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09/08/99

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

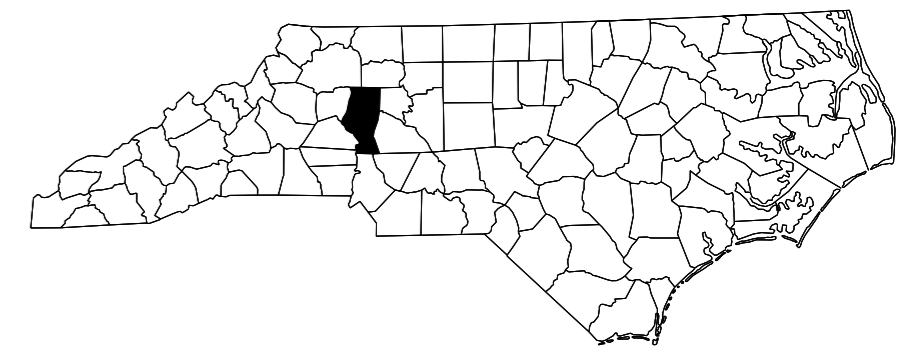
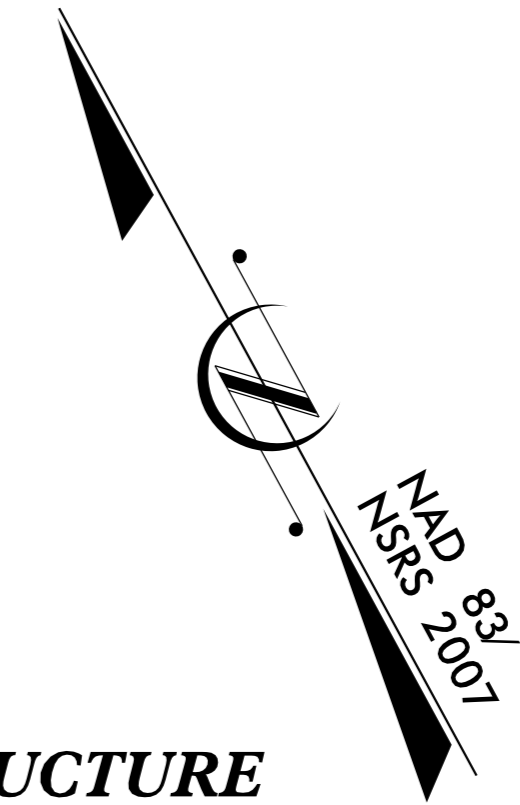
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**IREDELL COUNTY**

**LOCATION: BRIDGE 57 OVER CORNELIUS CREEK  
ON SR 1302**

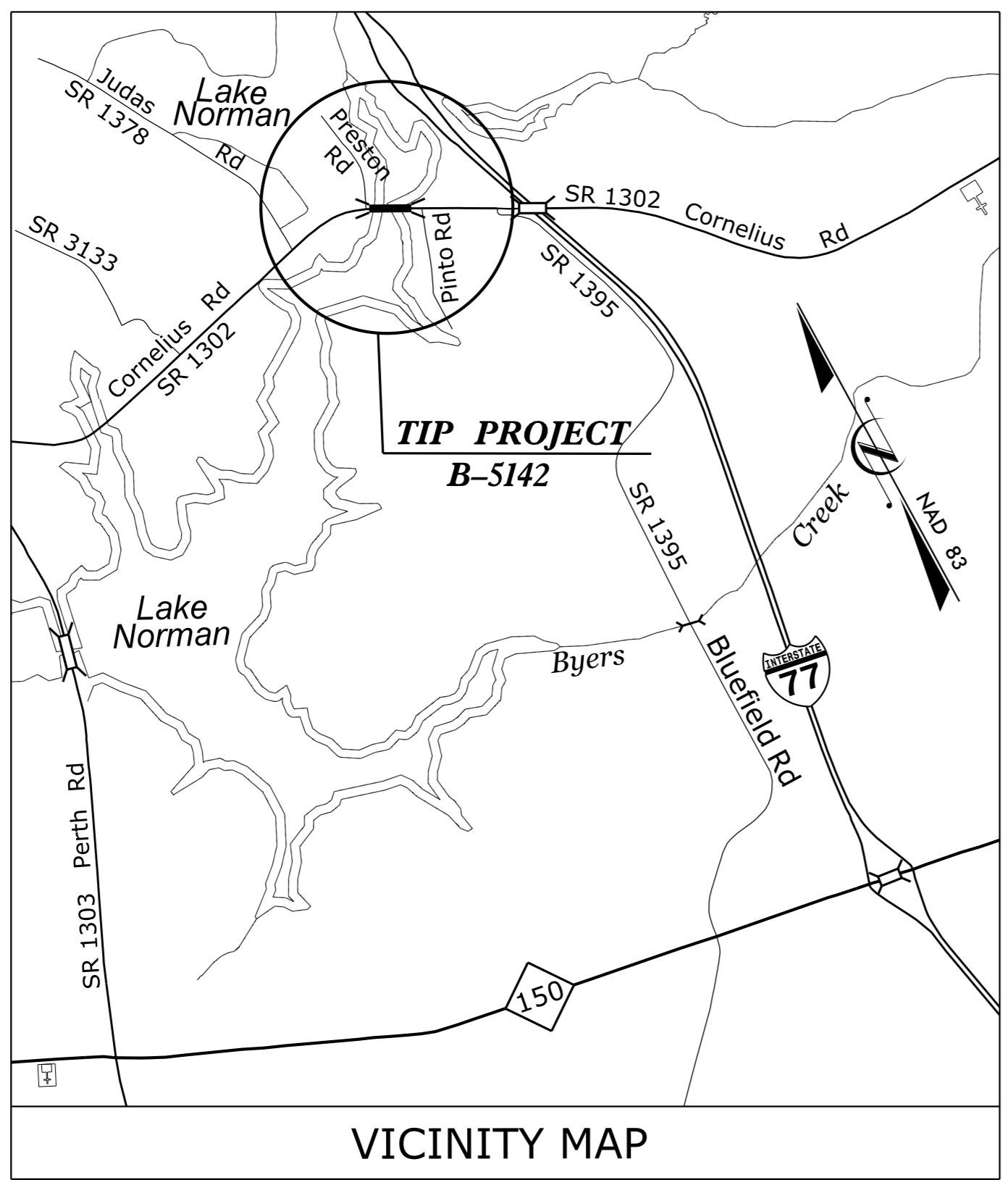
**TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>B-5142</b>	<b>1</b>	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
42303.1.1	BRZ-1302(41)	PE	
42303.2.FD1	BRZ-1302(41)	RW, UTIL	
42303.3.FD1	BRZ-1302(41)	CONST.	

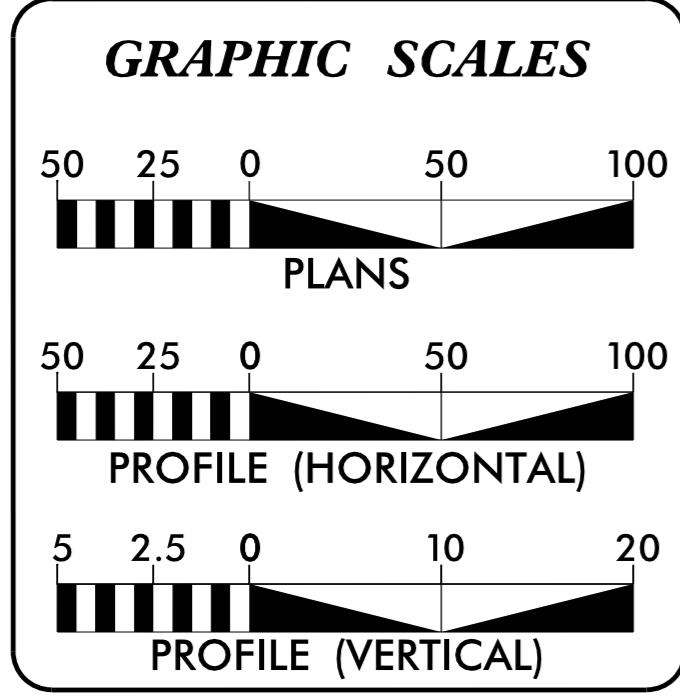
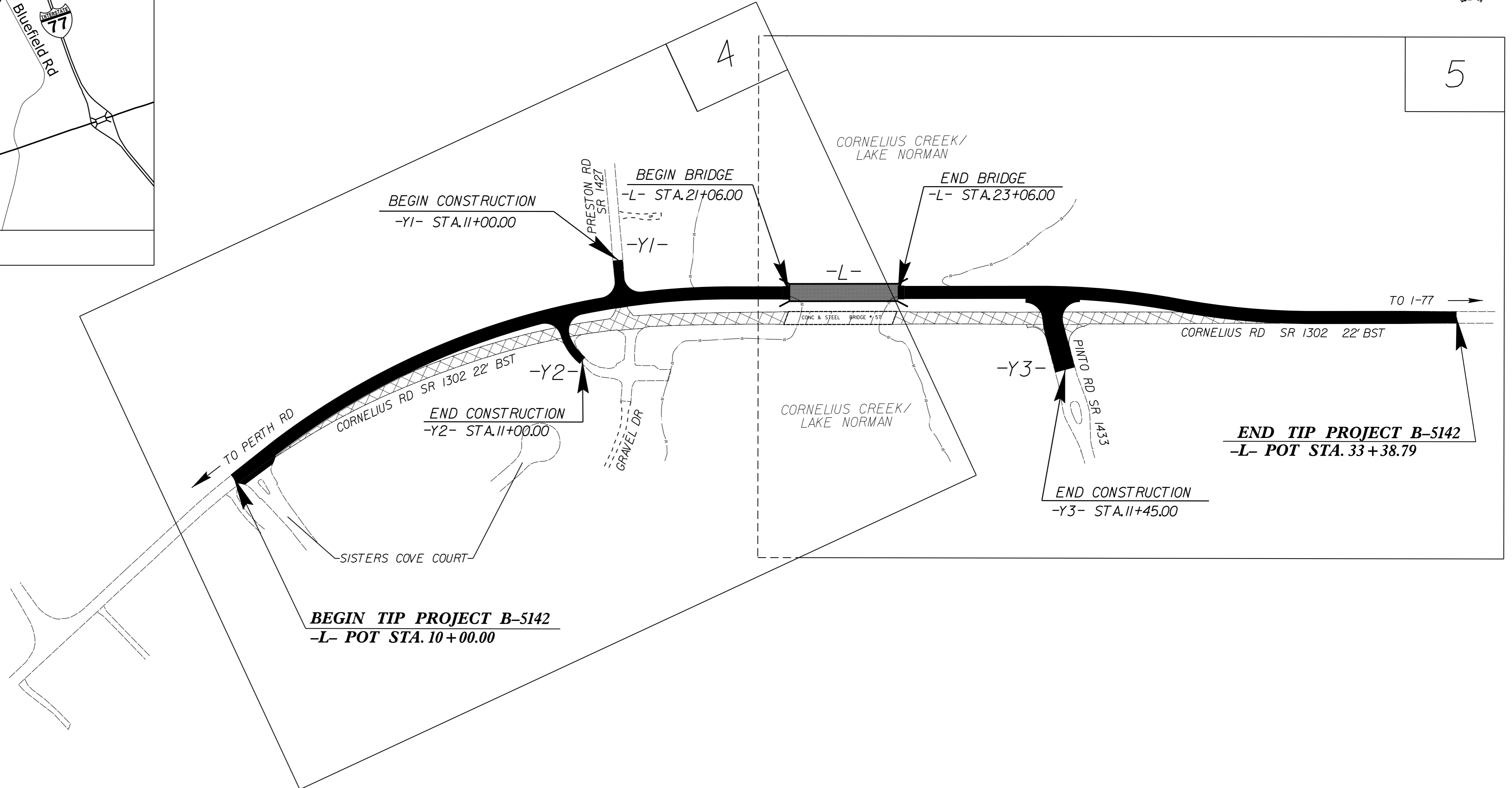


**TIP PROJECT: B-5142**

**CONTRACT: C203913**



VICINITY MAP



**DESIGN DATA**

ADT 2016 =	10,884
ADT 2036 =	18,164
K =	12 %
D =	70 %
T =	4 % *
V =	60 MPH
* TTST =	3 DUAL 1
FUNC CLASS =	Collector
SUB-REGIONAL TIER	

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT B-5142 =	0.405 MILES
LENGTH OF STRUCTURE TIP PROJECT B-5142 =	0.038 MILES
TOTAL LENGTH OF TIP PROJECT B-5142 =	0.443 MILES

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

2012 STANDARD SPECIFICATIONS	
<b>RIGHT OF WAY DATE:</b> JANUARY 29, 2015	<b>JASON MOORE, P.E.</b> PROJECT ENGINEER
<b>LETTING DATE:</b> AUGUST 16, 2016	<b>BRYAN KEY, P.E.</b> PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

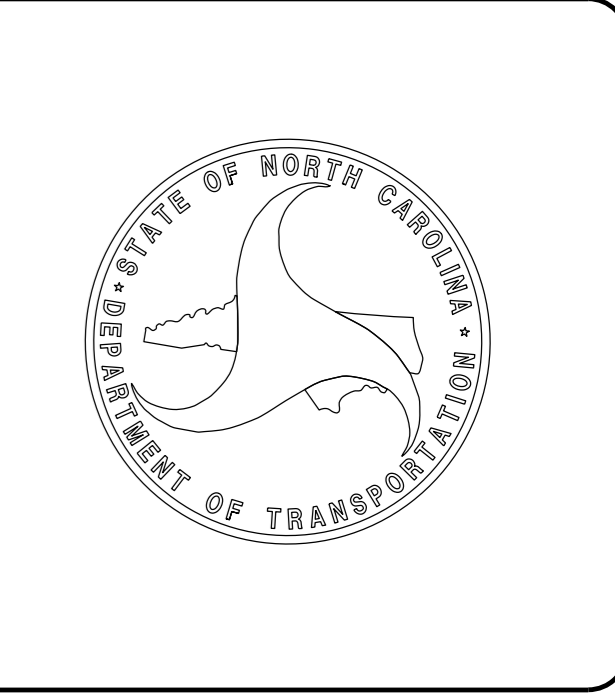
DocuSigned by:  
Steven Bondar  
4GFCBCDF39284C... 7/7/2016

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

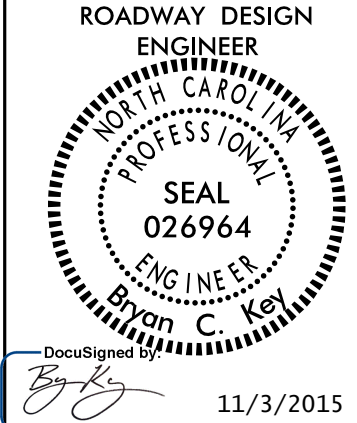
**ROADWAY DESIGN ENGINEER**

DocuSigned by:  
Bryan Key  
529D39A84F124FC... 7/7/2016

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



07-JUL-2016 11:17 R:\Roadway\Proj\B-5142-Rdy-fsh.dgn \$\$\$\$\$\$USERNAME\$\$\$\$\$



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

SHEET NUMBER	INDEX OF SHEETS SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-01	SURVEY CONTROL SHEETS
2A-01 THRU 2A-04	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-01	DETAIL OF -Y3- TRANSITION TO EXISTING
2B-02	DETAIL OF TEMPORARY WIDENING
2C-1	GUARDRAIL ANCHOR UNIT, TYPE III
2C-2	MODIFIED SHOULDER BERM GUTTER
2D-1	DRY DETENTION/HAZARDOUS SPILL BASIN DETAIL
2G-1	ROCK PLATING AND ROCK EMBANKMENT DETAIL
2G-2	STANDARD TEMPORARY SHORING DETAIL
3B-01	SUMMARY OF EARTHWORK, PAVEMENT REMOVAL SUMMARY, MODIFIED SHOULDER BERM GUTTER SUMMARY AND GUARDRAIL SUMMARY
3D-1	DRAINAGE SUMMARIES
3G-1	SUMMARY OF SUBSURFACE DRAINAGE, SUMMARY OF ROCK PLATING, SUMMARY OF BRIDGE WAITING PERIODS AND SUMMARY OF AGGREGATE SUBGRADE / STABILIZATION
3P-1	PARCEL INDEX SHEET
4 THRU 7	PLAN AND PROFILE SHEETS
TMP-1 THRU TMP-12	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-8	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-2	SIGNING PLANS
UC-1 THRU UC-6	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-0	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-25	CROSS-SECTIONS
S-1 THRU S-38	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.

**SHOULDER CONSTRUCTION:**

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

**SIDE ROADS:**

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

**SUBSURFACE DRAINS:**

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

**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

Water - Town of Mooresville, FM Sanitary Sewer - Town of Mooresville,

Power Distribution - Energy United Membership Corporation, Cable Television - Time Warner Cable, and Telecommunications - Windstream Communications

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

**RIGHT-OF-WAY MARKERS:**

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

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
<b>DIVISION 2 - EARTHWORK</b>	
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
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
<b>DIVISION 4 - MAJOR STRUCTURES</b>	
422.10	Reinforced Bridge Approach Fills
<b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b>	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
<b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b>	
654.01	Pavement Repairs
<b>DIVISION 8 - INCIDENTALS</b>	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
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

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

B/17/09

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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	○ EP
Property Corner	----->
Property Monument	□ ECM
Parcel/Sequence Number	①23
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	----- MLB
Proposed Wetland Boundary	----- MLB
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	-----
False Sump	▽

**RAILROADS:**

Standard Gauge	-----
RR Signal Milepost	○ CSX TRANSPORTATION 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 RW Marker	----- RW ●
Proposed Control of Access Line with Concrete CA 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	⊕
Storm Sewer	----- S

**UTILITIES:**

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊗
Power Transformer	⊗
U/G Power Cable Hand Hole	▭
H-Frame Pole	●
Recorded U/G Power Line	----- P
Designated U/G Power Line (S.U.E.*)	----- P

**TELEPHONE:**

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	▭
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	▭
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	⊕
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	⊕
TV Tower	⊗
U/G TV Cable Hand Hole	▭
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	⊕
Utility Unknown U/G Line	----- ?UTL
U/G Tank; Water, Gas, Oil	▭
Underground Storage Tank, Approx. Loc.	⊕
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.

# SURVEY CONTROL SHEET

## -Final-

**DATUM DESCRIPTION**

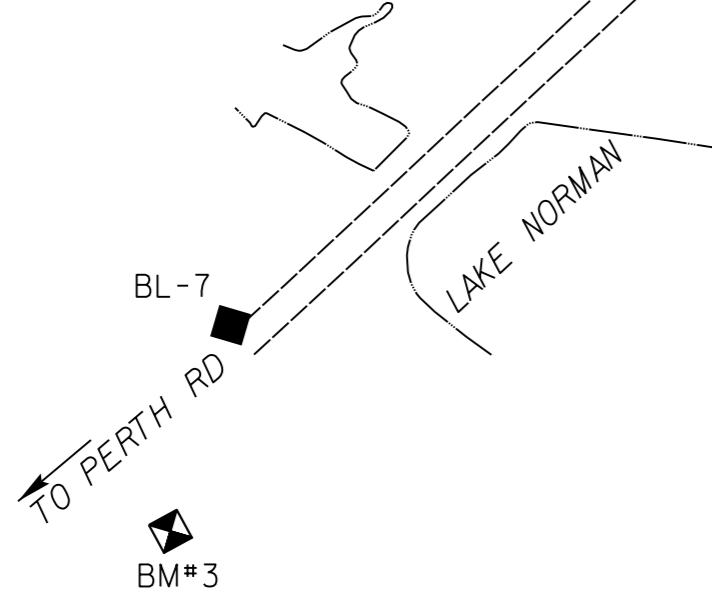
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5142-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 688343.842(ft) EASTING: 1445084.602(ft) ELEVATION: 770.18(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986215

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5142-1" TO -L- STATION 9+00.00 IS  
N 87°07'48.2" W 854.24'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
VERTICAL DATUM USED IS NAVD 88

.....  
 BM2 ELEVATION = 770.92  
 N 687823 E 1445784  
 L STATION 26+49.158 RIGHT  
 CHISELED SQUARE IN CONC GUTTER ON EAST SIDE OF PINTO ROAD. 58 FT NE OF SUBDIVISION SIGN  
 .....  
 BM3 ELEVATION = 772.67  
 N 688005 E 1442975  
 L STATION 33.75  
 N 82°58'0.83" W DIST 3532.82  
 RAILROAD SPIKE IN NORTH EAST ROOT OF A 48" WILLOW OAK  
 .....



