

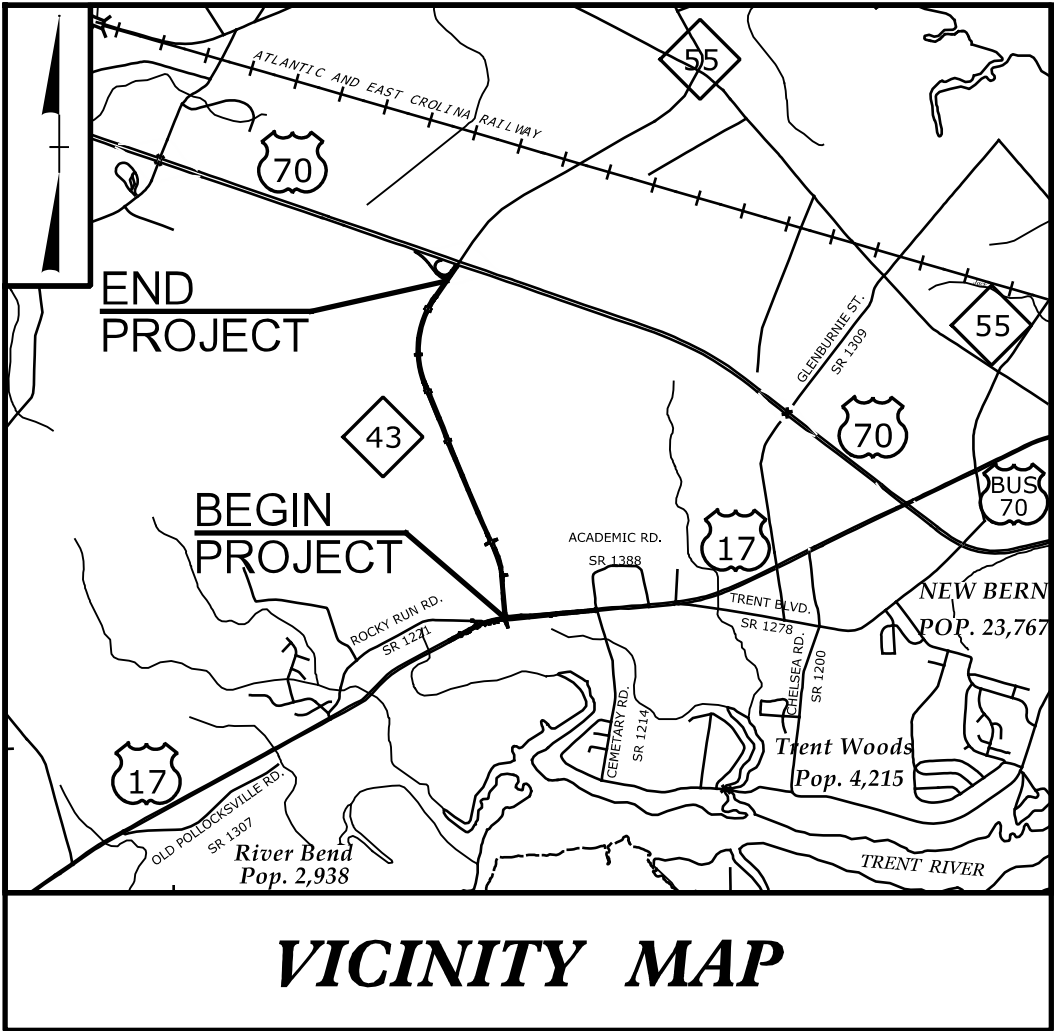
09/08/09

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TIP PROJECT: R-4463A

CONTRACT: C204421

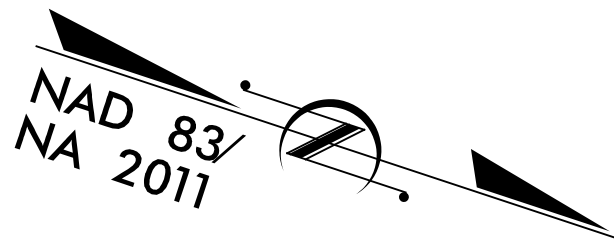
See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



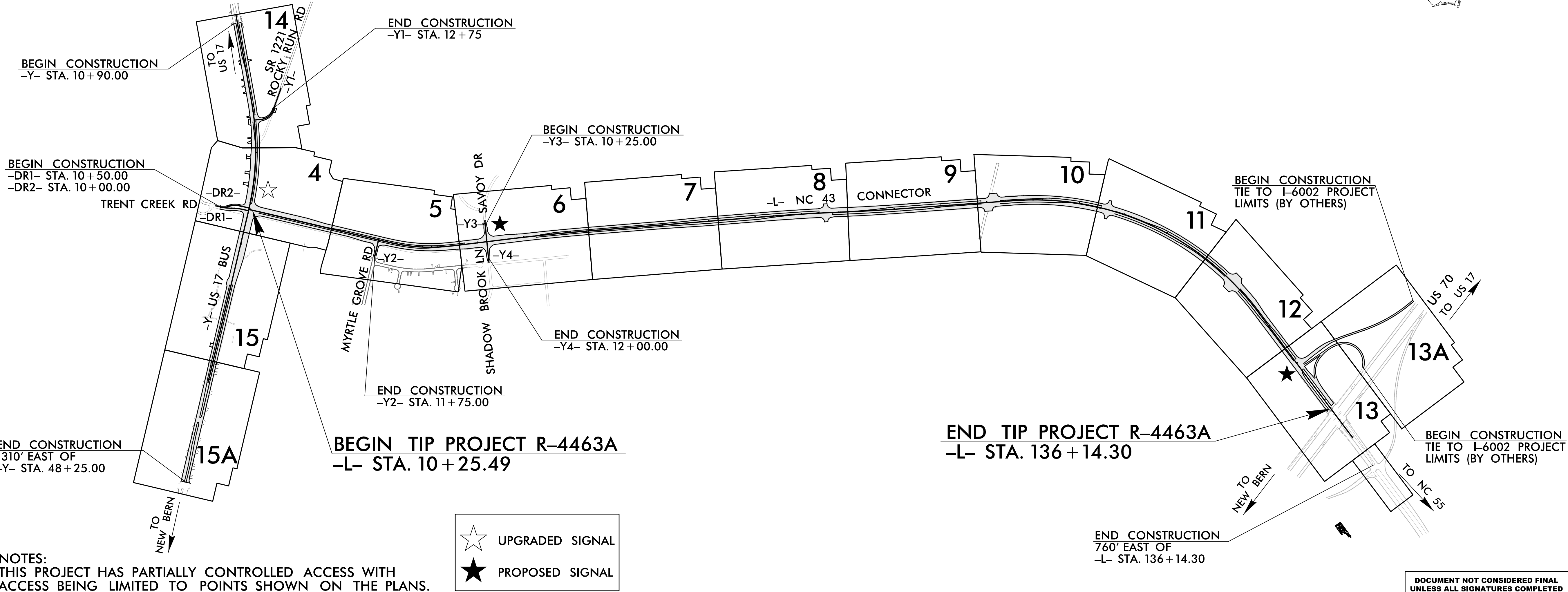
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CRAVEN COUNTY

LOCATION: NC 43 CONNECTOR FROM
US 17 BUSINESS TO US 70

TYPE OF WORK: GRADING, PAVING, DRAINAGE,
SIGNALS, & CULVERT

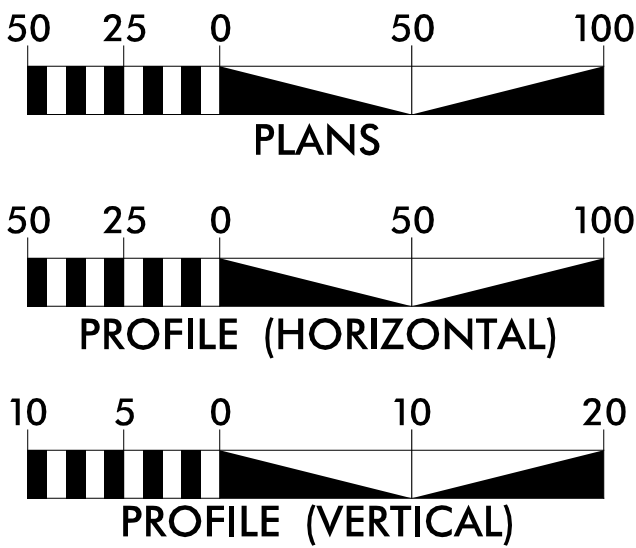


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4463A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35601.1.R2		PE	
35601.2.1		ROW	
35601.2.4		UTIL	
35601.3.4		CONSTRUCTION	



NOTES:
THIS PROJECT HAS PARTIALLY CONTROLLED ACCESS WITH
ACCESS BEING LIMITED TO POINTS SHOWN ON THE PLANS.

GRAPHIC SCALES



DESIGN DATA

ADT 2025 = 25,300
ADT 2050 = 47,100
K = 10 %
D = 55 %
T = 6 % *
V = 60 MPH
(* TTST 4% + DUAL 2%)
FUNC CLASS =
ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-4463A = 2.384 MILES
TOTAL LENGTH TIP PROJECT R-4463A = 2.384 MILES

NCDOT CONTACT: CATHRINE HOSSACK MEYER, PE
DIVISION 2 - PROJECT ENGINEER

Prepared for the
North Carolina Department
of Transportation
In the office of:



HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 18, 2019

LETTING DATE:
JULY 15, 2025

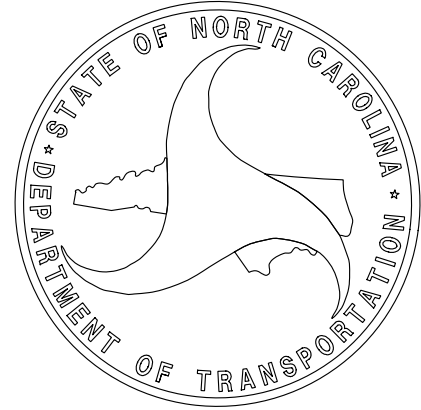
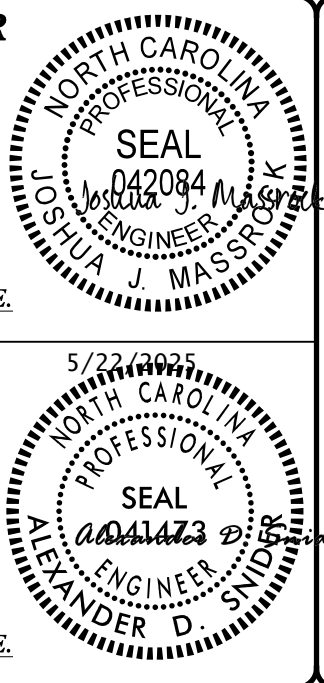
PHILLIP E. ROGERS, PE
PROJECT ENGINEER
ALEXANDER D. SNIDER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN
ENGINEER

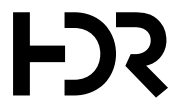
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UNLESS ALL SIGNATURES COMPLETED

8/17/99

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HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.
R-4463A

SHEET NO.
1A

R/W SHEET NO.

ROADWAY DESIGN ENGINEER



5/28/2025

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INDEX OF SHEETS	
SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-6	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1 THRU 2B-10	ROADWAY DETAILS
2C-1 THRU 2C-8	ROADWAY SPECIAL DETAILS
2D-1	DRAINAGE DETAILS
2G-1 THRU 2G-2	GEOTECHNICAL DETAILS
3B-1 THRU 3B-3	ROADWAY SUMMARIES
3D-1 THRU 3D-5	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 25	PLAN AND PROFILE SHEETS
RW1 THRU RW15	RIGHT OF WAY PLANS
TMP-1 THRU TMP-34	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-15	PAVEMENT MARKING PLANS
EC-1 THRU EC-27A	EROSION CONTROL PLANS
RF-1 THRU RF-3	REFORESTATION PLANS
SIGN-1 THRU SIGN-17A	SIGNING PLANS
SIG-1 THRU SIG-8.4	SIGNAL PLANS
SCP-1 THRU SCP-16	SIGNAL SYSTEM COMMUNICATION PLANS
UC-1 THRU UC-15	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-6	UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTION INDEX SHEET
X-1A THRU X-1C	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-67	CROSS-SECTIONS
C1-1 THRU C1-6	CULVERT PLANS, 36 + 41.23 -Y-
C2-1 THRU SN-01	CULVERT PLANS, 43 + 54.00 -Y-

GENERAL NOTES: 2024 SPECIFICATIONS EFFECTIVE: 01-16-2024
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 STDs. NO. 225.04 & 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 STDs. NO. 560.01 & NO. 560.02.

SIDE ROADS:

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

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS 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 SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE Duke Energy, City of New Bern, Piedmont Natural Gas, and Brightspeed

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. ALL CA MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

CURB RAMPS:

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.06.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-16-2024
REV.

The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit - N. C. Department of Transportation - Raleigh, N. C., Dated January 16, 2024 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
225.04 Method of Obtaining Superelevation - Two Lane Pavement
225.05 Method of Obtaining Superelevation - Divided Highways
225.06 Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS
300.01 Method of Pipe Installation
310.10 Driveway Pipe Construction
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
654.01 Pavement Repairs
DIVISION 8 - INCIDENTALS
806.03 Concrete Control of Access Marker
815.02 Subsurface 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
838.21 Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew
838.22 Reinforced Concrete Endwall - for Double and Triple 54" Pipes 90 Skew
838.33 Reinforced Concrete Endwall - for Single 66" Pipe 90 Skew
838.45 Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.51 Reinforced Brick Endwall - for Single 54" Pipe 90 Skew
838.52 Reinforced Brick Endwall - for Double and Triple 54" Pipes 90 Skew
838.63 Reinforced Brick Endwall - for Single 66" Pipe 90 Skew
838.75 Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80 Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00 Concrete Base Pad for Drainage Structures
840.01 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
840.19 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
840.27 Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
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
840.35 Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45 Precast Drainage Structure
840.46 Traffic Bearing Precast Drainage Structure
840.54 Manhole Frame and Cover
840.66 Drainage Structure Steps
840.72 Pipe Collar
846.01 Concrete Curb, Gutter and Curb & Gutter
848.01 Concrete Sidewalk
848.04 Street Turnout
848.06 Curb Ramp
852.01 Concrete Islands
852.04 Method for Placement of Drop Inlets in Grassed Median - Using 1'-6" Curb and Gutter
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
852.07 Median Curb for Traffic Bearing Grated Drop Inlet for Use with 2'-9" Curb and Gutter
852.10 Median Construction - with Curb and Gutter
862.01 Guardrail Placement
862.02 Guardrail Installation
866.02 Woven Wire Fence - with Wood Post
876.01 Rip Rap in Channels and Ditches
876.02 Guide for Rip Rap at Pipe Outlets
876.04 Drainage Ditches with Class 'B' Rip Rap

BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin	
Computed Property Corner	
Property Monument	
Parcel/Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Existing Historic Property Boundary	
Known Contamination Area: Soil	
Potential Contamination Area: Soil	
Known Contamination Area: Water	
Potential Contamination Area: Water	
Contaminated Site: Known or Potential	

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	
Sign	
Well	
Small Mine	
Foundation	
Area Outline	
Cemetery	
Building	
School	
Church	
Dam	

HYDROLOGY:

Stream or Body of Water	
Hydro, Pool or Reservoir	
Jurisdictional Stream	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	

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

RAILROADS:

Standard Gauge	
RR Signal Milepost	
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 Easment Pin and Cap	
New Permanent Easement Pin and Cap	
Vertical Benchmark	
Existing Right of Way Marker	
Existing Right of Way Line	
New Right of Way Line	
New Right of Way Line with Pin and Cap	
New Right of Way Line with Concrete or Granite RW Marker	
New Control of Access Line with Concrete C/A Marker	
Existing Control of Access	
New Control of Access	
Existing Easement Line	
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	
Proposed Slope Stakes Fill	
Proposed Curb Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	

VEGETATION:

Single Tree	
Single Shrub	

*S.U.E. = Subsurface Utility Engineering

Hedge	
Woods Line	
Orchard	
Vineyard	

EXISTING STRUCTURES:

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

UTILITIES:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

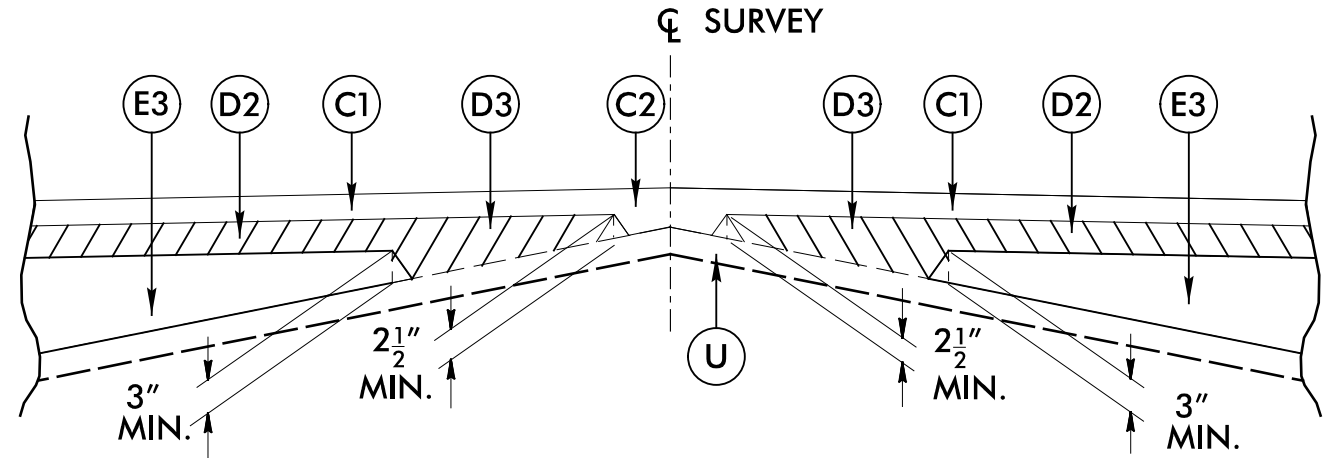
SANITARY SEWER:

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

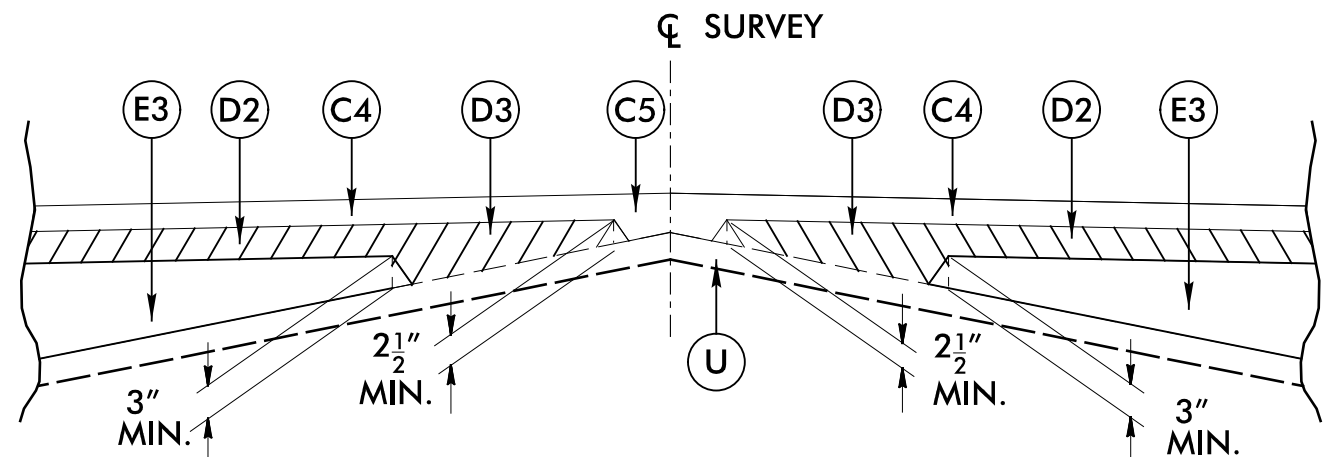
MISCELLANEOUS:

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

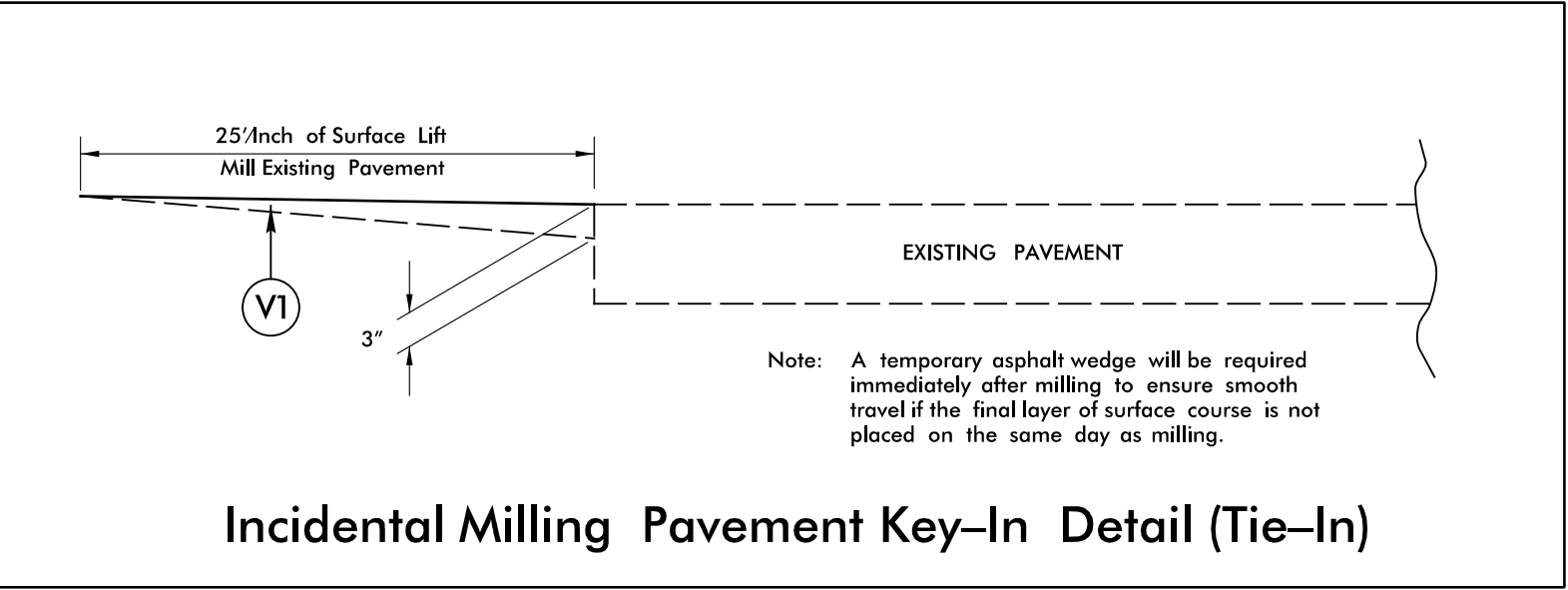
PAVEMENT SCHEDULE			
(FINAL PAVEMENT DESIGN; DECEMBER 5, 2019)			
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R1	1' 6" CONCRETE CURB AND GUTTER
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.	R2	2'-6" CONCRETE CURB AND GUTTER.
C3	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.	R3	2' 9" CONCRETE CURB AND GUTTER
C4	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R4	5" MONOLITHIC CONCRETE ISLAND (KEYED IN).
C5	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.	R5	4" CONCRETE ISLAND COVER.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	S	CONCRETE SIDEWALK.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
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 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	U	EXISTING PAVEMENT.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	V1	INCIDENTAL MILLING (SEE MILLING DETAIL).
E2	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	V2	UNIFORM 2" DEPTH MILLING.
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.	V3	UNIFORM 2½" DEPTH MILLING.
J1	PROP. 8" AGGREGATE BASE COURSE.	W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL).
J2	PROP. 12" AGGREGATE BASE COURSE.	W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL).



Detail Showing Method of Wedging (W1)
USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 12, 13, AND 16

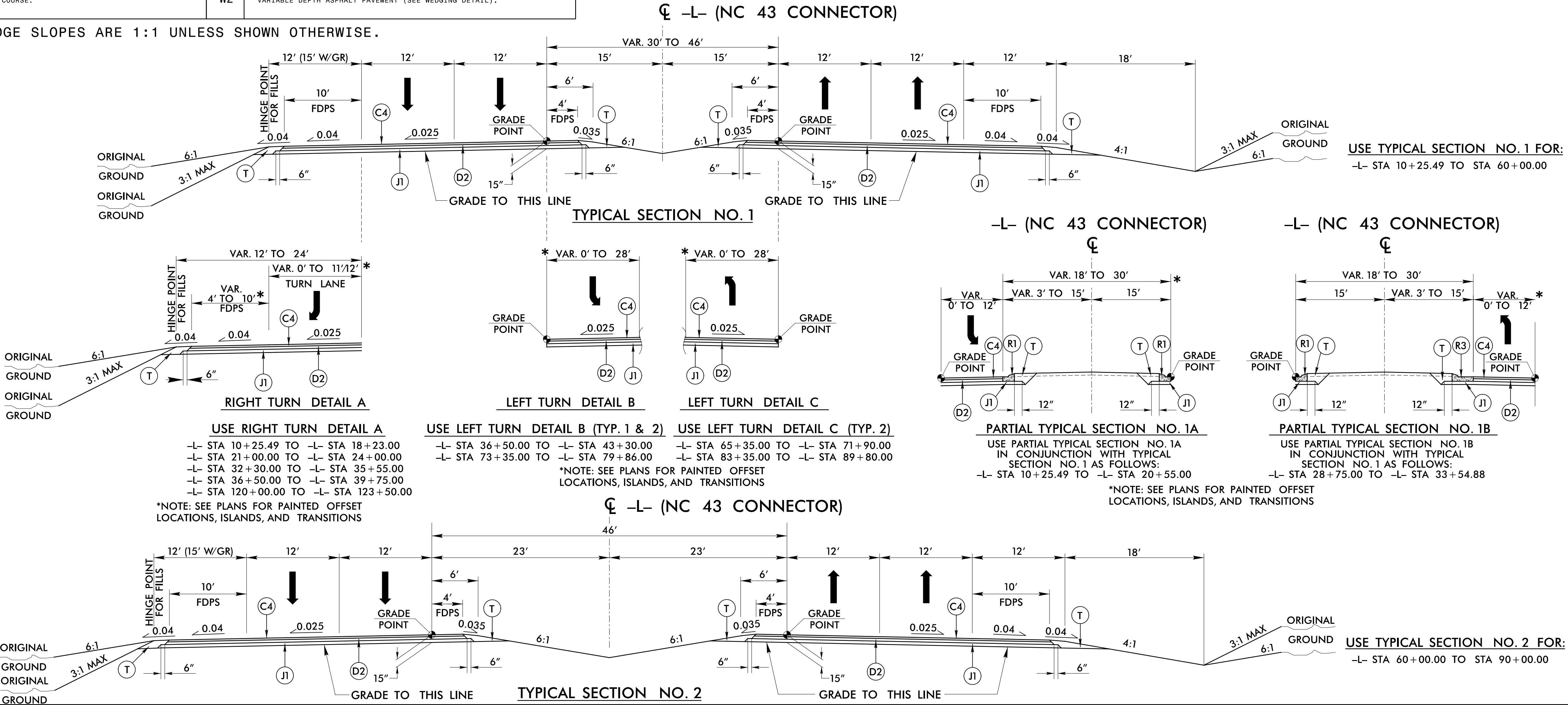


Detail Showing Method of Wedging (W2)
USE IN CONJUNCTION WITH TYPICAL SECTIONS NO. 3, 7, 8, AND 19



Incidental Milling Pavement Key-In Detail (Tie-In)

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





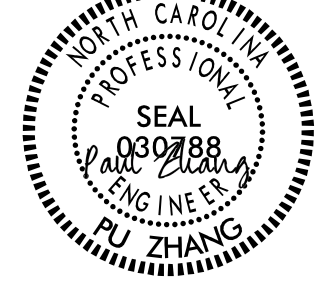
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.
R-4463A

SHEET NO.
2A-2

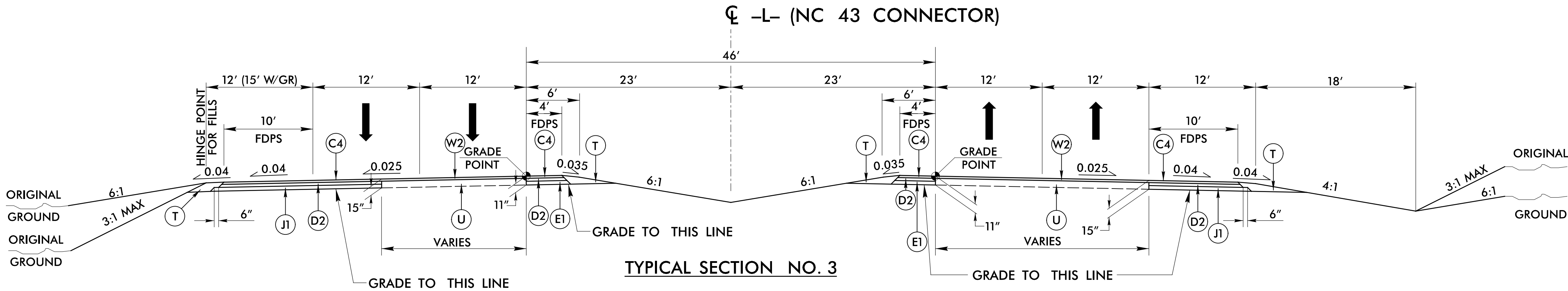
ROADWAY DESIGN ENGINEER

ALEXANDER D. ALEXANDER

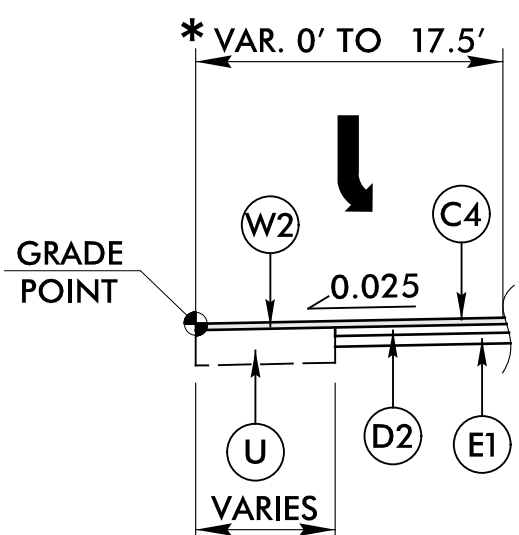
PAYMENT DESIGN ENGINEER

J. ZHANG

5/22/20255/22/2025

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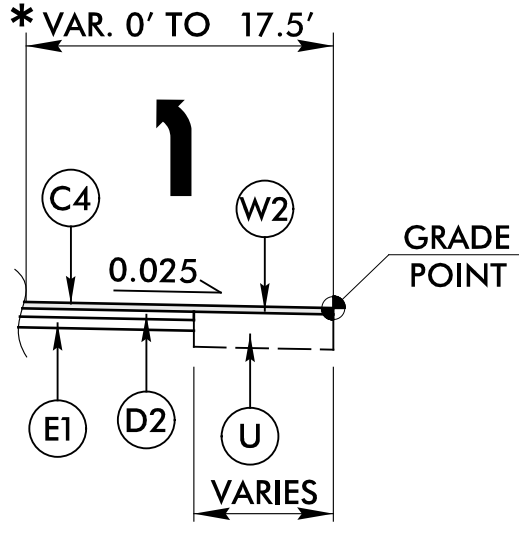
TYPICAL SECTION NO. 3



