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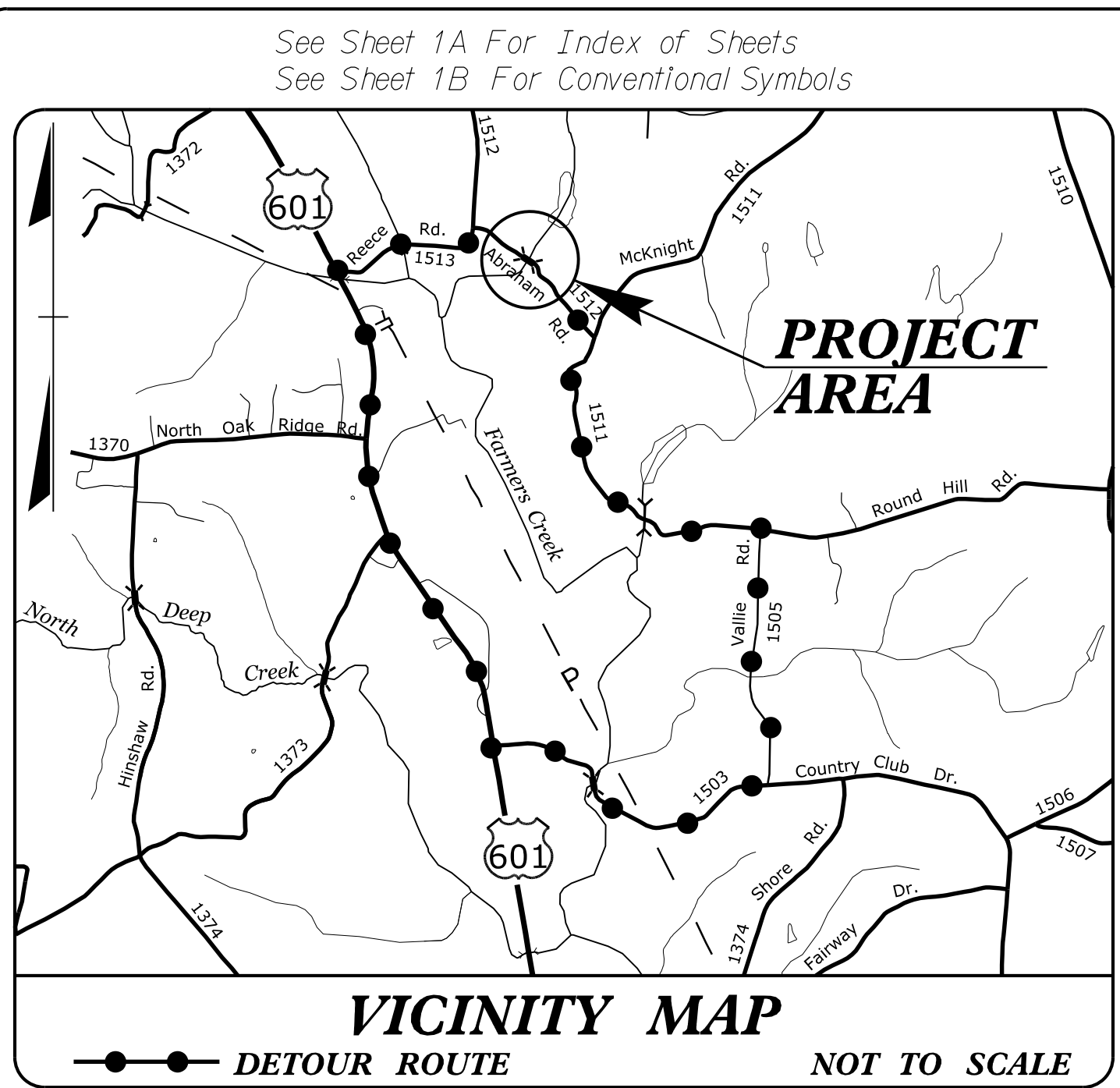
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and sealed by the individuals whose names and license
numbers appear on each page, on the dates appearing
with their signature on that page.**

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09.08/2019

18-APR-2022 12:36
 N:\DOCS\08339-05 BR-0109 NCDOT YADKIN 80 OVER UT FARMERS CREEK\Roadway\Proj\BR0109_rdy_tsh.dgn
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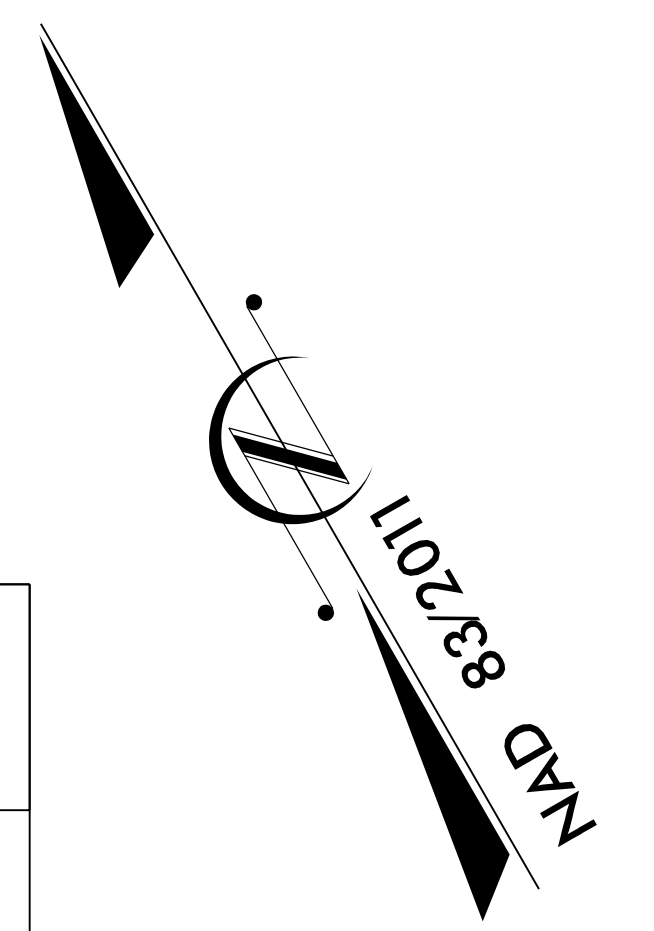
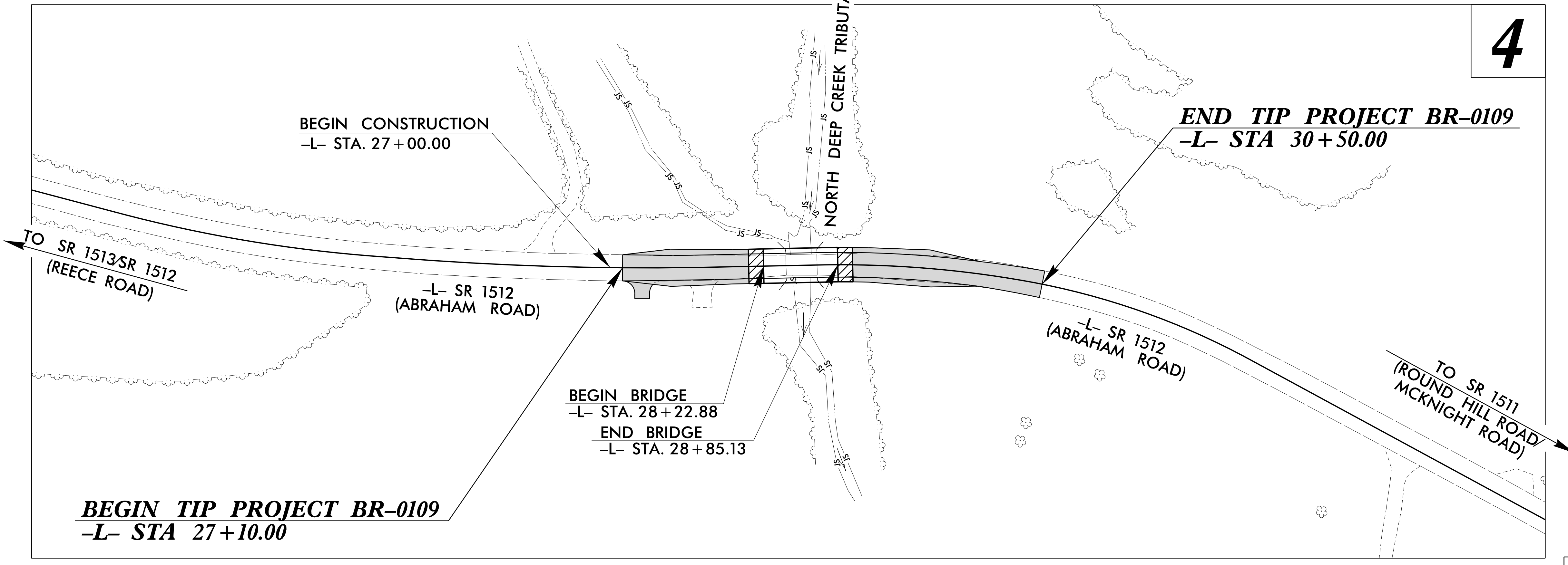
TIP PROJECT: BR-0109
CONTRACT: C204538



STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
YADKIN COUNTY

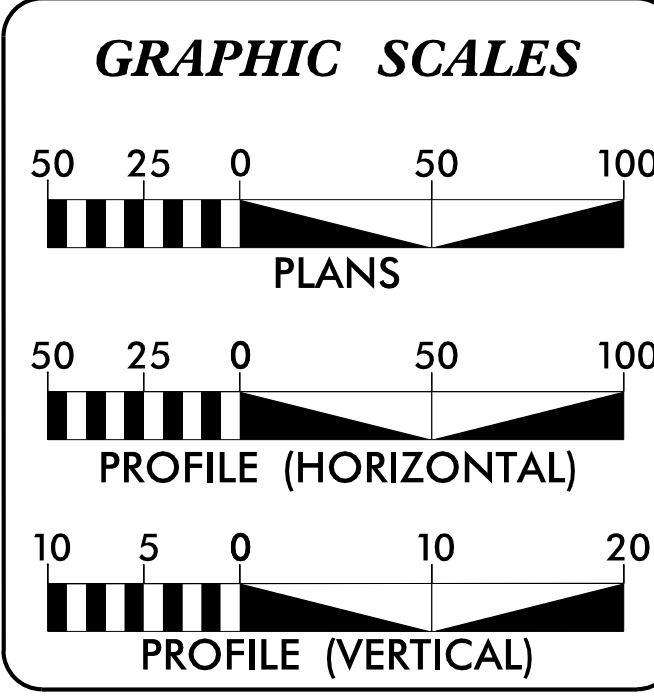
**LOCATION: REPLACE BRIDGE NO. 80 ON SR 1512 (ABRAHAM RD.)
 OVER NORTH DEEP CREEK TRIBUTARY 4B**
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0109	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
49217.1.1		PE	
49217.2.1		RIGHT-OF-WAY	
49217.2.2		UTILITIES	
49217.3.1		CONST.	



DESIGN EXCEPTION FOR SAG VERTICAL CURVE K VALUE AND NIGHTTIME VERTICAL SSD.

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2022 = 560
 ADT 2040 = 880

V = 55 MPH

FUNC CLASS =
 RURAL LOCAL
 SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT BR-0109 = 0.052 MILES
 LENGTH STRUCTURE PROJECT BR-0109 = 0.012 MILES
 TOTAL LENGTH PROJECT BR-0109 = 0.064 MILES

Plans Prepared By:
 ms consultants, inc.
 5444 Wade Park Blvd.
 Suite 190
 Raleigh, NC 27607
 NC License Number - C-3239

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
 OCTOBER 15, 2020

LETTING DATE:
 JULY 19, 2022

Plans Prepared For:
 NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 1000 BIRCH RIDGE DRIVE
 RALEIGH, NC 27610

DAVID STUTTS, PE
 NCDOT PROJECT ENGINEER

M. TRAVIS POTTS, PE
 PROJECT ENGINEER

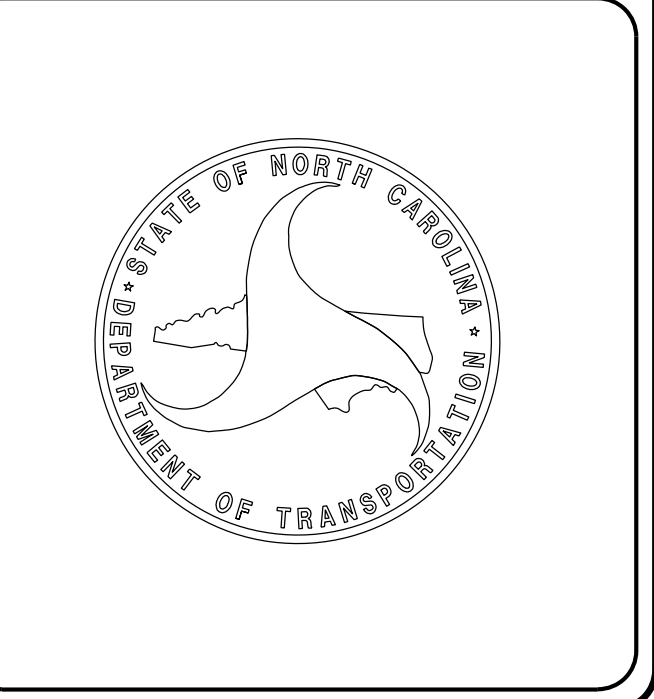
DAVE JANOSKO, PE
 PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

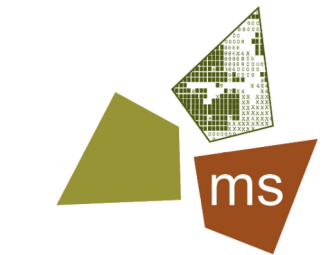
Rana Stansell
 4/25/2022
 P.E.

ROADWAY DESIGN ENGINEER

M. Travis Potts
 4/25/2022
 P.E.



8/17/99



ms consultants, inc.
5444 Wade Park Blvd.
Suite 160
Raleigh, NC 27607
NC License Number : C-3239

PROJECT REFERENCE NO. BR-0109 SHEET NO. 1A
ROADWAY DESIGN ENGINEER SEAL 041453
ROADWAY DESIGN ENGINEER TRAVIS POTTS
DocuSigned by: M. Travis Potts 4/25/2022
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS
SHEET NUMBER SHEET
1 TITLE SHEET
1A INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B CONVENTIONAL SYMBOLS
2A-1 PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1 DETAIL FOR GUARDRAIL SYSTEM PARTS
2C-2 DETAIL FOR GUARDRAIL ANCHOR UNIT, TYPE III
3B-1 SUMMARIES OF EARTHWORK, PAVEMENT REMOVAL, SHOULDER BERM GUTTER, AND GUARDRAIL
3D-1 DRAINAGE SUMMARY
3G-1 GEOTECHNICAL SUMMARIES
4 PLAN AND PROFILE SHEET
RW01 THRU RW04 RIGHT-OF-WAY PLANS
TMP-1 THRU TMP-2 TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2 PAVEMENT MARKING PLANS
EC-1 THRU EC-5 EROSION CONTROL PLANS
UD-1 THRU UD-2 UTILITIES BY OTHERS PLANS
X-0 CROSS-SECTION SUMMARY SHEET
X-1 THRU X-4 CROSS-SECTIONS
S-1 THRU S-14 STRUCTURE PLANS

GENERAL NOTES: 2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:
GRADING AND SURFACING: THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.
CLEARING: CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
SUPERELEVATION: ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.
SHOULDER CONSTRUCTION: ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01
SIDE ROADS: THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.
SUBSURFACE DRAINS: SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.
GUARDRAIL: THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.
TEMPORARY SHORING: SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.
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 FRONTIER NATURAL GAS COMPANY. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.
RIGHT-OF-WAY MARKERS: ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

2018 ROADWAY ENGLISH STANDARD DRAWINGS EFF. 01-16-2018 REV.
The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:
STD.NO. TITLE
DIVISION 2 - EARTHWORK
200.03 Method of Clearing - Method III
225.02 Guide for Grading Subgrade - Secondary and Local
225.04 Method of Obtaining Super-elevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS
300.01 Method of Pipe Installation
310.10 Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES
422.02 Bridge Approach Fills - Type II Modified Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS
560.01 Method of Shoulder Construction - High Side of Super-elevated Curve - Method I
DIVISION 8 - INCIDENTALS
815.02 Subsurface Drain
840.00 Concrete Base Pad for Drainage Structures
840.18 Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.24 Frames and Narrow Slot Sag Grates
840.25 Anchorage for Frames - Brick or Concrete or Precast
840.27 Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29 Frames and Narrow Slot Flat Grates
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
840.66 Drainage Structure Steps
846.01 Concrete Curb, Gutter and Curb & Gutter
846.04 Drop Inlet Installation in Shoulder Berm Gutter
862.01 Guardrail Placement
862.02 Guardrail Installation (Special Detail for Sheet 6 of 8)
862.03 Structure Anchor Units
866.04 Barbed Wire Fence with Wood Posts (2 - 7 Strands)
876.01 Rip Rap in Channels

05-APR-2022 17:01
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BR-0109 NCDOT YADKIN 80 OVER UT FARMERS CREEK

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

12/2/2016

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Computed Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	①23
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	--- WLB ---
Proposed Wetland Boundary	--- WLB ---
Existing Endangered Animal Boundary	--- EAB ---
Existing Endangered Plant Boundary	--- EPB ---
Existing Historic Property Boundary	--- HPB ---
Known Contamination Area: Soil	☠-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	○ S
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	▬

