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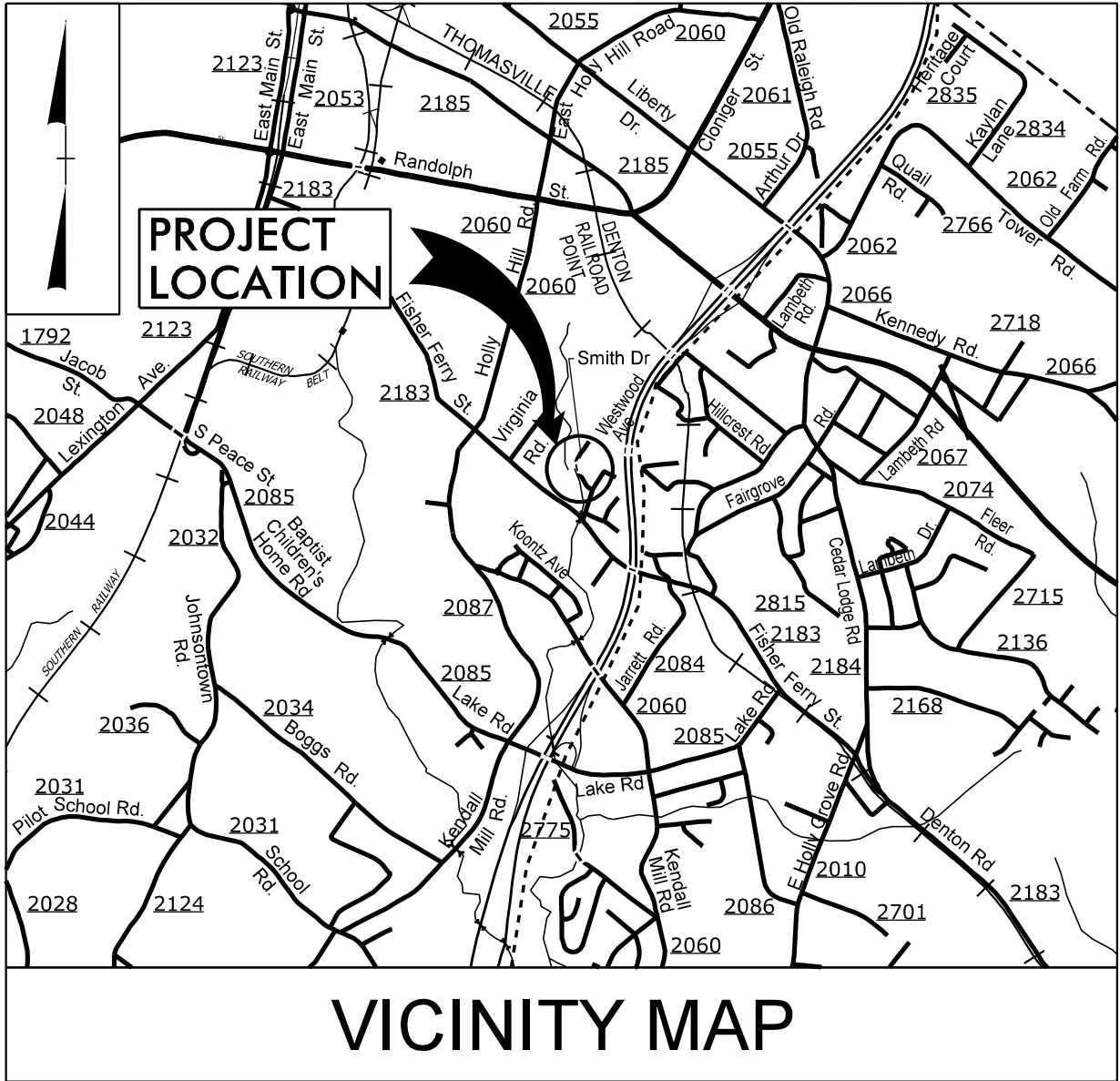
**This file or an individual page
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09/08/19

TIP PROJECT: 17BP.9.R.33

CONTRACT: DI00231

See Sheet 1A For Index of Sheets
See Sheet 1B For Symbology Sheet



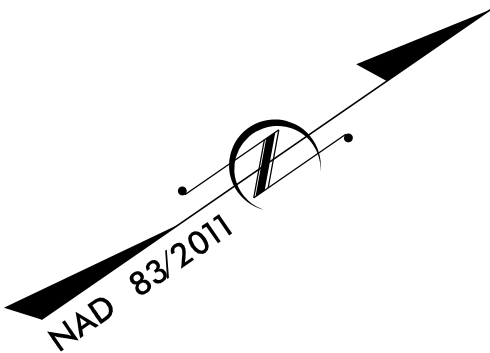
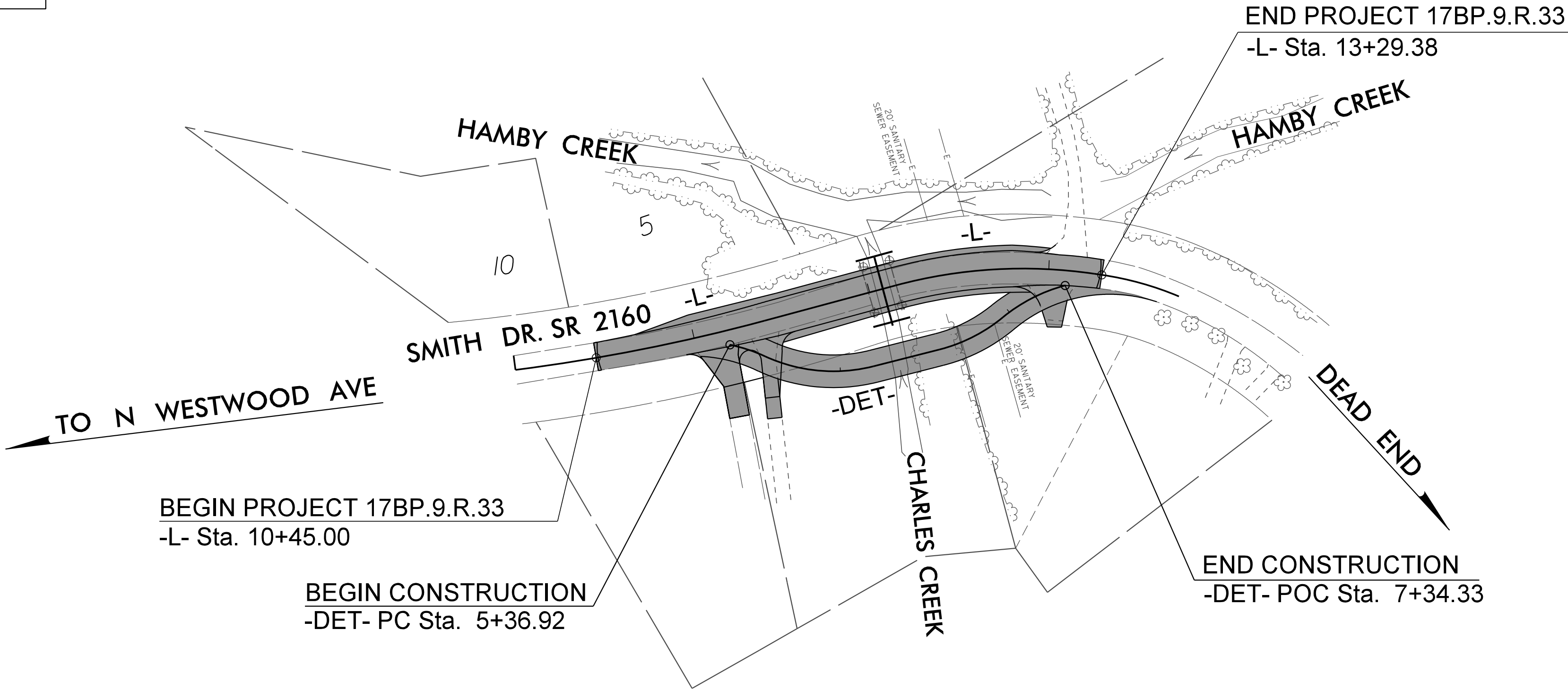
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DAVIDSON COUNTY

LOCATION: REPLACE EXISTING BRIDGE NO. 459 OVER
CHARLES CREEK ON SR 2160 (SMITH DR.)

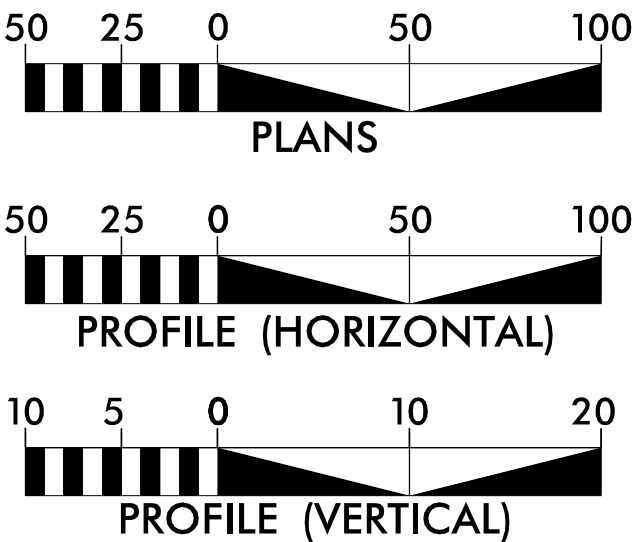
TYPE OF WORK: GRADING, DRAINAGE, WIDENING, CULVERT
ONSITE DETOUR AND PAVEMENT MARKINGS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.9.R.33	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
17BP.9.R.33	BRZ-1321(7)	PE	
17BP.9.R.33	BRZ-1321(7)	RW, UTIL.	
17BP.9.R.33	BRZ-1321(7)	CONST.	



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2018 = <100
V = 35 MPH*

FUNC CLASS = LOCAL
SUB REGIONAL TIER
GUIDELINES

*STATUTORY SPEED LIMIT
35 MPH

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT 17BP.9.R.33 = 0.054 MI

TOTAL LENGTH TIP PROJECT 17BP.9.R.33 = 0.054 MI



PREPARED IN THE OFFICE OF:
WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1-919-836-4040
FAX: 1-919-836-4099
LICENSE NO. E-0165

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 30, 2019

LETTING DATE:
JUNE 23, 2021

RONYELL THIGPEN, PE
PROJECT ENGINEER

ERIC MISAK
PROJECT DESIGN ENGINEER

NCDOT CONTACT:

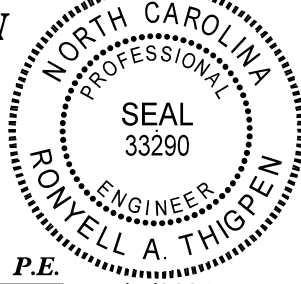
DANIEL DAGENHART
DIVISION 9 BRIDGE PROGRAM MANAGER

HYDRAULICS ENGINEER



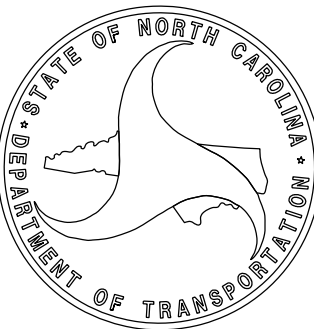
DocuSigned by:
Vidyia Mohandas
067C3DE8FE69B4A
SIGNATURE:

ROADWAY DESIGN
ENGINEER



DocuSigned by:
Ronyell A. Thigpen
5C7B41A2D8E447
SIGNATURE:

P.E.
5/4/2021



STATE HIGHWAY DESIGN ENGINEER

INDEX OF SHEETS	
SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
RW02C-1	SURVEY CONTROL SHEET
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTION AND DETAILS
2B-1	TEMPORARY DETOUR PLAN AND PROFILE
2C-1	GUARDRAIL INSTALLATION
3B-1	MISCELLANEOUS SUMMARIES
3D-1	DRAINAGE SUMMARY
4	PLAN AND PROFILE SHEET
TMP-1 THRU TMP-5	TRAFFIC MANAGEMENT PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
UC-1 THRU UC-5	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION INDEX
X-1B	CROSS-SECTION SUMMARY
X-1 THRU X-7	CROSS-SECTIONS
C-1 THRU C-10	CULVERT PLANS
SN	STRUCTURE STANDARD NOTES

EFF. 01-16-2018
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
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units

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

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED 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 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

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".

SUBSURFACE PLANS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:
POWER - DUKE ENERGY
CATV - SPECTRUM
COMMUNICATIONS - NORTH STATE TELEPHONE
SEWER - CITY OF THOMASVILLE
WATER - CITY OF THOMASVILLE

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.33	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA

PROFESSIONAL SEAL

33290

ROYE ENGINEERS

8/7/2021

DocuSign

Royell H. Roye

00384192085677

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

PROJECT REFERENCE NO.	SHEET NO.
17BP-9.R.33	1B

BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin	
Computed Property Corner	
Property Monument	
Parcel/Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Existing Historic Property Boundary	
Known Contamination Area: Soil	
Potential Contamination Area: Soil	
Known Contamination Area: Water	
Potential Contamination Area: Water	
Contaminated Site: Known or Potential	
BUILDINGS AND OTHER CULTURE:	
Gas Pump Vent or U/G Tank Cap	
Sign	
Well	
Small Mine	
Foundation	
Area Outline	
Cemetery	
Building	
School	
Church	
Dam	
HYDROLOGY:	
Stream or Body of Water	
Hydro, Pool or Reservoir	
Jurisdictional Stream	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	

RAILROADS:

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	
Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Exist Permanent Easment Pin and Cap	
New Permanent Easement Pin and Cap	
Vertical Benchmark	
Existing Right of Way Marker	
Existing Right of Way Line	
New Right of Way Line	
New Right of Way Line with Pin and Cap	
New Right of Way Line with Concrete or Granite RW Marker	
New Control of Access Line with Concrete CA Marker	
Existing Control of Access	
New Control of Access	
Existing Easement Line	
New Temporary Construction Easement	
New Temporary Drainage Easement	
New Permanent Drainage Easement	
New Permanent Drainage / Utility Easement	
New Permanent Utility Easement	
New Temporary Utility Easement	
New Aerial Utility Easement	

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Curb Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	

VEGETATION:

Single Tree	
Single Shrub	

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

Hedge	
Woods Line	
Orchard	
Vineyard	

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	
MINOR:	
Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

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.*)	
U/G Power Line LOS C (S.U.E.*)	
U/G Power Line LOS D (S.U.E.*)	

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.*)	
U/G Telephone Cable LOS C (S.U.E.*)	
U/G Telephone Cable LOS D (S.U.E.*)	
U/G Telephone Conduit LOS B (S.U.E.*)	
U/G Telephone Conduit LOS C (S.U.E.*)	
U/G Telephone Conduit LOS D (S.U.E.*)	
U/G Fiber Optics Cable LOS B (S.U.E.*)	
U/G Fiber Optics Cable LOS C (S.U.E.*)	
U/G Fiber Optics Cable LOS D (S.U.E.*)	

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	84-0008	RW01	7

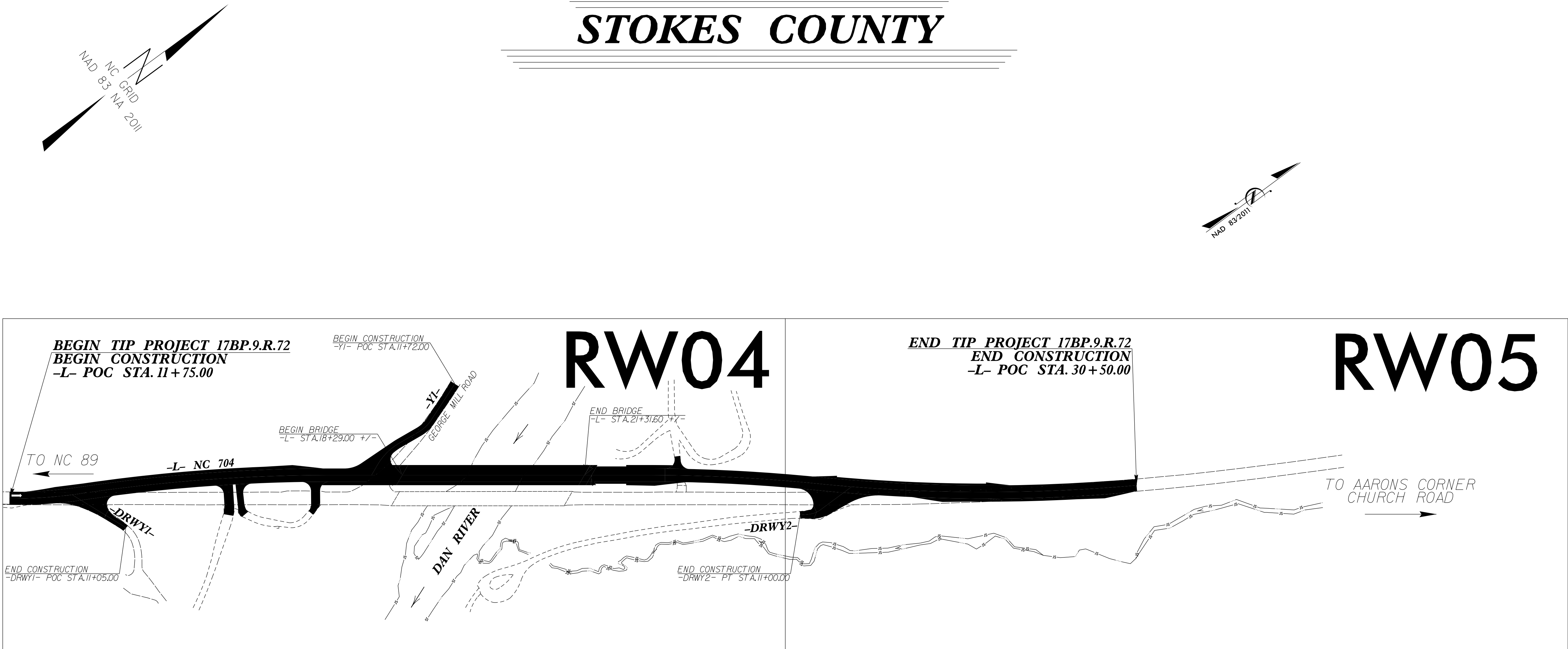
STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

SURVEY CONTROL, EXISTING CENTERLINES,
RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

STOKES COUNTY

TIP PROJECT: 84-0008



GRAPHIC SCALE



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "840008-2" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 1,008,575.4369(ft) EASTING: 1,616,929.8829(ft) ELEVATION: 866.77(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000793148 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "840008-2" TO -L- STATION IS ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

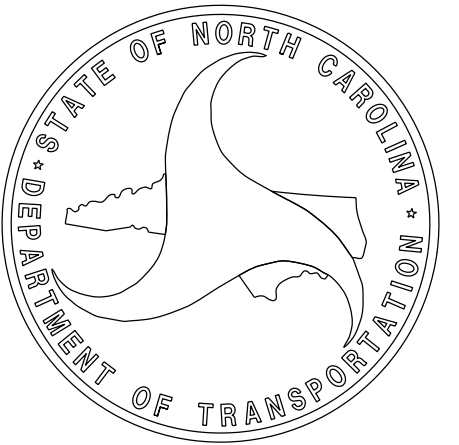
Prepared in the Office of:

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
03/01/2021

LETTING DATE:
03/04/2021

PROFESSIONAL LAND
SURVEYOR



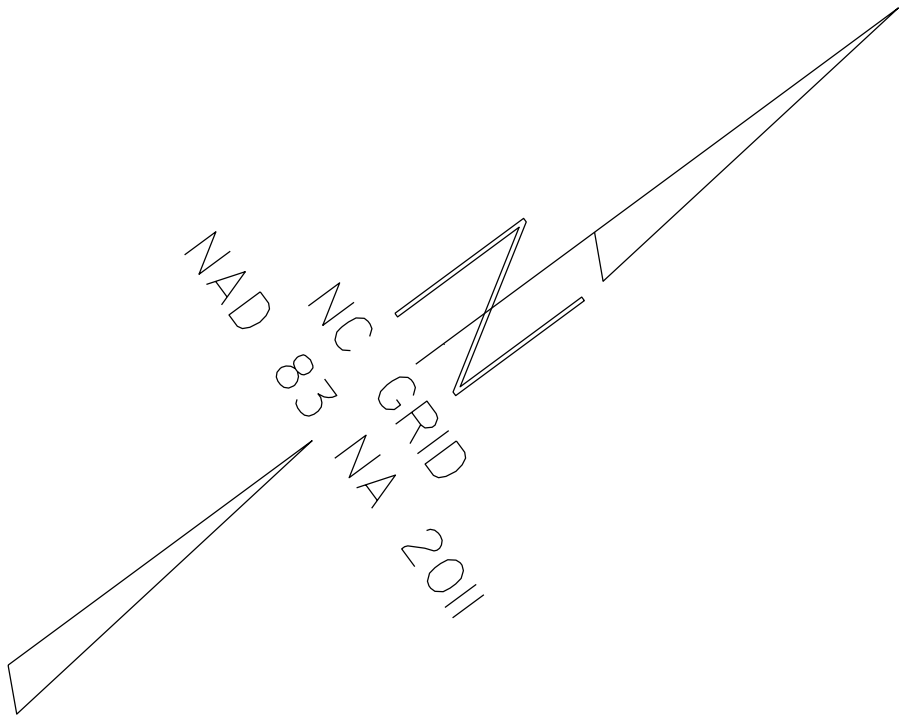
DocuSigned by:
Michael L. Molsinger
F0B8F670E23C40E...

3/8/2021

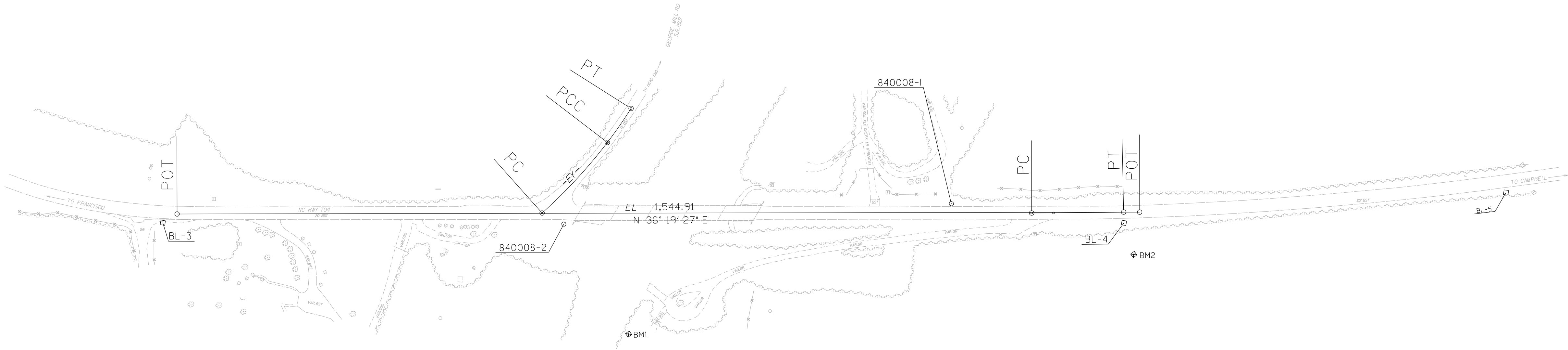
SIGNATURE:

Date:

SURVEY CONTROL SHEET
W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



SEE SHEET RW02C-2
FOR FURTHER
ALIGNMENT DETAILS



NOTES:

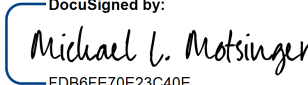
1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

PROJECT REFERENCE NO.	SHEET NO.
84-0008	RW02C-1
Location and Surveys	
PROJECT SURVEYOR	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Michael L. Motsinger, PLS, certify that the Project Control was verified under my supervision from an actual survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**
Type of GPS field procedure: [Static, OPUS, RTN]
Dates of survey: 3/1/2021
Datum/Epoch: NAD 83 / NA 2011
Published/Fixed-control use: [Project Control if applicable, N/A for RTN]
Localized around: 840008-2
Northing: 1008575.4369
Easting: 1616929.8829
Combined grid factor: 1.0000793148
Geoid model: G12NC
Units: US Survey Feet

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from 3/1/2021 to 3/4/2021, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 1st day of March, 2021.

Michael L. Motsinger
Professional Land Surveyor L-3877

PROJECT REFERENCE NO.	SHEET NO.
84-0008	RW03E-1
Location and Surveys	
PROJECT SURVEYOR	
A circular professional seal for Michael L. Mottsinger, a North Carolina Professional Land Surveyor. The outer ring contains the text "NORTH CAROLINA PROFESSIONAL LAND SURVEYOR". Inside this ring, at the top, are the words "SEAL" and "L-3877". At the bottom of the inner circle is the name "MICHAEL L. MOTTSINGER". The entire seal has a decorative border of small black dots.	
NON CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

This 1st day of March, 2021.

Professional Land Surveyor L-3877

ROW MARKER IRON PIN AND CAP-E				
ALIGN	STATION	OFFSET	NORTH	EAST
L	11+75.09	-30.21	1008107.7075	1616525.2535
L	12+94.46	-55.00	1008216.1309	1616564.7050
L	17+00.00	-55.00	1008566.1517	1616784.1394
L	21+93.00	-90.00	1008983.8491	1617048.6841
L	23+10.00	-56.00	1009058.4205	1617147.1395
L	25+50.00	-30.00	1009226.9849	1617323.9303
L	28+00.00	-40.00	1009425.2147	1617471.2982
L	29+55.00	-28.98	1009544.5973	1617567.7460

ROW MARKER IRON PIN AND CAP-E				
ALIGN	STATION	OFFSET	NORTH	EAST
Y1	12+22.00	24.61	1008742.3609	1616829.2142
Y1	12+22.00	-25.40	1008759.8013	1616876.0807

ROW MARKER PERMANENT EASEMENT-E				
ALIGN	STATION	OFFSET	NORTH	EAST
L	29+00.00	-60.00	1009516.8726	1617511.8566

_____, Michael L. Motsinger, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (Base map Compilation, R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

Further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans; also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 1st day of March, 2021.

DocuSigned by:
Michael L. Motsinger
FDB6FE70E23G40E...
Professional Land Surveyor

L-3877
PLS #

Seal



NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED TO .

I further certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 3rd day of March, 2021.

L-3877-
PLS #

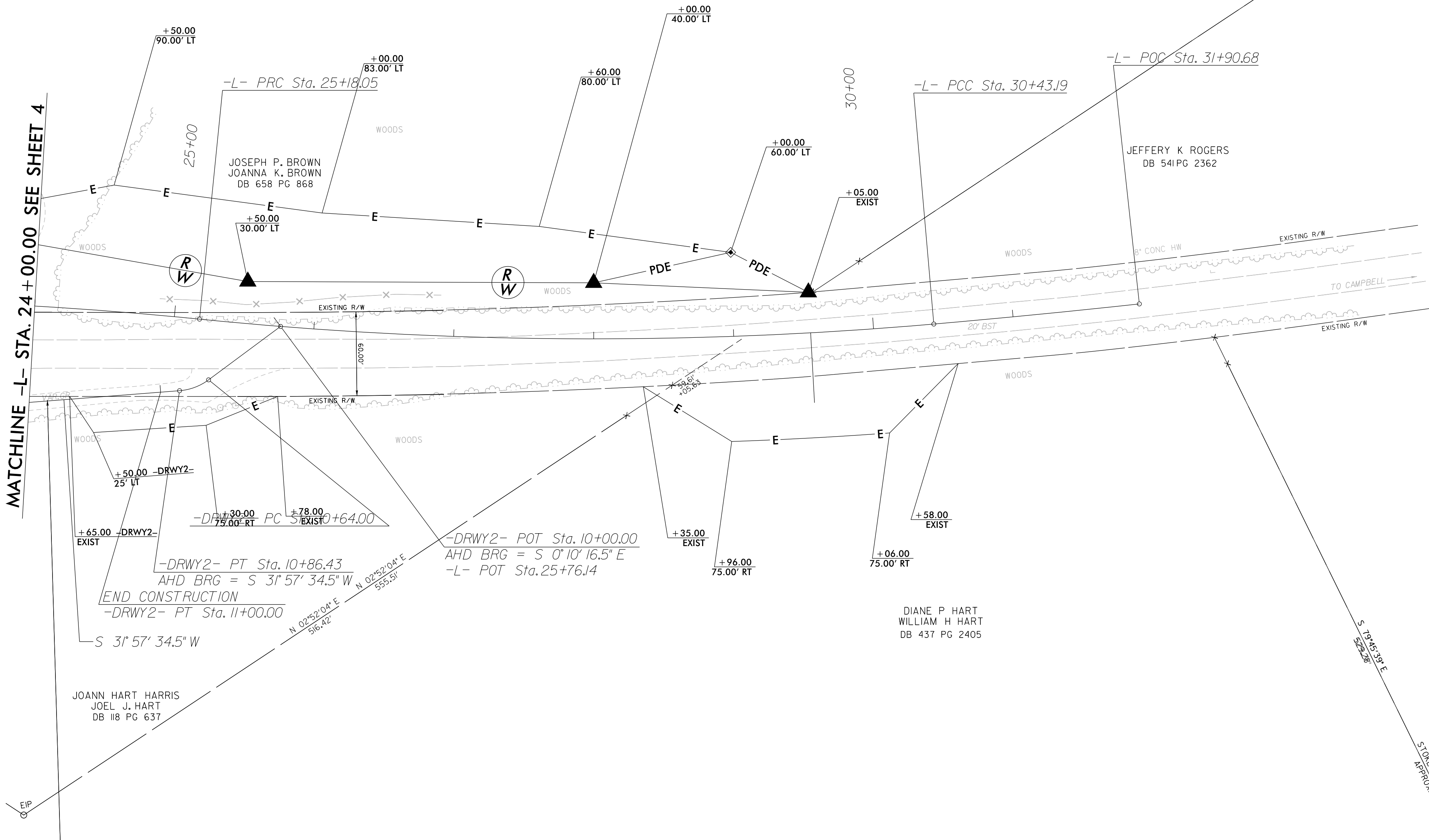
Seo



MYRA T BULLINS
ROY EDWARD BULLINS
DB 577 PG 308

NAD NC GRID
83 NA 2011

NAD 83/2011



GRAVEL DRIVE & CONCRETE BOAT RAMP ARE LEASED BY
COUNTY FOR PUBLIC ACCESS TO DAN RIVER ACCORDING
TO PROPERTY OWNER - NO RECORDED REFERENCE FOUND

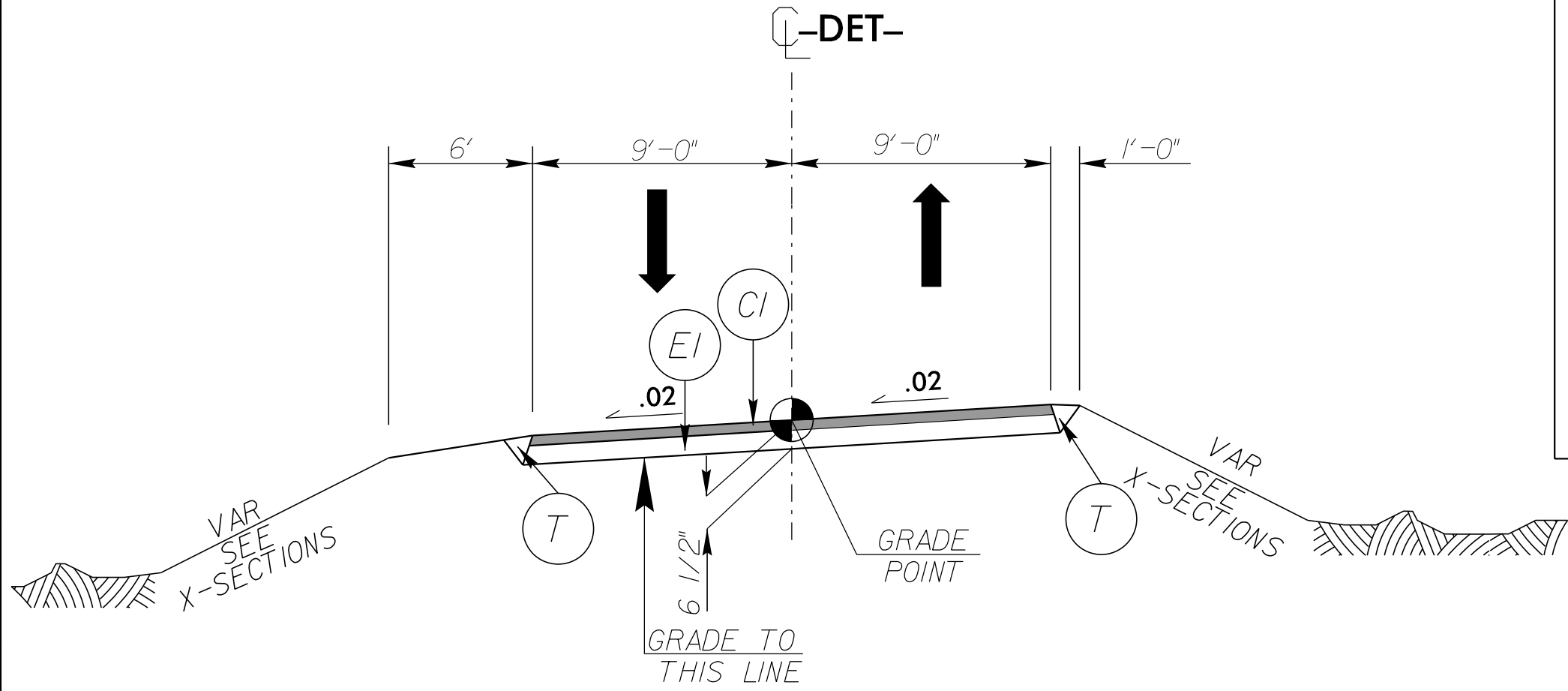
-L-			-DRWY2-		
Δ <i>Pl Sta</i> 23+77.48	Δ <i>Pl Sta</i> 27+81.39	Δ <i>Pl Sta</i> 31+16.94	Δ <i>Pl Sta</i> 10+75.51		
$D = 5^{\circ} 44' 13.7''$ (RT)	$D = 10^{\circ} 42' 27.7''$ (LT)	$D = 1^{\circ} 14' 20.5''$ (LT)	$D = 32^{\circ} 07' 51.0''$ (RT)		
$D = 2^{\circ} 02' 20.4''$	$D = 2^{\circ} 02' 20.4''$	$D = 0^{\circ} 50' 24.4''$	$D = 143^{\circ} 14' 22.0''$		
$L = 281.37'$	$L = 525.14'$	$L = 147.48'$	$L = 22.43'$		
$T = 140.80'$	$T = 263.34'$	$T = 73.74'$	$T = 11.52'$		
$R = 2,810.00'$	$R = 2,810.00'$	$R = 6,820.00'$	$R = 40.00'$		
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS			

6/2/99

PAVEMENT SCHEDULE	
C1	PROPOSED APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.
C2	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YARD, PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1" OR GREATER THAN 1 1/2" IN DEPTH.
E1	PROPOSED APPROXIMATE 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.
E2	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD, PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5 1/2" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING (SEE DETAIL THIS SHEET).