**NOTES:**

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: [HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/](https://connect.ncdot.gov/resources/location/)

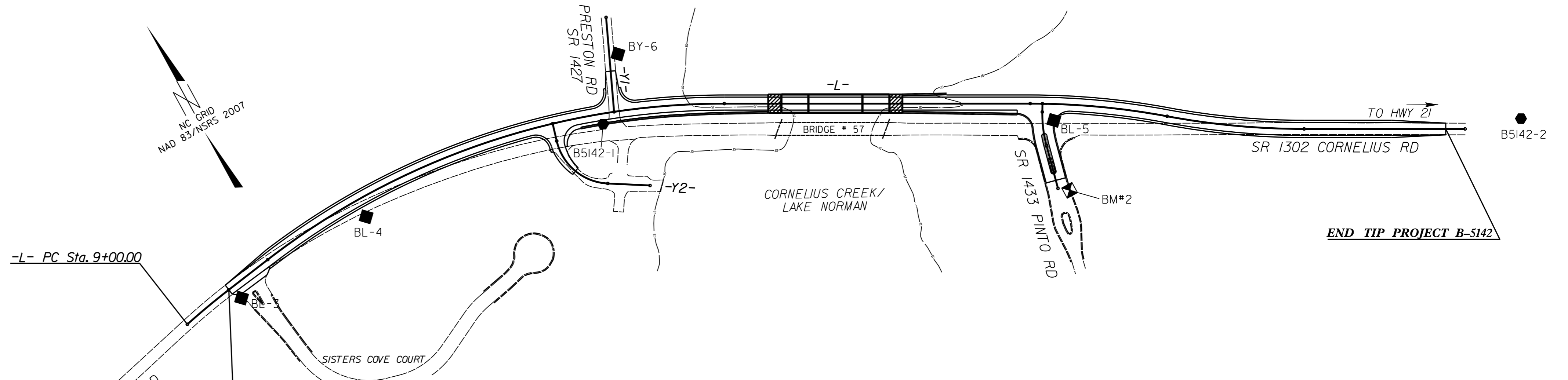
THE FILES TO BE FOUND ARE AS FOLLOWS:  
 B5142\_LS\_CONTROL.TXT  
 B5142\_LS\_LOCAL.TXT

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

3. PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM, UTILIZING THE NCGS RTN SYSTEM (VRS).

MONUMENTS USED OR SET FOR PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT:

- INDICATES GEODETIC CONTROL MONUMENTS FOR HORIZONTAL CONTROL
- INDICATES BASELINE MONUMENTS FOR HORIZONTAL PROJECT CONTROL
- ⊠ INDICATES BENCHMARKS FOR VERTICAL CONTROL



BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
7	BL-7		688108.3810	1443077.7580	765.88	OUTSIDE PROJECT LIMITS	
8	BL-8		688337.3839	1443937.3508	784.62	OUTSIDE PROJECT LIMITS	
3	BL-3		688381.1589	1444342.7525	785.69	10+09.12	26.71 RT
4	BL-4		688403.0723	1444617.2951	781.06	12+89.32	34.94 RT
1	B5142-1		688343.8420	1445084.6020	770.18	17+72.04	19.41 RT
5	BL-5		687950.5444	1445820.3799	769.32	26+11.55	30.53 RT
2	B5142-2		687539.6810	1446581.1530	806.55	OUTSIDE PROJECT LIMITS	

BY1	POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
6	BY-6		688444.6845	1445170.8132	773.67	10+69.63	16.12 LT
1	B5142-1		688343.8420	1445084.6020	770.18	OUTSIDE PROJECT LIMITS	

TYPE	STATION	L	
		NORTH	EAST
PC	9+00.00	688386.6130	1444231.4354
PT	09+99.54	688406.0006	1444329.0491
PC	10+91.26	688420.5998	1444419.5936
PT	20+00.48	688269.9216	1445299.6587
PC	25+66.71	687998.9580	1445796.8370
PRC	28+21.74	687856.9691	1446008.2587
PT	30+76.78	687714.9802	1446219.6803
POT	33+74.66	687572.4321	1446481.2350

TYPE	STATION	Y1	
		NORTH	EAST
POT	10+00.00	688514.9039	1445184.1089
POT	11+75.59	688354.1991	1445113.3694

TYPE	STATION	Y2	
		NORTH	EAST
POT	10+00.00	688389.3838	1445003.0483
PC	10+33.07	688357.5054	1444994.2373
PT	11+65.13	688243.1494	1445039.6057
POT	12+43.33	688202.5591	1445106.4437

TYPE	STATION	Y3	
		NORTH	EAST
POT	10+00.00	687987.9048	1445816.7260
PC	10+15.31	687974.5816	1445809.1780
PT	10+77.92	687916.5453	1445786.2444
POT	11+60.37	687836.3978	1445766.8685

ALIGN	STATION	OFFSET	ROW MARKER IRON PIN & CAP	
			NORTH	EAST
Y1	11+15.00	27.64	688420.7811	1445112.4793
Y1	11+18.61	-32.10	688393.4111	1445165.7009

ALIGN	STATION	OFFSET	ROW MARKER IRON PIN & CAP	
			NORTH	EAST
L	10+00.00	-30.00	688435.6908	1444324.7257
L	10+91.26	-30.00	688450.2173	1444414.8181
L	17+37.78	-30.00	688401.5738	1445067.5583
L	18+52.49	-30.00	688361.3728	1445177.6229
L	20+00.48	-30.00	688296.2635	1445314.0151
L	25+66.71	-30.00	688025.2998	1445811.1934
L	28+21.74	-30.00	687880.2242	1446027.2112
L	30+76.78	-30.00	687741.3220	1446234.0367

ALIGN	STATION	OFFSET	PERMANENT EASEMENT MARKER IRON PIN & CAP	
			NORTH	EAST
L	9+85.00	-70.00	688472.5956	1444302.8318
L	9+85.00	-30.00	688433.1722	1444309.6169
L	13+40.00	-73.00	688510.8939	1444668.8853
L	16+09.00	-95.00	688499.1368	1444954.4057
L	16+48.00	64.74	688334.6358	1444956.4725
L	17+06.00	-30.00	688411.0788	1445036.5147
L	17+98.00	71.27	688286.5609	1445090.8173
L	18+45.00	73.42	688268.4774	1445131.5714
L	18+45.00	89.00	688254.0470	1445125.7015
L	18+73.50	98.50	688235.0227	1445146.5325
L	20+00.48	104.00	688178.6032	1445249.8898
L	24+05.00	77.00	688008.7309	1445618.0012
L	24+05.00	104.00	687985.0232	1445605.0804
L	25+73.00	104.00	687904.8428	1445752.1720
L	26+53.50	99.00	687871.2759	1445818.9456
L	27+85.00	-54.00	687922.5533	1446012.4575
L	27+85.00	-30.00	687903.5522	1445997.7962
L	29+50.00	-47.00	687819.7084	1446137.4809
L	29+54.00	61.00	687727.6974	1446080.7878
L	30+44.00	30.40	687704.6709	1446175.9064
L	31+00.00	-30.00	687730.2120	1446254.4220
L	31+63.00	-46.00	687714.1125	1446317.3967
L	32+65.00	-30.00	687651.2518	1446399.3023
L	32+65.00	-42.00	687661.7885	1446405.0448
L	32+73.00	56.00	687571.9101	1446365.1718
L	33+74.66	30.00	687546.0907	1446466.8778

ALIGN	STATION	OFFSET	PERMANENT EASEMENT MARKER IRON PIN & CAP	
			NORTH	EAST
Y2	10+76.00	26.00	688311.0540	1444966.0111

ALIGN	STATION	OFFSET	PERMANENT EASEMENT MARKER IRON PIN & CAP	
			NORTH	EAST
Y3	11+52.00	30.00	687851.5869	1445739.6763
Y3	11+52.00	-29.71	687837.5556	1445797.7157

NOTE: DRAWING NOT TO SCALE

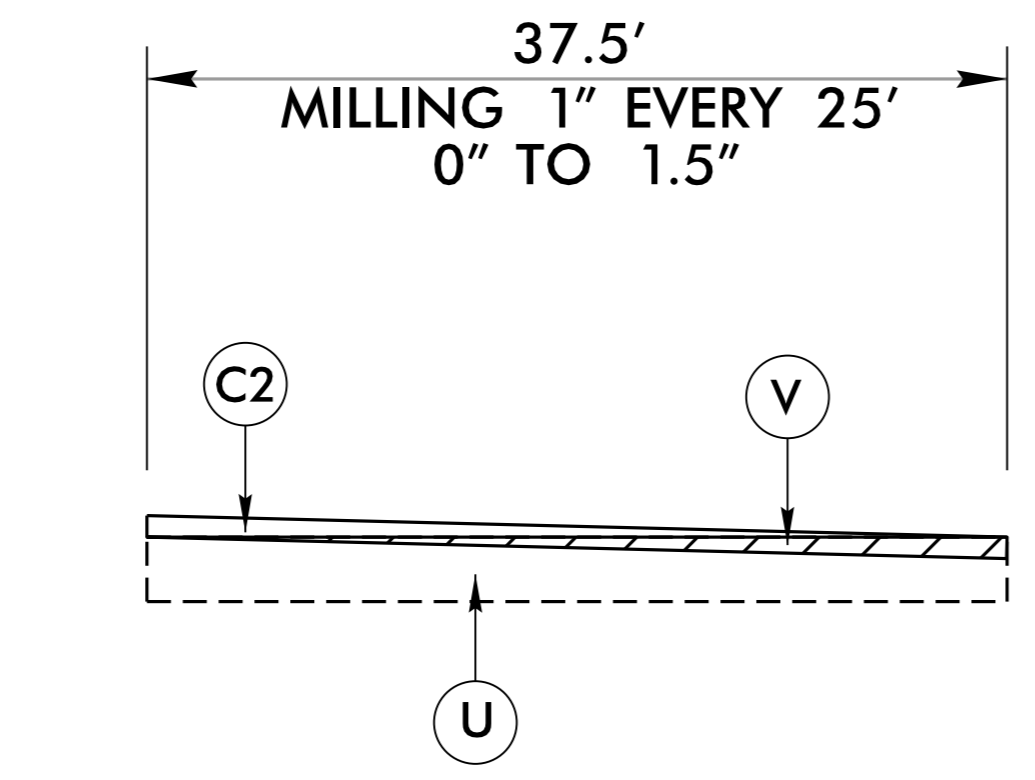
6/2/09

### PAVEMENT SCHEDULE

<b>C1</b>	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS	<b>R1</b>	2'-6" CONCRETE CURB AND GUTTER, STD. 846.01
<b>C2</b>	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1/2" IN DEPTH OR GREATER THAN 2" IN DEPTH.	<b>R2</b>	1'-6" CONCRETE CURB AND GUTTER, STD. 846.01
<b>C3</b>	PROP. APPROX. 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	<b>R3</b>	MODIFIED SHOULDER BERM GUTTER (SEE DETAIL SHEET 2C-2)
<b>D1</b>	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	<b>T</b>	EARTH MATERIAL.
<b>D2</b>	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 LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.	<b>U</b>	EXISTING PAVEMENT.
<b>E1</b>	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	<b>V</b>	MILLING ASPHALT PAVEMENT, VARIABLE DEPTH
<b>E2</b>	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	<b>W</b>	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING BELOW).
<b>E3</b>	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 LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.		

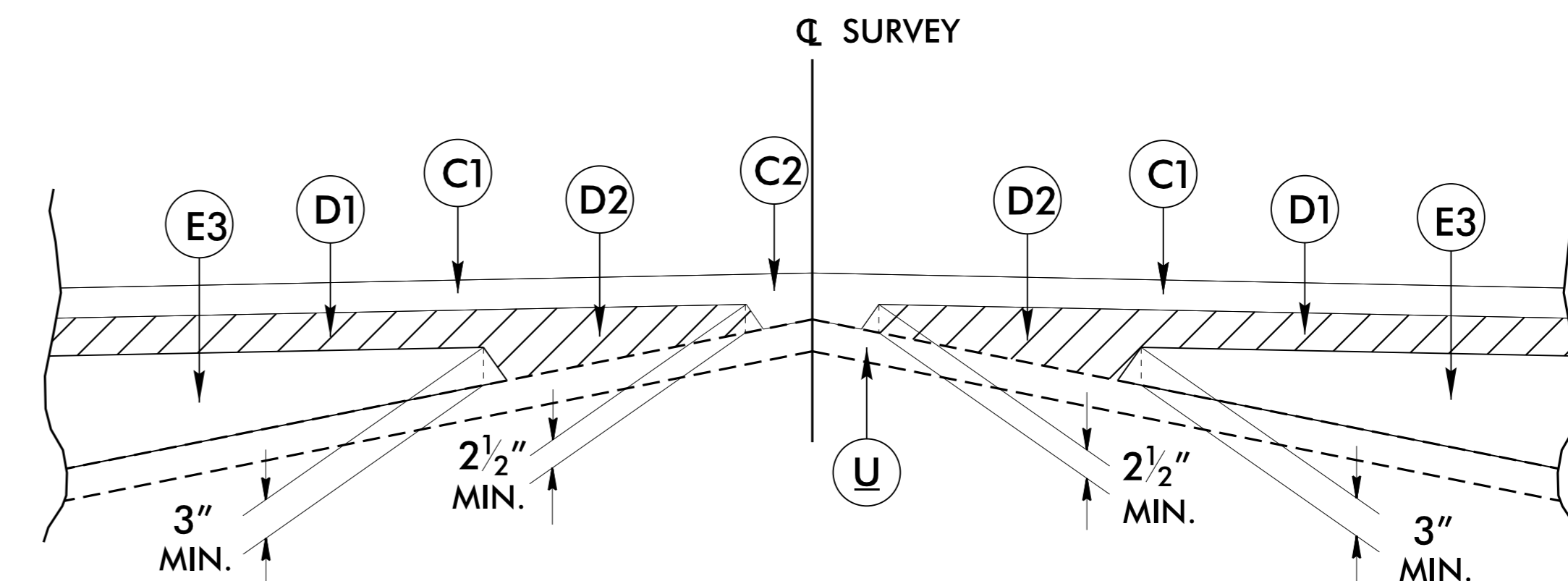
PROJECT REFERENCE NO. <b>B-5142</b>	SHEET NO. <b>2A-01</b>
ROADWAY DESIGN ENGINEER SEAL 026964 Bryan C. Key	PAVEMENT DESIGN ENGINEER SEAL 022896 Clark S. Morrison
11/3/2015	11/3/2015
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

