

09/08/19

See Sheet 1A For Index of Sheets  
See Sheet 1B For Conventional Plan Sheet Symbols  
See Sheets 1C-1 thru 1C-3 for Survey Control Sheets

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**GUILFORD COUNTY**

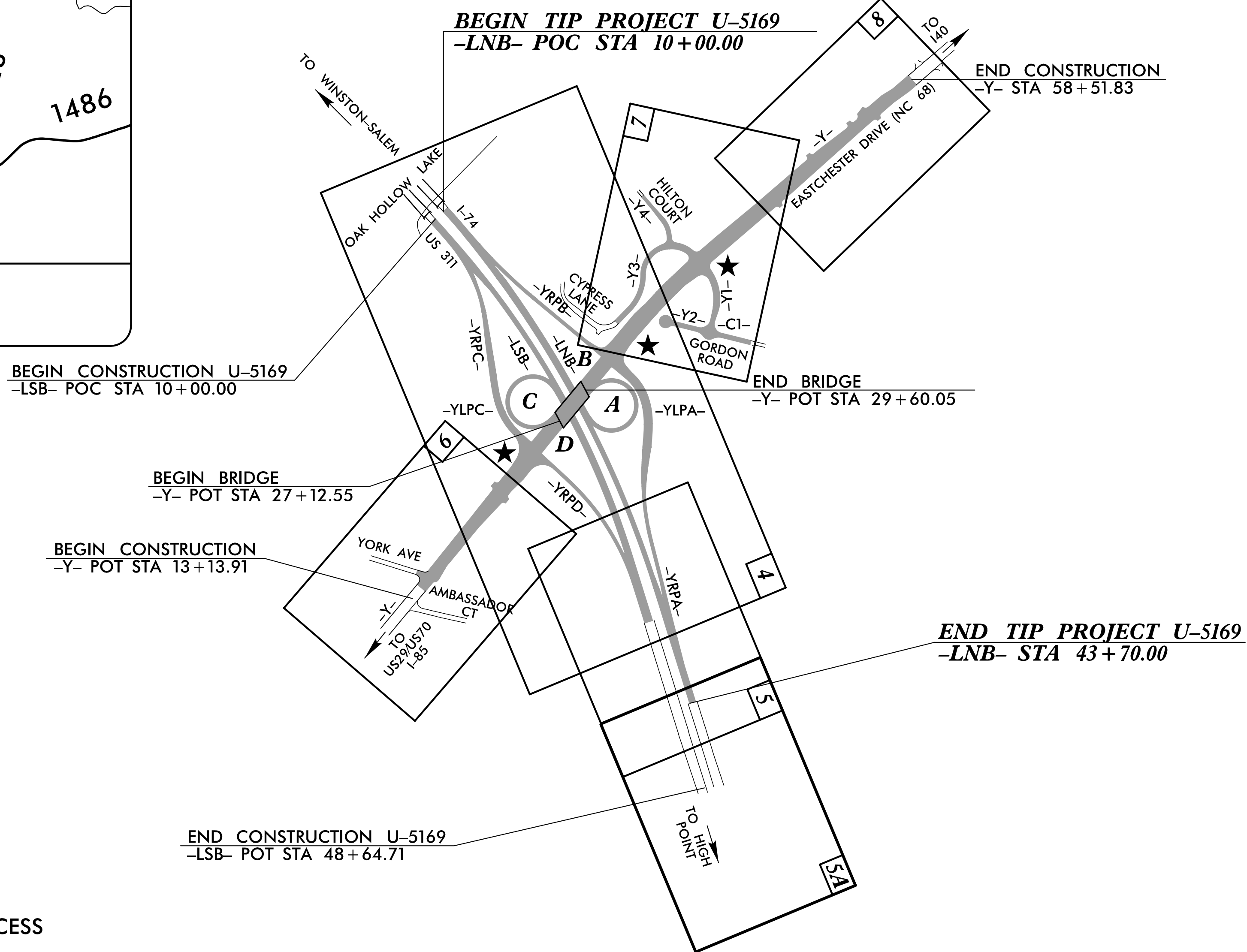
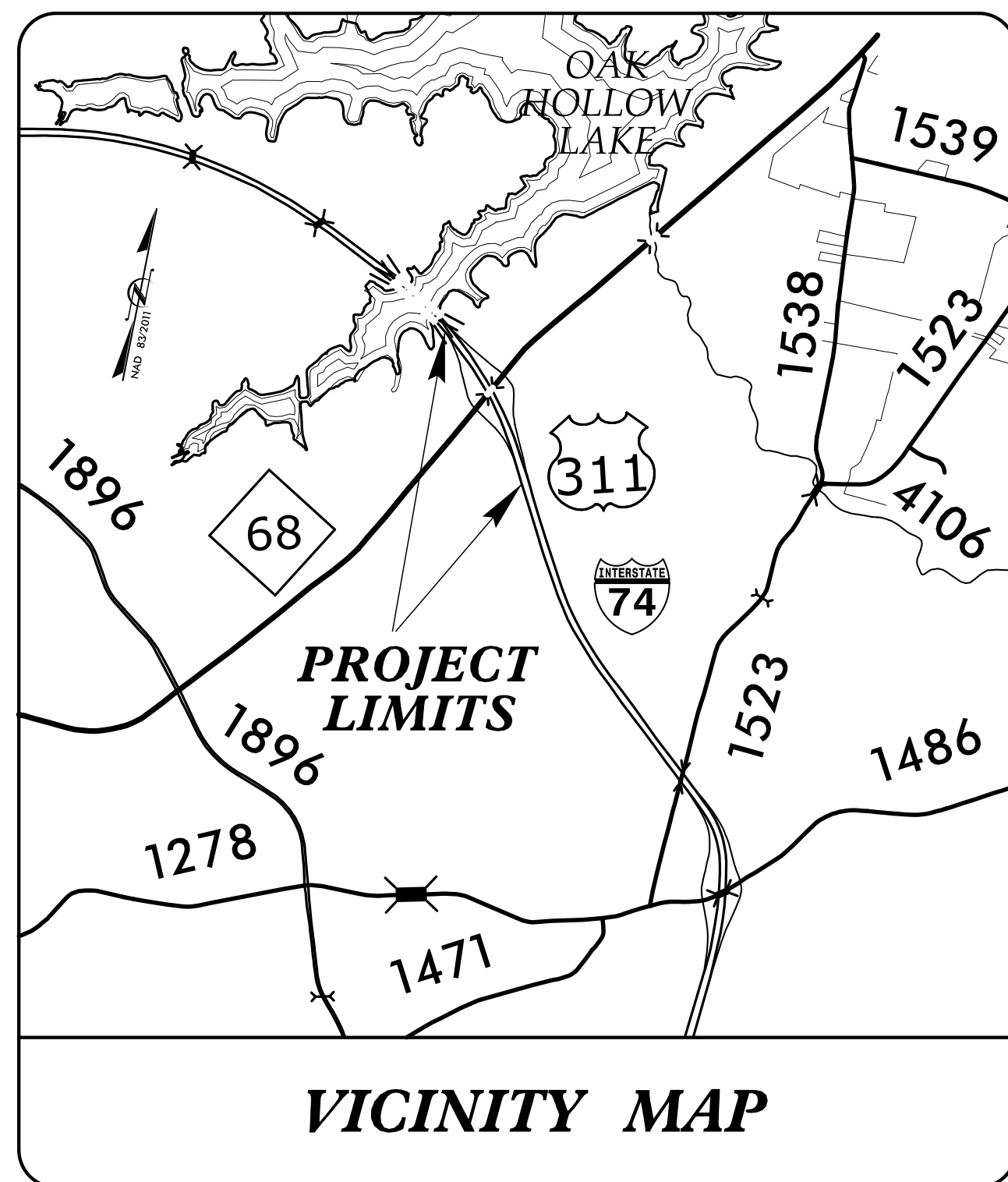
LOCATION: I-74/US311 AND NC 68 (EASTCHESTER DRIVE)

INTERCHANGE IMPROVEMENTS

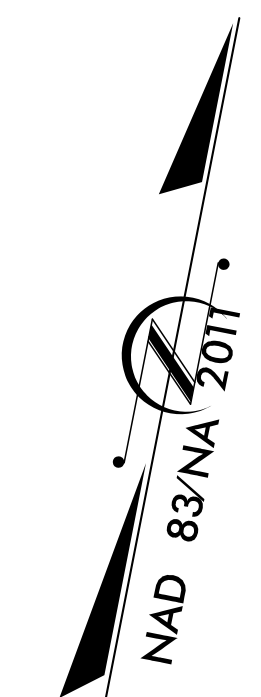
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, SIGNALS  
SOUND BARRIER, RETAINING WALL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5169	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45220.1.2	NHS-0311(32)	PE	
45220.2.1	NHS-0311(32)	R/W	
45220.2.2	NHS-0311(32)	UTILITIES	
45220.3.1	NHS-0311(32)	CONST.	

TIP PROJECT: U-5169



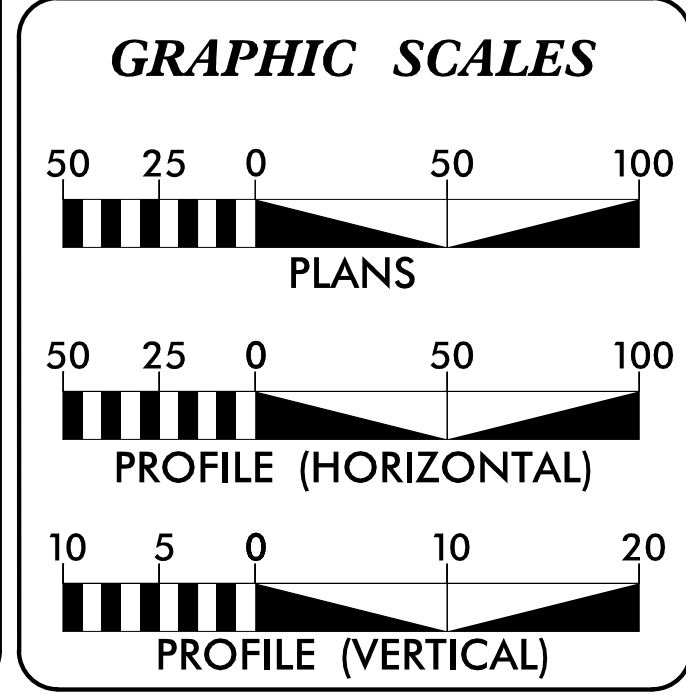
★ PROPOSED TRAFFIC SIGNAL



NOTES:  
1. A PORTION OF THIS PROJECT IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

CONTRACT: C204071



**DESIGN DATA**

ADT 2018 =	41,584
ADT 2038 =	72,144
K =	12 %
D =	60 %
T =	6 % *
V =	65 MPH
* TTST =	4% DUAL 2%
FUNC CLASS =	INTERSTATE
STATEWIDE TIER	

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT U-5169	=	0.638 MILES
TOTAL LENGTH TIP PROJECT U-5169	=	0.638 MILES

Prepared In the Office of:

**HNTB**  
HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1954

2018 STANDARD SPECIFICATIONS	DOUGLAS M. WHEATLEY, PE PROJECT ENGINEER
RIGHT OF WAY DATE: JUNE 30, 2016	ROY H. TELLIER, PE PROJECT DESIGN ENGINEER
LETTING DATE: JUNE 19, 2018	TATIA L. WHITE, PE, PLS NCDOT CONTACT

**HYDRAULICS ENGINEER**

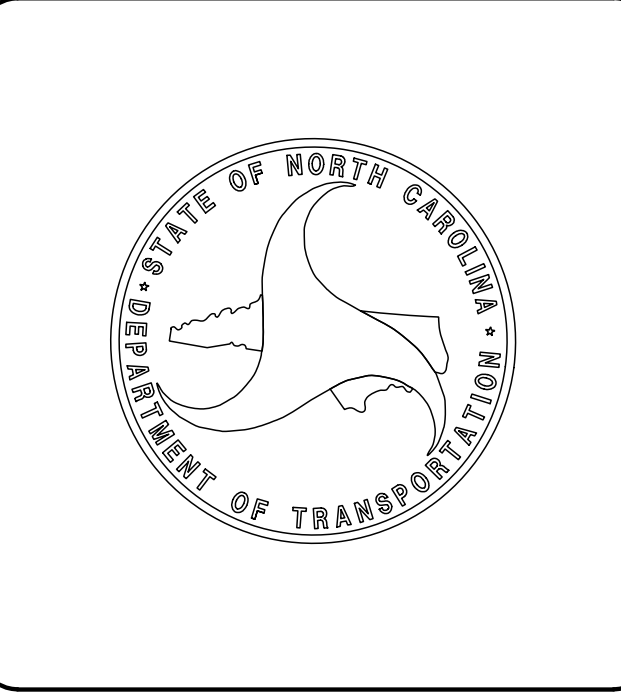
DocuSigned by:  
James A. Boyd  
5/18/2018 2:16:55 PM EDT

SIGNATURE:

**ROADWAY DESIGN ENGINEER**

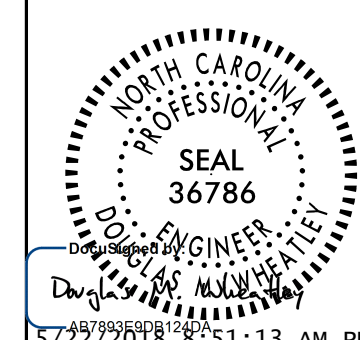
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Douglas M. Wheatley  
5/18/2018 10:18:03 AM PDT

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18-MAY-2018 11:24  
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HNTB



PROJECT REFERENCE NO.	SHEET NO.
U-5169	1A
ROADWAY DESIGN ENGINEER	
	
5/22/2018 8:51:13 AM PDT	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1 THRU 1C-3	SURVEY CONTROL SHEETS
2A-1 THRU 2A-6	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	INTERSECTION DETAIL SHEET
2B-2	SHEAR POINT DETAIL SHEET
2C-1	DETAIL OF W-BEAM GUARDRAIL INSTALLATION
2C-2	DETAIL OF TYPE III ANCHOR UNITS
2C-3	DETAIL TO CONVERT DI, CB, OTCB OR GI TO JUNCTION BOX
2C-4	DETAIL OF MEDIAN HAZARD PROTECTION
2C-5	DETAIL OF HANDRAIL ON RETAINING WALL
2C-6	DETAIL OF CURB RAMPS WITH A MEDIAN ISLAND CUT THROUGH
2C-7	DETAIL OF EXTRA DEPTH CATCH BASIN
2D-1 THRU 2D-8	DRAINAGE DETAILS
2G-1	STANDARD TEMPORARY SHORING
2N-1 THRU 2N-3	NOISE WALL DETAILS
3B-1	GUARDRAIL SUMMARY
3B-2	SUMMARY OF EARTHWORK, PAVEMENT REMOVAL SUMMARY, CABLE GUIDERAIL SUMMARY
3B-1 THRU 3B-3	SHOULDER DRAIN SUMMARY, SHOULDER BERM GUTTER SUMMARY, SUMMARY OF TEMPORARY SHORING, CHAIN LINK FENCE SUMMARY, EXPRESSWAY GUTTER SUMMARY
3D-1 THRU 3D-8	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 8	PLAN SHEETS
9 THRU 19	PROFILE SHEETS
TMP-1 THRU TMP-42	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-10	PAVEMENT MARKING PLANS
E-1 THRU E-2	ELECTRICAL PLANS
EC-1 THRU EC-13	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-13	SIGNING PLANS
SIG.1.0 THRU SIG-M8	SIGNAL PLANS
UC-1 THRU UC-10	UTILITY CONSTRUCTION PLANS
UBO-1 THRU UBO-5	UTILITIES BY OTHERS PLANS
X-1	CROSS SECTION INDEX SHEET
X-1A THRU X-1B	CROSS SECTION SUMMARY
X-2 THRU X-132	CROSS SECTIONS
S-1 THRU S-25	STRUCTURE PLANS
W-1 THRU W-3	RETAINING WALL PLANS

**GENERAL NOTES:** 2018 SPECIFICATIONS  
EFFECTIVE: 01-16-2018  
REVISED:

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

**CLEARING:**  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

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

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

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

**SHOULDER DRAINS:**  
SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 816.02 AND DETAILS IN PLANS AT LOCATIONS DIRECTED BY THE ENGINEER.

**DRIVEWAYS:**  
DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADIUS OR RADIUS AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

**STREET TURNOUT:**  
STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADIUS NOTED ON PLANS.

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

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

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

**UTILITIES:**  
UTILITY OWNERS ON THIS PROJECT ARE  
POWER TRANSMISSION & DISTRIBUTION: CITY OF HIGH POINT  
COMMUNICATIONS: NORTH STATE & SPECTRUM  
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

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

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

**ROCK**  
ROCK IS ANTICIPATED BETWEEN -YLPC- STA 12+00 TO 14+00. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK-BLASTING PROVISION.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD. NO.	TITLE
<b>DIVISION 2 - EARTHWORK</b>	
200.02	Method of Clearing - Method II
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
225.06	Method of Grading Sight Distance at Intersections
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
<b>DIVISION 4 - MAJOR STRUCTURES</b>	
422.02	Bridge Approach Fills - Type II Modified Approach Fill
<b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b>	
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
<b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b>	
610.01	Guide for Paving Shoulders Under Bridges - Method I
644.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
<b>DIVISION 8 - INCIDENTALS</b>	
806.03	Concrete Control of Access Marker
816.01	Concrete Pads - for Shoulder Drain Installation
816.02	Aggregate Shoulder Drain
816.04	Markers for Drainage Structure and Concrete Pad
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.04	Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.05	Brick Open Throat Catch Basin - 12" thru 48" Pipe
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.20	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
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units (Special Detail for Type III Anchor Units Sheets 1 of 7 and 2 of 7)
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
865.01	Cable Guiderail
866.01	Chain Link Fence - 4', 5' and 6' High Fence
866.05	Glare Screen - Chain Link Fabric/Guardrail Mounted
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

## BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Computed 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	☠ -s- ☠
Potential Contamination Area: Soil	?? -s- ??
Known Contamination Area: Water	☠ -w- ☠
Potential Contamination Area: Water	?? -w- ??
Contaminated Site: Known or Potential	☠ ??

## BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
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	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

Note: Not to Scale

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

## RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	◆
Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Exist Permanent Easement Pin and Cap	◇
New Permanent Easement Pin and Cap	◆
Vertical Benchmark	⊠
Existing Right of Way Marker	△
Existing Right of Way Line	-----
New Right of Way Line	----- R/W
New Right of Way Line with Pin and Cap	----- R/W ▲
New Right of Way Line with Concrete or Granite RW Marker	----- R/W ●
New Control of Access Line with Concrete CA Marker	----- C/A
Existing Control of Access	----- C/A
New Control of Access	----- C/A
Existing Easement Line	----- E
New Temporary Construction Easement	----- E
New Temporary Drainage Easement	----- TDE
New Permanent Drainage Easement	----- PDE
New Permanent Drainage / Utility Easement	----- DUE
New Permanent Utility Easement	----- PUE
New Temporary Utility Easement	----- TUE
New Aerial Utility Easement	----- AUE

## ROADS AND RELATED FEATURES:

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

## VEGETATION:

Single Tree	○
Single Shrub	○

Hedge	-----
Woods Line	-----
Orchard	-----
Vineyard	----- Vineyard

## EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	----- CONC
Bridge Wing Wall, Head Wall and End Wall	----- CONC WW
MINOR:	
Head and End Wall	----- CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊙
Storm Sewer	----- 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

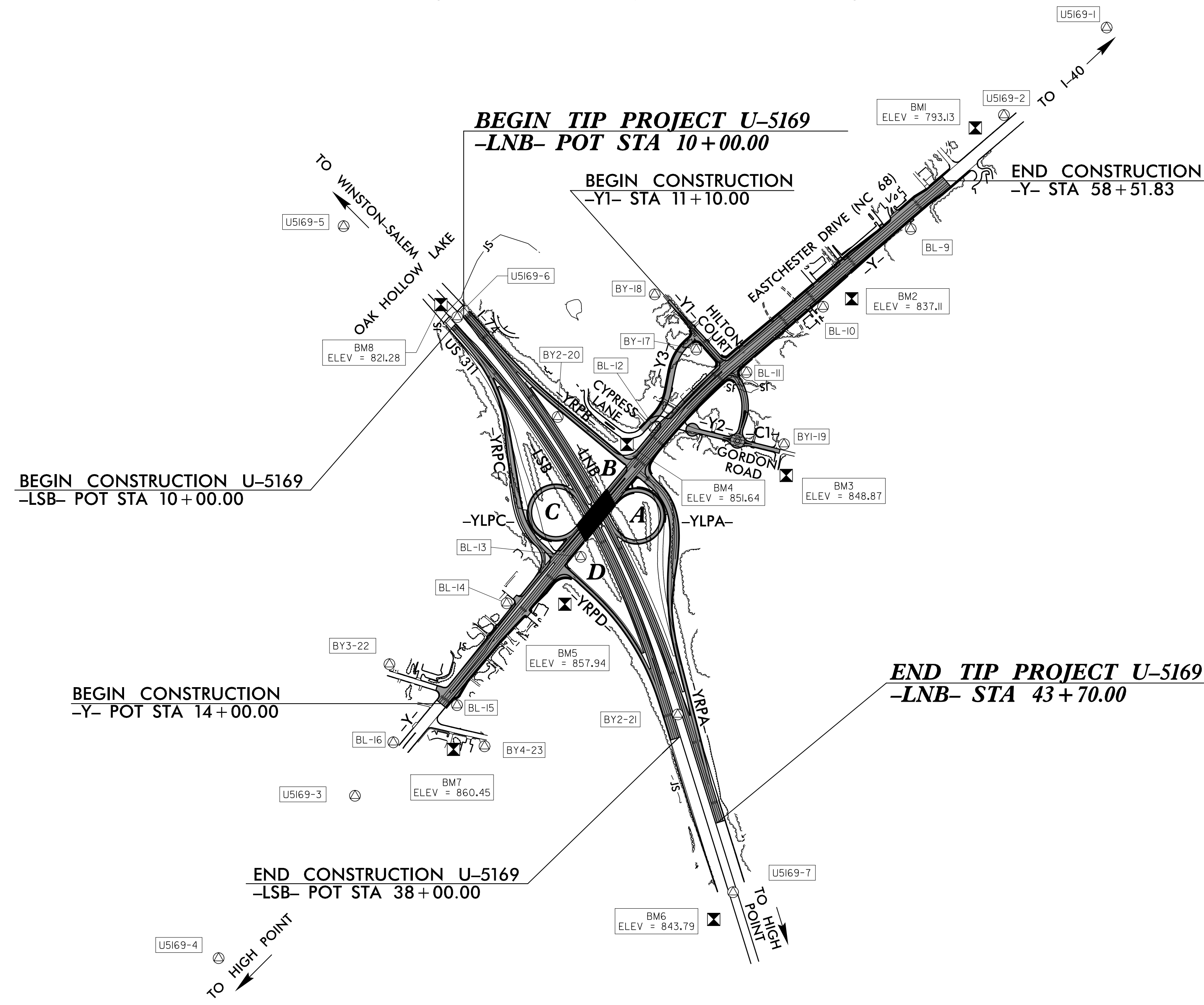
## SANITARY SEWER:

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.*)	----- 7UTL
U/G Tank; Water, Gas, Oil	-----
Underground Storage Tank, Approx. Loc.	⊠ UST
A/G Tank; Water, Gas, Oil	-----
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

# U-5169 SURVEY CONTROL SHEET



## NOTES

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/)  
 THE FILES TO BE FOUND ARE AS FOLLOWS:  
 U5169\_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.

### DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U5169-6"  
 WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF  
 NORTHING: 822078.6870(ft) EASTING: 1705591.8590(ft)  
 ELEVATION: 819.03'(ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999246384  
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U5169-6" TO -LNB- STATION 10+00.00 IS  
 N 86°47'33" E 38.53'  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

12/01/2005  
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 11/18



12/01/2005

PROJECT REFERENCE NO.	SHEET NO.
U-5169	1C-2
Location and Surveys	

# U-5169 SURVEY CONTROL SHEET

## BASELINE DATA

BL	POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
1		U5169-1	824488.8160	1709061.9690	806.85	OUTSIDE PROJECT LIMITS	
2		U5169-2	823846.6770	1708558.0050	782.94	OUTSIDE PROJECT LIMITS	
9		BL-9	823131.8037	1708092.0761	824.65	53+69.74	38.80 RT
10		BL-10	822570.9273	1707651.5570	835.78	46+56.55	39.15 RT
11		BL-11	822062.7596	1707251.5271	832.89	40+09.31	38.47 RT
12		BL-12	821671.3317	1706880.7152	847.09	34+80.26	61.48 LT
13		BL-13	820852.7707	1706602.4631	864.88	26+28.37	85.96 RT
14		BL-14	820474.8223	1706251.3513	858.68	21+28.47	41.44 LT
15		BL-15	819846.4200	1706001.2581	858.29	14+57.02	39.71 RT
16		BL-16	819551.9782	1705751.9973	870.51	10+79.20	38.23 LT
3		U5169-3	819224.7940	1705559.3340	867.89	OUTSIDE PROJECT LIMITS	
4		U5169-4	818043.2460	1704970.8850	872.53	OUTSIDE PROJECT LIMITS	

BY	POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
18		BY-18	822408.3470	1706758.4561	835.31	10+77.84	25.17 RT
17		BY-17	822197.9341	1707036.2430	841.17	14+25.69	16.88 RT
A11			822062.7596	1707251.5271	832.89	16+78.85	6.03 LT

BY1	POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
A12			821671.3317	1706880.7152	847.09	OUTSIDE PROJECT LIMITS	
19		BY1-19	821679.3269	1707598.1157	843.19	16+35.71	17.92 LT

BY2	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
5		U5169-5	822504.7520	1704863.9580	818.33	60+84.93	10.87 LT
6		U5169-6	822078.6870	1705591.8590	819.03	52+41.26	13.26 RT
20		BY2-20	821607.5866	1706277.8697	825.13	44+20.61	97.87 RT
A13			820852.7707	1706602.4631	864.88	36+35.98	162.16 LT
21		BY2-21	820014.6938	1707309.1184	841.75	25+32.16	13.43 LT
7		U5169-7	819050.4460	1707831.5150	836.07	14+35.50	12.42 LT
8		U5169-8	818106.2320	1708366.2400	824.82	OUTSIDE PROJECT LIMITS	

BY3	POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
22		BY3-22	819950.4498	1705608.2002	861.15	OUTSIDE PROJECT LIMITS	
A15			819846.4200	1706001.2581	858.29	8+62.41	1863.66 RT

BY4	POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
B15			819846.4200	1706001.2581	858.29	14+57.02	39.71 RT
23		BY4-23	819641.6953	1706247.2381	862.80	13+94.99	353.67 RT

## BENCHMARK DATA

.....  
 BM1 ELEVATION = 793.13  
 N 823749 E 1708398  
 Y STATION 10+00.00  
 N 31°44'23.59" E DIST 5038.51  
 \*MAG\* NAIL IN CONCRETE CATCH BASIN  
 .....

.....  
 BM2 ELEVATION = 837.11  
 N 822626 E 1707855  
 Y STATION 48+25.00 165 RIGHT  
 RR SPIKE IN BASE OF 28" OAK  
 .....

.....  
 BM3 ELEVATION = 848.87  
 N 821543 E 1707623  
 Y STATION 37+77.00 643 RIGHT  
 \*MAG\* NAIL IN CONCRETE CURB  
 .....

.....  
 BM4 ELEVATION = 851.64  
 N 821519 E 1706669  
 Y STATION 32+46.00 174 LEFT  
 RR SPIKE IN BASE OF 20" OAK  
 .....

.....  
 BM5 ELEVATION = 857.94  
 N 820577 E 1706597  
 Y STATION 23+84.00 213 RIGHT  
 RR SPIKE IN BASE OF 24" POPLAR  
 .....

.....  
 BM6 ELEVATION = 843.79  
 N 818830 E 1707790  
 LNB STATION 49+62.00 187 RIGHT  
 RR SPIKE IN BASE OF 24" OAK  
 .....

.....  
 BM7 ELEVATION = 860.45  
 N 819581 E 1706099  
 Y STATION 12+71.00 253 RIGHT  
 RR SPIKE IN BASE OF 24" POPLAR  
 .....

.....  
 BM8 ELEVATION = 821.28  
 N 822068 E 1705550  
 L STATION 52+69.00 20 LEFT  
 \*MAG\* NAIL IN WING WALL OF BRIDGE  
 .....

## NOTES

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/)

THE FILES TO BE FOUND ARE AS FOLLOWS:  
 U5169\_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.

## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U5169-6"  
 WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF  
 NORTHING: 822078.6870(ft) EASTING: 1705591.8590(ft)  
 ELEVATION: 819.03'(ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999246384  
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U5169-6" TO -LNB- STATION 10+00.00 IS  
 N 86°47'33" E 38.53'  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

I8-MAY-2008 11:24 U:\5169\Final\Survey\U5169\_ls\_1c-2.dgn





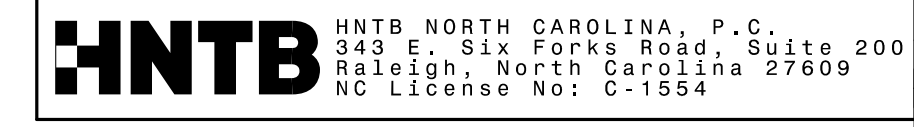
6/2/2018

**PAVEMENT SCHEDULE**

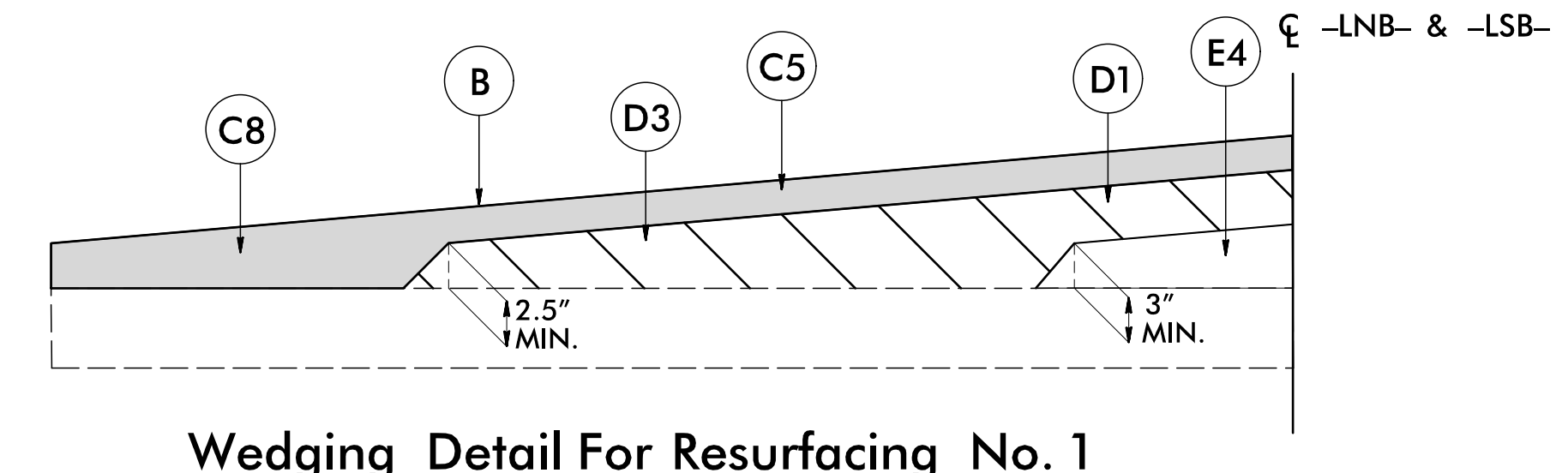
(FINAL PAVEMENT DESIGN)

<b>B</b>	PROP. APPROX. 3/4" OPEN-GRADED ASPHALT FRICTION COURSE, TYPE FC-1 MODIFIED, AT AN AVERAGE RATE OF 70 LBS. PER SQ. YD.	<b>J1</b>	PROP. 8" AGGREGATE BASE COURSE
<b>C1</b>	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	<b>J2</b>	PROP. 6" AGGREGATE BASE COURSE
<b>C2</b>	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	<b>K</b>	8" CLASS IV SUBGRADE STABILIZATION
<b>C3</b>	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	<b>N1</b>	GEOTEXTILE FOR SOIL STABILIZATION
<b>C4</b>	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.	<b>N2</b>	GEOTEXTILE FOR PAVEMENT STABILIZATION
<b>C5</b>	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.	<b>R1</b>	2'-6" CONCRETE CURB AND GUTTER.
<b>C6</b>	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1.5" IN DEPTH.	<b>R2</b>	1'-6" CONCRETE CURB AND GUTTER.
<b>C7</b>	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.	<b>R3</b>	PROP EXPRESSWAY GUTTER
<b>C8</b>	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 LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.	<b>R4</b>	5" MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED)
<b>D1</b>	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	<b>R5</b>	SHOULDER BERM GUTTER
<b>D2</b>	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	<b>R6</b>	PROP. CONCRETE APRON
<b>D3</b>	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.	<b>S</b>	CONCRETE SIDEWALK
<b>E1</b>	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	<b>T</b>	EARTH MATERIAL
<b>E2</b>	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	<b>U</b>	EXISTING PAVEMENT.
<b>E3</b>	PROP. APPROX. 7" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	<b>V</b>	MILLING, 1.5" TO 3" DEPTH
<b>E4</b>	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.	<b>W1</b>	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 1)
		<b>W2</b>	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 2)
		<b>W3</b>	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 3)
		<b>W4</b>	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 4)
		<b>W5</b>	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 5)
		<b>Y</b>	MILLED RUMBLE STRIPS

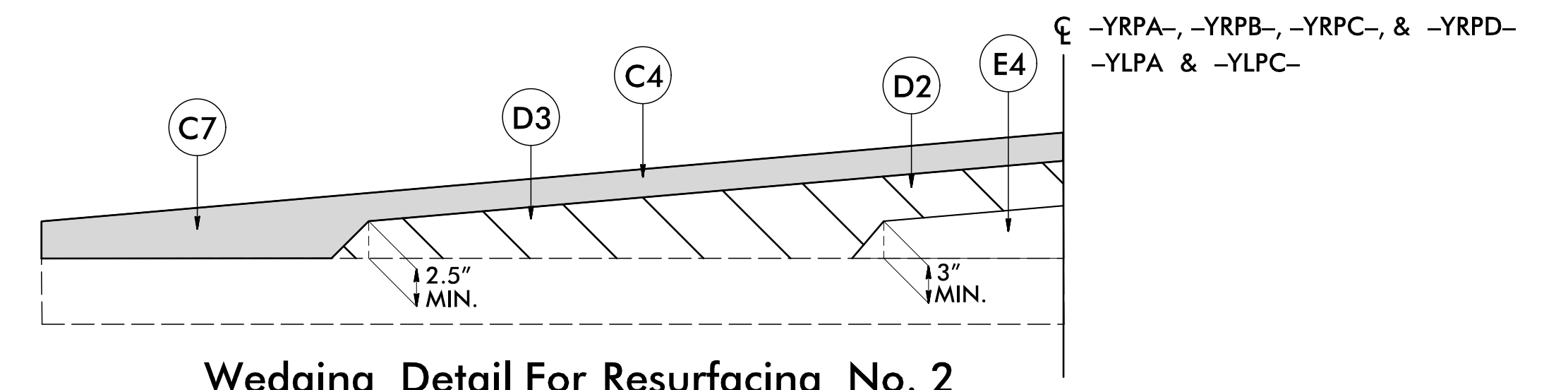
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



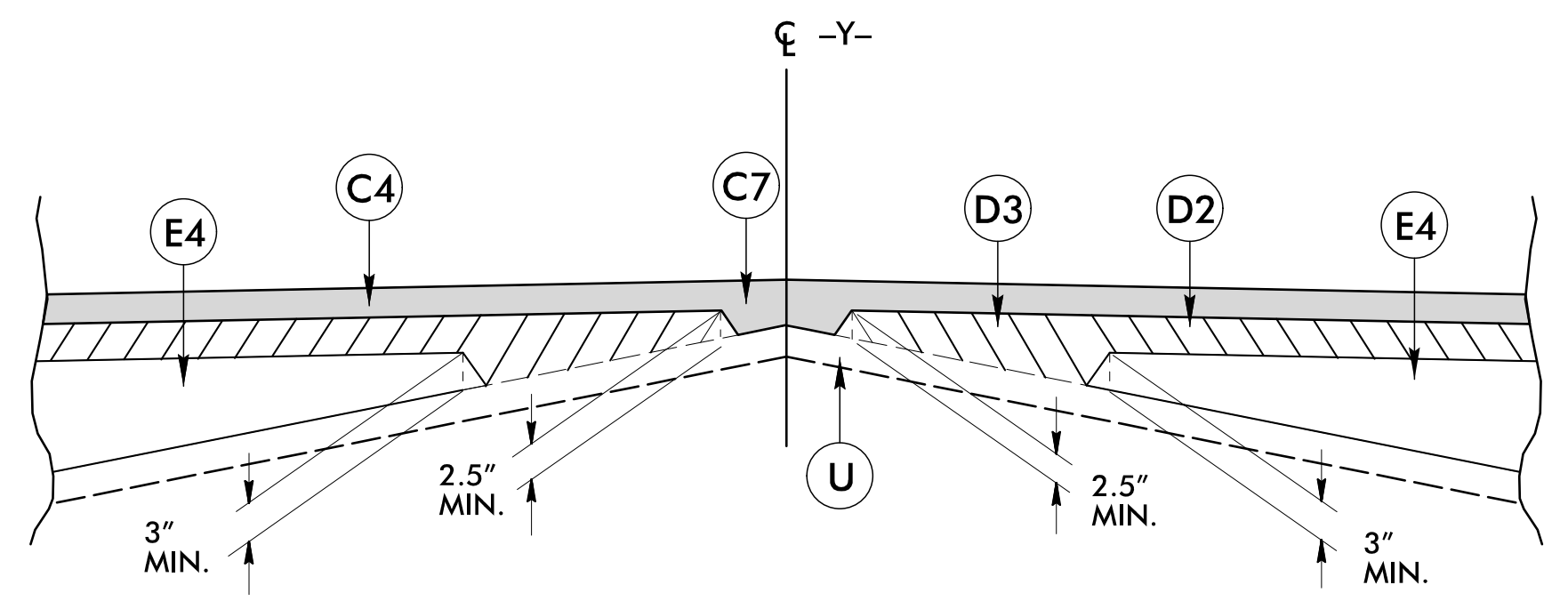
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ROADWAY DESIGN ENGINEER <i>[Signature]</i>	PAVEMENT DESIGN ENGINEER <i>[Signature]</i>
SEAL 36786 5/21/2018 11:30:11 AM PDT	SEAL 022896 5/21/2018 11:50:03 AM PDT
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



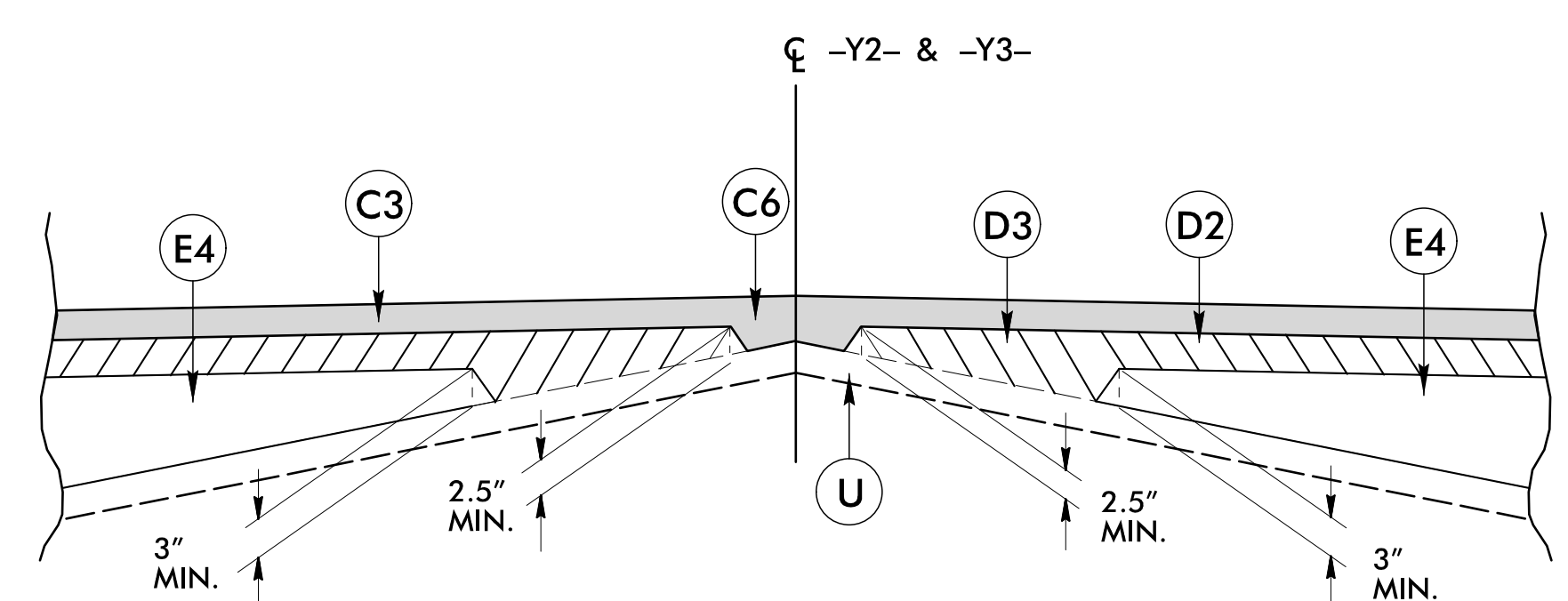
Wedging Detail For Resurfacing No. 1



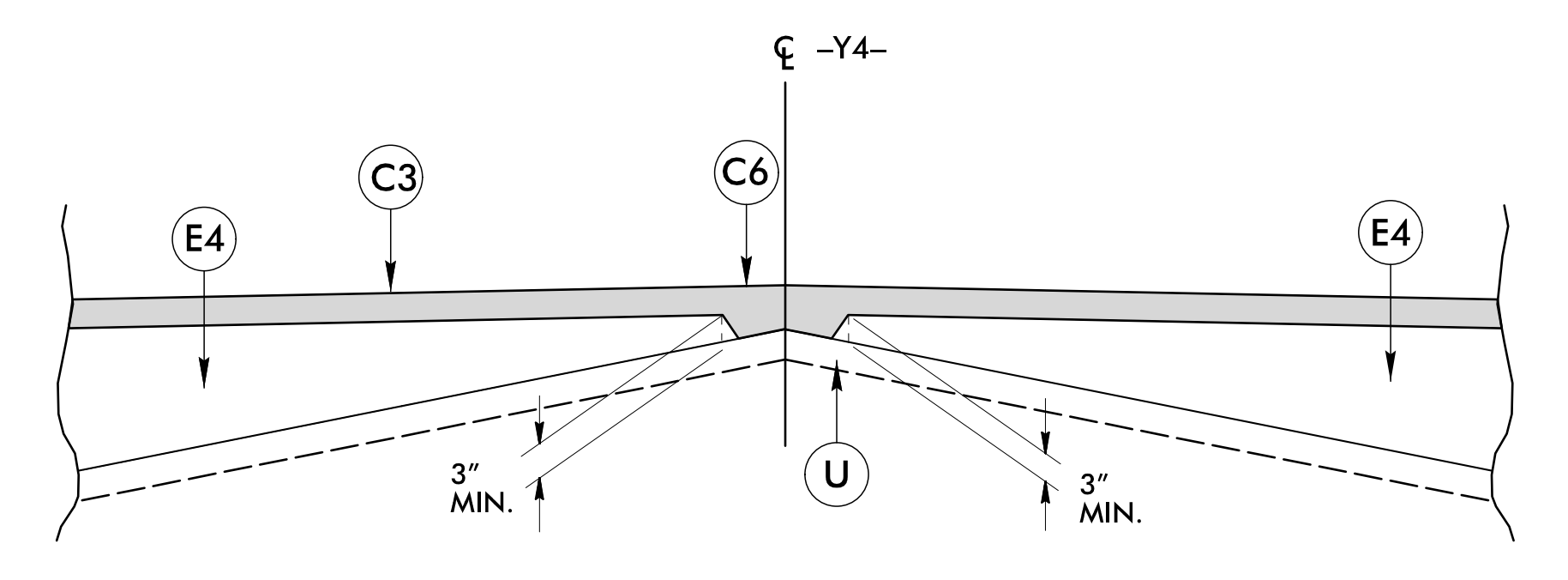
Wedging Detail For Resurfacing No. 2



Detail Showing Method of Wedging No. 3



Detail Showing Method of Wedging No. 4



Detail Showing Method of Wedging No. 5

21-MAY-2018 14:09  
C:\Roadway\Pro\U5169\_rdy\_.typ.dgn  
HNTB

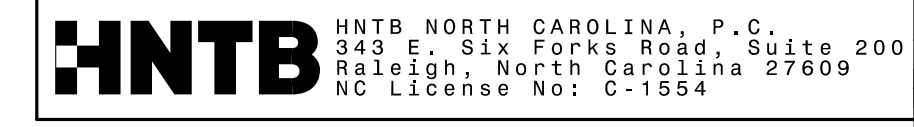


6/2/2018

**PAVEMENT SCHEDULE**  
(FINAL PAVEMENT DESIGN)

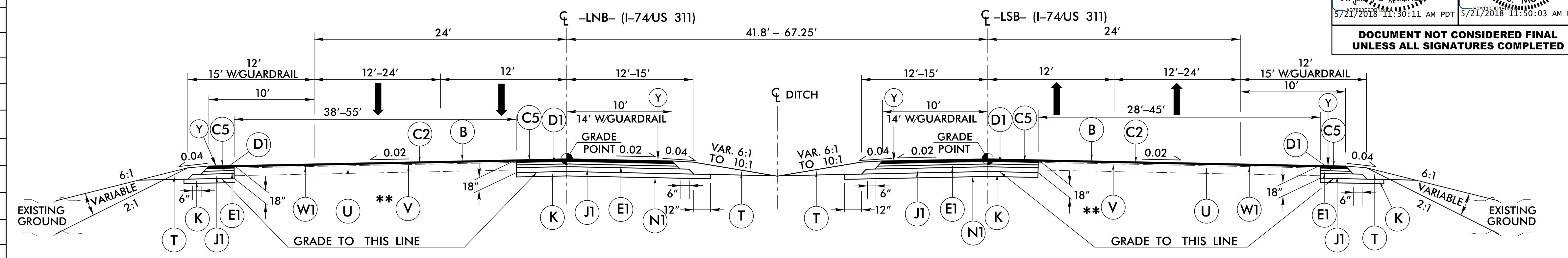
B	PROP. APPROX. 3/4" OGAFC, TYPE FC-1 MOD
C1	PROP. APPROX. 1.5" ACSC, TYPE S9.5C
C2	PROP. APPROX. 1.5" ACSC, TYPE S9.5D
C3	PROP. APPROX. 3" ACSC, TYPE S9.5B
C4	PROP. APPROX. 3" ACSC, TYPE S9.5C
C5	PROP. APPROX. 3" ACSC, TYPE S9.5D
C6	PROP. VAR. DEPTH ACSC, TYPE S9.5B
C7	PROP. VAR. DEPTH ACSC, TYPE S9.5C
C8	PROP. VAR. DEPTH ACSC, TYPE S9.5D
D1	PROP. APPROX. 3" ACIC, I19.0C
D2	PROP. APPROX. 4" ACIC, I19.0C
D3	PROP. VAR. DEPTH ACIC, I19.0C
E1	PROP. APPROX. 4" ACBC, TYPE B25.0C
E2	PROP. APPROX. 5.5" ACBC, TYPE B25.0C
E3	PROP. APPROX. 7" ACBC, TYPE B25.0C
E4	PROP. VAR. DEPTH ACBC, TYPE B25.0C
J1	PROP. 8" ABC
J2	PROP. 6" ABC
K	8" CLASS IV SUBGRADE STABILIZATION
N1	GEOTEXTILE FOR SOIL STABILIZATION
N2	GEOTEXTILE FOR PAVEMENT STABILIZATION
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	1'-6" CONCRETE CURB AND GUTTER.
R3	PROP EXPRESSWAY GUTTER
R4	5" MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED)
R5	SHOULDER BERM GUTTER
R6	PROP. 7" CONCRETE APRON
S	CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT.
V	MILLING, 1.5" TO 3" DEPTH
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 2)
W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 3)
W4	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 4)
W5	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 5)
Y	MILLED RUMBLE STRIPS

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



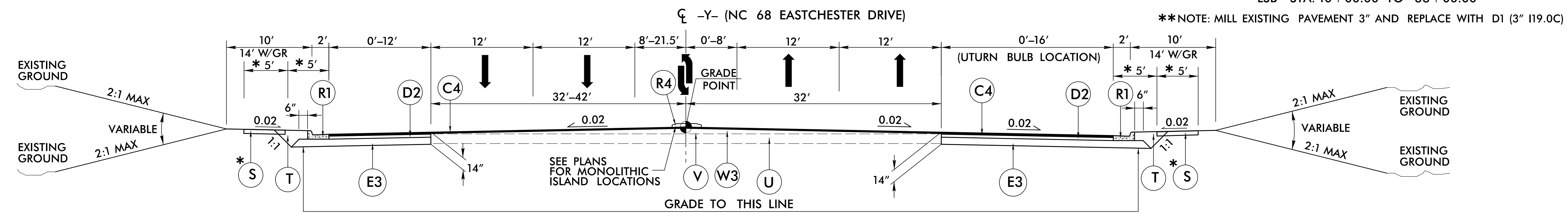
PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>2A-2</b>
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	PAVEMENT DESIGN ENGINEER <i>[Signature]</i>
SEAL 36786 5/21/2018 11:30:11 AM PDT	SEAL 022896 5/21/2018 11:50:03 AM PDT

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



**TYPICAL SECTION NO. 1**

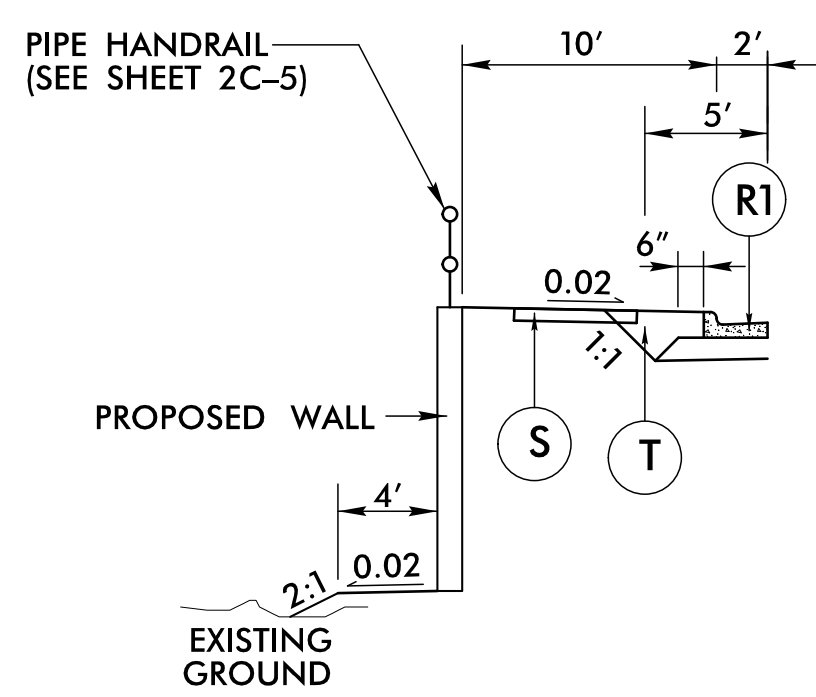
USE TYPICAL SECTION NO. 1  
-LNB- STA. 10+00.00 TO STA. 43+70.00  
-LSB- STA. 10+00.00 TO STA. 38+00.00



**TYPICAL SECTION NO. 2**

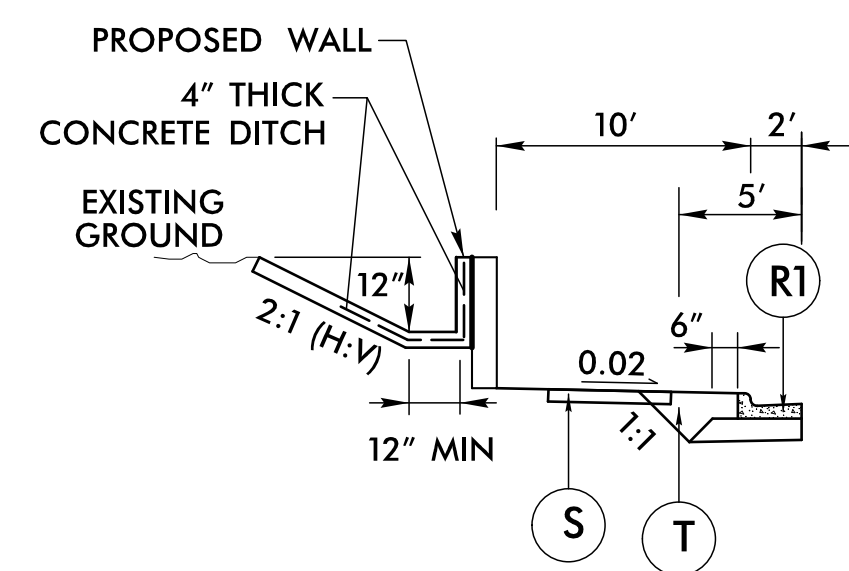
\*\*NOTE: MILL EXISTING PAVEMENT 3" AND REPLACE WITH D1 (3" I19.0C)

USE TYPICAL SECTION NO. 2  
-Y- STA. 14+00.00 TO STA. 27+12.55 (BEGIN BRIDGE)  
-Y- STA. 29+60.05 (END BRIDGE) TO STA. 57+00.00



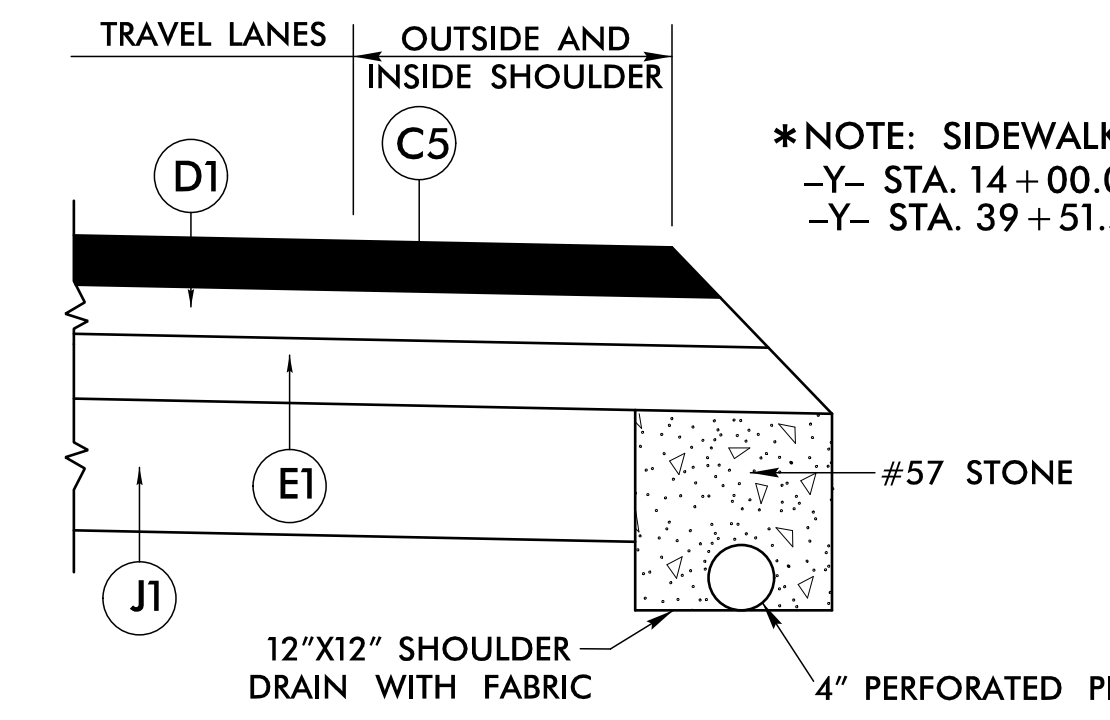
**INSET NO. 2A**

USE INSET NO. 2A IN CONJUNCTION WITH TYPICAL SECTION NO. 2 FROM -Y- STA. 49+50.00 TO STA. 50+25.00 LT



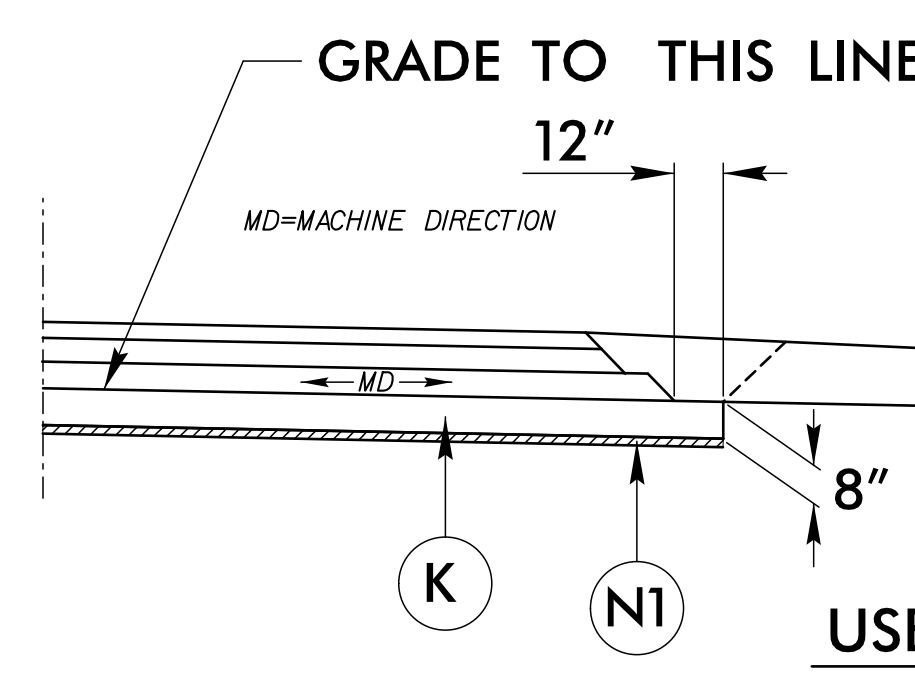
**INSET NO. 2B**

USE INSET NO. 2B IN CONJUNCTION WITH TYPICAL SECTION NO. 2 FROM -Y- STA. 54+10.00 TO STA. 54+60.00 LT



**SHOULDER DRAIN DETAIL A**

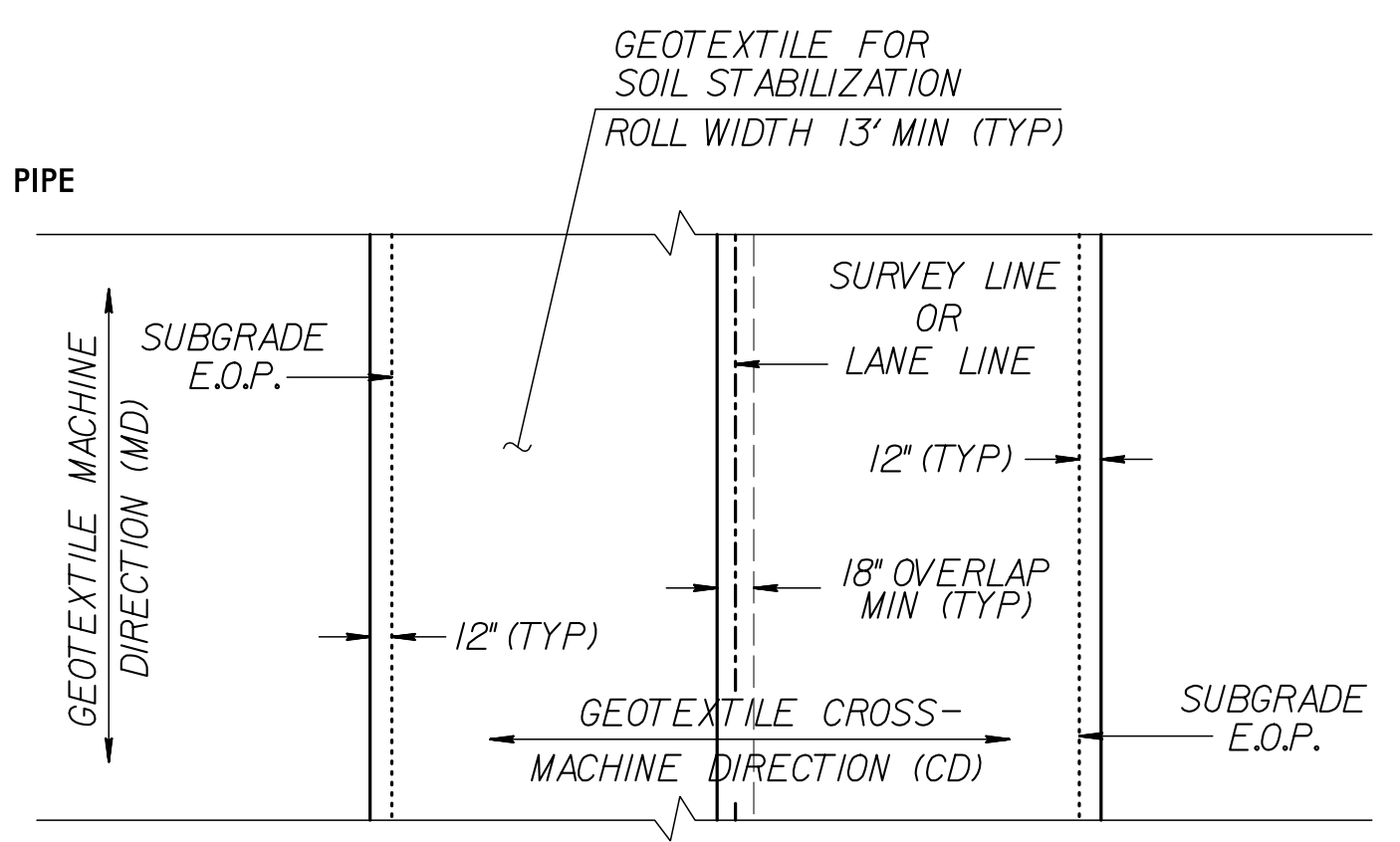
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1 SEE SHOULDER DRAIN SUMMARY ON SHEET 3B-3



