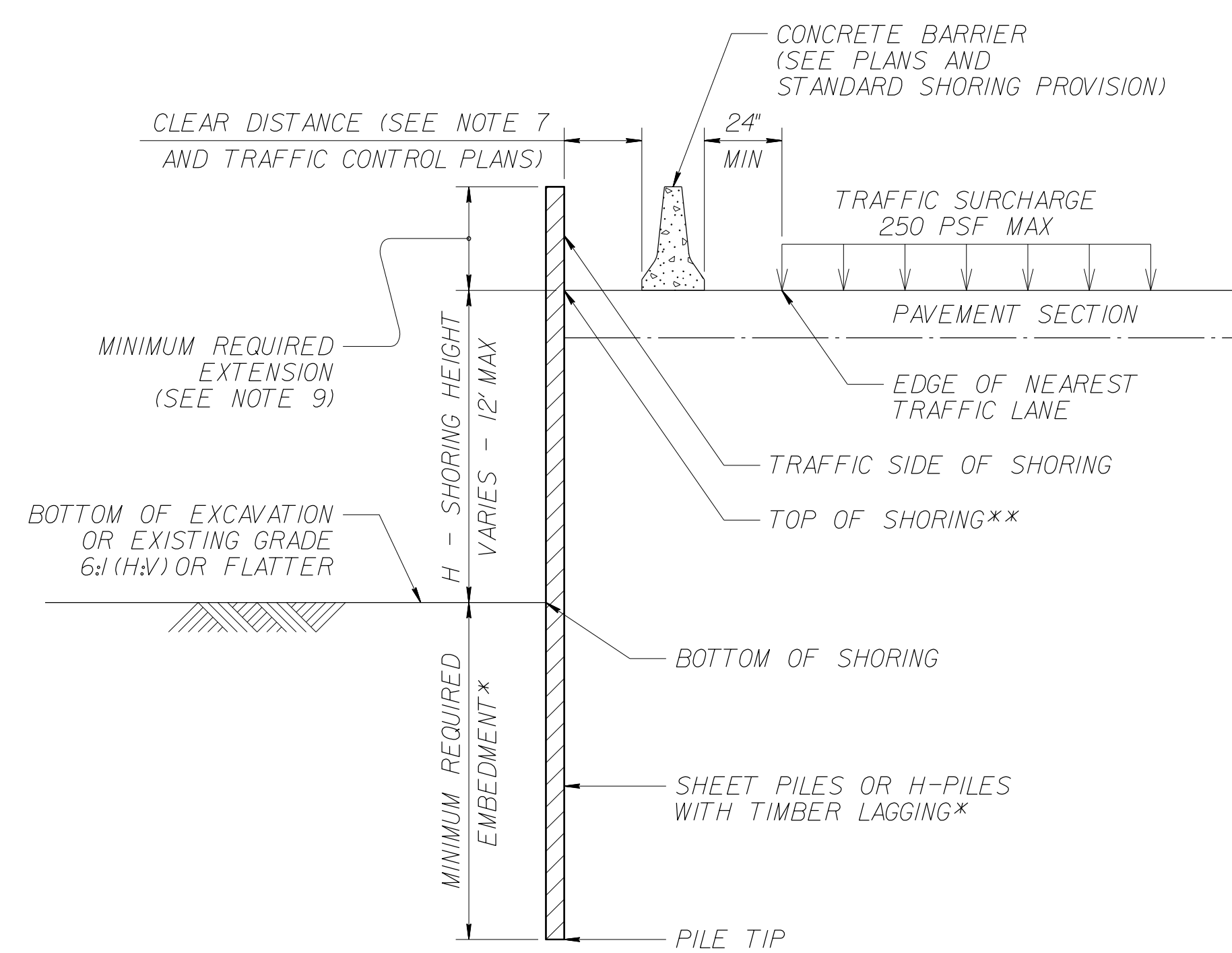
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN <sup>3</sup> /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN <sup>3</sup> /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5	