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

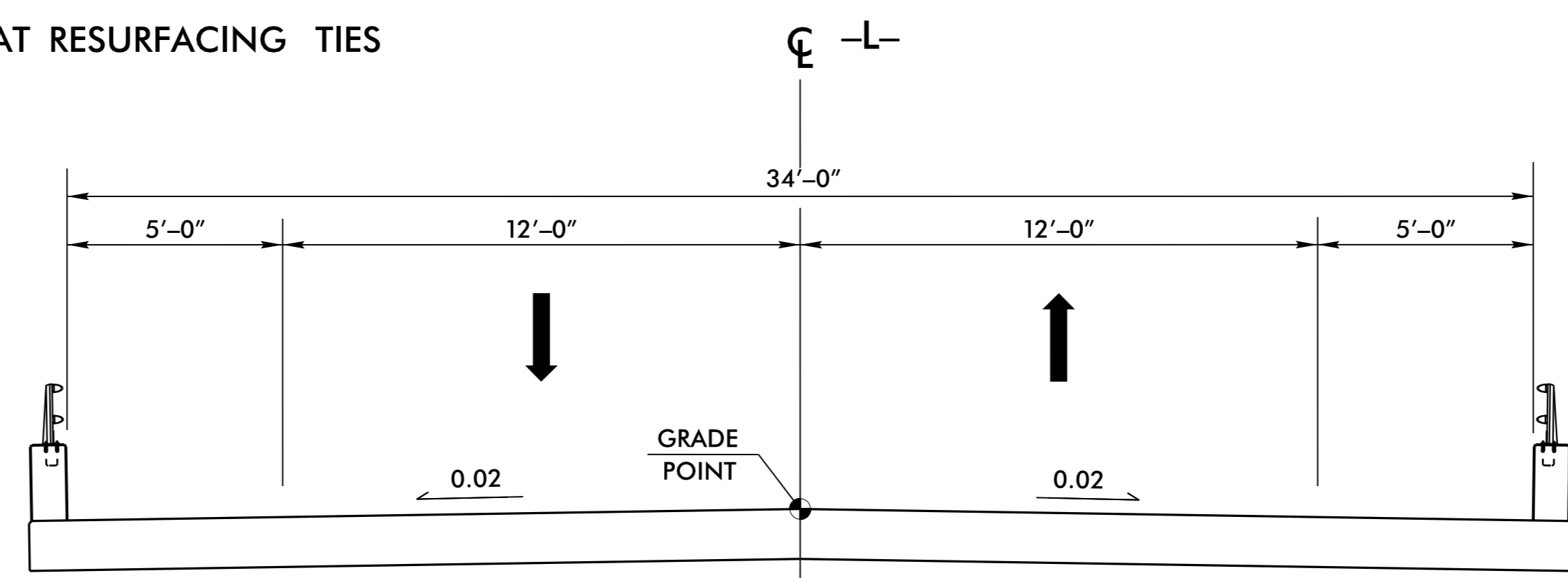


INCIDENTAL MILLING DETAIL

USE MILLING DETAIL AT RESURFACING TIES



DETAIL SHOWING METHOD OF WEDGING



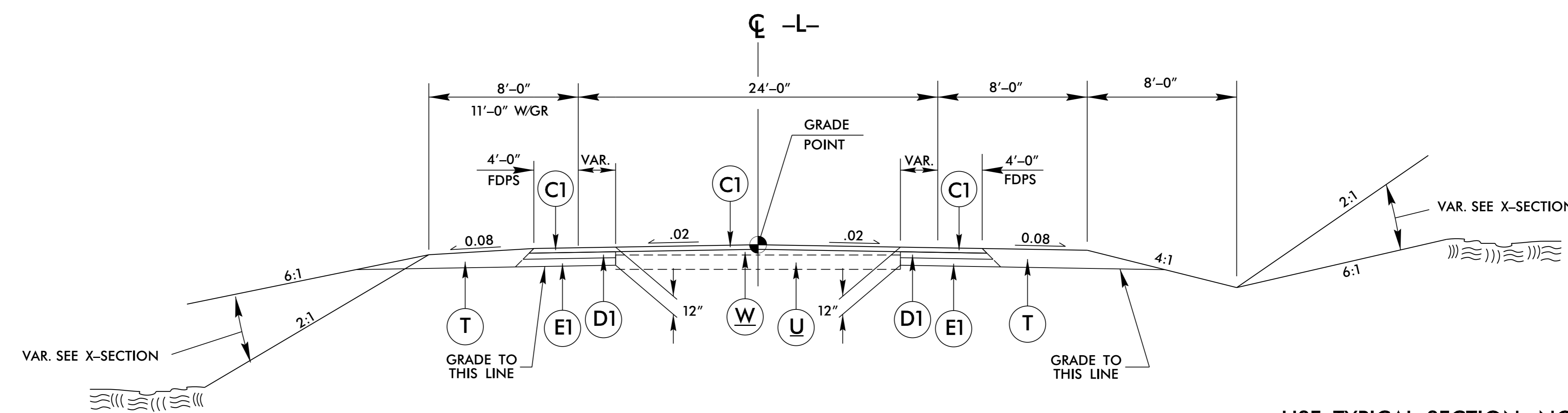
TYPICAL SECTION ON STRUCTURE

USE TYPICAL SECTION ON STRUCTURE  
-L- STA. 21+06.00 TO STA. 23+06.00

27-OCT-2015 14:40 B-5142-Rdy-TYP.dgn

6/2/99

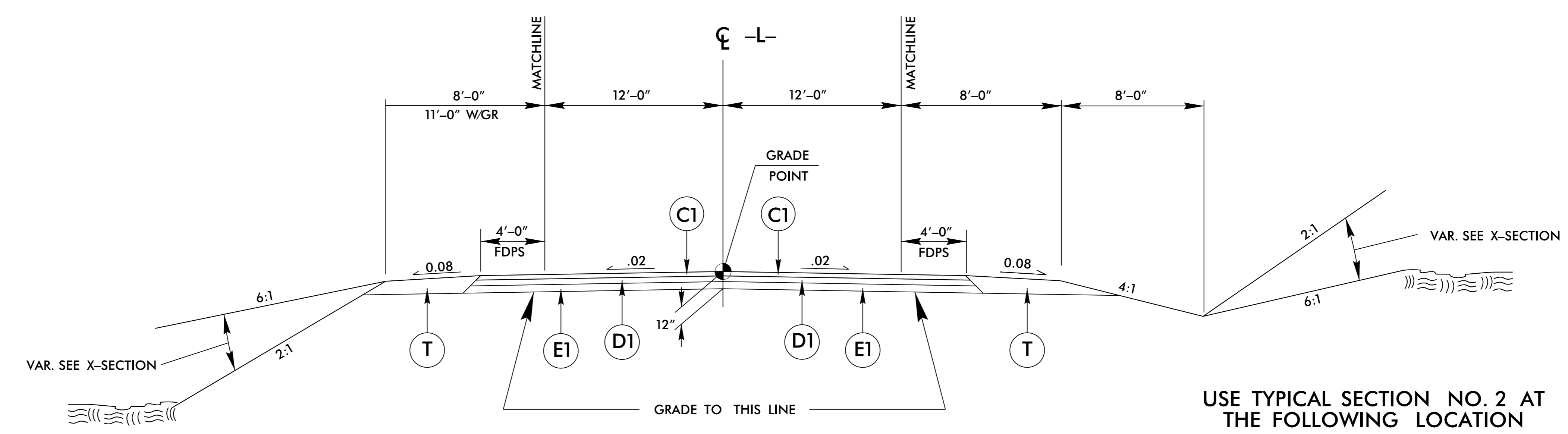
PROJECT REFERENCE NO. B-5142	SHEET NO. 2A-02
ROADWAY DESIGN ENGINEER SEAL 026964 Bryan C. Key	PAVEMENT DESIGN ENGINEER SEAL 022896 Clark S. Morrison
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
C1	3" S9.5B
D1	4" I19.0B
E1	5" B25.0B
R3	MODIFIED SBG
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA. 10+00.00 TO STA. 12+00.00  
 -L- STA. 29+75.00 TO STA. 33+38.79

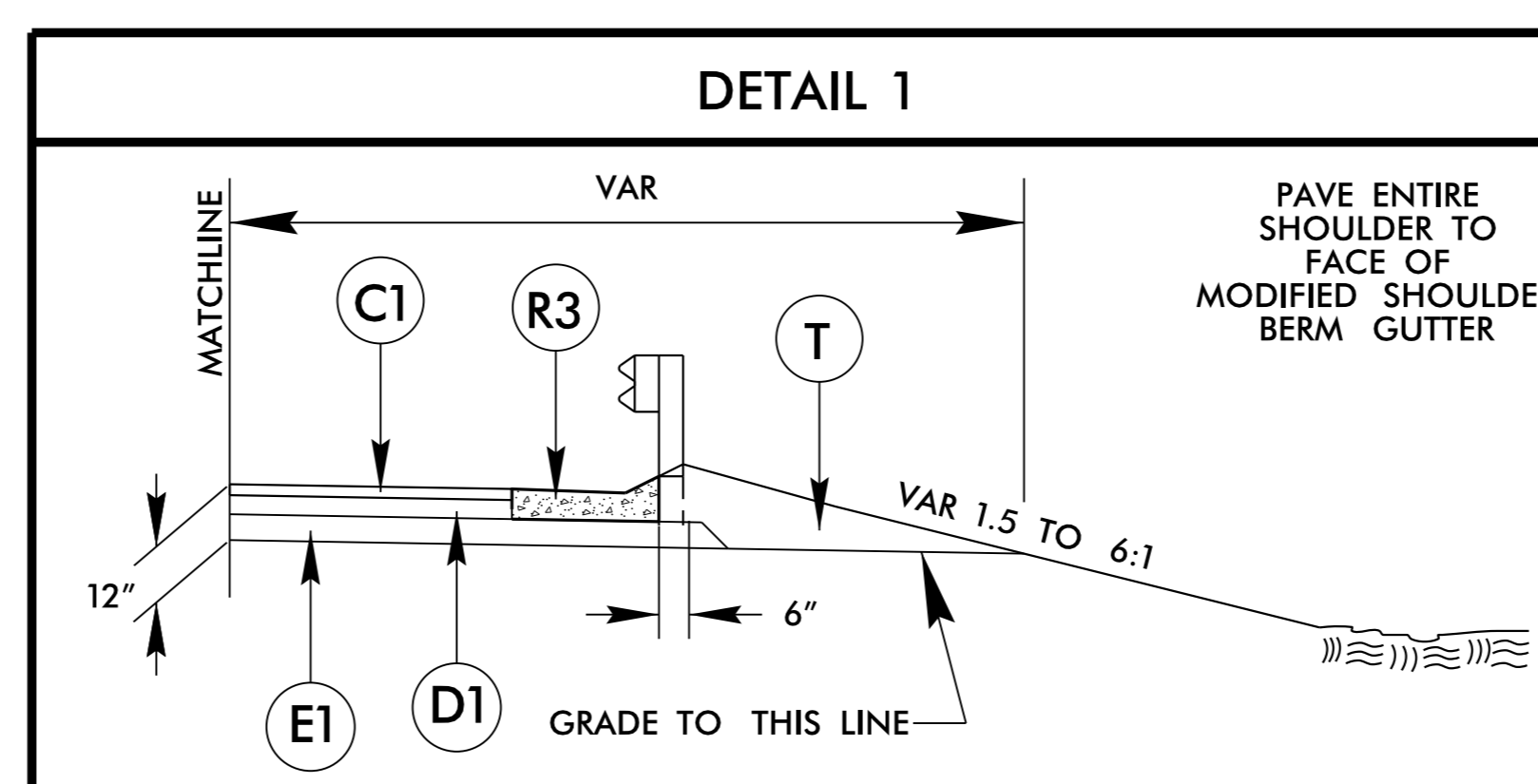


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AT THE FOLLOWING LOCATION

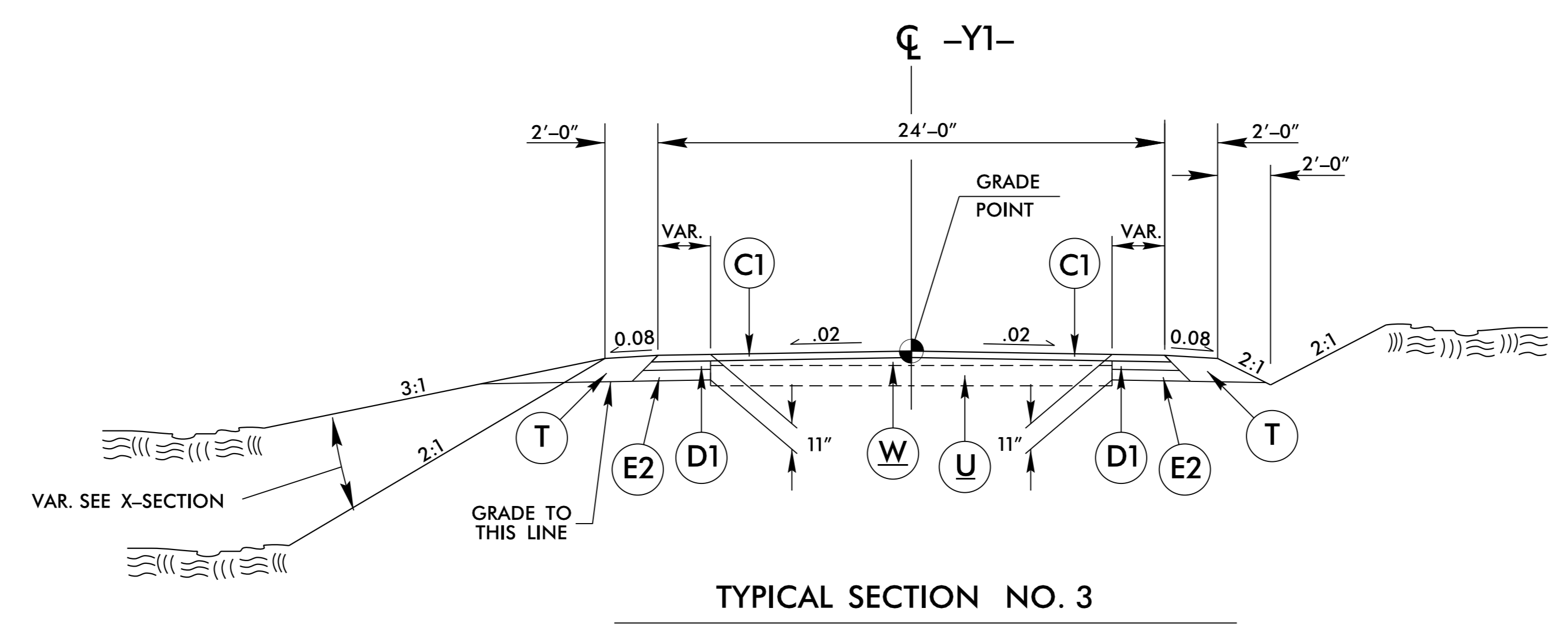
-L- STA. 12+00.00 TO STA. 21+06.00  
 -L- STA. 23+06.00 TO STA. 29+75.00

USE DETAIL 1 FOR ALL MODIFIED SBG LOCATIONS (MIRROR FOR LEFT SIDE)

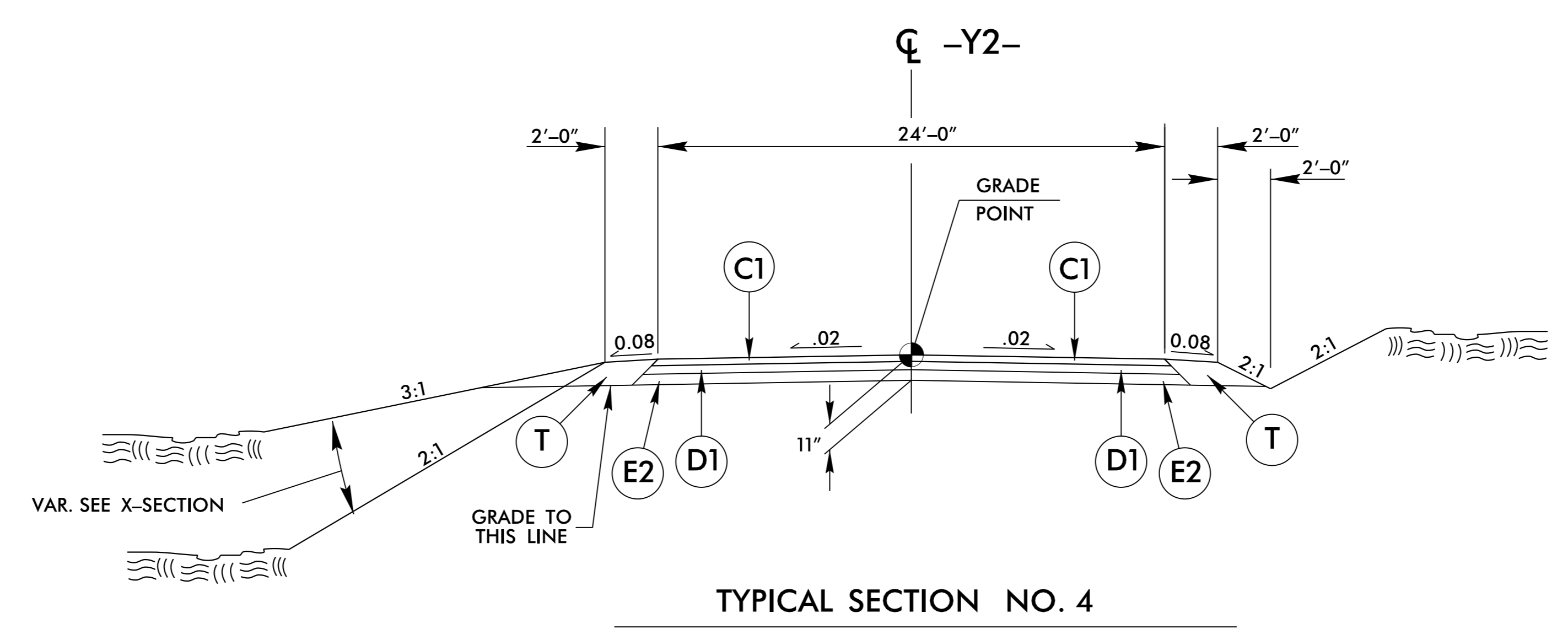


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PROJECT REFERENCE NO. B-5142		SHEET NO. 2A-03	
ROADWAY DESIGN ENGINEER SEAL 022894 Bryan C. Key		PAVEMENT DESIGN ENGINEER SEAL 022896 Clark S. Morrison	
11/3/2015		11/3/2015	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			
<b>CI</b>	3" S9.5B		
<b>DI</b>	4" I19.0B		
<b>E2</b>	4" B25.0B		
<b>T</b>	EARTH MATERIAL		
<b>U</b>	EXISTING PAVEMENT		
<b>W</b>	WEDGING		


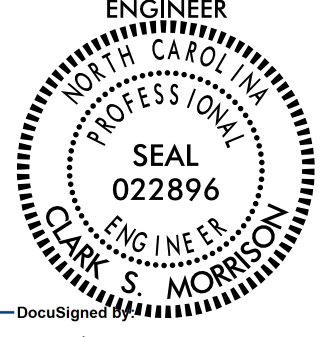


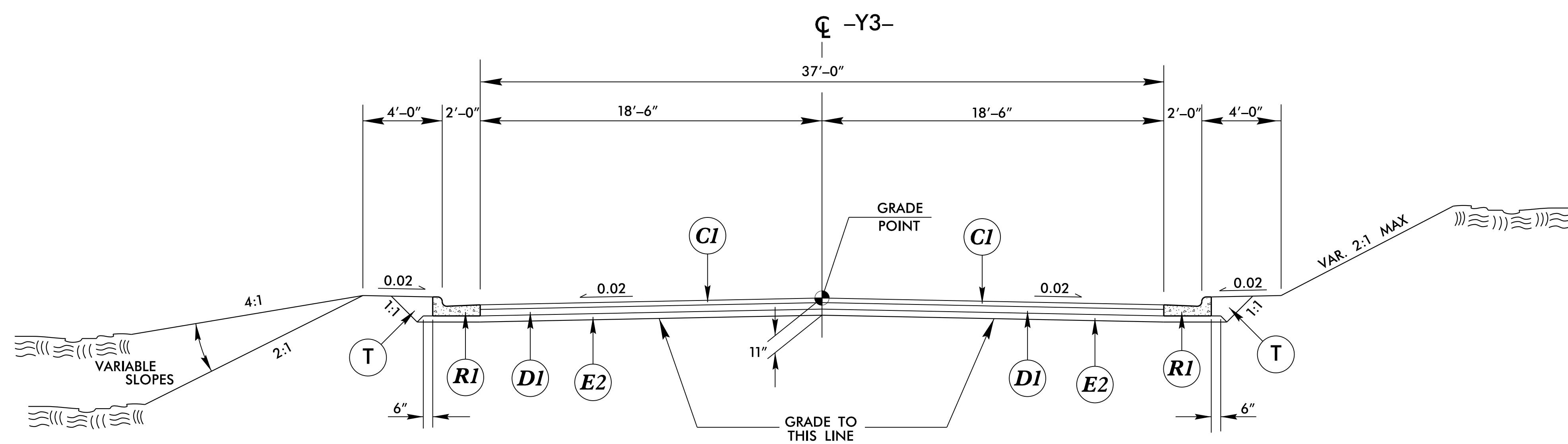
USE TYPICAL SECTION NO. 3 AT  
THE FOLLOWING LOCATION  
-Y1- STA. 11+00.00 TO STA. 11+63.56



USE TYPICAL SECTION NO. 4 AT  
THE FOLLOWING LOCATION  
-Y2- STA. 10+12.00 TO STA. 11+00.00



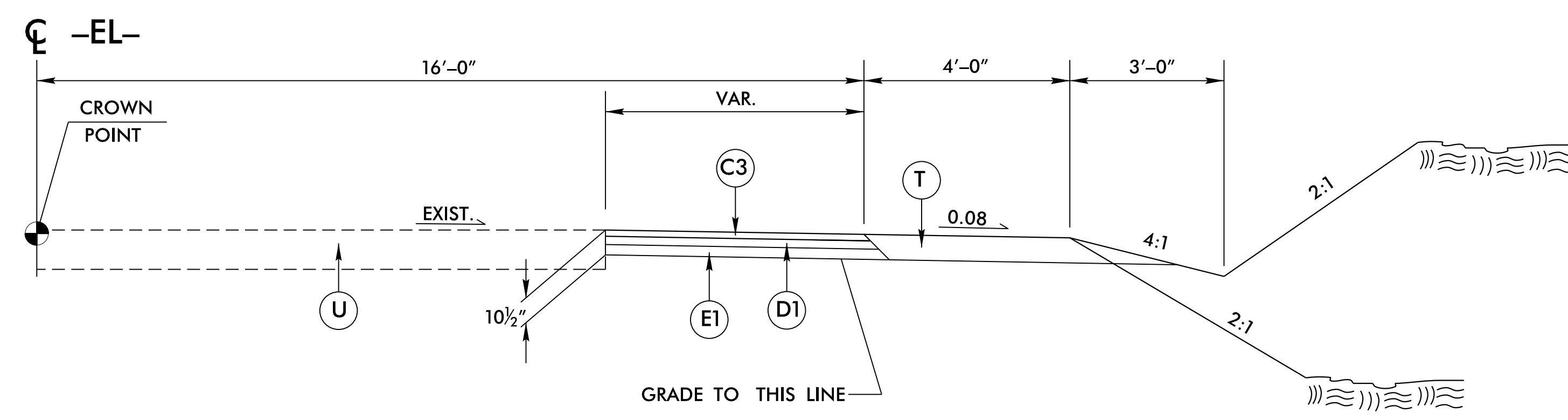
PROJECT REFERENCE NO. B-5142	SHEET NO. 2A-04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER  Brian C. Key 11/3/2015	PAVEMENT DESIGN ENGINEER  Clark S. Morrison 11/3/2015
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
<b>CI</b>	3" S9.5B
<b>C3</b>	1 1/2" S9.5B
<b>D1</b>	4" I19.0B
<b>E1</b>	5" B25.0B
<b>E2</b>	4" B25.0B
<b>R1</b>	2'-6" CURB & GUTTER
<b>R2</b>	1'-6" CURB & GUTTER
<b>T</b>	EARTH MATERIAL
<b>U</b>	EXISTING PAVEMENT



