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7/24/2017

**TIP PROJECT: I-4400BB/C**

**TIP PROJECT: I-4400BB/C**

**CONTRACT: C204265**

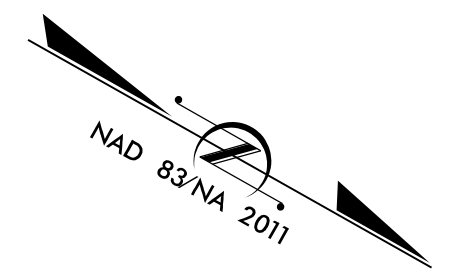
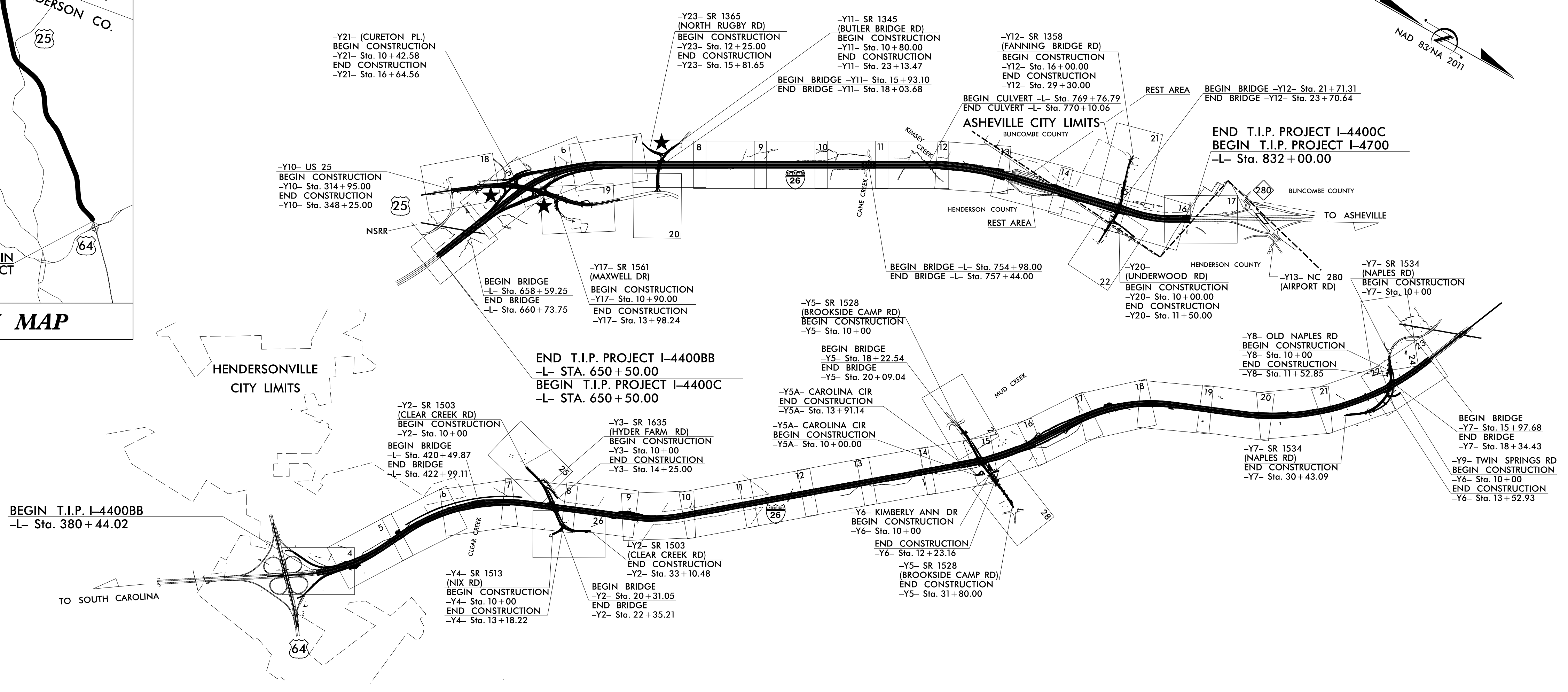
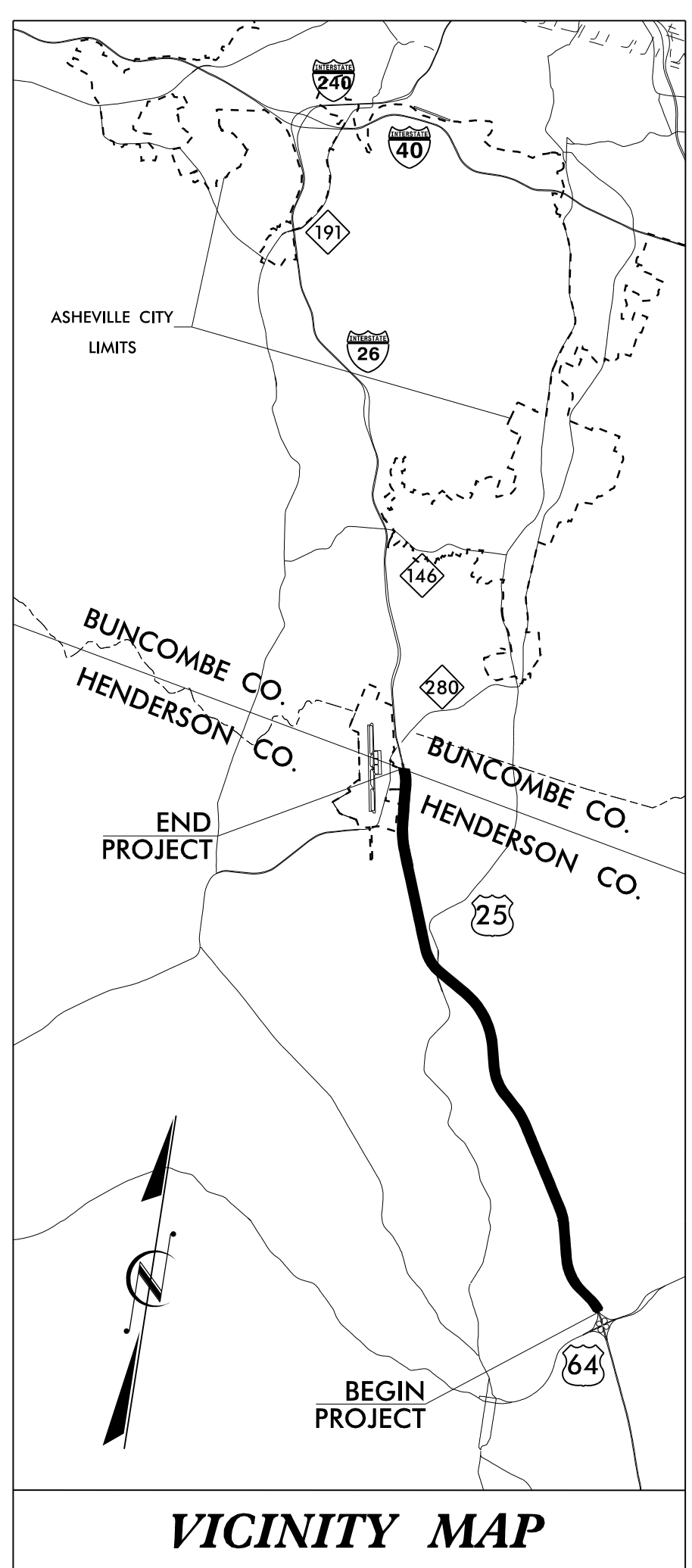
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# BUNCOMBE & HENDERSON COUNTIES

**LOCATION: I-26 BETWEEN US 64 TO SOUTH OF NC 280**  
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, CULVERTS, RETAINING WALLS, SOUND WALLS, REST AREA, SIGNALS, AND SIGNING**

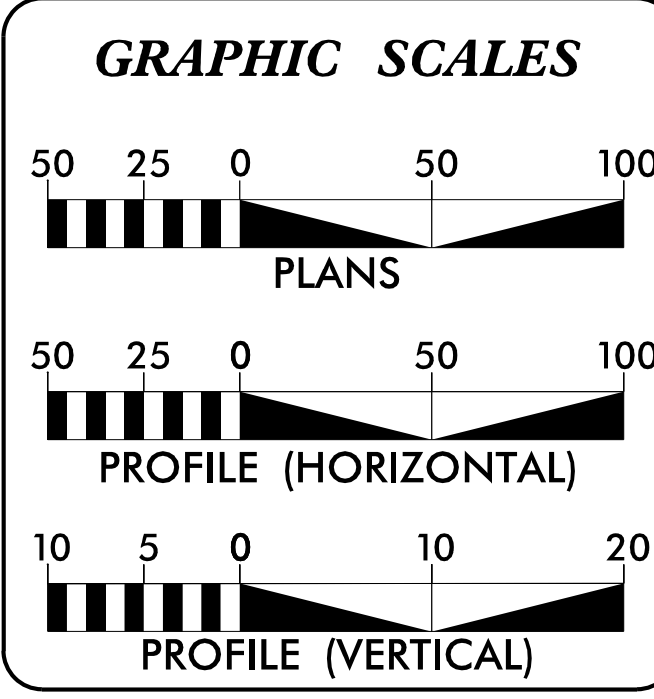
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-4400BB1-4400C	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34232.1.6	NHP-0026(015)	I-4400BB (P.E.)	
34232.2.10		I-4400BB (R/W/UTIL)	
34232.3.GV8	NHP-0026(015)	I-4400BB (CONST.)	
34232.1.FS4	NHPP-026-1(200)13	I-4400C (P.E.)	
34232.2.5		I-4400C (R/W)	
34232.2.7		I-4400C (UTIL)	
34232.3.5	NHPP-026-1(200)13	I-4400C (CONST.)	

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



**NOTE:**  
1. THIS IS A CONTROLLED- ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

★ PROPOSED TRAFFIC SIGNAL



**DESIGN DATA**

ADT 2019 = 65,900  
ADT 2040 = 91,000  
K = 10%  
D = 55%  
T = 15% \*  
V = 65 MPH\*\*

\* TTST = 11% DUAL 4%  
\*\*70MPH SOUTH OF US-25  
FUNC CLASS = INTERSTATE  
STATEWIDE TIER

**PROJECT LENGTH**

TOTAL LENGTH OF ROADWAY TIP PROJECT  
I-4400BB = 5.068 MI  
I-4400C = 3.351 MI

TOTAL LENGTH OF STRUCTURES OF TIP PROJECT  
I-4700BB = 0.047 MI  
I-4700C = 0.087 MI

TOTAL LENGTH OF TIP PROJECT  
I-4400BB = 5.115 MI  
I-4400C = 3.438 MI  
NOTE: LENGTHS WERE CALCULATED USING THE L ALIGNMENT

Prepared In the Office of:

**HNTB**

2018 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
JULY 2018 (I-4400C)  
FEBRUARY 2019 (I-4400BB)

**LETTING DATE:**  
SEPTEMBER 17, 2019

JOSEPH OLSON, P.E.  
PROJECT ENGINEER

MARC A. WHITMORE, P.E. (I-4400C)  
PROJECT DESIGN ENGINEER

MATTHEW KIRBY, P.E. (I-4400BB)  
PROJECT DESIGN ENGINEER

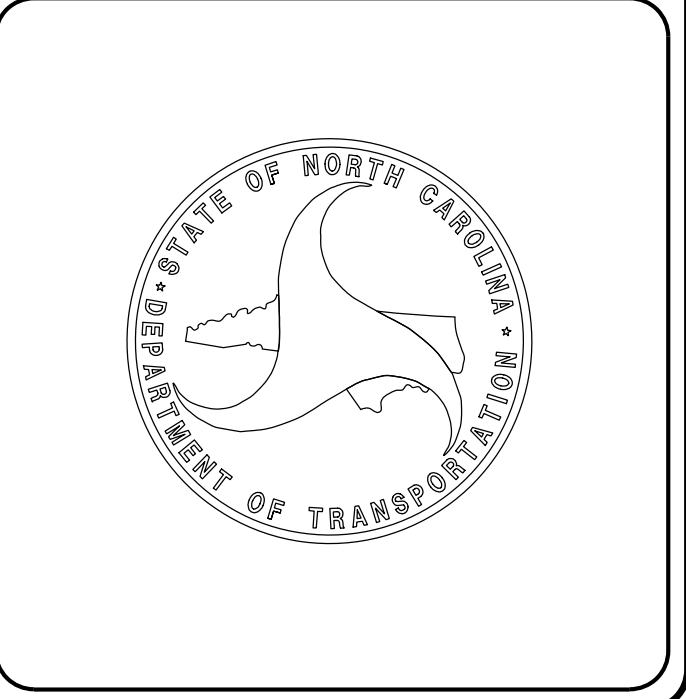
WANDA AUSTIN, P.E.  
NCDOT CONTACT

**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

**ROADWAY DESIGN ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.



7/24/2017  
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3:11 PM





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

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

CLEARING: CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD 11.

SUPERELEVATION: ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.05 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. 560.02

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.

SHOULDER DRAINS: SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 816.03 AND DETAILS IN PLANS AT LOCATIONS DIRECTED BY THE ENGINEER.

DRIVEWAYS: DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADIUS OR RADIUS AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

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

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.

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".

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 POWER - POWER(DISTRIBUTION)  
 .ATT - COMMUNICATIONS  
 .CHARTER - COMMUNICATIONS  
 .PSNC - GAS  
 .CITY OF ASHEVILLE - WATER  
 .MSD ENGINEERING - SEWER

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS EXCEPT AS SHOWN ON PLANS.

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

FENCING: ALL EXISTING C/A FENCE TO BE REMOVED.

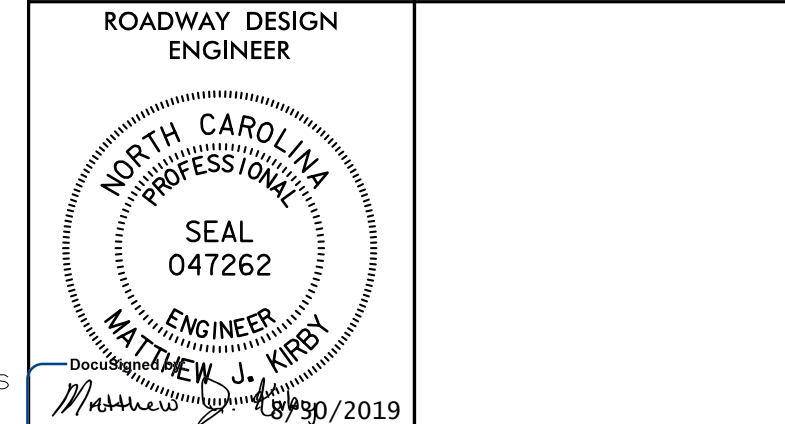
2018 ROADWAY ENGLISH STANDARD DRAWINGS EFF. 01-16-2018 REV.

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 11
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Super-elevation - Two Lane Pavement
225.05	Method of Obtaining Super-elevation - Divided Highways
225.06	Method of Grading Sight Distance at Intersections
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
275.01	Rock Plating
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills - Type I Standard Approach Fill
422.03	Reinforced Bridge Approach Fills - Type A Alternate Approach Fill for Integral Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.02	Method of Shoulder Construction - High Side of Super-elevated Curve - Method 11
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.01	Guide for Paving Shoulders Under Bridges - Method 1
654.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
DIVISION 7 - CONCRETE PAVEMENTS AND SHOULDERS	
700.01	Concrete Pavement Joints - Construction and Contraction Joints
700.02	Expansion Joint Layout - for Rigid Doweled Pavement at Bridges
700.03	Dowel Assembly
700.04	Concrete Pavement Header Board
700.05	Tying Proposed Pavement to Existing
710.01	Concrete Pavement - Station Marking
DIVISION 8 - INCIDENTALS	
816.01	Concrete Pads - for Shoulder Drain Installation
816.02	Aggregate Shoulder Drain
816.03	Geocomposite Shoulder Drain
816.04	Markers for Drainage Structure and Concrete Pad
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.21	Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew
838.27	Reinforced Concrete Endwall - for Single 60" Pipe 90 Skew
838.33	Reinforced Concrete Endwall - for Single 66" Pipe 90 Skew
838.39	Reinforced Concrete Endwall - for Single 72" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.51	Reinforced Brick Endwall - for Single 54" Pipe 90 Skew
838.57	Reinforced Brick Endwall - for Single 60" Pipe 90 Skew
838.63	Reinforced Brick Endwall - for Single 66" Pipe 90 Skew
838.69	Reinforced Brick Endwall - for Single 72" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad For Drainage Structures
840.04	Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.05	Brick Open Throat Catch Basin - 12" thru 48" Pipe
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
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
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow Slot Sag Grates
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
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
846.01	Concrete Curb, Gutter and Curb & Gutter
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement
862.02	Guardrail Installation
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.03	Drainage Ditches with Class 'A' Rip Rap
876.04	Drainage Ditches with Class 'B' Rip Rap

INDEX OF SHEETS

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2B-3	Pavement/Bridge Relationship Sketches
2B-4 THRU 2B-5	Shear Point/Cross-Section Layout Diagrams
2B-6 THRU 2B-11	Intersection Details
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2C-1 THRU 2C-15	Special Details
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2N-1 THRU 2N-11	Noise Wall Details
3B-1	Summary of Temporary Guardrail
3B-2	Summary of Guardrail
3B-3	Summary of Concrete Barrier
3B-4	Summaries of Pavement Removal, Shoulder Berm Gutter and Woven Wire Fence
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3B-6	Summary of Earthwork
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3P-1	Parcel Index Sheet
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29 THRU 58	Profile Sheets
TMP-1 THRU TMP-123	Traffic Management Plans
PMP-1 THRU PMP-13	Pavement Marking Plans
EC-1 THRU EC-56	Erosion Control Plans
RF-1	Reforestation Plan
SIGN-1 THRU SIGN-40	Signing Plans
ITS-1 THRU ITS-37	ITS Plans
UC-1 THRU UC-26	Utility Construction Plans
UO-1 THRU UO-13	Utilities by Others Plans
X-0	Cross Section Index
X-1A THRU X-1C	Cross Section Summaries
X-1 THRU X-295	Cross Sections - L, WEIGHA, WEIGHB, WEIGHC, WEIGHD
Y-1 THRU Y-139	Cross Sections - Y1RPA, Y1RPD, Y2, Y3, Y4, Y5, Y6, Y7, Y8, Y9
S1-1 THRU S1-46	EBL I-26 over Clear Creek Structure Plans
S2-1 THRU S2-52	WBL I-26 over Clear Creek Structure Plans
S3-1 THRU S3-30	Clear Creek Road over I-26 Structure Plans
S4-1 THRU S4-31	Brookside Camp Road over I-26 Structure Plans
S5-1 THRU S5-36	Naples Road over I-26 Structure Plans
C1-1 THRU C1-10	Featherstone Creek under I-26 Culvert Plans
C2-1 THRU C2-9	Byers Creek under I-26 Culvert Plans
W-1 THRU W-20	Retaining Wall Plans



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

30-AUG-2019 14:24 N:\reg\way\p-co\144000BB-IRDY\_Index-CenNotes.dgn

# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

## CONVENTIONAL PLAN SHEET SYMBOLS

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○
Computed Property Corner	-----
Property Monument	ECM
Parcel/Sequence Number	(23)
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-☠
Potential Contamination Area: Soil	☠-S-☠
Known Contamination Area: Water	☠-W-☠
Potential Contamination Area: Water	☠-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	-----
Proposed Lateral, Tail, Head Ditch	-----
False Sump	-----

### RAILROADS:

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

Note: Not to Scale

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

### 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	○
New Right of Way Line with Pin and Cap	○
New Right of Way Line with Concrete or Granite RW Marker	○
New Control of Access Line with Concrete C/A Marker	○
Existing Control of Access	○
New Control of Access	○
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	T
Proposed Guardrail	T
Existing Cable Guiderail	□
Proposed Cable Guiderail	□
Equality Symbol	⊕
Pavement Removal	⊗

### VEGETATION:

Single Tree	○
Single Shrub	○

Hedge	-----
Woods Line	-----
Orchard	-----
Vineyard	Vineyard

### EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊕
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.*)	-----
U/G Power Line LOS C (S.U.E.*)	-----
U/G Power Line LOS D (S.U.E.*)	-----

### 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.*)	-----
U/G Telephone Cable LOS C (S.U.E.*)	-----
U/G Telephone Cable LOS D (S.U.E.*)	-----
U/G Telephone Conduit LOS B (S.U.E.*)	-----
U/G Telephone Conduit LOS C (S.U.E.*)	-----
U/G Telephone Conduit LOS D (S.U.E.*)	-----
U/G Fiber Optics Cable LOS B (S.U.E.*)	-----
U/G Fiber Optics Cable LOS C (S.U.E.*)	-----
U/G Fiber Optics Cable LOS D (S.U.E.*)	-----

### WATER:

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

### TV:

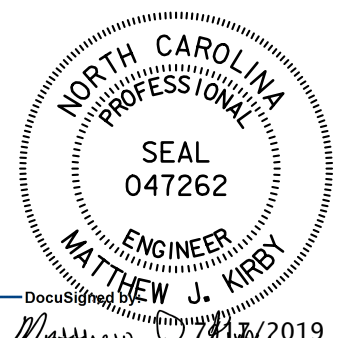

TV Pedestal	⊠
TV Tower	⊗
U/G TV Cable Hand Hole	-----
U/G TV Cable LOS B (S.U.E.*)	-----
U/G TV Cable LOS C (S.U.E.*)	-----
U/G TV Cable LOS D (S.U.E.*)	-----
U/G Fiber Optic Cable LOS B (S.U.E.*)	-----
U/G Fiber Optic Cable LOS C (S.U.E.*)	-----
U/G Fiber Optic Cable LOS D (S.U.E.*)	-----

### GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line LOS B (S.U.E.*)	-----
U/G Gas Line LOS C (S.U.E.*)	-----
U/G Gas Line LOS D (S.U.E.*)	-----
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.*)	-----
SS Forced Main Line LOS C (S.U.E.*)	-----
SS Forced Main Line LOS D (S.U.E.*)	-----

### MISCELLANEOUS:

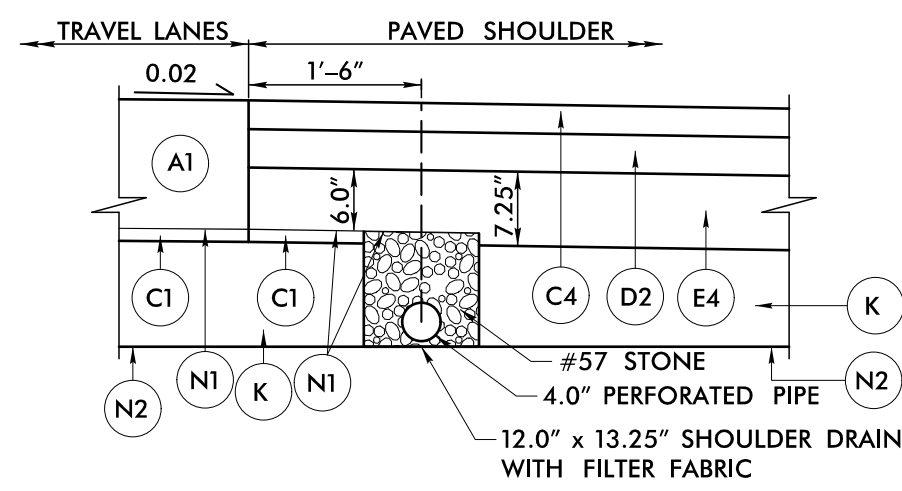
Utility Pole	●
Utility Pole with Base	⊠
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line LOS B (S.U.E.*)	-----
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	UST
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	⊕
Abandoned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

PROJECT REFERENCE NO.	SHEET NO.
1-4400BB	2A-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
	
Matthew J. Kirby 7/18/2019	Joseph Holland 7/18/2019
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

FINAL PAVEMENT SCHEDULE	
A1	13.0" PORTLAND CEMENT CONCRETE PAVEMENT
C1	PROP. APPROX. 1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS PER SQ. YD.
C3	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS PER SQ. YD. IN EACH OF TWO LAYERS
C4	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS PER SQ. YD. IN EACH OF TWO LAYERS
C5	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS PER SQ. YD.
C6	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D AT AN AVERAGE RATE OF 168 LBS PER SQ. YD. IN EACH OF TWO LAYERS
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 285 LBS PER SQ. YD.
D2	PROP. APPROX. 4.0" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS PER SQ. YD.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS PER SQ. YD.
E2	PROP. APPROX. 5.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS PER SQ. YD.
E3	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS PER SQ. YD.
E4	6.0" OR 7.25" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 OR 413.25 LBS PER SQ. YD. IN EACH OF TWO LAYERS (SEE SHOULDER DRAIN DETAIL SHEET 2A-2)
K	12" CLASS IV SUBGRADE STABILIZATION
N1	NONWOVEN GEOTEXTILE INTERLAYER
N2	GEOTEXTILE FOR SOIL STABILIZATION
R1	SHOULDER BERM GUTTER
R2	SINGLE SLOPE CONCRETE BARRIER
R3	PRECAST REINFORCED CONCRETE BARRIER WITH GUTTER
R4	CONCRETE BARRIER RAIL WITH MOMENT SLAB
R5	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
Y	MILLED RUMBLE STRIPS

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

REVISIONS



**SHOULDER DRAIN DETAIL**  
SEE SUMMARY TABLE FOR LOCATIONS

**HNTB** HNTB NORTH CAROLINA, P. C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

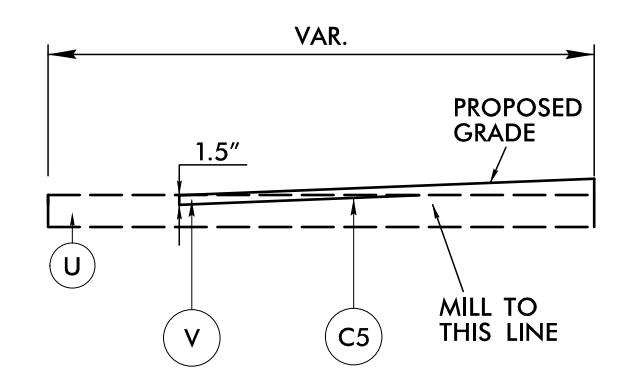
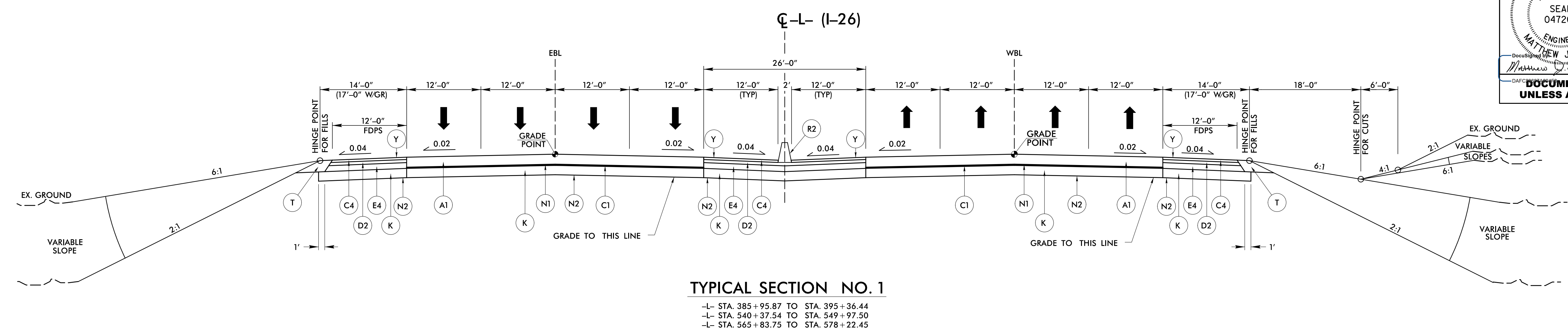
PROJECT REFERENCE NO. I-4400BB	SHEET NO. 2A-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

**SHOULDER DRAIN SUMMARY**

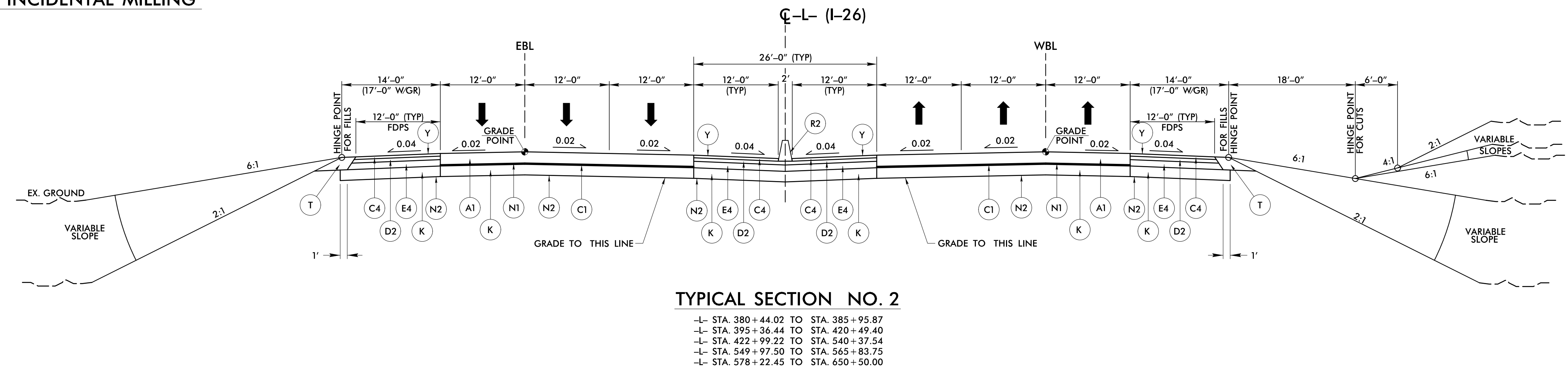
LINE	LOCATION	BEGIN STA.	END STA.	OUTLET LOCATIONS	LINE	LOCATION	BEGIN STA.	END STA.	OUTLET LOCATIONS
-L-	OUTSIDE SHOULDER (EASTBOUND)	380+44.02	381+87.34	381+87.34 (2GI 0402)					
-L-	OUTSIDE SHOULDER (EASTBOUND)	385+00.00	402+00.91	387+00, 388+37.45 (2GI 0507), 391+13.21 (2GI 0512), 394+00, 397+00, 400+89.02 (2GI 0528), 402+00.91	-L-	OUTSIDE SHOULDER (WESTBOUND)	398+43.83	420+00.00	400+90 (2GI 0524), 403+50, 404+30 (2GI 0606), 407+00 (2GI 0624), 409+00 (2GI 0616), 410+75 (2GI 0615), 412+60 (2GI 0612), 414+30 (2GI 0611), 416+95 (2GI 0709), 418+75 (GI 0702), 420+00 (GI 0703)
-L-	OUTSIDE SHOULDER (EASTBOUND)	434+07.40	550+00.00	434+07.40(2GI 0806), 436+90(2GI 0813), 440+00(2GI 0825), 441+40(2GI 0827), 442+90(2GI 0830), 444+90(2GI 0904), 448+00(2GI 0910), 450+50(2GI 0915), 453+20(2GI 0917), 455+00, 456+90 (2GI 0924), 457+40 (2GI 1004), 460+00, 465+50 (2GI 1011), 470+50, 471+60 (2GI 1105), 474+50, 477+50, 480+50, 483+50, 486+50, 488+00, 492+30 (2GI 1213), 495+40(2GI 1217), 496+00(2GI 1218), 498+90 (2GI 1224), 501+50 (2GI 1302), 504+50 (2GI 1310), 507+90 (2GI 1316), 510+00, 511+30 (2GI 1320), 513+00, 514+50 (2GI 1402), 517+50(2GI 1410), 518+50 (2GI 1409), 521+00, 523+50, 525+50 (2GI 1428), 528+00 (2GI 1502), 530+00 (2GI 1518), 531+75 (2GI 1506), 533+85.04 (2GI 1519), 538+10 (2GI 1509), 540+75 (2GI 1625), 541+30 (2GI 1602), 543+75 (2GI 1612), 545+00 (2GI 1627), 546+95 (2GI 1629), 547+75 (2GI 1622)	-L-	OUTSIDE SHOULDER (WESTBOUND)	423+25.00	456+49.99	423+70 (2GI 0714), 426+50 (GI 0727), 428+70 (2GI 0733), 431+00, 434+00, 434+55.51 (2GI 0811), 437+50 (2GI 0818), 438+50 (2GI 0819), 441+50, 443+00, 445+00, 448+00, 450+50 (GI 0912), 453+20 (2GI 0920), 455+00
-L-	OUTSIDE SHOULDER (EASTBOUND)	555+60.00	562+00.00	555+60(DI 1727), 558+60(2GI 1709), 560+00, 561+50(GI 1715)	-L-	OUTSIDE SHOULDER (WESTBOUND)	470+54.77	536+46.96	471+60 (2GI 1108), 474+50, 475+93.08 (2GI 1112), 480+25 (2GI 1116), 483+00, 485+50 (2GI 1203), 488+00 (2GI 1226), 490+00, 492+30 (2GI 1220), 495+40 (2GI 1215), 498+00, 499+95 (2GI 1305), 503+00, 505+00 (2GI 1314), 507+90 (2GI 1319), 511+30 (2GI 1324), 513+20 (2GI 1406), 515+00, 516+60 (2GI 1414), 519+50 (2GI 1426), 522+10 (2GI 1427), 523+00 (2GI 1435), 525+50 (2GI 1433), 528+50, 530+50, 533+50
-L-	OUTSIDE SHOULDER (EASTBOUND)	588+31.51	650+50.00	589+10 (2GI 1914), 590+00 (2GI 1916), 592+00, 595+00, 598+00, 601+00, 604+00, 605+50, 610+00, 613+00, 615+20, 618+20, 621+20 (2GI 2114), 624+00, 626+50, 627+50 (2GI 2215), 629+50 (2GI 2217), 632+00, 634+70 (2GI 2221), 636+50 (2GI 2222), 638+00, 638+90 (2GI 2307), 641+00 (2GI 2310), 643+00, 645+00 (GI 2320), 647+60 (2GI 2326), 650+00 (2GI 2329)	-L-	OUTSIDE SHOULDER (WESTBOUND)	553+19.09	561+00.00	553+19.09 (2GI 1701), 558+90 (2GI 1714)
-L-	MEDIAN SHOULDER (EASTBOUND)	398+53.83	420+00.00	400+50 (2GI 0530), 400+90 (2GI 0527), 404+30 (2GI 0608), 407+50 (2GI 0620), 409+00 (2GI 0618), 412+60 (2GI 0614), 415+25 (2GI 0712), 418+70 (2GI 0705), 420+00 (2GI 0707)	-L-	OUTSIDE SHOULDER (WESTBOUND)	565+00.00	602+55.38	565+00, 570+00 (2GI 1804), 572+00 (2GI 1805), 573+20 (2GI 1806), 574+50 (2GI 1808), 577+80 (2GI 1820), 581+20 (2GI 1908), 585+00 (2GI 1904), 587+20 (2GI 1926), 589+30, 590+00, 591+00, 593+00, 595+00, 596+30 (2GI 2003), 599+50 (2GI 2007)
-L-	MEDIAN SHOULDER (EASTBOUND)	423+25.00	456+49.99	423+60 (2GI 0716), 426+30 (2GI 0725), 428+70 (2GI 0731), 431+50 (2GI 0803), 434+10 (2GI 0807), 436+85 (2GI 0814), 437+50 (2GI 0816), 441+45 (2GI 0837), 442+90 (2GI 0831), 444+90 (2GI 0903), 448+00 (2GI 0909), 450+50 (2GI 0914), 453+20 (2GI 0918)	-L-	MEDIAN SHOULDER (WESTBOUND)	380+44.02	400+95.00	NONE 381+50 (2GI 0404), 384+95 (2GI 0411), 387+50 (2GI 0505), 391+20 (2GI 0511), 394+00 (2GI 0523), 395+50 (2GI 0521), 398+00 (2GI 0517), 400+95 (2GI 0526)
-L-	MEDIAN SHOULDER (EASTBOUND)	470+54.77	536+46.96	471+60 (2GI 1106), 476+00 (2GI 1110), 480+20 (2GI 1114), 483+90 (2GI 1118), 485+50 (2GI 1201), 488+00 (2GI 1207), 492+30 (2GI 1212), 495+50 (2GI 1216), 498+90 (2GI 1223), 501+50 (2GI 1303), 504+50 (2GI 1311), 507+90 (2GI 1317), 511+30 (2GI 1322), 514+50 (2GI 1403), 517+50 (2GI 1411), 520+50 (2GI 1423), 522+10 (2GI 1421), 523+00 (2GI 1419), 524+80 (2GI 1431), 528+00 (2GI 1503), 531+75(2GI 1507), 535+80(2GI 1512)	-L-	MEDIAN SHOULDER (WESTBOUND)	434+07.40	563+58.75	434+07.40 (2GI 0808), 436+90 (2GI 0815), 437+50 (2GI 0817), 441+50 (2GI 0836), 442+90 (2GI 0832), 444+90 (2GI 0902), 448+00 (2GI 0908), 450+50 (2GI 0913), 453+20 (2GI 0919), 456+90 (GI 0926), 457+40 (2GI 1002), 465+50 (2GI 1010), 468+20 (2GI 1007), 471+60 (2GI 1107), 476+00 (2GI 1111), 480+25 (2GI 1115), 483+90 (2GI 1119), 485+50 (2GI 1202), 488+00 (2GI 1208), 492+30 (2GI 1211), 495+50 (2GI 1215), 498+90 (2GI 1222), 501+50 (2GI 1304), 504+50 (2GI 1312), 507+90 (2GI 1318), 511+30 (2GI 1323), 514+50 (2GI 1404), 517+50 (2GI 1412), 520+50 (2GI 1424), 522+10 (2GI 1422), 523+10 (2GI 1420), 524+80 (2GI 1432), 528+00 (2GI 1504), 531+75 (2GI 1508), 535+80 (2GI 1513), 538+25 (2GI 1516), 541+30 (2GI 1604), 543+70 (2GI 1614), 546+95 (2GI 1631), 548+00 (2GI 1619), 551+30 (2GI 1621), 554+70 (2GI 1705), 558+85 (2GI 1712), 561+50 (2GI 1717)
-L-	MEDIAN SHOULDER (EASTBOUND)	554+70.00	602+55.38	554+70(2GI 1704), 558+85(2GI 1711), 561+50(2GI 1716), 564+50(2GI 1723), 566+00(2GI 1721), 570+00(2GI 1813), 572+00(2GI 1811), 573+90(2GI 1816), 577+75(2GI 1818), 581+20(2GI 1906), 585+00(2GI 1902), 587+20(2GI 1911), 589+30(2GI 1917), 590+00(2GI 1920), 591+00(2GI 1922), 594+00(2GI 1924), 596+30(2GI 2001), 599+50(2GI 2004)	-L-	MEDIAN SHOULDER (WESTBOUND)	588+31.51	650+50.00	589+35 (2GI 1918), 590+00 (2GI 1921), 591+00 (2GI 1923), 594+00 (2GI 1925), 596+35 (2GI 2002), 599+50 (2GI 2005), 602+63 (2GI 2008), 605+80 (2GI 2014), 608+75 (2GI 2023), 609+75 (2GI 2122), 612+50 (2GI 2102), 615+25 (2GI 2108), 616+70 (2GI 2111), 618+10 (2GI 2112), 621+15 (2GI 2116), 623+20 (2GI 2204), 624+00 (2GI 2203), 628+21.12 (2GI 2210), 630+50 (2GI 2211), 635+25 (2GI 2224), 637+50 (2GI 2303), 641+00 (2GI 2308), 645+00 (2GI 2318), 648+70 (2GI 2331)
-L-	MEDIAN SHOULDER (EASTBOUND)	649+87.20	650+50.00	NONE					

REVISIONS

PROJECT REFERENCE NO. <b>1-4400BB</b>	SHEET NO. <b>2A-3</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



**DETAIL FOR INCIDENTAL MILLING**



**TYPICAL SECTION NO. 2**

A1	13.0" FCCP
C1	1.25" S9.5B
C3	3" S9.5B
C4	3" S9.5C
C5	1.5" S9.5C
C6	3" S9.5D
D1	2.5" I19.0C
D2	4" I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	5.5" B25.0C
E4	6.0" OR 7.25" B25.0C *
K	12" CLASS IV SUBGRADE STABILIZATION
N1	NONWOVEN GEOTEXTILE INTERLAYER
N2	GEOTEXTILE FOR SOIL STABILIZATION
R1	CONC. SHOULDER BERM GUTTER
R2	SINGLE SLOPE CONCRETE BARRIER
R3	PRECAST REINFORCED CONC. BARRIER WITH GUTTER
R4	CONC. BARRIER RAIL WITH MOMENT SLAB
R5	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
Y	MILLED RUMBLE STRIPS

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE  
\*SEE SHOULDER DRAIN DETAIL SHEET 2A-2

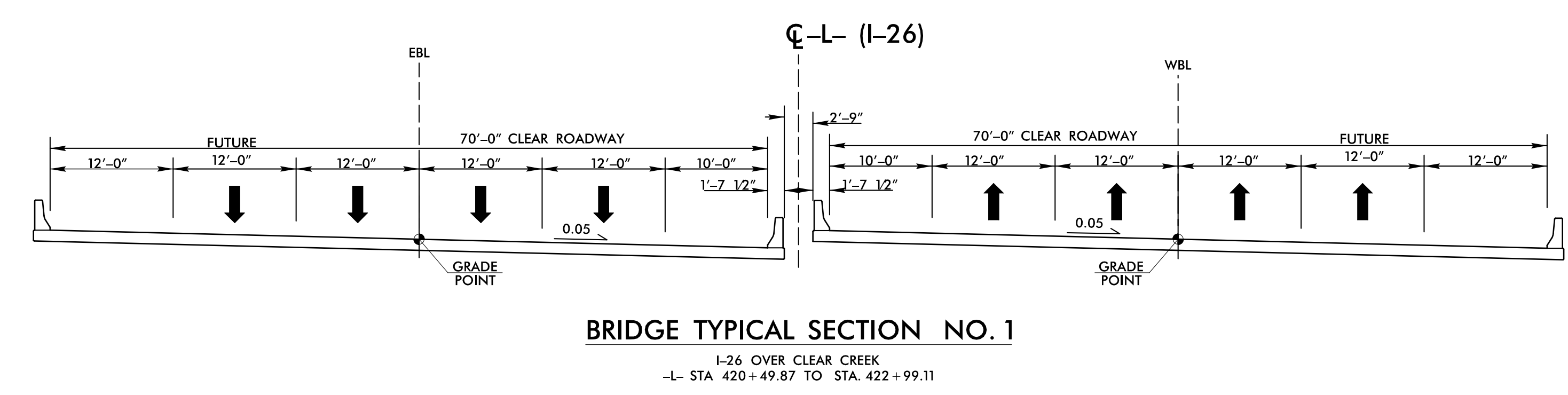
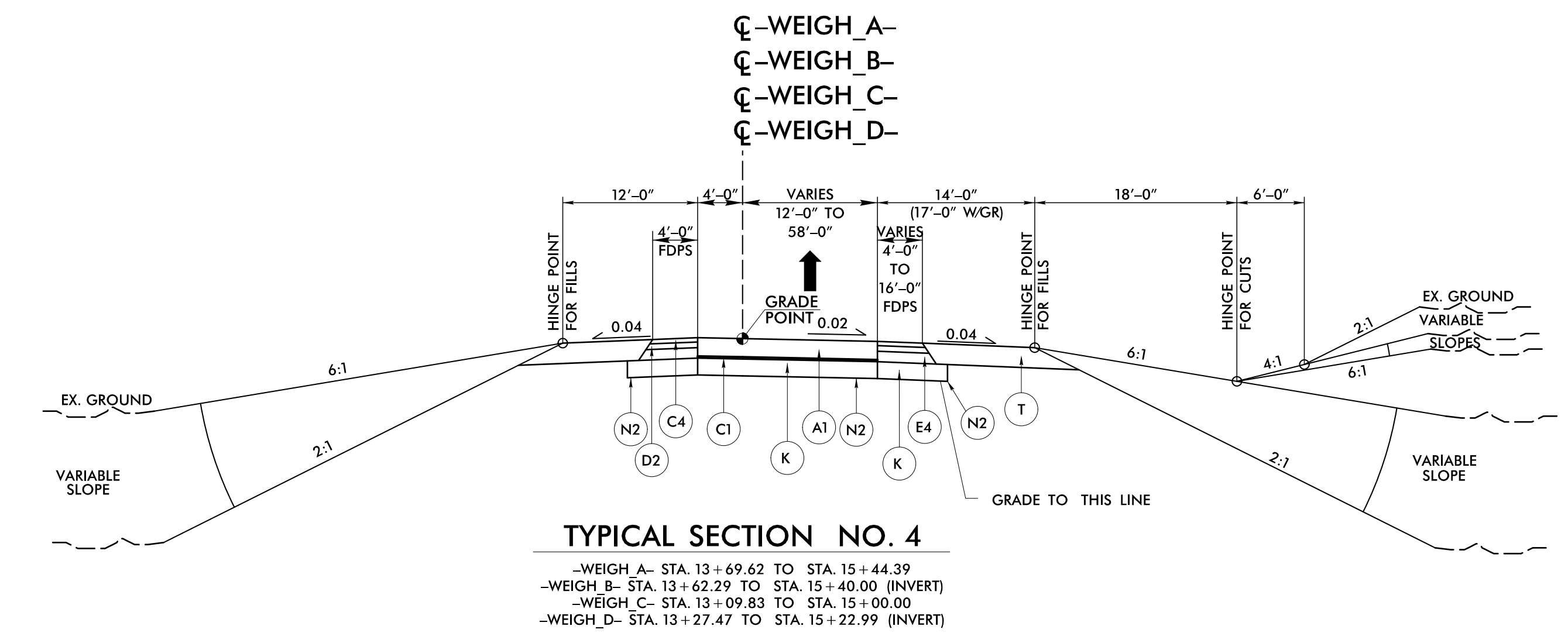
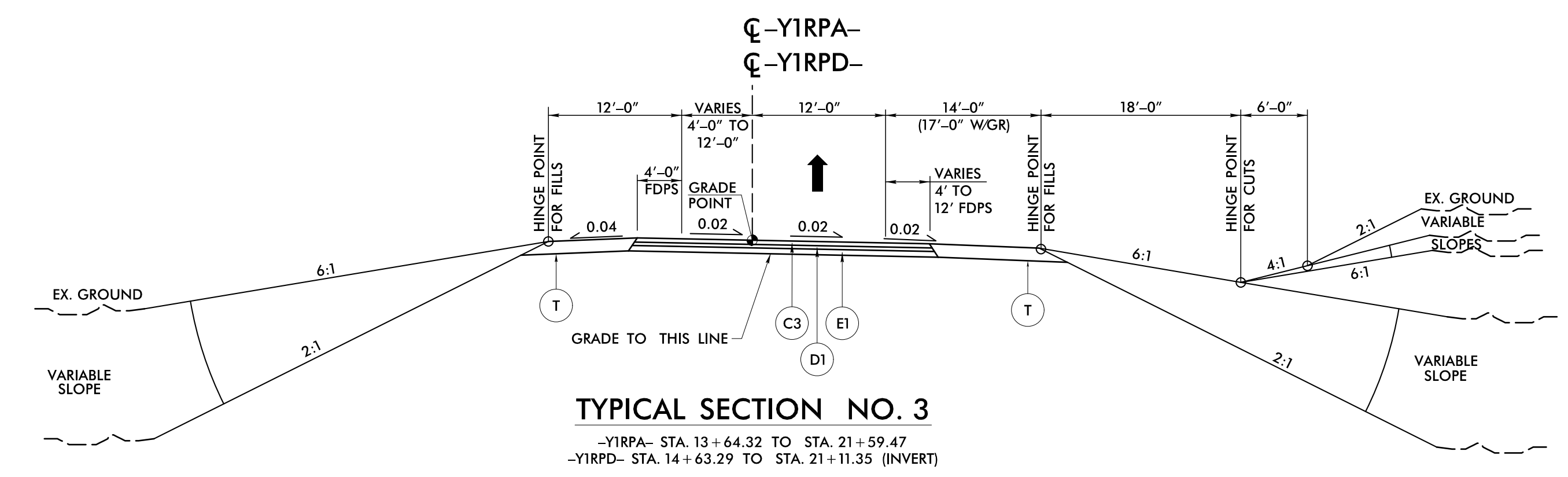
REVISIONS

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HNTB

NOTE: SEE PLANS FOR SUPERELEVATIONS, TURN LANES, MONOLITHIC ISLANDS, CURB AND GUTTER, AND LANE TAPER LOCATIONS.



PROJECT REFERENCE NO. <b>1-4400BB</b>	SHEET NO. <b>2A-4</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



A1	13.0" PCCP
C1	1.25" S9.5B
C3	3" S9.5B
C4	3" S9.5C
C5	1.5" S9.5C
C6	3" S9.5D
D1	2.5" I19.0C
D2	4" I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	5.5" B25.0C
E4	6.0" OR 7.25" B25.0C *
K	12" CLASS IV SUBGRADE STABILIZATION
N1	NONWOVEN GEOTEXTILE INTERLAYER
N2	GEOTEXTILE FOR SOIL STABILIZATION
R1	CONC. SHOULDER BERM GUTTER
R2	SINGLE SLOPE CONCRETE BARRIER
R3	PRECAST REINFORCED CONC. BARRIER WITH GUTTER
R4	CONC. BARRIER RAIL WITH MOMENT SLAB
R5	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
Y	MILLED RUMBLE STRIPS

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

\*SEE SHOULDER DRAIN DETAIL SHEET 2A-2

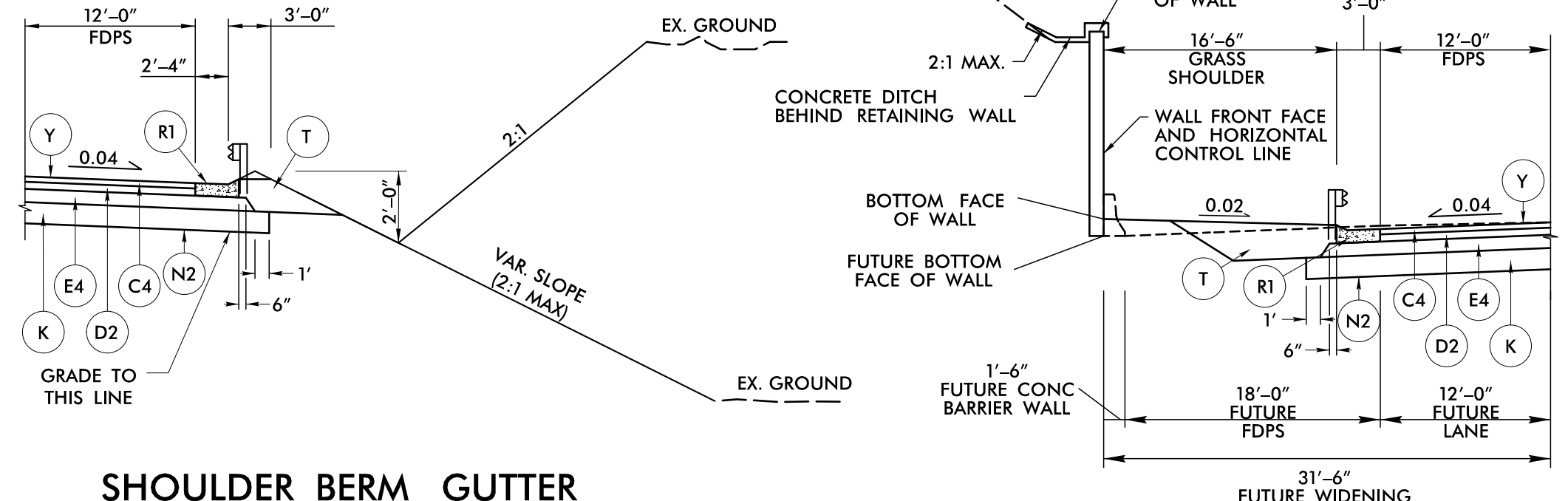
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HNTB

NOTE: SEE PLANS FOR SUPERELEVATIONS, TURN LANES, MONOLITHIC ISLANDS, CURB AND GUTTER, AND LANE TAPER LOCATIONS.