LEFT TURN DETAIL D

USE LEFT TURN DETAIL D

-L- STA 91+25.00 TO -L- STA 96+75.00
-L- STA 104+00.00 TO -L- STA 109+50.00
-L- STA 119+98.00 TO -L- STA 126+43.00



LEFT TURN DETAIL E

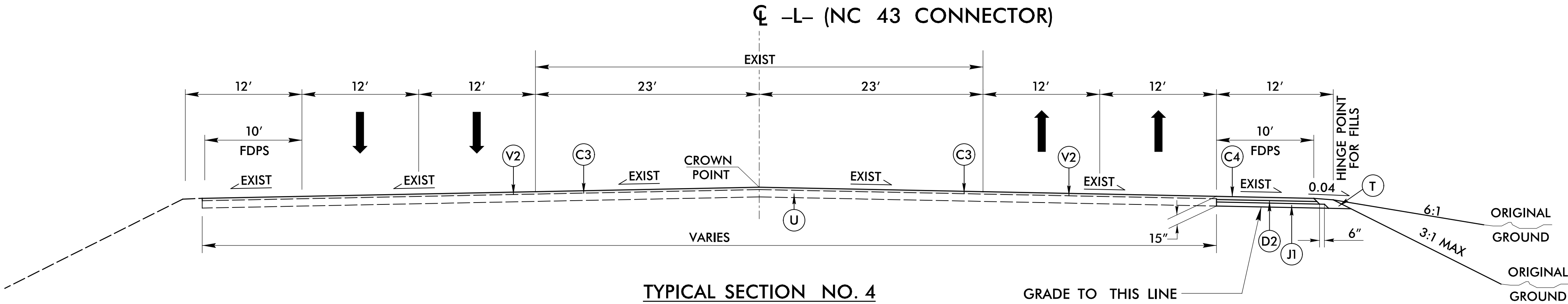
USE LEFT TURN DETAIL E

-L- STA 96+88.00 TO -L- STA 102+38.00
-L- STA 111+39.00 TO -L- STA 117+84.00
-L- STA 123+35.00 TO -L- STA 129+60.00

*NOTE: SEE PLANS FOR PAINTED OFFSET
LOCATIONS, ISLANDS, AND TRANSITIONS

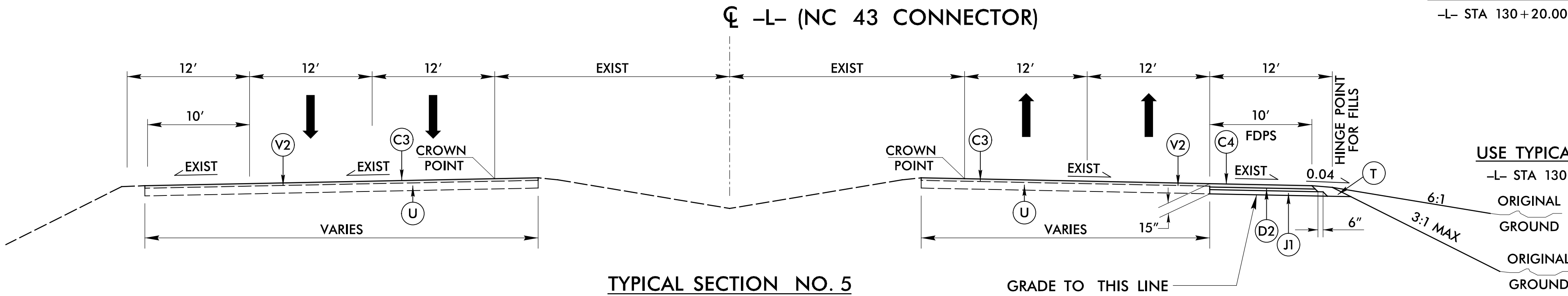
USE TYPICAL SECTION NO. 3 FOR:
-L- STA 90+00.00 TO STA 130+20.00

PAVEMENT SCHEDULE	
C1	3" S9.5B
C2	VAR. S9.5B
C3	2" S9.5C
C4	3" S9.5C
C5	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	5½" B25.0C
E3	VAR. B25.0C
J1	8" ABC
J2	12" ABC
R1	1'-6" C&G
R2	2'-6" C&G
R3	2'-9" C&G
R4	5" MON. ISLAND
R5	4" ISLAND COVER
S	CONC. SIDEWALK
T	EARTH MATERIAL
U	EX. PAVEMENT
V1	INCD. MILLING
V2	2" MILLING
V3	2½" MILLING
W1	WEDGING
W2	WEDGING



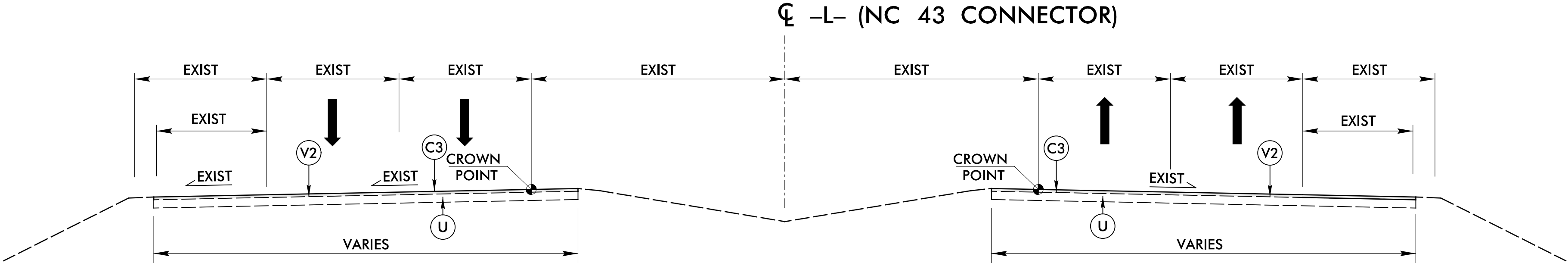
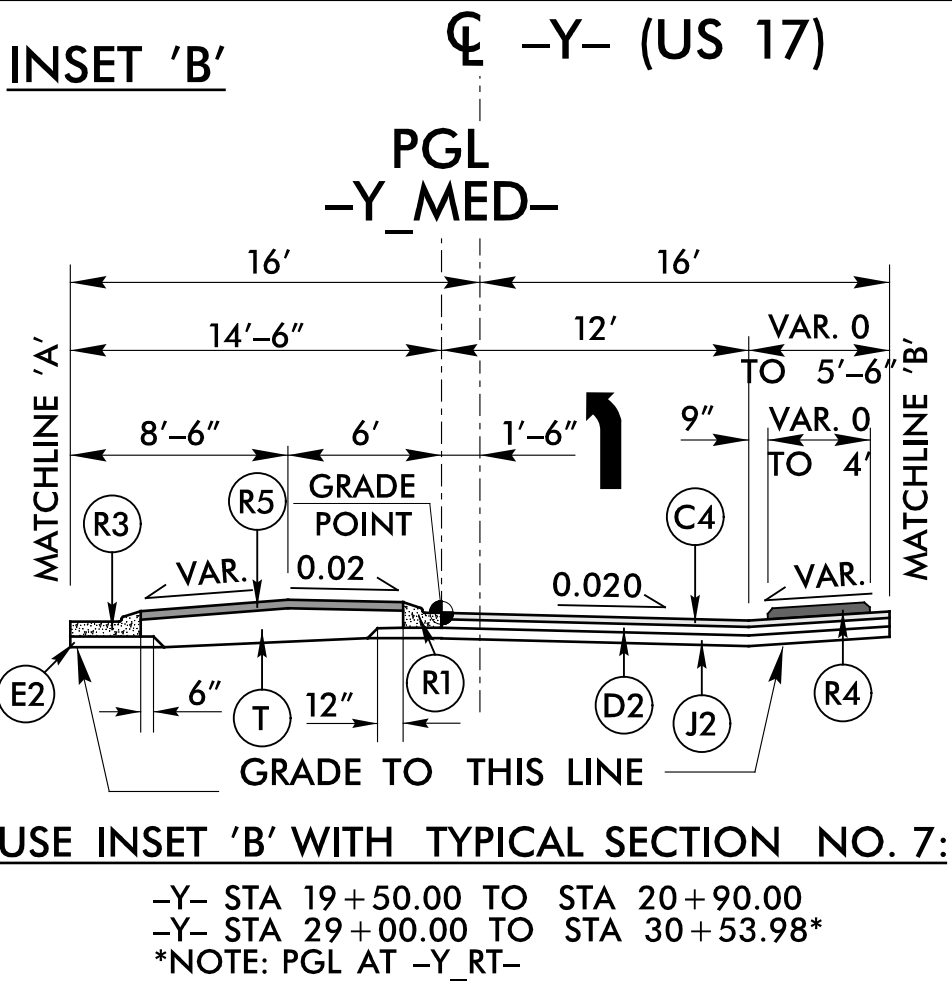
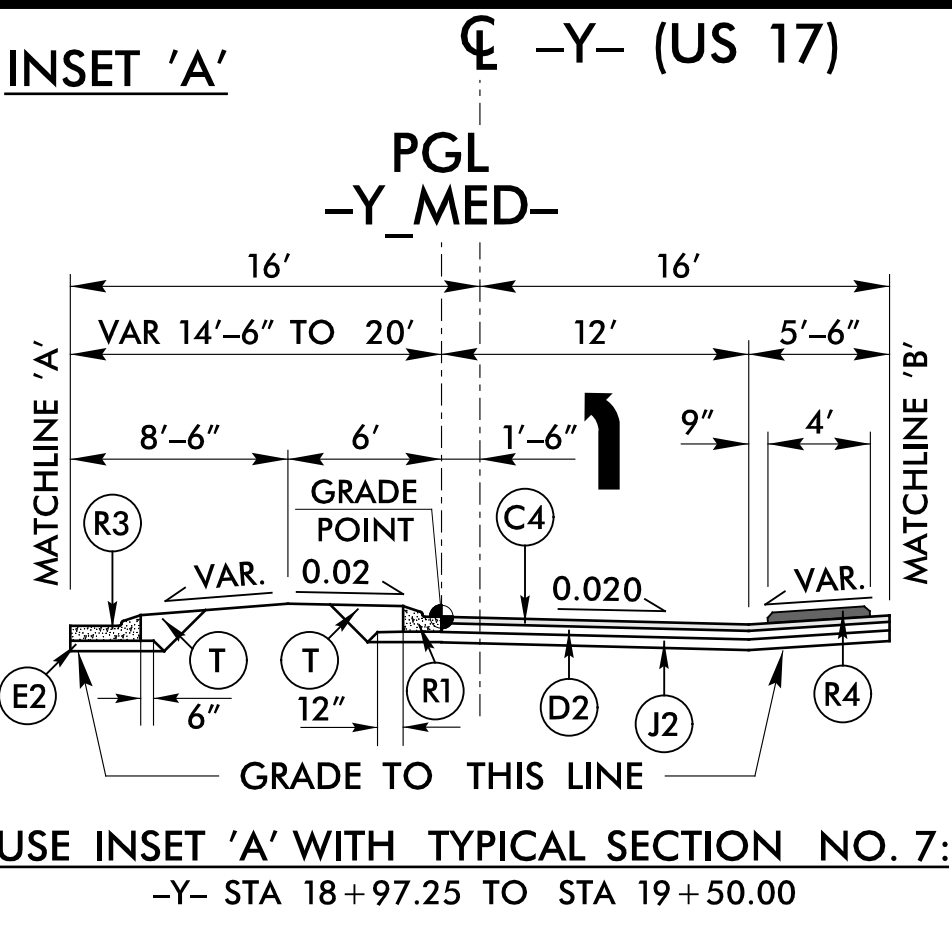
TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 FOR:
-L- STA 130+20.00 TO STA 130+88.40



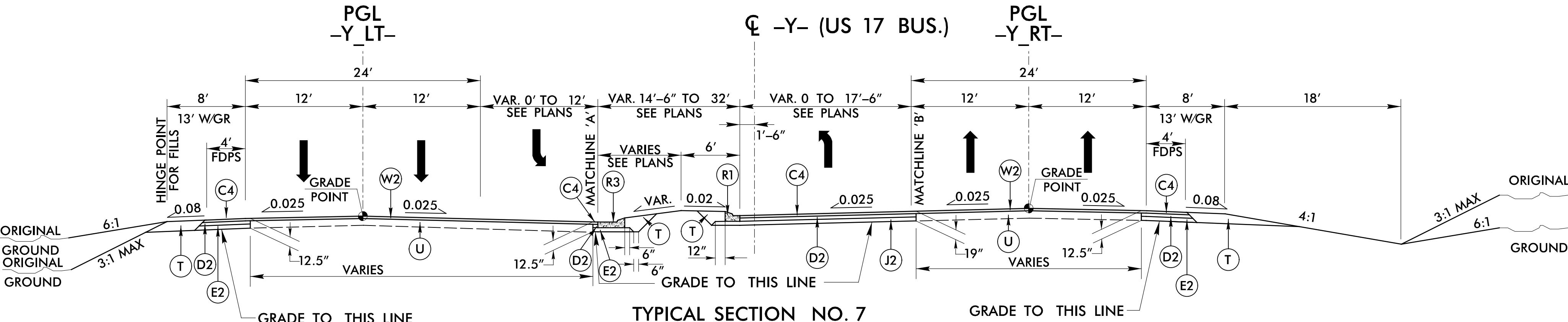
TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 FOR:
-L- STA 130+88.40 TO STA 131+46.40



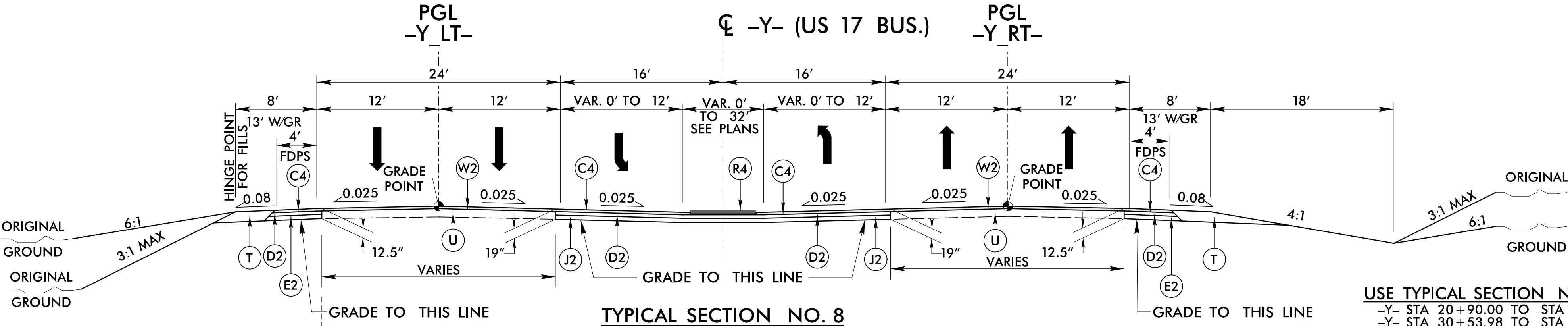
TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 FOR:
-L- STA 131+46.40 TO STA 136+12.49



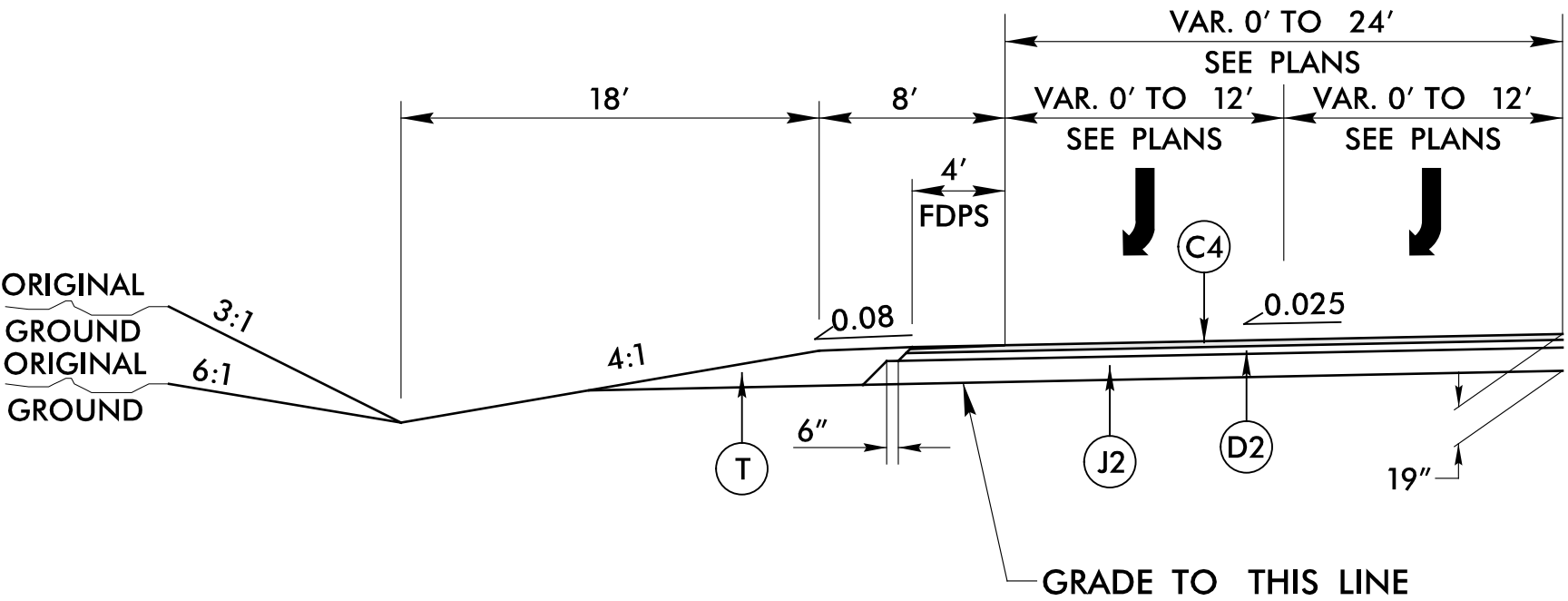
TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7 FOR:
-Y- STA 14+40.00 TO STA 20+90.00
-Y- STA 21+70.00 TO STA 30+53.98
-Y- STA 39+60.00 TO STA 46+40.00



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8 FOR:
-Y- STA 20+90.00 TO STA 21+70.00
-Y- STA 30+53.98 TO STA 39+60.00



USE RIGHT TURN DETAIL F
-Y- STA 31+75.00 TO STA 39+50.00

PAVEMENT SCHEDULE	
C1	3" S9.5B
C2	VAR. S9.5B
C3	2" S9.5C
C4	3" S9.5C
C5	VAR. S9.5C
D1	2 1/2" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	5 1/2" B25.0C
E3	VAR. B25.0C
J1	8" ABC
J2	12" ABC
R1	1'-6" C&G
R2	2'-6" C&G
R3	2'-9" C&G
R4	5" MON. ISLAND
R5	4" ISLAND COVER
S	CONC. SIDEWALK
T	EARTH MATERIAL
U	EX. PAVEMENT
V1	INCLD. MILLING
V2	2" MILLING
V3	2 1/2" MILLING
W1	WEDGING
W2	WEDGING



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PROJECT REFERENCE NO.

R-4463A

SHEET NO.

2A-4

ROADWAY DESIGN
ENGINEER



PAYMENT DESIGN
ENGINEER

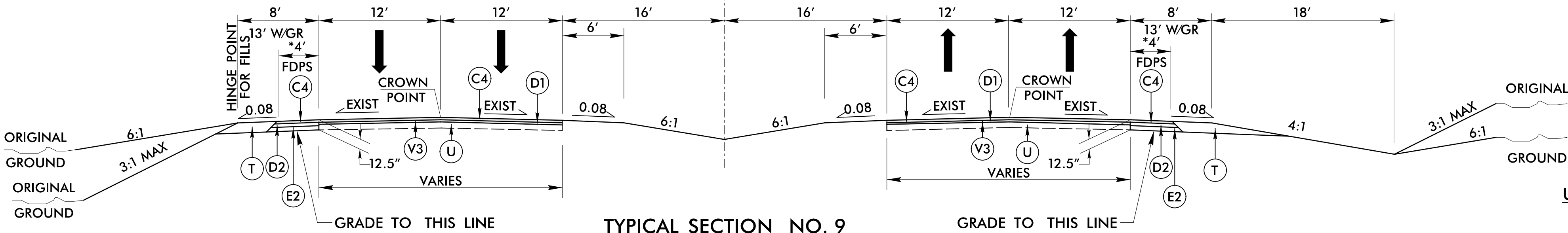


5/22/2025

5/22/2025

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CL -Y- (US 17 BUS.)



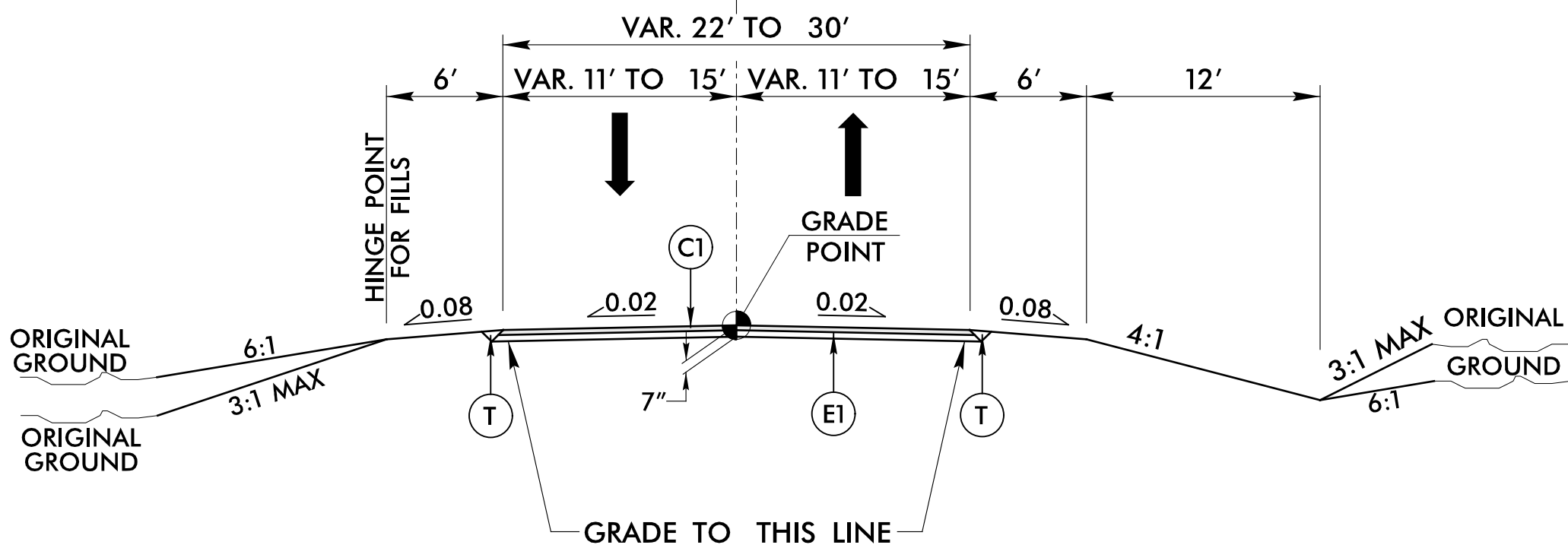
TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9 FOR:

-Y- STA 46+40.00 TO STA 47+06.23
*-Y- STA 47+06.23 TO STA 48+25.00
(NO FDPS; ONLY MILL AND FILL)

NOTE: 2" MILLING TO TIE
TO TYPICAL NO. 24

CL -Y1- (ROCKY RUN ROAD)

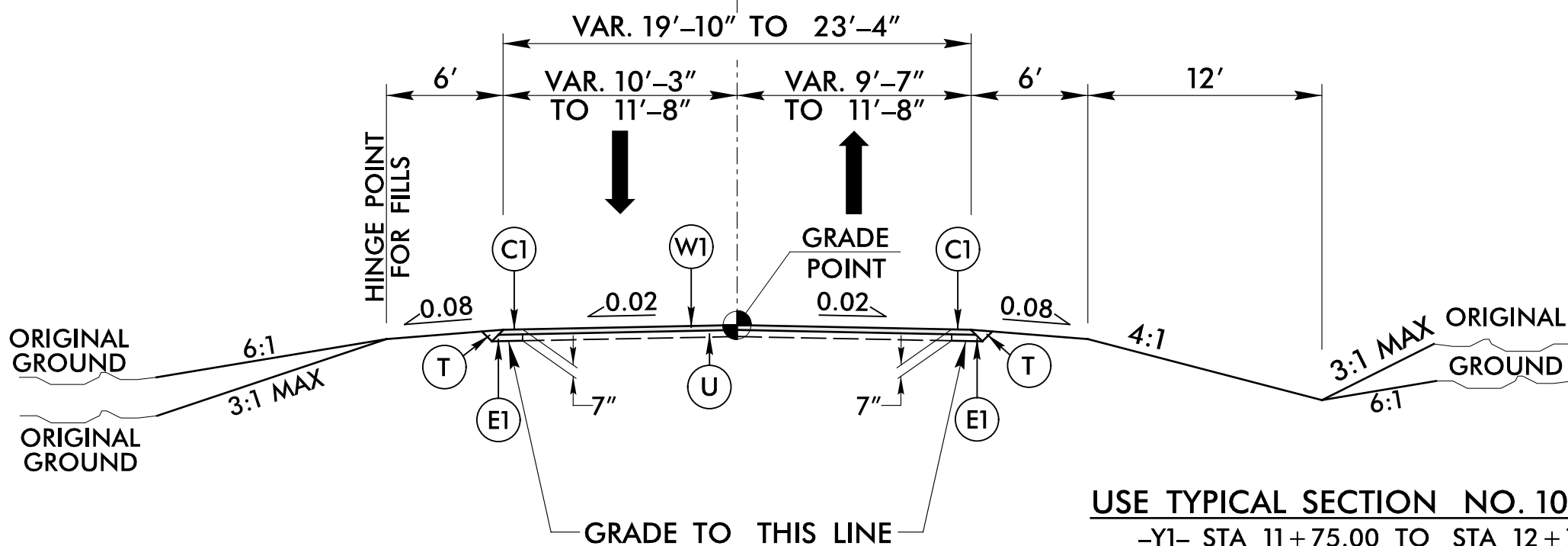


TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10 FOR:

-Y1- STA 10+40.00 TO STA 11+75.00

CL -Y1- (ROCKY RUN ROAD)

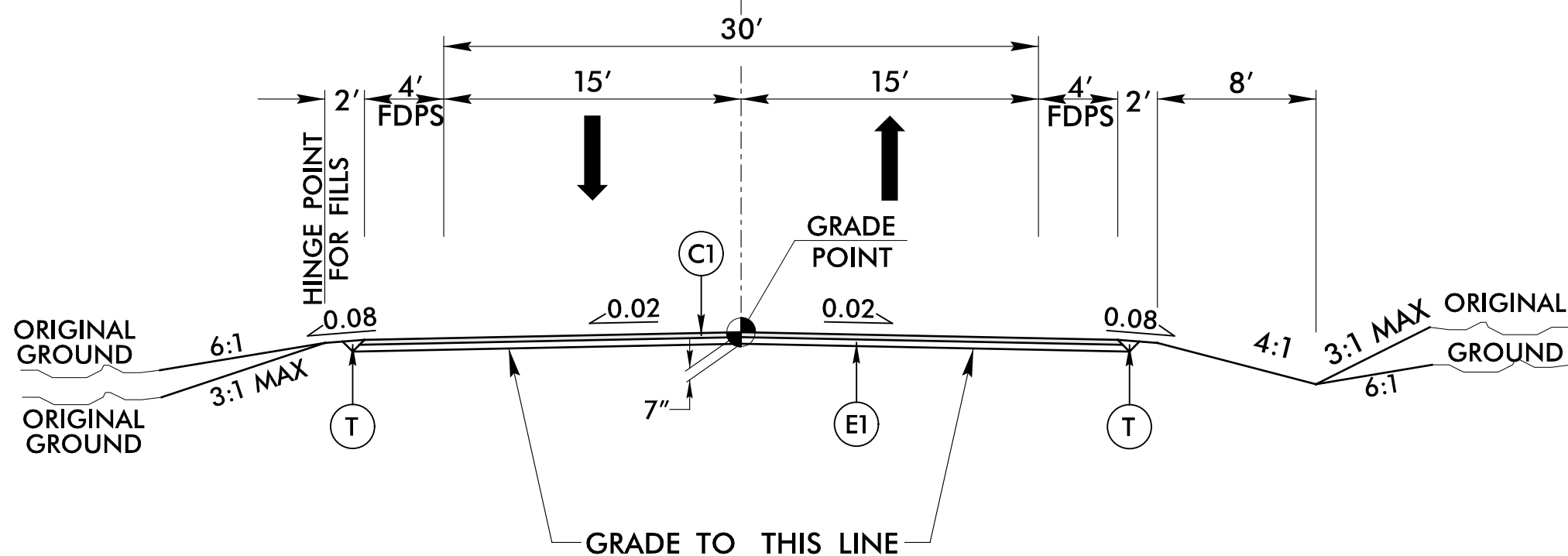


TYPICAL SECTION NO. 10A

USE TYPICAL SECTION NO. 10A FOR:

-Y1- STA 11+75.00 TO STA 12+75.00

CL -Y2- (MYRTLE GROVE ROAD)

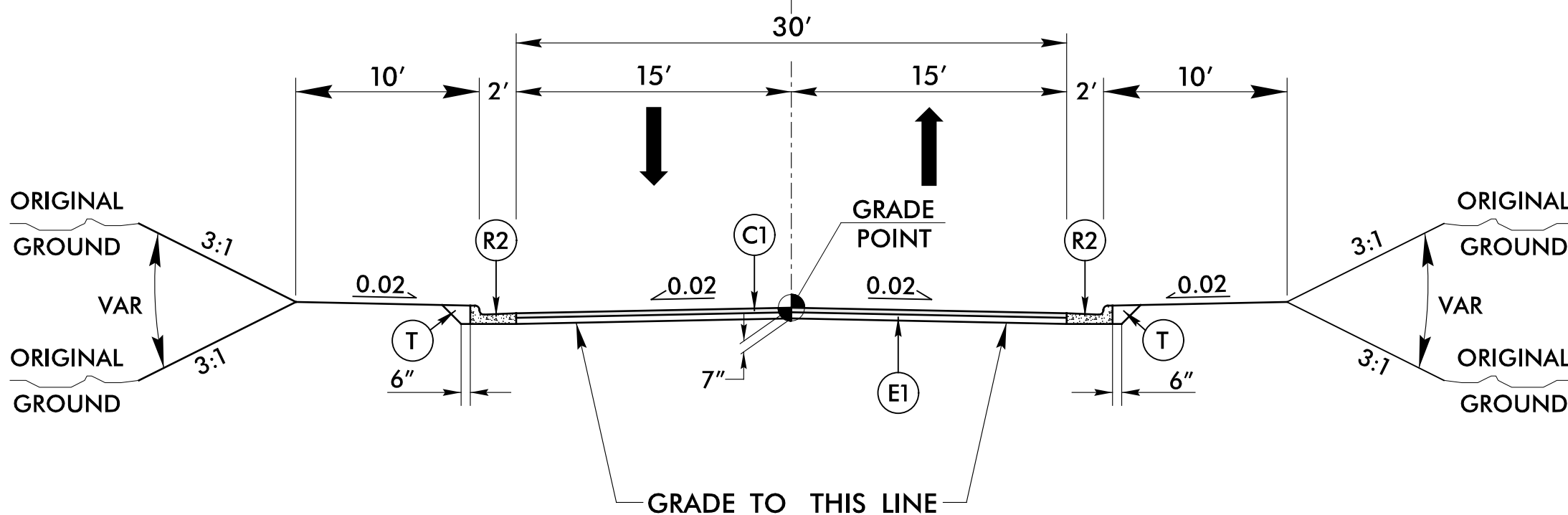


TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11 FOR:

-Y2- STA 10+39.00 TO STA 10+88.00

CL -Y2- (MYRTLE GROVE ROAD)

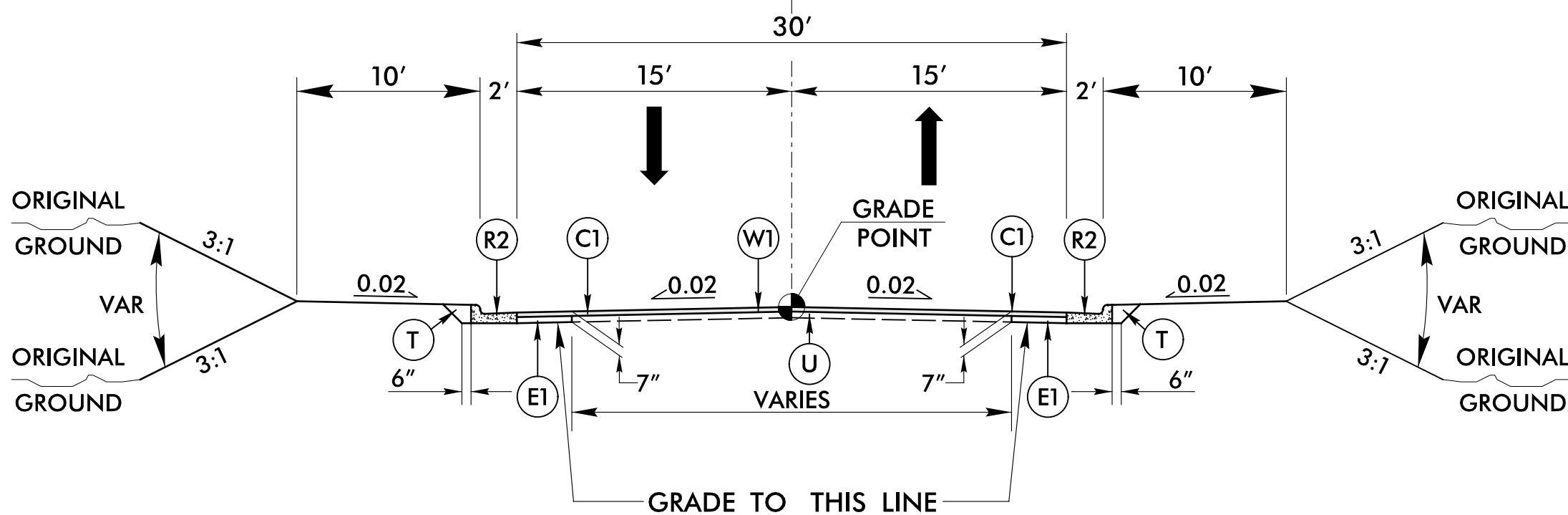


TYPICAL SECTION NO. 11A

USE TYPICAL SECTION NO. 11A FOR:

-Y2- STA 10+88.00 TO STA 11+00.00

CL -Y2- (MYRTLE GROVE ROAD)

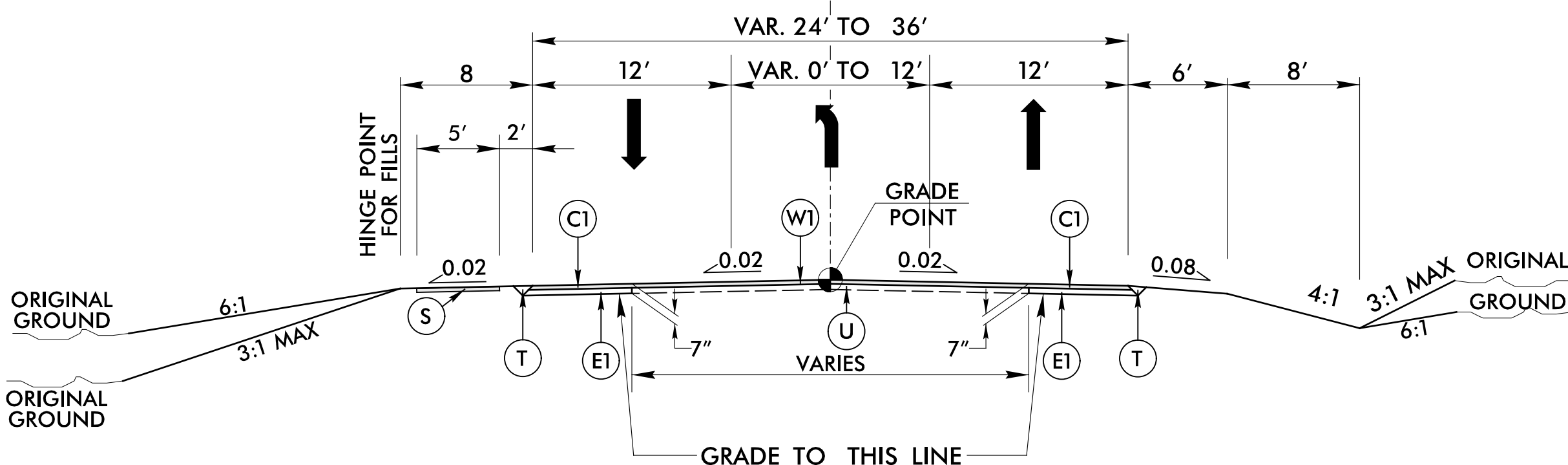


TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12 FOR:

-Y2- STA 11+00.00 TO STA 11+75.00

CL -Y3- (SAVOY DRIVE)



TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13 FOR:

-Y3- STA 10+25.00 TO STA 11+00.00

PAVEMENT SCHEDULE

C1	3" S9.5B
C2	VAR. S9.5B
C3	2" S9.5C
C4	3" S9.5C
C5	VAR. S9.5C
D1	2 1/2" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	5 1/2" B25.0C
E3	VAR. B25.0C
J1	8" ABC
J2	12" ABC
R1	1'-6" C&G
R2	2'-6" C&G
R3	2'-9" C&G
R4	5" MON. ISLAND
R5	4" ISLAND COVER
S	CONC. SIDEWALK
T	EARTH MATERIAL
U	EX. PAVEMENT
V1	INCD. MILLING
V2	2" MILLING
V3	2 1/2" MILLING
W1	WEDGING
W2	WEDGING



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PROJECT REFERENCE NO.