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 AT THE FOLLOWING LOCATION:

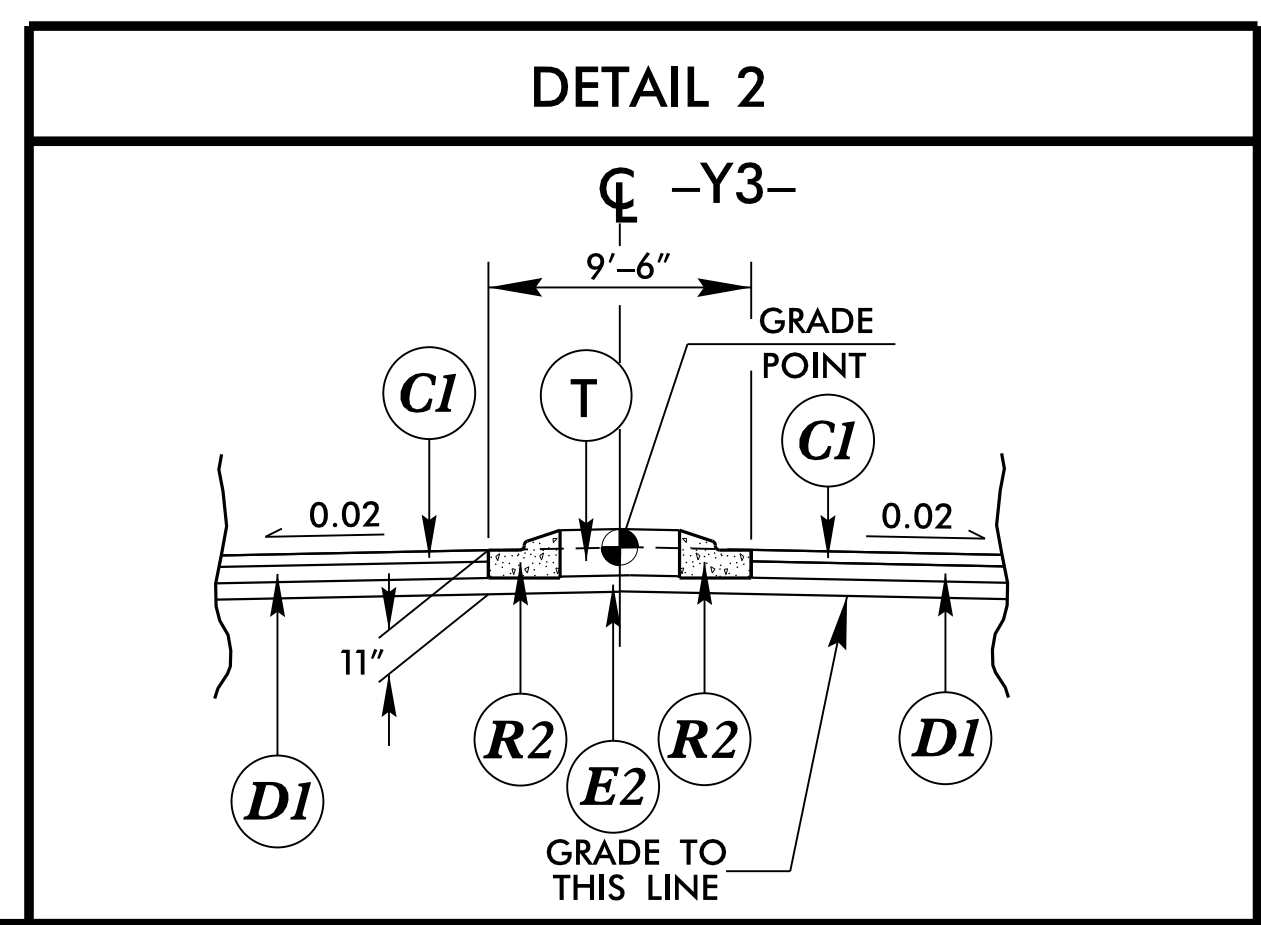
-Y3- STA. 10+12.00 TO STA. 11+45.00  
 USE DETAIL 2 FROM -Y3- STA.10+55.92 TO STA.11+32.15



TYPICAL SECTION NO. 6  
 (TEMPORARY PAVEMENT)

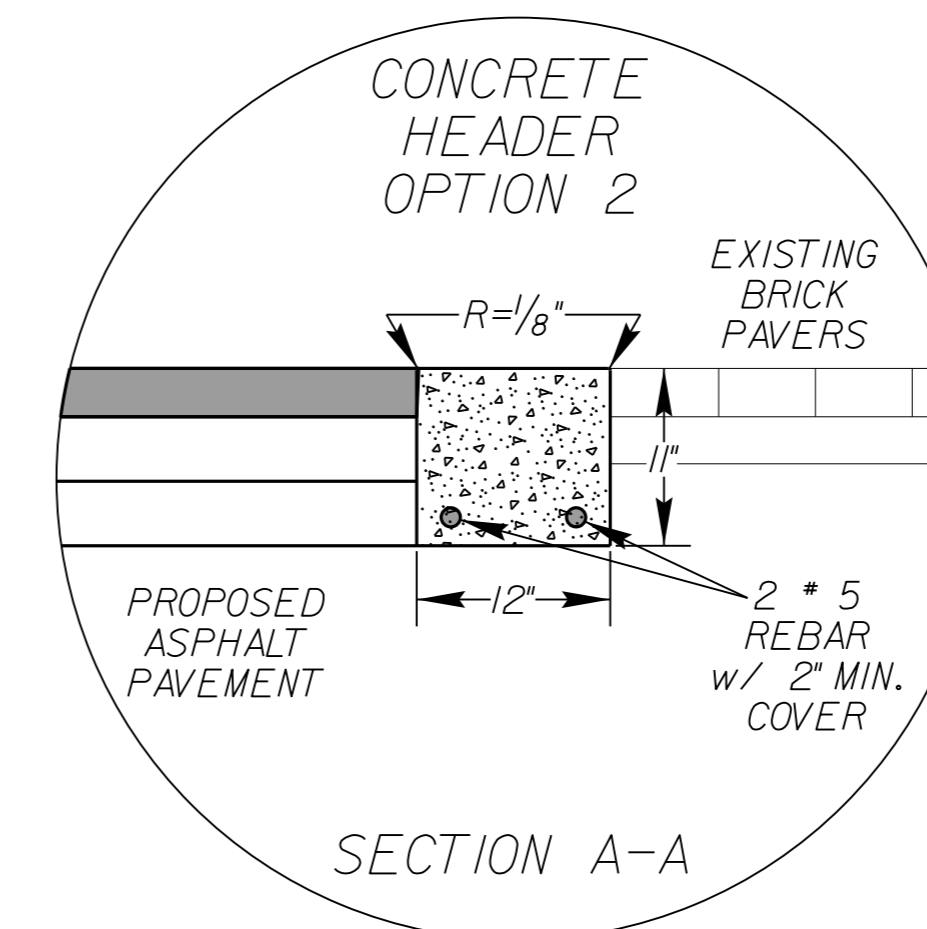
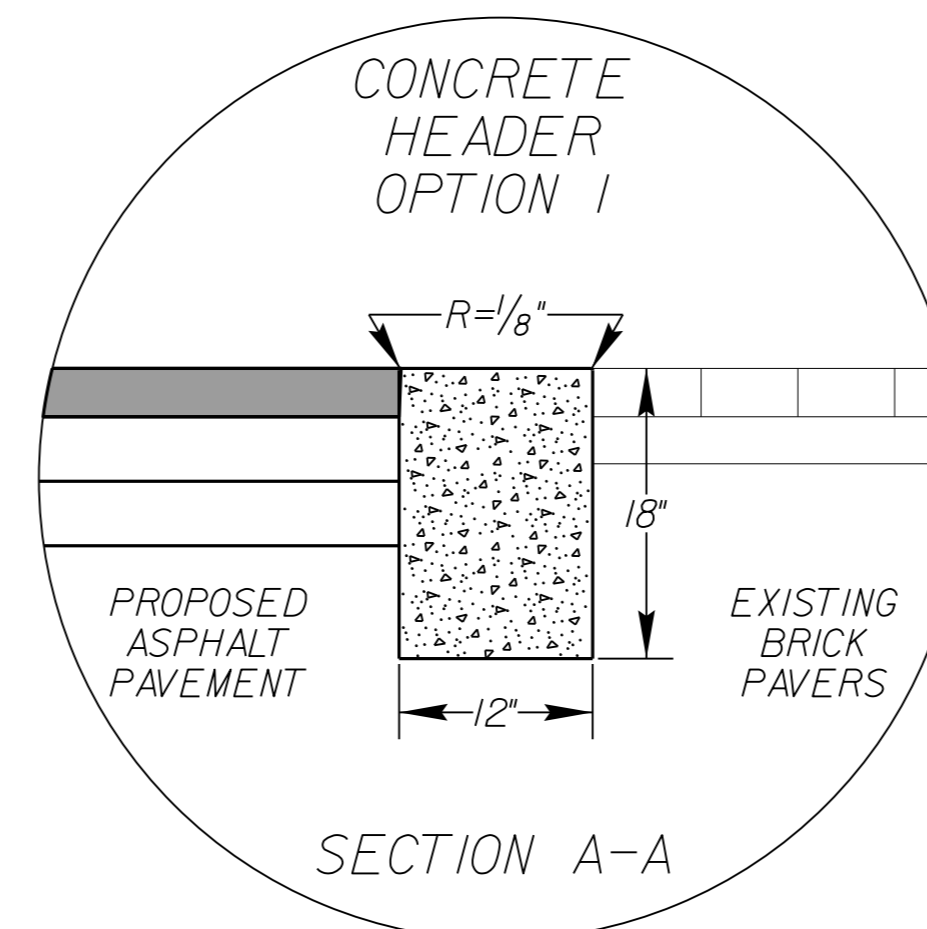
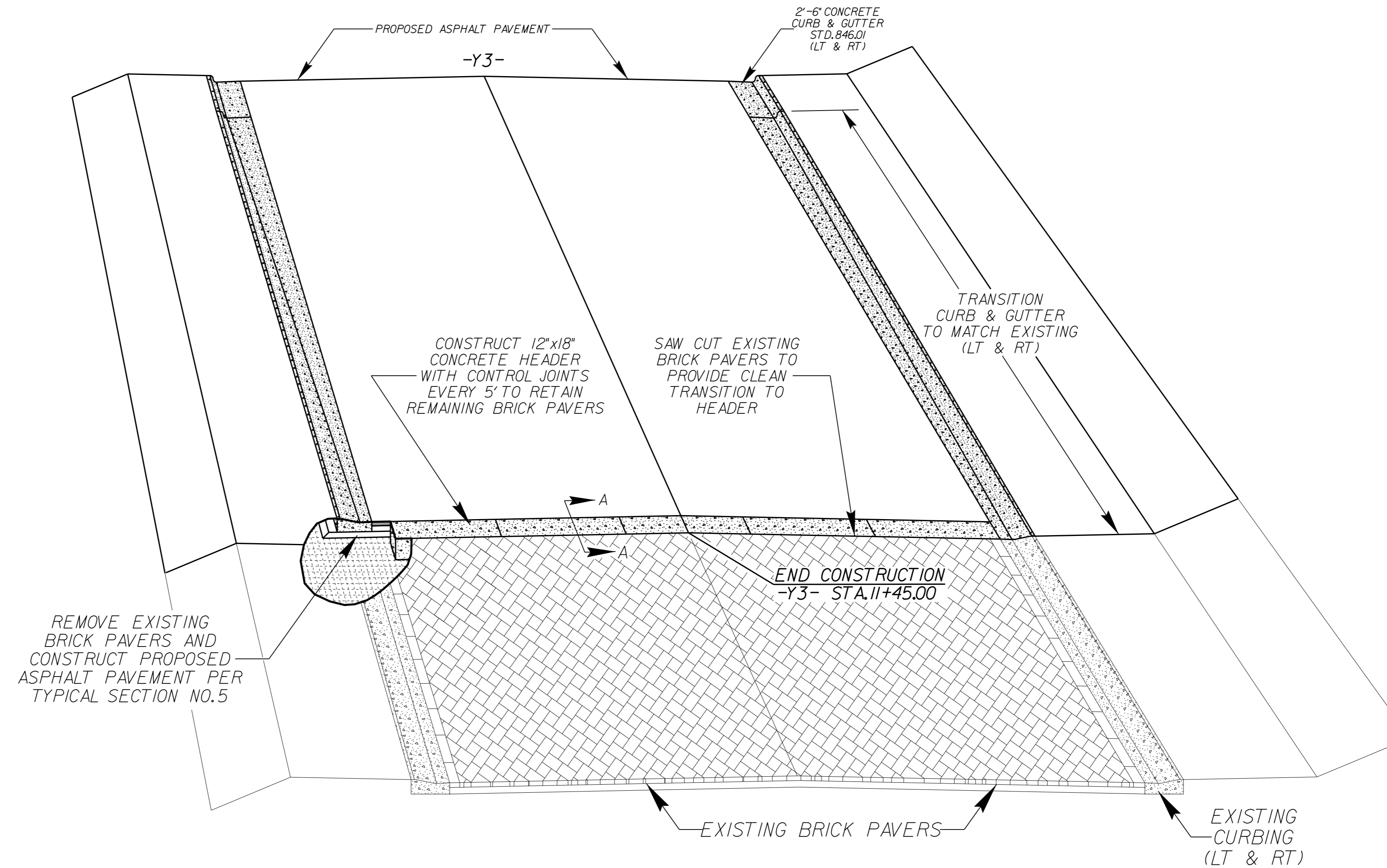
USE TYPICAL SECTION NO. 6 AT THE FOLLOWING LOCATION:

-EL- STA. 27+50.00 TO STA. 32+50.00  
 NOTE: USE 150' TRANSITION TO EXISTING (SEE SHEET 2B-02)



DETAIL 2

## DETAIL OF -Y3- TRANSITION TO EXISTING

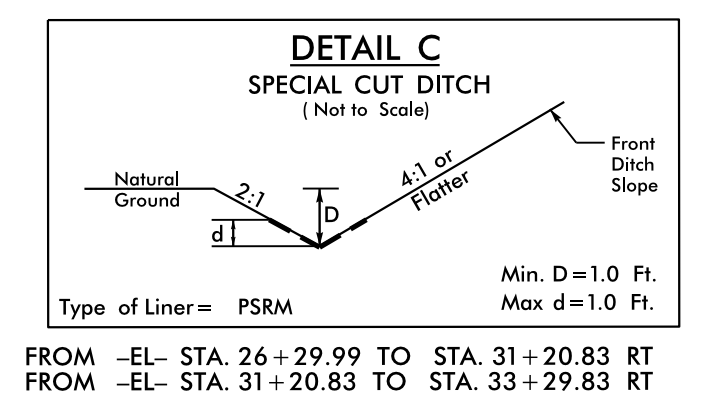
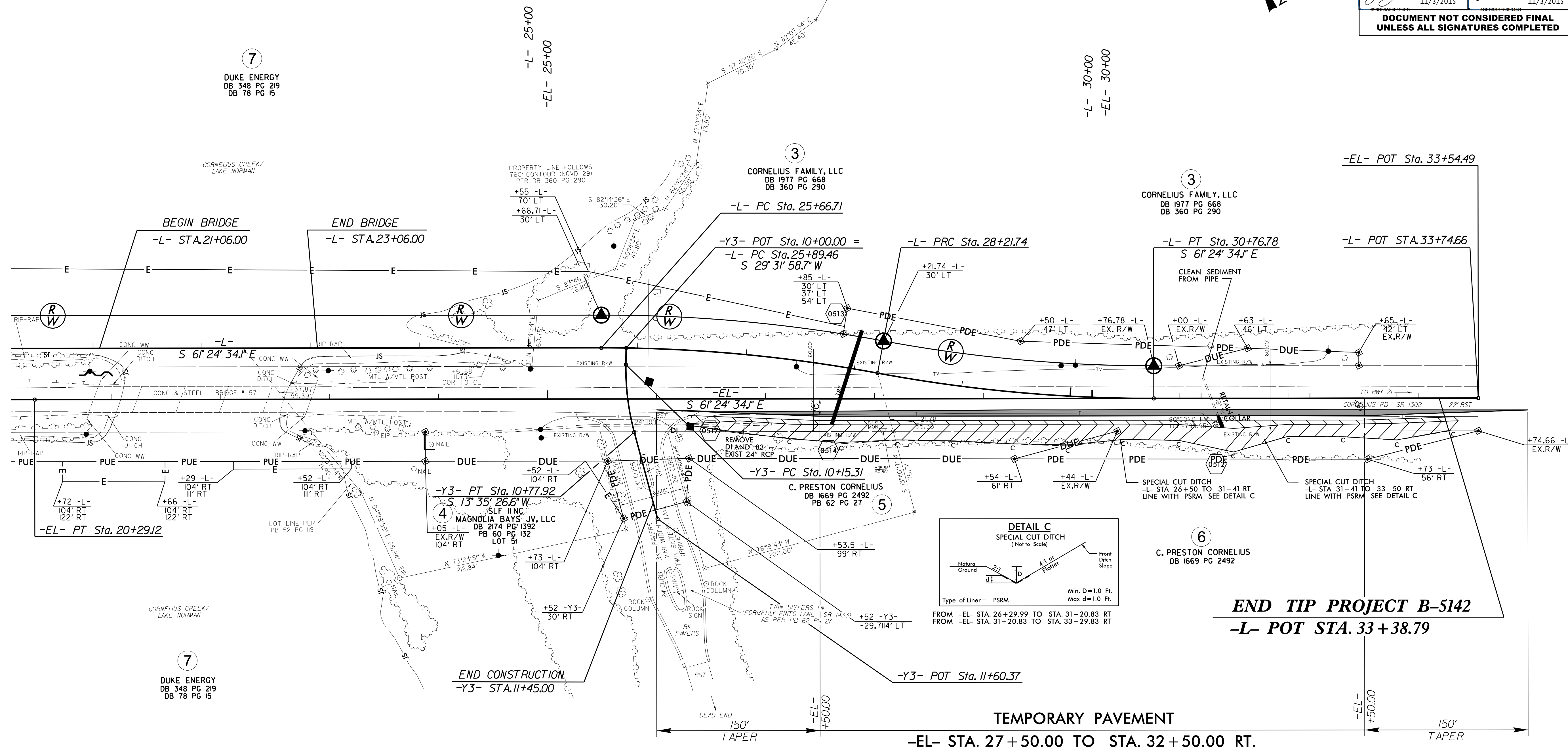
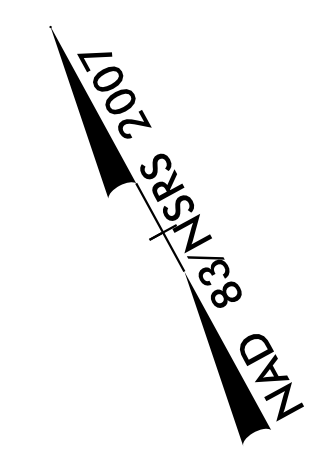