Professional Engineer seals for Matthew J. Kirby and Joseph Holland, North Carolina Professional Engineer.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SHOULDER BERM GUTTER AND GUARDRAIL DETAIL

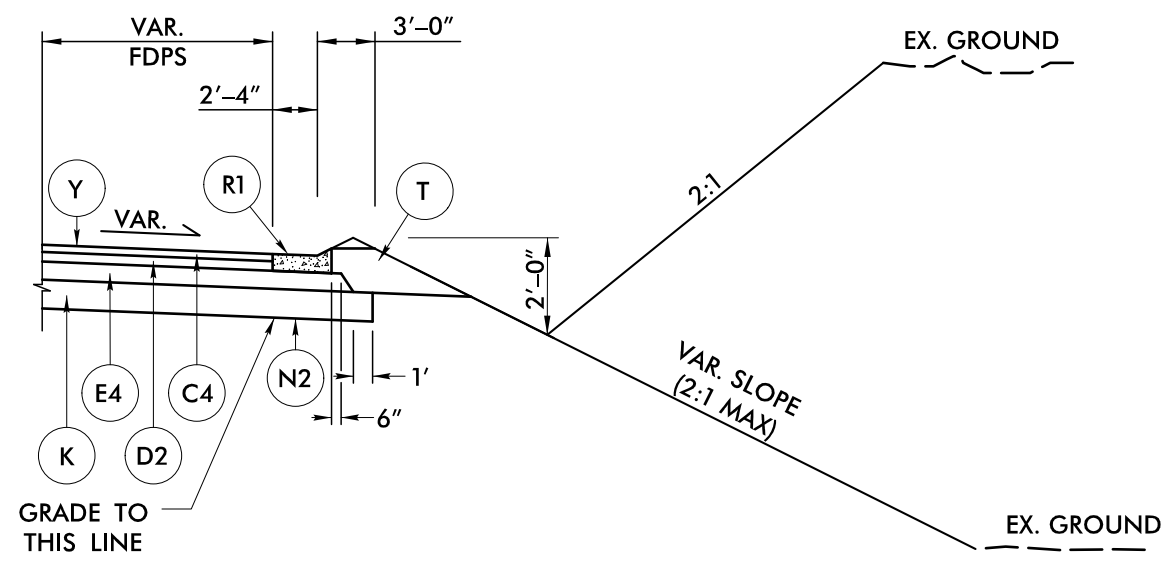
USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1, 2, 3 & 4

- YIRPD- STA. 11+80.00 TO -L- STA. 400+97.00 RT
-L- STA. 391+70.00 TO -L- STA. 394+20.00 LT (INVERT)
-L- STA. 403+13.00 TO STA. 408+73.00 RT
-L- STA. 404+23.00 TO STA. 406+73.00 LT (INVERT)
-L- STA. 428+18.26 TO STA. 463+16.00 LT (INVERT)
-L- STA. 436+43.00 TO STA. 440+68.00 RT
-L- STA. 449+00.00 TO STA. 462+40.00 RT
-L- STA. 470+71.25 TO STA. 473+15.00 LT (INVERT)
-L- STA. 475+50.00 TO STA. 480+25.00 RT
-L- STA. 483+90.00 TO STA. 500+00.00 RT
-L- STA. 488+48.00 TO STA. 519+10.50 LT (INVERT)
-L- STA. 506+12.50 TO STA. 511+02.00 RT
-L- STA. 518+61.00 TO STA. 523+83.00 RT
-L- STA. 524+75.00 TO STA. 548+50.00 LT (INVERT)
-L- STA. 528+79.00 TO STA. 529+50.00 RT
-L- STA. 535+83.00 TO STA. 541+80.00 RT
-WEIGH D- STA. 12+47.00 TO STA. 10+47.00 LT (INVERT)
-WEIGH A- STA. 13+31.00 RT TO -L- STA. 590+80.50 LT (INVERT)
-L- STA. 576+40.00 TO STA. 588+37.50 RT
-L- STA. 596+25.00 TO STA. 612+50.00 RT
-L- STA. 606+00.00 TO STA. 614+00.00 LT (INVERT)
-L- STA. 616+65.00 TO STA. 617+80.00 RT
-L- STA. 619+00.00 TO STA. 620+87.50 LT (INVERT)
-L- STA. 625+12.50 TO STA. 627+00.00 RT
-L- STA. 627+49.00 TO STA. 636+50.00 LT (INVERT)
-L- STA. 635+37.50 TO STA. 646+50.00 RT
-L- STA. 638+87.50 STA. 650+50.00 LT (INVERT)

OFFSET CUT WALL WITH SHOULDER BERM GUTTER AND GUARDRAIL DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTION NO.2

- L- STA. 437+77.00 TO STA. 439+51.00 LT
-L- STA. 438+79.00 TO STA. 440+65.00 RT (INVERT)
-L- STA. 533+52.00 TO STA. 540+68.00 LT
-L- STA. 539+30.00 TO STA. 541+29.00 RT (INVERT)
-L- STA. 637+28.00 TO STA. 639+55.00 RT (INVERT)
-L- STA. 638+98.00 TO STA. 640+91.00 LT



NOISEWALL DETAIL AT TOP OF CUT SLOPE

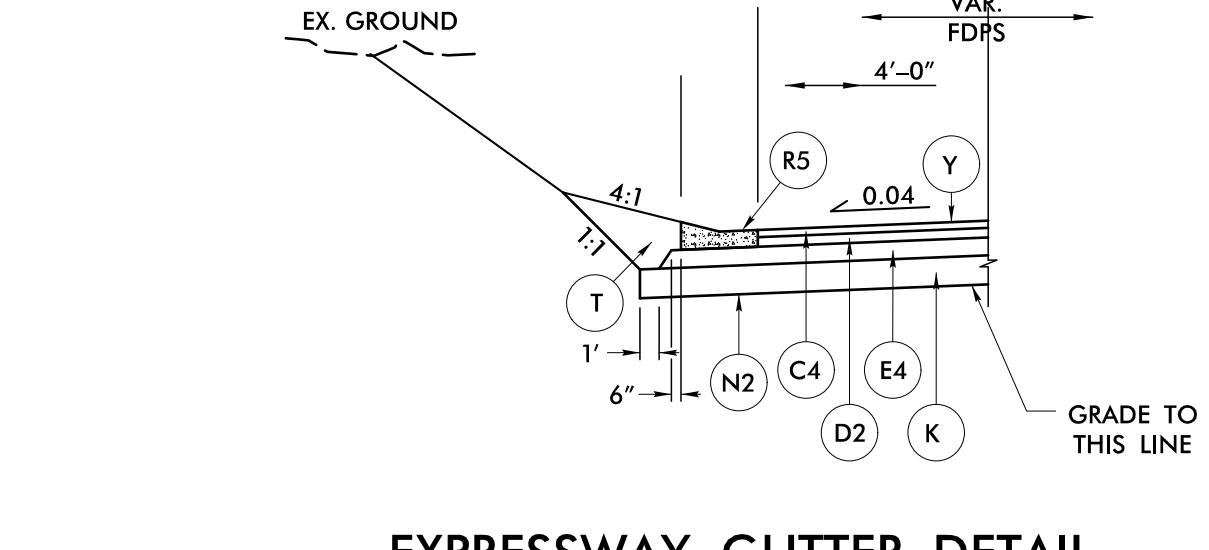
USE IN CONJUNCTION WITH TYPICAL SECTIONS NO.1 & 2

- L- STA. 391+69.27 TO STA. 399+73.84 LT (INVERT)
-L- STA. 404+22.13 TO STA. 414+98.66 LT (INVERT)
-L- STA. 506+44.65 TO STA. 511+02.57 RT
-L- STA. 513+42.57 TO STA. 523+83.67 RT
-L- STA. 528+78.65 TO STA. 539+71.88 RT
-WEIGH C- STA. 14+87.22 RT TO -WEIGH D- STA. 10+46.18 LT (INVERT)
-L- STA. 576+39.06 TO STA. 577+49.99 RT

NOISEWALL DETAIL AT EDGE OF SHOULDER

USE IN CONJUNCTION WITH TYPICAL SECTIONS NO.1 & 2

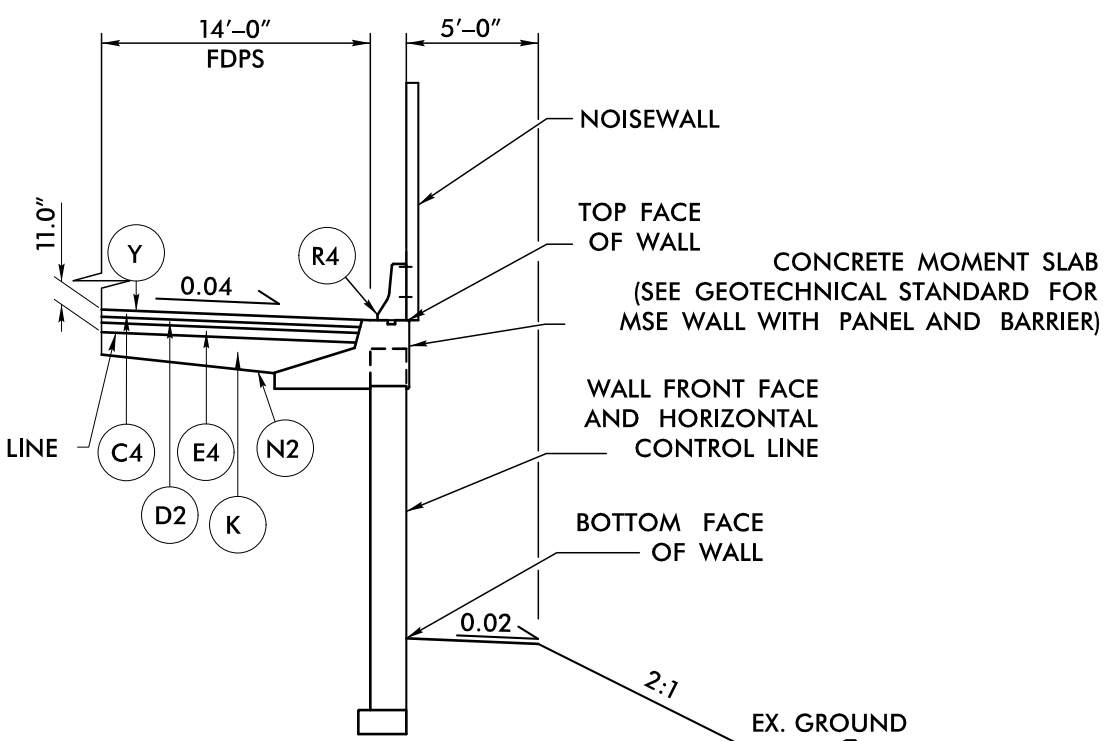
- YIRPA- STA. 12+86.00 RT TO -L- 385+88.00 LT (INVERT)
-L- STA. 388+32.00 TO -L- 391+69.27 LT (INVERT)
-L- STA. 399+13.83 TO STA. 404+22.13 LT (INVERT)
-L- STA. 414+98.66 TO STA. 428+11.43 LT (INVERT)
-L- STA. 511+02.57 TO STA. 513+42.57 RT
-L- STA. 523+83.67 TO STA. 528+78.65 RT
-L- STA. 541+80.45 RT TO -WEIGH C- STA. 14+87.22 RT
-WEIGH D- STA. 10+46.18 LT (INVERT) TO -L- STA. 576+39.06 RT



EXPRESSWAY GUTTER DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2

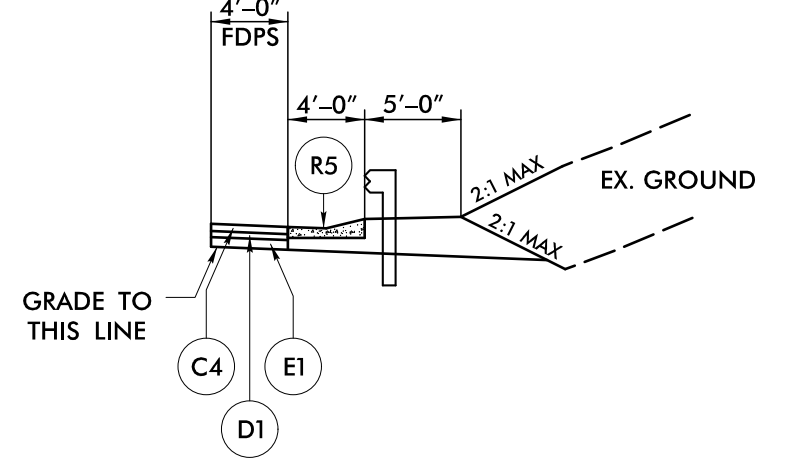
- L- STA. 463+36.00 TO STA. 470+25.00 LT
-L- STA. 618+00.00 TO STA. 623+80.00 RT (INVERT)



FILL WALL WITH MOMENT SLAB AND NOISEWALL DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTIONS NO.1 & 2

- L- STA. 385+88.00 TO STA. 388+32.00 LT



EXPRESSWAY GUTTER DETAIL

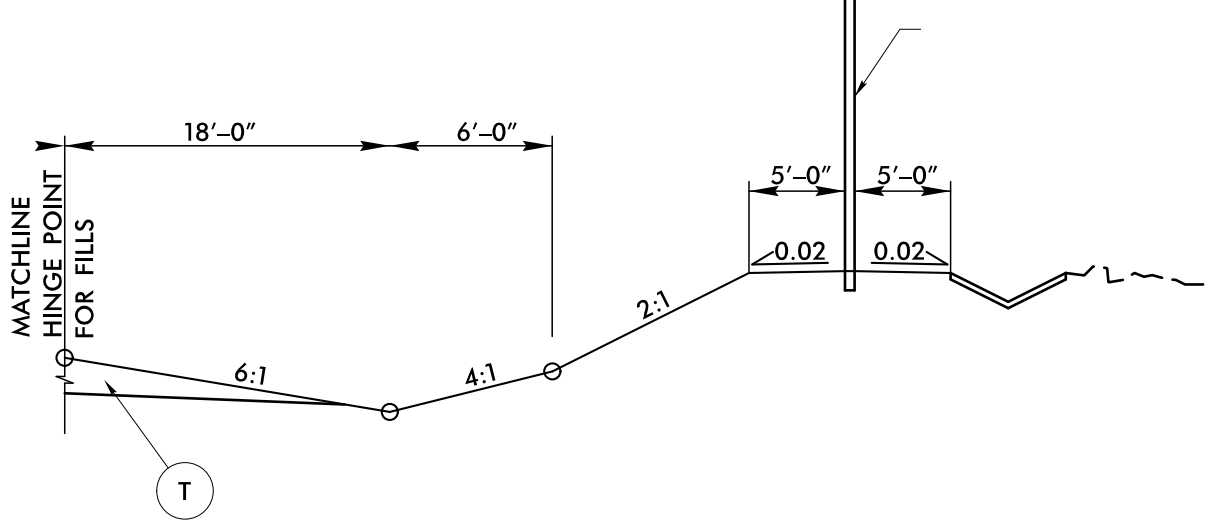
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 3

- YIRPD- STA. 11+80.00 TO STA. 14+39.00 LT

SHOULDER BERM GUTTER DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2

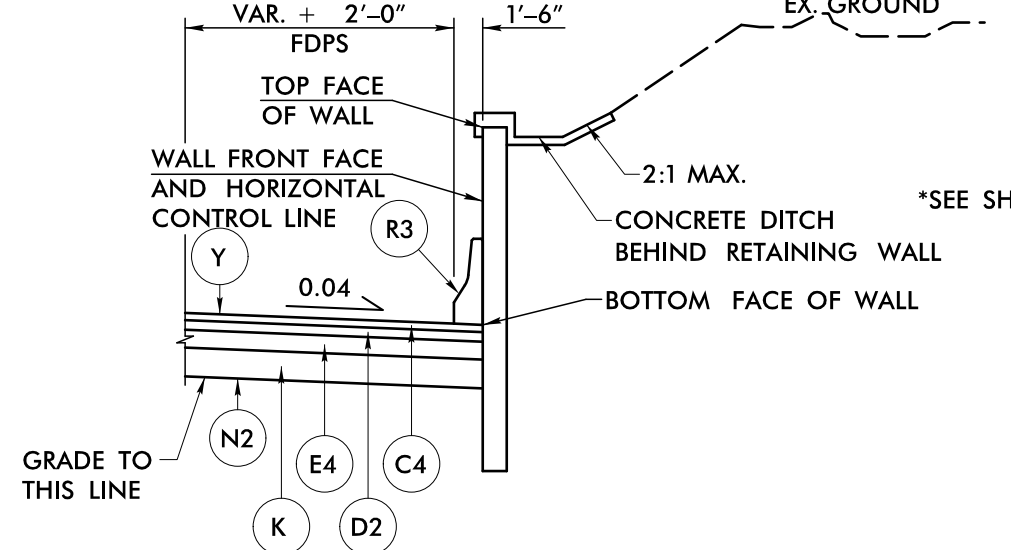
- L- STA. 624+00.00 TO STA. 625+12.50 RT



NOISEWALL DETAIL AT TOP OF CUT SLOPE

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1 & 3

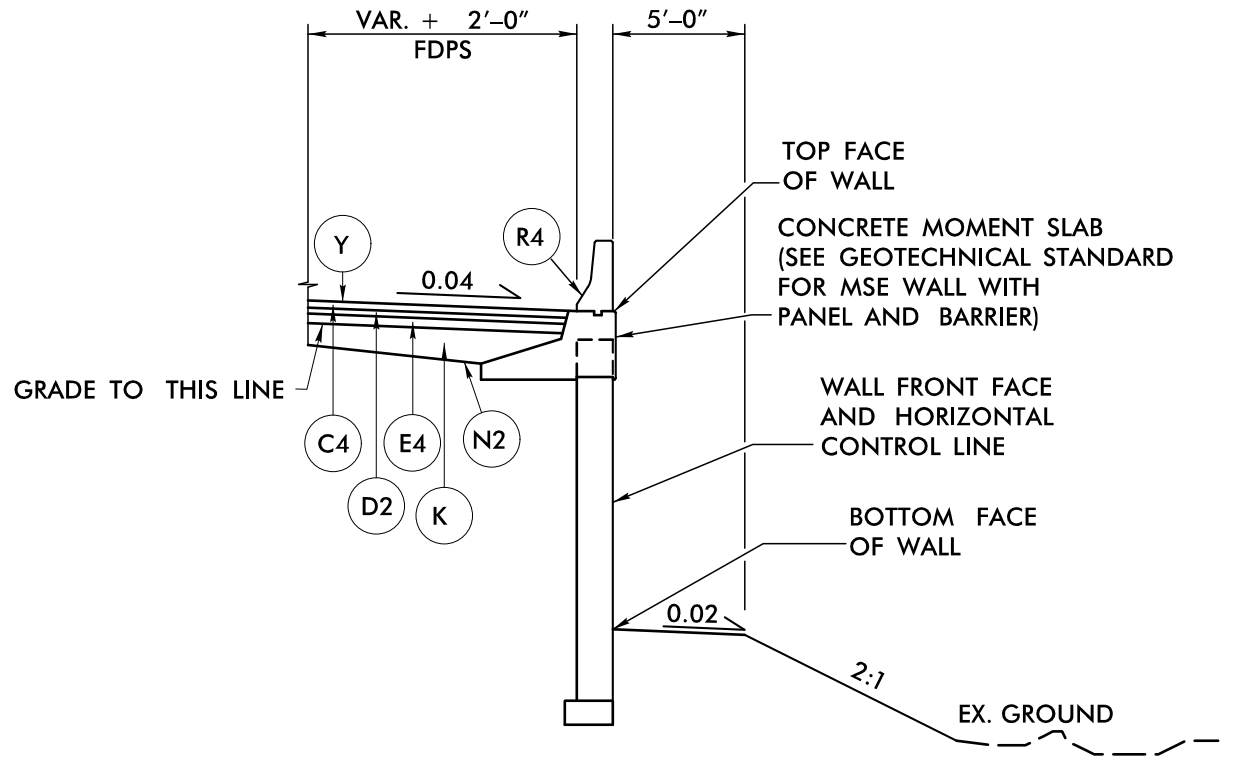
- YIRPA- STA. 18+10.68 TO STA. 12+86.00 RT



CUT WALL DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTION NO.2

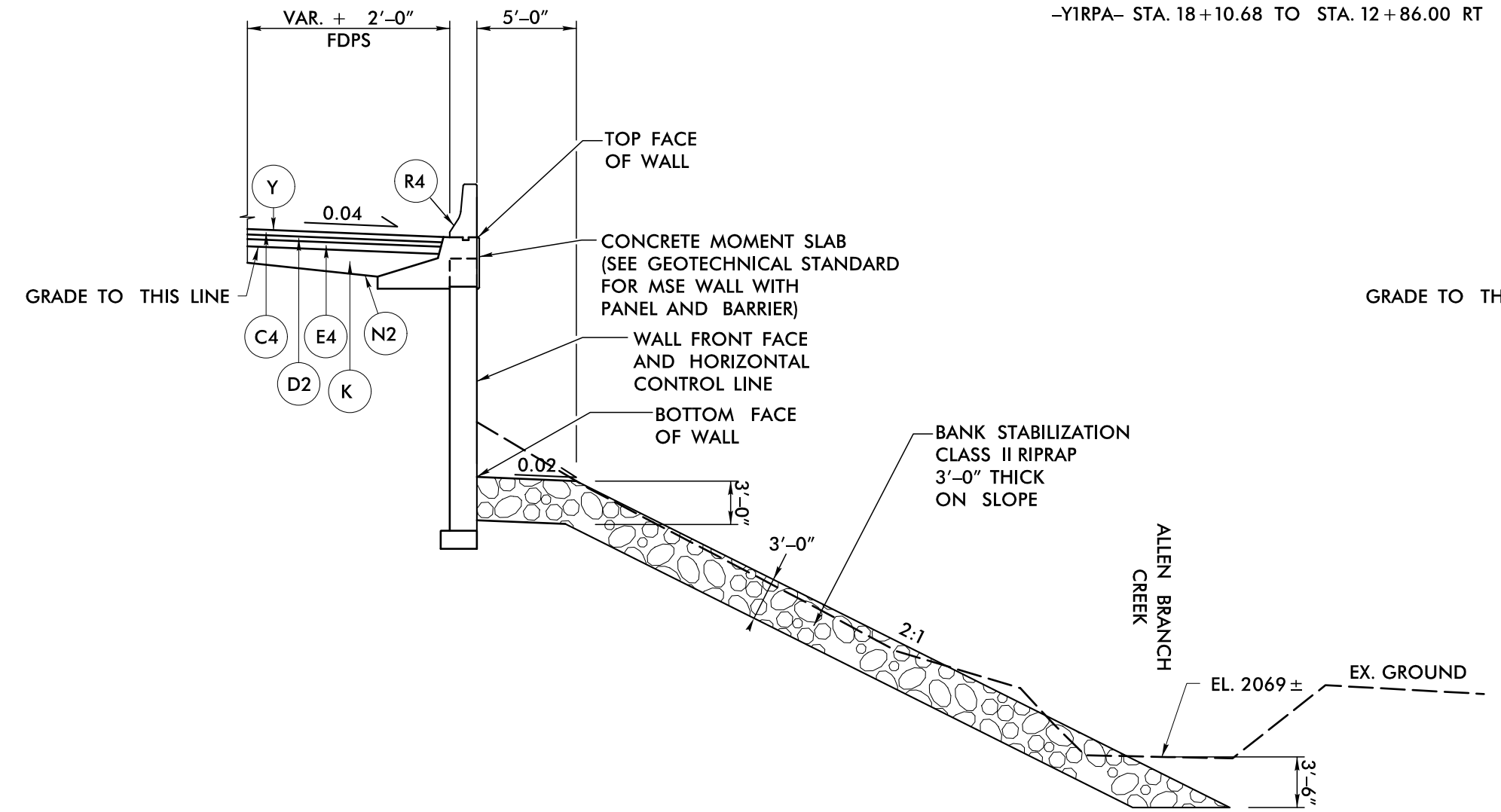
- L- STA. 408+73.00 TO STA. 418+48.43 RT
-L- STA. 424+97.92 TO STA. 429+13.00 RT
-L- STA. 533+52.00 TO STA. 538+96.00 LT



FILL WALL WITH MOMENT SLAB DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 2 & 11

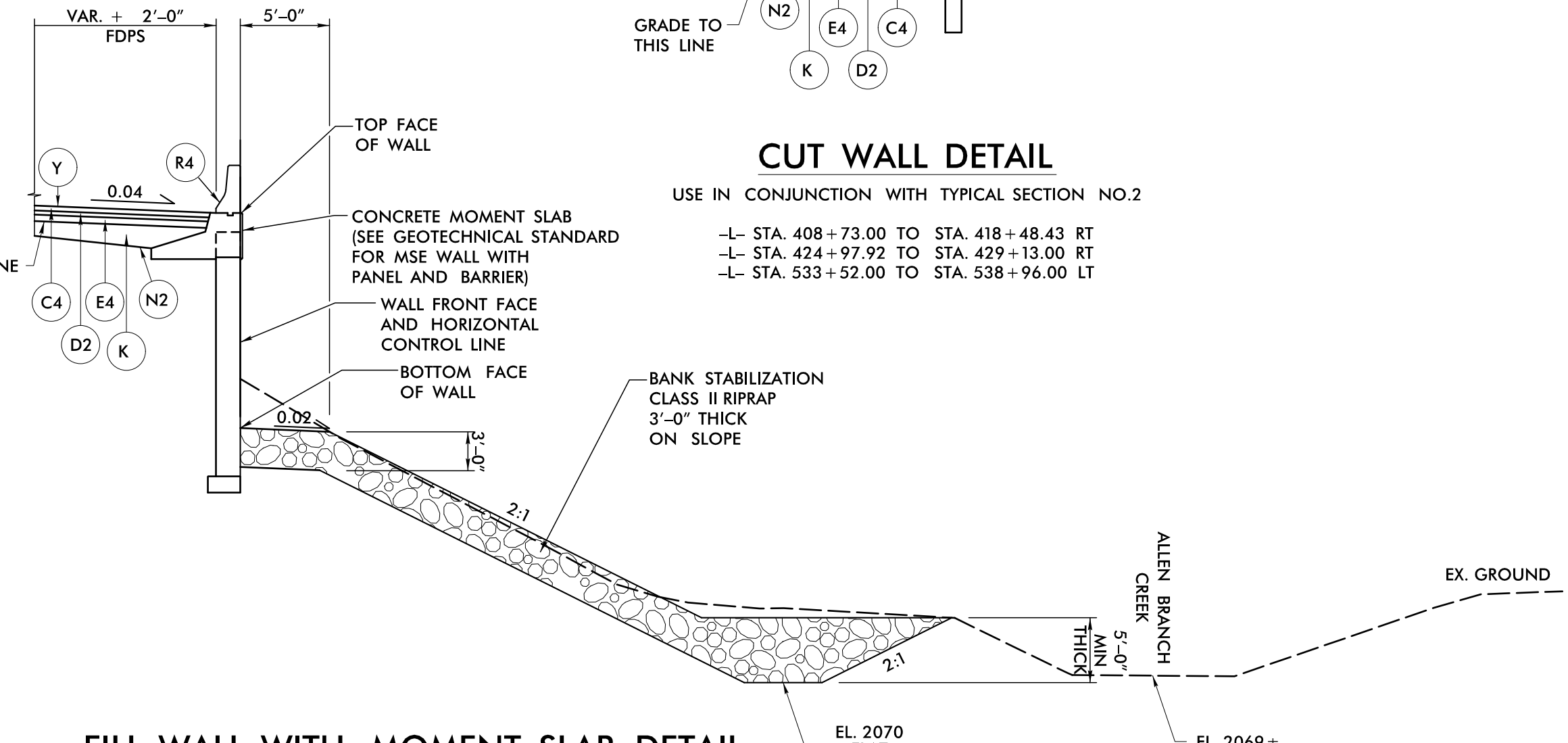
- L- STA. 400+97.00 TO STA. 403+13.00 RT
-L- STA. 422+93.11 TO STA. 424+14.01 RT



FILL WALL WITH MOMENT SLAB DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2

- L- STA. 419+88.42 TO STA. 420+52.62 RT



FILL WALL WITH MOMENT SLAB DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2

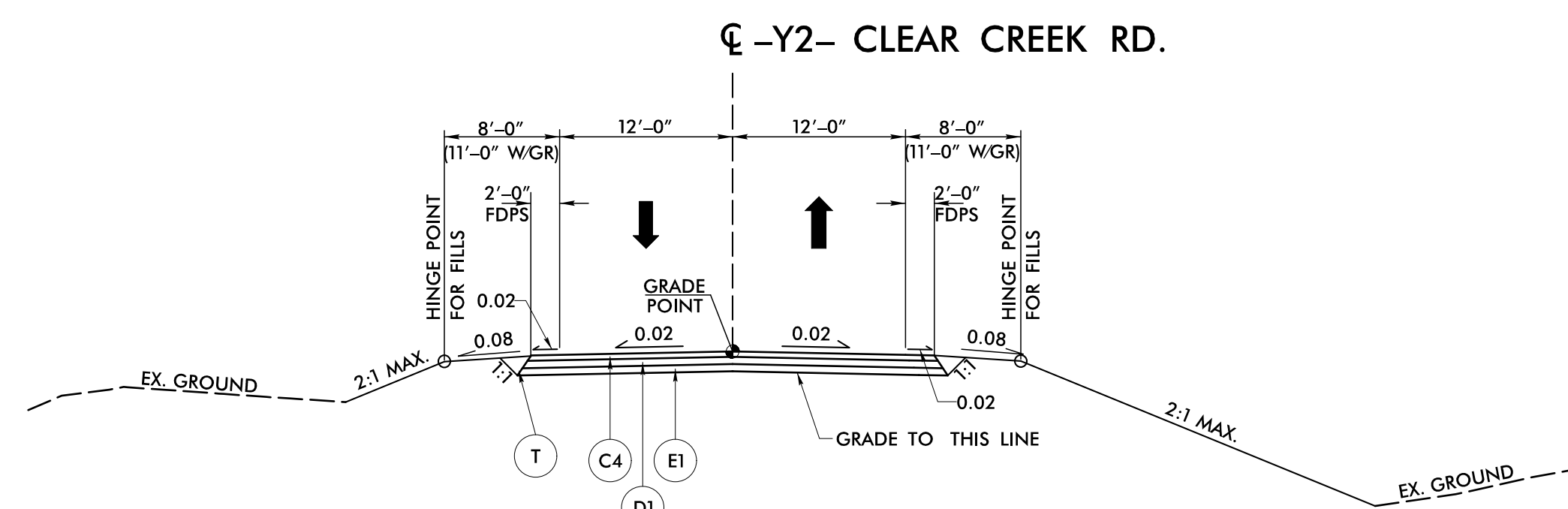
- L- STA. 418+48.43 RT TO STA. 419+88.42 RT
-L- STA. 420+52.62 RT TO STA. 420+57.44 RT

NOTE: SEE PLANS FOR SUPERELEVATIONS, TURN LANES, MONOLITHIC ISLANDS, CURB AND GUTTER, AND LANE TAPER LOCATIONS.

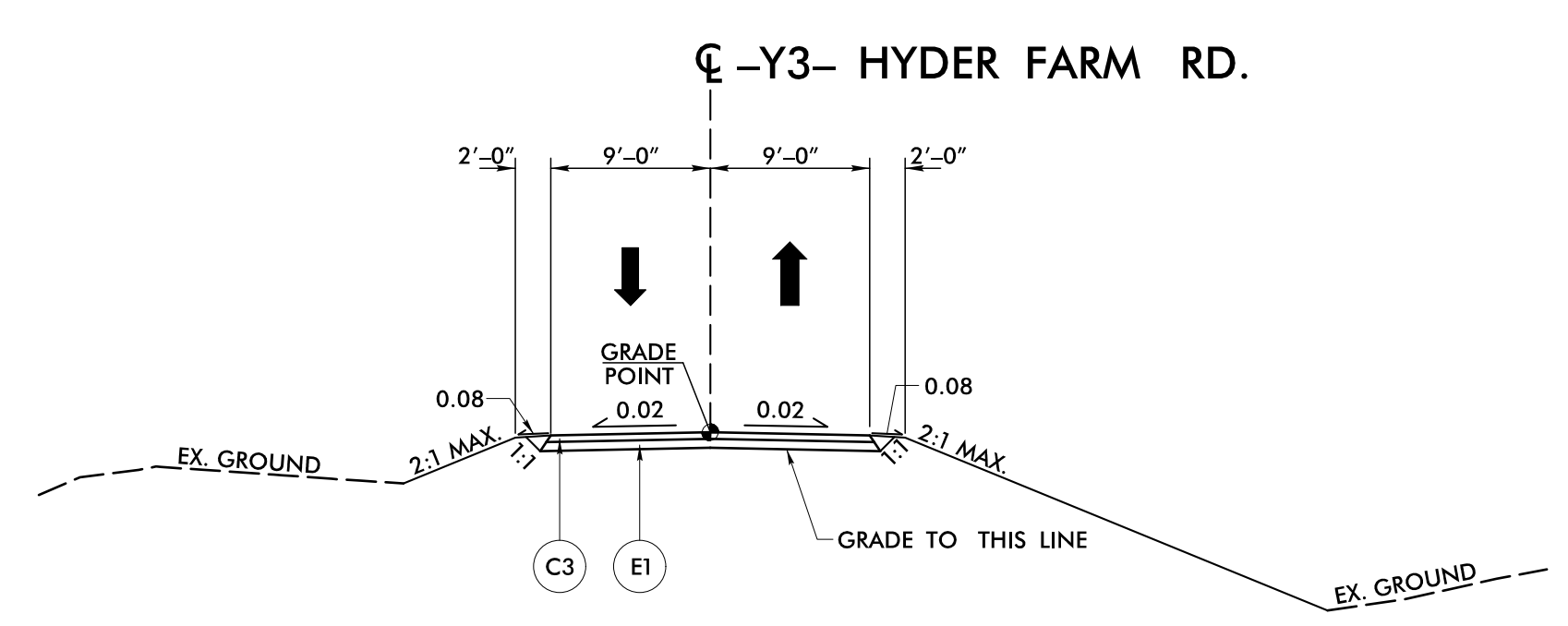
REVISIONS

17-JUL-2019 15:43 N:\Roadway\XP\c\14400BB-RDY\_TYP.dgn HNTB

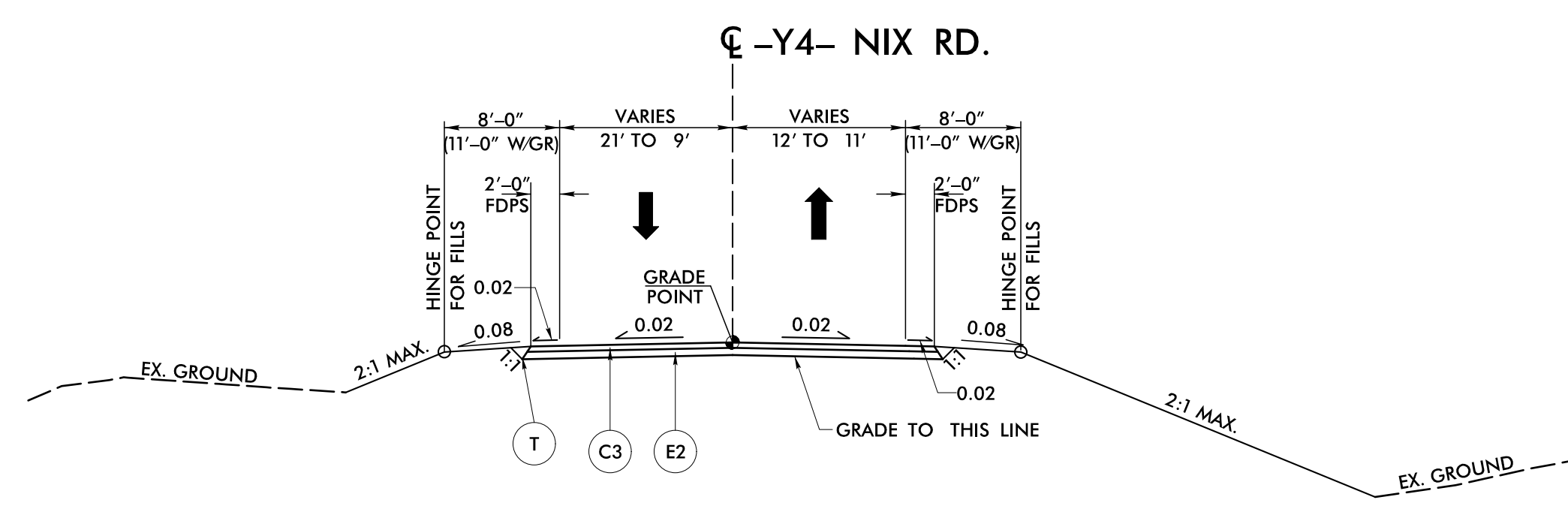
PROJECT REFERENCE NO. <b>1-4400BB</b>	SHEET NO. <b>2A-6</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



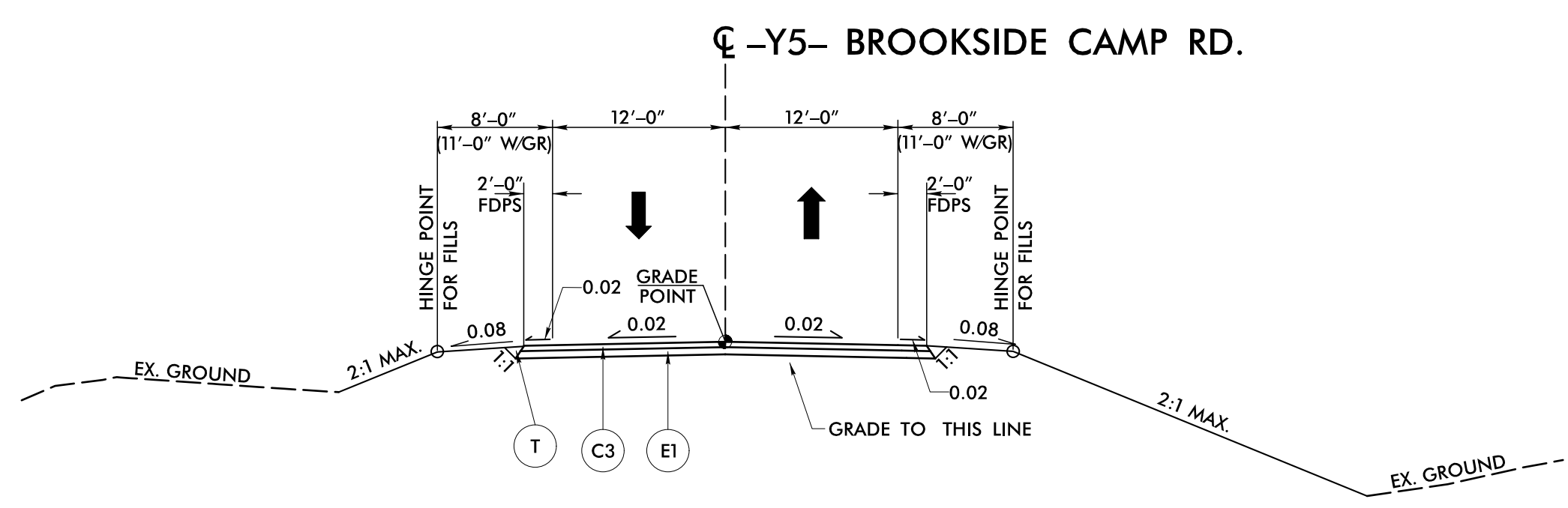
**TYPICAL SECTION NO. 5**  
-Y2- CLEAR CREEK RD. STA. 10+00.00 TO STA. 33+10.48



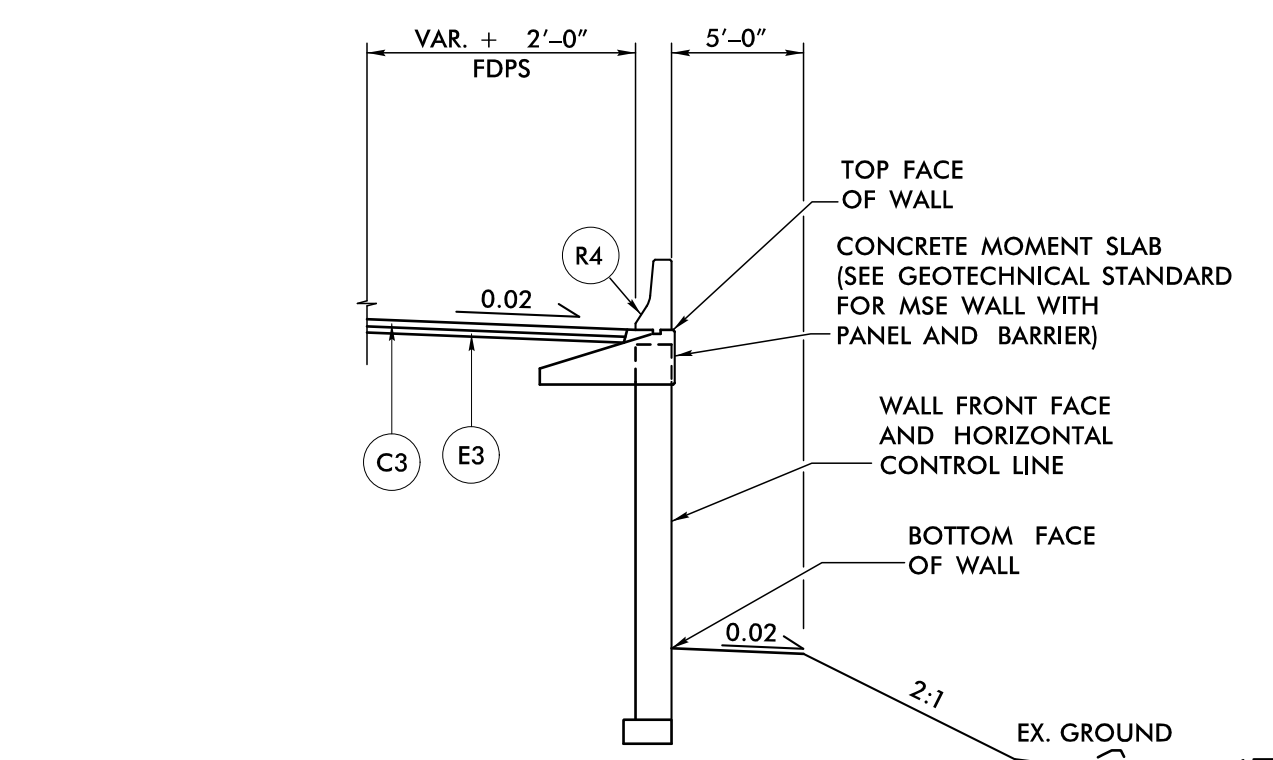
**TYPICAL SECTION NO. 6**  
-Y3- HYDER FARM RD. STA. 10+00.00 TO STA. 14+25.00



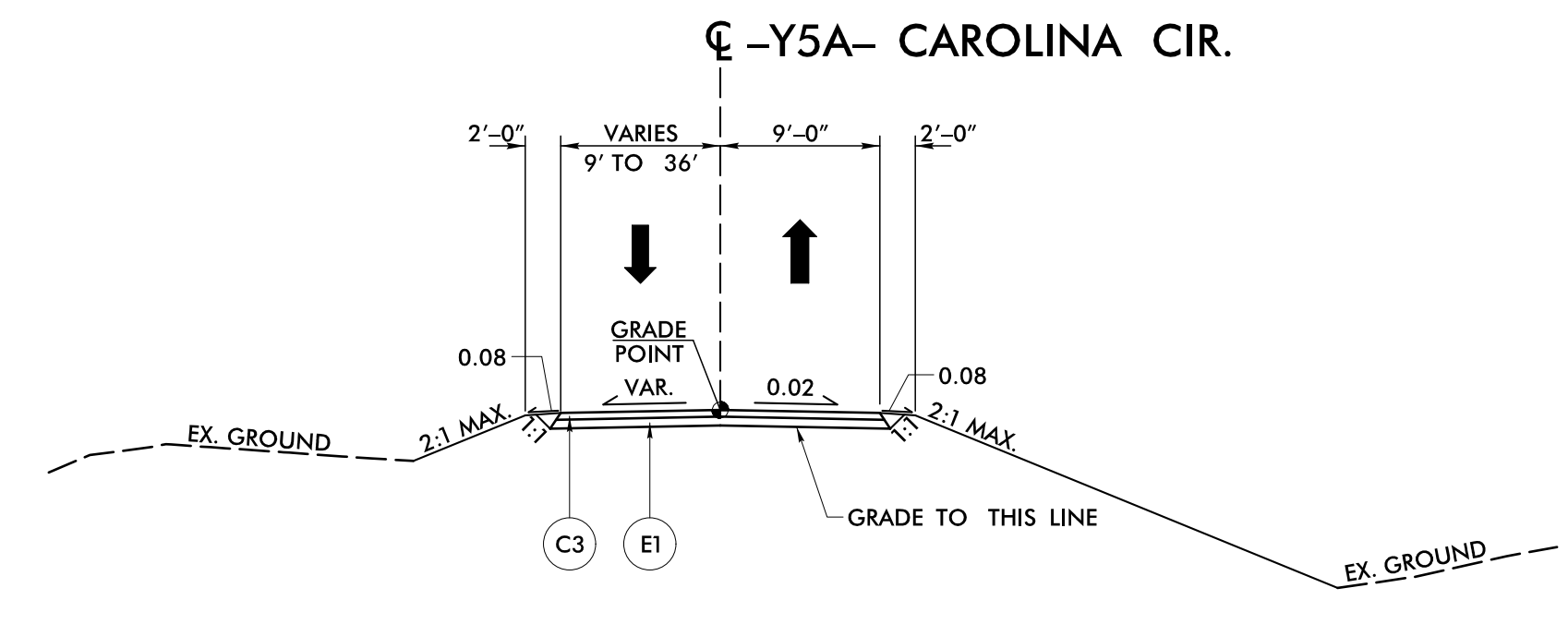
**TYPICAL SECTION NO. 7**  
-Y4- NIX RD. STA. 10+00.00 TO STA. 13+18.22



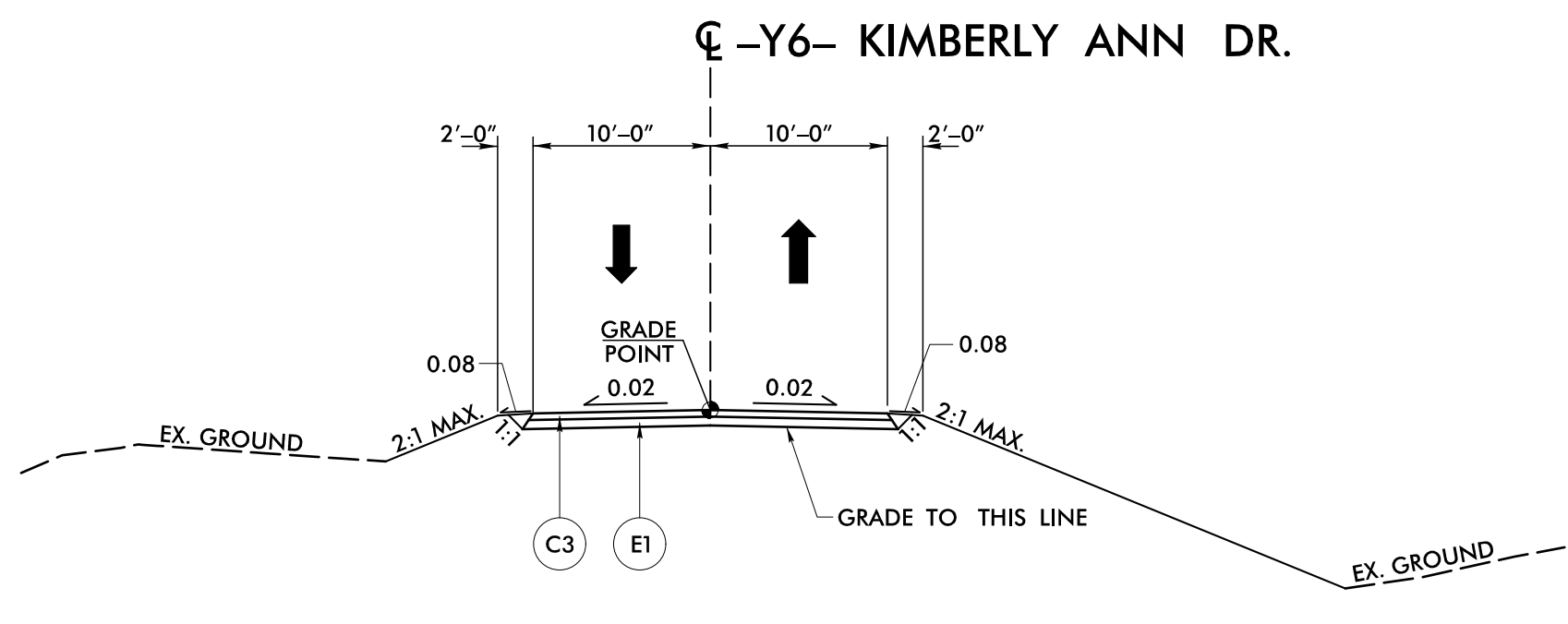
**TYPICAL SECTION NO. 8**  
-Y5- BROOKSIDE CAMP RD. STA. 10+00.00 TO STA. 31+50.10



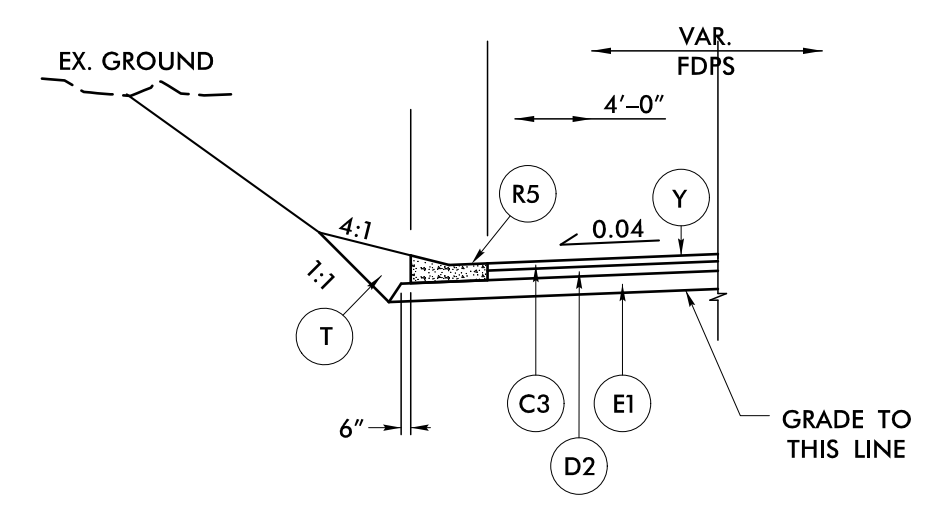
**FILL WALL WITH MOMENT SLAB DETAIL**  
USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 11  
-Y7- STA. 19+97.00 TO STA. 25+75.00 RT



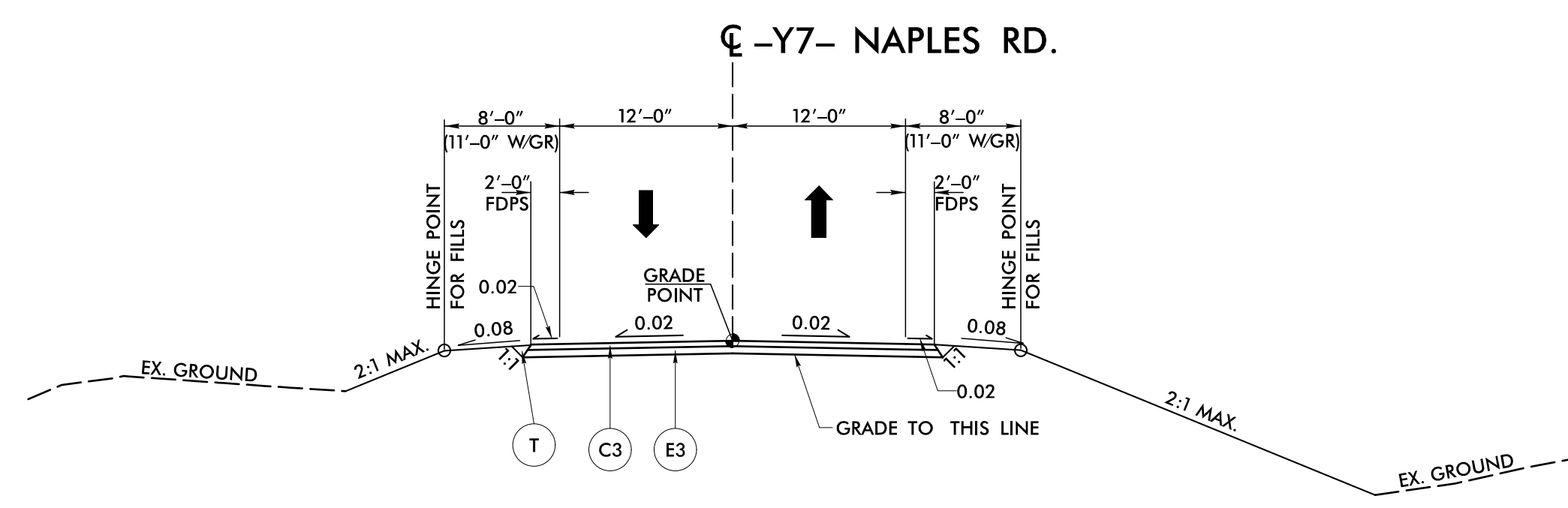
**TYPICAL SECTION NO. 9**  
-Y3- CAROLINA CIR. STA. 10+00.00 TO STA. 13+91.14



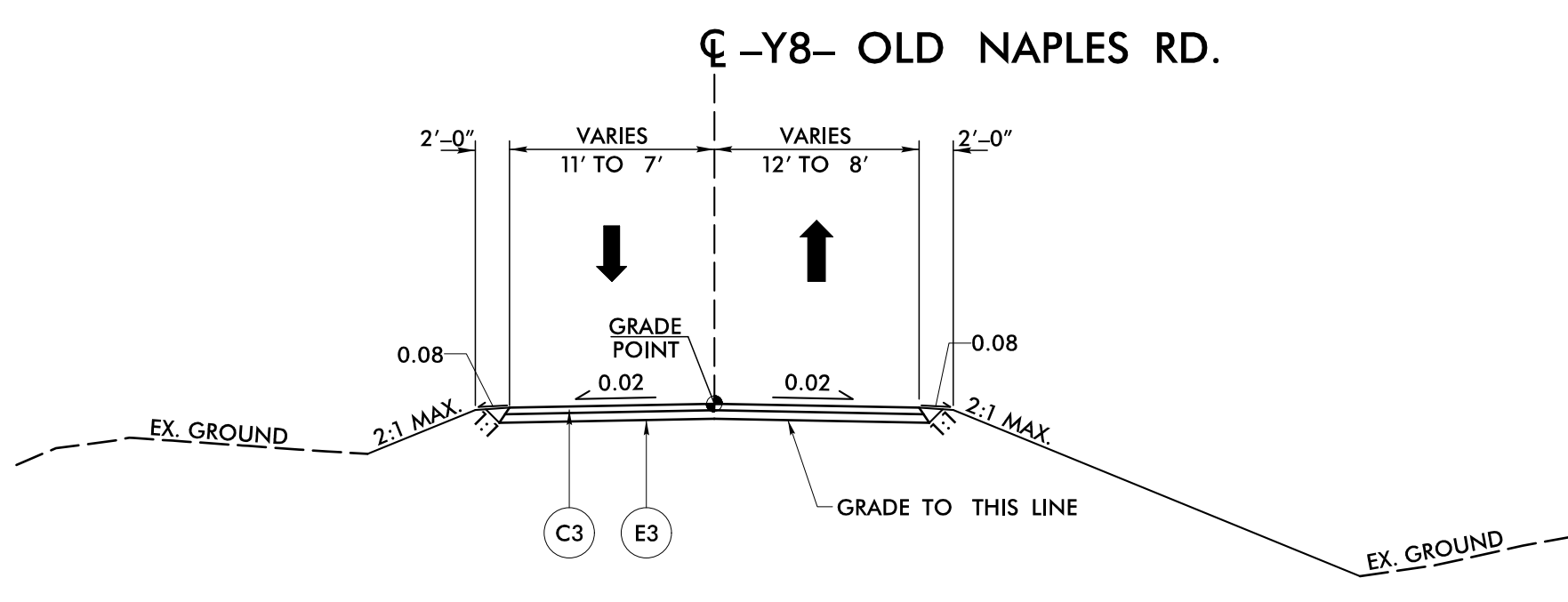
**TYPICAL SECTION NO. 10**  
-Y6- KIMBERLY ANN DR. STA. 10+00.00 TO STA. 12+23.16



**EXPRESSWAY GUTTER DETAIL**  
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 5 & 8  
-Y2- STA. 12+40.00 TO STA. 14+00.00 LT  
-Y5- STA. 26+25.00 TO STA. 31+80.00 RT (INVERT)



**TYPICAL SECTION NO. 11**  
-Y7- NAPLES RD. STA. 10+00.00 TO STA. 30+43.09



**TYPICAL SECTION NO. 12**  
-Y8- OLD NAPLES RD. STA. 10+40.00 TO STA. 11+52.85

A1	13.0" PCCP
C1	1.25" S9.5B
C3	3" S9.5B
C4	3" S9.5C
C5	1.5" S9.5C
C6	3" S9.5D
D1	2.5" I19.0C
D2	4" I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	5.5" B25.0C
E4	6.0" OR 7.25" B25.0C *
K	12" CLASS IV SUBGRADE STABILIZATION
N1	NONWOVEN GEOTEXTILE INTERLAYER
N2	GEOTEXTILE FOR SOIL STABILIZATION
R1	CONC. SHOULDER BERM GUTTER
R2	SINGLE SLOPE CONCRETE BARRIER
R3	PRECAST REINFORCED CONC. BARRIER WITH GUTTER
R4	CONC. BARRIER RAIL WITH MOMENT SLAB
R5	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
Y	MILLED RUMBLE STRIPS

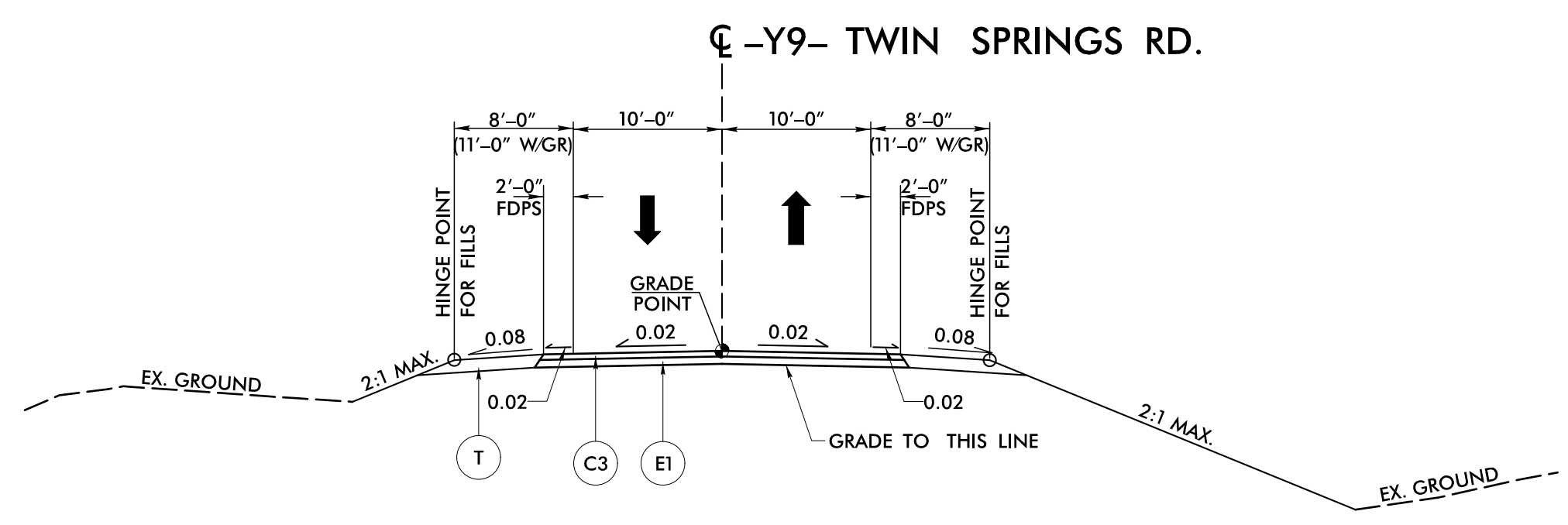
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE  
\*SEE SHOULDER DRAIN DETAIL SHEET 2A-2

REVISIONS

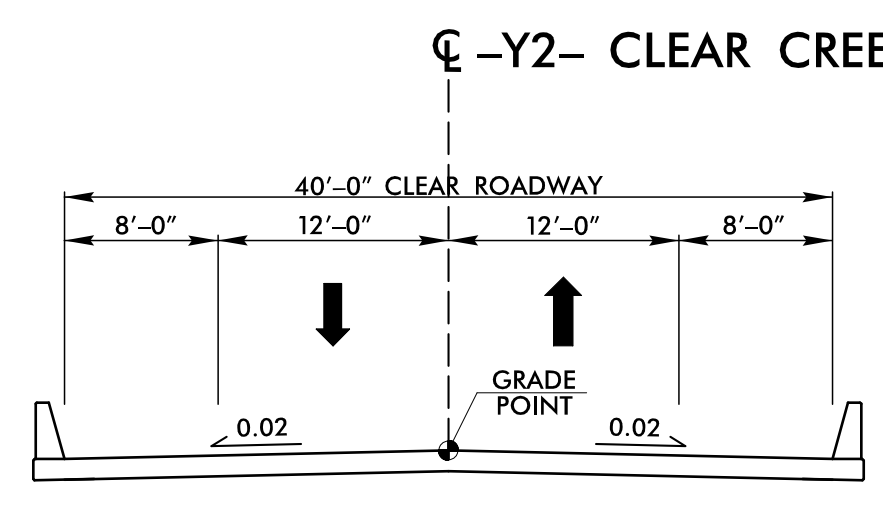
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HNTB

NOTE: SEE PLANS FOR SUPERELEVATIONS, TURN LANES, MONOLITHIC ISLANDS, CURB AND GUTTER, AND LANE TAPER LOCATIONS.

