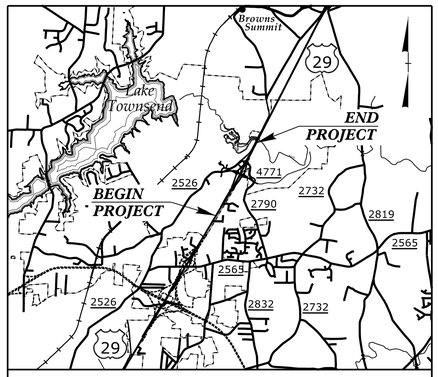
09/08/99

TIP PROJECT: R–4707

CONTRACT: C204499

See Sheet 1A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

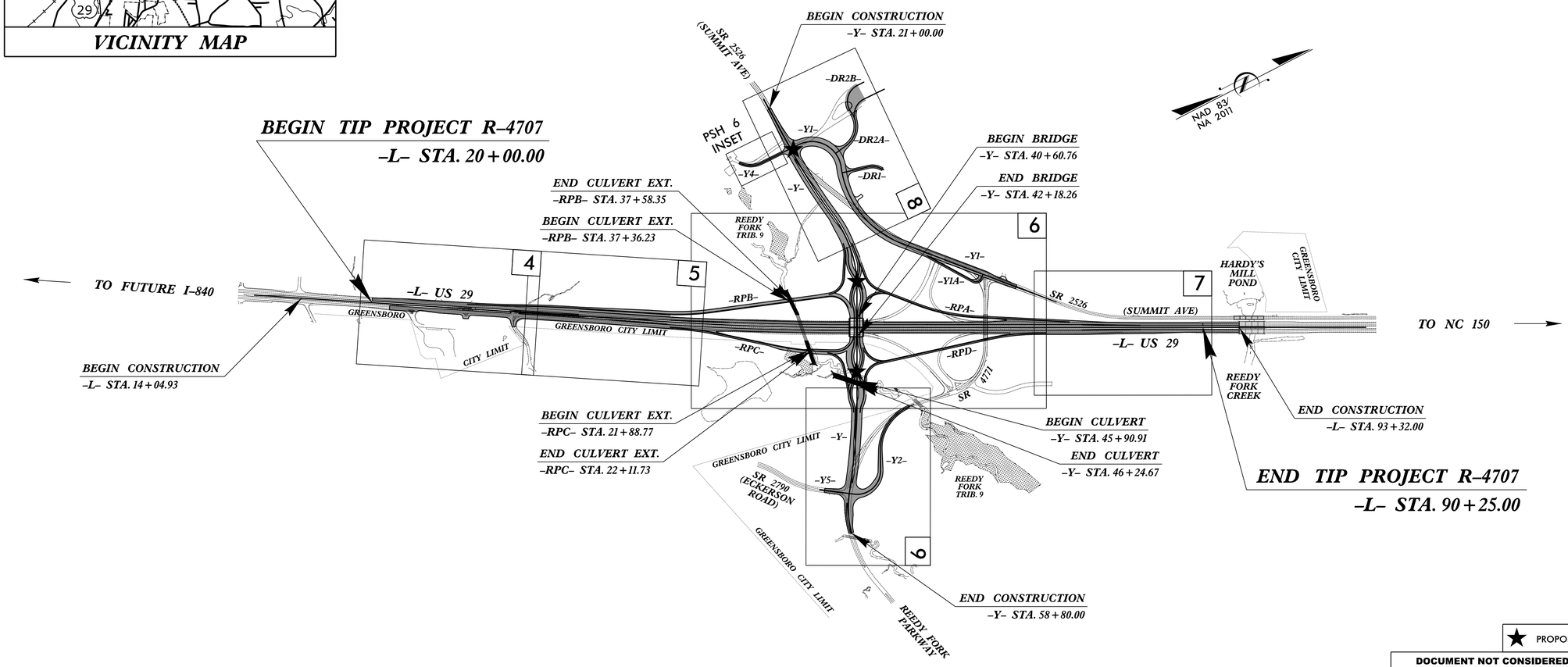
GUILFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–4707	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
36599.1.5	NA	PE
36599.2.1	NA	R/W
36599.2.U1	NA	UTILITY
36599.3.1	NA	CONST

LOCATION: US 29 AND SR 4771 (REEDY FORK PARKWAY) INTERCHANGE IMPROVEMENTS IN GREENSBORO; IMPROVE ROADWAY, MODIFY INTERCHANGE AND REPLACE BRIDGE 400360

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



★ PROPOSED SIGNAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2020 = 40,200
ADT 2040 = 49,000
K = 9 %
D = 60 %
T = 18 % *
V = 60 MPH
* TTST = 9% + DUAL 9%
FUNC CLASS = FUTURE INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R–4707 = 1.330 MILES
LENGTH STRUCTURE TIP PROJECT R–4707 = 0.000 MILES
TOTAL LENGTH TIP PROJECT R–4707 = 1.330 MILES

–L– USED TO DETERMINE PROJECT LENGTH

Prepared for NCDOT in the Office of:
Mead&Hunt
111 E. Hargett Street, Suite 300
Raleigh, North Carolina 27601
919-714-8670 | meadhunt.com
NC License No. F-1235

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MARCH 28, 2019

LETTING DATE: APRIL 20, 2021

RICK DECOLA, PE
PROJECT ENGINEER

TRAVIS COOK, PE
PROJECT DESIGN ENGINEER

LAURA SUTTON, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

DocuSigned by: Roger Weaden 82804FC9F536430...
01/12/2021
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 21656 ENGINEER ROGER S. WEADEN

ROADWAY DESIGN ENGINEER

DocuSigned by: R J DeCola EF1546DF704F4A4...
01/12/2021
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 034381 ENGINEER RICHARD J. DECOLA

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

11-JAN-2021 7:03
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PROJECT REFERENCE NO.	SHEET NO.
R-4707	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034381 ENGINEER RICHARD J. DECOLA

R J DeCola 4/17/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Mead&Hunt
111 E. Hargett Street, Suite 300
Raleigh, North Carolina 27601
919-714-8670 | meadhunt.com
NC License No. F-1235

INDEX OF SHEETS

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 PROPERER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01 AND 560.02.

SIDE ROADS:

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

BERM DITCHES:

BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

SUBSURFACE DRAINS:

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

SHOULDER DRAINS:

SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 816.02 AND DETAILS IN PLANS 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 CITY OF GREENSBORO, DUKE ENERGY, PIEDMONT NATURAL GAS, CENTURY LINK, AT&T, AND CHARTER.

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.

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD. 848.05 and/or 848.06.

ROCK

ROCK IS ANTICIPATED BETWEEN -RPB- STA. 33+75 - 34+25 AND -Y2- STA. 12+25 - 14+25. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-16-2018
REV.

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
240.01	Guide for Berm Ditch Construction
275.01	Rock Plating
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.04	Guide for Paving Shoulders Under Bridges - Method IV
654.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
DIVISION 8 - INCIDENTALS	
806.03	Concrete Contol of Access Marker
815.02	Subsurface Drain
816.01	Concrete Pads - for Shoulder Drain Installation
816.02	Aggregate Shoulder Drain
816.04	Markers for Drainage Structure and Concrete Pad
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.04	Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.05	Brick Open Throat Catch Basin - 12" thru 48" Pipe
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	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
846.02	Drop Inlet Installation in Expressway Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
850.01	Concrete Paved Ditches
850.10	Guide for Berm Drainage Outlet - 15" and 18" Pipe
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
852.10	Median Construction - with Curb and Gutter
854.01	Double Faced Concrete Barrier - Types I, II, III and IV
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
865.01	Cable Guiderail
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

8/17/99

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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
R-4707	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 — EIP
- Computed Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- 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 — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- 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 — S
- Storm Sewer — S

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

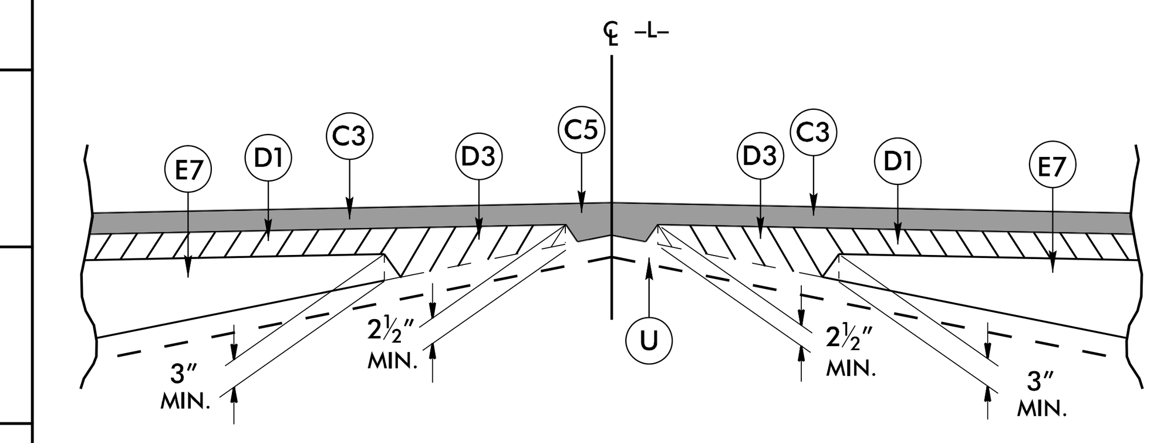
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc.
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)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

PAVEMENT SCHEDULE

B1	PROP. APPROX. ¾″ OPEN-GRADED ASPHALT FRICTION COURSE (OGFC), TYPE FC-1 MODIFIED, AT AN AVERAGE RATE OF 90 LBS. PER SQ. YD.	N1	GEOTEXTILE FOR PAVEMENT STABILIZATION.
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.	N2	GEOTEXTILE FOR SOIL STABILIZATION.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1″ IN DEPTH OR GREATER THAN 1½″ IN DEPTH.	R1	2′-6″ CONCRETE CURB AND GUTTER.
C3	PROP. APPROX. 1½″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R2	1′-6″ CONCRETE CURB AND GUTTER.
C4	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R3	SHOULDER BERM GUTTER.
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1½″ IN DEPTH OR GREATER THAN 2″ IN DEPTH.	R4	CONCRETE EXPRESSWAY GUTTER.
D1	PROP. APPROX. 3″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	R5	5″ MONOLITHIC CONCRETE ISLAND.
D2	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R6	TYPE III DOUBLE FACED CONCRETE BARRIER.
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.	R7	42″ VERTICAL CONCRETE BARRIER.
E1	PROP. APPROX. 3″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	R8	41″ SINGLE FACED CONCRETE BARRIER.
E2	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R9	4″ CONCRETE ISLAND COVER.
E3	PROP. APPROX. 5½″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	S	4″ CONCRETE SIDEWALK.
E4	PROP. APPROX. 9″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	T	EARTH MATERIAL.
E5	PROP. APPROX. 9½″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 541.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	U	EXISTING PAVEMENT.
E6	PROP. APPROX. 13″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 494 LBS. PER SQ. YD. IN EACH OF THREE LAYERS.	V1	MILLING ASPHALT PAVEMENT, 1½″ DEPTH.
E7	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.	V2	INCIDENTAL MILLING.
J1	PROP. 6″ AGGREGATE BASE COURSE.	W1	WEDGING (VARIABLE DEPTH ASPHALT, SEE DETAIL ON THIS SHEET)
K1	PROP. CHEMICAL STABILIZATION (7″ SOIL-CEMENT BASE/8″ LIME-TREATED SOIL). BASE TREATED WITH CEMENT AT A RATE OF 55 LBS. PER SQ. YD. OR SOIL TREATED WITH LIME AT A RATE OF 24 LBS. PER SQ. YD.	W2	WEDGING (VARIABLE DEPTH ASPHALT, SEE DETAIL ON THIS SHEET)
K2	PROP. 8″ CLASS IV SUBGRADE STABILIZATION.	W3	WEDGING (VARIABLE DEPTH ASPHALT, SEE DETAIL ON THIS SHEET)
K3	PROP. 18″ CLASS IV SUBGRADE STABILIZATION.	W4	WEDGING (VARIABLE DEPTH ASPHALT, SEE DETAIL ON THIS SHEET)
L	BASE TO BE STABILIZED WITH 200 TO 400 LBS. PER SQ. YD. OF STABILIZER AGGREGATE MIXED WITH THE TOP 3″ OF SUBGRADE SOIL AT LOCATIONS DIRECTED BY THE ENGINEER.	Y	MILLED RUMBLE STRIPS

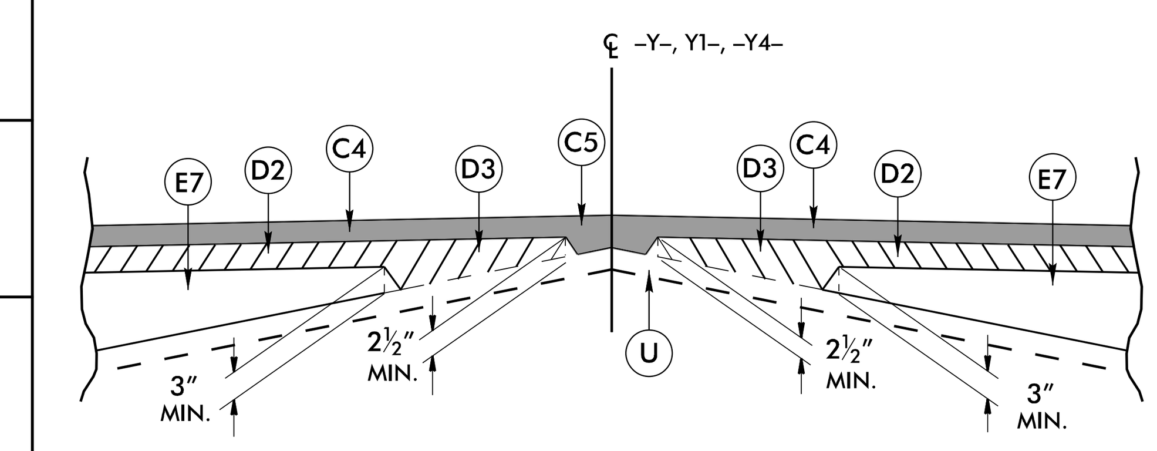
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

DETAIL W1



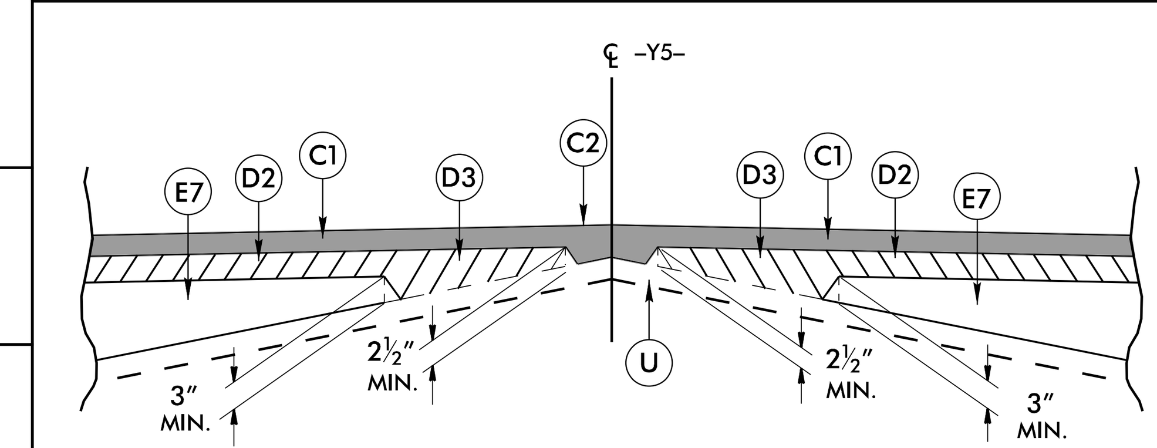
DETAIL SHOWING METHOD OF WEDGING

DETAIL W2



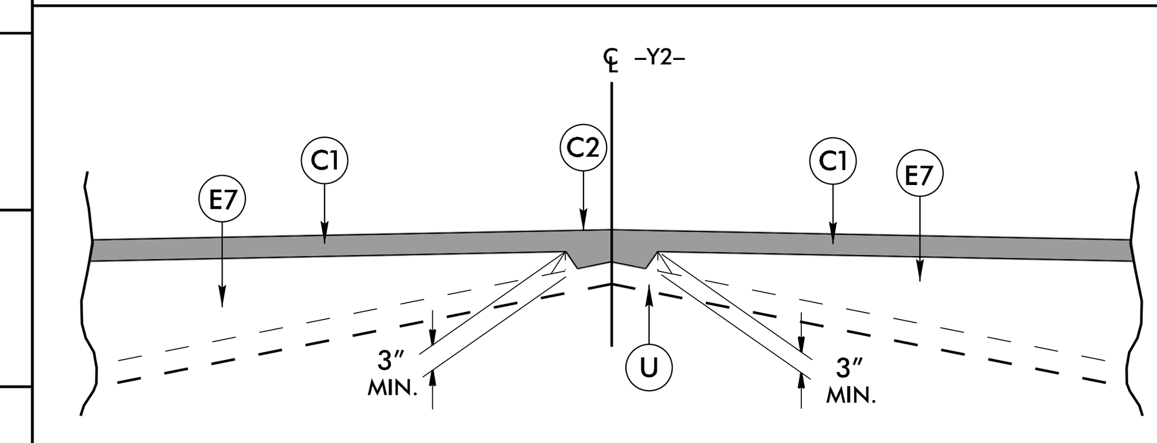
DETAIL SHOWING METHOD OF WEDGING

DETAIL W3



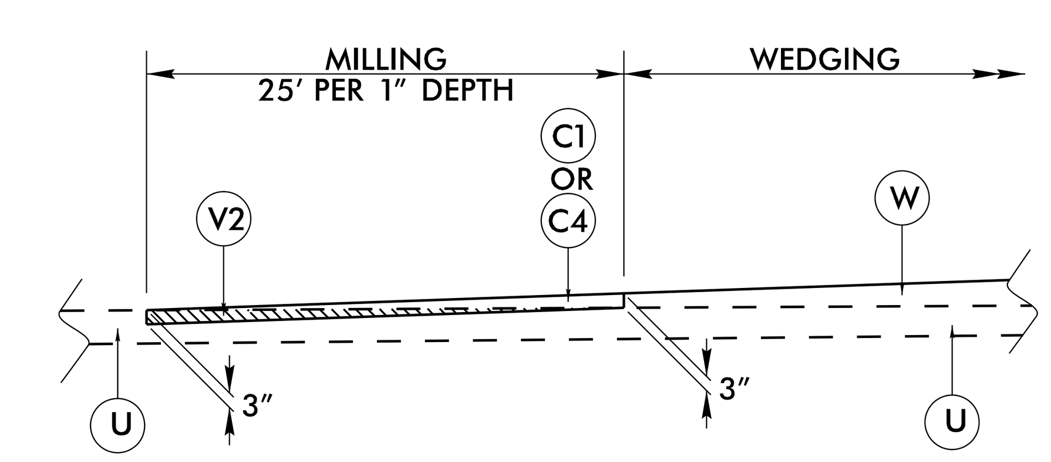
DETAIL SHOWING METHOD OF WEDGING

DETAIL W4



DETAIL SHOWING METHOD OF WEDGING

INCIDENTAL MILLING DETAIL



USE INCIDENTAL MILLING DETAIL AT ALL PROPOSED PROFILE TIE-INS TO EXISTING PAVEMENT

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2A-1

ROADWAY DESIGN ENGINEER — SEAL 034381, RICHARD J. DECOLA — R J DeCola 4/17/2020

PAVEMENT DESIGN ENGINEER — SEAL 022896, CLARK S. MORRISON — Clark S. Morrison 4/22/2020

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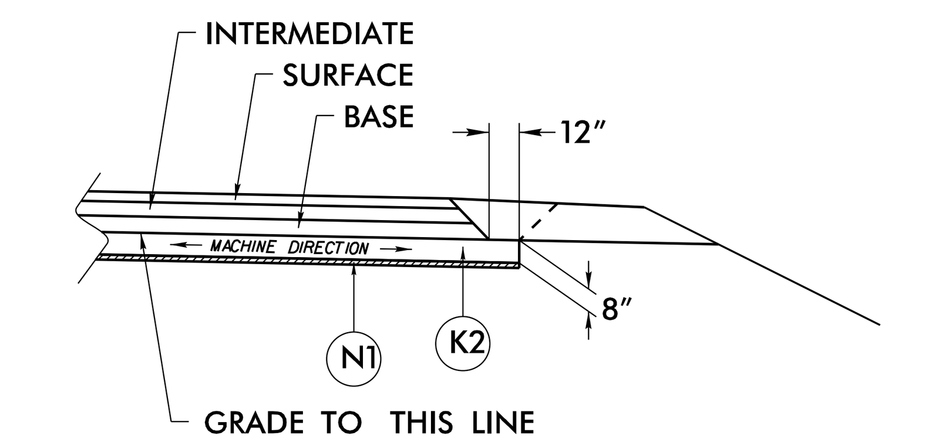
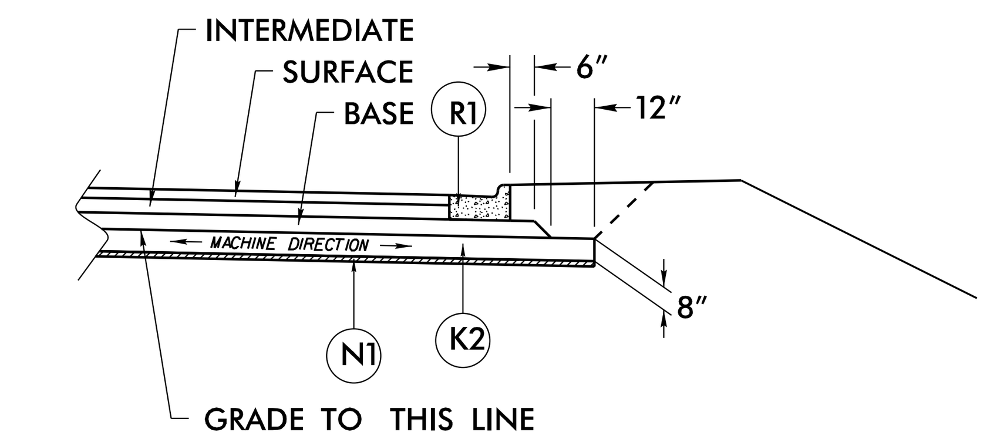
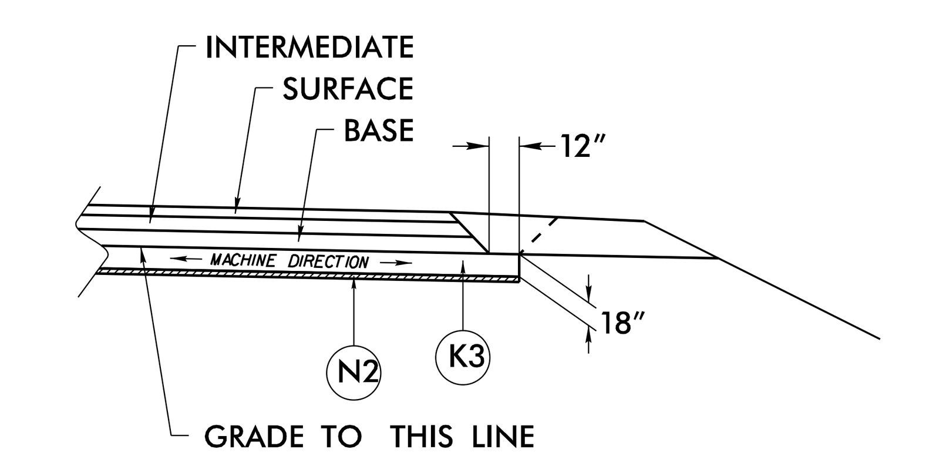




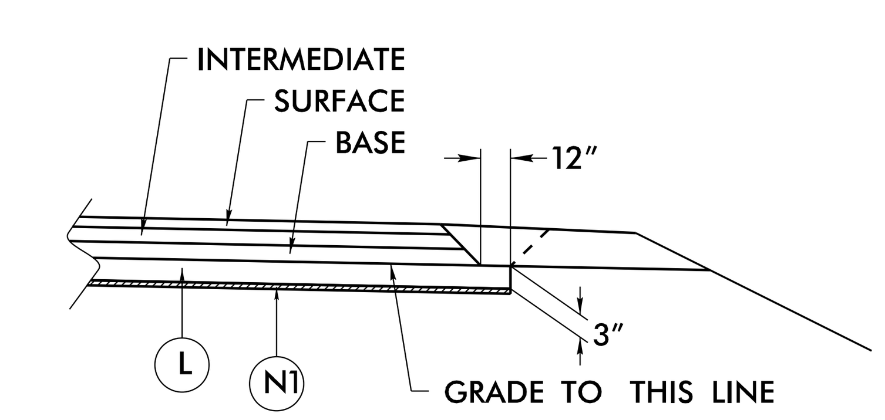
CLASS IV SUBGRADE STABILIZATION WITH GEOTEXTILE FOR PAVEMENT STABILIZATION

USE DETAIL
-L- STA. 32+75 TO -L- STA. 36+25
-L- STA. 75+25 TO -L- STA. 80+75
-Y- STA. 36+75 TO -Y- STA. 41+25
-Y- STA. 42+17 TO -Y- STA. 47+75
-RPA- STA. 10+00 TO -RPA- STA. 13+75
-RPA- STA. 26+75 TO -RPA- STA. 27+75
-RPB- STA. 14+75 TO -RPB- STA. 18+25
-RPB- STA. 35+75 TO -RPB- STA. 42+75
-RPC- STA. 18+75 TO -RPC- STA. 25+25
-RPD- STA. 19+75 TO -RPD- STA. 26+25
-SPB- STA. 41+25 TO -SPB- STA. 43+75
-SPC- STA. 24+25 TO -SPC- STA. 27+25
-SPD- STA. 24+25 TO -SPD- STA. 26+25
-Y1- STA. 12+25 TO -Y1- STA. 13+75
-Y1- STA. 20+75 TO -Y1- STA. 22+25



CLASS IV SUBGRADE STABILIZATION WITH GEOTEXTILE FOR SOIL STABILIZATION

USE DETAIL
-RPA- STA. 14+75 TO -RPA- STA. 16+25 LT & RT
-RPC- STA. 13+75 TO -RPC- STA. 16+75 LT & RT
-Y1- STA. 10+00 TO -Y1- STA. 11+75 LT & RT
-Y1- STA. 24+25 TO -Y1- STA. 34+75 LT & RT
-Y1A- STA. 26+50 TO -Y1A- STA. 28+25 LT & RT
-Y1A- STA. 31+25 TO -Y1A- STA. 32+16 LT & RT



STABILIZER AGGREGATE

USE DETAIL
FOR CONTINGENCY ONLY - USE AS DIRECTED BY ENGINEER

6/2/99

27-MAR-2020 09:31
X:\4306200\172319.01\TECH\Roadway\Proj\R4707_Rdy_typ.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2A-2

ROADWAY DESIGN ENGINEER — SEAL 034381 — RICHARD J. DECOLA — R J DeCola 4/17/2020

PAVEMENT DESIGN ENGINEER — SEAL 022896 — CLARK S. MORRISON — Clark S. Morrison 4/22/2020

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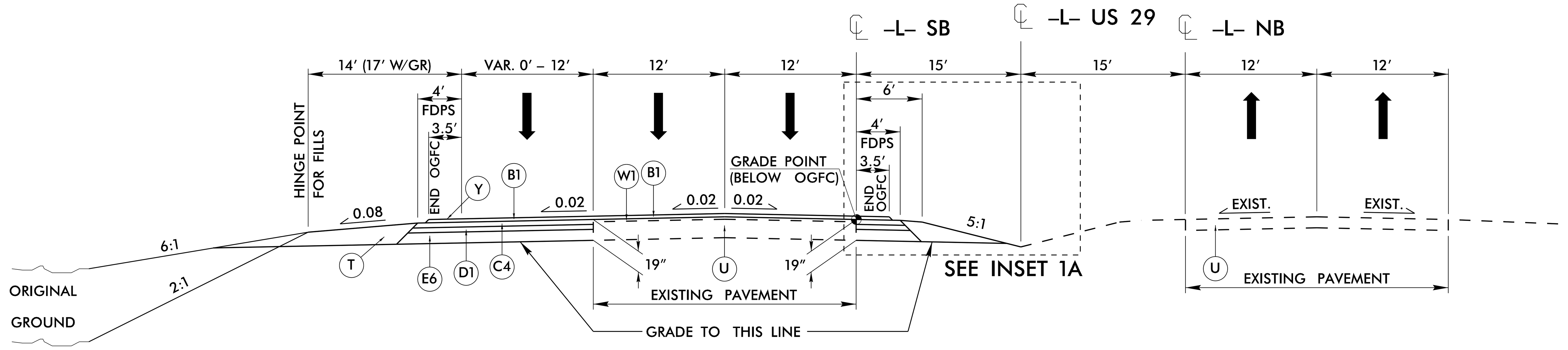
PAVEMENT SCHEDULE

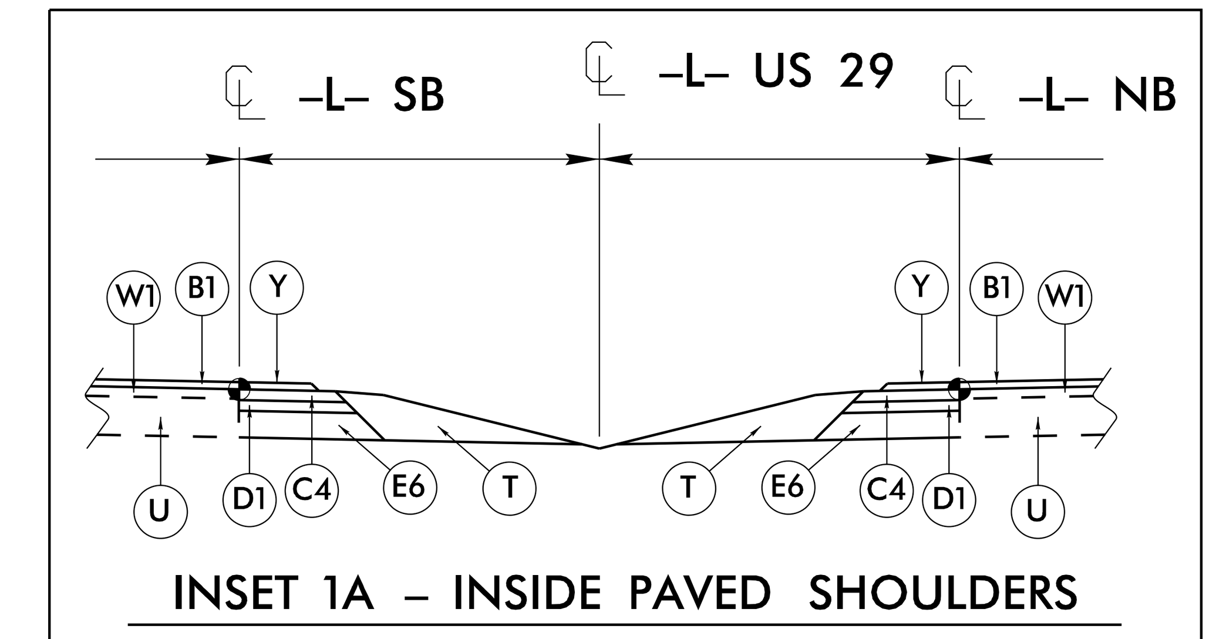
B1	3/4" OGFC TYPE FC-1 MODIFIED
C4	3" SURFACE COURSE TYPE S9.5C
D1	3" INTER. COURSE TYPE I19.0C
E5	9½" BASE COURSE TYPE B25.0C
E6	13" BASE COURSE TYPE B25.0C
K1	8" LIME OR 7" CEMENT STAB.
N1	GEOTEXTILE FOR PAVEMENT STAB.
R5	5" MONOLITHIC CONC. ISLAND
R6	TYPE III CONC. BARRIER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	VAR. DEPTH ASPHALT PAVEMENT
Y	MILLED RUMBLE STRIPS



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

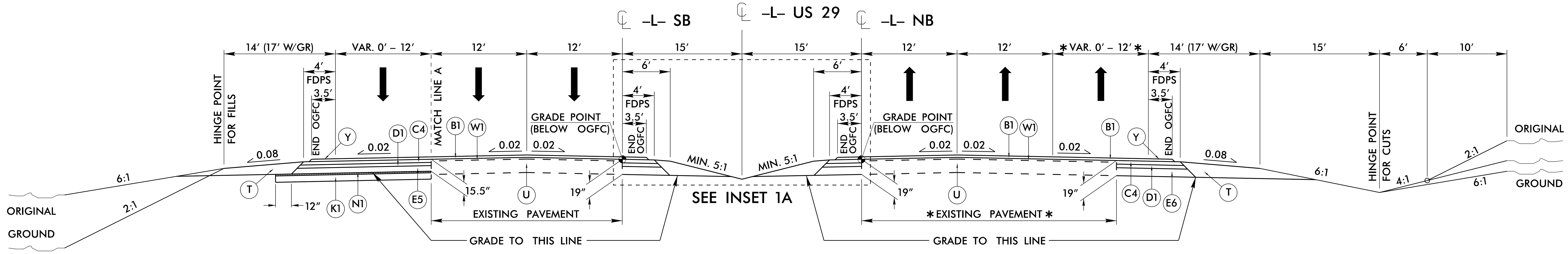
-L- SB STA. 20+00.00 TO -L- STA. 21+50.00



INSET 1A – INSIDE PAVED SHOULDERS

NOTE: INSET IS FOR PAVEMENT ID ONLY

NOTE: REMOVE EXISTING INSIDE AND OUTSIDE SHOULDERS ON -L- BEFORE WIDENING.



TYPICAL SECTION NO. 2

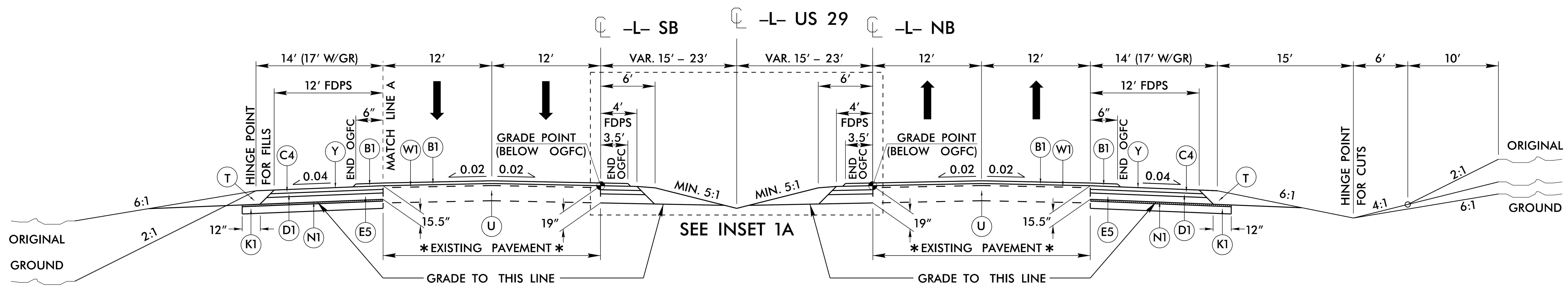
NOTE: SEE DETAIL 1B AND TYPICAL SECTION 1C

USE TYPICAL SECTION NO. 2

-L- STA. 21+50.00 TO -L- STA. 40+00.00

NOTE: REMOVE EXISTING NB MEDIAN LEFTOVER AND CONSTRUCT MEDIAN FROM -L- STA. 21+50.00 TO -L- STA. 28+80.00

* REMOVE EXISTING ACCELERATION AND DECELERATION LANES ON -L-, EXCEPT THE SB ACCELERATION LANE FROM -L- STA. 49+50 TO -L- STA. 60+00.



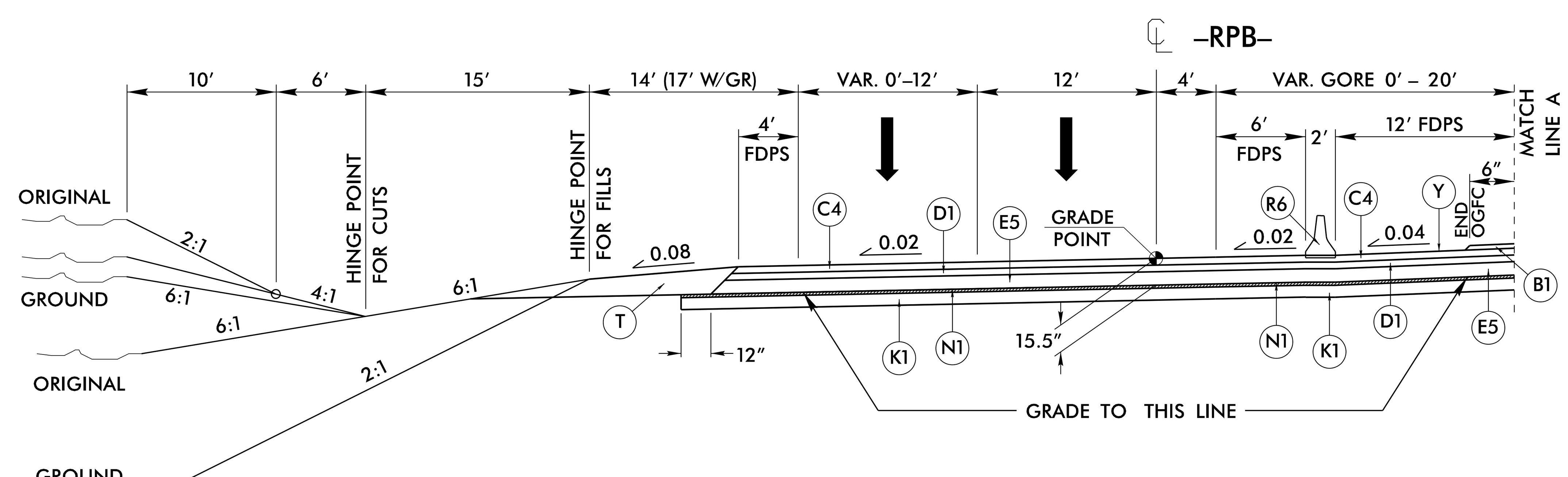
TYPICAL SECTION NO. 3

NOTE: SEE TYPICAL SECTION 1C

USE TYPICAL SECTION NO. 3

-L- STA. 40+00.00 TO -L- STA. 50+22.23

NOTE: USE -LSB1- & -LNB1- FOR MEDIAN TAPERS



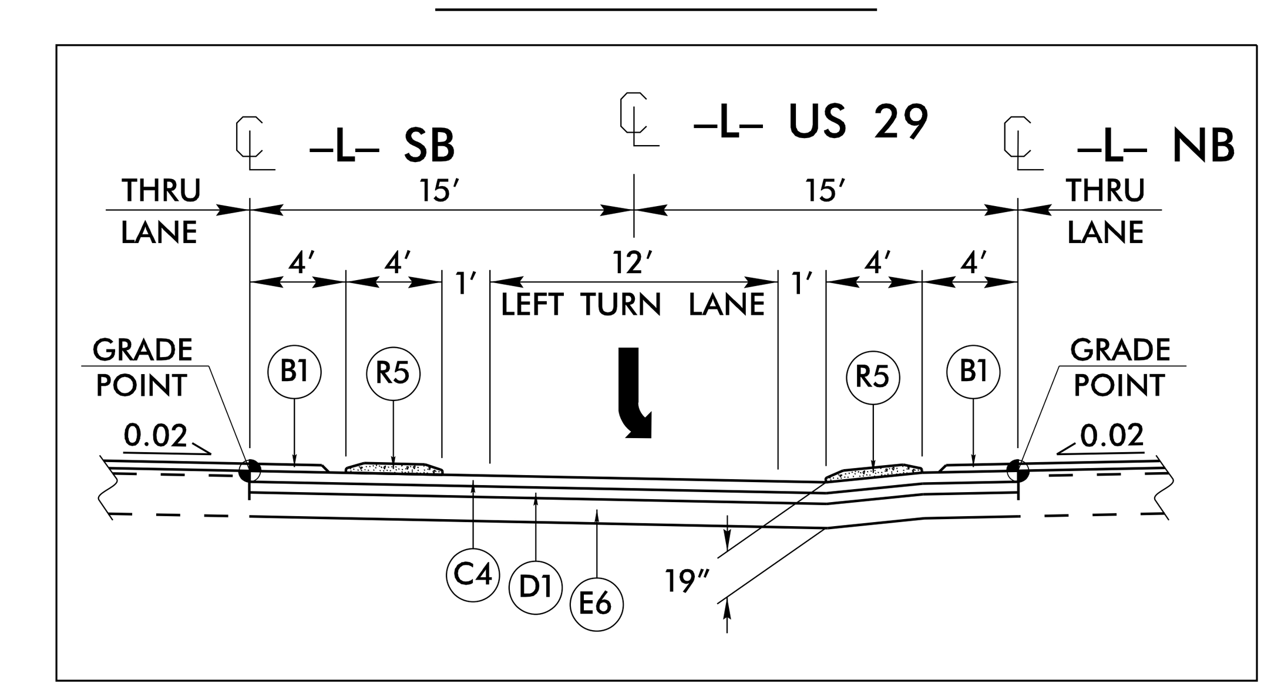
TYPICAL SECTION 1C

NOTE: SEE EXPRESSWAY GUTTER DETAIL
SEE SHOULDER BERM GUTTER DETAIL – MAINLINE

USE TYPICAL SECTION 1C

-L- SB STA. 30+55.37 TO -L- SB STA. 37+50.00 (GORE)
-L- SB STA. 37+50.00 TO -L- SB STA. 46+40.00 (BARRIER)
-RPB- STA. 19+50.43 TO -RPB- STA. 28+57.15

DETAIL 1B



USE DETAIL 1B

-L- STA. 31+59.00 TO -L- STA. 39+50.00

NOTE: REMOVE EXISTING SB MEDIAN LEFTOVER AND RECONSTRUCT

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2A-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034381 RICHARD J. DECOLA — R J DeCola 4/17/2020	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896 CLARK S. MORRISON — Clark S. Morrison 4/22/2020

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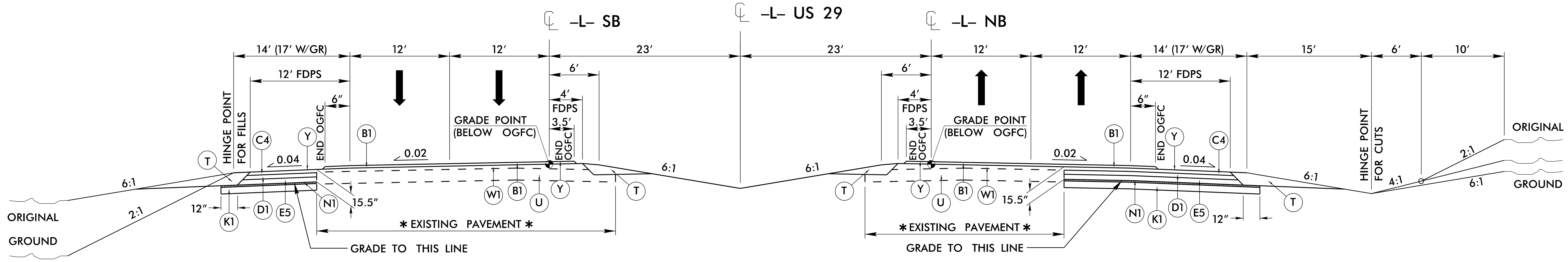
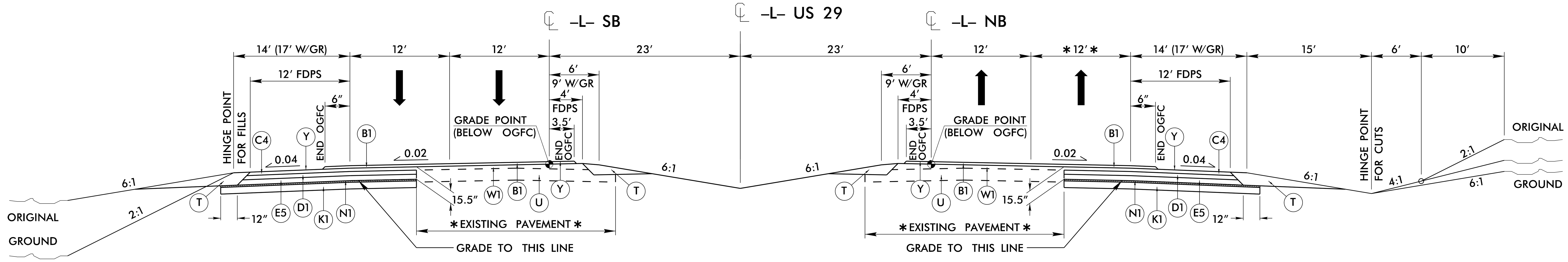


TYPICAL SECTION NO. 4

NOTE: RETAIN SB ACCEL LANE

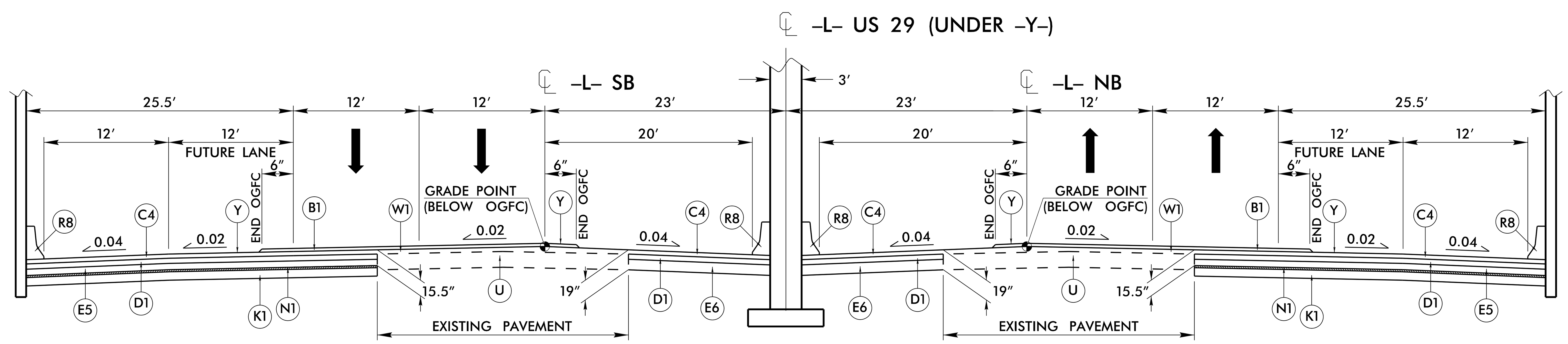
USE TYPICAL SECTION NO. 4
-L- STA. 50+22.23 TO -L- STA. 60+00.00



TYPICAL SECTION NO. 5

NOTE: SEE SHOULDER BERM GUTTER DETAIL - MAINLINE

USE TYPICAL SECTION NO. 5
-L- STA. 60+00.00 TO -L- STA. 80+00.00



TYPICAL SECTION NO. 5A

NOTE: FOR INFORMATION ONLY

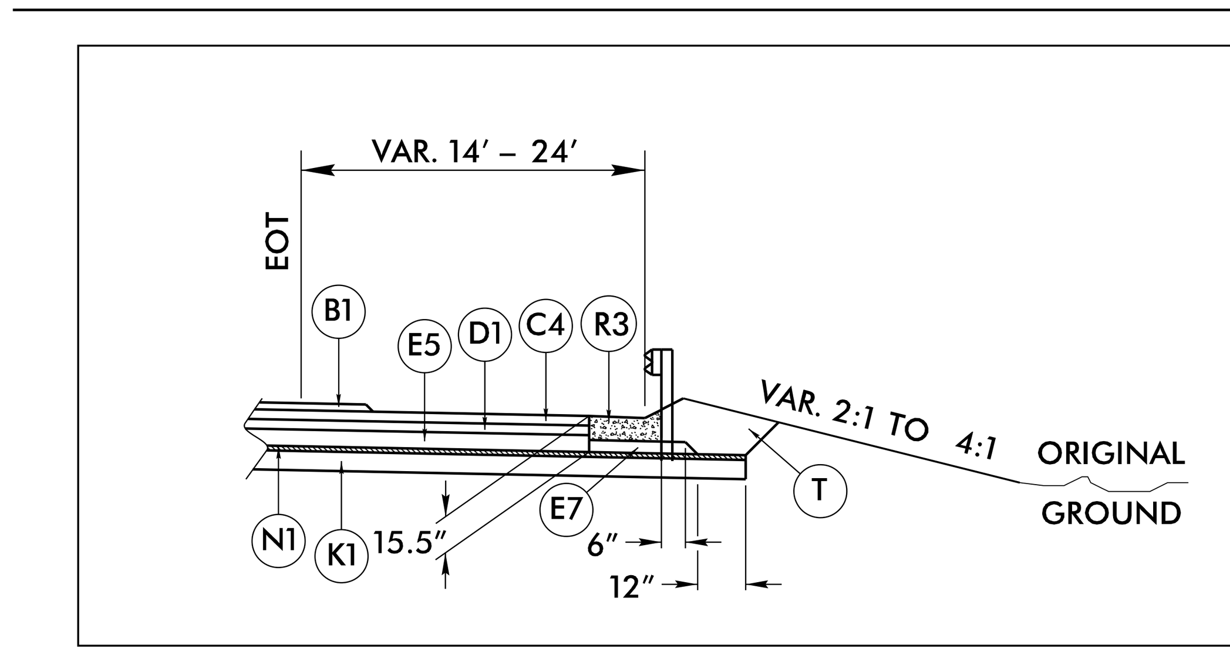
USE TYPICAL SECTION NO. 5A
SEE PLANS

	PAVEMENT SCHEDULE
B1	3/4" OGFC TYPE FC-1 MODIFIED
C4	3" SURFACE COURSE TYPE S9.5C
D1	3" INTER. COURSE TYPE I19.0C
E5	9 1/2" BASE COURSE TYPE B25.0C
E6	13" BASE COURSE TYPE B25.0C
E7	VAR. BASE COURSE TYPE B25.0C
K1	8" LIME OR 7" CEMENT STAB.
N1	GEOTEXTILE FOR PAVEMENT STAB.
R3	SHOULDER BERM GUTTER
R8	41" SINGLE FACED CONC. BARRIER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	VAR. DEPTH ASPHALT PAVEMENT
Y	MILLED RUMBLE STRIPS

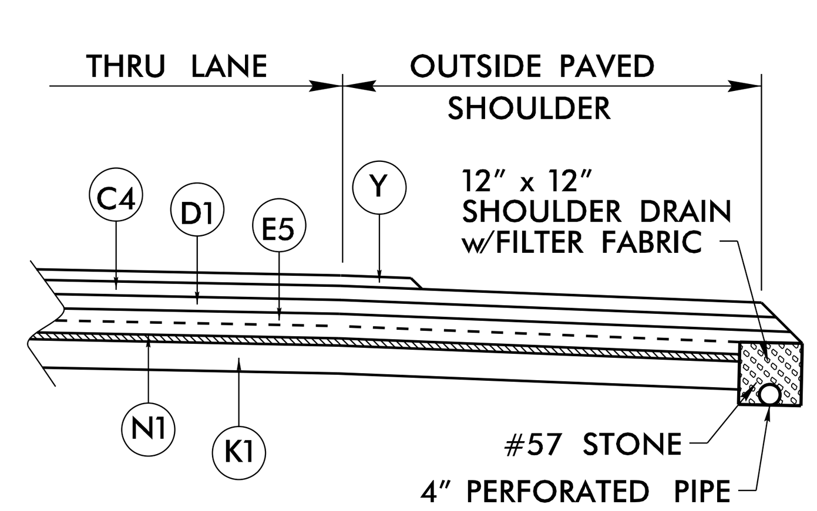
NOTE: REMOVE EXISTING INSIDE AND OUTSIDE SHOULDERS ON -L- BEFORE WIDENING.

