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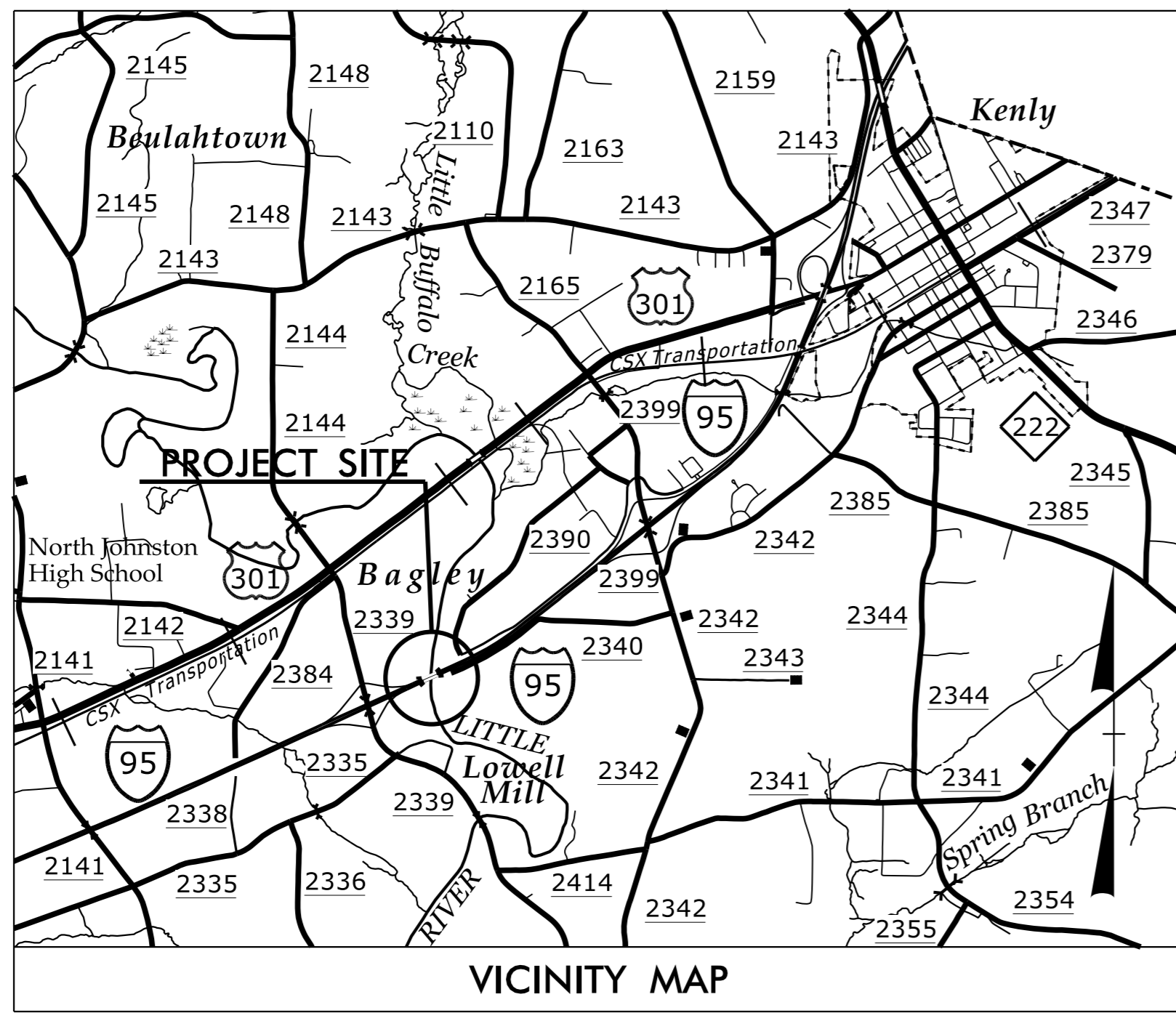
09/08/99

See Sheet 1A For Index of Sheets
 See Sheet 1B For Conventional Symbols
 See Sheet 1C-1 through 1C-2 For Survey Control Sheets

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-3318BB	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34182.1.4	IMS-095-2(119)105	P.E.	
34182.3.FS3	IMS-095-2(119)105	RAW	
34182.3.FSU3	IMS-095-2(119)105	UTILITIES	
34182.2.FS4	IMS-095-2(119)105	CONSTR.	

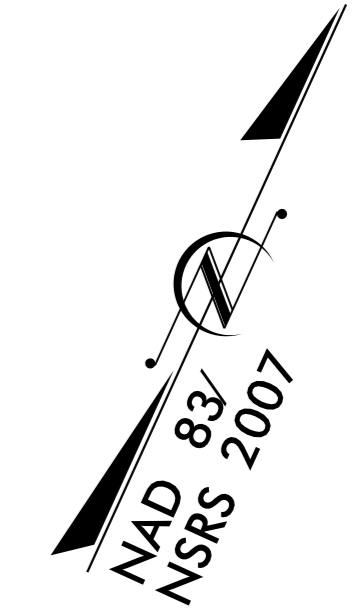
TIP PROJECT: I-3318BB



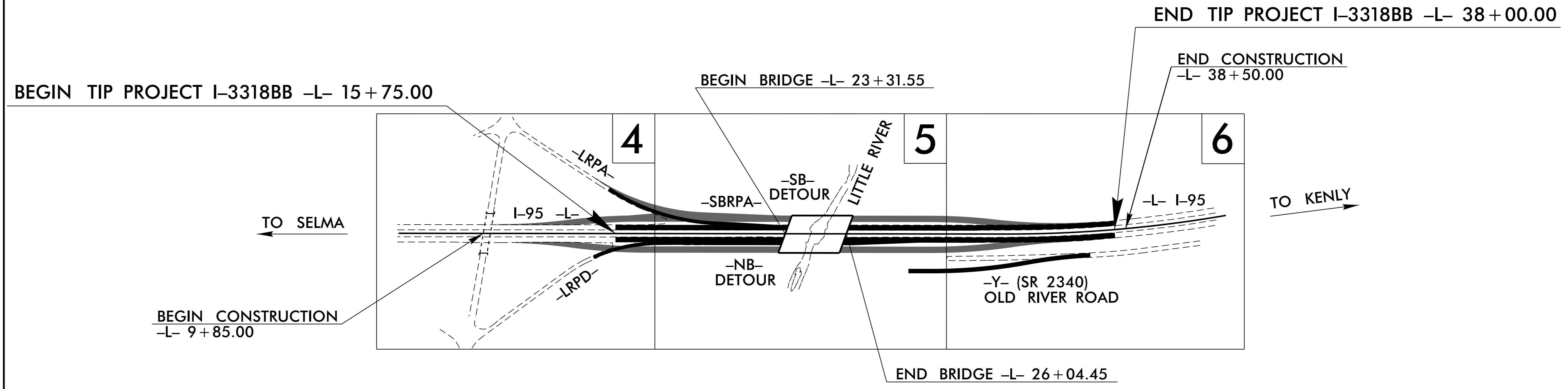
JOHNSTON COUNTY

LOCATION: REPLACE BRIDGES 114 & 116 OVER THE LITTLE RIVER ON I-95

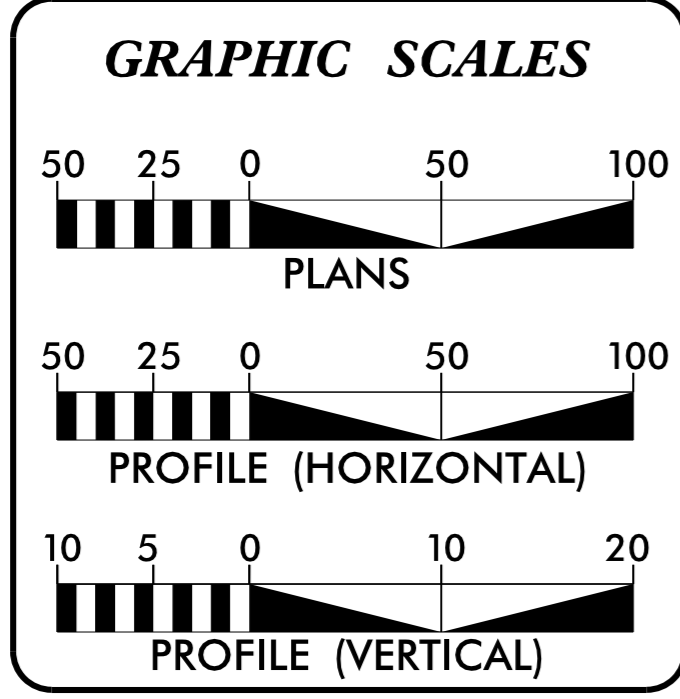
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE AND SIGNALS



CONTRACT: C203658



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



DESIGN DATA

ADT 2015 =	34640
ADT 2035 =	40900
K =	12 %
D =	55 %
T =	29 % *
V =	70 MPH
*(TTST = 23% + DUAL = 6%)	
FUNC CLASS = INTERSTATE STATEWIDE TIER	

PROJECT LENGTH

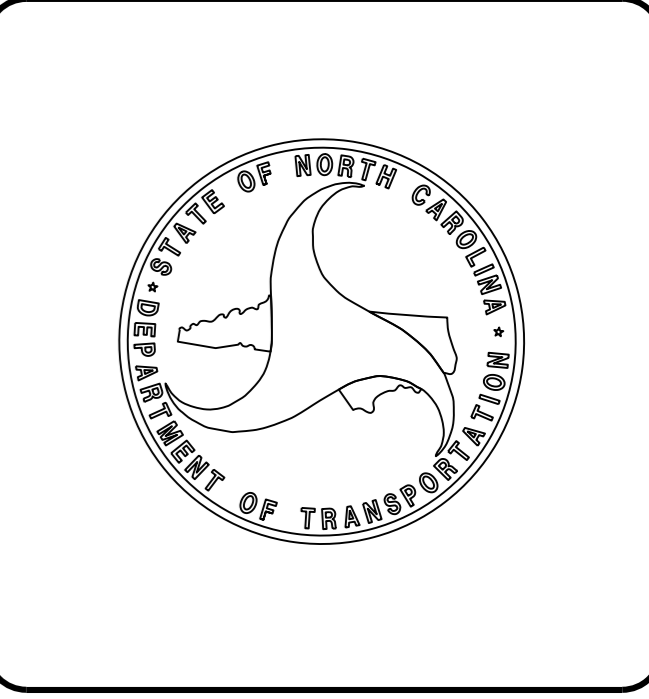
LENGTH OF ROADWAY TIP PROJECT I-3318BB =	0.369 MI
LENGTH OF STRUCTURE TIP PROJECT I-3318BB =	0.052 MI
TOTAL LENGTH OF TIP PROJECT I-3318BB =	0.421 MI

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

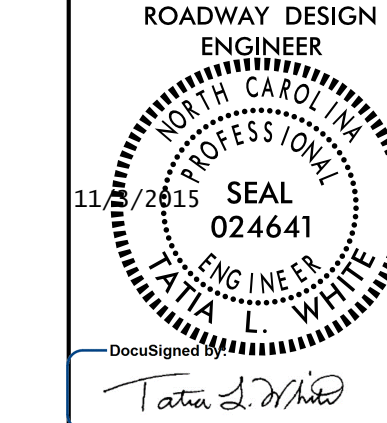
2012 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: JUNE 24, 2014	REKHA PATEL, P.E. PROJECT ENGINEER
LETTING DATE: NOVEMBER 17, 2015	TATIA L. WHITE, P.E. PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
 9/15/2015
 Designated by: Christopher R. Lewis
 SEAL: 041420
 ENGINEER: CHRISTOPHER R. LEWIS
 P.E.

ROADWAY DESIGN ENGINEER
 9/16/2015
 Designated by: Tatia L. White
 SEAL: 024641
 ENGINEER: TATIA L. WHITE
 P.E.



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INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
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1B	CONVENTIONAL SYMBOLS
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2A-1 THROUGH 2A-3	TYPICAL SECTIONS, PAVEMENT SCHEDULE, AND WEDGING DETAILS
2B-1 THROUGH 2B-3	DETAIL OF ON-SITE DETOURS
2B-4 THROUGH 2B-5	DETAIL OF OFF-SITE DETOURS
2B-6 THROUGH 2B-7	DETAIL OF TEMPORARY SHORING LOCATIONS
2C-1	DETAIL OF COAL COMBUSTION PRODUCT PLACEMENT
2C-2	DETAIL OF CONVERTING EXISTING TBJB TO TB2-G1
2C-3	DETAIL OF TEMPORARY ANCHOR UNIT FOR PCB
2C-4	DETAIL OF SPECIAL 3GI
2C-5	DETAIL OF STRUCTURE ANCHOR UNIT, TYPE B-77
2G-1 THROUGH 2G-4	DETAILS OF TEMPORARY SHORING
2H-1	DETAIL OF STOCKPILE CONTAINMENT
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3B-2	SUMMARY OF GUARDRAIL
3B-3	SUMMARY OF EARTHWORK
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3G-1	SUMMARY OF SUBSURFACE DRAINAGE AND SUMMARY OF AGGREGATE SUBGRADE STABILIZATION
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SIG-1.0 THROUGH SIG-2.3	SIGNAL PLANS
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X-1A	CROSS SECTION SUMMARY
X-2 THROUGH X-41	CROSS SECTIONS
S-1 THROUGH S-80	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 OR STD. NO. 225.05 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

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

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

UNDERDRAINS:
UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 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 DUKE ENERGY PROGRESS. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

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

STANDARD DRAWINGS

2012 ROADWAY ENGLISH STANDARD DRAWINGS
EFF. 01-17-2012
REV. 10-30-2012

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
225.01	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 Superlevation - Two Lane Pavement
225.05	Method of Obtaining Superlevation - Divided Highways
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
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II (Sheet 2 of 3 is no longer applicable)
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
665.01	Asphalt Shoulders - Milled Rumble Strips
DIVISION 7 - CONCRETE PAVEMENTS AND SHOULDERS	
700.01	Concrete Pavement Joints - Construction and Contraction Joints
700.02	Expansion Joint Layout - for Rigid Doweled Pavement at Bridges
700.03	Dowel Assembly
700.04	Concrete Pavement Header Board
700.05	Tying Proposed Pavement to Existing
720.01	Concrete Shoulders - Stamped or Rolled Rumble Strips, Milled Rumble Strips
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
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
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
854.04	Concrete Median Barrier - Precast Permanent
862.01	Guardrail Placement
862.02	Guardrail Installation
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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 8/17/09

04/05/15

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
Property Corner	-----
Property Monument	□ EDM
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	----- WLB
Proposed Wetland Boundary	----- WLB
Existing Endangered Animal Boundary	----- EAB
Existing Endangered Plant Boundary	----- EPB
Existing Historic Property Boundary	----- HPB
Known Contamination Area: Soil	☠
Potential Contamination Area: Soil	☠
Known Contamination Area: Water	☠
Potential Contamination Area: Water	☠
Contaminated Site: Known or Potential	☠ ?

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ 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 R/W 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	○ S
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	●
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	⊕
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	○
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	⊕
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	⊠
TV Tower	⊗
U/G TV Cable Hand Hole	○
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	⊠
Utility Unknown U/G Line LOS B (S.U.E.*)	----- ?U/L
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.

SURVEY CONTROL SHEET I-3318-BB

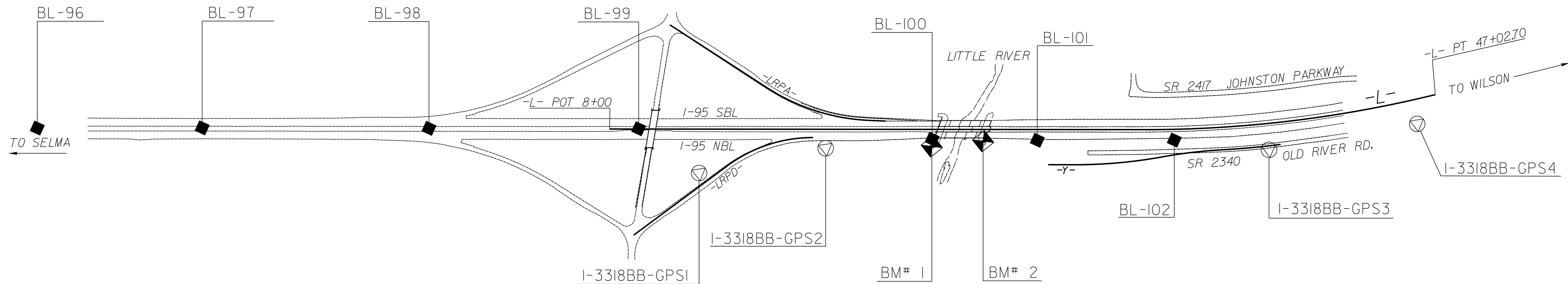
BASELINE DATA

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
96		BL-96	661591.4900	2245045.8560	166.07	OUTSIDE PROJECT LIMITS	
97		BL-97	661914.4870	2245752.3560	152.65	OUTSIDE PROJECT LIMITS	
98		BL-98	662355.4080	2246725.4230	155.30	OUTSIDE PROJECT LIMITS	
99		BL-99	662763.2500	2247624.9500	157.38	9+37.12	1.67 LT
1		I-3318BB-GPS1	662691.3590	2247970.4530	156.30	12+21.96	206.67 RT
2		I-3318BB-GPS2	663044.7500	2248464.6070	151.98	18+18.02	89.30 RT
100		BL-100	663291.6770	2248903.5400	150.50	23+19.78	46.01 RT
101		BL-101	663492.1990	2249355.9910	150.10	28+14.66	50.57 RT
102		BL-102	663760.7270	2249942.7490	151.54	34+58.71	50.51 RT
3		I-3318BB-GPS3	663904.0840	2250367.8040	147.74	38+94.76	123.70 RT
4		I-3318BB-GPS4	664304.4820	2250952.4290	157.09	45+89.29	114.61 RT

BENCHMARK DATA

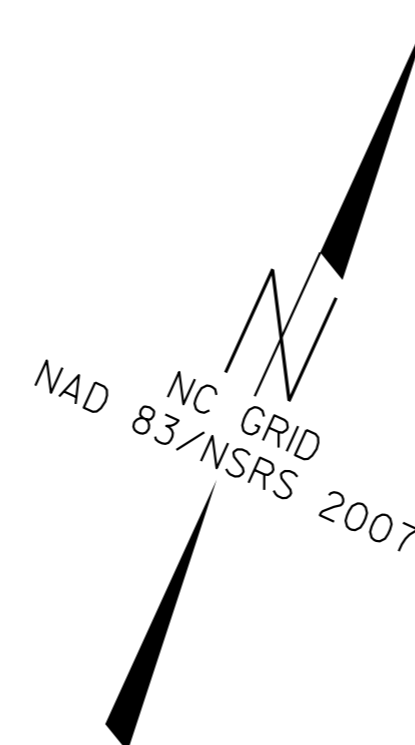
 BM # 1 ELEVATION = 135.59
 N 663260 E 2248916
 L STATION 23+18.00 80' RIGHT
 RR SPIKE IN BASE OF 4" HICKORY

 BM # 2 ELEVATION = 145.98
 N 663383 E 2249126
 L STATION 25+59.00 55' RIGHT
 CHISLED "X" IN CONCRETE APRON



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "Panel # 7" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 663166.162(ft) EASTING: 2249736.787(ft) ELEVATION: 136.116(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988586
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "Panel # 7" TO -L- STATION 10+00.00 IS
 S 78°20'48.46" W 2283.05 FT
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88



NOTE: DRAWING NOT TO SCALE

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](https://connect.ncdot.gov/resources/location/pages/default.aspx)

THE FILES TO BE FOUND ARE AS FOLLOWS:
 I3318BB_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.

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SURVEY CONTROL SHEET I3318BB

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
L	21+20.00	-130.00	663369.3056	2248648.8477
L	21+20.00	-160.00	663396.6196	2248636.4402
L	21+40.00	129.72	663141.1075	2248774.4744
L	21+40.00	170.00	663104.4373	2248791.1320
L	22+47.00	170.00	663148.6907	2248888.5519
L	23+00.00	193.00	663149.6699	2248946.3190
L	23+15.00	160.00	663185.9191	2248946.3278
L	32+37.39	-160.00	663858.7531	2249653.7858
L	32+38.21	-130.00	663831.7803	2249666.9443

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
Y	10+00.00	-5.64	663413.8195	2249448.0302
Y	10+00.00	30.00	663381.3664	2249462.7638
Y	10+00.00	-25.00	663431.4469	2249440.0275
Y	11+23.20	30.00	663432.2951	2249574.9428
Y	11+23.20	-25.00	663482.3756	2249552.2065
Y	15+40.12	30.00	663640.6986	2249941.6382
Y	15+40.12	-25.00	663685.8597	2249910.2459
Y	17+08.96	-25.00	663778.0503	2250053.8438
Y	18+30.15	24.05	663794.1173	2250183.5903
Y	18+30.15	30.00	663788.8465	2250186.3433

PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
Y	10+00.00	20.00	663390.4719	2249458.6300
Y	10+11.00	46.00	663371.3448	2249479.3942
Y	12+78.00	46.00	663487.7864	2249723.0272
Y	12+78.00	53.00	663481.6216	2249726.3430
Y	12+98.00	54.00	663490.5154	2249744.8017
Y	12+98.00	46.00	663497.5277	2249740.9510
Y	14+55.00	46.00	663579.3372	2249878.5812
Y	14+58.00	66.00	663564.1720	2249891.9775
Y	14+76.00	47.00	663590.1493	2249897.1044
Y	14+78.00	62.00	663578.7244	2249907.0373
Y	19+70.00	41.00	663847.0904	2250315.5087
Y	19+70.00	36.00	663851.4263	2250313.0186
Y	19+94.00	36.00	663863.5734	2250334.0033
Y	19+94.00	24.08	663873.8653	2250327.9985

PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	19+93.00	162.00	663050.9243	2248653.9848
L	20+02.00	187.00	663031.8849	2248672.5186
L	20+08.00	133.73	663082.8640	2248655.9511
L	20+09.00	170.00	663050.2579	2248671.8609
L	20+20.00	-133.73	663331.3445	2248556.2578
L	20+20.00	-138.00	663335.2310	2248554.4924
L	20+21.00	195.00	663032.4593	2248693.1261
L	20+28.00	179.00	663049.9218	2248692.8820
L	20+46.00	185.00	663051.9035	2248711.7519
L	20+54.00	167.00	663071.6006	2248711.5911
L	20+54.00	130.67	663104.6775	2248696.5658
L	20+54.00	145.00	663091.6308	2248702.4923
L	21+20.00	-138.00	663376.5893	2248645.5390
L	21+34.00	-172.00	663413.3353	2248644.2237
L	21+55.00	-171.00	663421.1101	2248663.7571
L	21+66.00	-199.00	663451.1526	2248662.1919
L	21+80.00	-177.00	663436.9125	2248684.0373
L	21+86.00	-191.00	663452.1405	2248683.7099
L	23+00.00	233.00	663113.2513	2248962.8624
L	23+56.00	228.00	663140.9643	2249011.7806
L	23+86.00	160.00	663215.2835	2249010.9709
L	25+50.00	165.00	663278.5588	2249162.3553
L	25+50.00	160.00	663283.1111	2249160.2874
L	26+05.00	160.00	663305.8582	2249210.3630
L	26+05.00	165.00	663301.3059	2249212.4309
L	26+23.00	-165.00	663609.2042	2249092.3369
L	26+23.00	-160.00	663604.6519	2249094.4048
L	26+69.00	-160.00	663623.6767	2249136.2862
L	26+69.00	-165.00	663628.2291	2249134.2183
L	28+50.00	186.00	663383.5139	2249444.1804
L	28+50.00	207.00	663364.3942	2249452.8657
L	32+00.00	-184.00	663865.1406	2249609.8179
L	32+00.00	-176.00	663857.8569	2249613.1265
L	32+19.00	-190.00	663878.4615	2249624.6352
L	32+37.09	-171.00	663868.6432	2249648.9611

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "Panel # 7" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 663166.162(ft) EASTING: 2249736.787(ft) ELEVATION: 136.116(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988586

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "Panel # 7" TO -L- STATION 08+00.00 IS
S 78°20'48.46" W 2283.05 FT

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

L				
TYPE	STATION	NORTH	EAST	
POT	8+00.00	662705.0151	2247500.7980	
PC	33+17.70	663746.2921	2249793.0759	
PT	47+02.70	664465.2111	2250972.9311	

Y				
TYPE	STATION	NORTH	EAST	
POT	10+00.00	663408.6830	2249450.3622	
PC	11+23.20	663459.6118	2249562.5412	
PRC	15+40.12	663665.3319	2249924.5151	
PRC	18+30.15	663815.4377	2250172.4543	
PT	21+00.54	663949.7521	2250407.0559	

NOTE: DRAWING NOT TO SCALE

NOTES:

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

THE FILES TO BE FOUND ARE AS FOLLOWS:
I3318BB_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.

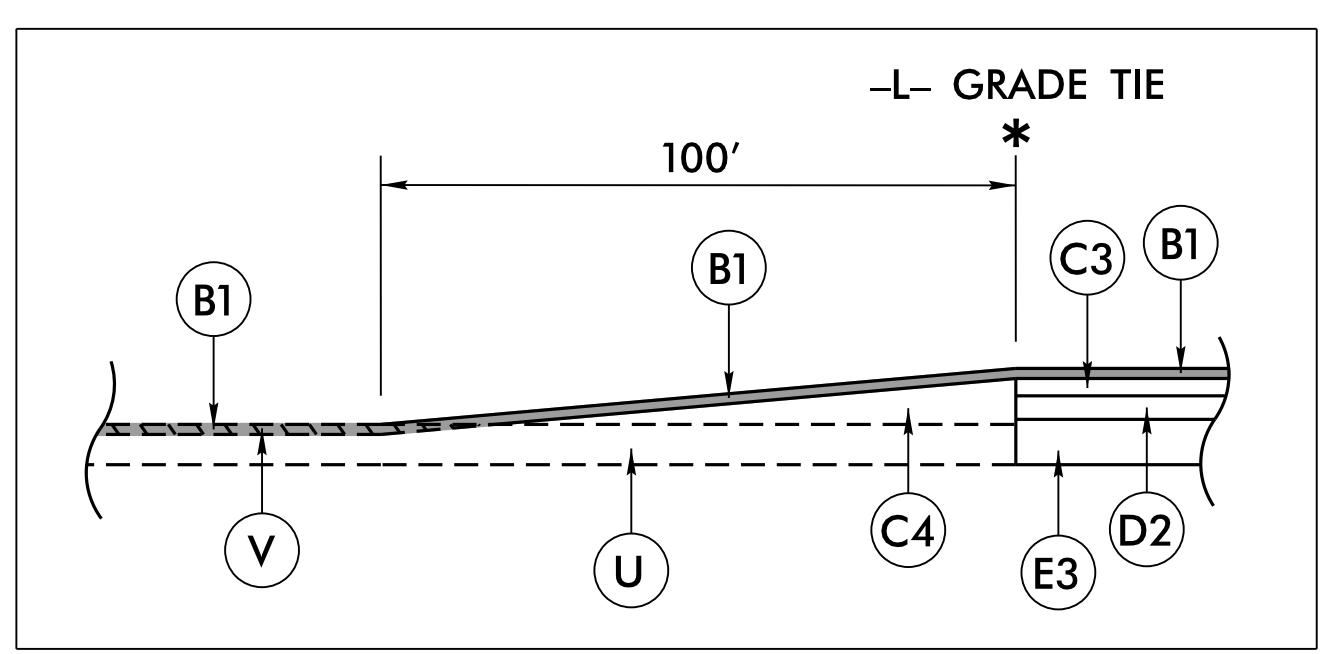
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION

PAVEMENT SCHEDULE

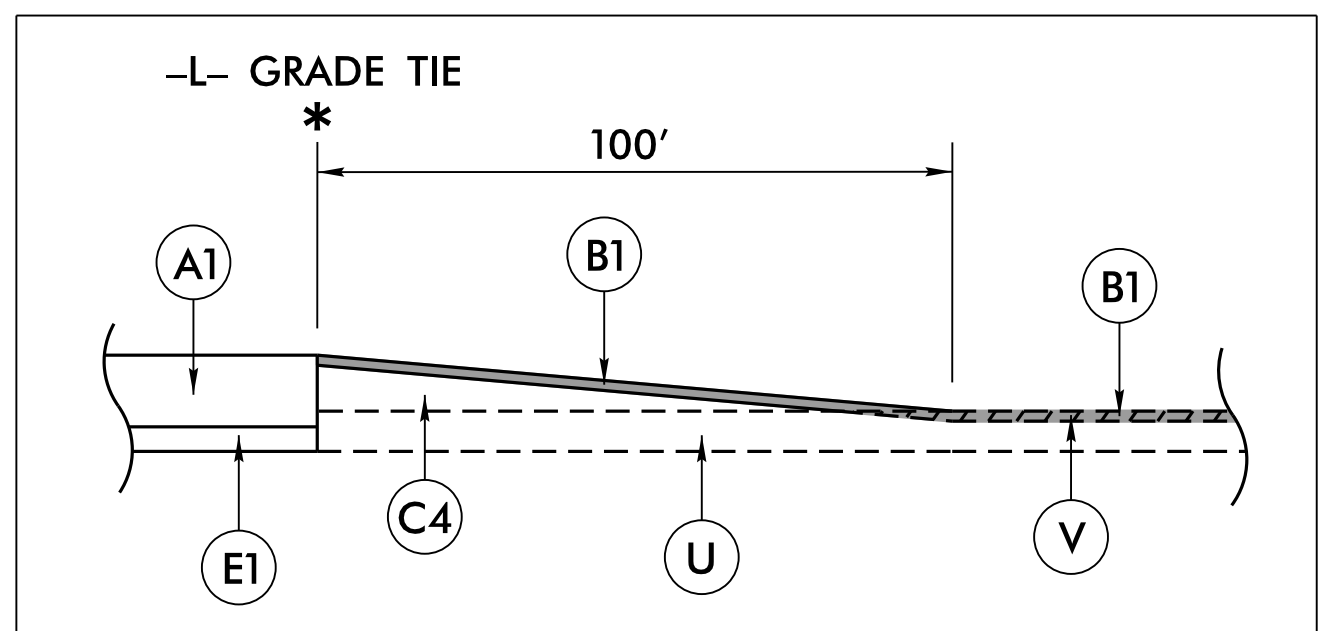
(FINAL PAVEMENT DESIGN)

A1	11" JOINTED PORTLAND CEMENT CONCRETE PAVEMENT (WITH DOWELS).	E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
B1	PROP. APPROX. 3/4" OPEN-GRADED ASPHALT FRICTION COURSE, TYPE FC-2 MODIFIED, AT AN AVERAGE RATE OF 90 LBS. PER SQ. YD.	E2	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
C1	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.	E3	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.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	T	EARTH MATERIAL
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	U	EXISTING PAVEMENT
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	V	MILL 3/4" OF EXISTING ASPHALT PAVEMENT
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	Y	MILLED RUMBLE STRIPS
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0D, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.		

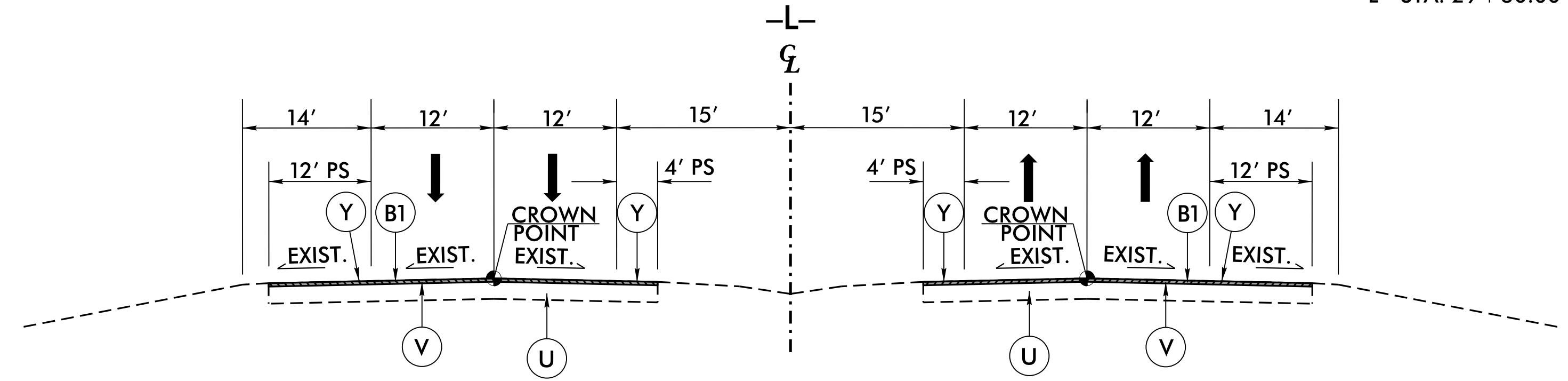
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



DETAIL FOR TRANSITION OF PAVEMENT FROM GRADE ELEVATION TO EXISTING
*-L- STA. 15+75.00

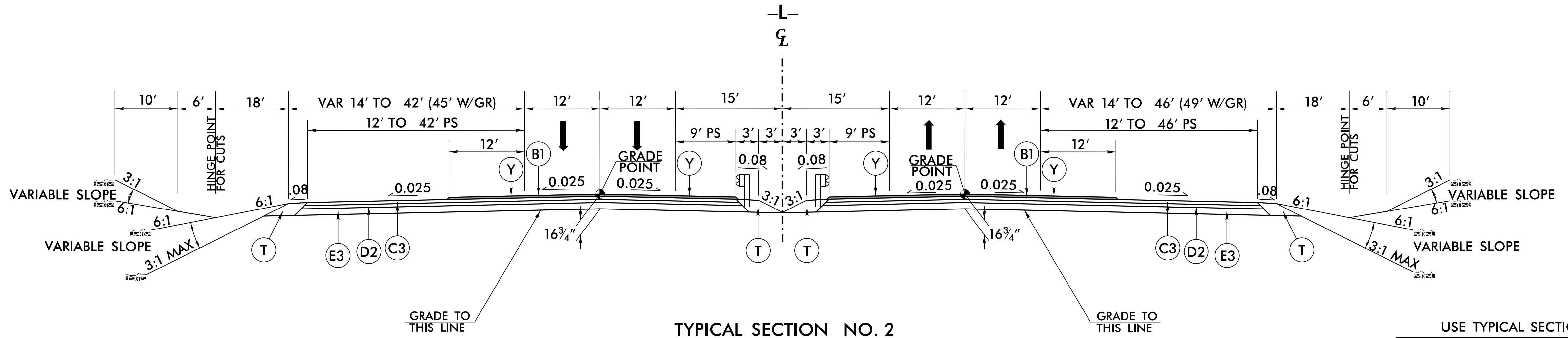


DETAIL FOR TRANSITION OF PAVEMENT FROM GRADE ELEVATION TO EXISTING
*-L- STA. 29+30.00



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STA. 10+50.00 TO 15+75.00
-L- STA. 31+88.81 TO 38+00.00 LT.
-L- STA. 32+65.14 TO 38+00.00 RT.

