

See Sheet 1A For Index of Sheets
 See Sheet 1B For Symbols Sheet
 See Sheet RW01 THRU RW08 For Survey Control Sheet

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

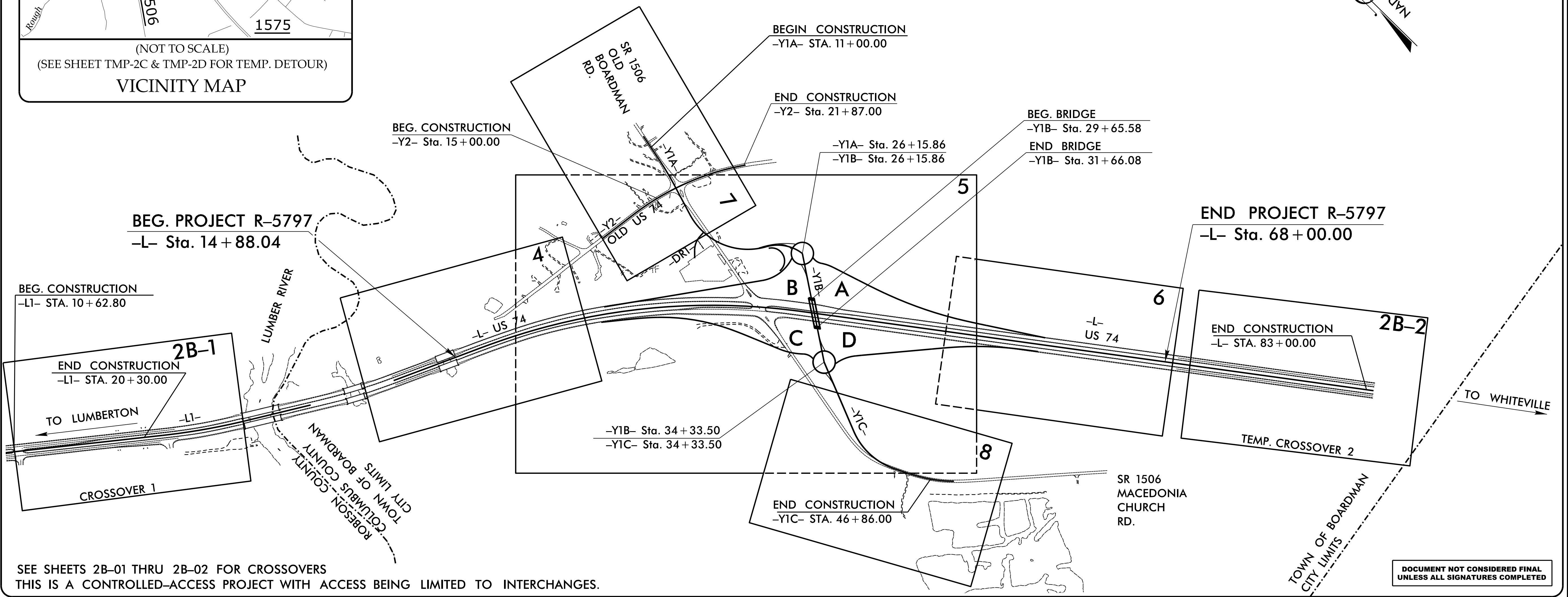
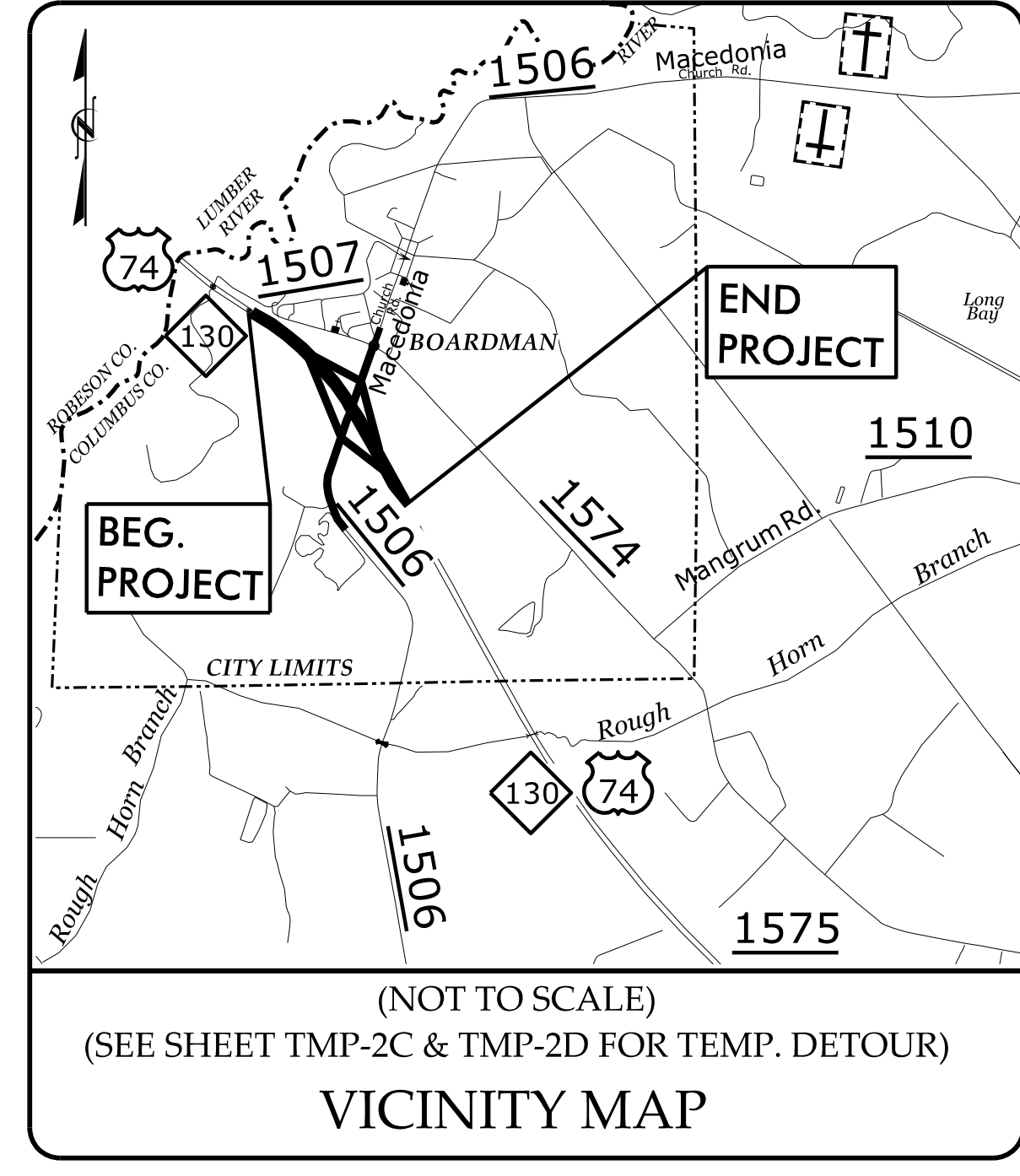
COLUMBUS COUNTY

LOCATION: US 74 AT SR 1506 (OLD BOARDMAN RD/
 MACEDONIA CHURCH RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5797	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
44997.1.1		PE	
44997.2.1	NHPP-0074(215)	ROW/UTIL.	
44997.3.1		CONST.	

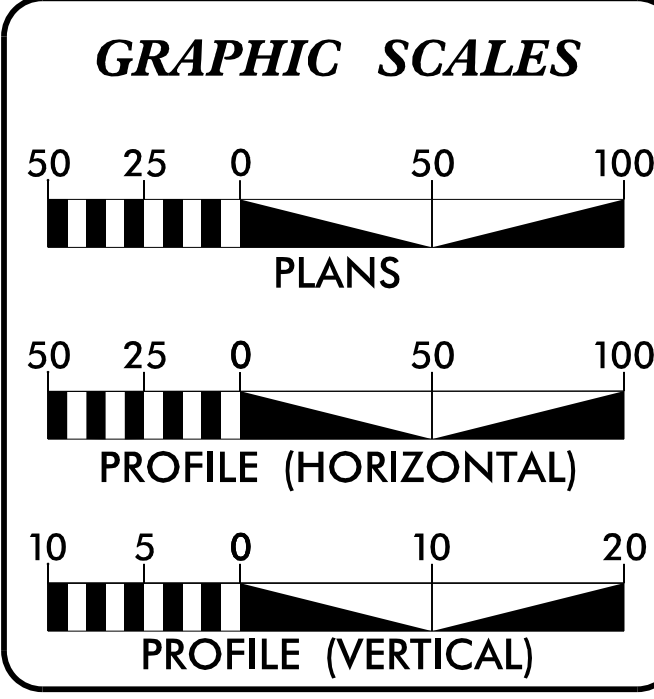
TIP PROJECT: R-5797



CONTRACT: C204571

SEE SHEETS 2B-01 THRU 2B-02 FOR CROSSOVERS
 THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2020 =	13,700
ADT 2040 =	20,110
K =	9 %
D =	55 %
T =	19 % *
V =	70 MPH
* TTST =	15% DUAL = 4%
FUNC. CLASS =	FUTURE INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-5797	=	1.006 MILES
TOTAL LENGTH TIP PROJECT R-5797	=	1.006 MILES

Prepared in the Office of:
WETHERILL ENGINEERING
 1223 Jones Franklin Rd. Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919.851.8077 Fax: 919.851.8107

2018 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE:
 OCTOBER 31, 2018
LETTING DATE:
 APRIL 20, 2021

Prepared for:
DIVISION OF HIGHWAYS
 DIVISION 6
 549 Transportation Drive
 Fayetteville, NC, 28301

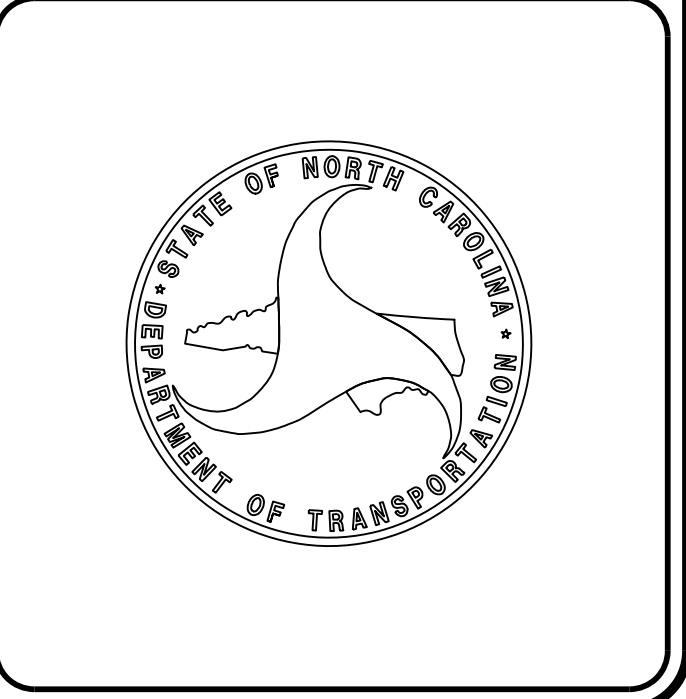
GREG PURVIS, PE
 PROJECT ENGINEER

ROBERT O'DELL, JR.
 PROJECT DESIGN ENGINEER

NCDOT CONTACT:
 JOHN GAUTHIER
 DIVISION PROJECT MANAGER

HYDRAULICS ENGINEER
 2/16/2021

ROADWAY DESIGN ENGINEER
 2/16/2021



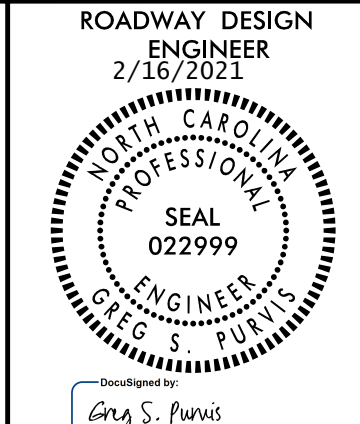
2/16/2021
 \\P01\N-5797-Rdy_PSH_01_TSH.dgn
 USER:GPurvis



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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
R-5797	1A



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

INDEX OF SHEETS

SHEET NUMBER	SHEET
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2D-1	DRAINAGE DETAIL
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3B-1 THRU 3B-3	EARTHWORK SUMMARY, PAVEMENT REMOVAL SUMMARY, SHOULDER BERM GUTTER SUMMARY GUARDRAIL SUMMARY, TEMPORARY GUARDRAIL SUMMARY, CABLE GUIDERAIL SUMMARY
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3G-1	SUMMARY OF SUBSURFACE DRAINAGE
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9 THRU 21	PROFILE SHEETS
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2018 STANDARD DRAWINGS

EFF. 01-16-2018
REV.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superlevation - Two Lane Pavement
225.05	Method of Obtaining Superlevation - Divided Highways
225.06	Method of Grading Sight Distance at Intersections
225.07	Grading for False Cut at Grade Separations
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.04	Parallel Pipe End Section - Prefabricated Steel Section for 15" to 24" Pipe
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills - Type I Standard Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.03	Guide for Paving Shoulders Under Bridges - Method III
654.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
815.03	Pipe Underdrain and Blind Drain
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
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	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
840.18	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
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.03	Driveway Turnout - Drop Curb Type
848.04	Street Turnout
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
865.01	Cable Guiderail
866.01	Chain Link Fence - 4', 5' and 6' High Fence
866.02	Woven Wire Fence - with Wood Post
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

2018 SPECIFICATIONS

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 II.

SUPERELEVATION:
ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 AND 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. 560.01 AND 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.

DRIVEWAYS:
DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:
STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII 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 BRUNSWICK EMC, AT&T, MCNC, DUKE NET, AND TOWN OF BOARDMAN
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

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

REVISIONS

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

12/2/2016

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Computed Property Corner	-----
Property Monument	□ 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	○ R W
New Right of Way Line with Pin and Cap	○ R W ◆
New Right of Way Line with Concrete or Granite R/W Marker	○ R W ◆
New Control of Access Line with Concrete C/A Marker	○ C/A
Existing Control of Access	○ C/A
New Control of Access	○ C/A
Existing Easement Line	---E---
New Temporary Construction Easement	---E---
New Temporary Drainage Easement	---TDE---
New Permanent Drainage Easement	---PDE---
New Permanent Drainage / Utility Easement	---DUE---
New Permanent Utility Easement	---PUE---
New Temporary Utility Easement	---TUE---
New Aerial Utility Easement	---AUE---

ROADS AND RELATED FEATURES:

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

VEGETATION:

Single Tree	○
Single Shrub	○

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

Hedge	-----
Woods Line	-----
Orchard	○
Vineyard	□ Vineyard

EXISTING STRUCTURES:

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

UTILITIES:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

5/14/2021

PAVEMENT SCHEDULE			
(FINAL PAVEMENT DESIGN)			
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.	R3	12" CONCRETE TRUCK APRON
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1 1/2" IN DEPTH.	R4	8"x18" CONCRETE CURB
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R5	EXPRESSWAY GUTTER
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	R6	SHOULDER BERM GUTTER
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R7	9"x12" CONCRETE CURB
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R8	4" CONCRETE ISLAND COVER
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R9	5" MONOLITHIC ISLAND (KEYED IN)
E2	PROP. APPROX. 5 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	T	EARTH MATERIAL
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.	U	EXISTING PAVEMENT
J1	PROP. 6" AGGREGATE BASE COURSE.	V1	INCIDENTAL MILLING
J2	PROP. 8" AGGREGATE BASE COURSE.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAILS)
R1	1'-6" CONCRETE CURB AND GUTTER.	X	ARTIFICIAL TURF (SEE SPECIAL PROVISION IN CONTRACT)
R2	2'-6" CONCRETE CURB AND GUTTER.	Y	MILLED RUMBLE STRIPS

NOTES TO CONTRACTOR

Perform the work in accordance with Section 607 of the January 2018 North Carolina Department of Transportation Standard Specifications for Roads and Structures. Resurfacing will be accomplished at the same time as the milling operation.

BEGIN OF PROJECT

75' INCIDENTAL MILLING

EXISTING PAVEMENT

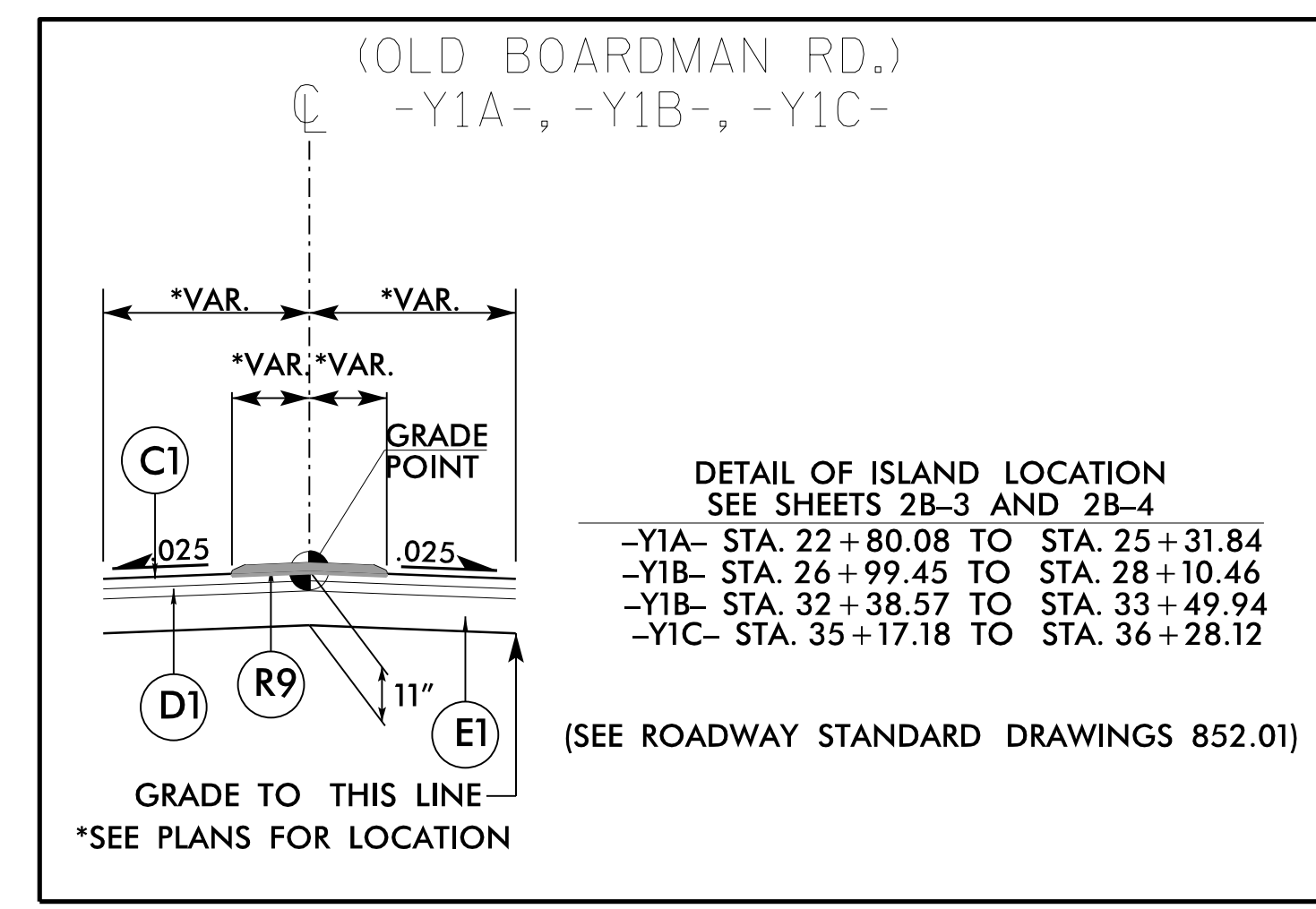
3" V1

3" U

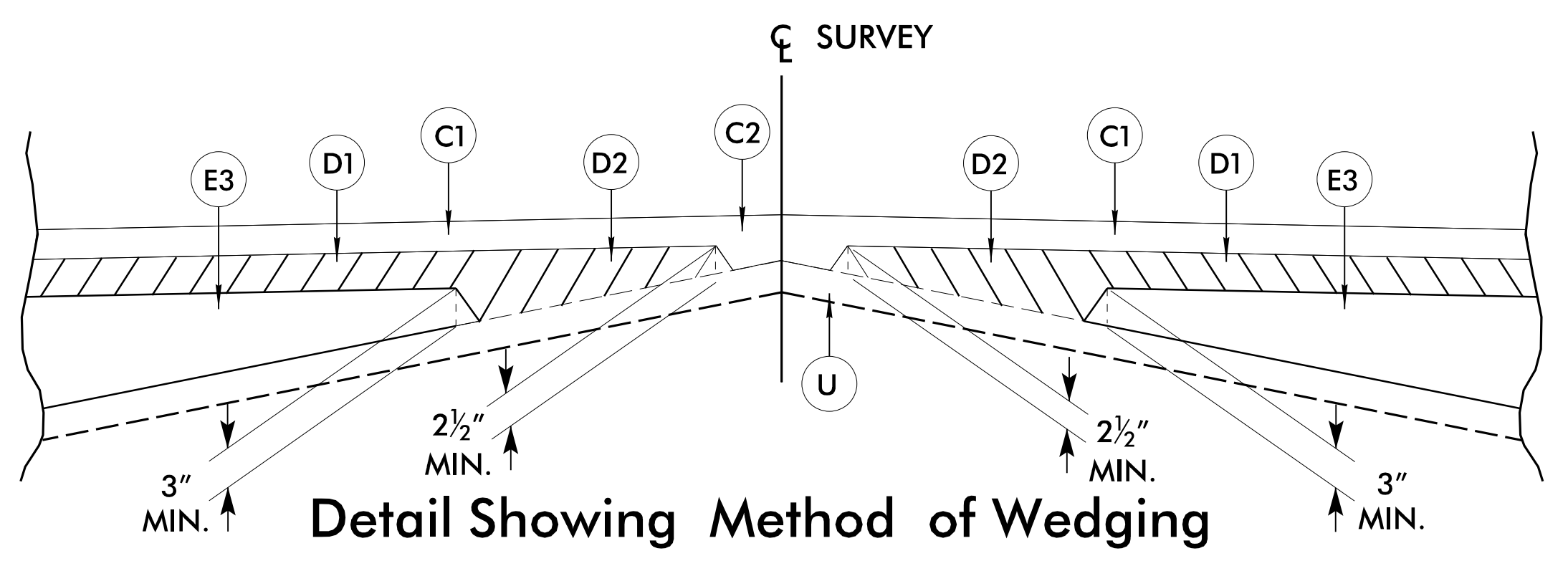
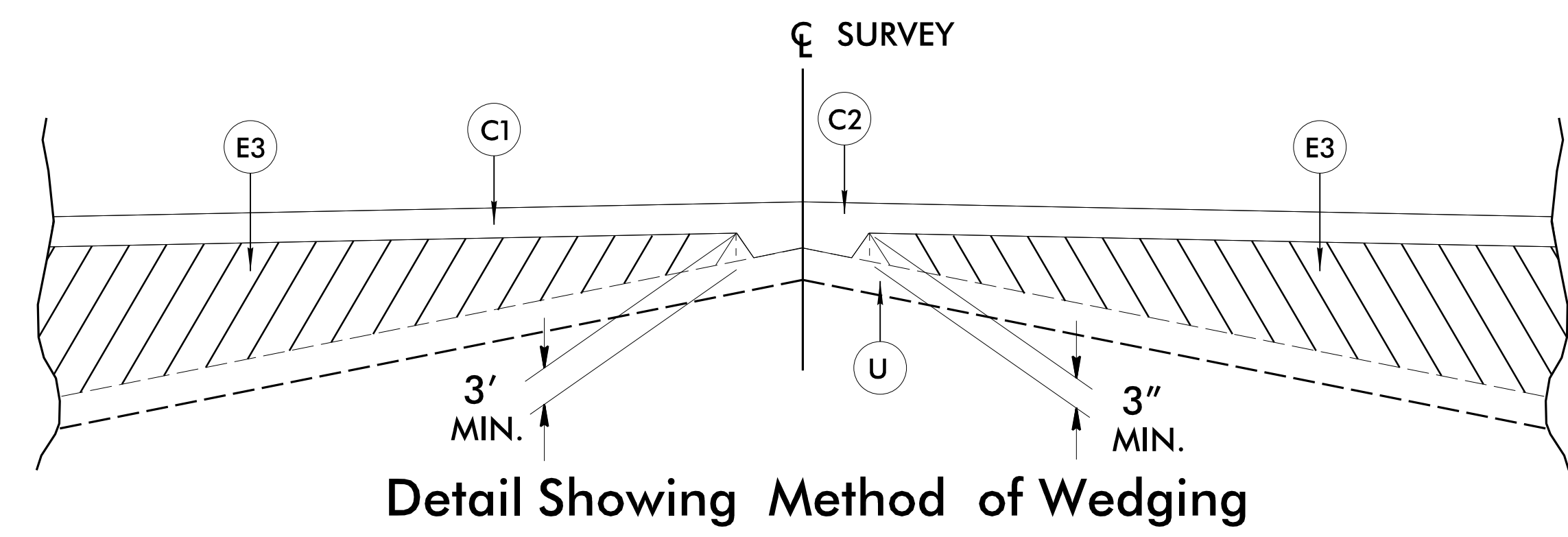
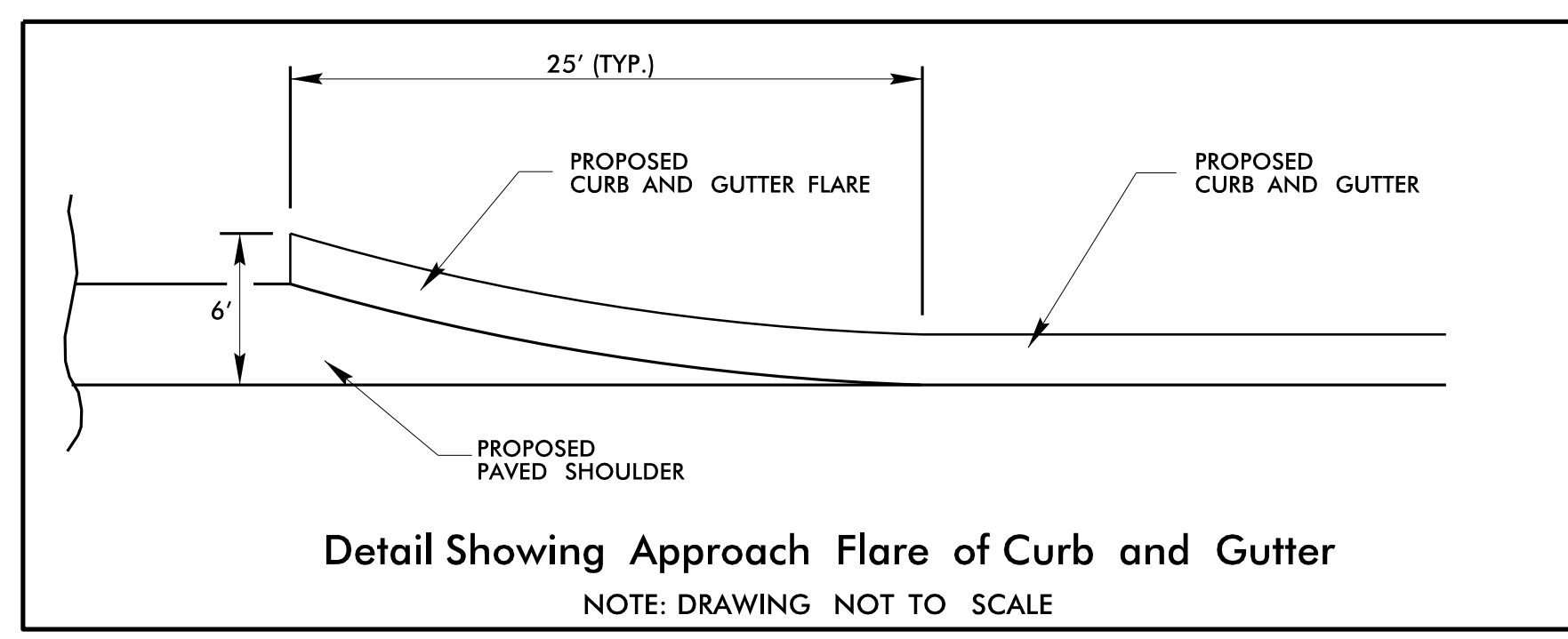
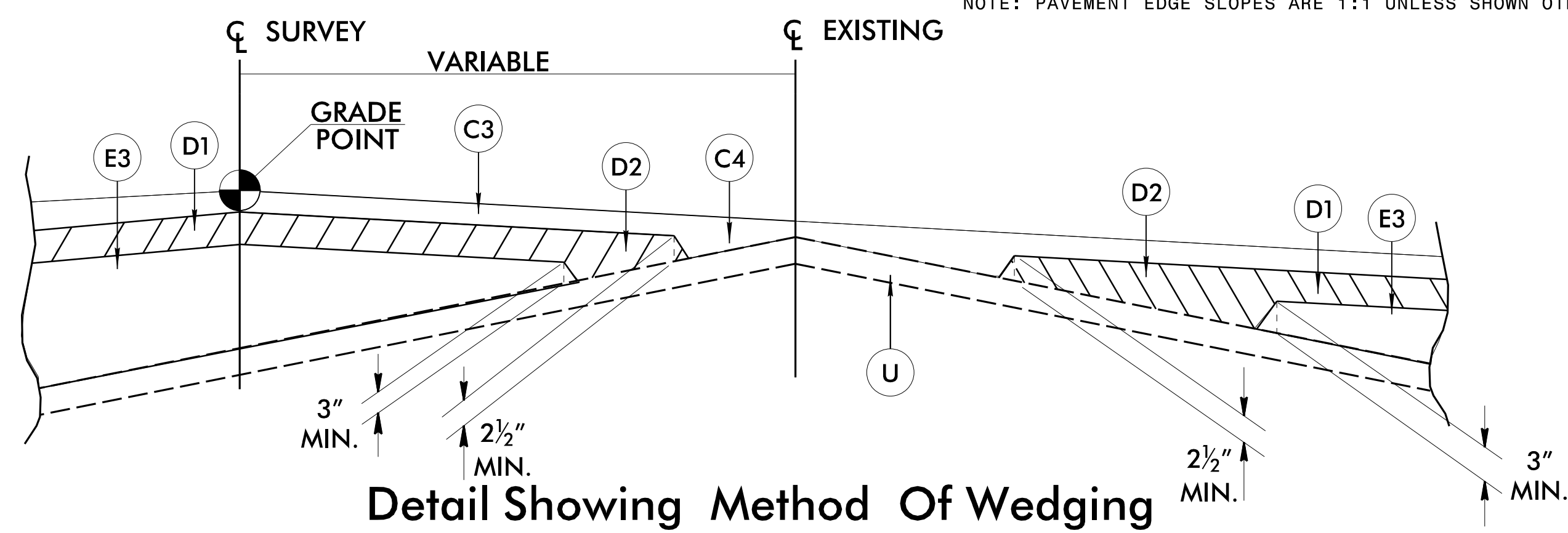
NOTE: UTILIZE INCIDENTAL MILLING TO MAKE PAVEMENT TIE-INS

- L- STA. 14+88.04 TO -L- STA. 15+63.04
- L- STA. 67+25.00 TO -L- STA. 68+00.00
- Y2- STA. 15+00.00 TO -Y2- STA. 15+75.00
- Y1A- STA. 11+00.00 TO -Y1A- STA. 11+75.00
- Y2- STA. 17+25.00 TO -Y2- STA. 18+00.00

ROADWAY DESIGN ENGINEER 2/3/2021 	OVERLAY PAVEMENT DESIGN ENGINEER 2/3/2021 	PAVEMENT DESIGN ENGINEER 2/3/2021
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION		
SINCERELY 		
Prepared in the Office of: FROEHLING & ROBERTSON, INC. Engineering Stability Since 1881 310 Hubert Street Raleigh, North Carolina 27603-2302 License No. F-0266 Bus: 919.828.3441 Fax: 919.828.5751		



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



5/13/2021 10:57:07 AM PSH-02A-1.dgn
 I:\P\02A\02A-1.dgn

RW SHEET NO.

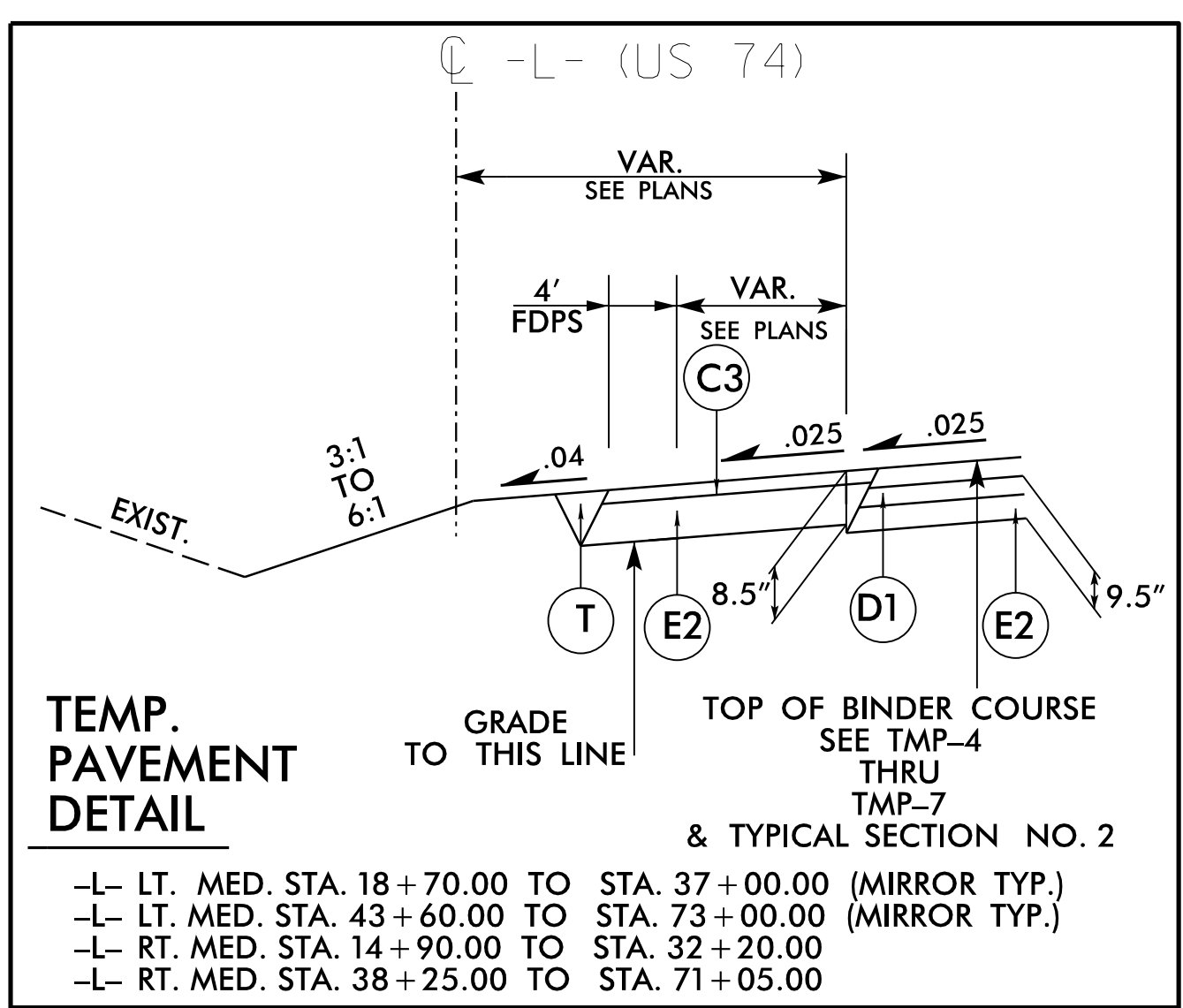
ROADWAY DESIGN ENGINEER 2/3/2021 	OVERLAY PAVEMENT DESIGN ENGINEER 2/3/2021 	PAVEMENT DESIGN ENGINEER 2/3/2021
---	--	--

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

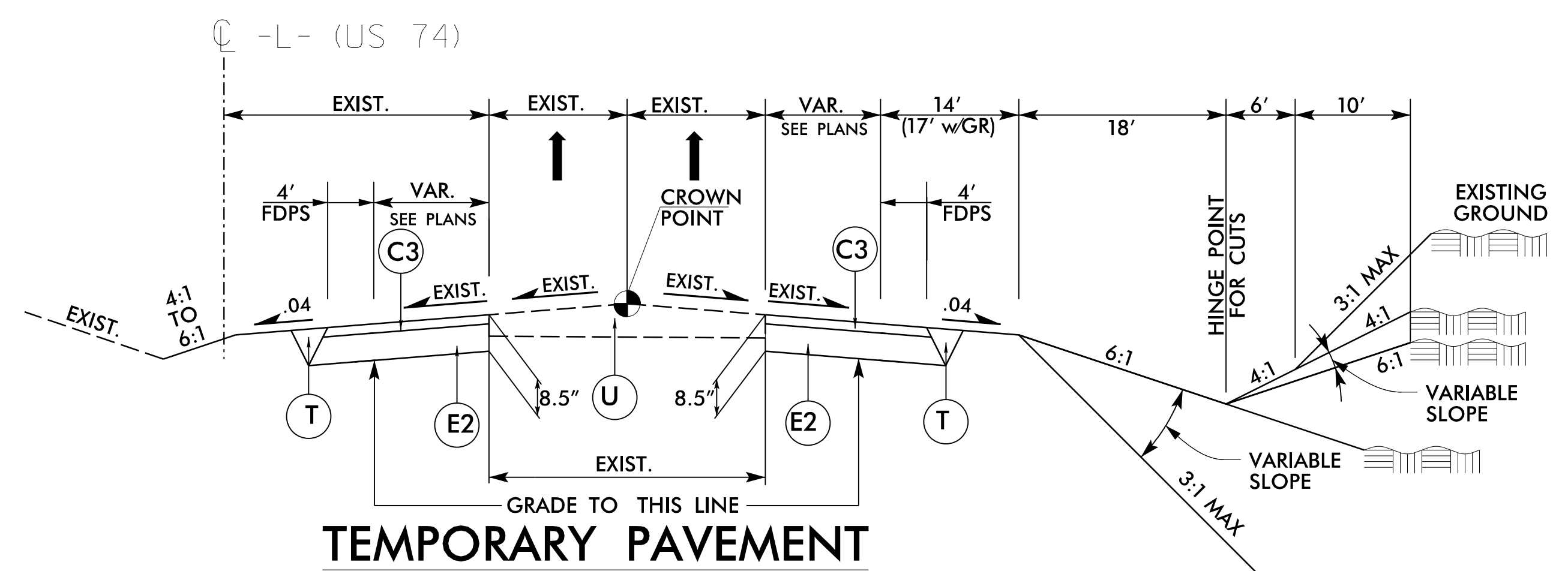
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

SINCE Prepared in the Office of:
 FROEHLING & ROBERTSON, INC.
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310 Hubert Street
Raleigh, North Carolina 27603-2302
License No. F-0266
Bus: 919.828.3441 Fax: 919.828.5751



TEMP. PAVEMENT DETAIL

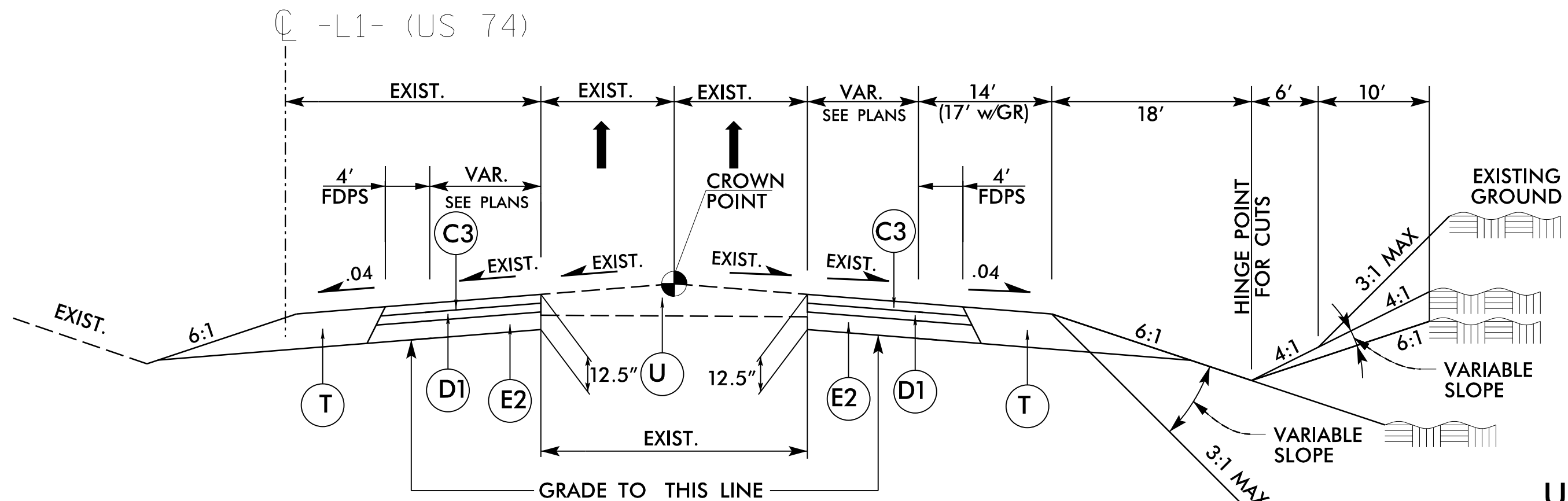
- L- LT. MED. STA. 18+70.00 TO STA. 37+00.00 (MIRROR TYP.)
- L- LT. MED. STA. 43+60.00 TO STA. 73+00.00 (MIRROR TYP.)
- L- RT. MED. STA. 14+90.00 TO STA. 32+20.00
- L- RT. MED. STA. 38+25.00 TO STA. 71+05.00



TEMPORARY PAVEMENT

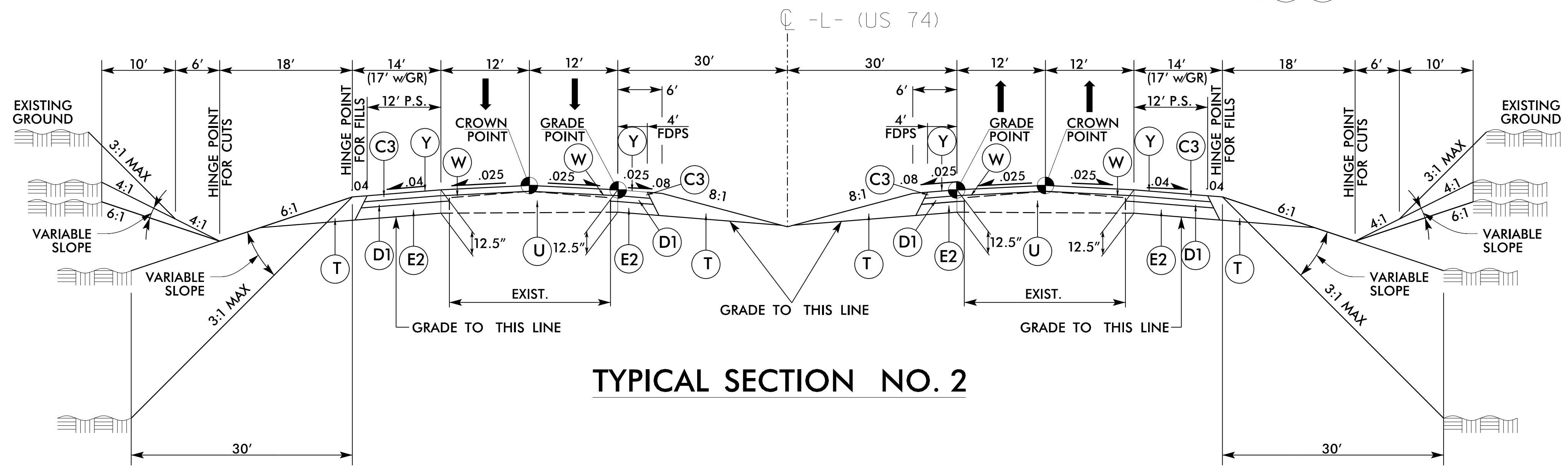
TEMPORARY PAVEMENT

*SEE TMP PLANS TMP-4 THRU TMP-7
*-L- STA. 71+08.63 TO STA. 81+17.46



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L1- STA. 10+62.80 TO STA. 20+30.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-L- STA. 65+64.95 TO STA. 68+00.00

PAVMT. SCHEDULE (FINAL)	
C1	3" S9.5B
C2	VAR. S9.5B
C3	3" S9.5C
C4	VAR. S9.5C
D1	4" I19.0C
D2	VAR. I19.0C
E1	4" B25.0C
E2	5 1/2" B25.0C
E3	VAR. B25.0C
J1	6" ABC
J2	8" ABC
R1	1'-6" C&G
R2	2'-6" C&G
R3	12" CON. TRK. APR.
R4	8"X18" CONC. CURB
R5	EXPRESSWAY GUTTER
R6	SHLD. BERM GUTTER
R7	9"X12" CONC. CURB
R8	4" CONC. ISLAND COVER
R9	5" MONO. ISLAND (KEYED IN)
T	EARTH MAT.
U	EXIST. PAV.
V1	INC. MILLING
W	VAR. DEPTH. PAV.
X	ARTIFICIAL TURF
Y	MILLED RUM. STRIPS

5/14/2021 8:13:28 PM PSH_02A-2.dgn

5/14/2021 8:13:28 PM PSH_02A-3.dgn

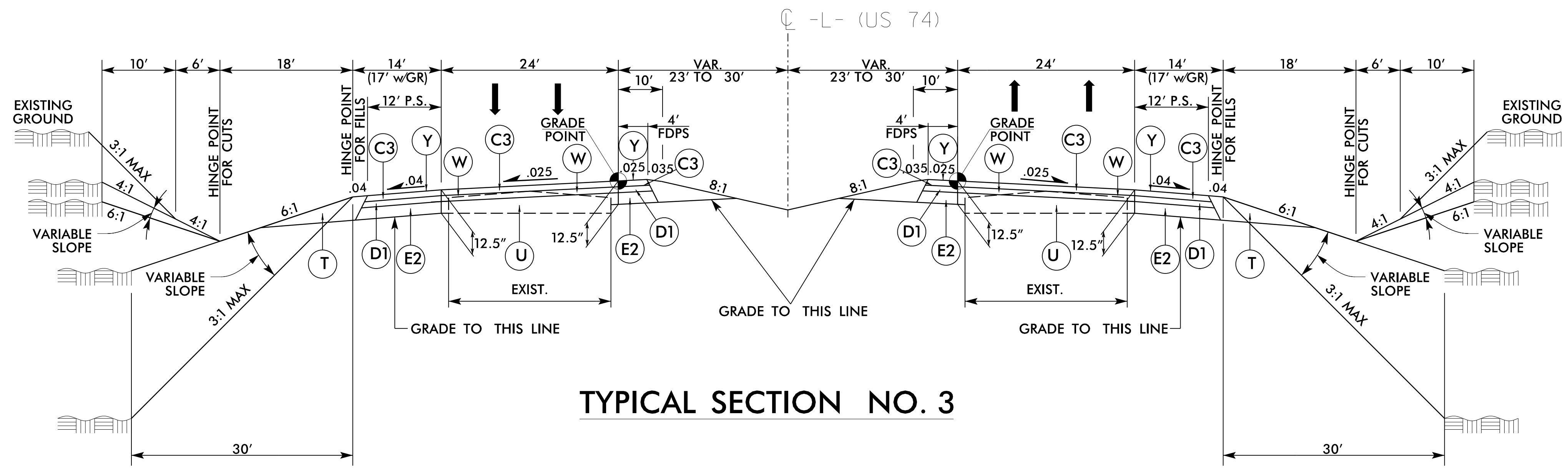
PROJECT REFERENCE NO. R-5797	SHEET NO. 2A-3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 2/3/2021 	OVERLAY PAVEMENT DESIGN ENGINEER 2/3/2021
PAVEMENT DESIGN ENGINEER 2/3/2021 	

