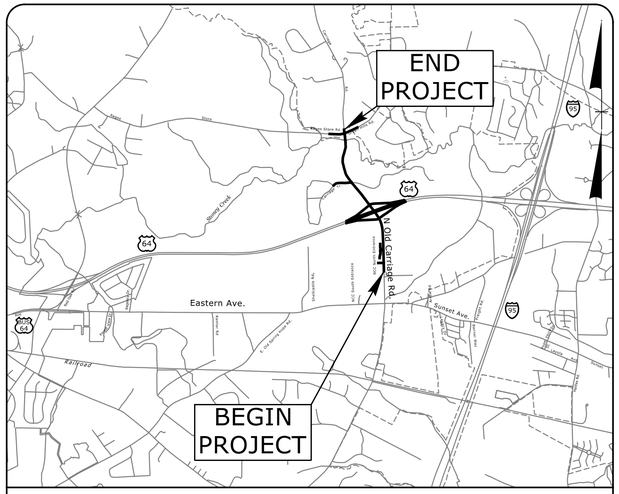
09/08/99

TIP PROJECT: U–5996

CONTRACT: C204542

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



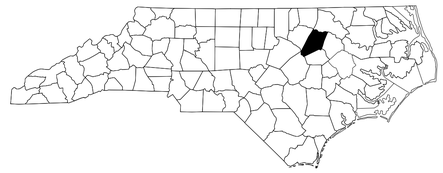
VICINITY MAP
NOT TO SCALE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U–5996	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
47133.1.1		PE
47133.2.1		R/W & UTILITIES
47133.3.1		CONSTRUCTION

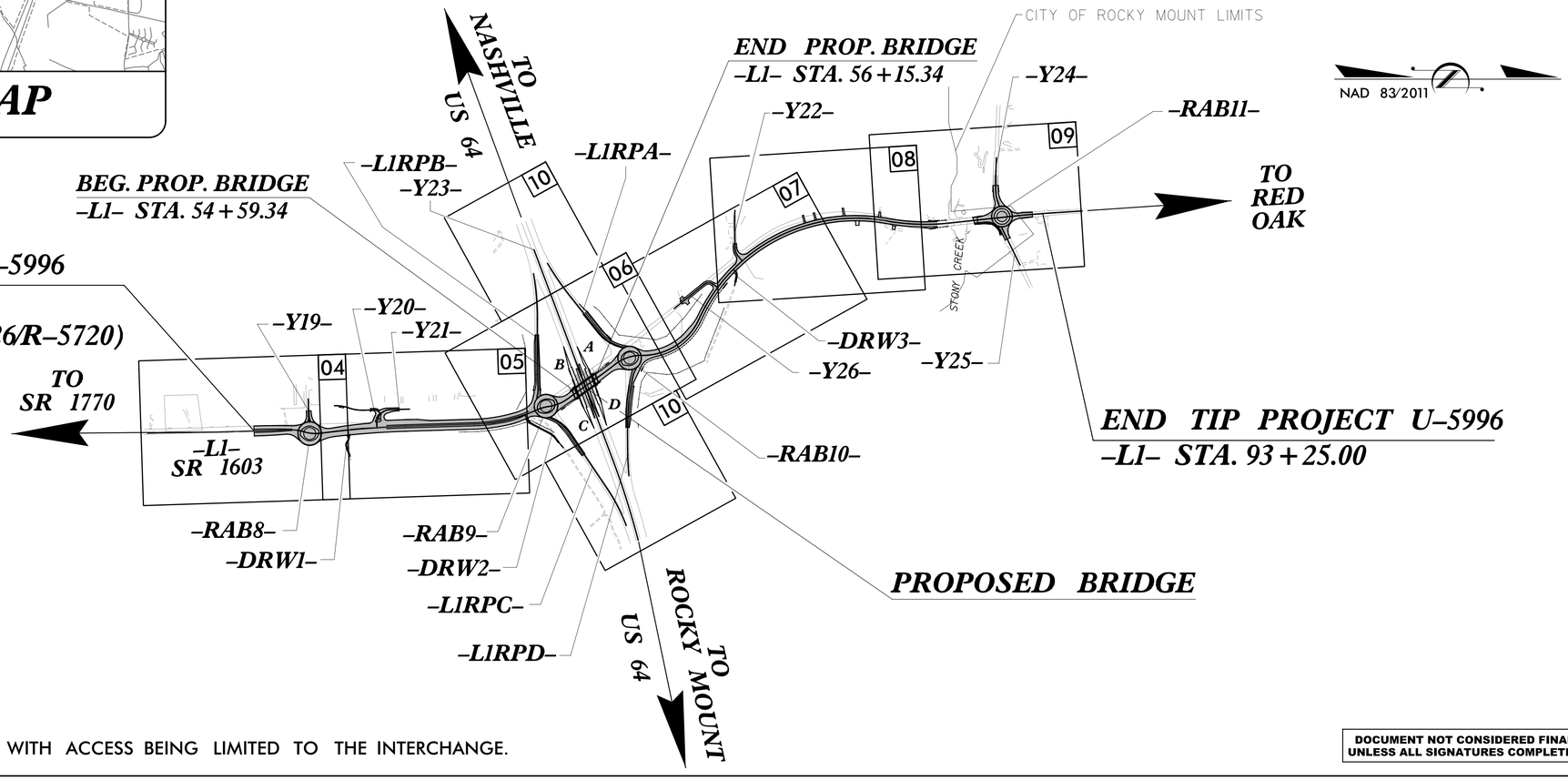
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NASH COUNTY



LOCATION: WIDEN SR 1603 (N. OLD CARRIAGE RD.) FROM NORTH OF SR 1770 (EASTERN AVE./SUNSET AVE.) TO SR 1601 (REGES STORE RD.) /SR 1609 (GREEN HILLS RD.).

TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURE, AND RETAINING WALLS



THIS IS A CONTROLLED–ACCESS PROJECT WITH ACCESS BEING LIMITED TO THE INTERCHANGE.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2022 = 13,870
ADT 2040 = 18,800
K = 9 %
D = 55 %
T = 4 % *
V = 50 MPH**

* TTST =1% DUAL 3%
** V = 40 MPH B/W RAMPS
FUNC CLASS = ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U–5996 = 1.155 MI.
LENGTH STRUCTURE TIP PROJECT U–5996 = 0.030 MI.
TOTAL LENGTH OF TIP PROJECT U–5996 = 1.185 MI.

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

vhb — 940 Main Campus Drive, Suite 500, Raleigh, NC 27606, NC License No. C-3705
MIENGINEERING — 1011 Schaub Drive, Suite 100, Raleigh, NC 27606, Firm PE No. P-0671

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: December 13, 2019
LETTING DATE: January 18, 2022

JONATHAN SOIKA, PE — *PROJECT ENGINEER*
JOHN TOWNSEND, PE — *PROJECT DESIGN ENGINEER*
NCDOT CONTACT — RUSSELL BROADWELL, PE — *NCDOT PROJECT ENGINEER*

HYDRAULICS ENGINEER

DocuSigned by: Linda Johns — 11/30/2021 — *P.E.*
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 033246 ENGINEER LINDA M. JOHNS

ROADWAY DESIGN ENGINEER

DocuSigned by: Jonathan Soika — 11/30/2021 — *P.E.*
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 033822 ENGINEER JONATHAN P. SOIKA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

11/30/2021
U5996_rdy_tsh.dgn
JSoika

8/17/99

INDEX OF SHEETS

GENERAL NOTES

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. 225.04/225.05 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. 560.01/560.02

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.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII 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 RADII NOTED ON PLANS.

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE AT&T, CENTURYLINK, CITY OF

ROCKY MOUNT, CONTERRA, DUKE (DISTRIBUTION), MCNC, SUDDENLINK, AND THE

TOWN OF RED OAK.

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.

PROJECT REFERENCE NO.	SHEET NO.
U-5996	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033822 ENGINEER JONATHAN P. SORG
12/7/2021

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vhb
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NC License No. C-3705

STANDARD DRAWINGS

EFF. 01-16-2018
REV.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
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
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
275.01	Rock Plating
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills - Type I Standard Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.04	Guide for Paving Shoulders Under Bridges - Method IV
654.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
DIVISION 8 - INCIDENTALS	
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
838.80	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
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.33	Angled Vane Grates and Frames
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
850.01	Concrete Paved Ditches
852.01	Concrete Islands
852.04	Method for Placement of Drop Inlets in Grassed Median - Using 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands
852.10	Median Construction - with Curb and Gutter
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.03	Drainage Ditches with Class 'A' Rip Rap
876.04	Drainage Ditches with Class 'B' Rip Rap

12/7/2021
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tsako

PROJECT REFERENCE NO.	SHEET NO.
U-5996	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

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

RAILROADS:

- Standard Gauge (CSX TRANSPORTATION)
- 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 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 R/W Marker
- New Control of Access Line with Concrete C/A Marker
- Existing Control of Access
- New Control of Access
- Existing Easement Line (E)
- New Temporary Construction Easement (E)
- New Temporary Drainage Easement (TDE)
- New Permanent Drainage Easement (PDE)
- New Permanent Drainage / Utility Easement (DUE)
- New Permanent Utility Easement (PUE)
- New Temporary Utility Easement (TUE)
- New Aerial Utility Easement (AUE)

ROADS AND RELATED FEATURES:

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

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (Vineyard)

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert (CONC)
- Bridge Wing Wall, Head Wall and End Wall (CONC WW)

MINOR:

- Head and End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB (CB)
- Paved Ditch Gutter
- Storm Sewer Manhole
- Storm Sewer

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

11/3/2021 u5996_rdy_tsh_01B.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033822 JONATHAN P. SOIKA — DocuSigned by: AEB35098FFE34F1... 11/30/2021	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038176 SHIHAI ZHANG — DocuSigned by: 245D67F41811435... 11/30/2021

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FINAL PAVEMENT SCHEDULE

A1	PROP. 9″ JOINTED CONCRETE TRUCK APRON	R1	PROPOSED 2′-6″ CURB AND GUTTER
B1	PROP. OPEN-GRADED ASPHALT FRICTION COURSE, TYPE FC-1, AT AN AVERAGE RATE OF 90 LBS. PER SQ. YD.	R2	PROPOSED 1′-6″ CURB AND GUTTER
C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R3	PROPOSED 5″ MONOLITHIC CONCRETE ISLAND (KEYED-IN)
C2	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	PROPOSED 9″X18″ CONCRETE CURB
C3	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R5	PROPOSED SHOULDER BERM GUTTER
C4	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R6	PROPOSED 2′-9″ CURB AND GUTTER
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SUFRACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1″ OR GREATER THAN 1.5″ IN DEPTH.	R7	PROPOSED CONCRETE ISLAND COVER
C6	PROP. VAR. DEPTH ASPHALT CONCRETE SUFRACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5″ OR GREATER THAN 2″ IN DEPTH.	R8	PROPOSED EXPRESSWAY GUTTER
C7	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.	T	EARTH MATERIAL
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	U	EXISTING ASPHALT PAVEMENT
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2.5″ OR GREATER THAN 4″ IN DEPTH	V1	MILLING OF ASPHALT PAVEMENT AT 2.25″ 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 OF ASPHALT PAVEMENT, 0″ TO 3″ DEPTH.
E2	PROP. APPROX. 5″ ASPHALT CONCRETE BASE COURSE,TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	V3	MILLED RUMBLE STRIPS
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 GREATER THAN 5-1/2″ IN DEPTH OR LESS THAN 3″ IN DEPTH.	W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAILS SHOWING METHOD OF WEDGING, SHEET 2A-2).
J1	PROPOSED 8″ AGGREGATE BASE COURSE	W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAILS SHOWING METHOD OF WEDGING, SHEET 2A-2).
P	PRIME COAT		

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

NOTE: SEE TMP PLANS FOR TEMPORARY PAVEMENT DETAILS.

8/17/99

11/30/2021
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JSoika

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2A-2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033822 JONATHAN P. SOIKA 11/30/2021	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038176 SHIHAI ZHANG 11/30/2021

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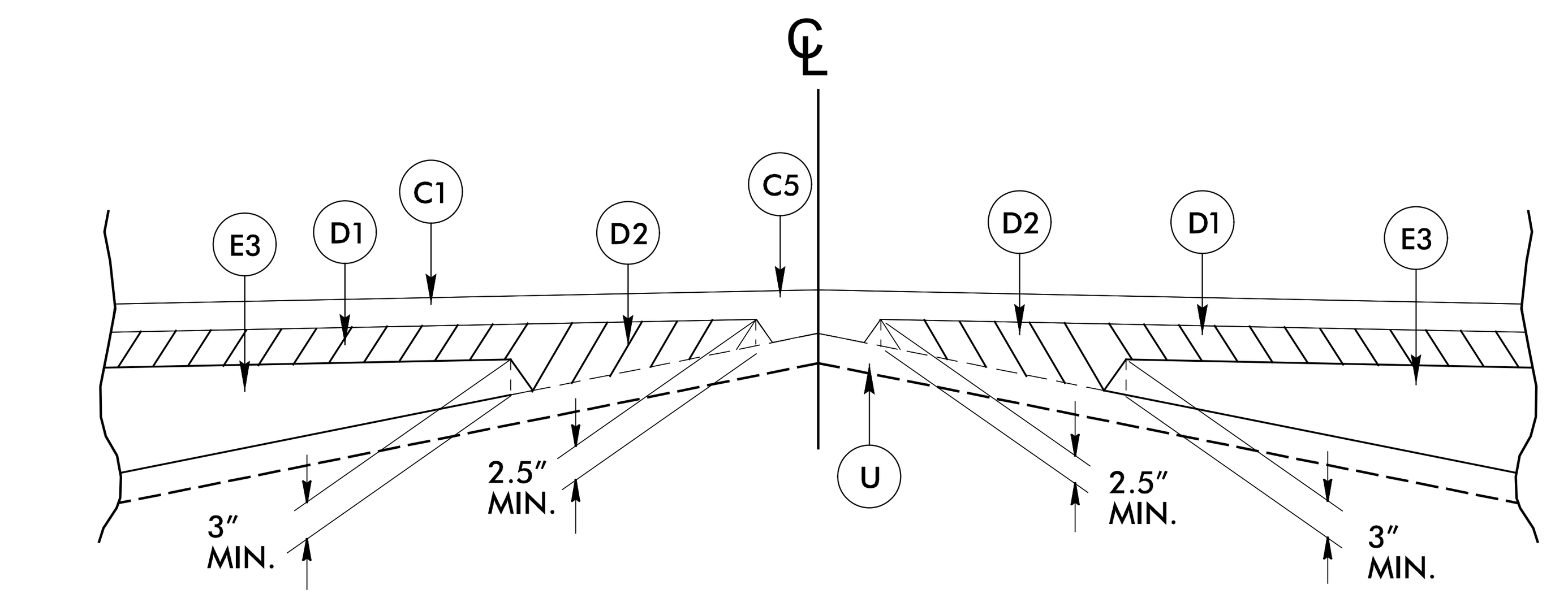
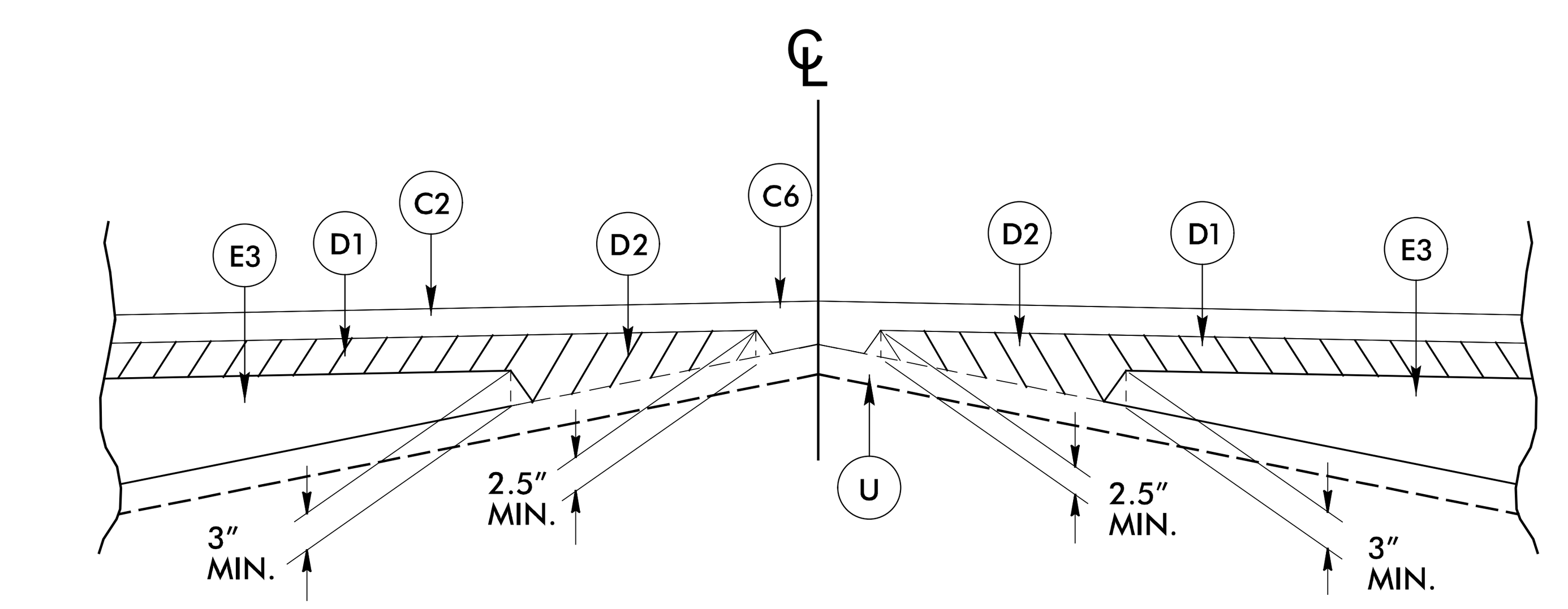


(W1) - DETAIL SHOWING METHOD OF WEDGING ON ALL LINES EXCEPT RAMPS AND RAB9 AND RAB10



(W2) - DETAIL SHOWING METHOD OF WEDGING ON RAMPS AND RAB9 AND RAB10

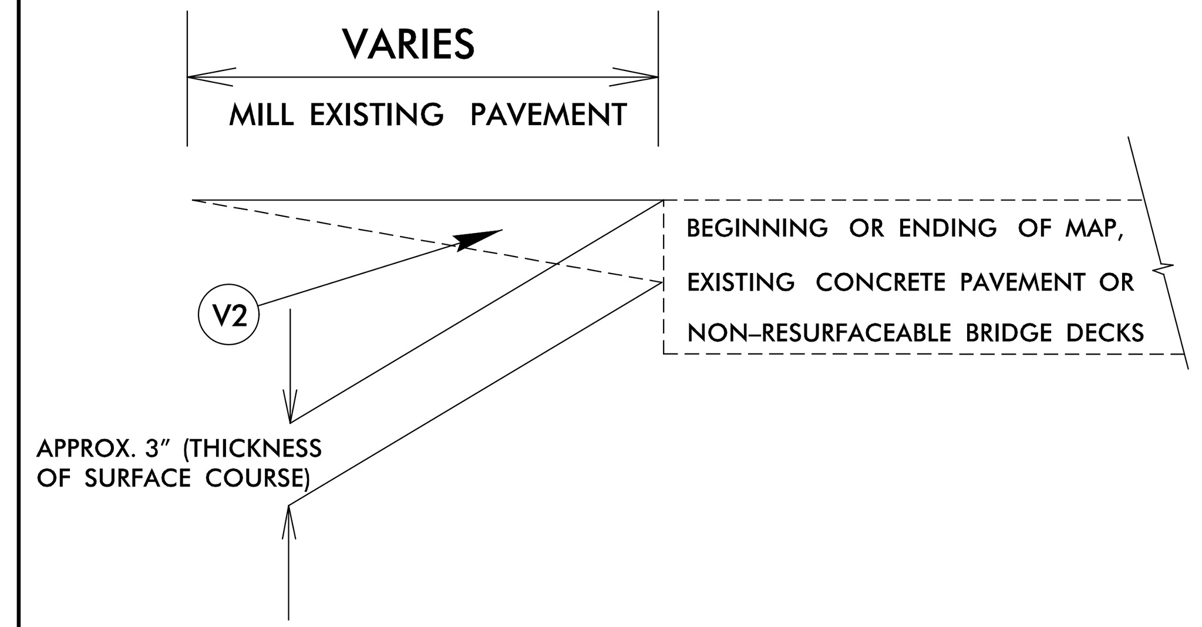
MILLING AT PAVEMENT TIE-INS

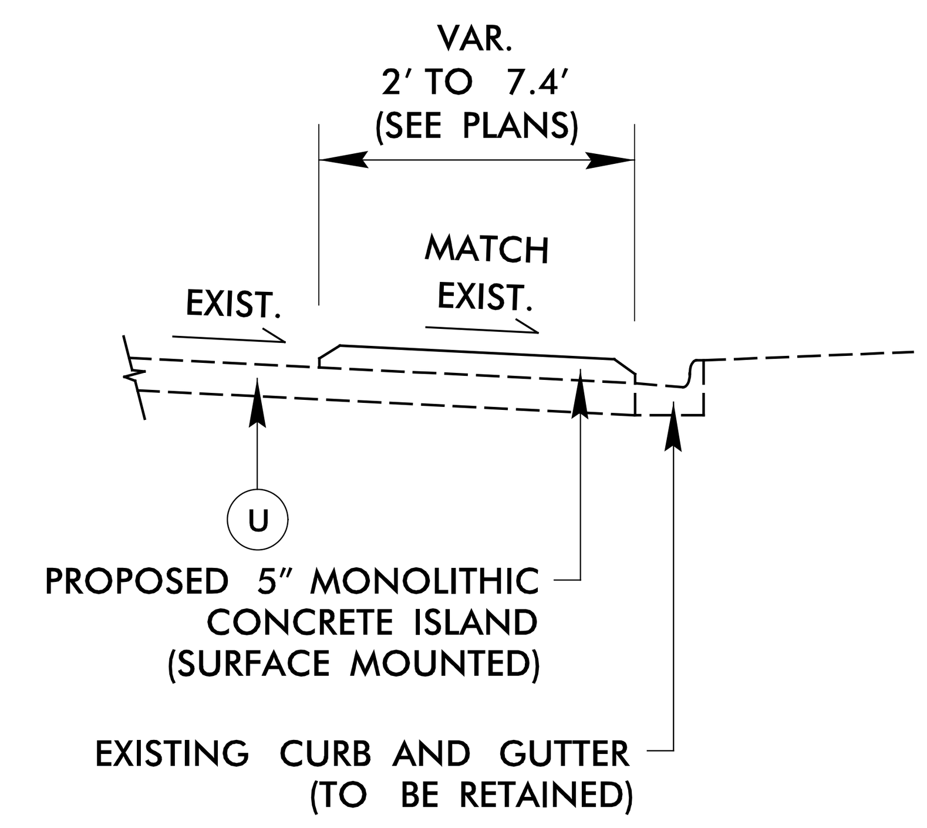
NOTES TO CONTRACTOR

For surface mixes over 1" in thickness, mill the existing pavement in accordance with the following sketch as directed by the Engineer.

Locations shall include ties into existing concrete pavement, at bridge approaches where the bridge will not be resurfaced, and at the beginning and ending point of each resurfacing map.

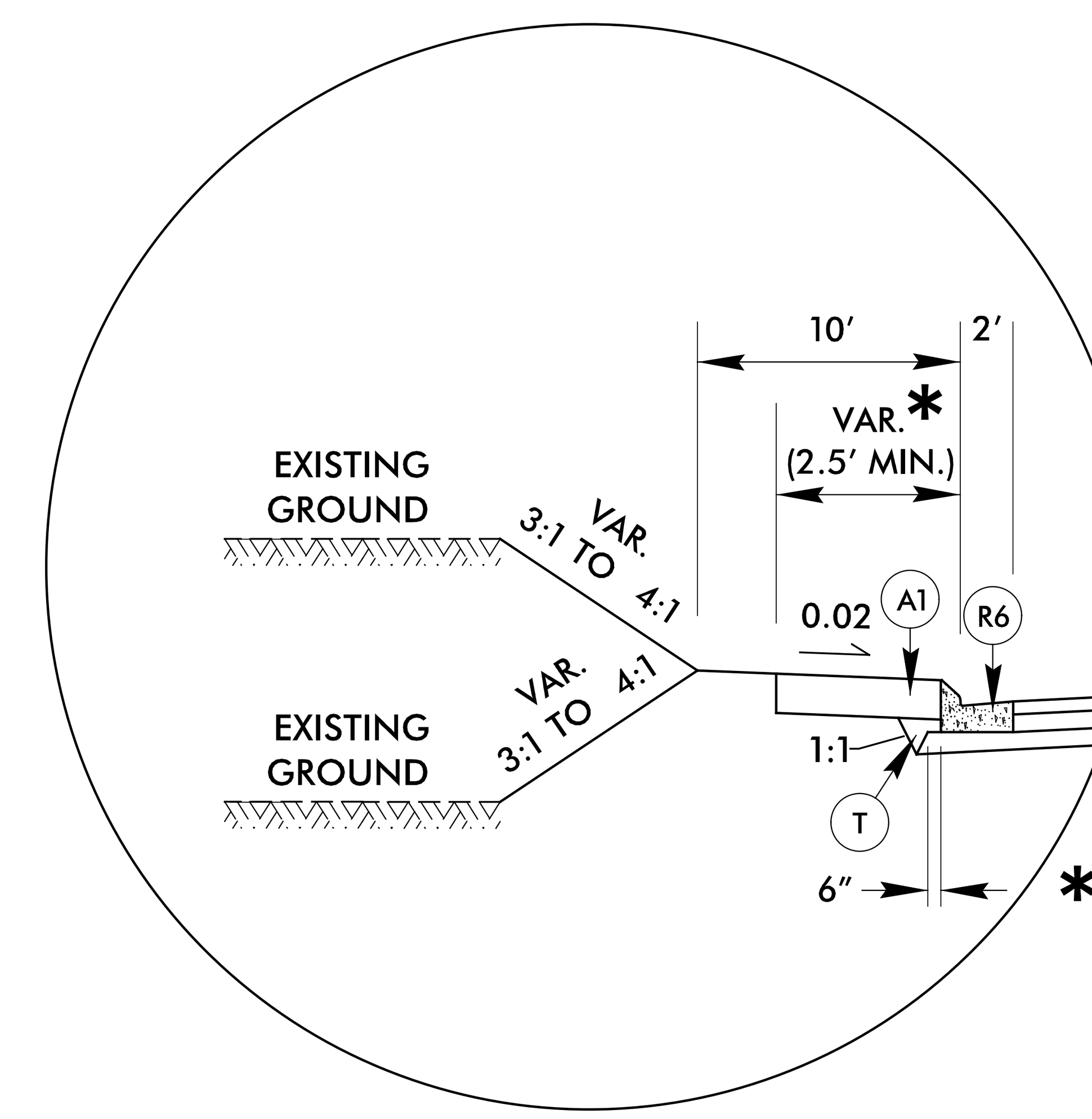
Perform the work in accordance with Section 607 of the January 2018 North Carolina Department of Transportation Standard Specifications for Roads and Structures. Resurfacing will be accomplished at the same time as the milling operation.





DETAIL A | -Y20- CHANNELIZING ISLAND

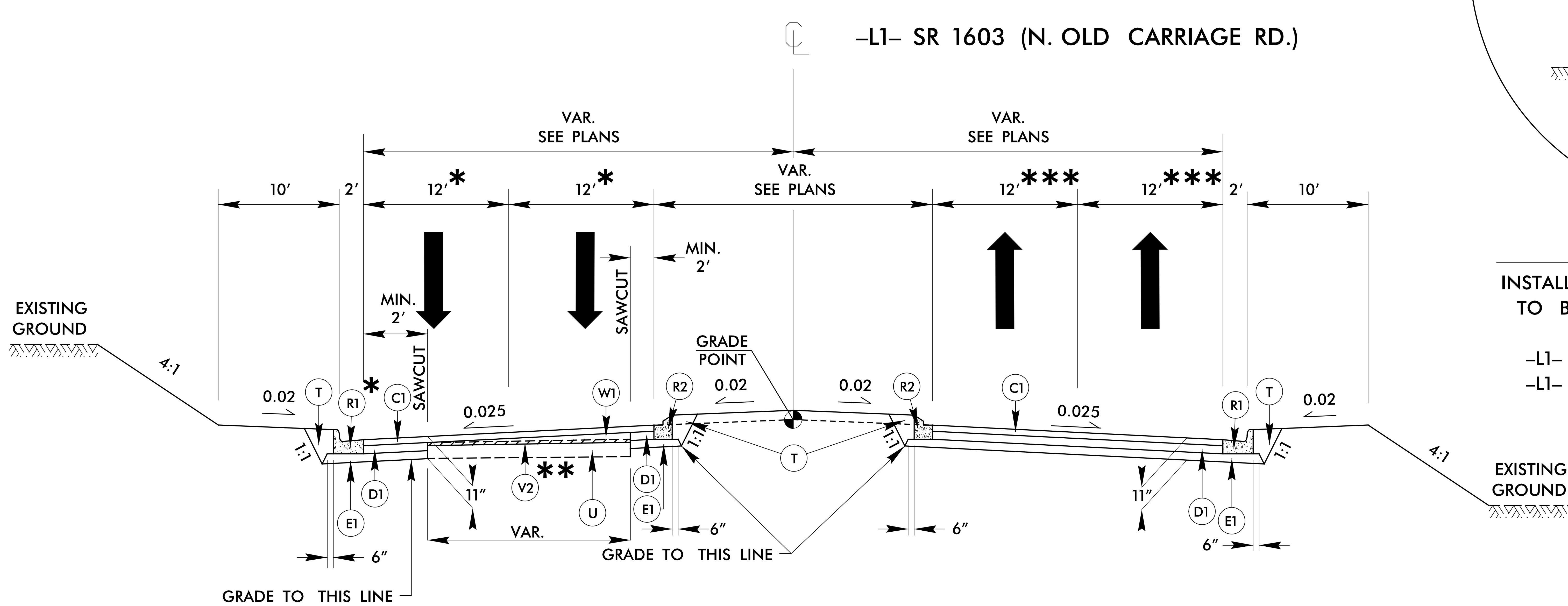
-Y20- STA. 10+32.42 TO 10+68.41 RT.



* SEE SHEETS 2B-1 & 2B-2 FOR WIDTHS

INSET 1A

INSTALLATION OF OUTSIDE TRUCK APRON TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 1
-L1- STA. 33+10.00 TO 33+41.53 LT.
-L1- STA. 49+90.60 TO 50+77.81 LT.



TYPICAL SECTION NO. 1

-L1- STA. 30+70.01 TO 33+41.53
-L1- STA. 46+00.00 TO 48+85.00
-L1- STA. 48+85.00 TO 50+77.81 (MIRRORED)

* AT -L1- STA. 33+00.00 LT. AND 49+80.60 LT.:
BEGIN 10' TRANSITION FROM 2'-6" C&G TO 2'-9" C&G; SEE DETAIL ON SHEET 2C-3

** APPLY TO -L1- STA. 33+00.00 TO 33+41.53 LT.

*** GREATER WIDTHS MAY OCCUR AT ROUNDABOUTS; SEE PLANS

PAVEMENT SCHEDULE

A1	9" JOINTED CONC. TRUCK APRON
B1	0.75" TYPE FC-1
C1	3" TYPE S9.5B
C2	3" TYPE S9.5C
C3	1.5" TYPE S9.5D
C4	3" TYPE S9.5D
C5	VAR. DEPTH S9.5B
C6	VAR. DEPTH S9.5C
C7	2.5" TYPE S9.5B
D1	4" TYPE I19.0C
D2	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	5" TYPE B25.0C
E3	VAR. DEPTH B25.0C
J1	8" ABC
P	PRIME COAT
R1	2'-6" C&G
R2	1'-6" C&G
R3	5" MONO. CONC. ISLAND
R4	9"X18" CURB
R5	SHOULDER BERM GUTTER
R6	2'-9" C&G
R7	CONC. ISLAND COVER
R8	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING ASPHALT PAVEMENT
V1	2.25" MILLING
V2	VAR. DEPTH MILLING (0-3")
V3	MILLED RUMBLE STRIPS
W1	WEDGING
W2	WEDGING

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

11/30/2021
u5996_rdy_typ.dgn
JSoika

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2A-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
SEAL 033822 JONATHAN P. SOKA 11/30/2021	SEAL 038176 SHIHAI ZHANG 11/30/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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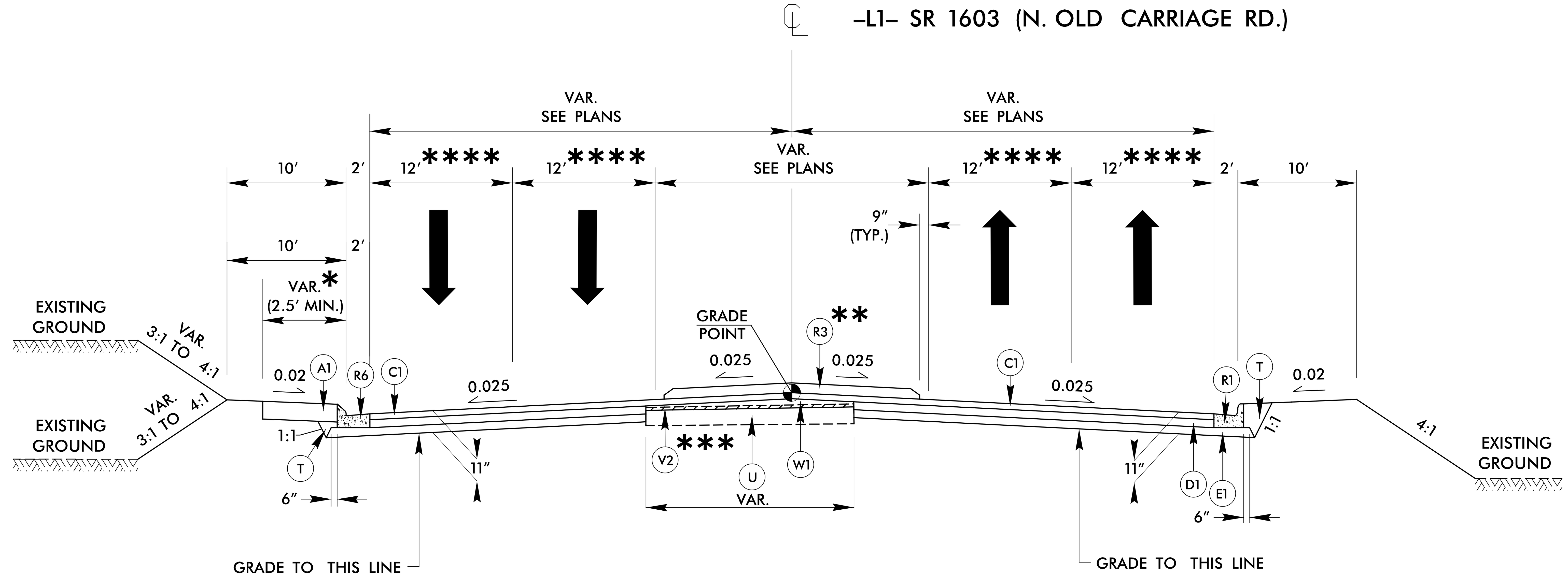


TYPICAL SECTION NO. 2

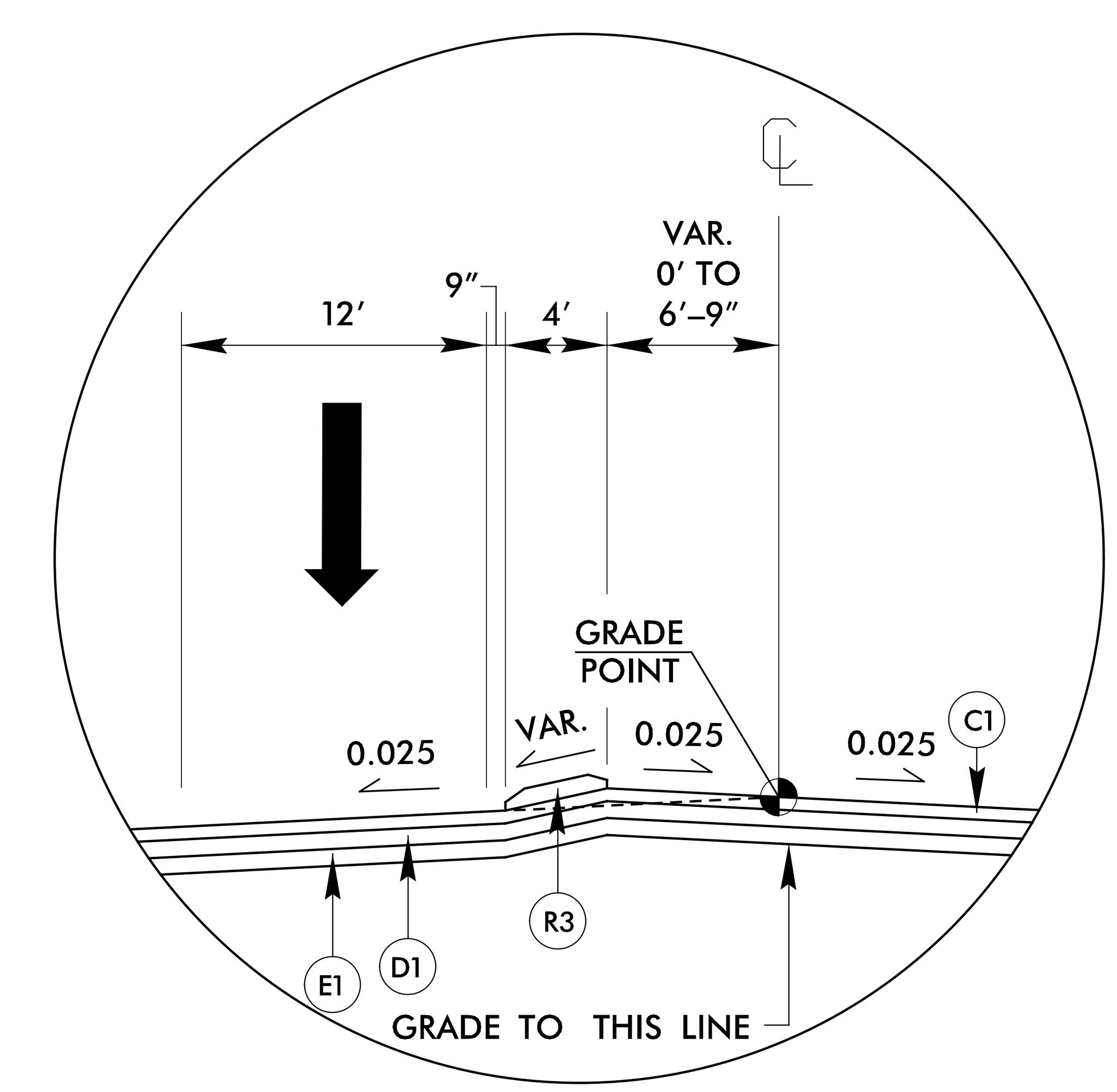
-L1- STA. 33+41.53 TO 33+91.58
-L1- STA. 50+77.81 TO 51+27.81

* SEE SHEETS 2B-1 & 2B-2 FOR WIDTHS

** SEE PLANS FOR LIMITS AND DIMENSIONS OF MONOLITHIC CONCRETE ISLAND

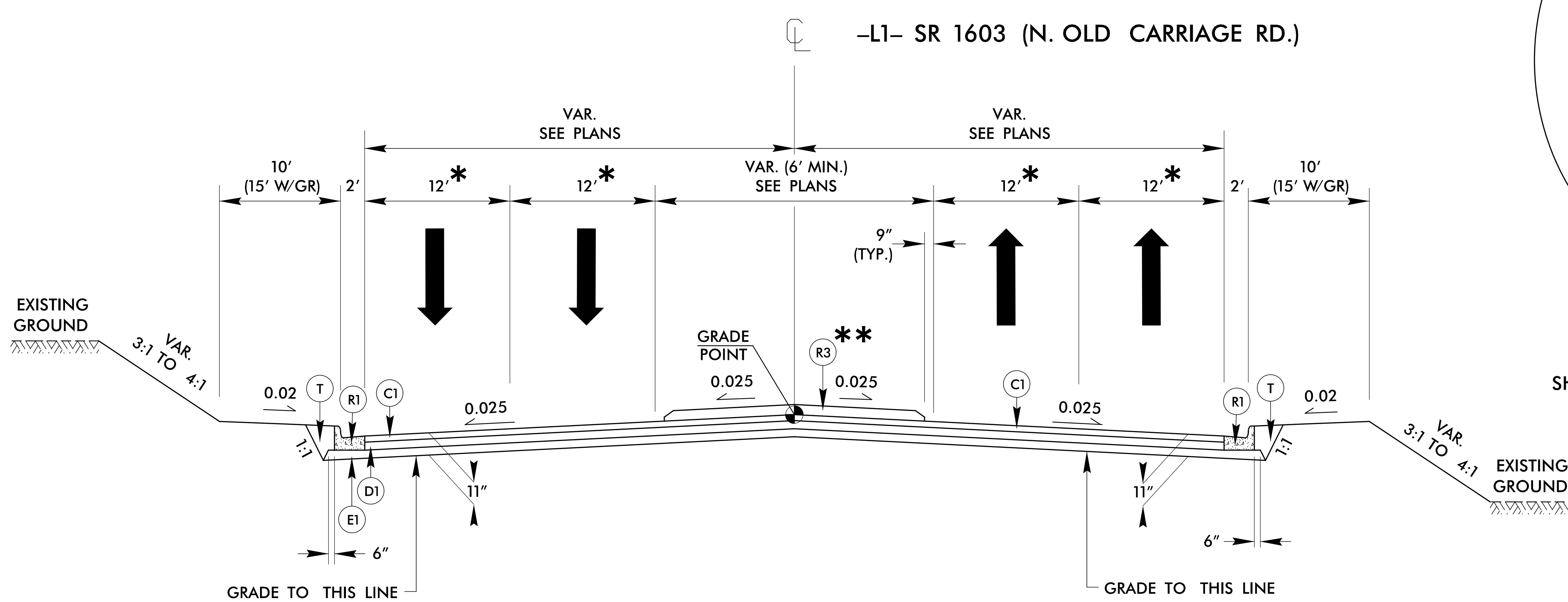
*** APPLY TO -L1- STA. 33+41.53 TO 33+91.58

**** GREATER WIDTHS MAY OCCUR AT ROUNDABOUTS; SEE PLANS



INSET 3A

SHIFTING OF CROWN POINT AT TURN LANE TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 3
-L1- STA. 36+87.17 TO 39+86.66



TYPICAL SECTION NO. 3

-L1- STA. 35+61.15 TO 40+38.58
-L1- STA. 52+97.27 TO 54+59.34 (BEGIN BRIDGE)
-L1- STA. 56+15.34 (END BRIDGE) TO 58+36.43

* GREATER WIDTHS MAY OCCUR AT ROUNDABOUTS; SEE PLANS

** SEE PLANS FOR LIMITS AND DIMENSIONS OF MONOLITHIC CONCRETE ISLAND

PAVEMENT SCHEDULE

A1	9" JOINTED CONC. TRUCK APRON
B1	0.75" TYPE FC-1
C1	3" TYPE S9.5B
C2	3" TYPE S9.5C
C3	1.5" TYPE S9.5D
C4	3" TYPE S9.5D
C5	VAR. DEPTH S9.5B
C6	VAR. DEPTH S9.5C
C7	2.5" TYPE S9.5B
D1	4" TYPE I19.0C
D2	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	5" TYPE B25.0C
E3	VAR. DEPTH B25.0C
J1	8" ABC
P	PRIME COAT
R1	2'-6" C&G
R2	1'-6" C&G
R3	5" MONO. CONC. ISLAND
R4	9"X18" CURB
R5	SHOULDER BERM GUTTER
R6	2'-9" C&G
R7	CONC. ISLAND COVER
R8	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING ASPHALT PAVEMENT
V1	2.25" MILLING
V2	VAR. DEPTH MILLING (0-3")
V3	MILLED RUMBLE STRIPS
W1	WEDGING
W2	WEDGING

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

11/30/2021
u5996_rdy_typ.dgn
JSoka

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2A-4

ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
SEAL 033822 JONATHAN P. SOIKA 11/30/2021	SEAL 038176 SHIHAI ZHANG 11/30/2021

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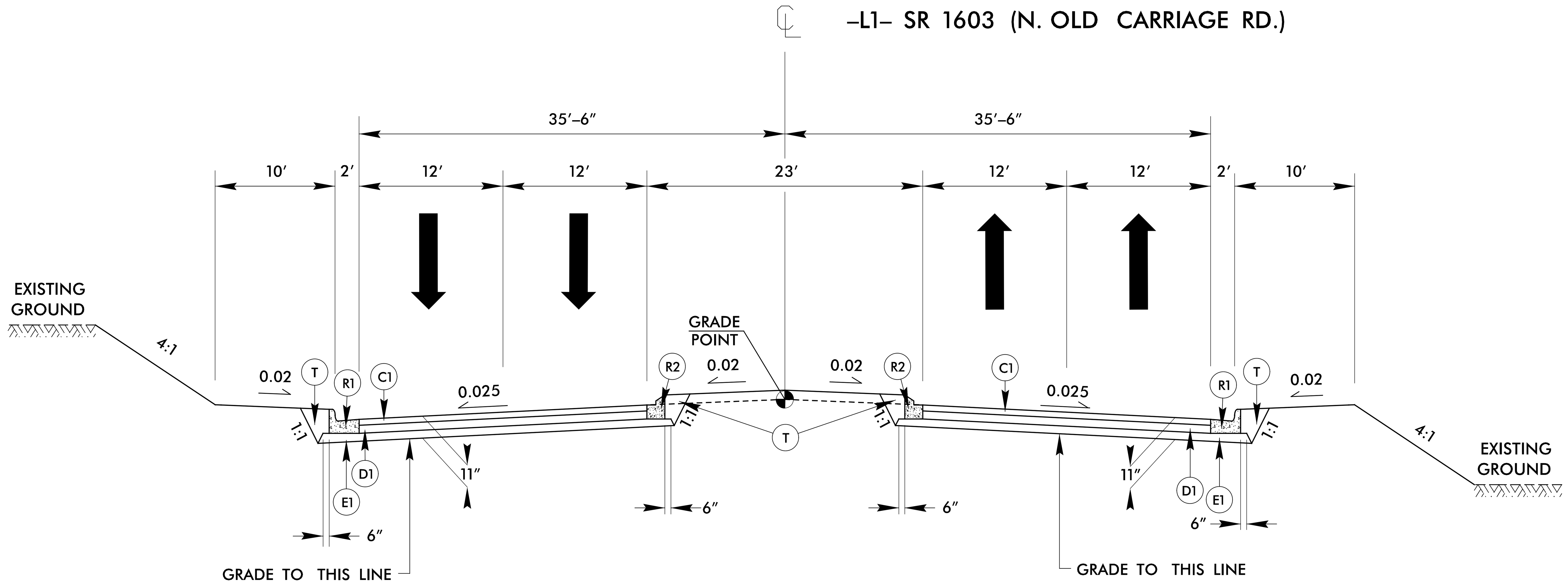
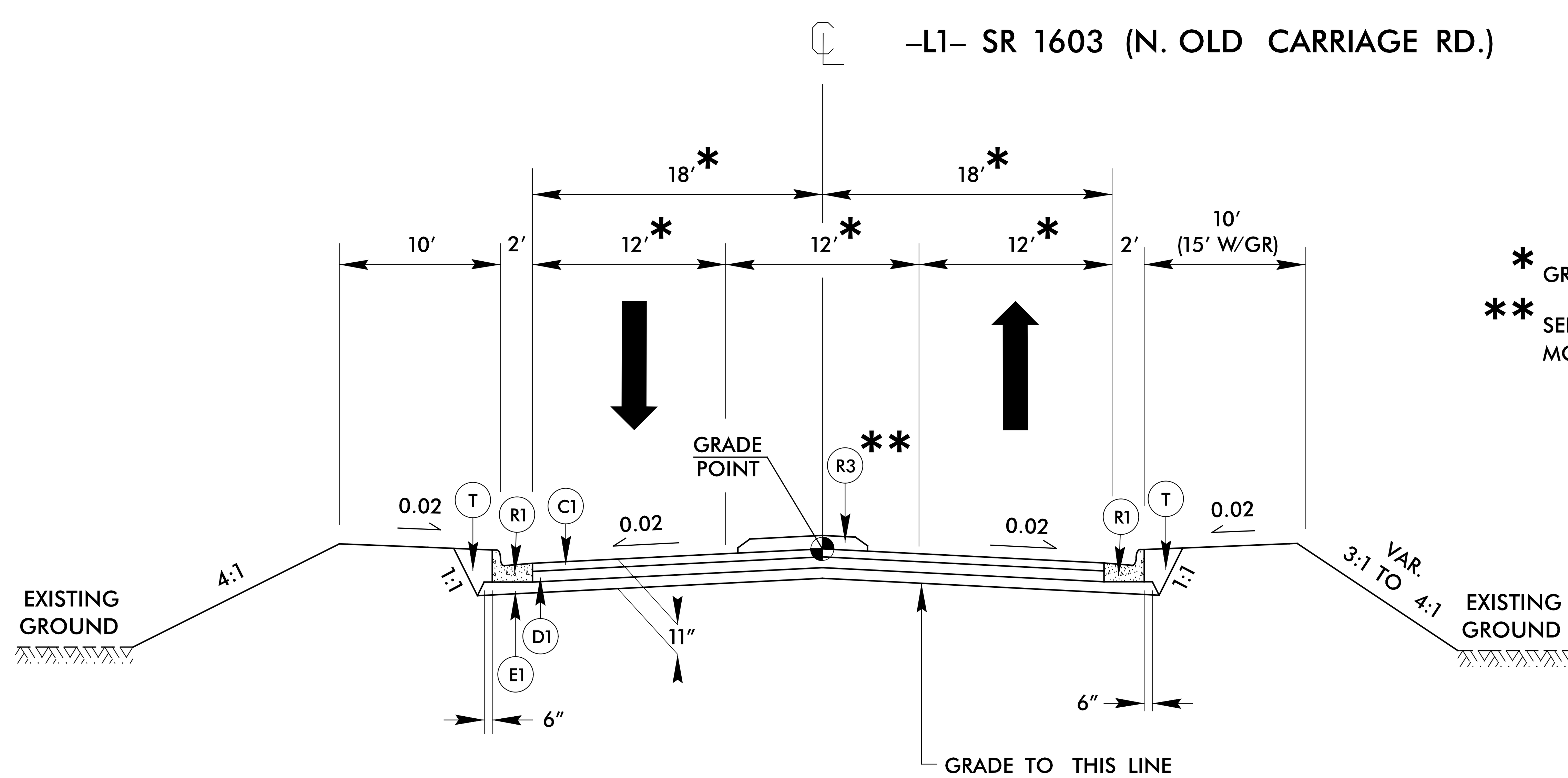