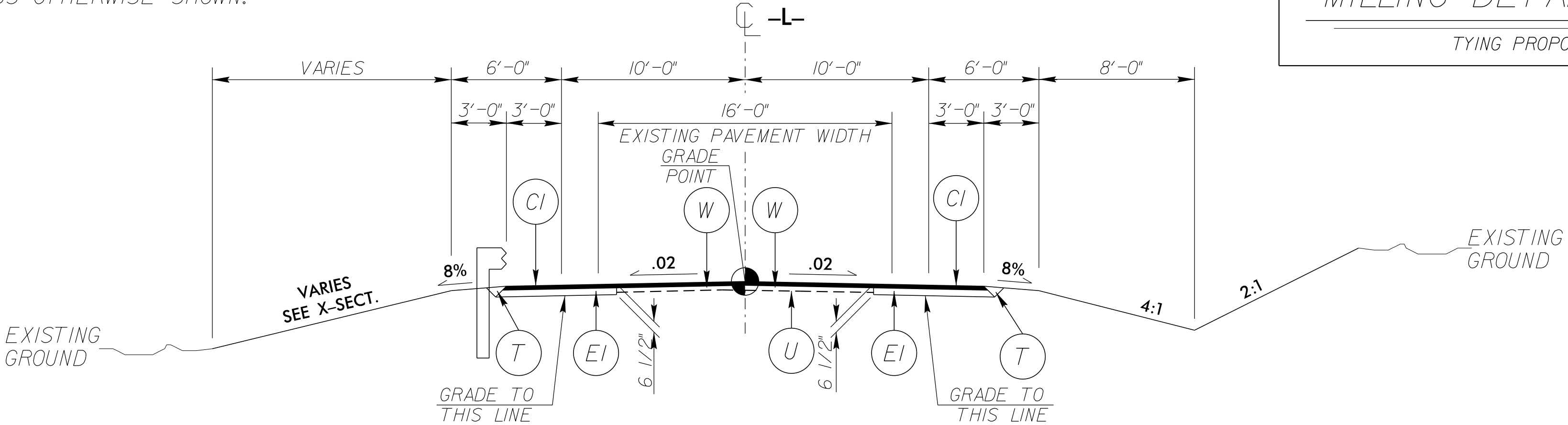
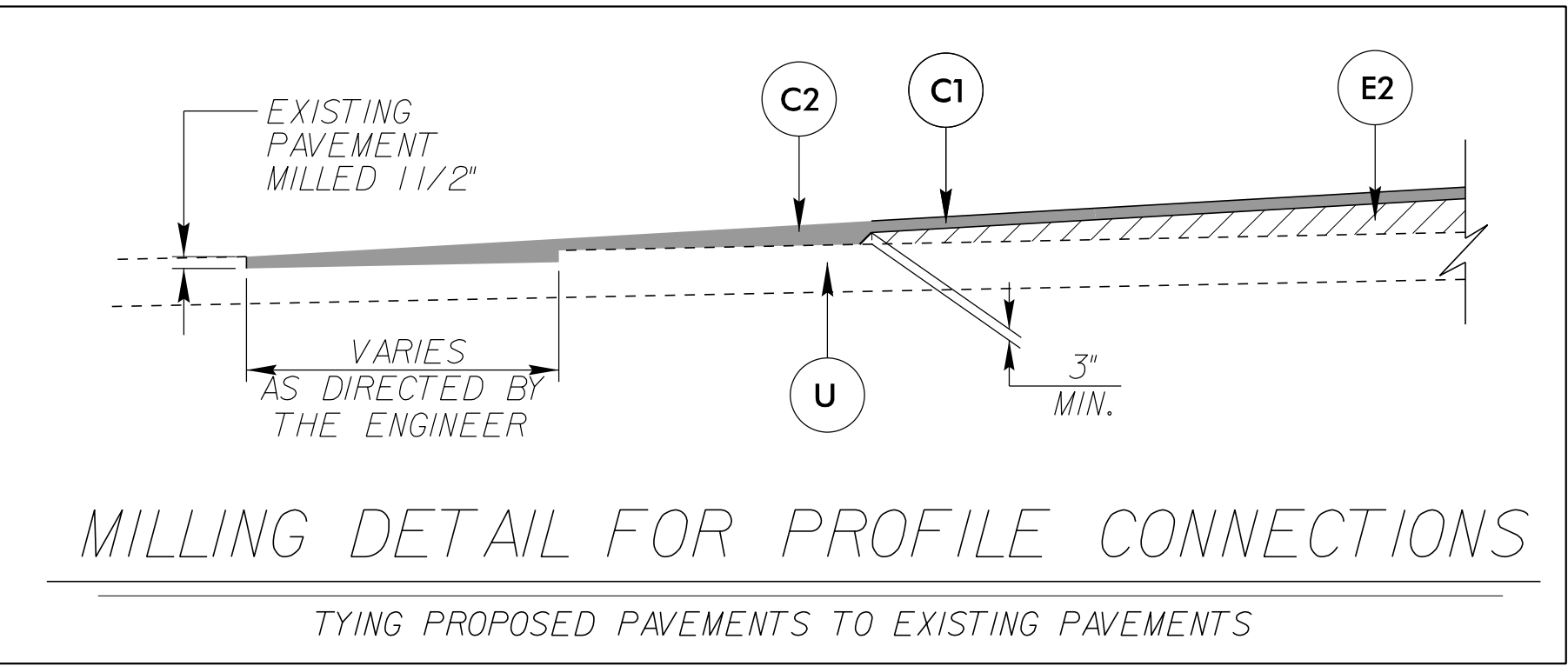
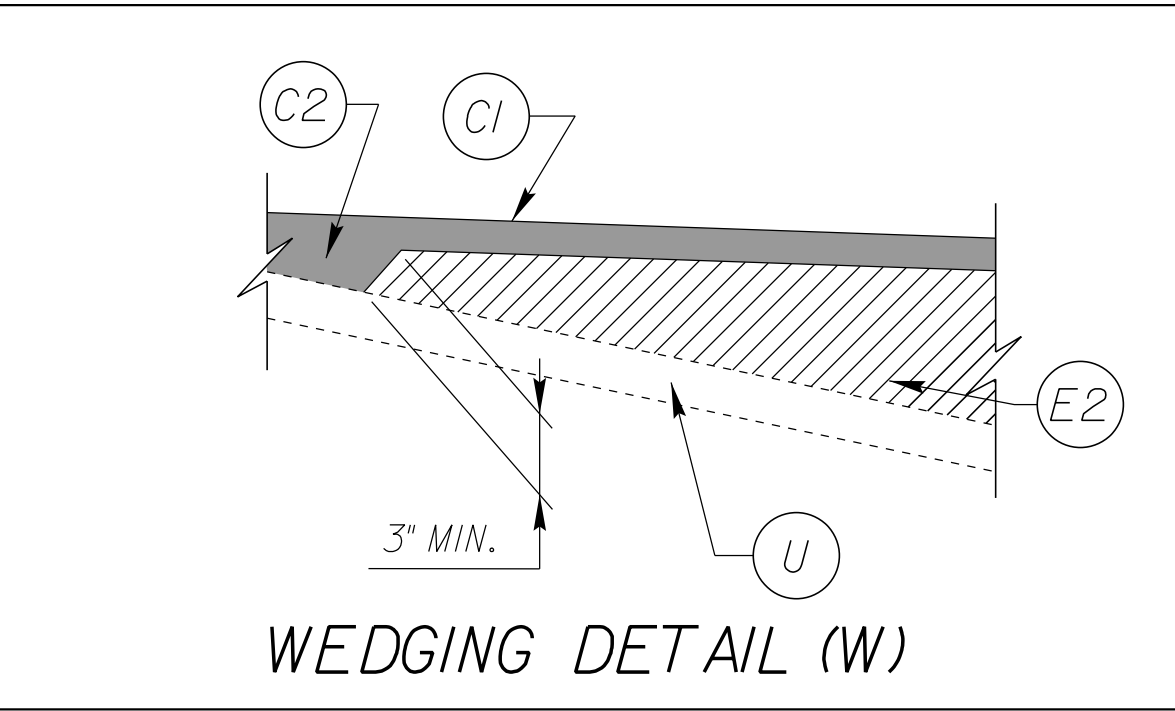
NOTES:

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



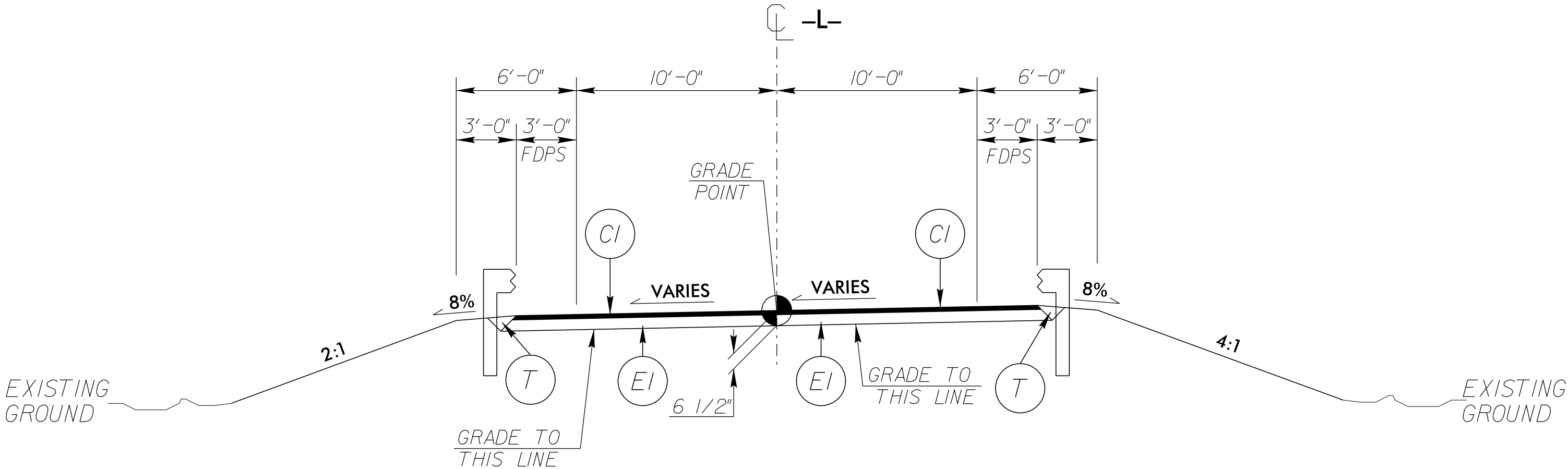
TYPICAL SECTION No. 1

-DET- STA 5+36.92 TO STA 7+34.33



TYPICAL SECTION No. 2

FROM -L- STA.10+45.00 TO -L- STA.11+98.00
FROM -L- STA.12+16.50 TO -L- STA.13+29.38



TYPICAL SECTION No. 3

FROM -L- STA.11+98.00 TO -L- STA.12+16.50

PROJECT REFERENCE NO.
17BP.9.R.33

SHEET NO.
2A-1

ROADWAY DESIGN
ENGINEER

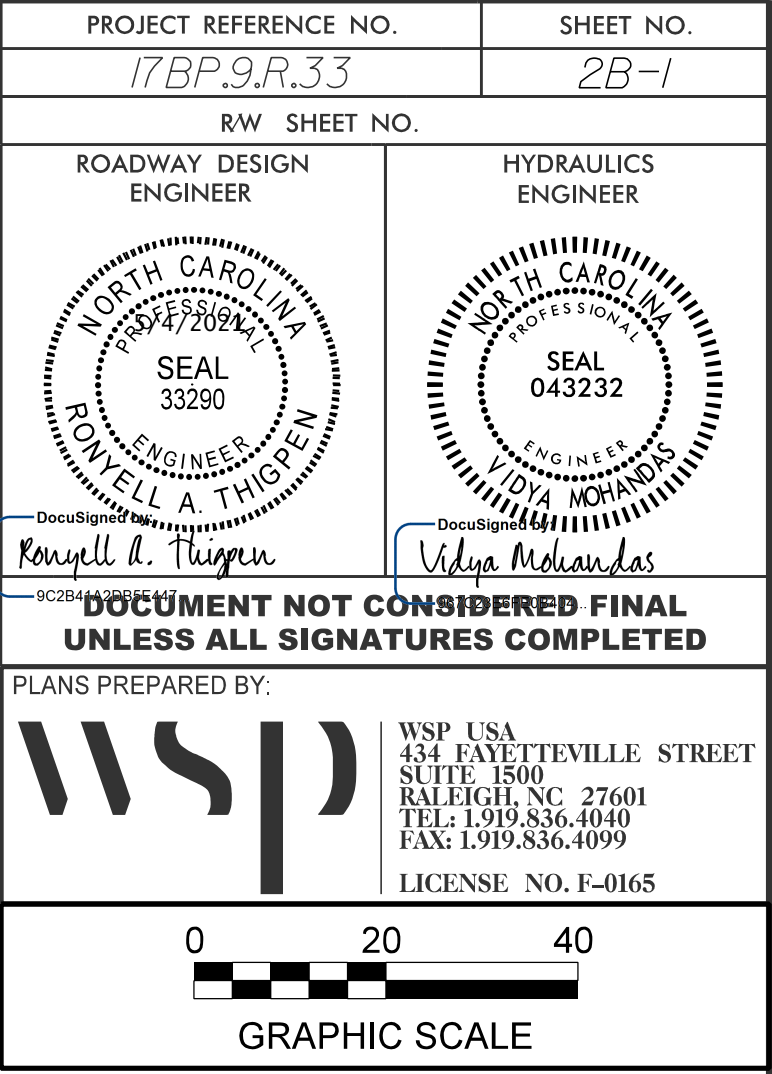
POWELL A. THIGPEN
ENGINEER
SEAL
33290
NORTH CAROLINA
2004/2005

DESIGNED BY
Ronell D. Thigpen

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

PLANS PREPARED BY:

WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165



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

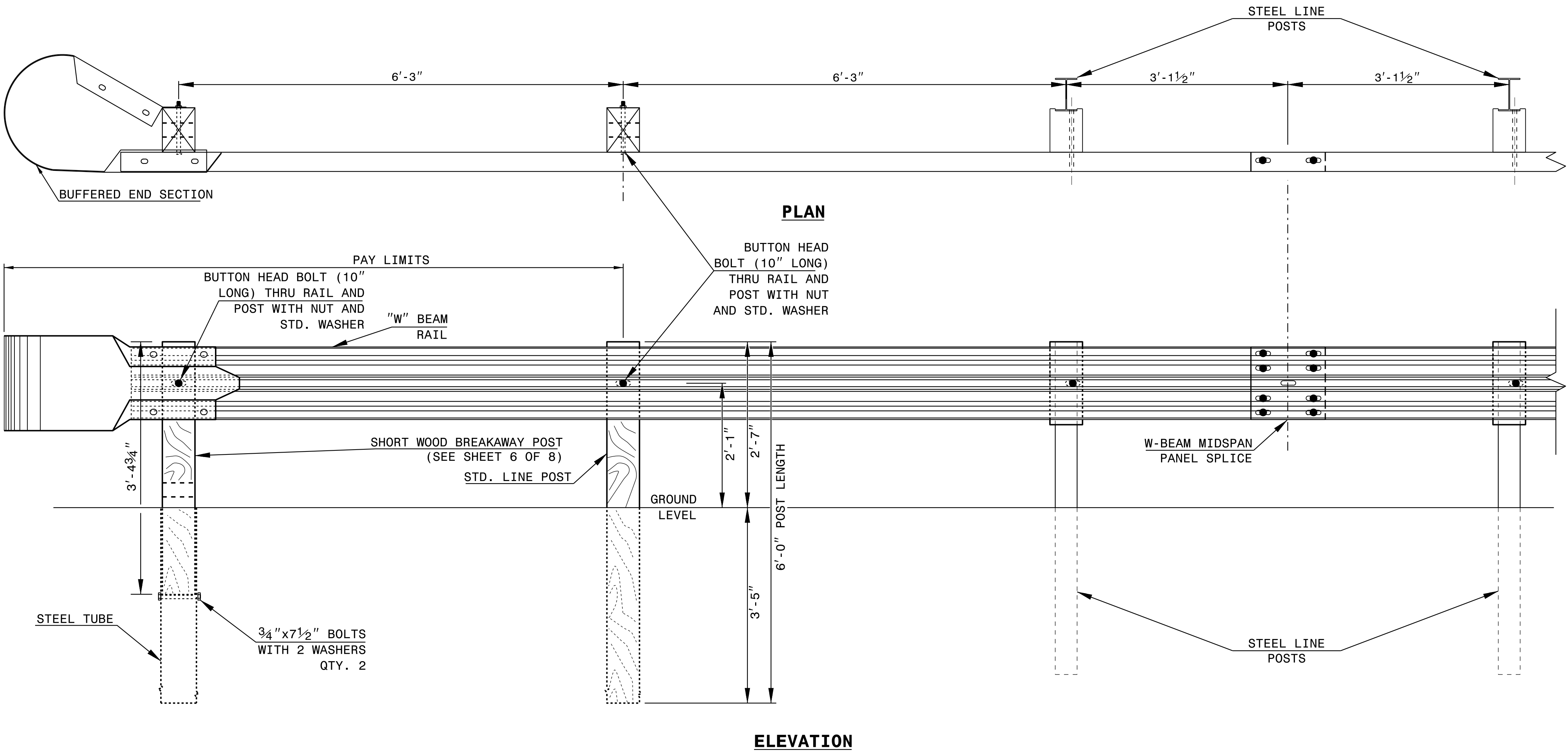
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF

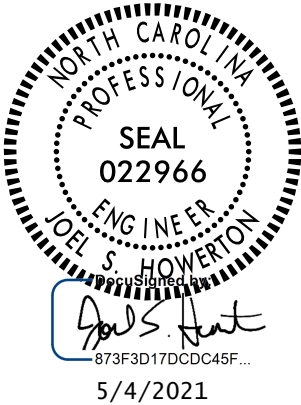
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF



TRAILING END UNIT ASSEMBLY
A.T. - 1 SYSTEM



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CONTRACTS STANDARDS AND DEVELOPMENT UNIT Office 919-707-6950 FAX 919-250-4119	
A.T. - 1 SYSTEM	
ORIGINAL BY: _____	DATE: _____
MODIFIED BY: _____	DATE: _____
CHECKED BY: _____	DATE: _____
FILE SPEC.: _____	

12/06/07

COMPUTED BY:	EM	DATE:	05/22/2019
CHECKED BY:	RT	DATE:	05/22/2019

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.33	3B-1

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. + %	BORROW	WASTE
-DET- 5 + 36.92	-DET- 7 + 34.33	131	292	161	
SUBTOTALS:		131	292	161	
-L- 10 + 45.00	-L- 13 + 29.38	44	348	304	
SUBTOTALS:		44	348	304	
DETOUR REMOVAL					
-L- 11 + 25.00	-L- 13 + 00.00	312	109		203
SUBTOTALS:		312	109		203
PROJECT TOTALS:		487	749	465	203
EST. 5% REPLACE TOP SOIL BORROW PIT				23	
GRAND TOTALS:		487	749	488	203
SAY:		500		500	

ASPHALT PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD ²
-DET-	5 + 36.92	7 + 34.33	CL	399
			TOTAL:	399
			SAY:	400

SUMMARY OF EXISTING
CONCRETE PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD ²
CONCRETE DRIVEWAY	-L- 10 + 94.37 +/-	-L- 11 + 22.95 +/-	RT	62
TOTAL:				62
SAY:				70

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

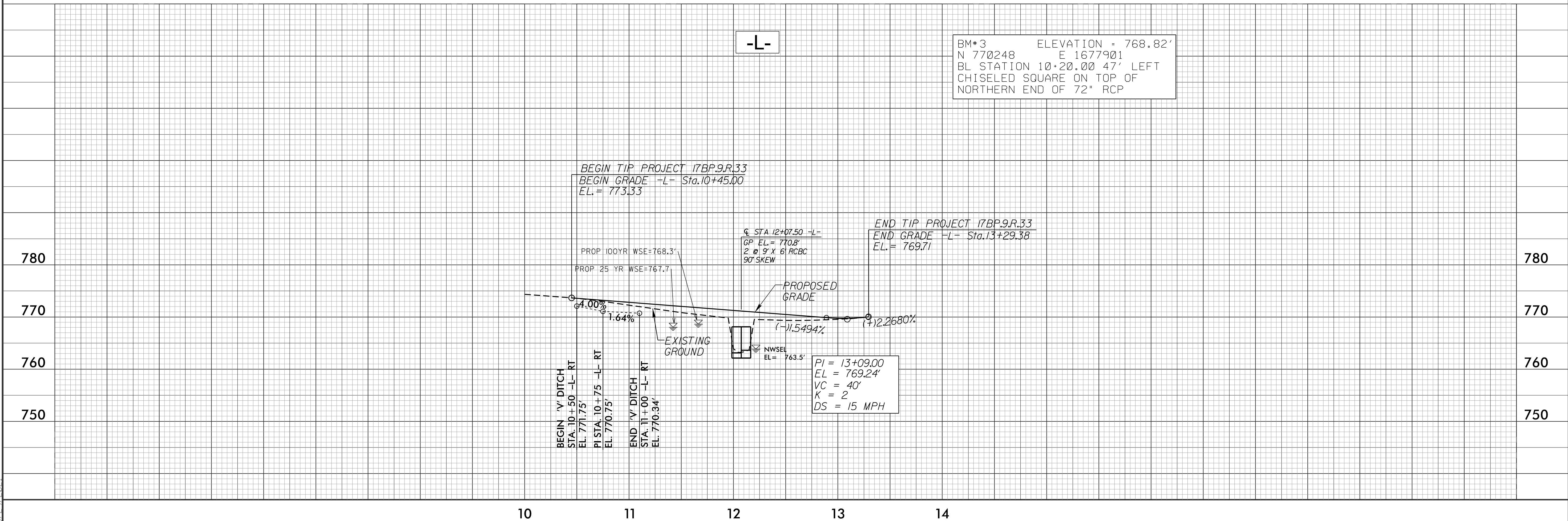
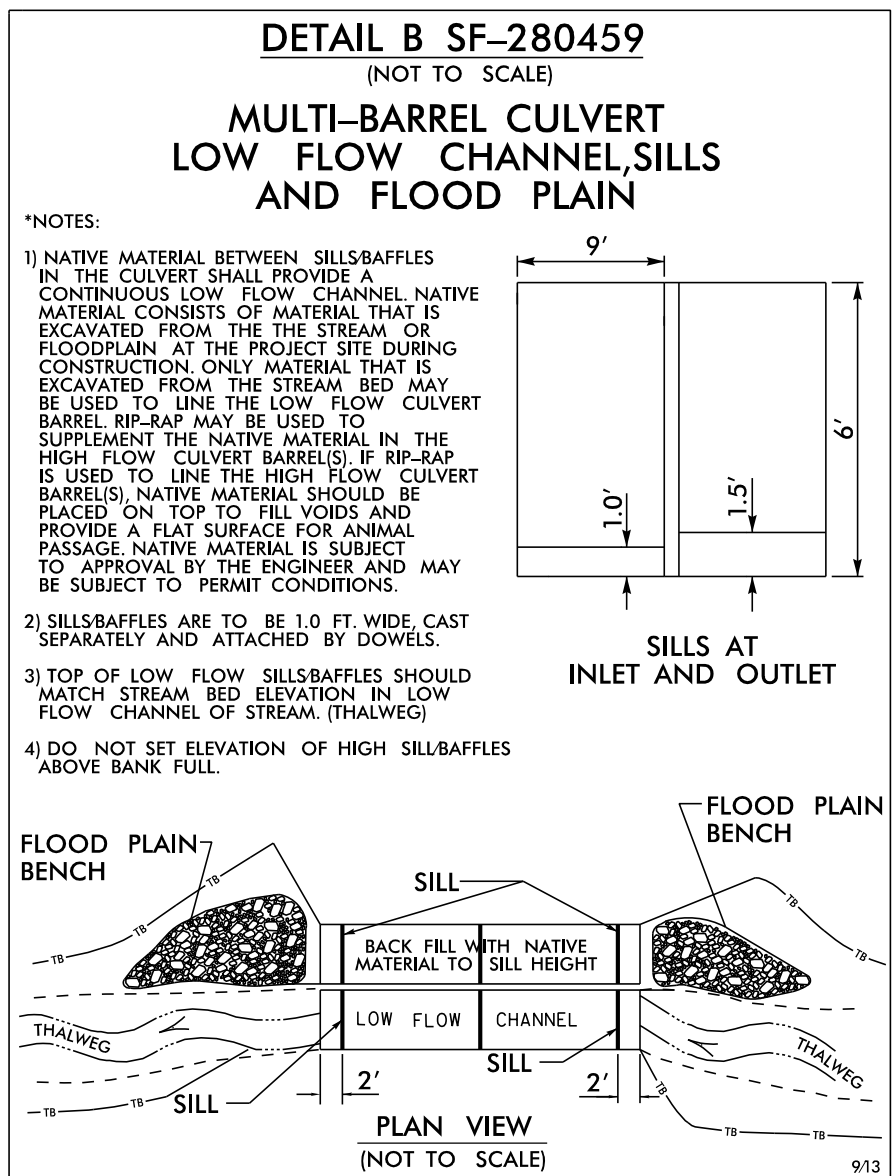
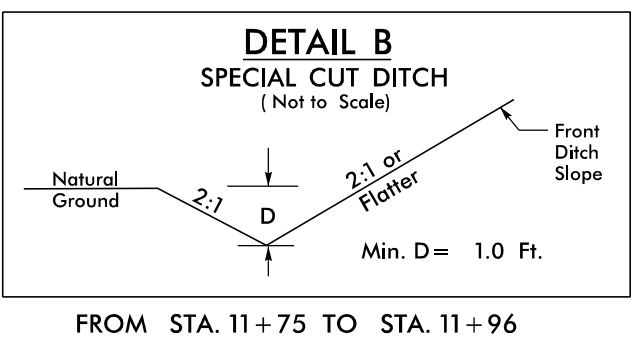
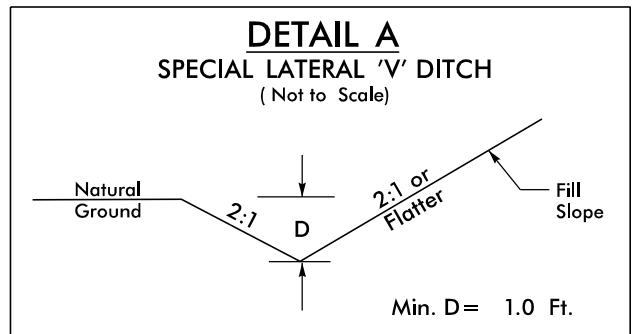
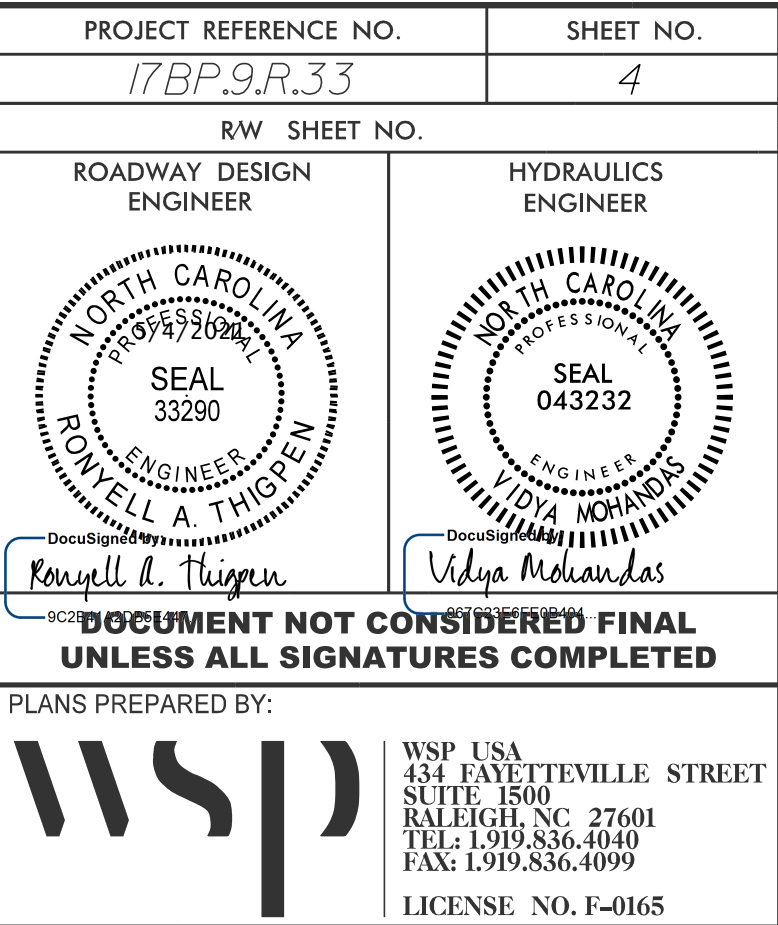
GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS										IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GREU TL-2	GREU TL-3	XIII	CAT-I	VI MOD	BIC	AT-I	EA G NG							
-L-	10 + 99.50	13 + 04.50	LT	193.75'	18.75'				3'	6'		50'		1'				1					1								
-L-	11 + 52.11	12 + 77.11	RT	125.00'	18.75'						50'		1'				1					1									
			SUBTOTAL	318.75'	37.50'																										
			LESS DEDUCTIONS																												
			TL-3 (2 x 50') =	-100.00'																											
			AT-1 (2 x 6.25') =	-12.50'																											
			TOTAL	206.25'	37.50'		ADDITIONAL GUARDRAIL POSTS = 5										2					2									
			SAY	212.50'	37.50'												2					2									

h53141.PW
17BP.9.R.33_3B-1.dgn
3/26/2021

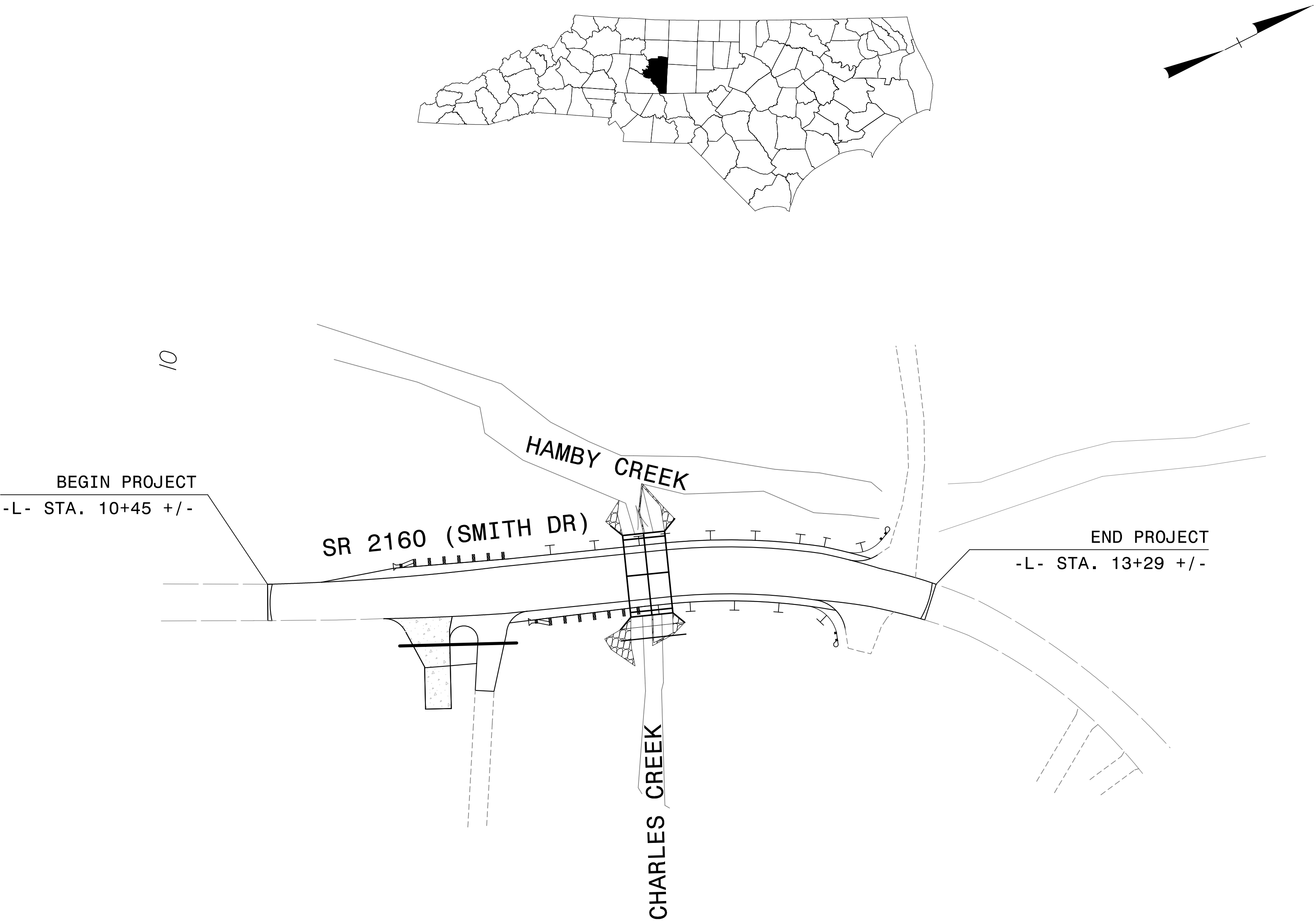
STRUCTURE 280459
LS 09-11-048
WBS 17BP.9.R.33
TIP 28-0459

CURVE DATA



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

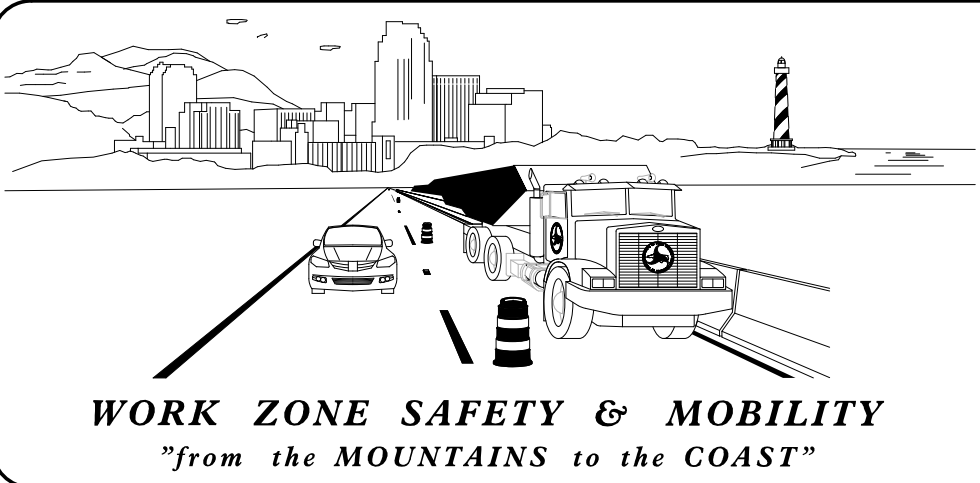
TRANSPORTATION MANAGEMENT PLAN
DAVIDSON COUNTY



INDEX OF SHEETS

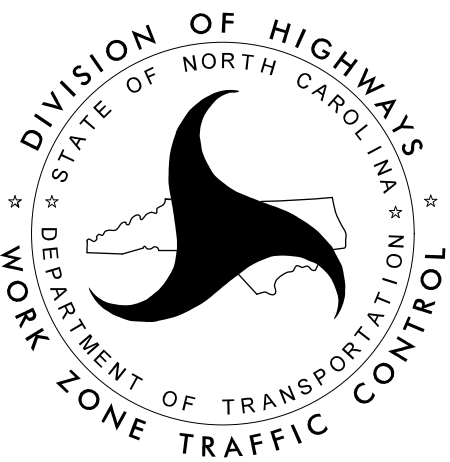
SHEET NO.	TITLE
TMP-01	TITLE SHEET, VICINITY MAP AND INDEX OF SHEETS
TMP-02	ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-03	GENERAL NOTES AND WRITTEN PHASING
TMP-04	TEMPORARY TRAFFIC CONTROL PHASE I
TMP-05	TEMPORARY TRAFFIC CONTROL PHASE II

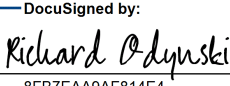
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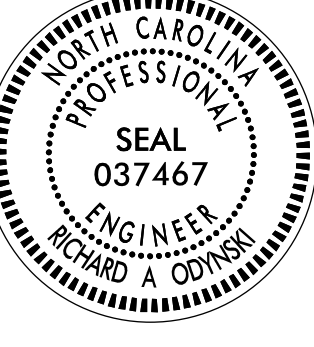
N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 814-5000 FAX: (919) 771-2745

- STATE TRAFFIC MANAGEMENT ENGINEER
- TRAFFIC CONTROL PROJECT ENGINEER
- TRAFFIC CONTROL PROJECT DESIGN ENGINEER
- TRAFFIC CONTROL DESIGN ENGINEER



APPROVED: 

DATE: 5/4/2021



PROJECT: 17BP.9.R.33

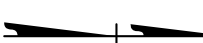
ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

<u>STD. NO.</u>	<u>TITLE</u>
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES - TYPE III
1150.01	FLAGGING DEVICES
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS

LEGEND

GENERAL

-  DIRECTION OF TRAFFIC FLOW
-  DIRECTION OF PEDESTRIAN TRAFFIC FLOW
-  EXIST. PVMT.
-  NORTH ARROW
-  PROPOSED PVMT.

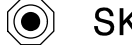
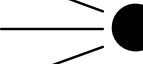
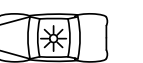
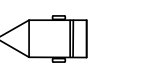
 WORK AREA

TEMPORARY PAVEMENT MARKING

PAINT (4")

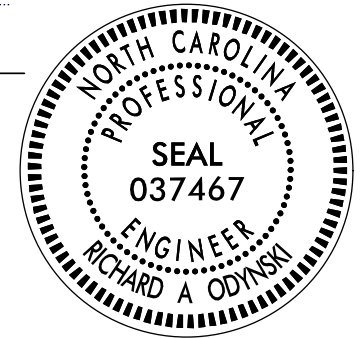
- PA WHITE EDGELINE
- PI YELLOW DOUBLE CENTER

TRAFFIC CONTROL DEVICES

-  BARRICADE (TYPE III)
-  CONE
-  DRUM  SKINNY DRUM
-  TEMPORARY CRASH CUSHION
-  FLASHING ARROW BOARD
-  FLAGGER
-  LAW ENFORCEMENT
-  TRUCK MOUNTED ATTENUATOR (TMA)
-  CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

-  PORTABLE SIGN
-  STATIONARY SIGN
-  STATIONARY OR PORTABLE SIGN

APPROVED:  8FB7EAA8AF814EA7 DATE: 5/4/2021 SEAL  DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	 1001 Morehead Square Dr. Suite 610 Charlotte NC, 28203 NC LIC. NO. F-0165	TRANSPORTATION MANAGEMENT PLAN ROADWAY STANDARD DRAWINGS & LEGEND
--	--	--

PROJ. REFERENCE NO.	SHEET NO.
17BP.9.R.33	TMP-03

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIREED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.
- F) CONTRACTOR SHALL PROVIDE ACCESS TO ALL RESIDENCES AT ALL TIMES. COORDINATE WITH PROPERTY OWNERS DURING CONSTRUCTION ACTIVITIES IMPACTING DRIVEWAYS.

PAVEMENT EDGE DROP OFF REQUIREMENTS

- G) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:
- BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.
- BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.
- BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.
- H) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

- I) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

- J) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

- K) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.
- PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.
- L) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

PAVEMENT MARKINGS AND MARKERS

- M) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:
- ROAD NAMEMARKINGPAINTERMARKERALL ROADSPAINTNONE
- N) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.
- O) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- P) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY’S OPERATION.