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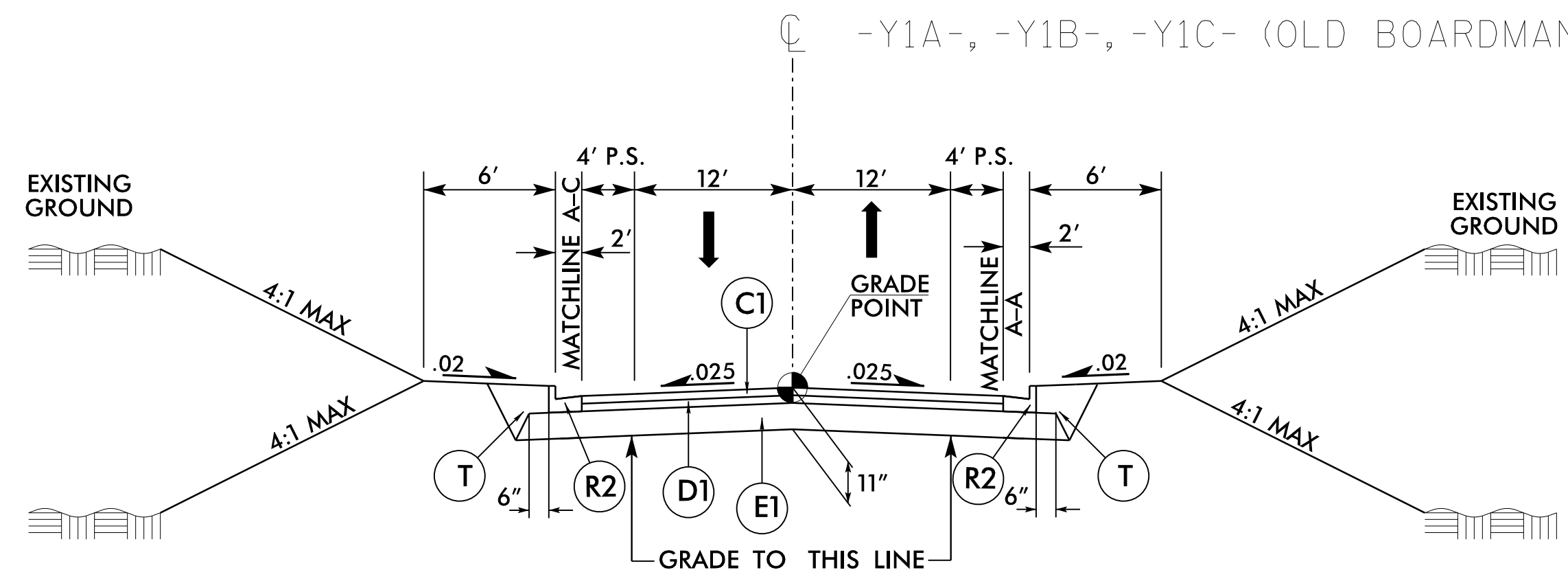
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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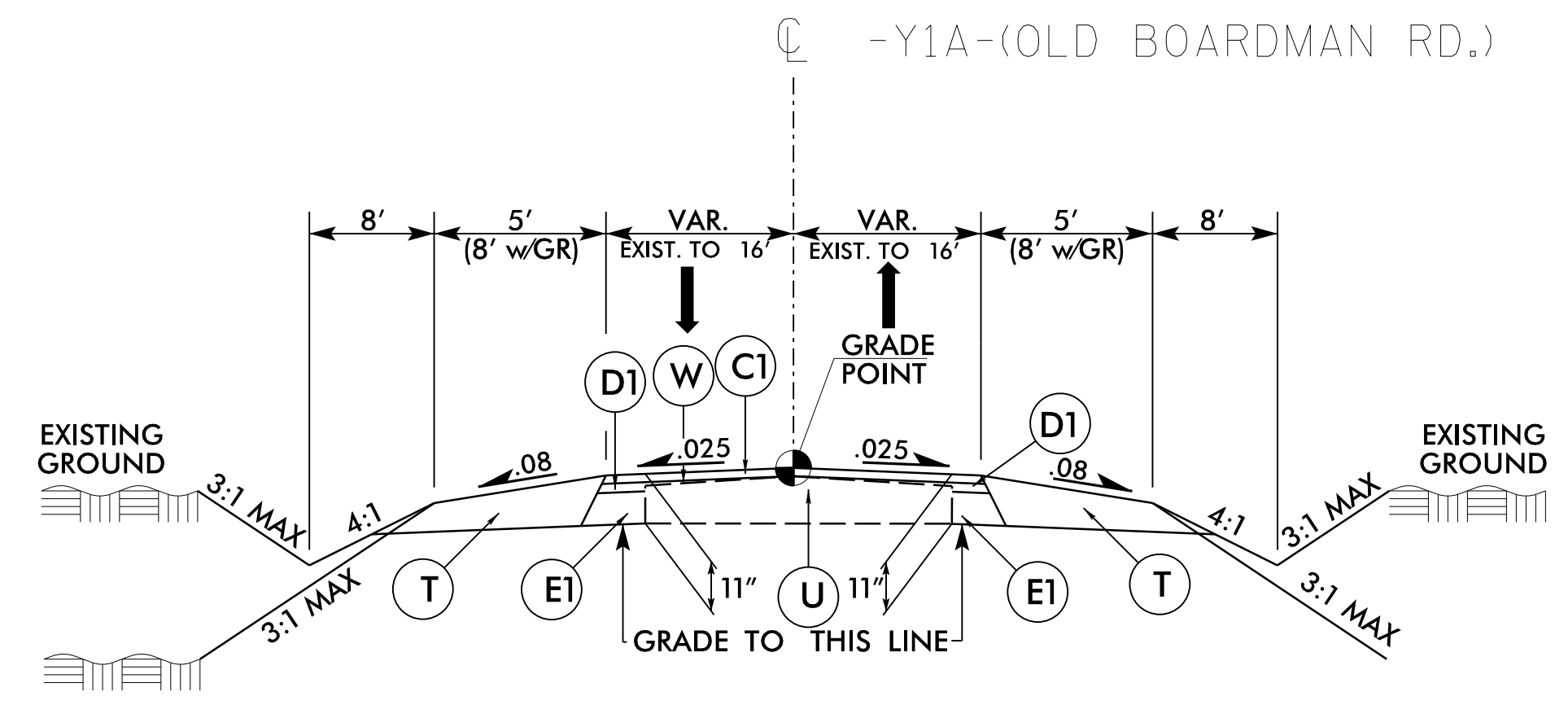
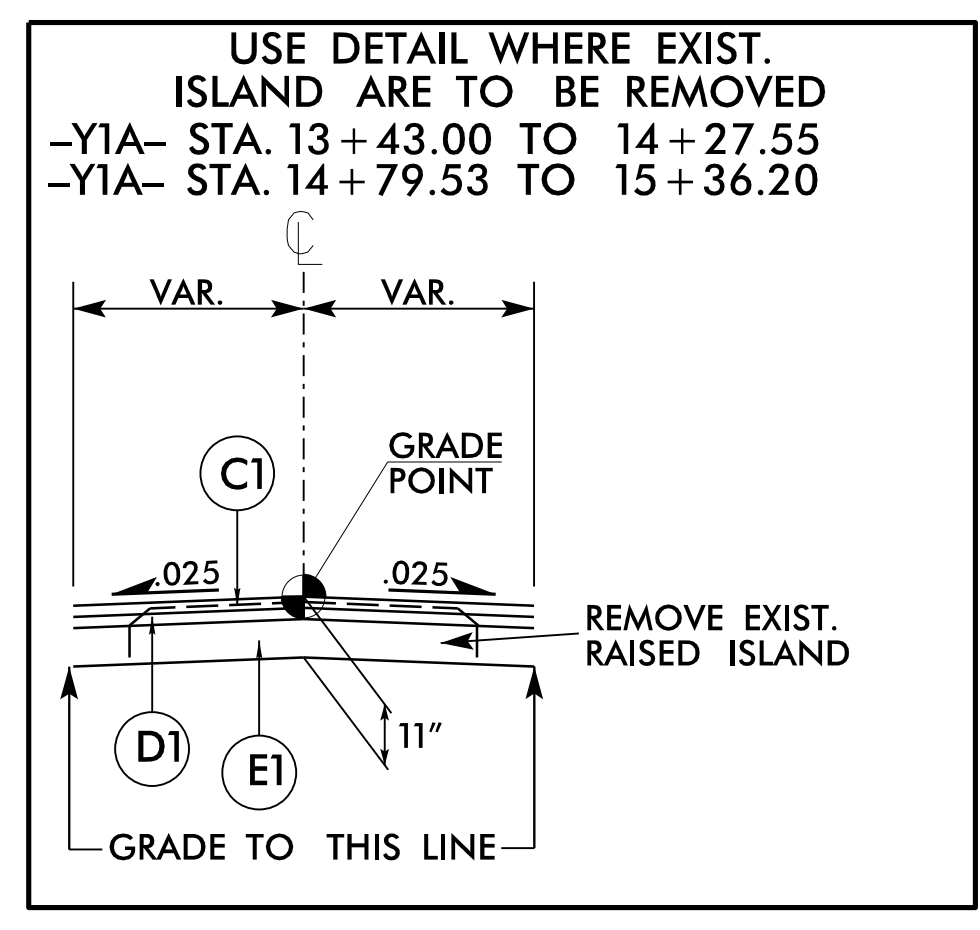
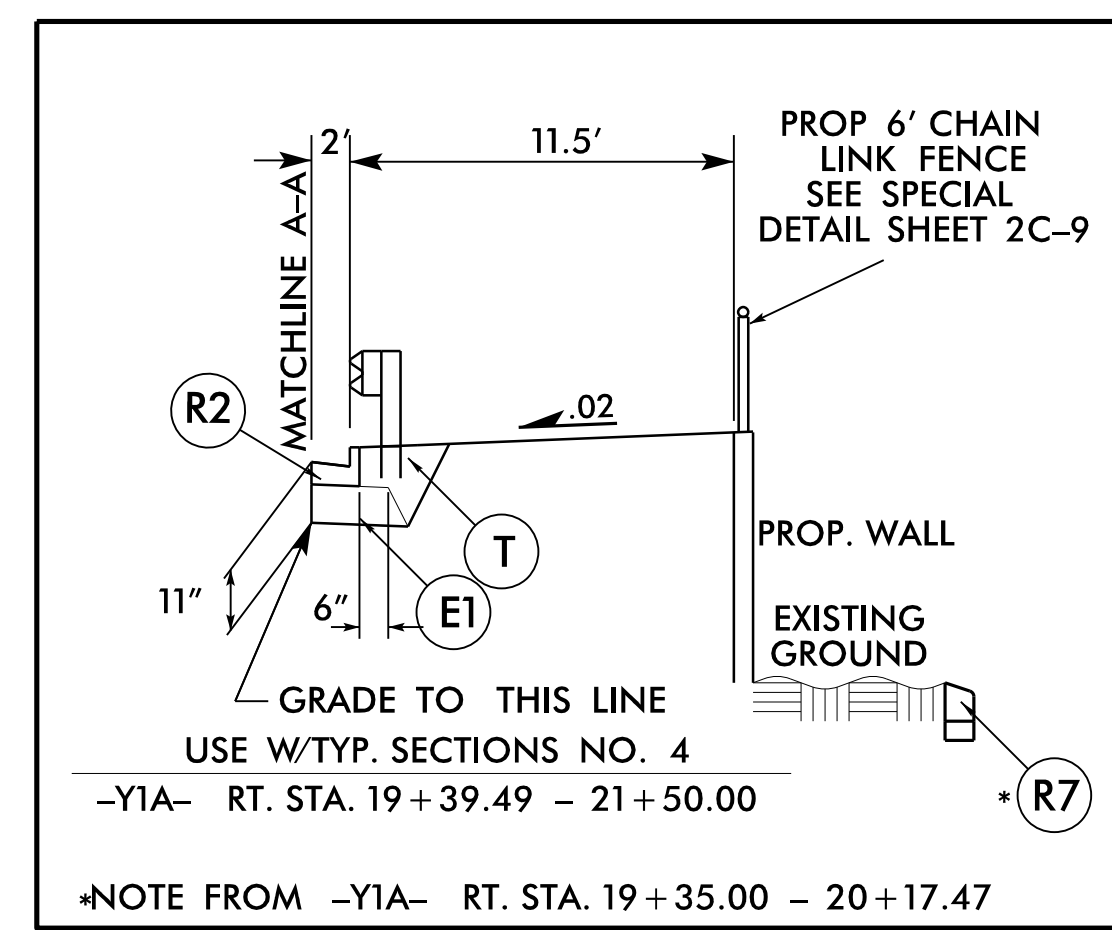
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
-L- STA. 14+88.04 TO STA. 65+64.95



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
-Y1A- STA. 14+75.00 TO STA. 25+33.61
-Y1B- STA. 26+97.86 TO STA. 29+65.58 (BEGIN BRIDGE)
-Y1C- STA. 31+66.08 (END BRIDGE) TO STA. 33+51.50
-Y1C- STA. 35+15.50 TO STA. 44+54.91

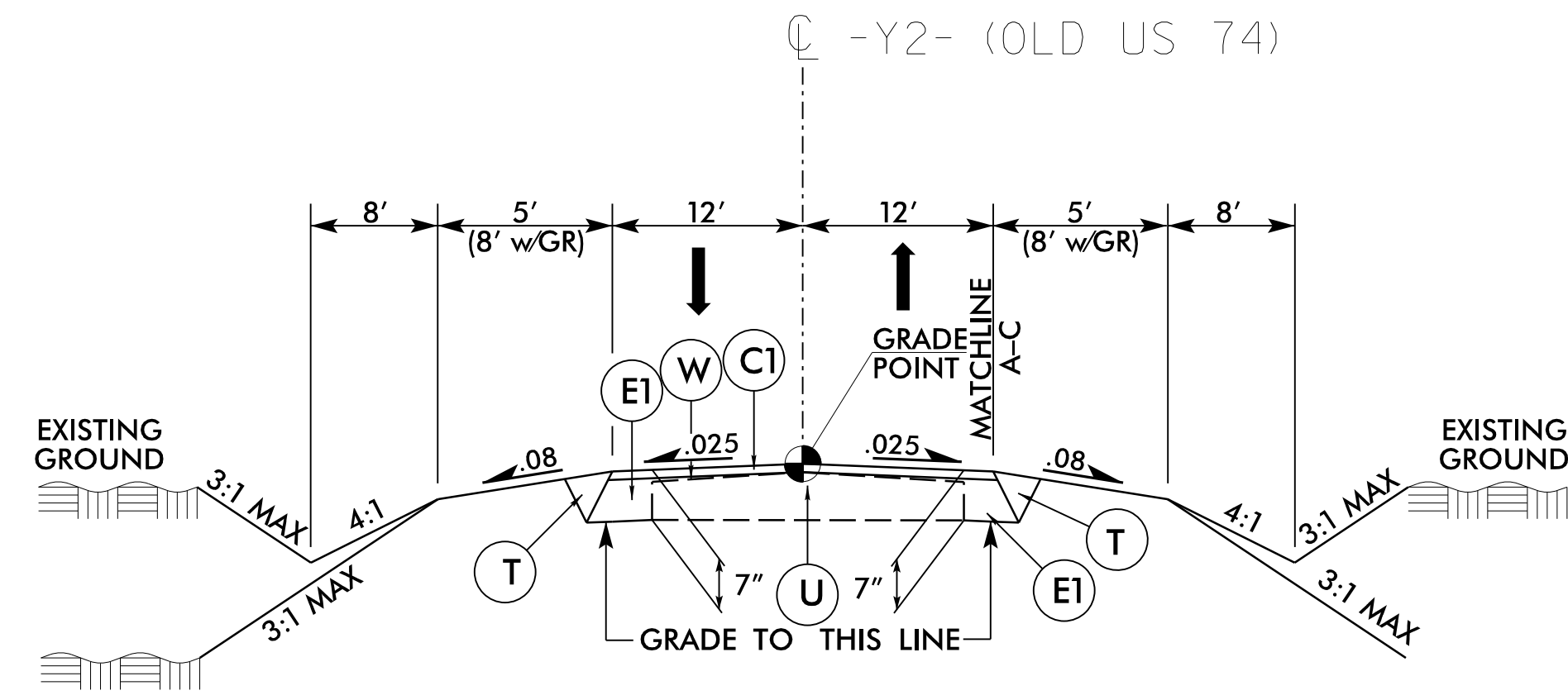


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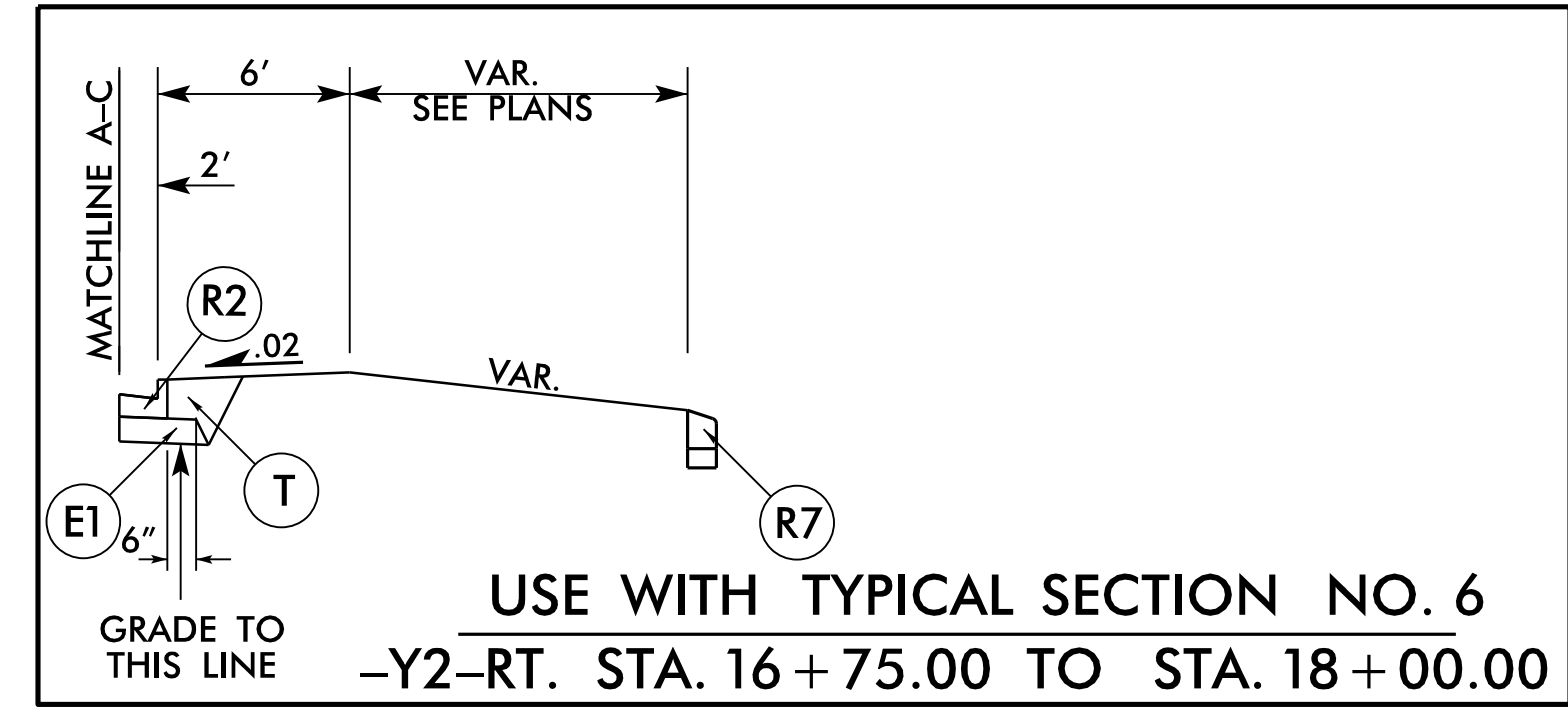
USE TYPICAL SECTION NO. 5
-Y1A- STA. 11+00.00 TO STA. 14+75.00

PAVMT. SCHEDULE (FINAL)	
C1	3" S9.5B
C2	VAR. S9.5B
C3	3" S9.5C
C4	VAR. S9.5C
D1	4" I19.0C
D2	VAR. I19.0C
E1	4" B25.0C
E2	5 1/2" B25.0C
E3	VAR. B25.0C
J1	6" ABC
J2	8" ABC
R1	1'-6" C&G
R2	2'-6" C&G
R3	12" CON. TRK. APR.
R4	8"X18" CONC. CURB
R5	EXPRESSWAY GUTTER
R6	SHLD. BERM GUTTER
R7	9"X12" CONC. CURB
R8	4" CONC. ISLAND COVER
R9	5" MONO. ISLAND (KEYED IN)
T	EARTH MAT.
U	EXIST. PAV.
V1	INC. MILLING
W	VAR. DEPTH. PAV.
X	ARTIFICIAL TURF
Y	MILLED RUM. STRIPS

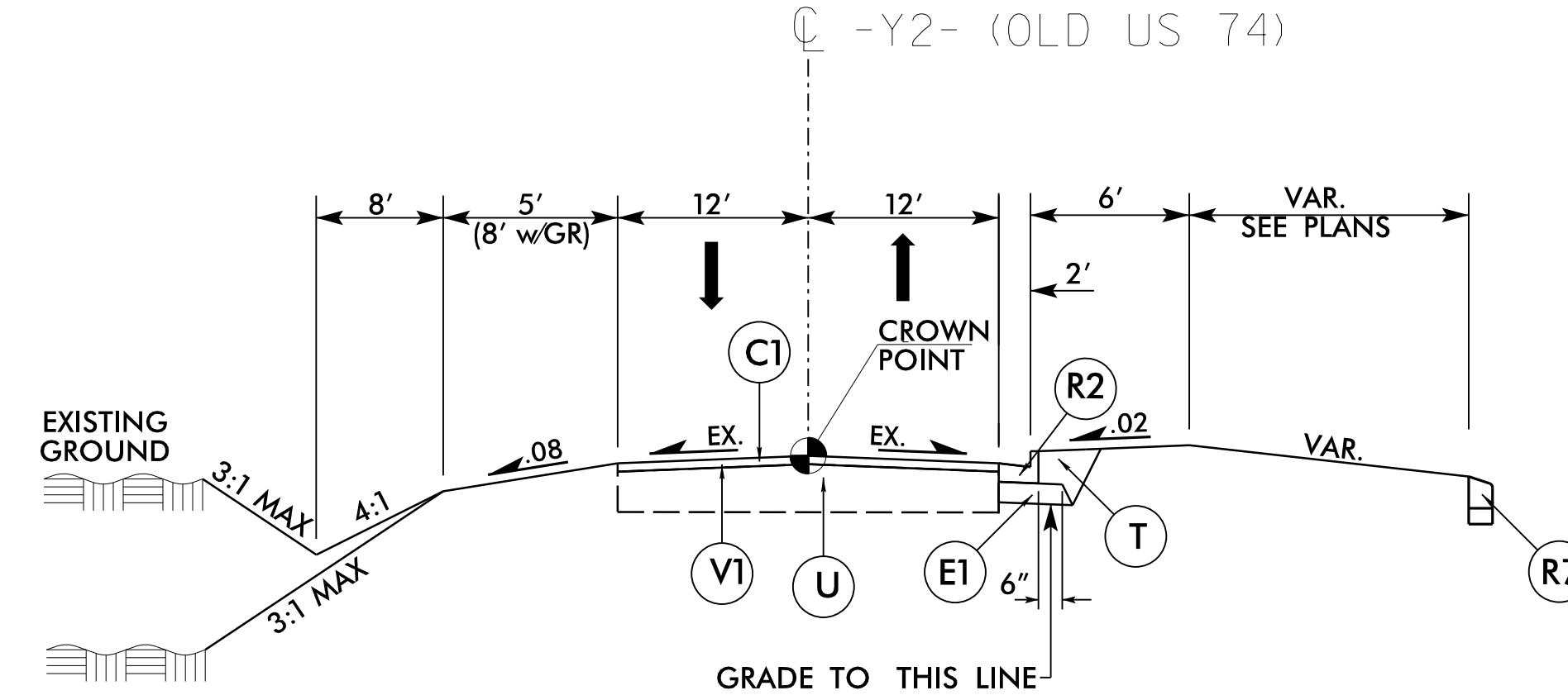
5/14/19



TYPICAL SECTION NO. 6

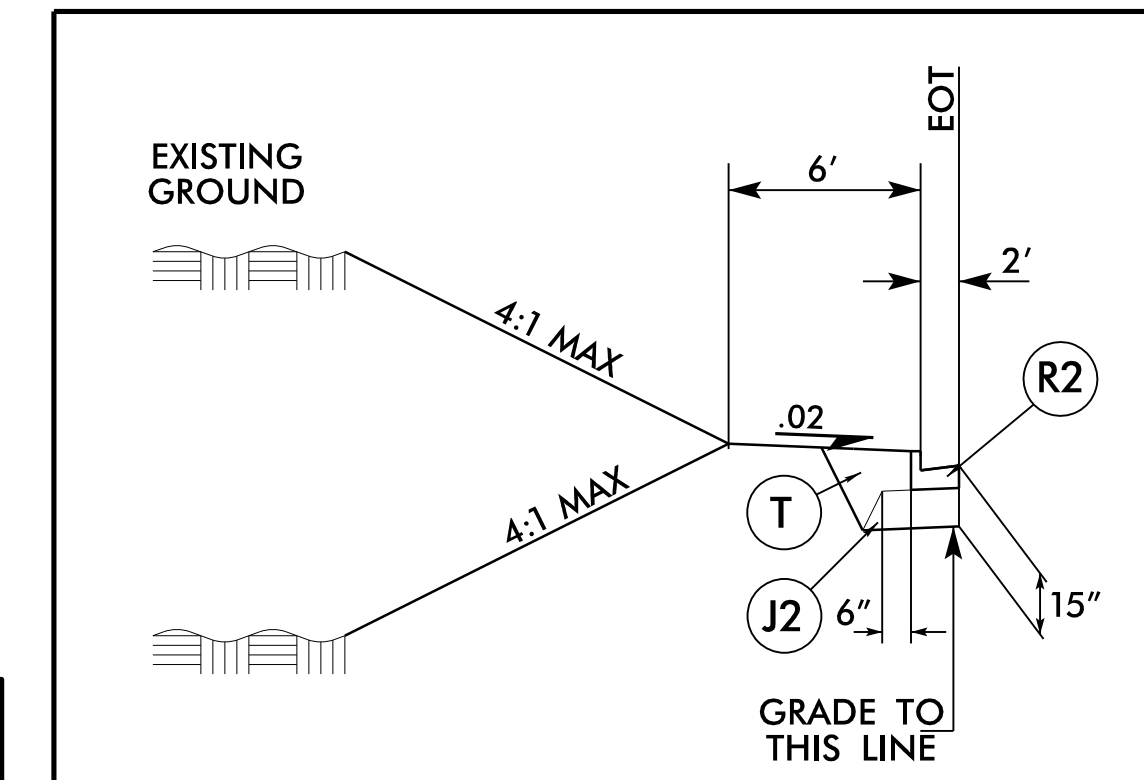


USE TYPICAL SECTION NO. 6
 -Y2- STA. 15+00.00 TO STA. 16+40.75
 -Y2- STA. 16+75.00 TO STA. 18+00.00

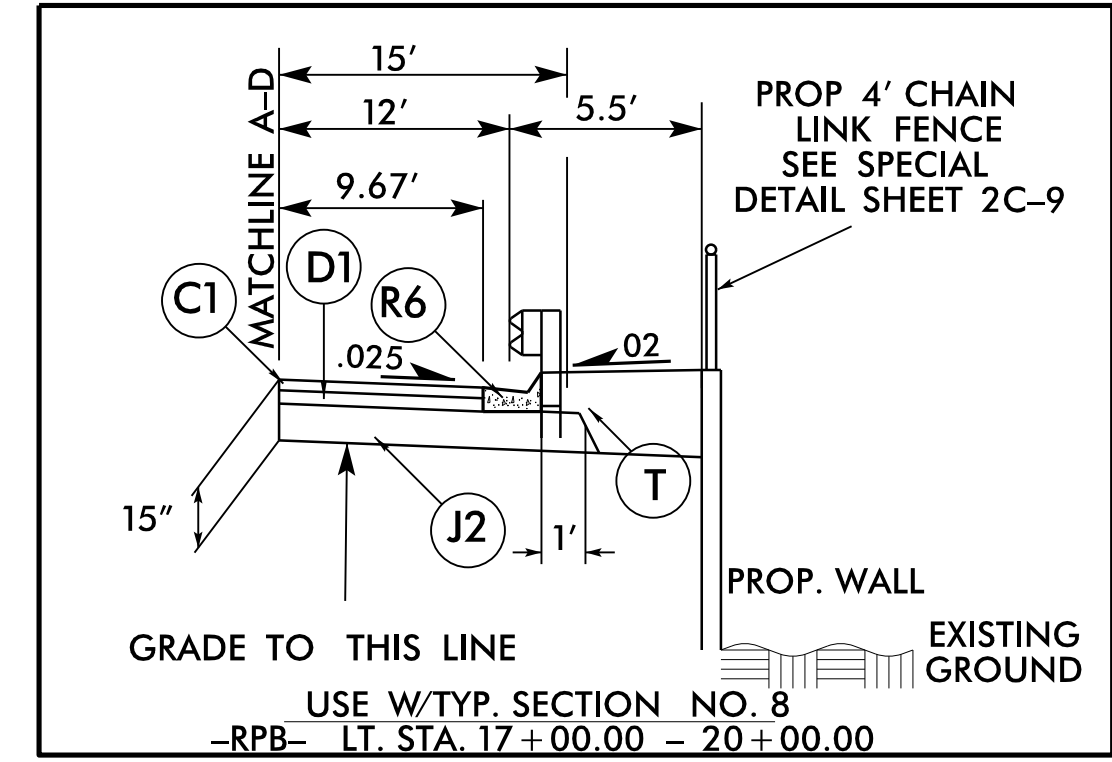


TYPICAL SECTION NO. 7

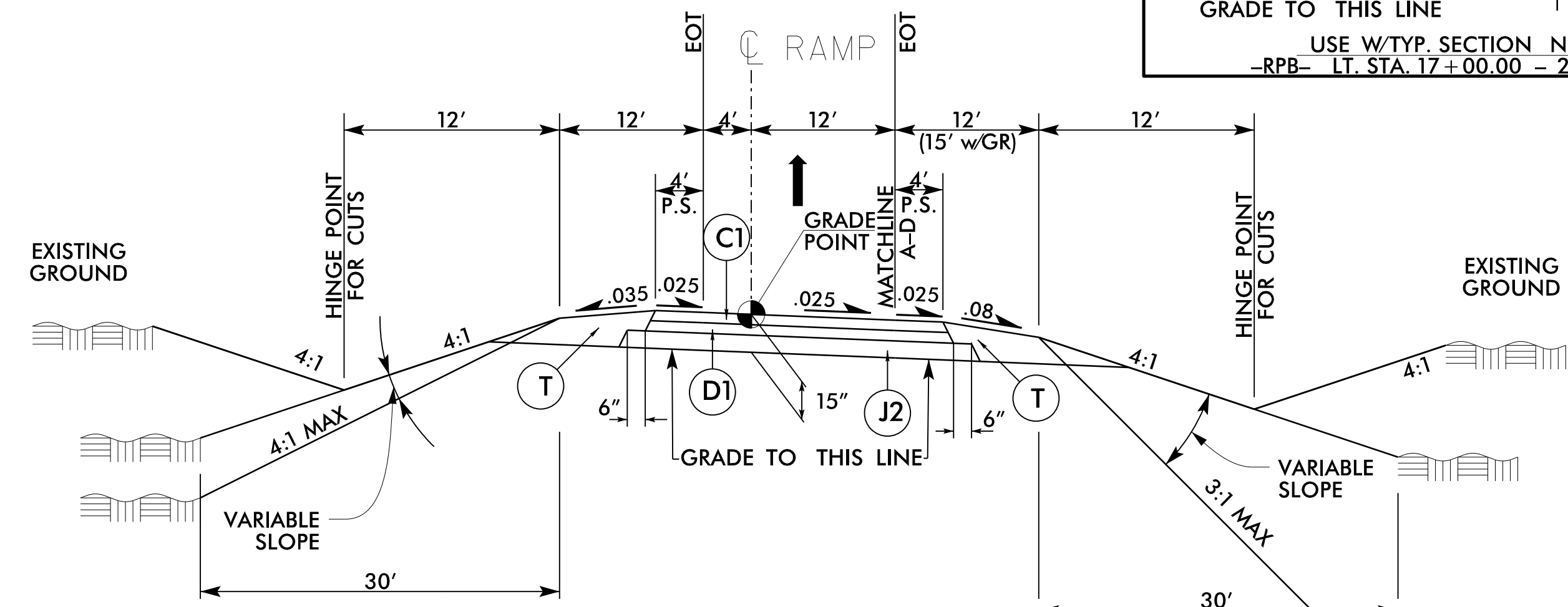
USE TYPICAL SECTION NO. 7
 -Y2- STA. 18+00.00 TO STA. 19+20.00



USE W/TYP. SECTION NO. 8
 -RPA- LT, RT. STA. 27+39.19 TO STA. 28+28.84
 -RPB- RT. STA. 23+33.42 TO STA. 24+67.09
 -RPB- LT. STA. 24+10.52 TO STA. 24+67.09
 -RPC- LT, RT. STA. 25+09.64 TO STA. 23+31.53
 -RPD- LT, RT. STA. 22+83.16 TO STA. 25+13.83

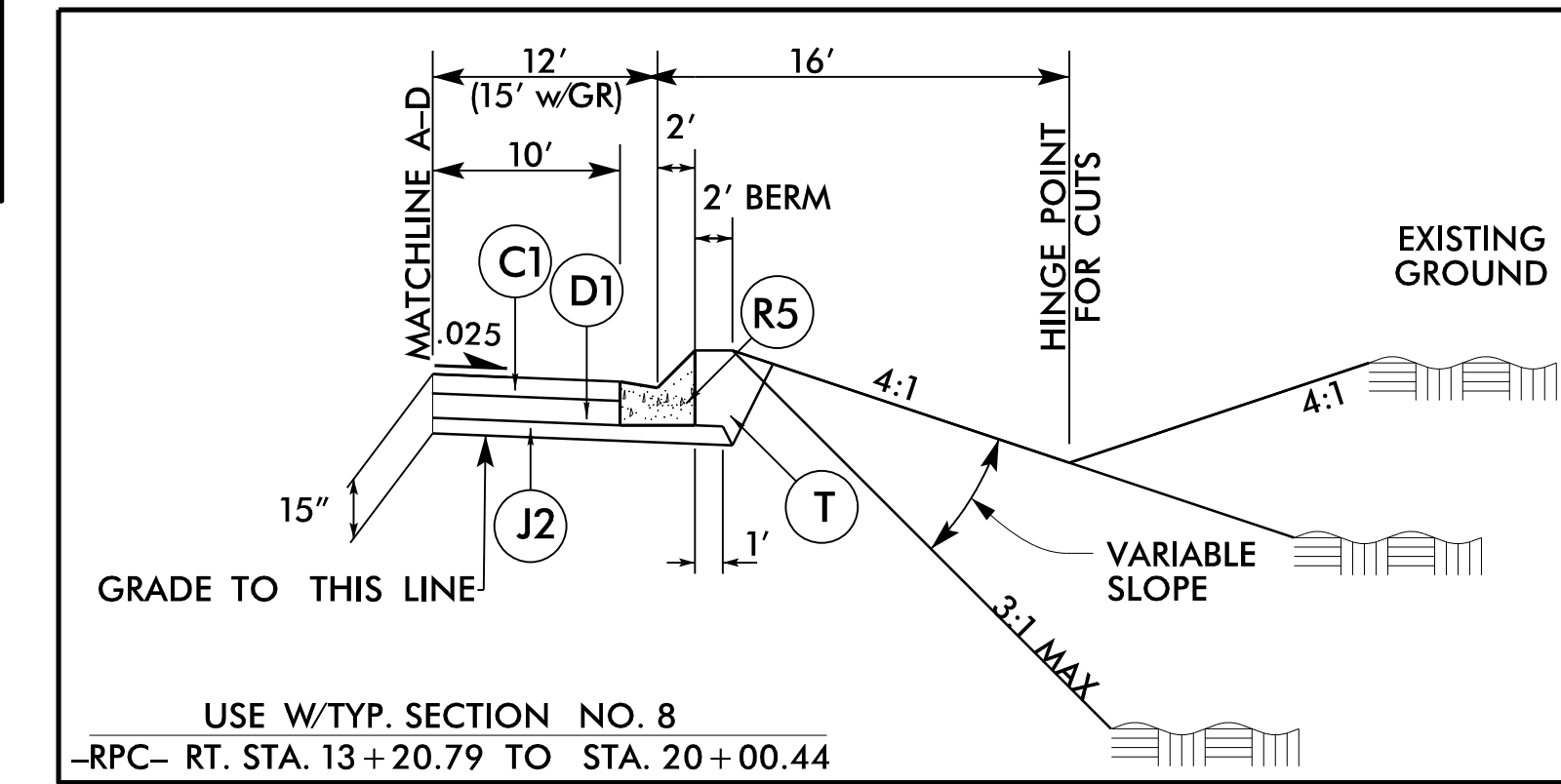


USE W/TYP. SECTION NO. 8
 -RPB- LT. STA. 17+00.00 - 20+00.00



TYPICAL SECTION NO. 8

NOTE: IN GORE AREA USE MAINLINE PAVEMENT DESIGN (SEE STD. 225.03)



USE W/TYP. SECTION NO. 8
 -RPC- RT. STA. 13+20.79 TO STA. 20+00.44

USE TYPICAL SECTION NO. 8
 -RPA- STA. 10+00.00 TO STA. 28+28.84
 -RPB- STA. 10+00.00 TO STA. 24+70.05 (REVERSE TYP.)
 -RPC- STA. 10+00.00 TO STA. 26+22.25
 -RPD- STA. 10+00.00 TO STA. 25+13.83 (REVERSE TYP.)

PROJECT REFERENCE NO. R-5797	SHEET NO. 2A-4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 3/8/2021 	OVERLAY PAVEMENT DESIGN ENGINEER 3/8/2021
	PAVEMENT DESIGN ENGINEER 3/8/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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Prepared in the Office of:
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 Engineering Stability Since 1881
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 Raleigh, North Carolina 27603-2302
 License No. F-0266
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PAVMT. SCHEDULE (FINAL)

C1	3" S9.5B
C2	VAR. S9.5B
C3	3" S9.5C
C4	VAR. S9.5C
D1	4" I19.0C
D2	VAR. I19.0C
E1	4" B25.0C
E2	5 1/2" B25.0C
E3	VAR. B25.0C
J1	6" ABC
J2	8" ABC
R1	1'-6" C&G
R2	2'-6" C&G
R3	12" CON. TRK. APR.
R4	8"X18" CONC. CURB
R5	EXPRESSWAY GUTTER
R6	SHLD. BERM GUTTER
R7	9"X12" CONC. CURB
R8	4" CONC. ISLAND COVER
R9	5" MONO. ISLAND (KEYED IN)
T	EARTH MAT.
U	EXIST. PAV.
V1	INC. MILLING
W	VAR. DEPTH. PAV.
X	ARTIFICIAL TURF
Y	MILLED RUM. STRIPS

5/18/2021 10:57:57 AM Rdy_PSH_02A-4.dgn

5/14/2021

PROJECT REFERENCE NO.	SHEET NO.
R-5797	2A-5

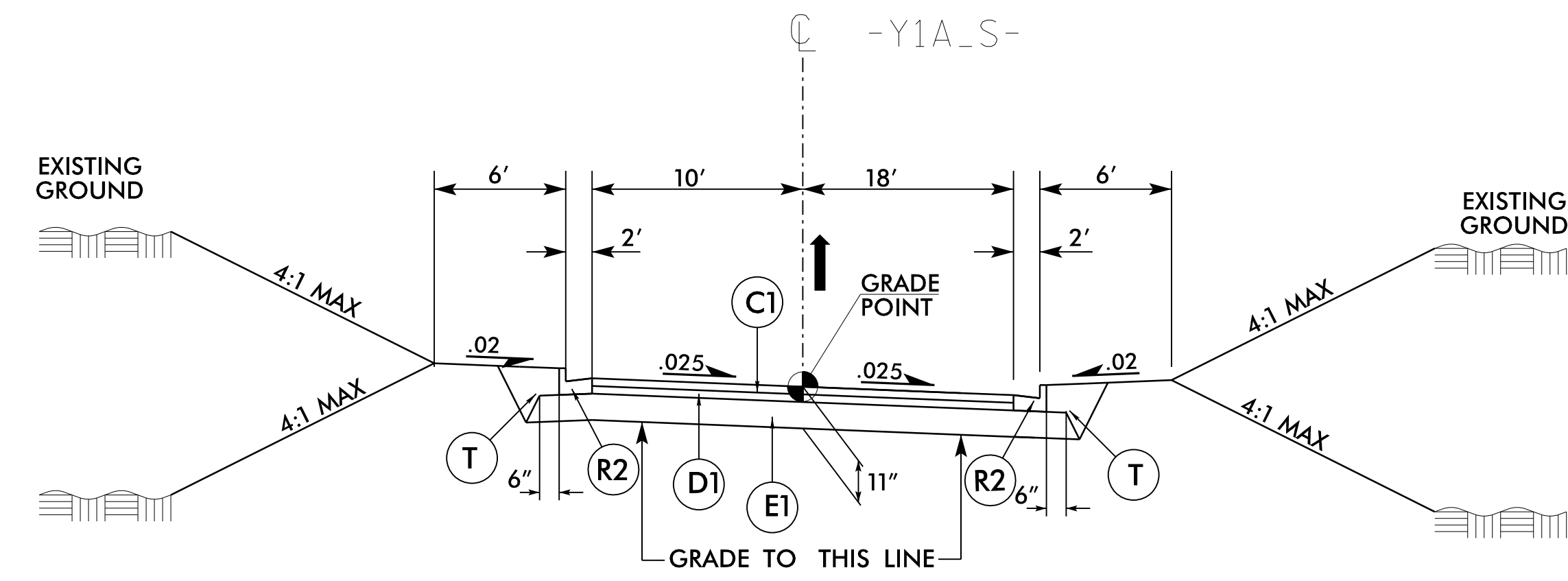
ROADWAY DESIGN ENGINEER 2/3/2021 	OVERLAY PAVEMENT DESIGN ENGINEER 2/3/2021 	PAVEMENT DESIGN ENGINEER 2/3/2021
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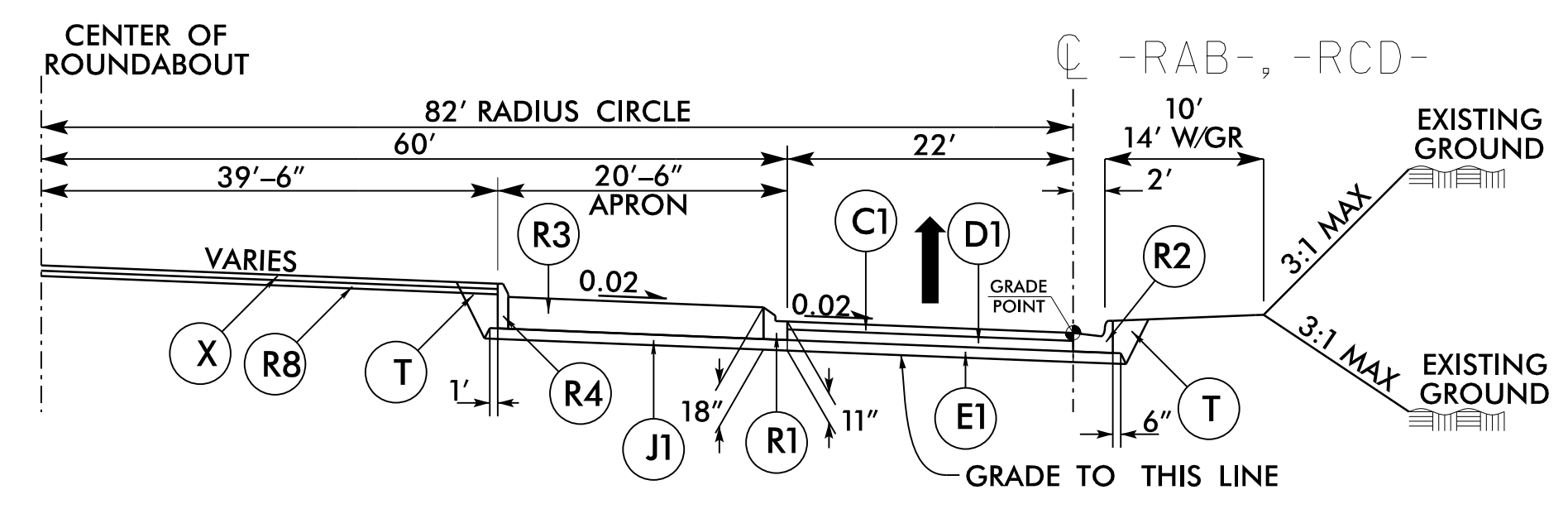
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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License No. F-0266
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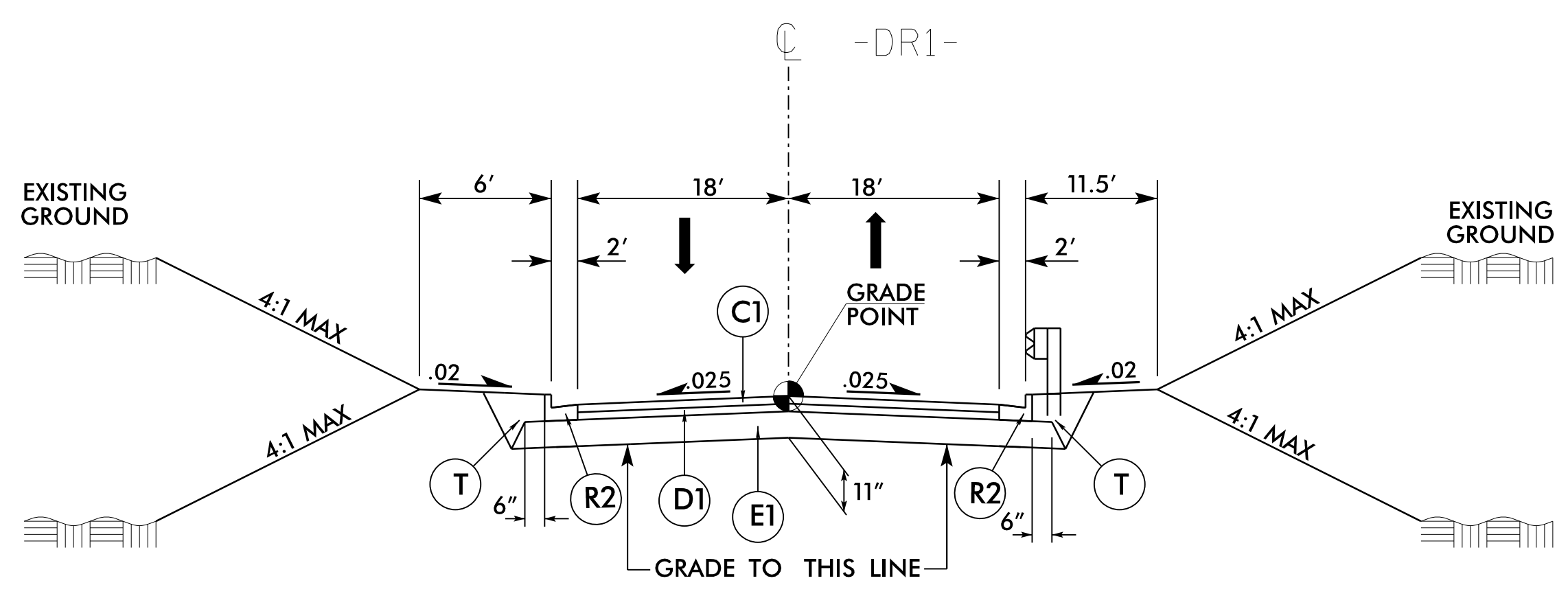
TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9
-Y1A_S- STA. 23+49.31 TO STA. 26+06.06



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10
-RAB- STA. 10+00.00 TO STA. 15+15.22
-RCD- STA. 10+00.00 TO STA. 15+15.22



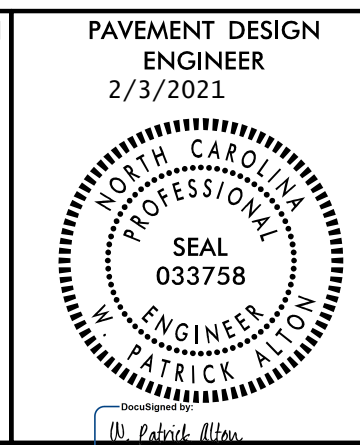
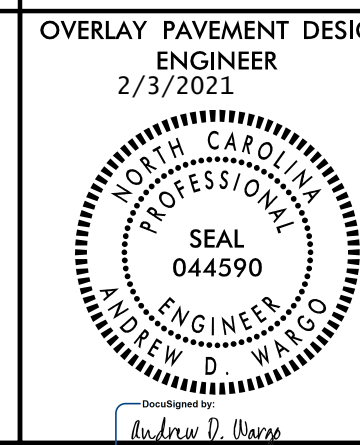
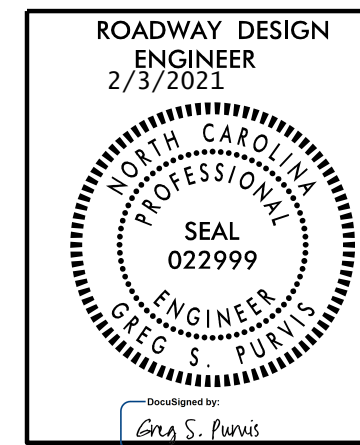
TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11
-DR1- STA. 10+00.00 TO STA. 11+96.12

PAVMT. SCHEDULE (FINAL)

C1	3" S9.5B
C2	VAR. S9.5B
C3	3" S9.5C
C4	VAR. S9.5C
D1	4" I19.0C
D2	VAR. I19.0C
E1	4" B25.0C
E2	5 1/2" B25.0C
E3	VAR. B25.0C
J1	6" ABC
J2	8" ABC
R1	1'-6" C&G
R2	2'-6" C&G
R3	12" CON. TRK. APR.
R4	8"X18" CONC. CURB
R5	EXPRESSWAY GUTTER
R6	SHLD. BERM GUTTER
R7	9"X12" CONC. CURB
R8	4" CONC. ISLAND COVER
R9	5" MONO. ISLAND (KEYED IN)
T	EARTH MAT.
U	EXIST. PAV.
V1	INC. MILLING
W	VAR. DEPTH. PAV.
X	ARTIFICIAL TURF
Y	MILLED RUM. STRIPS

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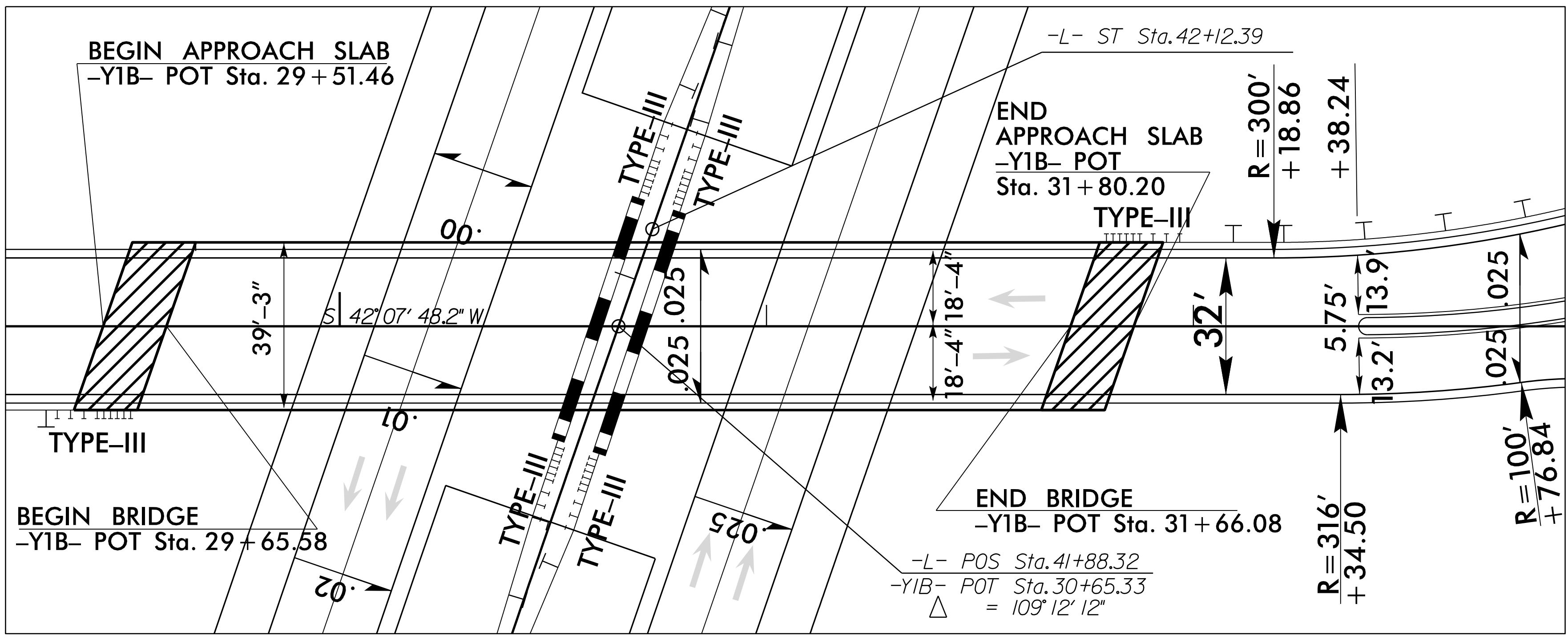


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

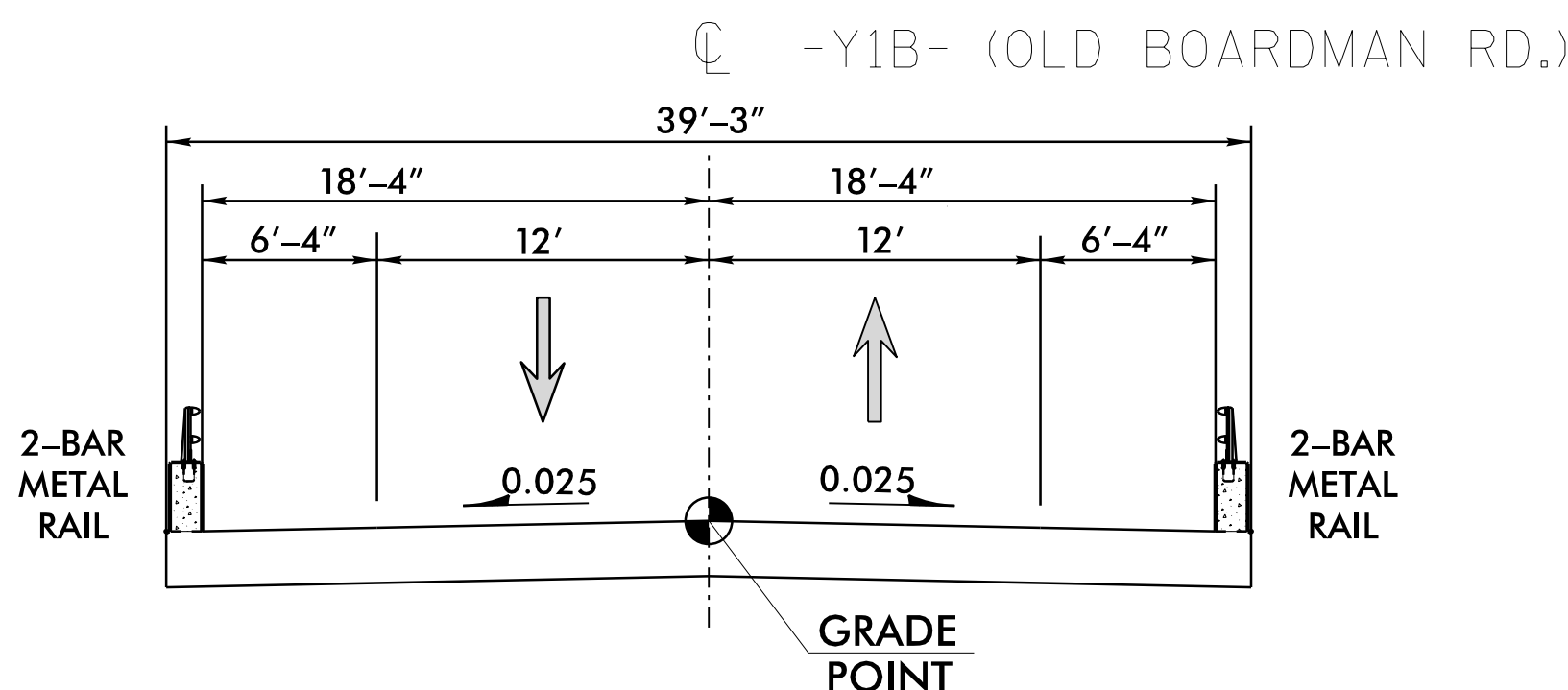
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
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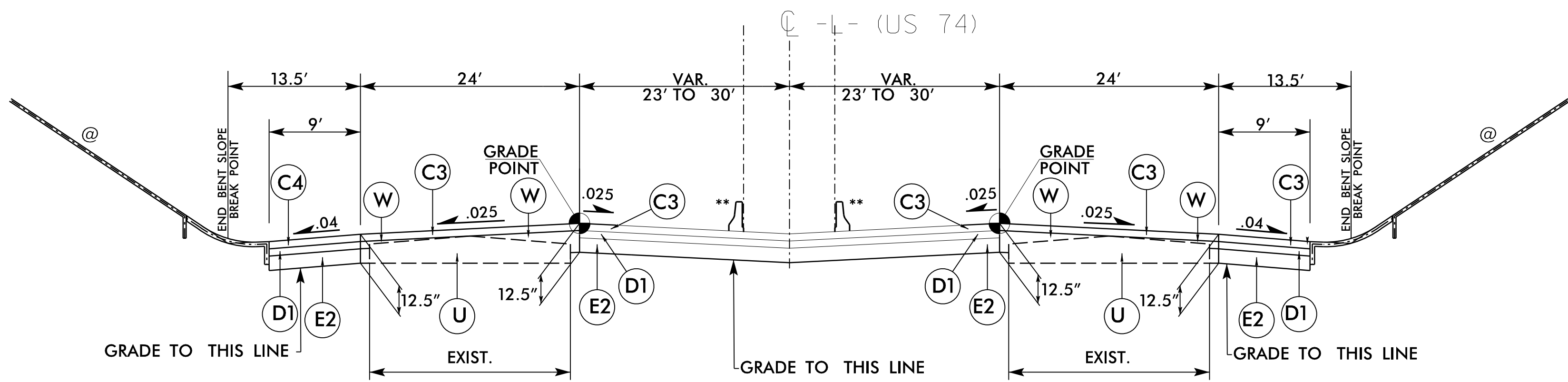


STRUCTURE / PAVEMENT RELATIONSHIP



BRIDGE TYPICAL

-Y1B- STA. 29 + 65.58 TO STA. 31 + 66.08



TYPICAL SECTION UNDER STRUCTURE

-L- STA. 41 + 67.84 TO STA. 42 + 09.40

@ SLOPE DETERMINED BY GEOTECHNICAL UNIT
MINIMUM VERTICAL CLEARANCE 16'-6"
DESIRABLE VERTICAL CLEARANCE 17'-0"

** SEE SHEET 2C-3 FOR DETAIL OF MEDIAN HAZARD PROTECTION

PAVMT. SCHEDULE (FINAL)	
C1	3" S9.5B
C2	VAR. S9.5B
C3	3" S9.5C
C4	VAR. S9.5C
D1	4" I19.0C
D2	VAR. I19.0C
E1	4" B25.0C
E2	5 1/2" B25.0C
E3	VAR. B25.0C
J1	6" ABC
J2	8" ABC
R1	1'-6" C&G
R2	2'-6" C&G
R3	12" CON. TRK. APR.
R4	8"X18" CONC. CURB
R5	EXPRESSWAY GUTTER
R6	SHLD. BERM GUTTER
R7	9"X12" CONC. CURB
R8	4" CONC. ISLAND COVER
R9	5" MONO. ISLAND (KEYED IN)
T	EARTH MAT.
U	EXIST. PAV.
V1	INC. MILLING
W	VAR. DEPTH. PAV.
X	ARTIFICIAL TURF
Y	MILLED RUM. STRIPS

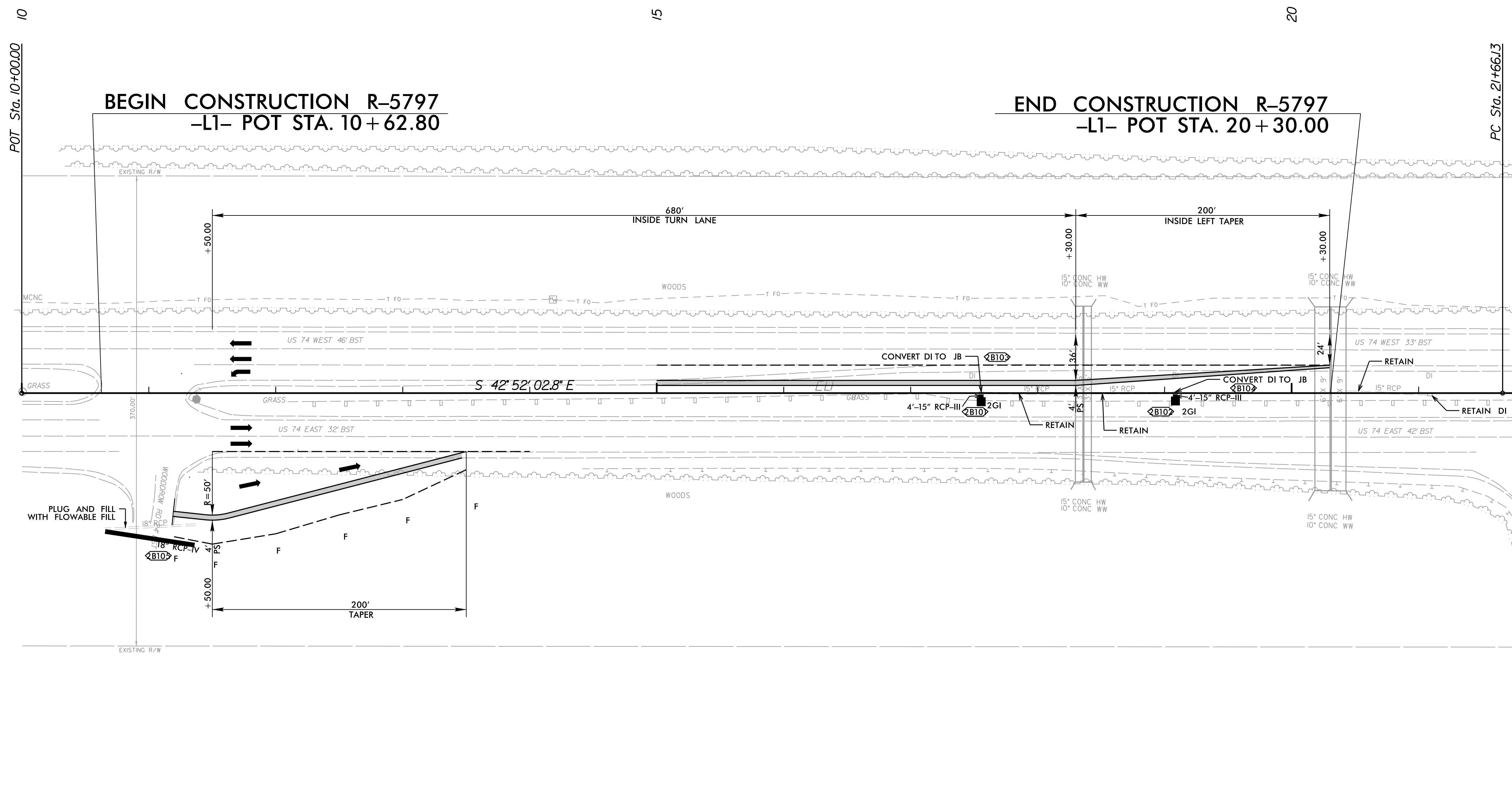
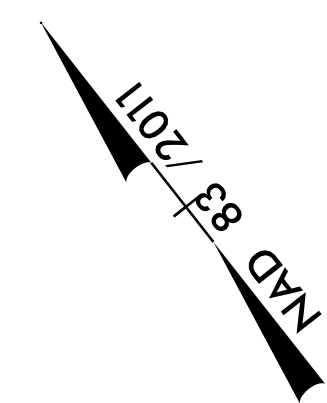
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11/15/2021 10:54:34

8/17/99

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
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PROJECT REFERENCE NO. R-5797	SHEET NO. 2B-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 1/5/2021 13:03:56 EST	HYDRAULICS ENGINEER 1/5/2021 09:12:11 PST
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	



REVISIONS

-L1-
PI Sta 24+75.25
$\Delta = 7' 14' 56.5'' (LT)$
$D = 1' 10' 26.7''$
$L = 617.42'$
$T = 30912'$
$R = 4,880.00'$
SE = EXIST.