TYPICAL SECTION NO. 4

-L1- STA. 40+38.58 TO 46+00.00



* GREATER WIDTHS OCCUR AT ROUNDABOUT; SEE PLANS

** SEE SHEET 2B-4 FOR LIMITS AND DIMENSIONS OF MONOLITHIC CONCRETE ISLAND

TYPICAL SECTION NO. 5

-L1- STA. 60+08.52 TO 68+49.00

PAVEMENT SCHEDULE	
A1	9" JOINTED CONC. TRUCK APRON
B1	0.75" TYPE FC-1
C1	3" TYPE S9.5B
C2	3" TYPE S9.5C
C3	1.5" TYPE S9.5D
C4	3" TYPE S9.5D
C5	VAR. DEPTH S9.5B
C6	VAR. DEPTH S9.5C
C7	2.5" TYPE S9.5B
D1	4" TYPE I19.0C
D2	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	5" TYPE B25.0C
E3	VAR. DEPTH B25.0C
J1	8" ABC
P	PRIME COAT
R1	2'-6" C&G
R2	1'-6" C&G
R3	5" MONO. CONC. ISLAND
R4	9"X18" CURB
R5	SHOULDER BERM GUTTER
R6	2'-9" C&G
R7	CONC. ISLAND COVER
R8	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING ASPHALT PAVEMENT
V1	2.25" MILLING
V2	VAR. DEPTH MILLING (0-3")
V3	MILLED RUMBLE STRIPS
W1	WEDGING
W2	WEDGING

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

8/17/99

11/30/2021 u5996_rdy_typ.dgn JSoika

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2A-5
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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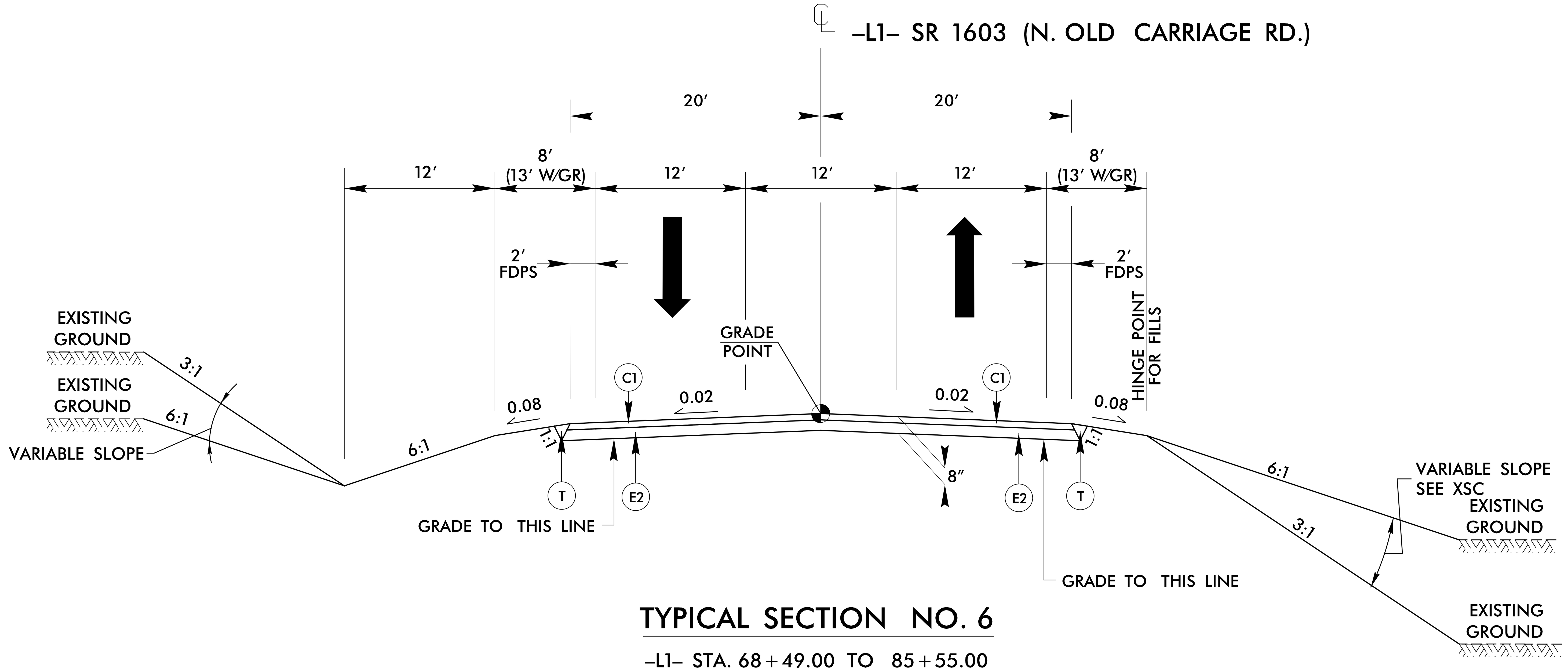
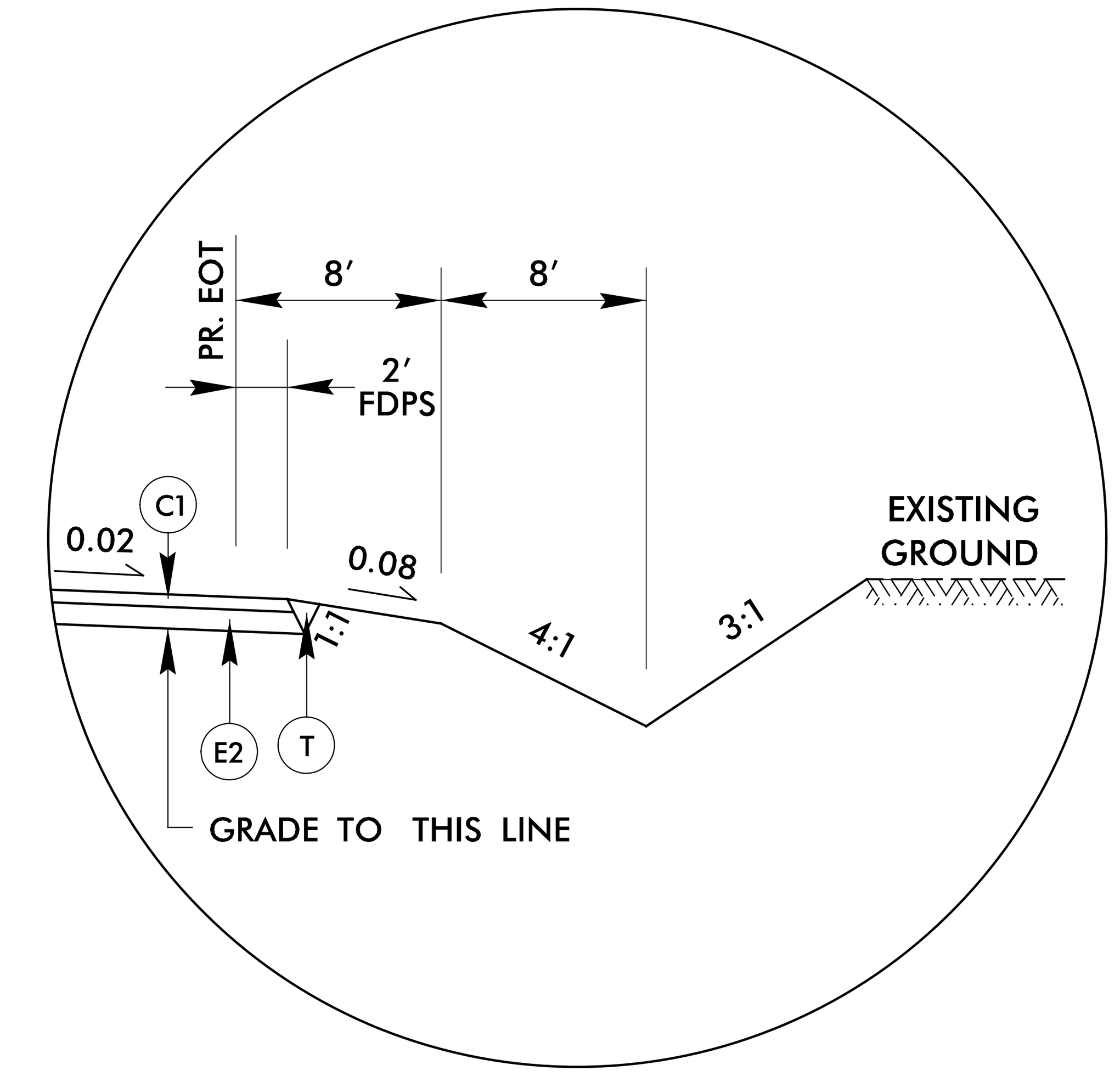


TYPICAL SECTION NO. 6

-L1- STA. 68+49.00 TO 85+55.00

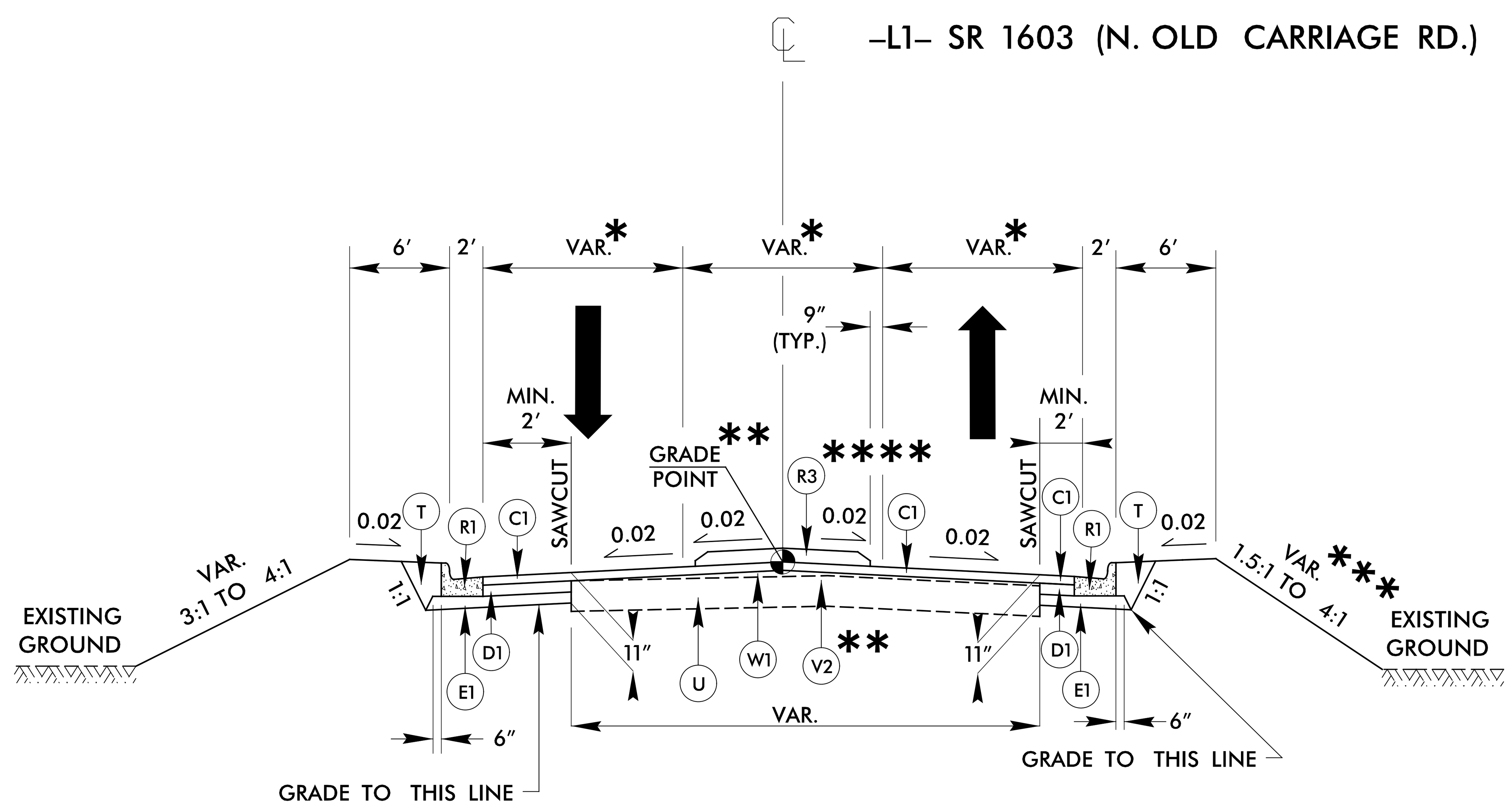


INSET 6A

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 6
-L1- STA. 80+50± TO 82+50± RT.

RESURFACING AND ASPHALT JOINT REHAB ON STONY CREEK BRIDGE

AS REQUESTED BY DIVISION 4 BRIDGE MAINTENANCE, FROM -L1- STA. 85+55.00 TO 88+21.45, CONDUCT 1.5" MILLING AND INSTALL 1.5" S9.5B. ALSO CONDUCT ASPHALT JOINT REPAIR AND REPLACEMENT ON THE EXISTING BRIDGE.



TYPICAL SECTION NO. 7

-L1- STA. 88+21.45 TO 89+54.51
-L1- STA. 91+03.89 TO 92+50.00

* LANE WIDTHS VARY; SEE PLANS

** PROPOSED GRADE BEGINS AT -L1- STA. 88+50.00. FROM -L1- STA. 88+21.45 TO 88+50.00, CONDUCT VARIABLE-DEPTH MILLING AND REPLACE WITH S9.5B AND WEDGING (AS NECESSARY) TO TRANSITION FROM BRIDGE TO PROPOSED -L1- GRADE.

*** ROCK PLATING REQUIRED ON SLOPES STEEPER THAN 3:1. SEE PLANS.

**** SEE PLANS FOR LIMITS AND DIMENSIONS OF MONOLITHIC CONCRETE ISLANDS

PAVEMENT TRANSITION NOTE:

FROM -L1- STA. 92+50.00 TO 93+25.00:
CONDUCT VARIABLE-DEPTH MILLING (0" TO 3") AND REPLACE WITH 3" S9.5B TO TRANSITION FROM TYPICAL SECTION NO. 7 TO THE EXISTING PAVEMENT SURFACE.

PAVEMENT SCHEDULE

A1	9" JOINTED CONC. TRUCK APRON
B1	0.75" TYPE FC-1
C1	3" TYPE S9.5B
C2	3" TYPE S9.5C
C3	1.5" TYPE S9.5D
C4	3" TYPE S9.5D
C5	VAR. DEPTH S9.5B
C6	VAR. DEPTH S9.5C
C7	2.5" TYPE S9.5B
D1	4" TYPE I19.0C
D2	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	5" TYPE B25.0C
E3	VAR. DEPTH B25.0C
J1	8" ABC
P	PRIME COAT
R1	2'-6" C&G
R2	1'-6" C&G
R3	5" MONO. CONC. ISLAND
R4	9"X18" CURB
R5	SHOULDER BERM GUTTER
R6	2'-9" C&G
R7	CONC. ISLAND COVER
R8	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING ASPHALT PAVEMENT
V1	2.25" MILLING
V2	VAR. DEPTH MILLING (0-3")
V3	MILLED RUMBLE STRIPS
W1	WEDGING
W2	WEDGING

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

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2A-6
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033822 ENGINEER JONATHAN P. SOIKA 11/30/2021	NORTH CAROLINA PROFESSIONAL SEAL 038176 ENGINEER SHIHAI ZHANG 11/30/2021

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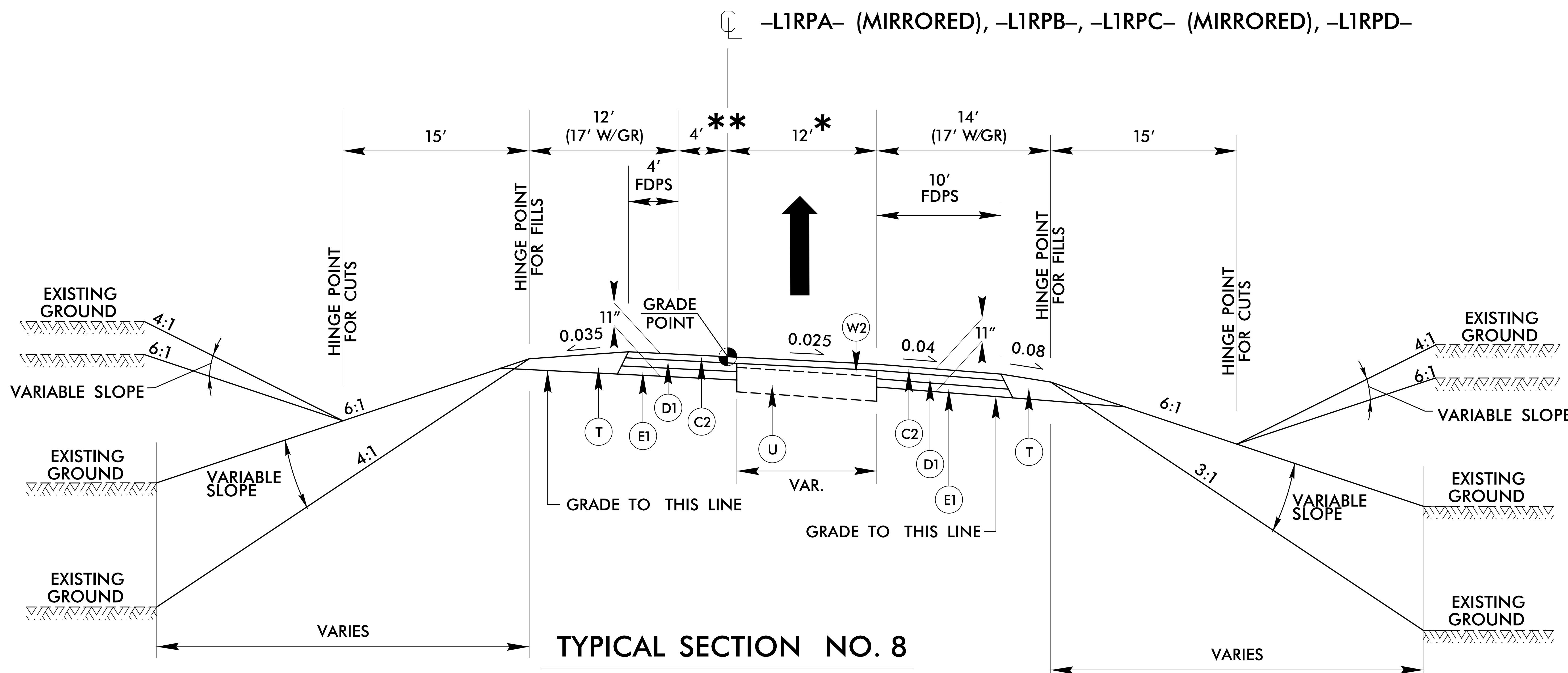
RESURFACING NOTE – CONDUCT 1.5″ MILLING AND 1.5″ ASPHALT OVERLAY (S9.5C) ALONG RAMPS AS FOLLOWS:

–L1RPA– FROM STA. 7+48.57 TO 10+50.00; –L1RPB– FROM STA. 9+97.32 TO 12+95.00;
–L1RPC– FROM STA. 7+85.43 TO 12+00.00; –L1RPD– FROM STA. 8+71.33 TO 11+00.00



TYPICAL SECTION NO. 8

–L1RPA– STA. 11+50.00 TO 14+35.18
–L1RPB– STA. 13+95.00 TO 18+61.79
–L1RPC– STA. 13+00.00 TO 15+85.18
–L1RPD– STA. 12+00.00 TO 15+00.00

NOTE: MAX SHOULDER ROLLOVER IS 6%

* GREATER WIDTHS OCCUR AT ROUNDABOUTS. SEE PLANS

** 12′ ALONG –L1RPD–

PAVEMENT TRANSITION NOTES:

FROM –L1RPA– STA. 10+50.00 TO 11+50.00: CONDUCT VARIABLE-DEPTH MILLING (3″ TO 0″) AND REPLACE WITH 3″ S9.5C TO TRANSITION FROM EXISTING GRADE TO TYPICAL SECTION NO. 8.

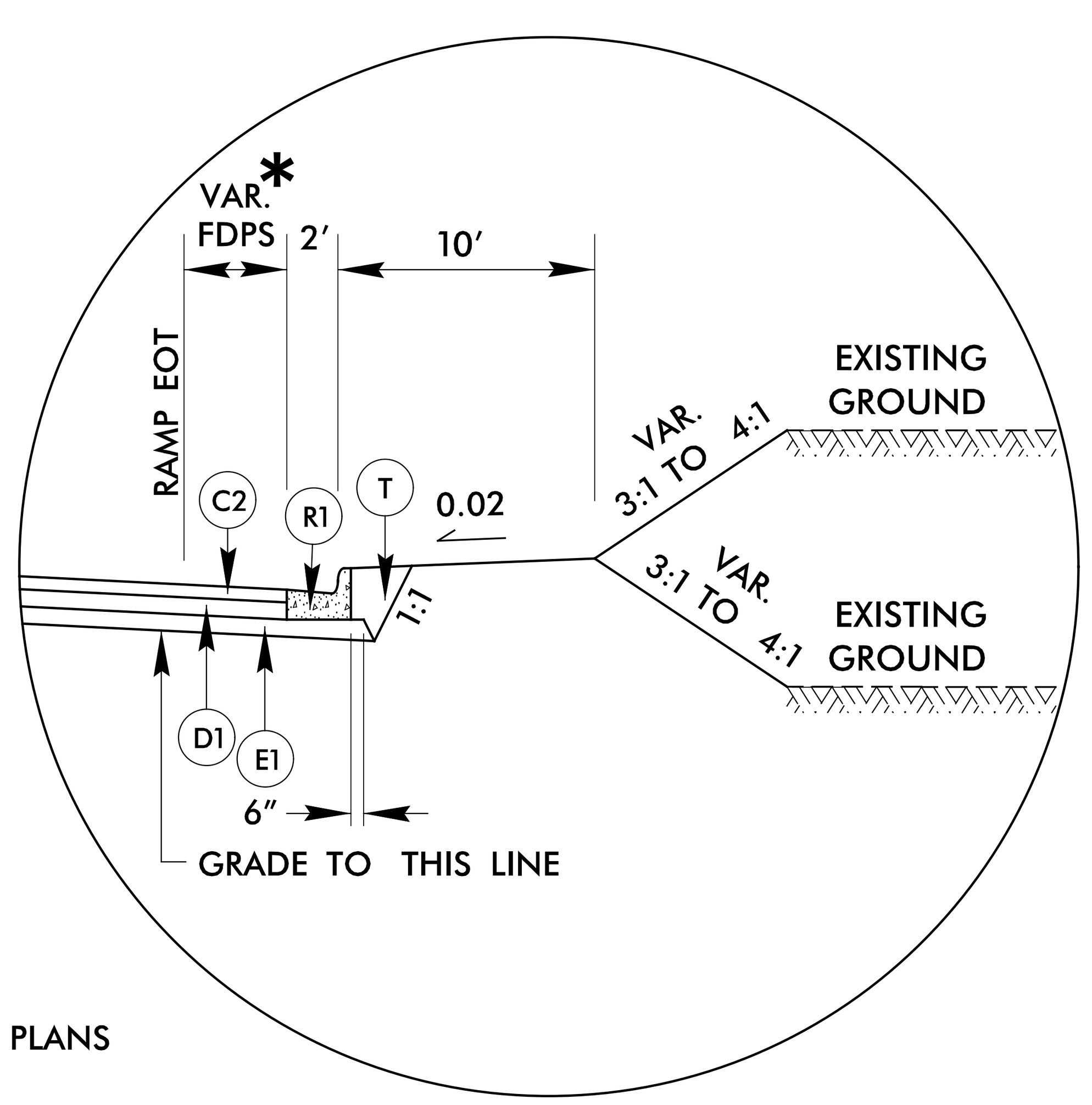
FROM –L1RPB– STA. 12+95.00 TO 13+95.00: CONDUCT VARIABLE-DEPTH MILLING (3″ TO 0″) AND REPLACE WITH 3″ S9.5C TO TRANSITION FROM EXISTING GRADE TO TYPICAL SECTION NO. 8.

FROM –L1RPC– STA. 12+00.00 TO 13+00.00: CONDUCT VARIABLE-DEPTH MILLING (3″ TO 0″) AND REPLACE WITH 3″ S9.5C TO TRANSITION FROM EXISTING GRADE TO TYPICAL SECTION NO. 8.

FROM –L1RPD– STA. 11+00.00 TO 12+00.00: CONDUCT VARIABLE-DEPTH MILLING (3″ TO 0″) AND REPLACE WITH 3″ S9.5C TO TRANSITION FROM EXISTING GRADE TO TYPICAL SECTION NO. 8.

PAVEMENT SCHEDULE	
A1	9″ JOINTED CONC. TRUCK APRON
B1	0.75″ TYPE FC-1
C1	3″ TYPE S9.5B
C2	3″ TYPE S9.5C
C3	1.5″ TYPE S9.5D
C4	3″ TYPE S9.5D
C5	VAR. DEPTH S9.5B
C6	VAR. DEPTH S9.5C
C7	2.5″ TYPE S9.5B
D1	4″ TYPE I19.0C
D2	VAR. DEPTH I19.0C
E1	4″ TYPE B25.0C
E2	5″ TYPE B25.0C
E3	VAR. DEPTH B25.0C
J1	8″ ABC
P	PRIME COAT
R1	2′-6″ C&G
R2	1′-6″ C&G
R3	5″ MONO. CONC. ISLAND
R4	9″X18″ CURB
R5	SHOULDER BERM GUTTER
R6	2′-9″ C&G
R7	CONC. ISLAND COVER
R8	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING ASPHALT PAVEMENT
V1	2.25″ MILLING
V2	VAR. DEPTH MILLING (0-3″)
V3	MILLED RUMBLE STRIPS
W1	WEDGING
W2	WEDGING

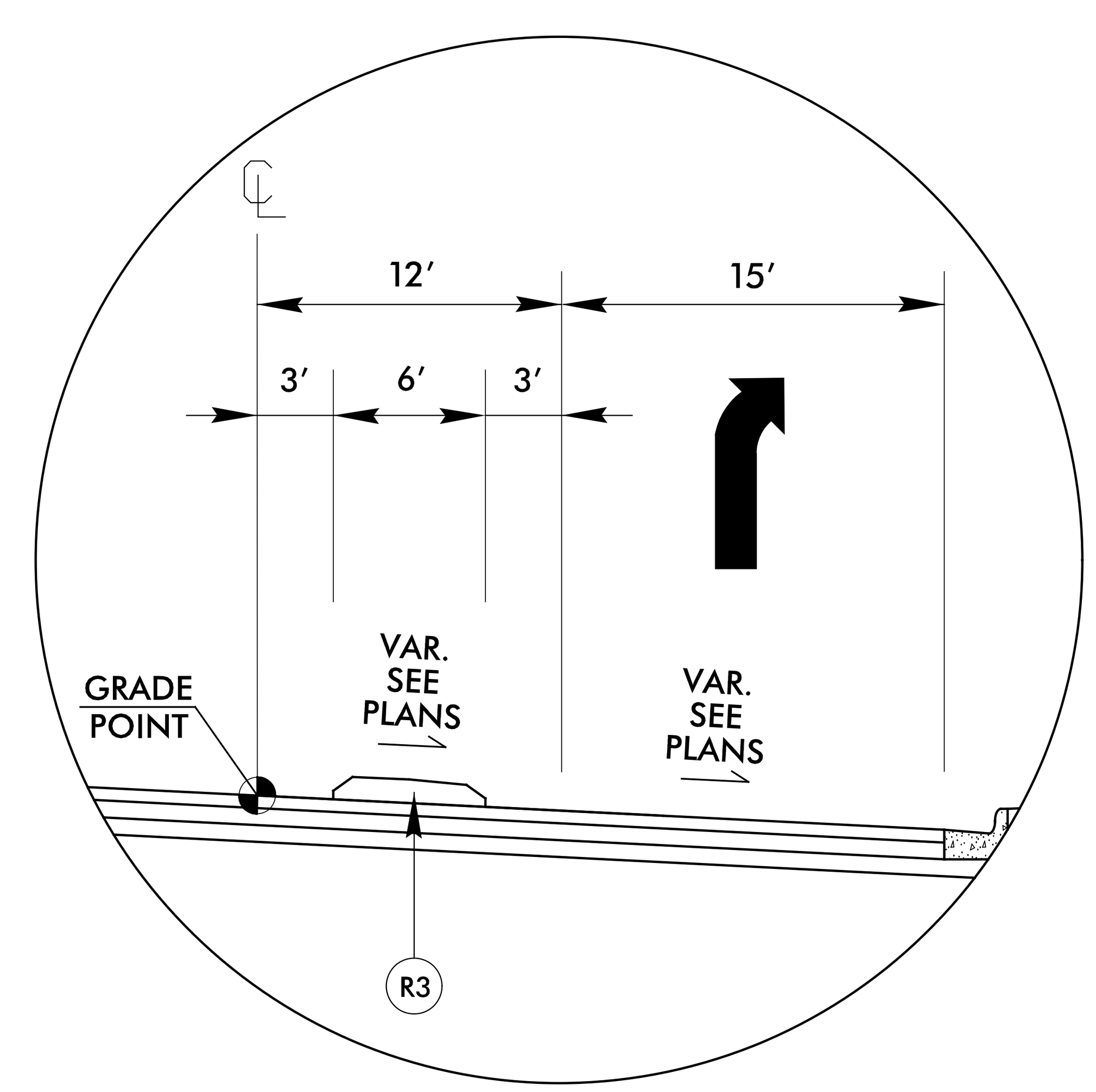
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



* SEE PLANS

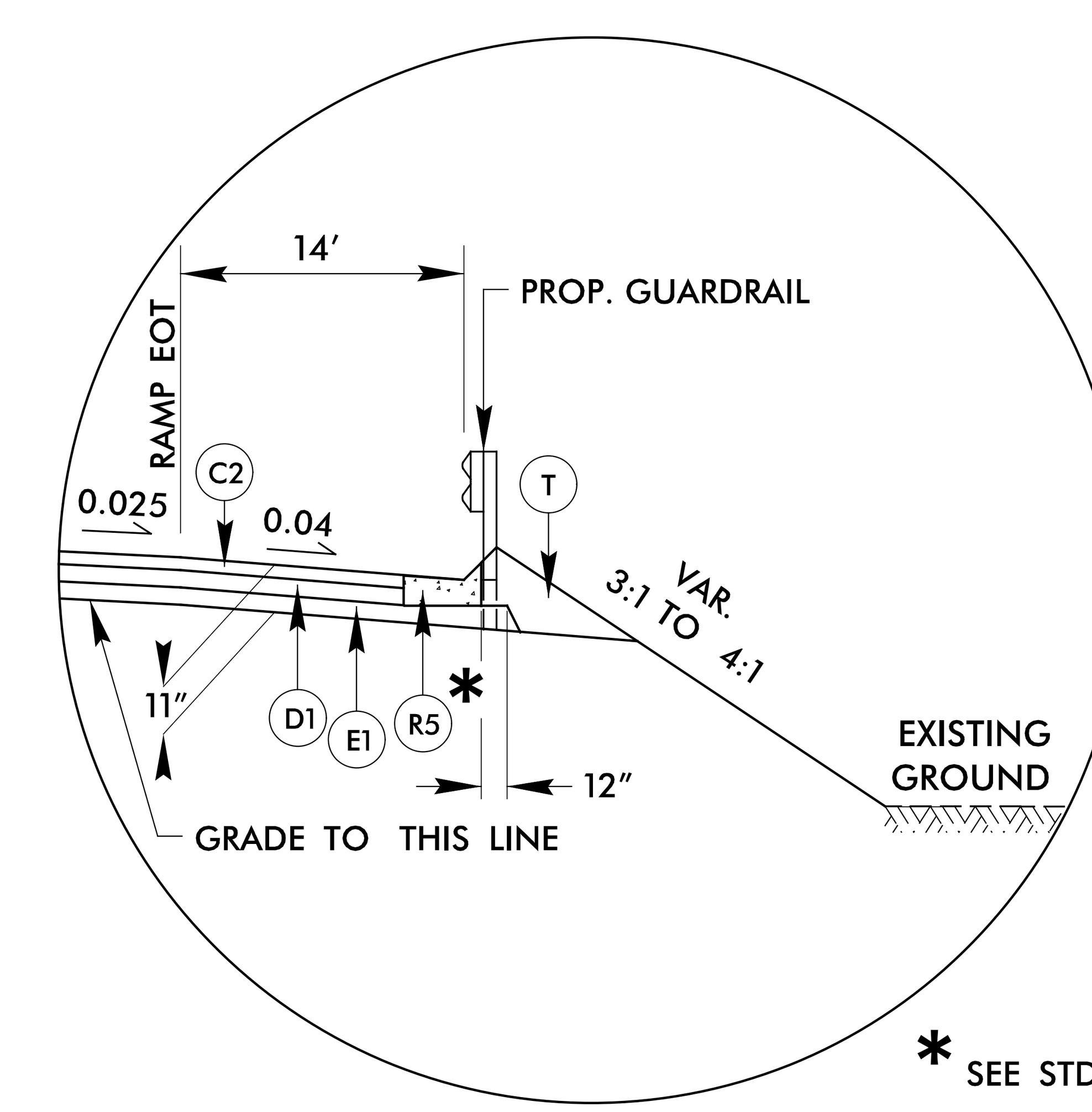
INSET 8A

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 8
–L1RPA– STA. 13+57.11 TO 14+35.18 LT. (MIRRORED)
–L1RPB– STA. 18+02.17 TO 18+61.79 LT. & RT.



INSET 8B

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 8
–L1RPB– STA. 18+06.64 TO 18+61.79



* SEE STD. DWG. 846.03

INSET 8C

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 8
–L1RPA– STA. 11+50.00 TO 13+57.11 LT. (MIRRORED)

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2A-7
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
SEAL 033822 JONATHAN P. SOIKA 11/30/2021	SEAL 038176 SHIHAI ZHANG 11/30/2021

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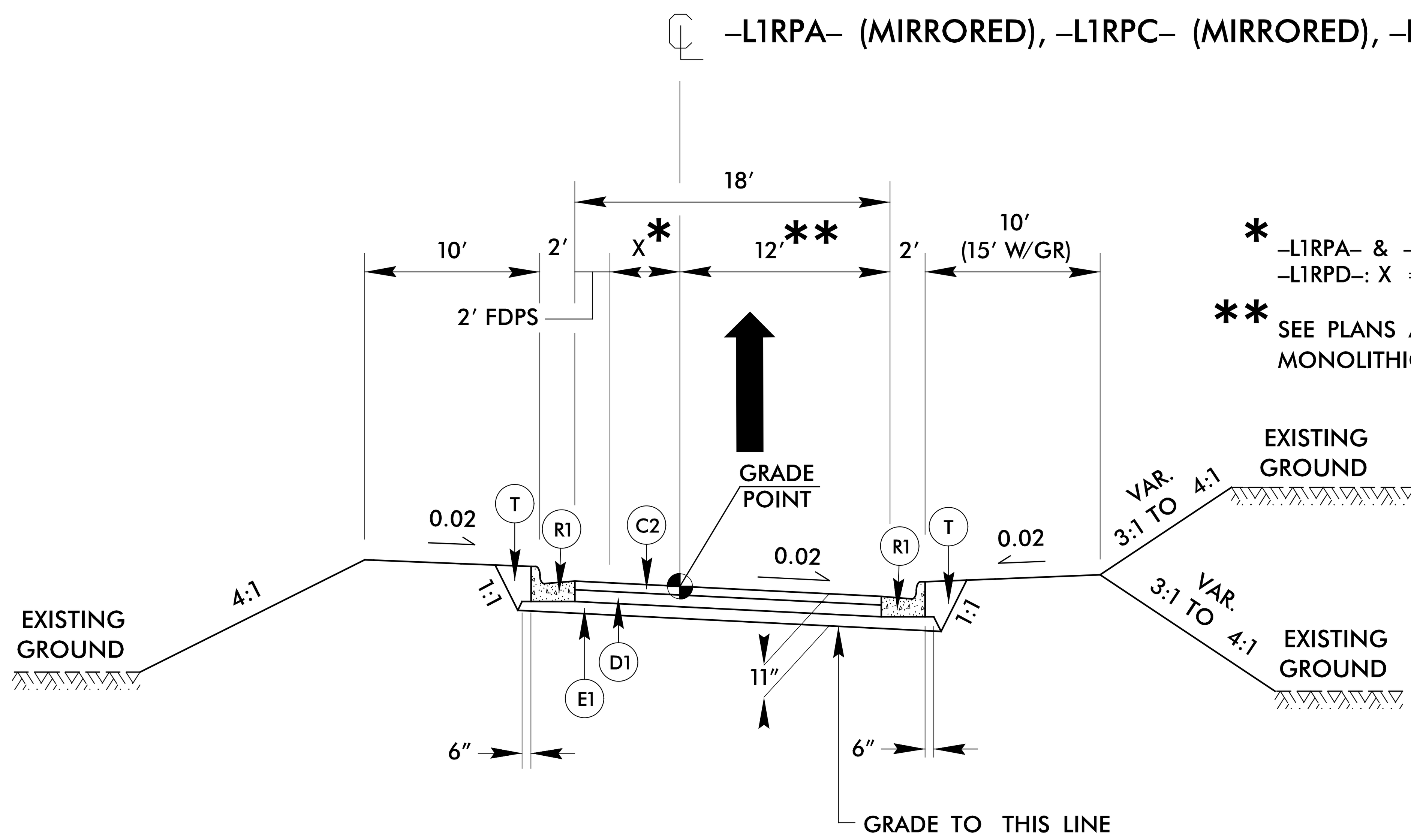
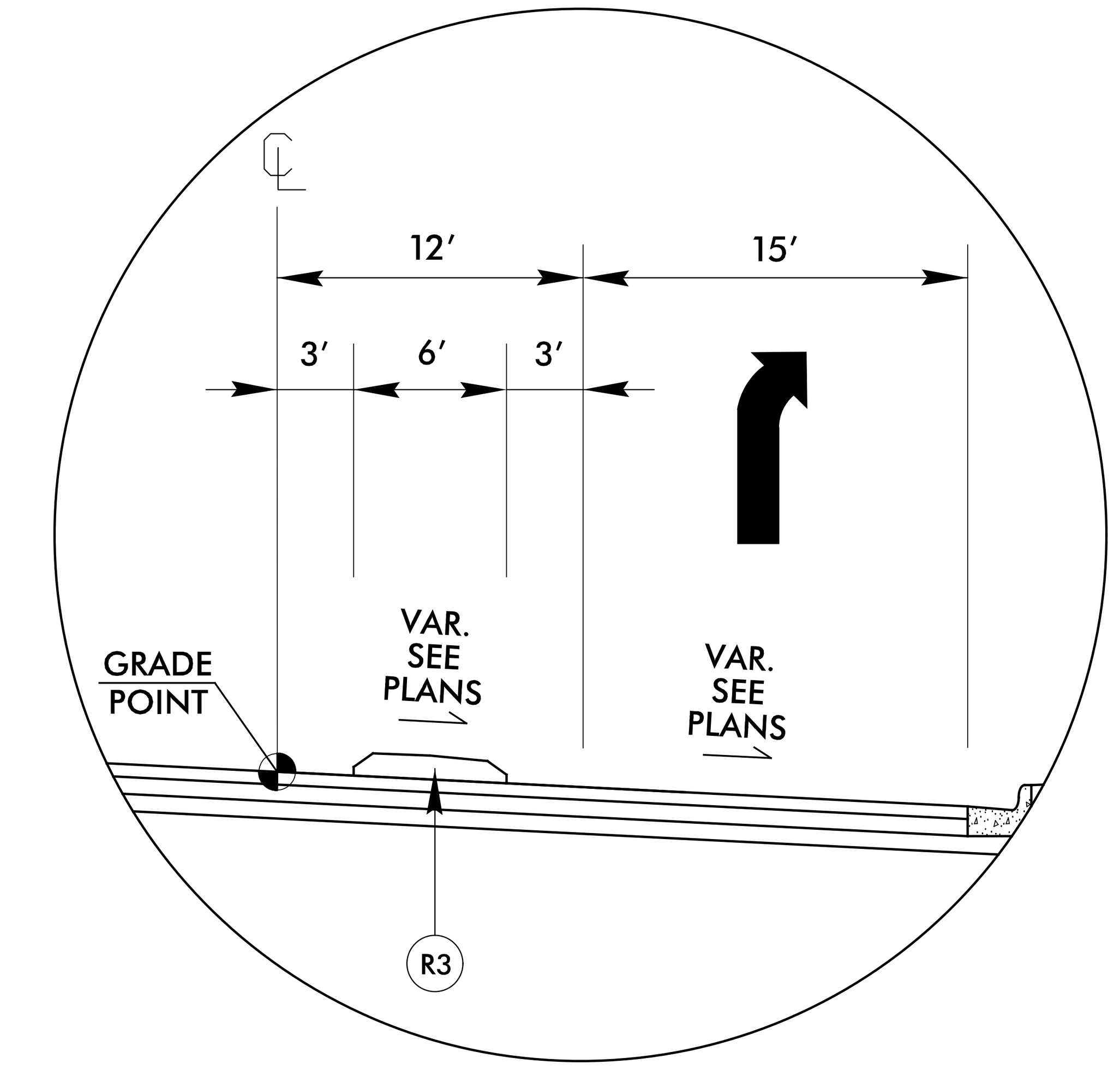


* -L1RPA- & -L1RPC-: X = 4′
-L1RPD-: X = 12′

** SEE PLANS AND INSET 9A FOR WIDTH AND LIMITS OF MONOLITHIC CONCRETE ISLAND ALONG -L1RPD-

TYPICAL SECTION NO. 9

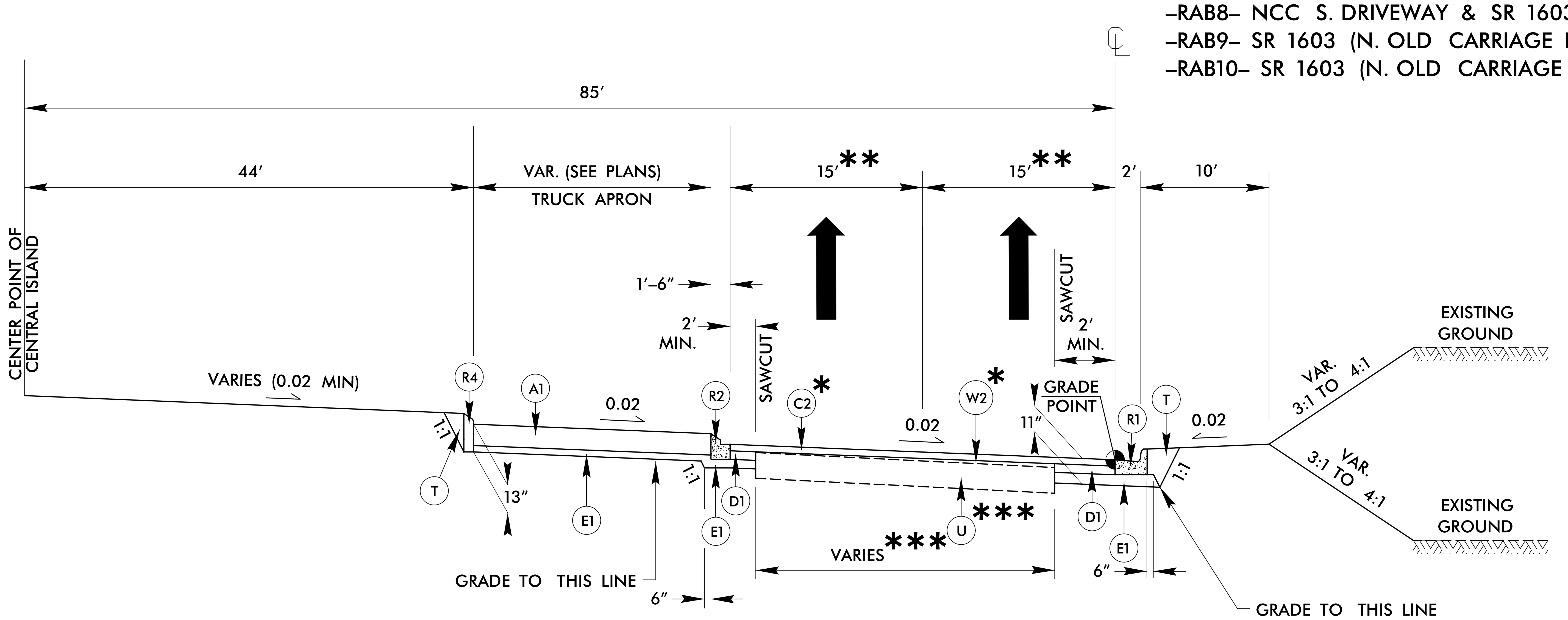
-L1RPA- STA. 14+35.18 TO 15+45.54
-L1RPC- STA. 15+85.18 TO 16+77.00
-L1RPD- STA. 15+00.00 TO 16+42.27



INSET 9A

TO BE USED IN CONJUNCTION WITH
TYPICAL SECTION NO. 9
-L1RPD- STA. 15+83.04 TO 16+42.27

-RAB8- NCC S. DRIVEWAY & SR 1603 (N. OLD CARRIAGE RD.)
-RAB9- SR 1603 (N. OLD CARRIAGE RD.) & -L1RPB- /-L1RPC-
-RAB10- SR 1603 (N. OLD CARRIAGE RD.) & -L1RPA- /-L1RPD-



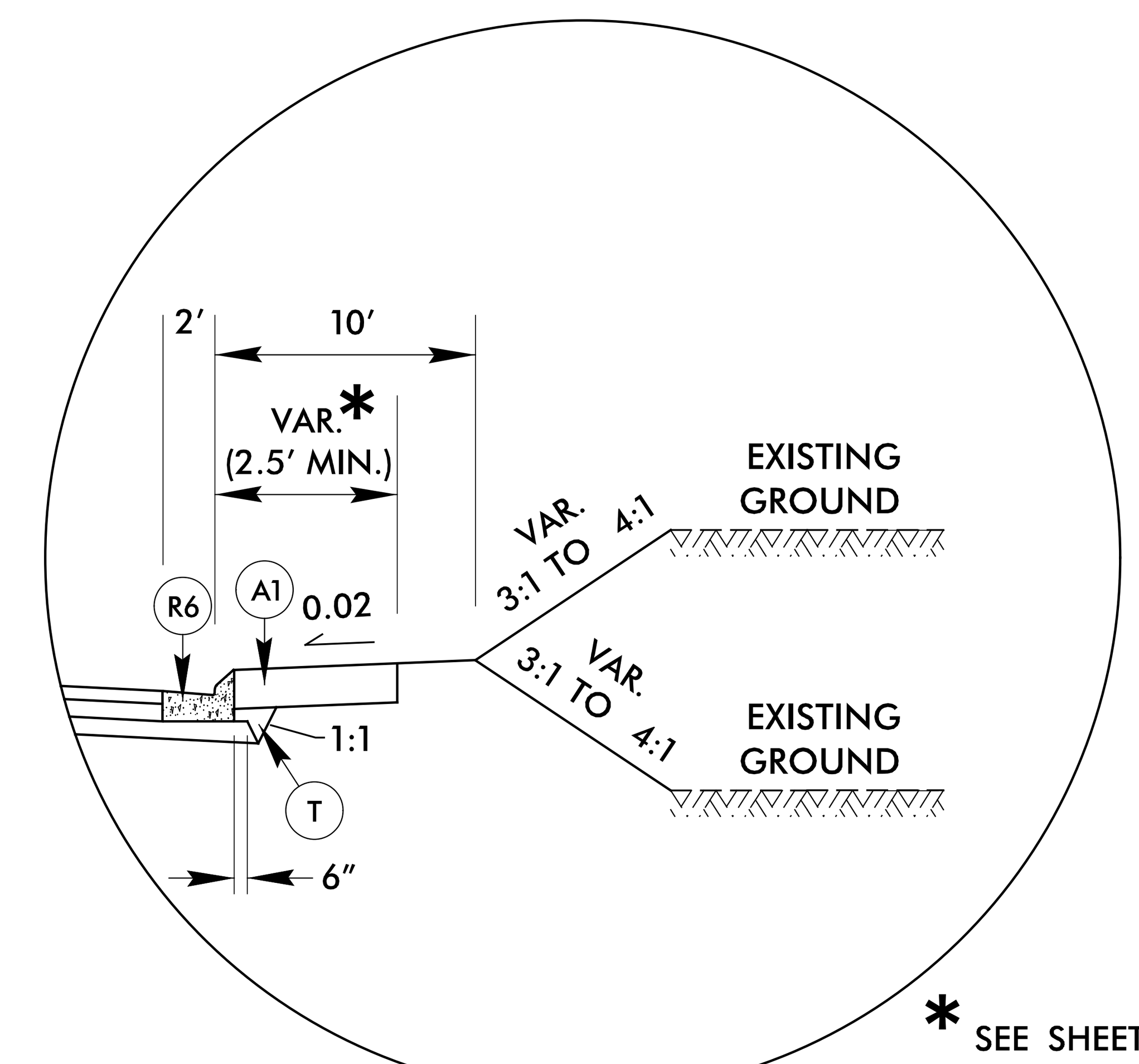
* FOR -RAB8-, USE (C1) & (W1)

** DISTANCES VARY; SEE ROUNDABOUT DETAIL SHEETS

*** FULL-DEPTH PAVEMENT SECTION (AND NO WEDGING) APPLIES TO THE FOLLOWING AREAS:
-RAB8- FROM STA. 10+99.21 TO 14+29.59
-RAB9- FROM STA. 10+10.05 TO 14+16.92
-RAB10- FROM STA. 10+00.00 TO 15+34.03
CONDUCT 1.5″ MILLING OF EXISTING PAVEMENT AT
-RAB8- FROM STA. 14+29.59 TO 15+25.00

TYPICAL SECTION NO. 10

-RAB8- STA. 10+00.00 TO 15+34.03
-RAB9- STA. 10+00.00 TO 15+34.03
-RAB10- STA. 10+00.00 TO 15+34.03



* SEE SHEET 2B-1 FOR WIDTH

INSET 10A

INSTALLATION OF OUTSIDE TRUCK APRON
TO BE USED IN CONJUNCTION WITH
TYPICAL SECTION NO. 10
-RAB8- STA. 10+30.17 TO 10+69.86 RT.
-RAB9- STA. 14+75.38 TO 14+78.87 RT.