PHASING NOTES

PHASE I

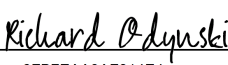
- STEP 1: INSTALL WORK ZONE ADVANCE WARNING SIGNS ON ALL ROADS ACCORDING TO ROADWAY STANDARD DRAWING NO. 1101.01 WHERE WORK WILL BE OCCURRING NO MORE THAN THREE DAYS PRIOR TO BEGINNING CONSTRUCTION.
- STEP 2: USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 14, AS NEEDED, INSTALL TEMPORARY PAVEMENT FOR ON-SITE DETOUR.

PHASE II

- STEP 1: USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 14, AS NEEDED, INSTALL TEMPORARY MARKINGS AND SHIFT TRAFFIC TO TEMPORARY PATTERN AS SHOWN ON SHEET TMP-5.
- STEP 2: USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 14, AS NEEDED, INSTALL PROPOSED CULVERT AND ROADWAY IMPROVEMENTS AS SHOWN ON SHEET TMP-5.
- STEP 3: ONCE CONSTRUCTION IS COMPLETE, REMOVE ALL SIGNS AND DEVICES AND PLACE TRAFFIC IN ITS FINAL PATTERN.

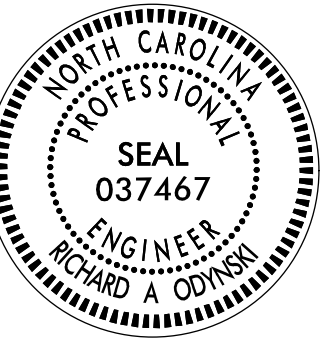
APPROVED:

DocuSigned by:
Richard A Odynski
8FB7EAABAF814E4...



DATE: 5/4/2021

SEAL



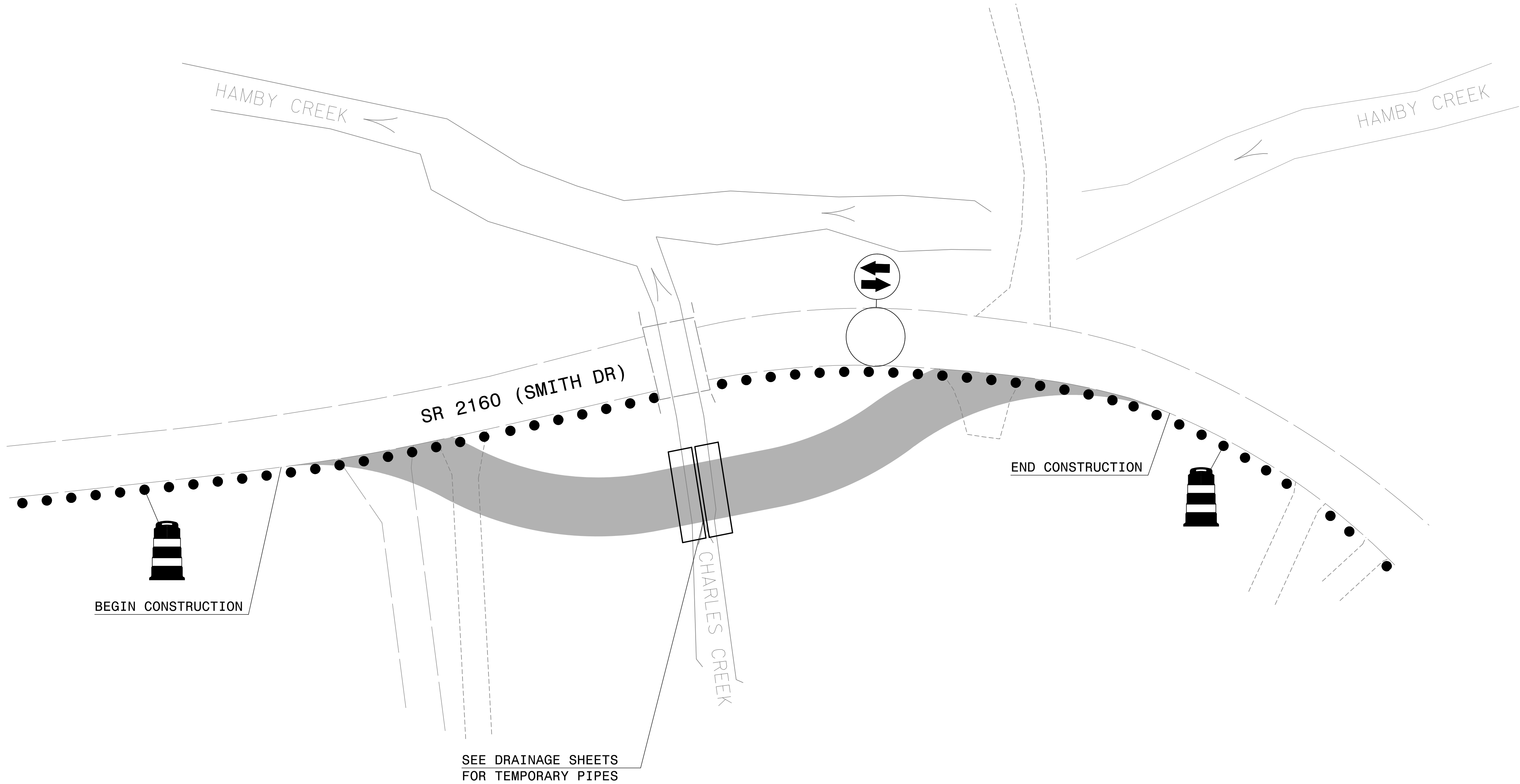
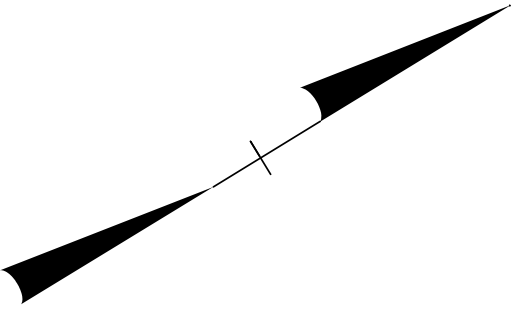


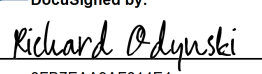
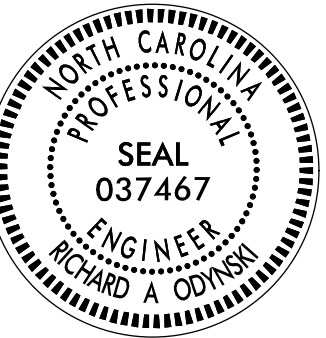
1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203

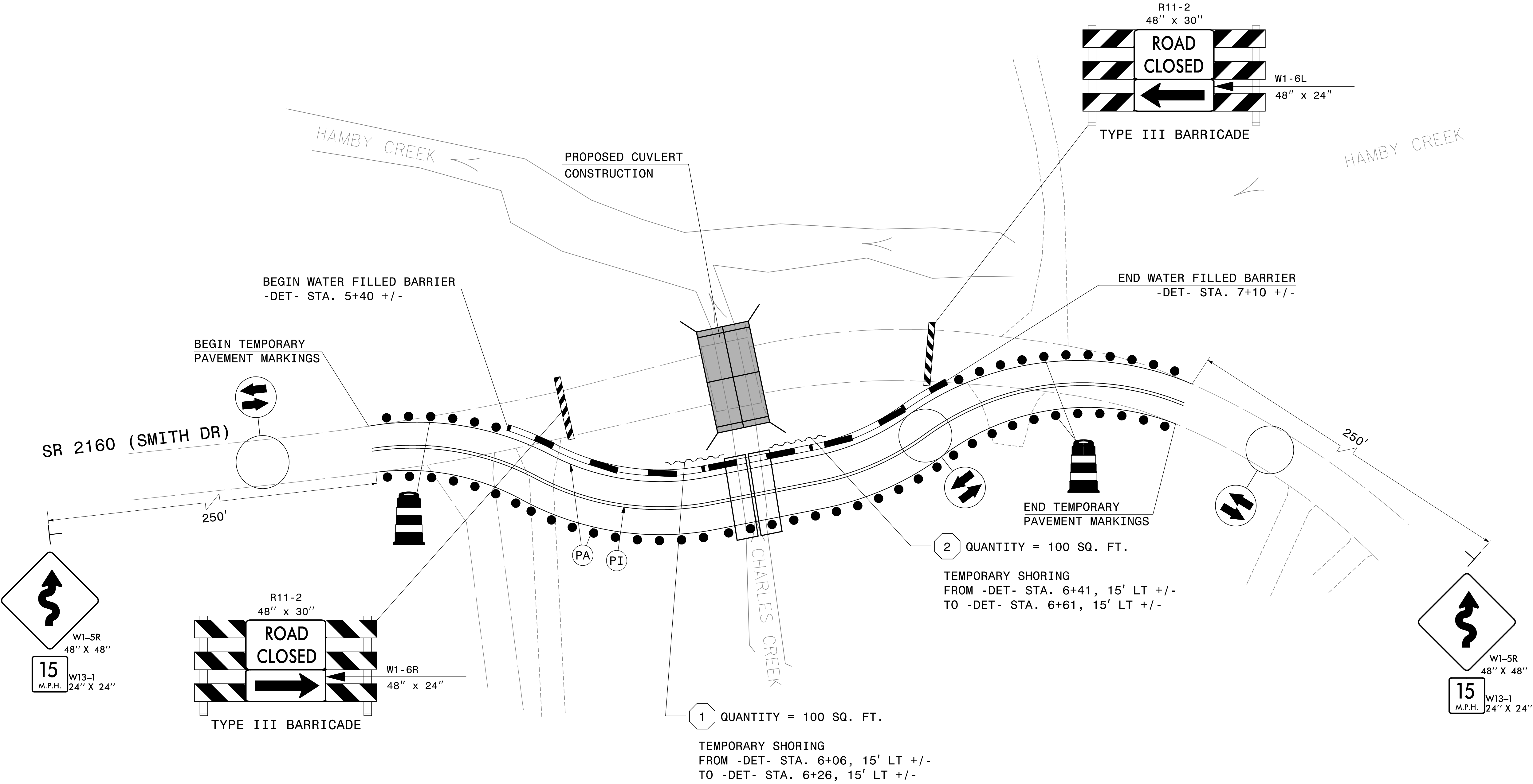
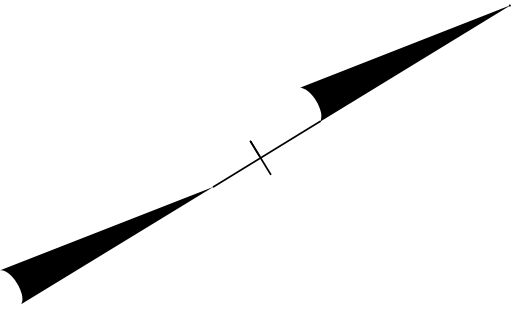
NC LIC. NO. F-0165

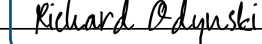
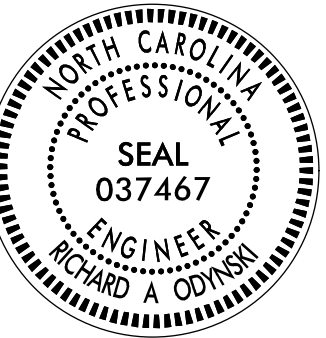
TRANSPORTATION
MANAGEMENT PLAN
GENERAL NOTES AND
WRITTEN PHASING

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UNLESS ALL SIGNATURES COMPLETED



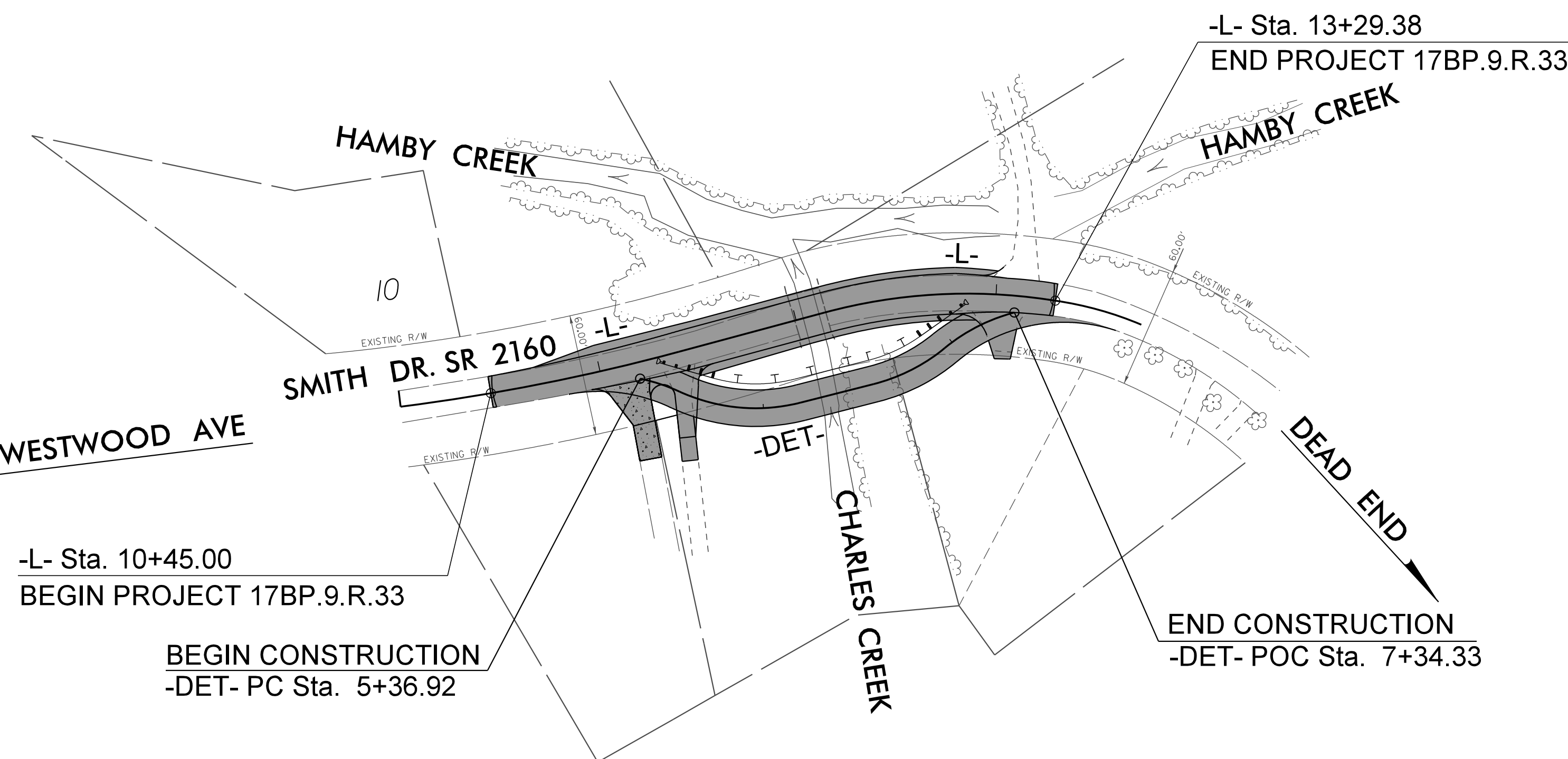
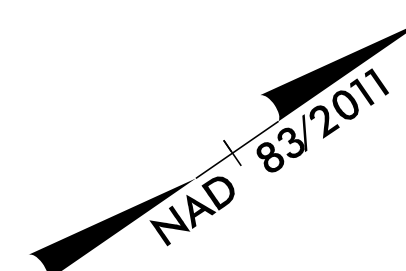
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APPROVED:  5/4/2021 DATE: 5/4/2021 SEAL  DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	 1001 Morehead Square Dr. Suite 610 Charlotte NC, 28203 NC LIC. NO. F-0165	TRANSPORTATION MANAGEMENT PLAN TEMPORARY TRAFFIC CONTROL PHASE II
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EROSION AND SEDIMENT CONTROL MEASURES

**THIS PROJECT CONTAINS
EROSION CONTROL PLANS
FOR CLEARING AND
GRUBBING PHASE OF
CONSTRUCTION.**



GRAPHIC SCALE



Prepared in the Office of:



WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

Designed by:

VIDYA MOHANDAS, PE	3404
<i>NAME</i>	<i>LEVEL III CERTIFICATION NO.</i>

Reviewed in the Office of:

ROADSIDE ENVIRONMENTAL UNIT

405 Polo Road
 Winston-Salem, NC 27105

2018 STANDARD SPECIFICATIONS

Reviewed by:

THOMAS SMITH

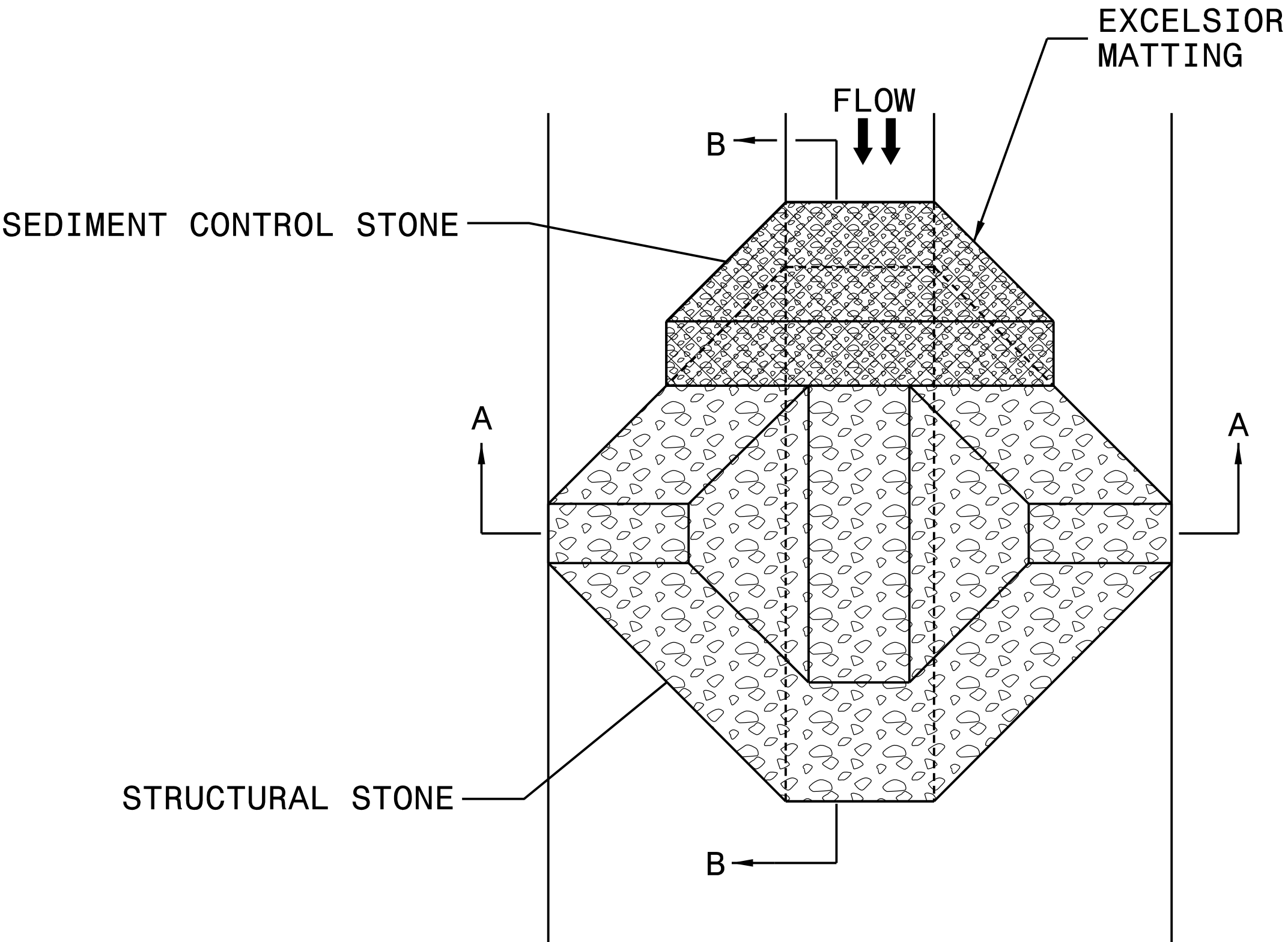
Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2018 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

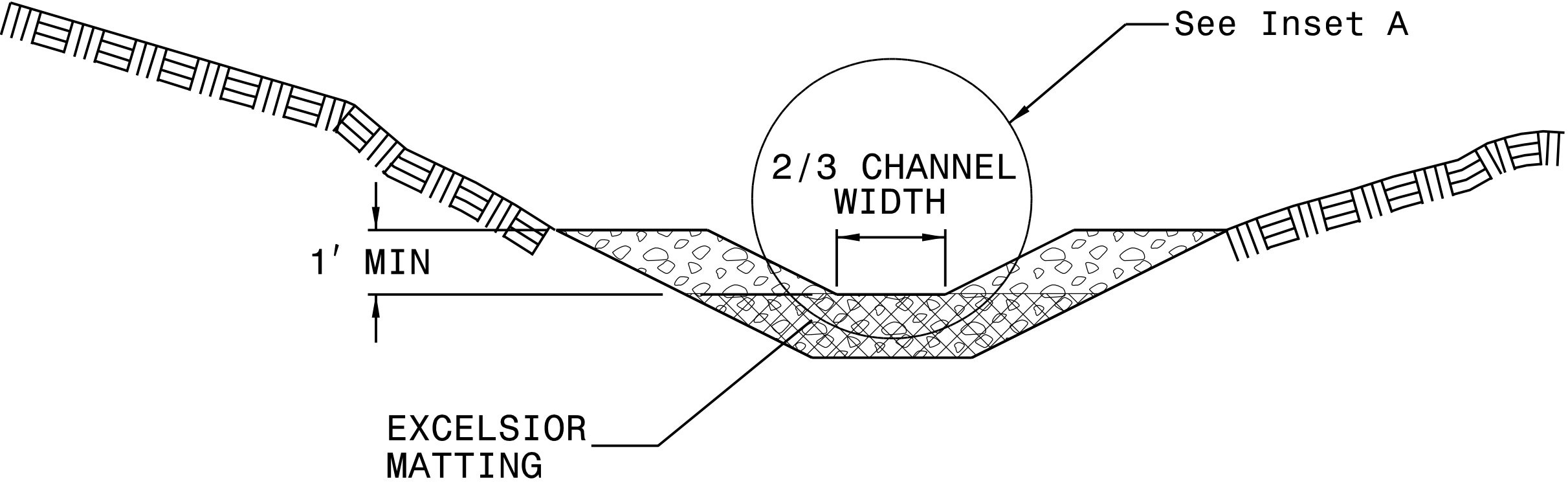
1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)

PROJECT REFERENCE NO.	SHEET NO.
17BP9R33	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



PLAN



SECTION A-A

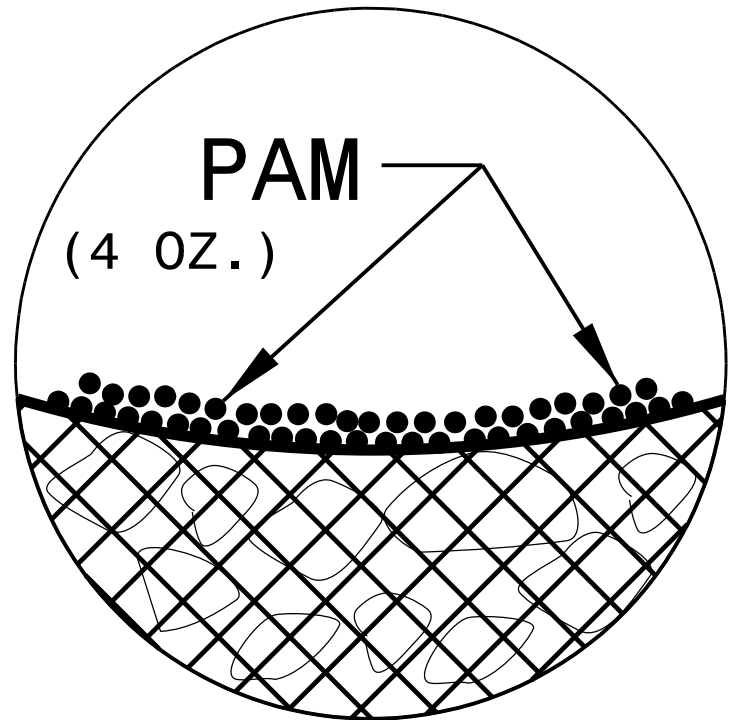
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

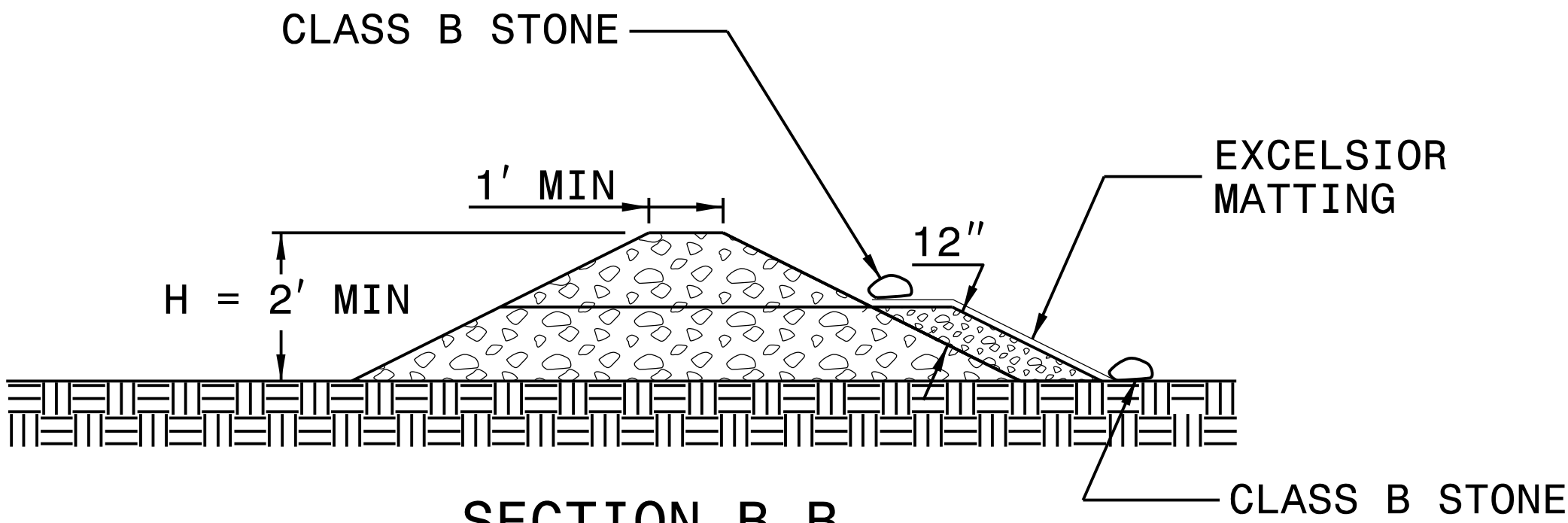
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION B-B

NOT TO SCALE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

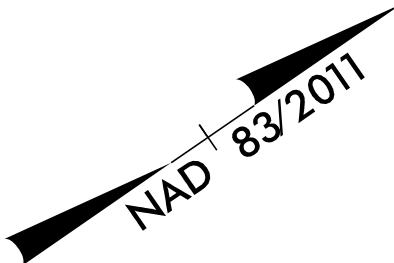
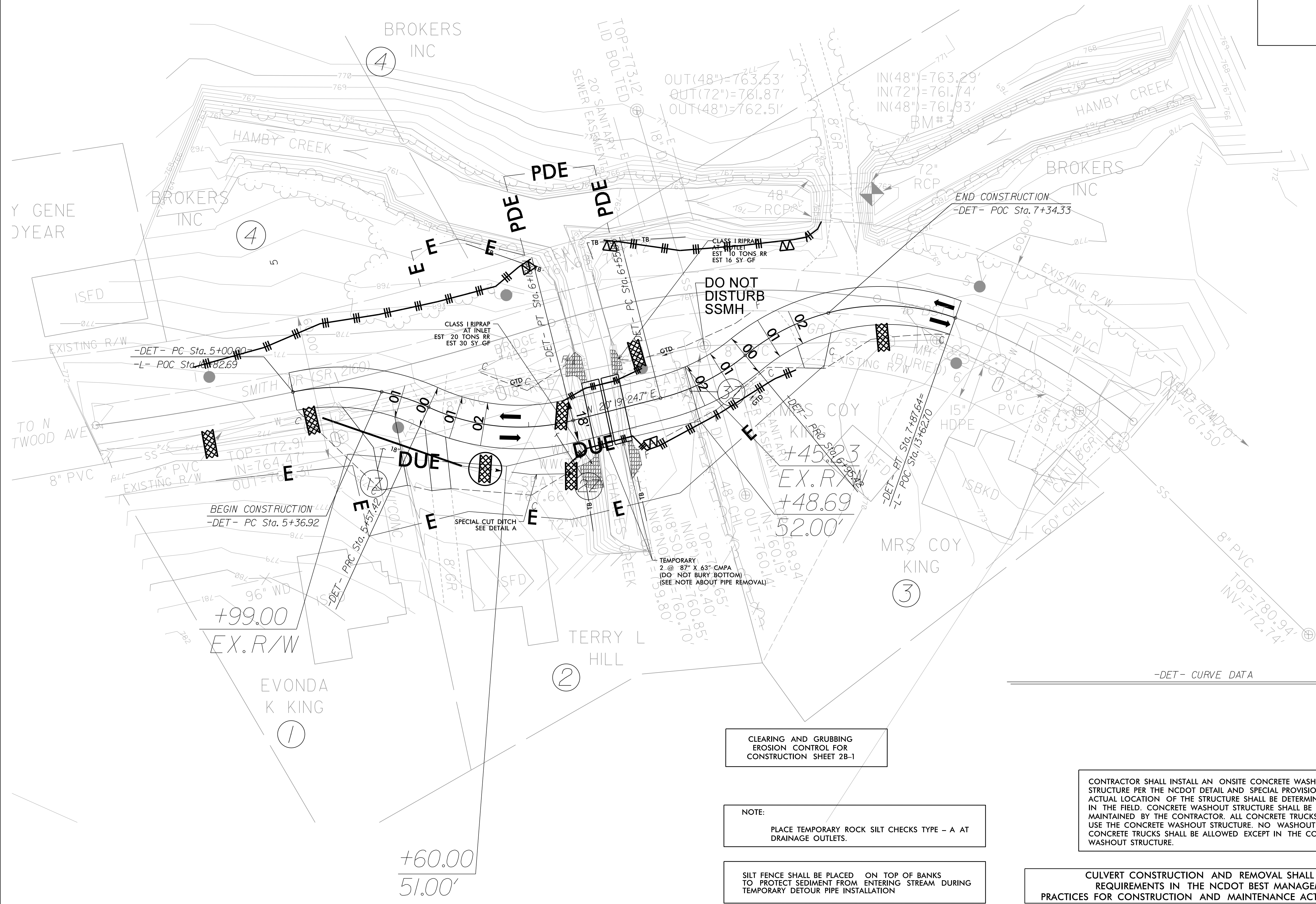
PROJECT REFERENCE NO.		SHEET NO.	
17BP9.R.33		EC-3	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10’ OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50’ IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.33	EC-4/CONST.2B-1/4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

EROSION CONTROL PLAN



CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 2B-1

NOTE:
PLACE TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

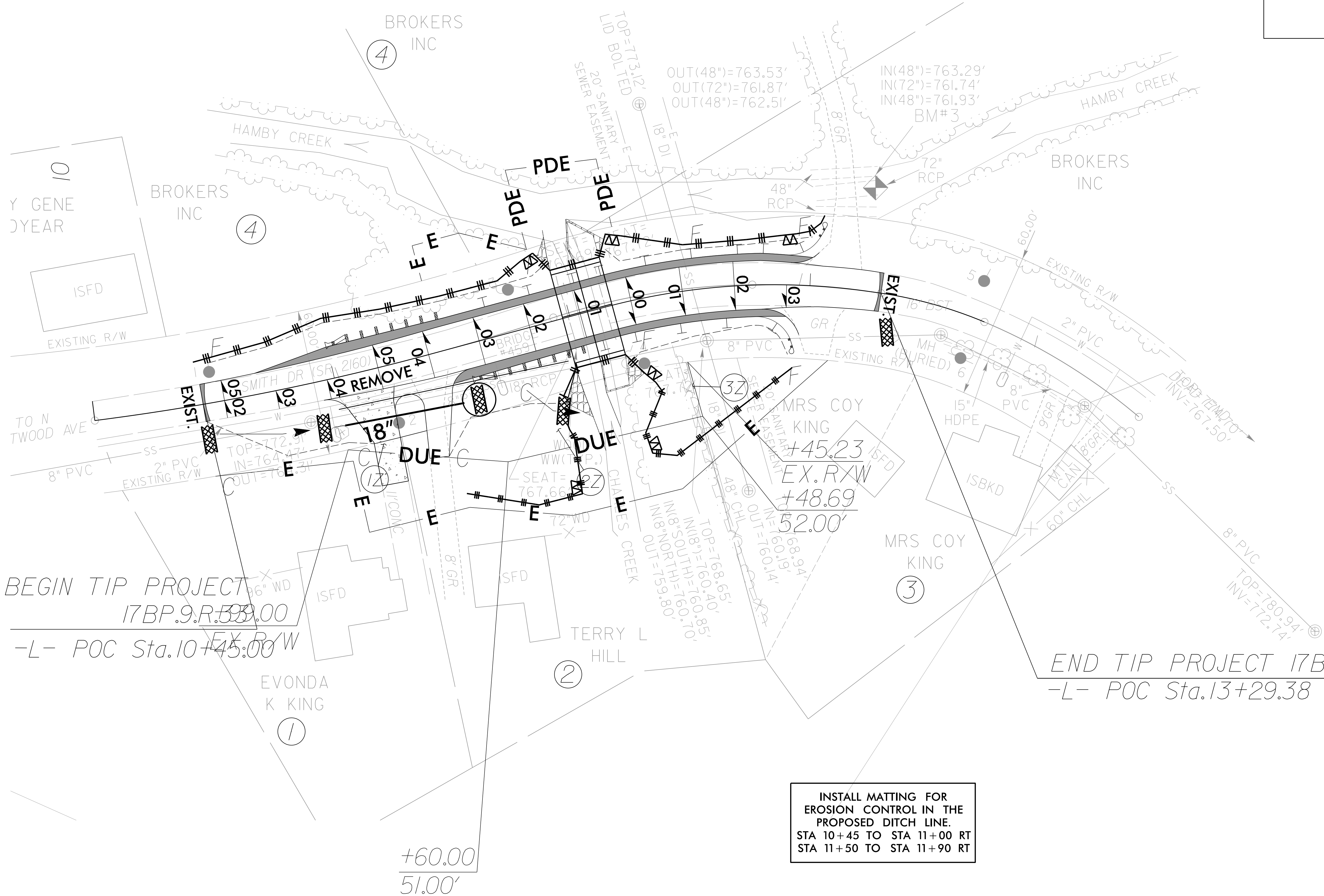
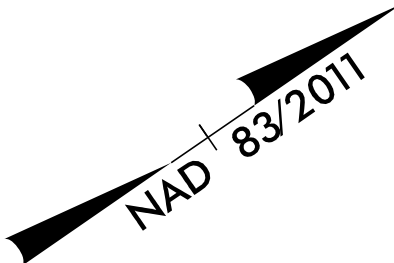
SILT FENCE SHALL BE PLACED ON TOP OF BANKS
TO PROTECT SEDIMENT FROM ENTERING STREAM DURING
TEMPORARY DETOUR PIPE INSTALLATION

CONTRACTOR SHALL INSTALL AN ONSITE CONCRETE WASHOUT
STRUCTURE PER THE NCDOT DETAIL AND SPECIAL PROVISIONS.
ACTUAL LOCATION OF THE STRUCTURE SHALL BE DETERMINED
IN THE FIELD. CONCRETE WASHOUT STRUCTURE SHALL BE
MAINTAINED BY THE CONTRACTOR. ALL CONCRETE TRUCKS SHALL
USE THE CONCRETE WASHOUT STRUCTURE. NO WASHOUT OF
CONCRETE TRUCKS SHALL BE ALLOWED EXCEPT IN THE CONCRETE
WASHOUT STRUCTURE.