FOR -L1- PROFILE, SEE SHEET NO. 21

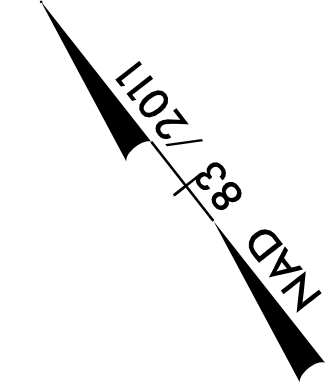
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8/17/99

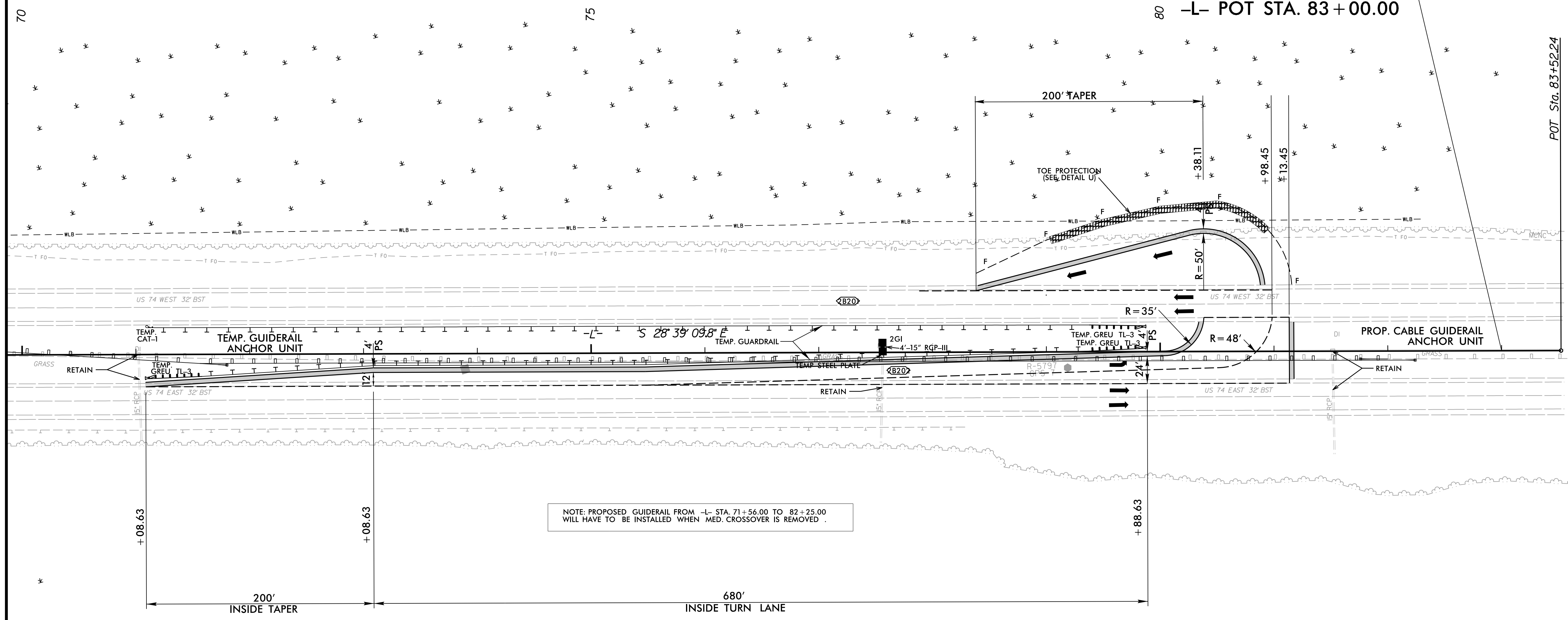
WETHERILL ENGINEERING
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. R-5797	SHEET NO. 2B-2
RW SHEET NO.	
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



END CONSTRUCTION R-5797
80 -L- POT STA. 83+00.00



NOTE: PROPOSED GUIDERAIL FROM -L- STA. 71+56.00 TO 82+25.00 WILL HAVE TO BE INSTALLED WHEN MED. CROSSOVER IS REMOVED.

REVISIONS

10/16/2020
 11:58:13 AM
 R-5797 - Rwy - PSH_02B_2.dgn


8.17.99

DETAIL RAB

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

**DOCUMENT NOT CONSIDERED FINAL
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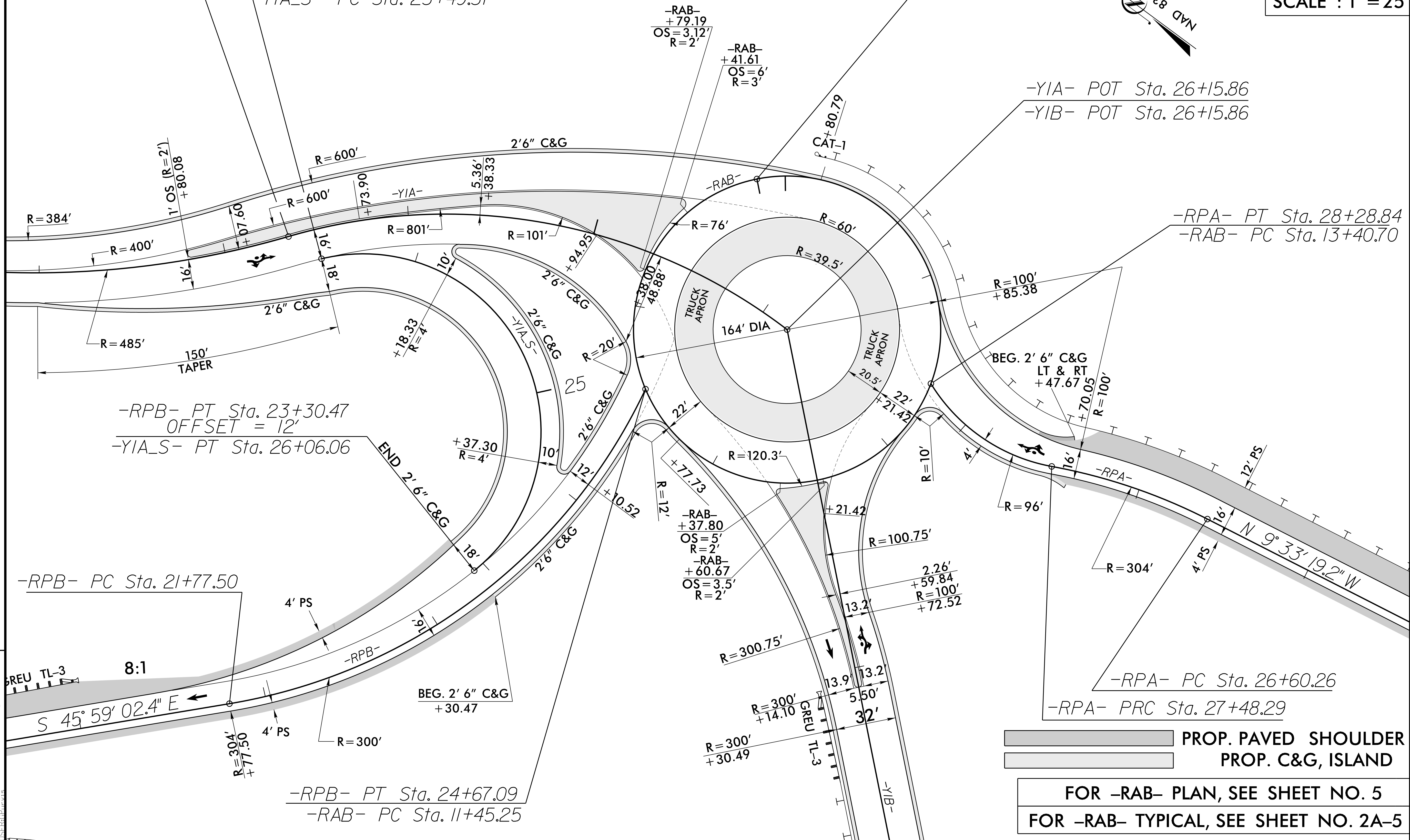
PROJECT REFERENCE NO. R-5797	SHEET NO. 2B-3
ROADWAY DESIGN 1/5/2023 13:03:56 EST	
	
<p>SCALE : 1" = 25'</p>	

25
 -RAB- PC Sta. 10+00.00
 -RAB- PT Sta. 15+15.22

-YIA- PRC Sta. 23+34.94
 -YIA- PC Sta. 23+49.31
 OFFSET = 16'
 -YIA_S- PC Sta. 23+49.31

-YIA- POT Sta. 26+15.86
 -YIB- POT Sta. 26+15.86

-RPA- PT Sta. 28+28.84
 -RAB- PC Sta. 13+40.70



PROP. PAVED SHOULDER
PROP. C&G, ISLAND

FOR -RAB- PLAN, SEE SHEET NO. 5
FOR -RAB- TYPICAL, SEE SHEET NO. 2A-5

REVISIONS

12/9/2020 R-5797_Rdy_PSH_02B-3.dgn

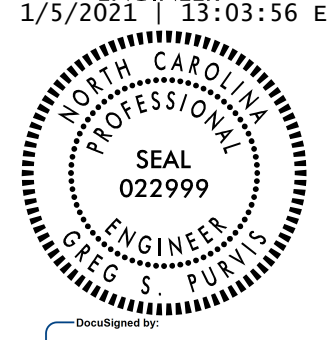
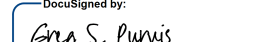
8/17/99

DETAIL RCD

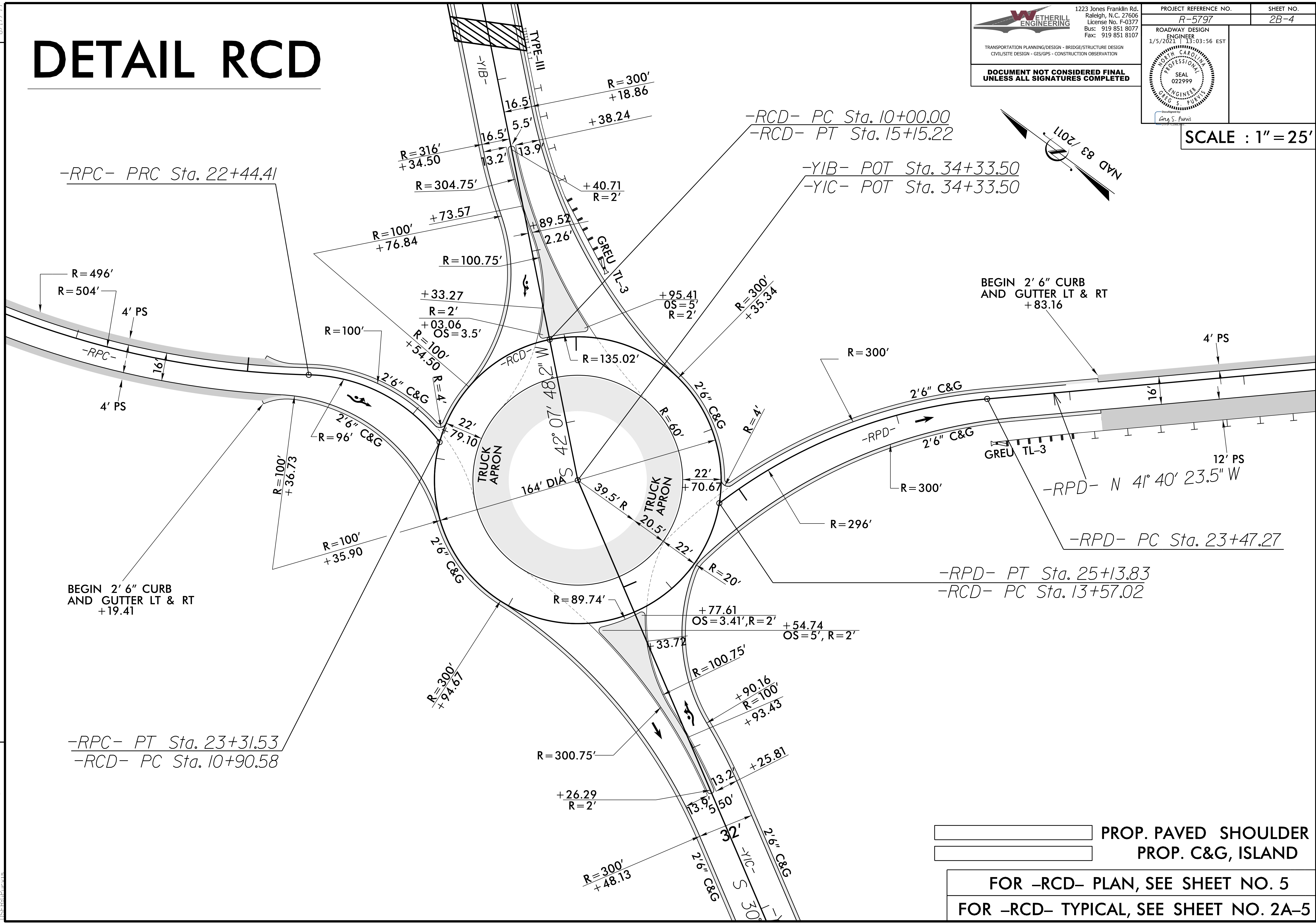
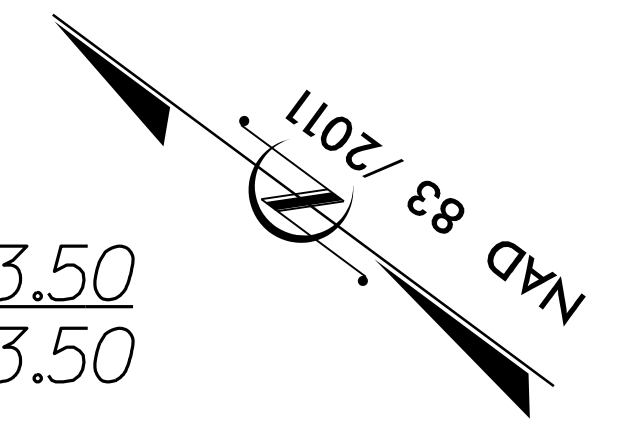
WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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

PROJECT REFERENCE NO. R-5797	SHEET NO. 2B-4
ROADWAY DESIGN ENGINEER 1/5/2021 13:03:56 EST	
	
	

SCALE : 1" = 25'



REVISIONS

12/9/2020 08:57:97_Rcd_PSH_02B-4.dgn

 PROP. PAVED SHOULDER
 PROP. C&G, ISLAND

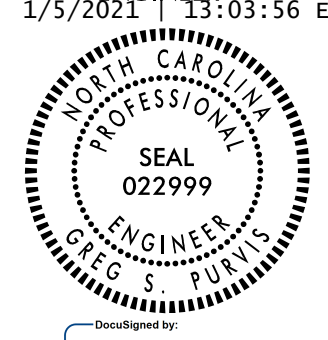
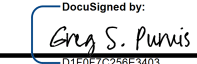
FOR -RCD- PLAN, SEE SHEET NO. 5
 FOR -RCD- TYPICAL, SEE SHEET NO. 2A-5

8/17/99

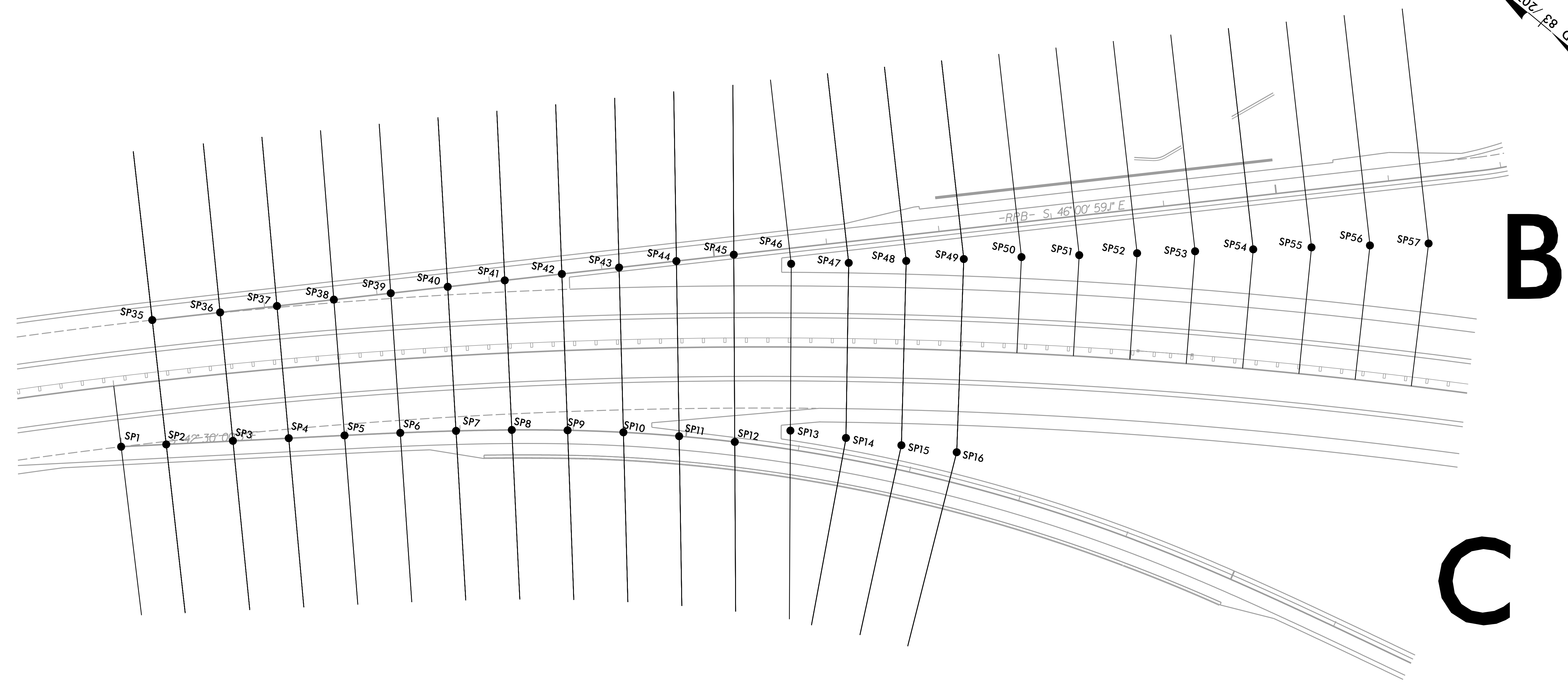
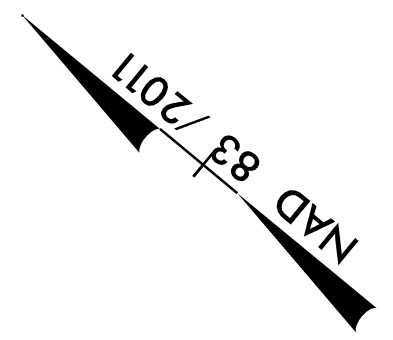
WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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PROJECT REFERENCE NO. R-5797	SHEET NO. 2B-5
ROADWAY DESIGN ENGINEER 1/5/2011 12:03:56 EST	
	

SHEAR POINT DIAGRAM RPB /RPC



B

C


REVISIONS

10/16/2009
 R-5797-Relay_PSH_02B-5.dgn
 GSP

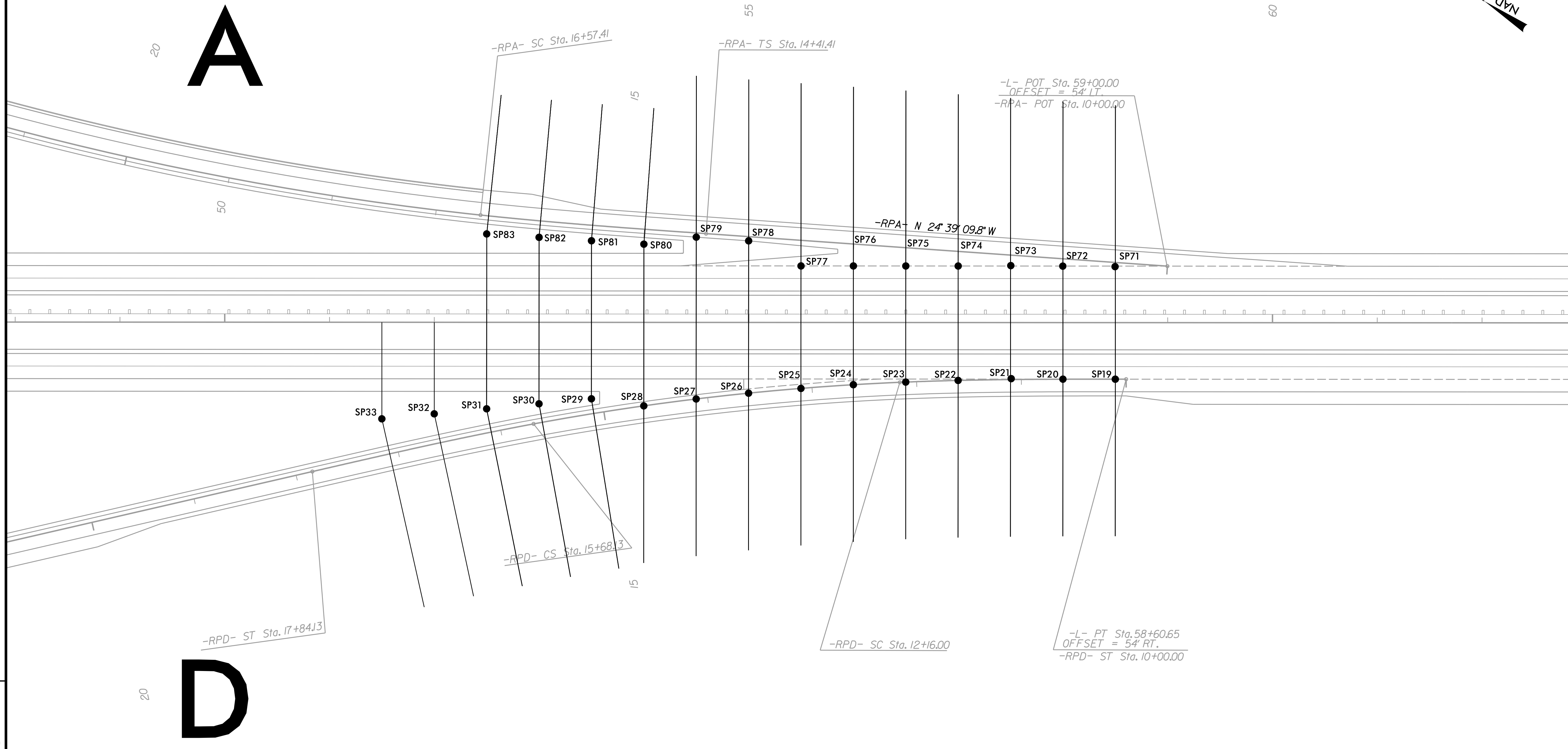
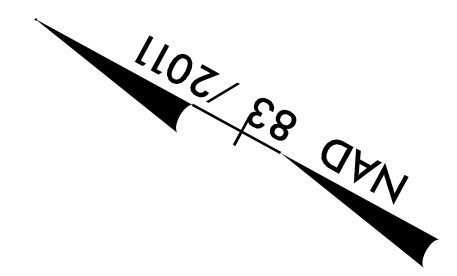
WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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 UNLESS ALL SIGNATURES COMPLETED**

PROJECT REFERENCE NO. R-5797	SHEET NO. 2B-6
ROADWAY DESIGN ENGINEER 1/5/2023 1:13:03:56 EST	
	
Designed by <i>Greg S. Purvis</i>	

SHEAR POINT DIAGRAM RPA /RPD

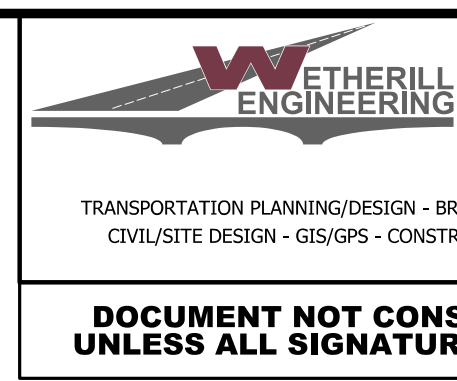


REVISIONS

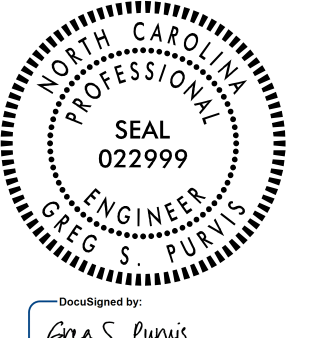
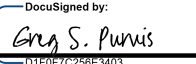
8/17/99
 10/16/2020
 11/5/2021
 1/5/2023

8/17/99

SHEAR POINT DIAGRAM RAB



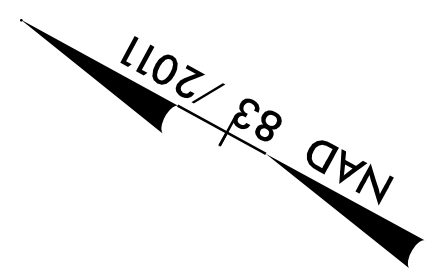
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

PROJECT REFERENCE NO. R-5797	SHEET NO. 2B-7
ROADWAY DESIGN ENGINERS 1/5/2011 13:03:56 EST	
	
<small>Designed by</small> 	

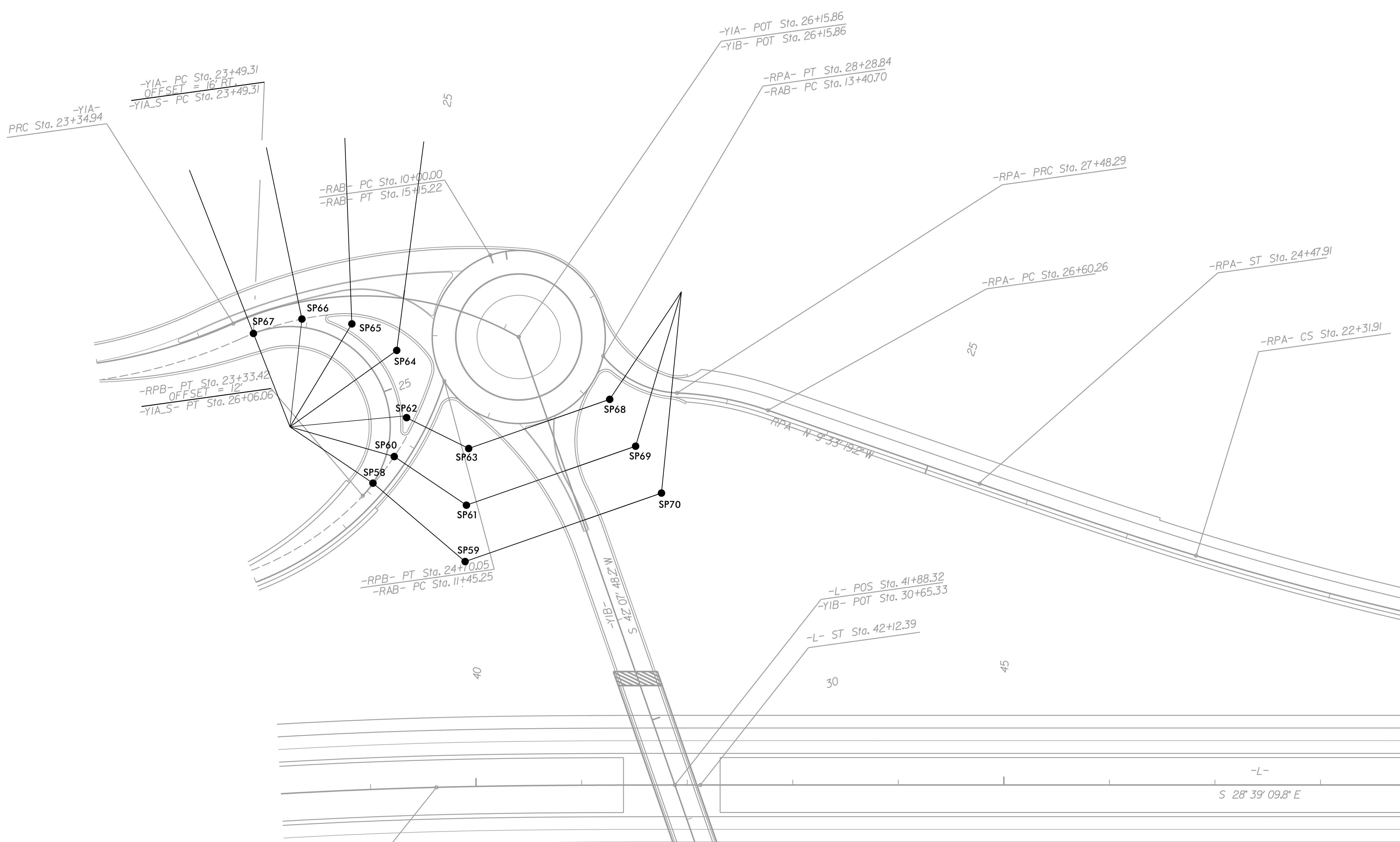
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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UNLESS ALL SIGNATURES COMPLETED**

RAB



REVISIONS



10/16/2008
R-5797-Relay_PSH_02B-7.dgn
11:58:00 AM

-L-
S 28° 39' 09.8" E


8/17/99

SHEAR POINT DIAGRAM RCD

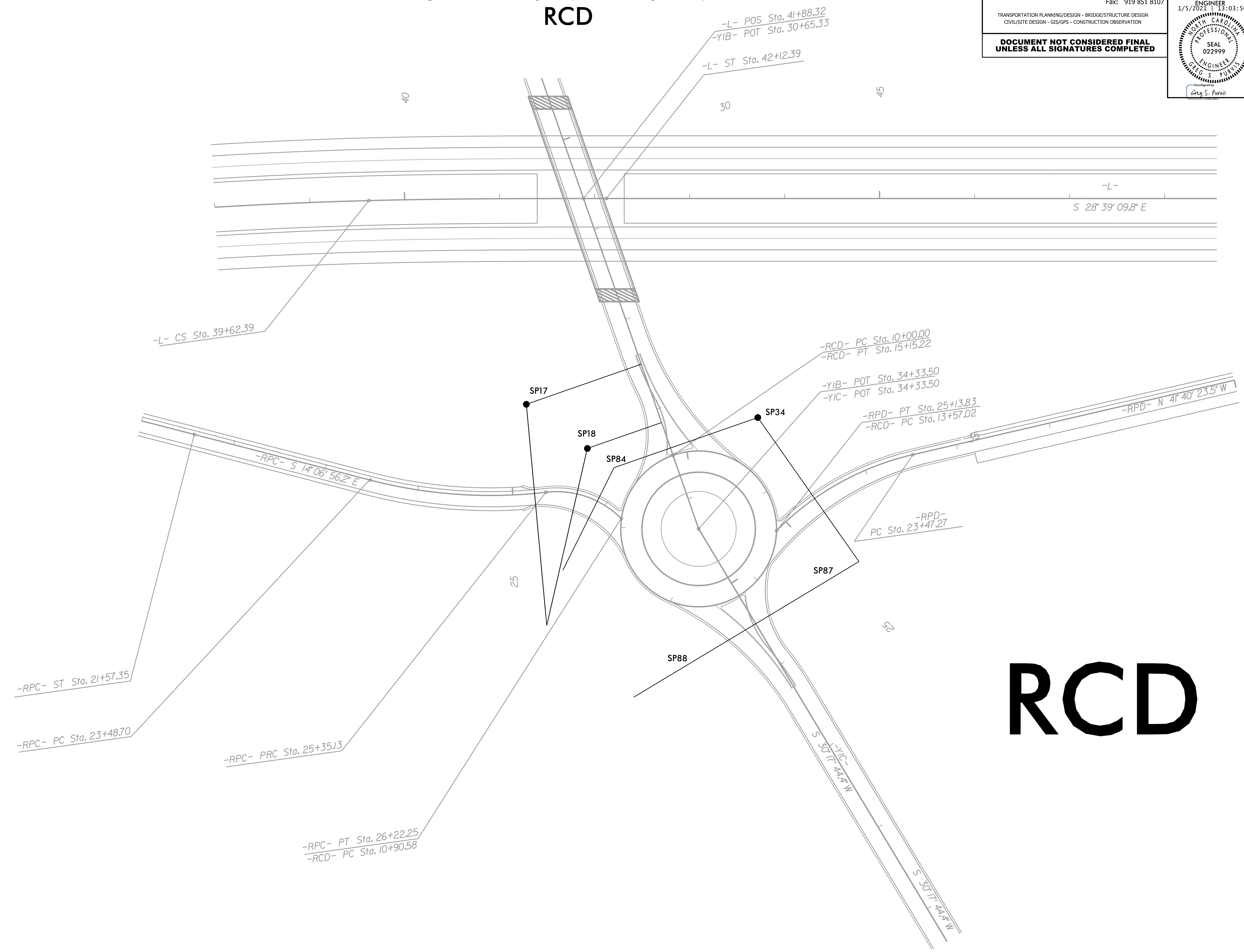
WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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 UNLESS ALL SIGNATURES COMPLETED**

PROJECT REFERENCE NO. R-5797	SHEET NO. 2B-8
ROADWAY DESIGN ENGINEER 1/5/2021 13:03:56 EST	
	
Designed by Gary S. Purvis	

REVISIONS



RCD

04-SEP-2018 08:31 S:\Contracts\Special Details\Standard Drawings\Division 8\862D01 Impact Attenuator Sheets 1 and 2.dgn Jhowerton AT USD-292595

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

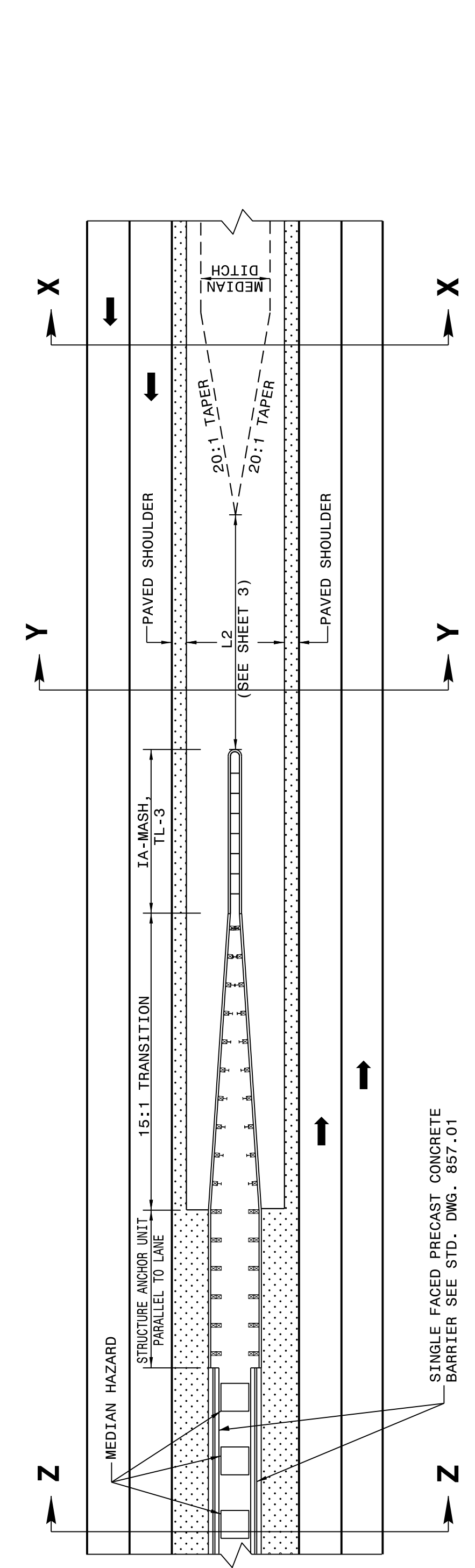
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 1 OF 11
862D01

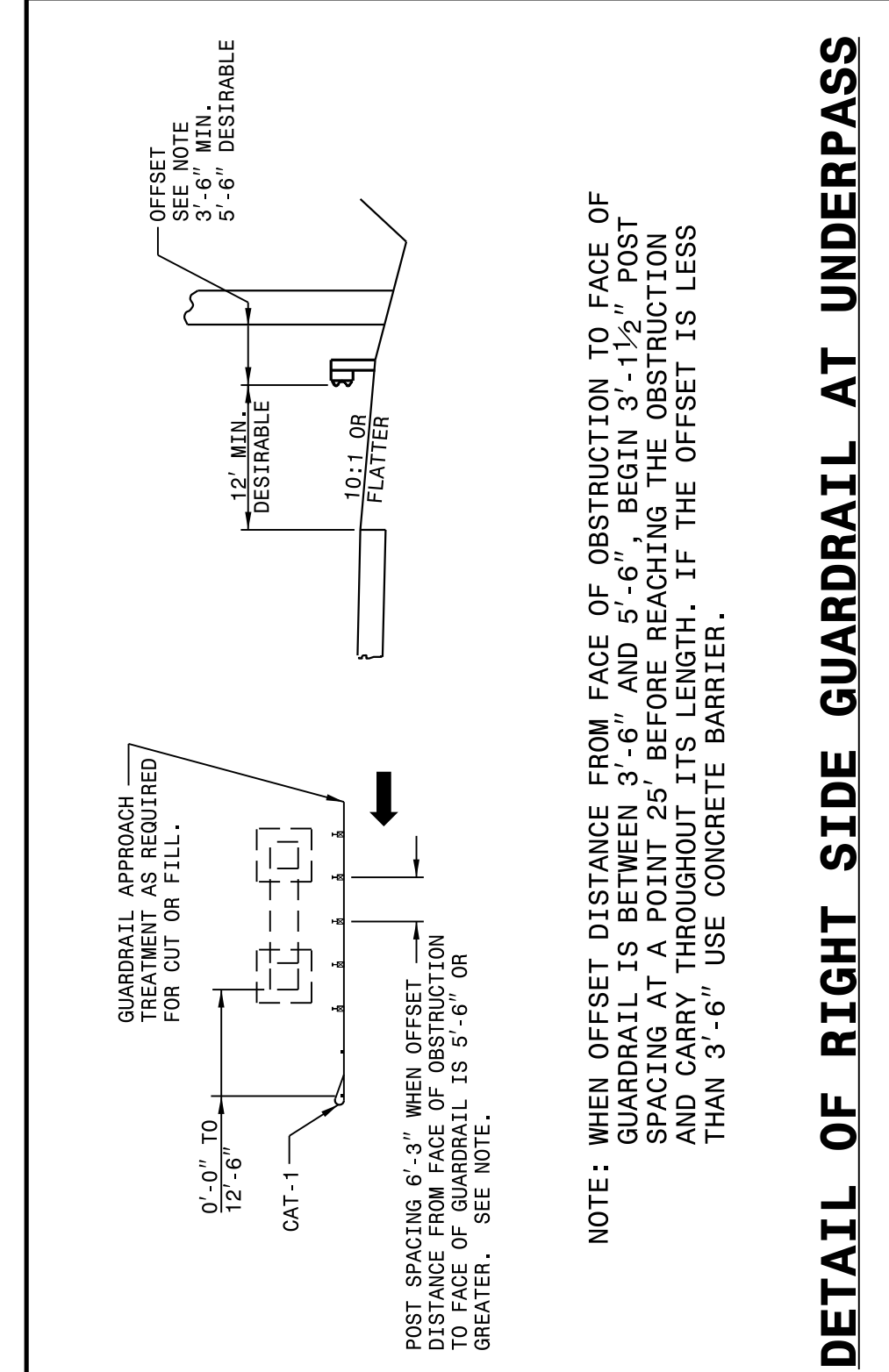
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 1 OF 11
862D01

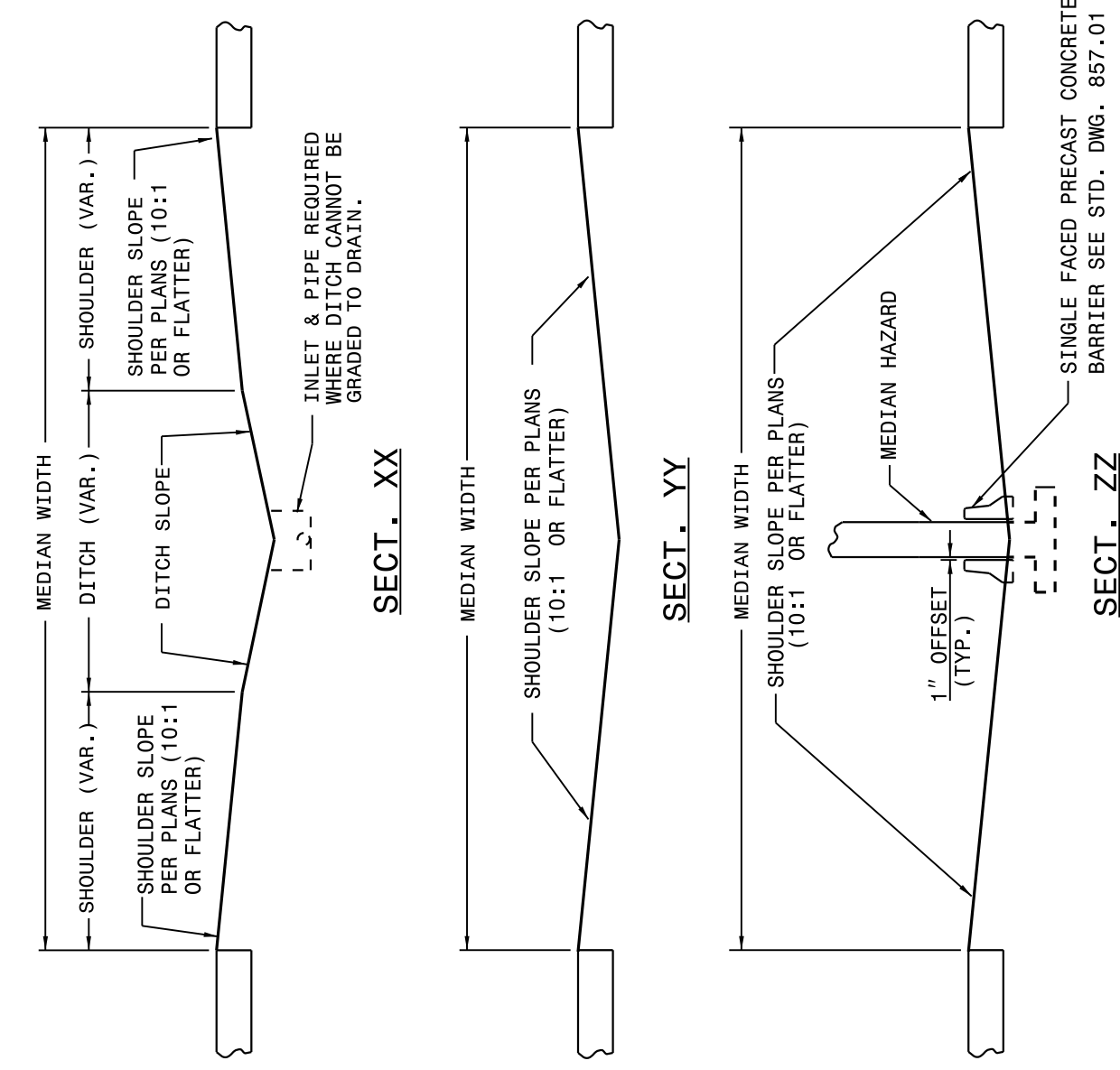


SINGLE FACED PRECAST CONCRETE BARRIER SEE STD. DWG. 857.01



DETAIL OF RIGHT SIDE GUARDRAIL AT UNDERPASS

DETAIL OF MEDIAN TREATMENT AT UNDERPASS



DETAIL OF MEDIAN TREATMENT AT UNDERPASS

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

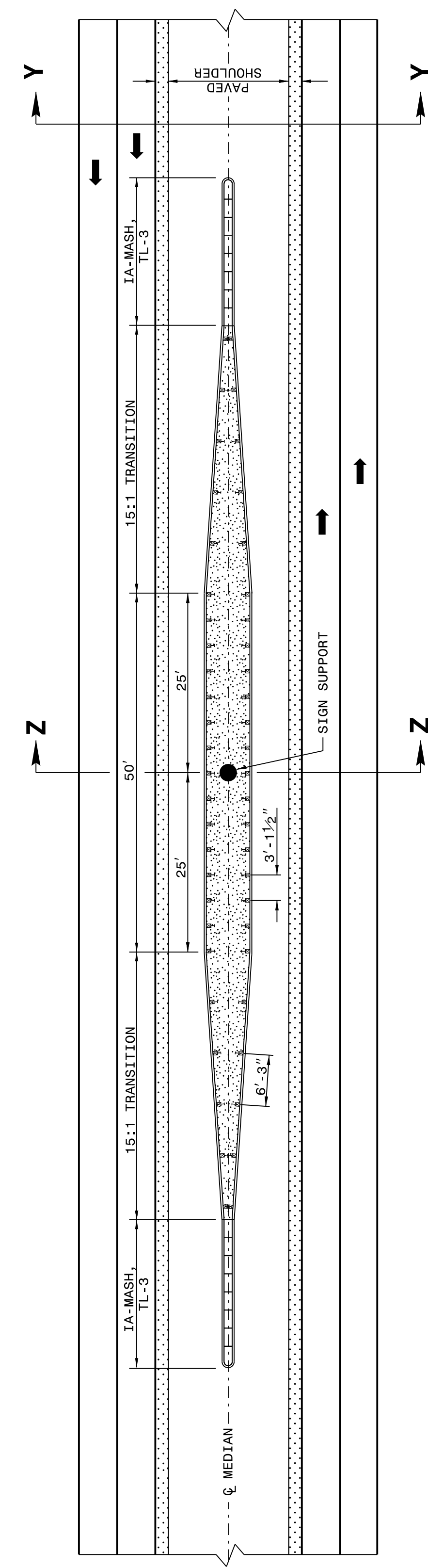
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 2 OF 11
862D01

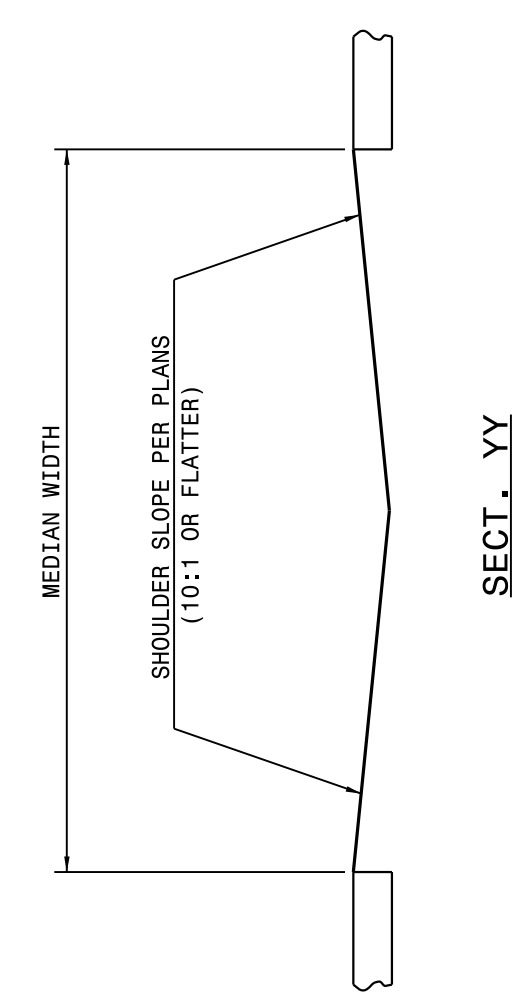
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

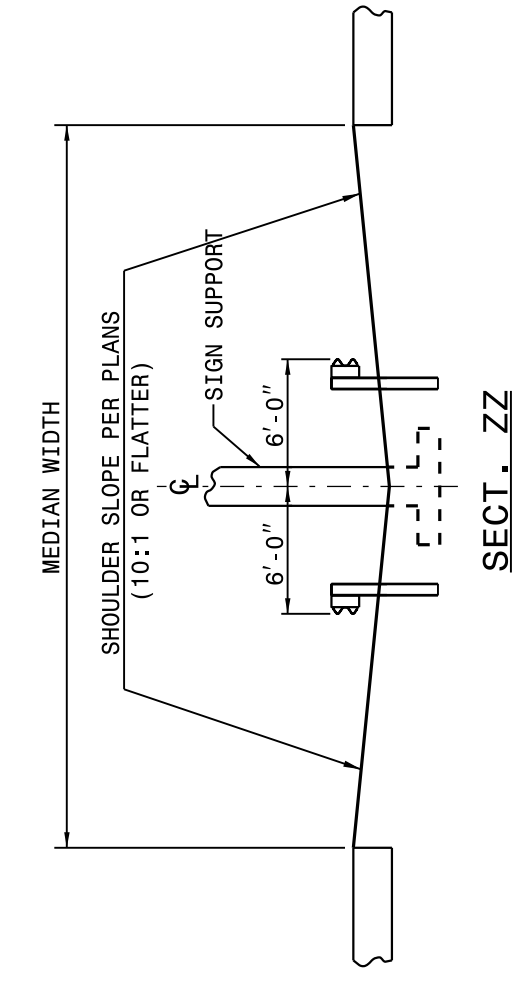
SHEET 2 OF 11
862D01



NOTE SPECIAL LAYER OF PAVEMENT
USE 3'-1 1/2" POST SPACING ON THE 50' OF GUARDRAIL PARALLEL TO LANES AND 6'-3" POST SPACING ON 15:1 TRANSITION SECTIONS.
GRADE MEDIAN IN THE VICINITY OF THE SIGN SUPPORT AS ILLUSTRATED IN THE ROADWAY STANDARD DRAWINGS (STANDARD 862.01 SHEET 1 OF 12).