PAVEMENT SCHEDULE

A1	9″ JOINTED CONC. TRUCK APRON
B1	0.75″ TYPE FC-1
C1	3″ TYPE S9.5B
C2	3″ TYPE S9.5C
C3	1.5″ TYPE S9.5D
C4	3″ TYPE S9.5D
C5	VAR. DEPTH S9.5B
C6	VAR. DEPTH S9.5C
C7	2.5″ TYPE S9.5B
D1	4″ TYPE I19.0C
D2	VAR. DEPTH I19.0C
E1	4″ TYPE B25.0C
E2	5″ TYPE B25.0C
E3	VAR. DEPTH B25.0C
J1	8″ ABC
P	PRIME COAT
R1	2′-6″ C&G
R2	1′-6″ C&G
R3	5″ MONO. CONC. ISLAND
R4	9″X18″ CURB
R5	SHOULDER BERM GUTTER
R6	2′-9″ C&G
R7	CONC. ISLAND COVER
R8	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING ASPHALT PAVEMENT
V1	2.25″ MILLING
V2	VAR. DEPTH MILLING (0-3″)
V3	MILLED RUMBLE STRIPS
W1	WEDGING
W2	WEDGING

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

11/30/2021
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jsoika

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2A-8
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
SEAL 033822 JONATHAN P. SOIKA 11/30/2021	SEAL 038176 SHIHAI ZHANG 11/30/2021

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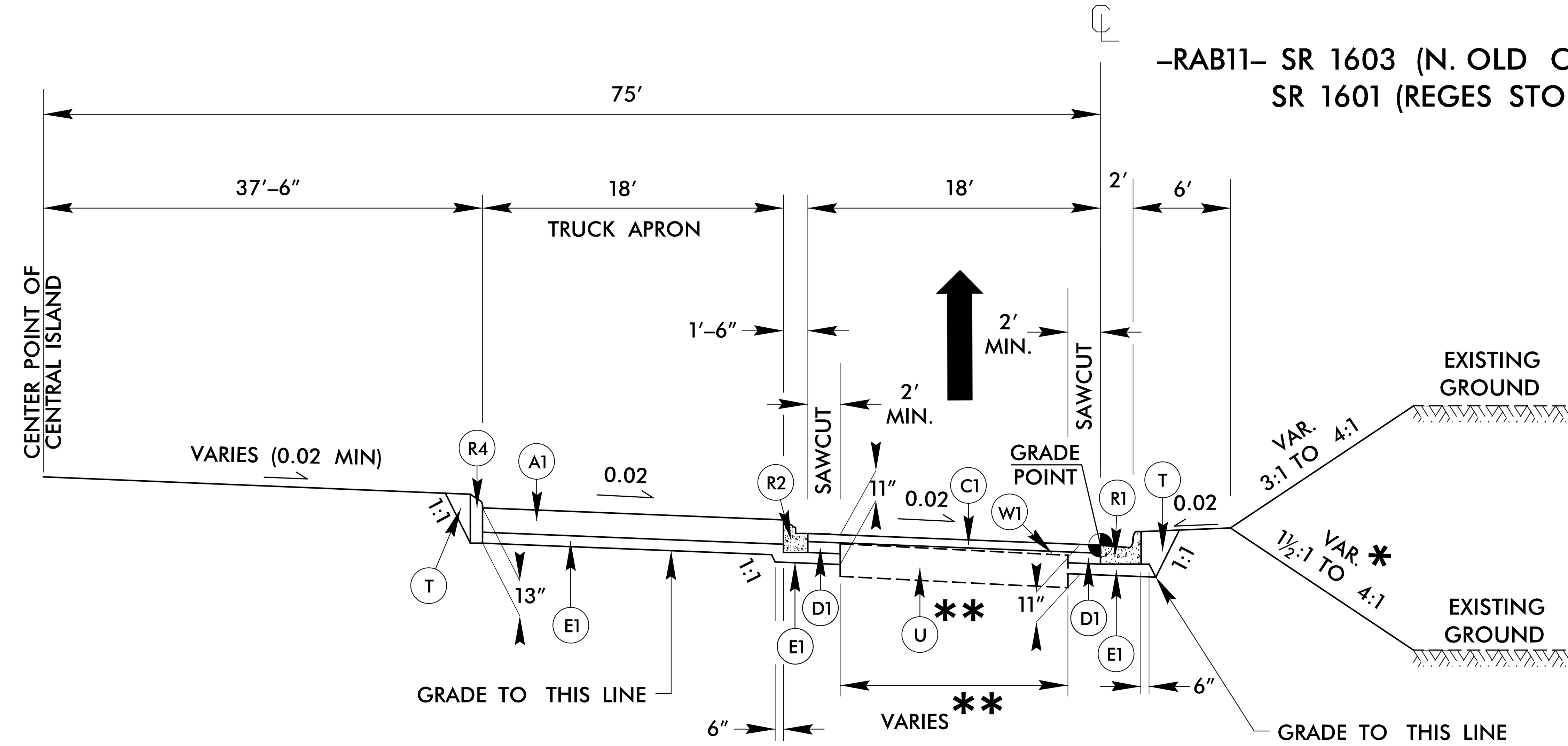
NC License No. C-3705

-RAB11- SR 1603 (N. OLD CARRIAGE RD.) &
SR 1601 (REGES STORE RD.)/SR 1609 (GREEN HILLS RD.)



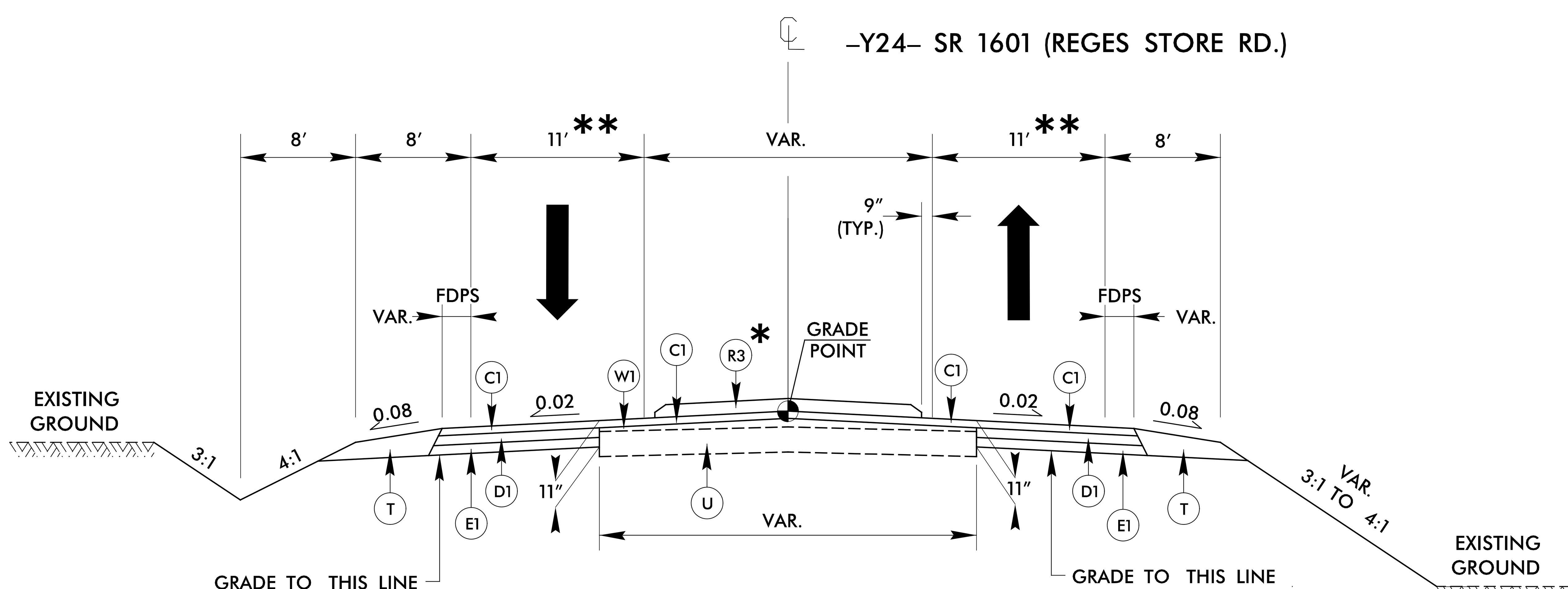
* ROCK PLATING REQUIRED ON SLOPES STEEPER THAN 3:1. SEE PLANS.

** FULL-DEPTH PAVEMENT SECTION (AND NO WEDGING) APPLIES TO THE FOLLOWING AREAS:
FROM STA. 10+85.67 TO 11+49.89
FROM STA. 11+94.14 TO 13+03.62

TYPICAL SECTION NO. 11

-RAB11- STA. 10+00.00 TO 14+71.23

-Y24- SR 1601 (REGES STORE RD.)



TYPICAL SECTION NO. 12

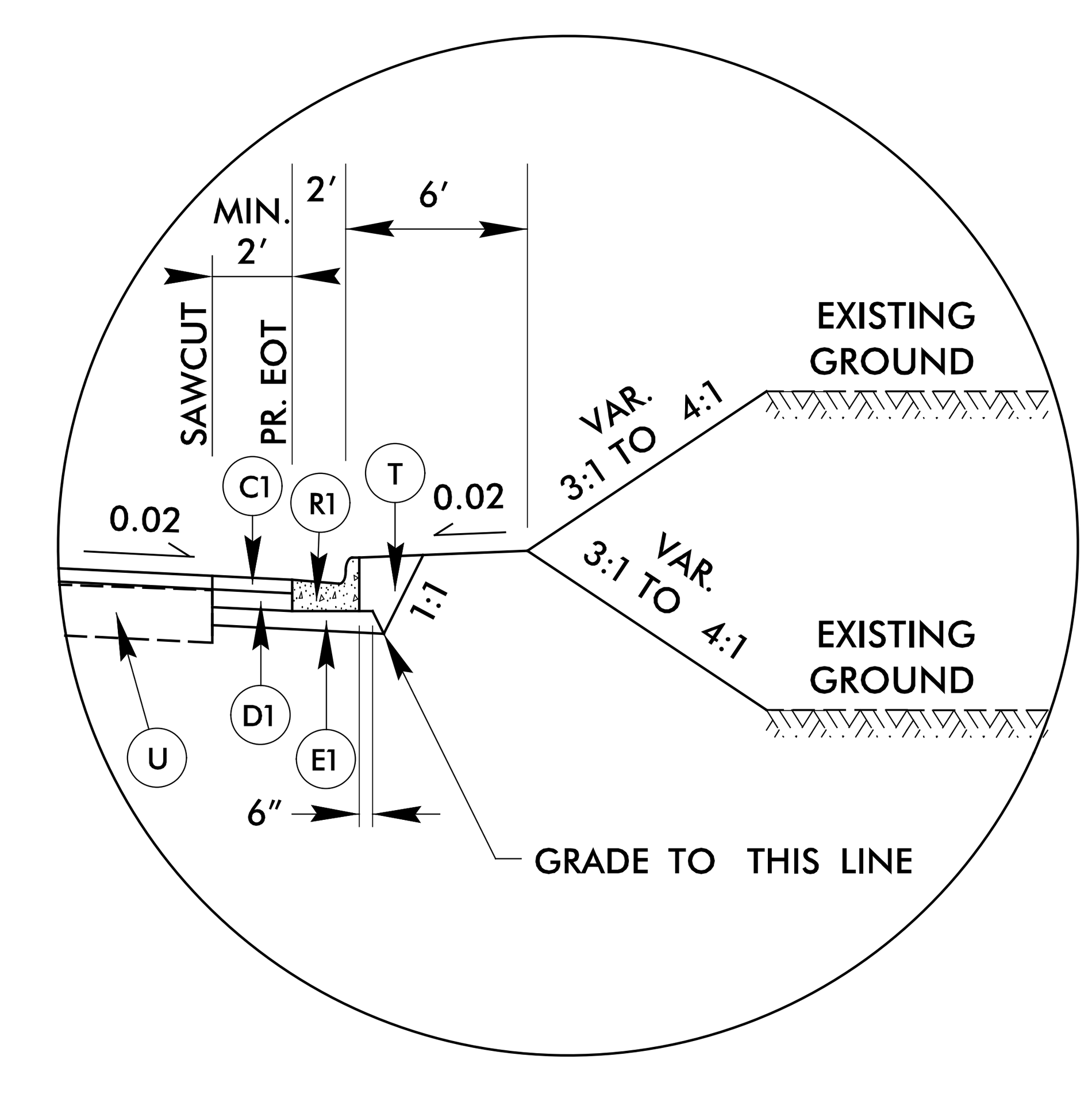
-Y24- STA. 12+00.00 TO 13+56.17

* SEE PLANS FOR LIMITS OF MONOLITHIC CONCRETE ISLAND

** GREATER WIDTHS MAY OCCUR AT ROUNDABOUT; SEE PLANS

PAVEMENT TRANSITION NOTE:

FROM -Y24- STA. 11+25.00 TO 12+00.00:
CONDUCT VARIABLE-DEPTH MILLING (3" TO 0") AND REPLACE WITH 3" S9.5B TO TRANSITION FROM EXISTING PAVEMENT SURFACE TO TYPICAL SECTION NO. 12.



INSET 12A

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 12
-Y24- STA. 12+41.68 TO 13+56.17 RT. & LT. (MIRRORED)

PAVEMENT SCHEDULE

A1	9" JOINTED CONC. TRUCK APRON
B1	0.75" TYPE FC-1
C1	3" TYPE S9.5B
C2	3" TYPE S9.5C
C3	1.5" TYPE S9.5D
C4	3" TYPE S9.5D
C5	VAR. DEPTH S9.5B
C6	VAR. DEPTH S9.5C
C7	2.5" TYPE S9.5B
D1	4" TYPE I19.0C
D2	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	5" TYPE B25.0C
E3	VAR. DEPTH B25.0C
J1	8" ABC
P	PRIME COAT
R1	2'-6" C&G
R2	1'-6" C&G
R3	5" MONO. CONC. ISLAND
R4	9"X18" CURB
R5	SHOULDER BERM GUTTER
R6	2'-9" C&G
R7	CONC. ISLAND COVER
R8	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING ASPHALT PAVEMENT
V1	2.25" MILLING
V2	VAR. DEPTH MILLING (0-3")
V3	MILLED RUMBLE STRIPS
W1	WEDGING
W2	WEDGING

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

11/30/2021
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JSoika

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2A-9
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
SEAL 033822 NORTH CAROLINA PROFESSIONAL ENGINEER JONATHAN P. SOIKA 11/30/2021	SEAL 038176 NORTH CAROLINA PROFESSIONAL ENGINEER SHIHAI ZHANG 11/30/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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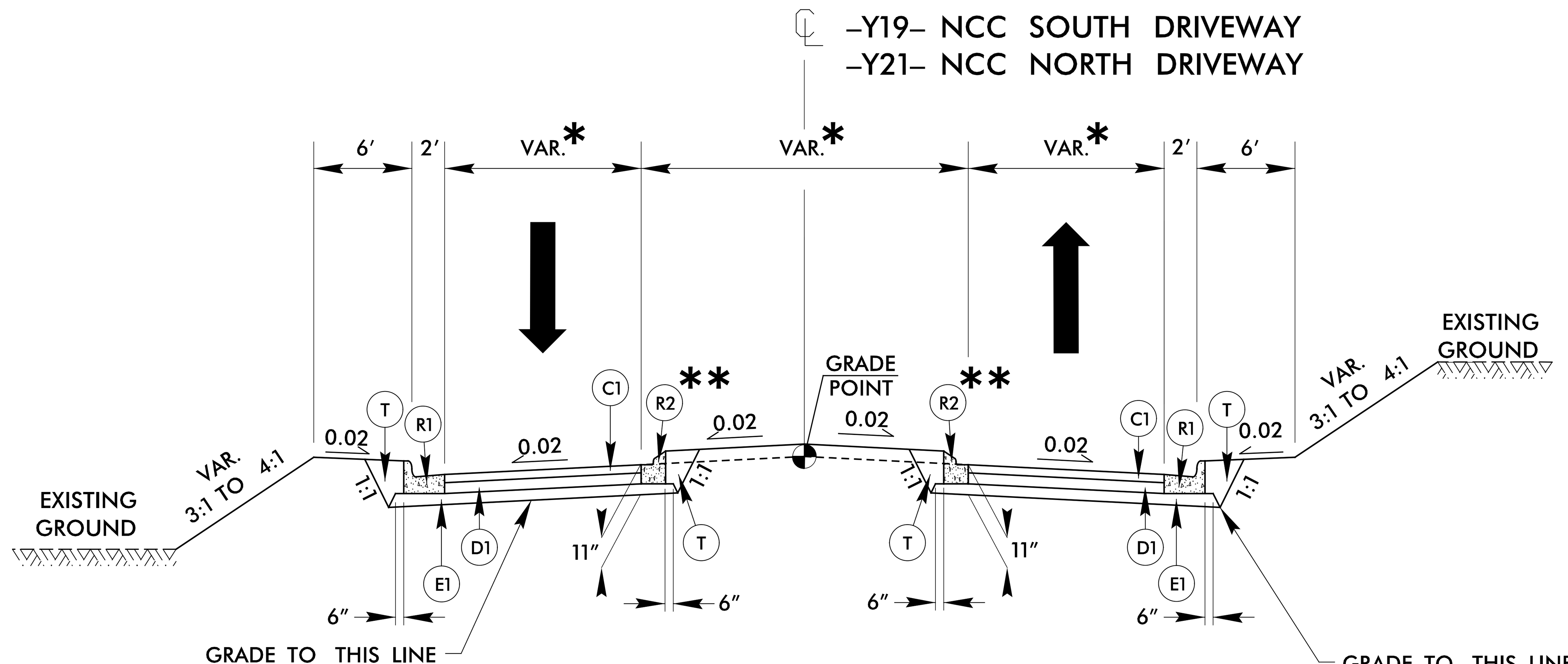
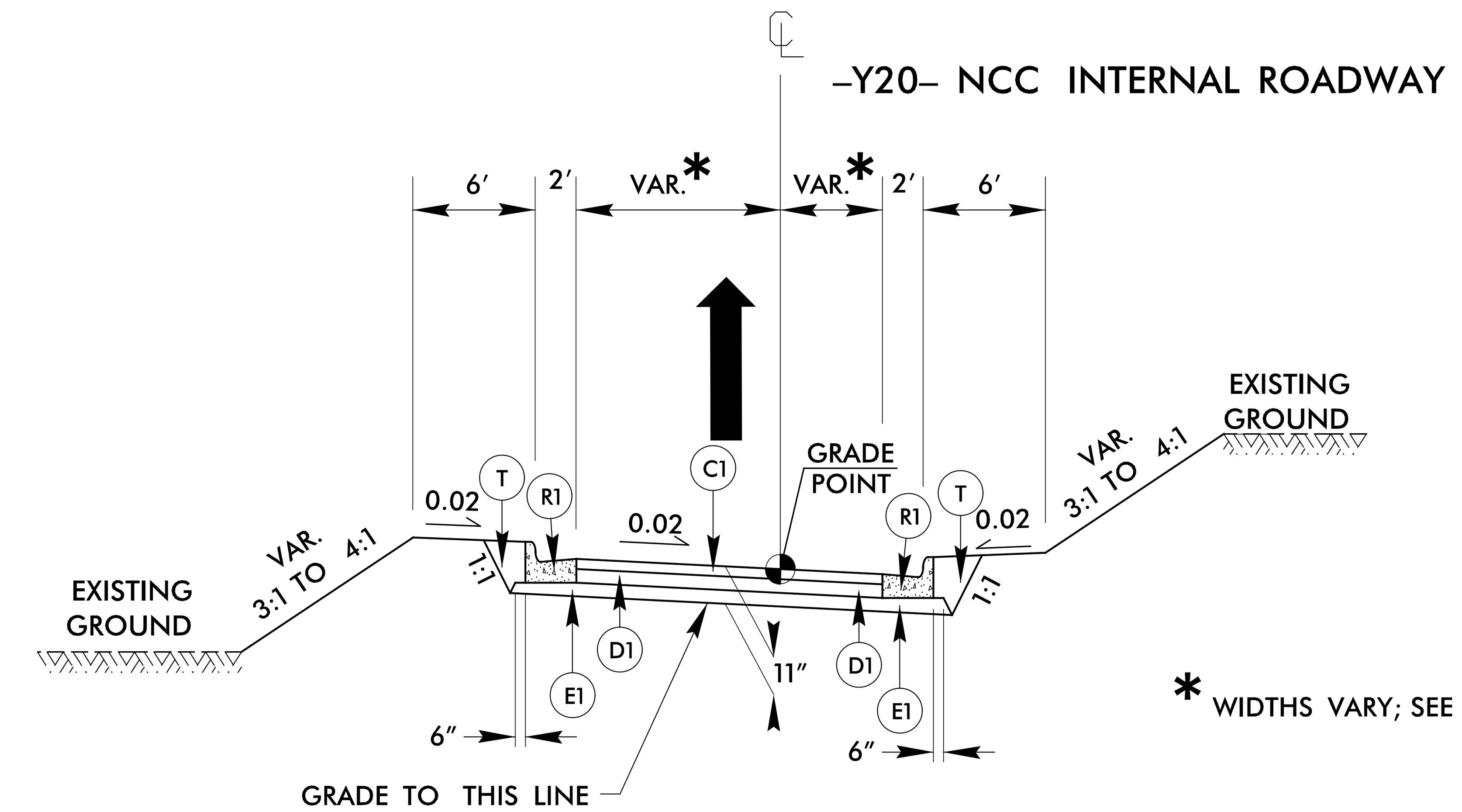


TYPICAL SECTION NO. 13

-Y19- STA. 10+84.82 TO 11+64.85
-Y21- STA. 10+35.52 TO 12+50.00

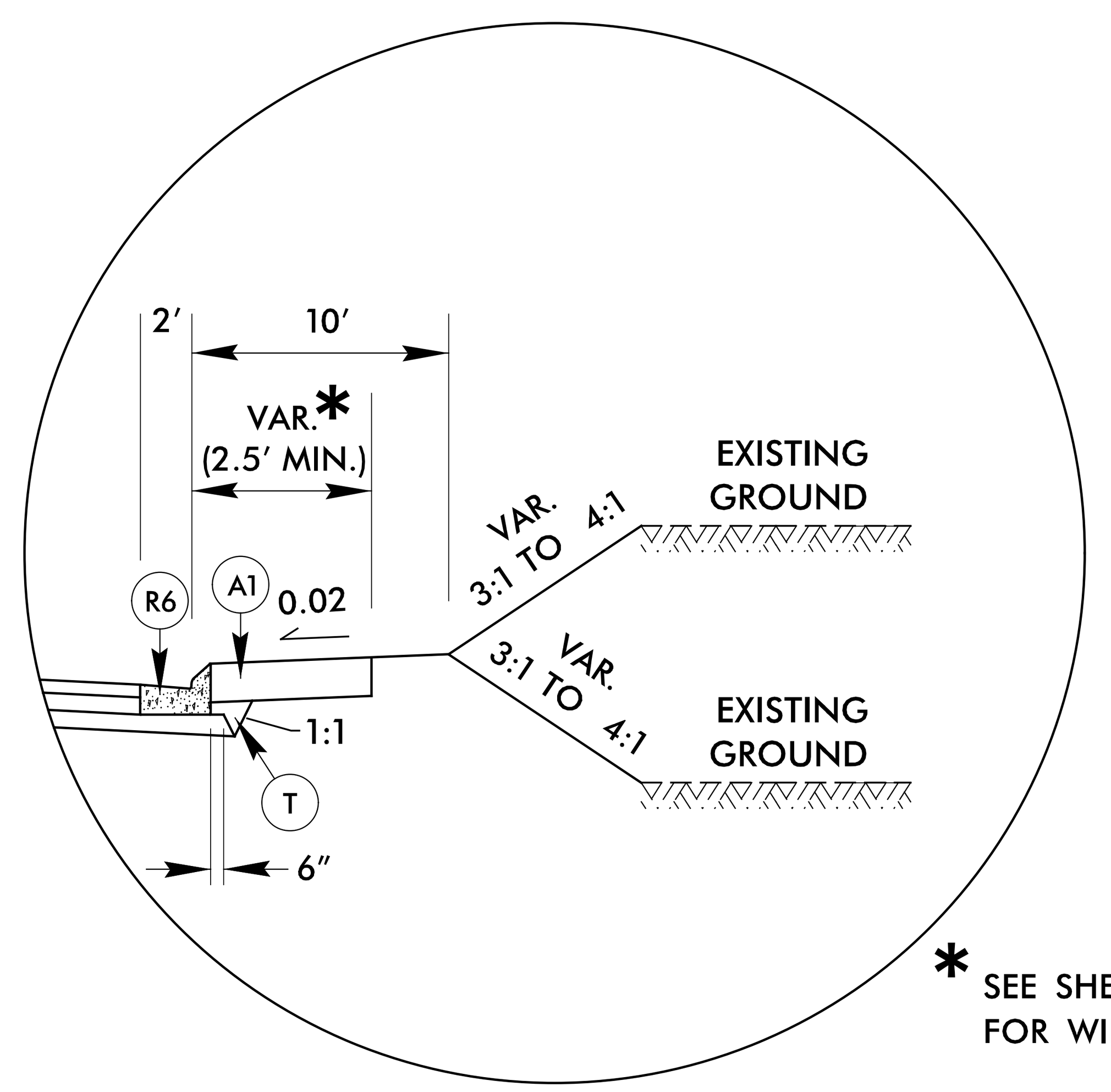
* WIDTHS VARY; SEE PLANS
** SEE PLANS FOR LIMITS OF 1'-6" CURB AND GUTTER



* WIDTHS VARY; SEE PLANS

TYPICAL SECTION NO. 14

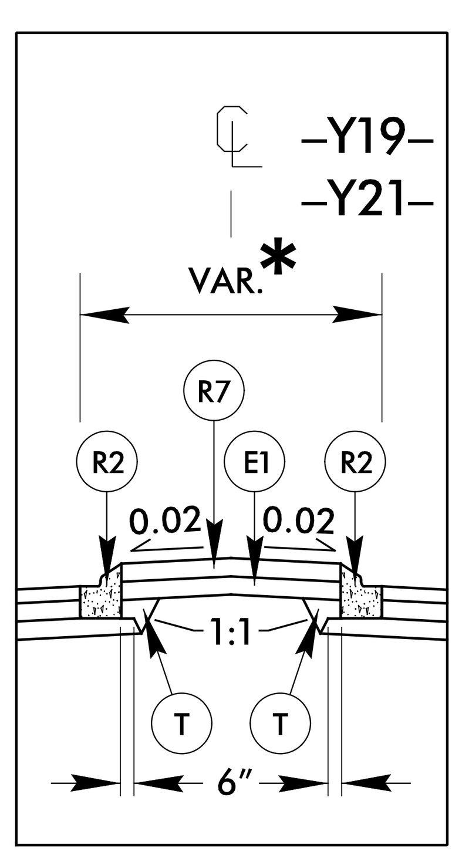
-Y20- STA. 12+63.50 TO 13+24.62



* SEE SHEET 2B-1 FOR WIDTH

INSET 13A

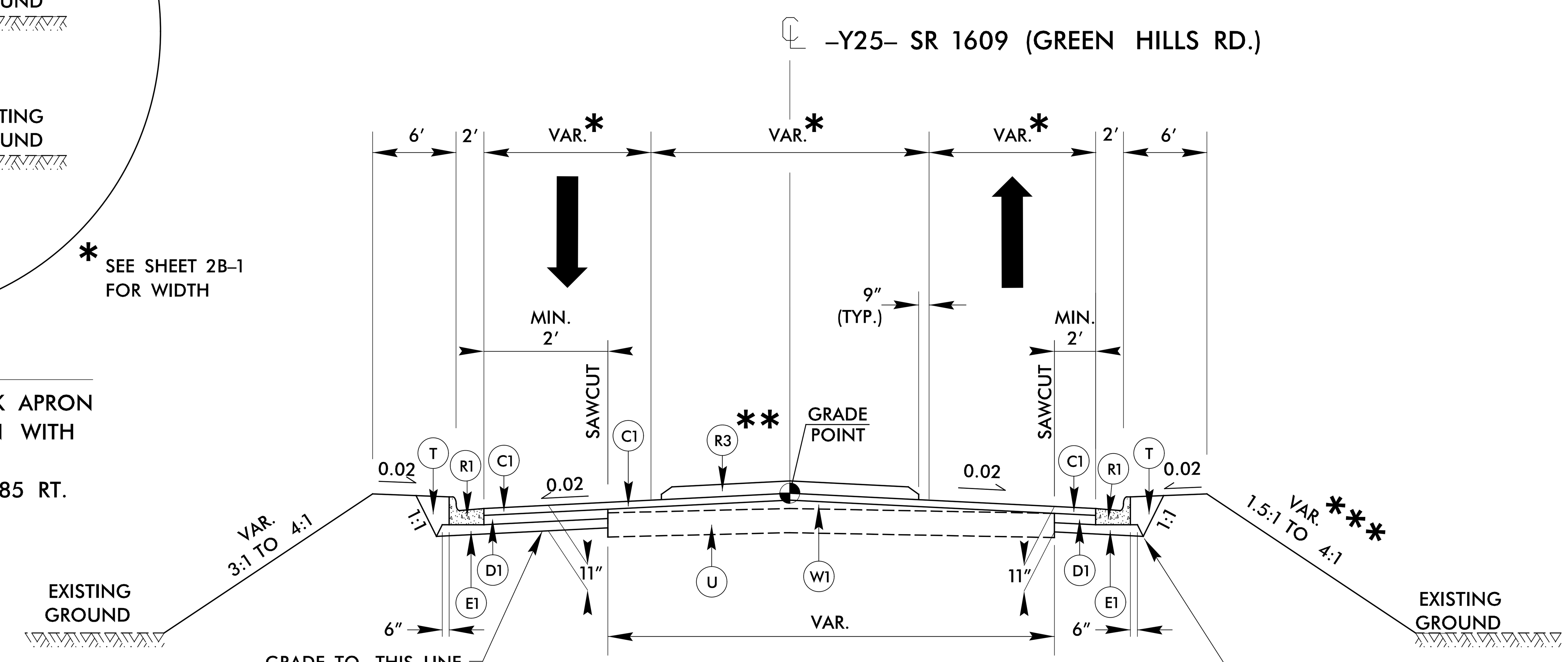
INSTALLATION OF OUTSIDE TRUCK APRON
TO BE USED IN CONJUNCTION WITH
TYPICAL SECTION NO. 13
-Y19- STA. 11+21.09 TO 11+64.85 RT.



* WIDTH VARIES; SEE PLANS

INSET 13B

INSTALLATION OF CONCRETE CAP
TO BE USED IN CONJUNCTION WITH
TYPICAL SECTION NO. 13
-Y19- STA. 11+42.64 TO 11+64.55
-Y21- STA. 10+40.45 TO 10+68.06



TYPICAL SECTION NO. 15

-Y25- STA. 10+00.00 TO 11+00.00

* WIDTHS VARY; SEE PLANS
** SEE PLANS FOR LIMITS AND DIMENSIONS OF MONOLITHIC CONCRETE ISLAND
*** ROCK PLATING REQUIRED ON SLOPES STEEPER THAN 3:1. SEE PLANS.

PAVEMENT TRANSITION NOTE:

FROM -Y25- STA. 11+00.00 TO 11+75.00:
CONDUCT VARIABLE-DEPTH MILLING (0" TO 3") AND REPLACE WITH 3" S9.5B TO TRANSITION FROM TYPICAL SECTION NO. 15 TO EXISTING PAVEMENT SURFACE.

PAVEMENT SCHEDULE

A1	9" JOINTED CONC. TRUCK APRON
B1	0.75" TYPE FC-1
C1	3" TYPE S9.5B
C2	3" TYPE S9.5C
C3	1.5" TYPE S9.5D
C4	3" TYPE S9.5D
C5	VAR. DEPTH S9.5B
C6	VAR. DEPTH S9.5C
C7	2.5" TYPE S9.5B
D1	4" TYPE I19.0C
D2	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	5" TYPE B25.0C
E3	VAR. DEPTH B25.0C
J1	8" ABC
P	PRIME COAT
R1	2'-6" C&G
R2	1'-6" C&G
R3	5" MONO. CONC. ISLAND
R4	9"X18" CURB
R5	SHOULDER BERM GUTTER
R6	2'-9" C&G
R7	CONC. ISLAND COVER
R8	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING ASPHALT PAVEMENT
V1	2.25" MILLING
V2	VAR. DEPTH MILLING (0-3")
V3	MILLED RUMBLE STRIPS
W1	WEDGING
W2	WEDGING

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

11/30/2021
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jsoika

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2A-10
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
SEAL 033822 JONATHAN P. SOIKA 11/30/2021	SEAL 038176 SHIHAI ZHANG 11/30/2021

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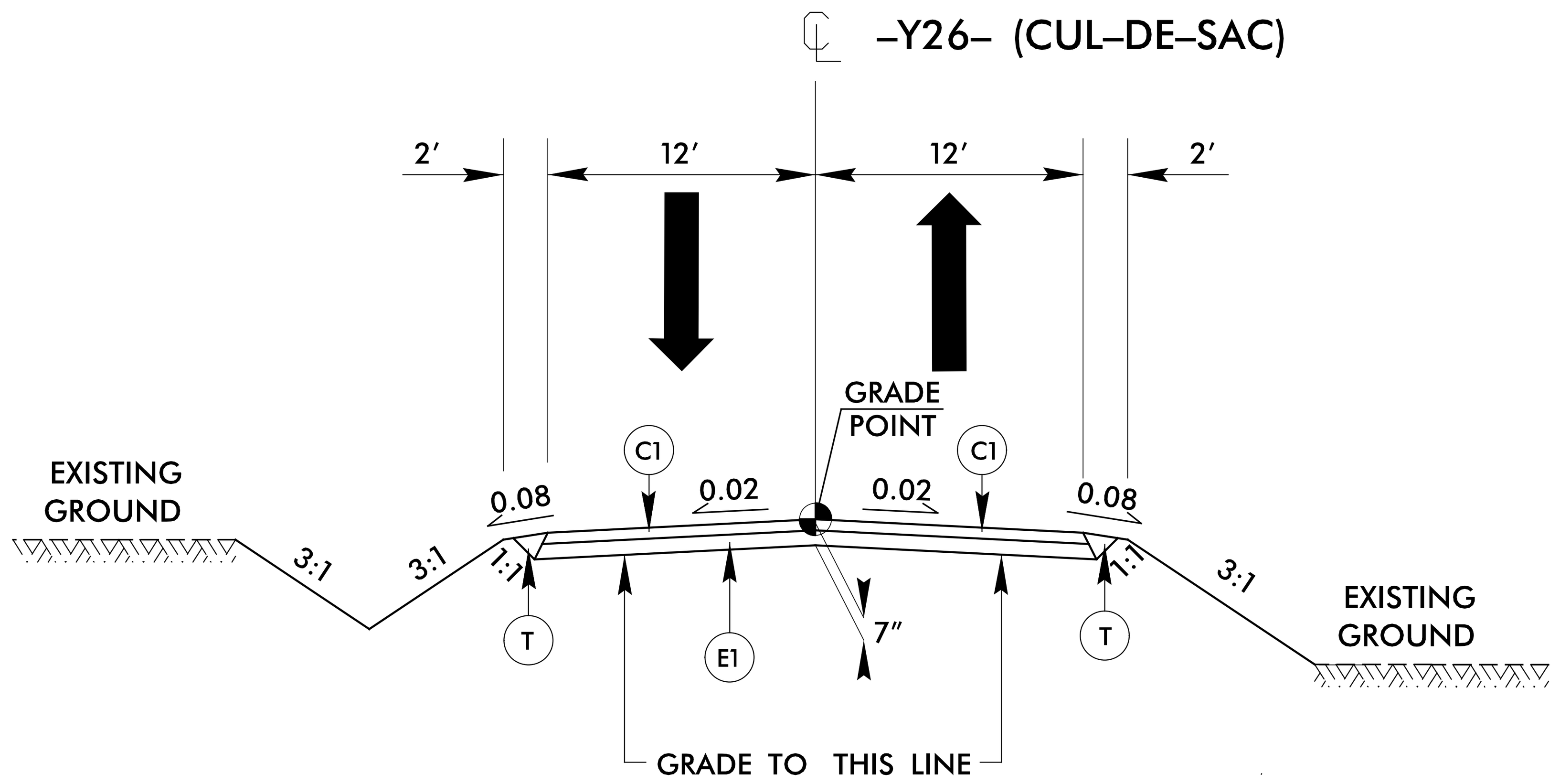
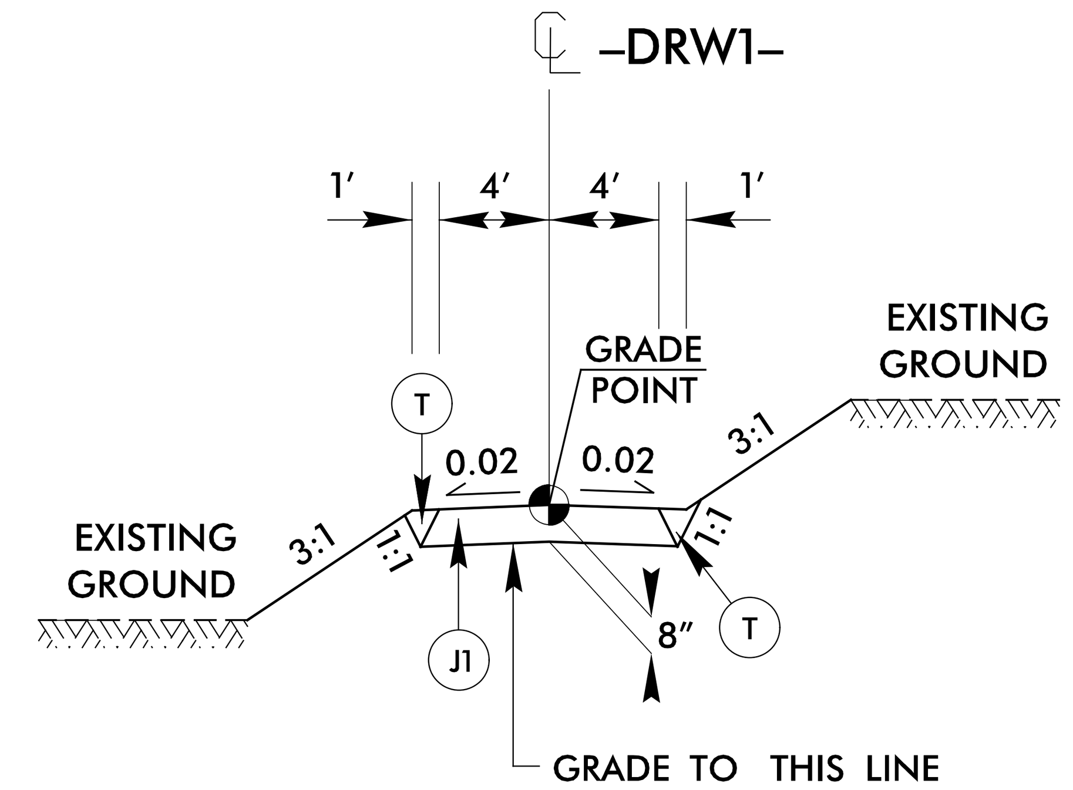


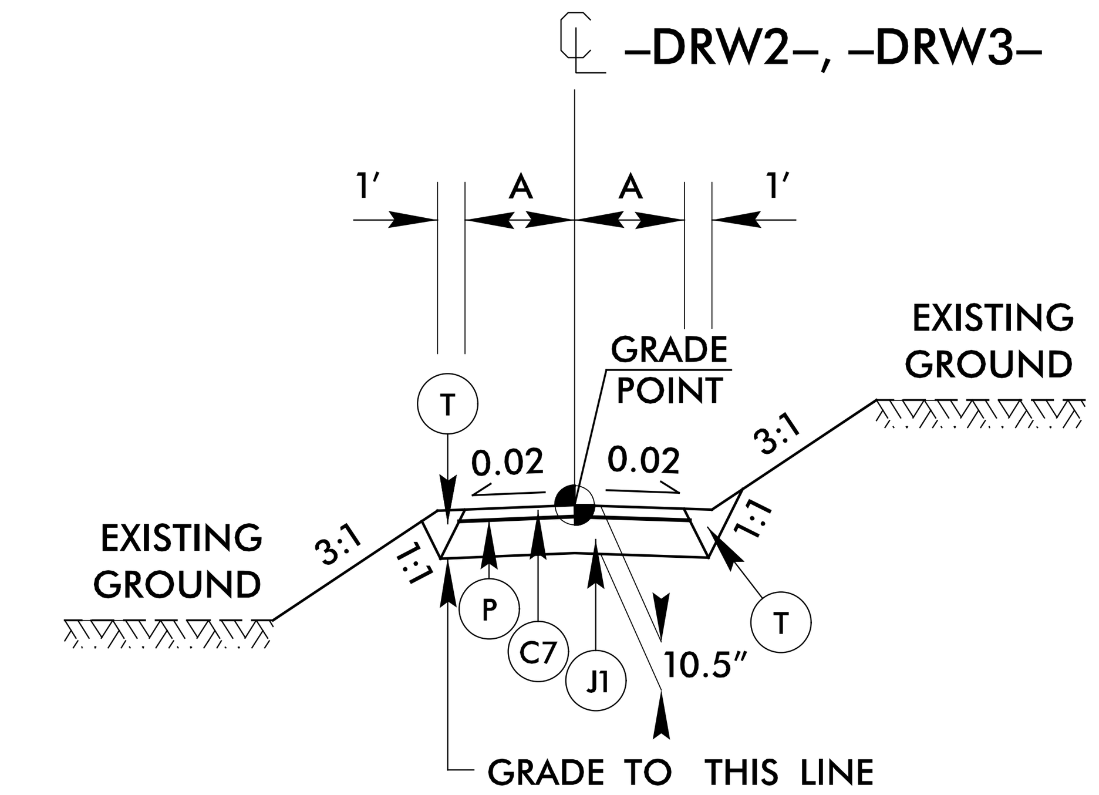
TYPICAL SECTION NO. 16

-Y26- STA. 10+18.00 TO 13+25.00



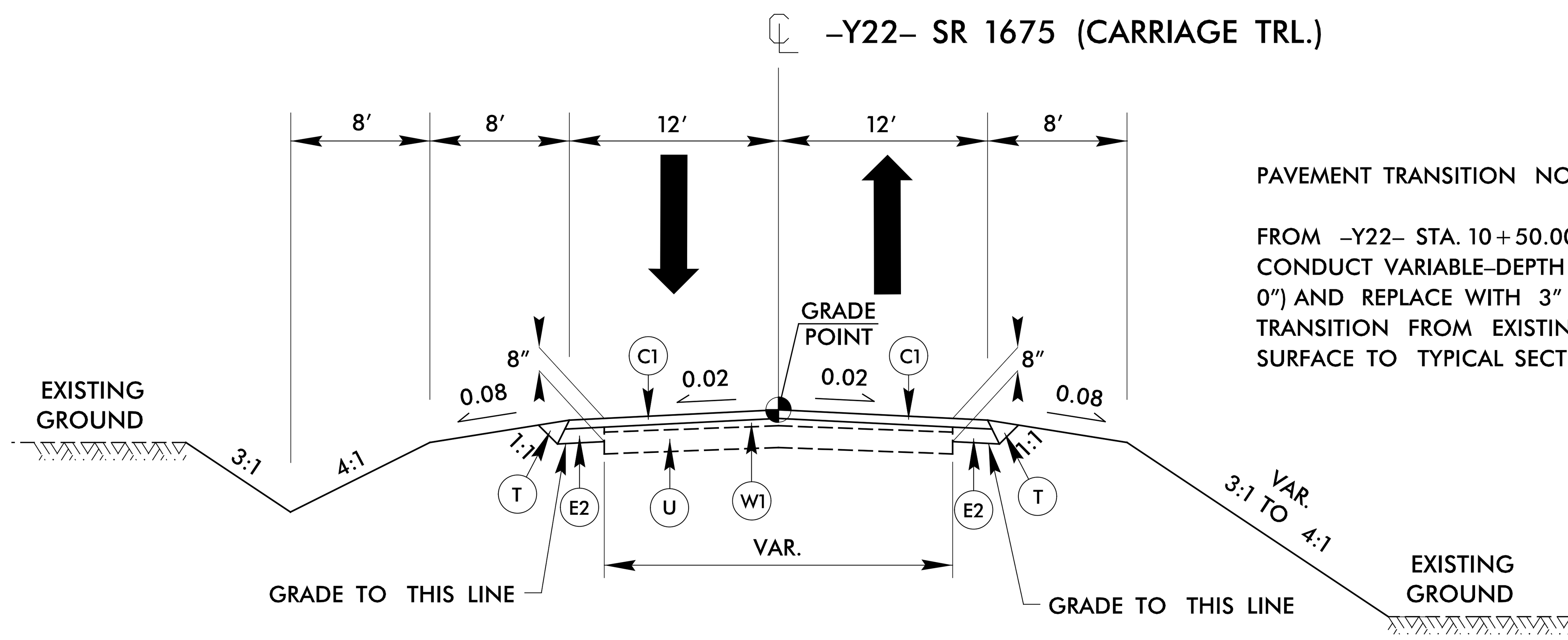
TYPICAL SECTION NO. 17

-DRW1- STA. 10+38.00 TO 11+90.00



TYPICAL SECTION NO. 18

-DRW2- STA. 10+31.22 TO 13+25.00, A = 4'
-DRW3- STA. 10+20.03 TO 11+00.00, A = 5'



TYPICAL SECTION NO. 19

-Y22- STA. 11+25.00 TO 12+48.65

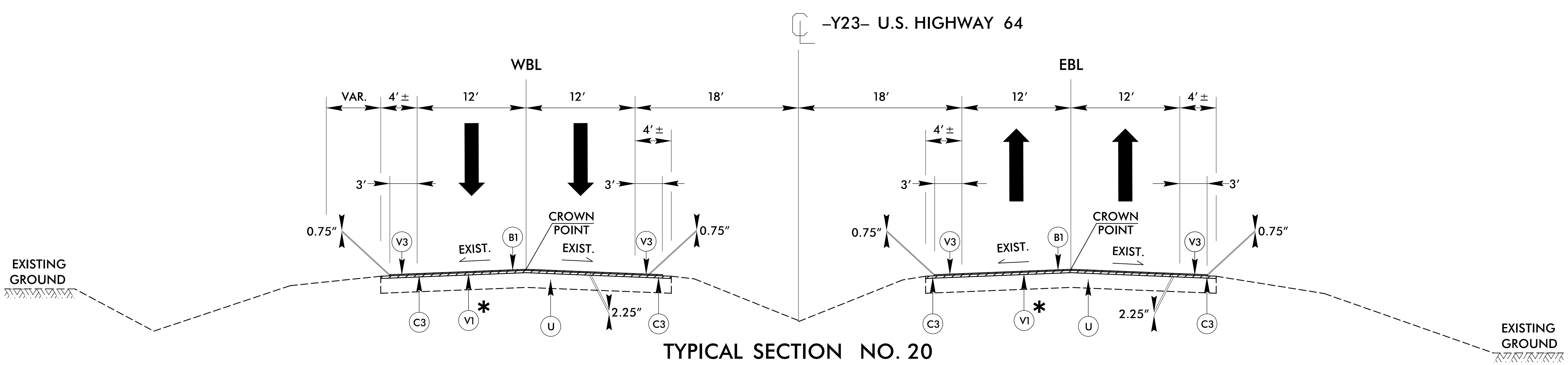
PAVEMENT TRANSITION NOTE:

FROM -Y22- STA. 10+50.00 TO 11+25.00: CONDUCT VARIABLE-DEPTH MILLING (3" TO 0") AND REPLACE WITH 3" S9.5B TO TRANSITION FROM EXISTING PAVEMENT SURFACE TO TYPICAL SECTION NO. 19.