**USE AGGREGATE SUBGRADE DETAIL**

-LNB- STA. 10+00.00 TO STA. 43+70.00 LT/RT  
-LSB- STA. 10+00.00 TO STA. 38+00.00  
-Y- STA. 19+25 TO STA. 21+25 LT/RT  
-Y- STA. 36+75 TO STA. 39+75 LT  
-Y2- STA. 10+83 TO STA. 13+10 LT/RT  
-Y2- STA. 14+80 TO STA. 16+50 LT/RT

-YRPA- STA. 20+00.00 TO STA. 29+32.48 LT/RT  
-YRPB- STA. 10+00.00 TO STA. 22+53.68 LT  
-YRPC- STA. 16+75.00 TO STA. 24+73.15 LT/RT  
-YLPA- STA. 10+00.00 TO STA. 19+49.08 LT/RT  
-YLPC- STA. 10+00.00 TO STA. 18+72.20 LT/RT



**GEOTEXTILE FOR SOIL STABILIZATION (PLAN VIEW)**

(100% COVERAGE REQUIRED)

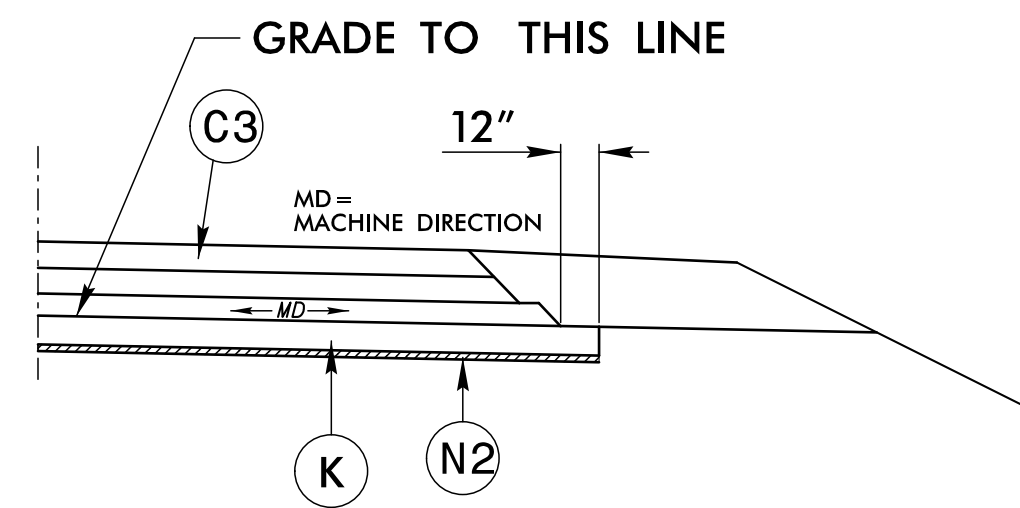
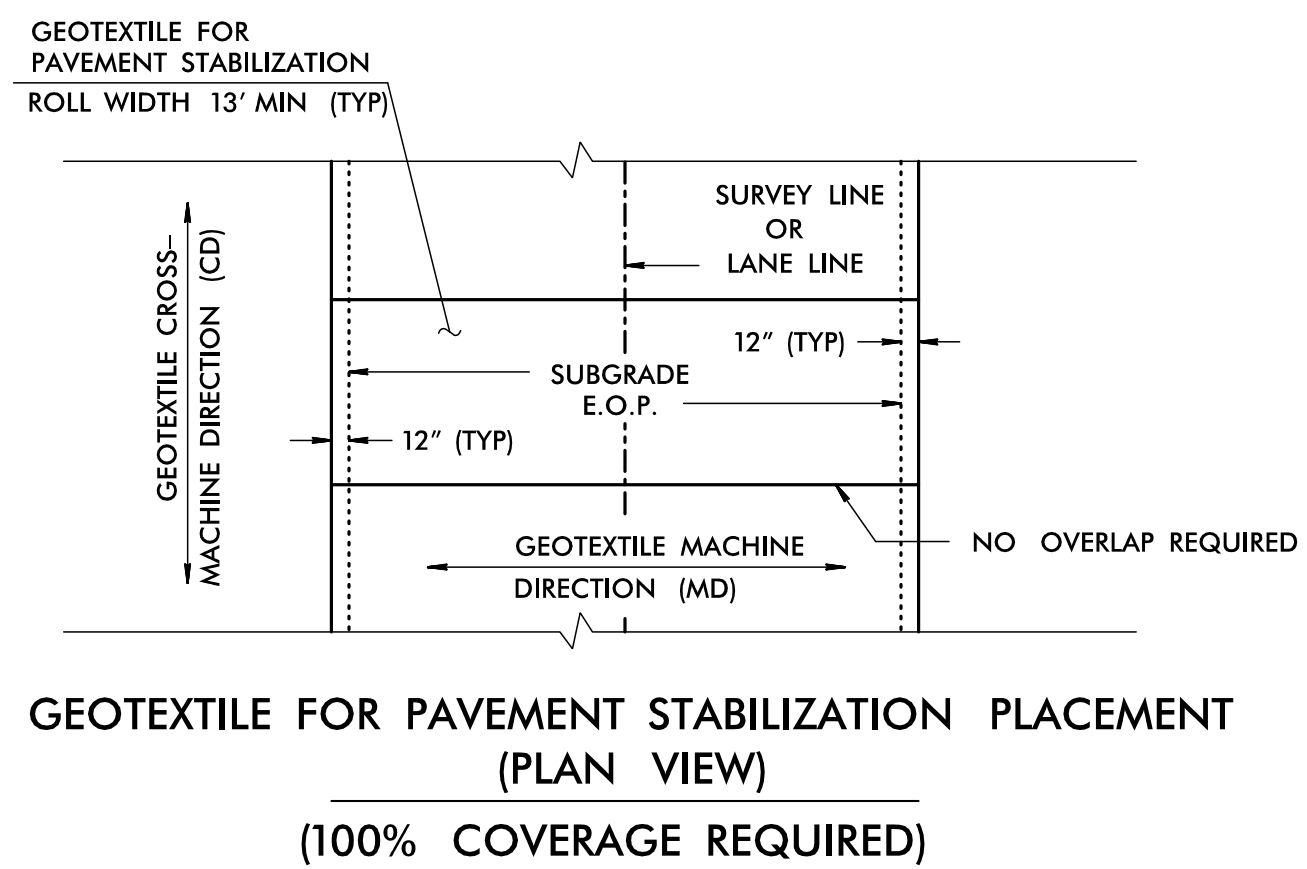
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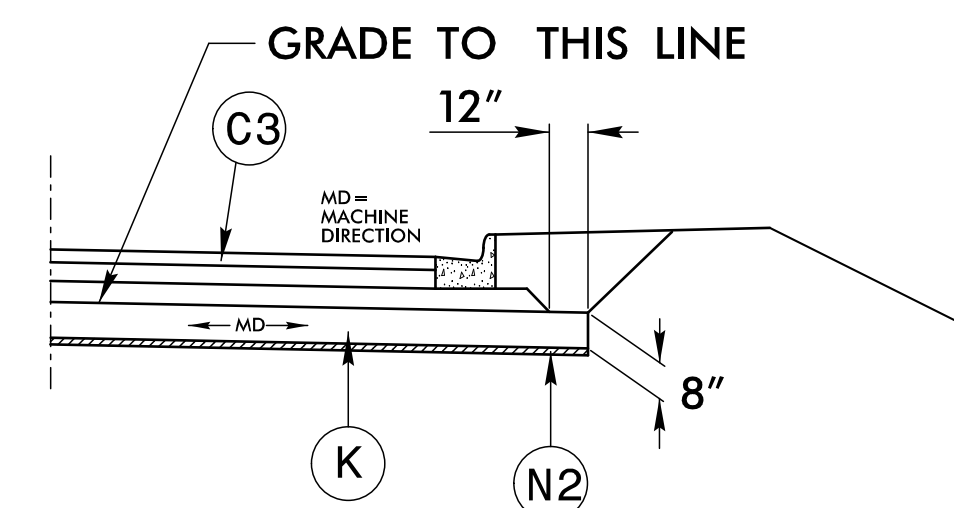
6/2/2018

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
B	PROP. APPROX. 3/4" OGAFC, TYPE FC-1 MOD
C1	PROP. APPROX. 1.5" ACSC, TYPE S9.5C
C2	PROP. APPROX. 1.5" ACSC, TYPE S9.5D
C3	PROP. APPROX. 3" ACSC, TYPE S9.5B
C4	PROP. APPROX. 3" ACSC, TYPE S9.5C
C5	PROP. APPROX. 3" ACSC, TYPE S9.5D
C6	PROP. VAR. DEPTH ACSC, TYPE S9.5B
C7	PROP. VAR. DEPTH ACSC, TYPE S9.5C
C8	PROP. VAR. DEPTH ACSC, TYPE S9.5D
D1	PROP. APPROX. 3" ACIC, I19.0C
D2	PROP. APPROX. 4" ACIC, I19.0C
D3	PROP. VAR. DEPTH ACIC, I19.0C
E1	PROP. APPROX. 4" ACBC, TYPE B25.0C
E2	PROP. APPROX. 5.5" ACBC, TYPE B25.0C
E3	PROP. APPROX. 7" ACBC, TYPE B25.0C
E4	PROP. VAR. DEPTH ACBC, TYPE B25.0C
J1	PROP. 8" ABC
J2	PROP. 6" ABC
K	8" CLASS IV SUBGRADE STABILIZATION
N1	GEOTEXTILE FOR SOIL STABILIZATION
N2	GEOTEXTILE FOR PAVEMENT STABILIZATION
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	1'-6" CONCRETE CURB AND GUTTER.
R3	PROP EXPRESSWAY GUTTER
R4	5" MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED)
R5	SHOULDER BERM GUTTER
R6	PROP. 7" CONCRETE APRON
S	CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT.
V	MILLING, 1.5" TO 3" DEPTH
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 2)
W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 3)
W4	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 4)
W5	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 5)
Y	MILLED RUMBLE STRIPS

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

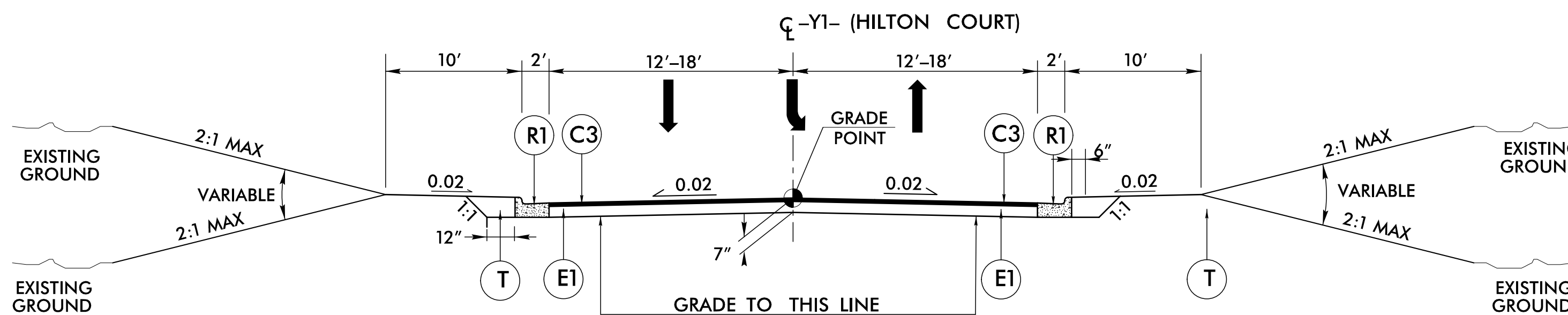


USE IN CONJUNCTION WITH TYPICAL SECTION NO. 3 & 9 FROM -Y1- STA. 17+25.00 TO STA. 18+75.00, 18' LT TO 18' RT -YRPC- STA. 21+25.00 TO STA. 24+75.00, 12' LT TO 24' RT FOR MORE INFORMATION, SEE SHEET 3G-1

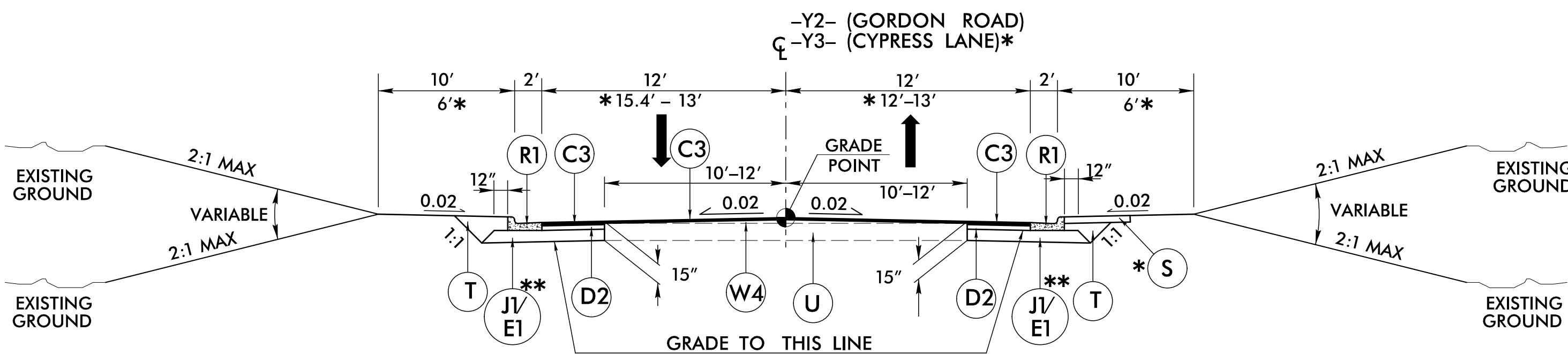


USE IN CONJUNCTION WITH TYPICAL SECTION NO. 3 & 9 FROM -Y1- STA. 17+25.00 TO STA. 18+75.00, 18' LT TO 18' RT -YRPC- STA. 21+25.00 TO STA. 24+75.00, 12' LT TO 24' RT FOR MORE INFORMATION, SEE SHEET 3G-1

PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>2A-3</b>
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	PAVEMENT DESIGN ENGINEER <i>[Signature]</i>
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

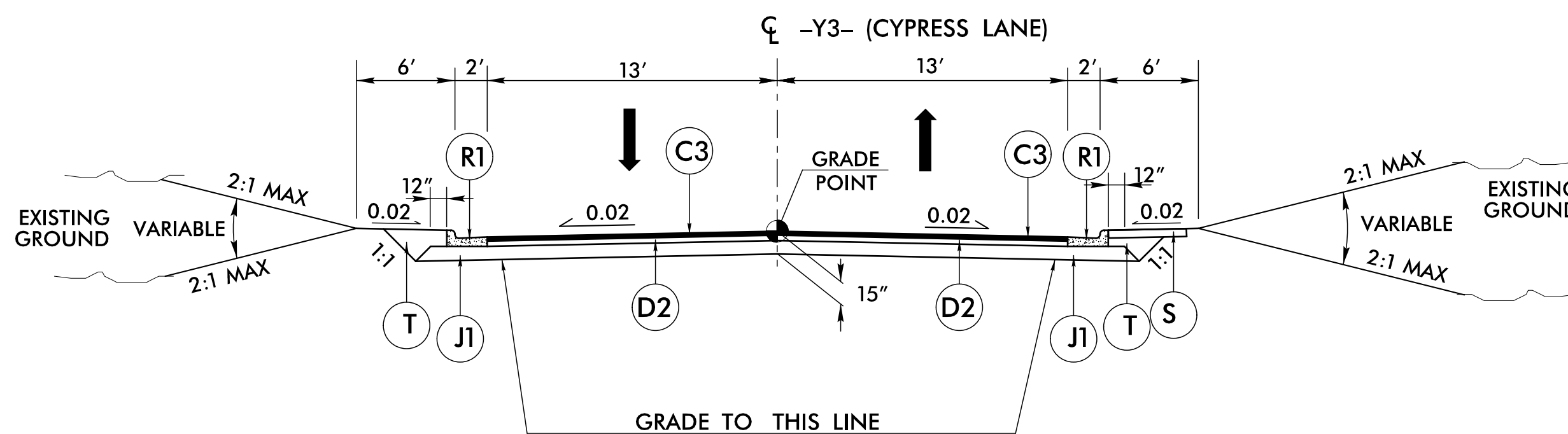


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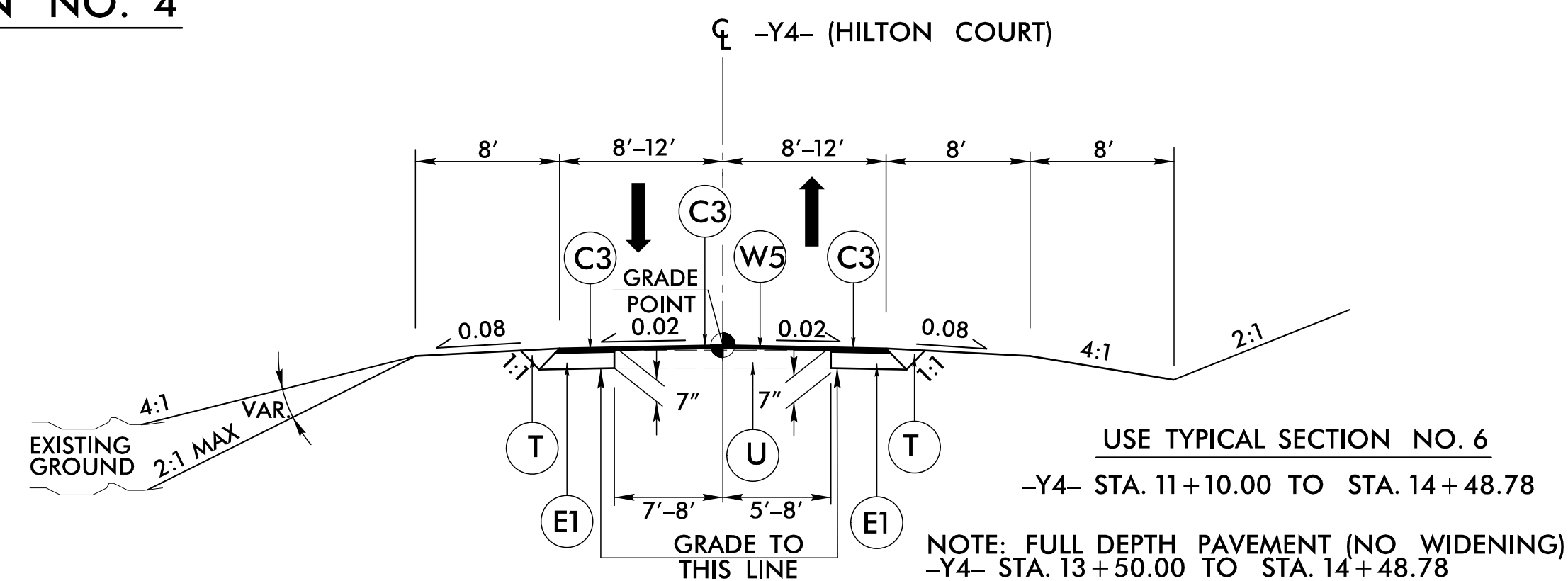
TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4  
-Y2- STA. 10+83.00 TO STA. 13+52.18  
-Y2- STA. 14+36.18 TO STA. 16+50.00  
\* -Y3- STA. 10+00.00 TO STA. 11+00.00  
NOTE: SIDEWALK LOCATIONS  
\*\* USE E1 IN LIEU OF J1 IN AREAS OF NARROW WIDENING AND TIE-INS  
-Y2- STA. 11+70.00 TO STA. 13+52.18  
-Y2- STA. 14+36.18 TO STA. 16+50.00  
-Y3- STA. 10+00.00 TO STA. 11+00.00



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5  
-Y3- STA. 11+00.00 TO STA. 17+71.18



TYPICAL SECTION NO. 6

NOTE: SIDEWALK LOCATIONS  
-Y3- STA. 11+00.00 TO STA. 17+71.18 RT

NOTE: FULL DEPTH PAVEMENT (NO WIDENING)  
-Y4- STA. 13+50.00 TO STA. 14+48.78

21-MAY-2018 14:09  
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HNTB

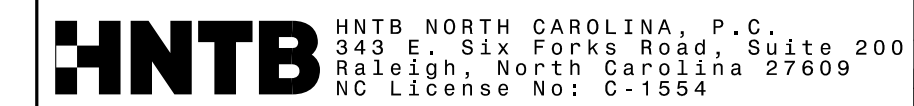
6/2/19

**PAVEMENT SCHEDULE**

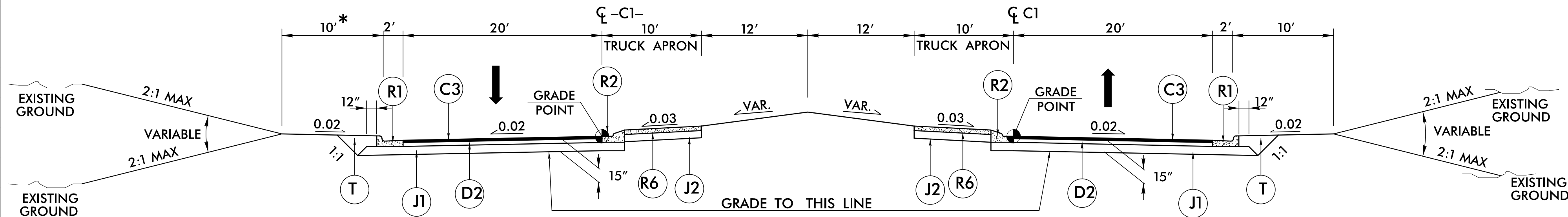
(FINAL PAVEMENT DESIGN)

B	PROP. APPROX. 3/4" OGAFC, TYPE FC-1 MOD
C1	PROP. APPROX. 1.5" ACSC, TYPE S9.5C
C2	PROP. APPROX. 1.5" ACSC, TYPE S9.5D
C3	PROP. APPROX. 3" ACSC, TYPE S9.5B
C4	PROP. APPROX. 3" ACSC, TYPE S9.5C
C5	PROP. APPROX. 3" ACSC, TYPE S9.5D
C6	PROP. VAR. DEPTH ACSC, TYPE S9.5B
C7	PROP. VAR. DEPTH ACSC, TYPE S9.5C
C8	PROP. VAR. DEPTH ACSC, TYPE S9.5D
D1	PROP. APPROX. 3" ACIC, I19.0C
D2	PROP. APPROX. 4" ACIC, I19.0C
D3	PROP. VAR. DEPTH ACIC, I19.0C
E1	PROP. APPROX. 4" ACBC, TYPE B25.0C
E2	PROP. APPROX. 5.5" ACBC, TYPE B25.0C
E3	PROP. APPROX. 7" ACBC, TYPE B25.0C
E4	PROP. VAR. DEPTH ACBC, TYPE B25.0C
J1	PROP. 8" ABC
J2	PROP. 6" ABC
K	8" CLASS IV SUBGRADE STABILIZATION
N1	GEOTEXTILE FOR SOIL STABILIZATION
N2	GEOTEXTILE FOR PAVEMENT STABILIZATION
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	1'-6" CONCRETE CURB AND GUTTER.
R3	PROP EXPRESSWAY GUTTER
R4	5" MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED)
R5	SHOULDER BERM GUTTER
R6	PROP. 7" CONCRETE APRON
S	CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT.
V	MILLING, 1.5" TO 3" DEPTH
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 2)
W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 3)
W4	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 4)
W5	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 5)
Y	MILLED RUMBLE STRIPS

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

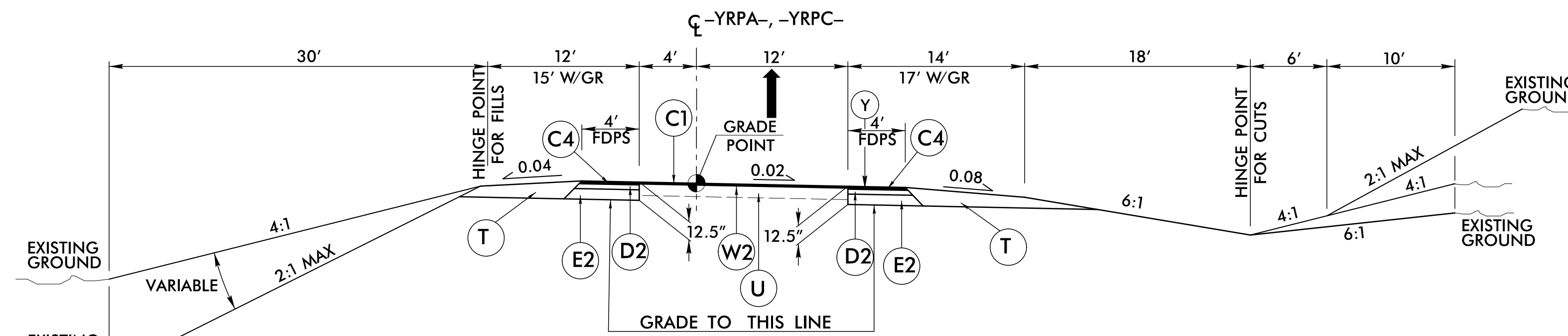


PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>2A-4</b>
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



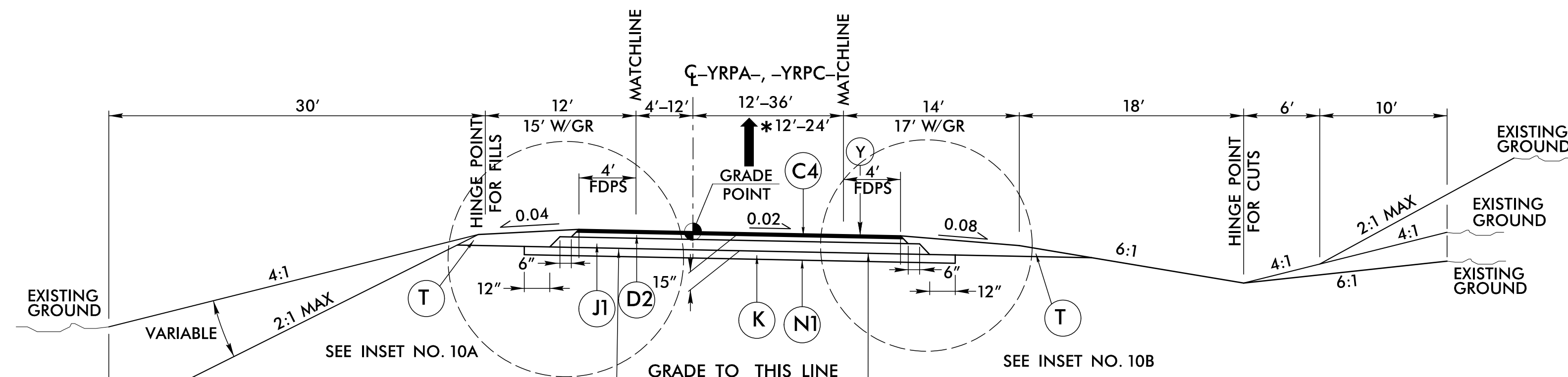
**TYPICAL SECTION NO. 7**  
ROUNDABOUT TYPICAL

USE TYPICAL SECTION NO. 7  
-C1- STA. 10+00.00 TO STA. 11+38.22



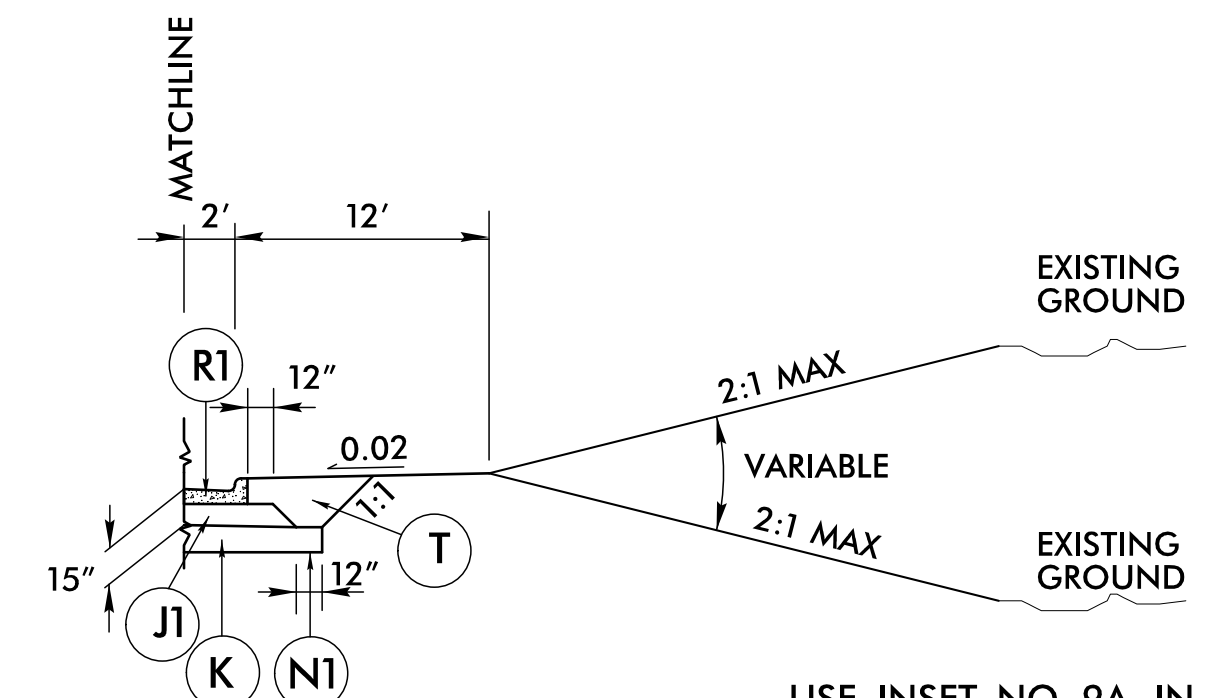
**TYPICAL SECTION NO. 8**

USE TYPICAL SECTION NO. 8  
-YRPA- STA. 10+00.00 TO STA. 20+00.00  
-YRPC- STA. 10+00.00 TO STA. 16+75.00



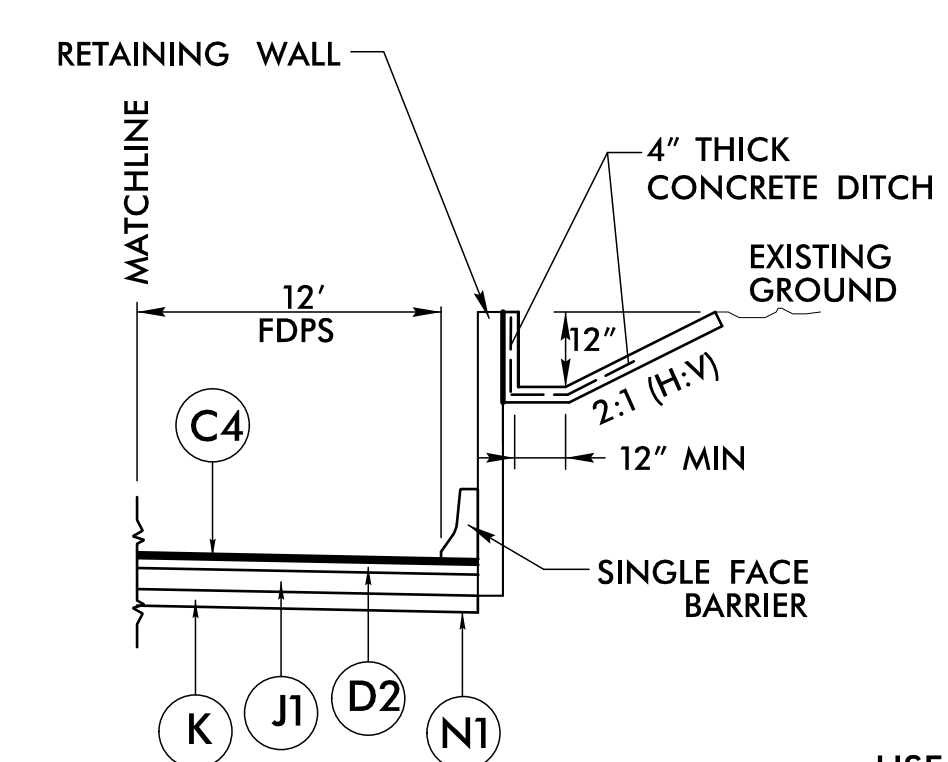
**TYPICAL SECTION NO. 9**

USE TYPICAL SECTION NO. 9  
-YRPA- STA. 20+00.00 TO STA. 29+32.48  
\* -YRPC- STA. 16+75.00 TO STA. 24+73.15



**INSET NO. 9A**

USE INSET NO. 9A IN CONJUNCTION WITH TYPICAL SECTION NO. 9 FOR CURB & GUTTER LOCATIONS  
-YRPA- STA. 27+64.30 TO STA. 29+32.48 RT  
-YRPA- STA. 25+69.17 TO STA. 29+32.48 LT  
-YRPC- STA. 23+40.30 TO STA. 24+73.15 RT  
-YRPC- STA. 20+30.00 TO STA. 24+73.15 LT



**INSET NO. 9B**

USE INSET NO. 9B IN CONJUNCTION WITH TYPICAL SECTION NO. 9 FOR RETAINING WALL LOCATIONS  
-YRPC- STA. 16+05.61 TO STA. 20+36.94 RT

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6/2/2018

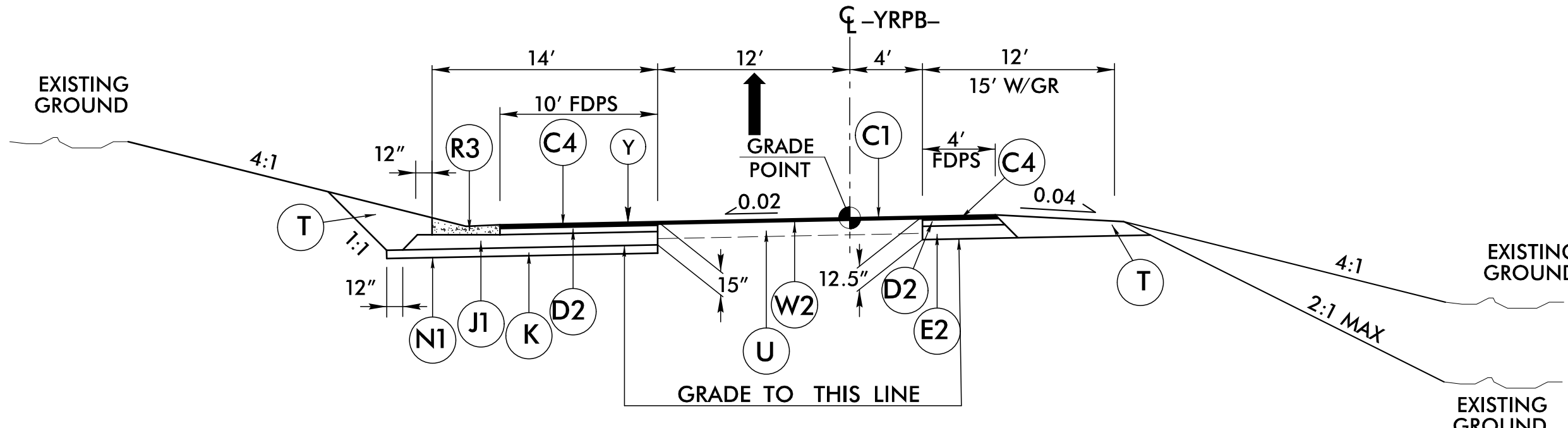
**PAVEMENT SCHEDULE**  
(FINAL PAVEMENT DESIGN)

B	PROP. APPROX. 3/4" OGAFC, TYPE FC-1 MOD
C1	PROP. APPROX. 1.5" ACSC, TYPE S9.5C
C2	PROP. APPROX. 1.5" ACSC, TYPE S9.5D
C3	PROP. APPROX. 3" ACSC, TYPE S9.5B
C4	PROP. APPROX. 3" ACSC, TYPE S9.5C
C5	PROP. APPROX. 3" ACSC, TYPE S9.5D
C6	PROP. VAR. DEPTH ACSC, TYPE S9.5B
C7	PROP. VAR. DEPTH ACSC, TYPE S9.5C
C8	PROP. VAR. DEPTH ACSC, TYPE S9.5D
D1	PROP. APPROX. 3" ACIC, I19.0C
D2	PROP. APPROX. 4" ACIC, I19.0C
D3	PROP. VAR. DEPTH ACIC, I19.0C
E1	PROP. APPROX. 4" ACBC, TYPE B25.0C
E2	PROP. APPROX. 5.5" ACBC, TYPE B25.0C
E3	PROP. APPROX. 7" ACBC, TYPE B25.0C
E4	PROP. VAR. DEPTH ACBC, TYPE B25.0C
J1	PROP. 8" ABC
J2	PROP. 6" ABC
K	8" CLASS IV SUBGRADE STABILIZATION
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N2	GEOTEXTILE FOR PAVEMENT STABILIZATION
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	1'-6" CONCRETE CURB AND GUTTER.
R3	PROP EXPRESSWAY GUTTER
R4	5" MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED)
R5	SHOULDER BERM GUTTER
R6	PROP. 7" CONCRETE APRON
S	CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT.
V	MILLING, 1.5" TO 3" DEPTH
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 2)
W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 3)
W4	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 4)
W5	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 5)
Y	MILLED RUMBLE STRIPS

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

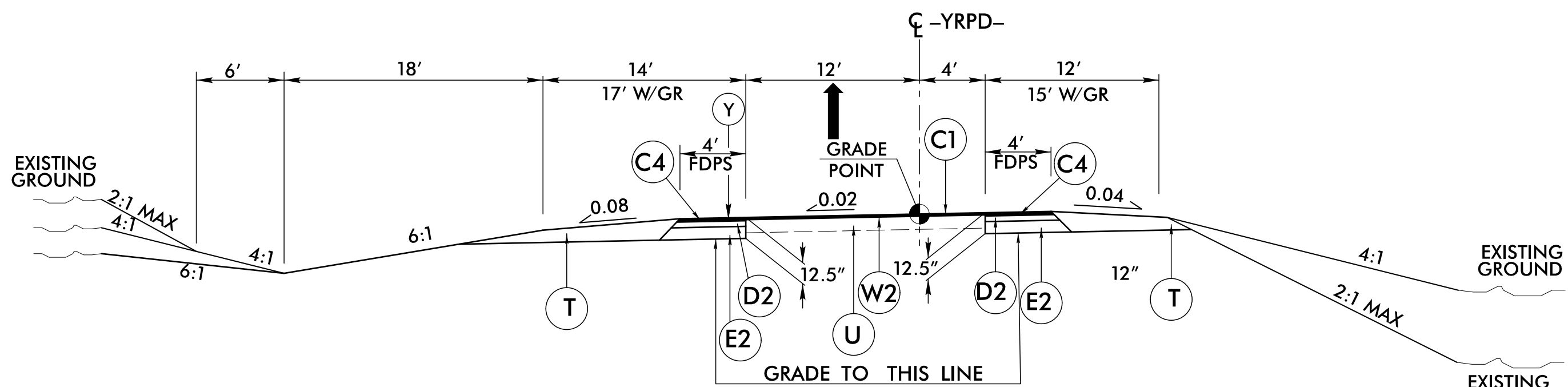
**HNTB** HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1524

PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>2A-5</b>
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



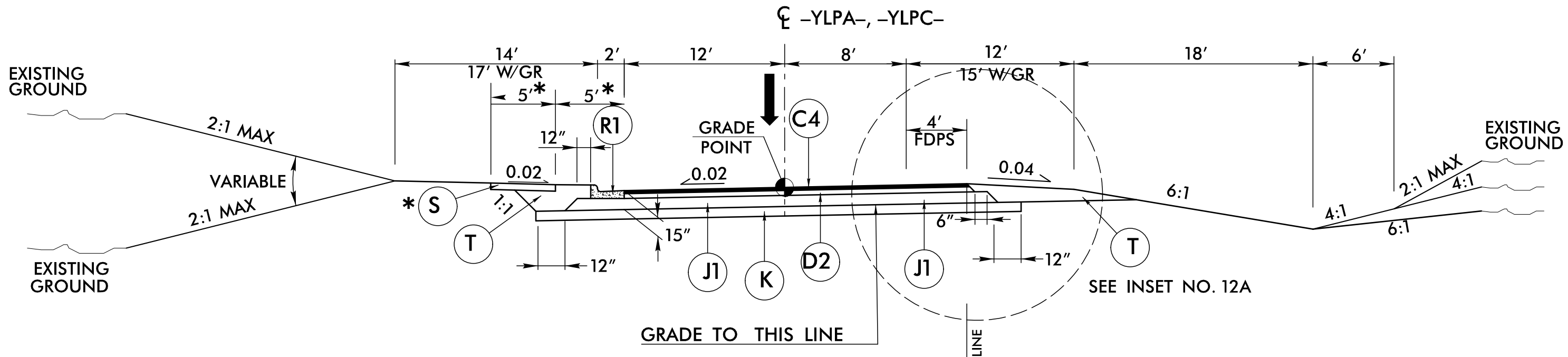
**TYPICAL SECTION NO. 10**

USE TYPICAL SECTION NO. 10  
-YRPB- STA. 10+00.00 TO STA. 22+53.68



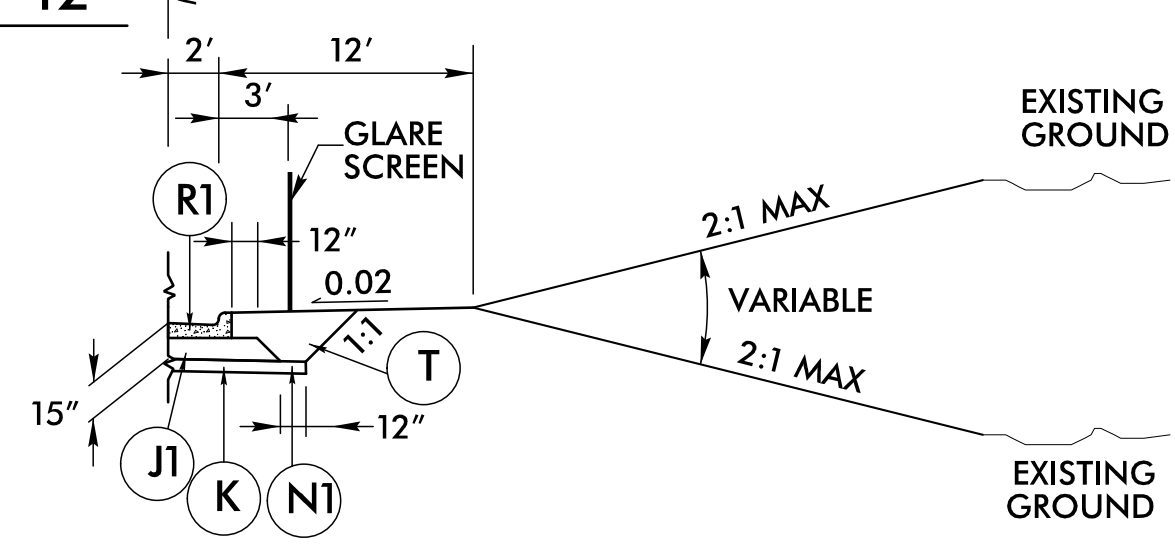
**TYPICAL SECTION NO. 11**

USE TYPICAL SECTION NO. 11  
-YRPD- STA. 10+00.00 TO STA. 20+59.71



**TYPICAL SECTION NO. 12**

USE TYPICAL SECTION NO. 12  
-YLPA- STA. 10+00.00 TO STA. 19+49.08  
-YLPC- STA. 10+00.00 TO STA. 18+72.20  
\* NOTE: SIDEWALK LOCATIONS  
-YLPA- STA. 17+93.70 TO STA. 19+27.40



**INSET NO. 12A**

USE INSET NO. 12A IN CONJUNCTION WITH TYPICAL SECTION NO. 12 FOR CURB & GUTTER LOCATIONS  
-YLPA- STA. 15+01.26 TO STA. 17+72.76  
-YLPC- STA. 14+41.96 TO STA. 16+75.47

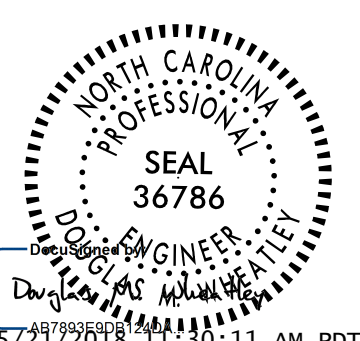
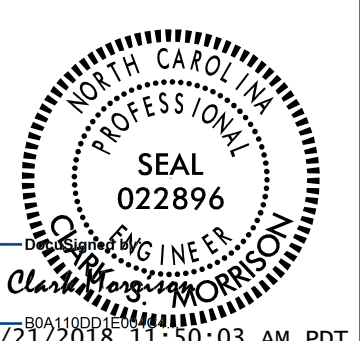
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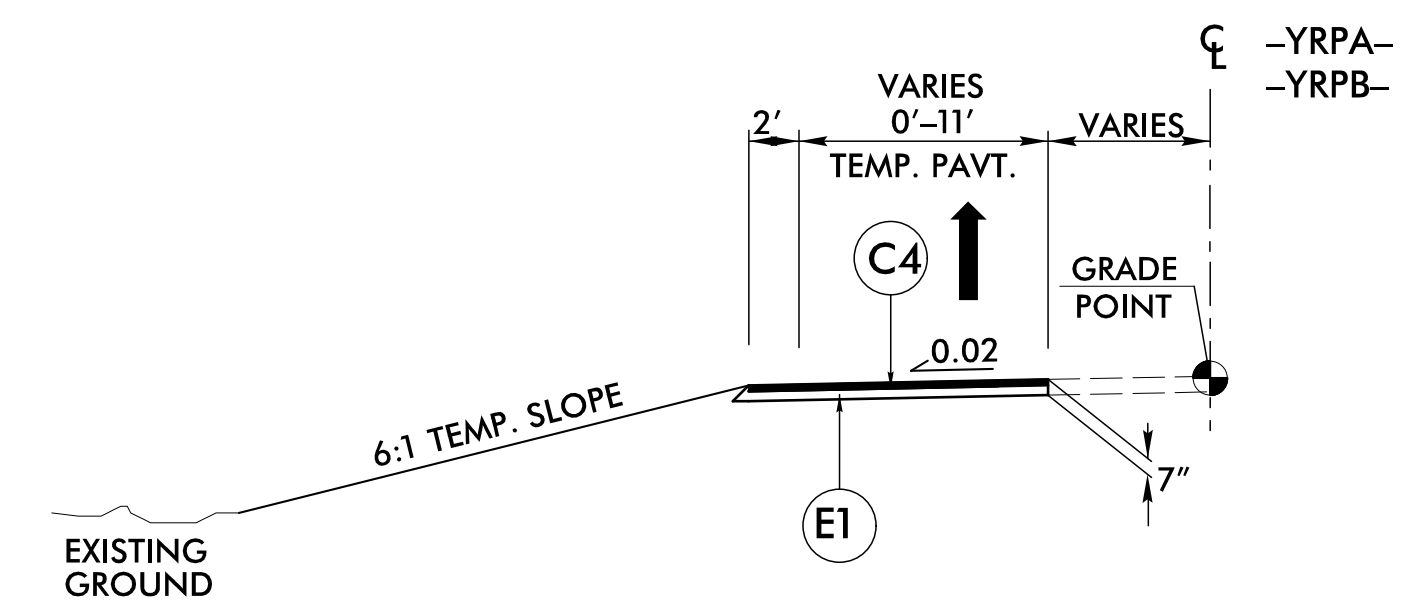
6/2/2018

**PAVEMENT SCHEDULE**  
(FINAL PAVEMENT DESIGN)

B	PROP. APPROX. 3/4" OGAFC, TYPE FC-1 MOD
C1	PROP. APPROX. 1.5" ACSC, TYPE S9.5C
C2	PROP. APPROX. 1.5" ACSC, TYPE S9.5D
C3	PROP. APPROX. 3" ACSC, TYPE S9.5B
C4	PROP. APPROX. 3" ACSC, TYPE S9.5C
C5	PROP. APPROX. 3" ACSC, TYPE S9.5D
C6	PROP. VAR. DEPTH ACSC, TYPE S9.5B
C7	PROP. VAR. DEPTH ACSC, TYPE S9.5C
C8	PROP. VAR. DEPTH ACSC, TYPE S9.5D
D1	PROP. APPROX. 3" ACIC, I19.0C
D2	PROP. APPROX. 4" ACIC, I19.0C
D3	PROP. VAR. DEPTH ACIC, I19.0C
E1	PROP. APPROX. 4" ACBC, TYPE B25.0C
E2	PROP. APPROX. 5.5" ACBC, TYPE B25.0C
E3	PROP. APPROX. 7" ACBC, TYPE B25.0C
E4	PROP. VAR. DEPTH ACBC, TYPE B25.0C
J1	PROP. 8" ABC
J2	PROP. 6" ABC
K	8" CLASS IV SUBGRADE STABILIZATION
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N2	GEOTEXTILE FOR PAVEMENT STABILIZATION
R1	2'-6" CONCRETE CURB AND GUTTER.
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R3	PROP EXPRESSWAY GUTTER
R4	5" MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED)
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R6	PROP. 7" CONCRETE APRON
S	CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT.
V	MILLING, 1.5" TO 3" DEPTH
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 1)
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W4	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 4)
W5	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING No. 5)
Y	MILLED RUMBLE STRIPS

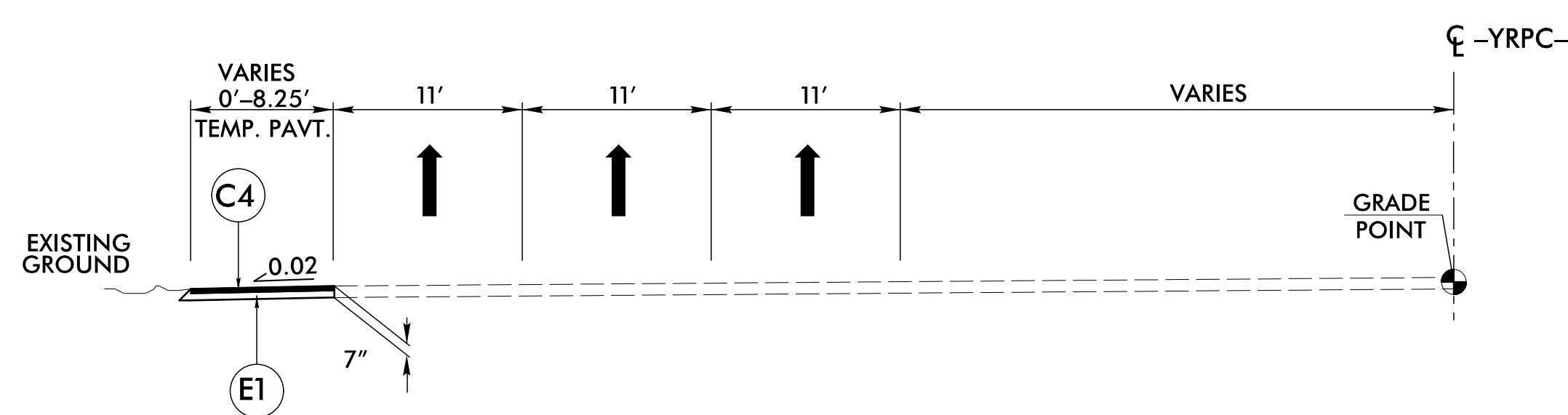
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>2A-6</b>
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



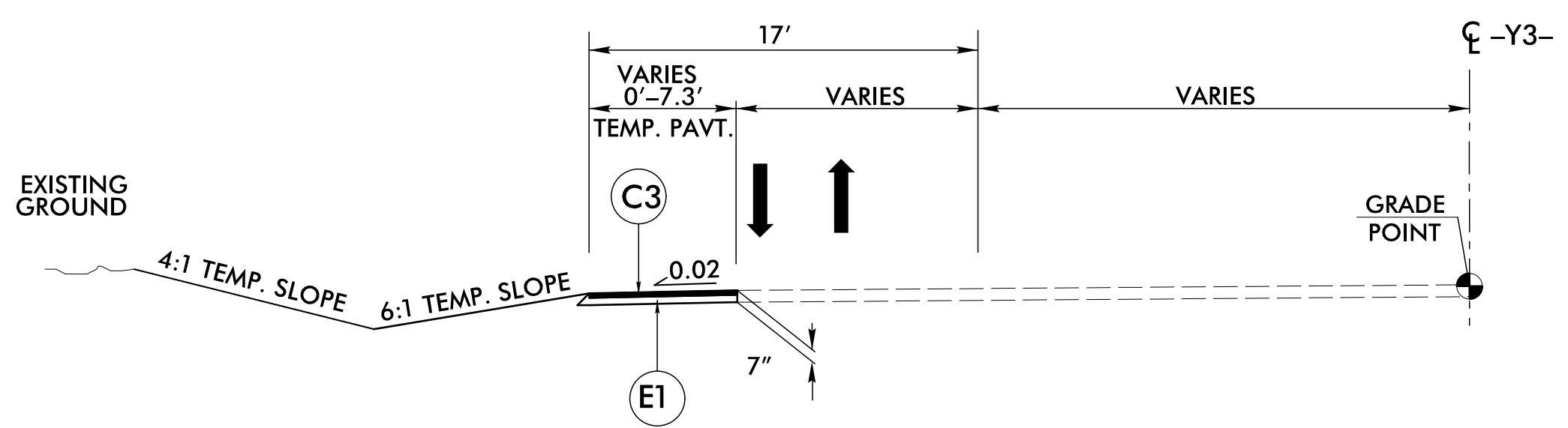
USE TYPICAL SECTION NO. 13 FOR PHASE I CONSTRUCTION  
-YRPA- STA. 17+82 +/- TO STA. 20+50 +/-  
-YRPA- STA. 27+49 +/- TO STA. 29+19 +/-  
-YRPB- STA. 22+36 +/- TO STA. 22+61 +/-

**TYPICAL SECTION NO. 13**  
**PHASE I CONSTRUCTION**



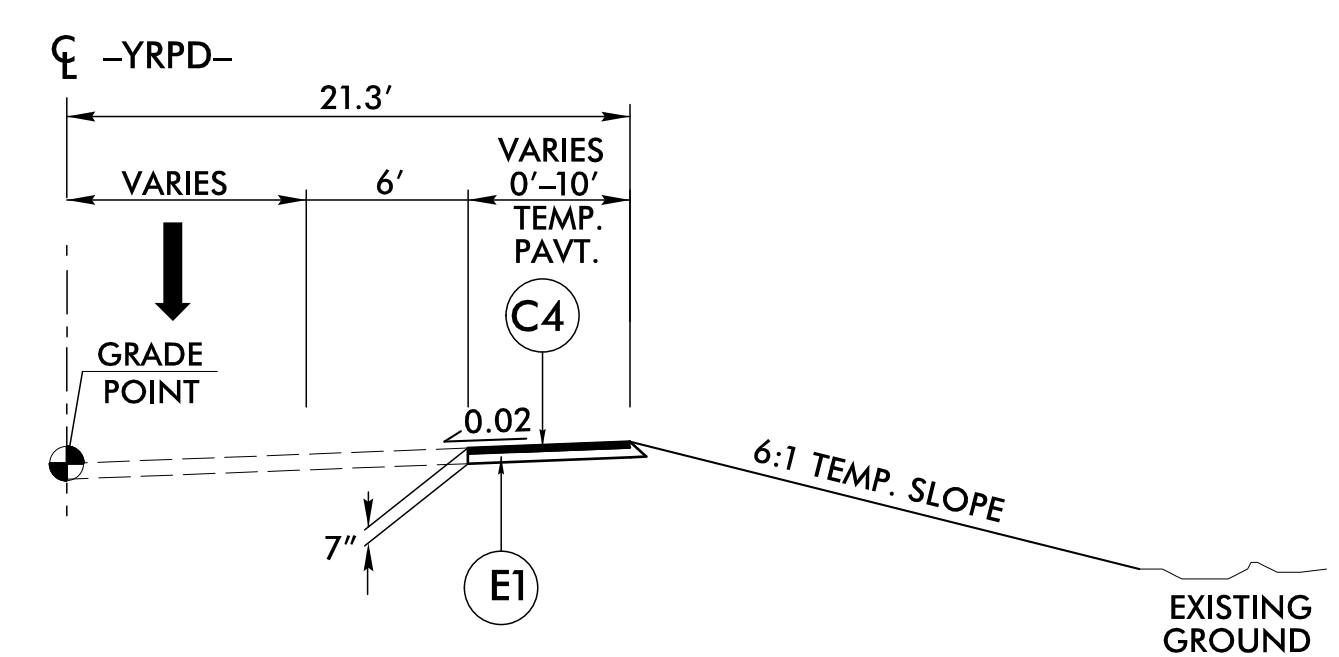
USE TYPICAL SECTION NO. 14 FOR PHASE I CONSTRUCTION  
-YRPC- STA. 23+25 +/- TO STA. 24+67 +/-

**TYPICAL SECTION NO. 14**  
**PHASE I CONSTRUCTION**



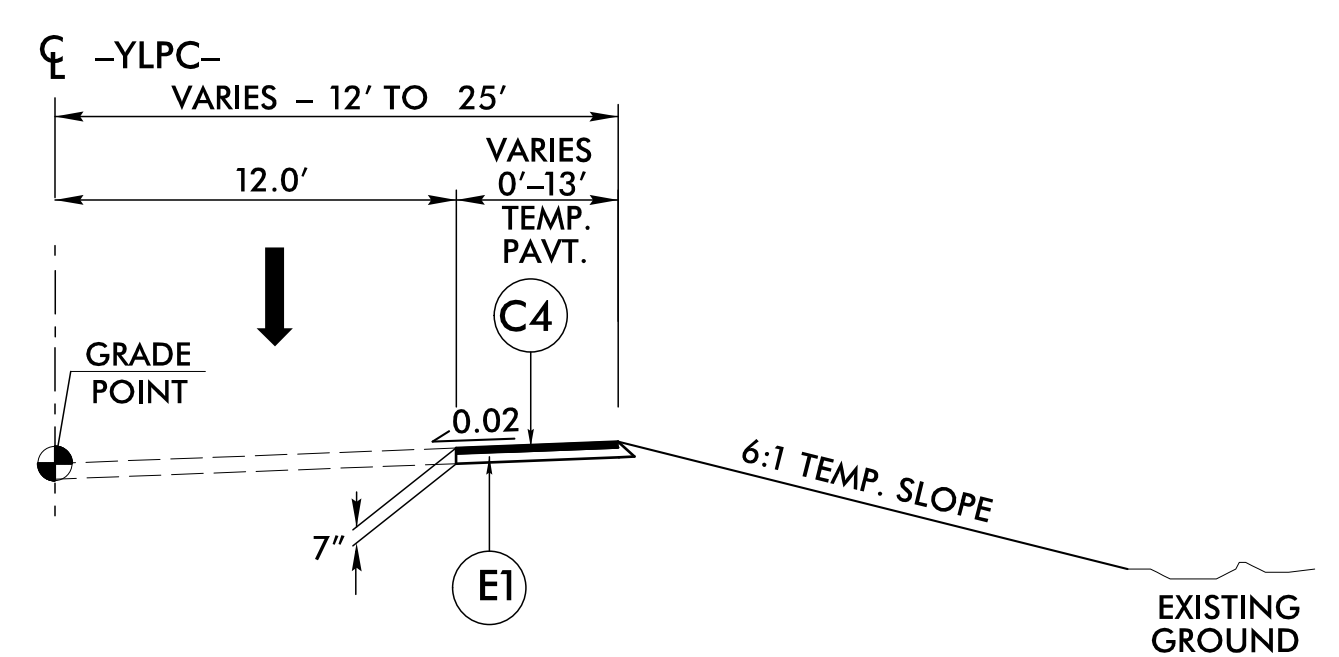
USE TYPICAL SECTION NO. 15 FOR PHASE I CONSTRUCTION  
-Y3- STA. 16+58 +/- TO STA. 17+86 +/-

