

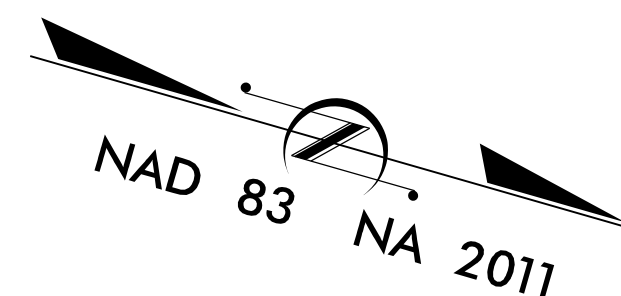
See Sheet 1A For Index of Sheets  
 See Sheet 1B For Conventional Symbols  
 See Sheet RW 1 thru RW 9 for Right of Way Plan Sheets

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

**ROWAN COUNTY**

**LOCATION: SR 2528 (JULIAN ROAD) FROM  
 SR 2667 (SUMMIT PARK DRIVE) TO  
 US 601 (JAKE ALEXANDER BOULEVARD)  
 IN SALISBURY**

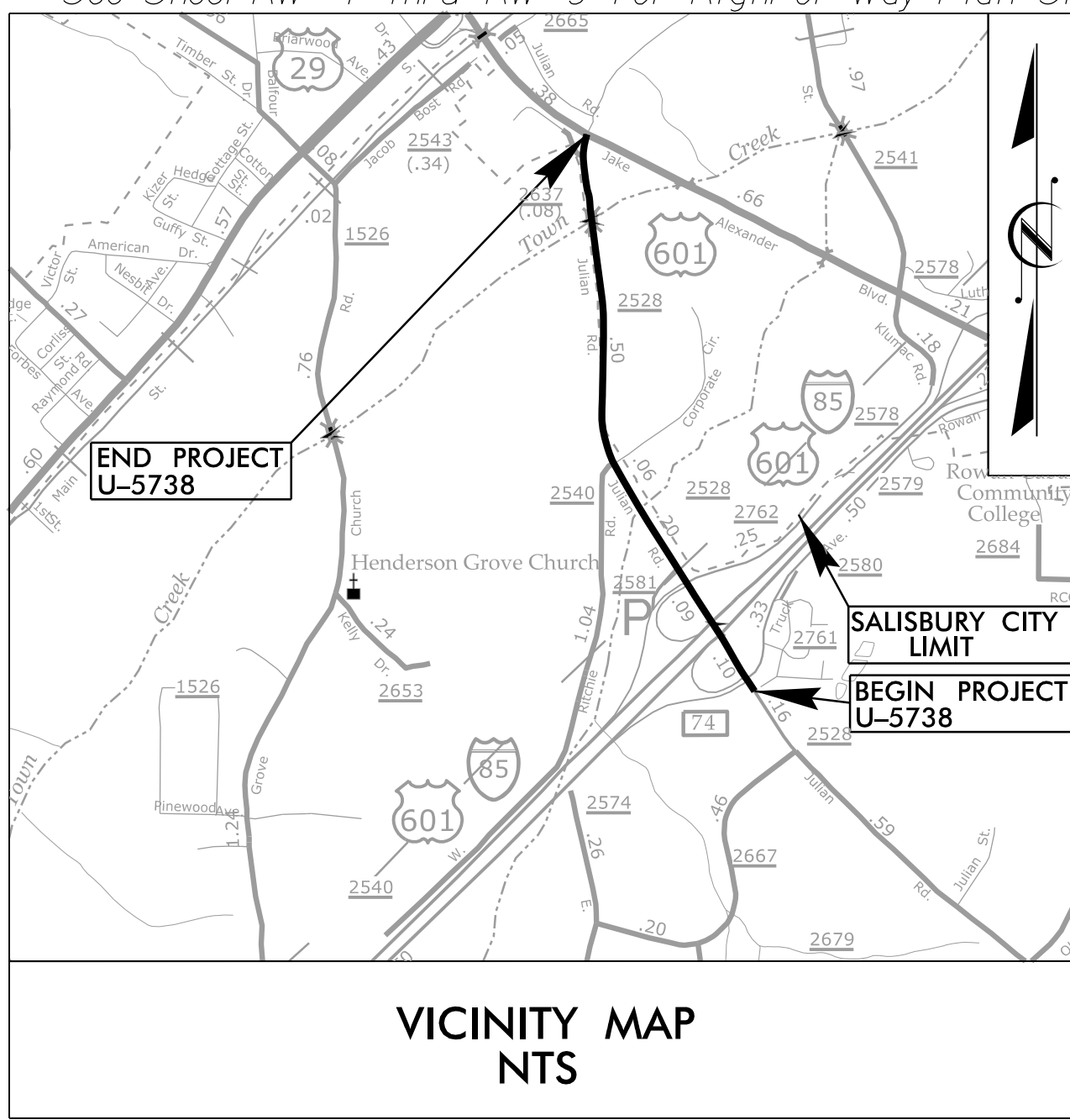
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND  
 STRUCTURES**



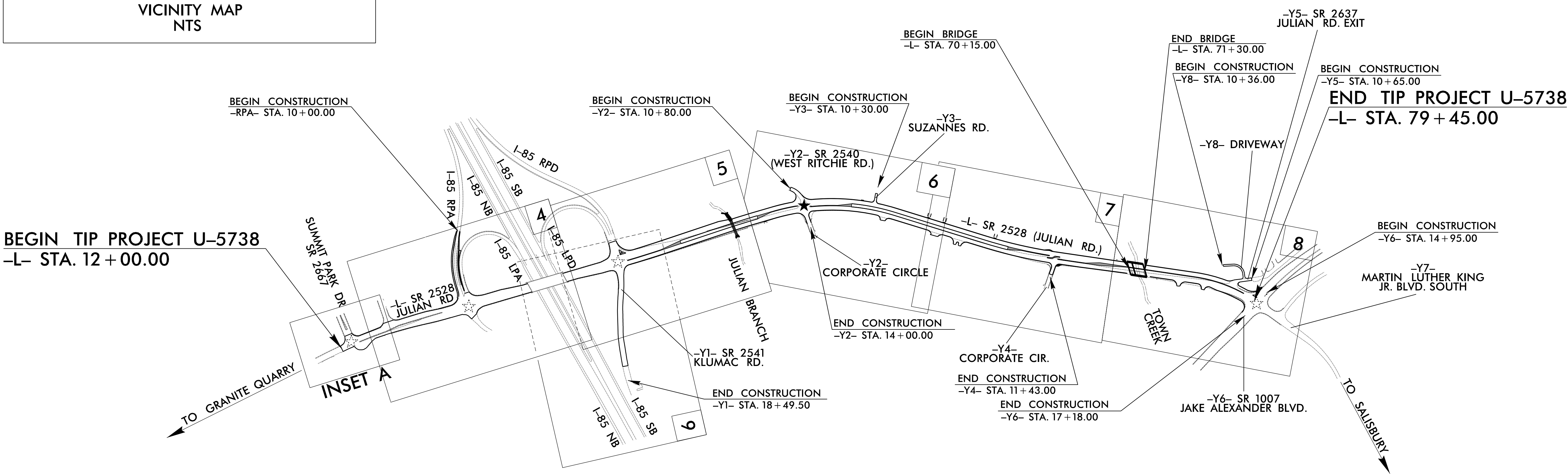
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5738	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50163.1.1	N/A	P.E.	
50163.2.1	N/A	RW & UTILITIES	
50163.3.1	N/A	CONST.	



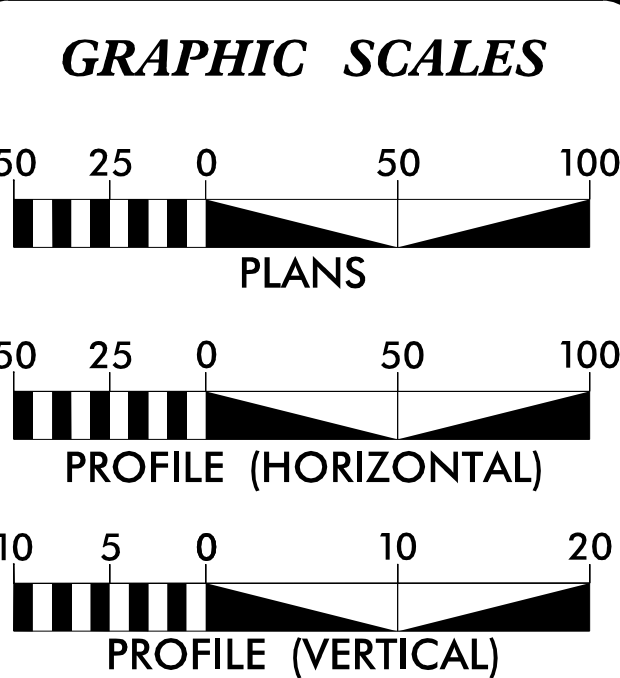
**TIP PROJECT: U-5738**



VICINITY MAP NTS



**CONTRACT: C204426**



**DESIGN DATA**

ADT 2022 =	24,280
ADT 2040 =	26,800
K =	9 %
D =	60 %
T =	8 % *
V =	50 MPH
*(TTST=2% DUAL=6%)	
FUNC CLASS =	LOCAL STATEWIDE TIER

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT U-5738 =	1.256 Miles
LENGTH OF STRUCTURES TIP PROJECT U-5738 =	0.022 Miles
TOTAL LENGTH TIP PROJECT U-5738 =	1.278 Miles

PREPARED FOR  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 DIVISION NINE

**SEPI**  
 ENGINEERING & CONSTRUCTION  
 1 Glenwood Avenue  
 Raleigh, NC 27603  
 Tel: 919.789.9577  
 Fax: 919.789.9581  
 License: C-2197

2018 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
 FEBRUARY 16, 2018

**LETTING DATE:**  
 FEBRUARY 15, 2022

**MIKE TAYLOR, PE**  
 PROJECT ENGINEER

**DANIEL W. GARDNER, JR., PE**  
 PROJECT DESIGN ENGINEER

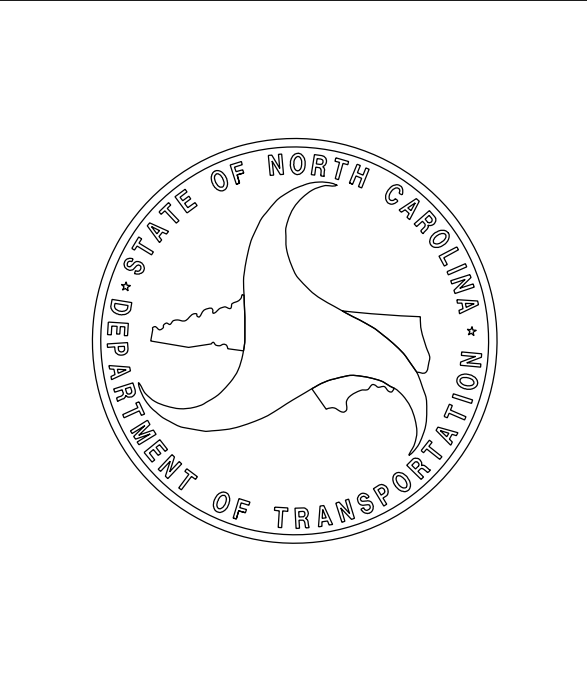
**MATT JONES, PE**  
 NCDOT DIVISION CONTACT

**HYDRAULICS ENGINEER**

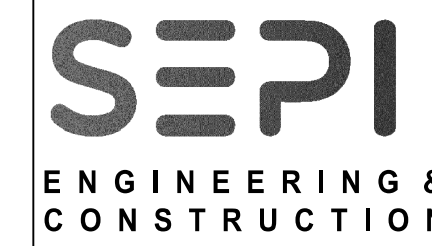
**ROADWAY DESIGN ENGINEER**

SIGNATURE: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_



DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED



1 Glenwood Avenue  
Raleigh, NC 27603  
Tel:919.789.9977  
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License: C-2197

PROJECT REFERENCE NO. U-5738 SHEET NO. 1A  
ROADWAY DESIGN ENGINEER  
SEAL 033871  
DANIEL W. GARDNER  
NORTH CAROLINA PROFESSIONAL ENGINEER

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

EFF. 01-16-2018  
REV.

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL PLAN SHEET SYMBOLS
2A-1 THRU 2A-6	PAVEMENT SCHEDULE, WEDGING DETAIL, AND TYPICAL SECTIONS
2B-1 THRU 2B-2	ROADWAY INTERSECTION DETAILS
2C-1	STRUCTURE ANCHOR UNITS
2C-2	GUARDRAIL AT-1 END UNIT DETAIL
2C-3	GUARDRAIL INSTALLATION DETAIL
2C-4	CURB RAMP DETAIL - MEDIAN OR TURN LANE ISLANDS
2C-5	CURB RAMP DETAIL - PARALLEL RAMPS
2C-6	CURB RAMP DETAIL - SHARED LANDING
2C-7	CURB RAMP DETAIL - DIRECTIONAL RAMP
2D-1	DRAINAGE DITCH DETAILS
2D-2	CULVERT INLET/OUTLET DETAILS/DRAINAGE DITCH DETAILS
2G-1	STANDARD TEMPORARY SHORING DETAIL
3B-1	SUMMARY OF EARTHWORK
3B-2	GUARDRAIL SUMMARY, ASPHALT PAVEMENT REMOVAL SUMMARY, AND WOVEN WIRE FENCE SUMMARY
3D-1 THRU 3D-4	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 9	PLAN SHEETS
10 THRU 14	PROFILE SHEETS
RW 1 THRU RW 9	RIGHT OF WAY PLAN SHEETS
TMP-1 THRU TMP-18	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-9	PAVEMENT MARKING PLANS
EC-1 THRU EC-15	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-17	SIGNING PLANS
SIG-1 THRU SIG-11.9	SIGNAL PLANS
SIG-M1 THRU SIG-M8	METAL POLE STANDARD DRAWINGS
SCP-1 THRU SCP-10	SIGNAL COMMUNICATION PLANS
UC-1 THRU UC-10	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-6	UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTION INDEX SHEET
X-1A THRU X-1B	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-41	CROSS-SECTIONS
S-1 THRU S-39	STRUCTURE PLANS
C-1 THRU C-9	CULVERT PLANS

**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 III.

**SUPERELEVATION:**  
ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 AND STD. NO. 225.05 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

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

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

**SUBSURFACE DRAINS:**  
SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

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

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

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

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

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

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

**UTILITIES:**  
UTILITY OWNERS ON THIS PROJECT ARE Duke Energy-(Distribution), Duke Energy-(Transmission), Piedmont Natural Gas-(Distribution), AT&T-(Communications), Spectrum-(Communications), Hotwire-(Communications), Lumen-(Communications), Water and Sanitary Sewer-Salisbury/Rowan Utilities  
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 CONTRACT.

**CURB RAMPS**  
CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05, 848.06, and/or details shown in plans.

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	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Super-elevation - Two Lane Pavement
225.05	Method of Obtaining Super-elevation - Divided Highways
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
300.02	Parallel Pipe End Section - Precast Concrete Section for 15" to 24" Pipe
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Super-elevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 7 - CONCRETE PAVEMENTS AND SHOULDERS	
700.01	Concrete Pavement Joints - Construction and Contraction Joints
700.03	Dowel Assembly
700.04	Concrete Pavement Header Board
700.05	Tying Proposed Pavement to Existing
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
806.03	Concrete Control of Access Marker
815.02	Subsurface Drain
816.01	Concrete Pads - for Shoulder Drain Installation
816.02	Aggregate Shoulder Drain
816.03	Geocomposite Shoulder Drain
816.04	Markers for Drainage Structure and Concrete Pad (Shoulder Drains)
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" 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
840.04	Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.05	Brick Open Throat Catch Basin - 12" thru 48" Pipe
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter (See Details 2C-4 Thru 2C-7)
848.06	Curb Ramp - Existing Curb and Gutter
852.01	Concrete Islands
852.05	Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.03	Drainage Ditches with Class 'A' Rip Rap
876.04	Drainage Ditches with Class 'B' Rip Rap

# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

## CONVENTIONAL PLAN SHEET SYMBOLS

12/2/2016

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Computed Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	①23
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	--- WLB ---
Proposed Wetland Boundary	--- WLB ---
Existing Endangered Animal Boundary	--- EAB ---
Existing Endangered Plant Boundary	--- EPB ---
Existing Historic Property Boundary	--- HPB ---
Known Contamination Area: Soil	☠-s-☠
Potential Contamination Area: Soil	☠-s-☠
Known Contamination Area: Water	☠-w-☠
Potential Contamination Area: Water	☠-w-☠
Contaminated Site: Known or Potential	---

### BUILDINGS AND OTHER CULTURE:

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

### HYDROLOGY:

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

### RAILROADS:

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

### RIGHT OF WAY & PROJECT CONTROL:

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

### ROADS AND RELATED FEATURES:

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

### VEGETATION:

Single Tree	○
Single Shrub	○

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

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

### EXISTING STRUCTURES:

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

### UTILITIES:

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

### TELEPHONE:

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

### WATER:

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

### TV:

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

### GAS:

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

### SANITARY SEWER:

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

### MISCELLANEOUS:

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

8/17/99

REVISIONS

11/15/2021  
S:\Gardner\Projects\U5738\_Rdy\_tup.dgn  
TSG:RDL

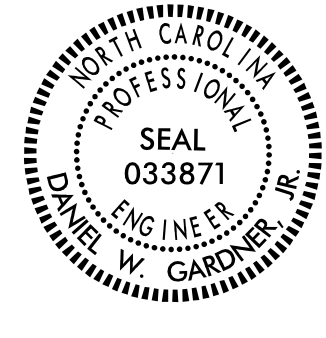
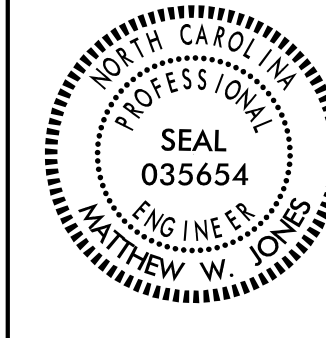
PAVEMENT SCHEDULE  
(FINAL PAVEMENT DESIGN)

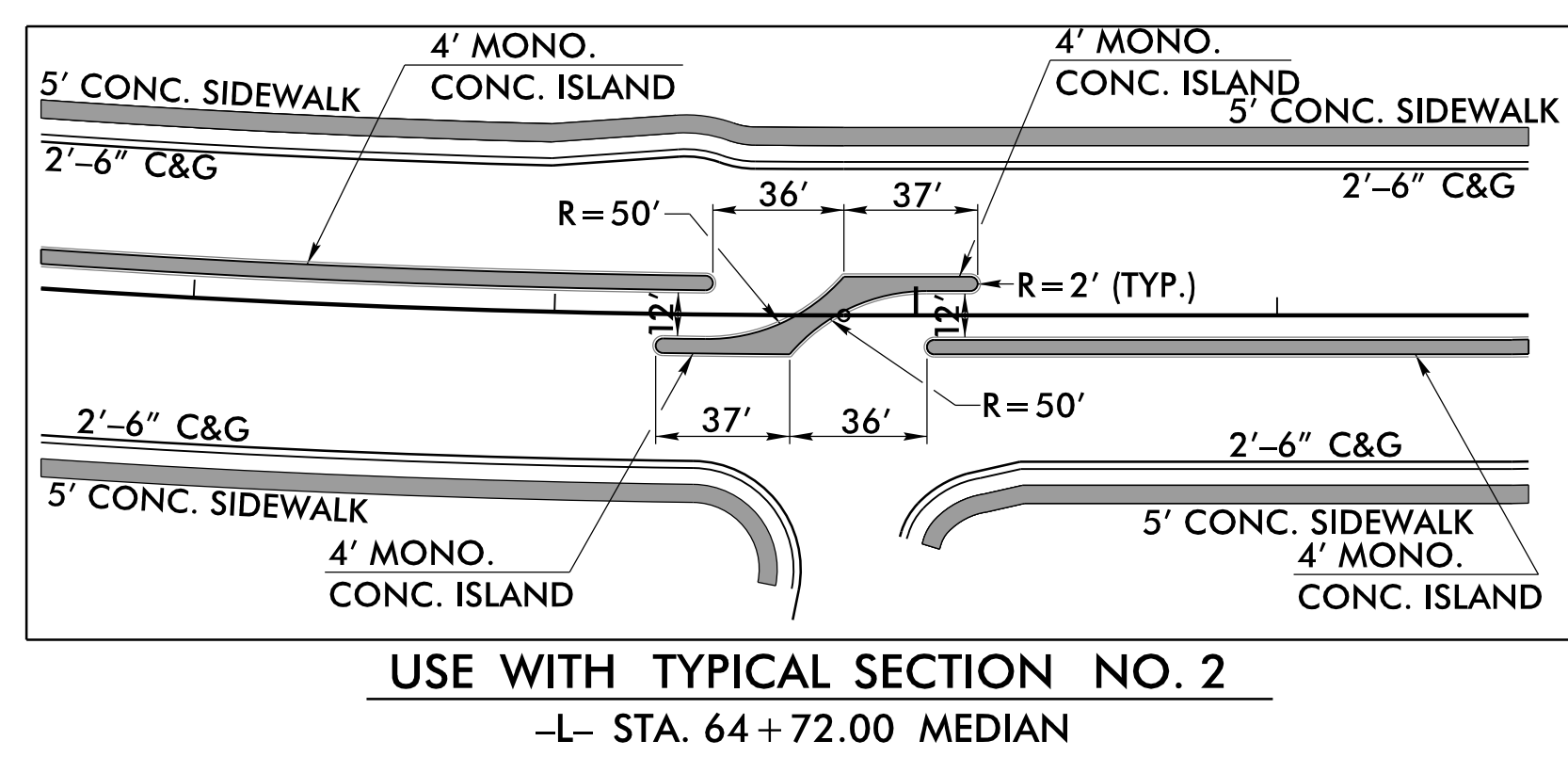
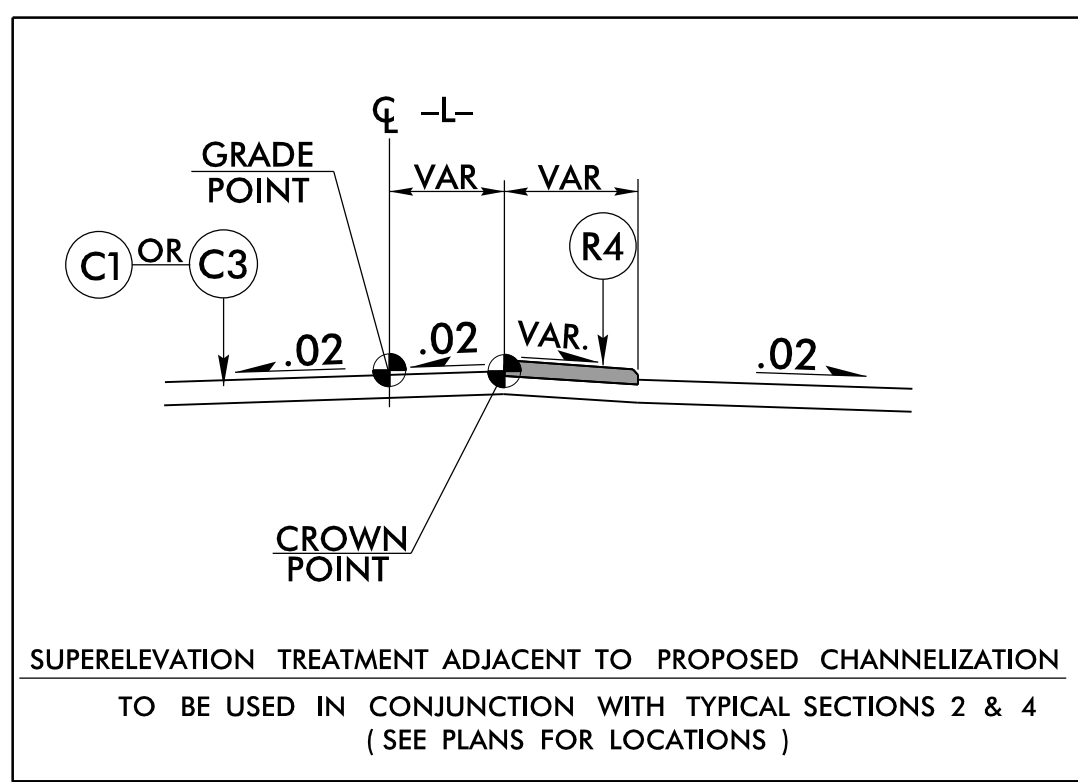
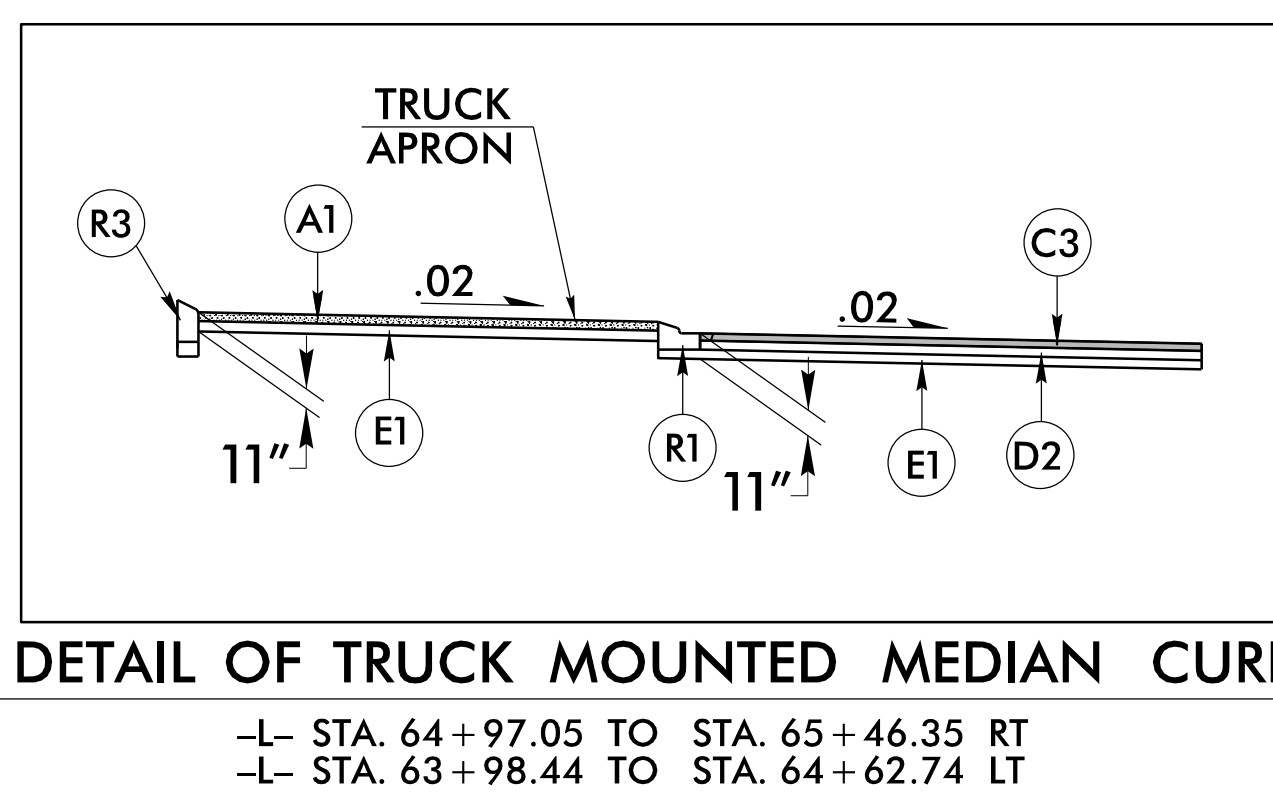
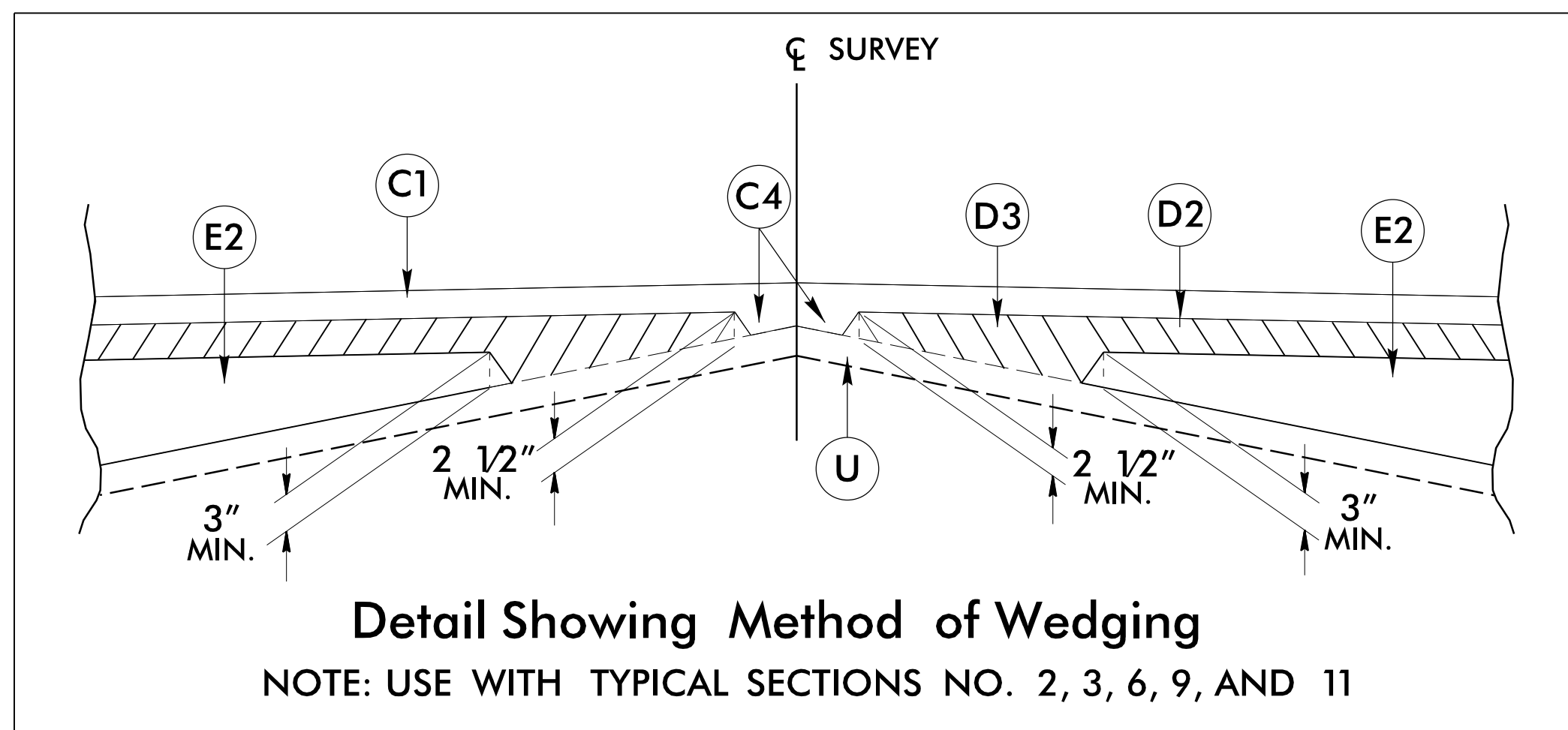
A1	7" JOINTED CONCRETE TRUCK APRON REINFORCED WITH WIRE MESH	R1	1'-6" CONC. CURB & GUTTER
A2	9" PORTLAND CEMENT CONCRETE PAVEMENT, RAMPS (WITH DOWELS).	R2	2'-6" CONC. CURB & GUTTER
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	R3	9" X 18" CONCRETE CURB
C2	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R4	5" CONC. MONOLITHIC ISLAND (KEYED IN)
C3	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.	R5	5" CONC. MONOLITHIC ISLAND (SURFACE MOUNTED)
C4	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 TO EXCEED 1.5" IN DEPTH.	S	4" CONCRETE SIDEWALK
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	T	EARTH MATERIAL.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
D3	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 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.	V1	MILLING EXISTING ASPHALT PAVEMENT, 1.5" DEPTH
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	V2	VARIABLE DEPTH MILLING EXISTING ASPHALT PAVEMENT
E2	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 5.5" IN DEPTH.	W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE STANDARD WEDGING DETAIL)
K	PROPOSED 8" CLASS IV SUBGRADE STABILIZATION.	X	PROP. APPROX. 4" PERMEABLE ASPHALT DRAINAGE COURSE - TYPE P-57

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

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Raleigh, NC 27603  
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Fax:919.789.9591  
License: C-2197

PROJECT REFERENCE NO. <i>U-5738</i>	SHEET NO. <i>2A-1</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	





8/17/99

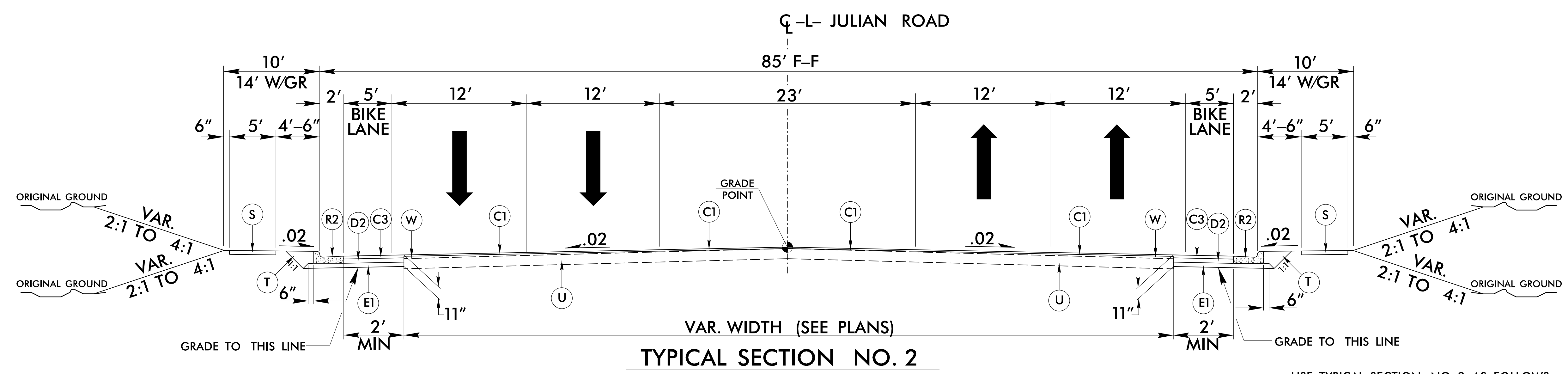
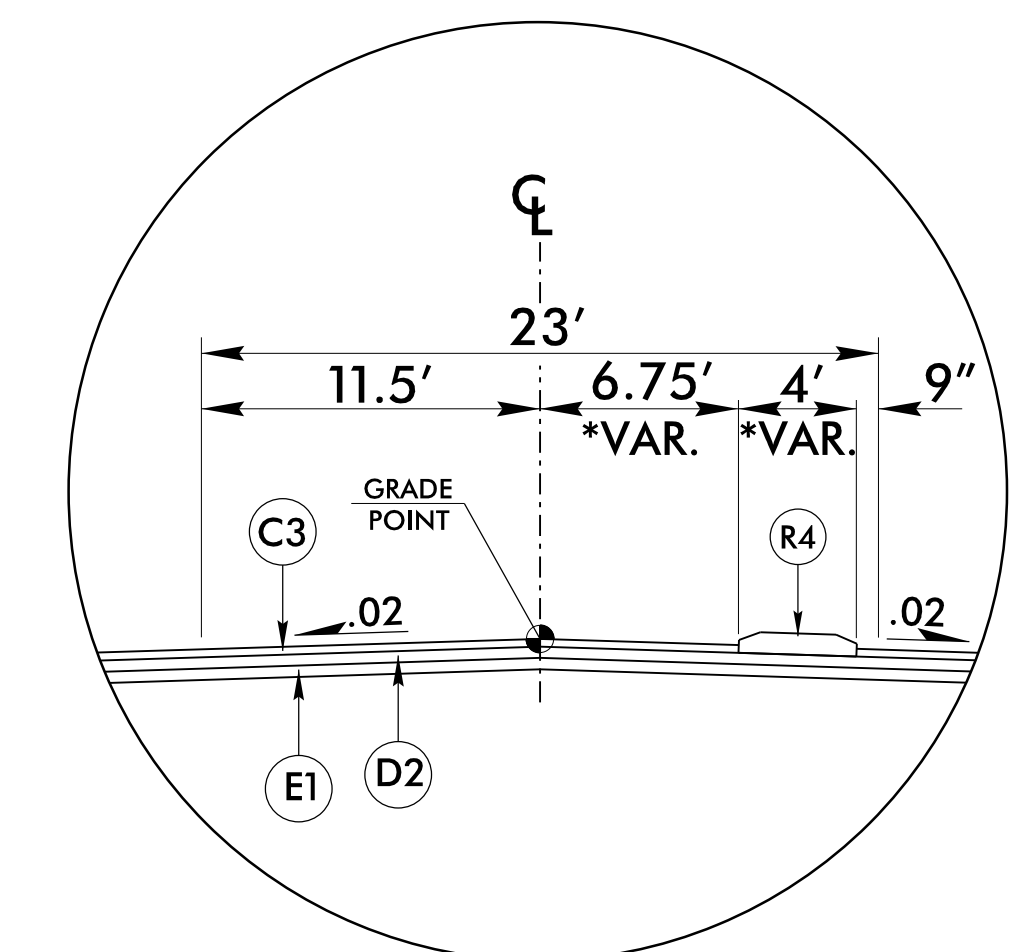
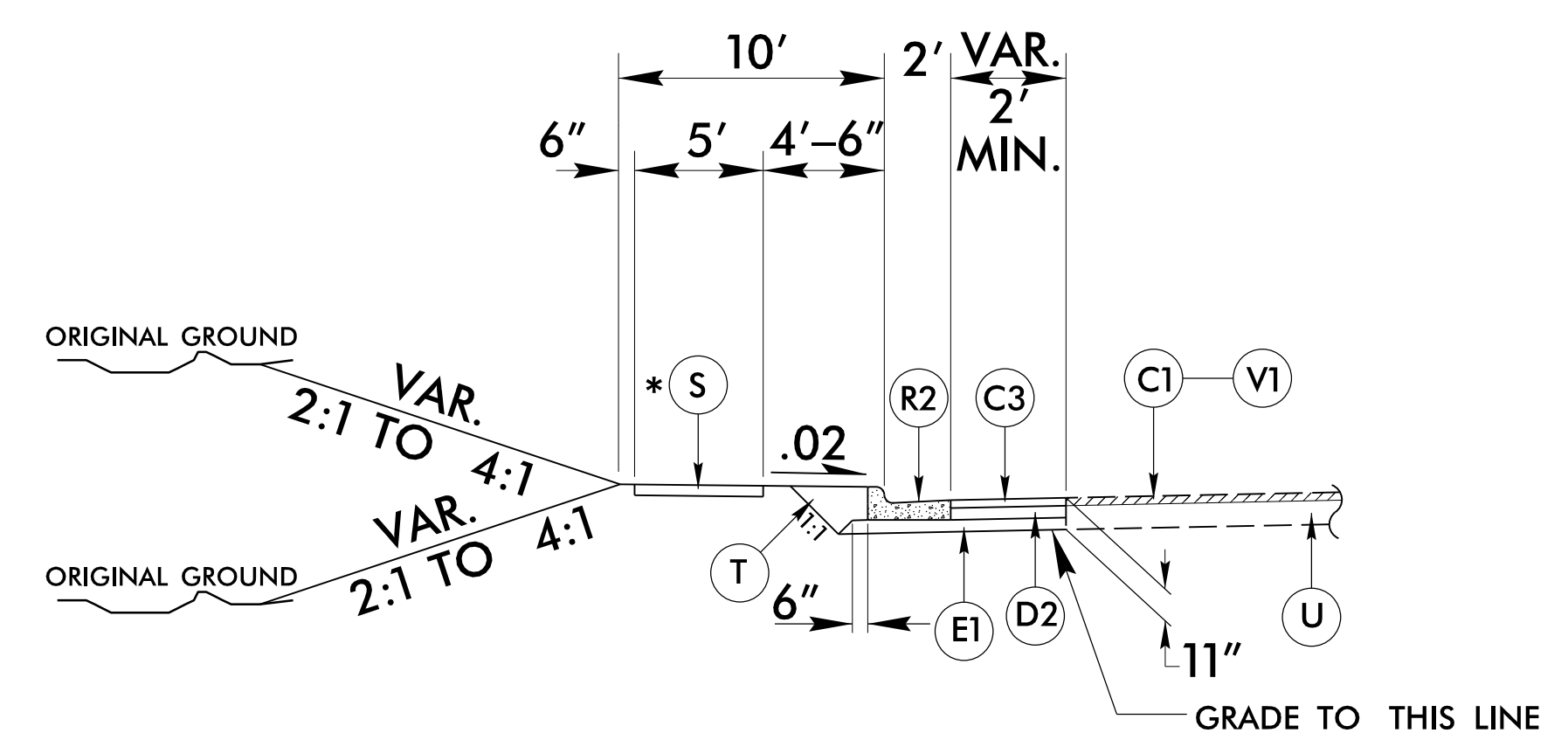
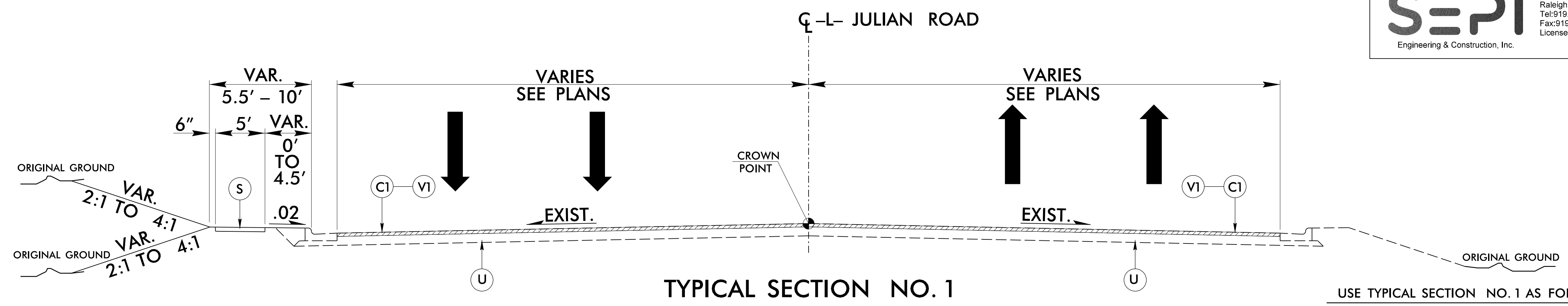
REVISIONS

11/15/2021  
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PROJECT REFERENCE NO. U-5738	SHEET NO. 2A-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER SEAL 033871 DANIEL W. GARDNER, R.	PAVEMENT DESIGN ENGINEER SEAL 035654 MATTHEW W. JONES
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
<b>PAVEMENT SCHEDULE</b>	
A1	7" CONCRETE TRUCK APRON
A2	9" CONCRETE (WITH DOWELS)
C1	1.5" S9.5B
C2	2.5" S9.5B
C3	3" S9.5B
C4	PROP. VAR. DEPTH S9.5B
D1	2.5" I19.0C
D2	4" I19.0C
D3	PROP. VAR. DEPTH I19.0C
E1	4" B25.0C
E2	PROP. VAR. DEPTH B25.0C
K	SUBGRADE STABILIZATION
R1	1'-6" C & G
R2	2'-6" C & G
R3	9" X 18" CURB
R4	5" MONO. ISLAND (KEYED IN)
R5	5" MONO. ISLAND (SURFACE MOUNTED)
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING, 1.5" DEPTH
V2	VAR. DEPTH MILLING
W	VAR. DEPTH WEDGING
X	4" PADC



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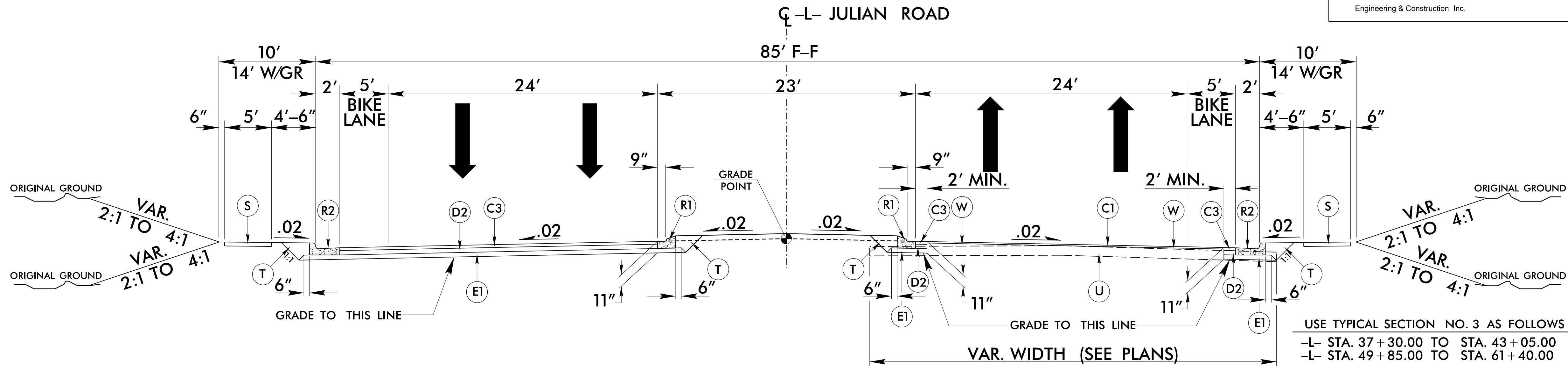
PROJECT REFERENCE NO. U-5738 SHEET NO. 2A-3

RW SHEET NO. ROADWAY DESIGN ENGINEER SEAL 033871 DANIEL W. GARDNER, P.E. PAVEMENT DESIGN ENGINEER SEAL 035654 MATTHEW W. JONES, P.E.