SECTION Y-Y



SECTION Z-Z

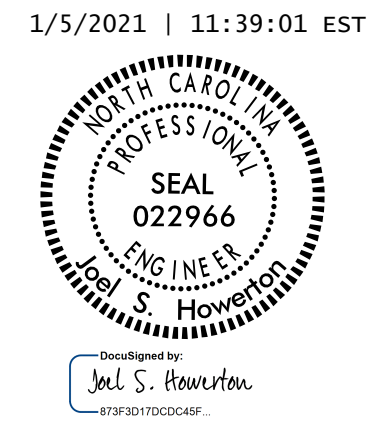
DETAIL OF GUARDRAIL AT MEDIAN SIGN SUPPORT

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: 08-23-18
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: DATE:



1/5/2021 | 11:39:01 EST

I4-DEC-2017 10:36 S:\Contracts\Projects\Special Details\Standard Drawings\Division 8\0862d0301.dgn Jhowerton AT:USD-292595

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

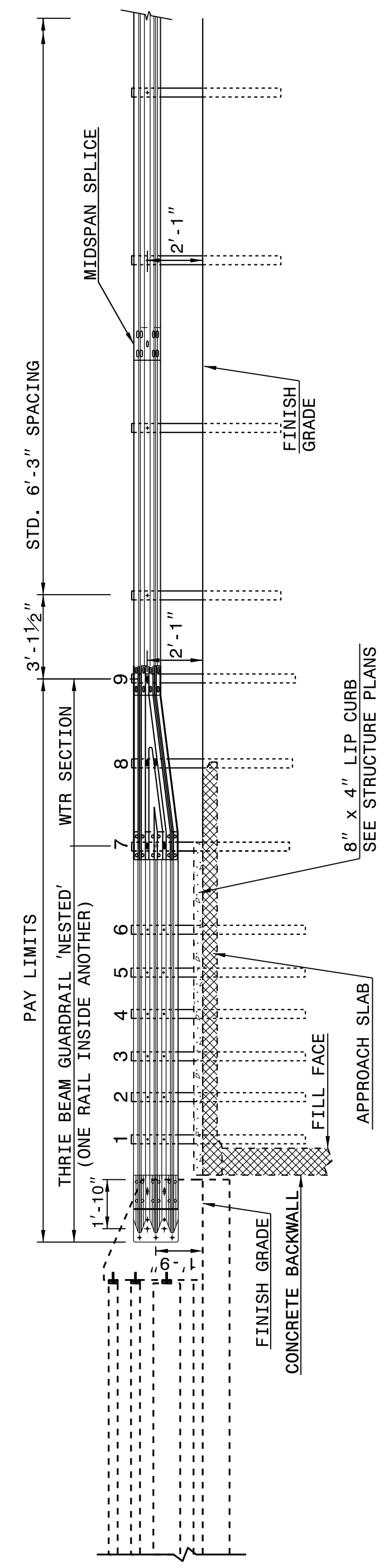
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7 862D03

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

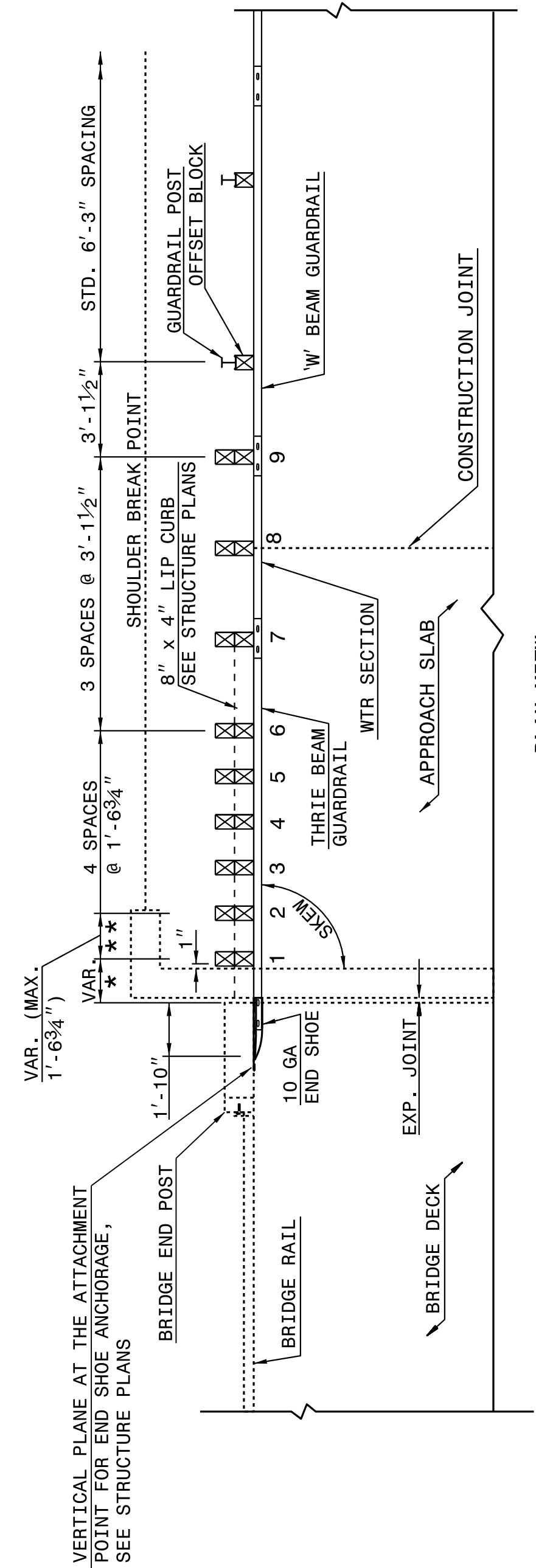
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7 862D03



ELEVATION

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 11 1/2" 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

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

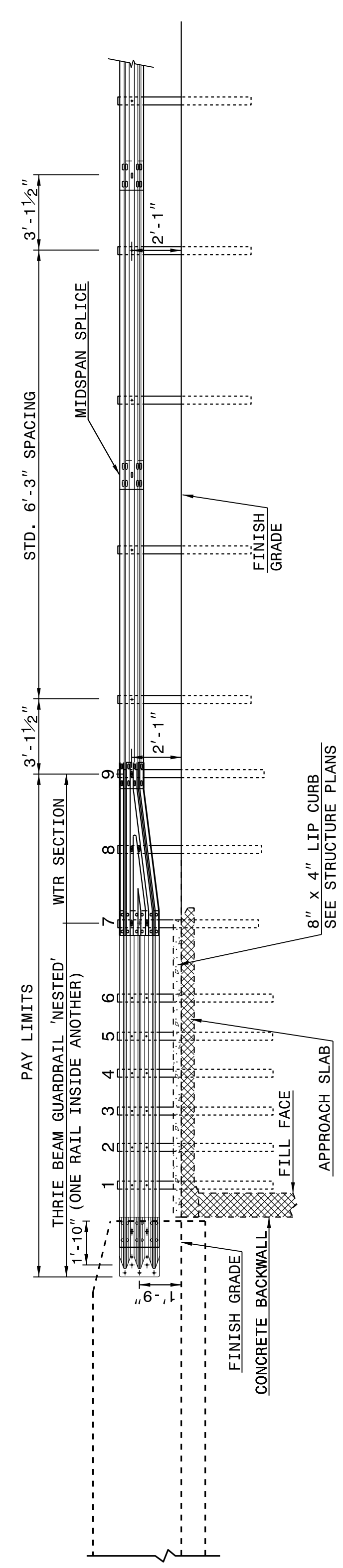
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7 862D03

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

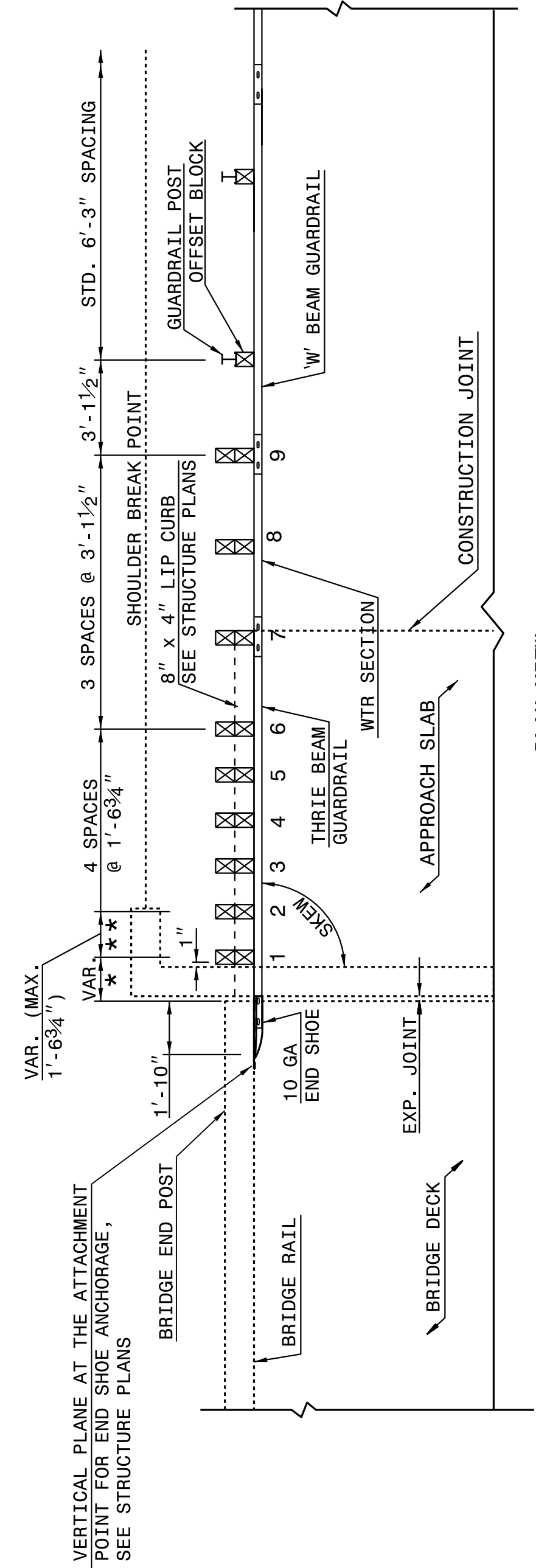
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7 862D03



ELEVATION

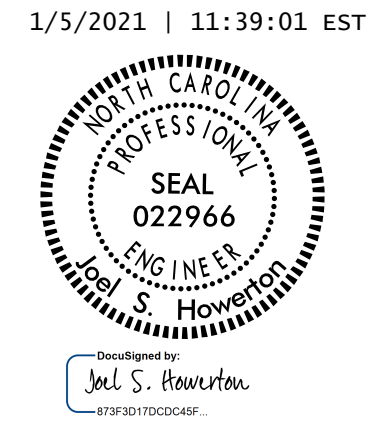
NOTE: **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER. *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT. -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" 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

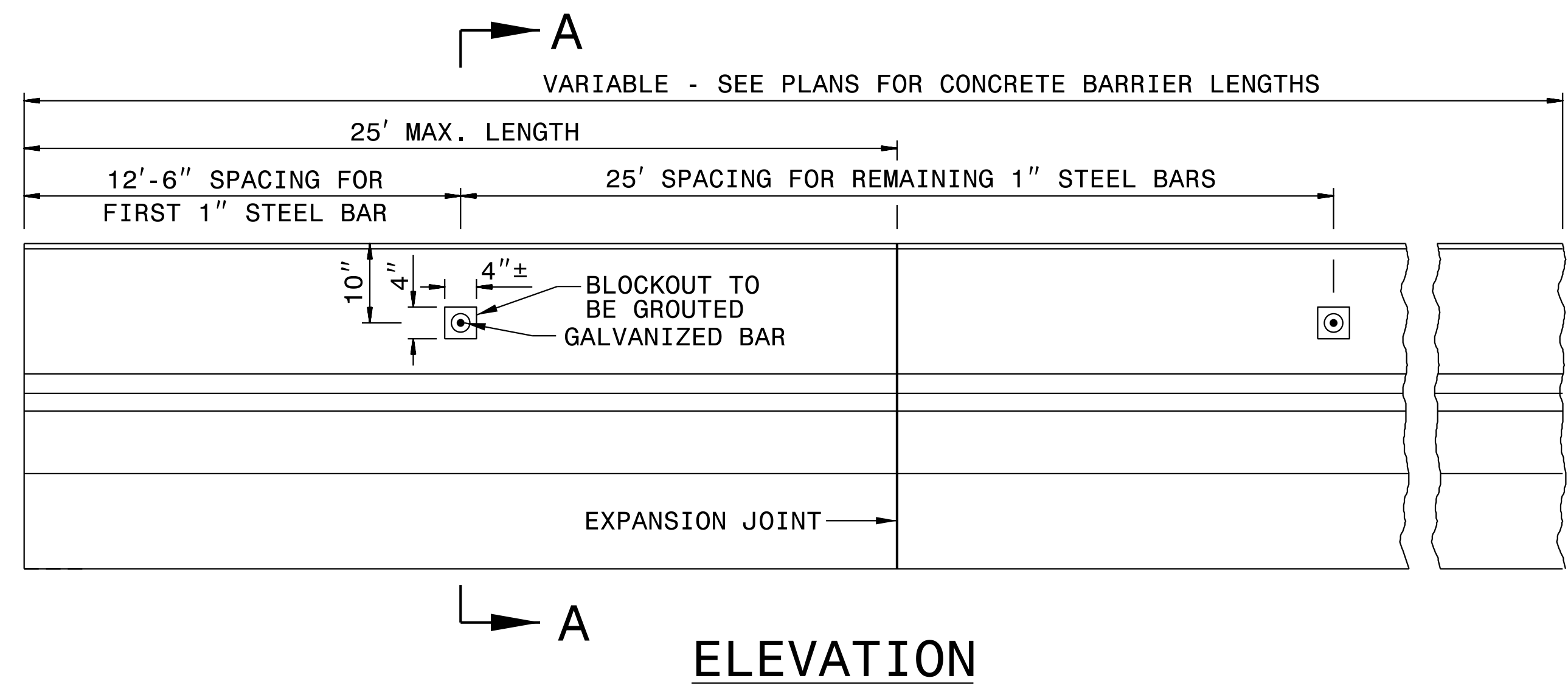
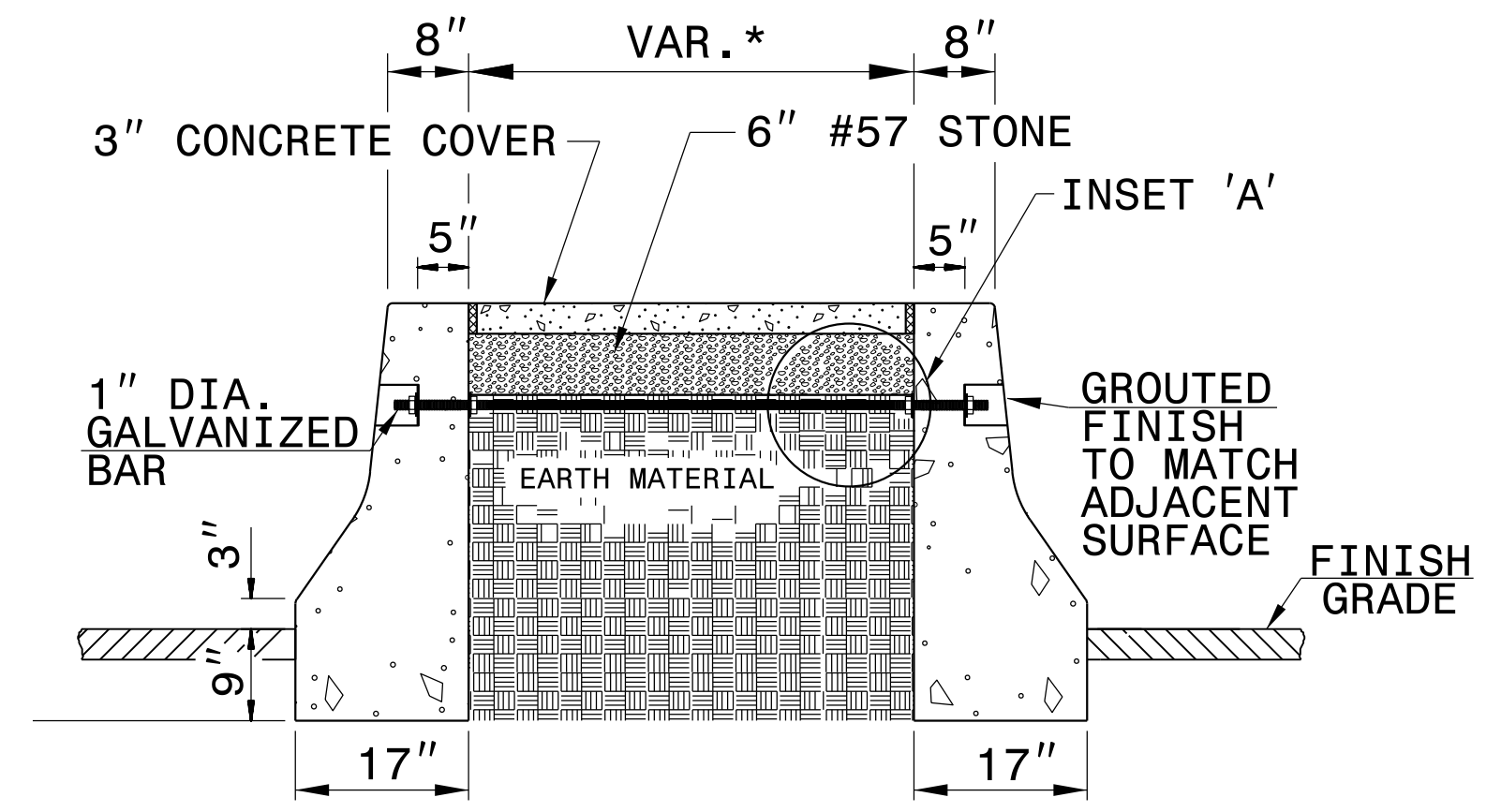
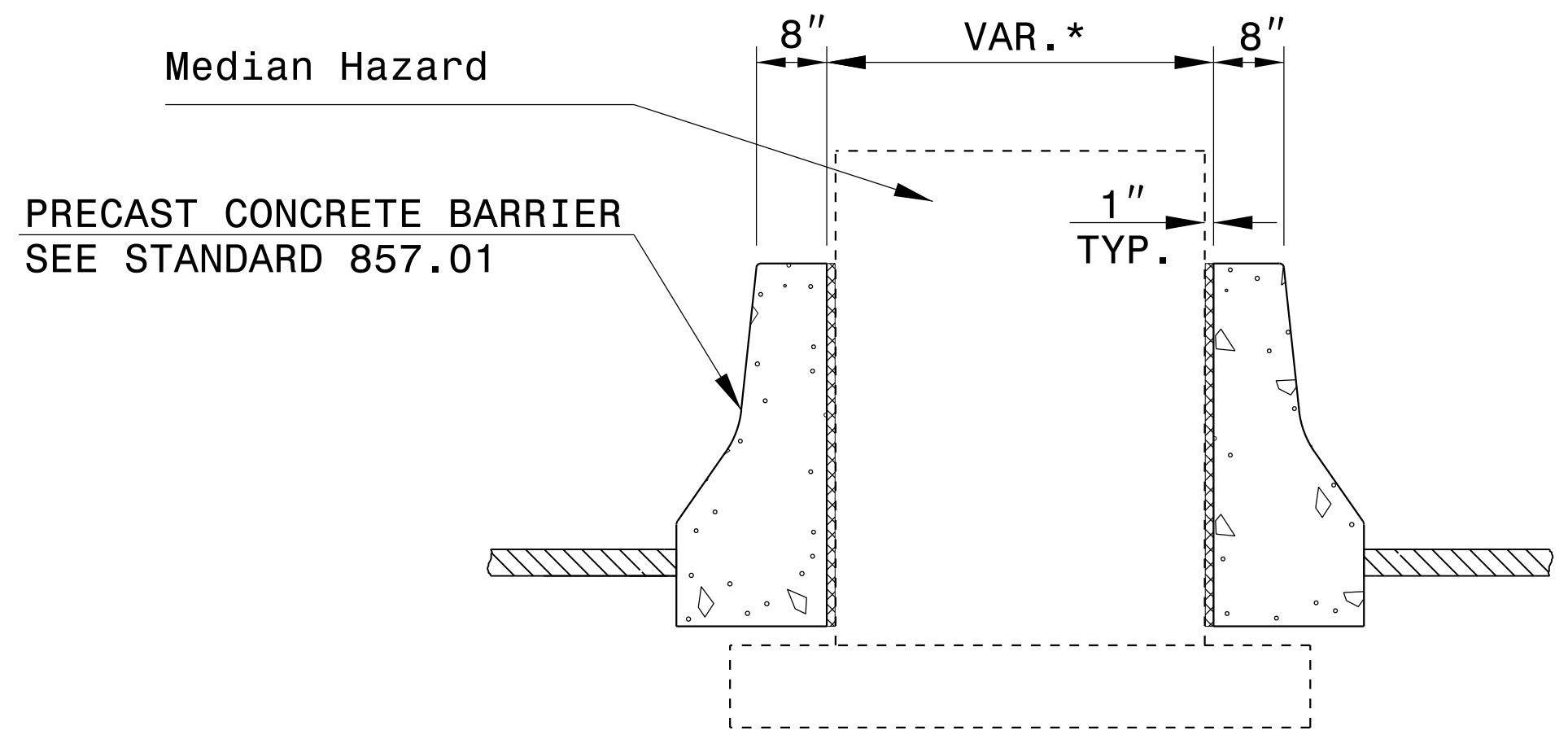
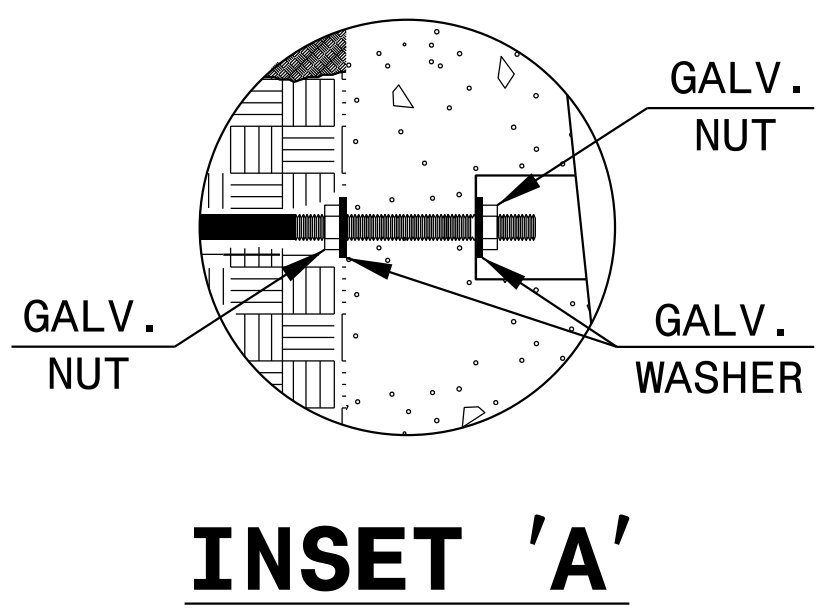
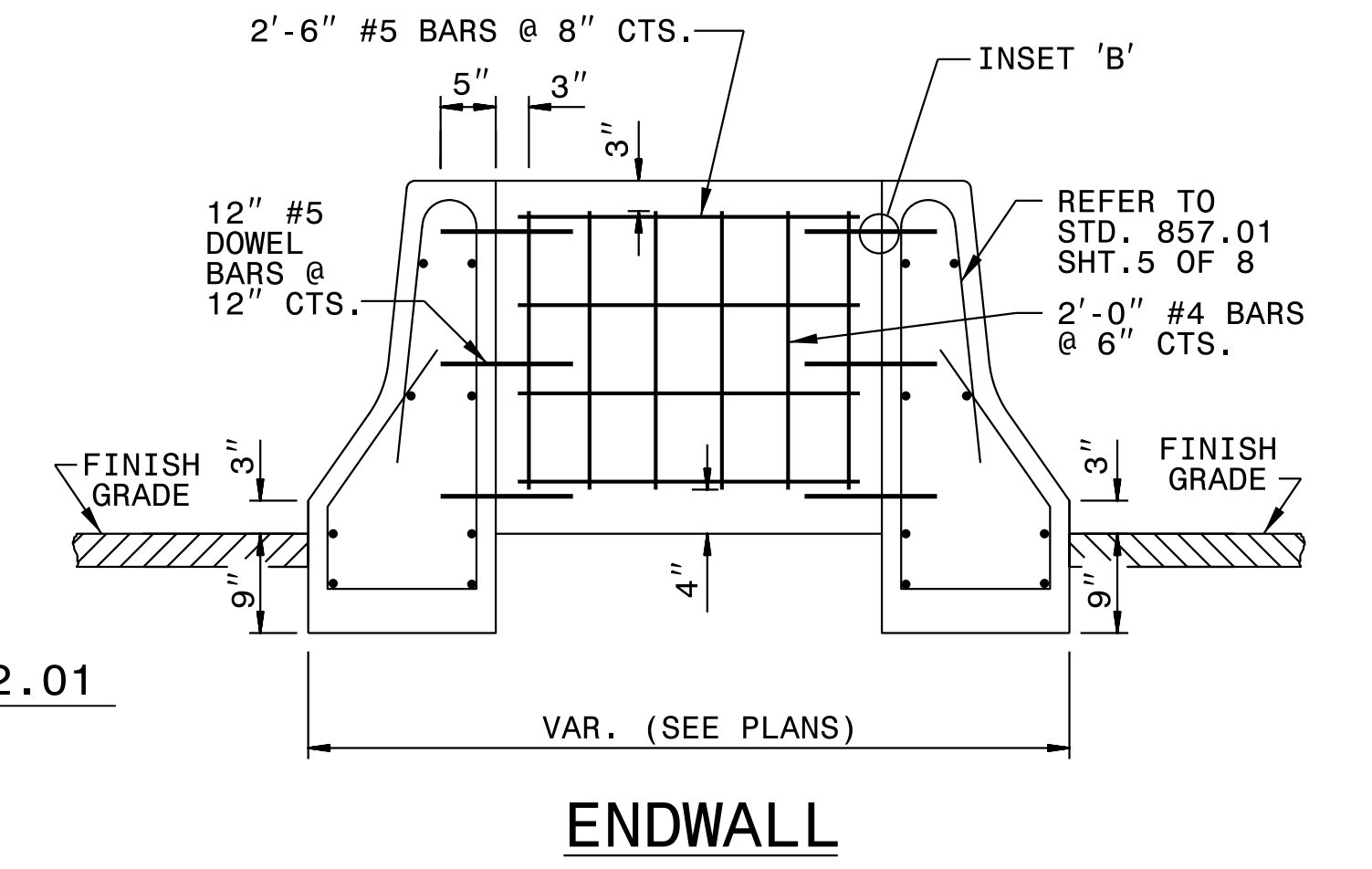
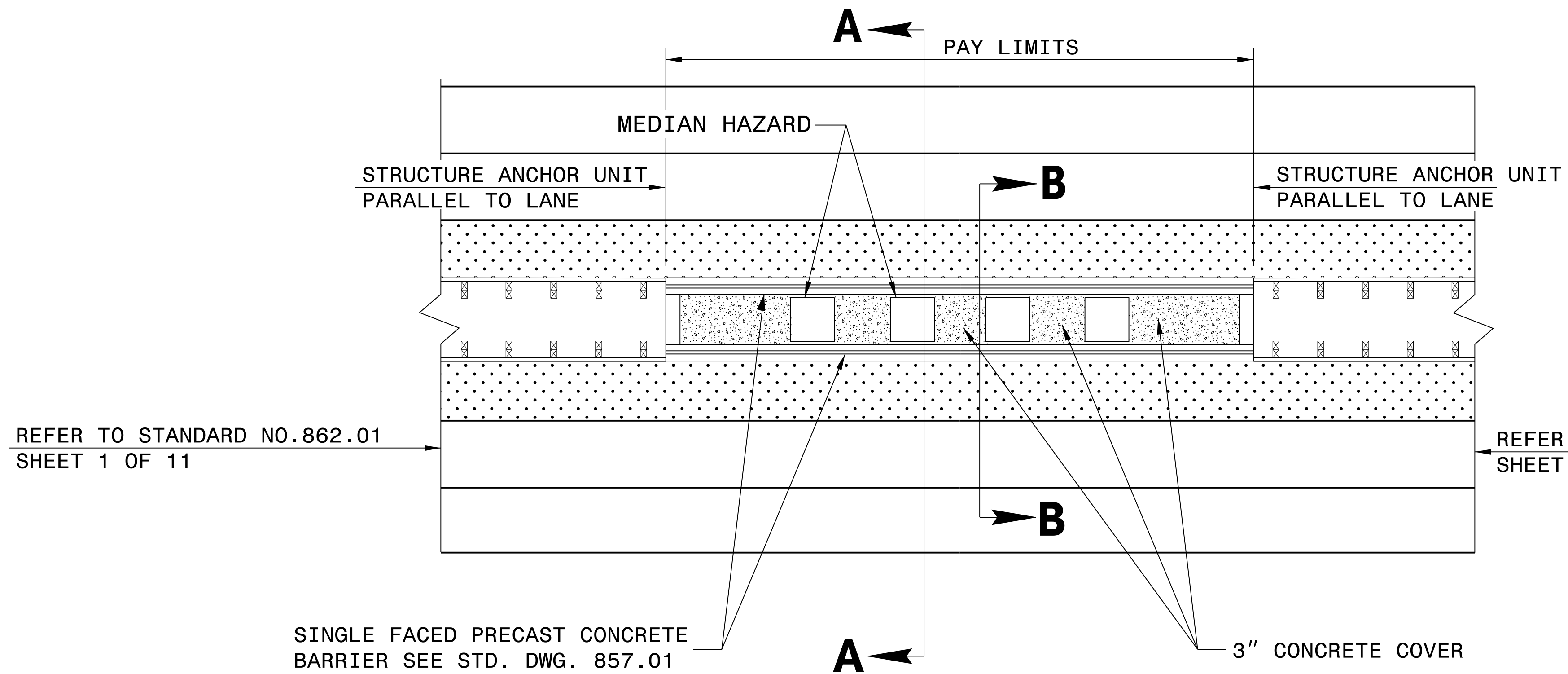
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

CONTRACT STANDARDS AND DEVELOPMENT UNIT Office 919-707-6950 FAX 919-250-4119 SEE TITLE BLOCK ORIGINAL BY: J HOWERTON DATE: 06-22-12 MODIFIED BY: DATE: CHECKED BY: DATE: FILE SPEC.: DATE:



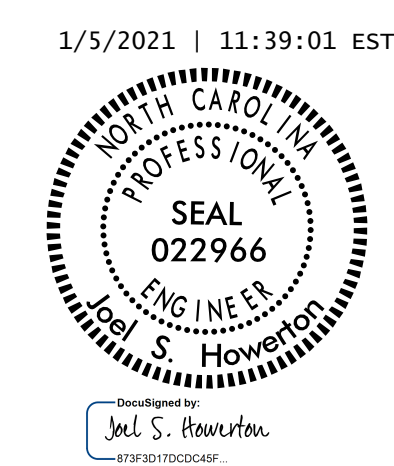
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

1/5/2021 | 11:39:01 EST



GENERAL NOTES:

- *THIS DIMENSION MAY VARY DEPENDING ON THE WIDTH OF THE PIER.
- 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 1081-1, TYPE 3A OF THE STANDARD SPECIFICATIONS.
- USE CLASS B CONCRETE FOR THE CONCRETE COVER
- SEAL ALL EXPANSION JOINTS WITH JOINT FILLER (SEE SECTION 1028 OF THE SPECIFICATIONS).
- PLACE A 1" BAR BETWEEN EACH SET OF PIERS



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

DETAIL OF MEDIAN HAZARD PROTECTION

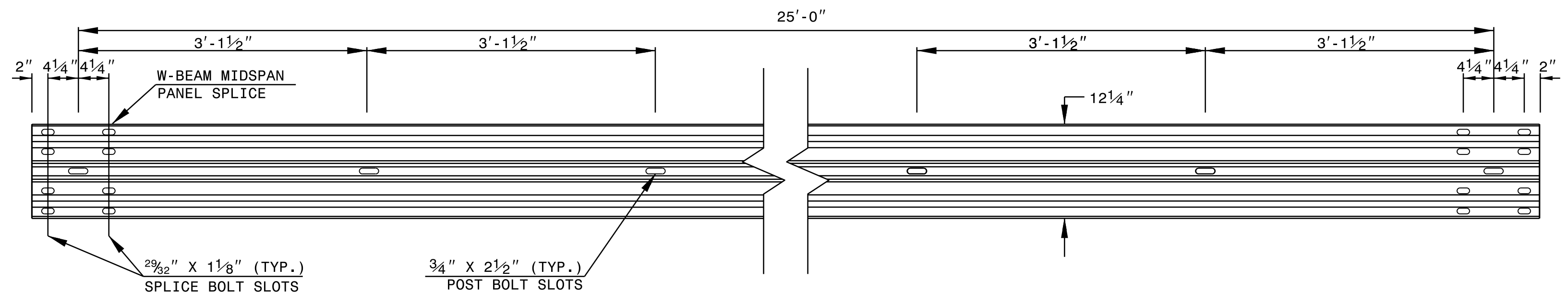
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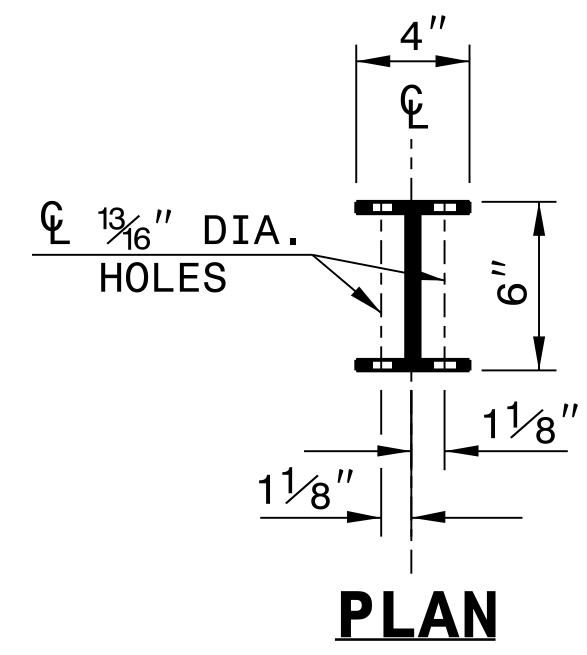
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

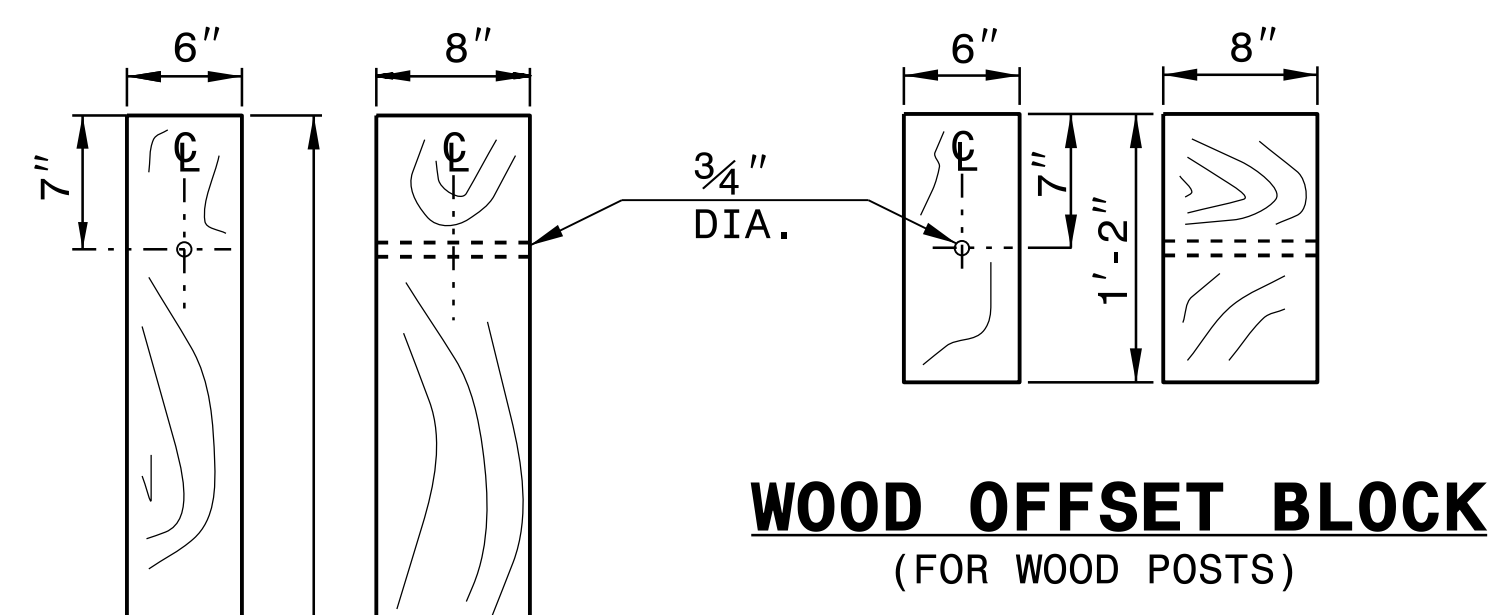
SHEET 6 OF 8
862D02



STANDARD W-BEAM GUARDRAIL

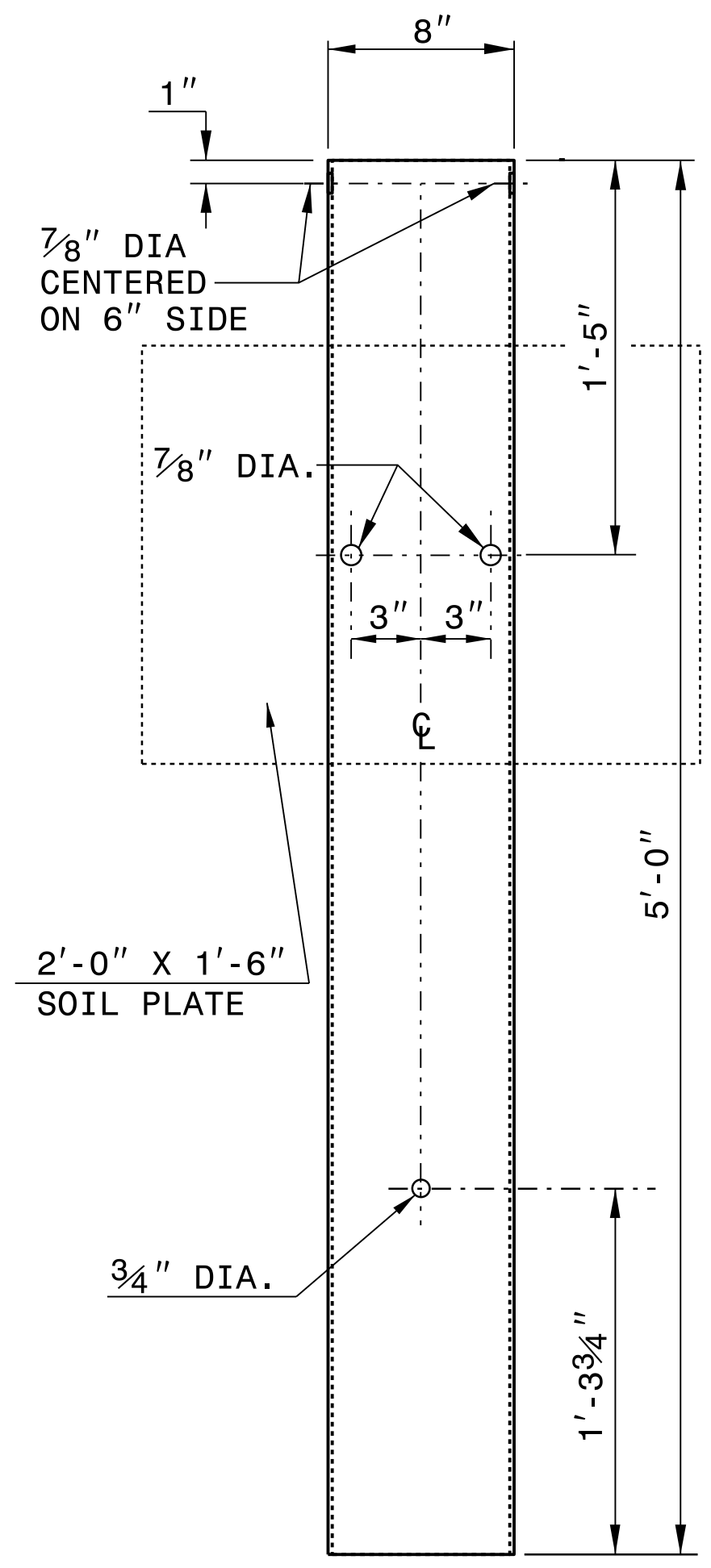


PLAN

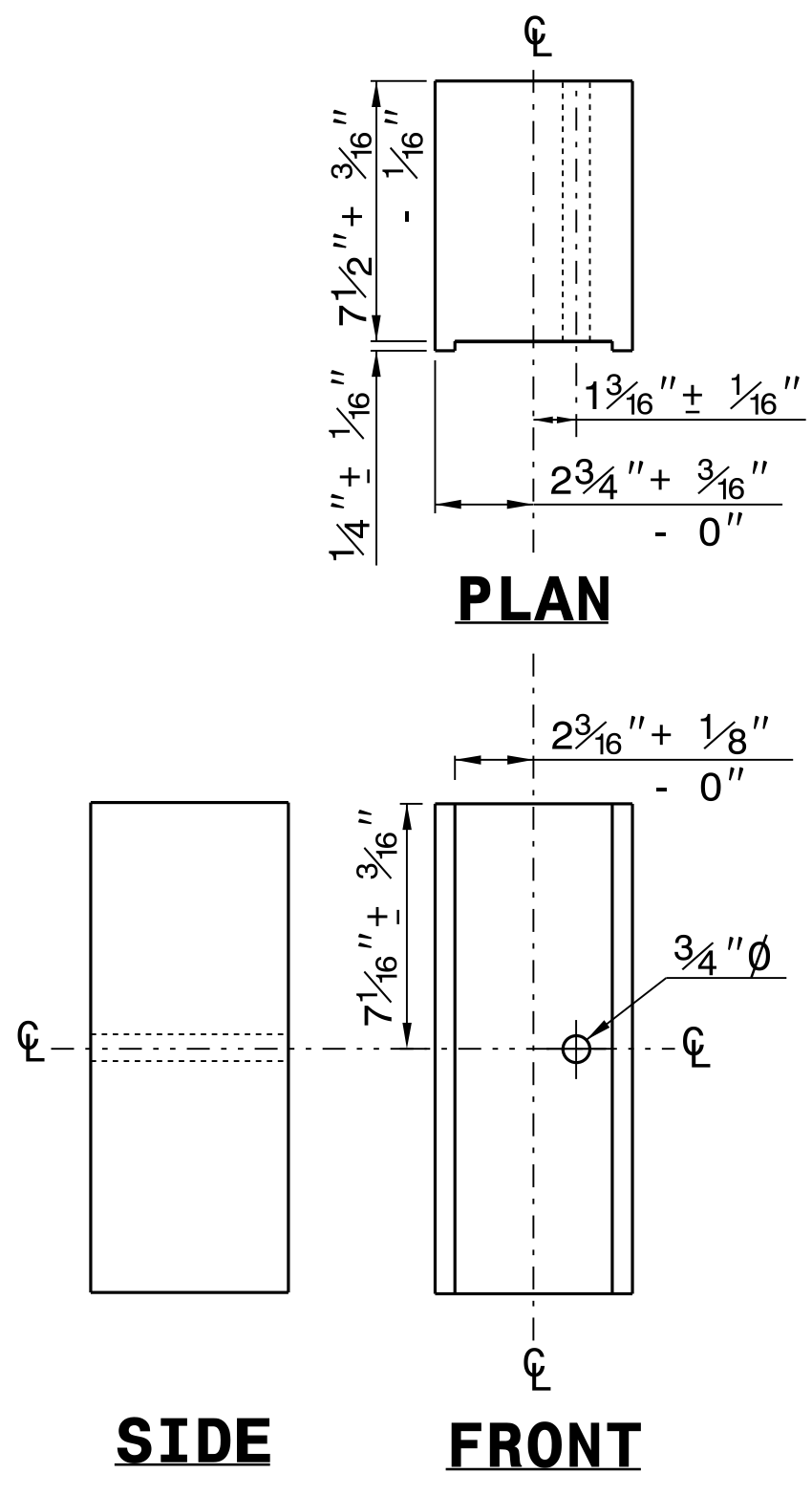


STANDARD LINE POST

SHORT WOOD BREAKAWAY POST



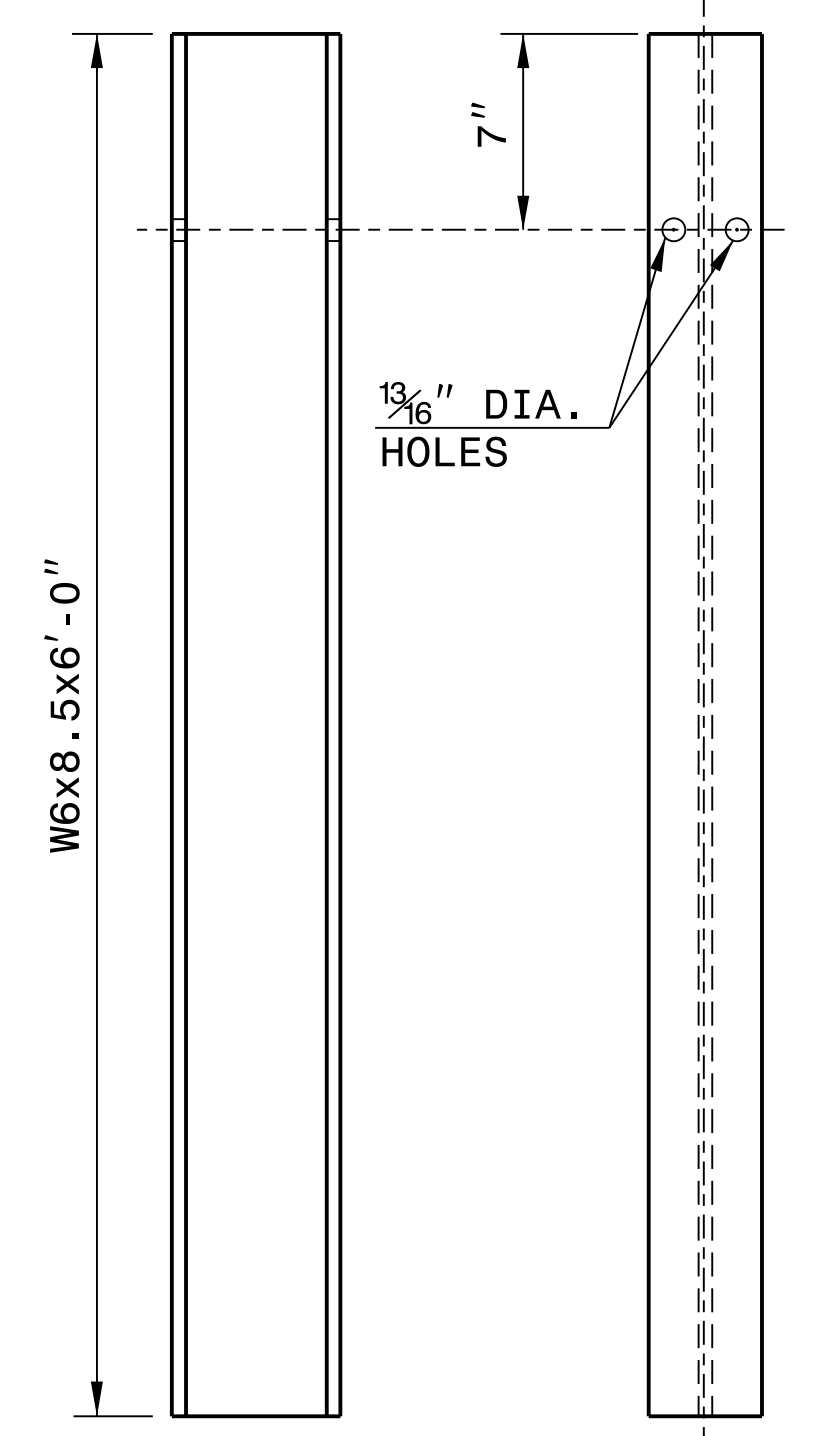
STEEL TUBE
TS 6"x8"x0.1875"