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	◇
Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	◇
Exist Permanent Easement Pin and Cap	◇
New Permanent Easement Pin and Cap	◆
Vertical Benchmark	⊠
Existing Right of Way Marker	△
Existing Right of Way Line	-----
New Right of Way Line	-----
New Right of Way Line with Pin and Cap	-----
New Right of Way Line with Concrete or Granite R/W Marker	-----
New Control of Access Line with Concrete C/A Marker	-----
Existing Control of Access	-----
New Control of Access	-----
Existing Easement Line	-----
New Temporary Construction Easement	-----
New Temporary Drainage Easement	-----
New Permanent Drainage Easement	-----
New Permanent Drainage / Utility Easement	-----
New Permanent Utility Easement	-----
New Temporary Utility Easement	-----
New Aerial Utility Easement	-----

ROADS AND RELATED FEATURES:

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

VEGETATION:

Single Tree	☼
Single Shrub	☼

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

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

EXISTING STRUCTURES:

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

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	-----

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	-----

SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----
Above Ground 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.*)	-----

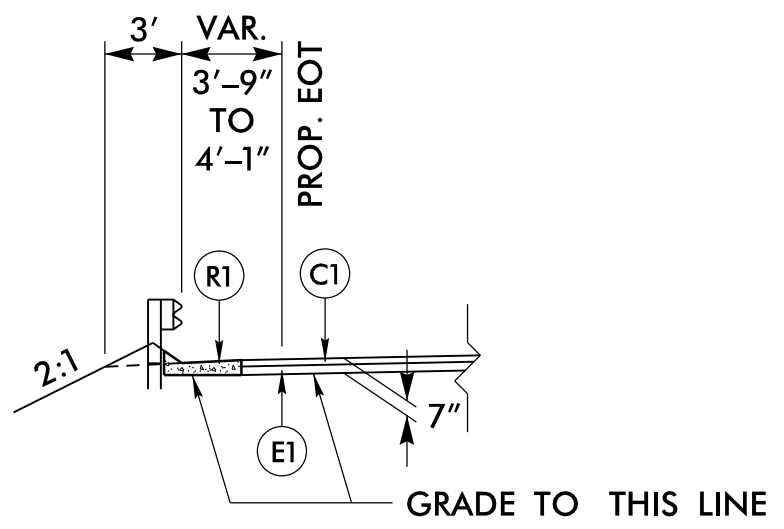
MISCELLANEOUS:

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.	-----
A/G Tank; Water, Gas, Oil	-----
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	-----
Abandoned According to Utility Records	-----
End of Information	-----

6/2/2019

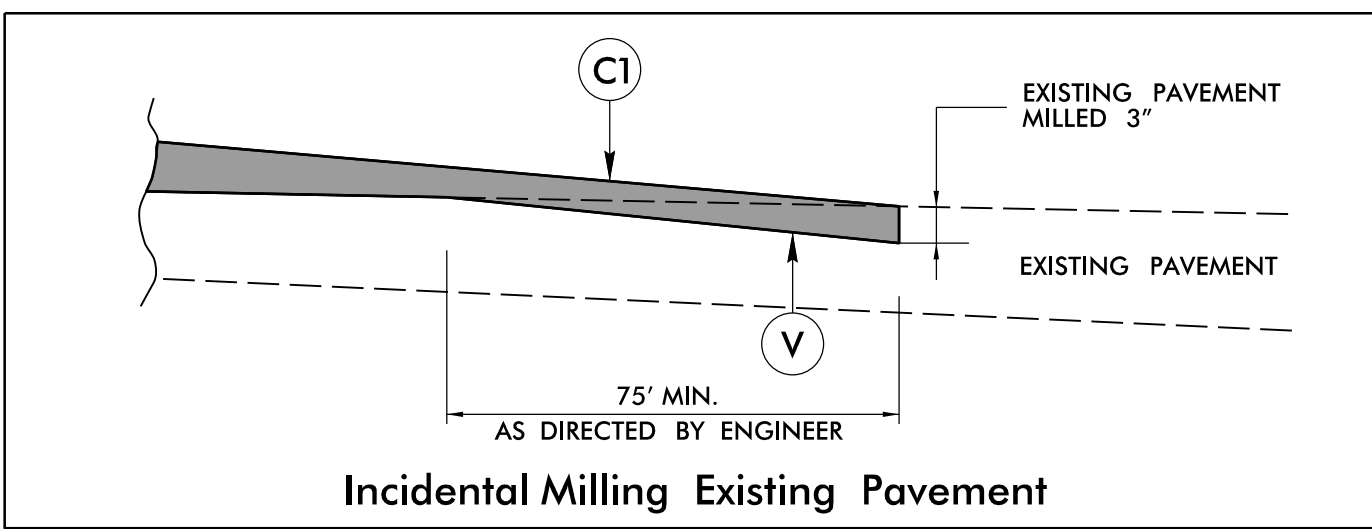
PAVEMENT SCHEDULE	
FINAL PAVEMENT DESIGN (REVISED): MAY 26, 2020	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL
V	INCIDENTAL MILLING

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



SHOULDER BERM GUTTER DETAIL

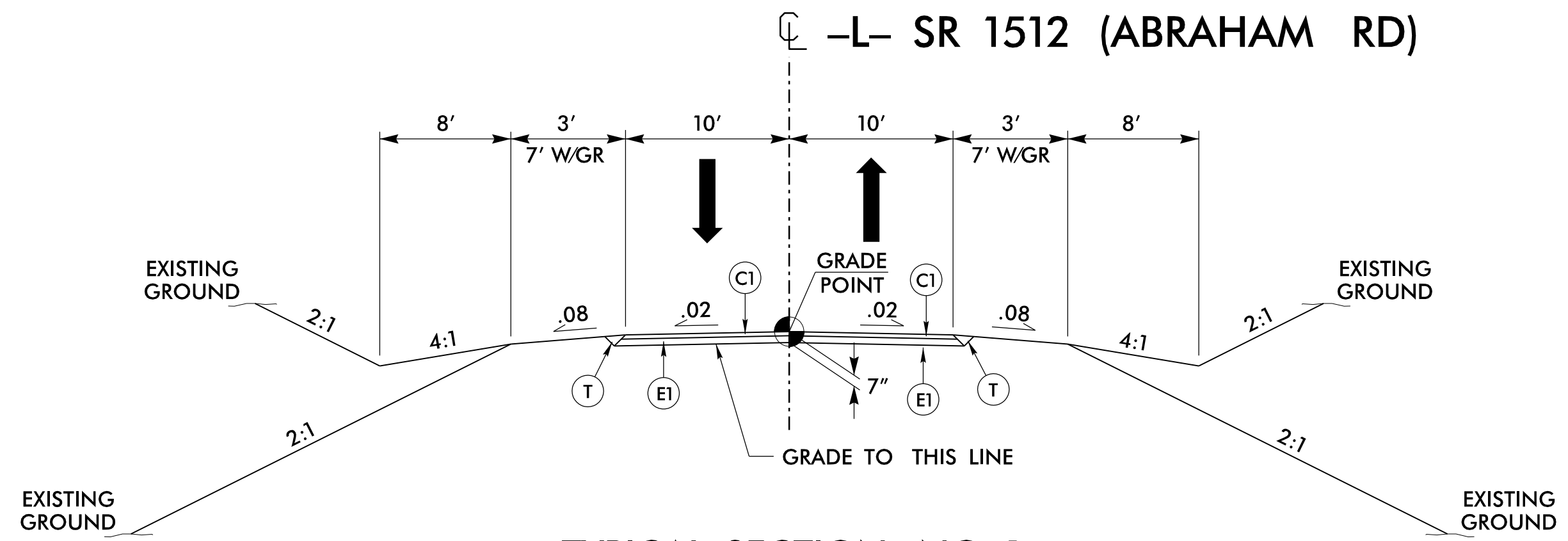
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- L- STA. 28+95.55 TO -L- STA. 29+00.55 LT
- L- STA. 28+96.46 TO -L- STA. 29+10.00 RT