US 64 RESURFACING

MILL AND FILL SHALL BE APPLIED ALONG US 64 BEYOND TYPICAL SECTION NO. 20 PER SHEET 2B-7 AND AS DESCRIBED BELOW:

FOR EXISTING PAVEMENT HAVING OGFC, MILL 2.25"; FOR EXISTING PAVEMENT WITHOUT OGFC, MILL 1.5". INSTALL 1.5" S9.5D TO ENTIRE PAVEMENT SURFACE, AND INSTALL 0.75" OGFC FROM EOT TO EOT AND EXTENDING 3' INTO THE OUTSIDE AND MEDIAN PAVED SHOULDERS AS SHOWN IN TYPICAL SECTION NO. 20. INSTALL MILLED RUMBLE STRIPS PER STANDARD DWG. NO. 665.01.



TYPICAL SECTION NO. 20

-Y23- (WBL) STA. 9+76.29 TO 15+68.49
-Y23- (EBL) STA. 10+10.58 TO 15+33.66
-Y23- (WBL) STA. 21+74.20 TO 25+46.74
-Y23- (EBL) STA. 21+63.41 TO 28+23.12

* CONDUCT 1.5" MILLING WHERE NO OGFC IS PRESENT

PAVEMENT SCHEDULE

A1	9" JOINTED CONC. TRUCK APRON
B1	0.75" TYPE FC-1
C1	3" TYPE S9.5B
C2	3" TYPE S9.5C
C3	1.5" TYPE S9.5D
C4	3" TYPE S9.5D
C5	VAR. DEPTH S9.5B
C6	VAR. DEPTH S9.5C
C7	2.5" TYPE S9.5B
D1	4" TYPE I19.0C
D2	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	5" TYPE B25.0C
E3	VAR. DEPTH B25.0C
J1	8" ABC
P	PRIME COAT
R1	2'-6" C&G
R2	1'-6" C&G
R3	5" MONO. CONC. ISLAND
R4	9"X18" CURB
R5	SHOULDER BERM GUTTER
R6	2'-9" C&G
R7	CONC. ISLAND COVER
R8	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING ASPHALT PAVEMENT
V1	2.25" MILLING
V2	VAR. DEPTH MILLING (0-3")
V3	MILLED RUMBLE STRIPS
W1	WEDGING
W2	WEDGING

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

11/30/2021
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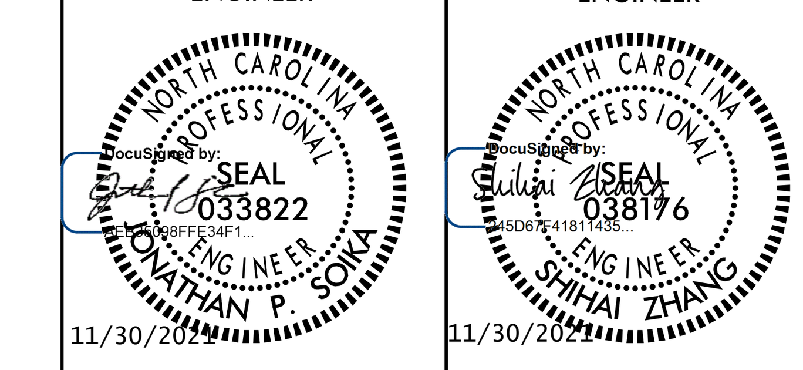
JSoika

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2A-II
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER



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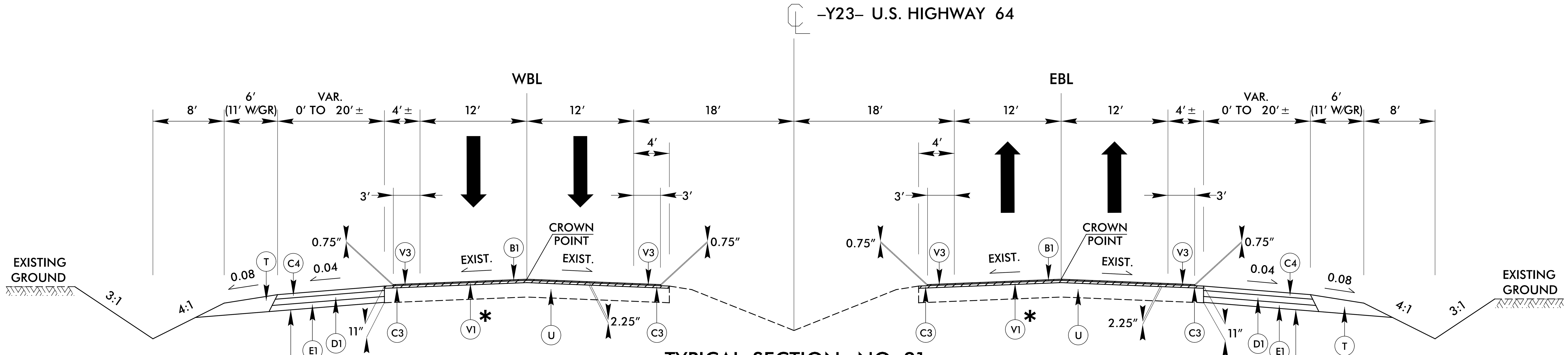


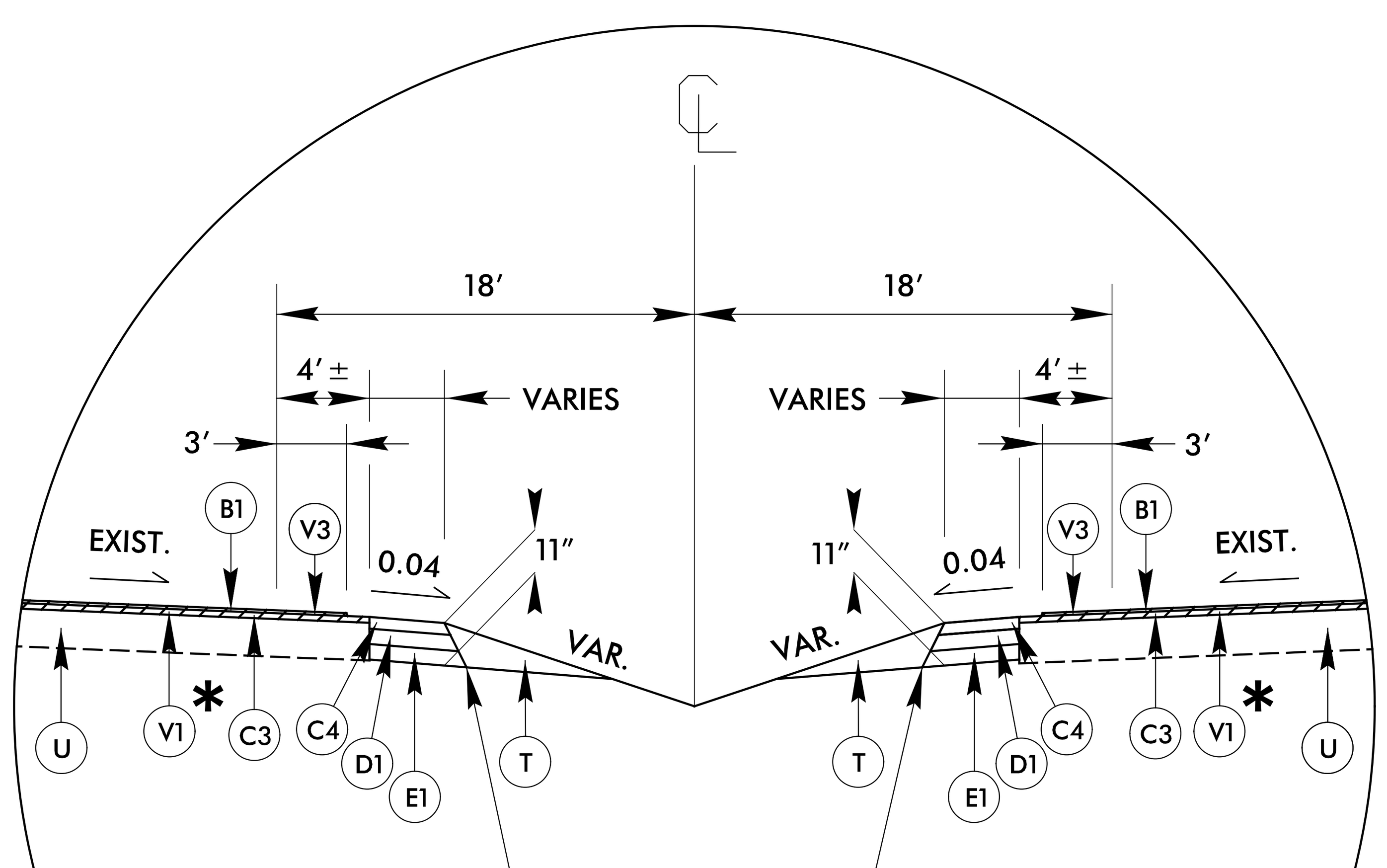
TYPICAL SECTION NO. 21

-Y23- (WBL) STA. 15+68.49 TO 17+51.49
-Y23- (EBL) STA. 15+33.66 TO 17+80.54
-Y23- (WBL) STA. 19+23.48 TO 21+74.20
-Y23- (EBL) STA. 19+81.53 TO 21+63.41

GRADE TO THIS LINE

GRADE TO THIS LINE

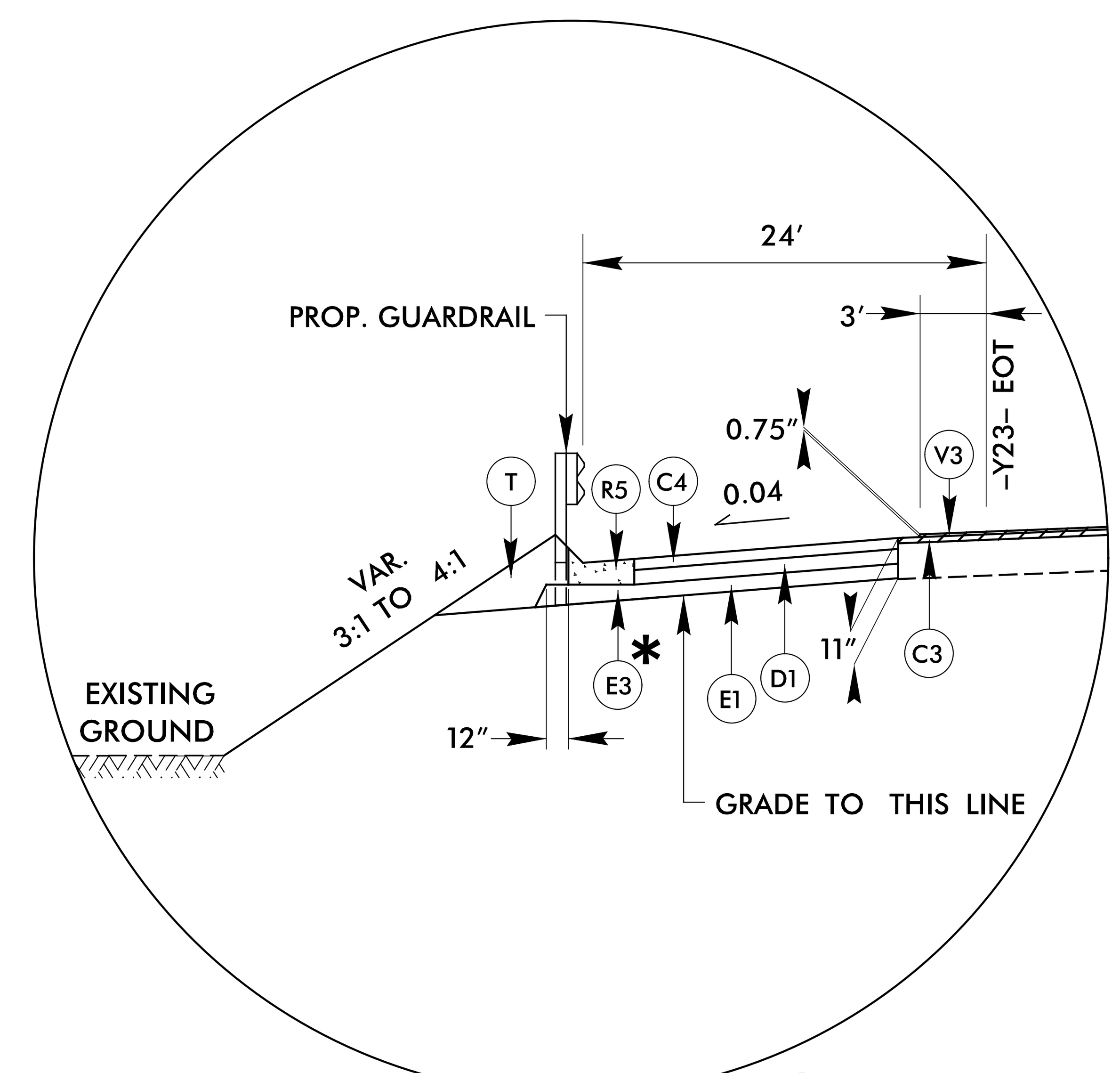
* CONDUCT 1.5" MILLING WHERE NO OGFC IS PRESENT



INSET 21A

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 21
-Y23- (WBL) STA. 16+91.97 TO 17+51.49
-Y23- (WBL) STA. 19+23.48 TO 20+95.19
-Y23- (EBL) STA. 19+81.53 TO 20+95.01

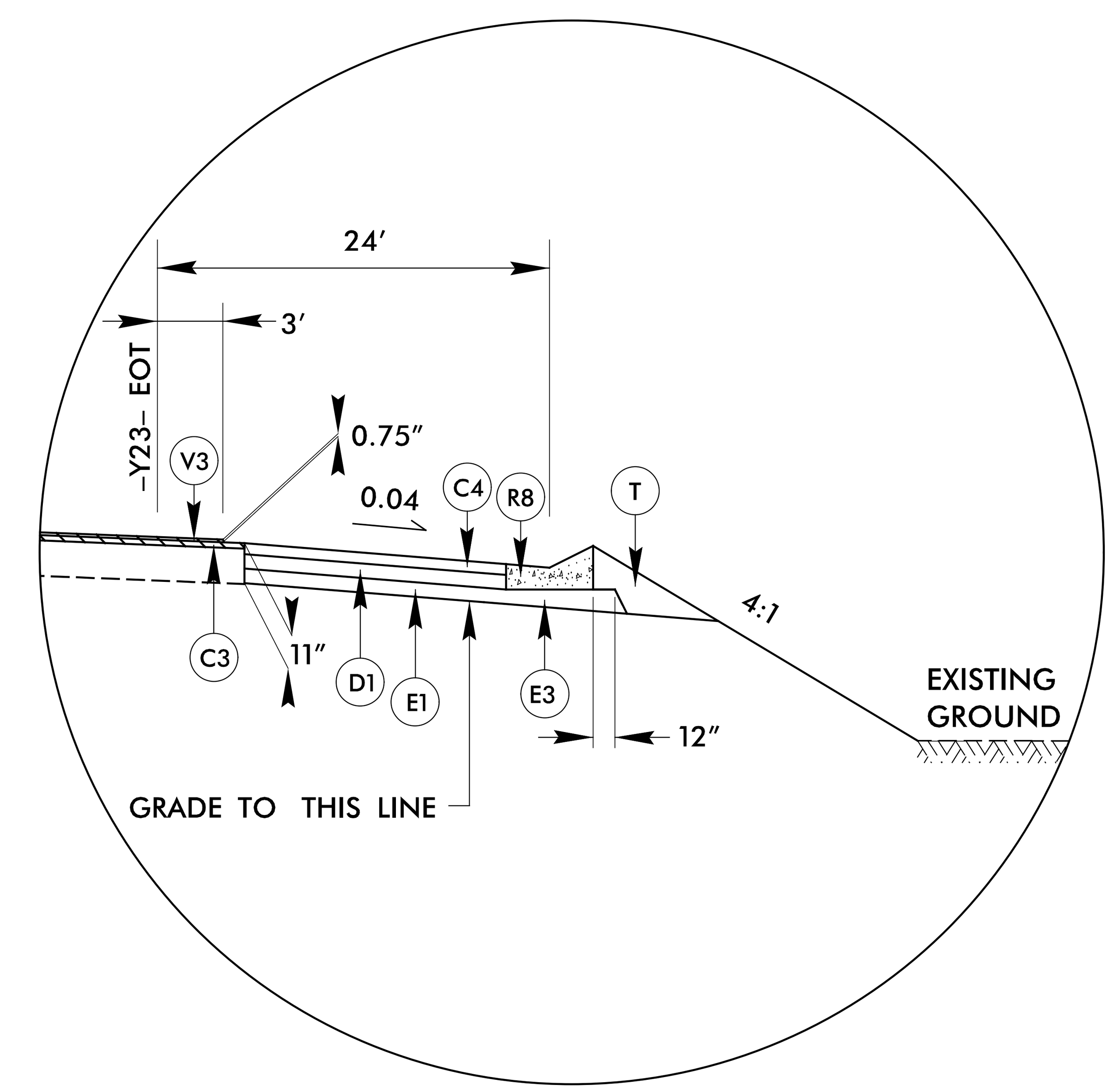
* CONDUCT 1.5" MILLING WHERE NO OGFC IS PRESENT



* SEE STD. DWG. 846.03

INSET 21B

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 21
-Y23- STA. 19+23.48 TO 19+52.00 LT.



INSET 21C

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 21
-Y23- STA. 19+81.53 TO 20+03.57 RT.

PAVEMENT SCHEDULE	
A1	9" JOINTED CONC. TRUCK APRON
B1	0.75" TYPE FC-1
C1	3" TYPE S9.5B
C2	3" TYPE S9.5C
C3	1.5" TYPE S9.5D
C4	3" TYPE S9.5D
C5	VAR. DEPTH S9.5B
C6	VAR. DEPTH S9.5C
C7	2.5" TYPE S9.5B
D1	4" TYPE I19.0C
D2	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	5" TYPE B25.0C
E3	VAR. DEPTH B25.0C
J1	8" ABC
P	PRIME COAT
R1	2'-6" C&G
R2	1'-6" C&G
R3	5" MONO. CONC. ISLAND
R4	9"X18" CURB
R5	SHOULDER BERM GUTTER
R6	2'-9" C&G
R7	CONC. ISLAND COVER
R8	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING ASPHALT PAVEMENT
V1	2.25" MILLING
V2	VAR. DEPTH MILLING (0-3")
V3	MILLED RUMBLE STRIPS
W1	WEDGING
W2	WEDGING

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

11/30/2021
u5996_rdy_typ.dgn
JSoika

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2A-12

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033822 JONATHAN P. SOIKA
11/30/2021

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038176 SHIHAI ZHANG
11/30/2021

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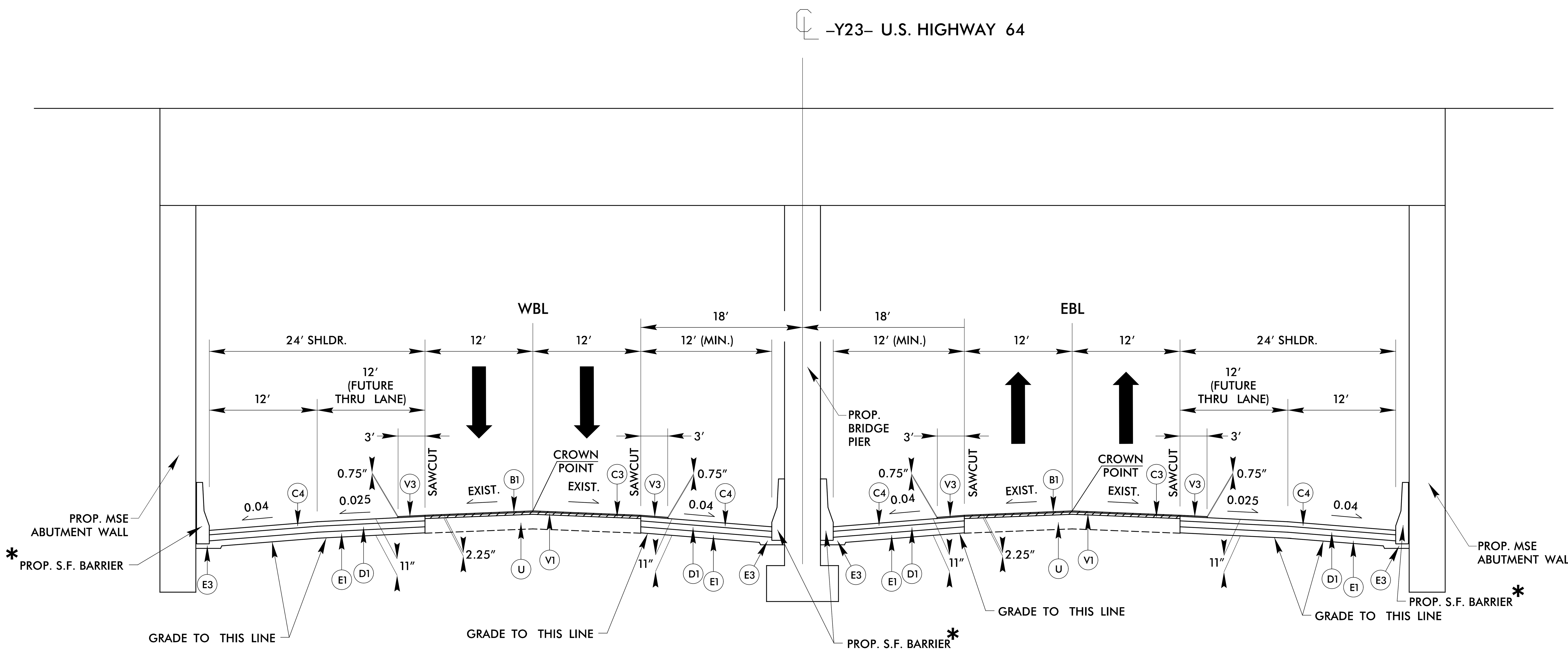
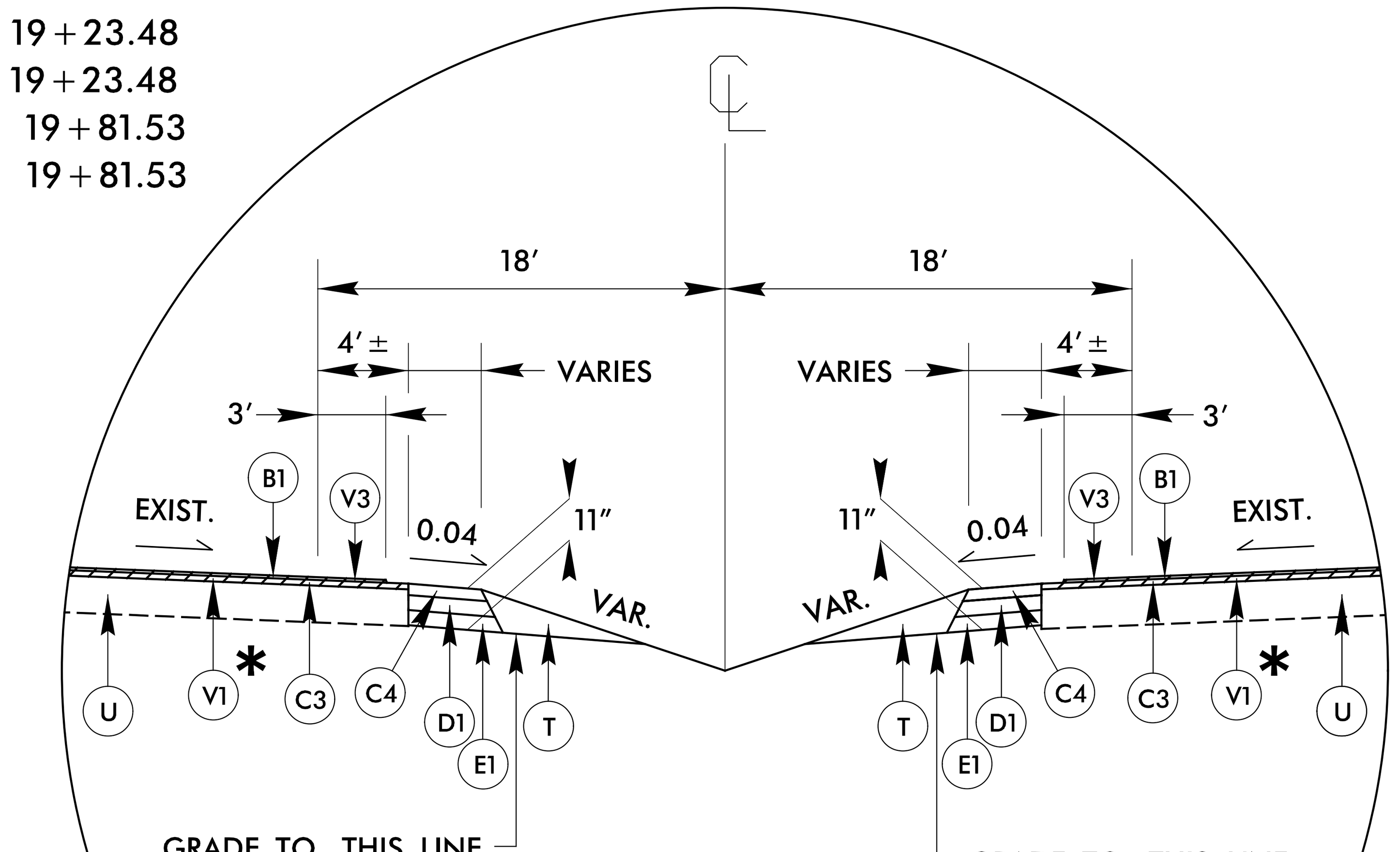


*PRECAST SINGLE-FACED CONCRETE BARRIER; SEE STANDARD DWG. NO. 610.04; SEE PLANS FOR LIMITS OF BARRIER

TYPICAL SECTION NO. 22

-Y23- LEFT OUTSIDE (WBL) STA. 17+51.49 TO 19+23.48
-Y23- LEFT MEDIAN (WBL) STA. 17+51.49 TO 19+23.48
-Y23- RIGHT MEDIAN (EBL) STA. 17+80.54 TO 19+81.53
-Y23- RIGHT OUTSIDE (EBL) STA. 17+80.54 TO 19+81.53



INSET 22A

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 22
-Y23- (WBL) STA. 17+51.49 TO 17+92.56
-Y23- (EBL) STA. 17+80.54 TO 17+92.56
-Y23- (WBL) STA. 19+20.79 TO 19+23.48
-Y23- (EBL) STA. 19+20.79 TO 19+81.53

* CONDUCT 1.5" MILLING WHERE NO OGFC IS PRESENT

PAVEMENT SCHEDULE

A1	9" JOINTED CONC. TRUCK APRON
B1	0.75" TYPE FC-1
C1	3" TYPE S9.5B
C2	3" TYPE S9.5C
C3	1.5" TYPE S9.5D
C4	3" TYPE S9.5D
C5	VAR. DEPTH S9.5B
C6	VAR. DEPTH S9.5C
C7	2.5" TYPE S9.5B
D1	4" TYPE I19.0C
D2	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	5" TYPE B25.0C
E3	VAR. DEPTH B25.0C
J1	8" ABC
P	PRIME COAT
R1	2'-6" C&G
R2	1'-6" C&G
R3	5" MONO. CONC. ISLAND
R4	9"X18" CURB
R5	SHOULDER BERM GUTTER
R6	2'-9" C&G
R7	CONC. ISLAND COVER
R8	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING ASPHALT PAVEMENT
V1	2.25" MILLING
V2	VAR. DEPTH MILLING (0-3")
V3	MILLED RUMBLE STRIPS
W1	WEDGING
W2	WEDGING

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

11/30/2021
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jsoika

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2A-13

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033822 ENGINEER JONATHAN P. SOKA

11/30/2021

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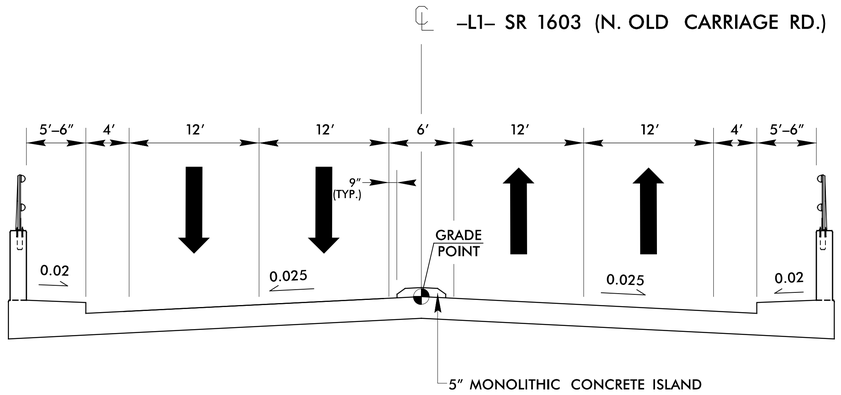
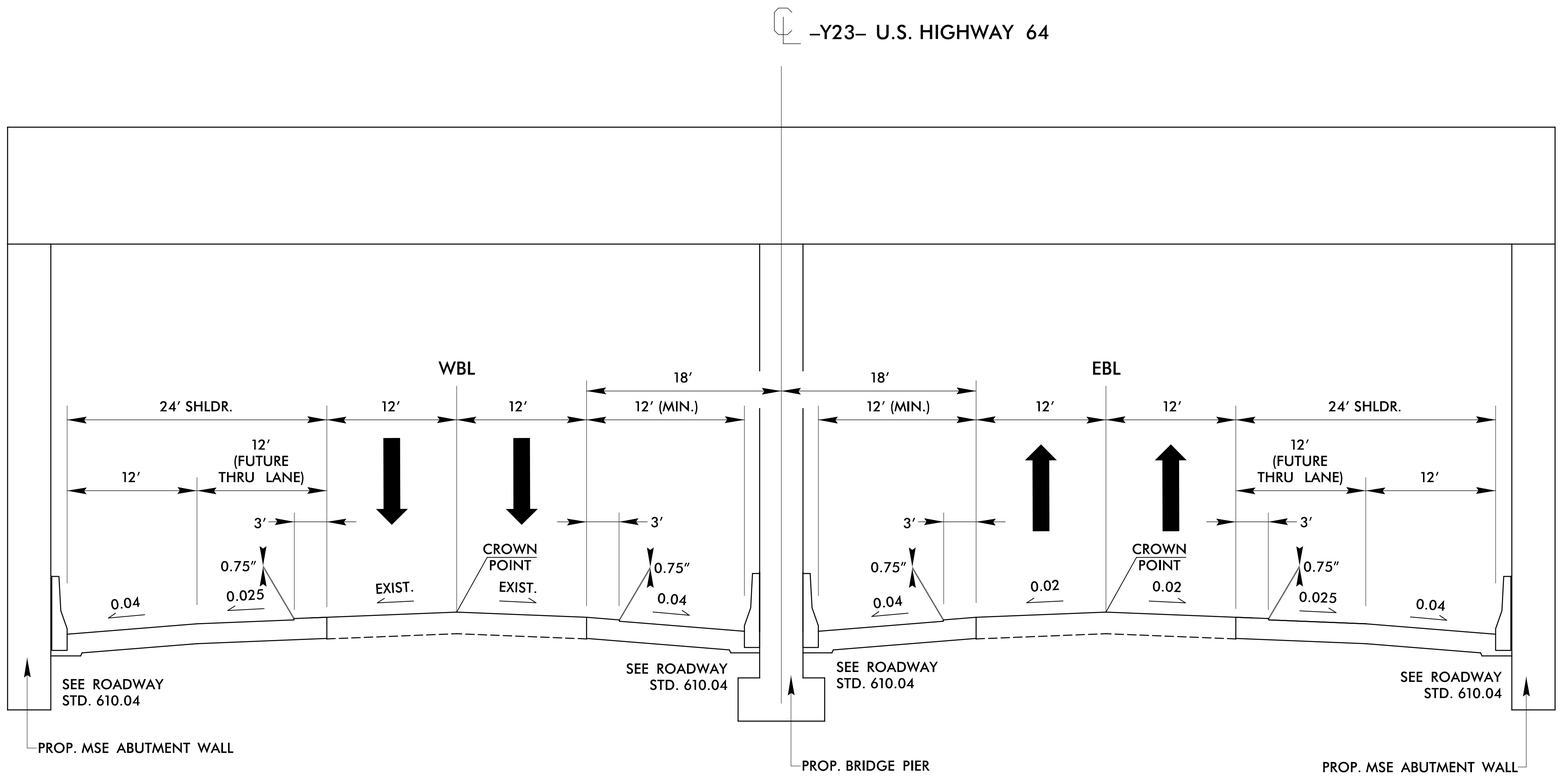
NC License No. C-3705

BRIDGE AT –L1– STATION 55+37.34
OVER –Y23– STATION 18+56.68



STRUCTURE TYPICAL SECTION



US 64 TYPICAL SECTION UNDER STRUCTURE

11/30/2021
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2B-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033822 ENGINEER JONATHAN P. SOKA

11/30/2021

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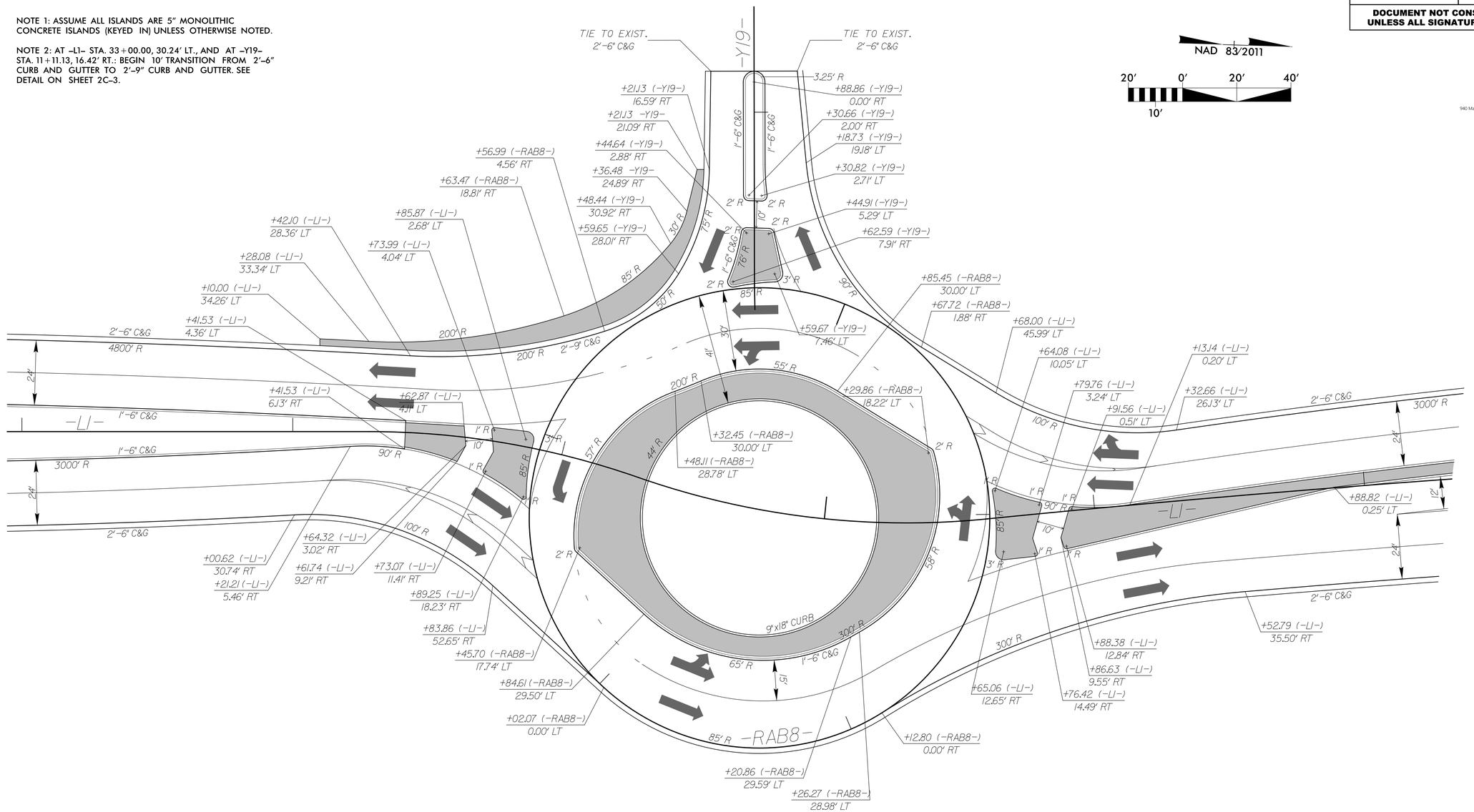
INTERSECTION DETAIL –L1– WITH –RAB8– /–Y19–

SEE SHEET 4

NOTE 1: ASSUME ALL ISLANDS ARE 5" MONOLITHIC CONCRETE ISLANDS (KEYED IN) UNLESS OTHERWISE NOTED.

NOTE 2: AT –L1– STA. 33+00.00, 30.24' LT., AND AT –Y19– STA. 11+11.13, 16.42' RT.: BEGIN 10' TRANSITION FROM 2'–6" CURB AND GUTTER TO 2'–9" CURB AND GUTTER. SEE DETAIL ON SHEET 2C–3.



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8/17/99

INTERSECTION DETAIL –L1– WITH –Y20– /–Y21–

SEE SHEET 5

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2B-2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033822 ENGINEER JONATHAN P. SOKA

Docusigned by: 11/30/2021

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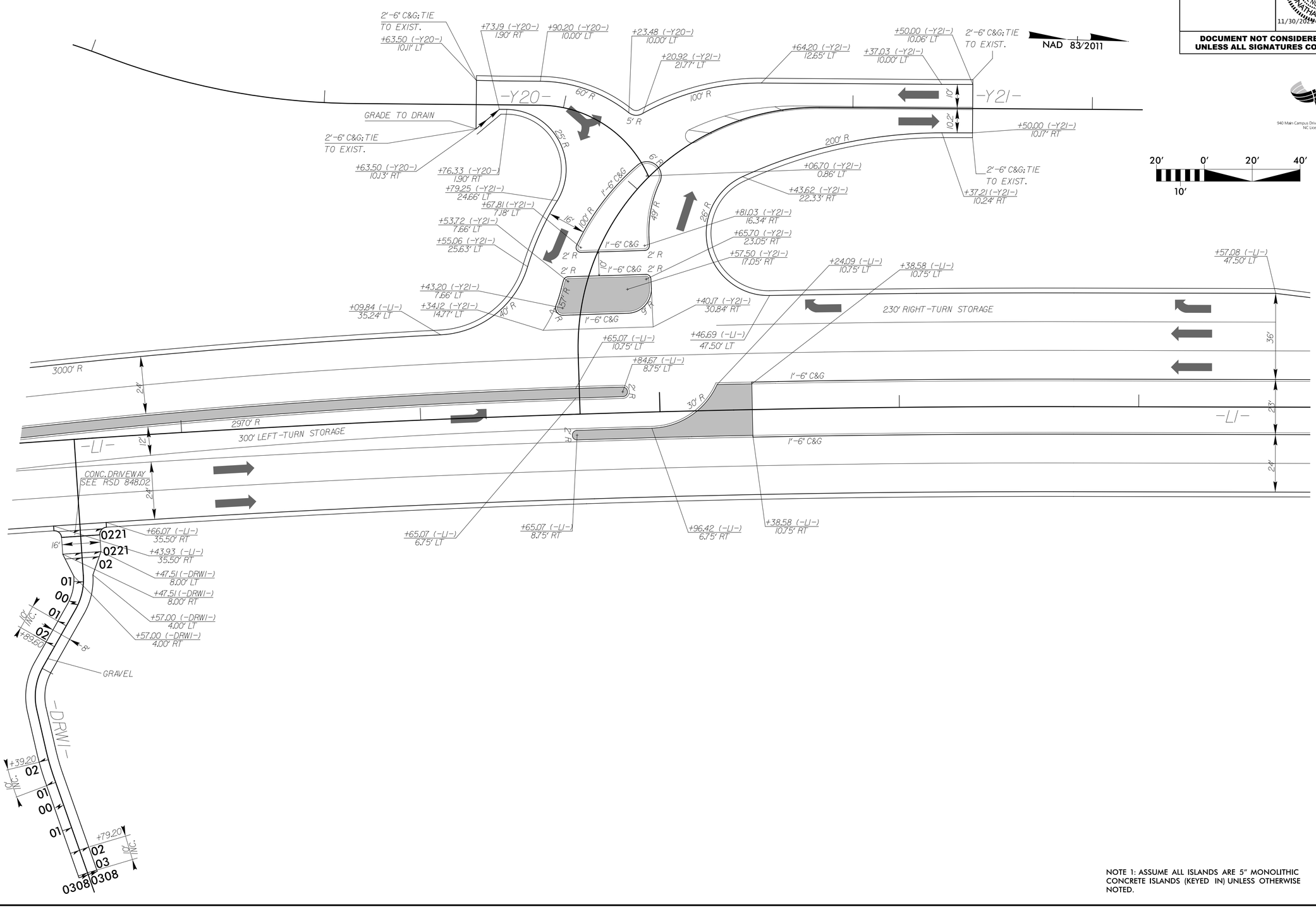
NAD 83/2011

20′ 0′ 20′ 40′
10′



NOTE 1: ASSUME ALL ISLANDS ARE 5″ MONOLITHIC CONCRETE ISLANDS (KEYED IN) UNLESS OTHERWISE NOTED.

8/17/99

INTERSECTION DETAIL –L1– WITH –RAB9– /–L1RPB– /–L1RPC–

SEE SHEET 6

NOTE 1: ASSUME ALL ISLANDS ARE 5" MONOLITHIC CONCRETE ISLANDS (KEYED IN) UNLESS OTHERWISE NOTED.

NOTE 2: AT –L1– STA. 49+80.60, 35.50' LT., AND AT –RAB9– STA. 14+65.38, 22.03' RT.: BEGIN 10' TRANSITION FROM 2'–6" CURB AND GUTTER TO 2'–9" CURB AND GUTTER. SEE DETAIL ON SHEET 2C–3.

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2B-3

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033822 ENGINEER JONATHAN P. SOKA

11/30/2021

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940 Main Campus Drive, Suite 500 Raleigh, NC 27606
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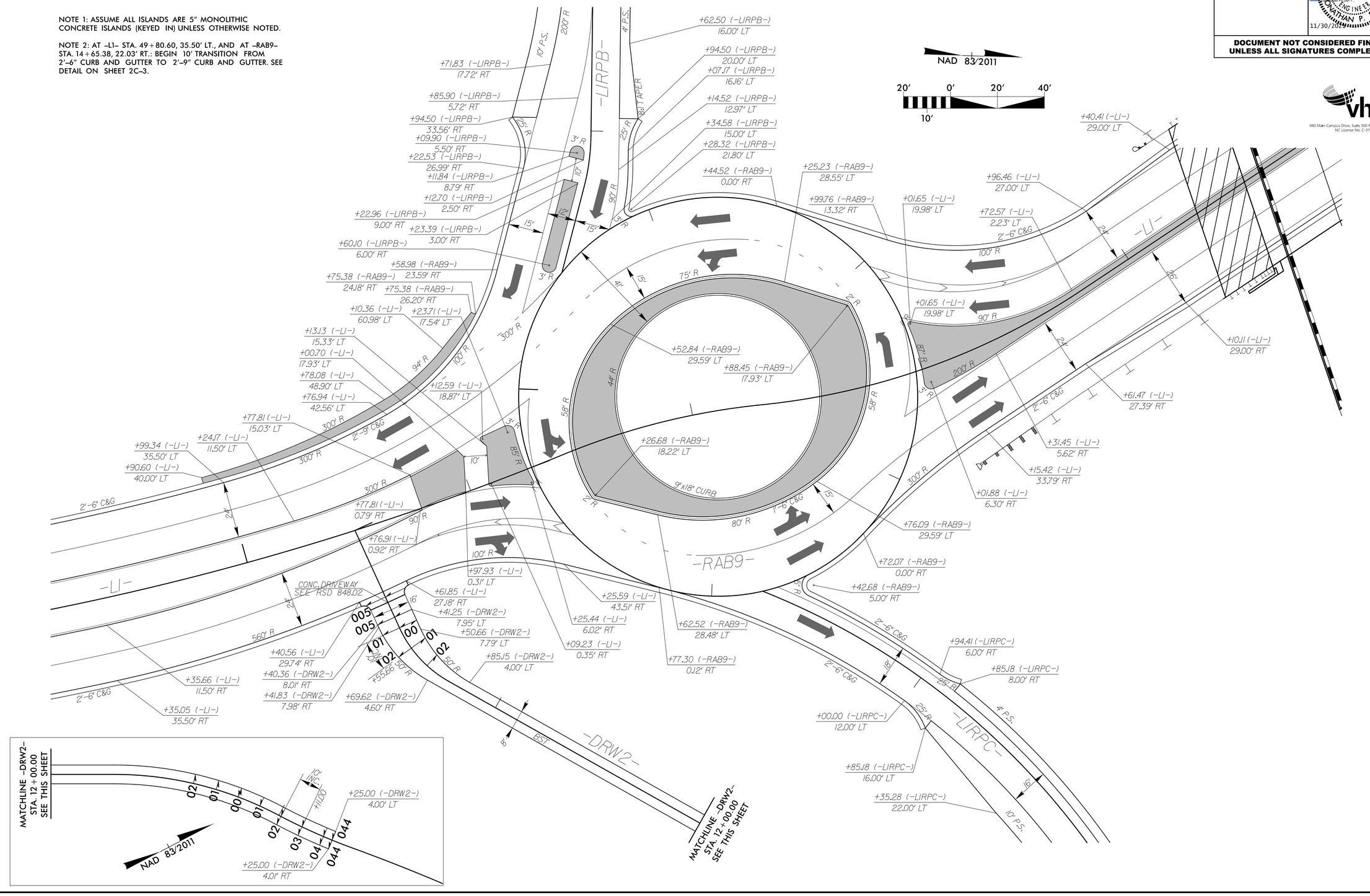

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2B-4

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033822 JONATHAN P. SOIKA

11/30/2021

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INTERSECTION DETAIL -L1- WITH -RAB10- /-L1RPA- /-L1RPD-

SEE SHEET 6

NOTE 1: ASSUME ALL ISLANDS ARE 5" MONOLITHIC CONCRETE ISLANDS (KEYED IN) UNLESS OTHERWISE NOTED.