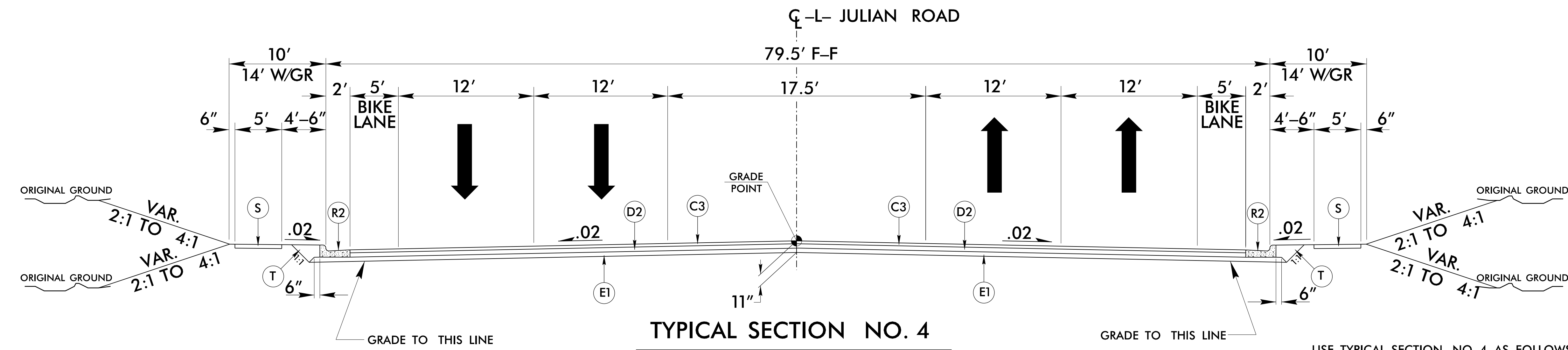
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE

A1	7" CONCRETE TRUCK APRON
A2	9" CONCRETE (WITH DOWELS)
C1	1.5" S9.5B
C2	2.5" S9.5B
C3	3" S9.5B
C4	PROP. VAR. DEPTH S9.5B
D1	2.5" I19.0C
D2	4" I19.0C
D3	PROP. VAR. DEPTH I19.0C
E1	4" B25.0C
E2	PROP. VAR. DEPTH B25.0C
K	SUBGRADE STABILIZATION
R1	1'-6" C & G
R2	2'-6" C & G
R3	9" X 18" CURB
R4	5" MONO. ISLAND (KEYED IN)
R5	5" MONO. ISLAND (SURFACE MOUNTED)
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING, 1.5" DEPTH
V2	VAR. DEPTH MILLING
W	VAR. DEPTH WEDGING
X	4" PADC

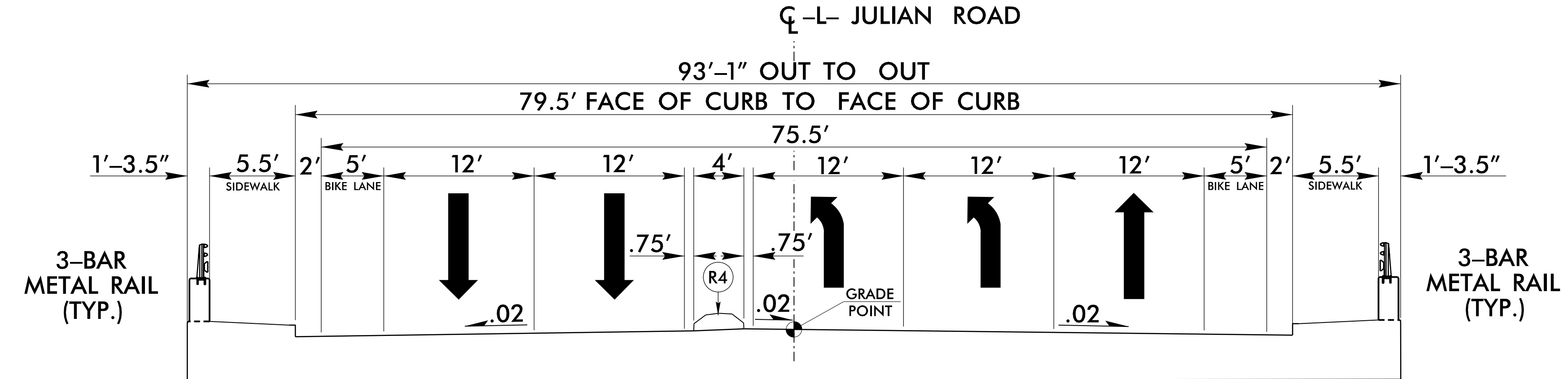


TYPICAL SECTION NO. 3



TYPICAL SECTION NO. 4

NOTE: BEGIN FULL DEPTH PAVEMENT AT -L- STA. 67+75.00



TYPICAL SECTION NO. 5

REVISIONS

11/15/2021  
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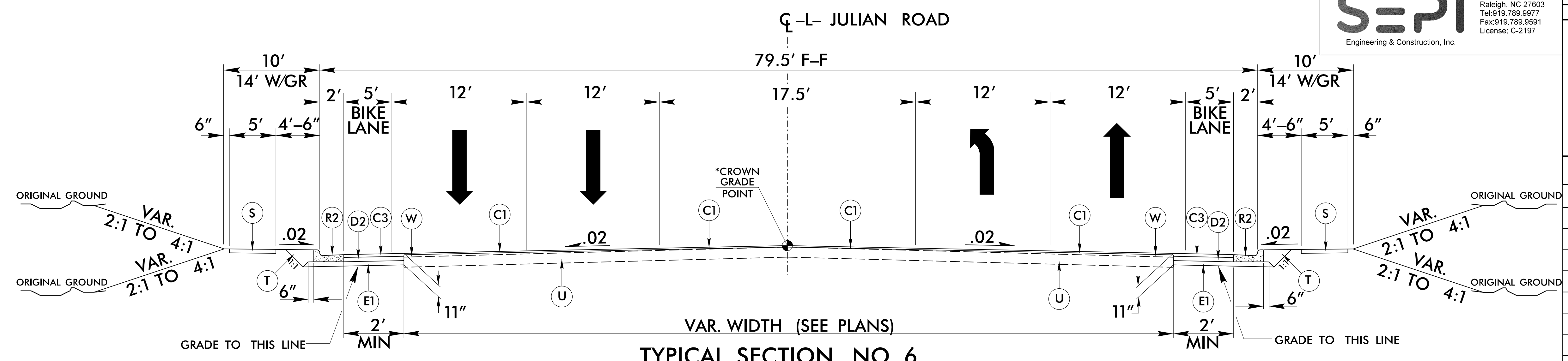
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Raleigh, NC 27603  
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Fax: 919.789.9591  
License: C-2197

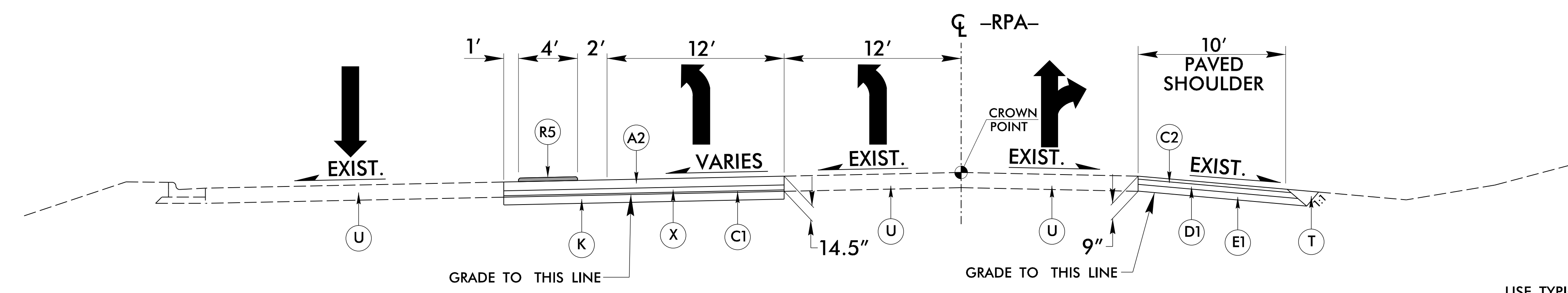
PROJECT REFERENCE NO. U-5738	SHEET NO. 2A-4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER SEAL 033871 DANIEL W. GARDNER, R.	PAVEMENT DESIGN ENGINEER SEAL 035654 MATTHEW W. JONES

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 6

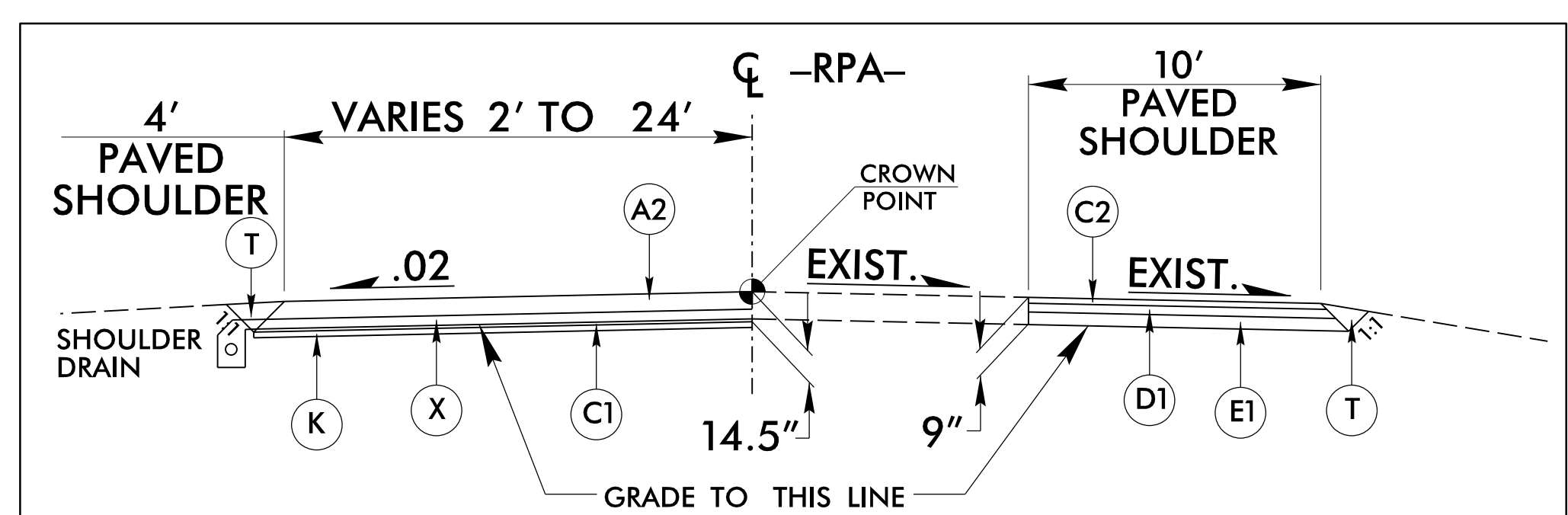
USE TYPICAL SECTION NO. 6 AS FOLLOWS  
-L- STA. 73+75.00 TO STA. 79+20.00  
\*-L- STA. 79+20.00 TO STA. 79+42.87



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7 AS FOLLOWS  
-RPA- STA. 11+33.32 TO STA. 14+70.45

NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 7  
-RPA- STA. 10+00.00 TO STA. 10+50.00 RT.



USE IN CONJUNCTION WITH TYPICAL SECTION NO. 7

-RPA- STA. 10+43.32 TO STA. 11+33.32 LT.  
-RPA- STA. 10+50.00 TO STA. 11+33.32 RT.

NOTE: TIE PROPOSED SHOULDER DRAIN TO EXISTING DRAIN AT -RPA- STA. 10+00.00 TO STA. 11+33.32  
REMOVE EXISTING DRAIN THRU LIMITS OF CONSTRUCTION.

REVISIONS

11/15/2021  
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PAVEMENT SCHEDULE	
A1	7" CONCRETE TRUCK APRON
A2	9" CONCRETE (WITH DOWELS)
C1	1.5" S9.5B
C2	2.5" S9.5B
C3	3" S9.5B
C4	PROP. VAR. DEPTH S9.5B
D1	2.5" I19.0C
D2	4" I19.0C
D3	PROP. VAR. DEPTH I19.0C
E1	4" B25.0C
E2	PROP. VAR. DEPTH B25.0C
K	SUBGRADE STABILIZATION
R1	1'-6" C & G
R2	2'-6" C & G
R3	9" X 18" CURB
R4	5" MONO. ISLAND (KEYED IN)
R5	5" MONO. ISLAND (SURFACE MOUNTED)
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING, 1.5" DEPTH
V2	VAR. DEPTH MILLING
W	VAR. DEPTH WEDGING
X	4" PADC

8/17/99

REVISIONS

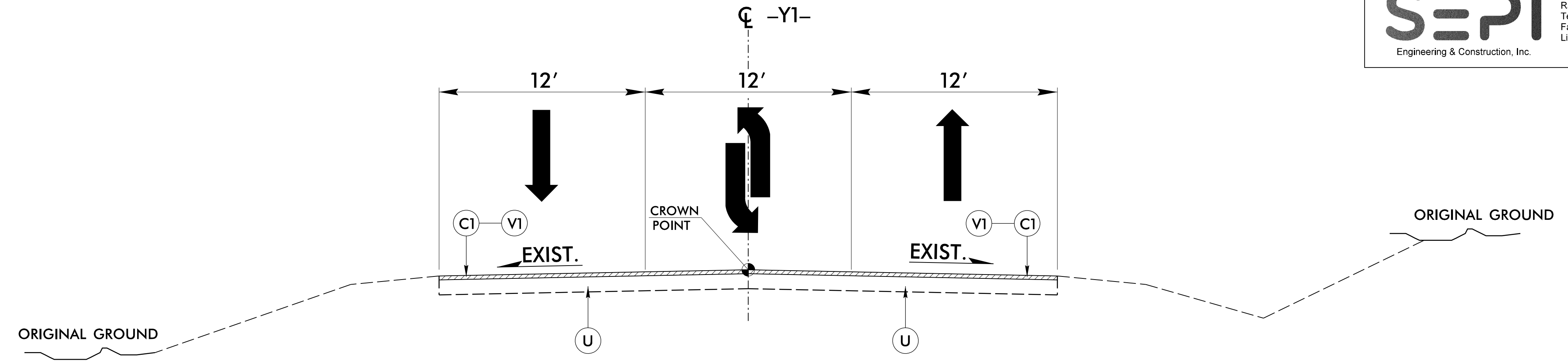
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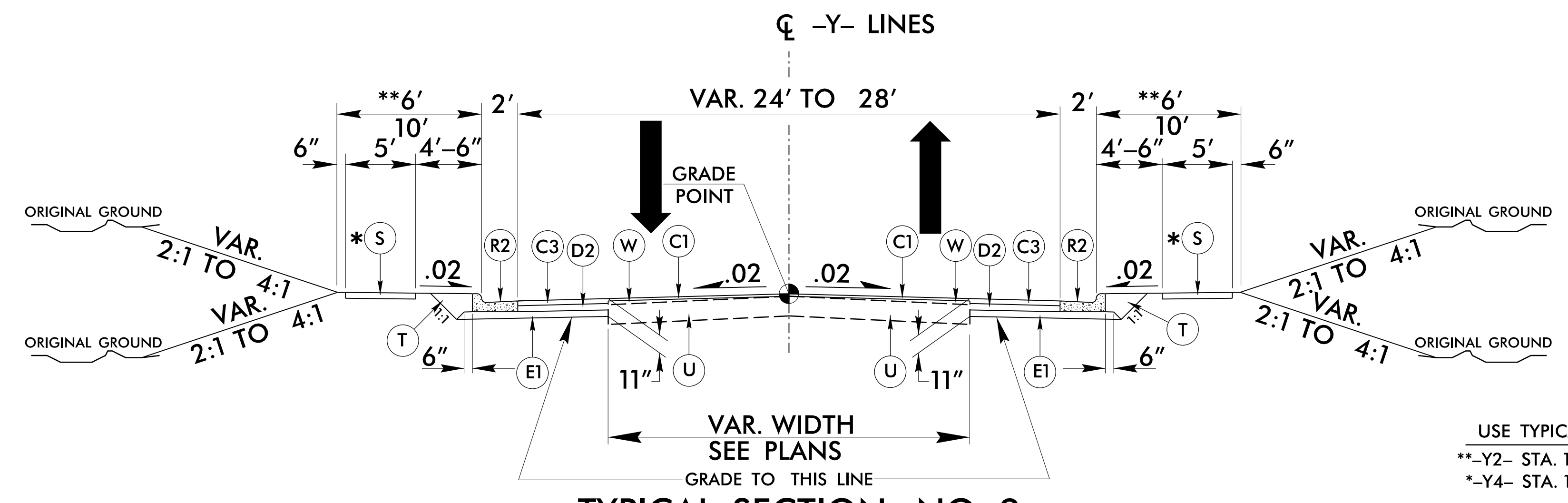
PROJECT REFERENCE NO. U-5738	SHEET NO. 2A-5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER DANIEL W. GARDNER, P.E. SEAL 033871	PAVEMENT DESIGN ENGINEER MATTHEW W. JONES, P.E. SEAL 035654

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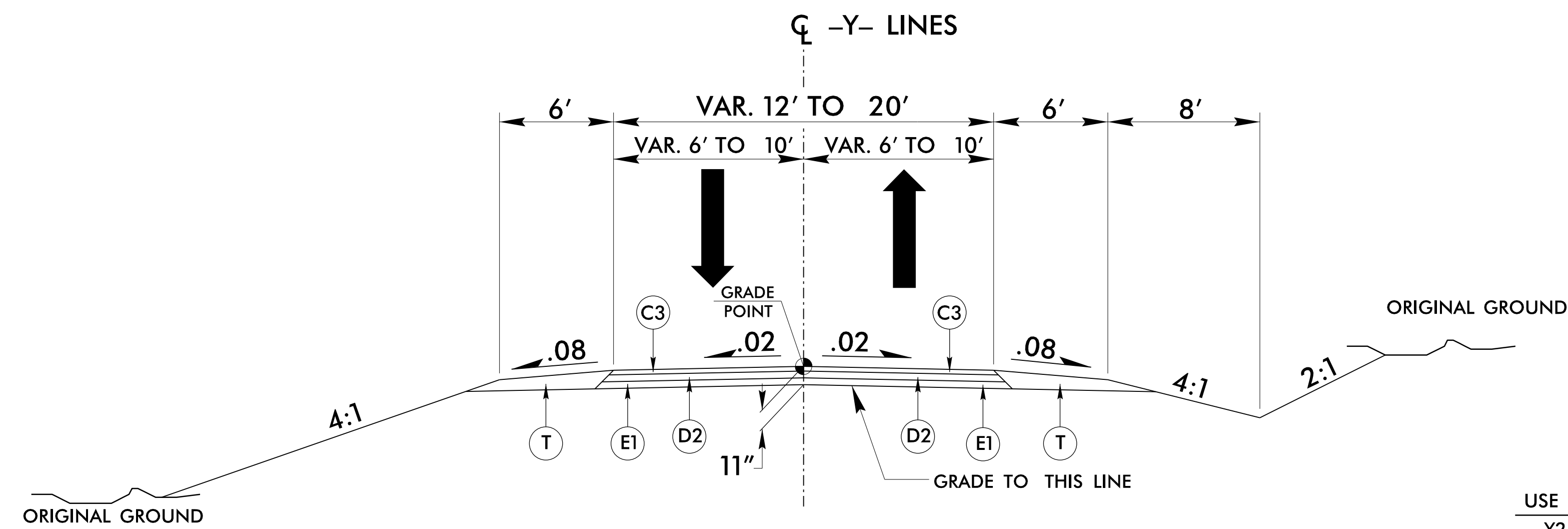
**TYPICAL SECTION NO. 8**

USE TYPICAL SECTION NO. 8 AS FOLLOWS  
-Y1- STA. 10+40.29 TO STA. 17+46.51



**TYPICAL SECTION NO. 9**

USE TYPICAL SECTION NO. 9 AS FOLLOWS  
\*\*-Y2- STA. 13+30.80 TO STA. 13+70.00  
\*-Y4- STA. 10+79.49 TO STA. 11+25.00  
NOTE: VARIABLE DEPTH INCIDENTAL MILLING WILL BE REQUIRED AS DIRECTED BY THE ENGINEER.



**TYPICAL SECTION NO. 10**

USE TYPICAL SECTION NO. 10 AS FOLLOWS  
-Y2- STA. 11+25.00 TO STA. 11+50.00  
-Y3- STA. 10+75.00 TO STA. 11+22.97  
-Y5- STA. 11+15.00 TO STA. 11+50.93  
-Y8- STA. 10+43.00 TO STA. 12+56.62

**PAVEMENT SCHEDULE**

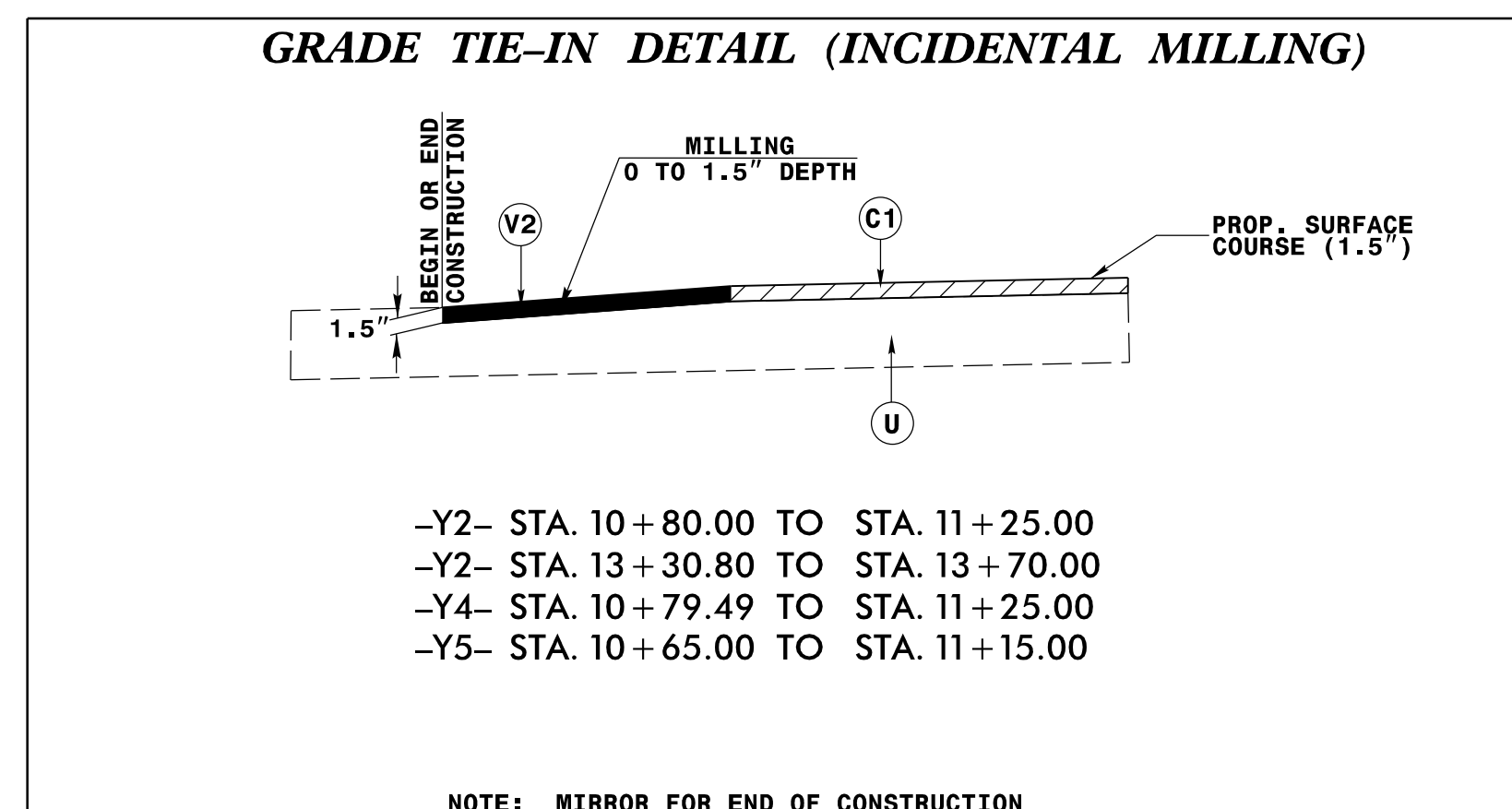
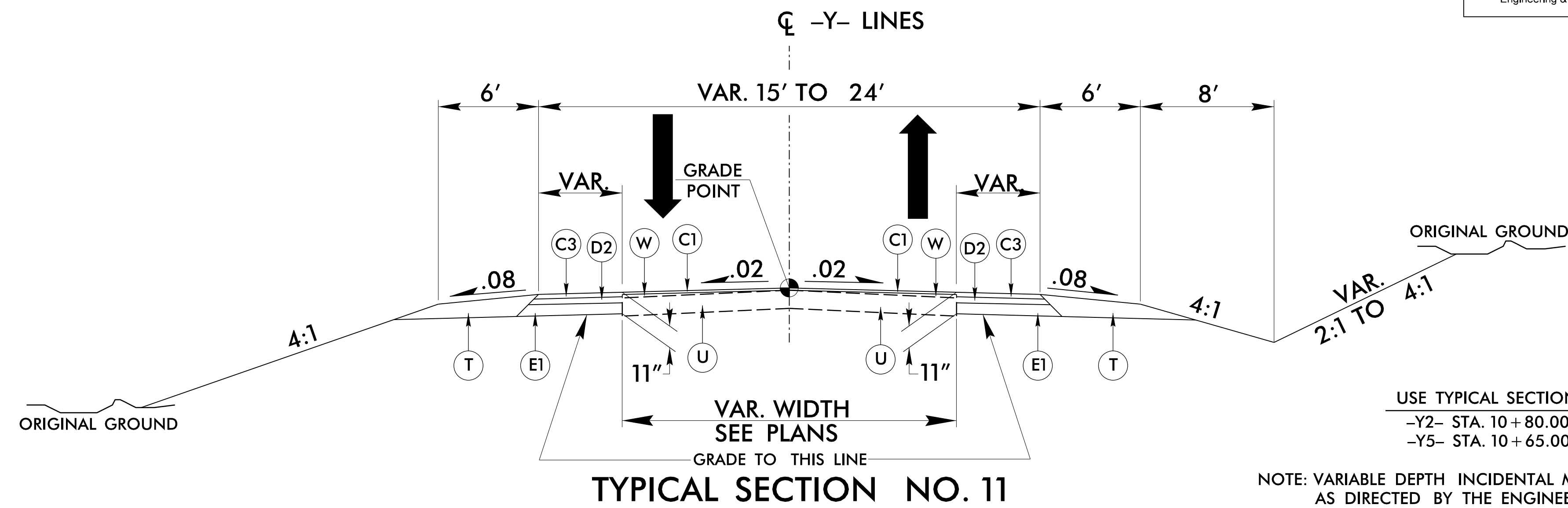
A1	7" CONCRETE TRUCK APRON
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C1	1.5" S9.5B
C2	2.5" S9.5B
C3	3" S9.5B
C4	PROP. VAR. DEPTH S9.5B
D1	2.5" I19.0C
D2	4" I19.0C
D3	PROP. VAR. DEPTH I19.0C
E1	4" B25.0C
E2	PROP. VAR. DEPTH B25.0C
K	SUBGRADE STABILIZATION
R1	1'-6" C & G
R2	2'-6" C & G
R3	9" X 18" CURB
R4	5" MONO. ISLAND (KEYED IN)
R5	5" MONO. ISLAND (SURFACE MOUNTED)
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING, 1.5" DEPTH
V2	VAR. DEPTH MILLING
W	VAR. DEPTH WEDGING
X	4" PADC



PROJECT REFERENCE NO. U-5738	SHEET NO. 2A-6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER SEAL 033871 DANIEL W. GARDNER, R.	PAVEMENT DESIGN ENGINEER SEAL 035654 MATTHEW W. JONES

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

PAVEMENT SCHEDULE	
A1	7" CONCRETE TRUCK APRON
A2	9" CONCRETE (WITH DOWELS)
C1	1.5" S9.5B
C2	2.5" S9.5B
C3	3" S9.5B
C4	PROP. VAR. DEPTH S9.5B
D1	2.5" I19.0C
D2	4" I19.0C
D3	PROP. VAR. DEPTH I19.0C
E1	4" B25.0C
E2	PROP. VAR. DEPTH B25.0C
K	SUBGRADE STABILIZATION
R1	1'-6" C & G
R2	2'-6" C & G
R3	9" X 18" CURB
R4	5" MONO. ISLAND (KEYED IN)
R5	5" MONO. ISLAND (SURFACE MOUNTED)
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING, 1.5" DEPTH
V2	VAR. DEPTH MILLING
W	VAR. DEPTH WEDGING
X	4" PADC



REVISIONS

8/17/99

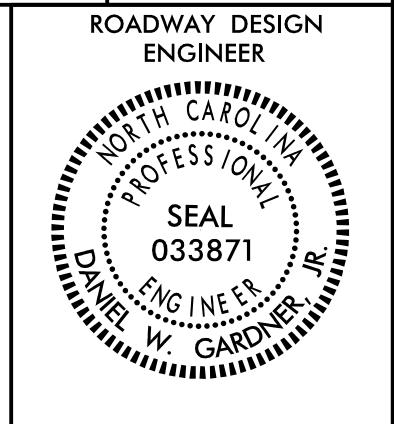
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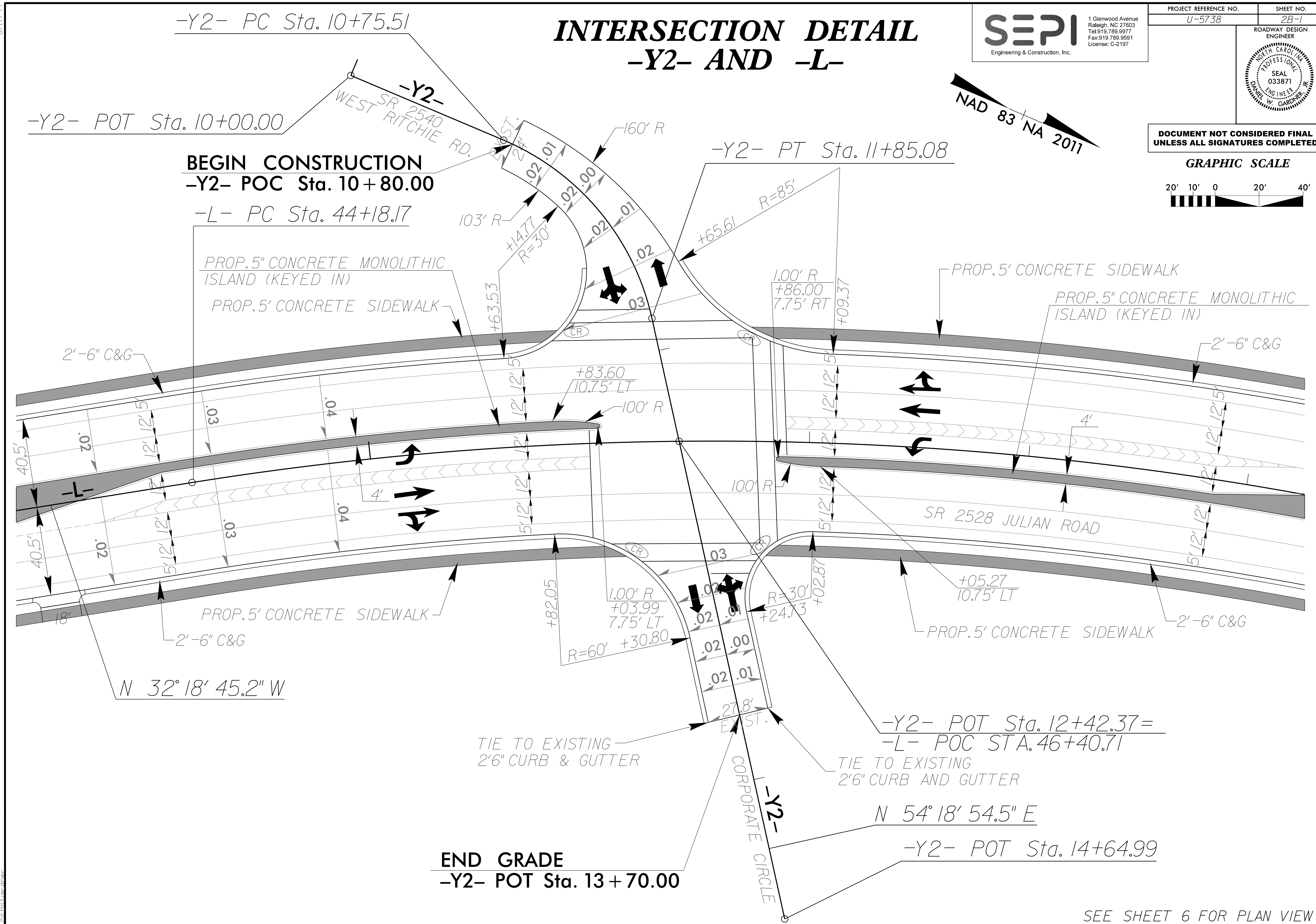
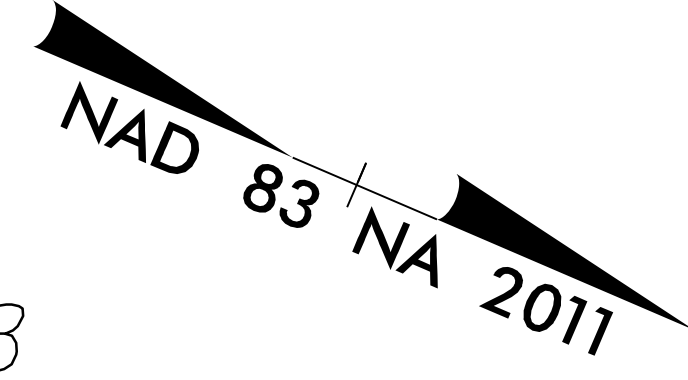
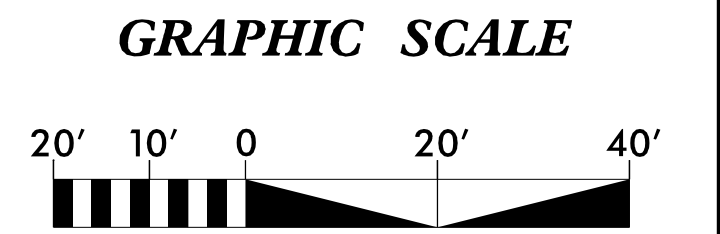
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PROJECT REFERENCE NO. U-5738	SHEET NO. 2B-1
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SEE SHEET 6 FOR PLAN VIEW

8/17/99  
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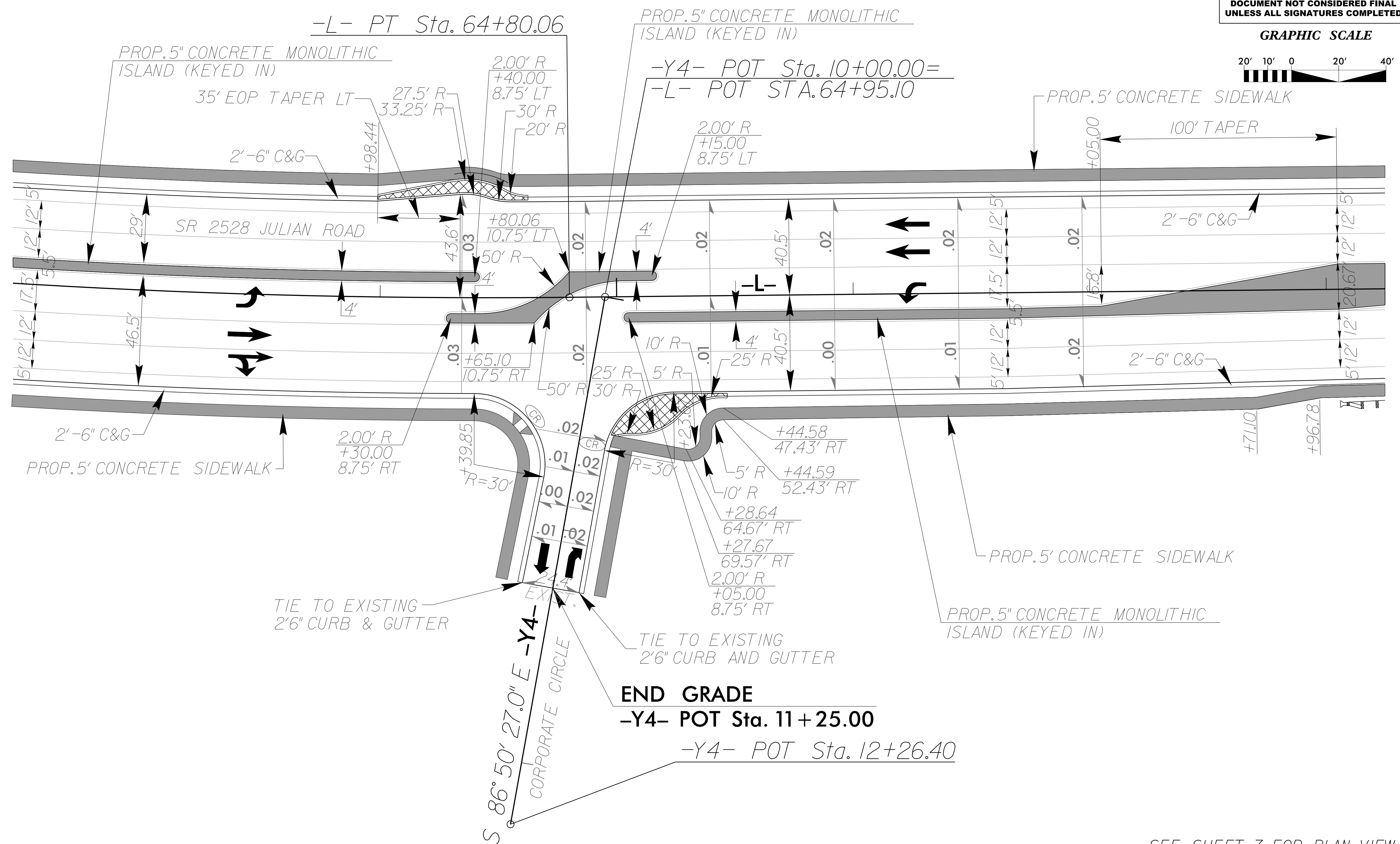
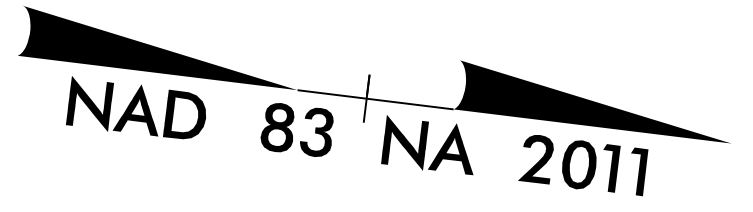
# INTERSECTION DETAIL -Y4- AND -L-

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PROJECT REFERENCE NO. U-5738	SHEET NO. 2B-2
ROADWAY DESIGN ENGINEER SEAL 033871 W. GARDNER JR.	