CULVERT CONSTRUCTION AND REMOVAL SHALL BE PER
REQUIREMENTS IN THE NCDOT BEST MANAGEMENT
PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.33	EC-5/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

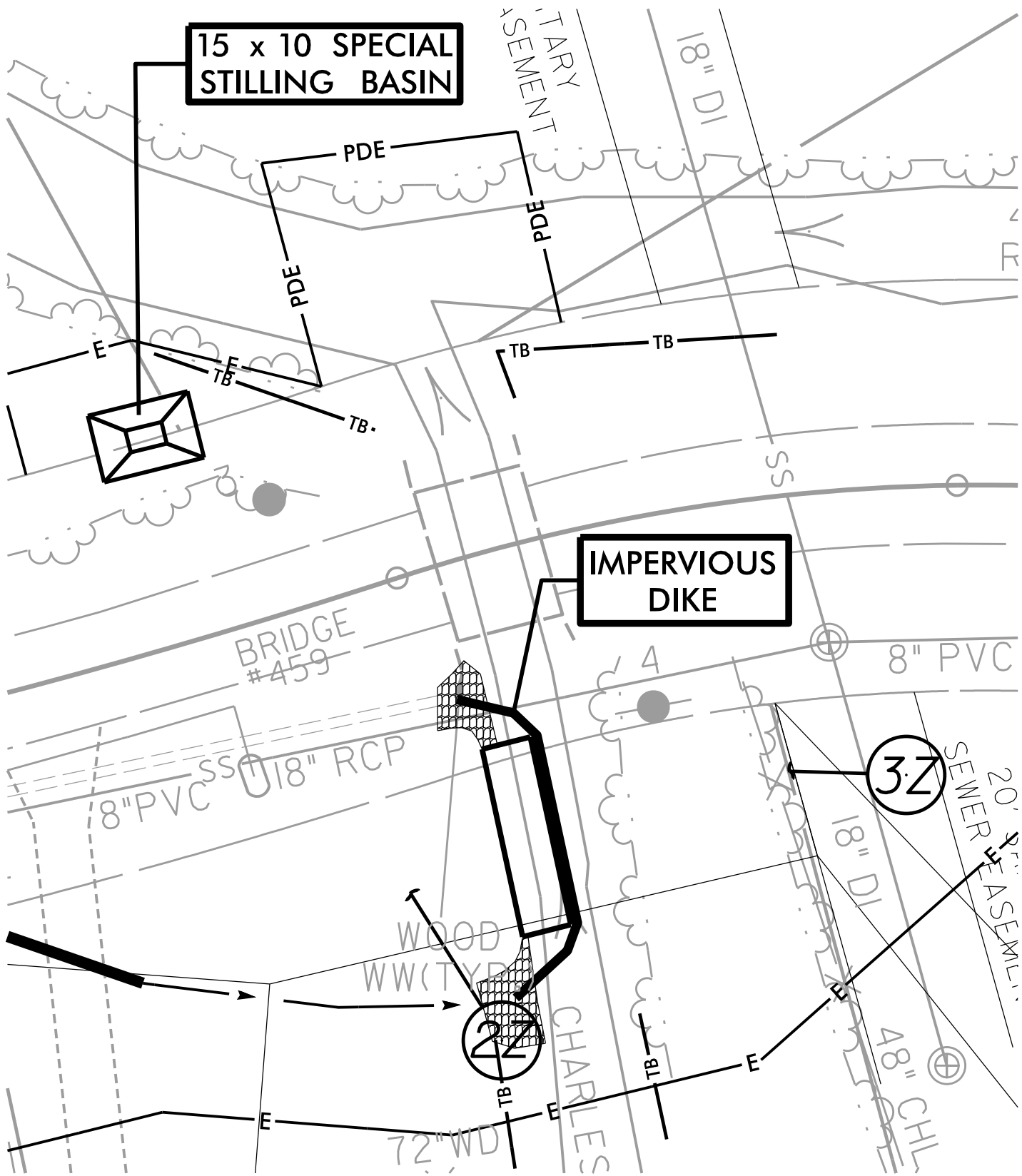
EROSION CONTROL PLAN



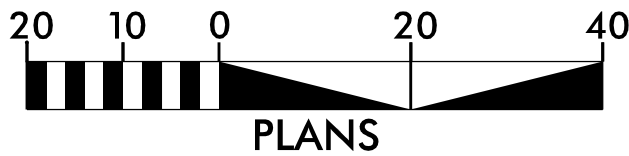
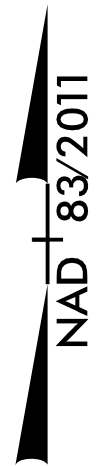
CULVERT CONSTRUCTION SEQUENCE STA. 12 + 07.50 –L– (STA. 6 + 33.00 –DET–)

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.33	EC-6/CONST. 2B-1/4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

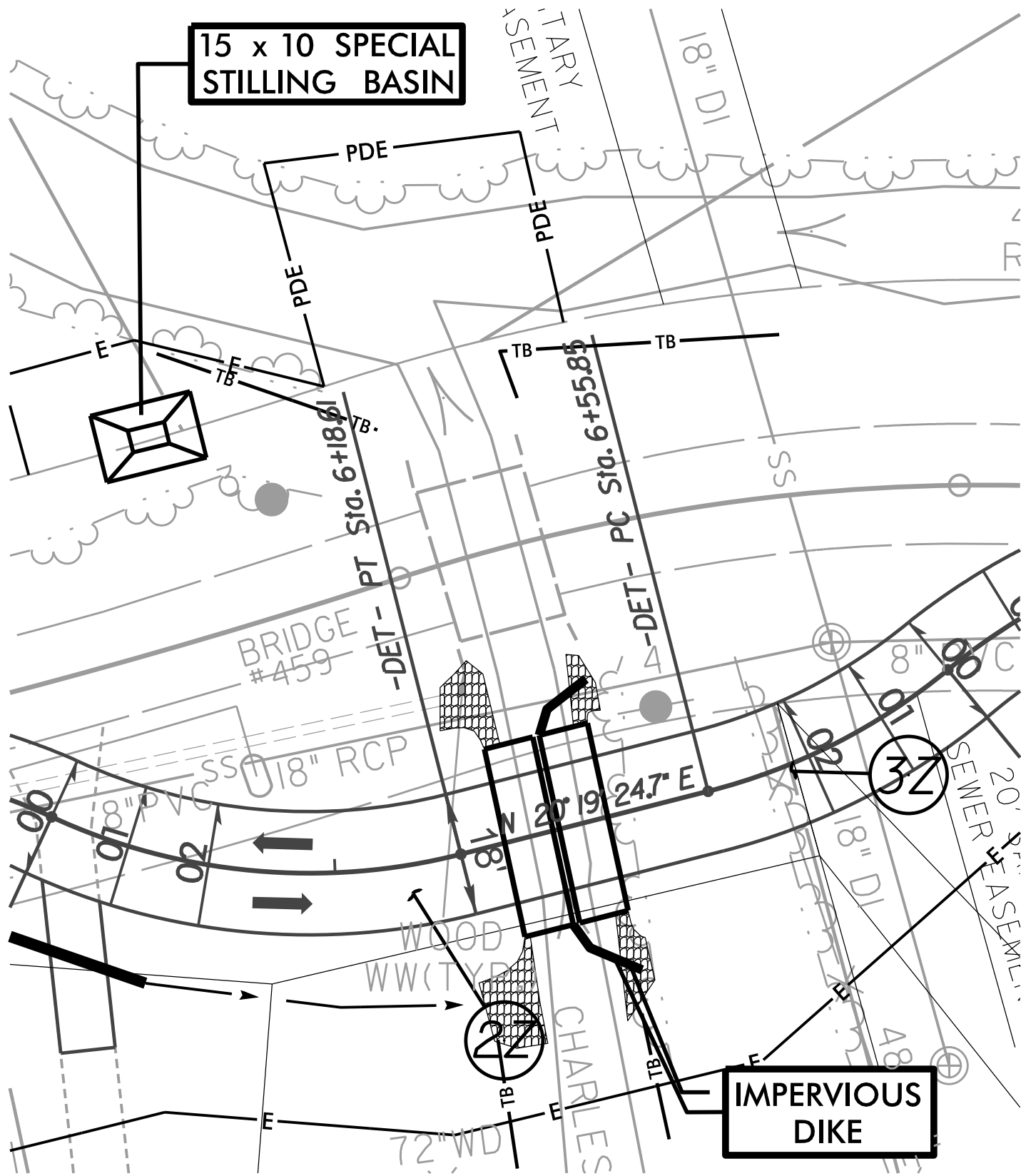
CONSTRUCTION SEQUENCE STAGE I



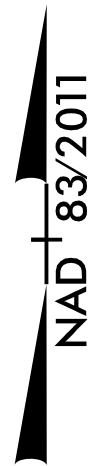
1. INSTALL SPECIAL STILLING BASIN.
2. INSTALL IMPERVIOUS DIKE.
3. DEWATER AREA ENCLOSED BY DIKE, INTO THE SPECIAL STILLING BASIN.
4. EXCAVATE AS NECESSARY, AND INSTALL WEST BARREL 87" X 63" CMPA, INCLUDING CLASS I RIPRAP.



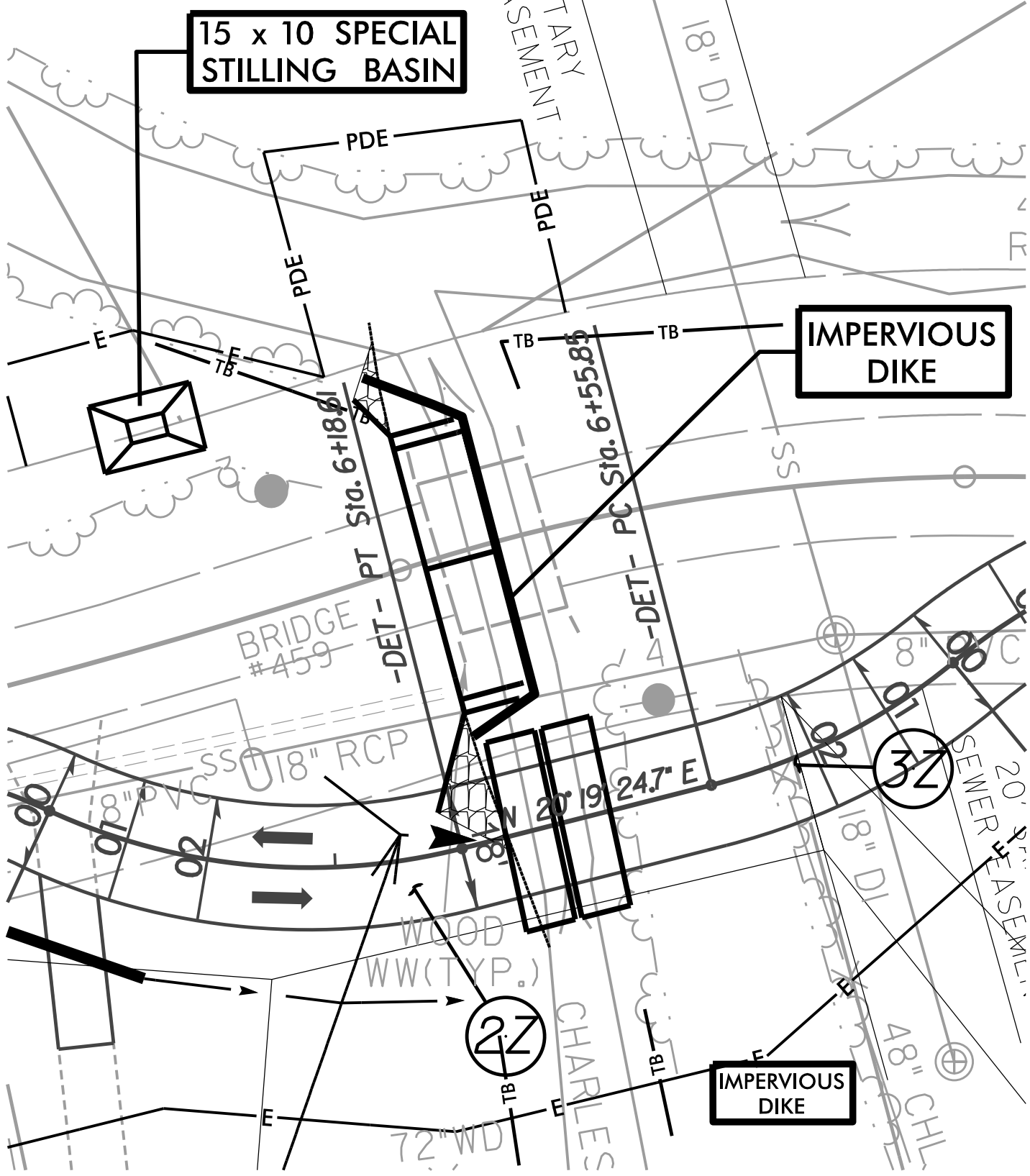
CONSTRUCTION SEQUENCE STAGE II



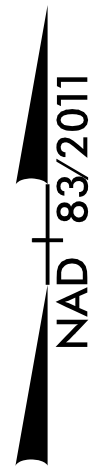
1. RELOCATE THE IMPERVIOUS DIKES TO DIRECT STREAMFLOW INTO THE WEST BARREL.
2. DEWATER AREA ENCLOSED BY DIKE, INTO THE SPECIAL STILLING BASIN.
3. EXCAVATE AS NECESSARY, AND INSTALL EAST BARREL 87" X 63" CMPA, INCLUDING CLASS I RIPRAP.
4. INSTALL FILL OVER CULVERTS AND INSTALL TEMPORARY PAVEMENT FOR DETOUR ALIGNMENT.



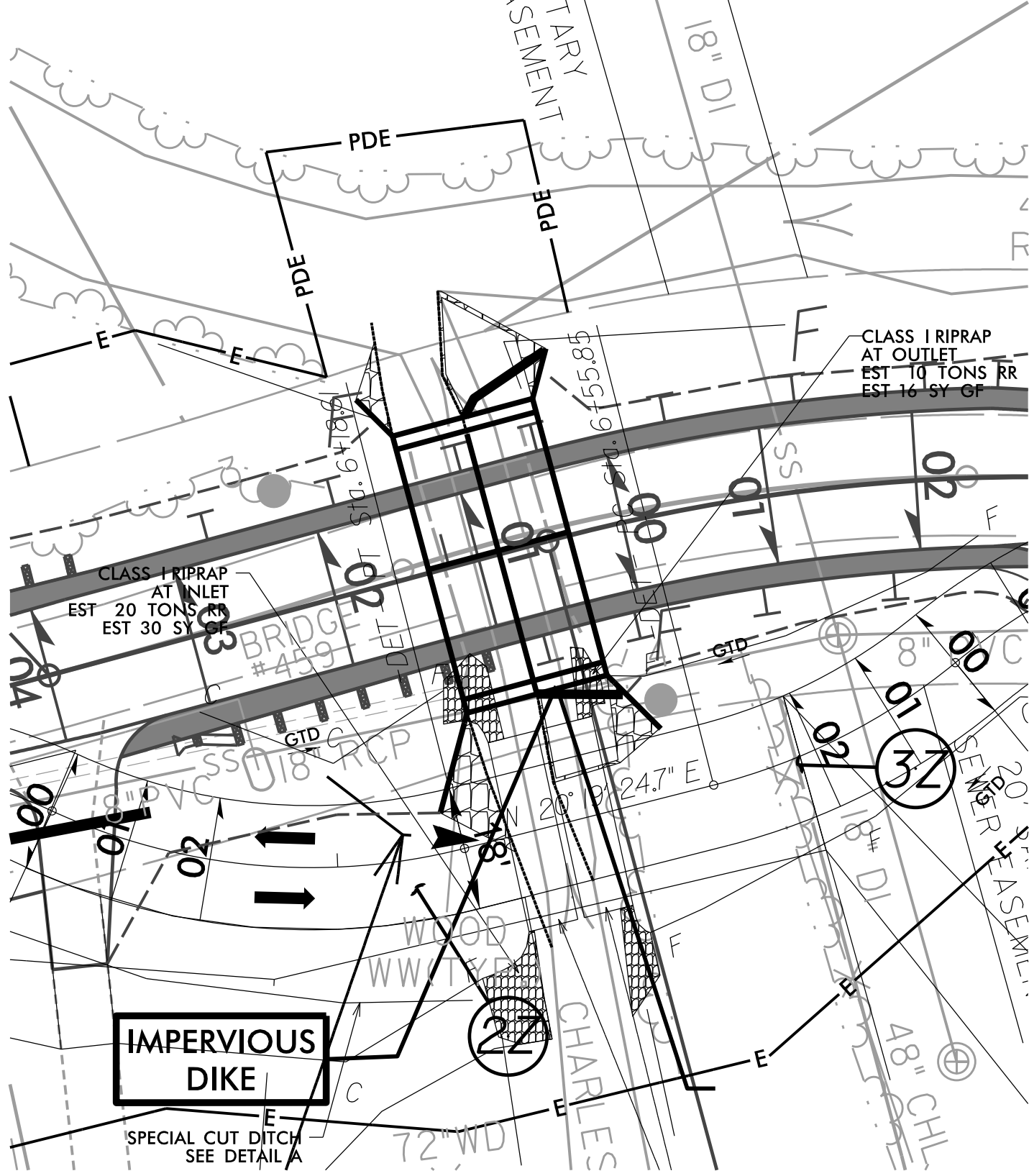
CONSTRUCTION SEQUENCE STAGE III



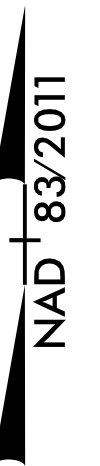
1. SHIFT ALL TRAFFIC TO THE NEWLY CONSTRUCTED DETOUR, AND DEMOLISH EXISTING BRIDGE #459.
2. INSTALL IMPERVIOUS DIKE.
3. DEWATER AREA ENCLOSED BY DIKE, INTO THE SPECIAL STILLING BASIN.
4. EXCAVATE AS NECESSARY, AND INSTALL WEST BARREL OF 9' X 6' RCBC, INCLUDING WING WALLS, BOTTOM SLAB, AND CLASS I RIPRAP.
5. CONSTRUCT SILLS AND BAFFLES AND BACKFILL INSIDE BARREL WITH STOCKPILED NATIVE MATERIAL.



CONSTRUCTION SEQUENCE STAGE IV



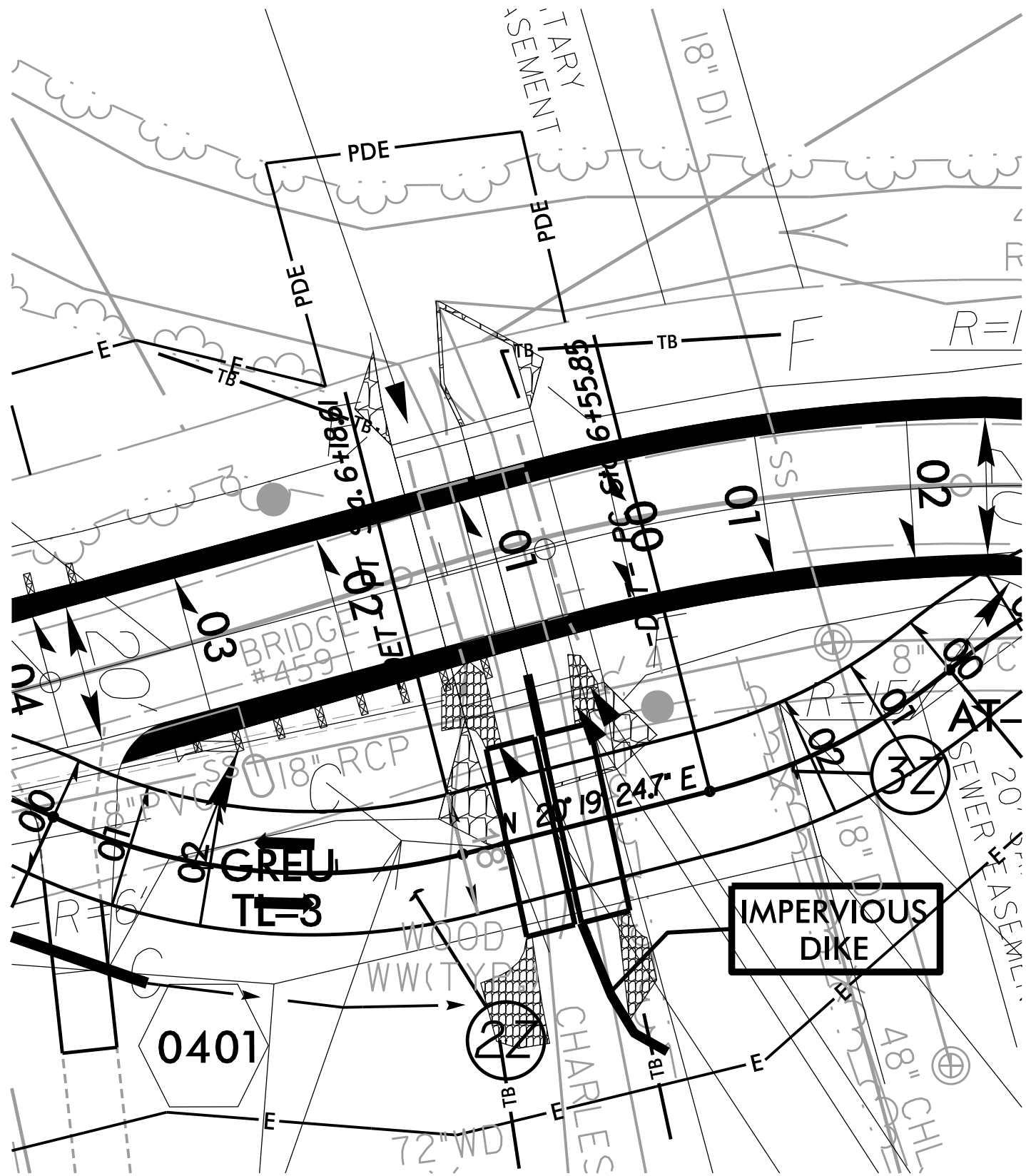
1. RELOCATE THE IMPERVIOUS DIKES TO DIRECT STREAMFLOW INTO THE WEST BARREL.
2. DEWATER AREA ENCLOSED BY DIKE, INTO THE SPECIAL STILLING BASIN.
3. EXCAVATE AS NECESSARY, AND INSTALL EAST BARREL OF 9' X 6' RCBC, INCLUDING WING WALLS, BOTTOM SLAB, AND CLASS I RIPRAP.
4. CONSTRUCT UPSTREAM AND DOWNSTREAM BENCHES, SILLS, AND BAFFLES IN EAST BARREL.
5. BACKFILL INSIDE BARREL WITH STOCKPILED NATIVE MATERIAL.
6. REMOVE IMPERVIOUS DIKE AND SPECIAL STILL BASIN.
7. FINISH ROADWAY WORK. OPEN NEW ROAD TO TRAFFIC.



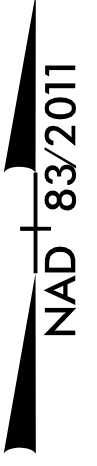
CULVERT CONSTRUCTION SEQUENCE STA. 12 + 07.50 –L– (STA. 6 + 33.00 –DET–)

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.33	EC-7/CONST.2B-1/4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

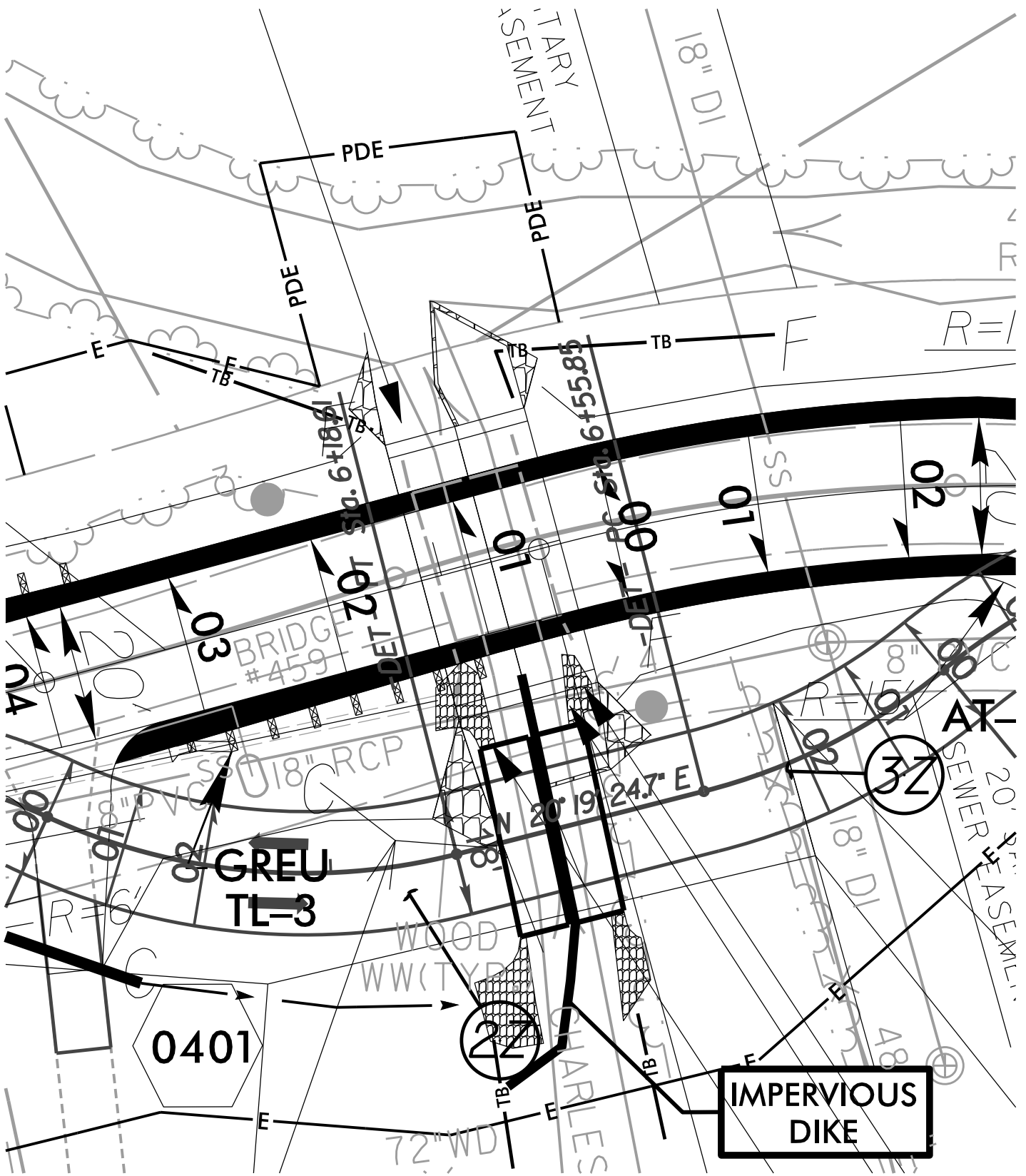
CONSTRUCTION SEQUENCE STAGE V



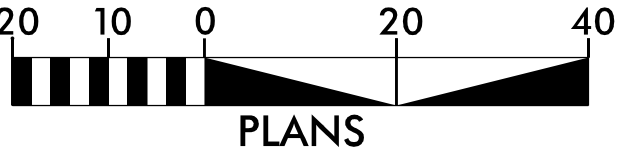
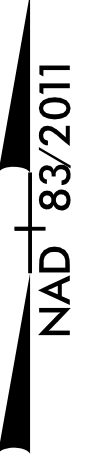
1. INSTALL IMPERVIOUS DIKES.
2. REMOVE DETOUR ROADWAY TO THE EAST SIDE OF STREAM AND EAST SIDE DETOUR CMPA.
4. REGRADE STREAM BANK ON EAST SIDE AND VEGETATE AREA.



CONSTRUCTION SEQUENCE STAGE VI



1. RELOCATE THE IMPERVIOUS DIKE TO DIRECT STREAMFLOW TO THE EAST SIDE.
2. REMOVE DETOUR ROADWAY TO THE WEST SIDE OF THE STREAM AND WEST DETOUR CMPA.
3. REGRADE STREAM BANK ON WEST SIDE AND VEGETATE AREA.



8/17/99

REVISIONS

\$\$\$SYTIME\$\$\$
\$\$\$DON\$\$\$
\$\$\$USERNAME\$\$\$

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	----- 12" WL -----
11¼ Degree Bend	-----+~
22½ Degree Bend	-----+X
45 Degree Bend	-----+X
90 Degree Bend	-----+~
Plug	-----+~
Tee	-----+~
Cross	-----+~
Reducer	-----▶
Air Release Valve	-----ARV
Gate Valve	-----BV
Butterfly Valve	-----BV
Tapping Valve	-----TDV
Pressure Reducing Valve	-----PRV
Line Stop	-----LS
Line Stop with Bypass	-----LS/BP
Blow Off	-----BO
Fire Hydrant	-----RFH
Relocate Fire Hydrant	-----RFH
Remove Fire Hydrant	-----REM FH
Water Meter	-----P/M
Relocate Water Meter	-----P/M
Remove Water Meter	-----REM WM
Water Pump Station	-----PS(W)
RPZ Backflow Preventer	-----PRPZ
DCV Backflow Preventer	-----PRFP
Relocate RPZ Backflow Preventer	-----PRPZ
Relocate DCV Backflow Preventer	-----PRFP
Remove Backflow Preventer	-----RFP

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	----- 12" SS -----
Force Main Sewer Line (Sized as Shown)	----- 12" FSS -----
Manhole (Sized per Note)	-----●
Sewer Lateral and Cleanout (Sized per Note)	-----SSCO

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Thrust Block	-----
Plan Note	-----<----- NOTE
Encasement	-----24" ENCASEMENT
To Be Abandoned	----- (TBA) -----

EXISTING UTILITIES SYMBOLS

Guy Wire To Be Removed	-----↓ REM
Power Pole	-----●
Power Pole To Be Removed	-----● REM
Telephone Pole	-----●
Telephone Pole To Be Removed	-----● REM
Joint Use Pole	-----●
Joint Use Pole To Be Removed	-----● REM
Utility Pole	-----●
Utility Pole To Be Removed	-----● REM
Structural Utility Pole	-----●
Utility Pole with Base	-----□
H-Frame Pole	-----●●
Power Transmission Line Tower	-----┴
Water Manhole	-----⊗
Power Manhole	-----⊗
Telephone Manhole	-----⊗
Sanitary Sewer Manhole	-----⊗
Hand Hole for Cable	-----⊞
Power Transformer	-----⊞
Telephone Pedestal	-----⊞
CATV Pedestal	-----⊞
Gas Valve	-----◇
Gas Meter	-----◇
Located Miscellaneous Utility Object	-----○

Abandoned According to Utility Records	AATUR
End of Information	E.O.I.
*Underground Power Line	-----P-----
*Underground Telephone Cable	-----T-----
*Underground Telephone Conduit	-----TC-----
*Underground Fiber Optics Telephone Cable	-----T FO-----
*Underground TV Cable	-----TV-----
*Underground Fiber Optics TV Cable	-----TV FO-----
*Underground Gas Pipeline	-----G-----
Aboveground Gas Pipeline	-----A/G Gas-----
*Underground Water Line	-----W-----
Aboveground Water Line	-----A/G Water-----
*Underground Gravity Sanitary Sewer Line	-----SS-----
Aboveground Gravity Sanitary Sewer Line	-----A/G Sanitary Sewer-----
*Underground SS Forced Main Line	-----FSS-----
Underground Unknown Utility Line	-----?UTL-----
SUE Test Hole	-----⊗
Water Meter	-----○
Water Valve	-----⊗
Fire Hydrant	-----◇
Sanitary Sewer Cleanout	-----⊗

*For Existing Utilities	
Utility Line Drawn from Record (Type as Shown)	-----W-----
Designated Utility Line (Type as Shown)	-----W-----

PROJECT REFERENCE NO. <i>17BP.9.R.33</i>	SHEET NO. UC=2
R/W SHEET NO. ---	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
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434 Fayetteville Street Suite 1500 Raleigh, NC 27601 - 919.836.4040 www.wspgroup.com LICENSE NO. F-0891	

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

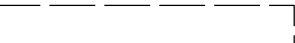
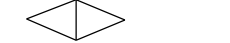
BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	----- 
Property Corner	----- 
Property Monument	----- 
Parcel / Sequence Number	----- 
Existing Fence Line	-----x-x-x- 
Proposed Woven Wire Fence	----- 
Proposed Chain Link Fence	----- 
Proposed Barbed Wire Fence	----- 
Existing Wetland Boundary	----- 
Proposed Wetland Boundary	----- 

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	
Jurisdictional Stream	----- 
Flow Arrow	----- 
Disappearing Stream	----- 
Spring	----- 
Wetland	----- 
Proposed Lateral, Tail, Head Ditch	
False Sump	
Proposed Outlet Protection	
Proposed Toe Protection	

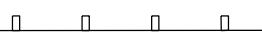
RAILROADS:

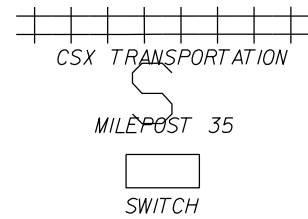
Standard Gauge	-----
RR Signal Milepost	-----
Switch	-----
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	
Existing Right of Way Marker	
Existing Right of Way Line	----- 
Proposed Right of Way Line	----- 
Proposed Right of Way Line with Iron Pin and Cap Marker	----- 
Proposed Right of Way Line with Concrete or Granite R/W Marker	----- 
Proposed Control of Access Line with Concrete C/A Marker	----- 
Existing Control of Access	----- 
Proposed Control of Access	----- 
Existing Easement Line	----- 
Proposed Temporary Construction Easement	----- 
Proposed Temporary Drainage Easement	----- 
Proposed Permanent Drainage Easement	----- 
Proposed Permanent Drainage / Utility Easement	----- 
Proposed Permanent Utility Easement	----- 
Proposed Temporary Utility Easement	----- 
Proposed Aerial Utility Easement	----- 
Proposed Permanent Easement with Iron Pin and Cap Marker	----- 

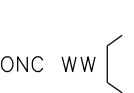
ROADS AND RELATED FEATURES:

Existing Edge of Pavement	---
Existing Curb	---
Proposed Slope Stakes Cut	--- 
Proposed Slope Stakes Fill	--- 
Proposed Curb Ramp	----- 
Existing Metal Guardrail	----- 
Proposed Guardrail	----- 
Existing Cable Guiderail	----- 
Proposed Cable Guiderail	----- 
Pavement Removal	----- 
Proposed Concrete Barrier	----- 

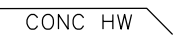


EXISTING STRUCTURES:

MAJOR:

Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	

MINOR:

Head and End Wall	
Pipe Culvert	
Footbridge	

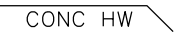
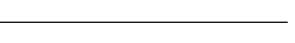
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	-----
Storm Sewer Manhole	----- 
Storm Sewer	----- 

PROPOSED STRUCTURES:

MAJOR:

Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	

MINOR:

Head and End Wall	
Pipe Culvert	
Drainage Box: Catch Basin, DI or JB	
Storm Sewer Manhole	----- 
Proposed Storm Pipe	-----
Proposed Noisewall	-----

VEGETATION:

Single Tree	----- 
Single Shrub	----- 
Hedge	----- 
Woods Line	----- 
Orchard	----- 

PROPOSED TRAFFIC CONTROL:

Controller and Cabinet	----- 
------------------------	---

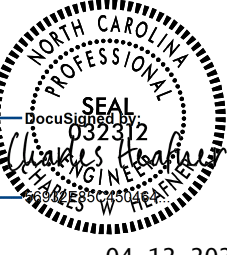
Signal Pole w/ Guy Wire	----- 
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Signal Pole w/ Sidewalk Guy Wire	-----
----------------------------------	---

PROPOSED POWER:

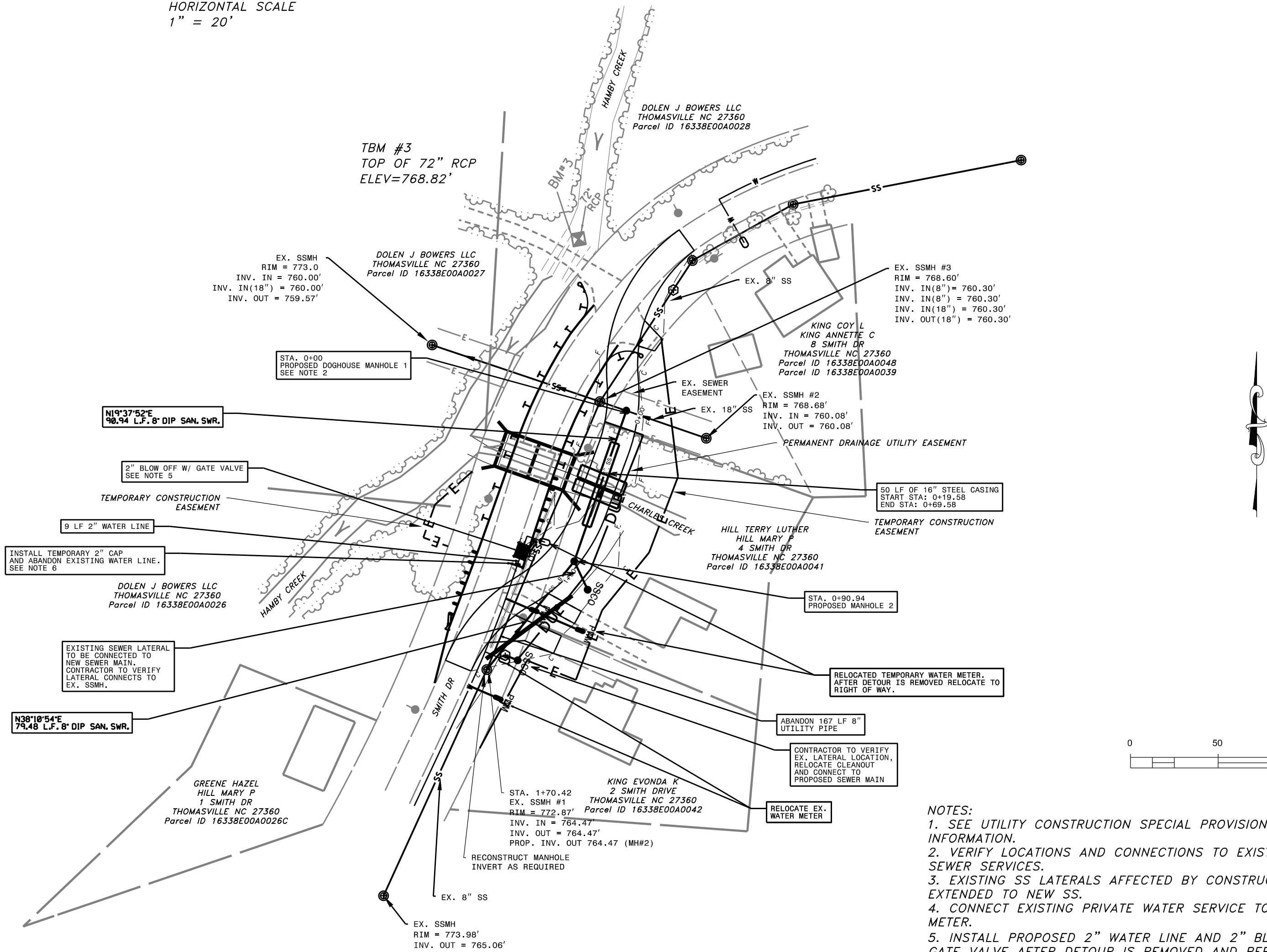
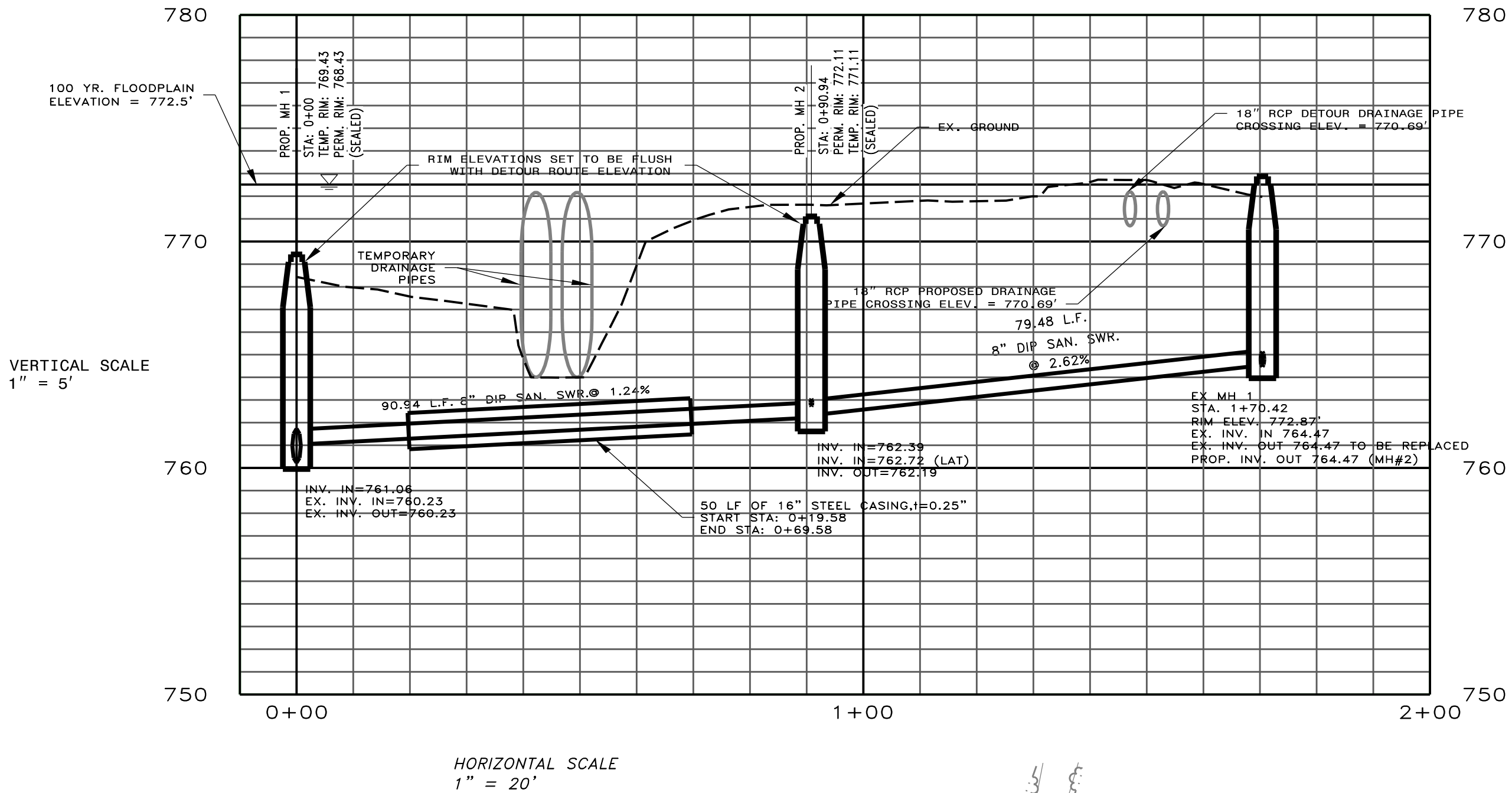
Power Pole	-----
------------	---

Guy Wire	----- 
----------	---

PROJECT REFERENCE NO. <i>17BP.9.R.33</i>	SHEET NO. UC=3
R/W SHEET NO. ---	
	 04-12-2021
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5/14/99

NOTE:
TEMPORARY RIM ELEVATIONS ARE SET FOR THE DETOUR ROUTE.
PERMANENT RIM ELEVATIONS TO BE OBTAINED AFTER DETOUR ROUTE
IS REMOVED. CONTRACTOR TO USE GRADE RINGS TO OBTAIN
POST-DETOUR RIM ELEVATIONS.