SEE SHEET 2A-04 FOR -Y3- TYPICAL SECTION  
SEE SHEET 5 FOR -Y3- PLAN VIEW

6/2/99

03-NOV-2015 08:58 B-5142-Rdy\_TYP.dgn  
454303PERMANENT

<p><b>-L-</b></p> <p>PI Sta 26+94.59  <math>\Delta = 10^\circ 35' 20.0''</math> (RT)  <math>D = 4^\circ 09' 06.7''</math>  <math>L = 255.04'</math>  <math>T = 127.88'</math>  <math>R = 1,380.00'</math>  <math>SE = .06</math>  <math>V_D = 60</math> mph</p>	<p><b>-L-</b></p> <p>PI Sta 29+49.63  <math>\Delta = 10^\circ 35' 20.0''</math> (LT)  <math>D = 4^\circ 09' 06.7''</math>  <math>L = 255.04'</math>  <math>T = 127.88'</math>  <math>R = 1,380.00'</math>  <math>SE = .06</math>  <math>V_D = 60</math> mph</p>	<p><b>-Y3-</b></p> <p>PI Sta 10+46.82  <math>\Delta = 15^\circ 56' 32.1''</math> (LT)  <math>D = 25^\circ 27' 53.2''</math>  <math>L = 62.61'</math>  <math>T = 31.51'</math>  <math>R = 225.00'</math></p>
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**END TIP PROJECT B-5142**  
**-L- POT STA. 33+38.79**



SEE SHEET TMP-4 FOR TRAFFIC CONTROL PLANS  
 SEE SHEET 5 FOR -L- PLAN SHEET  
 SEE SHEET 6 FOR -L- PROFILE  
 SEE SHEET 7 FOR -EL- PROFILE

REVISIONS

8/17/99

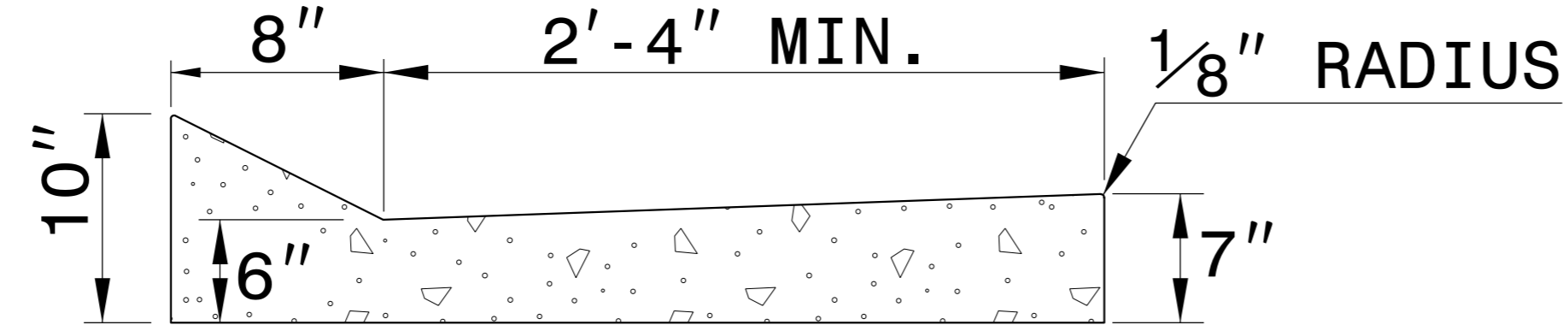
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STATE OF  
NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

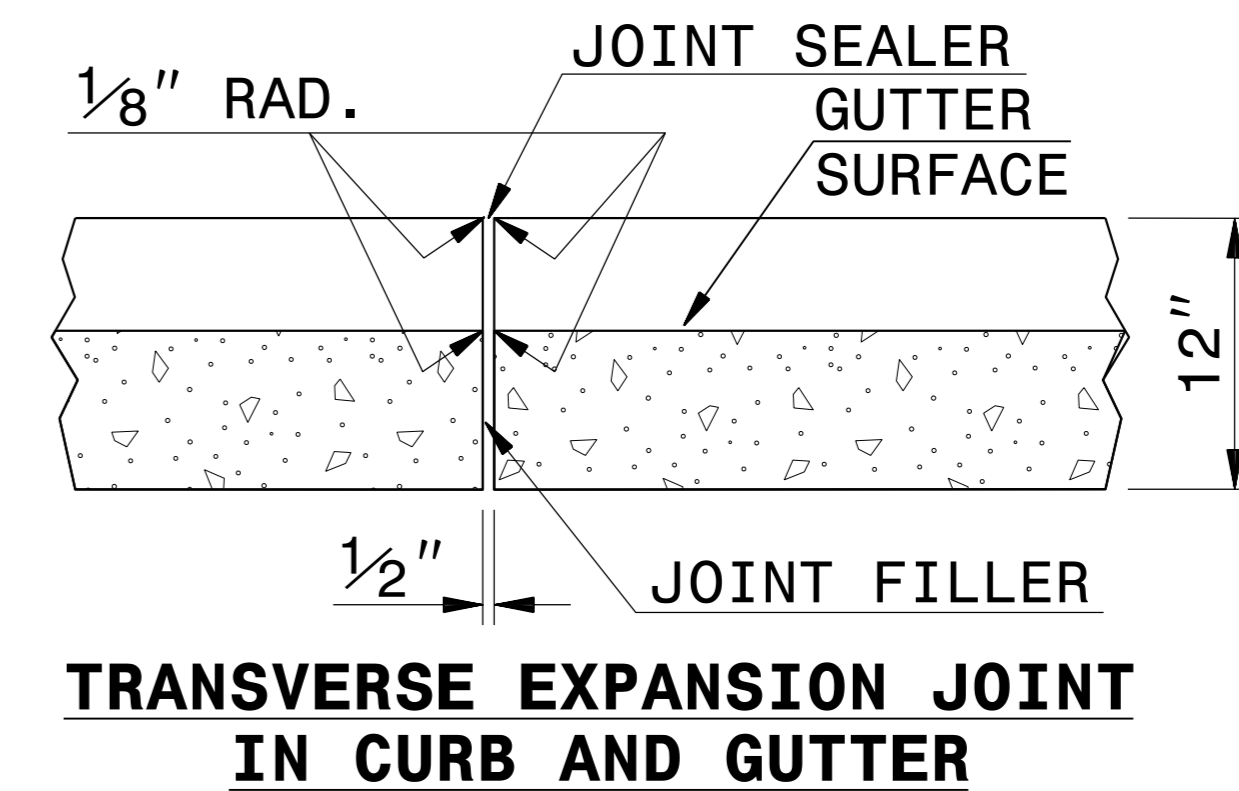
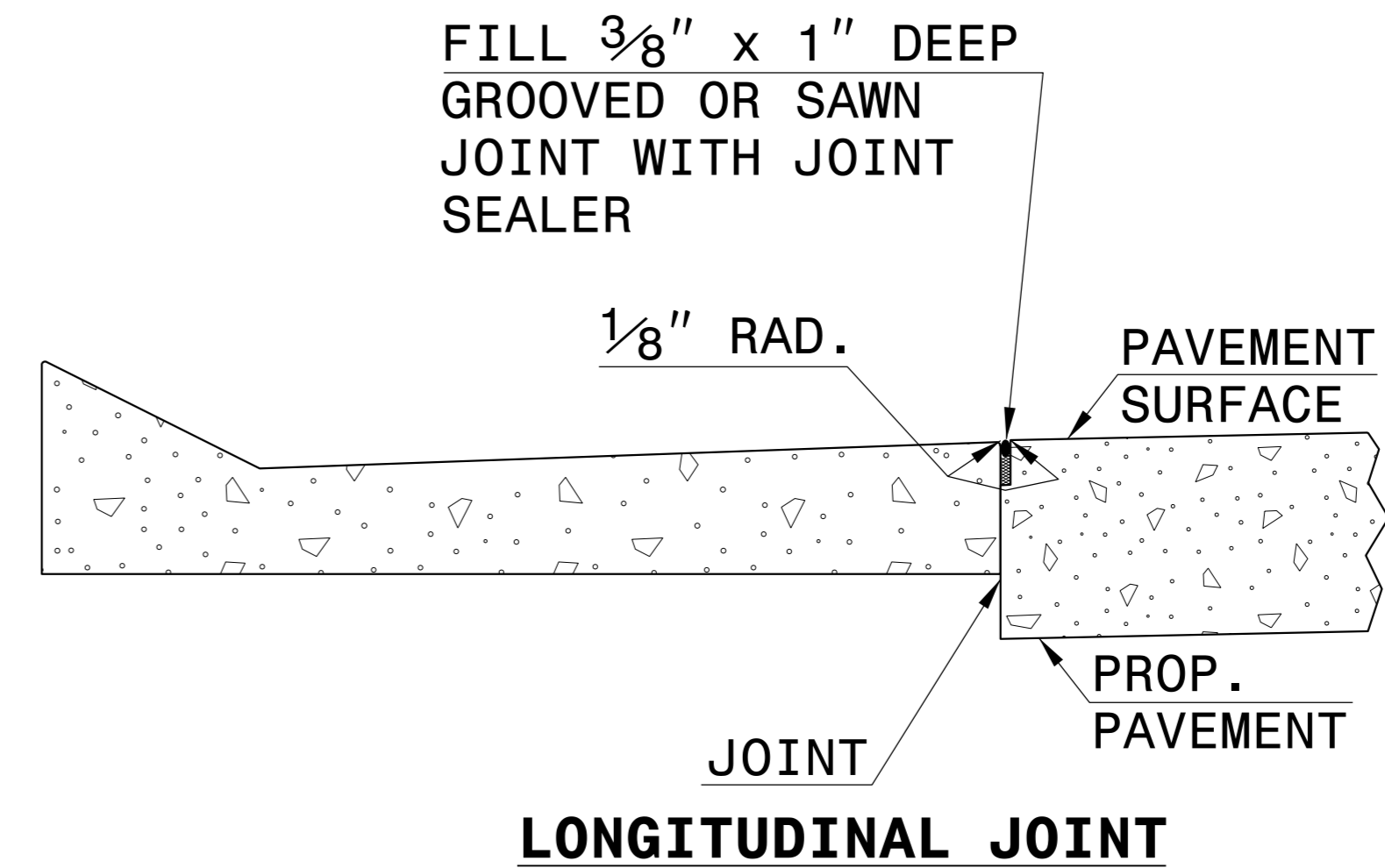
ENGLISH DETAIL DRAWING FOR  
**MODIFIED SHOULDER  
BERM GUTTER**

SHEET OF  
**846D01**



**MODIFIED SHOULDER BERM GUTTER**

- GENERAL NOTES:
- PLACE CONTRACTION JOINTS AT 10' INTERVALS, EXCEPT THAT A 15' SPACING MAY BE USED WHEN A MACHINE IS USED OR WHEN SATISFACTORY SUPPORT FOR THE FACE FORM CAN BE OBTAINED WITHOUT THE USE OF TEMPLATES AT 10' INTERVALS.
  - JOINT SPACING MAY BE ALTERED IF REQUIRED BY THE ENGINEER.
  - CONTRACTION JOINTS MAY BE INSTALLED WITH THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS. CONSTRUCT NON-TEMPLATE FORMED JOINTS A MIN. OF 1 1/2" DEEP.
  - FILL ALL CONSTRUCTION JOINTS WITH JOINT FILLER AND SEALER.
  - SPACE EXPANSION JOINTS AT 90' INTERVALS AND ADJACENT TO ALL RIGID OBJECTS.