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GRAPHIC SCALE  
20' 10' 0 20' 40'



SEE SHEET 7 FOR PLAN VIEW

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

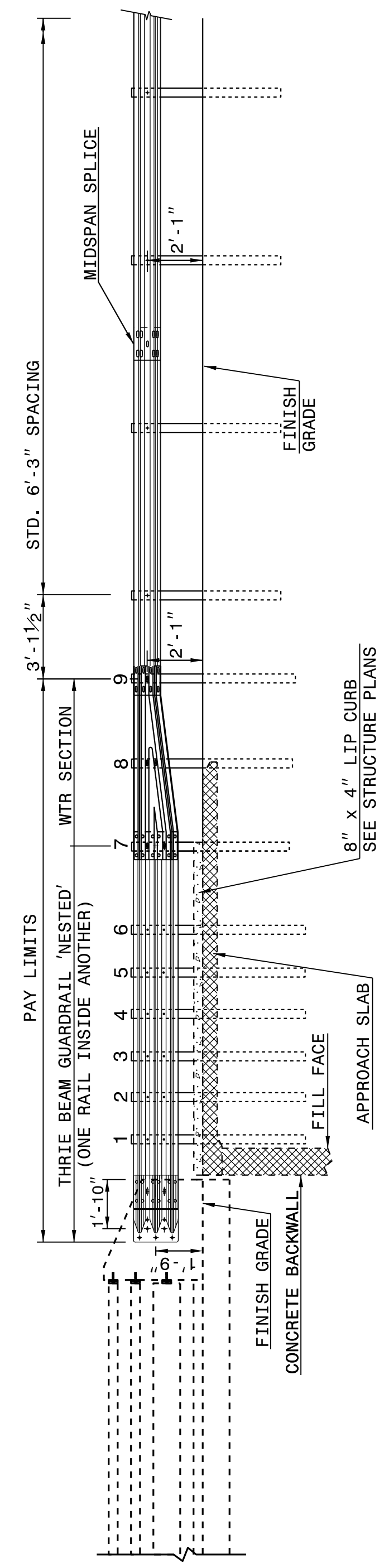
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7 862D03

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

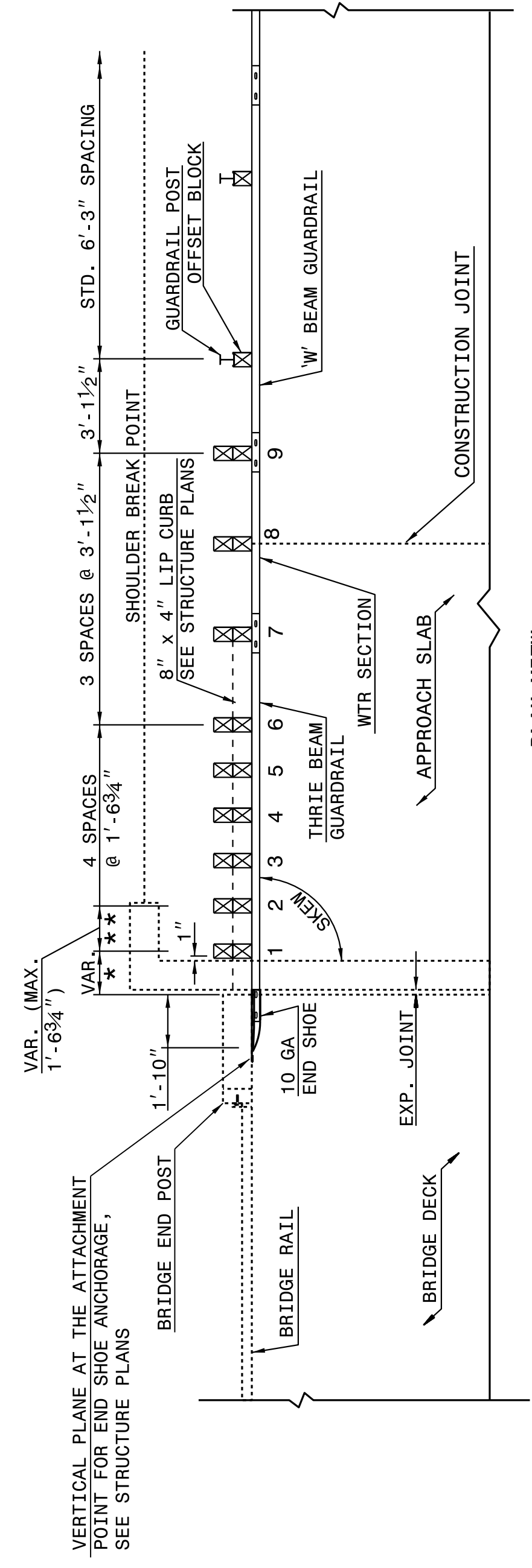
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE

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 11½" IF CONCRETE BACKWALL IS NOT PRESENT.  
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.  
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).  
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.  
 -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

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

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

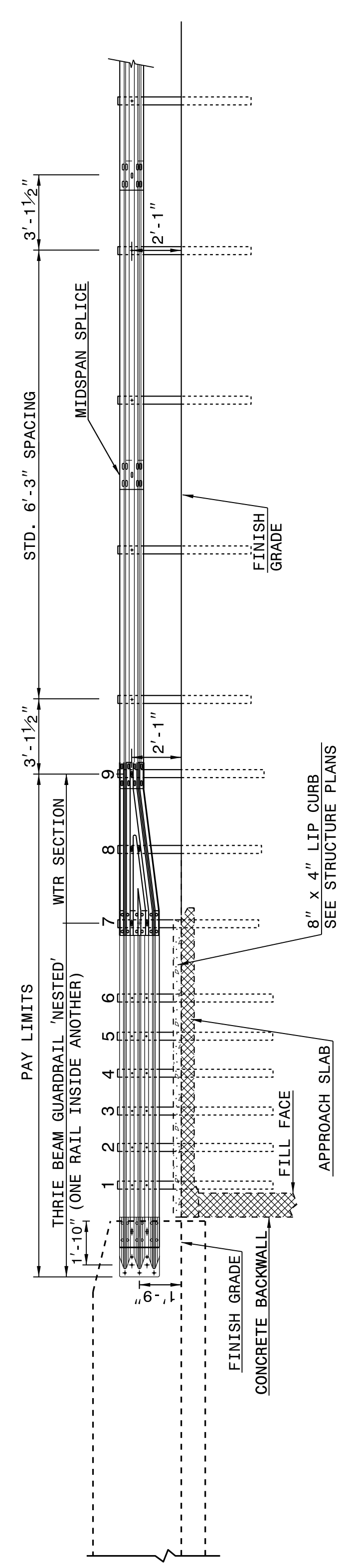
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7 862D03

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

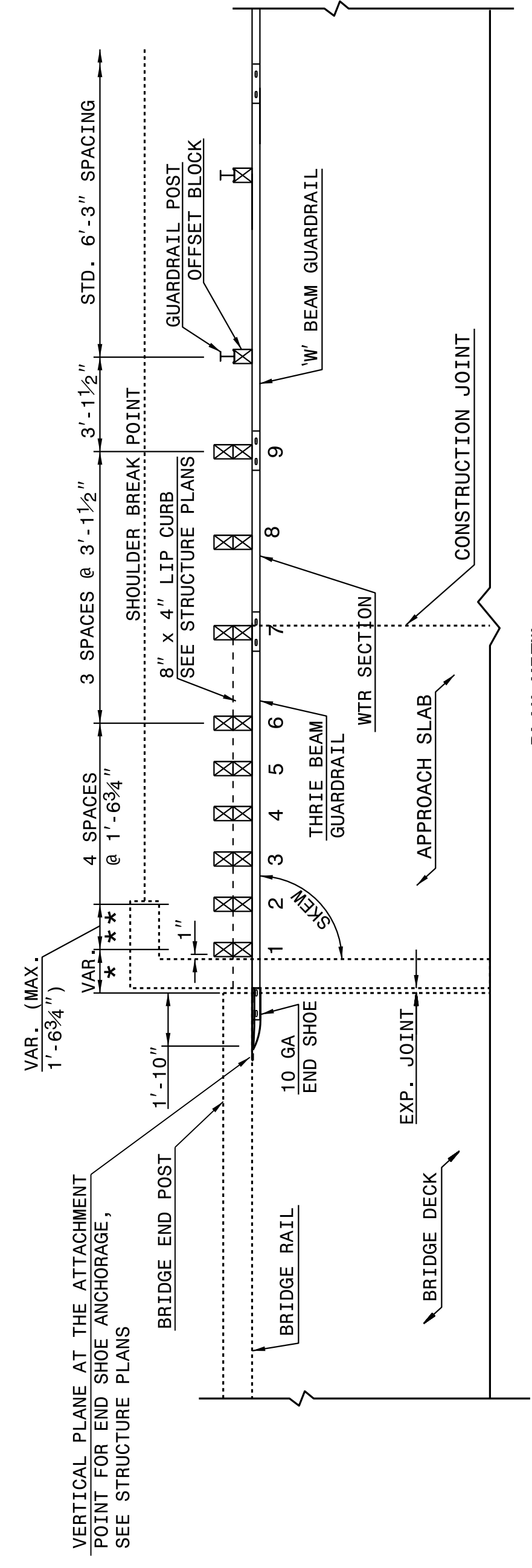
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

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 11½" IF CONCRETE BACKWALL IS NOT PRESENT.  
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.  
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).  
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.  
 -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

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



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

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



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

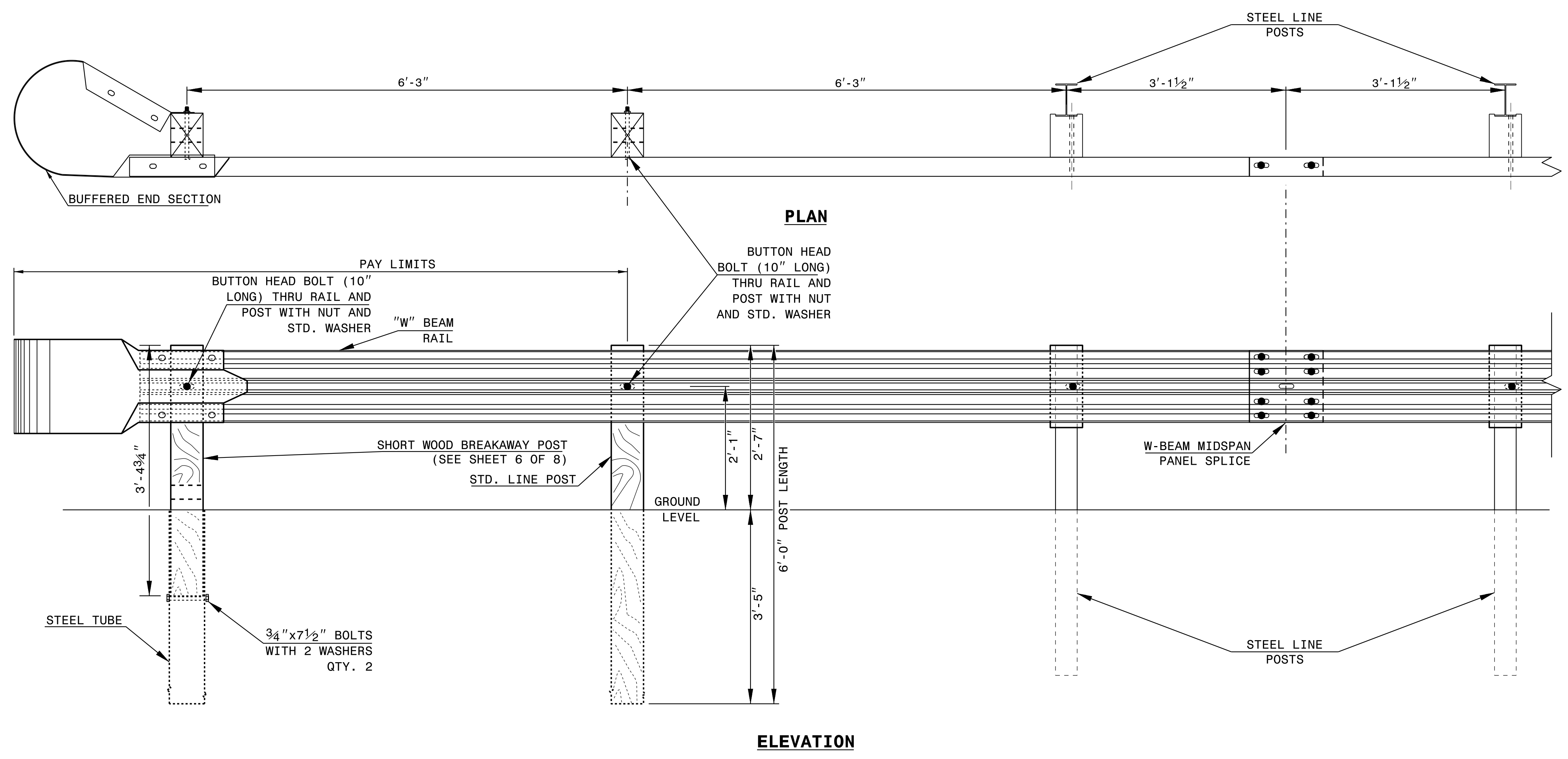
ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

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**



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

**A.T. - 1 SYSTEM**

ORIGINAL BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 MODIFIED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
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STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

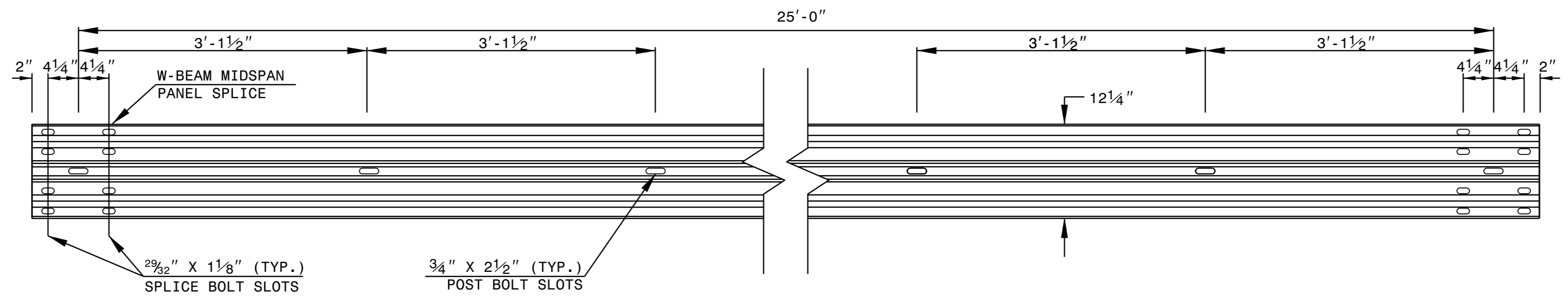
ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 6 OF 8  
**862D02**

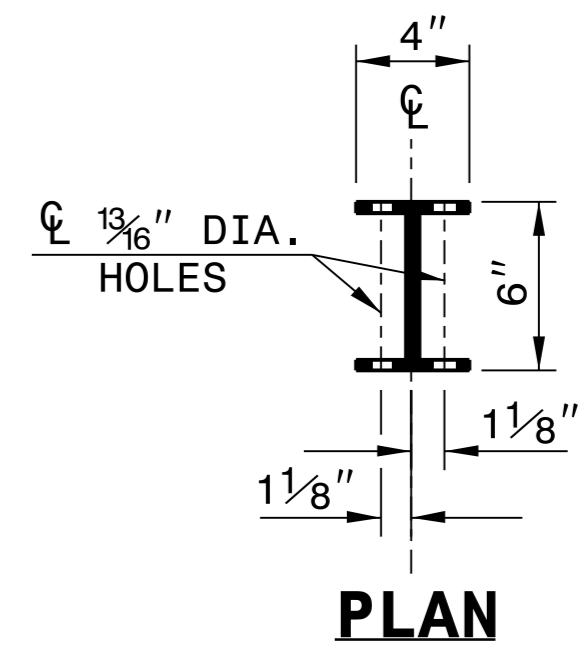
STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

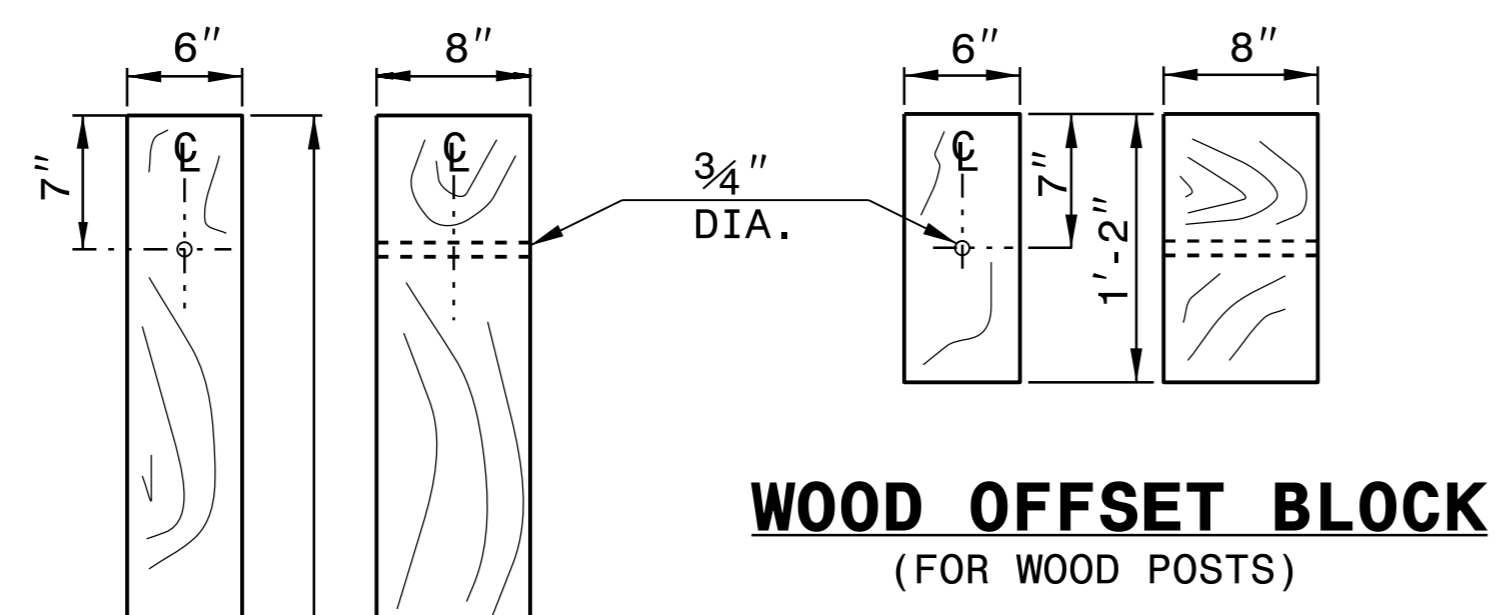
SHEET 6 OF 8  
**862D02**



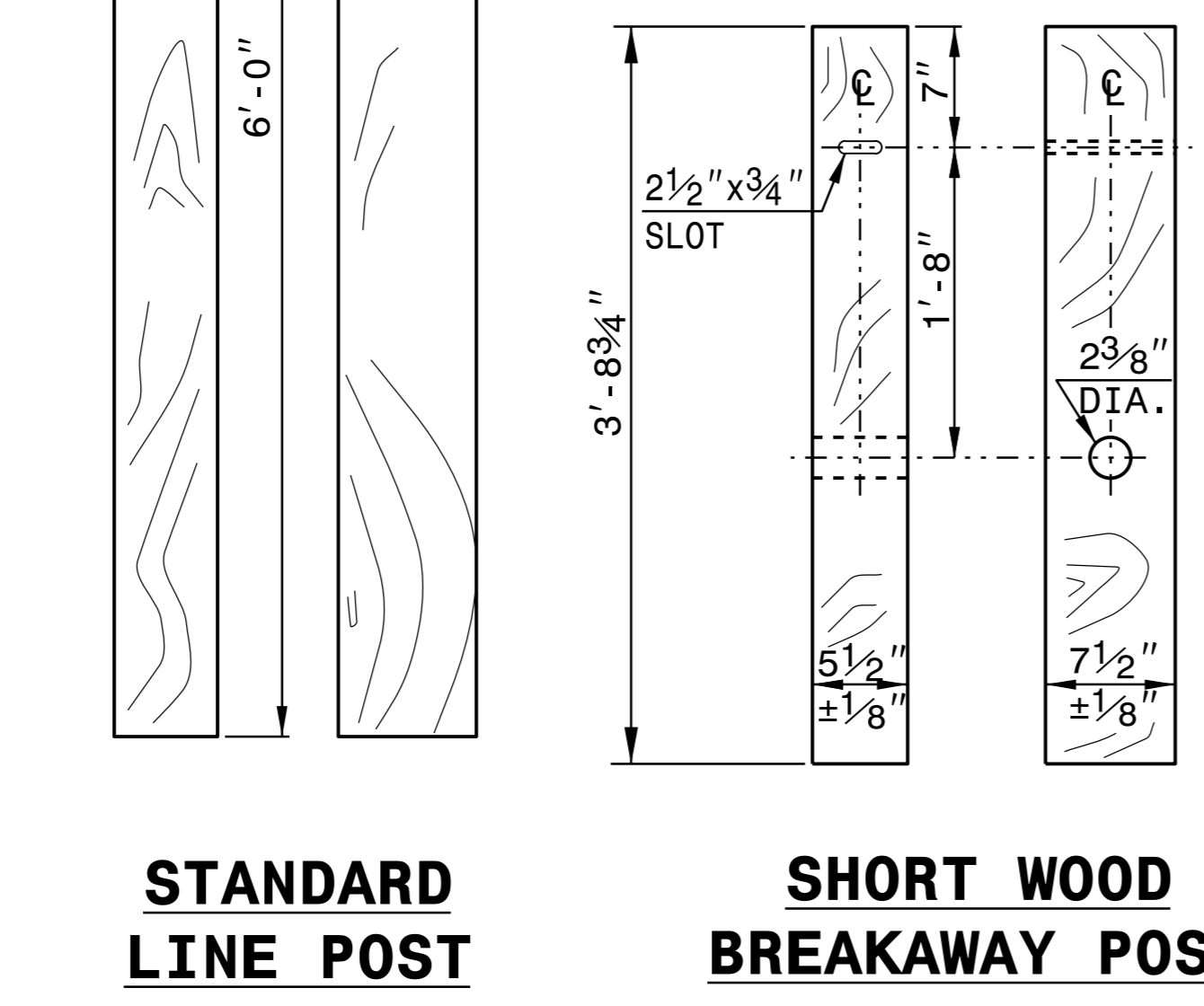
**STANDARD W-BEAM GUARDRAIL**



**PLAN**

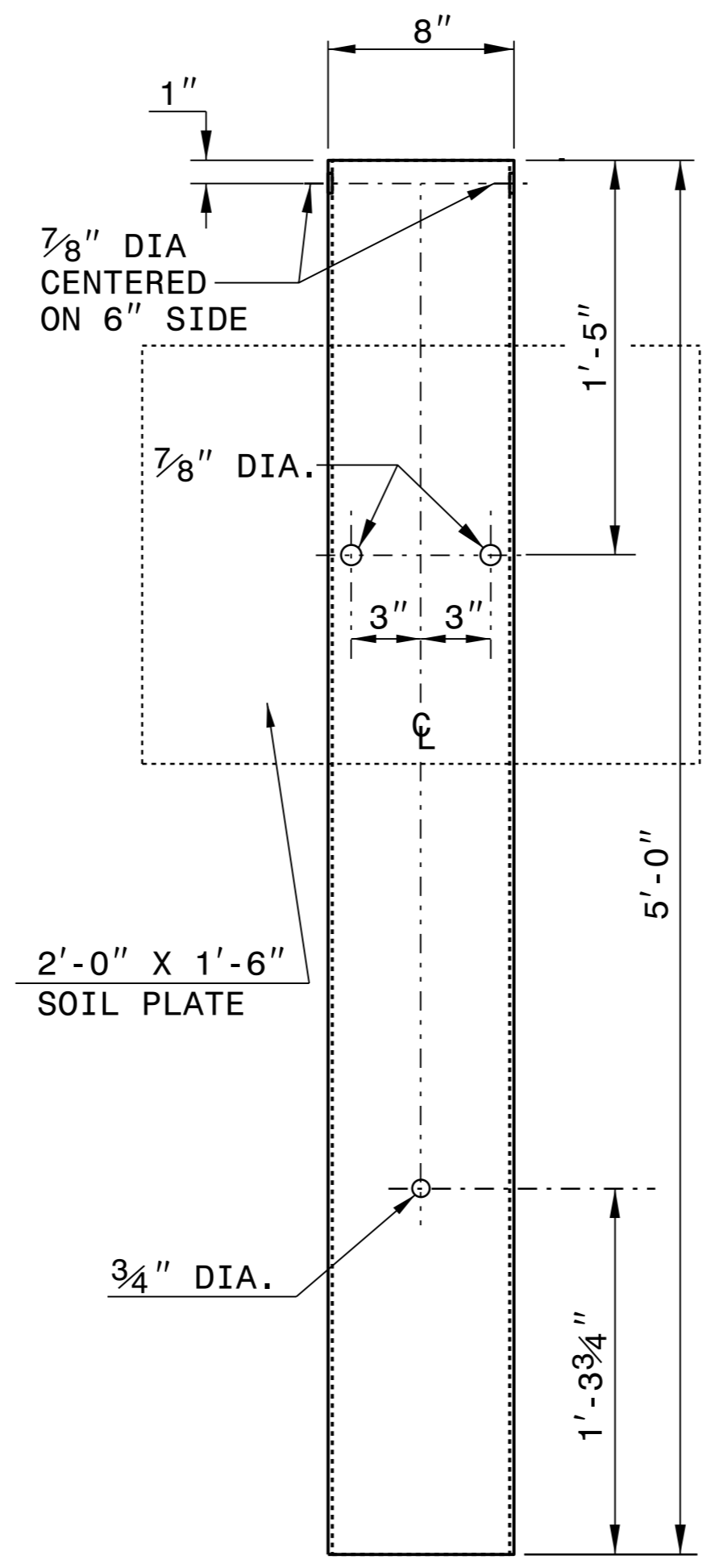


**WOOD OFFSET BLOCK**  
 (FOR WOOD POSTS)

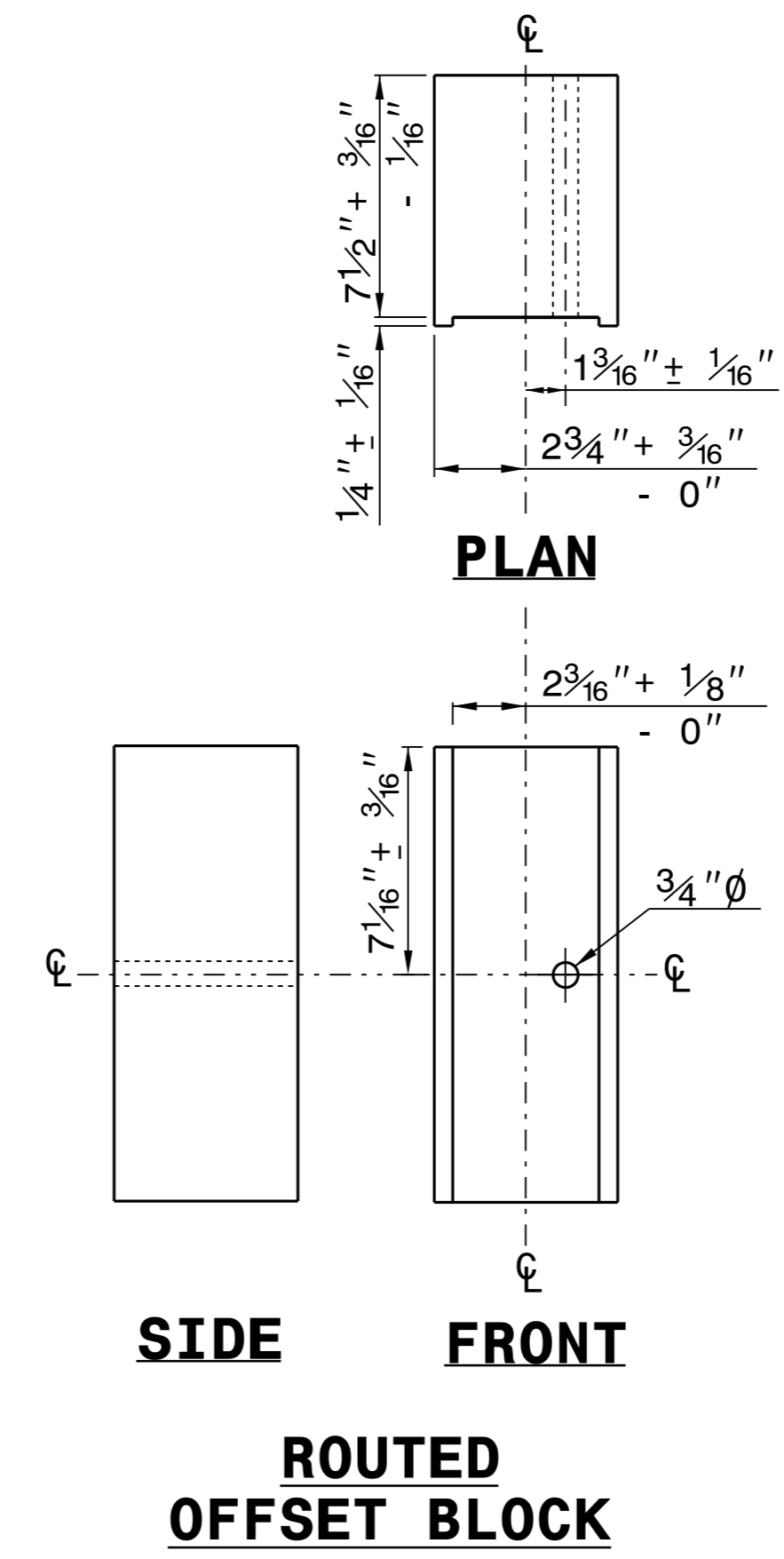


**STANDARD LINE POST**

**SHORT WOOD BREAKAWAY POST**



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

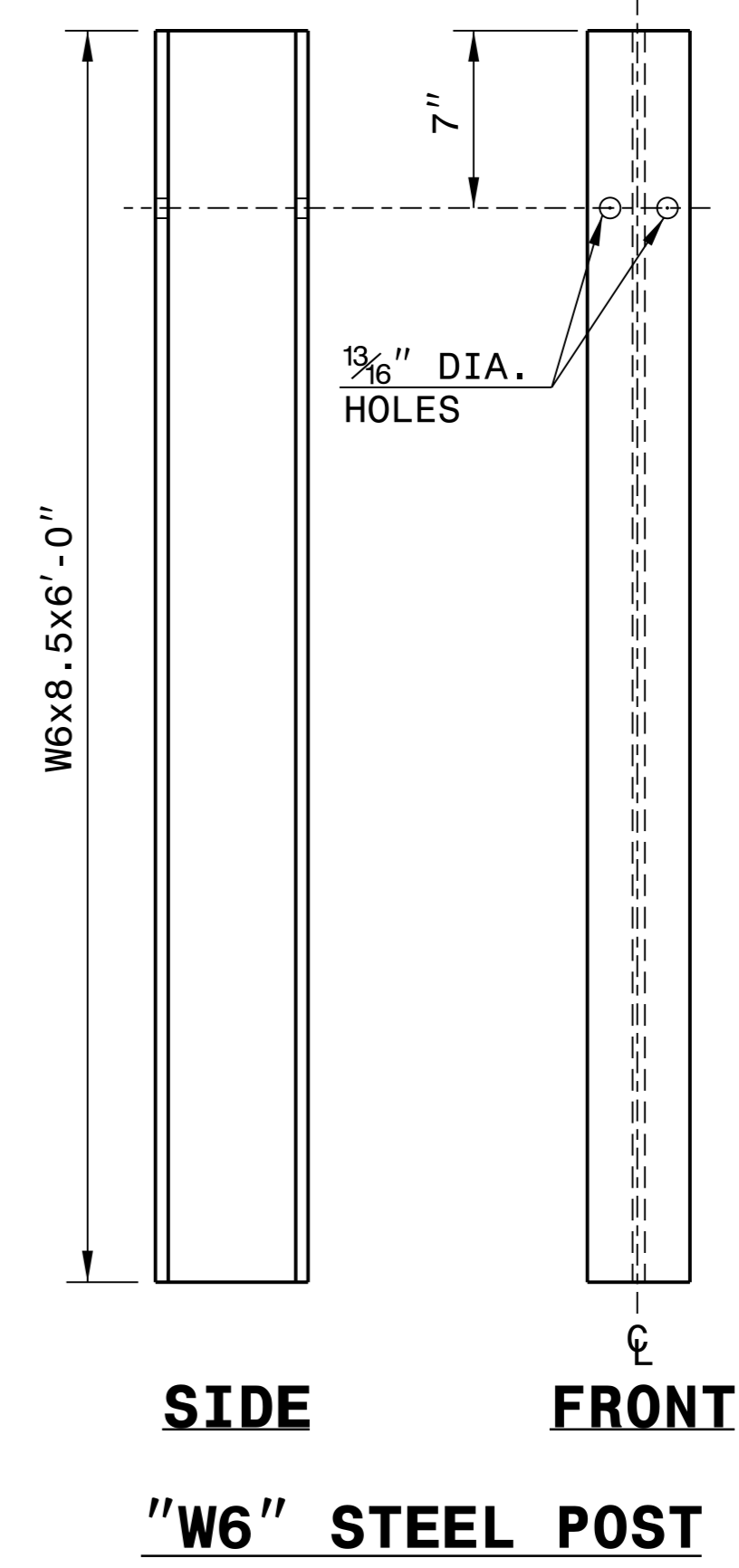


**PLAN**

**SIDE**

**FRONT**

**ROUTED OFFSET BLOCK**



**SIDE**

**FRONT**

**"W6" STEEL POST**

**SYSTEM PARTS**

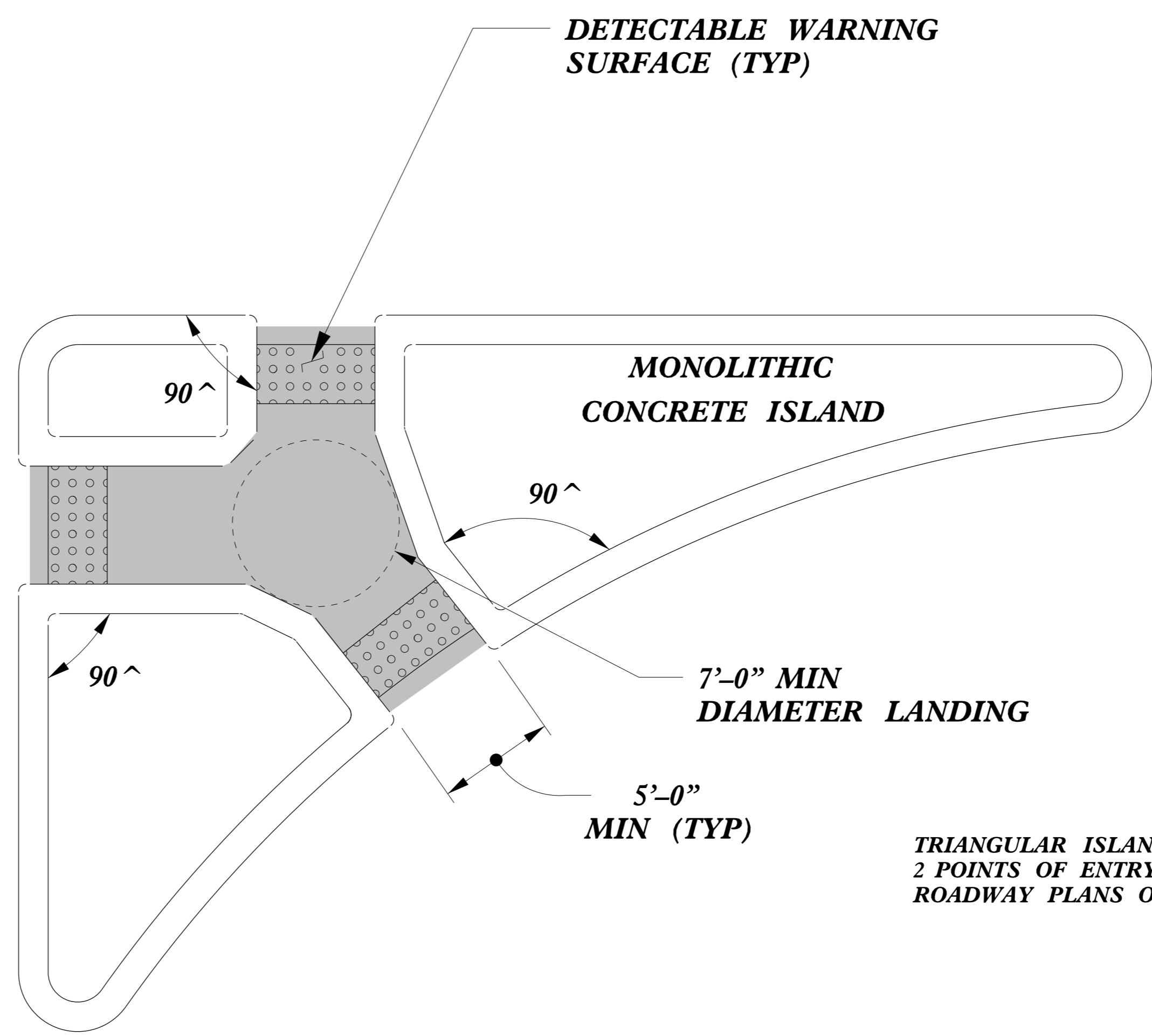


**CONTRACTS STANDARDS AND DEVELOPMENT UNIT**  
 Office 919-707-6950 FAX 919-250-4119

**SEE TITLE BLOCK**

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

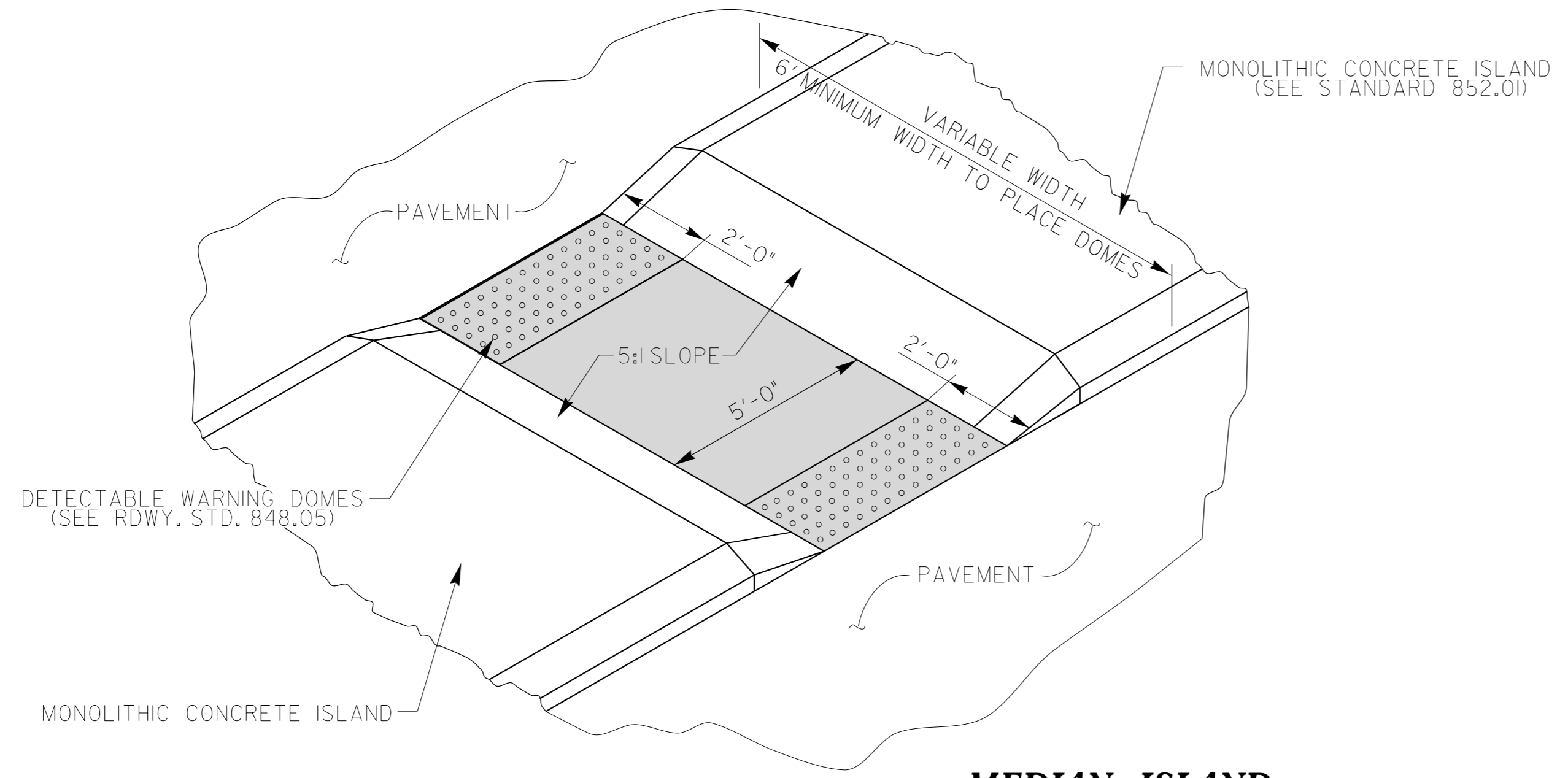
5/14/99



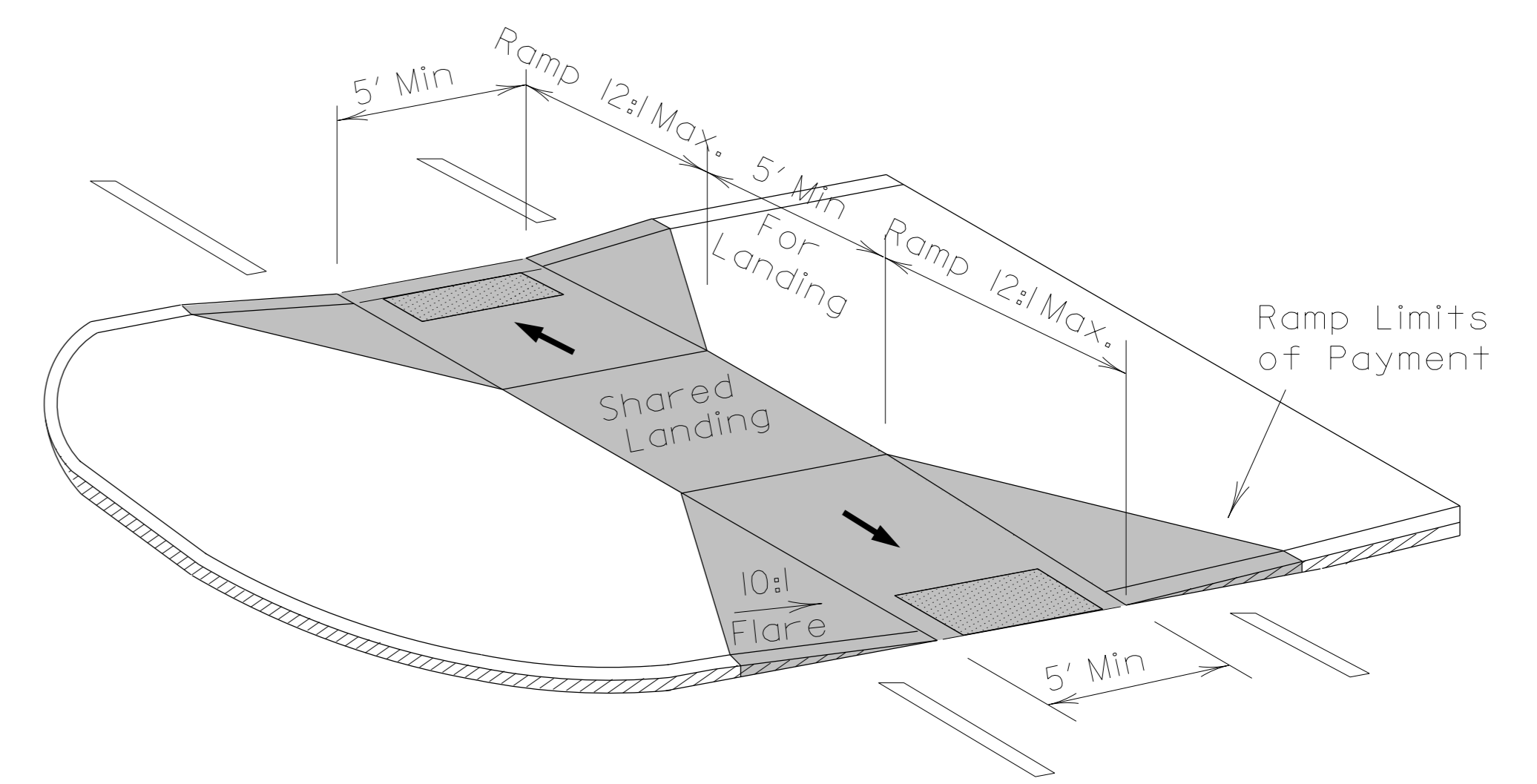
**PAY LIMITS FOR 2 OR 3 CURB RAMPS**  
(CALCULATE BASED ON NUMBER OF SETS OF TRUNCATED DOMES)

TRIANGULAR ISLANDS MAY BE CONSTRUCTED WITH ONLY 2 POINTS OF ENTRY AND EXIT AS SHOWN IN THE ROADWAY PLANS OR AS DIRECTED BY THE ENGINEER.