R-4463A

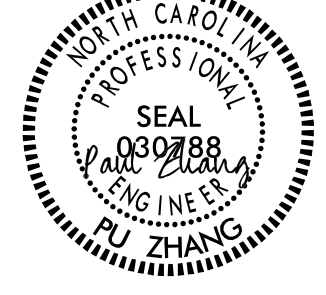
SHEET NO.

2A-5

ROADWAY DESIGN ENGINEER



PAVEMENT DESIGN ENGINEER

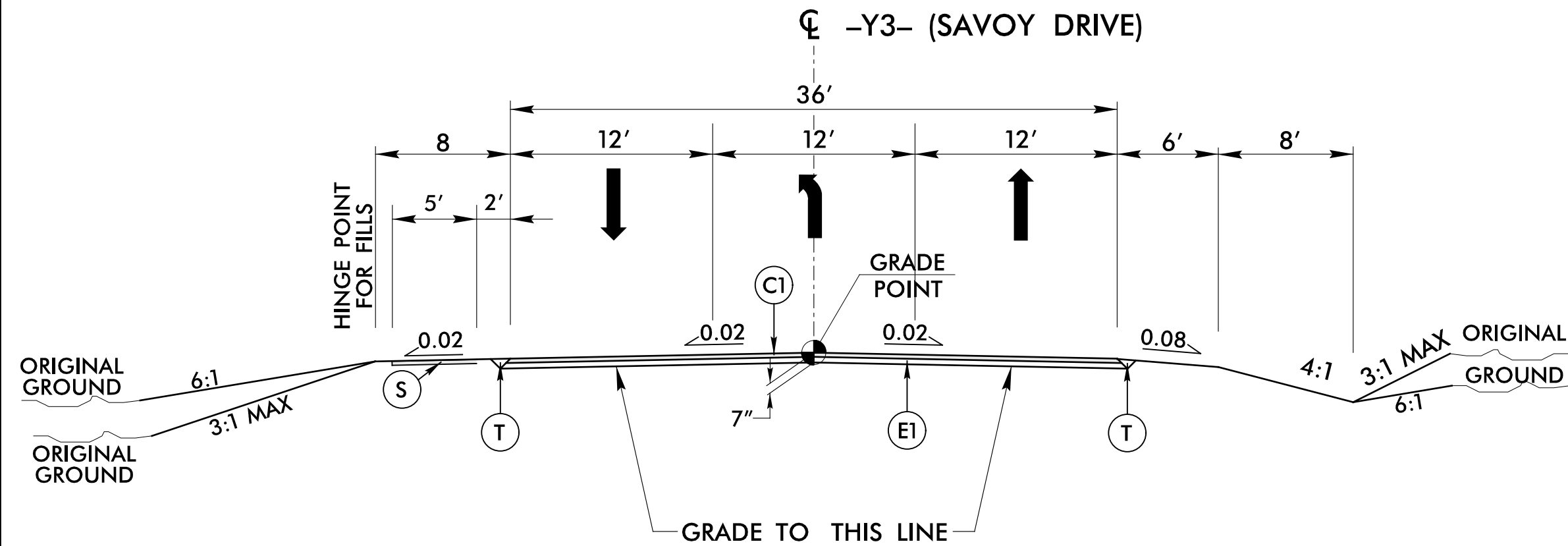


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5/22/2025

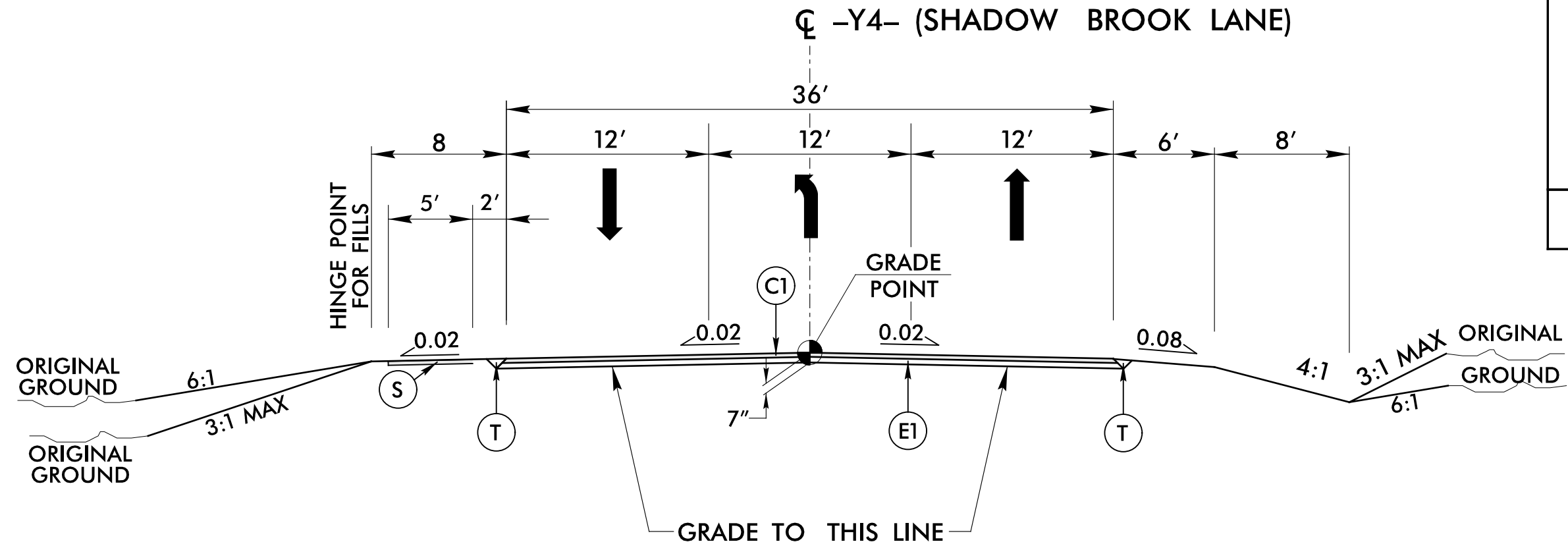
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UNLESS ALL SIGNATURES COMPLETED



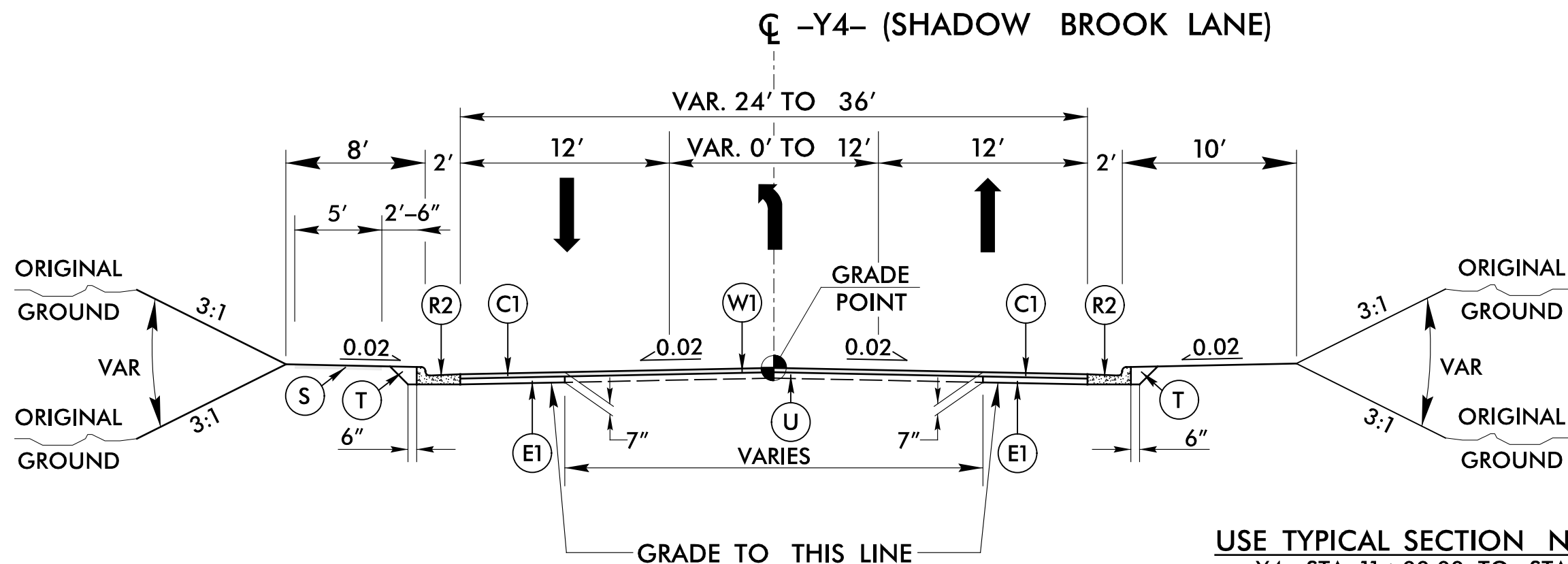
TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14 FOR:
-Y3- STA 11+00.00 TO STA 11+86.06



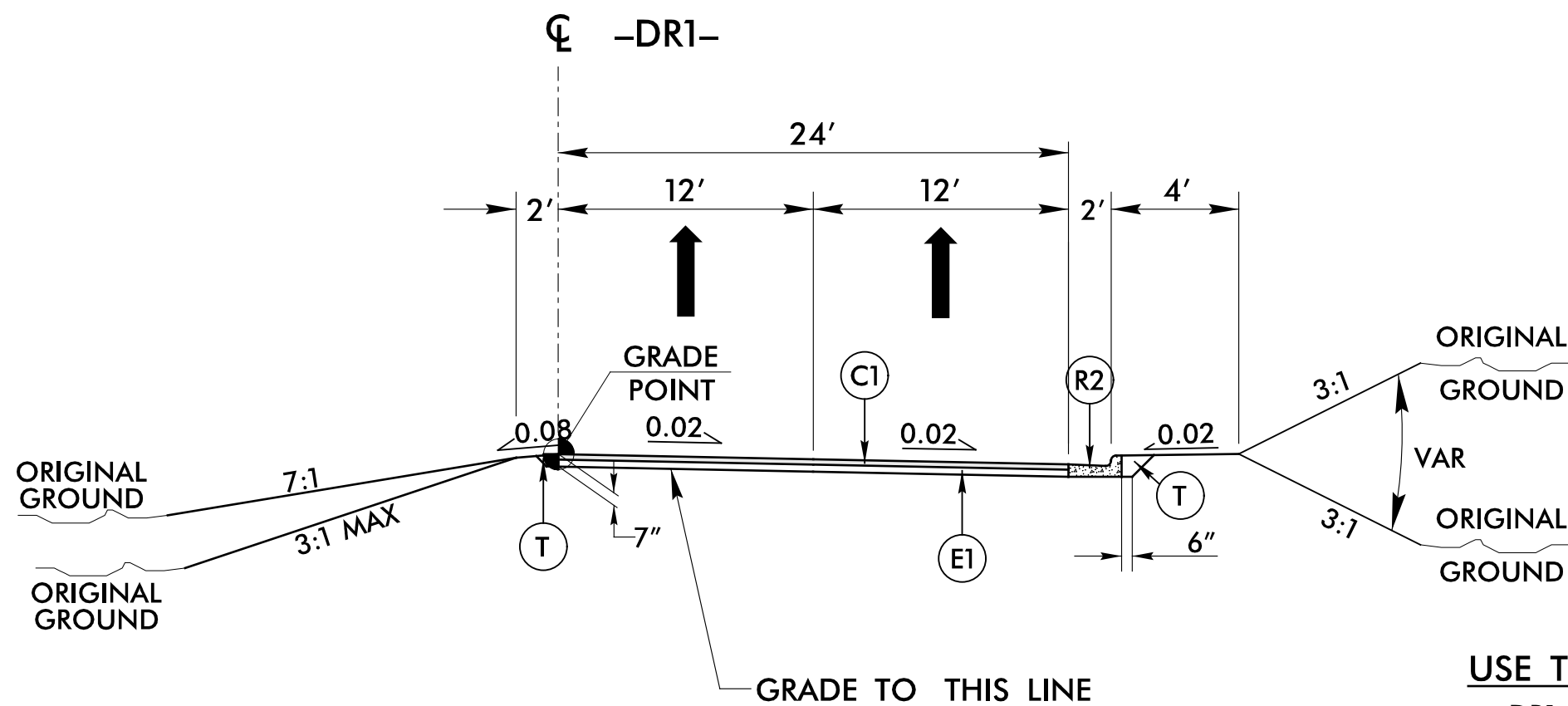
TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15 FOR:
-Y4- STA 10+39.01 TO STA 11+00.00



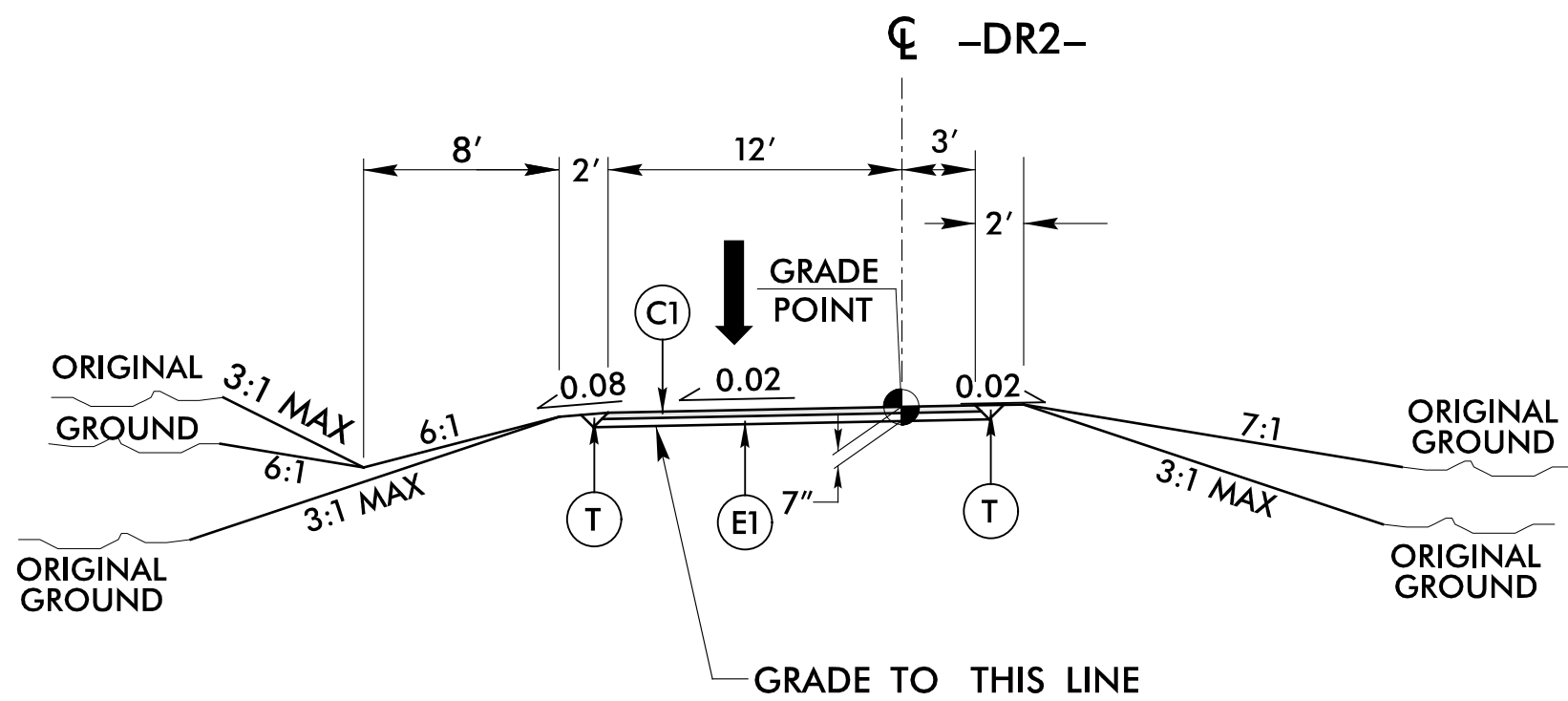
TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16 FOR:
-Y4- STA 11+00.00 TO STA 12+00.00



TYPICAL SECTION NO. 17

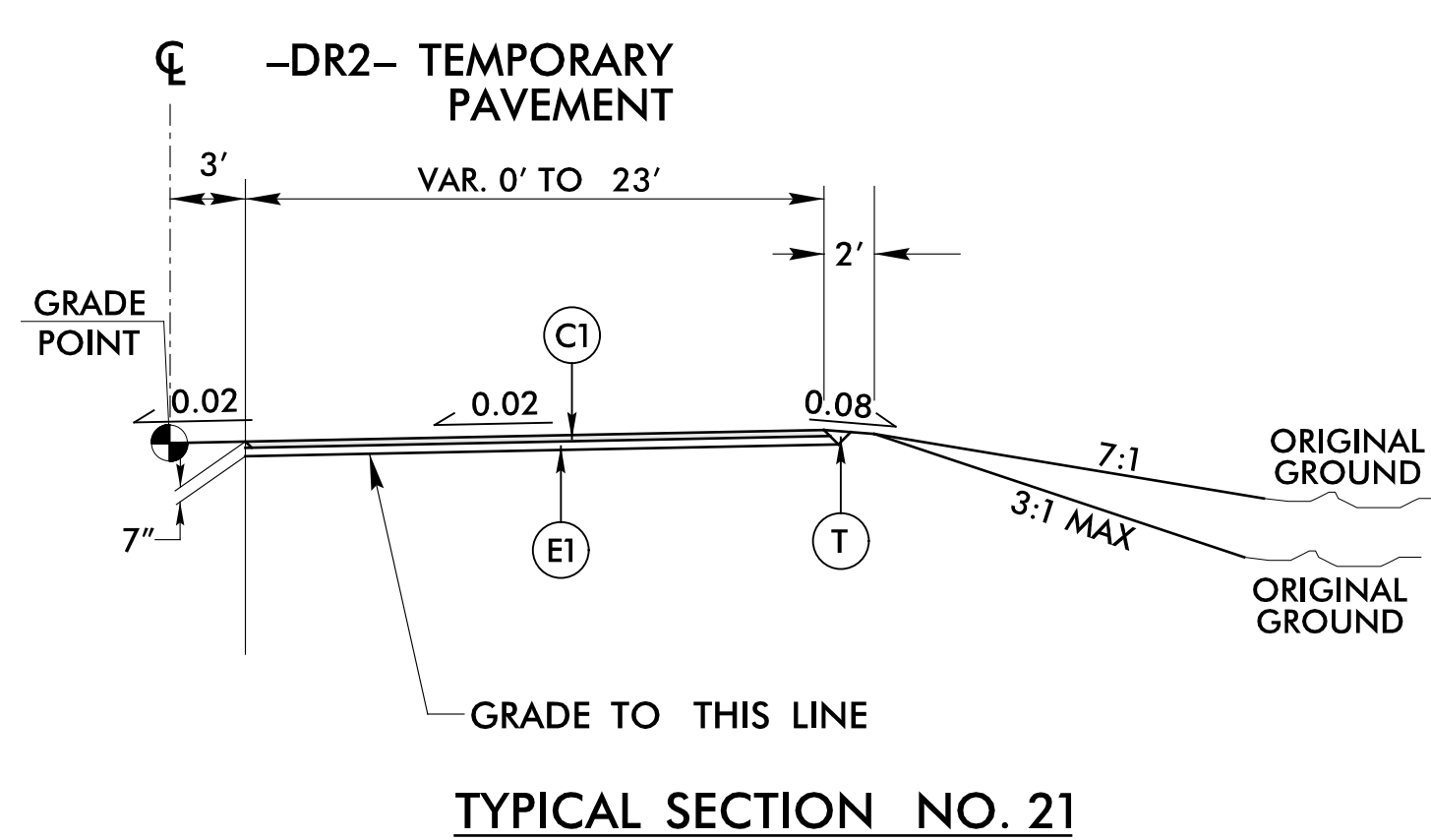
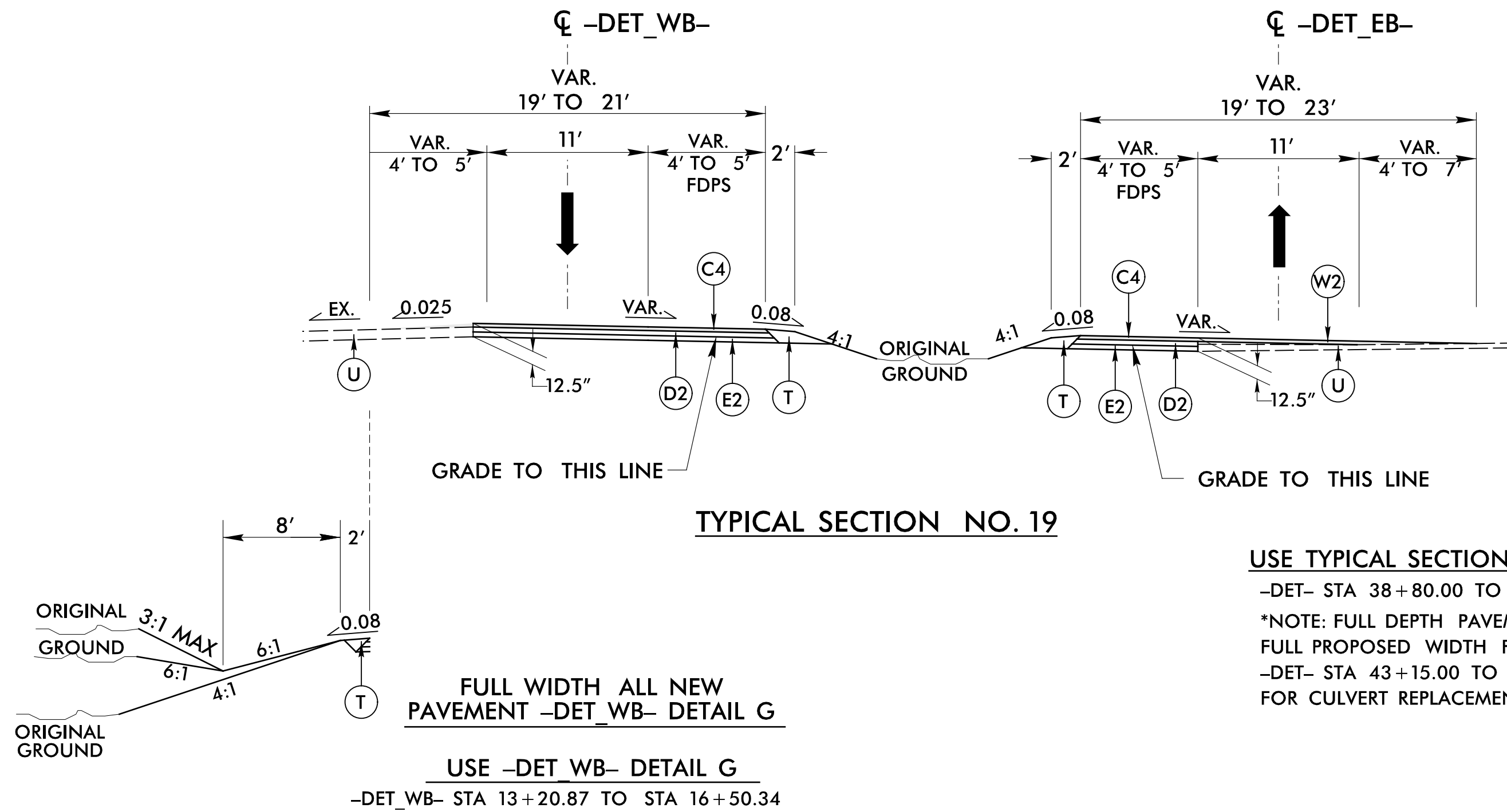
USE TYPICAL SECTION NO. 17 FOR:
-DR1- STA 10+50.00 TO STA 13+17.04



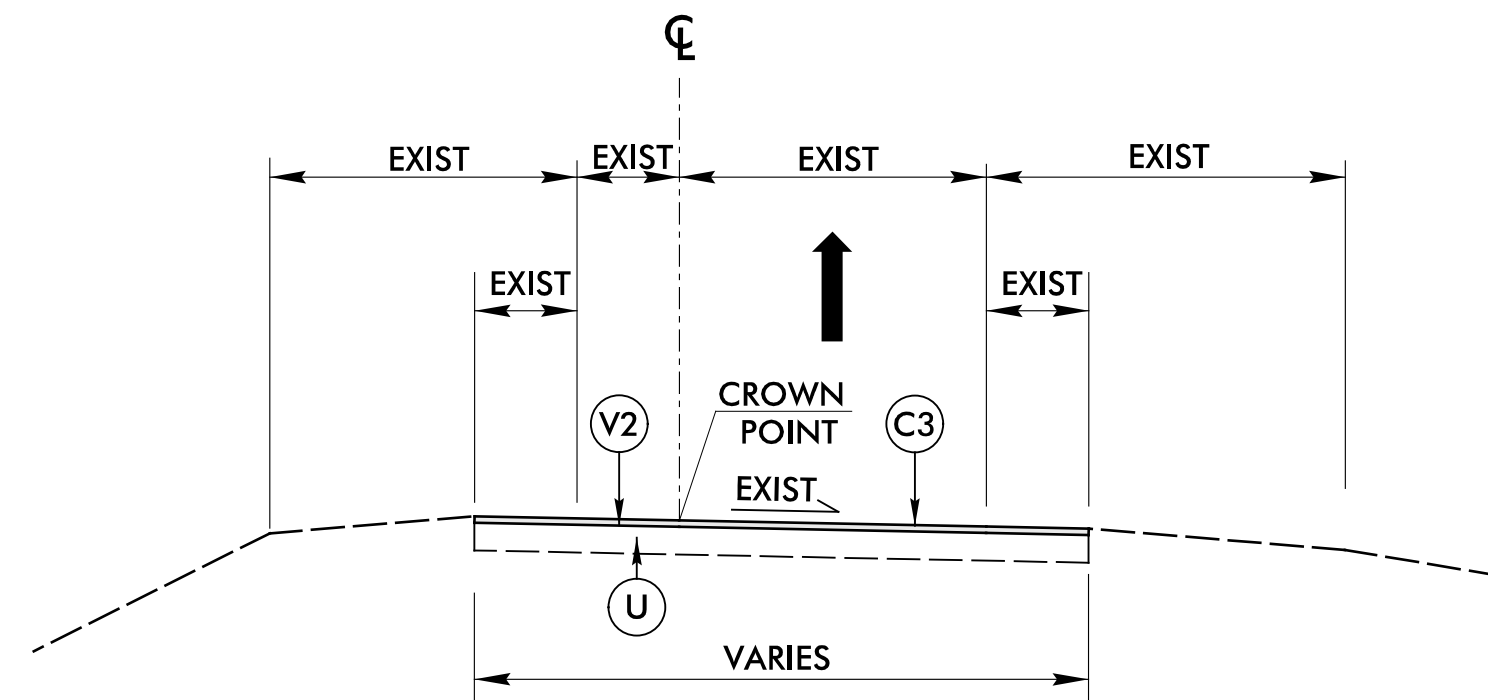
TYPICAL SECTION NO. 18

USE TYPICAL SECTION NO. 18 FOR:
-DR2- STA 10+00.00 TO STA 12+76.23

PAVEMENT SCHEDULE	
C1	3" S9.5B
C2	VAR. S9.5B
C3	2" S9.5C
C4	3" S9.5C
C5	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	5½" B25.0C
E3	VAR. B25.0C
J1	8" ABC
J2	12" ABC
R1	1'-6" C&G
R2	2'-6" C&G
R3	2'-9" C&G
R4	5" MON. ISLAND
R5	4" ISLAND COVER
S	CONC. SIDEWALK
T	EARTH MATERIAL
U	EX. PAVEMENT
V1	INCD. MILLING
V2	2" MILLING
V3	2½" MILLING
W1	WEDGING
W2	WEDGING