**TYPICAL SECTION NO. 15**  
**PHASE I CONSTRUCTION**



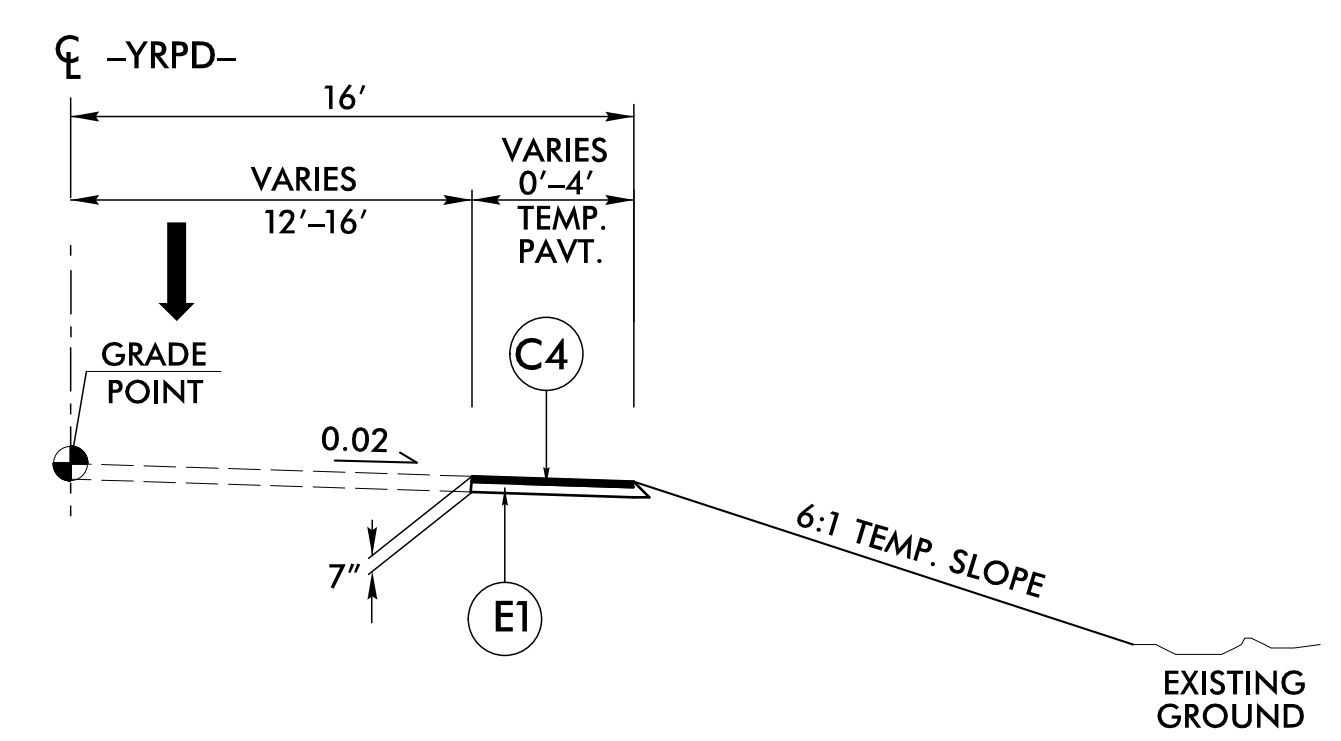
**TYPICAL SECTION NO. 16**  
**PHASE II CONSTRUCTION**

USE TYPICAL SECTION NO. 16 FOR PHASE II CONSTRUCTION  
-YRPD- STA. 13+66 +/- TO STA. 20+54 +/-



**TYPICAL SECTION NO. 17**  
**PHASE II CONSTRUCTION**

USE TYPICAL SECTION NO. 17 FOR PHASE II CONSTRUCTION  
-YLPC- STA. 13+04 +/- TO STA. 17+58 +/-

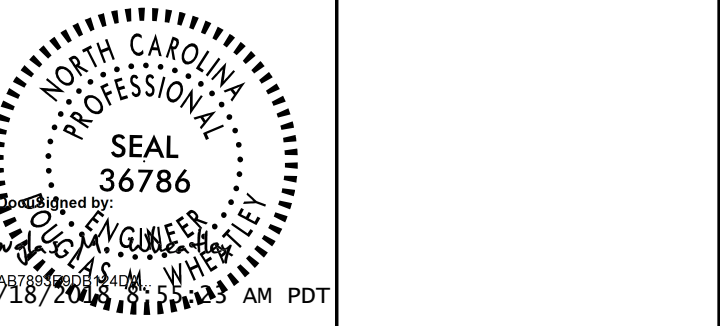


**TYPICAL SECTION NO. 18**  
**PHASE III CONSTRUCTION**

USE TYPICAL SECTION NO. 18 FOR PHASE III CONSTRUCTION  
-YRPD- STA. 19+19 +/- TO STA. 19+67 +/-

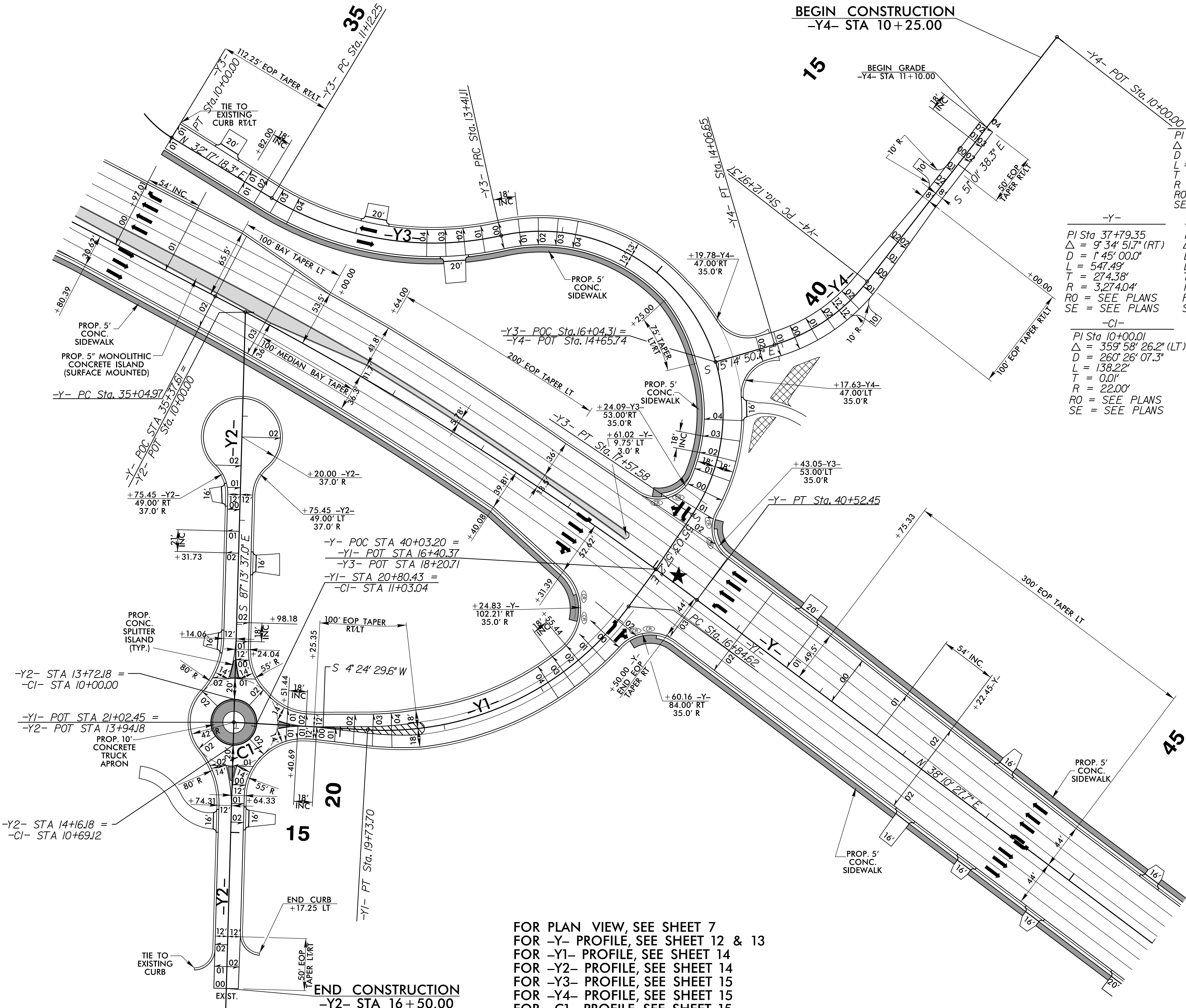
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

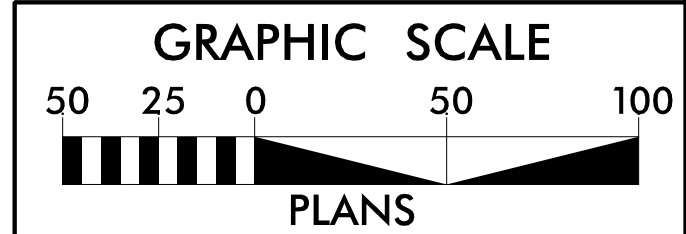
NAD 83/NA 2011



-Y-	-Y1-	-Y3-
PI Sta 9+43.37 Δ = 84' 22' 41.7" (LT) D = 57' 17' 44.8" L = 147.27' T = 90.64' R = 100.00' RO = SEE PLANS SE = SEE PLANS	PI Sta 12+32.58 Δ = 43' 42' 31.7" (LT) D = 19' 05' 54.9" L = 228.86' T = 120.32' R = 300.00' RO = SEE PLANS SE = SEE PLANS	PI Sta 17+78.14 Δ = 136' 21' 16.2" (RT) D = 32' 44' 25.6" L = 416.47' T = 437.03' R = 175.00' RO = SEE PLANS SE = SEE PLANS

-Y-	-Y1-
PI Sta 37+79.35 Δ = 9' 34' 51.7" (RT) D = 1' 45' 00.0" L = 547.49' T = 274.38' R = 3,274.04' RO = SEE PLANS SE = SEE PLANS	PI Sta 18+42.45 Δ = 57' 06' 46.6" (RT) D = 19' 45' 25.8" L = 289.07' T = 157.83' R = 290.00' RO = SEE PLANS SE = SEE PLANS

-C1-	-Y4-
PI Sta 10+00.01 Δ = 359' 58' 26.2" (LT) D = 260' 26' 07.3" L = 138.22' T = 0.01' R = 22.00' RO = SEE PLANS SE = SEE PLANS	PI Sta 13+53.86 Δ = 35' 46' 47.6" (RT) D = 32' 44' 25.6" L = 109.28' T = 56.49' R = 175.00' RO = SEE PLANS SE = SEE PLANS



TITLE: INTERSECTION DETAIL SHEET  
-Y-, -Y1-, -Y2-, -Y3-, -Y4- AND -C1-

TIP NO.: U-5169 COUNTY: GUILFORD

DRAWN BY: MONICA J. DUVAL DATE: 02/12/16

FOR PLAN VIEW, SEE SHEET 7  
FOR -Y- PROFILE, SEE SHEET 12 & 13  
FOR -Y1- PROFILE, SEE SHEET 14  
FOR -Y2- PROFILE, SEE SHEET 14  
FOR -Y3- PROFILE, SEE SHEET 15  
FOR -Y4- PROFILE, SEE SHEET 15  
FOR -C1- PROFILE, SEE SHEET 15

16-MAY-2016 11:24 AM  
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HNTB



8/17/99

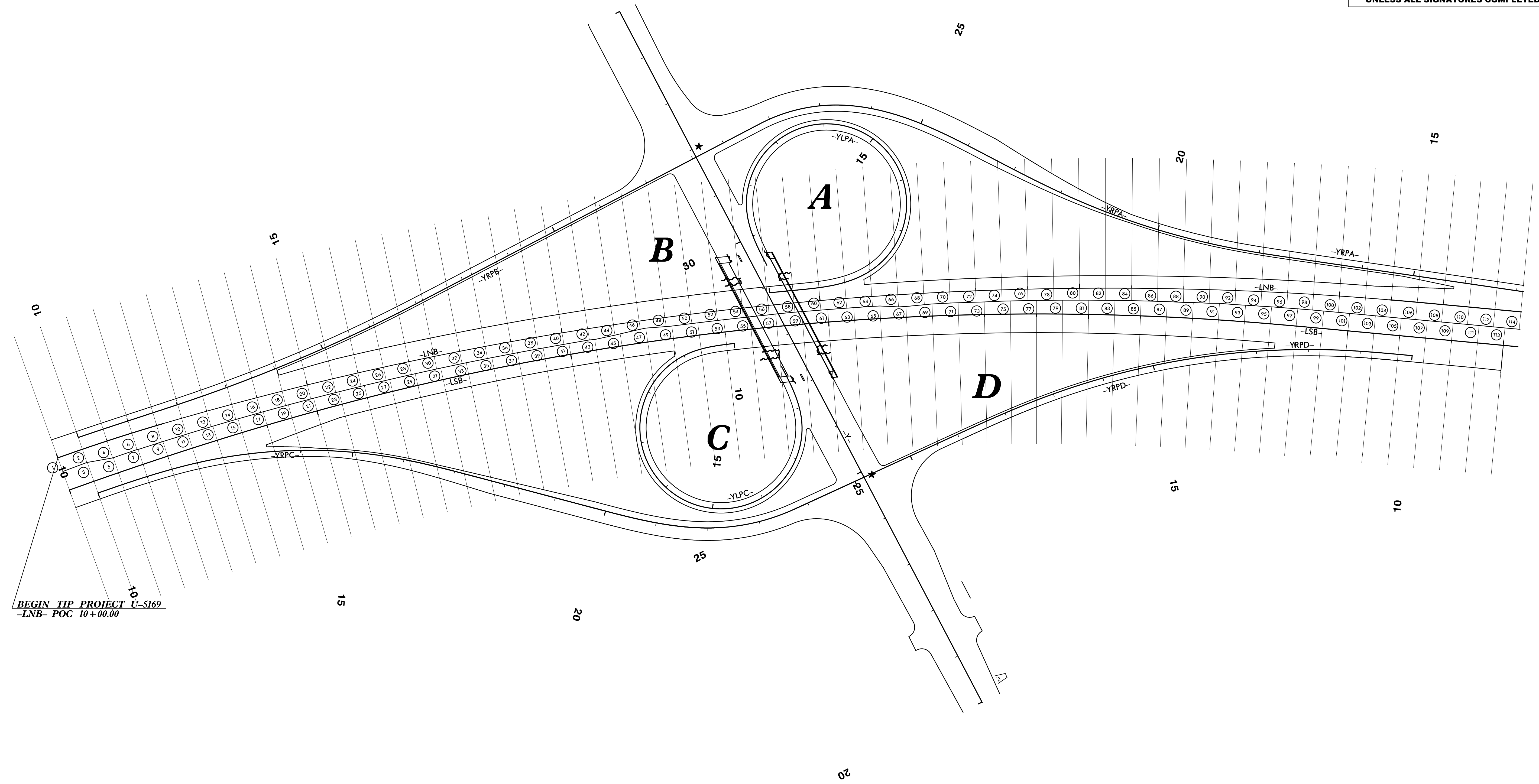
NAD 83/NA 2011

# SHEAR POINT DETAIL SHEET

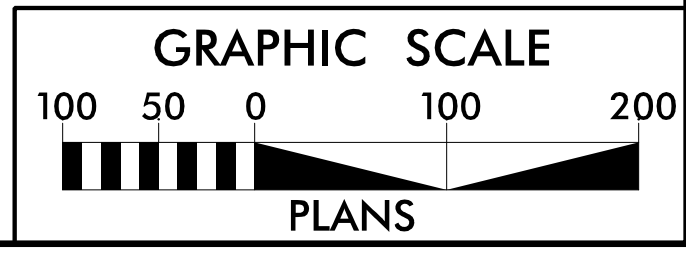
-LNB- AND -LSB-

**HNTB** HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
U-5169	2B-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



BEGIN TIP PROJECT U-5169  
-LNB- POC 10+00.00



18 MAY 2018 11:24  
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HNTB

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

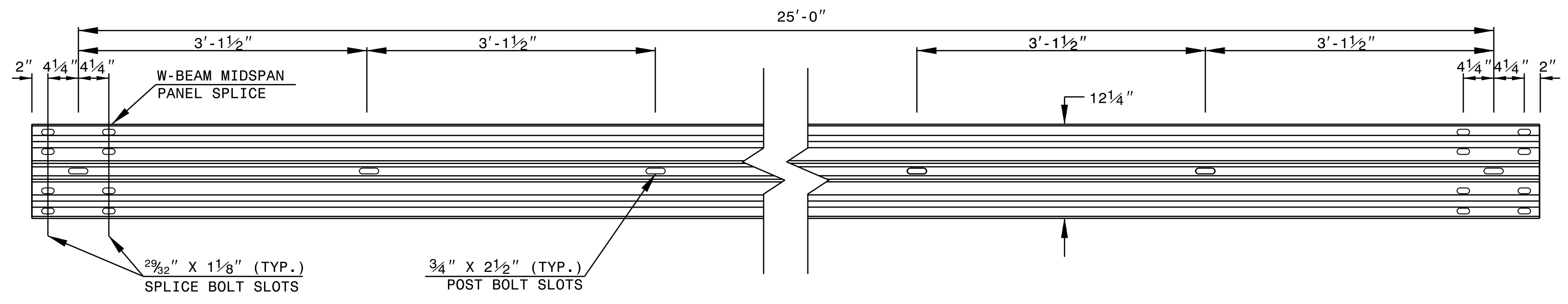
ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 6 OF 8  
**862D02**

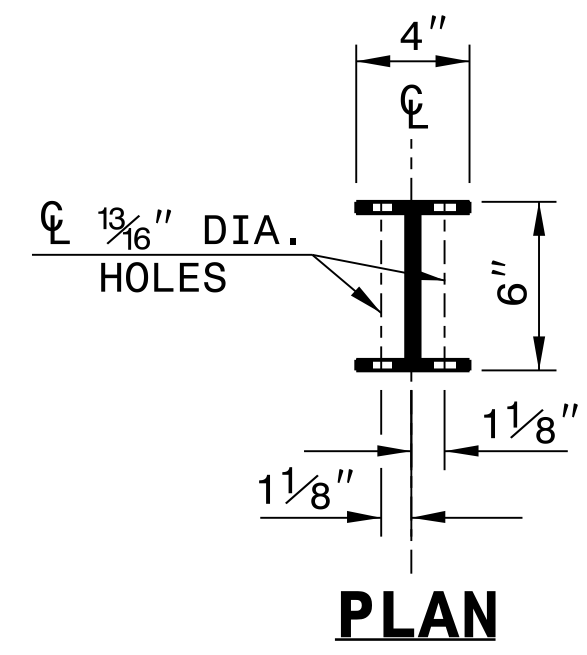
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

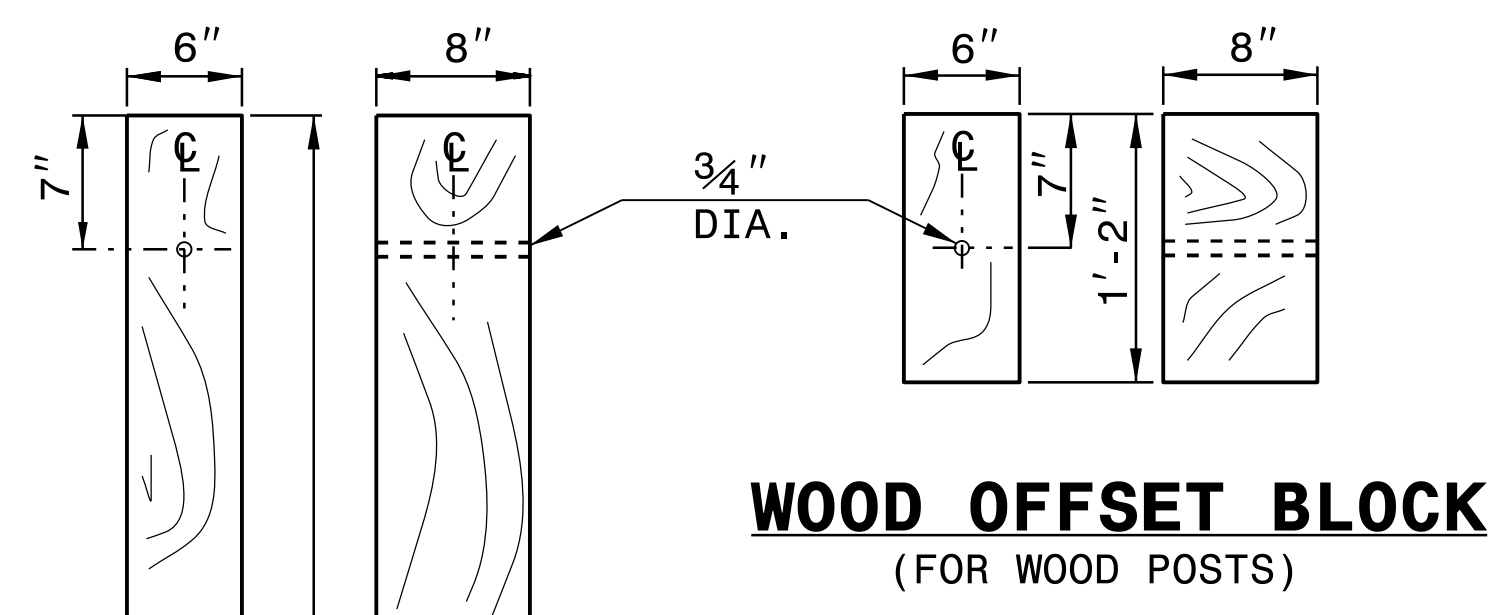
SHEET 6 OF 8  
**862D02**



**STANDARD W-BEAM GUARDRAIL**



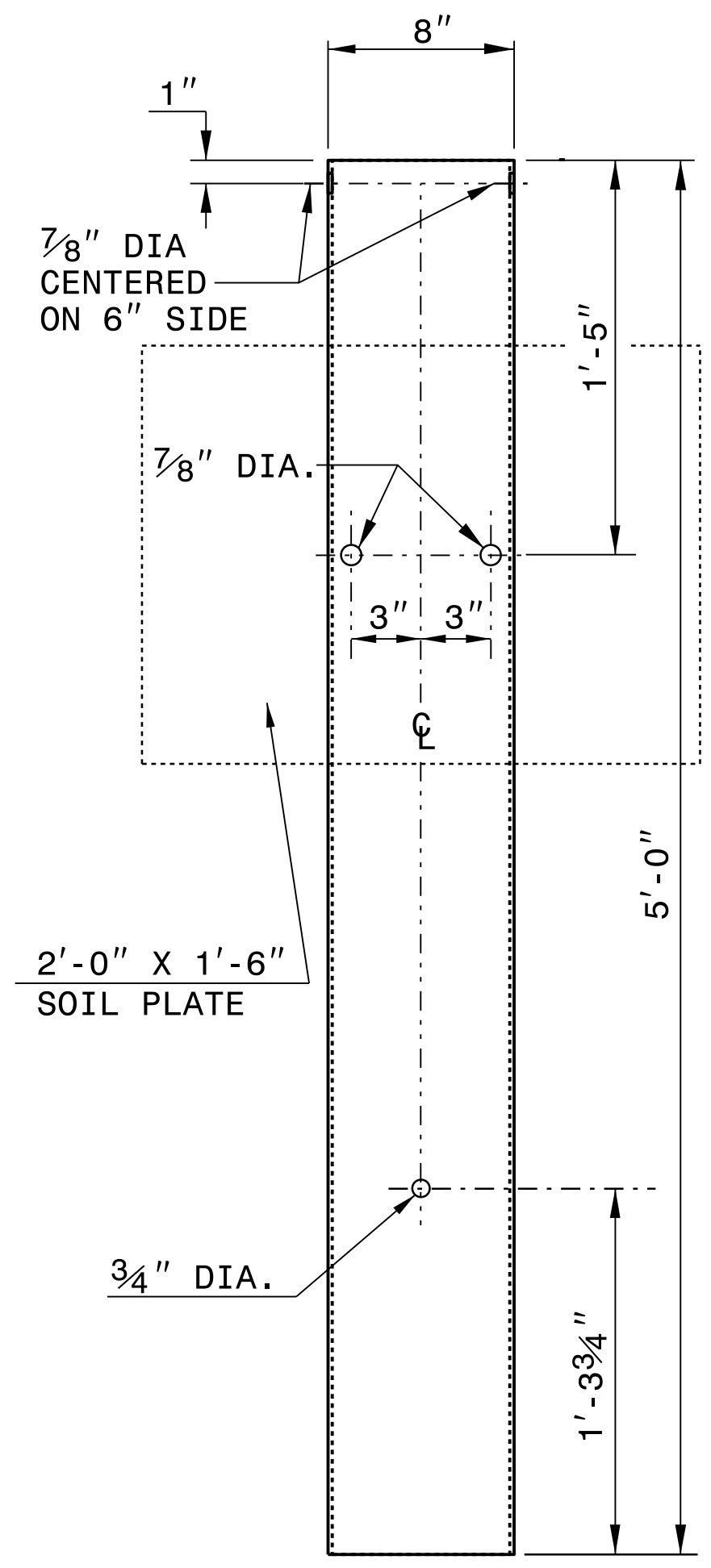
**PLAN**



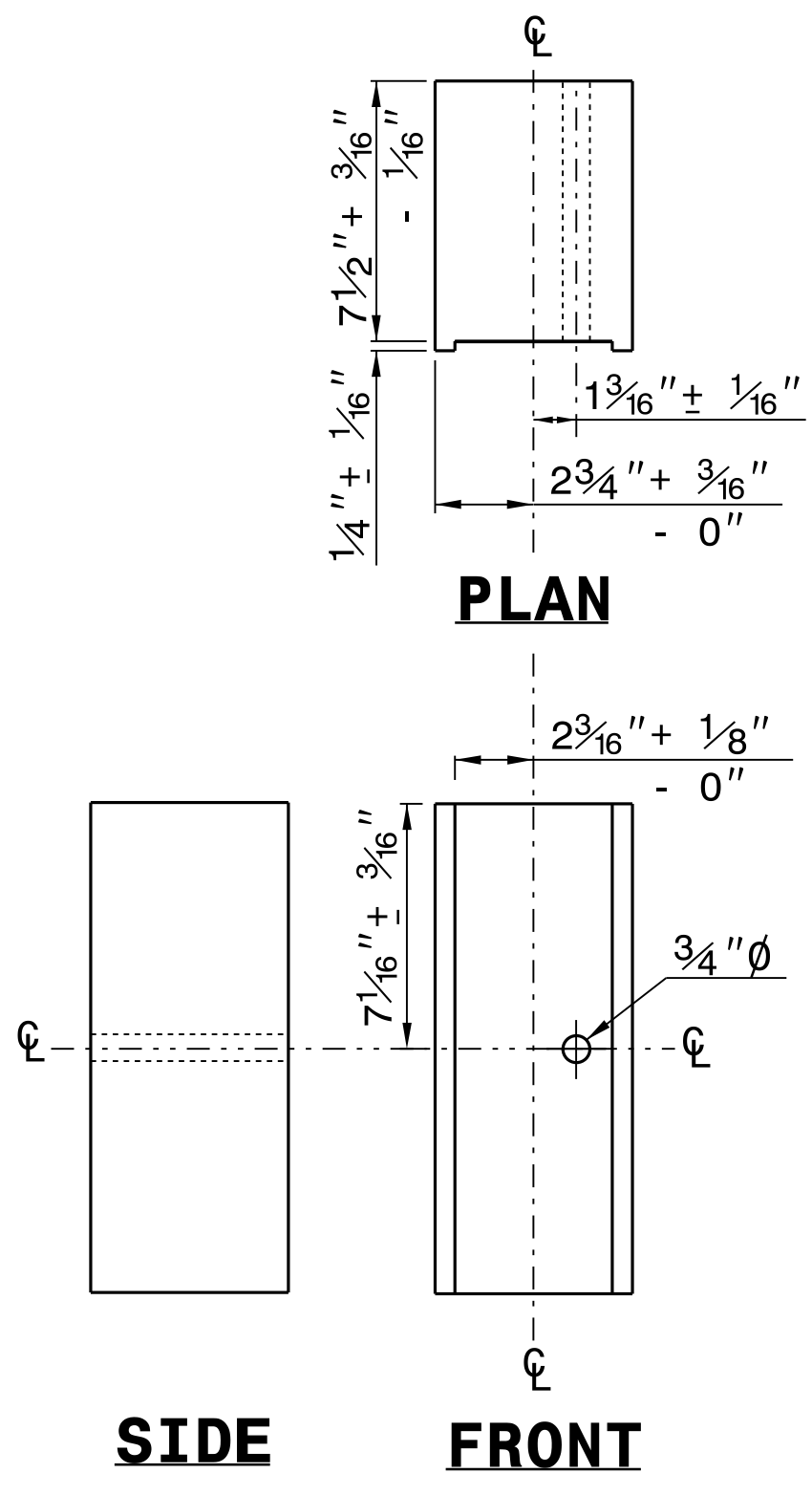
**WOOD OFFSET BLOCK  
(FOR WOOD POSTS)**

**STANDARD  
LINE POST**

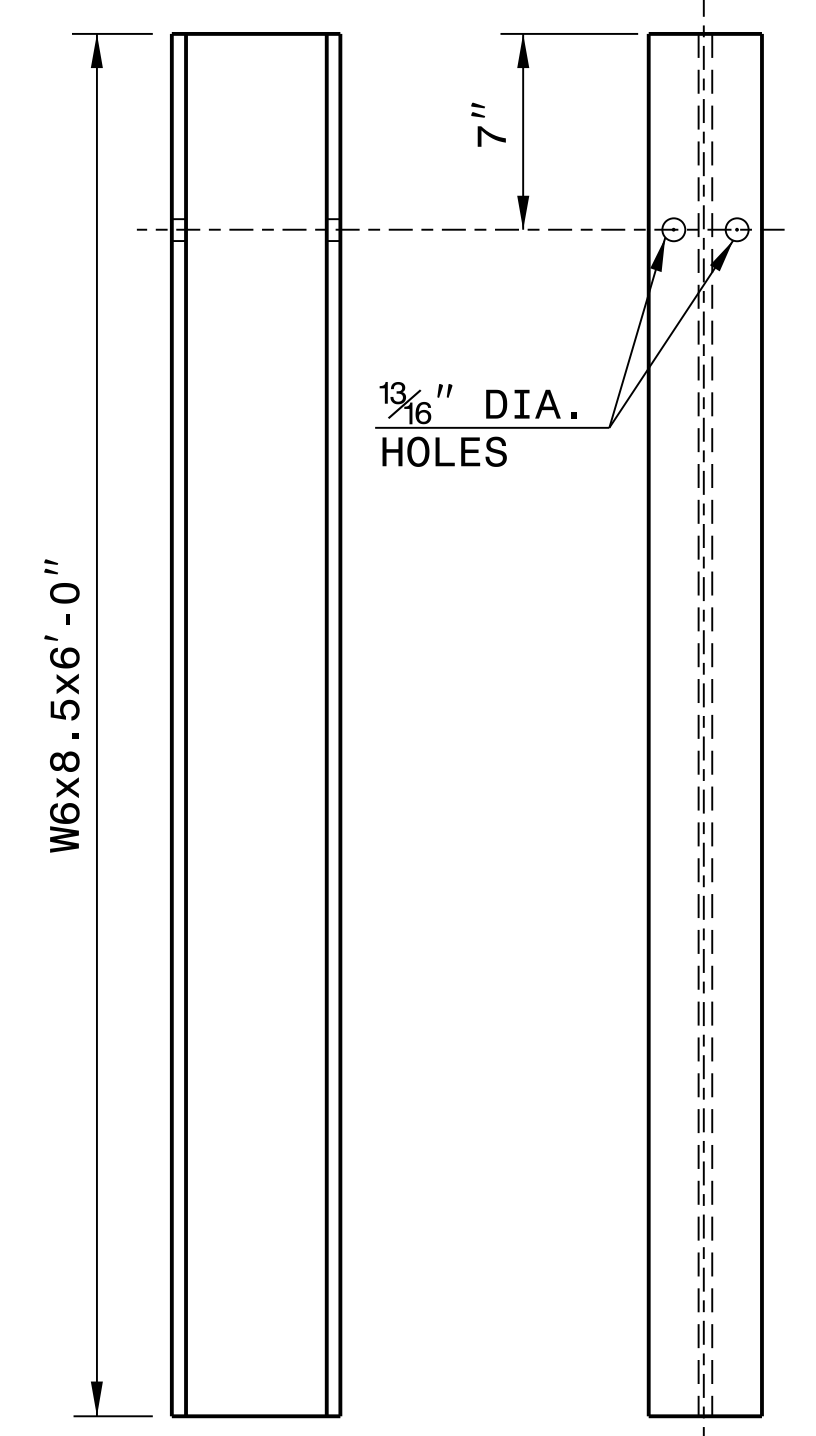
**SHORT WOOD  
BREAKAWAY POST**



**STEEL TUBE  
TS 6"x8"x0.1875"**

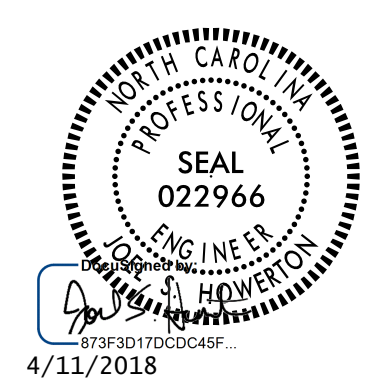


**ROUTED  
OFFSET BLOCK**



**"W6" STEEL POST**

**SYSTEM PARTS**



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

**SEE TITLE BLOCK**

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



I4-DEC-2017 10:36  
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 Jhowerton AT: USD-292595

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

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

SHEET 1 OF 7  
**862D03**

SHEET 1 OF 7  
**862D03**

**ELEVATION**

**PLAN VIEW**

**NOTE:**

- \*\*POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- \*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
- SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" X 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
- MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

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

ROADWAY DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO  
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7  
**862D03**

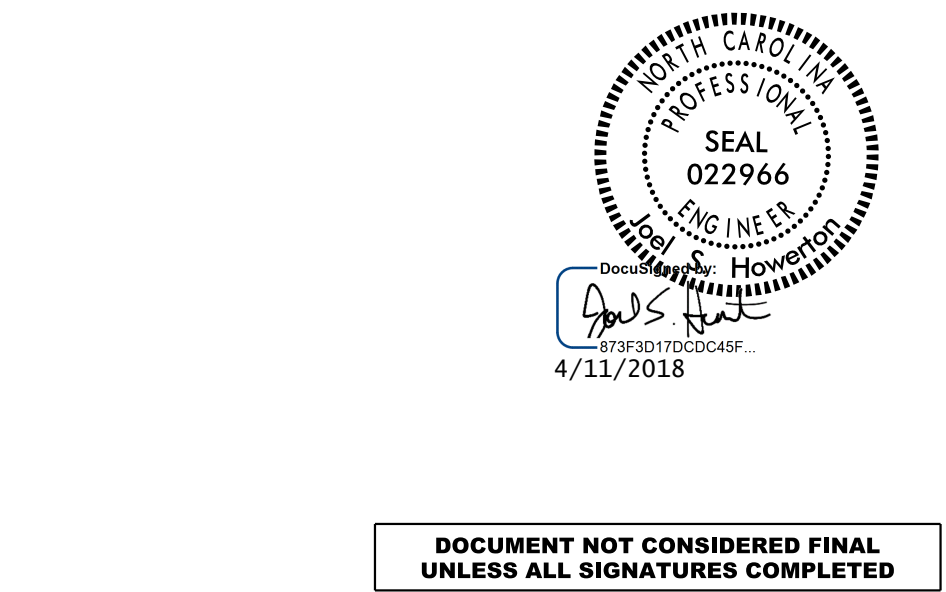
SHEET 2 OF 7  
**862D03**

**ELEVATION**

**PLAN VIEW**

**NOTE:**

- \*\*POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- \*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
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- MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

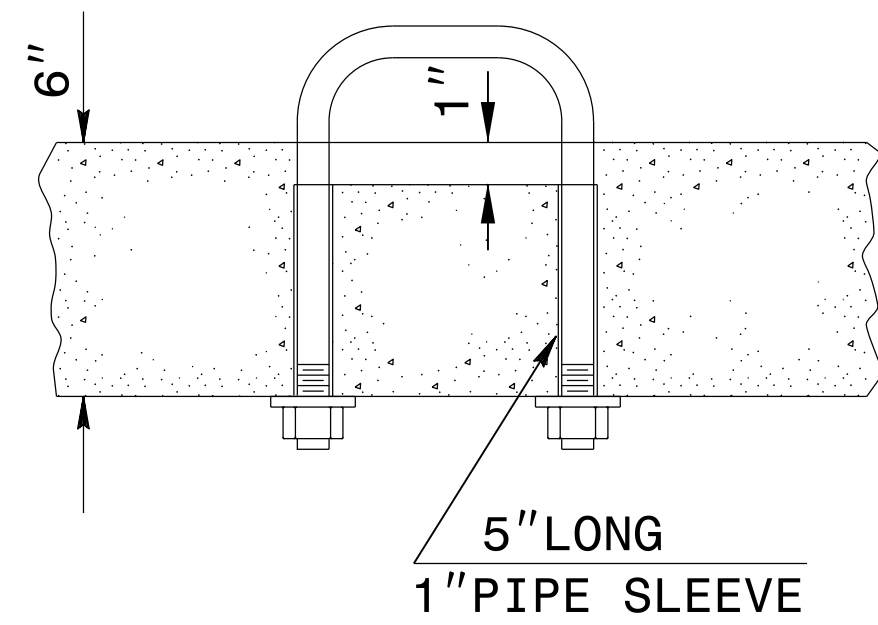


DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

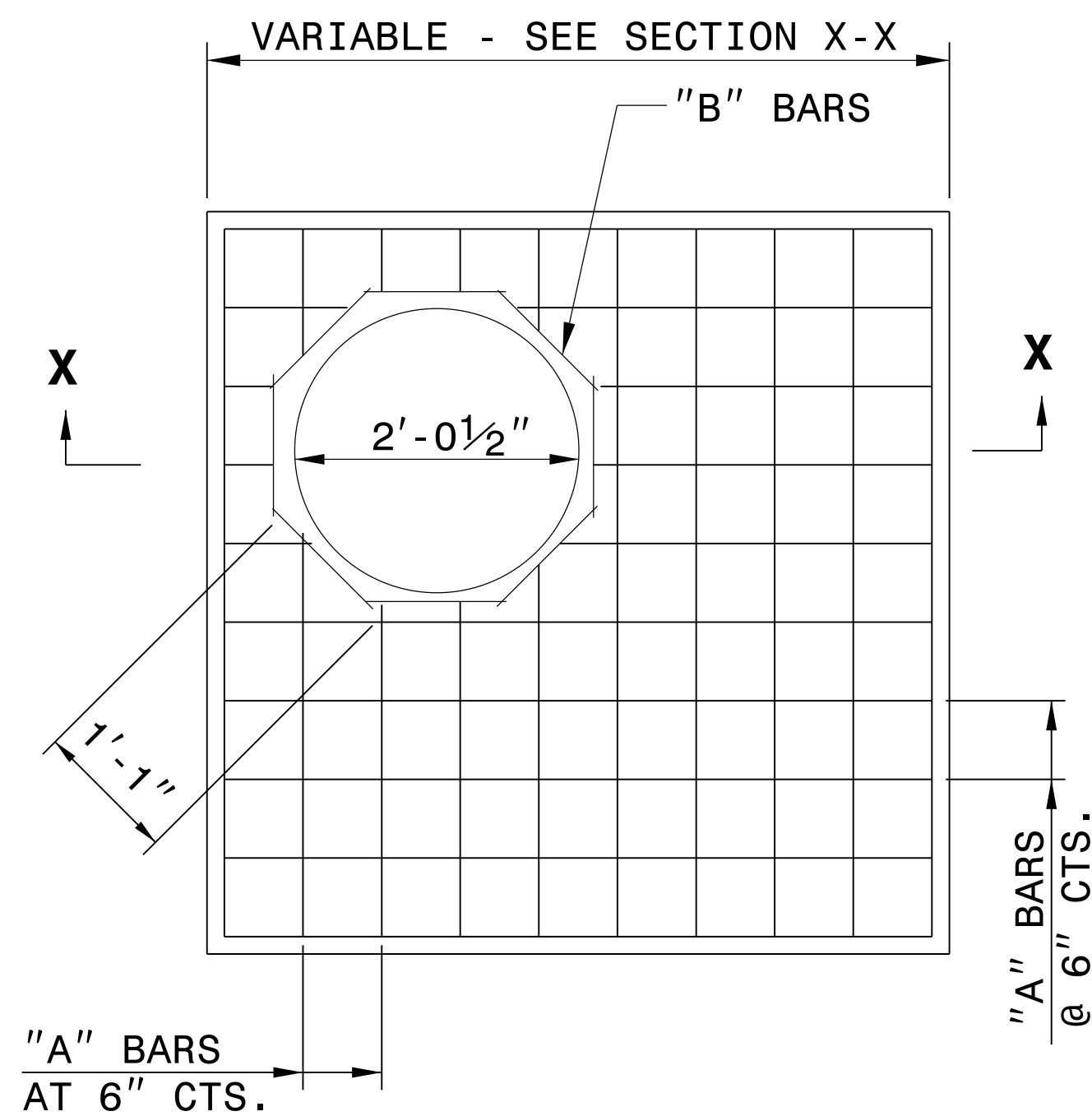
**CONTRACT STANDARDS  
AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

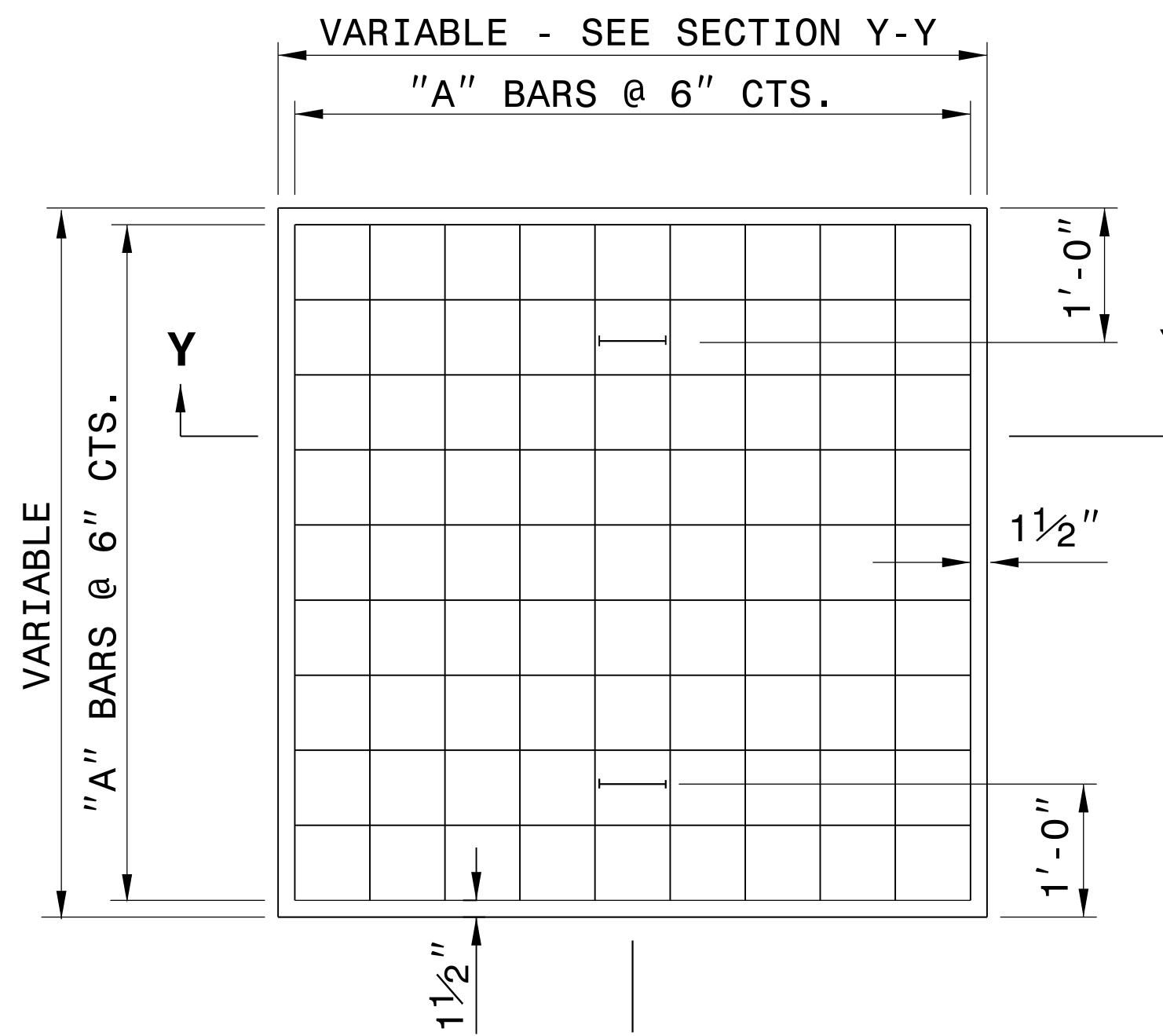
ORIGINAL BY: J HOWERTON	DATE: 06-22-12
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	



**PARTIAL SECTION**



**PLAN**



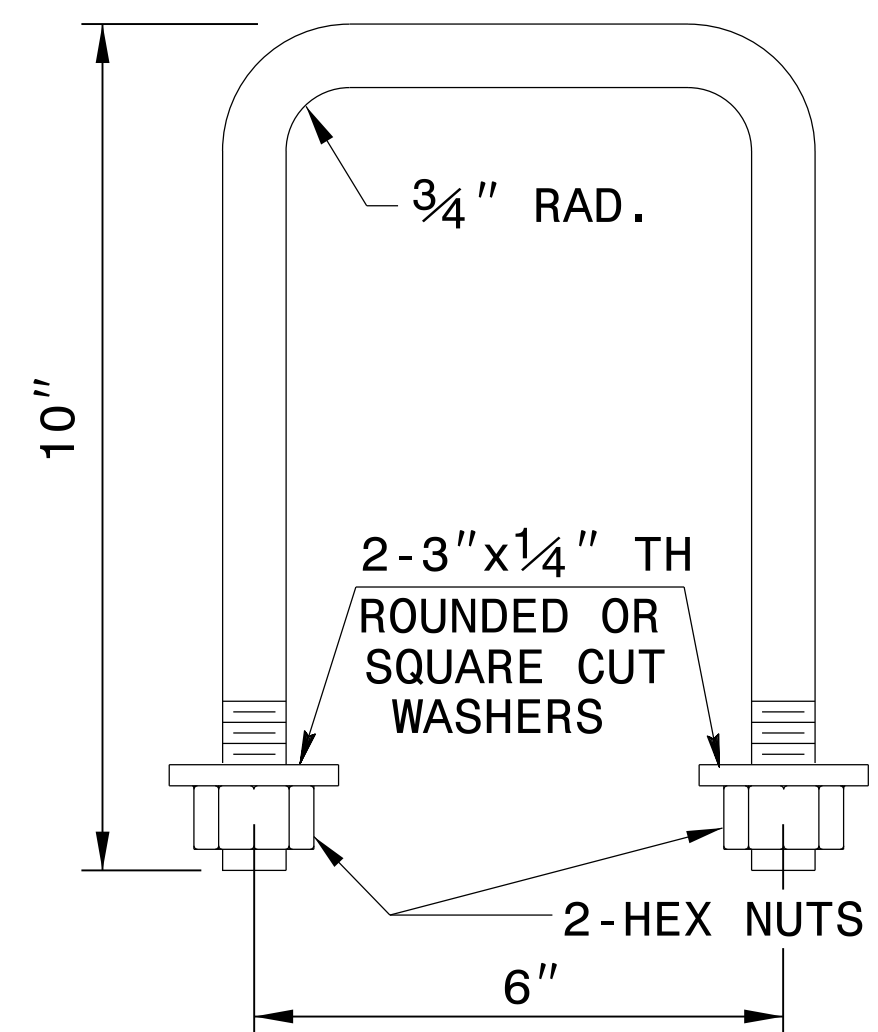
**PLAN**

**GENERAL NOTES:**

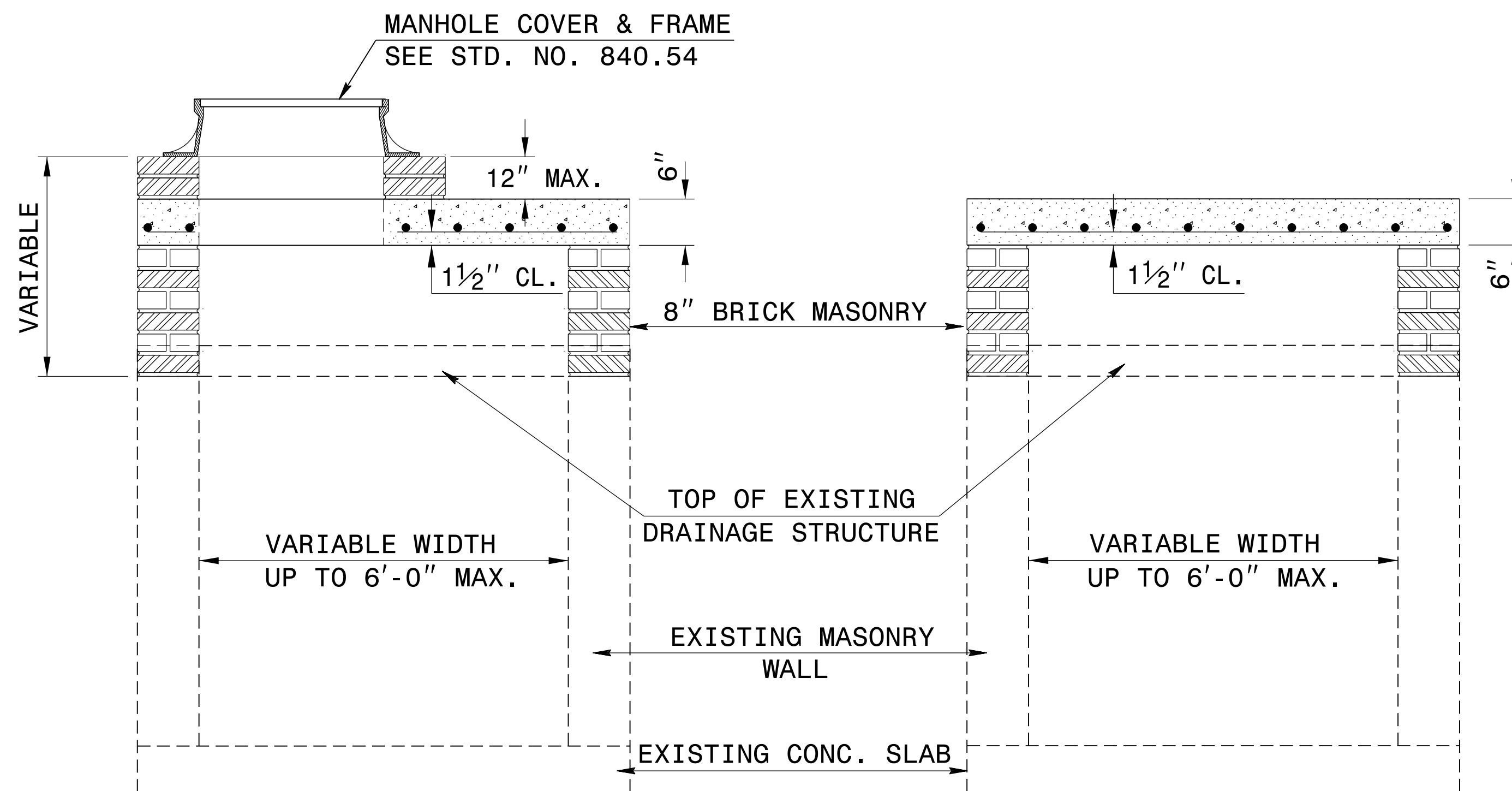
CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

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

DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.