* REMOVE EXISTING ACCELERATION AND DECELERATION LANES ON -L-, EXCEPT THE SB ACCELERATION LANE FROM -L- STA. 49+50 TO -L- STA. 60+00.

SHOULDER BERM GUTTER DETAIL - MAINLINE



USE SHOULDER BERM GUTTER DETAIL - MAINLINE
-RPB- STA. 15+00.00 TO -RPB- STA. 18+75.00 LT
-L- STA. 62+10.00 TO -L- STA. 62+80.00 LT
-RPA- STA. 10+00.00 TO -RPA- STA. 13+50.00 RT
-L- STA. 79+00.00 TO STA. -L- 81+05.00 LT



SHOULDER DRAIN DETAIL

USE DETAIL
-L- STA. 57+00 TO -L- STA. 63+00 RT (NB) - OUTLET AT -L- STA. 59+80 JB (0614)
-L- STA. 86+90 TO -L- STA. 89+90 RT (NB) - OUTLET AT -L- STA. 89+90 EXIST. DI
-L- STA. 57+00 TO -L- STA. 63+00 LT (SB) - OUTLET AT -L- STA. 60+30 2GI (0625)
-L- STA. 86+25 TO -L- STA. 89+25 LT (SB) - OUTLET AT -L- STA. 89+25 EXIST. DI

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2A-4

ROADWAY DESIGN ENGINEER — SEAL 034381, NORTH CAROLINA PROFESSIONAL ENGINEER, RICHARD J. DECOLA — R J DeCola 4/17/2020

PAVEMENT DESIGN ENGINEER — SEAL 022896, NORTH CAROLINA PROFESSIONAL ENGINEER, CLARK S. MORRISON — Clark S. Morrison 4/22/2020

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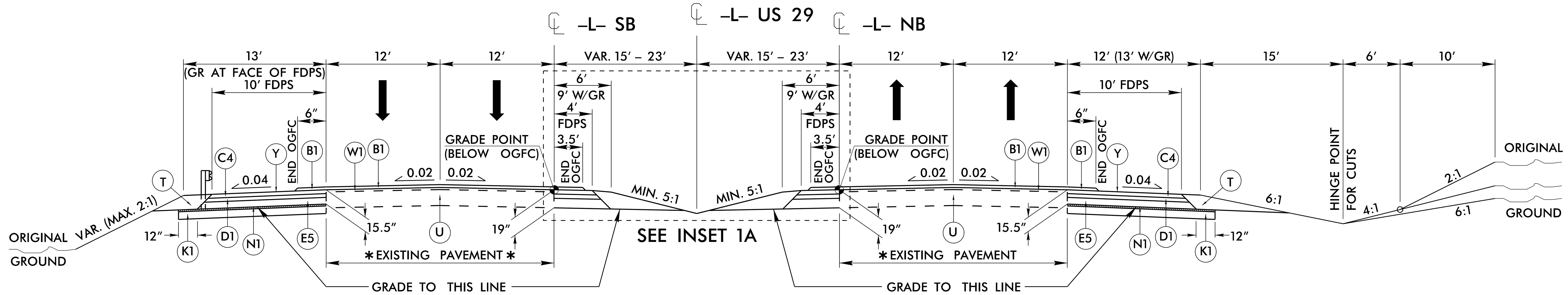
PAVEMENT SCHEDULE	
B1	3/4" OGFC TYPE FC-1 MODIFIED
C3	1 1/2" SURFACE COURSE TYPE S9.5C
C4	3" SURFACE COURSE TYPE S9.5C
D1	3" INTER. COURSE TYPE I19.0C
E4	9" BASE COURSE TYPE B25.0C
E5	9 1/2" BASE COURSE TYPE B25.0C
K1	8" LIME OR 7" CEMENT STAB.
N1	GEOTEXTILE FOR PAVEMENT STAB.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	1 1/2" DEPTH MILLING
W1	VAR. DEPTH ASPHALT PAVEMENT
Y	MILLED RUMBLE STRIPS

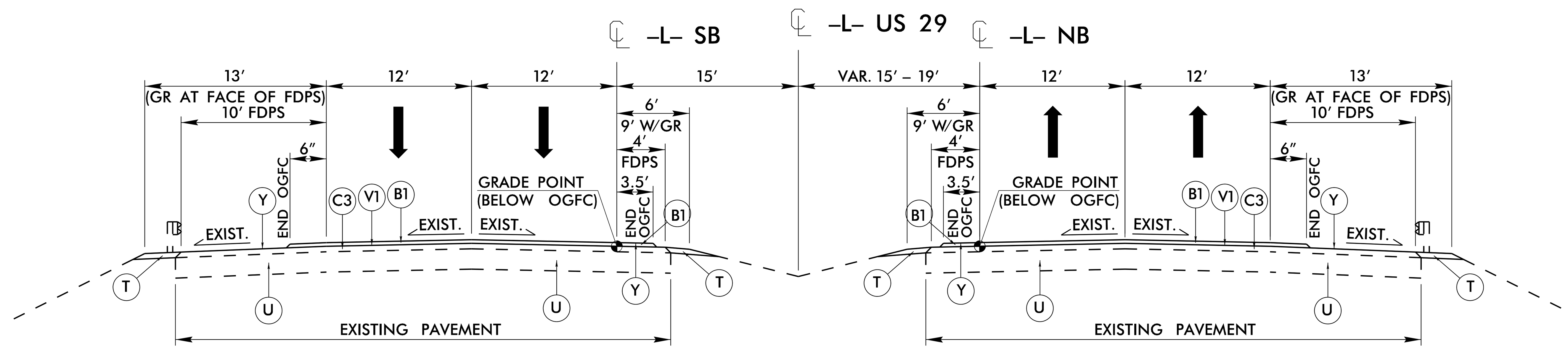


TYPICAL SECTION NO. 6

NOTE: SEE SHOULDER BERM GUTTER DETAIL – MAINLINE

USE TYPICAL SECTION NO. 6

-L- STA. 80+00.00 TO -L- STA. 90+25.00
NOTE: USE -LSB2- & -LNB2- FOR MEDIAN TAPERS



TYPICAL SECTION NO. 7

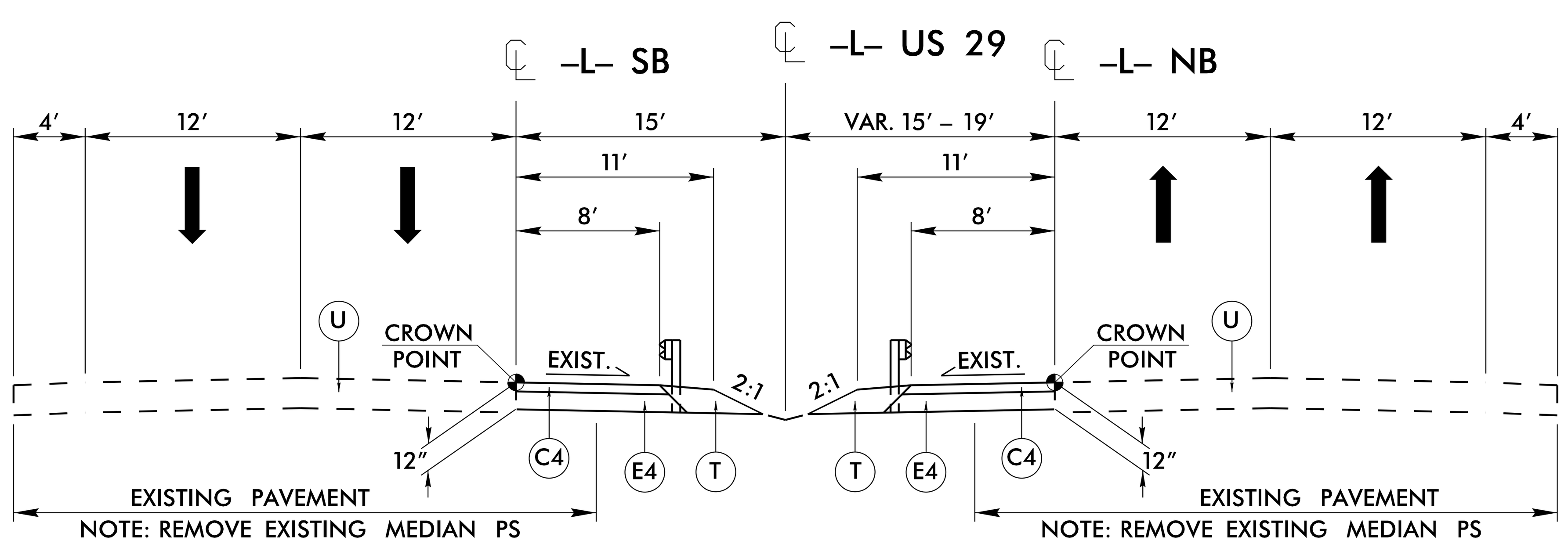
NOTE: MILL, RESURFACE AND ADD OGFC

USE TYPICAL SECTION NO. 7

-L- STA. 90+25.00 TO -L- STA. 93+32.00
NOTE: EXACT END STATION TBD IN FIELD

NOTE: REMOVE EXISTING INSIDE AND OUTSIDE SHOULDERS ON -L- BEFORE WIDENING.

* REMOVE EXISTING ACCELERATION AND DECELERATION LANES ON -L-, EXCEPT THE SB ACCELERATION LANE FROM -L- STA. 49+50 TO -L- STA. 60+00.

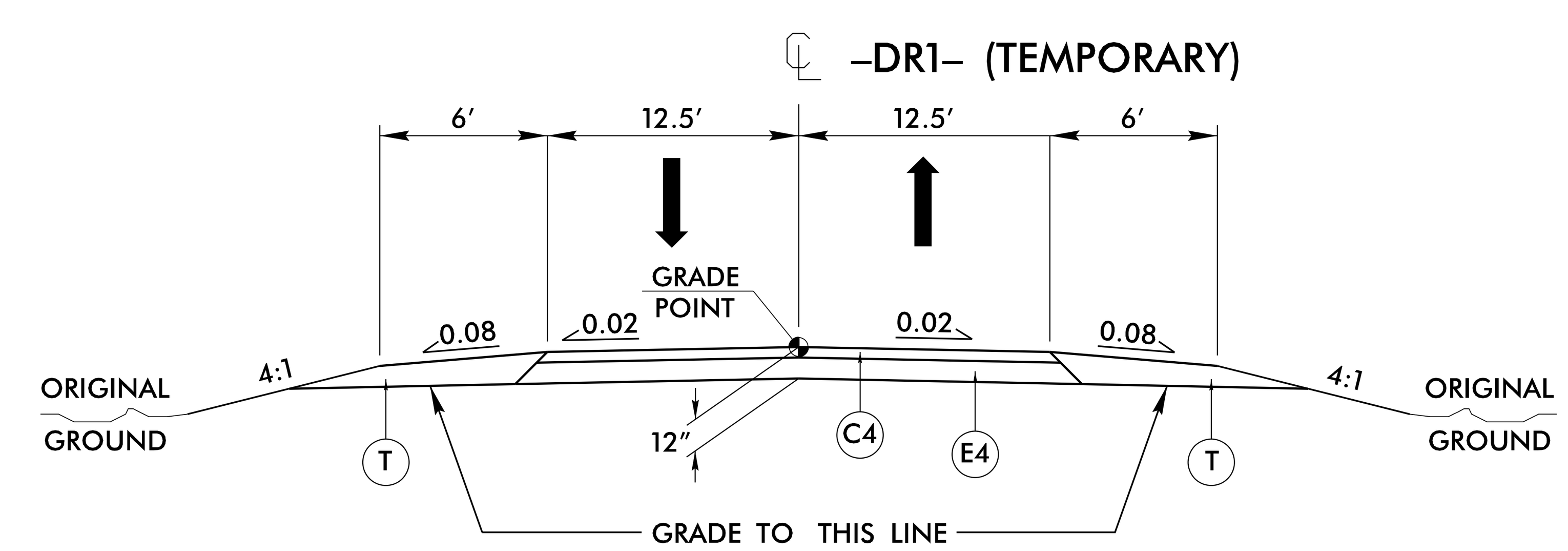


TYPICAL SECTION NO. 8A

NOTE: TEMPORARY PAVEMENT ONLY

USE TYPICAL SECTION NO. 8A

-L- STA. 18+35± TO -L- STA. 92+25±
NOTE: SEE SHEETS TMP-8 TO TMP-11



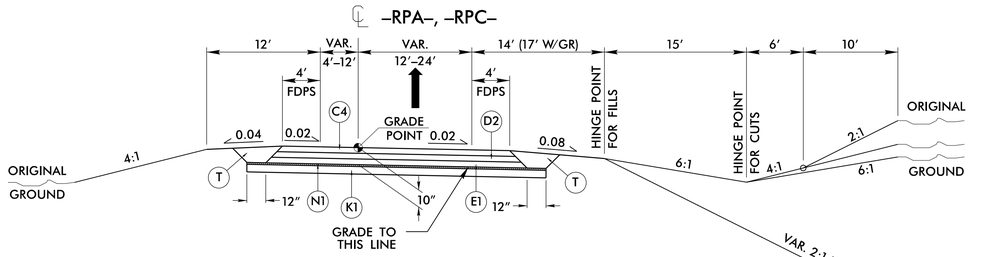
TYPICAL SECTION NO. 8B

NOTE: TEMPORARY PAVEMENT ONLY

USE TYPICAL SECTION NO. 8B

SEE SHEET TMP-4

6/2/99

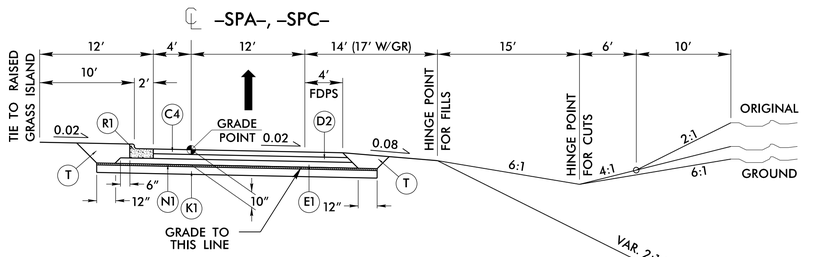


TYPICAL SECTION NO. 9

NOTE: SEE SHOULDER BERM GUTTER DETAIL – RAMPS

USE TYPICAL SECTION NO. 9

–RPA– STA. 10+00.00 TO –RPA– STA. 27+72.73
–RPC– STA. 10+00.00 TO –RPC– STA. 25+32.29

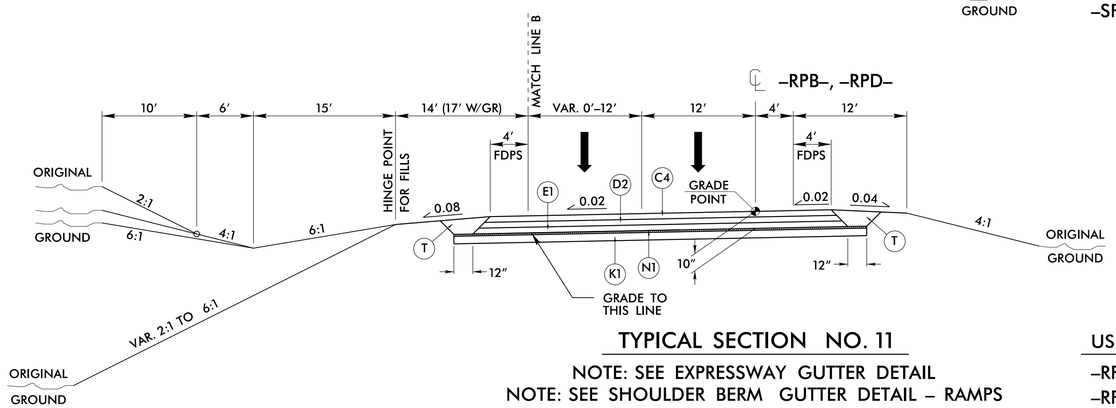


TYPICAL SECTION NO. 10

NOTE: SEE SHOULDER BERM GUTTER DETAIL – RAMPS

USE TYPICAL SECTION NO. 10

–SPA– STA. 25+49.04 TO –SPA– STA. 28+95.09
–SPC– STA. 23+50.00 TO –SPC– STA. 27+30.07

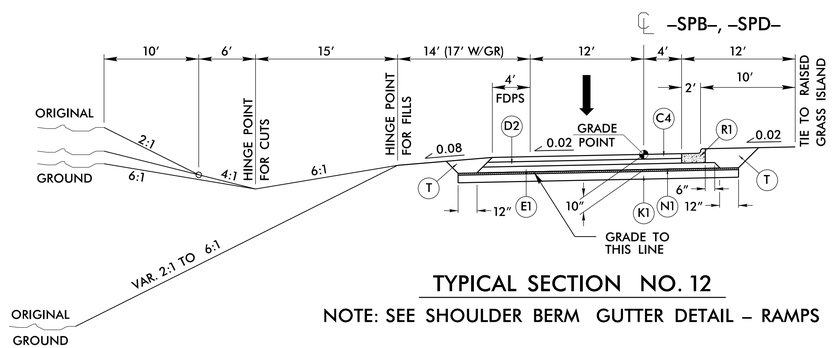


TYPICAL SECTION NO. 11

NOTE: SEE EXPRESSWAY GUTTER DETAIL
NOTE: SEE SHOULDER BERM GUTTER DETAIL – RAMPS

USE TYPICAL SECTION NO. 11

–RPB– STA. 10+00.00 TO –RPB– STA. 19+50.43
–RPB– STA. 28+57.15 TO –RPB– STA. 42+79.14
–RPD– STA. 10+00.00 TO –RPD– STA. 26+12.52



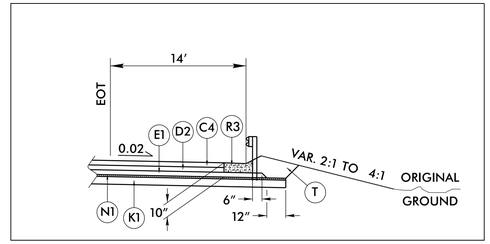
TYPICAL SECTION NO. 12

NOTE: SEE SHOULDER BERM GUTTER DETAIL – RAMPS

USE TYPICAL SECTION NO. 12

–SPB– STA. 40+71.32 TO –SPB– STA. 45+74.12
–SPD– STA. 23+62.76 TO –SPD– STA. 26+74.20

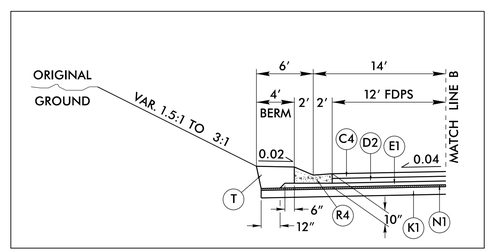
SHOULDER BERM GUTTER DETAIL – RAMPS



USE SHOULDER BERM GUTTER DETAIL – RAMPS

–RPB– STA. 35+75.00 TO –RPB– STA. 40+71.32 LT
–SPB– STA. 40+71.32 TO –SPB– STA. 41+45.00 LT
–RPC– STA. 18+25.00 TO –RPC– STA. 23+50.00 RT
–SPC– STA. 23+50.00 TO –SPC– STA. 24+50.00 RT
–RPD– STA. 21+25.00 TO –RPD– STA. 23+62.76 LT
–SPD– STA. 23+62.76 TO –SPD– STA. 24+55.00 LT

EXPRESSWAY GUTTER DETAIL



USE EXPRESSWAY GUTTER DETAIL

–RPB– STA. 23+75.00 TO –RPB– STA. 30+00.00 LT
–RPD– STA. 12+00.00 TO –RPD– STA. 16+50.00 LT

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2A-5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034381 ENGINEER RICHARD J. DECOSTA

DocuSigned by: 4/17/2020

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON

DocuSigned by: Clark S. Morrison 4/22/2020

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PAVEMENT SCHEDULE

C4	3″ SURFACE COURSE TYPE S9.5C
D2	4″ INTER. COURSE TYPE I19.0C
E1	3″ BASE COURSE TYPE B25.0C
K1	8″ LIME OR 7″ CEMENT STAB.
N1	GEOTEXTILE FOR PAVEMENT STAB.
R1	2′-6″ CONC. CURB AND GUTTER
R3	SHOULDER BERM GUTTER
R4	CONC. EXPRESSWAY GUTTER
T	EARTH MATERIAL

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2A-6

ROADWAY DESIGN ENGINEER — SEAL 034381 — NORTH CAROLINA PROFESSIONAL ENGINEER — RICHARD J. DECOLA — R J DeCola 4/17/2020

PAVEMENT DESIGN ENGINEER — SEAL 022896 — NORTH CAROLINA PROFESSIONAL ENGINEER — CLARK S. MORRISON — Clark S. Morrison 4/22/2020

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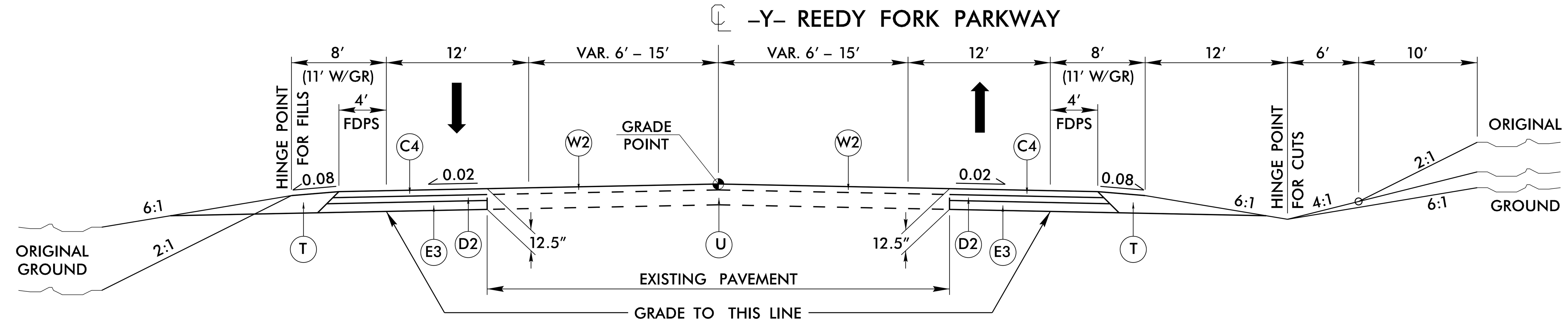
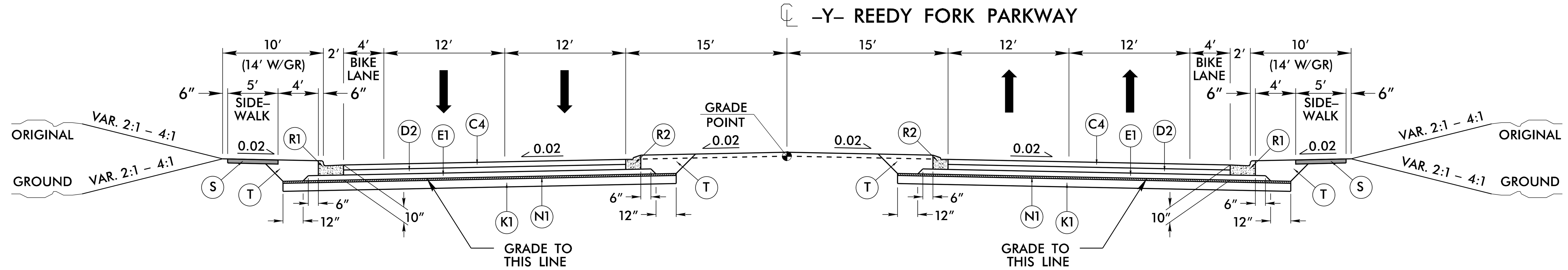
PAVEMENT SCHEDULE	
C4	3" SURFACE COURSE TYPE S9.5C
D2	4" INTER. COURSE TYPE I19.0C
E1	3" BASE COURSE TYPE B25.0C
E3	5½" BASE COURSE TYPE B25.0C
K1	8" LIME OR 7" CEMENT STAB.
N1	GEOTEXTILE FOR PAVEMENT STAB.
R1	2'-6" CONC. CURB AND GUTTER
R2	1'-6" CONC. CURB AND GUTTER
R9	4" CONC. ISLAND COVER
S	4" CONC. SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W2	VAR. DEPTH ASPHALT PAVEMENT



TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13

-Y- STA. 21+00.00 TO -Y- STA. 25+75.00



TYPICAL SECTION NO. 14

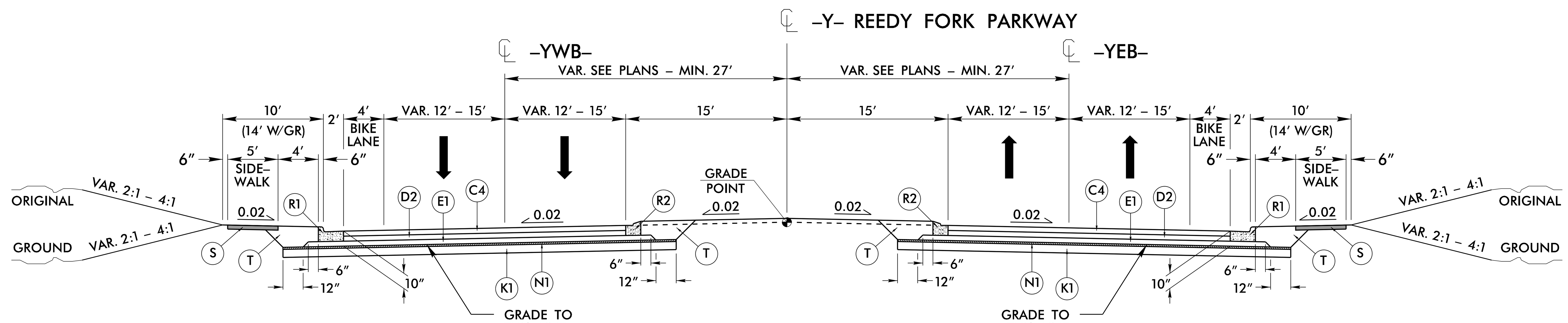
NOTE: SEE DETAILS 14A & 14B

NOTE: SEE OFFSET LEFT TURN DETAIL

USE TYPICAL SECTION NO. 14

-Y- STA. 25+75.00 TO -Y- STA. 34+25.00

-Y- STA. 48+60.56 TO -Y- STA. 54+50.00



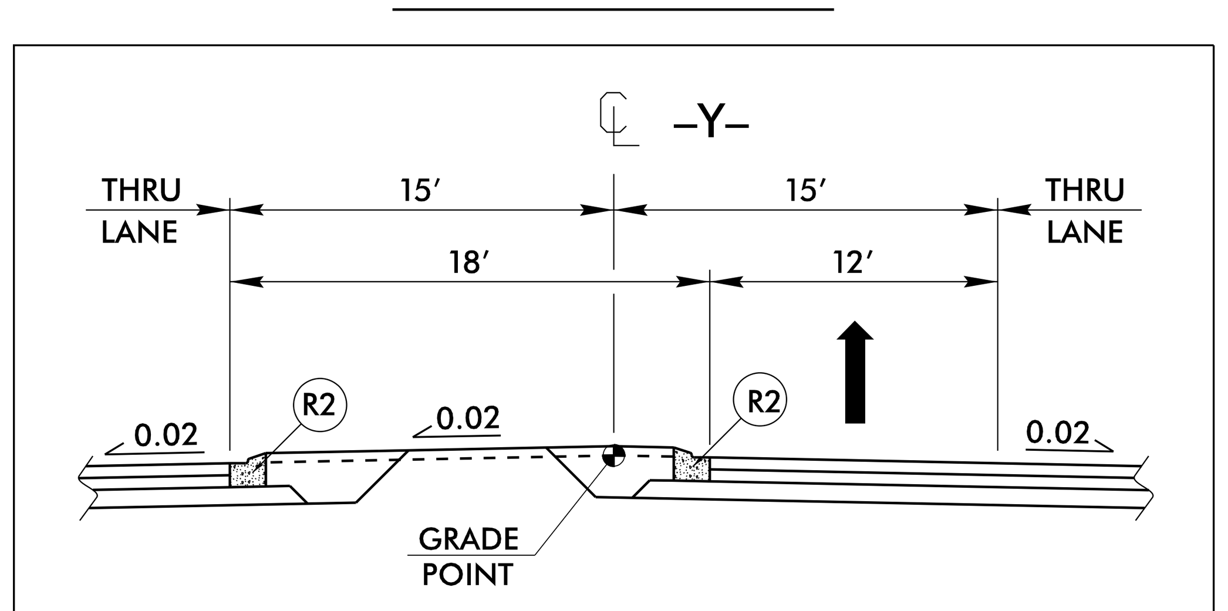
TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15

-Y- STA. 34+25.00 TO -Y- STA. 37+36.73

-Y- STA. 45+29.96 TO -Y- STA. 48+60.56

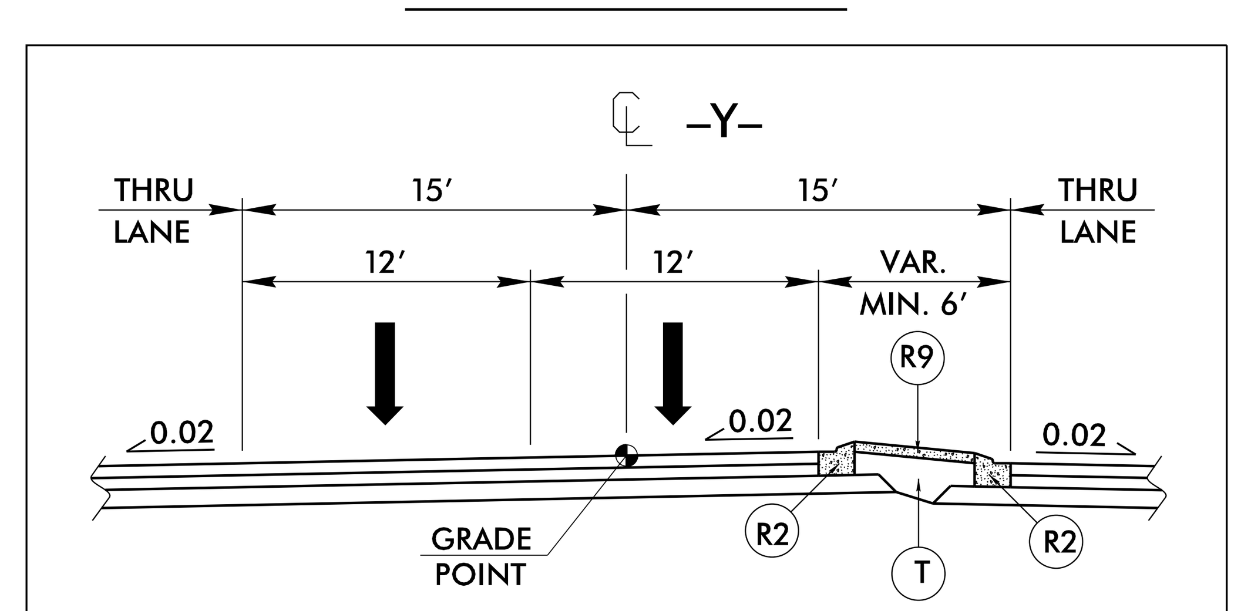
DETAIL 14A



USE DETAIL 14A

-Y- STA. 33+00.00 TO -Y- STA. 34+43.63

DETAIL 14B



USE DETAIL 14B

-Y- STA. 48+00.00 TO -Y- STA. 51+00.00

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2A-7

ROADWAY DESIGN ENGINEER — SEAL 034381 — NORTH CAROLINA PROFESSIONAL ENGINEER — RICHARD J. DECOLA — R J DeCola 4/17/2020

PAVEMENT DESIGN ENGINEER — SEAL 022896 — NORTH CAROLINA PROFESSIONAL ENGINEER — CLARK S. MORRISON — Clark S. Morrison 4/22/2020

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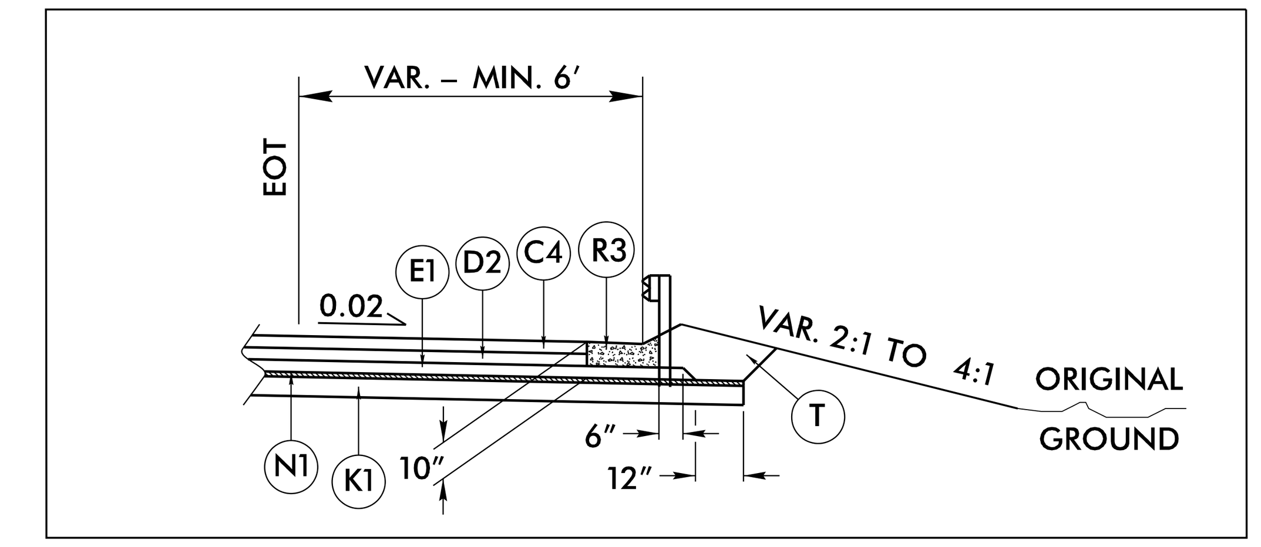
PAVEMENT SCHEDULE

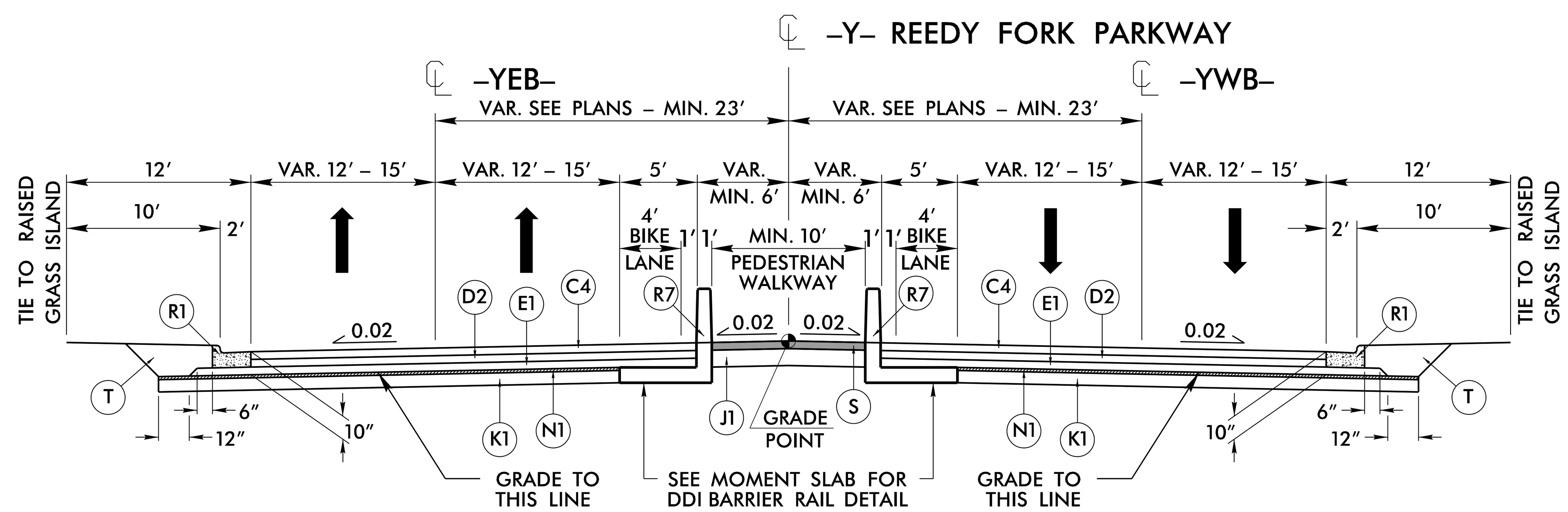
C4	3" SURFACE COURSE TYPE S9.5C
D2	4" INTER. COURSE TYPE I19.0C
E1	3" BASE COURSE TYPE B25.0C
E3	5½" BASE COURSE TYPE B25.0C
J1	6" AGGREGATE BASE COURSE
K1	8" LIME OR 7" CEMENT STAB.
N1	GEOTEXTILE FOR PAVEMENT STAB.
R1	2'-6" CONC. CURB AND GUTTER
R2	1'-6" CONC. CURB AND GUTTER
R3	SHOULDER BERM GUTTER
R5	5" MONOLITHIC CONC. ISLAND
R7	42" VERTICAL CONC. BARRIER
S	4" CONC. SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W2	VAR. DEPTH ASPHALT PAVEMENT

SHOULDER BERM GUTTER DETAIL



USE SHOULDER BERM GUTTER DETAIL

–Y– STA. 39+54.75 RT TO –Y– STA. 40+36.76 RT
–Y– STA. 42+42.26 RT TO –Y– STA. 43+00.32 RT
–Y– STA. 39+90.00 TO –Y– STA. 40+36.76 LT
–Y– STA. 42+42.26 TO –Y– STA. 42+90.00 LT