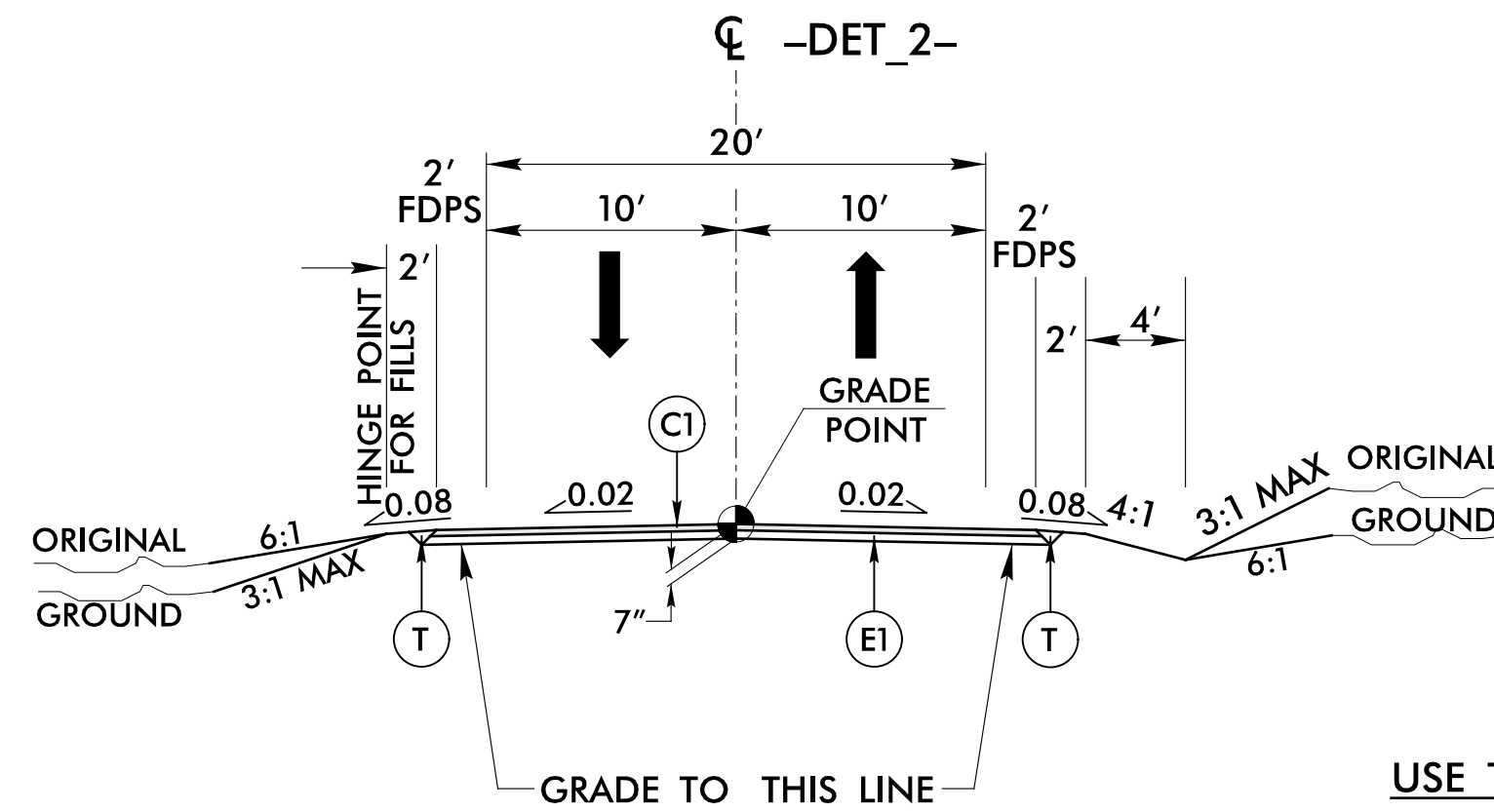


USE TYPICAL SECTION NO. 21 FOR:
-DR2- STA 10+59.02 TO STA 12+34.29

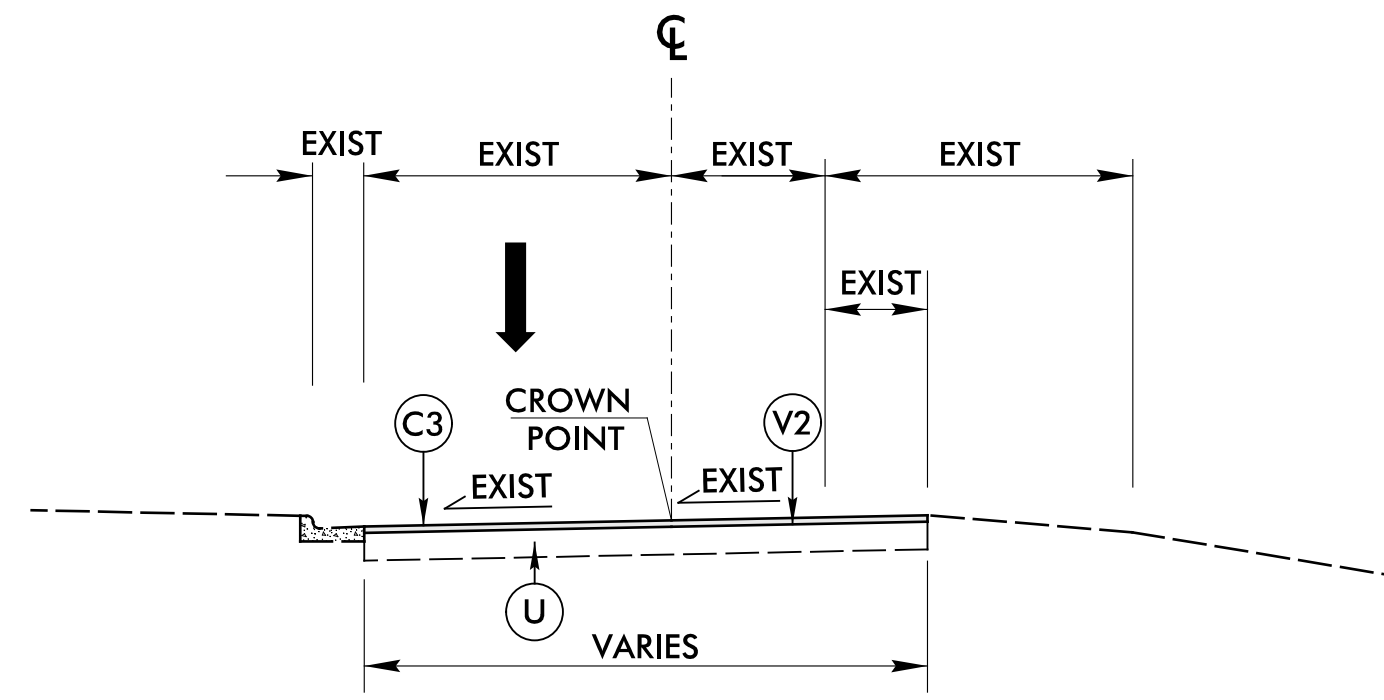


TYPICAL SECTION NO. 22

USE TYPICAL SECTION NO. 22 FOR:
 US 70 TO NC 43 RAMP MILL/FILL
 TIE TO I-6002 PROJECT LIMITS
 (BY OTHERS)

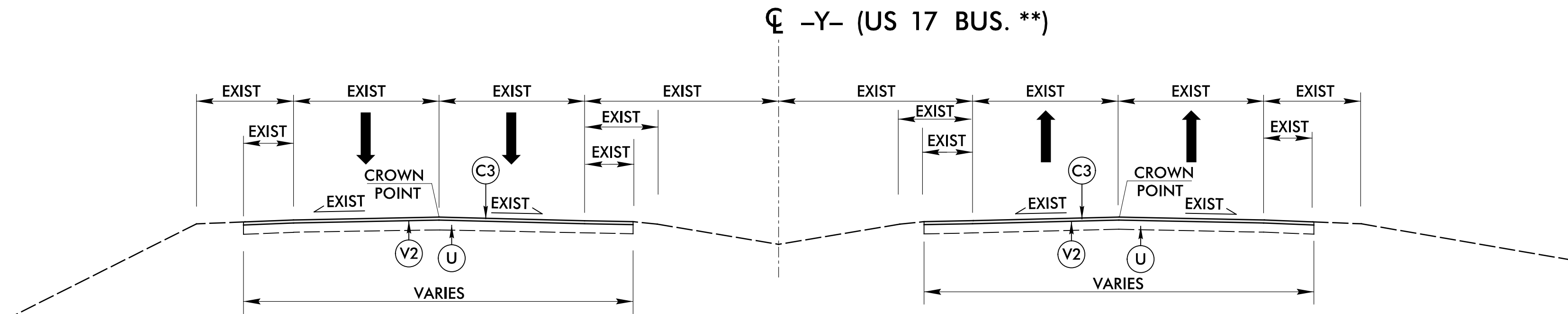


USE TYPICAL SECTION NO. 20 FOR:
-DET_2- STA 11+03.05 TO STA 12+06.48



TYPICAL SECTION NO. 23

USE TYPICAL SECTION NO. 23 FOR:
US 70 TO NC 43 LOOP MILL/FILL
TIE TO I-6002 PROJECT LIMITS
(BY OTHERS)



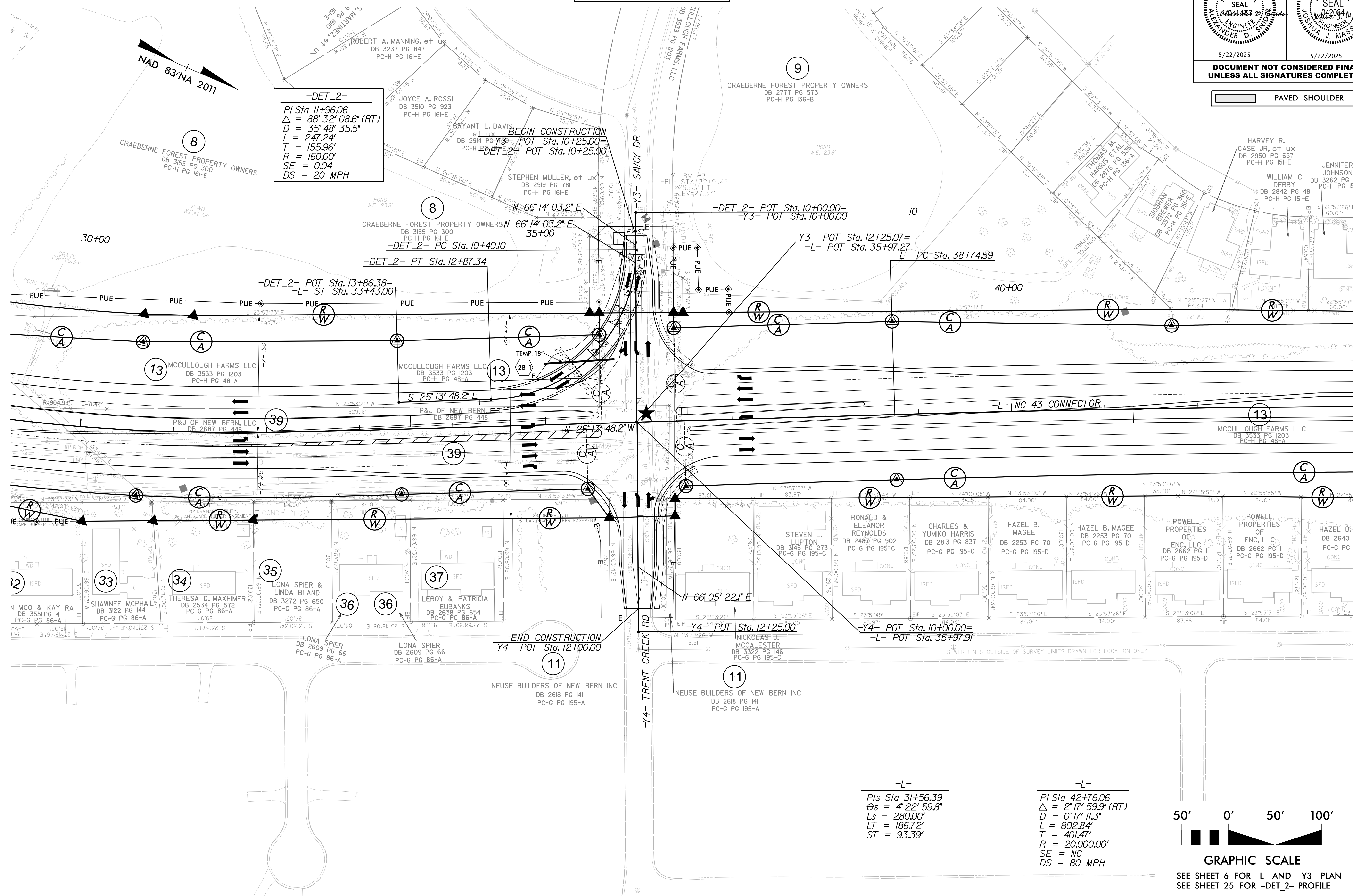
TYPICAL SECTION NO. 24

USE TYPICAL SECTION NO. 24 FOR:
 -Y- STA 10+90.00 TO STA 14+40.00
 -Y- STA 48+25.00 TO 1310' EAST
 ** (TIE TO EXISTING MARKINGS)

PROJECT REFERENCE NO.		SHEET NO.	
R-4463A		2A-6	
ROADWAY DESIGN ENGINEER		PAVEMENT DESIGN ENGINEER	
			
5/22/2025		5/22/2025	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

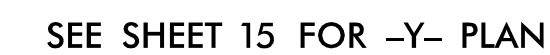
PAVEMENT SCHEDULE	
C1	3" S9.5B
C2	VAR. S9.5B
C3	2" S9.5C
C4	3" S9.5C
C5	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	5½" B25.0C
E3	VAR. B25.0C
J1	8" ABC
J2	12" ABC
R1	1'-6" C&G
R2	2'-6" C&G
R3	2'-9" C&G
R4	5" MON. ISLAND
R5	4" ISLAND COVER
S	CONC. SIDEWALK
T	EARTH MATERIAL
U	EX. PAVEMENT
V1	INCID. MILLING
V2	2" MILLING
V3	2½" MILLING
W1	WEDGING
W2	WEDGING

–DET 2–



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N.C.B.E.L.S. License Number: F-0116

 PAVED SHOULDER



PLOT DRIVER: nodot_eng.pdf_fullsize.plt
USER: ASWIDER
FILE: R4463A_RDY_PSH-2B-3.dgn
PENTABLE: roadway_v8.tbl
DATE: 2/18/2025
TIME: 11:58:22 AM



HDR Engineering, Inc. of the Carolinas

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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.

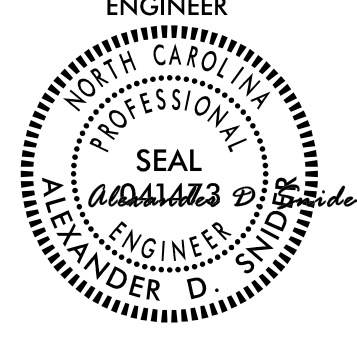
R-4463A

SHEET NO.

2B-3

R/W SHEET NO.

ROADWAY DESIGN ENGINEER



5/22/2025

DOCUMENT NOT CONSIDERED FINAL

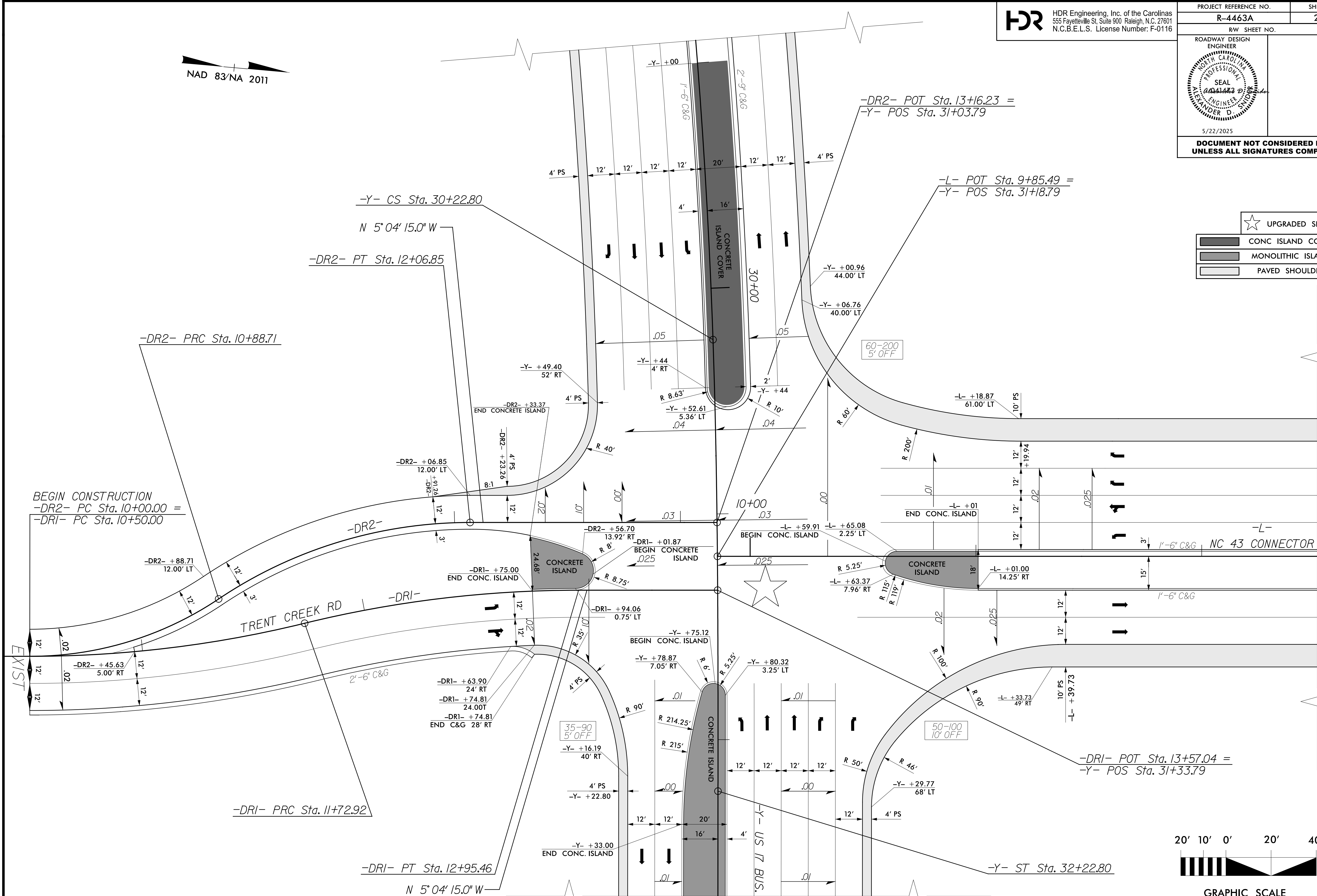
UNLESS ALL SIGNATURES COMPLETED

☆ UPGRADED SIGNAL

CONC ISLAND COVER

MONOLITHIC ISLAND

PAVED SHOULDER

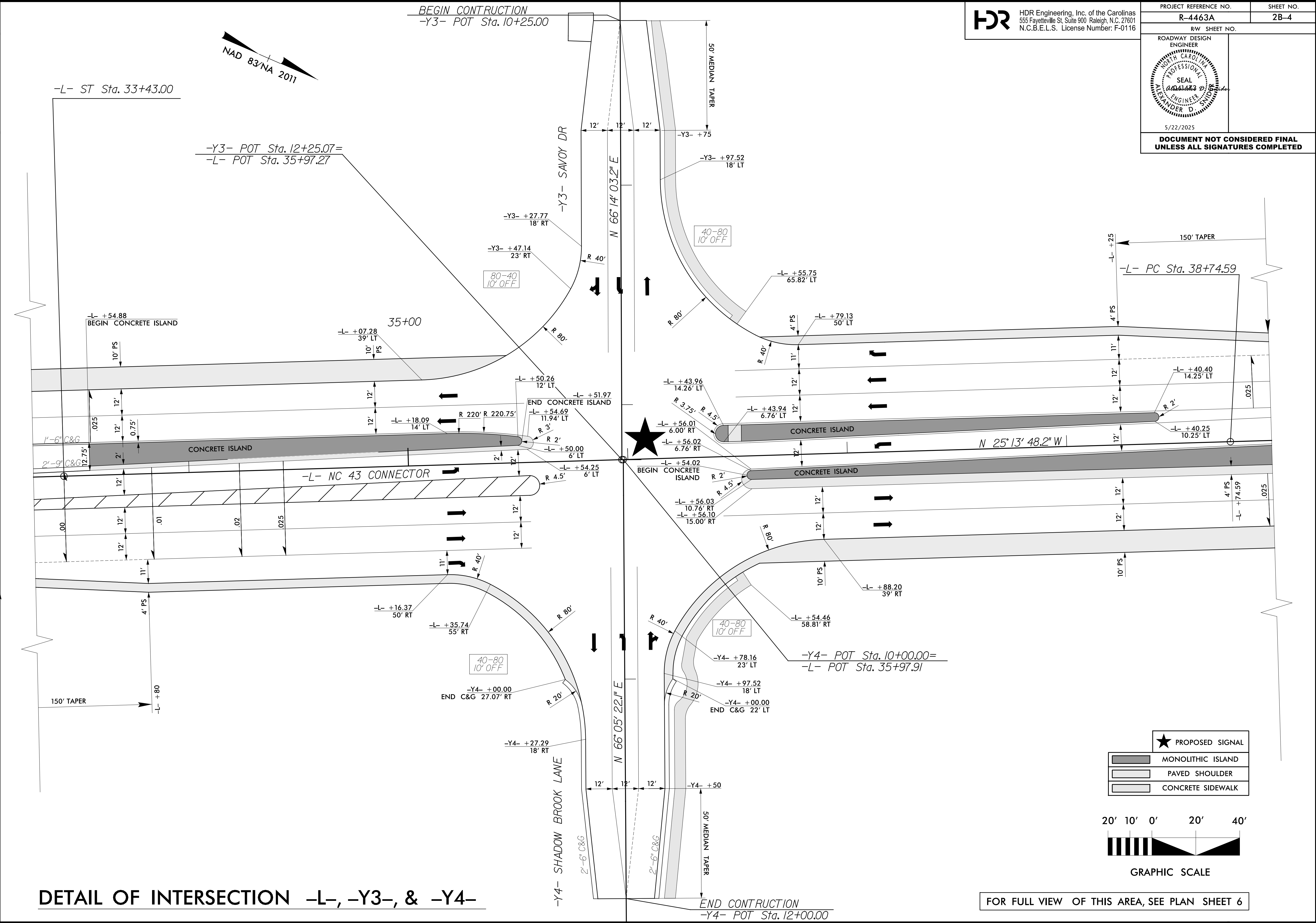


DETAIL OF INTERSECTION -L-, -Y-, -DRI-, & -DR2-

FOR FULL VIEW OF THIS AREA, SEE PLAN SHEET 4

PLOT DRIVER: nodot_eng.pdf_fulsize.plt
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PENTABLE: roadway_v8.tbl
DATE: 2/18/2025
TIME: 7:08:08 PM

DETAIL OF INTERSECTION -L-, -Y3-, & -Y4-



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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO. R-4463A		SHEET NO. 2B-4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER			
5/22/2025			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

FOR FULL VIEW OF THIS AREA, SEE PLAN SHEET 6

PLOT DRIVER: nodot_eng.pdf_fullsize.plt
USER: ASNIDER
FILE: R4463A_RDY_PSH-2B-5.dgn
PENTABLE: roadway_v8.tbl
DATE: 2/18/2025
TIME: 11:58:32 AM



HDR Engineering, Inc. of the Carolinas

555 Fayetteville St, Suite 900 Raleigh, N.C. 27601

N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.

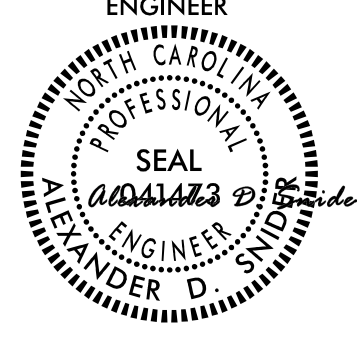
R-4463A

SHEET NO.

2B-5

R/W SHEET NO.

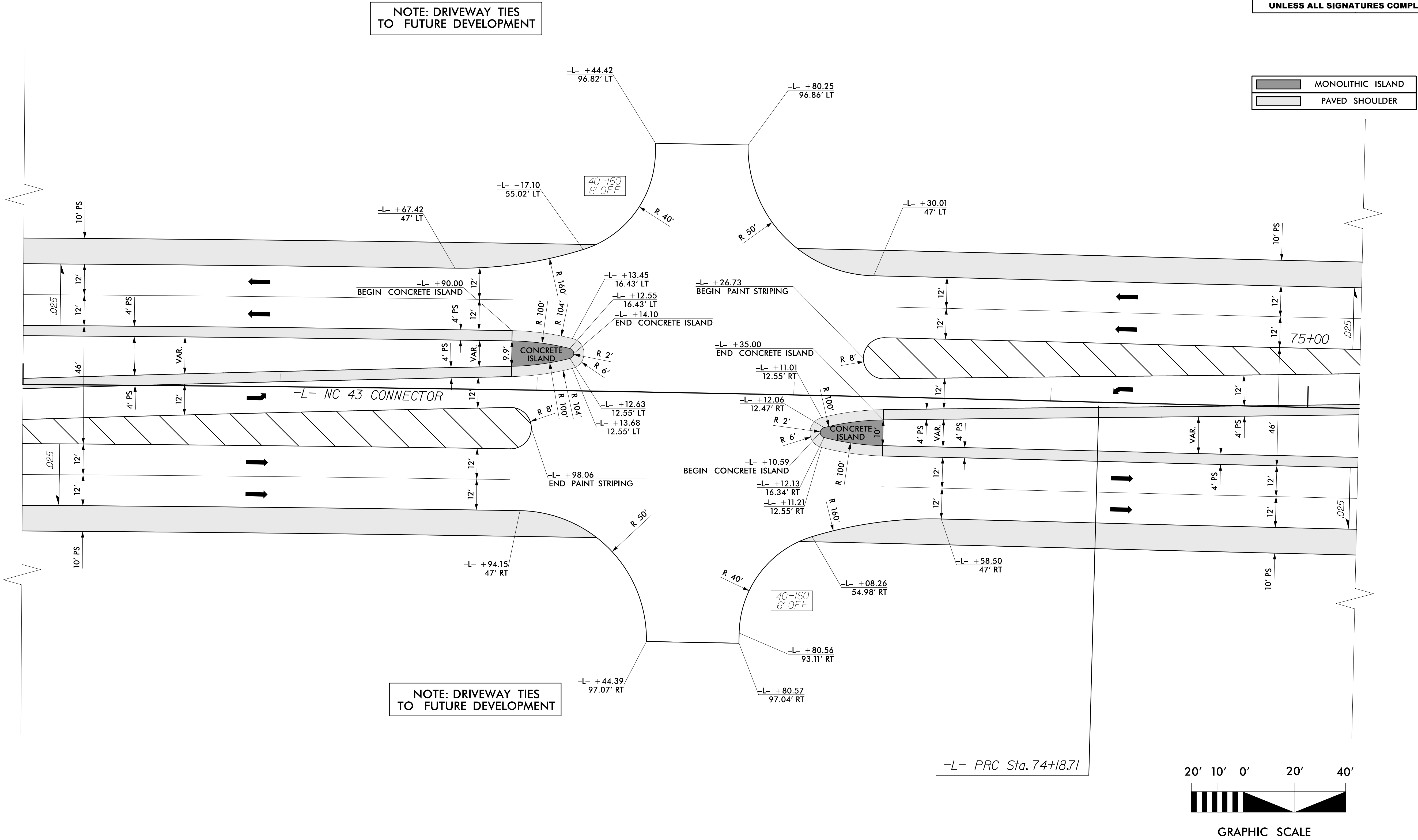
ROADWAY DESIGN ENGINEER



5/22/2025

DOCUMENT NOT CONSIDERED FINAL

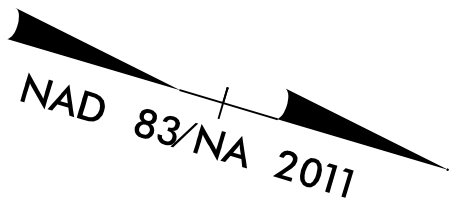
UNLESS ALL SIGNATURES COMPLETED



DETAIL OF INTERSECTION

PLOT DRIVER: nodot_eng.pdf_fulsize.plt
PENTABLE: roadway_v8.tbl
USER: ASNIDER
DATE: 2/18/2025
FILE: R4463A_RDY_PSH-2B-6.dgn

REVISIONS



HDR Engineering, Inc. of the Carolinas
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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.

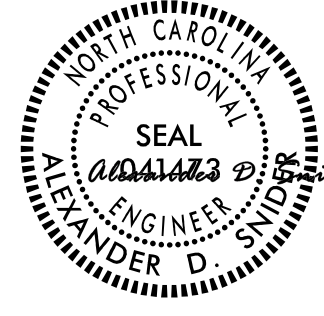
R-4463A

SHEET NO.

2B-6

R/W SHEET NO.