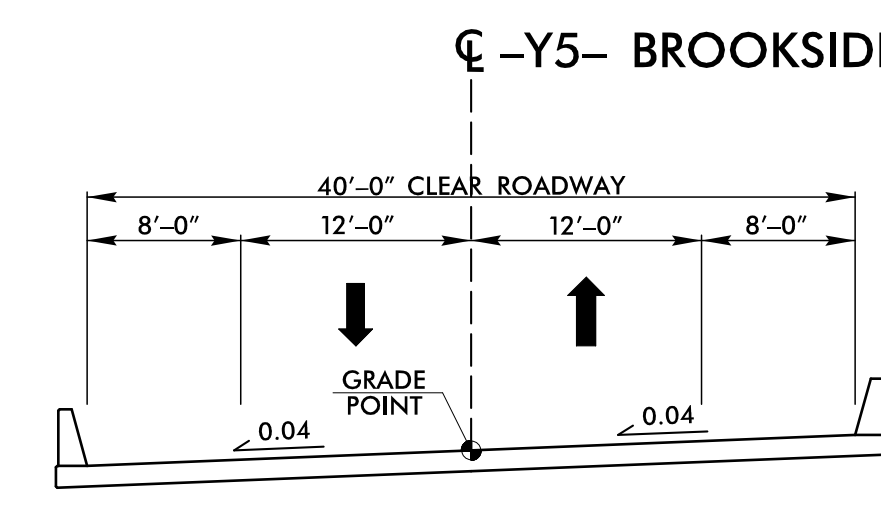
PROJECT REFERENCE NO. <b>1-4400BB</b>	SHEET NO. <b>2A-7</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER <b>MATTHEW J. KIRBY</b> SEAL 047262 7/18/2019	PAVEMENT DESIGN ENGINEER <b>JOSEPH HOLLAND</b> SEAL 024964 7/18/2019
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



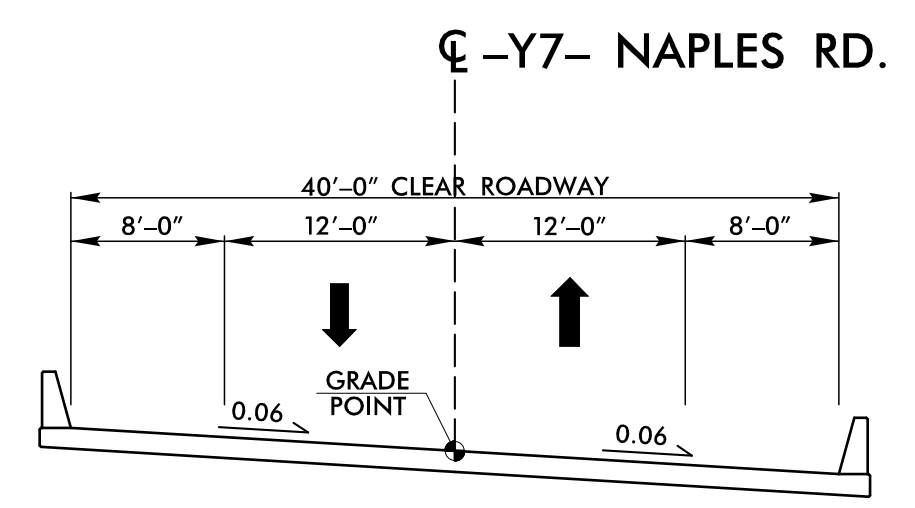
**TYPICAL SECTION NO. 13**  
-Y9- TWIN SPRINGS RD. STA. 10+00.00 TO STA. 13+52.93



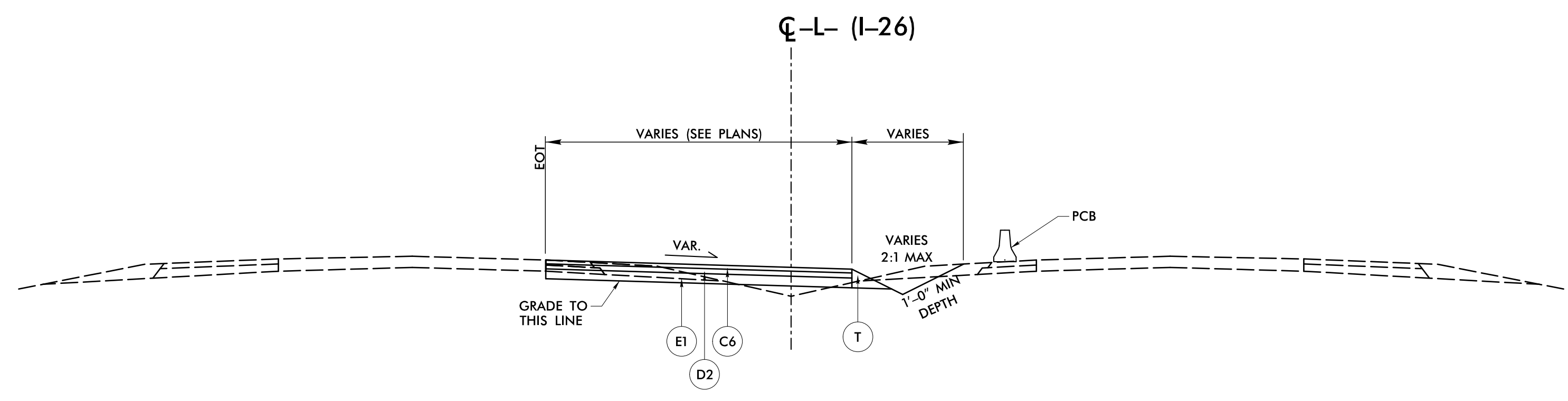
**BRIDGE TYPICAL SECTION NO. 2**  
-Y2- CLEAR CREEK RD. OVER I-26  
-Y2- CLEAR CREEK RD. STA. 20+31.05 TO STA. 22+35.21



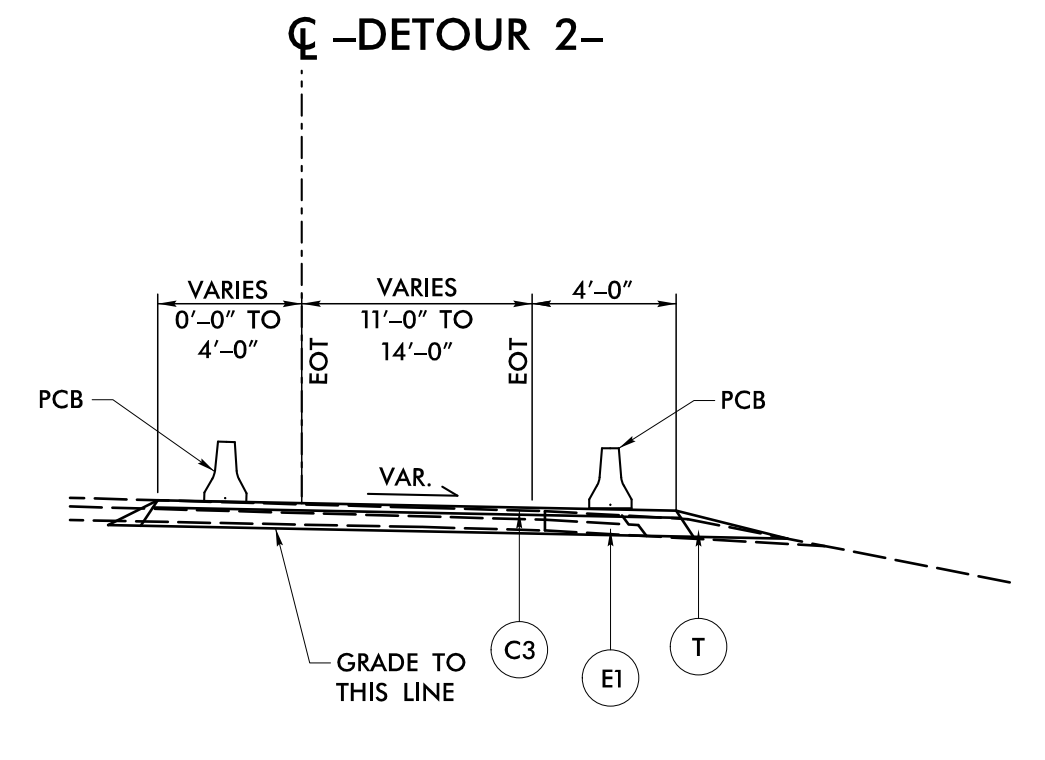
**BRIDGE TYPICAL SECTION NO. 3**  
-Y5- BROOKSIDE CAMP RD. OVER I-26  
-Y5- BROOKSIDE CAMP STA. 18+22.54 TO STA. 20+09.04



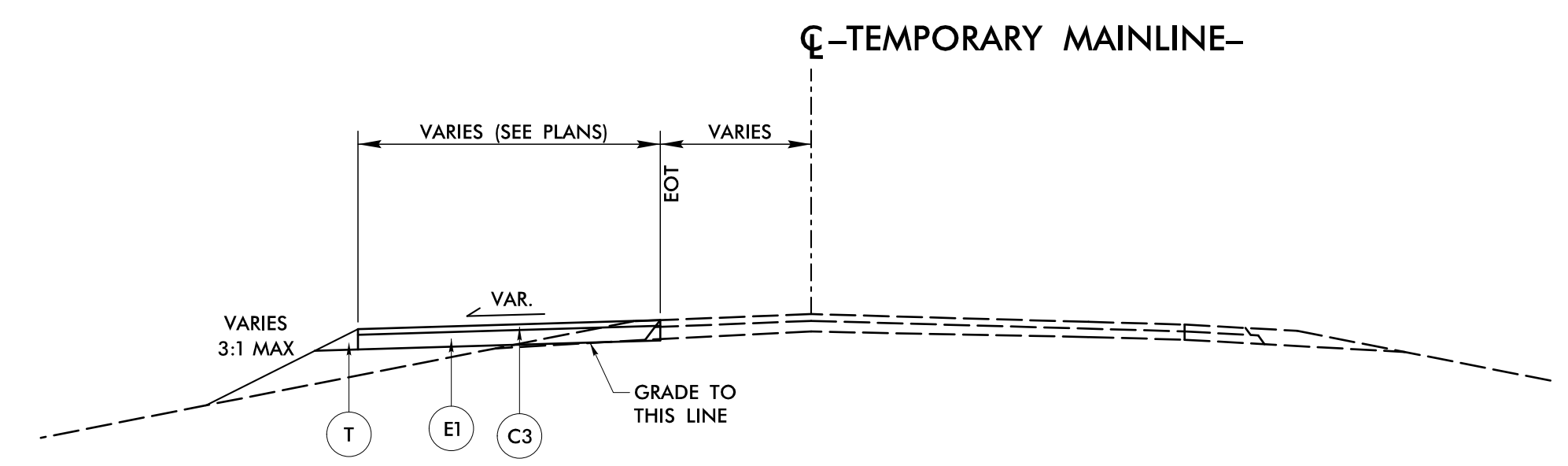
**BRIDGE TYPICAL SECTION NO. 4**  
-Y7- NAPLES RD. OVER I-26  
-Y7- NAPLES RD. STA. 15+97.68 TO STA. 18+34.43



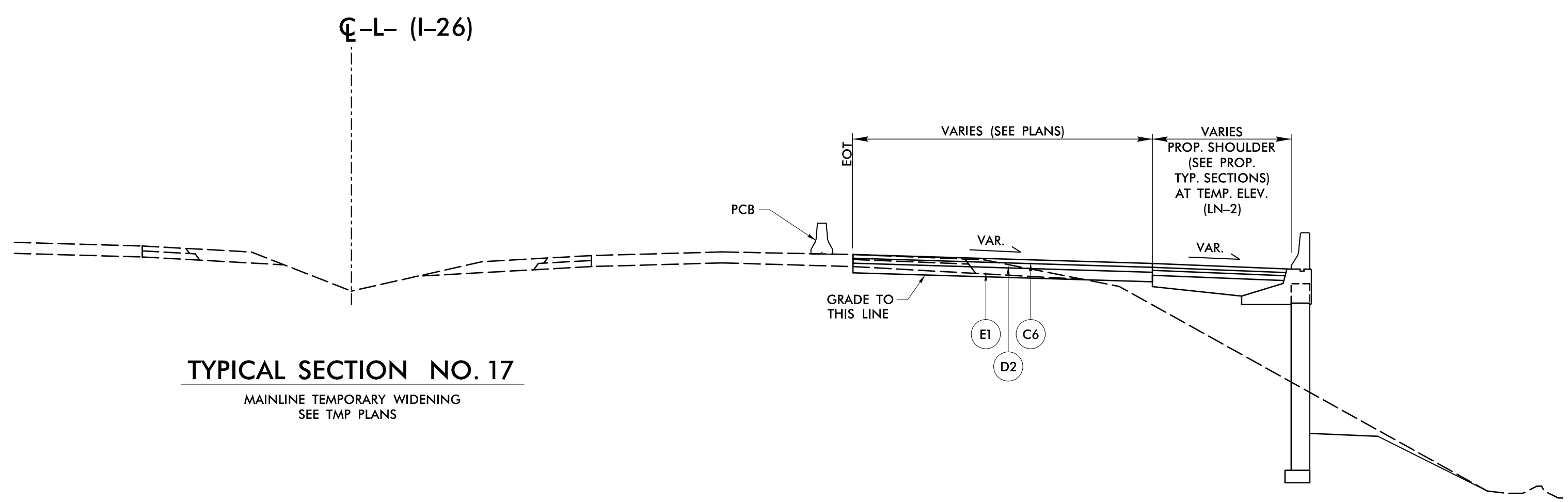
**TYPICAL SECTION NO. 14**  
MAINLINE TEMPORARY WIDENING  
SEE TMP PLANS



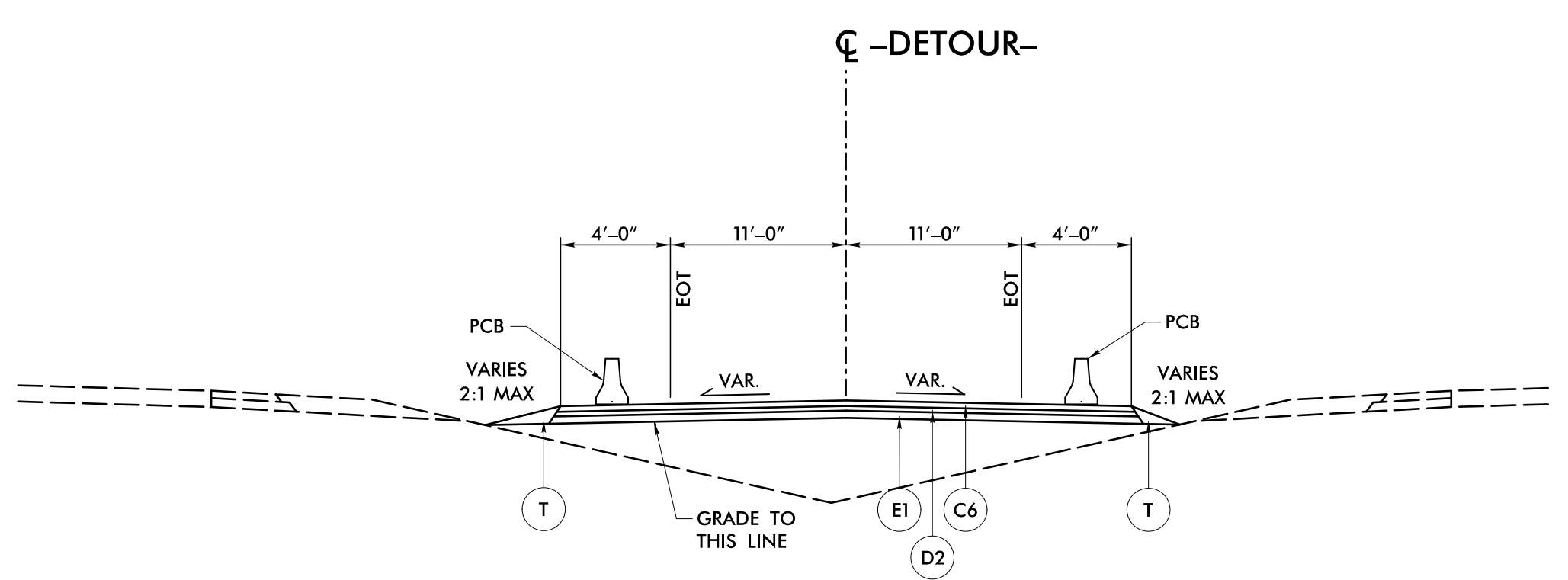
**TYPICAL SECTION NO. 15**  
RAMP TEMPORARY PAVEMENT  
DETOUR 2



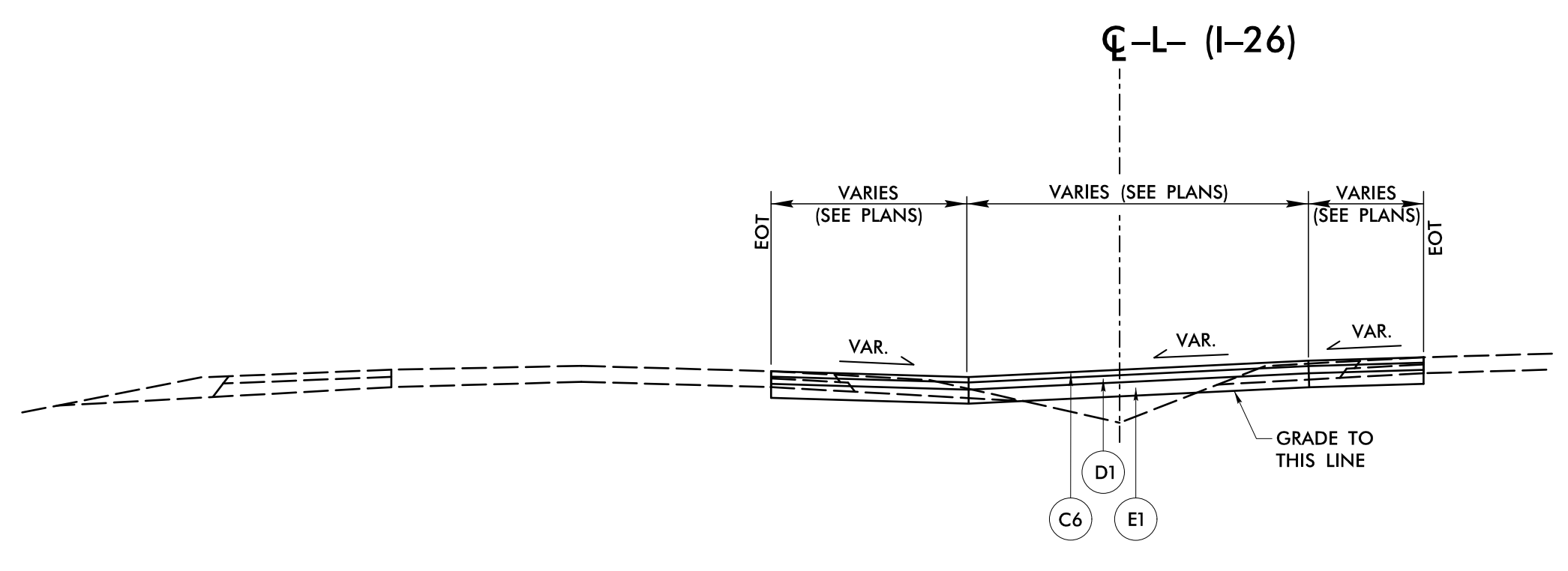
**TYPICAL SECTION NO. 16**  
RAMP TEMPORARY WIDENING  
SEE TMP PLANS



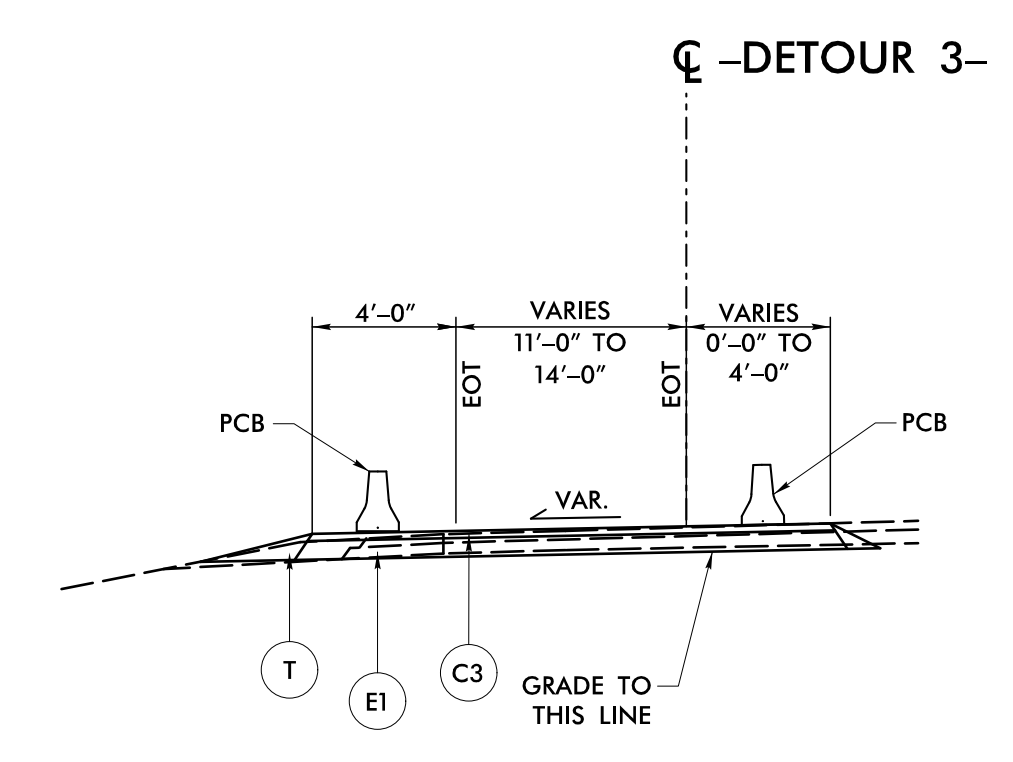
**TYPICAL SECTION NO. 17**  
MAINLINE TEMPORARY WIDENING  
SEE TMP PLANS



**TYPICAL SECTION NO. 18**  
MAINLINE TEMPORARY PAVEMENT  
DETOURS 1 & 4



**TYPICAL SECTION NO. 19**  
MAINLINE CROSSOVERS  
DETOURS 5, 6, & 7



**TYPICAL SECTION NO. 20**  
RAMP TEMPORARY PAVEMENT  
DETOUR 3

A1	13.0" PCCP
C1	1.25" S9.5B
C3	3" S9.5B
C4	3" S9.5C
C5	1.5" S9.5C
C6	3" S9.5D
D1	2.5" I19.0C
D2	4" I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	5.5" B25.0C
E4	6.0" OR 7.25" B25.0C *
K	12" CLASS IV SUBGRADE STABILIZATION
N1	NONWOVEN GEOTEXTILE INTERLAYER
N2	GEOTEXTILE FOR SOIL STABILIZATION
R1	CONC. SHOULDER BERM GUTTER
R2	SINGLE SLOPE CONCRETE BARRIER
R3	PRECAST REINFORCED CONC. BARRIER WITH GUTTER
R4	CONC. BARRIER RAIL WITH MOMENT SLAB
R5	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
Y	MILLED RUMBLE STRIPS

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE  
\*SEE SHOULDER DRAIN DETAIL SHEET 2A-2

REVISIONS

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HNTB

NOTE: SEE PLANS FOR SUPERELEVATIONS, TURN LANES, MONOLITHIC ISLANDS, CURB AND GUTTER, AND LANE TAPER LOCATIONS.

RW SHEET NO.

ROADWAY DESIGN ENGINEER

ENGINEER  
 MATTHEW J. KIRBY  
 11/17/2019

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

# CURVE DATA

<b>-L-</b>								
<i>PIs Sta 376+97.92</i> $\Theta_s = 1^{\circ} 40' 30.4''$ $L_s = 225.00'$ $LT = 150.01'$ $ST = 75.01'$ RO = SEE PLANS SE = SEE PLANS	<i>PI Sta 387+19.29</i> $\Delta = 27^{\circ} 38' 02.5''$ (LT) $D = 1^{\circ} 29' 20.3''$ $L = 1,855.91'$ $T = 946.37'$ $R = 3,848.00'$ RO = SEE PLANS SE = SEE PLANS	<i>PIs Sta 397+03.83</i> $\Theta_s = 1^{\circ} 40' 30.4''$ $L_s = 225.00'$ $LT = 150.01'$ $ST = 75.01'$ RO = SEE PLANS SE = SEE PLANS	<i>PIs Sta 403+50.94</i> $\Theta_s = 1^{\circ} 33' 52.2''$ $L_s = 225.00'$ $LT = 150.01'$ $ST = 75.01'$ RO = SEE PLANS SE = SEE PLANS	<i>PI Sta 418+57.99</i> $\Delta = 38^{\circ} 20' 00.6''$ (RT) $D = 1^{\circ} 23' 26.4''$ $L = 2,756.47'$ $T = 1,432.06'$ $R = 4,120.00'$ RO = SEE PLANS SE = SEE PLANS	<i>PIs Sta 432+57.41</i> $\Theta_s = 1^{\circ} 33' 52.2''$ $L_s = 225.00'$ $LT = 150.01'$ $ST = 75.01'$ RO = SEE PLANS SE = SEE PLANS	<i>PIs Sta 458+00.00</i> $\Theta_s = 1^{\circ} 41' 14.6''$ $L_s = 225.00'$ $LT = 150.01'$ $ST = 75.01'$ RO = SEE PLANS SE = SEE PLANS	<i>PI Sta 463+54.88</i> $\Delta = 14^{\circ} 19' 14.3''$ (LT) $D = 1^{\circ} 29' 59.6''$ $L = 954.78'$ $T = 479.89'$ $R = 3,820.00'$ RO = SEE PLANS SE = SEE PLANS	<i>PIs Sta 469+04.78</i> $\Theta_s = 1^{\circ} 41' 14.6''$ $L_s = 225.00'$ $LT = 150.01'$ $ST = 75.01'$ RO = SEE PLANS SE = SEE PLANS

<b>-L-</b>								
<i>PIs Sta 537+66.96</i> $\Theta_s = 0^{\circ} 54' 00.0''$ $L_s = 180.00'$ $LT = 120.00'$ $ST = 60.00'$ RO = SEE PLANS SE = SEE PLANS	<i>PI Sta 545+39.54</i> $\Delta = 14^{\circ} 10' 43.4''$ (LT) $D = 1^{\circ} 00' 00.0''$ $L = 1,417.87'$ $T = 712.58'$ $R = 5,729.58'$ RO = SEE PLANS SE = SEE PLANS	<i>PIs Sta 553+04.84</i> $\Theta_s = 0^{\circ} 54' 00.0''$ $L_s = 180.00'$ $LT = 120.00'$ $ST = 60.00'$ RO = SEE PLANS SE = SEE PLANS	<i>PIs Sta 565+08.76</i> $\Theta_s = 1^{\circ} 41' 14.6''$ $L_s = 225.00'$ $LT = 150.01'$ $ST = 75.01'$ RO = SEE PLANS SE = SEE PLANS	<i>PI Sta 576+19.44</i> $\Delta = 30^{\circ} 20' 20.6''$ (RT) $D = 1^{\circ} 29' 59.6''$ $L = 2,022.75'$ $T = 1,035.69'$ $R = 3,820.00'$ RO = SEE PLANS SE = SEE PLANS	<i>PIs Sta 586+81.51</i> $\Theta_s = 1^{\circ} 41' 14.6''$ $L_s = 225.00'$ $LT = 150.01'$ $ST = 75.01'$ RO = SEE PLANS SE = SEE PLANS	<i>PIs Sta 603+75.38</i> $\Theta_s = 0^{\circ} 54' 07.7''$ $L_s = 180.00'$ $LT = 120.00'$ $ST = 60.00'$ RO = SEE PLANS SE = SEE PLANS	<i>PI Sta 627+34.48</i> $\Delta = 43^{\circ} 49' 19.4''$ (LT) $D = 1^{\circ} 00' 08.6''$ $L = 4,371.82'$ $T = 2,299.10'$ $R = 5,716.00'$ RO = SEE PLANS SE = SEE PLANS	<i>PIs Sta 648+67.20</i> $\Theta_s = 0^{\circ} 54' 07.7''$ $L_s = 180.00'$ $LT = 120.00'$ $ST = 60.00'$ RO = SEE PLANS SE = SEE PLANS

<b>-WEIGH A-</b>	
<i>PI Sta 12+49.28</i> $\Delta = 2^{\circ} 25' 51.0''$ (RT) $D = 1^{\circ} 29' 59.6''$ $L = 162.07'$ $T = 81.05'$ $R = 3,820.00'$ RO = SEE PLANS SE = SEE PLANS	<i>PI Sta 16+62.88</i> $\Delta = 7^{\circ} 05' 58.2''$ (LT) $D = 2^{\circ} 59' 59.2''$ $L = 236.67'$ $T = 118.49'$ $R = 1,910.00'$ RO = SEE PLANS SE = SEE PLANS

<b>-WEIGH B-</b>		
<i>PI Sta 11+29.29</i> $\Delta = 5^{\circ} 17' 14.7''$ (LT) $D = 2^{\circ} 02' 46.6''$ $L = 258.39'$ $T = 129.29'$ $R = 2,800.00'$ RO = SEE PLANS SE = SEE PLANS	<i>PI Sta 13+87.46</i> $\Delta = 10^{\circ} 17' 35.1''$ (LT) $D = 3^{\circ} 59' 53.9''$ $L = 257.44'$ $T = 129.07'$ $R = 1,433.00'$ RO = SEE PLANS SE = SEE PLANS	<i>PI Sta 16+18.58</i> $\Delta = 12^{\circ} 20' 47.4''$ (RT) $D = 6^{\circ} 01' 52.1''$ $L = 204.71'$ $T = 102.75'$ $R = 950.00'$ RO = SEE PLANS SE = SEE PLANS

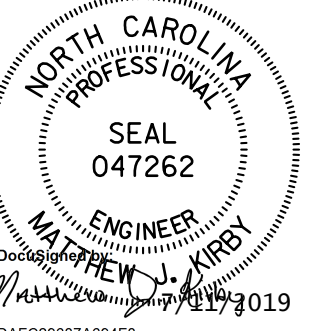
<b>-WEIGH C-</b>	
<i>PI Sta 10+90.18</i> $\Delta = 3^{\circ} 34' 29.2''$ (RT) $D = 1^{\circ} 58' 57.2''$ $L = 180.31'$ $T = 90.18'$ $R = 2,890.00'$ RO = SEE PLANS SE = SEE PLANS	<i>PI Sta 15+44.97</i> $\Delta = 8^{\circ} 30' 52.0''$ (LT) $D = 2^{\circ} 59' 59.2''$ $L = 283.84'$ $T = 142.18'$ $R = 1,910.00'$ RO = SEE PLANS SE = SEE PLANS

<b>-WEIGH D-</b>	
<i>PI Sta 16+45.02</i> $\Delta = 7^{\circ} 18' 40.6''$ (RT) $D = 2^{\circ} 59' 59.2''$ $L = 243.73'$ $T = 122.03'$ $R = 1,910.00'$ RO = SEE PLANS SE = SEE PLANS	<i>PI Sta 11+96.52</i> $\Delta = 8^{\circ} 59' 22.1''$ (LT) $D = 2^{\circ} 17' 30.6''$ $L = 392.24'$ $T = 196.52'$ $R = 2,500.00'$ RO = SEE PLANS SE = SEE PLANS

REVISIONS

RW SHEET NO.

ROADWAY DESIGN ENGINEER



Matthew J. Kurb  
 ENGINEER  
 SEAL 047262  
 11/17/2019

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

# CURVE DATA

-Y1-RPA-			
Pls Sta 11+17.39 $\Theta_s = 1^\circ 26' 50.1''$ $\Theta_s = 7^\circ 08' 38.3''$ $L_s = 192.00'$ $LT = 117.39'$ $ST = 74.94'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 14+42.92 $\Delta = 36^\circ 05' 55.4''$ (RT) $D = 7^\circ 26' 27.6''$ $L = 485.13'$ $T = 250.92'$ $R = 770.00'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 17+41.23 $\Theta_s = 7^\circ 08' 36.1''$ $L_s = 192.00'$ $LT = 128.10'$ $ST = 64.09'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 22+72.97 $\Delta = 48^\circ 50' 14.2''$ (LT) $D = 22^\circ 55' 05.9''$ $L = 213.09'$ $T = 113.50'$ $R = 250.00'$ RO = SEE PLANS SE = SEE PLANS

-Y1-RPD-					
Pls Sta 10+32.00 $\Theta_s = 0^\circ 42' 20.6''$ $L_s = 96.00'$ $LT = 64.00'$ $ST = 32.00'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 11+28.10 $\Theta_s = 7^\circ 08' 36.1''$ $L_s = 192.00'$ $LT = 128.10'$ $ST = 64.09'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 13+52.04 $\Theta_s = 4^\circ 32' 17.8''$ $L_s = 192.00'$ $LT = 128.04'$ $ST = 64.04'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 16+16.15 $\Delta = 18^\circ 45' 16.7''$ (LT) $D = 4^\circ 43' 38.5''$ $L = 396.72'$ $T = 200.15'$ $R = 1,212.00'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 18+76.76 $\Theta_s = 4^\circ 32' 17.8''$ $L_s = 192.00'$ $LT = 128.04'$ $ST = 64.04'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 22+83.97 $\Delta = 32^\circ 45' 09.5''$ (RT) $D = 14^\circ 19' 26.2''$ $L = 228.66'$ $T = 117.55'$ $R = 400.00'$ RO = SEE PLANS SE = SEE PLANS

-Y2-	
Pls Sta 15+46.41 $\Delta = 22^\circ 13' 27.4''$ (RT) $D = 5^\circ 43' 46.5''$ $L = 387.89'$ $T = 196.41'$ $R = 1,000.00'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 27+44.34 $\Delta = 66^\circ 14' 27.4''$ (LT) $D = 13^\circ 38' 30.7''$ $L = 485.57'$ $T = 274.01'$ $R = 420.00'$ RO = SEE PLANS SE = SEE PLANS

-Y3-	
Pls Sta 11+23.54 $\Delta = 53^\circ 02' 03.2''$ (RT) $D = 24^\circ 48' 12.1''$ $L = 213.82'$ $T = 115.26'$ $R = 231.00'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 15+45.35 $\Delta = 46^\circ 09' 00.5''$ (LT) $D = 16^\circ 00' 00.0''$ $L = 288.44'$ $T = 152.56'$ $R = 358.10'$ RO = SEE PLANS SE = SEE PLANS

-Y4-
Pls Sta 12+05.90 $\Delta = 24^\circ 23' 10.1''$ (LT) $D = 16^\circ 22' 12.8''$ $L = 148.97'$ $T = 75.63'$ $R = 350.00'$ RO = SEE PLANS SE = SEE PLANS

-Y5-				
Pls Sta 10+61.69 $\Delta = 1^\circ 24' 49.2''$ (RT) $D = 1^\circ 08' 45.3''$ $L = 123.37'$ $T = 61.69'$ $R = 5,000.00'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 12+39.06 $\Delta = 11^\circ 41' 30.3''$ (RT) $D = 5^\circ 04' 13.5''$ $L = 230.59'$ $T = 115.70'$ $R = 1,130.00'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 19+26.36 $\Delta = 10^\circ 30' 27.0''$ (LT) $D = 2^\circ 36' 15.7''$ $L = 403.46'$ $T = 202.30'$ $R = 2,200.00'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 28+38.78 $\Delta = 5^\circ 09' 00.7''$ (RT) $D = 1^\circ 35' 29.6''$ $L = 323.60'$ $T = 161.91'$ $R = 3,600.00'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 32+03.35 $\Delta = 24^\circ 02' 58.8''$ (RT) $D = 22^\circ 55' 05.9''$ $L = 104.94'$ $T = 53.25'$ $R = 250.00'$ RO = SEE PLANS SE = SEE PLANS

-Y5A-		
Pls Sta 12+22.09 $\Delta = 127^\circ 00' 06.6''$ (LT) $D = 159^\circ 09' 17.8''$ $L = 79.80'$ $T = 72.21'$ $R = 36.00'$ RO = NONE SE = N.C.	Pls Sta 13+01.89 $\Delta = 127^\circ 00' 06.6''$ (LT) $D = 159^\circ 09' 17.8''$ $L = 79.80'$ $T = 72.21'$ $R = 36.00'$ RO = NONE SE = N.C.	Pls Sta 13+57.13 $\Delta = 74^\circ 00' 13.2''$ (RT) $D = 90^\circ 37' 28.4''$ $L = 81.66'$ $T = 47.65'$ $R = 63.22'$ RO = NONE SE = N.C.

-Y6-
Pls Sta 11+28.13 $\Delta = 23^\circ 40' 40.4''$ (LT) $D = 34^\circ 16' 31.2''$ $L = 69.08'$ $T = 35.04'$ $R = 167.16'$ RO = SEE PLANS SE = SEE PLANS

-Y7-	
Pls Sta 10+51.86 $\Delta = 12^\circ 01' 52.7''$ (LT) $D = 11^\circ 38' 33.1''$ $L = 103.34'$ $T = 51.86'$ $R = 492.13'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 22+74.01 $\Delta = 89^\circ 14' 12.2''$ (RT) $D = 6^\circ 52' 41.7''$ $L = 1,297.38'$ $T = 821.98'$ $R = 833.00'$ RO = SEE PLANS SE = SEE PLANS

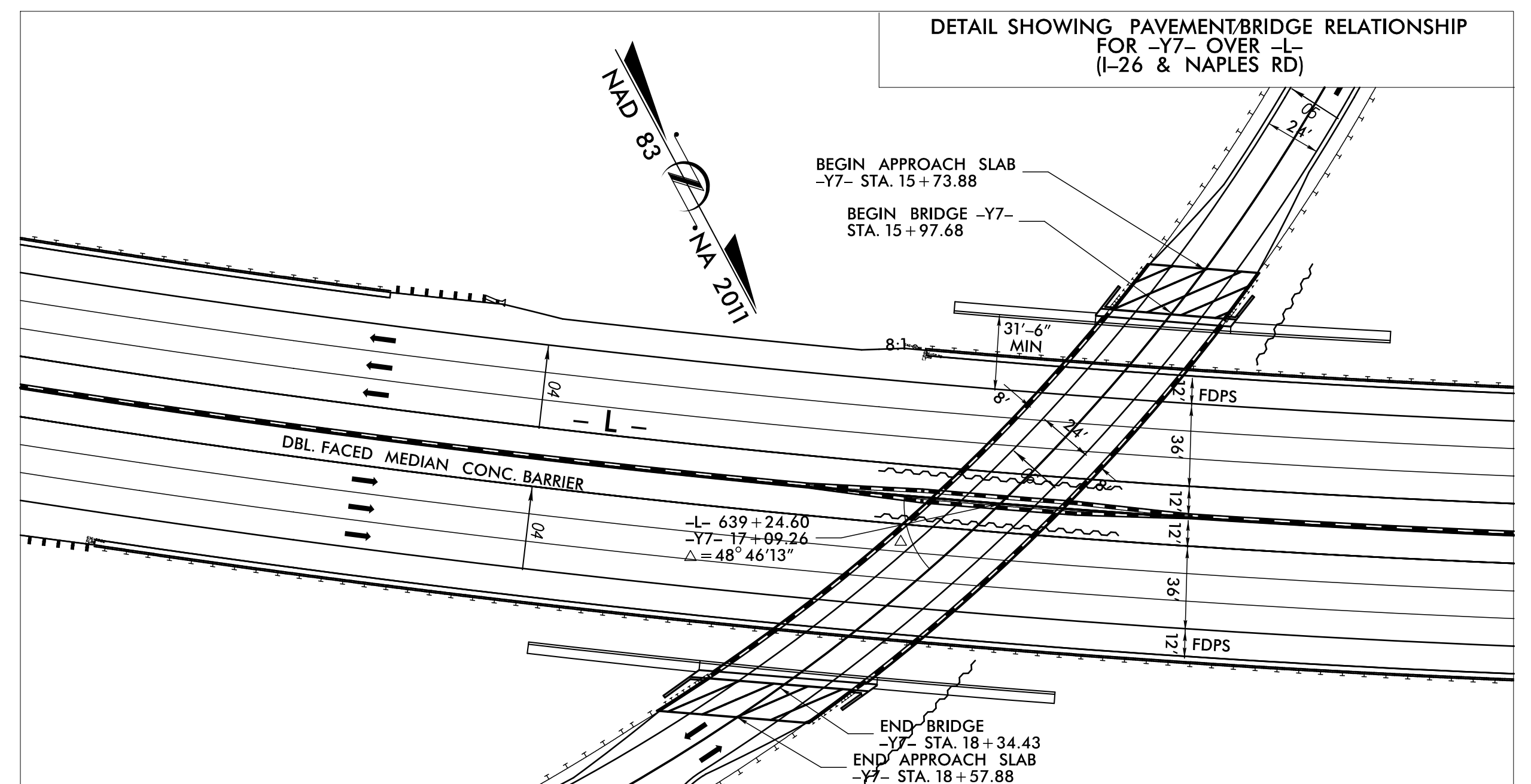
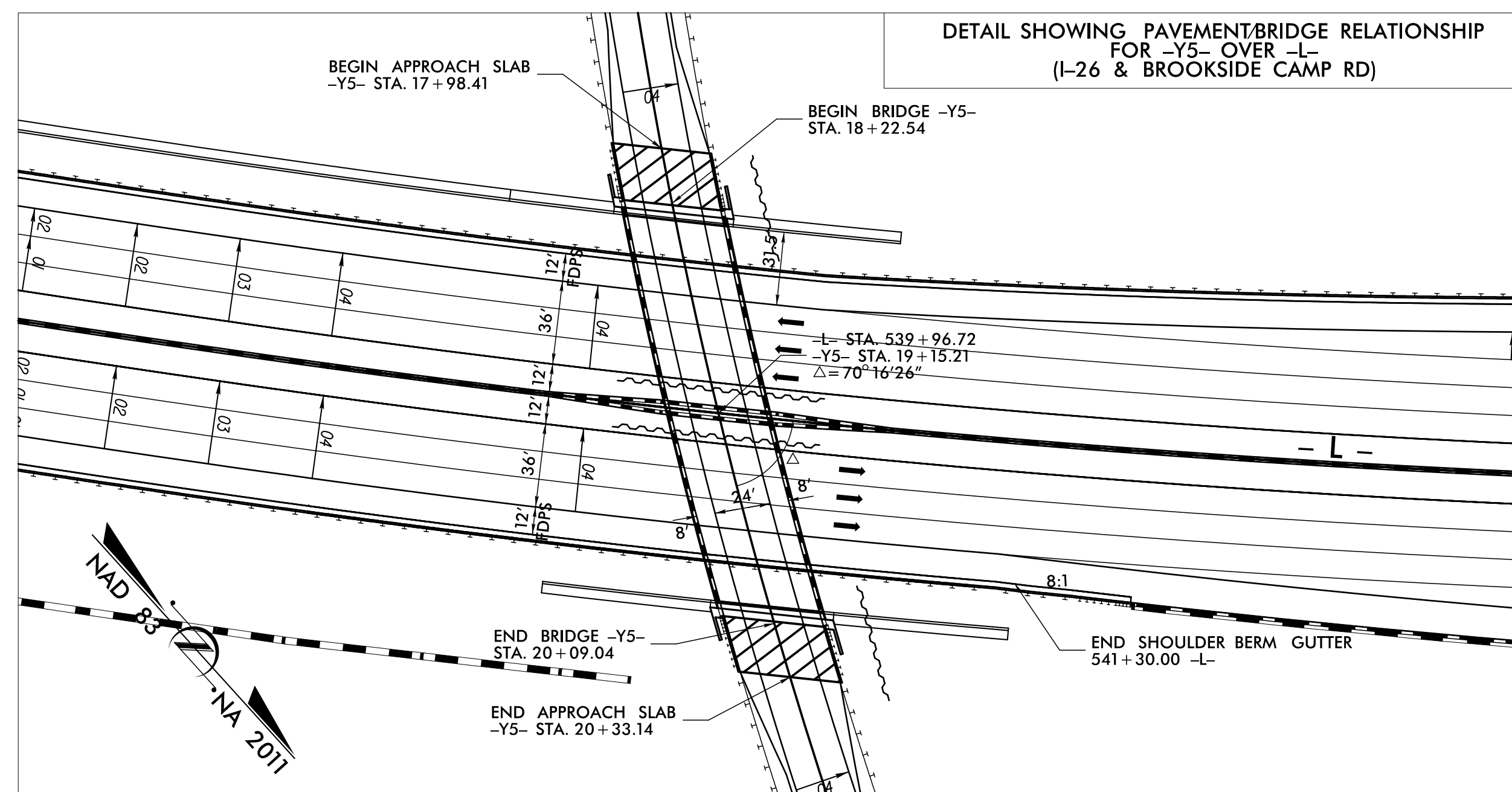
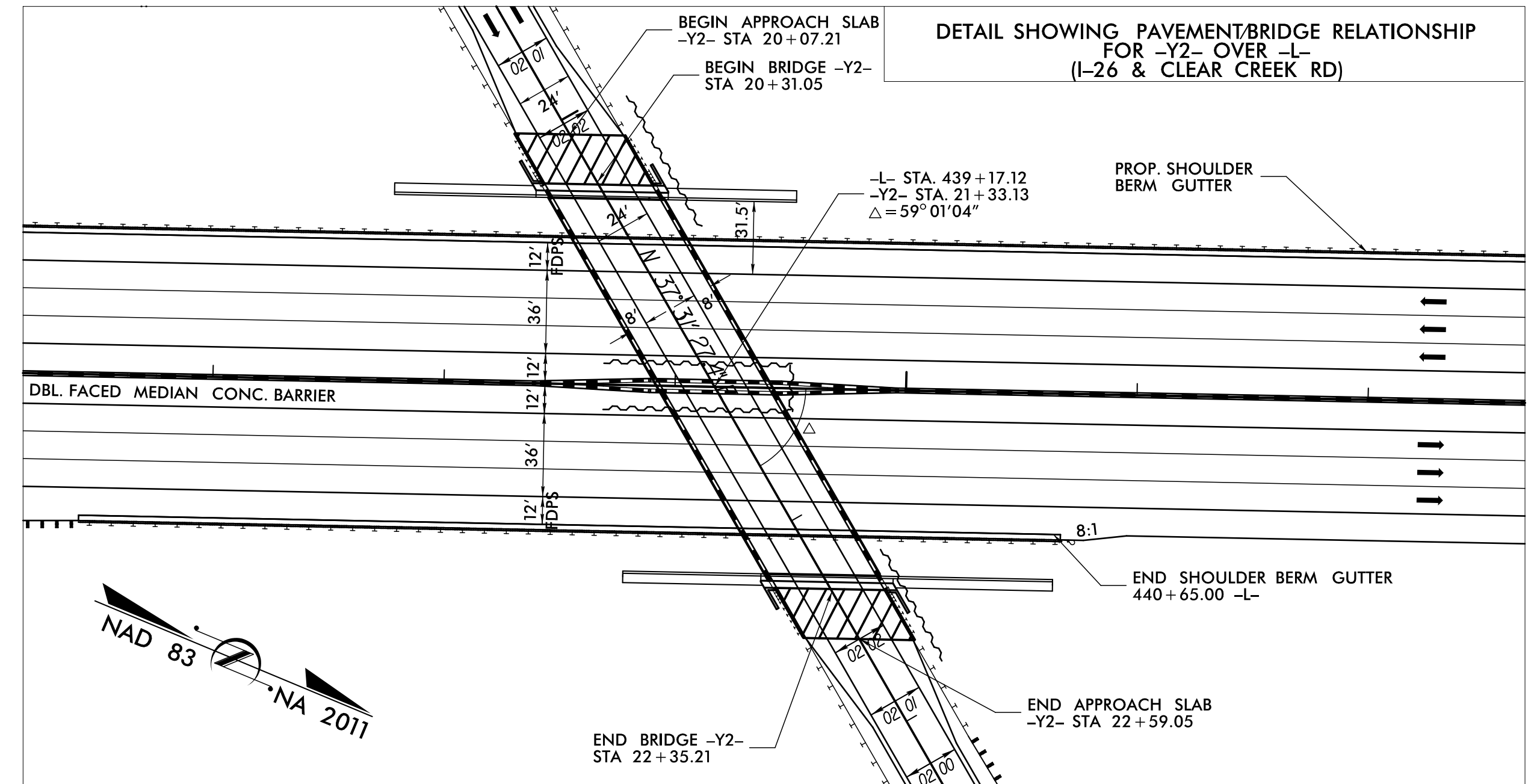
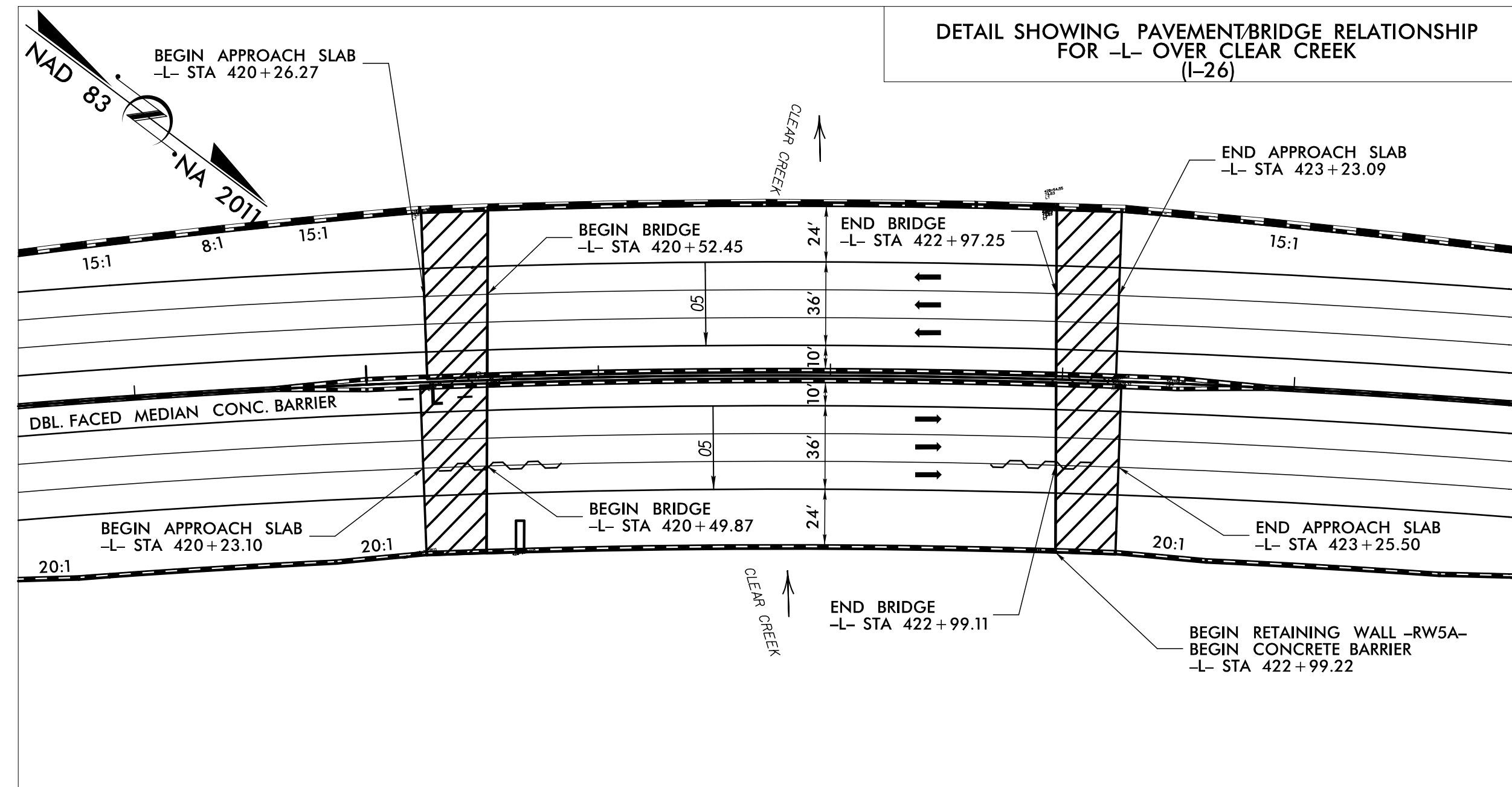
-Y8-
Pls Sta 10+53.81 $\Delta = 61^\circ 54' 55.5''$ (LT) $D = 70^\circ 00' 00.0''$ $L = 88.45'$ $T = 49.10'$ $R = 81.85'$ RO = SEE PLANS SE = SEE PLANS