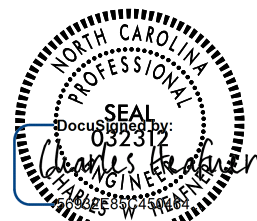


GENERAL NOTES

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2019.
2. THE EXISTING UTILITIES BELONG TO THE CITY OF THOMASVILLE. PLEASE CONTACT MR. MORGAN HUFFMAN, 10 SALEM STREET, THOMASVILLE, NC 27360, (336)-475-4220, Morgan.Huffman@thomasville-nc.gov
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.
6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE AND TYPE MATERIAL OF EXISTING FACILITIES AS NECESSARY FOR CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES, REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT, SEE 1500-7, "SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS

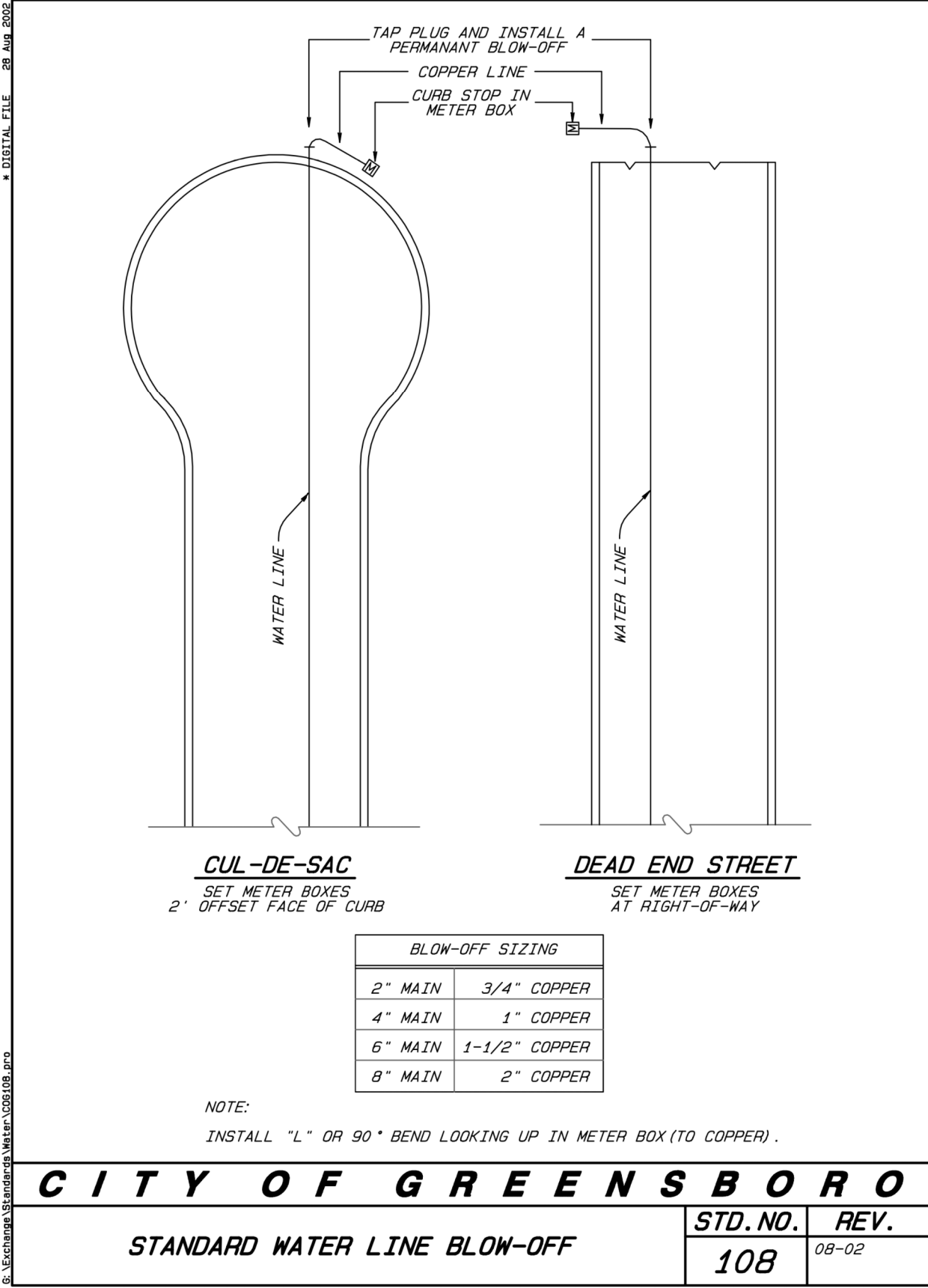
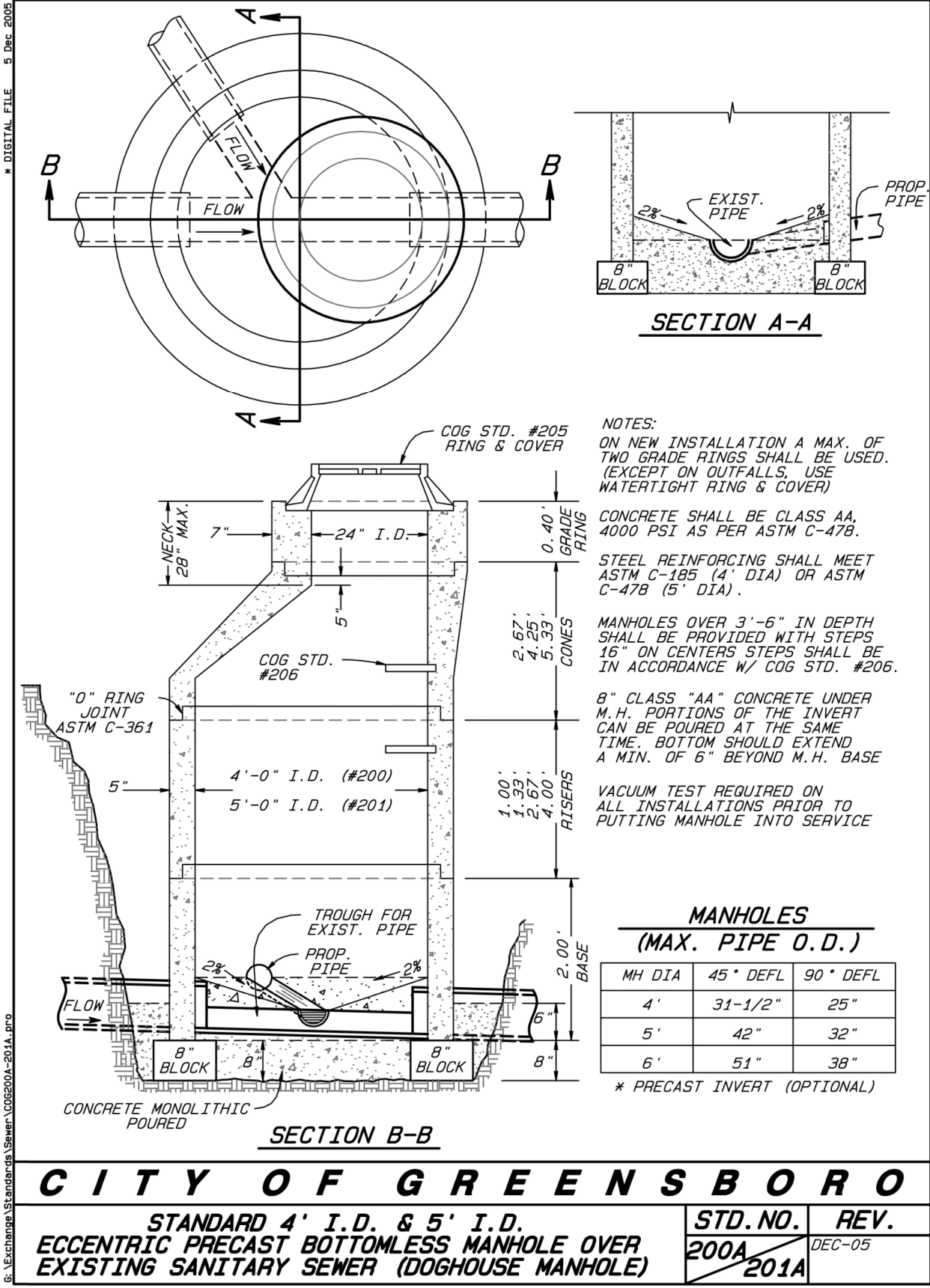
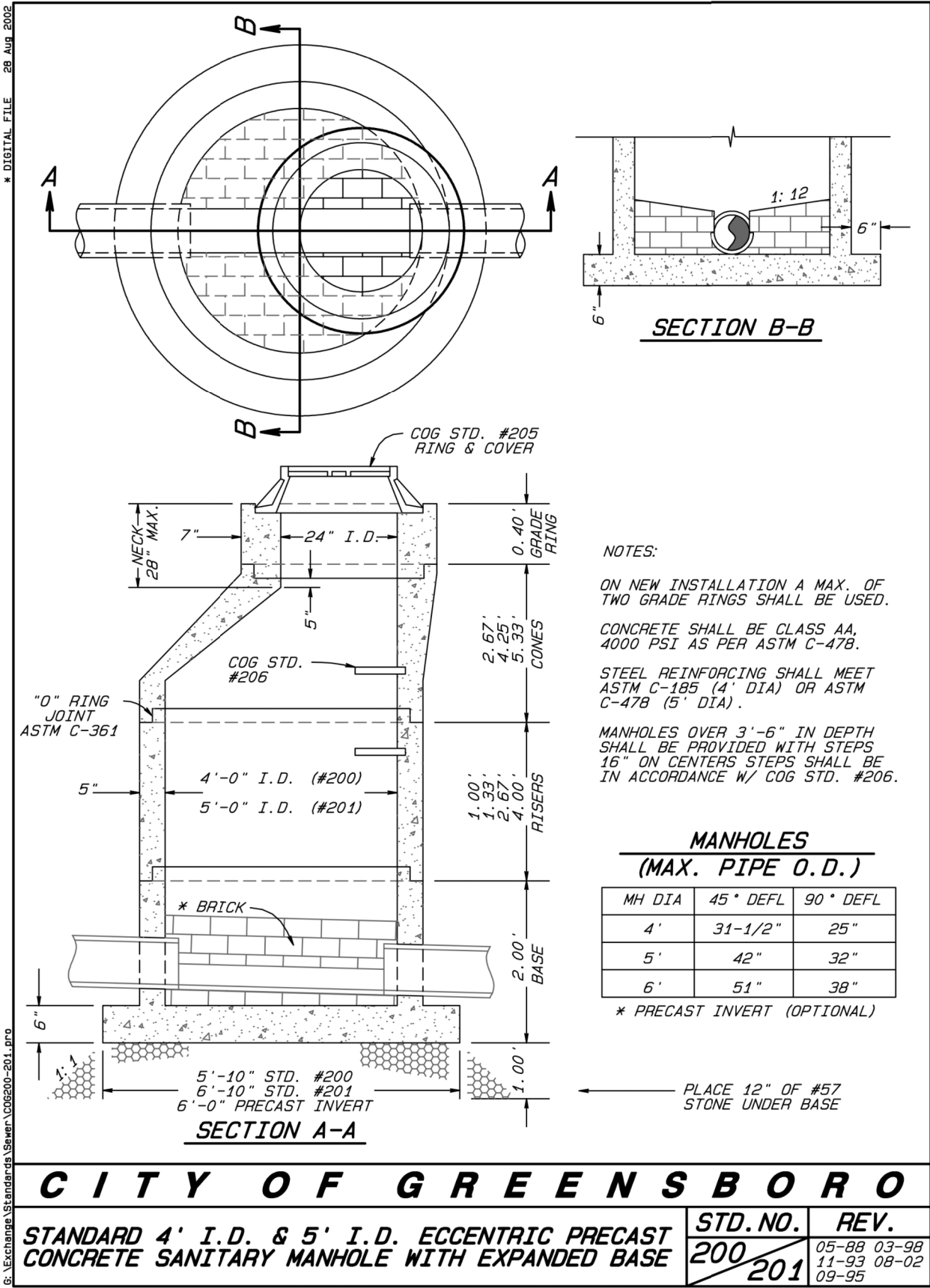
PROJECT SPECIFIC NOTE

1. SERVICE INTERRUPTIONS SHALL BE SCHEDULED WITH THE CITY OF THOMASVILLE AND SHALL BE COMPLETED DURING OFF-PEAK HOURS, AFTER 9 PM AND BE COMPLETED BY 4 AM, UNLESS AUTHORIZED BY THE CITY OF THOMASVILLE. INTERRUPTION SHALL NOT EXCEED 8 HOURS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY POTABLE WATER SUPPLIES TO ANY CUSTOMER UPON REQUEST BY THE CITY AND/OR WHEN DURATIONS OF THE WATER SERVICE DISRUPTION EXCEEDS 4 HOURS.

PROJECT REFERENCE NO.		SHEET NO.	
<u>17BP.9.R.33</u>		<u>UC-4</u>	
R/W SHEET NO.		<u>4</u>	
			
		04-12-2021	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
 WSP		PARSONS BRINCKERHOFF	
434 Fayetteville Street Suite 1500 Raleigh, NC 27601 - 919.836.4040			
www.wspgroup.com LICENSE NO. F-0891			

REVISIONS

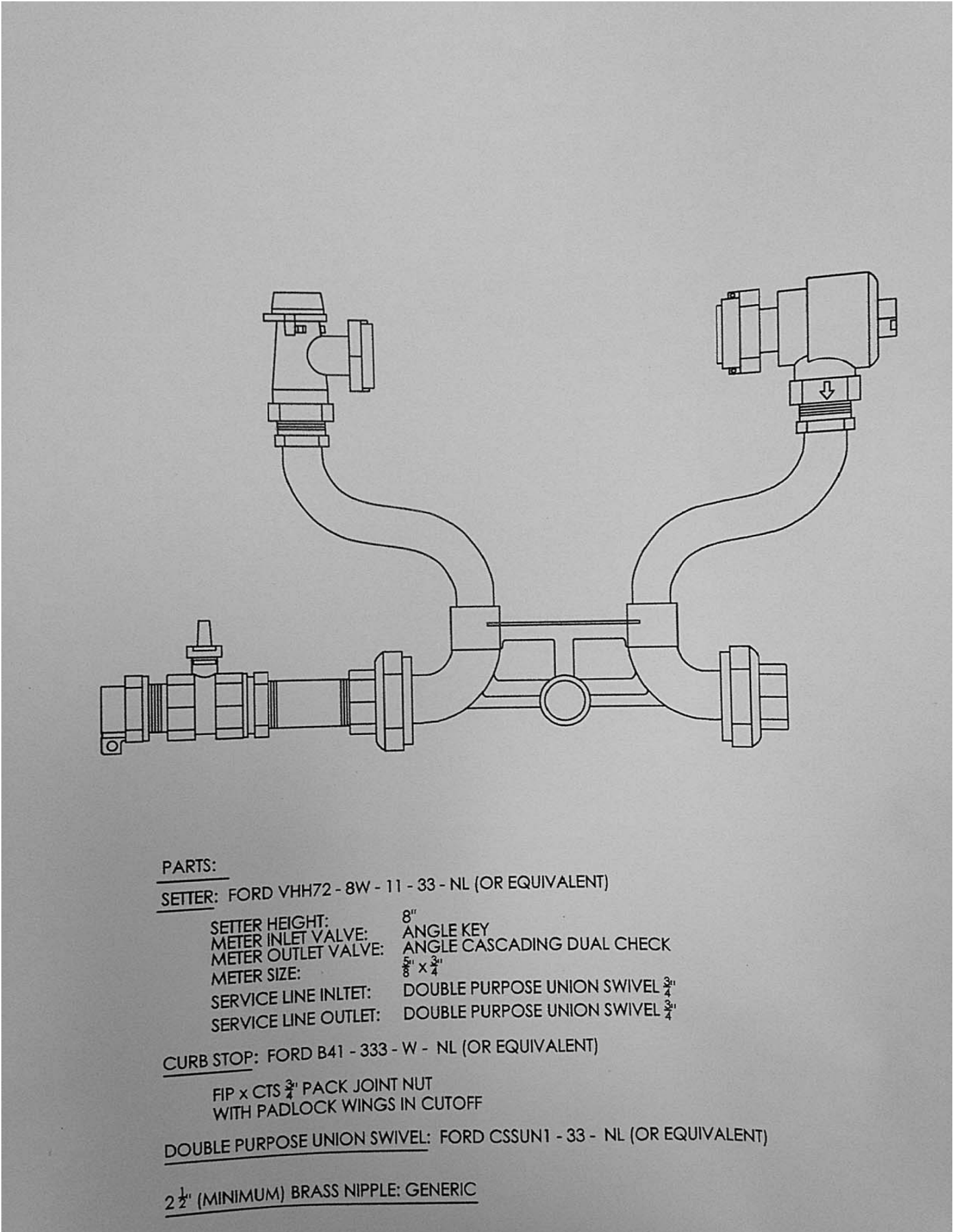
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*****SUPERADVE*****



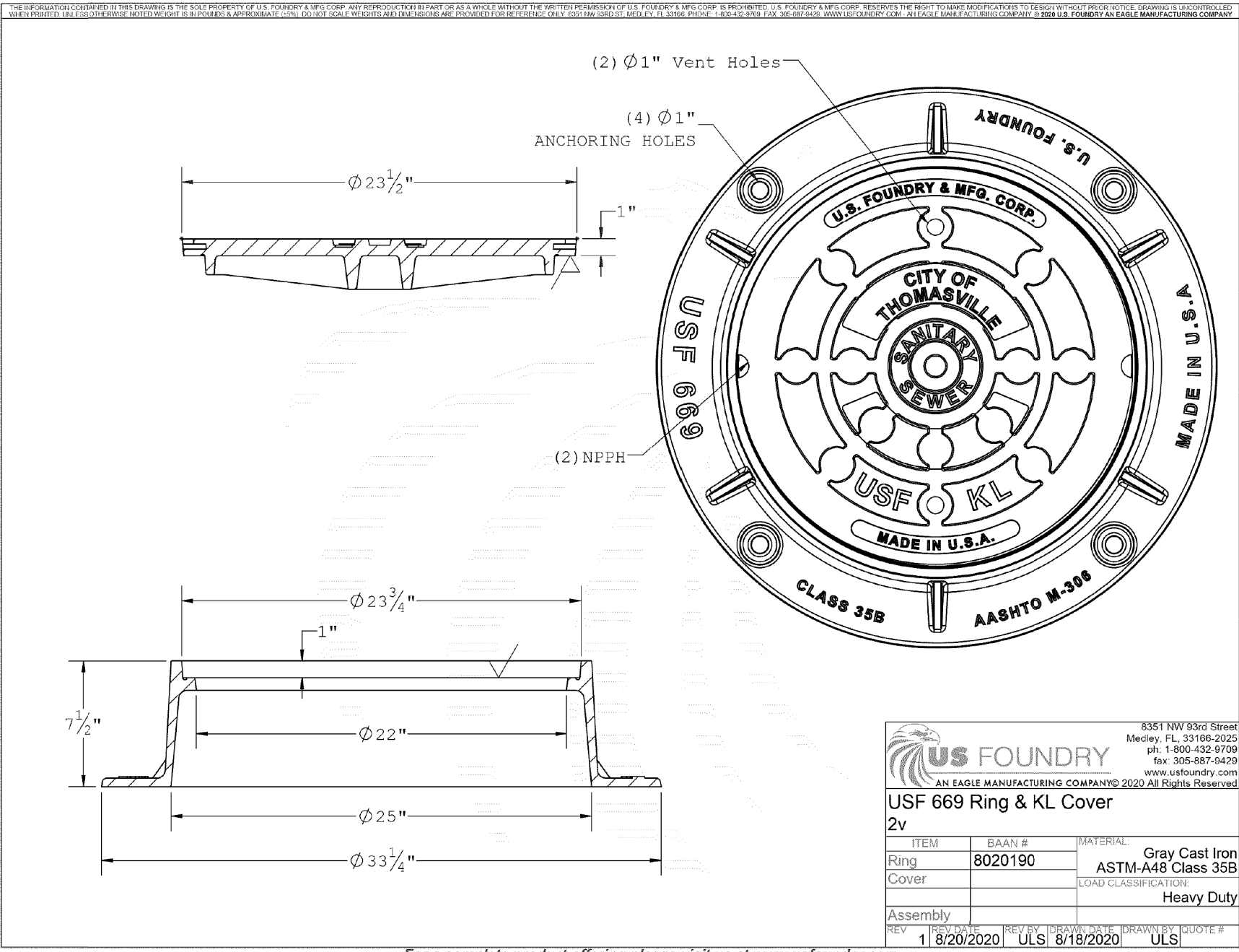
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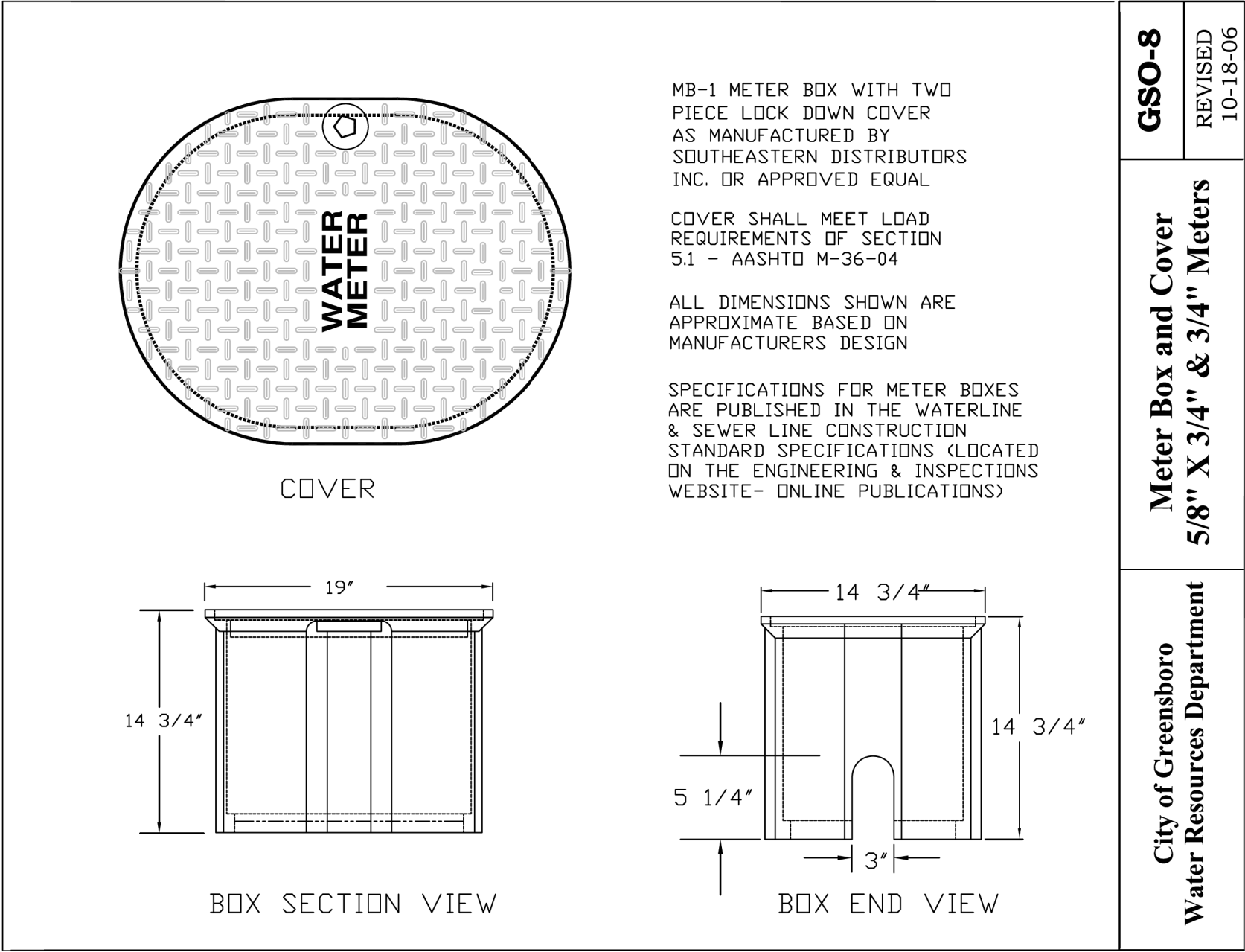
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4



5



6

PROJECT REFERENCE NO.
17BP.9.R.33

SHEET NO.
UC-5

R/W SHEET NO.

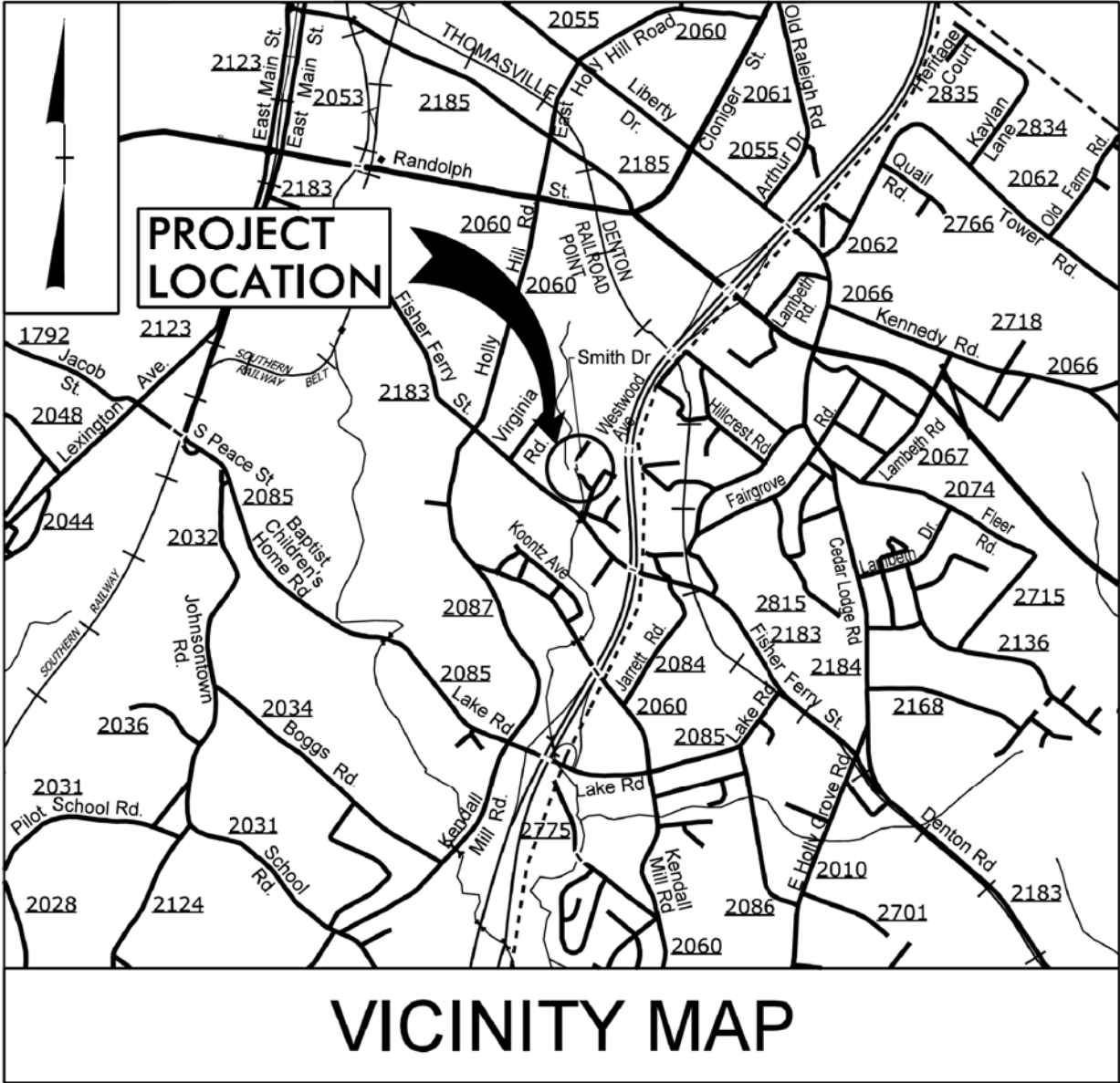
04-12-2021

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Raleigh, NC 27601 - 919.836.4040
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11/18/20

TIP PROJECT: 17BP.9.R.33



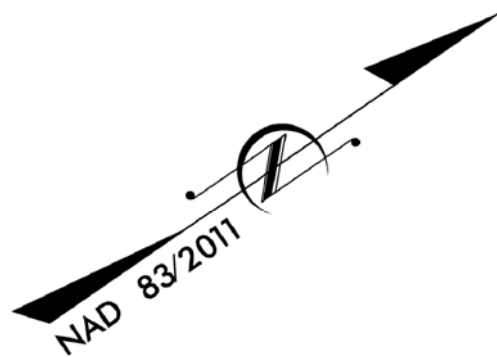
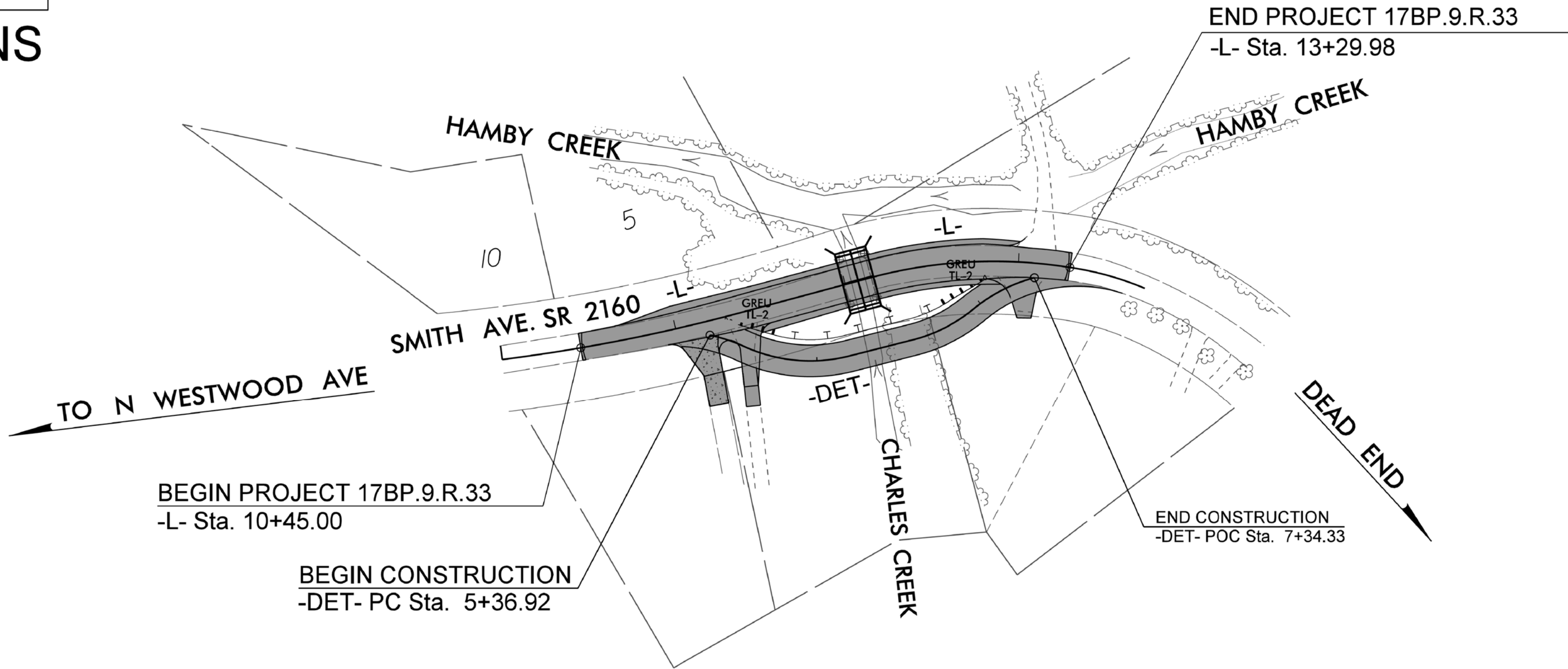
VICINITY MAP
75% SUBMITTAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
DAVIDSON COUNTY

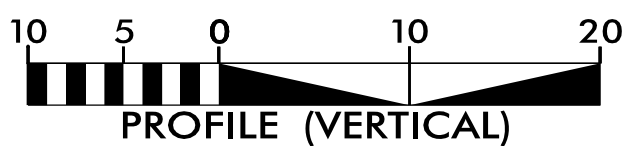
LOCATION: REPLACE EXISTING BRIDGE NO. 459 OVER
CHARLES CREEK ON SR 2160 (SMITH AVE.)