**NOTES:**

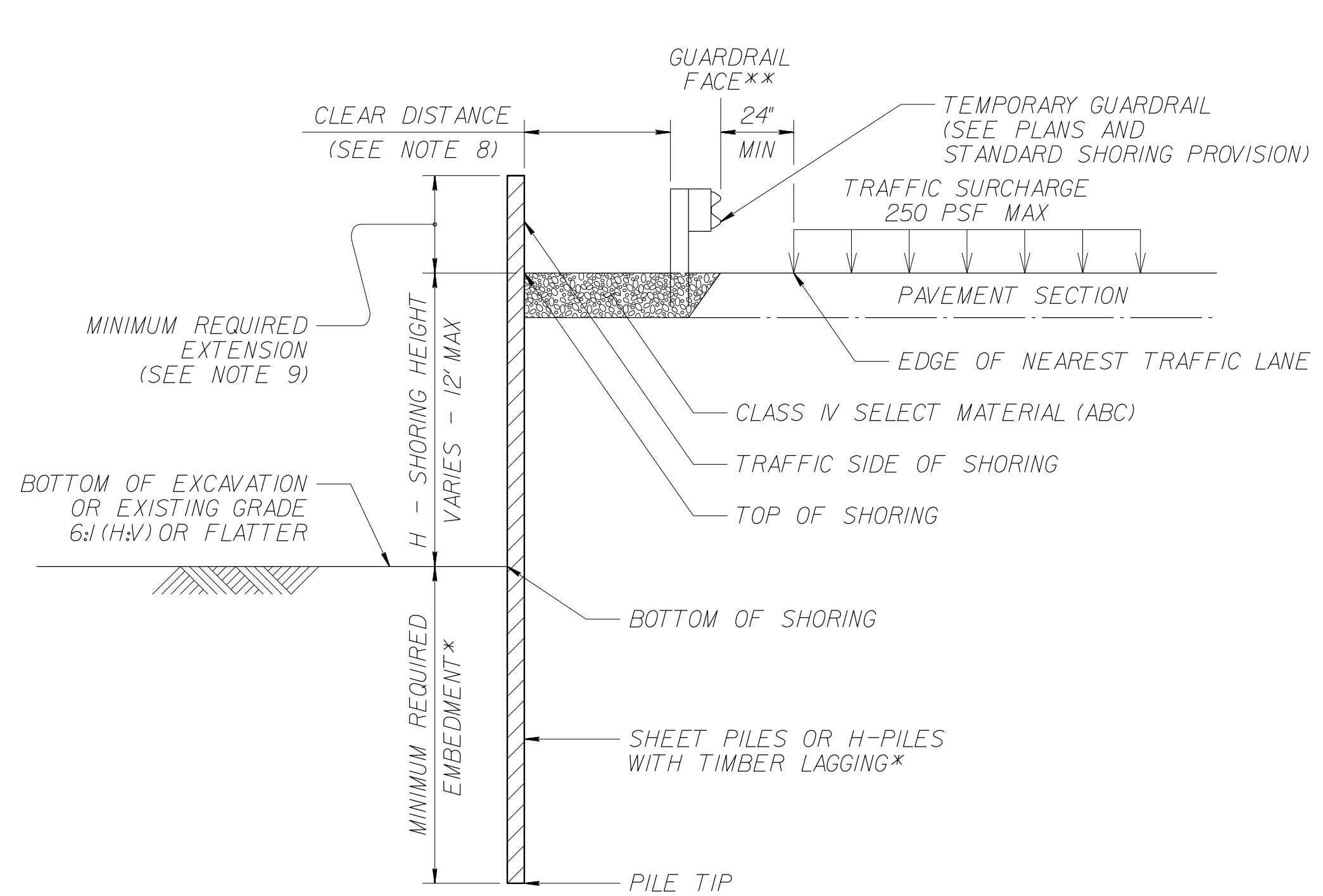
- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:  
UNIT WEIGHT,  $\gamma = 120$  PCF  
FRICTION ANGLE,  $\phi = 30$  DEGREES  
COHESION,  $c = 0$  PSF
- DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
- DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
- USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
- AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
- AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
- MINIMUM REQUIRED EXTENSION IS 6' FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32' FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
- MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
- SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM:  
[connect.ncdot.gov/resources/Geological/Pages/Geotech\\_Forms\\_Details.aspx](http://connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx)
- CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.

**MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS**

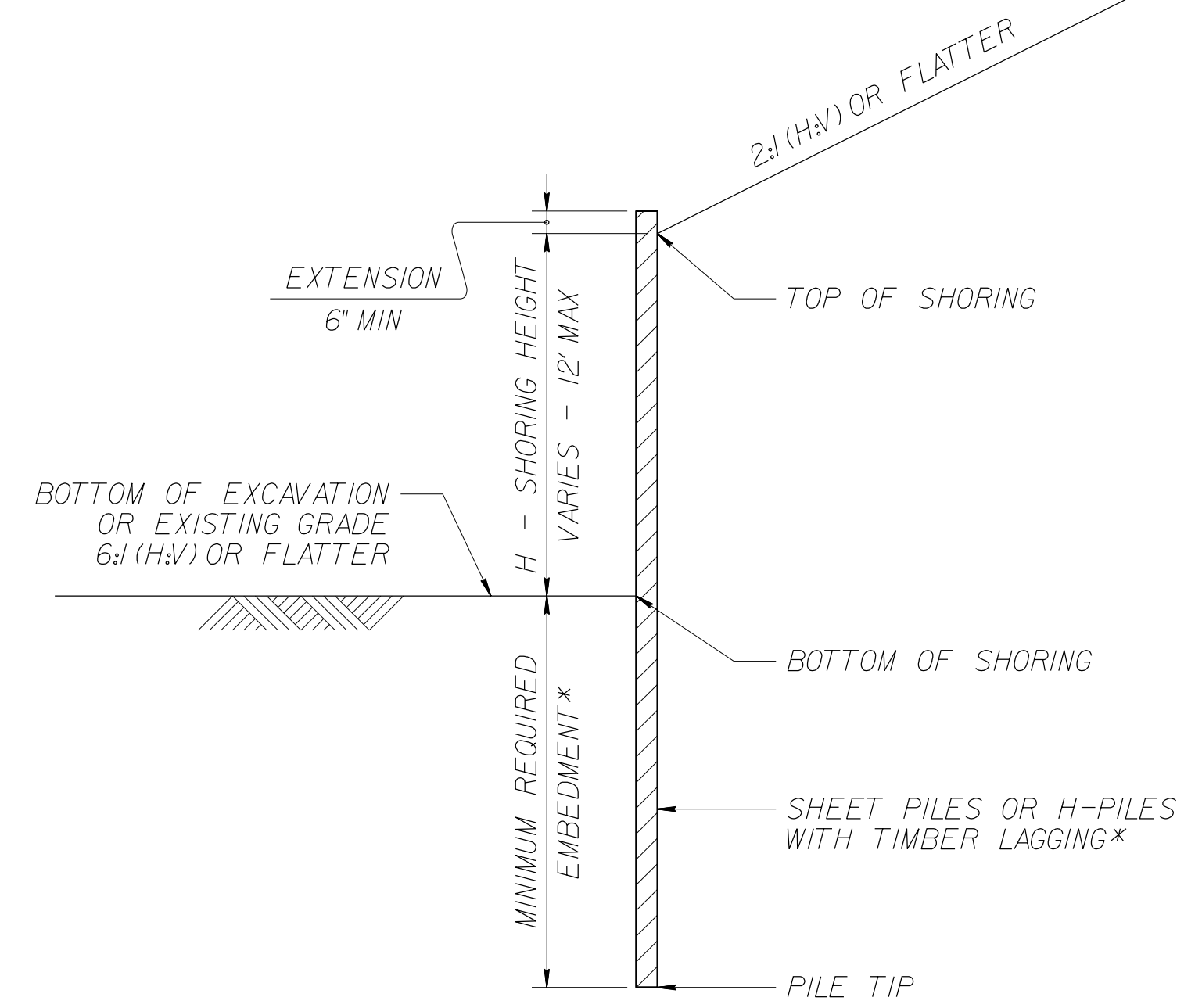
**\*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".**