**DETAIL OF HANDLE**



**SECTION X-X**

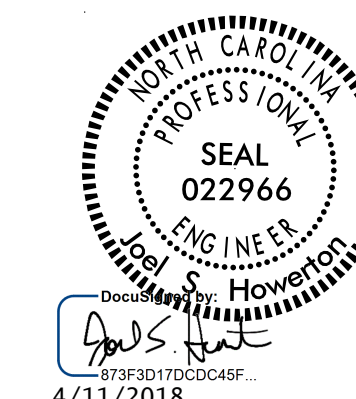
**SECTION Y-Y**

**BILL OF MATERIALS**

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

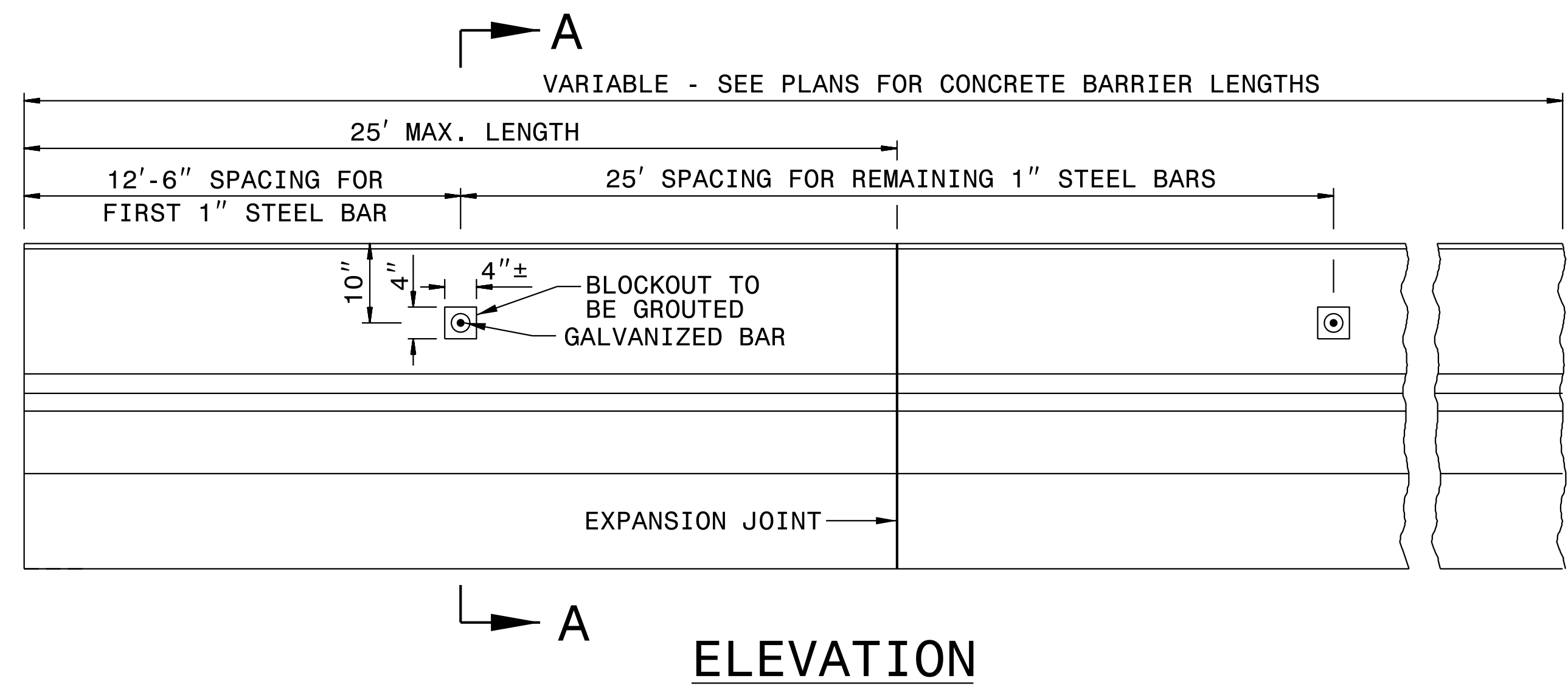
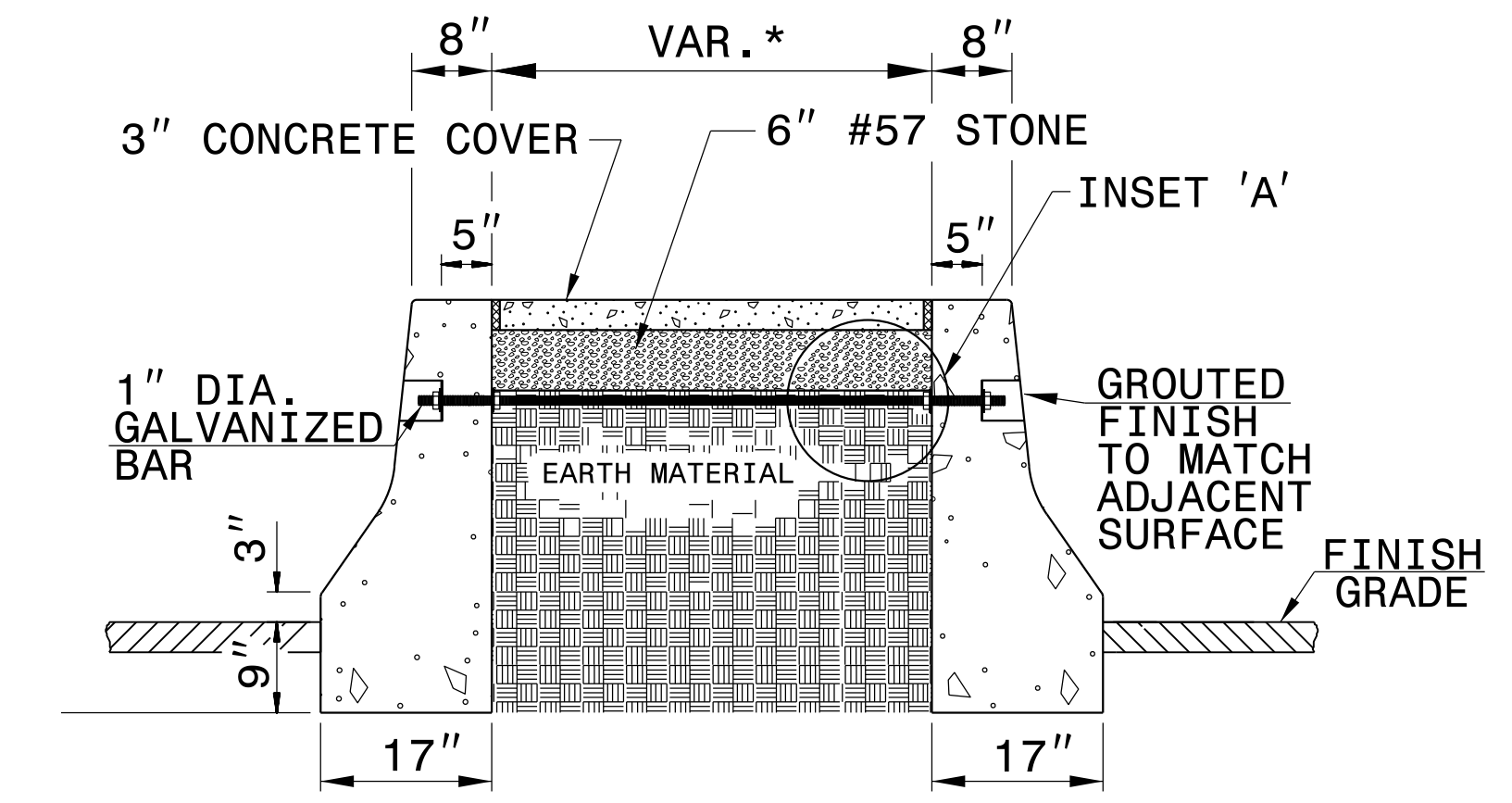
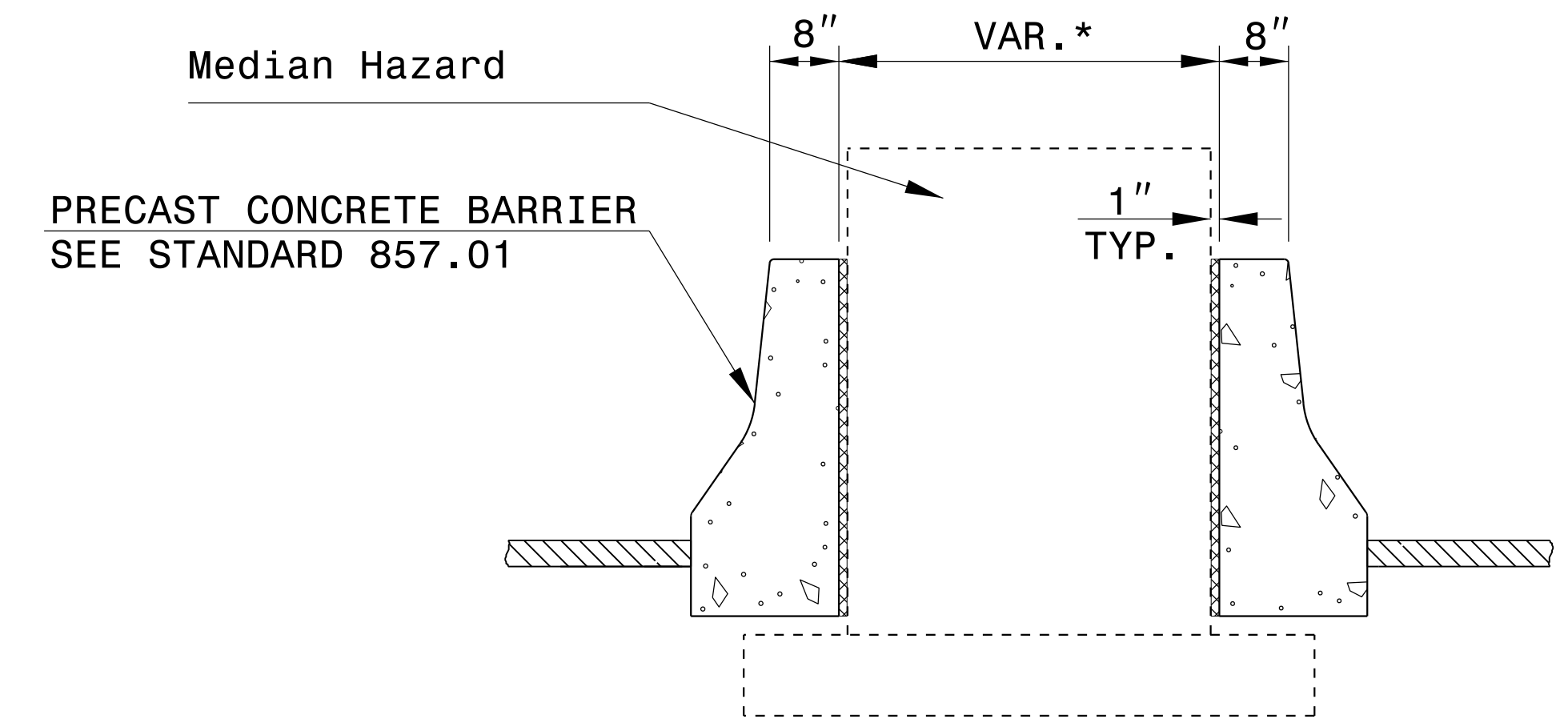
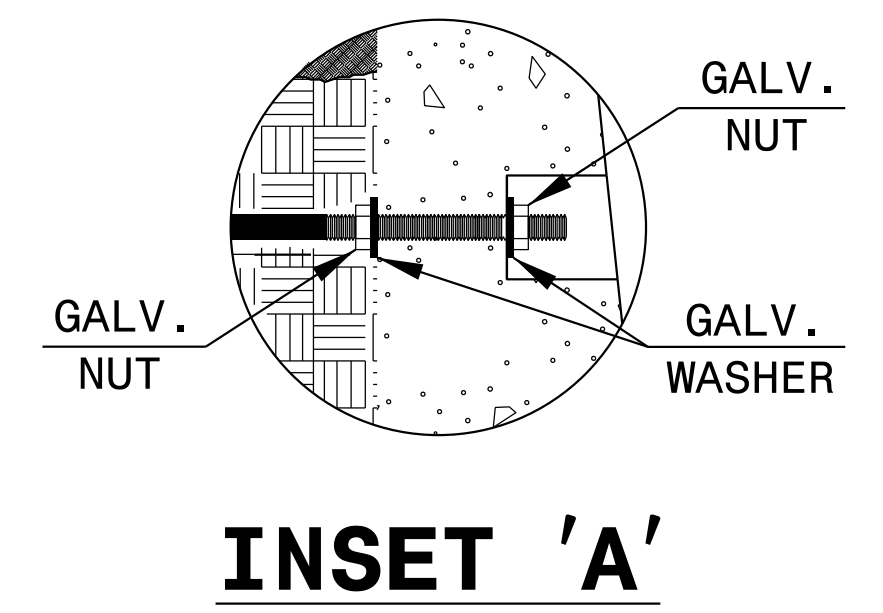
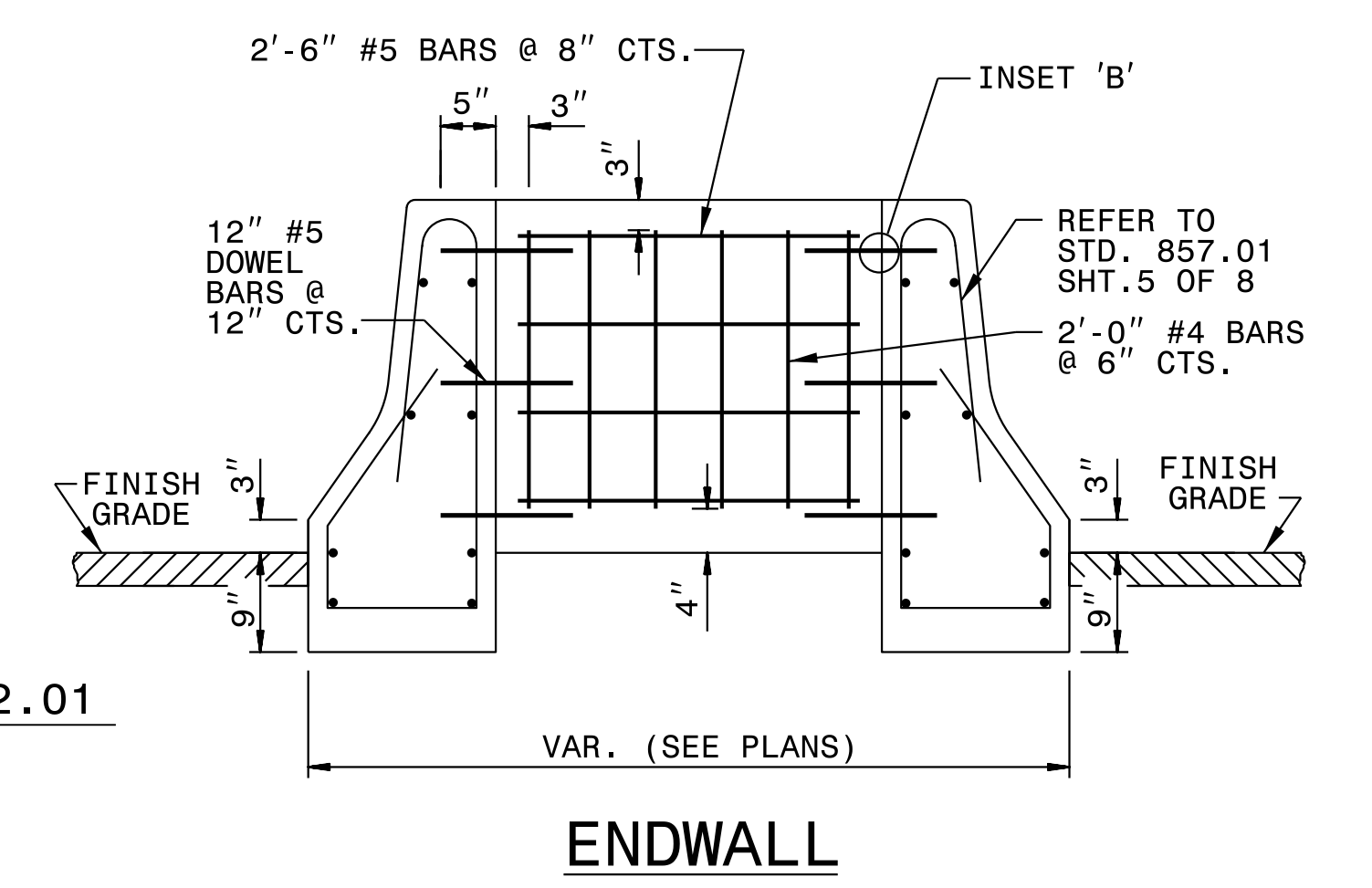
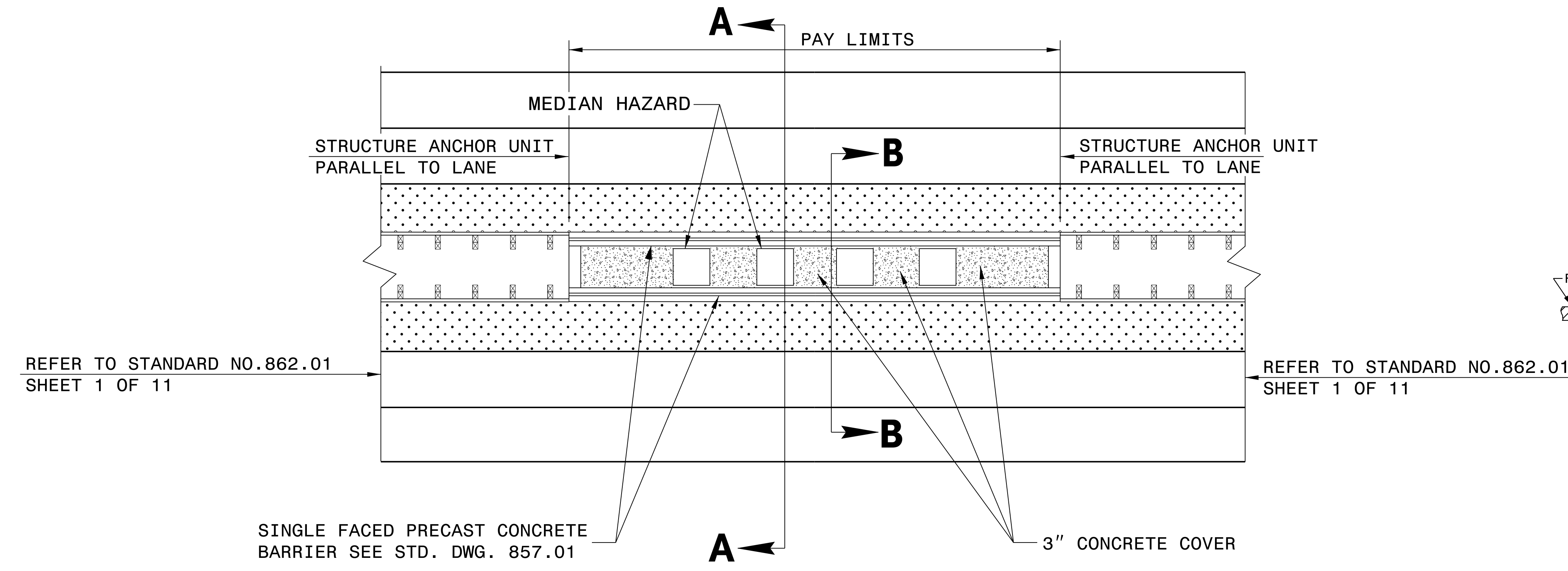


**CONTRACT STANDARDS AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

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

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

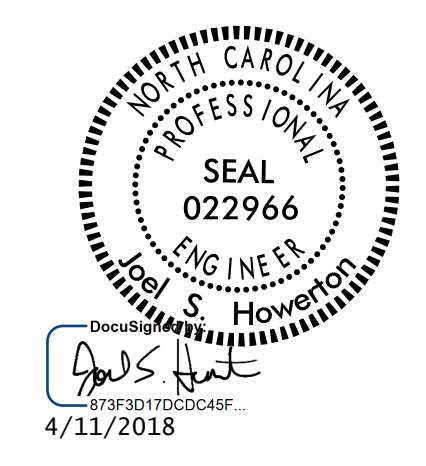




**GENERAL NOTES:**

- \*THIS DIMENSION MAY VARY DEPENDING ON THE WIDTH OF THE PIER.
- INSET FIRST 1" DIA. GALVANIZED BAR 12'-6" AND SPACE THE REMAINING 1" BARS AT 25'-0".
- USE AN APPROVED BONDING SYSTEM IN ACCORDANCE WITH SECTION 1081-1, TYPE 3A OF THE STANDARD SPECIFICATIONS.
- USE CLASS B CONCRETE FOR THE CONCRETE COVER
- SEAL ALL EXPANSION JOINTS WITH JOINT FILLER (SEE SECTION 1028 OF THE SPECIFICATIONS).
- PLACE A 1" BAR BETWEEN EACH SET OF PIERS

I5-NOV-2017 13:03 S:\Contracts\Special Details\Howerton\Barrier Cover for Median Hazard Protection.dgn Jhowerton AT CSD-292595

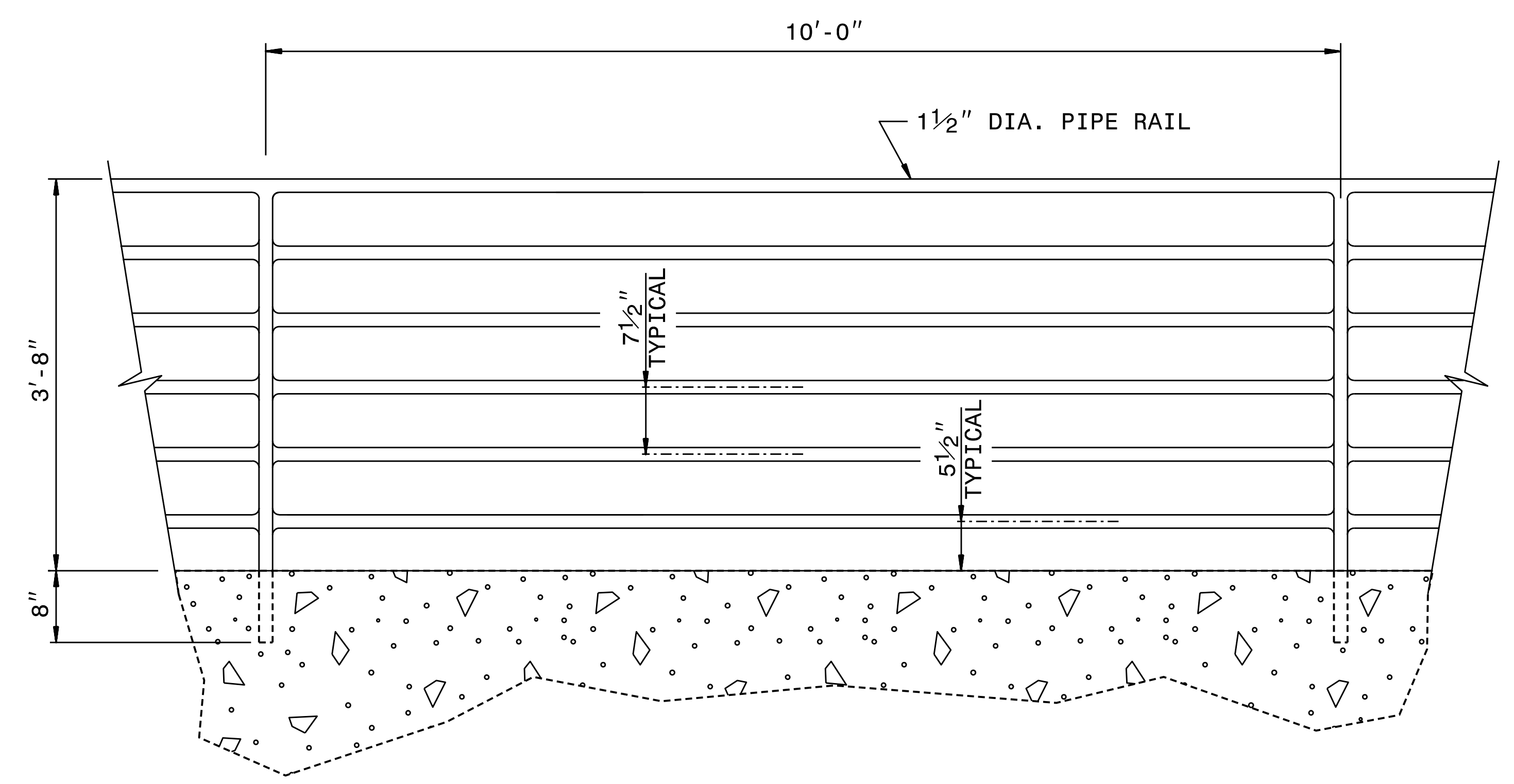


DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

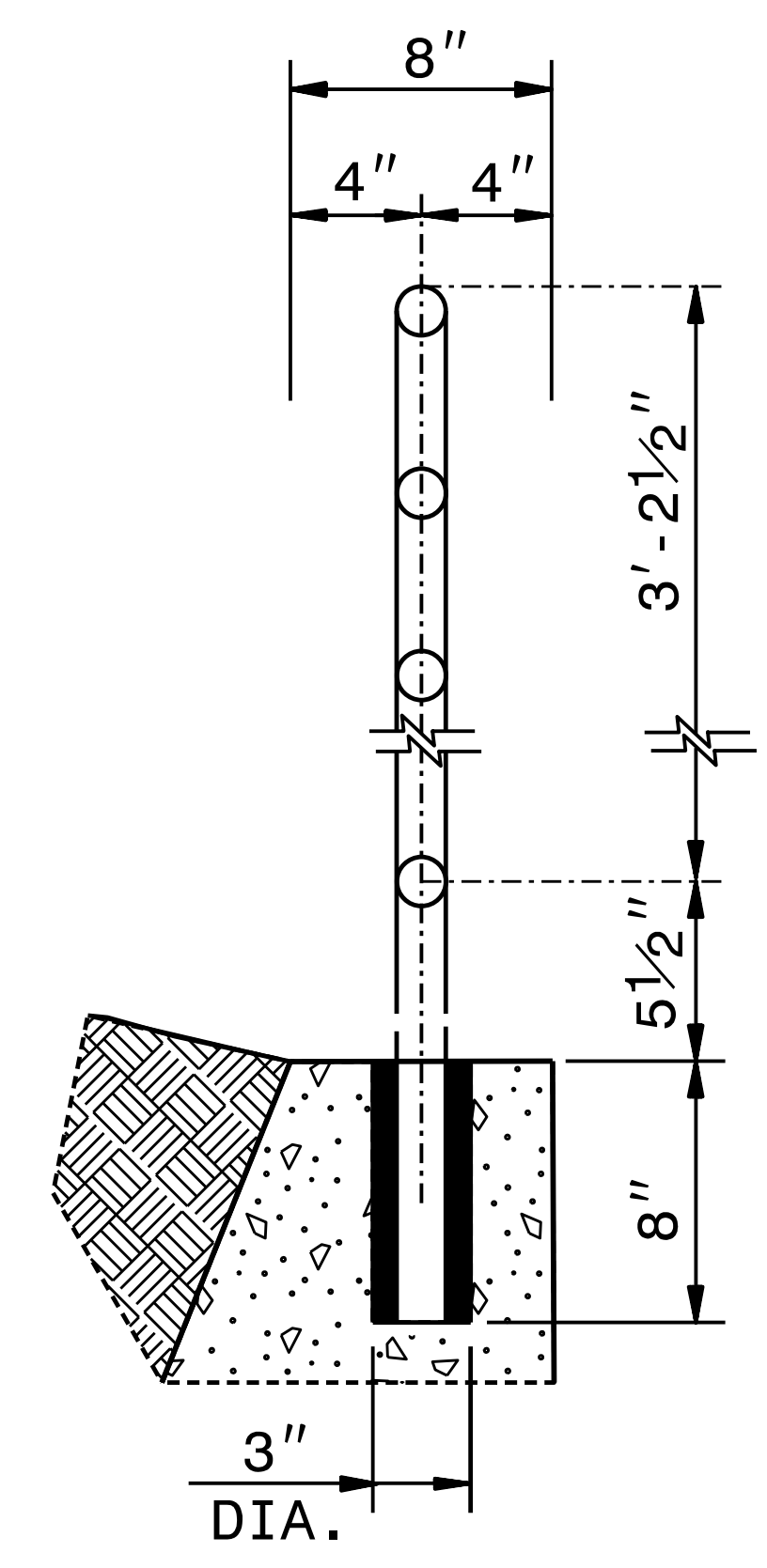
**CONTRACT STANDARDS  
AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

**DETAIL OF MEDIAN  
HAZARD PROTECTION**

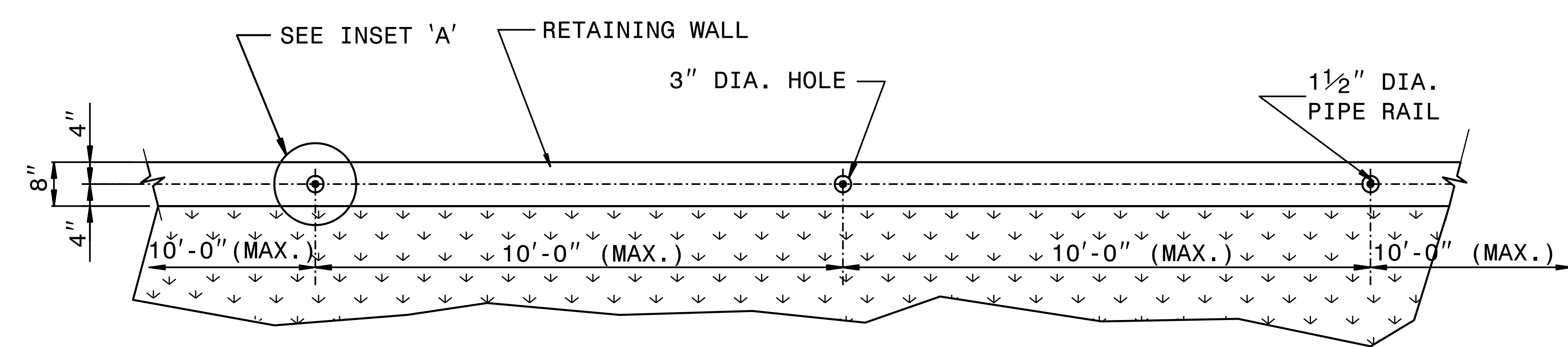
ORIGINAL BY: T.S. Spe11	DATE: 2-4-10
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC: Jhowerton\Barrier Cover for Median Hazard Protection	



**ELEVATION OF HANDRAIL**



**INSET 'A'**

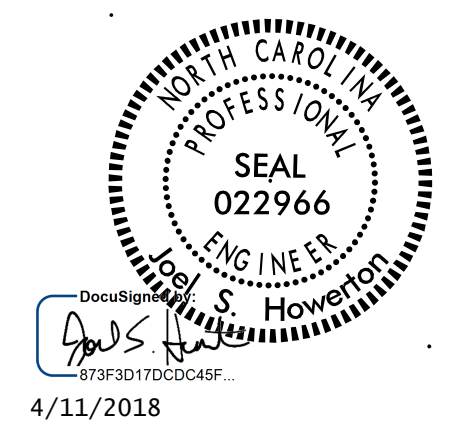


**PLAN VIEW**

**NOTES:**

- CONSTRUCT PROPOSED STEEL PIPE RAIL 1 1/2" DIAMETER SCHEDULE 40 PLAIN END GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A53.
- EMBED PIPE RAIL 8" INTO PROPOSED WALL WITH CHEMICAL OR CONCRETE GROUT ANCHORING SYSTEM AS DIRECTED BY THE ENGINEER.
- REPAIR GALVANIZING IN ACCORDANCE WITH SECTION 1076 OF THE NCDOT STANDARD SPECIFICATIONS.
- PAINT, IF REQUIRED BY THE ENGINEER, IN ACCORDANCE WITH SECTION 1080 OF THE STANDARD SPECIFICATIONS.
- CENTER THE PROPOSED RAILING ON TOP OF THE WALL WITH POST SPACING SYMMETRICAL ABOUT THE CENTER-LINE OF THE WALL.
- USE A ROTARY DRILL IF NEEDED FOR EMBEDMENT HOLES OF RAIL IN WALL. ROTARY DRILL ONLY (NO ROTARY-IMPACT DRILLS).
- WELD IN ACCORDANCE WITH ARTICLE 1072-18 OF THE STANDARD SPECIFICATIONS.

\$\$\$\$\$SYTIME\$\$\$\$\$  
\$\$\$\$\$CUSTNAME\$\$\$\$\$  
\$\$\$\$\$USERNAME\$\$\$\$\$




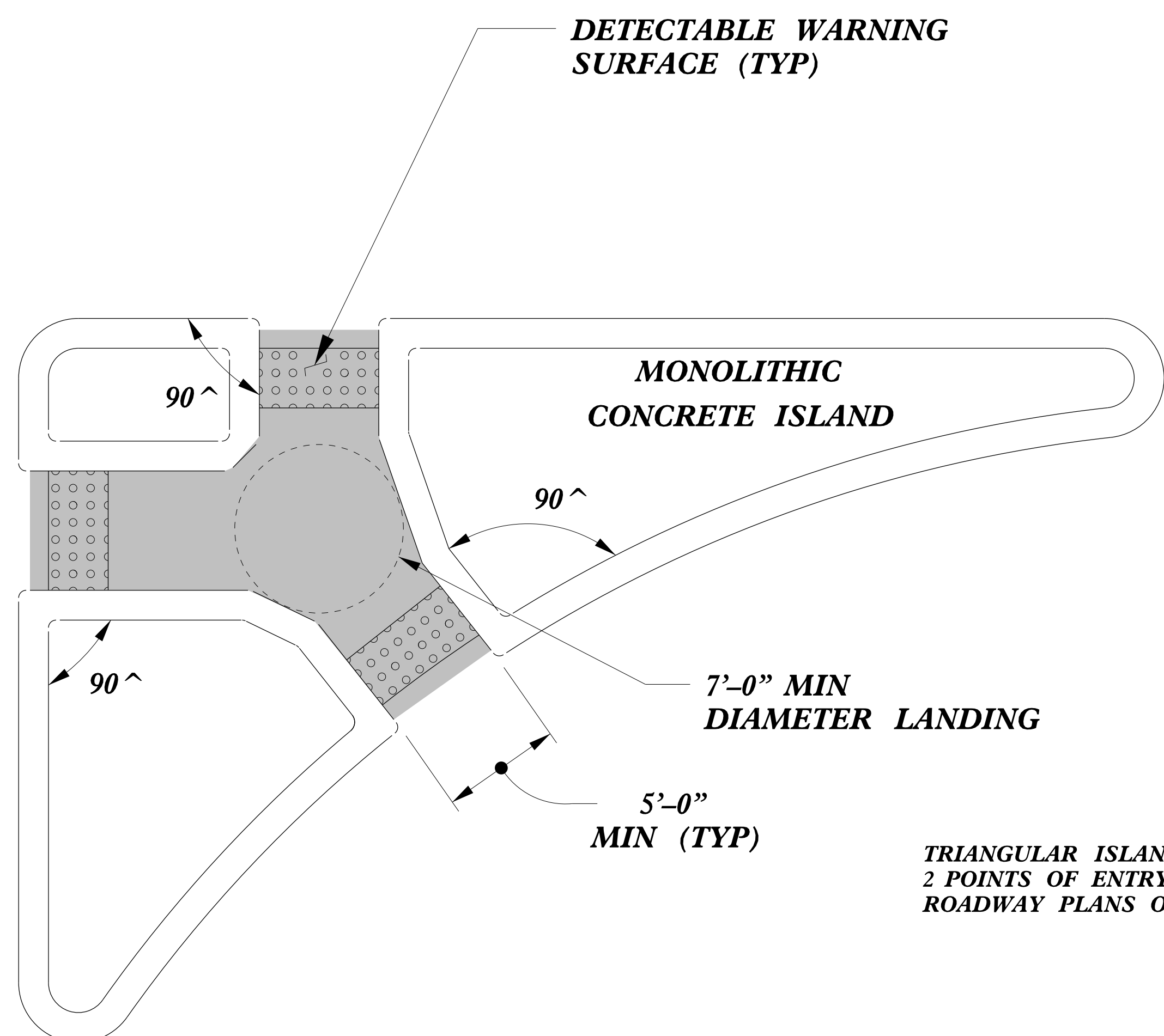
4/11/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950 FAX 919-250-4119	
<b>DETAIL OF PIPE HANDRAIL MOUNTED ON RETAINING WALL</b>	
ORIGINAL BY: E.E. WARD	DATE: 12-99
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: jhowerton/handrail_on_retaining_wall.dgn	

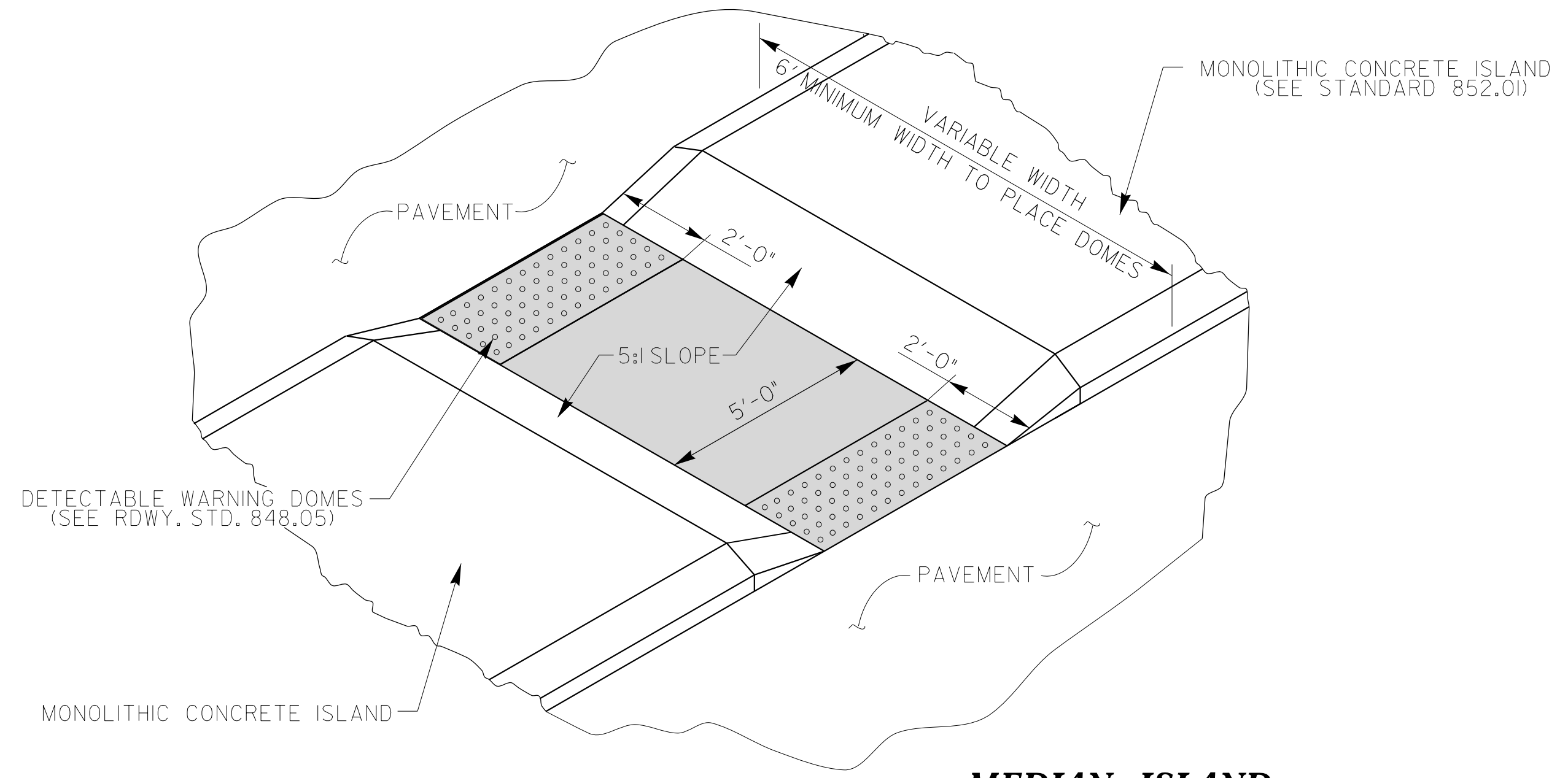


 PAY LIMITS FOR 2 OR 3 CURB RAMPS  
(CALCULATE BASED ON NUMBER OF  
SETS OF TRUNCATED DOMES)

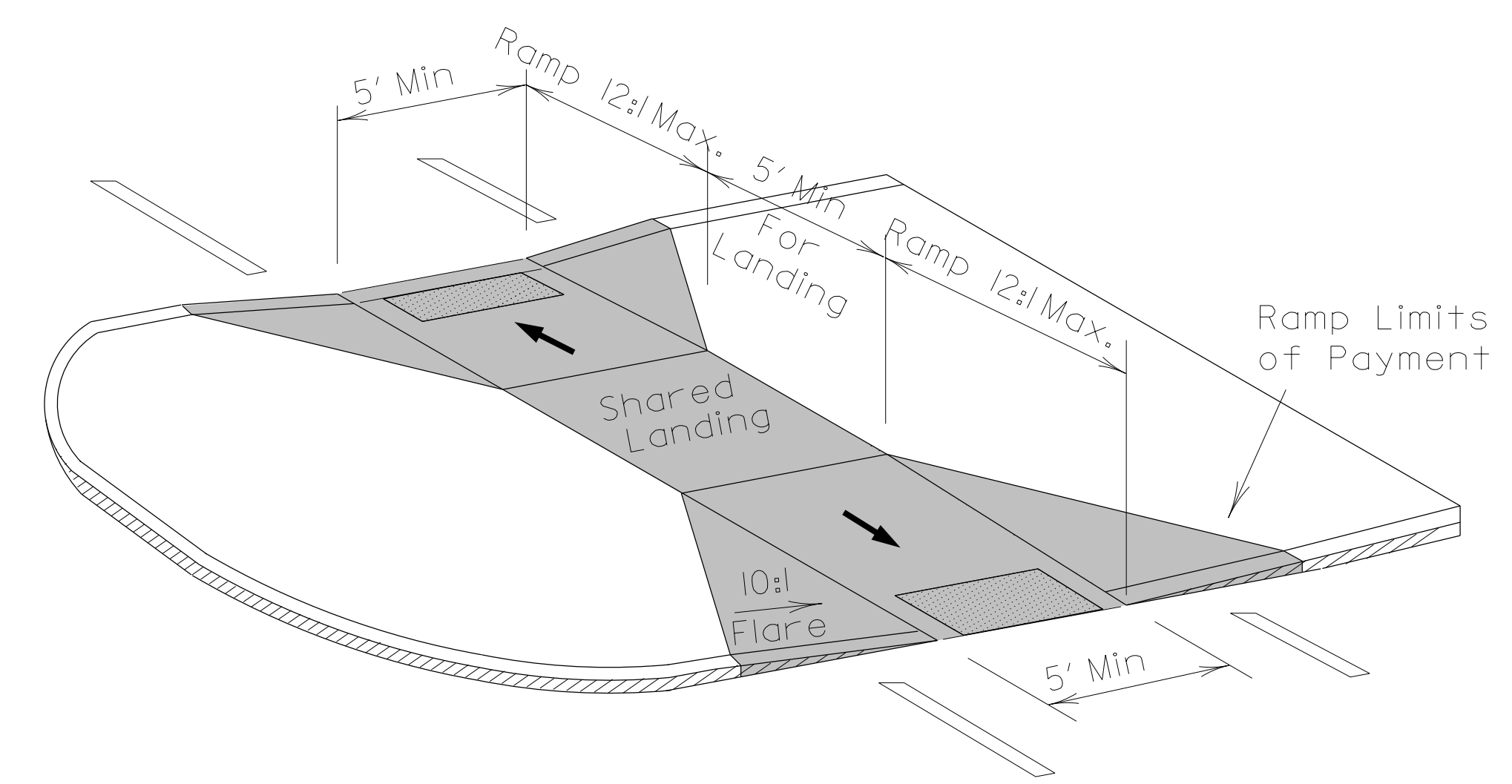


TRIANGULAR ISLANDS MAY BE CONSTRUCTED WITH ONLY  
2 POINTS OF ENTRY AND EXIT AS SHOWN IN THE  
ROADWAY PLANS OR AS DIRECTED BY THE ENGINEER.

**TRIANGULAR ISLAND  
WITH CUT THROUGH**



**MEDIAN ISLAND  
WITH CUT THROUGH**



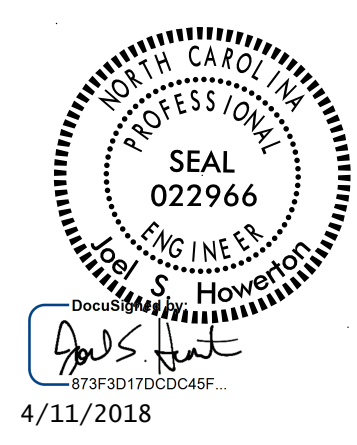
**MEDIAN ISLAND  
CURB RAMPS**

DOCUMENT NOT CONSIDERED FINAL  
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**CONTRACT STANDARDS  
AND DEVELOPMENT UNIT**  
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**CURB RAMPS**  
Median or Turn Lane Islands

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11  
MODIFIED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
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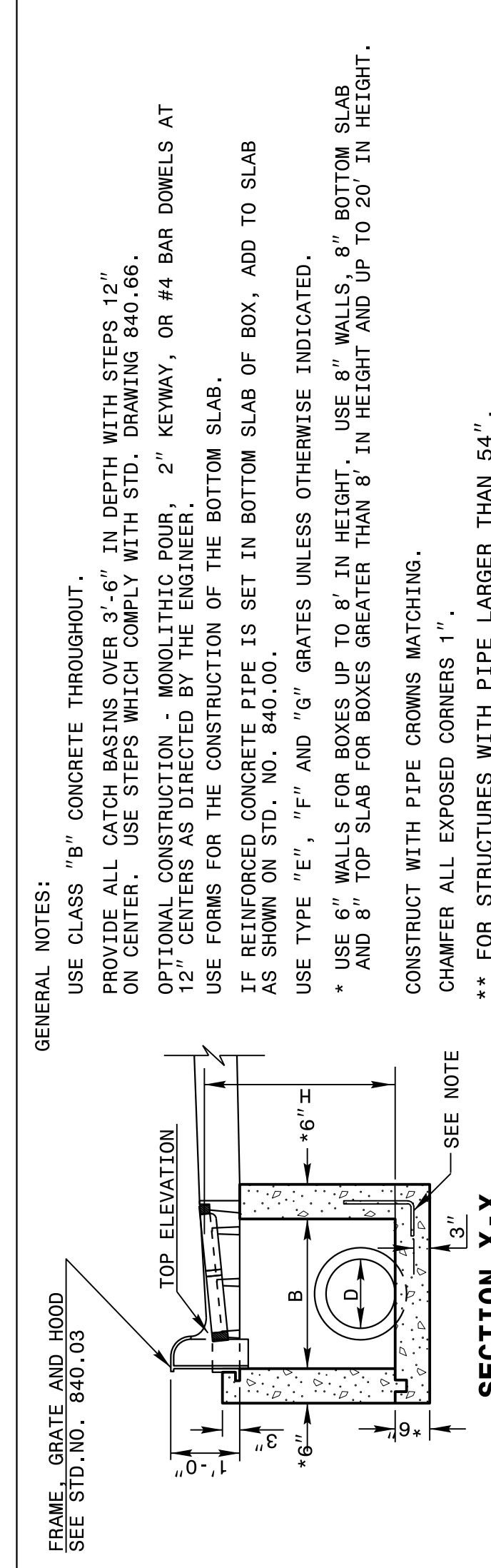
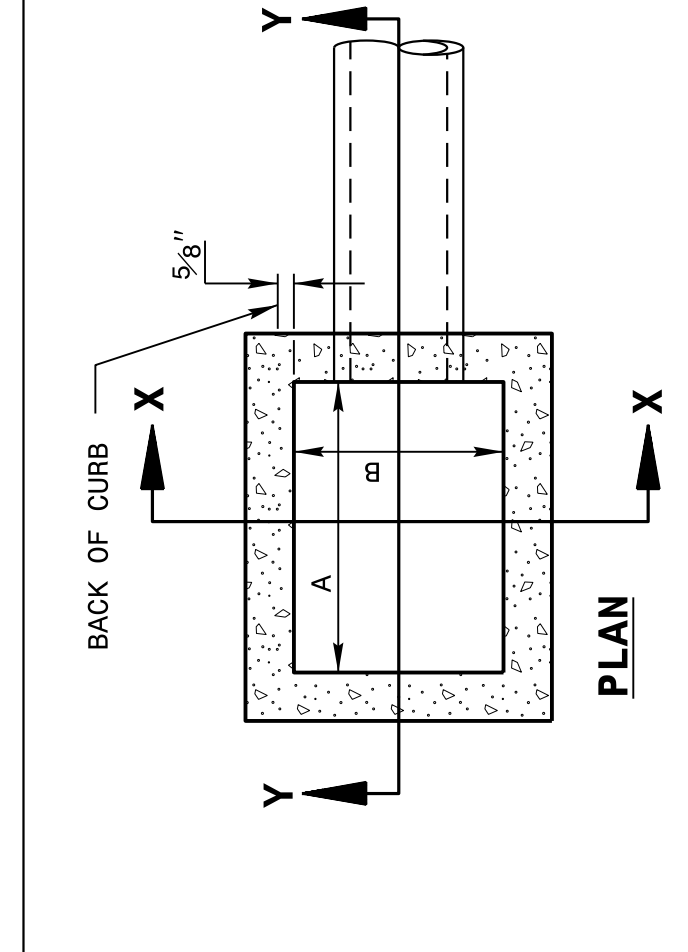


5/14/99  
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 Jhewerton AT CSD-292595

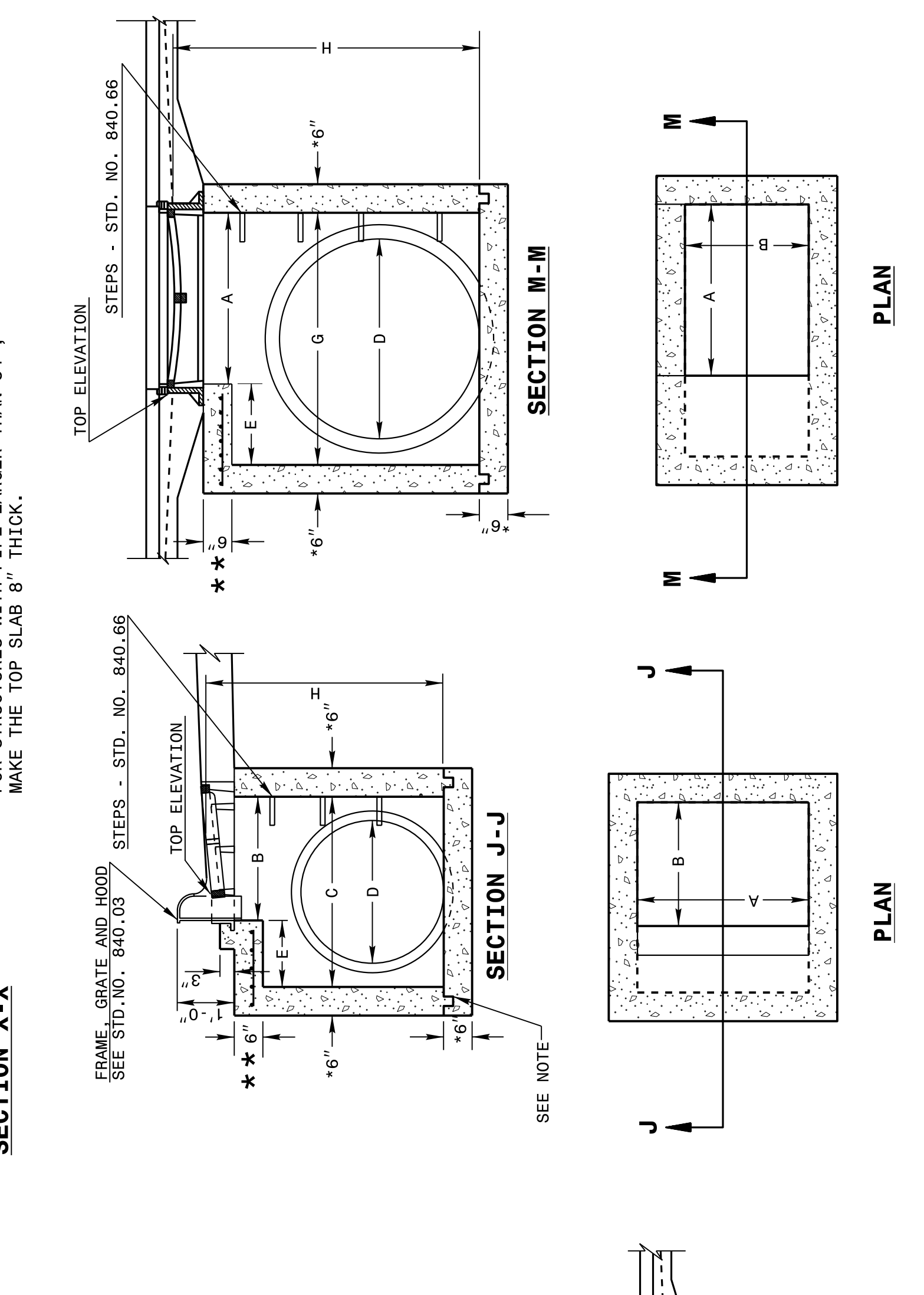
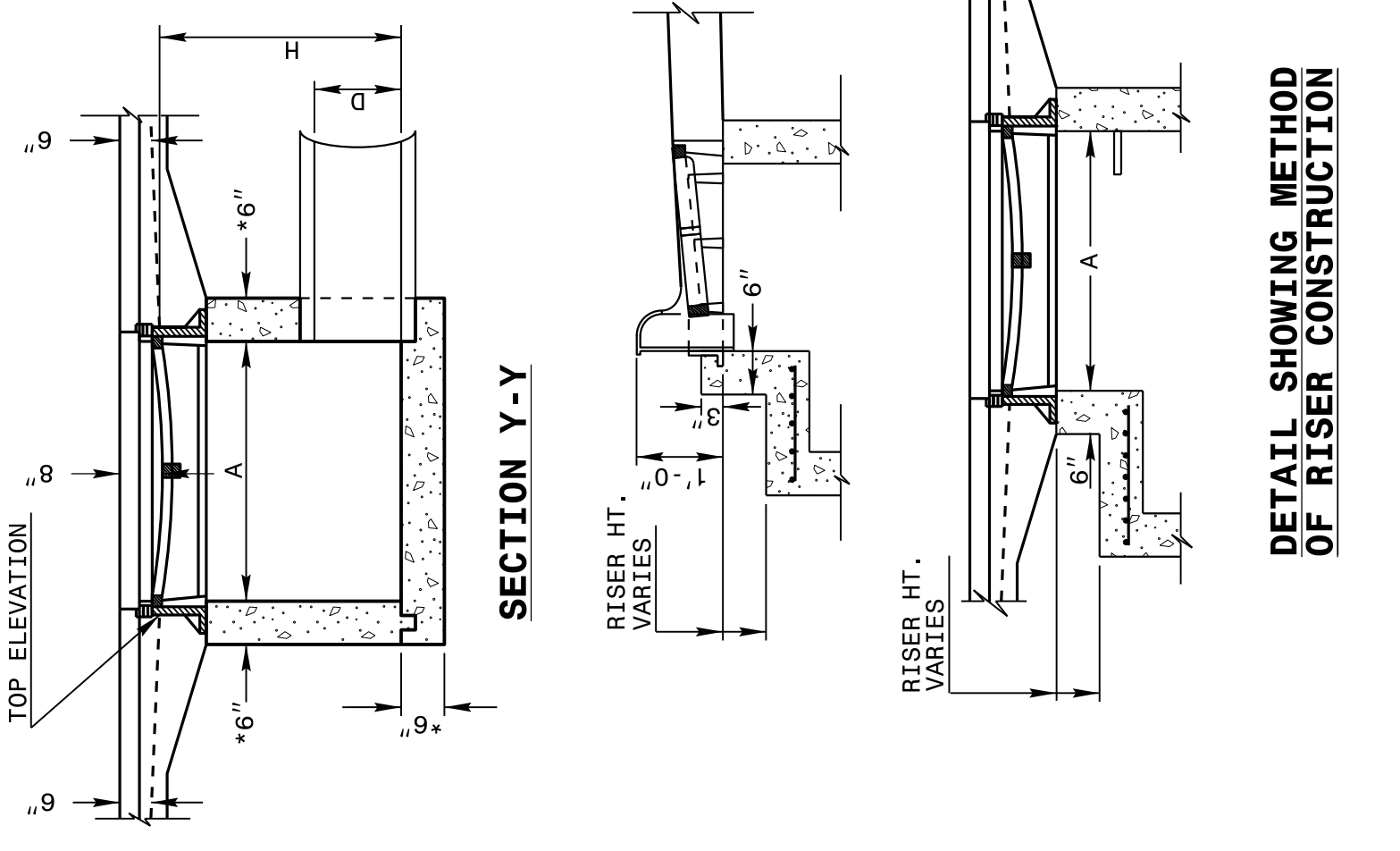
5/14/99

STATE OF NORTH CAROLINA  
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 RALEIGH, N.C.



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

ENGLISH DETAIL DRAWING FOR  
**EXTRA DEPTH  
 CONCRETE CATCH BASIN**  
 12" THRU 84" PIPE

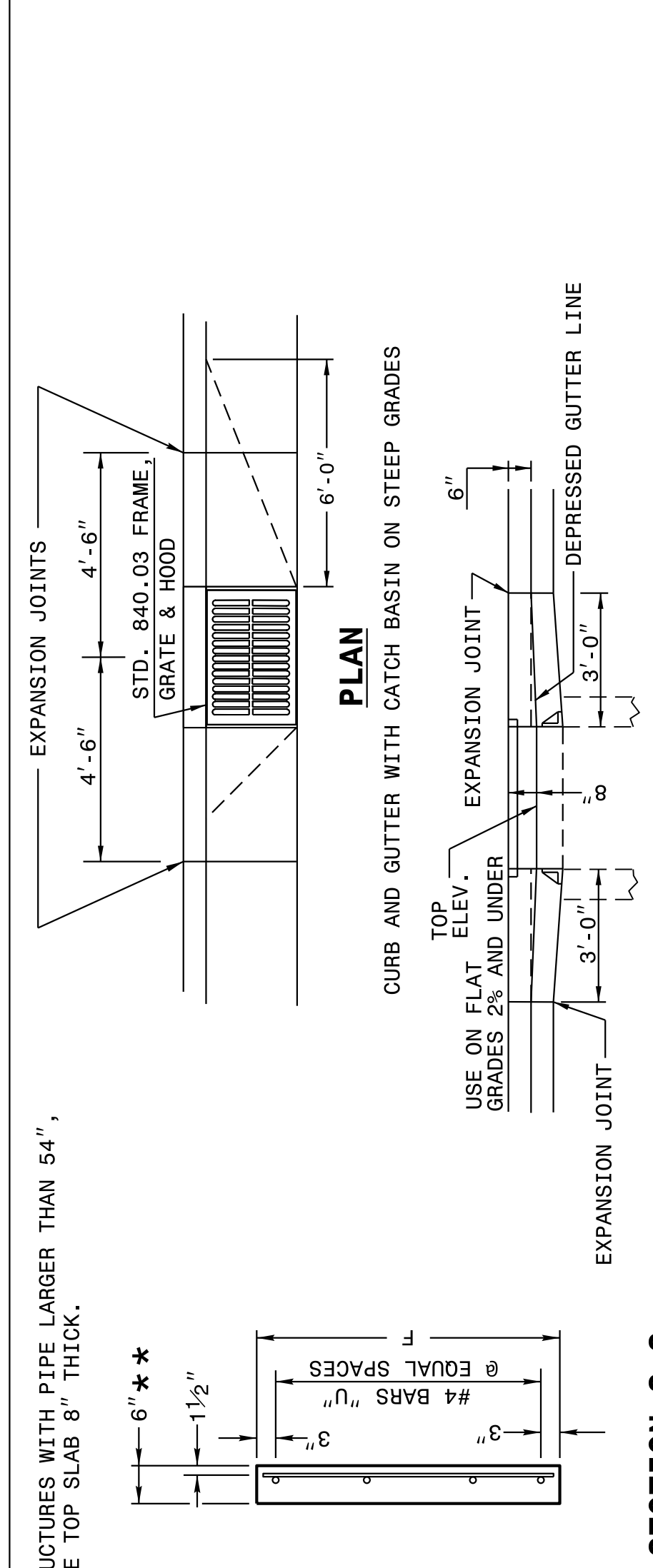
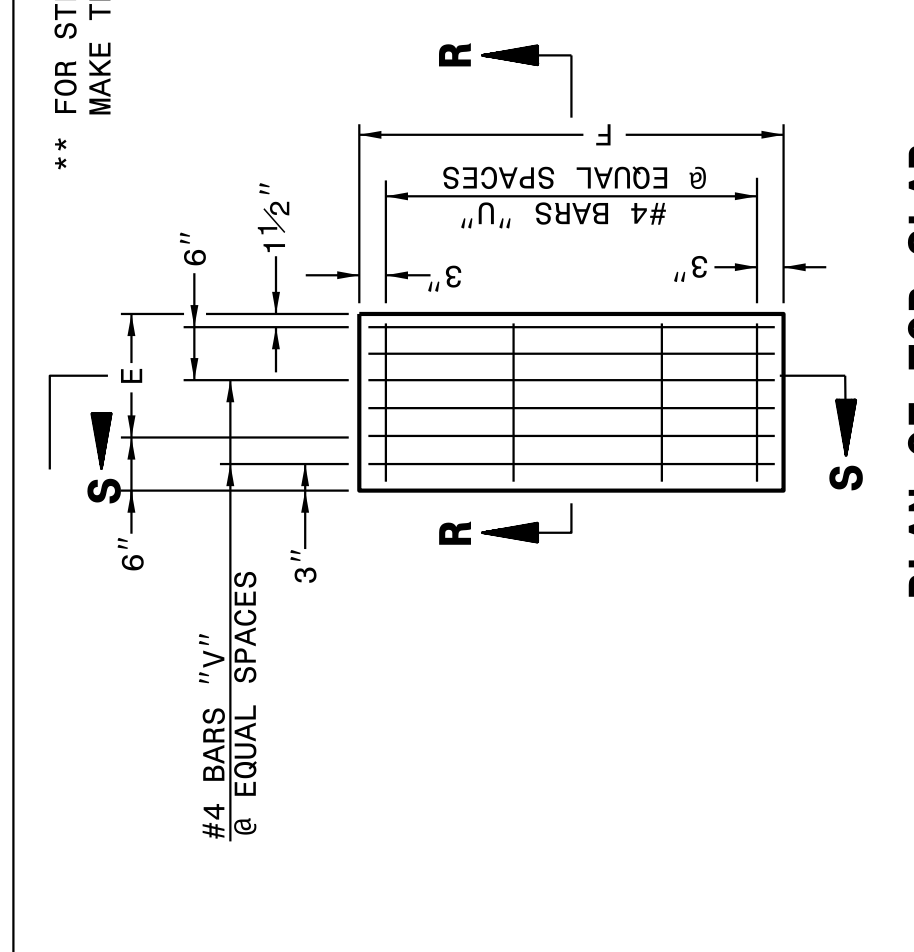


ENGLISH DETAIL DRAWING FOR  
**EXTRA DEPTH  
 CONCRETE CATCH BASIN**  
 12" THRU 84" PIPE

SHEET 1 OF 2  
**840D02**

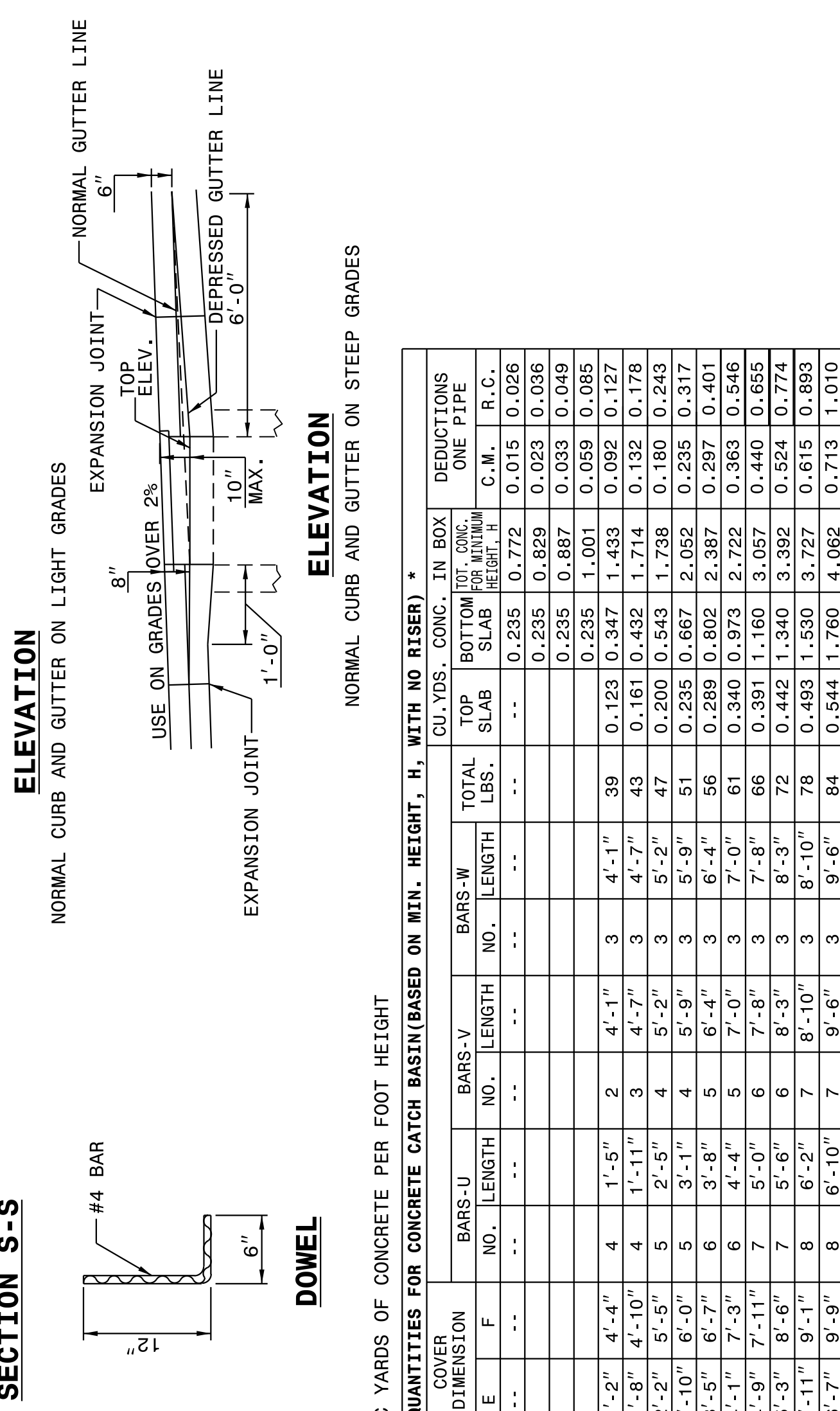
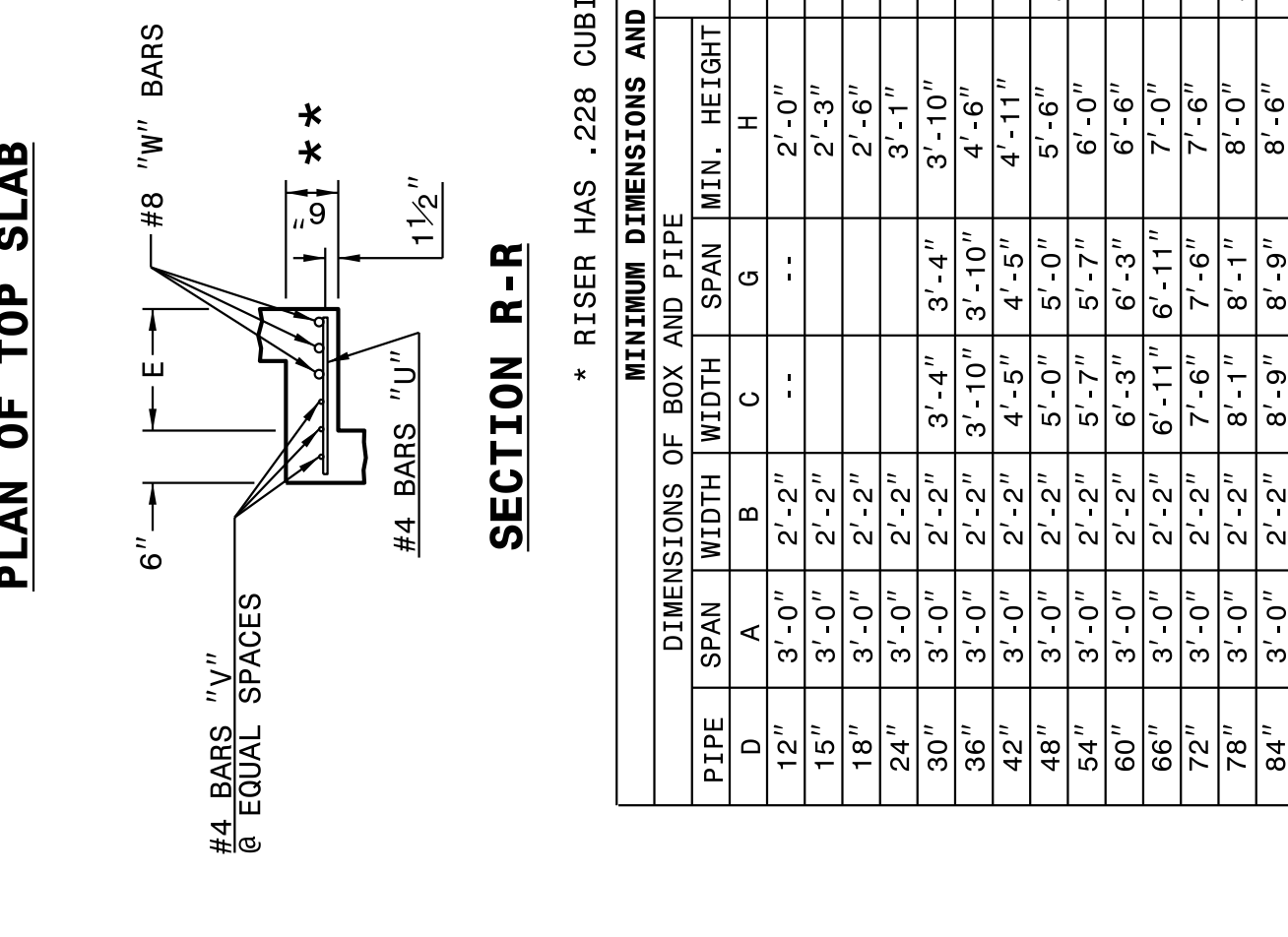
SHEET 1 OF 2  
**840D02**

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

ENGLISH DETAIL DRAWING FOR  
**EXTRA DEPTH  
 CONCRETE CATCH BASIN**  
 12" THRU 84" PIPE



ENGLISH DETAIL DRAWING FOR  
**EXTRA DEPTH  
 CONCRETE CATCH BASIN**  
 12" THRU 84" PIPE

SHEET 2 OF 2  
**840D02**

SHEET 2 OF 2  
**840D02**

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

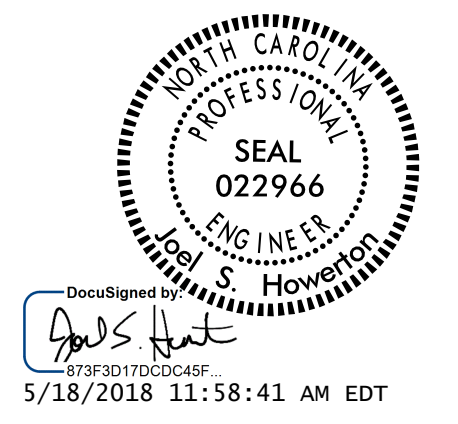
PIPE D.	MINIMUM DIMENSIONS OF BOX AND PIPE			COVER DIMENSION			DIMENSIONS OF BOX AND PIPE			QUANTITIES FOR CONCRETE CATCH BASIN (BASED ON MIN. HEIGHT, H, WITH NO RISER) *			DEDUCTIONS ONE PIPE				
	SPAN	WIDTH	HEIGHT	E	F	H	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	TOTAL LBS.	CU. YDS. CONC.	TOP BOTTOM SLAB	FOR MINIMUM HEIGHT, H	R.C.
12"	3'-0"	2'-2"	2'-0"	..	..	2'-0"	..	..	..	..	..	..	..	0.235	0.772	0.015	0.026
15"	3'-0"	2'-2"	2'-3"	..	..	2'-3"	..	..	..	..	..	..	..	0.235	0.829	0.023	0.036
18"	3'-0"	2'-2"	3'-1"	..	..	3'-1"	..	..	..	..	..	..	..	0.235	0.887	0.033	0.049
24"	3'-0"	2'-2"	3'-10"	..	..	3'-10"	..	..	..	..	..	..	..	0.235	1.001	0.059	0.085
30"	3'-0"	2'-2"	3'-4"	..	..	3'-4"	..	..	..	..	..	..	..	0.235	1.001	0.059	0.085
36"	3'-0"	2'-2"	3'-10"	..	..	3'-10"	..	..	..	..	..	..	..	0.235	1.001	0.059	0.085
42"	3'-0"	2'-2"	4'-11"	..	..	4'-11"	..	..	..	..	..	..	..	0.235	1.001	0.059	0.085
48"	3'-0"	2'-2"	5'-0"	..	..	5'-0"	..	..	..	..	..	..	..	0.235	1.001	0.059	0.085
54"	3'-0"	2'-2"	5'-7"	..	..	5'-7"	..	..	..	..	..	..	..	0.235	1.001	0.059	0.085
60"	3'-0"	2'-2"	6'-3"	..	..	6'-3"	..	..	..	..	..	..	..	0.235	1.001	0.059	0.085
66"	3'-0"	2'-2"	6'-11"	..	..	6'-11"	..	..	..	..	..	..	..	0.235	1.001	0.059	0.085
72"	3'-0"	2'-2"	7'-6"	..	..	7'-6"	..	..	..	..	..	..	..	0.235	1.001	0.059	0.085
78"	3'-0"	2'-2"	8'-1"	..	..	8'-1"	..	..	..	..	..	..	..	0.235	1.001	0.059	0.085
84"	3'-0"	2'-2"	8'-9"	..	..	8'-9"	..	..	..	..	..	..	..	0.235	1.001	0.059	0.085

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

**SEE PLATE FOR TITLE**

ORIGINAL BY: 2002 Std.840.01 DATE: \_\_\_\_\_  
 MODIFIED BY: E.E. WARD DATE: 3-1-02  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 FILE SPEC.: jhewerton/840d02 Extra\_Depth CB.dgn



5/18/2018 11:58:41 AM EDT



# FILTRATION BASIN TYPICAL CROSS SECTION DETAILS

**NOTES**

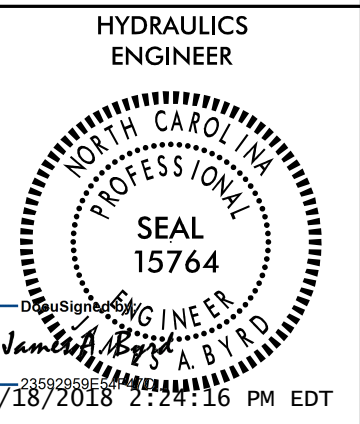
- FOR BASIN AND FOREBAY LAYOUTS SEE SHEETS 2D-6, 2D-7, AND 2D-8.
- FOREBAYS WITH PIPED INLETS SHALL BE LINED WITH CLASS B RIPRAP.
- ACCESS BERM SHOULD BE PROVIDED FOR MAINTENANCE.
- 6-INCH UNDERDRAIN IS THE PRIMARY DRAWDOWN DEVICE FOR STORMS LESS THAN OR EQUAL TO THE MAGNITUDE OF THE WATER QUALITY EVENT.
- UNDERDRAIN PIPES SHOULD BE PLACED A MAXIMUM OF 5 FEET FROM THE EDGE OF THE BASIN AND MUST HAVE A MAXIMUM OF 10 FEET BETWEEN THE UNDERDRAIN PIPES.
- UNDERDRAIN SHOULD BE BEDDED ON A THIN LAYER OF NO.57 WASHED STONE AND BACKFILLED TO A TOTAL MINIMUM STONE DEPTH OF 12 INCHES.
- PERFORATED PIPE HOLES ARE 3/8 INCH IN DIAMETER AND LONGITUDINALLY SPACED 6 INCHES ON CENTER ALONG 4 ROWS.
- TOP OF MEDIA FILTER MUST BE LEVEL.
- IF BASIN IS USED TO COLLECT SEDIMENTATION AS AN EROSION CONTROL MEASURE, DO NOT INSTALL UNDERDRAIN PIPES, WASHED STONE, NOR ENGINEERED SOIL MEDIA FILTER UNTIL EROSION CONTROL MEASURES INSIDE MEDIA FILTER BASIN ARE REMOVED.