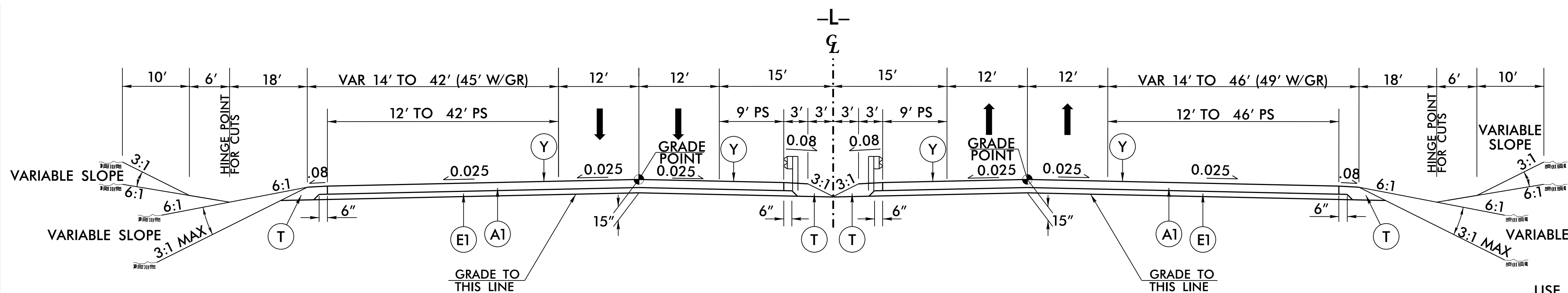


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-L- STA. 15+75.00 TO 20+86.10 LT.
-L- STA. 15+75.00 TO 19+69.43 RT.

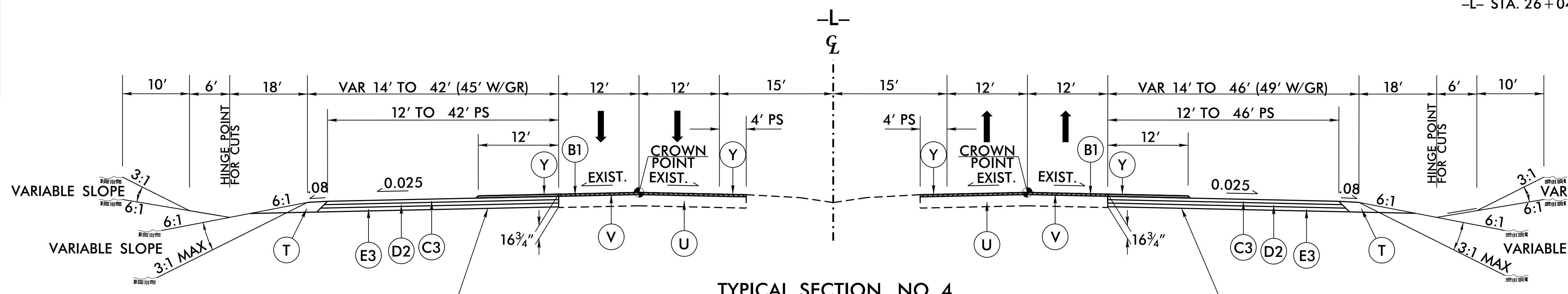
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27-AUG-2015 04:25
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PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
A1	11" PCCP
B1	3/4" OGAF C TYPE FC-2 MOD.
C1	3" S9.5C
C2	VAR. S9.5C
C3	3" S9.5D
C4	VAR. S9.5D
D1	4" I19.0C
D2	4" I19.0D
E1	4" B25.0B
E2	4" B25.0C
E3	9" B25.0C
T	EARTH MATERIAL
U	EXIST. PVMT.
V	3/4" ASPH. MILL.
Y	RUMBLE STRIPS



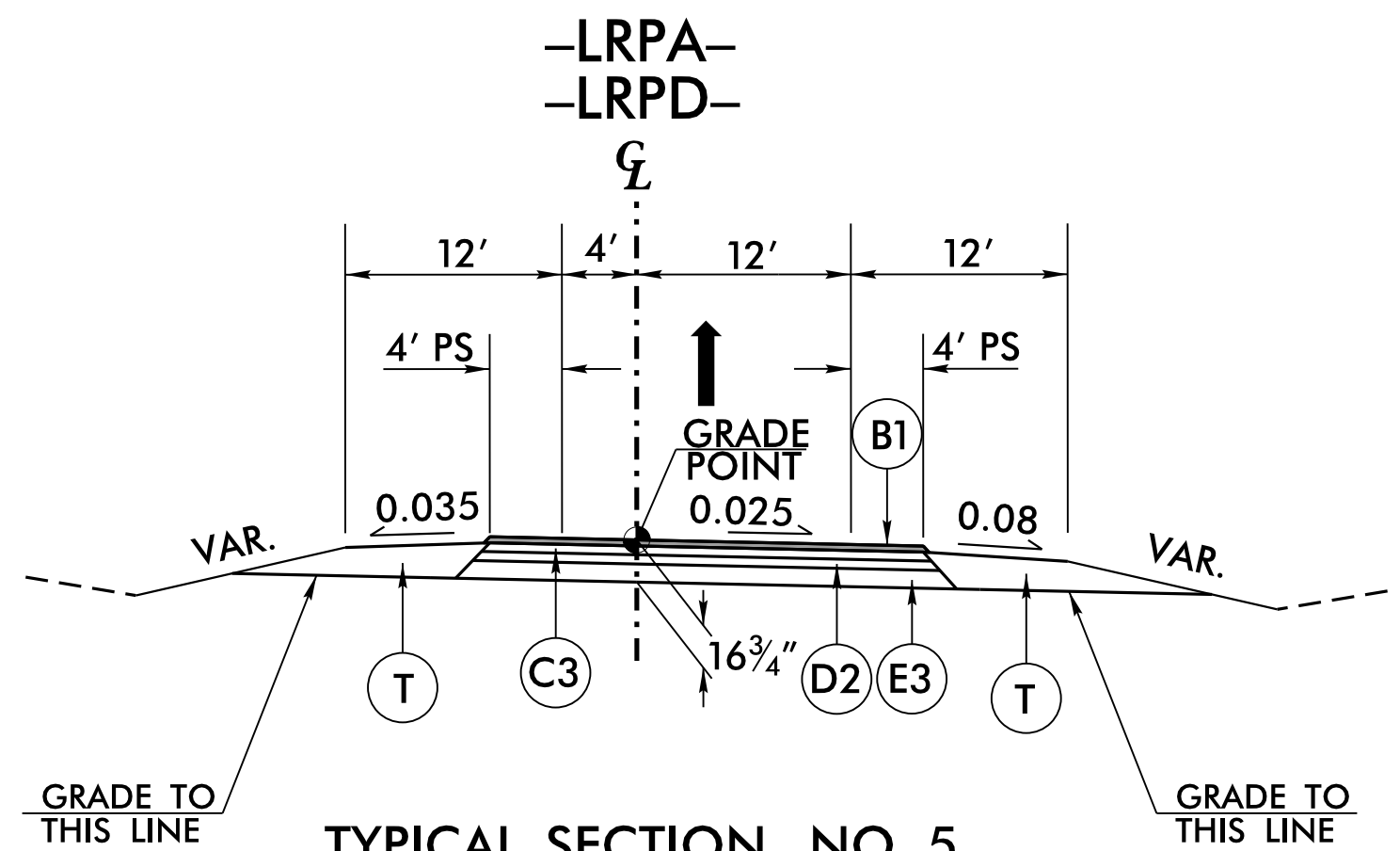
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
 -L- STA. 20+86.10 TO 23+31.55 (BEG. BRIDGE) LT.
 -L- STA. 19+69.43 TO 23+31.55 (BEG. BRIDGE) RT.
 -L- STA. 26+04.45 (END BRIDGE) TO 29+30.00



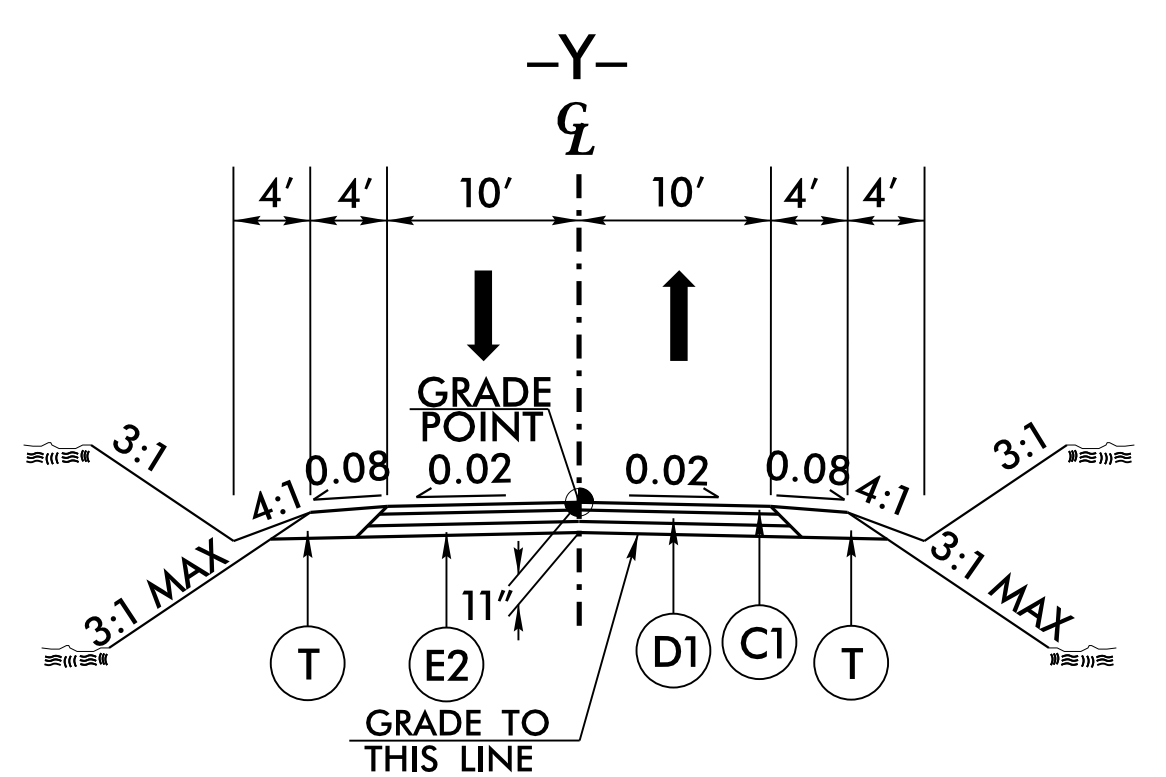
TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
 -L- STA. 29+30.00 TO 31+88.81 LT.
 -L- STA. 29+30.00 TO 32+65.14 RT.



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5
 -LRPA- STA. 10+00.00 TO 15+86.75
 REVERSE OF TYPICAL SECTION NO. 5
 -LRPD- STA. 10+00.00 TO 13+00.00

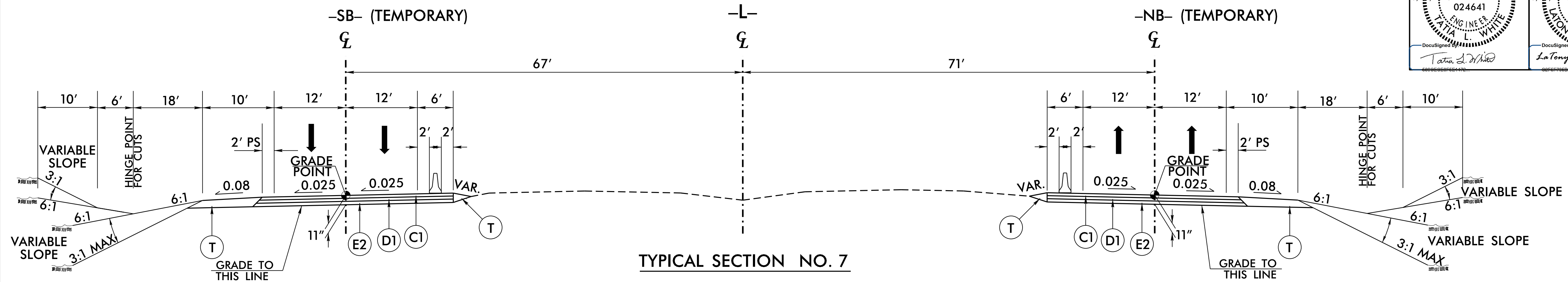


TYPICAL SECTION NO. 6

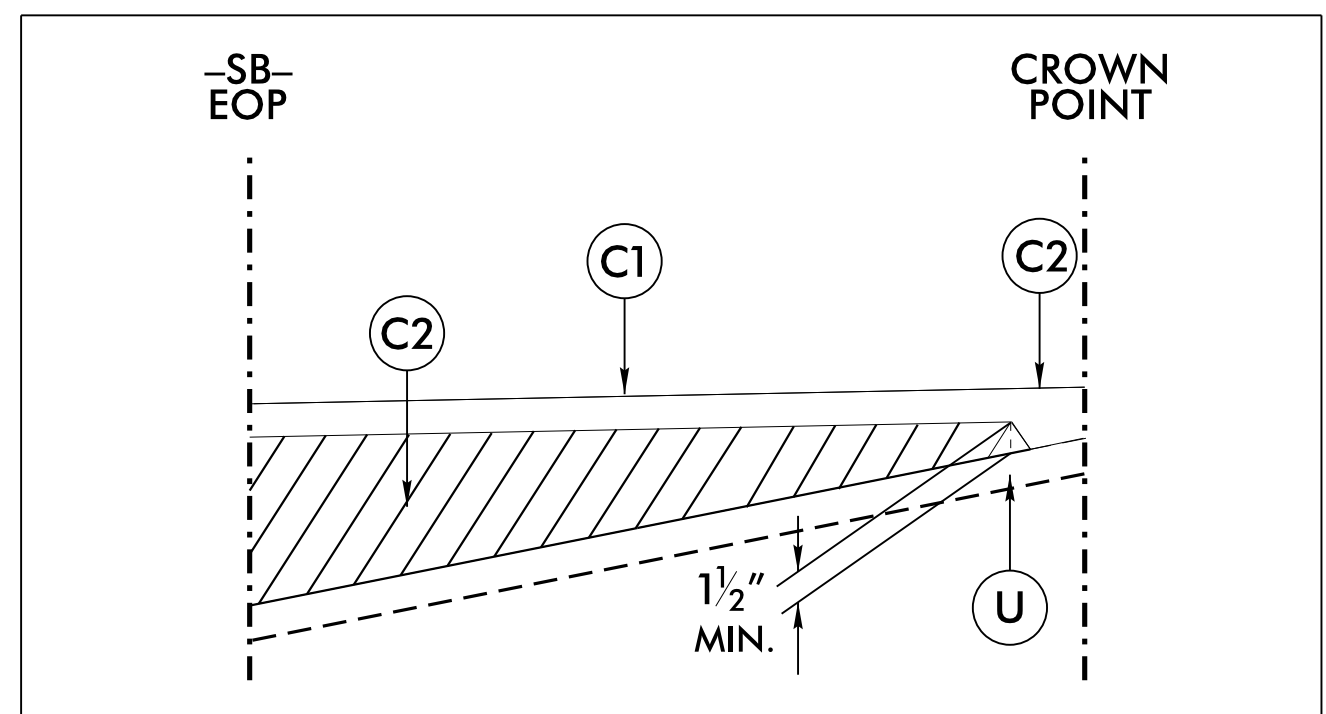
USE TYPICAL SECTION NO. 6
 -Y- STA. 10+15.00 TO 18+30.15

8/17/99
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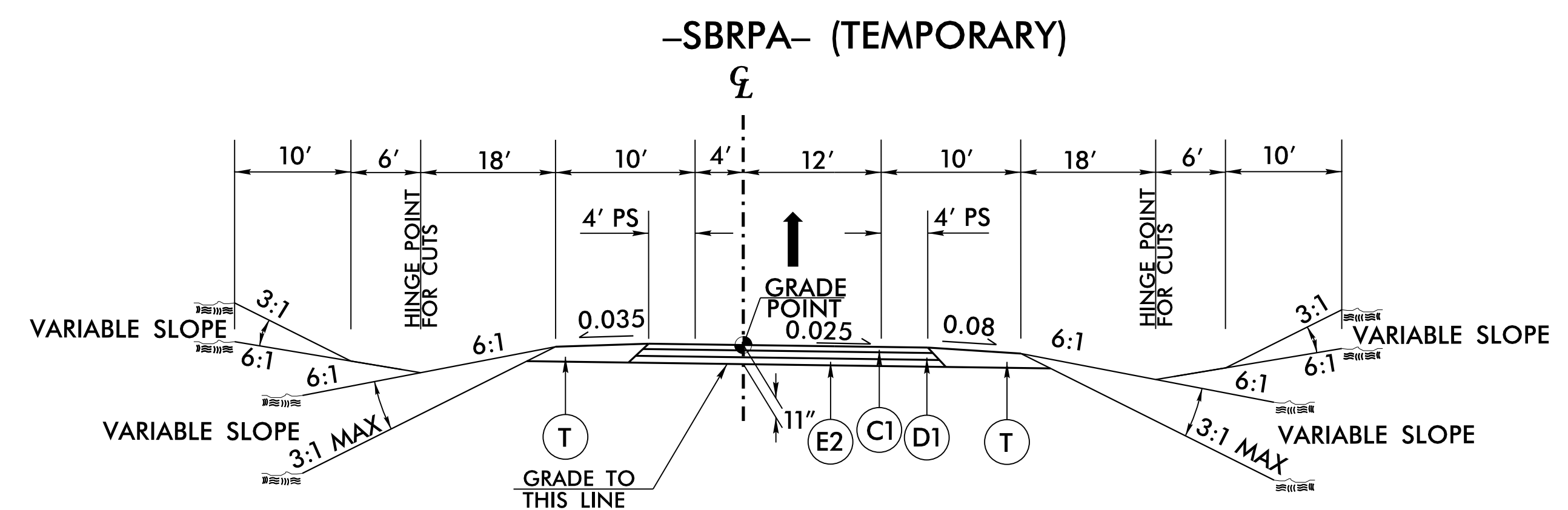
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
A1	11" PCCP
B1	3/4" OGAF C TYPE FC-2 MOD.
C1	3" S9.5C
C2	VAR. S9.5C
C3	3" S9.5D
C4	VAR. S9.5D
D1	4" I19.0C
D2	4" I19.0D
E1	4" B25.0B
E2	4" B25.0C
E3	9" B25.0C
T	EARTH MATERIAL
U	EXIST. PVMT.
V	3/4" ASPH. MILL.
Y	RUMBLE STRIPS



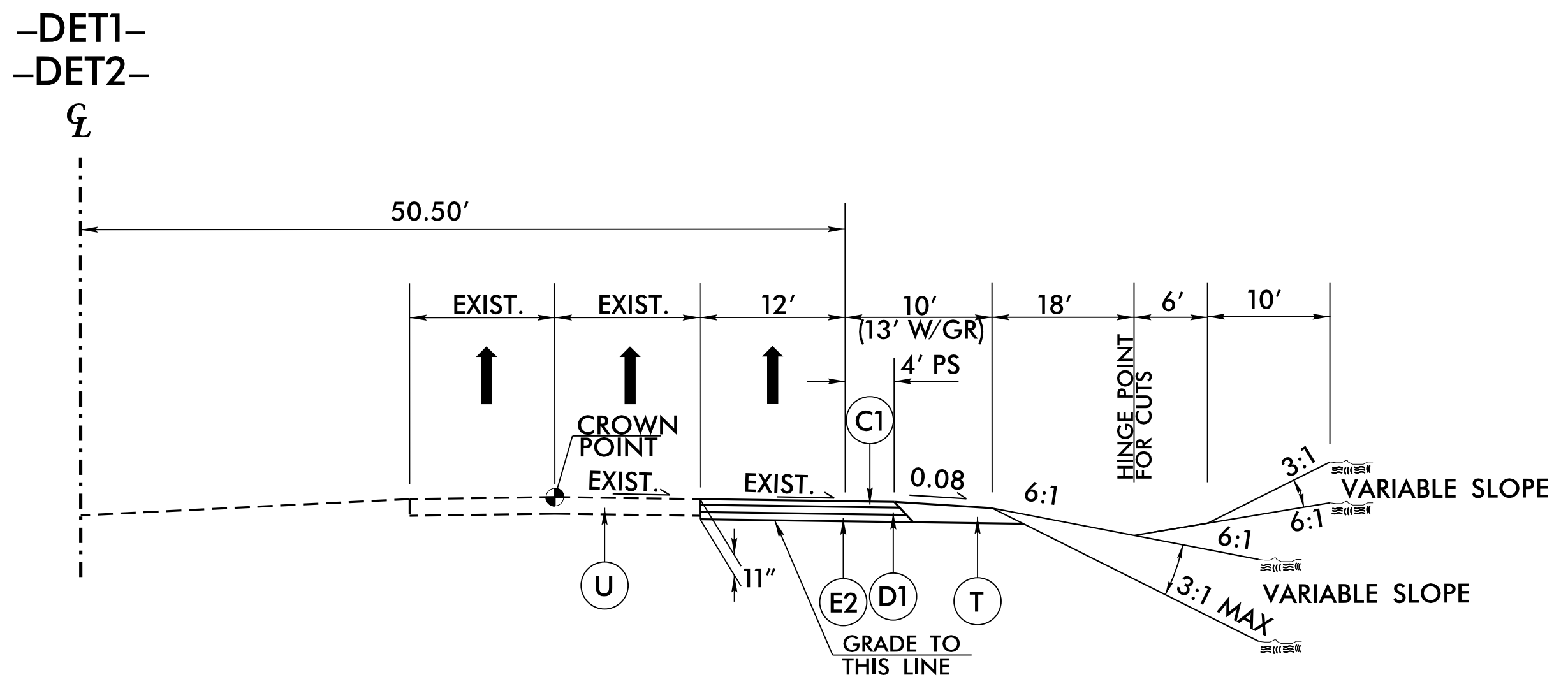
TYPICAL SECTION NO. 7



DETAIL SHOWING METHOD OF TEMPORARY WEDGING
 NOTES: - SEE TMP PLANS FOR STATIONS AND LOCATIONS
 - REVERSE OF DETAIL FOR -NB- DIRECTION



TYPICAL SECTION NO. 8



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 7
 -NB- STA. 7+61.86 TO 16+83.24
 -NB- STA. 26+43.81 TO 33+05.82
 -SB- STA. 7+31.19 TO 17+68.98
 -SB- STA. 26+12.88 TO 34+06.10
 SEE SHEETS 2B-1 THROUGH 2B-3 FOR DETOURS

NOTE: USE TYPICAL NO. 3 FOR THE FOLLOWING
 (SEE TMP PLANS FOR PAVEMENT STAGING)
 -NB- STA. 16+83.24 TO 20+19.52 (BEG. BRIDGE)
 -NB- STA. 22+92.42 (END BRIDGE) TO 26+43.81
 -SB- STA. 17+68.98 TO 20+38.81 (BEG. BRIDGE)
 -SB- STA. 23+11.71 (END BRIDGE) TO 26+12.88

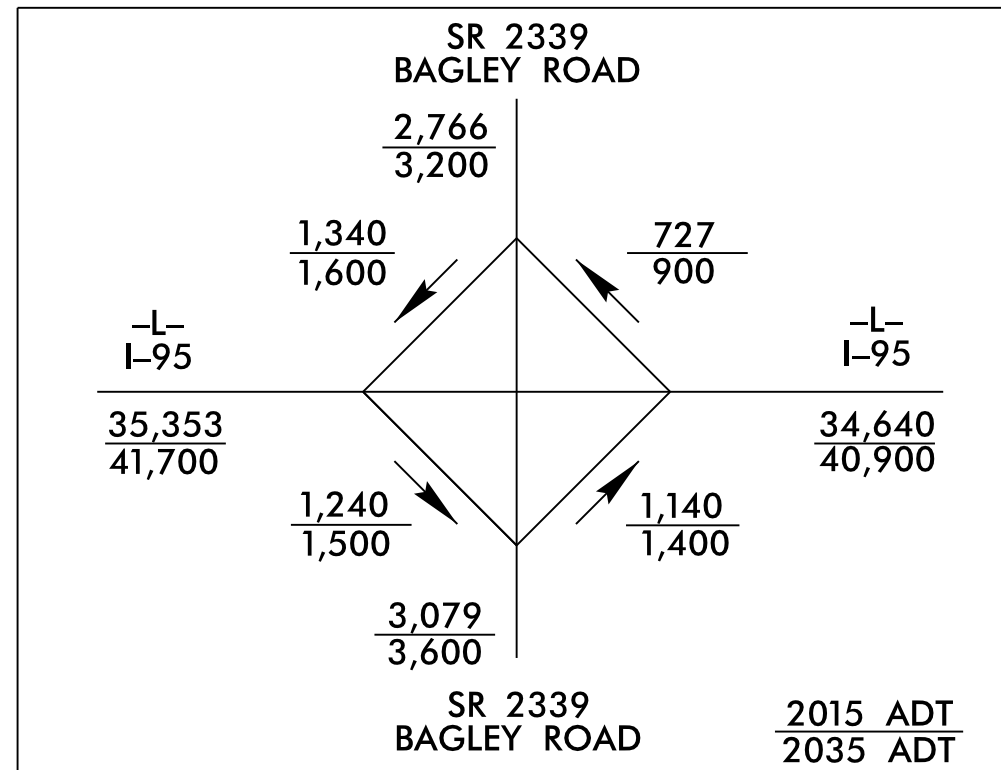
USE TYPICAL SECTION NO. 8
 -SBRPA- STA. 10+00.00 TO 15+64.46

USE TYPICAL SECTION NO. 9
 -DET1- STA. 24+00.00 TO 31+00.00
 REVERSE OF TYPICAL SECTION NO. 9
 -DET2- STA. 17+40.00 TO 23+75.00

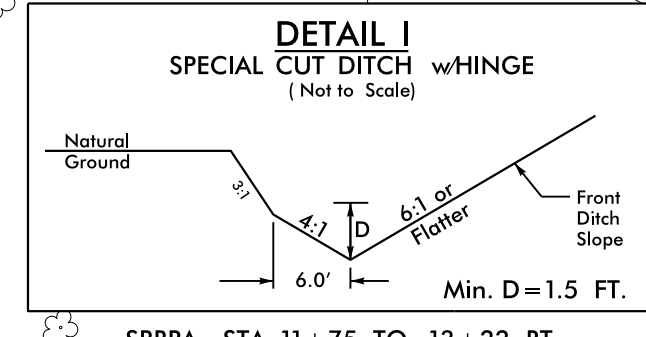
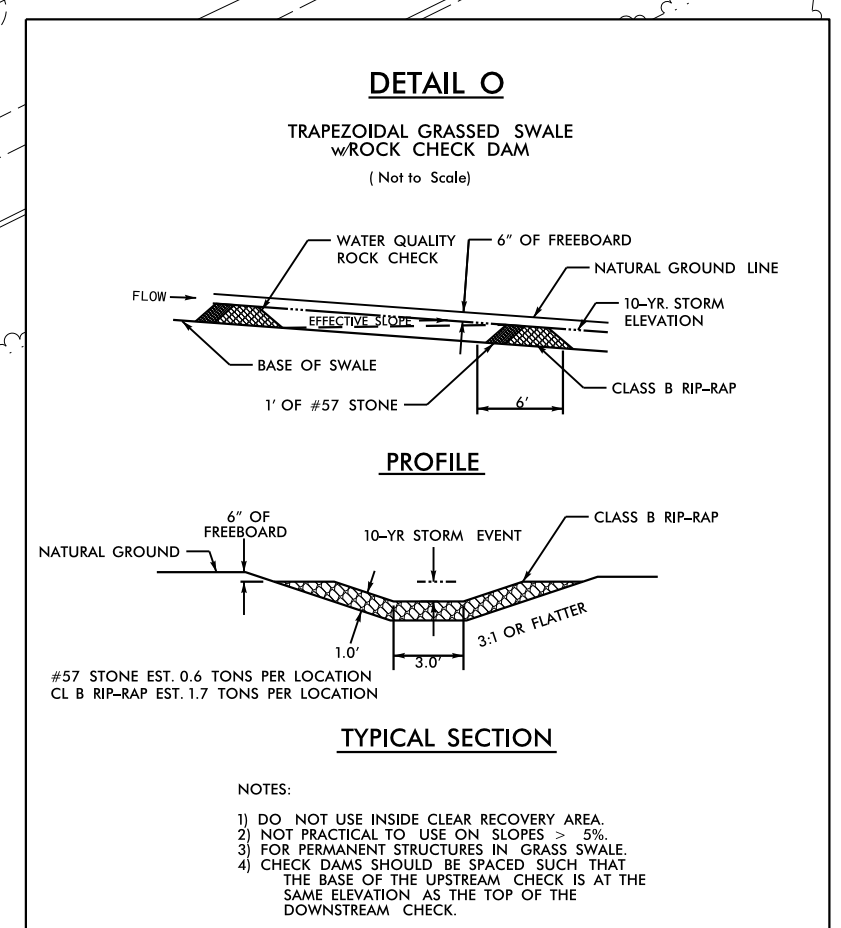
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DETAIL OF ON-SITE DETOURS

PROJECT REFERENCE NO. 1-3318BB	SHEET NO. 2B-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER TATIANA L. WHITE SEAL 024641 9/8/2015	HYDRAULICS ENGINEER CHRISTOPHER R. LEMUS SEAL 041420 9/8/2015

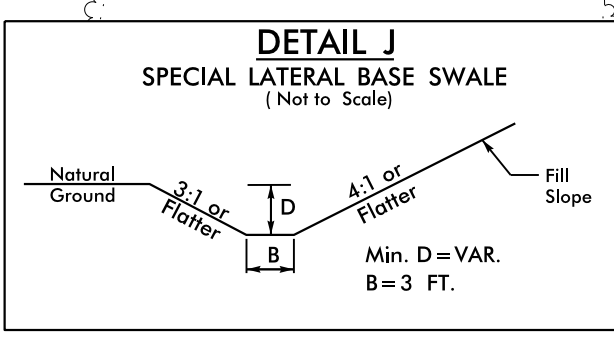
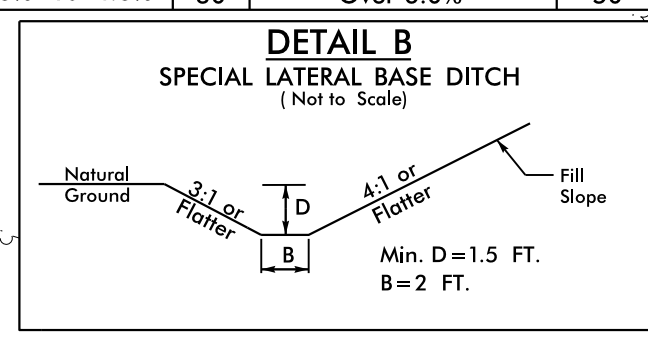


-SB-		-NB-	
PI Sta 8+89.62 Δ = 7°15' 08.1" (LT) D = 2°17' 30.6" L = 316.44' T = 158.43' R = 2,500.00' SE = SEE PLANS RO = SEE PLANS	PI Sta 12+06.06 Δ = 7°15' 08.1" (RT) D = 2°17' 30.6" L = 316.44' T = 158.43' R = 2,500.00' SE = SEE PLANS RO = SEE PLANS	PI Sta 13+14.89 Δ = 30°32' 01.4" (RT) D = 5°58' 05.9" L = 511.60' T = 262.03' R = 960.00' SE = SEE PLANS RO = 192.00'	PI Sta 9+28.06 Δ = 7°36' 24.2" (RT) D = 2°17' 30.6" L = 331.91' T = 166.20' R = 2,500.00' SE = SEE PLANS RO = SEE PLANS
PI Sta 12+59.97 Δ = 7°36' 24.2" (LT) D = 2°17' 30.6" L = 331.91' T = 166.20' R = 2,500.00' SE = SEE PLANS RO = SEE PLANS			



DETAIL F
FALSE SUMP
(Not to Scale)

S = Ditch Slope		Proposed Ditch	
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'



FINAL DRAINAGE TO BE INSTALLED AT ONSET OF PROJECT DURING CONSTRUCTION OF -Y- AND ONSITE DETOURS. ALL DRAINAGE STRUCTURES ARE TO BE RETAINED IN FINAL CONDITION UNLESS OTHERWISE NOTED.