NAD 83/2011

20' 0' 20' 40'

10'

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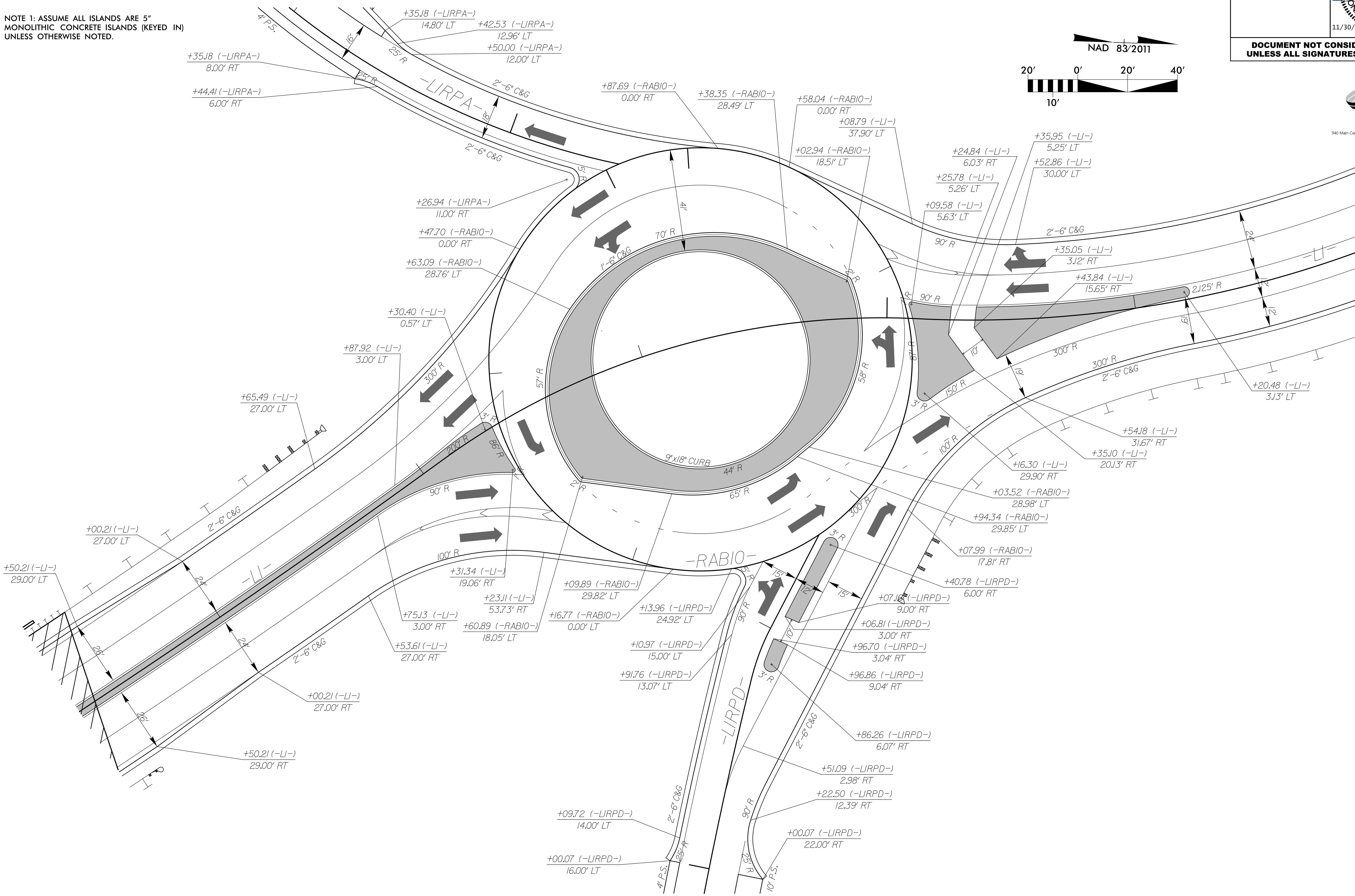

11/30/2021
u5996_rdy_dtl_2B4.dgn
JSoika

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2B-5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033822 ENGINEER JONATHAN P. SOKA

11/30/2021

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INTERSECTION DETAIL –L1– WITH –RAB11– /–Y24– /–Y25–

SEE SHEET 9

NAD 83/2011

NOTE 1: ASSUME ALL ISLANDS ARE 5" MONOLITHIC CONCRETE ISLANDS (KEYED IN) UNLESS OTHERWISE NOTED.

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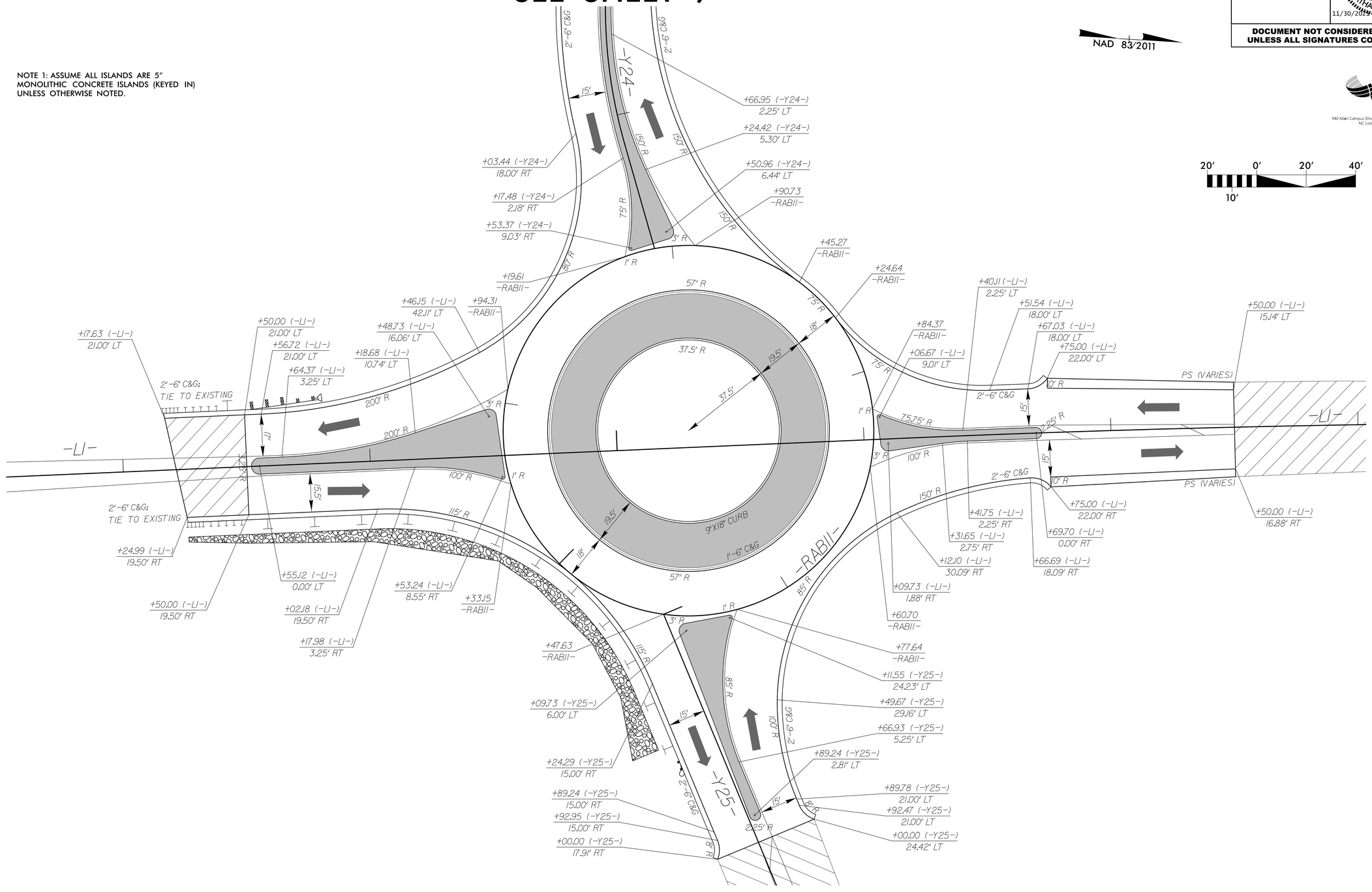
20′ 0′ 20′ 40′
10′



8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2B-6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 033822 JONATHAN P. SOIKA 11/30/2021	SEAL 033246 LINDA M. JOHNS 11/30/2021

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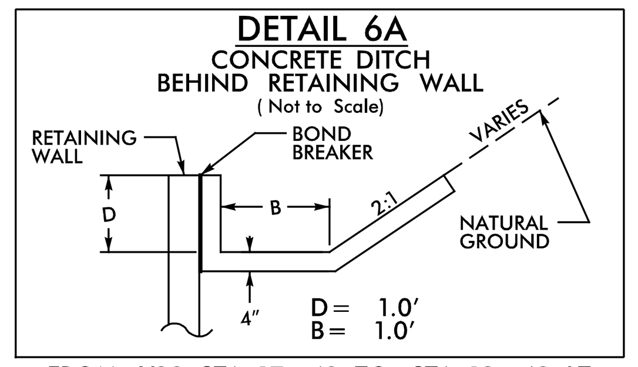
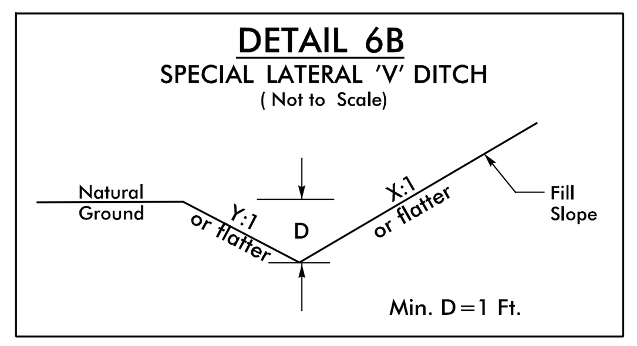
MI ENGINEERING
1011 Schaub Drive, Suite 100
Raleigh, NC 27606
Firm PE No. P-0671

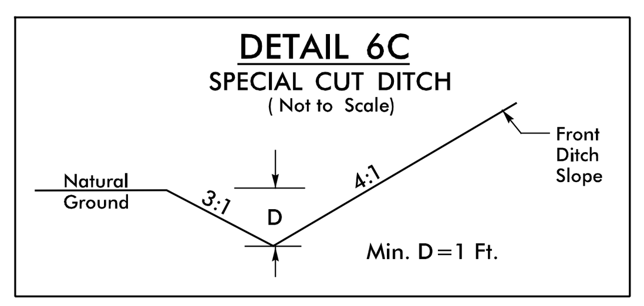
DITCH DETAILS FOR SHEET 6



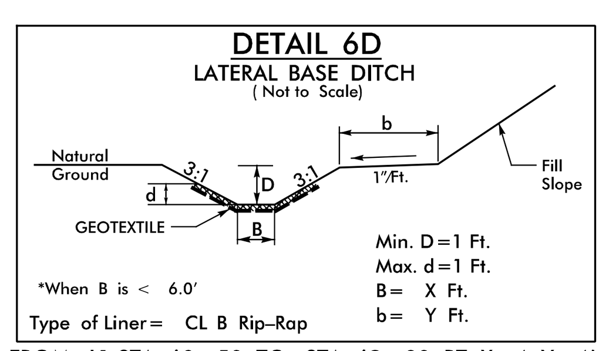
FROM Y23 STA. 17+42 TO STA. 19+43 LT
FROM Y23 STA. 17+56 TO STA. 19+98 RT



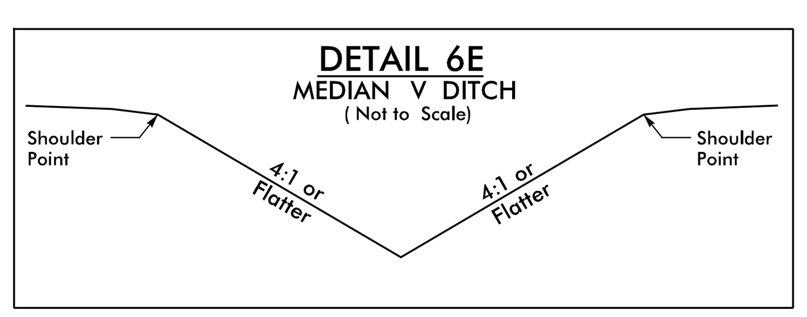
FROM L1RPB STA. 17+50 TO STA. 18+27 RT. X=4, Y=4
FROM L1RPB STA. 13+50 TO STA. 17+75 LT. X=6, Y=6
FROM RAB9 STA. 10+50 TO STA. 11+03 RT. X=3, Y=3
FROM L1RPC STA. 16+77 TO STA. 16+00 LT. X=3, Y=3



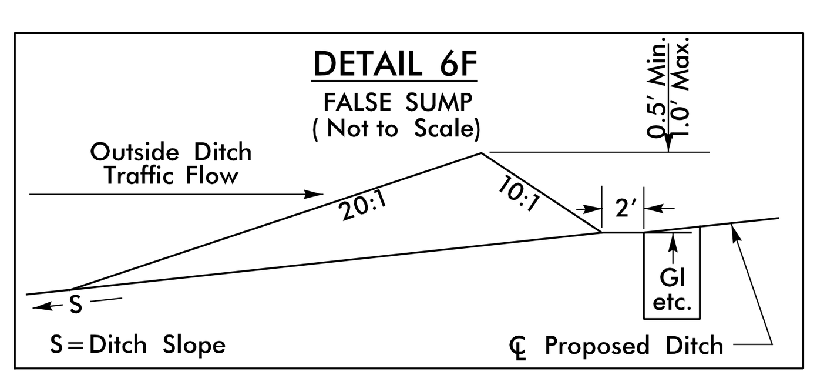
FROM Y23 STA. 17+00 TO STA. 17+54 RT.
FROM Y23 STA. 17+00 TO STA. 17+50 LT.
FROM Y23 STA. 20+00 TO STA. 21+83 RT.
FROM Y23 STA. 19+45 TO STA. 21+50 LT.



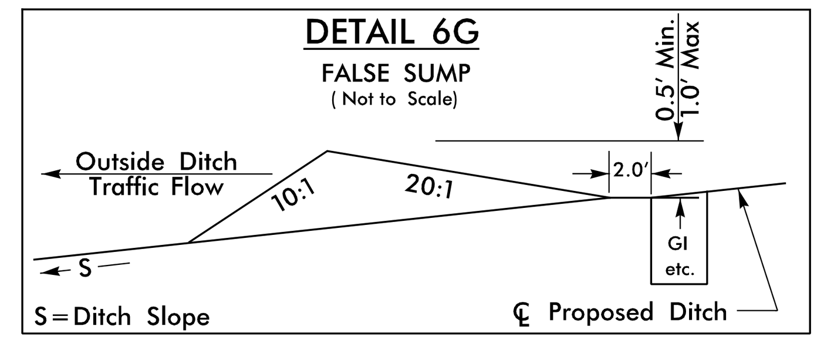
FROM L1 STA. 60+50 TO STA. 62+00 RT, X=4, Y=4'
243 TONS RIP RAP CL B, 633 SY GEOTEXTILE
FROM L1 STA. 61+50 TO STA. 62+00 LT, X=3, Y=5'
23 TONS RIP RAP CL B, 64 SY GEOTEXTILE



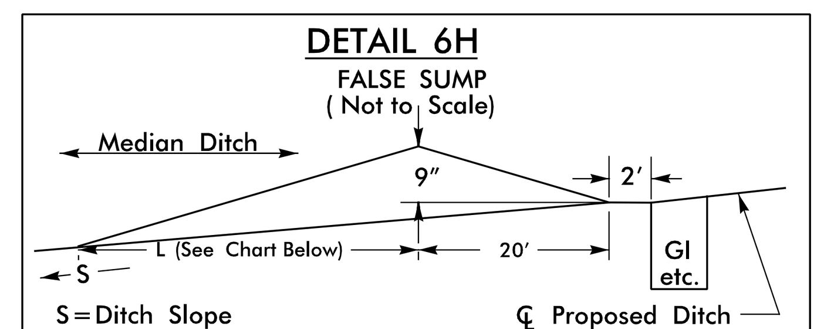
FROM Y23 STA. 17+00 TO STA. 18+00 MED.



FROM L1RPB STA. 14+70, 41' RT
FROM L1RPB STA. 14+10, 34' LT
FROM Y23 STA. 13+98, 65' LT
FROM Y23 STA. 19+69, 78' LT
FROM Y23 STA. 22+11, 62' LT
FROM L1RPD STA. 11+96, 52' LT
FROM L1RPD STA. 11+24, 46' LT

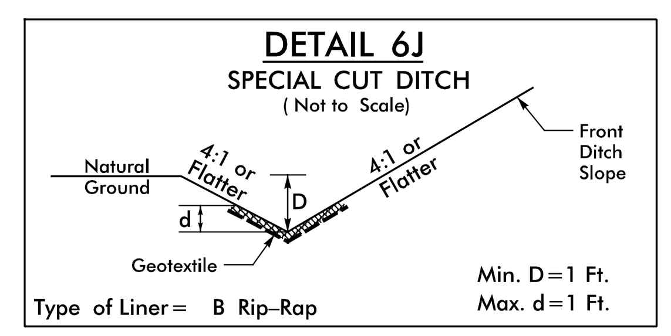


FROM Y23 STA. 14+08, 65' RT
FROM Y23 STA. 20+24, 75' RT
FROM Y23 STA. 22+07, 61' RT
FROM L1RPC STA. 13+99, 37' LT

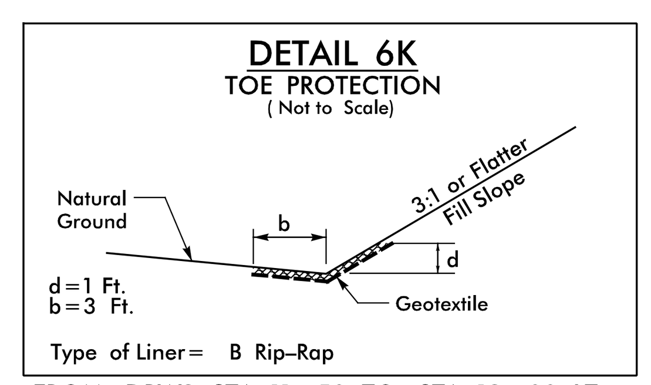


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

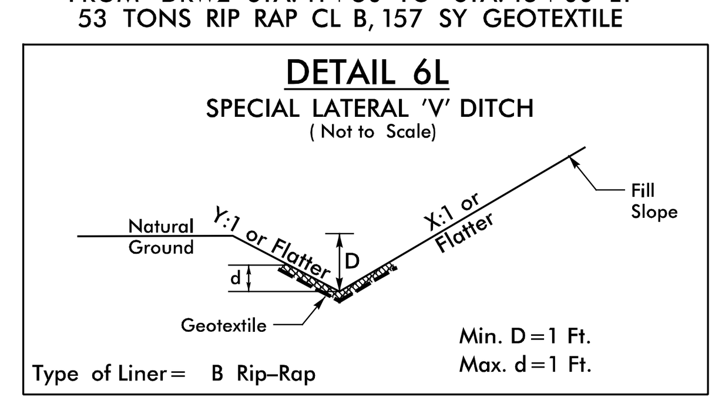
FROM Y23 STA. 14+08 MED
FROM Y23 STA. 19+67 MED
FROM Y23 STA. 22+09 MED



FROM L1RPC STA. 15+00 TO STA. 14+23 LT
27 TONS RIP RAP CL B, 81 SY GEOTEXTILE



FROM DRW2 STA. 11+50 TO STA. 13+00 LT
53 TONS RIP RAP CL B, 157 SY GEOTEXTILE



FROM L1RPC STA. 16+77 TO STA. 16+00 LT. X=3, Y=3
FROM L1RPC STA. 15+00 TO STA. 16+00 LT. X=4, Y=4
85 TONS RIP RAP CL B, 255 SY GEOTEXTILE

CURVE DATA FOR SHEET 6

-L1- CURVE DATA
PI Sta 51+86.80
Δ = 16° 34' 07.8" (RT)
D = 19° 05' 54.9"
L = 86.75'
T = 43.68'
R = 300.00'

-L1- CURVE DATA
PI Sta 53+04.42
Δ = 27° 54' 36.7" (LT)
D = 19° 05' 54.9"
L = 146.14'
T = 74.55'
R = 300.00'

-L1- CURVE DATA
PI Sta 57+29.51
Δ = 2° 25' 22.2" (LT)
D = 1° 31' 40.4"
L = 158.57'
T = 79.30'
R = 3,750.00'
SE = NC
DS = 35 MPH

-L1- CURVE DATA
PI Sta 59+14.65
Δ = 38° 52' 28.5" (RT)
D = 19° 05' 54.9"
L = 203.55'
T = 105.87'
R = 300.00'

-L1RPA- CURVE DATA
PI Sta 14+36.94
Δ = 41° 24' 24.8" (LT)
D = 18° 11' 20.9"
L = 227.65'
T = 119.05'
R = 315.00'
SE = 08
RO = 144'/168'
DS = 35 MPH

-L1RPB- CURVE DATA
PI Sta 11+15.25
Δ = 10° 04' 35.9" (RT)
D = 3° 03' 24.3"
L = 329.65'
T = 165.25'
R = 1,874.41'
SE = EXIST.

-L1RPB- CURVE DATA
PI Sta 14+80.71
Δ = 1° 23' 58.2" (LT)
D = 0° 20' 53.0"
L = 402.10'
T = 201.06'
R = 16,461.84'
SE = NC

-L1RPB- CURVE DATA
PI Sta 18+13.02
Δ = 13° 44' 25.4" (RT)
D = 63° 39' 43.1"
L = 21.58'
T = 10.84'
R = 90.00'

-L1RPC- CURVE DATA
PI Sta 15+80.97
Δ = 36° 11' 17.1" (LT)
D = 18° 11' 20.9"
L = 198.95'
T = 102.92'
R = 315.00'
SE = 08
RO = 144'/168'
DS = 35 MPH

-L1RPD- CURVE DATA
PI Sta 13+97.82
Δ = 11° 32' 07.3" (RT)
D = 3° 10' 59.2"
L = 362.39'
T = 181.81'
R = 1,800.00'
SE = 04
RO = 84'/72'
DS = 40 MPH

-L1RPD- CURVE DATA
PI Sta 15+89.10
Δ = 13° 33' 16.6" (RT)
D = 63° 39' 43.1"
L = 21.29'
T = 10.70'
R = 90.00'

-RAB9- CURVE DATA
PI Sta 10+00.02
Δ = 359° 58' 18.9" (LT)
D = 67° 24' 24.5"
L = 534.03'
T = 0.02'
R = 85.00'
SE = NC
DS = 25 MPH

-RAB10- CURVE DATA
PI Sta 10+00.02
Δ = 359° 58' 18.9" (LT)
D = 67° 24' 24.5"
L = 534.03'
T = 0.02'
R = 85.00'
SE = NC
DS = 25 MPH

-DRW2- CURVE DATA
PI Sta 10+61.89
Δ = 35° 57' 38.4" (LT)
D = 114° 35' 29.6"
L = 31.38'
T = 16.23'
R = 50.00'

-DRW2- CURVE DATA
PI Sta 12+64.09
Δ = 27° 52' 47.8" (RT)
D = 38° 11' 49.9"
L = 72.99'
T = 37.23'
R = 150.00'

-DRW2- CURVE DATA
PI Sta 13+17.14
Δ = 7° 54' 54.9" (LT)
D = 22° 55' 05.9"
L = 34.54'
T = 17.30'
R = 250.00'

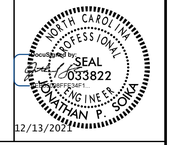
-DRW2- CURVE DATA
PI Sta 13+54.92
Δ = 3° 08' 14.6" (RT)
D = 7° 38' 22.0"
L = 41.07'
T = 20.54'
R = 750.00'

11/30/2021
u5996_rdy_dtl_2B6.dgn
jsoika

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2B-7

ROADWAY DESIGN ENGINEER



12/13/2024

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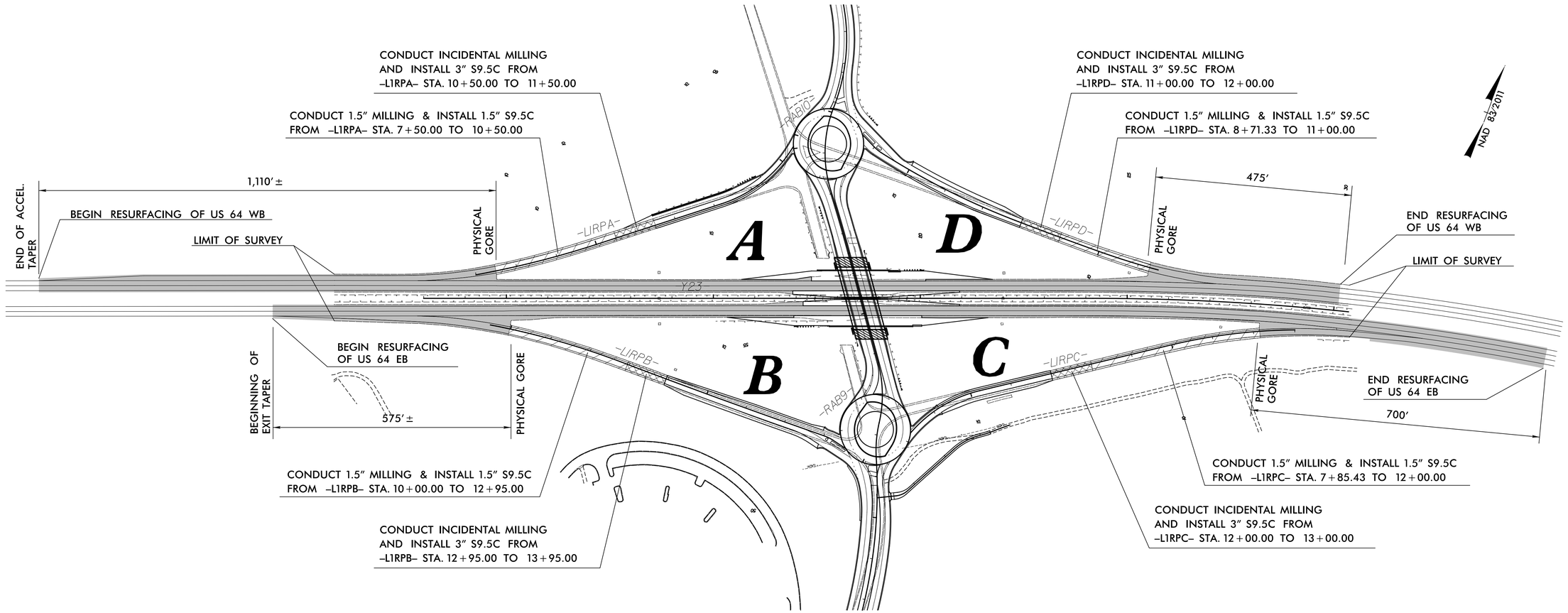
CONDUCT INCIDENTAL MILLING AND REPLACE WITH 3" S9.5C.

MILL 1.5" AND REPLACE WITH 1.5" S9.5C.

FOR EXISTING PAVEMENT HAVING OGFC, MILL 2.25"; FOR EXISTING PAVEMENT WITHOUT OGFC, MILL 1.5". INSTALL 1.5" S9.5D UPON ENTIRE PAVEMENT SURFACE AND INSTALL 0.75" OGFC FROM EOT TO EOT AND EXTENDING 3' INTO THE OUTSIDE AND MEDIAN PAVED SHOULDERS AS SHOWN IN TYPICAL SECTION NO. 20 ON SHEET 2A-10. APPLY MILLED RUMBLE STRIPS PER ROADWAY STANDARD DRAWING NO. 665.01.

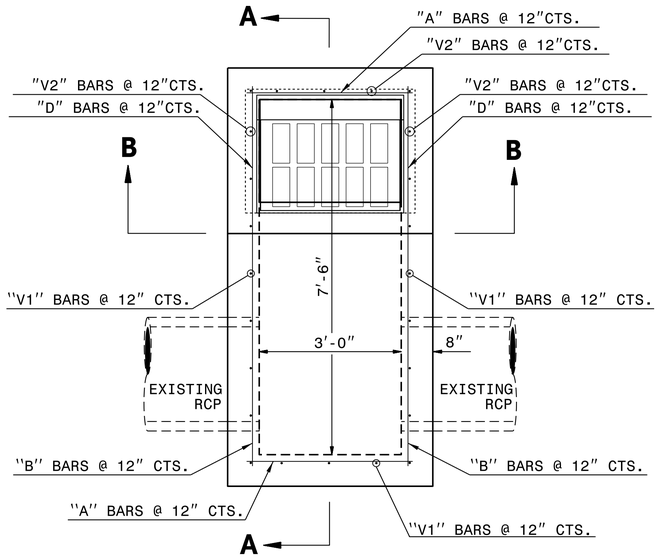


US 64 RESURFACING DETAIL

12/10/2024
U5996_2B_dt1_287.dgn
townsend

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2C-1

Drainage Structure:
0517



PLAN

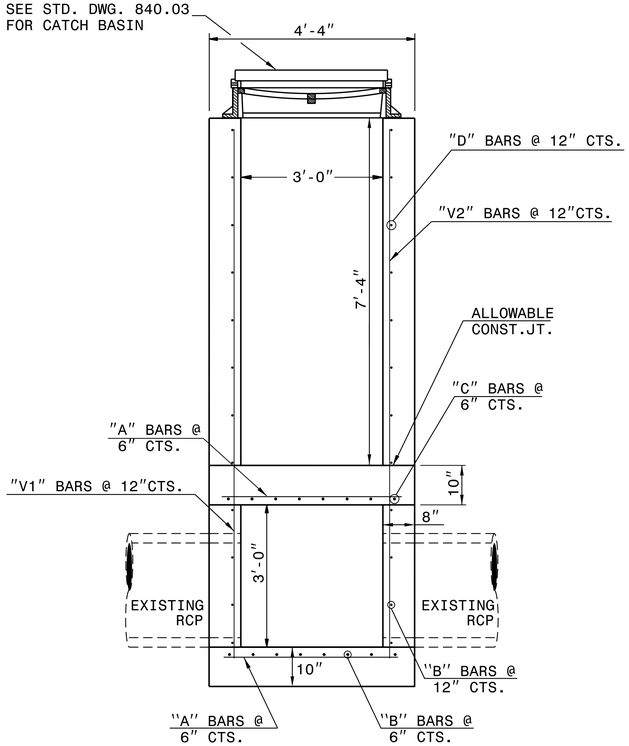
GENERAL NOTES:

1. USE CLASS "AA" CONCRETE THROUGHOUT.
2. CONSTRUCT CONCRETE BOX IN ACCORDANCE WITH SECTION 825 OF THE STANDARD SPECIFICATIONS.
3. USE FORMS TOR CONSTRUCT THE BOTTOM SLAB.
4. ADJUST LENGTH OF STEEL BARS AS NEEDED TO COMPENSATE FOR PIPES AND FRAME AND GRATE OPENINGS.
5. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60.
6. CUT OR BEND STEEL BARS AS NEEDED TO PROVIDE 2" CLEARANCE.
7. LOCATE FRAME AND GRATE AS FIELD CONDITIONS DICTATE AND AS DIRECTED BY THE ENGINEER.
8. DIMENSIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.

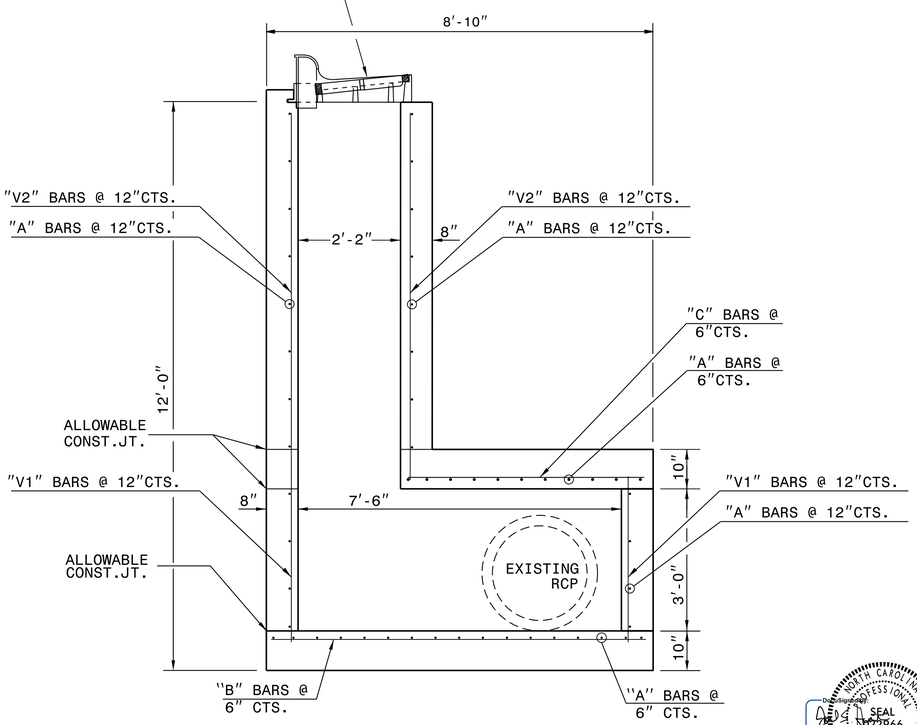
BILL OF MATERIALS

BAR	QTY	SIZE	LENGTH	WEIGHT
A	52	#5	4'-0"	217
B	16	#5	8'-6"	142
C	8	#5	6'-0"	51
D	16	#5	2'-8"	45
V1	24	#5	3'-6"	88
V2	24	#5	7'-4"	108
TOTAL REINF. STEEL (lbs.)				651
TOTAL CONC. CU. YDS.				5.4

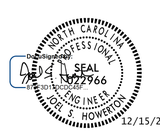
NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES OR CATCH BASIN OPENING.



SECTION B-B



SECTION A-A



12/15/2021

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

DETAIL OF SPECIAL OFFSET CATCH BASIN

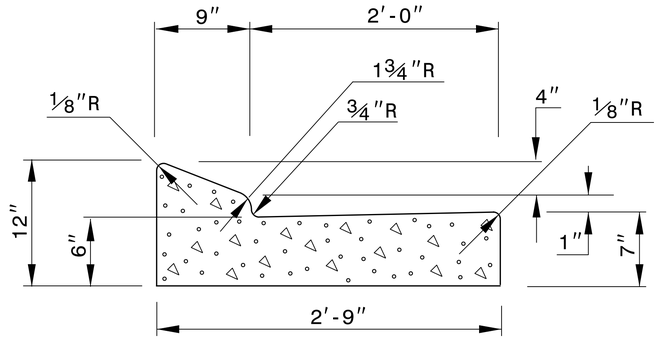
ORIGINAL BY: K.A.KEMPF DATE: JUNE 17,2014
MODIFIED BY: DATE: DEC 21,2016
CHECKED BY: DATE:
FILE SPEC.: s:details/kkempf/english/u5843_tb_cb_offset.dgn

03-MAY-2018 11:06
S:\Contracts\Special Details\kkempf\english\U5843_tb_cb_offset.dgn
jhowerton AT CSD-292545

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2C-2

*NOTE: SEE STD. DWG. 846.01
FOR 2′-6″ CURB AND GUTTER
INFORMATION.



PROPOSED 2′-9″ CURB & GUTTER

ISOMETRIC VIEW OF TRANSITIONING CURB & GUTTER

NORTH CAROLINA PROFESSIONAL SEAL 032966 ENGINEER John S. Howerton
12/15/2021

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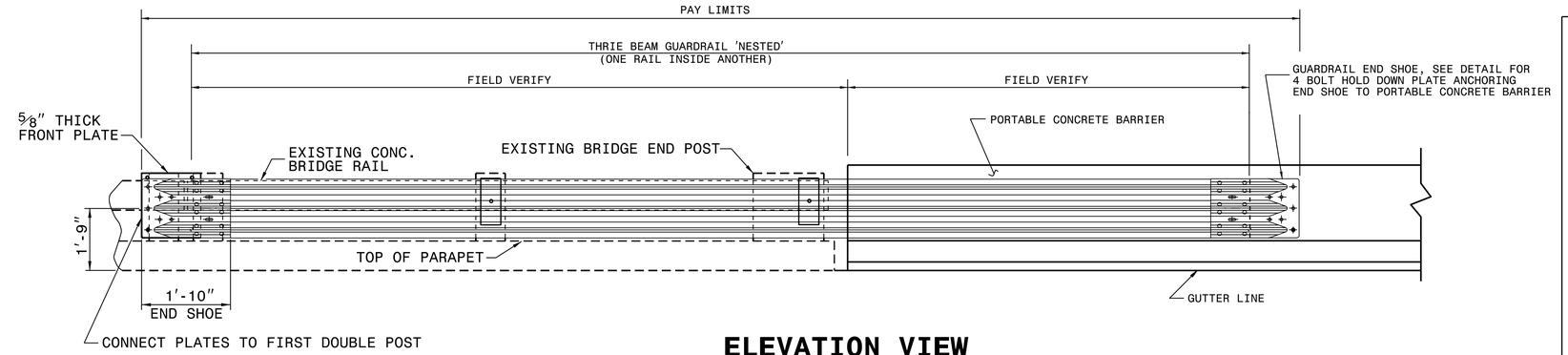
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

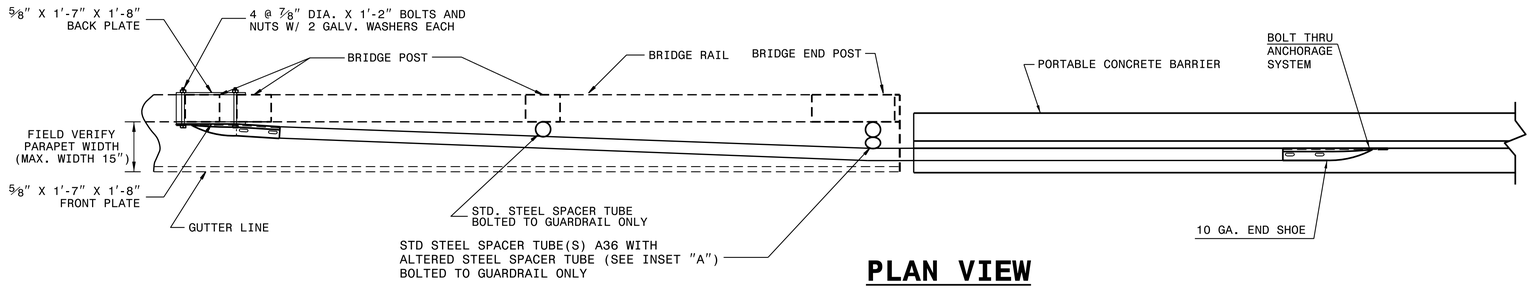
DETAIL OF 2′-9″ TO 2′-6″ CURB & GUTTER TRANSITION SECTION

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: DS174:/usr/details/stand/cgtransit.dgn

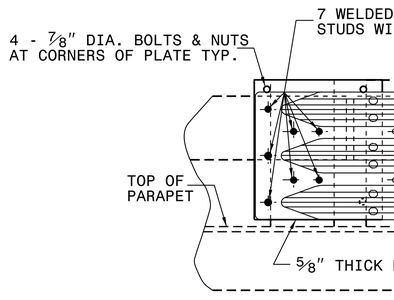
PROJECT REFERENCE NO.	SHEET NO.
U-5996	2C-3



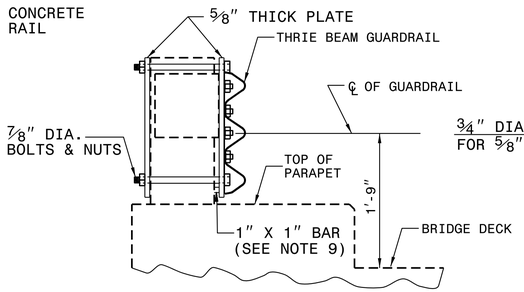
ELEVATION VIEW



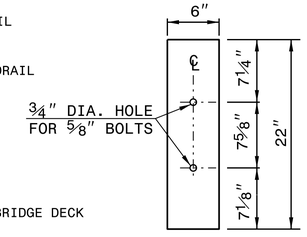
PLAN VIEW



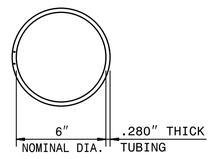
ELEVATION VIEW



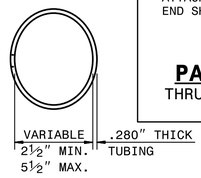
SECTION VIEW



FRONT VIEW



PLAN VIEW



PLAN VIEW INSET "A"

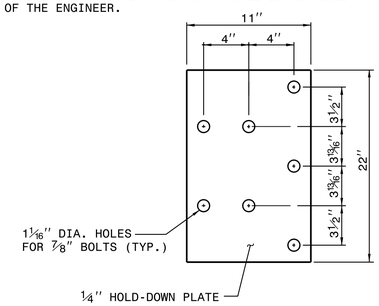
STEEL SPACER TUBE

NOTES FOR 4 BOLT HOLD DOWN PLATE

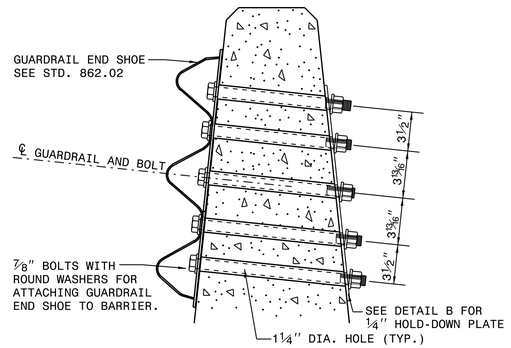
THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" DIA. BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

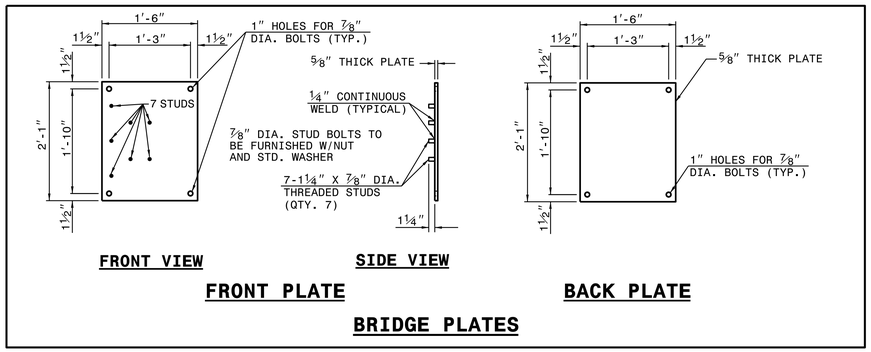
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. THE 1 1/4" DIA. HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



7 BOLT HOLD DOWN PLATE



PART SECTION OF BARRIER OR RAIL
THRU END SHOE SECTION AND 7 BOLT HOLD DOWN PLATE



BRIDGE PLATES

GENERAL NOTES:
1. USE NUTS, BOLTS, AND WASHERS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-307 AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
2. TAP NUTS FOR THE 7/8" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
3. USE PLATES AND TUBES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
4. ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
5. INSTALL FACE OF GUARDRAIL AS NEAR AS POSSIBLE TO PLUMB WITH THE PARAPET FACE AT BRIDGE END POST SPACER TUBE LOCATION BY USING STANDARD OR ALTERED SPACER TUBES OR A COMBINATION THEREOF OR AS DIRECTED BY THE ENGINEER. FOR VERY SMALL PARAPET WIDTHS, GUARDRAIL MAY BE INSTALLED AGAINST BRIDGE RAIL WITHOUT SPACER TUBES.
6. DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
7. USE THIS DETAIL ONLY FOR BRIGES WITH POST AND BEAM TYPE RAIL.
8. ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH 1/4" WELDS ALL AROUND.
9. 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.
10. PROVIDE SHOP DRAWINGS OF THE PLATES TO THE ENGINEER FOR APPROVAL BEFORE FABRICATING THE PLATES.
11. LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
12. SEE ROADWAY STANDARD DRAWING 862.03 SHEET 3 FOR ADDITIONAL INFORMATION ON THE TYPE III ANCHOR UNIT

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

TEMPORARY ANCHOR UNIT TYPE THRIE-BEAM

ORIGINAL BY: E.E. WARD DATE: 01-03
MODIFIED BY: KA Kempf DATE: 10-19
CHECKED BY: DATE:
FILE SPEC.: s:details\stand\bpiii originial.dgn

29-OCT-2019 16:56
S:\Contracts\Contracts\Special Details\Jericward\usr\details\stand\bp iii original.dgn
kkempf AT CSD-22596

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2C-4

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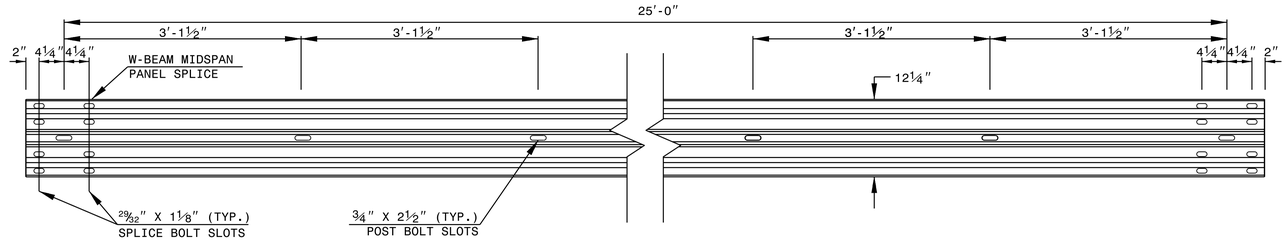
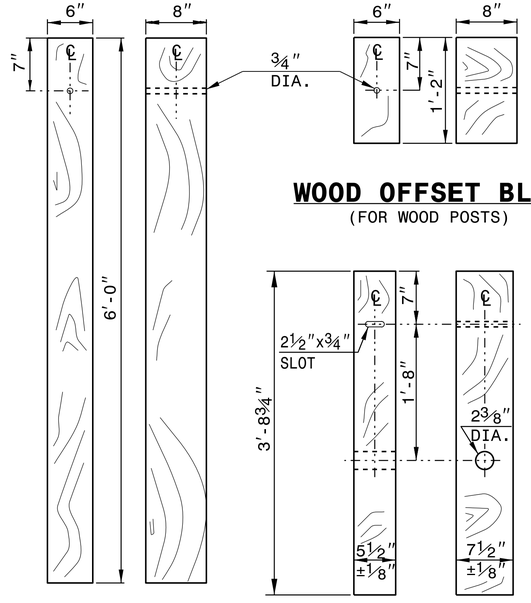
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



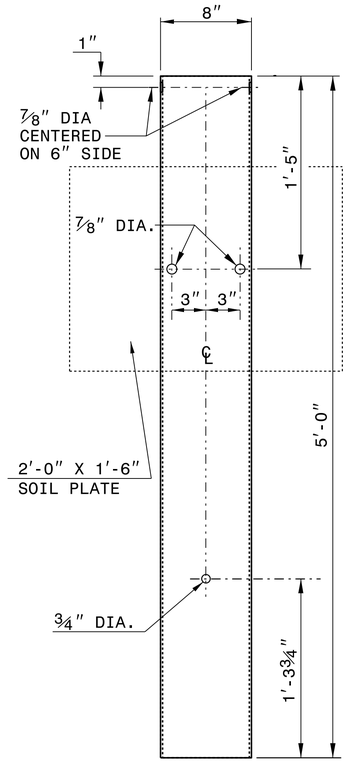
STANDARD W-BEAM GUARDRAIL



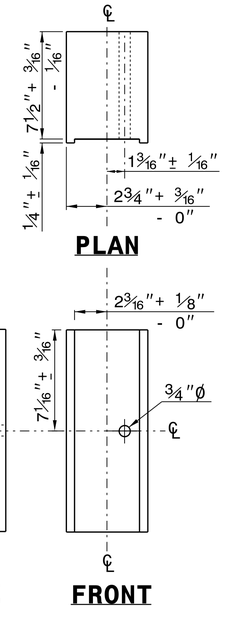
WOOD OFFSET BLOCK
(FOR WOOD POSTS)