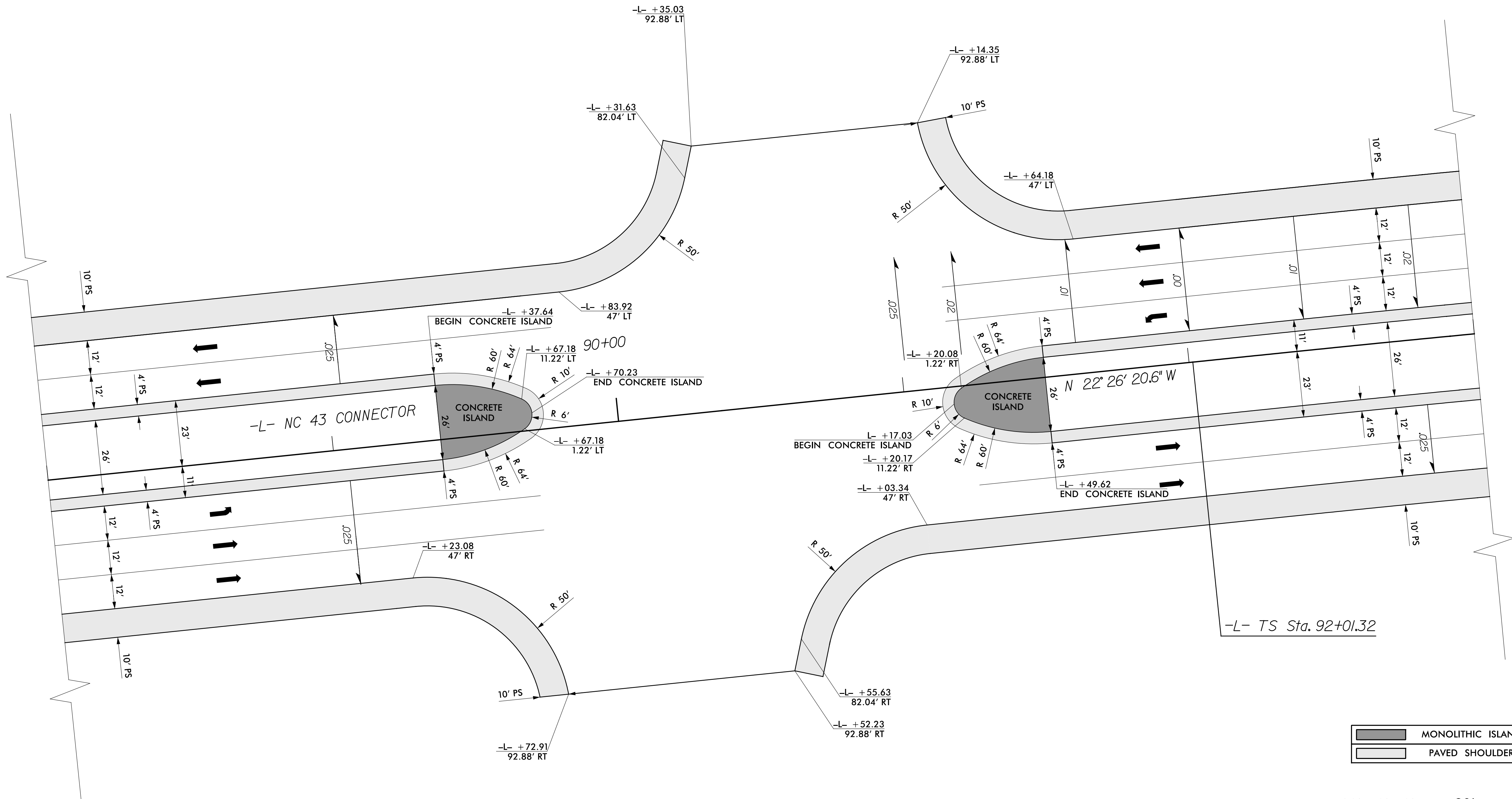
ROADWAY DESIGN
ENGINEER



5/22/2025

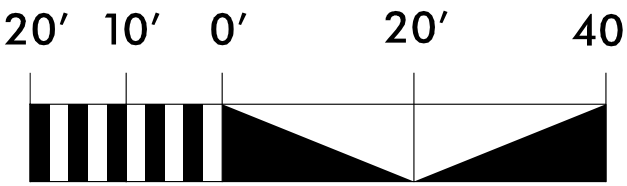
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NOTE: DRIVEWAY TIES
TO FUTURE DEVELOPMENT



NOTE: DRIVEWAY TIES
TO FUTURE DEVELOPMENT

	MONOLITHIC ISLAND
	PAVED SHOULDER



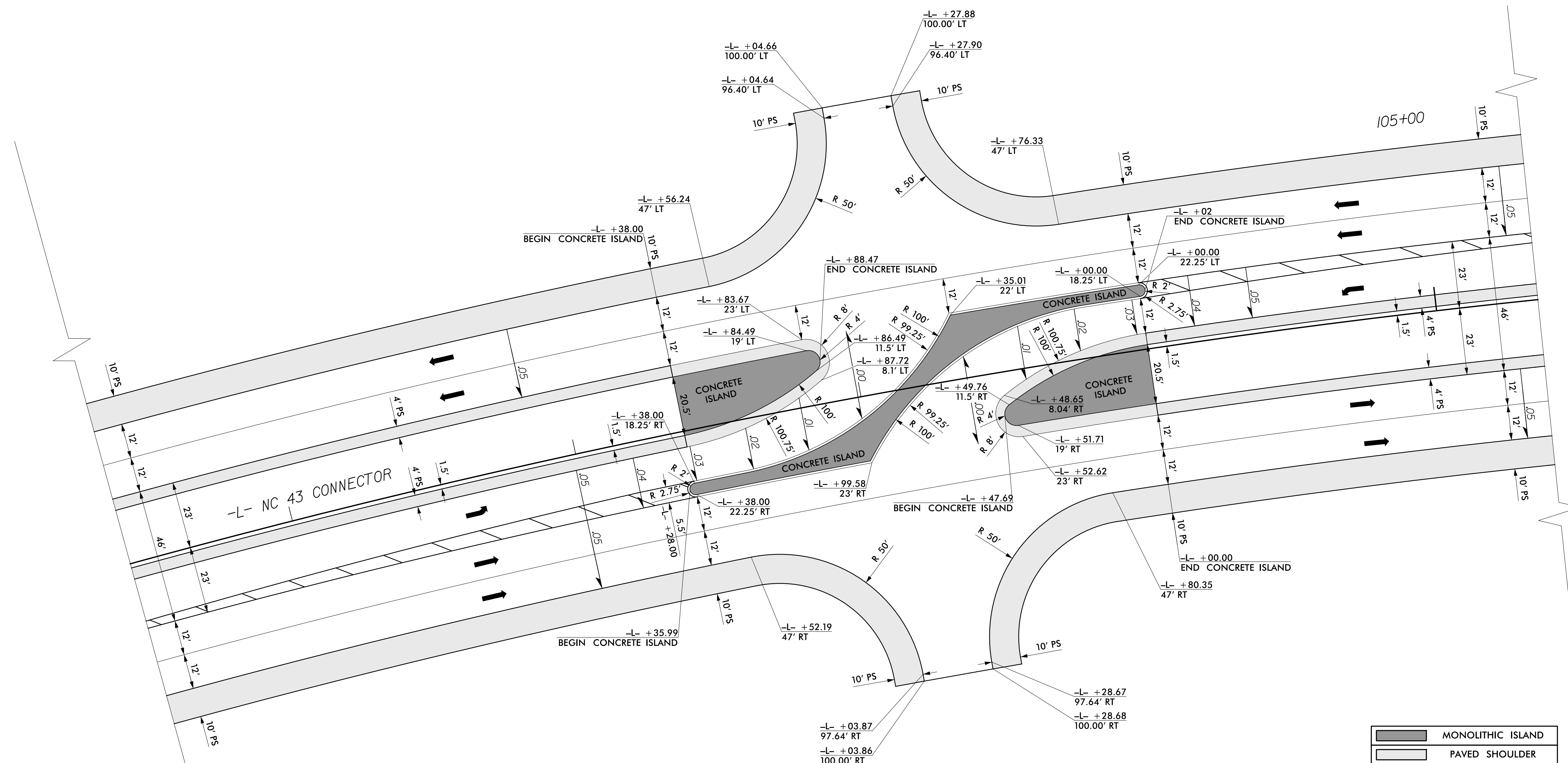
GRAPHIC SCALE

FOR FULL VIEW OF THIS AREA, SEE PLAN SHEET 10

DETAIL OF INTERSECTION

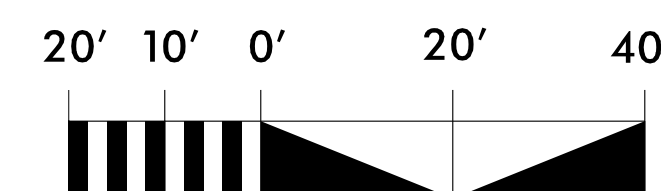
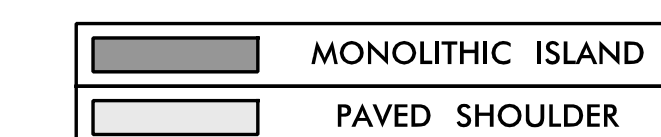
**NOTE: DRIVEWAY TIES
TO FUTURE DEVELOPMENT**

NAD 83/NA 2011



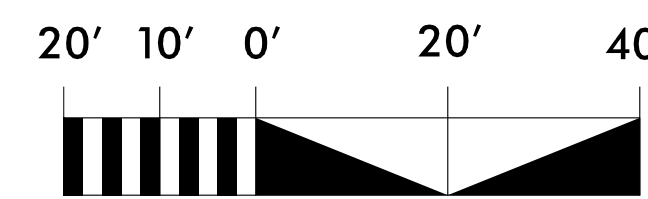
**NOTE: DRIVEWAY TIES
TO FUTURE DEVELOPMENT**

DETAIL OF INTERSECTION



GRAPHIC SCALE

FOR FULL VIEW OF THIS AREA, SEE PLAN SHEET 11



GRAPHIC SCALE

FOR FULL VIEW OF THIS AREA, SEE PLAN SHEET 12

DETAIL OF INTERSECTION



HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.

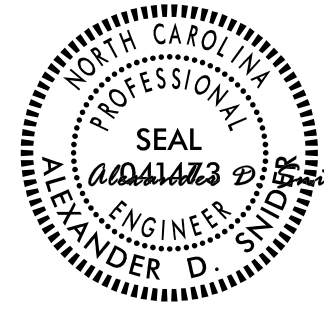
R-4463A

SHEET NO.

2B-9

R/W SHEET NO.

ROADWAY DESIGN
ENGINEER



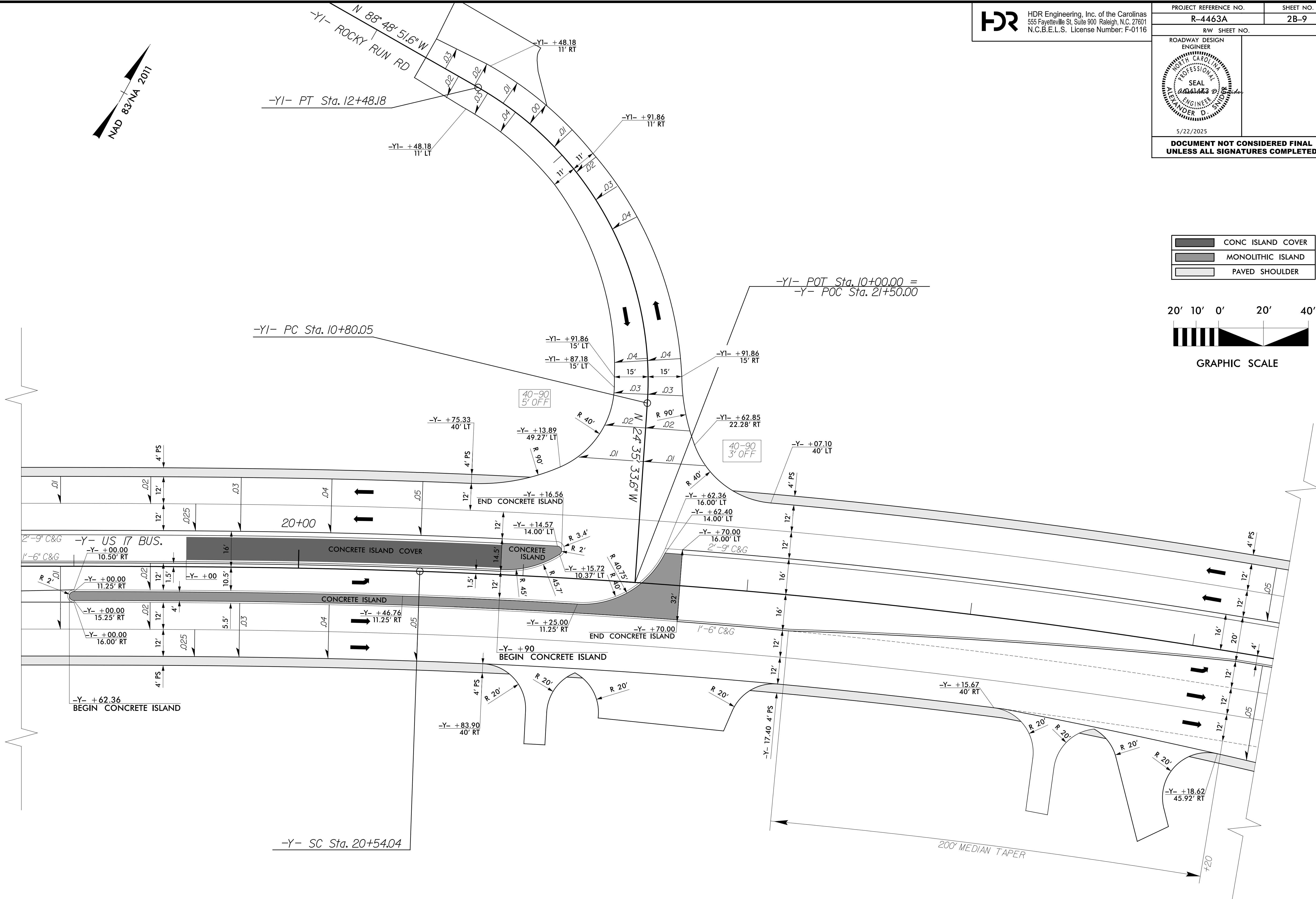
5/22/2025

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	CONC ISLAND COVER
	MONOLITHIC ISLAND
	PAVED SHOULDER



GRAPHIC SCALE



DETAIL OF INTERSECTION -Y- & -Y1-

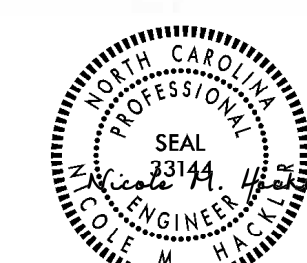
FOR FULL VIEW OF THIS AREA, SEE PLAN SHEET 14

FOR FULL VIEW OF THIS AREA, SEE PLAN SHEET 15

DETAIL OF INTERSECTION



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



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

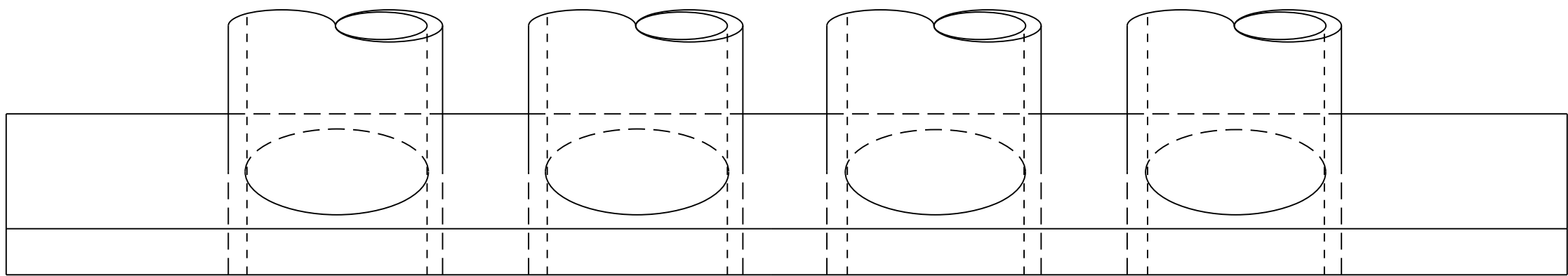
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STATE OF
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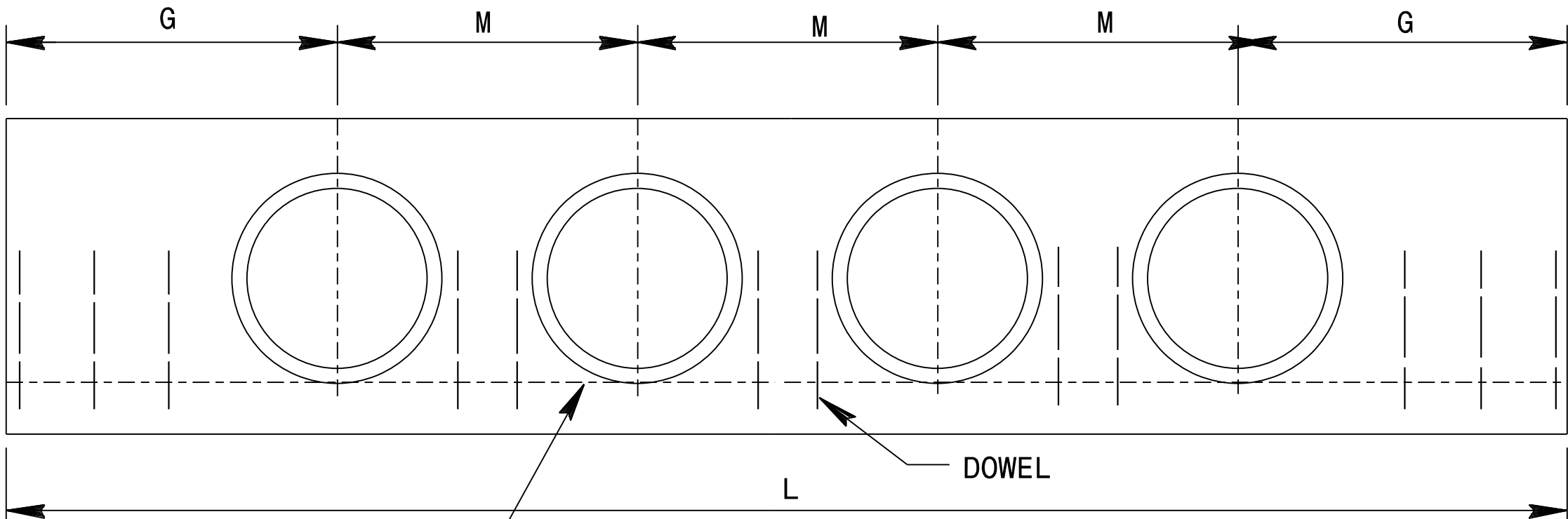
ENGLISH DETAIL DRAWING FOR
**CONCRETE ENDWALL FOR TRIPLE AND
QUADRUPE PIPE CULVERTS**
15" THRU 48" PIPE - 90° SKEW

SHEET 1 OF 3

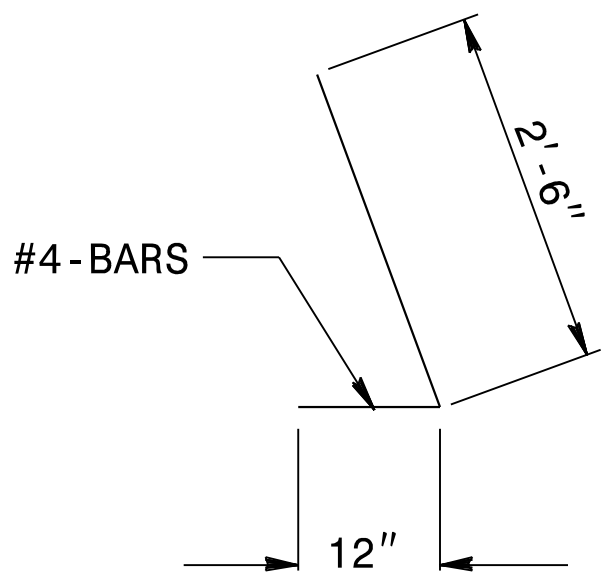
838D01



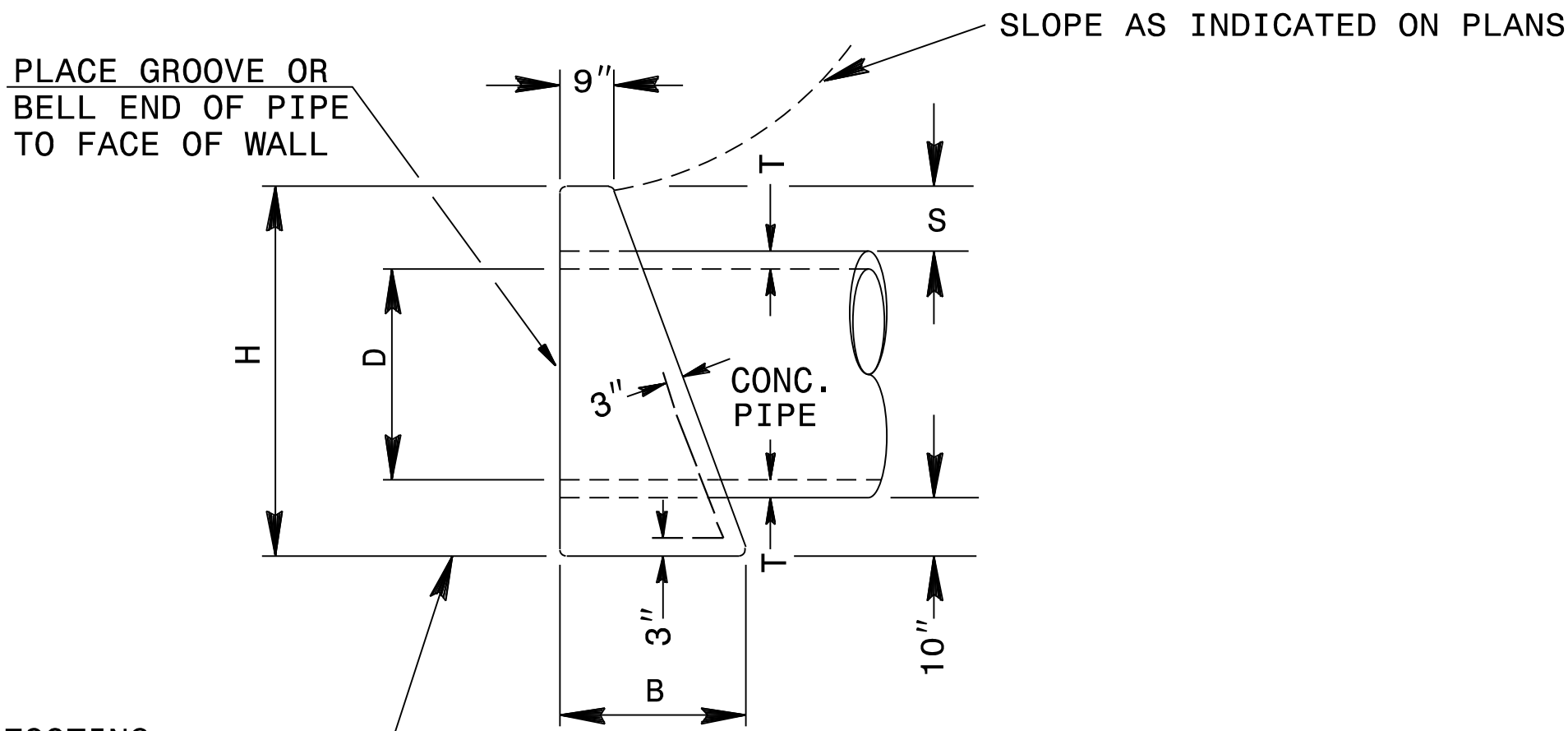
PLAN



ELEVATION



DOWEL
BAR - "X"



END ELEVATION

DIMENSIONS AND CONCRETE QUANTITIES										
USING CONCRETE PIPE										
	COMMON DIMENSIONS					TRIPLE PIPE		QUADRUPLE PIPE		
D	H	B	G	T	S	L	YD ³	L	YD ³	M
15"	3'-3"	1'-8"	2'-9"	2¼"	9½"	9'-10"	1.3	12'-0"	1.6	2'-2"
18"	3'-7"	1'-10"	3'-2"	2½"	10"	11'-6"	1.6	14'-1"	1.9	2'-7"
24"	4'-2"	2'-1"	4'-0"	3"	10"	14'-10"	2.5	18'-3"	3.0	3'-5"
30"	5'-0"	2'-6"	4'-7"	4¼"	11½"	17'-8"	3.9	21'-11"	4.7	4'-3"
36"	5'-8"	2'-8"	5'-6"	4¾"	12½"	21'-0"	5.6	26'-0"	6.7	5'-0"
42"	6'-2"	3'-1"	6'-4"	5¼"	11½"	24'-4"	7.5	30'-2"	9.0	5'-10"
48"	6'-9"	3'-5"	7'-2"	5¾"	11½"	27'-8"	10.0	34'-4"	12.0	6'-8"

* NOTE: SEE ROADWAY STANDARD DRAWING 838.01 SHEET 3 OF 3 FOR GENERAL NOTES

DOWELS IN ENDWALL WITH REINFORCED CONCRETE PIPE																			
	PIPE	TRIPLE PIPE										QUADRUPLE PIPE							
LOC.	DIA.	15"	18"	24"	30"	36"	42"	48"	15"	18"	24"	30"	36"	42"	48"				
	BARS	"X"	"X"	"X"	"X"	"X"	"X"	Y*	"X"	Y*	"X"	"X"	"X"	"X"	"X"	Y*	"X"	Y*	
M(s)	G QTY.	2	2	3	3	4	4	2	5	2	2	2	3	3	4	4	2	5	2
	QTY.	2	2	4	4	4	4		6		3	3	6	6	6	6		9	
	G QTY.	2	2	3	3	4	4		5		2	2	3	3	4	4		5	
TOTAL LBS.		14	14	23	23	28	100		119		17	17	28	28	33	122		147	

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ENGLISH DETAIL DRAWING FOR
**CONCRETE ENDWALL FOR TRIPLE AND
QUADRUPLE PIPE CULVERTS**
15" THRU 48" PIPE - 90° SKEW

SHEET 1 OF 3

838D01

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SEE PLATE FOR TITLE

ORIGINAL BY: E.E. WARD DATE: _____
 MODIFIED BY: K.A. Kempf DATE: _____
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 FILE SPEC.: details/kkempf/english/838d0101.dgn



5/22/2025

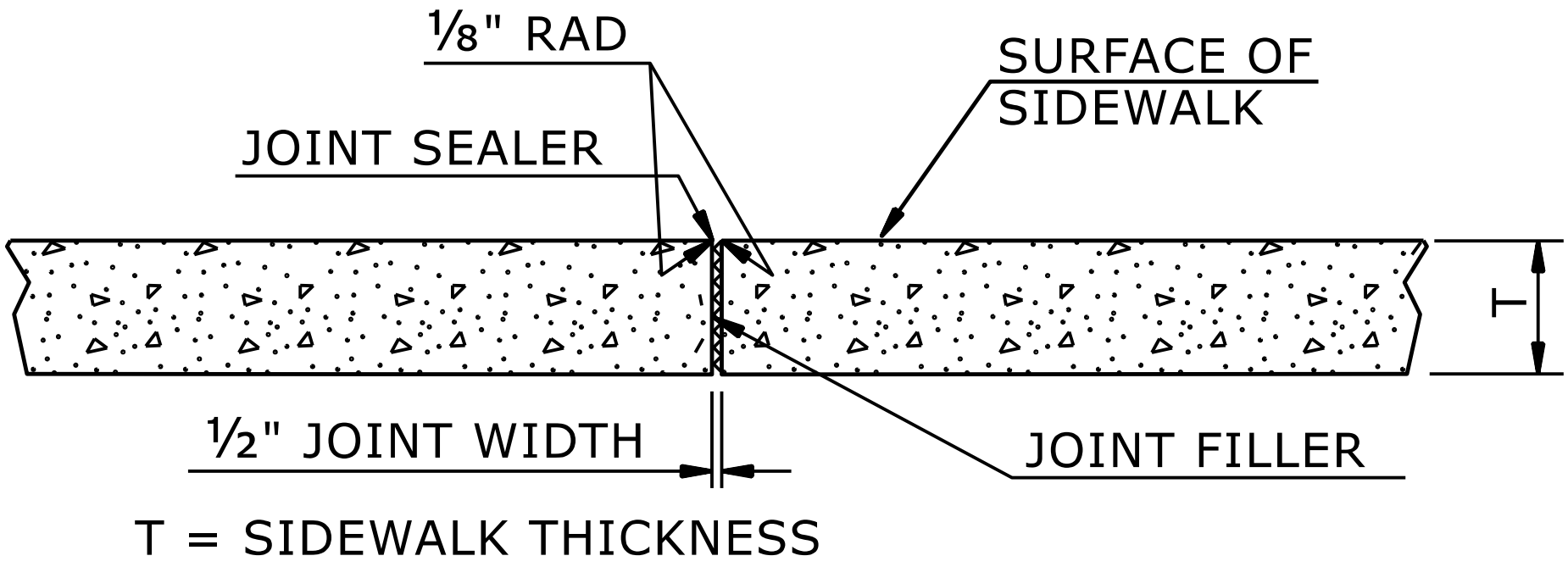
PROJECT REFERENCE NO.	SHEET NO.
R-4463A	2C-3

NOTES:

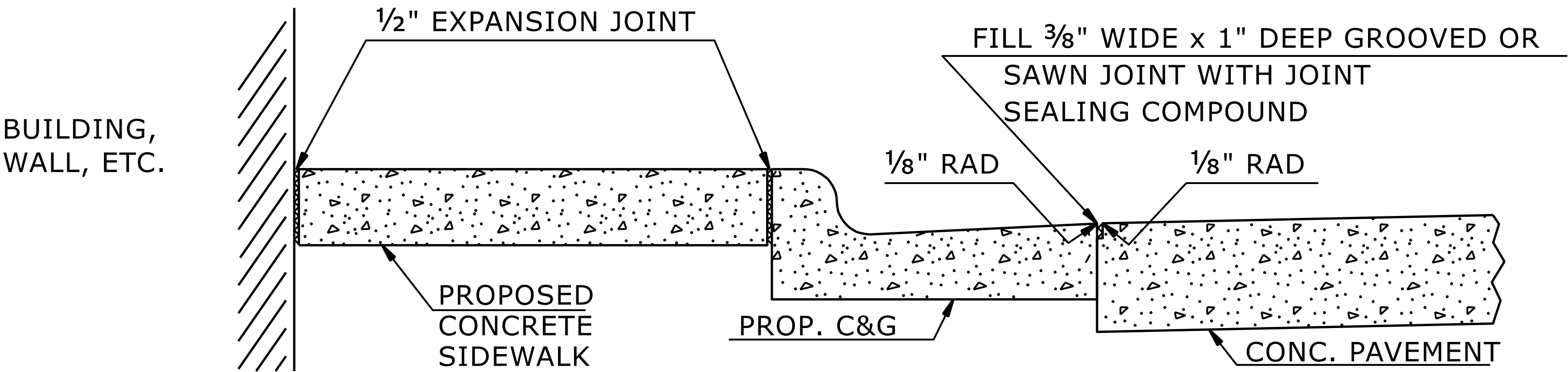
CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4" THICK UNLESS OTHERWISE DENOTED ON PLANS.

PLACE A GROOVE JOINT 1" DEEP WITH 1/8" RADII IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS. A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.

SEE STD. DWG. 848.06 FOR CURB RAMP LOCATION REQUIREMENTS AND CONSTRUCTION GUIDELINES.



TRANSVERSE EXPANSION JOINT
IN SIDEWALK



DETAILS SHOWING JOINTS IN CONCRETE SIDEWALK

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ROADWAY DETAIL DRAWING FOR
CONCRETE SIDEWALK



5/22/2025

SHEET 1 OF 1

848D01

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FILE SPEC.: DATE:

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FLEXIBLE PIPE

SHEET 1 OF 2
300.01

Diagram showing a pipe in a trench with normal earth foundation. The pipe is surrounded by compacted material. Labels include: TOP OF FILL, GROUND LINE, H, I.D. /6 MIN. NOT LESS THAN 6", O.D. + 3', COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL, and NORMAL EARTH FOUNDATION.

Diagram showing a pipe in a trench with a rock foundation. The pipe is surrounded by compacted material, and a rock layer is shown beneath the bedding. Labels include: TOP OF FILL, GROUND LINE, H, I.D. /6 MIN. NOT LESS THAN 6", O.D. + 3', COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL, ROCK, TYPE 4a GEOTEXTILE, I.D. /6 MIN. NOT LESS THAN 6", 1/2" PER FOOT OF 'H' BUT NOT LESS THAN 12" NOR MORE THAN 24" AS DIRECTED BY ENGR., and ROCK FOUNDATION PIPE IN TRENCH.

Diagram showing a pipe in a trench with an unsuitable material foundation. The pipe is surrounded by compacted material, and a layer of unsuitable material is shown beneath the bedding. Labels include: TOP OF FILL, GROUND LINE, H, I.D. /6 MIN. NOT LESS THAN 6", O.D. + 3', COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL, EARTH, TYPE 4a GEOTEXTILE, I.D. /6 MIN. NOT LESS THAN 6", 1/2" PER FOOT OF 'H' BUT NOT LESS THAN 12" NOR MORE THAN 24" AS DIRECTED BY ENGR., and UNSUITABLE MATERIAL FOUNDATION.

Diagram showing a pipe above ground with normal earth foundation. The pipe is surrounded by compacted material. Labels include: TOP OF FILL, GROUND LINE, H, MIN. O.D., 1:1, COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL, I.D. /6 MIN. NOT LESS THAN 6", O.D. + 2', and NORMAL EARTH FOUNDATION.

Diagram showing a pipe above ground with a rock foundation. The pipe is surrounded by compacted material, and a rock layer is shown beneath the bedding. Labels include: TOP OF FILL, GROUND LINE, H, MIN. O.D., 1:1, COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL, I.D. /6 MIN. NOT LESS THAN 6", O.D. + 2', TYPE 4a GEOTEXTILE, I.D. /6 MIN. NOT LESS THAN 6", 1/2" PER FOOT OF 'H' BUT NOT LESS THAN 12" NOR MORE THAN 24" AS DIRECTED BY ENGINEER, and ROCK FOUNDATION PIPE ABOVE GROUND.

Diagram showing a pipe above ground with an unsuitable material foundation. The pipe is surrounded by compacted material, and a layer of unsuitable material is shown beneath the bedding. Labels include: TOP OF FILL, GROUND LINE, H, MIN. O.D., 1:1, COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL, I.D. /6 MIN. NOT LESS THAN 6", O.D. + 2', TYPE 4a GEOTEXTILE, I.D. /6 MIN. NOT LESS THAN 6", 1/2" PER FOOT OF 'H' BUT NOT LESS THAN 12" NOR MORE THAN 24" AS DIRECTED BY ENGINEER, and UNSUITABLE MATERIAL FOUNDATION.

GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.