NAD 83/NSRS 2007

MATCHLINE -L- STA. 17 + 50.00 SEE SHEET 2B-2

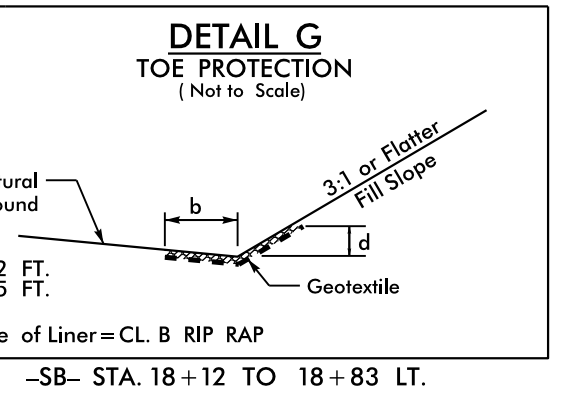
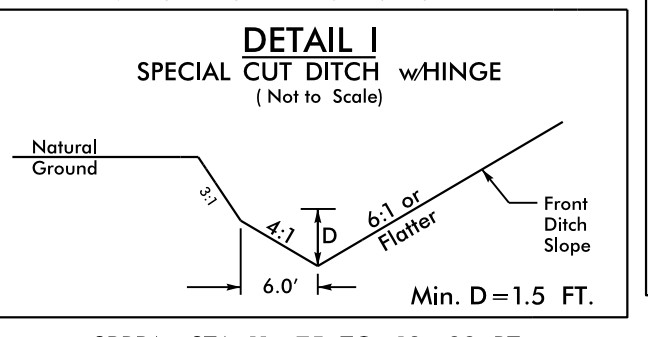
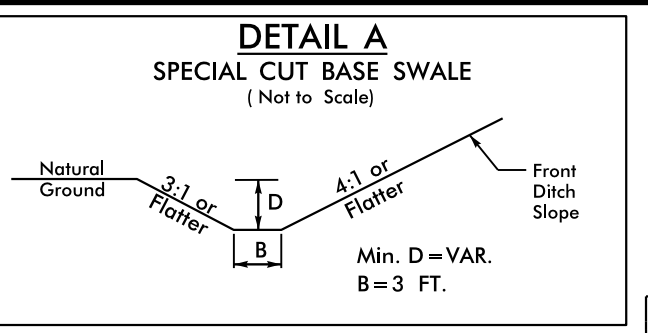
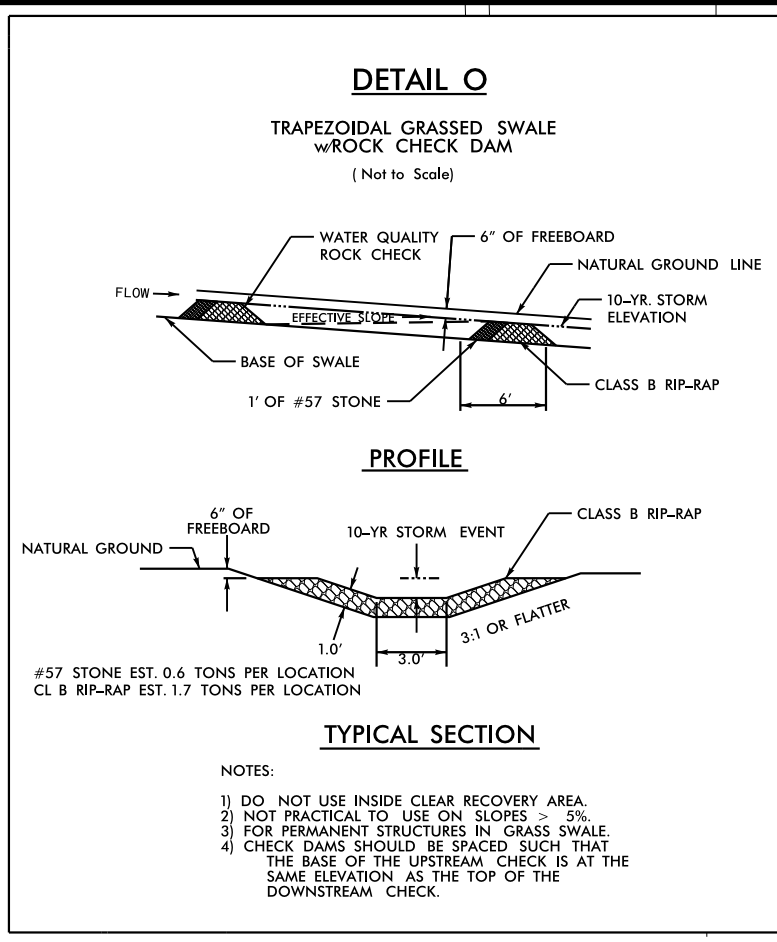
FOR -NB- PROFILE SEE SHEET 9
FOR -SB- PROFILE SEE SHEET 10
FOR -SBRPA- PROFILE SEE SHEET 11

8/17/99
21-AUG-2015 08:35 13318BB-Rdy_tup-2B-1.dgn
3:58:50 PM TATIANA L. WHITE

DETAIL OF ON-SITE DETOURS

FINAL DRAINAGE TO BE INSTALLED ON ONSET OF PROJECT DURING CONSTRUCTION OF -Y- AND ONSITE DETOURS. ALL DRAINAGE STRUCTURES ARE TO BE RETAINED IN FINAL CONDITION UNLESS OTHERWISE NOTED.

PROJECT REFERENCE NO. 1-33188B	SHEET NO. 2B-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER CAROL J. WHITE PROFESSIONAL SEAL 024641	HYDRAULICS ENGINEER CHRISTOPHER R. LEWIS PROFESSIONAL SEAL 041420



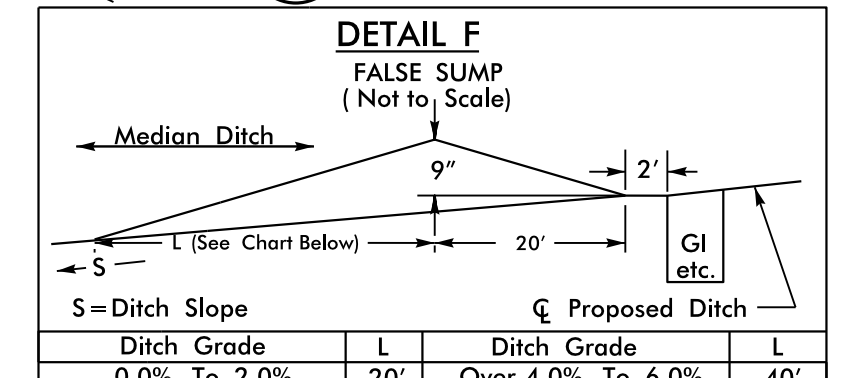
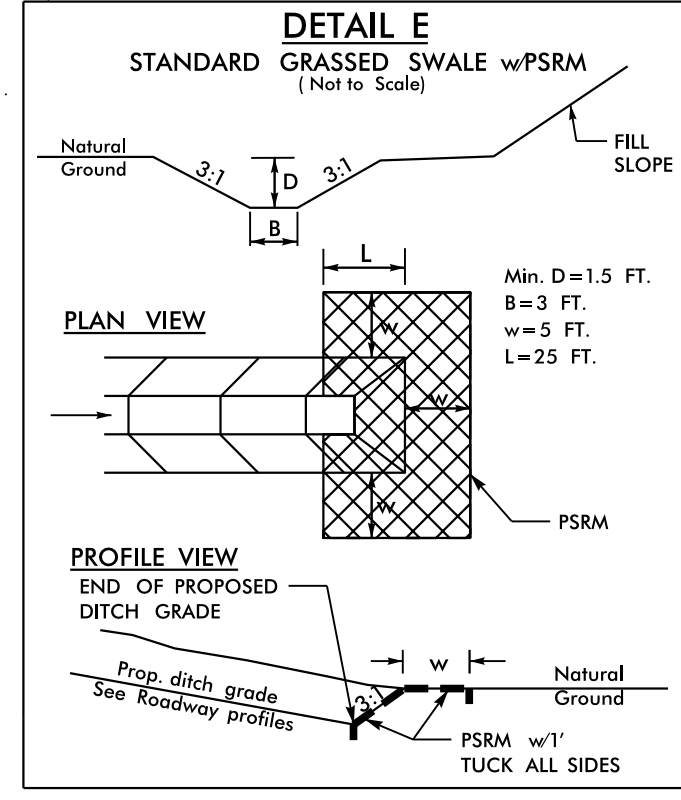
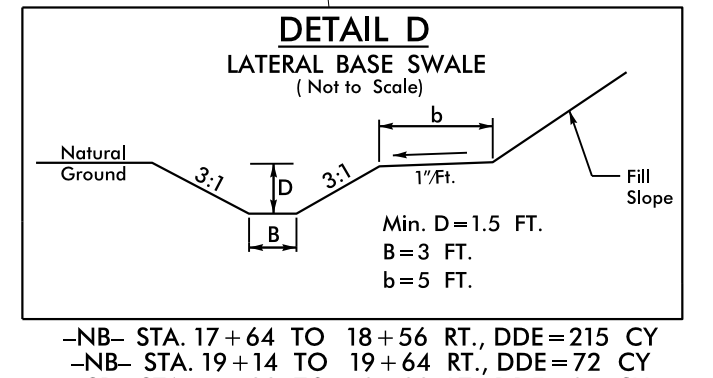
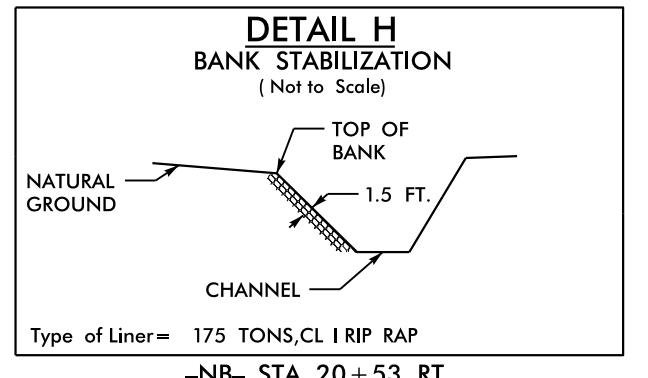
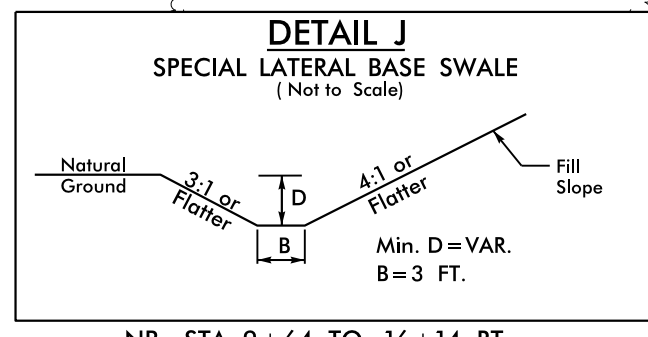
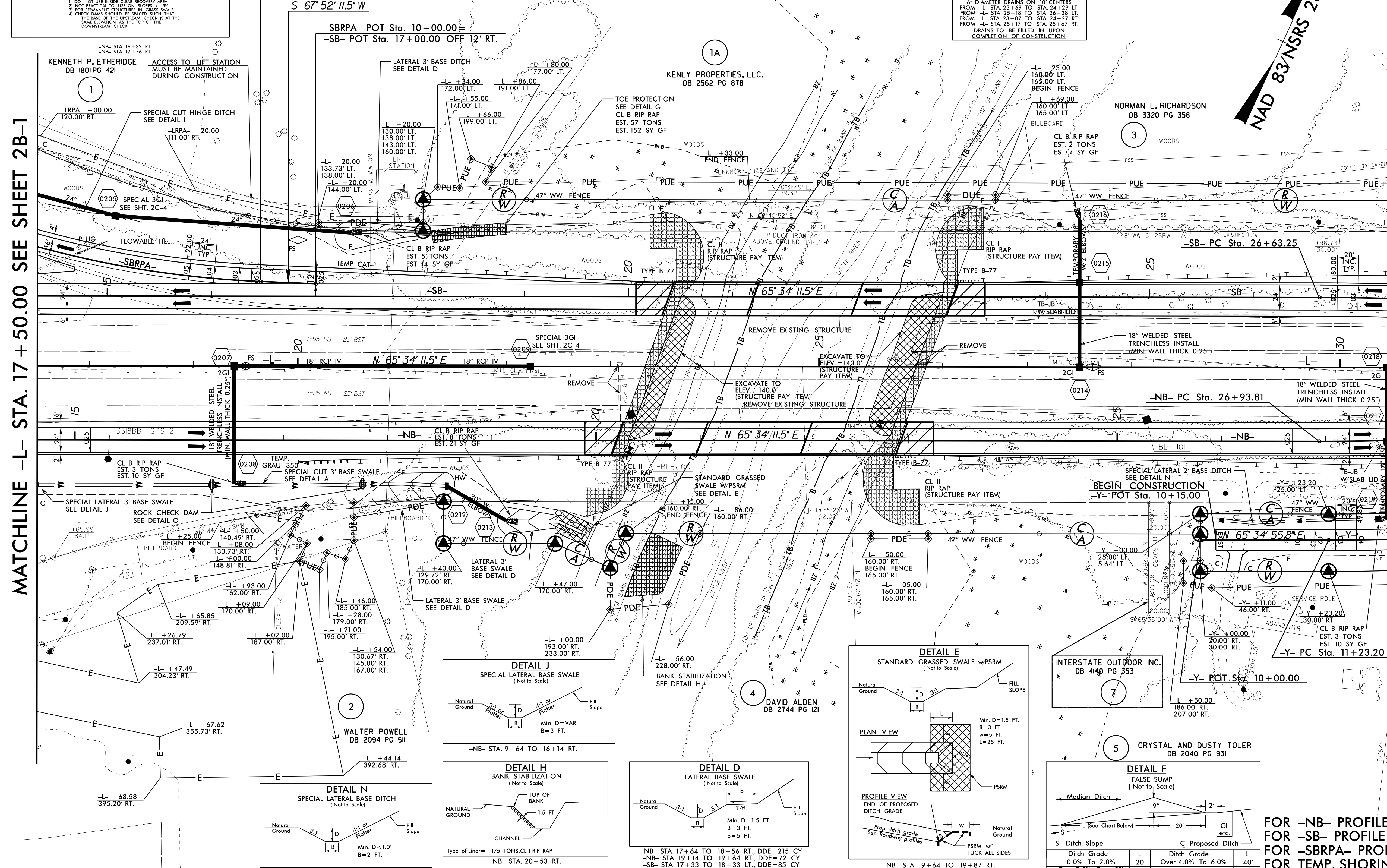
-SB-	-NB-	-SBRPA-	-Y-
PI Sta 12+06.06 Δ = 7' 15" 08.1" (RT) D = 2' 17" 30.6" L = 316.44' T = 158.43' R = 2,500.00' SE = SEE PLANS RO = SEE PLANS	PI Sta 28+04.78 Δ = 6' 28" 49.0" (RT) D = 2' 17" 30.6" L = 282.76' T = 141.53' R = 2,500.00' SE = SEE PLANS RO = SEE PLANS	PI Sta 12+59.97 Δ = 7' 36" 24.2" (LT) D = 2' 17" 30.6" L = 331.91' T = 166.20' R = 2,500.00' SE = SEE PLANS RO = SEE PLANS	PI Sta 28+76.66 Δ = 8' 21" 57.6" (LT) D = 2' 17" 30.6" L = 365.04' T = 182.84' R = 2,500.00' SE = SEE PLANS RO = SEE PLANS

-SBRPA-	-Y-
PI Sta 13+14.89 Δ = 30' 32" 01.4" (RT) D = 5' 58" 05.9" L = 511.60' T = 262.03' R = 2,500.00' SE = SEE PLANS RO = 192.00'	PI Sta 13+32.23 Δ = 10' 23" 09.4" (LT) D = 2' 29" 28.0" L = 416.92' T = 209.03' R = 2,300.00'

TEMPORARY DECK DRAINS REQUIRED
6" DIAMETER DRAINS ON 10' CENTERS
FROM -L- STA 23+69 TO STA 24+29 LT.
FROM -L- STA 25+18 TO STA 26+28 LT.
FROM -L- STA 23+07 TO STA 24+27 RT.
FROM -L- STA 25+17 TO STA 26+27 RT.
DRAINS TO BE FILLED IN UPON COMPLETION OF CONSTRUCTION.

MATCHLINE -L- STA. 17 + 50.00 SEE SHEET 2B-1

MATCHLINE -L- STA. 30 + 50.00 SEE SHEET 2B-3



FOR -NB- PROFILE SEE SHEET 9 & 10
FOR -SB- PROFILE SEE SHEET 10 & 11
FOR -SBRPA- PROFILE SEE SHEET 11
FOR TEMP. SHORING SEE SHEET 2B-6

NAD 83 NSRS 2007

DETAIL OF ON-SITE DETOURS

FINAL DRAINAGE TO BE INSTALLED AT ONSET OF PROJECT DURING CONSTRUCTION OF -Y- AND ONSITE DETOURS.
ALL DRAINAGE STRUCTURES ARE TO BE RETAINED IN FINAL CONDITION UNLESS OTHERWISE NOTED.

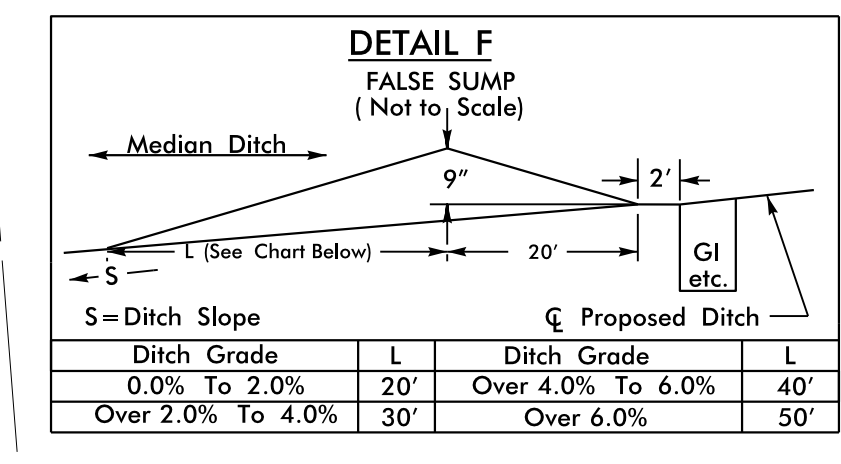
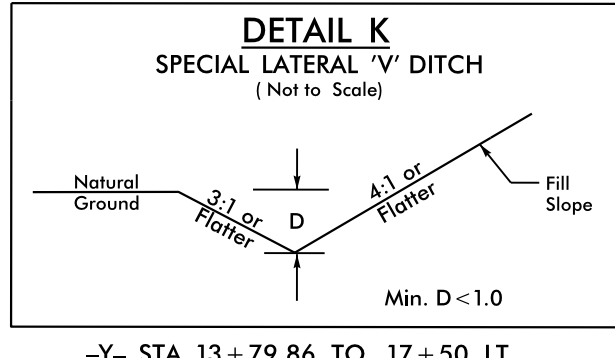
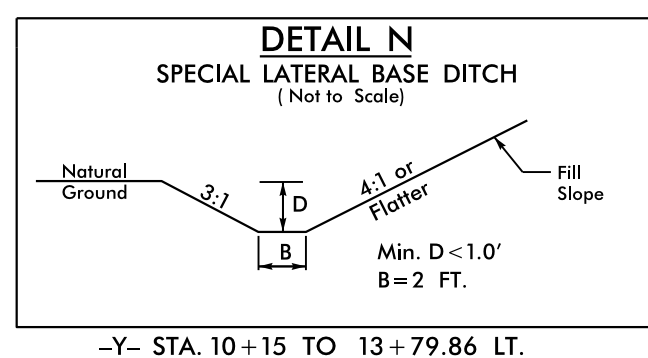
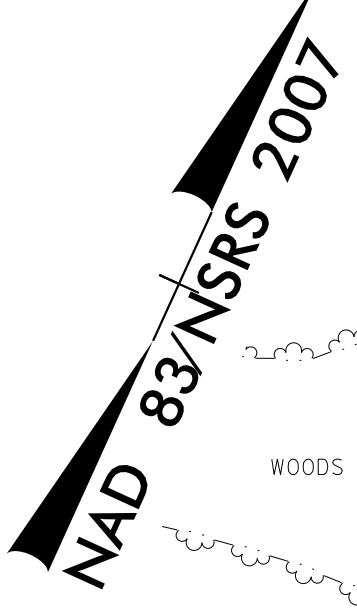
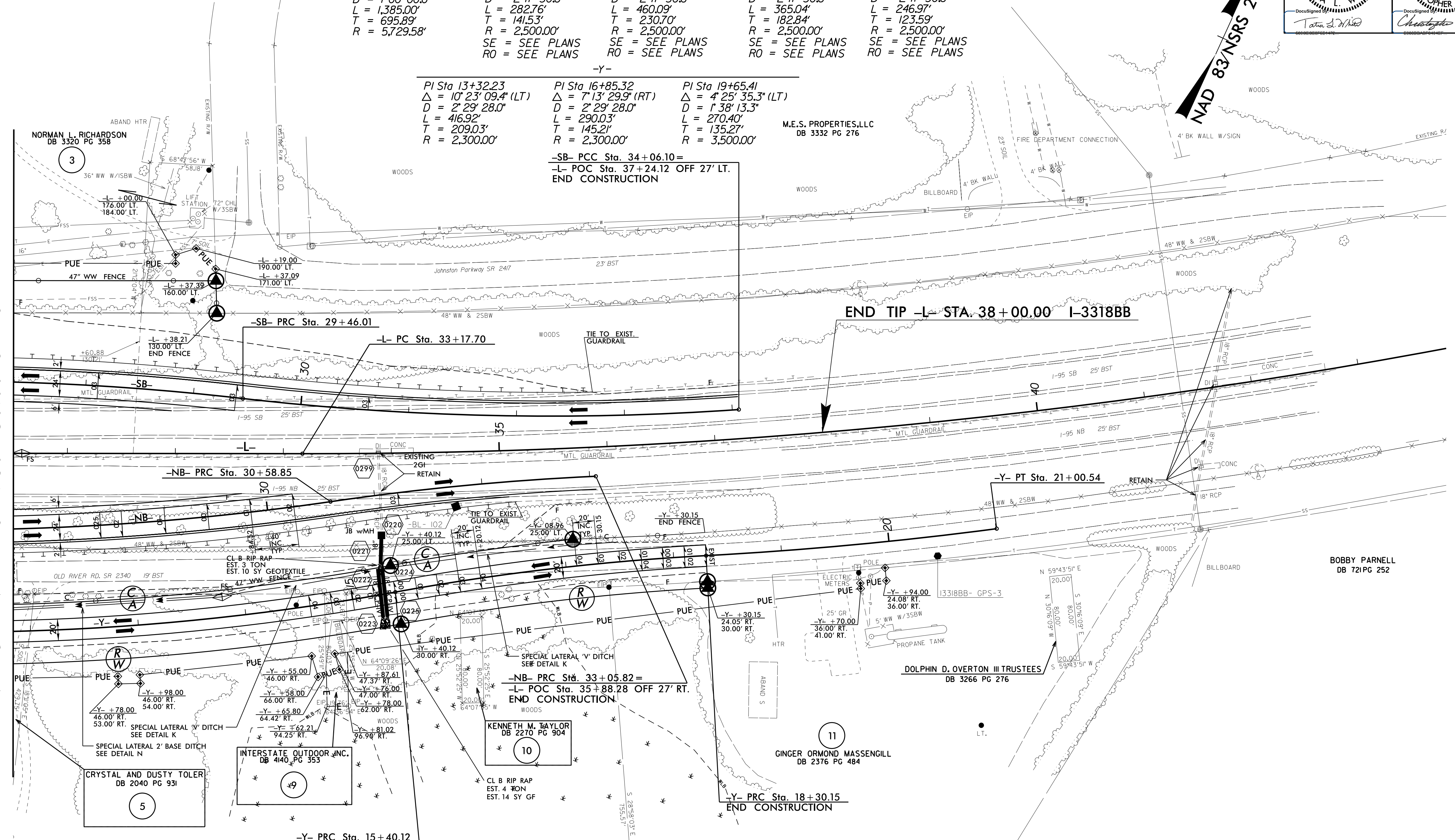
-L-	-SB-	-NB-
PI Sta 40+13.59 Δ = 13° 51' 00.0" (LT) D = 1° 00' 00.0" L = 1,385.00' T = 695.89' R = 5,729.58'	PI Sta 28+04.78 Δ = 6° 28' 49.0" (RT) D = 2° 17' 30.6" L = 282.76' T = 141.53' R = 2,500.00' SE = SEE PLANS RO = SEE PLANS	PI Sta 31+76.70 Δ = 10° 32' 40.2" (LT) D = 2° 17' 30.6" L = 460.09' T = 230.70' R = 2,500.00' SE = SEE PLANS RO = SEE PLANS
		PI Sta 28+76.66 Δ = 8° 21' 57.6" (LT) D = 2° 17' 30.6" L = 365.04' T = 182.84' R = 2,500.00' SE = SEE PLANS RO = SEE PLANS
		PI Sta 31+82.43 Δ = 5° 39' 36.5" (RT) D = 2° 17' 30.6" L = 246.97' T = 123.59' R = 2,500.00' SE = SEE PLANS RO = SEE PLANS

-Y-		
PI Sta 13+32.23 Δ = 10° 23' 09.4" (LT) D = 2° 29' 28.0" L = 416.92' T = 209.03' R = 2,300.00'	PI Sta 16+85.32 Δ = 7° 13' 29.9" (RT) D = 2° 29' 28.0" L = 290.03' T = 145.21' R = 2,300.00'	PI Sta 19+65.41 Δ = 4° 25' 35.3" (LT) D = 1° 38' 13.3" L = 270.40' T = 135.27' R = 3,500.00'

-SB- PCC Sta. 34+06.10 =
-L- POC Sta. 37+24.12 OFF 27' LT.
END CONSTRUCTION

-NB- PCC Sta. 33+05.82 =
-L- POC Sta. 35+88.28 OFF 27' RT.
END CONSTRUCTION

MATCHLINE -L- STA. 30 + 50.00 SEE SHEET 2B-2

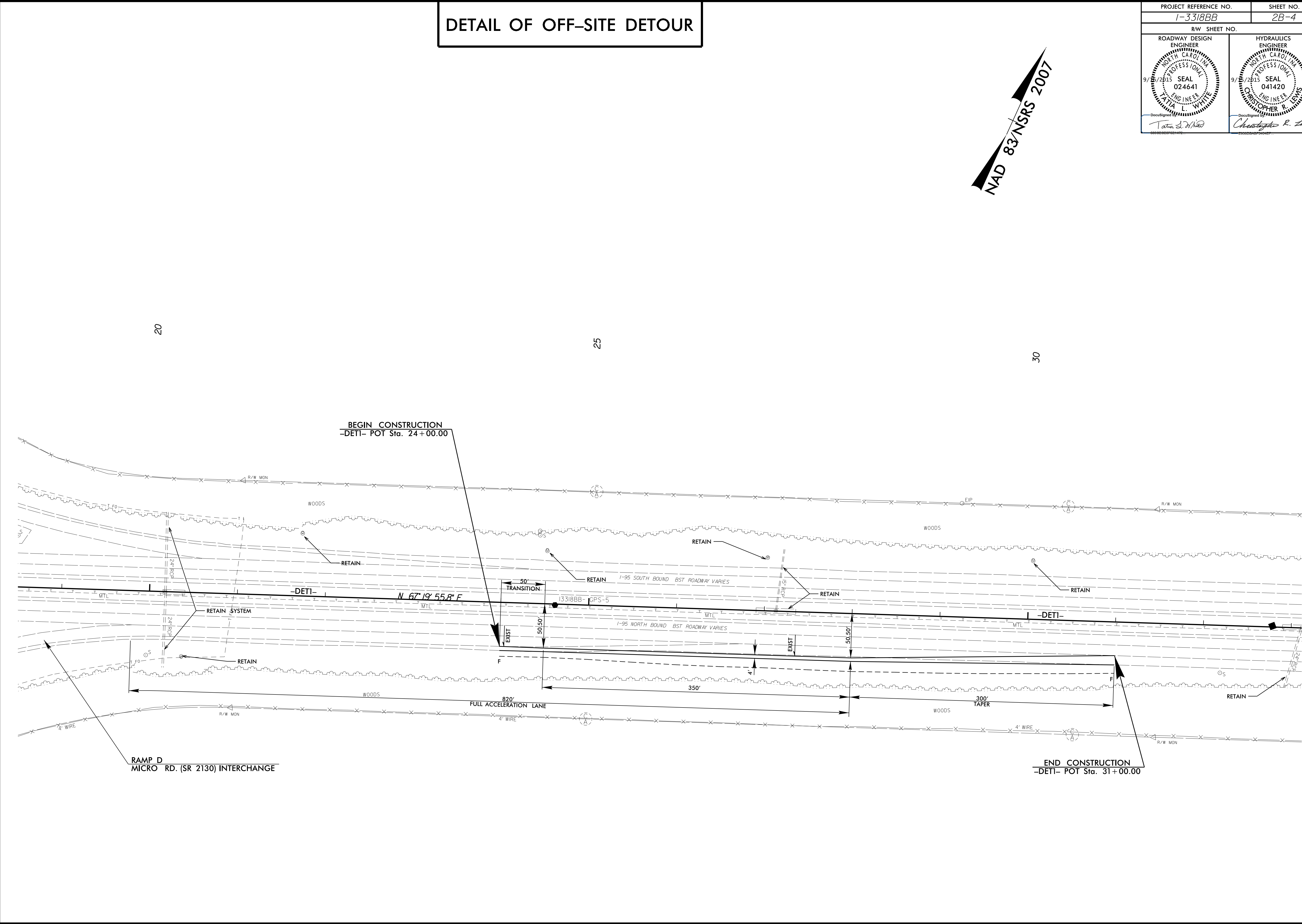


FOR -NB- PROFILE SEE SHEET 10
FOR -SB- PROFILE SEE SHEET 11

DETAIL OF OFF-SITE DETOUR

PROJECT REFERENCE NO. 1-3318BB	SHEET NO. 2B-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER TATIA L. WHITE SEAL 024641 9/8/2015	HYDRAULICS ENGINEER CHRISTOPHER R. LEMO SEAL 041420 9/8/2015

NAD 83/NSRS 2007



20

25

30

BEGIN CONSTRUCTION
-DETI- POT Sta. 24+00.00

RAMP D
MICRO RD. (SR 2130) INTERCHANGE

END CONSTRUCTION
-DETI- POT Sta. 31+00.00

-DETI- N 67°19'55.8" E

50' TRANSITION

EXIST

50.50'

F

350'

EXIST

50.50'