SIDE

FRONT

ROUTED OFFSET BLOCK



SIDE

FRONT

"W6" STEEL POST

SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

1/5/2021 | 11:39:01 EST



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

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FILE SPEC.: _____

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

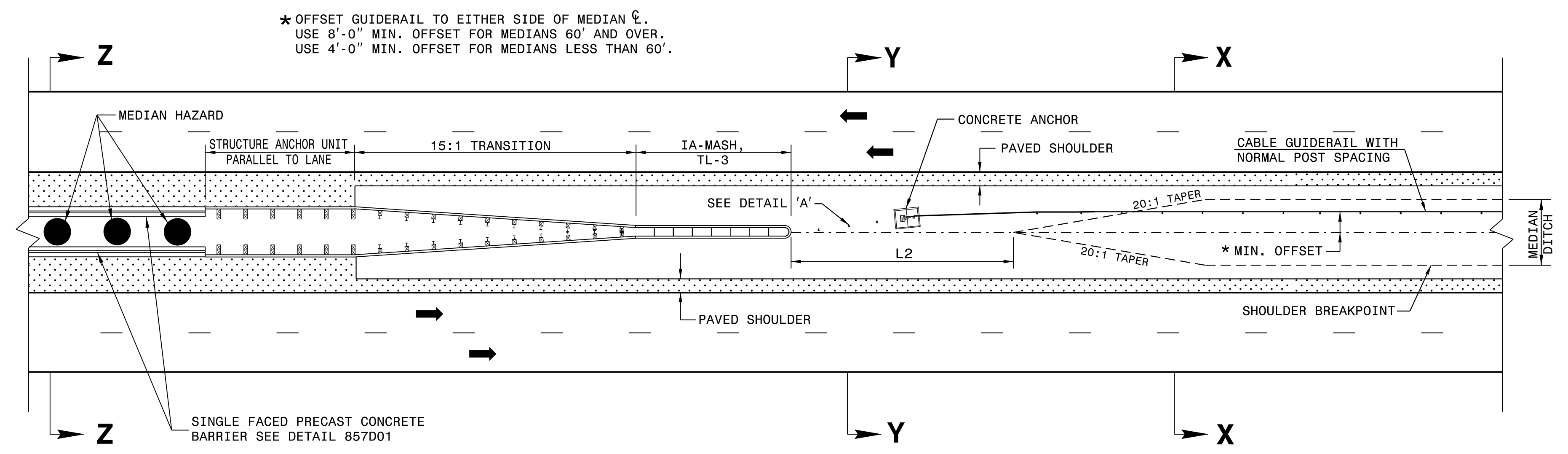
ROADWAY DETAIL DRAWING FOR
CABLE GUIDERAIL
MEDIAN HAZARD GUIDERAIL LAYOUT

SHEET 1 OF 12
865D01

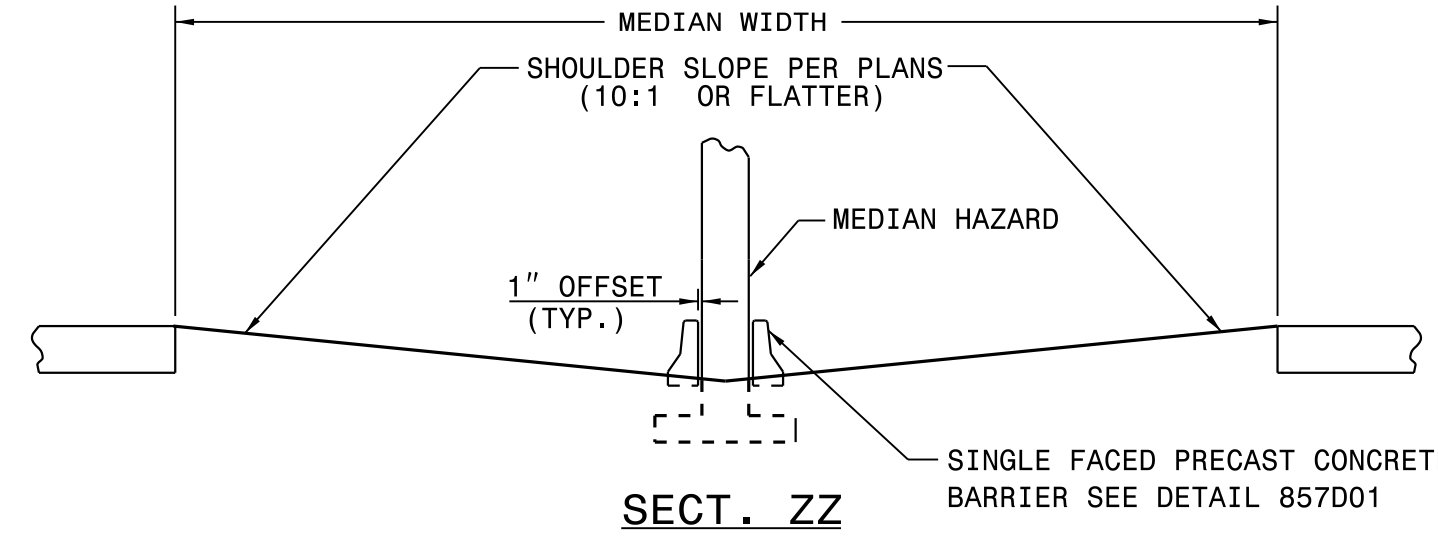
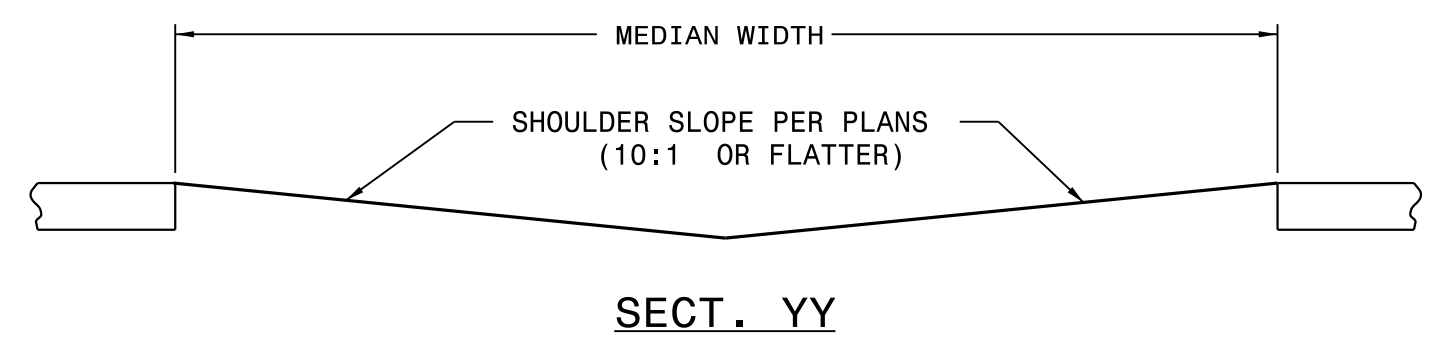
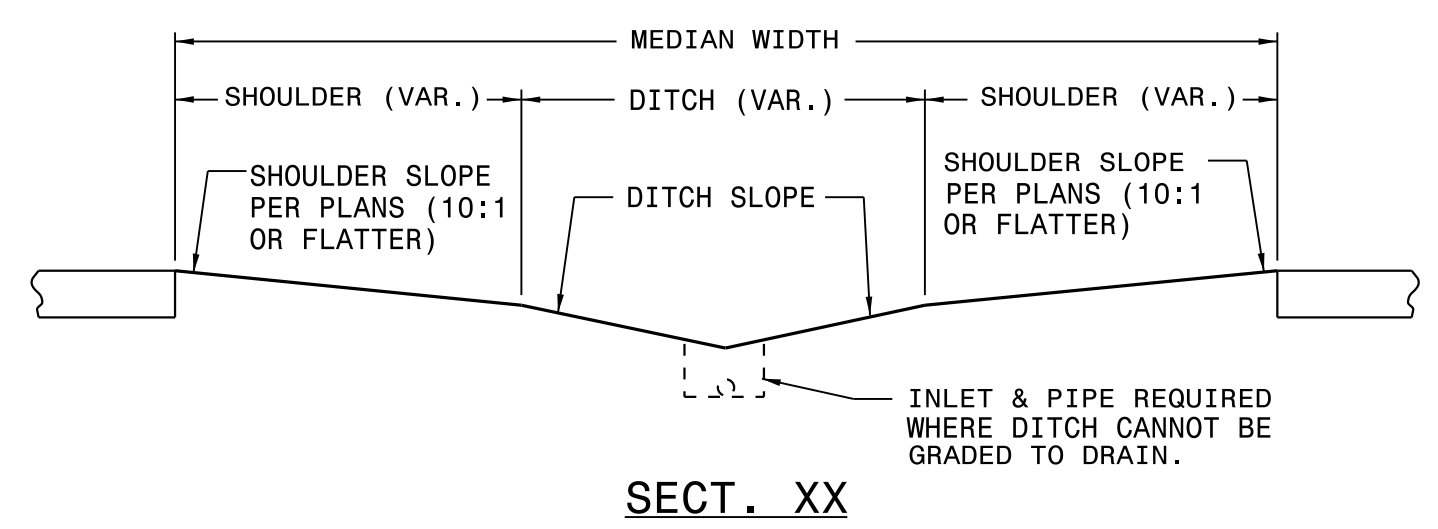
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
CABLE GUIDERAIL
MEDIAN HAZARD GUIDERAIL LAYOUT

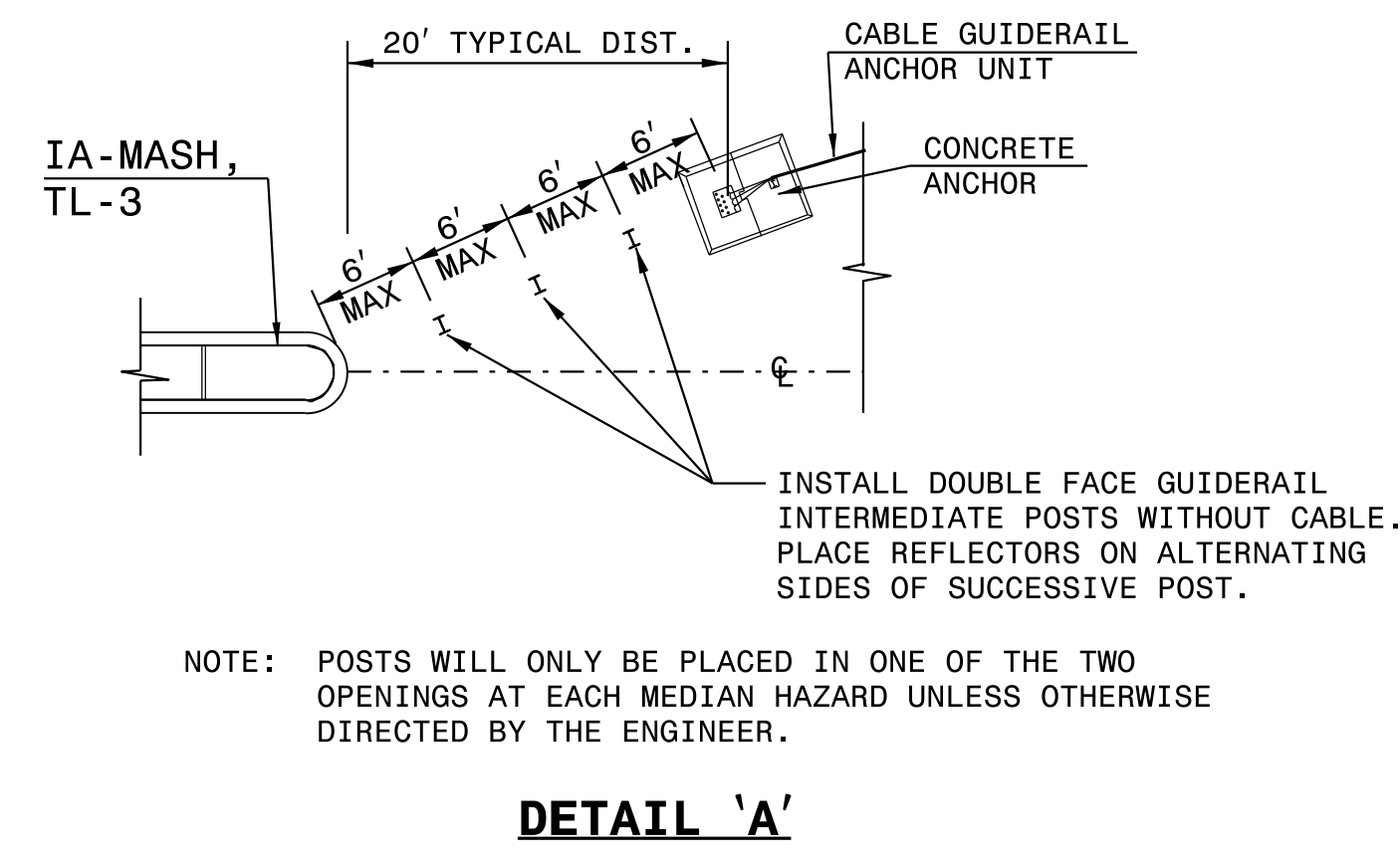
SHEET 1 OF 12
865D01



* OFFSET GUIDERAIL TO EITHER SIDE OF MEDIAN C.
USE 8'-0" MIN. OFFSET FOR MEDIANS 60' AND OVER.
USE 4'-0" MIN. OFFSET FOR MEDIANS LESS THAN 60'.



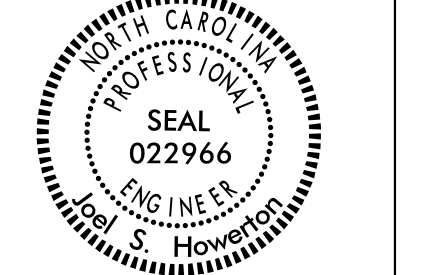
LIMITS OF -L2-	
MEDIAN WIDTH	-L2- DIMENSION
30'	80.0'
36'	60.0'
40' & ABOVE	40.0'



NOTE: POSTS WILL ONLY BE PLACED IN ONE OF THE TWO OPENINGS AT EACH MEDIAN HAZARD UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

DETAIL OF TREATMENT AT MEDIAN HAZARDS

1/5/2021 | 11:39:01 EST



Designed by
Joel S. Howerton
Professional Engineer

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

SEE TITLE BLOCK

ORIGINAL BY: J. HOWERTON DATE: 08-23-18
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

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

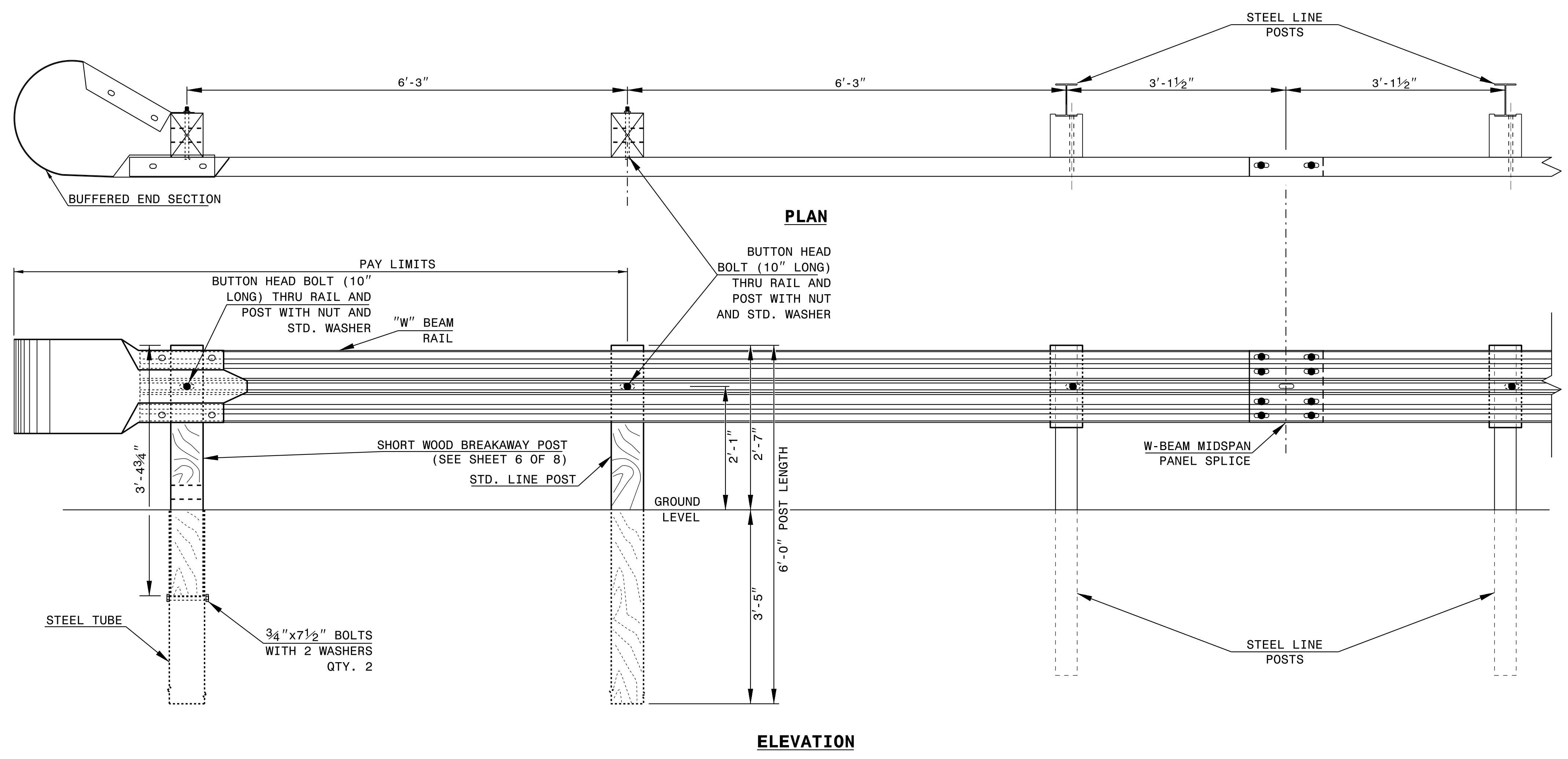
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF



TRAILING END UNIT ASSEMBLY
A.T. - 1 SYSTEM

1/5/2021 | 11:39:01 EST



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

A.T. - 1 SYSTEM

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MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

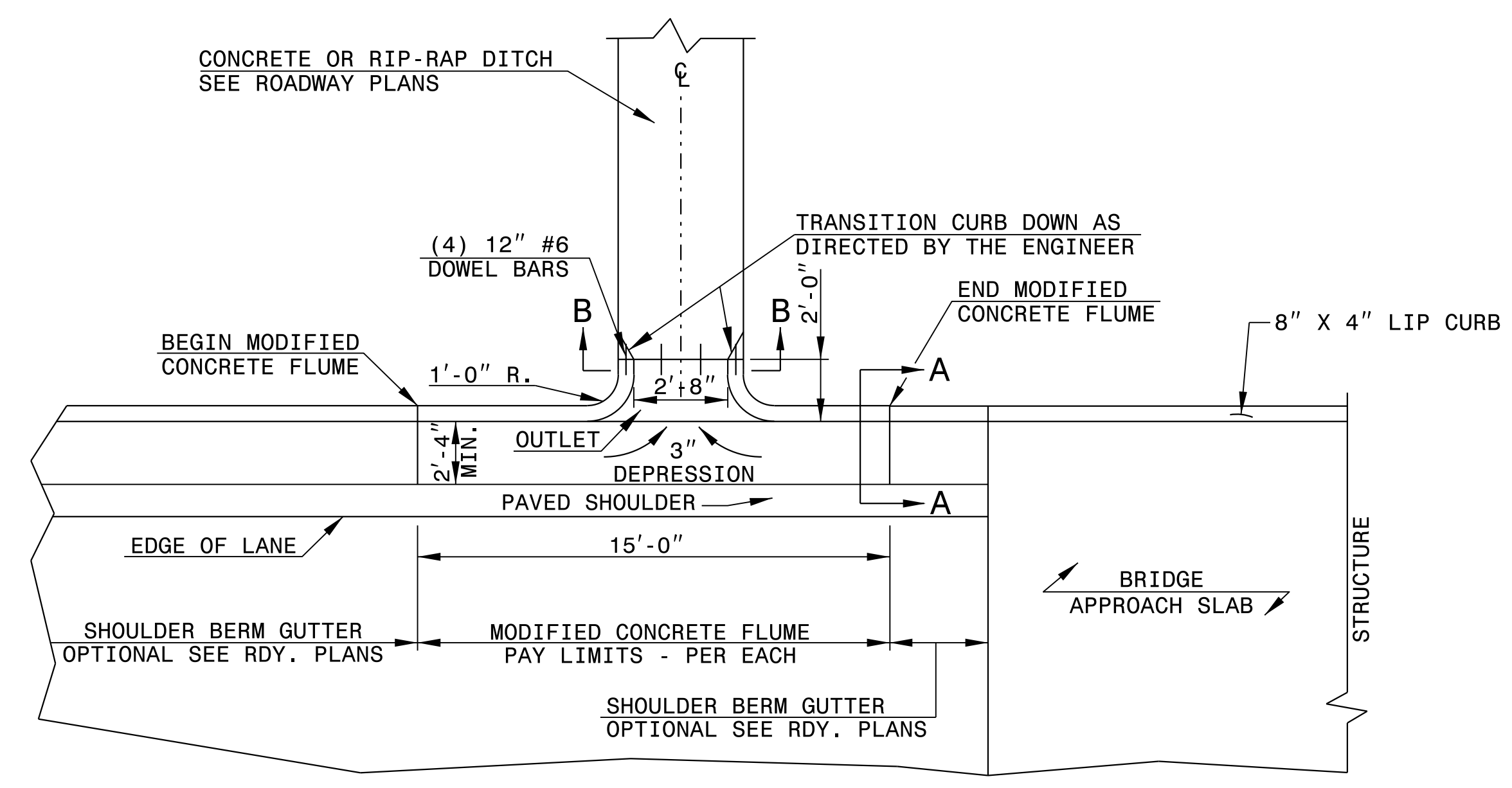
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

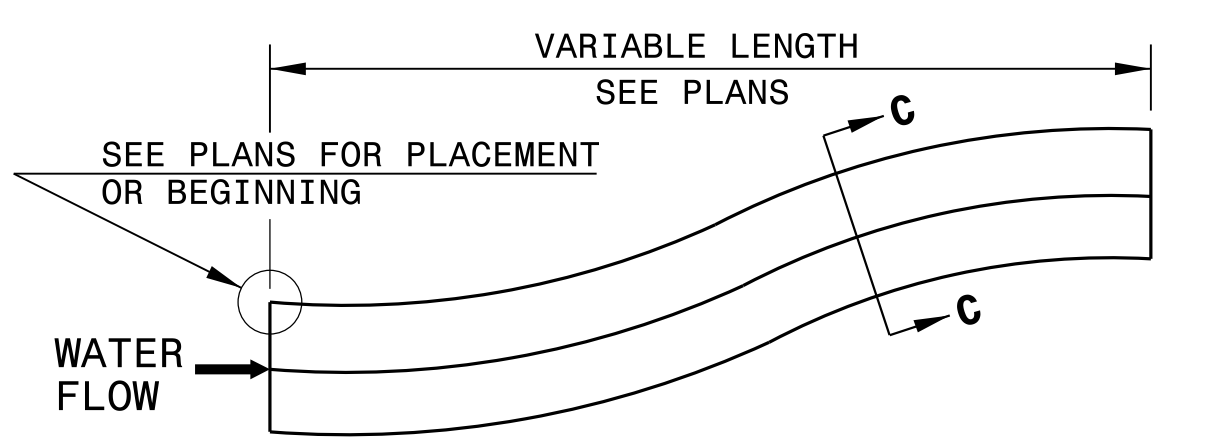
ENGLISH DETAIL DRAWING FOR MODIFIED CONCRETE FLUME WITH CONCRETE OR RIP-RAP DITCH

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

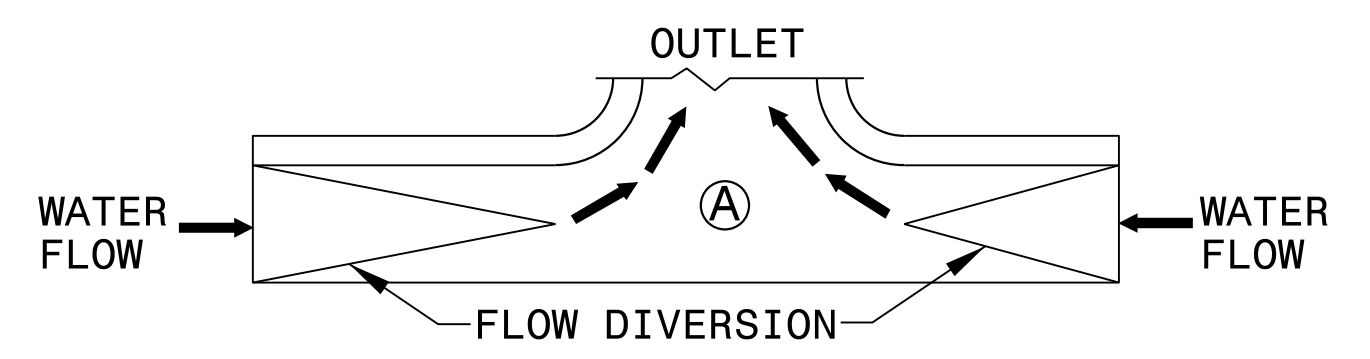
ENGLISH DETAIL DRAWING FOR MODIFIED CONCRETE FLUME WITH CONCRETE OR RIP-RAP DITCH



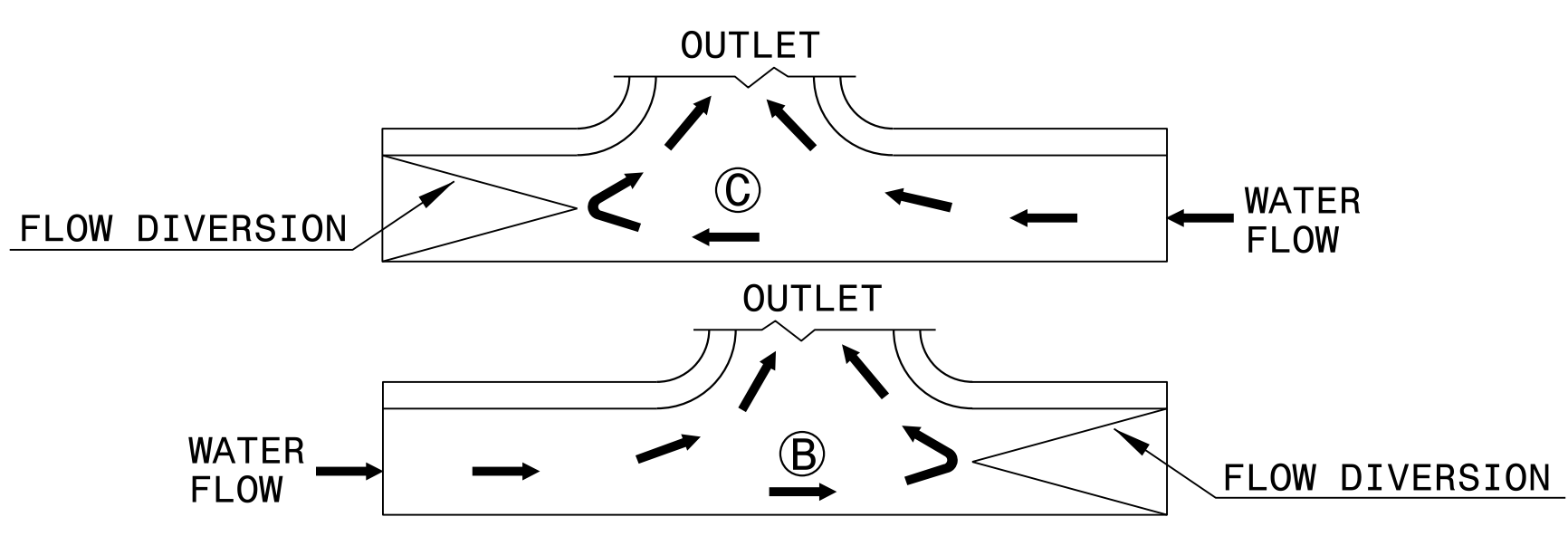
PLAN VIEW



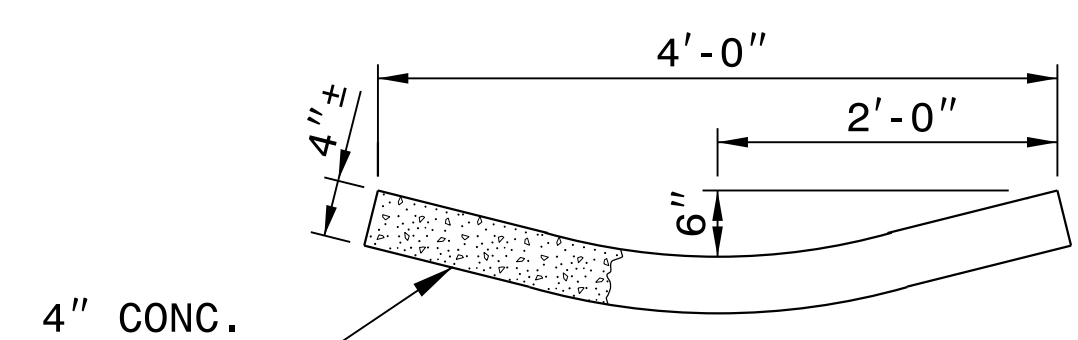
DOWNGRADE OR SAG



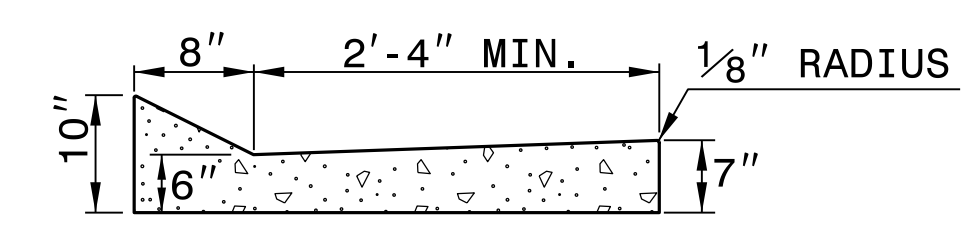
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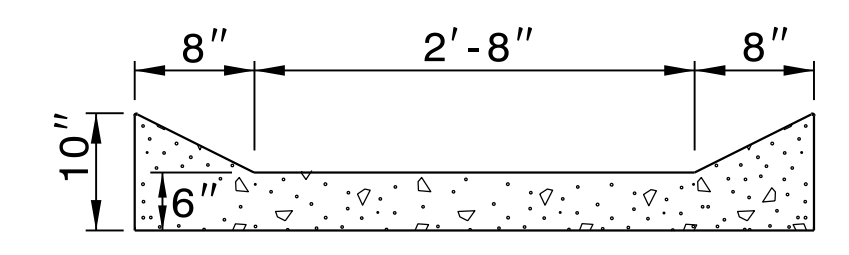
FLOW DIVERSION EXAMPLES



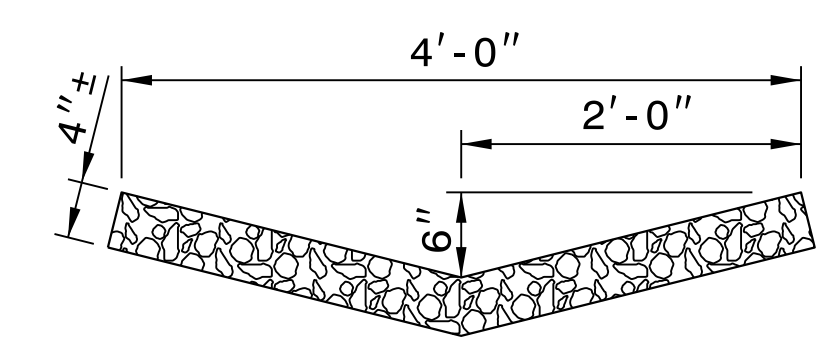
SECTION C-C



SECTION A-A



SECTION B-B



RIP-RAP LINED DITCH

- NOTES: - CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL. - CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01. - CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS. - CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18" PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER. - MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

SHEET 1 OF 1 MODFLMDTCH

SHEET 1 OF 1 MODFLMDTCH

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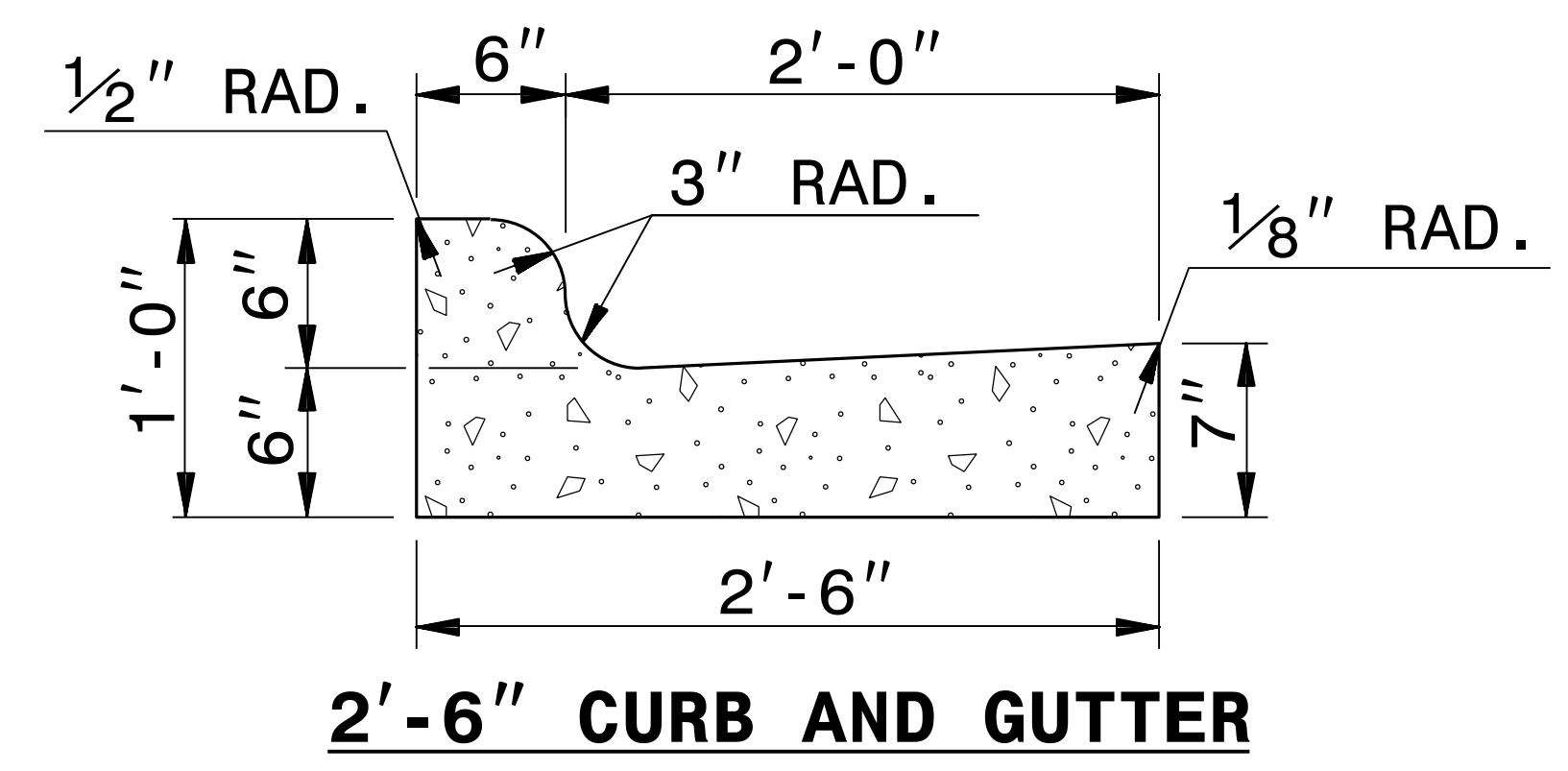


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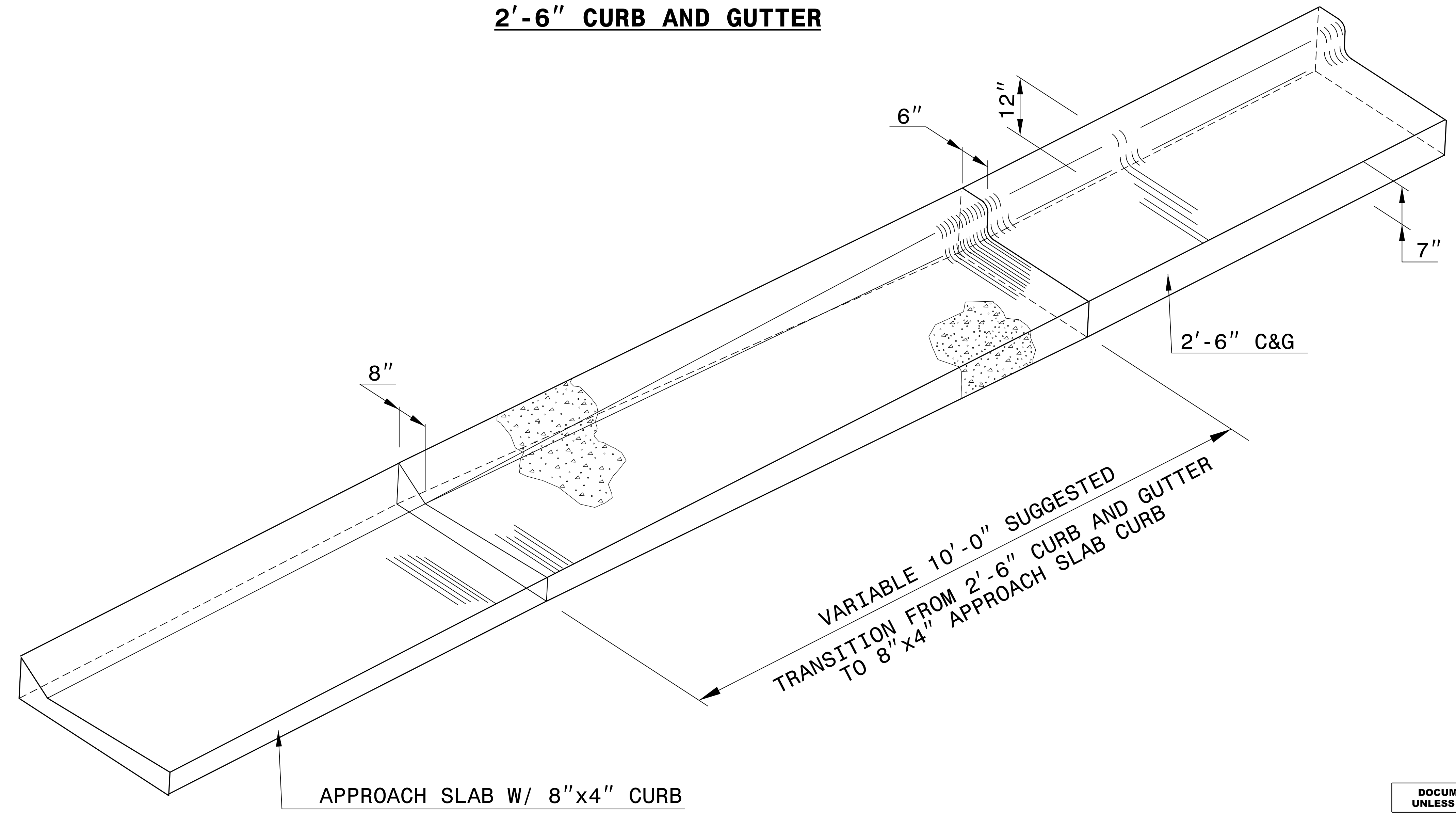
SEE PLATE FOR TITLE

ORIGINAL BY: E.E. Ward DATE: Apr. 2002 MODIFIED BY: J.S. Howerton DATE: October 2017 CHECKED BY: DATE: FILE SPEC.: w:\details\stand\modifiedflume.dgn

18-OCT-2017 14:17 S:\Contracts\Contract\Stand\Stand\stand\modiflume.dgn J.Howerton AI CS0-2/2/95



*NOTE: SEE STD. DWG. 846.01 FOR GENERAL NOTES



ISOMETRIC VIEW OF TRANSITION

1/5/2021 | 11:39:01 EST



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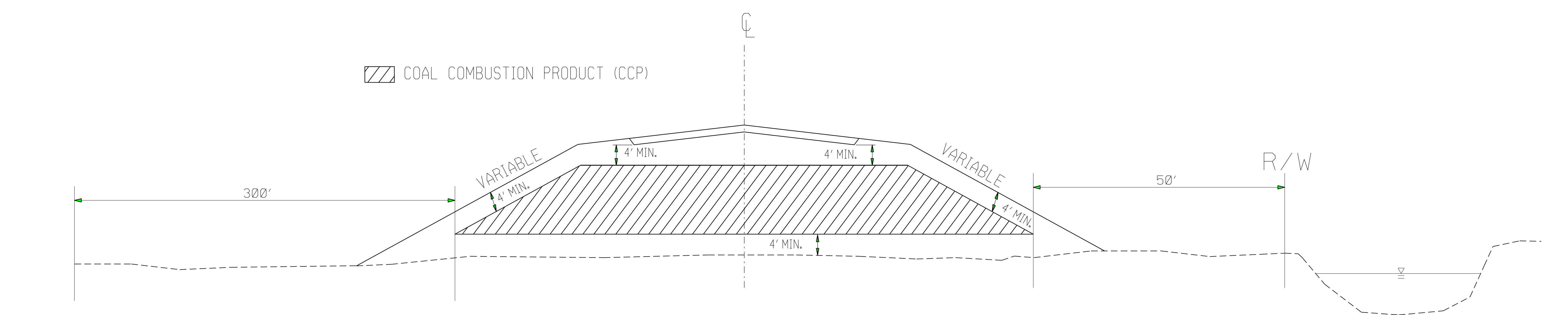
DETAIL OF 2'-6" CURB & GUTTER TO 8"x4" APPROACH SLAB CURB TRANSITION SECTION

ORIGINAL BY: E.E. WARD	DATE: 5-29-02
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: /usr/details/stand/cgtransit.dgn	

08-JAN-2020 09:26 S:\Contracts\Contractors\Special Details\vericard\usr\details\stand\c&g transition sections.dgn Jhowerton AT USD-320965

5/14/99

COAL COMBUSTION PRODUCT PLACEMENT



PRIVATE DWELLING
OR WELL

PERENNIAL STREAM, OTHER SURFACE
WATER BODY OR *WETLAND

*(OBTAIN PERMISSION FROM ARMY
CORPS OF ENGINEERS)

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

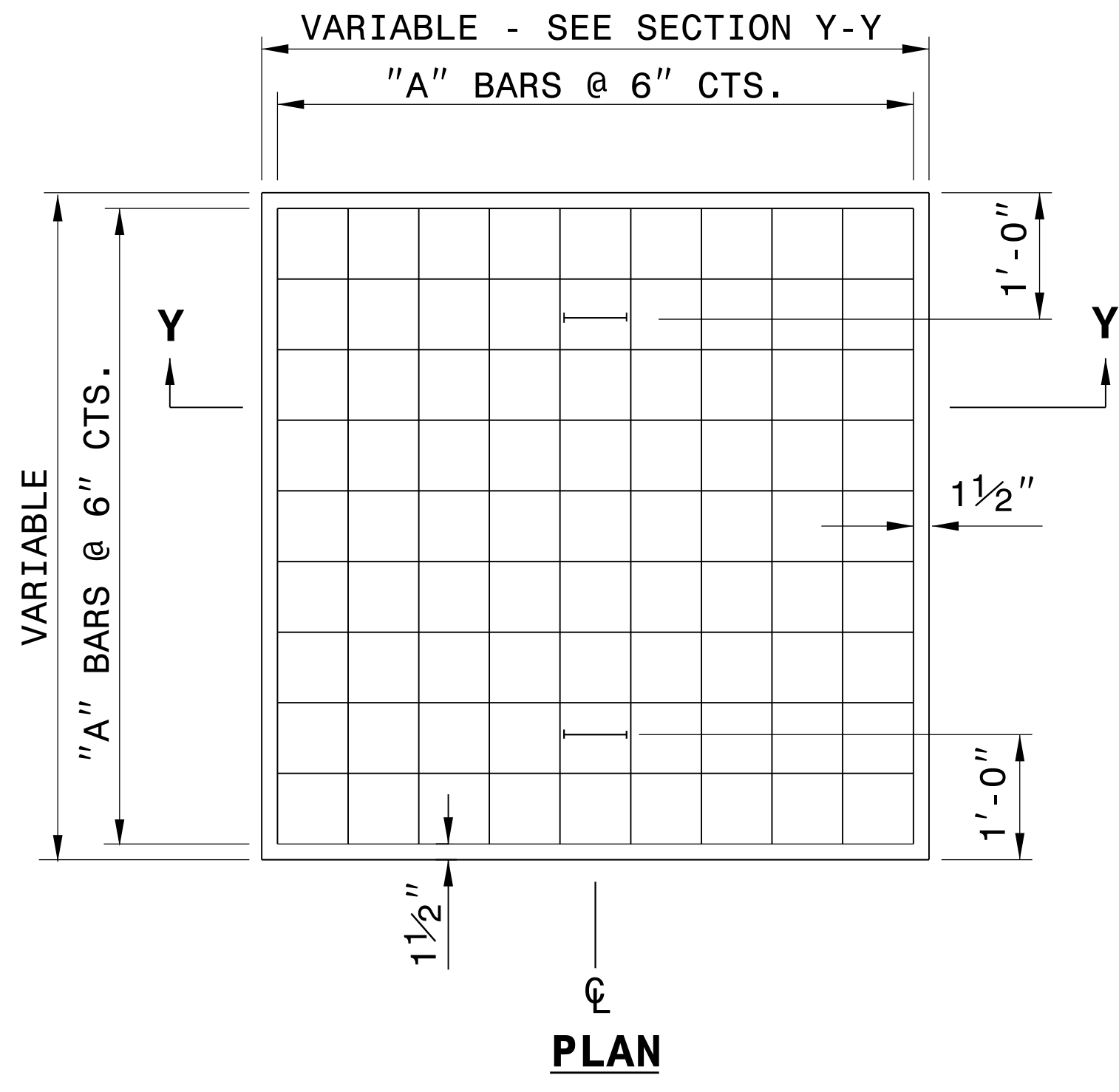
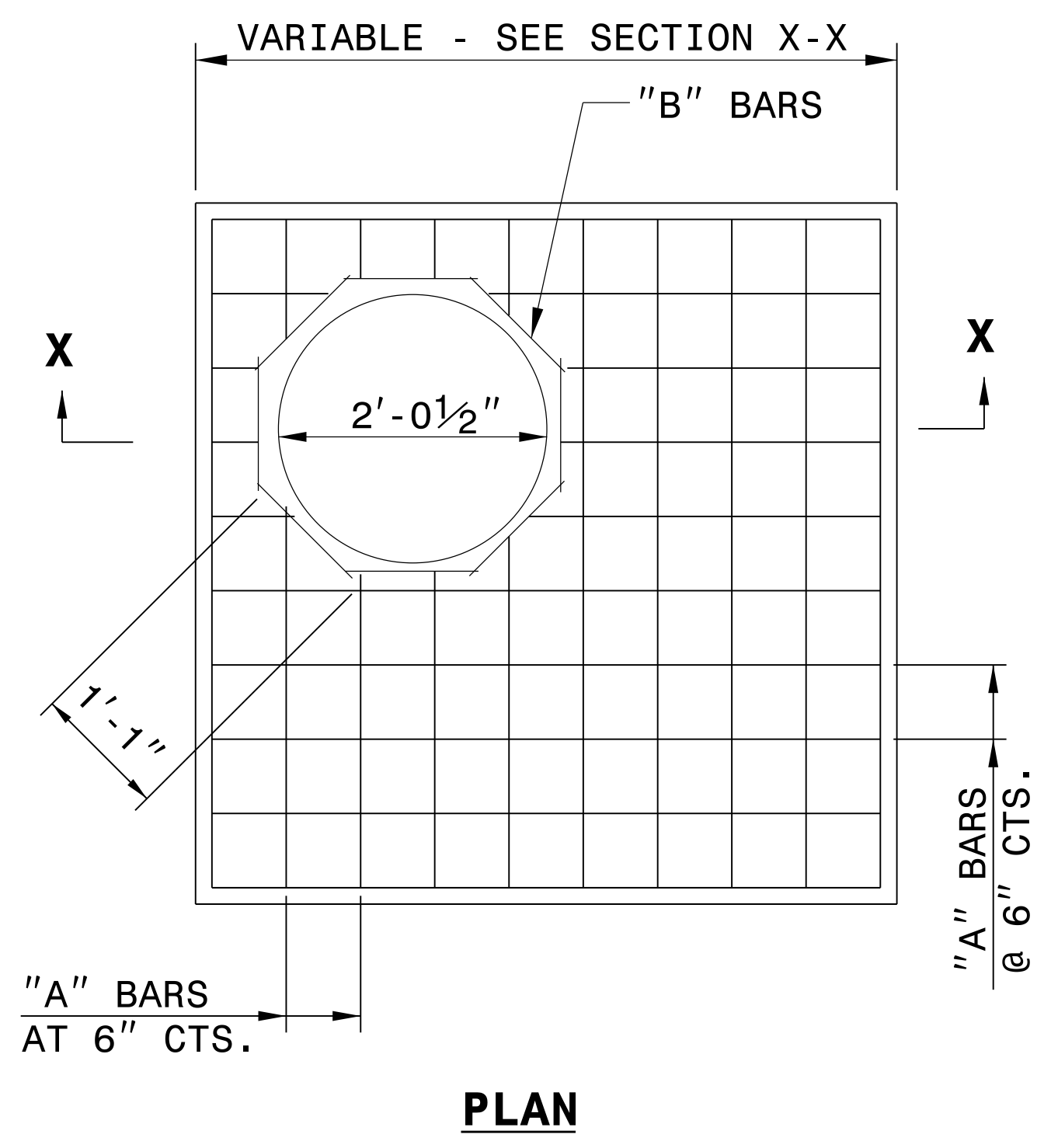
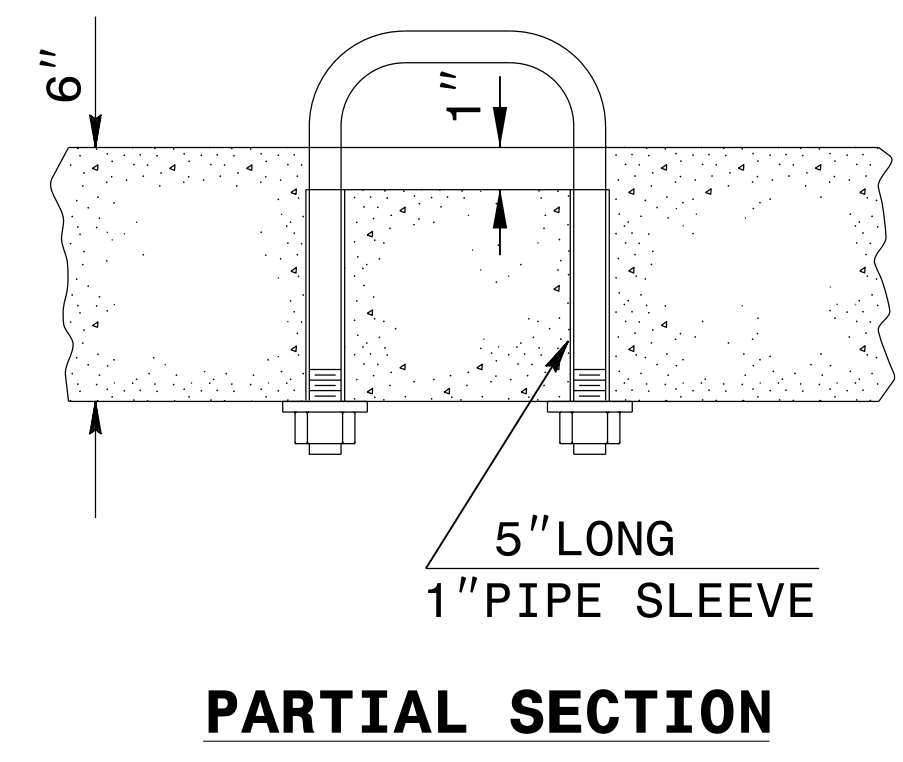
1/27/2021 | 09:01:19 EST

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

07-SEP-2017 08:21 S:\Contracts\Special Details\Howerton\Coal Combustion Product Detail.dgn



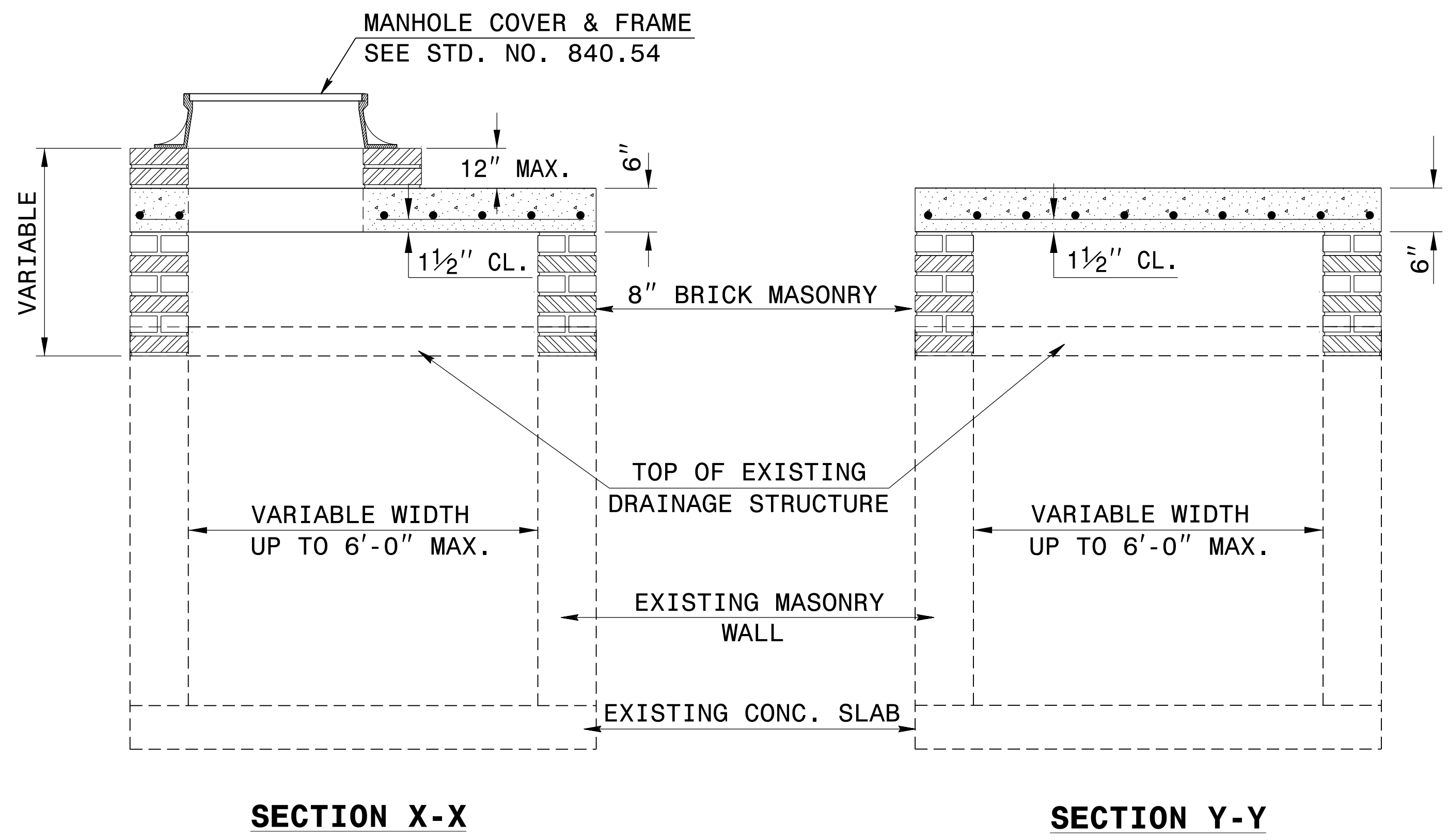
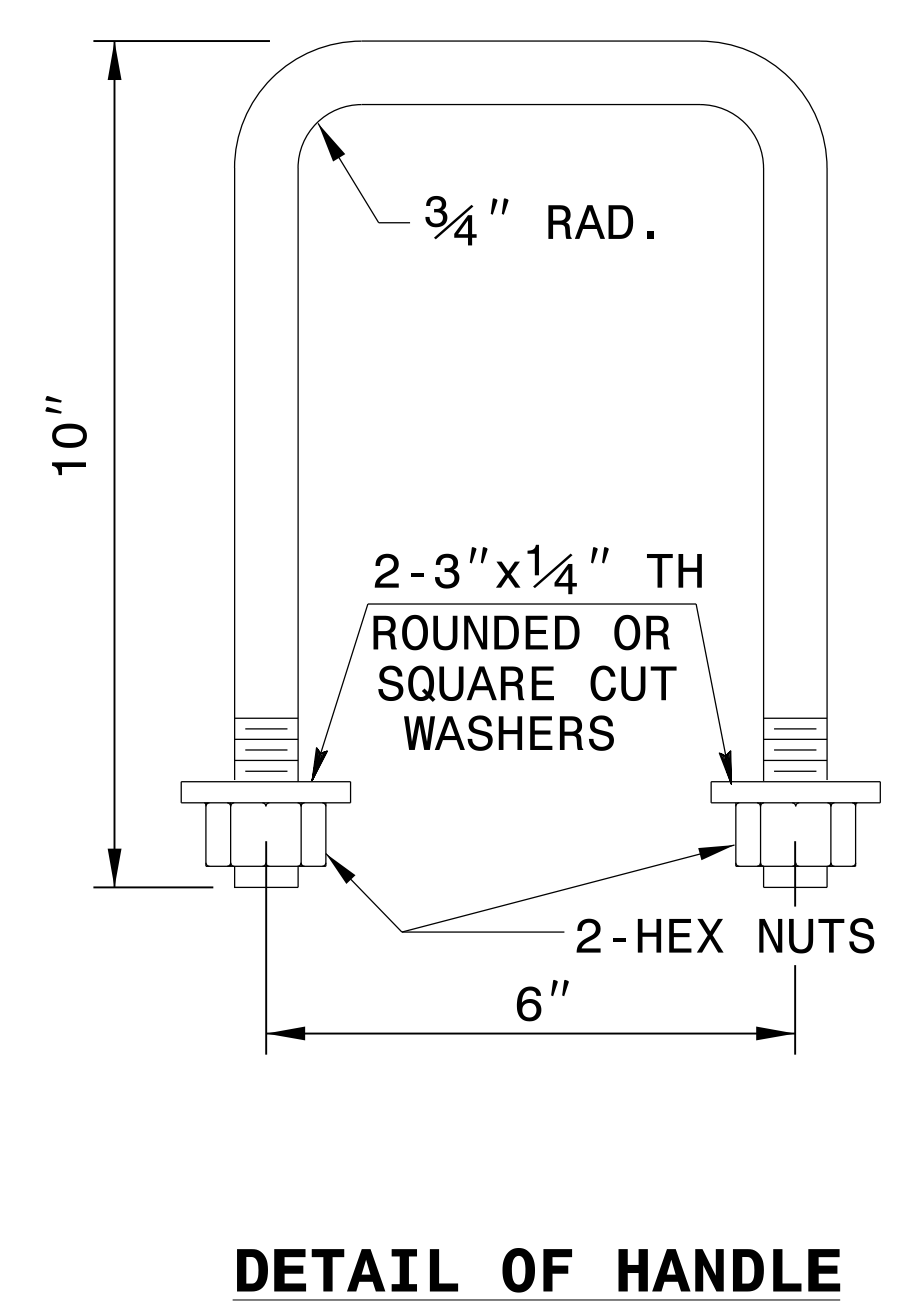
GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

