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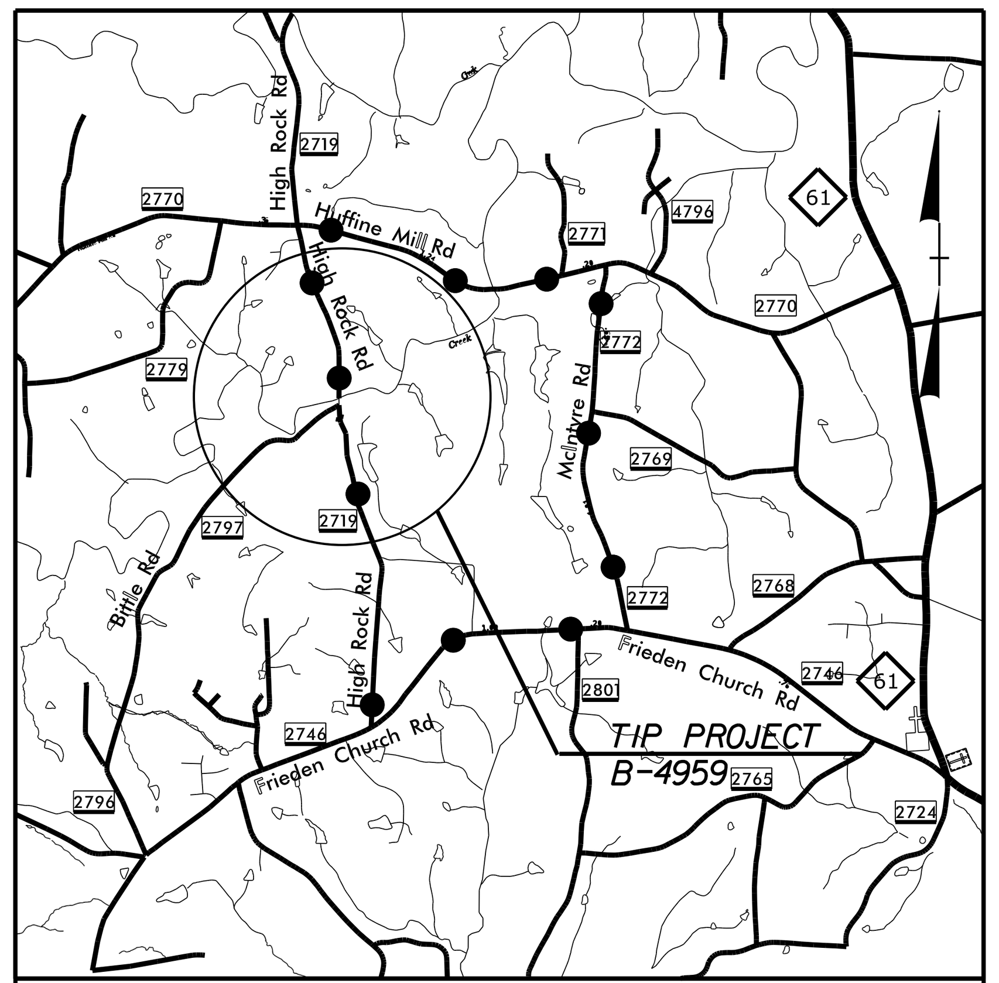
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP

●—●—●—●—● *OFFSITE DETOUR*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

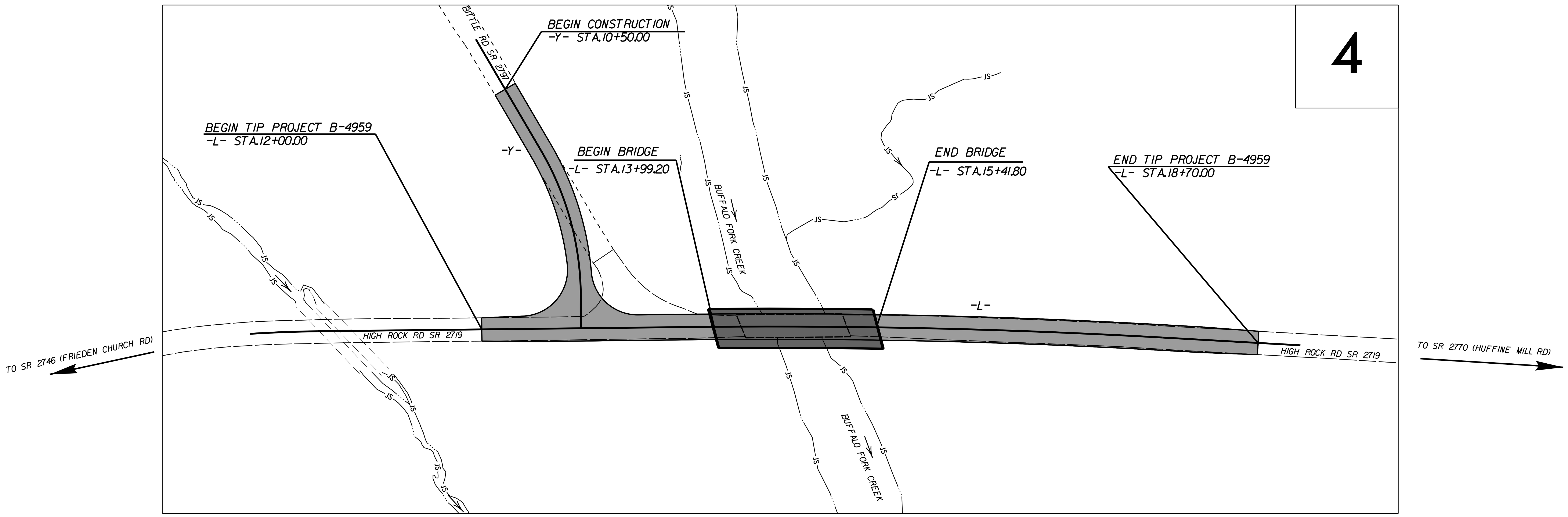
LOCATION: BRIDGE NO. 193 OVER BUFFALO CREEK ON SR 2719 (HIGH ROCK ROAD)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4959	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
40151.1.1	BRZ-2719(1)	PE
40151.2.FDI	BRZ-2719(1)	R/W & UTIL.
40151.3.2	BRZ-2719(1)	CONST.

NAD 83/
NSRS 2007



TIP PROJECT: B-4959

CONTRACT: C203625

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 2015 = 770 VPD
ADT 2040 = 2900 VPD
K = 11 %
D = 55 %
T = 14 % *
V = 55 MPH
* TTST = 1% DUAL 13%
FUNC CLASS = RURAL LOCAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4959 = 0.100 MILES
LENGTH STRUCTURE TIP PROJECT B-4959 = 0.027 MILES
TOTAL LENGTH OF TIP PROJECT B-4959 = 0.127 MILES

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 16, 2014

LETTING DATE:
OCTOBER 20, 2015

JAMES A. SPEER, PE
PROJECT ENGINEER

ALLISON K. WHITE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
Richard Hiner 7/22/2015 P.E.
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 29185 ENGINEER RICHARD L. HINER

ROADWAY DESIGN ENGINEER
James Speer 7/23/2015 P.E.
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 014571 ENGINEER James A. Speer

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

21-JUL-2015 10:56
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$$$$USERNAME$$$$

09/08/99

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4959	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 014571 ENGINEER James A Speer

DocuSigned by: James Speer 7/23/2015

B-4959 INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEETS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	SPECIAL DETAILS
3B-1	ROADWAY SUMMARIES (Earthwork, Guardrail, Asphalt Pavement Removal, Shoulder Berm Gutter, Special Shoulder Berm Curb, Drainage Summary)
3G-1	GEOTECH SUMMARIES
4 THRU 5	PLAN AND PROFILE SHEET
TMP-01 THRU TMP-04	TRAFFIC MANAGEMENT PLANS
PMP-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION
SIGN-1 THRU SIGN-2	SIGNING PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X- 5	CROSS-SECTIONS
S-1 THRU S-25	STRUCTURE PLANS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 10-31-2014

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 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.

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.

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 WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

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.