**CONCRETE BARRIER**  
**\*\*TOP OF SHORING = EDGE OF PAVEMENT**

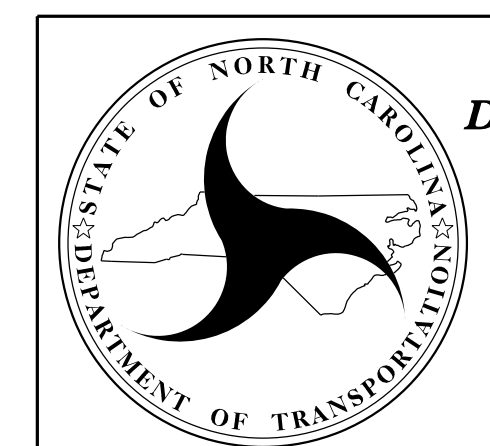


**TEMPORARY GUARDRAIL**  
**\*\*GUARDRAIL FACE = EDGE OF PAVEMENT**



**STANDARD TEMPORARY SHORING (SLOPE CASE)**  
**\*SEE TABLE ABOVE.**

**STANDARD TEMPORARY SHORING (SURCHARGE CASE)**  
**\*SEE TABLE ABOVE.**



**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS**  
**GEOTECHNICAL ENGINEERING UNIT**

STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING



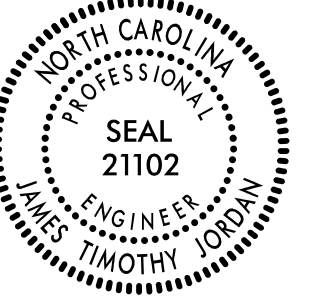
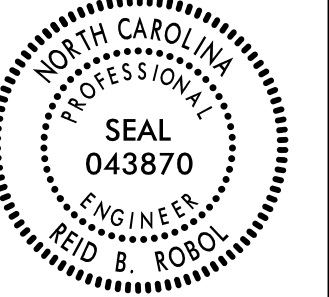












PROJECT REFERENCE		SHEET NO.	
BP7.R006 - GUILFORD 225		4	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			
MOTT MACDONALD 1 & E, LLC LICENSE NO. F-06697		VHB ENGINEERING LICENSE NO. C-3705	
<b>DOCUMENT NOT CONSIDERED FINAL</b>			
<b>UNLESS ALL SIGNATURES COMPLETED</b>			
Prepared in the Office of:			
			
		VHB Engineering N.C., P.C. (C-3705) 940 Main Campus Drive, Suite 500 Raleigh, NC 27606	