**TRIANGULAR ISLAND WITH CUT THROUGH**



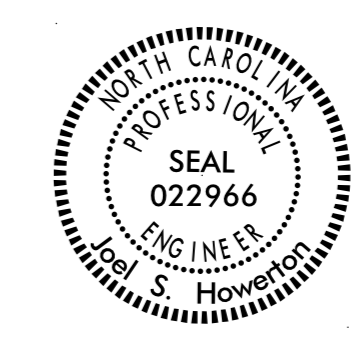
**MEDIAN ISLAND WITH CUT THROUGH**



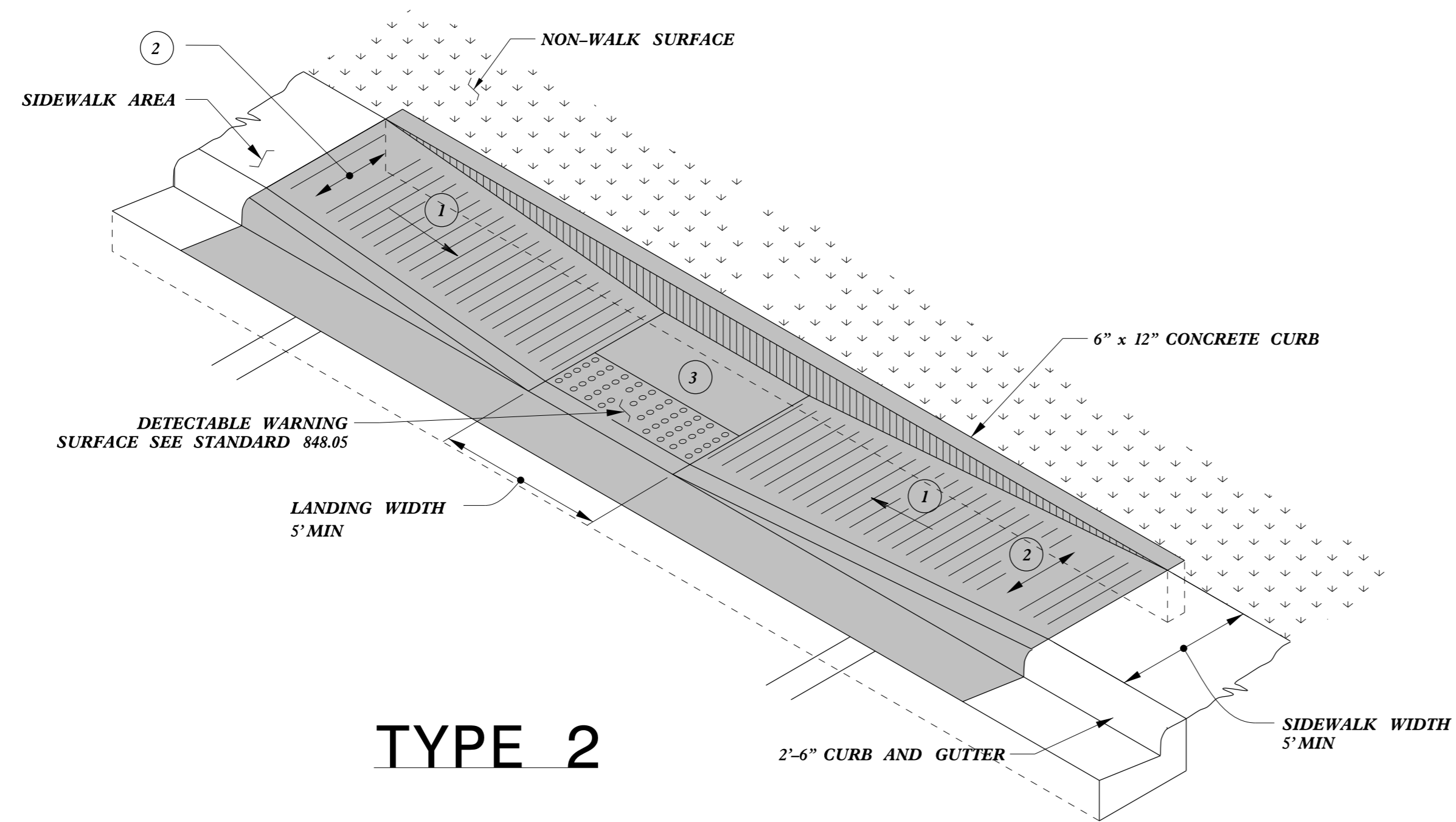
**MEDIAN ISLAND CURB RAMPS**

C:\P\2012\STDS\CONSTRUCTION\USER\NAME.DWG

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



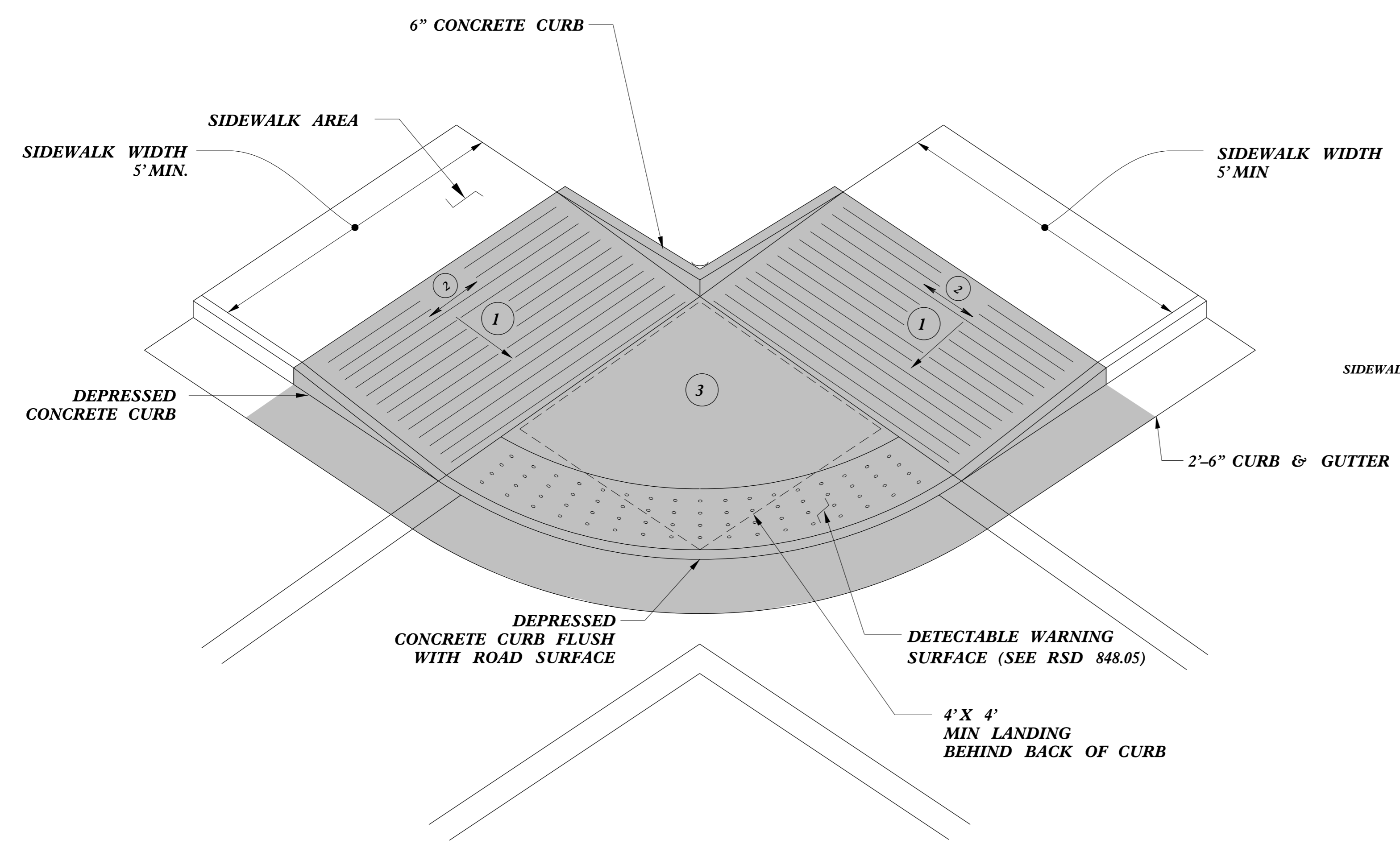
<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950	FAX 919-250-4119
<b>CURB RAMPS</b>	
Median or Turn Lane Islands	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn	



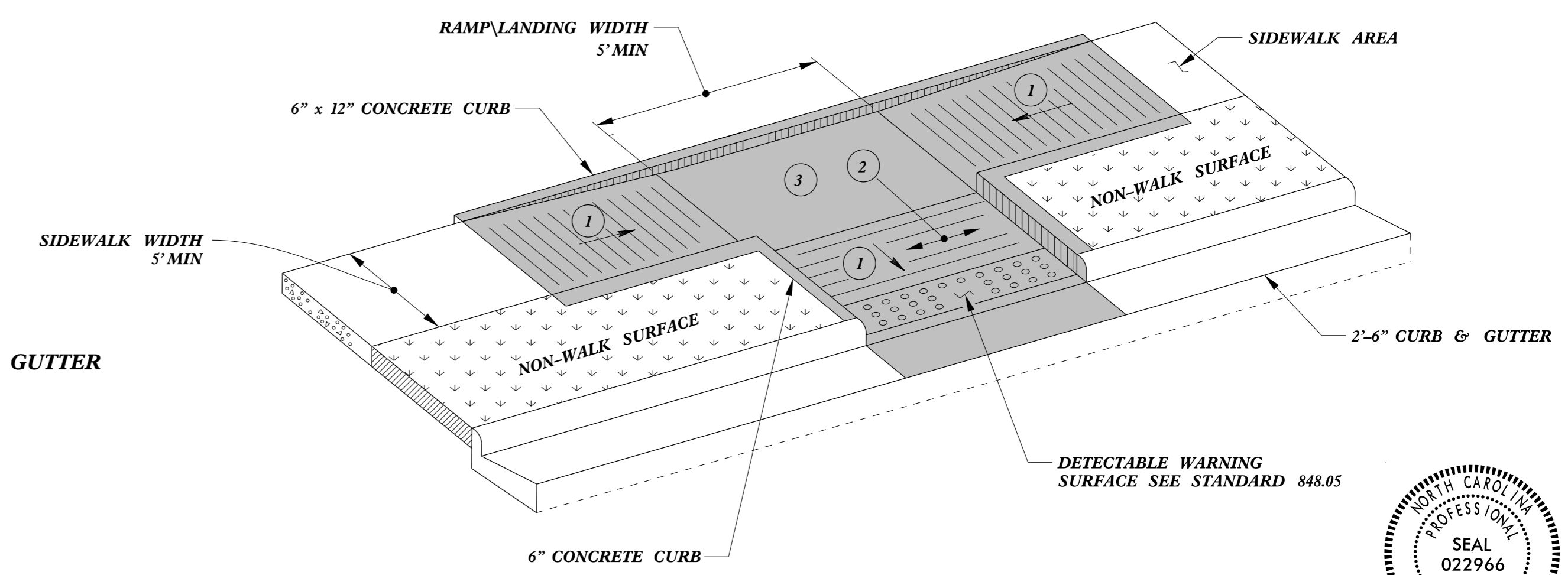
**TYPE 2**

**PAY LIMITS FOR 1 CURB RAMP**

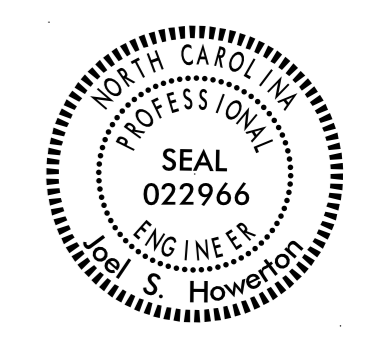
- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 3 CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.



**TYPE 2A**



**TYPE 3**



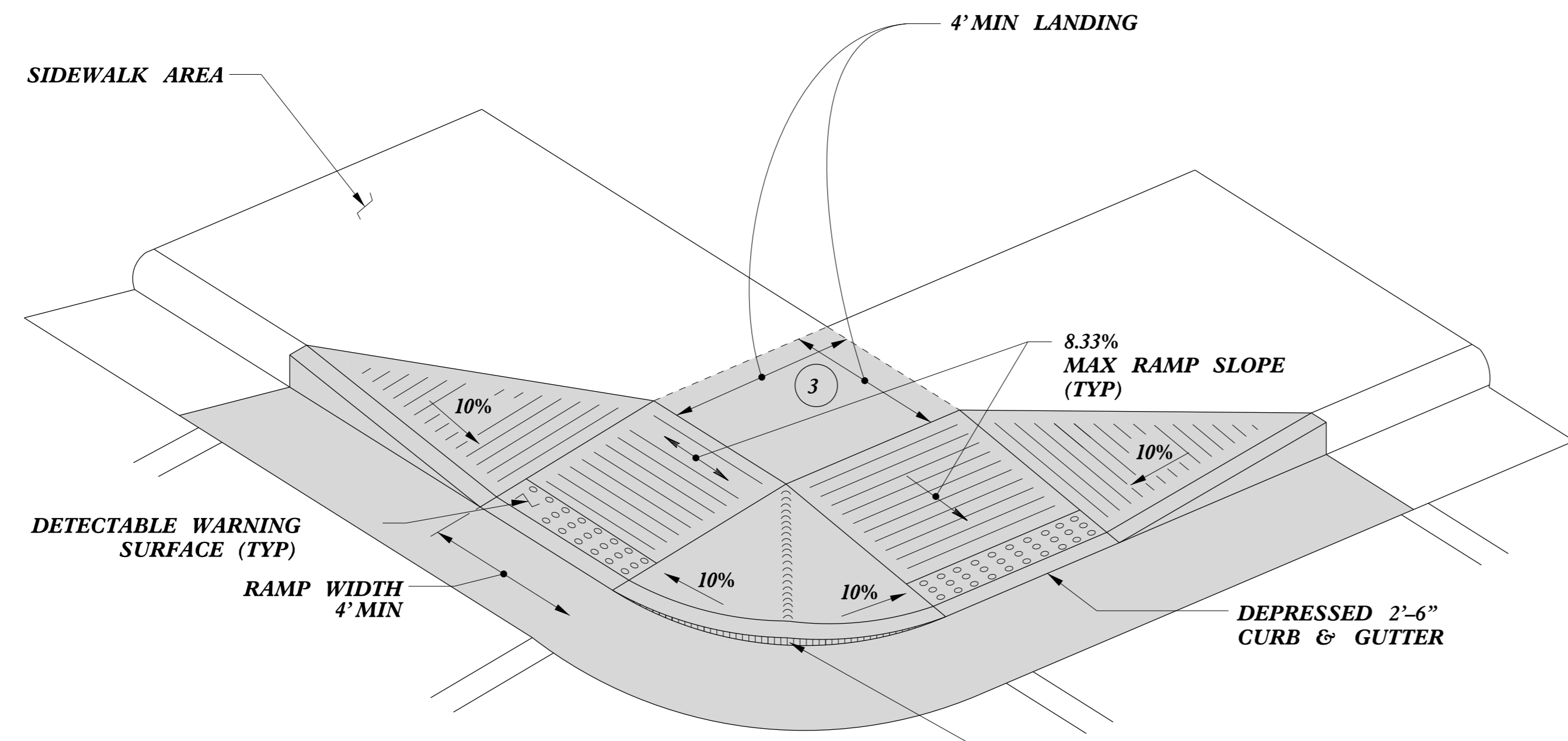
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950	FAX 919-250-4119
<b>CURB RAMPS</b>	
Parallel Ramps	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC. :stds/2012CurbRamp/CurbRampDetails.dgn	

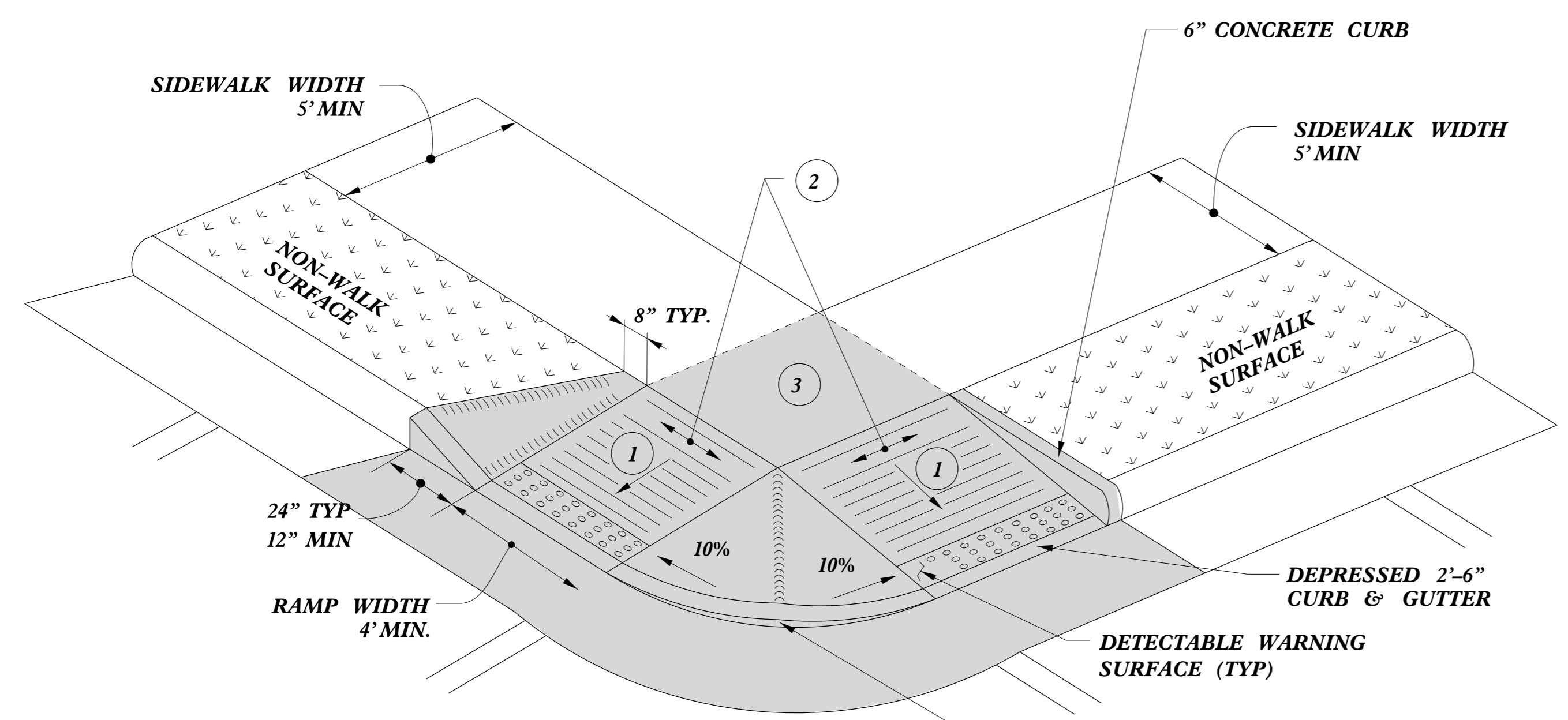
REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

5/14/99  
C:\ME\DWG\CON\CON\USER\NAME.DWG



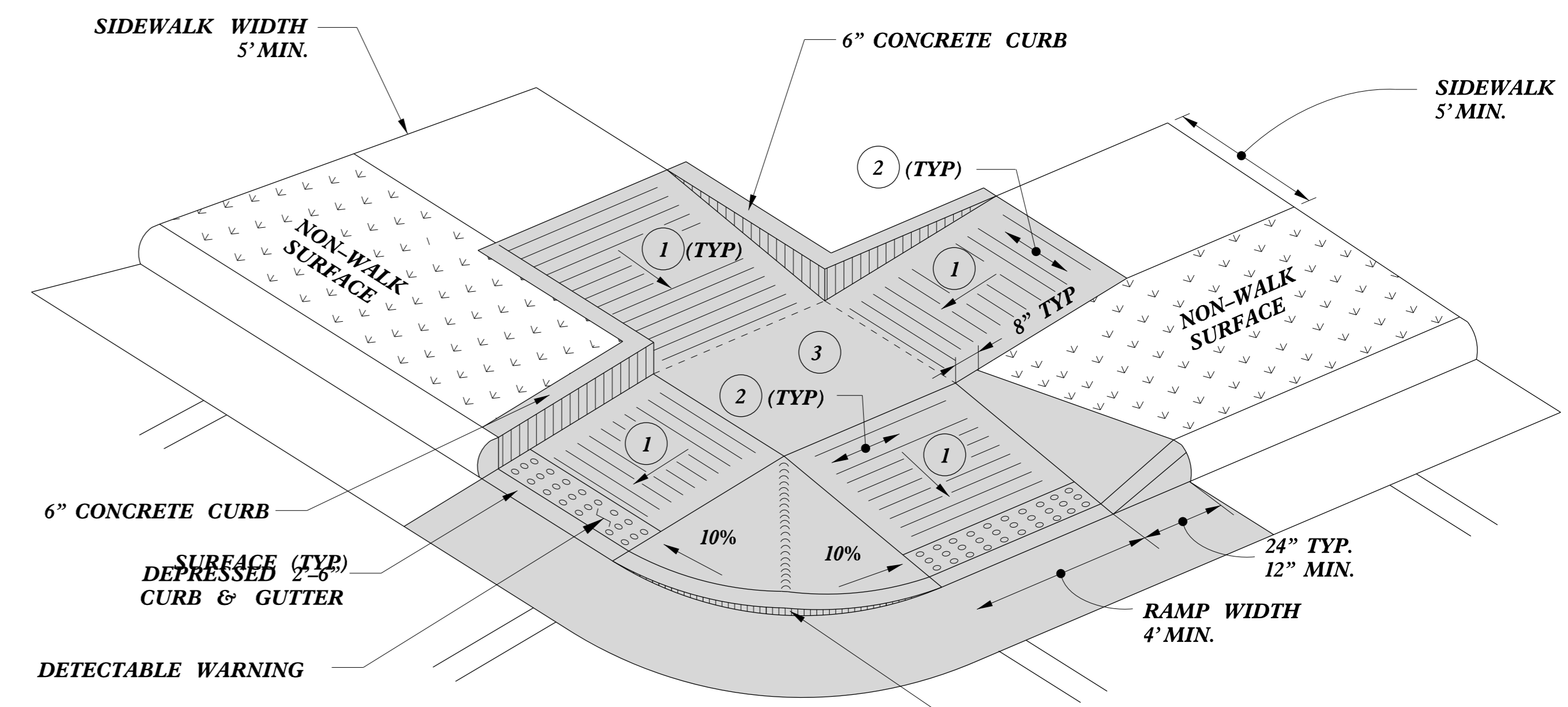


**TYPE 4**



**TYPE 4A**

PAY LIMITS FOR 2 CURB RAMPS



**TYPE 5**

- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 3 CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.



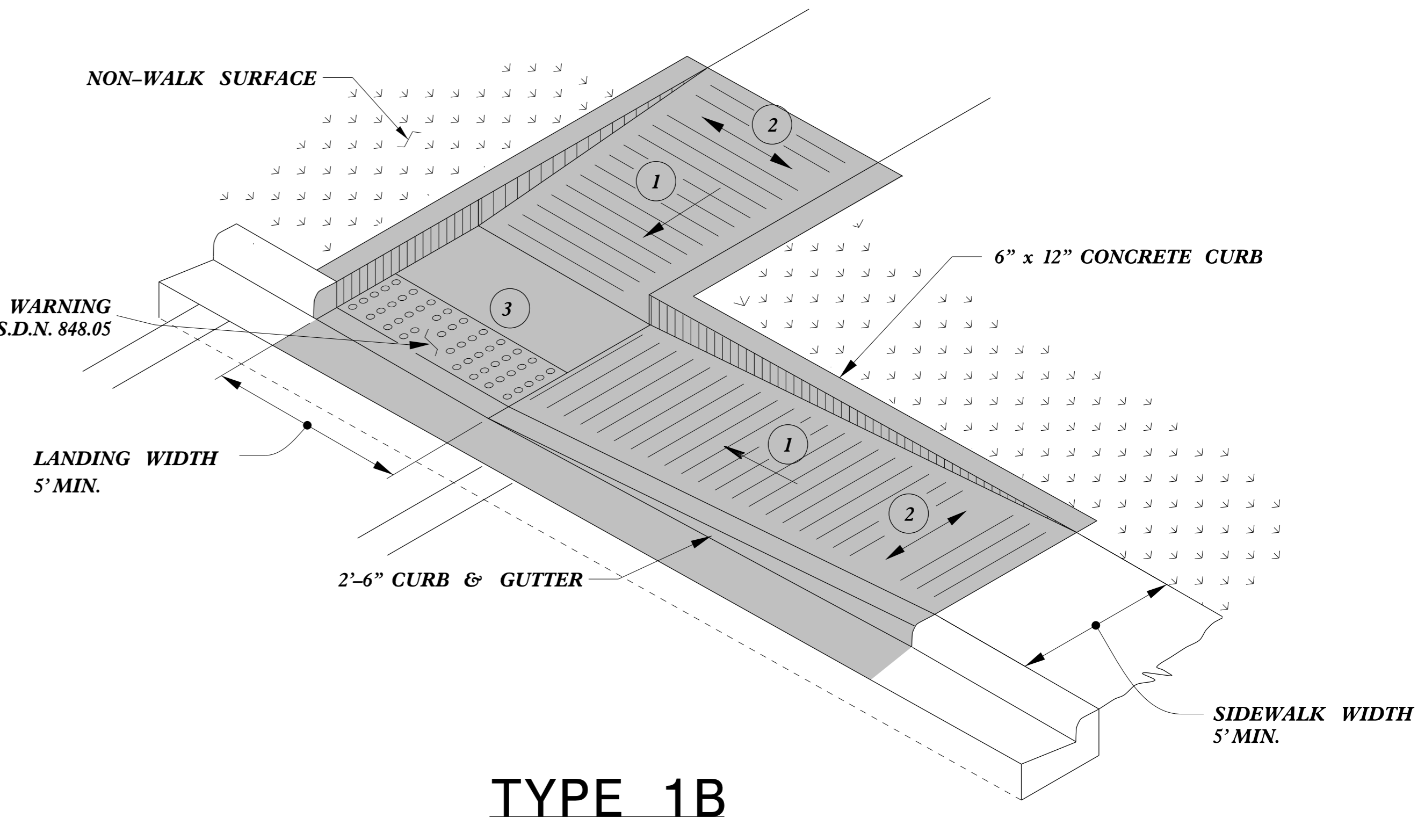
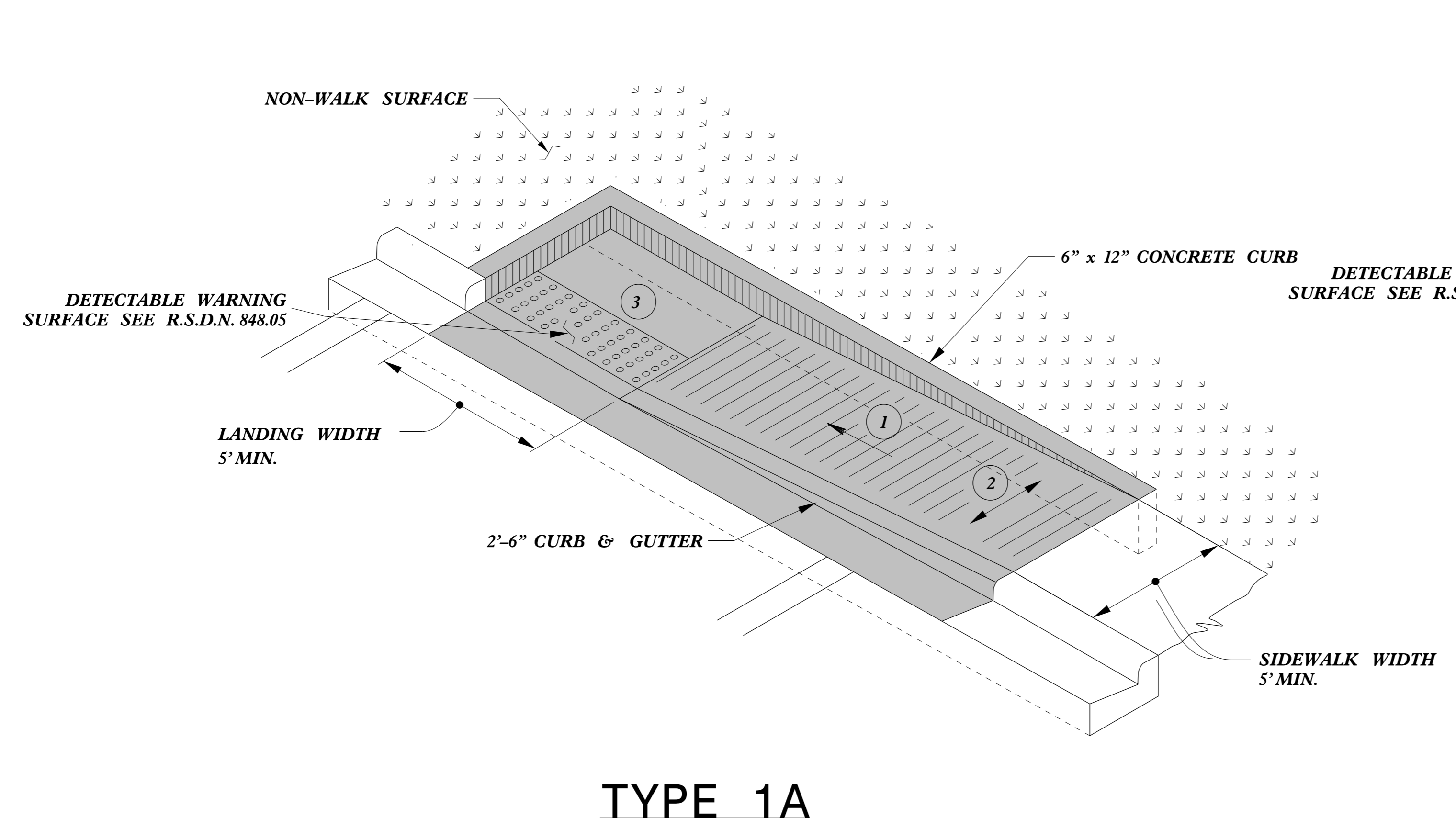
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950	FAX 919-250-4119
<b>CURB RAMPS</b>	
Shared Landing	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC: stds/2012CurbRamp/CurbRampDetails.dgn	

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

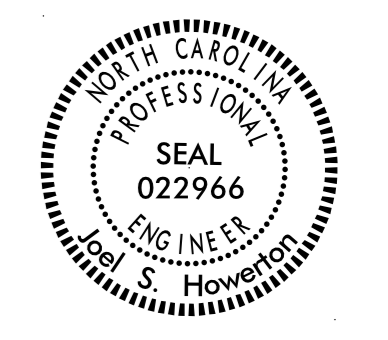
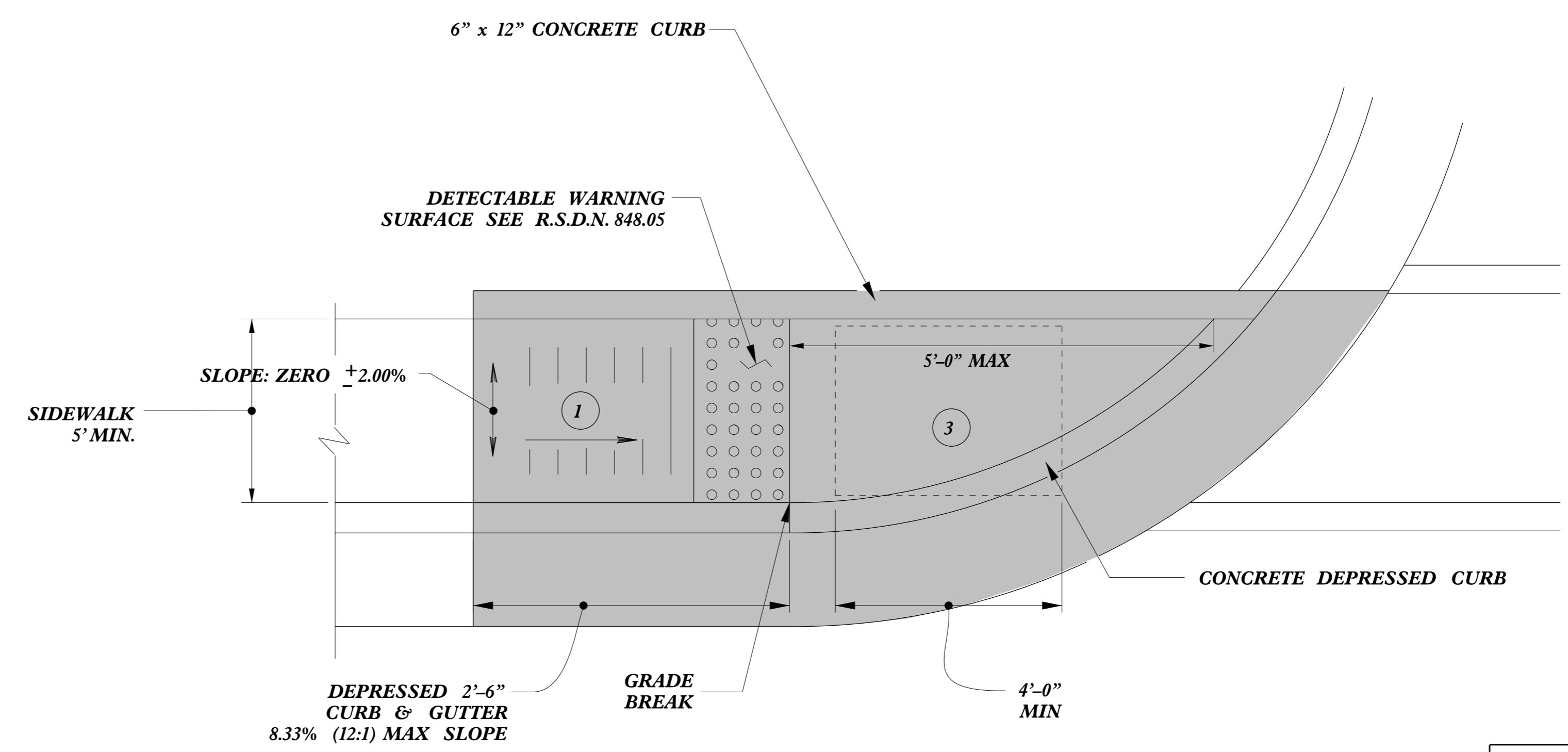
5/14/99  
C:\TIME\STDS\CON\STDS\USER\NAME

5/14/99



**PAY LIMITS FOR 1 CURB RAMP**

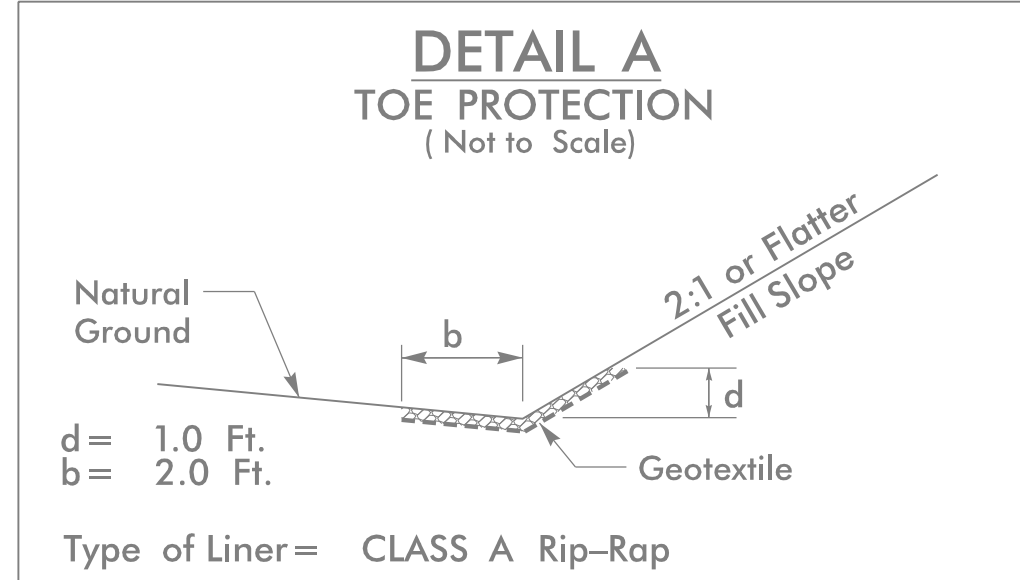
- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 3 CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.