RIGHT-OF-WAY MARKERS:

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

EFF. 01-17-2012
REV. 10-30-2012

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.11	Reinforced Bridge Approach Fills - Sub Regional Tier
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units (Beg. March 2013 Letting use detail in lieu of Standard)
876.04	Drainage Ditches with Class 'B' Rip Rap

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12/05/11

PROJECT REFERENCE NO.	SHEET NO.
B-4959	1-B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- 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
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

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:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

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
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

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

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

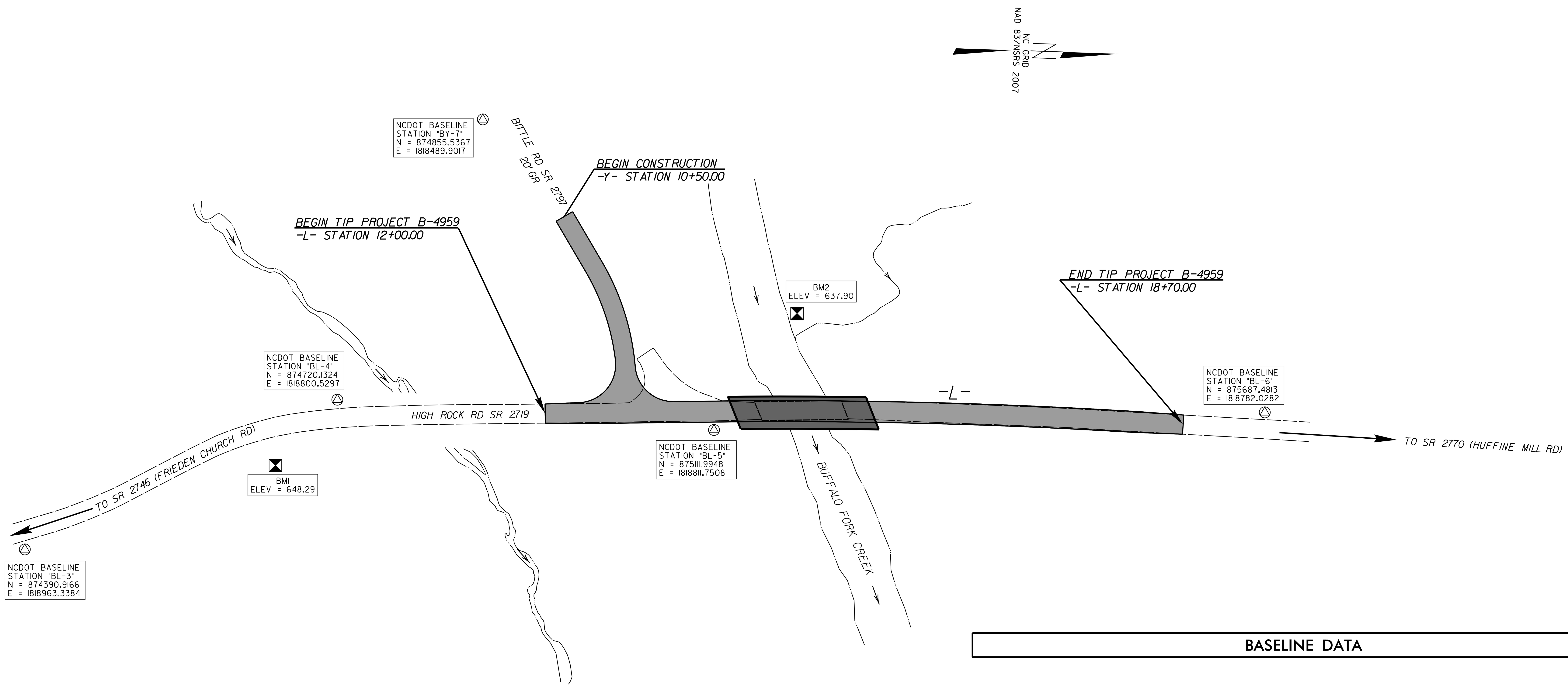
SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

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

B4959 SURVEY CONTROL SHEET



BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	B4959-1	873136.8360	1819143.3580	687.07	OUTSIDE PROJECT LIMITS	
2	B4959-2	874042.8020	1818961.7290	674.05	OUTSIDE PROJECT LIMITS	
3	BL-3	874390.9166	1818963.3384	660.41	OUTSIDE PROJECT LIMITS	
4	BL-4	874720.1324	1818800.5297	643.00	OUTSIDE PROJECT LIMITS	
5	BL-5	875111.9948	1818811.7508	641.48	13+79.22	14.93 RT
6	BL-6	875687.4813	1818782.0282	649.43	OUTSIDE PROJECT LIMITS	

BY

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
7	BY-7	874855.5367	1818489.9017	657.08	11+37.69	318.27 LT
A5	BL-5	875111.9948	1818811.7508	641.48	13+79.22	14.93 RT

BENCHMARK DATA

BM1 ELEVATION = 648.29
N 874651 E 1818869
BL STATION 20+47.00 31 RIGHT
RR SPIKE IN 15" SWEET GUM

BM2 ELEVATION = 637.90
N 875193 E 1818691
BL STATION 26+18.00 116 LEFT
RR SPIKE IN 20" SWEET GUM

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4959-2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 874042.8020(ft) EASTING: 1818961.7290(ft)
ELEVATION: 674.0500(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000320016
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4959-2" TO -L- STATION 12+00.00 IS
N 09°59'34" W 903.18'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING NCDOT PROJECT CONTROL DATA AT:*
HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B4959_LS_CONTROL.TXT

   SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

△ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
B-4959	2A-1

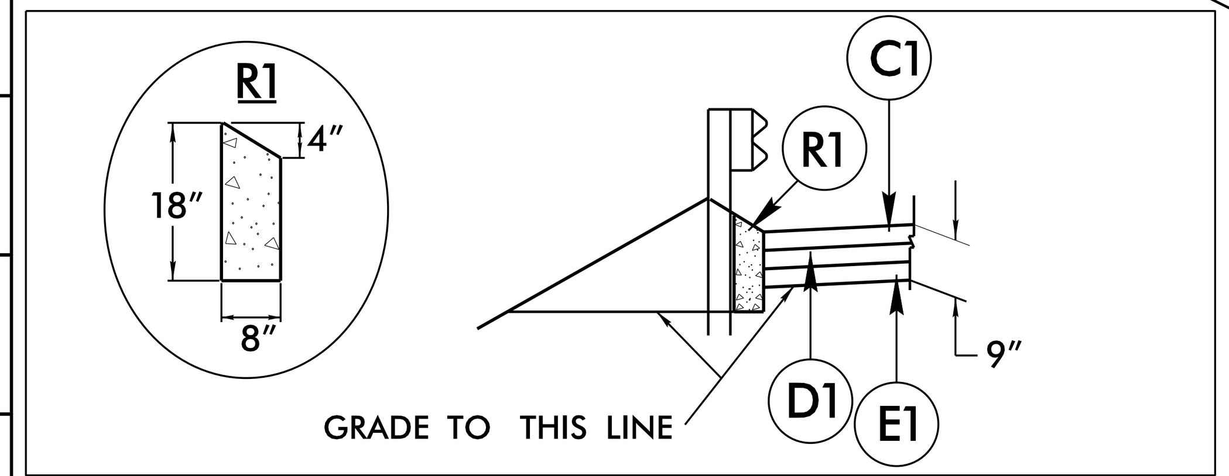
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 014571 James A. Speer — DocuSigned by: James Speer 8/20/2015

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896 CLARK S. MORRISON — DocuSigned by: Clark Morrison 8/20/2015

PAVEMENT SCHEDULE

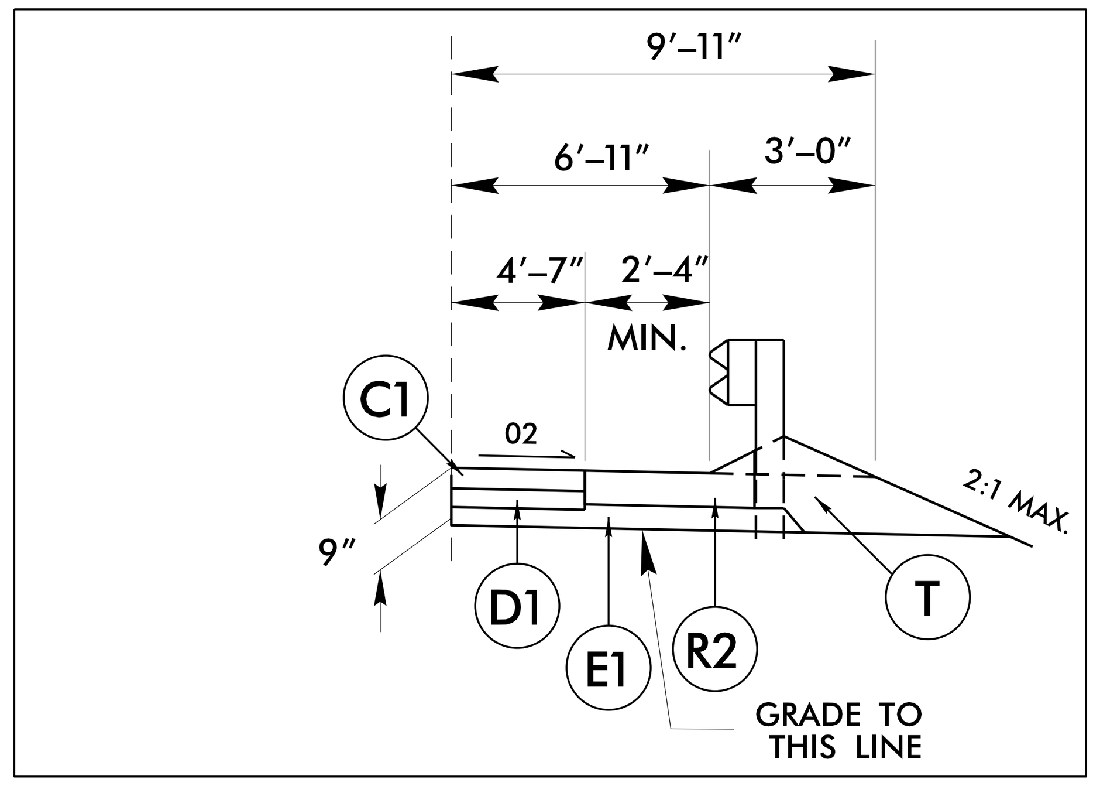
C1	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYER NOT TO EXCEED 1.5" IN DEPTH.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B' AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYER NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B' AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYER NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
J	PROP. 6.5" AGGREGATE BASE COURSE.
R1	SPECIAL SHOULDER BERM CURB (SEE DETAIL ON THIS SHEET)
R2	SHOULDER BERM GUTTER (SEE DETAIL ON THIS SHEET)
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)