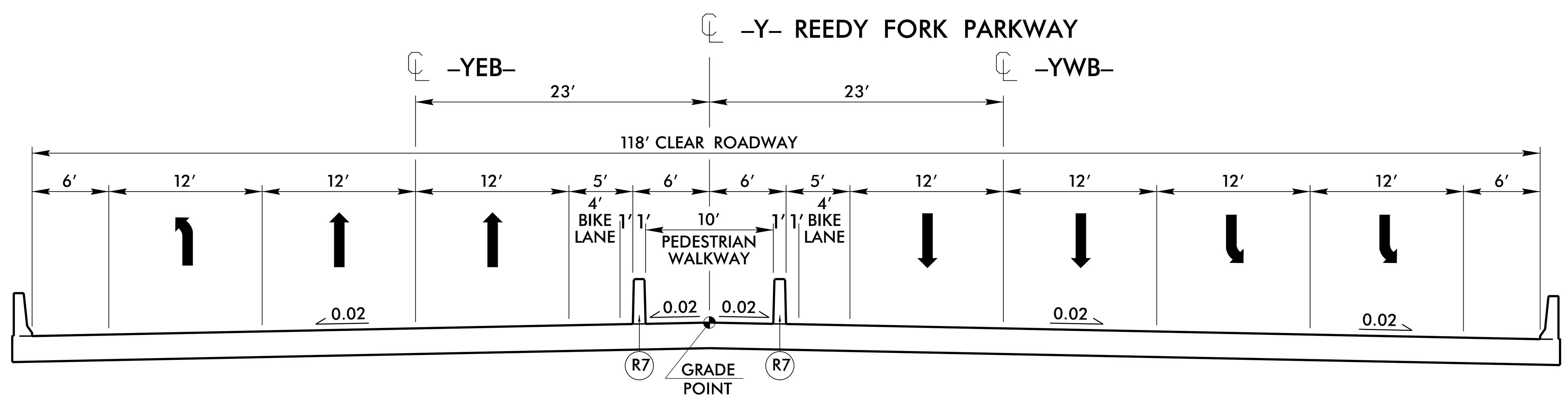


TYPICAL SECTION NO. 16

NOTE: SEE PLANS FOR LANE CONFIGURATION
SEE SHOULDER BERM GUTTER DETAIL

USE TYPICAL SECTION NO. 16

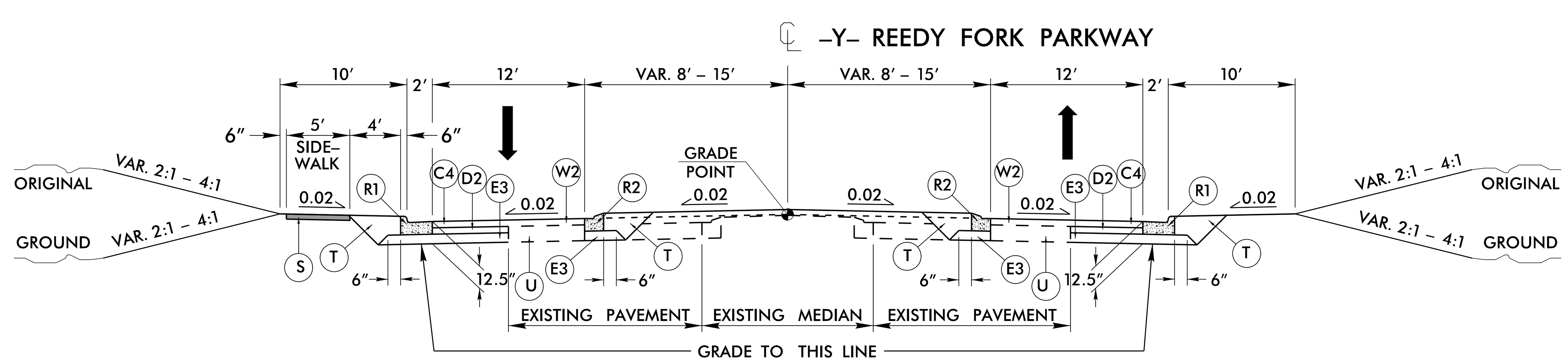
–Y– STA. 37+36.73 TO –Y– STA. 40+60.76 (BEGIN BRIDGE)
–Y– STA. 42+18.26 (END BRIDGE) TO –Y– STA. 45+29.96



TYPICAL SECTION NO. 17

USE TYPICAL SECTION NO. 17

–Y– STA. 40+60.76 (BEGIN BRIDGE) TO –Y– STA. 42+18.26 (END BRIDGE)



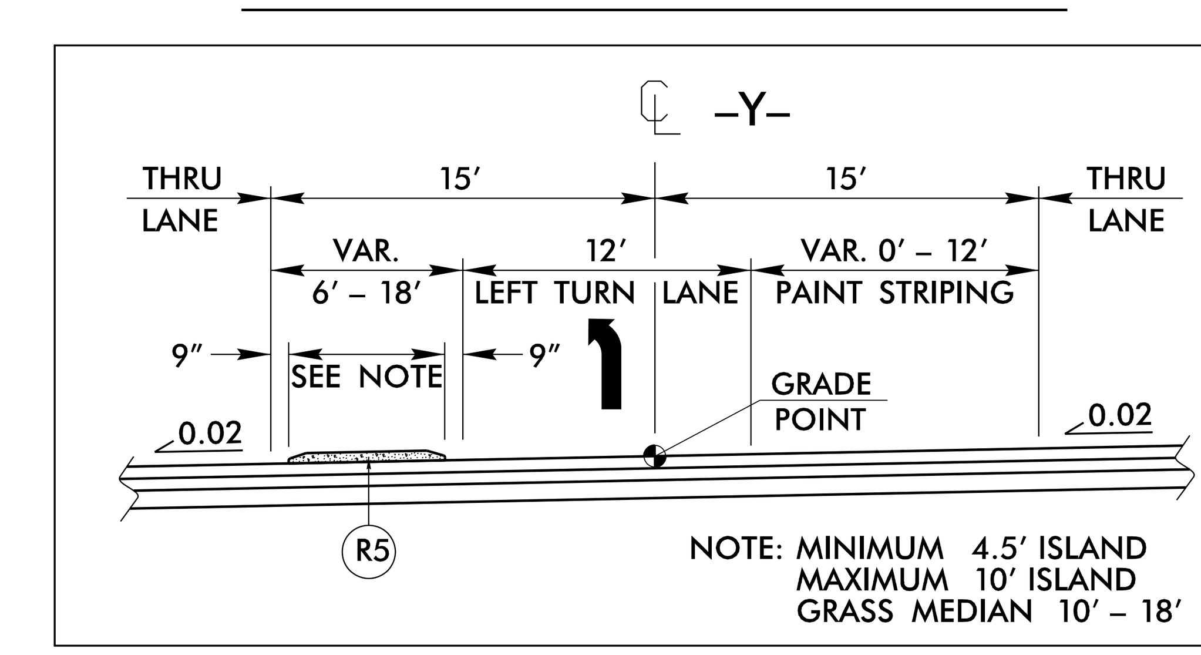
TYPICAL SECTION NO. 18

NOTE: SEE OFFSET LEFT TURN DETAIL

USE TYPICAL SECTION NO. 18

–Y– STA. 54+50.00 TO –Y– STA. 58+80.00

OFFSET LEFT TURN DETAIL

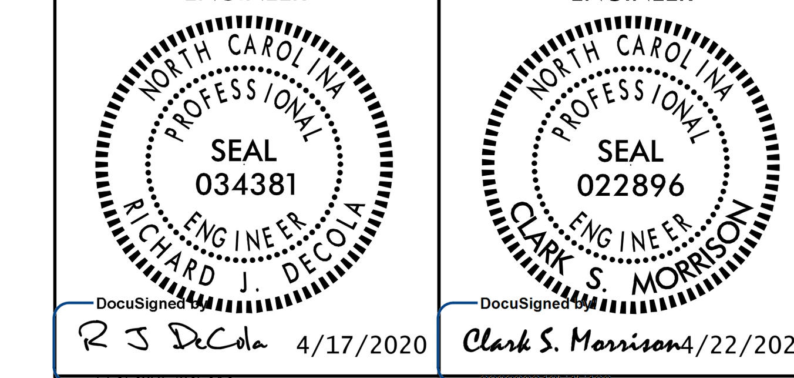


USE OFFSET LEFT TURN DETAIL

–Y– STA. 25+75.00 TO –Y– STA. 27+50.00
–Y– STA. 52+75.00 TO –Y– STA. 54+50.00
–Y– STA. 56+30.00 TO –Y– STA. 57+75.00

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2A-8

ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER



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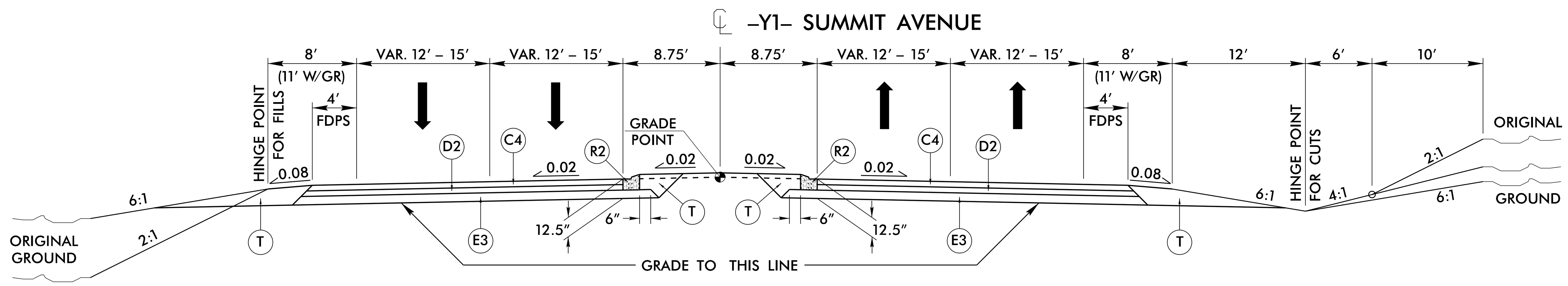
PAVEMENT SCHEDULE	
C4	3" SURFACE COURSE TYPE S9.5C
D2	4" INTER. COURSE TYPE I19.0C
E3	5½" BASE COURSE TYPE B25.0C
R2	1'-6" CONC. CURB AND GUTTER
R5	5" MONOLITHIC CONC. ISLAND
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W2	VAR. DEPTH ASPHALT PAVEMENT

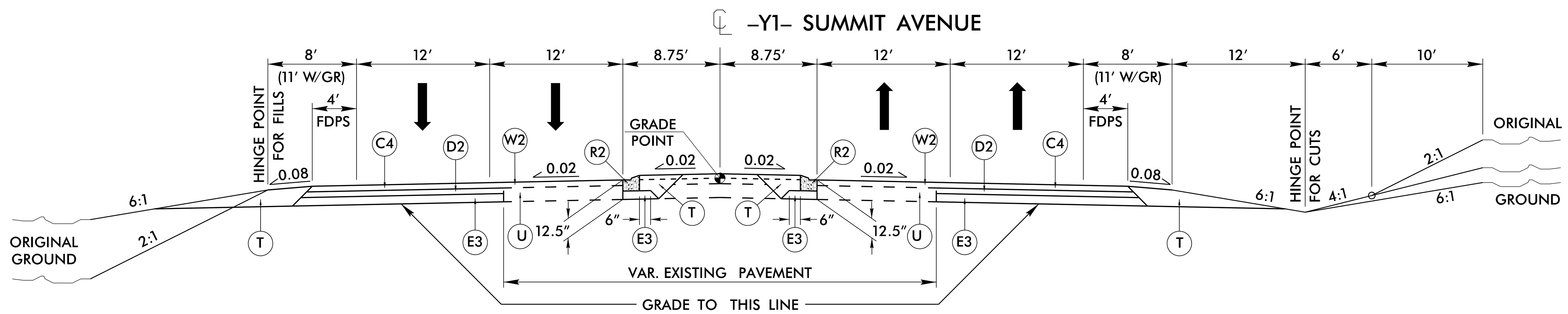


TYPICAL SECTION NO. 19

NOTE: SEE LEFT TURN DETAIL

USE TYPICAL SECTION NO. 19

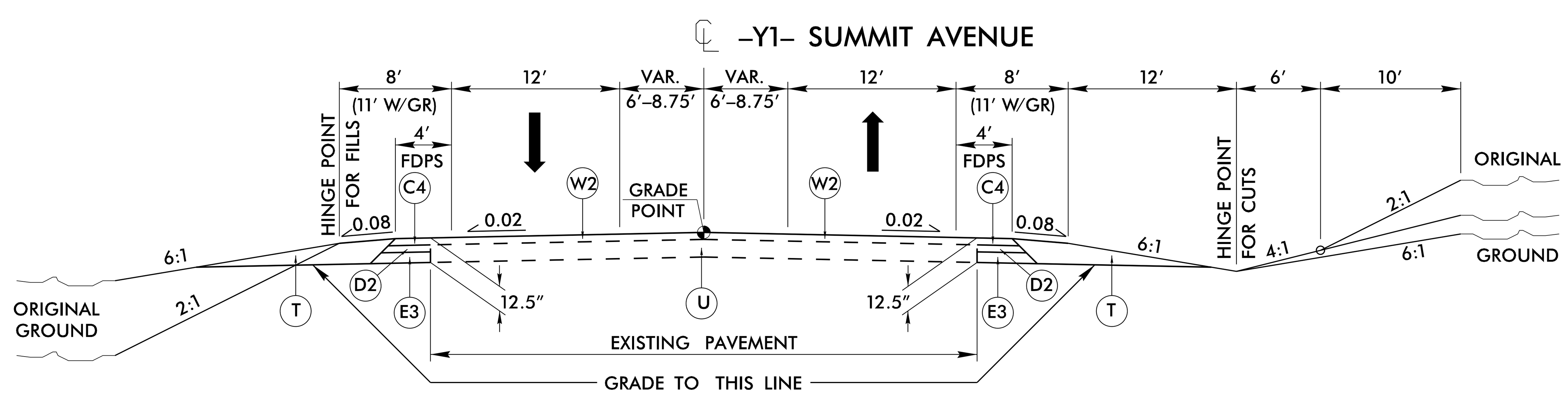
-Y1- STA. 10+27.02 TO -Y1- STA. 18+00.00



TYPICAL SECTION NO. 20

USE TYPICAL SECTION NO. 20

-Y1- STA. 18+00.00 TO -Y1- STA. 31+75.00

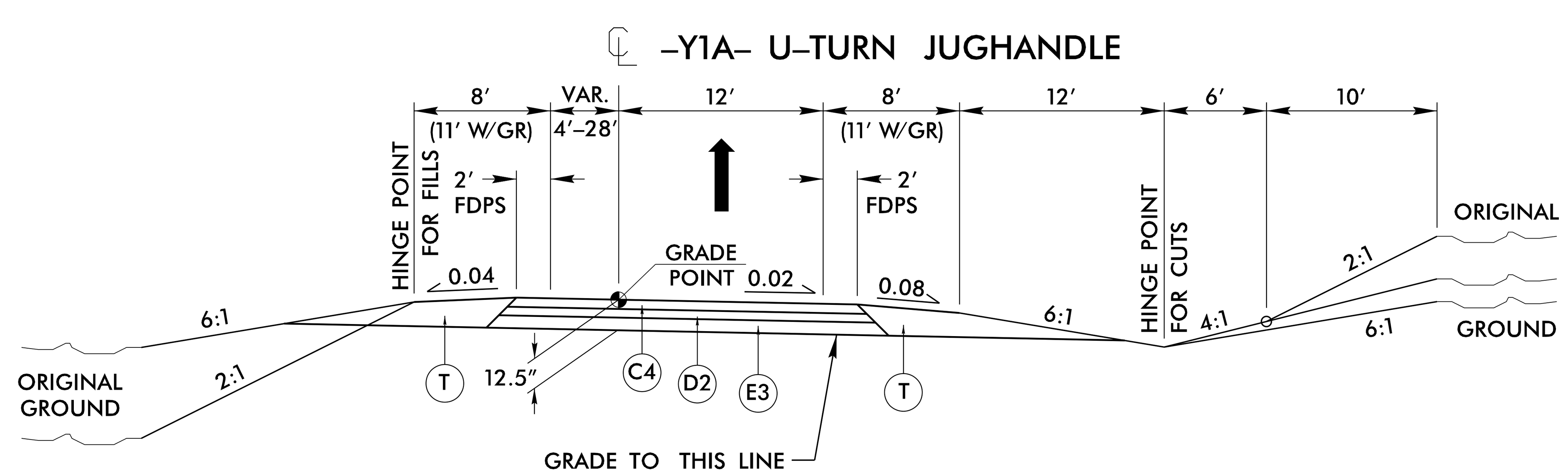


TYPICAL SECTION NO. 21

NOTE: TIE PROPOSED PAVEMENT MARKINGS TO EXISTING AT -Y1- STA. 35+50.00

USE TYPICAL SECTION NO. 21

-Y1- STA. 31+75.00 TO -Y1- STA. 34+50.00

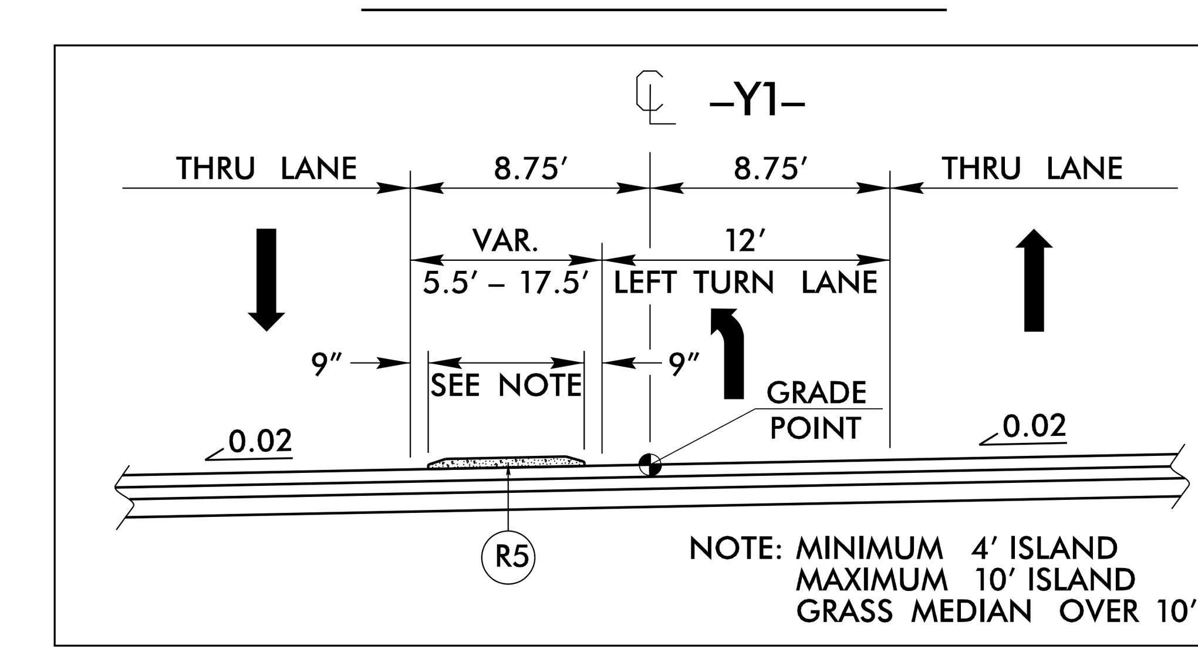


TYPICAL SECTION NO. 22

USE TYPICAL SECTION NO. 22

-Y1A- STA. 26+50.00 TO -Y1A- STA. 31+95.67

LEFT TURN DETAIL

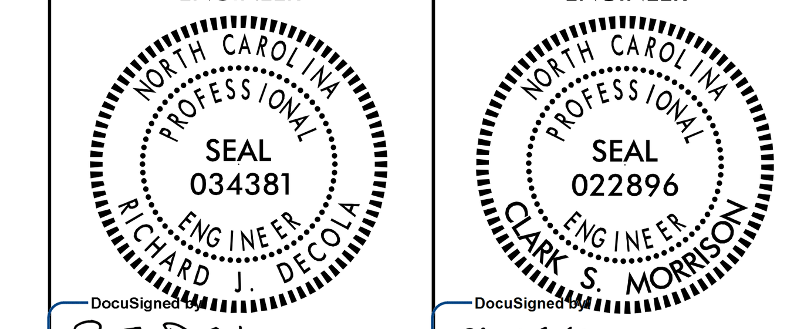


USE LEFT TURN DETAIL

-Y1- STA. 10+75.00 TO -Y1- STA. 14+25.00

-Y1- STA. 16+00.00 TO -Y1- STA. 18+00.00

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2A-9
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER



R J DeCola 4/17/2020 | Clark S. Morrison 4/22/2020

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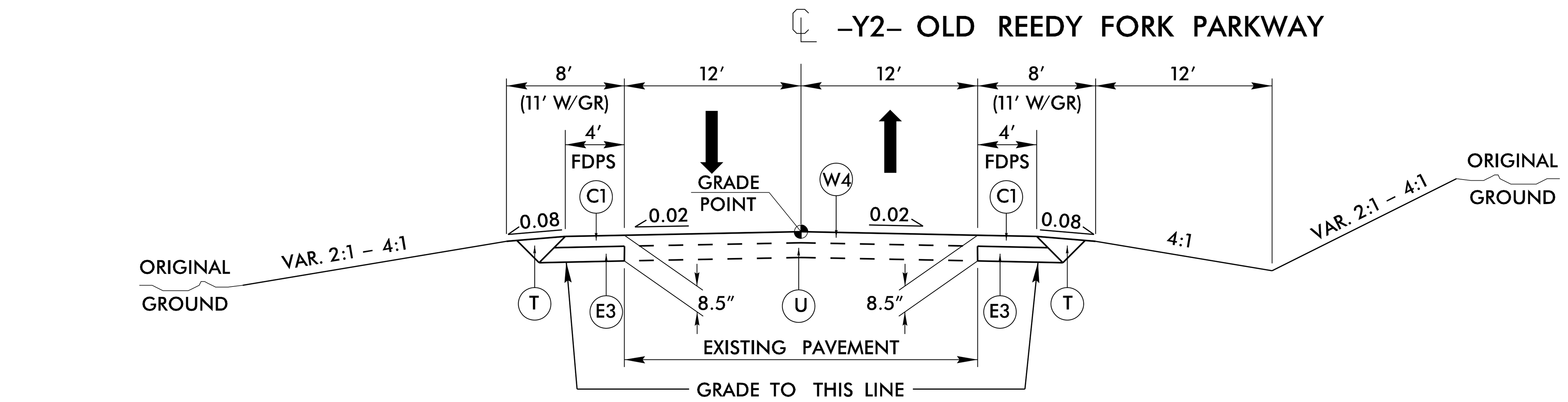
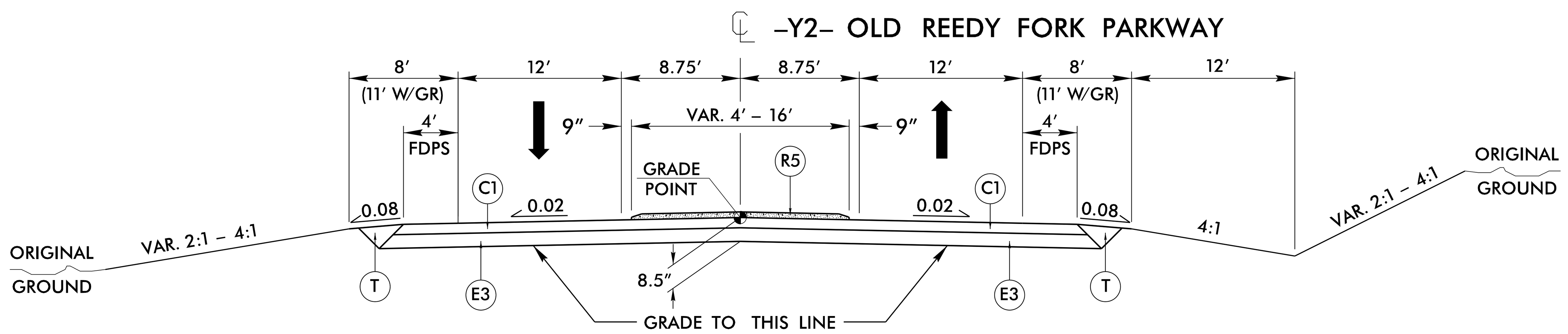
PAVEMENT SCHEDULE

C1	3" SURFACE COURSE TYPE S9.5B
C4	3" SURFACE COURSE TYPE S9.5C
D1	3" INTER. COURSE TYPE I19.0C
D2	4" INTER. COURSE TYPE I19.0C
E2	4" BASE COURSE TYPE B25.0C
E3	5½" BASE COURSE TYPE B25.0C
R1	2'-6" CONC. CURB AND GUTTER
R5	5" MONOLITHIC CONC. ISLAND
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W2	VAR. DEPTH ASPHALT PAVEMENT
W3	VAR. DEPTH ASPHALT PAVEMENT
W4	VAR. DEPTH ASPHALT PAVEMENT



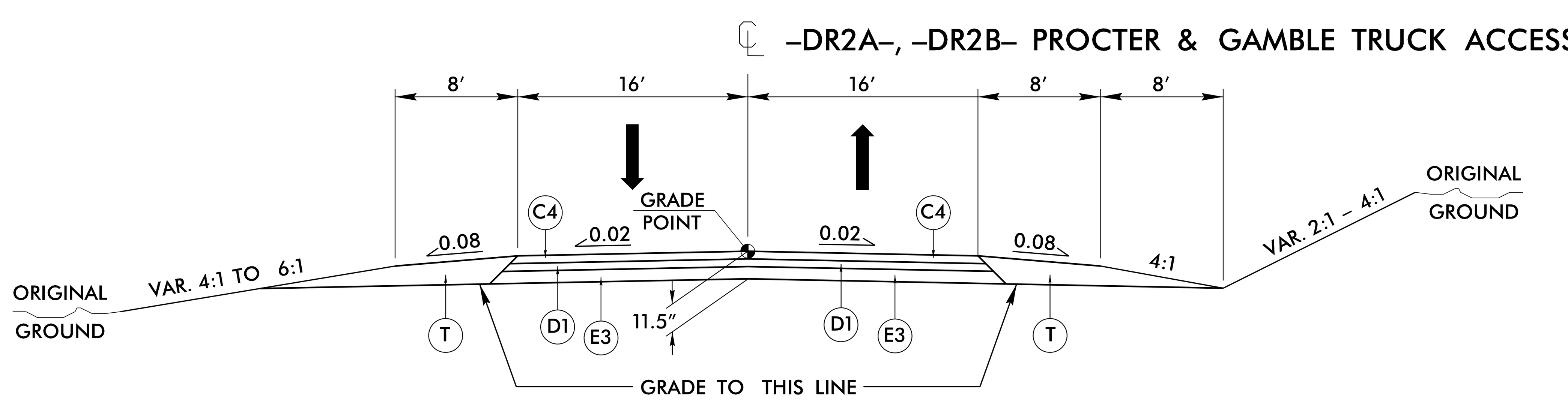
TYPICAL SECTION NO. 23

USE TYPICAL SECTION NO. 23
-Y2- STA. 10+50.00 TO -Y2- STA. 12+69.50



TYPICAL SECTION NO. 24

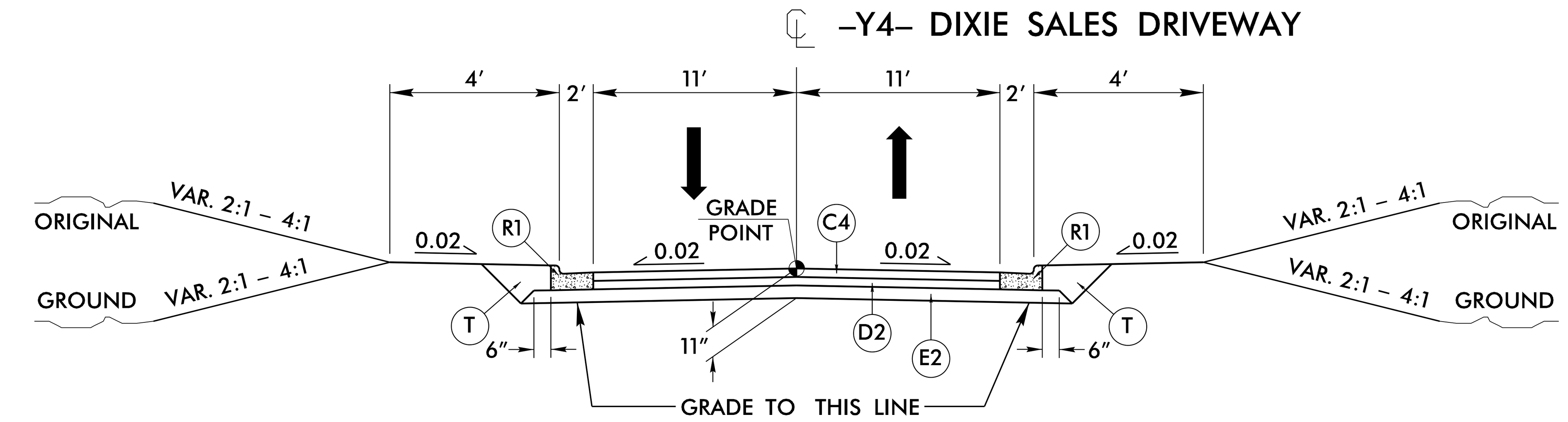
USE TYPICAL SECTION NO. 24
-Y2- STA. 12+69.50 TO -Y2- STA. 20+28.26



TYPICAL SECTION NO. 25

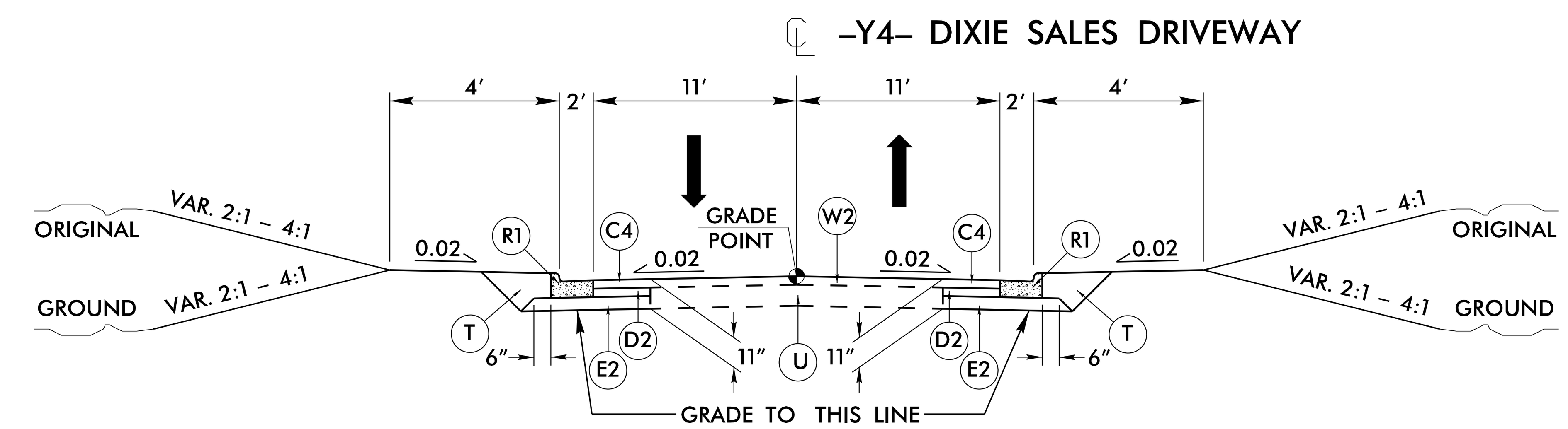
NOTE: MAINTAIN EXISTING PARKING LOT BETWEEN -DR2A- & -DR2B-. SAWCUT OUTER EDGES.

USE TYPICAL SECTION NO. 25
-DR2A- STA. 11+90.00 TO -DR2A- STA. 17+20.21
-DR2B- STA. 10+65.00 TO -DR2B- STA. 14+02.98



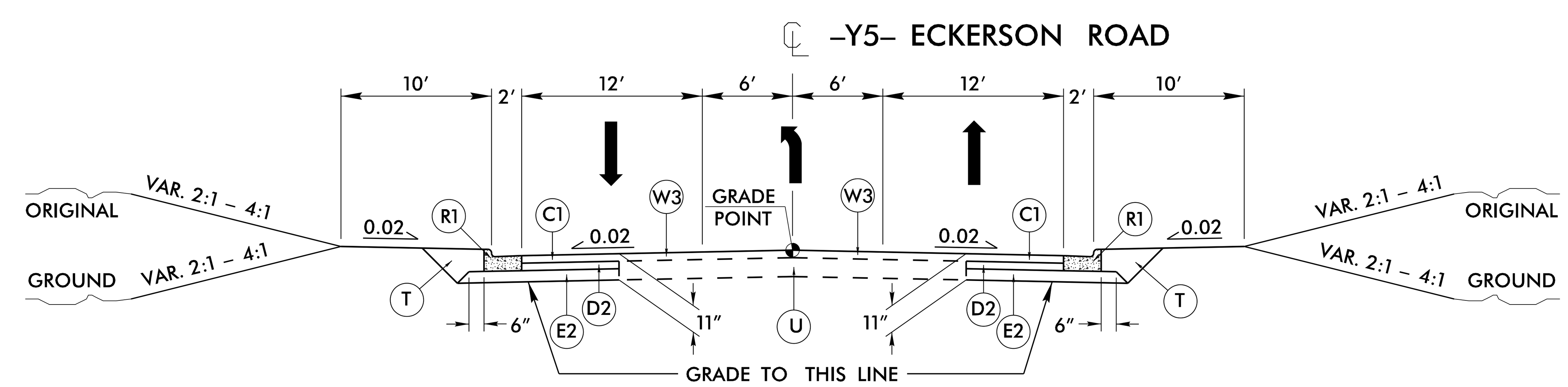
TYPICAL SECTION NO. 26

USE TYPICAL SECTION NO. 26
-Y4- STA. 10+27.02 TO -Y4- STA. 14+00.00



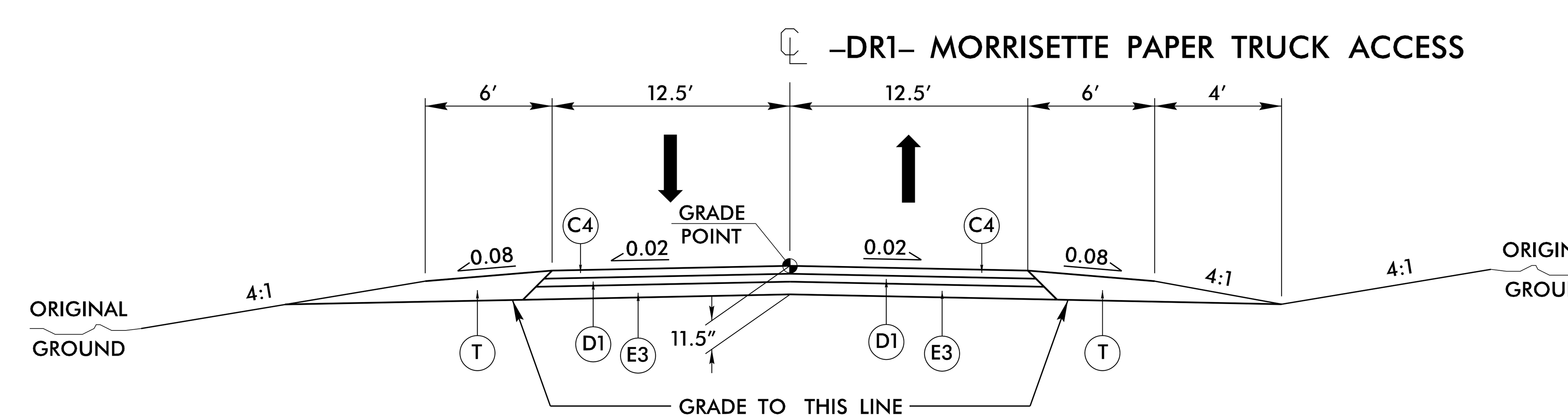
TYPICAL SECTION NO. 27

USE TYPICAL SECTION NO. 27
-Y4- STA. 14+00.00 TO -Y4- STA. 14+65.00



TYPICAL SECTION NO. 28

USE TYPICAL SECTION NO. 28
-Y5- STA. 10+27.00 TO -Y5- STA. 12+10.00



TYPICAL SECTION NO. 29

USE TYPICAL SECTION NO. 29
-DR1- STA. 10+15.00 TO -DR1- STA. 13+27.18

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2B-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034381 ENGINEER RICHARD J. DECOLA

DocuSigned by: R J DeCola 4/17/2020

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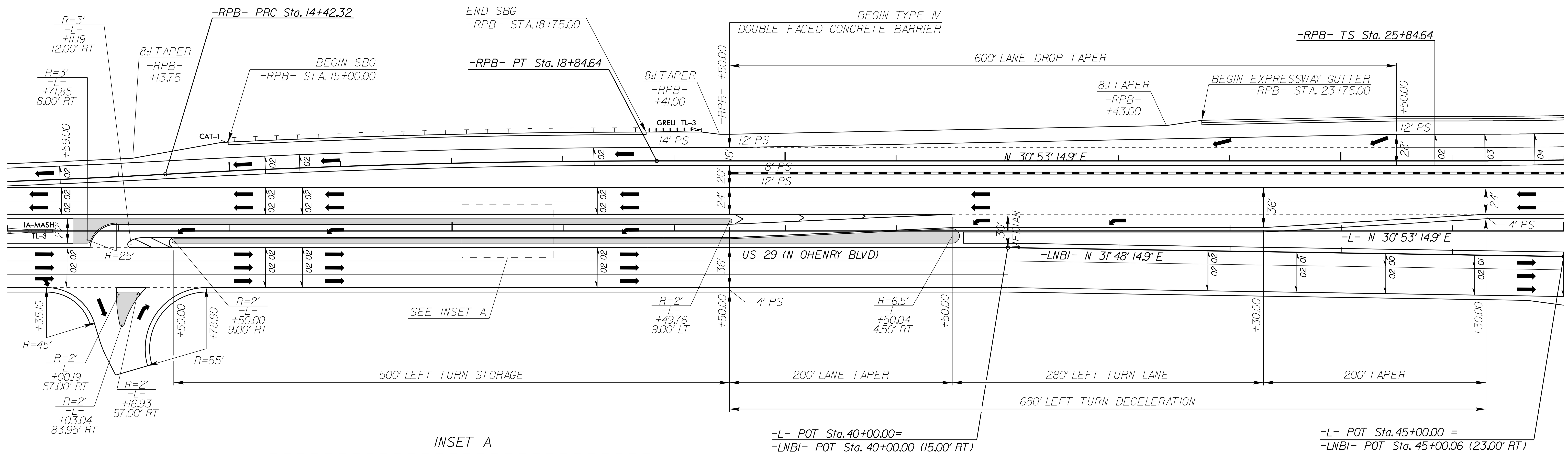
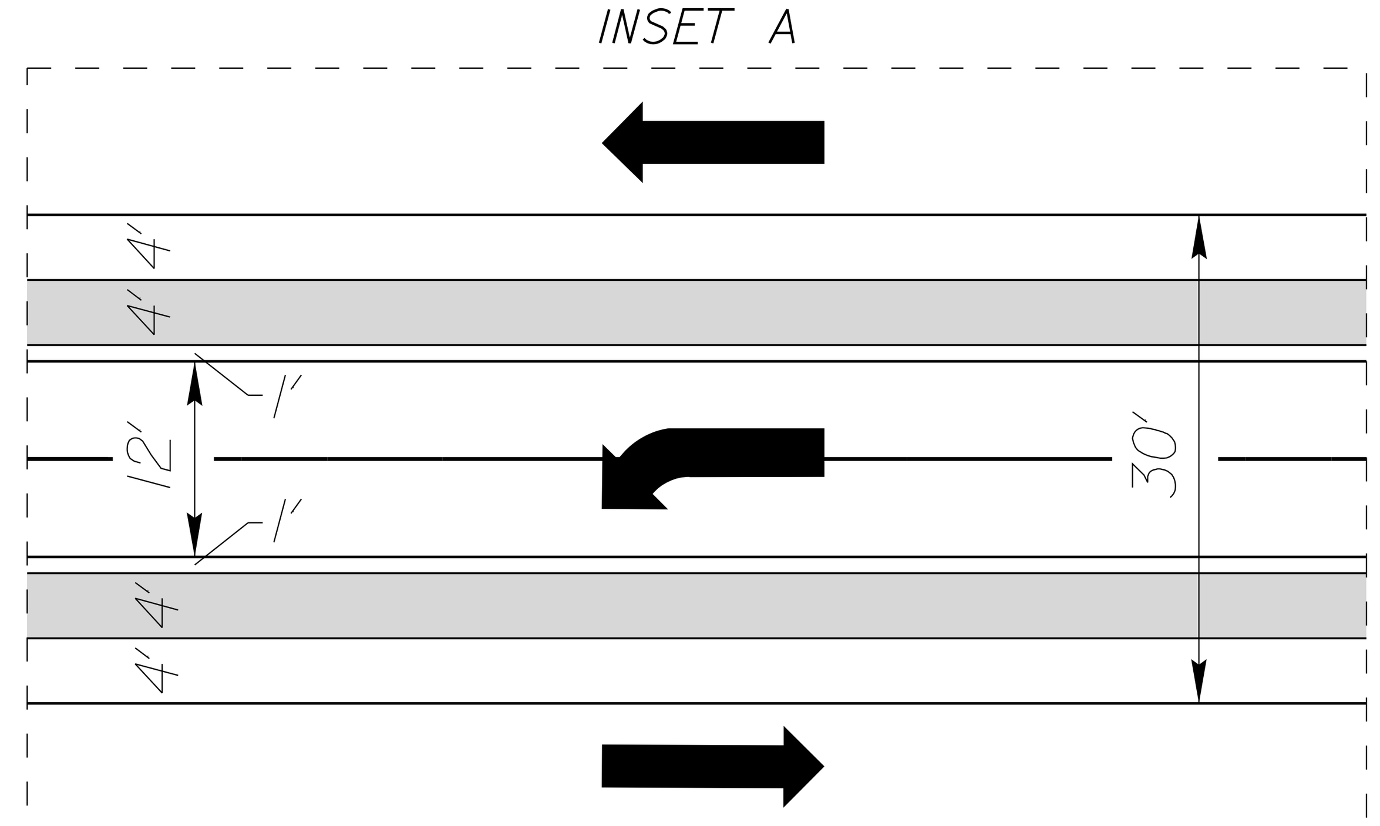
GRAPHIC SCALE
50 25 0 50 100
PLANS

US 29 SOUTHBOUND LEFTOVER DETAIL



INSET A



FOR PLANS, SEE SHEETS 4 & 5

06-MAR-2020 16:29
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2B-2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034381 ENGINEER RICHARD J. DECOLA

R J DeCola 4/17/2020

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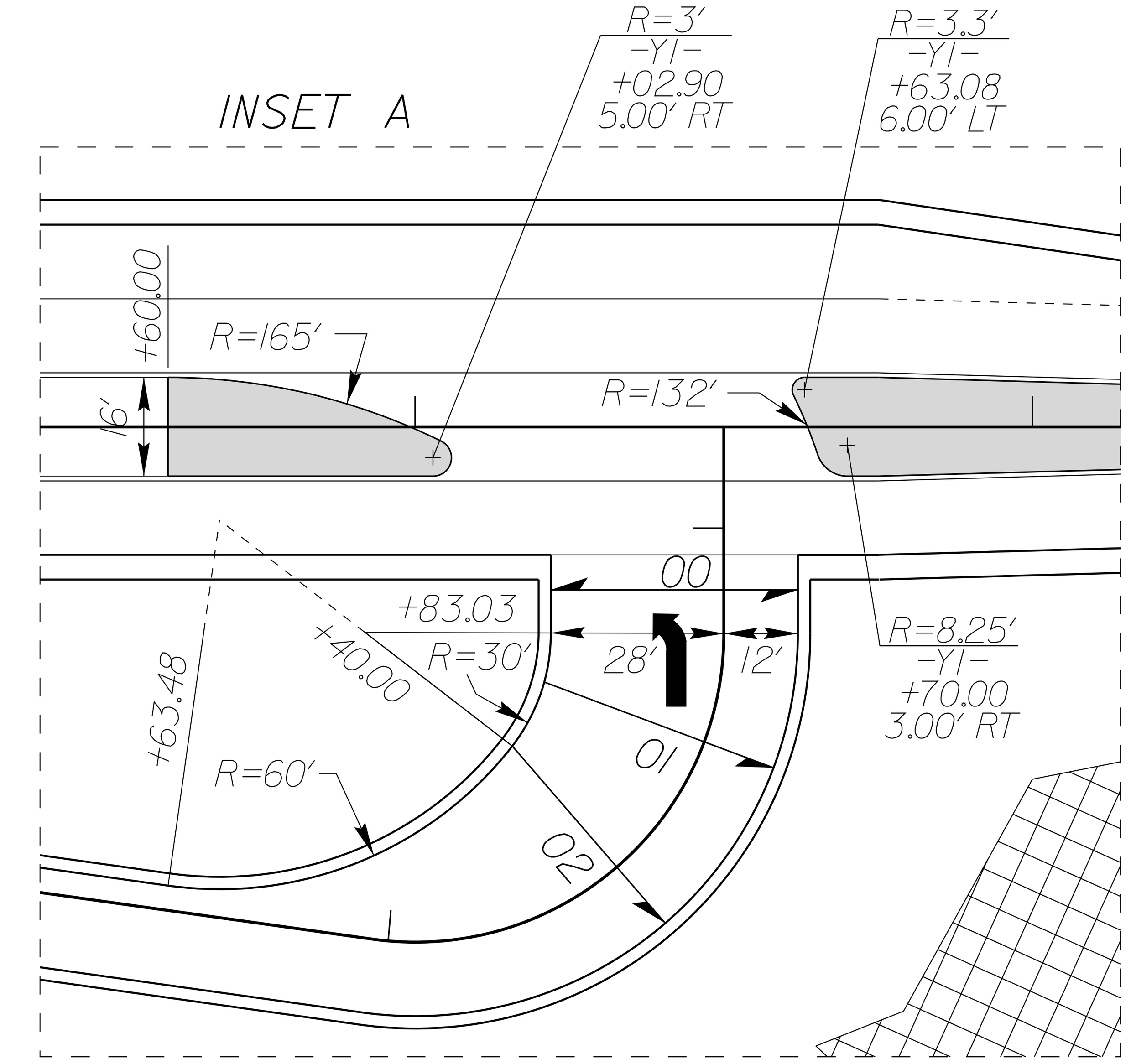
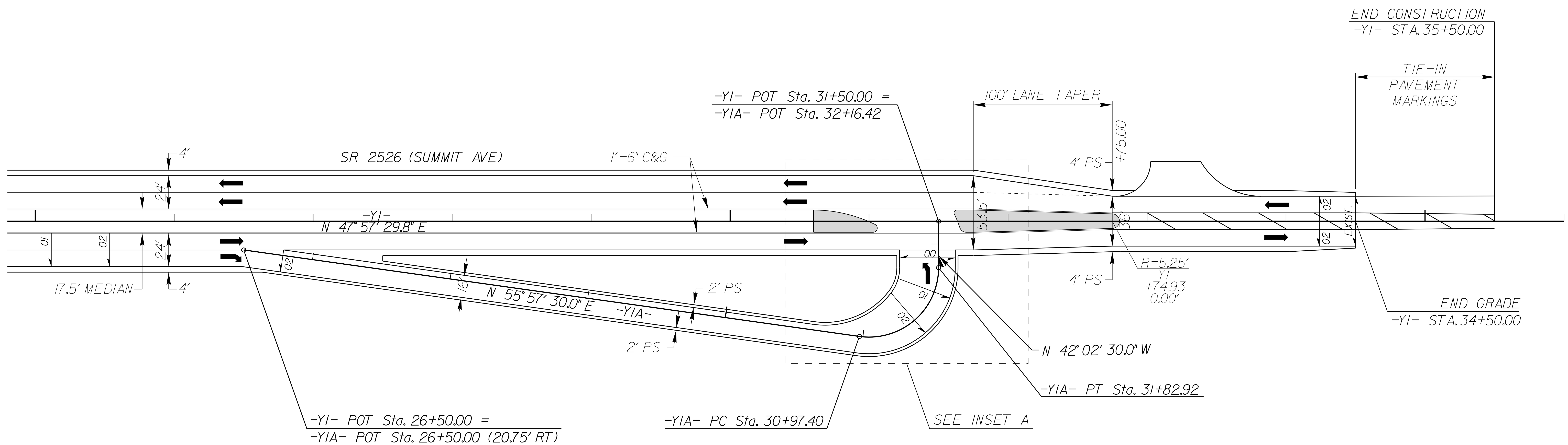
GRAPHIC SCALE
40 20 0 40 80
PLANS

SUMMIT AVENUE JUGHANDLE DETAIL



25 30 35



FOR PLANS, SEE SHEET 6

02-MAR-2020 18:26
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1784rd

8/17/99

REEDY FORK PARKWAY, SUMMIT AVENUE & DIXIE SALES DRIVEWAY INTERSECTION DETAIL

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2B-3

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034381 ENGINEER RICHARD J DECOA

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EF1545DF704F4A2...