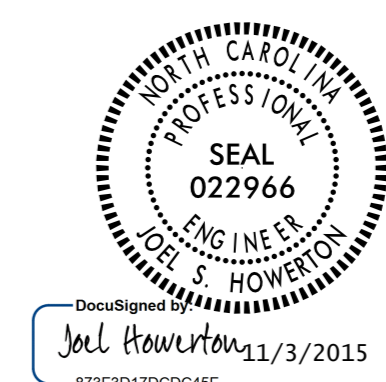


**SECTION VIEW OF JOINTS**

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

ENGLISH DETAIL DRAWING FOR  
**MODIFIED SHOULDER  
BERM GUTTER**

SHEET OF  
**846D01**



DocuSigned by:  
Joel Howerton 11/3/2015  
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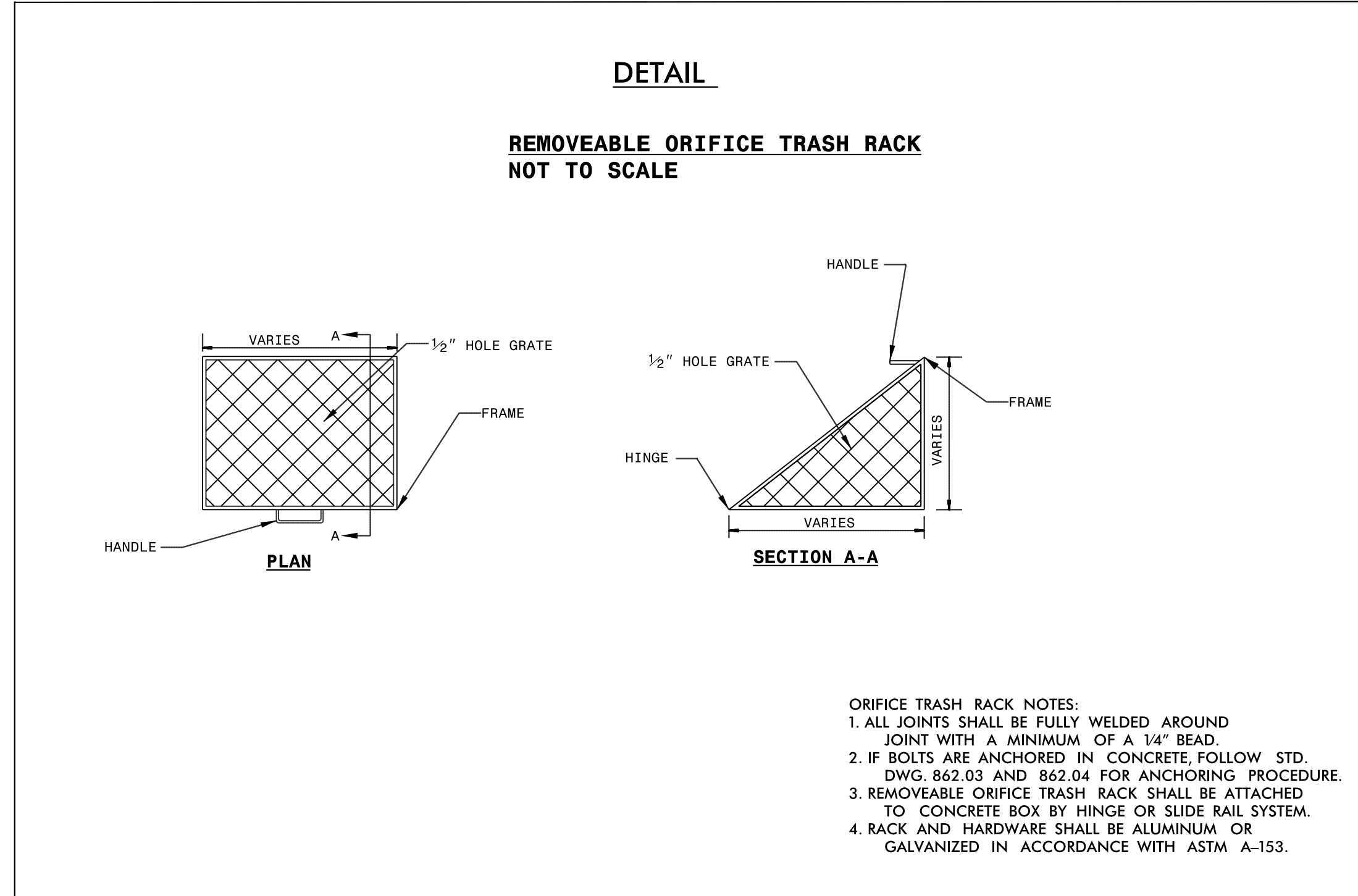
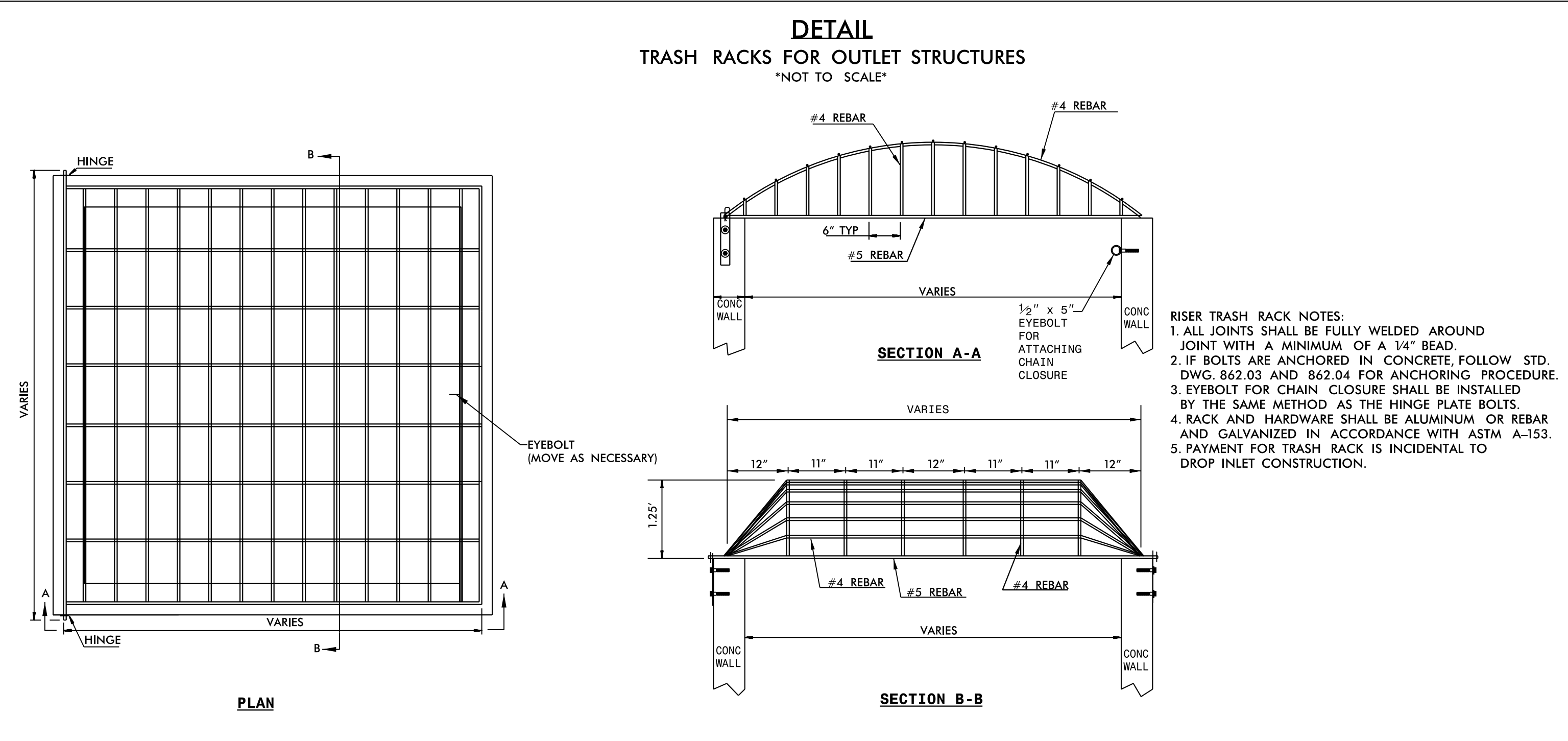
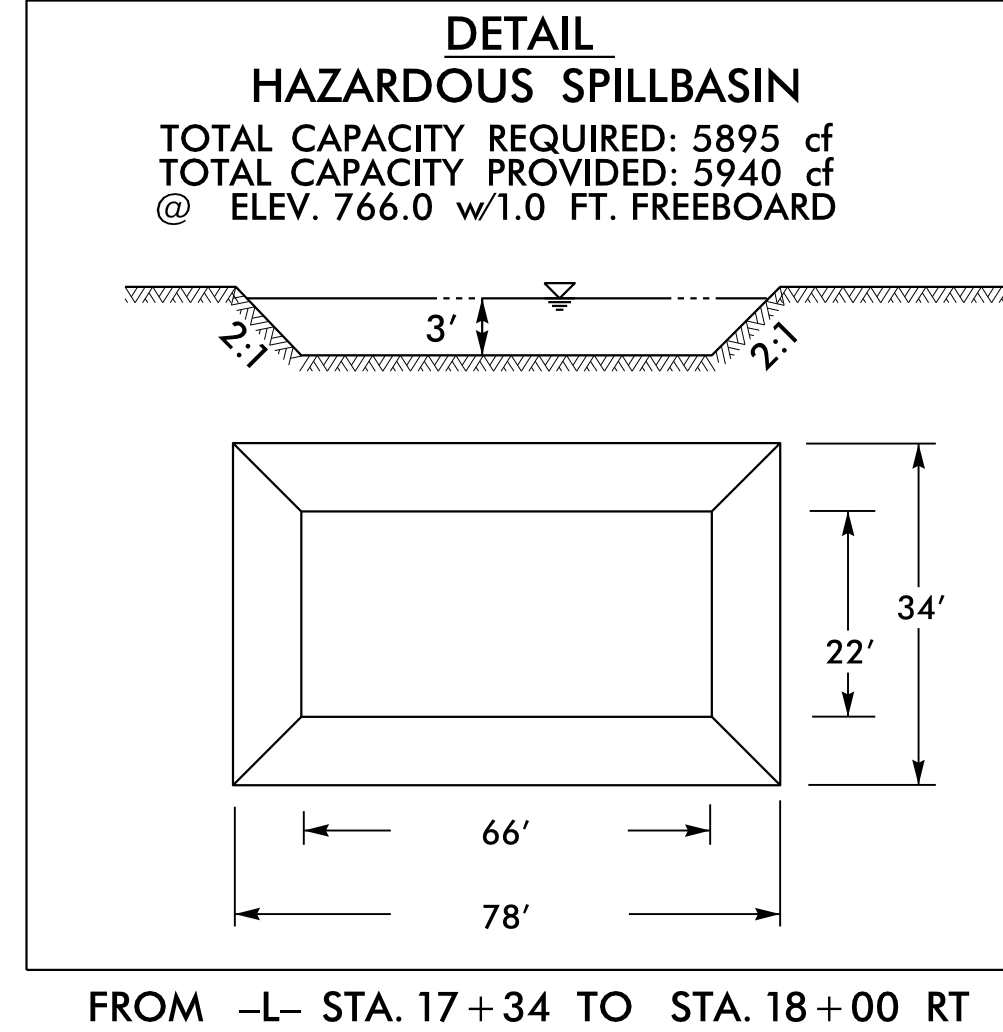
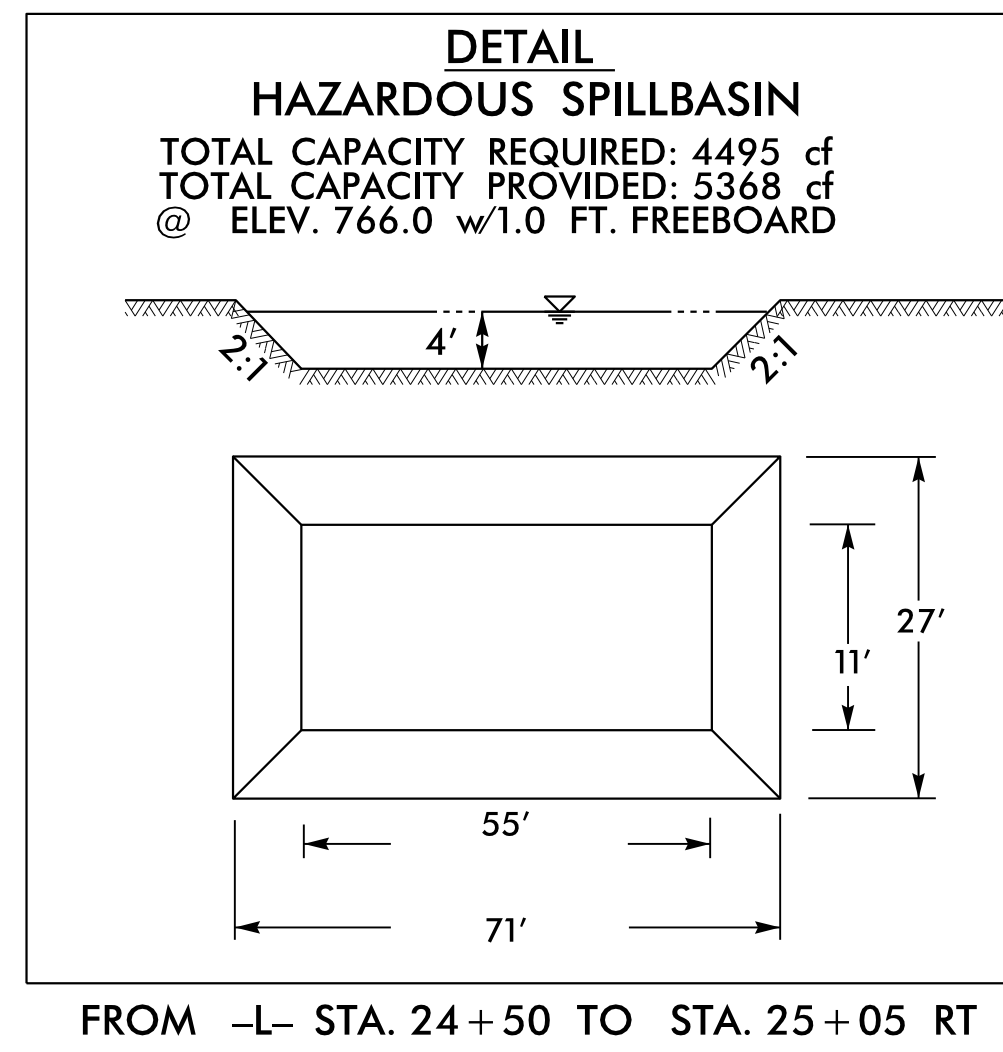
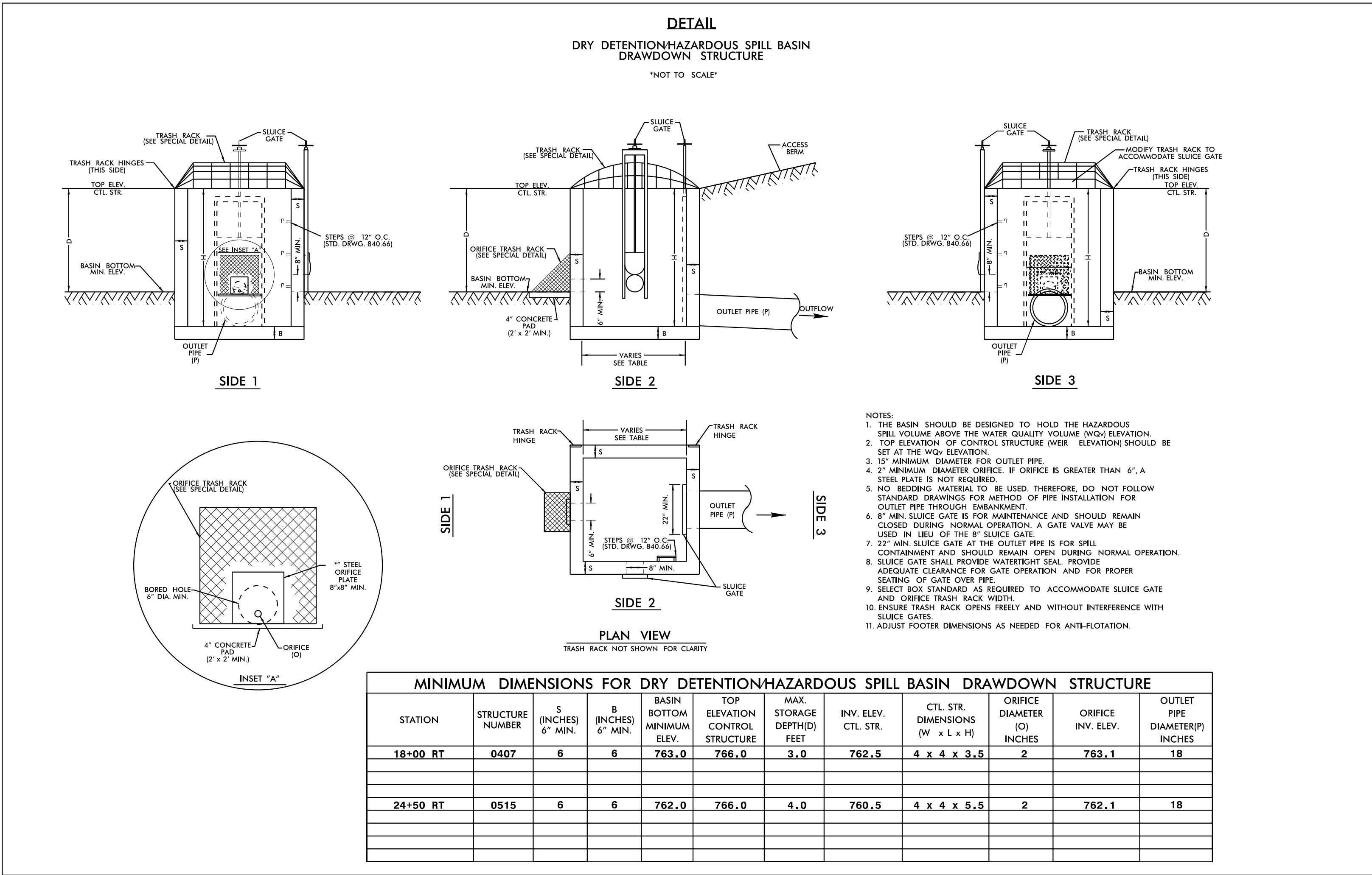
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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

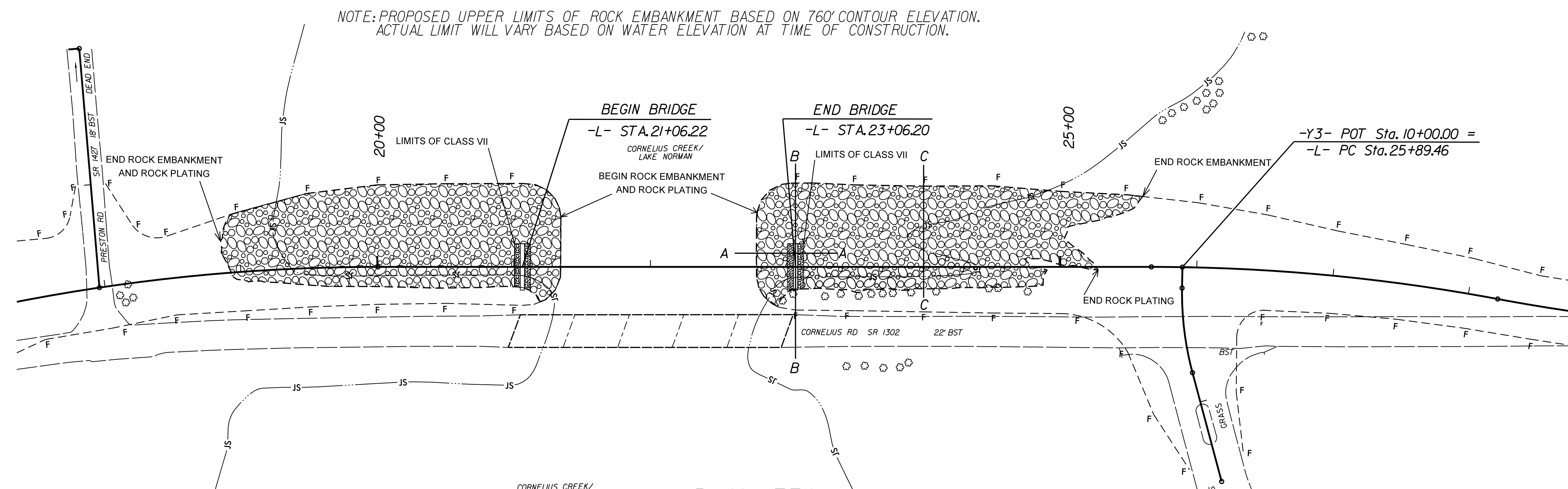
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8/17/09  
 REVISIONS  
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 5:54 PM C:\PROGRAMS\AUTOCAD\DRAWING\



PLANVIEW  
1" = 100'

**ROCK EMBANKMENT**  
18+85 TO 21+34 & 22+78 TO 25+59 -L-

**\* ESTIMATED QUANTITIES**

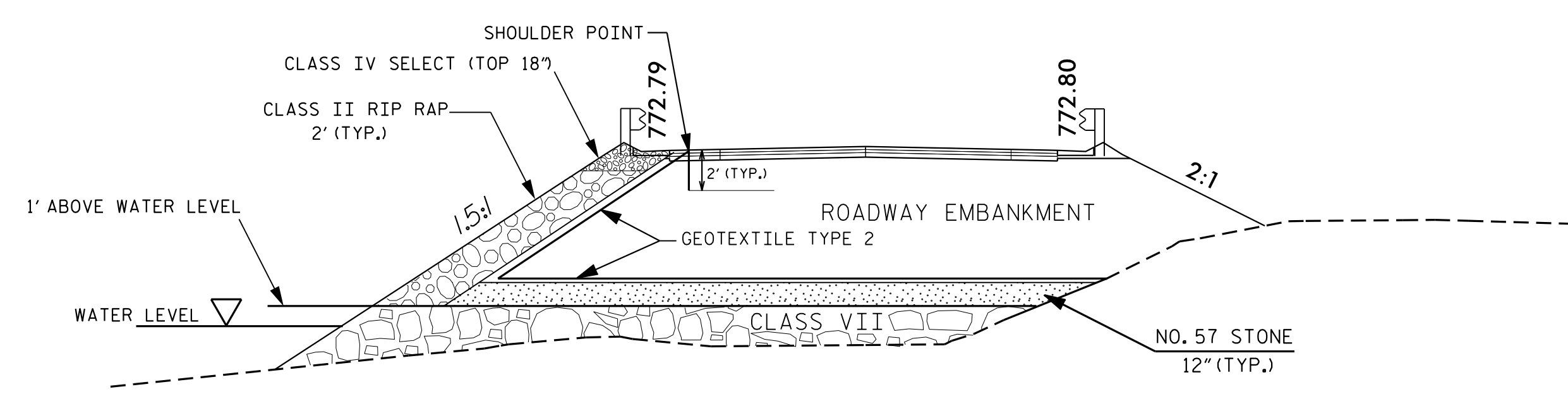
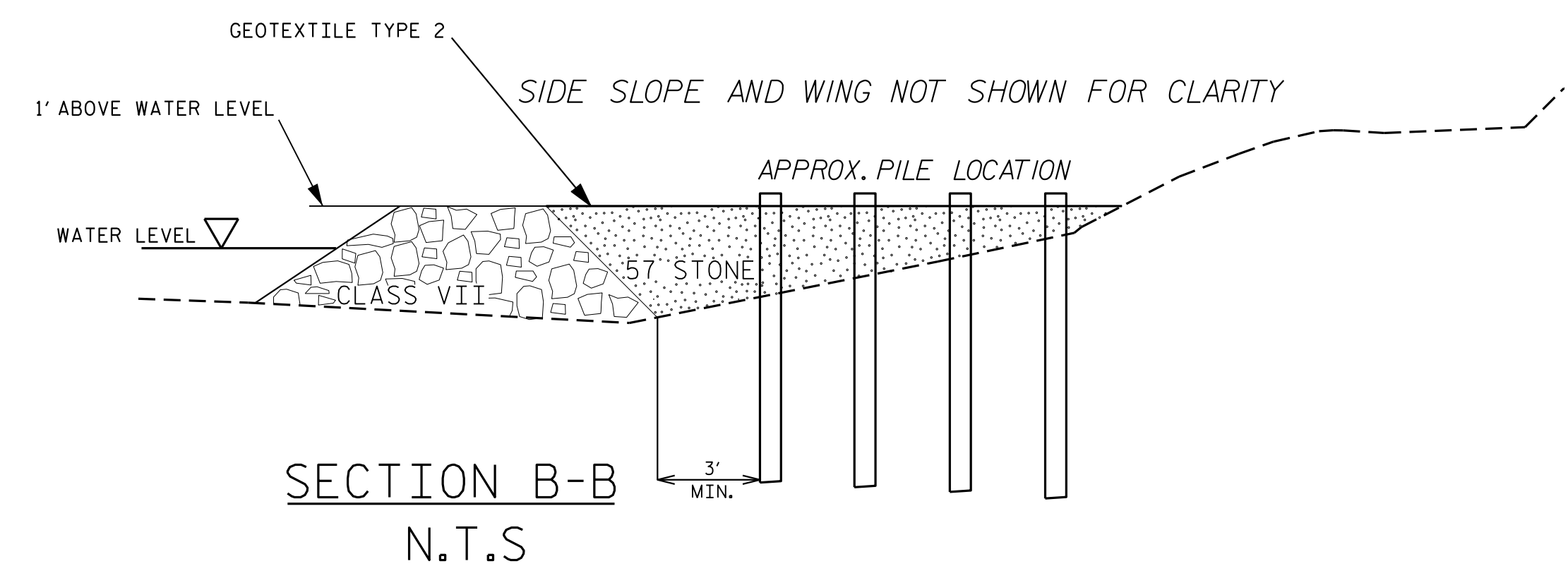
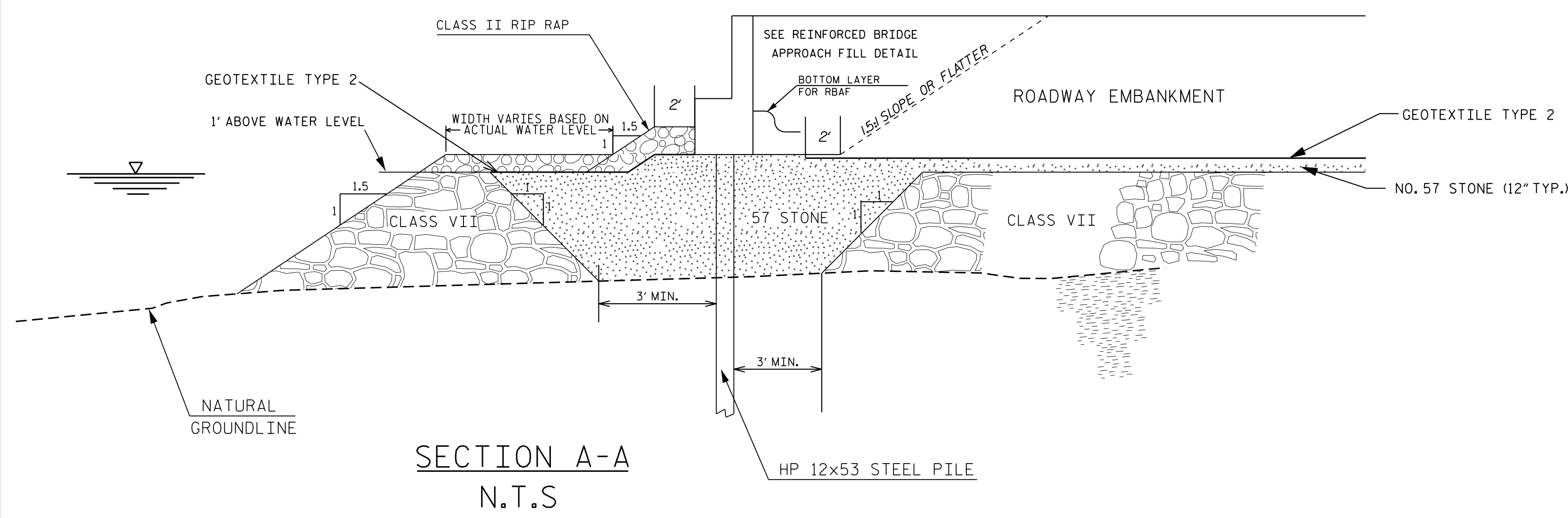
SELECT MATERIAL, CLASS VII.....	9,200 TONS
SELECT MATERIAL, CLASS VI (NO. 57 STONE).....	8,200 TONS
GEOTEXTILE TYPE 2 FOR DRAINAGE.....	3,900 SY

**ROCK PLATING**  
18+85 TO 21+34 & 22+78 TO 25+28 -L-

**\* ESTIMATED QUANTITIES**

PLAIN RIP RAP, CLASS II.....	950 TONS
GEOTEXTILE TYPE 2 FOR DRAINAGE.....	900 SY

\* ESTIMATED QUANTITIES BASED ON WATER ELEVATION OF 759'  
\* ROCK PLATING QUANTITY INCLUDES ROCK PLACED IN FRONT OF CAP




**NOTES ON PLANS:**  
CONSTRUCT ROCK EMBANKMENT 1' ABOVE WATER SURFACE AT TIME OF CONSTRUCTION AND ACCORDING TO THE SPECIAL PROVISION FOR ROCK EMBANKMENT.  
CONSTRUCT ROCK PLATING FROM TOP OF ROCK EMBANKMENT TO THE SHOULDER POINT AND ACCORDING TO SECTION 275 OF THE STANDARD SPECIFICATIONS.