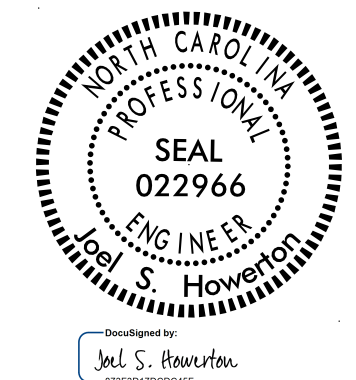
DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS				
REINFORCING STEEL				
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *
MASONRY				CU YDS
TOP SLAB CONCRETE CLASS "B"				.4326 *
BRICK MASONRY PER FT HT (MIN)				.4111



*** NOTE:**
 QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.

1/27/2021 | 09:01:19 EST



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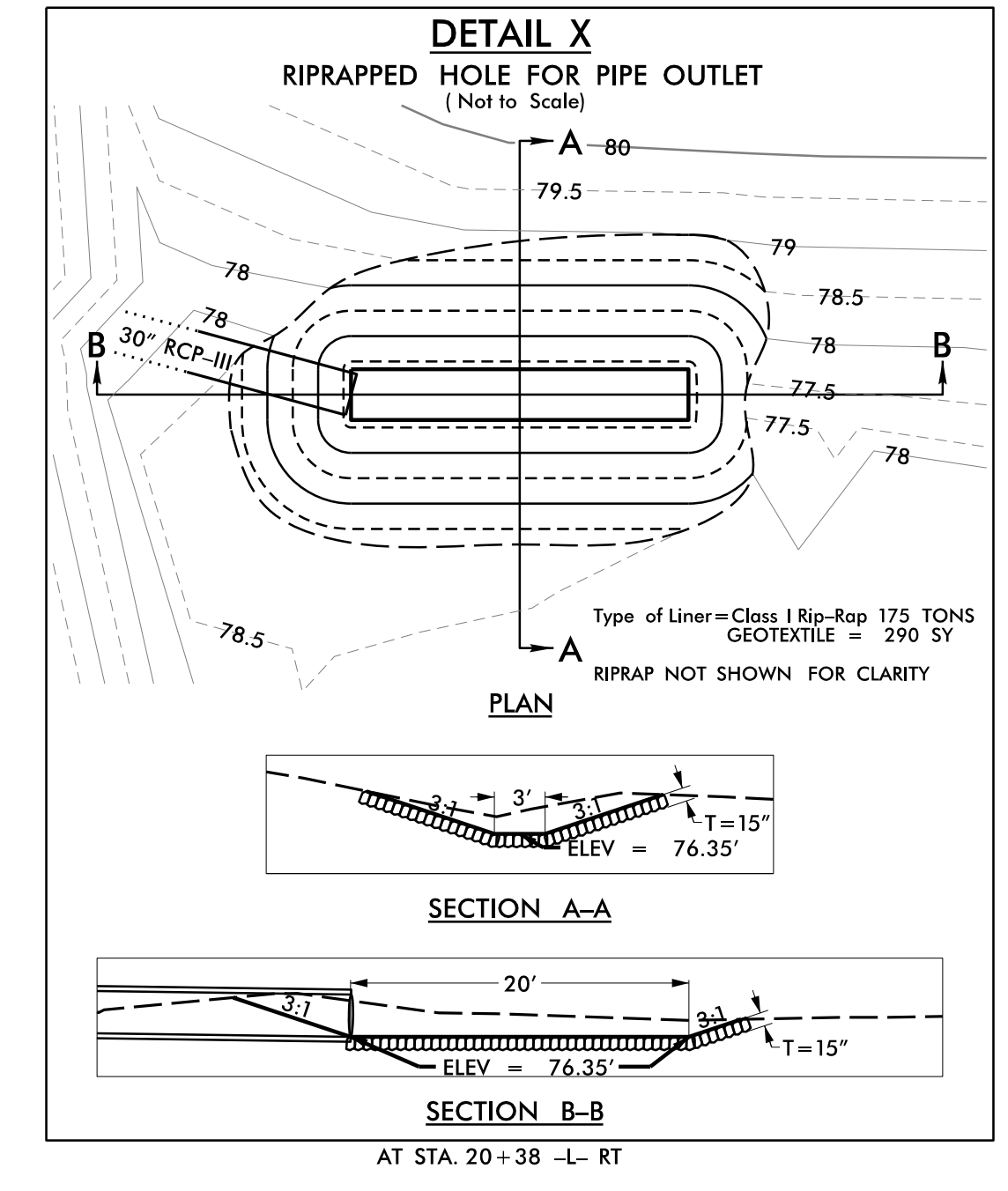
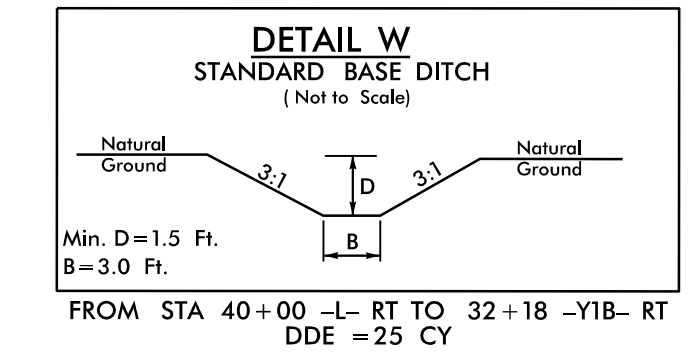
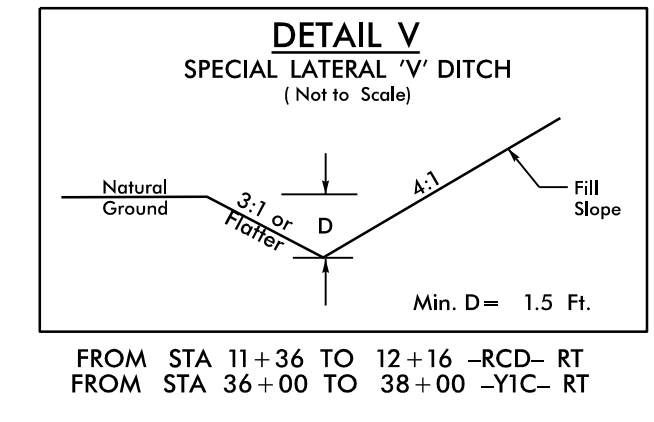
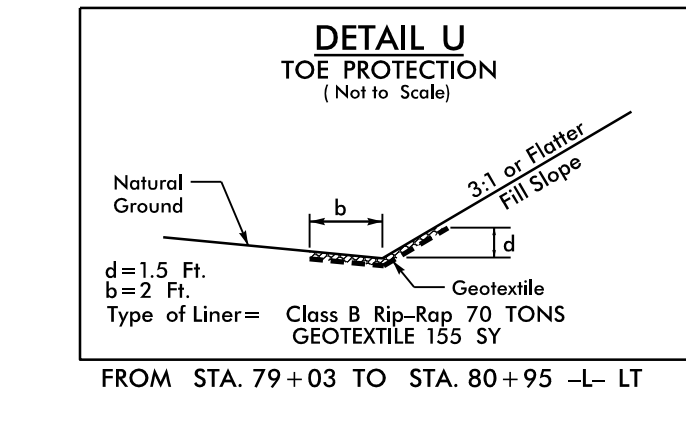
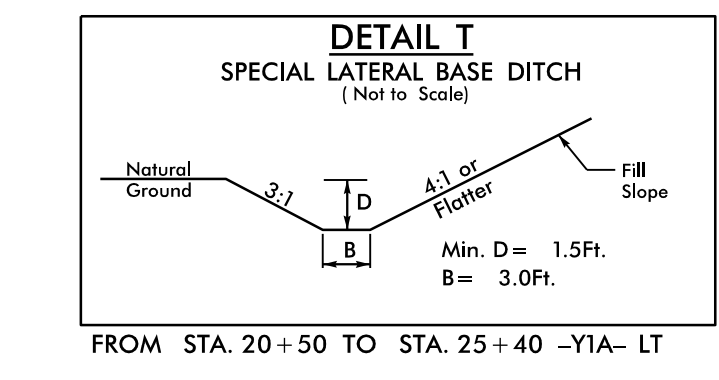
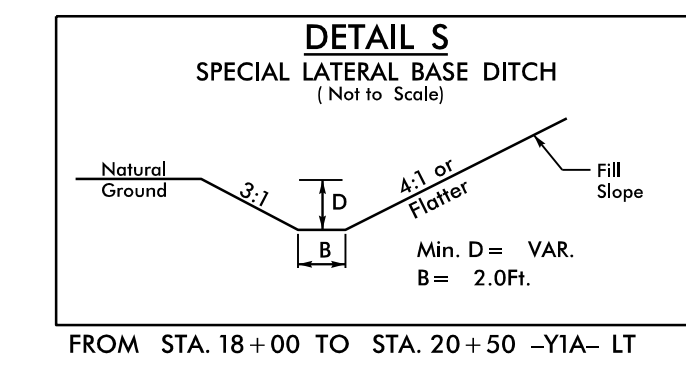
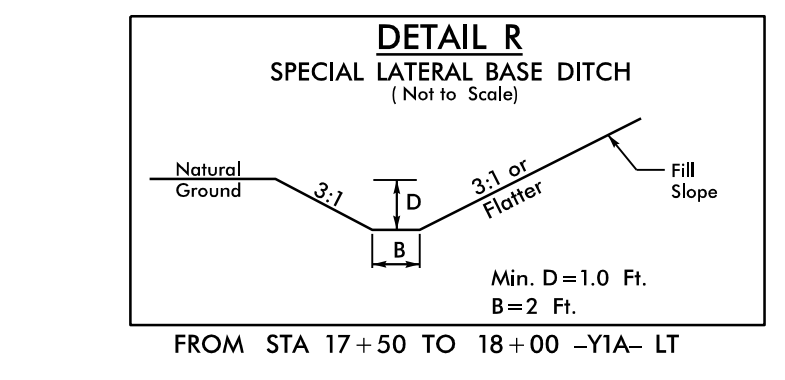
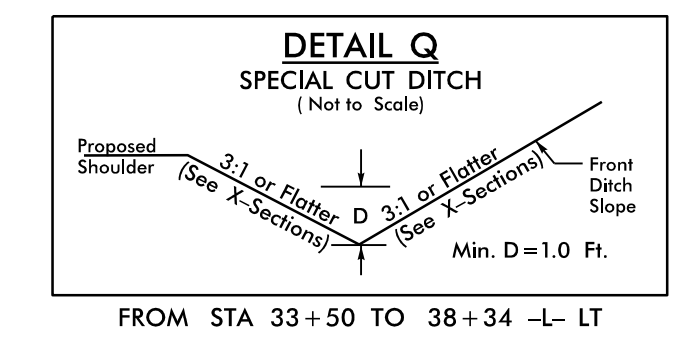
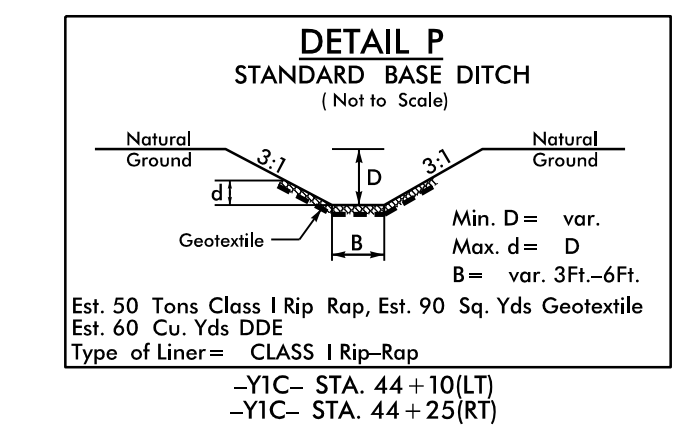
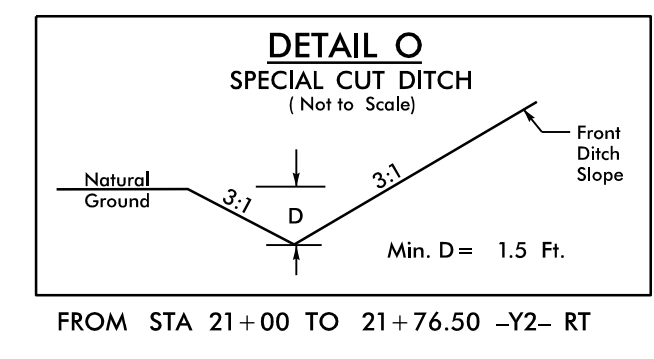
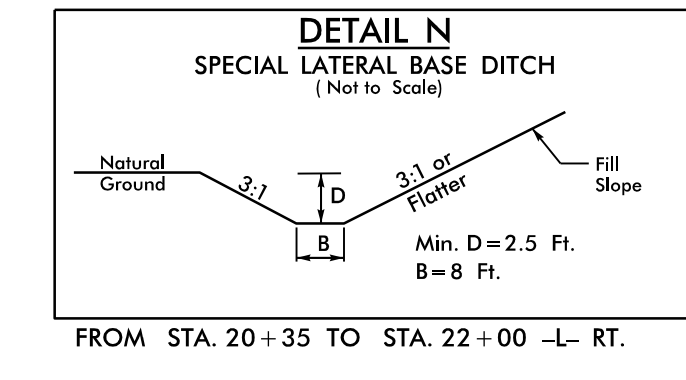
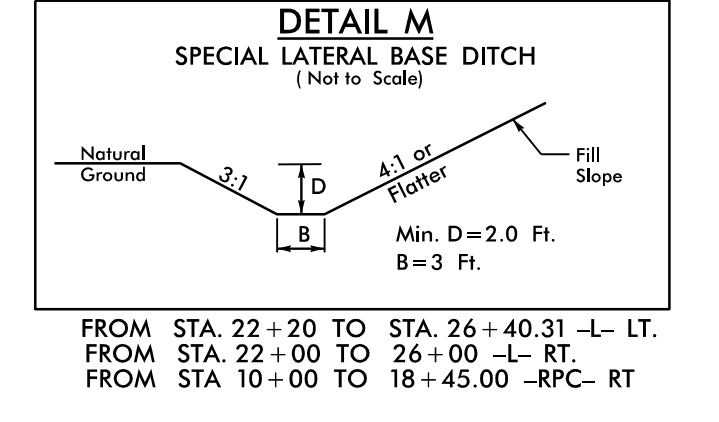
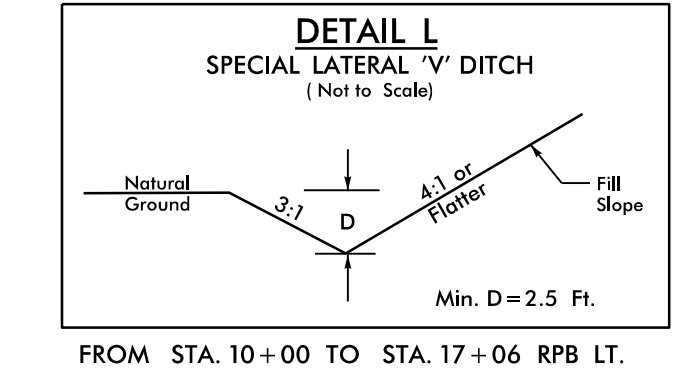
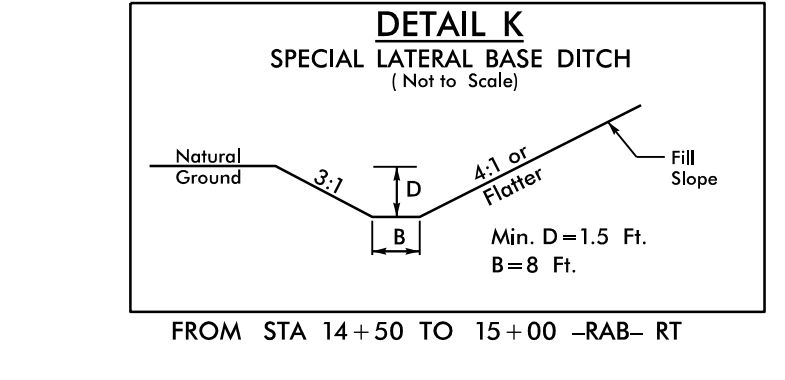
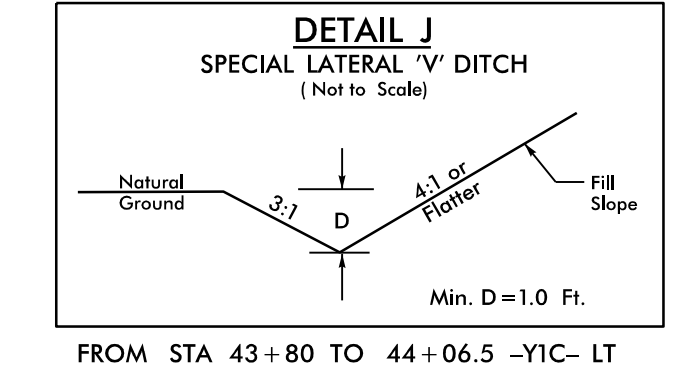
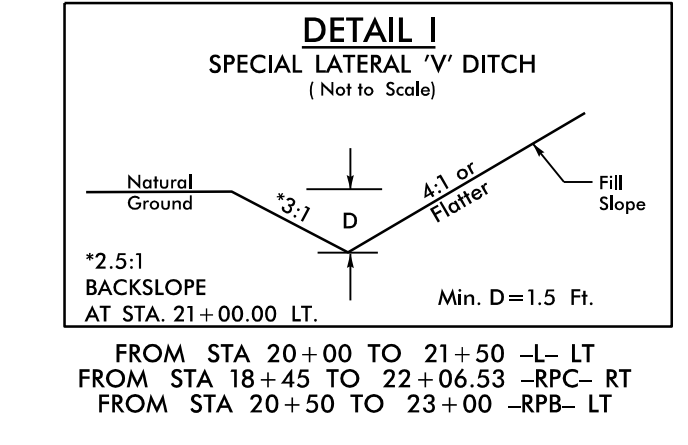
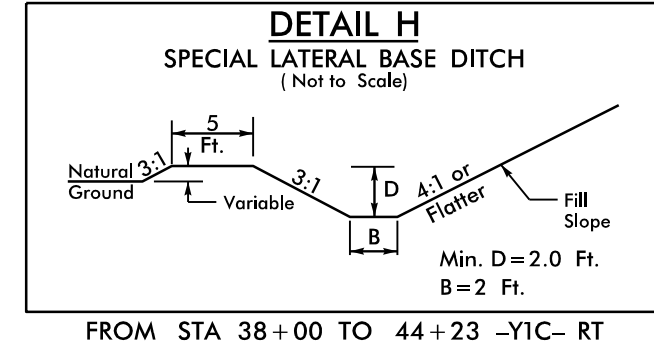
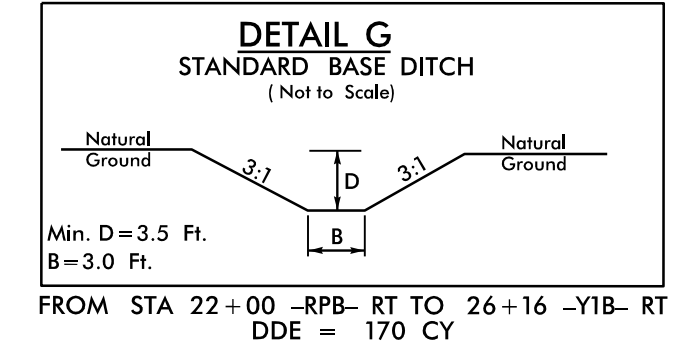
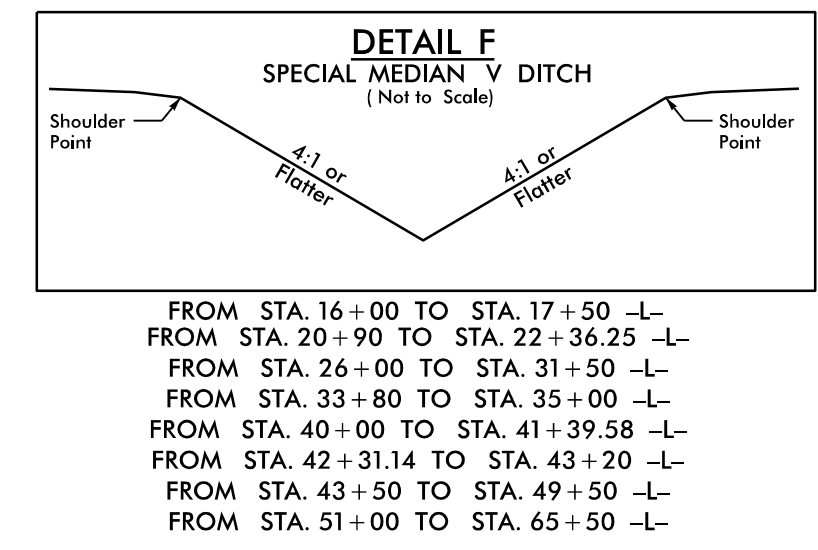
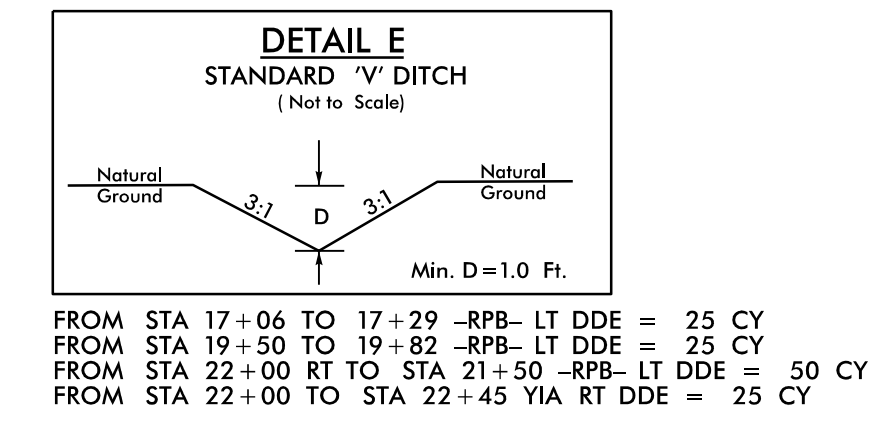
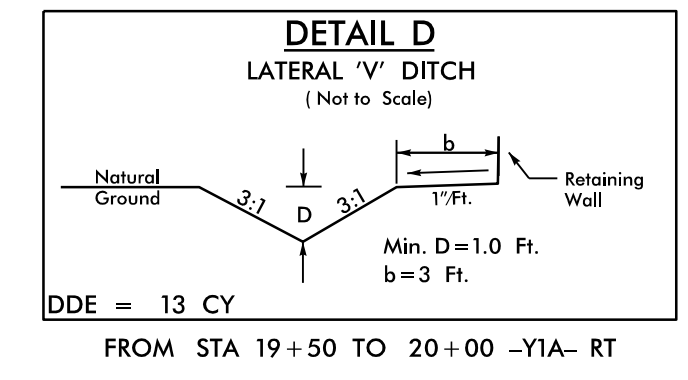
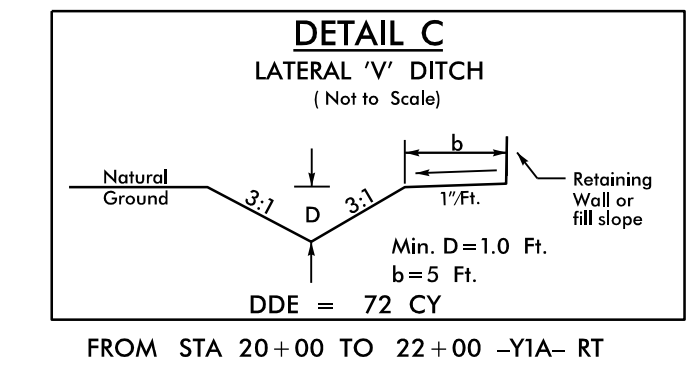
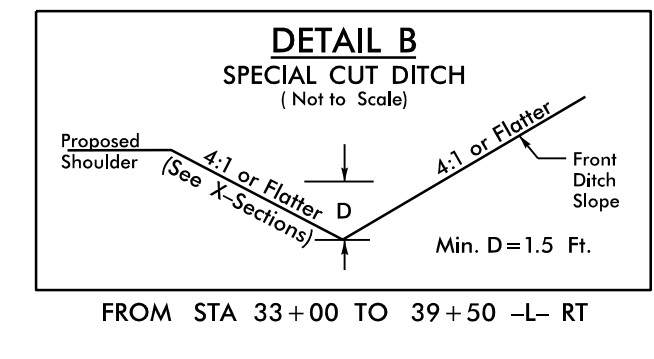
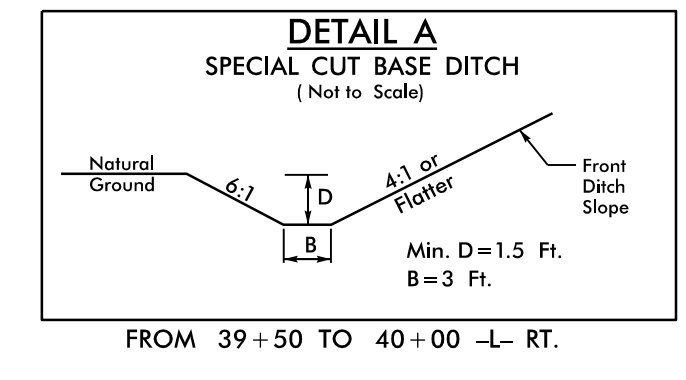
DETAIL TO CONVERT EXISTING DI, CB, OTCB or GI TO JUNCTION BOX (MANHOLE OPTIONAL)


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 MODIFIED BY: T.S.S. DATE: FEB. 2000
 CHECKED BY: DATE:
 FILE SPEC.: ds174:/usr/details/stand/boxtojbe.dgn

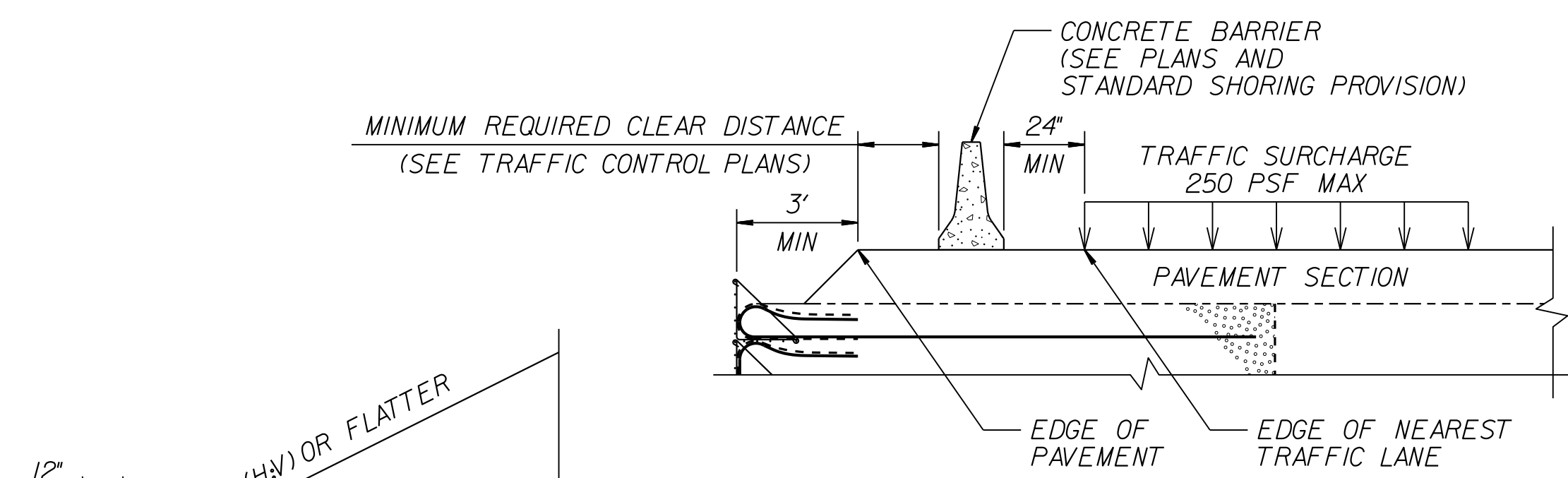
1/27/2021 09:01:19 EST
 T.S.S. Howerton
 PROFESSIONAL ENGINEER
 STATE OF NORTH CAROLINA
 LICENSE NO. 022966

DRAINAGE DETAILS

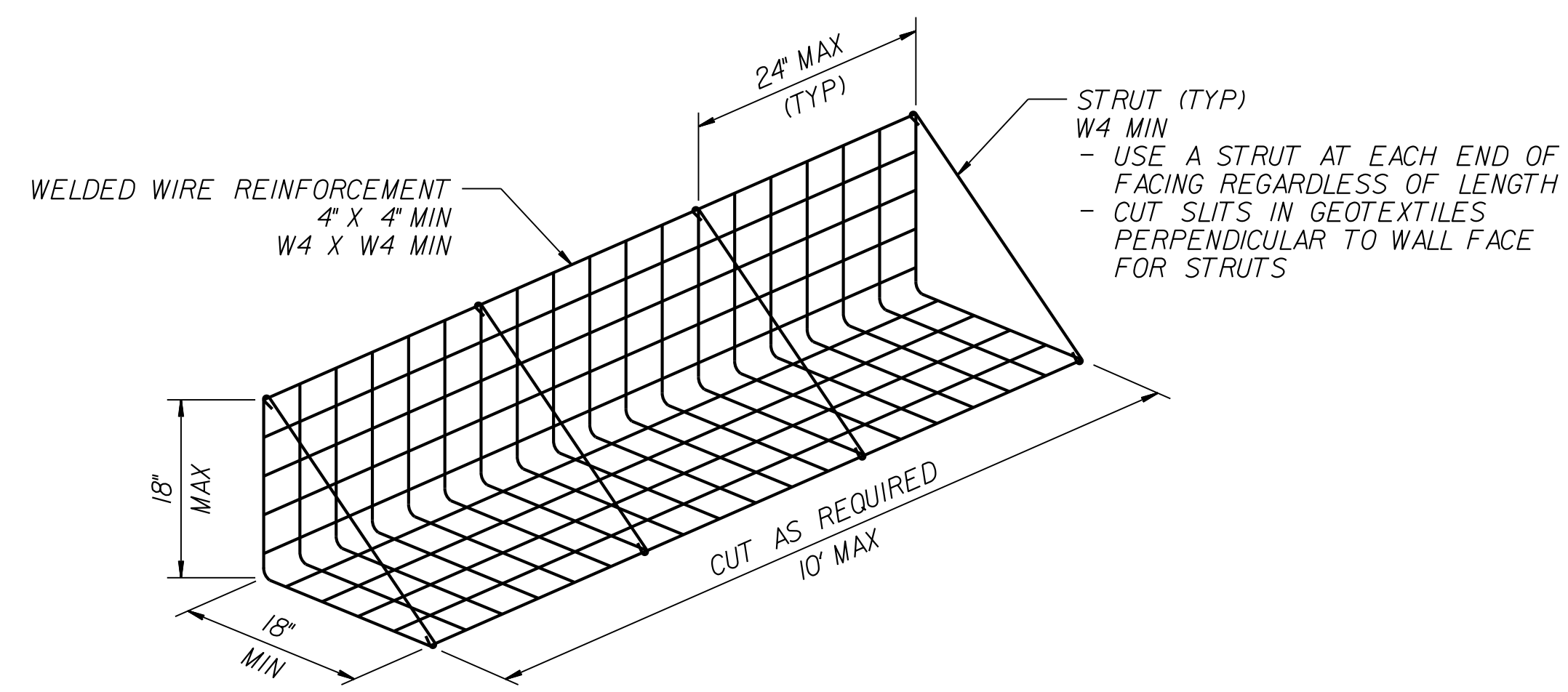
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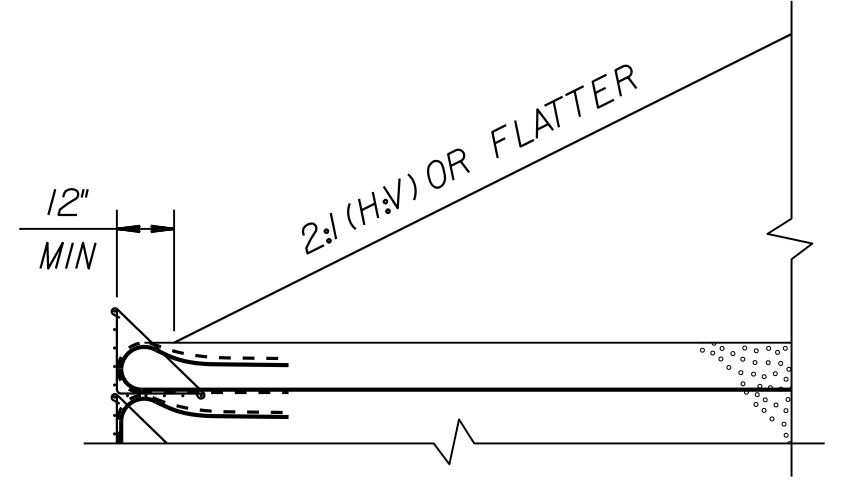
PROJECT REFERENCE NO. R-5797		SHEET NO. 2G-1	
GEOTECHNICAL ENGINEER  Scott A. Hidden DATE: 10/23/2020 SIGNATURE: _____ DATE: _____		ENGINEER _____ DATE: _____	
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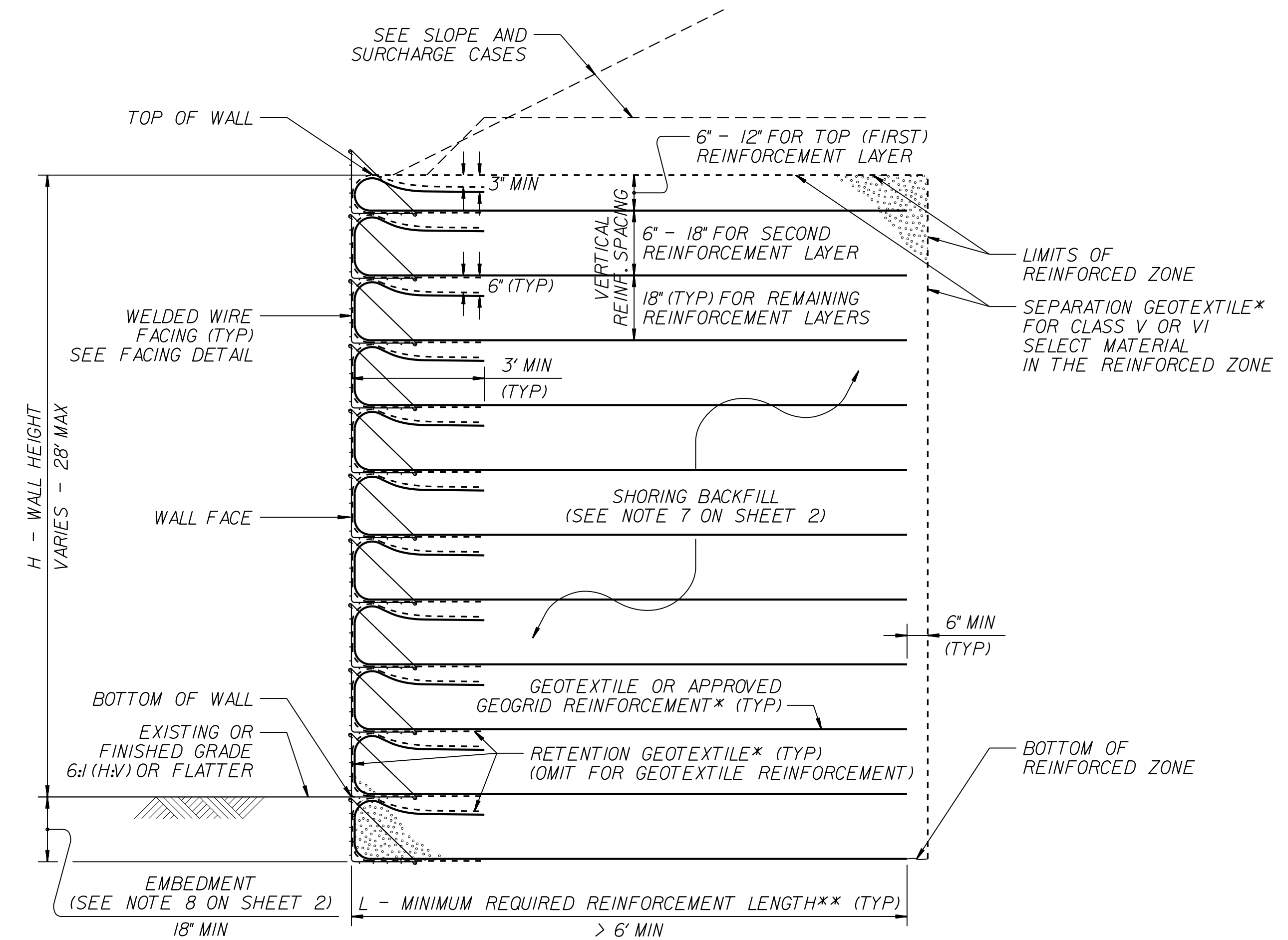
SURCHARGE CASE



FACING DETAIL

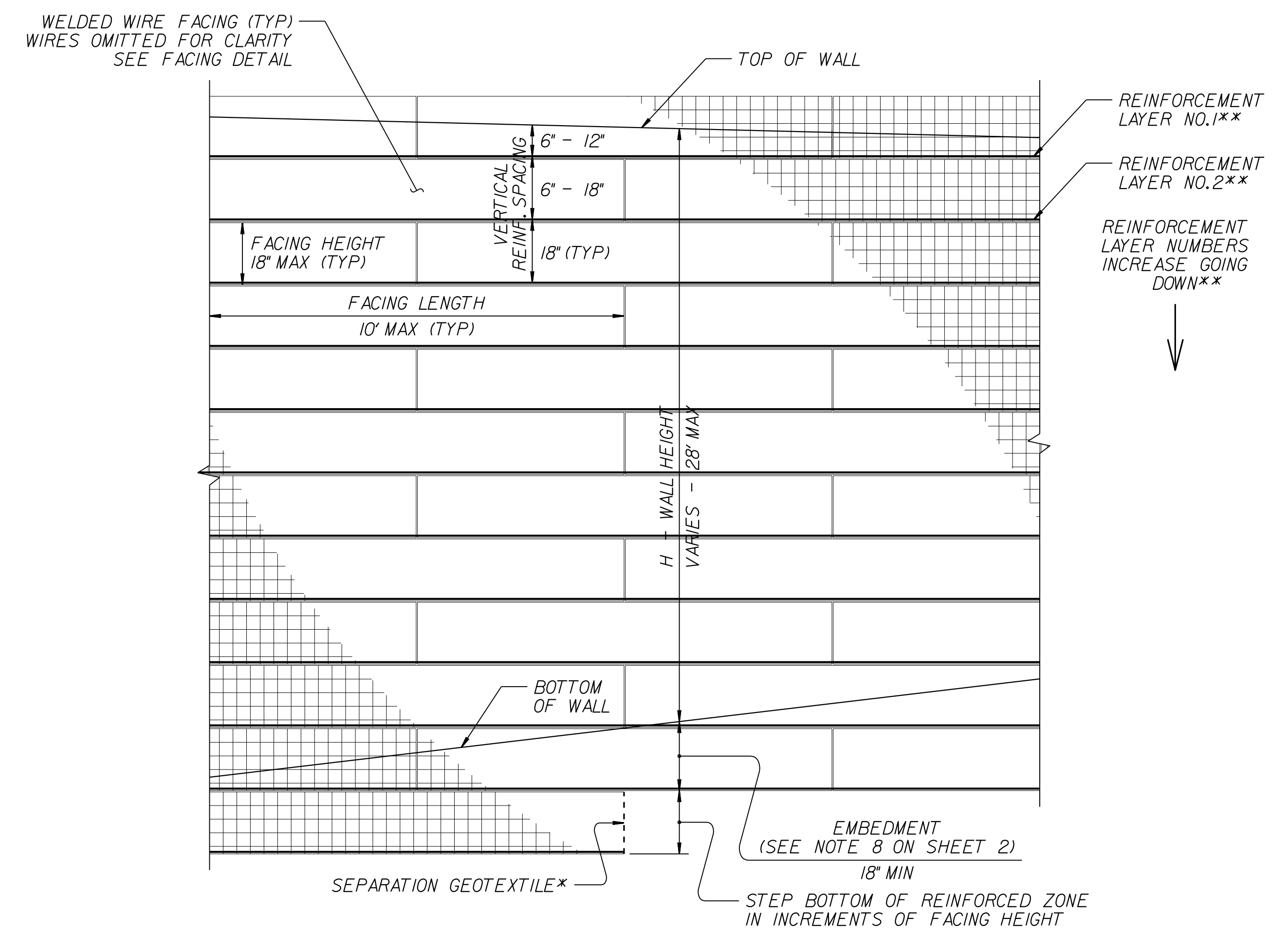


SLOPE CASE



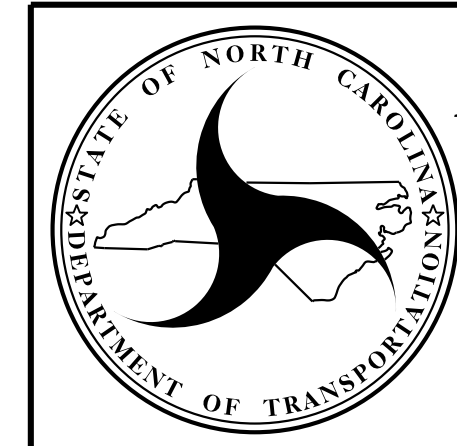
STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
 *SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
 **SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
 **SEE REINFORCEMENT TABLES ON SHEET 3.




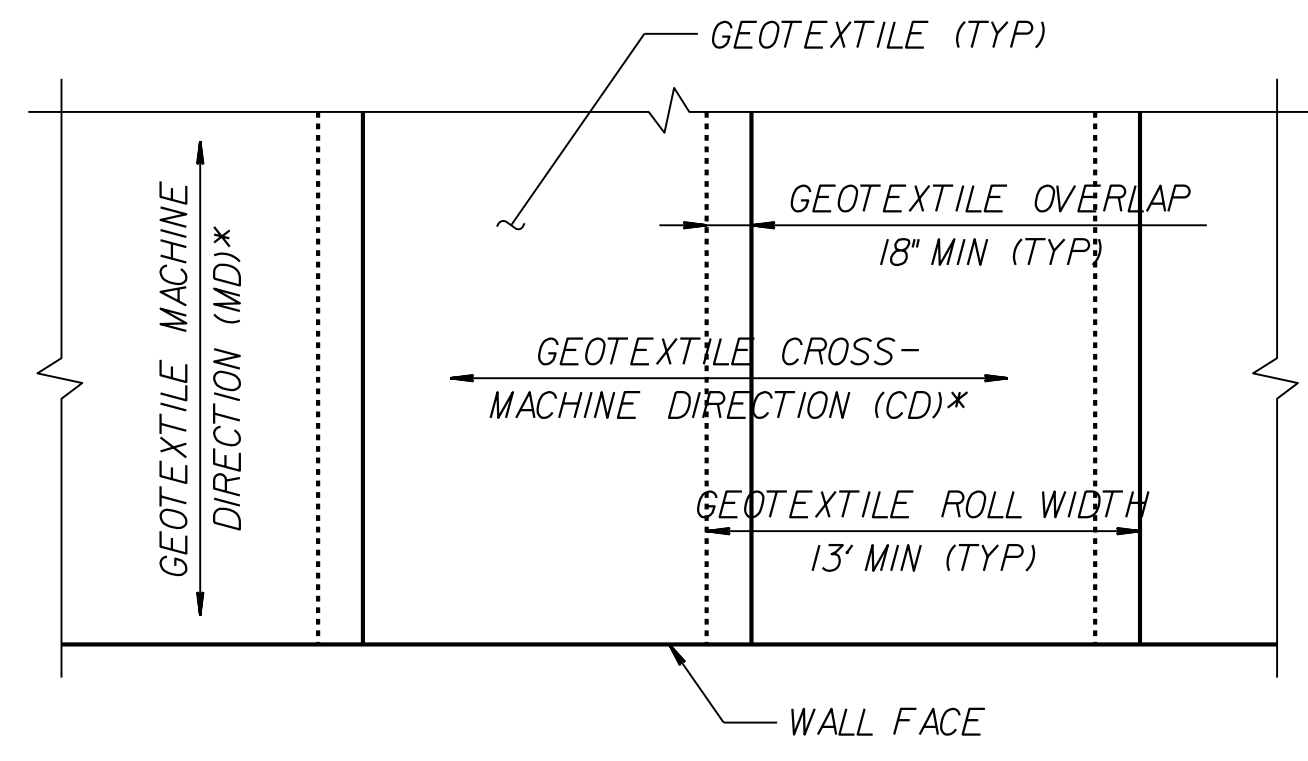
**NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS**

**GEOTECHNICAL
 ENGINEERING UNIT**

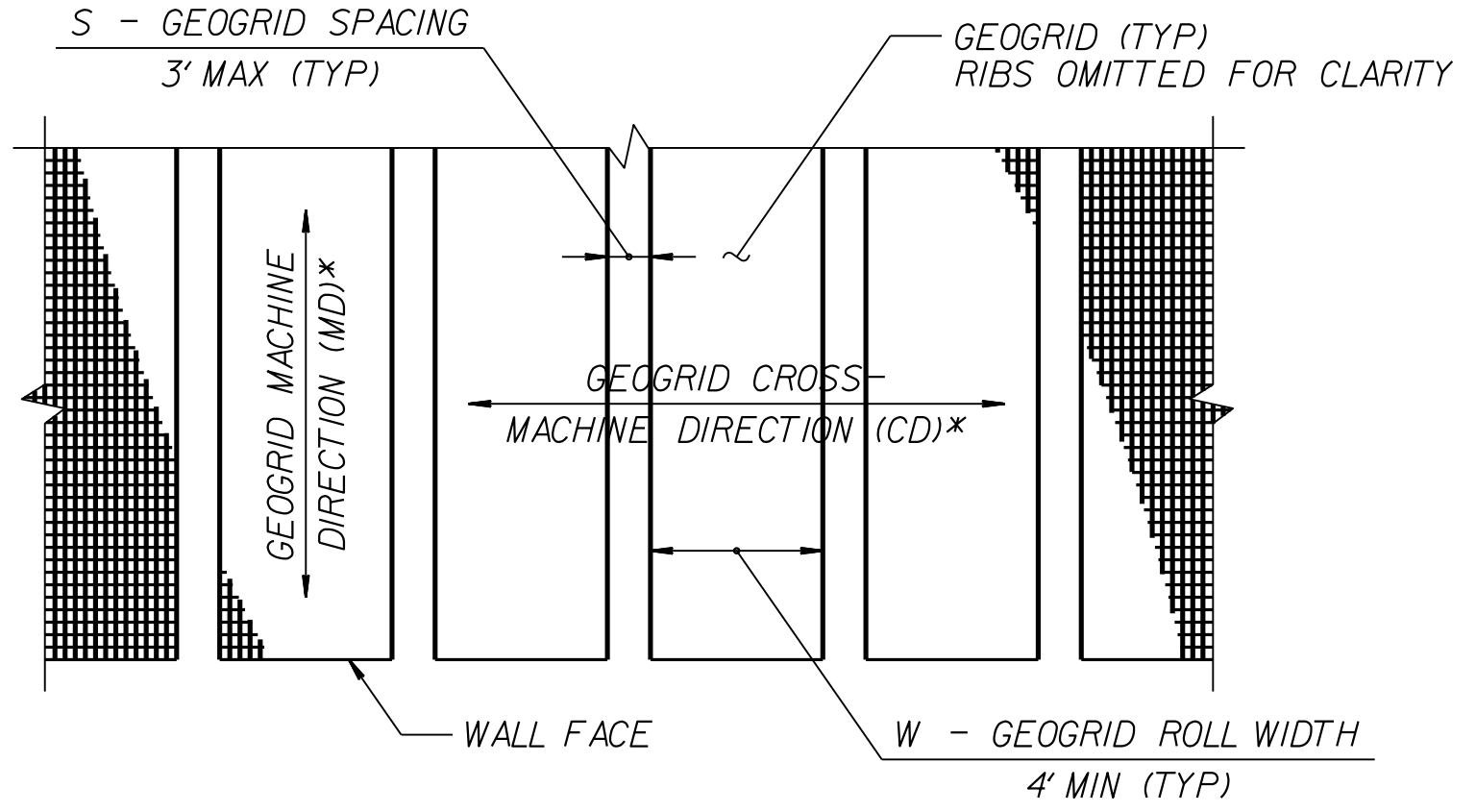
STANDARD DETAIL NO. 1801.02

**STANDARD
 TEMPORARY WALL
 SHEET 1 OF 3**

PROJECT REFERENCE NO. R-5797	SHEET NO. 2G-2
 GEOTECHNICAL ENGINEER	ENGINEER
DocuSigned by: Scott A. Holden 10/23/2020	SIGNATURE DATE SIGNATURE DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

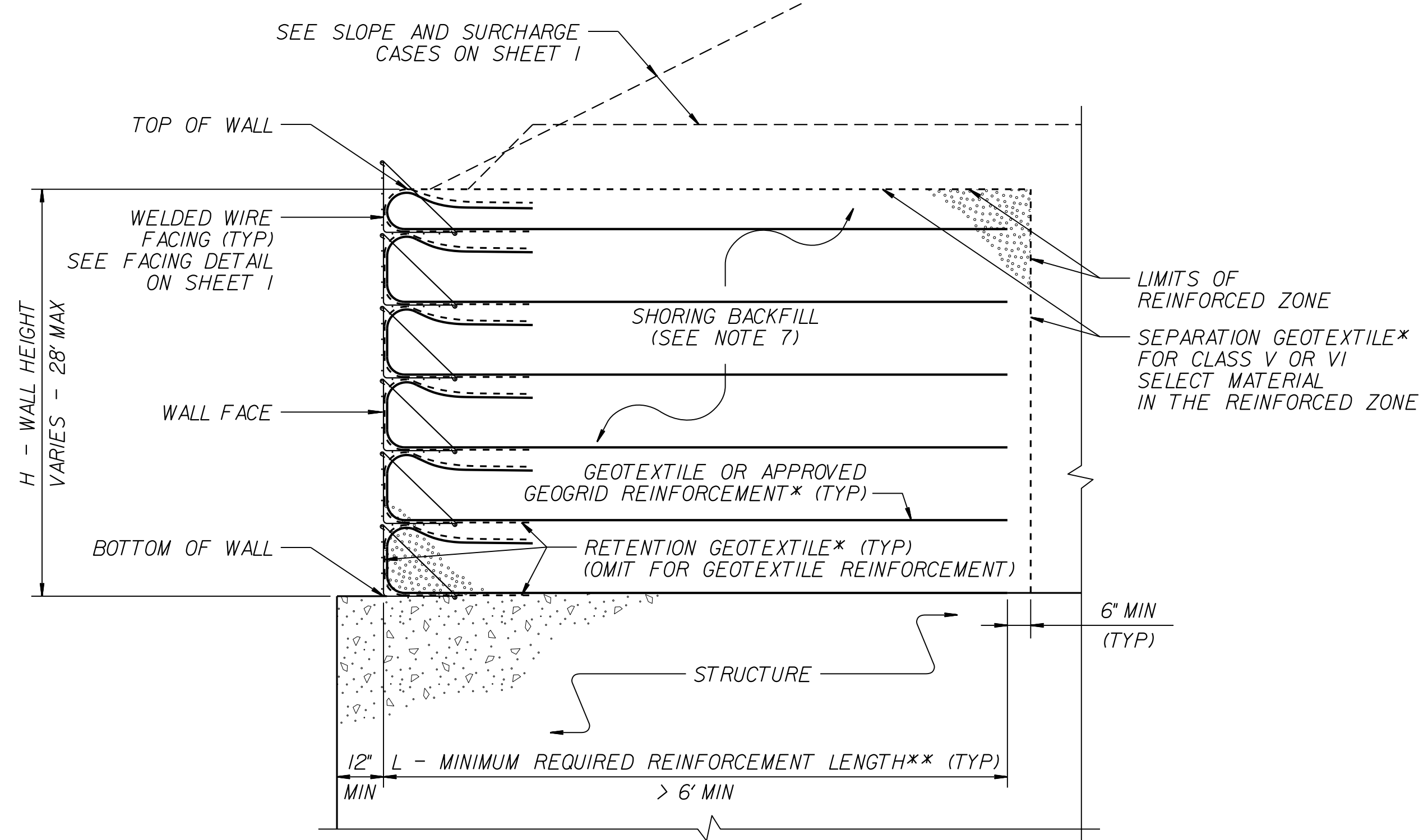


GEOTEXTILE PLACEMENT
(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)



GEOGRID PLACEMENT
(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT - $\frac{W}{W+S} \times 100 \geq 80\%$, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS
(PLAN VIEW)
*SEE NOTE 12.