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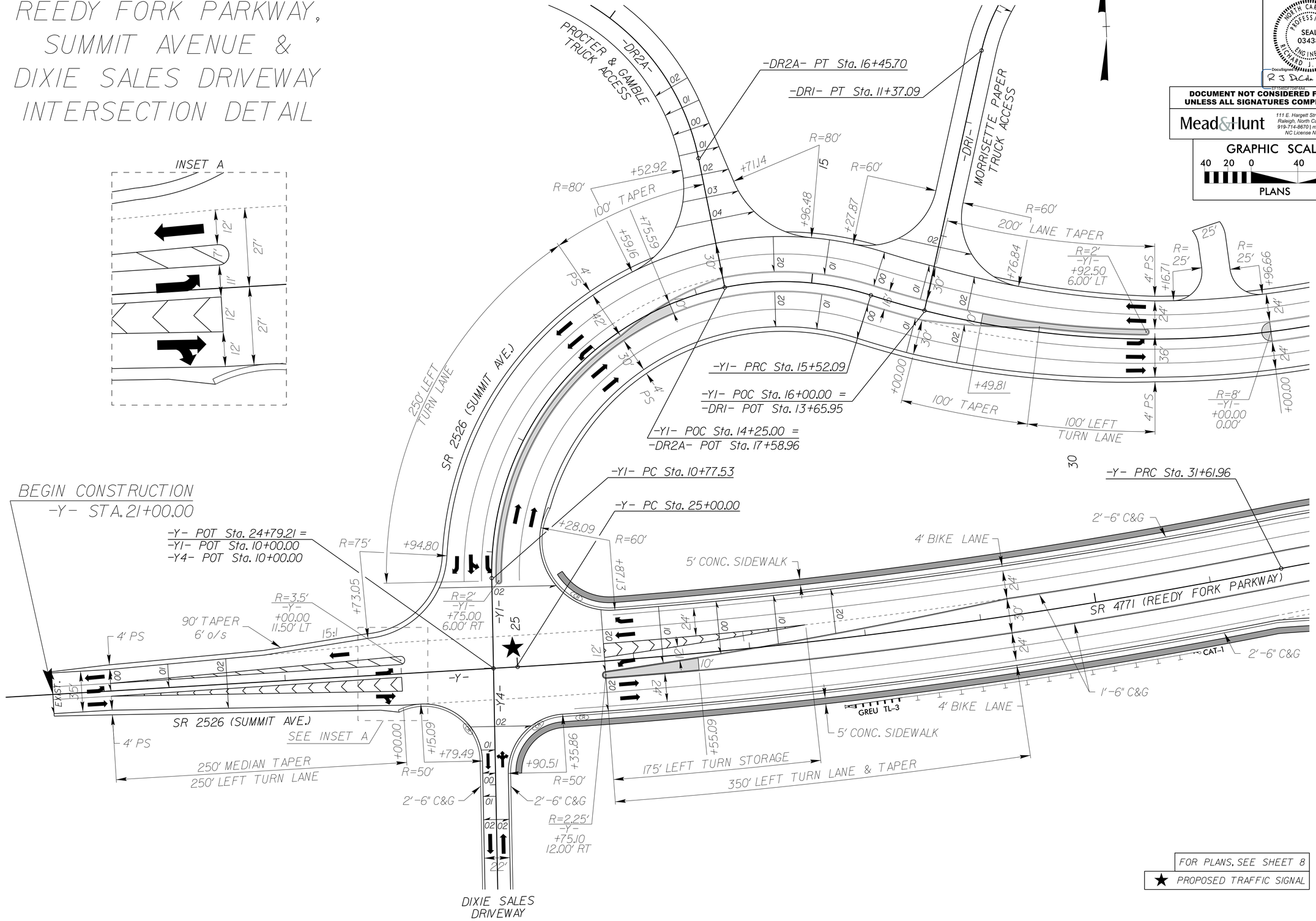
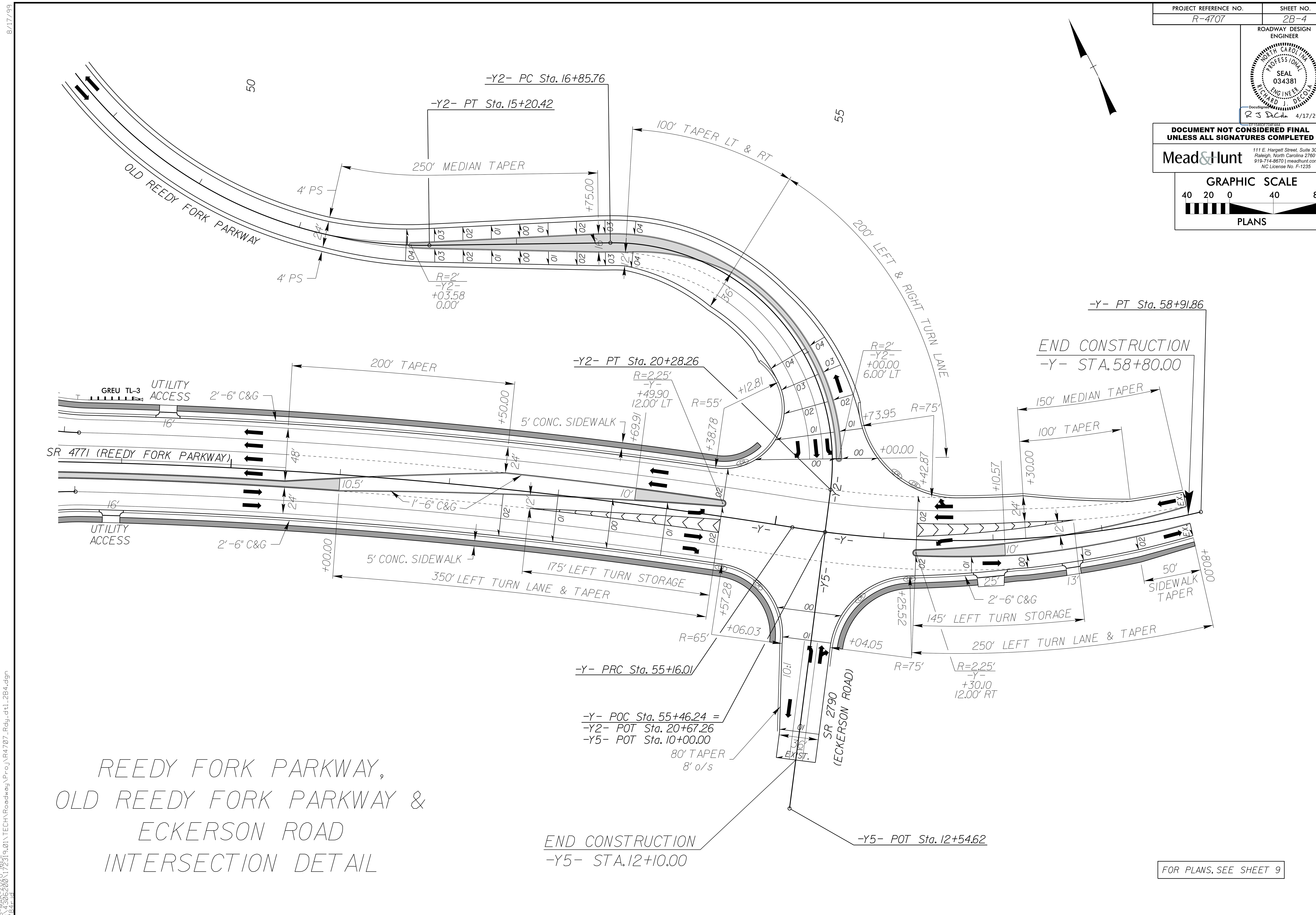
GRAPHIC SCALE
40 20 0 40 80
PLANS

INSET A




PROJECT REFERENCE NO. R-4707
SHEET NO. 2B-4
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034381 ENGINEER RICHARD J. DECOLA
R J DeCola 4/17/2020
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GRAPHIC SCALE
40 20 0 40 80
PLANS
-Y2- PC Sta. 16+85.76
-Y2- PT Sta. 15+20.42
100' TAPER LT & RT
250' MEDIAN TAPER
200' LEFT & RIGHT TURN LANE
OLD REEDY FORK PARKWAY
4' PS
4' PS
R=2' -Y2- +03.58 0.00'
-Y- PT Sta. 58+91.86
END CONSTRUCTION -Y- STA. 58+80.00
R=2' -Y2- +00.00 6.00' LT
-Y2- PT Sta. 20+28.26
R=2.25' -Y- +49.90 12.00' LT
R=55'
R=75'
150' MEDIAN TAPER
100' TAPER
200' TAPER
GREU TL-3
UTILITY ACCESS
2'-6" C&G
5' CONC. SIDEWALK
SR 4771 (REEDY FORK PARKWAY)
10.5'
1'-6" C&G
UTILITY ACCESS
2'-6" C&G
5' CONC. SIDEWALK
175' LEFT TURN STORAGE
350' LEFT TURN LANE & TAPER
R=65'
-Y- PRC Sta. 55+16.01
-Y- POC Sta. 55+46.24 =
-Y2- POT Sta. 20+67.26
-Y5- POT Sta. 10+00.00
80' TAPER 8' o/s
SR 2790 (ECKERSON ROAD)
2'-6" C&G
145' LEFT TURN STORAGE
250' LEFT TURN LANE & TAPER
50' SIDEWALK TAPER
R=75'
R=2.25' -Y- +30.10 12.00' RT
END CONSTRUCTION -Y5- STA. 12+10.00
-Y5- POT Sta. 12+54.62
FOR PLANS, SEE SHEET 9

REEDY FORK PARKWAY, OLD REEDY FORK PARKWAY & ECKERSON ROAD INTERSECTION DETAIL

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2B-5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034381 ENGINEER RICHARD J. DECOLA

DocuSigned by: R J DeCola 4/17/2020

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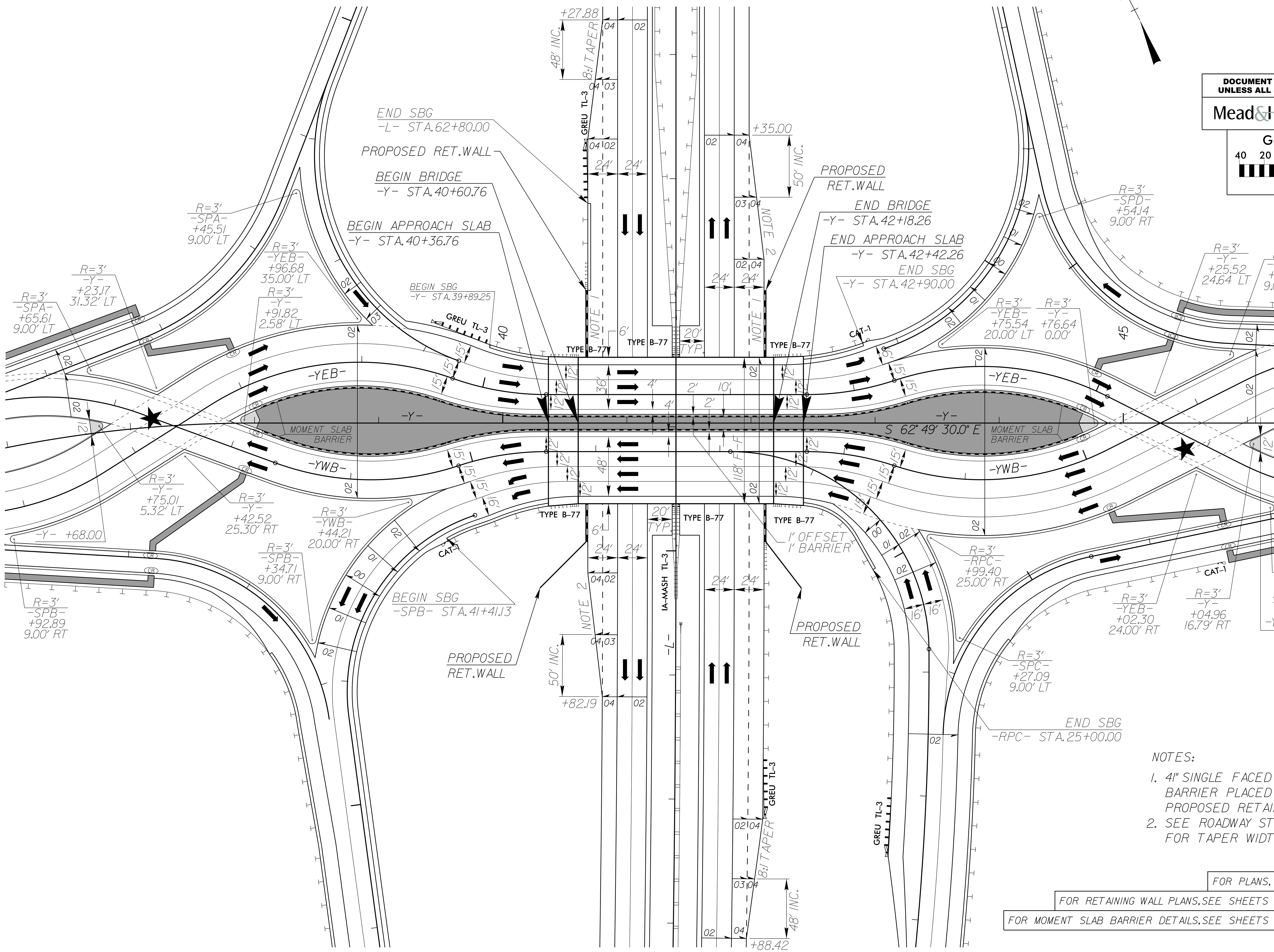
GRAPHIC SCALE
40 20 0 40 80
PLANS

RELATIONSHIP OF BRIDGE TO PROPOSED PAVEMENT


+27.88
48' INC.
8:1 TAPER
GREU TL-3
END SBG
-L- STA.62+80.00
PROPOSED RET.WALL
BEGIN BRIDGE
-Y- STA.40+60.76
BEGIN APPROACH SLAB
-Y- STA.40+36.76
BEGIN SBG
-Y- STA.39+89.25
+35.00
50' INC.
NOTE 2
NOTE 1
PROPOSED
RET.WALL
END BRIDGE
-Y- STA.42+18.26
END APPROACH SLAB
-Y- STA.42+42.26
END SBG
-Y- STA.42+90.00
R=3'
-SPA-
+45.51
9.00' LT
R=3'
-YEB-
+96.68
35.00' LT
R=3'
-Y-
+91.82
2.58' LT
R=3'
-Y-
+23.17
31.32' LT
R=3'
-SPA-
+65.61
9.00' LT
R=3'
-SPD-
+54.14
9.00' RT
R=3'
-Y-
+25.52
24.64' LT
R=3'
-SPD-
+44.72
9.00' RT
R=3'
-YEB-
+75.54
20.00' LT
R=3'
-Y-
+76.64
0.00'
TYPE B-77
CAT-1
-YEB-
-Y-
-YWB-
MOMENT SLAB
BARRIER
S 62° 49' 30.0" E
R=3'
-Y-
+75.01
5.32' LT
R=3'
-Y-
+42.52
25.30' RT
R=3'
-YWB-
+44.21
20.00' RT
R=3'
-SPB-
+34.71
9.00' RT
-Y- +68.00
R=3'
-SPB-
+92.89
9.00' RT
BEGIN SBG
-SPB- STA.41+41.13
PROPOSED
RET.WALL
50' INC.
+82.19
IA-MASH TL-3
-L-
1' OFFSET
1' BARRIER
R=3'
-RPC-
+99.40
25.00' RT
R=3'
-YEB-
+02.30
24.00' RT
R=3'
-Y-
+04.96
16.79' RT
R=3'
-SPC-
+00.59
9.00' LT
-Y- +10.50
R=3'
-SPC-
+27.09
9.00' LT
END SBG
-RPC- STA.25+00.00
+88.42
48' INC.
8:1 TAPER

NOTES:

1. 41" SINGLE FACED CONCRETE BARRIER PLACED IN FRONT OF PROPOSED RETAINING WALL.
2. SEE ROADWAY STD. 610.04 FOR TAPER WIDTHS.

FOR PLANS, SEE SHEET 6
FOR RETAINING WALL PLANS, SEE SHEETS W-1 THRU W-5
FOR MOMENT SLAB BARRIER DETAILS, SEE SHEETS 2B-9 & 2B-10

06-MAR-2020 16:32
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2B-6

ROADWAY DESIGN ENGINEER

SEAL 034381 — NORTH CAROLINA PROFESSIONAL ENGINEER — RICHARD J. DECOLA

R J DeCola 4/17/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Mead&Hunt
111 E. Hargett Street, Suite 300
Raleigh, North Carolina 27601
919-714-8670 | meadhunt.com
NC License No. F-1235

PLAN SHEET 6 HORIZONTAL CURVE DATA

-YEB- CURVE DATA

PI Sta 34+89.32	PI Sta 36+04.64	PI Sta 38+80.35	PI Sta 40+13.51	PI Sta 42+97.73	PI Sta 44+26.46	PI Sta 47+28.23	PI Sta 48+58.51
△ = 22° 57′ 30.0″ (RT)	△ = 34° 57′ 30.0″ (LT)	△ = 51° 54′ 33.7″ (RT)	△ = 19° 35′ 05.8″ (LT)	△ = 18° 15′ 00.0″ (LT)	△ = 45° 00′ 00.0″ (RT)	△ = 47° 11′ 03.3″ (LT)	△ = 21° 45′ 39.0″ (RT)
D = 25° 27′ 53.2″	D = 25° 27′ 53.2″	D = 25° 27′ 53.2″	D = 25° 27′ 53.2″	D = 25° 27′ 53.2″	D = 25° 27′ 53.2″	D = 25° 27′ 53.2″	D = 25° 27′ 53.2″
L = 90.16′	L = 137.28′	L = 203.85′	L = 76.91′	L = 71.67′	L = 176.71′	L = 185.29′	L = 85.45′
T = 45.69′	T = 70.85′	T = 109.52′	T = 38.83′	T = 36.14′	T = 93.20′	T = 98.26′	T = 43.25′
R = 225.00′	R = 225.00′	R = 225.00′	R = 225.00′	R = 225.00′	R = 225.00′	R = 225.00′	R = 225.00′
e = NC	e = NC	e = NC	e = NC	e = NC	e = NC	e = NC	e = NC

-L- CURVE DATA

PI Sta 52+64.99
△ = 3° 42′ 45.0″ (LT)
D = 0° 15′ 00.0″
L = 1,485.00′
T = 742.76′
R = 22,918.31′
e = NC

-YWB- CURVE DATA

PI Sta 36+45.12	PI Sta 39+15.95	PI Sta 40+24.47	PI Sta 43+06.20	PI Sta 44+34.93	PI Sta 47+43.55	PI Sta 48+73.67
△ = 41° 26′ 32.2″ (RT)	△ = 38° 19′ 53.3″ (LT)	△ = 18° 16′ 52.4″ (RT)	△ = 18° 15′ 00.0″ (RT)	△ = 45° 00′ 00.0″ (LT)	△ = 48° 38′ 54.4″ (RT)	△ = 20° 32′ 53.3″ (LT)
D = 25° 27′ 53.2″	D = 25° 27′ 53.2″	D = 25° 27′ 53.2″	D = 25° 27′ 53.2″	D = 25° 27′ 53.2″	D = 25° 27′ 53.2″	D = 25° 27′ 53.2″
L = 162.74′	L = 150.53′	L = 71.79′	L = 71.67′	L = 176.71′	L = 191.04′	L = 80.69′
T = 85.12′	T = 78.20′	T = 36.20′	T = 36.14′	T = 93.20′	T = 101.71′	T = 40.78′
R = 225.00′	R = 225.00′	R = 225.00′	R = 225.00′	R = 225.00′	R = 225.00′	R = 225.00′
e = NC	e = NC	e = NC	e = NC	e = NC	e = NC	e = NC

-Y- CURVE DATA

PI Sta 34+91.35	PI Sta 51+32.55
△ = 36° 27′ 48.1″ (RT)	△ = 9° 10′ 26.7″ (RT)
D = 5° 43′ 46.5″	D = 1° 11′ 37.2″
L = 636.41′	L = 768.57′
T = 329.40′	T = 385.11′
R = 1,000.00′	R = 4,800.00′
e = NC	e = NC

-RPA- CURVE DATA

PIs Sta 18+24.65	PI Sta 20+52.44	PIs Sta 22+79.05	PI Sta 27+29.11
Θs = 3° 13′ 22.4″	△ = 11° 58′ 30.0″ (RT)	Θs = 3° 13′ 22.4″	△ = 91° 38′ 15.8″ (LT)
Ls = 180.00′	D = 3° 34′ 51.6″	Ls = 180.00′	D = 32° 44′ 25.6″
LT = 120.02′	L = 334.41′	LT = 120.02′	L = 279.89′
ST = 60.02′	T = 167.81′	ST = 60.02′	T = 180.08′
INC = 45′	R = 1,600.00′	INC = 45′	R = 175.00′
	e = 0.06		

-SPA- CURVE DATA

PI Sta 27+40.32
△ = 47° 23′ 06.6″ (RT)
D = 28° 38′ 52.4″
L = 165.41′
T = 87.76′
R = 200.00′

-RPB- CURVE DATA

PIs Sta 26+74.65	PI Sta 28+60.83	PIs Sta 30+46.59	PI Sta 41+95.81
Θs = 1° 50′ 29.9″	△ = 7° 41′ 32.6″ (LT)	Θs = 1° 50′ 29.9″	△ = 79° 22′ 55.2″ (RT)
Ls = 135.00′	D = 2° 43′ 42.1″	Ls = 135.00′	D = 38° 11′ 49.9″
LT = 90.00′	L = 281.94′	LT = 90.00′	L = 207.82′
ST = 45.00′	T = 141.18′	ST = 45.00′	T = 124.49′
INC = 45′	R = 2,100.00′	INC = 45′	R = 150.00′
	e = 0.05		

-SPB- CURVE DATA

PI Sta 45+18.26	PI Sta 41+95.19
△ = 26° 03′ 46.7″ (LT)	△ = 79° 05′ 53.7″ (LT)
D = 22° 55′ 05.9″	D = 38° 11′ 49.9″
L = 113.72′	L = 207.08′
T = 57.86′	T = 123.87′
R = 250.00′	R = 150.00′

-RPC- CURVE DATA

PIs Sta 10+90.00	PI Sta 12+39.90	PIs Sta 13+89.68	PI Sta 21+62.60	PI Sta 25+77.65
Θs = 1° 36′ 41.2″	△ = 5° 00′ 20.0″ (RT)	Θs = 1° 36′ 41.2″	△ = 12° 16′ 05.7″ (LT)	△ = 89° 40′ 21.7″ (LT)
Ls = 135.00′	D = 2° 23′ 14.4″	Ls = 135.00′	D = 2° 23′ 14.4″	D = 35° 48′ 35.5″
LT = 90.00′	L = 209.67′	LT = 90.00′	L = 513.89′	L = 250.41′
ST = 45.00′	T = 104.90′	ST = 45.00′	T = 257.93′	T = 159.09′
INC = 45′	R = 2,400.00′	INC = 45′	R = 2,400.00′	R = 160.00′
	e = 0.05			

-SPC- CURVE DATA

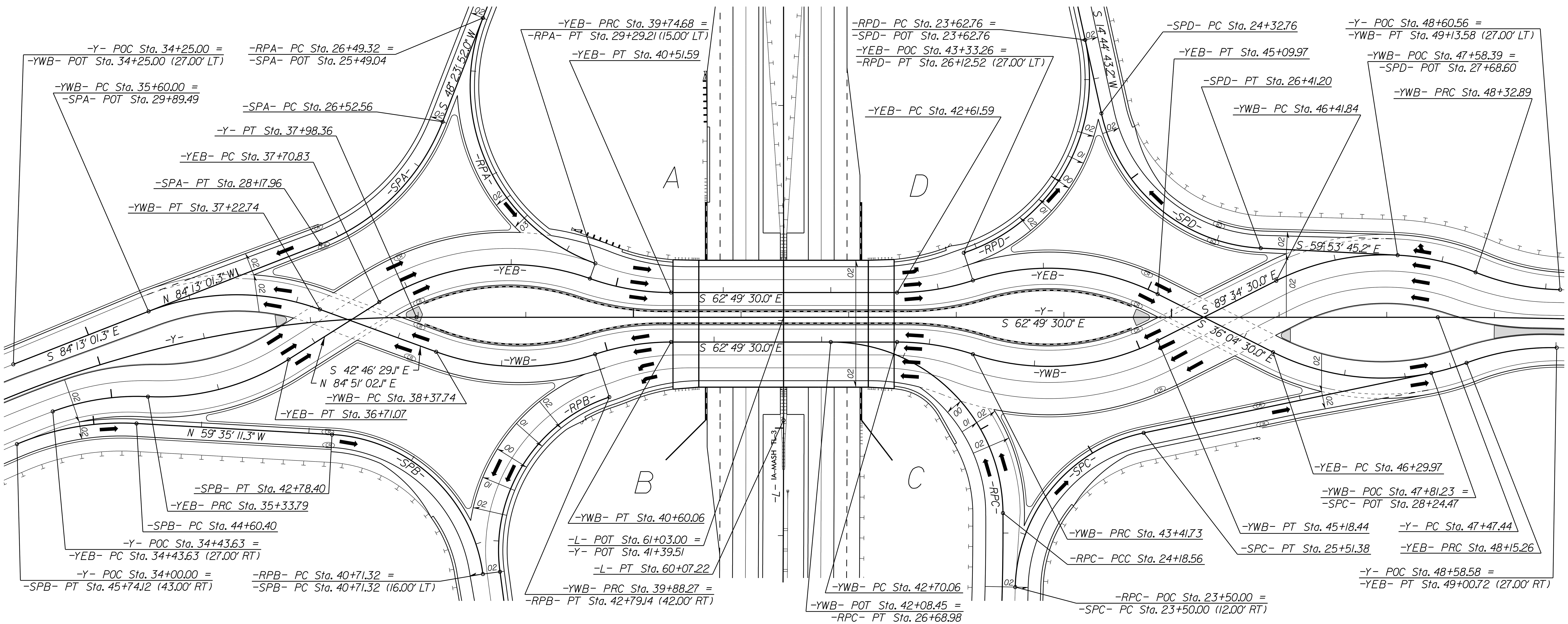
PI Sta 24+69.15
△ = 76° 55′ 23.0″ (RT)
D = 38° 11′ 49.9″
L = 201.38′
T = 119.15′
R = 150.00′

-RPD- CURVE DATA

PIs Sta 11+20.02	PI Sta 12+79.93	PIs Sta 14+39.66	PI Sta 25+16.31
Θs = 2° 56′ 47.9″	△ = 6° 32′ 10.9″ (LT)	Θs = 2° 56′ 47.9″	△ = 84° 10′ 44.0″ (RT)
Ls = 180.00′	D = 3° 16′ 26.6″	Ls = 180.00′	D = 33° 42′ 12.2″
LT = 120.02′	L = 199.64′	LT = 120.02′	L = 249.76′
ST = 60.02′	T = 99.93′	ST = 60.02′	T = 153.55′
INC = 45′	R = 1,750.00′	INC = 45′	R = 170.00′
	e = 0.06		

-SPD- CURVE DATA

PI Sta 25+54.74
△ = 74° 38′ 28.5″ (LT)
D = 35° 48′ 35.5″
L = 208.44′
T = 121.98′
R = 160.00′



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8/17/99

SHEAR POINT DIAGRAM

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2B-7

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034381 RICHARD J. DECOA

DocuSigned by: R J DeCoa 4/17/2020
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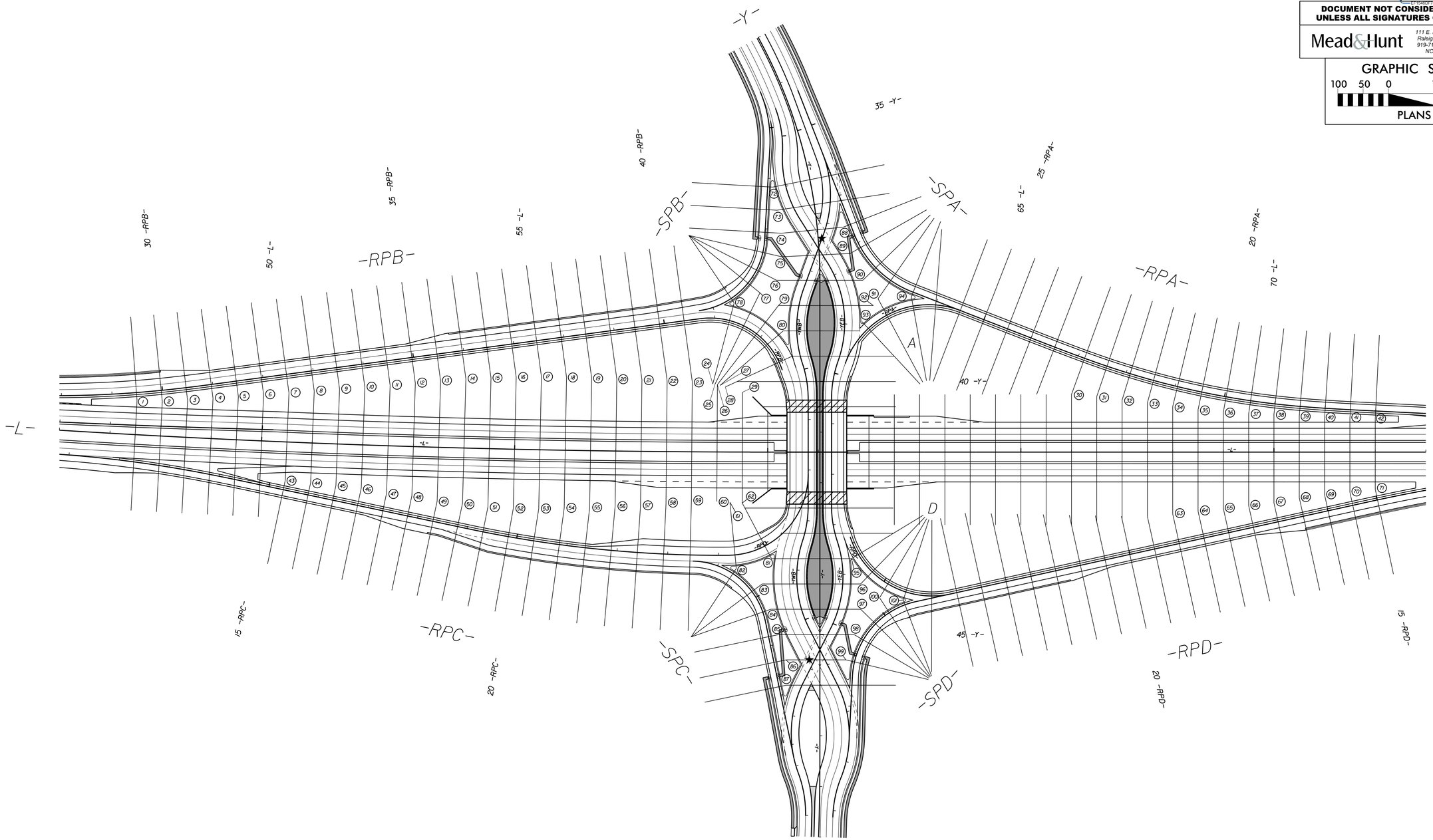
GRAPHIC SCALE
100 50 0 100 200
PLANS



8/17/99

EXISTING SHOULDER AND AUXILIARY LANE REMOVAL DETAIL

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2B-8

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034381 ENGINEER RICHARD J. DECOA

DocuSigned by: R J DeCoa 4/17/2020
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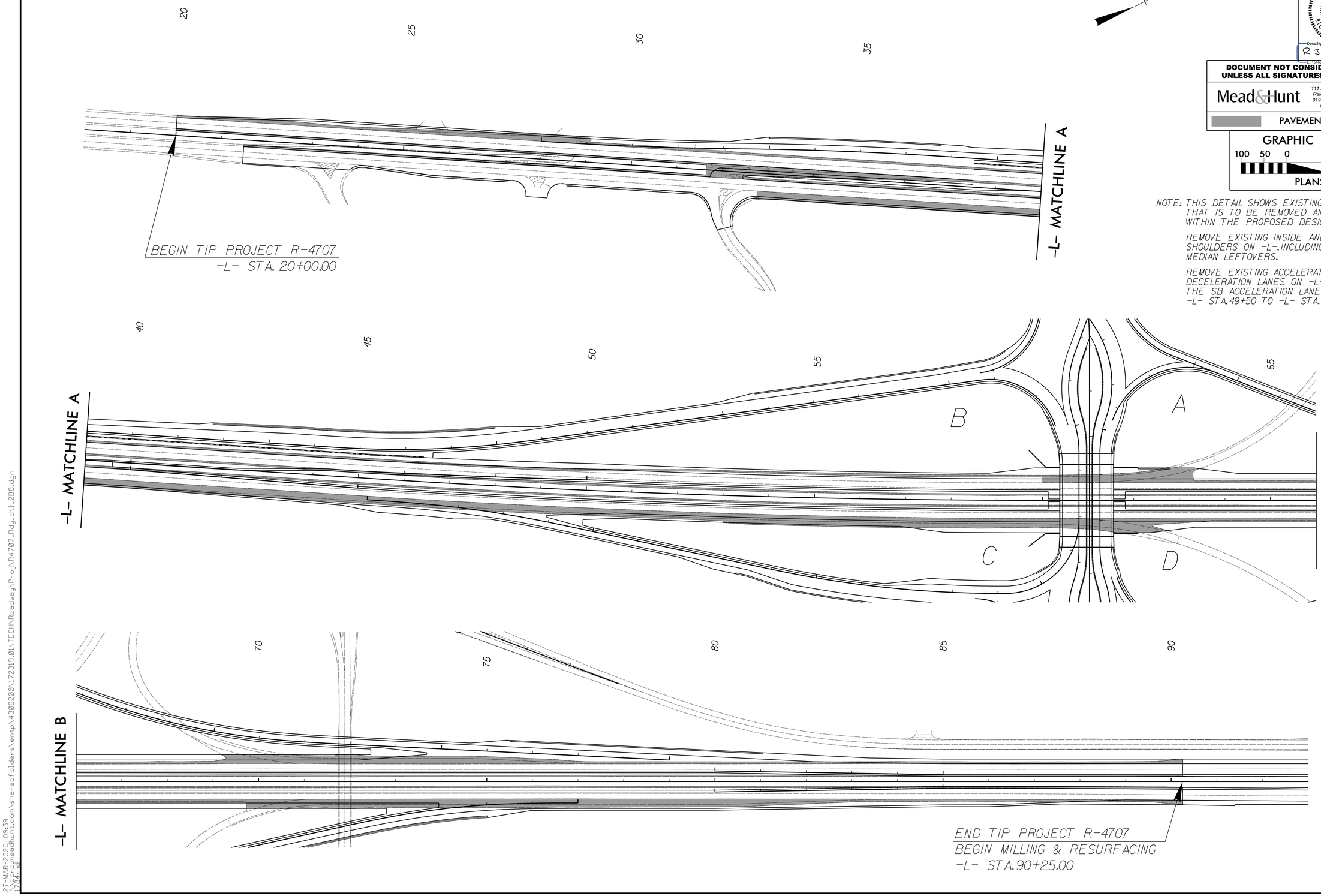
PAVEMENT REMOVAL

GRAPHIC SCALE
100 50 0 100 200
PLANS

NOTE: THIS DETAIL SHOWS EXISTING PAVEMENT THAT IS TO BE REMOVED AND REPLACED WITHIN THE PROPOSED DESIGN:

REMOVE EXISTING INSIDE AND OUTSIDE SHOULDERS ON -L-, INCLUDING EXISTING MEDIAN LEFTOVERS.

REMOVE EXISTING ACCELERATION AND DECELERATION LANES ON -L-, EXCEPT THE SB ACCELERATION LANE FROM -L- STA. 49+50 TO -L- STA. 60+00.



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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2B-9

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034381 ENGINEER RICHARD J. DECOLA

DocuSigned by: R J DeCola 4/17/2020

STRUCTURE DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 043177 ENGINEER JOHN S. HOBSON

DocuSigned by: Jack Hobson 4/17/2020

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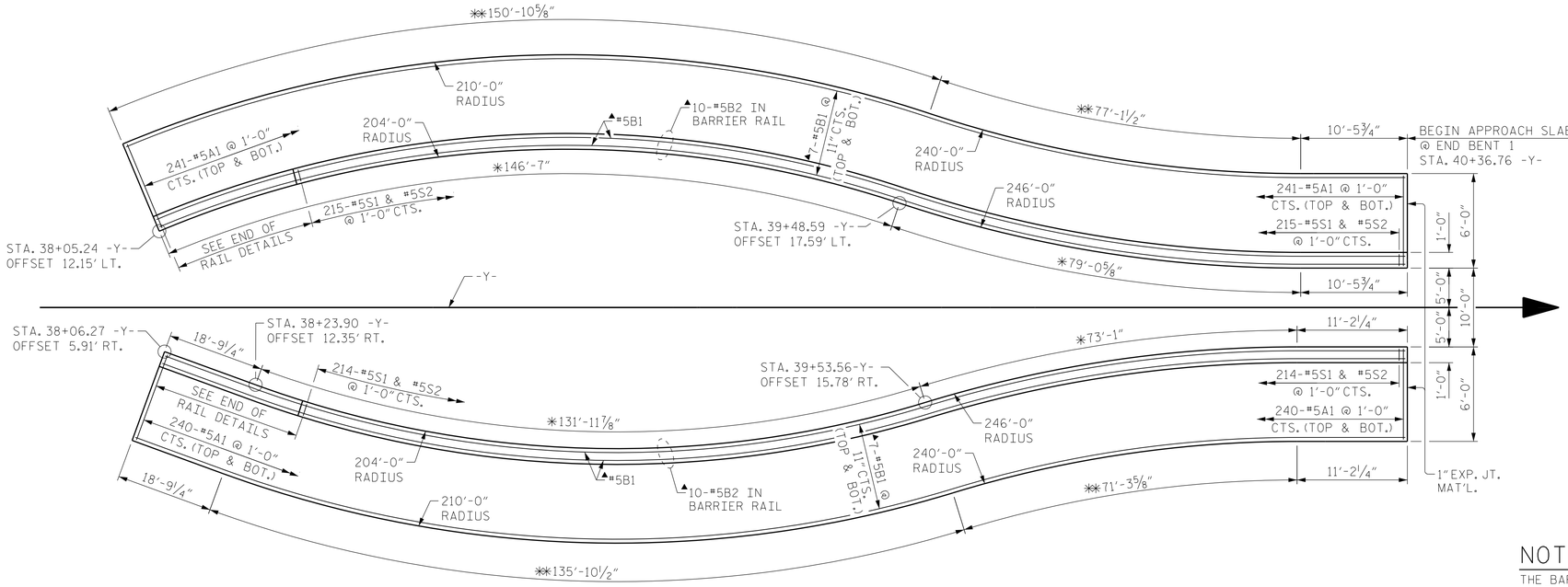
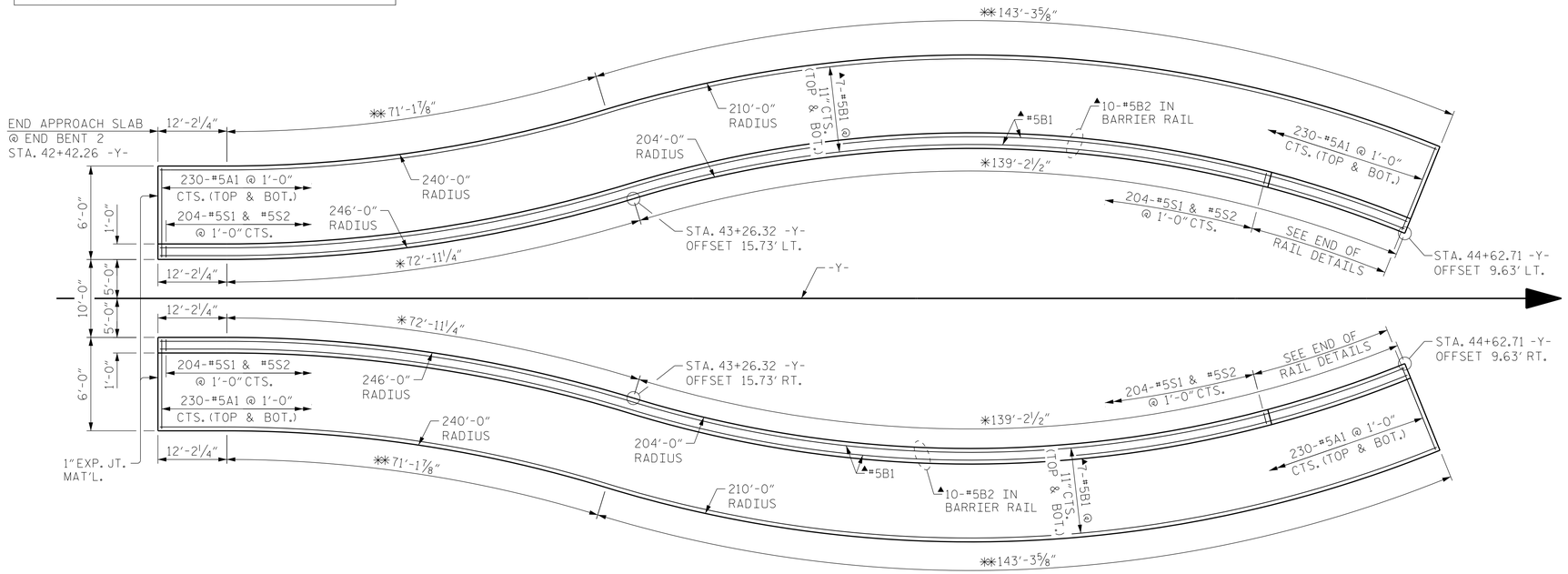


✳ LENGTH OF ARC, MEASURED ALONG FACE OF BARRIER
✳✳ LENGTH OF ARC, MEASURED ALONG EDGE OF SLAB
▲ 9 BAR RUNS

PLAN - BEGIN APPROACH SLAB



PLAN - END APPROACH SLAB

NOTES

THE BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL MOMENT SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

MOMENT SLAB AND BARRIER RAIL SHALL BE CLASS AA CONCRETE.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, ½″ IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT 10 FEET MAXIMUM CENTERS.

EXCAVATE 6″ BELOW MOMENT SLAB AND REPLACE WITH CLASS VI SELECT MATERIAL FOUNDATION CONDITIONING MATERIAL.

REINFORCING STEEL TO BE CUT, BENT, OR RELOCATED AS DIRECTED BY THE ENGINEER.

ALL EXPOSED CORNERS TO BE CHAMFERED 1″.

GRADE THE MEDIAN BETWEEN THE BARRIERS TO DRAIN AS DIRECTED BY THE ENGINEER.