SECTION C-C  
N.T.S.

**GEOTECHNICAL ENGINEERING UNIT**

EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE  
 CONTRACT OFFICE

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH



**ROCK PLATING AND ROCK EMBANKMENT DETAIL**

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

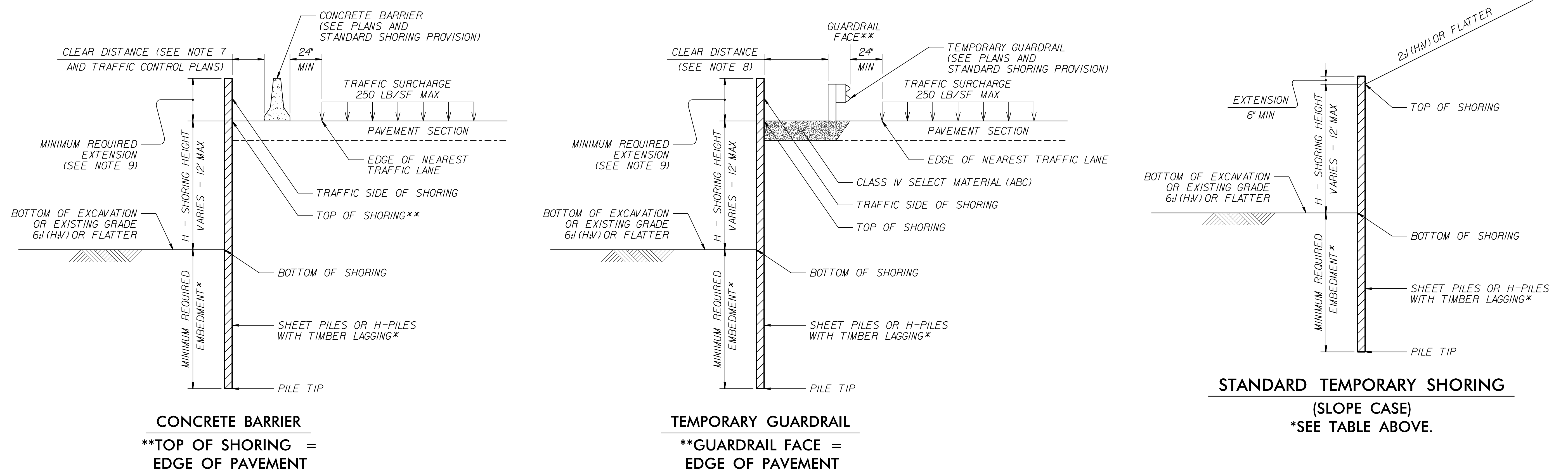
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS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

**MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS**

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

**NOTES:**

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



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



12/06/07

COMPUTED BY: REO	DATE: 9/16/2015
CHECKED BY: JRH	DATE: 10/7/2015

PROJECT REFERENCE NO.	SHEET NO.
B-5142	3B-01

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**SUMMARY OF EARTHWORK**  
IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	EMBT + %	BORROW	WASTE
-L- (-EL-) 26+00.00 TO 34+00.00	1,165	16		1,149
SUBTOTAL	1,165	16		1,149
-L- LT 10+00.00 TO 18+00.00	10,568	25		10,543
-Y1- RT 11+00.00 TO 11+63.58	9			9
SUBTOTAL	10,577	25		10,552
-L- LT 18+00.00 TO 21+06.00 BR	20	4311	4291	
-Y1- LT 11+00.00 TO 11+63.58	9			9
SUBTOTAL	29	4311	4291	9
-L- LT 23+06.00 BR TO 33+38.79	29	9,396	9,367	
SUBTOTAL	29	9,396	9,367	
-L- RT 10+00.00 TO 16+50.00	210	8		202
-Y2- RT 10+12.00 TO 11+00.00	57			57
SUBTOTAL	267	8		259
-L- RT 17+00.00 TO 18+50.00	4			4
-Y2- LT 10+12.00 TO 11+00.00	57			57
EXCAVATE EXIST. BRIDGE EMBANKMENT	710			710
SUBTOTAL	771			771

LOCATION	UNCLASSIFIED EXCAVATION	EMBT + %	BORROW	WASTE
-Y3- RT 10+12.00 TO 11+45.00		256	256	
EXCAVATE EXIST. BRIDGE EMBANKMENT	730			730
SUBTOTAL	730	256	256	730
-L- RT 27+00.00 TO 33+00.00	10	221	211	
-Y3- LT 10+12.00 TO 11+45.00		196	196	
SUBTOTAL	10	417	407	
SUMMARY TOTALS	13,578	14,429	14,321	13,470
LOSS DUE TO CLEARING AND GRUBBING	-300		300	
MATERIAL FOR SHOULDER CONSTRUCTION		587	587	
WASTE IN LIEU OF BORROW			-11,710	-11,710
PROJECT TOTAL	13,278	15,016	3,498	1,760
EST 5% TO REPL TOPSOIL ON BORROW PIT			175	
GRAND TOTAL	13,278	15,016	3,673	1,760
SAY	14,000		4,000	
-L- PAVEMENT STRUCTURE VOLUME = 600 CY				

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, Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at contract lump sum price for "Grading".

**PAVEMENT REMOVAL SUMMARY**

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD <sup>2</sup>
-L-	12+00.00	21+00.00	RT	2,200.00
-L-	23+00.00	28+00.00	RT	1,222.22
-L-	28+00.00	28+50.00	RT	61.11
-EL-	26+00.00	27+50.00	RT	41.67
-EL-	27+50.00	28+78.00	RT	73.96
-EL-	28+78.00	29+80.00	RT	30.53
-EL-	32+80.00	34+00.00	RT	3.34
-Y2-	10+46.00	11+00.00	CL	97.67
-Y3-	10+12.00	11+45.00	CL	402.89
TOTAL:				4,133.37
SAY:				4,140.00

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

**MODIFIED SHOULDER BERM GUTTER SUMMARY**

SURVEY LINE	STATION	STATION	LENGTH
-L- RT	17+30.00	21+06.00	376.00
-L- LT	20+79.00	21+06.00	27.00
-L- LT	23+06.00	24+12.00	106.00
-L- RT	23+06.00	25+40.00	234.00
TOTAL:			743.00
SAY:			750.00

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

**GUARDRAIL SUMMARY**

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS						
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	XIII	CAT-1	VI MOD	SAU III	AT-1	EA	G					NG					
Y2 /L	10+55.80	21+06.00	LT /RT	382.02'	50.00'		21+06.00		5'	8'	150.00'																								
L /Y3	23+06.00	10+43.04	RT /RT		50.00'			23+06.00	5'	8'	217.74'		3.35'																						
L	18+31.00	21+06.00	LT	275.00'				21+06.00	5'	8'		256.25'																							
L	23+06.00	28+31.00	LT	525.00'				27+00.00	5'	8'	150.00'	150.00'	3'	3'																					
EL	18+86.78	20+78.53	RT																														191.75'		
EL	18+98.14	20+88.06	LT																														189.92'		
EL	22+79.33	23+69.29	RT																														89.96'		
EL	22+89.42	23+78.66	LT																														89.24'		
SUBTOTAL:				1,415.53	100.00'																													560.87'	
ANCHOR DEDUCTION: GRAU 350 2 @ 50'				-100.00'																															
ANCHOR DEDUCTION: SAU TYPE III 4 @ 18.75'				-75.00'																															
ANCHOR DEDUCTION: GRAU TYPE AT-1 2 @ 6.25'				-12.50'																															
PROJECT TOTAL:				1228.03	100.00'																													560.87'	
(5) ADDITIONAL GUARDRAIL POST				1237.50'	100.00'																													560.87'	

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RD26217

COMPUTED BY: SB DATE: 05/05/15  
CHECKED BY: BCK DATE: 10/13/15

PROJECT NO. SHEET NO.  
B-5142 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)

Main data table with columns: LINE & STATION, OFFSET, STRUCTURE NUMBER, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C. S. PIPE, R. C. PIPE CLASS IV, FRAME, GRATES, AND HOOD, QUANTITIES FOR DRAINAGE STRUCTURES, CONCRETE TRANSITIONAL SECTION, and ABBREVIATIONS. Includes summary rows for SHEET TOTALS and PROJECT TOTALS.

COMPUTED BY: SCC DATE: 8-12-2015  
 CHECKED BY: CBL DATE: 8-12-2015

PROJECT NO. SHEET NO.  
 B-5142 3G-01

**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

**SUMMARY OF SUBSURFACE DRAINAGE**

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
	CONTINGENCY			SD	200
				TOTAL LF:	200

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

**SUMMARY OF ROCK PLATING**

LINE	Beginning Slope	Approx. Station	Ending Slope	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	SY
-L-	1.5:1	18+85	1.5:1	21+34	LT	1	2	350
-L-	1.5:1	23+78	1.5:1	25+28	LT	1	2	550
							TOTAL SY:	900

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

**SUMMARY OF  
 BRIDGE WAITING PERIODS**

Bridge Description	End Bent/ Bent No.	MONTHS
Br. No. 57 on Cornelius Road over Cornelius Creek	1	2
Br. No. 57 on Cornelius Road over Cornelius Creek	2	2

**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 TONS
	CONTINGENCY		ASU		1000	1800	1000		
					TOTAL CY/TONS/SY:	1000	1800	1000	0

\*ASU = Aggregate Subgrade, AST = Aggregate Stabilization

\*\*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.



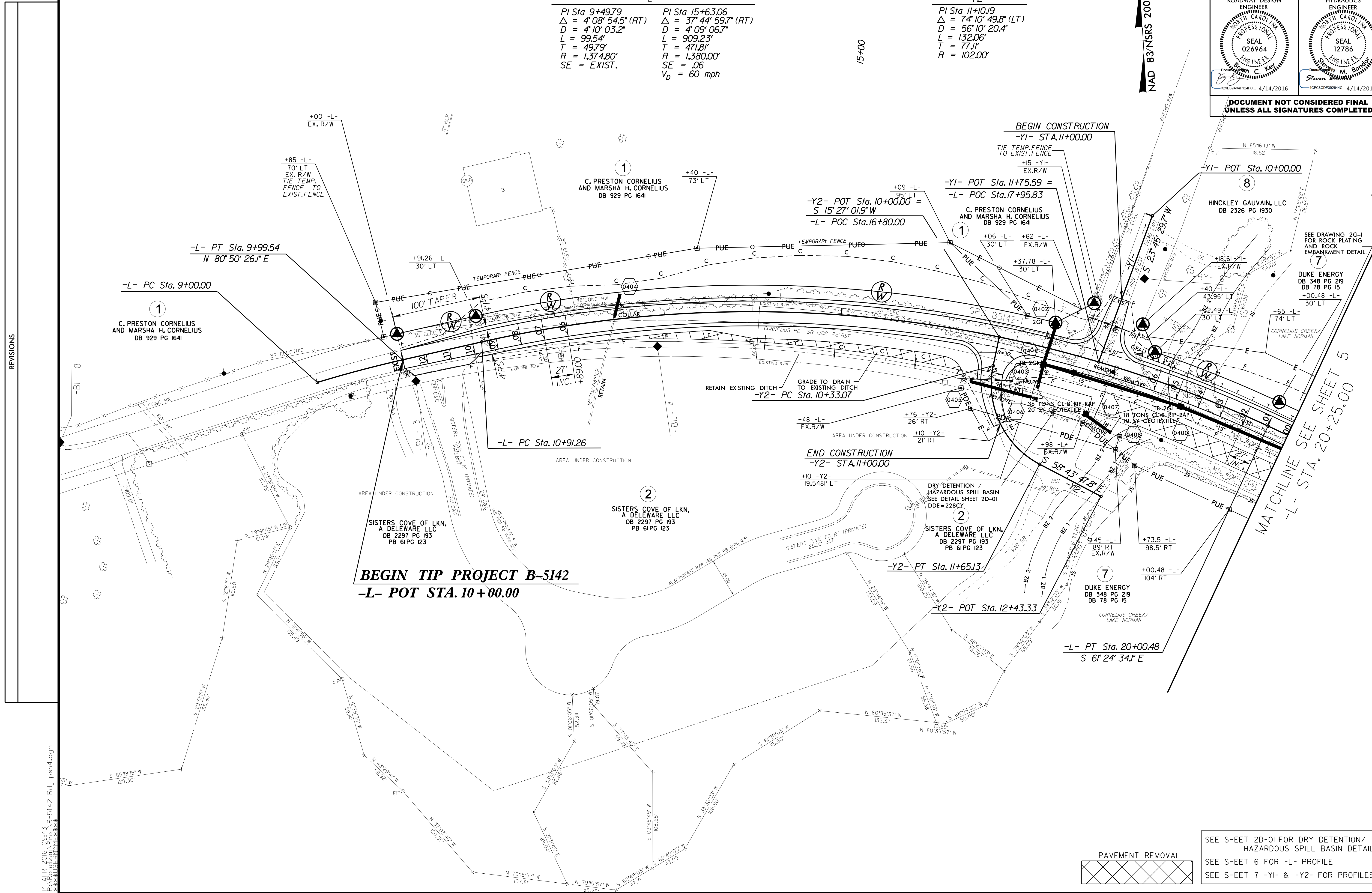
PROJECT REFERENCE NO. <b>B-5142</b>	SHEET NO. <b>4</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER <b>PROFESSIONAL SEAL 026964</b> Bryan C. Key	HYDRAULICS ENGINEER <b>PROFESSIONAL SEAL 12786</b> Steven M. Bond
4/14/2016	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

**-L-**  
 PI Sta 9+49.79    Δ = 4° 08' 54.5" (RT)  
 D = 4' 10" 03.2"  
 L = 99.54'  
 T = 49.79'  
 R = 1,374.80'  
 SE = EXIST.

PI Sta 15+63.06    Δ = 37° 44' 59.7" (RT)  
 D = 4' 09' 06.7"  
 L = 909.23'  
 T = 471.81'  
 R = 1,380.00'  
 SE = .06  
 V<sub>D</sub> = 60 mph

**-Y2-**  
 PI Sta 11+10.19    Δ = 74° 10' 49.8" (LT)  
 D = 56° 10' 20.4"  
 L = 132.06'  
 T = 77.11'  
 R = 102.00'

NAD 83 NRS 2007



REVISIONS

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**BEGIN TIP PROJECT B-5142**  
**-L- POT STA. 10+00.00**