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



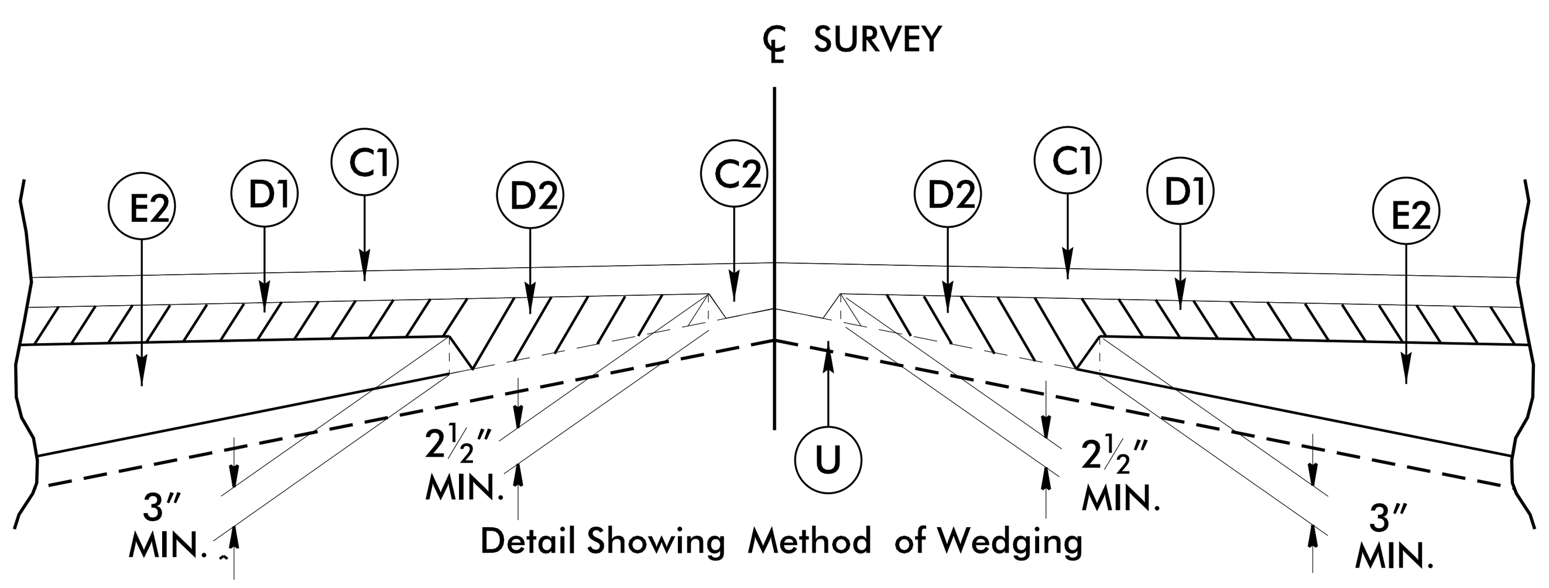
DETAIL SHOWING SPECIAL SHOULDER BERM CURB (SSBC)

USE WITH TYPICAL SECTION NO. 2
-L- STA. 13+91.30 TO -L- STA. 13+92.80 (BEGIN APPROACH SLAB) RT
-L- STA. 13+82.71 TO -L- STA. 13+84.21 (BEGIN APPROACH SLAB) LT
-L- STA. 15+48.57 (END APPROACH SLAB) TO -L- STA. 15+50.07 LT

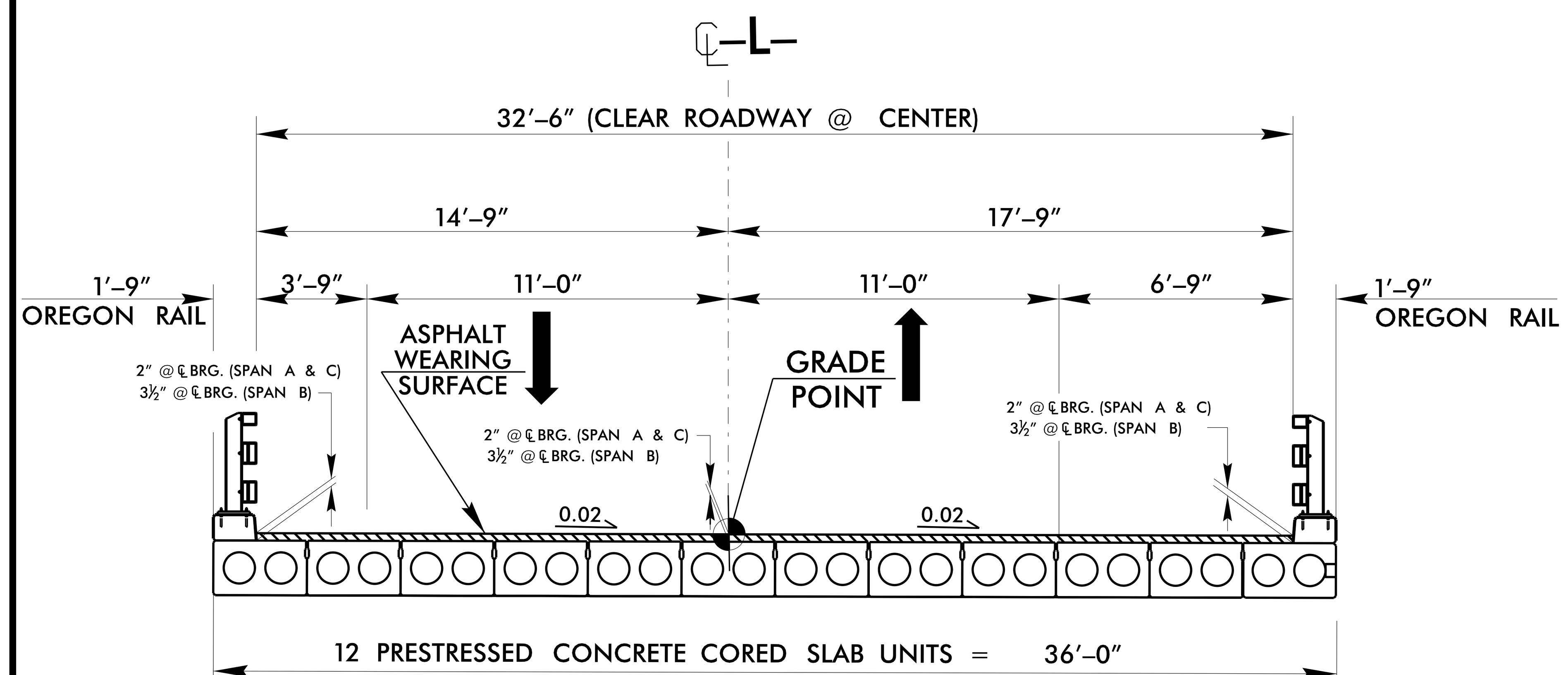


DETAIL SHOWING SHOULDER BERM GUTTER (SBG)