Incidental Milling Existing Pavement

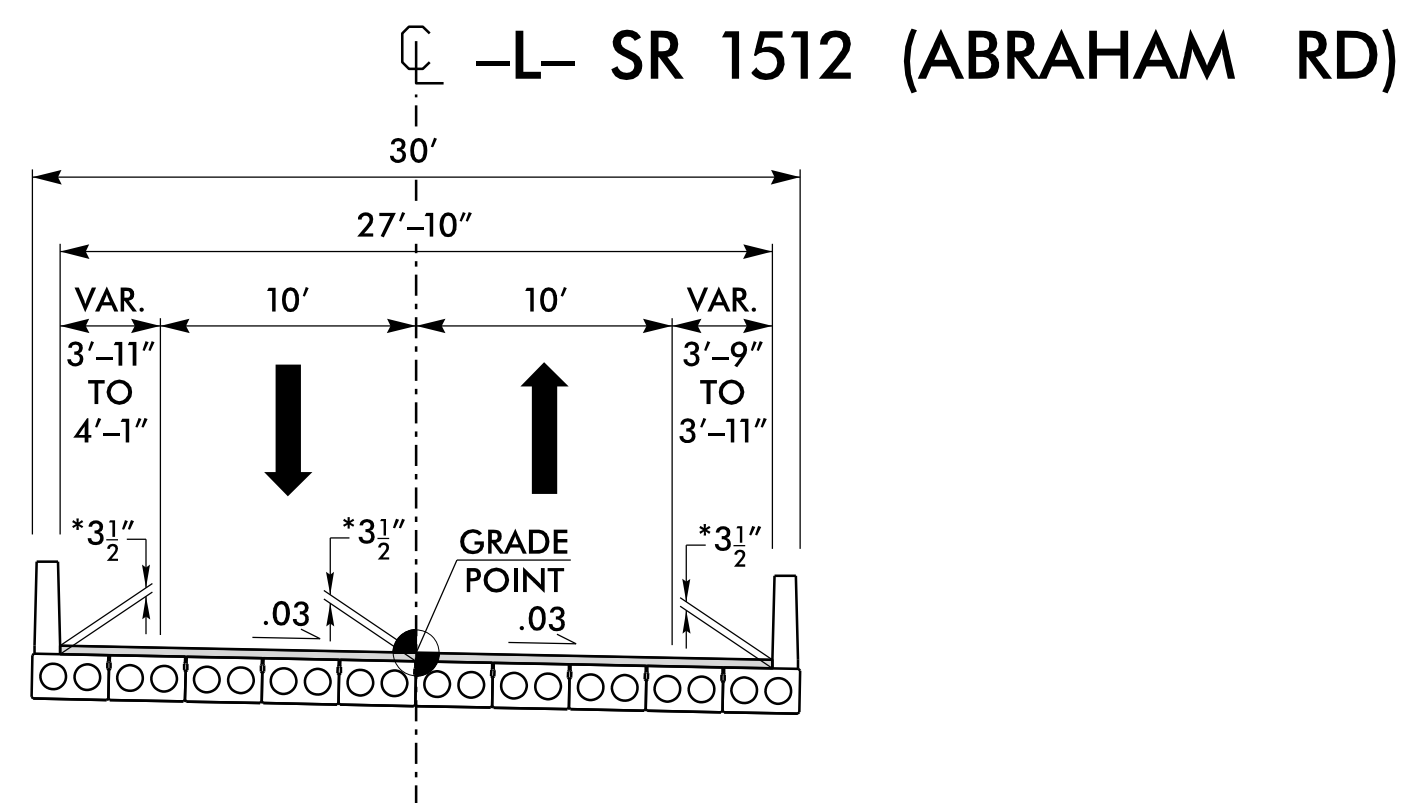
ms consultants, inc.
 5444 Wade Park Blvd.
 Suite 160
 Raleigh, NC 27607
 NC License Number : C-3239

PROJECT REFERENCE NO. <i>BR-0109</i>	SHEET NO. <i>2A-1</i>
ROADWAY DESIGN ENGINEER <i>M. Javira Potts</i> 4/29/2022	PAVEMENT DESIGN ENGINEER <i>Clark S. Morrison</i> 4/27/2022
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



TYPICAL SECTION NO. 1

- L- STA. 27+10.00 TO -L- STA. 28+22.88 (BEGIN BRIDGE)
- L- STA. 28+85.13 (END BRIDGE) TO -L- STA. 30+50.00



TYPICAL SECTION NO. 2

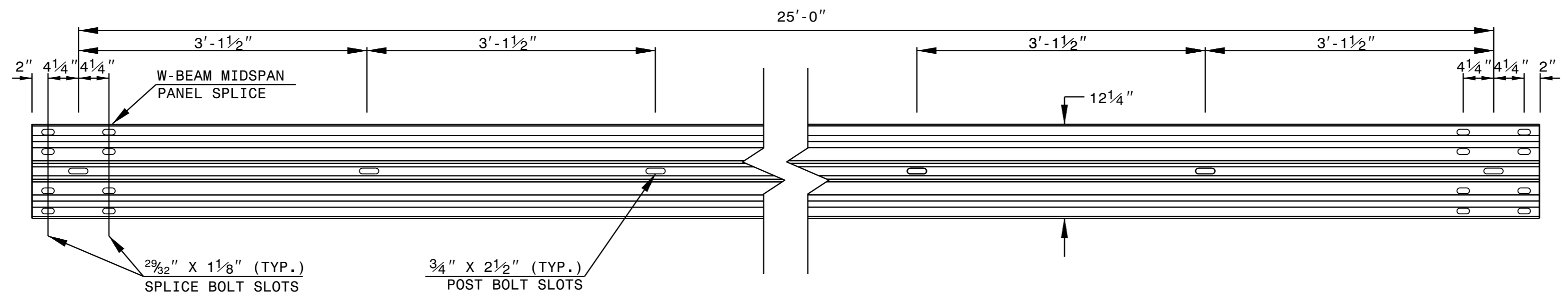
- L- STA. 28+22.88 (BEGIN BRIDGE) TO -L- STA. 28+85.13 (END BRIDGE)
- *OVERLAY DEPTH AT BEARING, SEE STRUCTURE PLANS FOR MORE INFORMATION

I:\APR-2022\1237-05 BR-0109_NCDOT_YADKIN 80 OVER UT_FARMERS CREEK\Roadway\Proj\BR0109_rdy_tup.dgn
 11/01/2022 10:06:06 AM USER:NAME

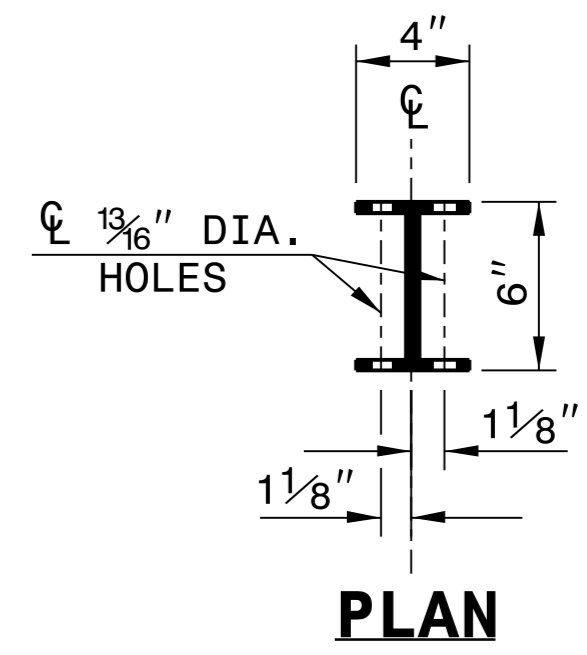
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