**REFERENCED SPECIAL DETAILS**

FOR "FOREBAY AND CLEANOUT DETAILS" SEE SHEET 2D-2  
 FOR "OUTLET CONTROL STRUCTURE DETAILS" SEE SHEET 2D-3  
 FOR "TRASH RACK DETAILS" SEE SHEET 2D-4

**SPECIFICATIONS**

ENGINEERED SOIL MEDIA SHALL CONSIST OF:  
 - SEE EXPANDED SLATE MEDIA SPECIAL PROVISION



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

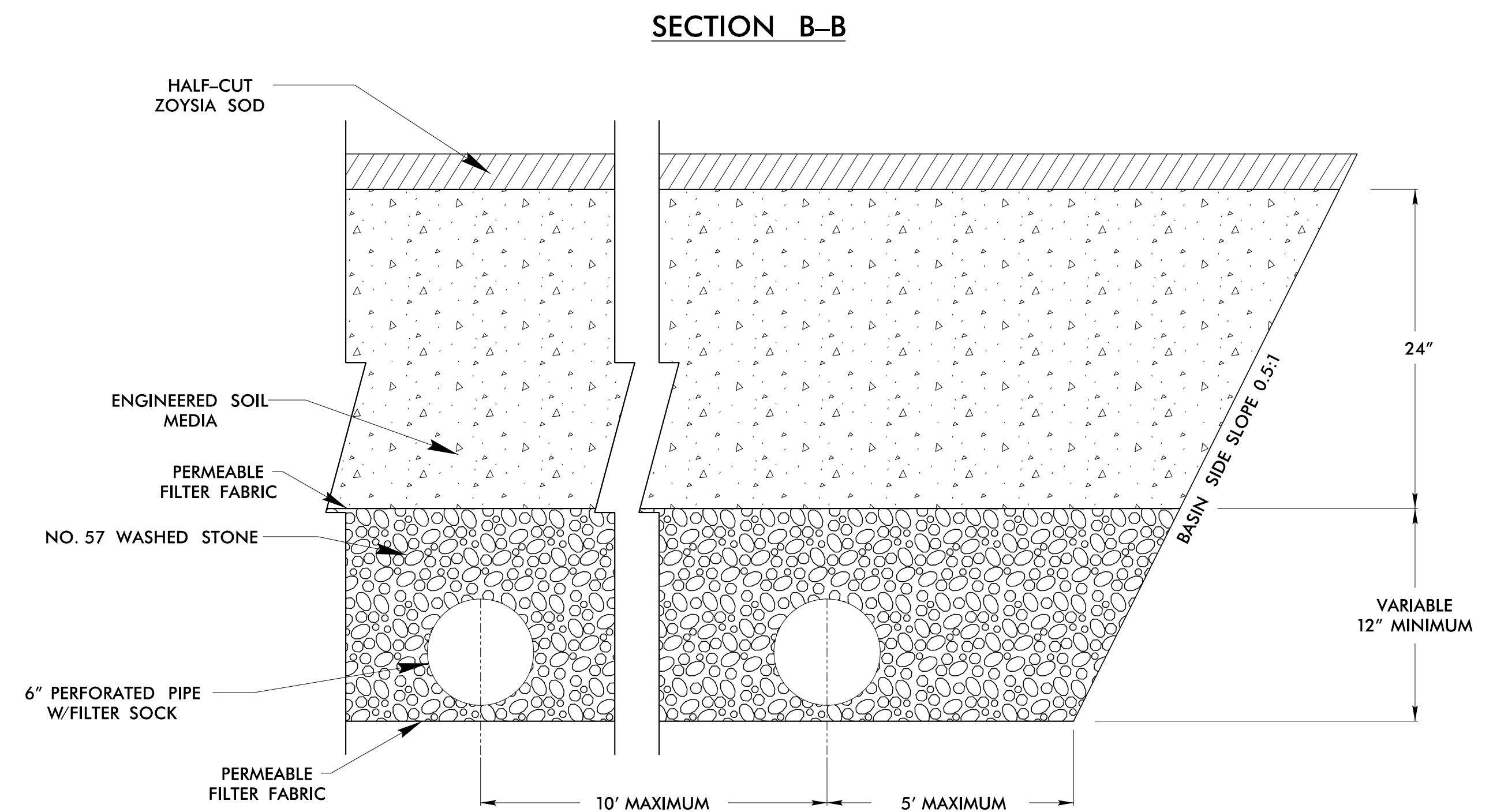
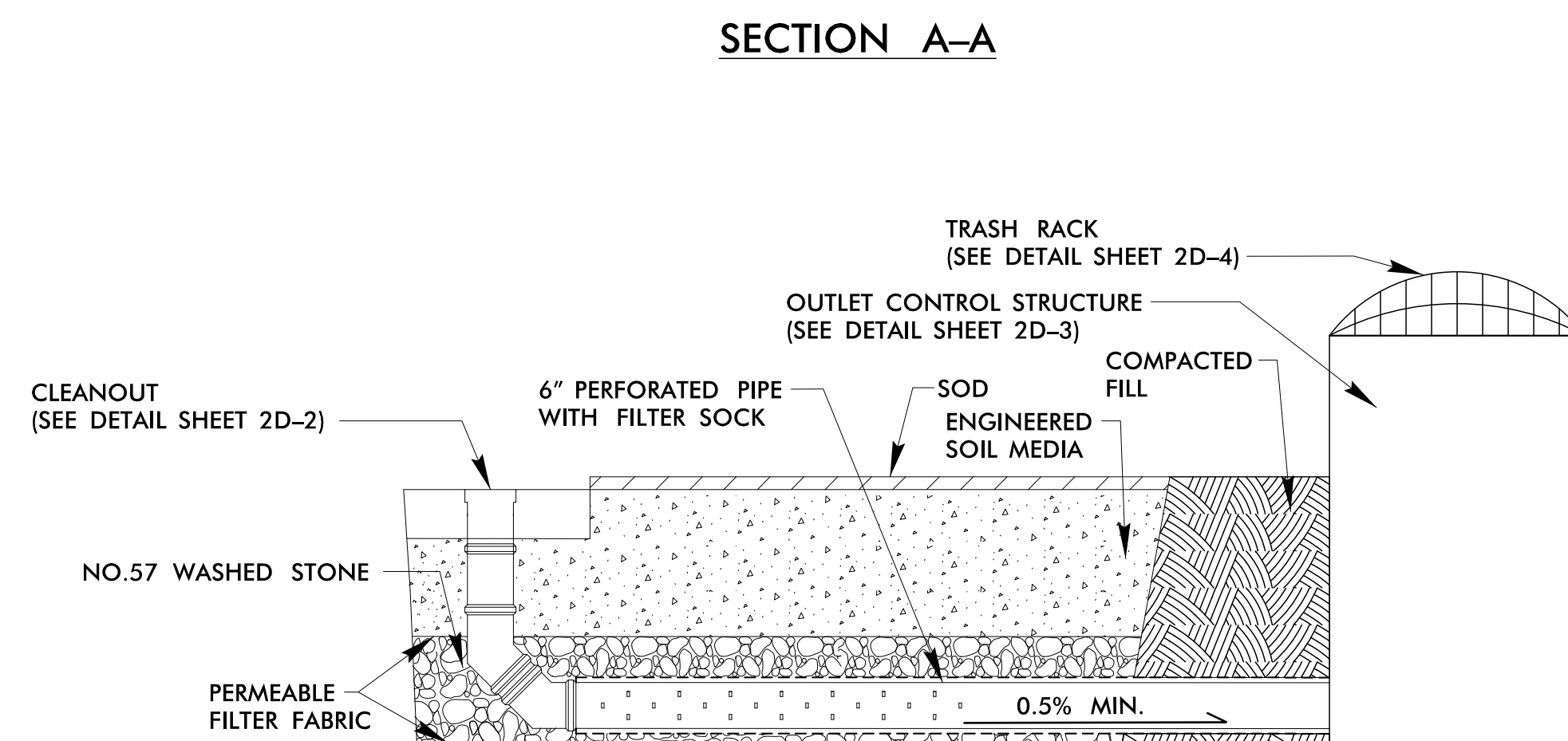
**PLAN**

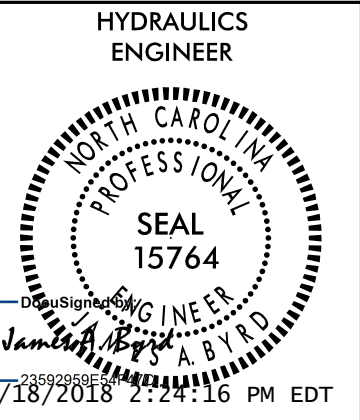
SEE SHEET 2D-6 FOR "PLAN VIEW - FILTRATION BASIN 1"  
 SEE SHEET 2D-7 FOR "PLAN VIEW - FILTRATION BASIN 2"

**PROFILE**

SEE SHEET 2D-8 FOR TYPICAL SECTIONS

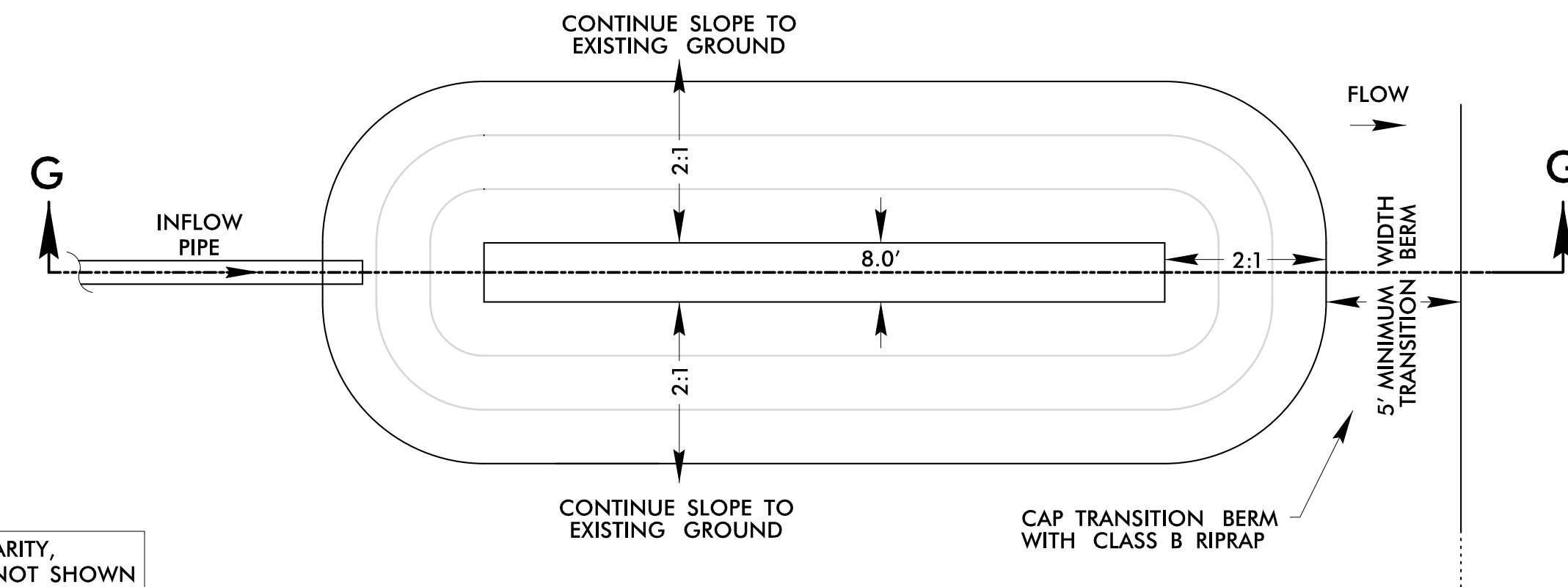
REVISIONS





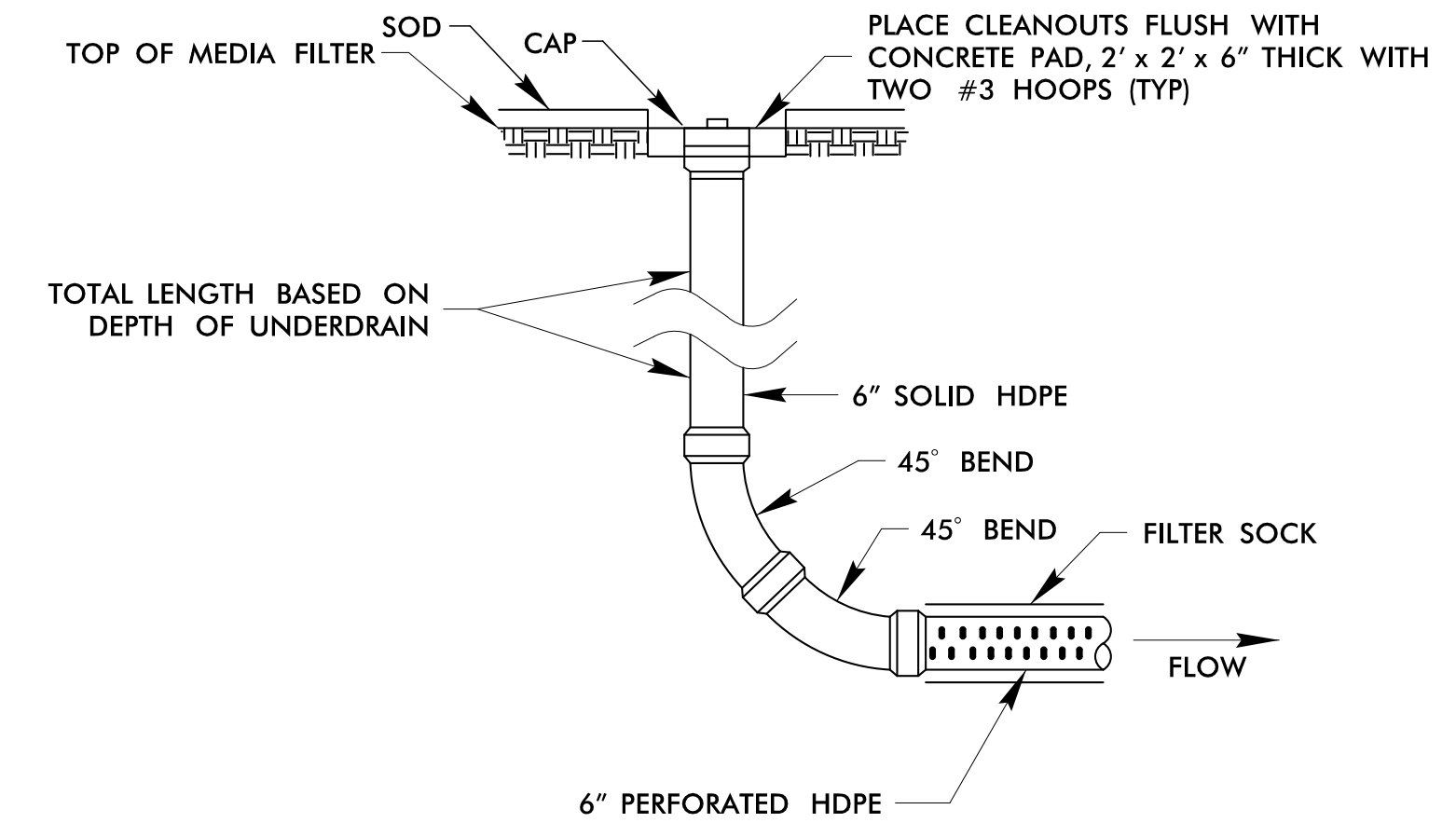
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

# FOREBAY AND CLEANOUT DETAILS



FOR CLARITY, RIPRAP NOT SHOWN

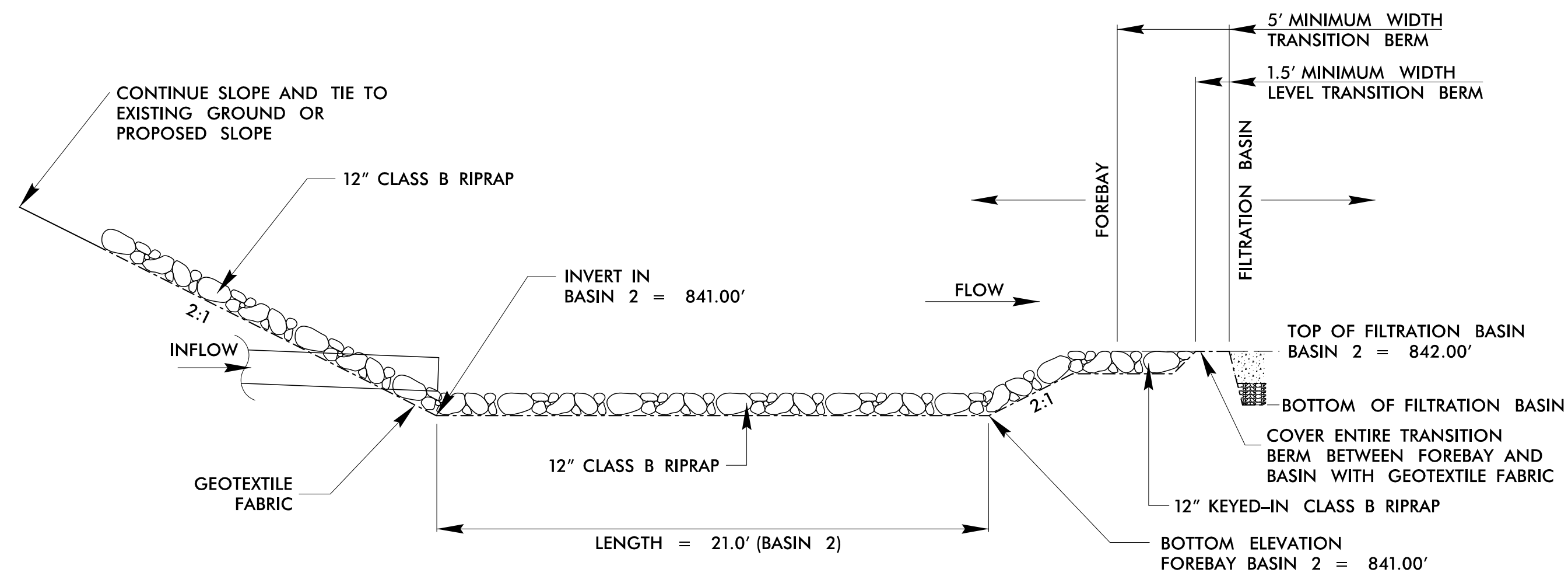
**PLAN  
LINEAR FOREBAY**



NOTES:

1. ONLY UNDERDRAIN PIPE THAT IS LOCATED BENEATH ENGINEERED SOIL MEDIA SHOULD BE PERFORATED.
2. PROVIDE THREADED SCREW CAP.

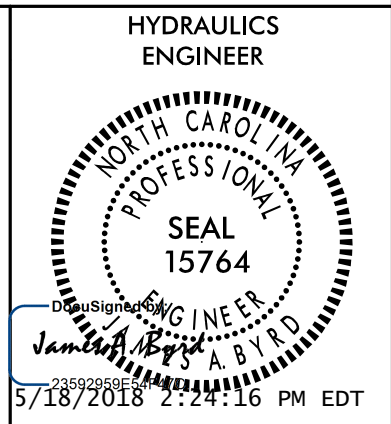
**CLEANOUT DETAIL**



**SECTION G-G  
FOREBAY**

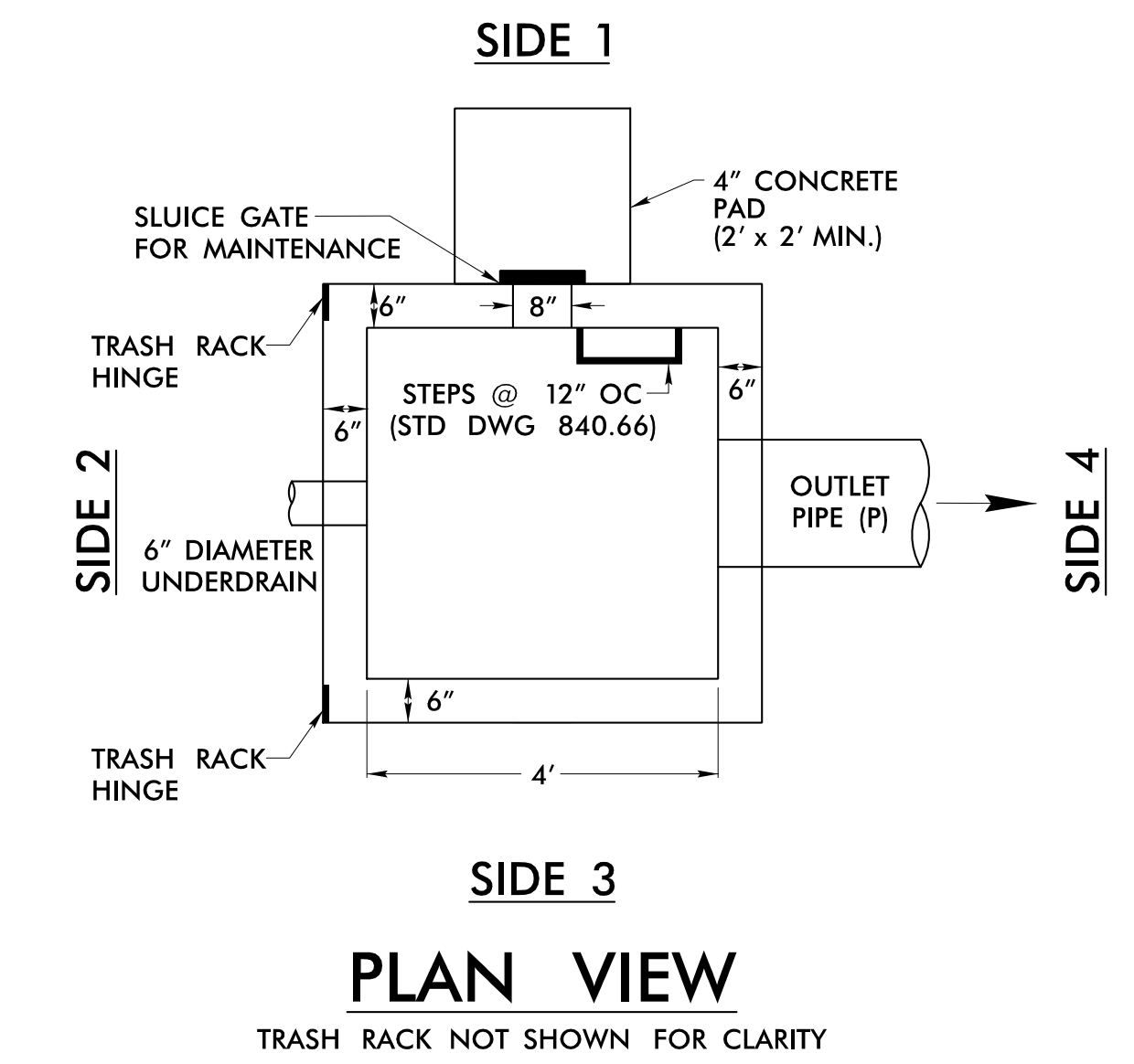
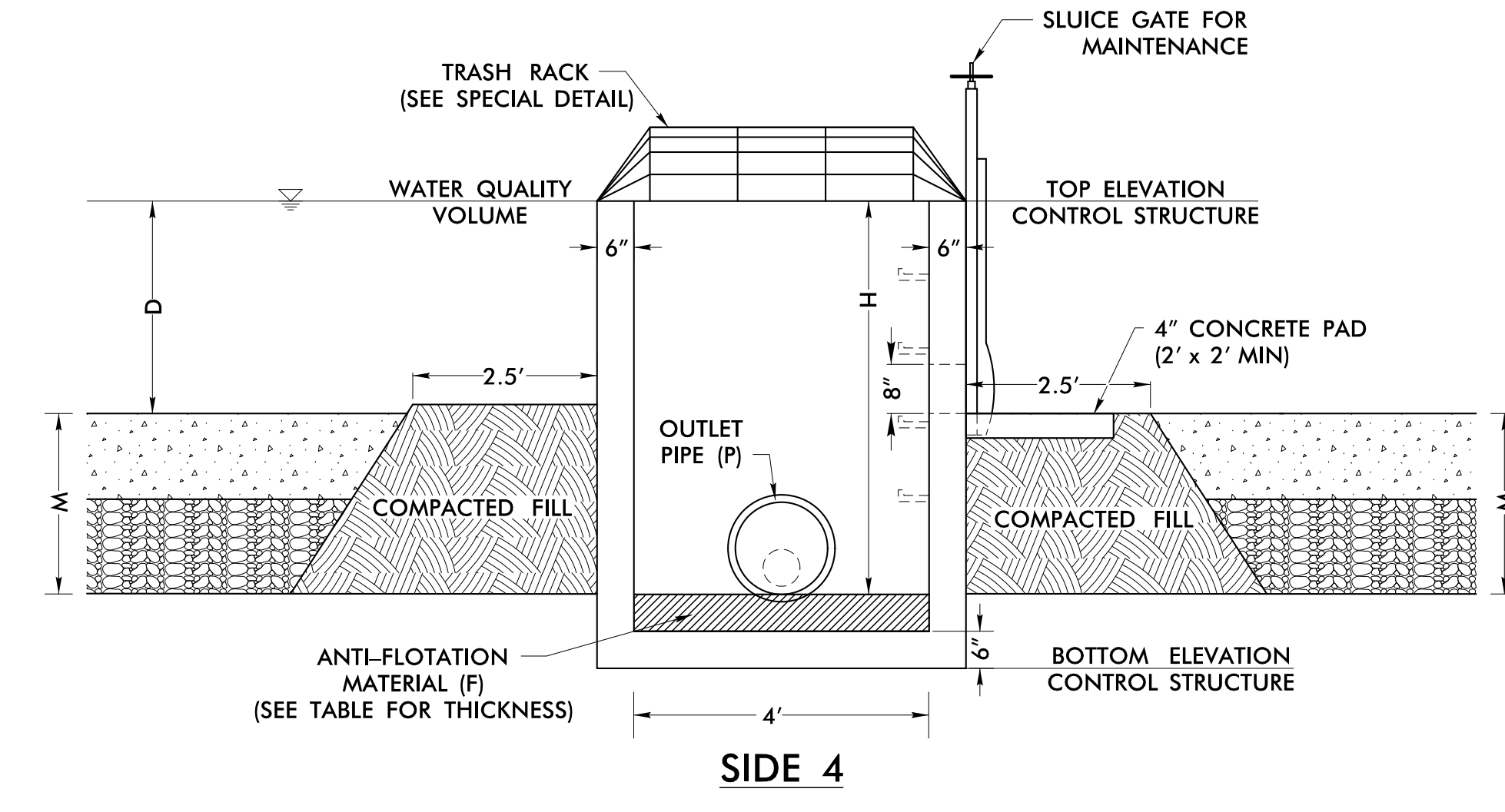
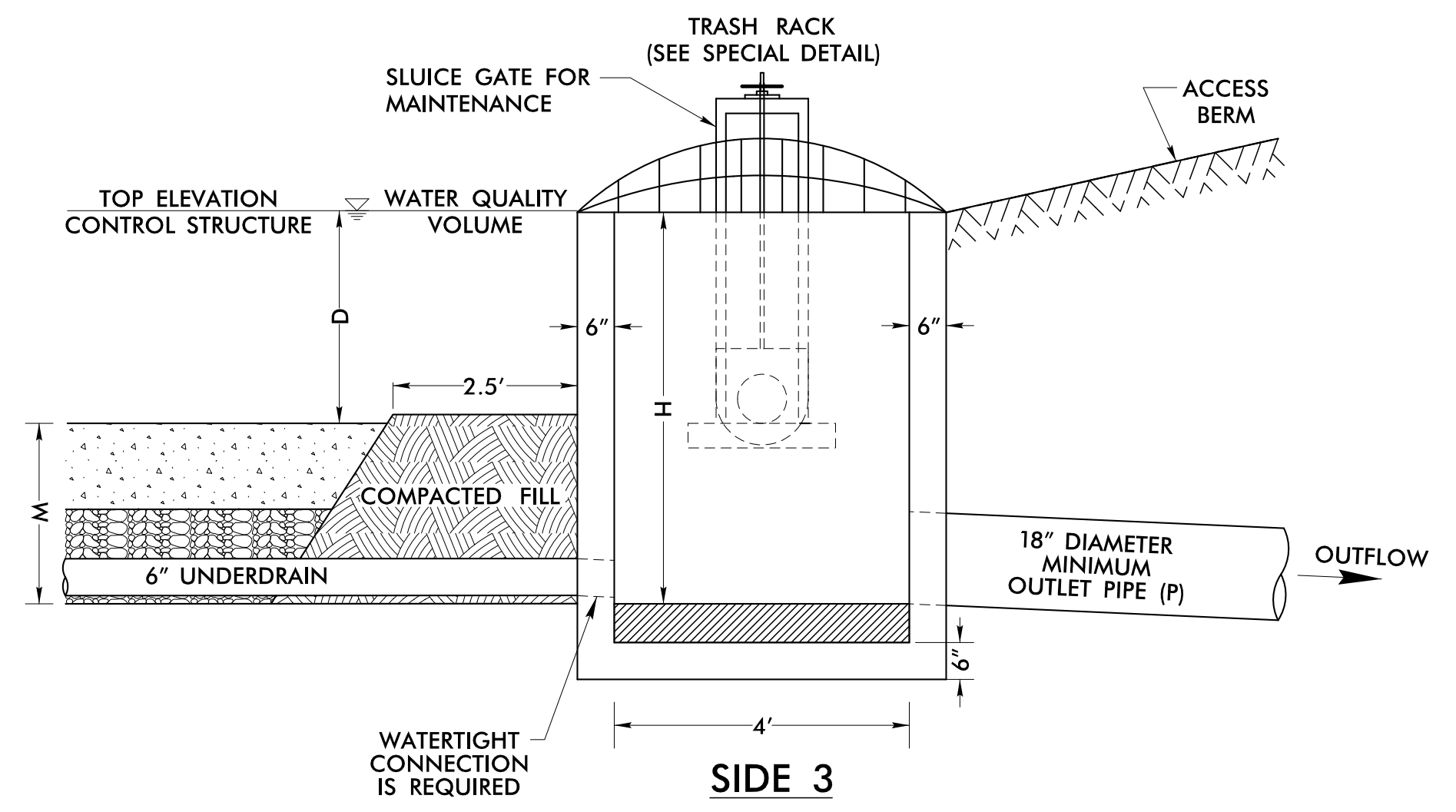
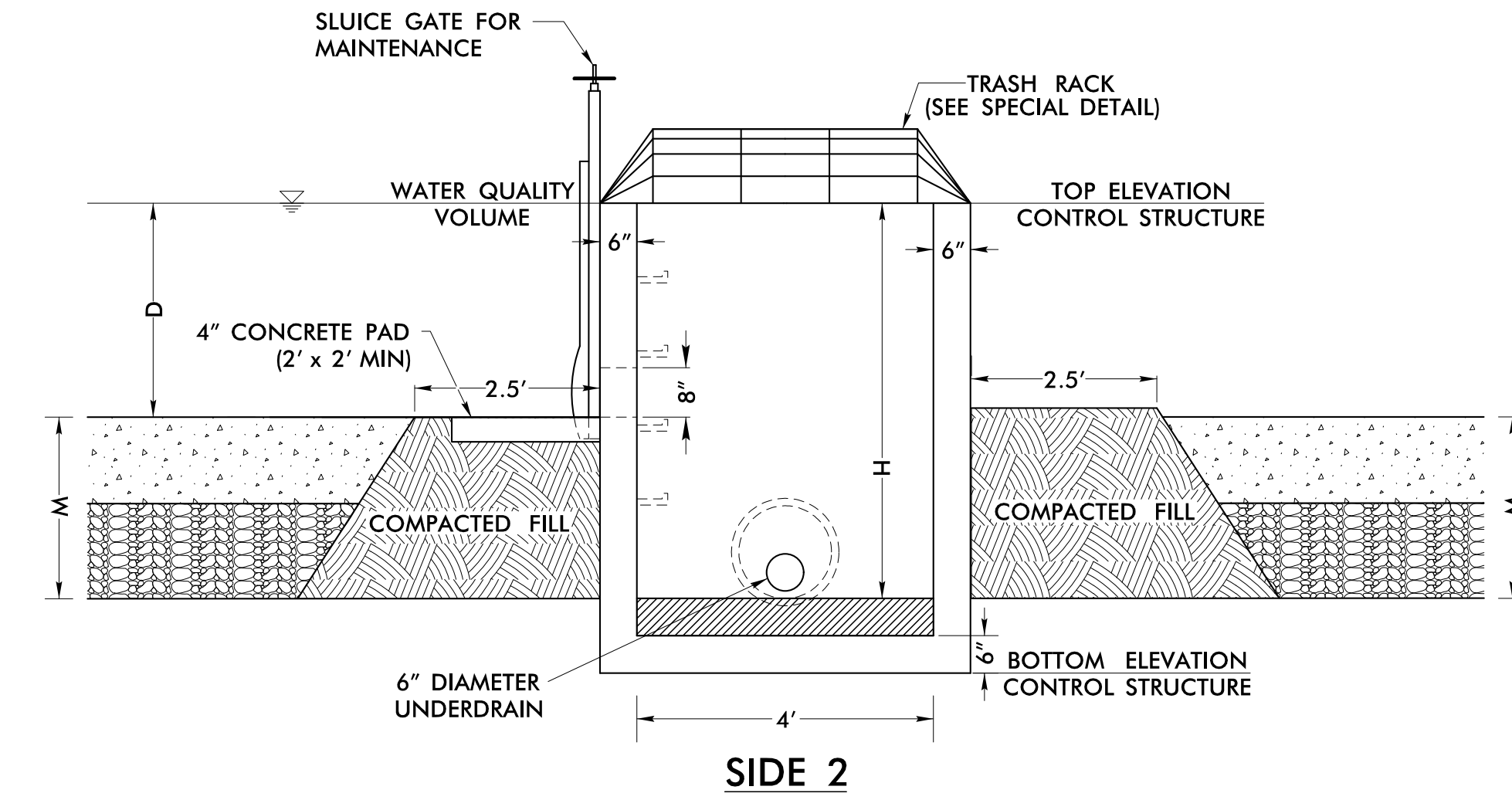
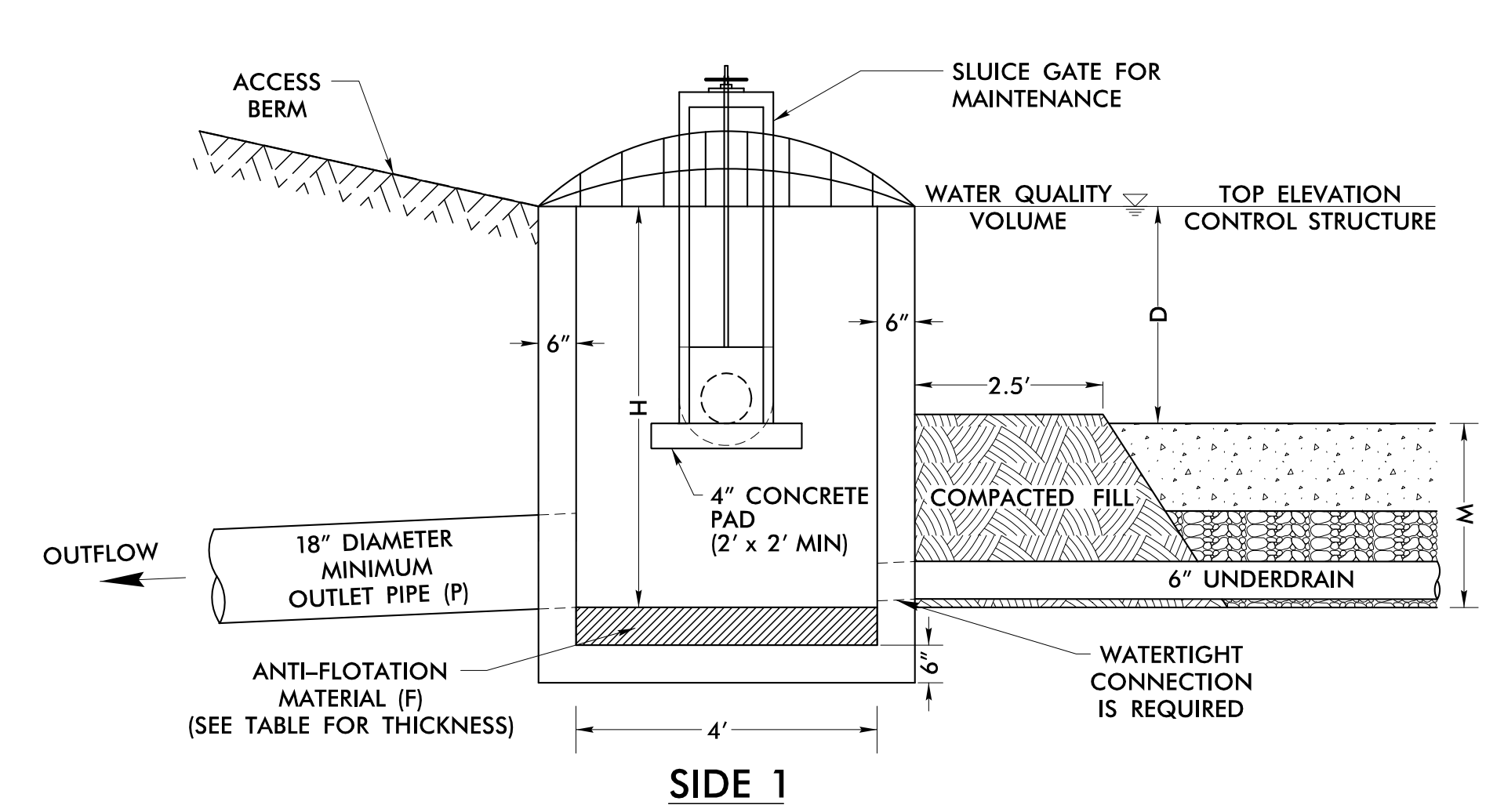
REVISIONS





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# OUTLET CONTROL STRUCTURE DETAILS



**DIMENSIONS**

D = PONDING DEPTH (BASED ON WATER QUALITY ELEVATION)  
 M = MEDIA FILTER + AGGREGATE THICKNESS  
 F = ANTI-FLOTATION MATERIAL THICKNESS  
 SLAB THICKNESS IS 0.5'  
 MINIMUM H = D + M

**NOTES**

1. A SLUICE GATE COVERING AN 8" ORIFICE WILL PROVIDE FOR DRAWDOWN DURING BASIN MAINTENANCE AND SHALL REMAIN CLOSED DURING NORMAL OPERATION.
2. THE SLUICE GATE FOR MAINTENANCE SHALL BE PLACED ON THE OUTSIDE OF THE STRUCTURE.
3. SLUICE GATES SHALL PROVIDE A WATERTIGHT SEAL. PROVIDE ADEQUATE CLEARANCE FOR GATE OPERATION AND FOR PROPER SEATING OF GATE OVER PIPE.
4. ENSURE THAT THE TRASH RACK OPENS FREELY AND WITHOUT INTERFERENCE WITH SLUICE GATES.
5. ANTI-FLOTATION MATERIAL IS REQUIRED AND SHALL BE CONCRETE.

**REFERENCED SPECIAL DETAILS**

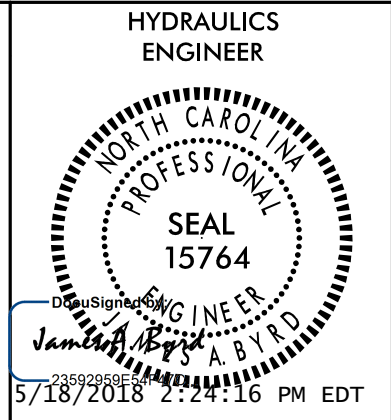
FOR "FILTRATION BASIN TYPICAL CROSS SECTION DETAILS" SEE SHEET 2D-1  
 FOR "TRASH RACKS DETAILS" SEE SHEET 2D-4

**MINIMUM DIMENSIONS FOR FILTRATION BASIN DRAWDOWN STRUCTURE**

OUTLET FOR BASIN	STRUCTURE NUMBER	TOP ELEVATION FILTRATION BASIN	TOP ELEVATION CONTROL STRUCTURE	BASIN DEPTH (D)	MEDIA FILTER + AGGREGATE DEPTH (M)	ANTI-FLOTATION MATERIAL (F) THICKNESS	BOTTOM ELEVATION CONTROL STRUCTURE	DIMENSIONS CONTROL STRUCTURE (W x L x H)	INVERT ELEVATION UNDERDRAIN OUTLET PIPE	DIAMETER OUTLET PIPE (P)	INVERT ELEVATION OUTLET PIPE (P)
BASIN 1	0423	826.00	828.40	2.4'	3.00'	1.0'	821.50	4'x4'x7.0'	823.00	18"	823.00
BASIN 2	0455	842.00	843.50	1.5'	3.00'	1.0'	836.50	4'x4'x7.0'	839.00	18"	838.00

\*NOT TO SCALE\*

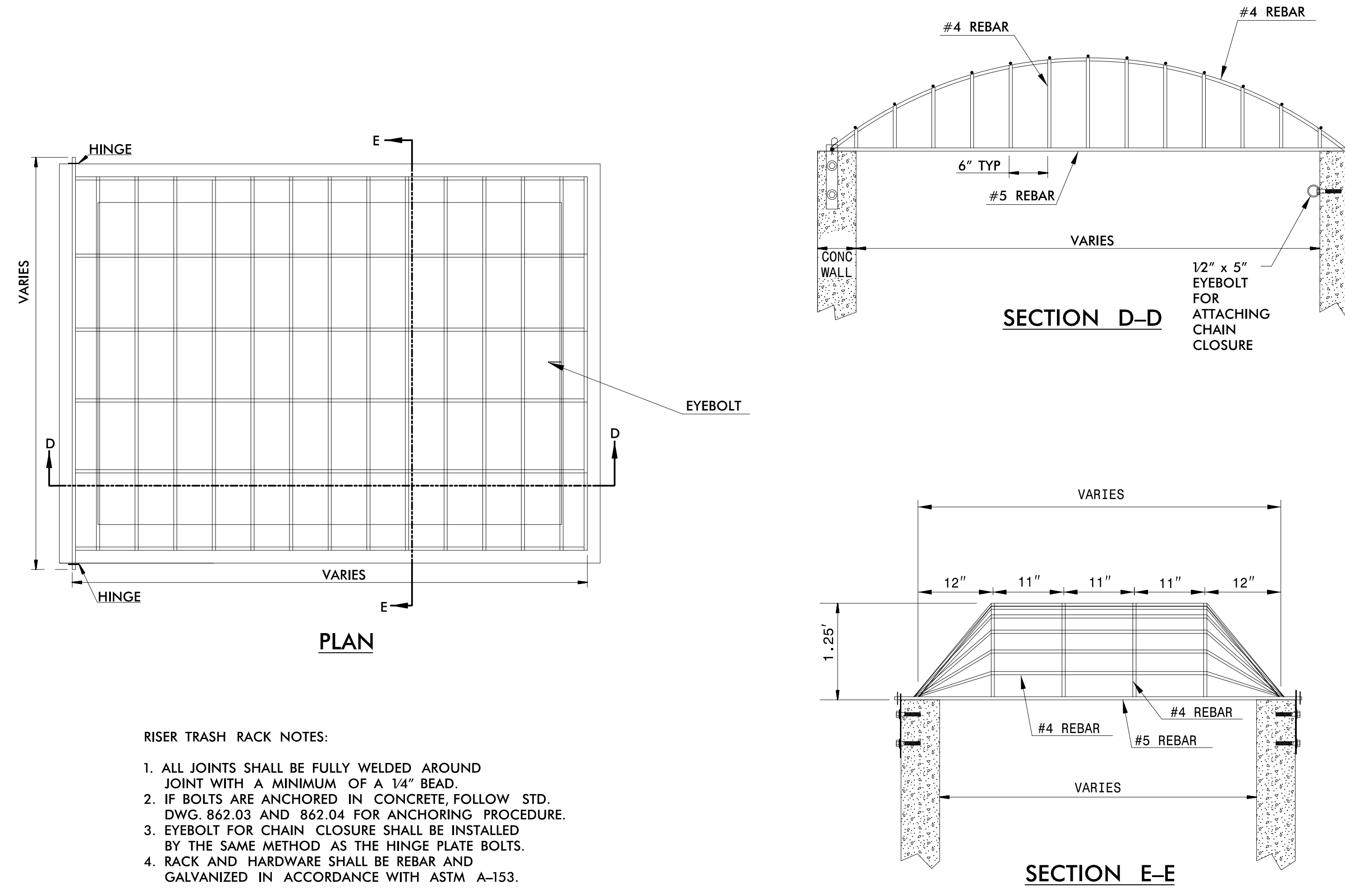
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# TRASH RACK DETAILS

REVISIONS



- RISER TRASH RACK NOTES:
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A 1/4" BEAD.
  2. IF BOLTS ARE ANCHORED IN CONCRETE, FOLLOW STD. DWG. 862.03 AND 862.04 FOR ANCHORING PROCEDURE.
  3. EYEBOLT FOR CHAIN CLOSURE SHALL BE INSTALLED BY THE SAME METHOD AS THE HINGE PLATE BOLTS.
  4. RACK AND HARDWARE SHALL BE REBAR AND GALVANIZED IN ACCORDANCE WITH ASTM A-153.

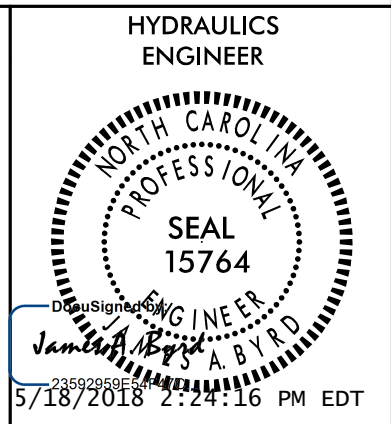
## REBAR TRASH RACK



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**HNTB** HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
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PROJECT REFERENCE NO.	SHEET NO.
U-5169	2D-5
RW SHEET NO.	



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## SUMMARY OF BASIN COMPONENT ITEMS (for Stormwater BMP's)

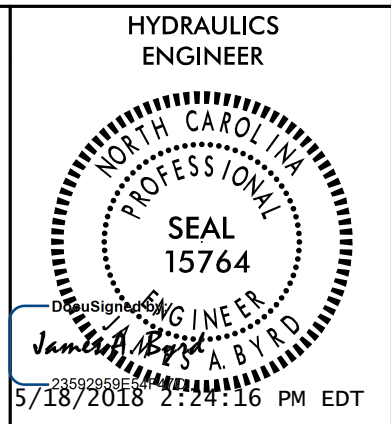
ITEM DESCRIPTION	UNIT	QUANTITY		
		BASIN 1	BASIN 2	PROJECT TOTALS
OUTLET CONTROL STRUCTURE BOX (840.45) (4'x4' INSIDE WALLS)	EA	1	1	2
CONCRETE PAD, 2' x 2' x 4" THICK	EA	1	1	2
8" SLUICE GATE	EA	1	1	2
RISER TRASH RACK	EA	1	1	2
GEOTEXTILE FOR DRAINAGE (TYPE 2, NON-WOVEN)	SY	99	93	192
WASHED NO. 57 STONE	TON	70	133	203
UNDERDRAIN PIPE - 6" HDPE PERFORATED	LF	208	195	403
UNDERDRAIN PIPE - 6" HDPE NONPERFORATED	LF	11.5	22	33.5
6" x 6" HDPE CROSS	EA	0	1	1
6" x 6" HDPE TEE	EA	1	0	1
6" HDPE 90-DEGREE BEND	EA	2	2	4
6" HDPE 45-DEGREE BEND	EA	4	6	10
6" CLEANOUT	EA	2	3	5
ENGINEERED SOIL MEDIA	CY	94	164	258
CONCRETE PAD, 2' x 2' x 6" THICK WITH TWO #3 HOOPS	EA	2	3	5
6" CLEANOUT CAP (THREADED)	EA	2	3	5
SOD, ZOYSIA, HALF-CUT	SY	152	257	409
RIPRAP, CL. B	TON	58	55	113
18" RCP-III	LF	116	73	189

## SUMMARY OF EARTHWORK (for Stormwater BMP's)

ITEM DESCRIPTION	UNIT	QUANTITY		
		BASIN 1 (SEE NOTE)	BASIN 2	PROJECT TOTALS
BASIN EXCAVATION (DDE)	CY	1060	711	1771
BASIN WASTE (DDE)	CY	1052	711	1763
BASIN CLEARING AND GRUBBING	ACR	0.32	0.34	0.66

NOTE: EARTHWORK QUANTITIES FOR BASIN 1 INCLUDED FOR INFORMATION ONLY.  
EARTHWORK QUANTITIES INCLUDED IN -YRPB- EARTHWORK SUMMARY ON SHEET 3B-2.