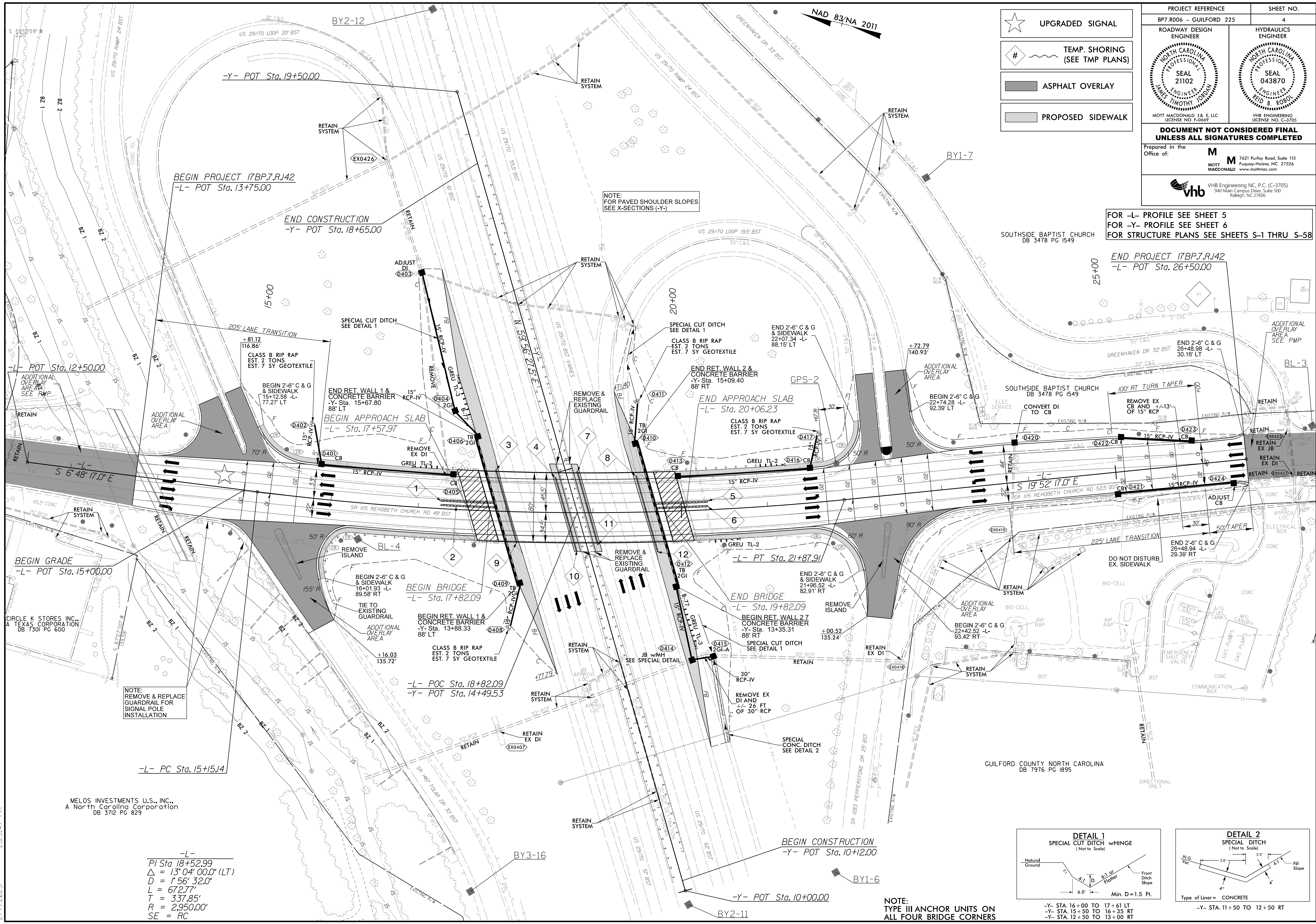
★ UPGRADED SIGNAL

# TEMP. SHORING (SEE TMP PLANS)

ASPHALT OVERLAY

PROPOSED SIDEWALK

FOR -L- PROFILE SEE SHEET 5  
 FOR -Y- PROFILE SEE SHEET 6  
 FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-58

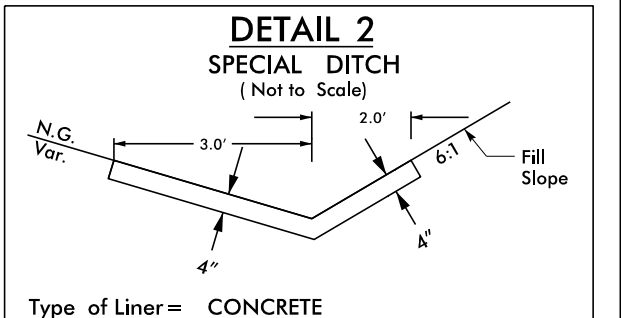
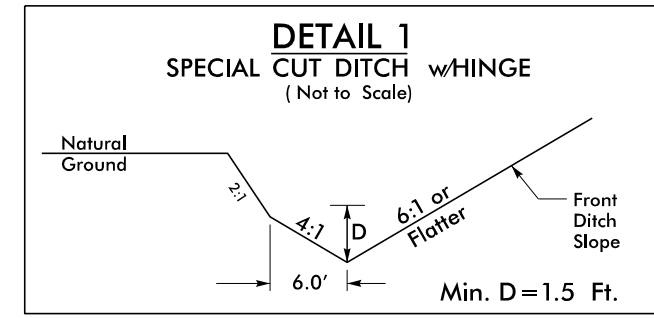


NOTE: REMOVE & REPLACE GUARDRAIL FOR SIGNAL POLE INSTALLATION

NOTE: FOR PAVED SHOULDER SLOPES SEE X-SECTIONS (-Y-)

MELOS INVESTMENTS U.S., INC.,  
 A North Carolina Corporation  
 DB 3712 PG 829

-L-  
 PI Sta 18+52.99  
 $\Delta = 13^\circ 04' 00.0''$  (LT)  
 $D = 156' 32.0''$   
 $L = 672.77'$   
 $T = 337.85'$   
 $R = 2,950.00'$   
 $SE = RC$