-Y9-	
Pls Sta 10+42.91 $\Delta = 12^\circ 10' 57.9''$ (RT) $D = 14^\circ 15' 00.0''$ $L = 85.49'$ $T = 42.91'$ $R = 402.08'$ RO = SEE PLANS SE = SEE PLANS	Pls Sta 12+30.45 $\Delta = 54^\circ 49' 31.2''$ (RT) $D = 20^\circ 30' 00.0''$ $L = 267.44'$ $T = 144.95'$ $R = 279.49'$ RO = SEE PLANS SE = SEE PLANS

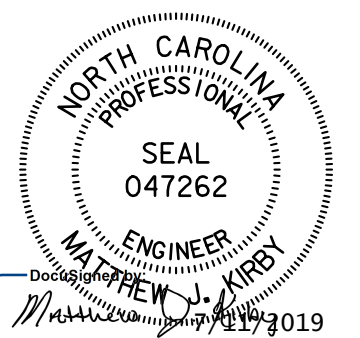
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 czimmowitch AT  
 \$\$SCALE\$\$  
 \$\$ENVIRONMENT\$\$

PROJECT REFERENCE NO. I-4400BB	SHEET NO. 2B-3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

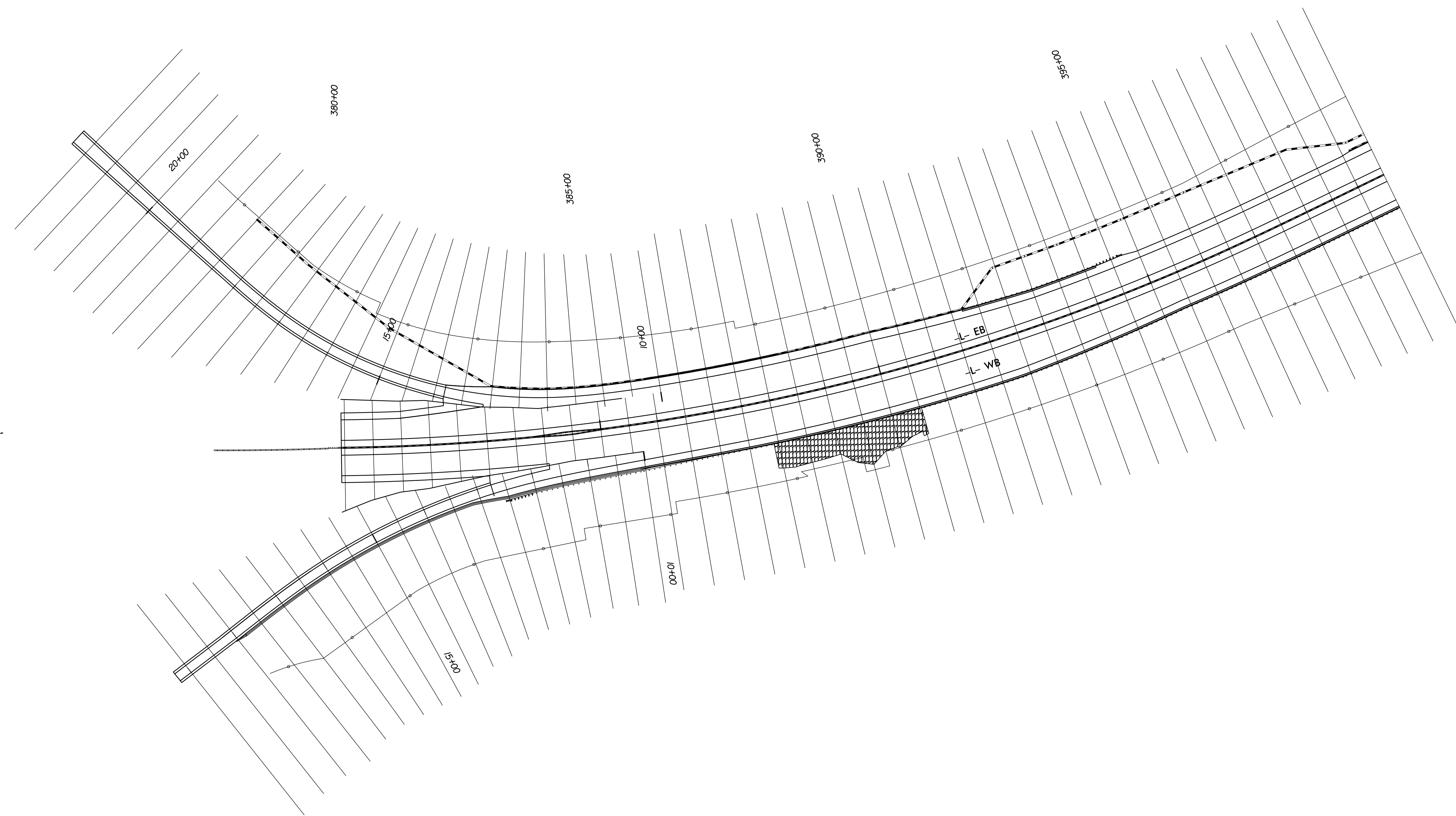
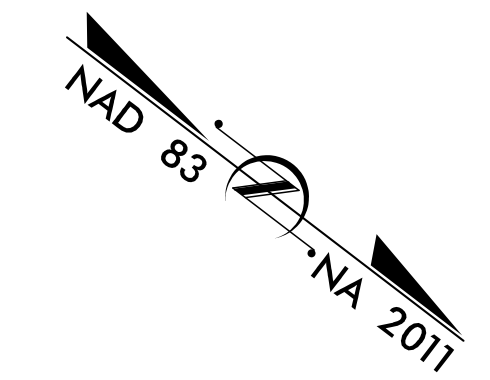
# PAVEMENT/BRIDGE RELATIONSHIP SKETCHES



REVISIONS  
 11-JUL-2019 15:06  
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 czimmovitch AT  
 \$\$\$CALE\$\$\$  
 \$\$ENVIRONMENT\$\$

PROJECT REFERENCE NO.		SHEET NO.	
I-4400BB		2B-4	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			

# CROSS-SECTION LAYOUT



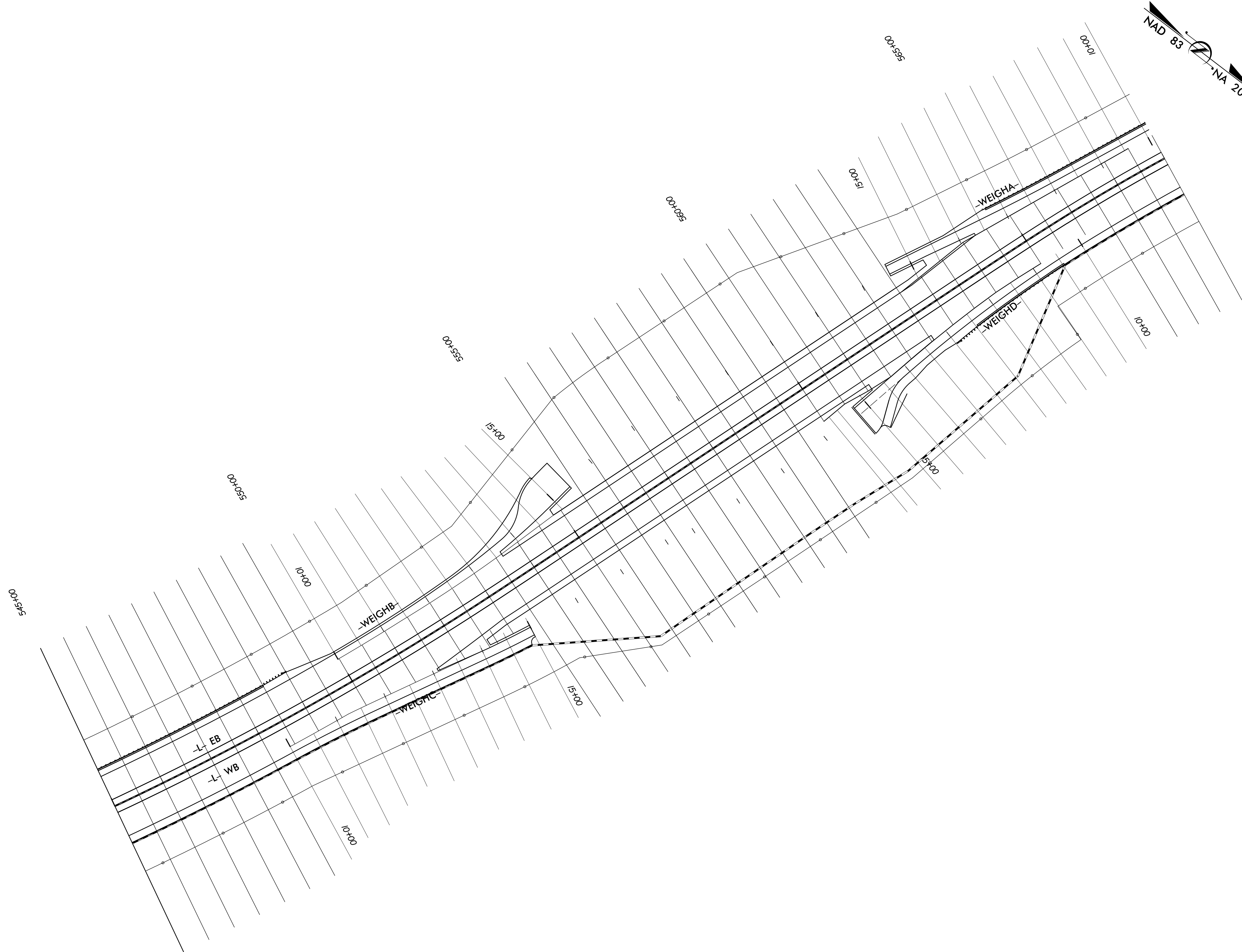
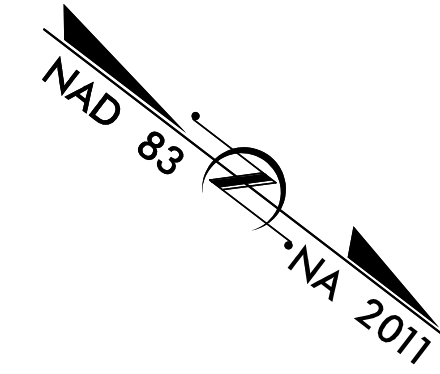
REVISIONS

11-JUL-2019 14:22  
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HNTB

-L- /-YI- INTERCHANGE AREA



# CROSS-SECTION LAYOUT



REVISIONS

11-JUL-2019 14:22  
N:\Roadway\Proj\14400BB-RDY\_SFD\_02.dgn  
HNTB

-L- /WEIGH STATION INTERCHANGE AREA

# INTERSECTION DETAIL -Y2- AND -Y3-



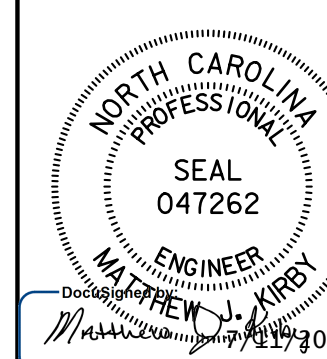
HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

PROJECT REFERENCE NO. SHEET NO.

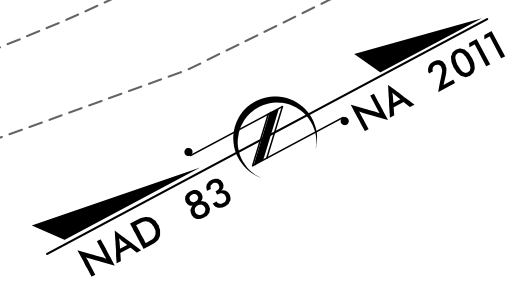
1-4400BB 2B-6

R/W SHEET NO.

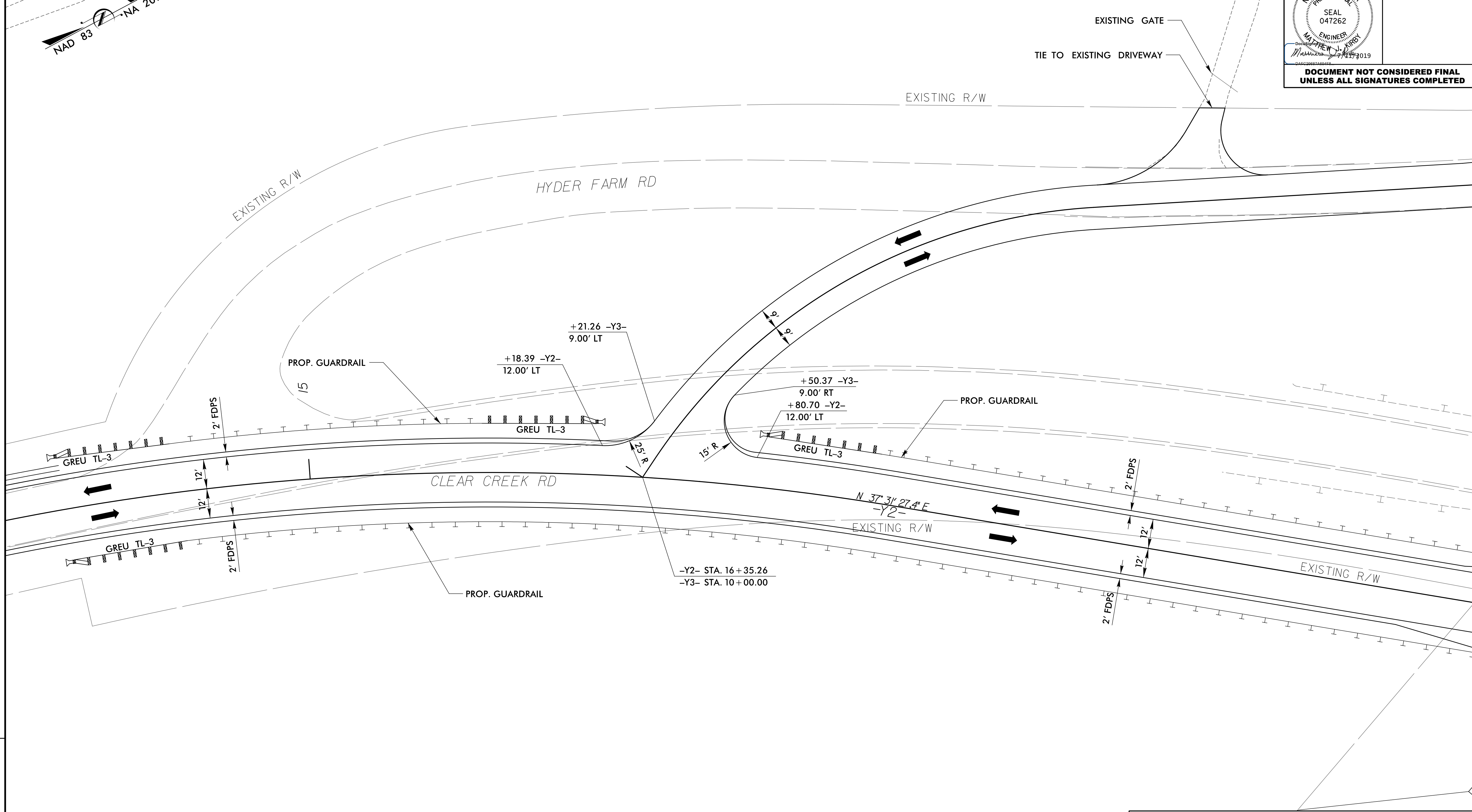
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER



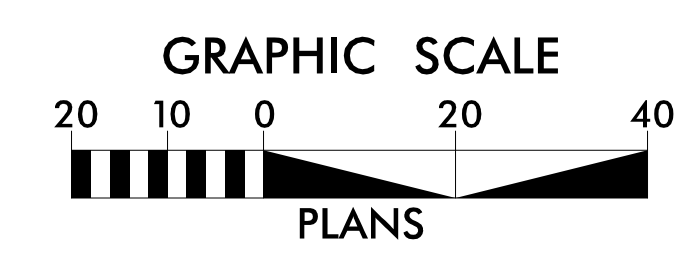
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**



REVISIONS



FOR -Y2- & -Y3- CURVE DATA, SEE SHEET 2B-2  
 FOR -Y2- PROFILE, SEE SHEET 53  
 FOR -Y3- PROFILE, SEE SHEET 54



11-JUL-2019 14:23  
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 HNTB

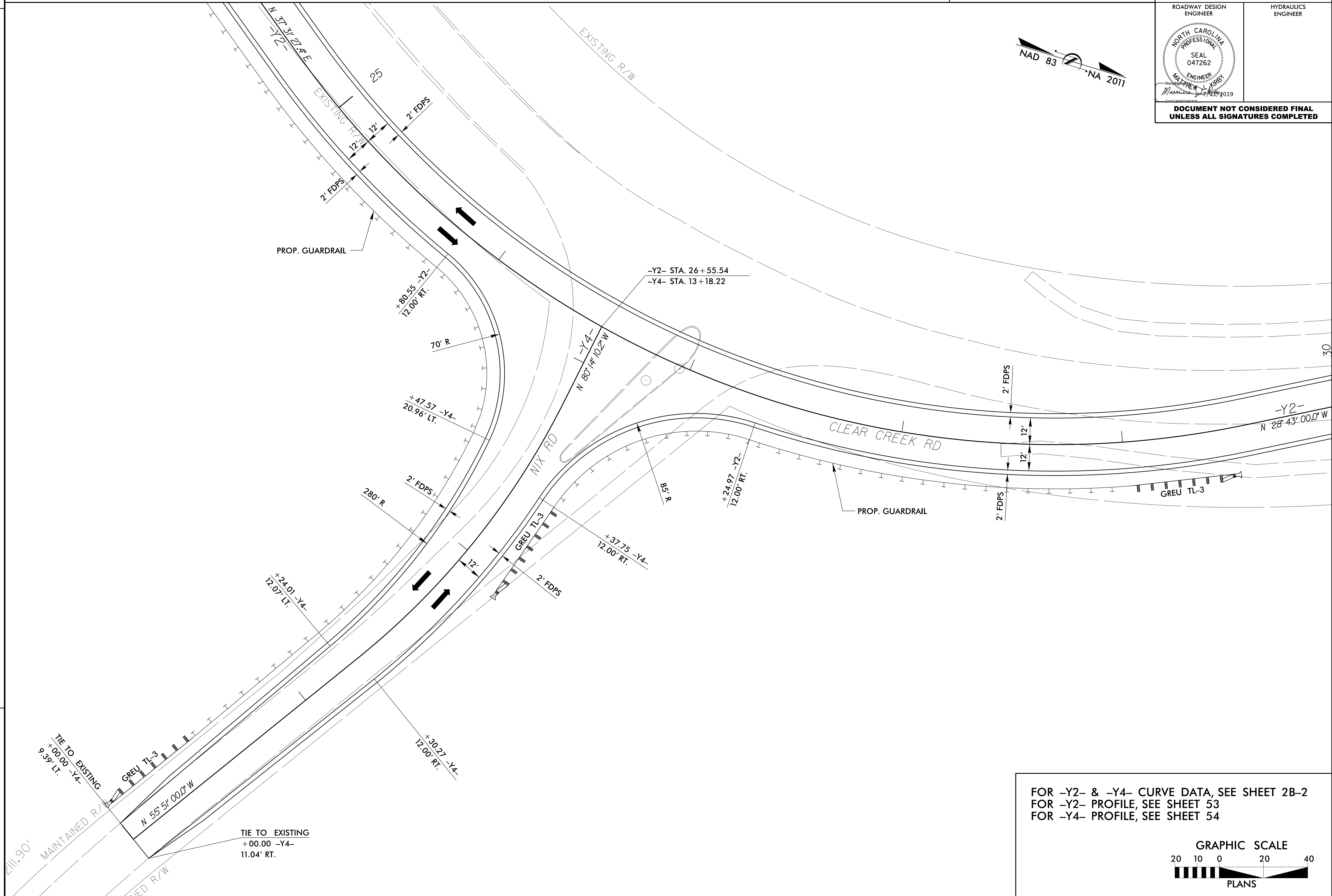
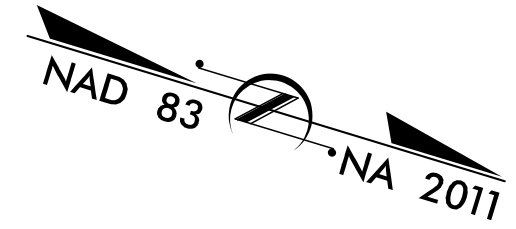
INTERSECTION DETAIL -Y2- AND -Y4-



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Raleigh, North Carolina 27609  
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
1-4400BB	2B-7

RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



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 czimmovitch AT  
 \$\$\$CALE\$\$  
 \$\$ENVIRONMENT\$\$

FOR -Y2- & -Y4- CURVE DATA, SEE SHEET 2B-2  
 FOR -Y2- PROFILE, SEE SHEET 53  
 FOR -Y4- PROFILE, SEE SHEET 54

GRAPHIC SCALE

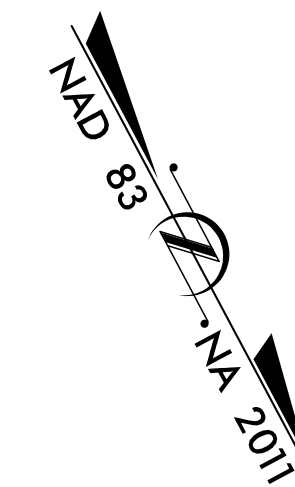
PLANS

# INTERSECTION DETAIL -Y5- AND -Y6-



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343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

PROJECT REFERENCE NO. 1-4400BB	SHEET NO. 2B-8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



REVISIONS

PROP. GUARDRAIL

2' FDPS

12'

12'

2' FDPS

BROOKSIDE CAMP RD

GREU TL-3

+86.16 -Y6-  
10.00' RT.

25' R

+69.00 -Y5-  
12.00' LT.

S 67°02'30.8" E  
-Y6-

10'

KIMBERLY ANN DR

S 43°21'50.4" E  
-Y6-

50' EOT TAPER

+50.00 -Y6-  
10.00' RT.

10'

+8.94 -Y6-  
10.00' RT.

TIE TO EXISTING  
+00.00 -Y6-

-Y5- STA. 23+05.83  
-Y6- STA. 12+23.16

+39.77 -Y5-  
12.00' LT.

2' FDPS

12'

12'

2' FDPS

10.00' LT.

+86.16 -Y6-  
10.00' LT.

25' R

N 22°57'29.2" E  
-Y5-

TIE TO EXISTING  
DRIVEWAY

+50.00 -Y6-  
10.00' LT.

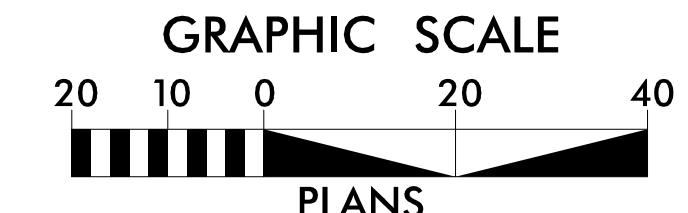
50' EOT TAPER

+00.00 -Y6-  
8.94' LT.

25

GREU TL-3

FOR -Y5- & -Y6- CURVE DATA, SEE SHEET 2B-2  
FOR -Y5- PROFILE, SEE SHEET 55  
FOR -Y6- PROFILE, SEE SHEET 56

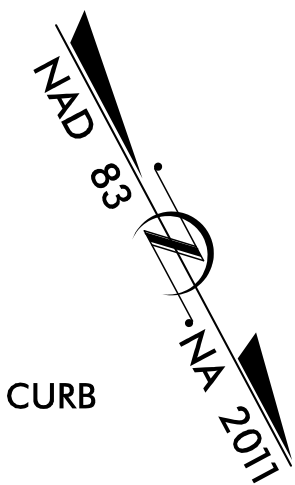


# INTERSECTION DETAIL -Y7- AND -Y8-

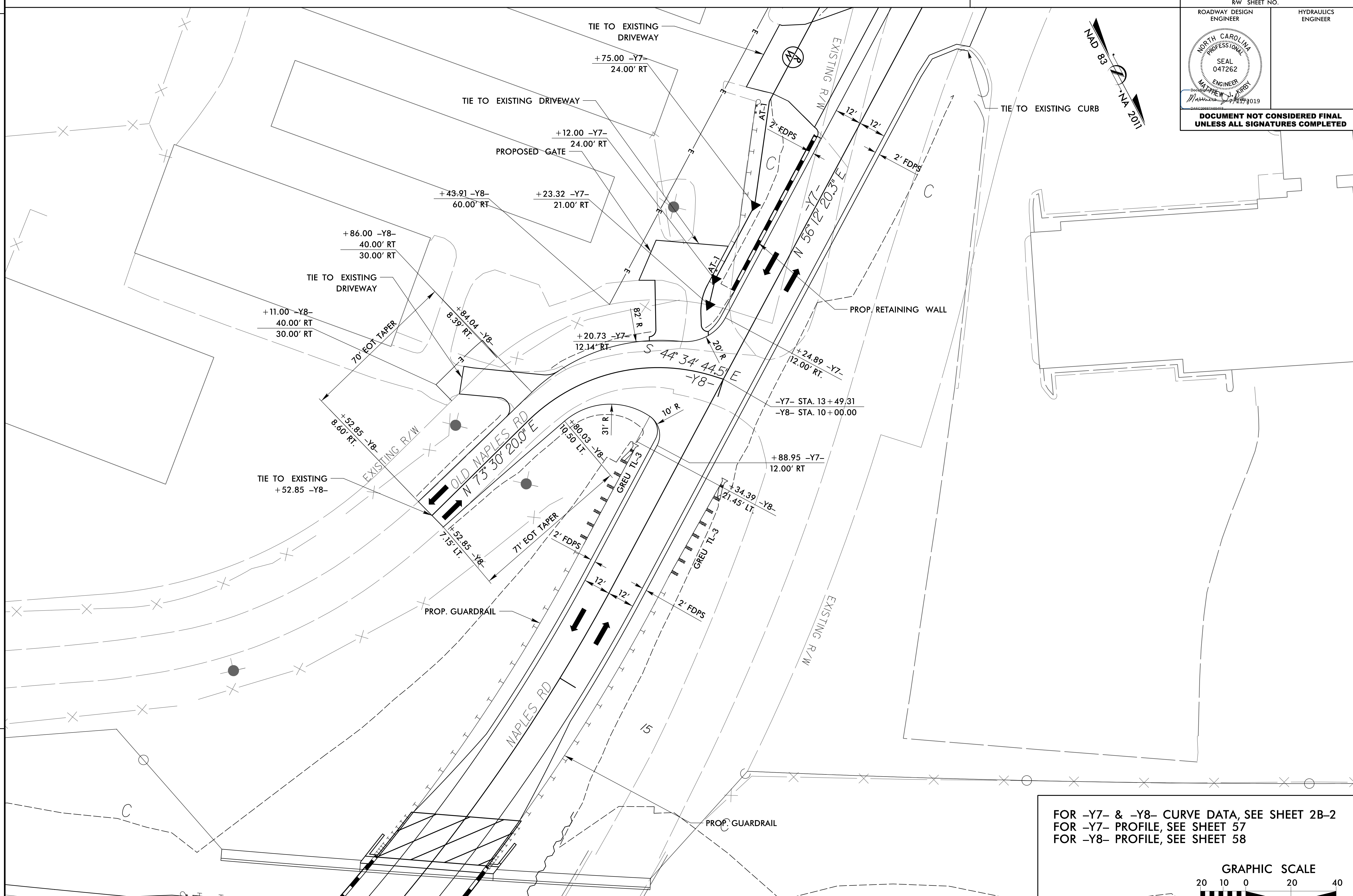


HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

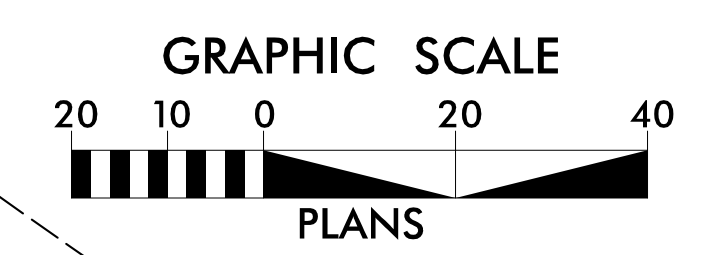
PROJECT REFERENCE NO. 1-4400BB	SHEET NO. 2B-9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



REVISIONS



FOR -Y7- & -Y8- CURVE DATA, SEE SHEET 2B-2  
 FOR -Y7- PROFILE, SEE SHEET 57  
 FOR -Y8- PROFILE, SEE SHEET 58

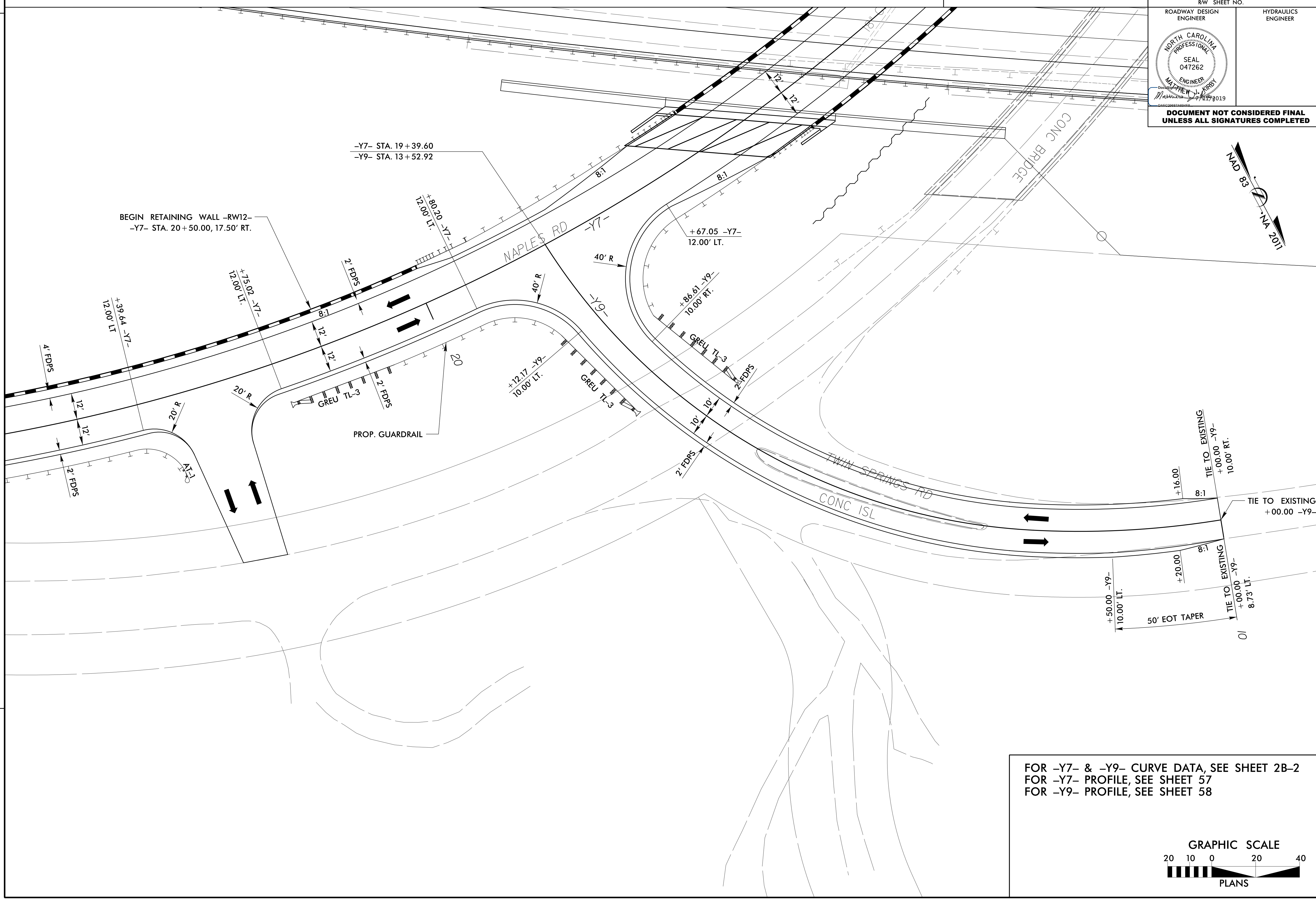
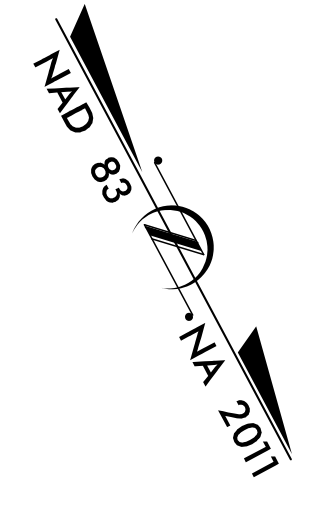


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 \Roadway\Pr-j\14400BB\_FDY\_DTL\_04.dgn  
 HNTB

# INTERSECTION DETAIL -Y7- AND -Y9-

**HNTB**  
HNTB NORTH CAROLINA, P.C.  
343 E. SIX FORKS ROAD, SUITE 200  
RALEIGH, NORTH CAROLINA 27609  
NC LICENSE NO. C-1554

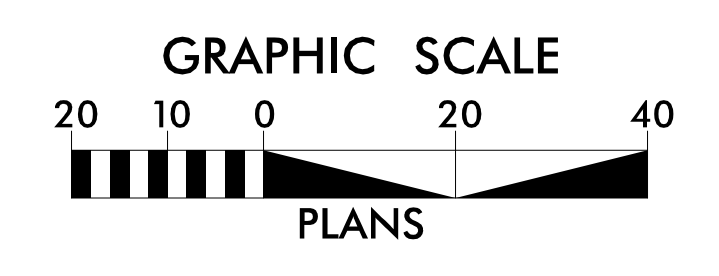
PROJECT REFERENCE NO. 1-4400BB	SHEET NO. 2B-10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



REVISIONS

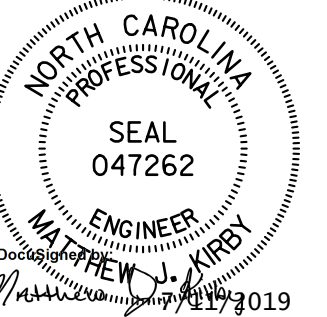
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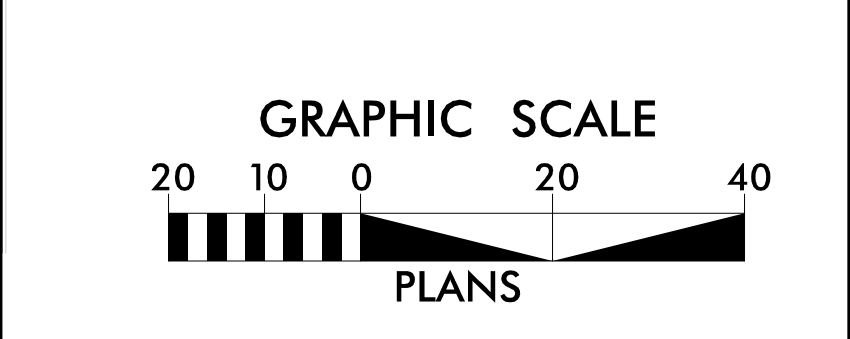
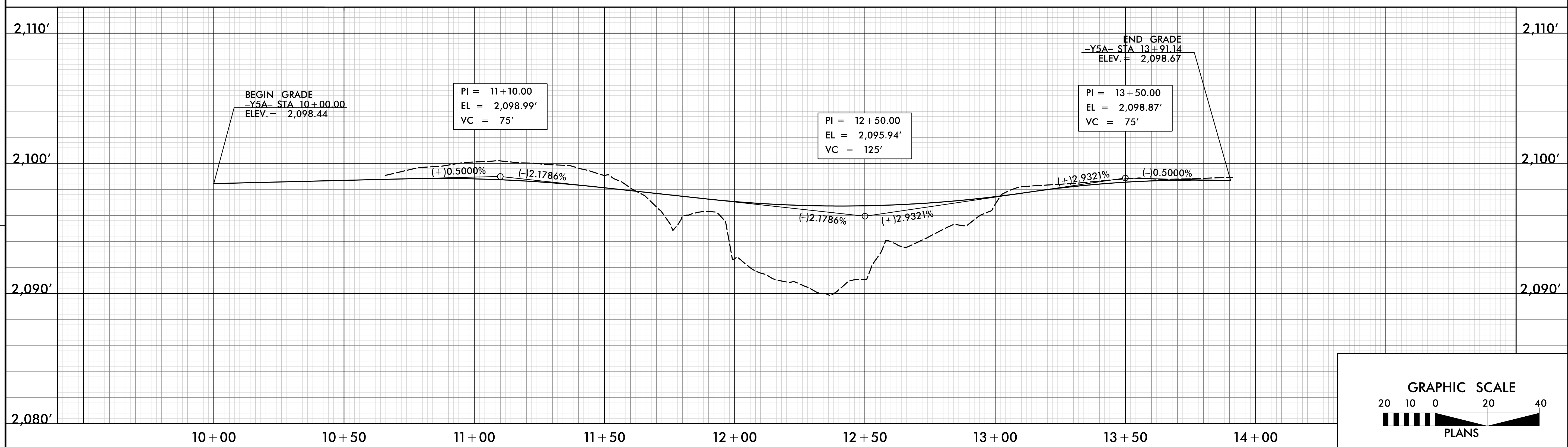
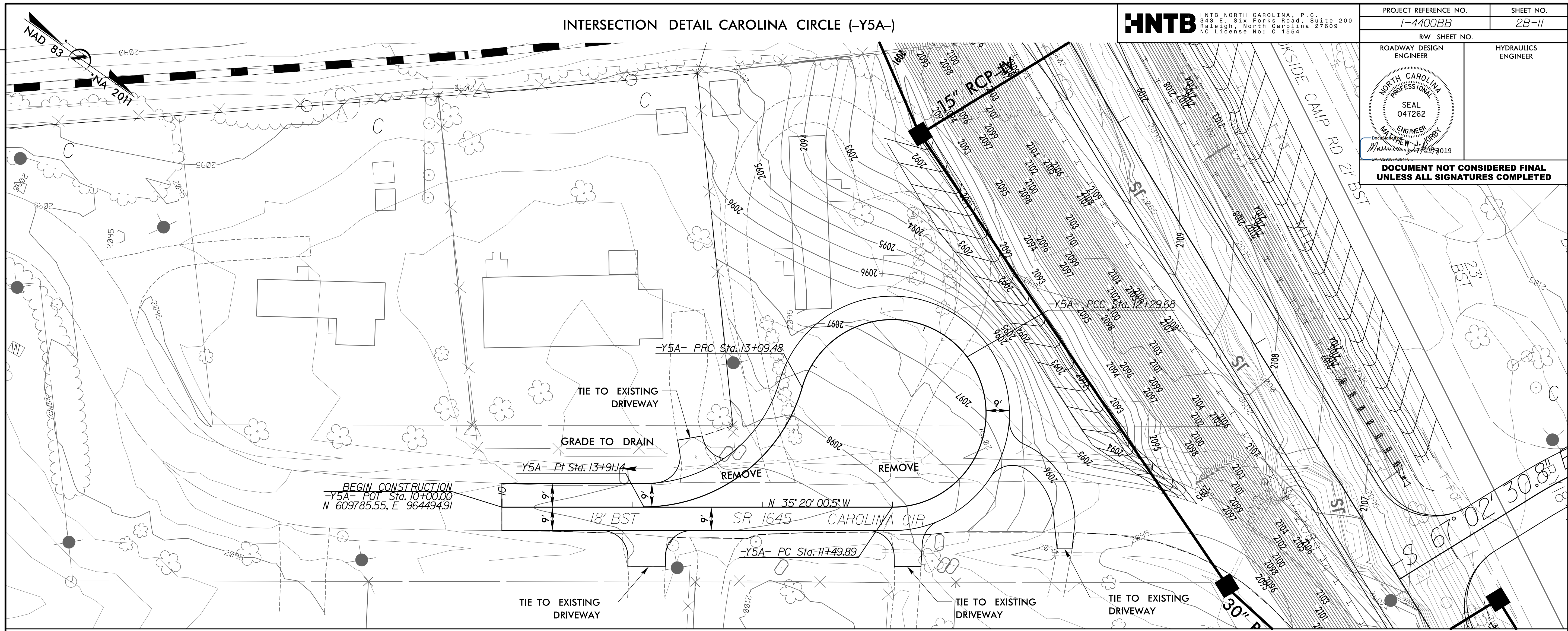
FOR -Y7- & -Y9- CURVE DATA, SEE SHEET 2B-2  
 FOR -Y7- PROFILE, SEE SHEET 57  
 FOR -Y9- PROFILE, SEE SHEET 58



# INTERSECTION DETAIL CAROLINA CIRCLE (-Y5A-)

**HNTB**  
HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

PROJECT REFERENCE NO. I-4400BB	SHEET NO. 2B-11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047262 MATTHEW J. KURB ENGINEER License No. 1173019	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

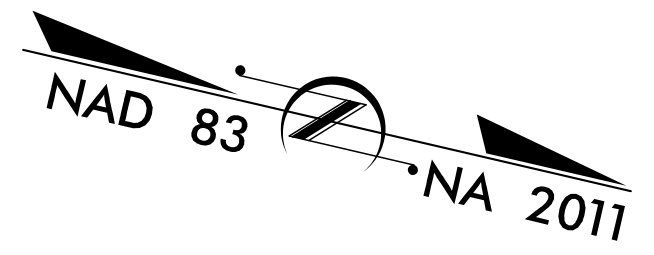


REVISIONS

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HNTB

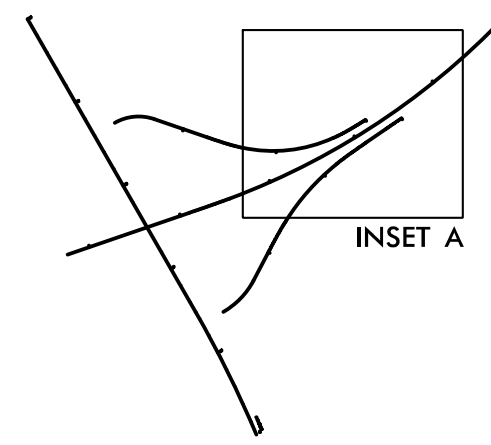
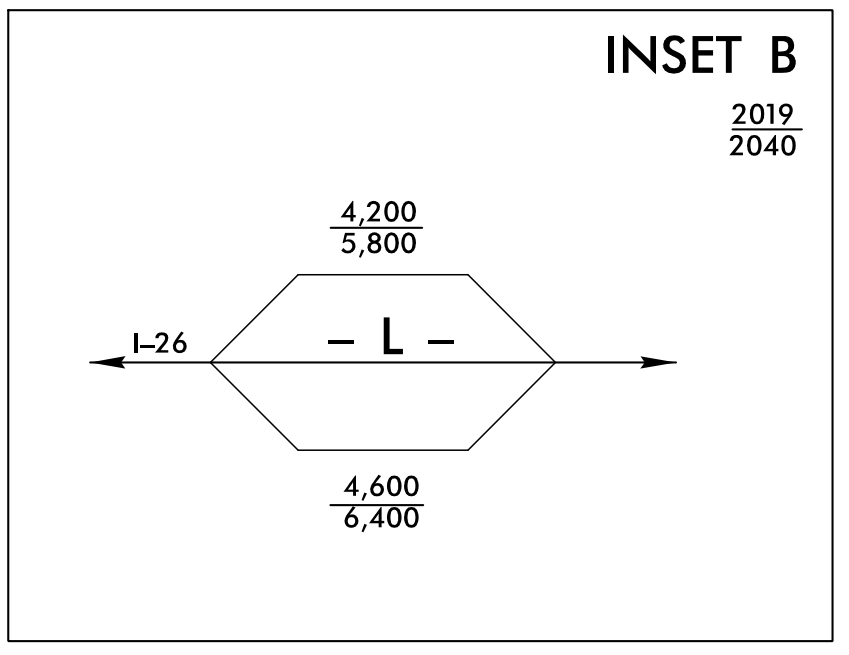
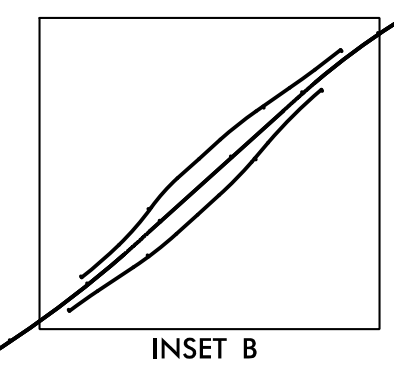
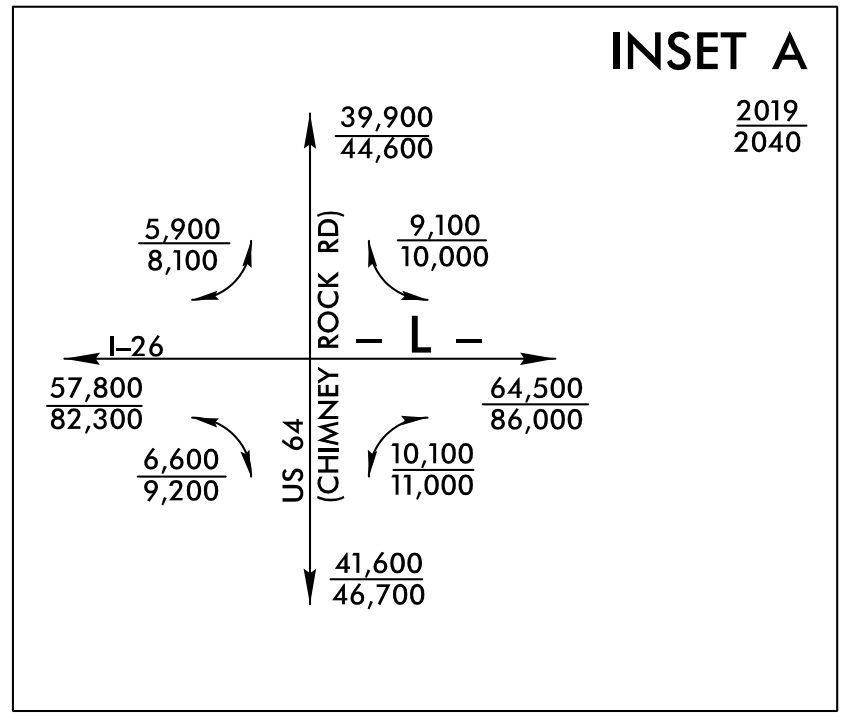
# TRAFFIC VOLUME DIAGRAMS

No. OF VEHICLES PER DAY (VPD)



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

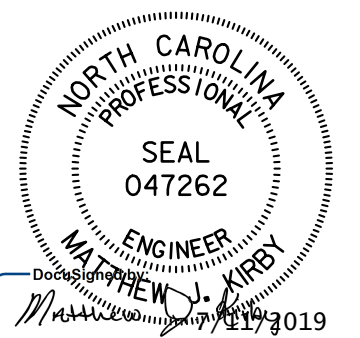
REVISIONS

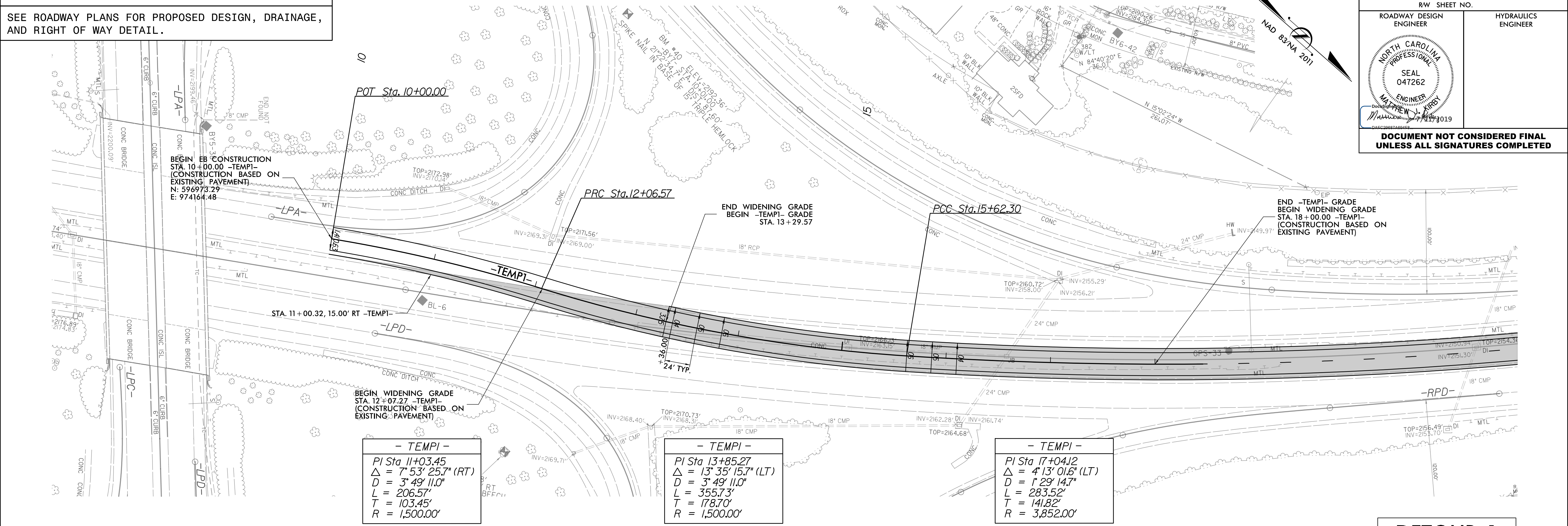




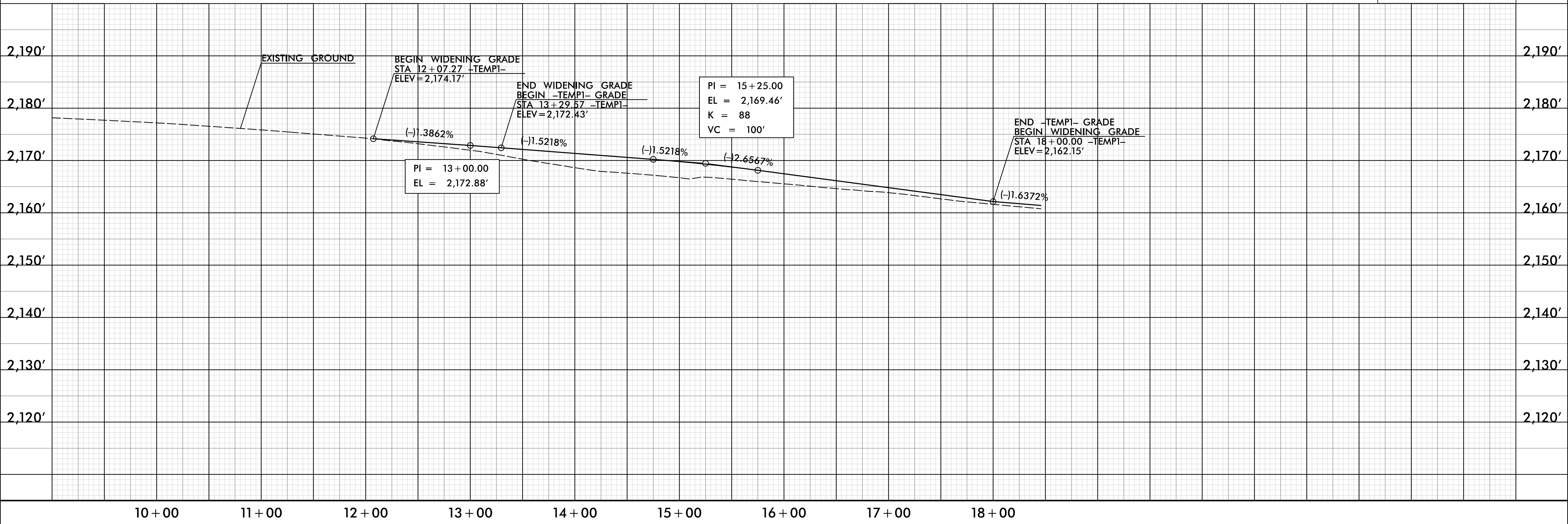
8.17.19

SEE WZTC PLANS FOR ADJACENT TEMPORARY PAVEMENT AREAS AND LOCATIONS OF PORTABLE CONCRETE BARRIER.  
SEE ROADWAY PLANS FOR PROPOSED DESIGN, DRAINAGE, AND RIGHT OF WAY DETAIL.

PROJECT REFERENCE NO. 1-4400BB	SHEET NO. 2B-13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
<p><b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b></p>	



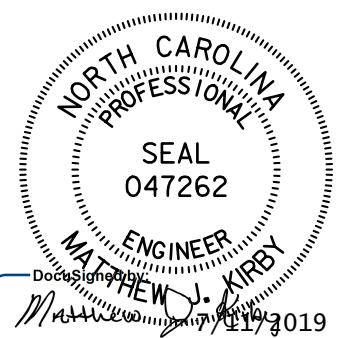
**DETOUR 1**

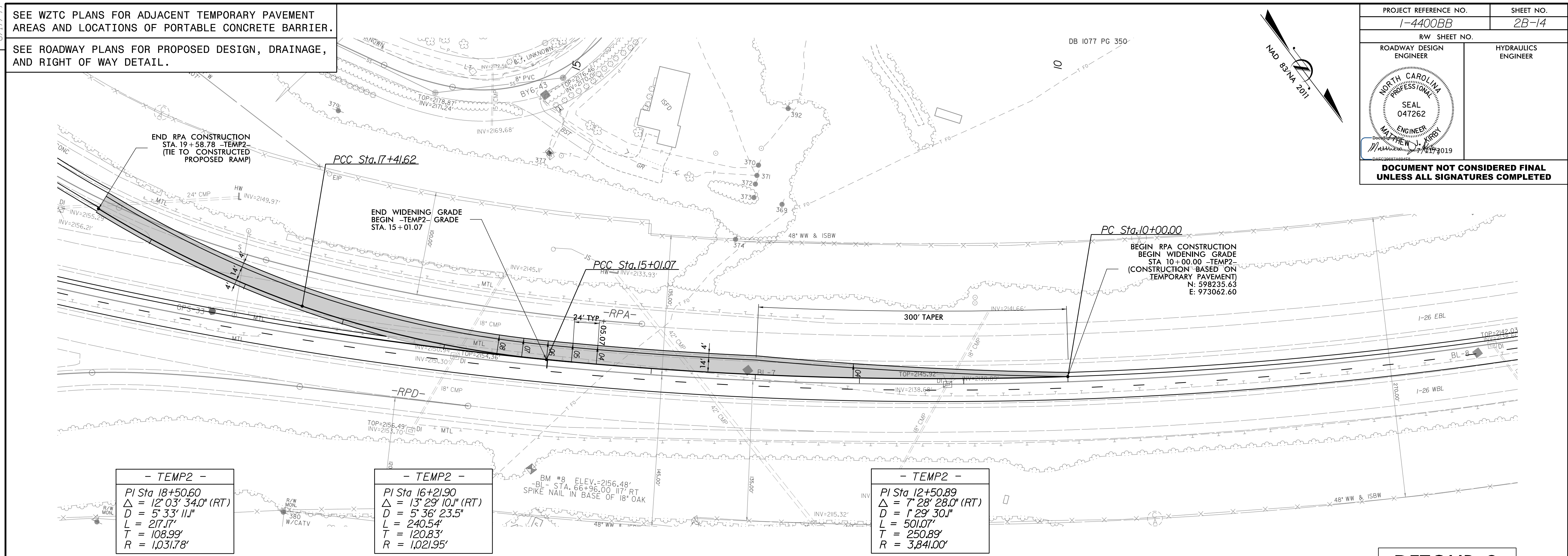
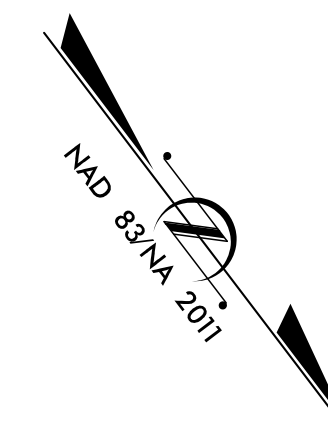


REVISIONS

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SEE WZTC PLANS FOR ADJACENT TEMPORARY PAVEMENT AREAS AND LOCATIONS OF PORTABLE CONCRETE BARRIER.  
SEE ROADWAY PLANS FOR PROPOSED DESIGN, DRAINAGE, AND RIGHT OF WAY DETAIL.