TYPE OF WORK: GRADING, DRAINAGE, WIDENING, CULVERT
ONSITE DETOUR AND PAVEMENT MARKINGS



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:

UO-1

UO-2

DESCRIPTION:

TITLE SHEET

UBO PLAN SHEETS

UTILITY OWNERS WITH CONFLICTS

- (A) POWER - DUKE ENERGY
- (B) TELEPHONE - NORTH STATE
- (C) CATV - SPECTRUM
- (D) WATER/SEWER - CITY OF THOMASVILLE

UCC

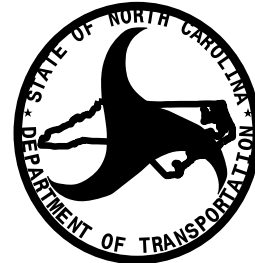
Utility Coordination Consultants
P.O. Box 450
Mineral Springs, NC 28108
704-844-9093

MARK PRICE

UTILITY PROJECT MANAGER

MARK PRICE

PROJECT UTILITY COORDINATOR



DIVISION OF HIGHWAYS
UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH, NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

DAVID TRANHAM UTILITIES REGIONAL ENGINEER

UTILITIES ENGINEER

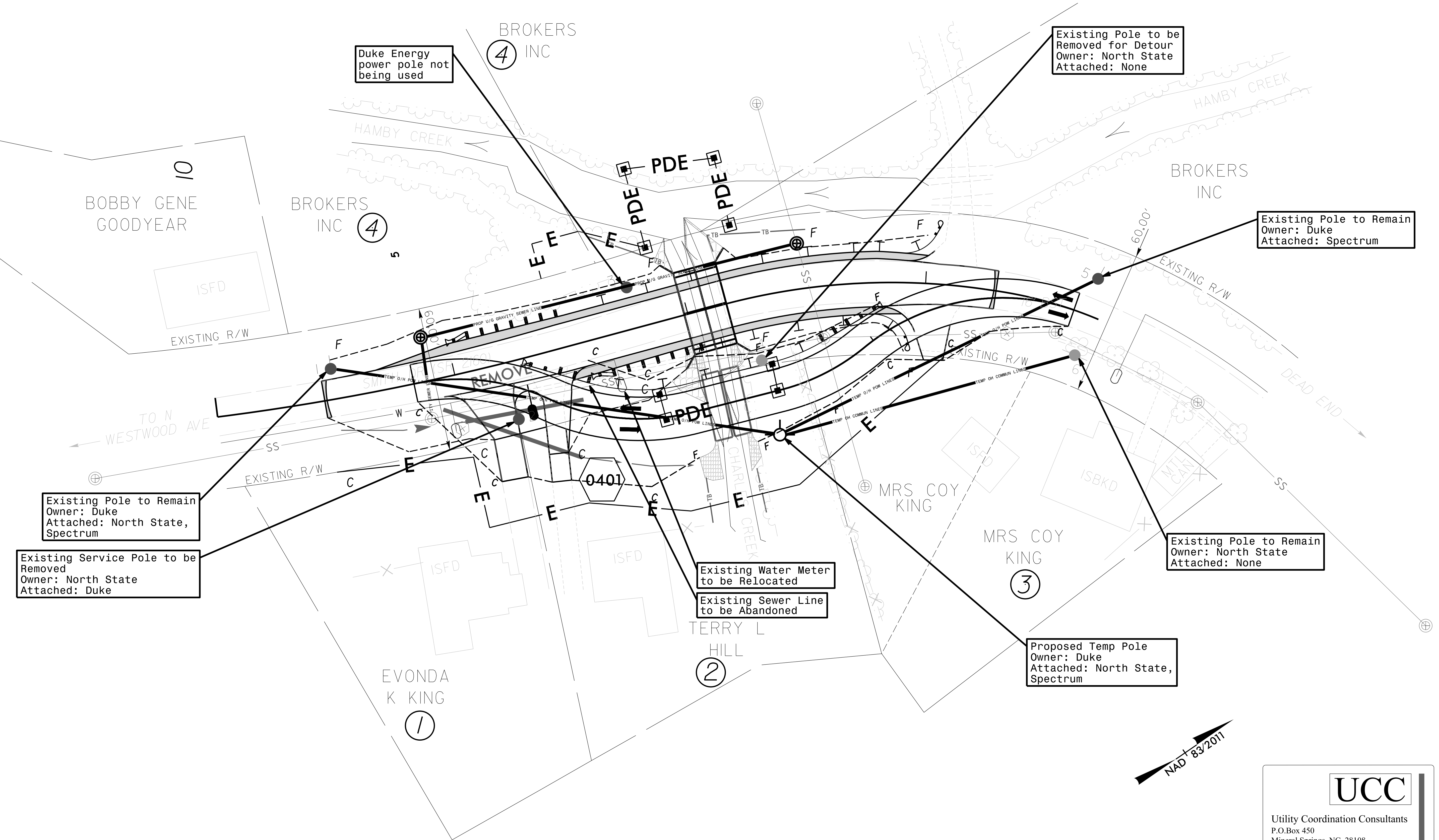
LYNN BASINGER UTILITIES AREA COORDINATOR

UTILITIES COORDINATOR

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.33	U0-2
THIS SHEET CORRESPONDS TO RDY SHEET 2B-1	

UTILITIES BY OTHERS

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.



UCC

Utility Coordination Consultants
P.O.Box 450
Mineral Springs, NC 28108
704-844-9093

DS

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-5717	X-1A

CROSS-SECTIONS INDEX OF SHEETS

-L- X-1 THRU X-4
-DET- X-5 THRU X-7

CROSS-SECTION SUMMARY

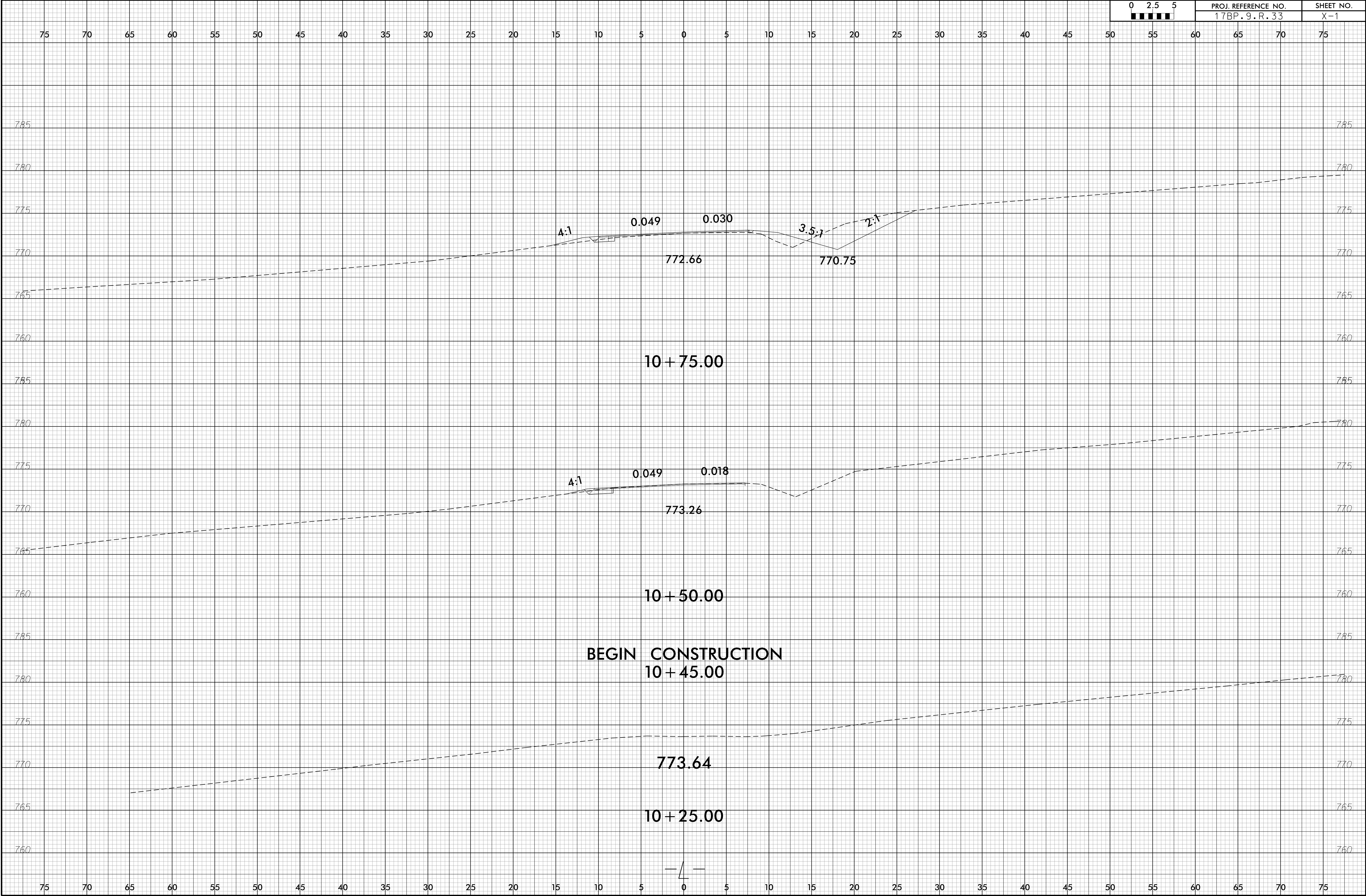
Approximate quantities only. Unclassified excavation, borrow excavation, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the lump sum price for "Grading".

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

[illegible]

6/23/16

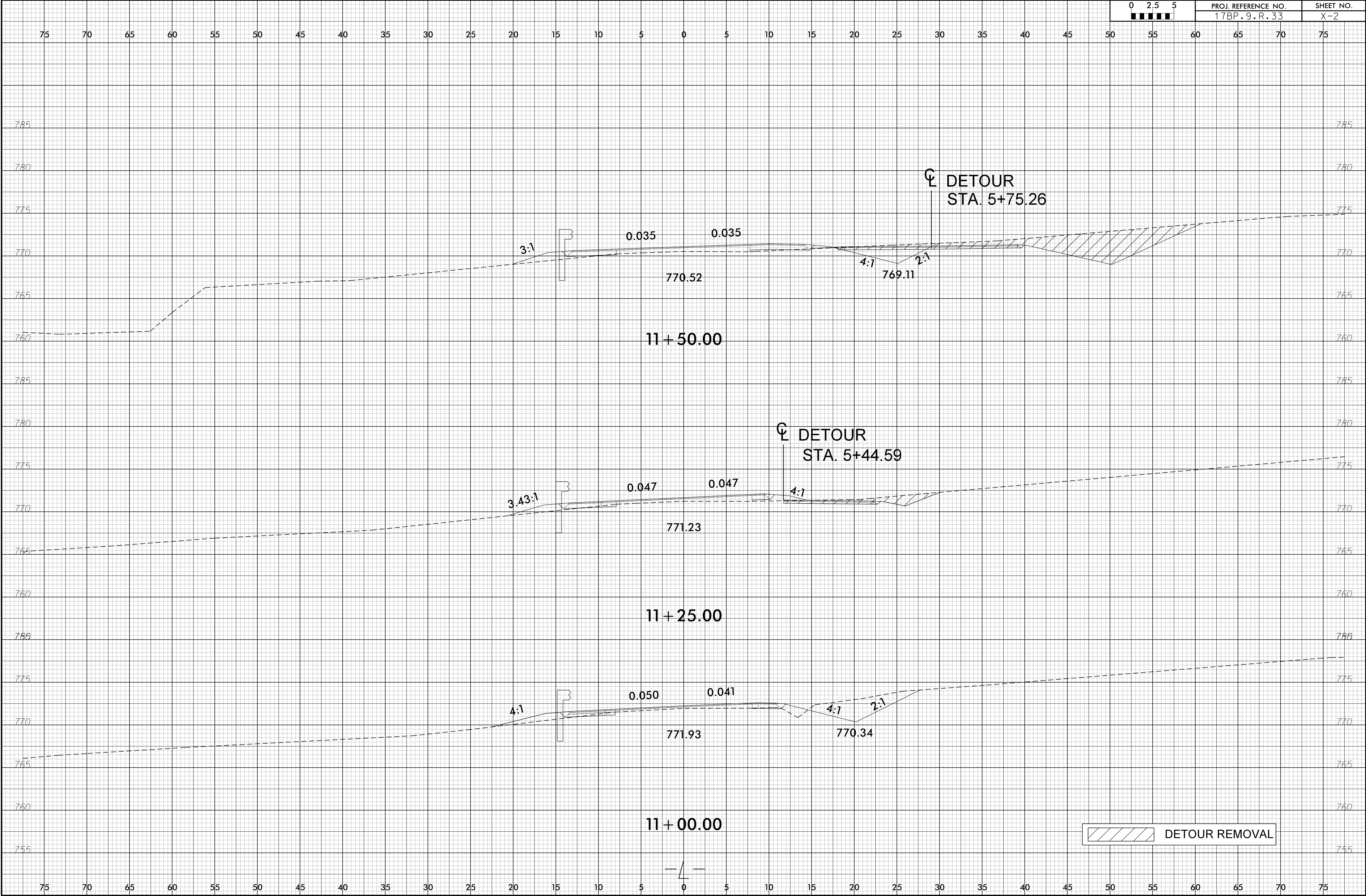
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3/26/2021

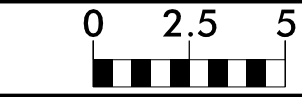
6/23/16

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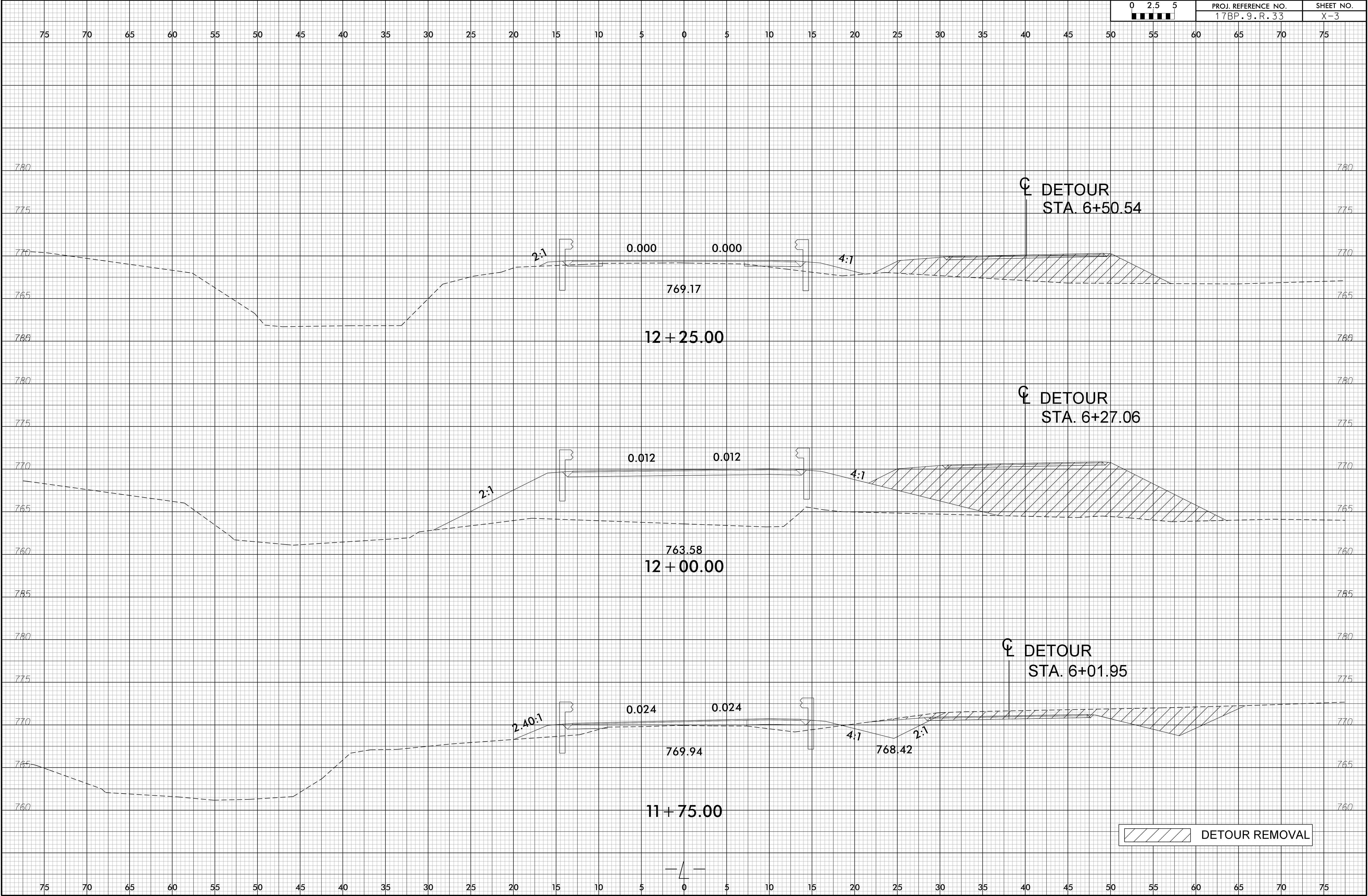
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3/26/2021

6/23/16



PROJ. REFERENCE NO.
17BP.9.R.33

SHEET NO.
X-3

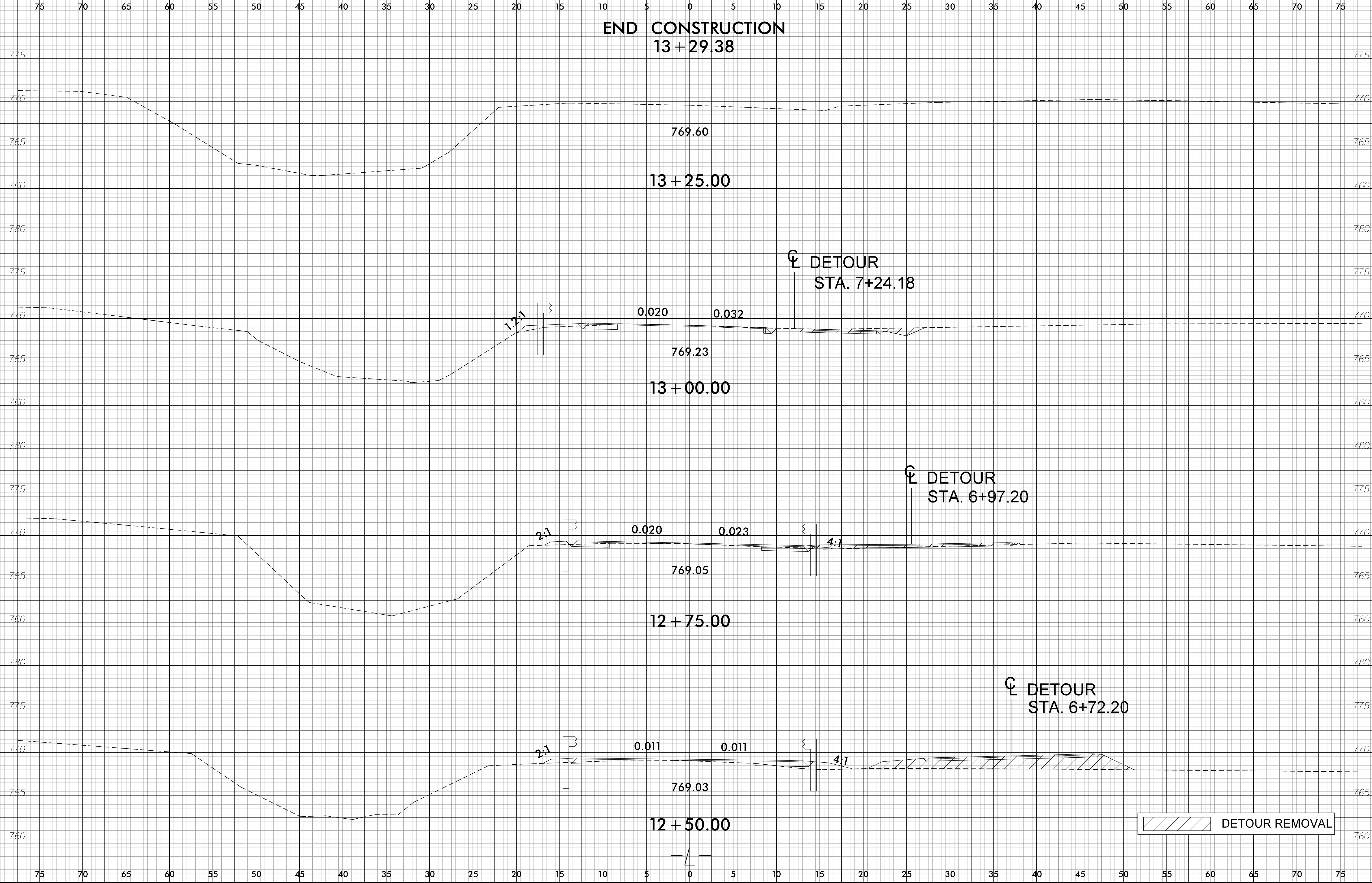


DETOUR REMOVAL

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3/26/2021

6/23/16

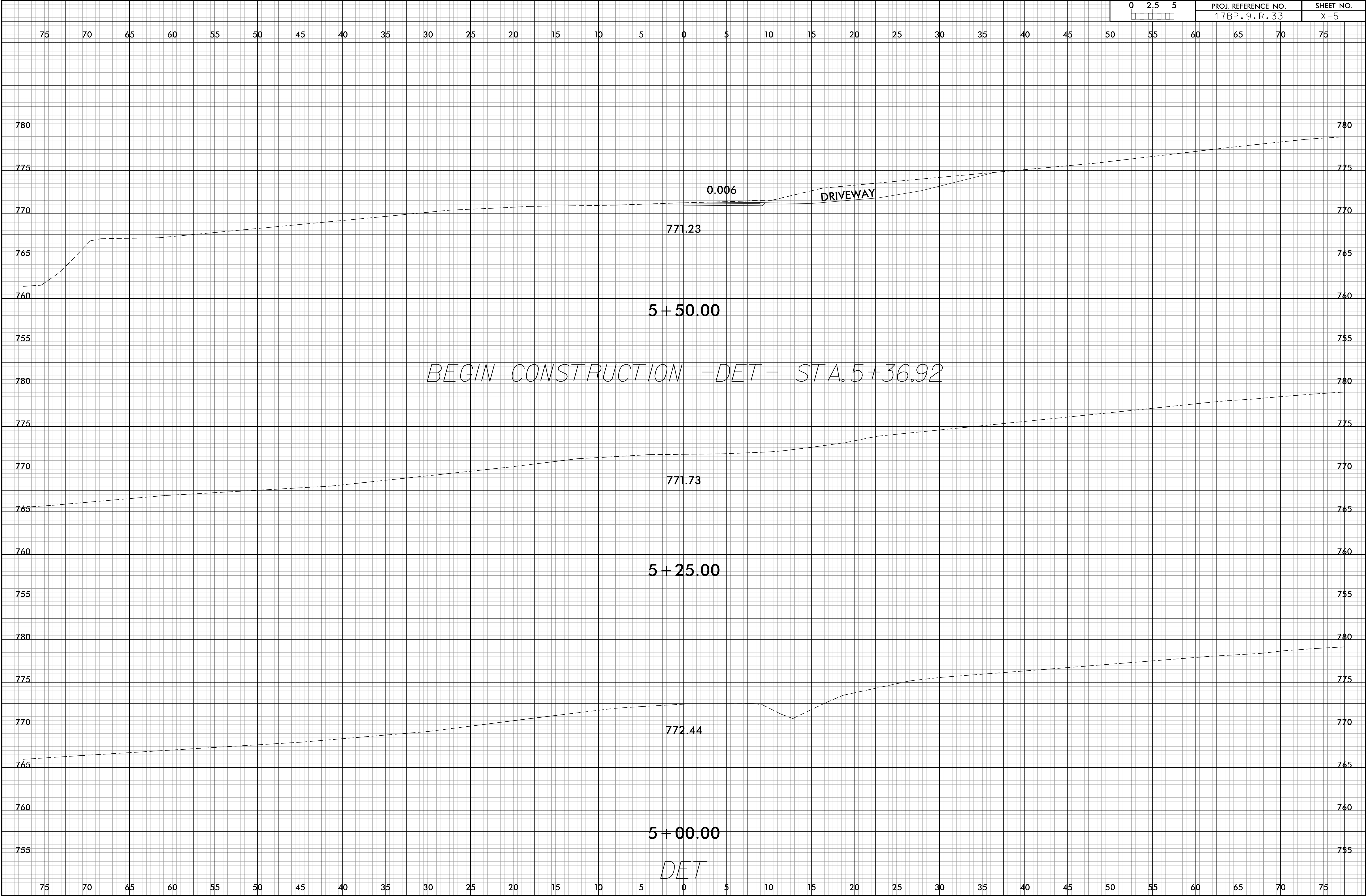
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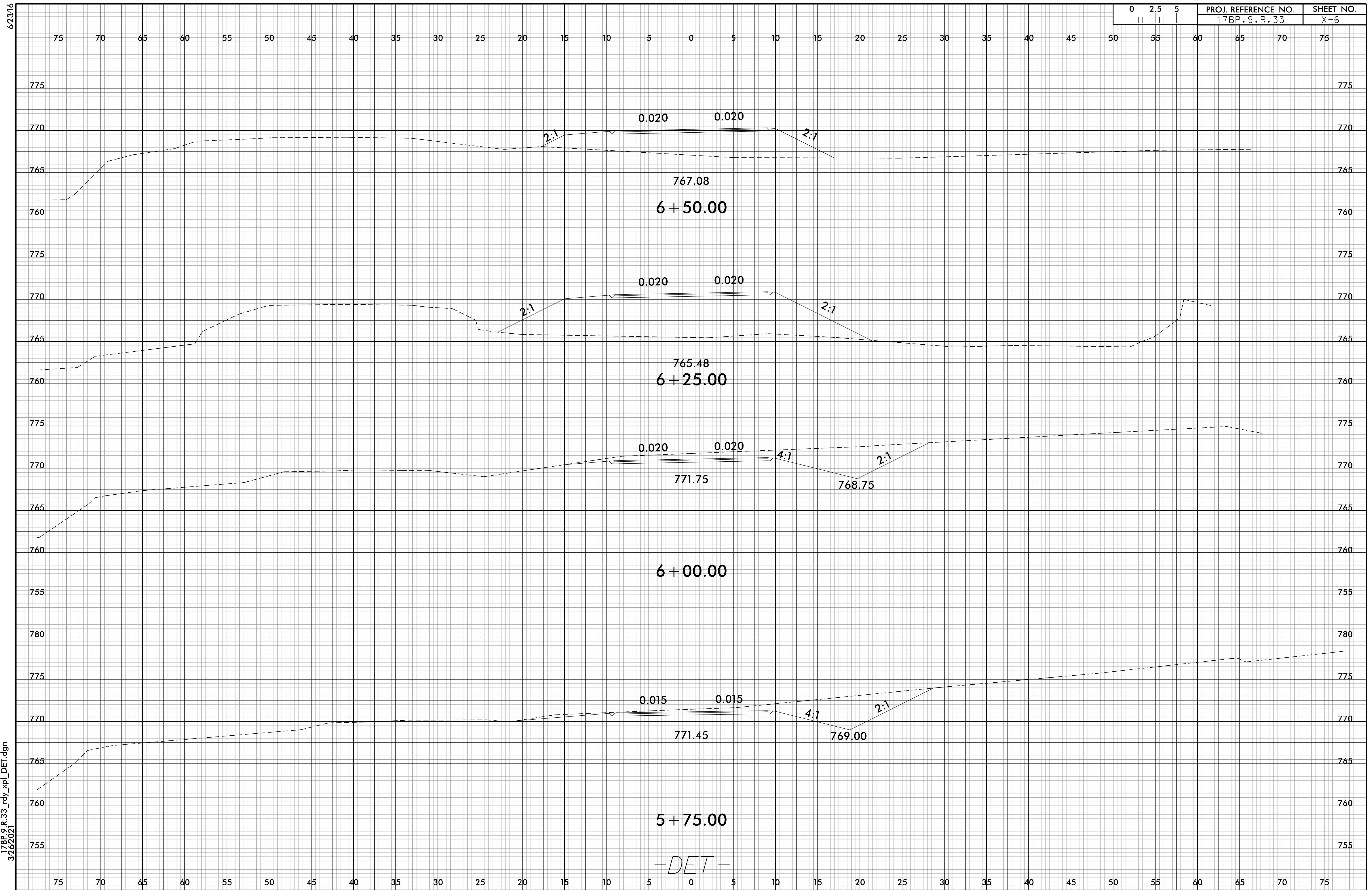


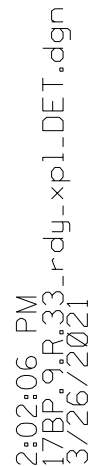
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3/26/2021

6/23/16

0 2.5 5 □ □ □ □ □	PROJ. REFERENCE NO.	SHEET NO.
	17BP.9.R.33	X-5







J:\173418 NCDOT Operations On Call\173418I - 17 BP Projects\17BP.9.R.33\17BP.9.R.33\Structures\RCBC\Drafting\410_001_17BP.9.R.33_SMU_CD01.dgn



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

DESIGN DISCHARGE	= 520 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YEARS
DESIGN HIGH WATER ELEVATION	= 767.7
DRAINAGE AREA	= 0.85 SQ.MI.
BASE DISCHARGE (Q100)	= 700 CFS
BASE HIGH WATER ELEVATION	= 768.3

PI STA. 12+70.67 -L-
 $\Delta = 23^{\circ}-25'-00.3''$ (RT)
 $D = 21^{\circ}-13'-14.4''$
 $L = 110.35'$
 $T = 55.96'$
 $R = 270.00'$

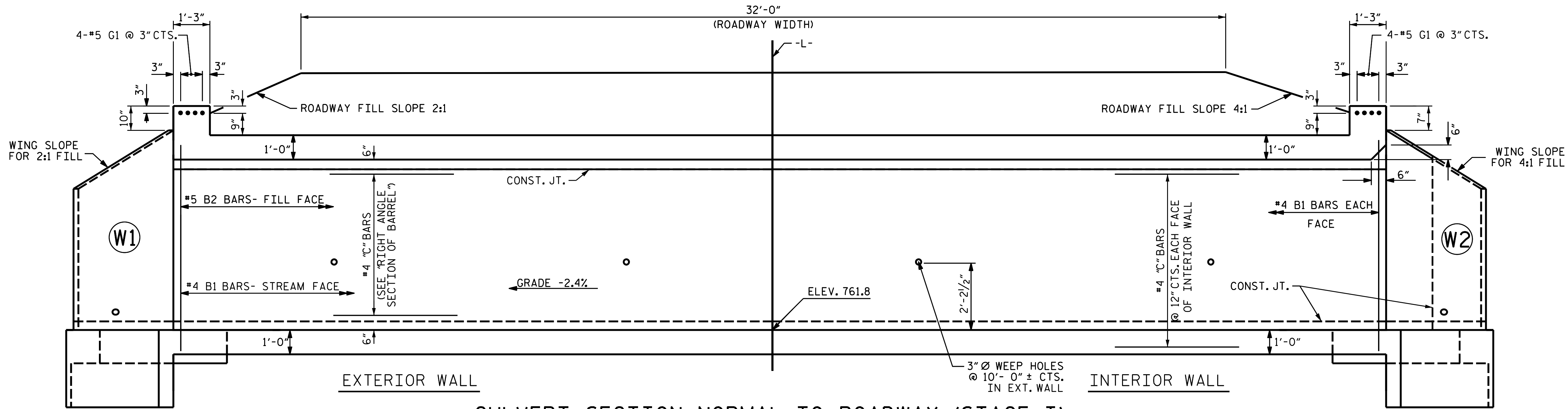
OVERTOPPING DISCHARGE	= 900 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500 YEARS
OVERTOPPING FLOOD ELEVATION	= 769.6

GRADE POINT ELEV. @ STA. 12+07.50 -L- = 770.8
INVERT ELEVATION @ 12+07.50 -L- = 761.8
ROADWAY SIDE SLOPES = 2:1 LEFT, 4:1 RIGHT



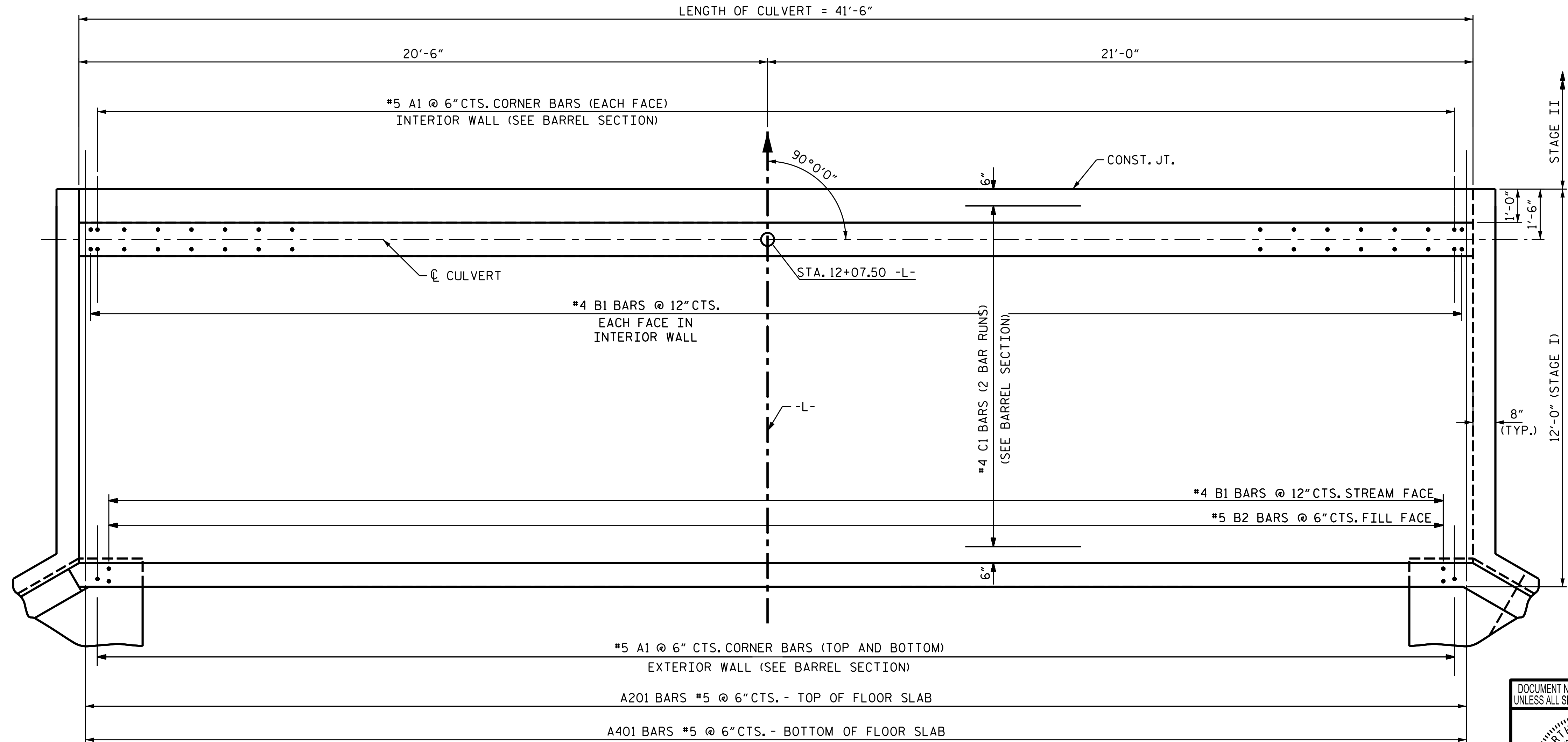
5/3/2021

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CULVERT SECTION NORMAL TO ROADWAY (STAGE I)

(ROOF SLAB TO BE CONSTRUCTED IN STAGE II, SEE SHEET C-3)



PART PLAN-FLOOR SLAB

PROJECT NO. 17BP.9.R.33
DAVIDSON COUNTY
STATION: 12+07.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 9'-0" X 6'-0"
CONCRETE BOX CULVERT
90° SKEW (STAGE I)

REVISIONS

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

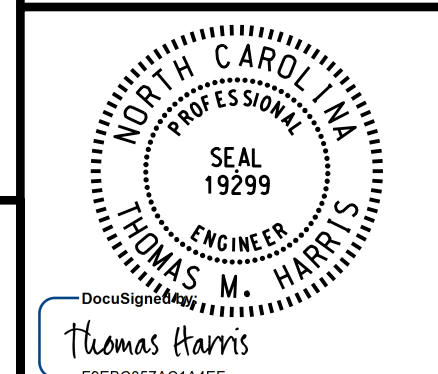
SHEET NO.