USE WITH TYPICAL SECTION NO. 2
INSTALL SHOULDER BERM GUTTER (SBG) AS FOLLOWS.
END APPR. SLAB TO STA. 15+70.00 RT

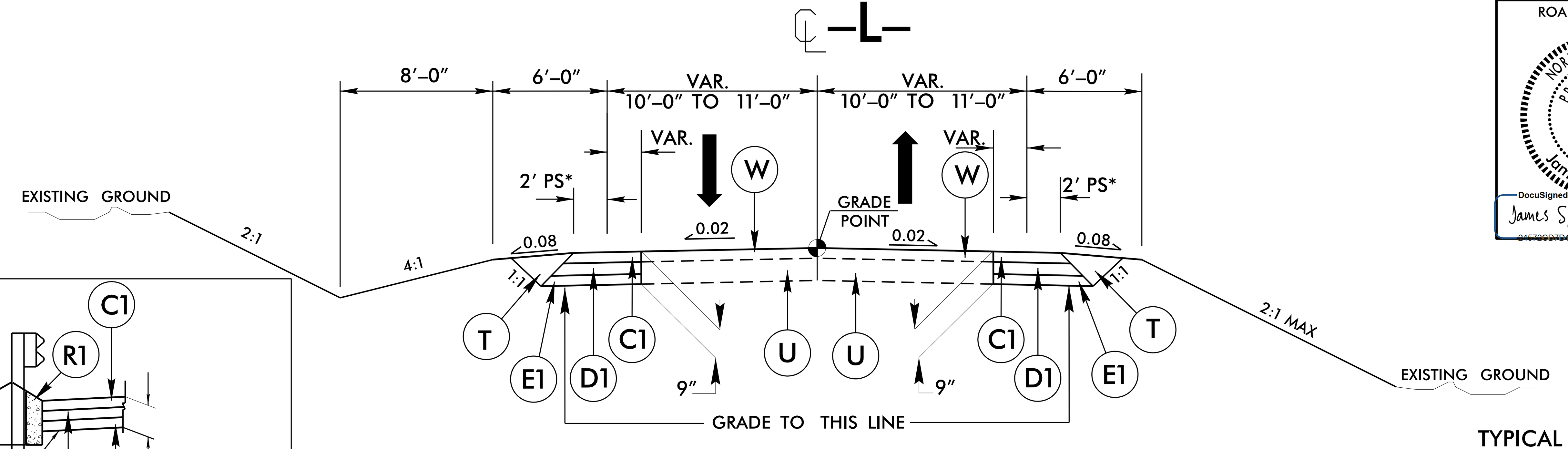


Detail Showing Method of Wedging



TYPICAL SECTION ON STRUCTURE

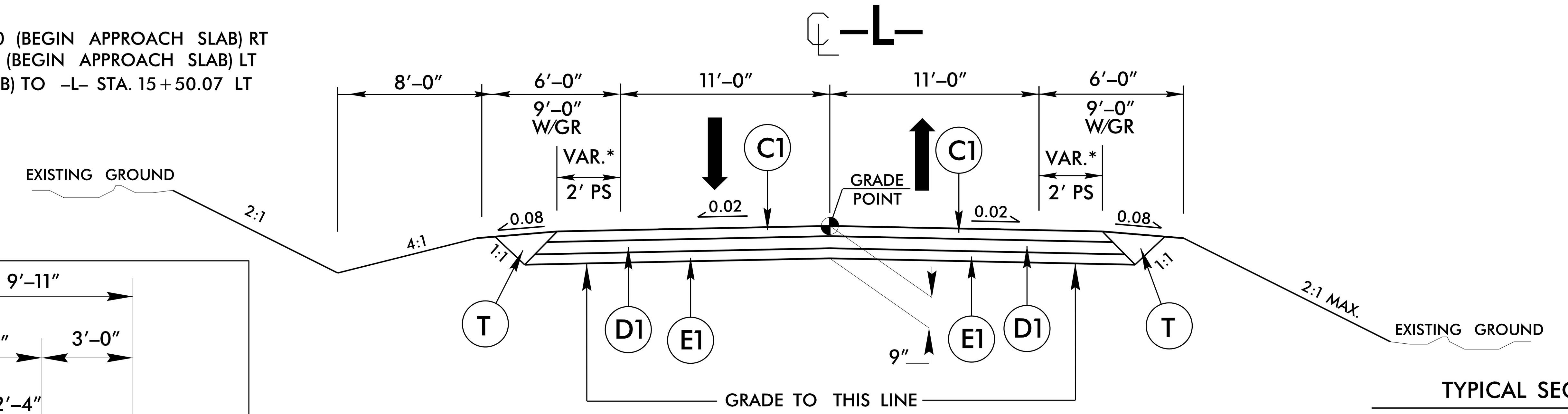
BEGIN BRIDGE -L- STA. 13+99.20 TO END BRIDGE -L- STA. 15+41.80
NOTE: SPAN 'A' AND SPAN 'C' ARE 21" CORED SLAB
SPAN 'B' IS 24" CORED SLAB



TYPICAL SECTION NO. 1

TYPICAL SECTION NO. 1

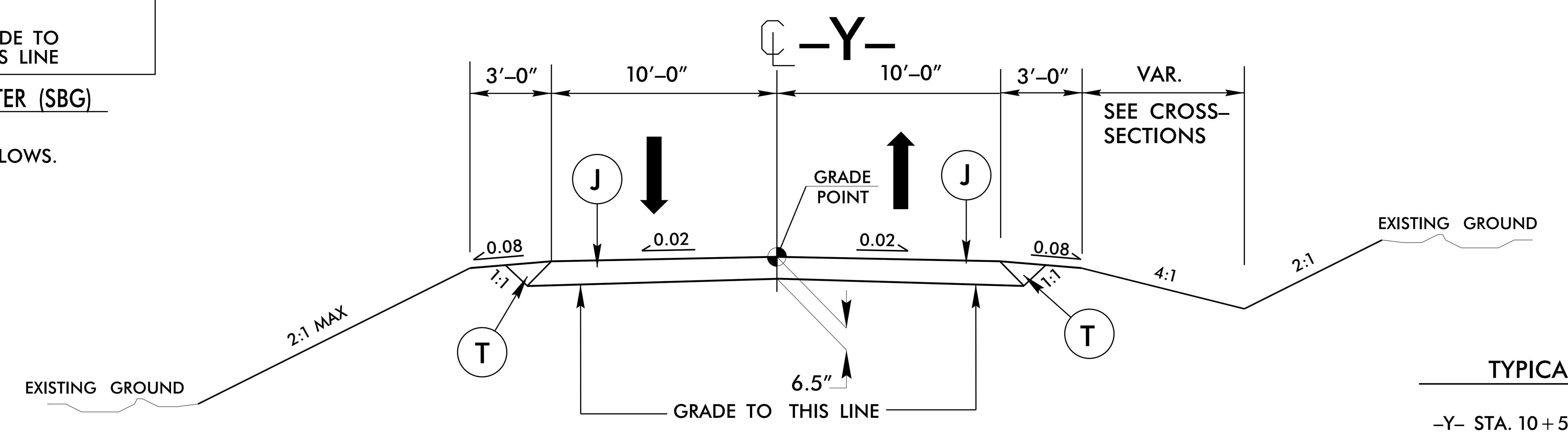
-L- STA. 12+00.00 TO -L- STA. 12+67.00
-L- STA. 18+20.00 TO -L- STA. 18+70.00
* SEE PLANS FOR PAVED SHOULDER TRANSITIONS



TYPICAL SECTION NO. 2

TYPICAL SECTION NO. 2

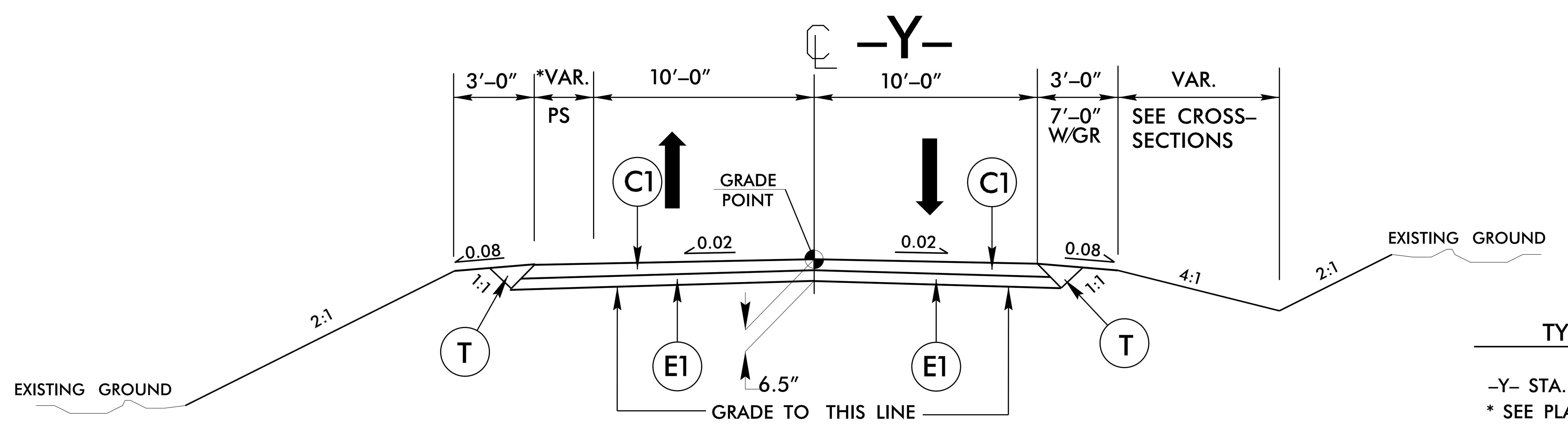
-L- STA. 12+67.00 TO -L- STA. 13+99.20 (BEGIN BRIDGE)
-L- STA. 15+41.80 (END BRIDGE) TO -L- STA. 18+20.00
* SEE PLANS FOR PAVED SHOULDER TRANSITIONS
*-L- STA. 12+81.58 TO -L- STA. 13+99.20
*-L- STA. 15+41.80 TO -L- STA. 16+74.29