#5 BAR MINIMUM SPLICE LENGTH = 3′-1″

MOMENT SLAB DETAIL

DESIGNED BY:	J.S.HOBSON	DATE:	12/04/2019
CHECKED BY:	J.A.BOYER	DATE:	12/09/2019

11-MAR-2020 13:56
R:\Roadway\Proj\R4707_Rdy_dtl_MSB.dgn
rjdecola

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2B-10

ROADWAY DESIGN ENGINEER — SEAL 034381, RICHARD J. DECOLA — R J DeCola 4/17/2020

STRUCTURE DESIGN ENGINEER — SEAL 043177, JOHN S. HOBSON — Jack Hobson 4/17/2020

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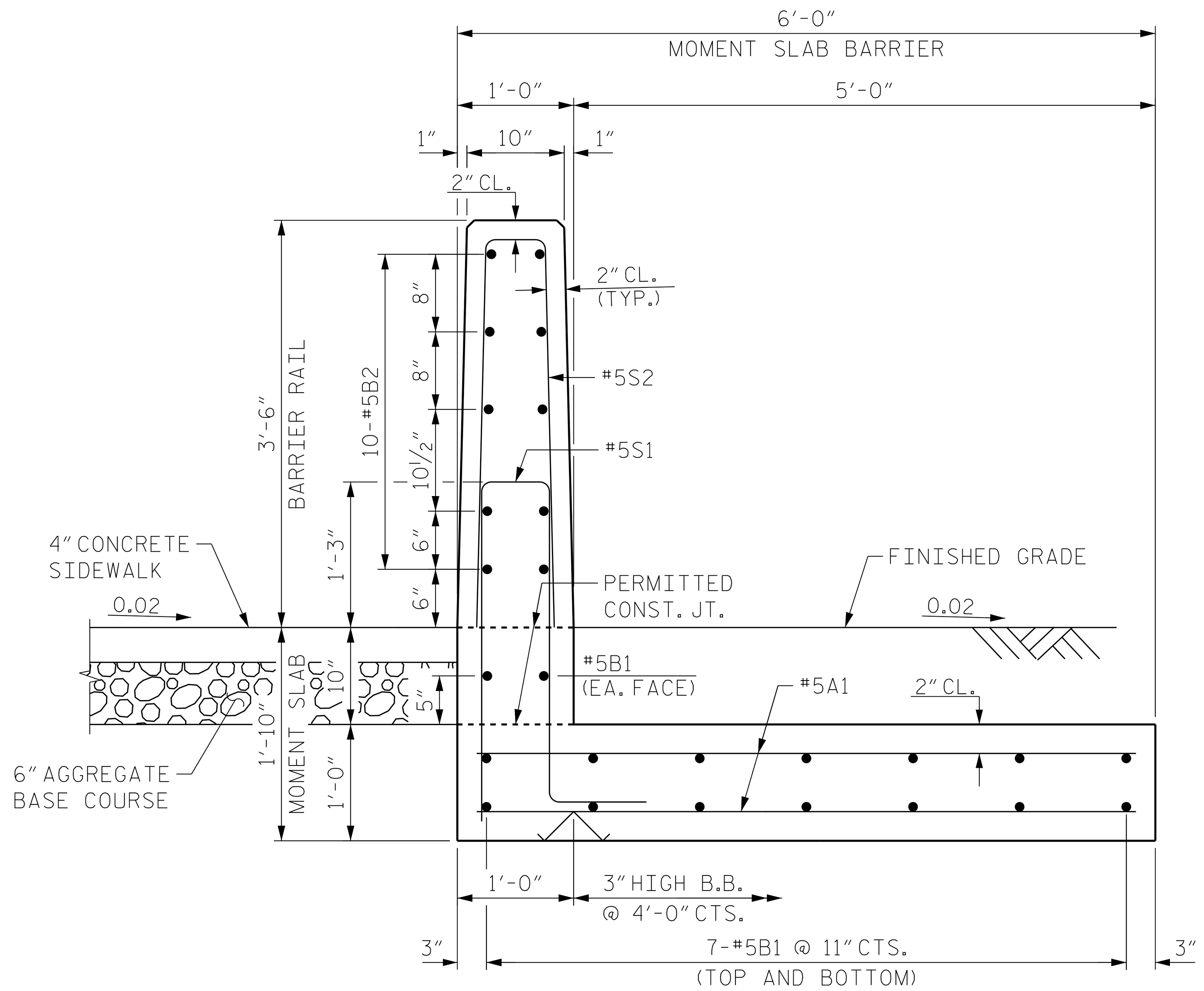


TYPICAL SECTION

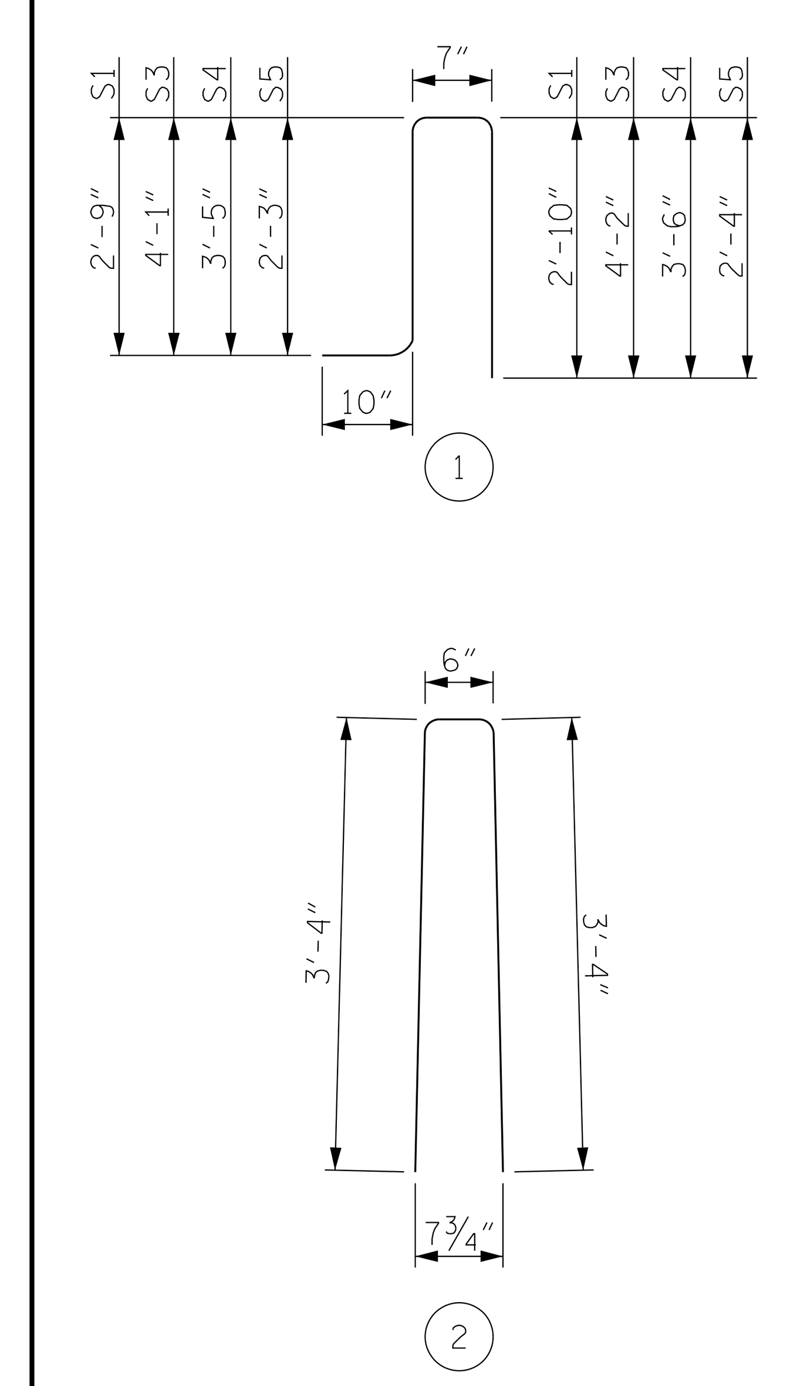
BILL OF MATERIAL					
MOMENT SLAB AT EB 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	962	#5	STR	5'-8"	5686
B1	288	#5	STR	29'-3"	8786
✳ B2	180	#5	STR	29'-3"	5491
✳ S1	437	#5	1	7'-0"	3191
✳ S2	429	#5	2	7'-2"	3207
✳ S3	10	#5	1	9'-8"	101
✳ S4	12	#5	1	8'-4"	104
✳ S5	14	#5	1	6'-0"	88
REINFORCING STEEL				LBS.	14,472
✳EPOXY COATED REINFORCING STEEL				LBS.	12,182
CLASS AA CONCRETE				CU. YDS.	173.6

NOTE: REINFORCEMENT AND CONCRETE QUANTITIES ARE FOR BIDDING PURPOSES ONLY.

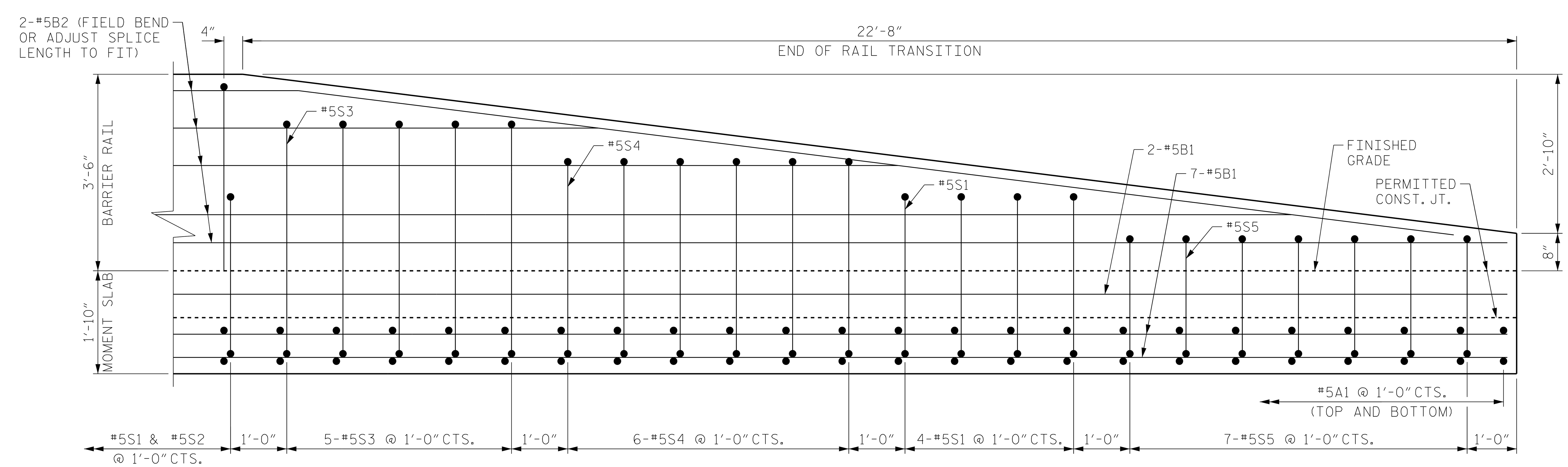
BILL OF MATERIAL					
MOMENT SLAB AT EB 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	920	#5	STR	5'-8"	5438
B1	288	#5	STR	27'-11"	8386
✳ B2	180	#5	STR	27'-11"	5241
✳ S1	416	#5	1	7'-0"	3037
✳ S2	408	#5	2	7'-2"	3050
✳ S3	10	#5	1	9'-8"	101
✳ S4	12	#5	1	8'-4"	104
✳ S5	14	#5	1	6'-0"	88
REINFORCING STEEL				LBS.	13,824
✳EPOXY COATED REINFORCING STEEL				LBS.	11,621
CLASS AA CONCRETE				CU. YDS.	165.3

NOTE: REINFORCEMENT AND CONCRETE QUANTITIES ARE FOR BIDDING PURPOSES ONLY.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT



END OF RAIL DETAILS

MOMENT SLAB DETAIL

DESIGNED BY:	J.S.HOBSON	DATE:	12/04/2019
CHECKED BY:	J.A.BOYER	DATE:	12/09/2019

PROJECT REFERENCE NO.	SHEET NO.

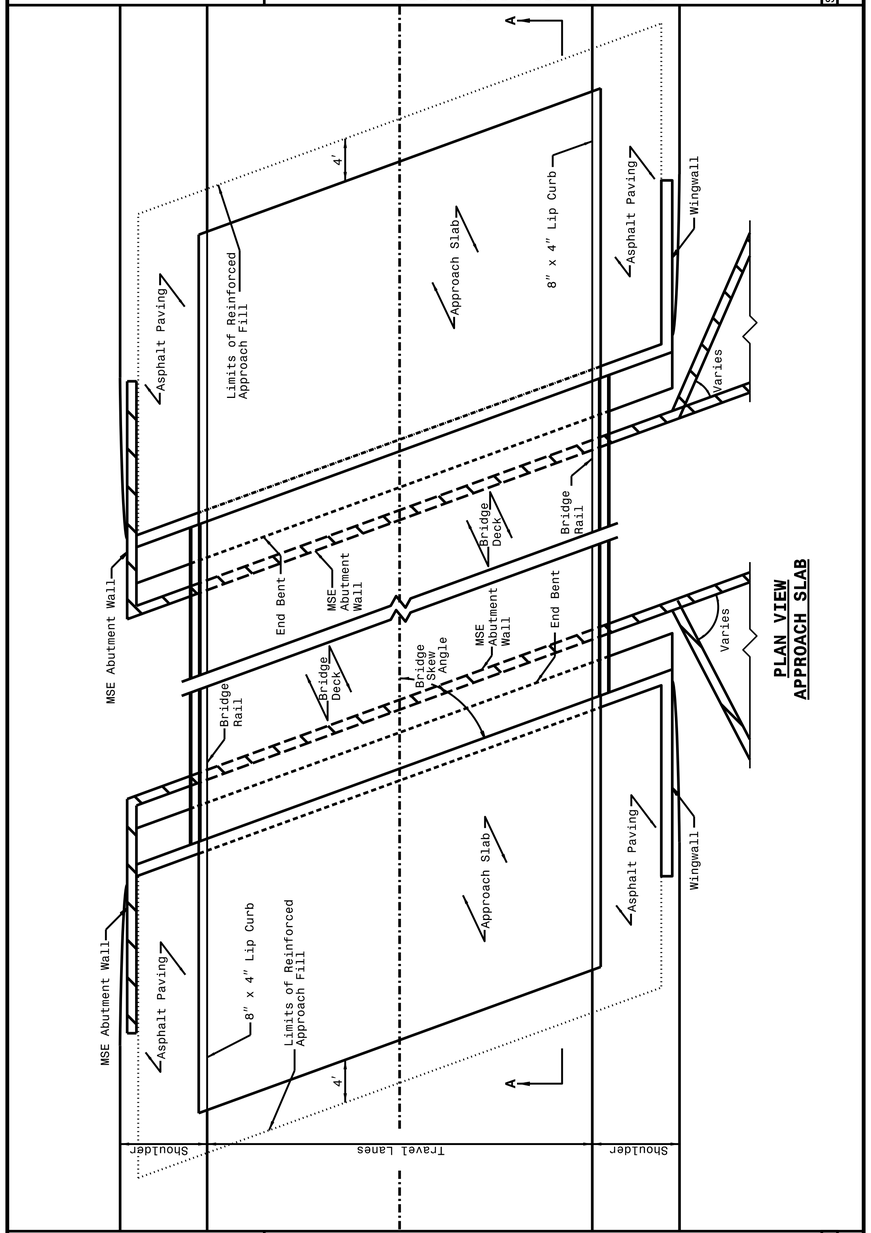
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

BRIDGE APPROACH FILLS

TYPE III - REINFORCED APPROACH FILL FOR
MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL

SHEET 1 OF 2 — 422D10



PLAN VIEW
APPROACH SLAB

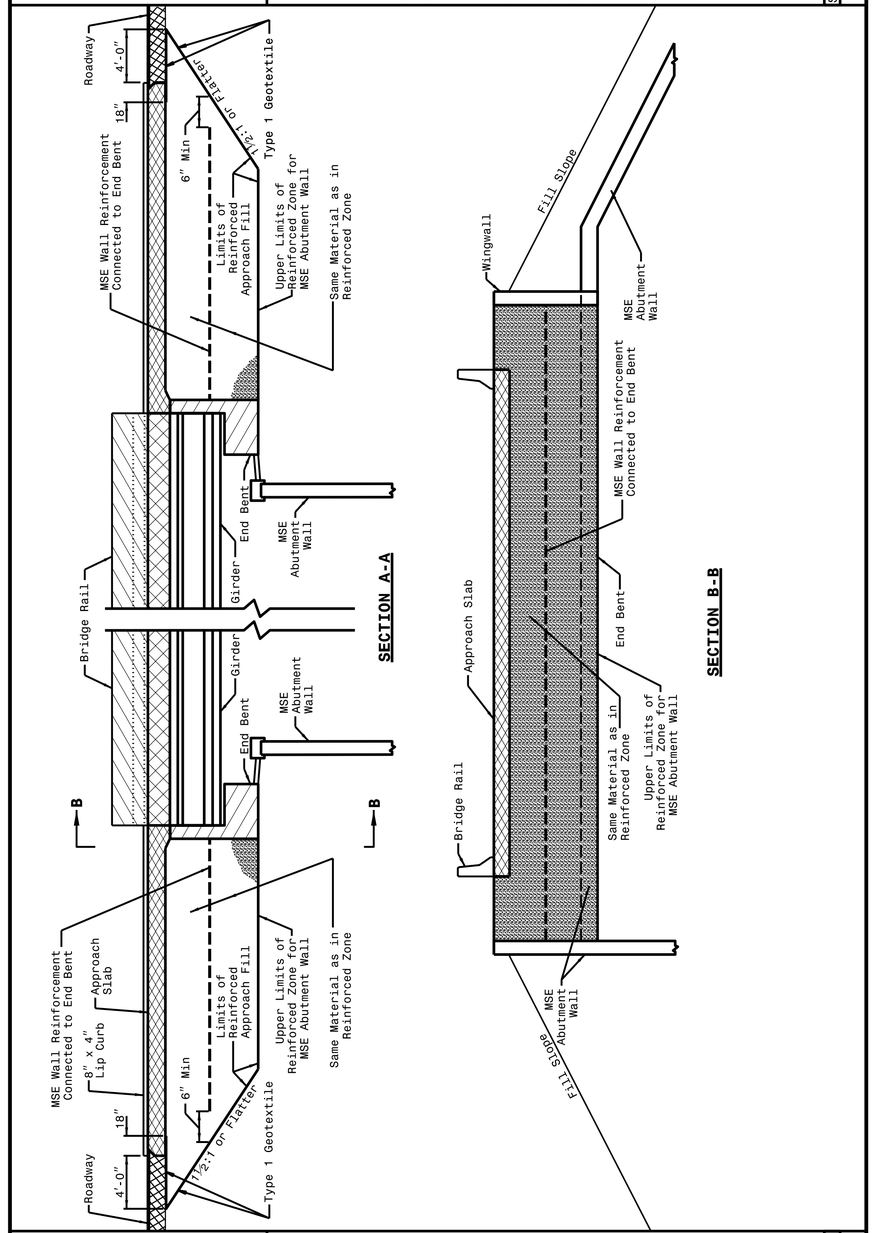
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

BRIDGE APPROACH FILLS

TYPE III - REINFORCED APPROACH FILL FOR
MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL

SHEET 2 OF 2 — 422D10



SECTION A-A

SECTION B-B

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

ROADWAY DETAIL DRAWING FOR

BRIDGE APPROACH FILLS

TYPE III - REINFORCED APPROACH FILL FOR
MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL

SHEET 1 OF 2 — 422D10

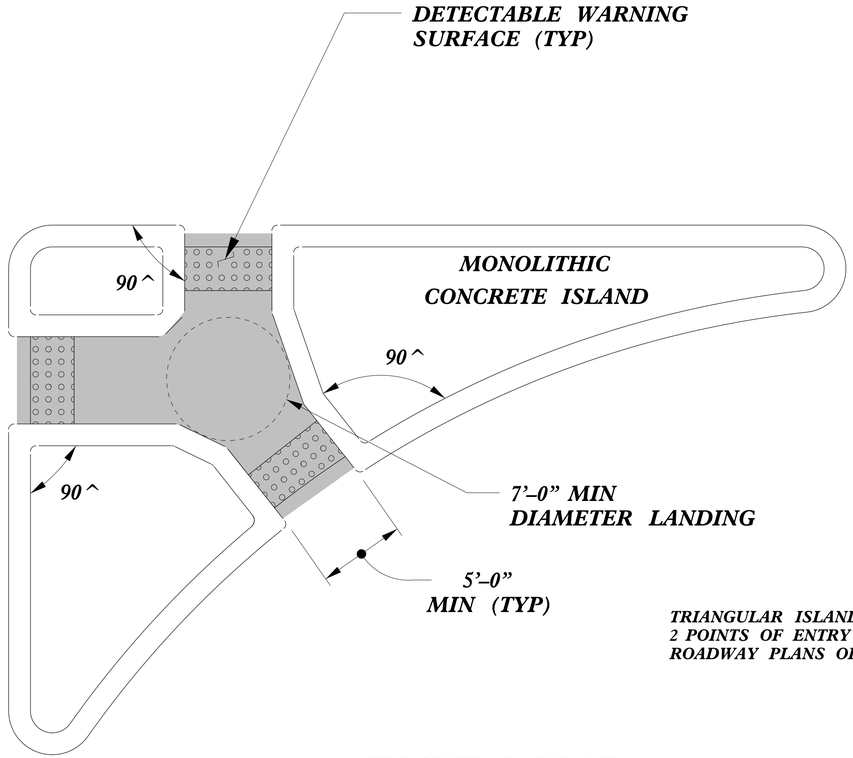
CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

TYPE III REINFORCED APPROACH FILLS

ORIGINAL BY: K. A. KEMPF DATE: JULY 2017
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: 2018 standard drawings\division 422d10.dgn

5/14/99

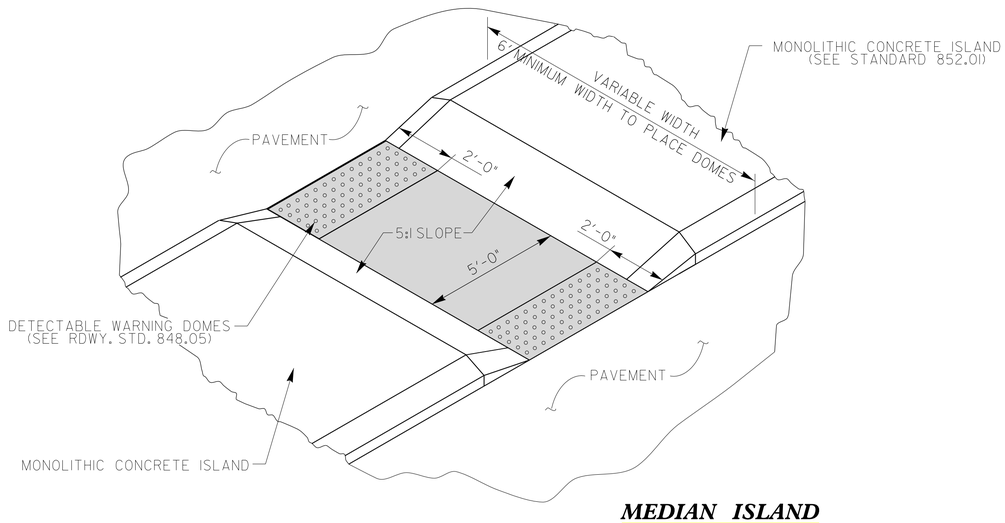
PROJECT REFERENCE NO.	SHEET NO.
R-4707	2C-2



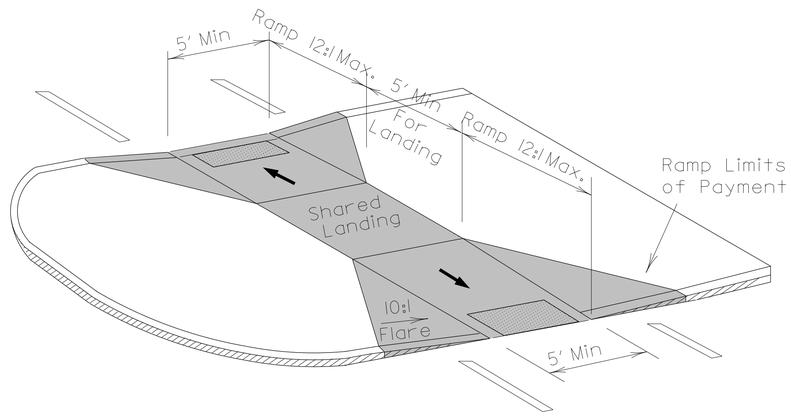
PAY LIMITS FOR 2 OR 3 CURB RAMPS (CALCULATE BASED ON NUMBER OF SETS OF TRUNCATED DOMES)

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

TRIANGULAR ISLAND WITH CUT THROUGH



MEDIAN ISLAND WITH CUT THROUGH



MEDIAN ISLAND CURB RAMPS

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: 4/17/2020
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CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

CURB RAMPS

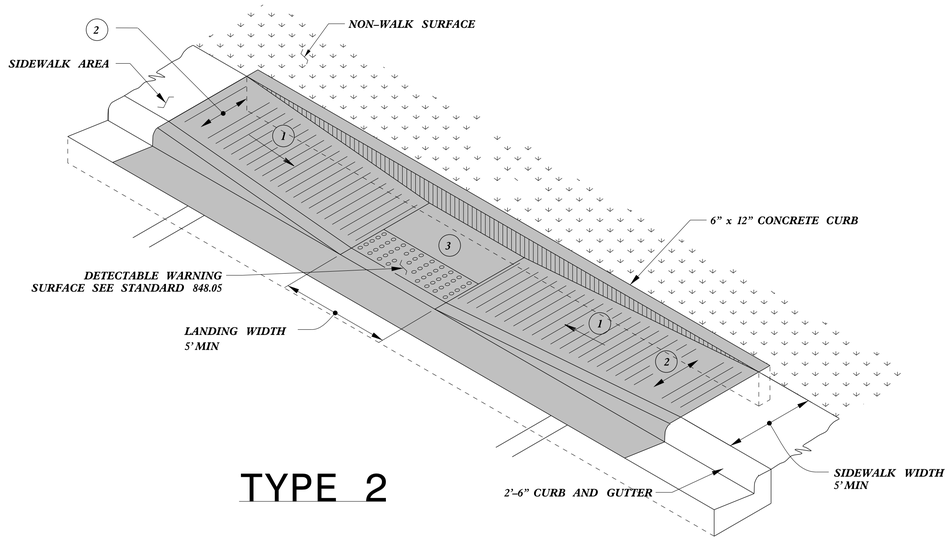
Median or Turn Lane Islands

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC. stds/2012CurbRamp/CurbRampDetails.dgn

$$$$ SYSTEM $$$$
$$$$ ELEMENT $$$$
$$$$ USERNAME $$$$

5/14/99

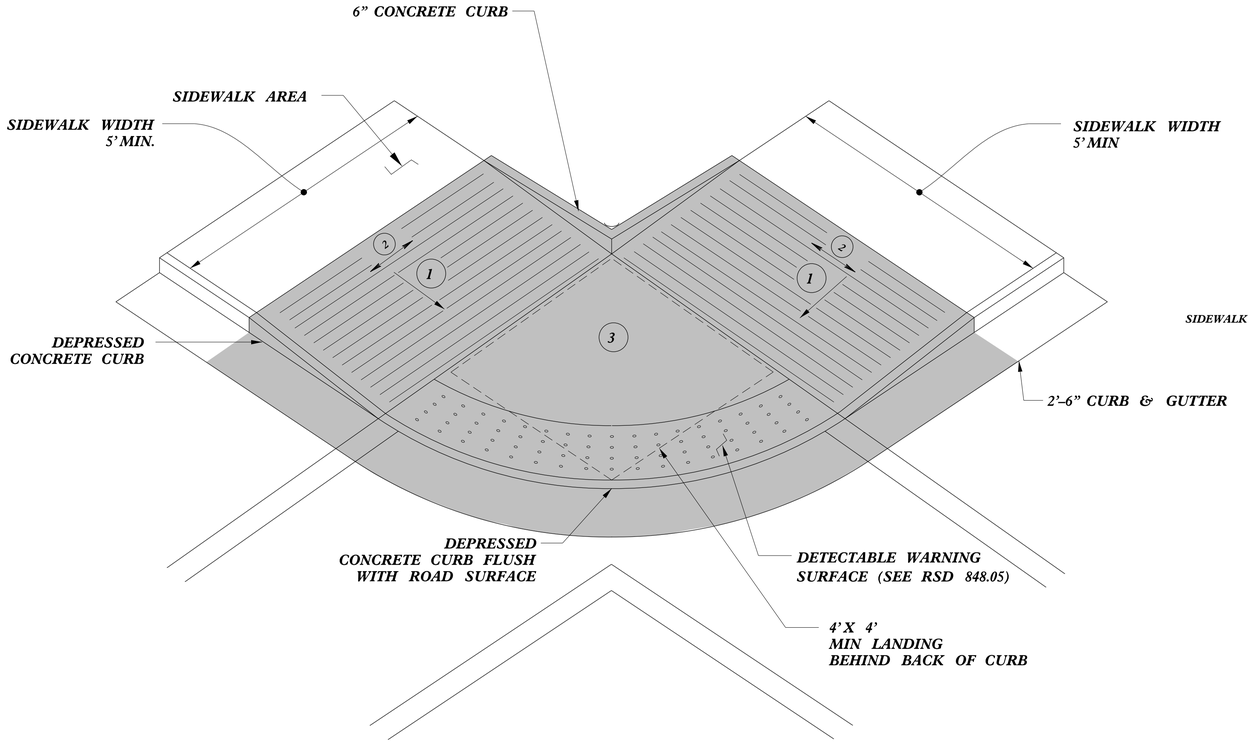
PROJECT REFERENCE NO.	SHEET NO.
R-4707	2C-3



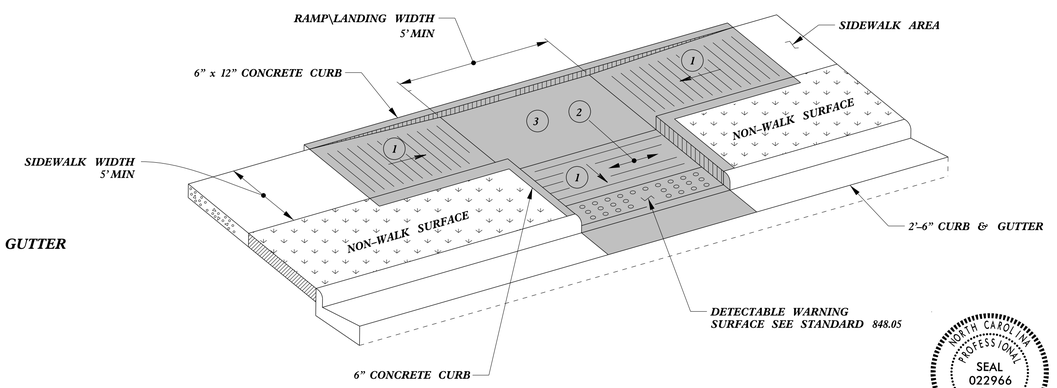
TYPE 2

PAY LIMITS FOR 1 CURB RAMP

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



TYPE 2A



TYPE 3

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton

DocuSigned by: 4/17/2020 873F3D17DCDC45F...

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

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

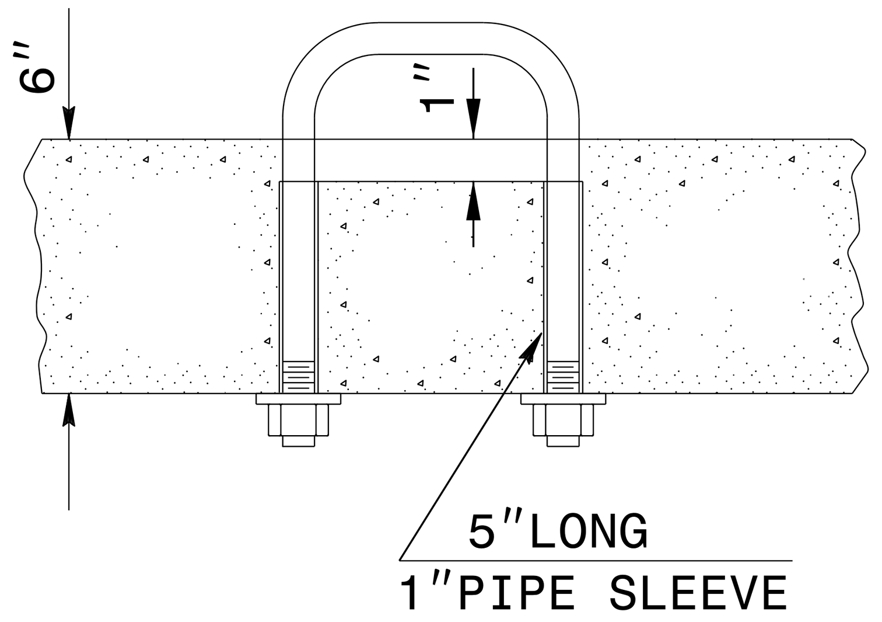
CURB RAMPS

Parallel Ramps

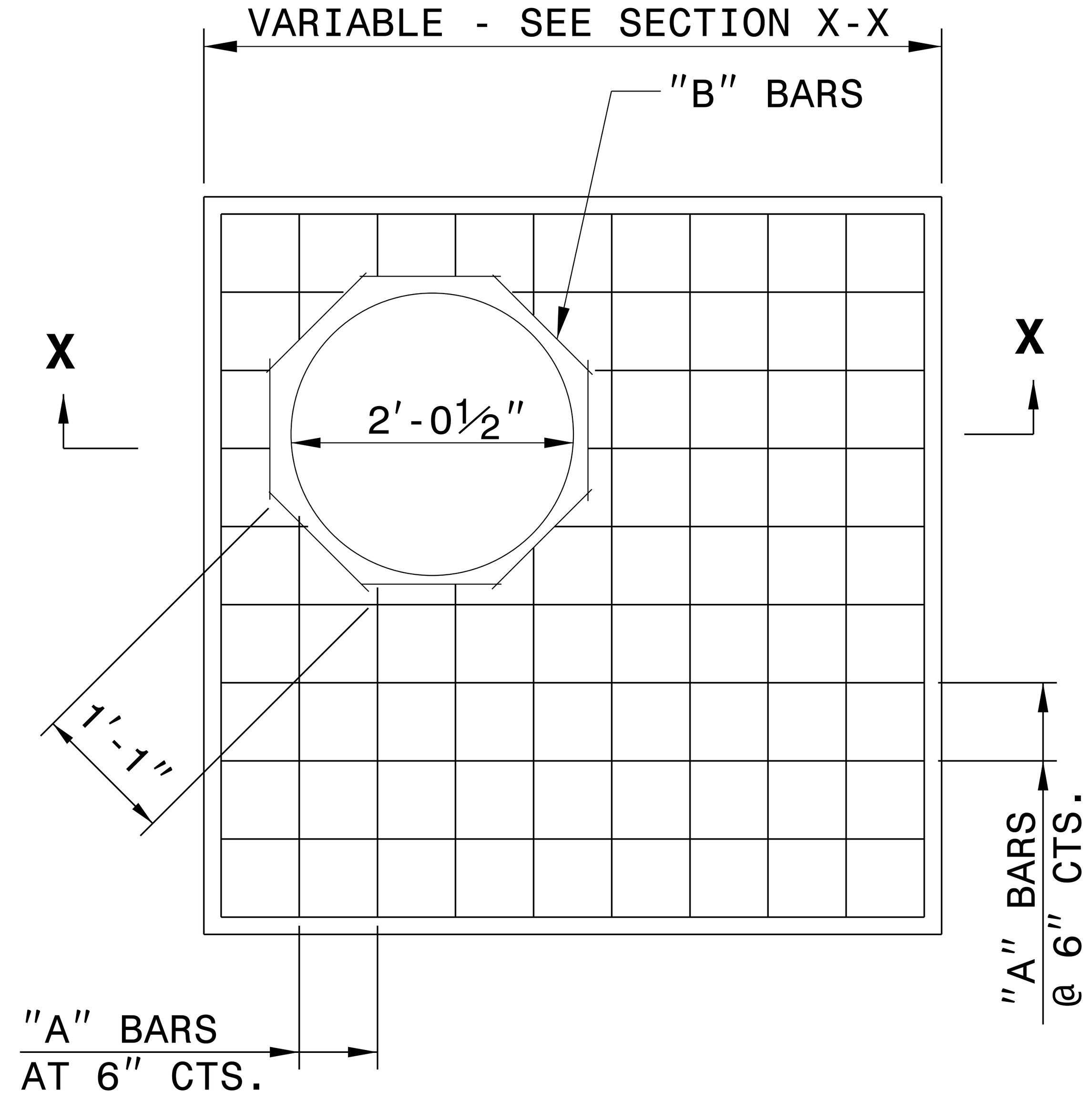
ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

$$$$USERNAME$$$$ $$$$SYSTIME$$$$ $$$$USERNAME$$$$ $$$$SYSTIME$$$$

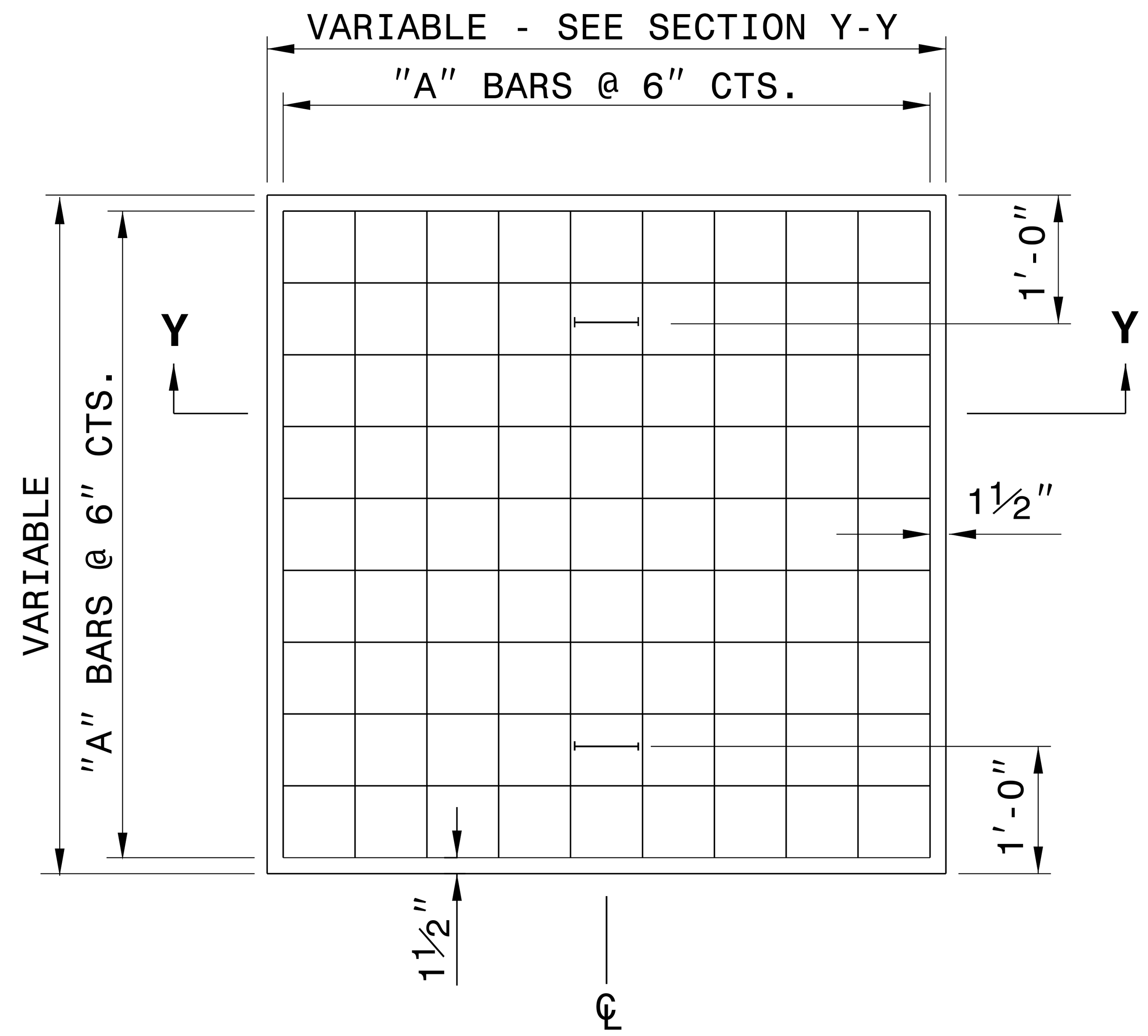
PROJECT REFERENCE NO.	SHEET NO.
R-4707	2C-4



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

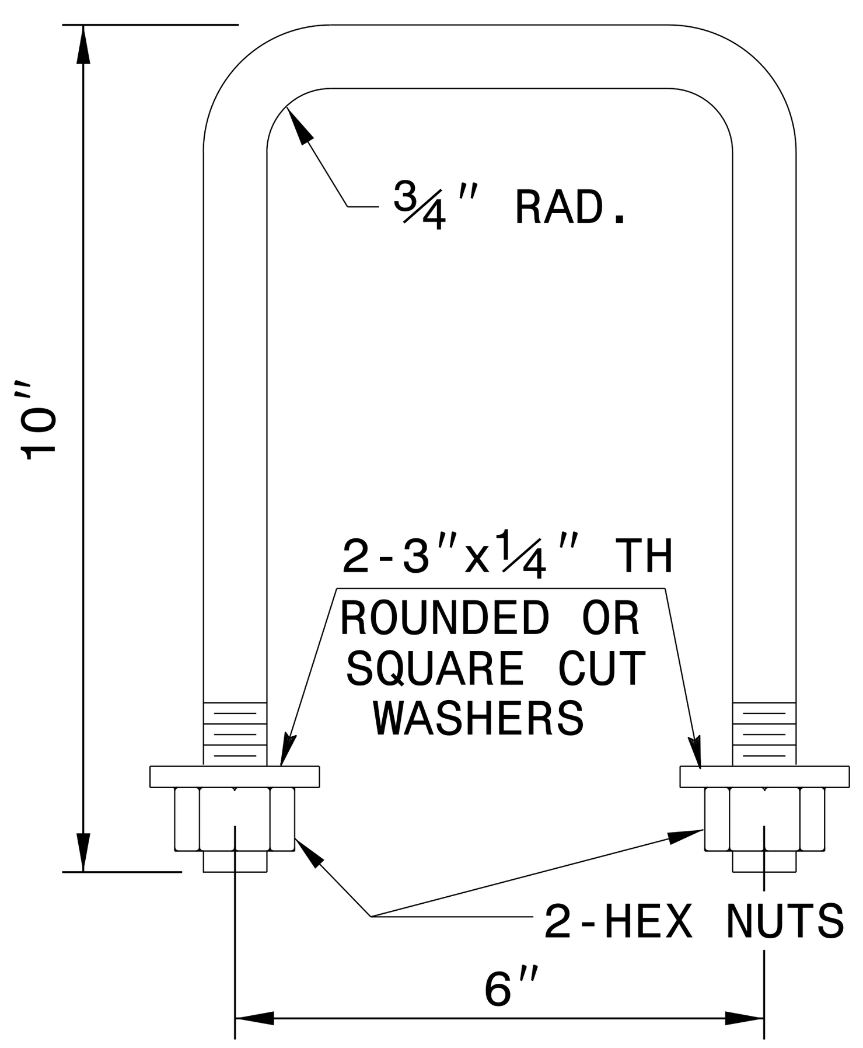
CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

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

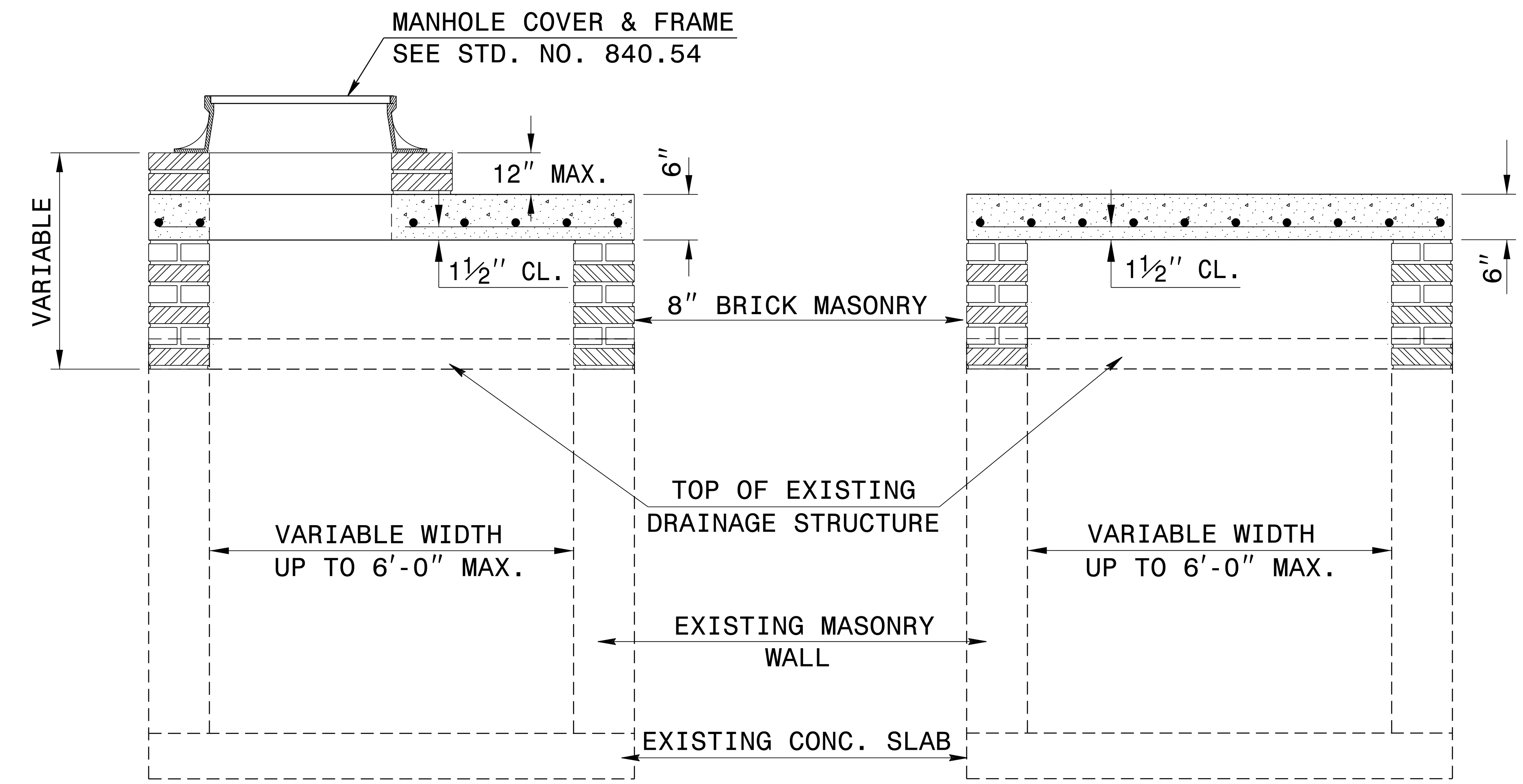
DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