C-2

TOTAL SHEETS

10

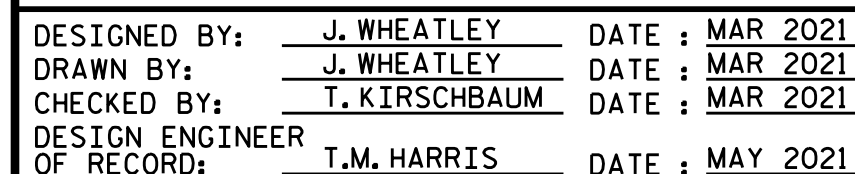
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UNLESS ALL SIGNATURES COMPLETED



5/3/2021



WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165



SHEET NO.	C-3
TOTAL SHEETS	10

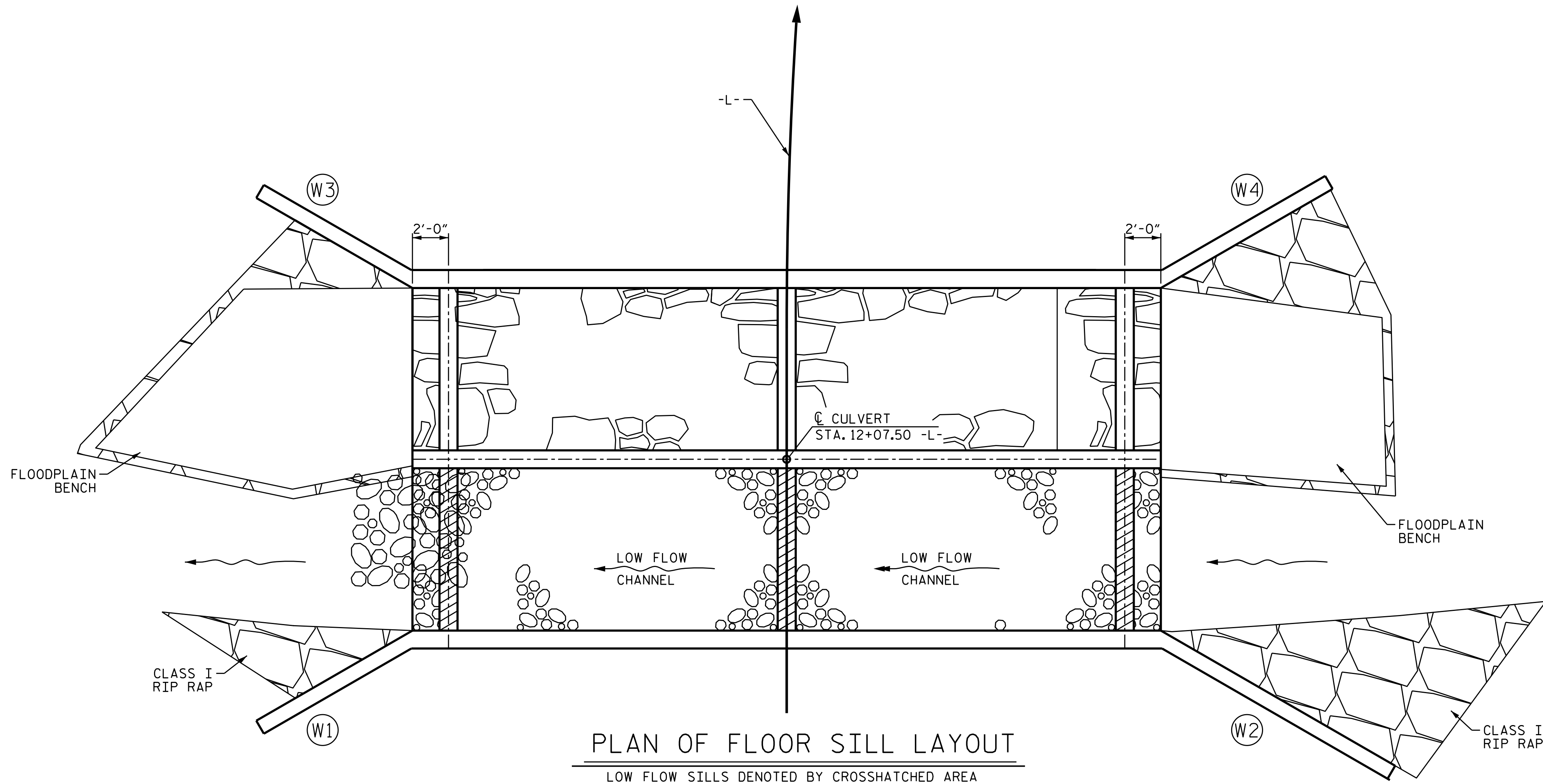
5/3/202



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RALEIGH, NC 27601
TEL: 1.919.836.4040

LICENSE NO. F-0165

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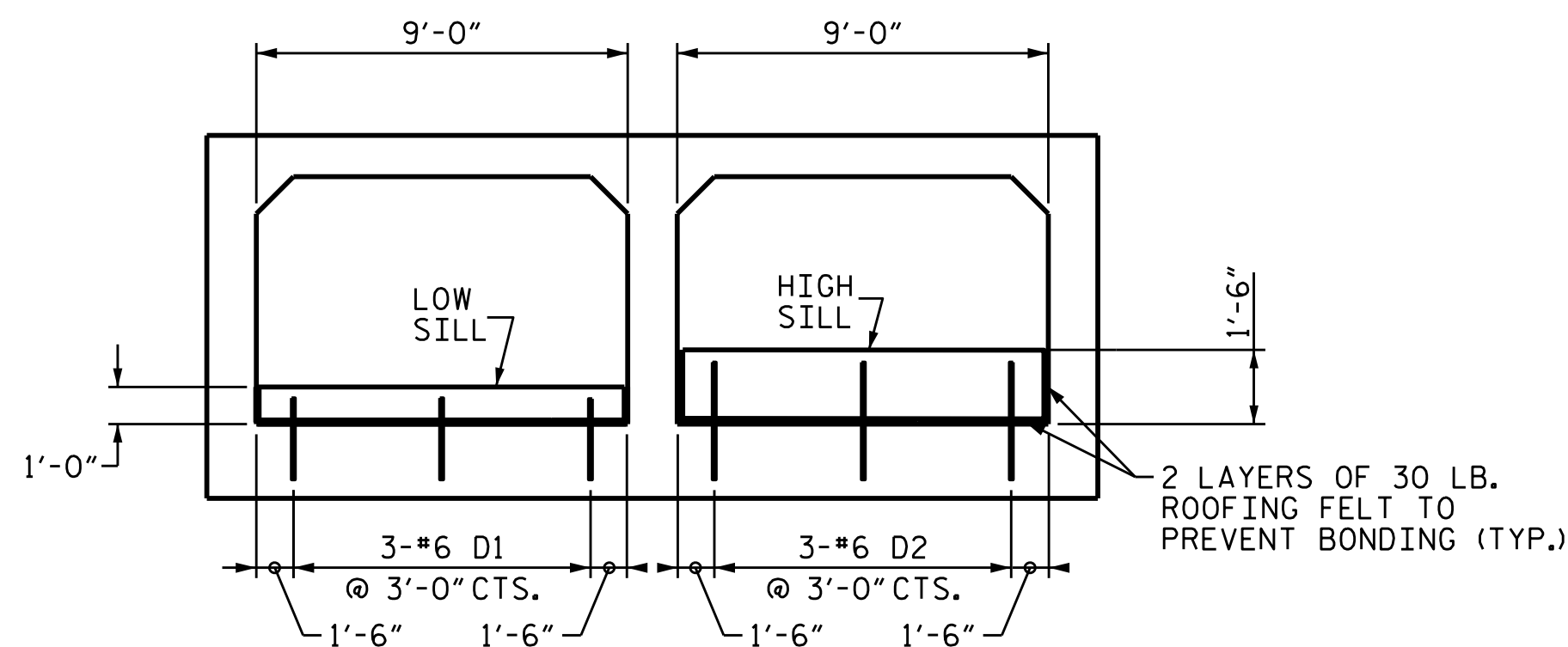


PLAN OF FLOOR SILL LAYOUT

LOW FLOW SILLS DENOTED BY CROSSHATCHED AREA

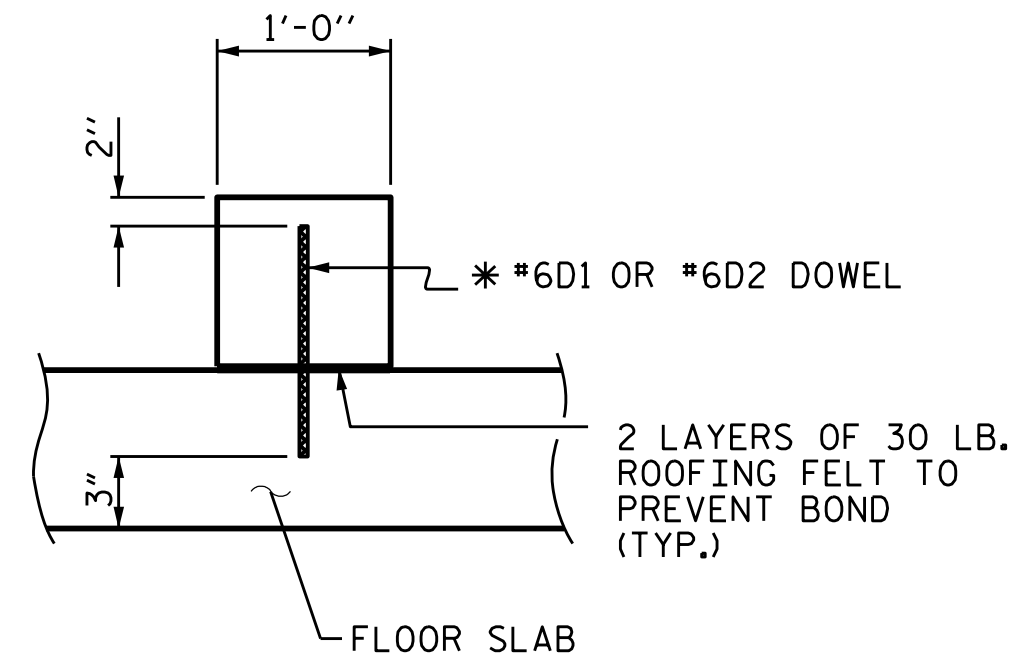
NATIVE MATERIAL IN
HIGH FLOW CULVERT BARREL

NATIVE MATERIAL IN
LOW FLOW CULVERT BARREL



ELEVATION

LOOKING DOWNSTREAM



SECTION THROUGH SILL

* DOWELS MAY BE PUSHED INTO GREEN CONCRETE
AFTER SLAB HAS BEEN FLOAT FINISHED.

NOTES

NATIVE BED MATERIAL SHALL BE PLACED BETWEEN THE SILLS IN THE LOW FLOW CULVERT. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED OR FLOODPLAIN DURING CULVERT CONSTRUCTION.

RIP RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL. IF RIP RAP IS USED, NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FACILITATE ANIMAL PASSAGE.

THE TOP SURFACE OF THE NATURAL STREAM BED MATERIAL SHALL BE PLACED AND LEVELED TO A FLAT SURFACE TO ALLOW ANIMAL PASSAGE.

THE HIGH FLOW BARREL SHALL BE BACK FILLED WITH NATIVE MATERIAL AND/OR RIP RAP.

NATIVE MATERIAL AND RIP RAP ARE SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

THE ENTIRE COST OF WORK REQUIRED TO PLACE THE EXCAVATED MATERIAL SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE BID FOR CULVERT EXCAVATION.

THE ENTIRE COST OF WORK REQUIRED TO CONSTRUCT THE SILLS SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS. NO SEPARATE PAYMENT WILL BE MADE FOR THE 30 LB. ROOFING FELT.

TOP OF LOW FLOW SILLS SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM.

DO NOT SET ELEVATION OF HIGH SILL ABOVE BANK FILL.

PROJECT NO. 17BP.9.R.33
DAVIDSON COUNTY
STATION: 12+07.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 9'-0" X 6'-0"
CONCRETE BOX CULVERT
BAFFLE/SILL LAYOUT

REVISIONS

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

SHEET NO.

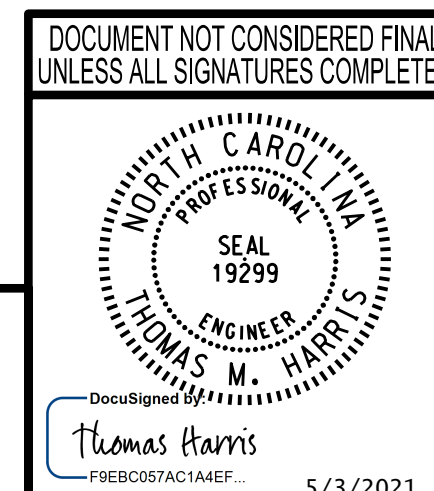
C-5

TOTAL SHEETS

10

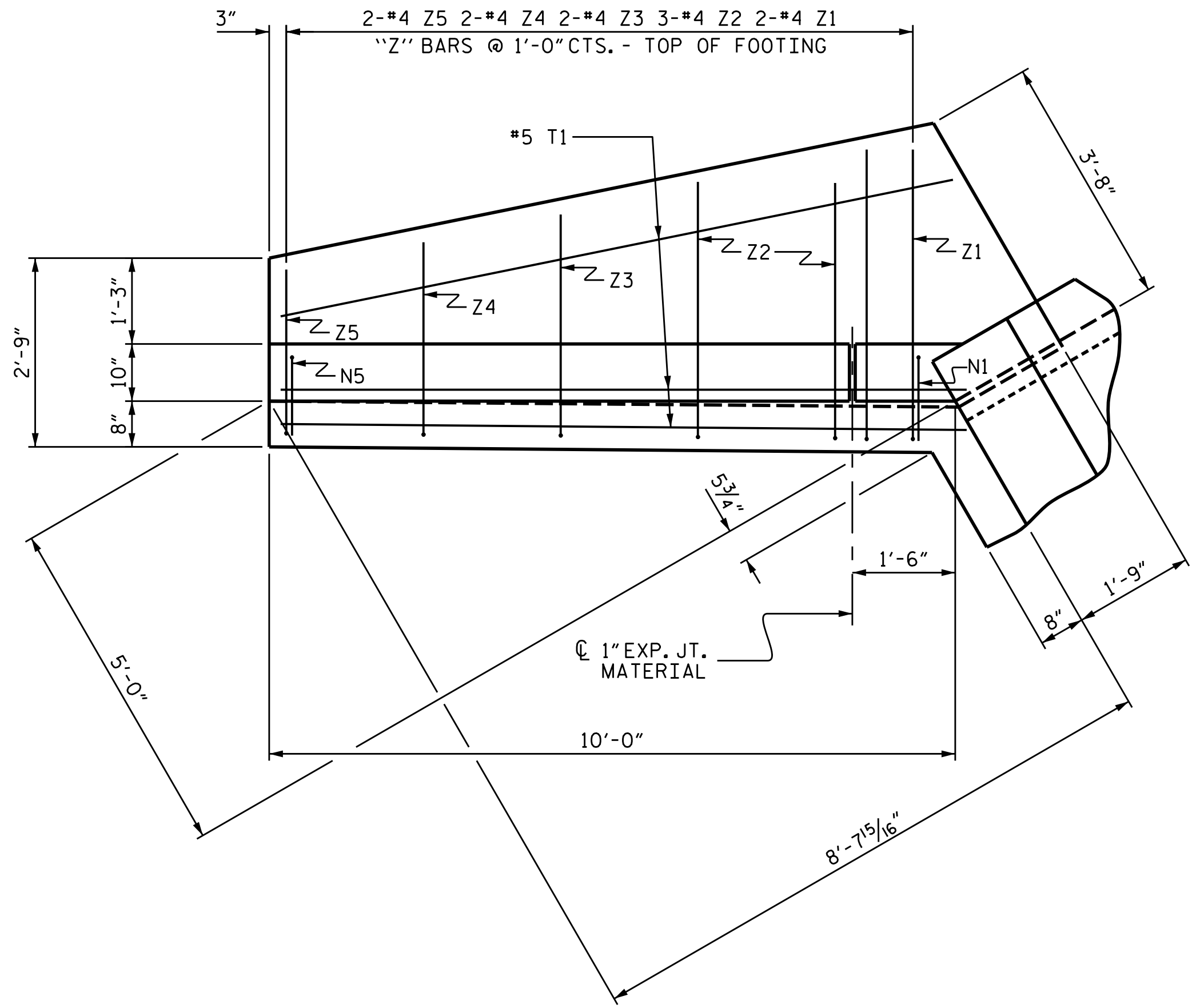
wsp

WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

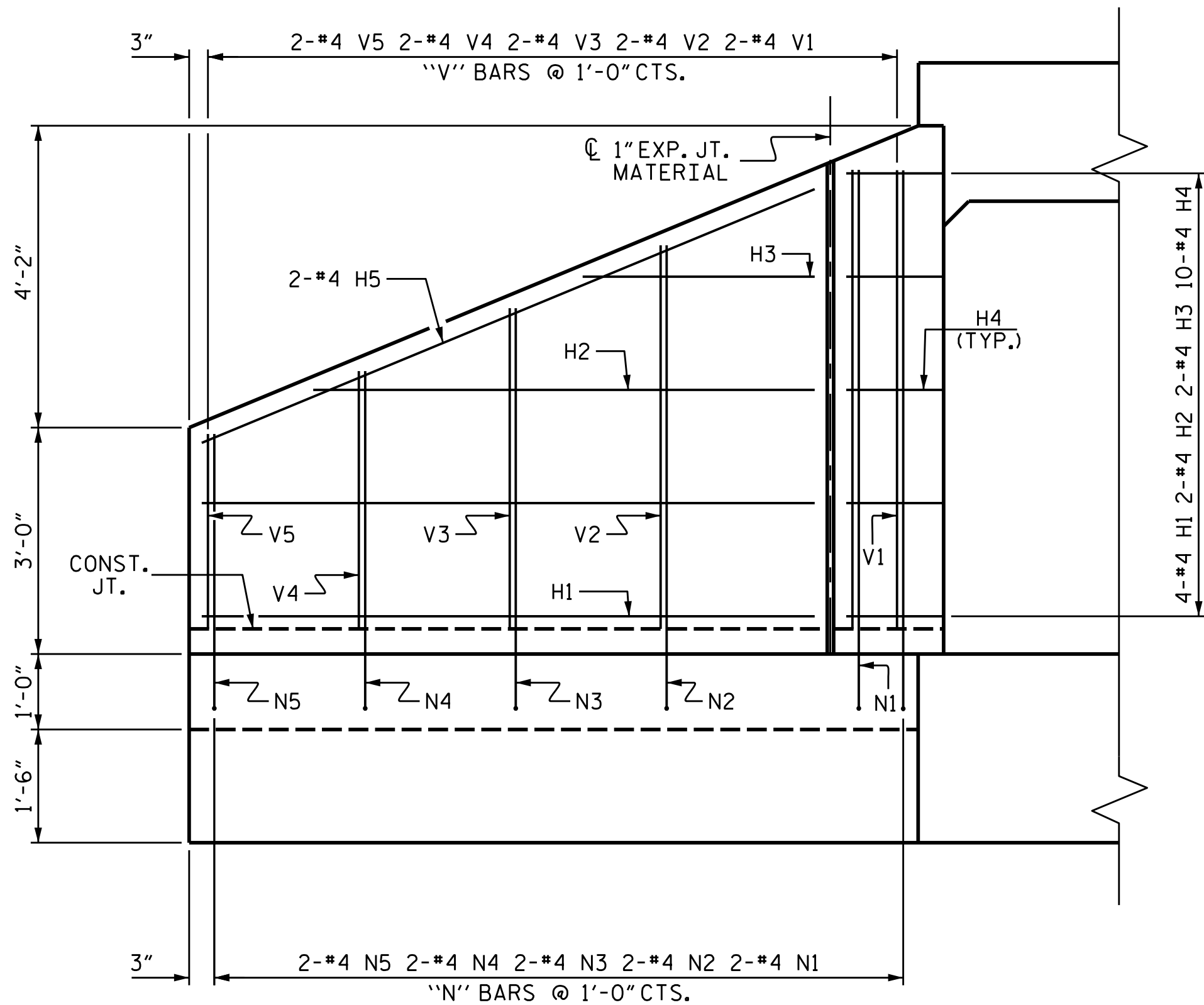


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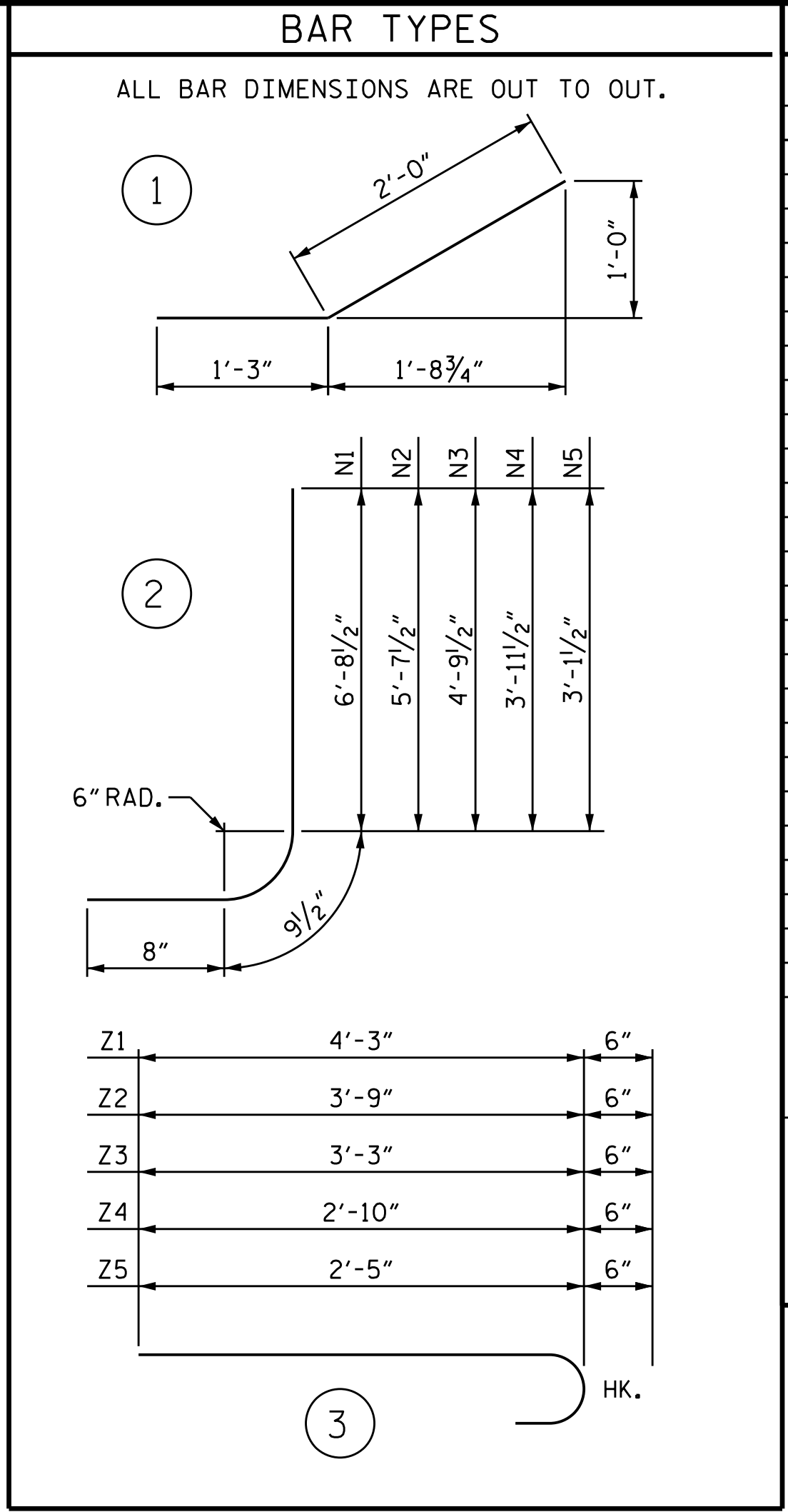
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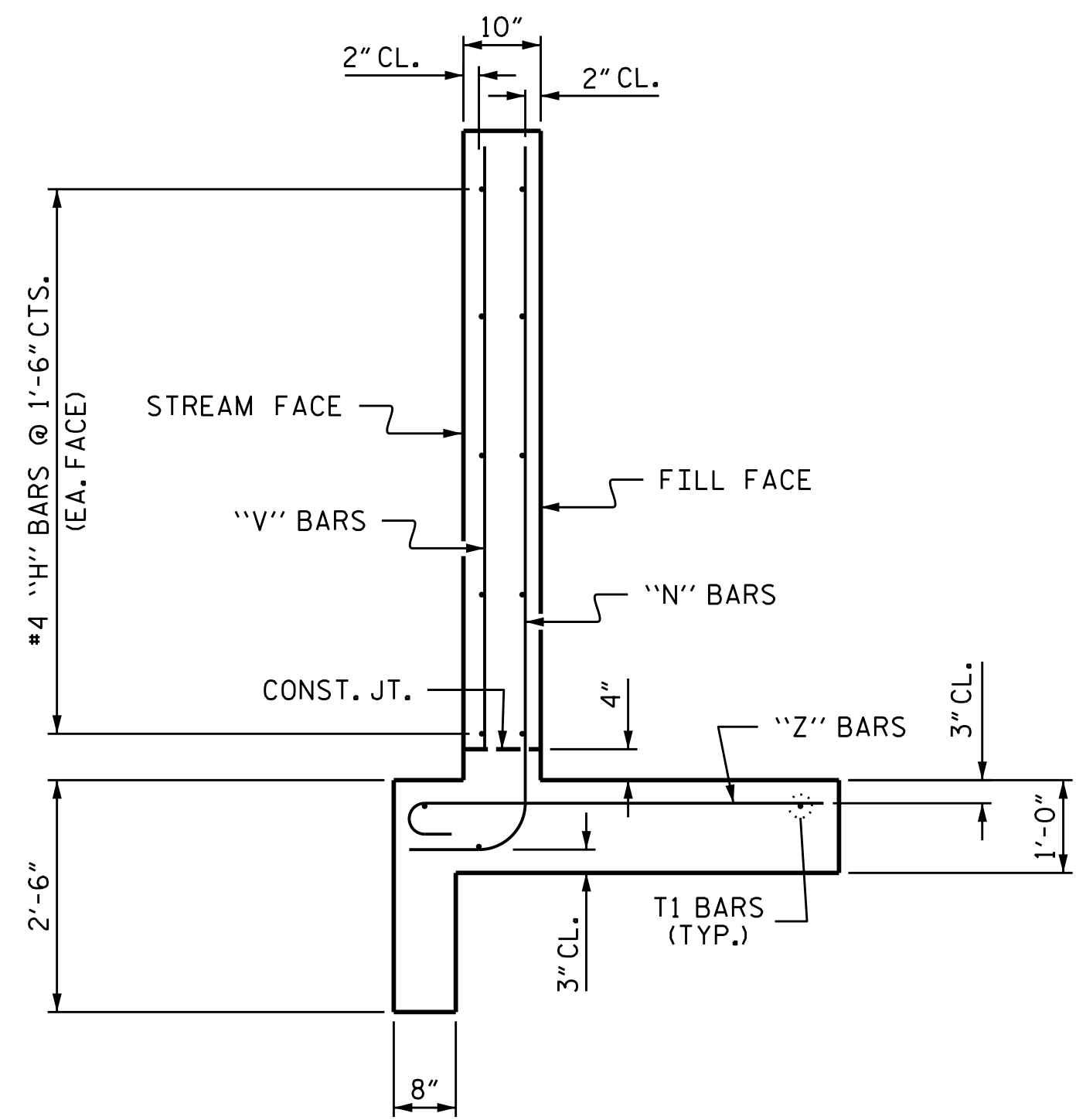
PLAN W1 & W3



ELEVATION W1 & W3



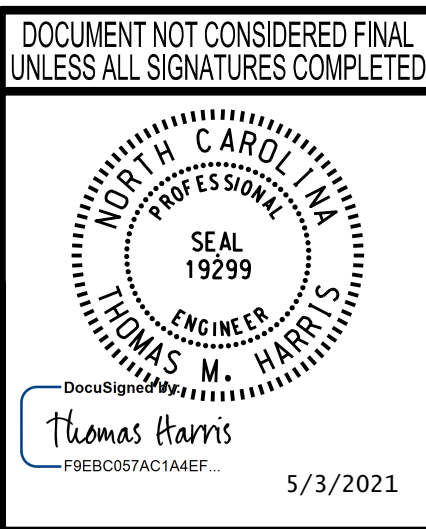
BILL OF MATERIAL						BILL OF MATERIAL					
STAGE I (W1)						STAGE II (W3)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	4	#4	STR	8'-1"	22	H1	4	#4	STR	8'-1"	22
H2	2	#4	STR	6'-8"	9	H2	2	#4	STR	6'-8"	9
H3	2	#4	STR	3'-1"	4	H3	2	#4	STR	3'-1"	4
H4	10	#4	1	3'-3"	22	H4	10	#4	1	3'-3"	22
H5	2	#4	STR	8'-9"	12	H5	2	#4	STR	8'-9"	12
N1	2	#4	2	8'-2"	11	N1	2	#4	2	8'-2"	11
N2	2	#4	2	7'-1"	9	N2	2	#4	2	7'-1"	9
N3	2	#4	2	6'-3"	8	N3	2	#4	2	6'-3"	8
N4	2	#4	2	5'-5"	7	N4	2	#4	2	5'-5"	7
N5	2	#4	2	4'-7"	6	N5	2	#4	2	4'-7"	6
T1	3	#5	STR	10'-0"	31	T1	3	#5	STR	10'-0"	31
V1	2	#4	STR	6'-1"	8	V1	2	#4	STR	6'-1"	8
V2	2	#4	STR	5'-1"	7	V2	2	#4	STR	5'-1"	7
V3	2	#4	STR	4'-3"	6	V3	2	#4	STR	4'-3"	6
V4	2	#4	STR	3'-5"	5	V4	2	#4	STR	3'-5"	5
V5	2	#4	STR	2'-7"	3	V5	2	#4	STR	2'-7"	3
Z1	2	#4	3	4'-9"	6	Z1	2	#4	3	4'-9"	6
Z2	3	#4	3	4'-3"	9	Z2	3	#4	3	4'-3"	9
Z3	2	#4	3	3'-9"	5	Z3	2	#4	3	3'-9"	5
Z4	2	#4	3	3'-4"	4	Z4	2	#4	3	3'-4"	4
Z5	2	#4	3	2'-11"	4	Z5	2	#4	3	2'-11"	4
REINFORCING STEEL FOR 1 WING (STAGE I) 198 LBS						REINFORCING STEEL FOR 1 WING (STAGE II) 198 LBS					
CLASS A CONCRETE						CLASS A CONCRETE					
1 WING 1.6 CY						1 WING 1.6 CY					
1 FOUNDATION 1.5 CY						1 FOUNDATION 1.5 CY					
1 END CURTAIN WALL 0.4 CY						1 END CURTAIN WALL 0.4 CY					
TOTAL 3.5 CY						TOTAL 3.5 CY					



TYPICAL WING SECTION

PROJECT NO. 17BP.9.R.33
DAVIDSON COUNTY
STATION: 12+07.50 -L-

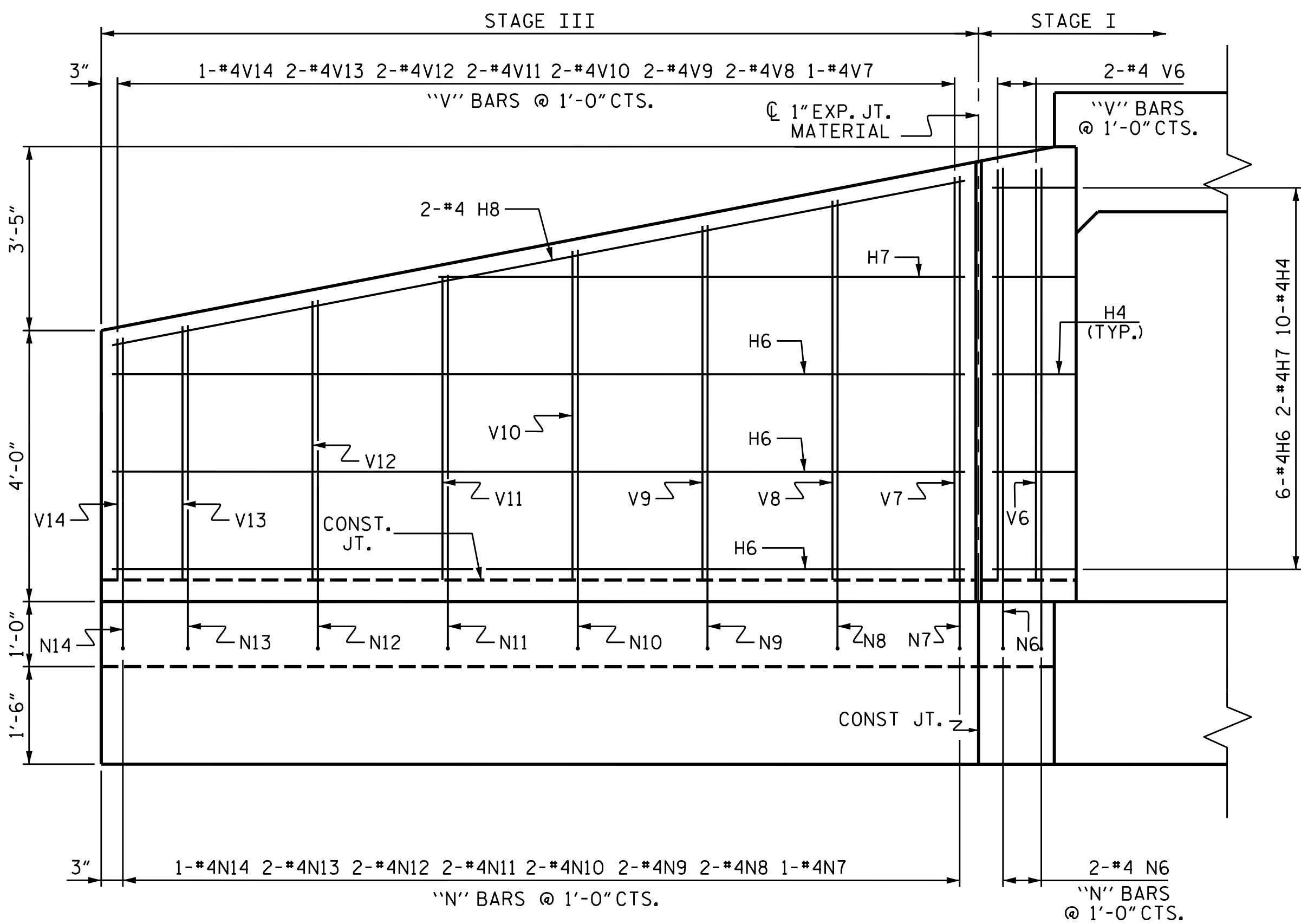
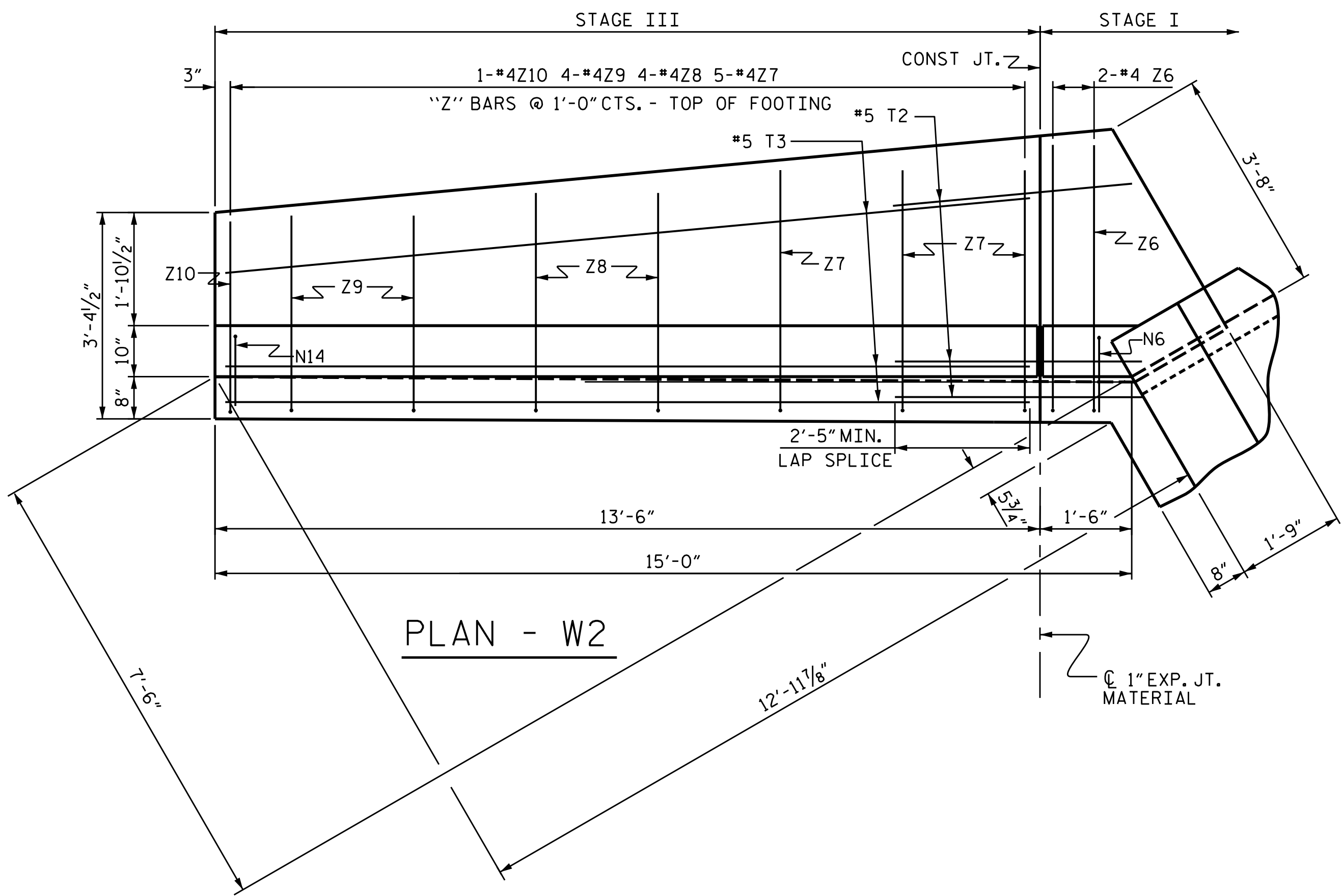
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			C-6
2			4			
TOTAL SHEETS 10						



wsp WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

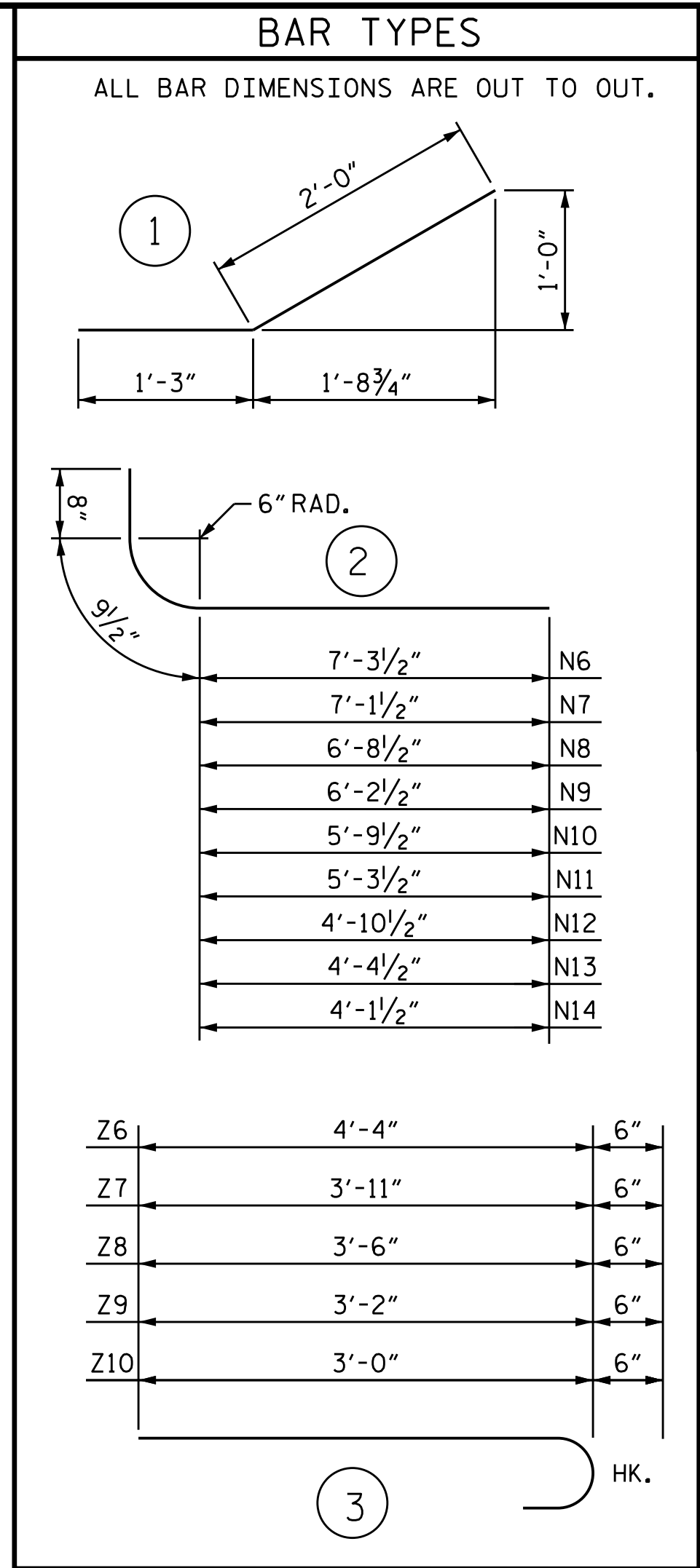
ASSEMBLED BY: J. WHEATLEY	DATE: MAR 2021	DRAWN BY: CCJ	10/99	REV. 6/19	MAA/THC
CHECKED BY: T. KIRSCHBAUM	DATE: MAR 2021	CHECKED BY: RWW	03/00		
DESIGN ENGINEER OF RECORD: T.M. HARRIS	DATE: MAY 2021				