5/22/2025

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AND DEVELOPMENT UNIT

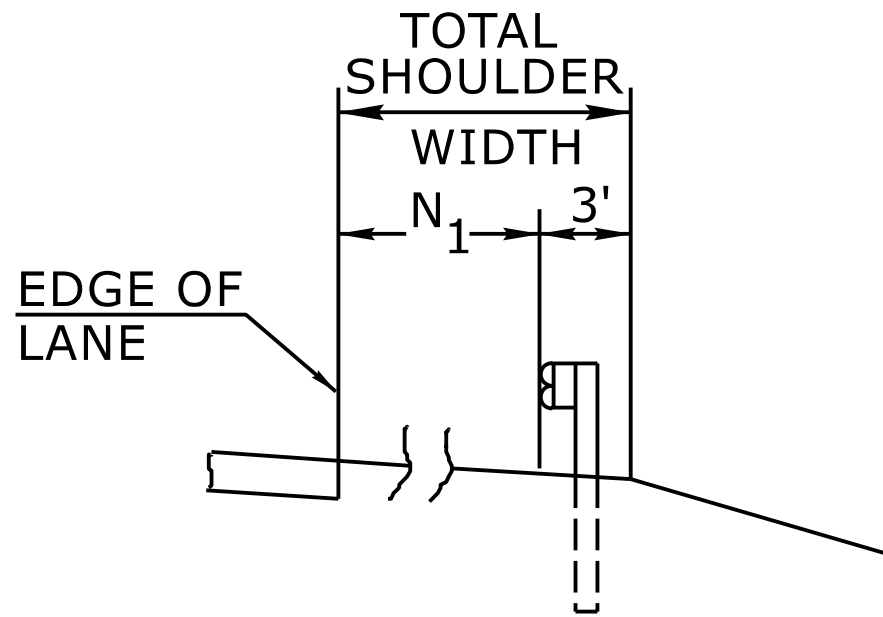
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FAX 919-250-4119

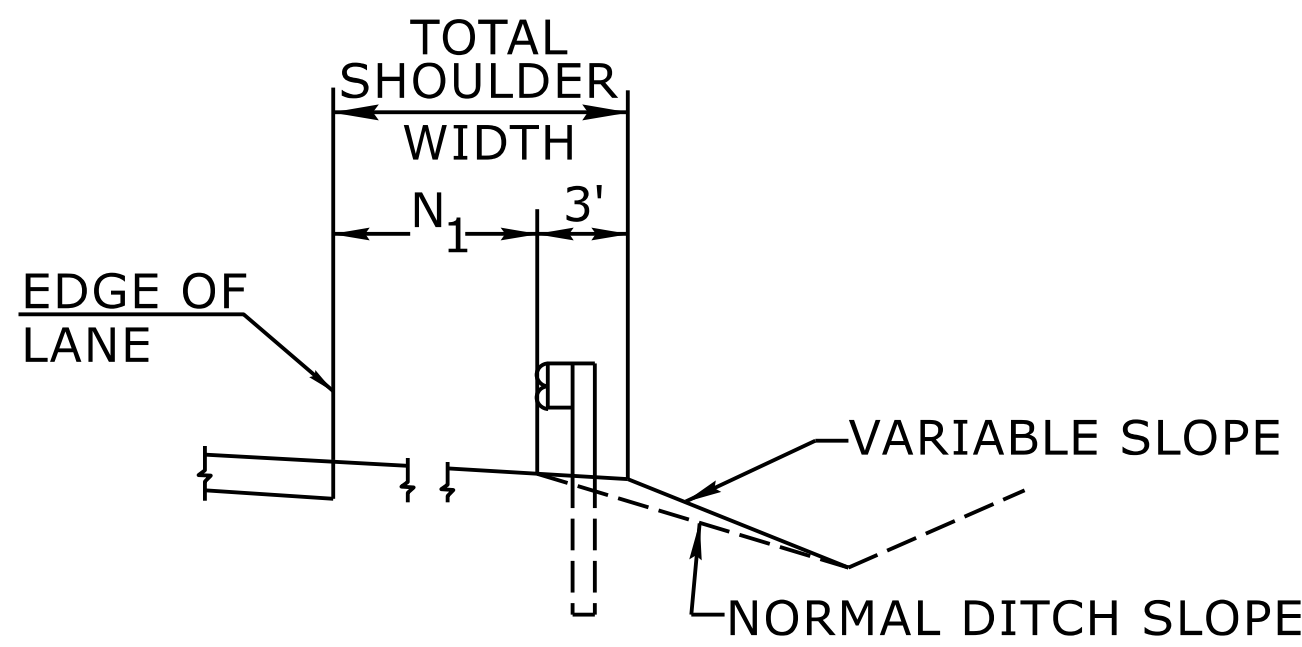
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CHECKED BY:		DATE:	
FILE SPEC.:			

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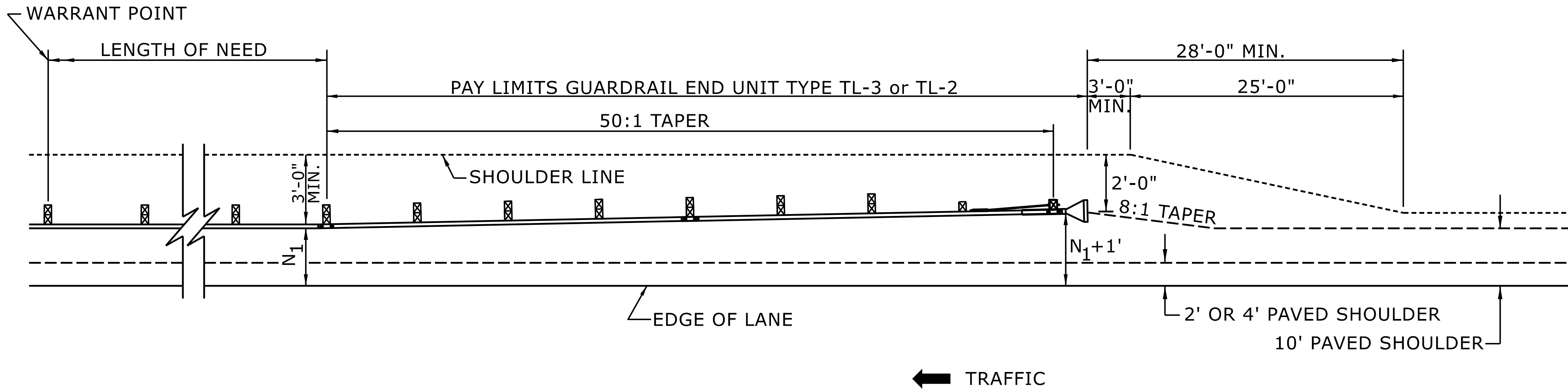


FILL SECTION



CUT SECTION

"N₁"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



5/22/2025

SHEET 6 OF 15
862D01

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ORIGINAL BY: S.CALHOUN	DATE: 7-25-2024
MODIFIED BY:	DATE:
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FILE SPEC.:	



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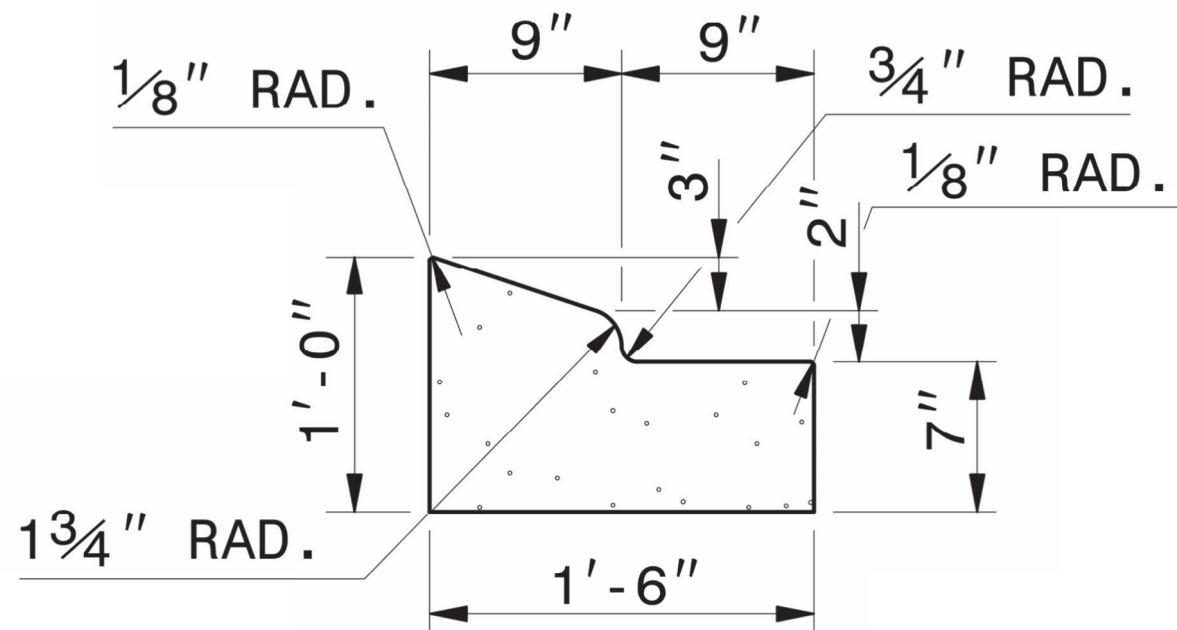
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MODIFIED BY: _____	DATE: _____
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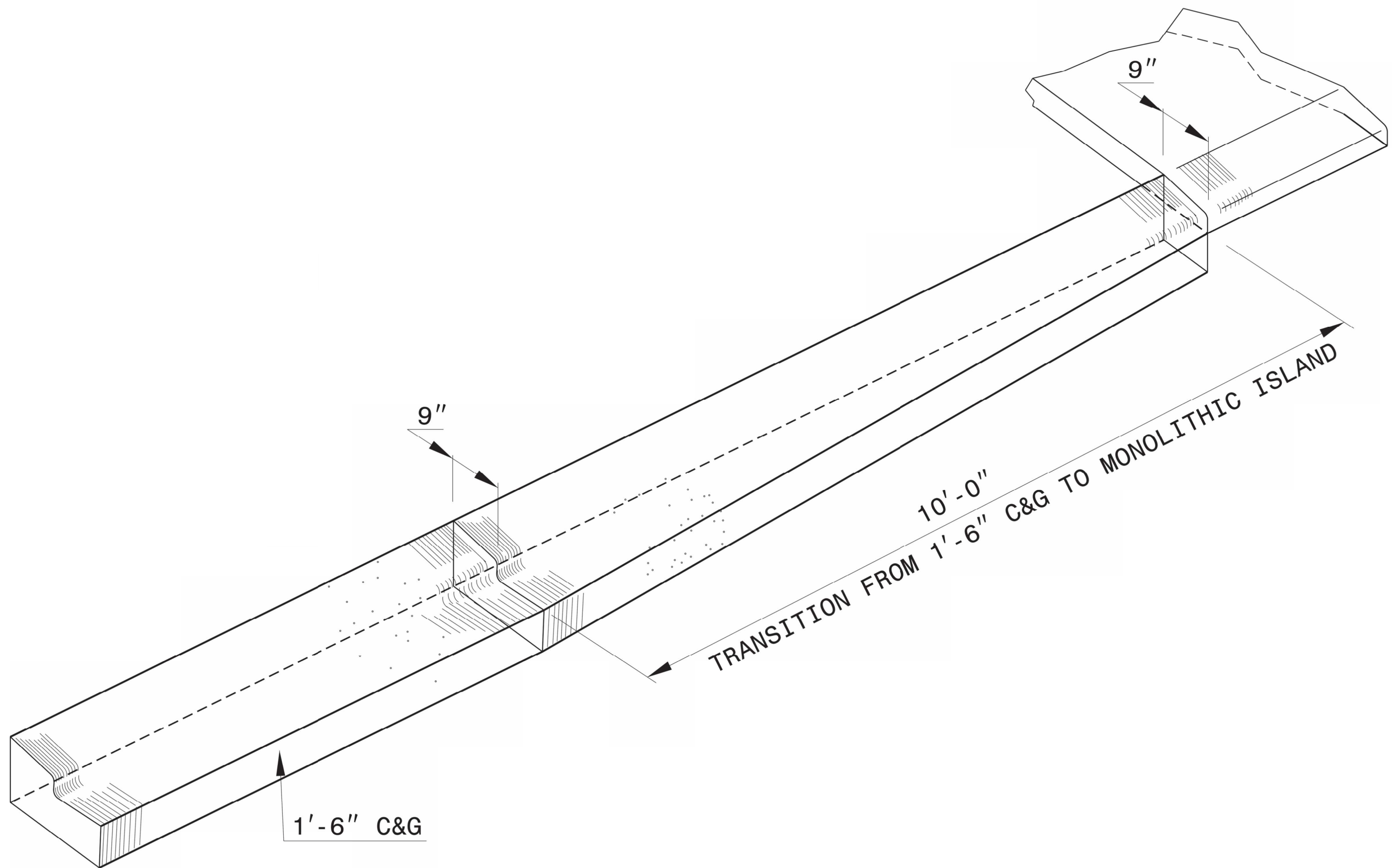
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R-4463A	2C-8



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

SEE ROADWAY PLANS FOR LOCATION OF CURB TRANSITION.

1'-6" CURB AND GUTTER



**ISOMETRIC VIEW OF
TRANSITIONING CURB & GUTTER**



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**DETAIL OF 1'-6"
CURB & GUTTER
TRANSITION SECTION**

ORIGINAL BY:	DATE:
MODIFIED BY: KKEMPF	DATE: 09-24-14
CHECKED BY:	DATE:
FILE SPEC.: kkempf/english/curb_gutter_transition.dgn	



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555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
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PROJECT REFERENCE NO.

R-4463A

SHEET NO.

2D-1

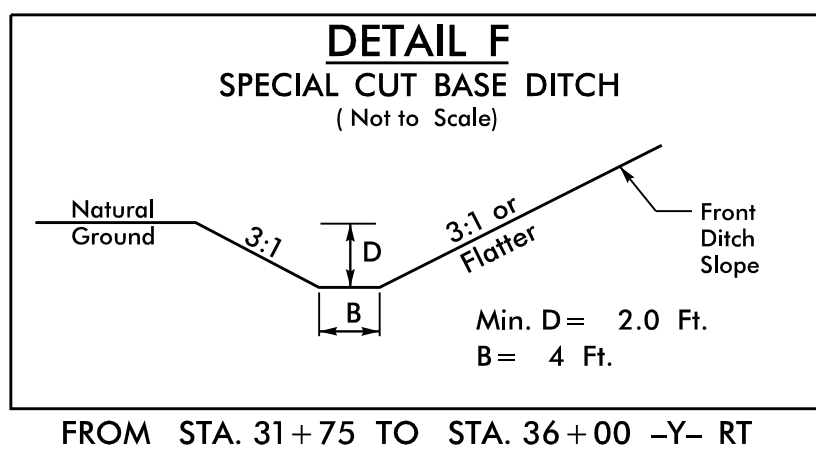
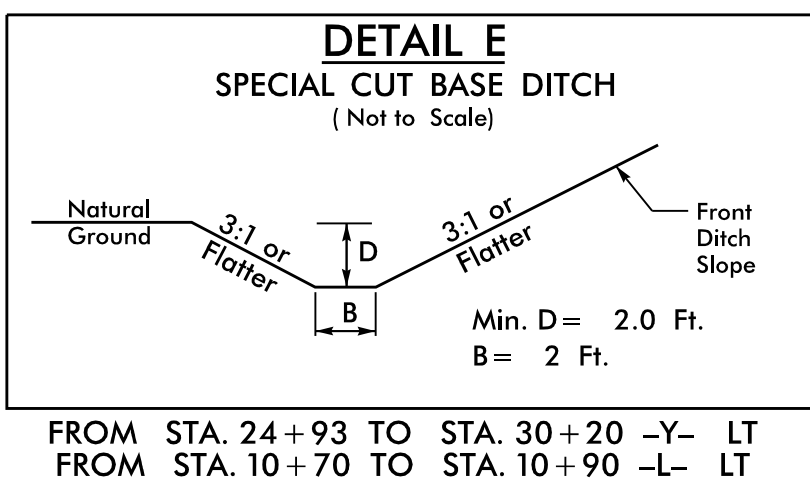
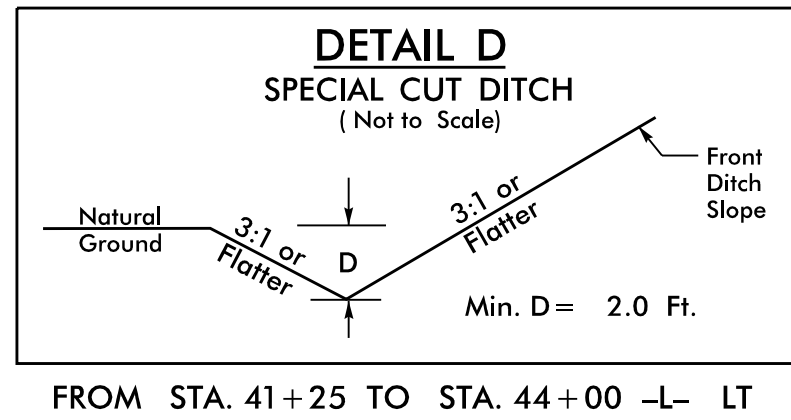
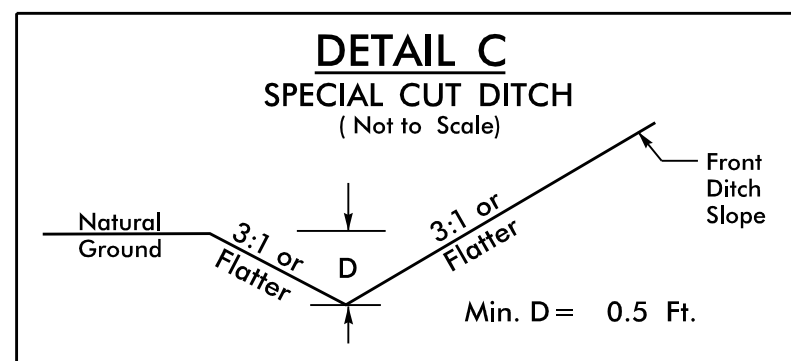
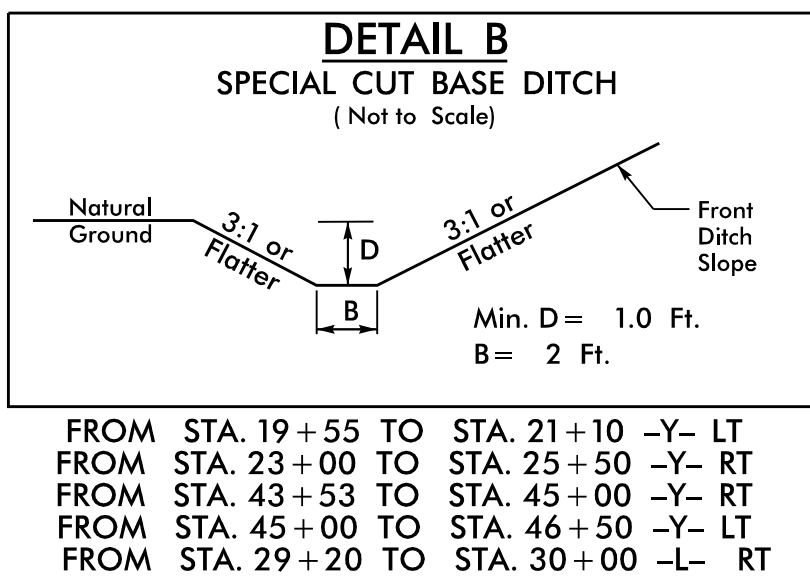
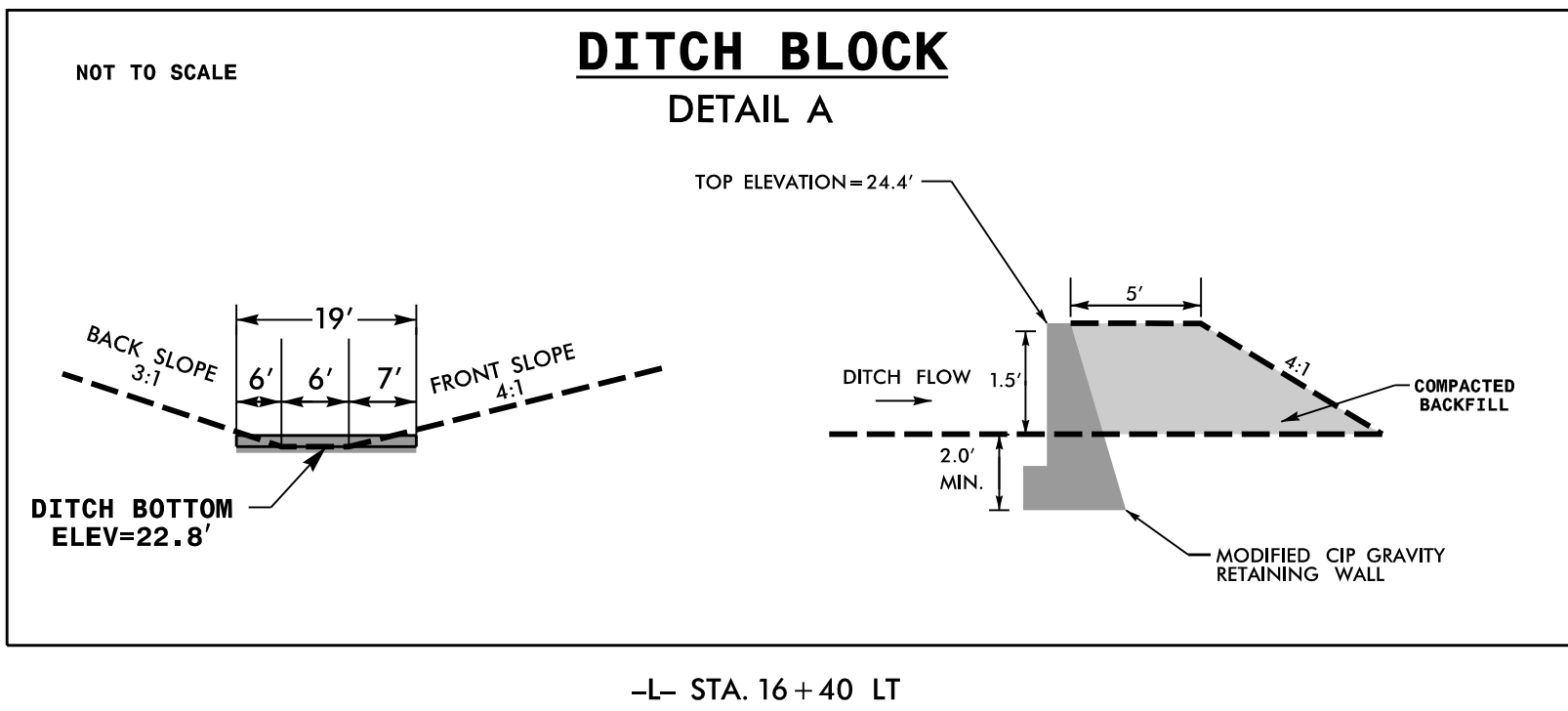
RW SHEET NO.

HYDRAULICS
ENGINEER



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FROM STA. 10+80 TO STA. 12+25 -Y1- RT