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

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

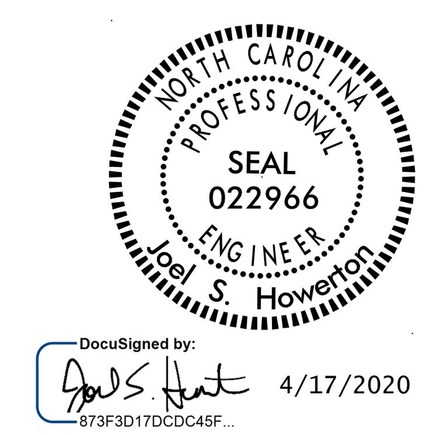


DETAIL OF HANDLE



SECTION X-X

SECTION Y-Y



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

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

ORIGINAL BY: T.S.S. DATE: NOV.1997
MODIFIED BY: T.S.S. DATE: FEB.2000
CHECKED BY: DATE:
FILE SPEC.: ds174:/usr/details/stand/boxtojbe.dgn

$$$$SYSTIME$$$$ $$$$DGN$$$$ $$$$USERNAME$$$$

24-APR-2019 07:24
S:\Contracts\Contracts\Special Details\jhowerton\840d04 3 or 4 side OTCB.dgn
jhowerton AT CSD-292595

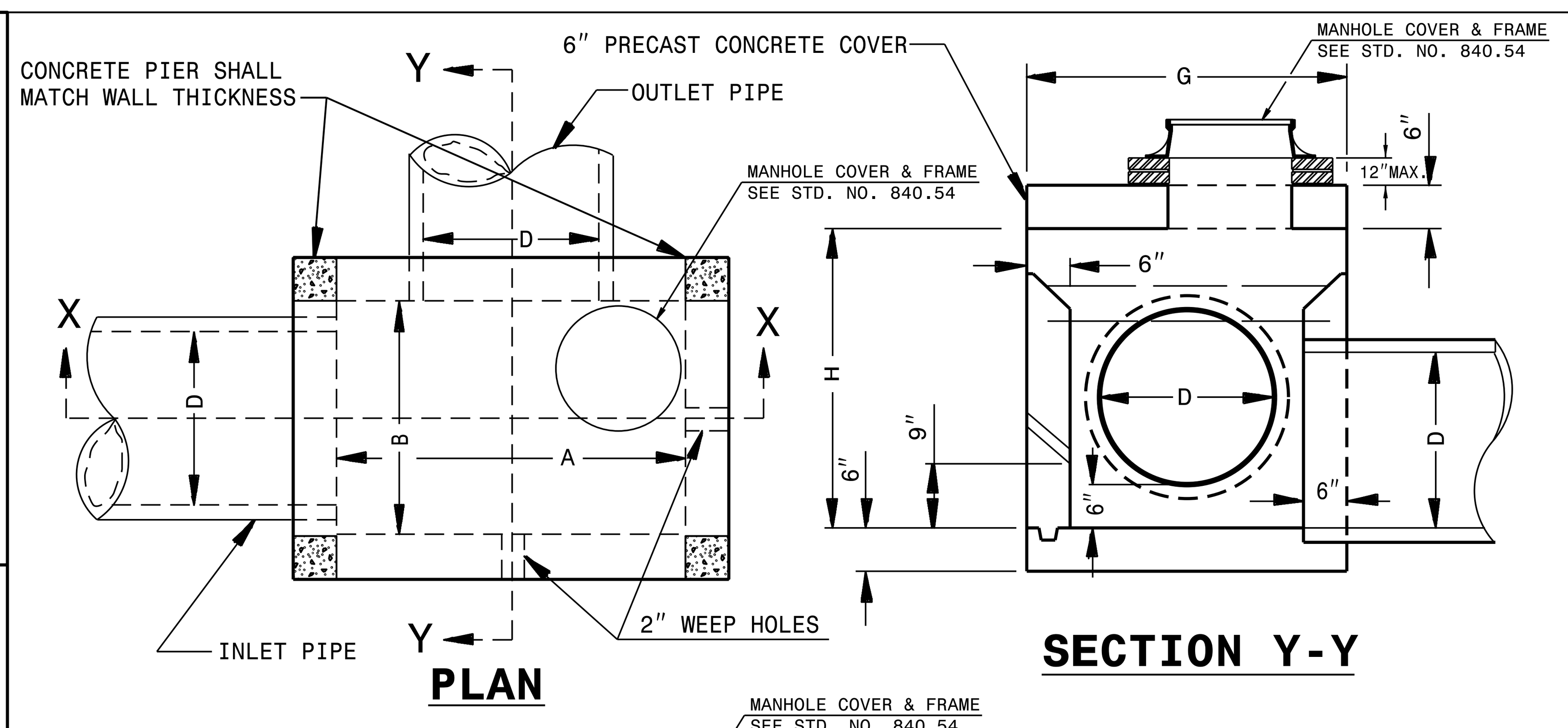
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2C-5

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

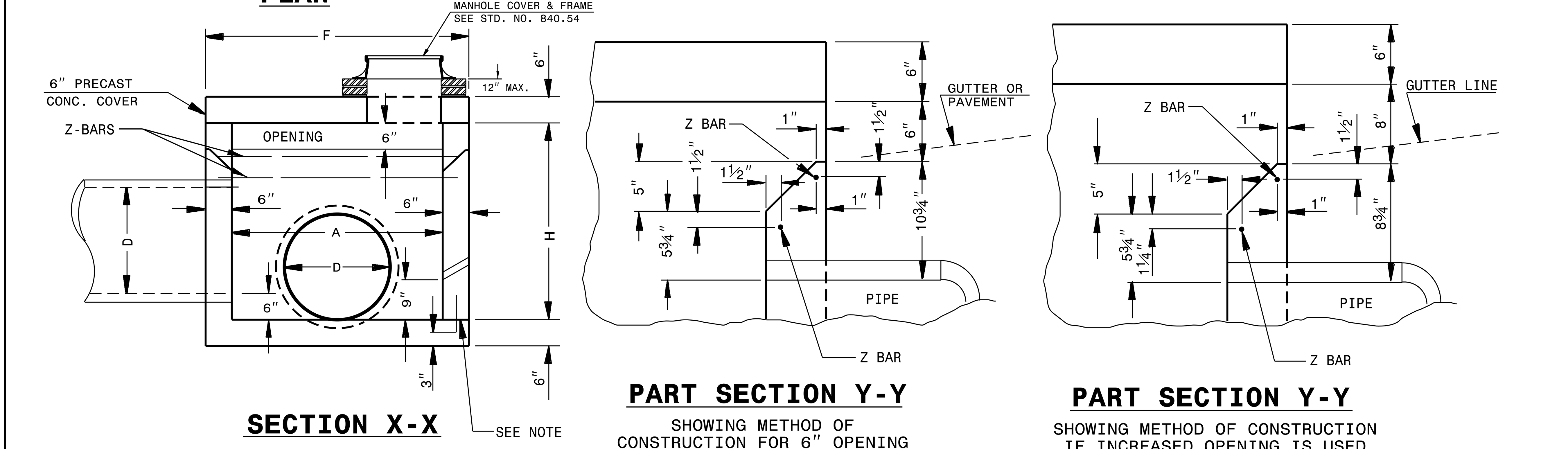
ENGLISH DETAIL DRAWING FOR
CONCRETE CATCH BASIN
(3 OR 4 SIDE OPEN THROAT)
(MANHOLE OPTIONAL)

SHEET 1 OF 2
840D04



GENERAL NOTES:

ALL CATCH BASINS OVER 3'-6" IN DEPTH TO BE PROVIDED WITH STEPS 12" ON CENTERS. STEPS SHALL BE IN ACCORDANCE WITH STD. 840.66.
ALL EXPOSED CORNERS TO BE CHAMFERED 1".
CLASS "B" CONCRETE TO BE USED THROUGHOUT.
2" PIPE WEEPHOLES TO BE PLACED AS DIRECTED BY ENGINEER.
THE 6" OPENING SHOWN MAY BE INCREASED TO 8" MAXIMUM IF DEEMED TO BE NECESSARY BY THE ENGINEER.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #5 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STD. DWG. 840.00.
A STONE DRAIN CONSISTING OF 1 CUBIC FOOT OF NO. 78M STONE CONTAINED IN A BAG OF POROUS FABRIC SHALL BE PLACED AT EACH WEEP HOLE.
FOR 8" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8' IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. QUANTITIES TO BE ADJUSTED ACCORDINGLY.
DIMENSIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.



MIN. DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN (BASED ON MIN. HEIGHT, H)

DIM'S OF BOX & PIPE				REINFORCING						TOP & BOT. SLAB DIMENSIONS		CU. YDS. CONC. IN BOX			TOTAL QUANTITIES BOX & SLABS		DEDUCTION ONE PIPE		DED. ONE 6" THROAT OPENING
PIPE	SPAN	WIDTH	HEIGHT	BARS - X		BARS - Y		BARS - Z											
D	A	B	H	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	F	G	TOP SLAB	BOT. SLAB	WALL/FT. HT.	LBS. REINF.	YD^3 (MIN H)	C.S.	R.C.	YD^3
12"	3'-6"	2'-3"	1'-10"	4	3'-0"	6	4'-3"	2	4'-3"	4'-6"	3'-3"	0.181	0.271	0.250	27	1.046	0.015	0.032	0.046
15"	3'-6"	2'-3"	2'-1"	4	3'-0"	6	4'-3"	2	4'-3"	4'-6"	3'-3"	0.181	0.271	0.250	27	1.108	0.023	0.036	0.046
18"	4'-0"	2'-8"	2'-4"	5	3'-5"	7	4'-9"	2	4'-9"	5'-0"	3'-8"	0.226	0.340	0.284	35	1.379	0.033	0.049	0.053
24"	4'-0"	2'-8"	2'-10"	5	3'-5"	7	4'-9"	2	4'-9"	5'-0"	3'-8"	0.226	0.340	0.284	35	1.521	0.059	0.085	0.053
30"	4'-0"	3'-6"	3'-4"	5	4'-3"	9	4'-9"	2	4'-9"	5'-0"	4'-6"	0.278	0.417	0.315	43	1.916	0.092	0.127	0.053
36"	4'-6"	4'-0"	3'-10"	5	4'-9"	10	5'-3"	2	5'-3"	5'-6"	5'-0"	0.340	0.510	0.352	51	2.390	0.132	0.178	0.059
42"	5'-0"	4'-6"	4'-4"	5	5'-3"	12	5'-9"	2	5'-9"	6'-0"	5'-6"	0.407	0.611	0.389	64	2.914	0.180	0.243	0.066
48"	5'-0"	5'-0"	4'-10"	5	5'-9"	13	5'-9"	2	5'-9"	6'-0"	6'-0"	0.444	0.666	0.407	68	3.298	0.235	0.317	0.066

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

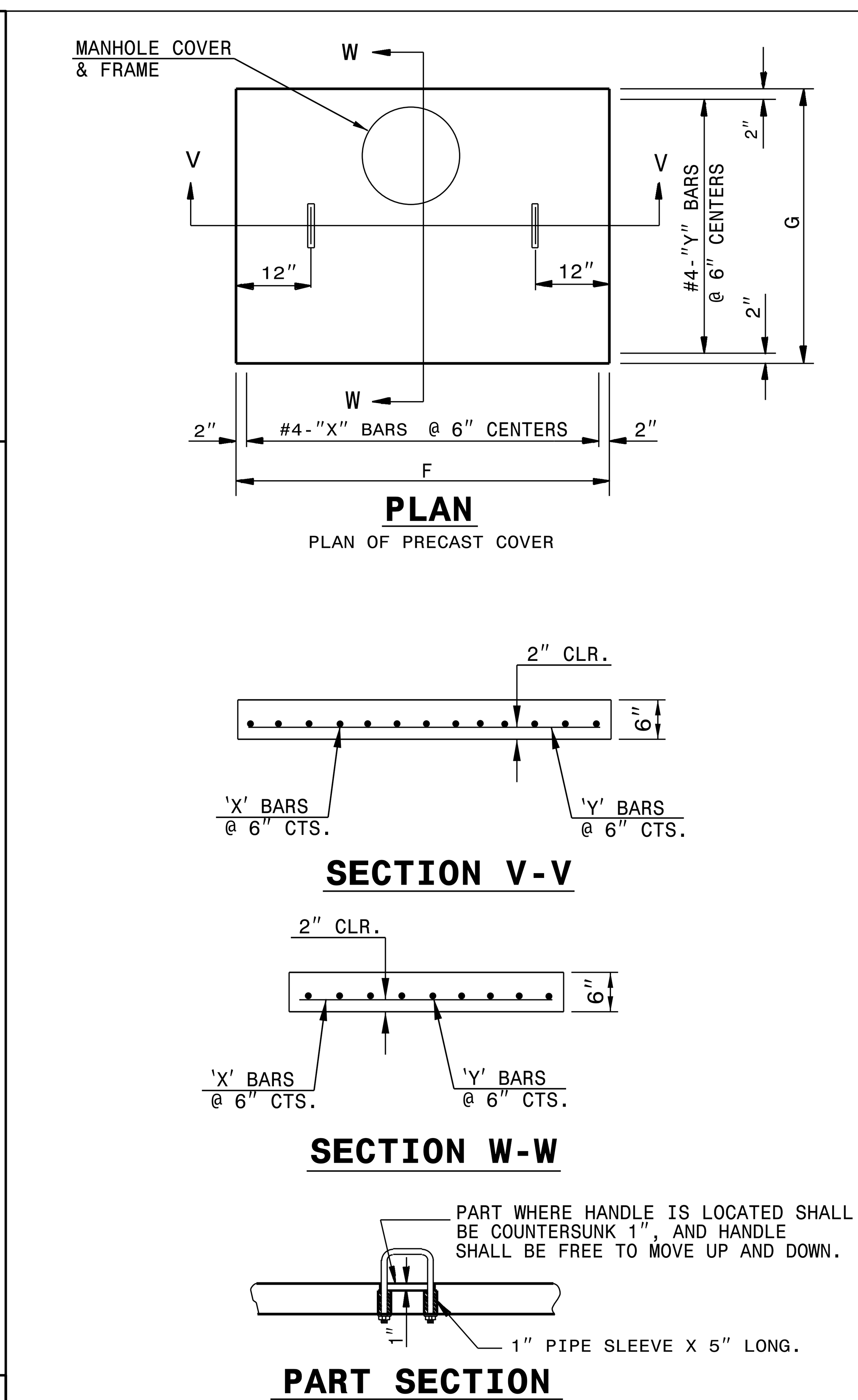
ENGLISH DETAIL DRAWING FOR
CONCRETE CATCH BASIN
(3 OR 4 SIDE OPEN THROAT)
(MANHOLE OPTIONAL)

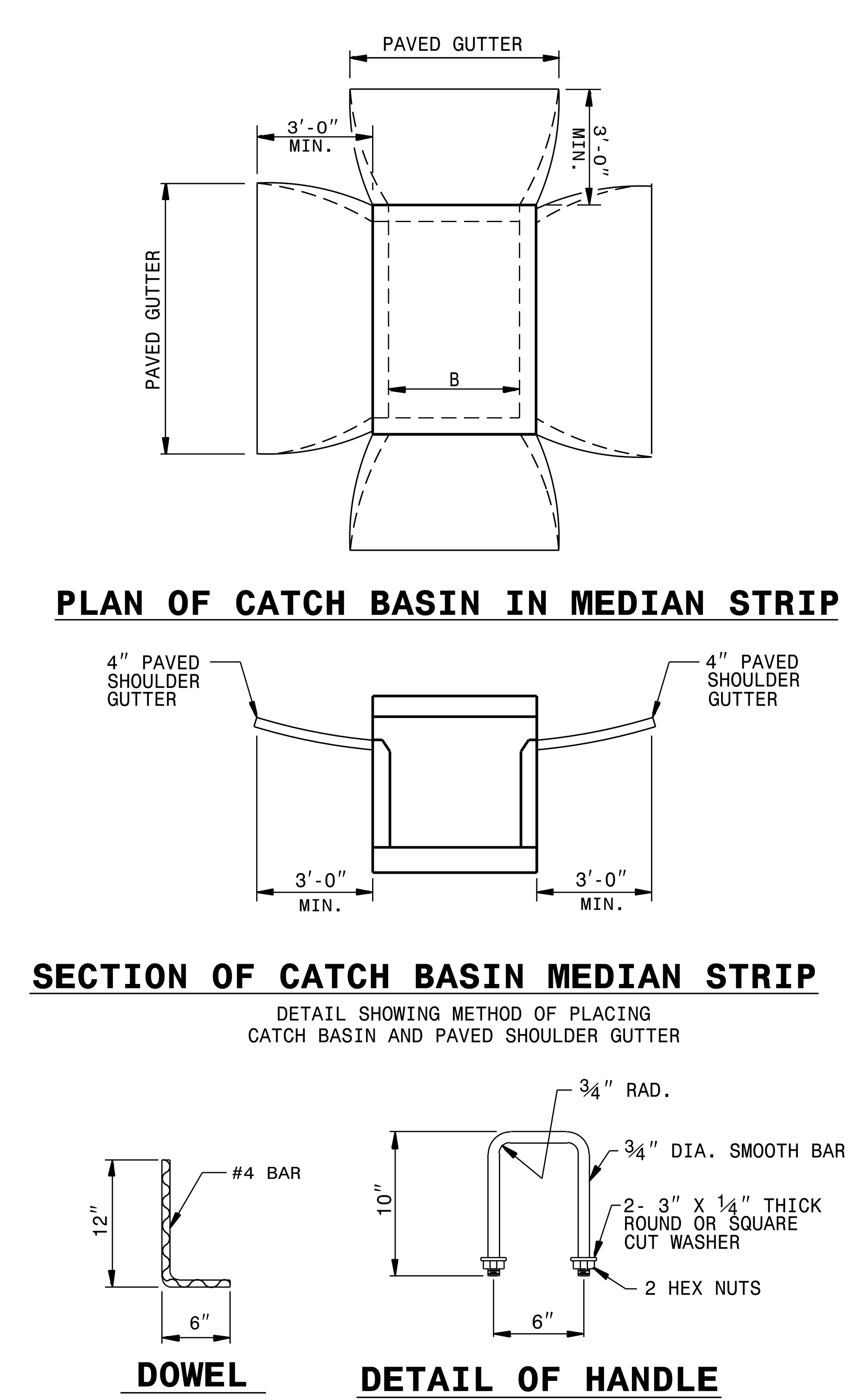
SHEET 1 OF 2
840D04

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

ENGLISH DETAIL DRAWING FOR
CONCRETE CATCH BASIN
(3 OR 4 SIDE OPEN THROAT)
(MANHOLE OPTIONAL)

SHEET 2 OF 2
840D04





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

ENGLISH DETAIL DRAWING FOR
CONCRETE CATCH BASIN
(3 OR 4 SIDE OPEN THROAT)
(MANHOLE OPTIONAL)

SHEET 2 OF 2
840D04

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton

DocuSigned by: 4/17/2020

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SEE PLATE FOR TITLE

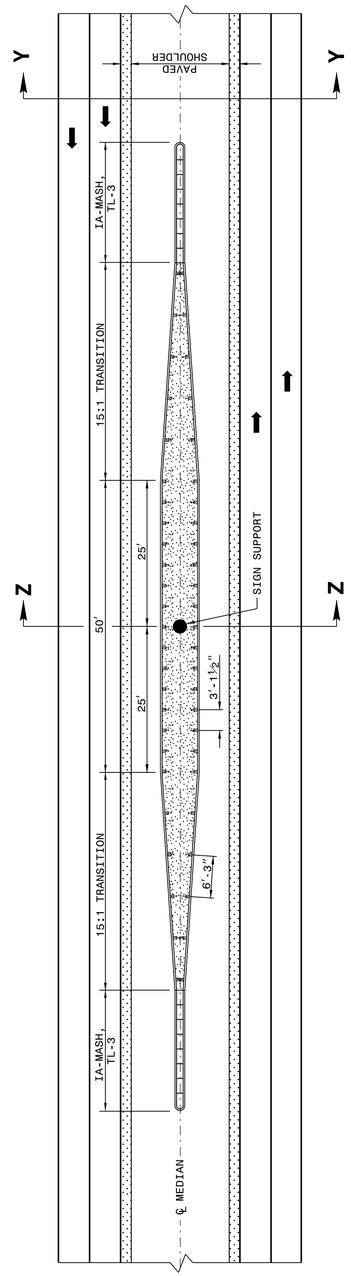
ORIGINAL BY: ______ DATE: ______
MODIFIED BY: rnbritt DATE: 07-03-2014
CHECKED BY: ______ DATE: ______
FILE SPEC.: details/nbritt/english/hydro/840d04.dgn

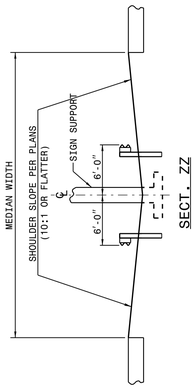
PROJECT REFERENCE NO.	SHEET NO.
R-4707	2C-6

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

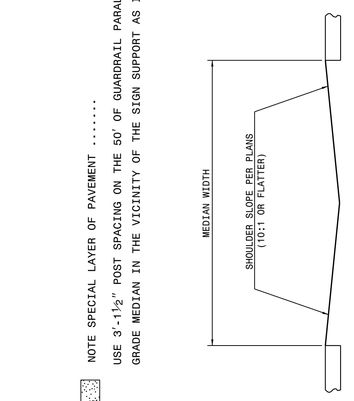
SHEET 2 OF 11
862D01





NOTE SPECIAL LAYER OF PAVEMENT .....

USE 3'-1½" POST SPACING ON THE 50' OF GUARDRAIL PARALLEL TO LANES AND 6'-3" POST SPACING ON 15:1 TRANSITION SECTIONS.
GRADE MEDIAN IN THE VICINITY OF THE SIGN SUPPORT AS ILLUSTRATED IN THE ROADWAY STANDARD DRAWINGS (STARDARD 862.01 SHEET 1 OF 12).



DETAIL OF GUARDRAIL AT MEDIAN SIGN SUPPORT

DocuSigned by:
4/17/2020
B73F3D17DCDC45F...

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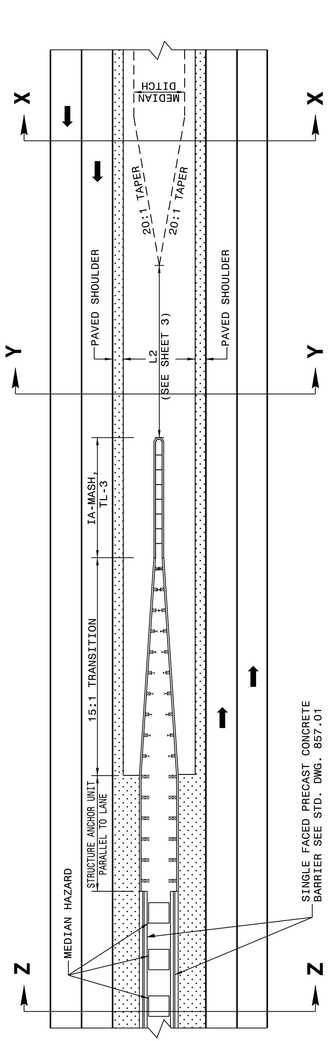
SEE TITLE BLOCK

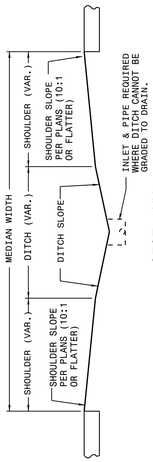
ORIGINAL BY: J HOWERTON DATE: 08-23-18
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

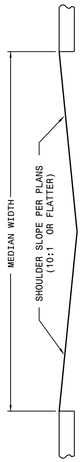
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

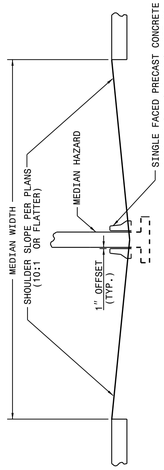
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 1 OF 11
862D01

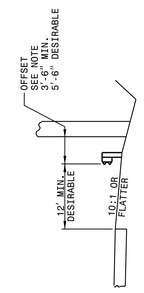








DETAIL OF MEDIAN TREATMENT AT UNDERPASS



NOTE: WHEN OFFSET DISTANCE FROM FACE OF OBSTRUCTION TO FACE OF GUARDRAIL IS BETWEEN 3'-6" AND 5'-6", BEGIN 3'-1½" POST SPACING AT A POINT 25' BEFORE REACHING THE OBSTRUCTION AND CARRY THROUGHOUT ITS LENGTH. IF THE OFFSET IS LESS THAN 3'-6" USE CONCRETE BARRIER.

DETAIL OF RIGHT SIDE GUARDRAIL AT UNDERPASS

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 1 OF 11
862D01

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2C-7
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STATE OF NORTH CAROLINA
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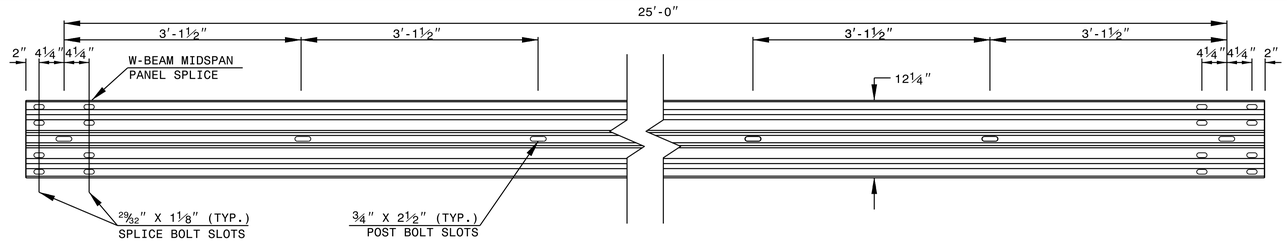
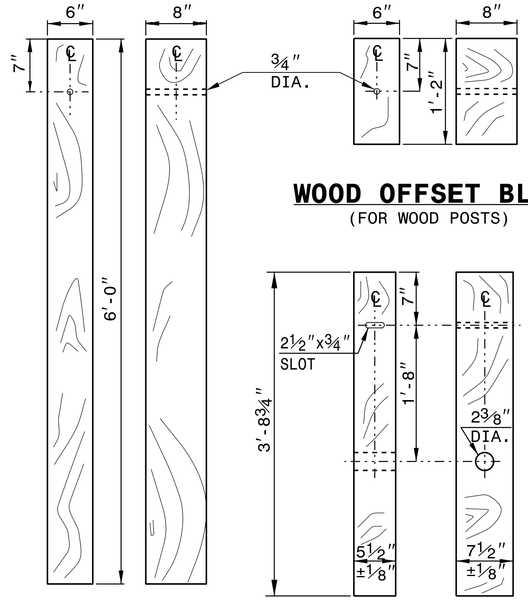
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



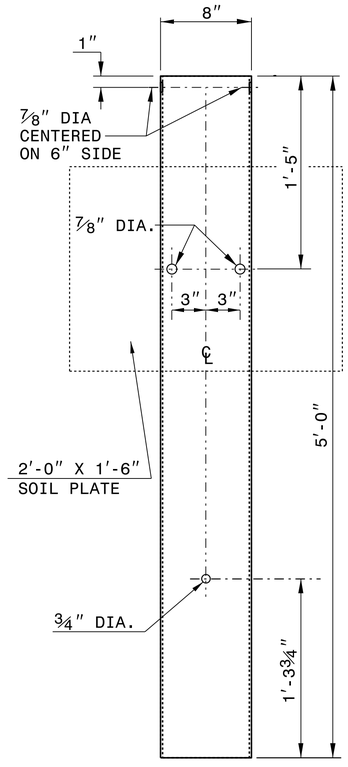
STANDARD W-BEAM GUARDRAIL



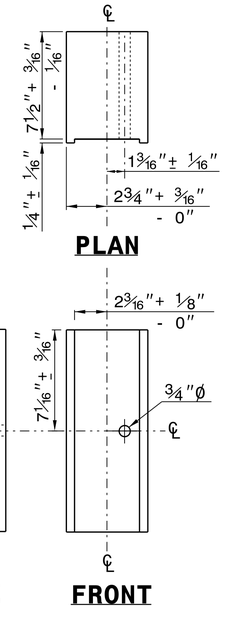
WOOD OFFSET BLOCK
(FOR WOOD POSTS)

STANDARD LINE POST

SHORT WOOD BREAKAWAY POST



STEEL TUBE
TS 6"x8"x0.1875"

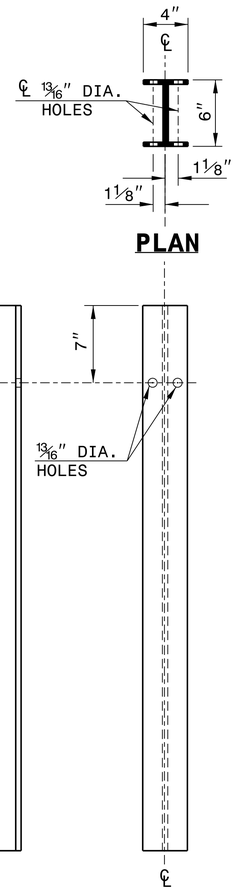


PLAN

SIDE

FRONT

ROUTED OFFSET BLOCK



PLAN

SIDE

FRONT

"W6" STEEL POST

SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. HOWERTON

DocuSigned by: John S. Howerton 4/17/2020
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CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

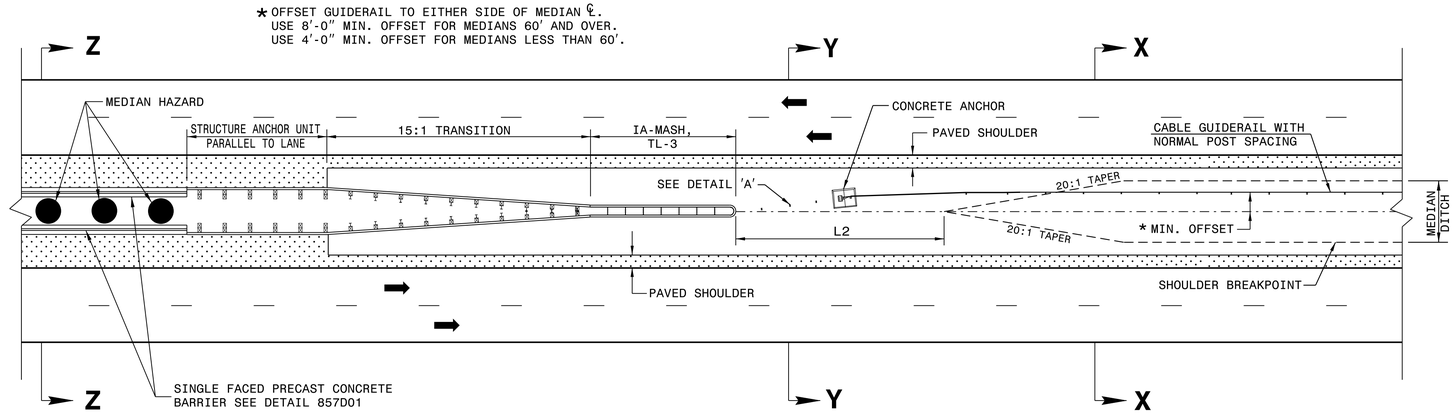
ORIGINAL BY: J.HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

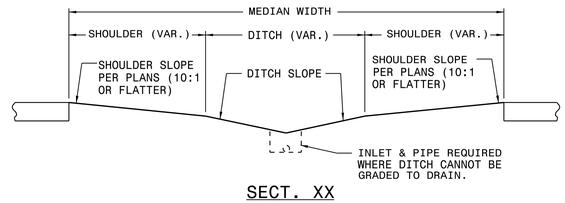
PROJECT REFERENCE NO.	SHEET NO.
R-4707	2C-8

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

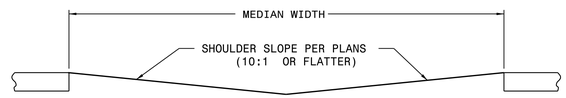
ROADWAY DETAIL DRAWING FOR
CABLE GUIDERAIL
MEDIAN HAZARD GUIDERAIL LAYOUT

SHEET 1 OF 12
865D01

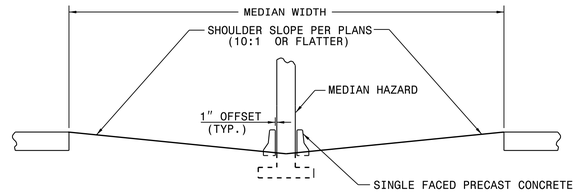




SECT. XX

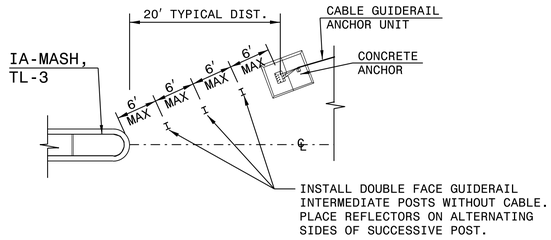


SECT. YY



SECT. ZZ

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



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

DETAIL 'A'

DETAIL OF TREATMENT AT MEDIAN HAZARDS

STATE OF
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ROADWAY DETAIL DRAWING FOR
CABLE GUIDERAIL
MEDIAN HAZARD GUIDERAIL LAYOUT

SHEET 1 OF12
865D01

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Jared S. Howerton

DocuSigned by: 4/17/2020
873F3D17DCDC45F...

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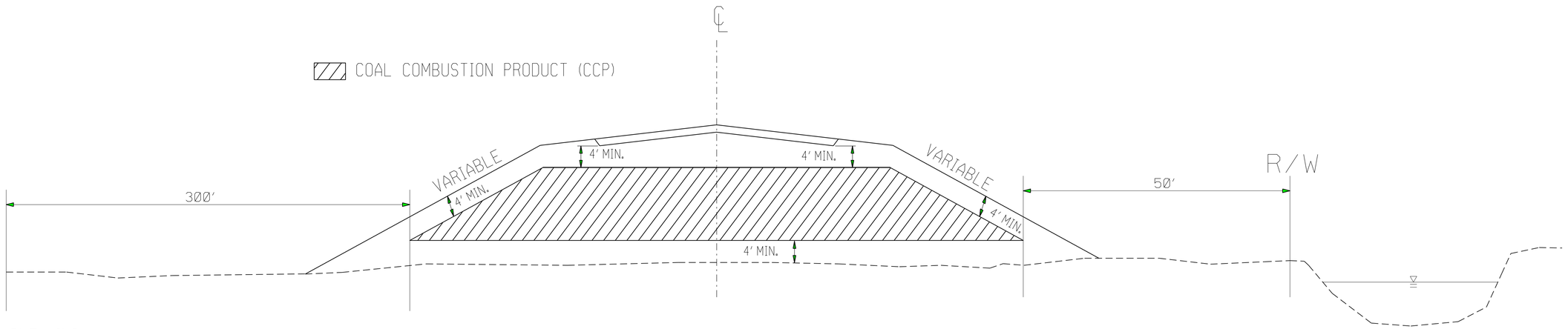
SEE TITLE BLOCK

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

31-JAN-2019 10:43
S:\Contracts\Contracts\Special Details\jhowerton\Standard Drawings\2018 Standard Drawings\Details in Lieu of Standards\865D01 Impact Attenuator Sheet 1.dgn
jhowerton AT CSD-21295

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2C-9

COAL COMBUSTION PRODUCT PLACEMENT



*(OBTAIN PERMISSION FROM ARMY CORPS OF ENGINEERS)

PLACE CCP IN HATCHED AREA IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS

PLACE CCP A MINIMUM OF 5' ABOVE SEASONAL HIGH GROUND WATER

PLACE AT LOCATIONS AS APPROVED BY THE ENGINEER

PLACE SOIL BORROW MATERIAL ON THE OUTSIDE OF CCP AS EACH LIFT OF CCP IS PLACED

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: 4/17/2020
873F3D17DCDC45F...

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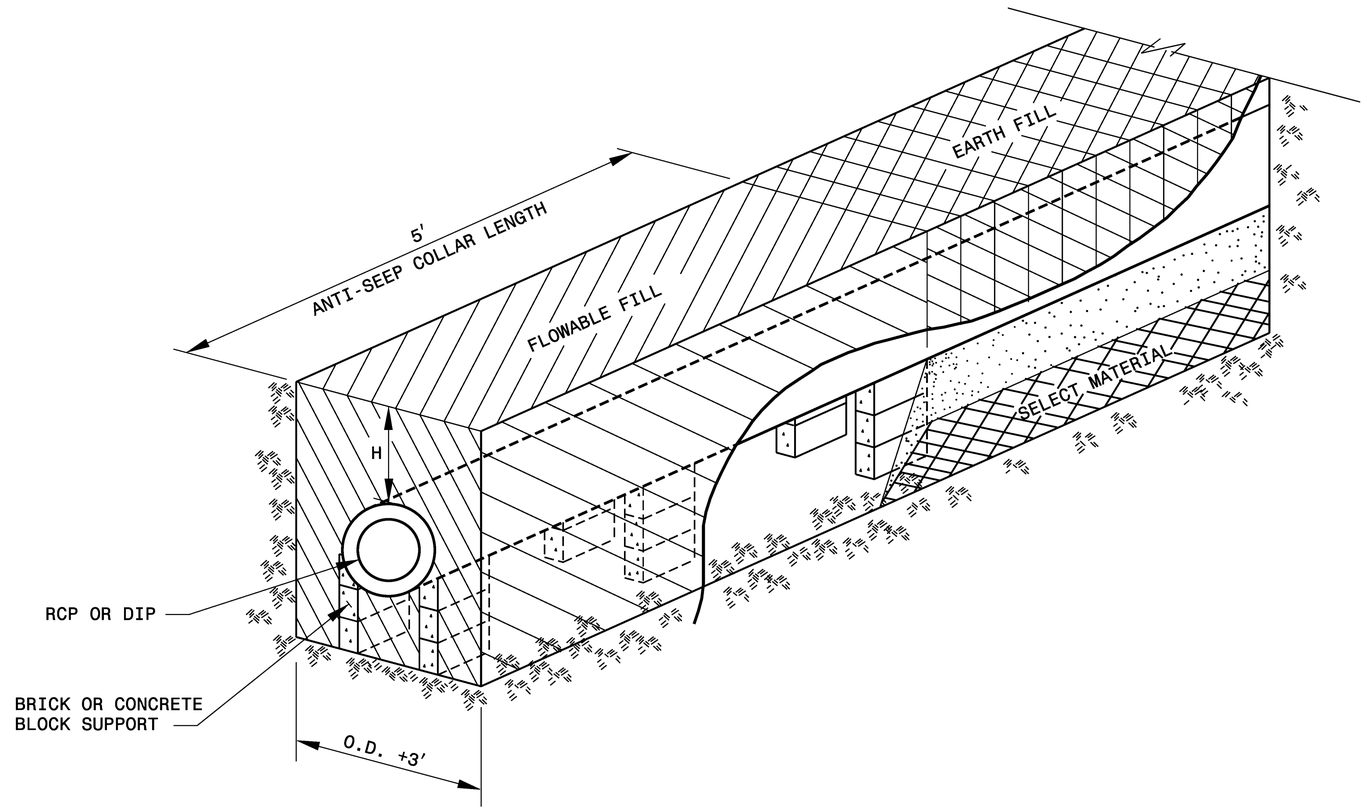
COAL COMBUSTION PRODUCT PLACEMENT DETAIL

ORIGINAL BY: J.S.H. DATE: 3/16/15
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: joel/coal combustion material detail.dgn

07-SEP-2017 08:21
S:\Contracts\Special Details\jhowerton\Coal Combustion Product Detail.dgn
jhowerton AT CSD-292595

PROJ. REFERENCE NO.	SHEET NO.
R-4707	2C-10



ANTI-SEEP COLLAR

NOTES:

ANTI-SEEP COLLAR LENGTH ALONG PIPE IS 5 FEET, CONSTRUCTED OF 35 PSI FLOWABLE FILL.

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

SEE ROADWAY STANDARD DRAWING NO.300.01, 2 OF 3, NCDOT,JANUARY 2018 FOR UNSUITABLE MATERIAL FOUNDATION.

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

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

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

RCP = REINFORCED CONCRETE PIPE.

DIP = DUCTILE IRON PIPE.

FLOWABLE FILL MATERIAL.

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

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

UNDISTURBED EARTH MATERIAL.

BRICK OR CONCRETE BLOCK SUPPORT

EARTH MATERIAL

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: 4/17/2020
873F3D17DCDC45F...