F

820' FULL ACCELERATION LANE

300' TAPER

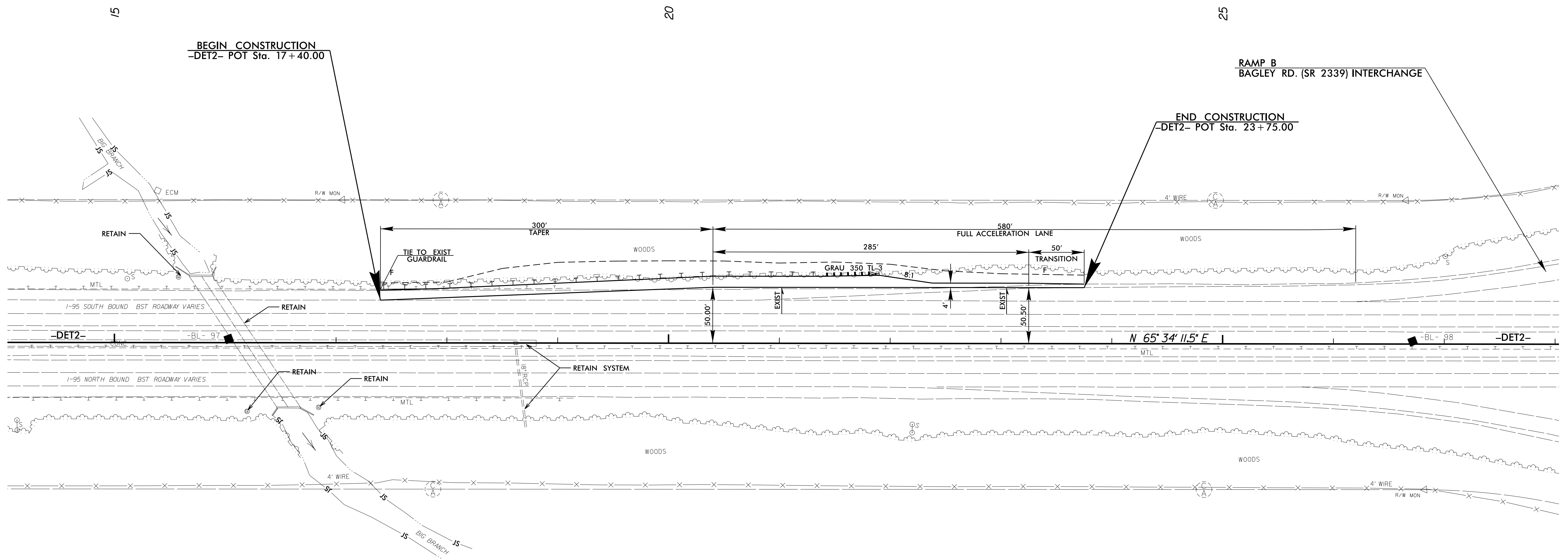
8/17/99

10_AUG-2015 16:07 \\s01\13318BB.Rdy_tup-2B-4.dgn

DETAIL OF OFF-SITE DETOUR

PROJECT REFERENCE NO. <i>1-3318BB</i>	SHEET NO. <i>2B-5</i>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER TATIANA L. WHITE SEAL 024641 9/8/2015	HYDRAULICS ENGINEER CHRISTOPHER R. LEMO SEAL 041420 9/8/2015
<i>Tatiana L. White</i>	<i>Christopher R. Lemo</i>

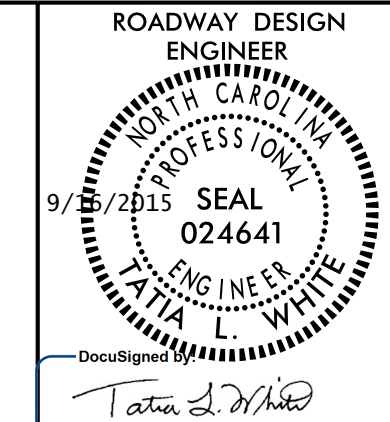
NAD 83/NSRS 2007



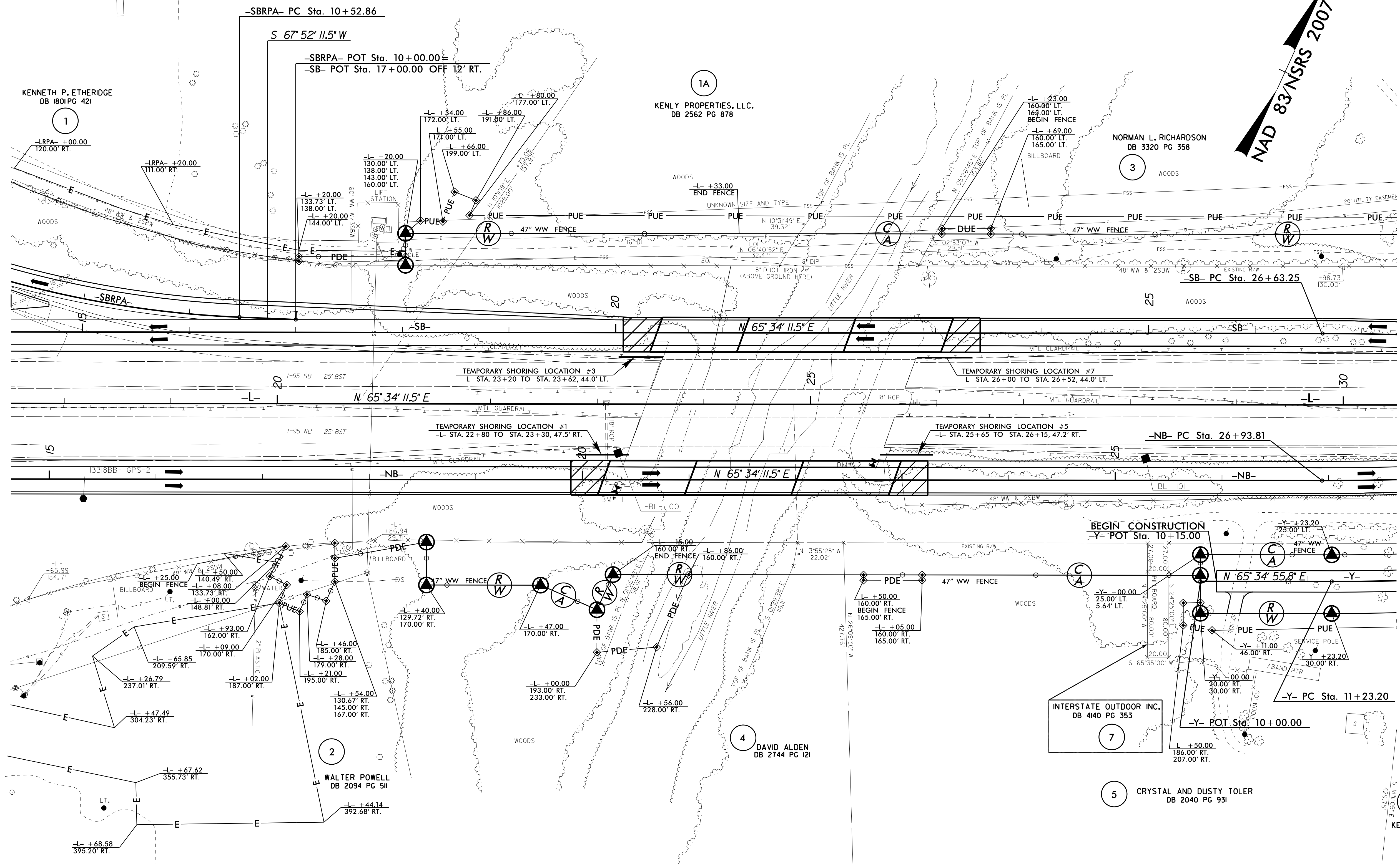
8/17/99

28-AUG-2015 08:20 1:31:18BB.Rdy_tup_2B-5.cgn
3:55:00 PM

DETAIL OF TEMPORARY SHORING LOCATIONS FOR THE EXISTING BRIDGE



-SB-	-NB-	-SBRPA-	-Y-
PI Sta 12+06.06	PI Sta 28+04.78	PI Sta 12+59.97	PI Sta 28+76.66
$\Delta = 7' 15'' 08.1''$ (RT)	$\Delta = 6' 28'' 49.0''$ (RT)	$\Delta = 7' 36'' 24.2''$ (LT)	$\Delta = 8' 21'' 57.6''$ (LT)
$D = 2' 17'' 30.6''$	$D = 2' 17'' 30.6''$	$D = 2' 17'' 30.6''$	$D = 2' 17'' 30.6''$
$L = 316.44'$	$L = 282.76'$	$L = 331.91'$	$L = 365.04'$
$T = 158.43'$	$T = 141.53'$	$T = 166.20'$	$T = 182.84'$
$R = 2,500.00'$	$R = 2,500.00'$	$R = 2,500.00'$	$R = 2,500.00'$
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS

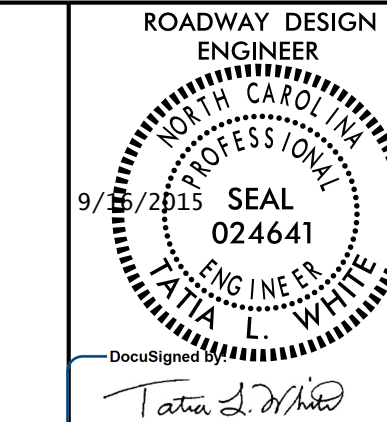


NAD 83 NSRS 2007

8/17/99
15-SEP-2015 08:57 13318BB-Pdy-tyj-2B-6.dgn
3:44:50 PM

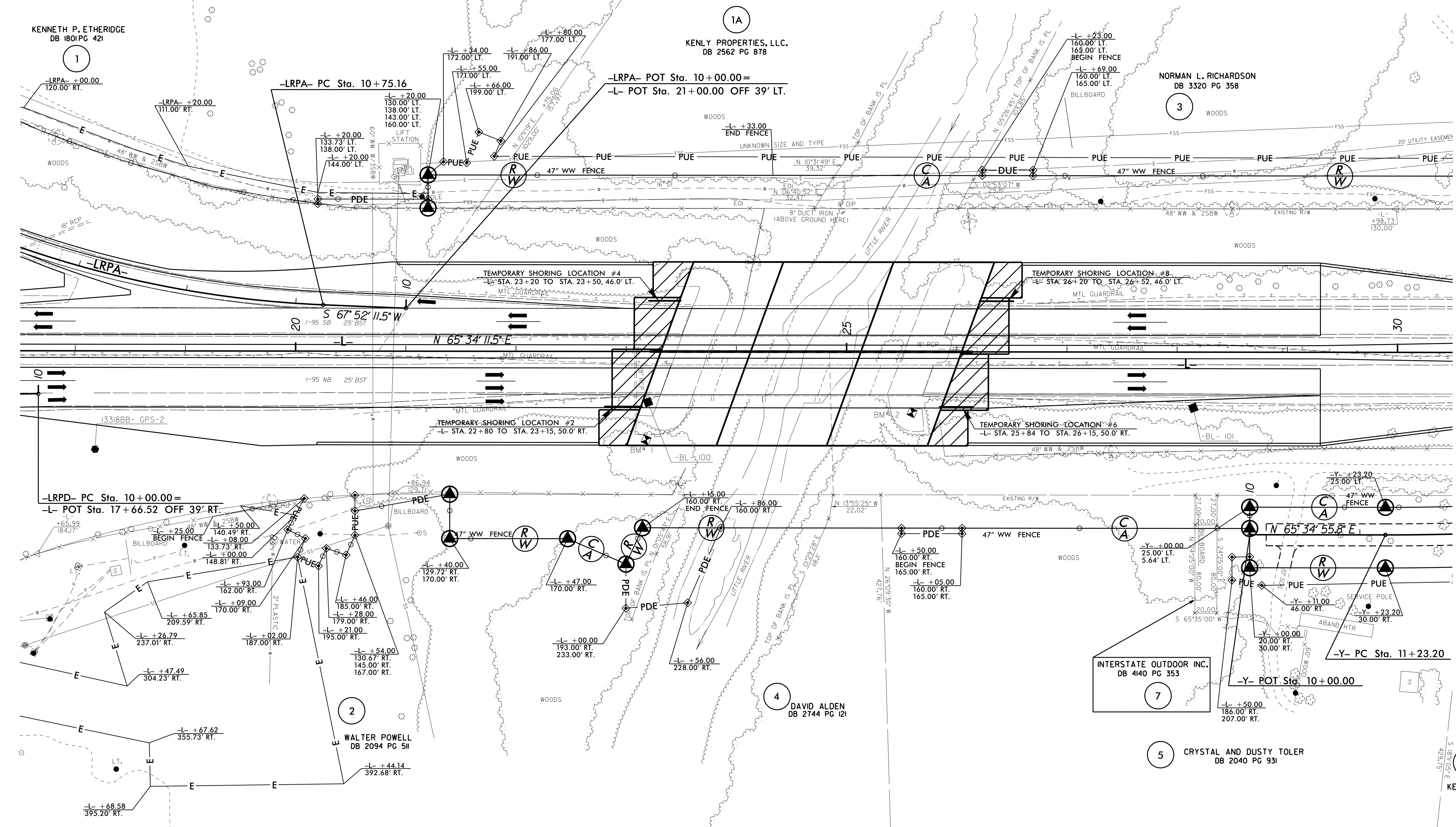
FOR PLAN VIEW SEE SHEET 2B-2

DETAIL OF TEMPORARY SHORING LOCATIONS FOR THE PROPOSED BRIDGE



NAD 83/NRS 2007

-LRPA-	-LRPD-	-Y-
PI Sta 13+37.19	PI Sta 12+31.26	PI Sta 13+32.23
$\Delta = 30^\circ 32' 01.4'' (RT)$	$\Delta = 36^\circ 33' 50.2'' (LT)$	$\Delta = 10^\circ 23' 09.4'' (LT)$
$D = 5^\circ 58' 05.9''$	$D = 8^\circ 11' 06.4''$	$D = 2^\circ 29' 28.0''$
$L = 511.60'$	$L = 446.71'$	$L = 416.92'$
$T = 262.03'$	$T = 231.26'$	$T = 209.03'$
$R = 960.00'$	$R = 700.00'$	$R = 2,300.00'$
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS

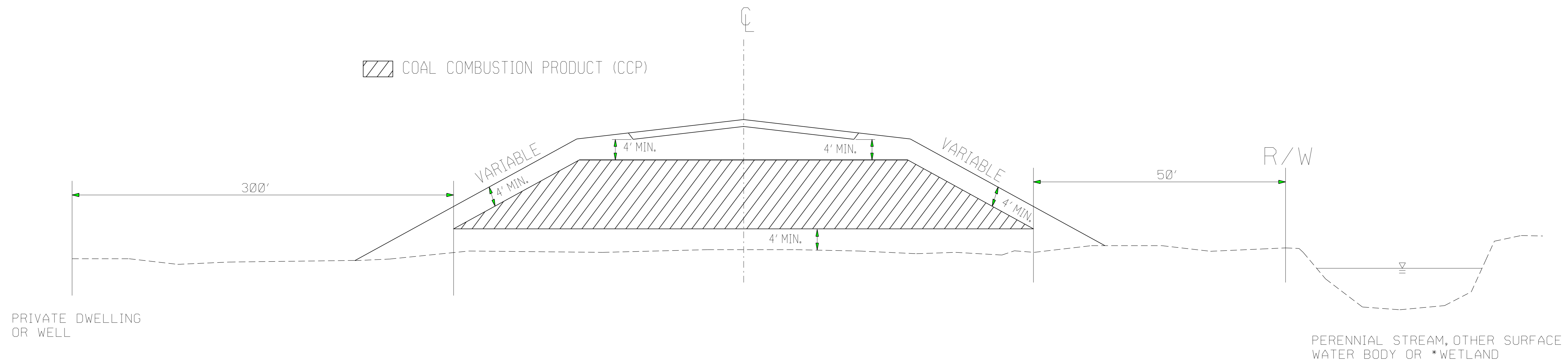


8/17/99

15 SEP 2015 08:58 I:\3318BB.Rdy_tup_2B-7.dgn
33350517211101

FOR PLAN VIEW SEE SHEET 5

COAL COMBUSTION PRODUCT PLACEMENT



PRIVATE DWELLING
OR WELL

PERENNIAL STREAM, OTHER SURFACE
WATER BODY OR *WETLAND

*(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

9/2/2015



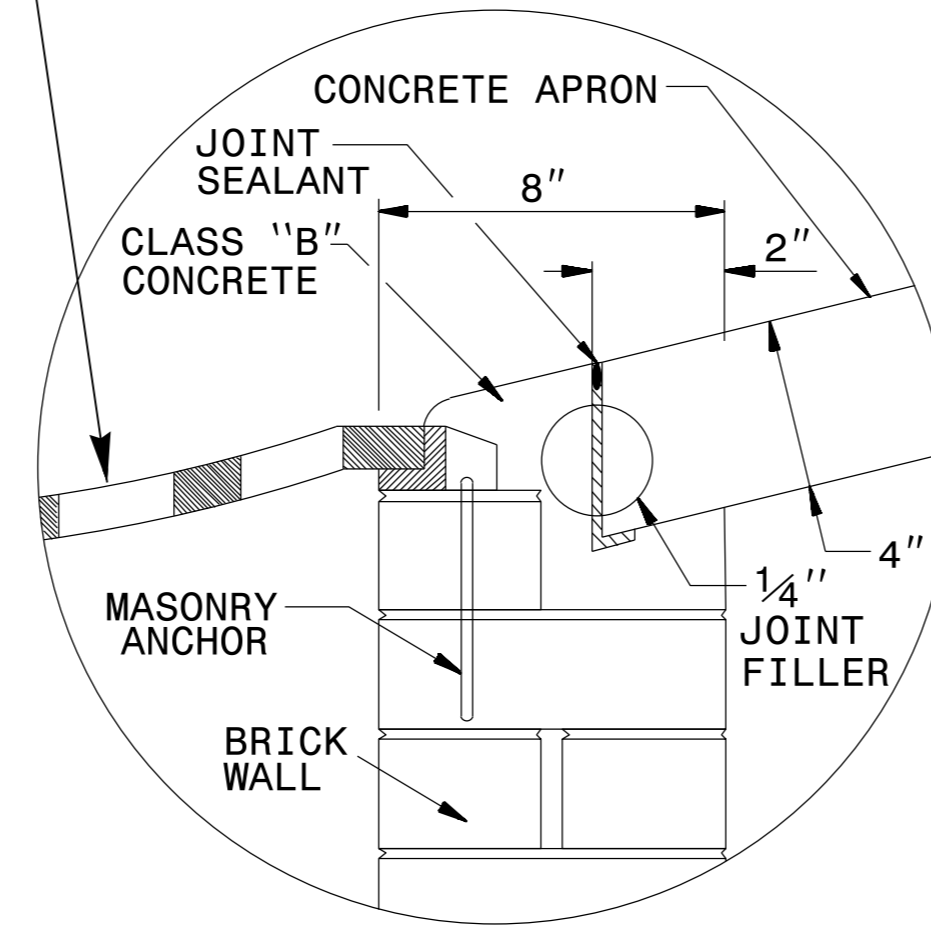
**CONTRACT STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

**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

PLACEMENT OF CCP SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS

SEE PLANS FOR FRAME & GRATE TYPE



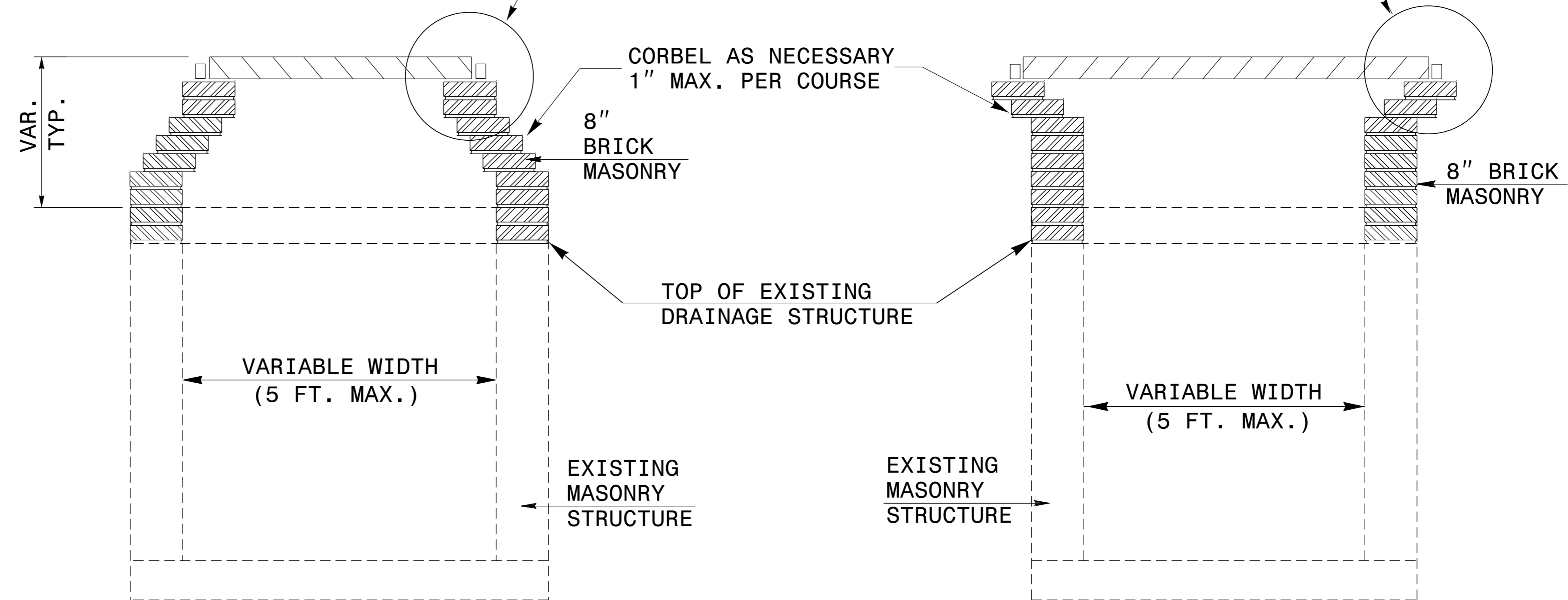
GRATE PLACEMENT DETAIL

FOR GRATED DROP INLETS

GENERAL NOTES:

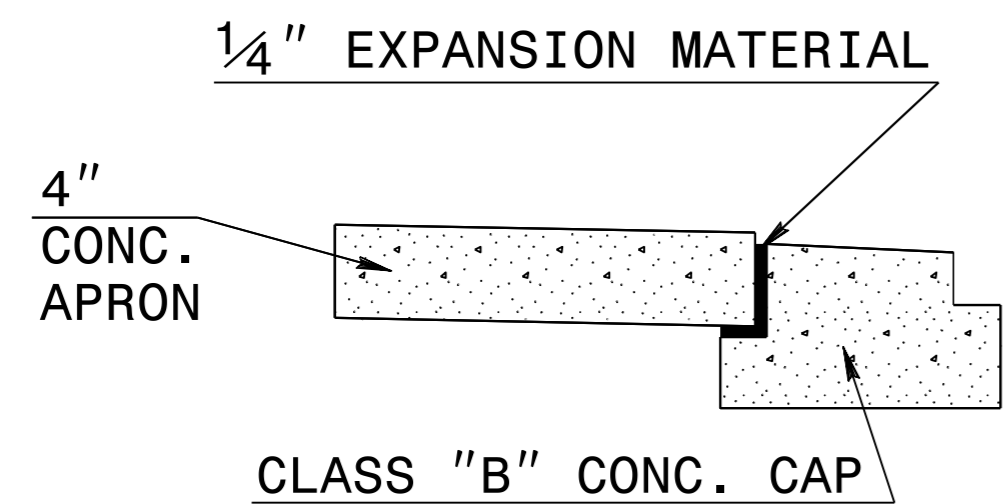
- CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.
- USE CLASS AA CONCRETE.
- THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.
- JUMBO CONCRETE BRICK WILL BE PERMITTED. 4" CONCRETE BRICK OR 8" SOLID CONCRETE BLOCK ARE REQUIRED FOR DRAINAGE STRUCTURE.
- INCLUDE CONCRETE APRON IN UNIT PRICE BID PER EACH, CONVERT EXISTING STRUCTURE TO 2GI AS NEEDED.
- SPECIAL DESIGN IS REQUIRED FOR USE UNDER PAVEMENT.
- CONFIRM DIMENSIONS ON EACH INDIVIDUAL FRAME & GRATE PROPOSAL.
- SEE STD. DRAWING 840.25 FOR MASONRY ANCHORAGE.
- SEE STD. DRAWING 840.17 FOR CONCRETE APRON.

SEE PLANS FOR 2GI FRAME & GRATE TYPE
SEE DETAILS ABOVE FOR METHOD OF GRATE PLACEMENT.

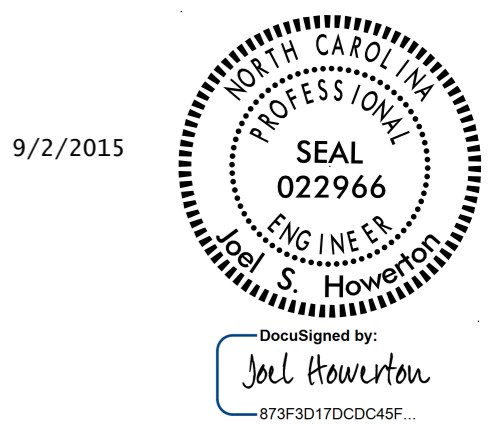


TYPICAL SECTION

TYPICAL SECTION



EXPANSION JOINT DETAIL



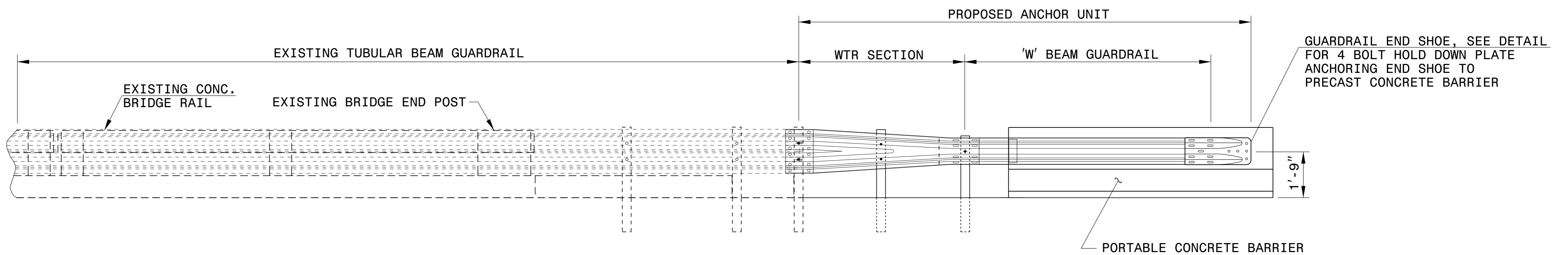
9/2/2015

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

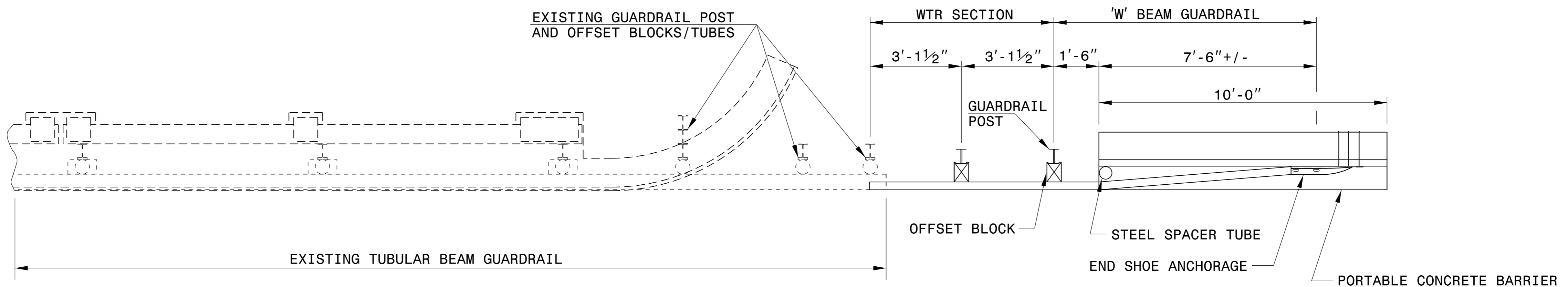
**DETAIL TO CONVERT
EXISTING TBJB
TO TB2-GI**

ORIGINAL BY: T.S.S. DATE: NOV. 1997
 MODIFIED BY: T.S.S. DATE: FEB. 2000
 CHECKED BY: DATE:
 FILE SPEC.: sjhowerton/Convert TBJB to TB2GI

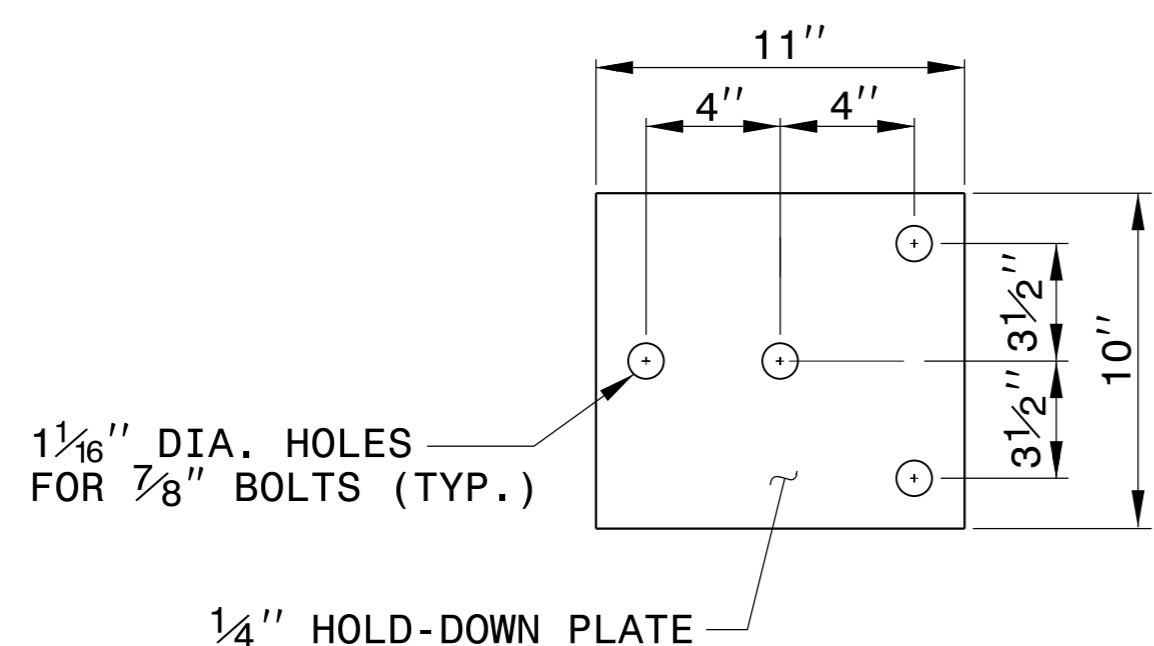
TIME \$\$\$\$\$\$
 DATE \$\$\$\$\$\$
 DRAWN \$\$\$\$\$\$
 CHECKED \$\$\$\$\$\$
 DESIGNED \$\$\$\$\$\$
 PROJECT \$\$\$\$\$\$
 SHEET \$\$\$\$\$\$
 USER \$\$\$\$\$\$
 NAME \$\$\$\$\$\$