FROM STA. 10+80 TO STA. 12+65 -Y1- LT

FROM STA. 10+90 TO STA. 14+50 -L- RT

FROM STA. 14+50 TO STA. 16+50 -L- RT

FROM STA. 16+50 TO STA. 23+50 -L- RT

FROM STA. 25+00 TO STA. 29+20 -L- RT

FROM STA. 30+00 TO STA. 35+50 -L- LT

FROM STA. 30+00 TO STA. 35+00 -L- RT

FROM STA. 36+50 TO STA. 41+25 -L- LT

FROM STA. 35+00 TO STA. 72+00 -L- RT

FROM STA. 73+00 TO STA. 81+50 -L- LT

FROM STA. 73+00 TO STA. 81+50 -L- RT

FROM STA. 82+00 TO STA. 89+50 -L- RT

FROM STA. 82+00 TO STA. 90+00 -L- LT

FROM STA. 92+00 TO STA. 93+50 -L- LT

FROM STA. 99+50 TO STA. 102+50 -L- LT

FROM STA. 91+00 TO STA. 93+00 -L- RT

FROM STA. 93+50 TO STA. 102+50 -L- RT

FROM STA. 104+00 TO STA. 118+00 -L- RT

FROM STA. 103+50 TO STA. 118+00 -L- LT

FROM STA. 121+50 TO STA. 127+50 -L- RT

FROM STA. 127+00 TO STA. 128+00 -L- LT

FROM STA. 10+20 TO STA. 11+25 -DR2- LT

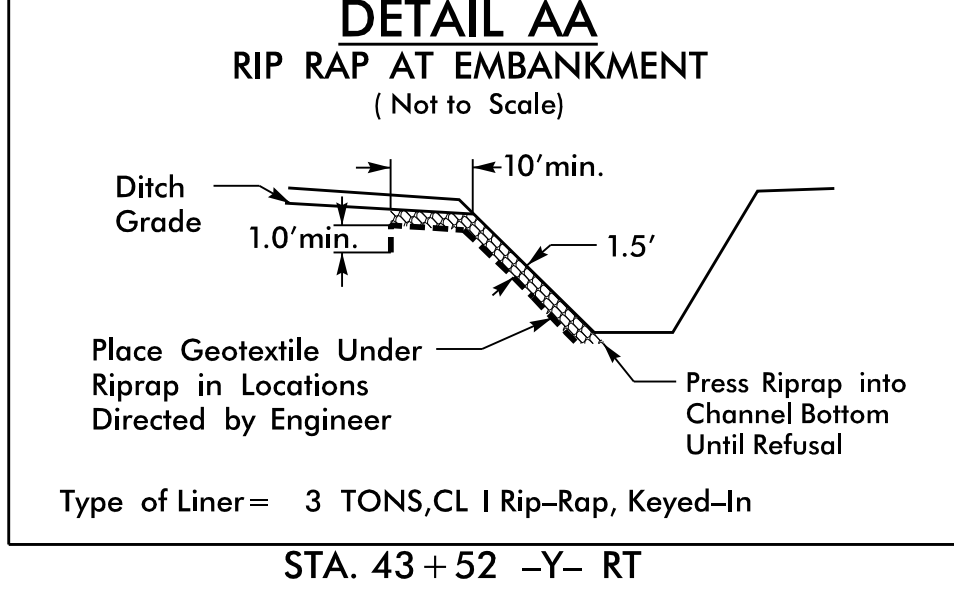
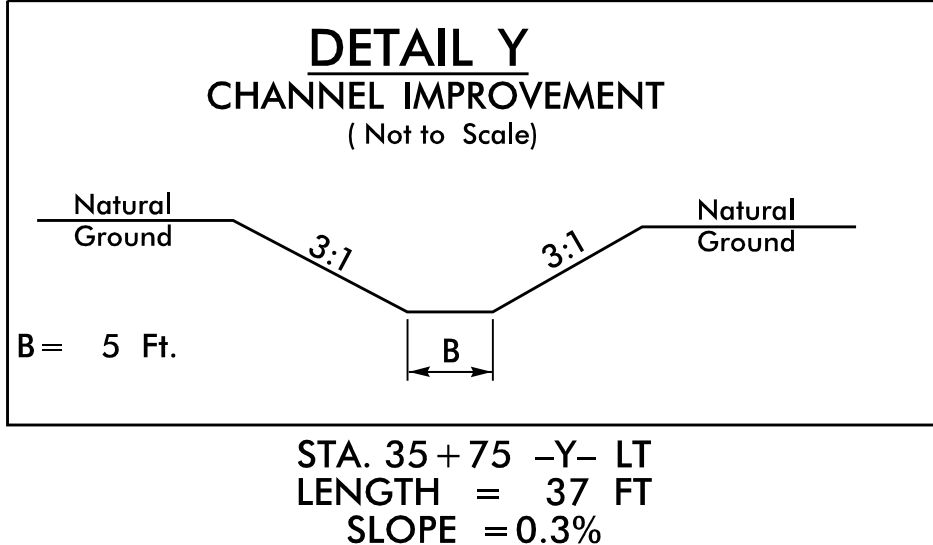
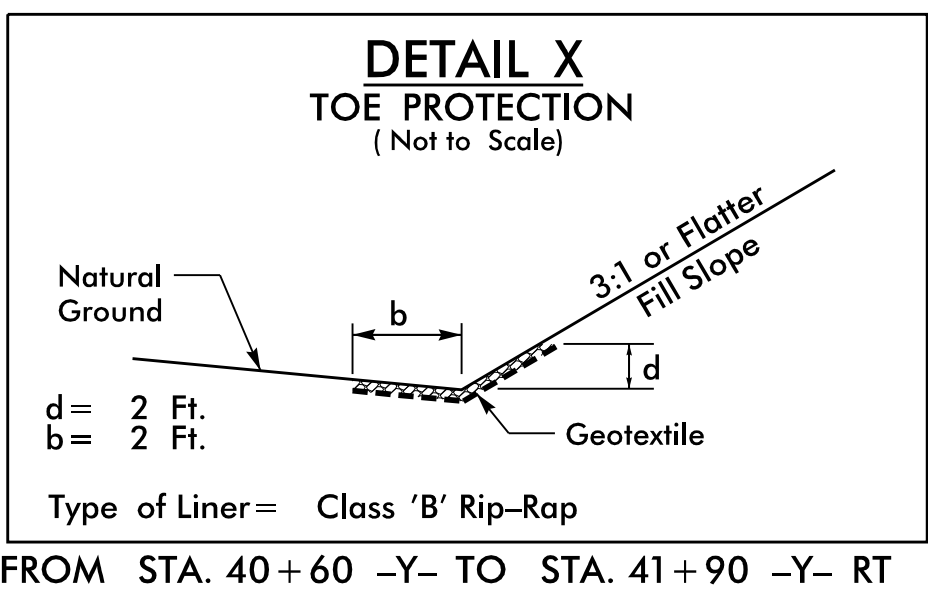
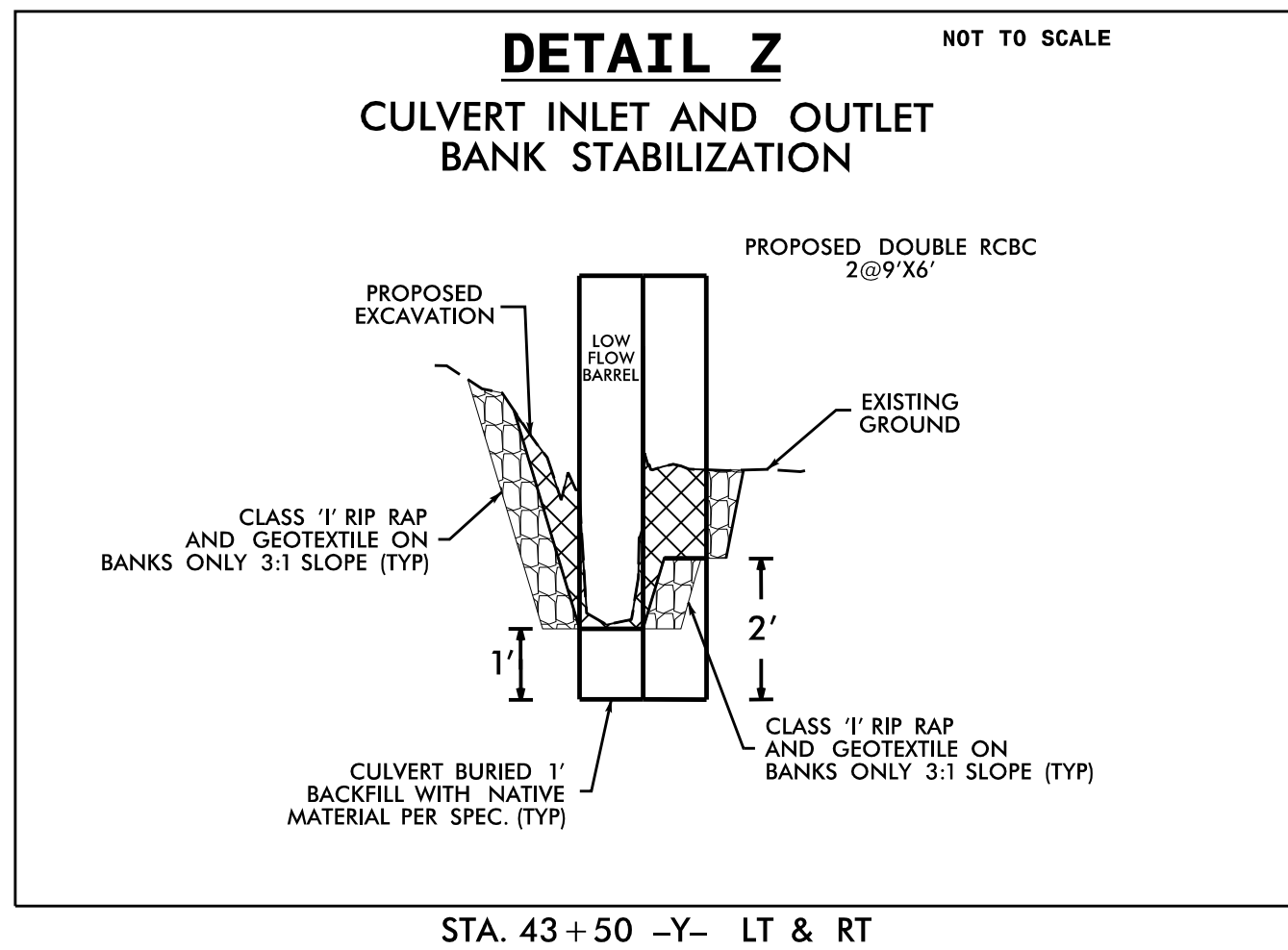
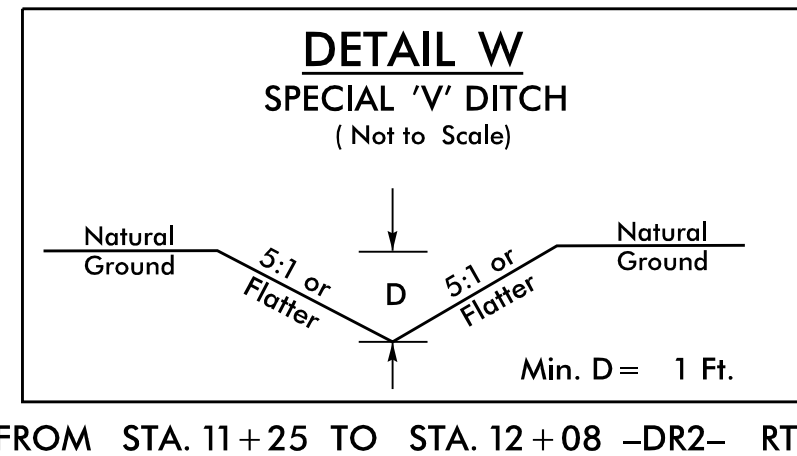
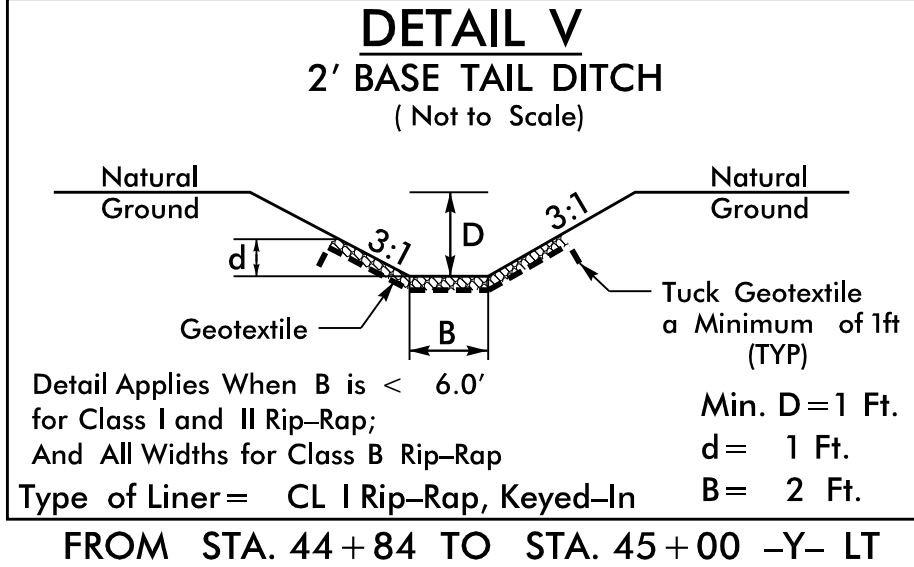
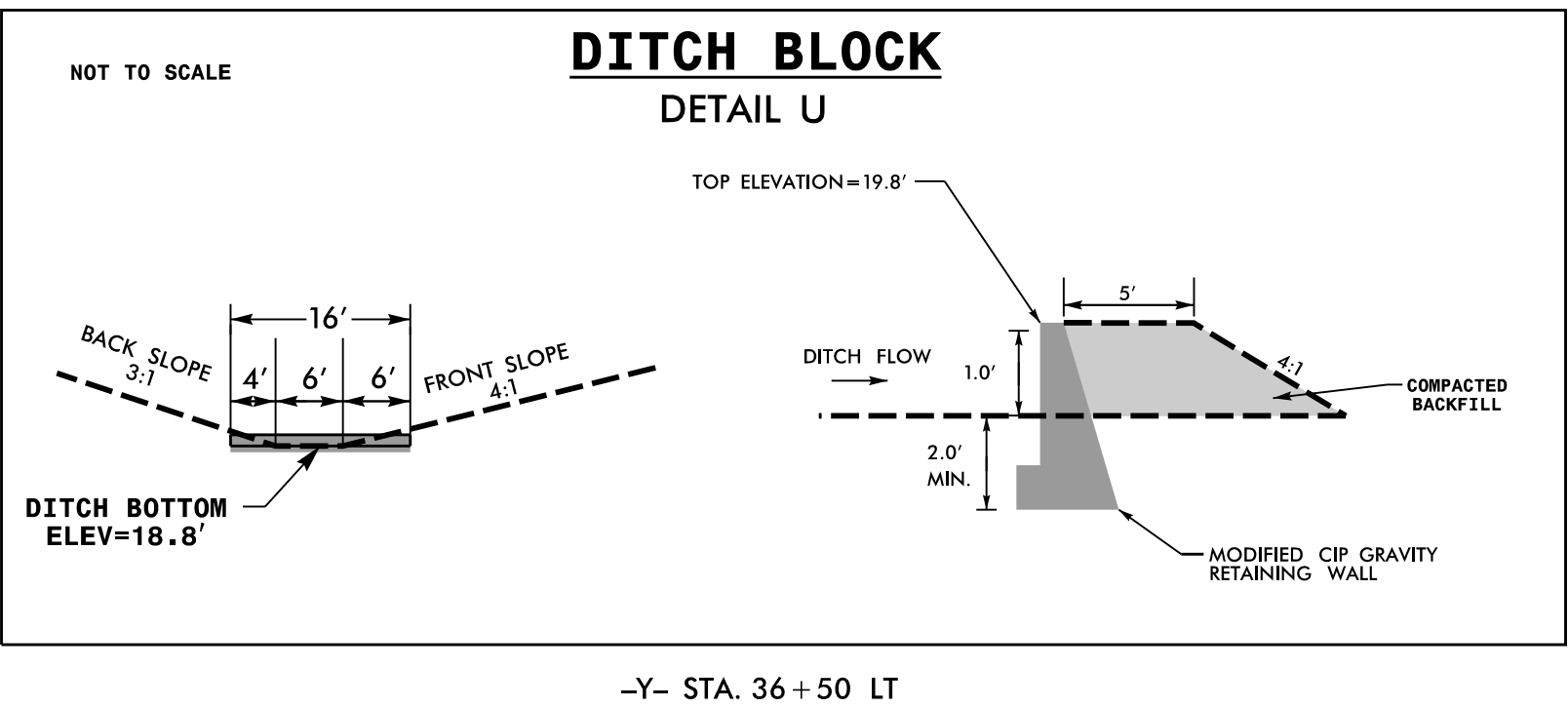
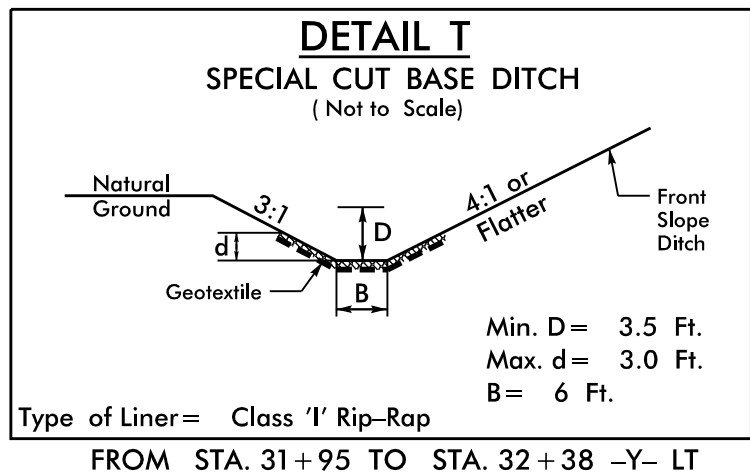
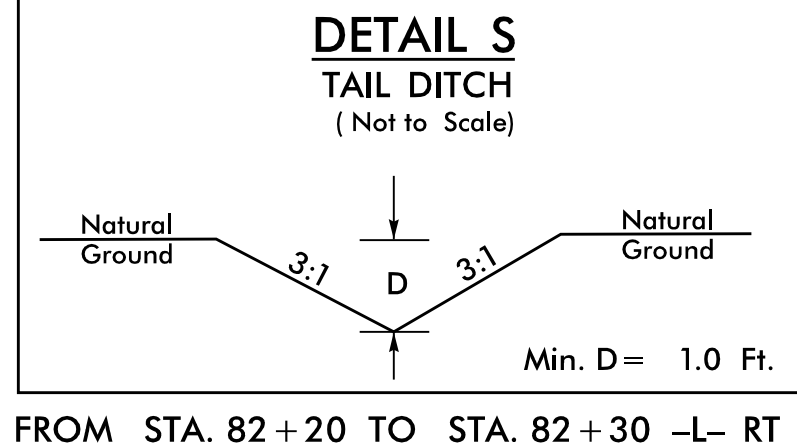
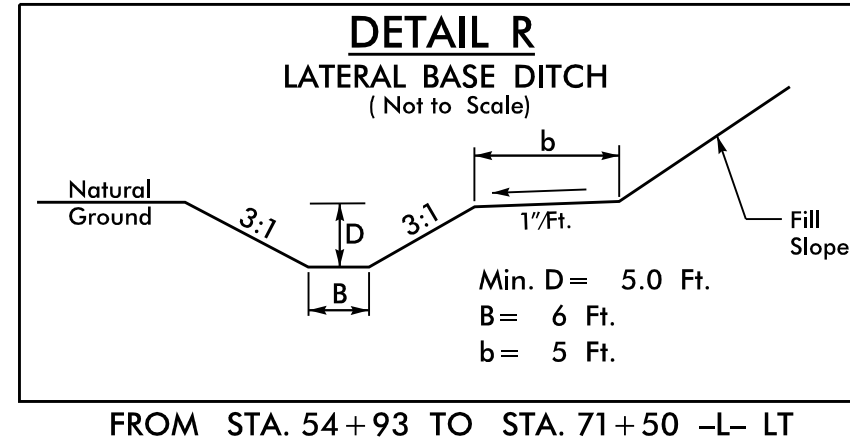
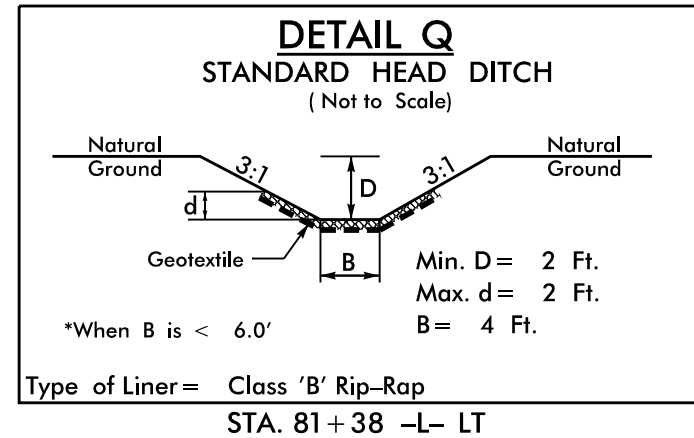
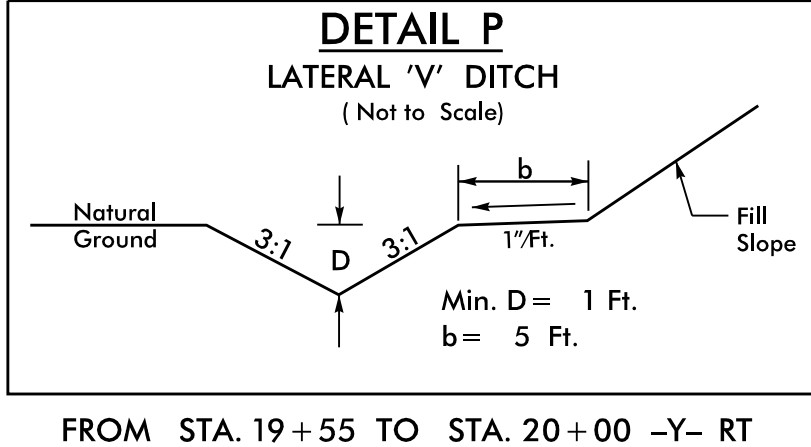
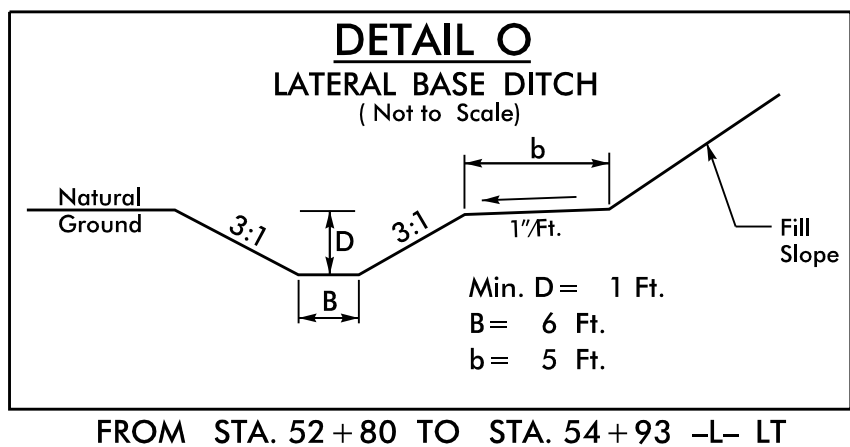
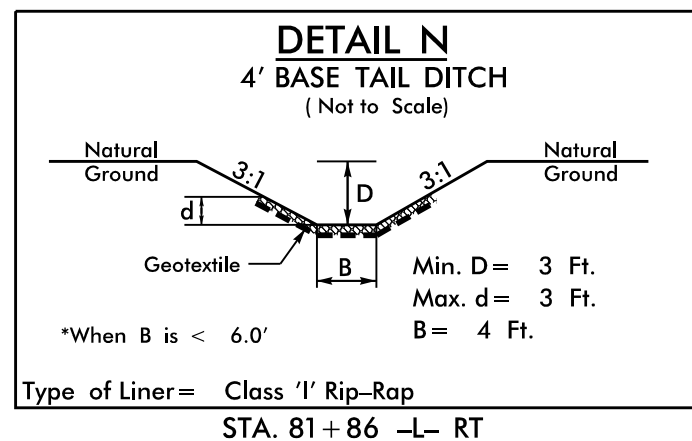
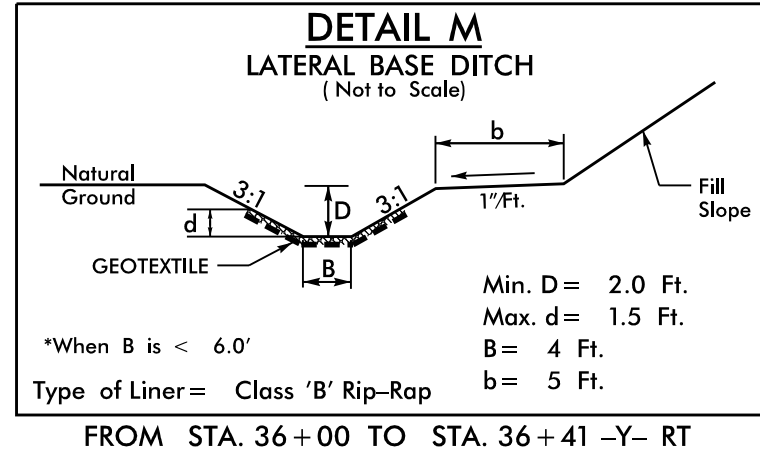
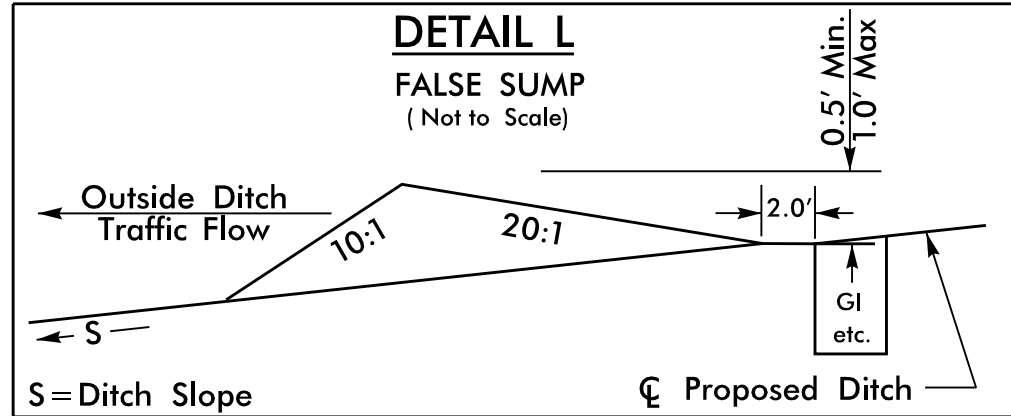
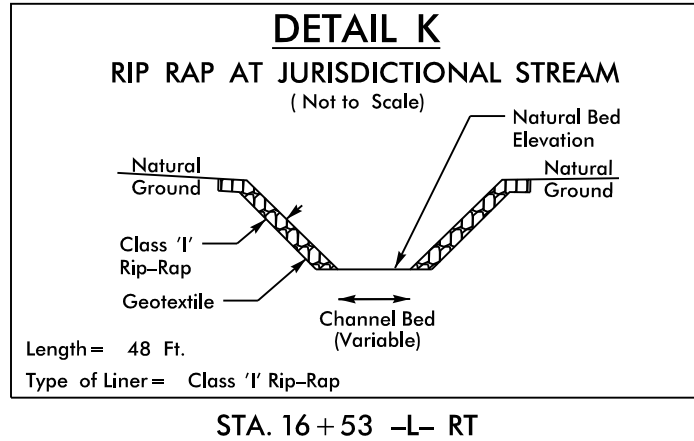
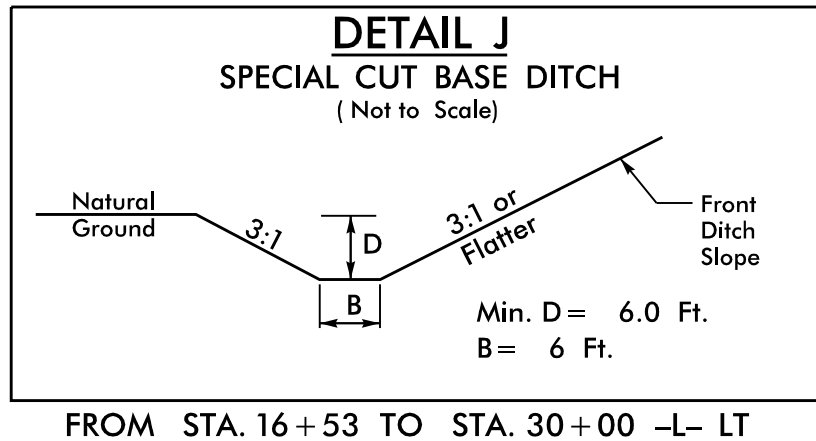
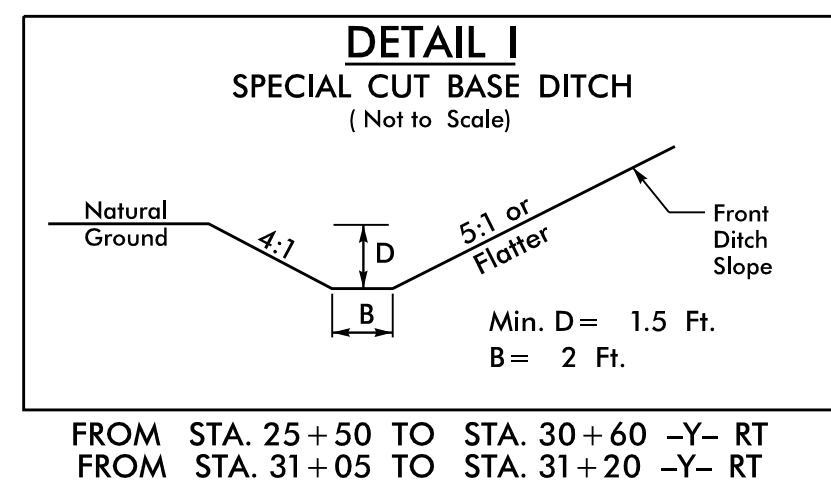
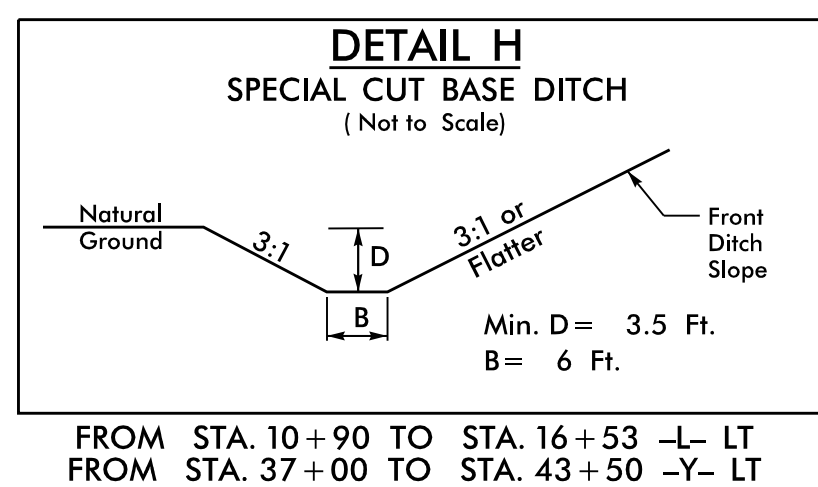
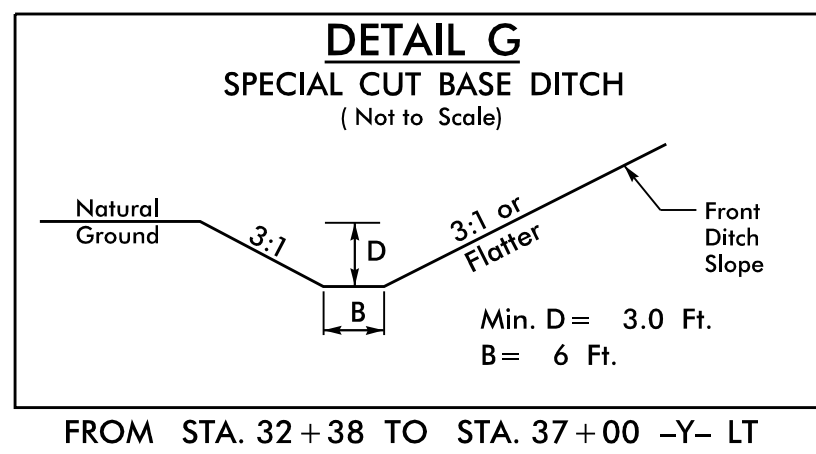
FROM STA. 11+25 TO STA. 11+80 -DR2- LT

FROM STA. 19+00 TO STA. 19+55 -Y- LT

FROM STA. 20+00 TO STA. 21+00 -Y- RT

FROM STA. 21+93 TO STA. 23+50 -Y- LT

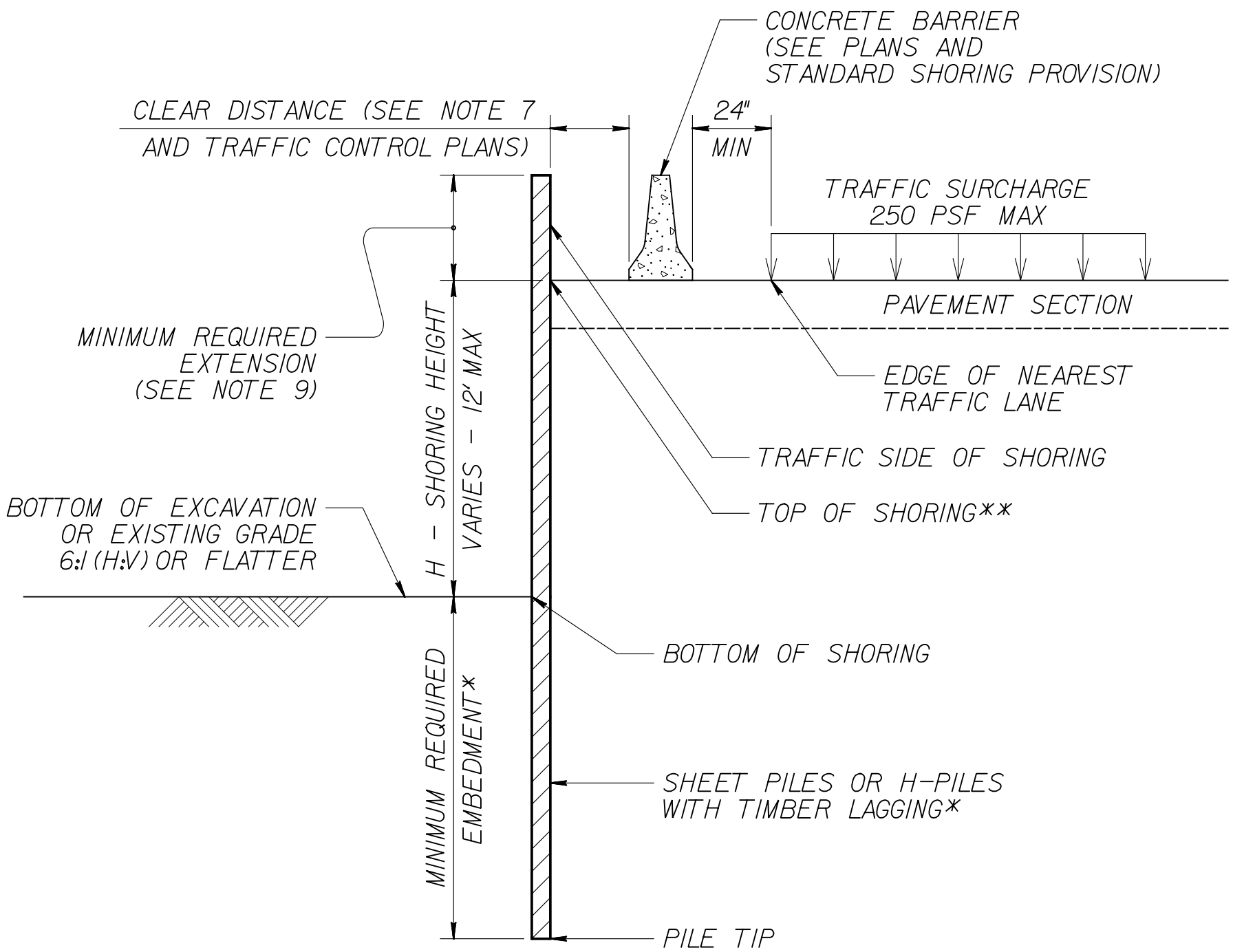
FROM STA. 23+50 TO STA. 24+93 -Y- LT



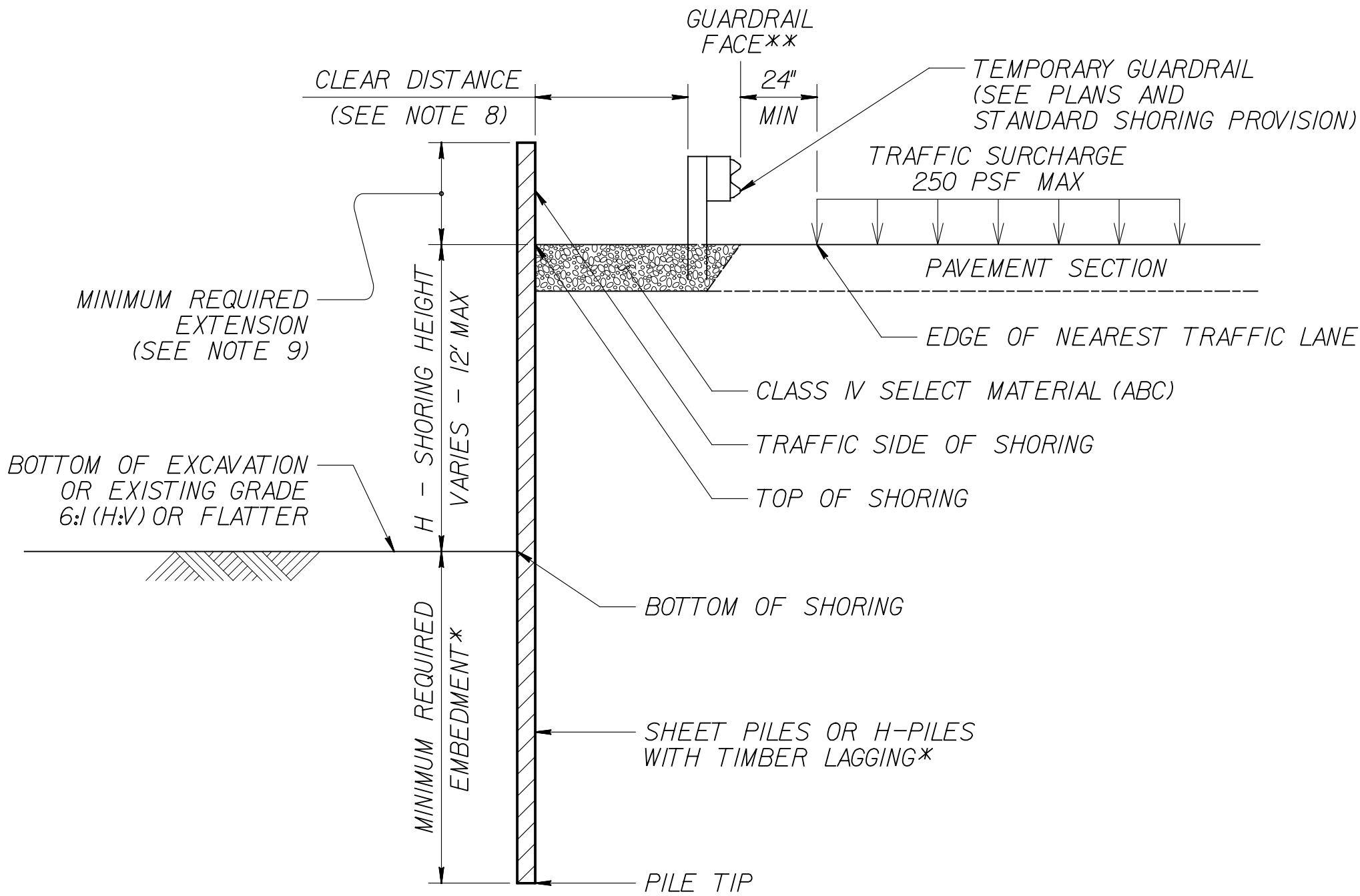
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS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

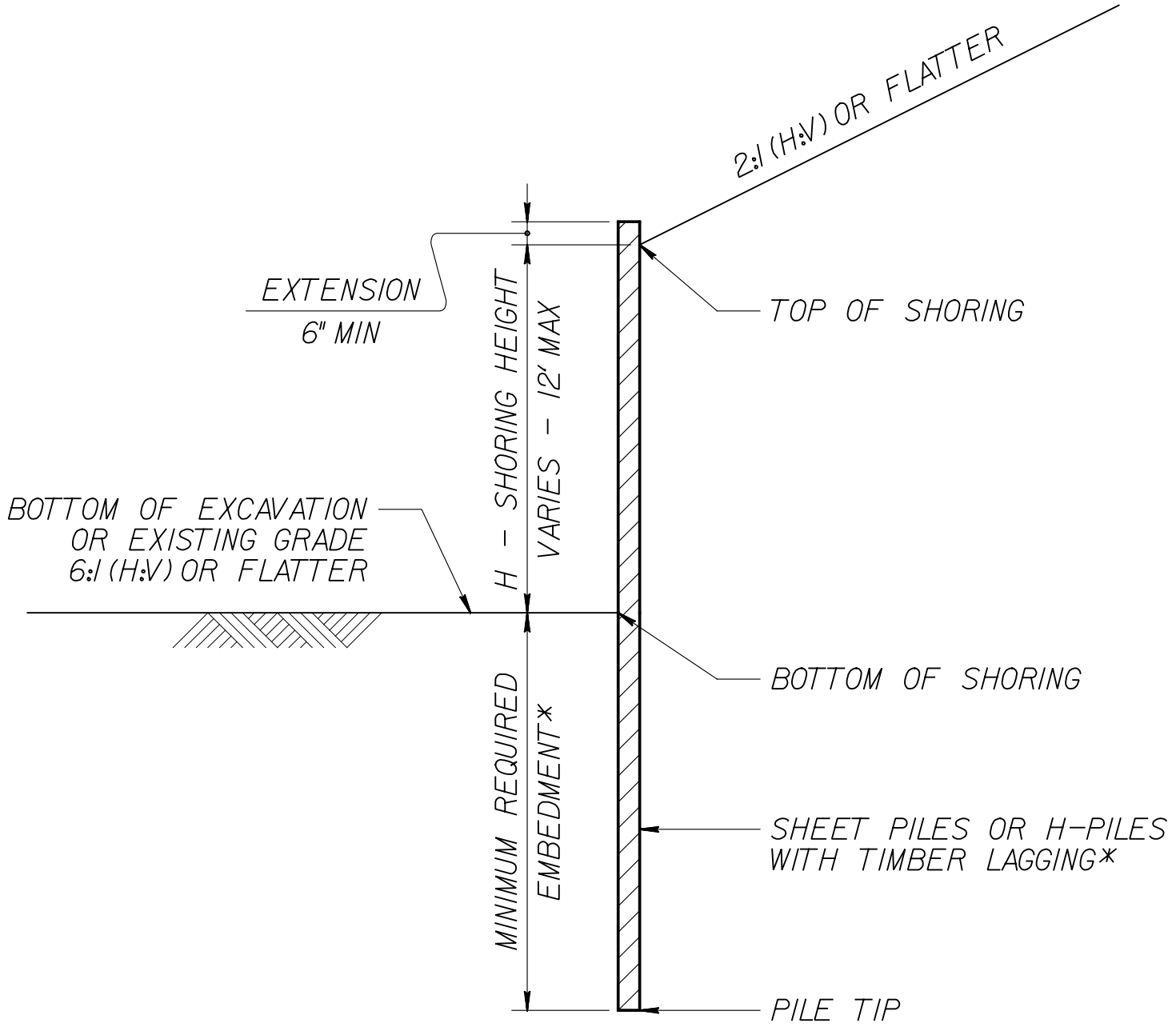
*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS “--”.