TYPICAL SECTION NO. 3

TYPICAL SECTION NO. 3

-Y- STA. 10+50.00 TO -Y- STA. 11+32.00



TYPICAL SECTION NO. 4

TYPICAL SECTION NO. 4

-Y- STA. 11+32.00 TO -Y- STA. 12+59.50
* SEE PLANS FOR PAVED SHOULDER TRANSITIONS
@ -Y- TURNOUT

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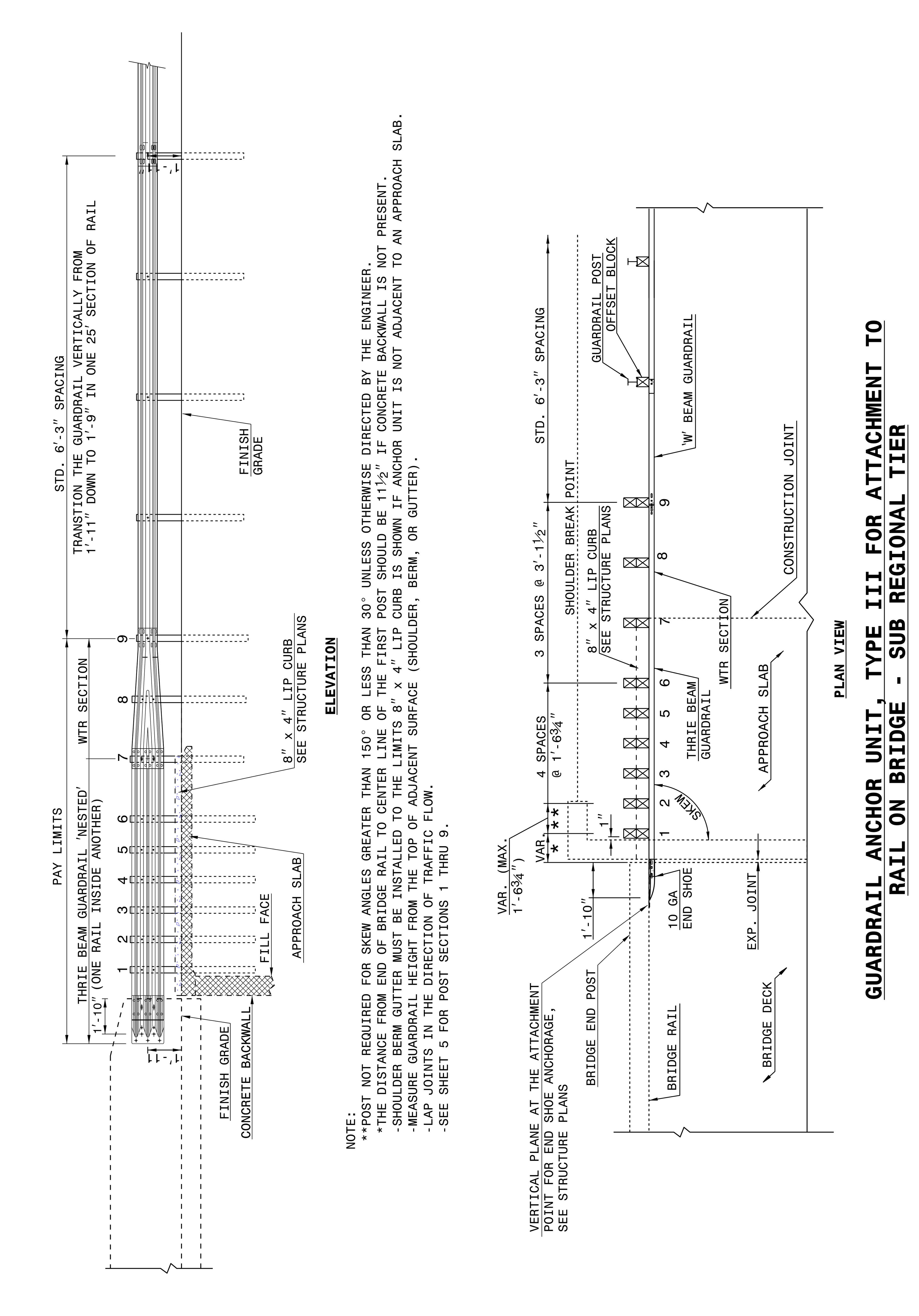
PROJECT REFERENCE NO.	SHEET NO.
B-4959	2C-1



ELEVATION
PLAN VIEW
STD. 6'-3" SPACING
TRANSITION THE GUARDRAIL VERTICALLY FROM 1'-11" DOWN TO 1'-9" IN ONE 25' SECTION OF RAIL
FINISH GRADE
PAY LIMITS
THREE BEAM GUARDRAIL 'NESTED' (ONE RAIL INSIDE ANOTHER)
WTR SECTION
8" x 4" LIP CURB SEE STRUCTURE PLANS
APPROACH SLAB
FILL FACE
FINISH GRADE
CONCRETE BACKWALL
NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.
VERTICAL PLANE AT THE ATTACHMENT POINT FOR END SHOE ANCHORAGE, SEE STRUCTURE PLANS
BRIDGE END POST
BRIDGE RAIL
BRIDGE DECK
EXP. JOINT
10 GA END SHOE
VAR. (MAX. 1'-6¾")
4 SPACES @ 1'-6¾"
3 SPACES @ 3'-1½"
SHOULDER BREAK POINT
8" x 4" LIP CURB SEE STRUCTURE PLANS
THRIE BEAM GUARDRAIL
WTR SECTION
APPROACH SLAB
CONSTRUCTION JOINT
'W' BEAM GUARDRAIL
GUARDRAIL POST OFFSET BLOCK
SKEW
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. — ENGLISH DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER — SHEET 2 OF 7 862d03

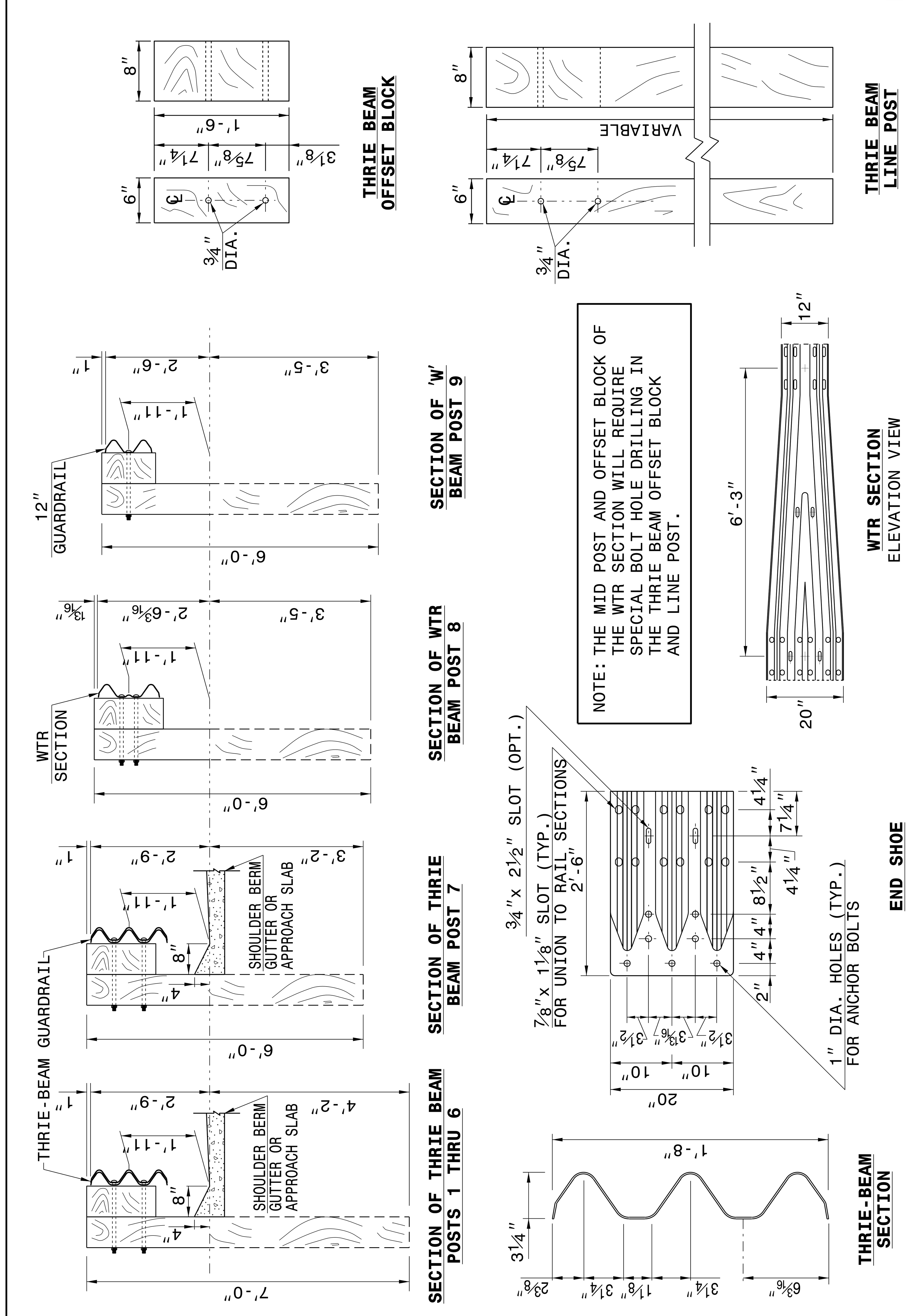
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

STRUCTURE ANCHOR UNITS

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

SHEET 2 OF 7 **862d03**



THRIE BEAM OFFSET BLOCK
THRIE BEAM LINE POST
VARIABLE
¾" DIA.
NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.
WTR SECTION ELEVATION VIEW
SECTION OF 'W' BEAM POST 9
SECTION OF WTR BEAM POST 8
SECTION OF THRIE BEAM POST 7
SECTION OF THRIE BEAM POSTS 1 THRU 6
SHOULDER BERM GUTTER OR APPROACH SLAB
12" GUARDRAIL
WTR SECTION
THRIE-BEAM GUARDRAIL
¾" x 2½" SLOT (OPT.)
⅞" x 1⅛" SLOT (TYP.) FOR UNION TO RAIL SECTIONS
1" DIA. HOLES (TYP.) FOR ANCHOR BOLTS
END SHOE
THRIE-BEAM SECTION