PROJECT REFERENCE NO. 1-4400BB	SHEET NO. 2B-14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047262 ENGINEER MATTHEW J. KURB License No. 1139019 State of North Carolina	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

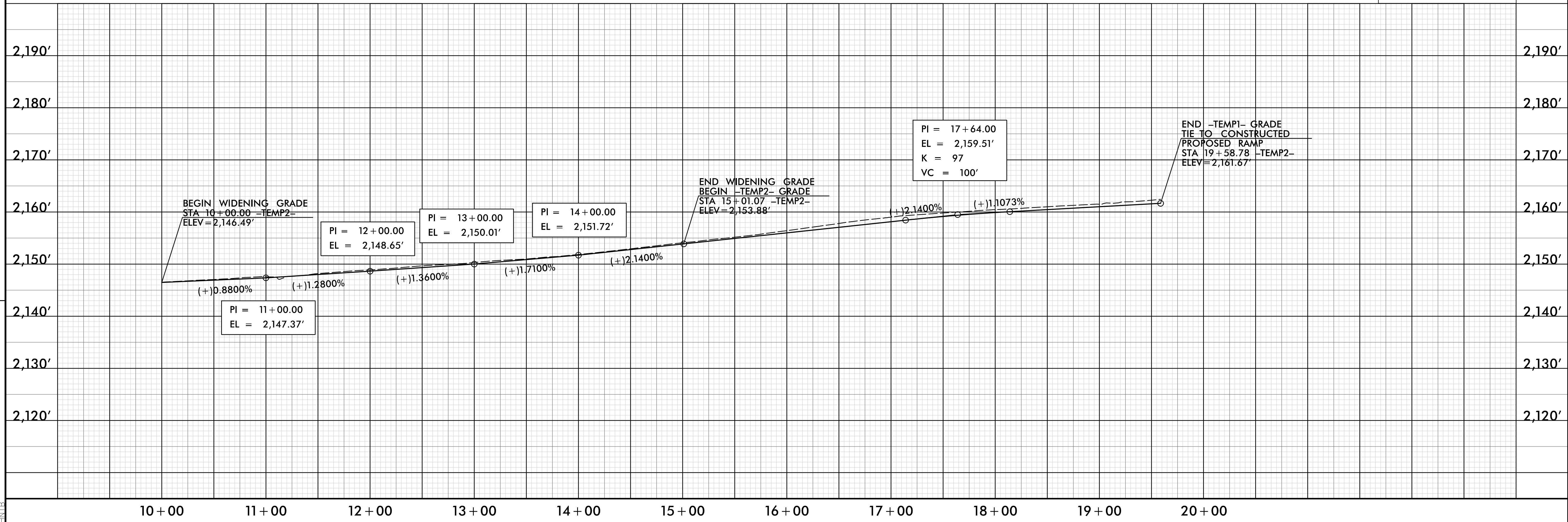


- TEMP2 -  
 PI Sta 18+50.60  
 $\Delta = 12' 03'' 34.0''$  (RT)  
 $D = 5' 33'' 11.1''$   
 $L = 217.17'$   
 $T = 108.99'$   
 $R = 1,031.78'$

- TEMP2 -  
 PI Sta 16+21.90  
 $\Delta = 13' 29'' 10.1''$  (RT)  
 $D = 5' 36'' 23.5''$   
 $L = 240.54'$   
 $T = 120.83'$   
 $R = 1,021.95'$

- TEMP2 -  
 PI Sta 12+50.89  
 $\Delta = 7' 28'' 28.0''$  (RT)  
 $D = 1' 29'' 30.1''$   
 $L = 501.07'$   
 $T = 250.89'$   
 $R = 3,841.00'$

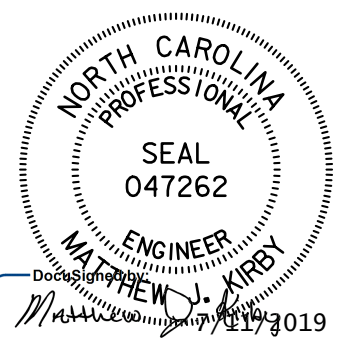
**DETOUR 2**

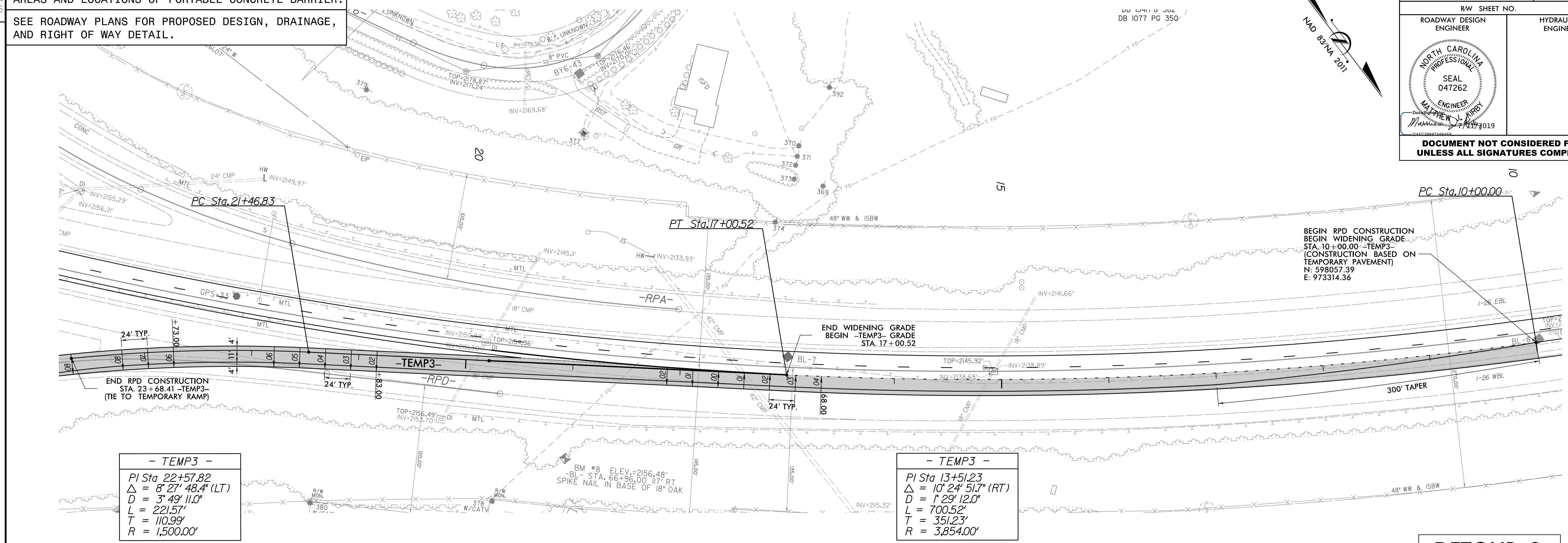
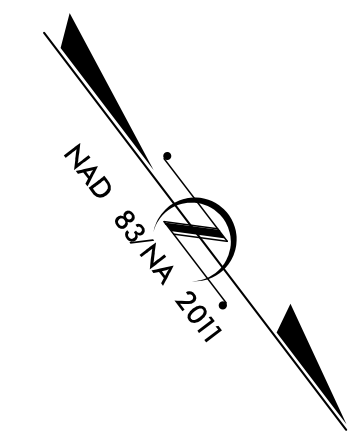


REVISIONS

1-JUL-2019 14:25 [Roadway\_Plan] 14400BB\_RDY\_Detour\_2B-14.dgn

SEE WZTC PLANS FOR ADJACENT TEMPORARY PAVEMENT AREAS AND LOCATIONS OF PORTABLE CONCRETE BARRIER.  
SEE ROADWAY PLANS FOR PROPOSED DESIGN, DRAINAGE, AND RIGHT OF WAY DETAIL.

PROJECT REFERENCE NO. 1-4400BB	SHEET NO. 2B-15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



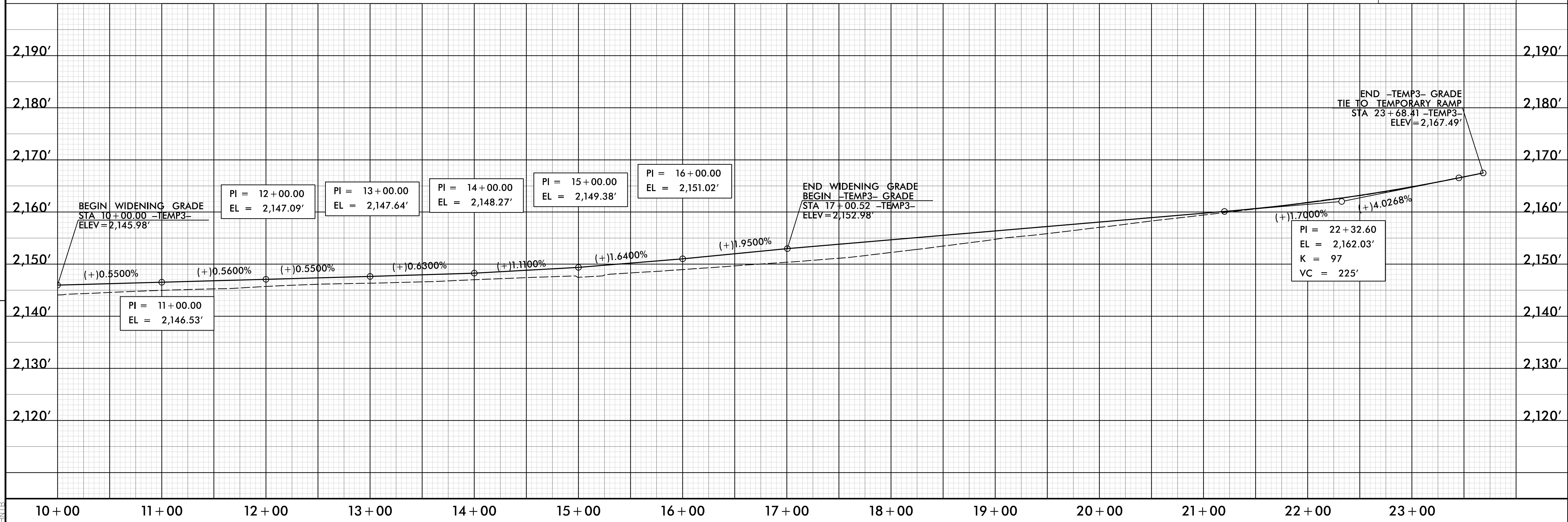
- TEMP3 -

PI Sta 22+57.82  
 $\Delta = 8^\circ 27' 48.4''$  (LT)  
 $D = 3^\circ 49' 11.0''$   
 $L = 221.57'$   
 $T = 110.99'$   
 $R = 1,500.00'$

- TEMP3 -

PI Sta 13+51.23  
 $\Delta = 10^\circ 24' 51.7''$  (RT)  
 $D = 1^\circ 28' 12.0''$   
 $L = 700.52'$   
 $T = 351.23'$   
 $R = 3,854.00'$

**DETOUR 3**



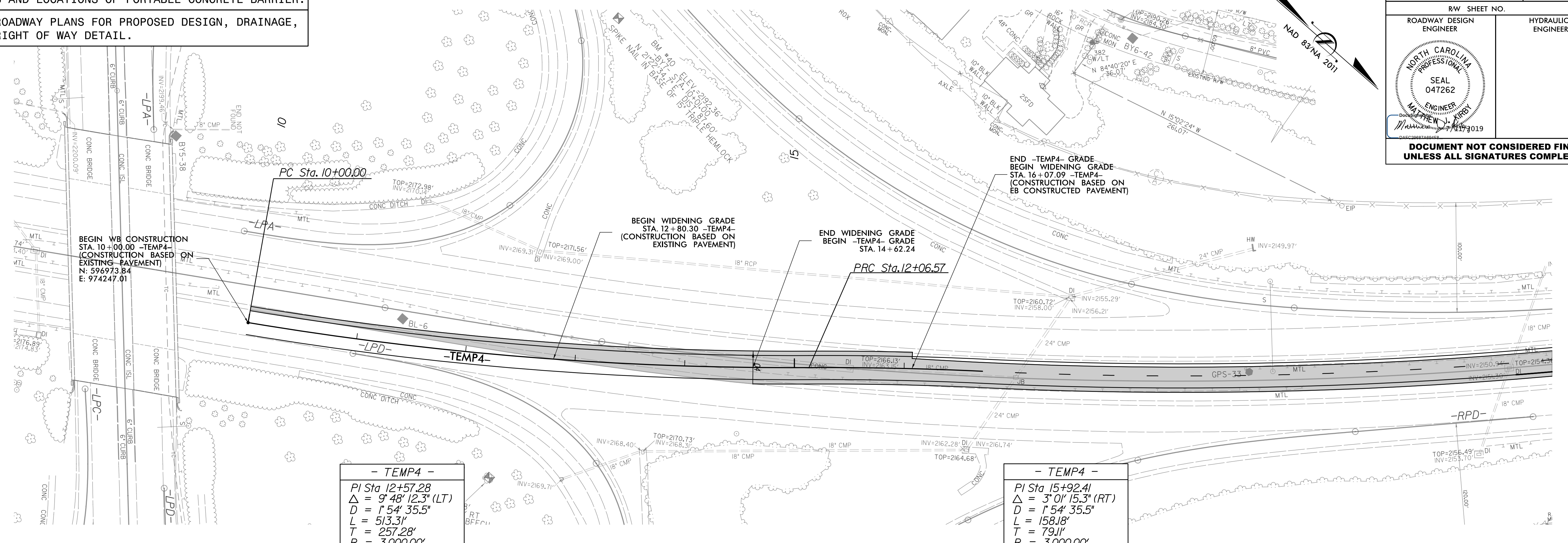
REVISIONS

I:\JUL 2019 14:25 [Roadway\_Plan] 14400BB\_RDY\_Detour\_2B-15.dgn

8/17/99

SEE WZTC PLANS FOR ADJACENT TEMPORARY PAVEMENT AREAS AND LOCATIONS OF PORTABLE CONCRETE BARRIER.  
SEE ROADWAY PLANS FOR PROPOSED DESIGN, DRAINAGE, AND RIGHT OF WAY DETAIL.

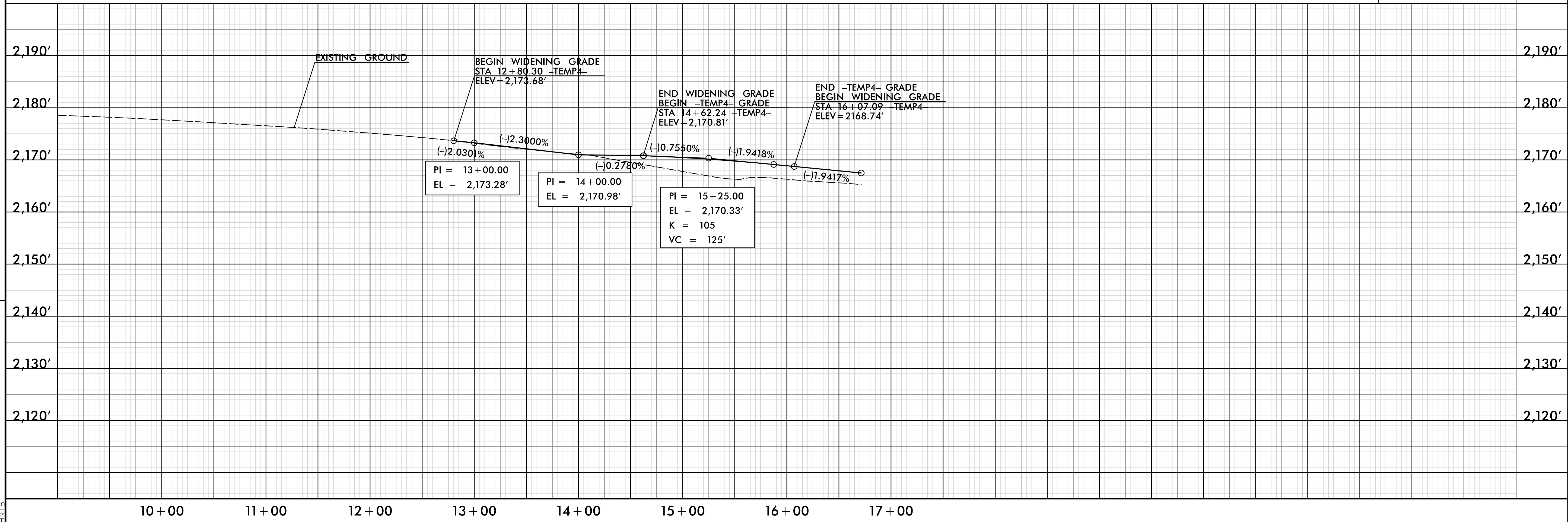
PROJECT REFERENCE NO. 1-4400BB	SHEET NO. 2B-16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



**- TEMP4 -**  
 PI Sta 12+57.28  
 $\Delta = 9' 48' 12.3''$  (LT)  
 $D = 1' 54' 35.5''$   
 $L = 513.3'$   
 $T = 257.28'$   
 $R = 3,000.00'$

**- TEMP4 -**  
 PI Sta 15+92.41  
 $\Delta = 3' 0' 15.3''$  (RT)  
 $D = 1' 54' 35.5''$   
 $L = 158.18'$   
 $T = 79.11'$   
 $R = 3,000.00'$

**DETOUR 4**



REVISIONS

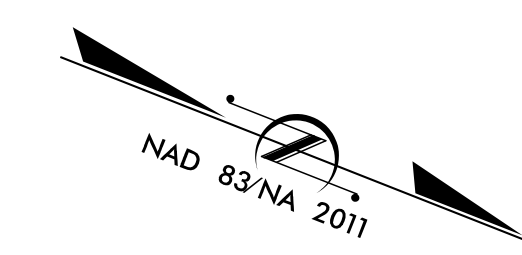
11 JUL 2019 14:26  
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8.17.17.99

SEE WZTC PLANS FOR ADJACENT TEMPORARY PAVEMENT AREAS AND LOCATIONS OF PORTABLE CONCRETE BARRIER.

SEE ROADWAY PLANS FOR PROPOSED DESIGN, DRAINAGE, AND RIGHT OF WAY DETAIL.

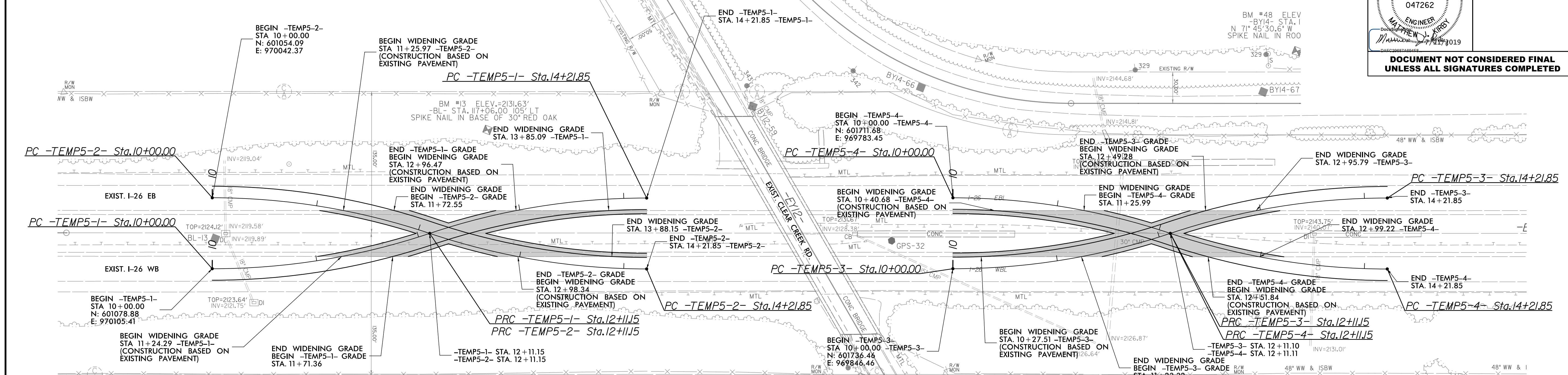
CLEAR CREEK INVESTMENT GROUP, LLC  
DB 3309 PG 430  
SLIDE 11670



PROJECT REFERENCE NO. 1-4400BB	SHEET NO. 2B-17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

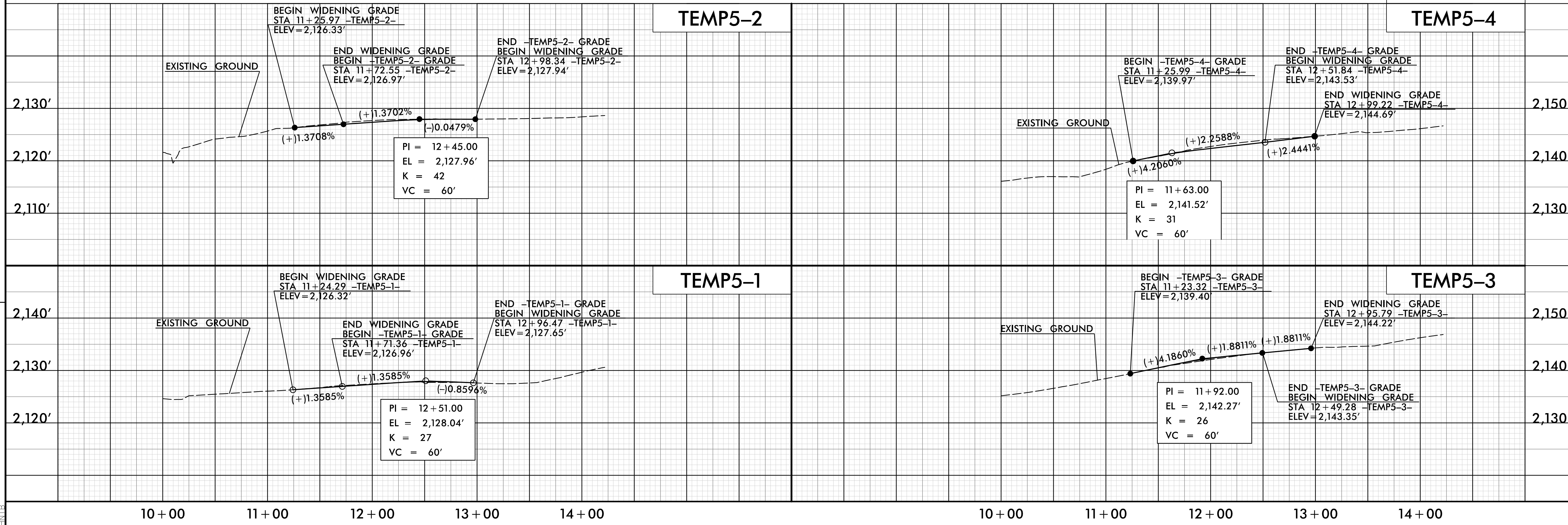
NORTH CAROLINA PROFESSIONAL ENGINEER  
SEAL 047262  
M. J. JAMES, P.E.  
11/19/2019

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



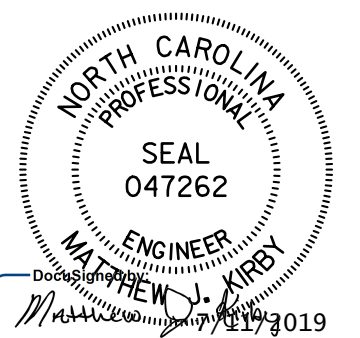
<p><b>- TEMP5-1 -</b></p> <p>PI Sta 11+06.52 Δ = 18° 36' 45.8" (LT) D = 8' 48' 53.1" L = 211.5' T = 106.52' R = 650.00'</p>		<p><b>- TEMP5-1 -</b></p> <p>PI Sta 13+17.43 Δ = 18° 34' 19.8" (RT) D = 8' 48' 53.1" L = 210.69' T = 106.28' R = 650.00'</p>		<p><b>- TEMP5-2 -</b></p> <p>PI Sta 11+06.52 Δ = 18° 36' 45.8" (RT) D = 8' 48' 53.1" L = 211.5' T = 106.52' R = 650.00'</p>		<p><b>- TEMP5-2 -</b></p> <p>PI Sta 13+17.43 Δ = 18° 34' 19.8" (LT) D = 8' 48' 53.1" L = 210.69' T = 106.28' R = 650.00'</p>		<p><b>- TEMP5-3 -</b></p> <p>PI Sta 11+06.52 Δ = 18° 36' 45.8" (LT) D = 8' 48' 53.1" L = 211.5' T = 106.52' R = 650.00'</p>		<p><b>- TEMP5-3 -</b></p> <p>PI Sta 13+17.43 Δ = 18° 34' 19.8" (RT) D = 8' 48' 53.1" L = 210.69' T = 106.28' R = 650.00'</p>		<p><b>- TEMP5-4 -</b></p> <p>PI Sta 11+06.52 Δ = 18° 36' 45.8" (RT) D = 8' 48' 53.1" L = 211.5' T = 106.52' R = 650.00'</p>		<p><b>- TEMP5-4 -</b></p> <p>PI Sta 13+17.43 Δ = 18° 34' 19.8" (LT) D = 8' 48' 53.1" L = 210.69' T = 106.28' R = 650.00'</p>	
---	--	--	--	---	--	--	--	---	--	--	--	---	--	--	--

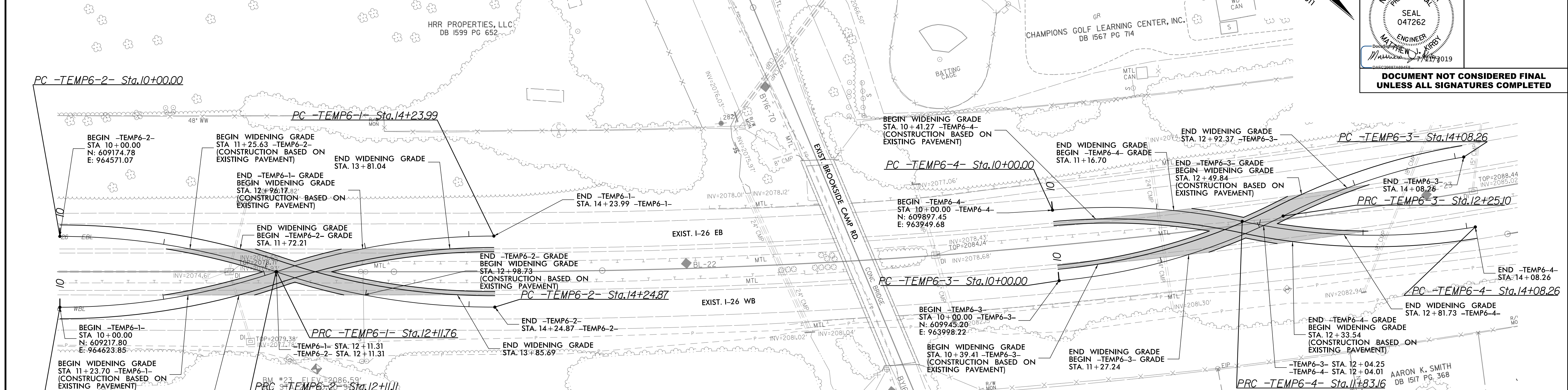
**DETOUR 5**



11-JUL-2019 14:26  
 (Roadway\_Plan) 14400BB\_RWD\_Detour\_2B-17.dgn  
 11/19/2019

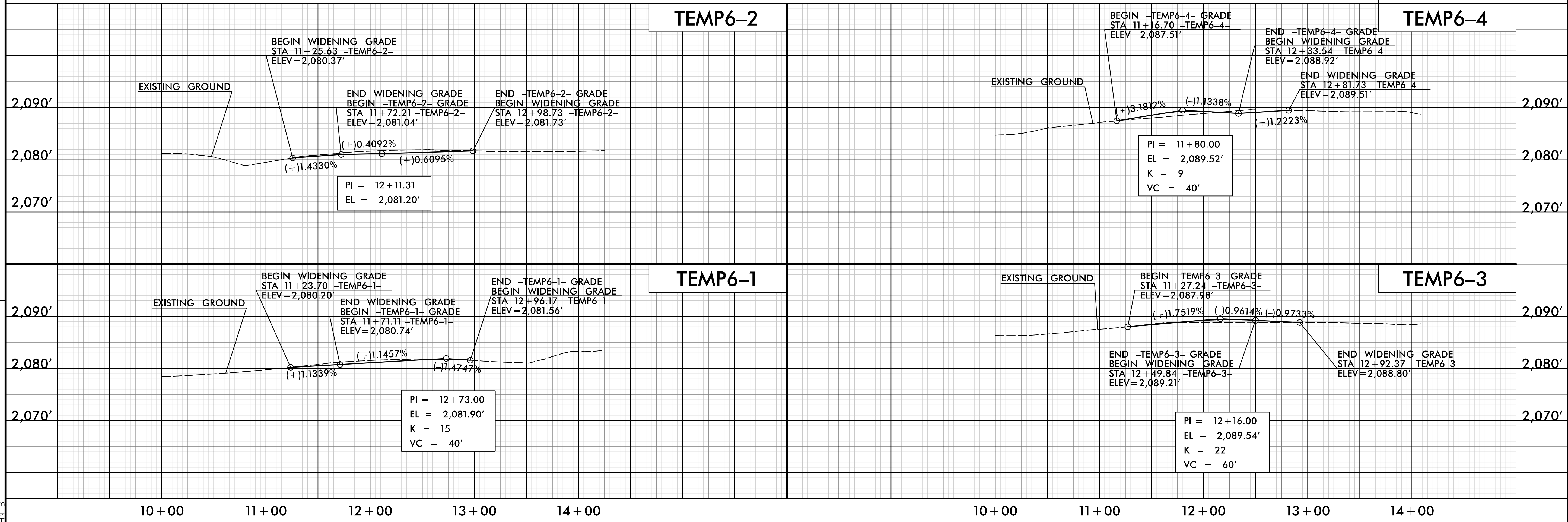
SEE WZTC PLANS FOR ADJACENT TEMPORARY PAVEMENT AREAS AND LOCATIONS OF PORTABLE CONCRETE BARRIER.  
SEE ROADWAY PLANS FOR PROPOSED DESIGN, DRAINAGE, AND RIGHT OF WAY DETAIL.

PROJECT REFERENCE NO. 1-4400BB	SHEET NO. 2B-18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



- TEMP6-1 -		- TEMP6-2 -		- TEMP6-3 -		- TEMP6-4 -	
PI Sta 11+06.83	PI Sta 13+17.43	PI Sta 11+06.49	PI Sta 13+18.96	PI Sta 11+13.89	PI Sta 13+17.40	PI Sta 10+92.30	PI Sta 12+97.05
$\Delta = 18^\circ 39' 59.0''$ (LT)	$\Delta = 18^\circ 42' 26.7''$ (RT)	$\Delta = 18^\circ 36' 31.0''$ (RT)	$\Delta = 18^\circ 50' 33.0''$ (LT)	$\Delta = 21^\circ 29' 43.9''$ (LT)	$\Delta = 17^\circ 29' 25.6''$ (RT)	$\Delta = 17^\circ 29' 25.6''$ (RT)	$\Delta = 21^\circ 29' 43.9''$ (LT)
D = 8' 48' 53.1"	D = 8' 48' 53.1"	D = 8' 48' 53.1"	D = 8' 48' 53.1"	D = 9' 32' 57.5"	D = 9' 32' 57.5"	D = 9' 32' 57.5"	D = 9' 32' 57.5"
L = 211.76'	L = 212.23'	L = 211.1'	L = 213.76'	L = 225.10'	L = 183.16'	L = 183.16'	L = 225.10'
T = 106.83'	T = 107.07'	T = 106.49'	T = 107.85'	T = 113.89'	T = 92.30'	T = 92.30'	T = 113.89'
R = 650.00'	R = 650.00'	R = 650.00'	R = 650.00'	R = 600.00'	R = 600.00'	R = 600.00'	R = 600.00'

**DETOUR 6**



REVISIONS

14400BB\_RWD\_Detour\_2B-18.dgn

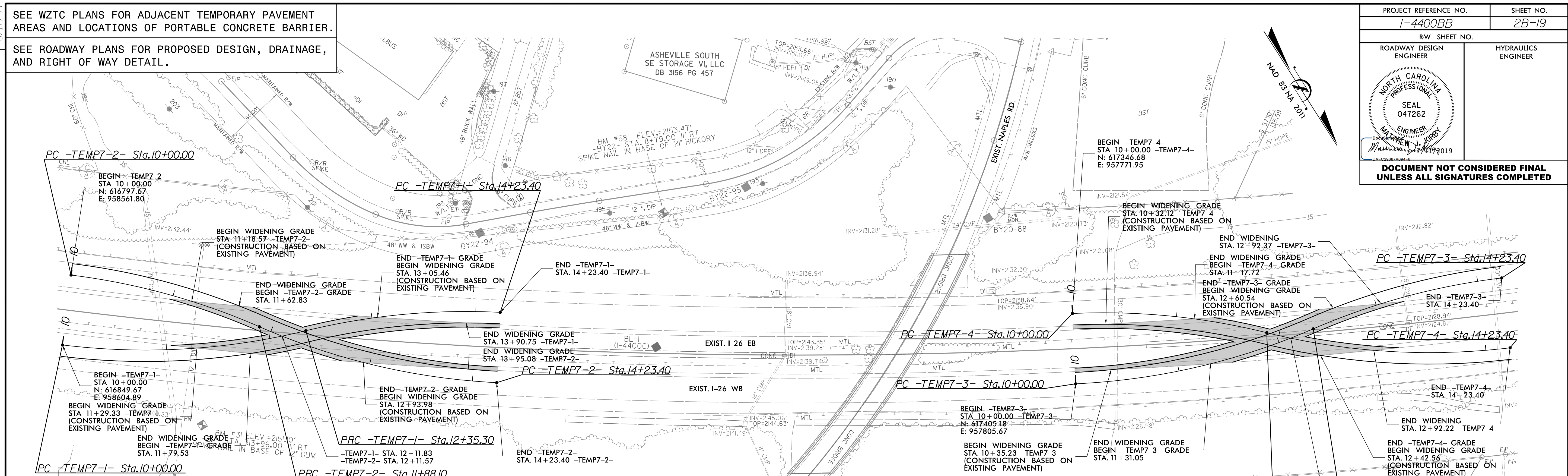
SEE WZTC PLANS FOR ADJACENT TEMPORARY PAVEMENT AREAS AND LOCATIONS OF PORTABLE CONCRETE BARRIER.

SEE ROADWAY PLANS FOR PROPOSED DESIGN, DRAINAGE, AND RIGHT OF WAY DETAIL.

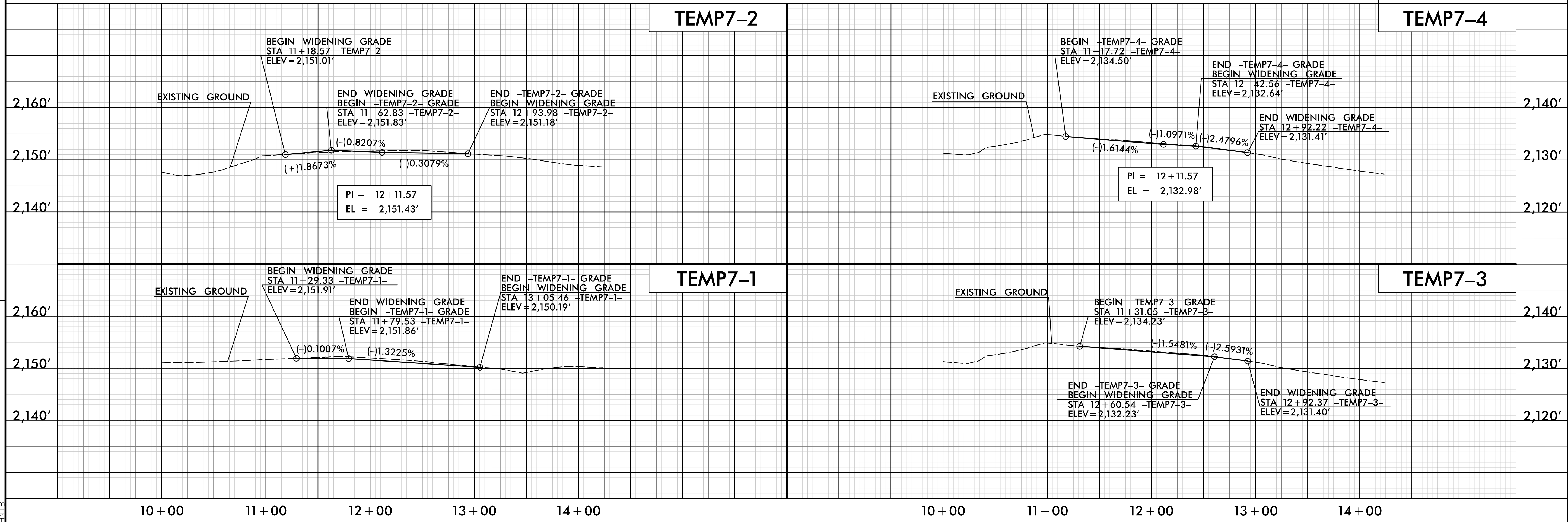
PROJECT REFERENCE NO. 1-4400BB	SHEET NO. 2B-19
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGINEER  
MATTHEW J. KIRBY  
No. 047262  
State of North Carolina  
Professional Engineer

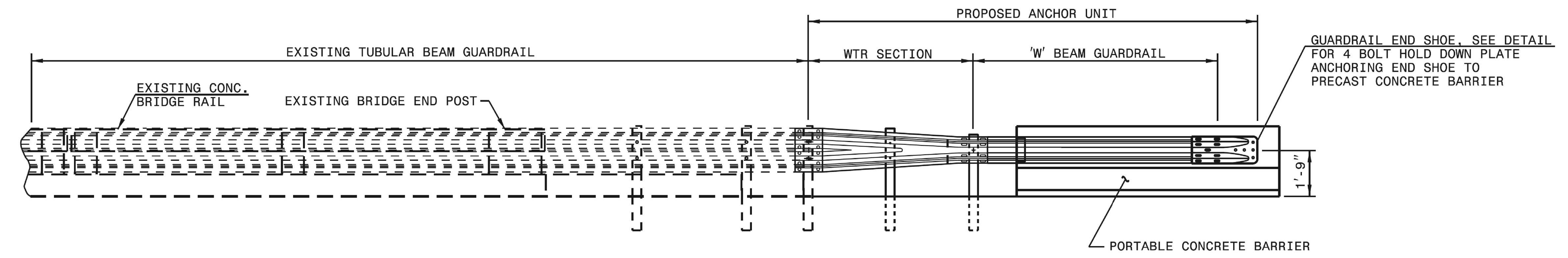
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**



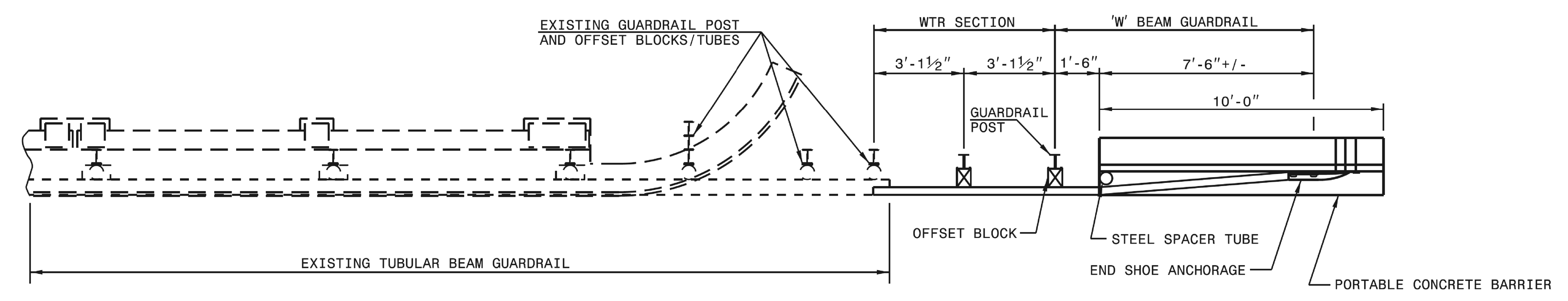
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PI Sta 11+18.95	PI Sta 13+30.01	PI Sta 10+94.71	PI Sta 13+07.06	PI Sta 11+8.95	PI Sta 13+30.01	PI Sta 10+94.71	PI Sta 13+07.06	PI Sta 11+8.95	PI Sta 13+30.01	PI Sta 10+94.71	PI Sta 13+07.06	PI Sta 11+8.95	PI Sta 13+30.01	PI Sta 10+94.71	PI Sta 13+07.06
$\Delta = 20' 44" 28.5" (LT)$	$\Delta = 16' 34" 50.6" (RT)$	$\Delta = 16' 34" 50.6" (RT)$	$\Delta = 20' 44" 28.5" (LT)$	$\Delta = 20' 44" 28.5" (LT)$	$\Delta = 16' 34" 50.6" (RT)$	$\Delta = 16' 34" 50.6" (RT)$	$\Delta = 20' 44" 28.5" (LT)$	$\Delta = 20' 44" 28.5" (LT)$	$\Delta = 16' 34" 50.6" (RT)$	$\Delta = 16' 34" 50.6" (RT)$	$\Delta = 20' 44" 28.5" (LT)$	$\Delta = 20' 44" 28.5" (LT)$	$\Delta = 16' 34" 50.6" (RT)$	$\Delta = 16' 34" 50.6" (RT)$	$\Delta = 20' 44" 28.5" (LT)$
D = 8' 48" 53.1"	D = 8' 48" 53.1"	D = 8' 48" 53.1"	D = 8' 48" 53.1"	D = 8' 48" 53.1"	D = 8' 48" 53.1"	D = 8' 48" 53.1"	D = 8' 48" 53.1"	D = 8' 48" 53.1"	D = 8' 48" 53.1"	D = 8' 48" 53.1"	D = 8' 48" 53.1"	D = 8' 48" 53.1"	D = 8' 48" 53.1"	D = 8' 48" 53.1"	D = 8' 48" 53.1"
L = 235.30'	L = 188.10'	L = 188.10'	L = 235.30'	L = 235.30'	L = 188.10'	L = 188.10'	L = 235.30'	L = 235.30'	L = 188.10'	L = 188.10'	L = 235.30'	L = 235.30'	L = 188.10'	L = 188.10'	L = 235.30'
T = 118.95'	T = 94.71'	T = 94.71'	T = 118.95'	T = 118.95'	T = 94.71'	T = 94.71'	T = 118.95'	T = 118.95'	T = 94.71'	T = 94.71'	T = 118.95'	T = 118.95'	T = 94.71'	T = 94.71'	T = 118.95'
R = 650.00'	R = 650.00'	R = 650.00'	R = 650.00'	R = 650.00'	R = 650.00'	R = 650.00'	R = 650.00'	R = 650.00'	R = 650.00'	R = 650.00'	R = 650.00'	R = 650.00'	R = 650.00'	R = 650.00'	R = 650.00'



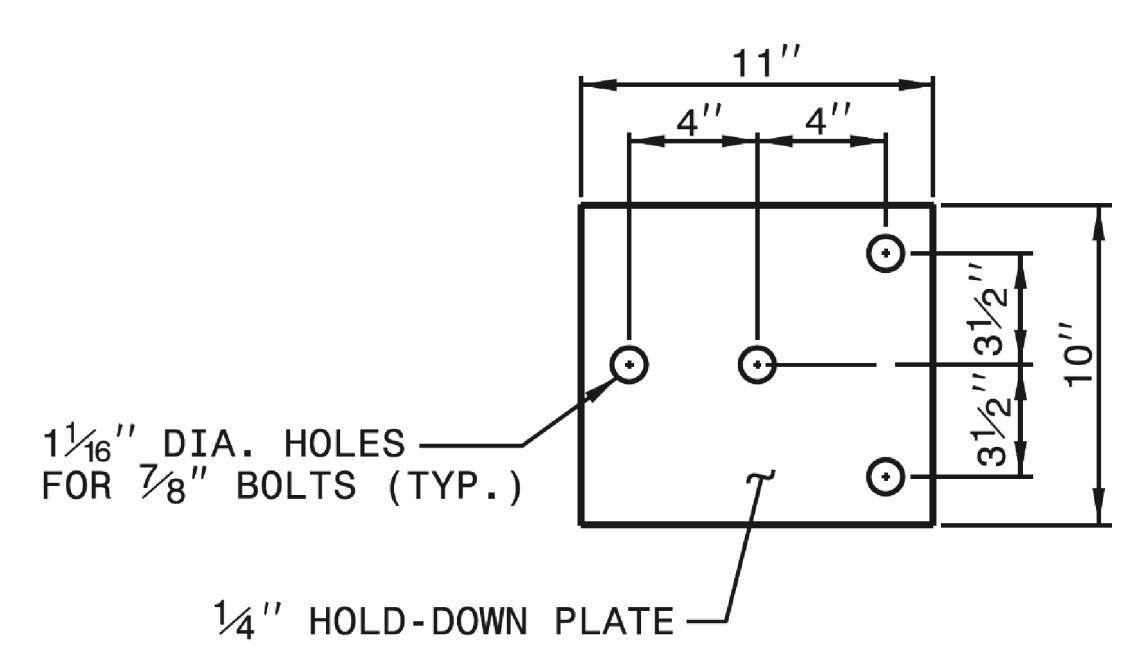
8/17/19  
 REVISIONS  
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 NOTE



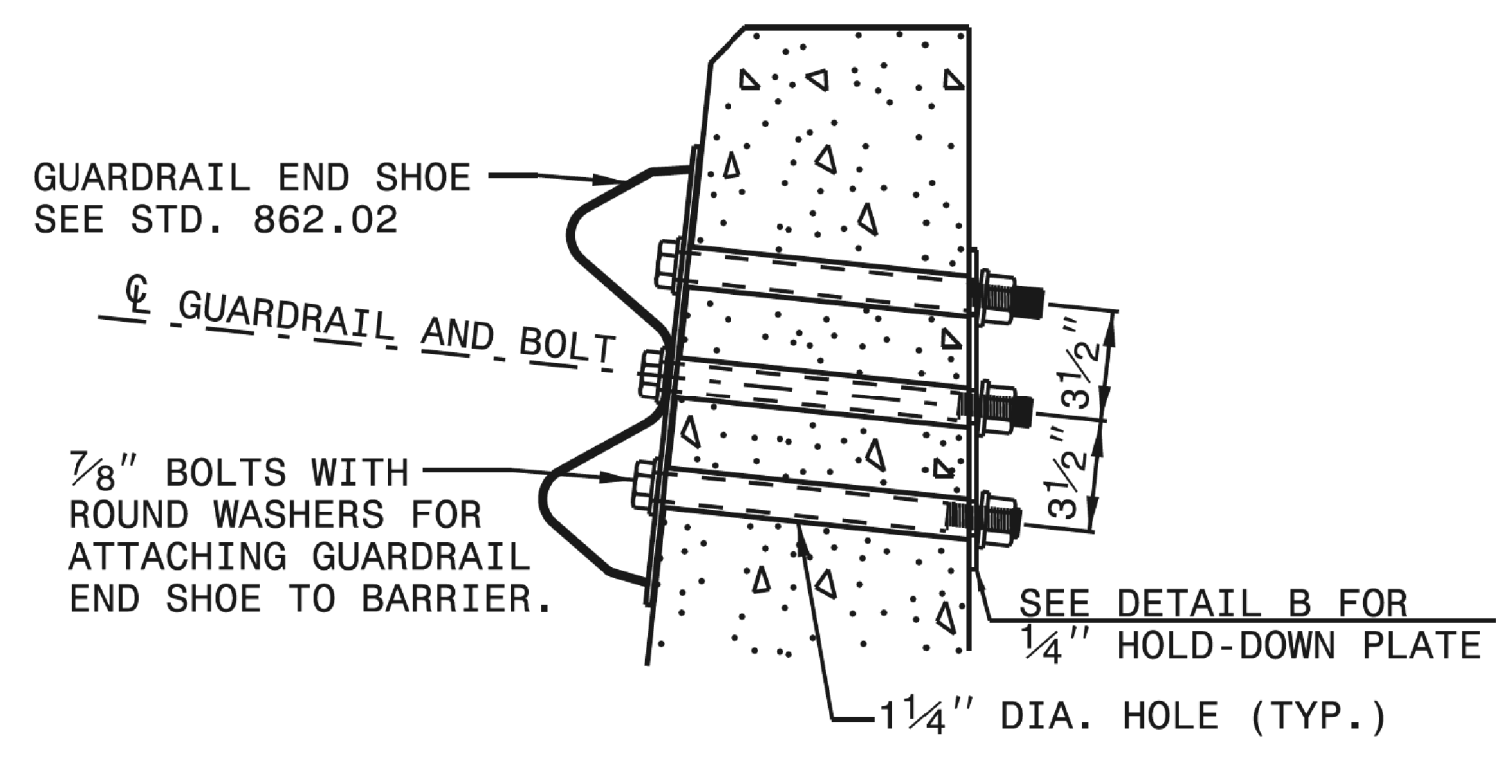
**ELEVATION VIEW**



**PLAN VIEW**



**4 BOLT HOLD DOWN PLATE**



**PART SECTION OF BARRIER**  
THRU END SHOE SECTION AND 4 BOLT HOLD DOWN PLATE

**NOTES FOR 4 BOLT HOLD DOWN PLATE**

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 7/8" DIA. 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.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. DRILL 1 1/4" DIA. HOLES 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.