STANDARD LINE POST

SHORT WOOD BREAKAWAY POST



STEEL TUBE
TS 6"x8"x0.1875"



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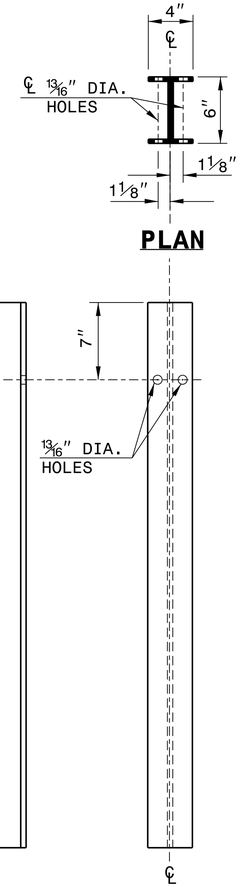


"W6" STEEL POST

SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S HOWERTON
12/15/2021

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

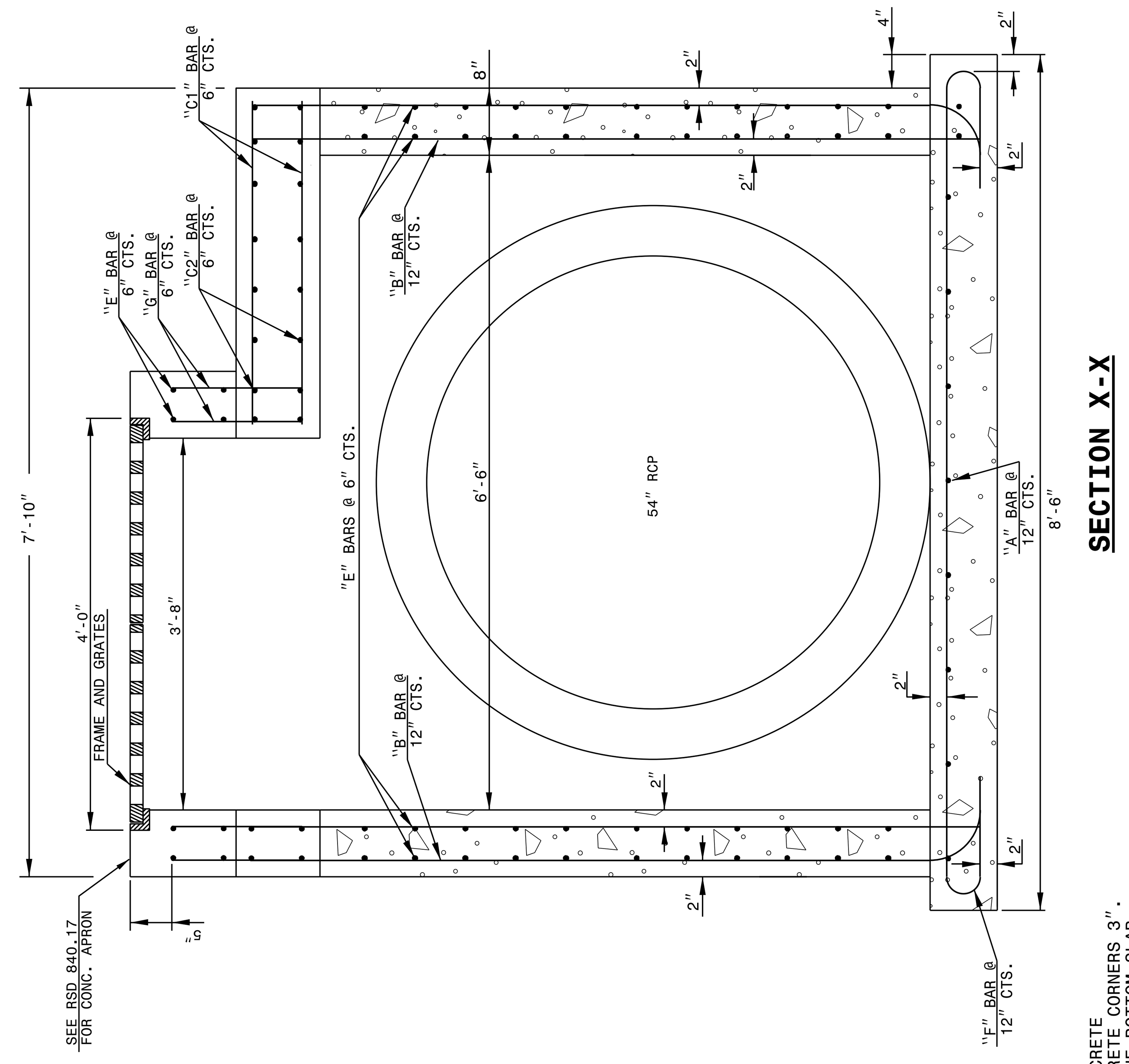
SEE TITLE BLOCK

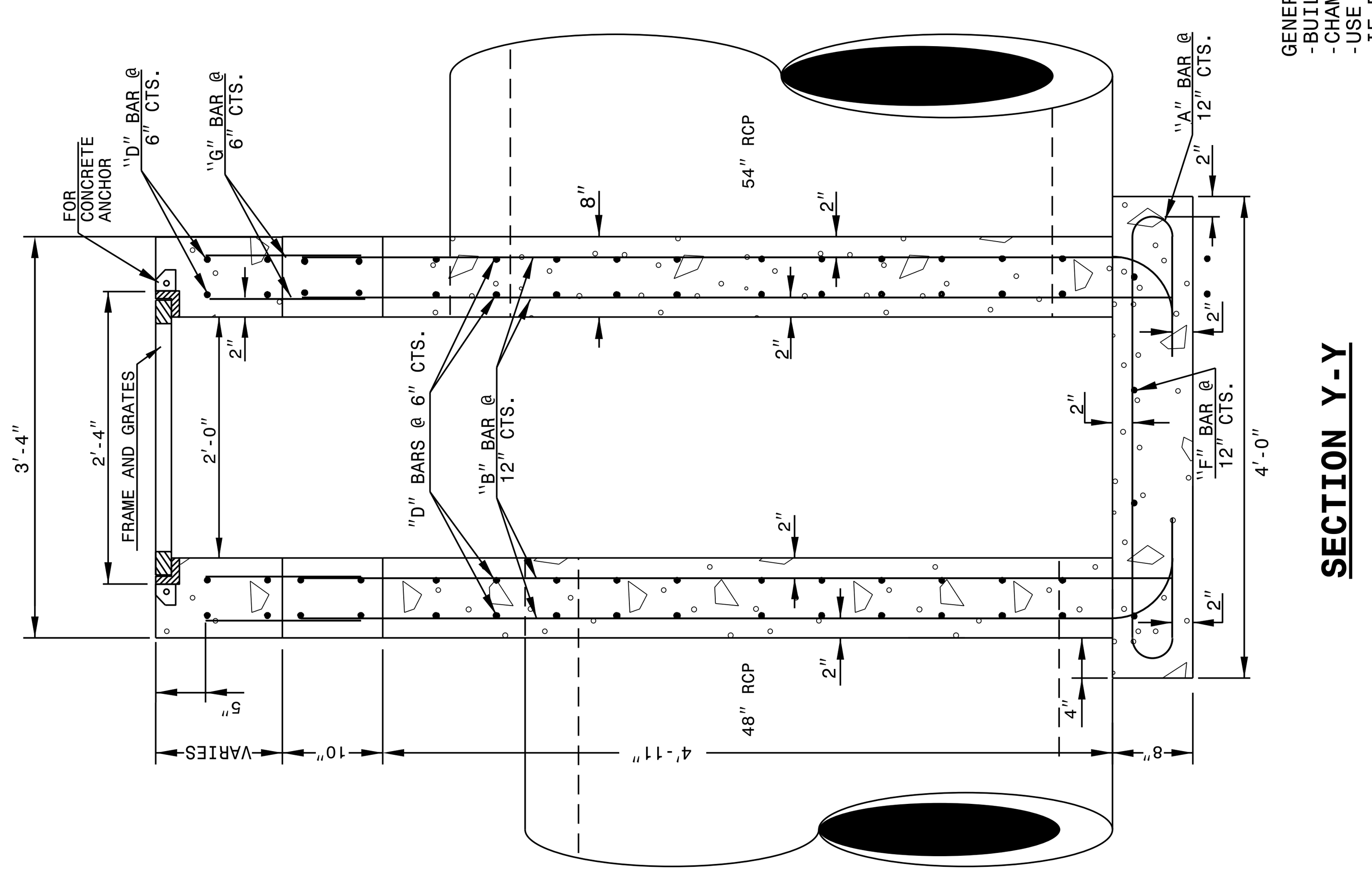
ORIGINAL BY: J.HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2C-5

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. — ENGLISH DETAIL DRAWING FOR TRAFFIC BEARING GRATED INLET FOR PIPES UP TO 54" — SHEET 1 OF 2 840D35

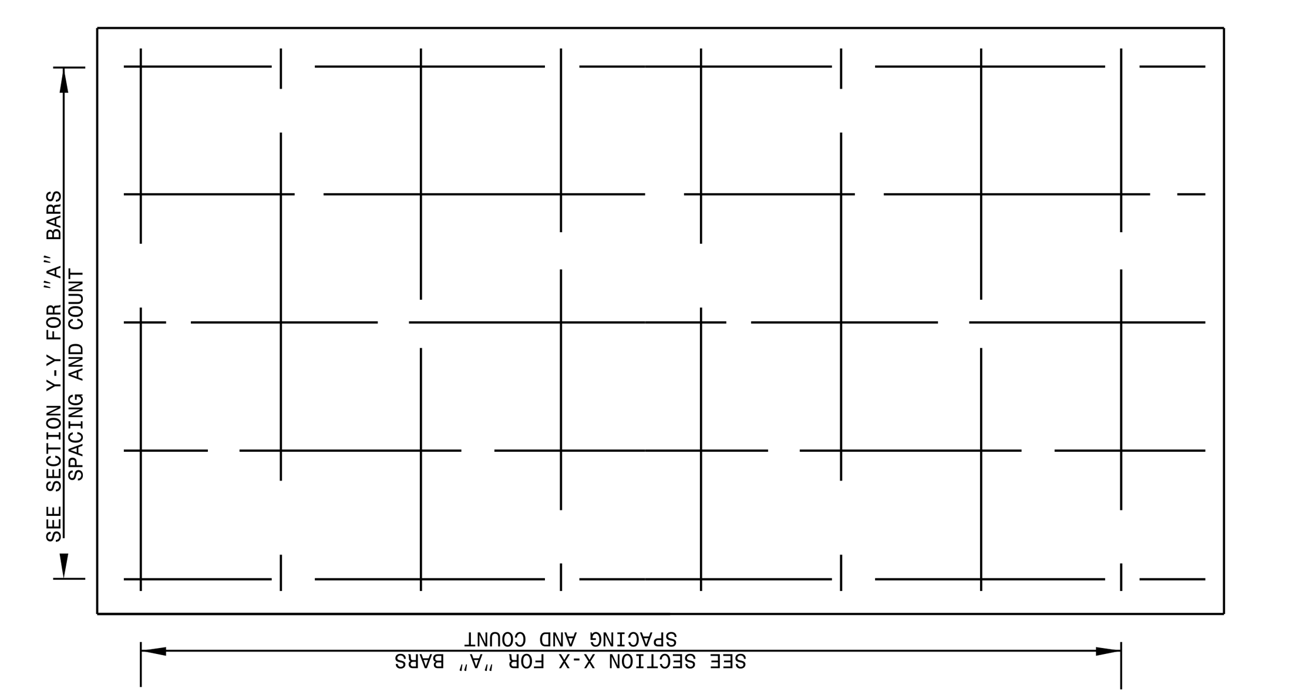
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. — ENGLISH DETAIL DRAWING FOR TRAFFIC BEARING GRATED INLET FOR PIPES UP TO 54" — SHEET 2 OF 2 840D35





GENERAL NOTES:
- BUILD WITH CLASS 'AA' CONCRETE
- CHAMFER ALL EXPOSED CONCRETE CORNERS 3".
- USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
- IF PIPES ARE SET IN THE BASE, FOLLOW CONSTRUCTION PROCEDURES SHOWN BY STD. DWG. 840.00.
- PRECAST UNITS CONCRETE MAY BE USED IN LIEU CAST IN PLACE CONCRETE.
- REFERENCE STD. DWG. 840.25 FOR FRAME ANCHORAGE.
- PROVIDE DROP INLETS OVER 3'-6" DEEP WITH STEPS AS DIRECTED BY STD. DWG. 840.66.
- FRAME AND GRATES ARE SEPARATE CONTRACT ITEM.

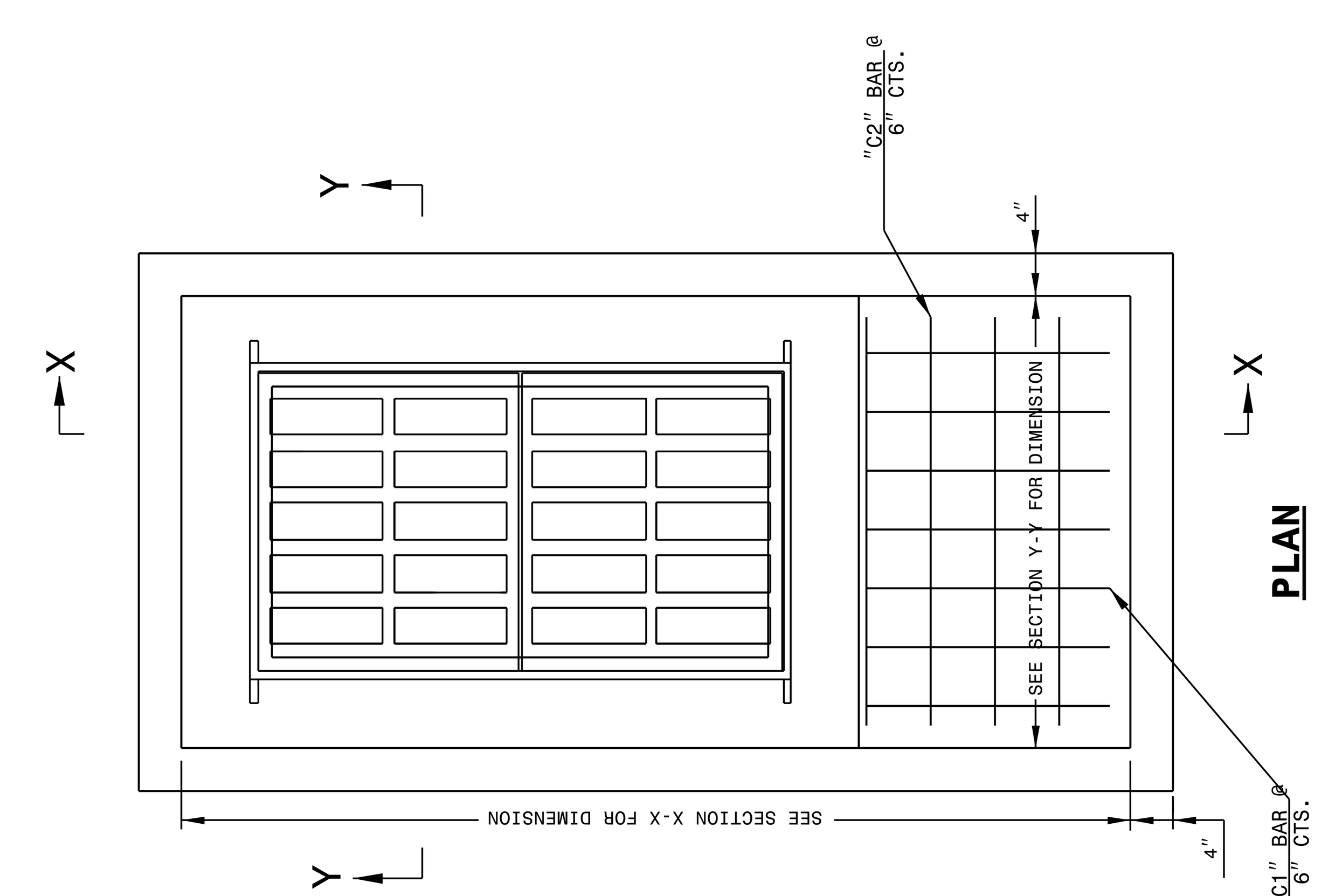
NOTES:
- HORIZONTAL (UP TO 10' MAX. IN BOTH DIRECTIONS) AND VERTICAL (UP TO 20' MAX.) DIMENSIONS MAY BE ADJUSTED AS THE FIELD CONDITIONS AND/OR ALTERNATE DESIGNS REQUIRE.
- ALL ADJUSTMENTS ARE TO BE MADE AS DIRECTED BY THE ENGINEER.

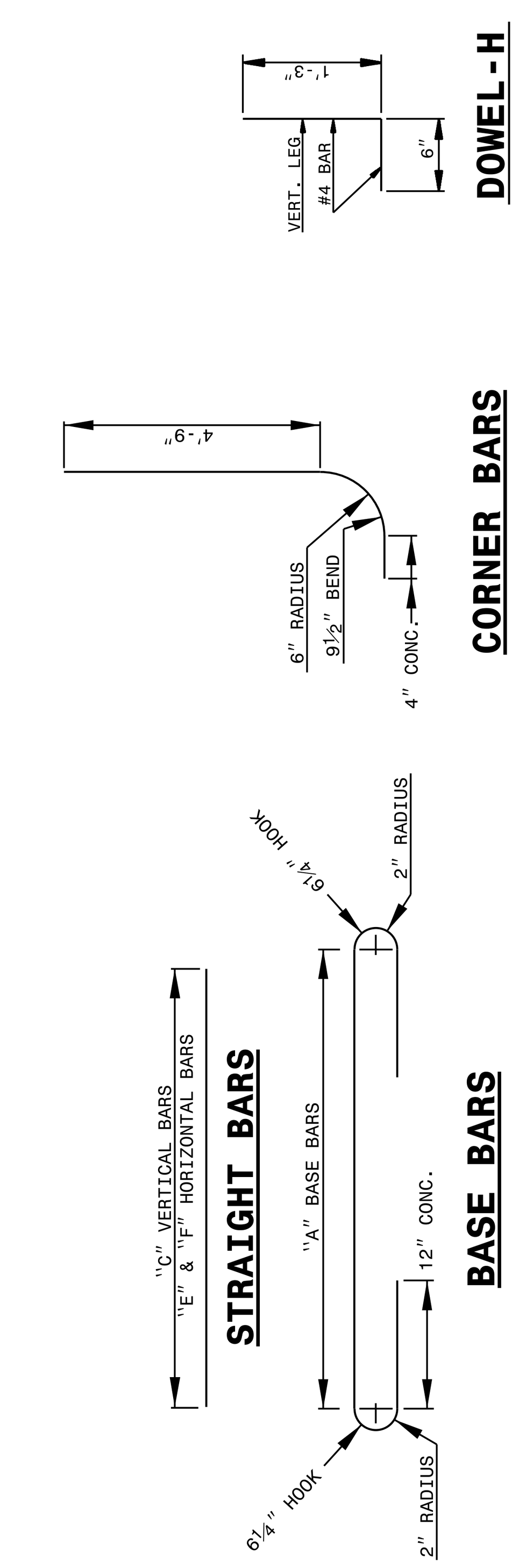


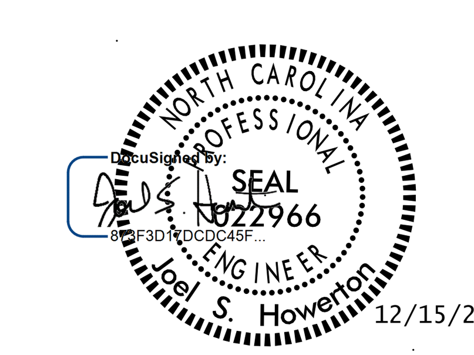
BILL OF MATERIALS

BAR	SIZE	LENGTH	QUANTITY	WEIGHT
A	#5	5'-0"	42	47
B	#5	7'-6"	104	780
C1	#5	3'-4"	9	32
C2	#5	3'-0"	6	19
D	#5	7'-6"	48	376
E	#5	3'-0"	48	151
F	#5	10'-0"	4	42
G	#5	1'-8"	104	181
REINF. STEEL (TOTAL WEIGHT LBS.)				1628
CONCRETE TOTAL (CU.YDS.) CLASS 'AA'				5.1
NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES				

FOR EVERY 1 FOOT OF RISER USE 0.41 CU.YDS CONCRETE AND 390 LBS STEEL.







DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **TRAFFIC BEARING GRATED INLET** FOR PIPES UP TO 54"	SHEET 1 OF 2 **840D35**

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **TRAFFIC BEARING GRATED INLET** FOR PIPES UP TO 54"	SHEET 2 OF 2 **840D35**

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

SEE PLATE FOR TITLE

ORIGINAL BY: K. KEMPF DATE: 03-03-2015
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: jhowerton/840d35 TBDI Up to 54in.dgn

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2C-6

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

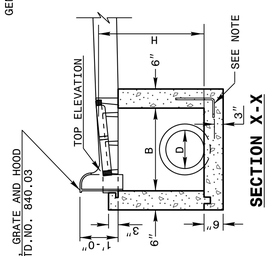
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.

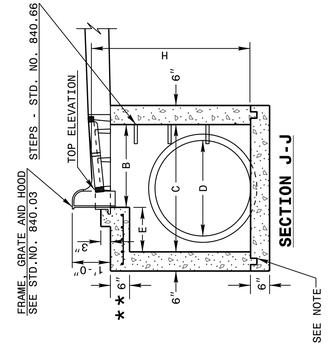
FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.

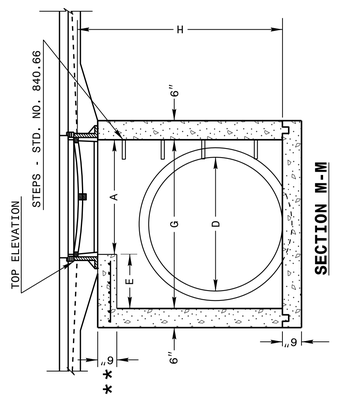
CONSTRUCT WITH PIPE CROWNS MATCHING.

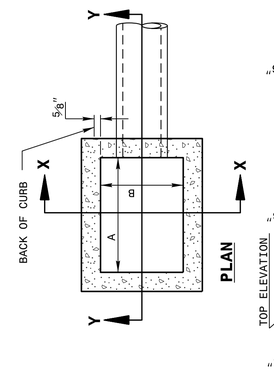
CHAMFER ALL EXPOSED CORNERS 1".

** FOR STRUCTURES WITH PIPE LARGER THAN 54", MAKE THE TOP SLAB 8" THICK.

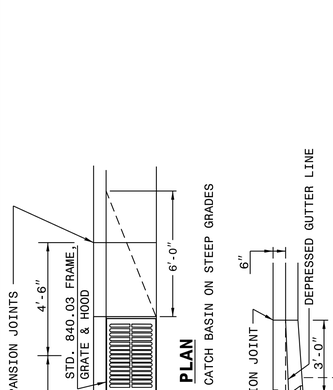


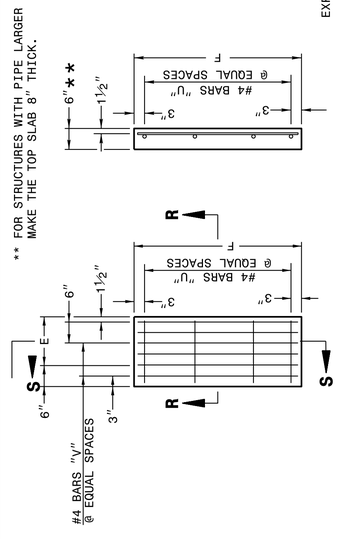






STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **MINIMUM DEPTH CONCRETE CATCH BASIN** 12" THRU 84" PIPE	SHEET 1 OF 2 **840D02**





* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN(BASED ON MIN. HEIGHT, H, WITH NO RISER) *

PIPE D	DIMENSIONS OF BOX AND PIPE COVER SPAN A	WIDTH B	WIDTH C	SPAN G	MIN. HEIGHT H	BARS-U NO.	BARS-U LENGTH	DIMENSION E	DIMENSION F	CU.YDS. CONC. IN BOX TOP SLAB	CU.YDS. CONC. IN BOX BOTTOM SLAB	CU.YDS. CONC. IN BOX TOT. CONC. FOR MINIMUM HEIGHT H	DEDUCTIONS ONE PIPE C.M.	DEDUCTIONS ONE PIPE R.C.
12"	3'-0"	2'-2"	--	--	2'-0"	--	--	--	--	--	0.235	0.772	0.015	0.026
15"	3'-0"	2'-2"			2'-3"						0.235	0.829	0.023	0.036
18"	3'-0"	2'-2"			2'-6"						0.235	0.887	0.033	0.049
24"	3'-0"	2'-2"			3'-1"						0.235	1.001	0.059	0.085
30"	3'-0"	2'-2"	3'-4"	3'-4"	3'-10"	4	1'-6"	1'-2"	4'-4"	0.123	0.347	1.433	0.092	0.127
36"	3'-0"	2'-2"	3'-10"	3'-10"	4'-6"	4	1'-6"	1'-8"	4'-10"	0.161	0.432	1.714	0.132	0.178
42"	3'-0"	2'-2"	4'-5"	4'-5"	4'-11"	5	2'-2"	2'-2"	5'-5"	0.200	0.543	1.738	0.160	0.243
48"	3'-0"	2'-2"	5'-0"	5'-0"	5'-6"	5	2'-10"	2'-10"	6'-0"	0.235	0.667	2.052	0.235	0.317
54"	3'-0"	2'-2"	5'-7"	5'-7"	6'-0"	6	3'-5"	3'-5"	6'-7"	0.289	0.802	2.387	0.297	0.401
60"	3'-0"	2'-2"	6'-3"	6'-3"	6'-6"	6	4'-1"	4'-1"	7'-3"	0.340	0.973	2.722	0.363	0.546
66"	3'-0"	2'-2"	6'-11"	6'-11"	7'-0"	7	4'-9"	4'-9"	7'-11"	0.391	1.160	3.057	0.440	0.655
72"	3'-0"	2'-2"	7'-6"	7'-6"	7'-6"	7	5'-3"	5'-3"	8'-6"	0.442	1.340	3.392	0.524	0.774
78"	3'-0"	2'-2"	8'-1"	8'-1"	8'-0"	7	5'-11"	5'-11"	9'-1"	0.493	1.530	3.727	0.615	0.893
84"	3'-0"	2'-2"	8'-9"	8'-9"	8'-6"	8	6'-7"	6'-7"	9'-9"	0.544	1.760	4.062	0.713	1.010

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **MINIMUM DEPTH CONCRETE CATCH BASIN** 12" THRU 84" PIPE	SHEET 2 OF 2 **840D02**

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT
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SEE PLATE FOR TITLE

ORIGINAL BY: 2002 Std.840.01 DATE:
MODIFIED BY: E.E. WARD DATE: 3-1-02
CHECKED BY: DATE:
FILE SPEC.: s:Special Details/jhowerton/840d02.dgn

10-AUG-2017 10:11
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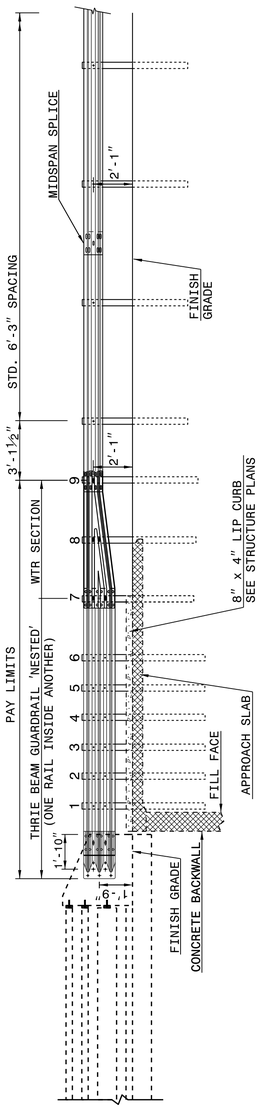
jhowerton
AT CSD-292595

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2C-7

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

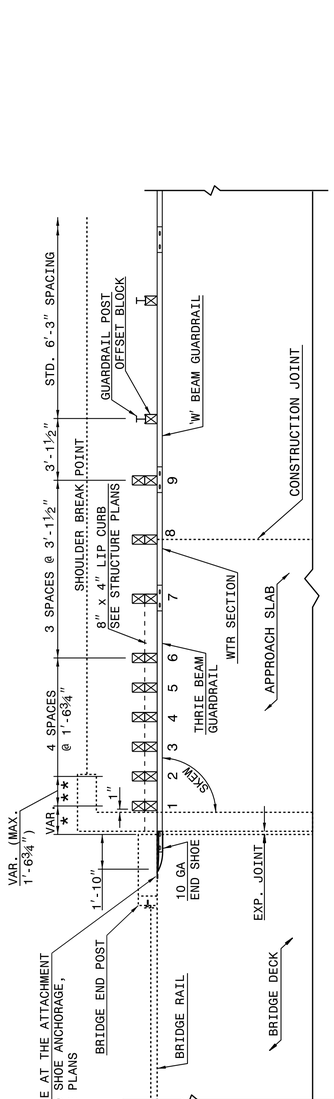
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

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.



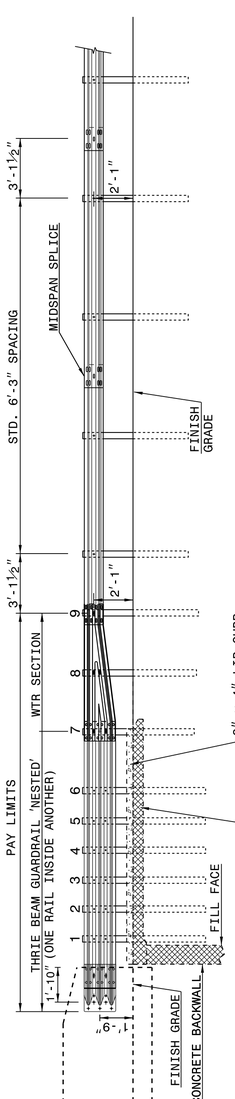
PLAN VIEW

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



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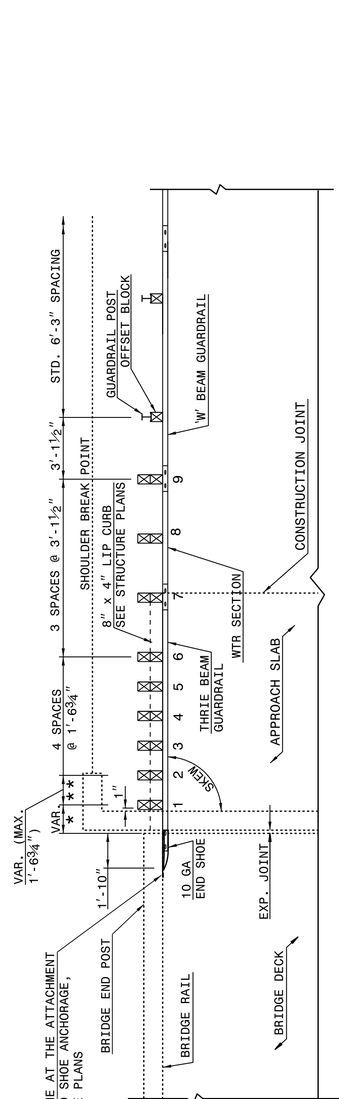

PLAN VIEW

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

DocuSigned by:
Joel S. Howerton
SEAL 022966
NORTH CAROLINA PROFESSIONAL ENGINEER
12/15/2021

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

SEE TITLE BLOCK

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

14-DEC-2017 10:36
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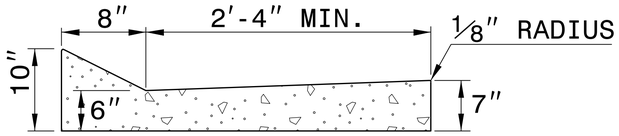
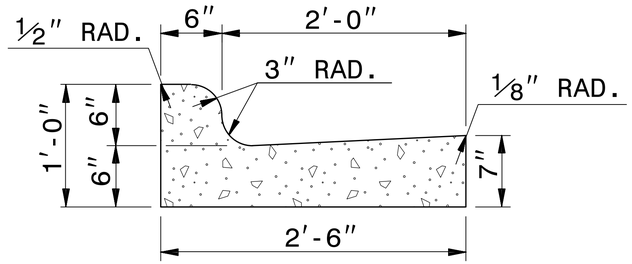
jhowerton AT CSD-2425965

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2C-8

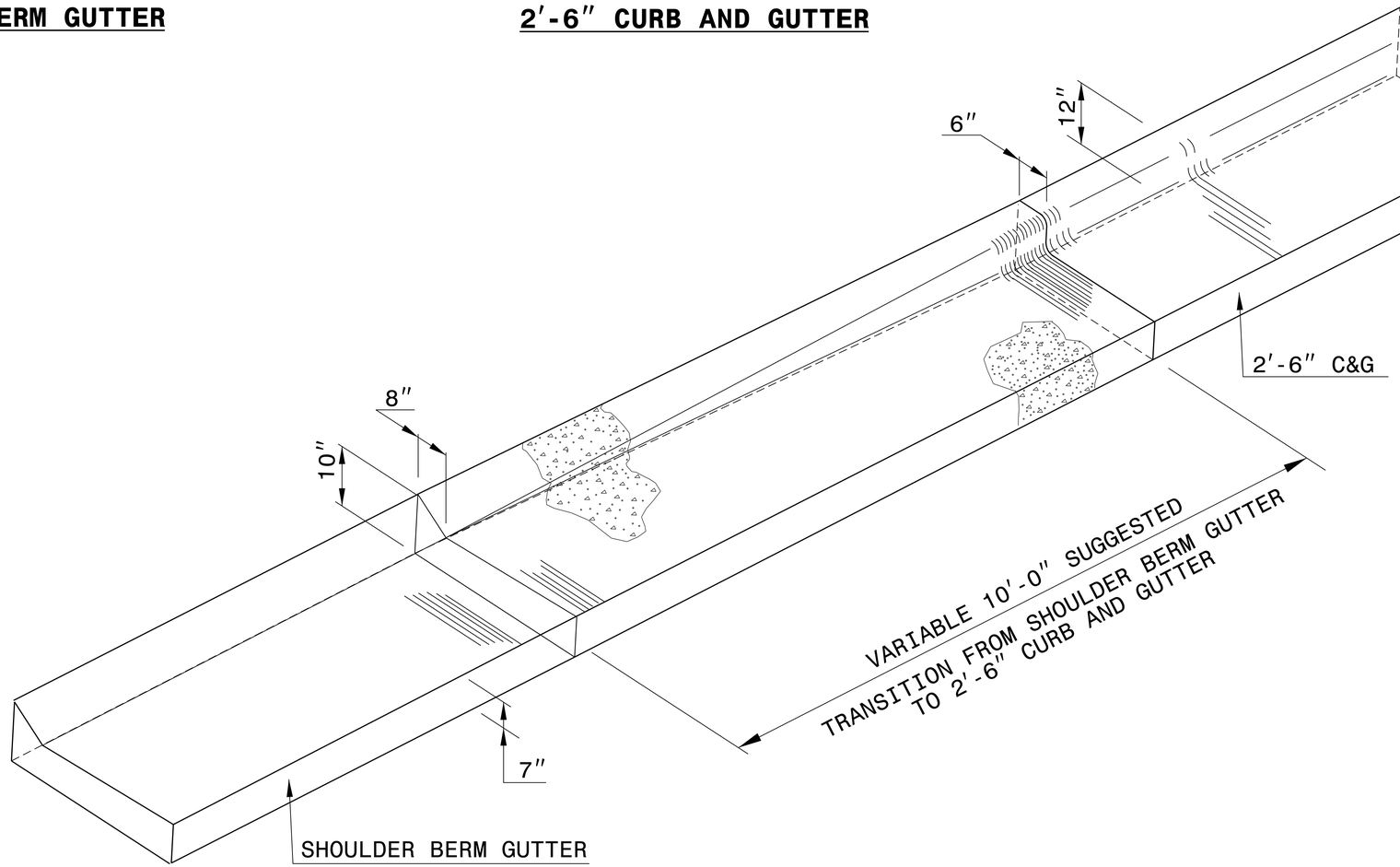


SHOULDER BERM GUTTER



2′-6″ CURB AND GUTTER

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



ISOMETRIC VIEW OF TRANSITION

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton
12/15/2021

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

DETAIL OF SHOULDER BERM GUTTER TO 2′-6″ CURB & GUTTER TRANSITION SECTION

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

20-OCT-2017 09:40
S:\Contracts\Special Details\erieward\usr\details\stand\c&g transition sections.dgn
jhowerton
AT CSD-2925995

8/17/99

DRAINAGE STRUCTURES 0605 & 0613 PLACEMENT DETAIL

SEE SHEET 6

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2D-1

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033246 LINDA M. JOHNS

11/30/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

vhb

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KCI ENGINEERING

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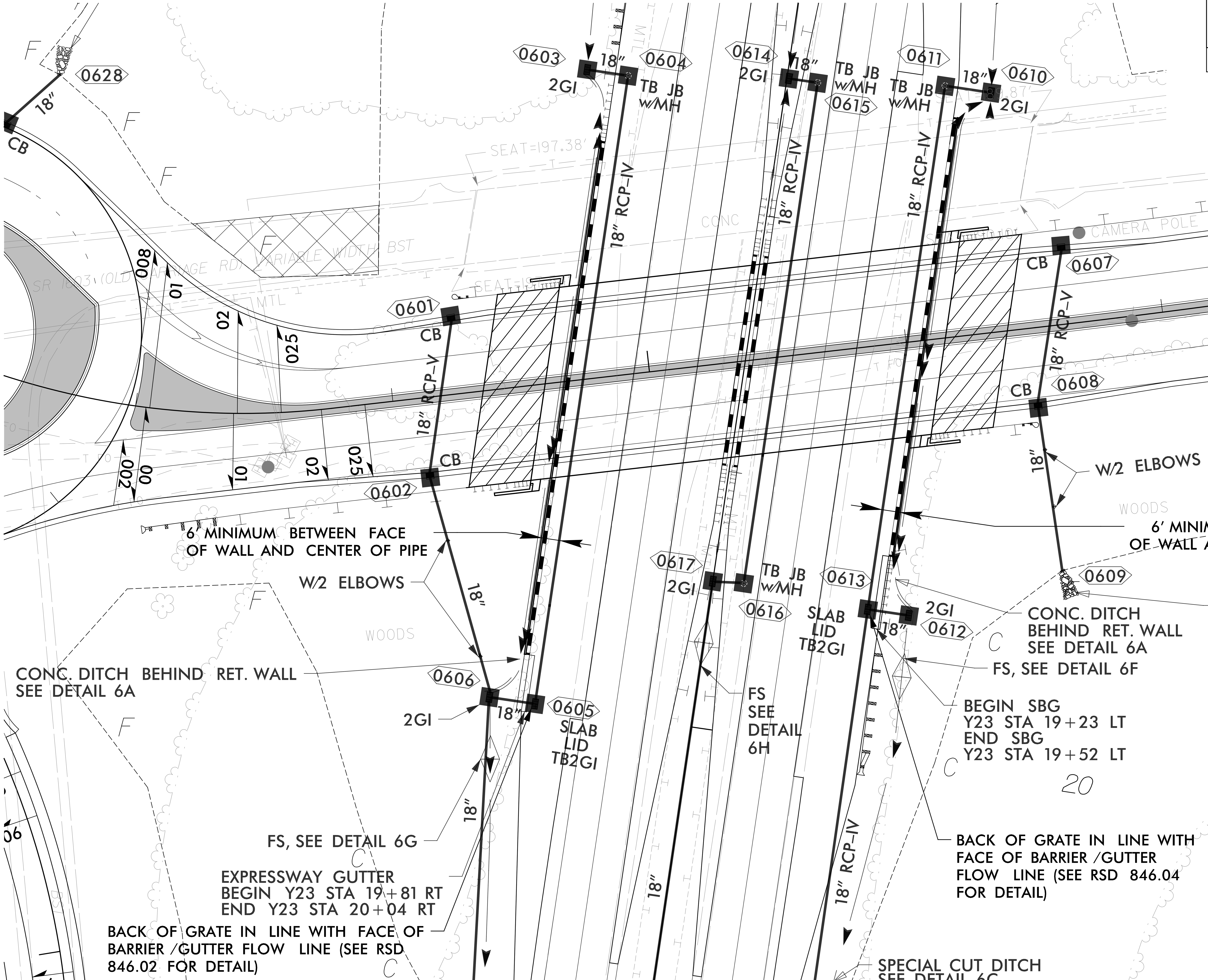

11/3/2021 u5996_rdy_drn_201.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2G-4

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 4/2/2020
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SIGNATURE DATE

ENGINEER

SIGNATURE DATE

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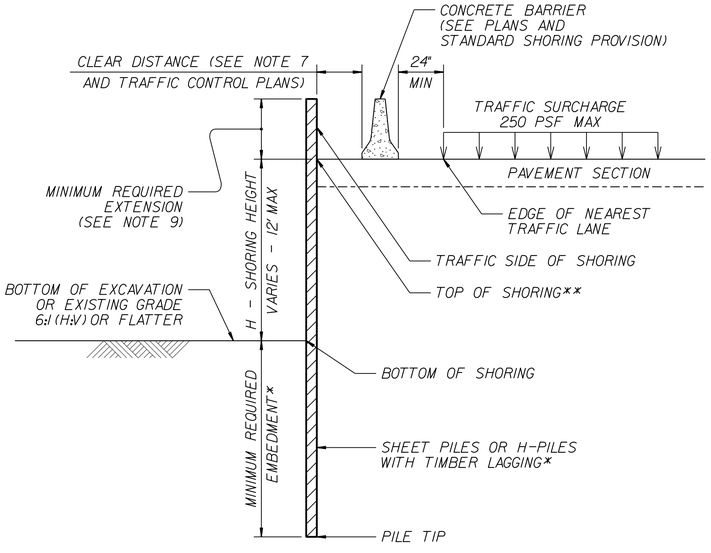
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (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 BEWTEEN 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 "--".

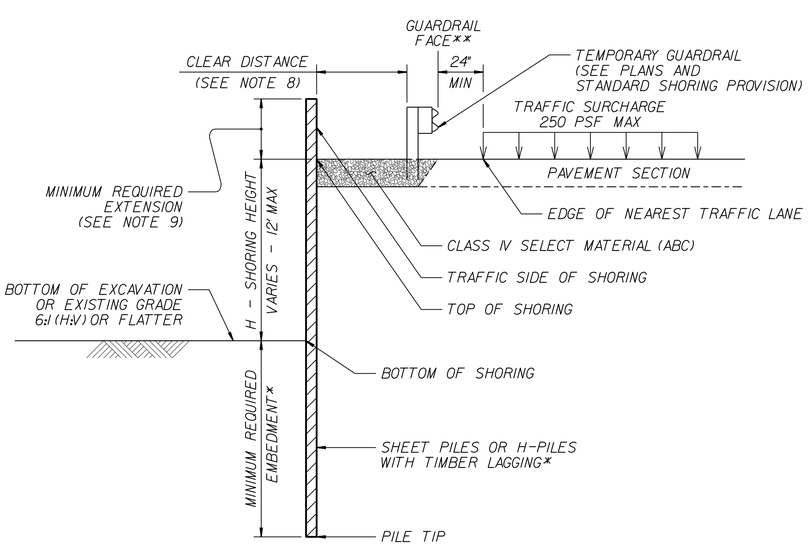
NOTES:

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.



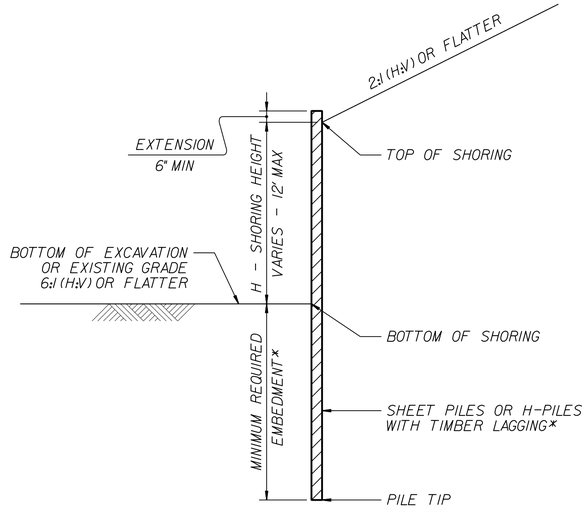
CONCRETE BARRIER

**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.

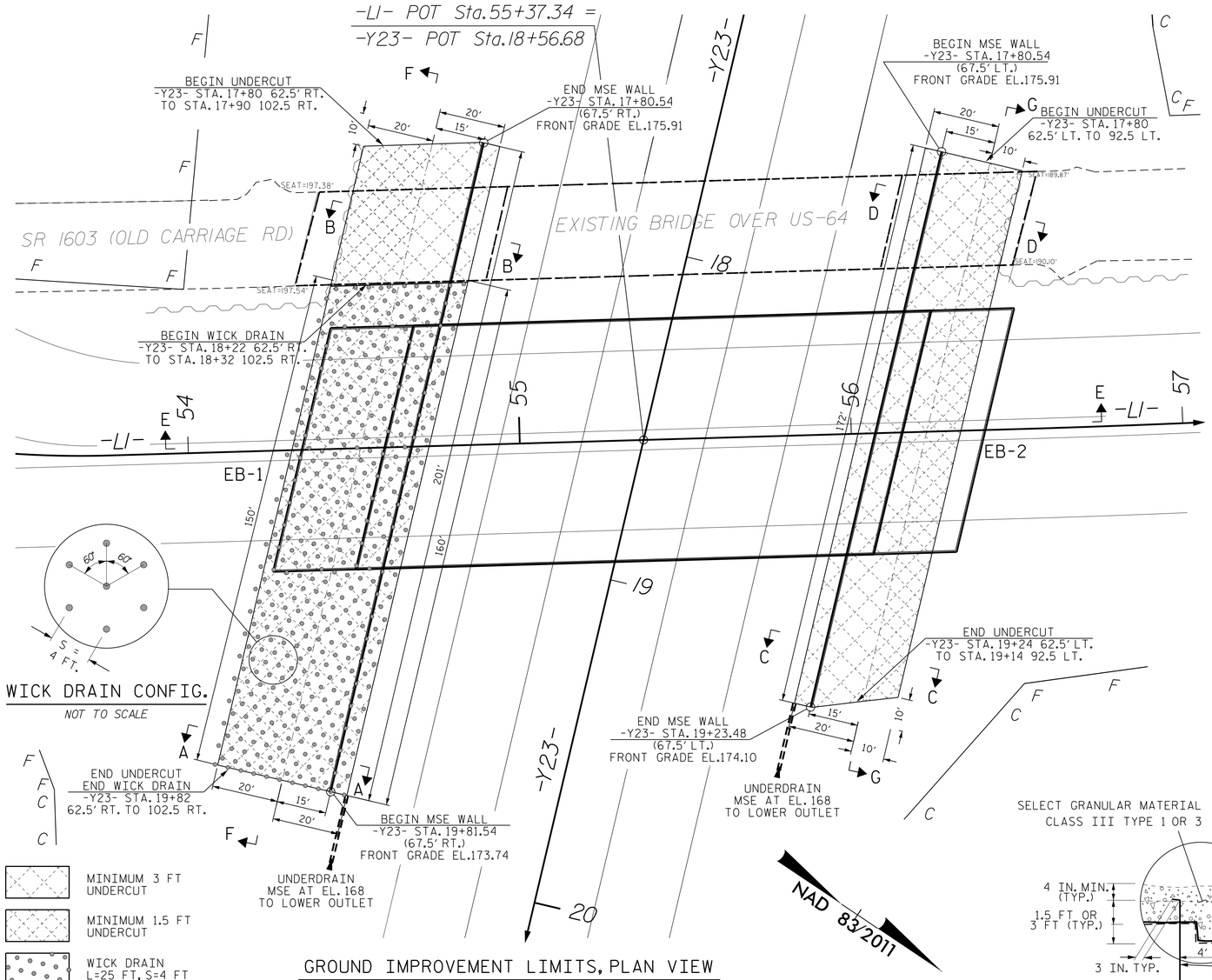
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13



WICK DRAIN CONFIG.