**END CONSTRUCTION**  
**-Y2- STA. 11+00.00**

**-L- PT Sta. 20+00.48**  
**S 61° 24' 34.1" E**

MATCHLINE SEE SHEET 5  
**-L- STA. 20+25.00**

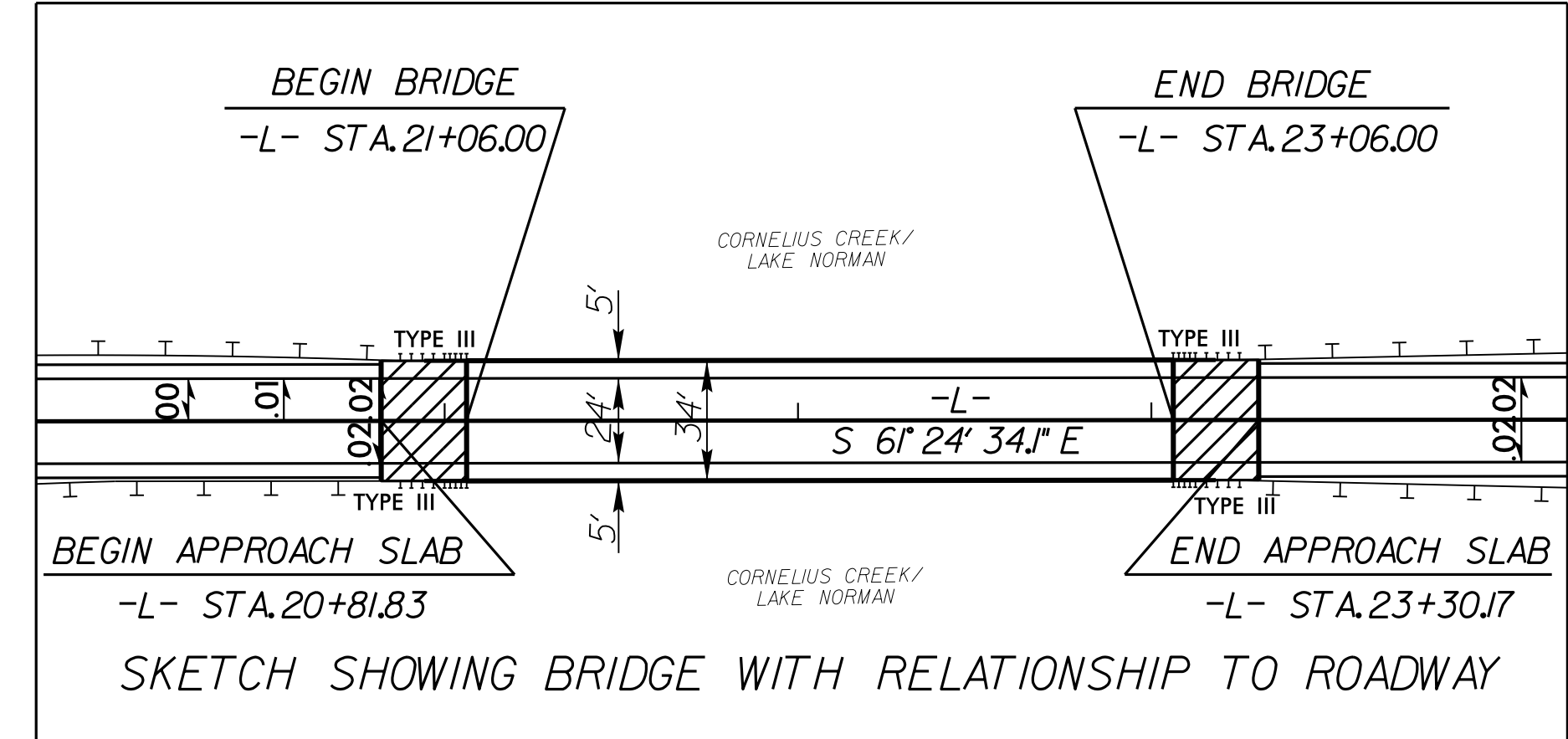
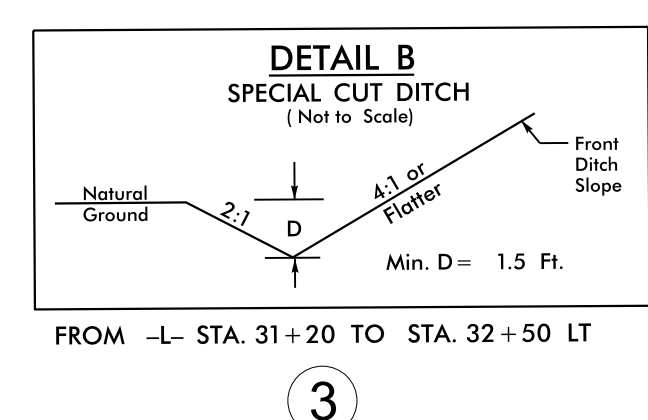
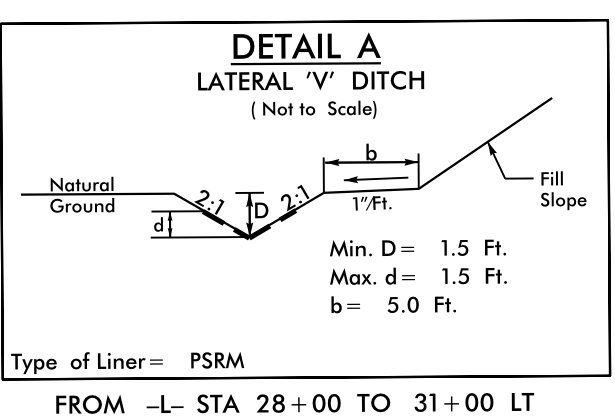
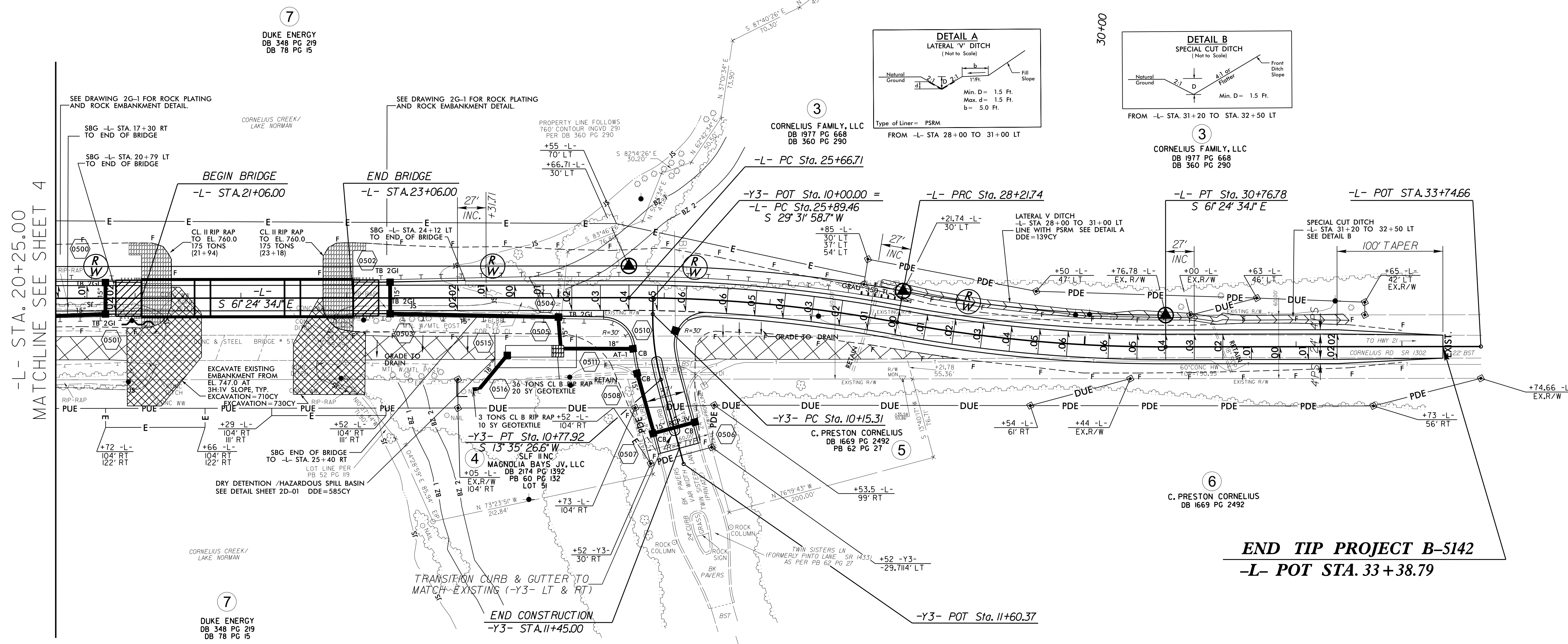
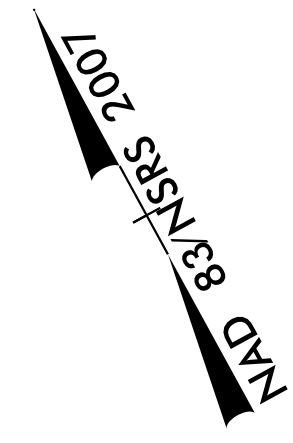
SEE SHEET 2D-01 FOR DRY DETENTION/  
 HAZARDOUS SPILL BASIN DETAIL  
 SEE SHEET 6 FOR -L- PROFILE  
 SEE SHEET 7 -Y1- & -Y2- FOR PROFILES



-L-  
 PI Sta 26+94.59  
 $\Delta = 10^\circ 35' 20.0''$  (RT)  
 $D = 4' 09'' 06.7''$   
 $L = 255.04'$   
 $T = 127.88'$   
 $R = 1,380.00'$   
 $SE = .06$   
 $V_D = 60$  mph

-Y3-  
 PI Sta 29+49.63  
 $\Delta = 10^\circ 35' 20.0''$  (LT)  
 $D = 4' 09'' 06.7''$   
 $L = 255.04'$   
 $T = 127.88'$   
 $R = 1,380.00'$   
 $SE = .06$   
 $V_D = 60$  mph

-Y3-  
 PI Sta 10+46.82  
 $\Delta = 15^\circ 56' 32.1''$  (LT)  
 $D = 25' 27'' 53.2''$   
 $L = 62.61'$   
 $T = 31.51'$   
 $R = 225.00'$



**END TIP PROJECT B-5142**  
**-L- POT STA. 33+38.79**

SEE SHEET 2B-01 FOR -Y3- BRICK PAVEMENT TRANSITION AND CONCRETE HEADER  
 SEE SHEET 2B-02 FOR TEMPORARY WIDENING ALONG THE EXISTING -EL-  
 SEE SHEET 2D-01 FOR DRY DETENTION/HAZARDOUS SPILL BASIN DETAIL  
 SEE SHEET 6 FOR -L- PROFILE  
 SEE SHEET 7 FOR -Y3- PROFILE  
 SEE SHEET TMP-03 FOR SHORING LOCATION  
 SEE SHEETS S-1 THRU S-38 FOR STRUCTURE PLANS



REVISIONS

-L- STA. 20+25.00  
 MATCHLINE SEE SHEET 4

8/17/99

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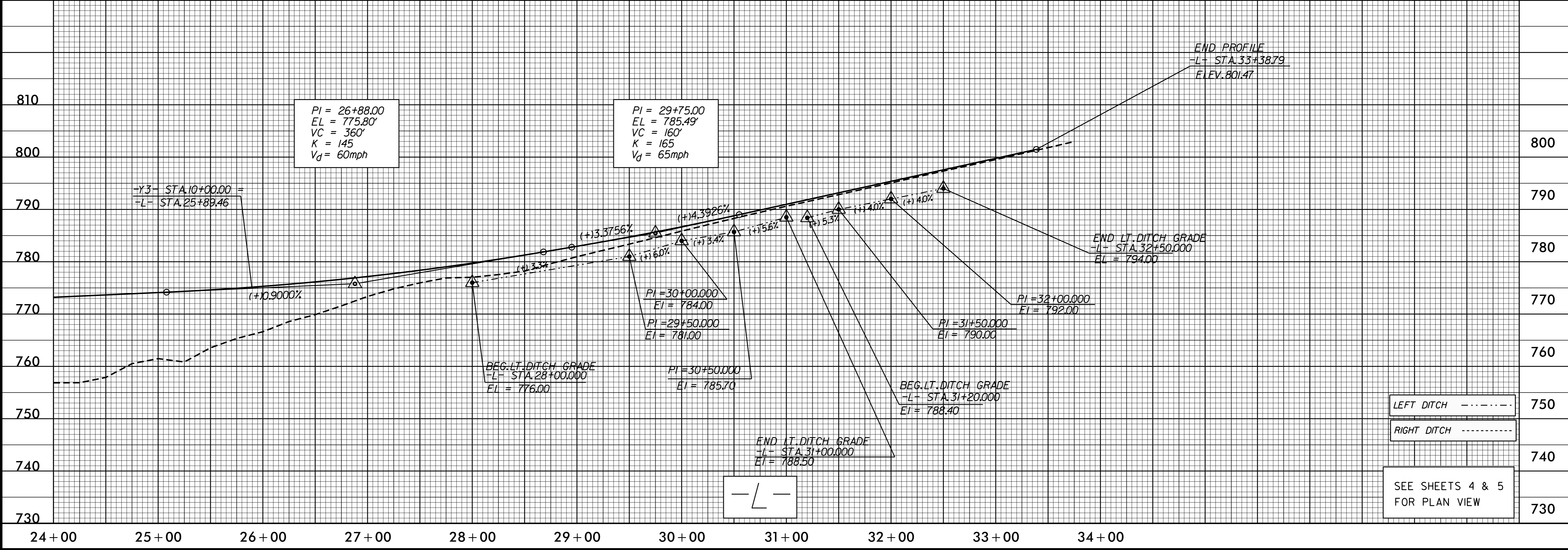
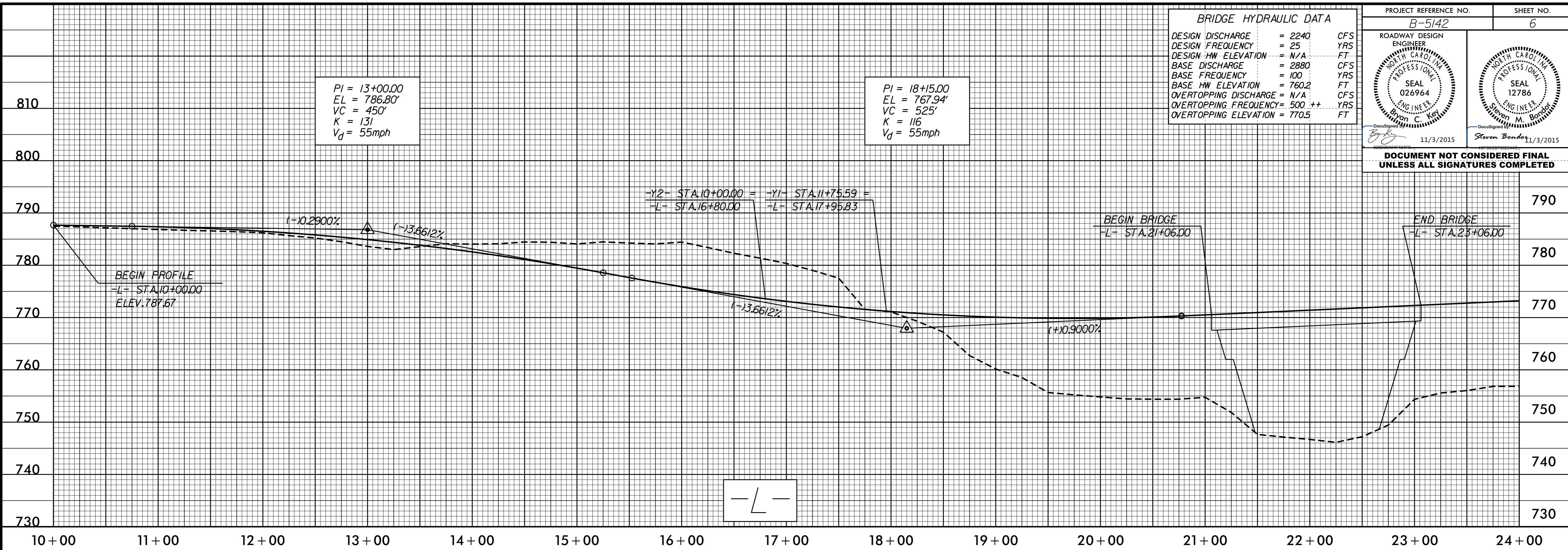
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7/10/2015 14:30 B-5142-Rdy-pf1.dgn

BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 2240 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= N/A FT
BASE DISCHARGE	= 2880 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 760.2 FT
OVERTOPPING DISCHARGE	= N/A CFS
OVERTOPPING FREQUENCY	= 500 ++ YRS
OVERTOPPING ELEVATION	= 770.5 FT

PROJECT REFERENCE NO. <b>B-5142</b>	SHEET NO. <b>6</b>
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 026964 Bryan C. Kay	SEAL 12786 Steven M. Bondot
11/3/2015	11/3/2015

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



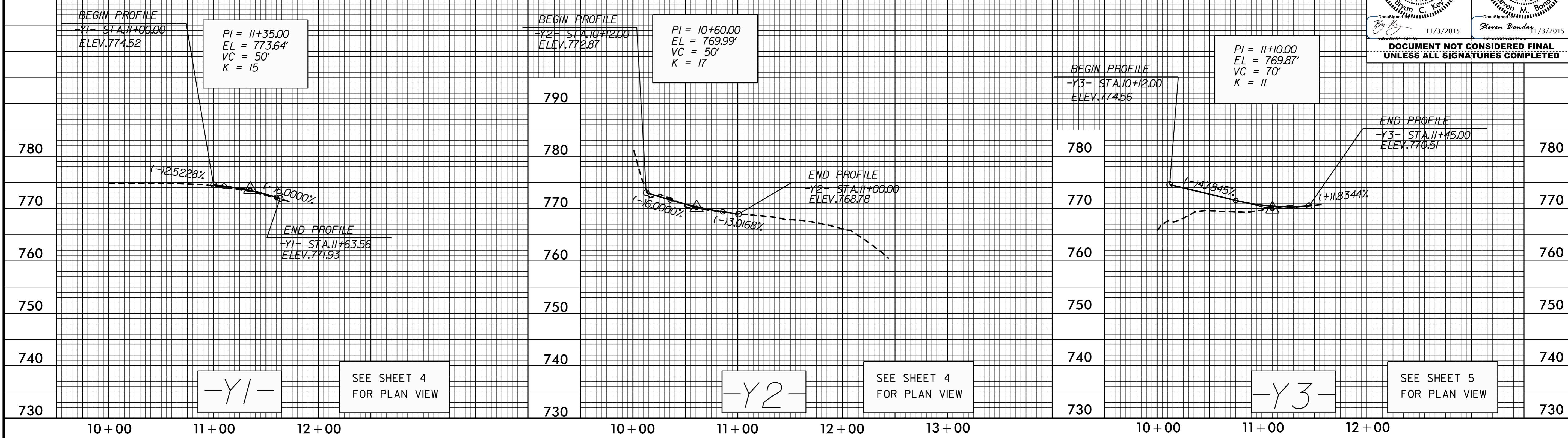
SEE SHEETS 4 & 5 FOR PLAN VIEW

5/28/15

27-OCT-2015 14:39  
F:\Roadwork\Proj\B-5142\_Rdy.plt.dgn  
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PROJECT REFERENCE NO. B-5142	SHEET NO. 7
ROADWAY DESIGN ENGINEER SEAL 026964 Bryan C. Key	HYDRAULICS ENGINEER SEAL 12786 Steven M. Bondor
11/3/2015	

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



-Y1-

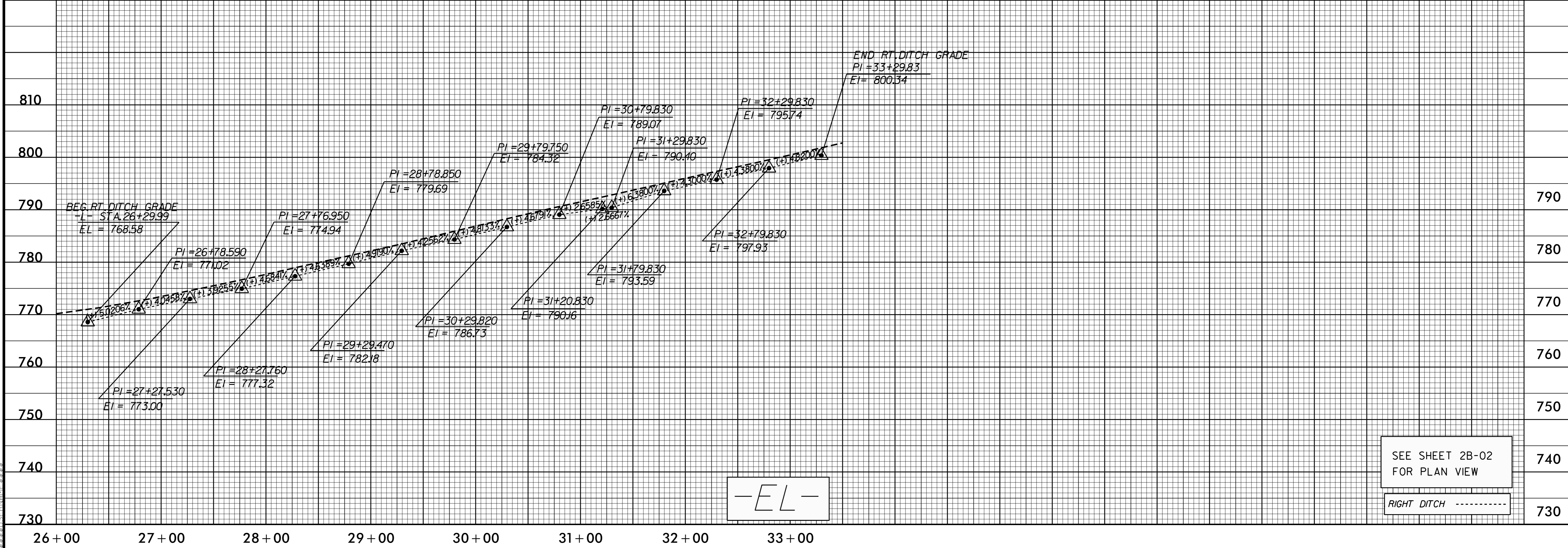
SEE SHEET 4  
FOR PLAN VIEW

-Y2-

SEE SHEET 4  
FOR PLAN VIEW

-Y3-

SEE SHEET 5  
FOR PLAN VIEW



-EL-

SEE SHEET 2B-02  
FOR PLAN VIEW

RIGHT DITCH - - - - -