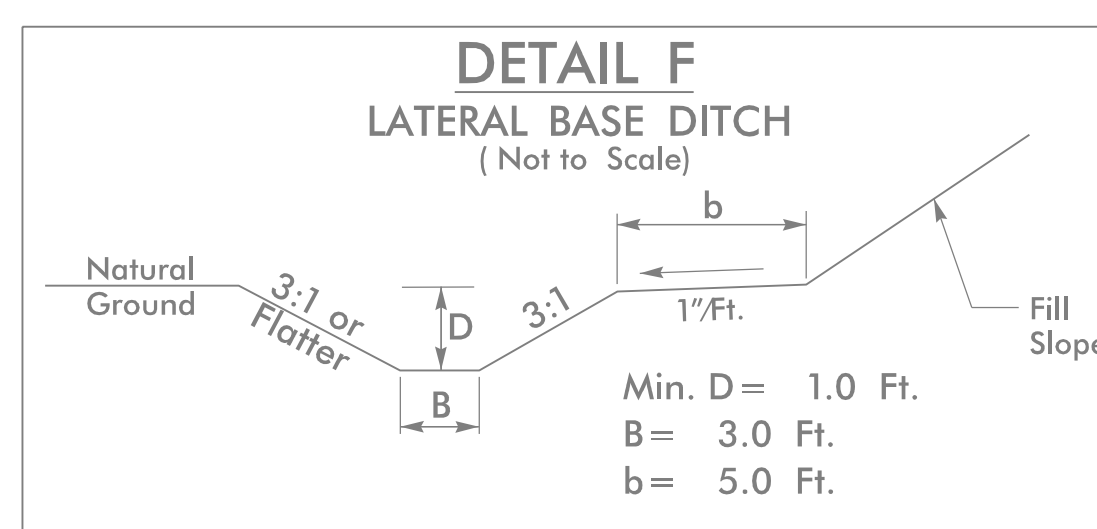
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950	FAX 919-250-4119
<b>CURB RAMPS</b>	
Directional Ramps	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC: stds/2012CurbRamp/CurbRampDetails.dgn	

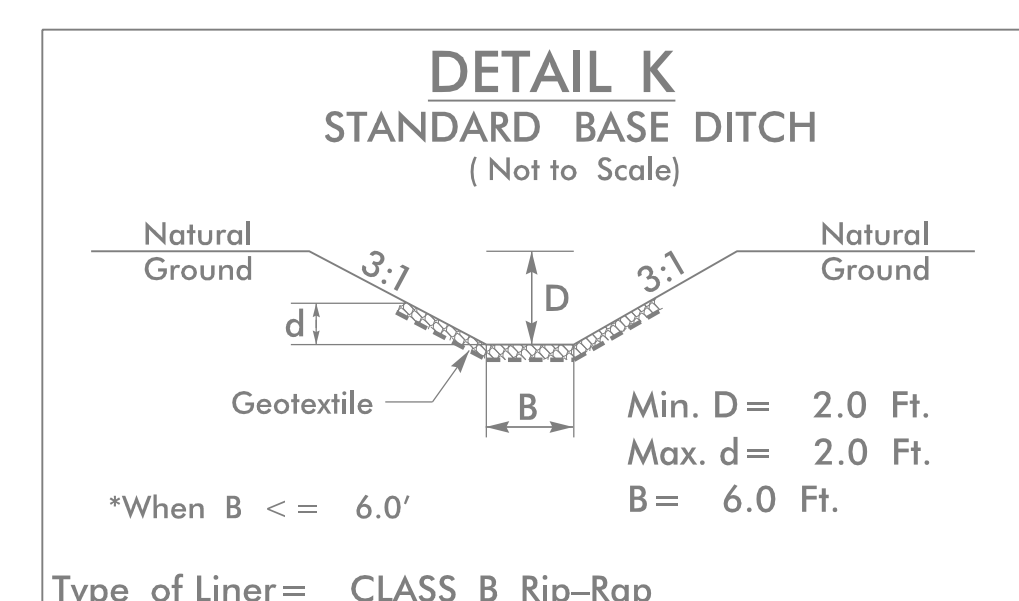
REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES



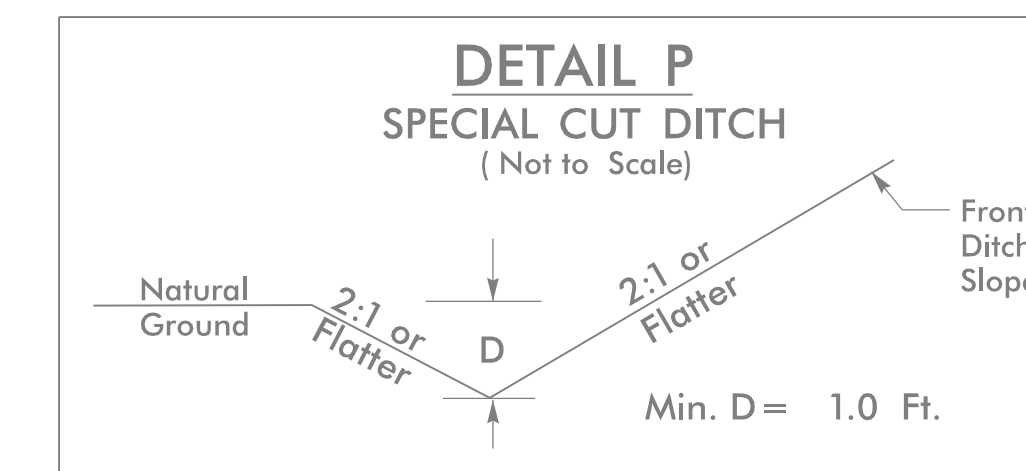
FROM -L- STA. 39+00 TO STA. 39+75 LT (EST 20 TONS, EST 40 SY GT)



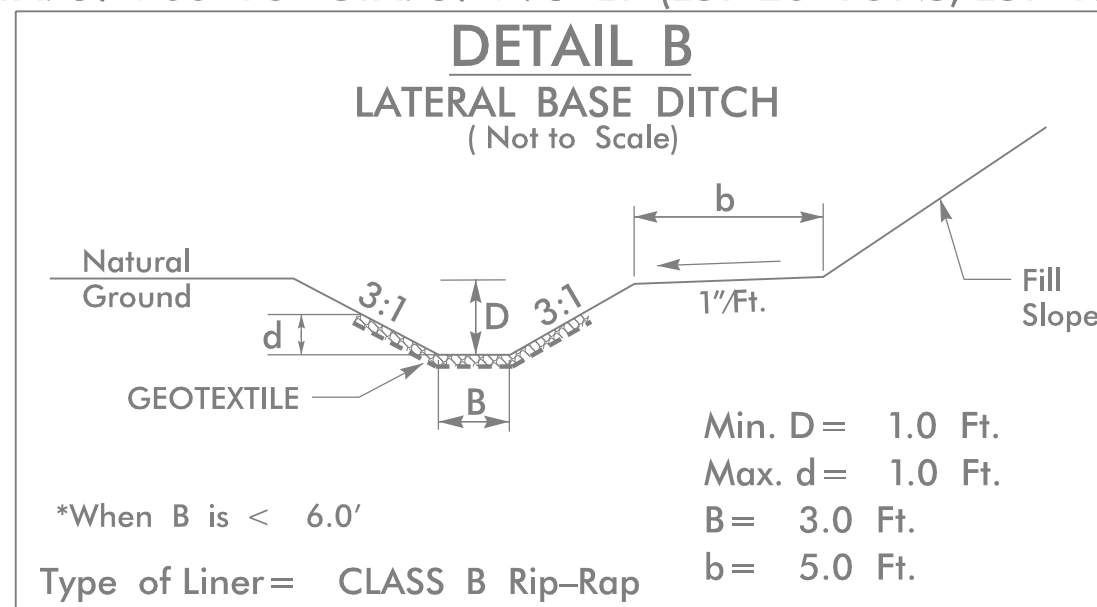
FROM -L- STA. 46+75 TO STA. 49+00 LT, EST. 154 CY DDE  
FROM -L- STA. 71+50 TO STA. 73+50 RT, EST. 227 CY DDE



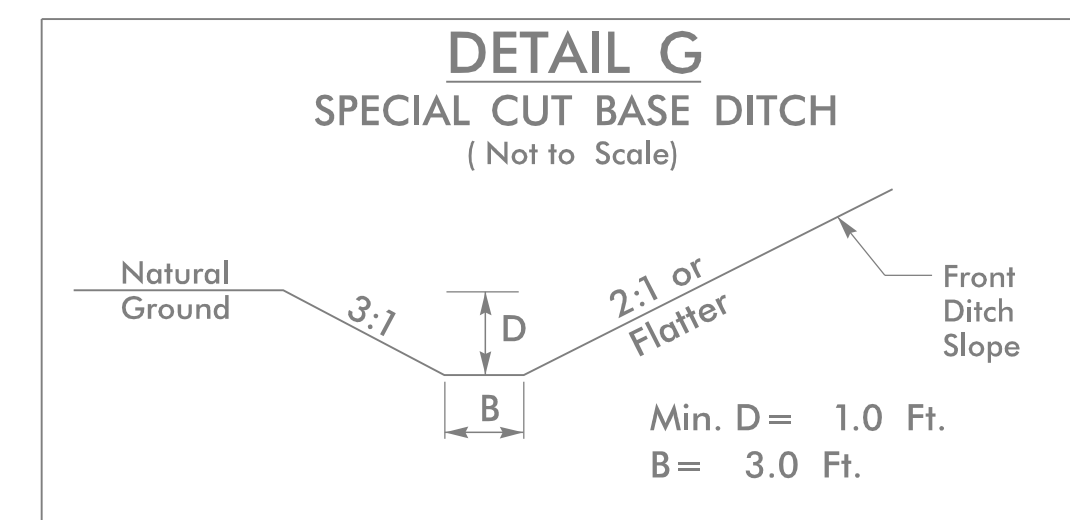
FROM -L- STA. 69+50 TO STA. 71+15 RT  
(EST 165 TONS, EST 360 SY GT)  
(EST. 349 CY DDE)



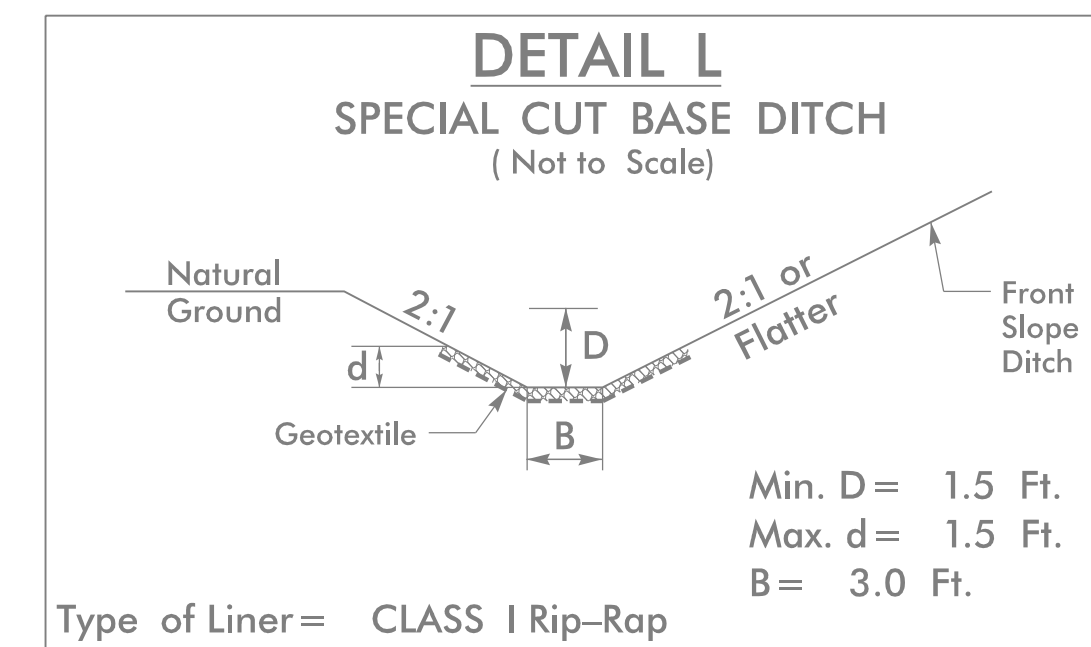
FROM -Y8- STA. 10+50 TO STA. 11+00 LT  
FROM -Y8- STA. 10+75 TO STA. 11+00 RT



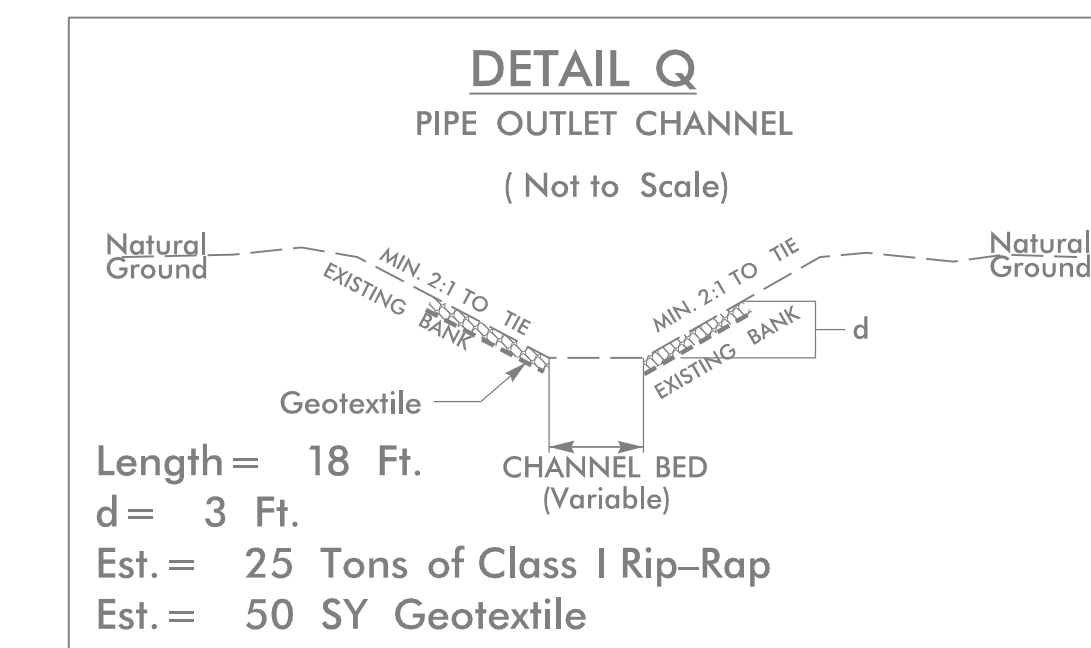
FROM -L- STA. 71+50 TO STA. 73+00 LT (EST 85 TONS, EST 185 SY GT)  
(EST. 95 CY DDE)



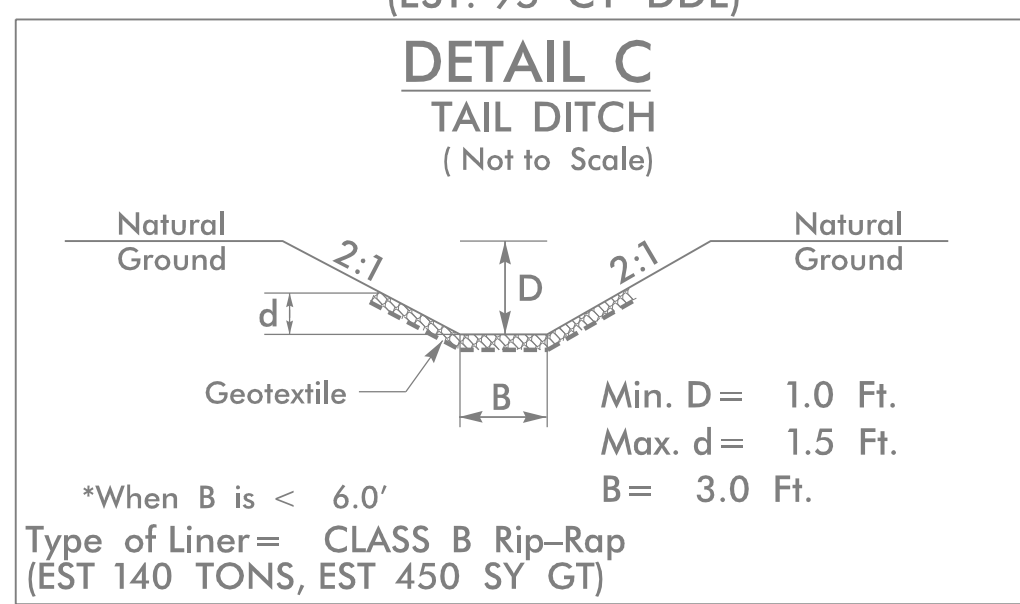
FROM -L- STA. 49+00 TO STA. 49+50 LT  
FROM -L- STA. 52+00 TO STA. 55+14.8 LT  
FROM -L- STA. 55+62.1 TO STA. 56+22.5 LT



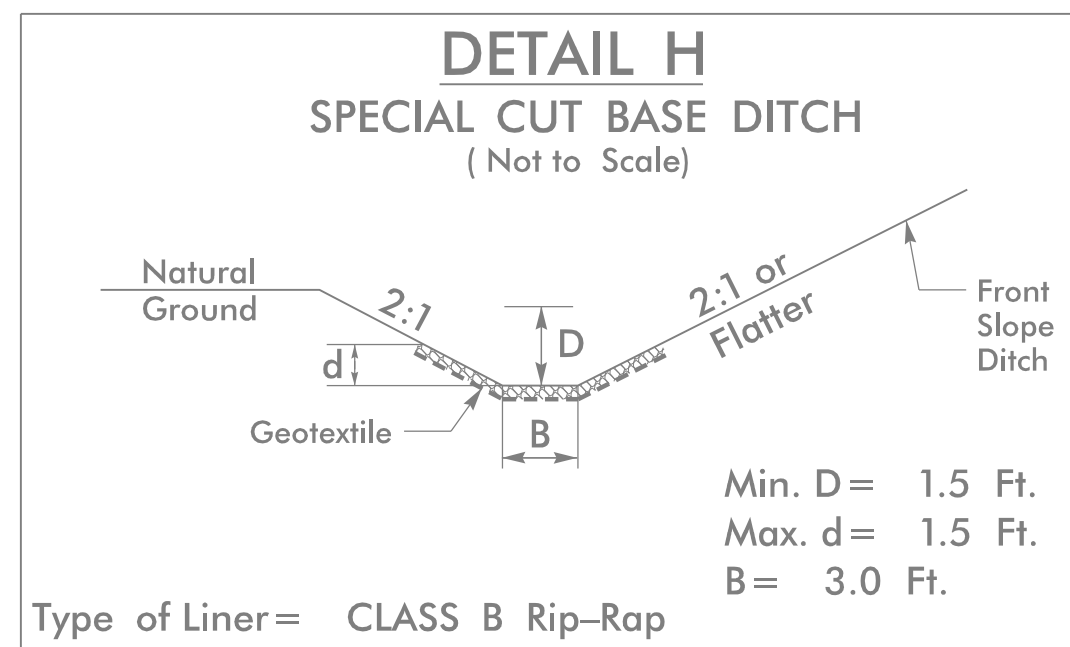
FROM -L- STA. 67+50 TO STA. 68+25 LT  
(EST 45 TONS, EST 95 SY GT)



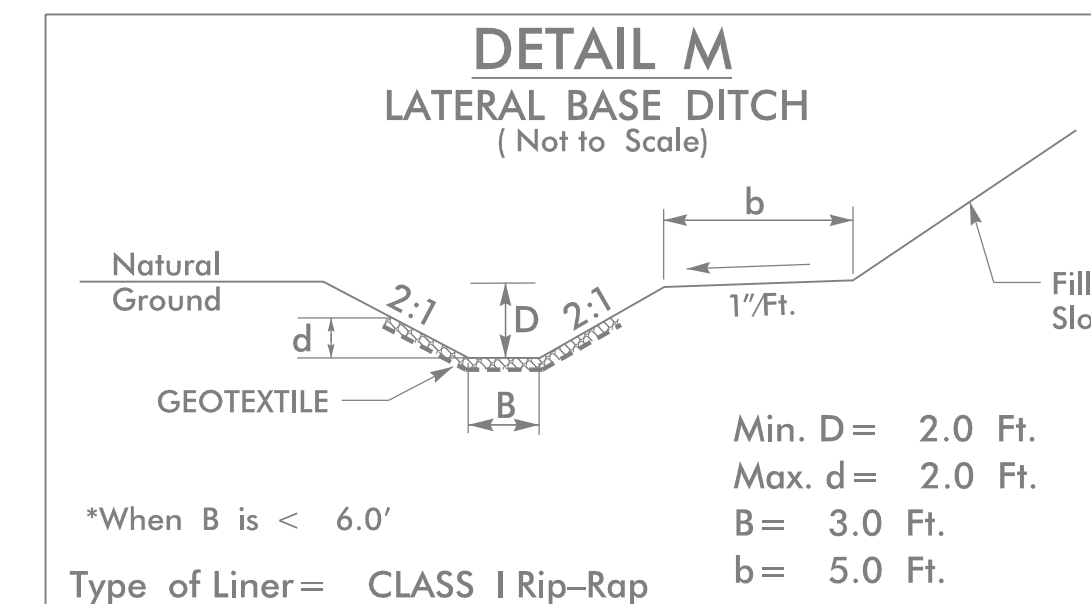
FROM -L- STA. 65+51.8, OFF +67.0' TO STA. 65+69.8, OFF +66.6' RT



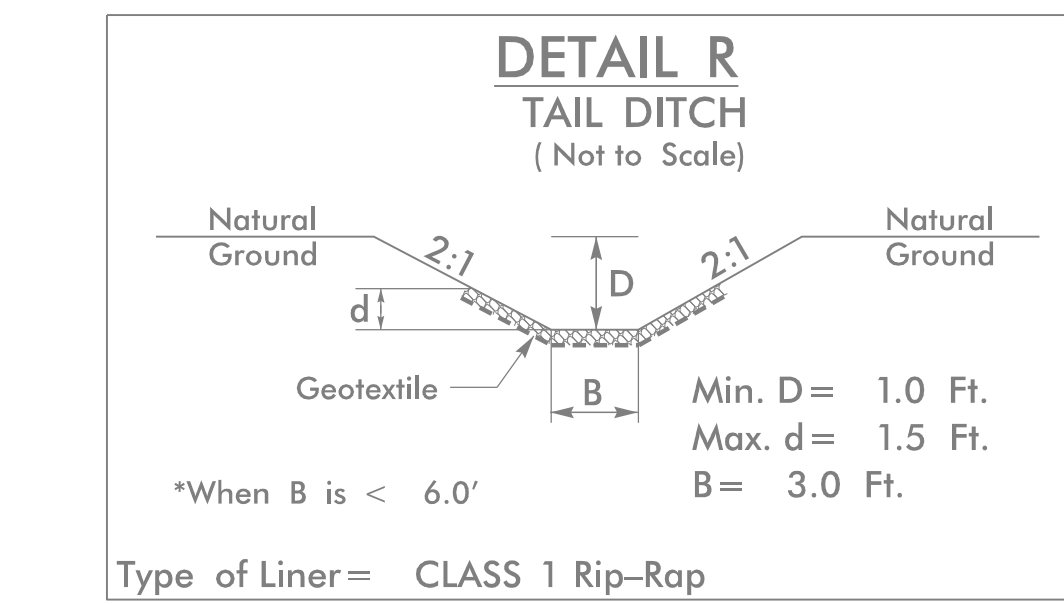
FROM -L- STA. 22+68.1, OFF -99.8' TO STA. 25+29.6, OFF -237.0' LT



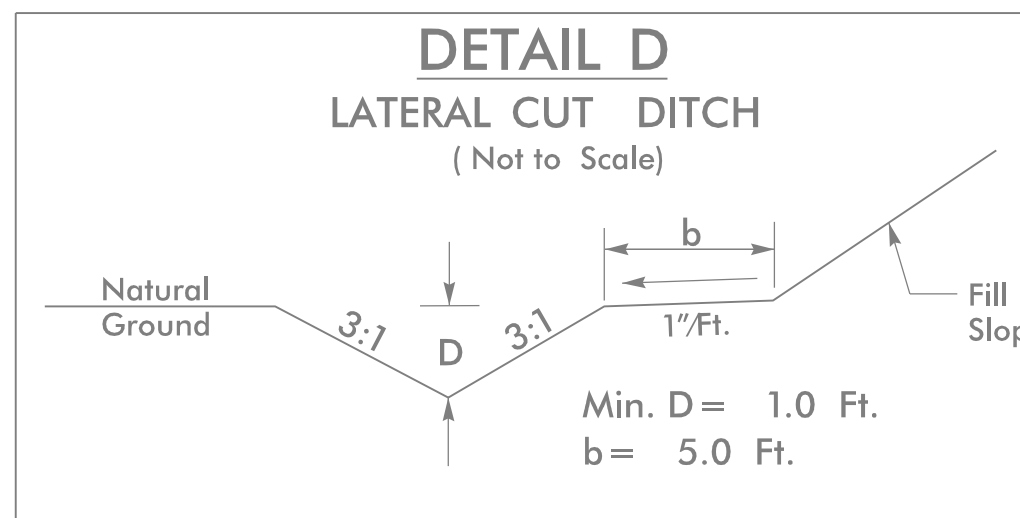
FROM -L- STA. 56+90.2 TO STA. 60+09.1 LT (EST 175 TONS, EST 385 SY GT)  
FROM -L- STA. 60+59.9 TO STA. 67+50 LT (EST 370 TONS, EST 820 SY GT)



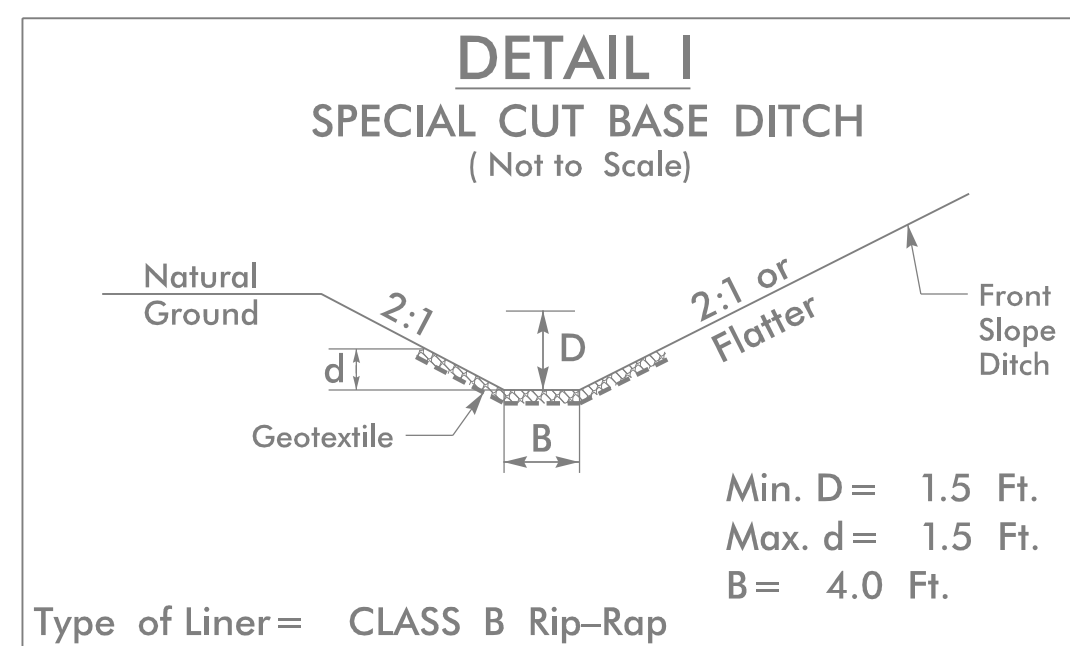
FROM -L- STA. 68+25 TO STA. 70+00 LT  
(EST 100 TONS, EST 215 SY GT)  
(EST. 175 CY DDE)



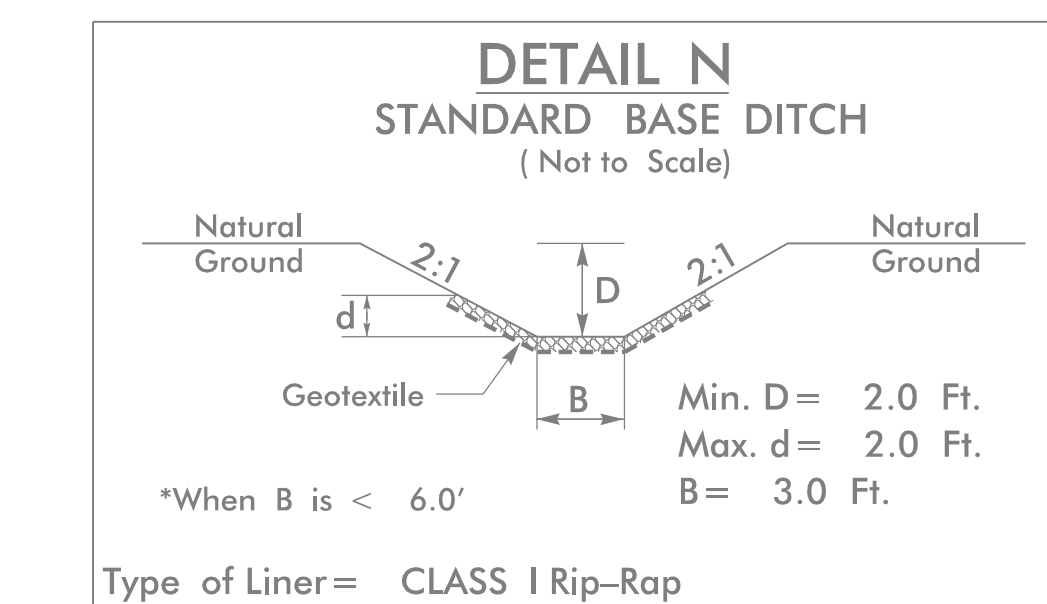
FROM -L- STA. 41+50.1, OFF +104.3' TO STA. 41+80.1, OFF +96.0' RT  
(EST 15 TONS, EST 40 SY GT)



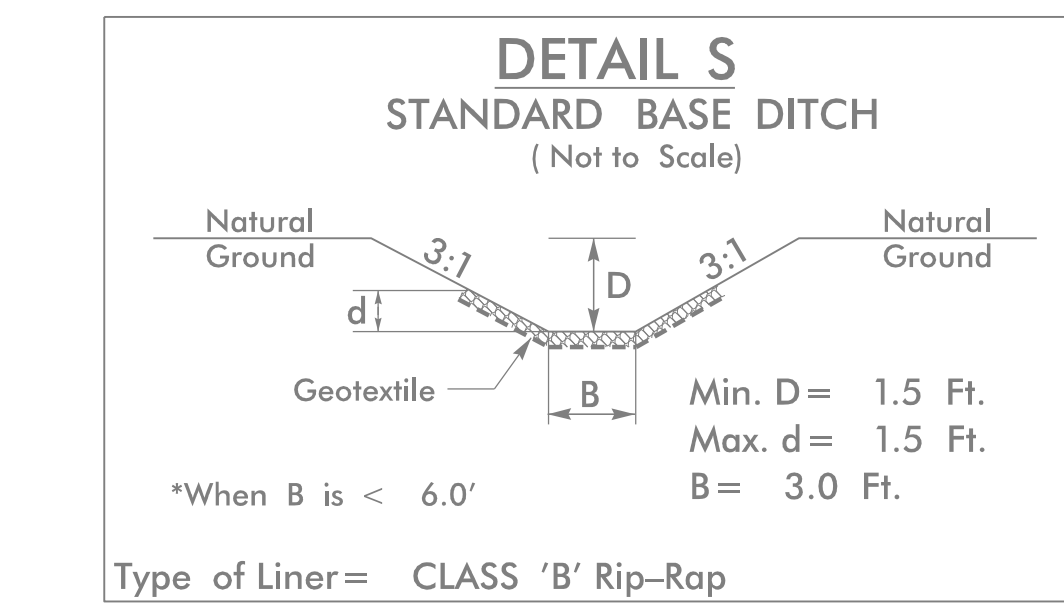
FROM -L- STA. 34+50 TO STA. 38+90 LT, EST. 275 CY DDE  
FROM -L- STA. 39+85 TO STA. 40+73.7 LT, EST. 24 CY DDE



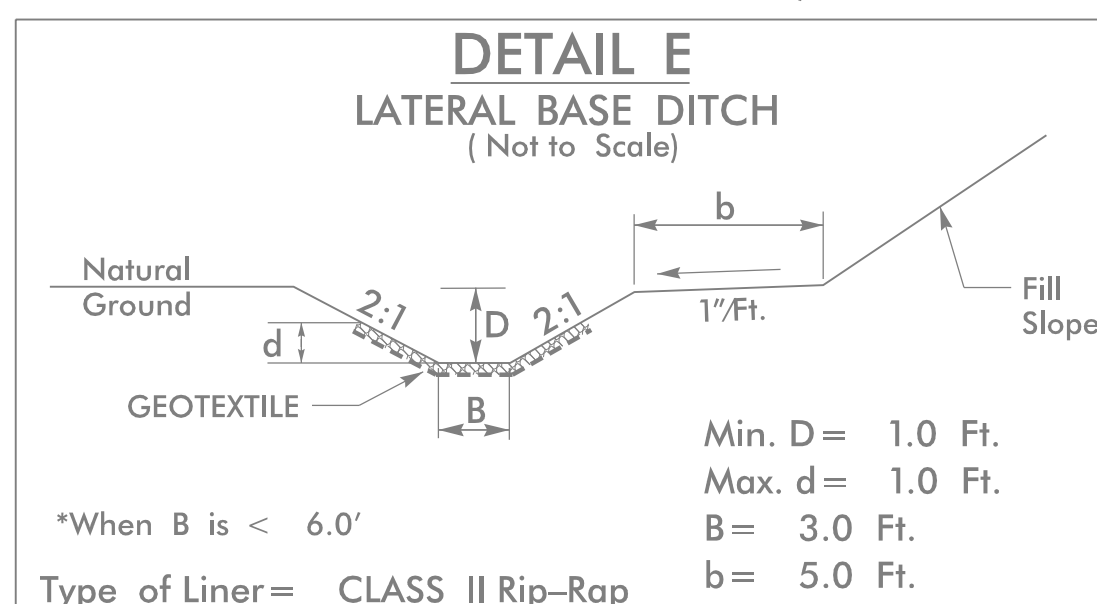
FROM -L- STA. 59+28 TO STA. 61+50 RT  
(EST 155 TONS, EST 345 SY GT)



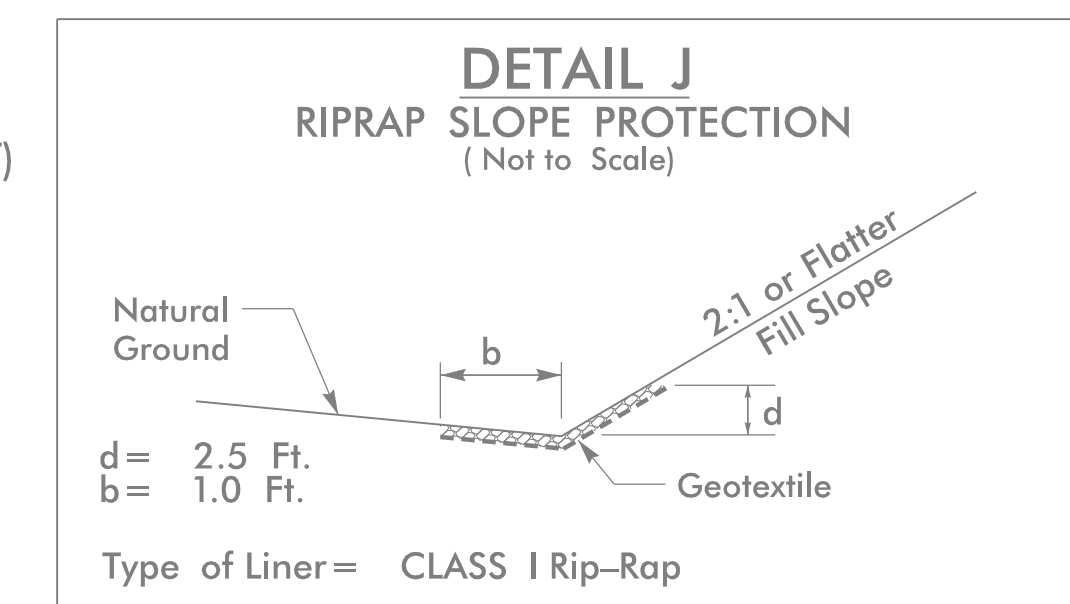
FROM STA. 70+00 TO STA. 70+45 LT  
(EST 30 TONS, EST 60 SY GT)  
(EST. 107 CY DDE)



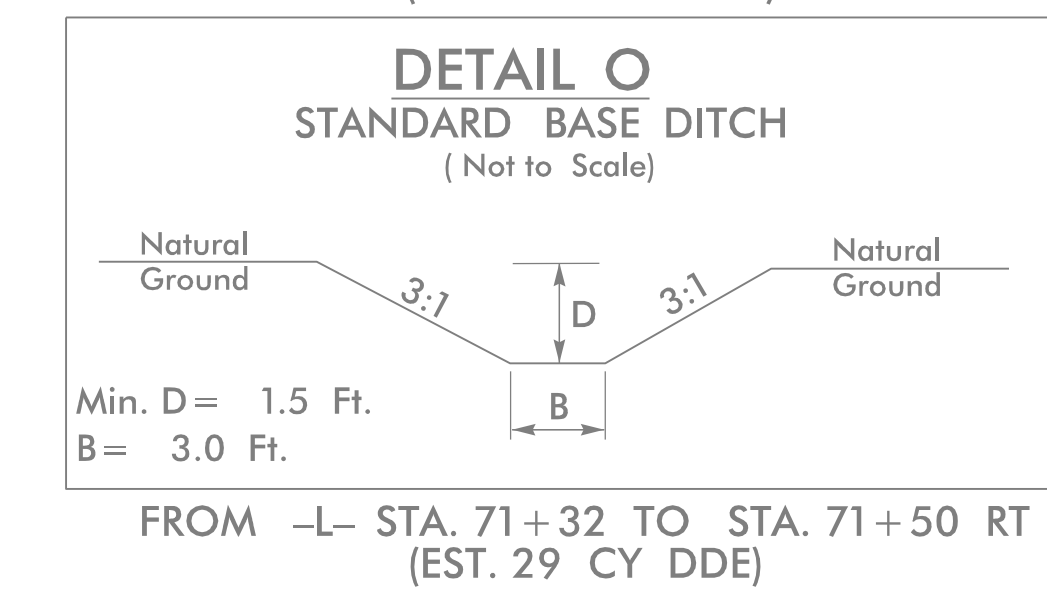
FROM -L- STA. 70+65 TO STA. 71+50 LT (EST 50 TONS, EST 105 SY GT)  
(EST. 155 CY DDE)



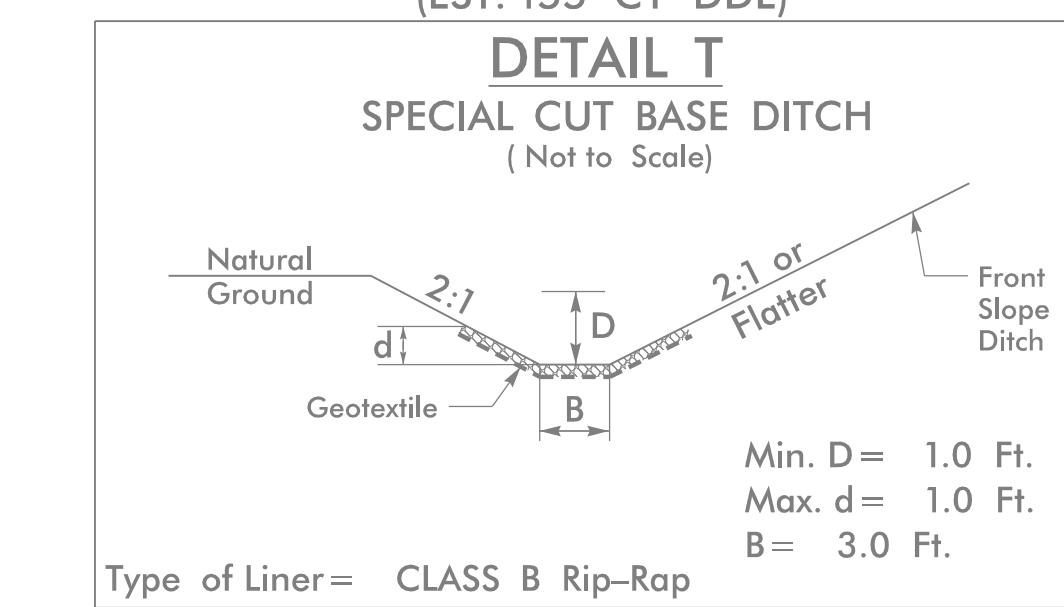
FROM -L- STA. 40+94.2 TO STA. 43+00 LT (EST 95 TONS, EST 200 SY GT)  
EST. 306 CY DDE



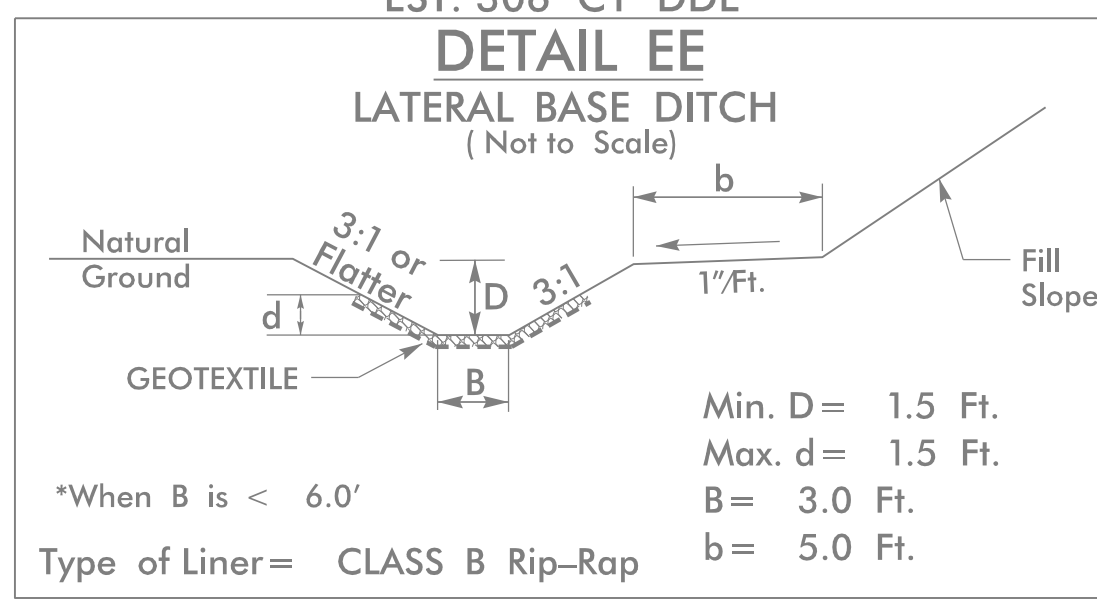
FROM STA. 65+50 TO STA. 68+50 RT  
(EST 115 TONS, EST 240 SY GT)