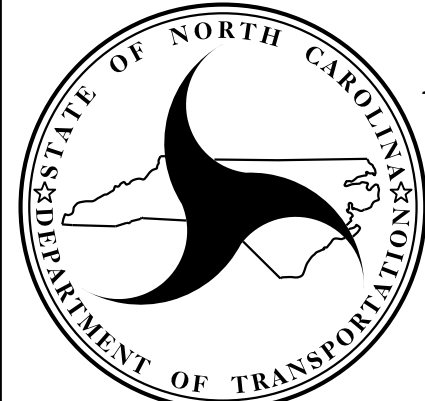
TEMPORARY WALL ON STRUCTURE DETAIL
*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ PSF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR SHORT-TERM DESIGN STRENGTHS FOR A 3-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM:
connect.ncdot.gov/resources/Materials/Pages/Materials-Manual-by-Manual.aspx
DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE I OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

- IF THE WEBSITE DOES NOT LIST A SHORT-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID, USE A SHORT-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 3.5 FOR THE GEOGRID REINFORCEMENT.
11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
 12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
- W (REINFORCEMENT ROLL WIDTH) \geq (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
- REINFORCEMENT STRENGTH IN CD \geq MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
 13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM:
connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
 14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
 15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
 16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
 17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
 18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
 19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.




**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**

**GEOTECHNICAL
ENGINEERING UNIT**

STANDARD DETAIL NO. 1801.02

**STANDARD
TEMPORARY WALL
SHEET 2 OF 3**

DATE: 11-19-13

PROJECT REFERENCE NO. R-5797	SHEET NO. 2G-3
 GEOTECHNICAL ENGINEER ENGINEER	ENGINEER DATE: 10/23/2020 SIGNATURE: Scott A. Holden
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																									
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
SLOPE CASE	> 0	CLASS II, TYPE I, CLASS III, CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27	
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H ≥ 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22	
		A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21	
		CLASS II, TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20	
	> 7 FOR H < 20' > 10 FOR H ≥ 20'	CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19		

L - MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)
(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

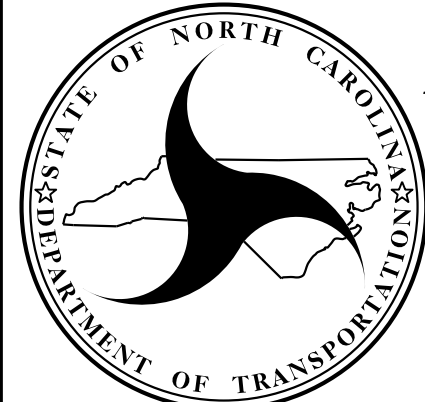
REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT
SHORT-TERM DESIGN STRENGTH (LB/FT)
(SEE NOTE 10 ON SHEET 2.)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD
(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02
STANDARD TEMPORARY WALL SHEET 3 OF 3
DATE: 11-19-13

8/17/19

COMPUTED BY: REO DATE: 2-8-19
 CHECKED BY: GP DATE: 2-8-19



1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. R-5797
 SHEET NO. 3B-1

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	UNCLASSIFIED EXCVATION	UNDERCUT	EMBANMENT +%	BORROW	WASTE
-L- Med 10+62.80	20+30.00	308		24		284
-L- RT 10+62.80	20+30.00	255		730	475	
	SUBTOTAL	563		754	475	284
-L- Med 15+00.00 (Temp.)	37+00.00	110		1,155	1,045	
-L- Med 38+50.00 (Temp.)	68+50.00	35		4,271	4,236	
-L- Med 69+00.00 (Temp.)	81+00.00	556		519		37
-L- LT 78+00.00	81+00.00	164		1,206	1,042	
	SUBTOTAL	865		7,151	6,323	37
-L- Med 71+50.00	81+00.00	360				360
	(REMOVAL)					
	SUBTOTAL	360				360
-L- LT 15+00.00	45+00.00	1,843		4,718	2,875	
-L- LT 45+00.00	68+00.00	358	88	870	512	88
-RPA- 10+00.00	28+28.84	1	16,280	77,305	77,304	16,280
-RPB- 10+00.00	24+70.05	1,268		39,685	38,417	
	SUBTOTAL	3,470	16,368	122,578	119,108	16,368
-L- RT 15+00.00	45+00.00	3,075	436	2,096		1,415
-L- RT 45+00.00	68+00.00	345	3,804	5,263	4,918	3,804
-RPC- 10+00.00	26+22.25	5,122		56,600	51,478	
-RPD- 10+00.00	25+13.83	33	8,770	64,071	64,038	8,770
	SUBTOTAL	8,575	13,010	128,030	120,434	13,989
-L- Med 15+00.00	45+00.00	3,041		971		2,070
-L- Med 45+00.00	68+00.00	1,451		2,390	939	
	SUBTOTAL	4,492		3,361	939	2,070
-Y1A- LT 11+00.00	16+50.00	55		229	174	
-Y1A- RT 11+00.00	16+50.00	56		330	274	
-Y1A- 16+50.00	25+33.61	320		36,246	35,926	
-Y1A- S- 23+49.31	26+06.06			16,586	16,586	
-DRI- 10+00.00	11+96.12	32		2,238	2,206	
-RAB- 10+00.00	15+15.22	27	759	54,660	54,633	759
	SUBTOTAL	490	759	110,289	109,799	759

STATION	STATION	UNCLASSIFIED EXCVATION	UNDERCUT	EMBANMENT +%	BORROW	WASTE
-Y1B- 26+97.86	29+65.58 (Beg. Bridge)		1,530	45,145	45,145	1,530
	SUBTOTAL		1,530	45,145	45,145	1,530
-Y1B- 31+66.08 (End Bridge)	33+51.50			36,064	36,064	
	SUBTOTAL			36,064	36,064	
-RCD- 10+00.00	15+15.22	26		74,189	74,163	
-Y1C- 35+15.50	44+54.91	921		62,561	61,640	
	SUBTOTAL	947		136,750	135,803	
-Y2- 15+00.00	16+40.75	94		71		23
-Y2- 16+72.76	19+00.00	83		263	180	
	SUBTOTAL	177		334	180	23
TOTAL		19,939	31,667	590,456	574,270	35,420
ADDITIONAL UNDERCUT			2,050	2,563	2,563	2,050
SHOULDER MATERIAL				13,750	13,750	
WASTE IN LIEU OF BORROW					-3,753	-3,753
PROJECT TOTAL		19,939	33,717	606,769	586,830	33,717
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					29,341	
GRAND TOTAL		19,939	33,717	606,769	616,171	33,717
SAY		20,100	33,800		617,000	
PAVEMENT STRUCTURE VOLUME	39600					

EST. DDE = 465 CY

REVISIONS

2/2/2021 10:04 AM R-5797 - Rdj_PSH_03B-1.dgn

WOVEN WIRE FENCE (47" FABRIC)

LINE	STATION	STATION	LOCATION	LF.	4" POST	5" POST
-RPA-	15+90.23	28+28.00	RT.	1283.00	81	20
-Y1A-	19+48.65	26+12.00	LT.	754.00	46	14
-RPD-	17+80.46	23+50.00	LT.	573.00	35	11
-Y1C-	36+01.27	43+82.55	LT.	735.00	47	11
-Y1C-	36+00.00	42+45.00	RT.	703.00	43	14
-RPB-	20+90.78	22+35.55	RT.	440.00	27	8
				TOTAL:	4488.00	278
				SAY:	4500.00	278

CHAIN LINK FENCE (48" FABRIC)

LINE	STATION	STATION	LOCATION	LF.	LINE POSTS	TERMINAL POST
-RPB-	17+00.00	20+00.00	LT.	300.00	26	6
-Y1A-	19+18.42	21+50.00	RT.	246.00	21	2
				TOTAL:	546.00	8
				SAY:	600.00	8

REMOVAL OF EXISTING PAVEMENT

LINE	STATION	STATION	LOCATION	SY.	
TEMP. PAVEMENT REMOVAL					
-L-	14+86.00	32+19.00	MED. RT.	744.11	
-L-	38+32.00	71+08.00	MED. RT.	1507.78	
-L-	18+73.00	37+13.00	MED. LT.	813.07	
-L-	43+60.00	73+00.00	MED. LT.	1183.67	
-L-	71+58.00	81+17.00	MED.	2024.78	
-L-	78+25.00	80+92.00	LT.	900.22	
EXIST. PAVEMENT					
-L-	14+92.00	68+00.00	MED. RT.	3328.99	
-L-	14+87.00	68+00.00	MED. LT.	3130.98	
-Y1A-	12+53.00	14+44.00	LT.	216.67	
-Y1A-	14+69.00	20+24.00	LT.	1439.44	
-RPB-	20+24.00	20+50.00	LT. / RT.	991.44	
-Y1B-	30+19.00	34+34.00	RT.	1960.11	
-Y1C-	34+34.00	43+32.00	RT.	1530.22	
-L-	14+87.00	37+16.00	RT.	1189.78	
-L-	39+22.00	68+00.00	RT.	1434.00	
-L-	14+89.00	68+00.00	LT.	3101.33	
-Y1C-	41+50.00	44+55.00	CL.	494.67	
				TOTAL:	25,991.26
				SAY:	26,500.00

SHOULDER BERM GUTTER

LINE	STATION	STATION	LOCATION	LF.	
-RPA-	16+57.41	22+75.11	RT.	617.17	
-RPB-	16+85.00	20+50.00	LT.	365.00	
-L-	14+88.04	15+17.59	LT.	29.55	
-L-	17+16.00	20+34.00	RT.	318.00	
				TOTAL:	1330.00
				SAY:	1350.00

EXPRESSWAY GUTTER

LINE	STATION	STATION	LOCATION	LF.	
-RPC-	13+20.49	20+01.09	RT.	670.19	
				TOTAL:	670.19
				SAY:	680.00

MILLED RUMBLE STRIPS

LINE	STATION	STATION	LOCATION	LF.	
-L-	14+88.04	30+06.00	LT.	1,517.96	
-L-	31+91.61	54+37.71	LT.	2,246.10	
-L-	59+57.49	68+00.00	LT.	842.51	
-L-	14+88.04	68+00.00	MED. LT.	5,311.96	
-L-	14+88.04	68+00.00	MED. RT.	5,311.96	
-L-	14+88.04	25+45.82	RT.	1,057.05	
-L-	32+26.79	53+57.84	RT.	2,131.05	
-L-	58+60.34	68+00.00	RT.	939.66	
				TOTAL:	19,358.98
				SAY:	20,000.00

REVISIONS

8/17/99

3/6/2021 3:52:00 PM R-5797_Req_PSH_03B-2.dgn
 USER: RMP

COMPUTED BY: REO DATE: 2-8-19
 CHECKED BY: GP DATE: 2-8-19

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. R-5797
 SHEET NO. 3B-3

"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						IA-MASH TL-3			REMOVE EXISTING GUARDRAIL	MEDIAN HAZARD PROTECTION	REMARKS							
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU TL-3	TYPE B-77	CAT-1	AT-1	TYPE III	NO.	PERMITTED	NO.	G				NG						
-L-	14+88.94	17+88.94	LT.	300.00'					9.24'	12.24'	281.25'		5.6'		1	1											300'						
-L-	14+88.94	17+88.94	MED. LT.	300.00'					12'	15'	281.25'		5.6'		1	1												175'					
-L-	14+86.71	16+12.70	MED. RT.																								126'						
-L-	14+86.71	20+34.00	RT.	547.29'					11.3'	14.3'		444.54'		8.89'		1	1										500'						
-L-	42+39.23	68+00.00	RT.												1												2,562.5'						
-DRI- /-YIA-	10+42.88	21+50.00	RT.	210.51'	158.25'				2'	13.5'							1	1															
-RPB-	16+80.41	21+02.99	LT.	422.58'			17+00.00	20+00.00	12'			50.0'	50.0'		1'			1															
-YIB-	28+08.75	29+58.75	RT.	150.00'			29+58.75		3.625'	5.625'	50.0'			1'																			
-YIB-	31+72.91	33+22.91	LT.	150.00'			31+72.91		3.625'	5.625'	50.0'			1'																			
-RPA- /-RAB-	16+10.32	14+80.79	RT.	1,333.77'			17+10.32	14+80.79	12'	15'	50.0'			1'																			
-RPC-	13+20.49	20+01.09	RT.	680.60'			14+20.49	20+01.09	12'	15'	50.0'			1'																			
-RPD-	20+00.00	23+50.00	LT.	350.00'			22+50.00	20+00.00	12'	15'	50.0'			1'																			
-L-	40+66.05		MED.																				1										
-L-	40+87.05	41+58.33	MED. RT.	71.28'			41+58.33		26.5'	30'0"	52.52'		3.5'																				
-L-	42+12.39	42+83.49	MED. RT.	71.28'				42+12.39	26.5'	30'0"	52.52'		52.52'	3.5'																			
-L-	40+87.05	41+58.33	MED. LT.	71.28'			40+87.05		26.5'	30'0"	52.52'		52.52'	3.5'																			
-L-	42+12.39	42+83.49	MED. LT.	71.28'				42+12.39	26.5'	30'0"	52.52'		52.52'	3.5'																			
-L-	53+04.50		MED.																				1										
-L-	41+58.33	42+12.39	MED. LT.																												54.06'		
-L-	41+58.33	42+12.39	MED. RT.																												54.06'		
SUBTOTAL:				4,729.87'	158.25'											9	3	6	1	6				2			3,663.50'	108.12'					
				9 GREU TL-3 @50.00'																													
				3 B-77 @22.875'																													
				6 CAT-1 @6.25'																													
				1 AT-1 @6.25'																													
				6 TYPE III @18.75'																													
GRAND TOTAL:				4,055.00'	158.25'											9	3	6	1	6				2			3,663.50'	108.12'					
SAY:				4,062.50'	162.50'			10 ADDITIONAL GUARDRAIL POST								9	3	6	1	6				2			3,663.50'	110.00'					

TEMPORARY 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	REMARKS								
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE TL-3	TYPE B-77	CAT-1	AT-1	TYPE III	NO.	PERMITTED	NO.	G			NG							
-L-	71+00.00	79+87.50	MED. RT.	887.5'			71+00.00	80+00.00	6'	9'	50.0'	50.0'	1'	1'	2																		
-L-	71+00.00	79+87.50	MED. LT.	887.5'			71+00.00	80+00.00	6'	9'	50.0'	50.0'	1'	1'	1																		
SUBTOTAL:				1,775.00'											3			1															
				3 TYPE TL-3 @50.00'																													
				1 CAT-1 @6.25'																													
GRAND TOTAL:				1,618.75'											3			1															
SAY:				1,625.00'											3			1															

CABLE GUIDERAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	ANCHORS	LENGTH	REMOVAL
-L-	15+05.61	35+55.61	CL	2	2,050.00'	1,865.04
-L-	35+55.61	40+47.19	CL	2	491.50'	
-L-	43+23.49	63+73.49	CL	2	2,050.00'	1,969.61'
*-L-	63+23.49'	82+25.00	CL	2	1,901.51'	1,851.51'
-L-	63+48.49		CL	1		
**L-	71+31.00		CL	1		
SUBTOTAL:				10	6,493.01	5,686.16'
ANCHOR DEDUCTION	8@ 25'					-200.00'
GRAND TOTAL:				10	6,293.01	5,686.16'
SAY:				10	6,300.00'	5,700.00'
NOTE: ** TEMP. ANCHOR.						
10 ADDITIONAL GUIDERAIL POST						

NOTE: *-L- STA. 71+56.00 TO 82+25.00 WILL HAVE TO BE INSTALLED WHEN MED. CROSSOVER IS REMOVED.

6/16/99
 2/24/2021
 11:55:56
 I:\S\116\116-3\0Rsum.dgn

RAL-VS077

COMPUTED BY: Jim Davis DATE: 03/05/19
CHECKED BY: REO DATE: 10/22/19

PROJECT NO. R-5797 SHEET NO. 3D-2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

Table with columns for Line & Station, Offset, Structure Number, Top Elevation, Invert Elevation, Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. PIPE, R.C. PIPE CLASS III, R.C. PIPE CLASS IV, R.C. PIPE CLASS V, Quantities for Drainage Structures, Frame, Grates, and Hood, and Remarks. Includes a summary row at the bottom labeled 'SHEET TOTALS'.

ABBREVIATIONS table listing symbols and their corresponding material types: C.A.A. CORRUGATED ALUMINIUM ALLOY, C.B. CATCH BASIN, C.S. CORRUGATED STEEL, D.I. DROP INLET, G.D.I. GRATED DROP INLET, H.D.P.E. HIGH DENSITY POLYETHYLENE, J.B. JUNCTION BOX, M.H. MANHOLE, N.S. NARROW SLOT, P.V.C. POLYVINYL CHLORIDE, R.C. REINFORCED CONCRETE, T.B.D.I. TRAFFIC BEARING DROP INLET, T.B.J.B. TRAFFIC BEARING JUNCTION BOX, W.S. WIDE SLOT.

RAL-VS077

COMPUTED BY: Jim Davis DATE: 03/05/19
CHECKED BY: REO DATE: 10/22/19

PROJECT NO. R-5797 SHEET NO. 3D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

Table with columns for Line & Station, Offset, Structure Number, Top Elevation, Invert Elevation, Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. PIPE, R.C. PIPE CLASS III, R.C. PIPE CLASS IV, R.C. PIPE CLASS V, Quantities for Drainage Structures, Frame, Grates, and Hood, and Remarks. Includes sub-totals for SHEET TOTALS and PROJECT TOTALS.

COMPUTED BY: CW DATE: 11/19
 CHECKED BY: WPA DATE: 11/19

(12-17-19)

PROJECT NO. R-5797 SHEET NO. 3G-1

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				UD	2000
CONTINGENCY				SD	2000
				TOTAL LF:	4000

*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	500	950	1500			
					TOTAL CY/TONS/SY:	500	950**	1500**	0	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.

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
Bridge on SR 1506 (Old Boardman Rd/Macedonia Church Rd.) over US 74	1 & 2	1



1223 Jones Franklin Rd.
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
R-5797	3P-1

8/17/99

REVISIONS

PROPERTY OWNER INDEX

PARCEL NO.	PROPERTY OWNERS NAME	SHEET NO.'S
1	ELLA H. LEWIS	7
2	SUE H. WALTERS	5, 7
3	SUE H. WALTERS	5, 7
4	ED D. LEWIS, HEIRS	7
5	WRIGHTSVILLE CHAPEL AME ZION CHURCH	7
6	IRVIN LUKUS, ET UX	5, 7
7	SONNY OLIVER REALTY CO.	5
8	SUE H. WALTERS	5, 8
9	SUE H. WALTERS	5, 8
10	LOUISE LAWSON	8
11	LOUISE LAWSON	8
12	CHEN TIMBER, LLC	5, 6, 8
13	CHEN TIMBER, LLC	5, 6
14	ROSE M. SMITH	7
15	RICHARD W. INMAN	8
16	JAG & ASSOCIATES, LLC	8
17	WOODY M. WILLIAMSON, ET UX	5, 7

12/9/2020
I:\PROJECTS\5797_RdJ_PSH_03P-1.dgn
JSEB

8/17/99

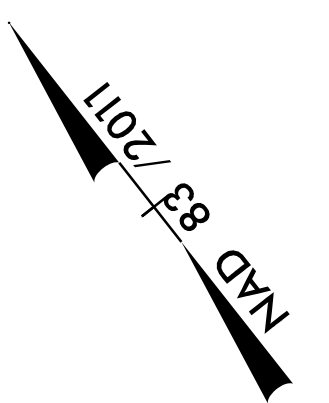
WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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 Bus: 919 851 8077
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

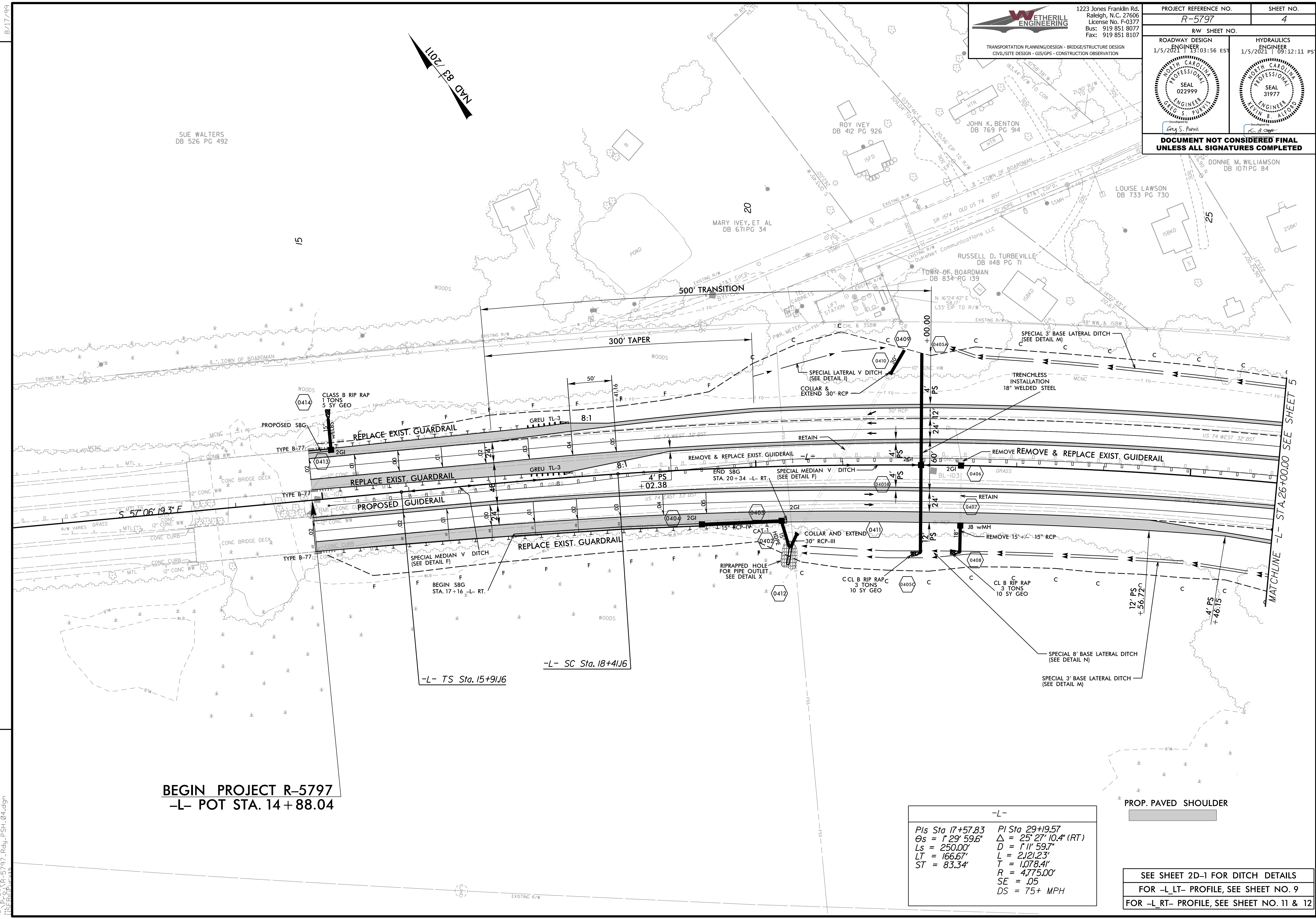
PROJECT REFERENCE NO. R-5797	SHEET NO. 4
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ROADWAY DESIGN ENGINEER 1/5/2021 13:03:56 EST	HYDRAULICS ENGINEER 1/5/2021 09:12:11 PST
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SUE WALTERS
DB 526 PG 492

DONNIE M. WILLIAMSON
DB 1071 PG 84



REVISIONS



BEGIN PROJECT R-5797
-L- POT STA. 14+88.04

-L- TS Sta. 15+91.16

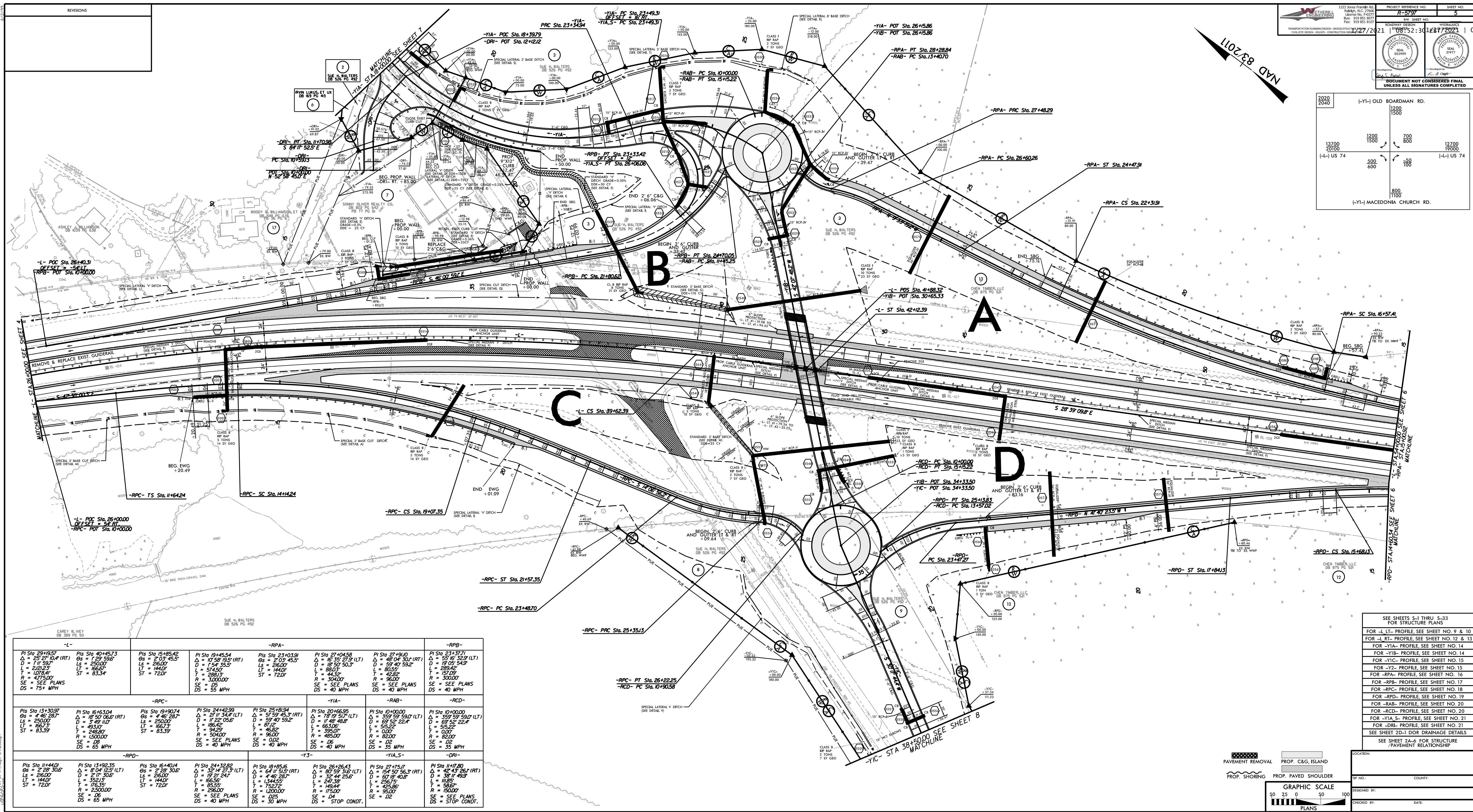
-L- SC Sta. 18+41.16

-L-	
PI Sta 17+57.83	PI Sta 29+19.57
Os = 1' 29' 59.6"	Δ = 25' 27' 10.4" (RT)
Ls = 250.00'	D = 1' 11' 59.7"
LT = 166.67'	L = 2,121.23'
ST = 83.34'	T = 1,078.41'
	R = 4,775.00'
	SE = .05
	DS = 75+ MPH

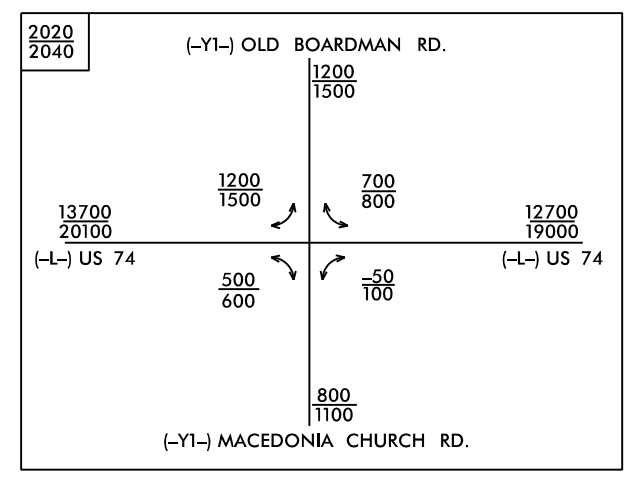
PROP. PAVED SHOULDER

SEE SHEET 2D-1 FOR DITCH DETAILS
 FOR -L_LT- PROFILE, SEE SHEET NO. 9
 FOR -L_RT- PROFILE, SEE SHEET NO. 11 & 12

12/9/2020 R-5797_Rdy_PSH_04.dgn



WETHERS ENGINEERING
 1225 SOUTH FURNACE RD.
 RICHMOND, VA 23066
 LICENSE NO. 00000
 PROJECT REFERENCE NO. **17-579**
 SHEET NO. **2**
 ROADWAY DESIGN
 I-495/2301/87/2021
 DATE: 11/27/21



-L-			-RPA-			-RPB-		
PI Sta 29+95.7 Δ = 25° 27' 02" (RT) D = 171.58' L = 212.23' T = 107.84' R = 477.500' SE = SEE PLANS DS = 75 MPH	PI Sta 40+45.73 Δ = 25° 27' 02" (RT) D = 171.58' L = 212.23' T = 107.84' R = 477.500' SE = SEE PLANS DS = 75 MPH	PI Sta 15+45.42 Δ = 8° 51' 45.5" D = 250.00' L = 144.0' T = 72.0' R = 330.000' SE = SEE PLANS DS = 40 MPH	PI Sta 19+45.54 Δ = 10° 58' 13.5" (RT) D = 154.55' L = 57.450' T = 28.613' R = 330.000' SE = SEE PLANS DS = 55 MPH	PI Sta 21+04.58 Δ = 16° 55' 27.9" (LT) D = 187.503' L = 80.53' T = 44.52' R = 300.000' SE = SEE PLANS DS = 40 MPH	PI Sta 27+04.58 Δ = 16° 55' 27.9" (LT) D = 187.503' L = 80.53' T = 44.52' R = 300.000' SE = SEE PLANS DS = 40 MPH	PI Sta 27+04.58 Δ = 16° 55' 27.9" (LT) D = 187.503' L = 80.53' T = 44.52' R = 300.000' SE = SEE PLANS DS = 40 MPH	PI Sta 27+04.58 Δ = 16° 55' 27.9" (LT) D = 187.503' L = 80.53' T = 44.52' R = 300.000' SE = SEE PLANS DS = 40 MPH	PI Sta 23+37.1 Δ = 55° 16' 32.9" (LT) D = 97.05542' L = 283.42' T = 151.29' R = 300.000' SE = SEE PLANS DS = 40 MPH
-RPA-			-YIA-			-RCD-		
PI Sta 13+30.97 Δ = 4° 40' 28.7" D = 250.00' L = 166.67' T = 83.33' R = 1500.000' SE = SEE PLANS DS = 65 MPH	PI Sta 16+30.4 Δ = 18° 50' 06.0" (RT) D = 349.10' L = 493.10' T = 246.55' R = 1500.000' SE = SEE PLANS DS = 65 MPH	PI Sta 19+00.74 Δ = 4° 40' 28.7" D = 250.00' L = 166.67' T = 83.33' R = 1500.000' SE = SEE PLANS DS = 65 MPH	PI Sta 24+42.95 Δ = 21° 11' 34.3" (LT) D = 117° 22' 05.6" L = 185.42' T = 94.29' R = 300.000' SE = SEE PLANS DS = 40 MPH	PI Sta 25+81.94 Δ = 10° 58' 13.5" (RT) D = 154.55' L = 57.450' T = 28.613' R = 300.000' SE = SEE PLANS DS = 40 MPH	PI Sta 20+66.95 Δ = 18° 19' 51.3" (LT) D = 114° 48' 48.0" L = 66.306' T = 35.017' R = 485.000' SE = SEE PLANS DS = 40 MPH	PI Sta 10+00.00 Δ = 359° 50' 59.0" (LT) D = 69° 52' 22.4" L = 55.22' T = 0.007' R = 82.000' SE = SEE PLANS DS = 35 MPH	PI Sta 10+00.00 Δ = 359° 50' 59.0" (LT) D = 69° 52' 22.4" L = 55.22' T = 0.007' R = 82.000' SE = SEE PLANS DS = 35 MPH	PI Sta 10+00.00 Δ = 359° 50' 59.0" (LT) D = 69° 52' 22.4" L = 55.22' T = 0.007' R = 82.000' SE = SEE PLANS DS = 35 MPH
-RPA-			-Y3-			-DRI-		
PI Sta 11+44.01 Δ = 2° 28' 30.6" D = 250.00' L = 144.0' T = 72.0' R = 2500.000' SE = SEE PLANS DS = 65 MPH	PI Sta 13+32.35 Δ = 8° 04' 12.5" (LT) D = 250.00' L = 144.0' T = 72.0' R = 2500.000' SE = SEE PLANS DS = 65 MPH	PI Sta 16+40.14 Δ = 8° 04' 12.5" (LT) D = 250.00' L = 144.0' T = 72.0' R = 2500.000' SE = SEE PLANS DS = 65 MPH	PI Sta 24+32.82 Δ = 19° 51' 34.7" (LT) D = 86.56' L = 38.59' R = 250.000' SE = SEE PLANS DS = 40 MPH	PI Sta 18+85.16 Δ = 41° 11' 51.5" (RT) D = 49.283' L = 134.455' T = 75.23' R = 175.000' SE = SEE PLANS DS = 30 MPH	PI Sta 26+26.43 Δ = 80° 55' 31.5" (LT) D = 52° 44' 25.6" L = 247.38' T = 149.44' R = 175.000' SE = SEE PLANS DS = STOP COND.	PI Sta 27+75.07 Δ = 154° 50' 56.3" (RT) D = 38° 14' 40.8" L = 255.71' T = 150.00' R = 455.86' SE = SEE PLANS DS = STOP COND.	PI Sta 11+78.0 Δ = 42° 43' 28.1" (RT) D = 38° 14' 40.8" L = 255.71' T = 150.00' R = 455.86' SE = SEE PLANS DS = STOP COND.	PI Sta 11+78.0 Δ = 42° 43' 28.1" (RT) D = 38° 14' 40.8" L = 255.71' T = 150.00' R = 455.86' SE = SEE PLANS DS = STOP COND.

PAVEMENT REMOVAL
 PROP. C&G ISLAND
 PROP. SHORING
 PROP. PAVED SHOULDER
 GRAPHIC SCALE
 0 25 50 100
 PLANS
 DESIGNED BY: _____
 CHECKED BY: _____
 DATE: _____

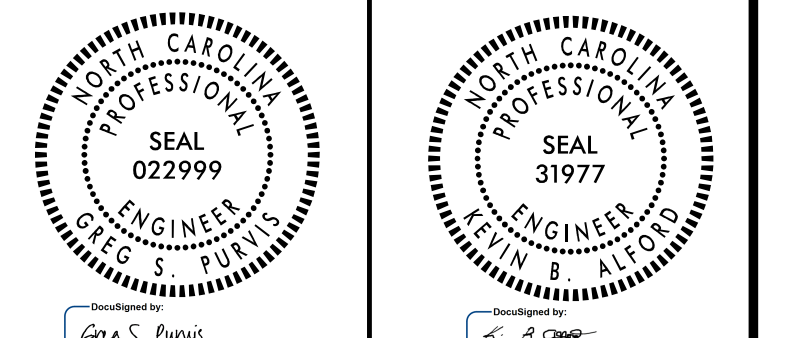
SEE SHEETS S-1 THRU S-33 FOR STRUCTURE PLANS
 FOR -L- PROFILE SEE SHEET NO. 9 & 10
 FOR -R- PROFILE SEE SHEET NO. 12 & 13
 FOR -YIA- PROFILE SEE SHEET NO. 14
 FOR -YIB- PROFILE SEE SHEET NO. 14
 FOR -YIC- PROFILE SEE SHEET NO. 15
 FOR -Y2- PROFILE SEE SHEET NO. 15
 FOR -RPA- PROFILE SEE SHEET NO. 16
 FOR -RPB- PROFILE SEE SHEET NO. 17
 FOR -RPC- PROFILE SEE SHEET NO. 18
 FOR -RPD- PROFILE SEE SHEET NO. 19
 FOR -RAB- PROFILE SEE SHEET NO. 20
 FOR -RCD- PROFILE SEE SHEET NO. 20
 FOR -YIA-S- PROFILE SEE SHEET NO. 21
 FOR -YIB-S- PROFILE SEE SHEET NO. 21
 SEE SHEET 20-1 FOR DRAINAGE DETAILS
 SEE SHEET 2A-6 FOR STRUCTURE /PAVEMENT RELATIONSHIP



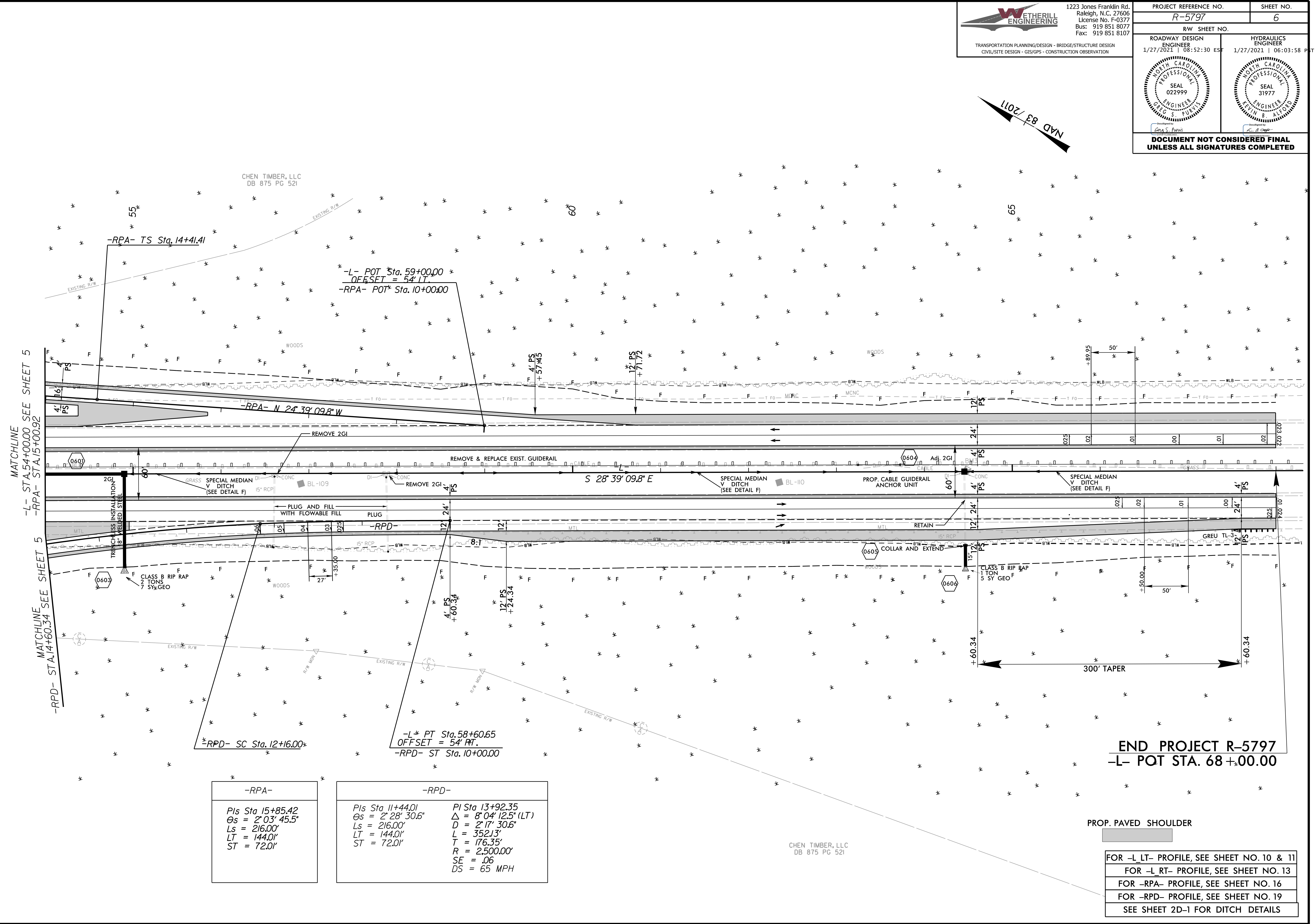
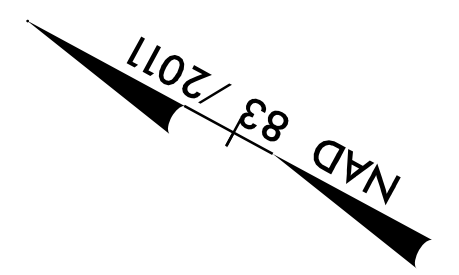
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Fax: 919 851 8107

PROJECT REFERENCE NO. **R-5797** SHEET NO. **6**

RW SHEET NO. ROADWAY DESIGN ENGINEER 1/27/2021 08:52:30 EST HYDRAULICS ENGINEER 1/27/2021 06:03:58 P



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MATCHLINE -L- STA. 54+00.00 SEE SHEET 5
-RPA- STA. 15+00.92
MATCHLINE -RPD- STA. 14+60.34 SEE SHEET 5

-RPA-	
PIs Sta 15+85.42	
θs = 2°03'45.5"	
Ls = 216.00'	
LT = 144.01'	
ST = 72.01'	

-RPD-	
PIs Sta 11+44.01	PI Sta 13+92.35
θs = 2°28'30.6"	Δ = 8°04'12.5" (LT)
Ls = 216.00'	D = 2°17'30.6"
LT = 144.01'	L = 352.13'
ST = 72.01'	T = 176.35'
	R = 2,500.00'
	SE = .06
	DS = 65 MPH

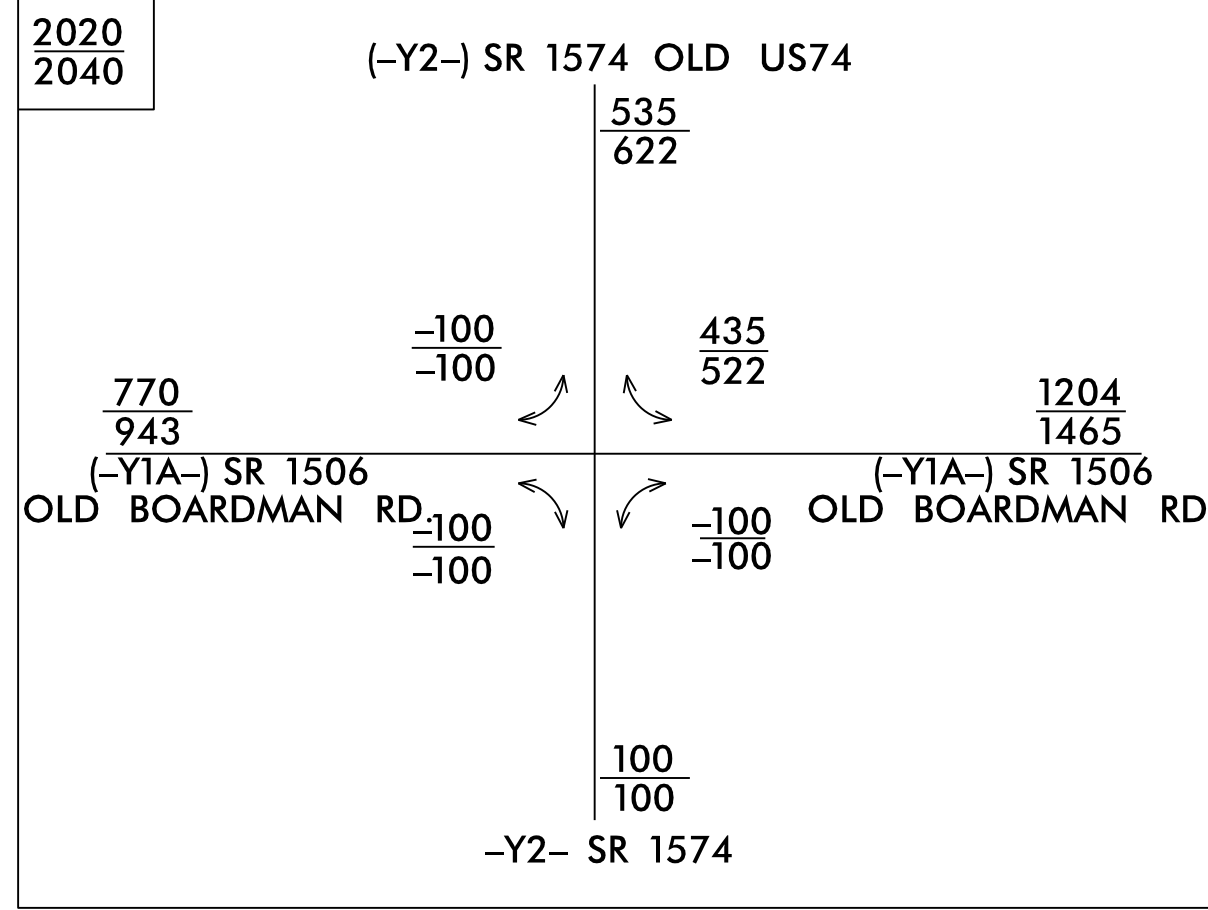
END PROJECT R-5797
-L- POT STA. 68+00.00

PROP. PAVED SHOULDER

- FOR -L LT- PROFILE, SEE SHEET NO. 10 & 11
- FOR -L RT- PROFILE, SEE SHEET NO. 13
- FOR -RPA- PROFILE, SEE SHEET NO. 16
- FOR -RPD- PROFILE, SEE SHEET NO. 19
- SEE SHEET 2D-1 FOR DITCH DETAILS

8.17.19.99
1/28/2021 10:57:57 -Rdy_PSH_06.dgn

8/17/19



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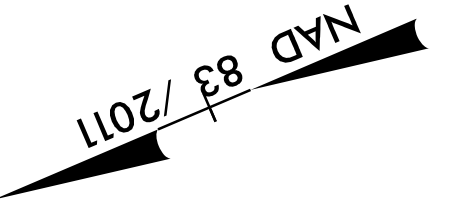
TRANSPORTATION DESIGN/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. R-5797	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 1/27/2021 11:14:21:12 EST	HYDRAULICS ENGINEER 1/27/2021 11:18:17 PST

Seal: ERIC S. PURVIS, PE, No. 022999, Exp. 12/31/23

Seal: KEVIN B. ALFORD, PE, No. 31977, Exp. 12/31/23

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REVISIONS

BEGIN CONSTRUCTION
-Y1A- POT STA. 11+00.00

-Y1A- PC Sta. 11+83.19

-Y1A- PT Sta. 14+33.20
S 25° 32' 22.6" W

-Y2- PC Sta. 12+78.86

-Y2- POT Sta. 21+99.99

END CONST
-Y2- POT STA. 21+87.00

-Y2- PT Sta. 21+77.02
S 47° 22' 20.4" E

END MILLING & CURB & GUTTER RT
-Y2- PC Sta. 19+20.13

BEGIN 2" 6" CURB AND GUTTER LT & RT +57.31

BEGIN CONST
-Y2- POC STA. 15+00.00

-Y1A-	-Y2-
PI Sta 13+08.32	PI Sta 17+36.40
Δ = 6' 08" 52.4" (RT)	Δ = 26' 55" 43.8" (RT)
D = 2' 27" 32.6"	D = 2' 59" 53.6"
L = 250.01'	L = 898.16'
T = 125.13'	T = 457.54'
R = 2,330.00'	R = 1,911.00'
SE = .025	SE = EXIST.
DS = 40 MPH	DS = STOP COND.