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

ANTI-SEEP COLLAR

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: rnbritt DATE: 05-15-15
CHECKED BY: _____ DATE: _____
FILE SPEC dptails/nbritt/english/hydro/anti seep collar.dgn

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2D-1
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 034381 NORTH CAROLINA PROFESSIONAL ENGINEER RICHARD J. DECOLA — 4/17/2020	SEAL 21656 NORTH CAROLINA PROFESSIONAL ENGINEER ROGER S. WEADON — 4/20/2020

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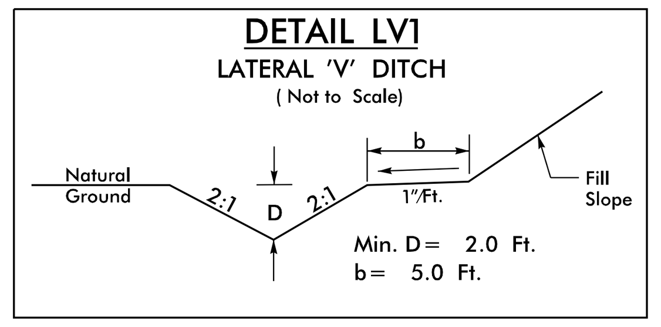
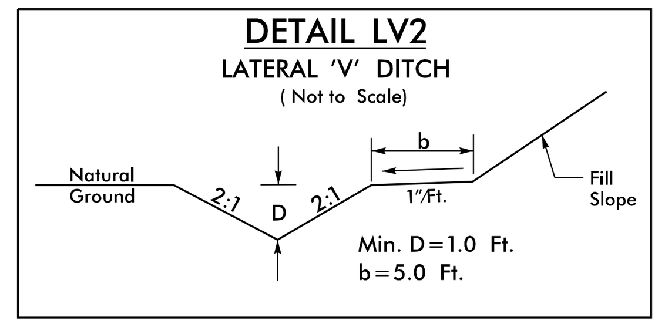
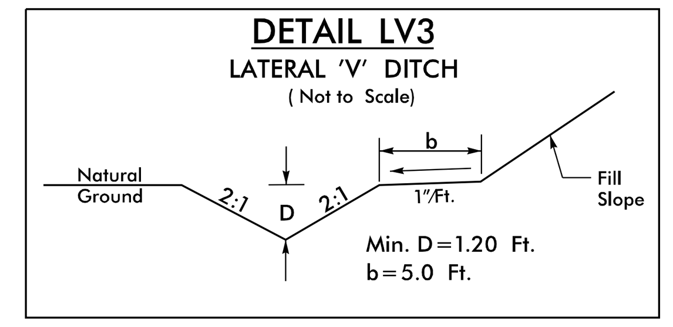


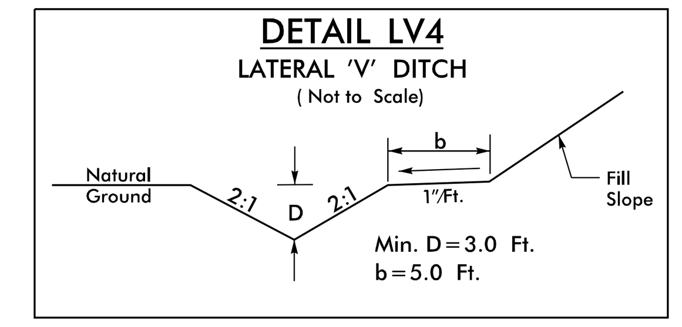
FROM STA. L RT 32+30 TO STA. L RT 36+30
FROM STA. L RT 36+30 TO STA. L RT 37+00
FROM STA. L LT 37+50 TO STA. L LT 38+50



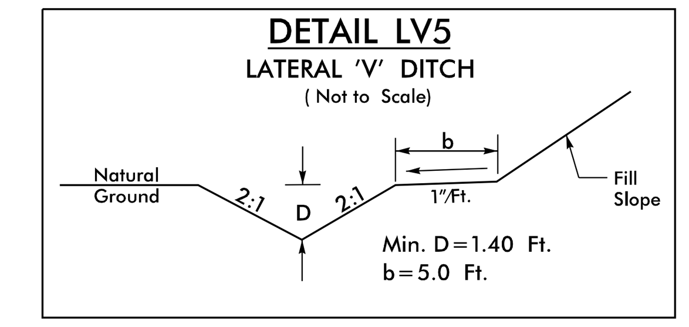
FROM STA. L RT 37+00 TO STA. L RT 40+00



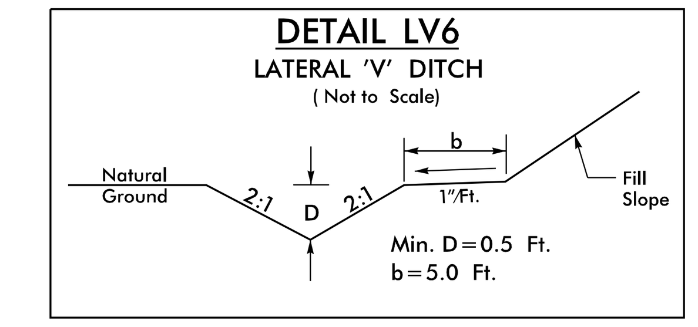
FROM STA. L LT 39+50 TO STA. L LT 41+00



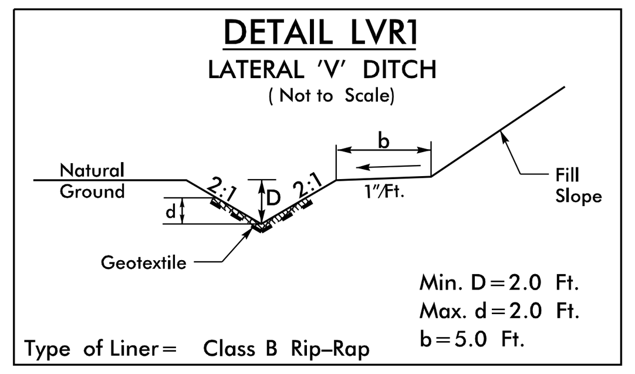
FROM STA. L LT 62+50 TO STA. L LT 66+00



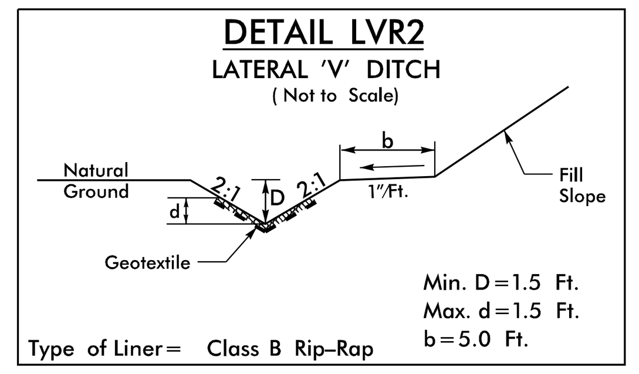
FROM STA. Y1 RT 13+25 TO STA. Y1 RT 13+50
FROM STA. Y1 RT 16+00 TO STA. Y1 RT 16+91



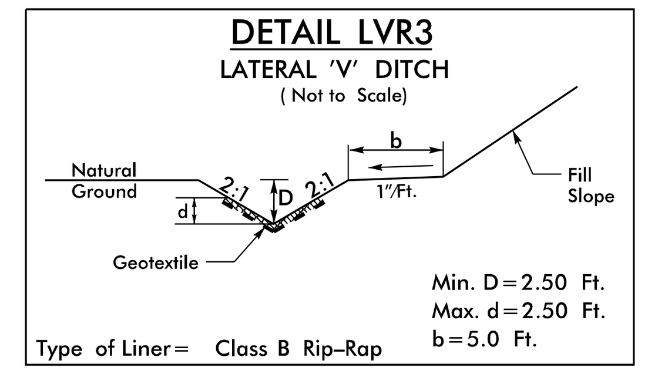
FROM STA. Y1 RT 20+00 TO STA. Y1 RT 25+00



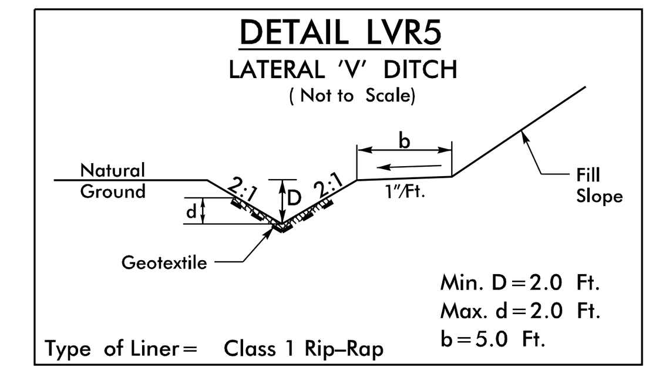
FROM STA. RPD RT 20+50 TO STA. RPD RT 23+90



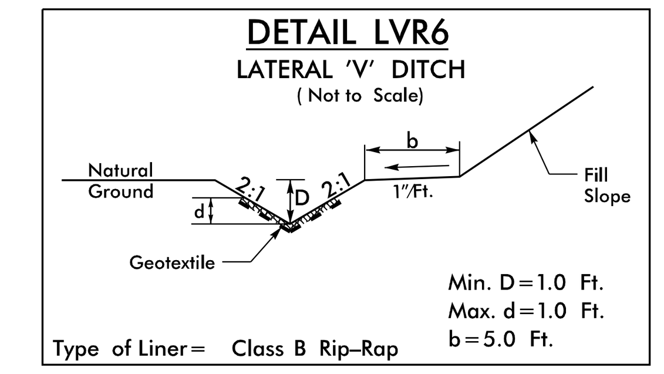
FROM STA. L RT 77+50 TO STA. L RT 80+50



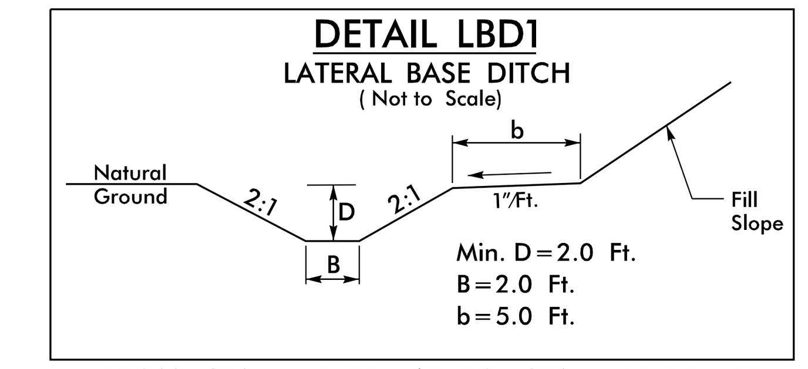
FROM STA. L LT 73+50 TO STA. L LT 77+00



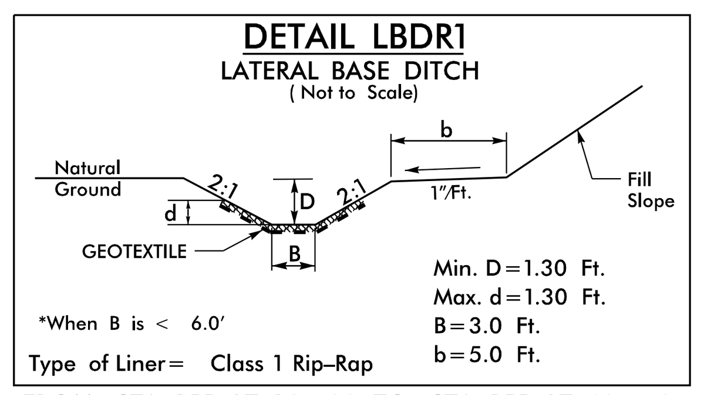
FROM STA. SPB LT 42+00 TO STA. RPB LT 40+50



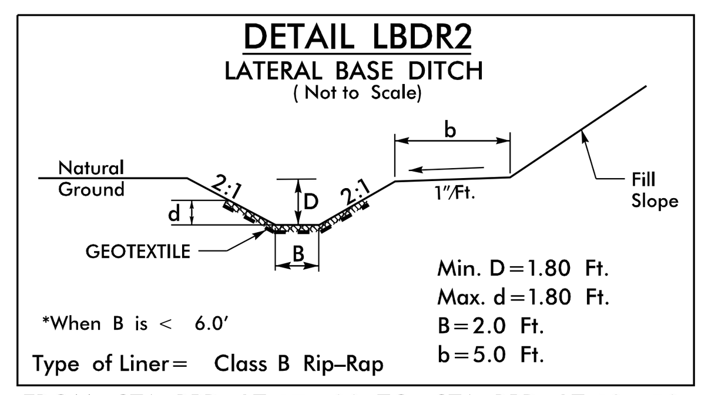
FROM STA. RPA LT 26+50 TO STA. Y LT 40+00



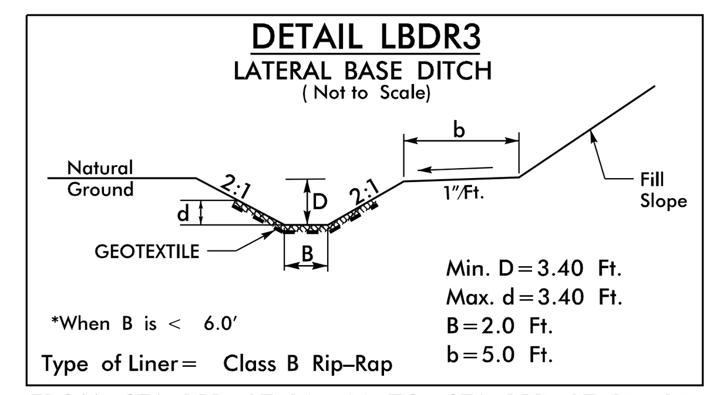
FROM STA. Y LT 29+68 TO STA. Y LT 30+50



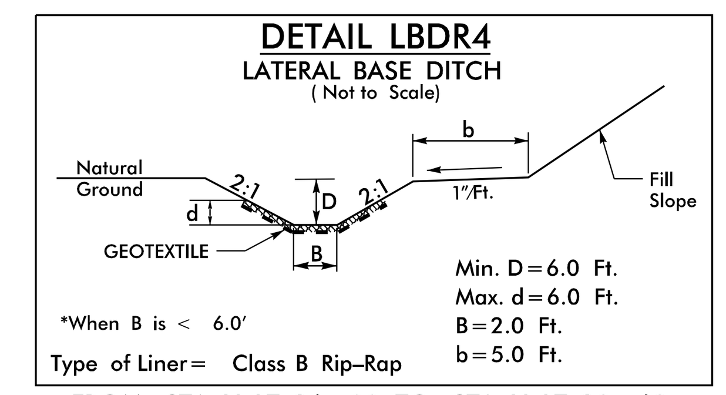
FROM STA. RPB LT 38+00 TO STA. RPB LT 40+50



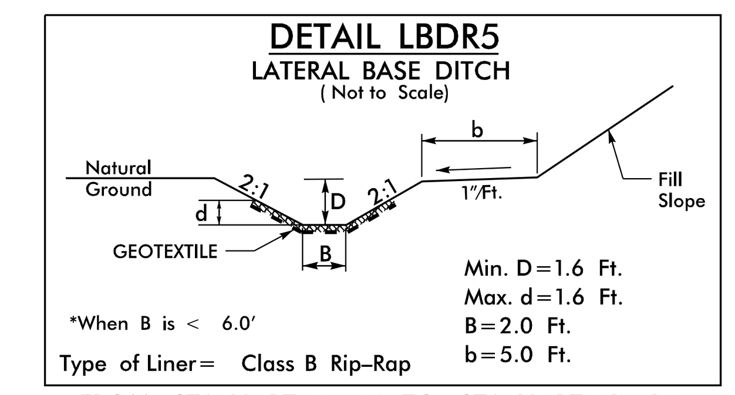
FROM STA. RPD LT 17+00 TO STA. RPD LT 18+50



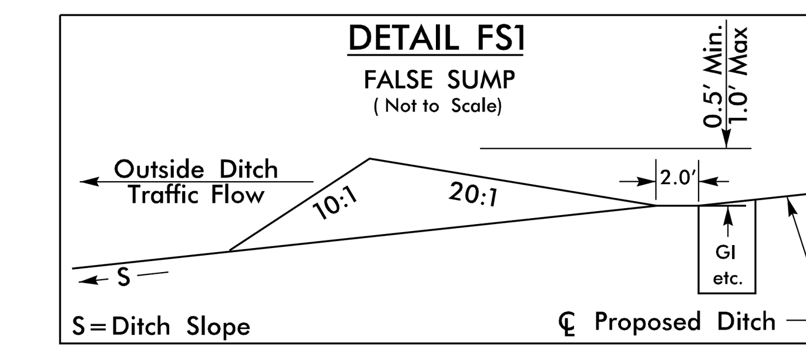
FROM STA. RPD LT 20+00 TO STA. RPD LT 21+25



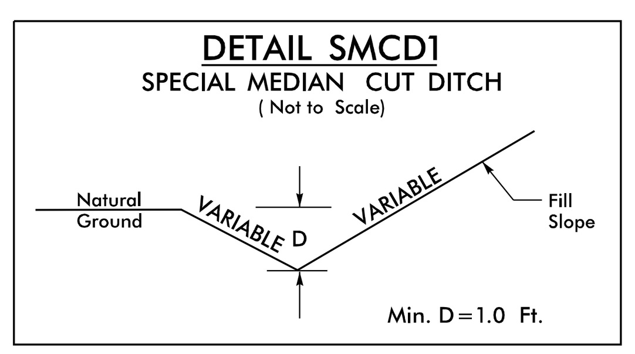
FROM STA. Y LT 26+00 TO STA. Y LT 29+68



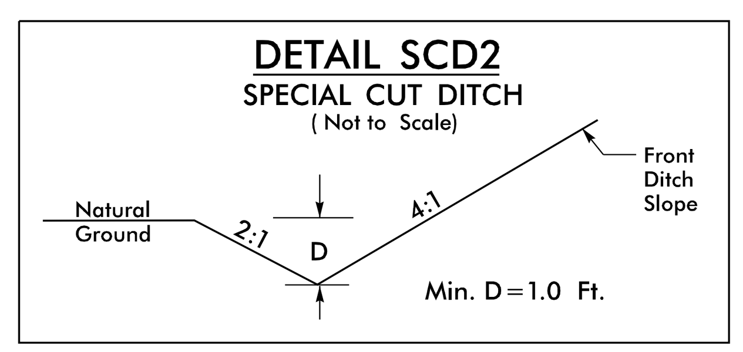
FROM STA. Y1 RT 11+50 TO STA. Y1 RT 13+25



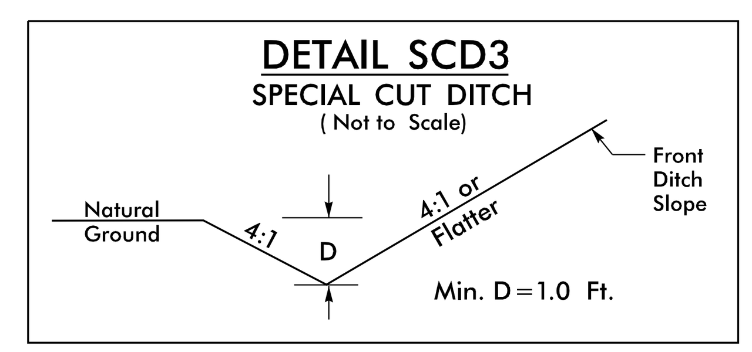
STA L 40+87 RT
STA L 44+76 RT
STA L 44+98 MED
STA RPC 14+03 RT
STA RPC 18+22 RT
STA RPC 19+01 LT
STA Y2 12+30 LT
STA RPD 20+24 RT



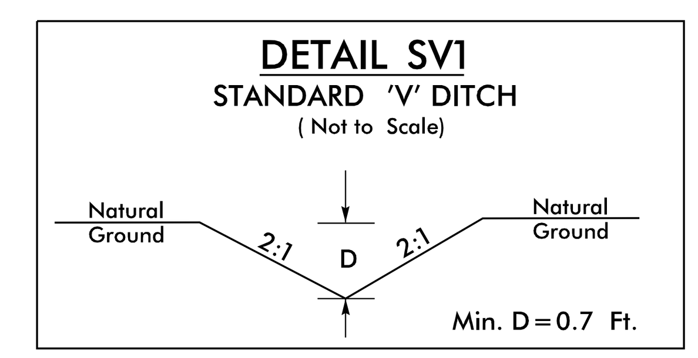
FROM STA. L MED 63+88 TO STA. L MED 74+20
FROM STA. L MED 74+20 TO STA. L MED 88+36



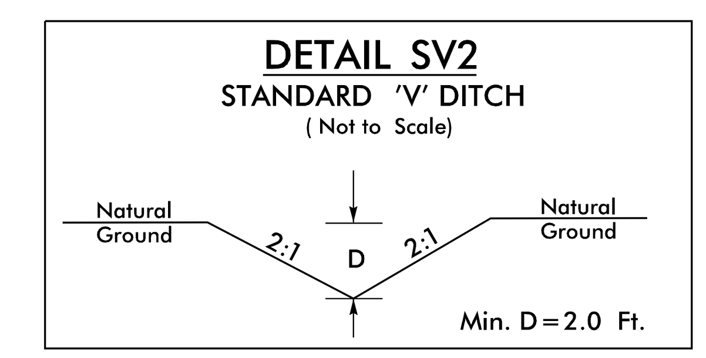
FROM STA. Y1 LT 10+50 TO STA. Y1 LT 13+00



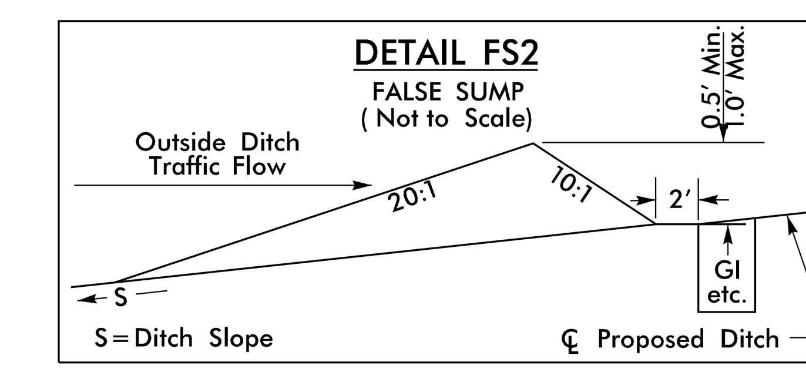
FROM STA. DR2B RT 11+50 TO STA. DR2B RT 14+00
FROM STA. DR1 RT 10+50 TO STA. DR1 RT 13+05
FROM STA. Y1 RT 13+50 TO STA. Y1 RT 16+00
FROM STA. Y1 RT 18+50 TO STA. Y1 RT 20+00
FROM STA. Y1 RT 25+00 TO STA. Y1 RT 27+00



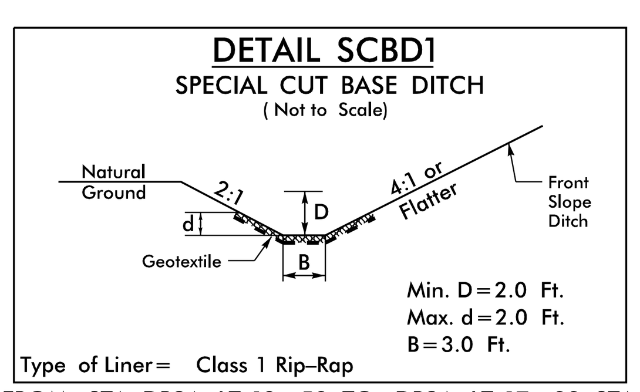
FROM STA. L LT 41+00 TO STA. L LT 41+50



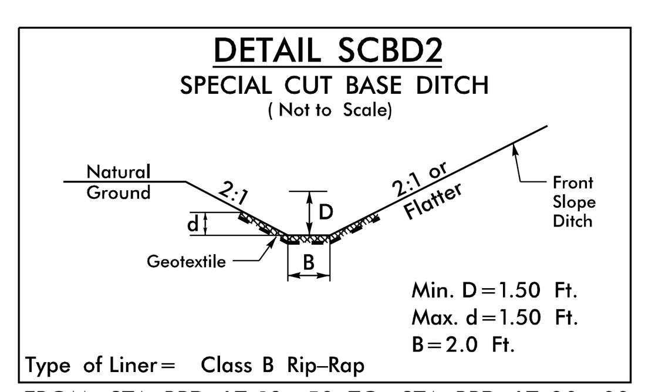
FROM STA. Y1 LT 12+38 TO STA. Y1 LT 13+00 (Tail Ditch)



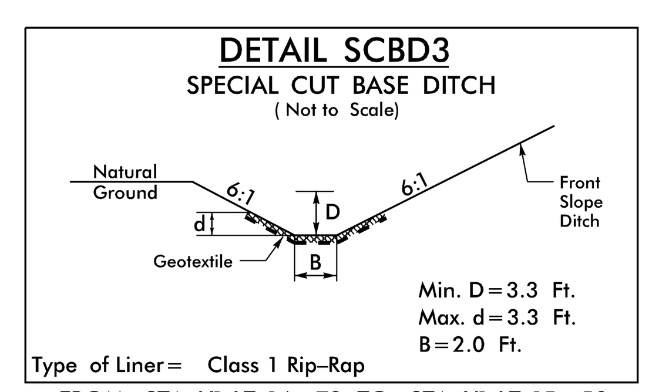
STA L 53+66 LT
STA RPB 10+46 LT
STA RPB 10+19 LT
STA RPB 35+61 RT
STA RPB 38+62 RT
STA L 48+77 MED
STA L 63+72 MED
STA L 67+74 MED
STA L 83+72 RT
STA L 88+15 RT



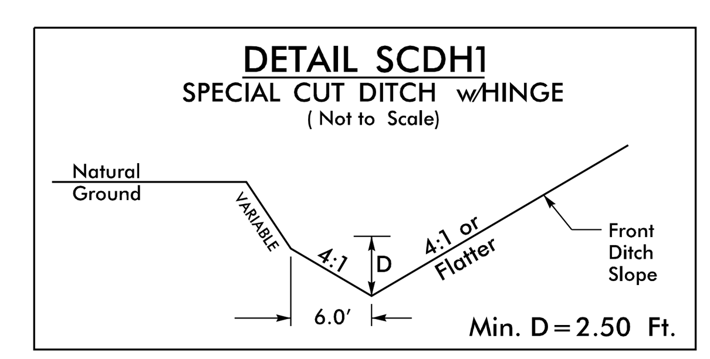
FROM STA. DR2A LT 13+50 TO DR2A LT 17+00 STA.



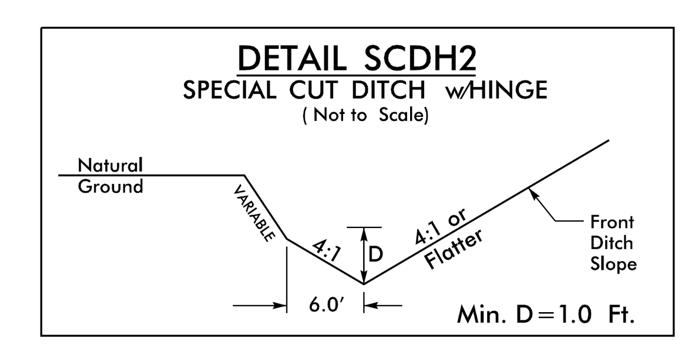
FROM STA. RPD LT 18+50 TO STA. RPD LT 20+00
FROM STA. DR2A RT 14+50 TO STA. Y1 LT 13+50



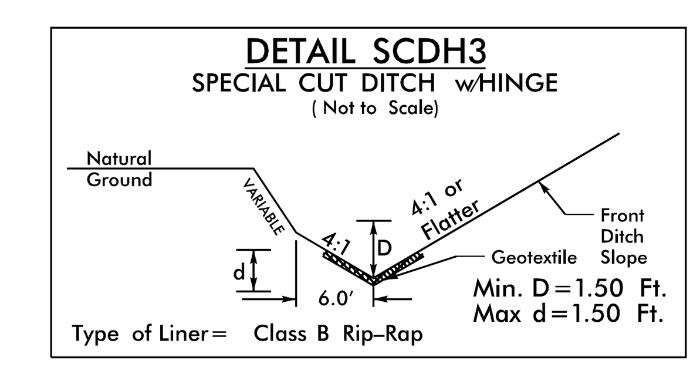
FROM STA. Y1 LT 14+72 TO STA. Y1 LT 15+50



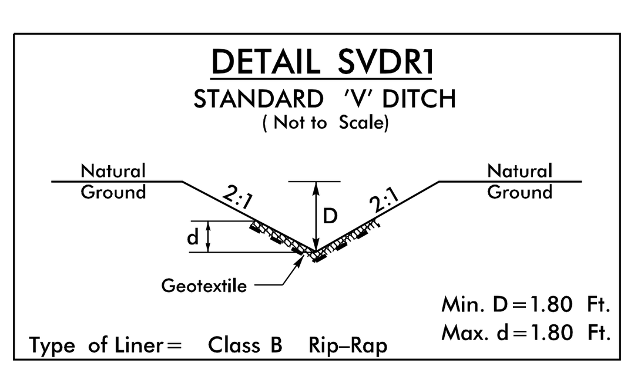
FROM STA. RPA RT 24+00 TO STA. Y LT 33+81
FROM STA. L LT 72+05 TO STA. L LT 73+50



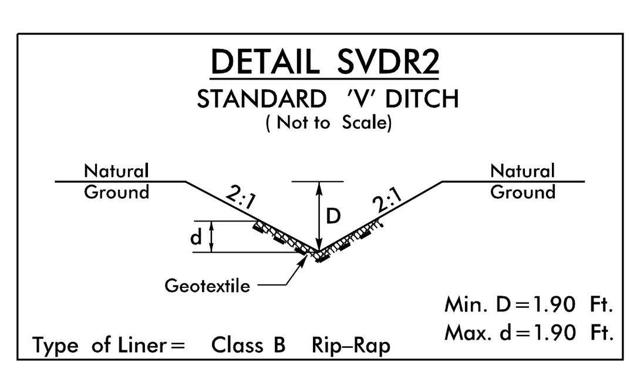
FROM STA. L RT 24+50 TO STA. L RT 27+50
FROM STA. L RT 41+00 TO STA. L RT 42+50
FROM STA. RPA RT 19+93 TO STA. RPA RT 24+00



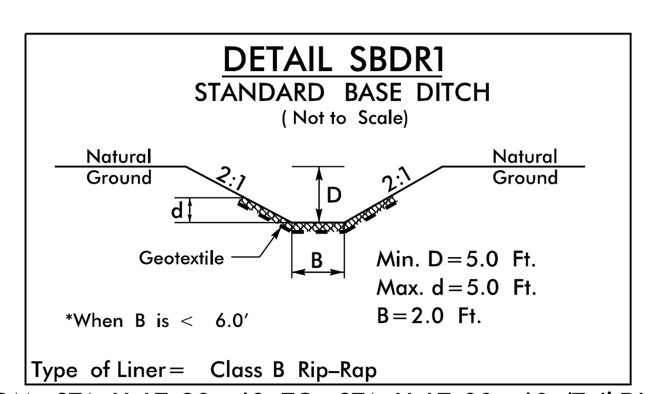
FROM STA. RPA RT 19+00 TO STA. RPA RT 19+93
FROM STA. DR1 LT 10+50 TO STA. DR1 LT 13+00



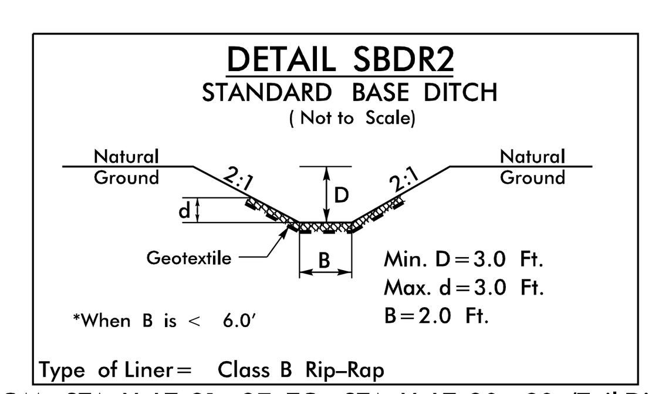
FROM STA. Y LT 26+52 TO STA. Y LT 27+30 (Tail Ditch)



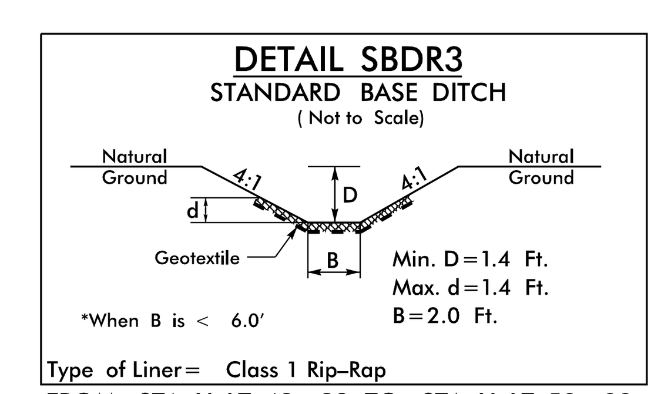
FROM STA. L LT 38+50 TO STA. L LT 39+10



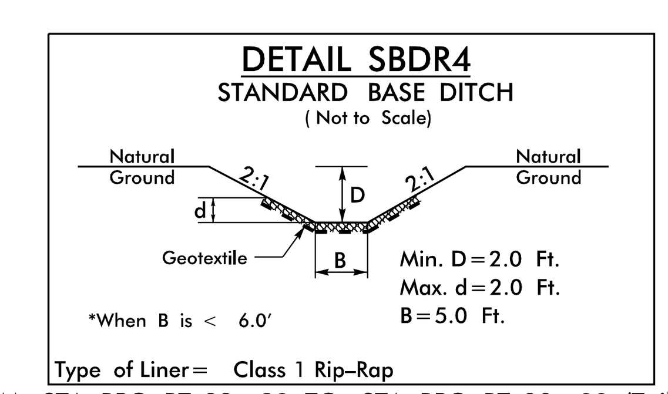
FROM STA. Y LT 29+62 TO STA. Y LT 29+68 (Tail Ditch)



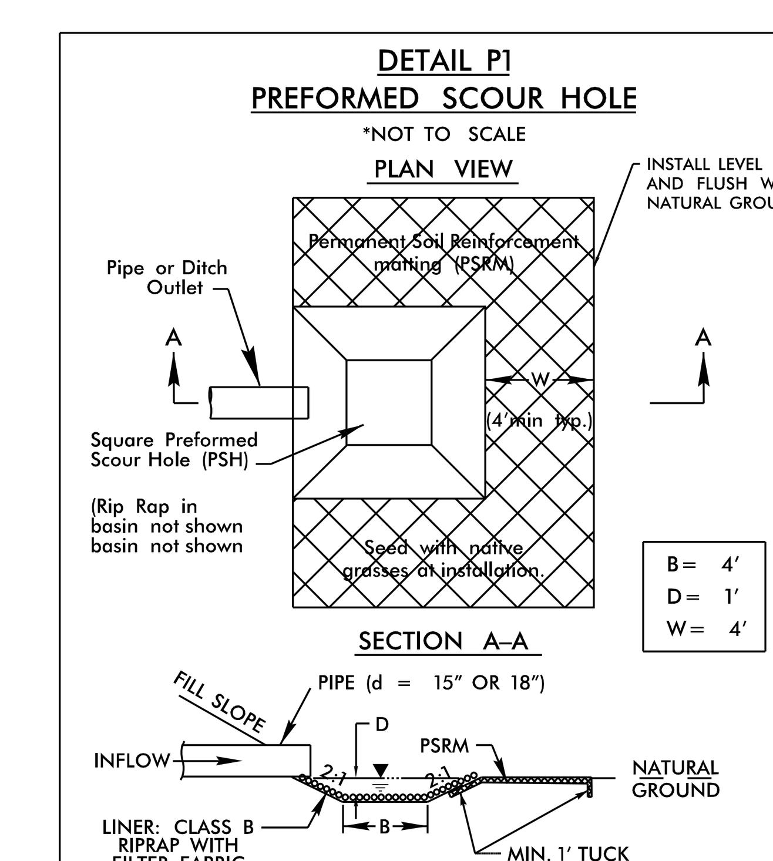
FROM STA. Y LT 21+27 TO STA. Y LT 20+80 (Tail Ditch)



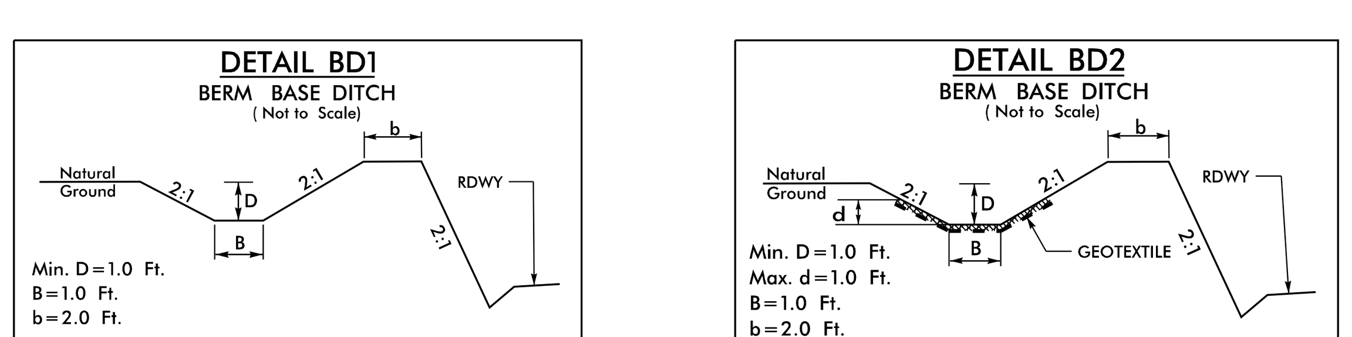
FROM STA. Y LT 48+83 TO STA. Y LT 50+00



FROM STA. RPC RT 22+90 TO STA. RPC RT 23+00 (Tail Ditch)



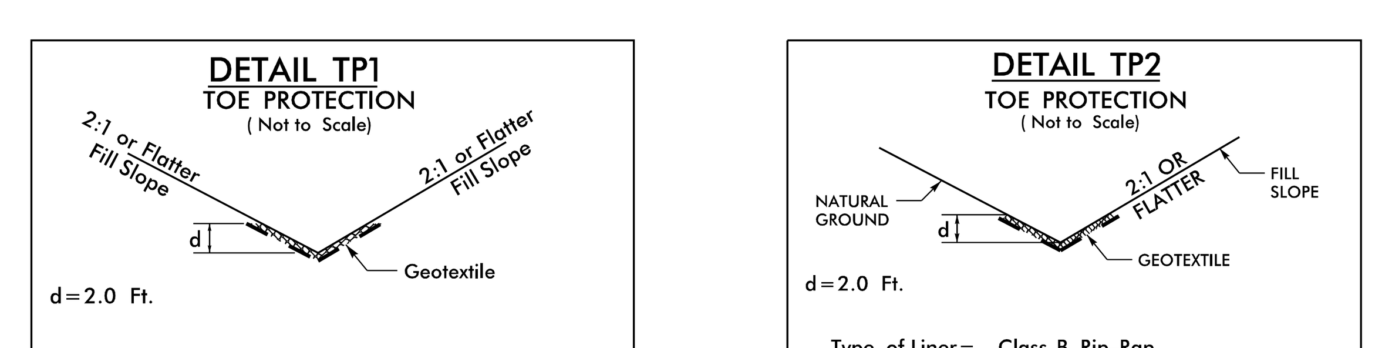
-L- STA 36+90 (LT)
-Y- STA 28+50 (RT)
-Y- STA 38+93 (RT)
-RPC- STA 21+00 (RT)



FROM STA. Y RT 48+75 TO STA. Y RT 49+24
FROM STA. Y RT 50+50 TO STA. Y RT 50+80

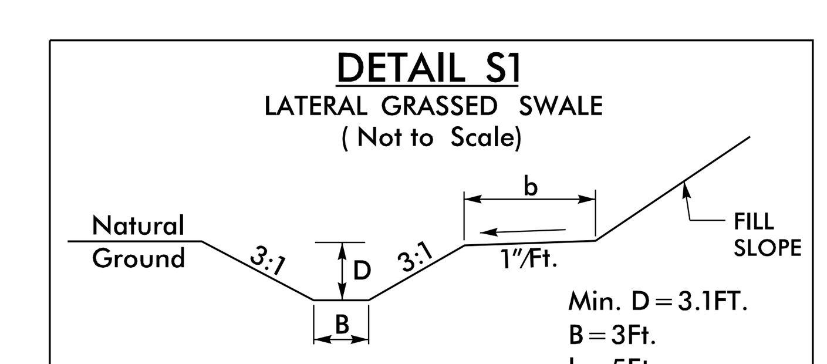
FROM STA. Y RT 49+24 TO STA. Y RT 50+50

FROM STA. Y RT 50+80 TO STA. Y RT 53+00



FROM STA. L 53+91 LT TO STA. L 59+63 LT
FROM STA. L 53+44 RT TO STA. L 59+67 RT
FROM STA. RPD 24+26 RT TO STA. RPD 26+12 RT

FROM STA. RPC RT 18+50 TO STA. RPC RT 20+30
FROM STA. L 77+10 LT TO STA. L 81+63 LT
FROM STA. SPC 26+25 RT TO STA. SPC 27+70 RT



FROM -RPB- 37+13 STA. TO STA. 38+00

02-MAR-2020 18:26
R:\Roadway\Proj\R4707_Rdy_dtl_2D.dgn
i784rjd

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2D-2

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034381 RICHARD J. DECOLA — 4/17/2020

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21656 ROGER S. WEADON — 4/20/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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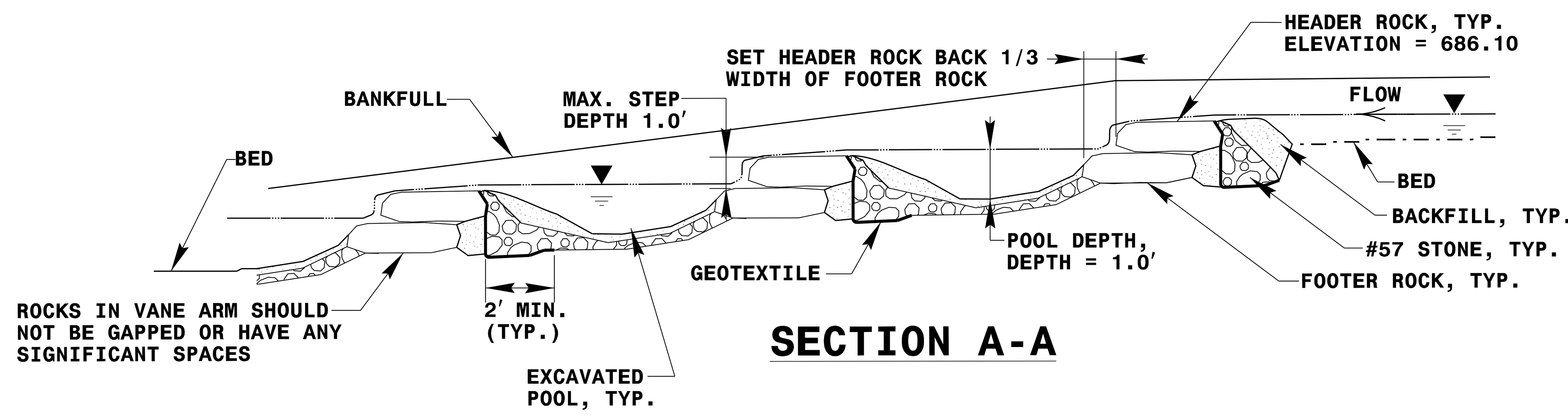
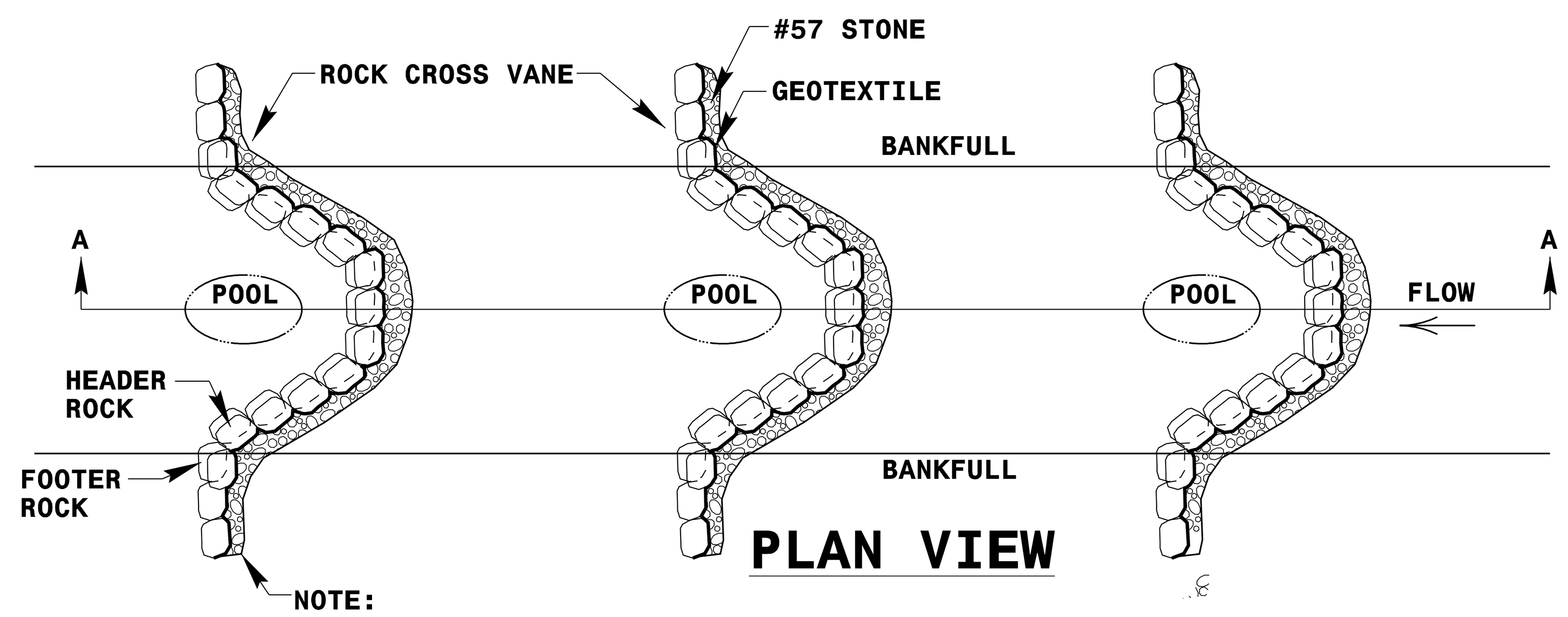


SECTION A-A

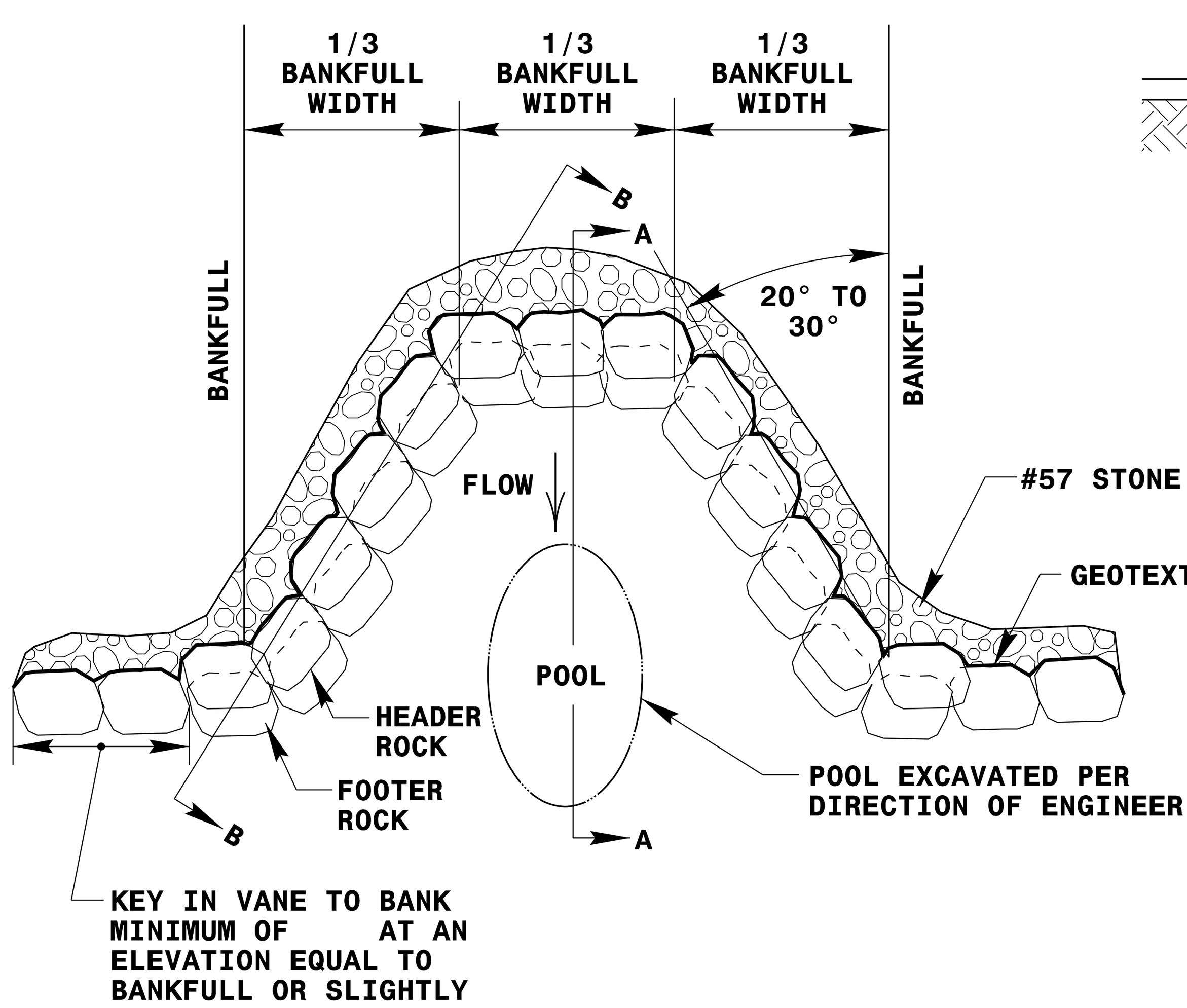


PLAN VIEW

STEP POOL DETAIL

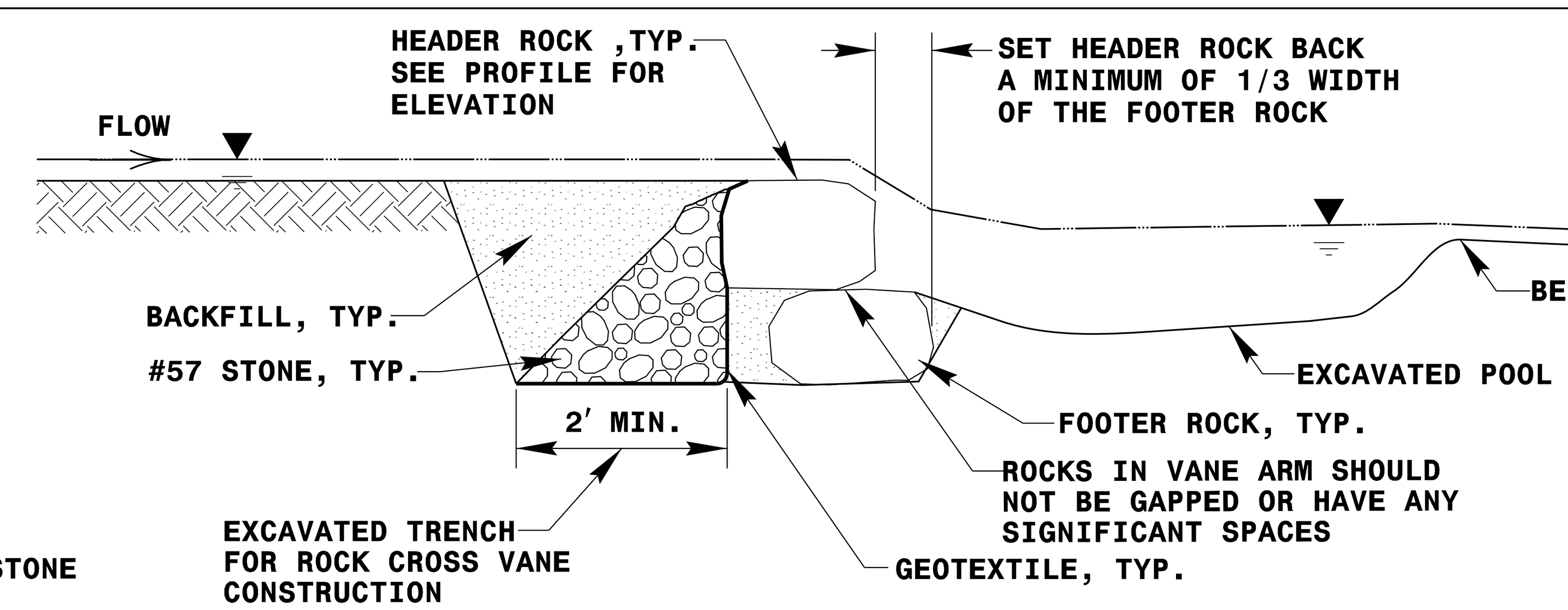
NOT TO SCALE

NOTES:
1. STEPS TO BE SPACED 18' TO 22' APART.
2. POOL SPACING SHALL BE INVERSELY PROPORTIONAL TO STREAM SLOPE, AND DIRECTLY PROPORTIONAL TO BANKFULL WIDTH.
3. POOL DEPTHS AT BANKFULL ELEVATION SHALL BE TYPICALLY 2 TIMES DEEPER THAN STEP DEPTHS AT BANKFULL ELEVATION.
4. ADEQUATE NUMBER OF FOOTER BOULDERS TO BE USED IN ORDER TO HOLD UP THE BOULDERS AT HEAD OF STEPS DURING HIGH ENERGY/HIGH FLOW EVENTS.
5. STEP POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.