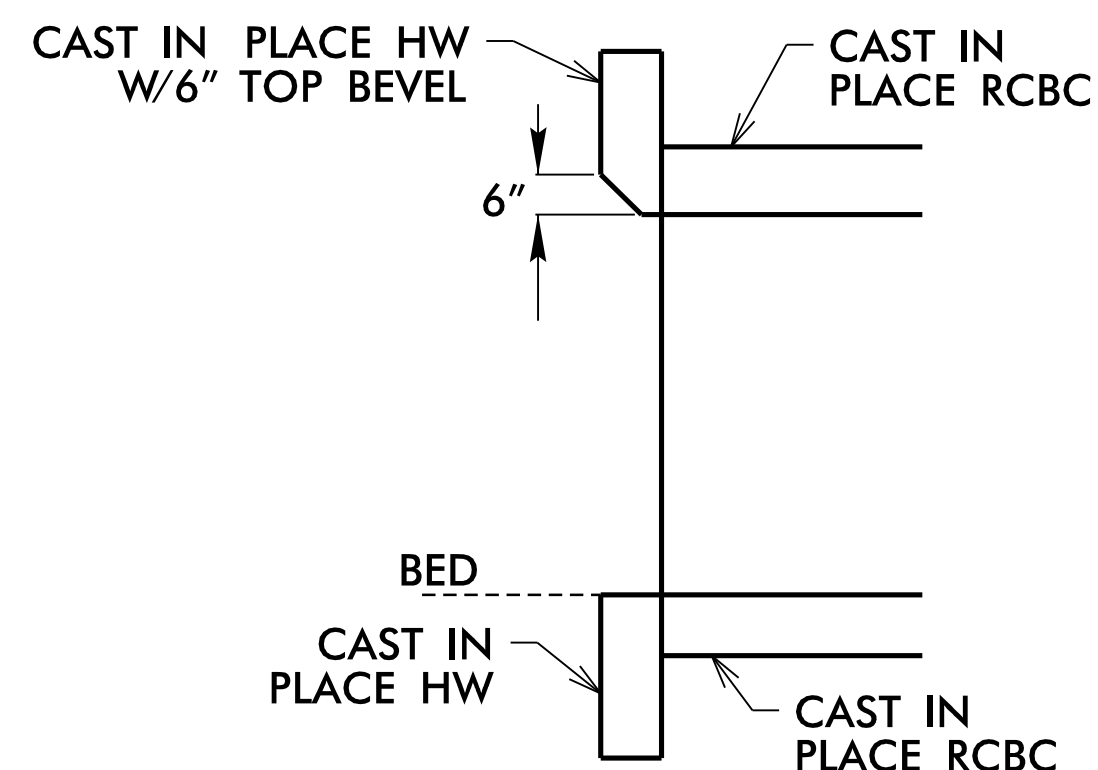
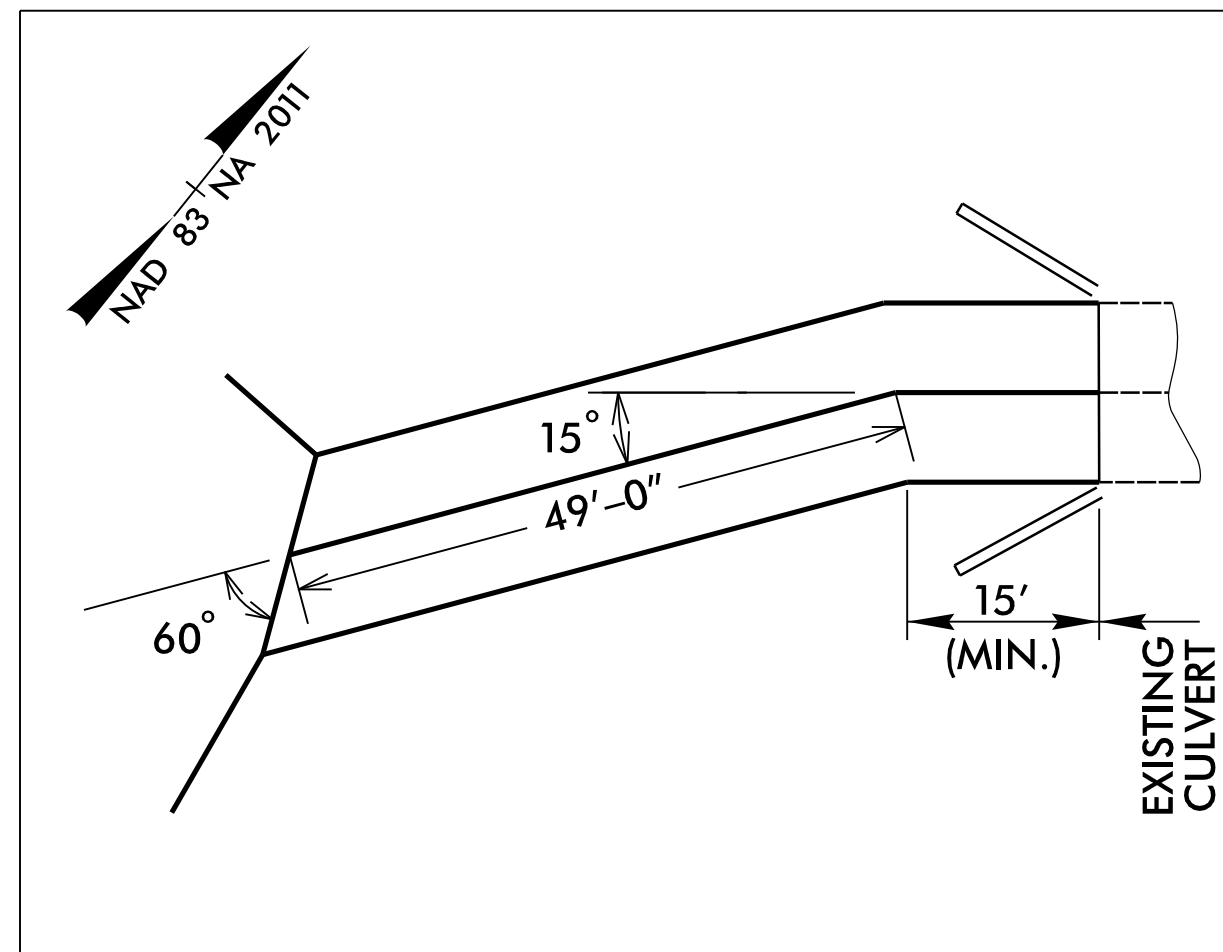
FROM -L- STA. 71+32 TO STA. 71+50 RT  
(EST. 29 CY DDE)



FROM -L- STA. 73+00 TO STA. 75+00 LT  
(EST 80 TONS, EST 170 SY GT)

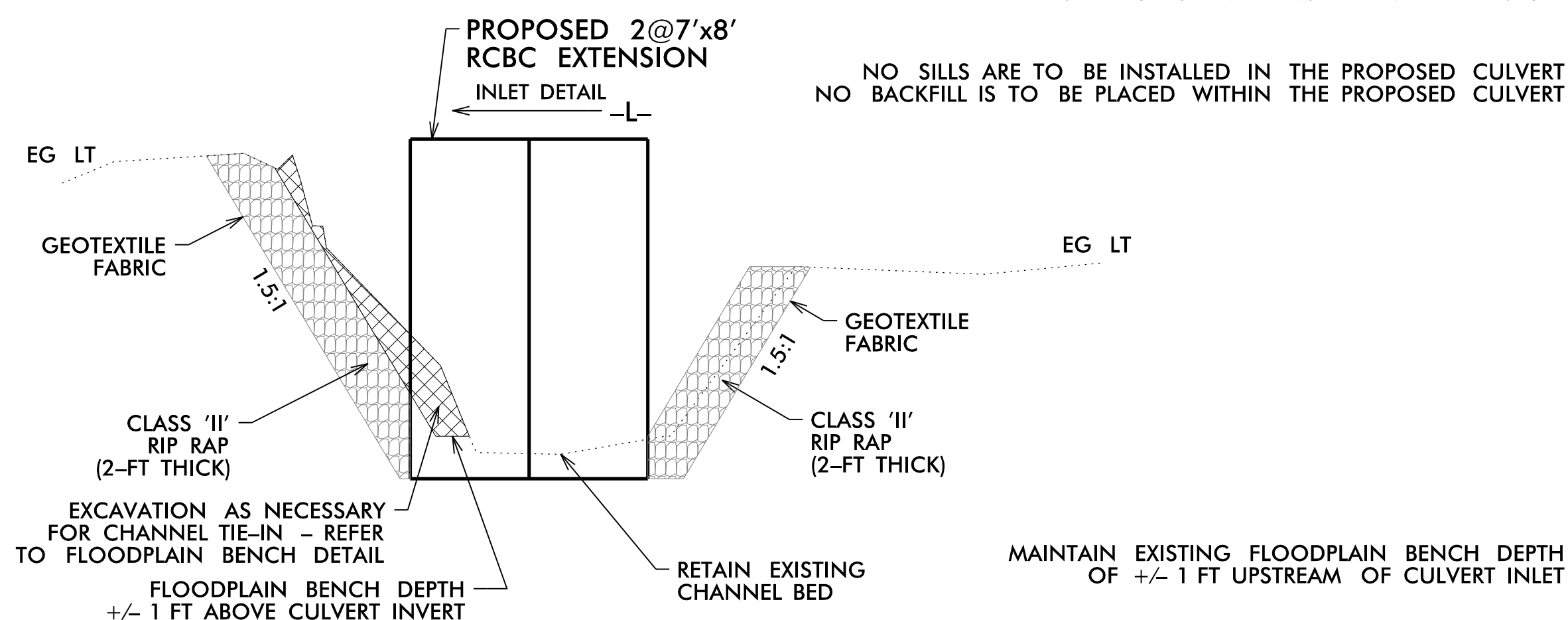


FROM -L- STA. 43+00 TO STA. 45+75 LT (EST 190 TONS, EST 415 SY GT)  
EST. 403 CY DDE



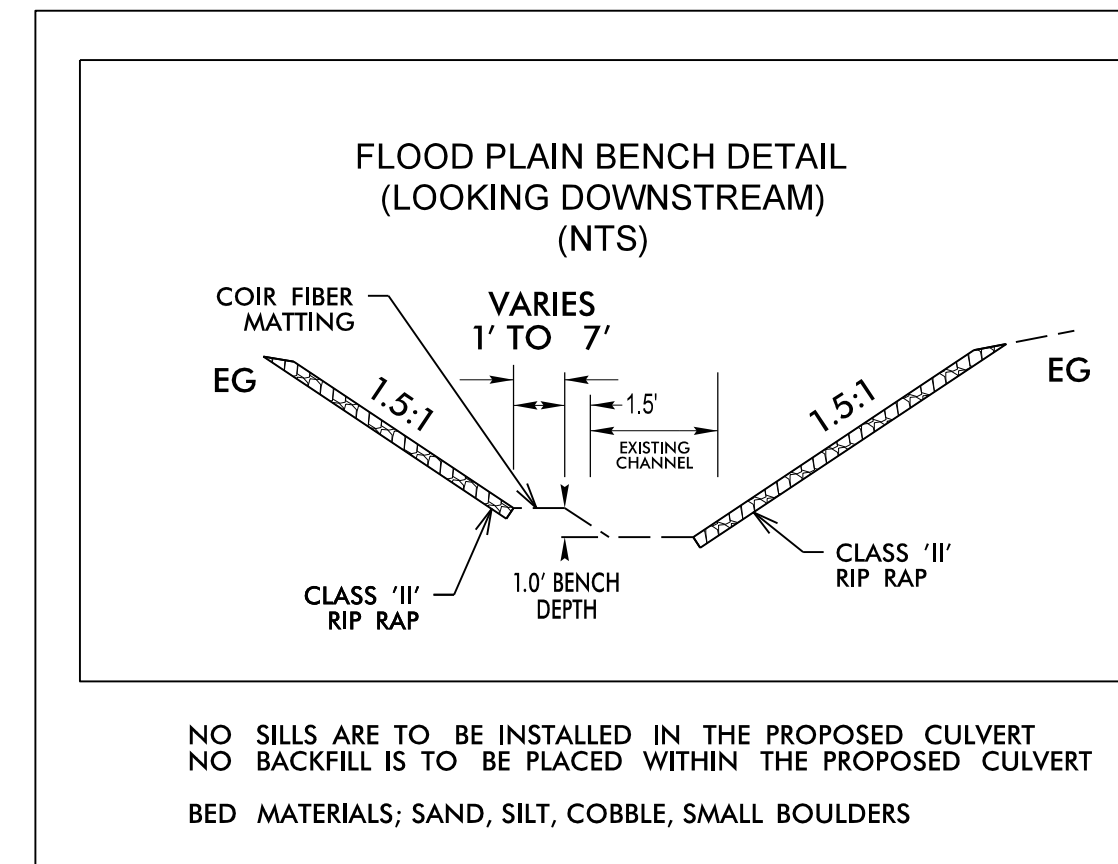
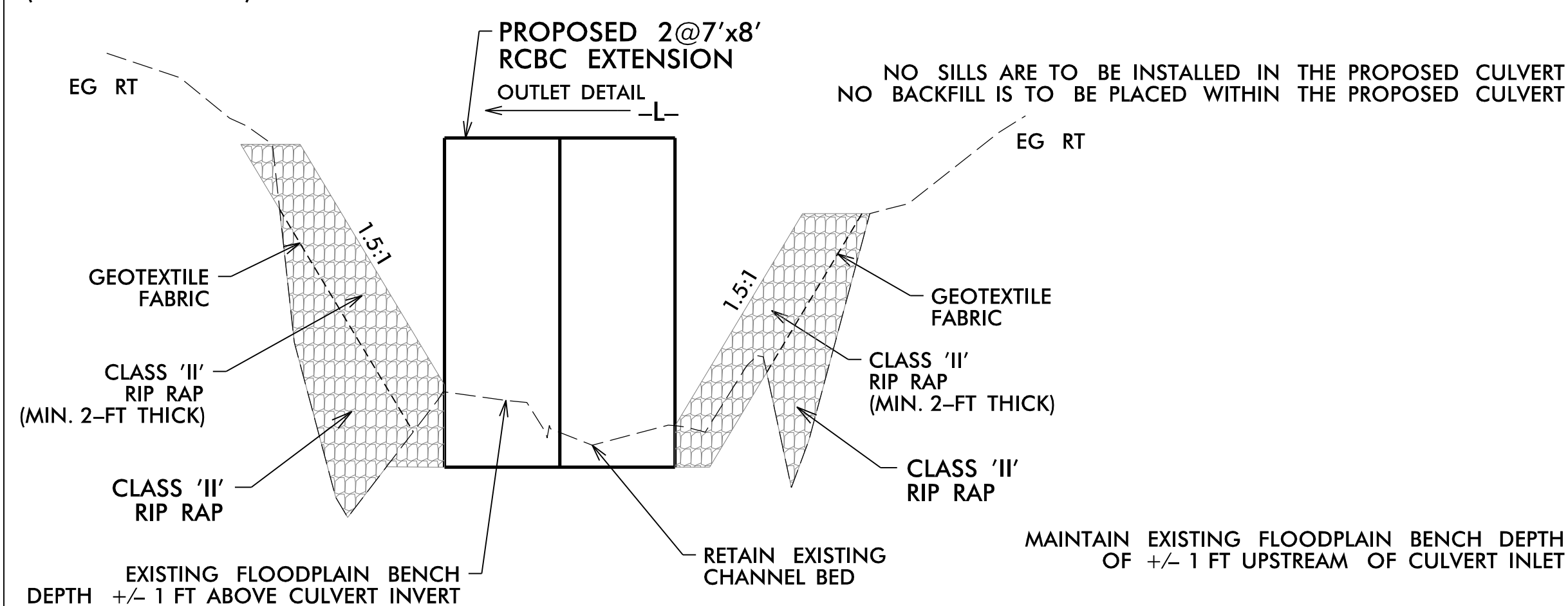
STREAM CROSS SECTION  
LT TO RT FACING DOWNSTREAM  
(NOT TO SCALE)

TOTAL EST. EXCAVATION AT INLET = 10 C.Y.  
TOTAL EST. CL 'II' RIP RAP AT INLET = 75 TONS  
TOTAL EST. GEOTEXTILE AT INLET = 85 S.Y.  
TOTAL EST. C.F. MATTING AT INLET = 40 S.Y.



STREAM CROSS SECTION  
LT TO RT FACING DOWNSTREAM  
(NOT TO SCALE)

TOTAL EST. CL 'II' RIP RAP AT OUTLET = 100 TONS  
TOTAL EST. GEOTEXTILE AT OUTLET = 85 S.Y.  
TOTAL EST. C.F. MATTING AT INLET = 40 C.Y.

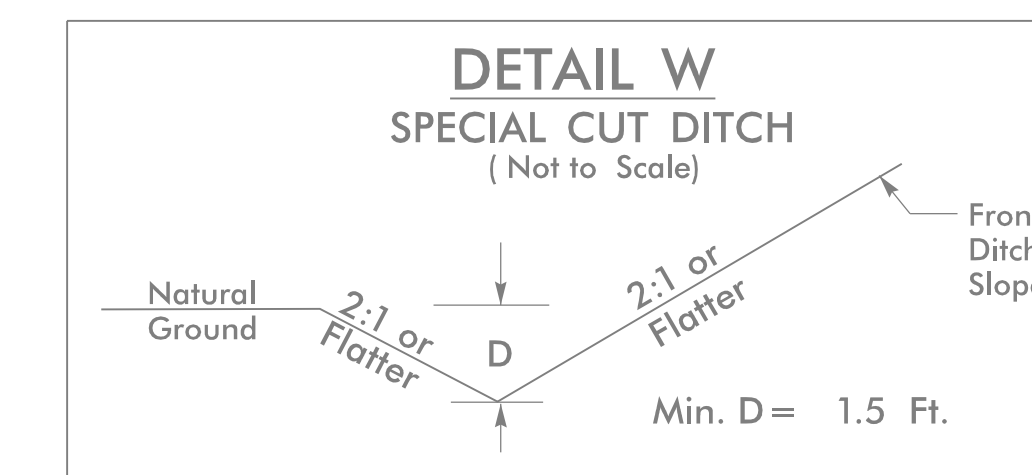
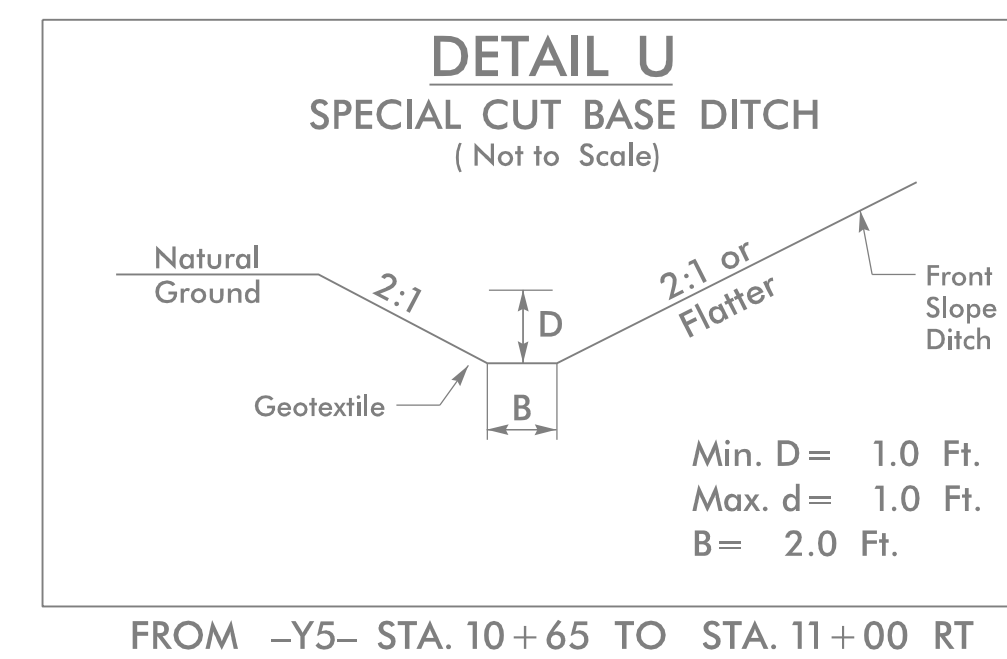


NO SILLS ARE TO BE INSTALLED IN THE PROPOSED CULVERT  
NO BACKFILL IS TO BE PLACED WITHIN THE PROPOSED CULVERT  
BED MATERIALS: SAND, SILT, COBBLE, SMALL BOULDERS

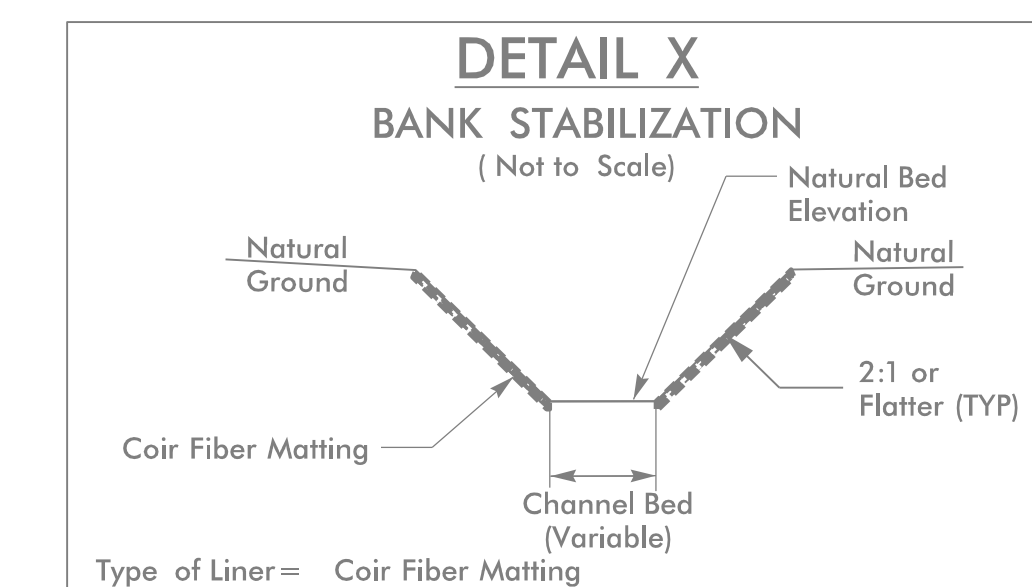
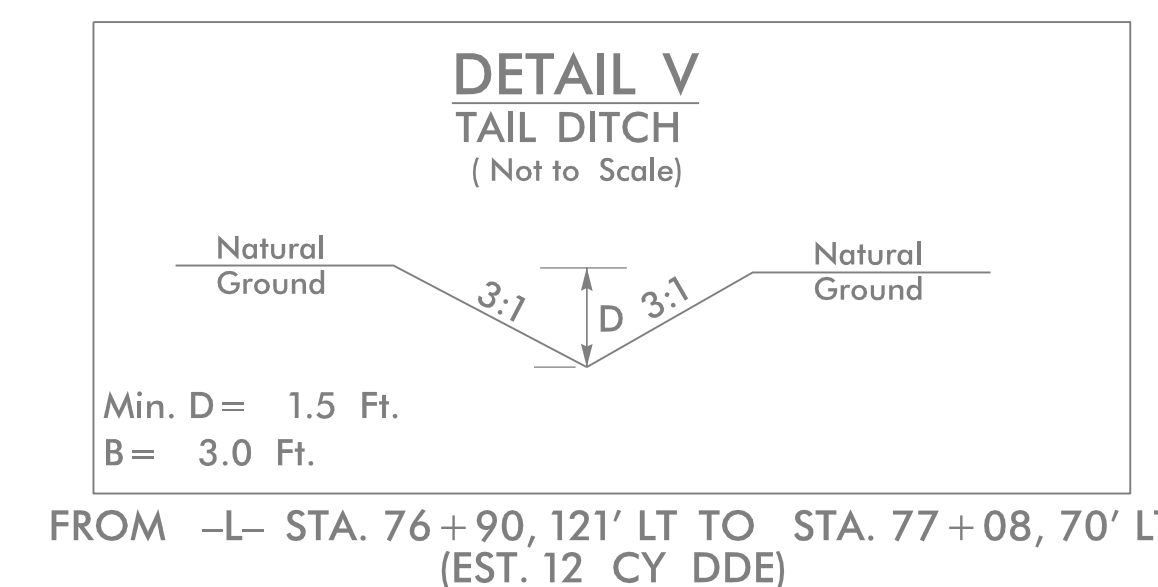
NO SILLS EXIST WITHIN THE EXISTING CULVERT BARRELS. THE INCLUSION OF SILLS IN THE EXTENDED CULVERT BARRELS WOULD REDUCE THE EFFECTIVE OPENING OF THE CROSSING. IN ORDER TO COMPLY WITH THE FEMA REQUIREMENT TO CAUSE NO INCREASE IN BASE FLOOD ELEVATIONS ON EXISTING INSURABLE STRUCTURES WITHIN THE FLOODPLAIN, THE EXISTING EFFECTIVE CULVERT OPEN AREA MUST BE MAINTAINED.

FOR THE PURPOSE OF DETERMINING BASE FLOOD ELEVATIONS ALONG THE IMPACTED REACH, EXISTING CONDITIONS WERE MODELED CONSISTENT WITH THE INTENT OF THE DESIGN OF THE EXISTING CULVERT. HISTORICAL CULVERT PLANS INDICATE TWO CLEAR 7-FT WIDE BY 8-FT DEEP CONCRETE BARRELS. OVER TIME, SEDIMENT HAS ACCUMULATED IN ONE BARREL, CREATING A FLOODPLAIN BENCH. HOWEVER, IT IS ASSUMED THAT DURING HIGH FLOW EVENTS SUCH AS A 100-YR DISCHARGE, THE BARRELS ARE FLUSHED OUT AND PROVIDE THE FULL OPEN AREA.

THE CULVERT EXTENSIONS HAVE BEEN DESIGNED CONSISTENT WITH THE ORIGINAL CULVERT DESIGN. NO BACKFILL HAS BEEN CALLED FOR. HOWEVER, IT IS ASSUMED THAT SEDIMENT WILL ACCUMULATE AND FLOODPLAIN BENCHES WILL DEVELOP CONSISTENT WITH WHAT HAS BEEN OBSERVED AT THE SITE.



FROM -L- STA. 75+00 TO STA. 77+14.7 LT  
FROM -Y5- STA. 11+50 TO STA. 11+94. RT



FROM -L- STA. 66+73 RT TO STA. 67+09 RT  
FROM -L- STA. 70+52 LT TO STA. 70+92 LT  
FROM -L- STA. 70+65 RT TO STA. 71+12 RT



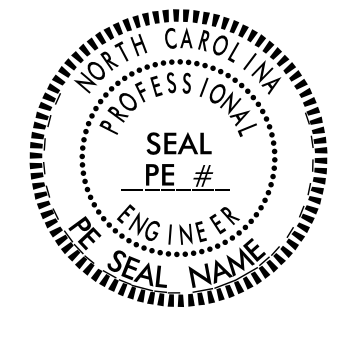
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN <sup>3</sup> /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN <sup>3</sup> /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
			HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73	
GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

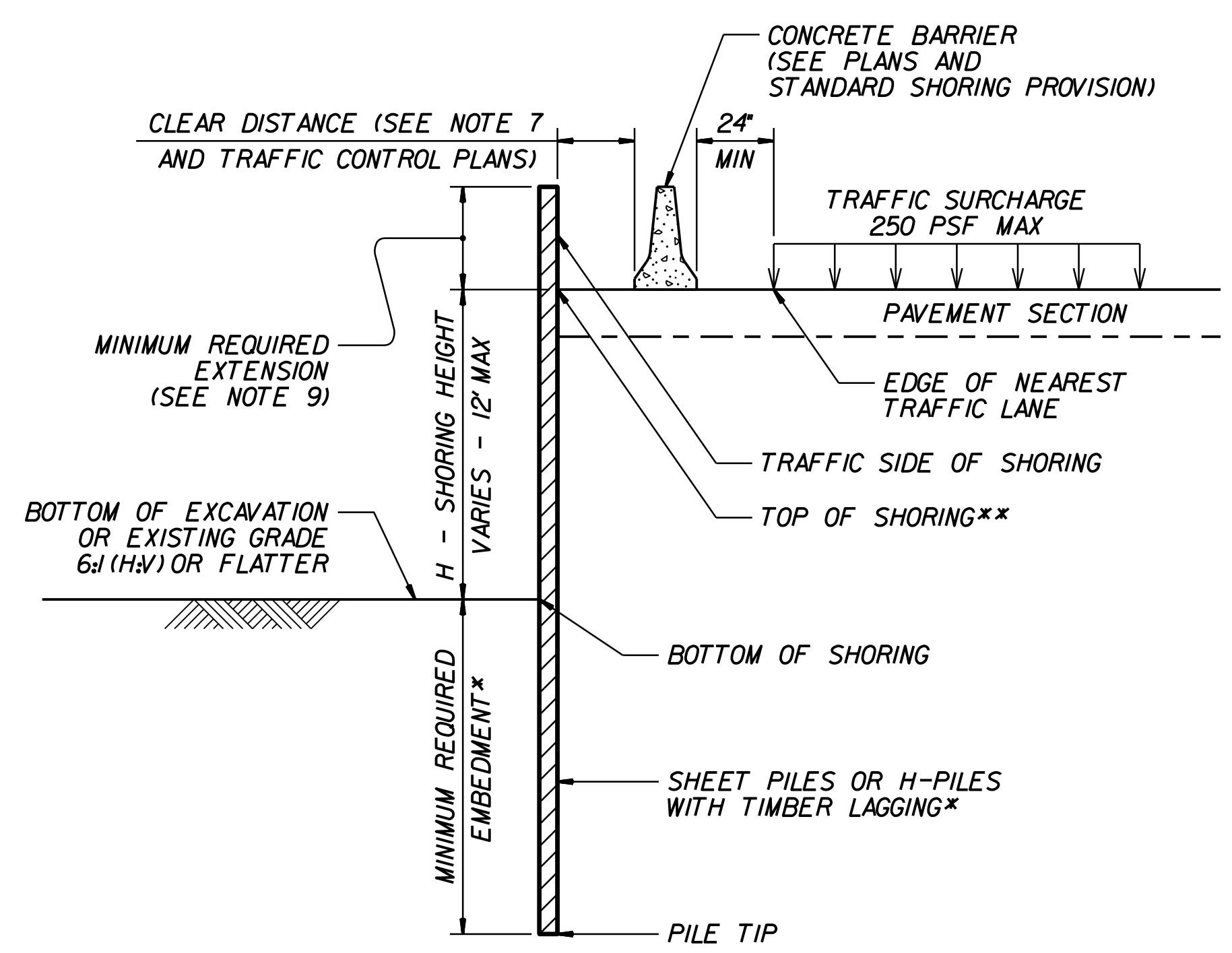
**MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS**

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

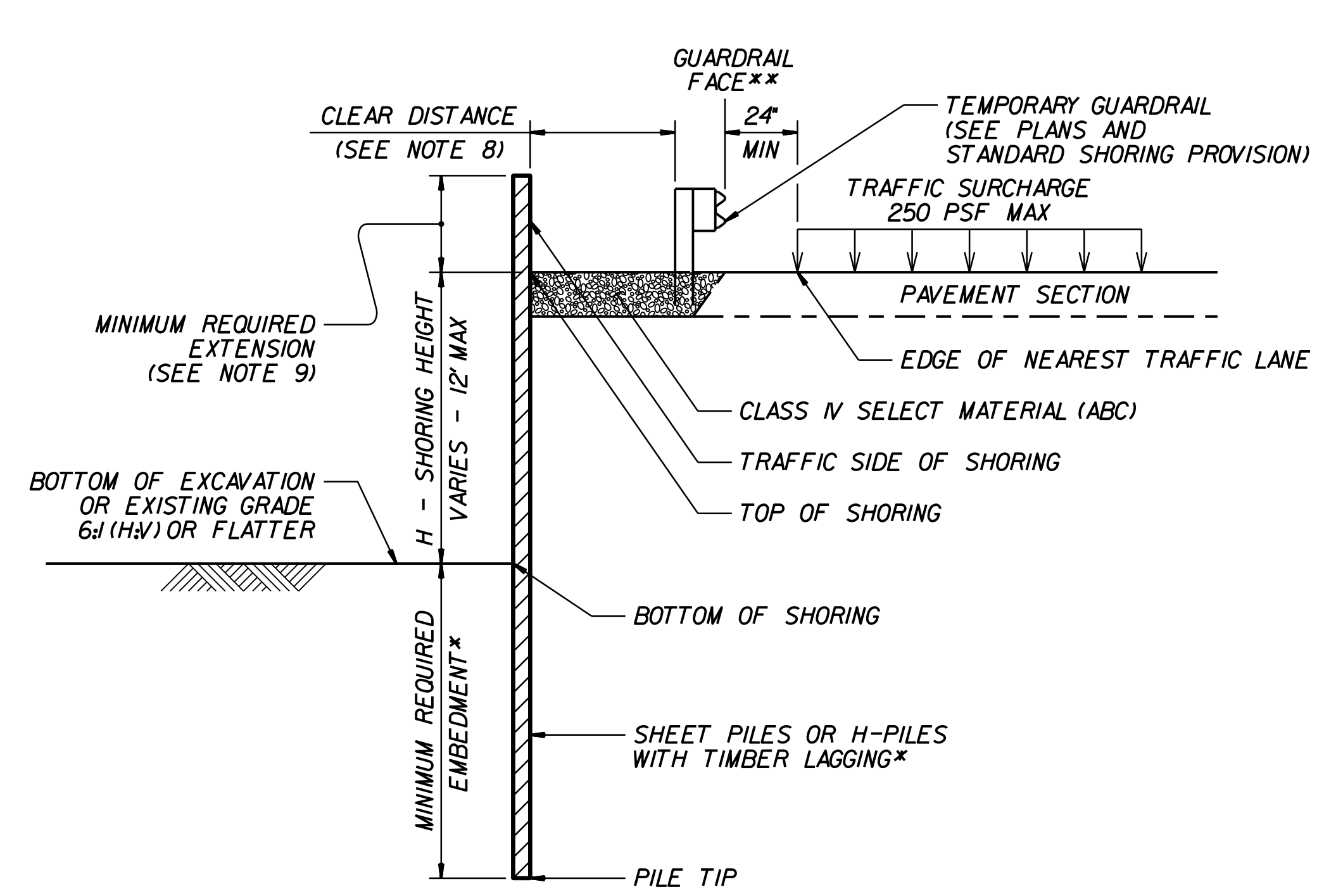
**NOTES:**

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

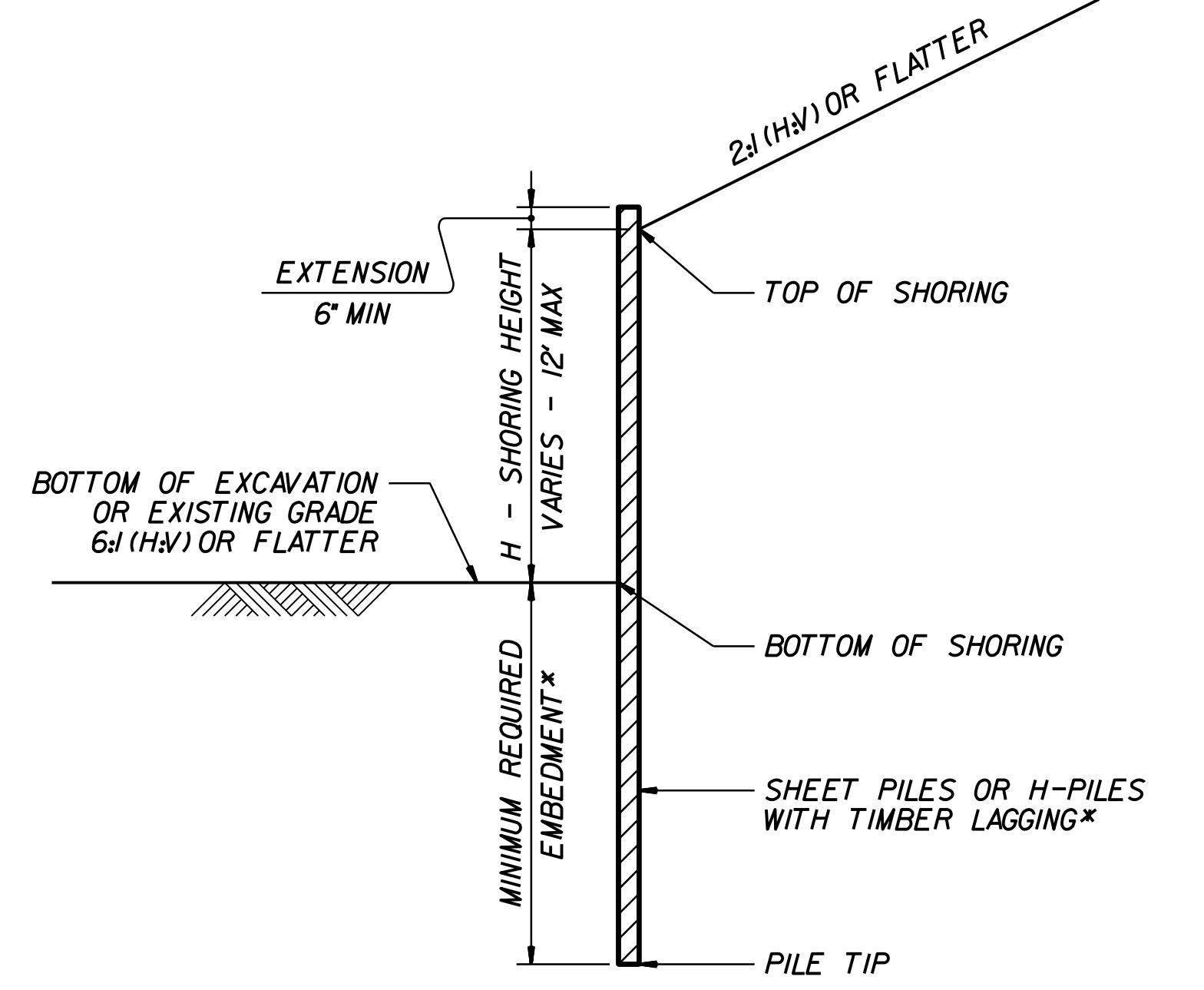
GEOTECHNICAL ENGINEER  SEAL PE # _____ ENGINEER SEAL NAME _____	ENGINEER SIGNATURE _____ DATE _____ SIGNATURE _____ DATE _____
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



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

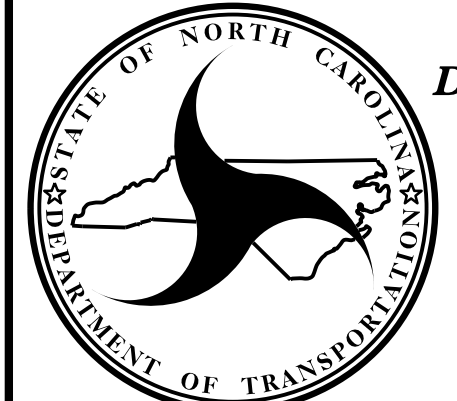


**TEMPORARY GUARDRAIL**  
\*\*GUARDRAIL FACE = EDGE OF PAVEMENT



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

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

	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS
	<b>GEOTECHNICAL ENGINEERING UNIT</b>

STANDARD DETAIL NO. 1801.01
STANDARD TEMPORARY SHORING
DATE: 11-19-13

12/06/07

COMPUTED BY: RMK DATE: 11/01/17  
 CHECKED BY: DWG DATE: 10/14/21

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
**SUMMARY OF EARTHWORK**  
 IN CUBIC YARDS



PROJECT REFERENCE NO. SHEET NO.  
 U-5738 3B-1

STATION	STATION	UNCL. EXCAV.	UNDERCUT	EMBANK. +%	BORROW	WASTE
PHASE I						
SUMMARY NO. 1 (LT.)						
-L- STA. 13+08.74	-L- STA. 26+09.34 (BB)	60		103	43	
-RPA- STA. 10+00.00	-RPA- STA. 14+70.45	472				472
TOTAL SUMMARY NO. 1		532		103	43	472
SUMMARY NO. 2 (LT.)						
-L- STA. 28+67.44 (EB)	-L- STA. 32+50.00	20		5		15
TOTAL SUMMARY NO. 2		20		5		15
SUMMARY NO. 3 (LT.)						
-L- STA. 32+50.00	-L- STA. 70+15.00 (BB)	10,596	675	32,225	21,629	675
-Y2- STA. 10+80.00	-Y2- STA. 12+01.01	5		402	397	
-Y3- STA. 10+75.00	-Y3- STA. 11+43.10	24		22		2
TOTAL SUMMARY NO. 3		10,625	675	32,649	22,026	677
SUMMARY NO. 4 (LT.)						
-L- STA. 71+30.00 (EB)	-L- STA. 79+42.87	398		4,276	3,878	
-Y5- STA. 10+65.00	-Y5- STA. 11+97.74	35		358	323	
-Y8- STA. 10+43.00	-Y8- STA. 12+65.55	453		61		392
TOTAL SUMMARY NO. 4		886		4,695	4,201	392
PHASE II						
SUMMARY NO. 5 (RT.)						
-L- STA. 32+50.00	-L- STA. 70+15.00 (BB)	547		6,930	6,383	
-Y2- STA. 12+83.78	-Y2- STA. 13+70.00	18		78	60	
-Y4- STA. 10+41.22	-Y4- STA. 11+25.00	14		47	33	
TOTAL SUMMARY NO. 5		579		7,055	6,476	
SUMMARY NO. 6 (RT.)						
-L- STA. 71+30.00 (EB)	-L- STA. 79+16.20	74		1,034	1,230	
TOTAL SUMMARY NO. 6		74		1,034	1,230	
SUMMARY TOTALS		12,716	675	45,811	33,976	1,556
WASTE IN LIEU OF BORROW					-881	-881
GRADE POINT UNDERCUT			100	120	120	100
UNDERCUT CONTINGENCY			200	240	240	200
SHOULDER MATERIAL				180	180	
PROJECT TOTALS		12,716	975	46,351	33,635	975
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					1,682	
GRAND TOTALS		12,716	975	46,351	35,317	975
SAY		13,000			36,000	

DDE = 2,356 CY  
 SHALLOW UNDERCUT = 390 CY  
 -L- PAVEMENT STRUCTURE VOLUME = 1,821 CY

Earthwork quantities are calculated by the SEPI Engineering. These earthwork quantities are based in part on subsurface data provided by HDR Engineering.