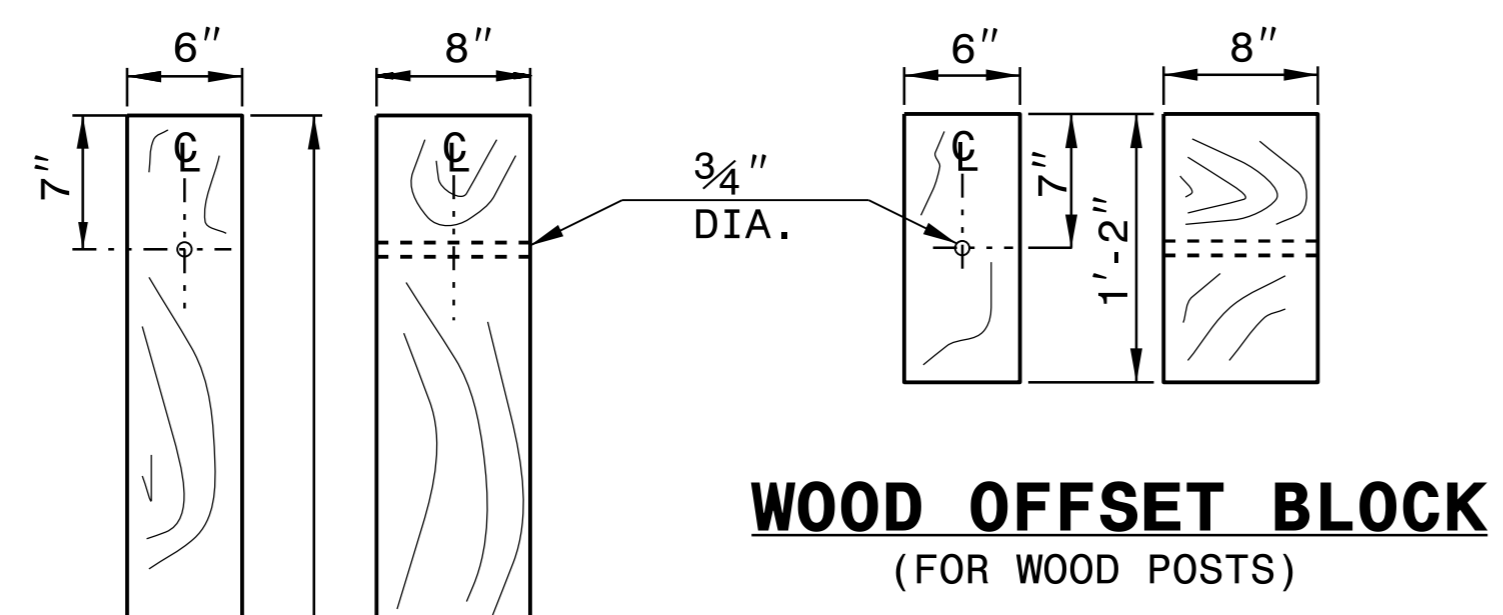
SHEET 6 OF 8
862D02



STANDARD W-BEAM GUARDRAIL



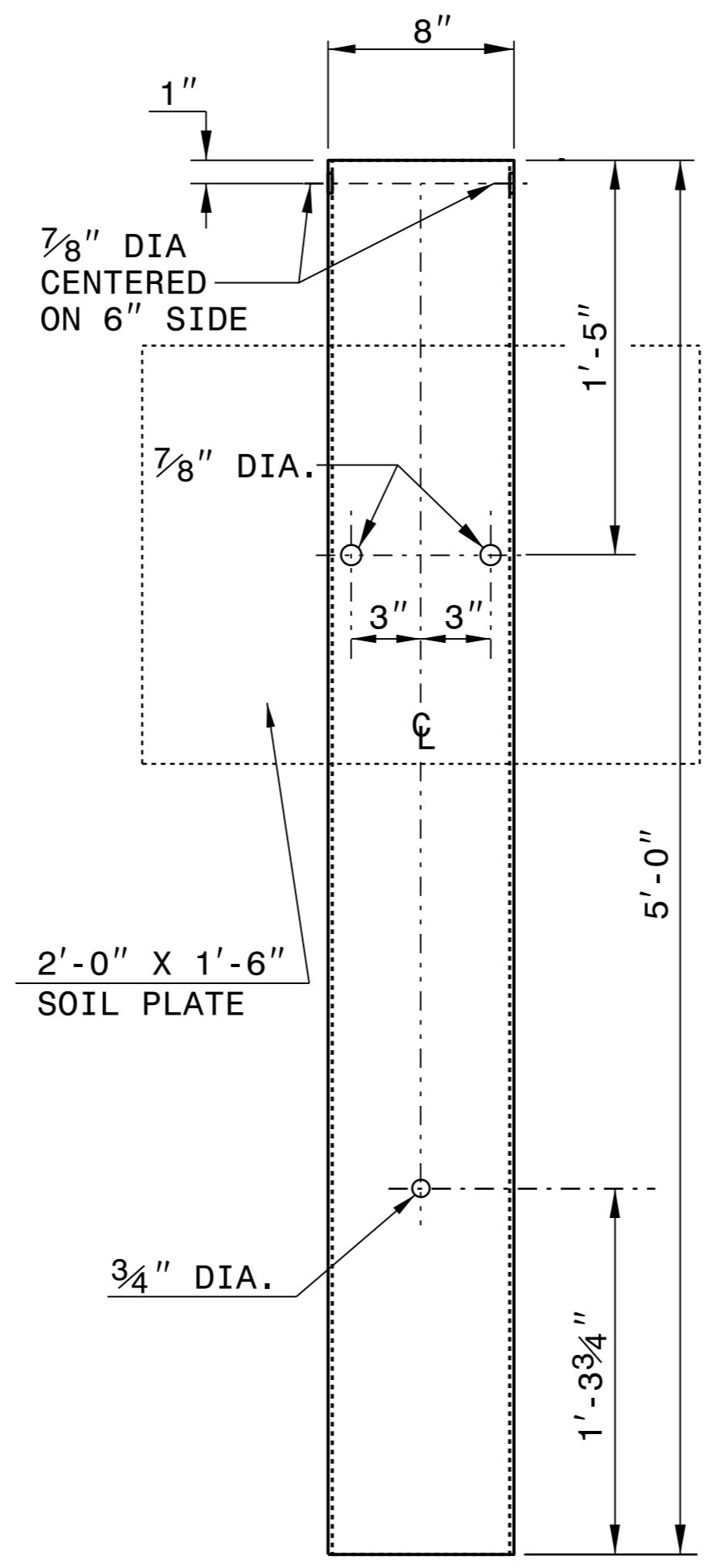
PLAN



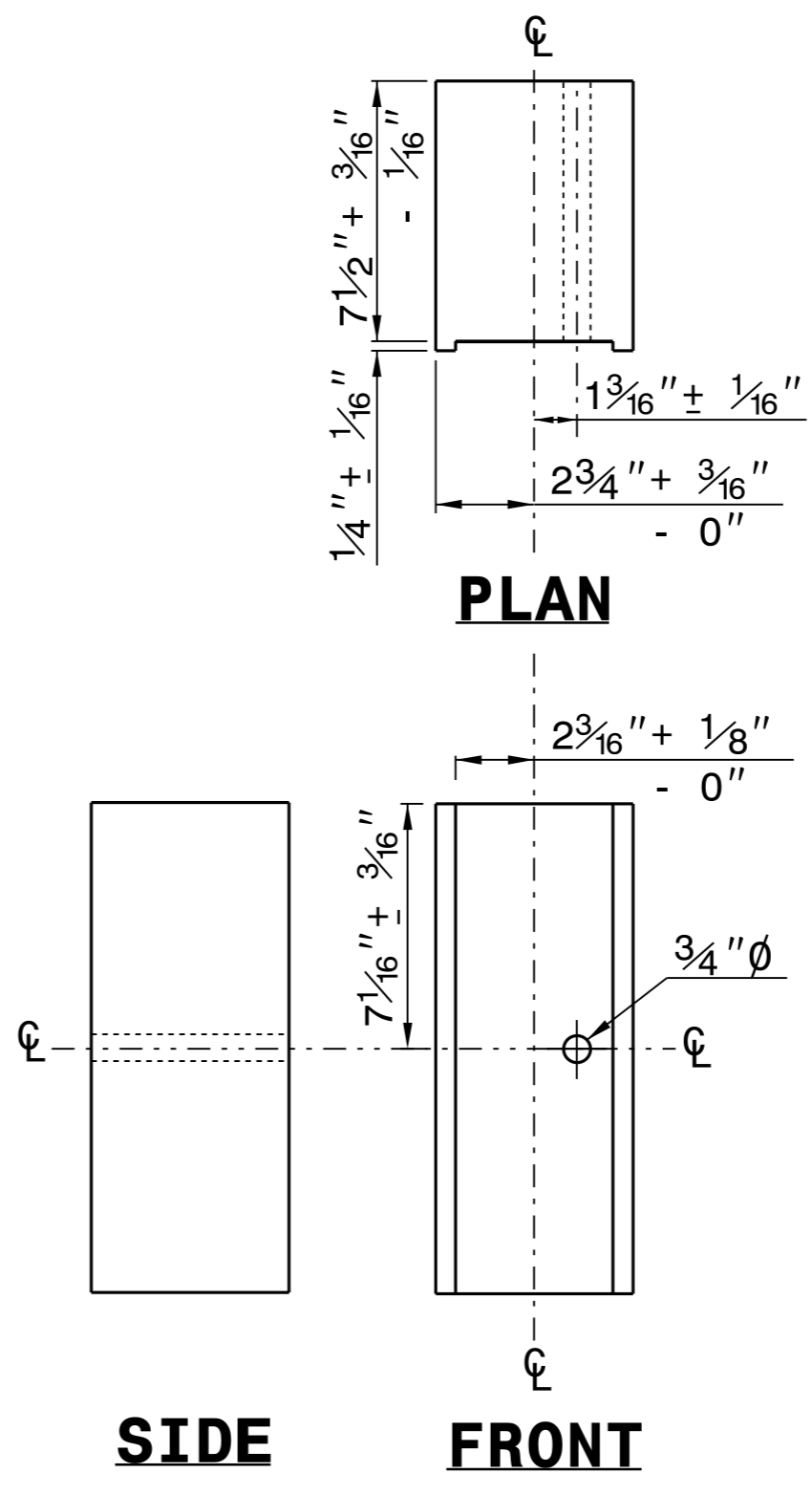
**WOOD OFFSET BLOCK
(FOR WOOD POSTS)**

**STANDARD
LINE POST**

**SHORT WOOD
BREAKAWAY POST**



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

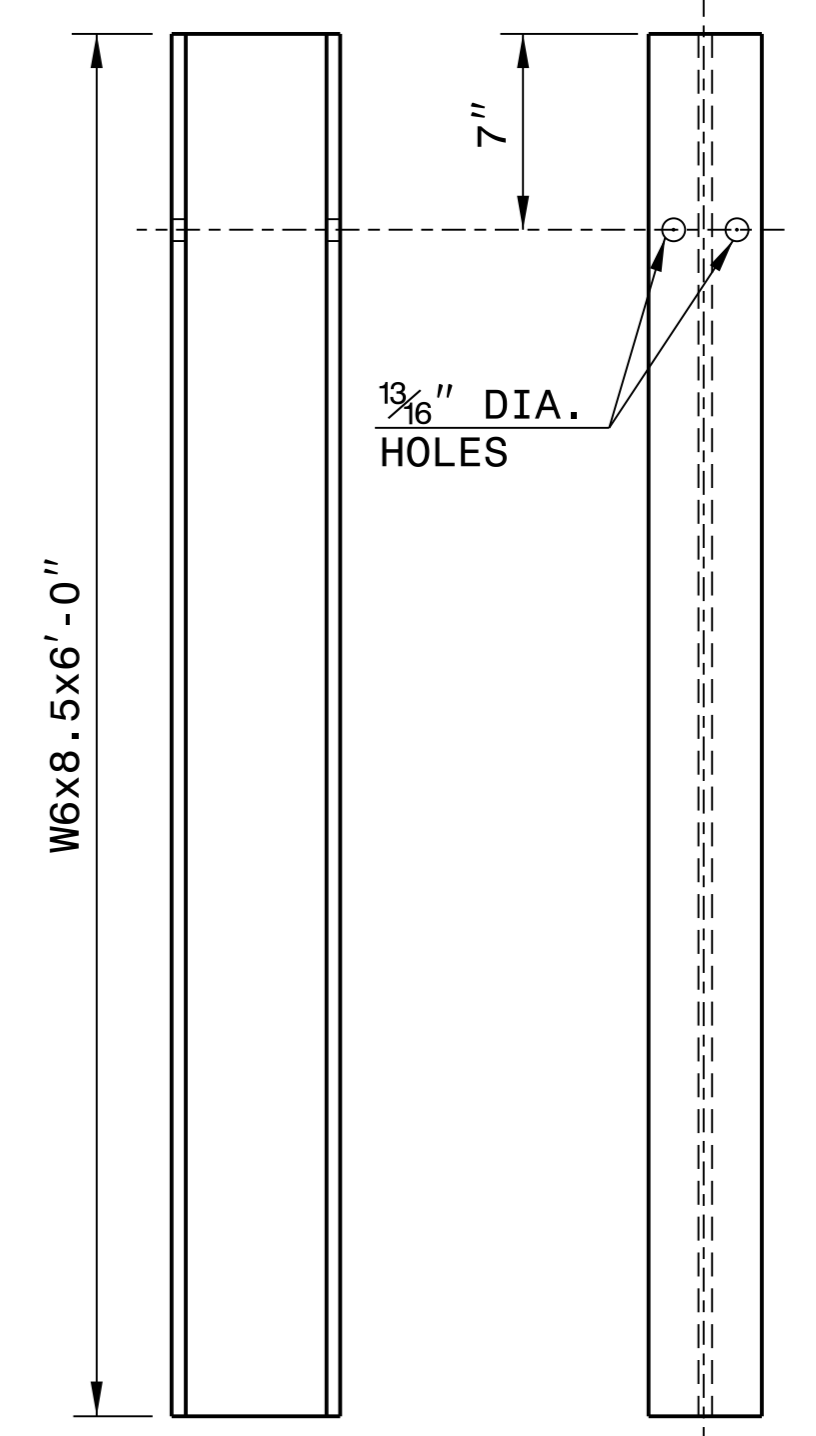


PLAN

SIDE

FRONT

**ROUTED
OFFSET BLOCK**



SIDE

FRONT

"W6" STEEL POST

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

SYSTEM PARTS