REVISIONS



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# PLAN VIEW – FILTRATION BASIN 1

FILTRATION BASIN DIMENSIONS

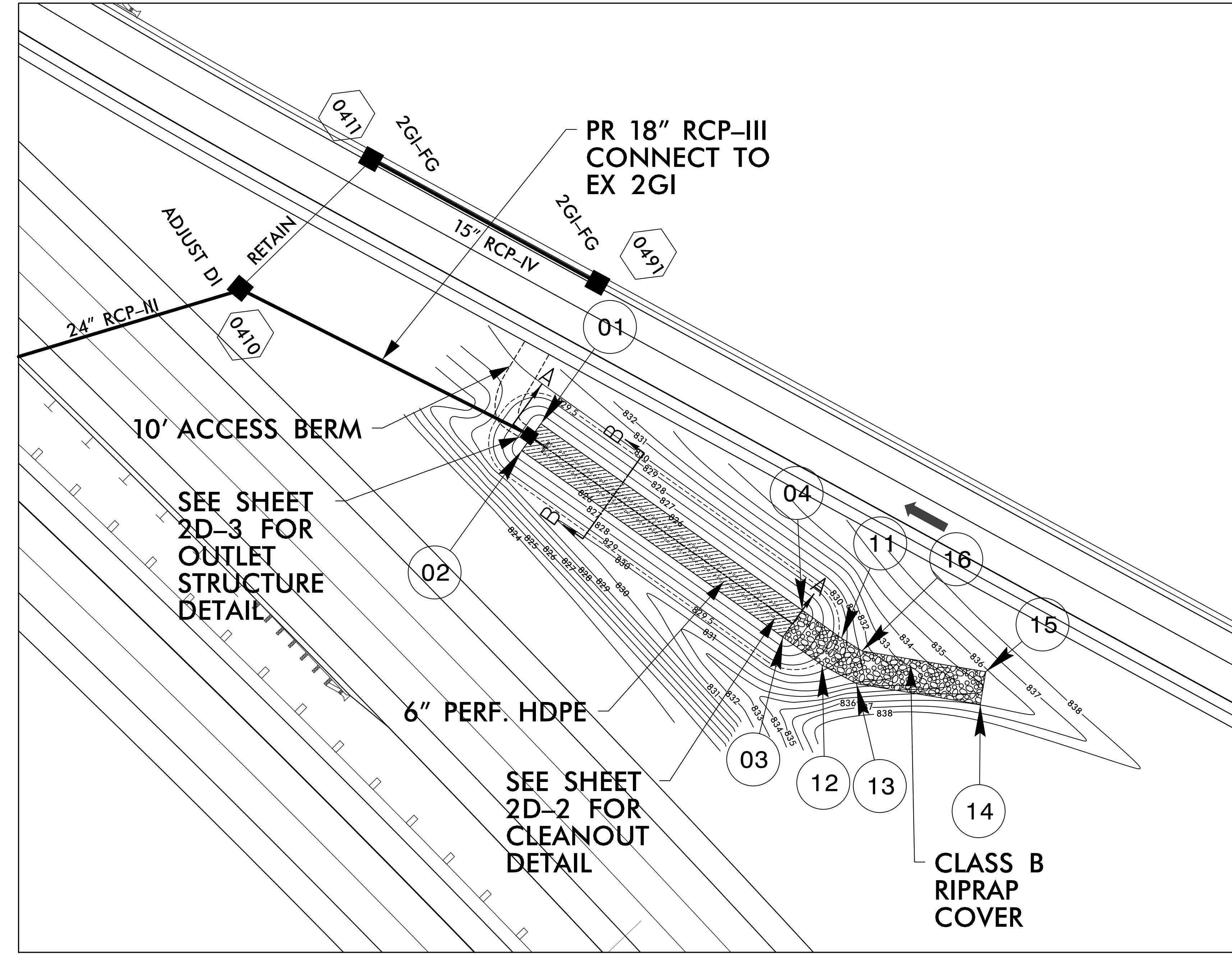
BASIN	WATER QUALITY VOLUME CALCULATED (cf)	WATER QUALITY VOLUME PROVIDED (cf)	BASIN DEPTH	FILTER LENGTH	FILTER WIDTH	BERM WIDTH	SIDE SLOPE	TOP ELEVATION MEDIA FILTER	RISER ELEVATION	BERM ELEVATION
1	5490	5991	2.4'	116.25'	12'	VARIES	3:1	826.00'	828.40'	829.50'

COORDINATE TABLE CORNERS OF TOP OF MEDIA FILTER FOR BASIN 1			
	NORTHING	EASTING	ELEVATION
01	821,593.5945	1,706,338.1123	826.00
02	821,583.8258	1,706,331.1429	826.00
03	821,516.3027	1,706,425.7864	826.00
04	821,526.0714	1,706,432.7558	826.00

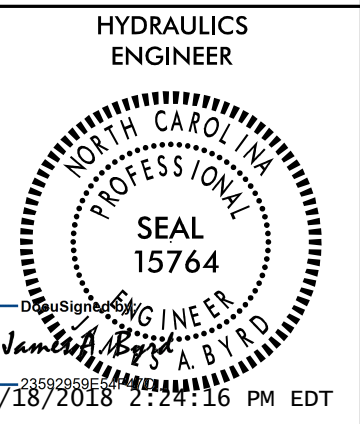
  

COORDINATE TABLE CORNERS OF RIPRAP COVER FOR BASIN 1			
	NORTHING	EASTING	ELEVATION
11	821,515.9076	1,706,447.0018	829.50
12	821,506.1390	1,706,440.0324	829.50
13	821,499.4386	1,706,452.4378	832.00
14	821,491.9008	1,706,497.3134	836.00
15	821,503.7350	1,706,499.3012	836.00
16	821,511.2728	1,706,454.4256	831.00

REVISIONS







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# PLAN VIEW – FILTRATION BASIN 2

**FILTRATION BASIN DIMENSIONS**

BASIN	WATER QUALITY VOLUME CALCULATED (cf)	WATER QUALITY VOLUME PROVIDED (cf)	BASIN DEPTH	FILTER LENGTH	FILTER WIDTH	BERM WIDTH	SIDE SLOPE	TOP ELEVATION MEDIA FILTER	RISER ELEVATION	BERM ELEVATION
2	4105	4927	1.5'	75'	30'	5'	3:1	842.00'	843.50'	846.00'

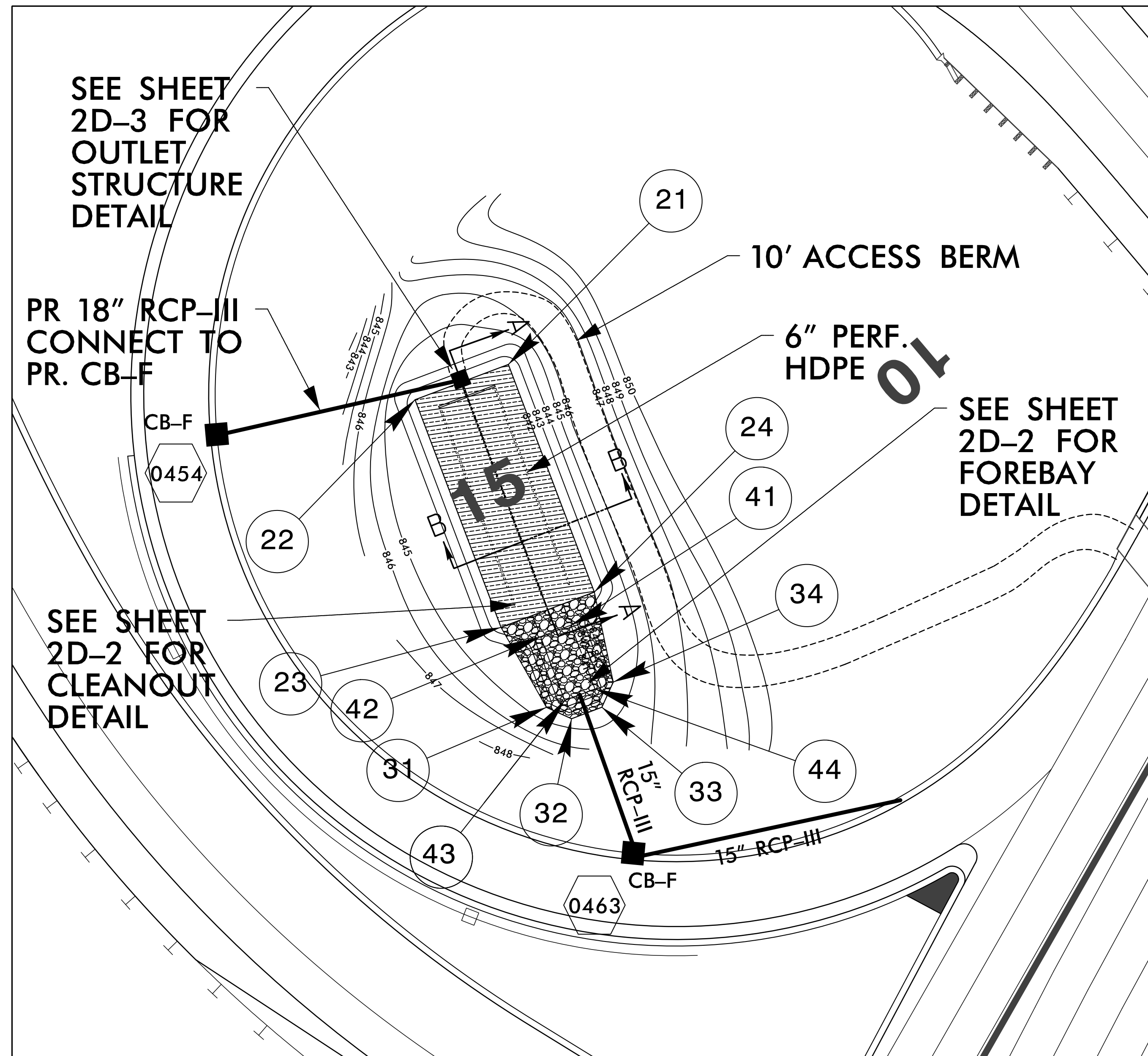
COORDINATE TABLE CORNERS OF TOP OF MEDIA FILTER BASIN 2			
	NORTHING	EASTING	ELEVATION
21	821,061.7206	1,706,334.7893	842.00
22	821,050.8582	1,706,306.0398	842.00
23	820,980.6990	1,706,332.5481	842.00
24	820,991.5614	1,706,361.2976	842.00

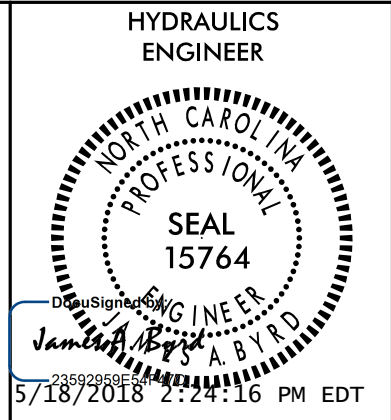
CORNERS OF RIPRAP COVER BASIN 2 FOREBAY			
	NORTHING	EASTING	ELEVATION
31	820,956.0426	1,706,346.5368	844.00
32	820,952.5505	1,706,354.2702	844.00
33	820,956.0850	1,706,363.6247	844.00
34	820,963.8184	1,706,367.1168	844.00

CORNERS OF BOTTOM OF BASIN 2 FOREBAY			
	NORTHING	EASTING	ELEVATION
41	820,981.3508	1,706,354.0785	841.00
42	820,977.8164	1,706,344.7240	841.00
43	820,958.1633	1,706,352.1495	841.00
44	820,961.6977	1,706,361.5041	841.00

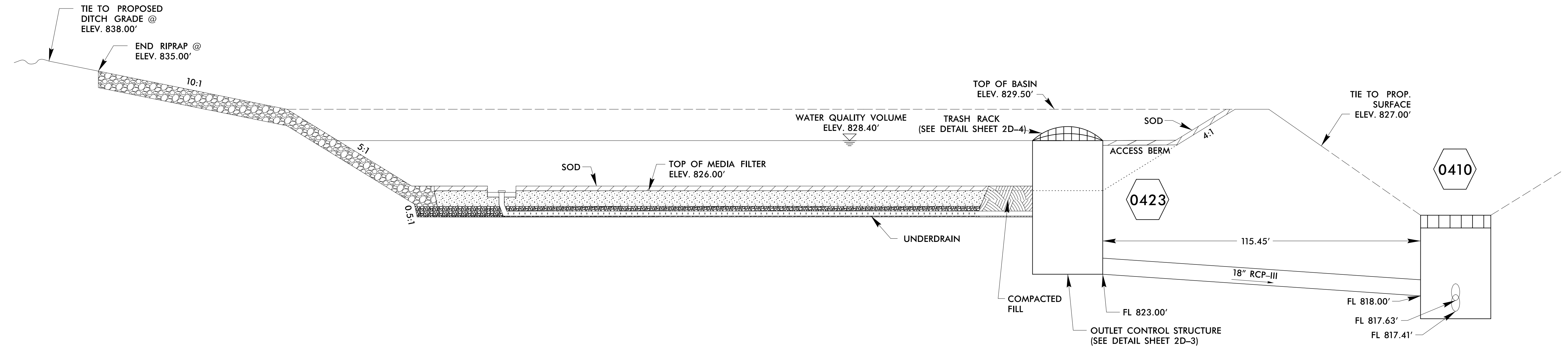


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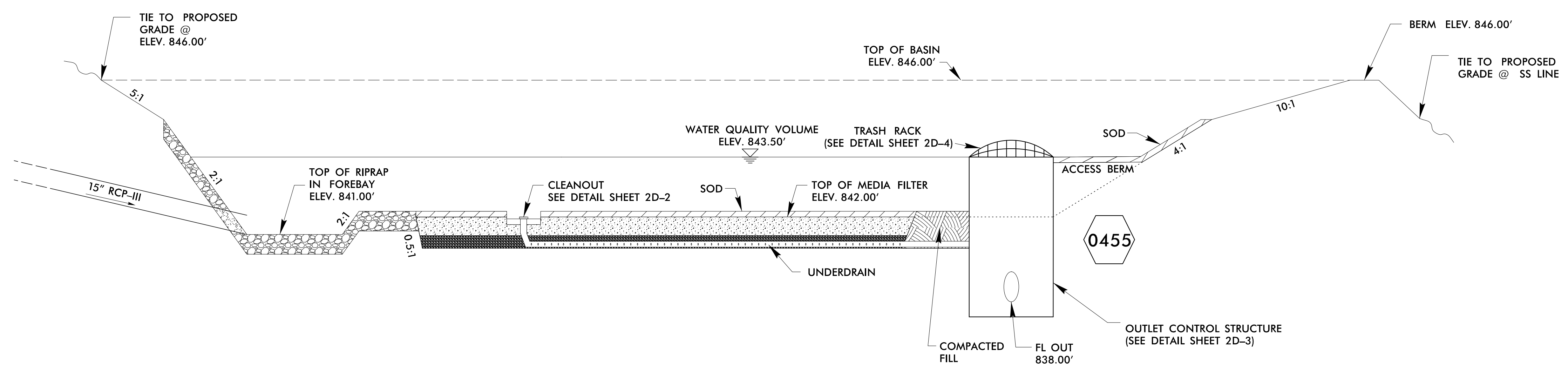


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# TYPICAL SECTION (NTS) – FILTRATION BASIN 1



# TYPICAL SECTION (NTS) – FILTRATION BASIN 2



REVISIONS



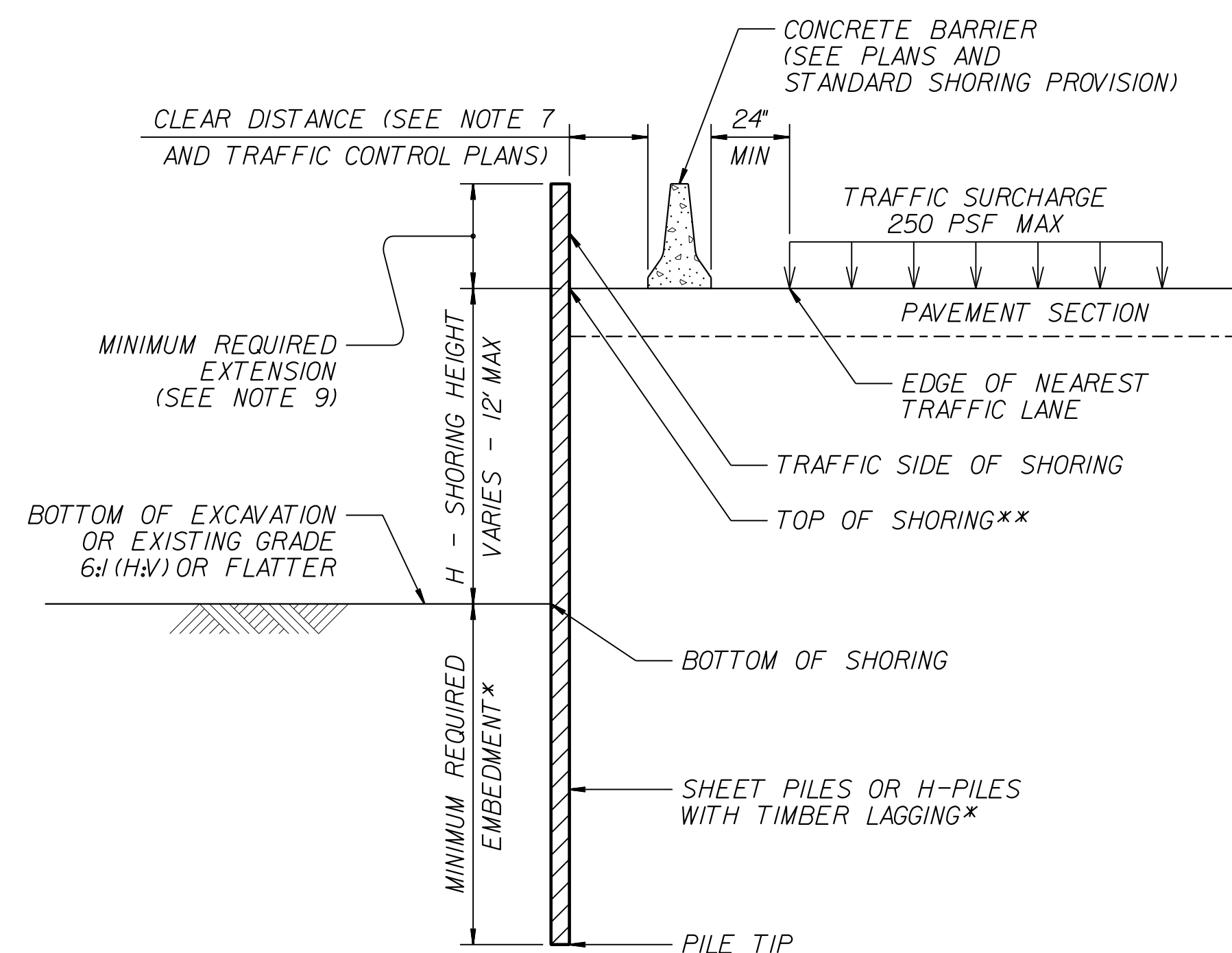
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS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

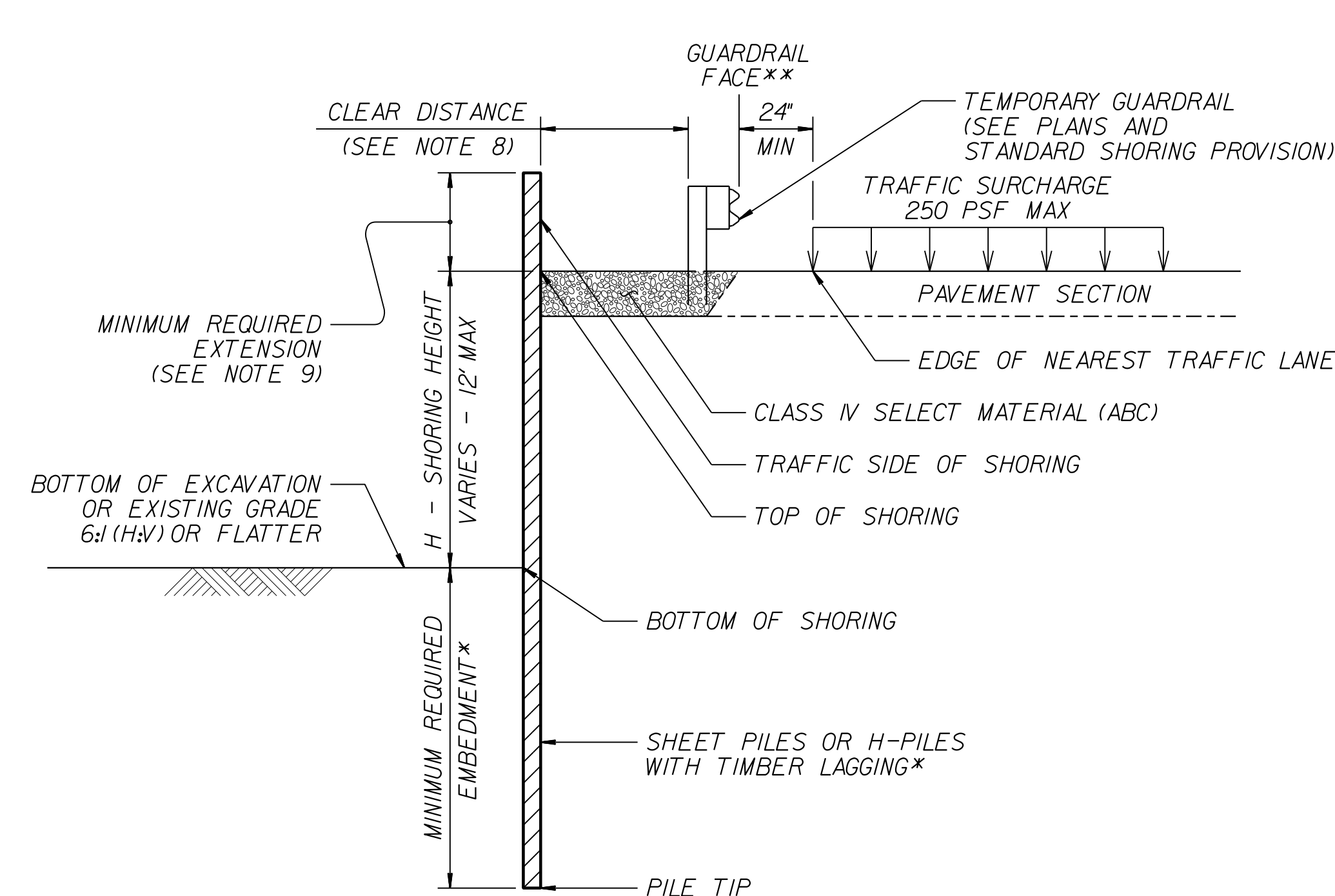
**NOTES:**

- 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,  $\gamma = 120$  PCF  
FRICTION ANGLE,  $\phi = 30$  DEGREES  
COHESION,  $c = 0$  PSF
- 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.

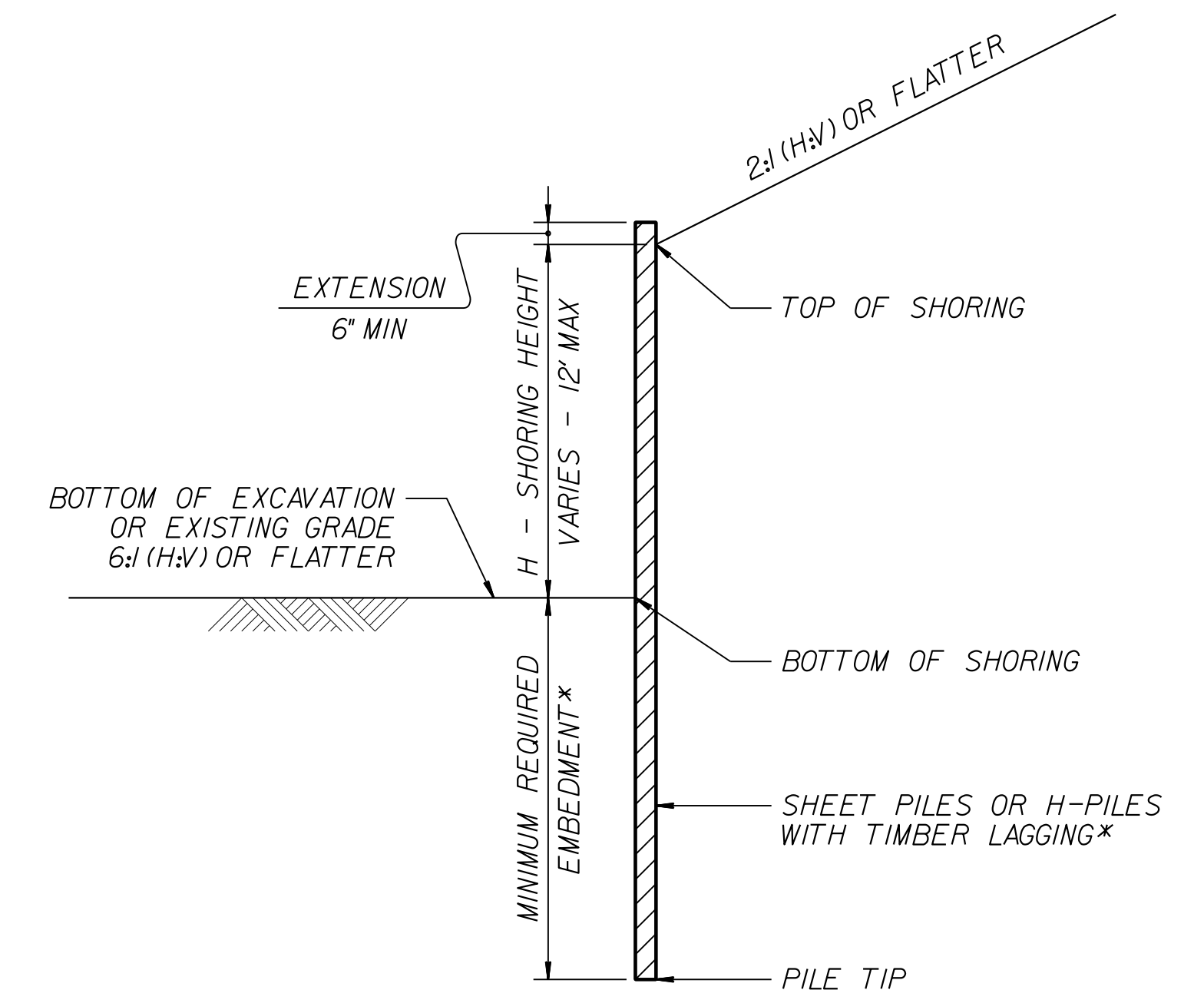


**CONCRETE BARRIER**  
\*\*TOP OF SHORING =  
EDGE OF PAVEMENT

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



**TEMPORARY GUARDRAIL**  
\*\*GUARDRAIL FACE =  
EDGE OF PAVEMENT



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



8.17.19

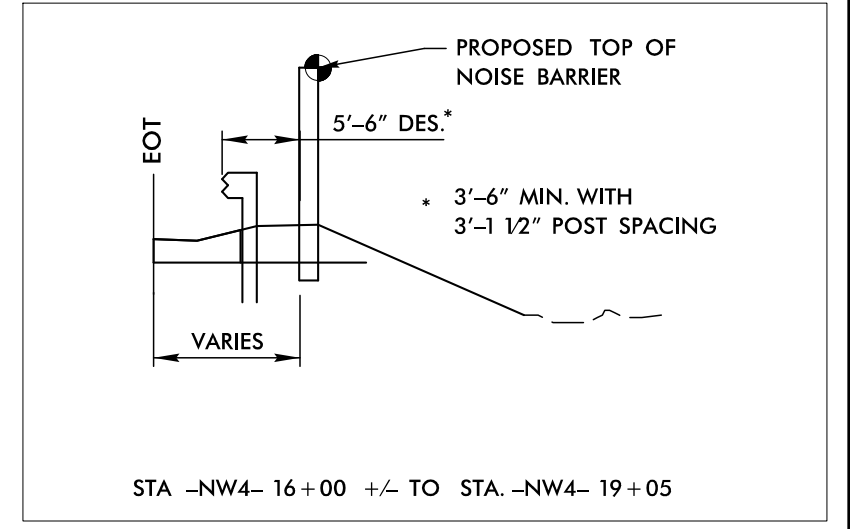
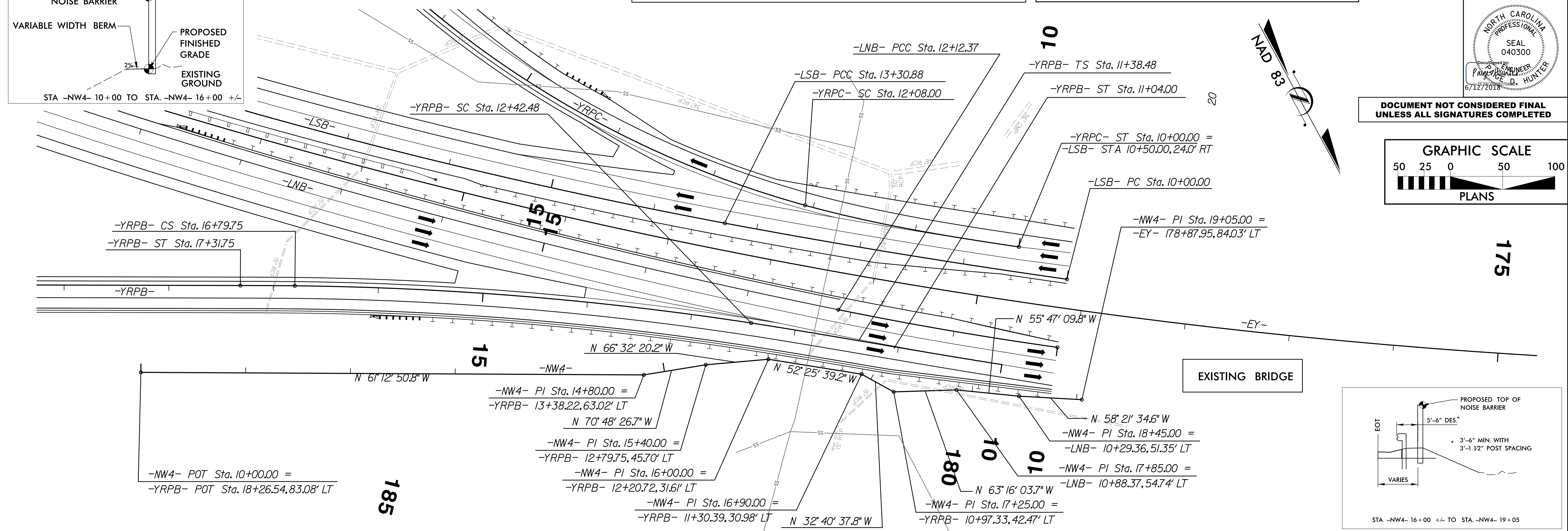
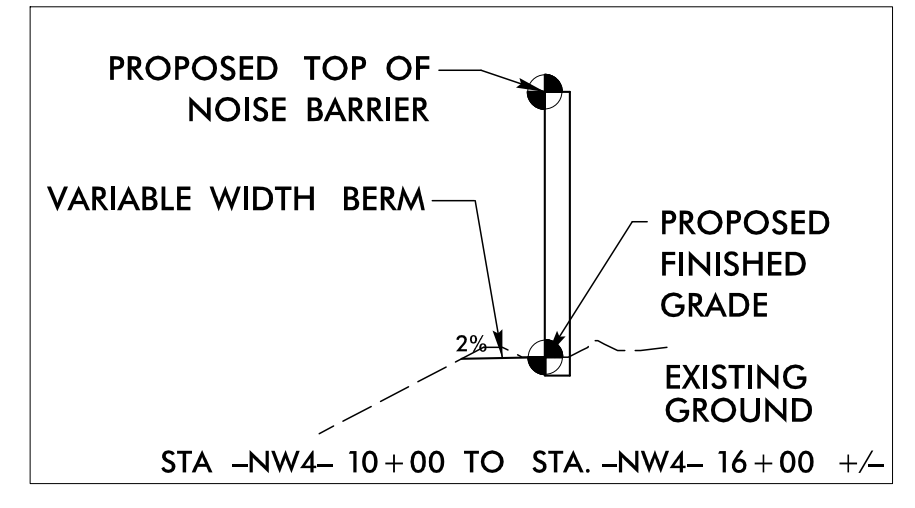
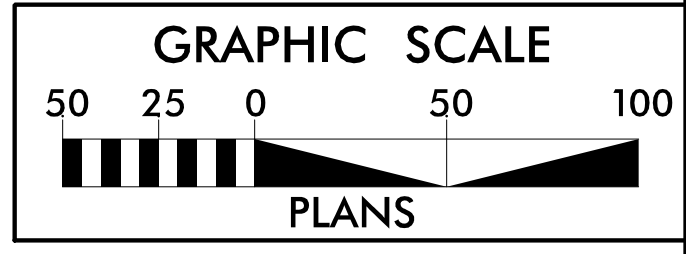
### DETAIL OF NOISE WALL #4 ENVELOPE

NOTE: SPACE PANELS TO AVOID EXISTING UTILITIES.

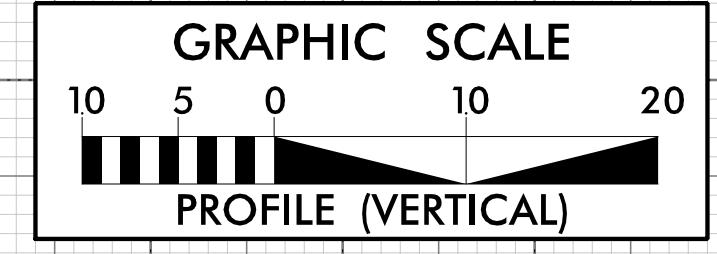
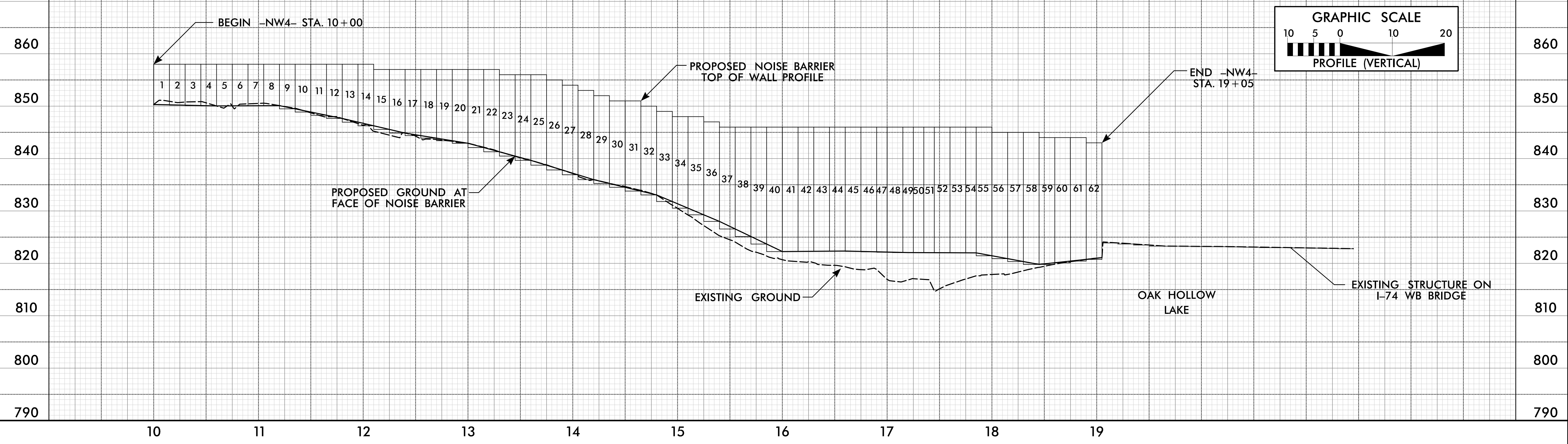
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PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>2N-1</b>
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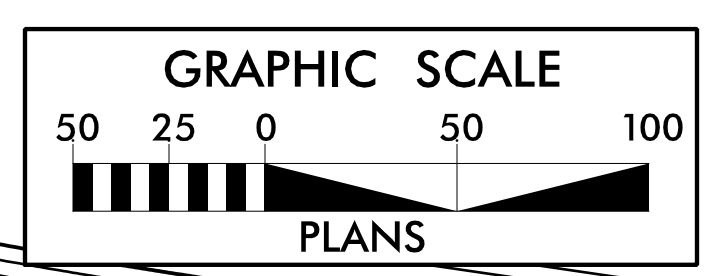
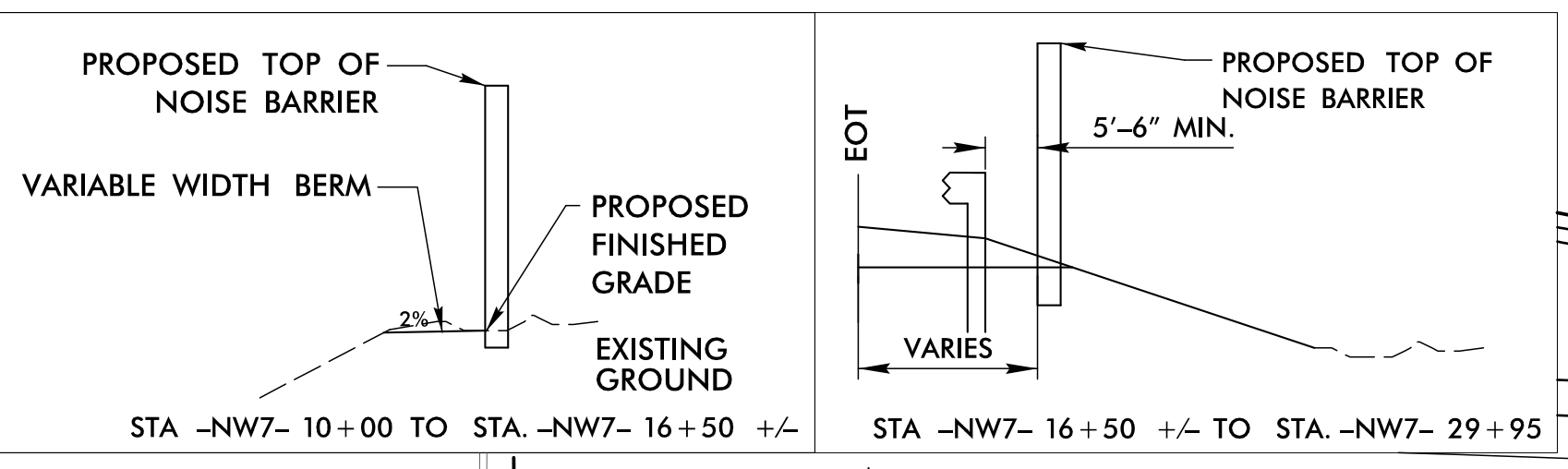
PANEL NUMBER	1-14	15-22	23-25	26	27	28	29	30-31	32	33	34-35	36	37-46	47	48	49-51	52-53	54	55	56-58	59-61	62
TOP ELEVATION	858	857	856	855	854	853	852	851	850	849	848	847	846	846	846	846	846	846	846	845	844	843
PANEL WIDTH	15	15	15	15	15	15	15	15	15	15	15	15	15	10	15	10	15	10	15	15	15	15





8.17.17/19

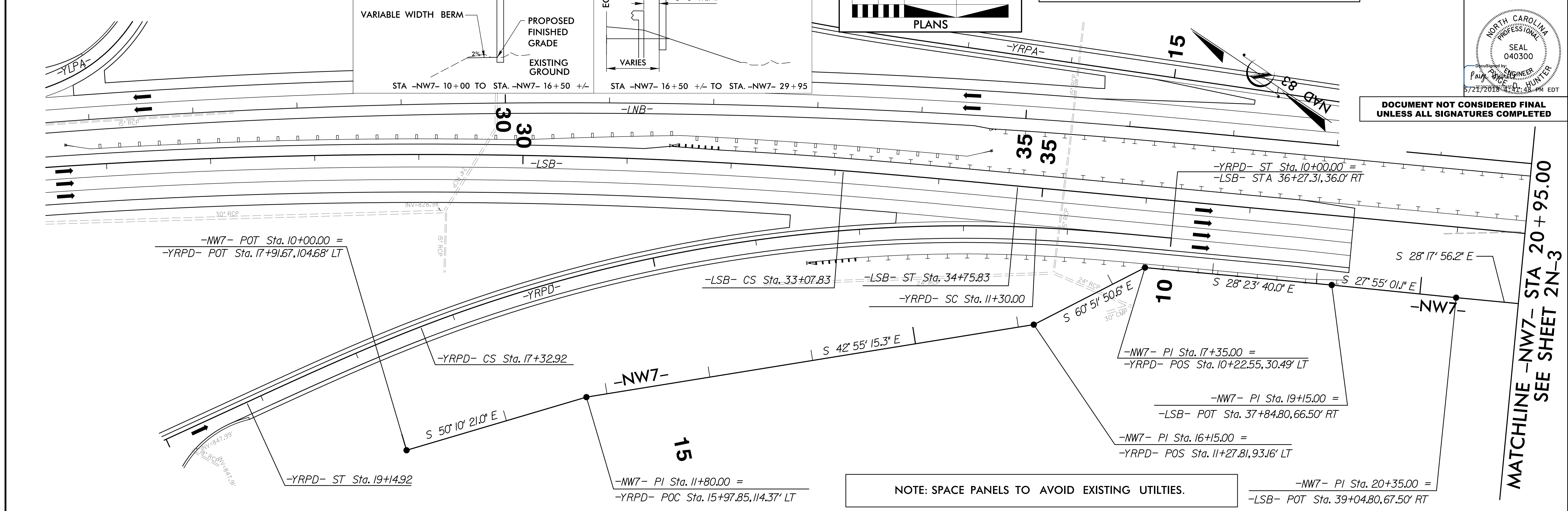
# DETAIL OF NOISE WALL #7 ENVELOPE



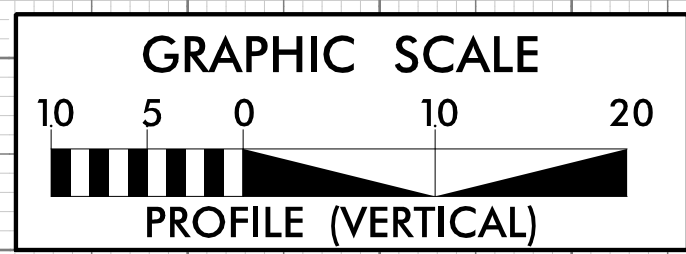
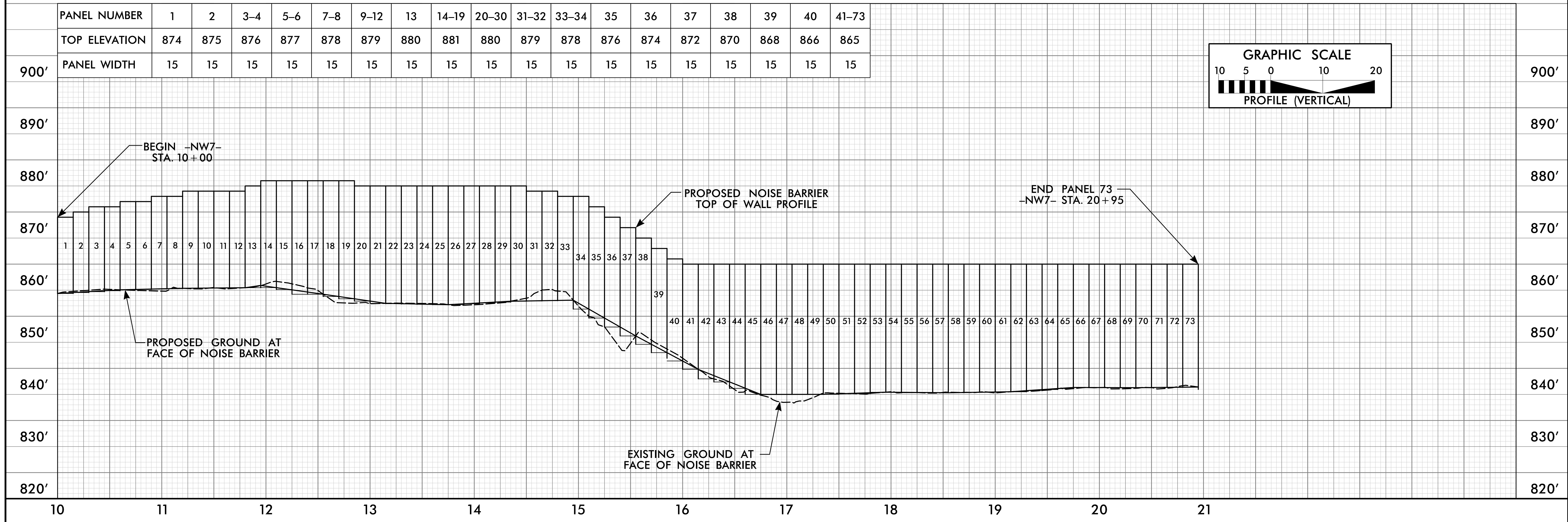
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PROJECT REFERENCE NO. U-5169 SHEET NO. 2N-2  
 EAU ENGINEER  
 NORTH CAROLINA PROFESSIONAL SEAL 040300  
 PAIGE W. HUNTER, P.E.  
 5/7/2018 4:48 PM EDT

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MATCHLINE -NW7- STA 20+95.00 SEE SHEET 2N-3

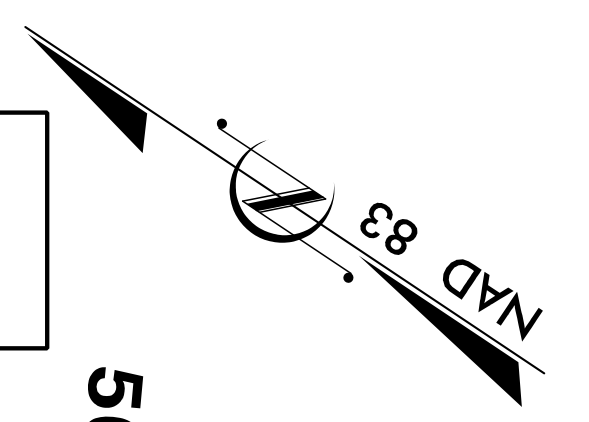
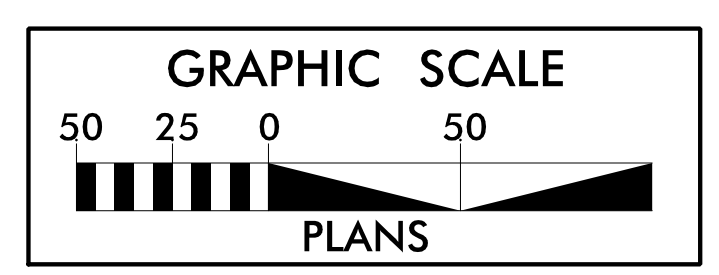
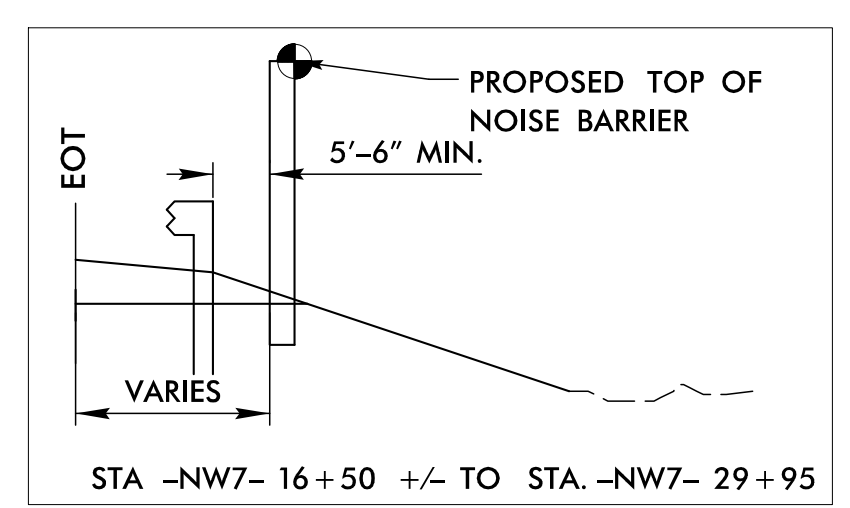


8/17/99

# DETAIL OF NOISE WALL #7 ENVELOPE

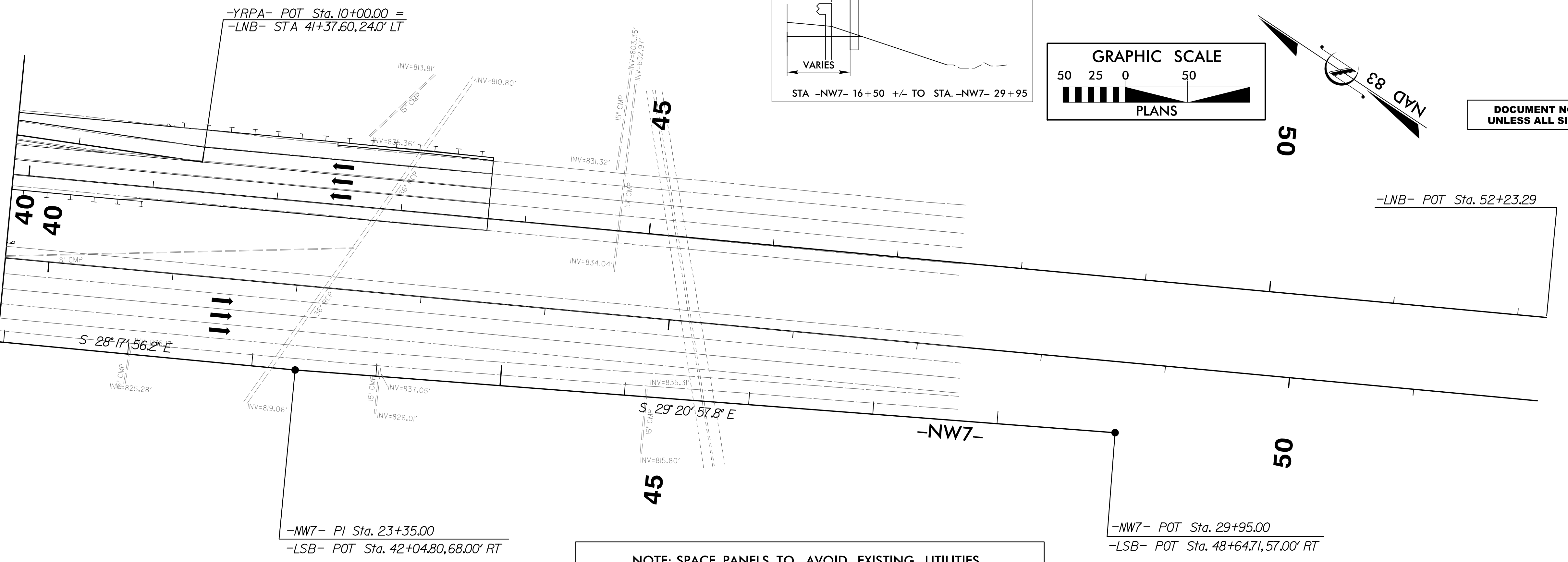
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PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>2N-3</b>
EAU ENGINEER	

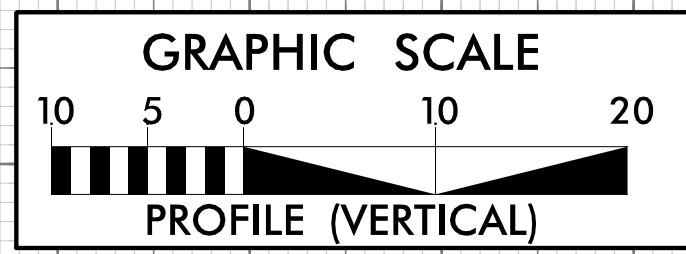
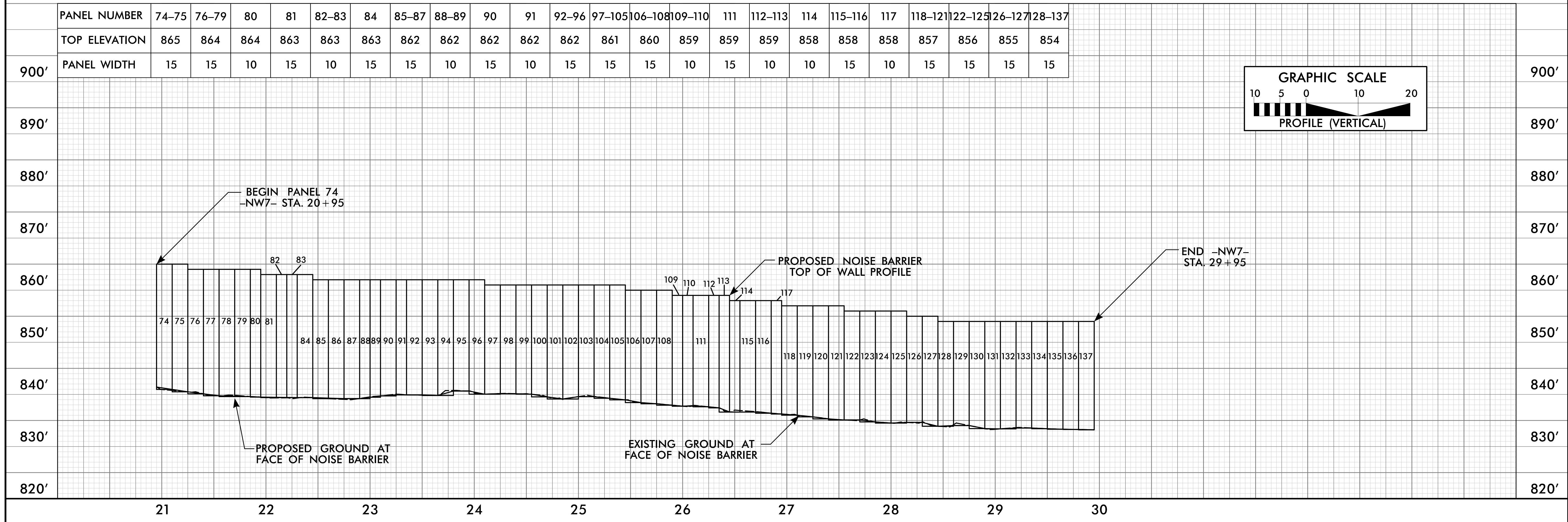


**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

MATCHLINE -NW7- STA 20+95.00  
SEE SHEET 2N-2



NOTE: SPACE PANELS TO AVOID EXISTING UTILITIES.







**SUMMARY OF EARTHWORK IN CUBIC YARDS**

Station	Station	Uncl. Excav.	Undercut	Embank. +%	Borrow	Waste
<b>Phase 1</b>						
-LNB- STA 10+00.00, RT	-LNB- STA 43+70.00, RT	3,780		1,728		2,052
-LSB- STA 10+00.00, LT	-LSB- STA 38+00.00, LT	2,336		829		1,507
-Y1- STA 16+83.44	-Y1- STA 20+60.43	0	450	10,561	10,561	450
-Y2- STA 10+83.00	-Y2- STA 16+50.00	332		1,187	905	50
-Y3- STA 10+00.00	-Y3- STA 17+71.18	704		588		116
-YRPA- STA 20+00.00	-YRPA- STA 29+32.48	55,600		155		55,445
-YRPC- STA 15+50.00	-YRPC- STA 24+73.15	5,394		11,190	5,796	
<b>SUBTOTALS:</b>		68,146	450	26,238	17,262	59,620
<b>Phase 2</b>						
-LNB- STA 10+00.00, LT	-LNB- STA 43+70.00, LT	17,882		1,620		16,262
-LSB- STA 10+00.00, RT	-LSB- STA 38+00.00, RT	12,567		304		12,263
-YLPA- STA 12+50.00	-YLPA- STA 18+00.00	23,473		11		23,462
-YLPC- STA 12+00.00	-YLPC- STA 17+50.00	20,100		1,215		18,885
<b>SUBTOTALS:</b>		74,022		3,149		70,872
<b>Phase 3</b>						
-Y- STA 14+00.00, LT	-Y- STA 27+12.55 (BRIDGE), LT	1,152		1,504	627	275
-Y- STA 29+60.05 (BRIDGE), LT	-Y- STA 57+00.00, LT	2,952		838		2,114
-Y- STA 14+00.00, RT	-Y- STA 27+12.55 (BRIDGE), RT	985		635		350
-Y- STA 29+60.05 (BRIDGE), RT	-Y- STA 57+00.00, RT	1,536		4,174	2,813	175
-YRPB- STA 17+00.00	-YRPB- STA 22+53.68	1,736		1,010	0	726
-YRPD- STA 15+50.00	-YRPD- STA 20+00.00	1,127		1,740	613	
-Y4- STA 10+00.00	-Y4- STA 14+48.78	317		301		16
<b>SUBTOTALS:</b>		9,805		10,201	4,052	3,656
<b>TOTALS:</b>		151,973	450	39,589	21,314	134,148
<b>LOSS DUE TO CLEARING AND GRUBBING:</b>		-400				-400
<b>ADDITIONAL UNDERCUT:</b>			700	840	840	700
<b>ROCK WASTE TO REPLACE BORROW:</b>					-1,047	-1,047
<b>ADJUST FOR ROCK WASTE:</b>				-209	-209	
<b>SELECT GRANULAR MATERIAL IN LIEU OF BORROW:</b>				-660	-660	
<b>WASTE IN LIEU OF BORROW:</b>					-20,238	-20,238
<b>PROJECT TOTALS:</b>		151,573	1,150	39,559	0	113,163
<b>GRAND TOTALS:</b>		151,573	1,150	39,559	0	
<b>SAY:</b>		153,000	1,150			
<b>SHOULDER BORROW (CY)</b>		5,600				

UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE IN THE TOP 3' OF EMBANKMENT OR BACKFILL  
 -LNB- 34+25 TO 39+25 (300 CY); -Y- 36+75 TO 39+75 (350 CY); -Y2- 10+83 TO 11+60 (150 CY); -YRPA- 21+25 TO 22+75 (2,200 CY); -Y2- 14+80 TO 16+50 (50 CY)

-LNB- PAVEMENT STRUCTURE VOLUME = 4,346 CY  
 -LSB- PAVEMENT STRUCTURE VOLUME = 3,337 CY  
 -YRPA- PAVEMENT STRUCTURE VOLUME = 2,642 CY  
 -YLPA- PAVEMENT STRUCTURE VOLUME = 782 CY  
 -YLPC- PAVEMENT STRUCTURE VOLUME = 595 CY  
 TOTAL PAVEMENT STRUCTURE VOLUME = 11,702 CY

Note: These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

**PAVEMENT REMOVAL SUMMARY IN SQUARE YARDS**

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-LNB-	26+17	35+73	LT	2069.00			
-LSB-	14+48	21+69	RT	975.82			
-Y2-	10+36	10+83	CL	270.23			
-Y3-	10+83	11+32	RT	320.53			
-Y4-	13+32	14+30	LT	142.51			
	14+23	14+66	LT	86.94			
-YRPA-	19+00	28+92	CL	3190.08			
-YRPB-	14+03	21+84	LT	1157.96			
-YRPC-	10+00	24+87	LT	5383.93			
-YRPD-	13+66	20+60	RT	560.20			
<b>TOTAL:</b>				14,157.19			
<b>SAY:</b>				14,200			

**CABLE GUIDERAIL SUMMARY**

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH	END ANCHOR UNITS	INTERMEDIATE ANCHOR UNITS	COMMENTS
LSB	16+33.00	22+21.00	LT	588.00'	2		REMOVE 900' EXISTING GUIDERAIL
	25+85.00	34+25.00	LT	840.00'	2		REMOVE 800' EXISTING GUIDERAIL
<b>SUBTOTAL:</b>				1428.00'			
<b>GRAND TOTAL:</b>				1428.00'			
<b>ADDITIONAL GUIDERAIL POSTS:</b>				5			
<b>SAY:</b>				1450'	4		



**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

**SHOULDER DRAIN SUMMARY**

LINE	Station	Station	Detail	Location	Outlet Locations	Shoulder Drains (LF)	4" Shoulder Drain Pipe (LF)	4" Outlet Pipe for Shoulder Drains (LF)	Concrete Pad for Shoulder Drain Pipe Outlet (EA)
-LNB-	10+00	22+00	A	Inside Shoulder	11+84 (2 GI), 16+88 (2 GI)	1200	1200	35	0
-LNB-	37+22	43+70	A	Outside Shoulder	40+70, 43+70	648	648	40	2
-LSB-	10+00	21+69	A	Outside Shoulder	11+82 (2 GI), 16+80 (2 GI), 19+70	1169	1169	48	1
-LSB-	35+00	38+00	A	Outside Shoulder	35+00	300	300	25	1
					TOTAL	3317	3317	148	4
					SAY	3320	3320	150	10

**GENERAL NOTES:**

- SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NCDOT STD. 816.02 ALONG WITH THE SHOULDER DRAIN DETAILS INCLUDED IN THESE PLANS. LIMITS OF SHOULDER DRAIN CONSTRUCTION ARE LISTED IN THE SHOULDER DRAIN SUMMARY ABOVE. SOME LOCATIONS MAY REQUIRE THE USE OF FLATTER OUTLET PIPE SLOPE THAN SHOWN IN NCDOT STD. 816.02. POSITIVE DRAINAGE SHALL BE MAINTAINED.
- SHOULDER DRAIN OUTLETS SHALL BE PLACED IN DRAINAGE STRUCTURES WHERE POSSIBLE. IF NOT CONNECTED TO DRAINAGE STRUCTURES, OUTLET PIPES SHALL BE PROTECTED USING A CONCRETE OUTLET PAD, SEE NCDOT STD. 816.01 FOR DETAIL. SHOULDER DRAIN OUTLETS SHALL BE LOCATED AS SHOWN IN THE SHOULDER DRAIN SUMMARY ABOVE OR AS DETERMINED BY THE ENGINEER.
- 90 DEGREE BENDS SHOULD BE USED TO OUTLET FROM THE SHOULDER DRAINS WHERE POSSIBLE. WHERE CONCRETE OUTLET PADS ARE USED, OUTLET END ELEVATIONS SHALL BE LOCATED 6 INCHES ABOVE DITCH GRADE WHILE PROVIDING POSITIVE DRAINAGE THROUGH THE OUTLET PIPE. THE USE OF 45 DEGREE BENDS WILL BE ALLOWED SO THAT THE APPROPRIATE OUTLET LOCATION/ELEVATION CAN BE REACHED.
- SEE SHEET 2A-2 FOR SHOULDER DRAIN DETAIL.