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. — ENGLISH DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III — SHEET 3 OF 7 862d03

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

ENGLISH DETAIL DRAWING FOR

STRUCTURE ANCHOR UNITS

GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7 **862d03**

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton

DocuSigned by: Joel Howerton /2015

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

SEE TITLE BLOCK

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

12/06/07

COMPUTED BY: L. JAH	DATE: 5/21/2015
CHECKED BY: MRL	DATE: 5/22/2015

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4959	3B-1

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-L- 12+00.00	-L- 13+99.20	98	20		78
-L- 15+41.80	-L- 18+70.00	208	190		18
-Y- 10+50.00	-Y- 12+59.50	124	37		87
SUBTOTALS:		430	147		183
PROJECT TOTALS:		430	247		183
GRAND TOTALS:		430			
SAY:		460			

UNDERCUT EXCAVATION = 100 CY (CONTINGENCY)
EST. SHALLOW UNDERCUT = 300 CY (CONTINGENCY)
CLASS IV SUBGRADE STABILIZATION = 600 TONS (CONTINGENCY)
SELECT GRANULAR MATERIAL = 100 CY (CONTINGENCY)

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

REMOVAL OF EXISTING ASPHALT PAVEMENT SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	12+67.00	13+99.20	LT & RT	293.80
-L-	15+41.80	18+20.00	LT & RT	618.22
-Y-	12+07.02	12+44+63	LT	99.03
			TOTAL:	1011.06
			SAY:	1020

SHOULDER BERM GUTTER

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LENGTH
-L-	15+57.06	15+70.00	RT	12.94
			TOTAL:	12.94
			SAY:	13.00

SPECIAL SHOULDER BERM CURB

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LENGTH
-L-	13+91.30	13+92.80	RT	1.50
-L-	13+82.71	13+84.21	LT	1.50
-L-	15+48.57	15+50.07	LT	1.50
			TOTAL:	4.50
			SAY:	5.00

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
-L- STA. 15+65	RT	0401					
-L- STA. 15+65	RT	0401	0402				
-L- STA. 16+06	RT	0402					
-L- STA. 16+06	RT	0402	0403				
-L- STA. 15+59	RT						
TOTAL							

DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) and C.S. PIPE (UNLESS NOTED OTHRWISE):

STATION	DP 12"	DP 15"	DP 18"	DP 24"	DP 30"	DP 36"	DP 42"	DP 48"	CS 12" .064	CS 15" .064	CS 18" .064	CS 24" .064	CS 30" .079	CS 36" .079	CS 42" .109	CS 48" .109
-L- STA. 15+65																
-L- STA. 15+65																
-L- STA. 16+06																
-L- STA. 16+06																
-L- STA. 15+59																
TOTAL																

CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED):

STATION	12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE
-L- STA. 15+65											
-L- STA. 15+65			44								
-L- STA. 16+06											
-L- STA. 16+06			16								
-L- STA. 15+59											
TOTAL			60								

STATION	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	T.B.D.I. STD. 840.35	G.D.I. (N.S. FLAT) FRAME W/2 GRATES STD. 840.29	PIPE REMOVAL	REMARKS
-L- STA. 15+65			1							1	1		
-L- STA. 15+65													
-L- STA. 16+06			1							1	1		
-L- STA. 16+06													
-L- STA. 15+59												24	
TOTAL			2							2	2	24	

ABBREVIATIONS

C.B. CATCH BASIN
N.D.I. NARROW DROP INLET
D.I. DROP INLET
G.D.I. GRATED DROP INLET
G.D.I. (N.S.) GRATED DROP INLET (NARROW SLOT)
J.B. JUNCTION BOX
M.H. MANHOLE
T.B.D.I. TRAFFIC BEARING DROP INLET
T.B.J.B. TRAFFIC BEARING JUNCTION BOX

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH
-L-	13+21.07	14+04.00	RT	82.93			13+99.20		6.9167	9
-L-	13+45.65	13+95.20	LT	49.55				13+99.20	3.9167	9
-L-	15+46.60	16+28.46	RT	81.86				15+41.80	6.9167	9
-L-	15+37.80	16+19.62	LT	81.82			15+41.80		3.9167	9
-Y-	12+00.00	12+65.00	LT	18.75	62.5				VAR.	VAR.
		SUBTOTAL		314.91	62.5					
		LESS DEDUCTIONS:								
		GRAU 350 TL-3	3@50	-150.00						
		TYPE III	4@18.75	-75						
		AT-1		-6.25						
		TOTAL		83.66	62.5		ADDITIONAL GUARDRAIL POSTS = 5			
		SAY		100	62.5					

SURVEY LINE	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS GRAU 350 TL-3	ANCHORS TYPE III	ANCHORS AT-1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	62.5		1.25		1	1								
-L-						1	1							
-L-		67.92		1.36	1	1								
-L-	59.07		1.18		1	1								
-Y-														SHOP CURVED GR (45' R)
SUBTOTAL														
LESS DEDUCTIONS:														
GRAU 350 TL-3														
TYPE III														
AT-1														
TOTAL														
SAY					3	4	1							

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CHECKED BY: L. JAH	DATE: 05/21/2015

PROJECT REFERENCE NO.	SHEET NO.
B-4959	3G-1

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	STATION	STATION	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization
	CONTINGENCY		*ASU		300	600	800		
				TOTAL CY/TONS	300	600	800		

*ASU = AGGREGATE SUBGRADE
*AST = AGGREGATE STABILIZATION

Note: Total square yards of Geotextile for Soil Stabilization is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.

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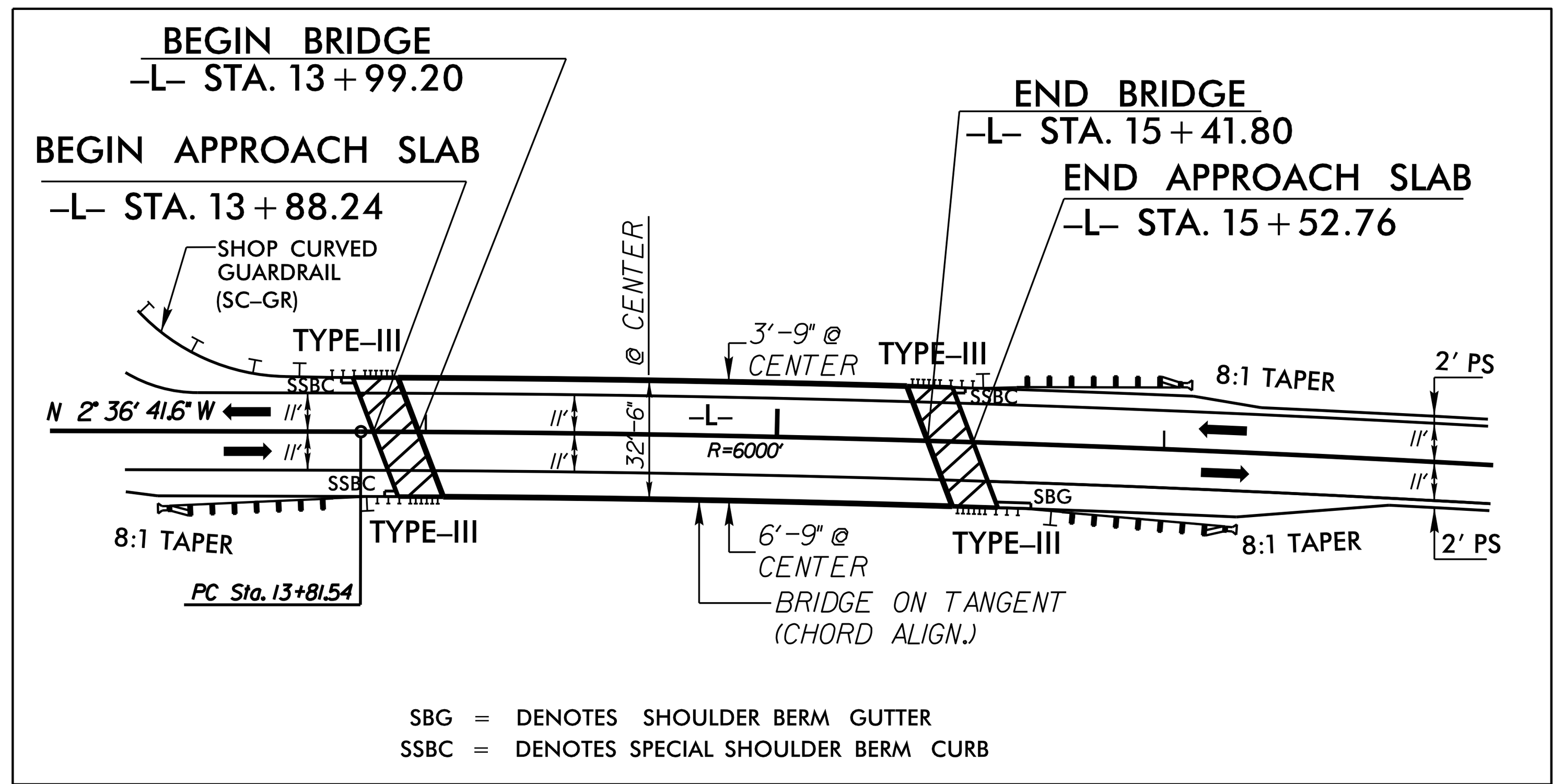
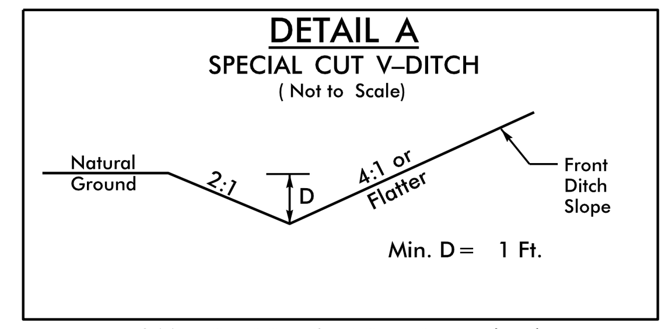
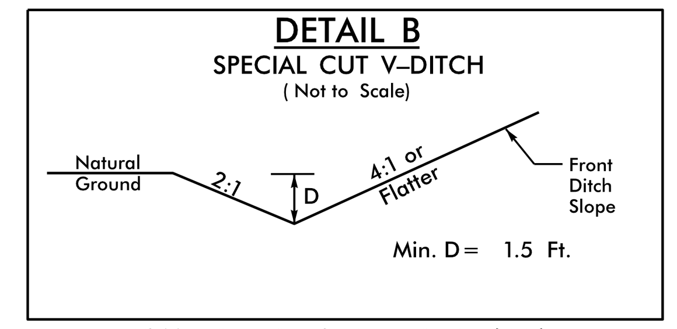
PROJECT REFERENCE NO.	SHEET NO.
B-4959	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