DocuSigned by:
Ron Davenport
F18B03A47442
6/16/2022

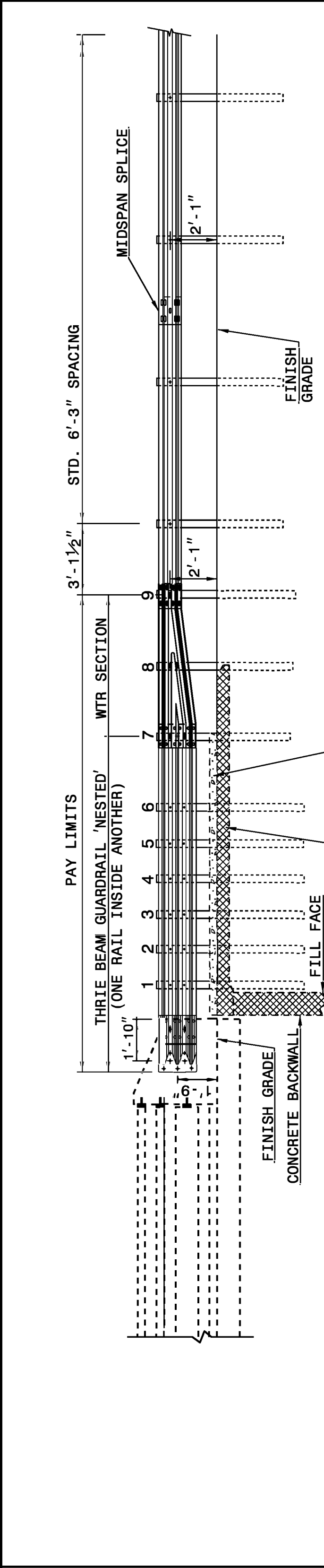
**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

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

14-DEC-2017 10:36 S:\Contracts\2018\Standard Drawings\Special Details\Hewerton\Standard Drawings\Details in Lieu of Standards\Division 8\0862d0301.dgn Jhowerton AT CSU-212855

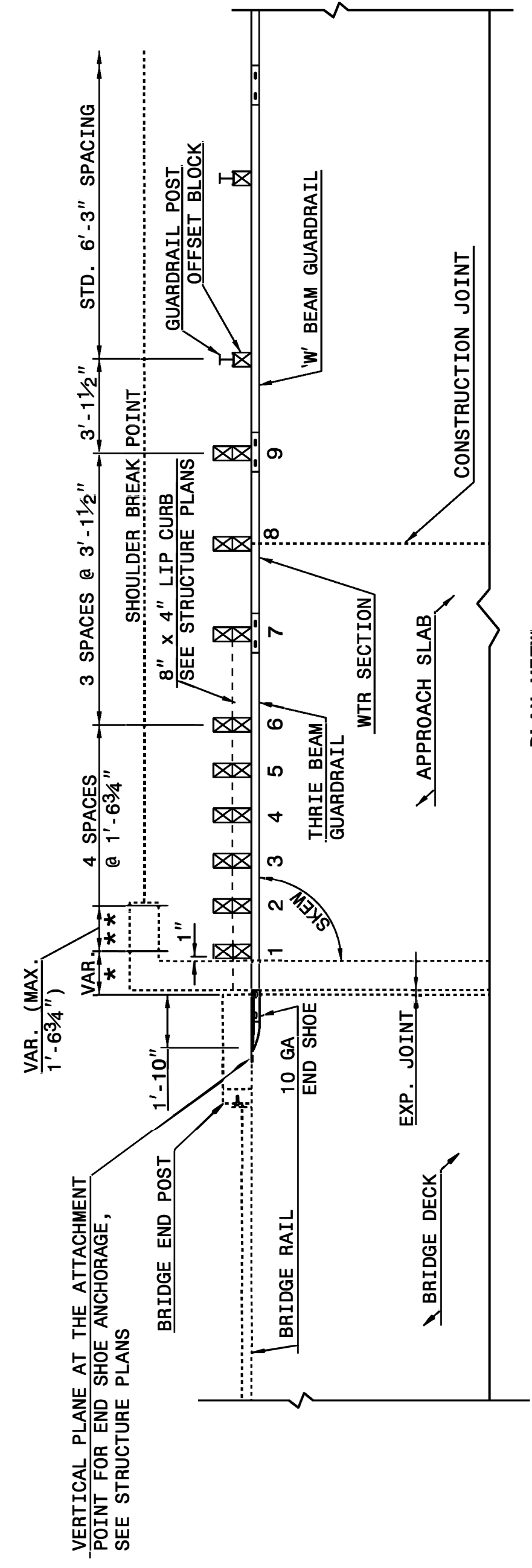
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.



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.