CONCRETE BARRIER
**TOP OF SHORING =
EDGE OF PAVEMENT



TEMPORARY GUARDRAIL
**GUARDRAIL FACE =
EDGE OF PAVEMENT



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

NOTES:

1. AT THE CONTRACTOR'S OPTION,USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING,SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, γ = 120 PCF
FRICTION ANGLE, ϕ = 30 DEGREES
COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. 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.
7. 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".
8. 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".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. 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.
11. 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
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.

PROJECT REFERENCE NO.

R-4463A

SHEET NO.

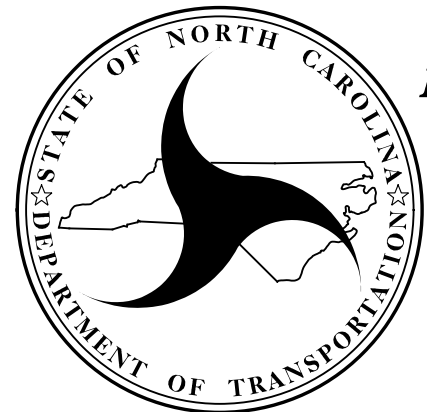
2G-1

GEOTECHNICAL ENGINEER



5/22/2025

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



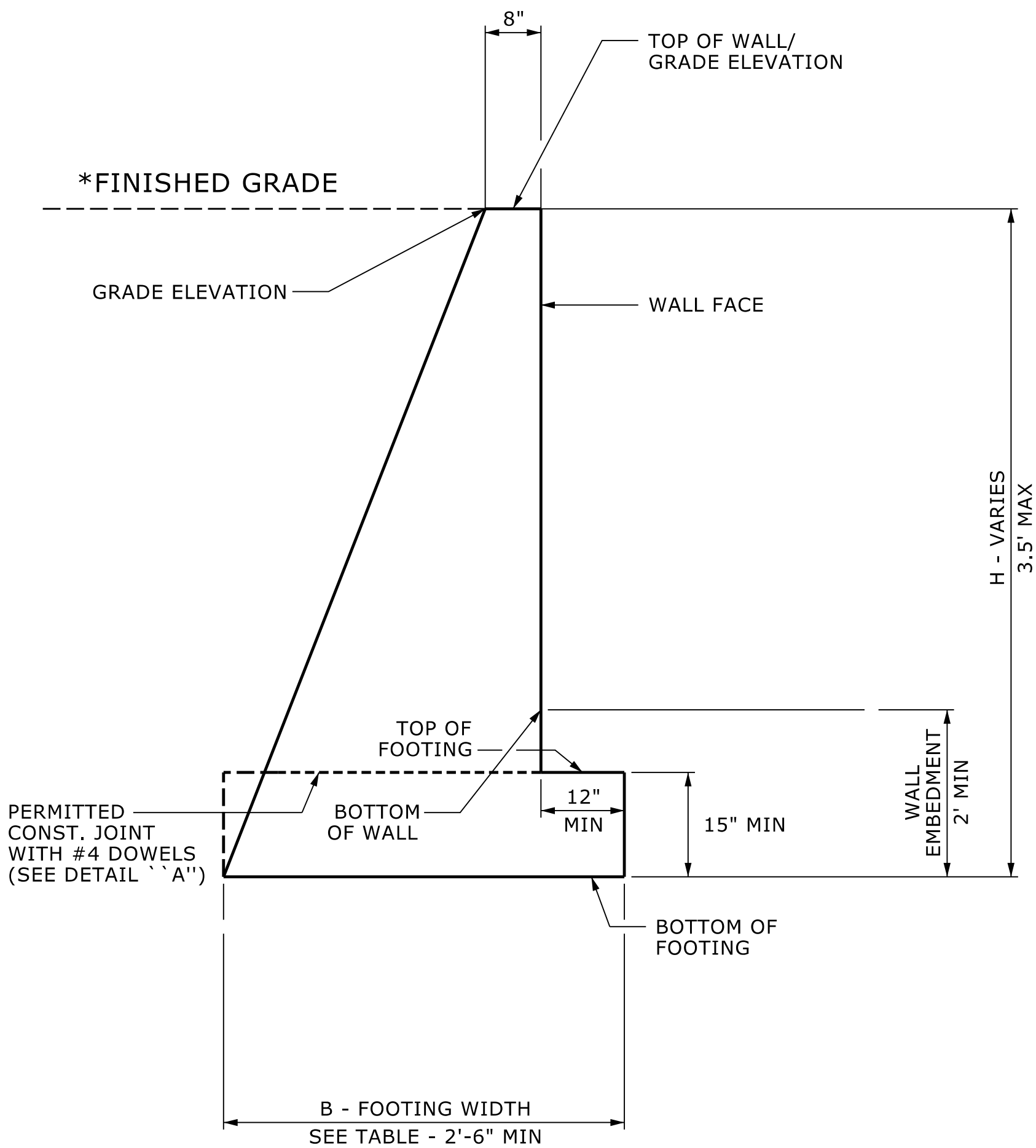
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01

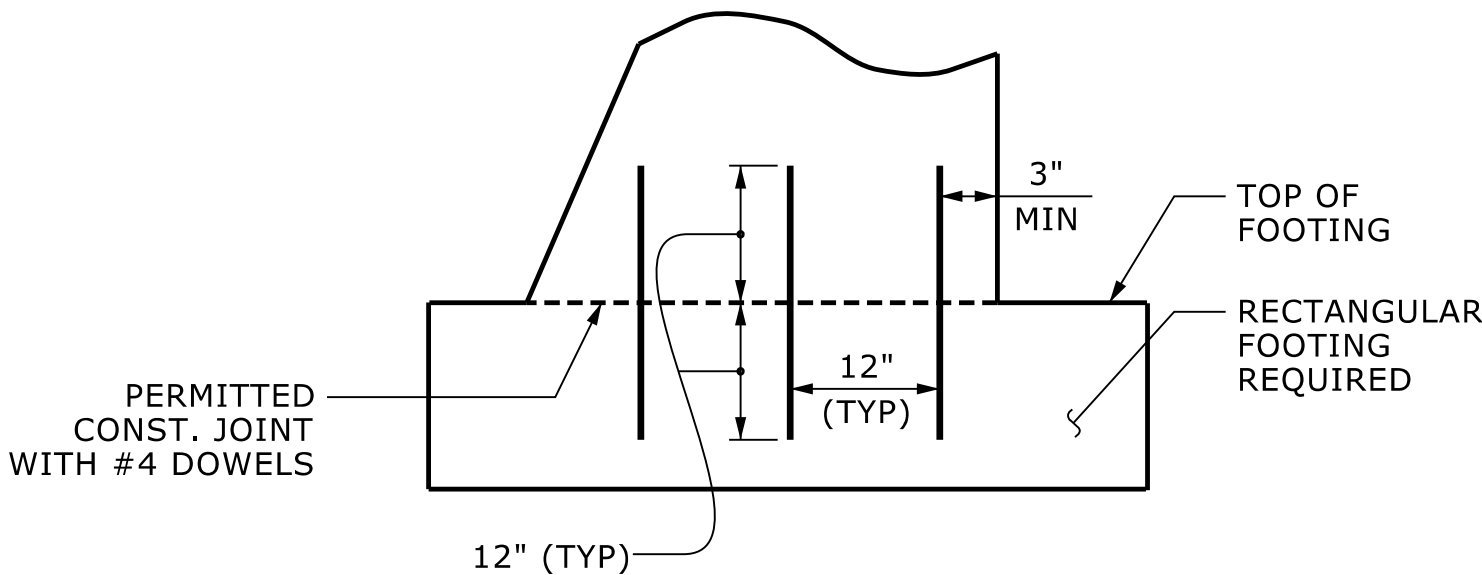
STANDARD
TEMPORARY SHORING

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
USER: JMAS5ROC
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PENTABLE: NCDOT_pshp.fltd
DATE: 5/28/2025
TIME: 4:36:51 PM



MODIFIED CIP GRAVITY WALL

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.



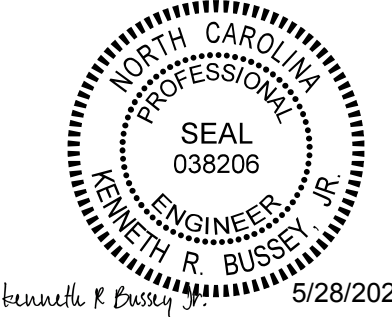
DETAIL "A"

H (FT)	1 - < 3.5
NO SLOPE CASE WITHOUT TRAFFIC SURCHARGE	.60

B/H RATIO (B = 2'-6" MIN)

NOTES:

- FOR CONSTRUCTION METHODS, MEASUREMENT, AND PAYMENT OF MODIFIED CIP GRAVITY RETAINING WALLS, SEE SECTION 453 OF THE STANDARD SPECIFICATIONS.
- DO NOT USE MODIFIED CIP GRAVITY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW WALLS.
- DO NOT PLACE CONCRETE FOR FOOTINGS UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
- WHEN CONSTRUCTING MODIFIED CIP GRAVITY WALLS WITH A CONSTRUCTION JOINT AS SHOWN IN DETAIL "A", PROVIDE A MINIMUM OF 3 EQUALLY SPACED #4 DOWELS AT INTERVALS OF 1'-6" ALONG WALLS.

PROJECT REFERENCE NO.	SHEET NO.
R-4463A	2G-2
GEOTECHNICAL ENGINEER	ENGINEER
	
SIGNATURE	DATE

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 HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT NO.: R-4463A
CRAVEN COUNTY

MODIFIED
CIP GRAVITY
RETAINING WALL

DATE: 05-27-2025

DRAINAGE DITCH EXCAVATION = 4300 C.Y.
SHALLOW UNDERCUT = 500 C.Y.
PAVEMENT STRUCTURE VOLUME = 21700 C.Y.

SHEET TOTALS

SHEET TOTALS

SHEET TOTALS

PROJECT TOTALS

COMPUTED BY: Callan Swafford DATE: 11/14/19

CHECKED BY: Kenny Bussey DATE: 11/14/19

(9-17-24)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.
R-4463A

SHEET NO.
3G-1

SUMMARY OF SUBSURFACE DRAINAGE

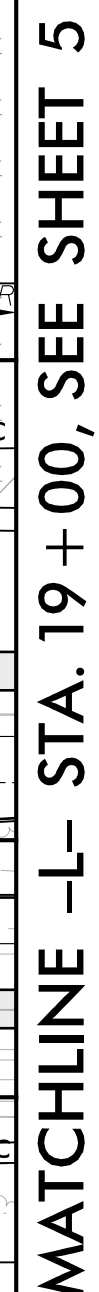
LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
L	24+50	29+00	CL	SD	450
L	93+00	102+50	CL	SD	950
L	104+50	109+00	CL	SD	450
L	113+00	118+00	CL	SD	500
L	121+00	122+50	CL	SD	150
CONTINGENCY				SD	500
				TOTAL LF:	3000

*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 Subgrade 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 Subgrade 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.



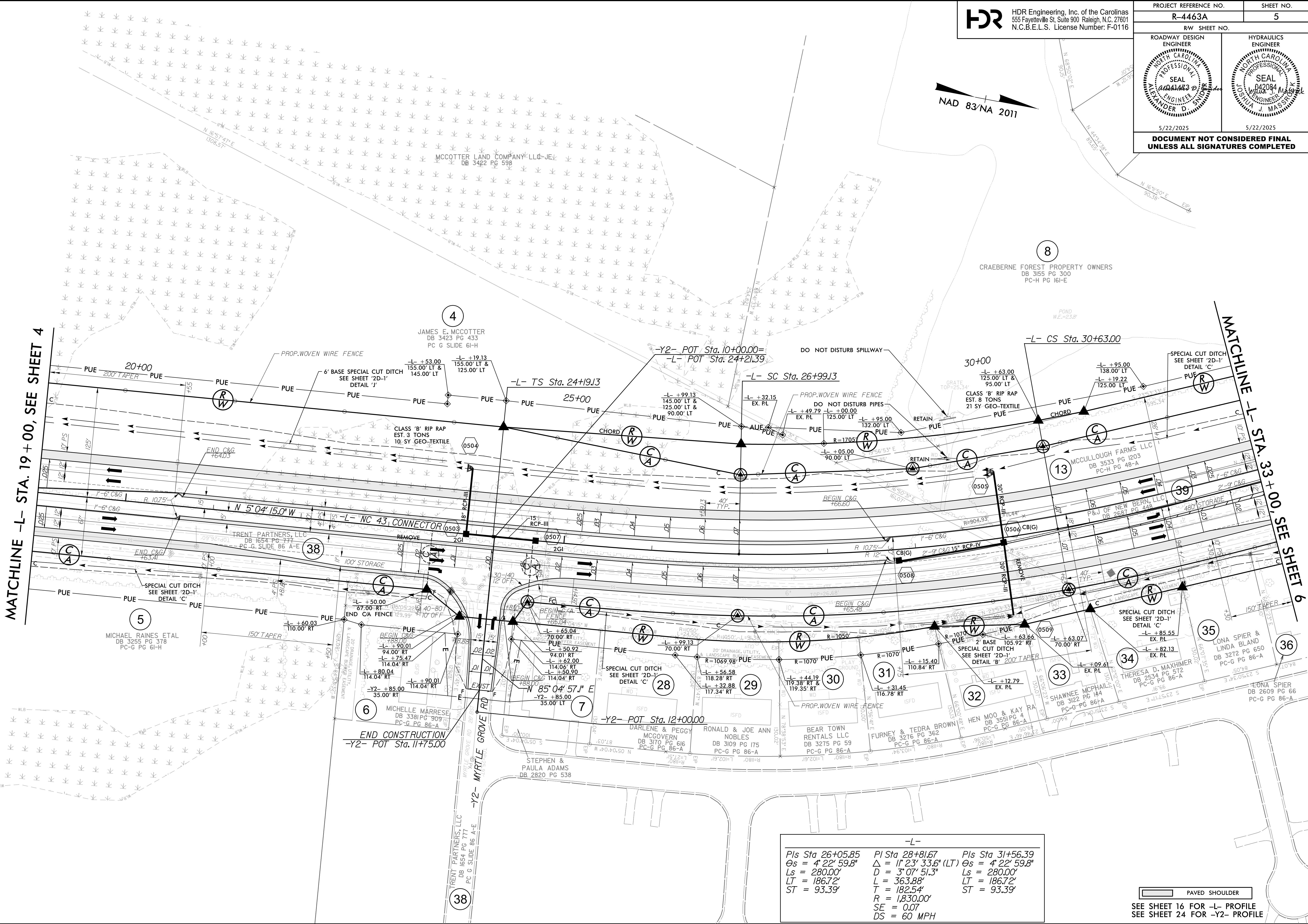
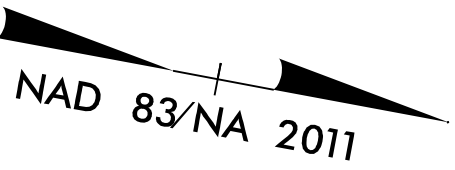
SEE SHEET 2B-3 FOR INTERSECTION DETAIL
SEE SHEET 16 FOR -L- PROFILE
SEE SHEETS 21 AND 22 FOR -Y- PROFILE
SEE SHEET 25 FOR -DR1- PROFILE
SEE SHEET 25 FOR -DR2- PROFILE

PLOT DRIVER: nodot_eng.pdf_fulsize.plt
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FILE: R4463A_RDY_PSH-05.dgn
PENTABLE: roadway_v8.tbi
TIME: 11:59:46 AM
DATE: 2/18/2025



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N.C.B.E.L.S. License Number: F-0116

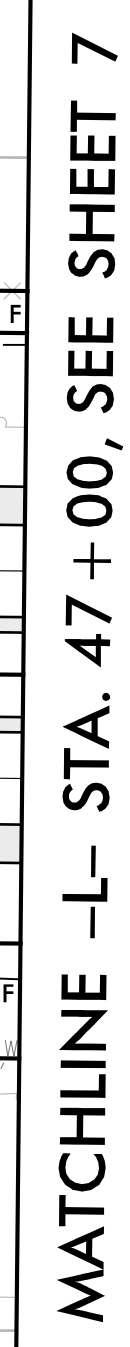
PROJECT REFERENCE NO.		SHEET NO.
R-4463A		5
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
5/22/2025		5/22/2025
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



-L-		
Pis Sta 26+05.85	Pi Sta 28+81.67	Pis Sta 31+56.39
Os = 4' 22' 59.8"	Δ = 11' 23' 33.6" (LT)	Os = 4' 22' 59.8"
Ls = 280.00'	D = 3' 07' 51.3"	Ls = 280.00'
LT = 186.72'	L = 363.88'	LT = 186.72'
ST = 93.39'	T = 182.54'	ST = 93.39'
	R = 1,830.00'	
	SE = 0.07	
	DS = 60 MPH	

PAVED SHOULDER

SEE SHEET 16 FOR -L- PROFILE
SEE SHEET 24 FOR -Y2- PROFILE



MATCHLINE -L- STA. 33+00, SEE SHEET 5

-L-

PI Sta 42+76.06
 $\Delta = 2^\circ 17' 59.9''$ (RT)
 $D = 0^\circ 17' 11.3''$
 $L = 802.84'$
 $T = 401.47'$
 $R = 20,000.00'$
 $SE = NC$
 $DS = 80$ MPH

	PROPOSED SIGNAL
	MONOLITHIC ISLAND
	PAVED SHOULDER
	CONCRETE SIDEWALK

SEE SHEET 2B-1 FOR -DET 2- PLAN
T 2B-4 FOR INTERSECTION DETAIL
SEE SHEET 17 FOR -L- PROFILE
SEE SHEET 24 FOR -Y3- PROFILE
SEE SHEET 24 FOR -Y4- PROFILE

☐ PAVED SHOULDER

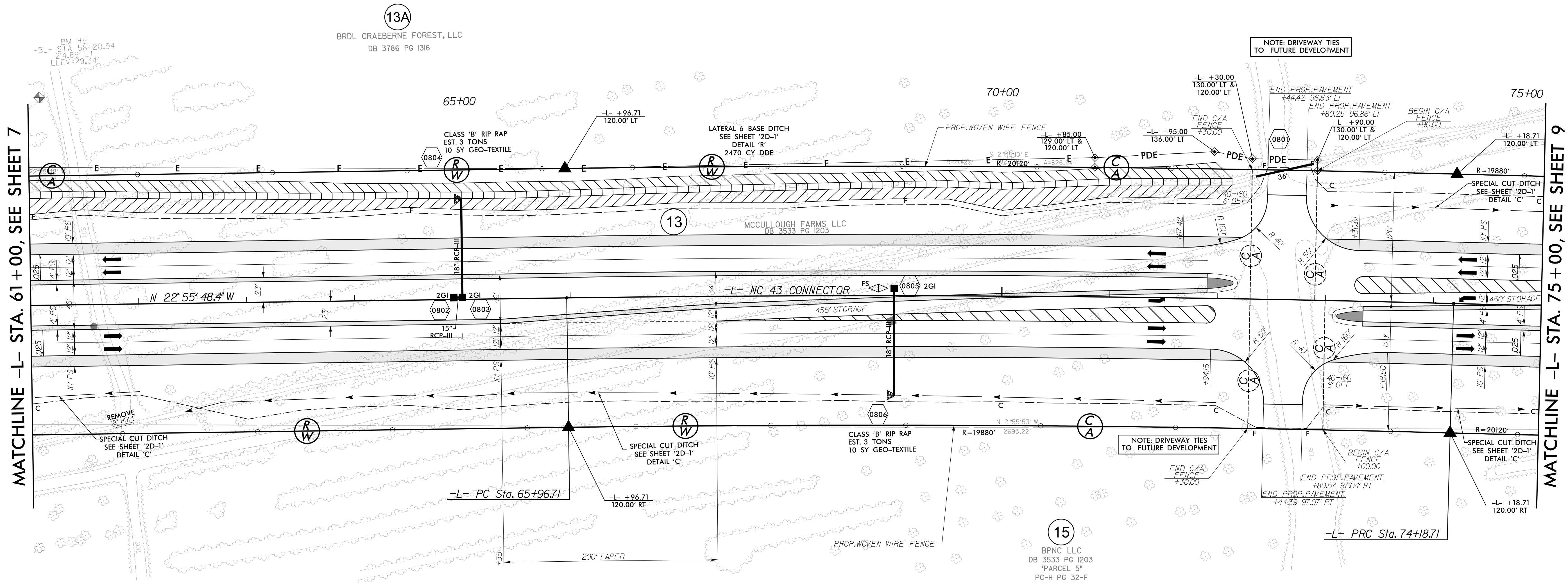
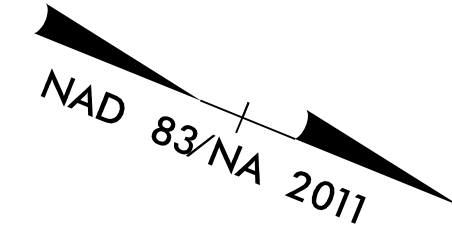
SEE SHEET 17 FOR -I- PROFILE

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FILE: R4463A_RDY_PSH-08.dgn
PENTABLE: roadway_v8.tbl
DATE: 2/18/2025
TIME: 12:00:14 PM



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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.		SHEET NO.
R-4463A		8
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
5/22/2025	5/22/2025	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



-L-
PI Sta 70+07.77
$\Delta = 2' 2" 17.5" (RT)$
$D = 0' 17' 11.3"$
$L = 822.01'$
$T = 411.06'$
$R = 20,000.00'$
SE = NC
DS = 80 MPH

-L-
PI Sta 77+44.04
$\Delta = 1' 51' 49.8" (LT)$
$D = 0' 17' 11.3"$
$L = 650.60'$
$T = 325.33'$
$R = 20,000.00'$
SE = NC
DS = 80 MPH

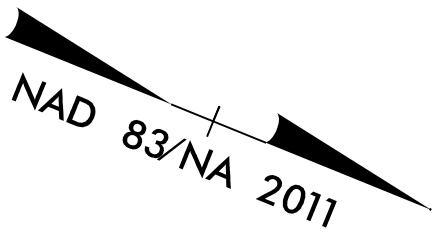
	MONOLITHIC ISLAND
	PAVED SHOULDER

SEE SHEET 2B-5 FOR INTERSECTION DETAIL
SEE SHEET 18 FOR -L- PROFILE

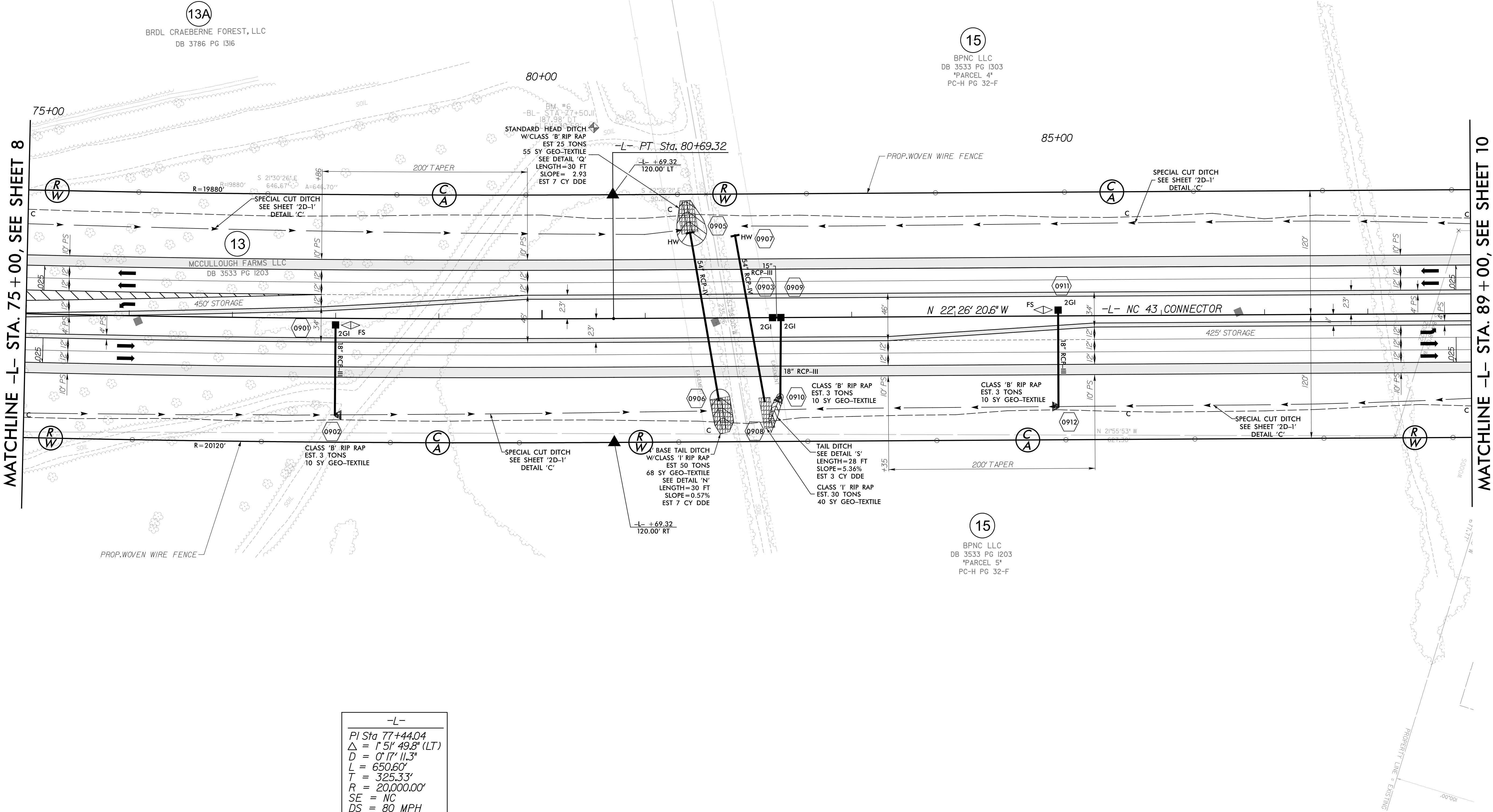
PLOT DRIVER: nodot_eng.pdf_fulsize.plt
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FILE: R4463A_RDY_PSH-03.dgn
PENTABLE: roadway_v8.tbl
DATE: 2/18/2025
TIME: 12:00:22 PM



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N.C.B.E.L.S. License Number: F-0116



PROJECT REFERENCE NO.		SHEET NO.
R-4463A		9
R/W SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
5/22/2025		5/22/2025
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



PAVED SHOULDER

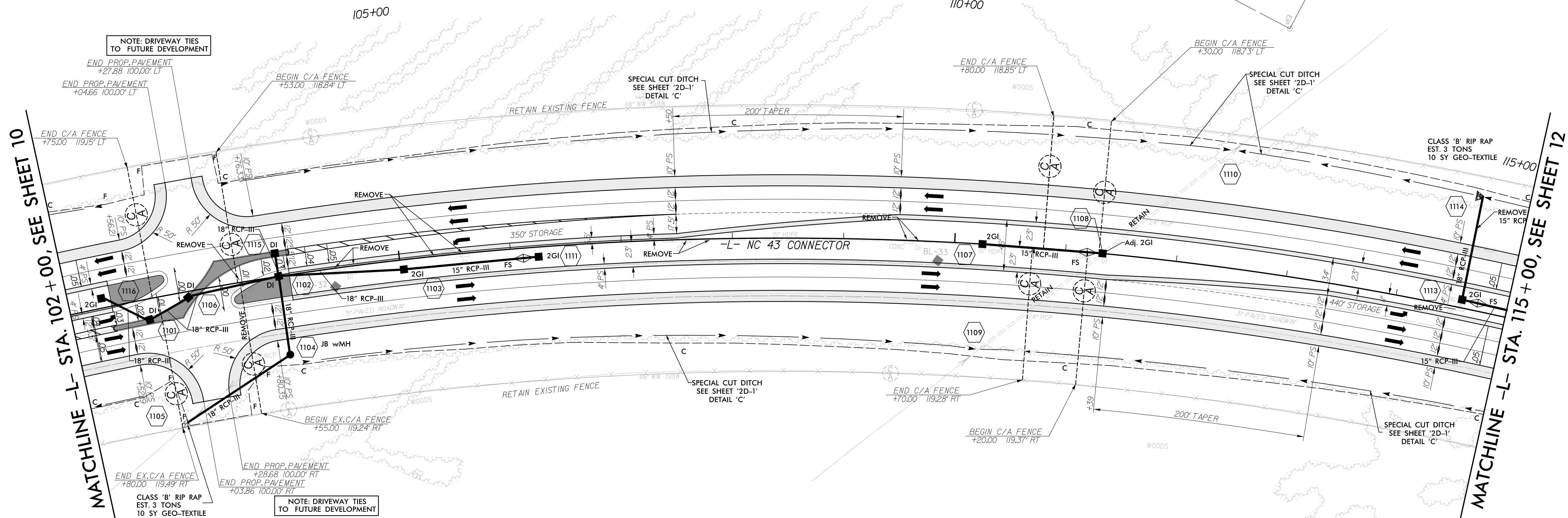
SEE SHEET 18 FOR -L- PROFILE

WEYERHAEUSER REAL ESTATE
DEVELOPMENT COMPANY
MB 2894 PG 246

WEYERHAEUSER REAL ESTATE
DEVELOPMENT COMPANY
MB 2894 PG 246



SEE SHEET 2B-6 FOR INTERSECTION DETAIL
SEE SHEET 19 FOR -L- PROFILE



SEE SHEET 2B-7 FOR INTERSECTION DETAIL
SEE SHEET 19 FOR -L- PROFILE

SEE SHEET 2B-7 FOR INTERSECTION DETAIL
SEE SHEET 19 FOR -L- PROFILE