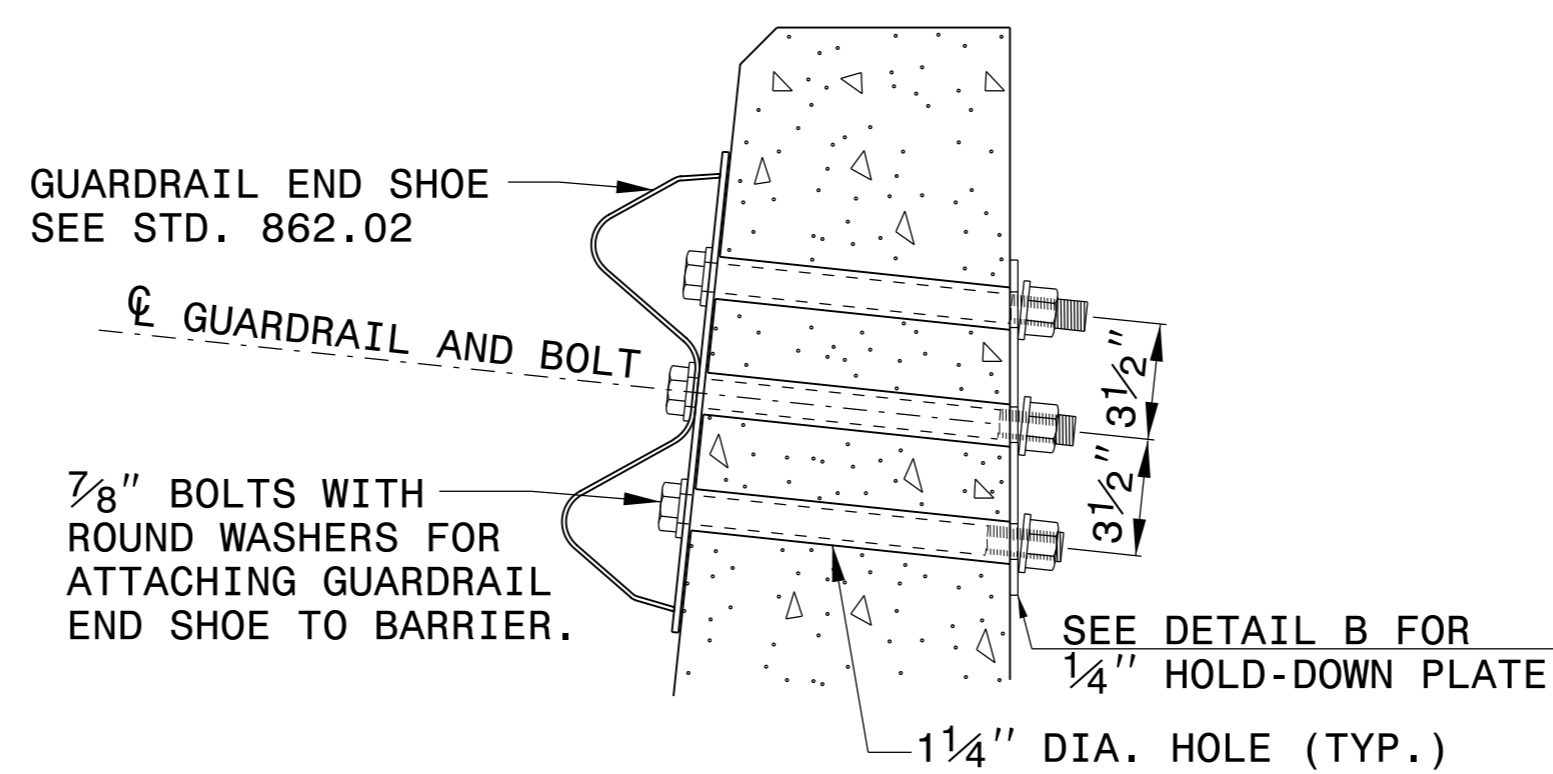
ELEVATION VIEW



PLAN VIEW



4 BOLT HOLD DOWN PLATE



PART SECTION OF BARRIER
THRU END SHOE SECTION AND 4 BOLT HOLD DOWN PLATE

NOTES FOR 4 BOLT HOLD DOWN PLATE

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

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

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

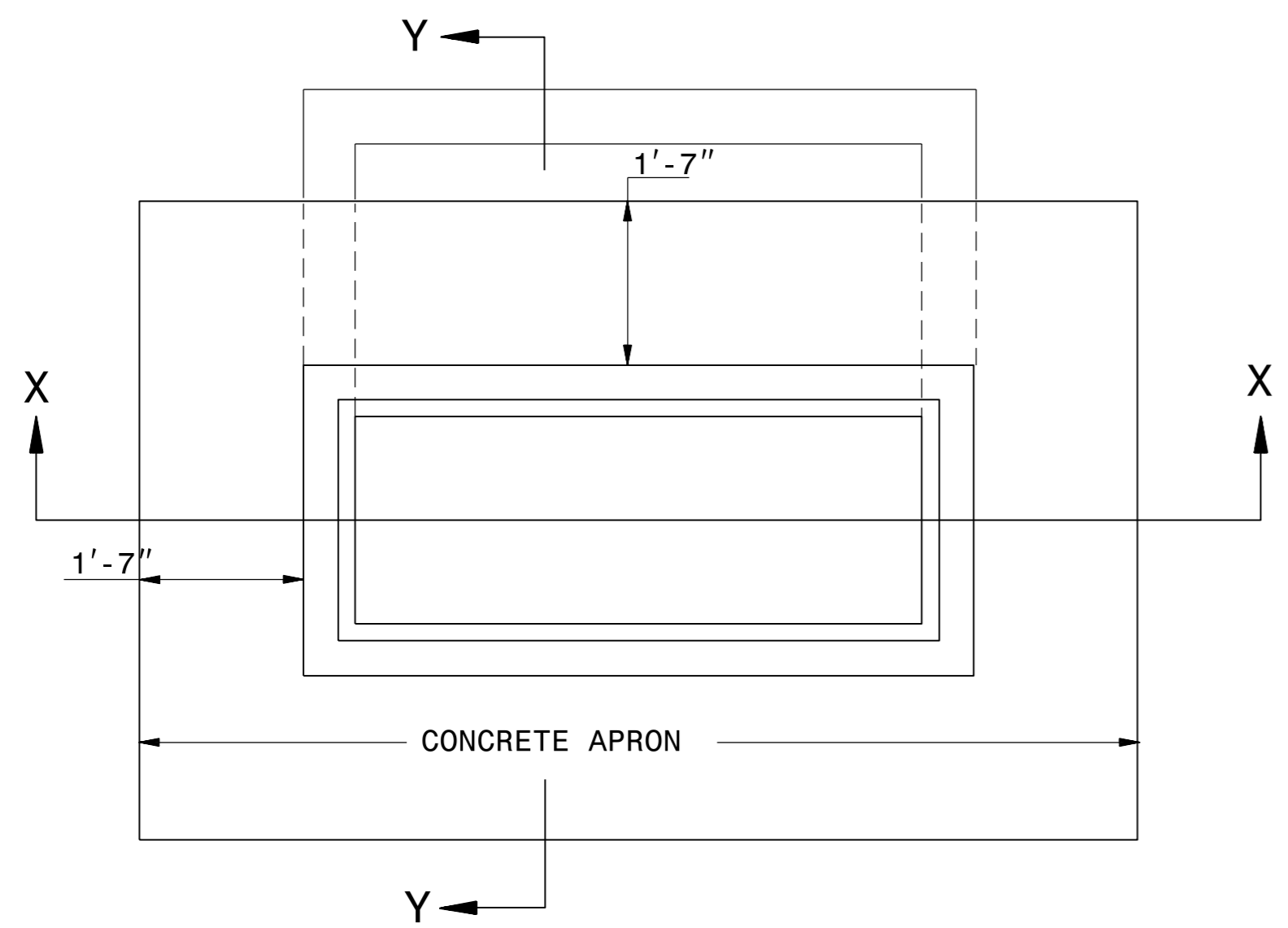
9/2/2015



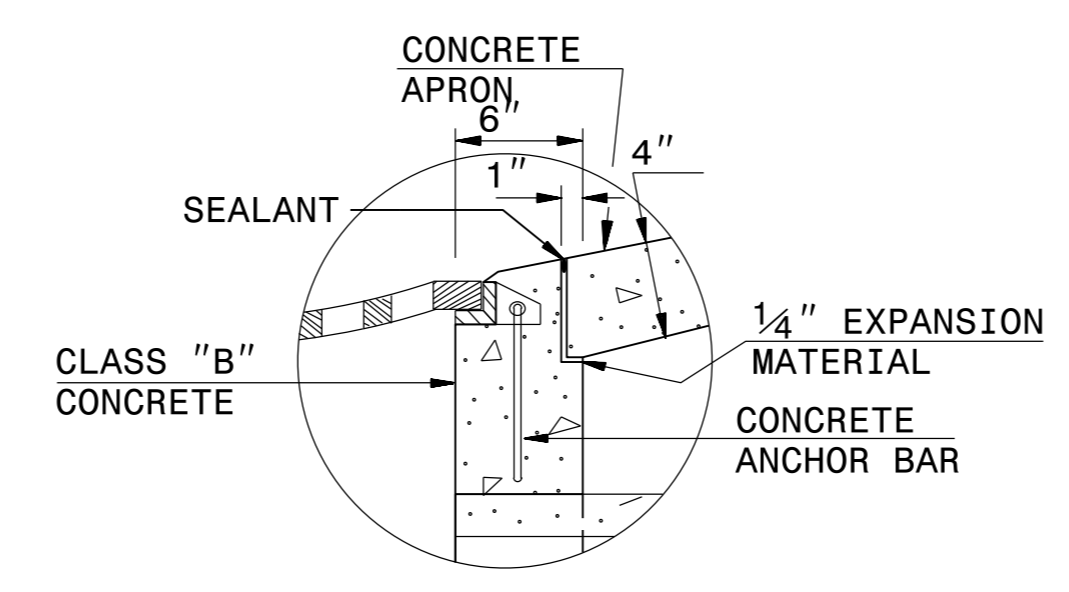
CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
TEMPORARY ANCHOR UNIT CONECTING TUBULAR BEAM GUARDRAIL TO PORTABLE CONCRETE BARRIER	
ORIGINAL BY: E.E. WARD	DATE: 9-9-04
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: \usr\details\stand\862stds\anc.dgn	

5/14/99

C:\P\2008\PROJECTS\I-3318\STANDARD\862STD\862STD.ANC.DGN



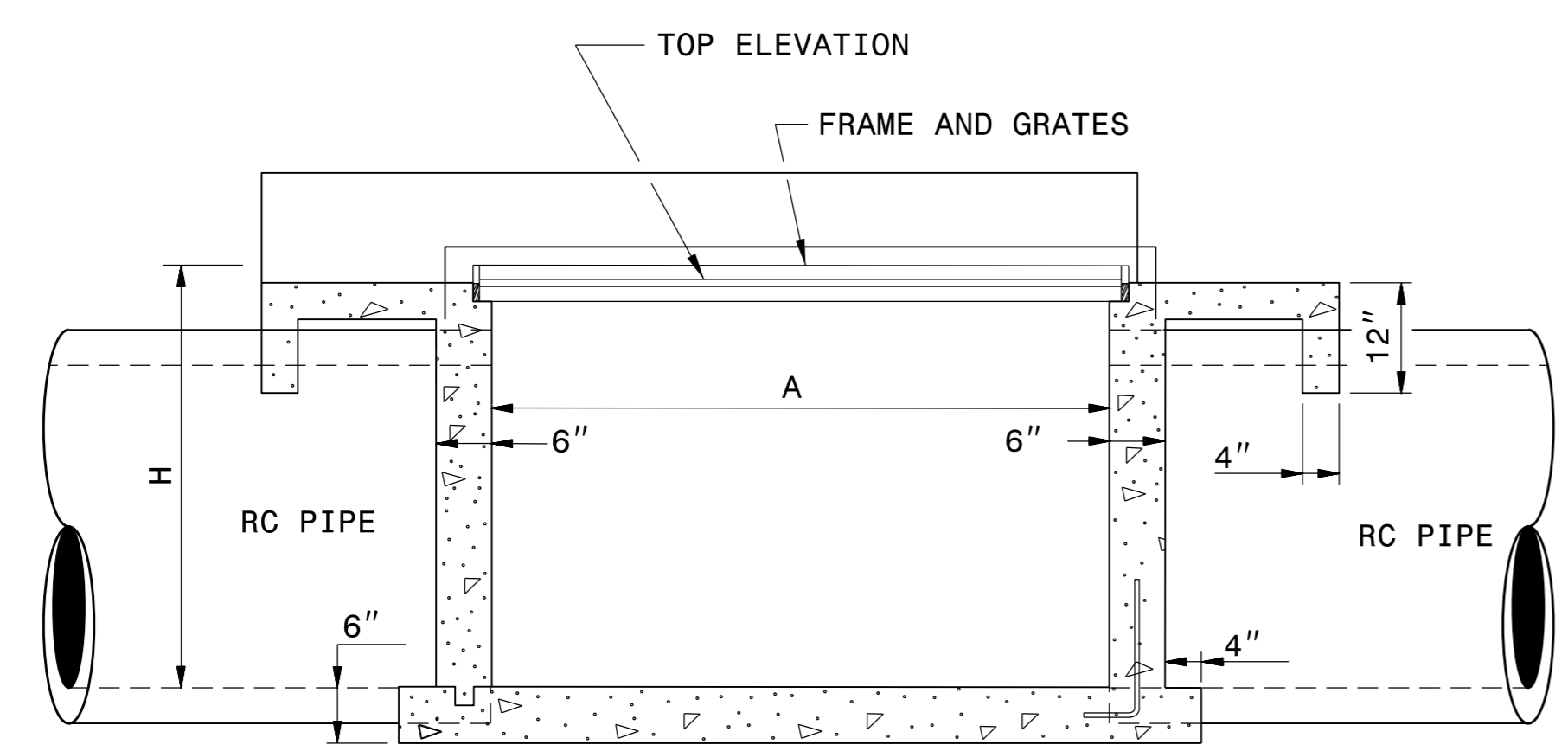
PLAN



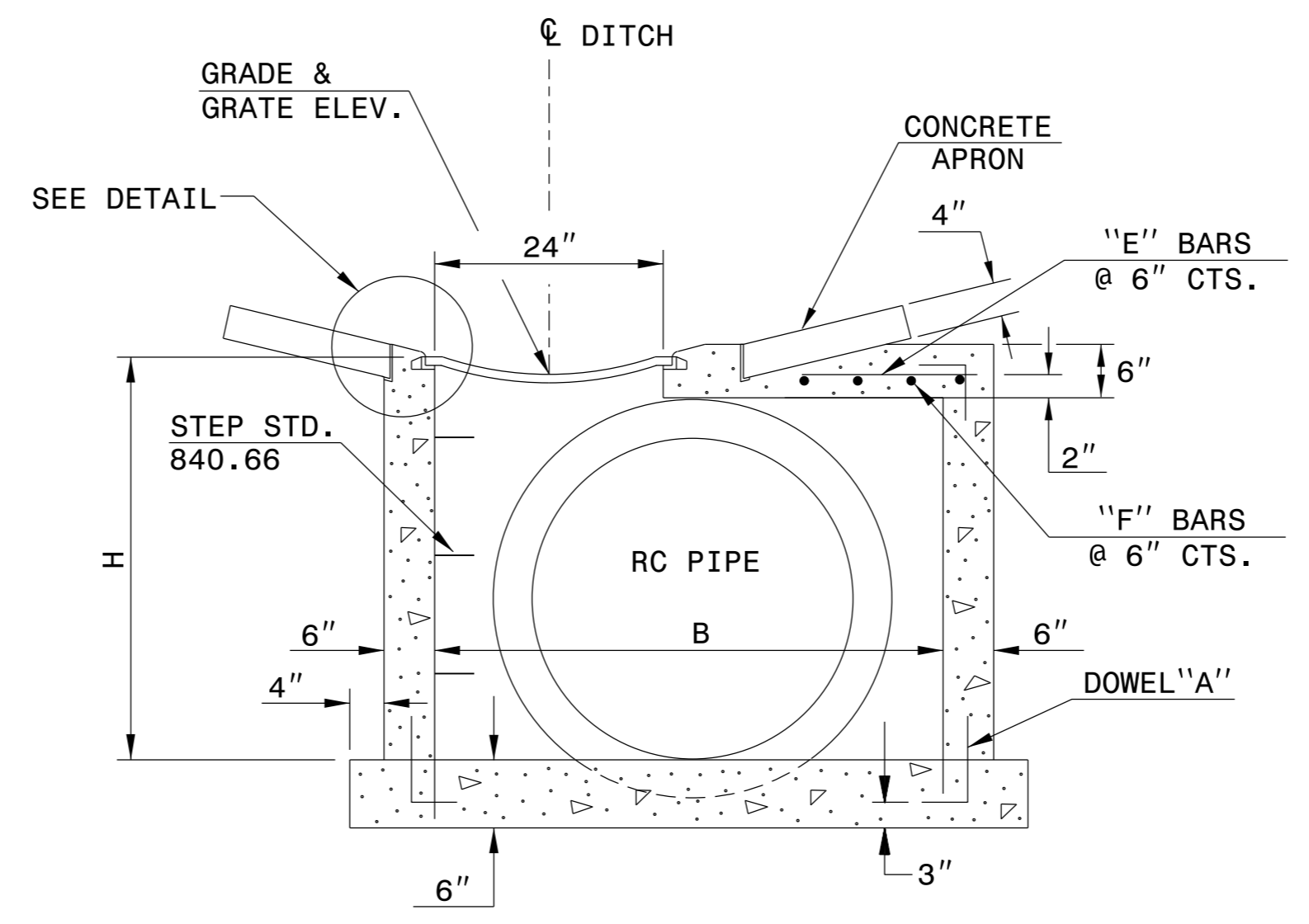
DETAIL
(APRON SUPPORT NOTCH)

GENERAL NOTES:

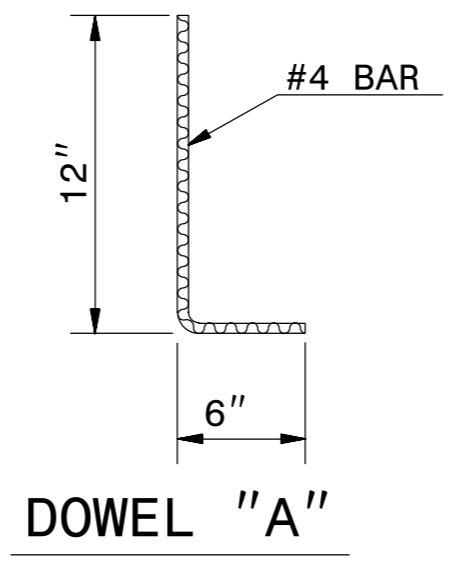
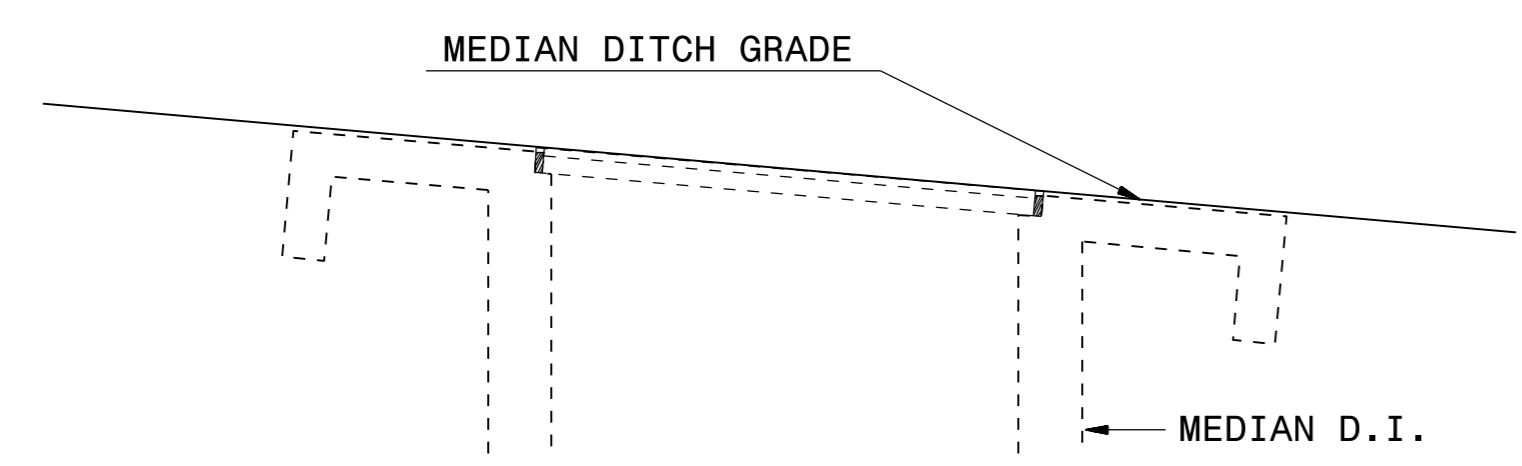
USE CLASS "B" CONCRETE THROUGHOUT.
 PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
 OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
 USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
 IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
 WHEN PAYMENT FOR THE DROP INLET IS MADE ON A PER EACH BASIS, THE CONCRETE APRON WILL BE CONSIDERED PART OF THE DROP INLET.
 CONSTRUCT WITH PIPE CROWNS MATCHING.
 USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24 (SHOWN), 840.20, 840.29, AND 840.33.
 SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.
 CHAMFER ALL EXPOSED CORNERS 1".
 THE DIMENSIONS OF THIS STRUCTURE MAY BE ADJUSTED UP AS DIRECTED BY THE ENGINEER



SECTION X-X



SECTION Y-Y



MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE DROP INLET									
PIPE D	SPAN A	WIDTH B	HEIGHT H	CUBIC YARDS OF CONCRETE IN BOX			DEDUCTIONS FOR ONE PIPE		
				BOTTOM SLAB	H PER FOOT HT.	H MIN. TOTAL	TOTAL	C.S.	R.C.
18"	5'-8 3/4"	2'-6"	2'-4"	0.571	0.526	0.848	1.419	0.033	0.049
24"	5'-8 3/4"	3'-0"	2'-10"	0.639	0.526	1.127	1.766	0.059	0.085
30"	5'-8 3/4"	3'-4"	3'-4"	0.685	0.526	1.384	2.069	0.092	0.127
36"	5'-8 3/4"	3'-8"	3'-10"	0.731	0.526	1.653	2.384	0.132	0.176

9/2/2015



Designed by:
Joel Howerton
873F3D17DCDC45F

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

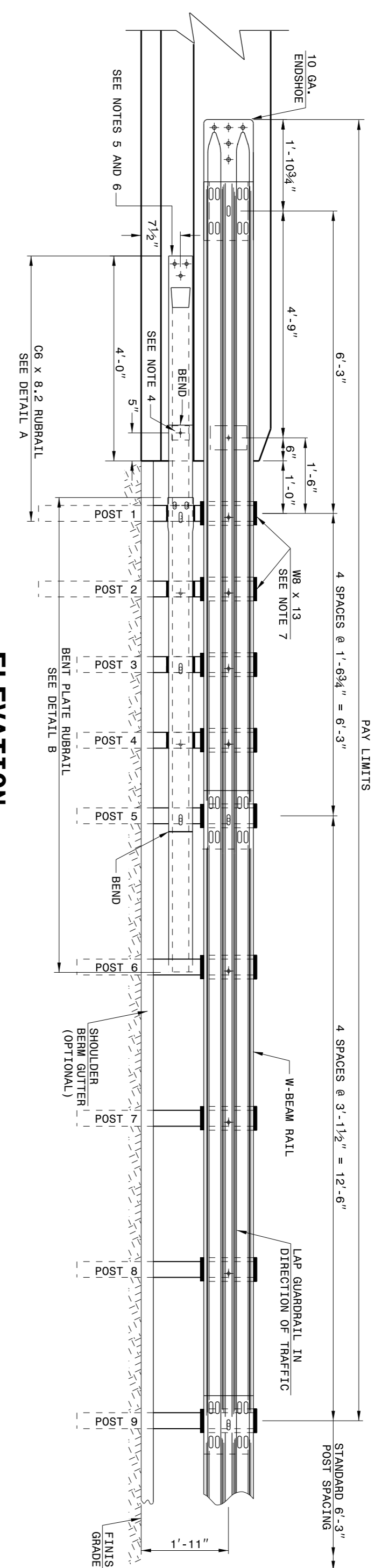
**CONTRACT STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

**SPECIAL CONCRETE
3-GI**

ORIGINAL BY: T.Spell DATE: 7-1-04
 MODIFIED BY: K.Kempf DATE: 8-27-15
 CHECKED BY: DATE:
 FILE SPEC.: kkempf/english/840d19_mindepth_3gi.dgn

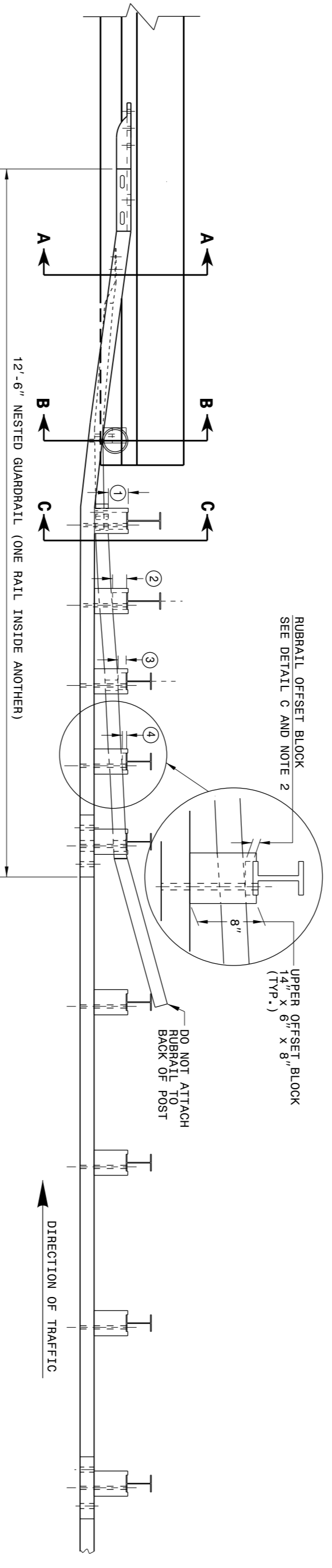
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ELEVATION

- GENERAL NOTES:
- POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBRAIL.
 - BLOCKOUTS AND RUBRAIL BLOCKS ON "Y" POSTS AND 4 REQUIRE RUBRAIL BLOCKOUTS AND RUBRAIL BLOCKS WITH A 5/8" x 4 1/2" BUTTONEAD BOLT. RUBRAIL IS FLARED TO BACK OF POST 6 AND NOT SECURED.
 - STEEL SPACER TUBE IS A SCHEDULE 40 GALVANIZED PIPE 6" INSIDE DIAMETER x 9' LONG. ATTACH TUBE TO GUARDRAIL ONLY WITH 5/8" x 1 1/4" LONG BUTTONEAD BOLT AND RECTANGULAR PLATE WASHER.
 - SEE DETAIL D FOR SLOPED RUBRAIL BLOCKOUT. BLOCKOUT IS ATTACHED TO RAIL ELEMENT ONLY. USE 3/8" x 3" LAG BOLT WITH FLAT WASHER.
 - TYPE OF F-RAIL SHOWN IS 8.2 RUBRAIL END TO BE CONSISTENT WITH THE SLOPE OF THE F-SHAPE AND ATTACH FLUSH WITH THE SLOPED ANCHORAGE.
 - ANCHORAGE:
 - AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR RUBRAIL USING THREE 5/8" x 6" CHEMICALLY ANCHORED BOLTS WITH WASHERS. MAXIMUM PROJECTION FOR BOLTS IS 1/2".
 - AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR THE W-BEAM END SHOE USING A 4 BOLT HOLD DOWN PLATE (SEE STD. DWG. 862.04).
 - THIS RAIL THE BEAM SHOE BEHIND THE NESTED GUARDRAIL BARRIER (SEE STD. DWG. 857.01).
 - (C) AT NEW BRIDGE RAIL, ANCHOR THE W-BEAM END SHOE AND RUBRAIL AS DETAILED ON THE STRUCTURE PLANS.
 - POSTS 1 AND 2 ARE W8 x 13, 7'-6" LONG. ALL OTHER POSTS IN THE ANCHOR UNIT ARE W8 x 8.5.



PLAN

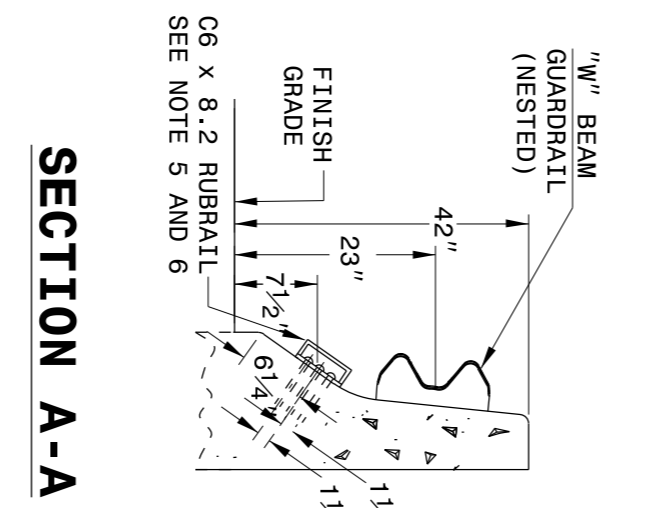
ENGLISH DETAIL DRAWING FOR
GUARDRAIL ANCHOR UNIT
FOR F-SHAPE BARRIER

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

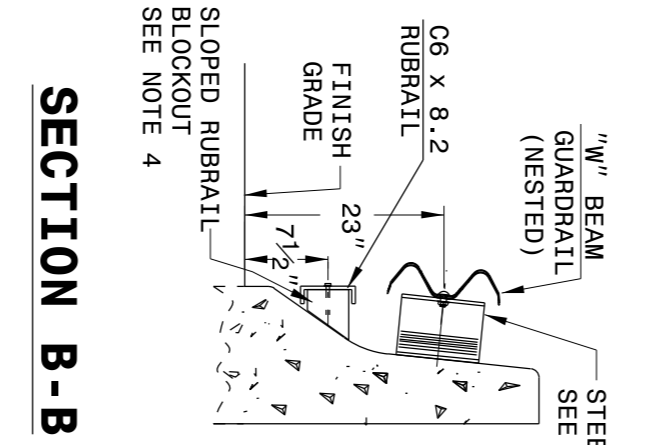
SHEET 4 OF 7
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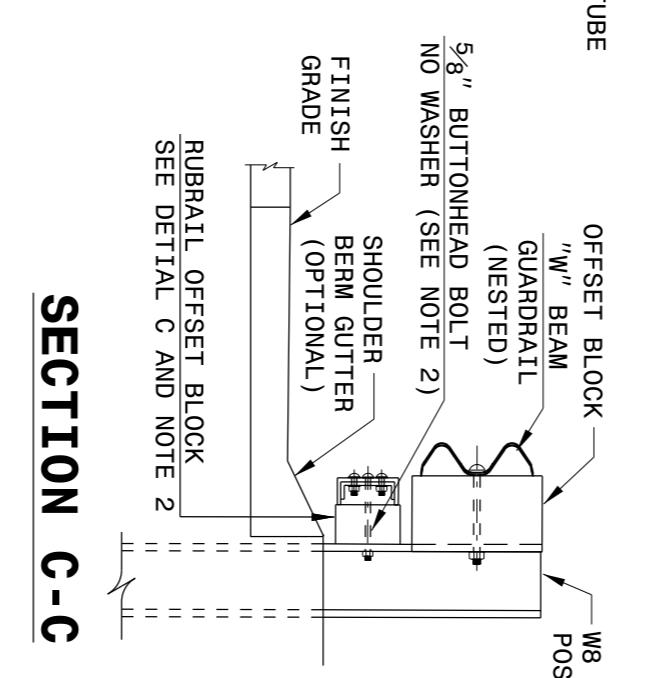
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SECTION A-A



SECTION B-B



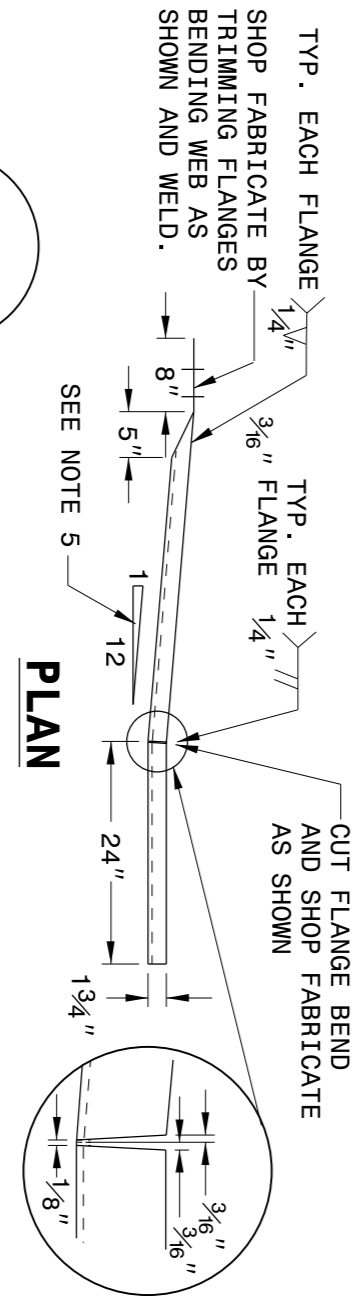
SECTION C-C

RUBRAIL BLOCKS 7" HIGH x 4" WIDE

POST	THICKNESS	BOLT LENGTH
1	4 1/4"	9"
2	3 1/4"	5" *
3	2"	6"
4	1"	3" *

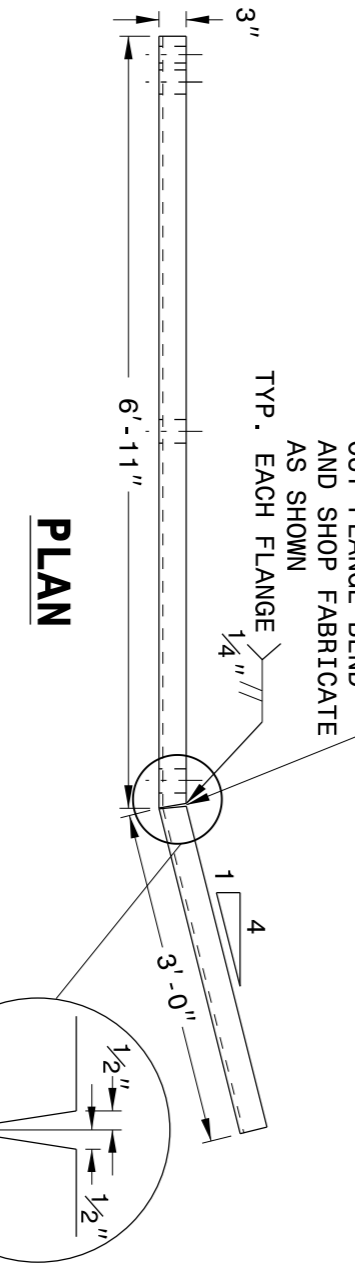
* BOLTS FOR POSTS 4 AND 5 ARE USED TO ATTACH BLOCK TO POST. RUBRAIL NOT ATTACHED TO BLOCK.