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

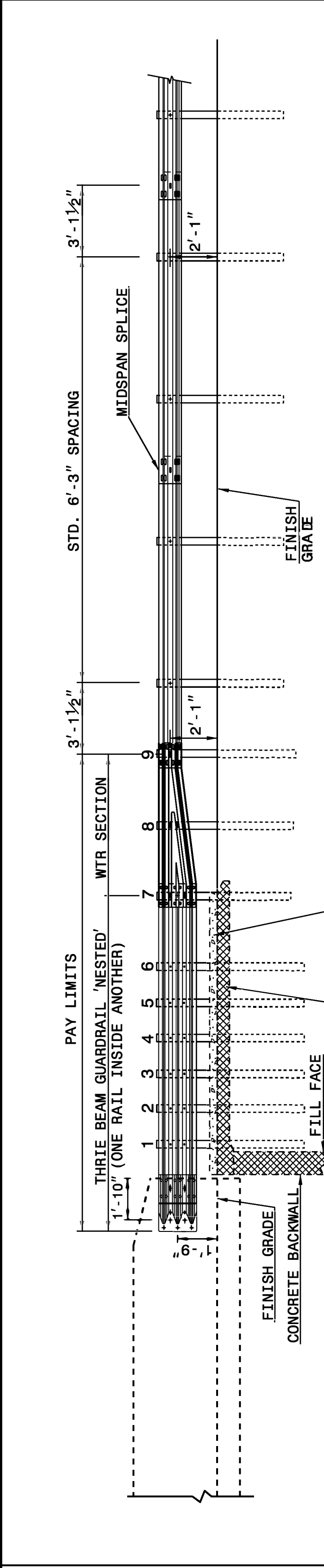
SHEET 1 OF 7
862D03

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

SHEET 1 OF 7
862D03

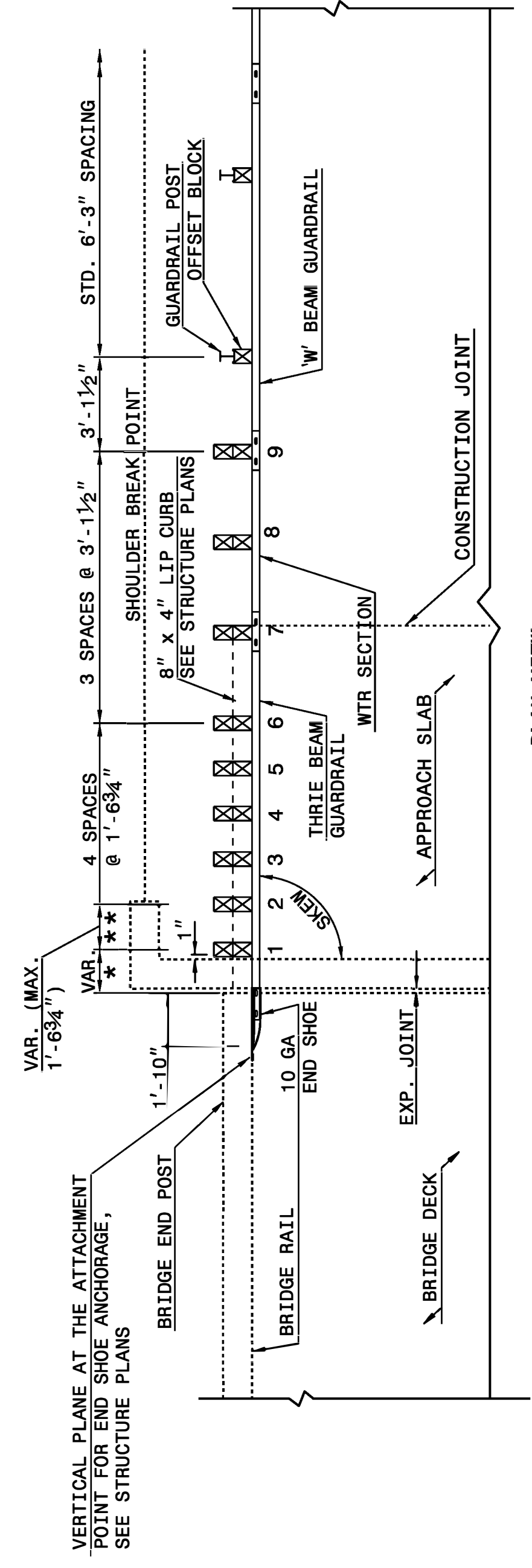
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.



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



PLAN VIEW
 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

SHEET 2 OF 7
862D03



DocuSigned by:
 Ron Davenport
 F8186038A7A442
 6/16/2022

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.:

**SUMMARY OF EARTHWORK
 VOLUME IN CUBIC YARDS**

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-L- 27+10.00	-L- 28+22.88 (BEGIN BRIDGE)	80	166	86	
SUBTOTAL:		80	166	86	
-L- 28+85.13 (END BRIDGE)	-L- 30+50.00	34	112	78	
SUBTOTAL:		34	112	78	
TOTAL:		114	278	164	
PROJECT TOTAL:		114	278	164	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				8	
GRAND TOTAL:		114	278	172	
SAY:		120		190	

EST. UNDERCUT = 450 CY
 EST. SELECT GRANULAR MATERIAL = 400 CY
 EST. DDE = 120 CY

Earthwork quantities are calculated by ms consultants. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

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

**SUMMARY OF EXISTING
 ASPHALT PAVEMENT REMOVAL**

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD ²
-L-	27+10	28+42	CL	288
-L-	28+67	30+50	CL	417
TOTAL:				705
SAY:				710

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L-	28+07	28+12	5
-L-	28+07	28+12	5
-L-	28+96	29+01	5
-L-	28+96	29+10	14
TOTAL:			29
SAY:			30

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
 G = GATING IMPACT ATTENUATOR TYPE 350
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS						IMPACT ATTENUATOR TYPE 350			REMOVE EXISTING GUARDRAIL	REMOVE AND RESET EXISTING GUARDRAIL	REMARKS					
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU TL-3	TYPE III	EA	G	NG												
-L-	27+49	28+23	LT	75.00				28+23	4	7		50		1		1	1														
-L-	27+49	28+23	RT	75.00				28+23	4	7	50			1		1	1														
-L-	28+85	29+57	LT	75.00				28+85	4	7	50			1		1	1														
-L-	28+85	29+60	RT	75.00				28+85	4	7		50			1	1	1														
SUBTOTAL				300.00																											
ANCHOR DEDUCTIONS																															
GREU TL-3 4 @ 50				-200.00																											
TYPE III 4 @ 18.75				-75.00																											
PROJECT TOTAL				25.00																											
SAY				37.50																											
EXTRA GUARDRAIL POSTS = 5 EA																															

12/06/07
 N:\0616\061605\061605-05 BR-0109 NC DOT YADKIN 80 OVER UT FARMERS CREEK\Roadway\Proj\BR0109_rdy_sum.dgn
 07 MAY 2021 14:55
 N:\0616\061605\061605-05 BR-0109 NC DOT YADKIN 80 OVER UT FARMERS CREEK\Roadway\Proj\BR0109_rdy_sum.dgn

COMPUTED BY: Charles R. Lavender, III, PG DATE: November 19, 2019
 CHECKED BY: Shane Clark, PE DATE: November 19, 2019

(12-17-19)

PROJECT NO.	SHEET NO.
BR-0109	3G-1

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

SUMMARY OF SUBSURFACE DRAINAGE

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

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

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU(1)	12	100	200	300		
TOTAL CY/TONS/SY:						100	200**	300**	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
 *AST = Aggregate Stabilization
 **Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

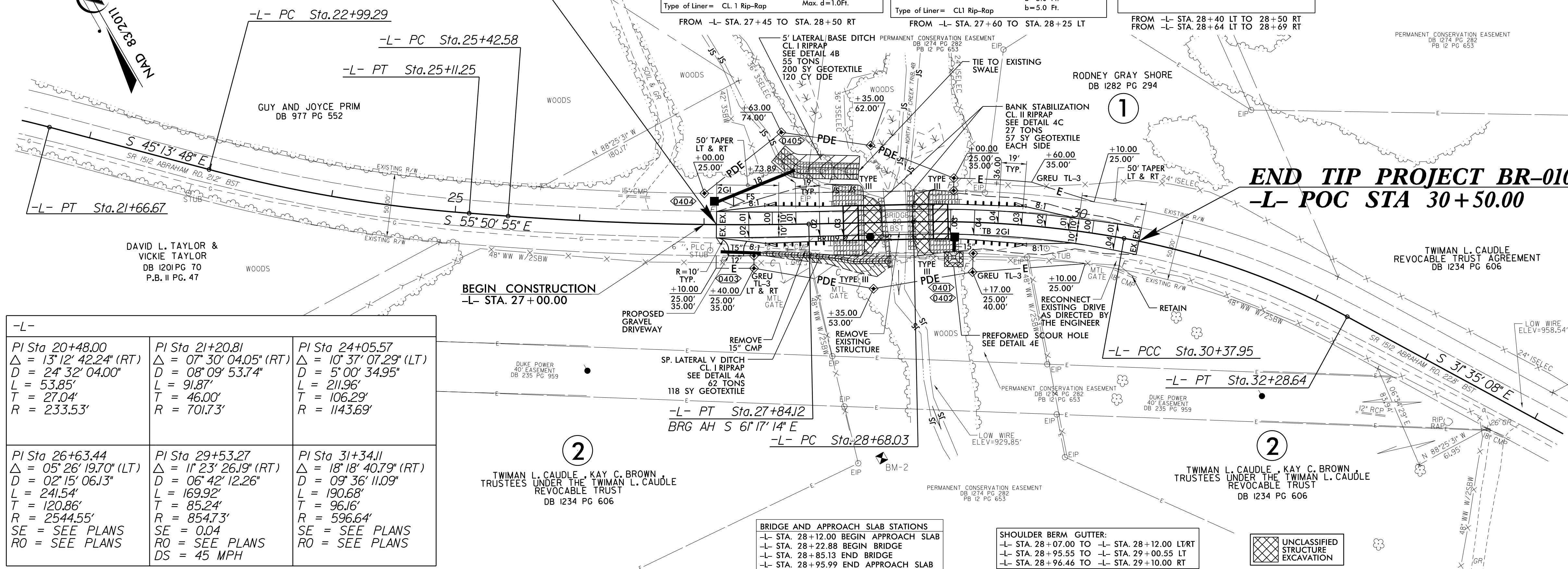
8.17.17.99

BEGIN TIP PROJECT BR-0109 -L- POC STA 27+10.00

ms consultants, inc.
5444 Wade Park Blvd.
Suite 160
Raleigh, NC 27607
NC License Number : C-3239