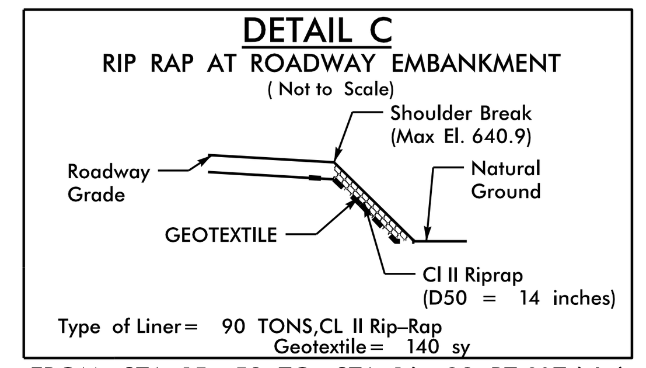
Sketch of Pavement in Relation to Bridge



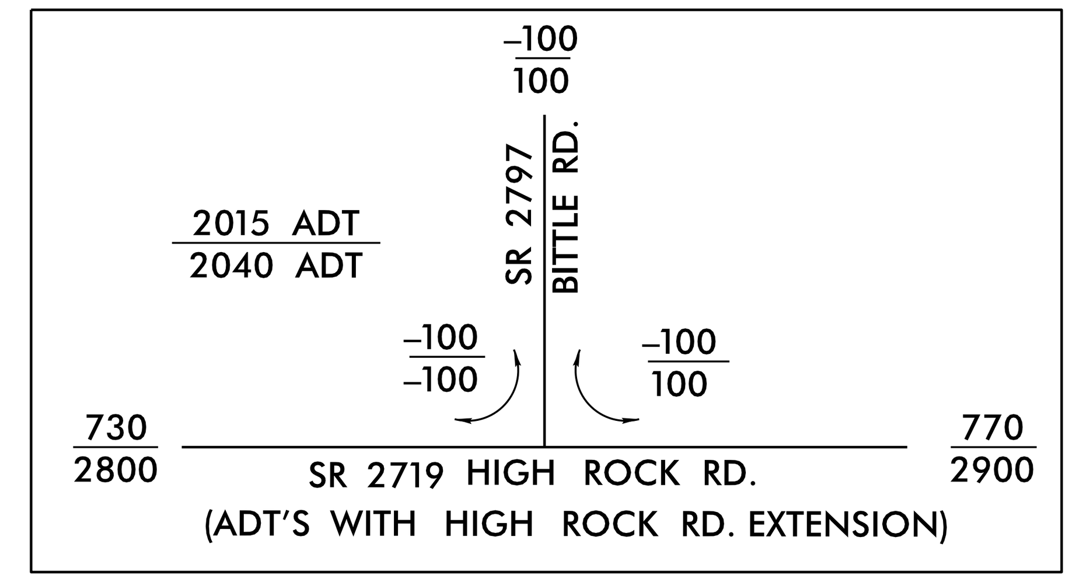
FROM 18+00 TO 18+70, RT. (-L-)



FROM 10+50 TO 11+50, RT. (-Y-)



FROM STA 15+53 TO STA. 16+09, RT.&LT.(-L-)
(STRUCTURE PAY ITEM, SEE STRUCTURE PLANS)



NAD 83/NSRS 2007

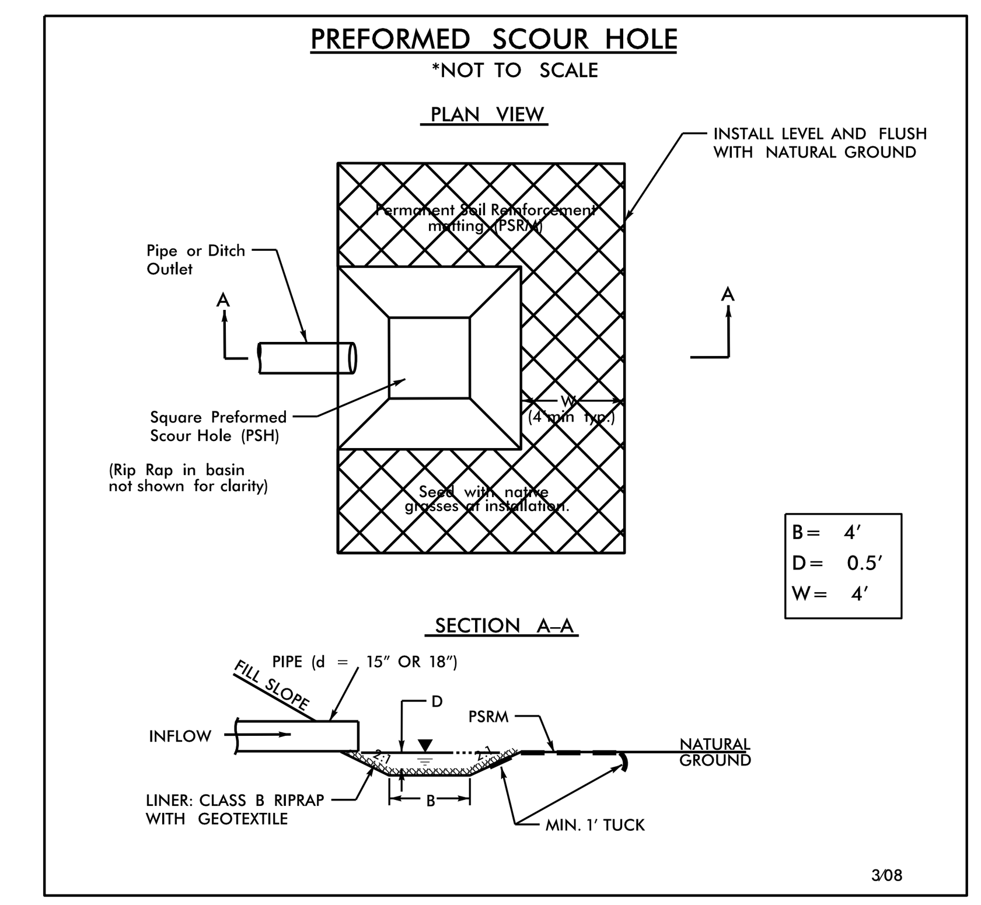
-L-

PI Sta 10+29.20
Δ = 3° 02' 26.7" (RT)
D = 5° 12' 31.3"
L = 58.38'
T = 29.20'
R = 1,100.00'