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

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12/06/07

COMPUTED BY: RMK DATE: 11/01/17  
 CHECKED BY: DWG DATE: 12/16/20

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS



PROJECT REFERENCE NO. U-5738  
 SHEET NO. 3B-2

"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 SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS				IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS			
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU TL-3	CAT-1	TYPE III	AT-1	EA	G	NG							
-L-	21+98.53	26+00.12	LT.	375.00	50.00																							
-L-	28+58.83	32+25.63	LT.	381.25	50.00																							
-L-/-Y1-	31+26.66	11+34.00	RT./RT.	118.75	50.00																							
-Y1-/-L-	11+53.00	41+68.00	LT./RT.	925.00	50.00		35+00.00	41+50.00	14'	21'	50'		1'															
-L-	39+62.00	43+87.00	LT.	425.00			41+50.00	40+00.00	14'	21'	50'		1'															
-L-	69+17.62	69+92.62	LT.	75.00																								
-L-	68+09.82	70+34.82	RT.	225.00			70+34.82		7.5'	21'																		
-L-	71+07.62	73+45.12	LT.	237.50			71+07.62		7.5'	21'																		
-L-	71+49.82	72+24.82	RT.	75.00																								
-Y1-	11+82.34	18+49.50	LT.	668.75	50.00																							
-L-	21+96.33	26+00.12	LT.																								425.69	
-L-	28+58.83	32+20.63	LT.																								400.59	
-L-/-Y1-	31+39.57	11+34.28	RT./RT.																								153.23	
-Y1-/-L-	11+62.68	37+31.03	LT./RT.																								554.15	
-L-	39+01.27	43+20.77	LT.																								420.08	
-L-	38+17.43	42+51.91	RT.																								434.48	
-Y1-	11+82.37	18+49.50	LT.																								705.74	
TOTALS				3,506.25	250.00																							3,093.96
LESS DEDUCTION FOR ANCHORS																												
GREU TL-3 7 @ 50' =				-350																								
CAT-1 5 @ 6.25' =				-31.25																								
TYPE III 6 @ 18.75' =				-112.50																								
TYPE AT-1 2 @ 6.25' =				-12.50																								
PROJECT TOTALS				3,000.00	250.00																							3,093.96
ADDITIONAL GUARDRAIL POSTS = 20 EA. SAY				3,050.00	250.00																							3,100.00

**ASPHALT PAVEMENT REMOVAL SUMMARY**

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	SQUARE YARDS
-L-/-Y2-	34+42.21	13+70.00	RT./RT.	713.73
-L-	37+30.00	43+05.00	MED.	1,074.68
-Y2-/-L-	13+65.96	51+97.23	LT./RT.	263.46
-L-/-Y4-	61+76.36	11+01.92	RT./RT.	297.17
-Y4-/-L-	10+63.92	73+75.00	LT./RT.	3,120.12
-L-	73+91.20	75+49.12	RT.	214.78
-L-	75+72.78	76+81.81	RT.	71.54
-Y2-	11+50.00	12+50.28	LT./RT.	479.08
-Y5-	11+15.00	12+16.07	LT./RT.	388.88
TOTAL				6,623.44
SAY				6,700

**WOVEN WIRE FENCE, 47" FABRIC**

SURVEY LINE	STATION TO STATION	LOC. LT/RT	47" FABRIC LF	4" POSTS	5" POSTS	SINGLE SWING 12' GATE
-L-	34+54.00 TO 36+41.41	LT	186.18	11	5	
-L-	41+64.59 TO 44+54.21	LT	613.10	33	20	
-Y2-	10+90	RT				1
TOTALS			799.28	44	25	1
SAY			800.00	44	25	1

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12-3700BHZ

COMPUTED BY: LEAH YOUNG, PE DATE: 11/19/2021  
CHECKED BY: GREG BRICKHAM, PE DATE: 11/19/2021

PROJECT NO. U-5738 SHEET NO. 3D-1

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, MINIMUM REQUIRED SLOPE, Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC), C. S. PIPE, R. C. PIPE CLASS IV, ENDWALLS, REINFORCED ENDWALLS, DRAINAGE STRUCTURE, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES, AND HOOD, CONCRETE TRANSITIONAL SECTION, and ABBREVIATIONS. Includes a SHEET TOTALS row at the bottom.



12-3700BHZ

COMPUTED BY: LEAH YOUNG, PE DATE: 11/19/2021  
CHECKED BY: GREG BRICKHAM, PE DATE: 11/19/2021

PROJECT NO. SHEET NO.  
U-5738 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: LINE & STATION, SIZE, THICKNESS OR GAUGE, OFFSET, STRUCTURE NUMBER, TOP ELEVATION, INVERT ELEVATION, MINIMUM REQUIRED SLOPE, Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC), C. S. PIPE, R. C. PIPE CLASS IV, ENDWALLS, REINFORCED ENDWALLS, DRAINAGE STRUCTURE, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES, AND HOOD, CONCRETE TRANSITIONAL SECTION, GRATE TYPE, and REMARKS. Includes a SHEET TOTALS row at the bottom.

ABBREVIATIONS  
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

SHEET TOTALS





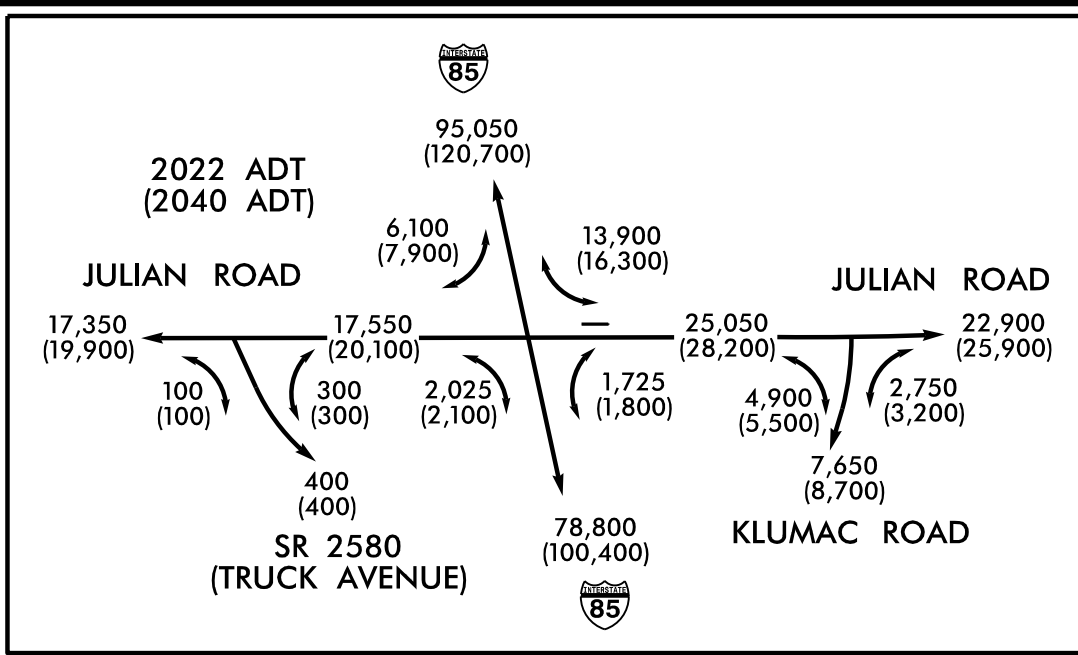






8/17/19

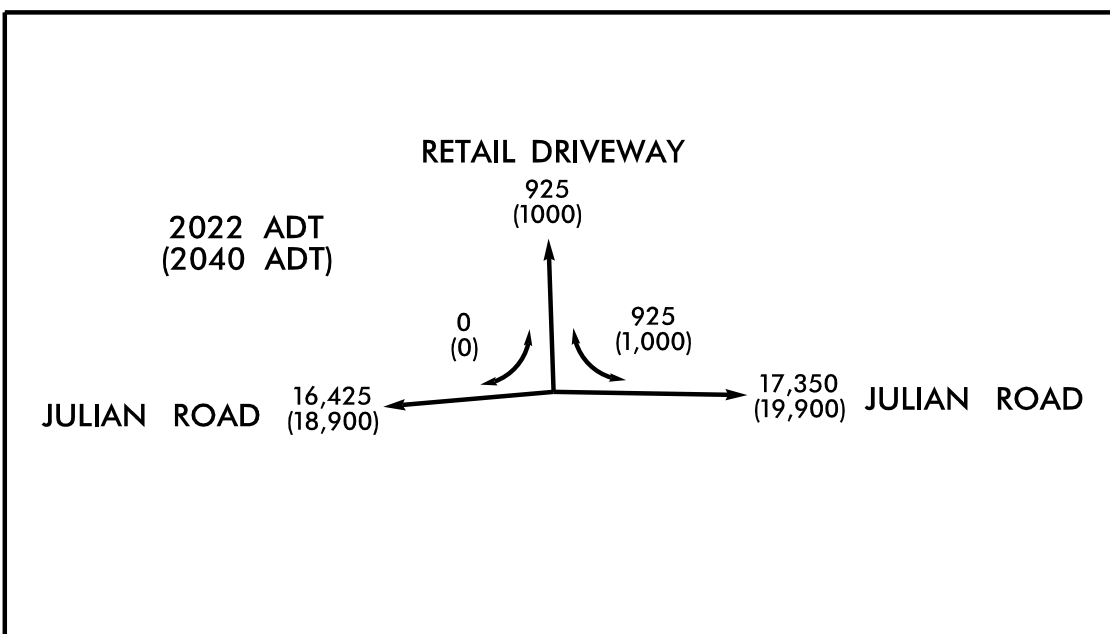
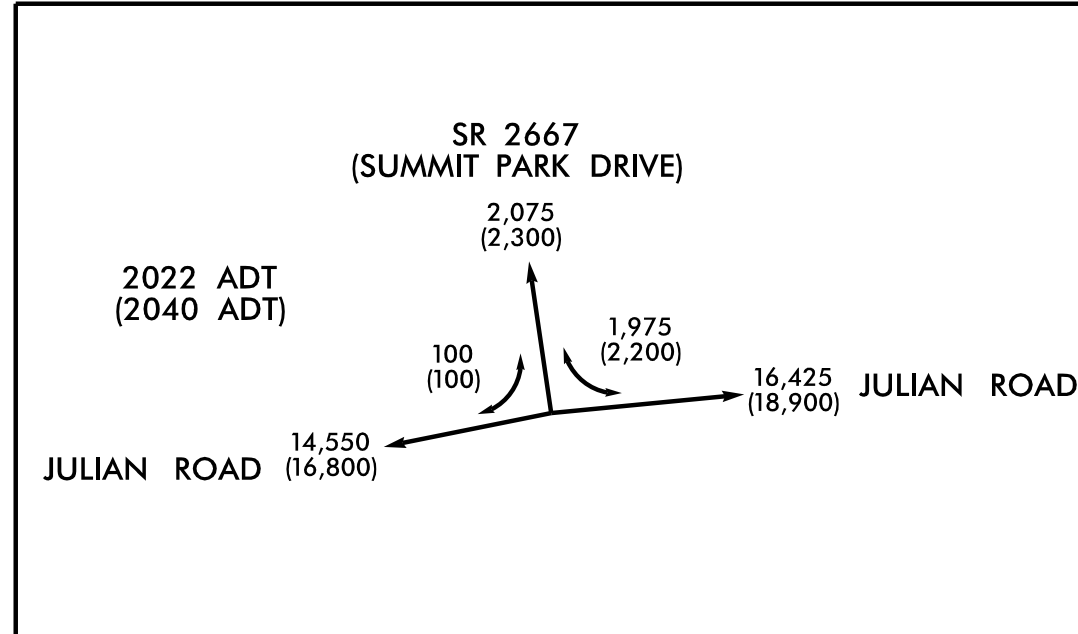
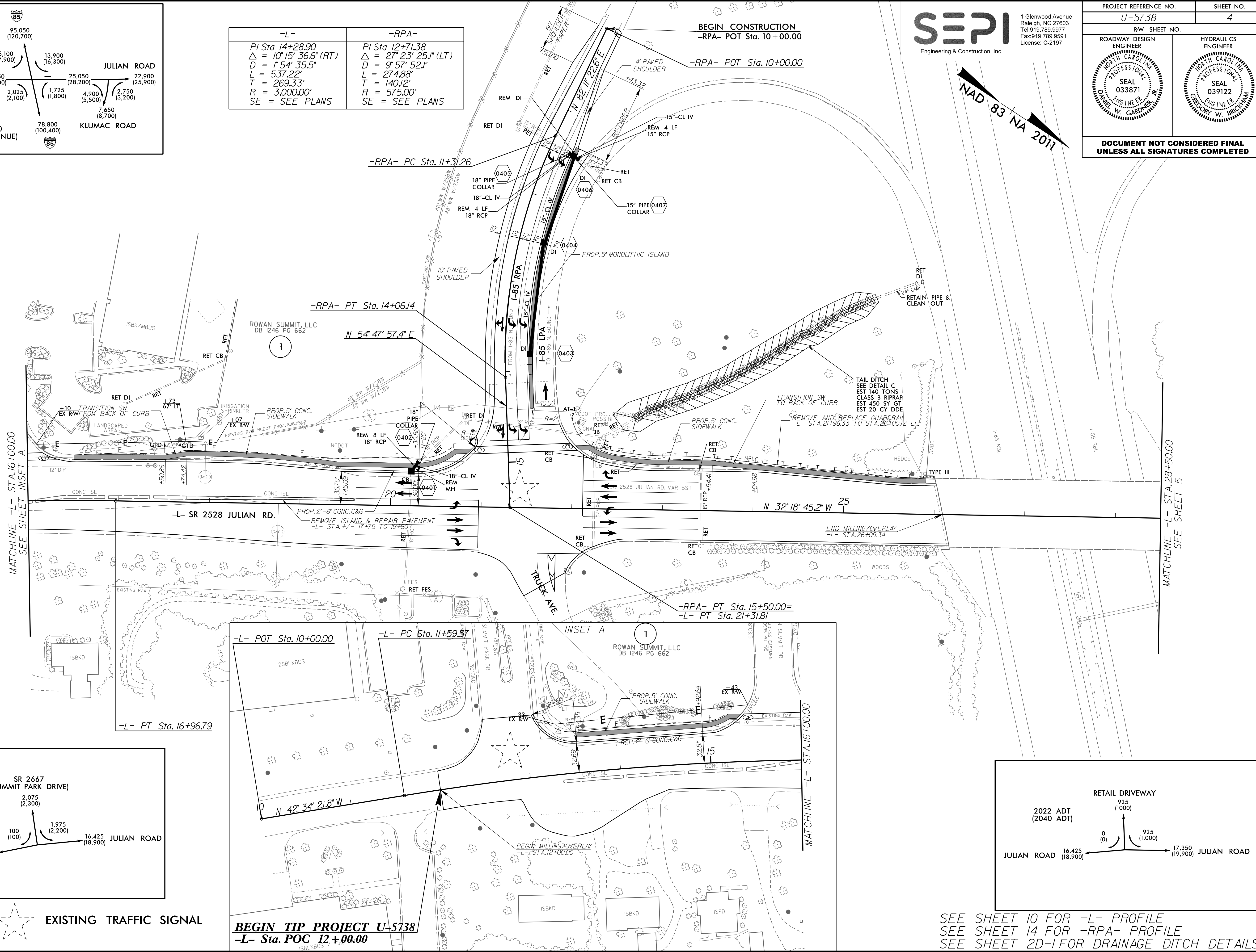
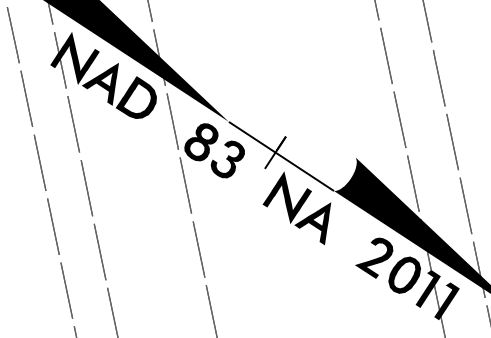
11/19/2021  
SR-C:\N5738\_Rd\psh\_4.dgn  
JISER



-L-	-RPA-
PI Sta 14+28.90	PI Sta 12+71.38
$\Delta = 10^\circ 15' 36.6''$ (RT)	$\Delta = 27^\circ 23' 25.1''$ (LT)
$D = 154' 35.5''$	$D = 9' 57' 52.1''$
$L = 537.22'$	$L = 274.88'$
$T = 269.33'$	$T = 140.12'$
$R = 3,000.00'$	$R = 575.00'$
SE = SEE PLANS	SE = SEE PLANS

**SEPI**  
Engineering & Construction, Inc.  
1 Glenwood Avenue  
Raleigh, NC 27603  
Tel: 919.789.9977  
Fax: 919.789.9591  
License: C-2197

PROJECT REFERENCE NO. <b>U-5738</b>	SHEET NO. <b>4</b>
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	SEAL 033871 DANIEL W. GARDNER, P.E.
	SEAL 039122 GREGORY W. BRIDGMAN, P.E.
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



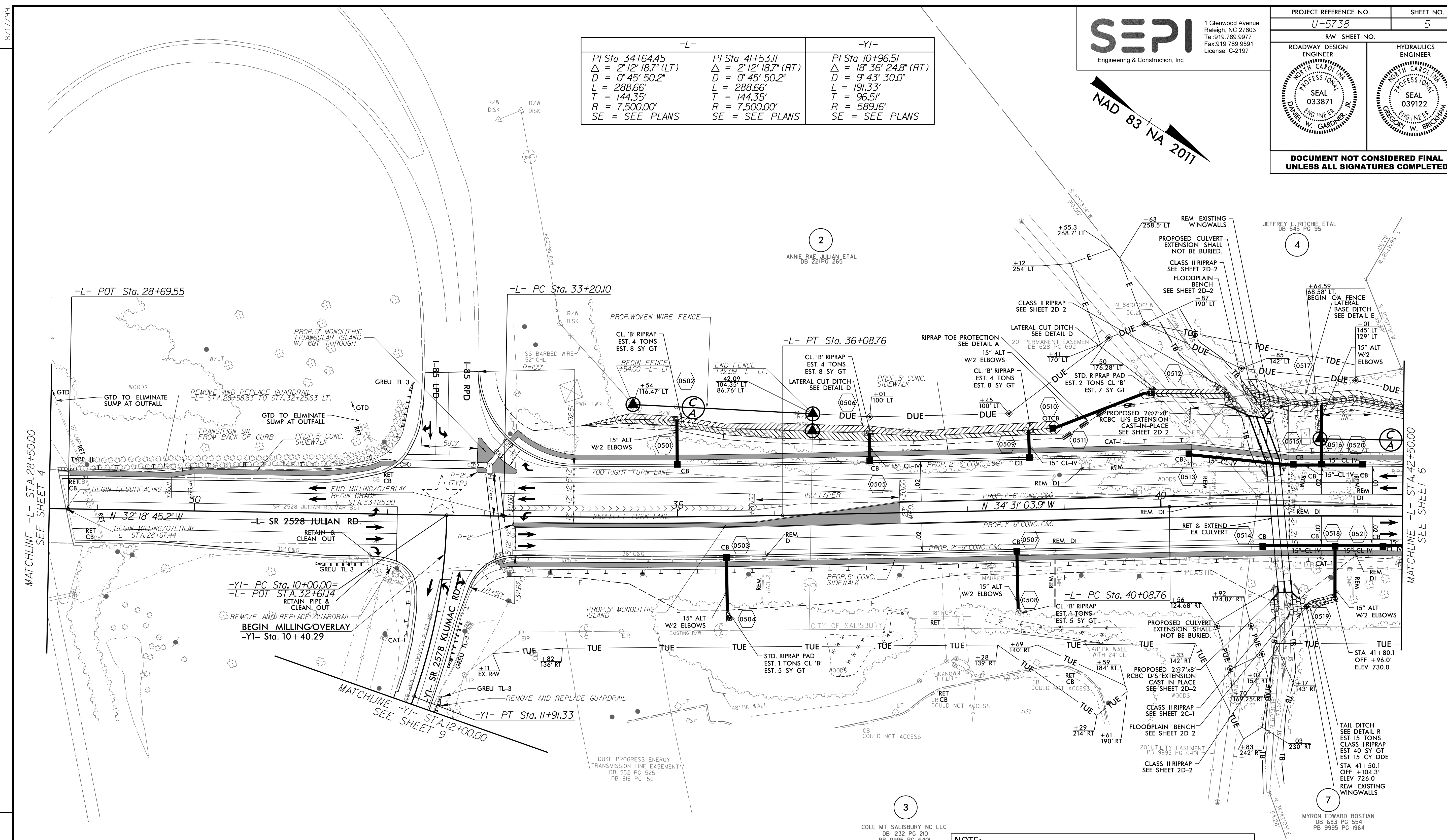
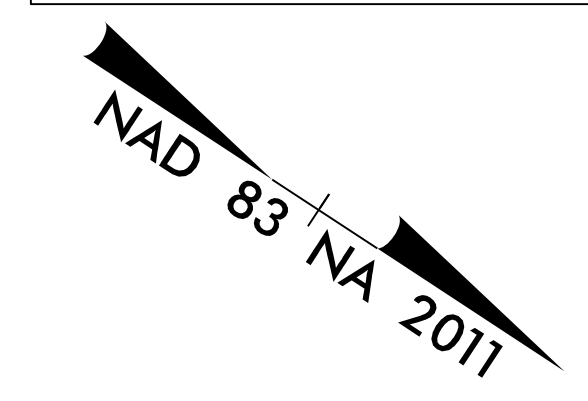
★ EXISTING TRAFFIC SIGNAL

**BEGIN TIP PROJECT U-5738**  
-L- Sta. POC 12+00.00

SEE SHEET 10 FOR -L- PROFILE  
SEE SHEET 14 FOR -RPA- PROFILE  
SEE SHEET 2D-1 FOR DRAINAGE DITCH DETAILS

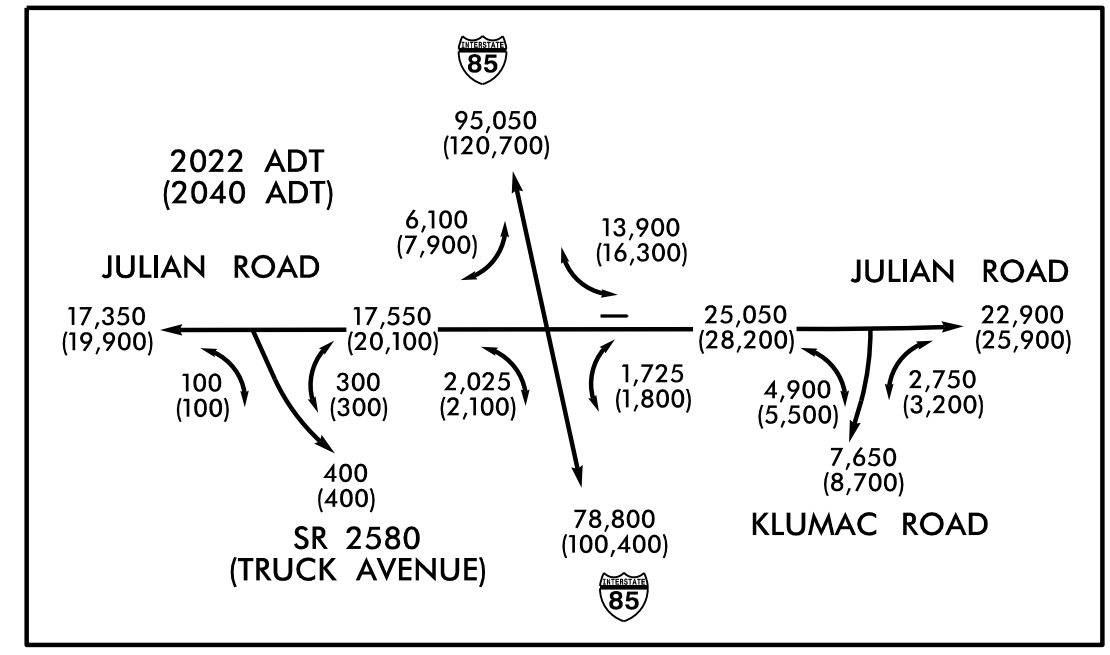


-L-	-YI-	-YI-
PI Sta 34+64.45	PI Sta 41+53.11	PI Sta 10+96.51
$\Delta = 2' 12" 18.7" (LT)$	$\Delta = 2' 12" 18.7" (RT)$	$\Delta = 18' 36" 24.8" (RT)$
$D = 0' 45" 50.2"$	$D = 0' 45" 50.2"$	$D = 9' 43" 30.0"$
$L = 288.66'$	$L = 288.66'$	$L = 191.33'$
$T = 144.35'$	$T = 144.35'$	$T = 96.51'$
$R = 7,500.00'$	$R = 7,500.00'$	$R = 589.16'$
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS



MATCHLINE -L- STA. 28+50.00  
SEE SHEET 4

MATCHLINE -L- STA. 42+50.00  
SEE SHEET 6



EXISTING TRAFFIC SIGNAL

**NOTE:**  
PIPES LABELED TO BE REMOVED MAY BE FILLED W/ FLOWABLE FILL AND ABANDONED AT THE NCDOT FIELD ENGINEER'S DISCRETION.

**NOTE:**  
IN SYSTEMS TO BE PLUGGED AND FILLED W/ FLOWABLE FILL, REMOVE STRUCTURES. ALTERNATELY, REMOVE TOPS OF STRUCTURES TO ELEV. OF BOTTOM OF AGGREGATE ROADWAY BASE, AND FILL W/ COMPACTED ABC OR FLOWABLE FILL AT NCDOT FIELD ENGINEER'S DISCRETION.

SEE SHEET 11 FOR -L- PROFILE  
SEE SHEET 13 FOR -YI- PROFILE  
SEE SHEET 2D-1 FOR DRAINAGE DITCH DETAILS  
SEE SHEET 2D-2 FOR CULVERT DETAILS  
SEE SHEETS C-1 THRU C-9 FOR CULVERT PLANS

REVISIONS

8/17/99

11/19/2021 U5738\_RdJ\_psh\_5.dgn  
15:58:00





1 Glenwood Avenue  
Raleigh, NC 27603  
Tel: 919.789.9977  
Fax: 919.789.9591  
License: C-2197

PROJECT REFERENCE NO. U-5738		SHEET NO. 6	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		SEAL 033871	
DANIEL W. GARDNER, P.E.		SEAL 039122	
GREGORY W. BRICKMAN, P.E.		GREGORY W. BRICKMAN, P.E.	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			

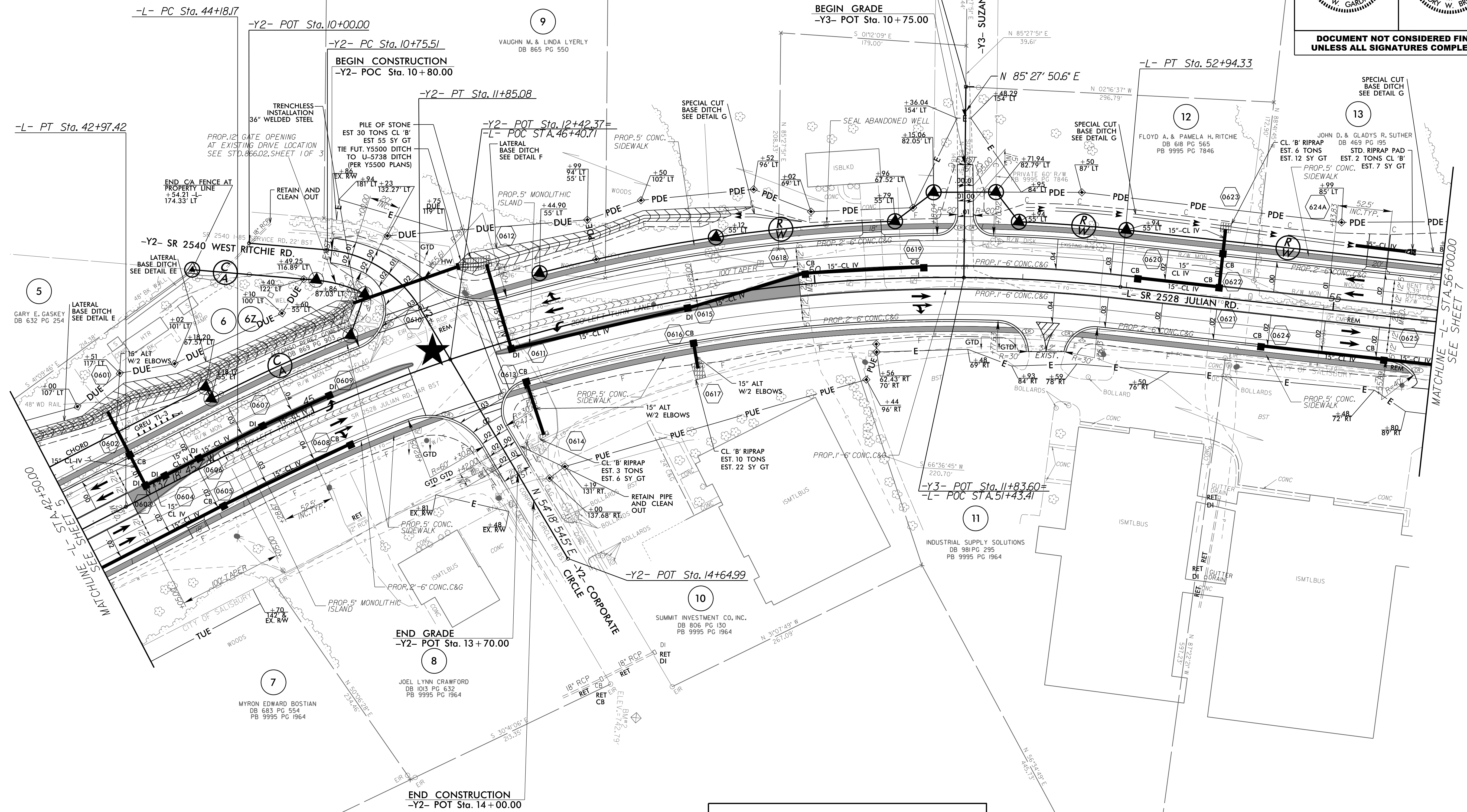
NAD 83 NA 2011

**-L-**  
PI Sta 48+69.14  
Δ = 33° 28' 00.8" (RT)  
D = 3' 49' 11.0"  
L = 876.16'  
T = 450.98'  
R = 1,500.00'  
SE = SEE PLANS

**-Y2-**  
PI Sta 11+34.85  
Δ = 54° 35' 25.0" (RT)  
D = 49' 49' 20.7"  
L = 109.57'  
T = 59.34'  
R = 115.00'  
SE = SEE PLANS

**-Y3- POT Sta. 10+00.00**  
BEGIN CONSTRUCTION  
-Y3- POT Sta. 10+30.00

**BEGIN GRADE**  
-Y3- POT Sta. 10+75.00



REVISIONS

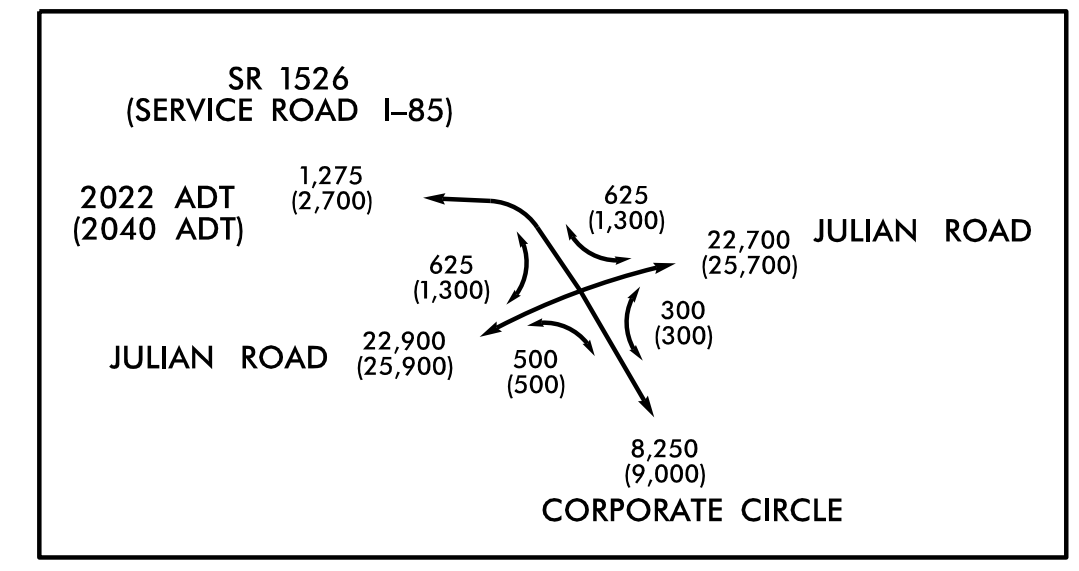


**PROPOSED TRAFFIC SIGNAL**

**CURB & GUTTER PAN CROSS SLOPE TO MATCH ROADWAY CROSS SLOPE:**  
-L- STA 44+81.2 LT TO STA 53+62.6 LT

**NOTE:**  
PIPES LABELED TO BE REMOVED MAY BE FILLED W/ FLOWABLE FILL AND ABANDONED AT THE NCDOT FIELD ENGINEER'S DISCRETION.

**NOTE:**  
IN SYSTEMS TO BE PLUGGED AND FILLED W/ FLOWABLE FILL, REMOVE STRUCTURES. ALTERNATELY, REMOVE TOPS OF STRUCTURES TO ELEV. OF BOTTOM OF AGGREGATE ROADWAY BASE, AND FILL W/ COMPACTED ABC OR FLOWABLE FILL AT NCDOT FIELD ENGINEER'S DISCRETION.



SEE SHEET 11 FOR -L- PROFILE  
SEE SHEET 13 FOR -Y2- PROFILE  
SEE SHEET 13 FOR -Y3- PROFILE  
SEE SHEET 2D-1 FOR DRAINAGE DITCH DETAILS

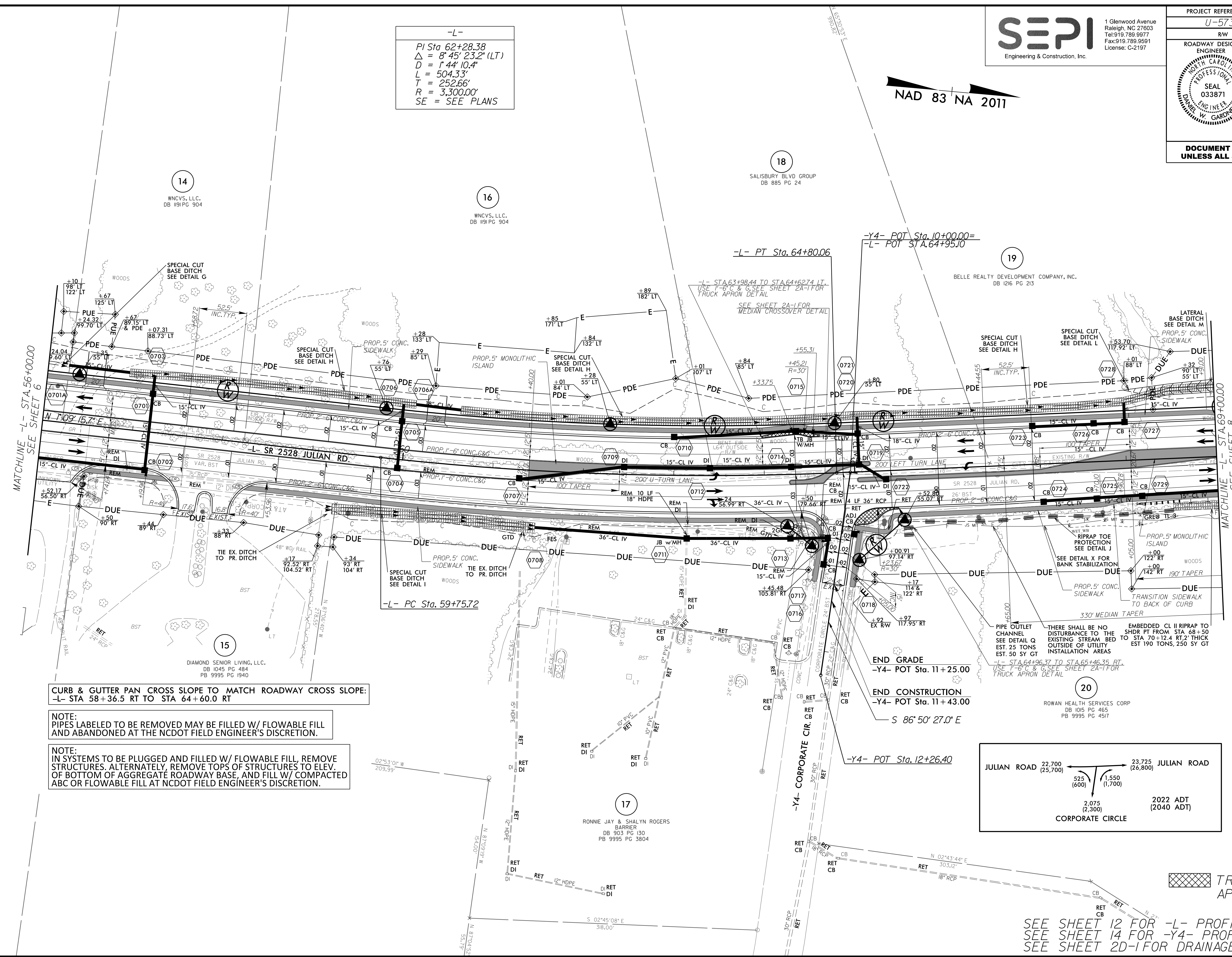
8/17/19

11/19/2021  
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-L-  
PI Sta 62+28.38  
 $\Delta = 8' 45" 23.2" (LT)$   
 $D = 1' 44" 10.4"$   
 $L = 504.33'$   
 $T = 252.66'$   
 $R = 3,300.00'$   
SE = SEE PLANS

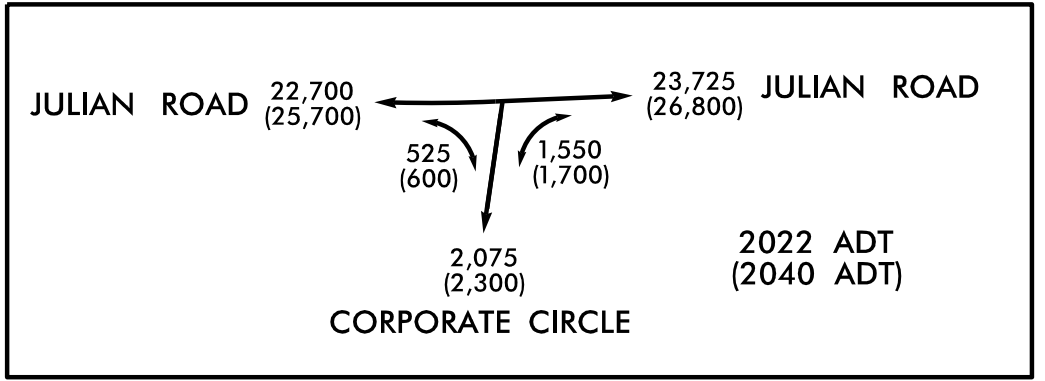
NAD 83 NA 2011



**CURB & GUTTER PAN CROSS SLOPE TO MATCH ROADWAY CROSS SLOPE:**  
-L- STA 58+36.5 RT TO STA 64+60.0 RT

**NOTE:**  
PIPES LABELED TO BE REMOVED MAY BE FILLED W/ FLOWABLE FILL AND ABANDONED AT THE NCDOT FIELD ENGINEER'S DISCRETION.

**NOTE:**  
IN SYSTEMS TO BE PLUGGED AND FILLED W/ FLOWABLE FILL, REMOVE STRUCTURES. ALTERNATELY, REMOVE TOPS OF STRUCTURES TO ELEV. OF BOTTOM OF AGGREGATE ROADWAY BASE, AND FILL W/ COMPACTED ABC OR FLOWABLE FILL AT NCDOT FIELD ENGINEER'S DISCRETION.



TRUCK MOUNTED APRON

SEE SHEET 12 FOR -L- PROFILE  
SEE SHEET 14 FOR -Y4- PROFILE  
SEE SHEET 2D-I FOR DRAINAGE DITCH DETAILS

REVISIONS

8/17/19

11/19/2021  
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15:58:00

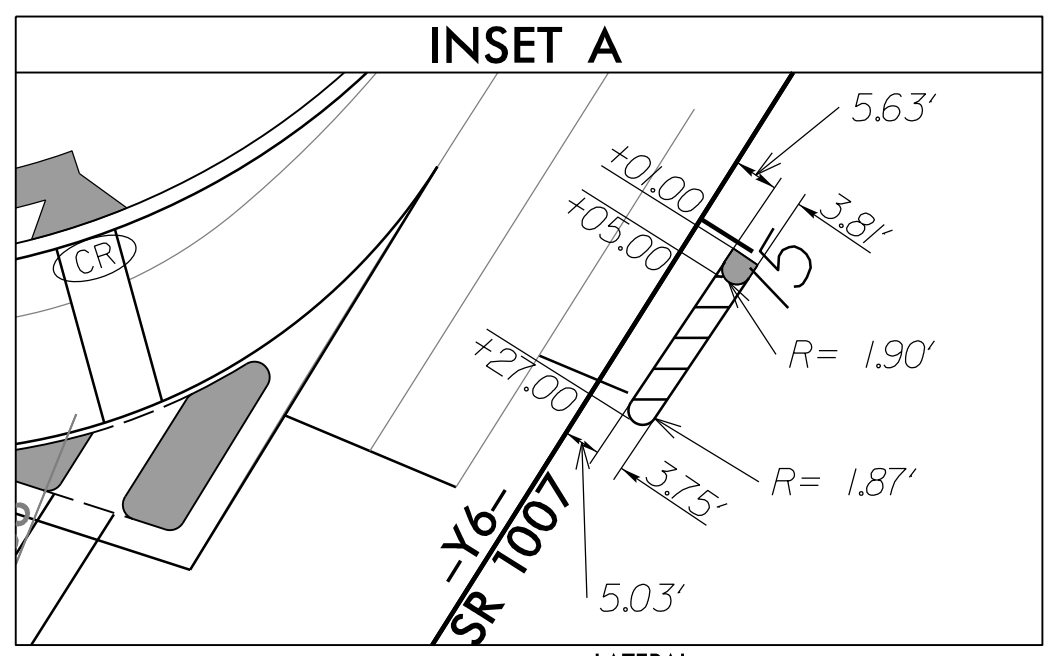




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Fax: 919.789.9591  
License: C-2197

PROJECT REFERENCE NO. <b>U-5738</b>		SHEET NO. <b>8</b>	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		SEAL 033871	
PROFESSIONAL SEAL		SEAL 039122	
DANIEL GARDNER, INC.		GREGORY W. BRICKMAN	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			

-L-	-Y5-	-Y6-	-Y8-
PI Sta 77+09.29 Δ = 24' 21" 45.3" (RT) D = 5' 43' 46.5" L = 425.2' T = 215.87' R = 1,000.00' SE = SEE PLANS	PI Sta 11+88.28 Δ = 62' 44' 53.2" (LT) D = 102' 43' 53.7" L = 61.08' T = 34.01' R = 55.77'	PI Sta 11+43.82 Δ = 4' 11" 10.4" (LT) D = 1' 27' 21.7" L = 287.51' T = 143.82' R = 3,935.07'	PI Sta 13+34.35 Δ = 8' 43' 35.1" (LT) D = 9' 20' 01.6" L = 93.49' T = 46.84' R = 613.85'
			PI Sta 11+79.45 Δ = 85' 43' 30.8" (RT) D = 81' 51' 04.0" L = 104.73' T = 64.96' R = 70.00'



**NAD 83 NA 2011**

BEGIN GRADE  
-Y8- POT Sta. 10+43.00

BEGIN CONSTRUCTION  
-Y8- POT Sta. 10+36.00  
-Y8- POT Sta. 10+00.00

BEGIN CONSTRUCTION  
-Y5- POT Sta. 10+65.00

-Y8- POT Sta. 12+65.66=  
-Y5- POT STA. 11+17.17  
N 66° 56' 40.4" E

-Y5- POT Sta. 10+00.00

-Y8- PT Sta. 12+19.22  
-Y8- PC Sta. 11+4.48

-L- PC Sta. 74+93.43  
S 85° 48' 12.8" E  
-Y5- PT Sta. 12+15.35

BEGIN CONSTRUCTION  
-Y6- POT Sta. 14+95.00

REPLACE SECTION OF EXISTING CONCRETE ISLAND FROM  
-Y6- STA. 15+00.00 TO STA. 15+05.00. SEE INSET A.