**SHOULDER BERM GUTTER SUMMARY**

LINE	Station	Station	LENGTH
-LNB-, LT	42+45	43+70	125.4
		TOTAL:	125.4
		SAY:	126

**SUMMARY OF TEMPORARY SHORING**

LINE	Station	Station	AVERAGE HEIGHT	AREA
-LNB-, LT	24+26	24+53	6.5	149 SF
-LNB-, LT	24+26	24+26	7.5	86 SF
-LNB-, LT	24+26	24+44	4.3	76 SF
-LNB-, LT	23+17	23+53	7.5	267 SF
-LNB-, LT	23+53	23+52	7.5	86 SF
-LNB-, LT	23+22	23+52	4.8	145 SF
-LSB-, RT	23+61	23+98	7.9	293 SF
-LSB-, RT	23+98	23+98	8.2	123 SF
-LSB-, RT	23+66	23+98	5.5	176 SF
-LSB-, RT	24+73	24+98	6.9	168 SF
-LSB-, RT	24+73	24+73	8.2	123 SF
-LSB-, RT	24+73	24+93	4.9	94 SF
-Y-, LT	27+10	27+26	2.6	43 SF
-Y-, LT	29+73	29+90	2.5	41 SF
-Y-, RT	26+82	26+99	2.8	45 SF
-Y-, RT	29+47	29+63	2.5	41 SF
			TOTAL:	1956 SF
			SAY:	1956 SF

**CHAIN LINK FENCE SUMMARY**

LINE	STATION	STATION	LT / RT	FABRIC, LF	LINE POSTS EA	TERMINAL POSTS EA
-Y-	21+93	23+77	RT	206.37	17	5
-Y-	34+93	39+18	RT	417.78	35	5
-Y-	21+91	24+02	LT	210.79	18	4
-Y-	32+65	39+35	LT	707	59	6
-YRPA-	18+54	29+04	RT	1159.84	97	5
-YRPB-	21+65	22+12	LT	69.19	5	2
-YRPC-	15+07	23+50	RT	889	75	8
			TOTAL:	3659.97	306	35
			SAY:	3700	307	35

**EXPRESSWAY GUTTER SUMMARY**

LINE	Station	Station	LENGTH
-LNB-, LT	10+00	10+50	50
-LSB-, RT	10+00	10+50	50
-YRPC-, RT	10+00	11+45	145
-YRPB-, LT	10+00	21+84	1184
		TOTAL:	1429
		SAY:	1450

RALD084

COMPUTED BY: Rebekah L. Perkins P.E. DATE: 4/12/18
CHECKED BY: Allen T. Hodges E.I DATE: 4/12/18

PROJECT NO. SHEET NO.
U-5169 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)

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Minimum Required Slope, Side Drain Pipe, C.S. Pipe, R.C. Pipe Class III, R.C. Pipe Class IV, Endwalls, Reinforced Endwalls, Drainage Structure, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Remarks. Includes a SHEET TOTALS row at the bottom.





COMPUTED BY: Rebekah L. Perkins P.E. DATE: 4/12/18

CHECKED BY: Allen T. Hodges E.I. DATE: 4/12/18

PROJECT NO. U-5169 SHEET NO. 3D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

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

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

Main data table with columns for Line & Station, Structure Number, Invert Elevation, Minimum Required Slope, Pipe Specifications (Side Drain, C.S., R.C. Class III/IV), Quantities, Frame/Grate Types, 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.

REMARKS





RALD084

COMPUTED BY: Rebekah L. Perkins P.E. DATE: 4/12/18
CHECKED BY: Allen T. Hodges E.I. DATE: 4/12/18

PROJECT NO. U-5169 SHEET NO. 3D-5

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)

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Pipe Type (Side Drain, C.S., R.C. Class III/IV), Endwalls, Drainage Structure, Frame/Grate, and Remarks. Includes a 'SHEET TOTALS' row at the bottom.

ABBREVIATIONS table listing terms like C.A.A., C.B., C.S., D.I., G.D.I., H.D.P.E., J.B., M.H., N.S., P.V.C., R.C., T.B.D.I., T.B.J.B., W.S. and their corresponding descriptions.

REMARKS











**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

**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
-LNB-	34+25	39+25	ASU	18	600	1170	1200	0	0
-Y-	19+25	21+25	ASU	18	200	390	400	0	0
	36+75	39+75	ASU	18	400	780	800	0	0
-Y1-	18+75	20+60	ASU	18	0	0	450	0	0
-Y2-	10+83	13+10	ASU	18	200	390	400	0	0
	14+80	16+50	ASU	18	100	200	200	0	0
CONTINGENCY					2800	6200	1200	500	
<b>TOTAL CY/TONS/SY:</b>					4300	9130	4650*	500	

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.

**SUMMARY OF GEOTEXTILE  
 FOR PAVEMENT STABILIZATION**

LINE	Station	Station	Geotextile for Pavement Stabilization SY	Class IV Aggregate for Subgrade Stabilization TONS
-LNB-	12+12	33+74	0	1430
	15+28	15+73	0	40
-LSB-	11+23	32+05	0	1550
-YRPA-	19+78	29+20	0	2360
-YRPB-	14+04	22+50	0	630
-YRPC-	14+73	24+67	0	2250
-YLPA-	12+04	19+36	0	950
-YLPC-	11+45	17+26	0	820
-YRPC-	21+25	24+75	2061	0
-Y1-	17+25	18+75	700	0
CONTINGENCY				
TOTAL			2761	10,030

\*Total square yards of Class IV Aggregate for Subgrade Stabilization is only the estimated quantity for pavement stabilization and may only represent a portion of the subgrade stabilization quantity shown in the Item Sheets of the Proposal.

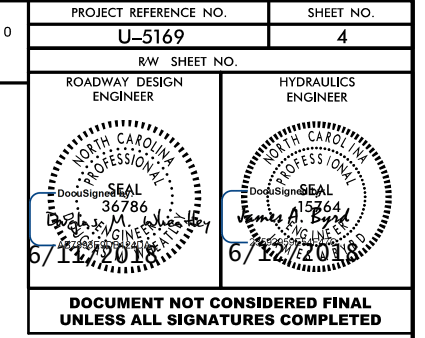


**STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS**

**PARCEL INDEX SHEET**

PARCEL No.	SHEET No.	PROPERTY OWNER NAME	PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	JOHN CHARLES MICKEY & PATRICA I. MICKEY			
2	4	DARIS D. BULLINS			
3	4	CAROL O. HAMLEY			
4	4	LARRY MICHAEL ELLISON & SYLVIA M. ELLISION			
5	4	DAVID C. JOYCE ET AL			
6	4	CJB PROPERTIES LLC			
7	4	RAYMOND C.DORSETT & LOUISE DORSETT			
8	4,6	KIRT S. PATEL & SOMABHAI R. PATEL			
9	N/A	PARCEL NO. NO LONGER USED			
10	4,5,6	WALTER S. DANIEL & NANCY L DANIEL			
11	N/A	PARCEL NO. NO LONGER USED			
12	4,7	BOBBY RAY IDOLS,ELIZABETH PATRICIA IDOLS, PHYLLIS ANN IDOLS & RHONDA JEAN IDOLS			
13	4	DONALD W. CALLAHAN ET AL			
14	N/A	PARCEL NO. NO LONGER USED			
15	4	FRED E. DENNY & JUDITH STROUD DENNY			
16	N/A	PARCEL NO. NO LONGER USED			
17	4	VIRGINIA L. ROYAL			
18	4,5	JAMES DAVID ALLEN & PAMELA ALLEN			
19	6	LEE LUONG PROPERTIES LLC			
20	6	LEE LUONG PROPERTIES LLC			
21	6	MARJORIE I. SURRETT			
22	6	NORTHWOOD UNITED METHODIST CHURCH			
23	6	GREENWOOD & CHARLES			
24	6	MEREDITH C. BREWER, MARK RUCINSKI			
25	6	GREG A. MITCHELL& TERRY MITCHELL			
26	6	JANNA DEA EDWARDS			
27	4	COY L. HILTON JR			
27A	4	COY L. HILTON JR			
27B	4	COY L. HILTON JR			
28	7	ADARE PROPERTIES LLC			
29	N/A	PARCEL NO. NO LONGER USED			
30	N/A	PARCEL NO. NO LONGER USED			
31	7	JULIE KRAWIEC			
32	7	LEE F. STACKHOUSE, JUNE S. STACKHOUSE			
33	7	BRC SPIRIT II LLC			
34	7	BRC SPIRIT LLC			
35	7	BARBARA B. HALL			
36	7,8	ZTB LLC			
37	4,7	DONALD W. CALLAHAN ET AL			
38	7	DONALD W. CALLAHAN ET AL			
39	7	ROBERT T. CALLAHAN ET AL			
40	7	MARGARET W. HARRIS & BILLY B. HARRIS			
41	7	JIMMY A. GOINS & TOMMY L. GOINS			
42	7	OURANIA TRIANTIS GILLIAM			
43	7	AQUA 09 INC.			
44	7	WAYNE BEAUFORD			
45	7, 8	T. CLARK GIBSON & LAURA H. GIBSON			
46	8	UDO REALTY LLC			
47	8	J. C. BAKER INVESTMENTS LLC			
48	8	BOYKIN-TKATCH LLC			
48A	8	MR. ROBERT H. JOLLY JR AND STACEY S. JOLLY			
49	8	1823 EASTCHESTER LLC			
50	8	JACOBSON HIGH POINT LLC			
51	8	L4D LLC			
52	8	CITY OF HIGH POINT			

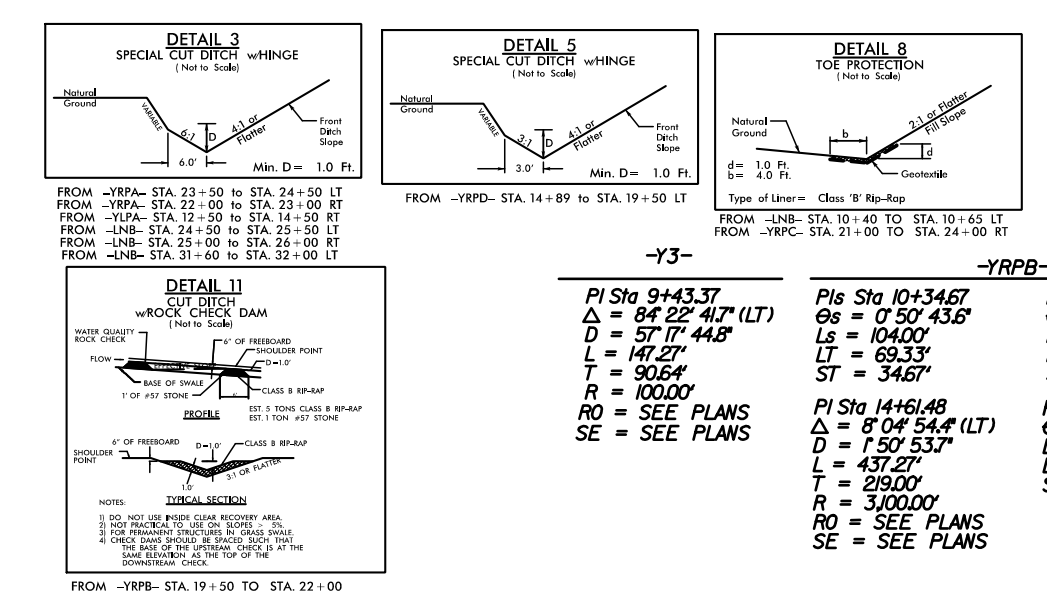




NAD 83/NA 2011

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

★ PROPOSED TRAFFIC SIGNAL



-Y3- PI Sta 9+43.37, PI Sta 10+34.67, PI Sta 10+407.82, PI Sta 14+161.48, PI Sta 16+491.08, PI Sta 18+149.00. Technical data for vertical curve Y3.

-YRPB- PI Sta 10+34.67, PI Sta 10+407.82, PI Sta 14+161.48, PI Sta 16+491.08, PI Sta 18+149.00. Technical data for vertical curve YRPB.

-LNB- PI Sta 11+06.22, PI Sta 24+18.09, PI Sta 24+18.09. Technical data for vertical curve LNB.

-YLPA- PI Sta 10+18.00, PI Sta 18+19.00, PI Sta 18+19.00. Technical data for vertical curve YLPA.

-YRPA- PI Sta 10+18.00, PI Sta 20+16.70, PI Sta 22+38.68, PI Sta 25+70.72, PI Sta 27+47.51. Technical data for vertical curve YRPA.

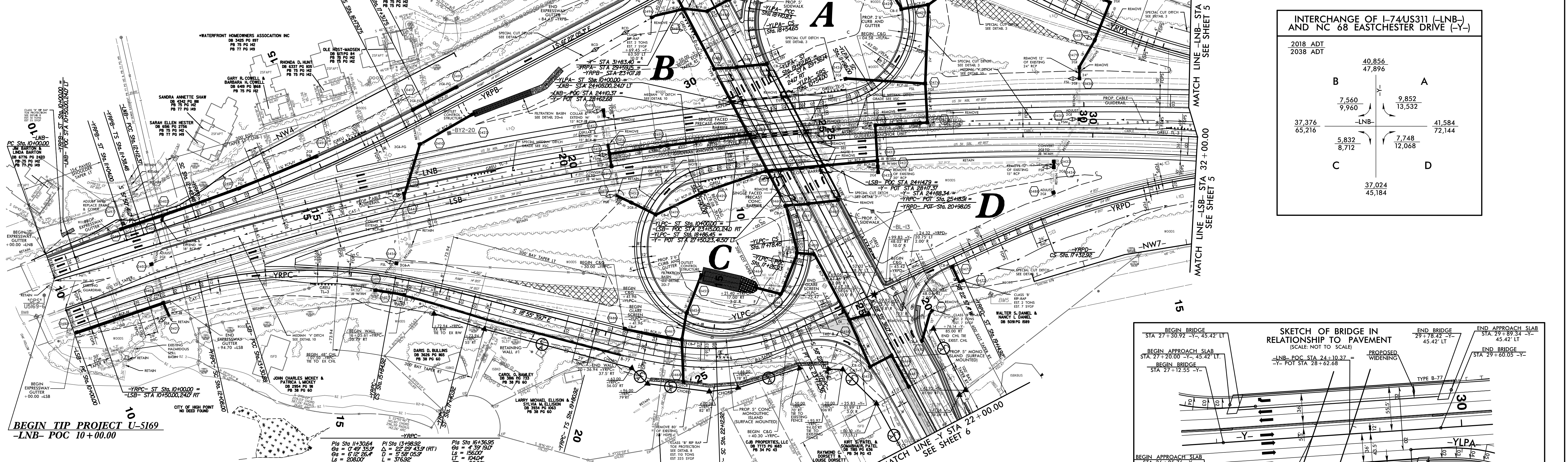
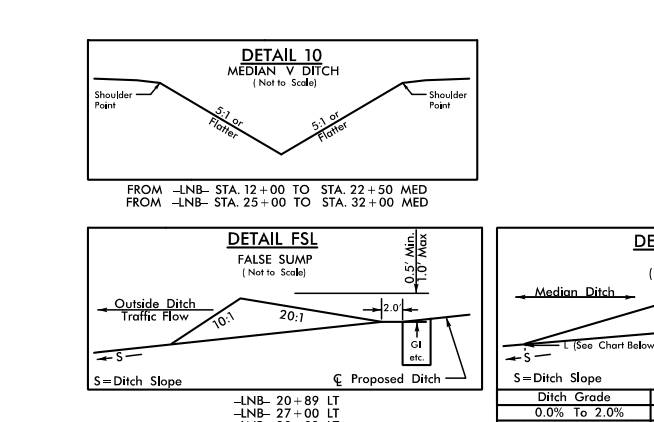


Table showing traffic volume data for 2018 ADT and 2038 ADT for various approaches (A, B, C, D) and directions (LNB, YLPA).

BEGIN TIP PROJECT U-5169 -LNB- POC STA 10+00.00

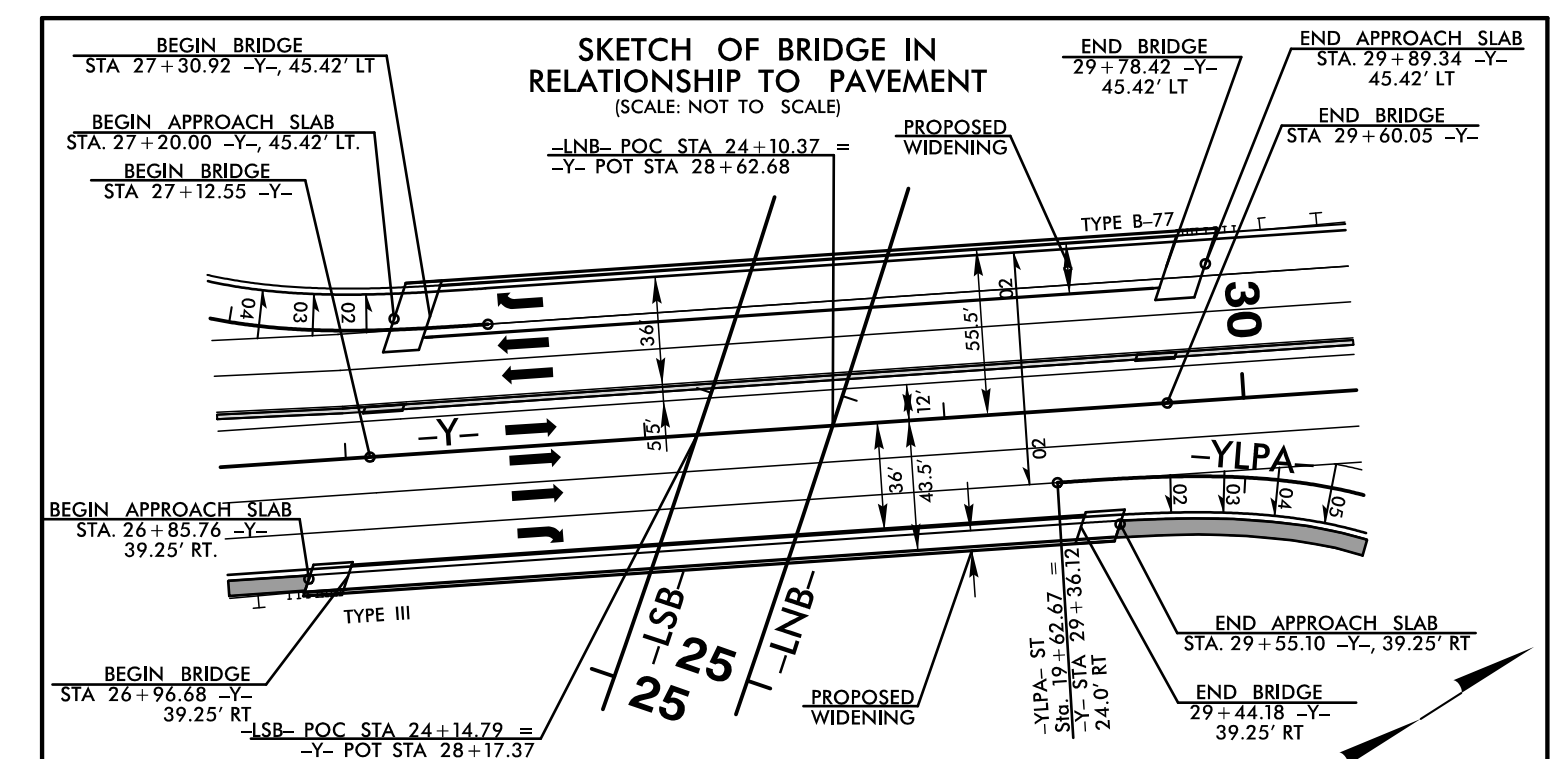


-YRPA- PI Sta 11+30.64, PI Sta 13+58.92, PI Sta 16+36.95, PI Sta 21+36.27, PI Sta 22+93.71, PI Sta 24+18.09. Technical data for vertical curve YRPA.

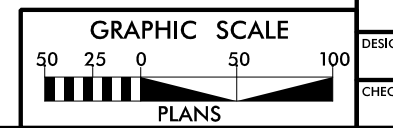
-YRPA- PI Sta 14+35.88, PI Sta 17+49.31, PI Sta 18+16.37, PI Sta 18+16.37, PI Sta 18+16.37. Technical data for vertical curve YRPA.

-YRPA- PI Sta 11+30.64, PI Sta 13+58.92, PI Sta 16+36.95, PI Sta 21+36.27, PI Sta 22+93.71, PI Sta 24+18.09. Technical data for vertical curve YRPA.

TEMPORARY SHORING -LNB- STA 24+26 +/- 58.5' LT TO -LNB- STA 24+52.50 +/- 58.5' LT. Technical data for temporary shoring.



FOR -LNB- PROFILE SEE SHEET 9, FOR -Y3- PROFILE SEE SHEETS 10 & 11, FOR -YRPA- PROFILE SEE SHEET 16, FOR -YRPA- PROFILE SEE SHEET 17, FOR -YRPA- PROFILE SEE SHEET 18, FOR -YRPA- PROFILE SEE SHEET 19, FOR -YRPA- PROFILE SEE SHEET 20, FOR -YRPA- PROFILE SEE SHEET 21.



LOCATION: 1-74US 311 AND NC 68 (EAST CHESTER DRIVE) INTERCHANGE RAMP REPLACEMENT. DESIGNED BY: BRIAN BLACKWELL, DATE: \_\_\_\_\_



8/17/99

PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>5</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

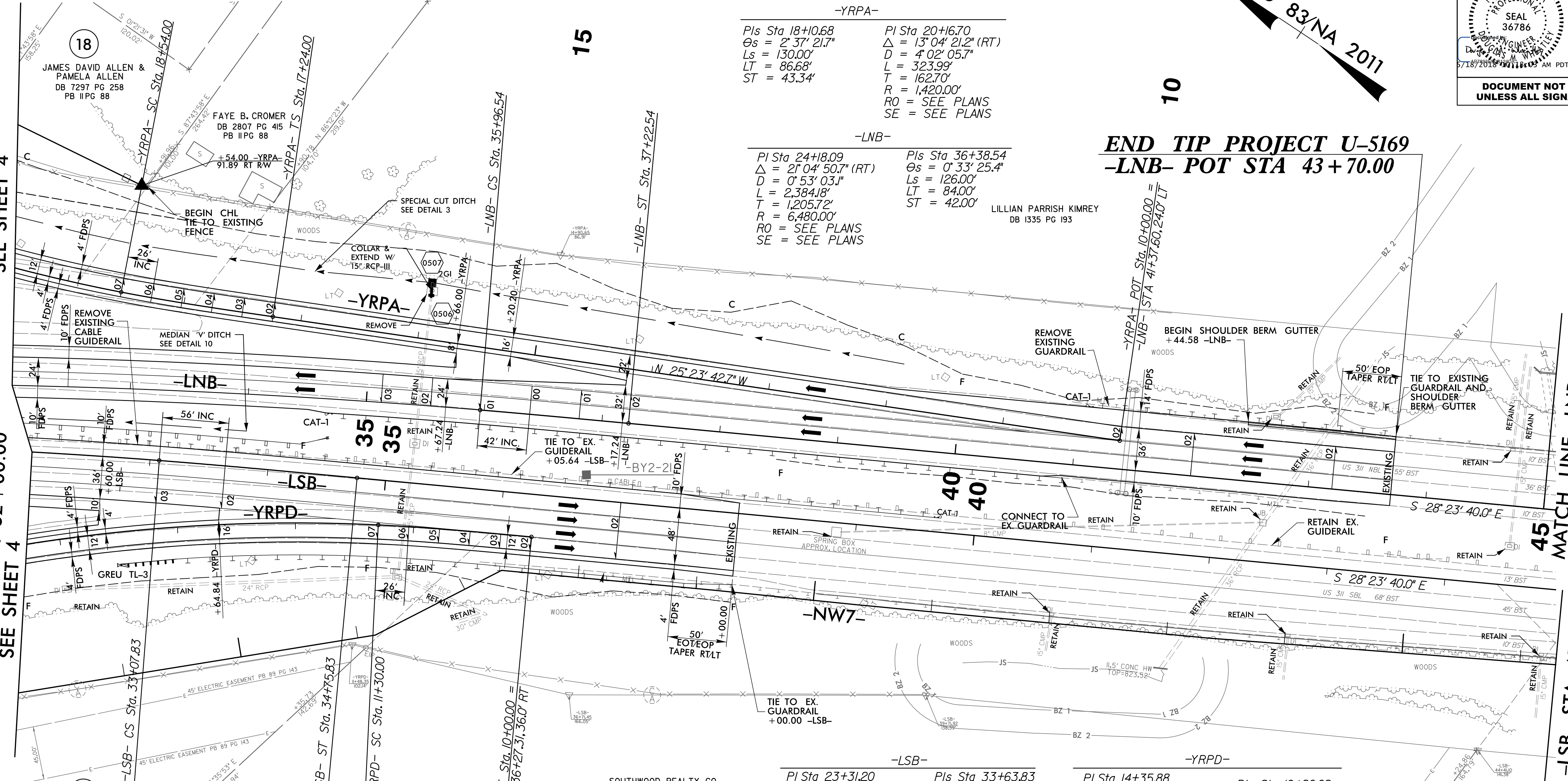


MATCH LINE -LNB- STA 32+00.00  
SEE SHEET 4

MATCH LINE -LSB- STA 32+00.00  
SEE SHEET 4

MATCH LINE -LNB- STA 45+00.00  
SEE SHEET 5A

MATCH LINE -LSB- STA 45+00.00  
SEE SHEET 5A



-YRPA-  
 Pls Sta 18+10.68  
 $\Delta = 2^\circ 37' 21.7''$   
 $L = 130.00'$   
 $LT = 86.68'$   
 $ST = 43.34'$

PI Sta 20+16.70  
 $\Delta = 13^\circ 04' 21.2''$  (RT)  
 $D = 4^\circ 02' 05.7''$   
 $L = 323.99'$   
 $T = 162.70'$   
 $R = 1,420.00'$   
 $RO = \text{SEE PLANS}$   
 $SE = \text{SEE PLANS}$

-LNB-  
 Pls Sta 24+18.09  
 $\Delta = 2^\circ 04' 50.7''$  (RT)  
 $D = 0^\circ 53' 03.1''$   
 $L = 2,384.18'$   
 $T = 1,205.72'$   
 $R = 6,480.00'$   
 $RO = \text{SEE PLANS}$   
 $SE = \text{SEE PLANS}$

Pls Sta 36+38.54  
 $\Delta = 0^\circ 33' 25.4''$   
 $L = 126.00'$   
 $LT = 84.00'$   
 $ST = 42.00'$

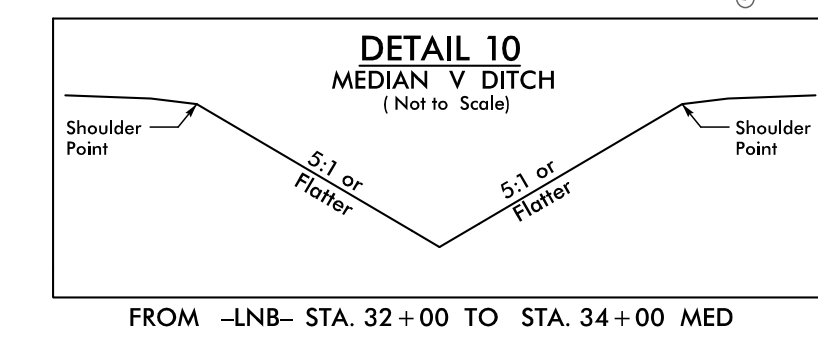
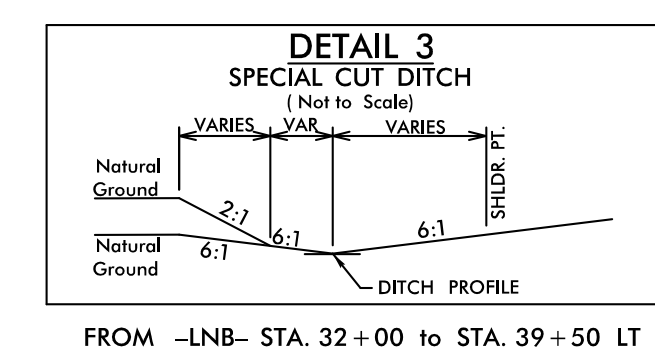
**END TIP PROJECT U-5169**  
**-LNB- POT STA 43+70.00**

LILLIAN PARRISH KIMREY  
DB 1335 PG 193

SOUTHWOOD REALTY CO.  
DB 5957 PG 204  
PB 74 PG 94

WALTER S. DANIEL &  
NANCY L. DANIEL  
DB 5091 PG 1589

AMBASSADOR PLACE  
HOMEOWNERS ASSOCIATION INC.  
DB 4723 PG 862  
PB 129 PG 88



FOR -LNB- PROFILE, SEE SHEET 9 & 10  
 FOR -LSB- PROFILE, SEE SHEET 11  
 FOR -YRPA- PROFILE, SEE SHEET 16  
 FOR -YRPD- PROFILE, SEE SHEET 19  
 FOR NOISE WALL PLANS, SEE SHEETS 2N-2 & 2N-3

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HNTB



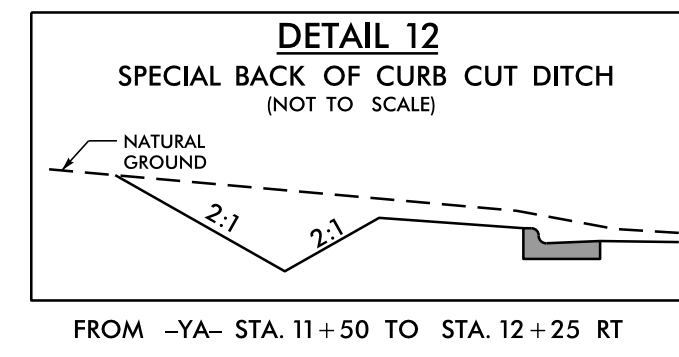




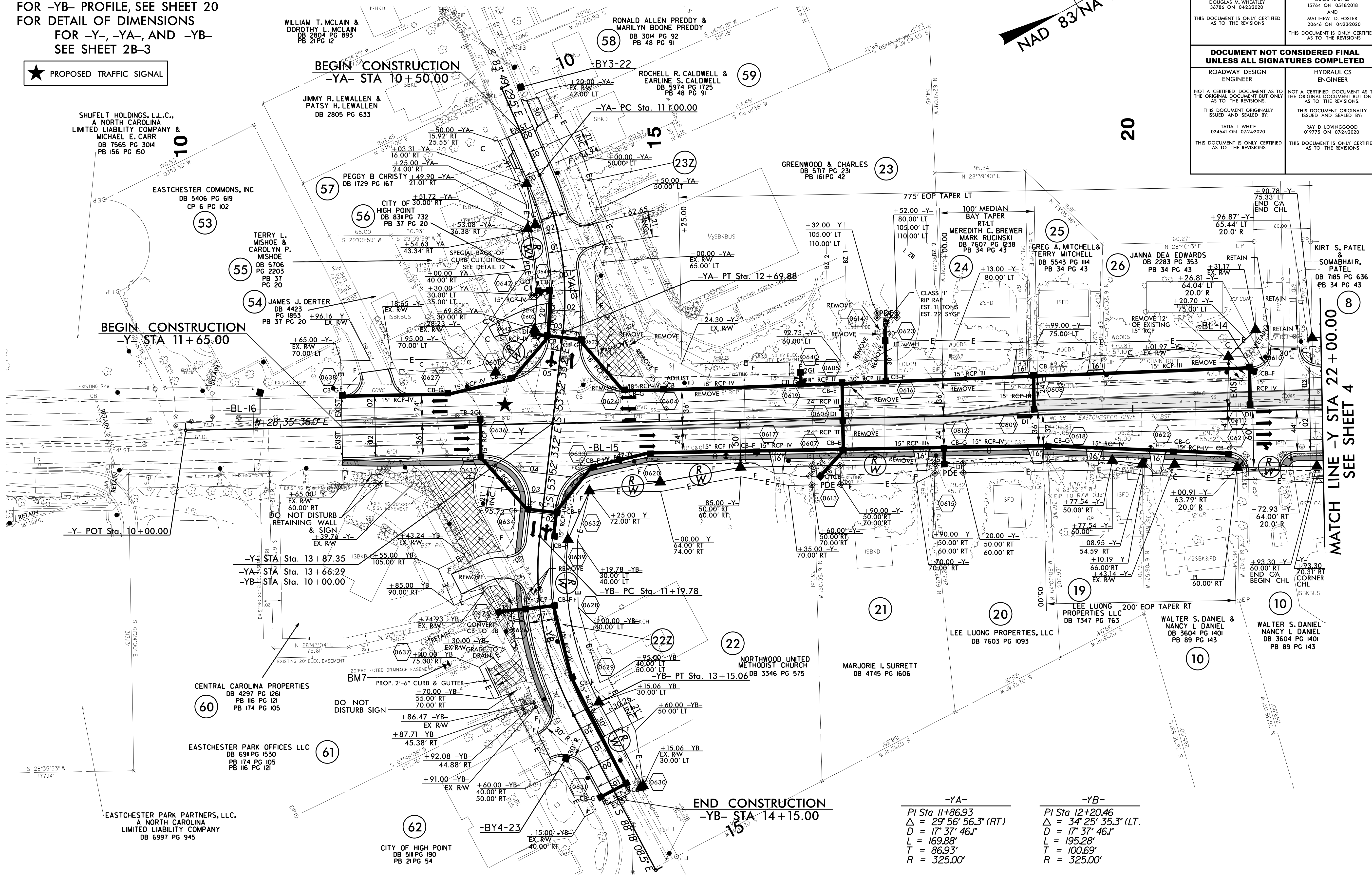
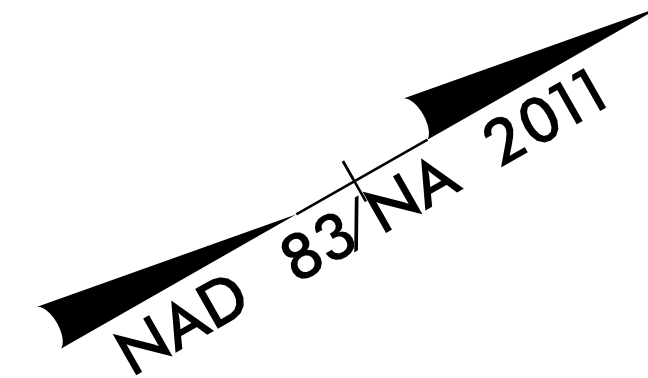
PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>6</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NOT A CERTIFIED DOCUMENT AS TO THE ORIGINAL DOCUMENT BUT ONLY AS TO THE REVISIONS. THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY: DOUGLAS M. WHEATLEY 36786 ON 04/23/2020 THIS DOCUMENT IS ONLY CERTIFIED AS TO THE REVISIONS	NOT A CERTIFIED DOCUMENT AS TO THE ORIGINAL DOCUMENT BUT ONLY AS TO THE REVISIONS. THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY: JAMES A. BYRD 15764 ON 05/18/2018 AND MATTHEW D. FOSTER 20646 ON 04/23/2020 THIS DOCUMENT IS ONLY CERTIFIED AS TO THE REVISIONS
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NOT A CERTIFIED DOCUMENT AS TO THE ORIGINAL DOCUMENT BUT ONLY AS TO THE REVISIONS. THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY: TATIA L. WHITE 024641 ON 07/24/2020 THIS DOCUMENT IS ONLY CERTIFIED AS TO THE REVISIONS	NOT A CERTIFIED DOCUMENT AS TO THE ORIGINAL DOCUMENT BUT ONLY AS TO THE REVISIONS. THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY: RAY D. LOVINGGOOD 019775 ON 07/24/2020 THIS DOCUMENT IS ONLY CERTIFIED AS TO THE REVISIONS

NOTE: ALL RADII ARE 20' UNLESS OTHERWISE NOTED.  
 NOTE: PARCELS 22Z, 23Z, AND 53 THROUGH 62 WILL BE ACQUIRED BY THE CITY OF HIGH POINT.

FOR -Y- PROFILE, SEE SHEET 12  
 FOR -YA- PROFILE, SEE SHEET 20  
 FOR -YB- PROFILE, SEE SHEET 20  
 FOR DETAIL OF DIMENSIONS FOR -Y-, -YA-, AND -YB- SEE SHEET 2B-3



★ PROPOSED TRAFFIC SIGNAL



-YA-	-YB-
PI Sta 11+86.93	PI Sta 12+20.46
$\Delta = 29' 56'' 56.3'' (RT)$	$\Delta = 34' 25'' 35.3'' (LT)$
$D = 17' 37'' 46.1''$	$D = 17' 37'' 46.1''$
$L = 169.88'$	$L = 195.28'$
$T = 86.93'$	$T = 100.69'$
$R = 325.00'$	$R = 325.00'$

REVISIONS

04/23/20 CONSTR REVISION: ADDED ALIGNMENTS -YA- & -YB- REVISD CONSTRUCTION LIMITS ON -Y- TO BEGIN AT STA. 11+65.00 (TAR)  
 04/03/20 RW REVISION: ADDED PARCELS 22Z, 23Z & 53 THRU 62 ADDED RW TO PARCELS 22Z, 55, 56, & 57. ADDED TCE TO PARCELS 22Z, 23Z, 53 THRU 62.  
 ADDED PDE TO PARCELS 56 & 57. ADDED PUE TO PARCEL 62. (TAR)  
 04/30/20 RW REVISION: REVISED "DO NOT DISTURB" NOTE ON PARCEL 60 TO INCLUDE SIGN. (RHT)  
 07/24/20 RW REVISION: ADJUSTED RW AND TCE AND REMOVED PDE ON PARCEL 57. ADDED "DO NOT DISTURB SIGN" NOTE ON PARCEL 61 AND REVISED THE CONSTR REVISION: REVISED THE BERM WIDTH ON -YA- FROM STA. 10+50.00 TO 11+75.00 RT. REMOVED DRIVE ON PARCEL 61 AND REVISED THE CONSTR REVISION: ASSOCIATED DRAINAGE ON -YA- (BPR)  
 09/15/20 RW REVISION: UPDATED PROPERTY LINES ON PARCELS 55, 56 AND 57. REVISED PROPOSED RW, TCE, PDE AND CHANGED PROPERTY OWNER NAME ON PARCEL 56. REVISED PROPOSED RW AND TCE ON PARCEL 57.

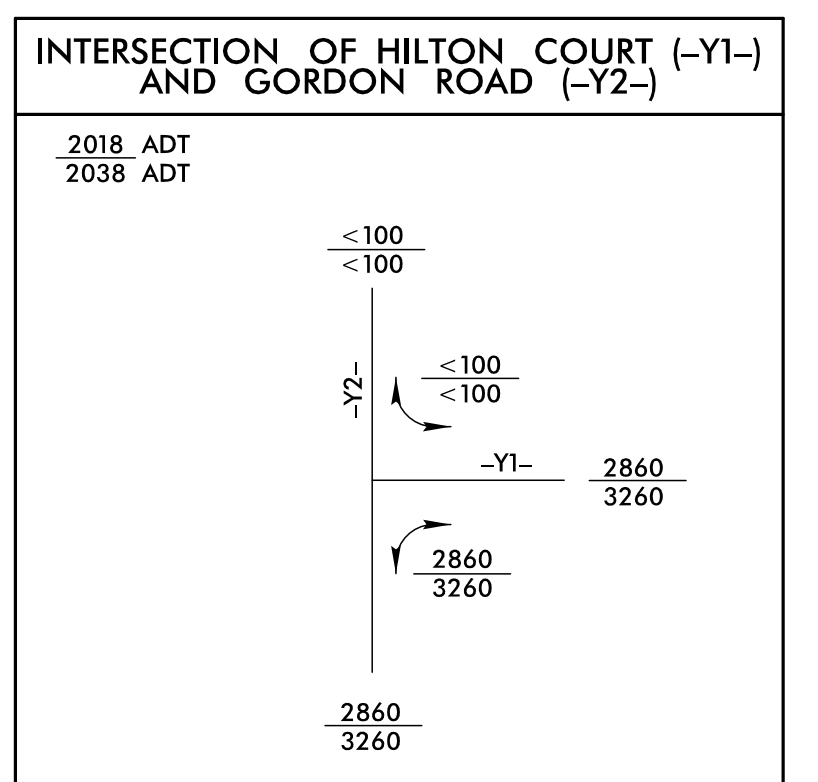
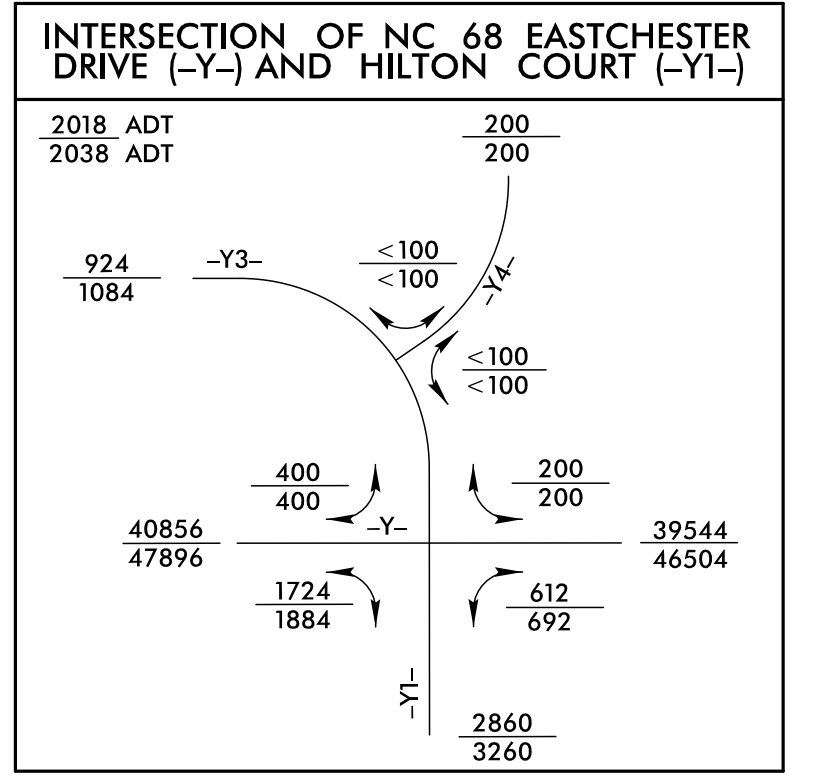
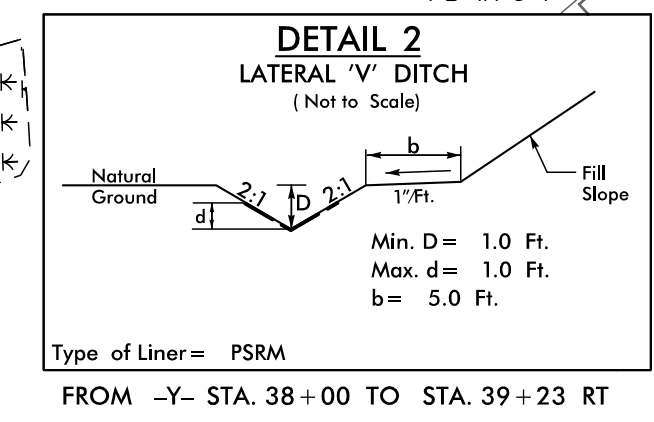
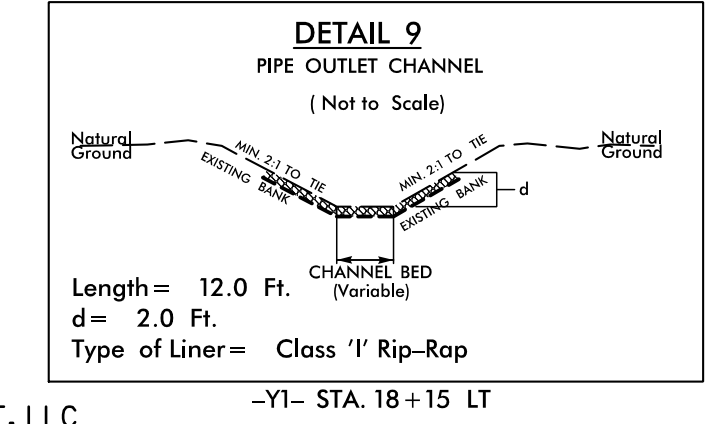
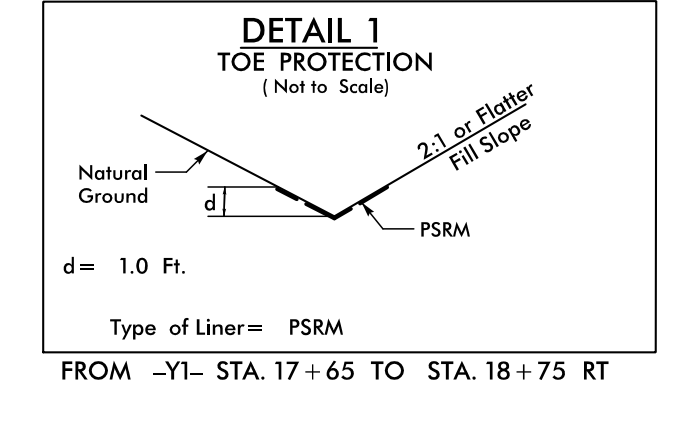
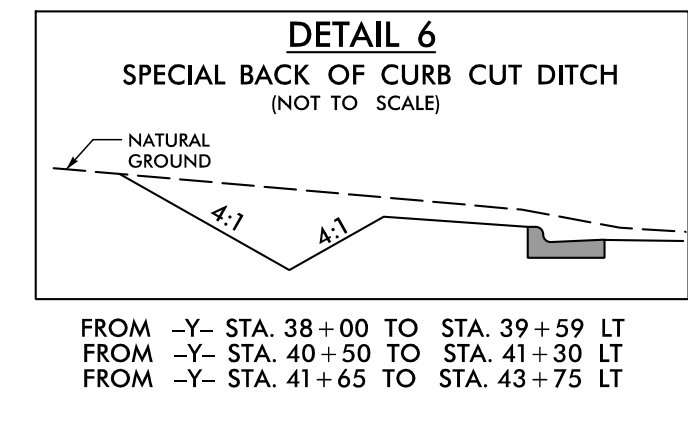
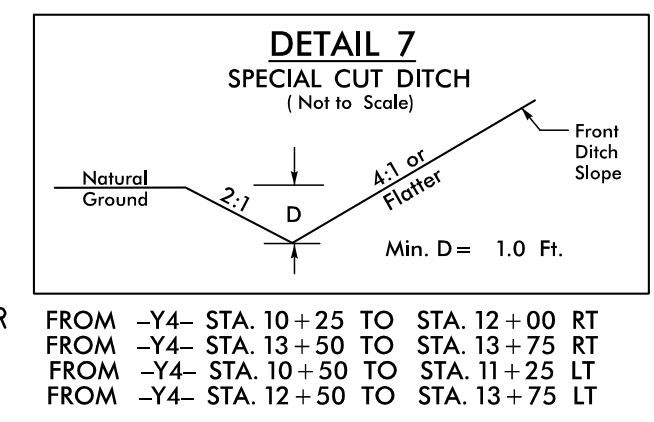
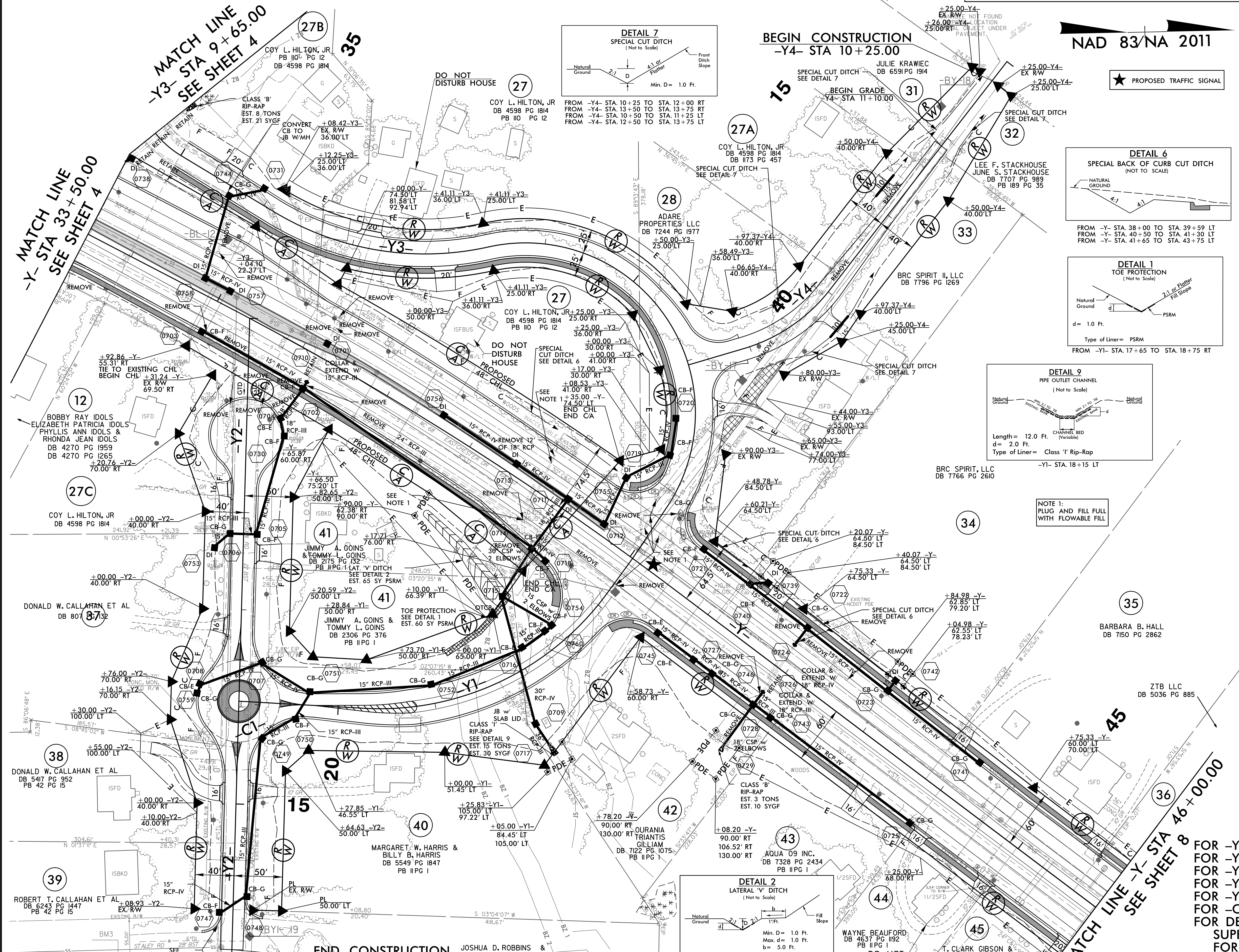
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MATCH LINE -Y STA 22+00.00  
 SEE SHEET 4



PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>7</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

NAD 83/NA 2011

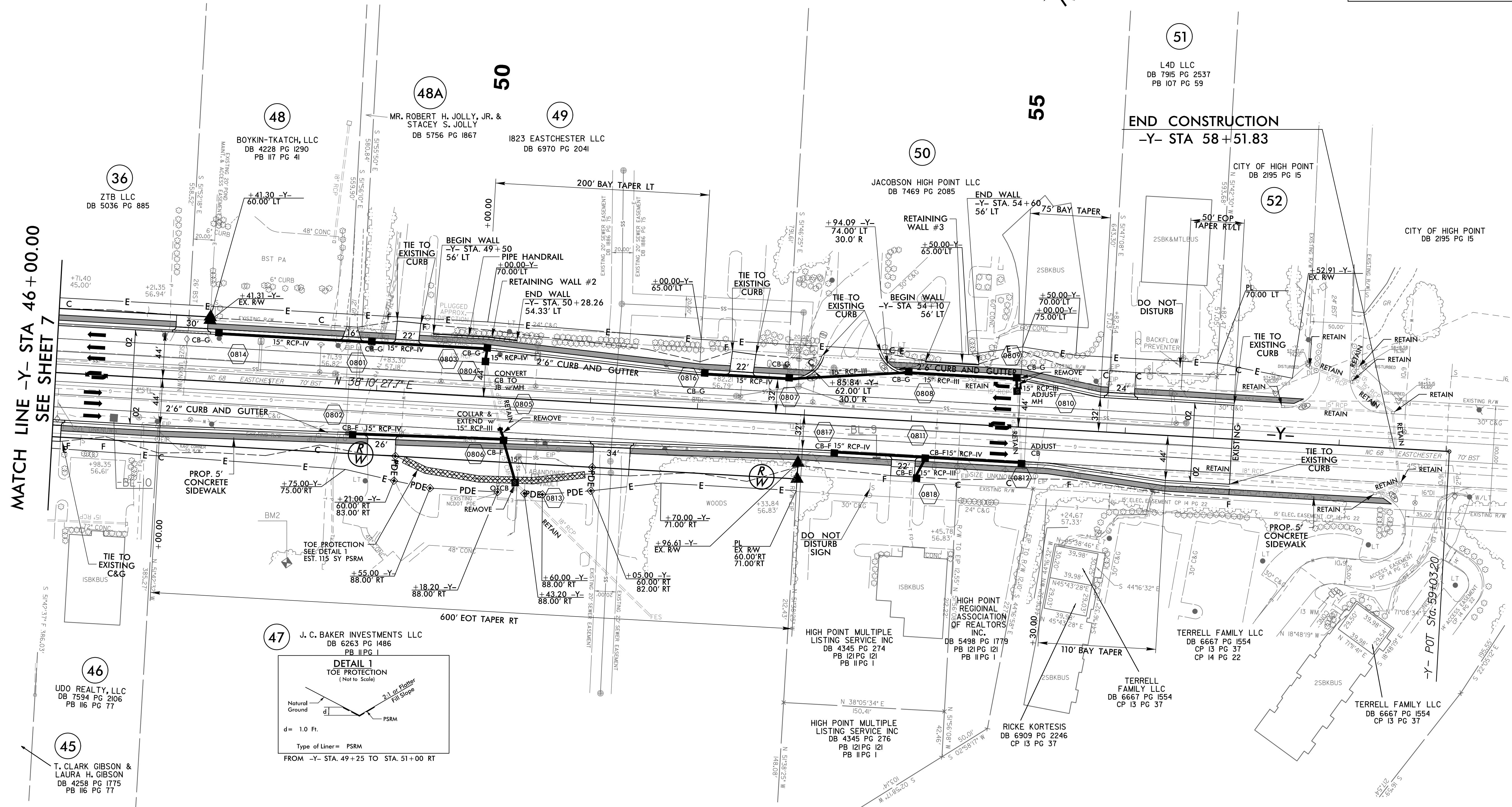
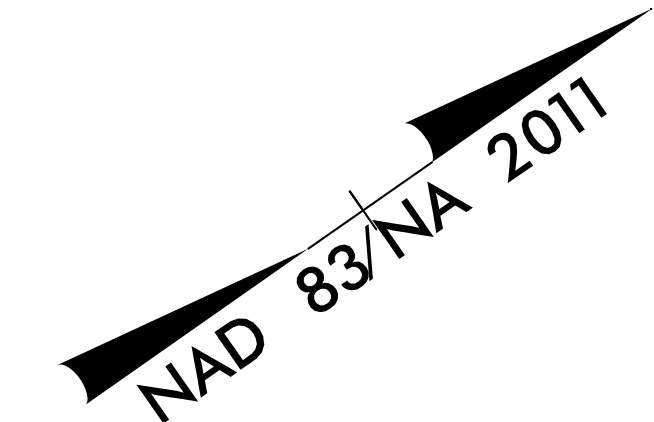


NOTE 1: PLUG AND FILL FULL WITH FLOWABLE FILL

FOR -Y- PROFILE, SEE SHEET 12 & 13  
 FOR -Y1- PROFILE, SEE SHEET 14  
 FOR -Y2- PROFILE, SEE SHEET 14  
 FOR -Y3- PROFILE, SEE SHEET 15  
 FOR -Y4- PROFILE, SEE SHEET 15  
 FOR -C1- PROFILE, SEE SHEET 15  
 FOR DETAIL OF ALIGNMENTS,  
 SUPERELEVATIONS AND DIMENSIONS  
 FOR -Y-, -Y1-, -Y2-, -Y3-, -Y4-, AND  
 -C1-, SEE SHEET 2B-1

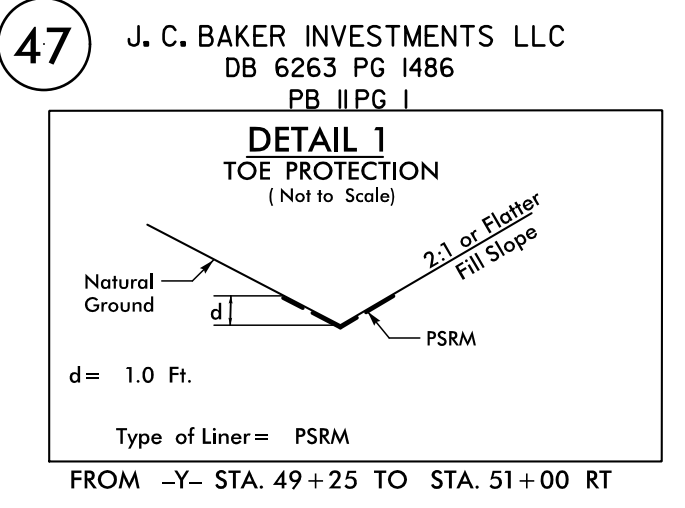


PROJECT REFERENCE NO. <b>U-5169</b>		SHEET NO. <b>8</b>
RW SHEET NO.		HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



MATCH LINE -Y- STA 46+00.00  
SEE SHEET 7

END CONSTRUCTION  
-Y- STA 58+51.83



36 ZTB LLC  
DB 5036 PG 885

48 BOYKIN-TKATCH, LLC  
DB 4228 PG 1290  
PB 117 PG 41

48A MR. ROBERT H. JOLLY, JR. &  
STACEY S. JOLLY  
DB 5756 PG 1867

49 1823 EASTCHESTER LLC  
DB 6970 PG 2041

50 JACOBSON HIGH POINT LLC  
DB 7469 PG 2085

51 L4D LLC  
DB 7915 PG 2537  
PB 107 PG 59

52 CITY OF HIGH POINT  
DB 2195 PG 15

55 CITY OF HIGH POINT  
DB 2195 PG 15

46 UDO REALTY, LLC  
DB 7594 PG 2106  
PB 116 PG 77

45 T. CLARK GIBSON &  
LAURA H. GIBSON  
DB 4258 PG 1775  
PB 116 PG 77

47 J. C. BAKER INVESTMENTS LLC  
DB 6263 PG 1486  
PB 112 PG 1

43 HIGH POINT MULTIPLE LISTING SERVICE INC  
DB 4345 PG 274  
PB 121 PG 121  
PB 112 PG 1

44 HIGH POINT MULTIPLE LISTING SERVICE INC  
DB 4345 PG 274  
PB 121 PG 121  
PB 112 PG 1

45 HIGH POINT MULTIPLE LISTING SERVICE INC  
DB 4345 PG 274  
PB 121 PG 121  
PB 112 PG 1

46 HIGH POINT MULTIPLE LISTING SERVICE INC  
DB 4345 PG 274  
PB 121 PG 121  
PB 112 PG 1

47 HIGH POINT MULTIPLE LISTING SERVICE INC  
DB 4345 PG 274  
PB 121 PG 121  
PB 112 PG 1

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DB 4345 PG 274  
PB 121 PG 121  
PB 112 PG 1

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PB 121 PG 121  
PB 112 PG 1

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PB 121 PG 121  
PB 112 PG 1

51 HIGH POINT MULTIPLE LISTING SERVICE INC  
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PB 121 PG 121  
PB 112 PG 1

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PB 121 PG 121  
PB 112 PG 1

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PB 112 PG 1

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PB 121 PG 121  
PB 112 PG 1

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PB 112 PG 1

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PB 112 PG 1

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PB 121 PG 121  
PB 112 PG 1

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PB 121 PG 121  
PB 112 PG 1

60 HIGH POINT MULTIPLE LISTING SERVICE INC  
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PB 121 PG 121  
PB 112 PG 1

61 HIGH POINT MULTIPLE LISTING SERVICE INC  
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PB 121 PG 121  
PB 112 PG 1

62 HIGH POINT MULTIPLE LISTING SERVICE INC  
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PB 121 PG 121  
PB 112 PG 1

63 HIGH POINT MULTIPLE LISTING SERVICE INC  
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PB 121 PG 121  
PB 112 PG 1

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PB 112 PG 1

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PB 121 PG 121  
PB 112 PG 1

66 HIGH POINT MULTIPLE LISTING SERVICE INC  
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PB 121 PG 121  
PB 112 PG 1

67 HIGH POINT MULTIPLE LISTING SERVICE INC  
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PB 112 PG 1

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PB 112 PG 1

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PB 112 PG 1

99 HIGH POINT MULTIPLE LISTING SERVICE INC  
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5/28/2018

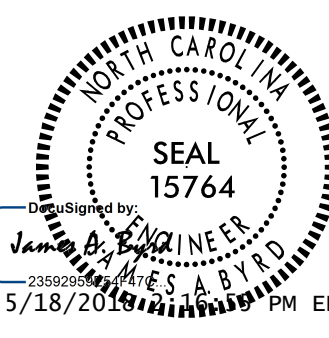
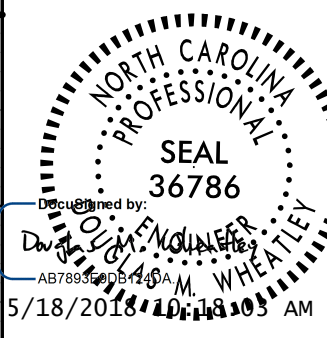


HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

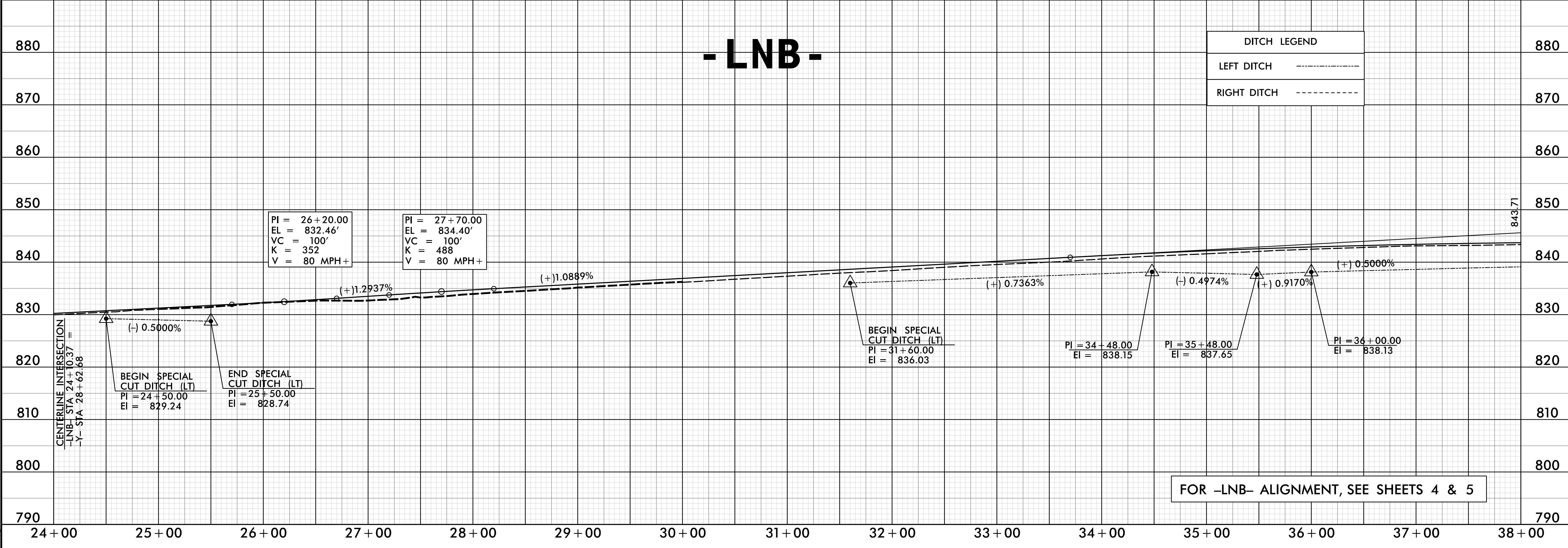
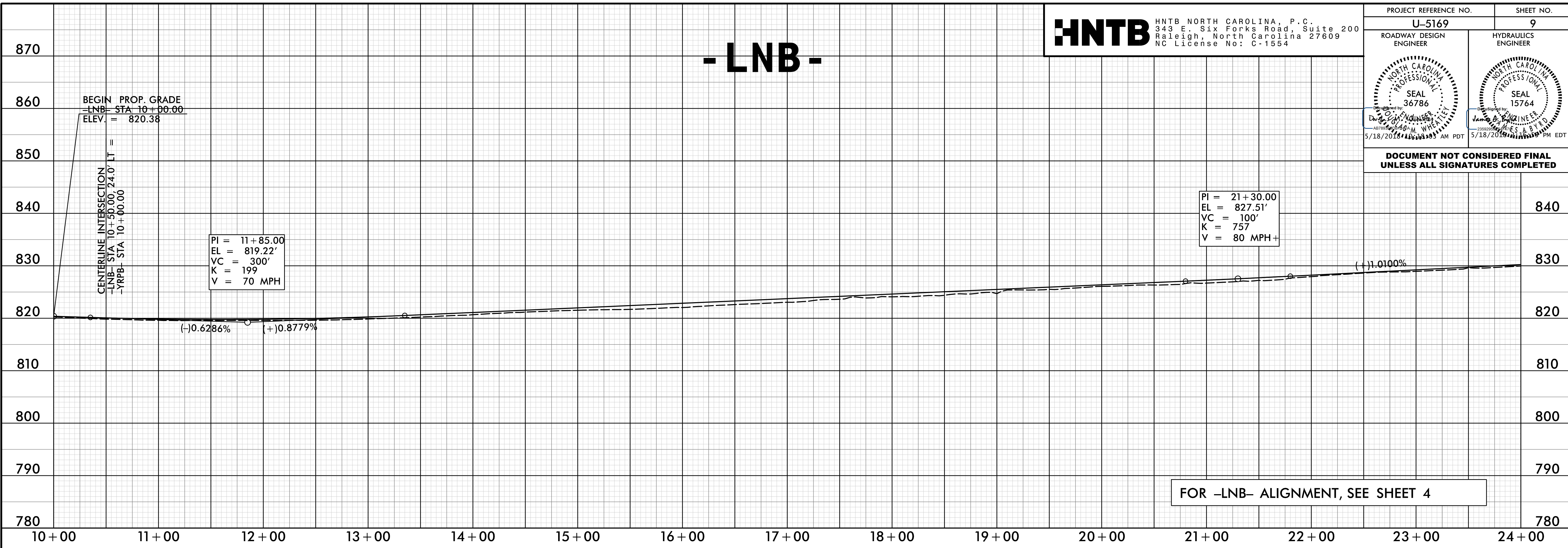
PROJECT REFERENCE NO. SHEET NO.