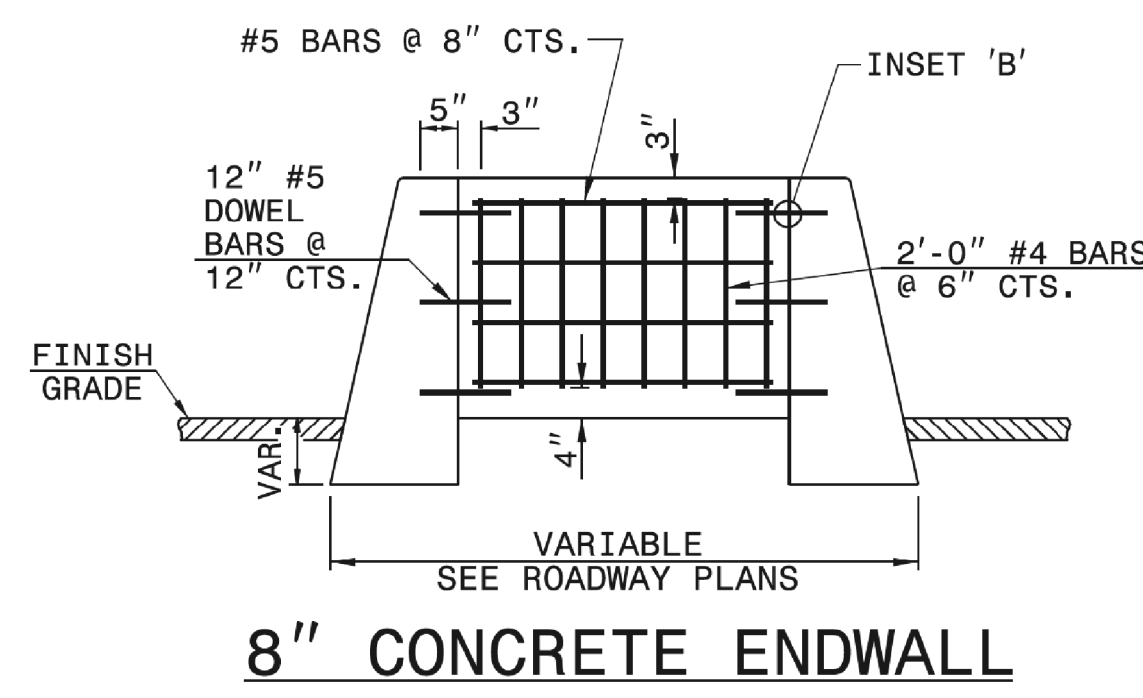
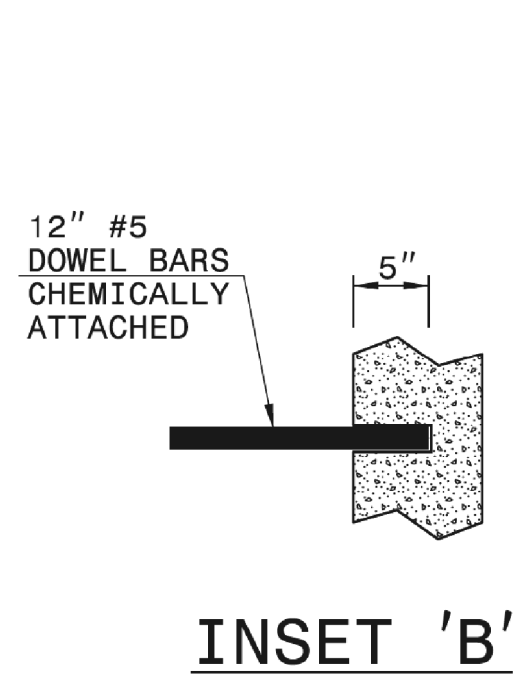
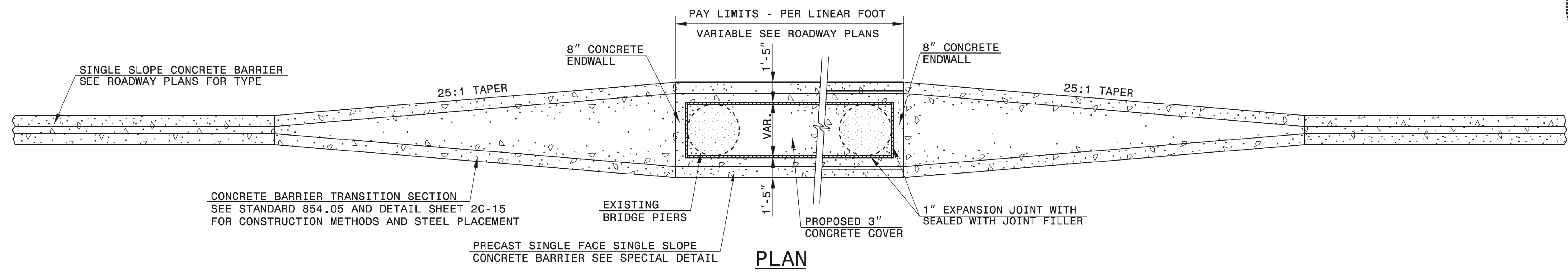
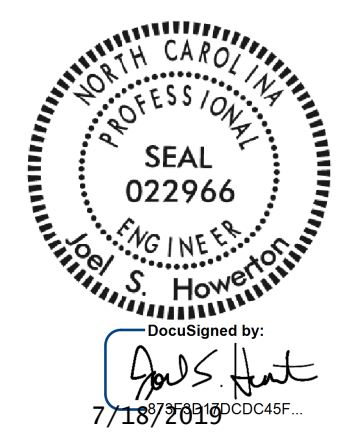
<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950 FAX 919-250-4119	
<b>TEMPORARY ANCHOR UNIT CONECTING TUBULAR BEAM GUARDRAIL TO PORTABLE CONCRETE BARRIER</b>	
ORIGINAL BY: E.E. WARD	DATE: 9-9-04
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC: \\usr\details\stand\862stds\anc.dgn	

SYSTEMS DESIGN CONSULTANTS, INC. 10000 W. HARRIS AVE. SUITE 1000 FORT WORTH, TEXAS 76132-4000

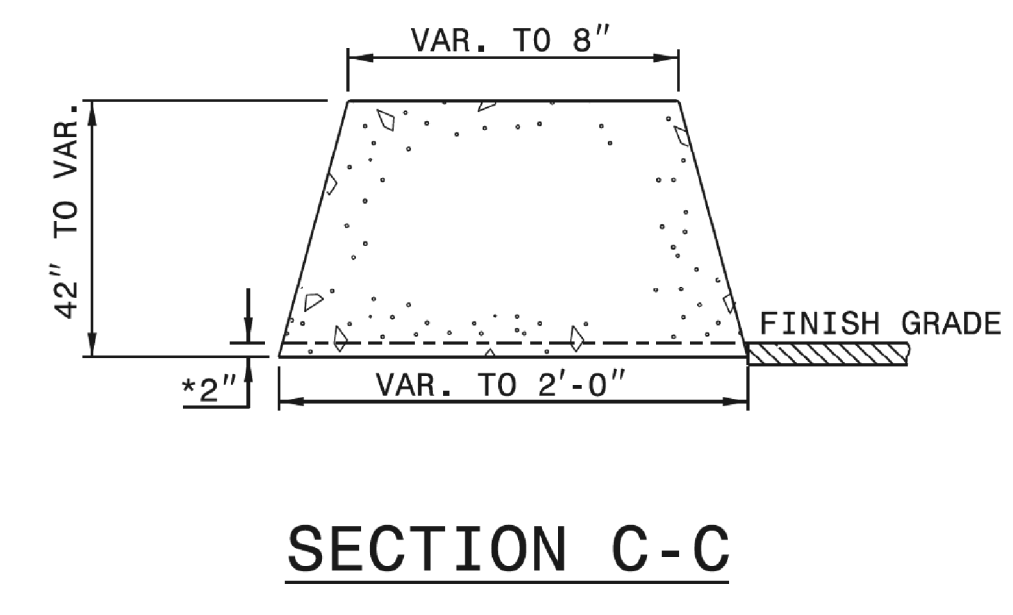
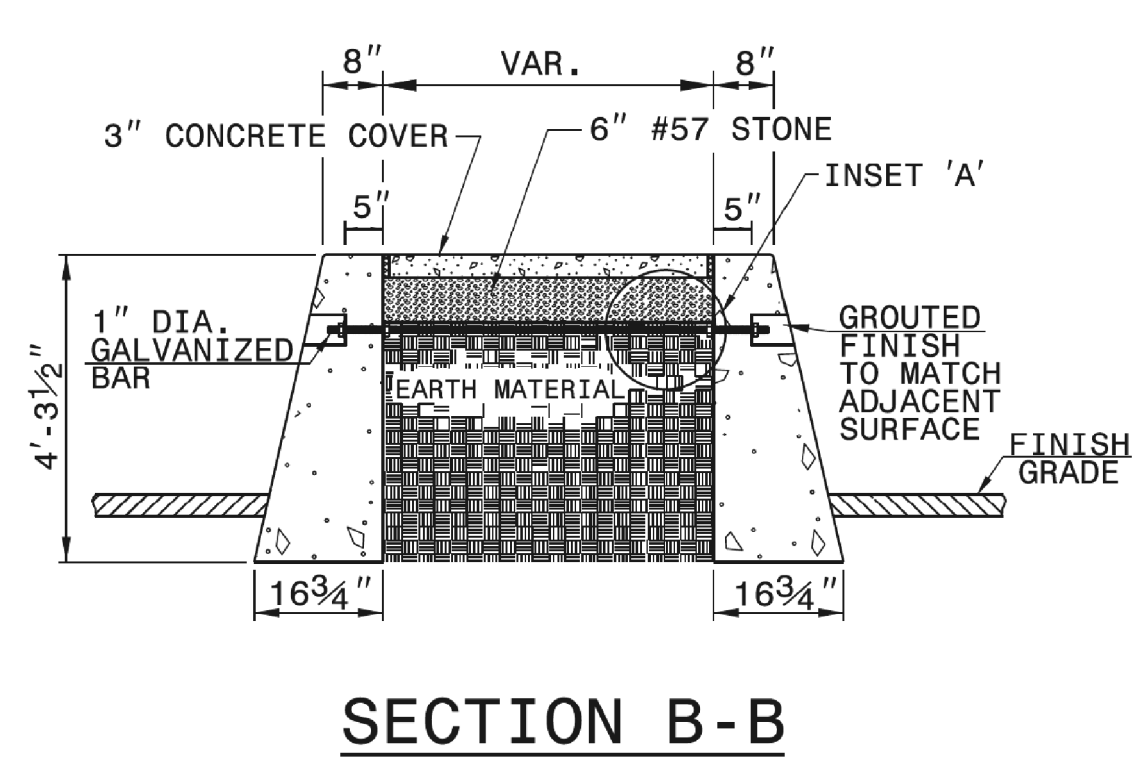
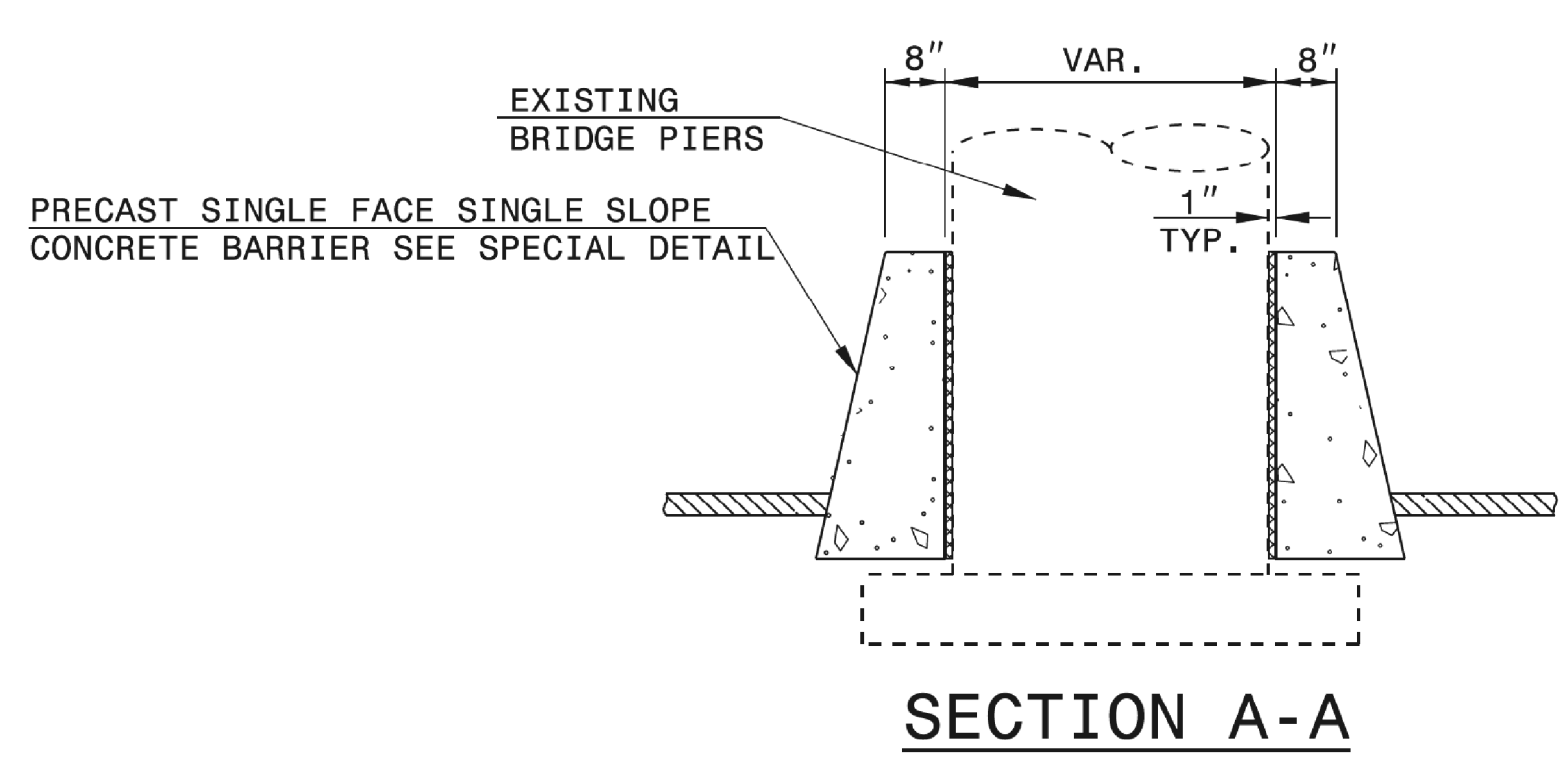
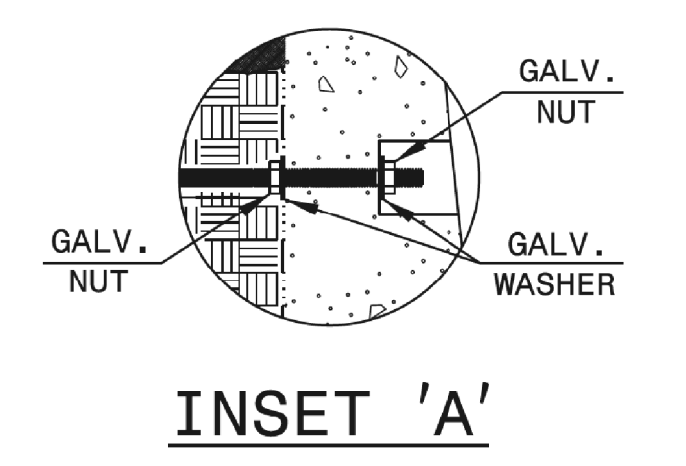
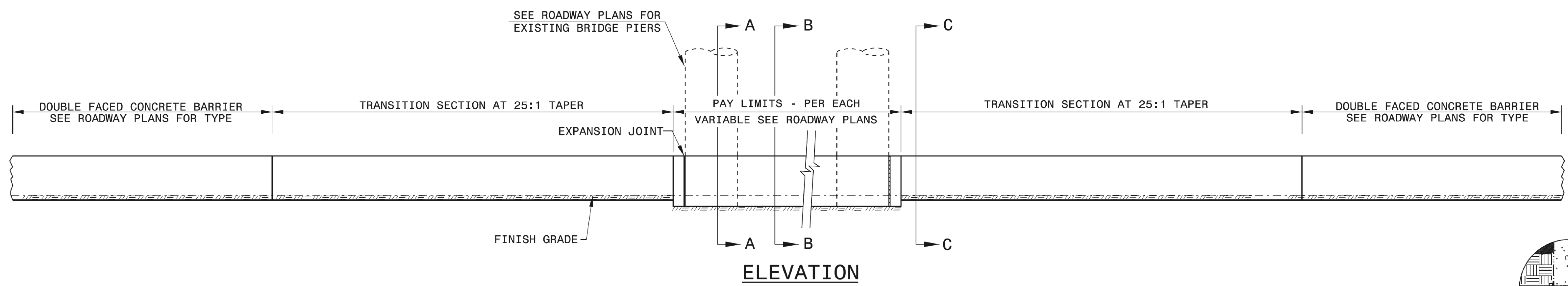


\* DRAWING NOT TO SCALE

PROJECT REFERENCE NO. I-4400BB	SHEET NO. 2C-2
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



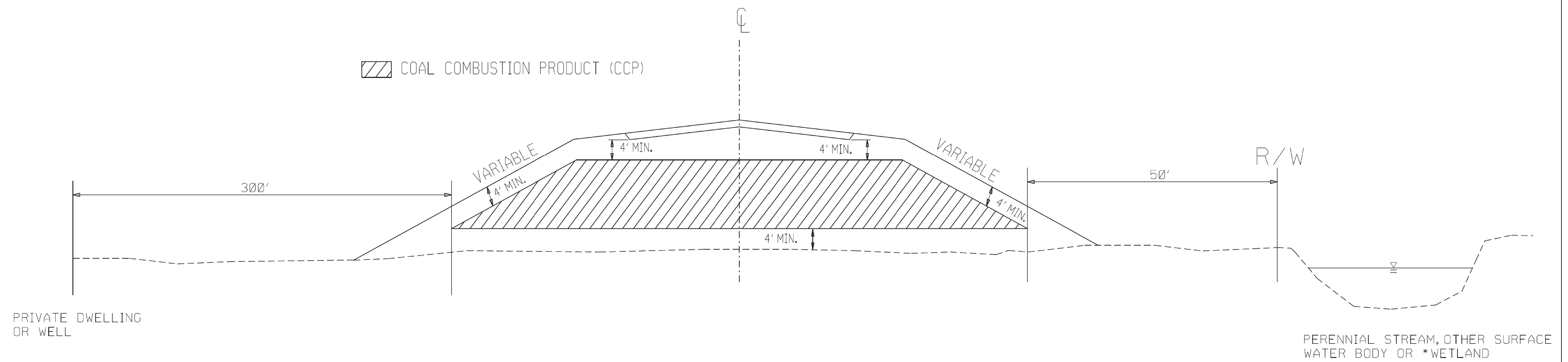
**GENERAL NOTES:**  
 CONSTRUCT CONCRETE BARRIER WITH CLASS 'AA' CONCRETE. (SEE SPECIFICATIONS SECTION 854).  
 CONSTRUCT EXPANSION AND CONTRACTION JOINTS AS SHOWN IN STANDARD DRAWING 854.01.  
 SEAL EXPANSION JOINTS WITH JOINT FILLER. (SEE SECTION 1028 OF THE SPECIFICATIONS).  
 SEE SPECIAL DETAILS PERTAINING TO SINGLE SLOPE BARRIERS FOR CONSTRUCTION METHODS AND STEEL PLACEMENT.  
 SUBMIT ALTERNATIVE METHODS FOR STEEL FABRICATION PLACEMENT FOR REVIEW AND APPROVAL.  
 SEE STANDARD DRAWING 854.05 FOR STEEL LAYOUT OF TRANSITION BARRIER.  
 \*THE 2" DIMENSION FROM FINISH GRADE TO THE BASE IS A MINIMUM DIMENSION.  
 INSET FIRST 1" DIA. GALVANIZED BAR 12'-6" AND SPACE THE REMAINING 1' BARS AT 25'-0".  
 USE AN APPROVED BONDING SYSTEM IN ACCORDANCE WITH SECTION 1081 OF THE STANDARD SPECIFICATIONS.



<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950	FAX 919-250-4119
<b>MEDIAN HAZARD PROTECTION</b>	
ORIGINAL BY: E.E. WARD	DATE: 7-28-03
MODIFIED BY: K.A. KEMPF	DATE: 5-08-19
CHECKED BY:	DATE:
FILE SPEC.: brittlenishguardrailsingle slope concrete barrier.dgn	

I:\MAY-2019\12-03 SA Contracts\Contract\General Details\brittlenish\guardrail\single slope concrete barrier.dgn  
 J:\mwh\on - At CSU 2/25/19

# COAL COMBUSTION PRODUCT PLACEMENT



PLACE CCP IN HATCHED AREA IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS

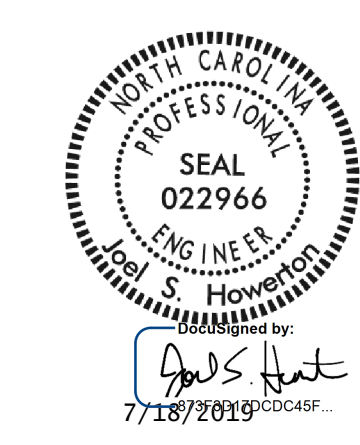
PLACE CCP A MINIMUM OF 5' ABOVE SEASONAL HIGH GROUND WATER

PLACE AT LOCATIONS AS APPROVED BY THE ENGINEER

PLACE SOIL BORROW MATERIAL ON THE OUTSIDE OF CCP AS EACH LIFT OF CCP IS PLACED

\*(OBTAIN PERMISSION FROM ARMY CORPS OF ENGINEERS)

Q7-SEP-2017 08:21 S:\Contracts\Contractors\Special\_Details\Howerton\Coal\_Combustion\_Product\_Detail.dgn Jhowerton - AT USD-242995



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950 FAX 919-250-4119	
<b>COAL COMBUSTION PRODUCT PLACEMENT DETAIL</b>	
ORIGINAL BY: J.S.H.	DATE: 3/16/15
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: joel/coal combustion material detail.dgn	

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

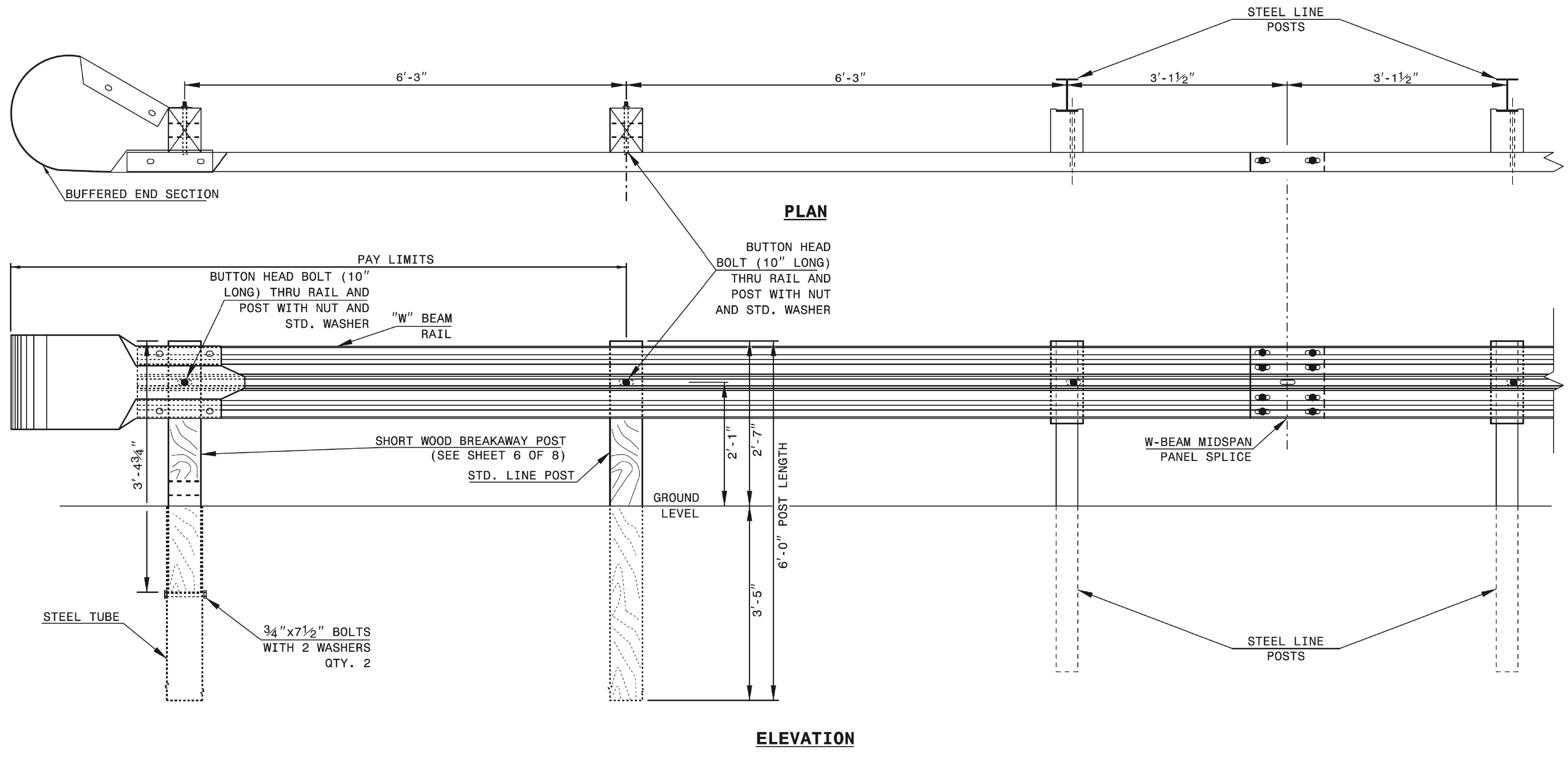
STATE OF  
NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET OF

SHEET OF



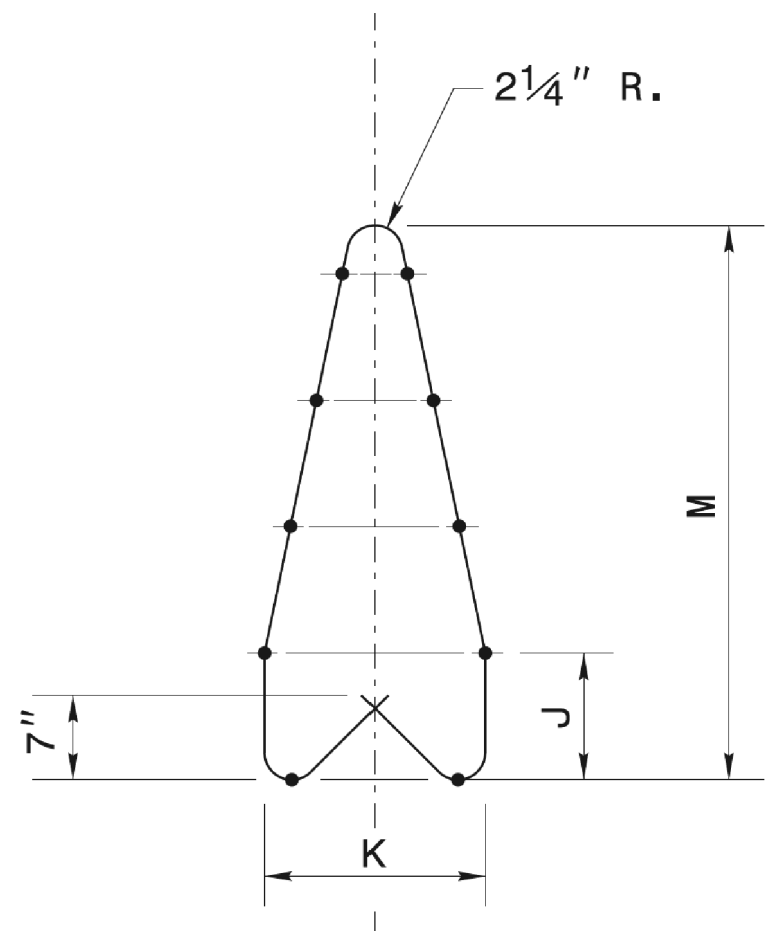
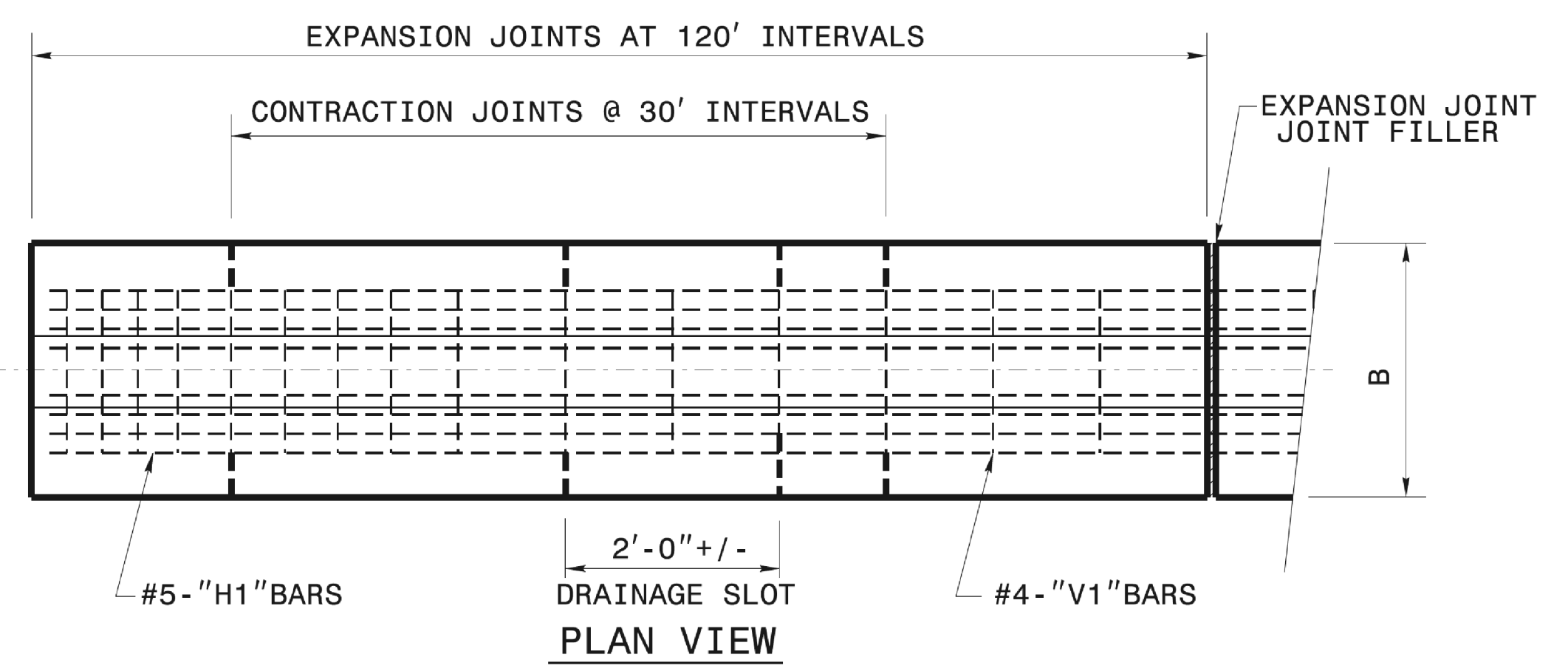
**TRAILING END UNIT ASSEMBLY**  
**A.T.-1 SYSTEM**



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

<b>CONTRACTS STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950 FAX 919-250-4119	
<b>A.T.-1 SYSTEM</b>	
ORIGINAL BY: _____	DATE: _____
MODIFIED BY: _____	DATE: _____
CHECKED BY: _____	DATE: _____
FILE SPEC.: _____	

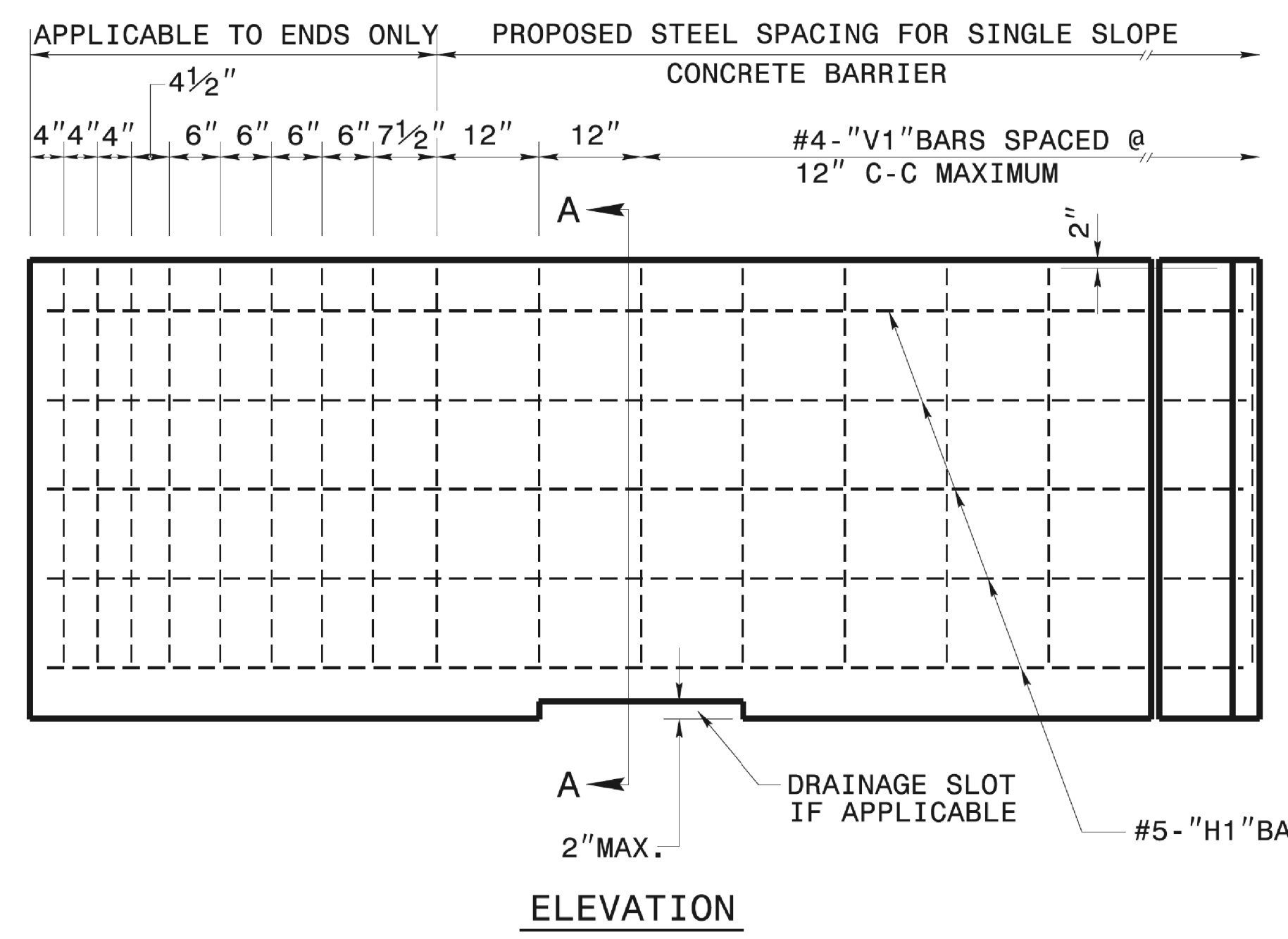
5/14/95



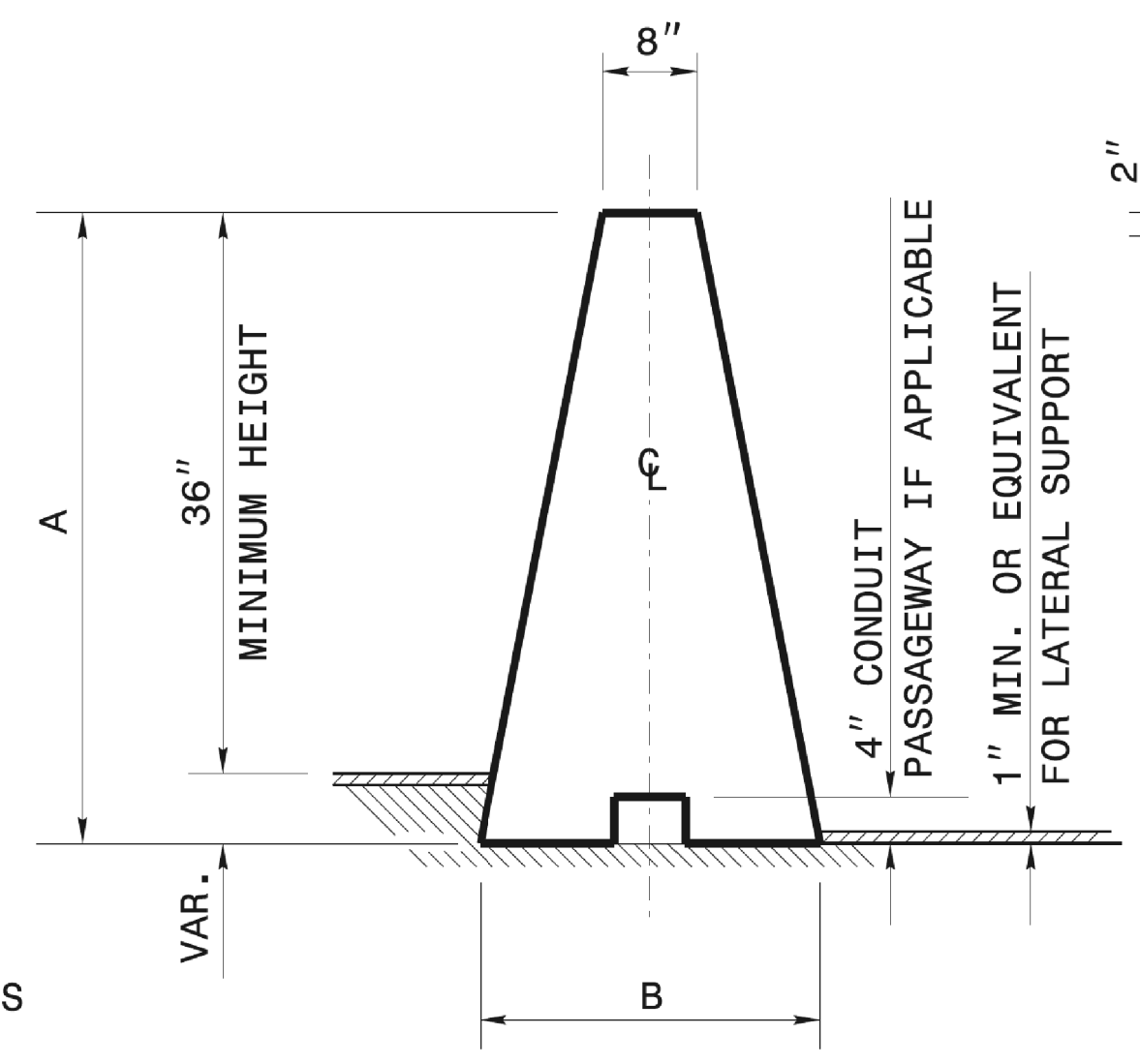
#4-'V1' BAR REINFORCING DETAIL

GENERAL NOTES:

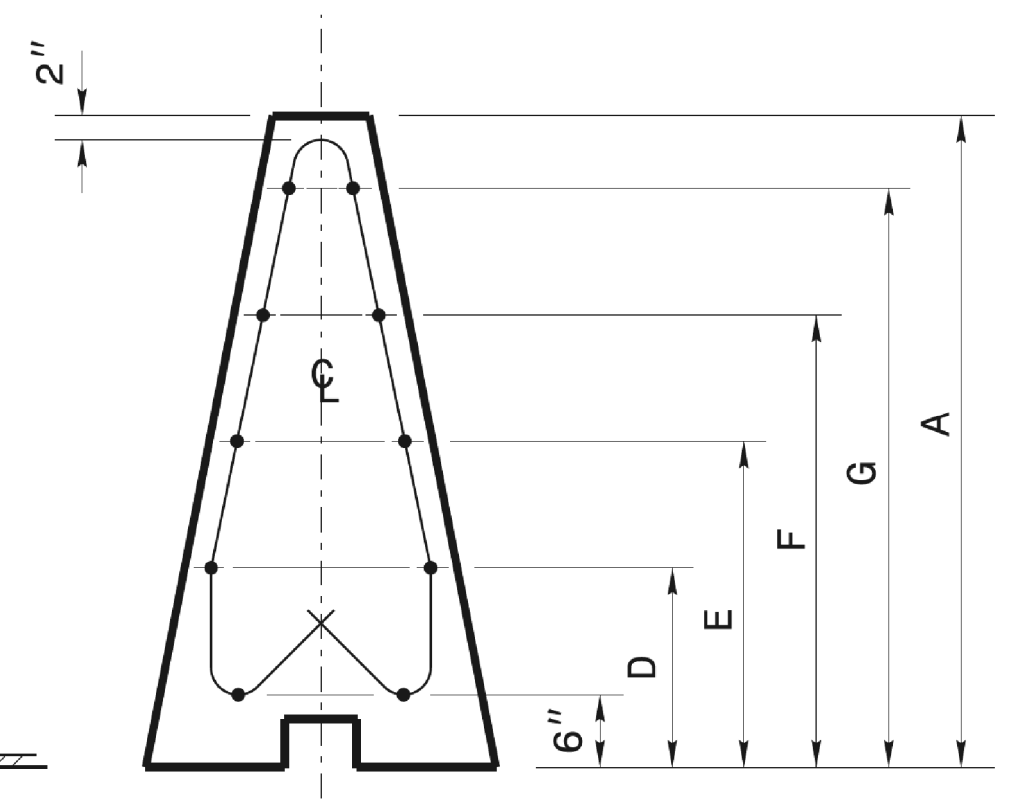
- USE CLASS "AA" CONCRETE.
- MAINTAIN 2" OF COVER OVER ALL REBAR. CHAMFER TOP AND ENDS OF BARRIER 1/2 INCH.
- USE BAR SPLICE LENGTHS A MINIMUM OF 20 TIMES THE NORMAL DIAMETER OF THE BAR. ANY METHOD DEvised BY THE CONTRACTOR AND APPROVED BY THE ENGINEER THAT WILL ASSURE THE LONGITUDINAL ROADWAY STEEL WILL BE POSITIONED +/- 1/2 INCH AS DIMENSIONED WILL BE SATISFACTORY.  
  
WELDED WIRE FABRIC MAY BE USED AS AN OPTION TO CONVENTIONAL REINFORCEMENT FOR CAST-IN-PLACE BARRIER. WELDED WIRE FABRIC SHALL BE MADE IN ACCORDANCE WITH ASTM A497. CONDUIT TO BE PROVIDED ONLY WHEN CALLED FOR ELSEWHERE IN THE PLANS. POSITION OF THE CONDUIT OR CONDUIT PASSAGEWAY MAY BE ADJUSTED TO FACILITATE CONSTRUCTION, SUBJECT TO APPROVAL BY THE ENGINEER.
- REFER TO ROADWAY STANDARD DRAWING NO.854.01 FOR EXPANSION AND CONTRACTION JOINT, FILLER AND OTHER SPECIFICATIONS.



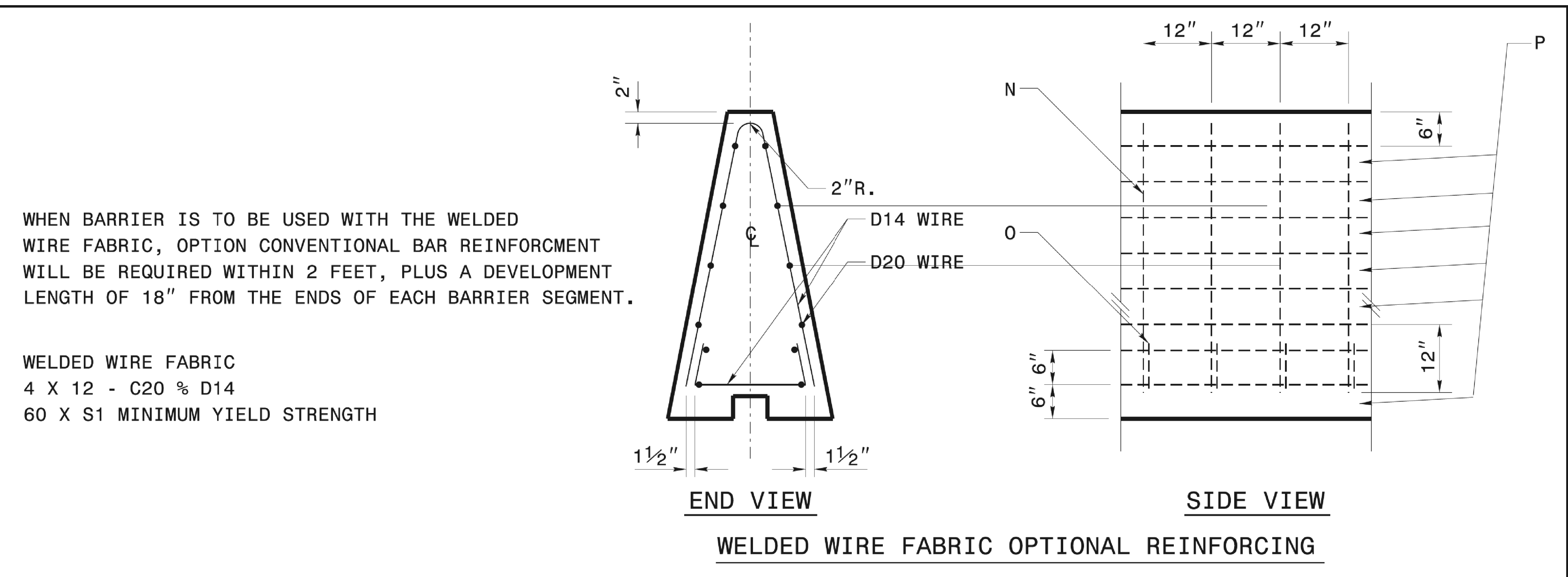
ELEVATION



TYPICAL SECTION



SECTION A-A



END VIEW

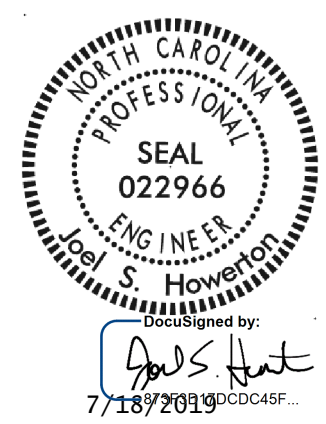
SIDE VIEW

WELDED WIRE FABRIC OPTIONAL REINFORCING

WHEN BARRIER IS TO BE USED WITH THE WELDED WIRE FABRIC, OPTION CONVENTIONAL BAR REINFORCEMENT WILL BE REQUIRED WITHIN 2 FEET, PLUS A DEVELOPMENT LENGTH OF 18" FROM THE ENDS OF EACH BARRIER SEGMENT.

WELDED WIRE FABRIC  
4 X 12 - C20 % D14  
60 X S1 MINIMUM YIELD STRENGTH

BARRIER HEIGHT (IN.)	DIMENSIONS											
	A	B	D	E	F	G	K	L	M	N	O	P
42"	42	24	13 1/2	21	28 1/2	36	15	9 1/4	36	72	28	4



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

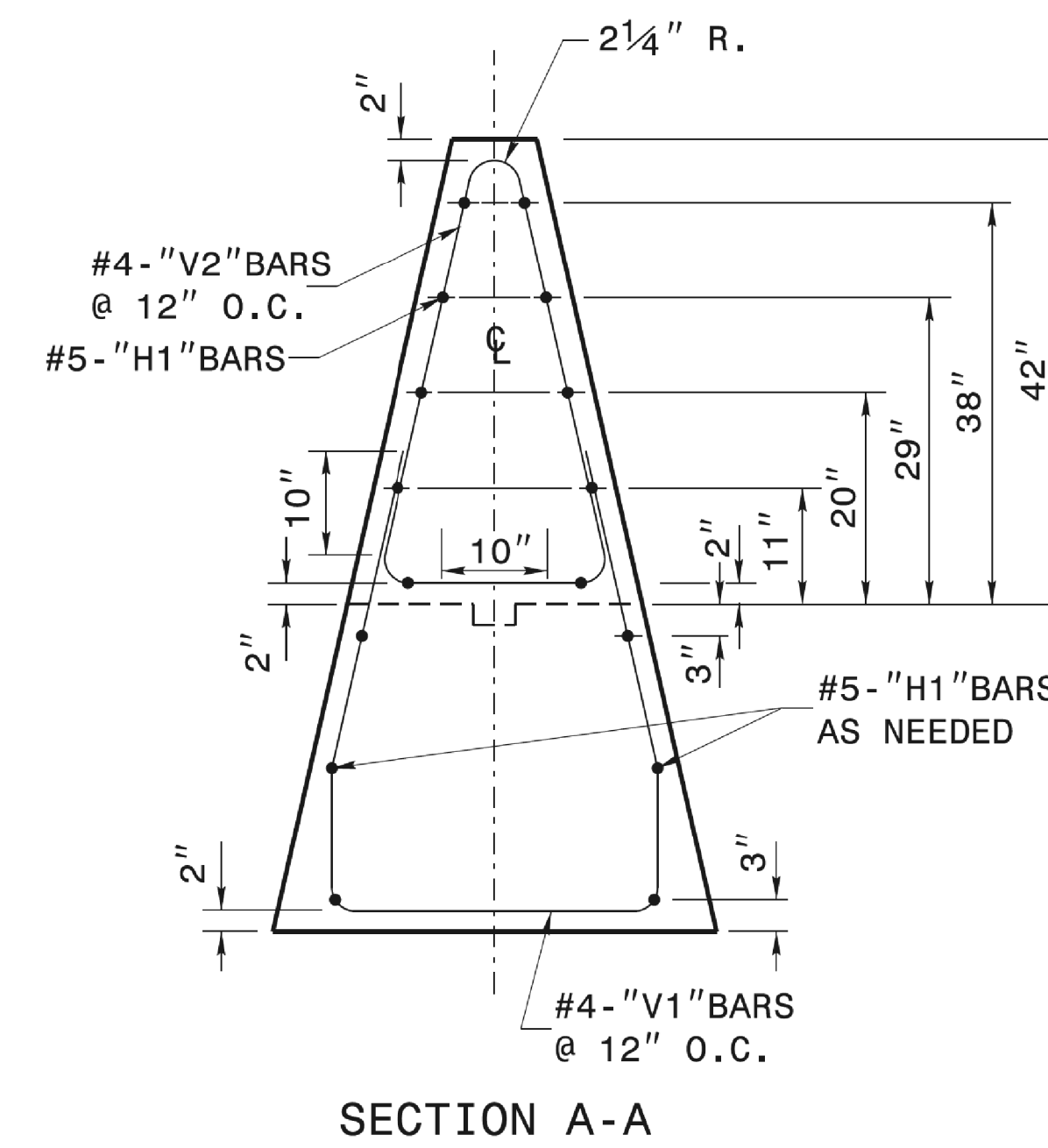
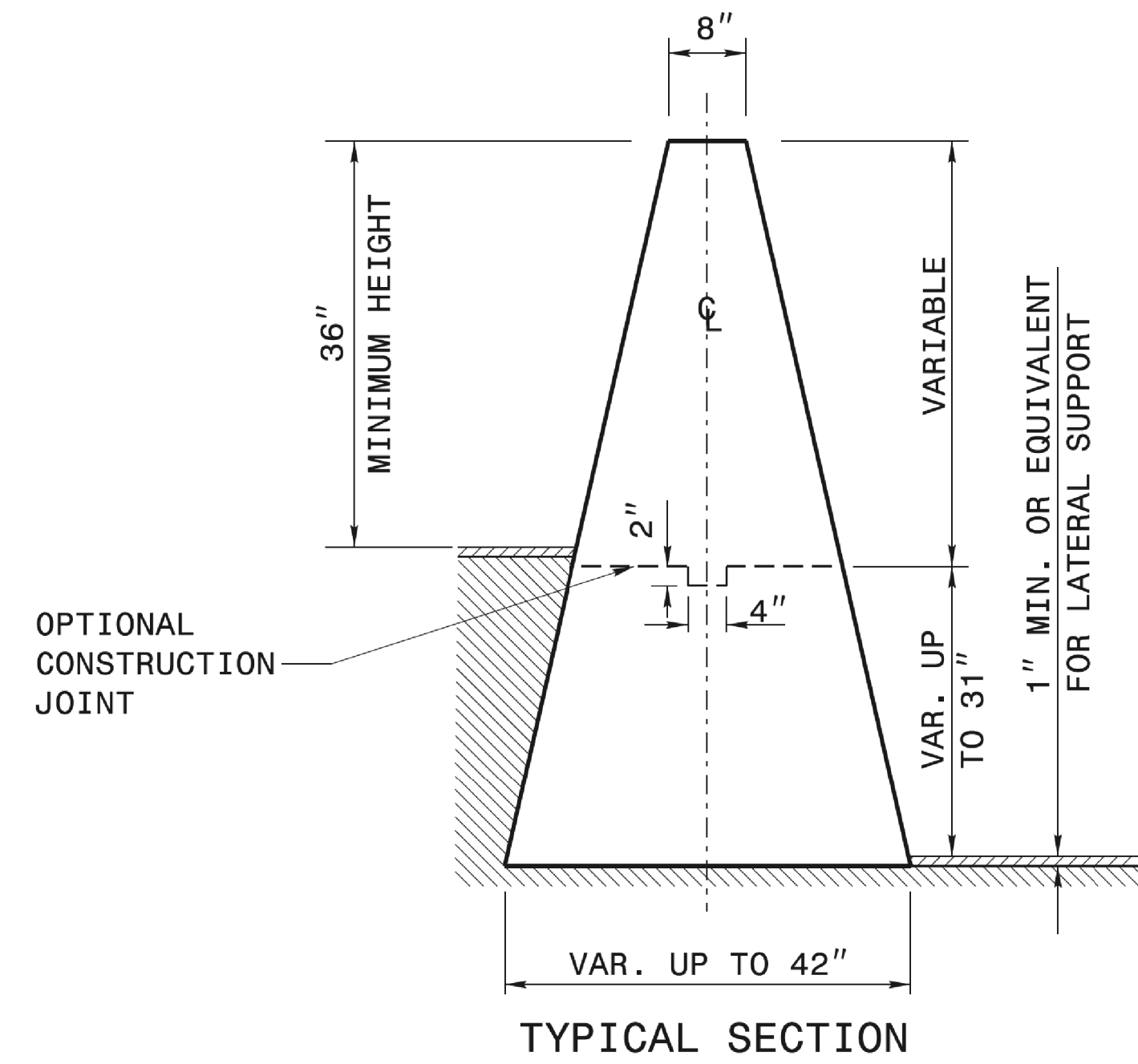
CONTRACTS STANDARDS AND DEVELOPMENT UNIT  
Office 919-707-6950 FAX 919-250-4119

**TYPE I SINGLE SLOPE CONCRETE BARRIER**

ORIGINAL BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 MODIFIED BY: kkempf DATE: 05-01-19  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 FILE SPEC.: details/rbr/ttr/eng/11sh/gurandra11/single slope concrete barrier.dgn

**GENERAL NOTES:**

1. USE CLASS "AA" CONCRETE.
2. MAINTAIN 2" OF COVER OVER ALL REBAR. CHAMFER TOP AND ENDS OF BARRIER 1/2 INCH.
3. USE BAR SPLICE LENGTHS A MINIMUM OF 20 TIMES THE NORMAL DIAMETER OF THE BAR. ANY METHOD DEvised BY THE CONTRACTOR AND APPROVED BY THE ENGINEER THAT WILL ASSURE THE LONGITUDINAL ROADWAY STEEL WILL BE POSITIONED +/- 1/2 INCH AS DIMENSIONED WILL BE SATISFACTORY.  
  
WELDED WIRE FABRIC MAY BE USED AS AN OPTION TO CONVENTIONAL REINFORCEMENT FOR CAST-IN-PLACE BARRIER. WELDED WIRE FABRIC SHALL BE MADE IN ACCORDANCE WITH ASTM A497. CONDUIT TO BE PROVIDED ONLY WHEN CALLED FOR ELSEWHERE IN THE PLANS. POSITION OF THE CONDUIT OR CONDUIT PASSAGEWAY MAY BE ADJUSTED TO FACILITATE CONSTRUCTION, SUBJECT TO APPROVAL BY THE ENGINEER.
4. REFER TO ROADWAY STANDARD DRAWING NO.854.01 FOR EXPANSION AND CONTRACTION JOINT, FILLER AND OTHER SPECIFICATIONS.
5. REFER TO TYPE I SINGLE SLOPE CONCRETE BARRIER SPECIAL DETAIL FOR FURTHER INFORMATION.