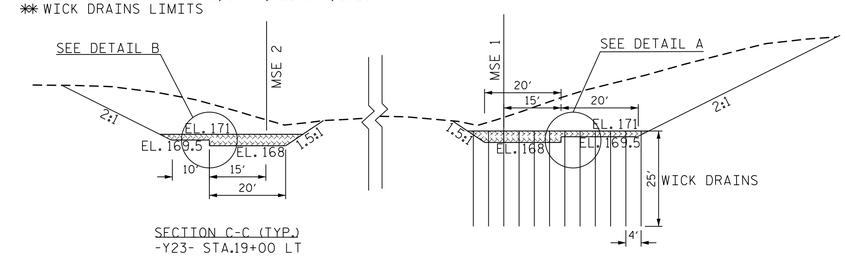
NOT TO SCALE

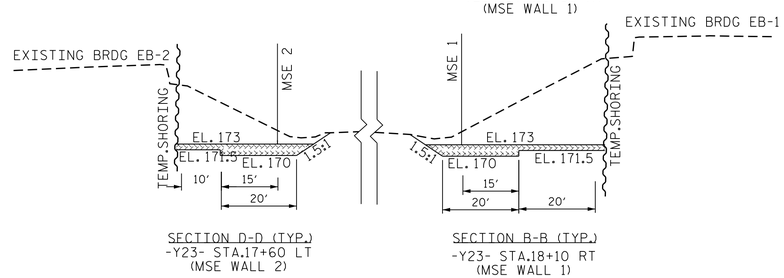
GROUND IMPROVEMENT LIMITS, PLAN VIEW

NOT TO SCALE

WICK DRAINS AND UNDERCUT LIMITS		
STATIONS (OFFSETS) -Y23-	UNDERCUT/ GEOTEXTILE BOTTOM ELEV.	WICK DRAIN* TOP ELEV.
19+82± (62.5'± RT) **	168' FRONT 20'	171' **
19+82± (102.5'± RT) **	169.5' BACK 20'	
18+22± (62.5'± RT) **	169.5' FRONT 20'	172.5' **
18+32± (102.5'± RT) **	171' BACK 20'	
17+80± (62.5''± RT)	170' FRONT 20'	
17+90± (102.5'± RT)	171.5' BACK 20'	
17+80± (62.5'± LT)	168' FRONT 20'	
17+80± (92.5'± LT)	169.5' BACK 10'	
19+24± (62.5'± LT)	170' FRONT 20'	
19+14± (92.5'± LT)	171.5' BACK 10'	

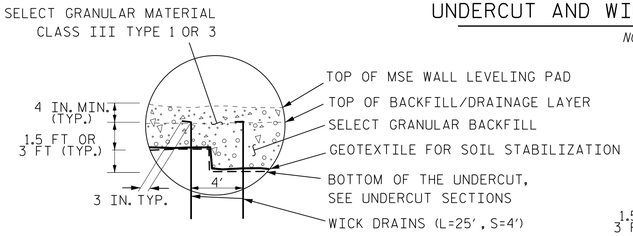
* WICK DRAINS (SPACING, S=4'), (LENGTH, L=25')
** WICK DRAINS LIMITS





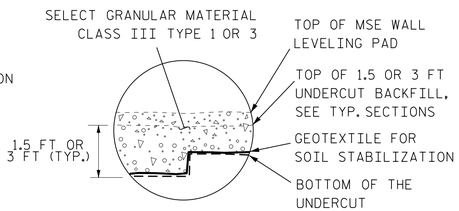
UNDERCUT AND WICK DRAIN TYP. SECTIONS

NOT TO SCALE



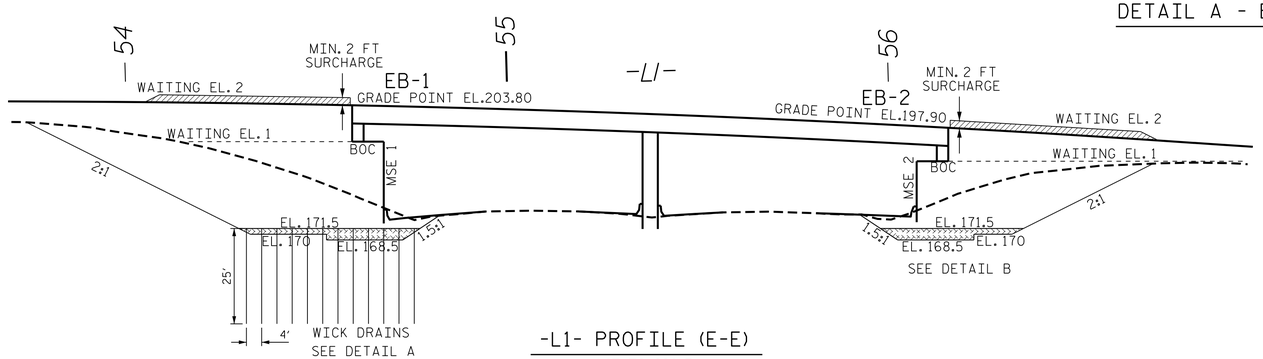
DETAIL A - BACKFILL/DRAINAGE LAYER

NOT TO SCALE



DETAIL B - UNDERCUT BACKFILL

NOT TO SCALE



-L1- PROFILE (E-E)

NOT TO SCALE

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 036278 ENGINEER MAJID KHAZAEI

DocuSigned by: Majid Khazaei 4/2/2020

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO.: 47133.1.1 (U-5996)

NASH COUNTY

STATION: -L1- 55+37.34 / -Y23- 18+56.68

SHEET 1 OF 3

PREPARED BY: MK	DATE: 04 / 2020
REVIEWED BY: -	DATE: -

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

GROUND IMPROVEMENT

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1	MK	04/20	3	-	-	W-1
2	-	-	4	-	-	

QUANTITIES	
EMBANKMENT SETTLEMENT GAUGES*	10 EACH

*FOR SETTLEMENT GAUGES, SEE EMBANKMENT MONITORING DETAIL SHEET.

SG-# SETTLEMENT GAUGE (SG)

SETTLEMENT GAUGES		
ID	STATION (-Y23-)	OFFSET (FT)
SG 1	18+40±	97.5± RT.
SG 2	19+25±	97.5± RT.
SG 3	18+40±	66.5± RT.
SG 4	18+83±	66.5± RT.
SG 5	19+25±	66.5± RT.
SG 6	17+93±	90.5± LT.
SG 7	18+89±	90.5± LT.
SG 8	17+93±	66.5± LT.
SG 9	18+35±	66.5± LT.
SG 10	18+89±	66.5± LT.

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 036278 ENGINEER MAJID KHAZAEI

DocuSigned by: Majid Khazaei 4/2/2020
3A8AD15A08124A3...
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SIGNATURE DATE

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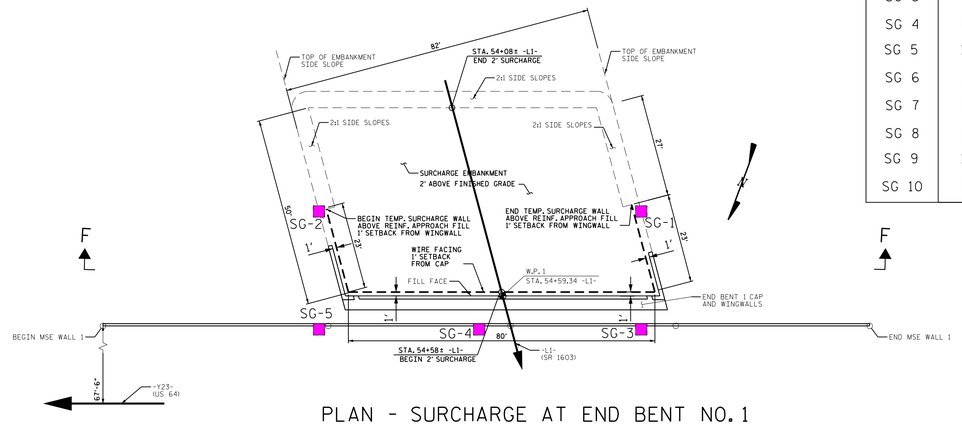
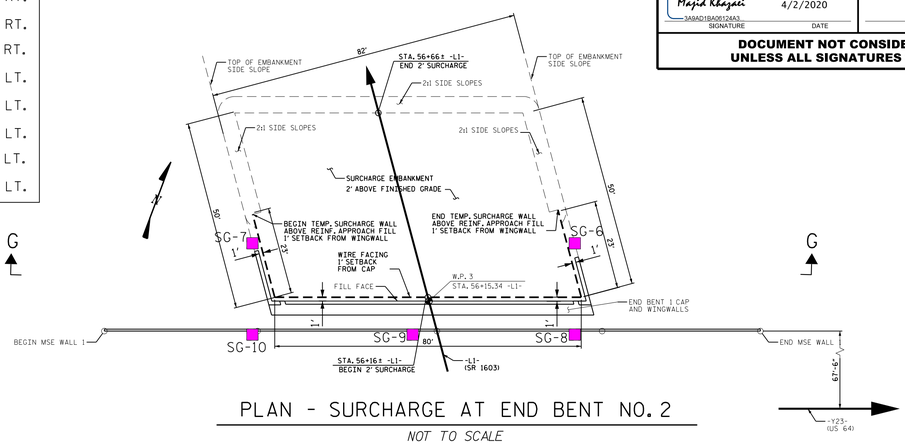


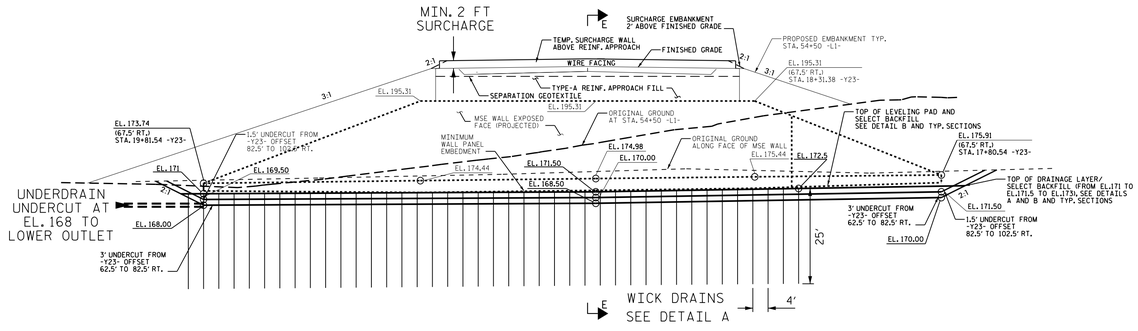
PLAN - SURCHARGE AT END BENT NO. 1

NOT TO SCALE



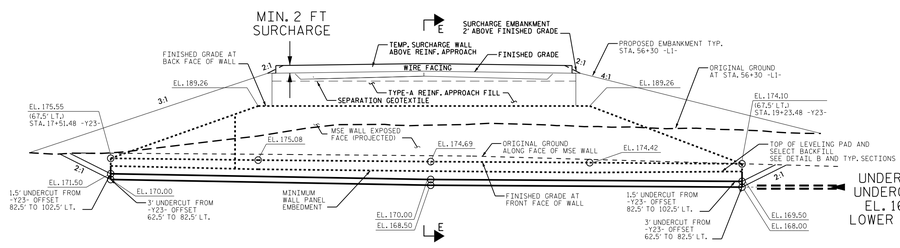
PLAN - SURCHARGE AT END BENT NO. 2

NOT TO SCALE



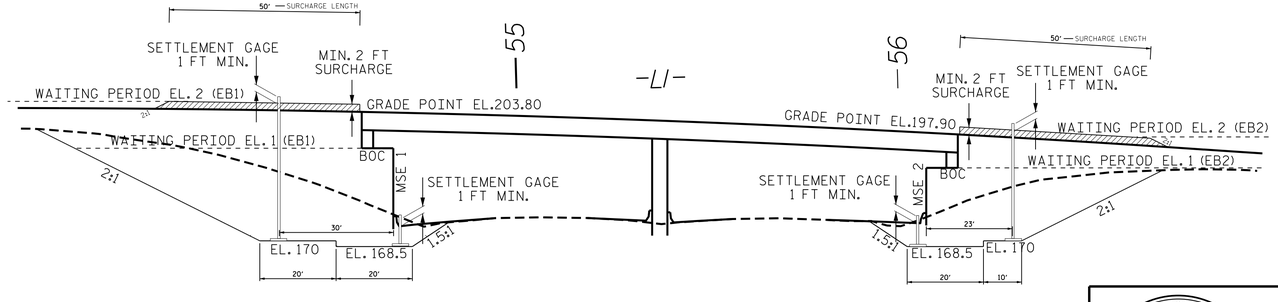
UNDERCUT, WICKDRAIN AND SURCHARGE AT END BENT 1 (SECTION F-F)

NOT TO SCALE



ELEVATION - UNDERCUT AND SURCHARGE AT END BENT 2 (SECTION G-G)

NOT TO SCALE



-L1- PROFILE (E-E) SURCHARGE AND SETTLEMENT GAGES

NOT TO SCALE

STAGE CONSTRUCTION AT END BENT NO. 1 AND 2		
STAGE	EMBANKMENT HEIGHTS	WAITING** PERIOD
1	WITHIN 1' OF BOTTOM OF CAP	1 MO.
2	2' ABOVE GRADE POINT*	2 MO.

* EMBANKMENT HEIGHT INCLUDES 2 FT OF SURCHARGE
** BRIDGE/EMBANKMENT WAITING PERIOD AT EACH STAGE

PROJECT NO.: 47133.1.1 (U-5996)

NASH COUNTY

STATION: -L1- 55+37.34 / -Y23- 18+56.68

SHEET 2 OF 3

PREPARED BY: MK	DATE: 04 / 2020
REVIEWED BY: -	DATE: -

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

GROUND IMPROVEMENT AND SETTLEMENT GAUGES

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1	MK	04/20	3	-	-	W-2
2	-	-	4	-	-	

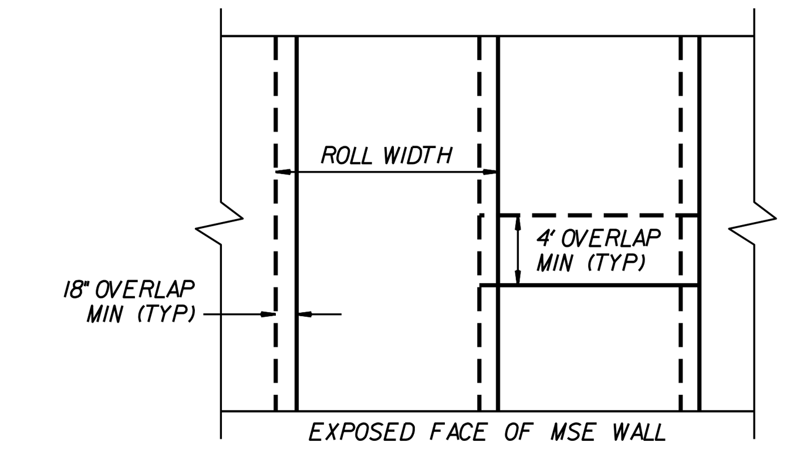
NOTES

1. WITH TEMPORARY SHORING IN PLACE, EXCAVATE EXISTING GROUND AT THE APPROACH EMBANKMENT TO THE BOTTOM OF THE REQUIRED UNDERCUT AS SHOWN ON THE PLANS.
2. INSTALL EMBANKMENT SETTLEMENT GAUGES ON THE UNDERCUT EXISTING GROUND LOCATIONS SHOWN IN EMBANKENT SETTLEMENT GAUAGES DETAIL SHEET.
3. COVER UNDERCUT BY PLACING GEOTEXTILE FOR SOIL STABILIZATION AND OVERLAP ADJACENT GEOTEXTILE SHEETS A MINIMUM OF 18 INCHES, AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. FOR THE GEOTEXTILE FOR SOIL STABILIZATION, SEE SECTION 270 OF THE STANDARD SPECIFICATIONS.
4. PLACE SELECT GRANULAR MATERIAL CLASS III TYPE 1 OR 3 BACKFILL THE UNDERCUT ZONES UP TO 3 FT THICK OVER THE GEOTEXTILE IN 8" TO 10" THICK LIFTS AS DETAILED ON THE PLANS AND COMPACT IN ACCORDANCE WITH SUBARTICLE 235-3(C) OF THE STANDARD SPECIFICATIONS.
5. INSTALL WICK DRAINS THROUGH COMPACTED SELECT GRANULAR MATERIAL BACKFILL/DRAINAGE LAYER AND GEOTEXTLE TO A DEPTH OF 25 FT OR AS DIRECTED BY THE ENGINEER. FOR WICK DRAINS AND DRAINAGE LAYER, SEE SECTION 235 OF THE STANDARD SPECIFICATIONS AND VERTICAL WICK DRAINS AND DRAINAGE LAYER SPECIAL PROVISION.
6. PRE-AUGERING MAY BE REQUIRED TO INSTALL THE WICK DRAINS. IF PRE-AUGERING IS NECESSARY, THE COST OF PRE-AUGERING IS INCIDENTAL TO THE COST OF THE WICK DRAINS.
7. CONSTRUCT THE ROADWAY EMBANKMENTS AND STRUCTURES FROM STA. 53+90 -L1- TO STA. 56+90 -L1- AS DESCRIBED IN THE FOLLOWING STAGES UNTIL THE EMBANKMENT HEIGHT REACHES THE FINAL GRADE ELEVATION PLUS TWO FEET OF SURCHARGE. FOR EMBANKMENT CONSTRUCTION, SURCHARGE, MONITORING AND WAITING PERIODS, SEE SECTION 235 OF THE STANARD SPECIFICATIONS.
8. STAGE 1: OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE MECHANICALLY STABILZED EARTH (MSE) ABUTMENT WALL TO WITHIN 1 FT OF THE BOTTOM OF CAP ELEVATION BEFORE BEGINNING DRIVING PILES THROUGH CANS AND END BENT CONSTRUCTION AT END BENT NO. 1 AND 2.
9. STAGE 2: OBSERVE AN ADDITIONAL TWO MONTH WAITING PERIOD AFTER CONSTRUCTING THE END BENT CAP AND REINFORCED APPROACH FILLS OVERLAID WITH A SURCHARGE WALL AND EMBANKMENT TO MINIMUM HEIGHT OF 2 FT ABOVE THE FINISHED GRADE ELEVATION AT END BENT NO. 1 AND 2 APPROACH. THE WAITING PERIOD STAGE DETAILS ARE SHOWN ON THE PLANS. FOR SURCHARGE WALLS, SEE SURCHARGE WALLS PROVISION.
10. SEE STANDARD TEMPORARY WALLS FOR SURCHARGE WALLS TYPICAL SECTIONS, DETAILS, REINFORCEMENT STRENGTH AND LENGTH, AND ADDITIONAL NOTES.
11. MAINTAIN THE SURCHARGE ELEVATIONS THROUGHOUT THE WAITING PERIODS.
12. EACH WAITING PERIOD BEGINS AFTER CONSTRUCTING THE EMBANKMENT TO THE HEIGHTS SPECIFIED IN STAGE CONSTRUCTION TABLE.
13. THE ENGINEER MAY INCREASE OR DECREASE THE WAITING TIME OF EACH EMBANKMENT CONSTRUCTION STAGE BASED ON THE SETTLEMENT MONITORING READINGS.
14. THE ENGINEER WILL USE THE NCDOT LOCATION AND SURVEYS UNIT TO MONITOR AND RECORD ELEVATIONS OF SETTLEMENT GAUGES AND PREDETERMINED SURVEY POINTS ON THE MSE WALLS DURING THE PROJECT. NO MEASUREMENTS WILL BE MADE FOR MONITORING BY THE NCDOT LOCATION AND SURVEYS UNIT. THE MONITORING ASSISTANCE PROVIDED TO THE NCDOT LOCATIONS AND SURVEYS UNIT IS INCIDENTAL TO THE COST OF THE STRUCTURE BEING MONITORED.

ESTIMATED TEMPORARY SHORING QUANTITIES SQ.FT.	
SURCHARGE WALL AT END BENT NO. 1	450 SQFT
SURCHARGE WALL AT END BENT NO. 2	450 SQFT
TOTAL	900 SQFT

ESTIMATED QUANTITIES	
WICK DRAINS	12,500 FT
SELECT GRANULAR MATERIAL, CLASS III (TYPE 1 OR 3)	* CY
GEOTEXTILE FOR SOIL STABILIZATION	* SY
BORROW EXCAVATION **	1,000 CY
UNCLASSIFIED EXCAVTION **	1,000 CY

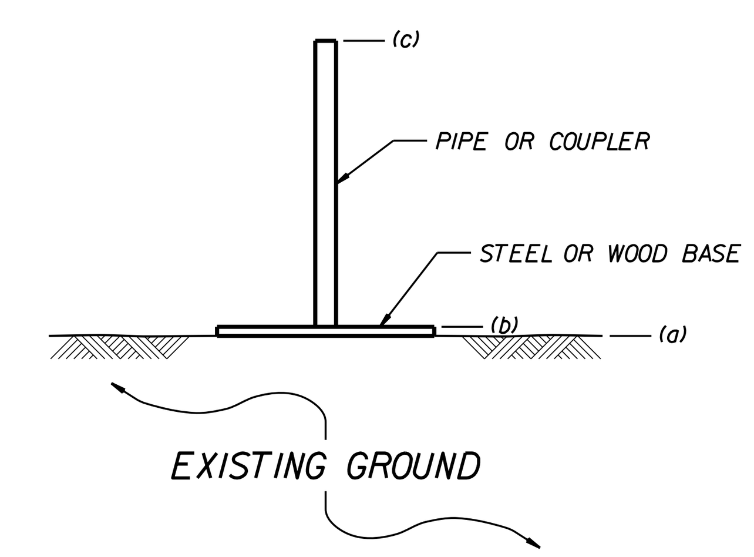
* SEE THE ROADWAY RECOMMENDATIONS FOR THE QUANTITIES
** SURCHARGE VOLUME = 1000 CY



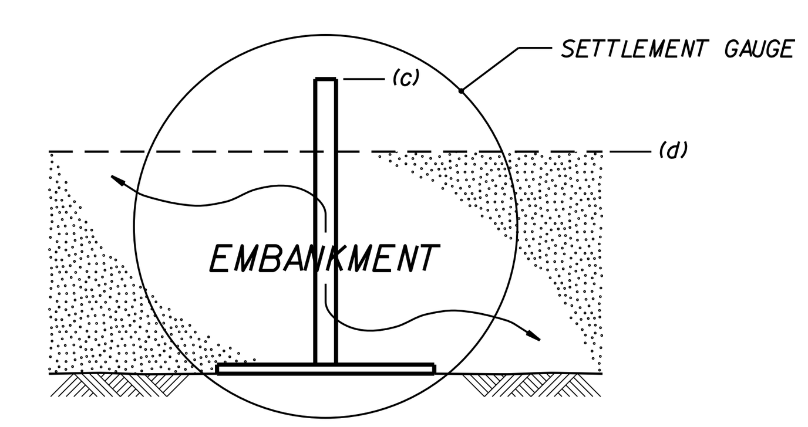
PLAN - GEOTEXTILE OVERLAP DETAIL

NOT TO SCALE

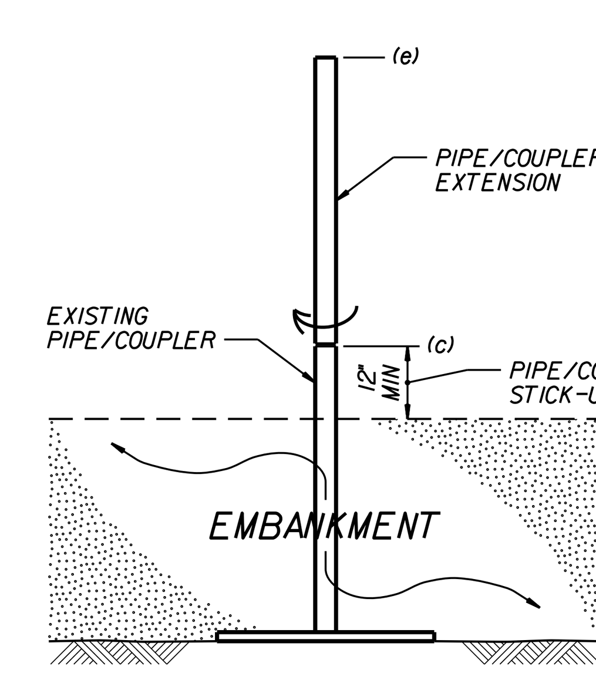
EMBANKMENT MONITORING SEQUENCE



1. PLACE STEEL/WOOD BASE AT APPROXIMATE GAUGE LOCATIONS SHOWN IN THE PLANS AS DETERMINED BY THE ENGINEER.
2. SET BASE ON LEVEL GROUND SO PIPE/COUPLER IS PLUMB.
3. BEFORE CONSTRUCTING EMBANKMENT, NOTIFY ENGINEER TO SURVEY AND RECORD THE FOLLOWING:
   (a) EXISITING GROUND ELEVATION,
   (b) TOP OF BASE ELEVATION AND
   (c) TOP OF PIPE ELEVATION.



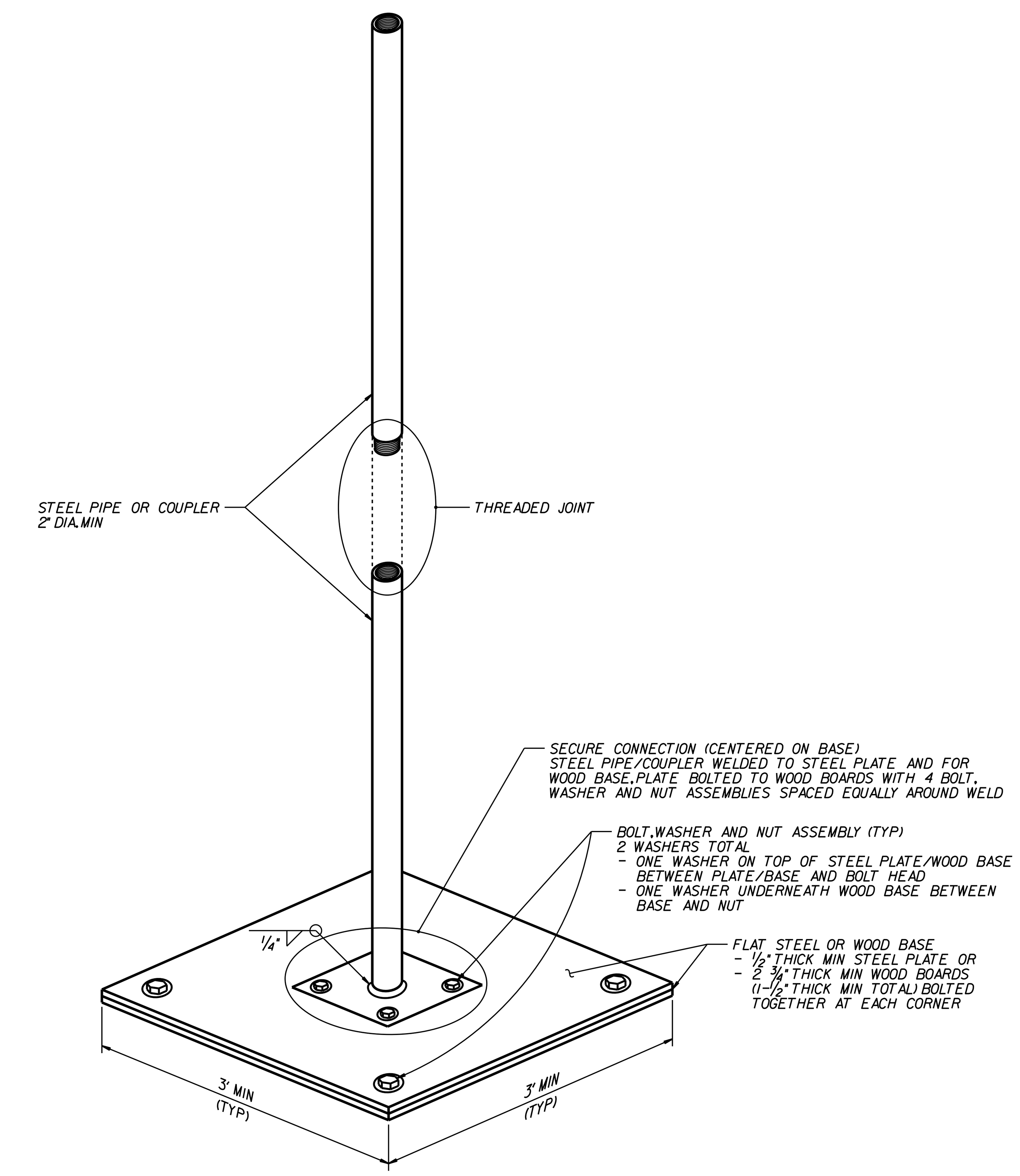
4. MAKE SETTLEMENT GAUGE HIGHLY VISIBLE SO GAUGE IS NOT HIT OR DAMAGED.
5. PLACE AND COMPACT FILL MATERIAL AROUND SETTLEMENT GAUGE WITHOUT DISTURBING GAUGE.
6. NOTIFY ENGINEER WEEKLY TO SURVEY AND RECORD THE FOLLOWING:
   (c) TOP OF PIPE ELEVATION AND
   (d) EMBANKMENT ELEVATION.



7. CONNECT PIPE/COUPLER EXTENSION TO EXISTING PIPE/COUPLER AS NEEDED TO MAINTAIN A PIPE/COUPLER STICK-UP OF AT LEAST 12" WHILE MONITORING SETTLEMENT.
8. SCREW PIPES/COUPLERS TOGETHER HAND TIGHT AND THEN TIGHTEN 2 TO 3 FULL TURNS WITH A WRENCH.
9. NOTIFY ENGINEER TO SURVEY AND RECORD THE FOLLOWING:
   (c) TOP OF PIPE ELEVATION,
   (d) EMBANKMENT ELEVATION AND
   (e) TOP OF EXTENSION ELEVATION.
10. RETURN TO STEP 4 WITH NEW TOP OF PIPE ELEVATION EQUAL TO TOP OF EXTENSION ELEVATION.

NOTES:

1. SEE THE SECOND SHEET OF THE GROUND IMPROVEMENT PLANS FOR APPROXIMATE SETTLEMENT GAUGE LOCATIONS.
2. FOR STANDARD EMBANKMENT MONITORING, SEE SECTION 235 OF THE STANARD SPECIFICATIONS.
3. INSTALL SETTLEMENT GAUGES AFTER CLEARING AND GRUBBING GAUGE LOCATIONS AND BEFORE CONSTRUCTING EMBANKMENTS WITH EMBANKMENT MONITORING.



SETTLEMENT GAUGE

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 036278 ENGINEER MAJID KHAZAEI

DocuSigned by: Majid Khazaei 4/2/2020
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SIGNATURE DATE

ENGINEER

SIGNATURE DATE

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PROJECT NO.: 47133.1.1 (U-5996)
NASH COUNTY
STATION: -L1- 55+37.34 / -Y23- 18+56.68
SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

GROUND IMPROVEMENT AND SETTLEMENT NONITORING DETAILS

REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		W-3
1	MK	04/20	3	-	-		
2	-	-	4	-	-		

PREPARED BY: MK	DATE: 04 / 2020
REVIEWED BY: -	DATE: -

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2G-5

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

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SIGNATURE DATE

ENGINEER

SIGNATURE DATE

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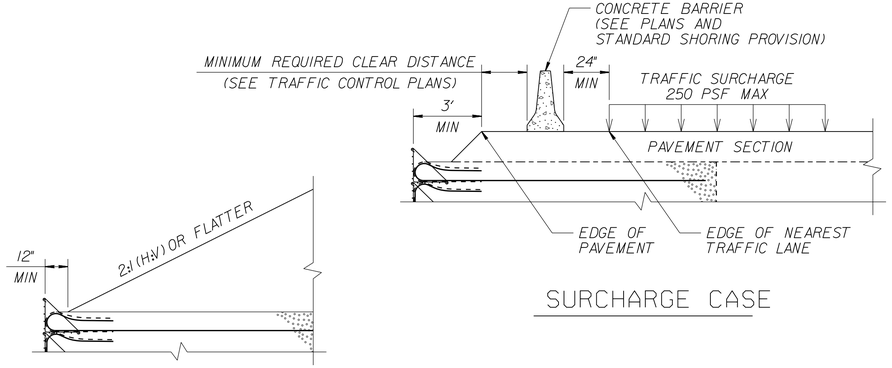
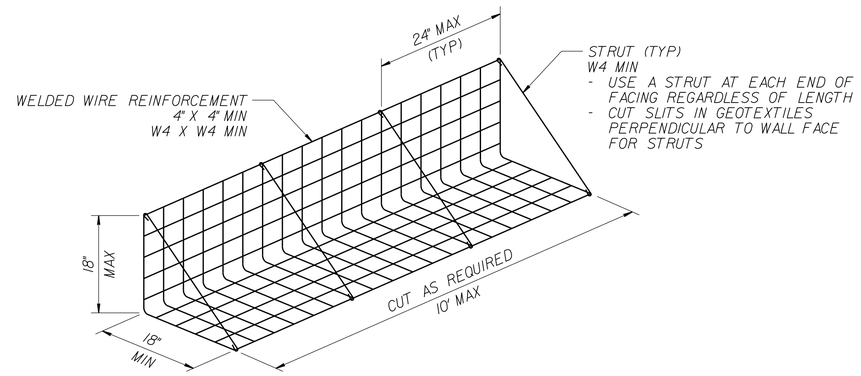
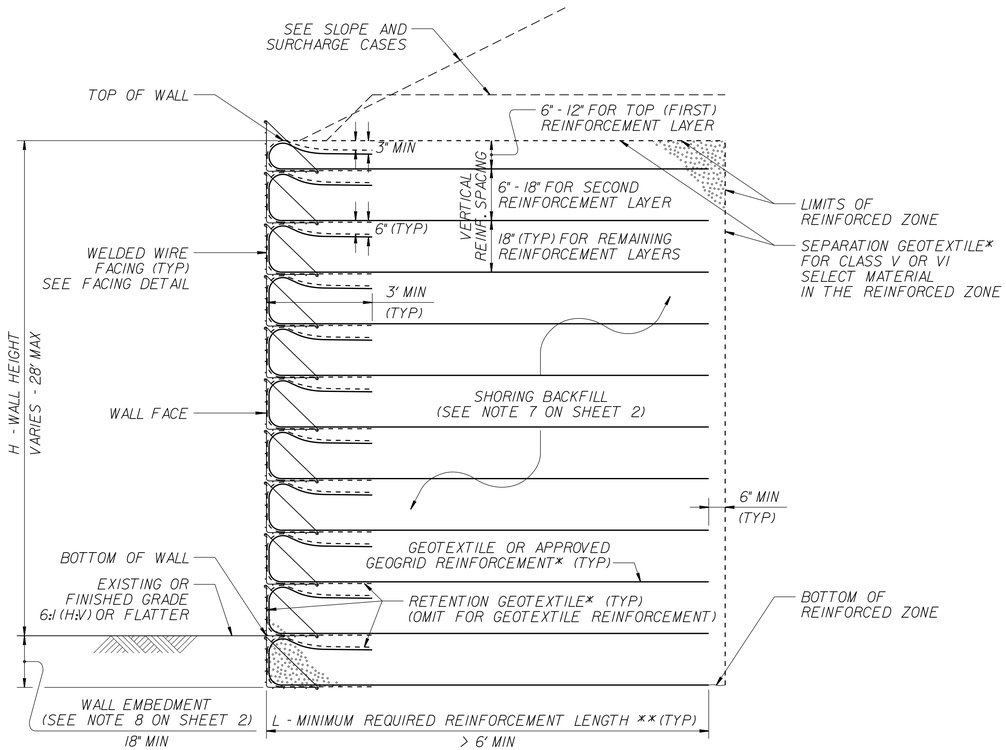


SURCHARGE CASE

SLOPE CASE

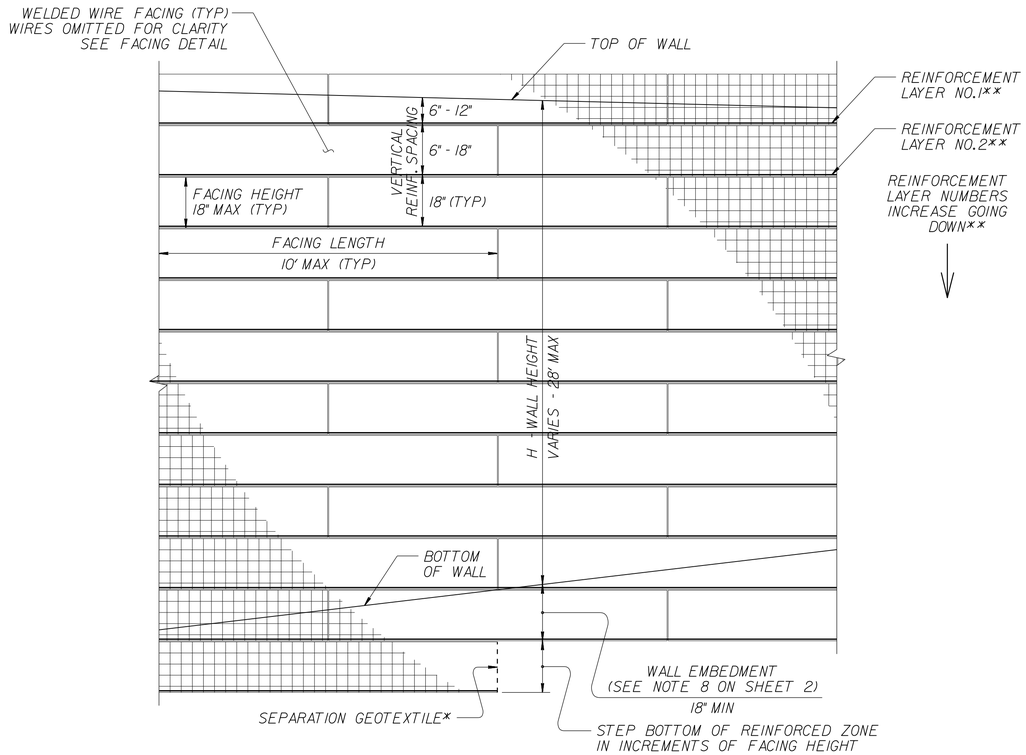


FACING DETAIL



STANDARD TEMPORARY WALL

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



STANDARD TEMPORARY WALL - PARTIAL ELEVATION

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

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL
SHEET 1 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2G-6

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

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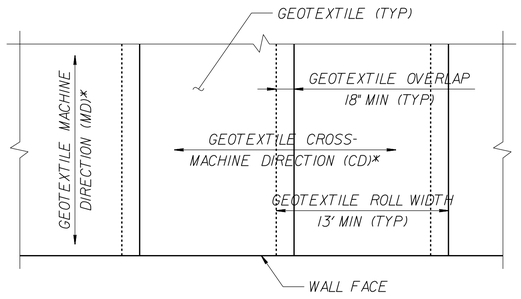
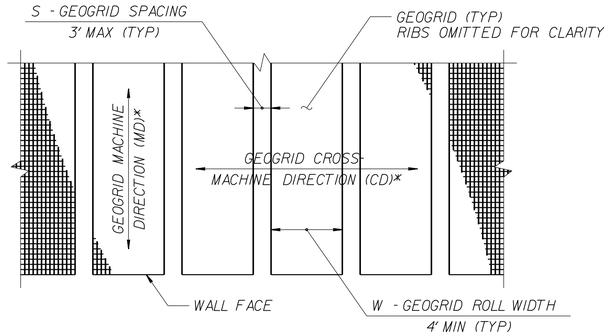


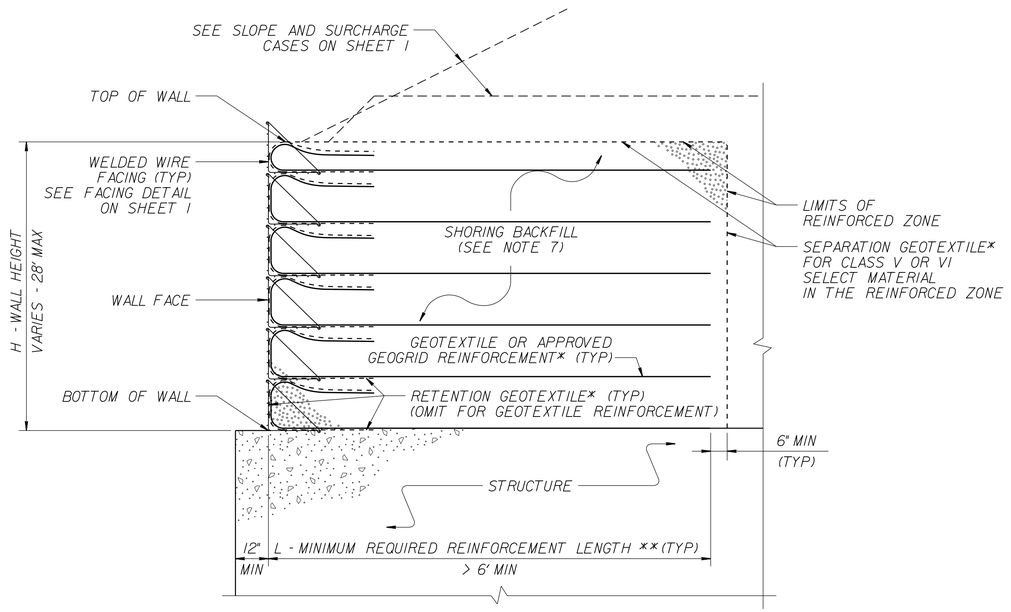
GEOTEXTILE PLACEMENT
(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)



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

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL

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

NOTES:

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

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

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

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL SHEET 2 OF 3

DATE: 10-19-21

PROJECT REFERENCE NO.	SHEET NO.
U-5996	2G-7

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden F760CAEB96EC4D3... Dec 13, 2021

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

L - MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

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

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

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

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

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

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

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL
SHEET 3 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
U-5996	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

vhb
940 Main Campus Drive, Suite 500 Raleigh, NC 27606
NC License No. C-3705

SUMMARY OF EARTHWORK IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
L1 31+00 RT	33+50 RT	129	323	194	0
RAB8 10+00	15+34.03	807	2,460	1,653	0
SUBTOTAL		936	2,782	1,846	0
L1 36+00 RT	51+00 RT	556	9,639	9,083	0
DRW1 10+50	11+75	1	249	248	0
SUBTOTAL		557	9,887	9,330	0
L1 53+00 RT	54+50 RT	0	6,850	6,850	0
RAB9 10+00	15+34.03	83	6,685	6,602	0
L1RPC 13+00	16+50	195	2,173	1,978	0
DRW2 10+50	13+25	3	635	632	0
Y23 18+00 RT	21+50 RT	1028	49	0	979
SUBTOTAL		1309	16,391	16,061	979
L1 56+50 RT	58+00 RT	44	2,975	2,931	0
RAB10 10+00	15+34.03	0	18,708	18,708	0
L1RPD 11+00	16+00	74	2,796	2,722	0
Y23 18+00 LT	21+50 LT	472	36	0	436
Y23 18+00 MED	20+50	203	11	0	192
SUBTOTAL		793	24,526	24,360	627
L1 60+50 RT	85+50 RT	783	122,823	122,040	0
DRW3 10+25	11+00	8	89	81	0
SUBTOTAL		791	122,911	122,120	0

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
L1 88+50	89+50	18	111	93	0
RAB11 10+00	14+71.23	12	3,891	3,879	0
Y24 12+00	13+50	31	415	384	0
Y25 10+00	11+00	13	166	153	0
SUBTOTAL		74	4,583	4,509	0
L1 91+50	92+50	31	323	194	0
SUBTOTAL		31	2,782	1,846	0
L1 31+00 LT	33+50 LT	44	354	310	0
Y19 11+00	11+50	81	3	0	79
SUBTOTAL		125	356	309	78
L1 36+00 LT	51+00 LT	339	4,360	4,021	0
Y20 12+75	13+00	48	1	0	47
Y21 10+50	12+50	297	83	0	215
SUBTOTAL		684	4,443	4,021	261
L1 53+00 LT	54+50 LT	14	235	221	0
L1RPB 14+00	18+50	719	1,329	610	0
Y23 15+50 RT	18+00	2810	29	0	2,781
SURCHARGE -L1-	55+37.34	0	1,250	1,250	0
SUBTOTAL		3543	2,842	2,080	2,781
L1 56+50 LT	58+00 LT	157	73	0	85
L1RPA 11+00	15+00	82	2,828	2,746	0
Y23 16+00 LT	18+00	1908	5	0	1,903
Y23 17+00 MED	18+00	71	4	0	67
SUBTOTAL		2218	2,908	2,745	2,054

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
L1 60+50 LT	85+50 LT	3557	834	0	2,723
Y22 11+50	12+00	23	60	37	0
Y26 10+50	13+00	160	1,903	1,743	0
SUBTOTAL		3740	2,796	1,779	2,723
PROJECT TOTAL		14,801	194,450	189,160	9,509
MATERIAL FOR SHOULDER CONSTRUCTION			1,925	1,925	
UNSUITABLE MATERIAL PER GEOTECH		600			600
WASTE IN LIEU OF BORROW				-9,509	
SURCHARGE REMOVAL		1000			1,000
PROJECT TOTAL		16,401	196,375	181,576	1,600
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				9,079	
GRAND TOTAL		16,401	196,375	190,655	1,600
SAY		16,500		191,000	

ESTIMATED **7,700 CY** AS CONTINGENCY OF UNDERCUT EXCAVATION PER GEOTECH RECOMMENDATION

ESTIMATED **700 CY** AND ADDITIONAL OF **500 CY** AS CONTINGENCY OF SHALLOW UNDERCUT PER GEOTECH RECOMMENDATION

CLASS IV SUBGRADE STABILIZATION TO REPLACE SHALLOW UNDERCUT (PER GEOTECH RECOMMENDATION) = **2,600 TONS**

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

PAVEMENT REMOVAL SUMMARY

LINE	STATION	STATION	LOCATION	LENGTH OR AREA	WIDTH	SQUARE YARDS
L1	30+70	33+92	LT	4841.59		537.95
L1	35+61	51+28	LT	45188.72		5020.97
L1	35+61	51+28	RT	4848.11		538.68
L1	52+97	54+59	LT	3524.74		391.64
L1	56+15	58+36	LT	4926.28		547.36
L1	60+09	86+29	LT	65057.04		7228.56
L1	60+09	86+29	RT	8138.35		904.26
L1	88+21	89+55	LT	656.83		72.98
L1	88+21	89+55	RT	614.46		68.27
L1	91+04	92+50	LT	536.54		59.62
L1	91+04	92+50	RT	554.83		61.65
L1RPA	11+50	14+22	LT	1149.21		127.69
L1RPA	11+50	15+40	RT	7533.45		837.05
L1RPB	13+95	18+39	LT	1640.61		182.29
L1RPB	13+95	18+39	RT	1842.47		204.72
L1RPC	13+00	15+81	LT	1266.29		140.70
L1RPC	13+00	16+47	RT	3807.33		423.04
L1RPD	12+00	15+99	LT	5707.85		634.21
L1RPD	12+00	14+24	RT	778.97		86.55
RAB8	10+00	15+34	LT/RT	3674.66		408.30
RAB9	10+00	15+34	LT/RT	9489.30		1054.37
RAB10	10+00	15+34	LT/RT	6744.78		749.42
RAB11	10+00	14+71	LT/RT	10064.54		1118.28
Y19	10+85	11+65	LT	1443.83		160.43
Y19	10+85	11+65	RT	1357.82		150.87
Y20	12+64	13+25	LT	890.32		98.92
Y20	12+64	13+25	RT	1290.24		143.36
Y21	10+35	12+50	LT	2883.16		320.35
Y21	10+35	12+50	RT	4108.30		456.48
Y24	12+00	13+56	LT	451.94		50.22
Y24	12+00	13+56	RT	1451.78		161.31
Y25	10+00	11+00	LT	364.43		40.49
Y25	10+00	11+00	RT	477.53		53.06
TEMP	SEE TMP PLANS FOR TEMP. PVMT.			8455.00		939.44
					TOTAL	23,973.48
					SAY	**23,980**