DETAIL C
RUBRAIL BLOCKOUT



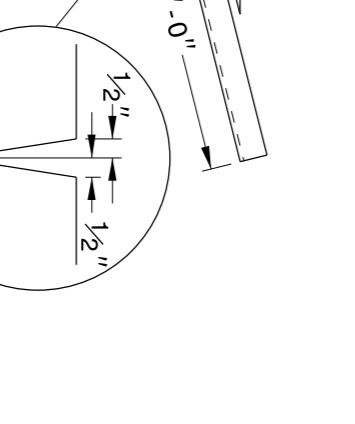
PLAN

DETAIL D
SLOPED RUBRAIL BLOCKOUT



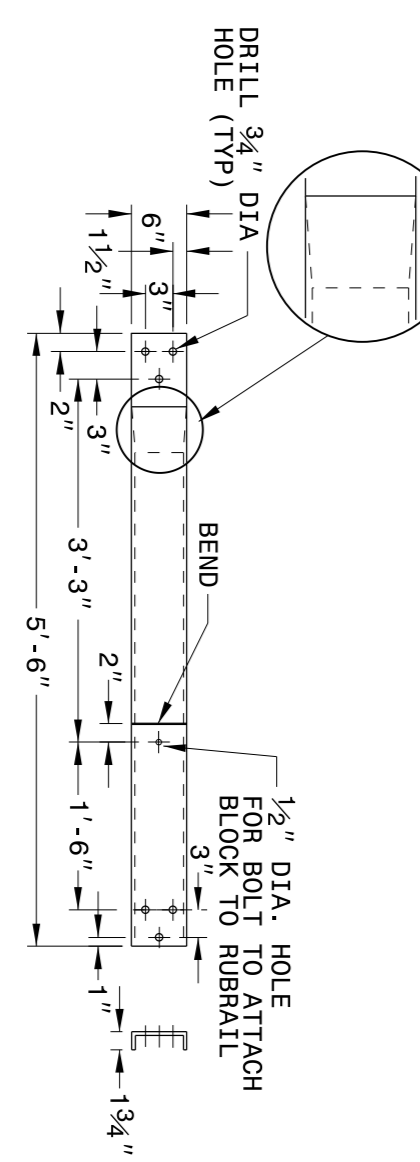
PLAN

DETAIL F
W8 X 13 X 7'-6"



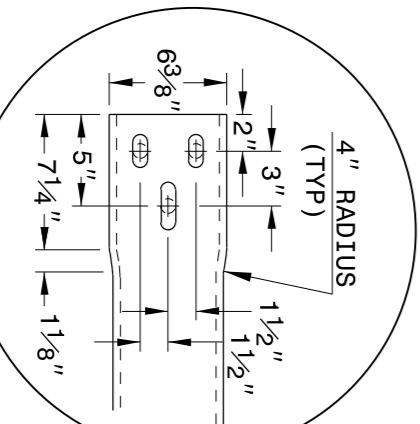
PLAN

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNIT
FOR F-SHAPE BARRIER



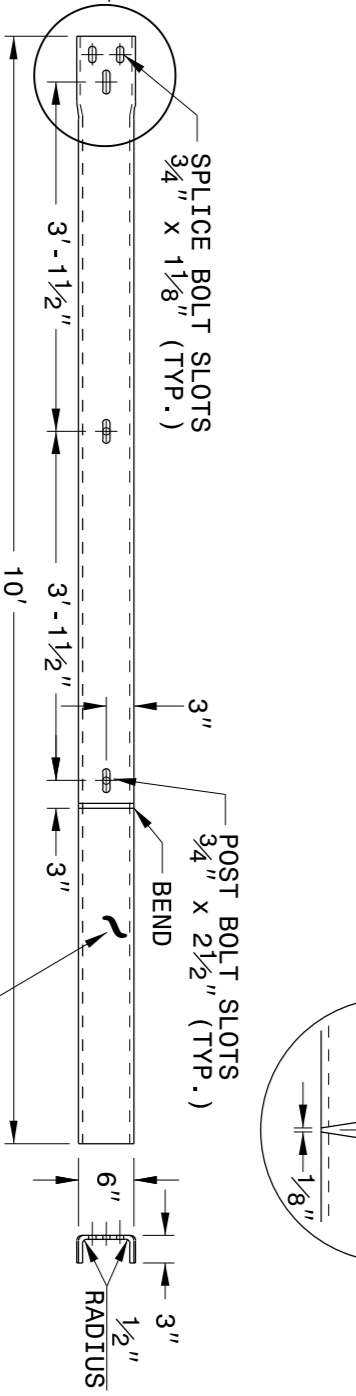
ELEVATION

DETAIL A
C6 X 8.2 RUBRAIL



ELEVATION

DETAIL B
BENT PLATE RUBRAIL



ELEVATION

DETAIL C
W8 X 13 X 7'-6"

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

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RALEIGH, N.C.

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DocuSigned by:
Joel Howerton
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UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 06-22-12
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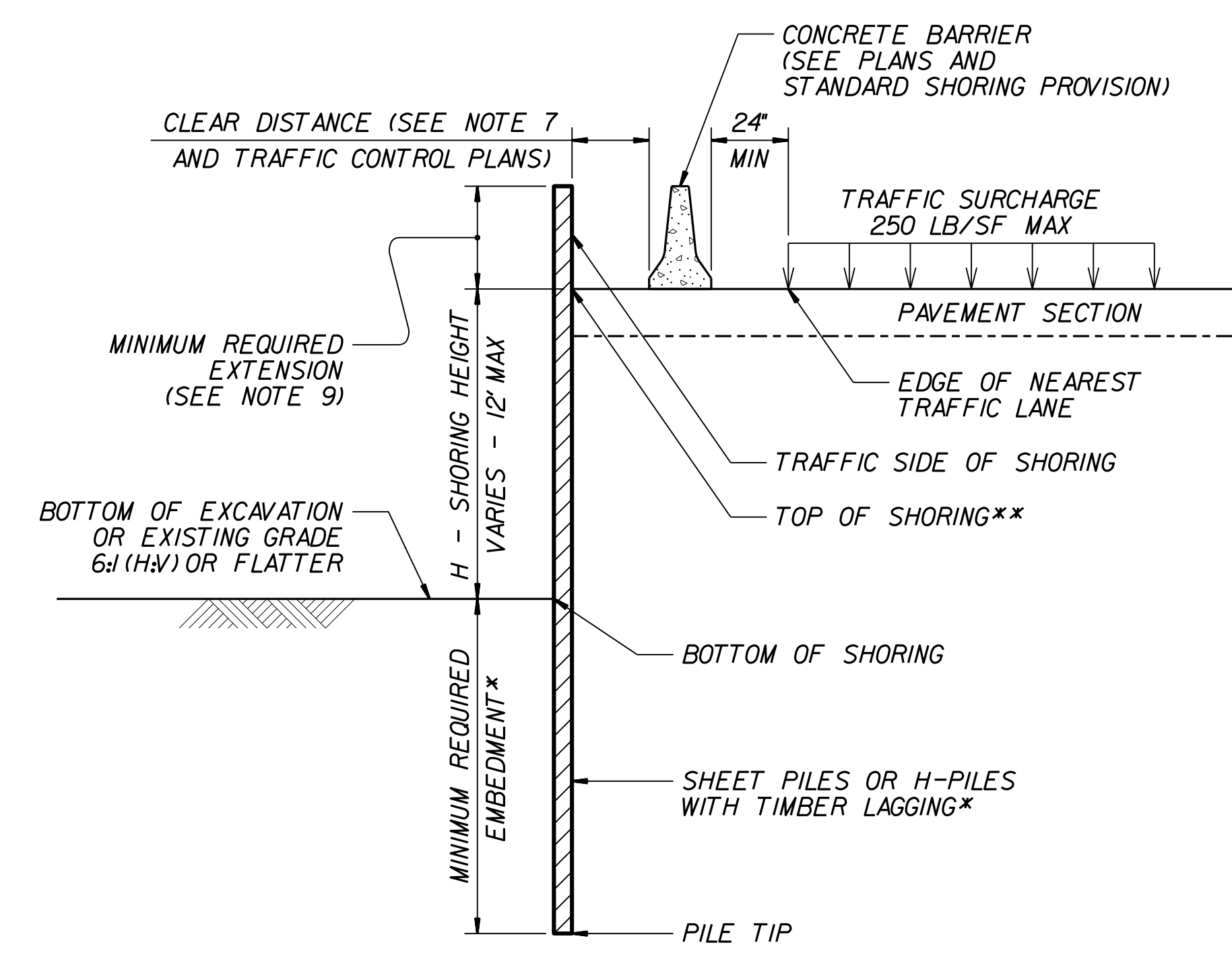
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN ³ /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN ³ /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
			HP 10x42	HP 12x53	HP 14x73				HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5	
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5	

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

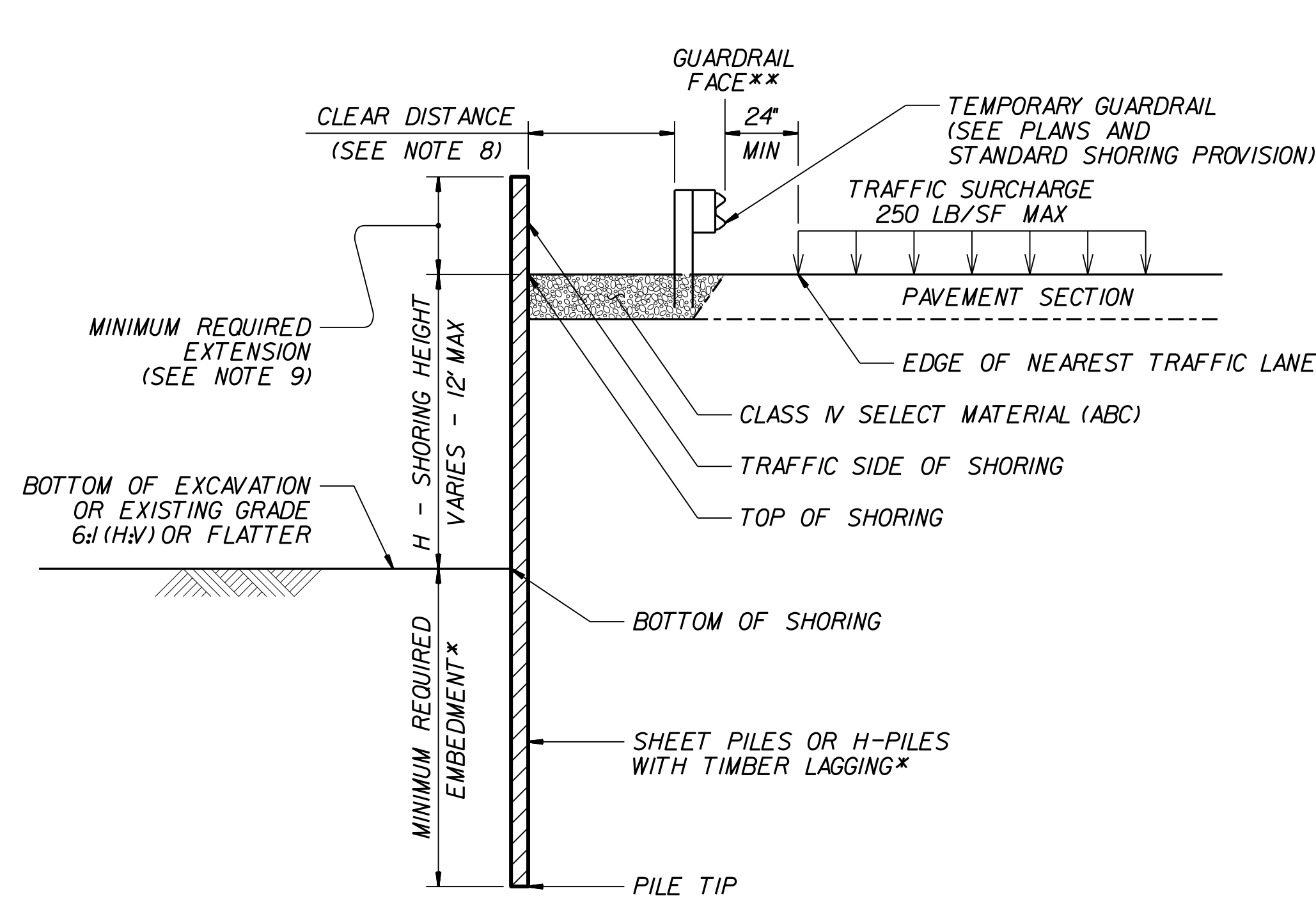
*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

NOTES:

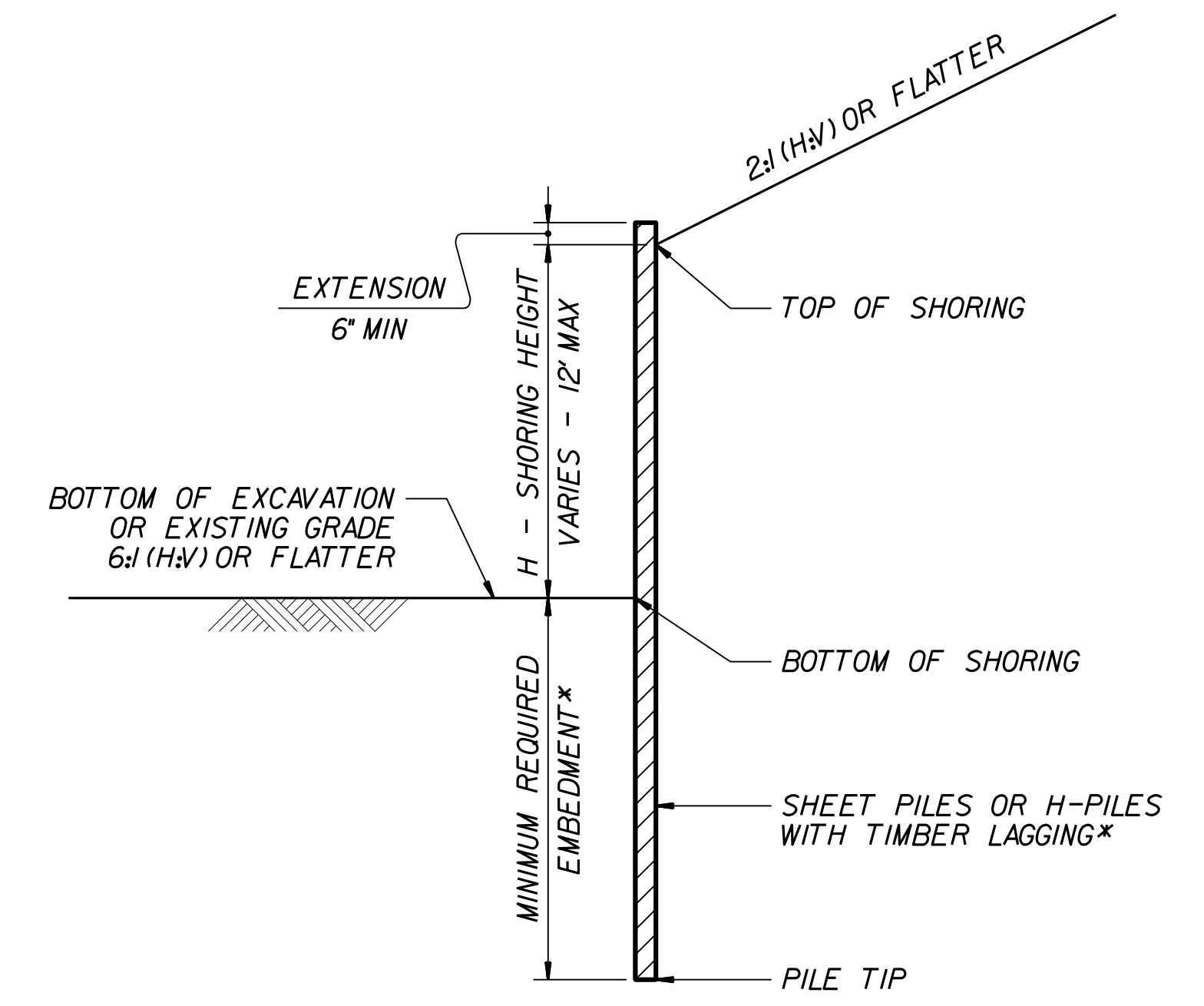
- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ LB/CF
FRICTION ANGLE, $\phi = 30$ DEGREES
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
- 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.

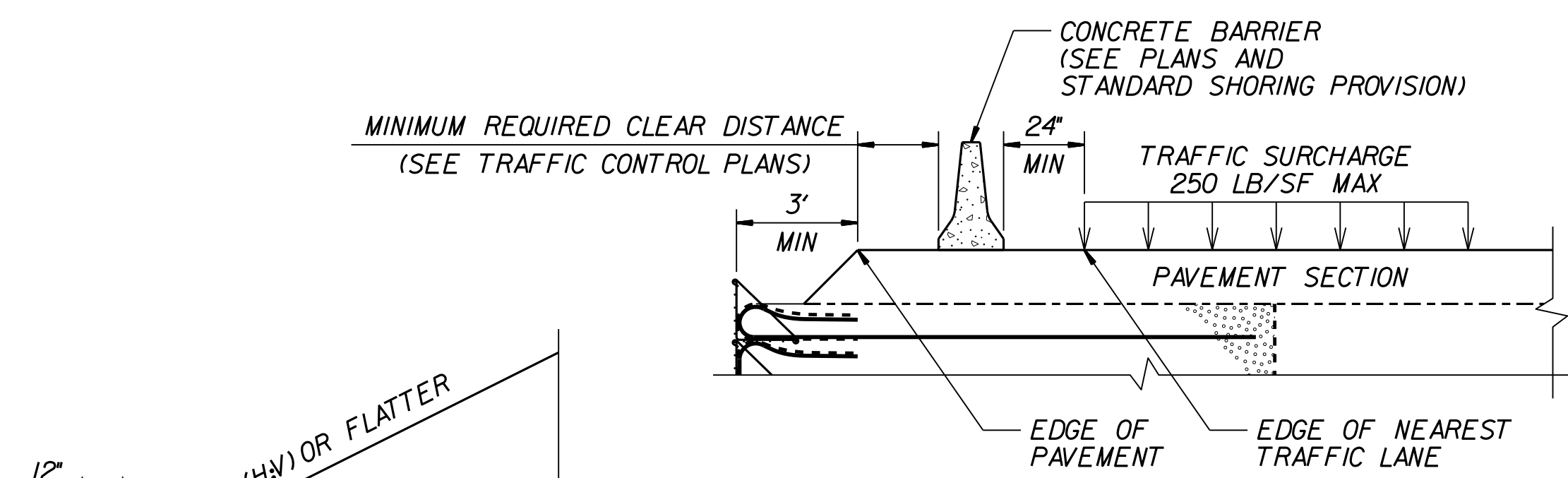


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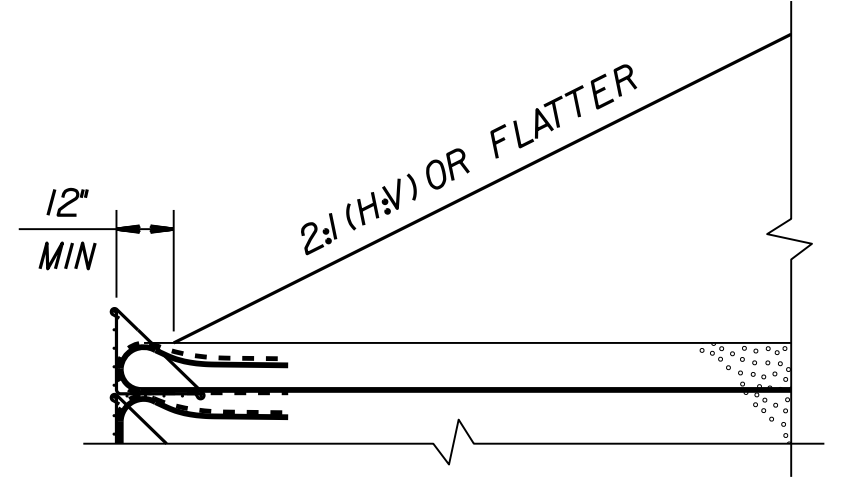
**GEOTECHNICAL
ENGINEERING UNIT**

STANDARD DETAIL NO. 1801.01

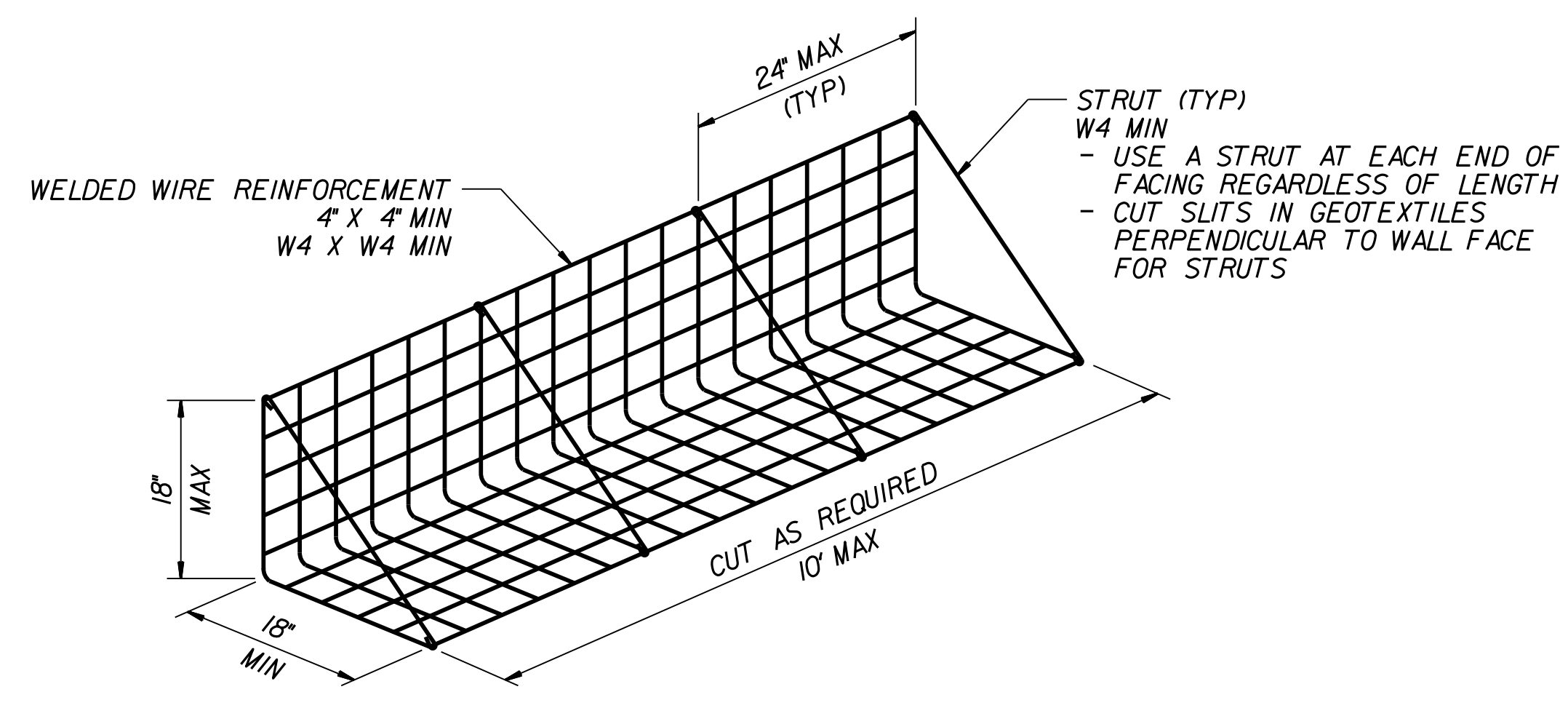
STANDARD
TEMPORARY SHORING



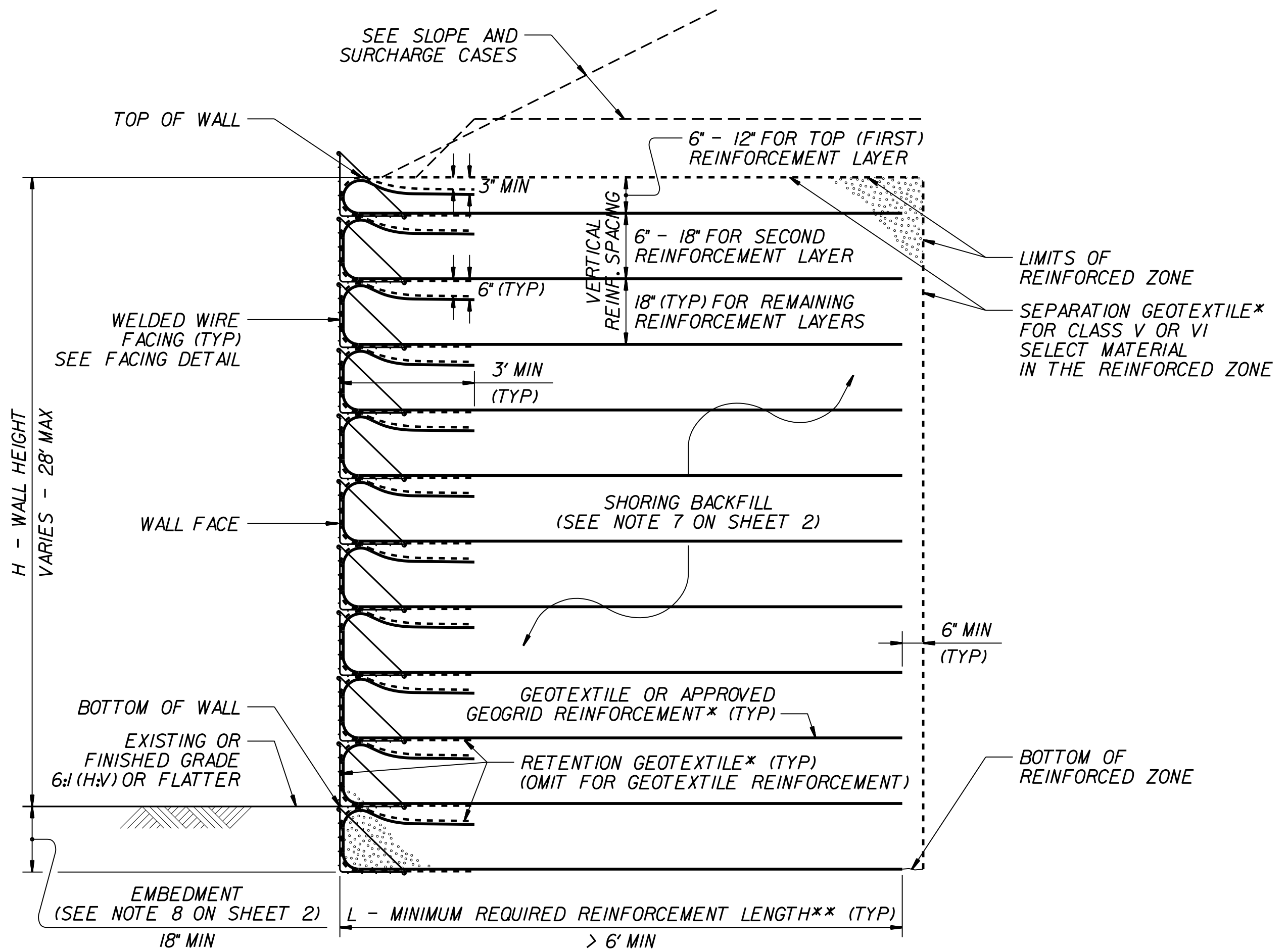
SURCHARGE CASE



SLOPE CASE

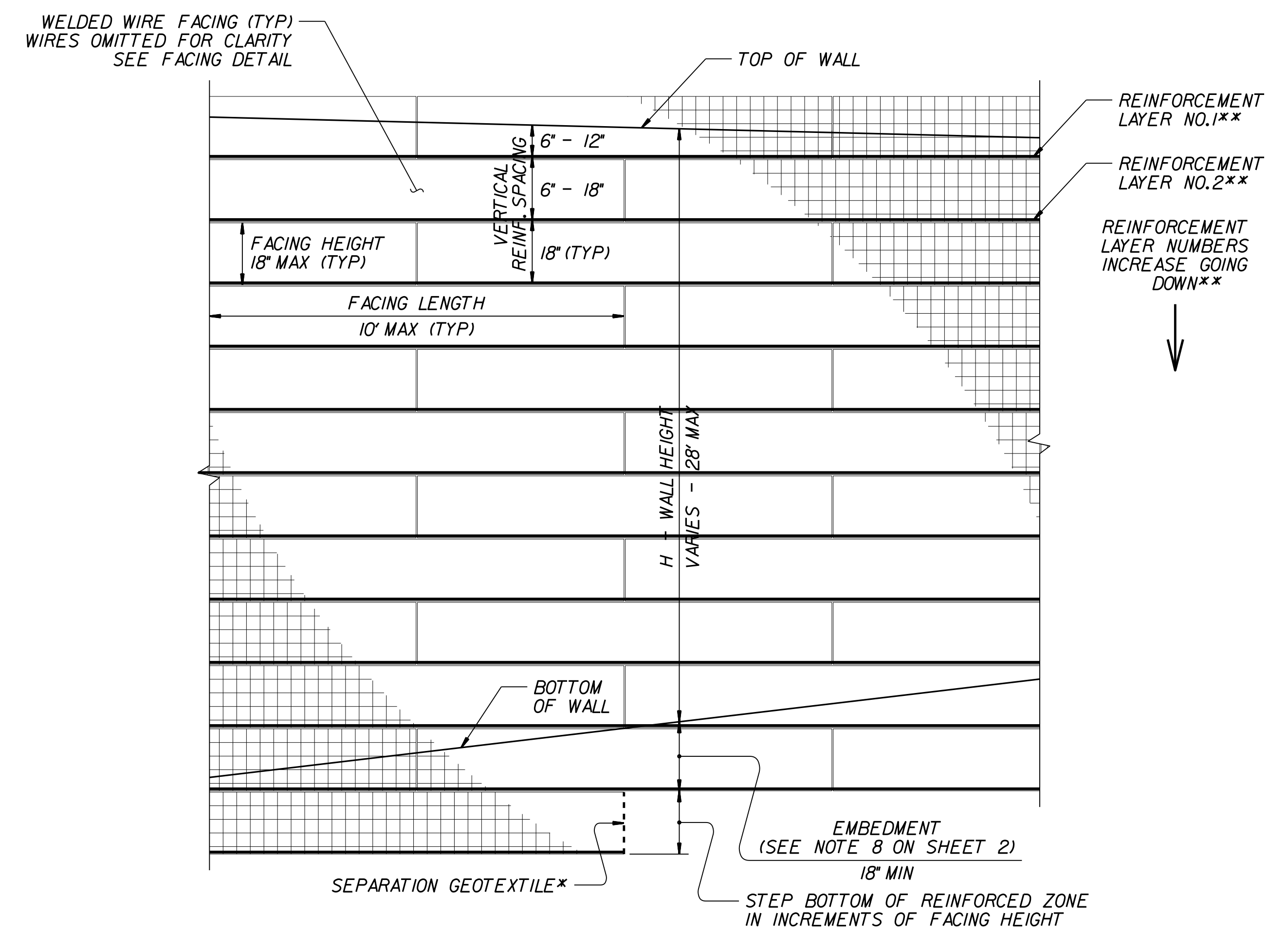


FACING DETAIL



STANDARD TEMPORARY WALL

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



STANDARD TEMPORARY WALL - PARTIAL ELEVATION

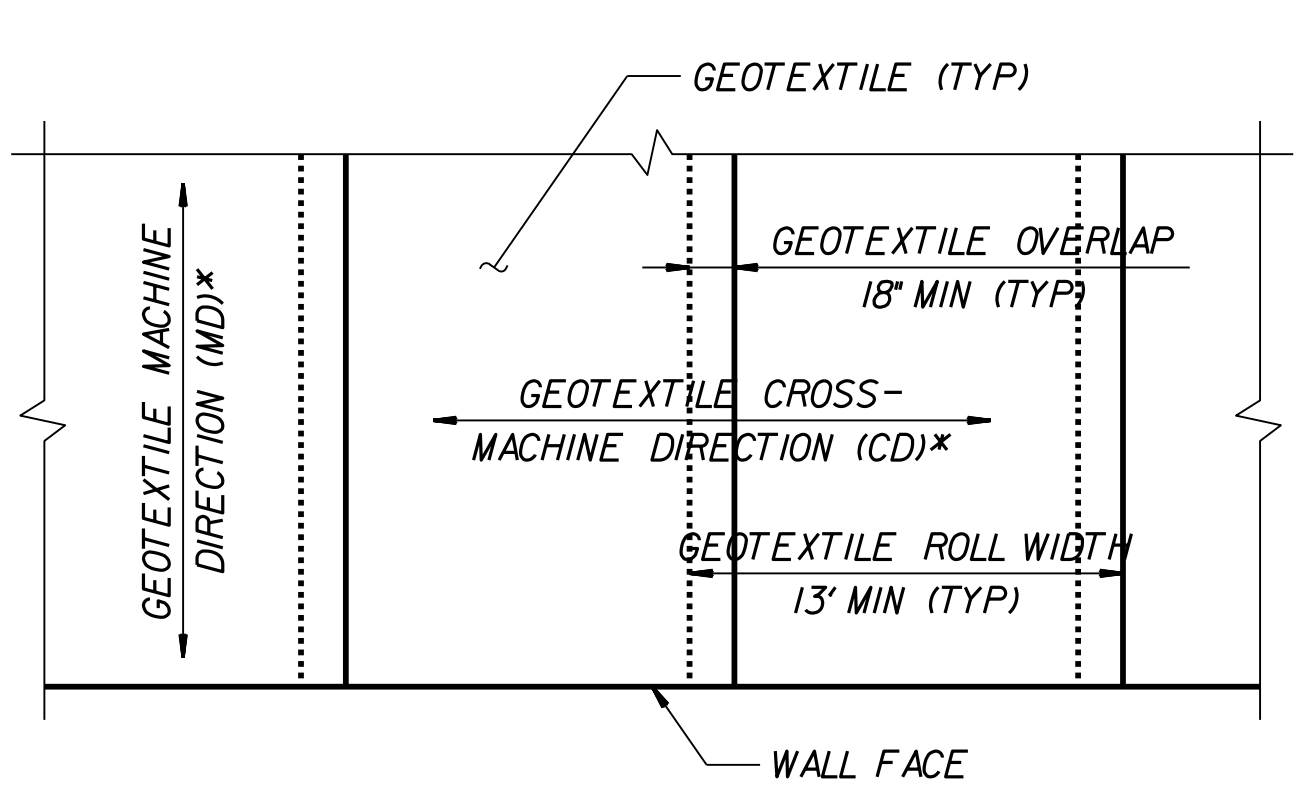
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
 **SEE REINFORCEMENT TABLES ON SHEET 3.