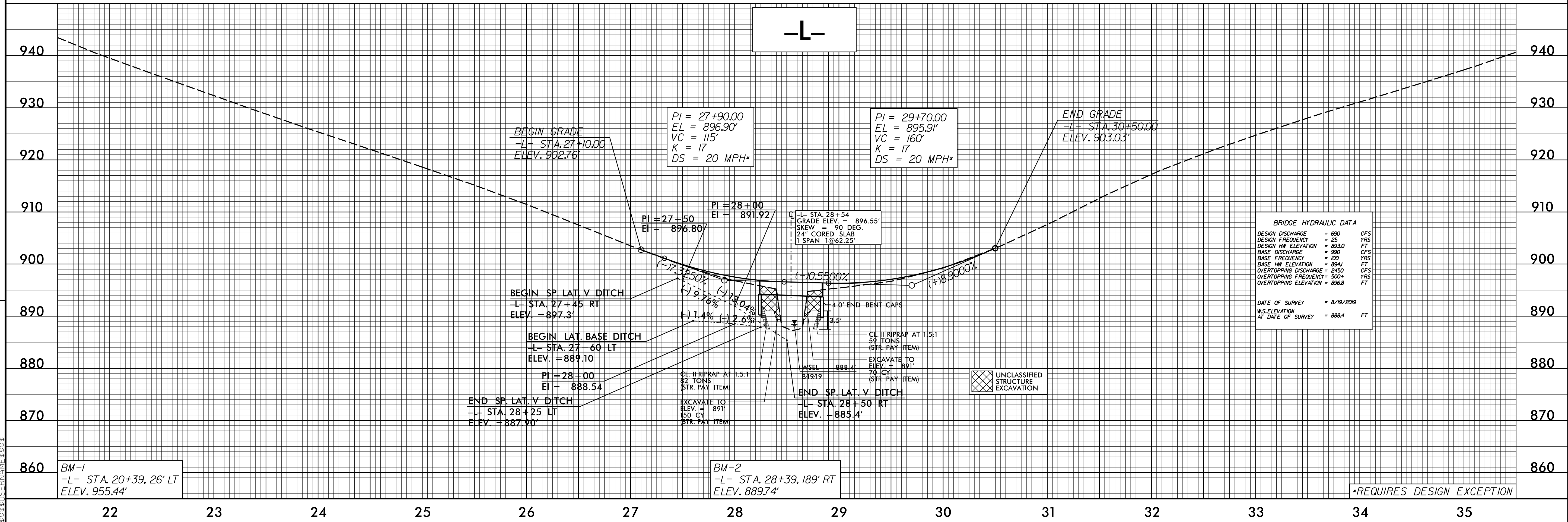
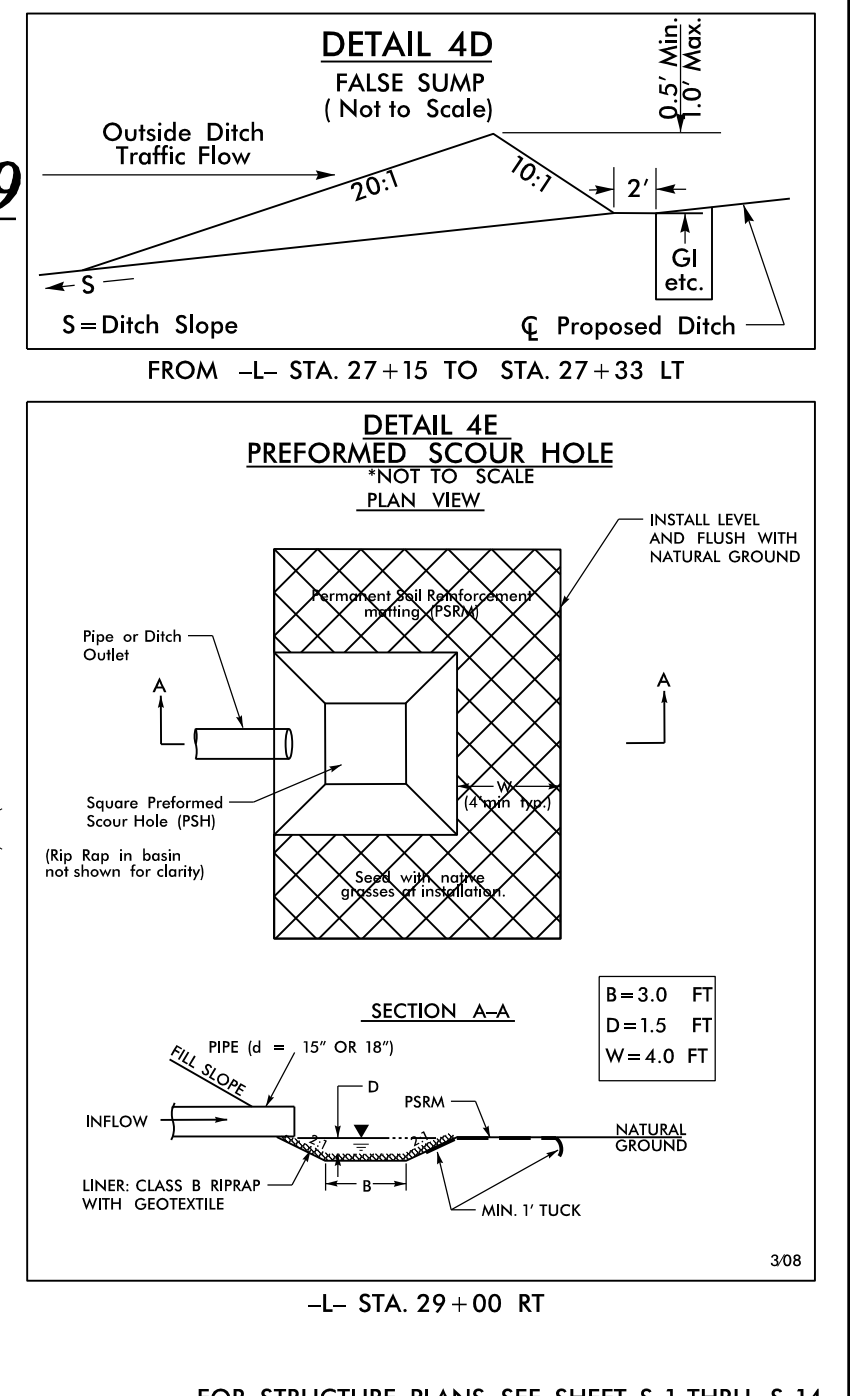
PROJECT REFERENCE NO. <i>BR-0109</i>	SHEET NO. <i>4</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
Documented by: <i>M. Travis Potts</i> 4/25/2022	Documented by: <i>Raina Stansell</i> 4/25/2022

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



-L-		
PI Sta 20+48.00 $\Delta = 13^\circ 12' 42.24''$ (RT) $D = 24^\circ 32' 04.00''$ $L = 53.85'$ $T = 27.04'$ $R = 233.53'$	PI Sta 21+20.81 $\Delta = 07^\circ 30' 04.05''$ (RT) $D = 08^\circ 09' 53.74''$ $L = 91.87'$ $T = 46.00'$ $R = 701.73'$	PI Sta 24+05.57 $\Delta = 10^\circ 37' 07.29''$ (LT) $D = 5^\circ 00' 34.95''$ $L = 211.96'$ $T = 106.29'$ $R = 1143.69'$
PI Sta 26+63.44 $\Delta = 05^\circ 26' 19.70''$ (LT) $D = 02^\circ 15' 06.13''$ $L = 241.54'$ $T = 120.86'$ $R = 2544.55'$ SE = SEE PLANS RO = SEE PLANS	PI Sta 29+53.27 $\Delta = 11^\circ 23' 26.19''$ (RT) $D = 06^\circ 42' 12.26''$ $L = 169.92'$ $T = 85.24'$ $R = 854.73'$ SE = 0.04 DS = 45 MPH	PI Sta 31+34.11 $\Delta = 18^\circ 18' 40.79''$ (RT) $D = 09^\circ 36' 11.09''$ $L = 190.68'$ $T = 96.16'$ $R = 596.64'$ SE = SEE PLANS RO = SEE PLANS

- BRIDGE AND APPROACH SLAB STATIONS**
 -L- STA. 28+12.00 BEGIN APPROACH SLAB
 -L- STA. 28+22.88 BEGIN BRIDGE
 -L- STA. 28+85.13 END BRIDGE
 -L- STA. 28+95.99 END APPROACH SLAB
- SHOULDER BERM GUTTER:**
 -L- STA. 28+07.00 TO -L- STA. 28+12.00 LT/RT
 -L- STA. 28+95.55 TO -L- STA. 29+00.55 LT
 -L- STA. 28+96.46 TO -L- STA. 29+10.00 RT
- UNCLASSIFIED STRUCTURE EXCAVATION



REVISIONS

MS-APP-2022-13-49
N:\00\5613\33\05 BR-0109\Roadway\Proc\BR0109_rdy_psh.dgn
8.17.17.99