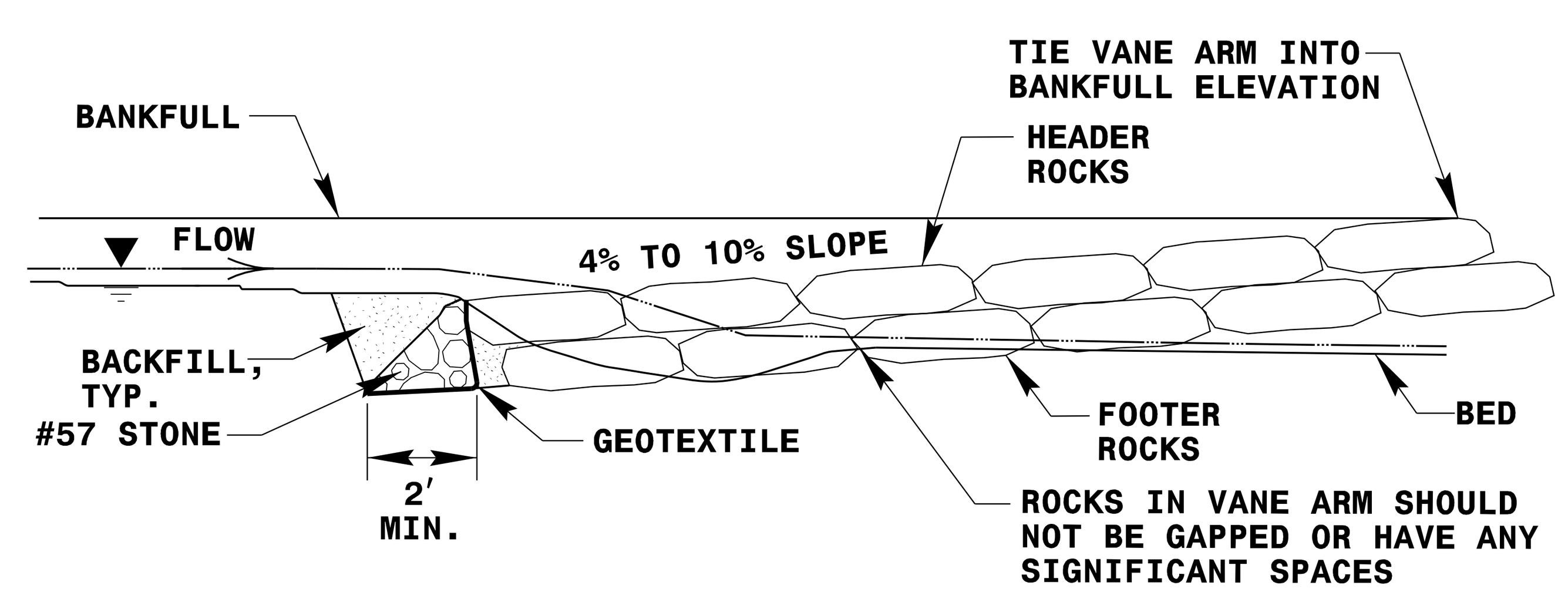


PLAN VIEW

	BOULDER DIMENSIONS (FT)		
STATION	HEIGHT	LENGTH	WIDTH
-	2.0'	3.0'	2.5'



SECTION A-A



SECTION B-B

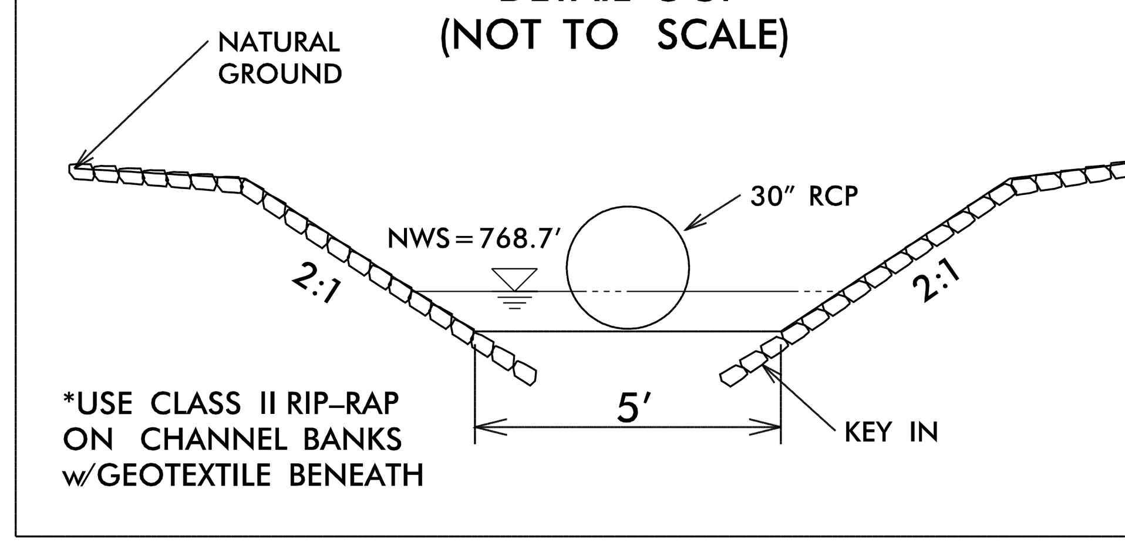
NOTES:
1. DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
2. DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
3. CLASS "A" STONE CAN BE USED TO REDUCE VOIDS BETWEEN HEADERS AND FOOTERS.
4. COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
5. POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.

ROCK CROSS VANE DETAIL FOR STEP POOLS

NOT TO SCALE

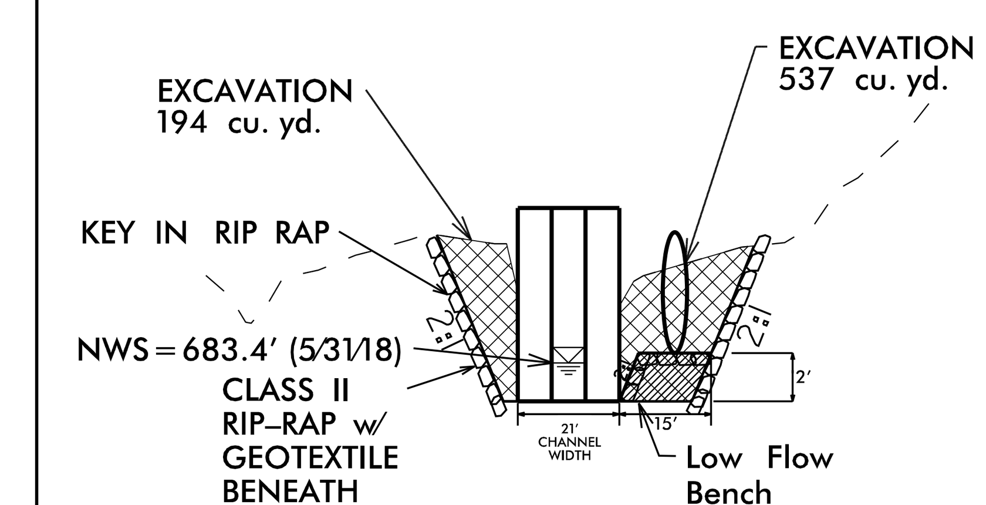
FROM -RPC- STA. 22+06 TO -RPC- STA. 22+96 RT

OUTLET CHANNEL DETAIL
DETAIL OC1
(NOT TO SCALE)



-L- STA 33+85 (36.5'+/- LT)

CULVERT INLET

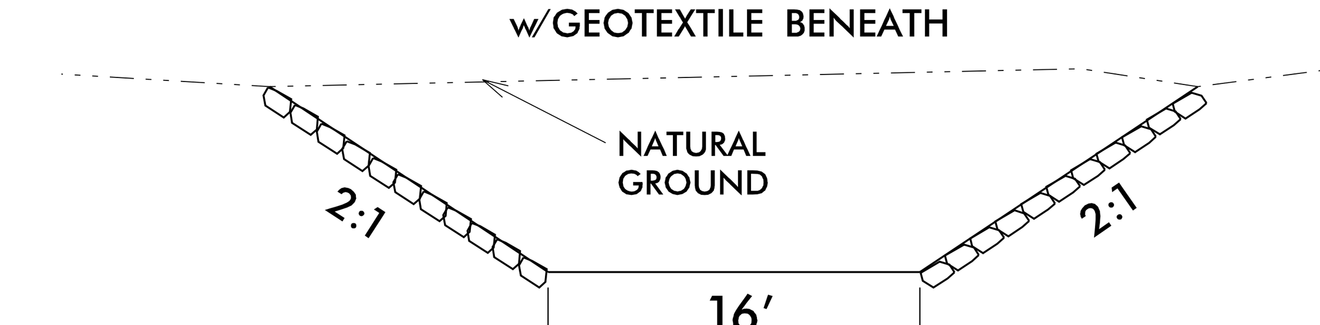


*FOR CUT CONDITION, USE CLASS II RIPRAP FLOOD BENCH BORDER WITH NATURAL GROUND COVER WITH COIR FIBER MAT INSIDE BORDER. IN FILL CONDITION, USE CLASS II RIPRAP FILL THROUGHOUT, WITH NATIVE BED MATERIAL FILLING THE VOIDS ON TOP.

-L- STA. 54+94 (CULVERT INLET 305' LT)

STREAM CHANNEL RELOCATION
DETAIL CR1

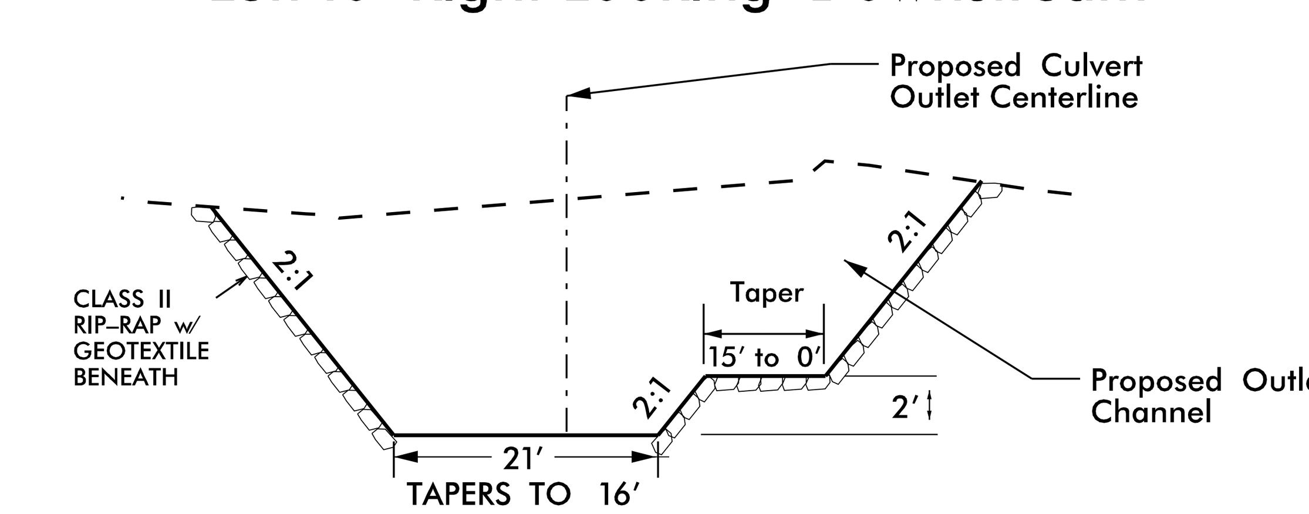
*USE CLASS II RIP-RAP ON CHANNEL BANKS w/GEOTEXTILE BENEATH



LONGITUDINAL SLOPE=.0045 FT/FT.

FROM -L- STA. 57+58 (350' RT+/-)
TO -L- 59+15 (405' RT+/-)

Channel Detail CH1
(Not to Scale)
Left to Right Looking Downstream



LONGITUDINAL SLOPE=.0045 FT/FT.

FROM -L- STA. 57+54 (@ CULVERT OUTLET 306' RT)
TO -L- STA. 57+58 (350' RT+/-)

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2G-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 12/5/2019
F760CAE89DEC4DB... SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

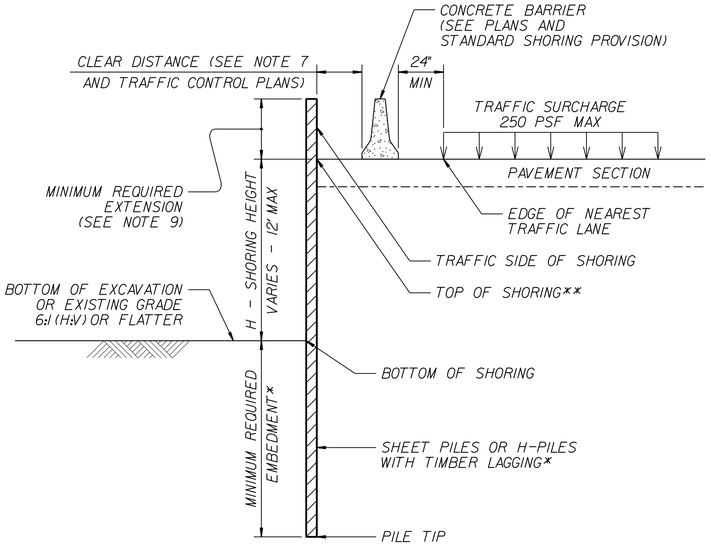
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS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

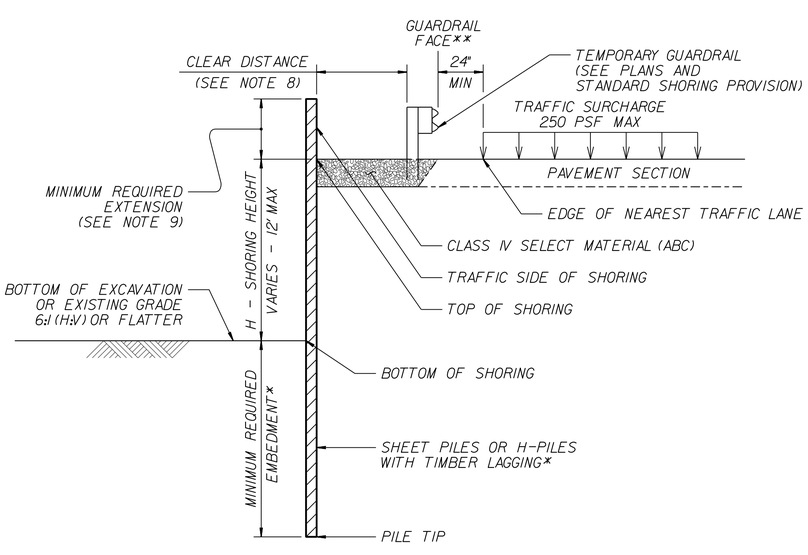
NOTES:

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.



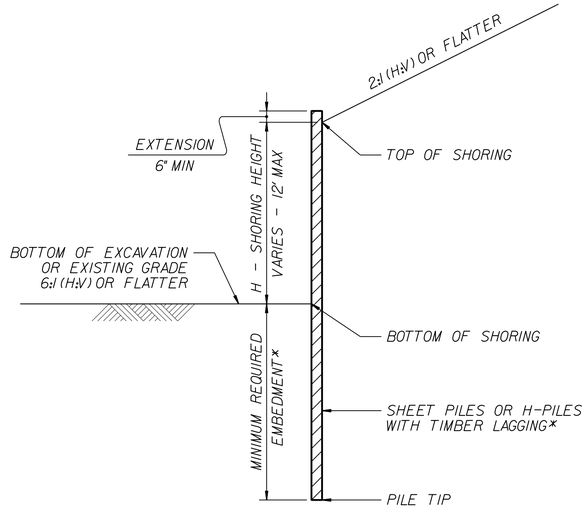
CONCRETE BARRIER

**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

COMPUTED BY: T. A. COOK	DATE: 2/13/2020
CHECKED BY: R. J. DECOLA	DATE: 2/13/2020

PROJECT NO.	SHEET NO.
R-4707	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

(In Cubic Yards)

Station	Station	UNCLASSIFIED EXCAVATION	UNDERCUT EXCAVATION	EMBT +%	BORROW	WASTE
SUMMARY NO. 1						
-L- STA. 20+00.00 LT	-L- STA. 31+50.00 LT	2,551		17		2,534
-L- STA. 21+50.00 MED	-L- STA. 31+50.00 MED	1,040		623		417
-L- STA. 21+50.00 RT	-L- STA. 31+50.00 RT	1,814		446		1,368
SUMMARY NO. 1 TOTALS		**5,405**	**0**	**1,086**	**0**	**4,319**
SUMMARY NO. 2						
-L- STA. 31+50.00 LT	-L- STA. 61+50.00 LT	24,257	1,603	35,986	11,729	1,603
-Y- STA. 21+00.00	-Y- STA. 40+60.76	5,593	3,054	69,336	65,336	4,647
-RPB- STA. 29+48.50	-RPB- STA. 42+79.14	56,595	8,824	119,933	66,131	11,617
-SPB- STA. 41+40.00	-SPB- STA. 43+83.00			11,130	11,130	
-Y1- STA. 10+27.02	-Y1- STA. 34+50.00	7,108		22,219	15,111	
-DR2A- STA. 11+90.00	-DR2A- STA. 17+20.21	1,859		2,886	1,027	
-DR2B- STA. 10+65.00	-DR2B- STA. 14+02.98	406		112		
-Y4- STA. 10+27.02	-Y4- STA. 14+65.00	124		1,108	984	
-DR1- STA. 10+15.00	-DR1- STA. 13+27.18	1,550	577			2,127
SUMMARY NO. 2 TOTALS		**97,492**	**14,058**	**262,710**	**171,448**	**19,994**
SUMMARY NO. 3						
-L- STA. 31+50.00 RT	-L- STA. 61+50.00 RT	3,912		10,484	7,241	669
-Y- STA. 42+18.26	-Y- STA. 58+80.00	20,628	3,139	182,582	162,802	3,987
-RPC- STA. 15+29.00	-RPC- STA. 25+32.29	6,350	7,804	154,411	148,061	7,804
-SPC- STA. 24+34.00	-SPC- STA. 26+83.00		6,010	48,367	48,367	6,010
-Y2- STA. 10+50.00	-Y2- STA. 20+28.26	48,331		164		48,167
-Y5- STA. 10+27.00	-Y5- STA. 12+10.00	317		58		259
SUMMARY NO. 3 TOTALS		**79,538**	**16,953**	**396,066**	**366,471**	**66,896**
SUMMARY NO. 4						
-L- STA. 61+50.00 LT	-L- STA. 90+25.00 LT	6,180		14,556	8,376	
-RPA- STA. 17+00.00	-RPA- STA. 27+72.73	19,399		4,139		15,260
-SPA- STA. 26+50.00	-SPA- STA. 28+39.00	2,495	230	1,126		1,599
SUMMARY NO. 4 TOTALS		**28,074**	**230**	**19,821**	**8,376**	**16,859**
SUMMARY NO. 5						
-L- STA. 61+50.00 RT	-L- STA. 90+25.00 RT	13,378		2,864		10,514
-RPD- STA. 14+99.00	-RPD- STA. 26+12.52	7,469		88,024	83,155	2,600
-SPD- STA. 24+55.00	-SPD- STA. 26+12.00	125	2,739	33,734	33,734	2,864
SUMMARY NO. 5 TOTALS		**20,972**	**2,739**	**124,622**	**116,889**	**15,978**
SUMMARY NO. 5						
-L- STA. 31+50.00 MED	-L- STA. 61+50.00 MED	1,332		1,601	269	
-L- STA. 61+50.00 MED	-L- STA. 90+25.00 MED	2,054		749		1,305
SUMMARY NO. 5 TOTALS		**3,386**	**0**	**2,350**	**269**	**1,305**
SUMMARY TOTALS		**234,867**	**33,980**	**806,655**	**663,453**	**125,351**
MATERIAL FOR SHOULDER CONSTRUCTION				14,400	14,400	
LOSS DUE TO CLEARING & GRUBBING		-13,000			13,000	
ADDITIONAL UNDERCUT			5,600	6,720	6,720	5,600
EARTH WASTE TO REPLACE BORROW					-56,474	-56,474
PROJECT TOTALS		**221,867**	**39,580**	**827,775**	**641,099**	**74,477**
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					32,055	
GRAND TOTALS:		**221,867**	**39,580**		**673,154**	
SAY:		**225,000**	**40,000**		**680,000**	

Note: 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.

Note: Unclassified Excavation - Acceptable, but not to be used in top 3' of Embankment or Backfill per the Geotechnical Engineering Unit:

-RPA- Sta. 14+75 to 16+25 LT & RT = 650 CY
-SPA- Sta. 26+25 to 27+75 LT &RT = 625 CY
-RPB- Sta. 26+75 to 29+75 LT & RT = 4,500 CY
-RPB- Sta. 32+75 to 35+25 LT & RT = 7,075 CY
-RPC- Sta. 14+75 to 17+25 LT & RT = 3,650 CY
-Y- Sta. 21+25 to 24+75 LT = 400 CY
-Y- Sta. 30+75 to 33+25 LT & RT = 2,450 CY
-Y- Sta. 35+25 to 36+75 LT = 125 CY
-Y- Sta. 49+25 to 53+25 LT & RT = 5,775 CY
-Y1- Sta. 10+00 to 11+75 LT & RT = 1,275 CY
-Y1- Sta. 29+25 to 32+75 LT & RT = 575 CY
Total = 27,100 CY

Pavement Structure Volume = 50,000 CY
Drainage Ditch Excavation = 13,000 CY

COMPUTED BY: M. E. VAUGHAN	DATE: 2/13/2020
CHECKED BY: R. J. DECOLA	DATE: 2/13/2020

PROJECT NO.	SHEET NO.
R-4707	3B-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PAVEMENT REMOVAL SUMMARY

(IN SQUARE YARDS)

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	ASPHALT REMOVAL	CONCRETE REMOVAL	COMMENTS
EXISTING OUTSIDE PAVED SHOULDERS						
-L-	20+00	60+00	LT	2415.69		
-L-	63+32	68+99	LT	292.00		
-L-	77+14	90+25	LT	664.14		
-L-	63+73	69+73	RT	347.48		
-L-	83+69	90+25	RT	331.94		
EXISTING MEDIAN PAVED SHOULDERS & LEFTOVERS						
-L-	20+00	26+70	LT	272.95		
-L-	28+80	31+65	LT	109.92		
-L-	37+04	90+25	LT	2070.74		
-L-	21+50	28+79	CL	1504.12		US 29 NB LEFTOVER
-L-	28+79	31+65	RT	125.09		
-L-	31+65	37+04	CL	1196.30		US 29 SB LEFTOVER
-L-	37+04	90+25	RT	2109.76		
EXISTING ACCELERATION/DECELERATION LANES & RAMPS						
-L-	32+79	63+73	RT	6480.01		INCLUDES PS & GORE
-L-	60+00	63+32	LT	981.56		INCLUDES PS & GORE
-L-	68+99	77+14	LT	1958.25		INCLUDES PS & GORE
-L-	69+73	83+69	RT	2788.21		INCLUDES PS & GORE
-RPA-	21+10	24+90	LT & RT	652.75	2232.06	EXISTING RAMP A & D
-RPD-	17+60	23+60	LT & RT	1844.74	1611.14	EXISTING RAMP B & C
EXISTING ROADS & DRIVEWAYS						
-Y1-	10+53	19+21	RT	1881.48		EXISTING SUMMIT AVE.
-Y1-	20+65	23+95	LT	220.09		
-Y1-	29+89	33+98	RT	2181.45		EXISTING REEDY FORK PKWY.
-RPD-	15+03	15+55	LT	317.71		EXISTING REEDY FORK PKWY.
-Y2-	11+42	20+67	RT	2741.61		EXISTING REEDY FORK PKWY.
-L-	16+66	17+00	LT	85.70		PARCEL NO. 3 DRIVEWAY
-L-	20+63	23+53	LT	723.36		PARCEL NO. 1 DRIVEWAY
-L-	25+25	25+94	LT		327.80	PARCEL NO. 2 DRIVEWAY
-L-	27+06	32+06	LT	2750.93		PARCEL NO. 2 DRIVEWAY
-Y4-	10+23	14+65	RT	1273.75		PARCEL NO. 11 DRIVEWAY
-DR2A-	12+07	17+58	RT	2559.11		PARCEL NO. 12 DRIVEWAY
-DR1-	10+15	13+65	RT	1770.44		PARCEL NO. 7 DRIVEWAY
TEMPORARY PAVEMENT						
-L-	35+95	92+25	LT	6243.22		INCLUDES REMOVAL FOR WIDENING MEDIAN
-L-	32+45	92+25	RT	6802.78		INCLUDES REMOVAL FOR WIDENING MEDIAN
-Y1-	15+67	16+57	RT	570.94		-DR1- TEMPORARY CONNECTION
			TOTAL	56268.2	4171.0	SEE SHEET 2B-8 FOR DETAIL OF EXISTING PAVEMENT TO BE REMOVED AND REPLACED
			SAY	**56,500**	**4,200**	

COMPUTED BY: M. E. VAUGHAN	DATE: 2/13/2020
CHECKED BY: R. J. DECOLA	DATE: 2/13/2020

PROJECT NO.	SHEET NO.
R-4707	3B-3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SHOULDER BERM GUTTER SUMMARY

LINE	LOCATION	STATION	STATION	LENGTH (LF)
-L- SB	LT	62+10	62+80	70
-Y-	RT	39+55	40+37	87
-Y-	LT	39+89	40+37	49
-Y-	RT	42+42	43+00	83
-Y-	LT	42+42	42+91	50
-L- & -RPA-	RT	81+05	13+50	555
-RPB-	LT	15+00	18+75	375
-RPB- & -SPB-	LT	35+75	41+45	560
-RPC- & -SPC-	RT	18+25	24+50	617
-RPD- & -SPD-	LT	21+25	24+55	327
			TOTAL	2773
			SAY	2800

EXPRESSWAY GUTTER SUMMARY

LINE	LOCATION	STATION	STATION	LENGTH (LF)
-RPB-	LT	23+75	30+00	625
-RPD-	LT	12+00	16+50	450
			TOTAL	1075
			SAY	1080

DOUBLE FACED CABLE GUIDERAIL SUMMARY

LINE	LOCATION	STATION	STATION	LENGTH (LF)	ANCHOR UNITS (EACH)
-L-	MED	50+22	59+17	895	2
			TOTAL	895	2
ADDITIONAL GUIDERAIL POSTS = 5			SAY	900	2

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL

GUARDRAIL SUMMARY

G = GATING IMPACT ATTENUATOR TYPE TL-3
NG = NON-GATING IMPACT ATTENUATOR TYPE TL-3

BEG. STA. SURVEY LINE	BEG. STA.	END STA. SURVEY LINE	END STA.	LOCATION	LENGTH		WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS			IA-MASH TL-3		REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
					STRAIGHT	SHOP CURVED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU TL-3	TYPE B-77	CAT-1	G	NG			
-L-	20+00.00	-L-	21+00.00	LT	100.00		19+75.00	-	9	12	50.00	-	1.00	-	1					89		
-L-	23+06.25	-L-	31+43.75	MED LT	837.50		-	-	6	9	118.75	118.75	7.75	7.75					1	403		
-L-	22+81.25	-L-	31+18.75	MED RT	837.50		-	-	6	9	118.75	118.75	7.75	7.75					1	290		
-L-	46+40.00	-L-	46+65.00	MED RT	25.00		-	-	-	-	-	-	-	-					1			
-L-	57+84.13	-L-	60+07.00	RT	222.87		60+07.00	-	24	27	50.00	-	1.00	-	1	1				173		
-L-	59+62.63	-L-	60+35.50	MED LT	72.87		-	60+35.50	20	20	-	26.25	-	1.75		1				779		SEE ROADWAY STD DRAWING 862.01
-L-	59+62.63	-L-	60+35.50	MED RT	72.87		60+35.50	-	20	20	26.25	-	1.75	-		1			1	1077		SEE ROADWAY STD DRAWING 862.01
-L-	61+58.50	-L-	90+25.00	MED LT	2866.50		61+58.50	-	6	9	-	210.00	-	14.00		1				734		
-L-	61+58.50	-L-	90+25.00	MED RT	2866.50		-	61+58.50	6	9	210.00	-	14.00	-		1				762		
-L-	62+10.00	-L-	63+32.88	LT	122.88		62+10.00	-	24	27	50.00	-	1.00	-	1	1				173		
-RPA-	13+56.25	-L-	90+25.00	RT / LT	1481.25		-	-RPA- 13+50.00	14	17	-	-	-	-			1			571		
-RPA-	27+94.75	-Y-	40+60.76	LT	122.88		-Y- 40+60.76	-	6	9	50.00	-	1.00	-	1	1						
-RPB-	14+93.75	-RPB-	19+25.00	LT	431.25		18+25.00	-	14	17	50.00	-	1.00	-	1		1			641		
-RPB-	35+68.75	-Y-	32+87.50	LT / RT	893.75	175.00	-Y- 33+50.00	-RPB- 33+75.00	14	17	50.00	-	1.00	-	1		1					
-RPB-	42+43.75	-Y-	40+60.76	RT	66.63	25.00	-	-Y- 40+60.76	6	9	-	-	-	-		1	1			103		
-RPC-	10+25.00	-RPC-	11+93.75	RT	168.75		11+87.50	-	14	17	50.00	-	1.00	-	1		1					
-RPC-	17+75.00	-SPC-	26+56.25	RT	693.75	162.50	-RPC- 18+75.00	-SPC- 26+50.00	14	17	50.00	-	1.00	-	1		1					
-RPC-	22+50.00	-Y-	42+18.26	LT / RT	222.88	125.00	-RPC- 23+50.00	-Y- 42+18.26	12	15	50.00	80.00	1.00	6.00	1	1						VAR. FLARE RATE APPROACHING BRIDGE
-RPD-	21+18.75	-Y-	49+18.00	LT	656.25	175.00	-Y- 47+75.00	-RPD- 21+25.00	14	17	50.00	-	1.00	-	1		1			390		
-Y-	27+75.00	-Y-	30+81.25	RT	306.25		28+50.00	-	12	14	50.00	-	1.00	-	1		1					
-Y-	42+18.26	-Y-	42+97.39	LT	79.13		-	42+18.26	6	9	-	-	-	-		1	1			103		
EXIST. REEDY FORK PKWY.		-RPD-	15+50.00	RT	37.50		-	-	-	-	-	-	-	-								
				SUBTOTAL	13185.00	662.50																
				IA-MASH TL-3: 4 @ 25'	-100.00																	
LESS DEDUCTIONS				GREU TL-3: 11 @ 50'	-550.00																	
FOR ANCHOR UNITS				TYPE B-77: 10 @ 22.875'	-228.75																	
				CAT-1: 9 @ 6.25'	-56.25																	
				PROJECT TOTAL	12250.00	662.50														6288		
				SAY	12300	675									11	10	9		4	6300		
ADDITIONAL GUARDRAIL POSTS = 10 EA.																						

"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

TEMPORARY GUARDRAIL SUMMARY

G = GATING IMPACT ATTENUATOR TYPE TL-3
NG = NON-GATING IMPACT ATTENUATOR TYPE TL-3

BEG. STA. SURVEY LINE	BEG. STA.	END STA. SURVEY LINE	END STA.	LOCATION	LENGTH		WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS			IA-MASH TL-3		REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
					STRAIGHT	SHOP CURVED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU TL-3	TYPE B-77	CAT-1	G	NG			
-L-	35+94.00	-L-	92+25.00	MED LT	5631.00		-	-	4	6	-	94.00	-	5.20	1		1					SEE SHEETS TMP-5 THRU TMP-11
-L-	35+94.00	-L-	92+25.00	MED RT	5631.00		-	-	4	6	94.00	-	5.20	-	1		1		1			
				TOTAL	11262.00																	
				SAY	11300										2		2		1			

WS-0025

COMPUTED BY:	MSR	DATE:	1/30/2020
CHECKED BY:	CRS	DATE:	2/3/2020

PROJECT NO.	SHEET NO.
R-4707	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)										C. S. PIPE						R. C. PIPE CLASS III						R. C. PIPE CLASS IV						DUCTILE IRON PIPE TYPE 3 SEALED PIPE SYSTEM SEE SPECIAL PRVISIONS					QUANTITES FOR SEALED DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)				ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03				CONCRETE TRANSITIONAL D.I. STD. 852.04 OR STD. 852.06	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	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. TYPE "D" STD. 840.19 OR STD. 840.28	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. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	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	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" SIDE DRAIN PIPE ELBOW	18" SIDE DRAIN PIPE ELBOW	24" SIDE DRAIN PIPE ELBOW	15" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (SY)	PREFORMED SCOUR HOLE (PER EACH)	FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	ANTI-SEEP COLLAR - SEE SPEC. PROV.	PIPE REMOVAL	REMARKS
SIZE								15	18	24	30	36	42						15	18	24	30	36	42	12	15	18	24	30	36	12	15	18	24	30	36	16	24	30	36	42		A	B				A	B		GRATE TYPE																																			
THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%							DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	.064	.064	.064	.079	.079	.109													CLASS 250	CLASS 200	CLASS 150	CLASS 150	CLASS 150	0' THRU 5'	5' THRU 10'	10' & ABOVE	BOOTS	CY	0' THRU 5' EACH	5' THRU 10' LIN. FT.	10' AND ABOVE LIN. FT.		E	F	G																															CY	CY	CY	LIN. FT.	
L 32+76	83 RT	0401		788.0																																													1												1					1																							
		0401	0402		783.0	780.0	1.8			12																																																																																								
		EX02																																																																																									EXISTING DI
		EX02	0415		793.4	788.5			32																																																																																									
L 31+39	80 RT	0415		792.5																																													1												1						1																								
		0415	0414		788.5	787.4	1.5			20																																																																																								
L 31+60	78 RT	0414		794.0																																																																								1	1													
		0414	0401		787.4	784.6	0.4																												116																																																												
L 32+90	78 RT	0402		789.0																																																																								1	1													
L 32+00	90 LT	0403		790.3																																													1													1				1																								
		0403	0404		787.6	780.0		120																																																																																									
L 33+22	75 LT	0404		789.6																																													1	5.0	5.6																			1				1																
		0404	0501		774.0	768.0	0.3																					80																																																																		
L 31+36	7 LT																																																																																								28	
L 32+08	69 RT																																																																																								163	
L 33+50	10 LT	0405		789.6																																													1									1			1	1																													
		0405	0406		786.9	786.5																												16																																																														
L 33+50	7 RT	0406		789.2																																													1									1			1	1																													
		0406	0509		786.5	785.6																												20																																																														
L 27+97	71 RT																																																																																							4				
L 28+34	87 LT																																																																																								19	
L 28+35	3 LT																																																																																								8	
L 28+40	83 LT																																																																																								16	
L 28+30	80 LT	0407		799.6																																													1														1			1																								
		0407	0408		797.7	797.0		16																																																																																									
L 28+34	95 LT	0408		800.8																																													1																			1				1																
L 25+19	7 LT																																																																																								78	
L 25+97	8 LT																																																																																								78	
L 26+62	4 LT																																																																																								54	
L 26+58	93 RT	0413				800.4																																																																																		Pipe Stub Out
		0413	0412		800.4	800.0			28																																																																																									
L 26+58	66 RT	0412		805.4																																																																								1	1													
L 26+89	0 CL	0411		803.6																																													1													1				1																								
L 31+50	1 RT	0409		794.8																																													1													1				1																								
L 28+35	1 RT	0410		801.3																																													1	0.5													1				1																								
L 31+42	85 RT																																																																																								57	
L 36+41	86 RT	0502		777.0																																													1	1.8																			1				1																
L 33+72	10 RT	0509		788.6																																													1									1			1	1																													
		0509	0530		785.6	780.7																												152																																																														
L 35+26	7 RT	0530		783.7																																													1									1			1	1																													
		0530	0504		780.7	780.1																												24																																																														
L 35+50	10 LT	0503		783.4																																													1									1			1	1																													
		0503	0504		780.6	780.1																												20																																																														
L 35+50	10 RT	0504		783.1																																													1									1			1	1																													
		0504	0531		780.1	775.6																												136																																																														
L 36+89	7 RT	0531		778.6																																													1									1			1	1																													
		0531	0505		775.6	775.0																												24																																																														
L 37+13	10 RT	0505		777.9																																													1	3.9								1			1	1																													
		0505	0506		769.1	768.3																						28																																																																			
L 37+31	10 LT	0506		777.7																																													1	4.4								1			1	1																													
							SHEET TOTALS	136	60	32																			28	80			392		116														19	15.6	5.6						9			9	9	2	4	1			6	1		3				6	3										4			501	

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

WS-0025

COMPUTED BY:	MSR	DATE:	1/30/2020
CHECKED BY:	CRS	DATE:	2/3/2020

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-4707	3D-2

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 %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)											C. S. PIPE						R. C. PIPE CLASS III						R. C. PIPE CLASS IV						DUCTILE IRON PIPE TYPE 3 SEALED PIPE SYSTEM SEE SPECIAL PRVISIONS				
SIZE / THICKNESS OR GAUGE								15	18	24	30	36	42	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	12	15	18	24	30	36	12	15	18	24	30	36	16 CLASS 250	24 CLASS 200	30 CLASS 150	36 CLASS 150	42 CLASS 150
L 37+89	72 LT	507B																																							
		507B	0507		766.7	764.8																						76													
L 36+38	100 RT	0000																																							
L 36+30	101 RT	0508		773.0																																					
		0508	0502		770.3	770.2																						20													
L 36+00	87 LT	0510		780.3																																					
		0510	0511		777.5	774.0																										68									
L 36+71	88 LT	0511		778.0																																					
		0511	0512		774.0	772.0		36																																	
L 36+94	122 LT	0512																																							
L 40+63	81 RT	0514		764.2																																					
		0514	514B		762.0	762.0																					8														
L 40+68	73 RT	514B																																							
L 39+45	1 LT	0515		770.8																																					
		0515	0516		768.0	767.4																										8									
L 39+45	10 RT	0516		770.9																																					
		0516	0517		767.4	761.3																										156									
L 41+02	6 RT	0517		765.3																																					
		0517	517B		761.3	761.3	0.4																										8								
L 41+05	1 LT	517B																																							
L 41+28	49 LT	0518		764.9																																					
L 41+42	77 LT	518B																																							
		518B	0520		760.7	760.5																					24														
L 42+92	99 LT	0519		758.7																																					
		0519	0520		756.0	755.3																										140									
L 41+52	98 LT	0520		762.6																																					
		0520	0521		755.3	754.5	0.6																										32								
L 41+52	132 LT	0521		762.6																																					
		0521	0522		754.5	753.0	0.8																										52								
L 43+00	4 RT	0525		758.6																																					
		0525	0527		755.8	748.1																										184									
L 44+53	86 RT	0526		751.7																																					
		0526	526B		749.3	749.1																				16															
L 44+59	71 RT	526B																																							
L 44+85	0 CL	0527		752.3																																					
L 46+36	52 LT	0528		749.1																																					
		0528	0603		746.3	738.5																										196									
RPB 29+31	37 LT	0529		743.7																																					
		0529	0601		741.0	739.4																										64									
RPB 29+98	37 LT	0601		741.4																																					
		0601	0602		739.4	738.9																										68									
L 48+35	73 LT	0602		740.8																																					
		0602	0603		738.6	738.5																										20									
L 48+35	53 LT	0603		743.2																																					
L 48+62	0 CL	0604		740.6																																					
RPC 13+92	5 LT	0000																																							
L 49+00	112 RT	0605		735.8																																					
		0605	0606		731.6	731.2	0.4																										52								
L 49+09	61 RT	0606		740.6																																					
		0606	0608		731.2	716.0	1.9			468																															
SHEET TOTALS								36		468																16	32	96				904	144								

LINE & STATION	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	QUANTITES FOR SEALED DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) 0' THRU 5'	A 5' THRU 10'	B 10' & ABOVE	BOOTS	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.	B 10' AND ABOVE 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 D.I. STD. 852.04 OR STD. 852.06	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	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. TYPE "D" STD. 840.19 OR STD. 840.28	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. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	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	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" SIDE DRAIN PIPE ELBOW	18" SIDE DRAIN PIPE ELBOW	24" SIDE DRAIN PIPE ELBOW	15" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (SY)	PREFORMED SCOUR HOLE (PER EACH)	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	ANTI-SEEP COLLAR - SEE SPEC. PROV. CY	PIPE REMOVAL LIN. FT.	REMARKS
L 37+89	507B																																												0.5526			
	507B	0507																																														
L 36+38	0000																																														16	
L 36+30	0508							1																1		1	1																					
	0508	0502																																														
L 36+00	0510							1															1		1																							
	0510	0511																																														
L 36+71	0511							1															1		1																							
	0511	0512																																														
L 36+94	0512																																										1					
L 40+63	0514							1																1			2																					
	0514	514B																																														
L 40+68	514B																																												0.4465			
L 39+45	0515							1								1			1	1																												
	0515	0516																																														
L 39+45	0516							1								1			1	1																												
	0516	0517																																														
L 41+02	0517							1	4.6													1				1																						
	0517	517B																																														
L 41+05	517B																																												0.4465			
L 41+28	0518							1																1							1																	
L 41+42	518B																																												0.4465			
	518B	0520																																														
L 42+92	0519							1														1		1																								
	0519	0520																																														
L 41+52	0520							1	2.4																				1				1															
	0520	0521																																														
L 41+52	0521							1	3.2													1				1																						
	0521	0522																																														
L 43+00	0525							1														1				1																						
	0525	0527																																														
L 44+53	0526							1														1				1																						
	0526	526B																																														
L 44+59	526B																																												0.3990			
L 44+85	0527																																					1											
L 46+36	0528							1														1		1																								
	0528	0603																																														
RPB 29+31	0529							1														1		1																								
	0529	0601																																														
RPB 29+98	0601							1															1	1																								
	0601	0602																																														
L 48+35	0602							1															1			1																						
	0602	0603																																														
L 48+35	0603							1																						1			1															
L 48+62	0604																																					1											
RPC 13+92	0000																																														18	
L 49+00	0605							1													1					2																						
	0605	0606																																														
L 49+09	0606							1	4.5																					1			1															
	0606	0608																																														
SHEET TOTALS								20	14.7							2			2	2	1	9	4	7	1	10			1	2	1		3				2						1		2.2911		34	

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