U-5169 9

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER



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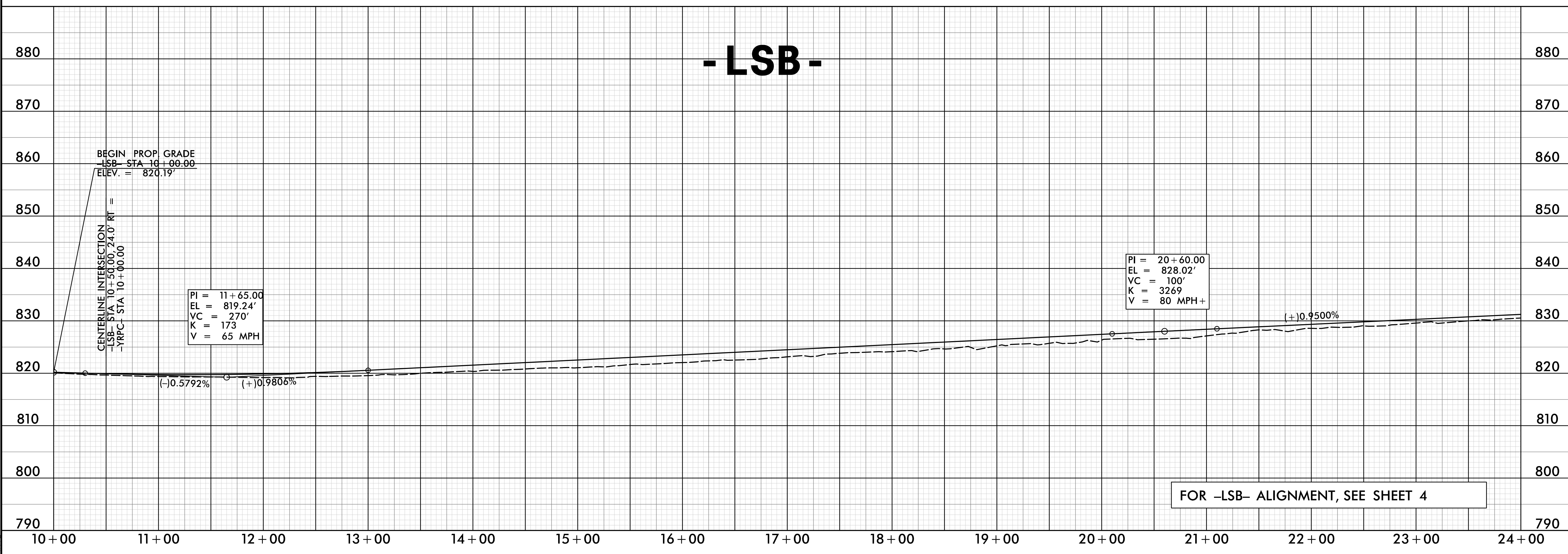
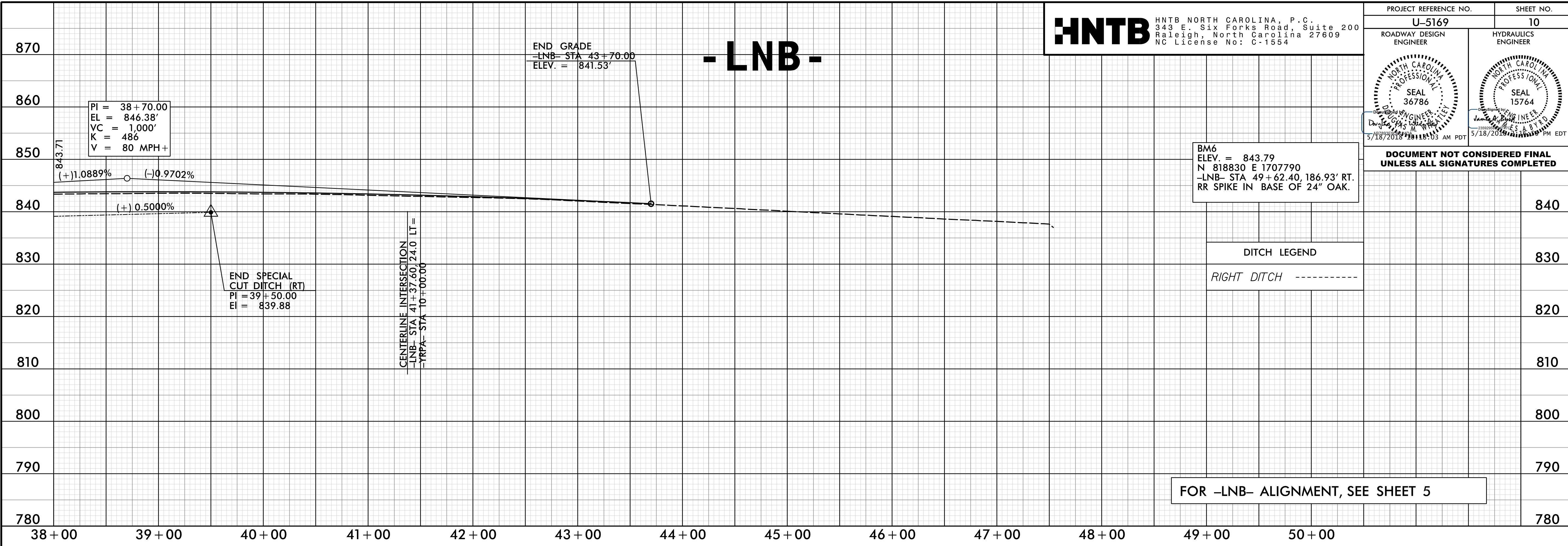
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Raleigh, North Carolina 27609  
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PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>10</b>
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5/18/2018 11:03 AM PDT	5/18/2018 11:03 AM PDT

**DOCUMENT NOT CONSIDERED FINAL  
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HNTB

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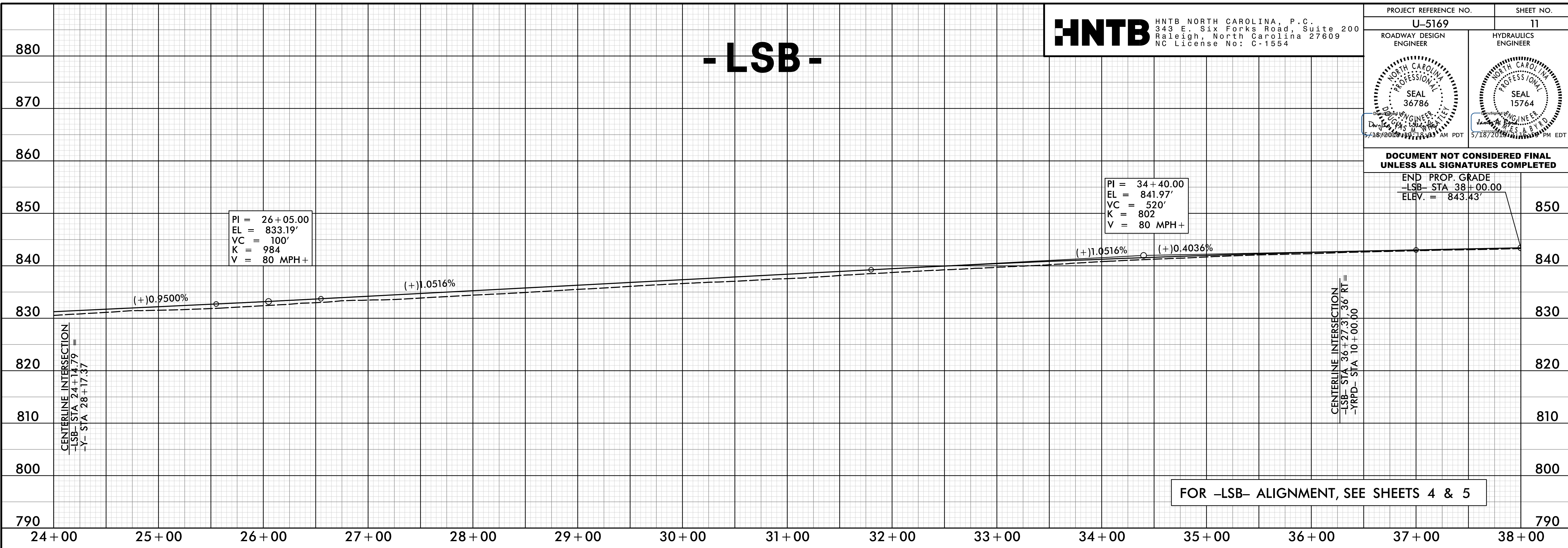
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343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>11</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
5/18/2018 11:11 AM PDT	5/18/2018 11:11 AM PDT

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

END PROP. GRADE  
-LSB- STA 38+00.00  
ELEV. = 843.43'

**- LSB -**

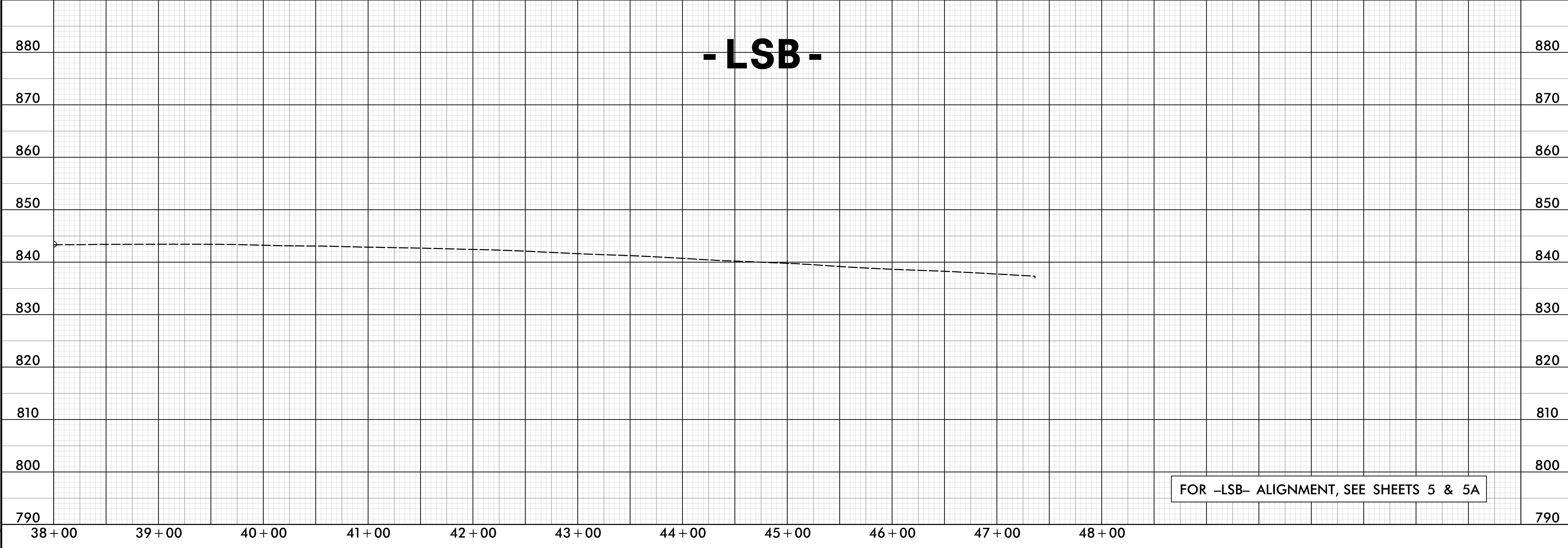


CENTERLINE INTERSECTION  
-LSB- STA 24+14.79 =  
-Y- STA 28+17.37

CENTERLINE INTERSECTION  
-LSB- STA 36+27.37 36' RT =  
-YRPD- STA 10+00.00

FOR -LSB- ALIGNMENT, SEE SHEETS 4 & 5

**- LSB -**



FOR -LSB- ALIGNMENT, SEE SHEETS 5 & 5A

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FILE



5/28/19



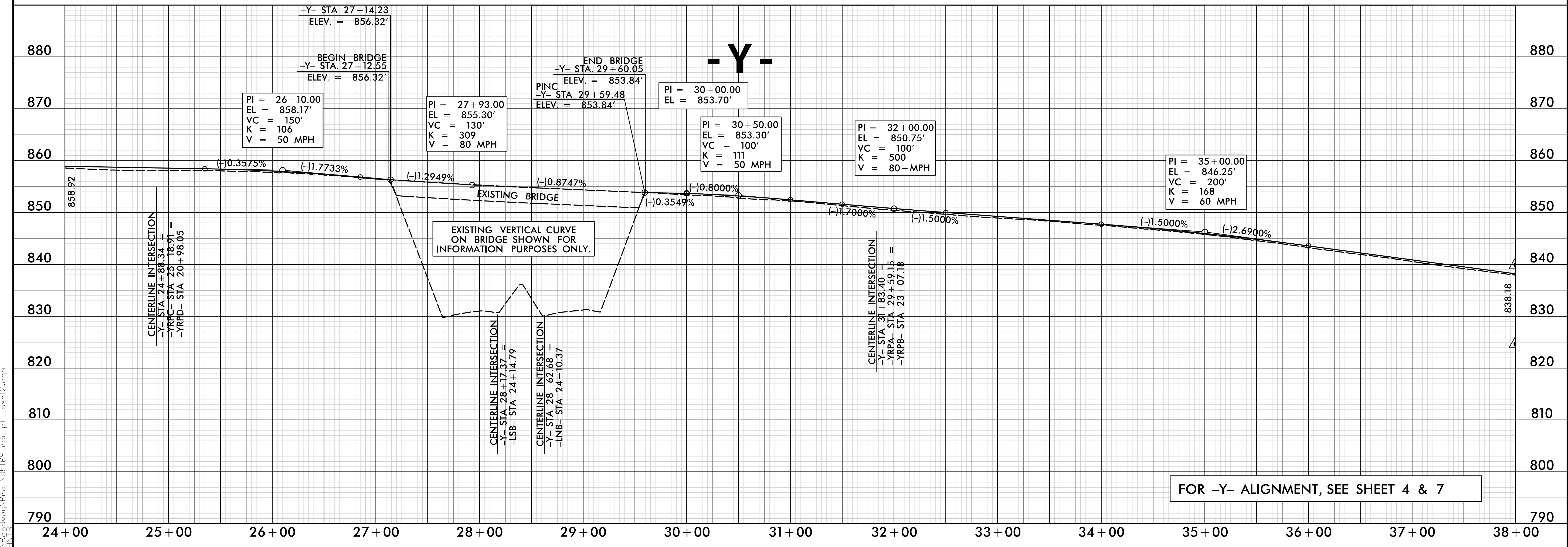
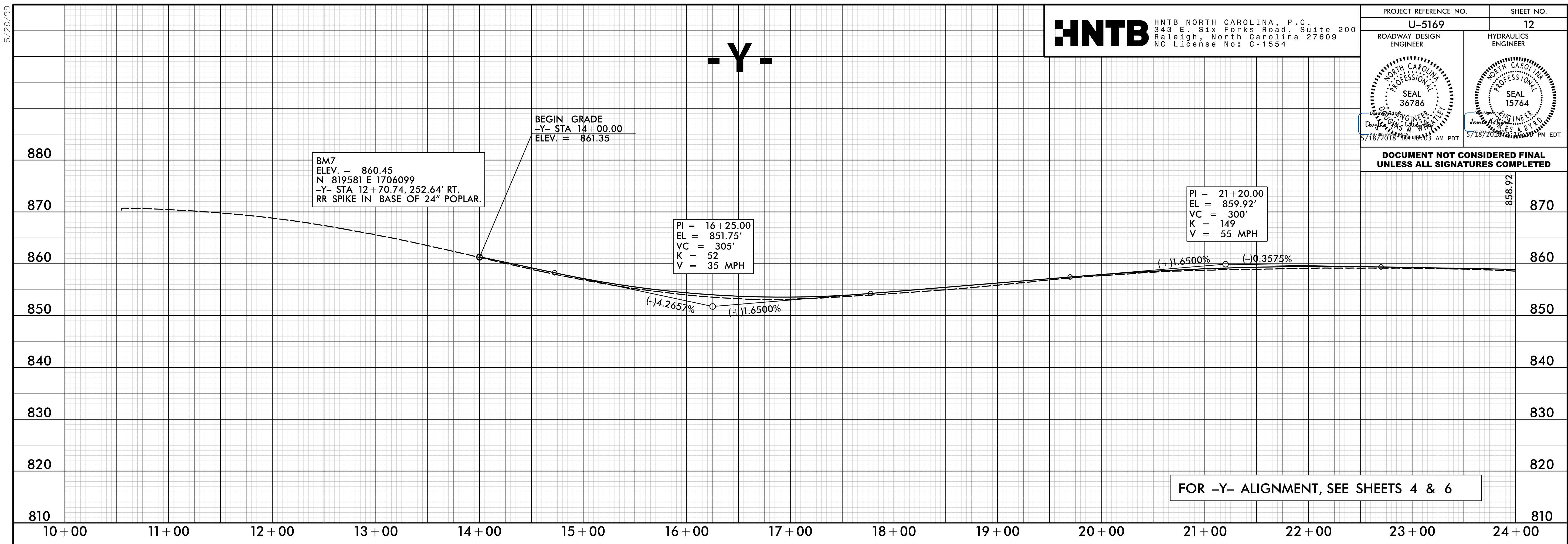
HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

PROJECT REFERENCE NO. SHEET NO.

U-5169 12

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



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5/28/19

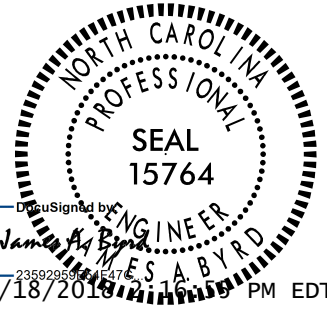
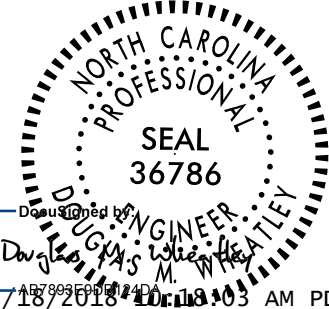


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343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

PROJECT REFERENCE NO. SHEET NO.

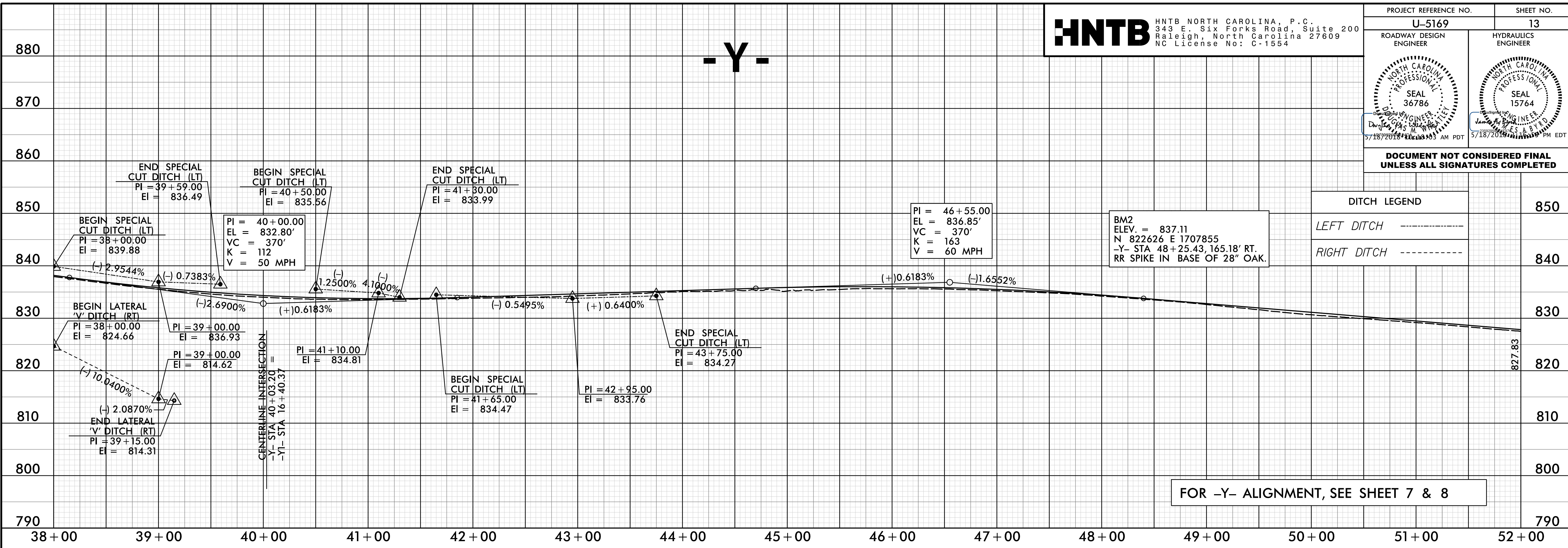
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ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

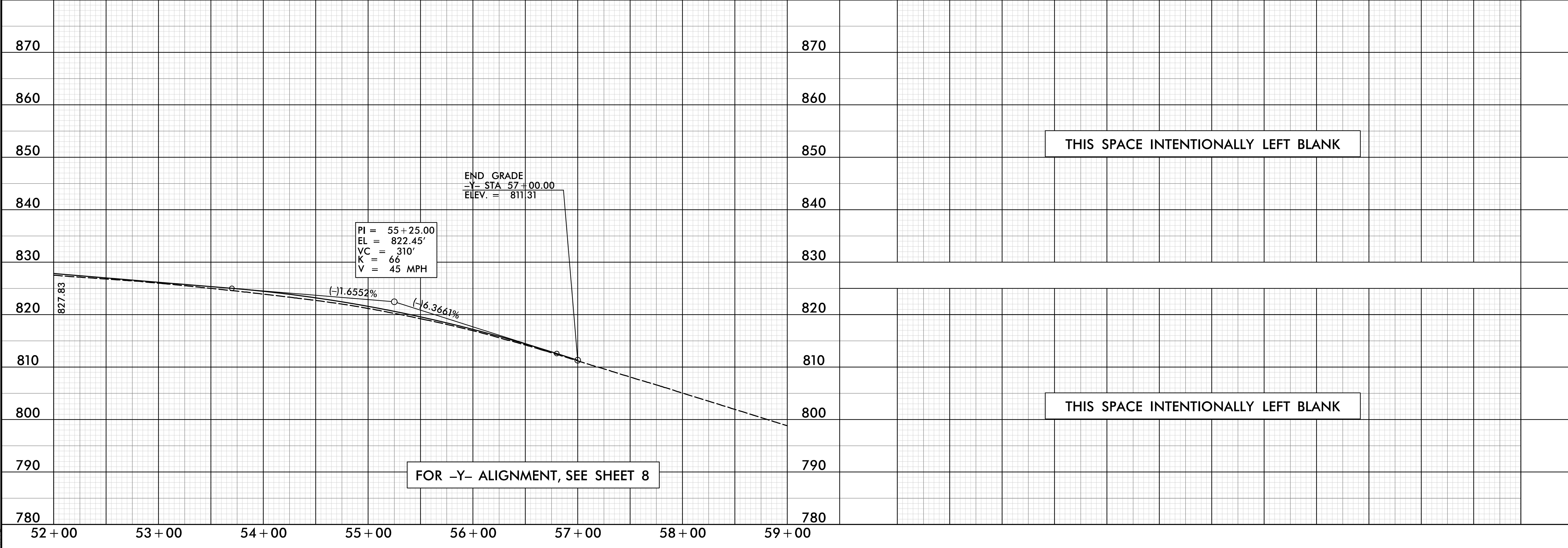


DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

DITCH LEGEND		
LEFT DITCH	-----	850
RIGHT DITCH	-----	840



FOR -Y- ALIGNMENT, SEE SHEET 7 & 8



FOR -Y- ALIGNMENT, SEE SHEET 8

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THIS SPACE INTENTIONALLY LEFT BLANK

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5/28/19

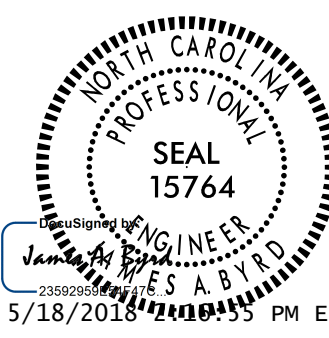
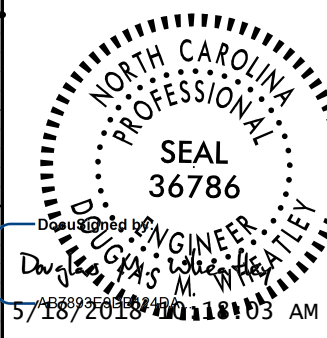


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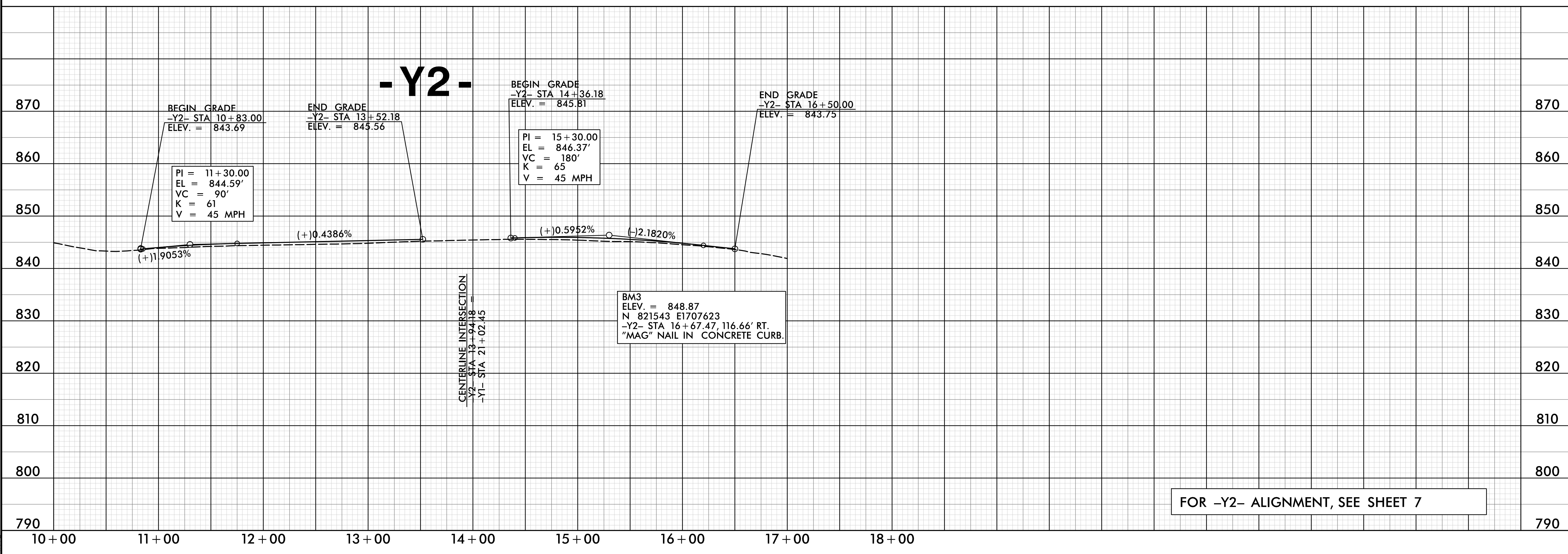
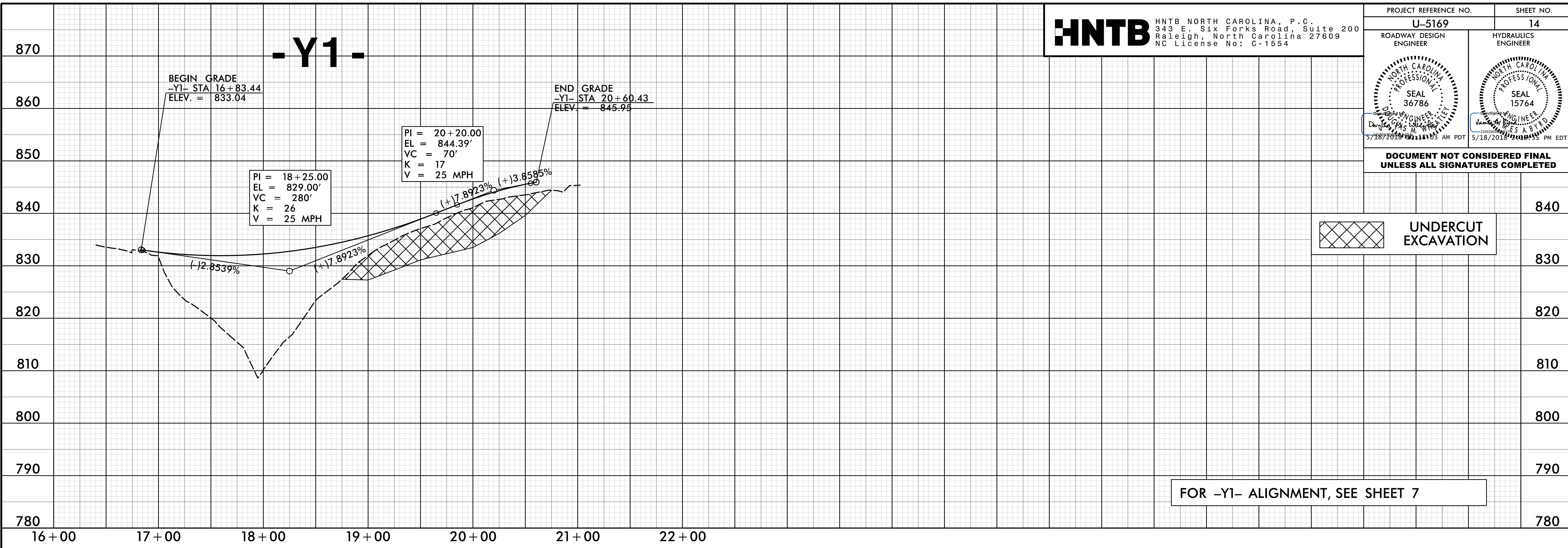
PROJECT REFERENCE NO. SHEET NO.

U-5169 14

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER



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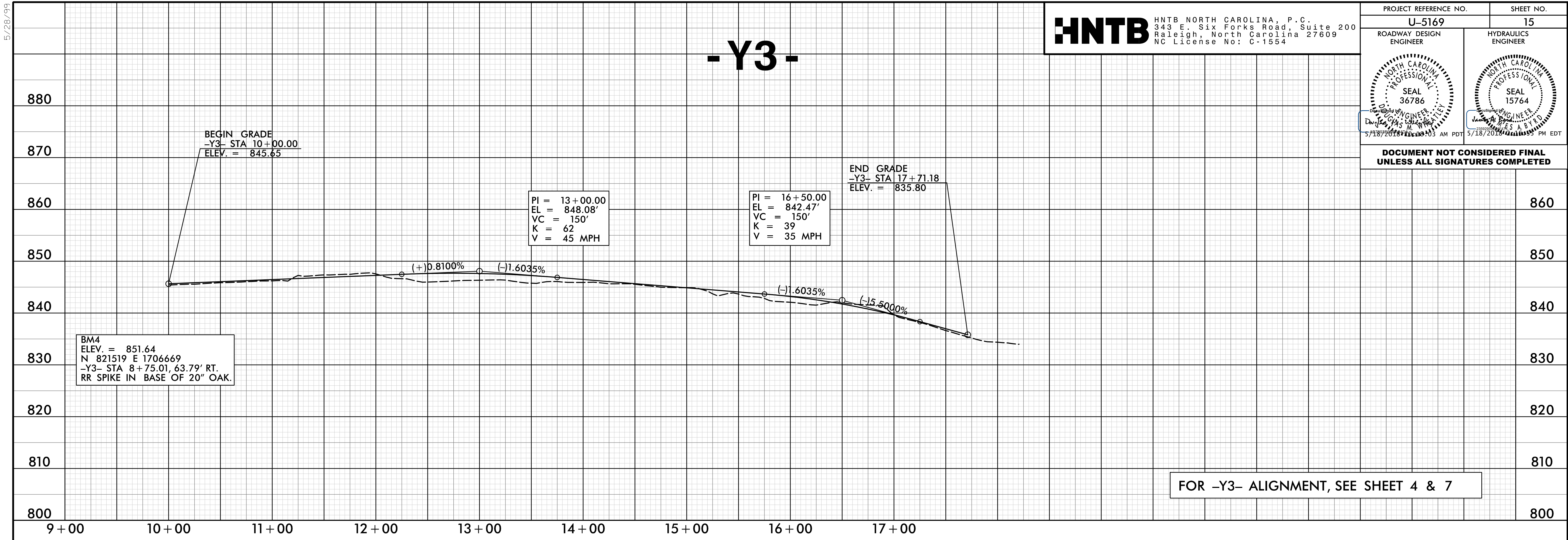
5/28/2018



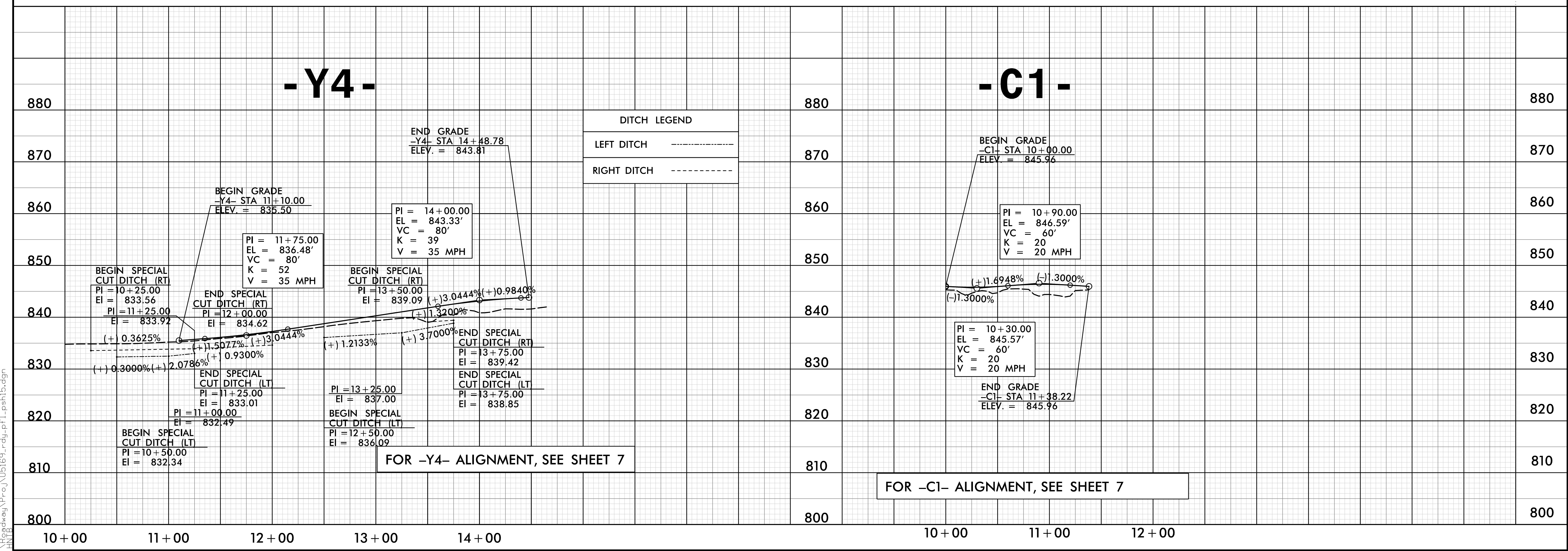
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PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>15</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
5/18/2018 10:03 AM PDT	

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FOR -Y3- ALIGNMENT, SEE SHEET 4 & 7



DITCH LEGEND	
LEFT DITCH	-----
RIGHT DITCH	-----

FOR -Y4- ALIGNMENT, SEE SHEET 7

FOR -C1- ALIGNMENT, SEE SHEET 7

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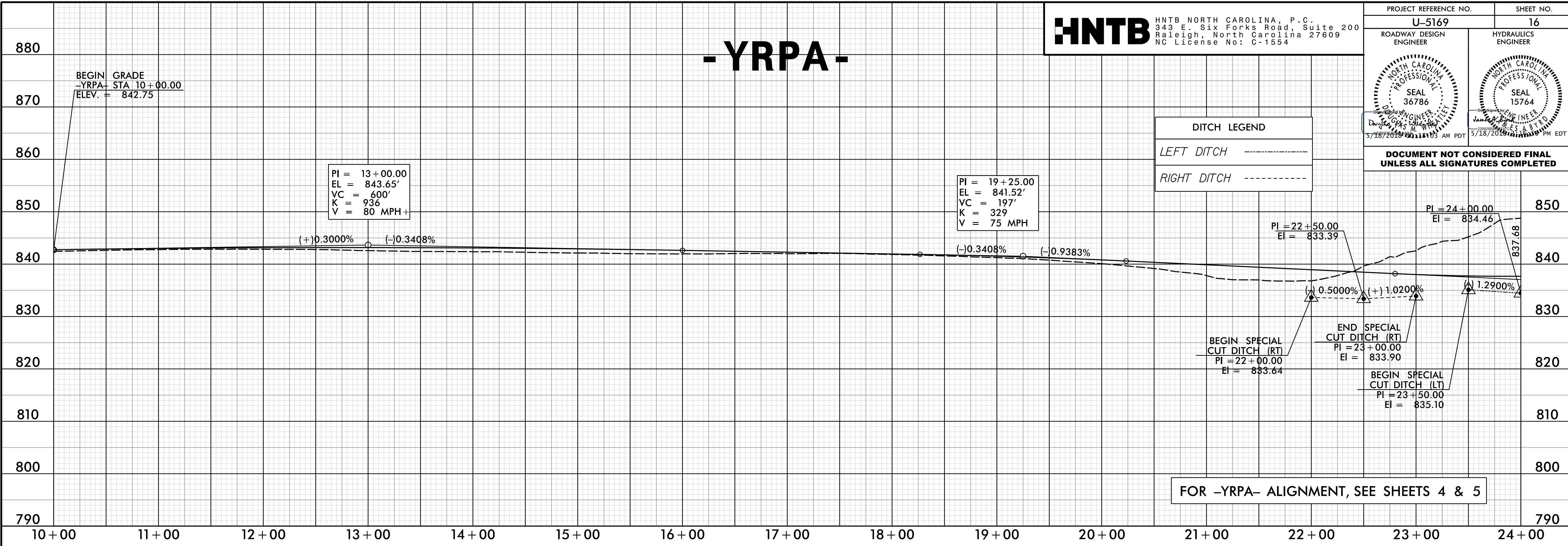
5/28/19



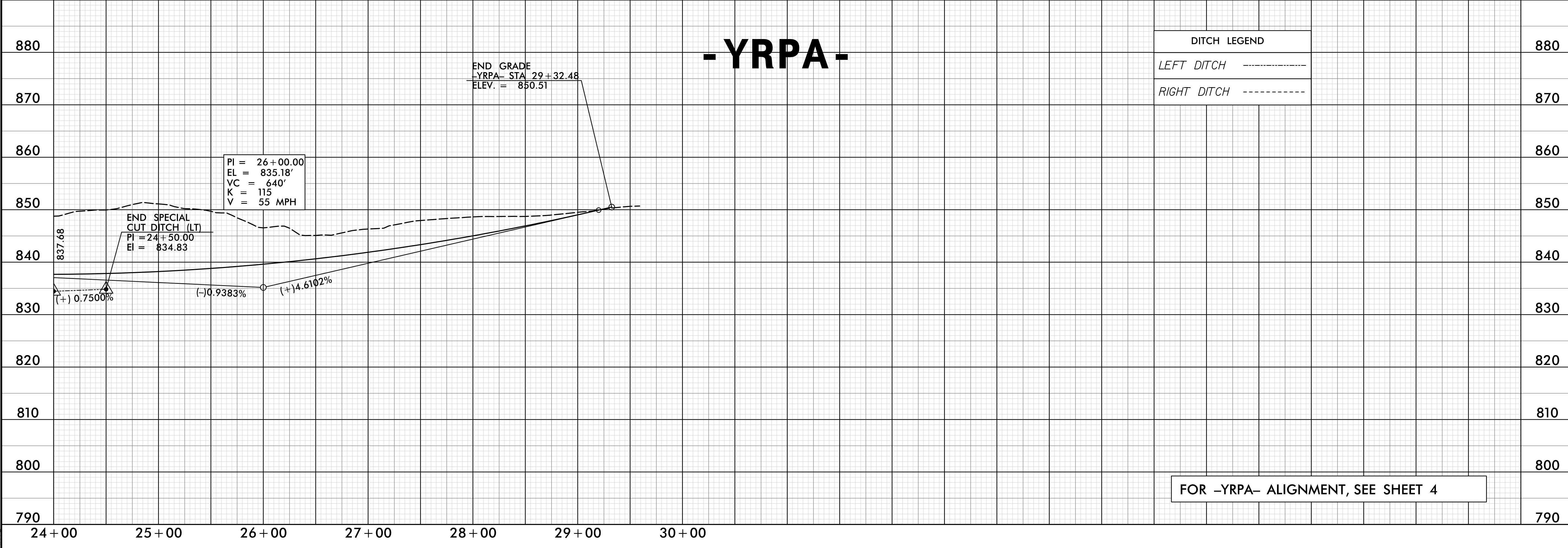
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PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>16</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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# -YRPA-



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5/28/2018

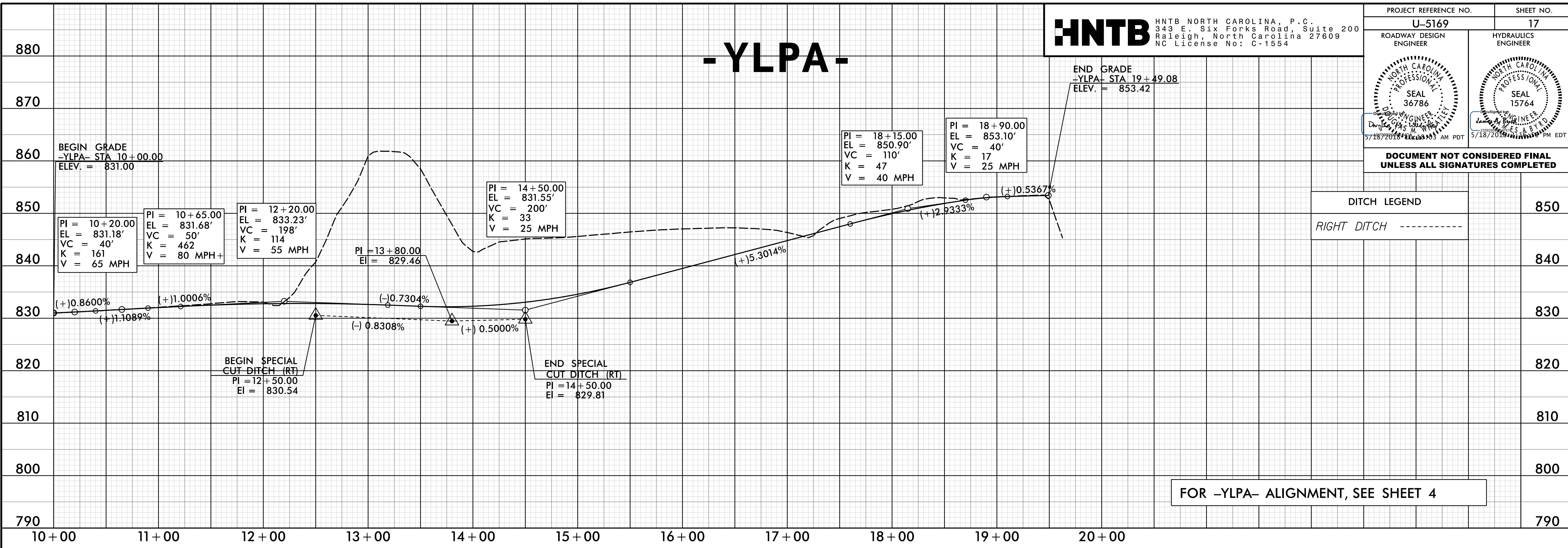


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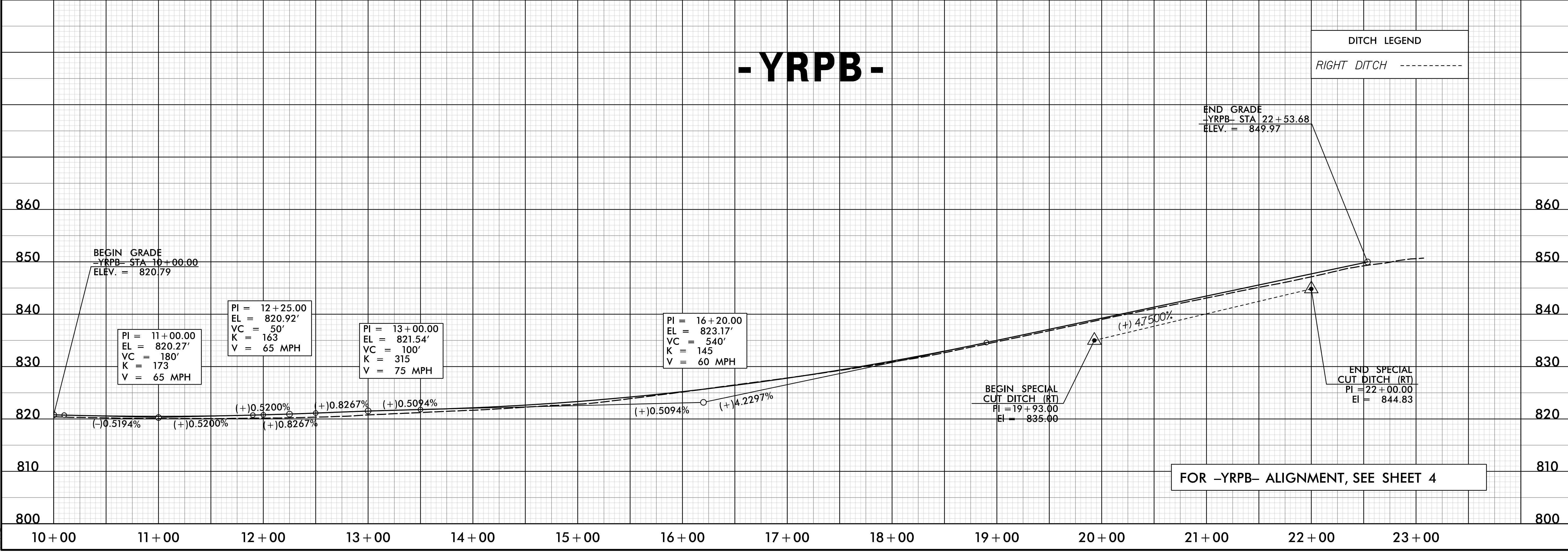
PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>17</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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# -YLPA-



# -YRPB-



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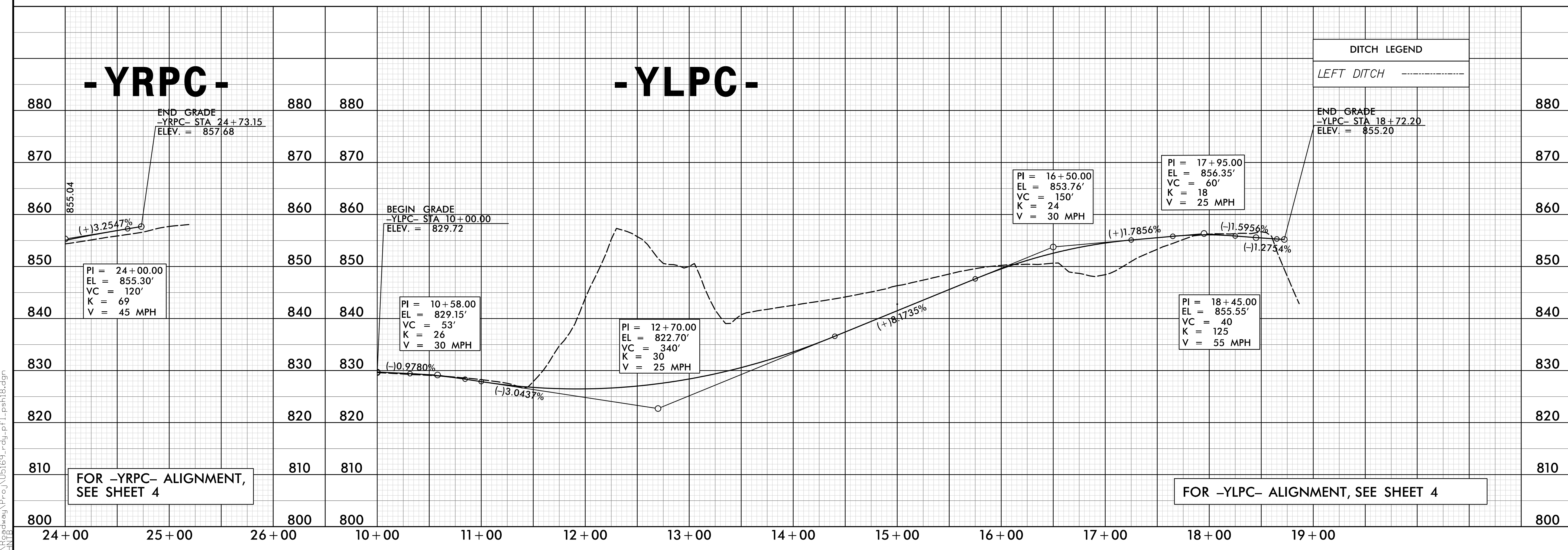
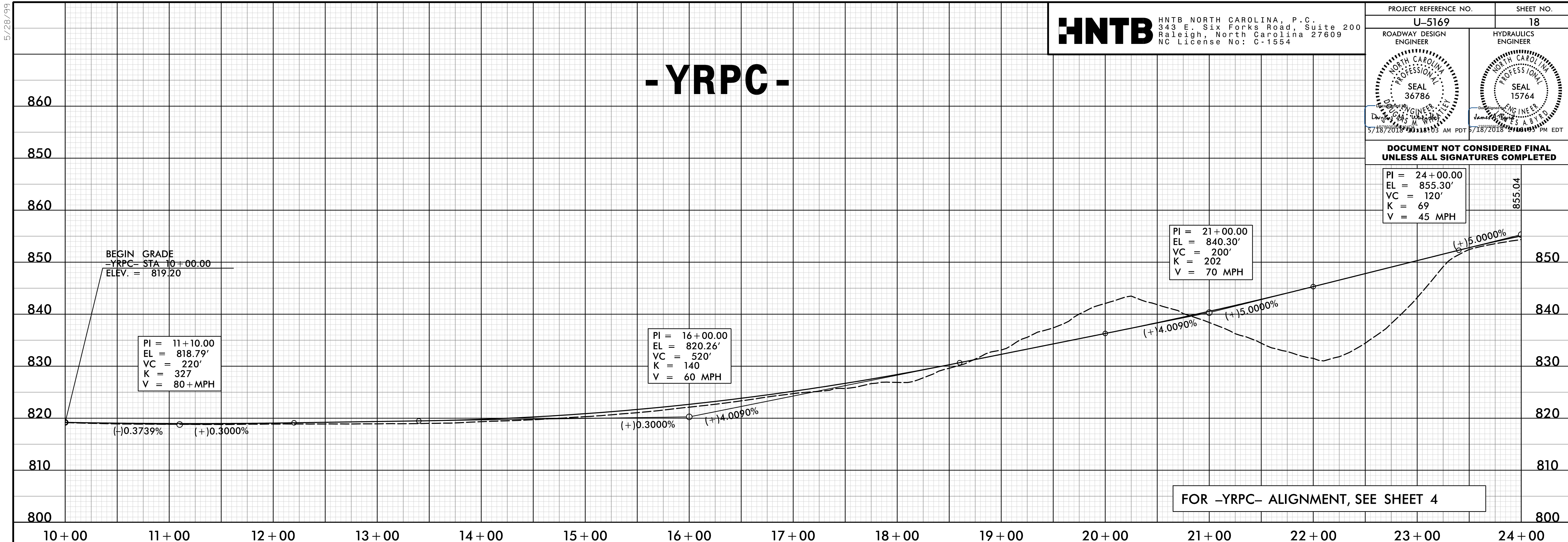


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PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>18</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<p>DATE: 5/18/2018 11:03 AM PDT / 5/18/2018 2:19:55 PM EDT</p> <p><b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b></p>	

PI = 24+00.00  
EL = 855.30'  
VC = 120'  
K = 69  
V = 45 MPH



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5/28/19



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PROJECT REFERENCE NO. <b>U-5169</b>	SHEET NO. <b>19</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
5/18/2018 10:03 AM PDT	5/18/2018 10:03 PM EDT

# -YRPD-

END GRADE  
-YRPD- STA 20+59.71  
ELEV. = 857.84

BEGIN GRADE  
-YRPD- STA 10+00.00  
ELEV. = 841.98

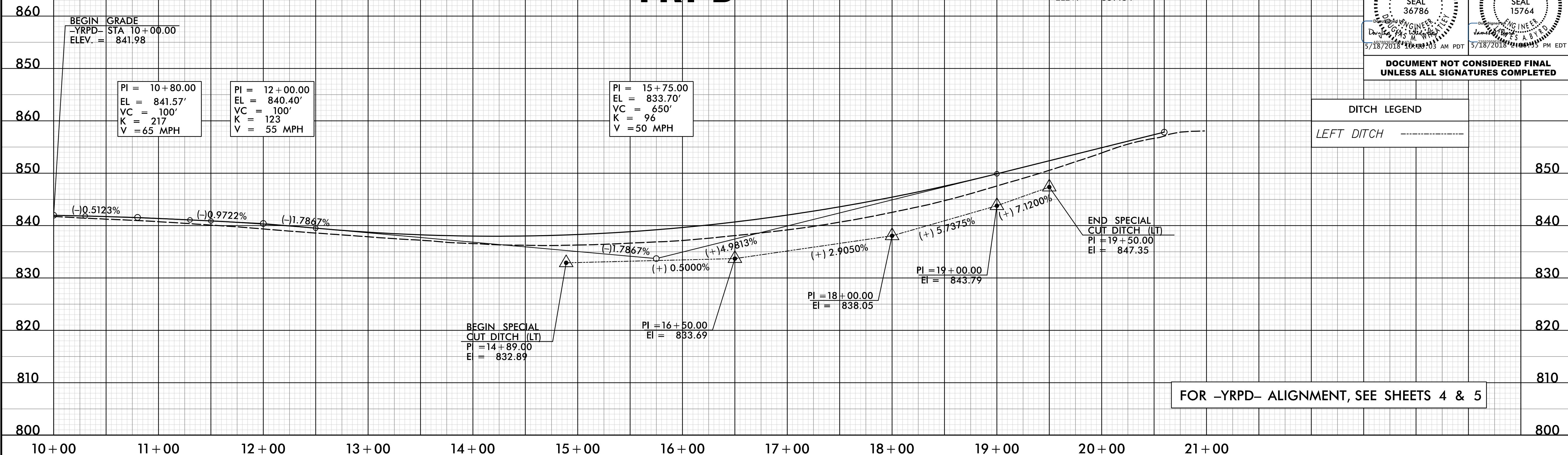
PI = 10+80.00  
EL = 841.57'  
VC = 100'  
K = 217  
V = 65 MPH

PI = 12+00.00  
EL = 840.40'  
VC = 100'  
K = 123  
V = 55 MPH

PI = 15+75.00  
EL = 833.70'  
VC = 650'  
K = 96  
V = 50 MPH

DITCH LEGEND  
LEFT DITCH -----

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UNLESS ALL SIGNATURES COMPLETED



FOR -YRPD- ALIGNMENT, SEE SHEETS 4 & 5

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