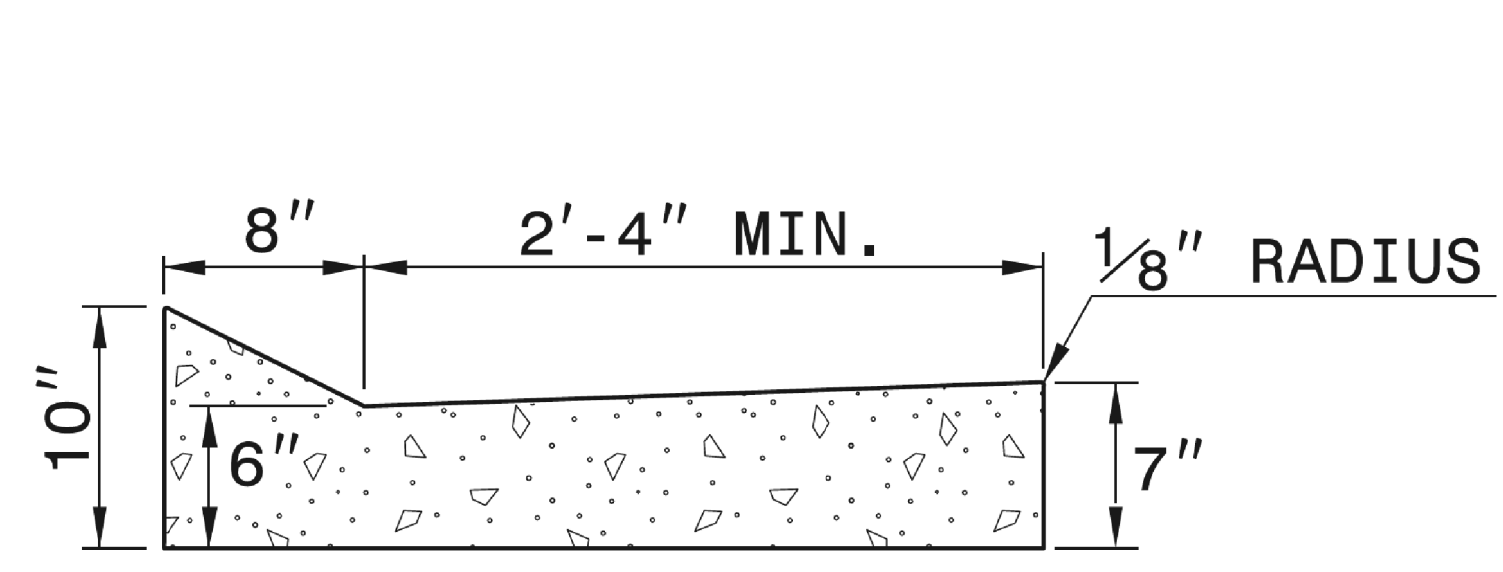
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



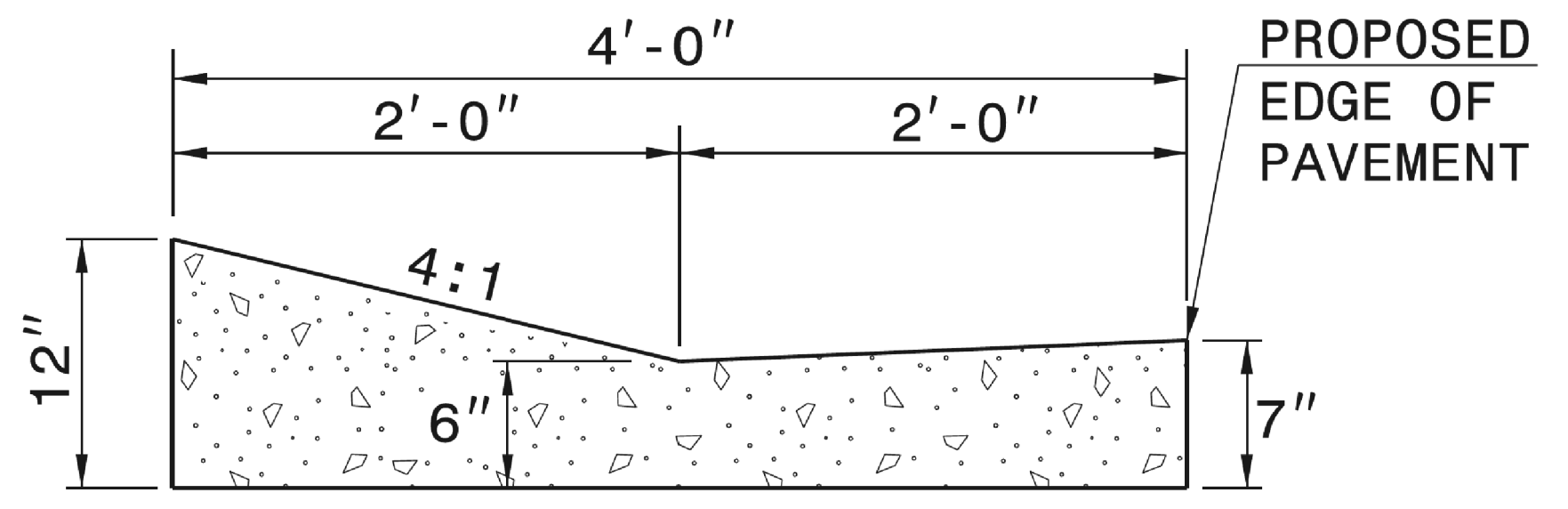
**CONTRACTS STANDARDS AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

**TYPE II SINGLE SLOPE CONCRETE BARRIER**

ORIGINAL BY:	DATE:
MODIFIED BY: kkemp	DATE: 05-01-19
CHECKED BY:	DATE:
FILE SPEC.: details/mbrtt/english/guardrail/single slope concrete barrier.dgn	



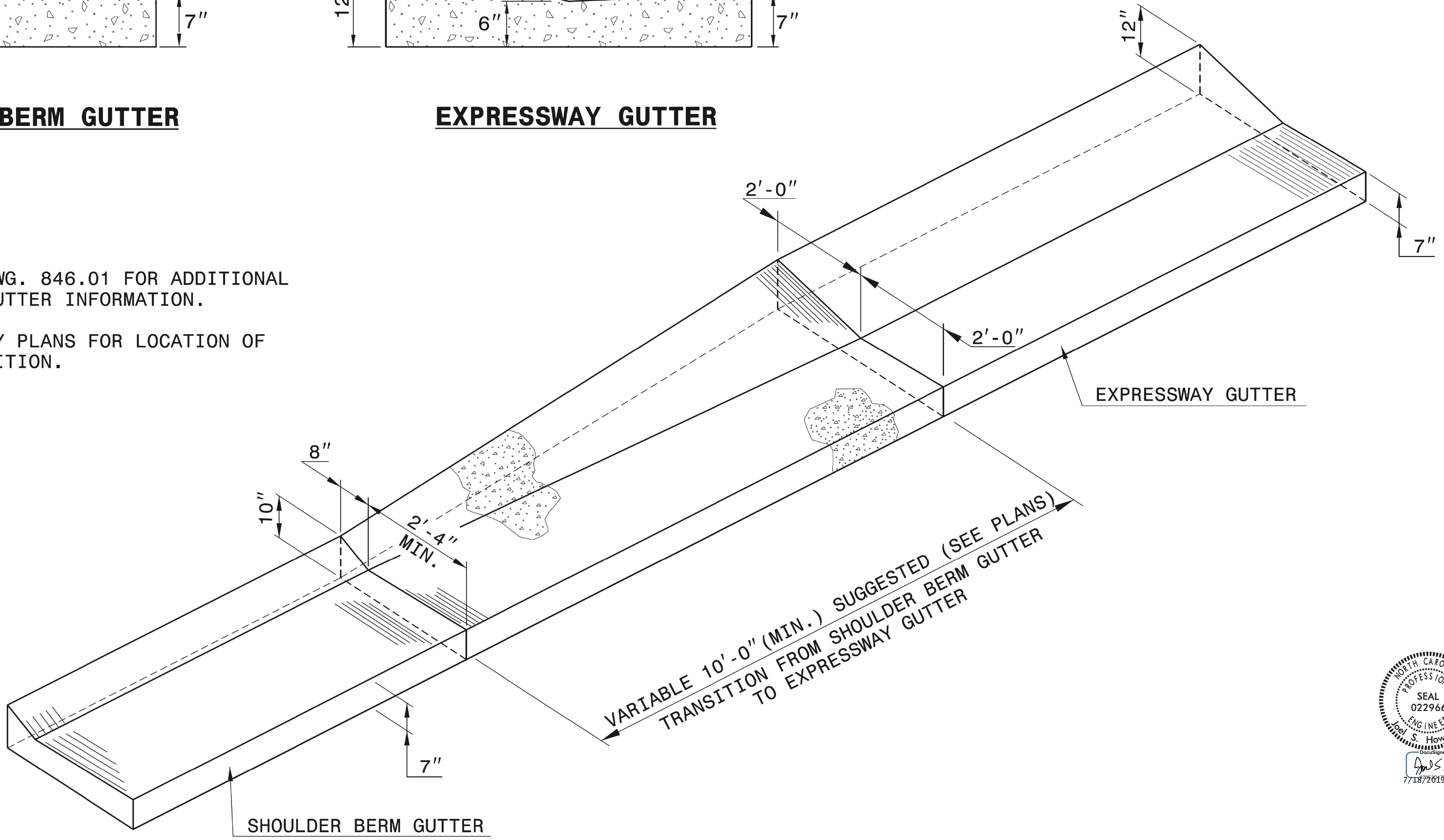
**SHOULDER BERM GUTTER**



**EXPRESSWAY GUTTER**

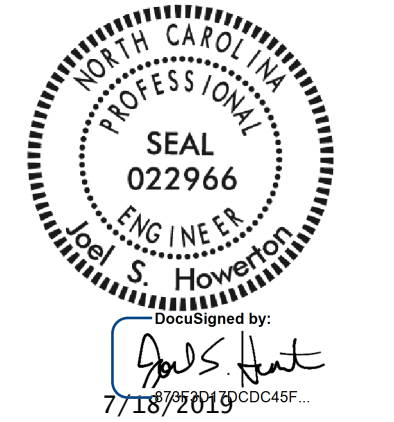
NOTE: SEE STD. DWG. 846.01 FOR ADDITIONAL CURB AND GUTTER INFORMATION.

SEE ROADWAY PLANS FOR LOCATION OF CURB TRANSITION.



**ISOMETRIC VIEW OF TRANSITION**

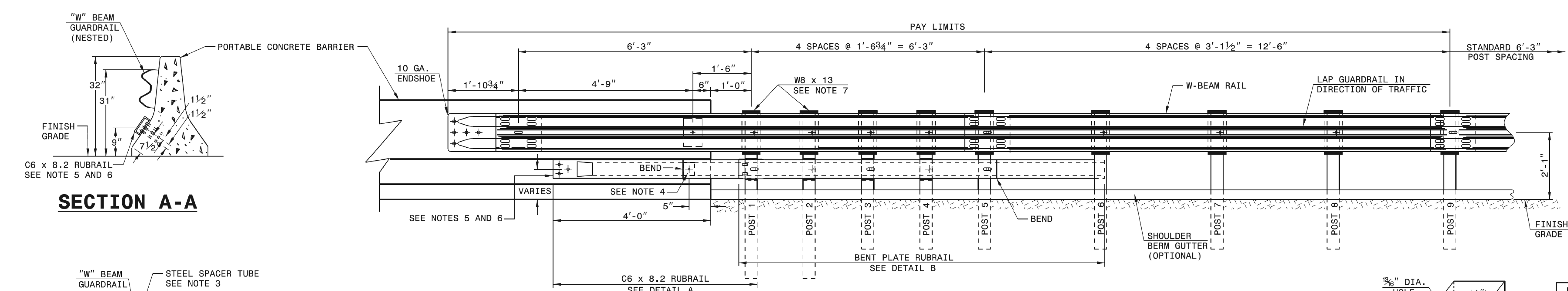
VARIABLE 10'-0" (MIN.) SUGGESTED (SEE PLANS) TRANSITION FROM SHOULDER BERM GUTTER TO EXPRESSWAY GUTTER



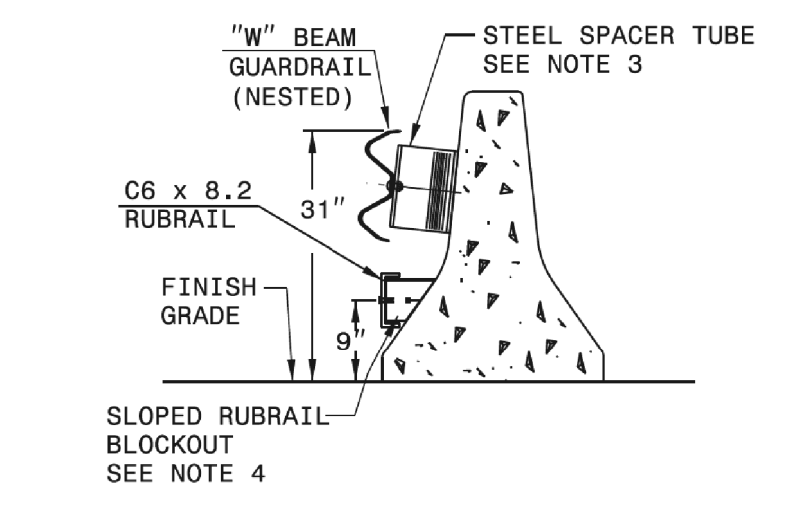
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950	FAX 919-250-4119
<b>DETAIL OF SHOULDER BERM GUTTER TO EXPRESSWAY GUTTER TRANSITION SECTION</b>	
ORIGINAL BY: T.S.Spell	DATE: 8-13-02
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: w:\usr\details\stand\cgtransit.dgn	

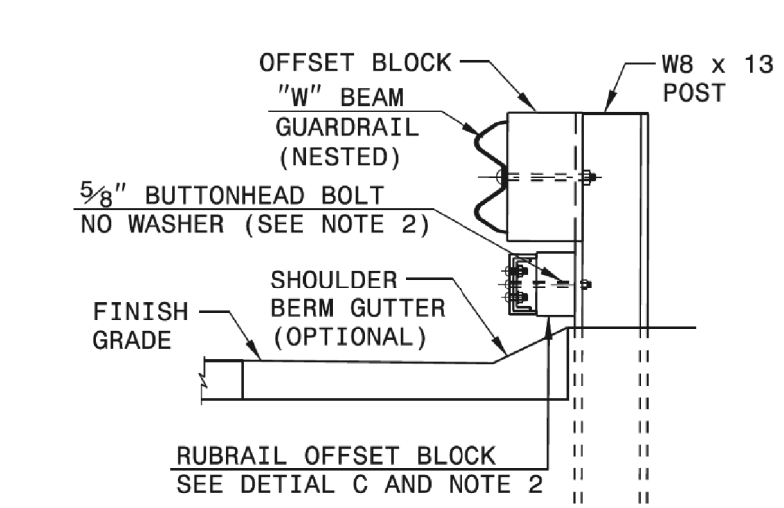
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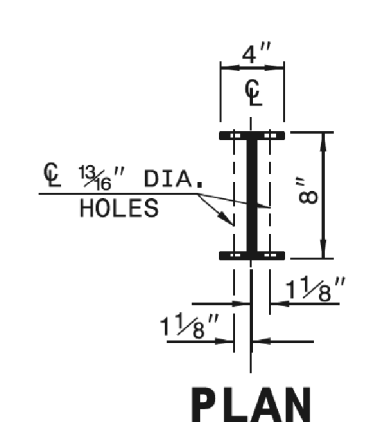
**SECTION A-A**



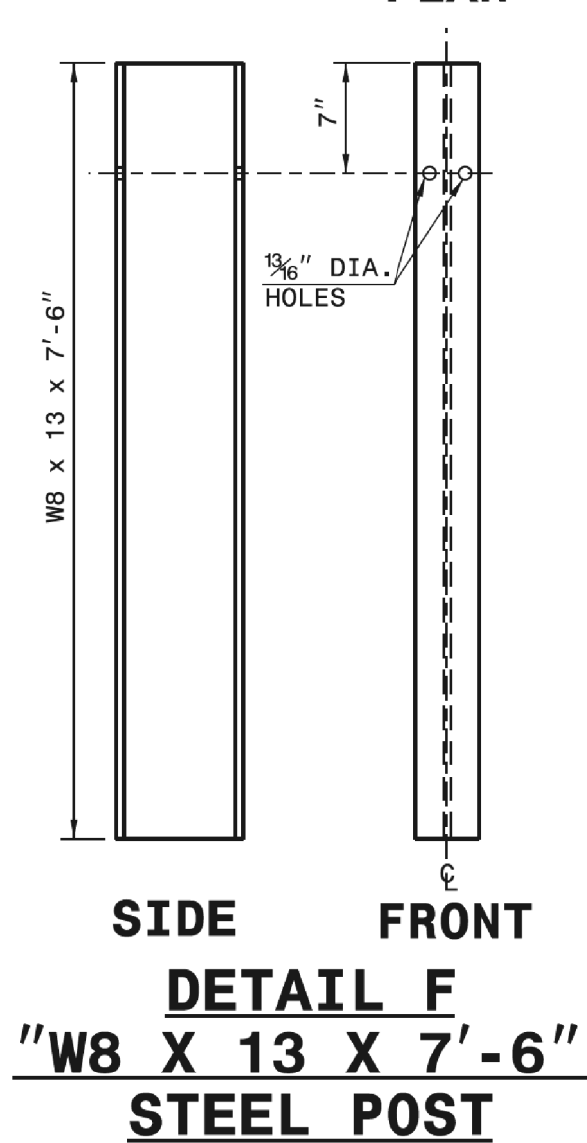
**SECTION B-B**



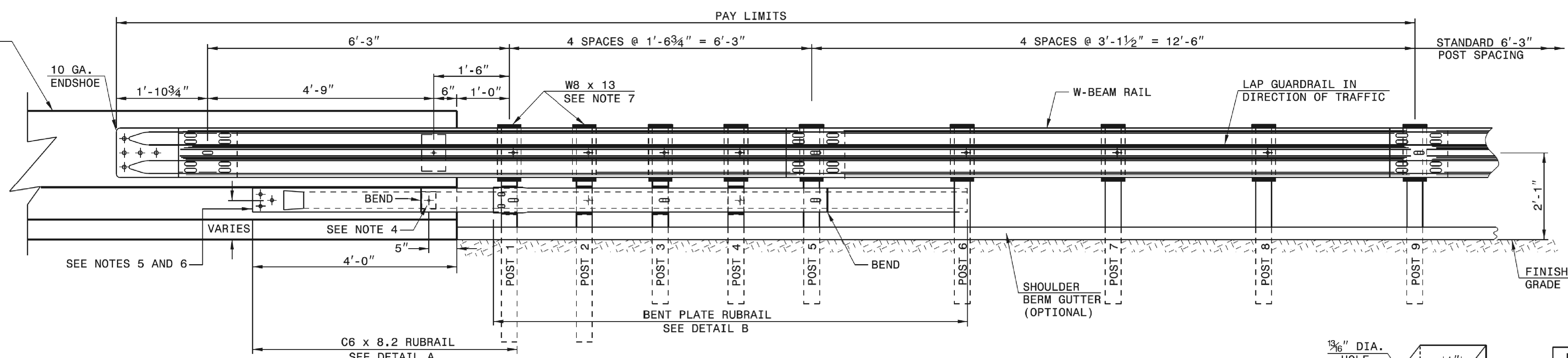
**SECTION C-C**



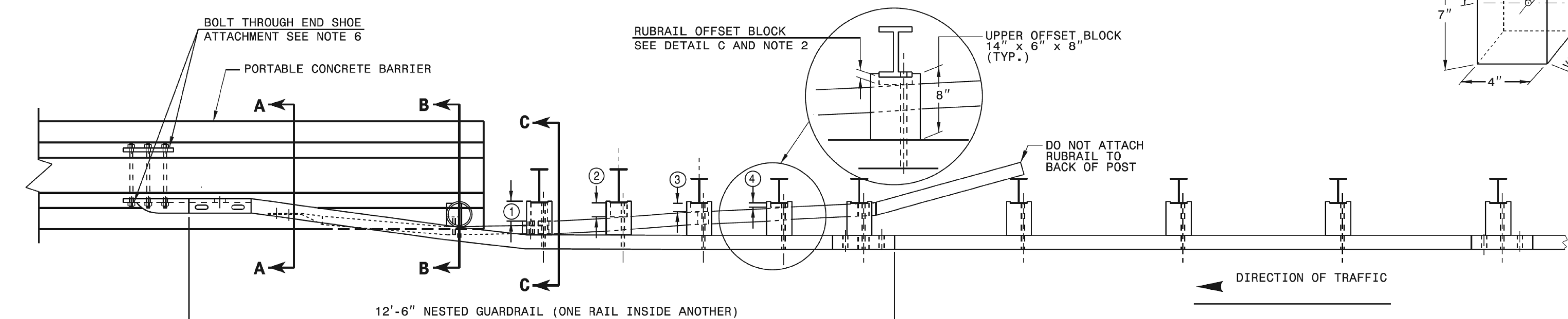
**PLAN**



**DETAIL F**  
**W8 X 13 X 7'-6"**  
**STEEL POST**

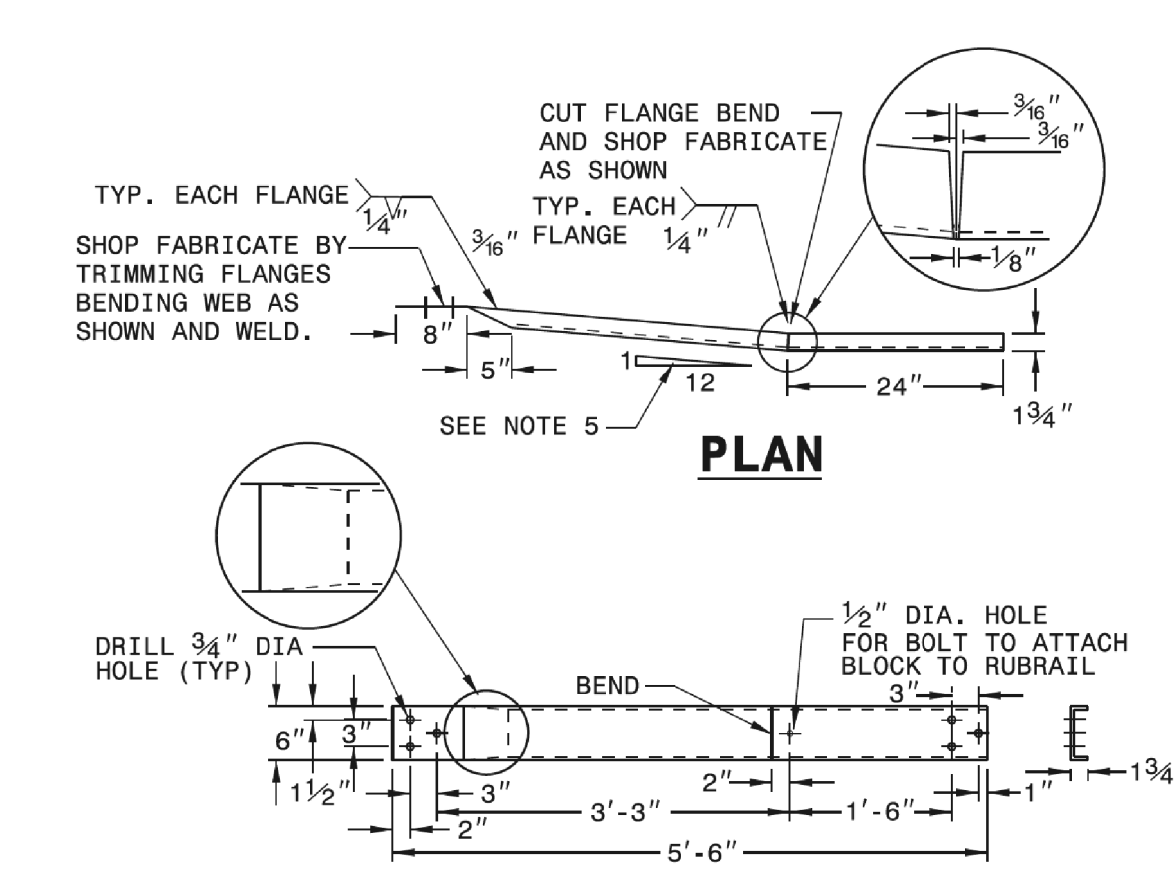


**ELEVATION**

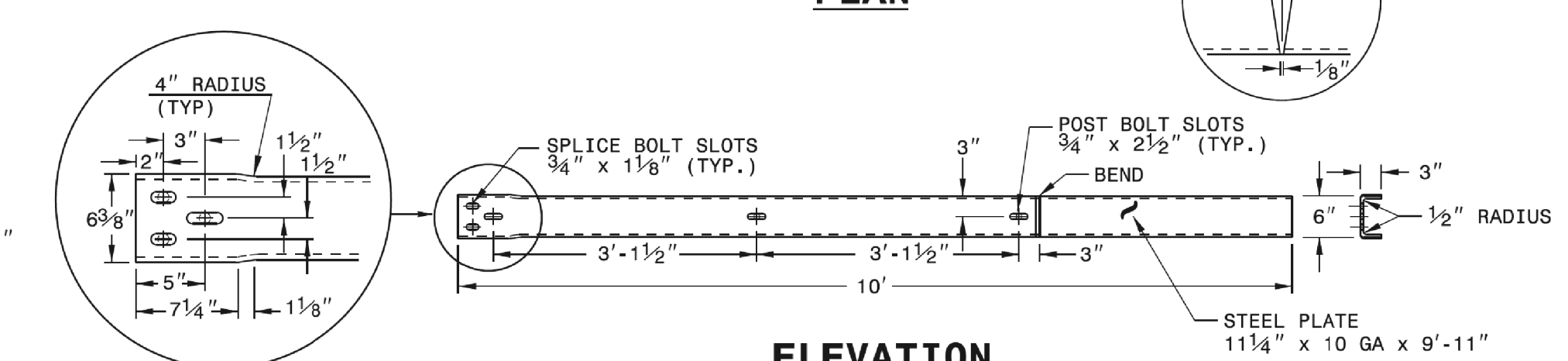


**PLAN**

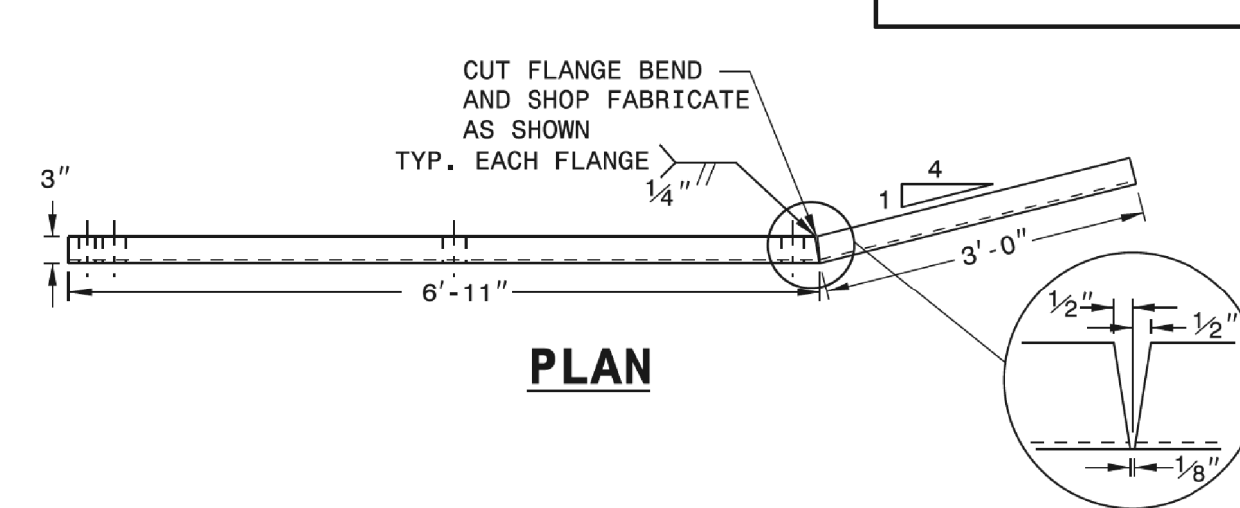
- GENERAL NOTES:**
- POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBRAIL.
  - RUBRAIL BLOCKOUTS LOCATED ON POSTS 1 THROUGH 4 ARE OFFSET DRILLED AND SECURED WITH 5/8" BUTTONHEAD BOLTS (SEE CHART FOR BOLT LENGTHS). SECURE BLOCKS ONLY TO POSTS 2 AND 4. SECURE RUBRAIL AND BLOCKOUTS TO POSTS 1 AND 3. RUBRAIL IS SECURED TO POST 5 WITH A 5/8" x 4 1/2" BUTTONHEAD BOLT. RUBRAIL IS FLARED TO BACK OF POST 6 AND NOT SECURED.
  - STEEL SPACER TUBE IS A SCHEDULE 40 GALVANIZED PIPE 6" INSIDE DIAMETER X 9" LONG. ATTACH TUBE TO GUARDRAIL ONLY WITH 5/8" x 1 1/4" LONG BUTTONHEAD BOLT AND RECTANGULAR PLATE WASHER.
  - SEE DETAIL D FOR SLOPED RUBRAIL BLOCKOUT. BLOCKOUT IS ATTACHED TO RAIL ELEMENT ONLY. USE 3/8" x 3" LAG BOLT WITH FLAT WASHER.
  - SHOP FABRICATE THE C6 X 8.2 RUBRAIL END TO BE CONSISTENT WITH THE SLOPE OF THE JERSEY SHAPE AND ATTACH FLUSH WITH THE SLOPED TOE OF THE BARRIER OR BRIDGE RAIL.
  - ANCHORAGE:
    - AT PORTABLE CONCRETE BARRIER, ANCHOR RUBRAIL USING THREE 5/8" x 6" CHEMICALLY ANCHORED BOLTS WITH WASHERS.
    - AT PORTABLE CONCRETE BARRIER, ANCHOR THE W-BEAM END SHOE USING A 4 BOLT HOLD-DOWN PLATE AS SHOWN. INSTALL THE W-BEAM END SHOE BEHIND THE NESTED W-BEAM ELEMENTS.
  - POSTS 1 AND 2 ARE W8 X 13, 7'-6" LONG. ALL OTHER POSTS IN THE ANCHOR UNIT ARE W6 X 8.5.



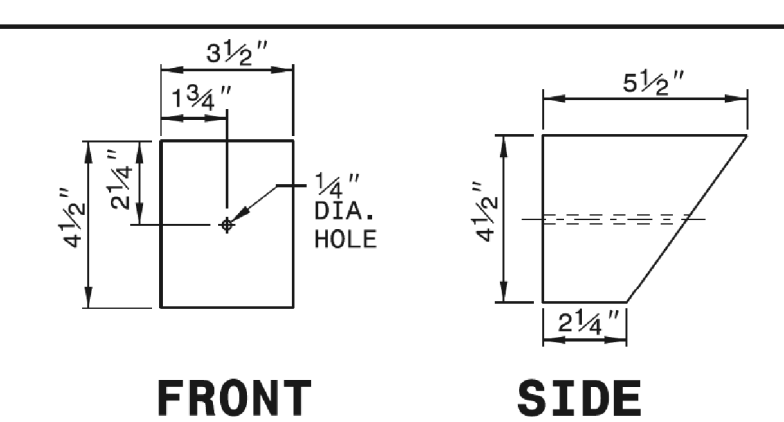
**DETAIL A**  
**C6 X 8.2 RUBRAIL**



**DETAIL B**  
**BENT PLATE RUBRAIL**



**DETAIL E**  
**LAG BOLT**



**DETAIL D**  
**SLOPED RUBRAIL BLOCKOUT**



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

**TEMPORARY GUARDRAIL ANCHOR UNIT TYPE B-77**

ORIGINAL BY: E.E. WARD DATE: 04-07-04  
 MODIFIED BY: J.S. Howerton DATE: 10-02-18  
 CHECKED BY: DATE:  
 FILE SPEC.:

**NOTES FOR 4 BOLT HOLD DOWN PLATE**

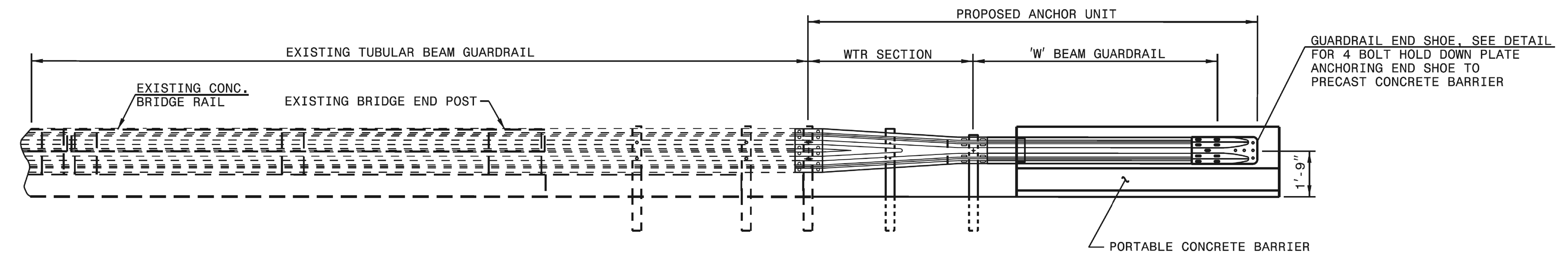
- THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 7/8" DIA. BOLTS WITH NUTS AND WASHERS.
- THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.
- AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. THE 1/4" DIA. 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.

**4 BOLT HOLD DOWN PLATE**

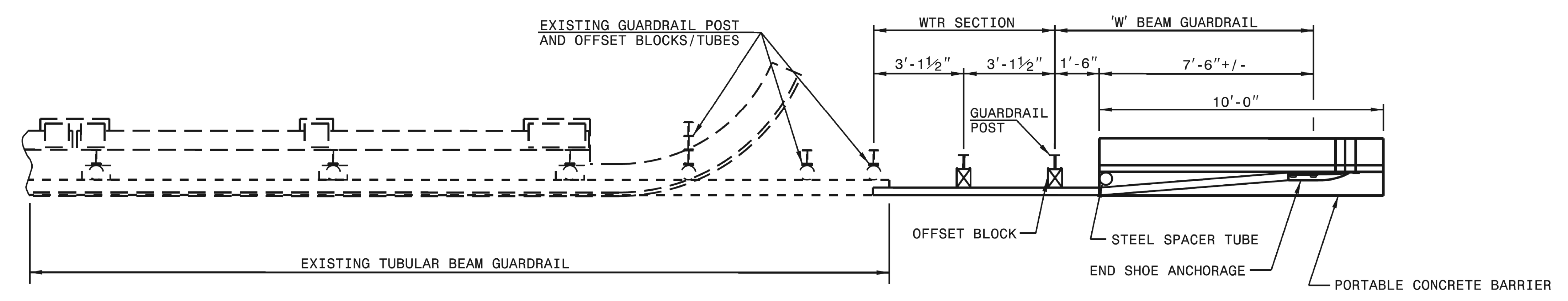
**PART SECTION OF BARRIER OR RAIL THRU END SHOE SECTION AND 4 BOLT HOLD DOWN PLATE**

02-001-2018 14:39  
 S:\Contracts\Special Details\Howerton\Temporary B-77 to PCB.dgn  
 Jhowerton AT USD-292595

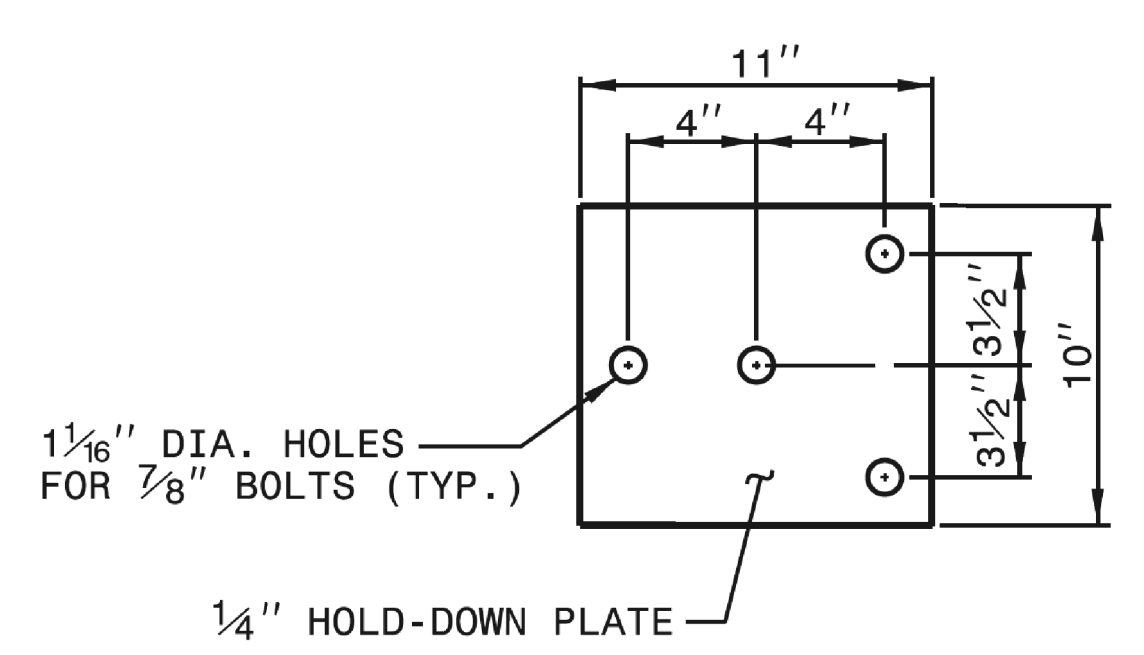
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



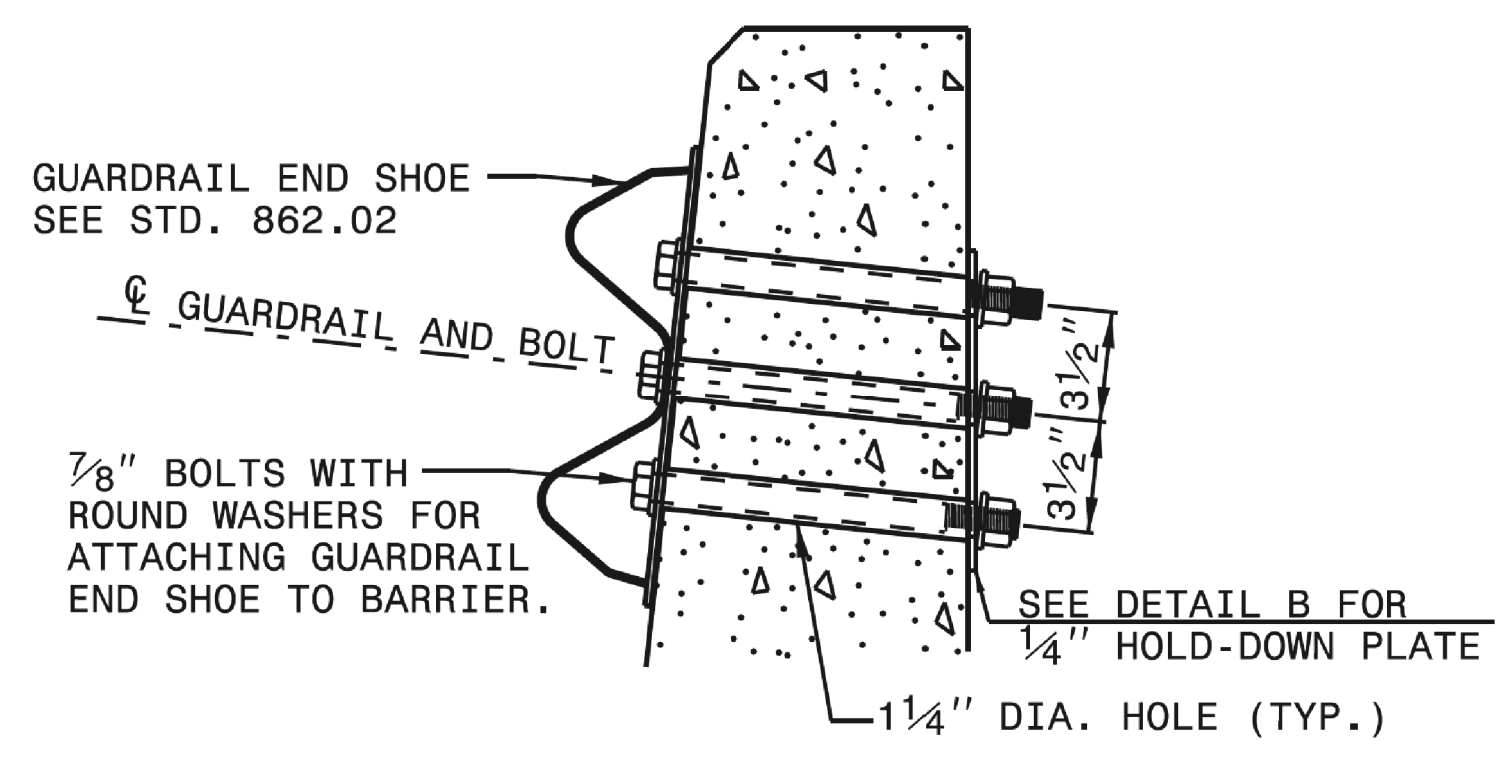
**ELEVATION VIEW**



**PLAN VIEW**



**4 BOLT HOLD DOWN PLATE**



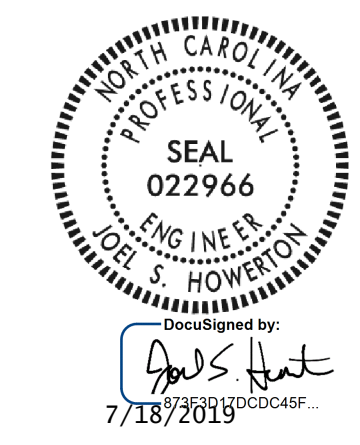
**PART SECTION OF BARRIER THRU END SHOE SECTION AND 4 BOLT HOLD DOWN PLATE**

**NOTES FOR 4 BOLT HOLD DOWN PLATE**

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 7/8" DIA. 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.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. DRILL 1 1/4" DIA. HOLES 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.



<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950 FAX 919-250-4119	
<b>TEMPORARY ANCHOR UNIT CONECTING TUBULAR BEAM GUARDRAIL TO PORTABLE CONCRETE BARRIER</b>	
ORIGINAL BY: E.E. WARD	DATE: 9-9-04
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC:	usr\details\stand\862stds\anc.dgn

SYSTEMS DESIGN CONSULTANTS, INC. 5/14/09



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

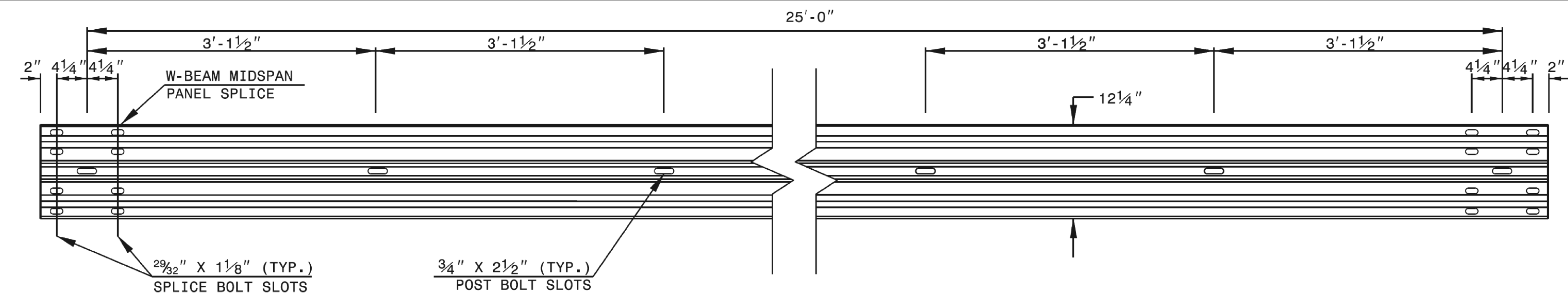
ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 6 OF 8  
**862D02**

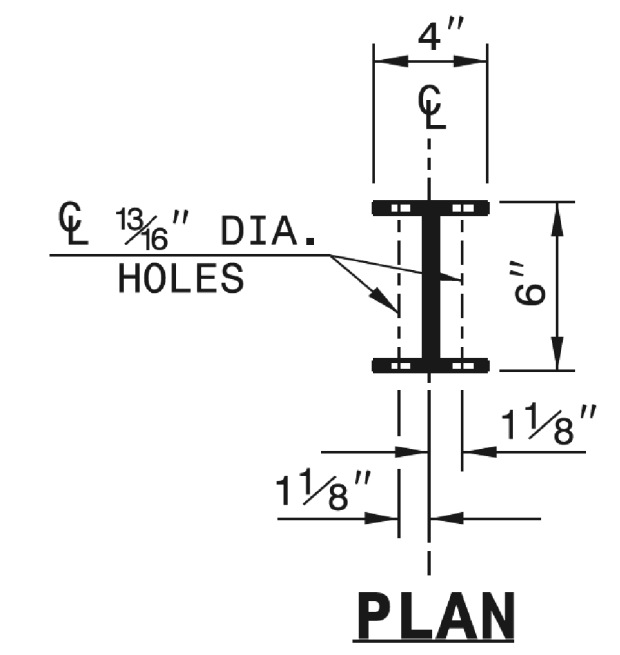
STATE OF  
NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

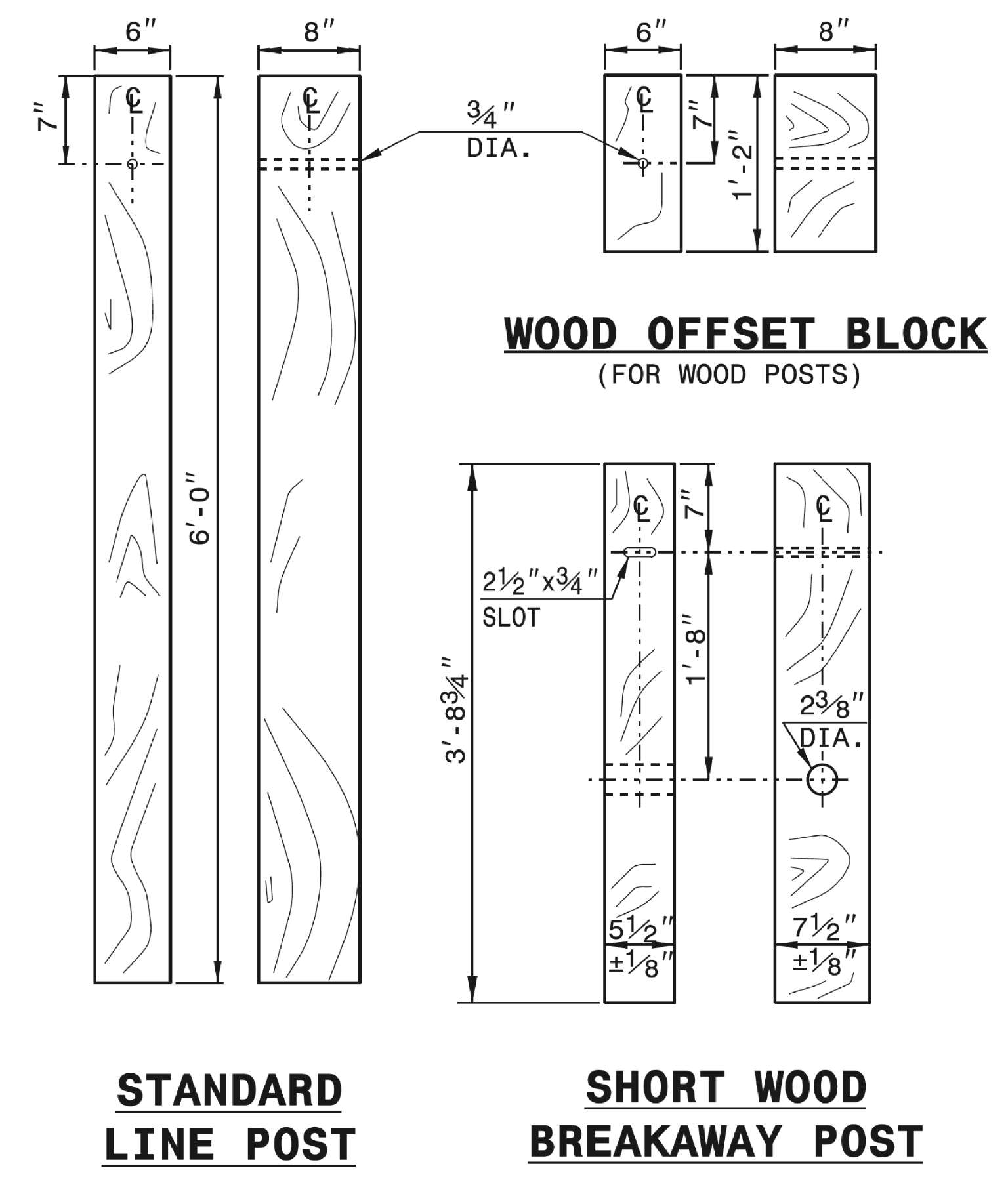
SHEET 6 OF 8  
**862D02**



**STANDARD W-BEAM GUARDRAIL**

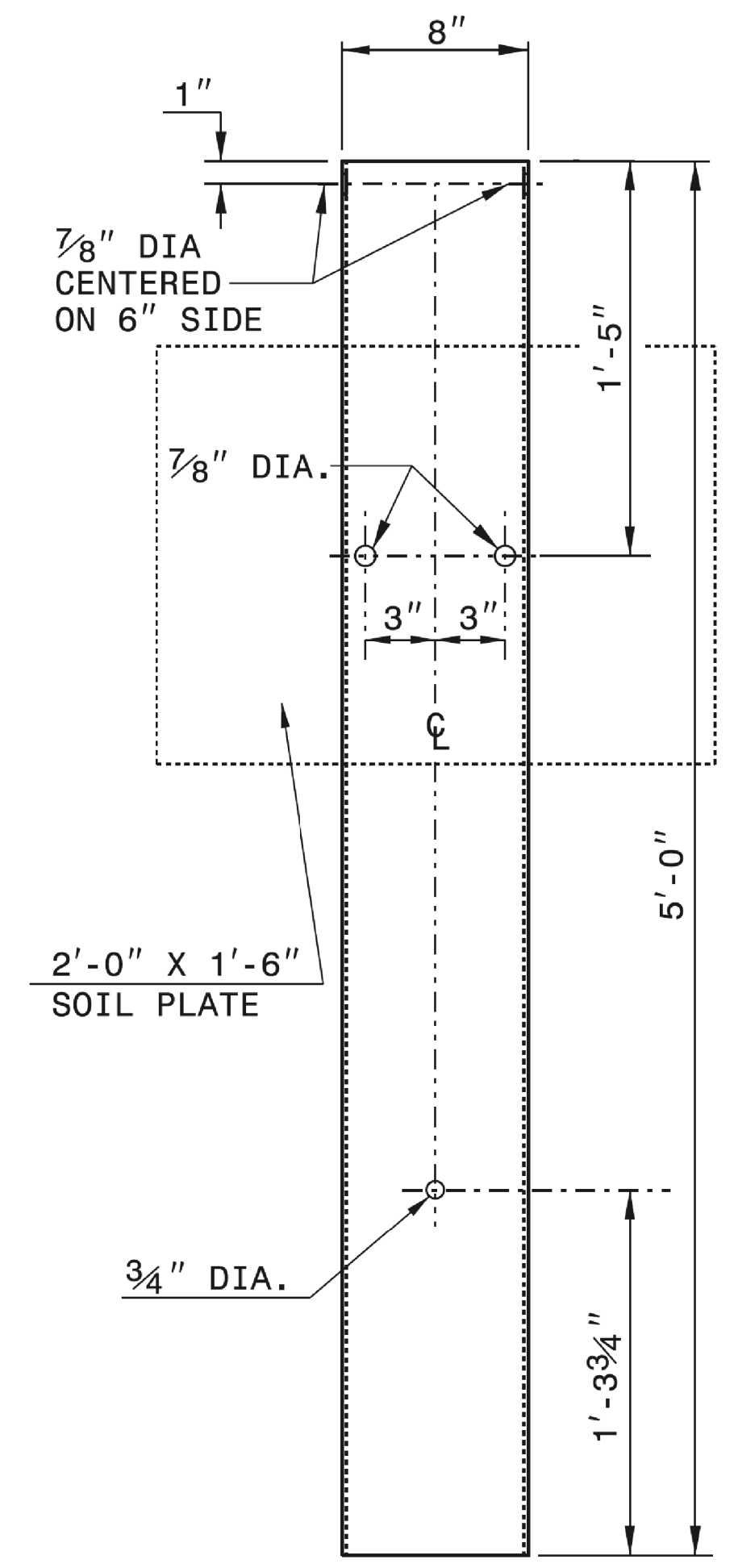


**PLAN**

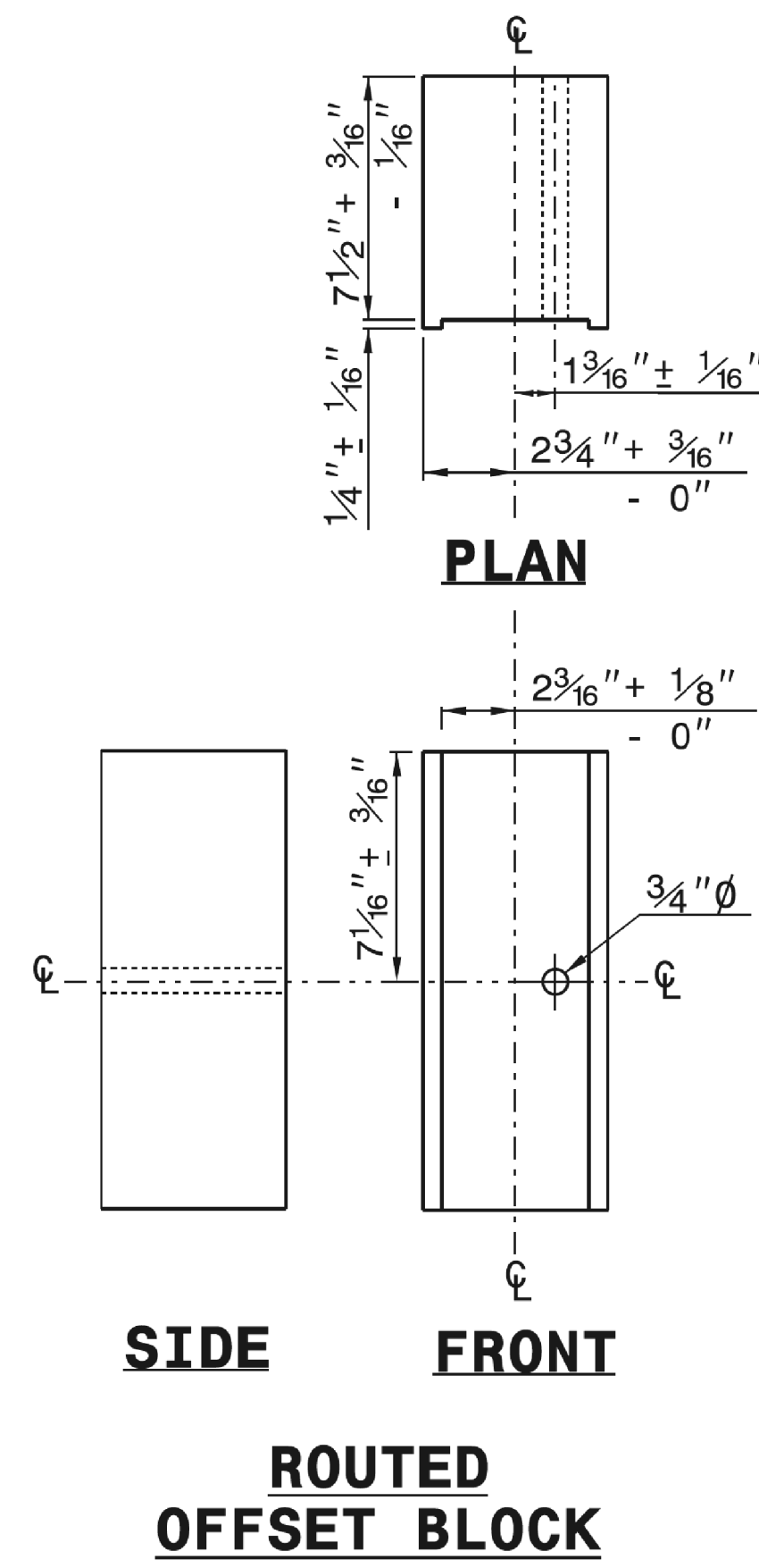


**STANDARD LINE POST**

**SHORT WOOD BREAKAWAY POST**



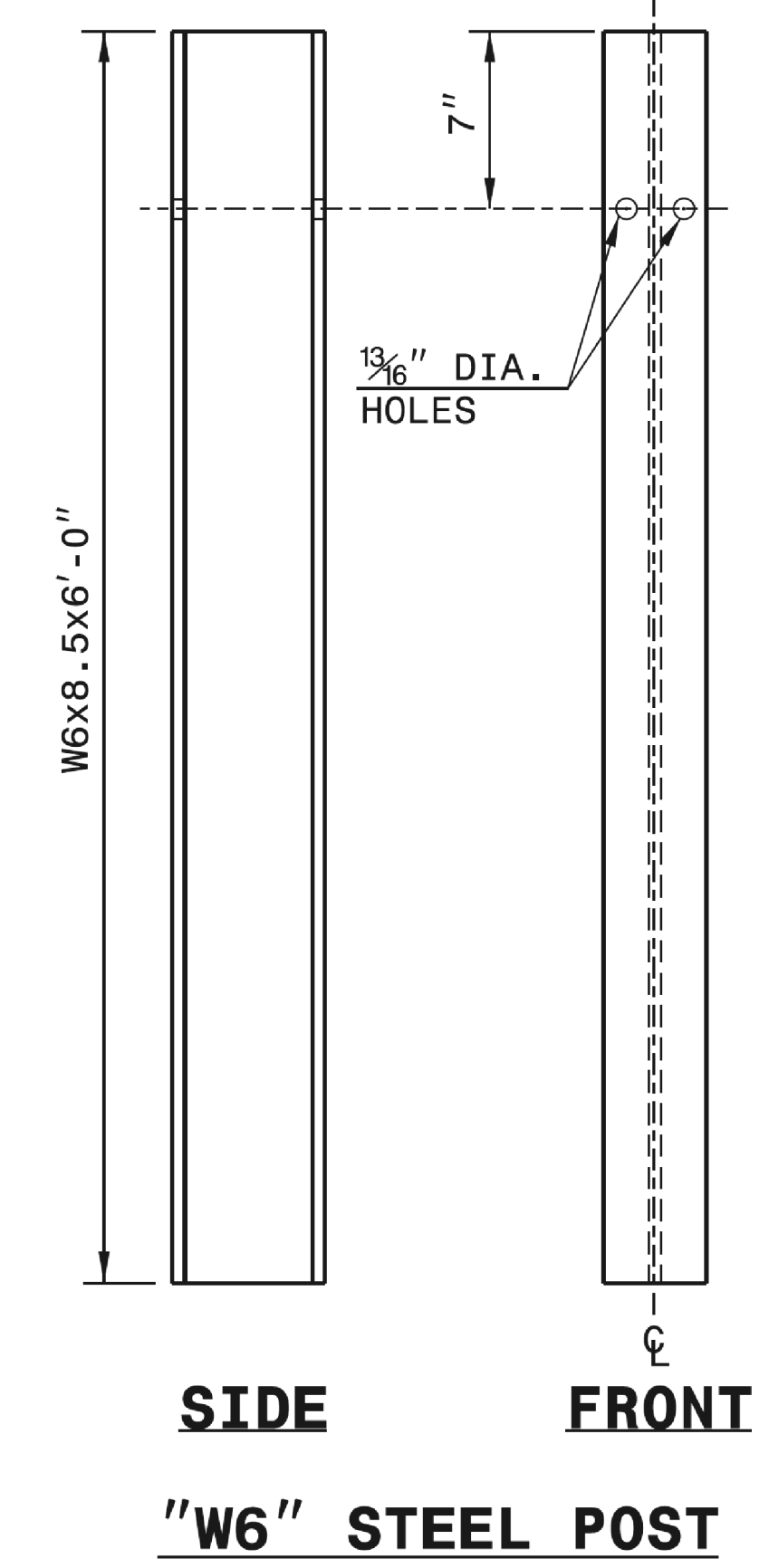
**STEEL TUBE**  
TS 6" x 8" x 0.1875"



**SIDE**

**FRONT**

**ROUTED OFFSET BLOCK**

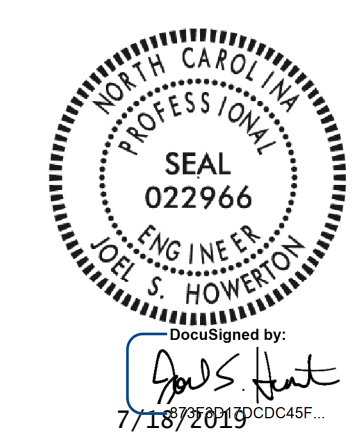


**SIDE**

**FRONT**

**"W6" STEEL POST**

**SYSTEM PARTS**



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

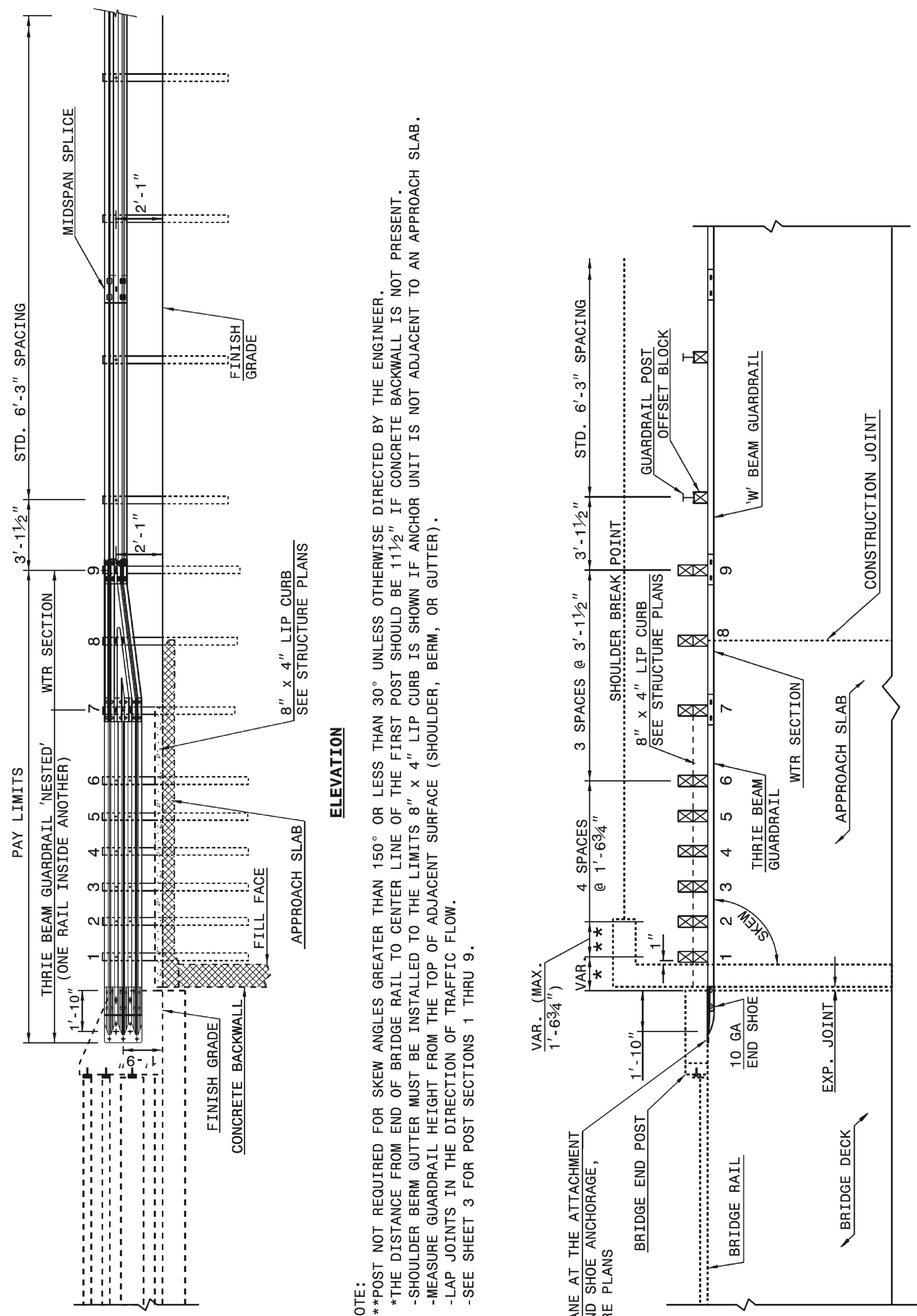
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ORIGINAL BY: J. HOWERTON	DATE: 3-7-2018
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	

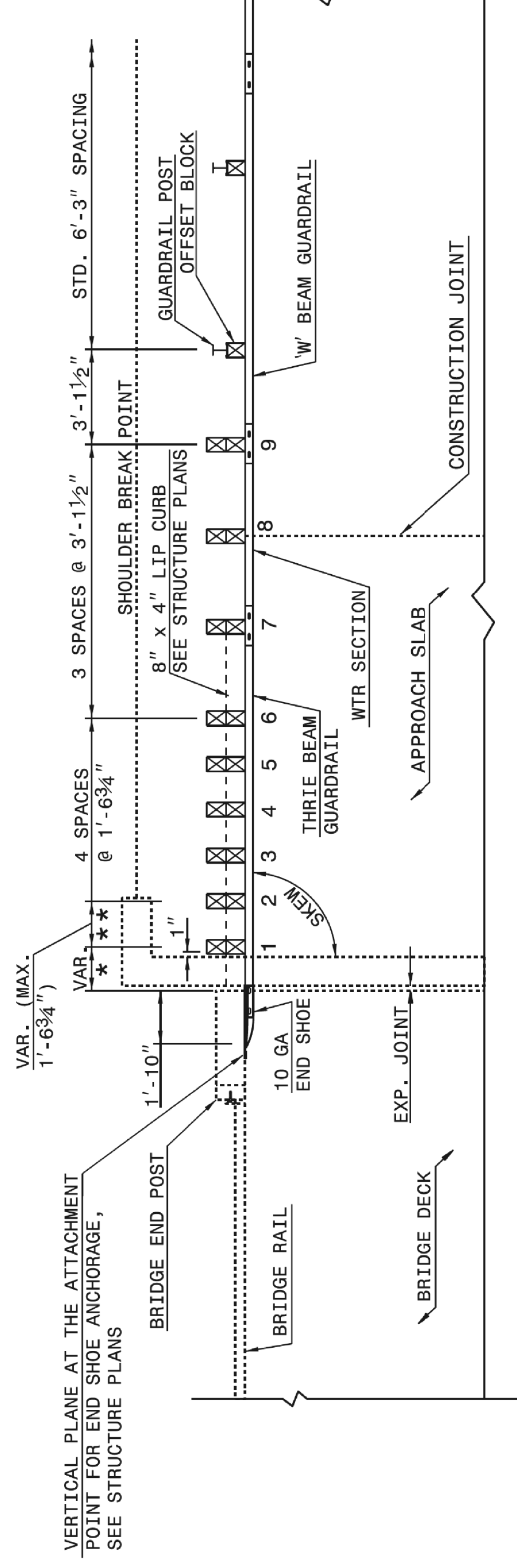
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III  
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7  
**862D03**



**NOTE:**  
 \*\*POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.  
 \*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.  
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.  
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).  
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.  
 -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.