-Y7- POT Sta. 10+00.00=  
-L- POT Sta. 19+68.82

END TIP PROJECT U-5738  
-L- POT STA. 79+45.00

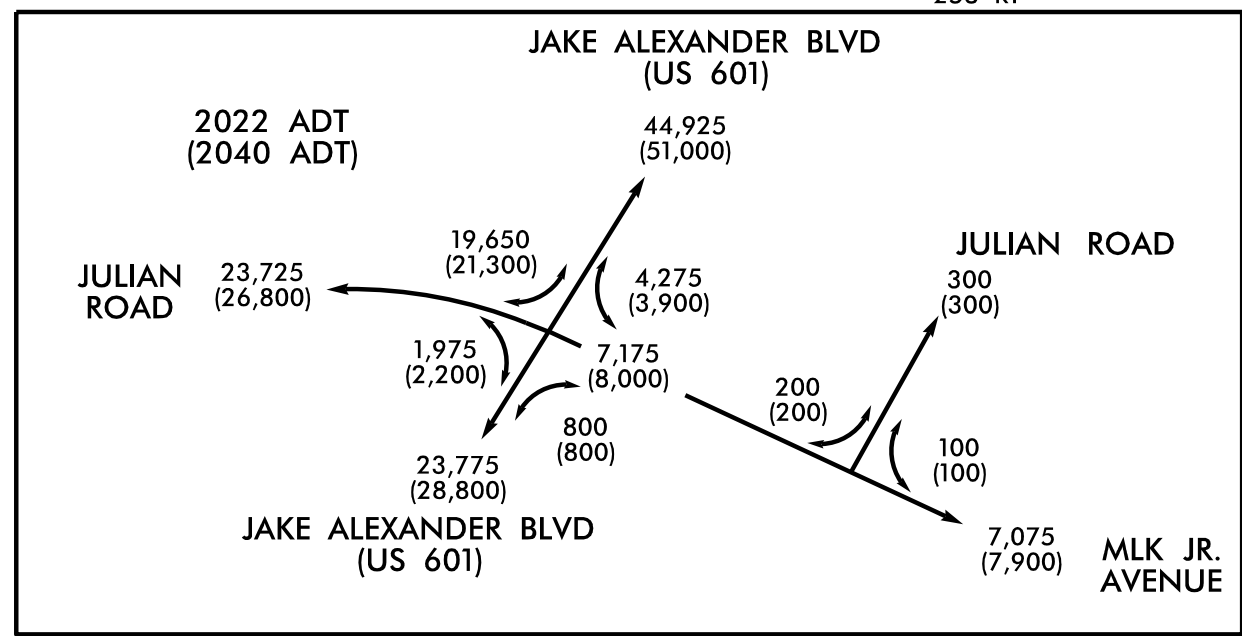
END CONSTRUCTION  
-Y6- POT Sta. 17+18.00  
-Y7- POT Sta. 13+18.11

-Y7- POT Sta. 13+61.64

8/17/19

REVISIONS

MATCHLINE -L- STA. 69+00.00  
SEE SHEET 7



CURB & GUTTER PAN CROSS SLOPE TO MATCH ROADWAY CROSS SLOPE:  
-L- STA 75+63.4 LT TO STA 79+18.6 LT

NOTE:  
PIPES LABELED TO BE REMOVED MAY BE FILLED W/ FLOWABLE FILL AND ABANDONED AT THE NCDOT FIELD ENGINEER'S DISCRETION.

NOTE:  
IN SYSTEMS TO BE PLUGGED AND FILLED W/ FLOWABLE FILL, REMOVE STRUCTURES. ALTERNATELY, REMOVE TOPS OF STRUCTURES TO ELEV. OF BOTTOM OF AGGREGATE ROADWAY BASE, AND FILL W/ COMPACTED ABC OR FLOWABLE FILL AT NCDOT FIELD ENGINEER'S DISCRETION.

EXISTING TRAFFIC SIGNAL

SEE SHEET 12 FOR -L- PROFILE  
SEE SHEET 14 FOR -Y5- PROFILE  
SEE SHEET 14 FOR -Y8- PROFILE  
SEE SHEET 2D-1 AND 2D-2 FOR DRAINAGE DITCH DETAILS  
SEE SHEETS S-1 THRU S-39 FOR STRUCTURE PLANS

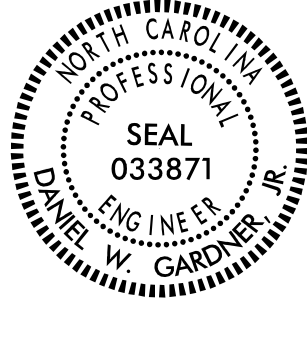
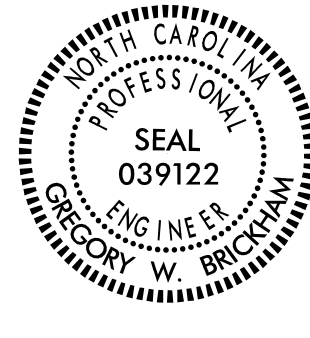
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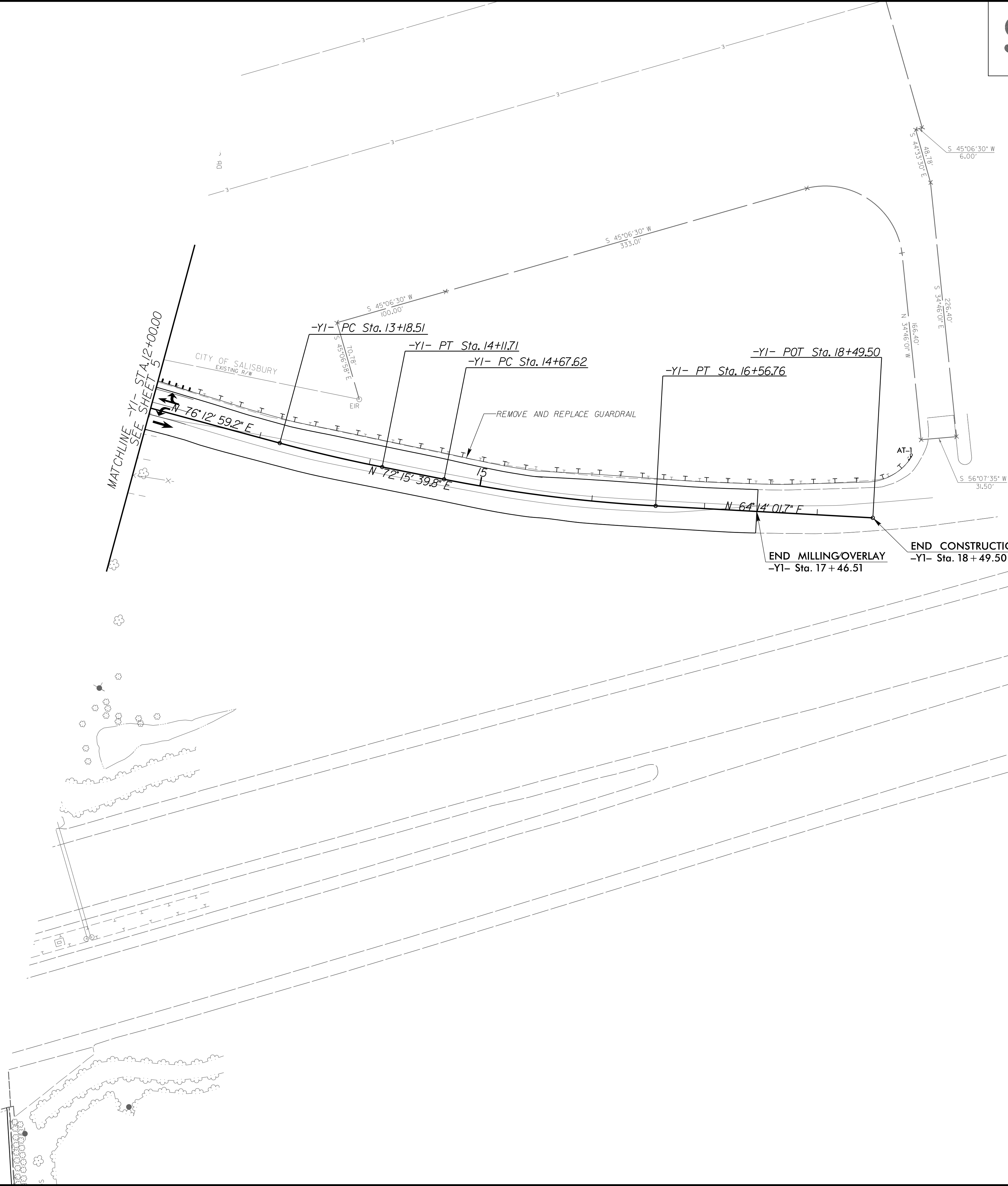
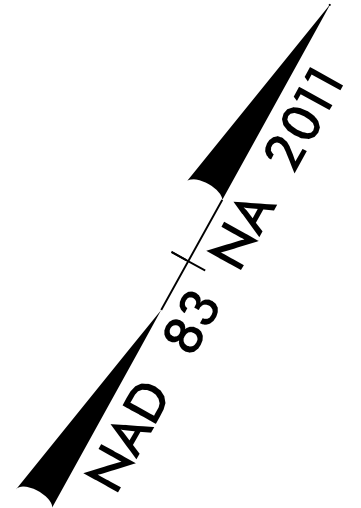
8/17/99

REVISIONS

11/19/2021  
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JISER

**SEPI**  
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PROJECT REFERENCE NO. <i>U-5738</i>		SHEET NO. <i>9</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			



-YI-	
PI Sta 13+65.13	PI Sta 15+62.34
$\Delta = 3^{\circ} 57' 19.4''$ (LT)	$\Delta = 8^{\circ} 0' 38.2''$ (LT)
D = 4' 14' 38.9"	D = 4' 14' 38.9"
L = 93.20'	L = 189.14'
T = 46.62'	T = 94.72'
R = 1,350.00'	R = 1,350.00'
SE = SEE PLANS	SE = SEE PLANS

SEE SHEET 13 FOR -YI- PROFILE



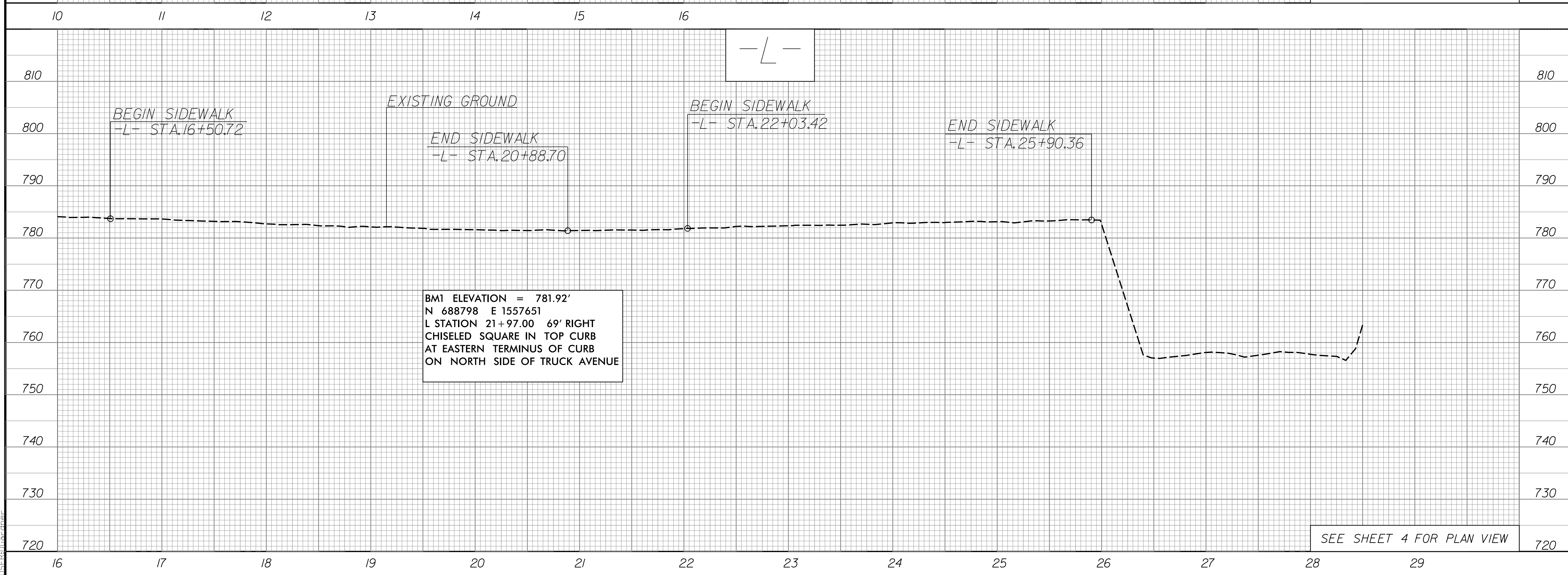
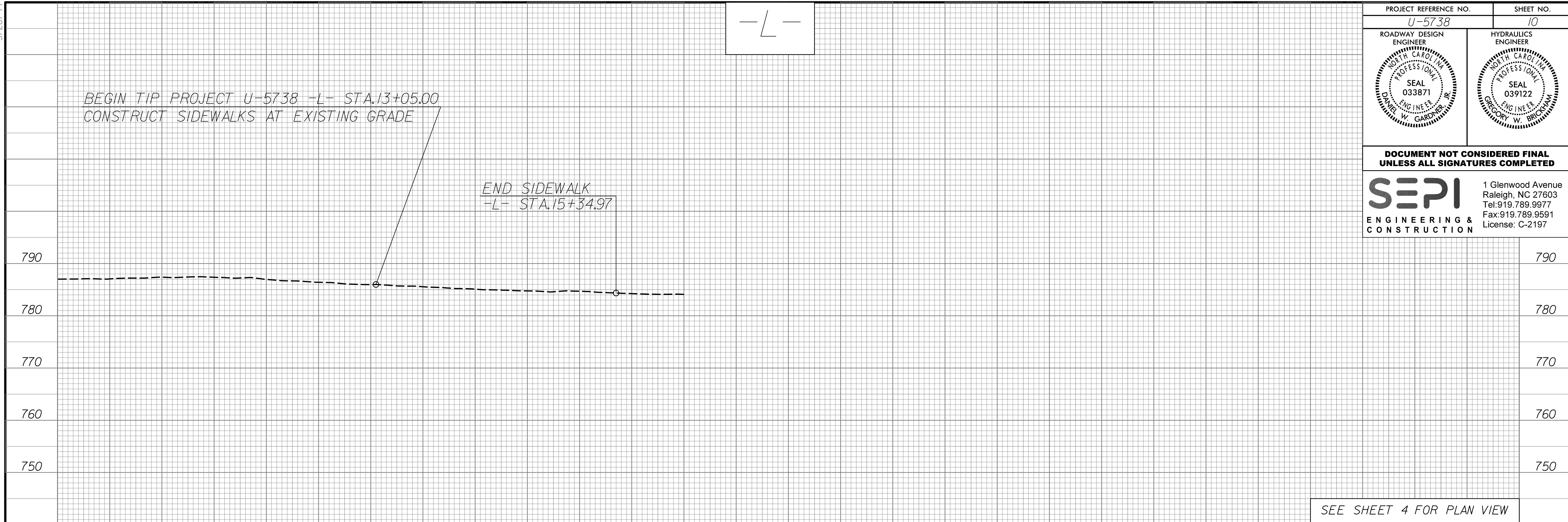
5/28/99

PROJECT REFERENCE NO. <i>U-5738</i>	SHEET NO. <i>10</i>
ROADWAY DESIGN ENGINEER SEAL 033871 DAVID W. GARDNER, JR.	HYDRAULICS ENGINEER SEAL 039122 GREGORY W. BRIDGMAN

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ENGINEERING & CONSTRUCTION

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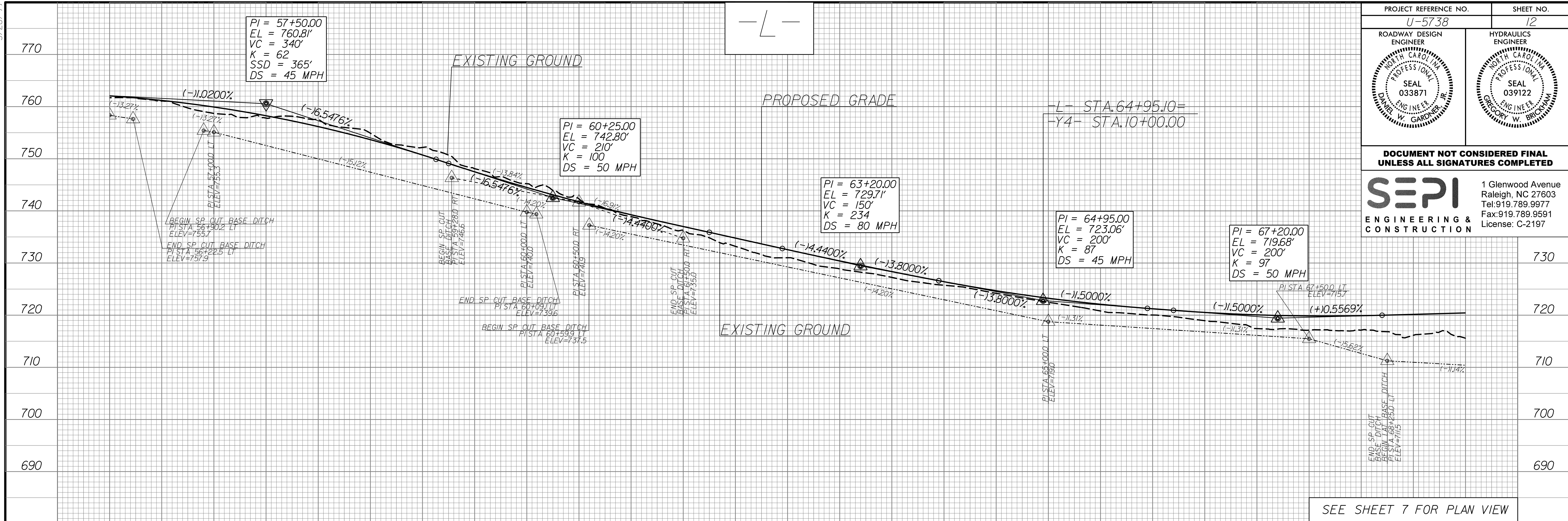
5/28/99

PROJECT REFERENCE NO. U-5738	SHEET NO. 12
ROADWAY DESIGN ENGINEER DANIEL W. GARDNER, INC. PROFESSIONAL SEAL 033871	HYDRAULICS ENGINEER GREGORY W. BRIDGMAN, INC. PROFESSIONAL SEAL 039122

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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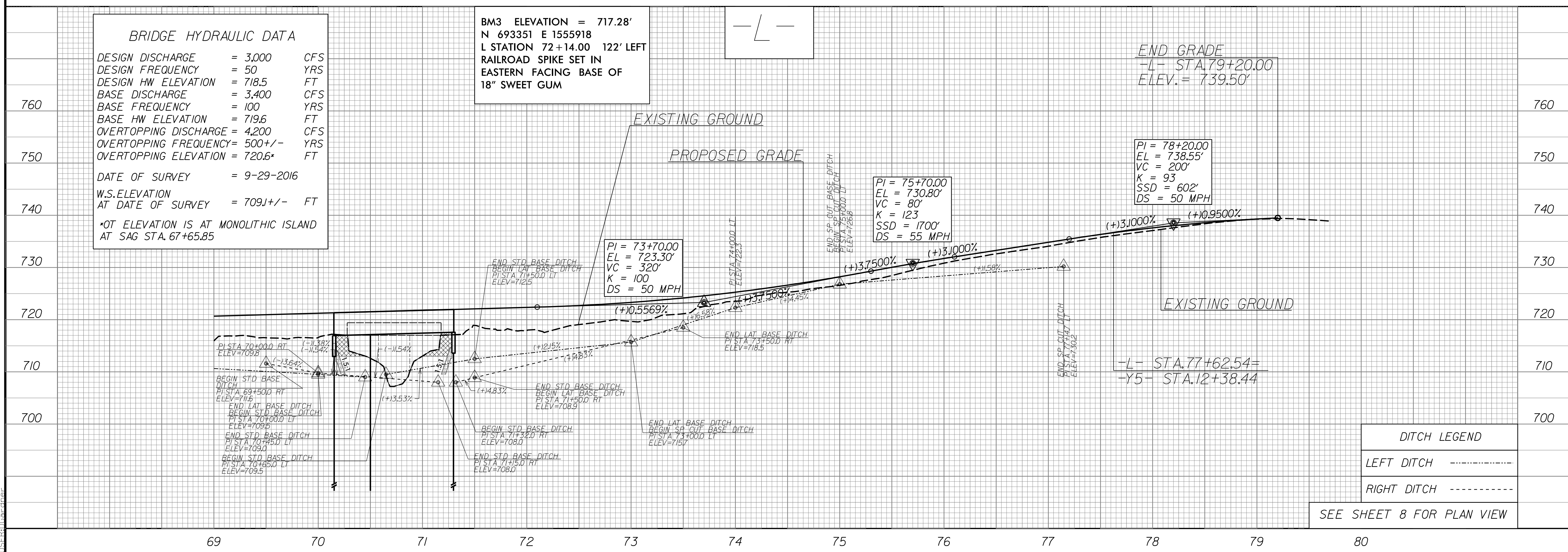
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**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE	= 3,000	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 718.5	FT
BASE DISCHARGE	= 3,400	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 719.6	FT
OVERTOPPING DISCHARGE	= 4,200	CFS
OVERTOPPING FREQUENCY	= 500 +/-	YRS
OVERTOPPING ELEVATION	= 720.6*	FT
DATE OF SURVEY	= 9-29-2016	
W.S. ELEVATION AT DATE OF SURVEY	= 709.1 +/-	FT
*OT ELEVATION IS AT MONOLITHIC ISLAND AT SAG STA. 67+65.85		

BM3 ELEVATION = 717.28'  
N 693351 E 1555918  
L STATION 72+14.00 122' LEFT  
RAILROAD SPIKE SET IN  
EASTERN FACING BASE OF  
18" SWEET GUM



**DITCH LEGEND**

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

SEE SHEET 8 FOR PLAN VIEW

11/18/2021 U:\5738\_Rd\1.dgn

5/28/99

-Y1-

PROJECT REFERENCE NO. U-5738	SHEET NO. 13
ROADWAY DESIGN ENGINEER DAVID W. GARDNER, JR. SEAL 033871 NORTH CAROLINA PROFESSIONAL ENGINEER	HYDRAULICS ENGINEER GREGORY W. BRUCKMAN SEAL 039122 NORTH CAROLINA PROFESSIONAL ENGINEER

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**SEPI**  
ENGINEERING & CONSTRUCTION

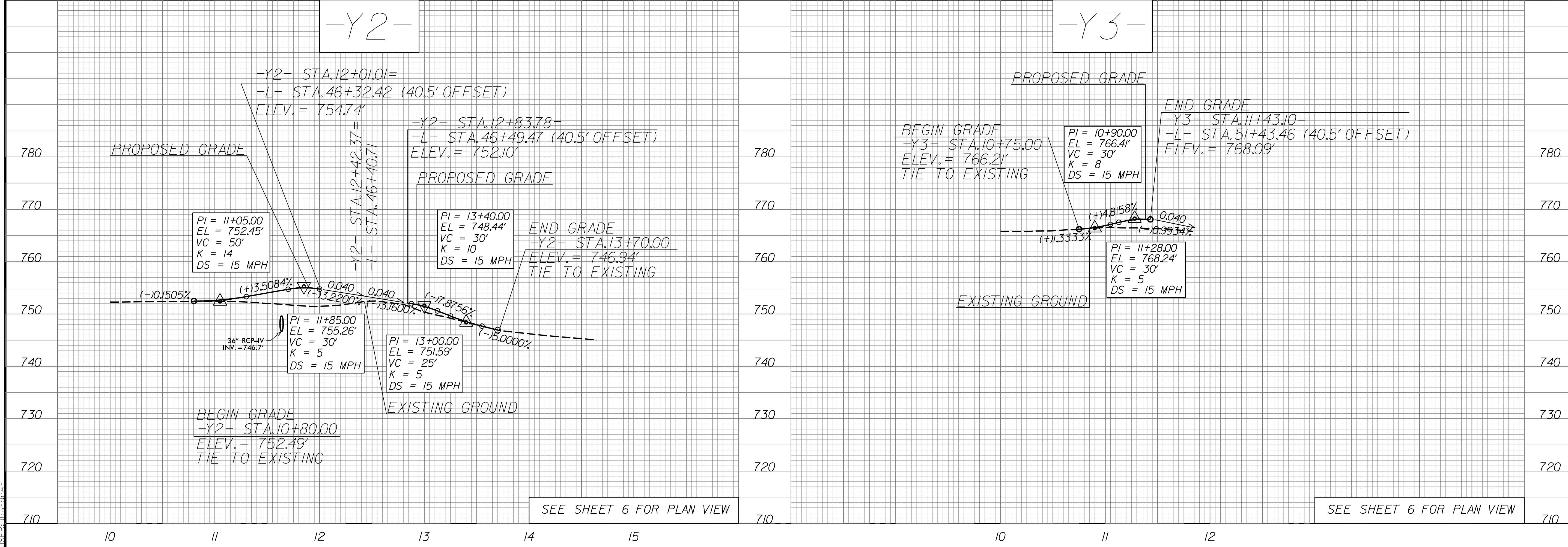
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Raleigh, NC 27603  
Tel: 919.789.9977  
Fax: 919.789.9591  
License: C-2197



SEE SHEETS 5 AND 9 FOR PLAN VIEW

-Y2-

-Y3-



SEE SHEET 6 FOR PLAN VIEW

SEE SHEET 6 FOR PLAN VIEW

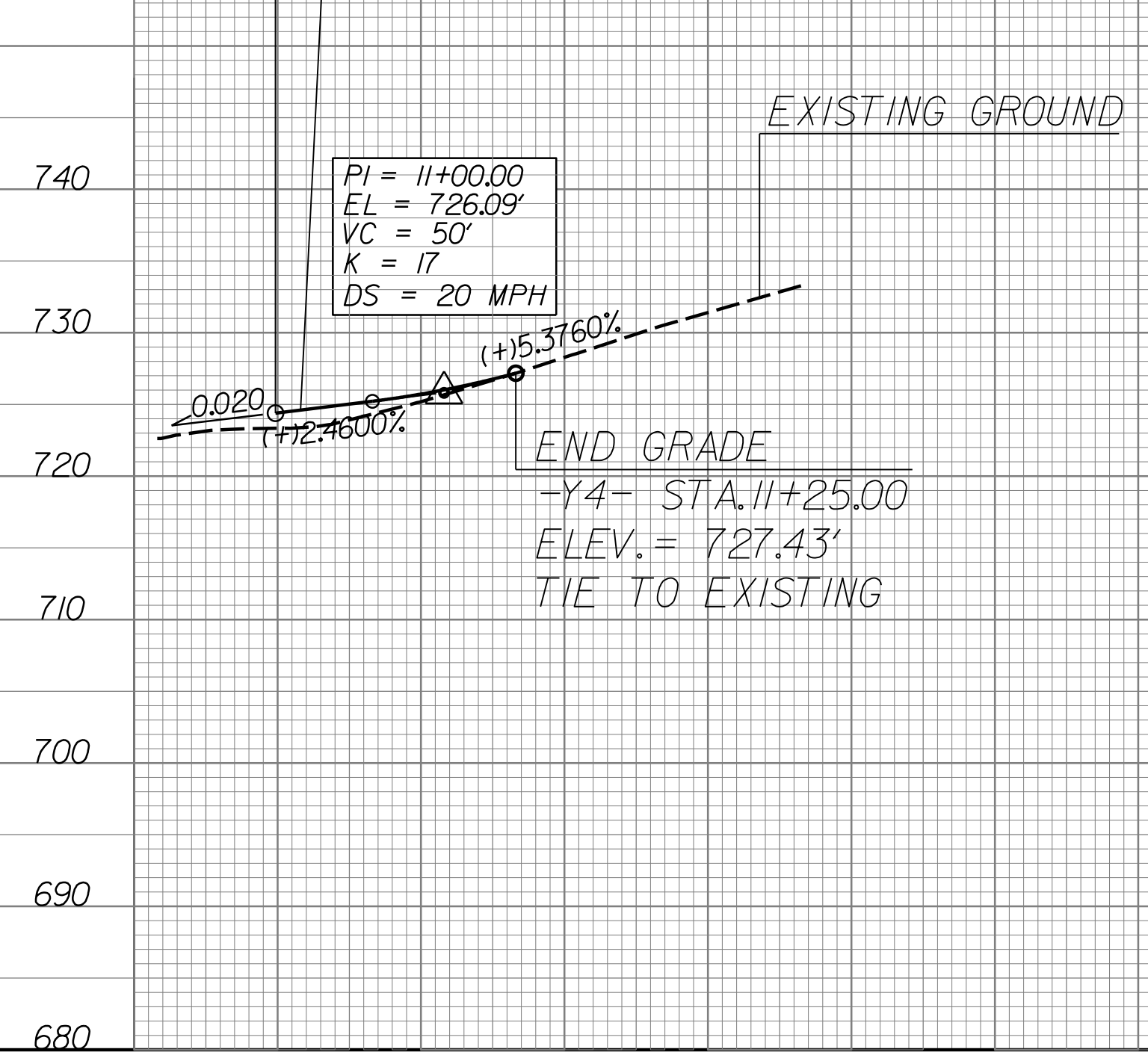
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5/28/99

-Y4-

-Y5-

BEGIN GRADE  
 -Y4- STA.10+41.22=  
 -L- STA.64+87.40 (40.5' OFFSET)  
 ELEV.= 724.64'  
 PROPOSED GRADE

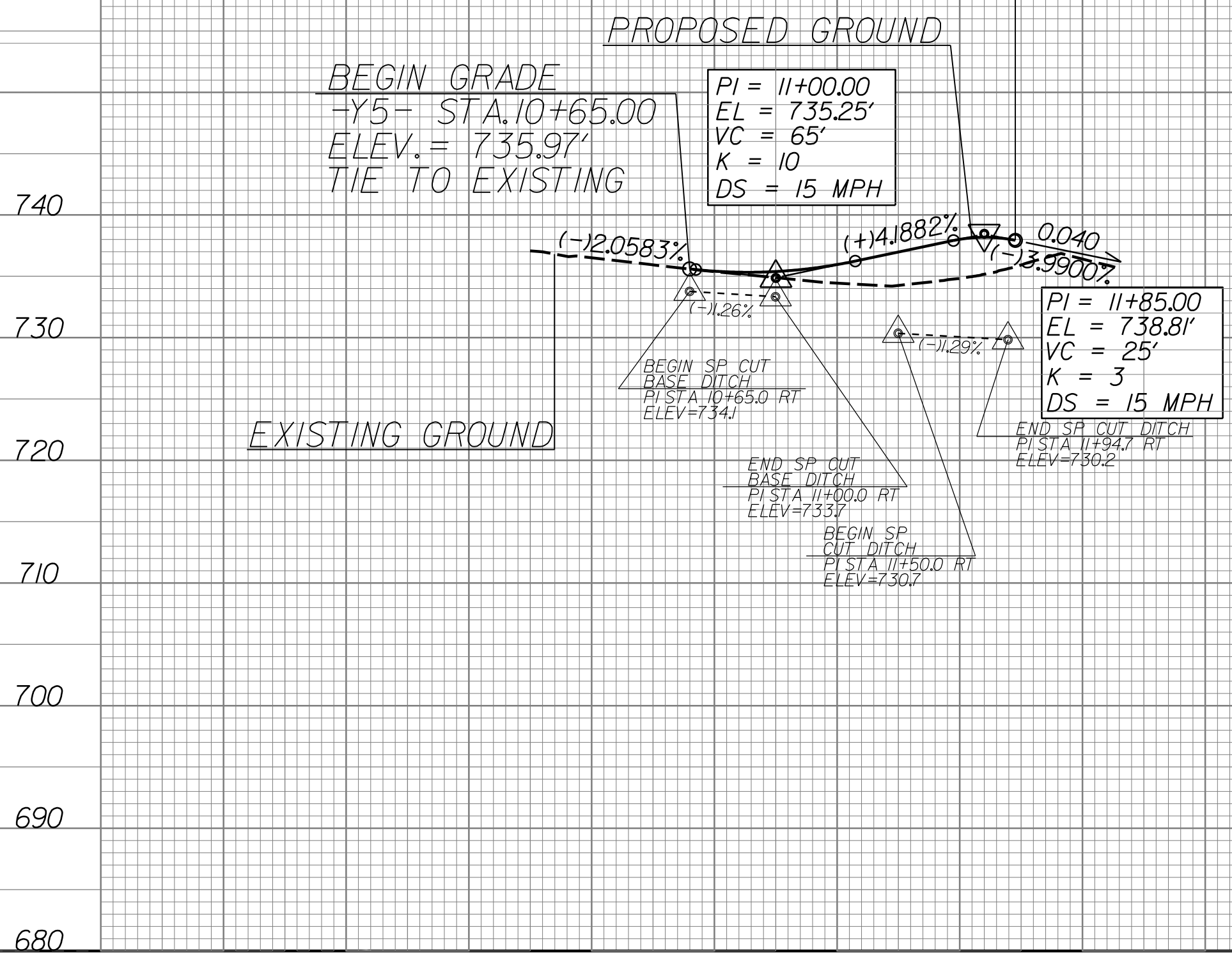


PI = 11+00.00  
 EL = 726.09'  
 VC = 50'  
 K = 17  
 DS = 20 MPH

END GRADE  
 -Y4- STA.11+25.00  
 ELEV.= 727.43'  
 TIE TO EXISTING

SEE SHEET 7 FOR PLAN VIEW

END GRADE  
 -Y5- STA.11+97.74=  
 -L- STA.77+62.73 (40.5' OFFSET)  
 ELEV.= 738.30'  
 PROPOSED GROUND



PI = 11+00.00  
 EL = 735.25'  
 VC = 65'  
 K = 10  
 DS = 15 MPH

PI = 11+85.00  
 EL = 738.81'  
 VC = 25'  
 K = 3  
 DS = 15 MPH

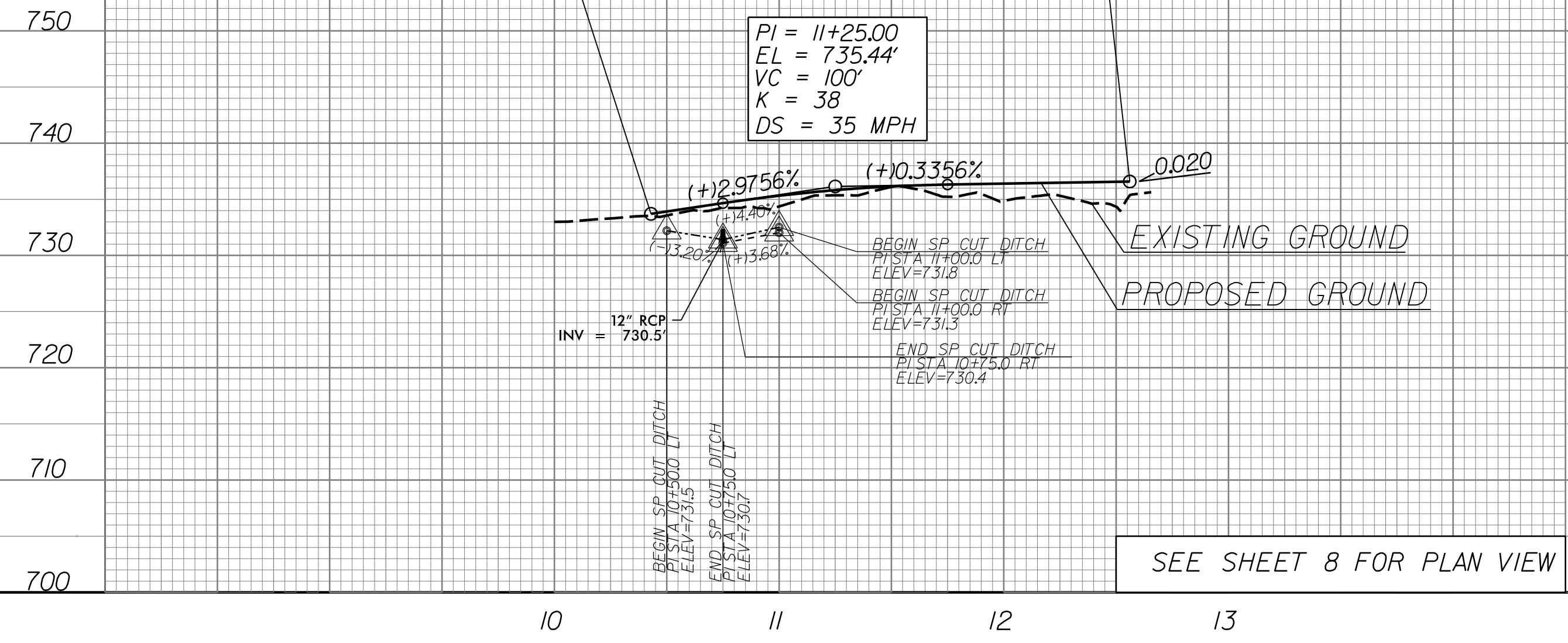
SEE SHEET 8 FOR PLAN VIEW

PROJECT REFERENCE NO. U-5738	SHEET NO. 14
ROADWAY DESIGN ENGINEER DANIEL W. GARDNER SEAL 033871 ENGINEER	HYDRAULICS ENGINEER GREGORY W. BRIDGMAN SEAL 039122 ENGINEER
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-Y8-

-RPA-

BEGIN GRADE  
 -Y8- STA.10+43.00  
 ELEV.= 733.00'  
 END GRADE  
 -Y8- STA.12+56.11=  
 -Y5- STA.11+17.17 (9.55' OFFSET)  
 ELEV.= 735.88'



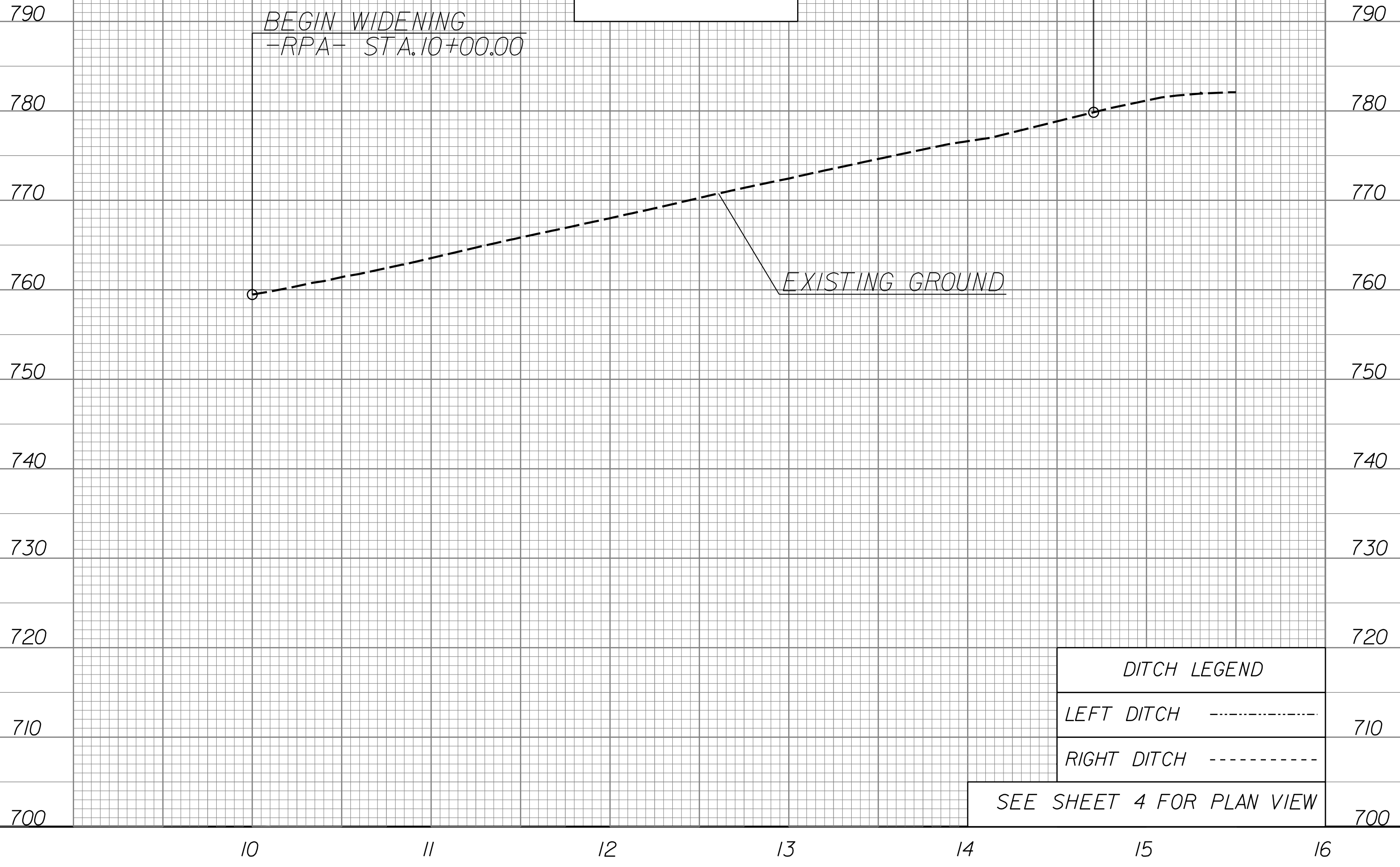
PI = 11+25.00  
 EL = 735.44'  
 VC = 100'  
 K = 38  
 DS = 35 MPH

INV = 12" RCP  
 780.5'

SEE SHEET 8 FOR PLAN VIEW

BEGIN WIDENING  
 -RPA- STA.10+00.00

END WIDENING  
 -RPA- STA.14+70.45



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

SEE SHEET 4 FOR PLAN VIEW

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