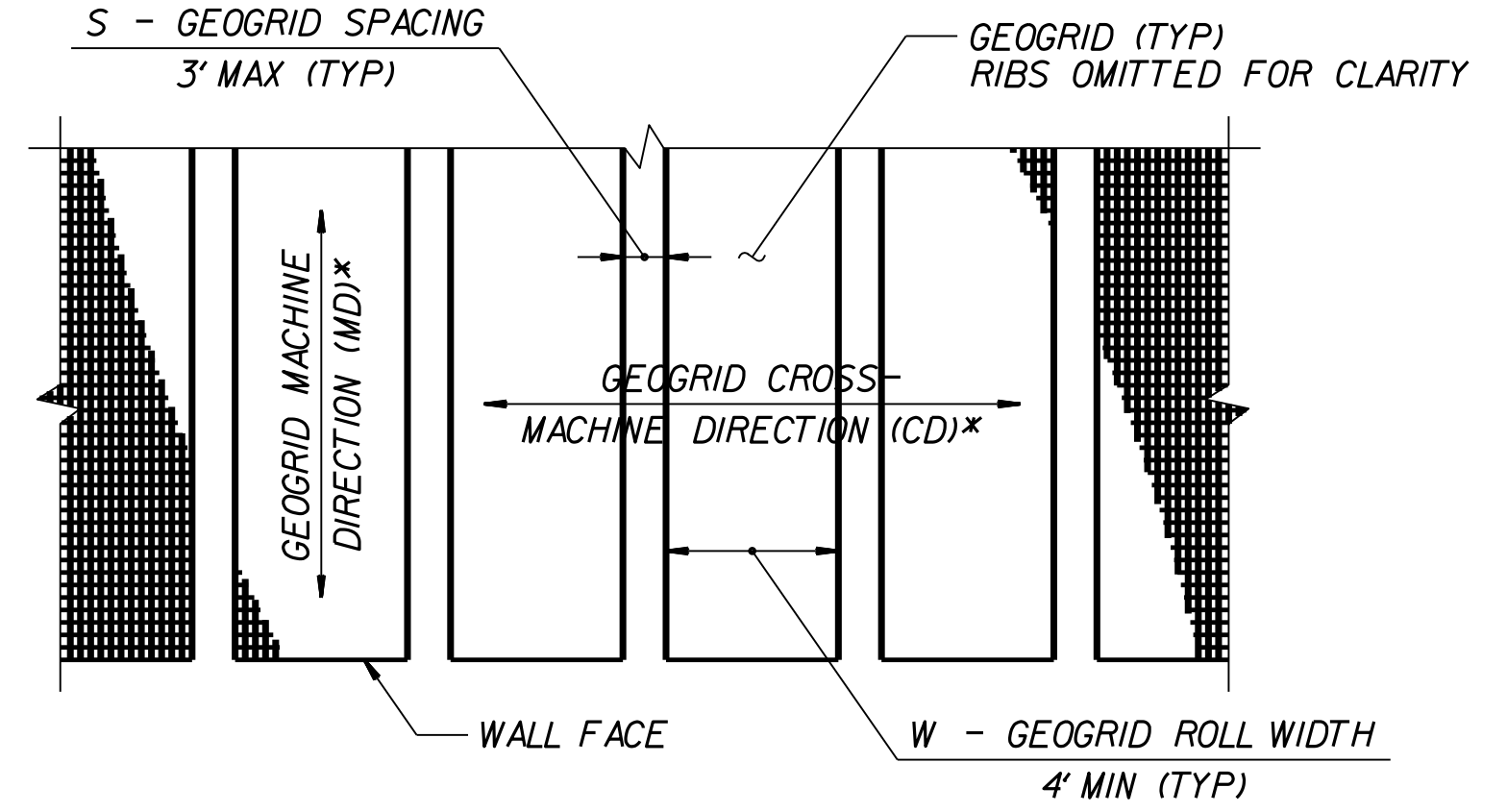
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STANDARD DETAIL NO. 1801.02

STANDARD
 TEMPORARY WALL
 SHEET 1 OF 3

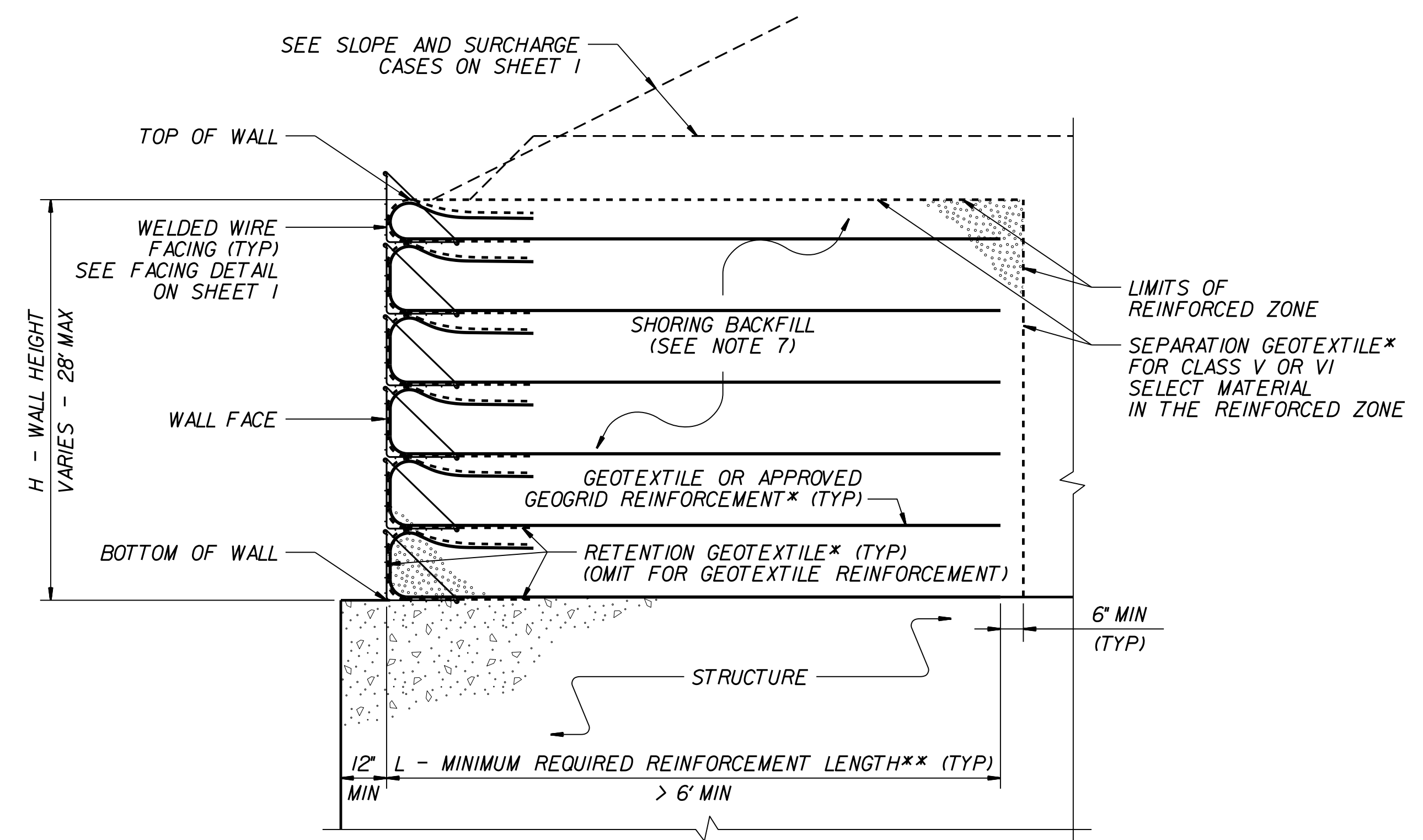


GEOTEXTILE PLACEMENT
(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)



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

GEOSYNTHETIC PLACEMENT DETAILS
(PLAN VIEW)
*SEE NOTE 12.



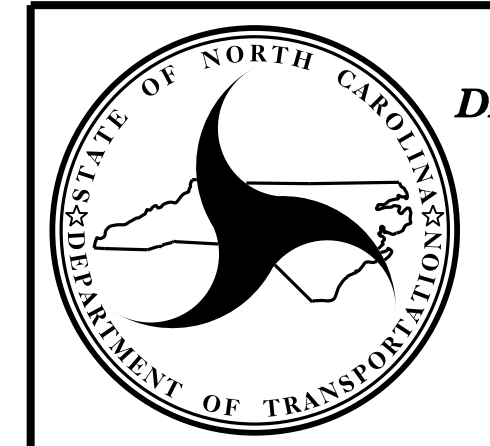
TEMPORARY WALL ON STRUCTURE DETAIL
*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY WALLS ARE 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 WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
- DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
- USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER IS ABOVE BOTTOM OF REINFORCED ZONE.
- DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
- EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
- DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
- GEORGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR SHORT-TERM DESIGN STRENGTHS FOR A 3-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEORGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: connect.ncdot.gov/resources/Materials/Pages/SoilsLaboratory.aspx
DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

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

- IF THE WEBSITE DOES NOT LIST A SHORT-TERM DESIGN STRENGTH FOR AN APPROVED GEORGRID, USE A SHORT-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 3.5 FOR THE GEORGRID REINFORCEMENT.
- FOR GEORGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEORGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
 - AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
 - W (REINFORCEMENT ROLL WIDTH) \geq (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
 - REINFORCEMENT STRENGTH IN CD \geq MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
 - SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
 - DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
 - FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
 - DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
 - CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
 - FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
 - FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.




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STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 2 OF 3

PROJECT REFERENCE NO. I-3318BB	SHEET NO. 2G-4
 GEOTECHNICAL ENGINEER ENGINEER	ENGINEER DATE: 8/6/2015 SIGNATURE: _____

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

L - MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)
(FOR ALL REINFORCEMENT TYPES)

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

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

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

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

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

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

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD
(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.



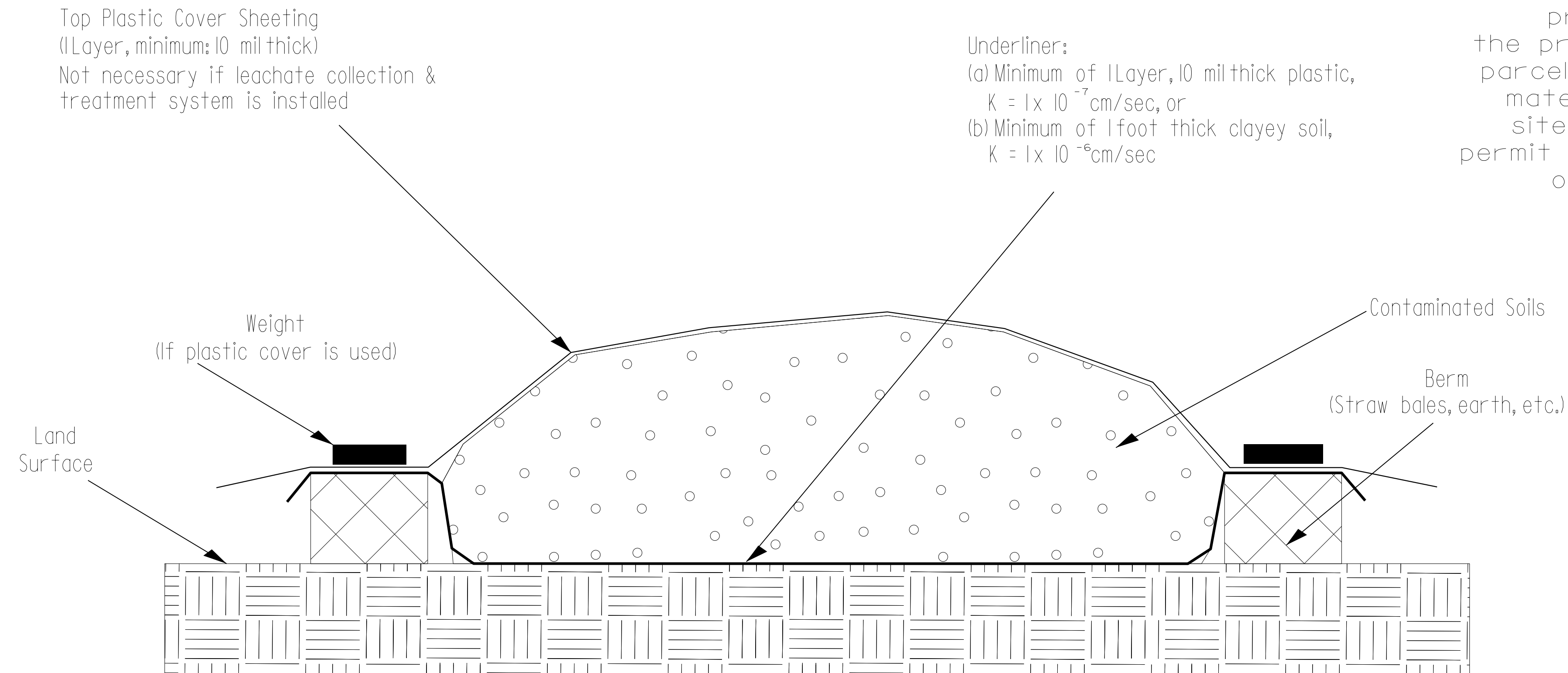
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**GEOTECHNICAL
ENGINEERING UNIT**

STANDARD DETAIL NO. 1801.02
STANDARD TEMPORARY WALL SHEET 3 OF 3
DATE: 11-19-13

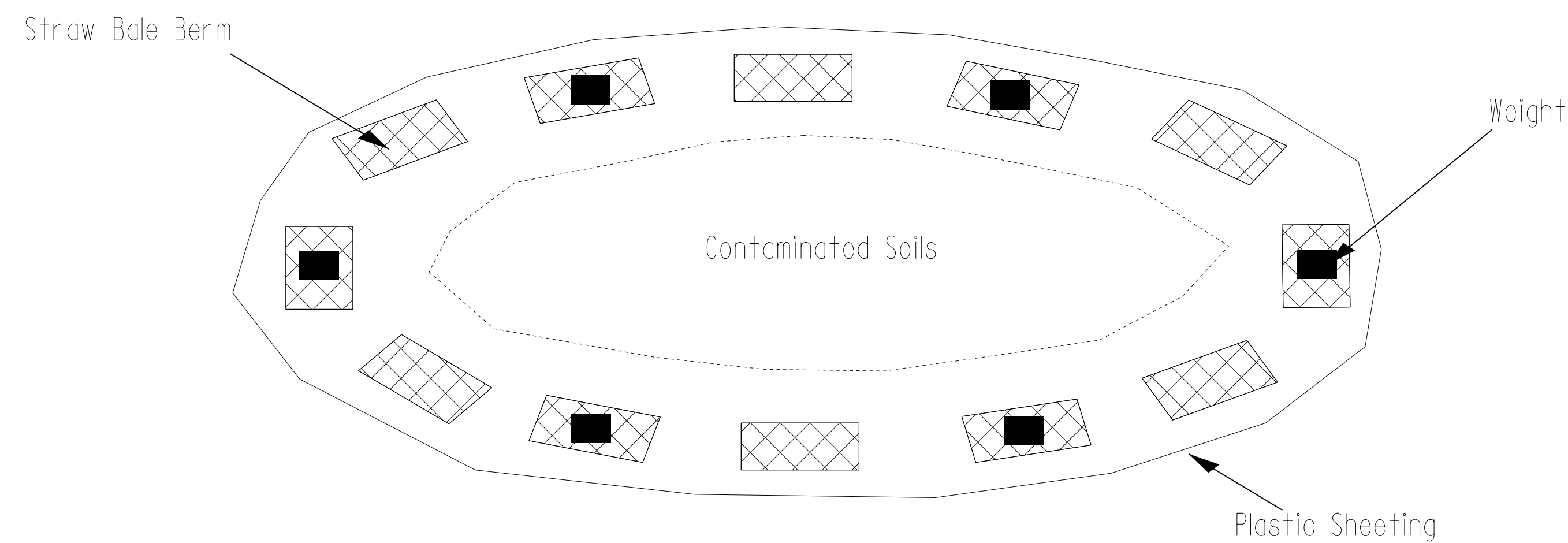
Detail for Temporary Containment of Contaminated Soil

Cross-Section View



NOTE:
The Contractor shall stockpile all contaminated soil excavated from a property in a location within the property boundaries of the source parcel. If the volume of contaminated material exceeds available space on site, the Contractor shall obtain a permit from the NCDENR UST Section for off-site temporary storage.

Map View



GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STOCKPILE CONTAINMENT DETAIL

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

PREPARED BY:	DATE:
REVIEWED BY:	DATE:

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

**SUMMARY OF SHOULDER BERM GUTTER
 (IN FEET)**

LINE	STATION	STATION	LENGTH
-L- LT	20+92.35	23+24.38	232.03
-L- LT	26+59.18	31+70.00	510.82
-L- RT	20+19.43	22+75.37	255.94
-L- RT	26+10.16	32+22.00	611.84
		TOTAL:	1,610.63
		SAY:	1,620

SUMMARY OF WOVEN WIRE FENCE

LINE	STATION	STATION	FABRIC (LF)	END BRACE	CORNER BRACE	LINE BRACE	4" POSTS (EA)	5" POSTS (EA)
-LRPA- RT	10+84.66	14+45.00	326.77	1	1		21	5
-L- LT	20+20.00	24+33.00	435.00	1	3		25	11
-L- LT	26+23.00	32+38.21	644.40	2	1	1	41	10
-L- RT	19+25.00	23+15.00	580.31	2	13		18	43
-L- RT	25+50.00	28+66.04	335.40	1	1		21	5
-Y- LT	10+00.00	18+30.15	828.72	1	1	2	53	11
		TOTAL:	3,150.60				179	85
		SAY:	3,160				180	90

**SUMMARY OF PAVEMENT REMOVAL
 (IN SQUARE YARDS)**

LINE	STATION	STATION	LOCATION (LT/RT/CL)	ASPHALT REMOVAL	CONCRETE REMOVAL
SB	9+36	14+73	CL	1,278.75	
SBRPA	10+00	15+44	CL	2,203.74	
NB	9+62	16+75	CL	1,548.02	
SB	26+13	31+49	CL	730.35	
NB	26+44	32+24	CL	926.28	
Y	11+89	18+27	LT	1,021.19	
L / LRPA	15+75	23+60	LT		4,247.27
L	25+89	29+30	LT		1,191.60
L	29+30	31+89	LT		179.68
L / LRPD	15+75	23+40	RT		3,726.83
L	25+69	29+30	RT		1,284.18
SBRPA	14+84	15+64	CL		163.00
		TOTAL:		7,708.33	10,792.56
		SAY:		7,710	10,800

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK (IN CUBIC YARDS)

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
SUMMARY 1					
-DET1- 24+00.00	-DET1- 31+00.00	388	35		353
	SUBTOTALS:	388	35		353
SUMMARY 2					
-DET2- 17+40.00	-DET2- 23+75.00	334	246		88
	SUBTOTALS:	334	246		88
SUMMARY 3					
-L- LT (SB) 10+50.00	-L- LT (SB) 23+55.94 (BRIDGE)	2,390	6,934	4,544	
	SUBTOTALS:	2,390	6,934	4,544	
SUMMARY 4					
-L- LT (SB) 26+28.84 (BRIDGE)	-L- LT (SB) 37+24.12	186	15,461	15,275	
	SUBTOTALS:	186	15,461	15,275	
SUMMARY 5					
-L- RT (NB) 10+50.00	-L- RT (NB) 23+05.71 (BRIDGE)	2,094	4,010	1,916	
	SUBTOTALS:	2,094	4,010	1,916	
SUMMARY 6					
-L- RT (NB) 25+78.61 (BRIDGE)	-L- RT (NB) 36+85.17	361	20,243	19,882	
	SUBTOTALS:	361	20,243	19,882	
SUMMARY 7					
-L- LT 12+00.00	-L- LT 23+31.55 (BRIDGE)	4,687	333		4,355
	SUBTOTALS:	4,687	333		4,355
SUMMARY 8					
-L- LT 26+04.45 (BRIDGE)	-L- LT 34+35.00	1,309	10		1,299
	SUBTOTALS:	1,309	10		1,299
SUMMARY 9					
-L- RT 12+00.00	-L- RT 23+31.55 (BRIDGE)	3,686	59		3,627
	SUBTOTALS:	3,686	59		3,627
SUMMARY 10					
-L- RT 26+04.45 (BRIDGE)	-L- RT 32+80.00	1,685	41		1,644
	SUBTOTALS:	1,685	41		1,644
	TOTALS:	17,120	47,372	41,617	11,366
	EST. SHOULDER MATERIAL:		3,975	3,975	
	PROJECT TOTALS:	17,120	51,347	45,592	11,366
	EST. 5% TO REPLACE TOP SOIL ON BORROW PIT:			2,280	
	GRAND TOTALS:	17,120		47,872	
	SAY:	17,200		48,000	

EST. UNDERCUT CONTINGENCY = 1,000 CY	PER GEOTECH. RECOMMENDATIONS DATED: JULY 12, 2013 & FEBRUARY 12, 2015
SHALLOW UNDERCUT CONTINGENCY = 1,500 CY	
SELECT GRANULAR MATERIAL = 1,000 CY	

DDE = 382 CY
PAVEMENT STRUCTURE VOLUME = 11,250 CY

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.

RD261645

COMPUTED BY: Chris Lewis DATE: 4/9/15
CHECKED BY: Piotr Stojda DATE: 4/13/15

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO. I-3318BB SHEET NO. 3D-1

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

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

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Minimum Required Slope, Pipe Sizes (12-48 inches), Material Types (Side Drain, C.S. Pipe, R.C. Pipe Class III/IV), Quantities for Drainage Structures, Frame, Grates, and Hood, and Remarks. Includes a SHEET TOTALS row at the bottom.

- ABBREVIATIONS
C.A.A. CORRUGATED ALUMINIUM ALLOY
C.B. CATCH BASIN
C.S. CORRUGATED STEEL
D.I. DROP INLET
G.D.I. GRATED DROP INLET
H.D.P.E. HIGH DENSITY POLYETHYLENE
J.B. JUNCTION BOX
M.H. MANHOLE
N.S. NARROW SLOT
P.V.C. POLYVINYL CHLORIDE
R.C. REINFORCED CONCRETE
T.B.D.I. TRAFFIC BEARING DROP INLET
T.B.J.B. TRAFFIC BEARING JUNCTION BOX
W.S. WIDE SLOT

COMPUTED BY: TEM DATE: 4/14/15
 CHECKED BY: PJS DATE: 8/05/15

(4-21-15)

PROJECT NO.	SHEET NO.
I-3318BB	3G-1

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

SUMMARY OF SUBSURFACE DRAINAGE

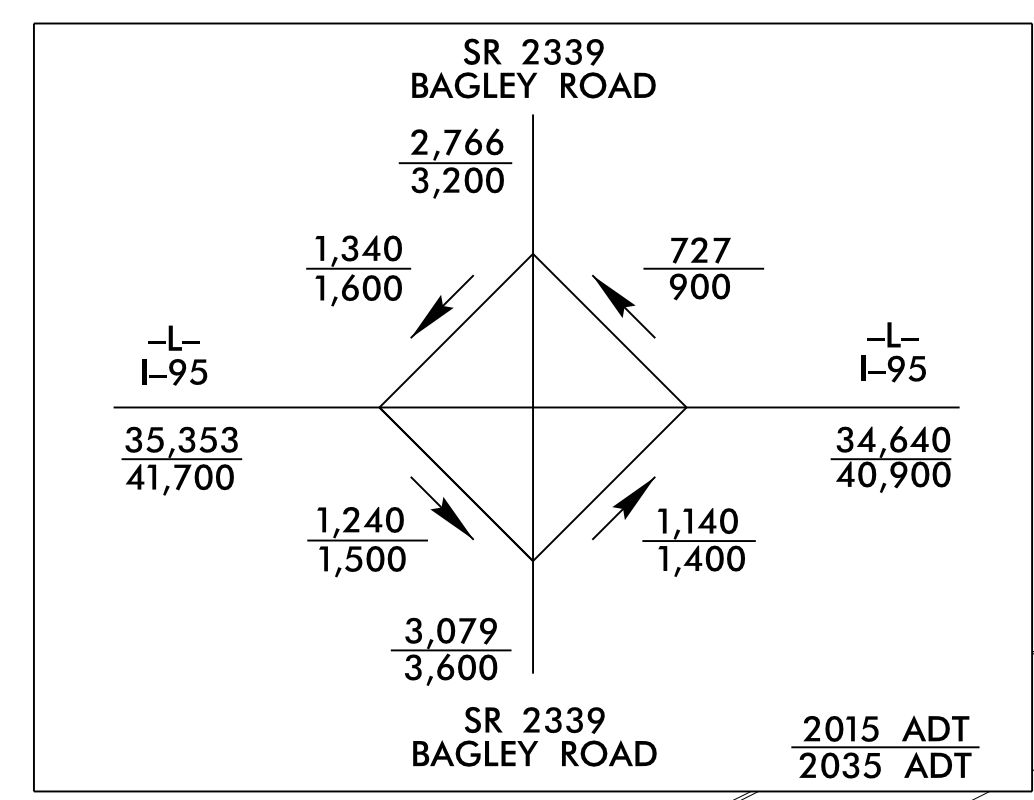
LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
				CONTINGENCY	800
				TOTAL LF:	800

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

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

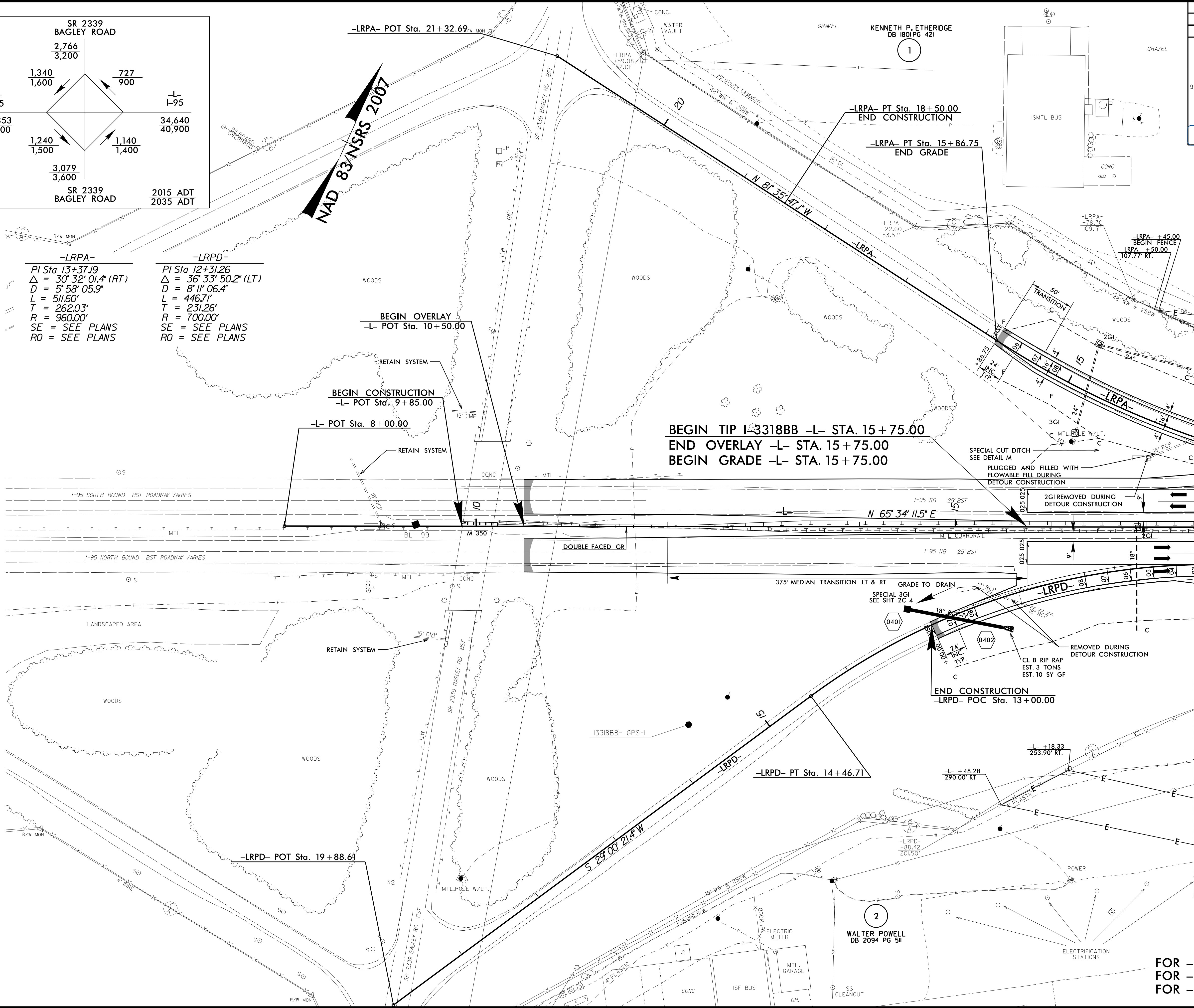
LINE	Station	Station	Aggregate Type ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
			CONTINGENCY	AST	3			250	
			CONTINGENCY	ASU	12	1500	3000	4500	
				TOTAL CY/TONS/SY:	1500	3000	4500 *	250	

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.