**GUARDRAIL ANCHOR UNIT, TYPE III  
FOR ATTACHMENT TO RAIL ON BRIDGE**

SHEET 1 OF 7  
**862D03**

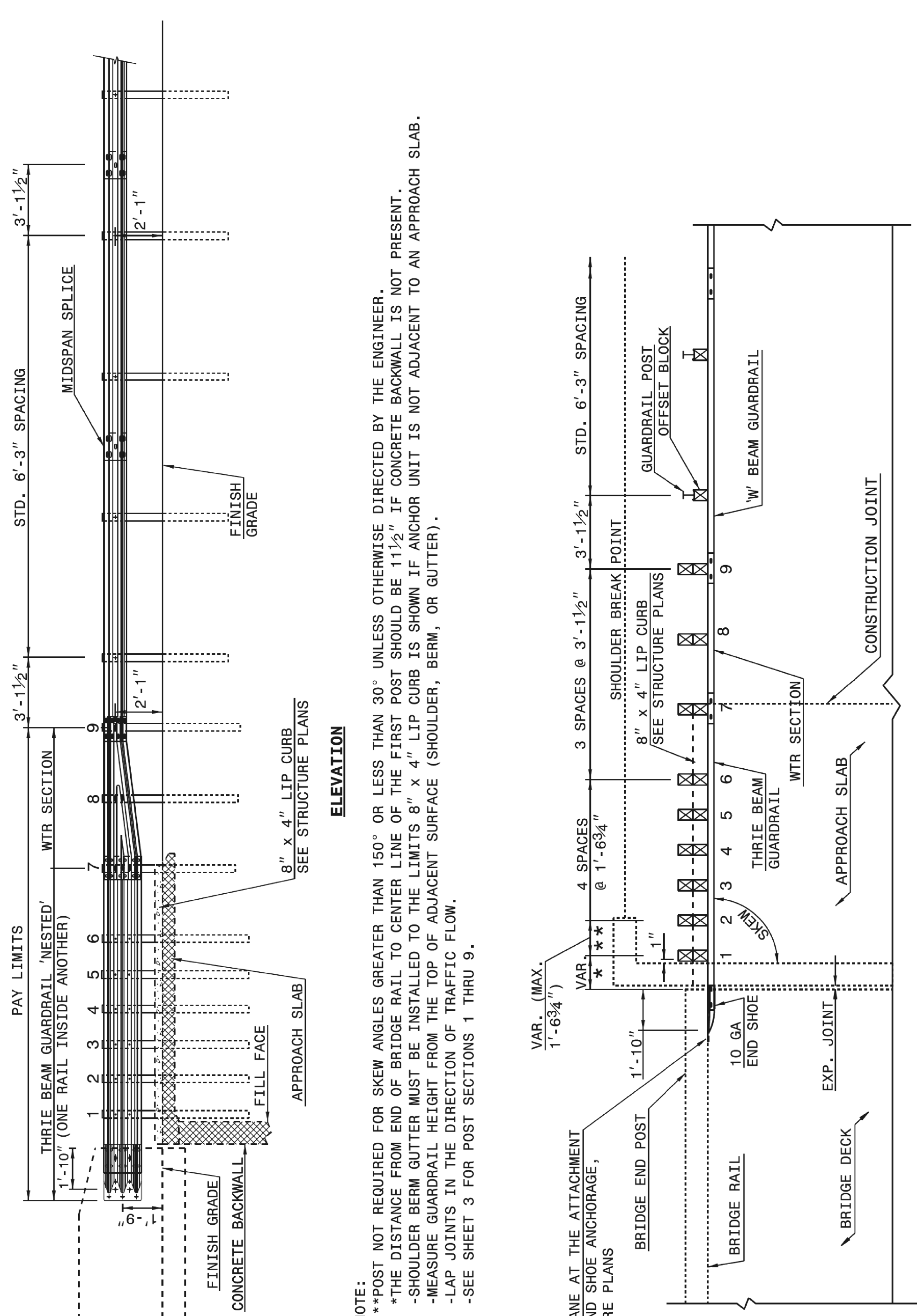
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III  
FOR ATTACHMENT TO RAIL ON BRIDGE

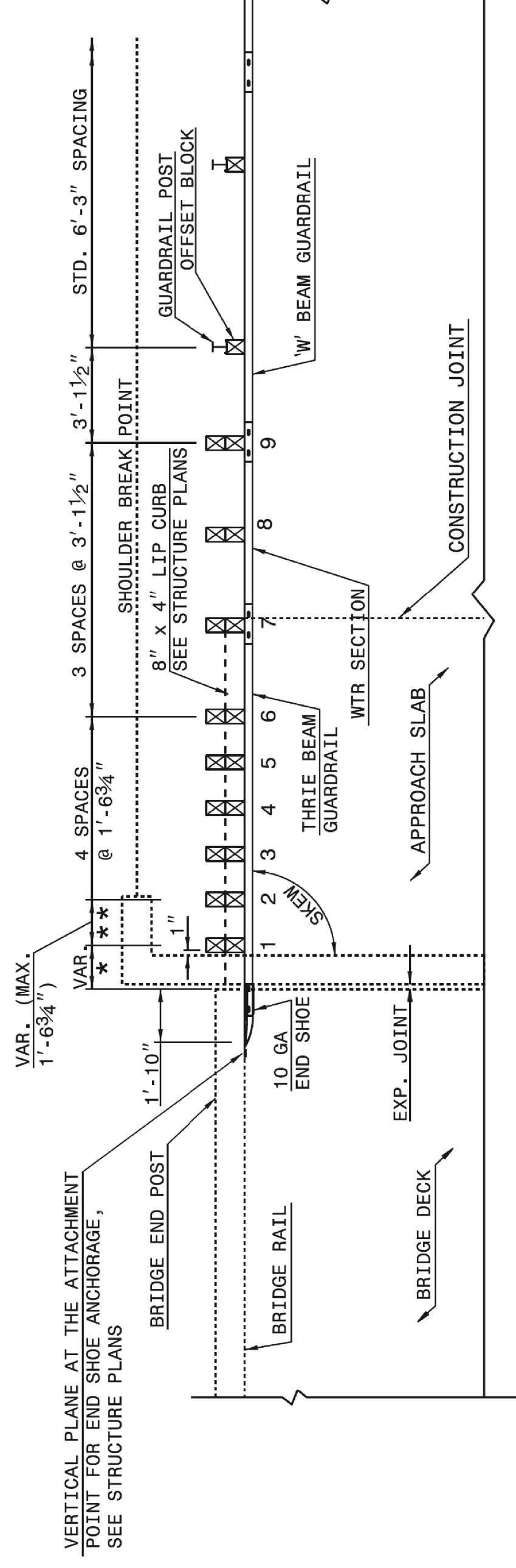
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO  
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7  
**862D03**



**NOTE:**  
 \*\*POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.  
 \*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.  
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.  
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).  
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.  
 -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.



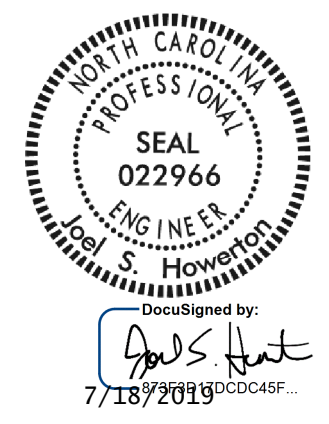
**GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO  
RAIL ON BRIDGE - SUB REGIONAL TIER**

SHEET 2 OF 7  
**862D03**

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

ROADWAY DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO  
RAIL ON BRIDGE - SUB REGIONAL TIER

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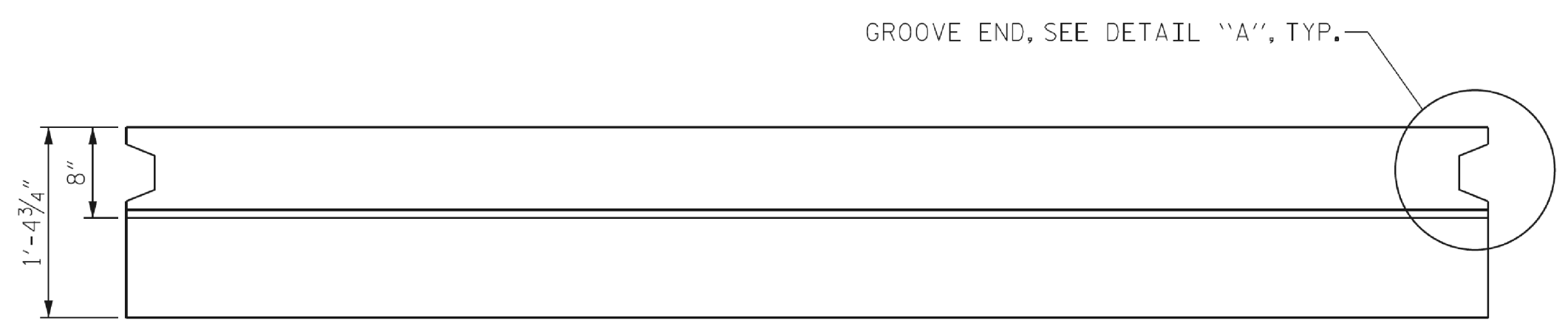
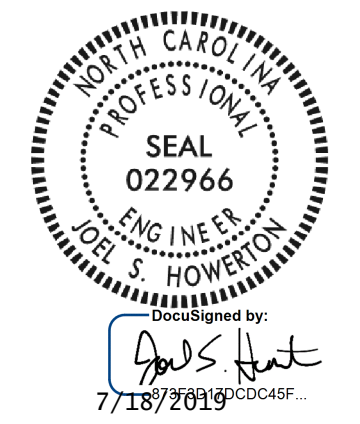


DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

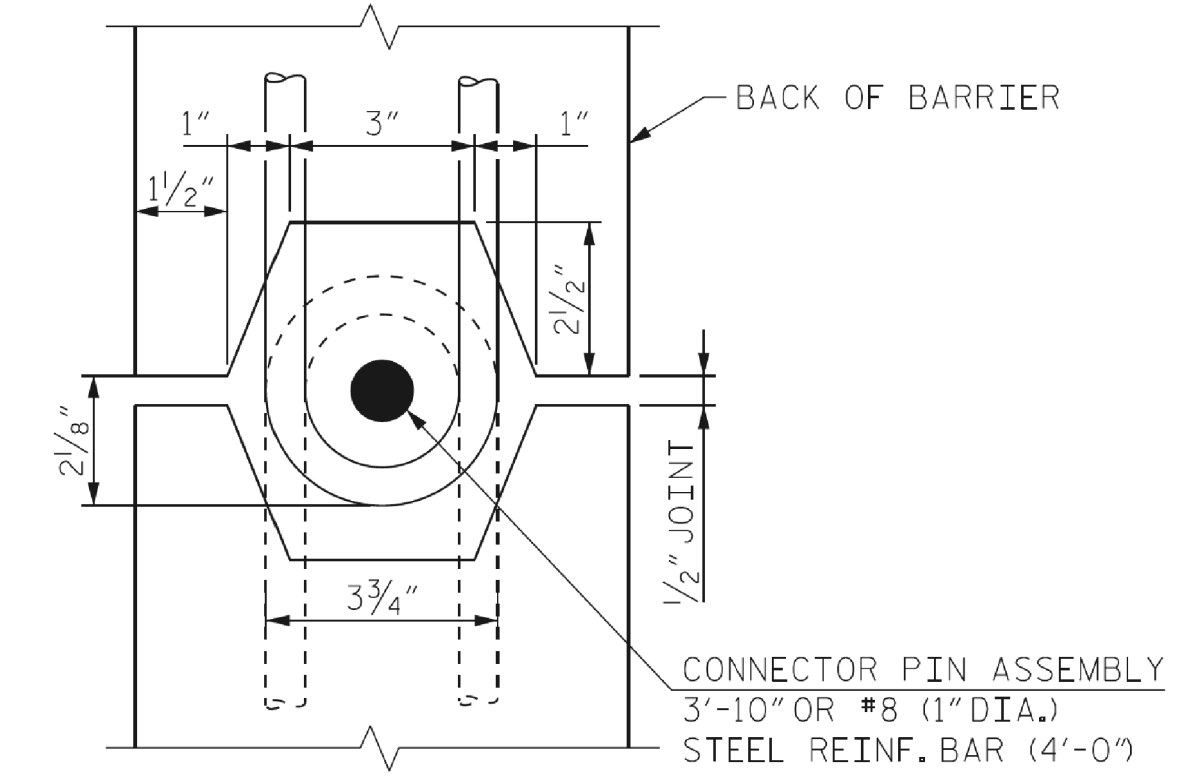
**CONTRACT STANDARDS  
AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

**SEE TITLE BLOCK**

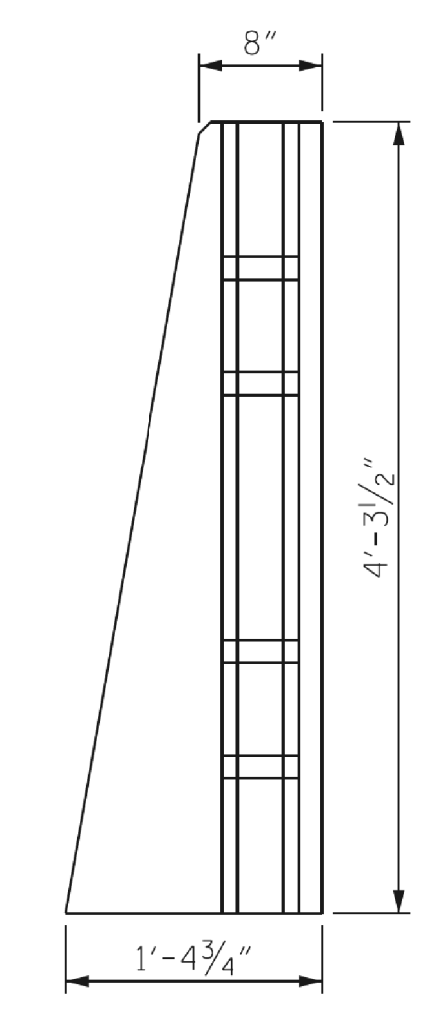
ORIGINAL BY: J. HOWERTON DATE: 06-22-12  
 MODIFIED BY: DATE: \_\_\_\_\_  
 CHECKED BY: DATE: \_\_\_\_\_  
 FILE SPEC.: \_\_\_\_\_



PLAN



DETAIL "A"

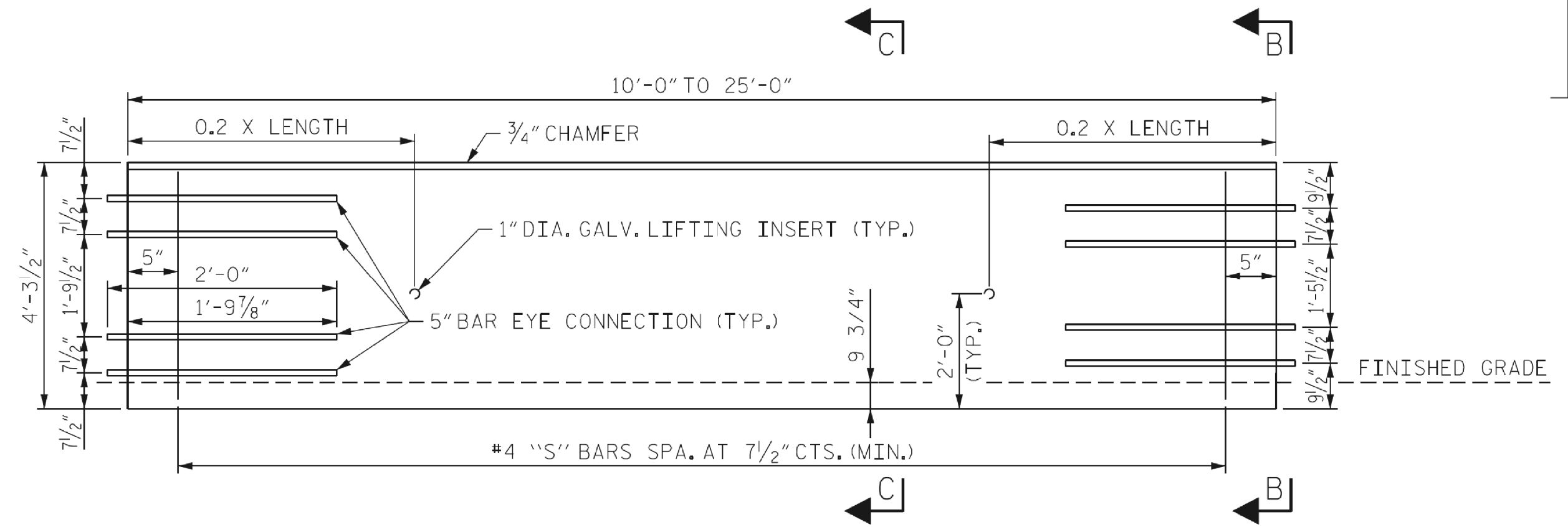


SECTION B-B

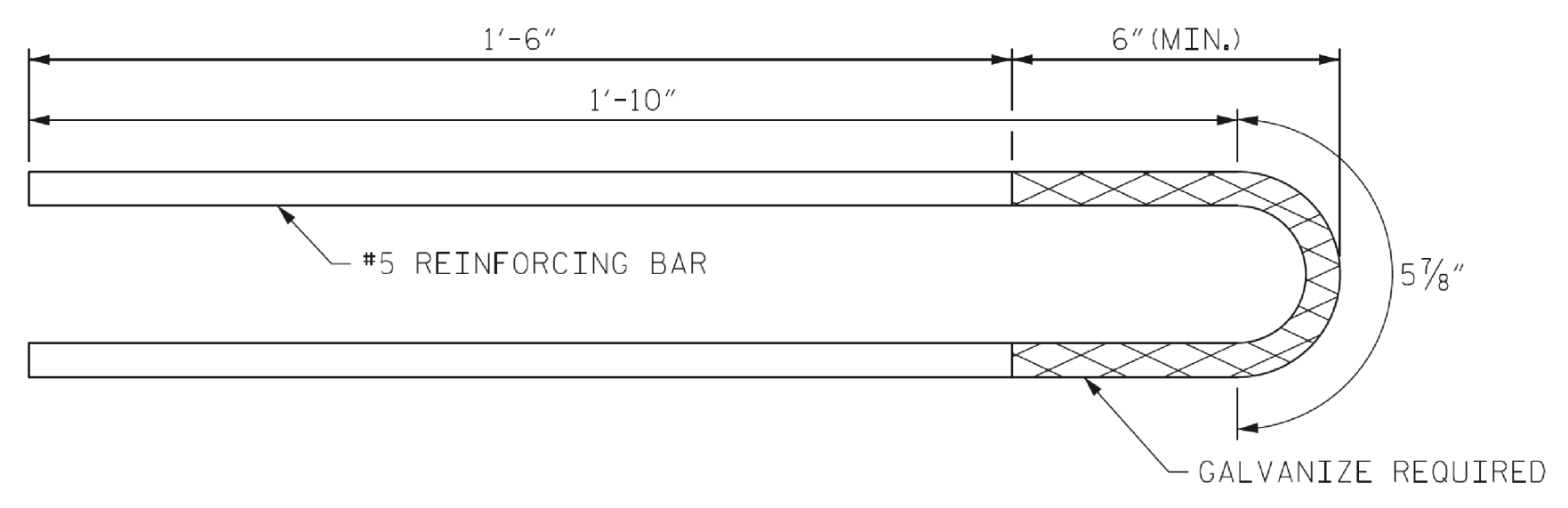
**NOTES:**

ALL PARTS OF CONNECTOR PIN ASSEMBLY SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-153 SPECIFICATIONS.

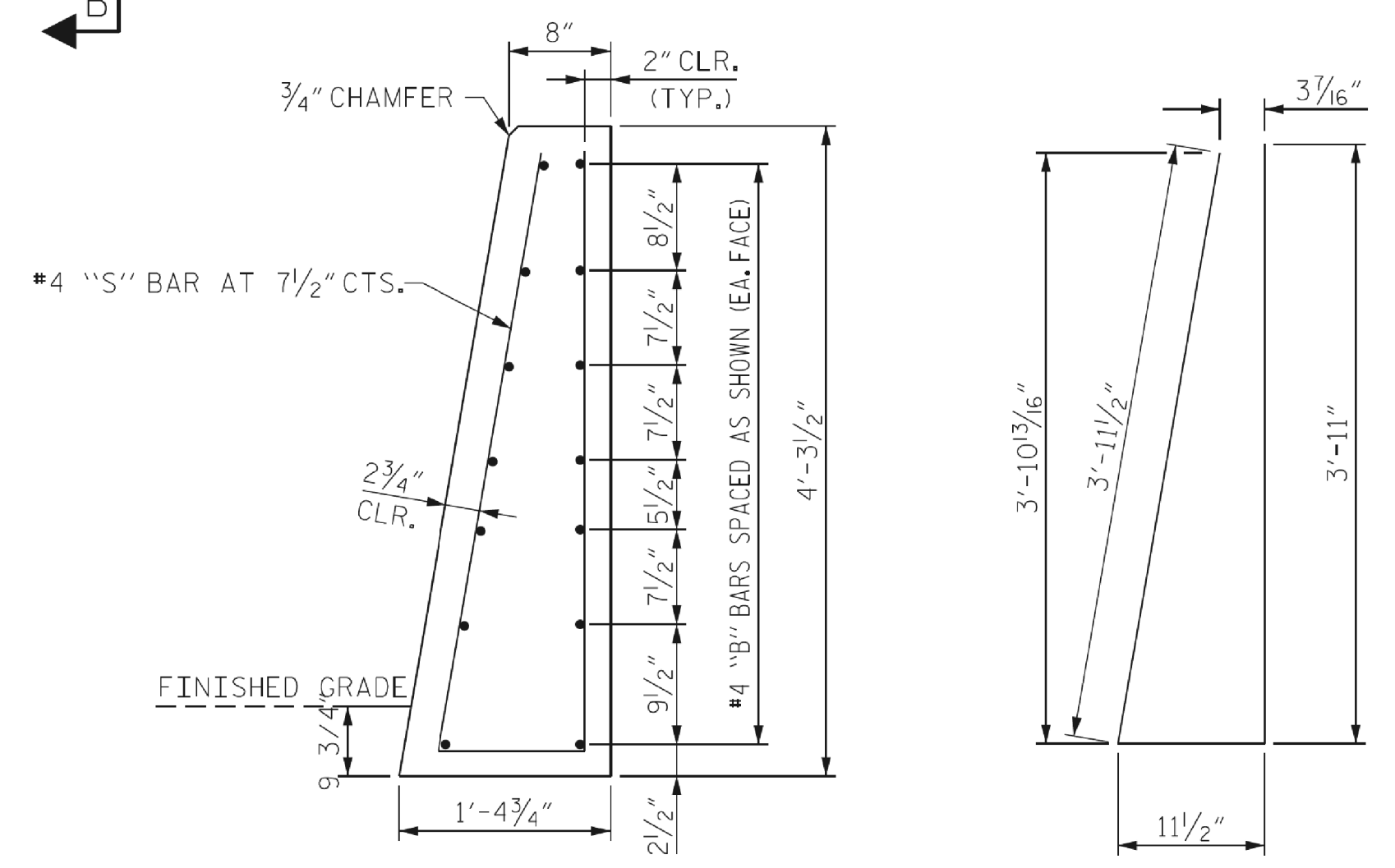
ALL CONCRETE IN PRECAST REINFORCED SINGLE FACE SINGLE SLOPE CONCRETE BARRIER RAIL SHALL BE CLASS AA.



FRONT ELEVATION MIDDLE BARRIER UNIT

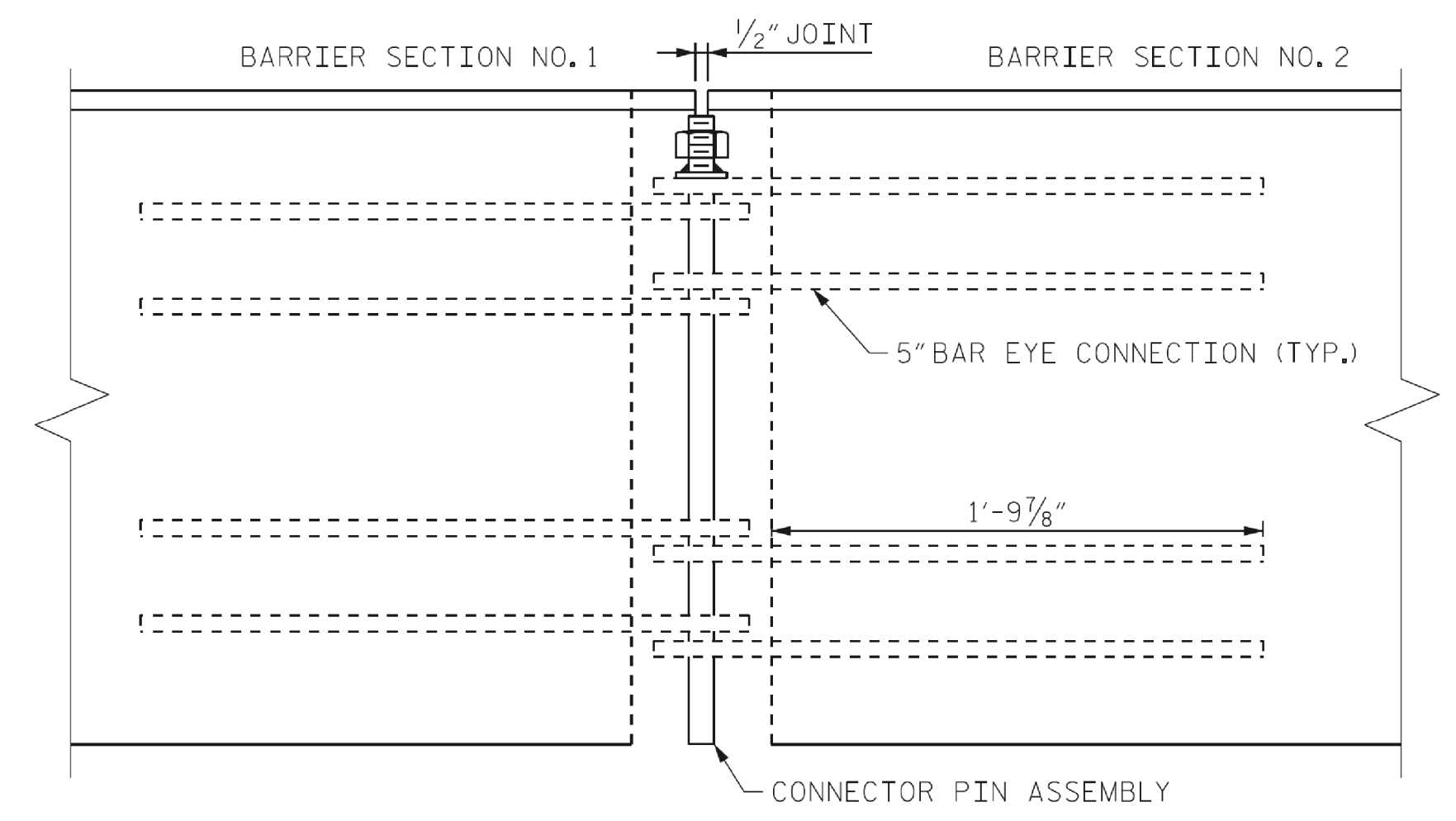


DETAIL OF REINFORCING EYE BAR

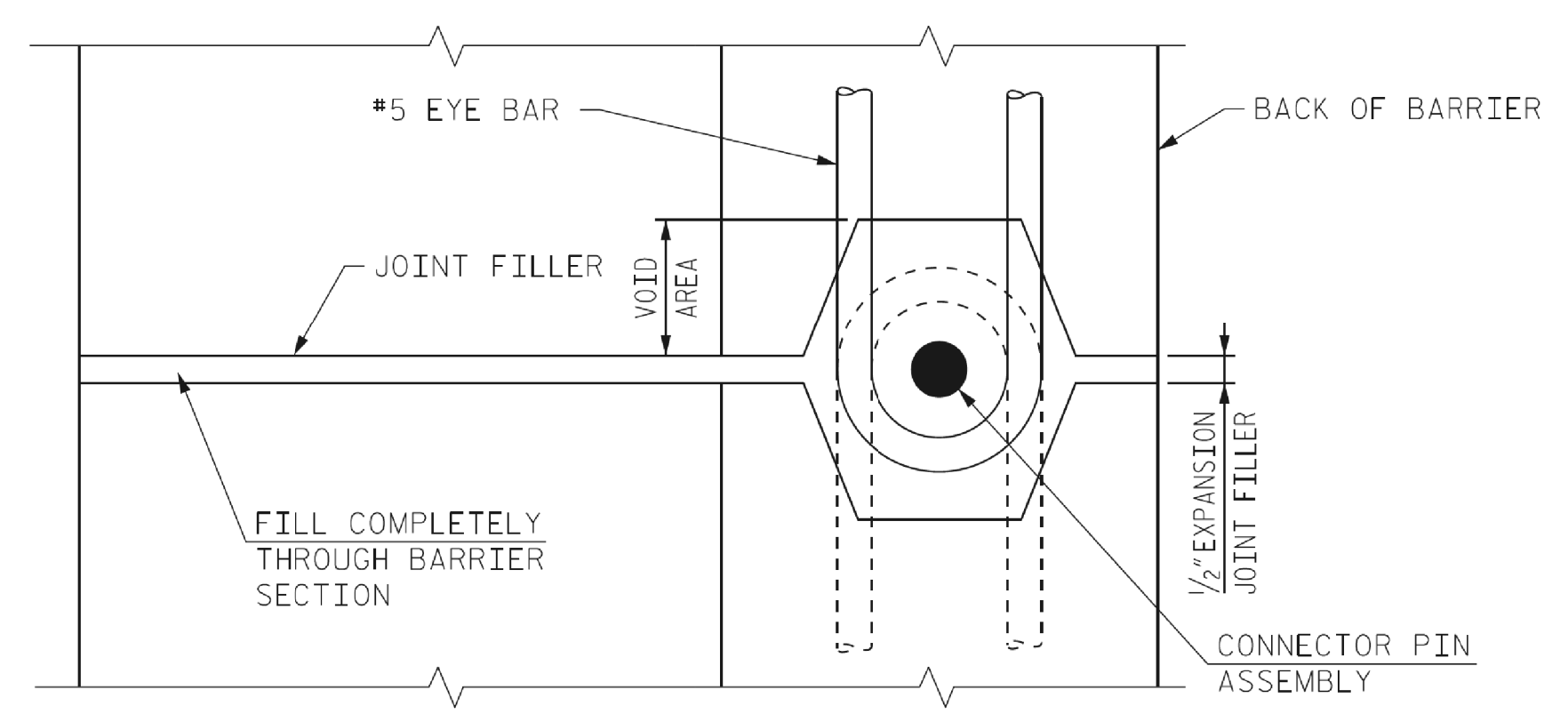


SECTION C-C

"S" BARS

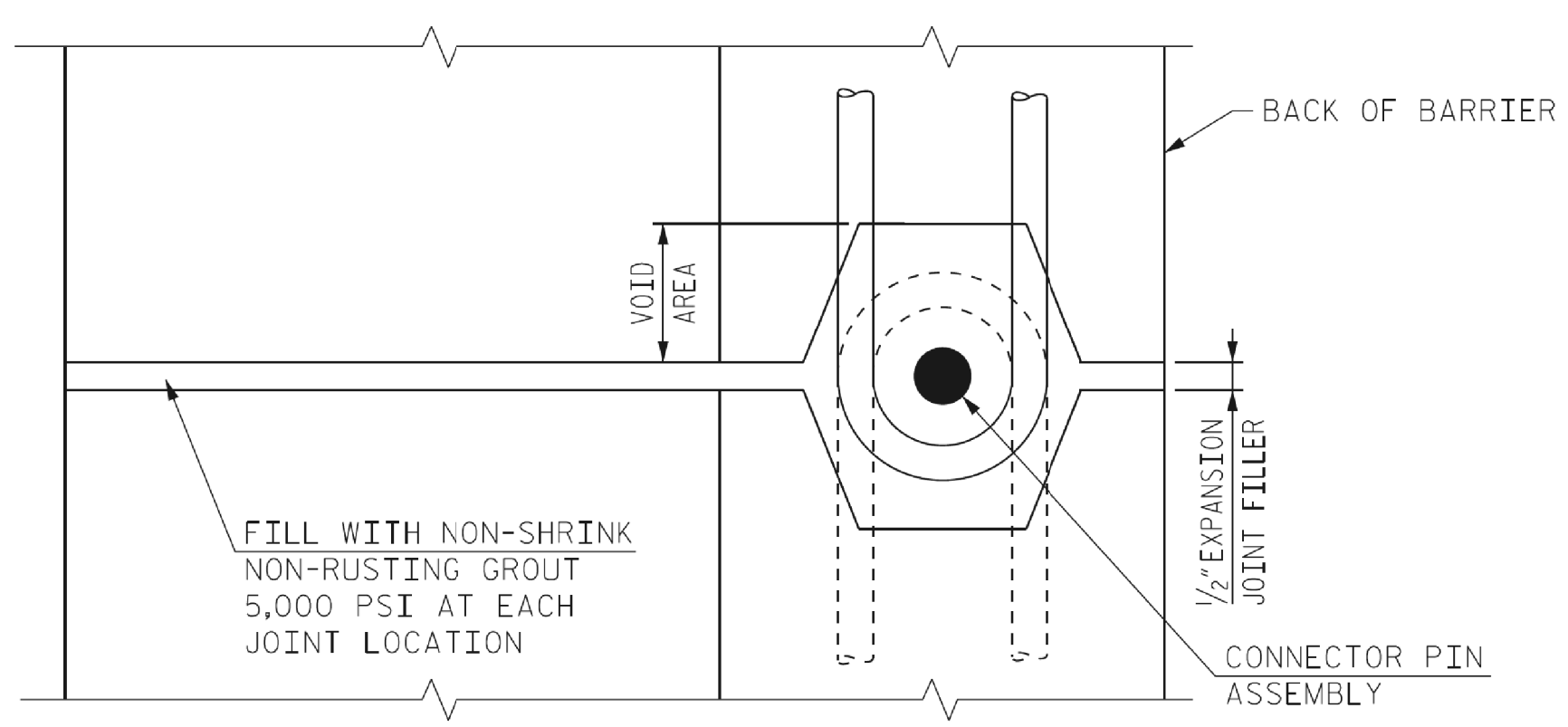


JOINT VIEW ELEVATION

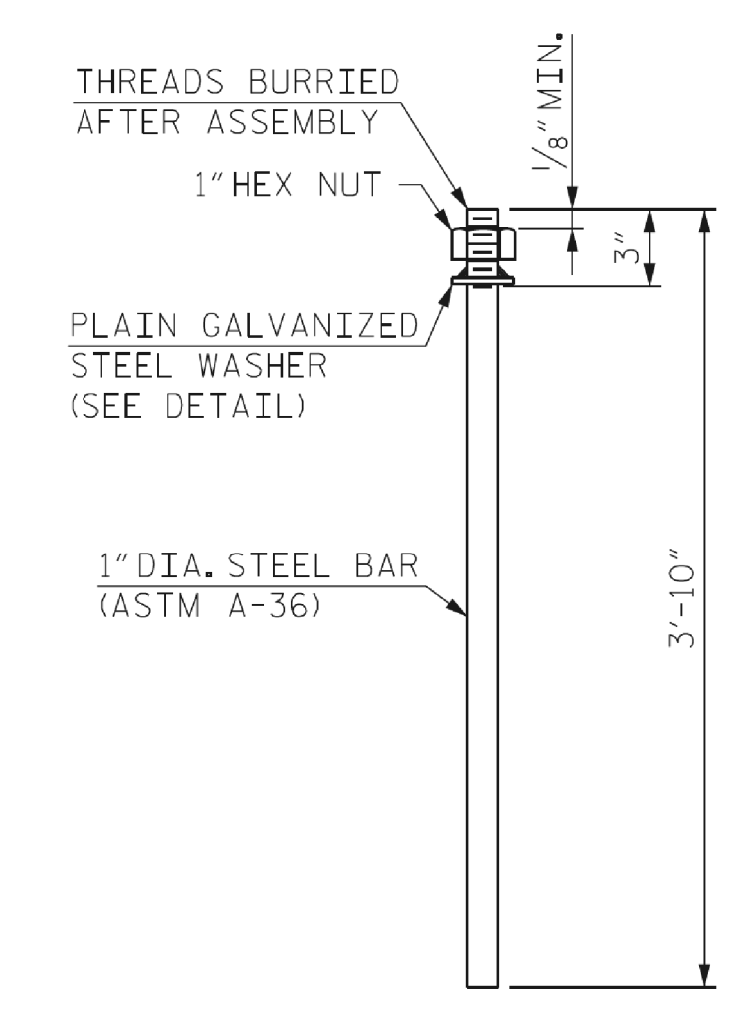


JOINT FILLER DETAIL

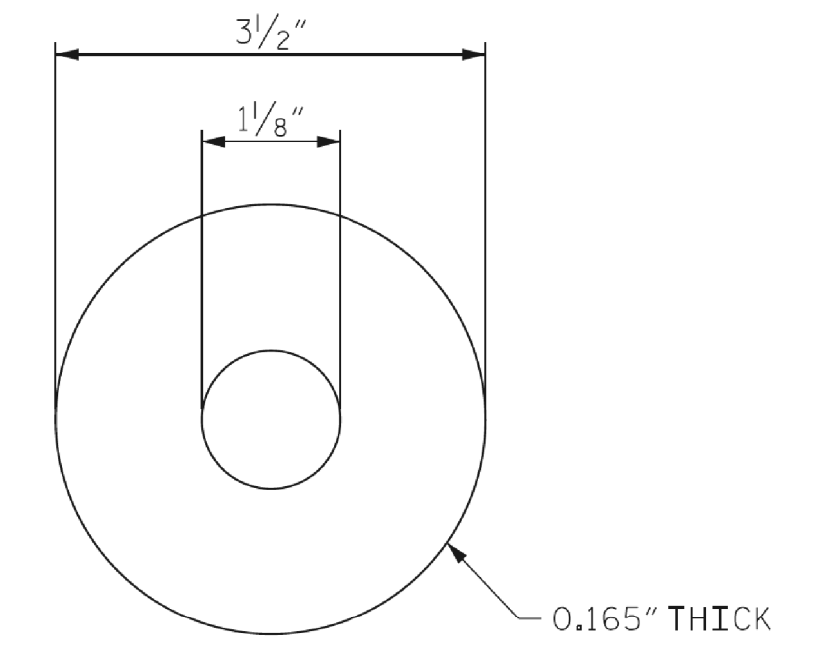
USE JOINT FILLER DETAIL AT 75 FT MAXIMUM SPACINGS



PLAN OF BONDED CONNECTION OF PRECAST UNIT



CONNECTOR PIN ASSEMBLY

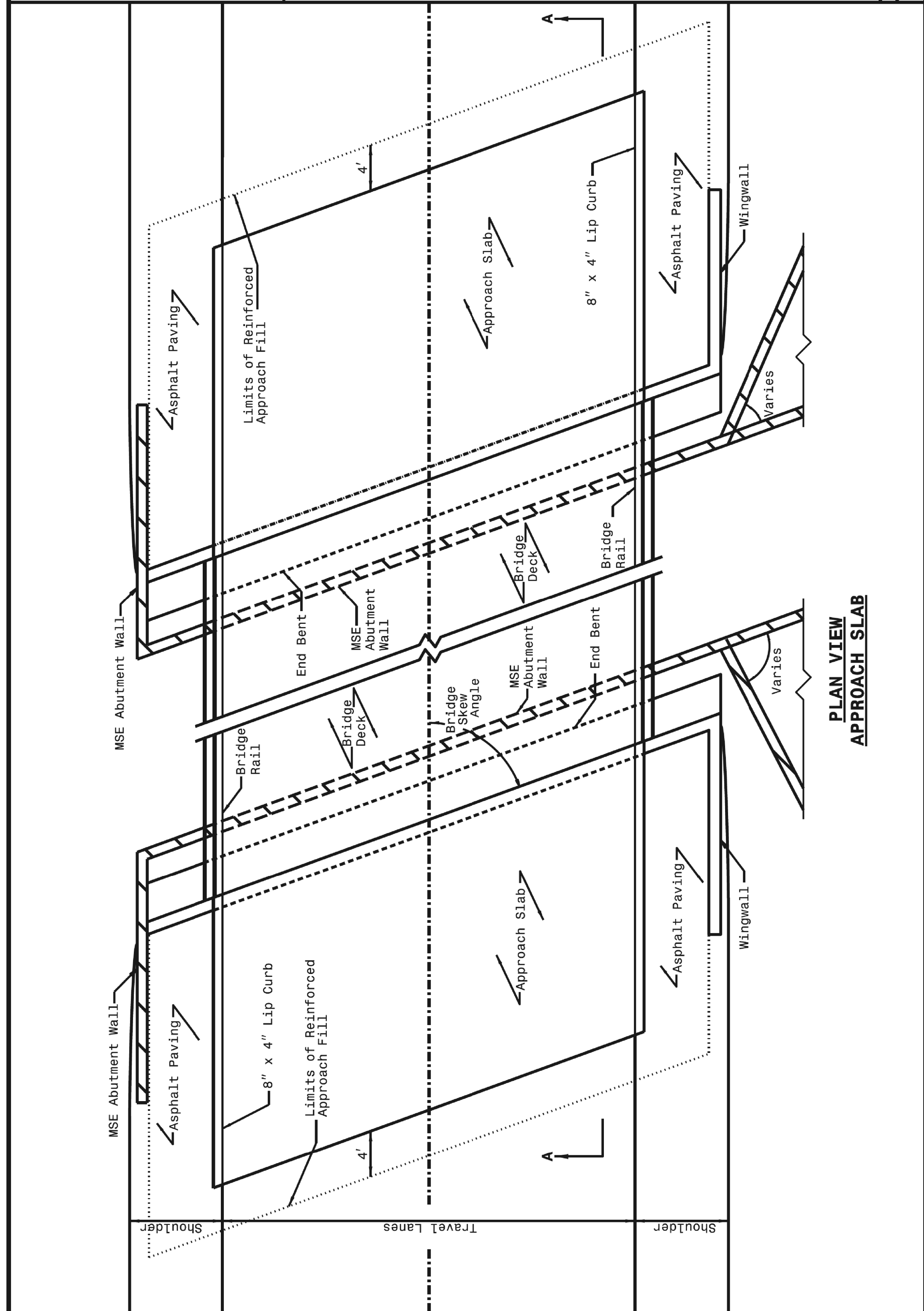


PLAIN GALVANIZED STEEL WASHER FOR 1" PIN

<b>CONTRACTS STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950	FAX 919-250-4119
PRECAST REINFORCED SINGLE FACE SINGLE SLOPE CONCRETE BARRIER RAIL	
ORIGINAL BY: J. E. KEENE	DATE: APR 2019
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: kkemp/english/single face single slope barrier rail.dgn	

\$\$\$USERNAME\$\$\$  
\$\$\$DATE\$\$\$ \$\$\$FILE\$\$\$

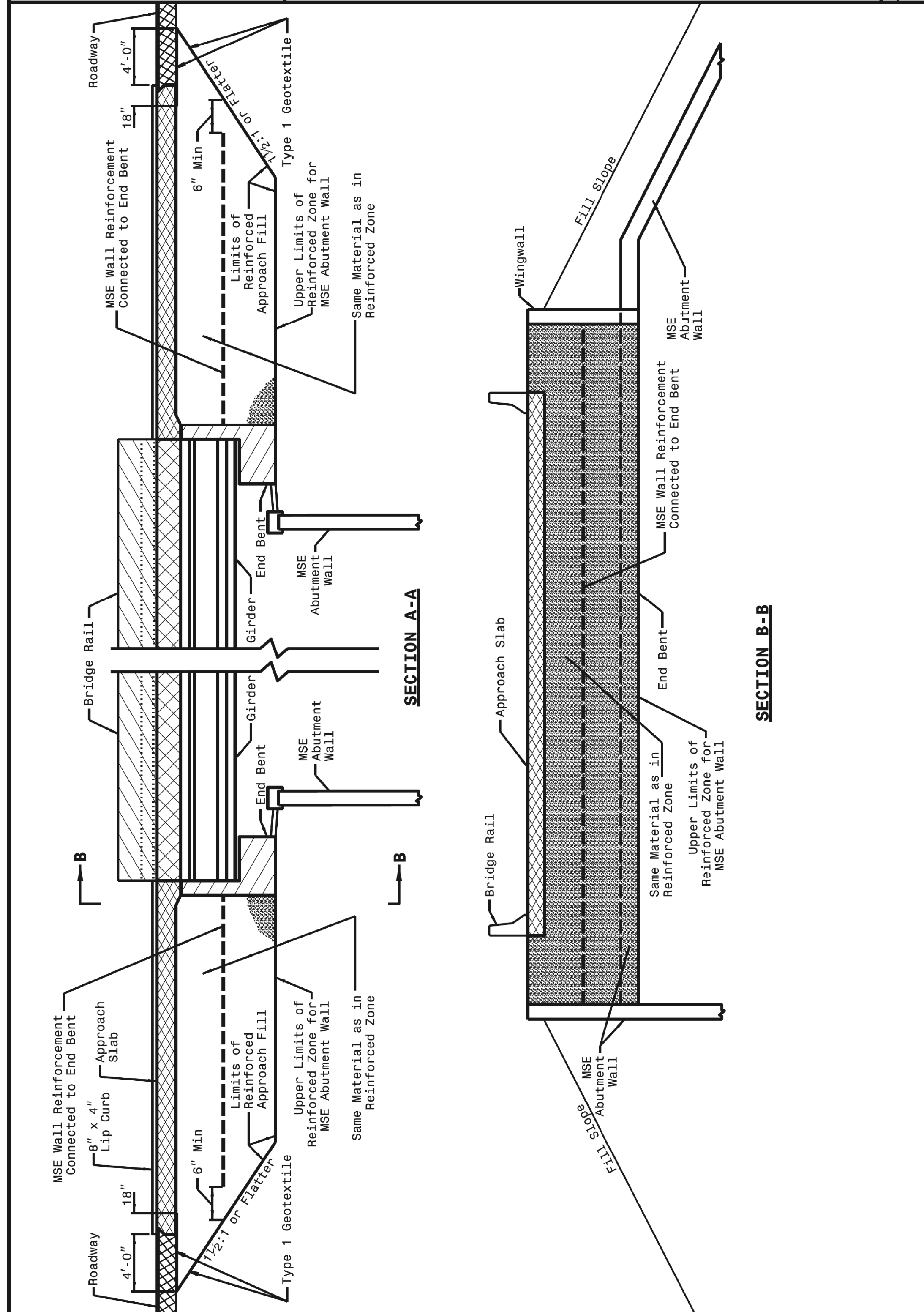
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.  
ROADWAY DETAIL DRAWING FOR BRIDGE APPROACH FILLS  
TYPE III - REINFORCED APPROACH FILL FOR MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL  
SHEET 1 OF 2 422D10



PLAN VIEW  
APPROACH SLAB

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

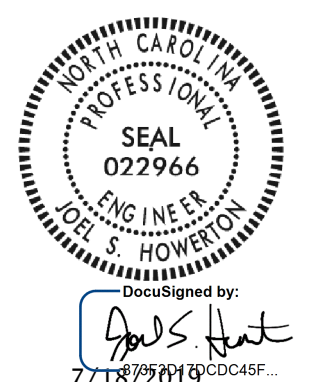
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.  
ROADWAY DETAIL DRAWING FOR BRIDGE APPROACH FILLS  
TYPE III - REINFORCED APPROACH FILL FOR MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL  
SHEET 2 OF 2 422D10



SECTION A-A

SECTION B-B

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



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