-Y- STA. 16+00 TO 17+61 LT  
 -Y- STA. 15+50 TO 16+35 RT  
 -Y- STA. 12+50 TO 13+00 RT

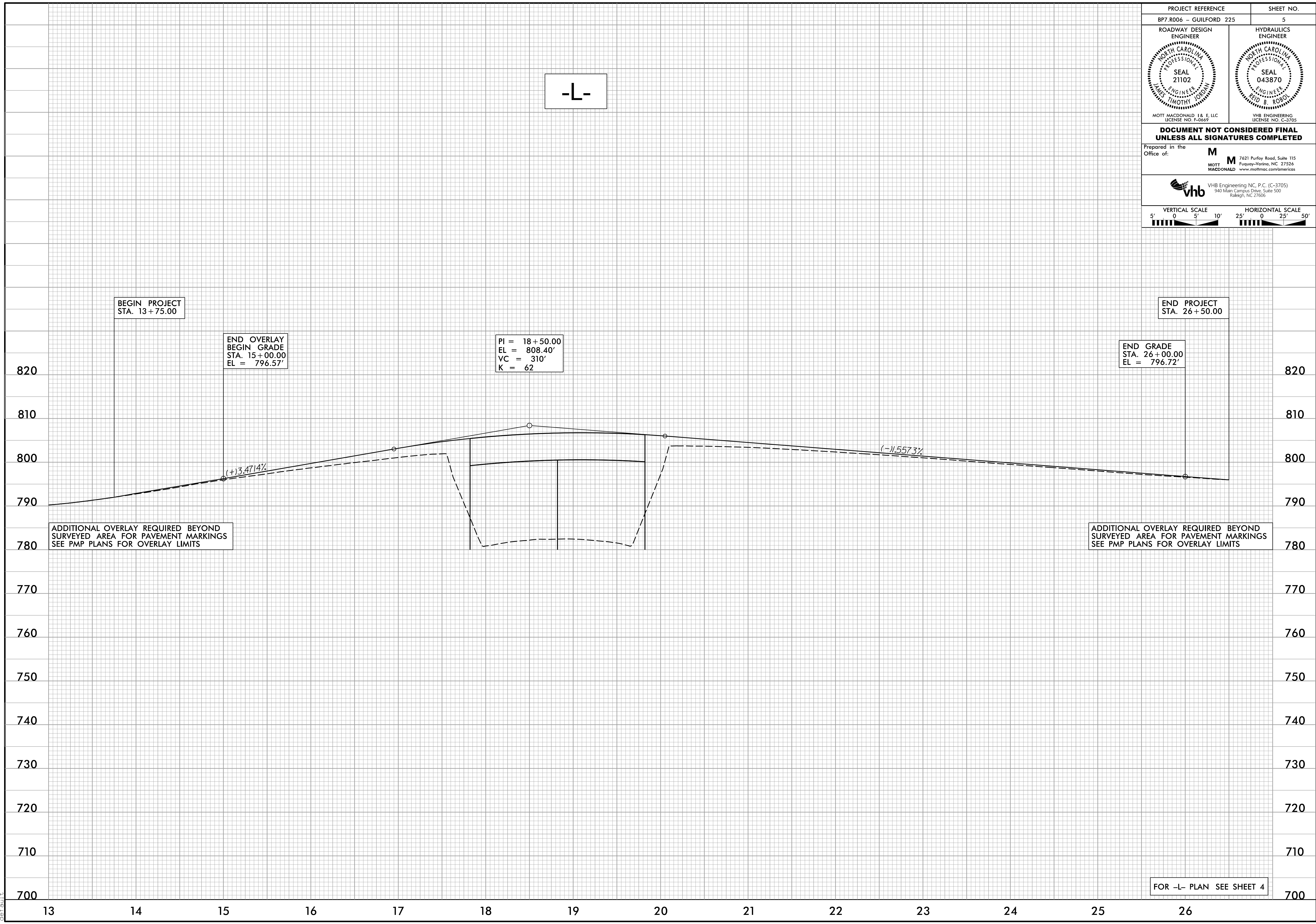
NOTE:  
 TYPE III ANCHOR UNITS ON ALL FOUR BRIDGE CORNERS

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PROJECT REFERENCE BP7.R006 - GUILFORD 225	SHEET NO. 5
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 21102 TIMOTHY JORDIN	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 043870 FRID B. ROBO
MOTT MACDONALD I & E, LLC LICENSE NO. F-0669	
VHB ENGINEERING LICENSE NO. C-3705	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
Prepared in the Office of:	<b>M</b> MOTT MACDONALD 7621 Purfoy Road, Suite 115 Fuquay-Varina, NC 27526 www.mottmac.com/america
 VHB Engineering NC, P.C. (C-3705) 940 Main Campus Drive, Suite 500 Raleigh, NC 27606	
VERTICAL SCALE 5' 0 5' 10'	HORIZONTAL SCALE 25' 0 25' 50'

-L-



BEGIN PROJECT  
STA. 13+75.00

END OVERLAY  
BEGIN GRADE  
STA. 15+00.00  
EL = 796.57'

PI = 18+50.00  
EL = 808.40'  
VC = 310'  
K = 62

END PROJECT  
STA. 26+50.00

END GRADE  
STA. 26+00.00  
EL = 796.72'