GUARDRAIL SUMMARY

"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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH (LF)			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	Type III	B-77	GREU, TL-3	GREU, TL-2	CAT-1	AT-1	Type III SC	B-77 SC	Temp Anchor Unit Type Thrie-Beam	G	NG				
L1	53+08	54+49	RT	143.75					9.5	12.5	50		1		1			1											
L1	54+28	54+69	LT	37.5					7.5	10.5		0	0		1				1								126		
L1	56+05	56+46	RT	37.5					7.5	10.5		0	0		1				1										
L1	56+25	57+78	LT	143.75					9.5	12.5	50		1		1			1									151		
L1	60+10	68+69	RT	862.5	62.5				14	17	0	0	0	0			1	1											
L1	85+00	86+32	RT	135.375					4	7	50		1			1	1										222		
L1	85+25	86+25	LT	97.875					4	7		50		1		1	1										97		
L1	88+17	88+81	LT	60.375					2	8	50		1			1		1									222		
L1	88+25	90+21	RT	254.125					2	8		0		0		1			1								97		
L1RPA	11+50	14+26	LT	268.75					14	17	50	0	1	1			1		1										
Y23	17+01	17+86	RT	85.375					24	27	50		1			1	1									158			
Y23	17+18	18+15	RT	97.875												1													TIE TO EXISTING GUARDRAIL
Y23	17+18	18+15	LT	97.875												1										82.5			TIE TO EXISTING GUARDRAIL
Y23	18+98	19+96	RT	97.875												1										82.5			TIE TO EXISTING GUARDRAIL
Y23	18+98	19+96	LT	97.875												1													TIE TO EXISTING GUARDRAIL
Y23	19+14	19+99	LT	85.375					24	27	50		1			1	1									192			
L1	56+40	56+40	LT																				1						TEMPORARY ANCHOR UNIT (SEE TMP-6 & 2C-3)
			TOTAL	**2,603.75**	**62.50**										**4**	**10**	**6**	**4**	**4**				**1**			**515**	**915**		
			PROJECT TOTAL	**1,875.00**	**62.50**																						**915.00**		
			SAY	**1,875.00**	**62.50**																						**925.00**		
			ADDITIONAL GUARDRAIL POSTS	**20 EACH**																									

DEDUCTIONS FOR ANCHORS:

TYPE	QTY	LT/EA	STRAIGHT
Type III	4	18.75	-75.00
TYPE B-77	10	22.88	-228.75
GREU, TL-3	6	50.00	-300.00
GREU, TL-2	4	25.00	-100.00
CAT-1	4	6.25	-25.00

11/29/2021
u5996_rdy_sum_3B1.dgn
townsend

MIENG02112017

COMPUTED BY:	LMJ	DATE:	11/2/2021
CHECKED BY:	BKJ	DATE:	11/2/2021

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-5996	3D-1

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)

LINE & STATION	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION (FT.)	INVERT ELEVATION (FT.)	INVERT ELEVATION (FT.)	MINIMUM REQUIRED SLOPE (%)	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15	18	24	30	36	42	48		DO NOT USE PVC	C. S. PIPE 12 .064	15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	48 .109
Y19 11+27	17	RT	0401		214.6																				
			0401	0402		211.6	210.4																		
Y19 11+27	22	LT	0402		213.6																				
			0402	0405		210.4	209.2																		
L1 33+20	29	LT	0403		213.8																				
			0403	0404		210.8	210.4																		
RAB8 10+62	7	RT	0404		214.1																				
			0404	0405		210.4	209.2																		
RAB8 14+75	3	RT	0405		212.5																				
			0405	0406		208.7	208.2																		
L1 35+59	68	LT	0406		210.2																				
RAB8 13+20	2	RT	0407		211.4																				
			0407	0408		208.1	207.2																		
L1 36+35	38	RT	0408		209.7																				
			0408	0409		207.2	207.1			28							X								
L1 41+00	37	RT	0501		196.6																				
			0501	0519		193.3	189.0																		
Y21 11+26	5	LT	0502		203.0																				
			0503	0508		194.4	193.1	0.6			24						X								
L1 39+10	57	LT	0504		201.7																				
			0504	0506		198.7	198.6			16							X								
L1 39+05	37	LT	0505		203.5																				
			0505	0506		200.2	200.1			12															
L1 39+15	43	LT	0506		203.7																				
			0506	0507		198.2	197.8																		
Y21 10+49	8	LT	0507		201.7																				
			0507	0508		197.8	193.1																		
L1 40+84	49	LT	0508		196.9																				
			0508	0509		192.6	188.3	0.4																	
L1 42+52	49	LT	0509		192.6																				
			0509	0517		188.3	187.8	0.4																	
			0510	0514		192.0	191.5	0.4				28					X								
L1 48+00	10	RT	0511		202.8																				
			0511	0512		199.8	196.4																		
L1 46+90	10	RT	0512		199.4																				
			0512	0513		196.4	194.1																		
L1 46+18	10	RT	0513		197.1																				
			0513	0522		194.1	186.4																		
L1 46+18	38	LT	0514		195.8																				
			0514	0515		191.0	187.5																		
L1 44+40	37	LT	0515		192.2																				
			0515	0516		187.5	187.1																		
L1 43+72	37	LT	0516		192.0																				
			0516	0517		187.1	186.9																		
L1 43+40	40	LT	0517		192.0																				
			0517	0522		184.4	182.6	0.4																	
L1 43+41	5	RT	0522		193.5																				
			0522	0520		182.6	182.0	0.4																	
L1 43+72	**38**	RT	0518		192.0																				
			0518	0520		188.7	188.5																		
							SHEET TOTALS			56	24	28													

FROM	TO	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48	R. C. PIPE CLASS V 12	15	18	24	30	36	42	48	18" WELDED STEEL PIPE 0.25" THICK, IN SOIL	24" WELDED STEEL PIPE 0.25" THICK, IN SOIL	30" WELDED STEEL PIPE 0.25" THICK, IN SOIL	48" WELDED STEEL PIPE 0.375" THICK, IN SOIL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY
0401																														
0401	0402																			44										
0402																														
0402	0405																			64										
0403																														
0403	0404																			88										
0404																														
0404	0405																			116										
0405																														
0405	0406																				24									
0406																														
0407																														
0407	0408																			120										
0408																														
0408	0409																													
0501																														
0501	0519																			200										
0502																														
0503	0508																													
0504																														
0504	0506																													
0505																														
0505	0506																													
0506																														
0506	0507																				48									
0507																														
0507	0508																				124									
0508																														
0508	0509																					168								
0509																														
0509	0517																					88								
0510	0514																													
0511																														
0511	0512																			108										
0512																														
0512	0513																			72										
0513																														
0513	0522																			280										
0514																														
0514	0515																						176							
0515																														
0515	0516																						68							
0516																														
0516	0517																						32							
0517																														
0517	0522							44																						
0522																														
0522	0520							32																						
0518																														
0518	0520																			32										
SHEET TOTALS								76												1124	196	256	276							

FROM	TO	QUANTITIES FOR DRAINAGE STRUCTURES 0' THRU 5' EACH	5' THRU 10' LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35		M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" C.S. ELBOW	18" DRAINAGE PIPE ELBOW		FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
0401		1													1									1											
0401	0402																																		
0402		1		1			1																												
0402	0405																																		
0403		1															1							1											
0403	0404																																		
0404		1													1									1											
0404	0405																																		
0405		1		1			1																												
0405	0406																																		
0406																															0.5526			
0407		1		1		1																													
0407	0408																																		
0408		1		1		1																													Min Depth CB: See PSH 2C-6
0408	0409																																		
0501		1		1		1																													
0501	0519																																		
0502		1																					1				1								Exist DI removed & replaced w/ TB JB W/MH
0503	0508																																		Exist DI (ST 0503) to be retained
0504		1												1			1																		
0504	0506																																		
0505		1		1			1																												
0505	0506																																		
0506		1	0.5																		1						1								
0506	0507																																		
0507		1							1		1	1																							
0507	0508																																		
0508		1		1			1																												
0508	0509																																		
0509		1		1			1																												
0509	0517																																		
0510	0514																																		
0511		1							1						1									1											
0511	0512																																		
0512		1							1						1									1											
0512	0513																																		
0513		1							1						1									1											
0513	0522																																		
0514		1		1		1																													
0514	0515																																		
0515		1		1		1																													
0515	0516																																		
0516		1		1	1																														
0516	0517																																		
0517		1	2.6	1			1																												See Special Detail CB on PSH 2C-1
0517	0522																																		
0522		1	5.9									1																							ST 0522: Temp St is 840.16,TOP EL=189.8
0522	0520																				1						1								ST 0522: Permanent JB W/MH, TOP EL=193.5
0518		1		1	1																														
0518	0520																																		
SHEET TOTALS		24	9.0	13	2	5	6		4		1	2		1	5		2				2		1	6			3					0.5526			

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

MIENG02112017

COMPUTED BY: LMJ DATE: 11/3/2021

CHECKED BY: BKJ DATE: 11/3/2021

PROJECT NO.	SHEET NO.
U-5996	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)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 15 | 18 | 24 | 30 | 36 | 42 | 48 | DO NOT USE PVC | C. S. PIPE SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS III SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 18" WELDED STEEL PIPE 0.25" THICK, IN SOIL | 24" WELDED STEEL PIPE 0.25" THICK, IN SOIL | 30" WELDED STEEL PIPE 0.25" THICK, IN SOIL | 48" WELDED STEEL PIPE 0.375" THICK, IN SOIL | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | QUANTITIES FOR DRAINAGE STRUCTUR NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | DRIVEWAY D.I. STD. 840.30 | FRAME W/ GRATE FOR DRIVEWAY STD. 840.30 | J.B. STD. 840.31 OR STD. 840.32 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | 18" C.S. ELBOW | 18" DRAINAGE PIPE ELBOW | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

MIENG02112017

COMPUTED BY:	LMJ	DATE:	11/2/2021
CHECKED BY:	BKJ	DATE:	11/2/2021

PROJECT NO.	SHEET NO.
U-5996	3D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15	18	24	30	36	42	48		DO NOT USE PVC	C. S. PIPE 12 .064	15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	48 .109
RAB10 12+35	2	RT	0629		184.4																				
			0629	0630		181.2	180.9																		
L1 58+34	63	RT	0630		185.5																				
			0630	0631		180.9	180.0			32							X								
RAB10 10+20	2	RT	0632		184.4																				
			0632	0633		181.9	181.7			40							X								
L1RPA 13+74	26	LT	0634		180.6																				
			0634	0635		177.4	177.2																		
L1RPA 13+32	25	LT	0635		181.4																				
			0635	0636		177.2	176.9																		
L1RPA 12+72	25	LT	0636		182.3																				
			0636	0637		176.9	163.9			56							X								
Y23 13+84	63	RT	0638		178.3																				
			0638	0639		175.3	174.2	1.7																	
Y23 13+84	0	CL	0639		178.3																				
			0639	0640		174.2	172.5	2.6																	
Y23 13+84	66	LT	0640		178.0																				
			0640	0641		172.5	172.2	0.9		36							X								
Y23 13+85	100	LT	0641		177.3																				
			0641	0642		171.7	165.5	1.1																	
RAB10 13+25	21	RT	0650		181.7																				
			0650	0651		178.5	175.4																		
L1 60+78	26	RT	0651		180.2																				
			0651	0653		175.4	161.0													84					
L1 61+11	2	RT	0652		178.5																				
			0652	0651		175.5	175.4																		
RAB10 14+12	16	RT	0654		181.3																				
			0654	0655		178.1	173.8																		
L1 61+11	32	LT	0655		177.1																				
			0655	0701		173.8	163.5																		
L1 62+96	32	LT	0701		166.7																				
			0701	0706		163.5	149.4													88					
L1 63+94	32	LT	0702		160.9																				
			0702	0703		157.6	152.4																		
L1 64+97	24	LT	0703		155.6																				
			0703	0718		152.4	141.0													96					
L1 66+60	20	RT	0707		145.4																				
			0707	0708		142.1	132.3																		
L1 68+33	20	RT	0708		135.6																				
			0708	0709		132.3	125.9													52					
L1 88+57	23	LT	0902		122.1																				
			0902	0901		118.1	117.4			32															
L1 88+83	2	RT	0903		122.7																				
			0903	0902		118.7	118.1																		
L1 89+07	2	RT	0904		122.7																				
			0904	0903		119.2	118.7																		
L1 89+31	38	LT	0905		121.6																				
			0905	0902		118.3	118.1																		
Y24 12+50	20	RT	0908		120.6																				
			0908	0907		117.4	117.0			24															
							SHEET TOTALS			220										320					

FROM	TO	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48	R. C. PIPE CLASS V 12	15	18	24	30	36	42	48	
0629																										
0629	0630																			56						
0630																										
0630	0631																									
0632																										
0632	0633																									
0634																										
0634	0635																			36						
0635																										
0635	0636																			56						
0636																										
0636	0637																									
0638																										
0638	0639																									
0639																										
0639	0640																									
0640																										
0640	0641																									
0641																										
0641	0642																									
0650																										
0650	0651											72														
0651																										
0651	0653																									
0652																										
0652	0651											40														
0654																										
0654	0655											96														
0655																										
0655	0701											172														
0701																										
0701	0706																									
0702																										
0702	0703											96														
0703																										
0703	0718																									
0707																										
0707	0708											168														
0708																										
0708	0709																									
0902																										
0902	0901																									
0903																										
0903	0902											36														
0904																										
0904	0903											24														
0905																										
0905	0902											76														
0908																										
0908	0907																									
SHEET TOTALS												780								148						

FROM	TO	18" WELDED STEEL PIPE 0.25" THICK, IN SOIL	24" WELDED STEEL PIPE 0.25" THICK, IN SOIL	30" WELDED STEEL PIPE 0.25" THICK, IN SOIL	48" WELDED STEEL PIPE 0.375" THICK, IN SOIL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) A: 0' THRU 5' EACH	5' THRU 10' LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION: D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35		M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" C.S. ELBOW	18" DRAINAGE PIPE ELBOW		FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
0629							1		1		1																													
0629	0630																																							
0630							1		1		1																													
0630	0631																																							
0632							1		1			1																												Min Depth CB: See PSH 2C-6
0632	0633																																							
0634							1		1	1																														
0634	0635																																							
0635							1												1	1																				
0635	0636																																							
0636							1												1	1																				
0636	0637																																							
0638							1												1			1																		
0638	0639	64																																						Trenchless Installation
0639							1												1			1																		
0639	0640	64																																						Trenchless Installation
0640							1	0.5											1			1																		
0640	0641																																							
0641							1	0.6											1			1																		
0641	0642		180																																					Trenchless Installation
0650							1		1		1																													
0650	0651																																							
0651							1		1		1																													
0651	0653																																1							
0652							1							1						1									1											
0652	0651																																							
0654							1		1			1																												
0654	0655																																							
0655							1		1			1																												
0655	0701																																							
0701							1		1			1																												
0701	0706																																1							
0702							1		1			1																												
0702	0703																																							
0703							1		1			1																												
0703	0718																																1							
0707							1		1		1																													
0707	0708																																							
0708							1		1		1																													
0708	0709																																1							
0902							1		1	1																														
0902	0901																																							
0903							1							1						1									1											
0903	0902																																							
0904							1							1						1									1											
0904	0903																																							
0905							1		1	1																														
0905	0902																																							
0908							1		1			1																												
0908	0907																																							
SHEET TOTALS		128	180				25	1.1	16	3	6	7		3					6	5		4							3				4							

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

MIENG02112017

COMPUTED BY:	LMJ	DATE:	11/2/2021
CHECKED BY:	BKJ	DATE:	11/2/2021

PROJECT NO.	SHEET NO.
U-5996	3D-4

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)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15	18	24	30	36	42	48		DO NOT USE PVC	C. S. PIPE 12 (.064)	15 (.064)	18 (.064)	24 (.064)	30 (.079)	36 (.079)	42 (.109)	48 (.109)
Y24 13+08	20	RT	0909		121.4																				
			0909	0908		118.1	117.4			64															
Y24 12+50	20	LT	0910		120.6																				
			0910	0913		117.3	117.0			20															
Y24 13+09	25	LT	0911		121.4																				
			0911	0910		118.2	117.3																		
L1 91+05	37	LT	0912		124.6																				
			0912	0911		121.4	118.2																		
RAB11 11+31	7	RT	0914		124.5																				
			0914	0916		120.8	120.0																		
			0915	0914		124.2	120.8																		
Y25 10+21	52	LT	0916		123.8																				
			0916	0921		120.0	119.9																		
Y25 10+80	23	LT	0917		122.9																				
			0917	0925		118.1	118.0																		
Y25 10+84	41	LT	0918		123.5																		20		
Y25 10+34	10	LT	0920		123.4																				
			0920	0921		120.4	120.4																		
Y25 10+23	15	LT	0921		123.5																				
			0921	0922		119.9	118.8																		
Y25 10+15	17	RT	0922		122.6																				
			0922	0923		117.8	116.8	0.4																	
RAB11 14+61	5	RT	0923		122.1																				
L1 89+38	27	RT	0924		122.1																				
			0924	0923		118.9	118.3																		
Y25 10+79	17	RT	0925		123.0																				
			0925	0922		118.0	117.8																		
L1 84+50	36	LT	0930		119.7																				
			0931	0930		116.2	116.0		36																
L1RPC 14+23	41	LT	1001		187.6																				
			1001	1002		184.6	167.5																		
Y23 21+83	62	RT	1002		170.6																				
			1002	1003		167.0	166.7	0.4																	
Y23 21+85	0	CL	1003		170.2																				
			1003	1004		166.7	166.0	0.7																	
Y23 21+87	62	LT	1004		170.0																				
			1004	1005		165.5	165.0					80					X								
			1005	1006		165.0	161.0	0.6																	
L1RPD 12+20	55	LT	1005		170.0																				
L1RPD 09+15	26	LT	1007		167.2																				
			1007	1008		164.2	163.5			236							X								
L1RPD 11+48	49	LT	1008		169.2																				
			1008	1009		163.5	163.2																		
DRW1 11+17	0	CL	0523						28								X								
Y26 10+69	0	CL	0712			132.5	127.6																		
L1 74+61	0	CL	0800	0801		117.3	116.2																		
L1 63+32	0	CL	0705			139.2	134.1																		
L1 81+30	38	LT	0806							48							X								
Y26 12+90	23	RT	0710						76								X								
Y26 12+90	25	LT	0711						80								X								
						SHEET TOTALS			220	368		80											20		

LINE & STATION	FROM	TO	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48	R. C. PIPE CLASS V 12	15	18	24	30	36	42	48
	0911	0910											52													
	0912	0911											120													
	0914	0916												36												
	0915	0914												60												
	0916	0921												36												
	0917	0925														40										
	0920	0921											12													
	0921	0922												32												
	0922	0923														64										
	0924	0923											32													
	0925	0922														64										
Y26 10+69	0712												128													
L1 74+61	0800	0801												132												
L1 63+32	0705																						352			
SHEET TOTALS													344	296		168								352			

LINE & STATION	FROM	TO	18" WELDED STEEL PIPE 0.25" THICK, IN SOIL	24" WELDED STEEL PIPE 0.25" THICK, IN SOIL	30" WELDED STEEL PIPE 0.25" THICK, IN SOIL	48" WELDED STEEL PIPE 0.375" THICK, IN SOIL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	5' THRU 10' LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05
Y24 13+08	0909							1		1			1			
Y24 12+50	0910							1		1		1				
Y24 13+09	0911							1		1		1				
L1 91+05	0912							1		1		1				
RAB11 11+31	0914							1		1			1			
Y25 10+21	0916							1		1			1			
Y25 10+80	0917							1		1	1					
Y25 10+84	0918						2.800									
Y25 10+34	0920							1							1	
Y25 10+23	0921							1							1	
Y25 10+15	0922							1		1			1			
RAB11 14+61	0923							1	0.3	1			1			
L1 89+38	0924							1		1	1					
Y25 10+79	0925							1		1			1			
L1 84+50	0930							1								
L1RPC 14+23	1001							1								
	1001	1002	188													
Y23 21+83	1002							1								
	1002	1003		64												
Y23 21+85	1003							1								
	1003	1004		60												
Y23 21+87	1004							1								
	1005	1006			132											
L1RPD 12+20	1005							1								
L1RPD 09+15	1007							1								
L1RPD 11+48	1008							1	0.8							
	1008	1009	104													
SHEET TOTALS			292	124	132		2.800	21	1.1	11	2	3	6		2	

LINE & STATION	FROM	TO	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35		M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" C.S. ELBOW	18" DRAINAGE PIPE ELBOW		FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
Y25 10+34	0920									1						1											
Y25 10+23	0921									1						1											
L1 84+50	0930														1				1								
L1RPC 14+23	1001					1			1																		
	1001	1002																									Trenchless Installation
Y23 21+83	1002					1			1																		
	1002	1003																									Trenchless Installation
Y23 21+85	1003					1			1																		
	1003	1004																									Trenchless Installation
Y23 21+87	1004					1			1																		
	1005	1006																									Trenchless Installation
L1RPD 12+20	1005					1			1																		
L1RPD 09+15	1007					1			1																		
L1RPD 11+48	1008					1			1																		
	1008	1009																									Trenchless Installation
SHEET TOTALS						7			7	2					1	2			1								

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

MIENG02112017

COMPUTED BY: LMJ DATE: 11/2/2021

CHECKED BY: BKJ DATE: 11/2/2021

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-5996	3D-5

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)

LINE & STATION	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE: 15	18	24	30	36	42	48		DO NOT USE PVC
									C. S. PIPE SIZE: 12	15	18	24	30	36	42	48	
									R. C. PIPE CLASS III SIZE: 12	15	18	24	30	36	42	48	
									R. C. PIPE CLASS IV SIZE: 12	15	18	24	30	36	42	48	
									R. C. PIPE CLASS V SIZE: 12	15	18	24	30	36	42	48	
									THICKNESS OR GAUGE: .064	.064	.064	.064	.079	.079	.109	.109	
DRW3 10+44	0	CL	0717							32							X
L1RPD 12+05	50	LT	0000														
L1RPD 12+12	30	RT	0000														
L1 43+41	0	CL	0000														
L1 43+35	39	LT	0000														
L1 43+56	37	LT	0000														
L1 34+56	63	LT	0000														
L1 35+21	96	LT	0000														
L1 345+41	69	LT	0000														
L1 40+19	46	LT	0000														
L1 47+39	41	LT	0000														
Y19 11+27	0	CL	0000														
L1 44+43	36	LT	0000														
L1 40+56	38	LT	0000														
L1 42+17	37	LT	0000														
L1 40+81	53	LT	0000														
Y21 10+40	0	CL	0000														
L1 RPD 12+14	47	RT	0000														
L1 78+74	67	LT	0000														
L1 81+31	50	LT	0000														
L1 89+91	39	RT	0000														
L1 90+72	40	RT	0000														
Y22 12+01	16	RT	0000														
Y22 12+24	13	LT	0000														
Y22 11+93	20	LT	0000														
L1 75+96	72	LT	0000														
L1 74+52	56	LT	0000														
L1RPD 12+10	0	CL	0000														
L1RPB 13+72	74	LT	0000														
Y23 13+70	31	RT	0000														
Y23 13+70	31	LT	0000														
Y23 13+70	80	LT	0000														
L1RPA 11+77	0	CL	0000														
L1RPC 14+04	0	CL	0000														
Y23 21+99	31	RT	0000														
Y23 21+99	31	LT	0000														
L1RPB 14+33	0	CL	0000														
Y23 22+11	98	LT	0000														
L1RPD 9+91	0	CL	0000														
L1 70+85	0	CL	0714	0716		121.5	121.2										
Y22 12+17	0	CL	0713	0714		124.0	121.5										
Y22 12+00	39	LT	0715	0714		124.4	121.5										
Y22 12+17	38	LT	0714		126.4												
L1 75+96	55	LT	0802							28							X
L1 76+74	44	LT	0803							28							X
L1 78+77	38	LT	0804							40							X
L1 79+75	38	RT	0805													48	
L1 82+48	39	RT	0807							56							X
L1 85+97	0	CL	0906	0926		113.0	112.5										
Y22 12+17	37	RT	0713		128.5												
SHEET TOTALS										184						48	

	18" WELDED STEEL PIPE 0.25" THICK, IN SOIL	24" WELDED STEEL PIPE 0.25" THICK, IN SOIL	30" WELDED STEEL PIPE 0.25" THICK, IN SOIL	48" WELDED STEEL PIPE 0.375" THICK, IN SOIL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	QUANTITIES FOR DRAINAGE STRUCTUR NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	D.I. STD. 840.14 OR STD. 840.15	D.I. STD. 840.16	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35		M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" C.S. ELBOW	18" DRAINAGE PIPE ELBOW		FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
DRW3 10+44																	
L1RPD 12+05																	0.065		
L1RPD 12+12																	0.065		
L1 43+41																		52	
L1 43+35																		5	
L1 43+56																		31	
L1 34+56																		155	
L1 35+21																		73	
L1 345+41																		21	
L1 40+19																		9	
L1 47+39																		40	
Y19 11+27																		41	
L1 44+43																		140	
L1 40+56																		73	
L1 42+17																		239	
L1 40+81																		36	
Y21 10+40																		100	
L1 RPD 12+14																		36	
L1 78+74																		32	
L1 81+31																		24	
L1 89+91																		147	
L1 90+72																		23	
Y22 12+01																		38	
Y22 12+24																		53	
Y22 11+93																		38	
L1 75+96																		16	
L1 74+52																		50	
L1RPD 12+10																	6		
L1RPB 13+72																	8		
Y23 13+70																	4		
Y23 13+70																	4		
Y23 13+70																	2		
L1RPA 11+77																	10		
L1RPC 14+04																	11		
Y23 21+99																	4		
Y23 21+99																	4		
L1RPB 14+33																	5		
Y23 22+11																	5		
L1RPD 9+91																	10		
L1 70+85									96										
Y22 12+17						3.400			72										Temp TBJB to be removed & replaced w/HW
Y22 12+00					20														
Y22 12+17							1							1		1			
L1 75+96																			
L1 76+74																			
L1 78+77																			
L1 79+75																			
L1 82+48																			
L1 85+97						6.000													Trenchless Installation
Y22 12+17							1							1		1			Temp TB JB w/Slab Lid
SHEET TOTALS			20	168	112	9.400	2							2		1	73	0.130	1472

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

MIENG02112017

COMPUTED BY:	LMJ	DATE:	11/3/2021
CHECKED BY:	BKJ	DATE:	11/3/2021

PROJECT NO.	SHEET NO.
U-5996	3D-6

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)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15	18	24	30	36	42	48		DO NOT USE PVC
Y22 12+10	37 RT	T701			124.9	124.0					16					X
L1 69+00	61 LT	T702			128.3	128.2			48							X
SHEET TOTALS									48		16					
PROJECT TOTALS								220	1776	24	124		64			

LINE & STATION	C. S. PIPE 12 (.064)	15 (.064)	18 (.064)	24 (.064)	30 (.079)	36 (.079)	42 (.109)	48 (.109)	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48	R. C. PIPE CLASS V 12	15	18	24	30	36	42	48	
Y22 12+10																																	
L1 69+00																																	
SHEET TOTALS																																	
PROJECT TOTALS			320			20									76				2068	296		168					1460	216	608	444			

LINE & STATION	18" WELDED STEEL PIPE 0.25" THICK, IN SOIL	24" WELDED STEEL PIPE 0.25" THICK, IN SOIL	30" WELDED STEEL PIPE 0.25" THICK, IN SOIL	48" WELDED STEEL PIPE 0.375" THICK, IN SOIL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35		M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	18" C.S. ELBOW	18" DRAINAGE PIPE ELBOW		FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
Y22 12+10																																								16	Temporary Drainage
L1 69+00																																								48	Temporary Drainage
SHEET TOTALS																																								64	
PROJECT TOTALS	516	304	132	112	12.200	98	18.6	50	8	19	23		10		2	2		22	13		21	2			2		8	14			9	4	6		73	0.5526	0.130	1536	

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

COMPUTED BY: Nick Moore, LG DATE: 3/5/2020
CHECKED BY: _____ DATE: _____

(5-15-18)

PROJECT NO.	SHEET NO.
U-5996	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	1000
				TOTAL LF:	1000

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

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
-L1-	76+25	81+25	ASU	12	450	1700	2600		
-L1RPA-	12+25	14+25	ASU	12	100	200	400		
-L1RPC-	13+00	15+25	ASU	12	80	200	300		
-L1RPD-	12+00	13+75	ASU	12	70	200	300		
CONTINGENCY			ASU	12	500	300	500		
			TOTAL CY/TONS/SY:		1200	2600**	4100**	0	0

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

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
-L1-/-Y25-	1.5:1	88+25	3:1	10+50	RT	1	1	1270
							TOTAL SY:	1270

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE and Station	Offset	
		Distance FT	Direction LT/RT
SG 1	-Y23- 18+40±	97.5±	RT
SG 2	-Y23- 19+25±	97.5±	RT
SG 3	-Y23- 18+40±	66.5±	RT
SG 4	-Y23- 18+83±	66.5±	RT
SG 5	-Y23- 19+25±	66.5±	RT
SG 6	-Y23- 17+93±	90.5±	LT
SG 7	-Y23- 18+89±	90.5±	LT
SG 8	-Y23- 17+93±	66.5±	LT
SG 9	-Y23- 18+35±	66.5±	LT
SG 10	-Y23- 18+89±	66.5±	LT
	TOTAL GAUGES (EACH):		10

SUMMARY OF SURCHARGES AND SURCHARGE WAITING PERIODS

LINE	Station	Station	Surcharge Height FT	MONTHS
-L1-	54+08	54+58	2.0	2
-L1-	56+16	56+66	2.0	2

* See Ground Improvement Plans Sheet G-2 for details

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
Bridge on SR 1603 over US-64	EB1	1
Bridge on SR 1603 over US-64	EB2	1

* See Ground Improvement Plans Sheet G-2 for details

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-5996	3P-1

vhb
940 Main Campus Drive, Suite 500 Raleigh, NC 27606
NC License No. C-3705

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4, 5, 6	NASH COMMUNITY COLLEGE
2	4, 5	ANGELYN C. EZZELL
3	5, 6	JONATHAN D. SMITH FAMILY TRUST
4	6, 7, 10	GSM PROPERTIES LLC
5	6, 7	GSM PROPERTIES LLC
6	7	SHEILA JOHNSON
7		INTENTIONALLY OMITTED
8	7, 8, 9	J C BELL JR
9	7, 8	OLD CARRIAGE RD BAPTIST CHURCH INC
10	9	TOWN OF NASHVILLE
11	9	JOSEPH & MELINDA SUGGS
12	9	NCDOT

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

11/4/2021
u5996_prdy_sum_3P1.dgn
townsend

PROJECT REFERENCE NO.	SHEET NO.
U-5996	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 033822 JONATHAN P. SOKA 11/30/2021	SEAL 033246 LINDA M. JOHNS 11/30/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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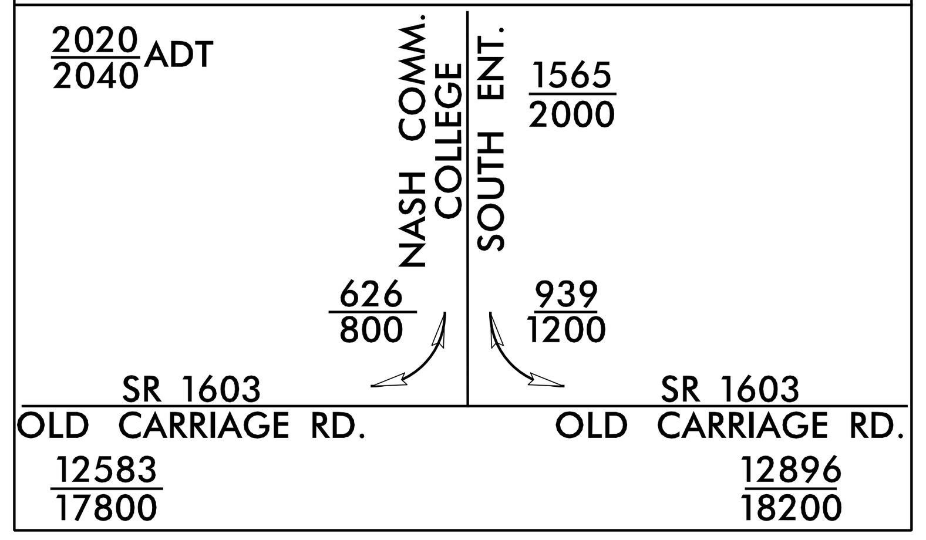
940 Main Campus Drive, Suite 500 Raleigh, NC 27606
NC License No. C-3705

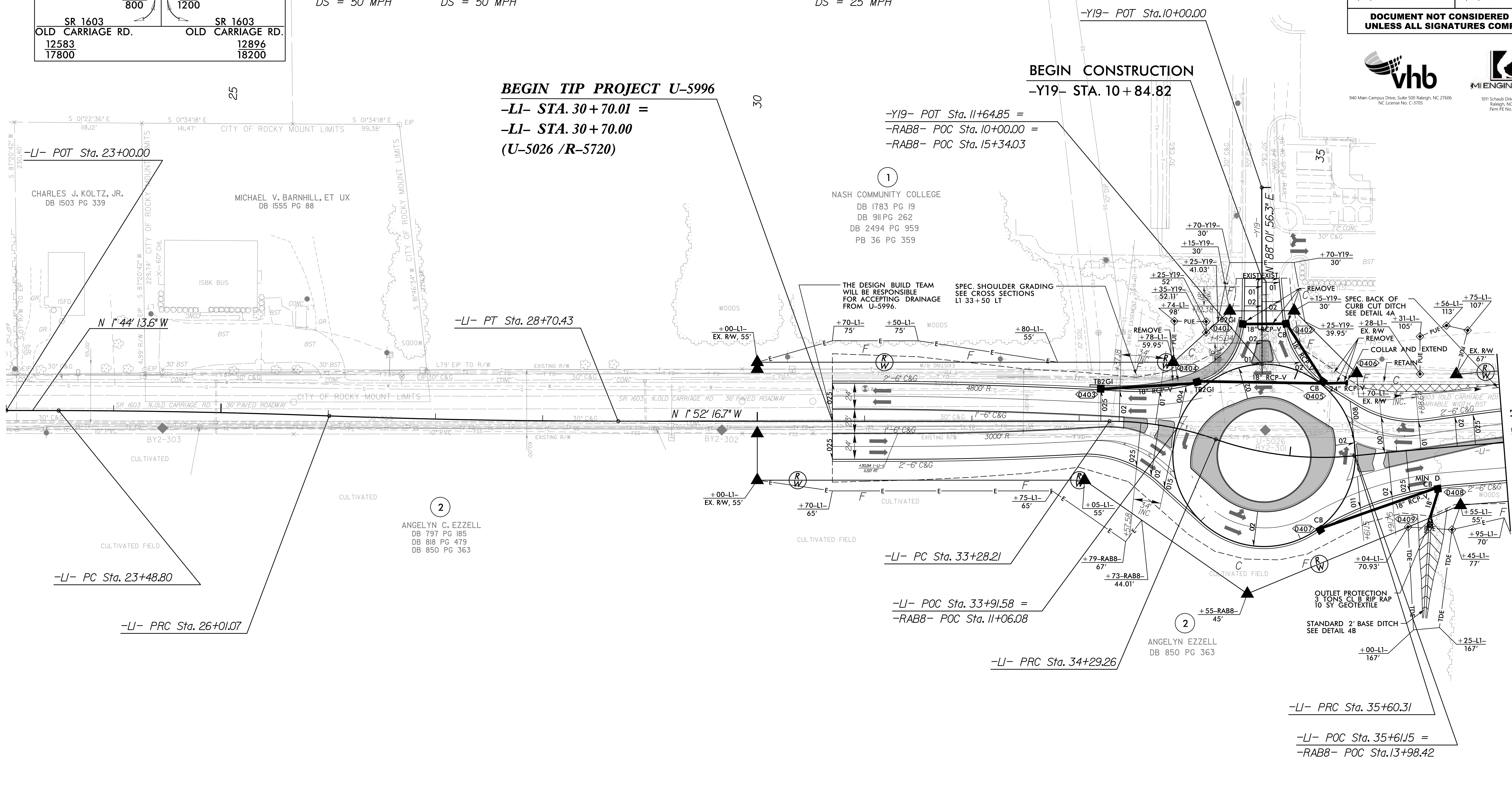
KMI ENGINEERING
1011 Schaub Drive, Suite 100
Raleigh, NC 27606
Firm PE No. P-0671

OLD CARRIAGE RD. AT NASH COMMUNITY COLLEGE SOUTH ENTRANCE



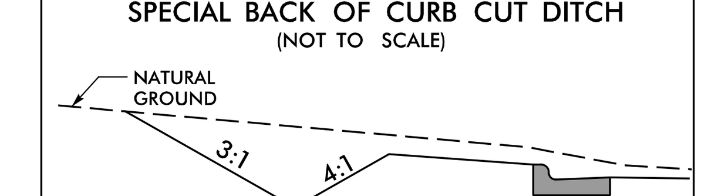
-L1- CURVE DATA	-L1- CURVE DATA	-L1- CURVE DATA	-L1- CURVE DATA	-RAB8- CURVE DATA
PI Sta 24+74.95	PI Sta 27+35.76	PI Sta 33+79.22	PI Sta 34+95.85	PI Sta 10+00.02
Δ = 1° 58' 47.9" (RT)	Δ = 2° 06' 51.0" (LT)	Δ = 19° 17' 56.8" (RT)	Δ = 25° 01' 38.7" (LT)	Δ = 359° 58' 18.9" (LT)
D = 0° 47' 05.5"	D = 0° 47' 05.5"	D = 19° 05' 54.9"	D = 19° 05' 54.9"	D = 67° 24' 24.5"
L = 252.27'	L = 269.36'	L = 101.05'	L = 131.04'	L = 534.03'
T = 126.15'	T = 134.70'	T = 51.01'	T = 66.58'	T = 0.02'
R = 7,300.00'	R = 7,300.00'	R = 300.00'	R = 300.00'	R = 85.00'
SE = NC	SE = NC			SE = NC
DS = 50 MPH	DS = 50 MPH			DS = 25 MPH

NAD 83/2011



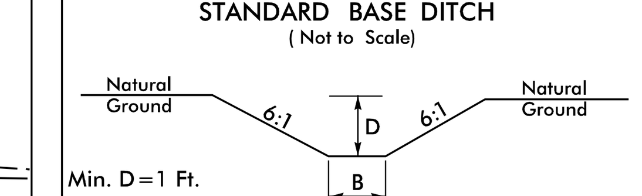
FOR INTERSECTION DETAIL, SEE SHEET 2B-1
FOR -L1- PROFILE, SEE SHEET 11
FOR -RAB8- PROFILE, SEE SHEET 15
FOR -Y19- PROFILE, SEE SHEET 16

DETAIL 4A
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



FROM L1 STA. 36+00 TO STA. 39+10 LT.

DETAIL 4B
STANDARD BASE DITCH
(Not to Scale)



FROM L1 STA. 36+26 TO STA. 36+12 RT
L=95', S=0.6%, DDE=34 CY

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5996	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 033822 JONATHAN P. SOKA 11/30/2021	SEAL 033246 LINDA M. JOHNS 11/30/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

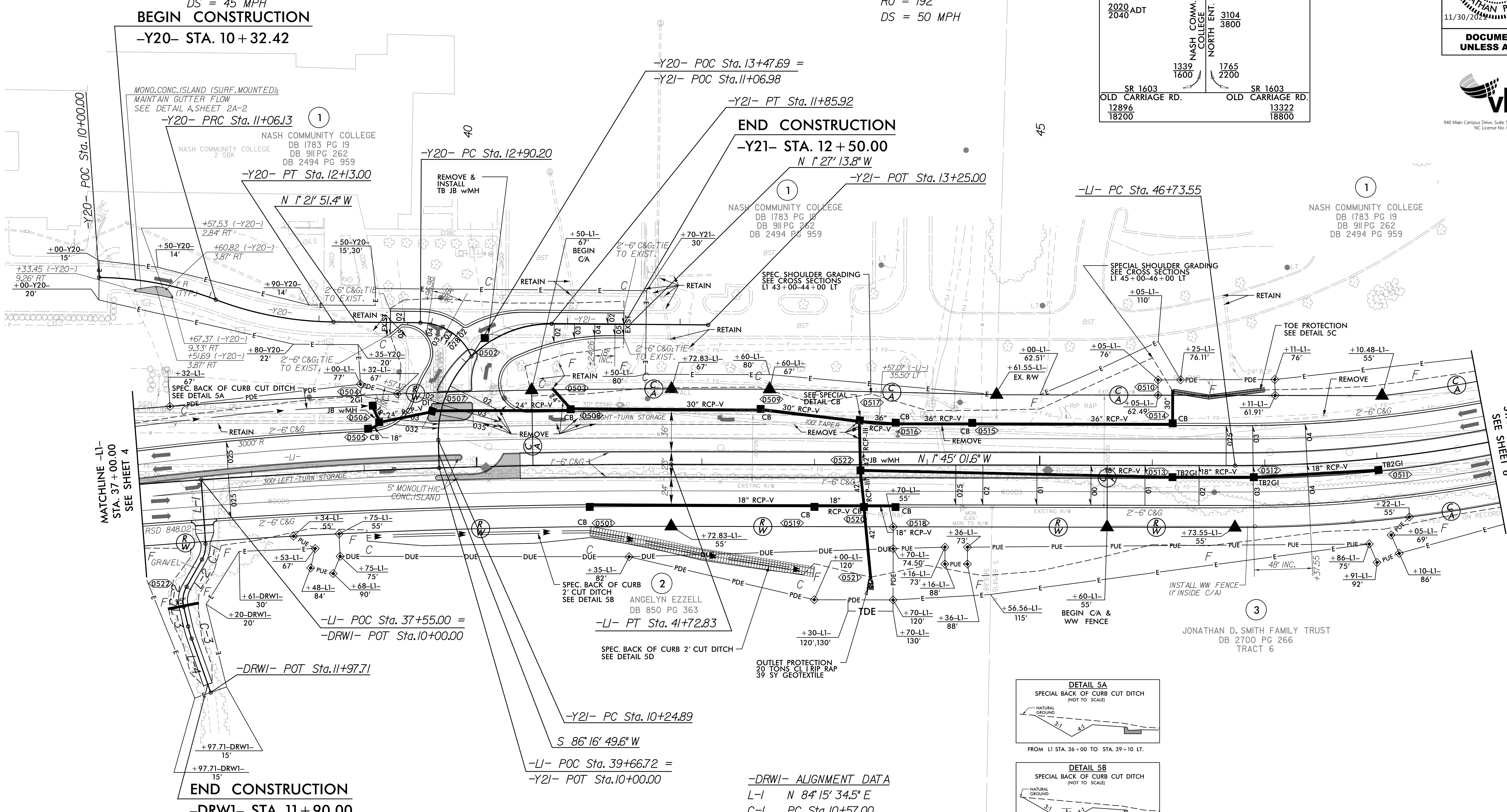
vhb — 940 Main Campus Drive, Suite 500 Raleigh, NC 27606 NC License No. C-3705

MI ENGINEERING — 1011 Schaub Drive, Suite 100 Raleigh, NC 27606 Firm PE No. P-0671

-L1- CURVE DATA	-Y20- CURVE DATA	-Y20- CURVE DATA	-Y20- CURVE DATA	-Y21- CURVE DATA	-L1- CURVE DATA
PI Sta 38+66.83	PI Sta 10+53.63	PI Sta 11+60.14	PI Sta 13+22.60	PI Sta 11+28.92	PI Sta 49+11.38
Δ = 5° 50′ 56.9″ (RT)	Δ = 20° 16′ 11.2″ (RT)	Δ = 20° 24′ 40.0″ (LT)	Δ = 65° 53′ 13.9″ (RT)	Δ = 92° 15′ 56.6″ (RT)	Δ = 22° 25′ 13.6″ (LT)
D = 0° 57′ 17.7″	D = 19° 05′ 54.9″	D = 19° 05′ 54.9″	D = 114° 35′ 29.6″	D = 57° 17′ 44.8″	D = 4° 46′ 28.7″
L = 612.52′	L = 106.13′	L = 106.87′	L = 57.50′	L = 161.03′	L = 469.57′
T = 306.53′	T = 53.63′	T = 54.01′	T = 32.40′	T = 104.03′	T = 237.83′
R = 6,000.00	R = 300.00′	R = 300.00′	R = 50.00′	R = 100.00′	R = 1,200.00′
SE = NC					SE = 04
DS = 45 MPH					RO = 192′
					DS = 50 MPH

NAD 83/2011

N. OLD CARRIAGE RD. AT NASH COMMUNITY COLLEGE NORTH ENTRANCE	
2020 ADT / 2040	NASH COMM. COLLEGE NORTH ENT.: 3104 / 3800
1339 / 1600	1765 / 2200
SR 1603 OLD CARRIAGE RD.: 12896 / 18200	SR 1603 OLD CARRIAGE RD.: 13322 / 18800



BEGIN CONSTRUCTION
-Y20- STA. 10+32.42
END CONSTRUCTION
-Y21- STA. 12+50.00
END CONSTRUCTION
-DRW1- STA. 11+90.00
MATCHLINE -L1- STA. 37+00.00 SEE SHEET 4
MATCHLINE -L1- STA. 49+00.00 SEE SHEET 6
NASH COMMUNITY COLLEGE DB 1783 PG 19 DB 911 PG 262 DB 2494 PG 959
ANGELYN EZZELL DB 850 PG 363
JONATHAN D. SMITH FAMILY TRUST DB 2700 PG 266 TRACT 6
-Y20- POC Sta. 13+47.69 = -Y21- POC Sta. 11+06.98
-Y21- PT Sta. 11+85.92
-Y21- POT Sta. 13+25.00
-Y20- PRC Sta. 11+06.13
-Y20- PC Sta. 12+90.20
-Y20- PT Sta. 12+13.00
-L1- PC Sta. 46+73.55
-L1- PT Sta. 41+72.83
-L1- POC Sta. 37+55.00 = -DRW1- POT Sta. 10+00.00
-DRW1- POT Sta. 11+97.71
-Y21- PC Sta. 10+24.89
S 86° 16′ 49.6″ W
-L1- POC Sta. 39+66.72 = -Y21- POT Sta. 10+00.00
N 1° 45′ 01.6″ W
N 1° 21′ 51.4″ W
N 1° 27′ 13.8″ W
OUTLET PROTECTION 20 TONS CL I RIP RAP 39 SY GEOTEXTILE
SPEC. BACK OF CURB 2′ CUT DITCH SEE DETAIL 5D
SPEC. BACK OF CURB 2′ CUT DITCH SEE DETAIL 5B
SPEC. BACK OF CURB CUT DITCH SEE DETAIL 5A
SPECIAL SHOULDER GRADING SEE CROSS SECTIONS
TOE PROTECTION SEE DETAIL 5C
INSTALL WW FENCE (1′ INSIDE C/A)

-DRW1- CURVE DATA	-DRW1- CURVE DATA	-DRW1- CURVE DATA
PI Sta 10+64.49	PI Sta 11+09.01	PI Sta 11+41.26
Δ = 33° 21′ 47.2″ (RT)	Δ = 42° 25′ 39.6″ (LT)	Δ = 6° 29′ 07.8″ (LT)
D = 229° 10′ 59.2″	D = 229° 10′ 59.2″	D = 57° 17′ 44.8″
L = 14.56′	L = 18.51′	L = 11.32′
T = 7.49′	T = 9.70′	T = 5.67′
R = 25.00′	R = 25.00′	R = 100.00′

-DRW1- ALIGNMENT DATA

L-1	N 84° 15′ 34.5″ E	
C-1	PC Sta.10+57.00	
	PT Sta.10+71.55	
L-2	S 62° 22′ 38.3″ E	
C-2	PC Sta.10+99.31	
	PT Sta.11+17.82	
L-3	N 75° 11′ 42.2″ E	
C-3	PC Sta.11+35.60	
	PT Sta.11+46.92	
L-4	N 68° 42′ 34.3″ E	

DETAIL 5A — SPECIAL BACK OF CURB CUT DITCH (NOT TO SCALE) — FROM L1 STA. 36+00 TO STA. 39+10 LT.

DETAIL 5B — SPECIAL BACK OF CURB CUT DITCH (NOT TO SCALE) — Min. D=1.5 Ft. B=2 Ft. — FROM L1 STA. 39+00 TO STA. 41+00 RT.

DETAIL 5C — TOE PROTECTION (Not to Scale) — Type of Liner= B Rip-Rap — FROM L1 STA. 46+18 TO STA. 47+03 LT 30 TONS RIP RAP CL B, 89 SY GEOTEXTILE

DETAIL 5D — SPECIAL BACK OF CURB CUT DITCH (NOT TO SCALE) — Min. D=1.5 Ft. Max. d=1 Ft. B=2 Ft. — Type of Liner= B Rip-Rap — FROM L1 STA. 41+00 TO STA. 43+00 RT. 90 TONS RIP RAP CL B, 254 SY GEOTEXTILE

PAVEMENT REMOVAL

FOR -DRW1- SUPERELEVATION, SEE SHEET 2B-2
FOR INTERSECTION/DRIVEWAY DETAIL, SEE SHEET 2B-2
FOR -L1- PROFILE, SEE SHEET 11
FOR -Y20- PROFILE, SEE SHEET 16
FOR -Y21- PROFILE, SEE SHEET 16
FOR -DRW1- PROFILE, SEE SHEET 19

11/3/2021 u5996_rdy_psh5.dgn