PROP. C&G, ISLAND

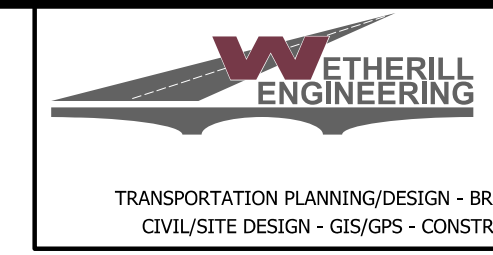
PAVEMENT REMOVAL

FOR -Y1A- PROFILE, SEE SHEET NO. 14

FOR -Y2- PROFILE, SEE SHEET NO. 15

SEE SHEET 2D-1 FOR DITCH DETAILS

1/27/2021 R-5797_Rd1_PSH_07.dgn

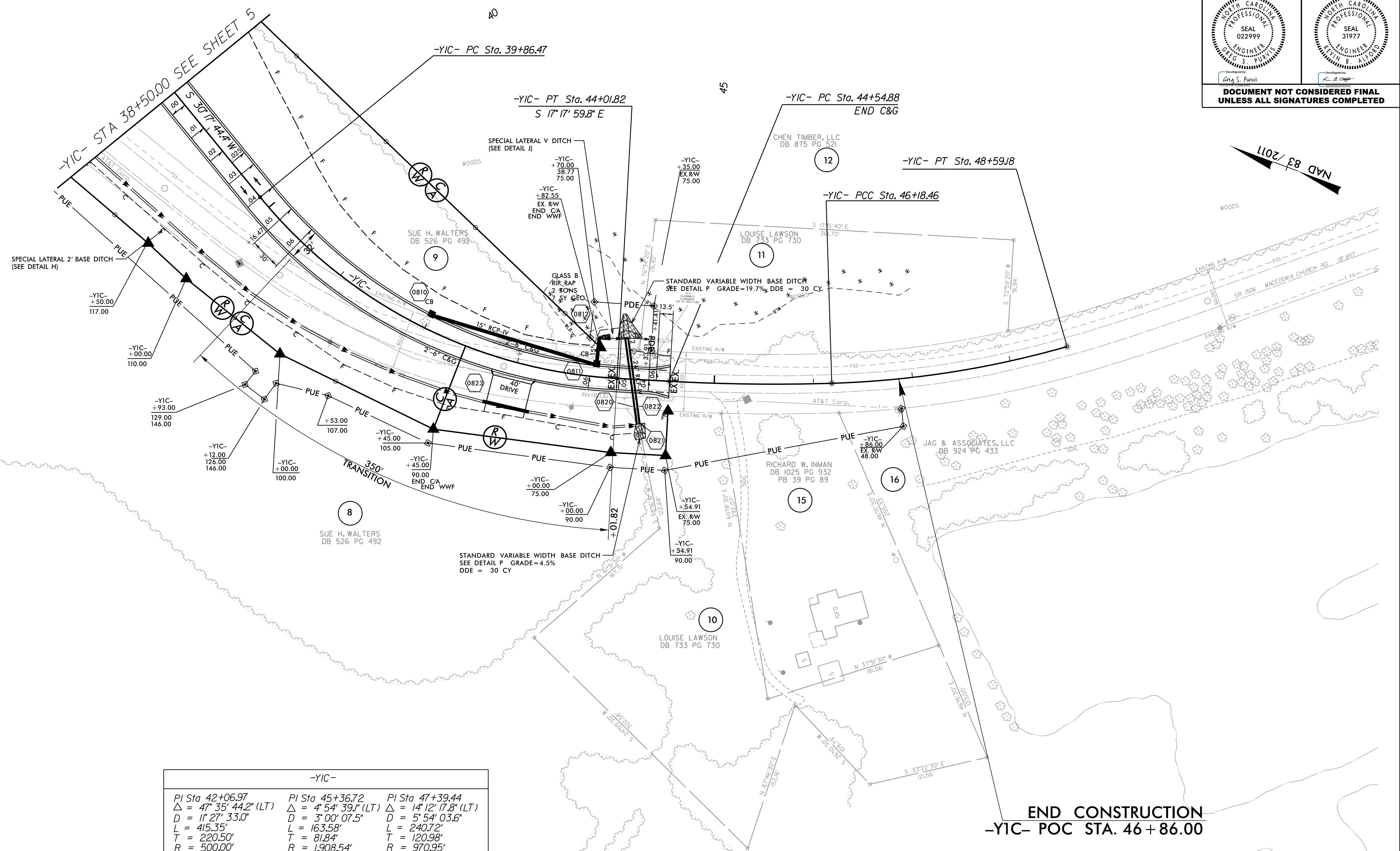


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PROJECT REFERENCE NO. R-5797	SHEET NO. 8
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER 1/27/2021 11:21:12 EST	1/27/2021 11:18:17 PS
Designed by Greg S. Purvis	Checked by Kevin S. Axford

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS



-YIC-		
PI Sta 42+06.97	PI Sta 45+36.72	PI Sta 47+39.44
$\Delta = 47^{\circ} 35' 44.2''$ (LT)	$\Delta = 4^{\circ} 54' 39.1''$ (LT)	$\Delta = 14^{\circ} 12' 17.8''$ (LT)
$D = 11^{\circ} 27' 33.0''$	$D = 3^{\circ} 00' 07.5''$	$D = 5^{\circ} 54' 03.6''$
$L = 415.35'$	$L = 163.58'$	$L = 240.72'$
$T = 220.50'$	$T = 81.84'$	$T = 120.98'$
$R = 500.00'$	$R = 1,908.54'$	$R = 970.95'$
$SE = .06$	$SE = EXIST.$	$SE = EXIST.$
$DS = 40$ MPH		

END CONSTRUCTION
-YIC- POC STA. 46 + 86.00

PROP. C&G, ISLAND

FOR -YIC- PROFILE, SEE SHEET NO. 14
SEE SHEET 2D-1 FOR DITCH DETAILS

1/27/2021 11:21:12 EST
R-5797_PSH_08.dgn

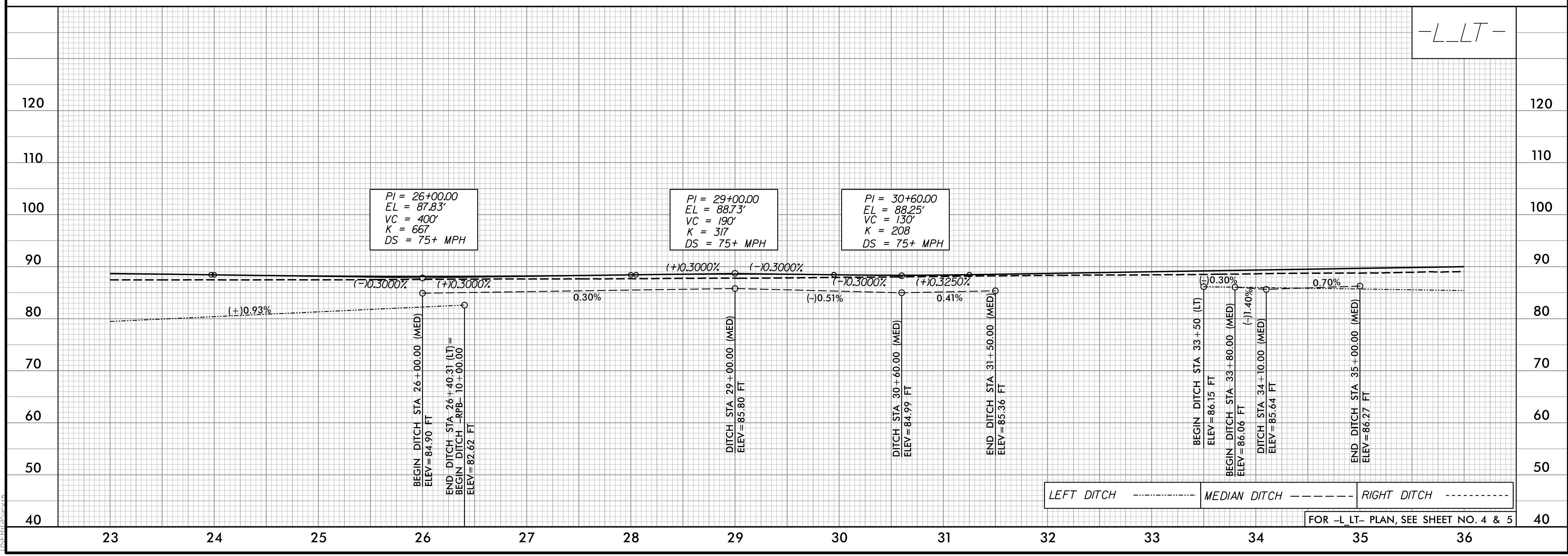
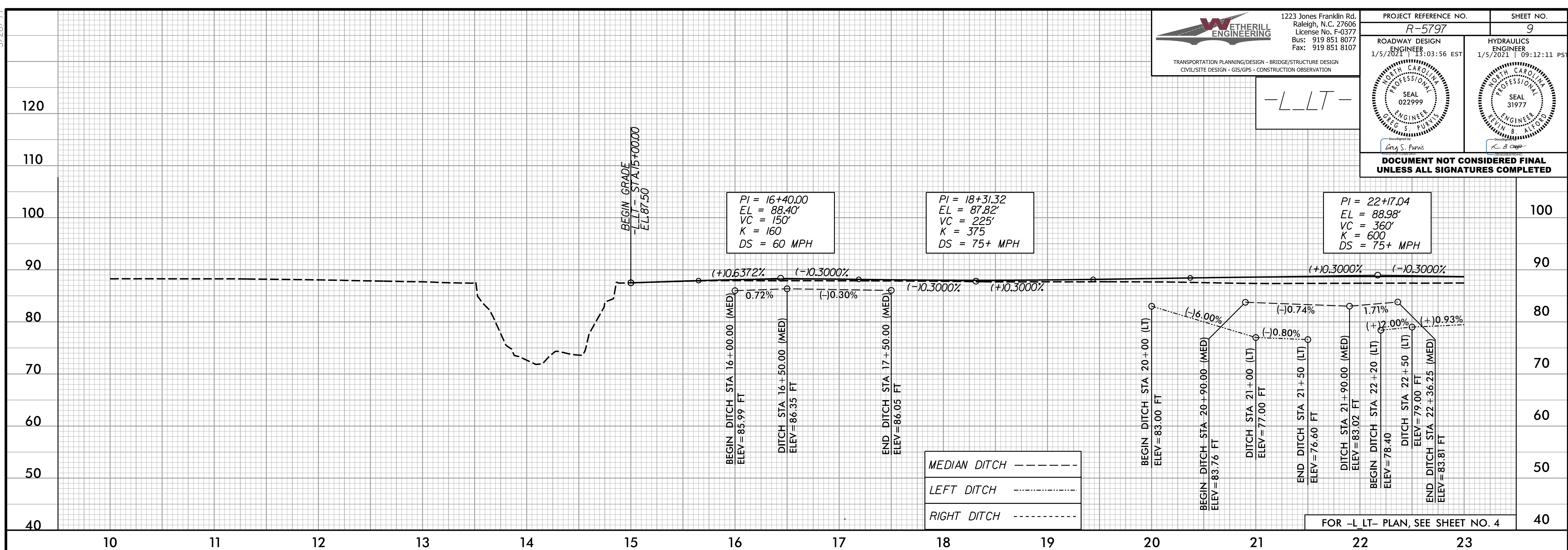
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 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. R-5797	SHEET NO. 9
ROADWAY DESIGN 1/5/2008 ENGINEER: 03:56 EST	HYDRAULICS ENGINEER 1/5/2021 09:12:11 PST
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-L-LT-

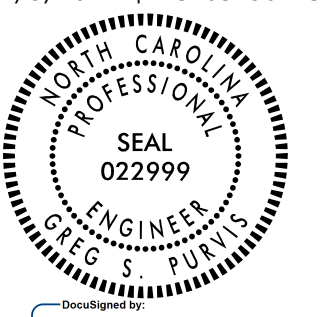
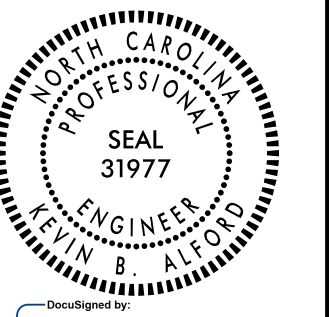


12/9/2008 R-5797_Rdy_PSH_09_PFL.dgn

5/28/99

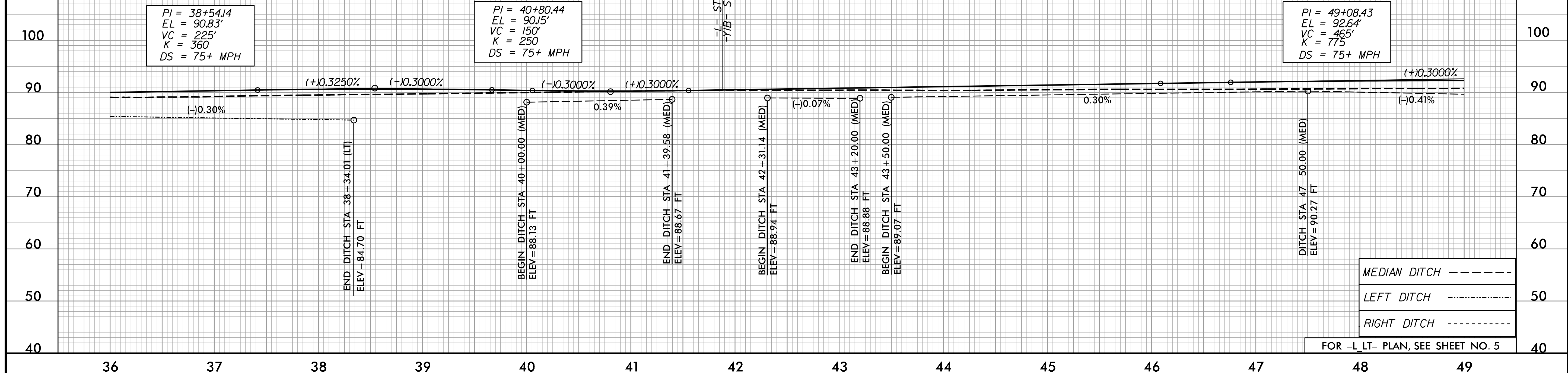
WETHERILL ENGINEERING
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 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. R-5797	SHEET NO. 10
ROADWAY DESIGN ENGINEER 1/5/2021 13:03:56 EST	HYDRAULICS ENGINEER 1/5/2021 09:12:11 PST
 Greg S. Purvis 022999	 Kevin S. Ford 31977

-L-LT-

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

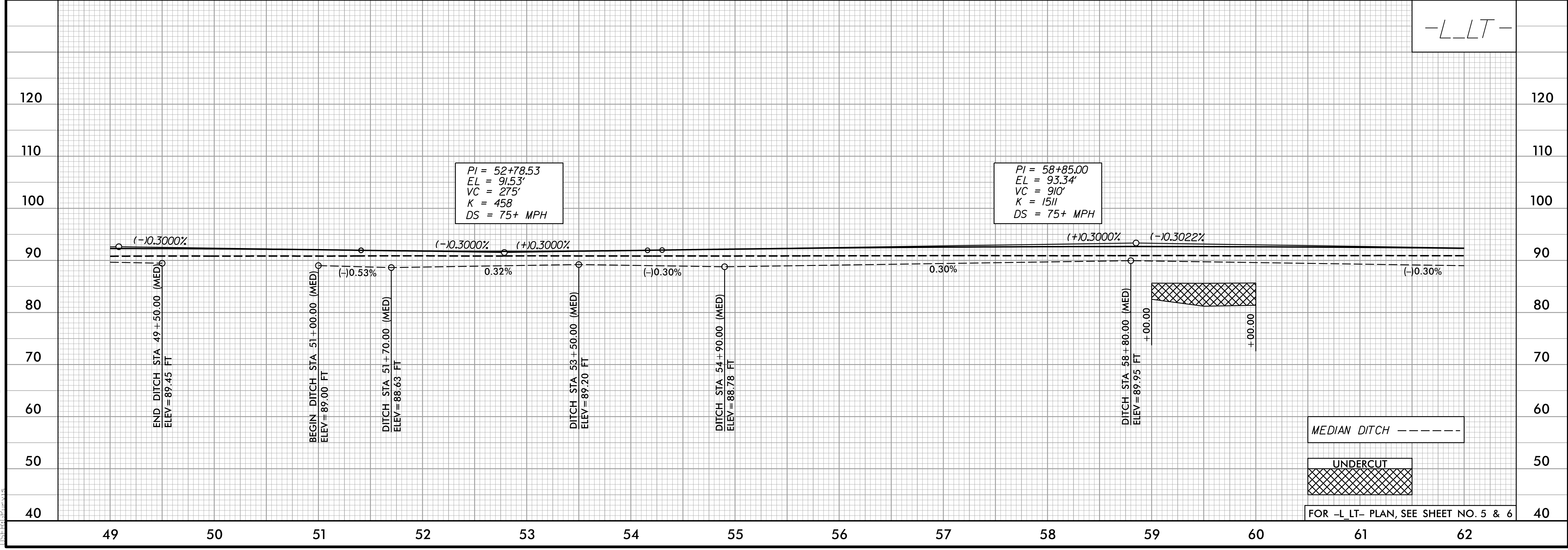


MEDIAN DITCH - - - - -

LEFT DITCH

RIGHT DITCH - - - - -

-L-LT-



MEDIAN DITCH - - - - -

UNDERCUT

12/9/2020 8:57:57 AM - Redy_PSH_10_PFL.dgn

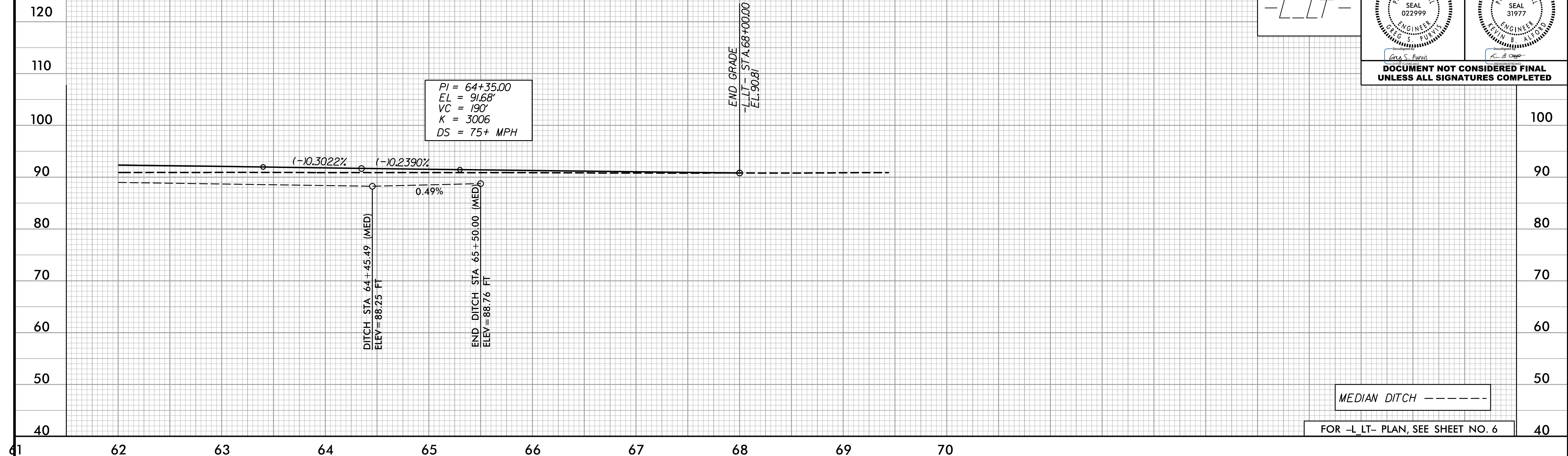
5/28/21

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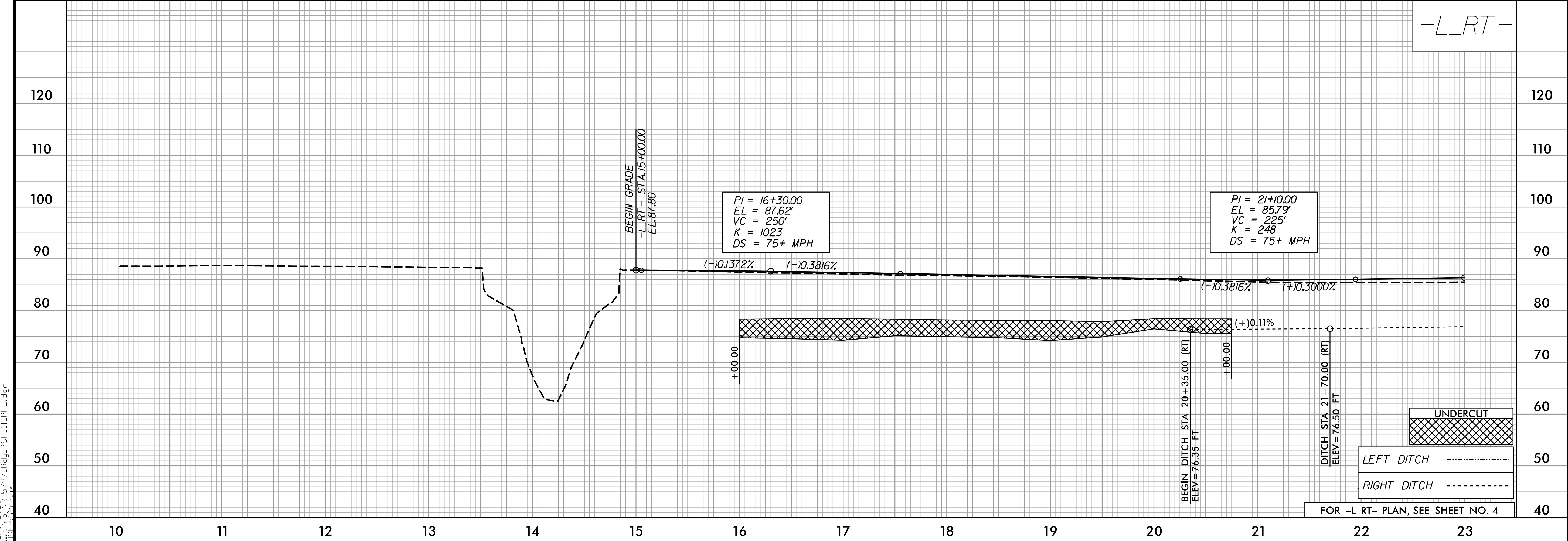
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. R-5797	SHEET NO. 11
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-L-LT-



MEDIAN DITCH -----
FOR -L-LT- PLAN, SEE SHEET NO. 6



-L-RT-

UNDERCUT
LEFT DITCH -----
RIGHT DITCH
FOR -L-RT- PLAN, SEE SHEET NO. 4

12/9/2020 8:57:57 AM -Redy_PSH_11_PFL.dgn

5/28/99

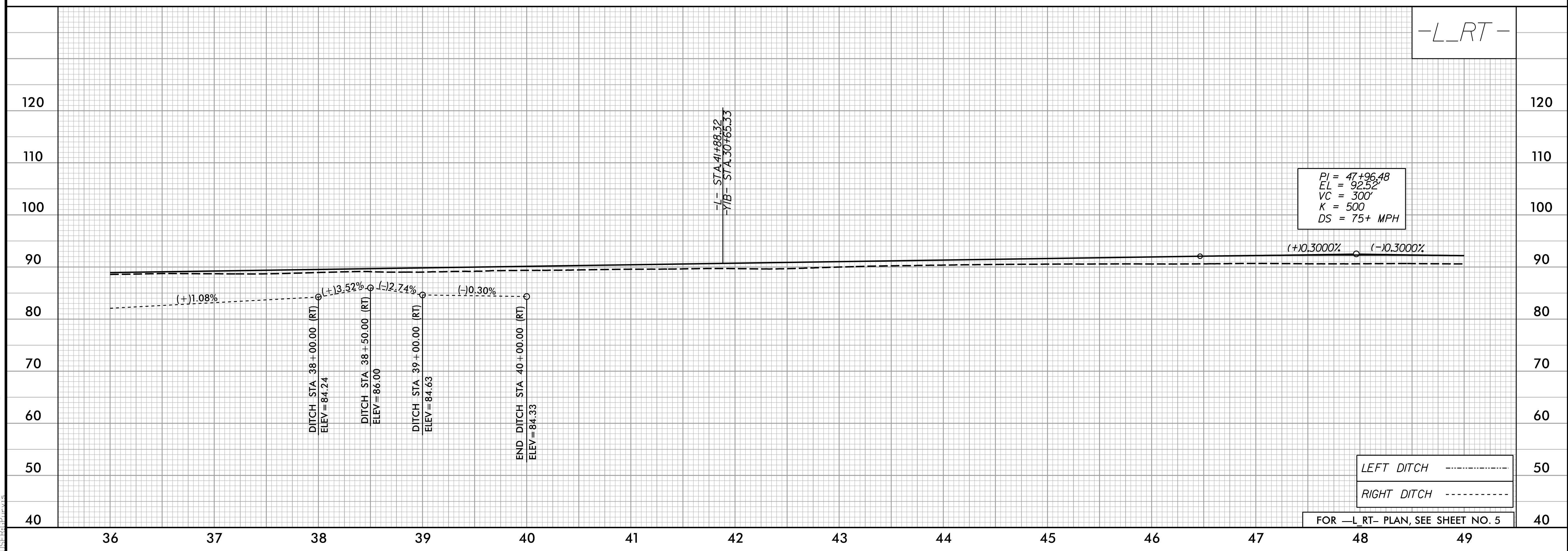
WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. R-5797	SHEET NO. 12
ROADWAY DESIGN ENGINEER 1/27/2021 08:52:30 EST	HYDRAULICS ENGINEER 1/27/2021 06:03:58 PST

-L_RT-

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



-L_RT-

1/26/2021 R-5797_Rdy_PSH_12_PFL.dgn

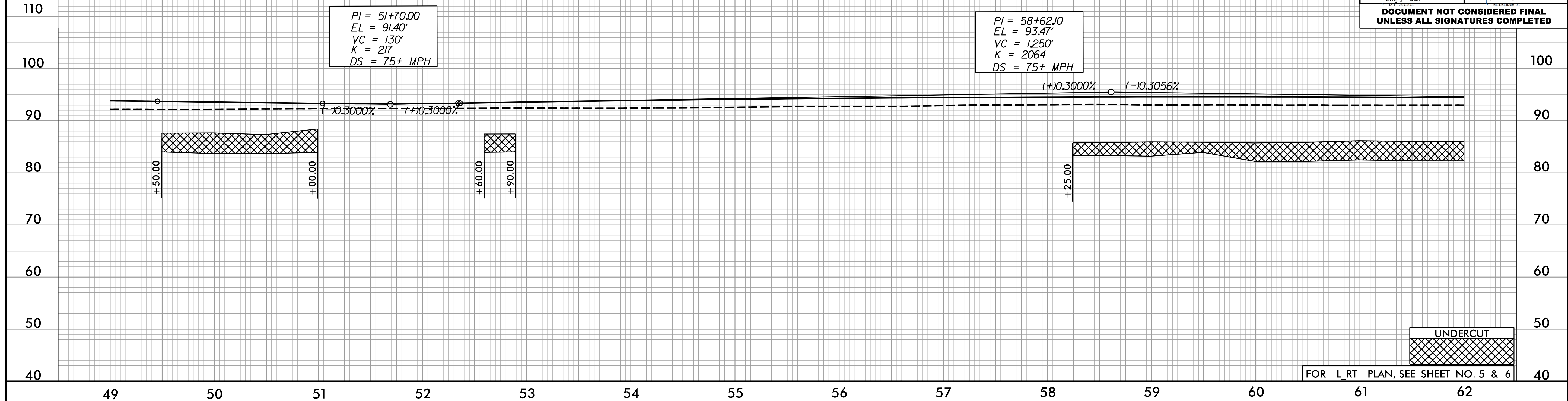
5/28/99

WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

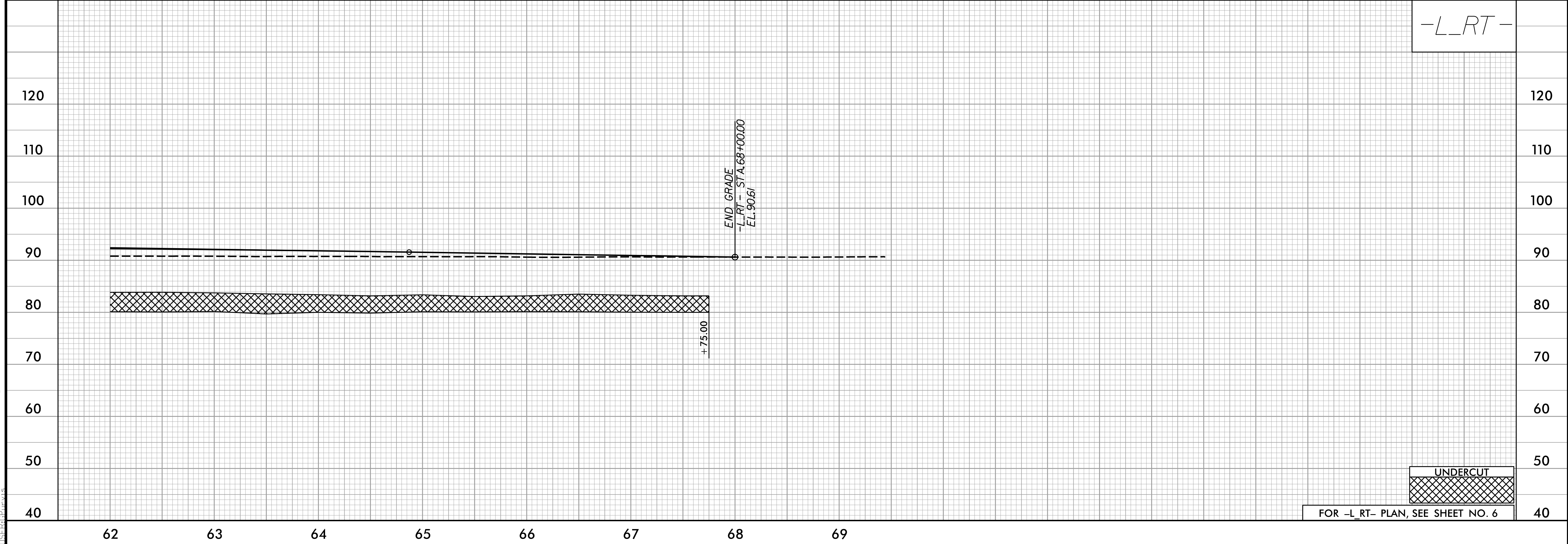
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. R-5797	SHEET NO. 13
ROADWAY DESIGN ENGINEER 1/27/2021 10:52:30 EST	HYDRAULICS ENGINEER 1/27/2021 06:03:58 PST

-L_RT-



-L_RT-



UNDERCUT

FOR -L_RT- PLAN, SEE SHEET NO. 6

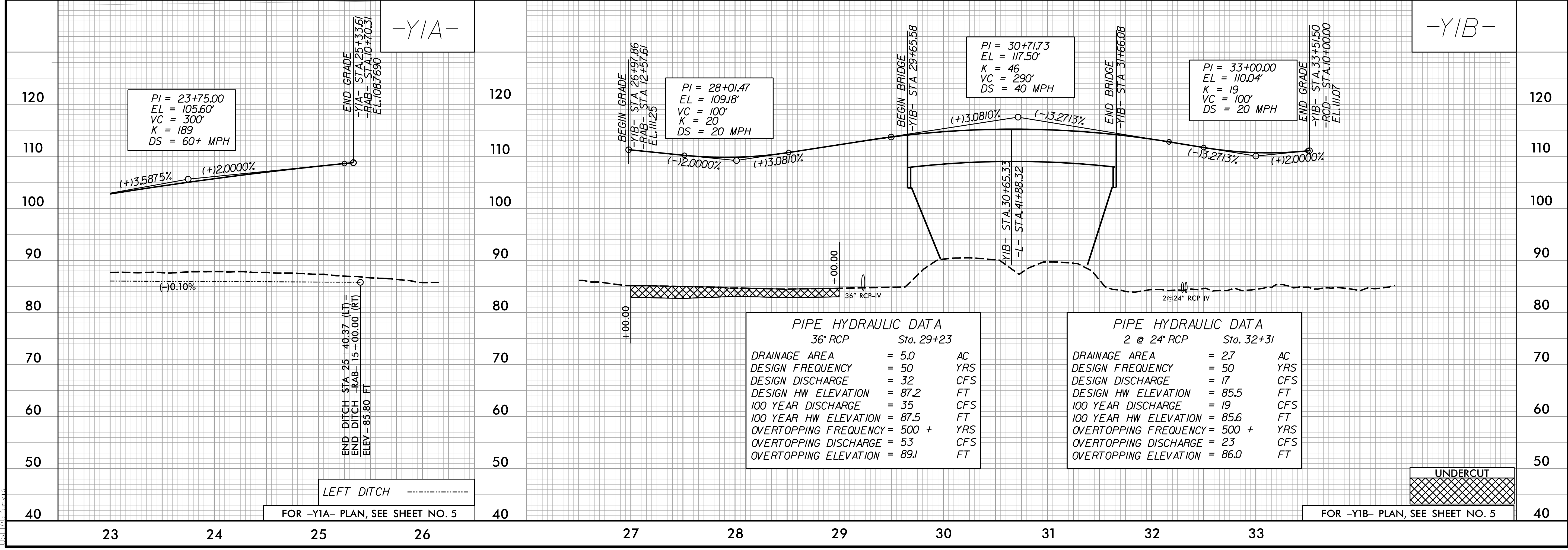
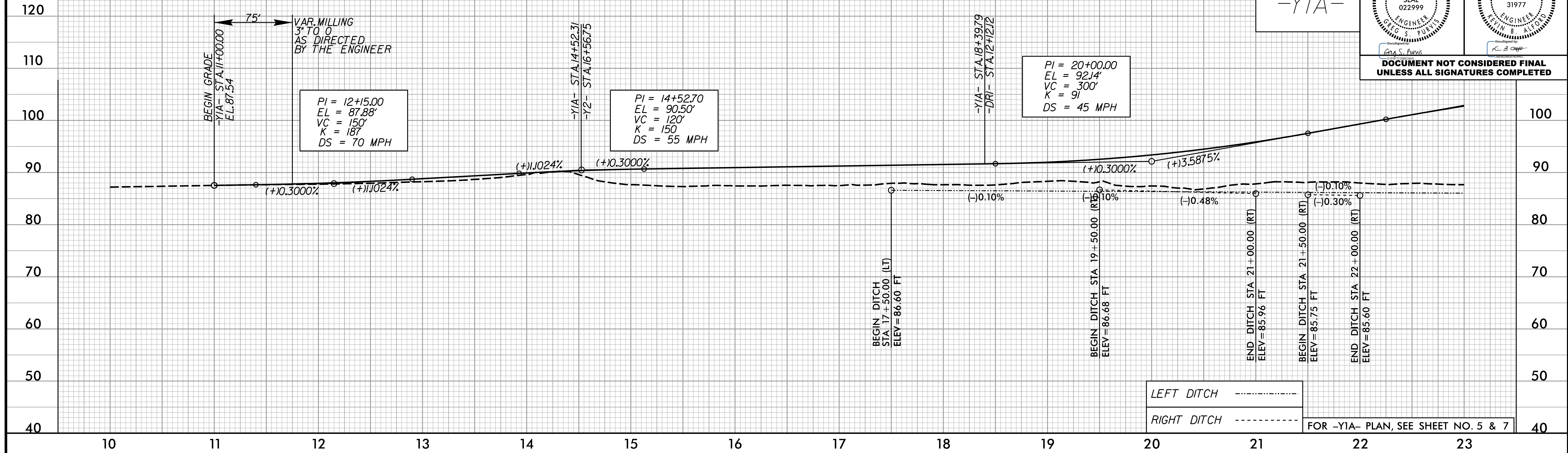
1/26/2021 R-5797_Rdy_PSH_13_PFL.dgn

5/28/2020

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

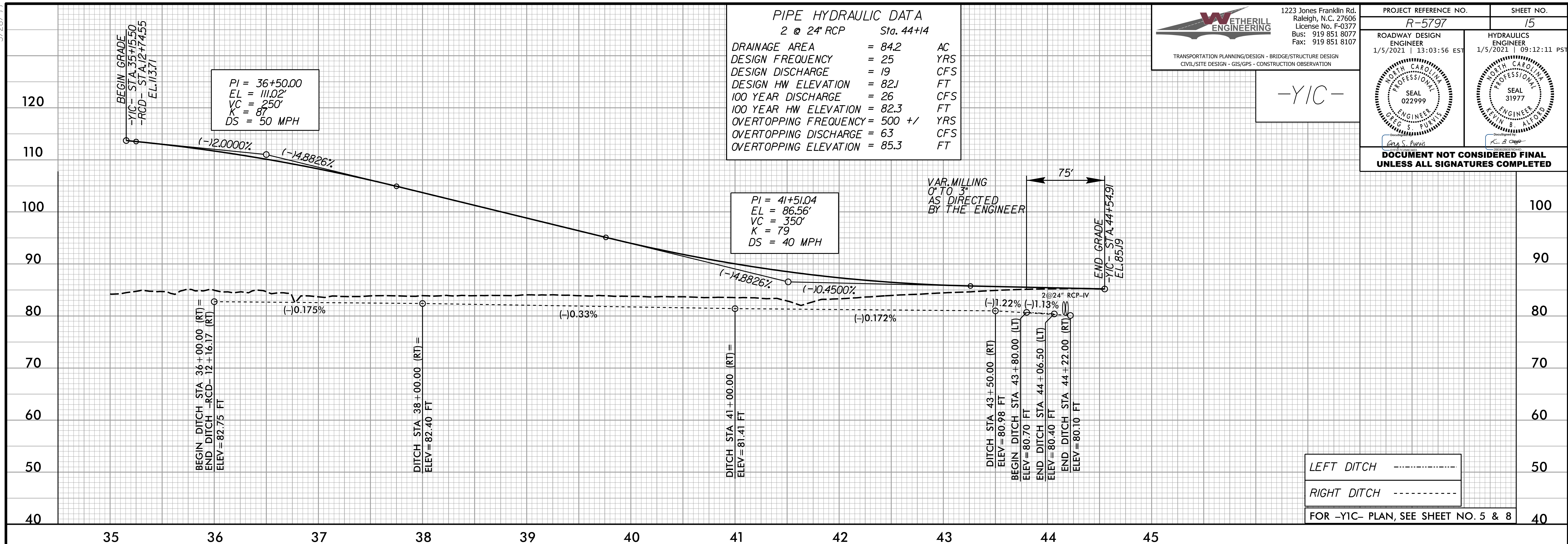
PROJECT REFERENCE NO. R-5797	SHEET NO. 14
ROADWAY DESIGN ENGINEER 1/5/2021 13:03:56 EST	HYDRAULICS ENGINEER 1/5/2021 09:12:11 PST
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



12/9/2020 11:58:00 AM R-5797_Rdy_PSH_14_PFL.dgn

5/28/2020

12/9/2020 8:57:97 -Redy_PSH_15_PFL.dgn



PIPE HYDRAULIC DATA
2 @ 24" RCP Sta. 44+14

DRAINAGE AREA	= 84.2	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 19	CFS
DESIGN HW ELEVATION	= 82.1	FT
100 YEAR DISCHARGE	= 26	CFS
100 YEAR HW ELEVATION	= 82.3	FT
OVERTOPPING FREQUENCY	= 500 +/-	YRS
OVERTOPPING DISCHARGE	= 63	CFS
OVERTOPPING ELEVATION	= 85.3	FT

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

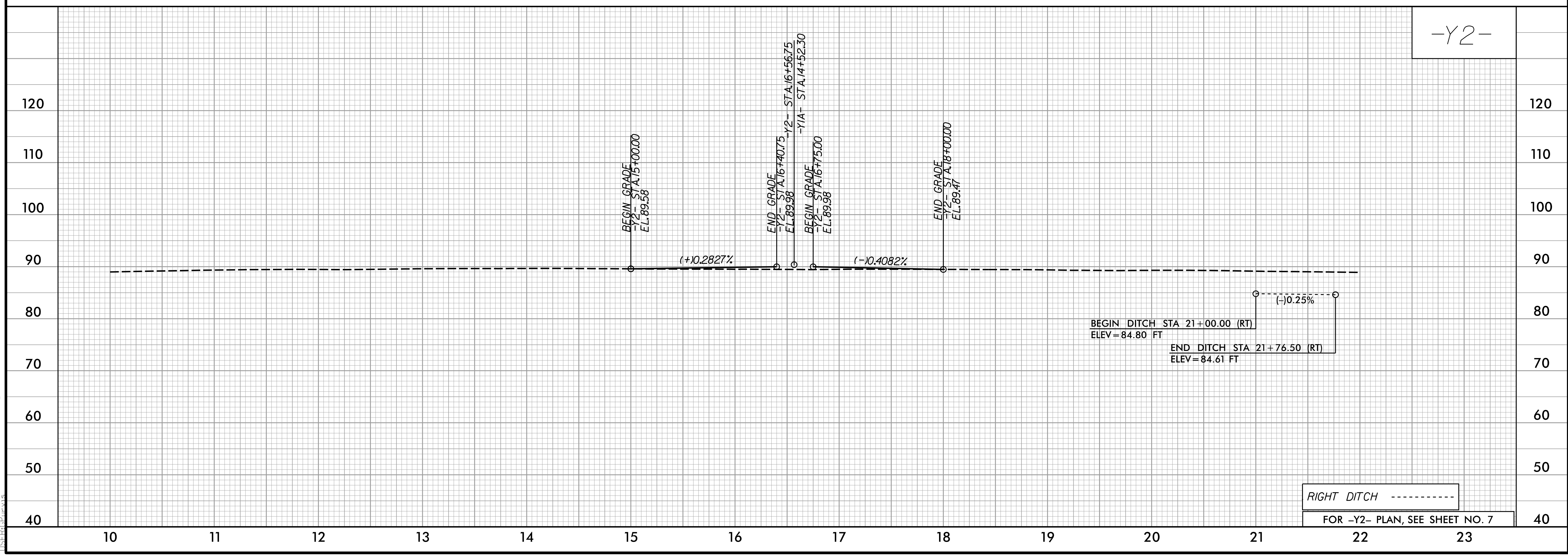
PROJECT REFERENCE NO.	R-5797	SHEET NO.	15
ROADWAY DESIGN ENGINEER	1/5/2021 1:09:12:11 PM EST	HYDRAULICS ENGINEER	1/5/2021 1:09:12:11 PM EST
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

-Y1C-

LEFT DITCH -----

RIGHT DITCH -----

FOR -Y1C- PLAN, SEE SHEET NO. 5 & 8



-Y2-

RIGHT DITCH -----

FOR -Y2- PLAN, SEE SHEET NO. 7

5/28/99

WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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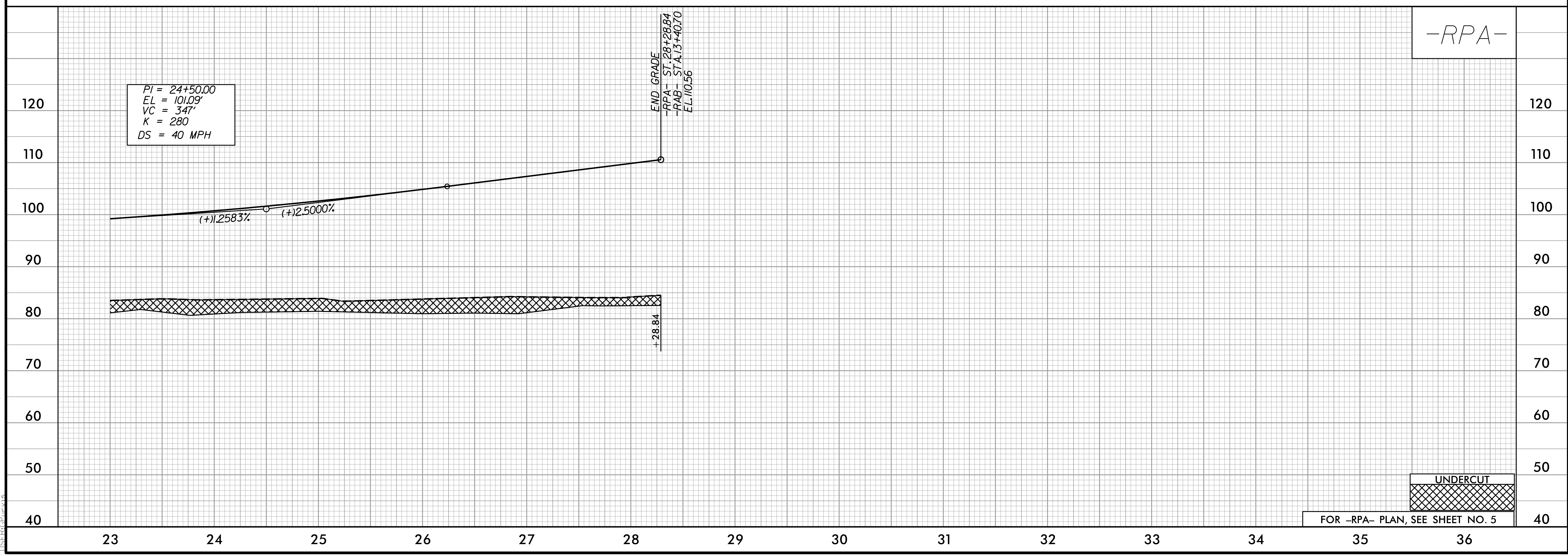
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. R-5797	SHEET NO. 16
ROADWAY DESIGN ENGINEER 1/5/2021 13:03:56 EST	HYDRAULICS ENGINEER 1/5/2021 09:12:11 PST
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-RPA-



-RPA-



12/9/2020 8:57:17 AM -RPA- PSH-16.PFL.dgn

5/28/99

PIPE HYDRAULIC DATA
30" RCP Sta. 21+78

DRAINAGE AREA	= 2.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 16	CFS
DESIGN HW ELEVATION	= 88J	FT
100 YEAR DISCHARGE	= 17	CFS
100 YEAR HW ELEVATION	= 88.3	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 23	CFS
OVERTOPPING ELEVATION	= 89J	FT

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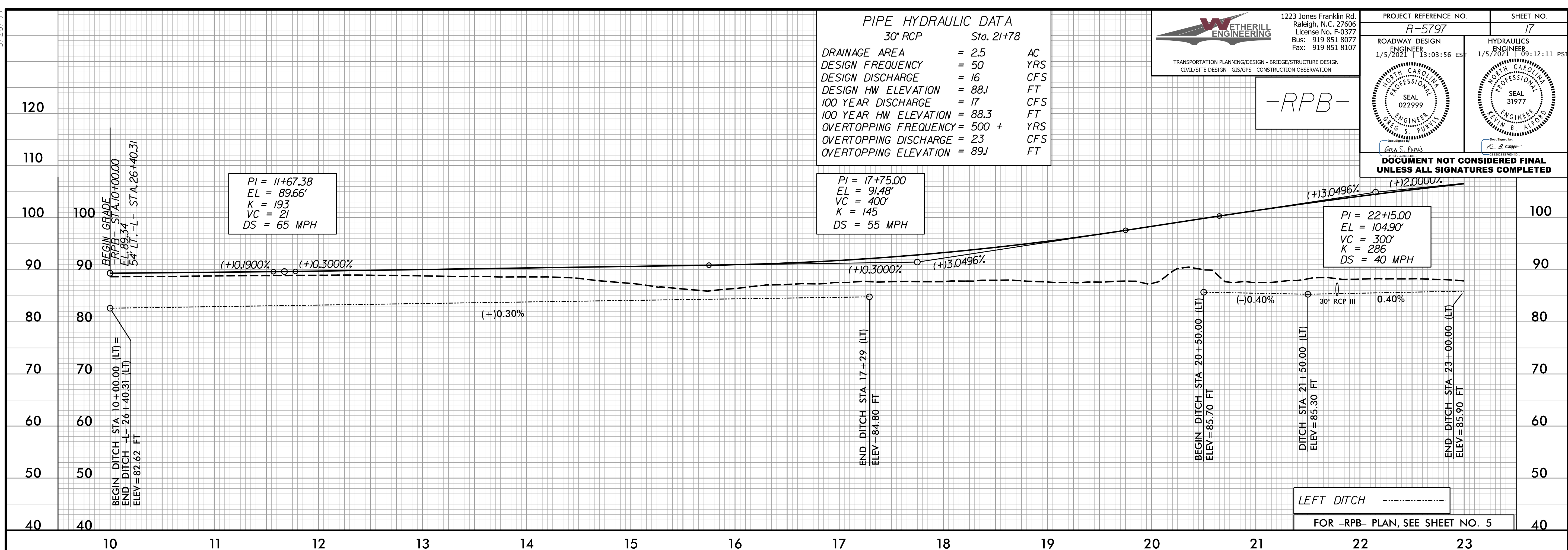
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	R-5797	SHEET NO.	17
ROADWAY DESIGN ENGINEER	1/5/2021 13:03:56 EST	HYDRAULICS ENGINEER	1/5/2021 09:12:11 PST

Seal: GREG S. PUGH, PROFESSIONAL ENGINEER, SEAL 022999, NORTH CAROLINA
Seal: KEVIN S. ALFORD, PROFESSIONAL ENGINEER, SEAL 31977, NORTH CAROLINA

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-RPB-



LEFT DITCH FOR -RPB- PLAN, SEE SHEET NO. 5



-RPB-

FOR -RPB- PLAN, SEE SHEET NO. 5

12/9/2020 8:57:97 -Rdy_PSH-17_PFL.dgn

5/28/99

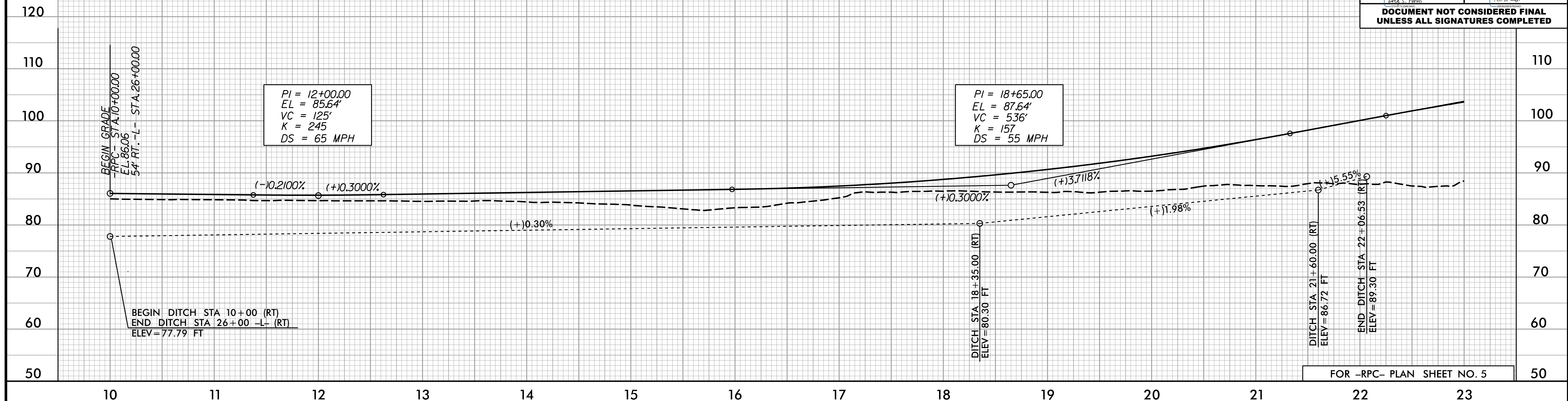
RIGHT DITCH - - - - -
LEFT DITCH - - - - -

WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. R-5797	SHEET NO. 18
ROADWAY DESIGN ENGINEER 1/27/2021 08:52:30 EST	HYDRAULICS ENGINEER 1/27/2021 06:03:58 PT
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-RPC-





-RPC-

1/26/2021 R-5797_Rdy_PSH-18_PFL.dgn

5/28/99

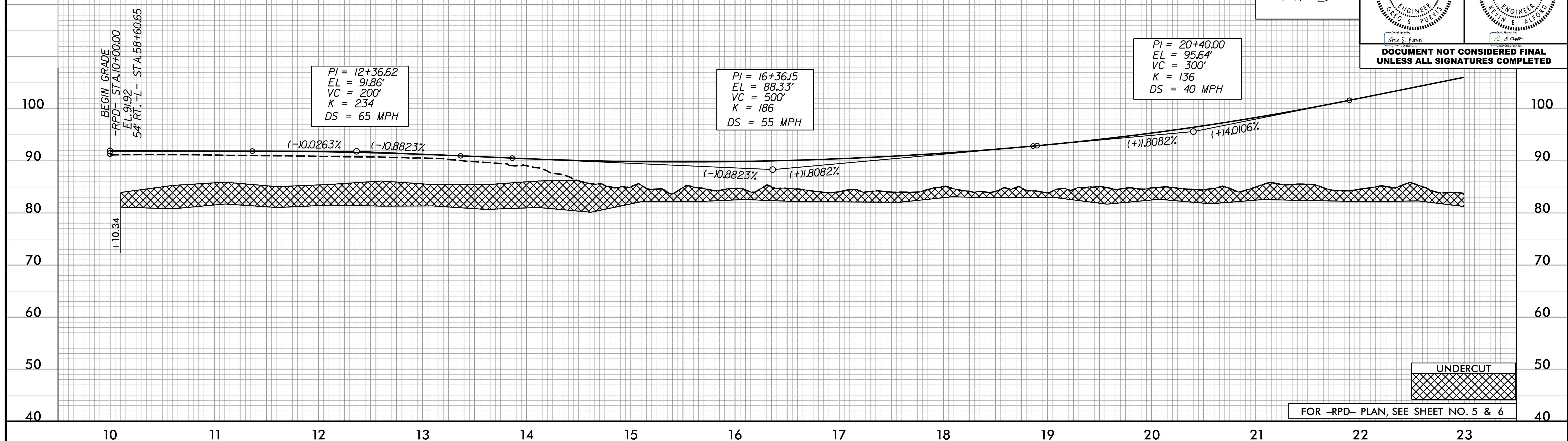
WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. R-5797	SHEET NO. 19
ROADWAY DESIGN 1/27/2021 10:52:30 EST	HYDRAULICS ENGINEER 1/27/2021 06:03:58 PST
 GREG S. PURVIS ENGINEER SEAL 022999	 KEVIN B. ALFORD ENGINEER SEAL 31977

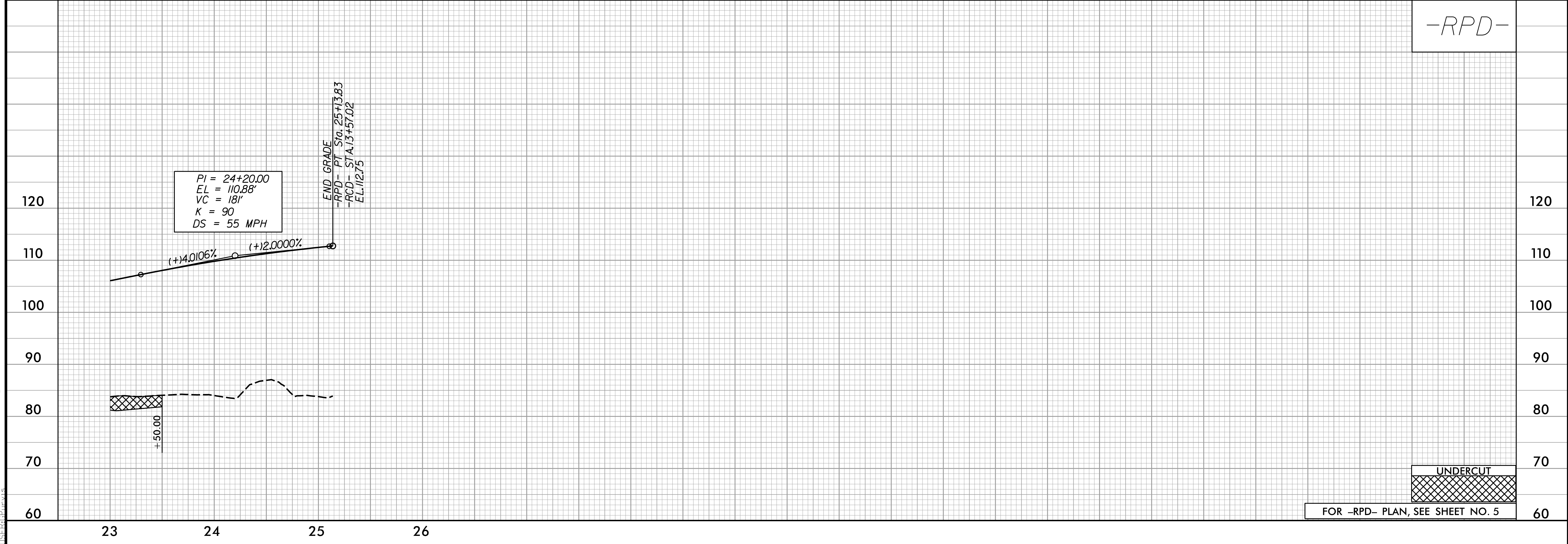
-RPD-

PI = 20+40.00
 EL = 95.64'
 VC = 300'
 K = 136
 DS = 40 MPH



UNDERCUT

-RPD-



UNDERCUT

1/26/2021 R-5797_Rdy_PSH_19_PFL.dgn