ADDITIONAL OVERLAY REQUIRED BEYOND  
SURVEYED AREA FOR PAVEMENT MARKINGS  
SEE PMP PLANS FOR OVERLAY LIMITS

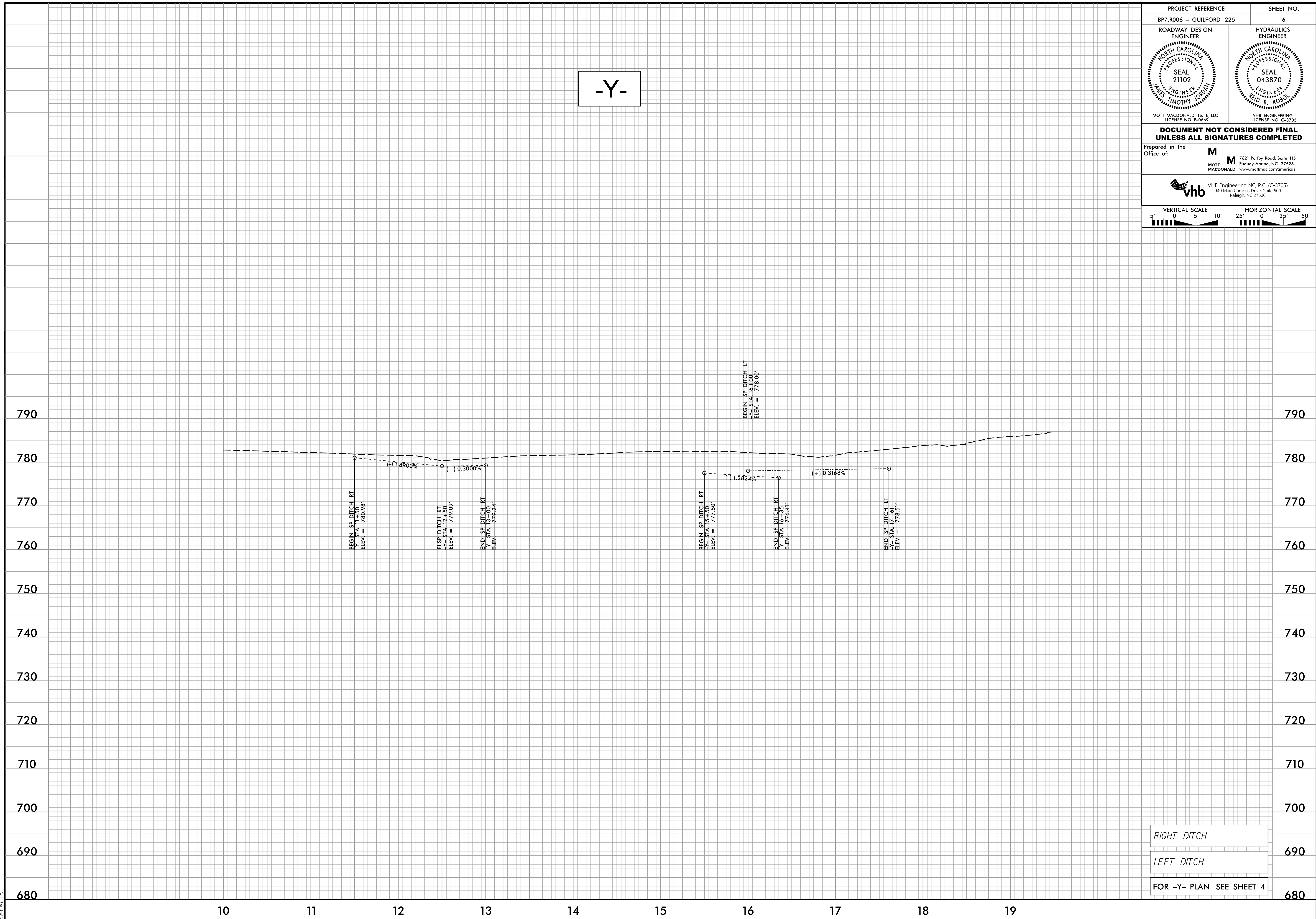
ADDITIONAL OVERLAY REQUIRED BEYOND  
SURVEYED AREA FOR PAVEMENT MARKINGS  
SEE PMP PLANS FOR OVERLAY LIMITS

FOR -L- PLAN SEE SHEET 4

2/7/2023 8:25:14 AM  
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default

PROJECT REFERENCE		SHEET NO.	
BP7.R006 - GUILFORD 225		6	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
MOTT MACDONALD I & E, LLC LICENSE NO. F-0669		VHB ENGINEERING LICENSE NO. C-3705	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			
Prepared in the Office of:			
		VHB Engineering NC, P.C. (C-3705) 940 Main Campus Drive, Suite 500 Raleigh, NC 27606	
VERTICAL SCALE		HORIZONTAL SCALE	

-Y-



RIGHT DITCH -----

LEFT DITCH -----

FOR -Y- PLAN SEE SHEET 4

2/7/2023 8:25:17 AM  
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