-LRPA-
 PI Sta. 13+37.19
 $\Delta = 30^\circ 32' 01.4" (RT)$
 $D = 5' 58" 05.9"$
 $L = 511.60'$
 $T = 262.03'$
 $R = 960.00'$
 SE = SEE PLANS
 RO = SEE PLANS

-LRPD-
 PI Sta. 12+31.26
 $\Delta = 36^\circ 33' 50.2" (LT)$
 $D = 8' 11" 06.4"$
 $L = 446.71'$
 $T = 231.26'$
 $R = 700.00'$
 SE = SEE PLANS
 RO = SEE PLANS



MATCHLINE -L- STA. 17 + 50.00 SEE SHEET 5

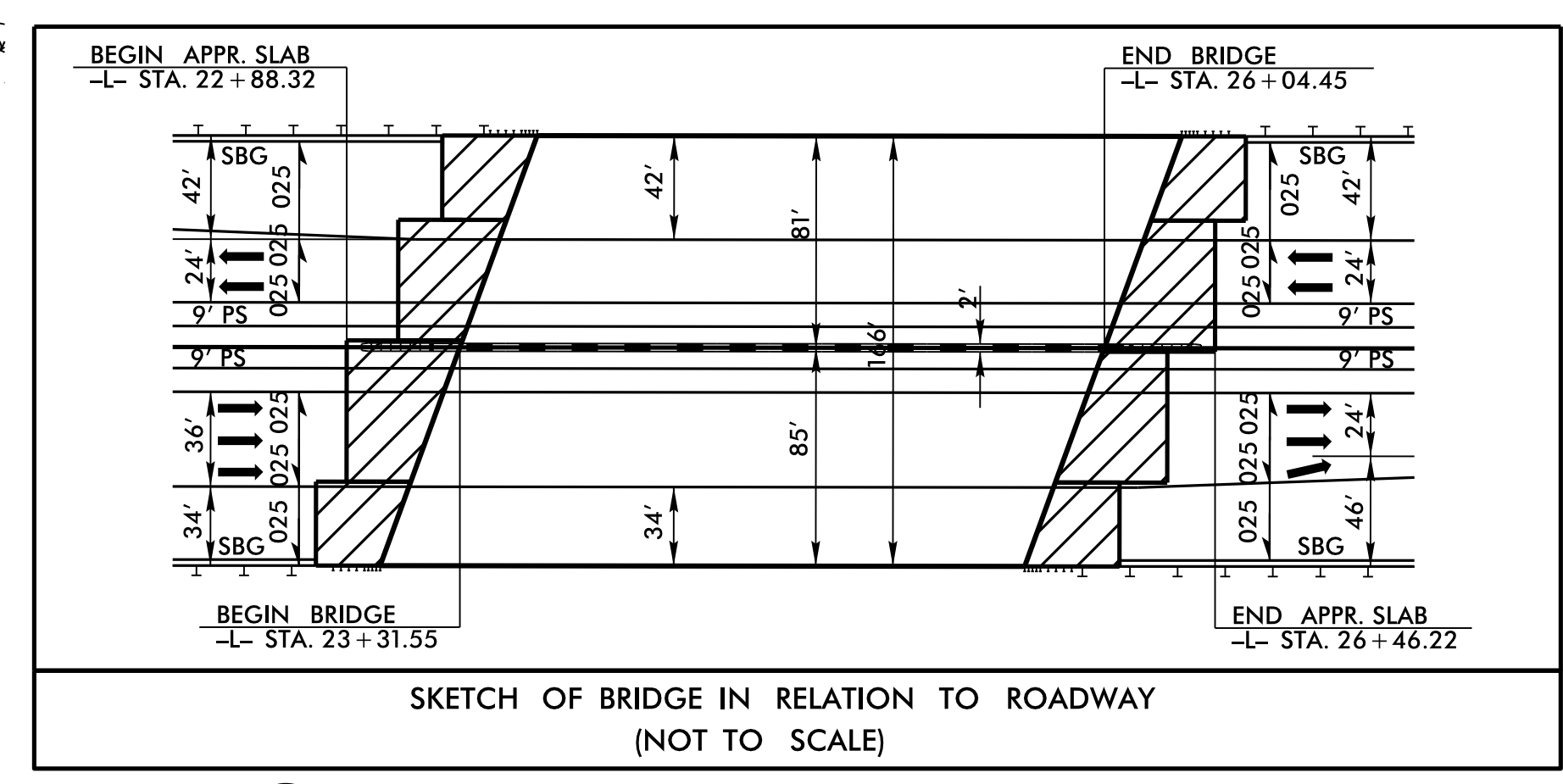
**FOR -L- PROFILE SEE SHEET 7
 FOR -LRPA- PROFILE SEE SHEET 8
 FOR -LRPD- PROFILE SEE SHEET 8**

REVISIONS

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8/17/99

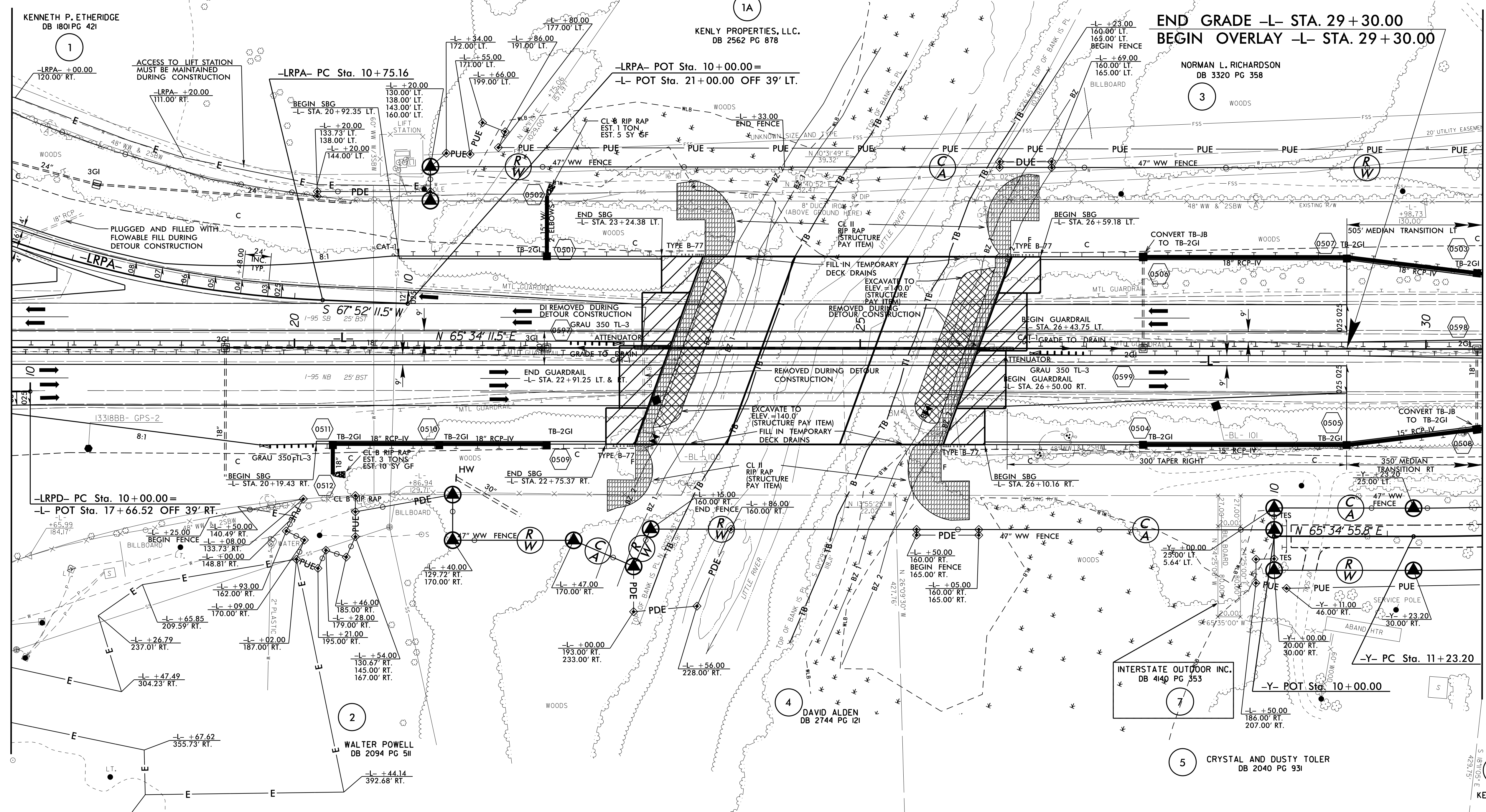
NAD 83/NRS 2007



-LRPA-	-LRPD-	-Y-
PI Sta 13+37.19	PI Sta 12+31.26	PI Sta 13+32.23
$\Delta = 30' 32' 01.4''$ (RT)	$\Delta = 36' 33' 50.2''$ (LT)	$\Delta = 10' 23' 09.4''$ (LT)
$D = 5' 58' 05.9''$	$D = 8' 11' 06.4''$	$D = 2' 29' 28.0''$
$L = 511.60'$	$L = 446.71'$	$L = 416.92'$
$T = 262.03'$	$T = 231.26'$	$T = 209.03'$
$R = 960.00'$	$R = 700.00'$	$R = 2,300.00'$
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS

MATCHLINE -L- STA. 17 + 50.00 SEE SHEET 4

MATCHLINE -L- STA. 30 + 50.00 SEE SHEET 6



-Y- CONSTRUCTED DURING DETOUR PHASE
 FOR -L- PROFILE SEE SHEET 7
 FOR -LRPA- PROFILE SEE SHEET 8
 FOR -LRPD- PROFILE SEE SHEET 8
 FOR TEMP. SHORING SEE SHEET 2B-7
 FOR STRUCTURE SEE SHEETS S-1 THROUGH S-80

REVISIONS

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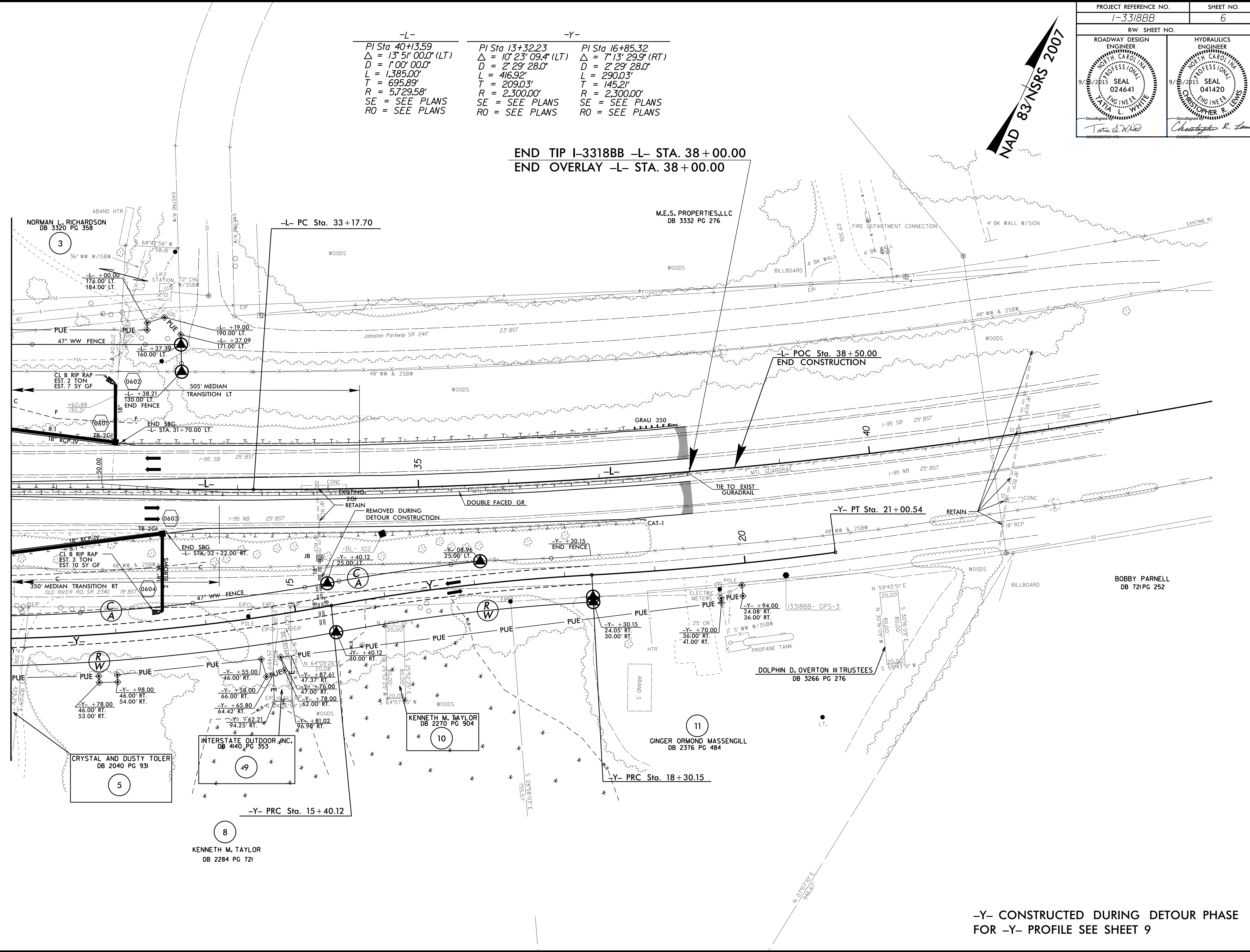
8/17/99

NAD 83/NSRS 2007

-L-	-Y-	-Y-
PI Sta 40+13.59	PI Sta 13+32.23	PI Sta 16+85.32
$\Delta = 13^{\circ} 51' 00.0''$ (LT)	$\Delta = 10^{\circ} 23' 09.4''$ (LT)	$\Delta = 7^{\circ} 13' 29.9''$ (RT)
D = 1,00' 00.0"	D = 2' 29' 28.0"	D = 2' 29' 28.0"
L = 1,385.00'	L = 416.92'	L = 290.03'
T = 695.89'	T = 209.03'	T = 145.21'
R = 5,729.58'	R = 2,300.00'	R = 2,300.00'
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS

END TIP I-3318BB -L- STA. 38+00.00
END OVERLAY -L- STA. 38+00.00

MATCHLINE -L- STA. 30+50.00 SEE SHEET 5

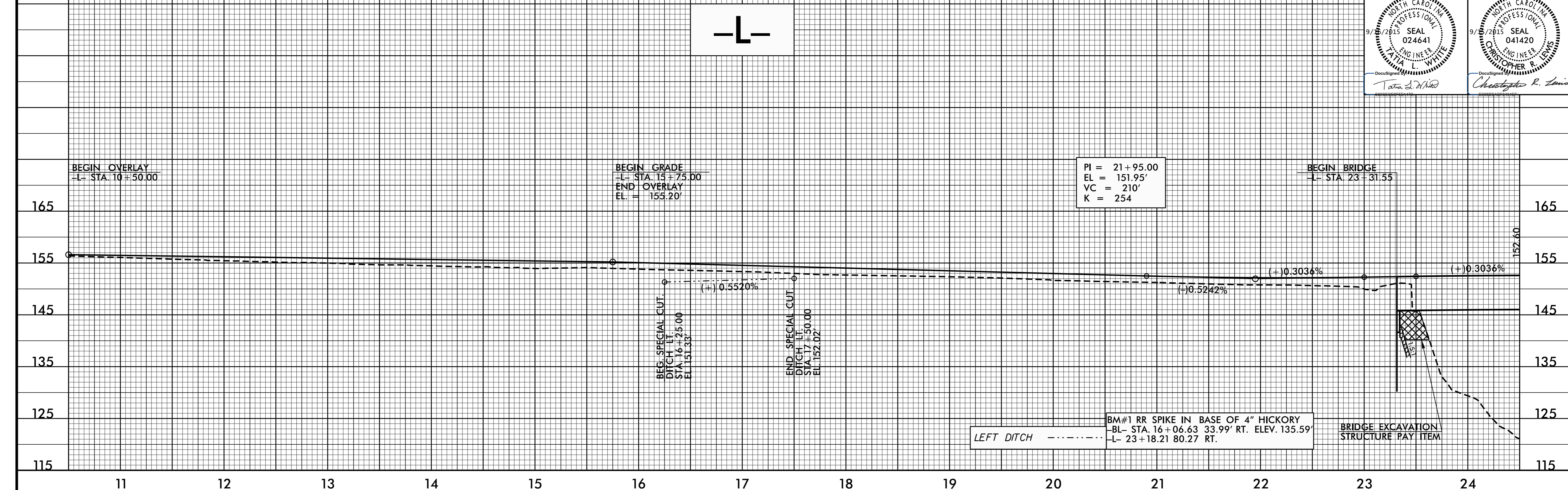


REVISIONS

-Y- CONSTRUCTED DURING DETOUR PHASE
FOR -Y- PROFILE SEE SHEET 9

28-AUG-2015 08:33 I:\3318BB.Rdy.psh6.dgn
8/17/99

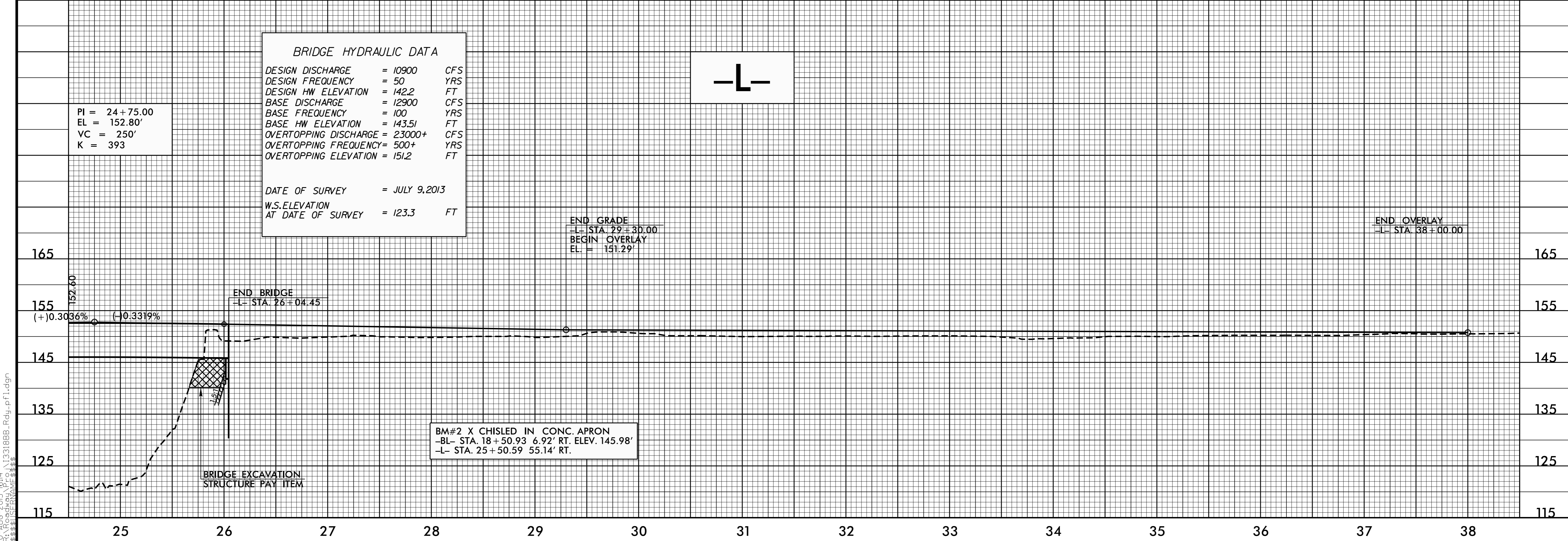
5/28/99



BRIDGE HYDRAULIC DATA

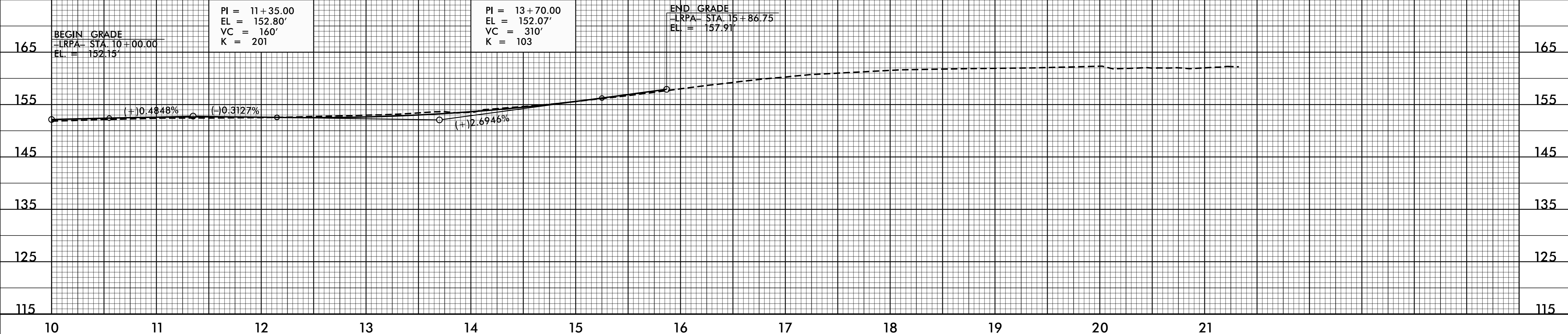
DESIGN DISCHARGE	= 10900	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 142.2	FT
BASE DISCHARGE	= 12900	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 143.51	FT
OVERTOPPING DISCHARGE	= 23000+	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 151.2	FT

DATE OF SURVEY = JULY 9, 2013
W.S. ELEVATION AT DATE OF SURVEY = 123.3 FT

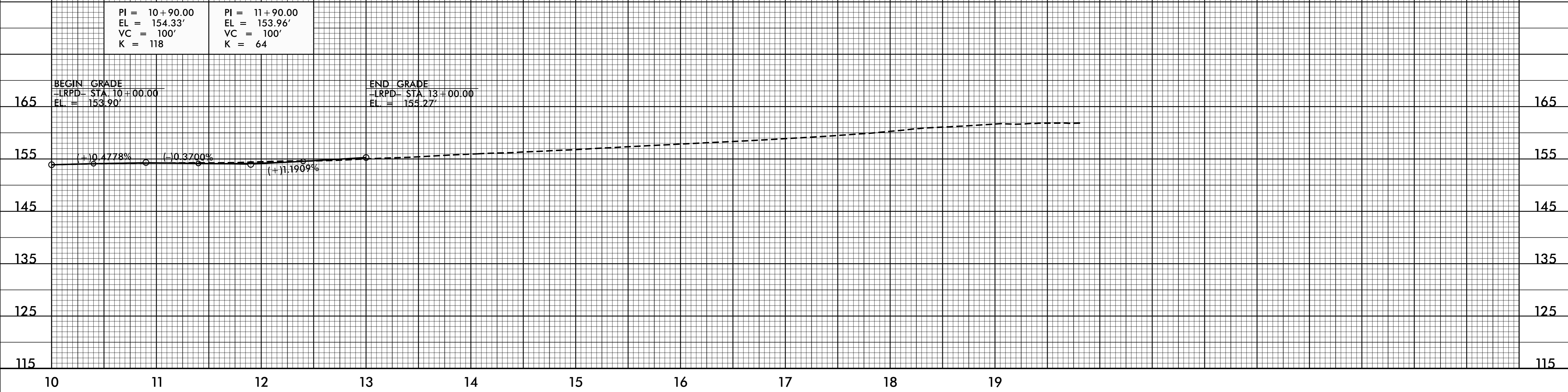


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-LRPA-



-LRPD-



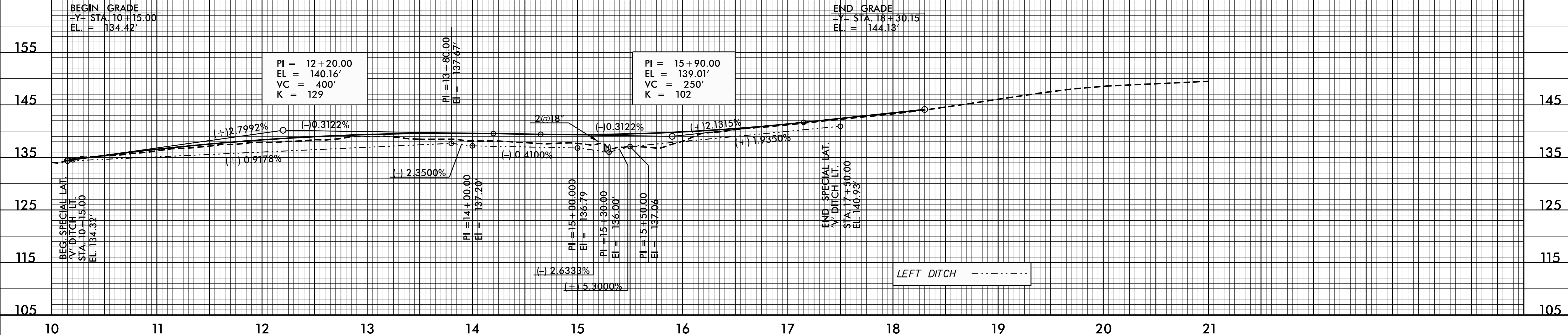
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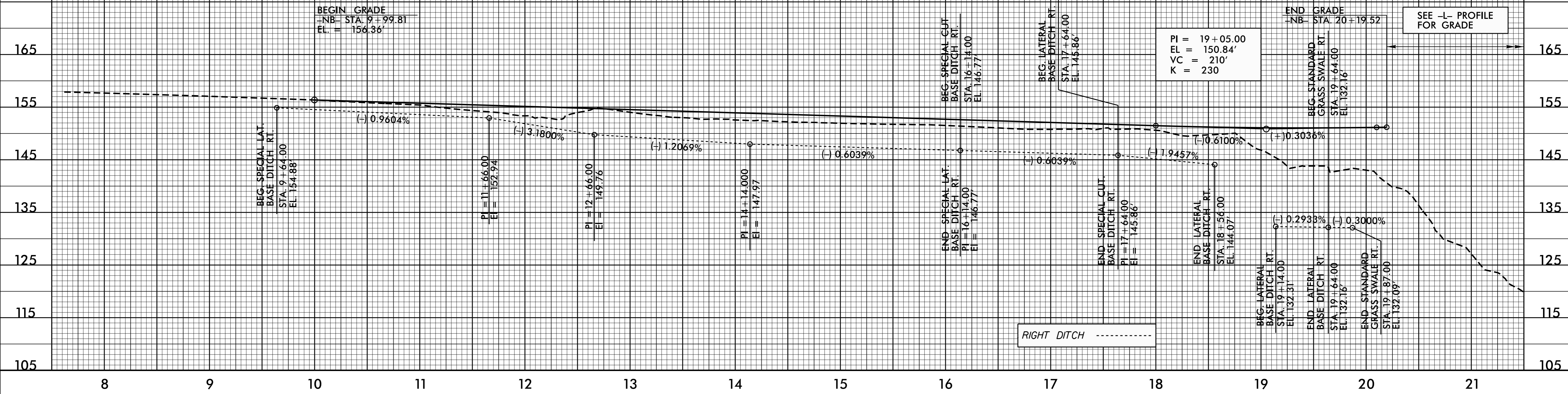
2@18" RCP-IV HYDRAULIC DATA

DRAINAGE AREA	= 27	AC
DESIGN DISCHARGE	= 13	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 137.5	FT
BASE DISCHARGE	= 15	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 137.5	FT
OVERTOPPING DISCHARGE	= 17+	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 138.7	FT

-Y-



-NB-

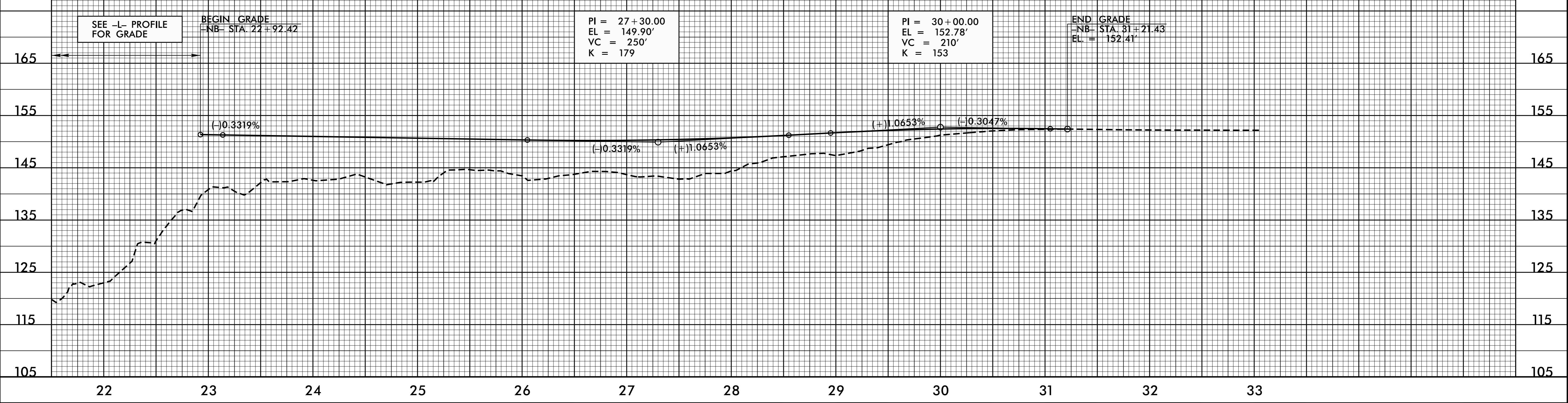


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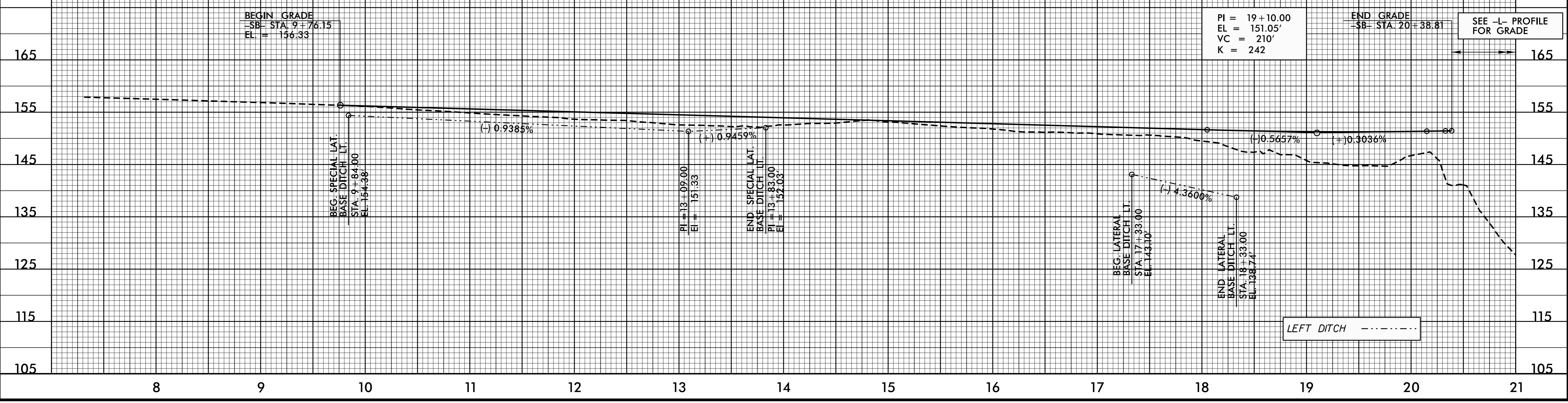
5/28/99

PROJECT REFERENCE NO. 1-3318BB	SHEET NO. 10
ROADWAY DESIGN ENGINEER TATIA L. WHITE 9/8/2015 SEAL 024641	HYDRAULICS ENGINEER CHRISTOPHER R. LEMIS 9/8/2015 SEAL 041420

-NB-

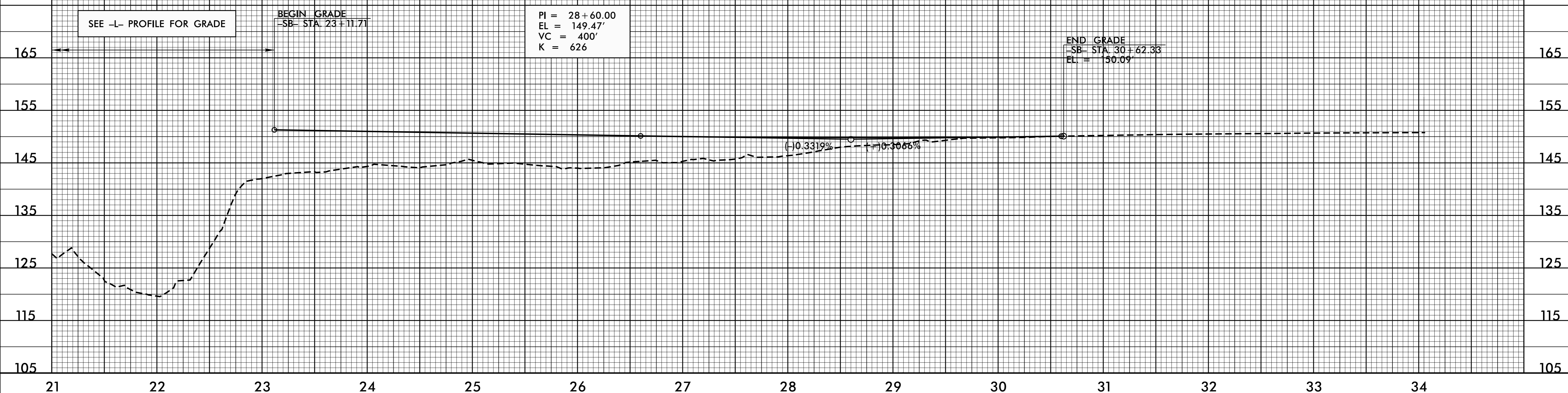


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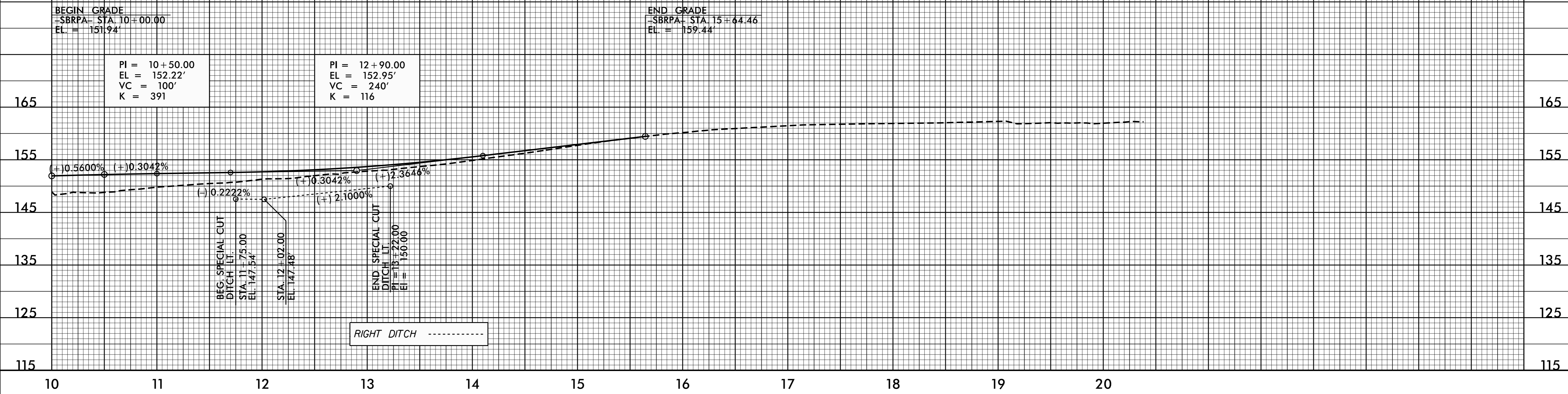


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-SB-



-SBRPA-



5/28/99
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