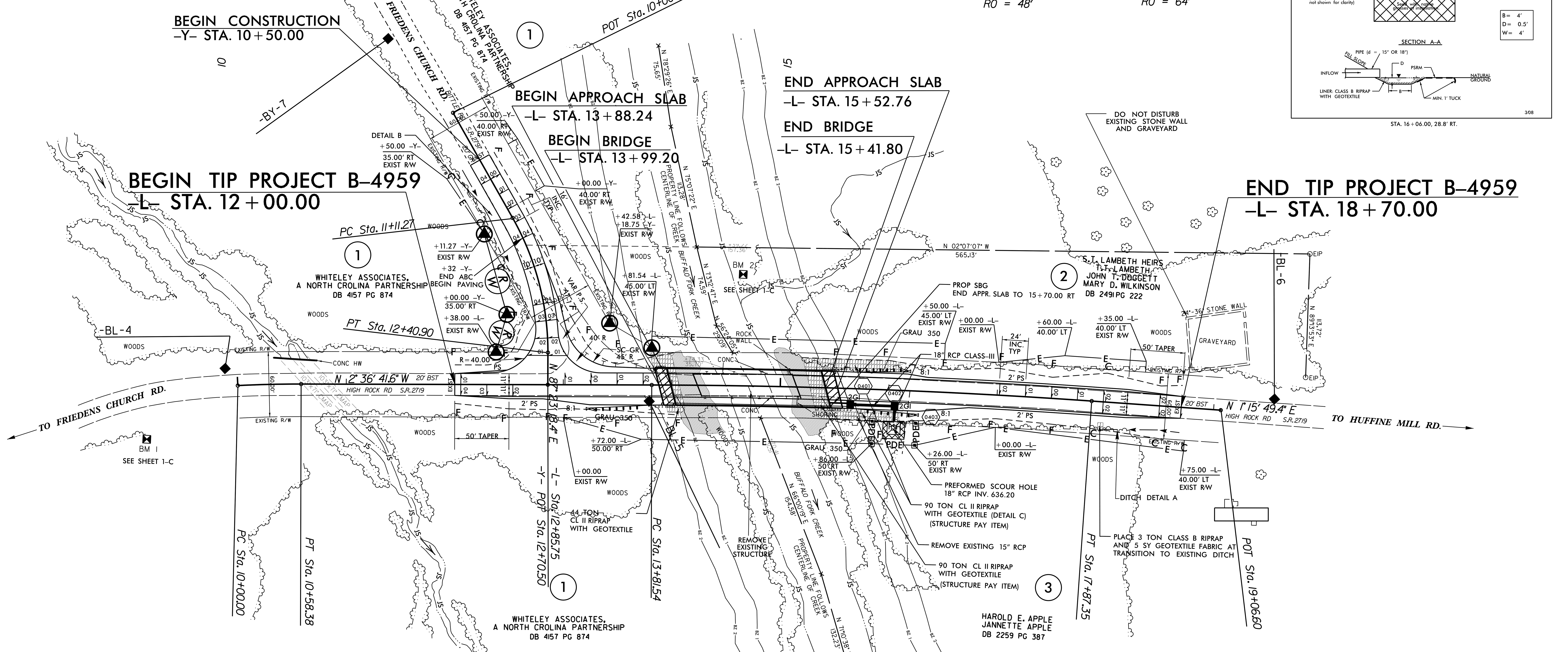
PI Sta 15+84.52
Δ = 3° 52' 31.0" (RT)
D = 0° 57' 17.7"
L = 405.82'
T = 202.99'
R = 6,000.00'
SE = 0.02
RO = 48'

-Y-

PI Sta 11+77.58
Δ = 29° 42' 34.0" (RT)
D = 22° 55' 05.9"
L = 129.63'
T = 66.31'
R = 250.00'
SE = 0.04
RO = 64'



STA. 16+06.00, 28.8' RT.



SEE SHEET NO. 5 FOR -L- & -Y- PROFILE
SEE SHEET S-1 THRU S-25 FOR STRUCTURE PLANS.

REVISIONS

20-AUG-2015 08:10
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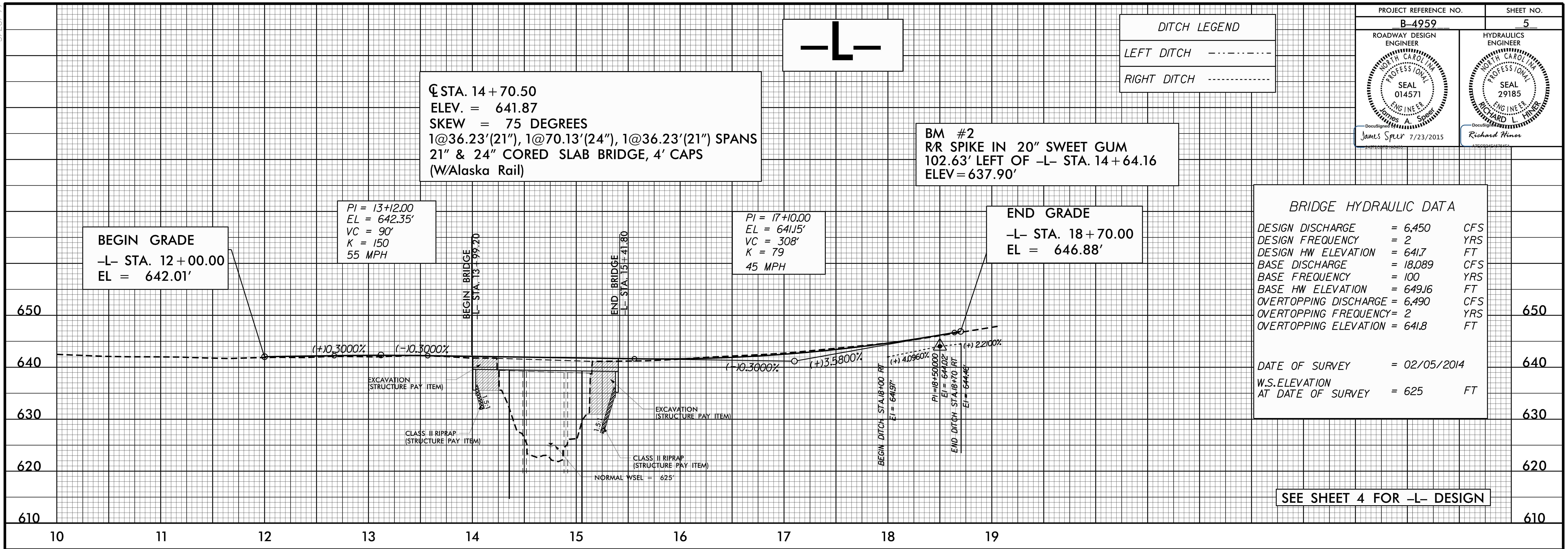
PROJECT REFERENCE NO.	SHEET NO.
B-4959	5

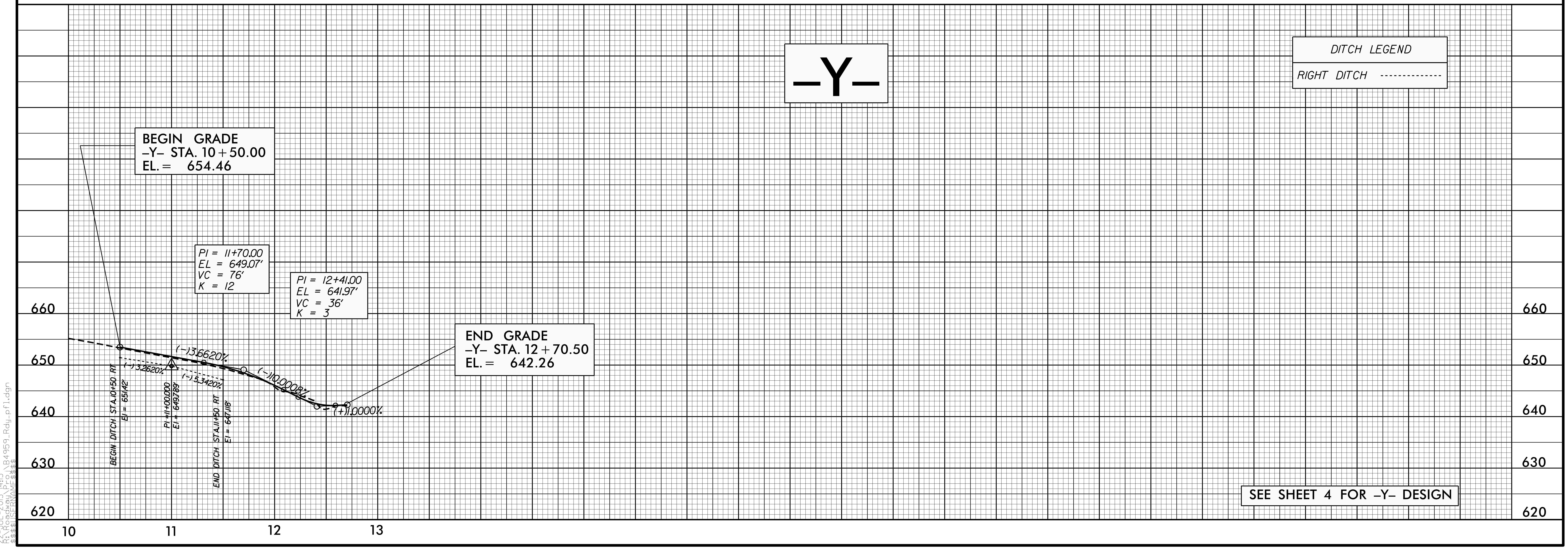
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 014571 James A. Speer — DocuSigned by: James Speer 7/23/2015

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29185 RICHARD L. HINER — DocuSigned by: Richard Hiner



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 6,450	CFS
DESIGN FREQUENCY	= 2	YRS
DESIGN HW ELEVATION	= 641.7	FT
BASE DISCHARGE	= 18,089	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 649.16	FT
OVERTOPPING DISCHARGE	= 6,490	CFS
OVERTOPPING FREQUENCY	= 2	YRS
OVERTOPPING ELEVATION	= 641.8	FT
DATE OF SURVEY	= 02/05/2014	
W.S.ELEVATION AT DATE OF SURVEY	= 625	FT



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