5/3/2021 4:17:34 PM WCDOT Operations On CalN734181 - 17 BP Projects\17BP.9.R.33\Structures\RCBC\Drafting\DON\410-013.17BP.9.R.33.SML.WW02.dgn



ELEVATION - W2

DESIGNED BY: J. WHEATLEY DATE: MAR 2021
DRAWN BY: J. WHEATLEY DATE: MAR 2021
CHECKED BY: T. KIRSCHBAUM DATE: MAR 2021
DESIGN ENGINEER OF RECORD: T.M. HARRIS DATE: MAY 2021

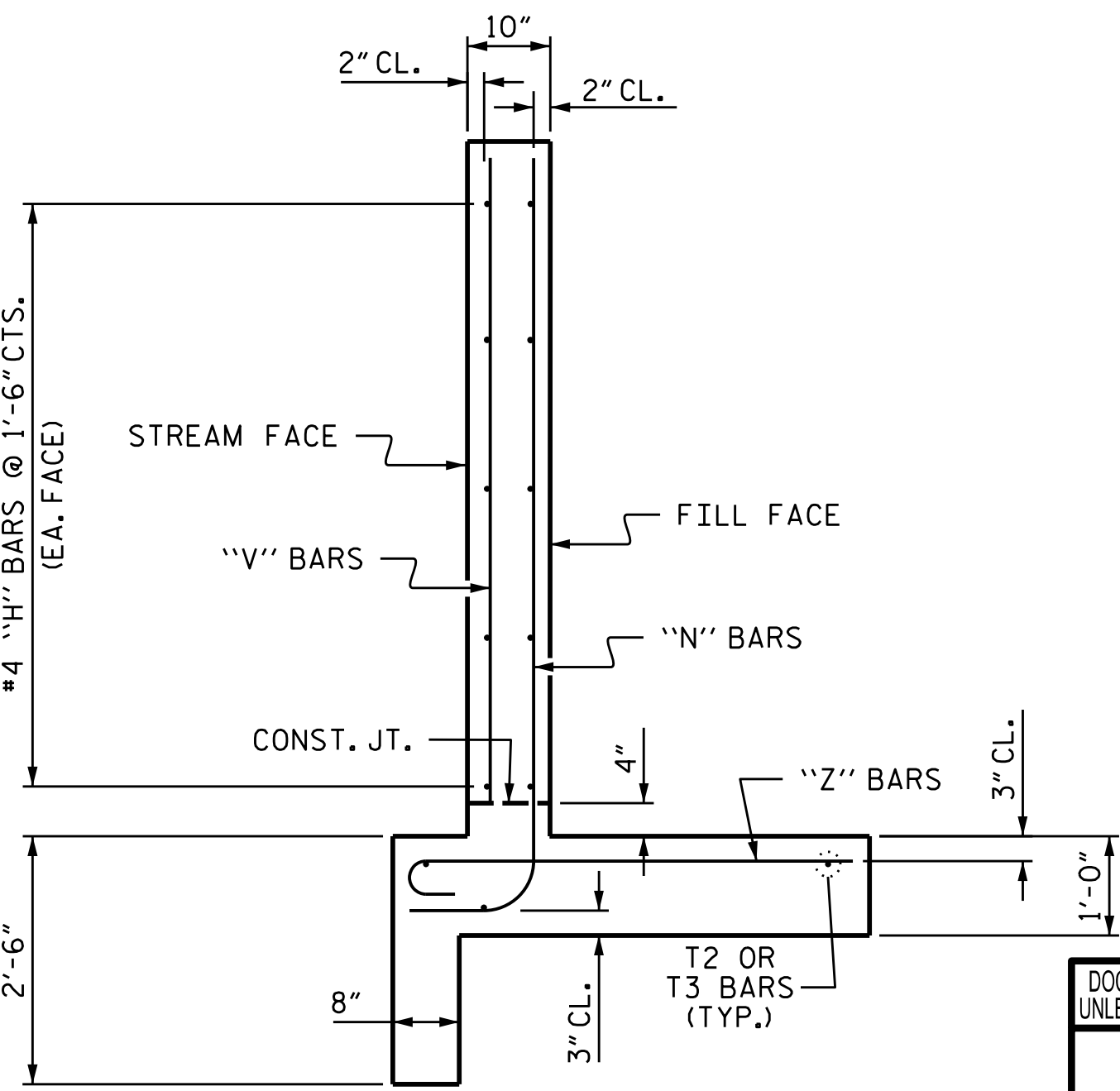


BILL OF MATERIAL					
STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H4	10	#4	1	3'-3"	22
N6	2	#4	2	8'-9"	12
T2	3	#5	STR	4'-4"	14
V6	2	#4	STR	6'-8"	9
Z6	2	#4	3	4'-10"	6
REINFORCING STEEL FOR 1 WING					63 LBS
CLASS A CONCRETE					
1 WING					0.3 CY
1 FOUNDATION					0.4 CY
1 CURTAIN WALL					0.1 CY
TOTAL					0.8 CY

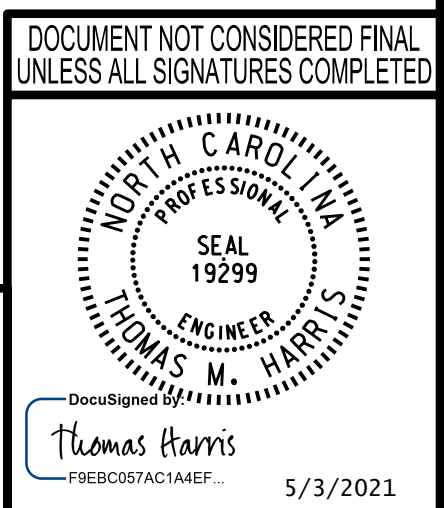
SPLICE LENGTHS

BAR TYPE	UNCOATED
#5	2'-5"

BILL OF MATERIAL					
STAGE III					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H6	6	#4	STR	13'-1"	52
H7	2	#4	STR	8'-3"	11
H8	2	#4	STR	13'-5"	18
N7	1	#4	2	8'-7"	6
N8	2	#4	2	8'-2"	11
N9	2	#4	2	7'-8"	10
N10	2	#4	2	7'-3"	10
N11	2	#4	2	6'-9"	9
N12	2	#4	2	6'-4"	8
N13	2	#4	2	5'-10"	8
N14	1	#4	2	5'-7"	4
T3	3	#5	STR	13'-2"	41
V7	1	#4	STR	6'-6"	4
V8	2	#4	STR	6'-1"	8
V9	2	#4	STR	5'-7"	7
V10	2	#4	STR	5'-2"	7
V11	2	#4	STR	4'-8"	6
V12	2	#4	STR	4'-3"	6
V13	2	#4	STR	3'-9"	5
V14	1	#4	STR	3'-6"	2
Z7	5	#4	3	4'-5"	15
Z8	4	#4	3	4'-0"	11
Z9	4	#4	3	3'-8"	10
Z10	1	#4	3	3'-6"	2
REINFORCING STEEL FOR 1 WING					271 LBS
CLASS A CONCRETE					
1 WINGS					2.6 CY
1 FOUNDATION					2.2 CY
1 CURTAIN WALLS					0.6 CY
TOTAL					5.4 CY



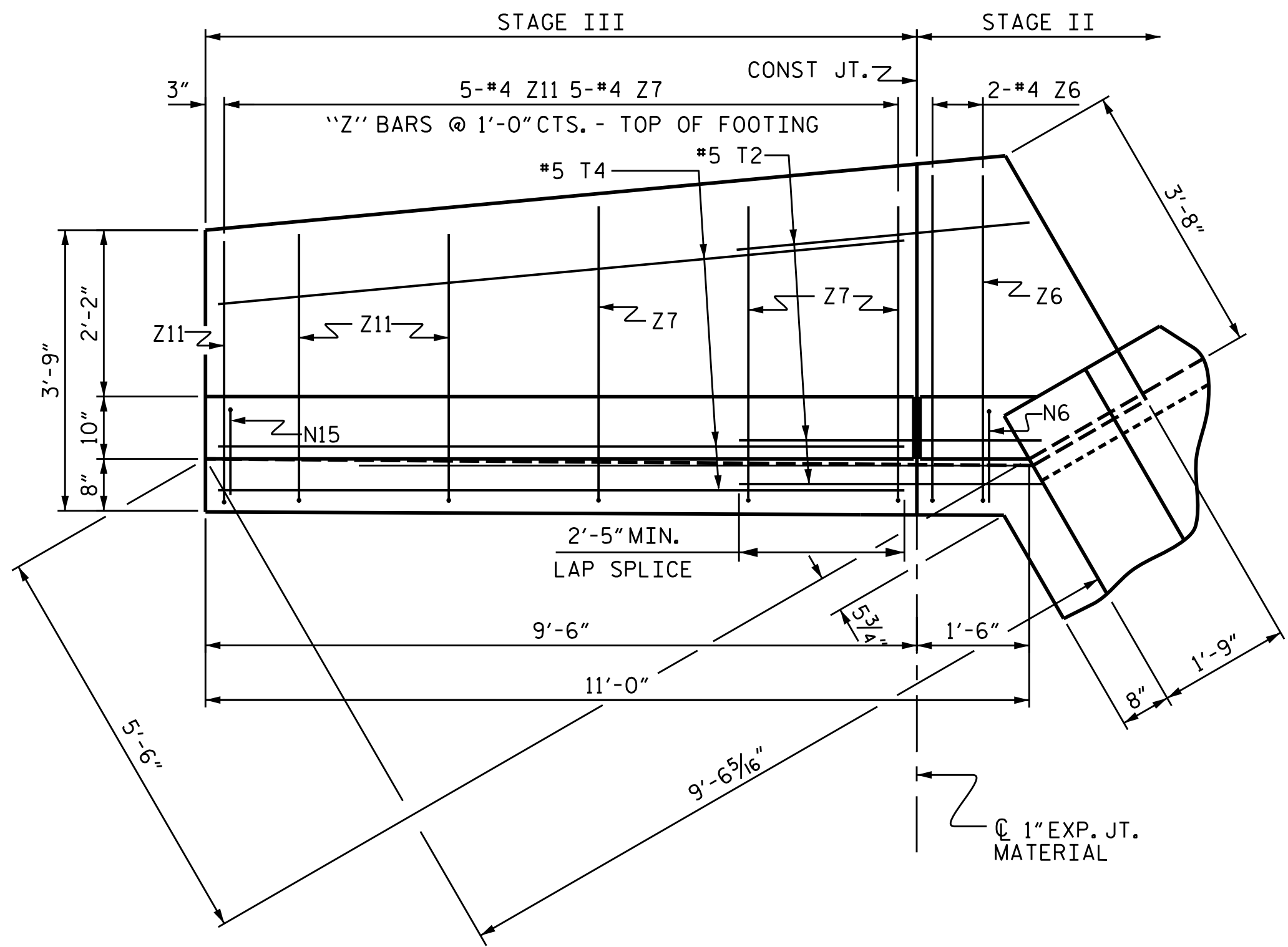
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165



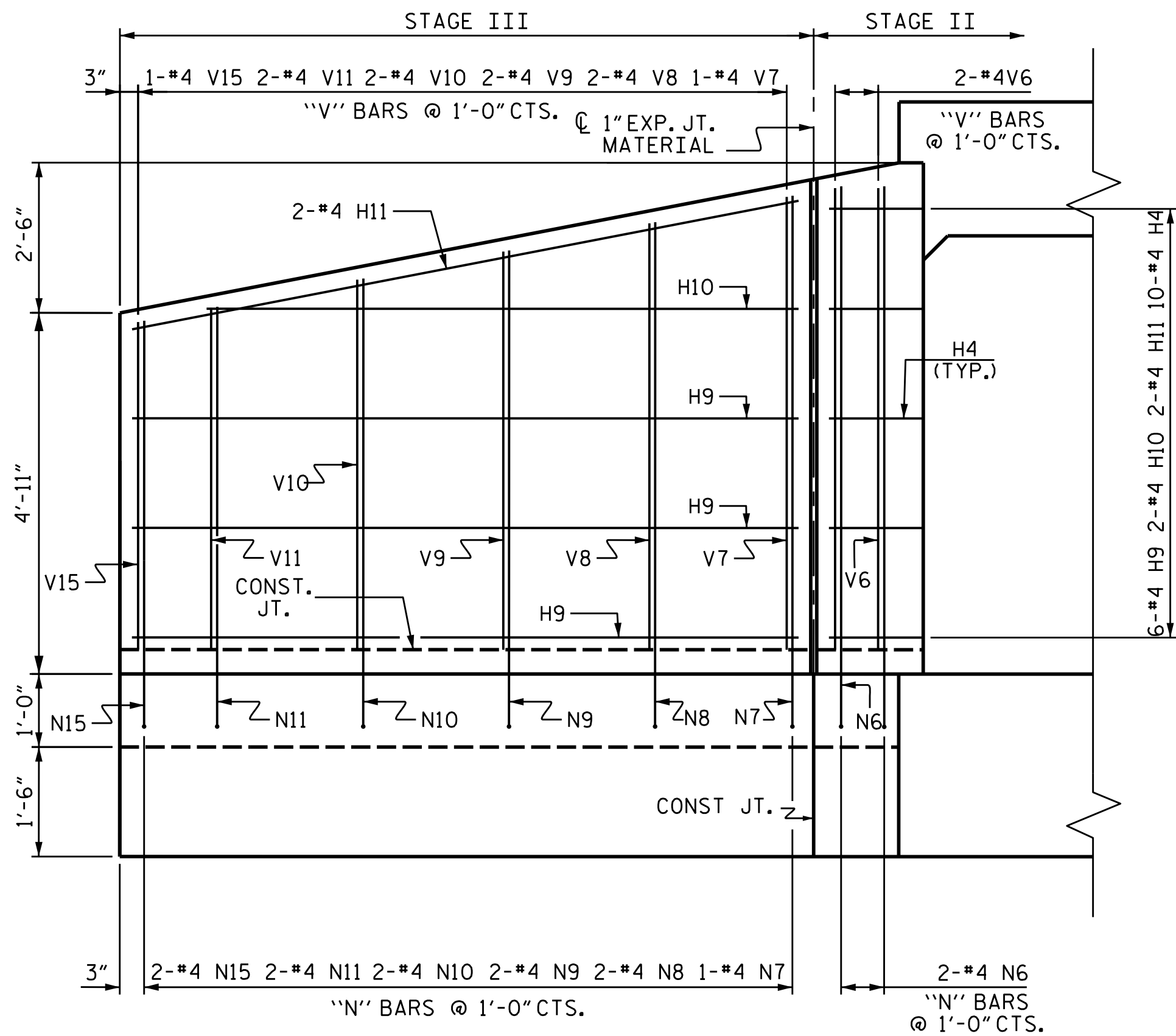
PROJECT NO. 17BP.9.R.33
DAVIDSON COUNTY
STATION: 12+07.50 -L-

DEPARTMENT OF TRANSPORTATION					
WING W2 FOR					
CONCRETE BOX CULVERT					
H = 6'-0" SLOPE = 4:1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					C-7
TOTAL SHEETS					10

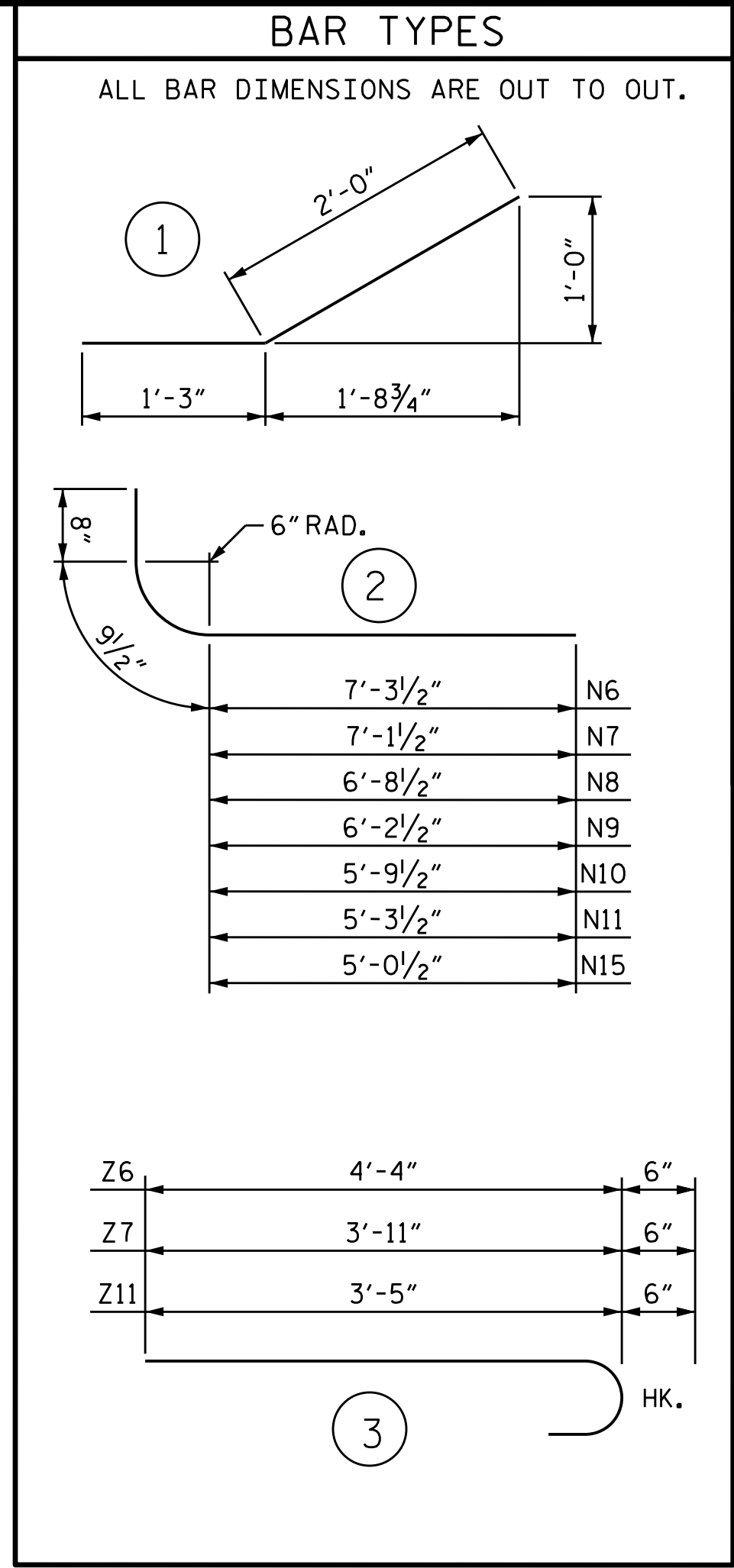
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PLAN - W4



ELEVATION - W4

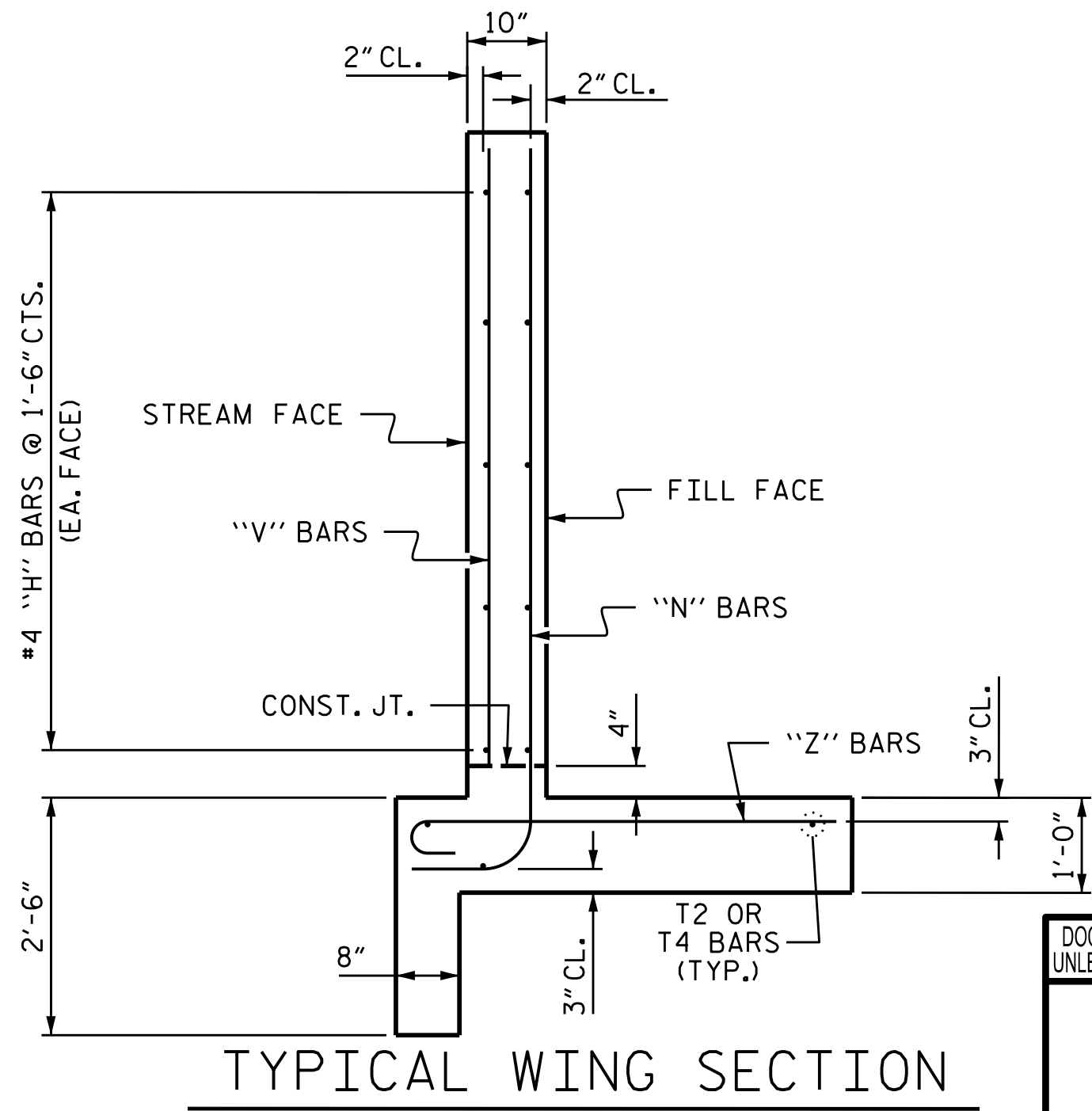


BILL OF MATERIAL					
STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H4	10	#4	1	3'-3"	22
N6	2	#4	2	8'-9"	12
T2	3	#5	STR	4'-4"	14
V6	2	#4	STR	6'-8"	9
Z6	2	#4	3	4'-10"	6
REINFORCING STEEL FOR 1 WING					63 LBS
CLASS A CONCRETE					
1 WING					0.3 CY
1 FOUNDATION					0.4 CY
1 CURTAIN WALL					0.1 CY
TOTAL					0.8 CY

SPLICE LENGTHS

BAR TYPE	UNCOATED
#5	2'-5"

BILL OF MATERIAL					
STAGE III					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H9	6	#4	STR	9'-1"	36
H10	2	#4	STR	8'-2"	11
H11	2	#4	STR	9'-4"	12
N7	1	#4	2	8'-7"	6
N8	2	#4	2	8'-2"	11
N9	2	#4	2	7'-8"	10
N10	2	#4	2	7'-3"	10
N11	2	#4	2	6'-9"	9
N15	1	#4	2	6'-6"	4
T4	3	#5	STR	9'-2"	29
V7	1	#4	STR	6'-6"	4
V8	2	#4	STR	6'-1"	8
V9	2	#4	STR	5'-7"	7
V10	2	#4	STR	5'-2"	7
V11	2	#4	STR	4'-8"	6
V15	1	#4	STR	4'-5"	3
Z7	5	#4	3	4'-5"	15
Z11	5	#4	3	3'-11"	13
REINFORCING STEEL FOR 1 WING					201 LBS
CLASS A CONCRETE					
1 WINGS					2.1 CY
1 FOUNDATION					1.8 CY
1 CURTAIN WALLS					0.4 CY
TOTAL					4.3 CY



TYPICAL WING SECTION

PROJECT NO. 17BP.9.R.33
DAVIDSON COUNTY
STATION: 12+07.50 -L-

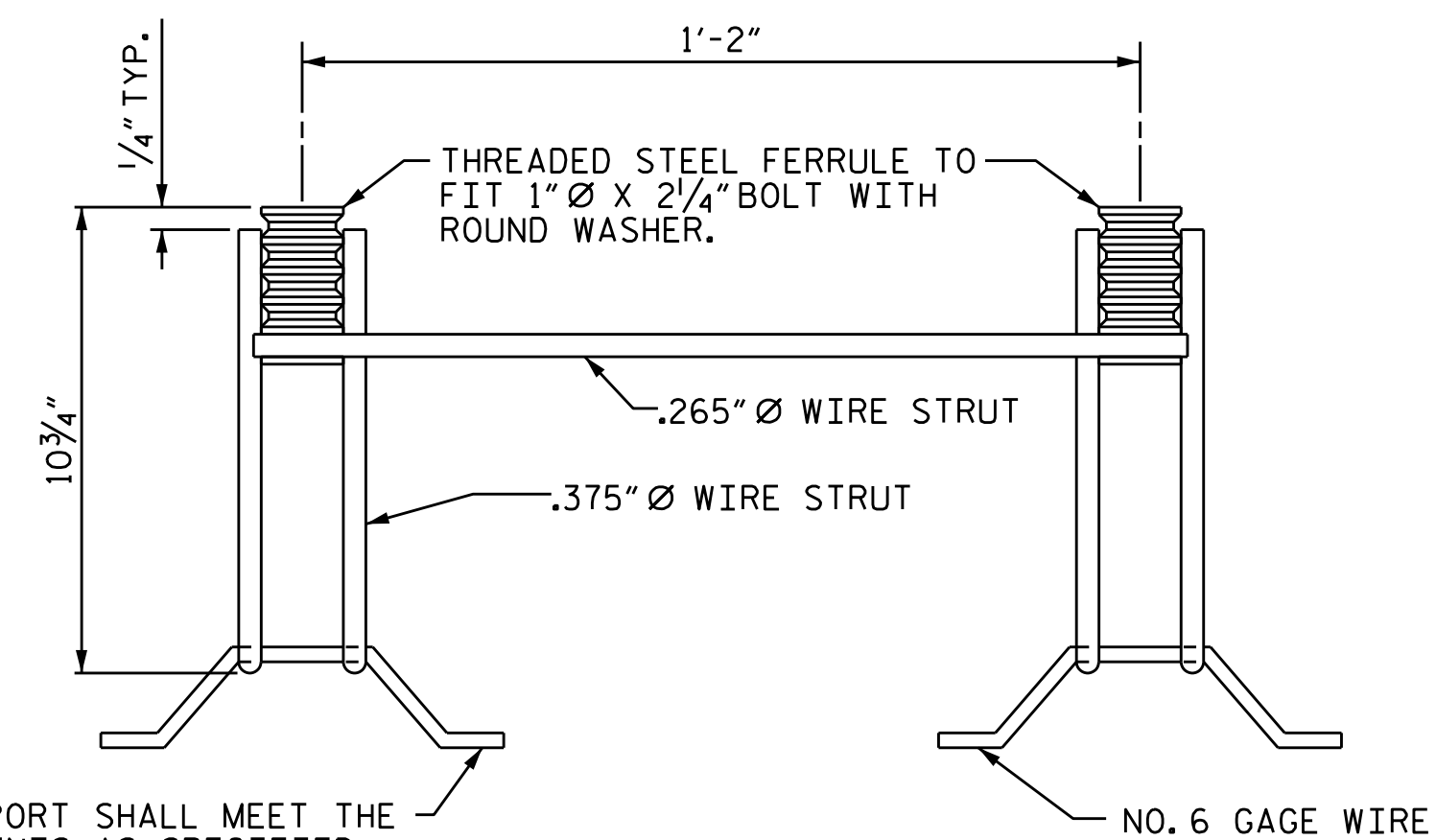
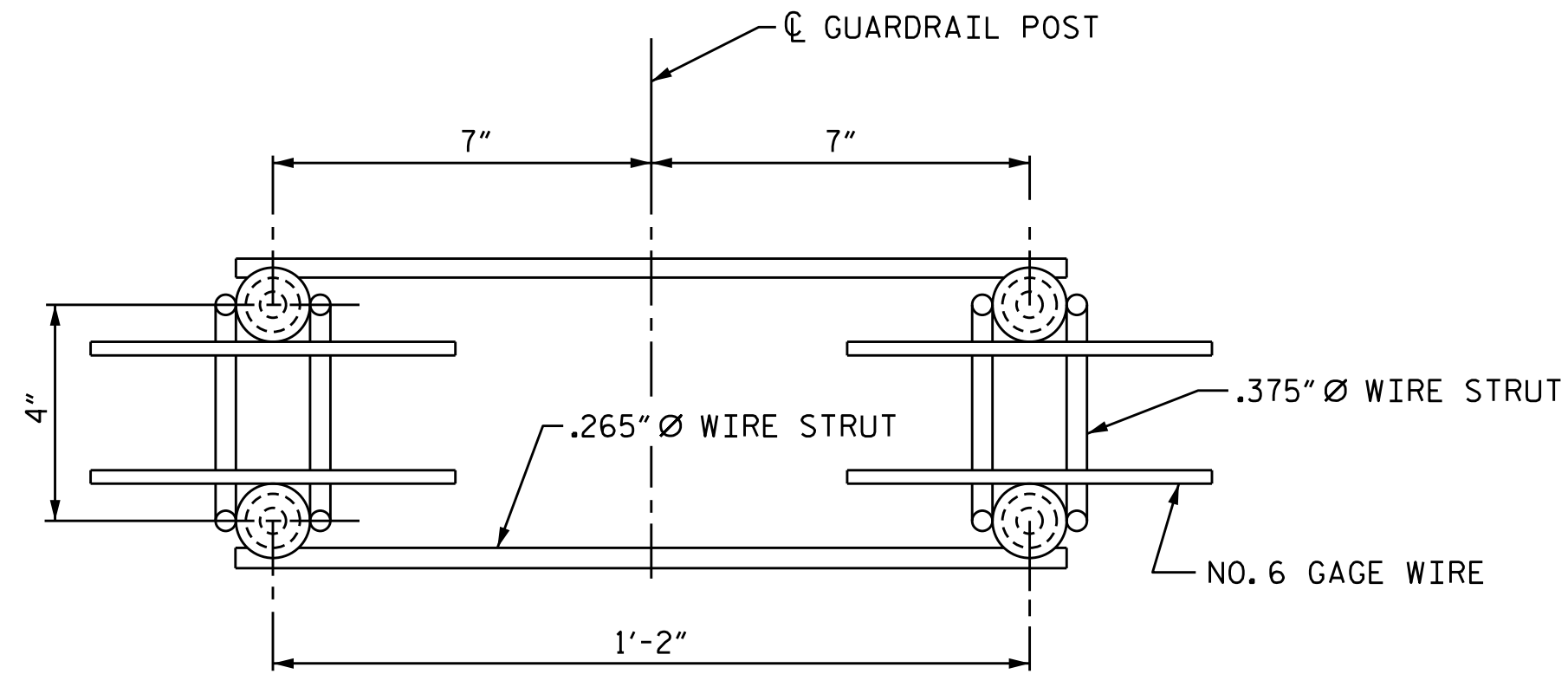
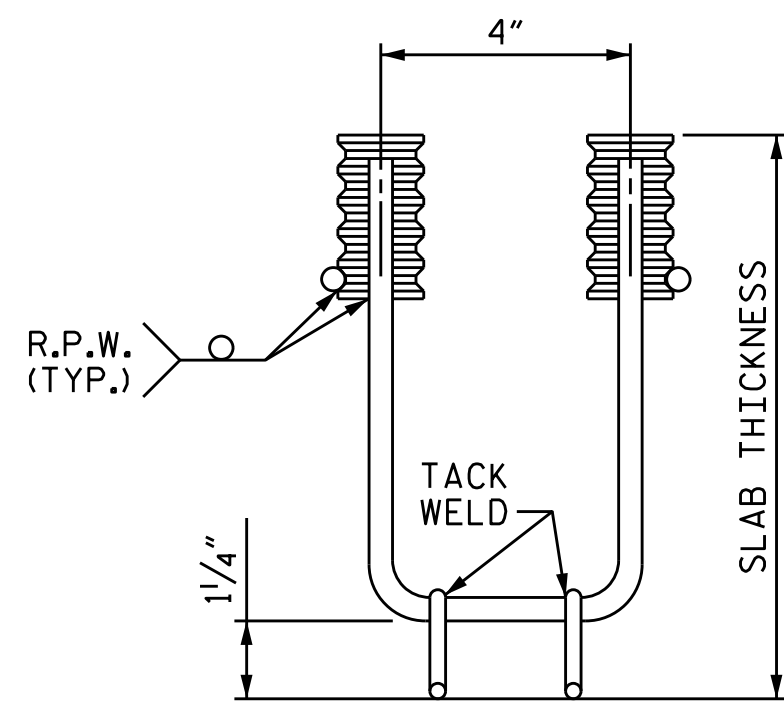
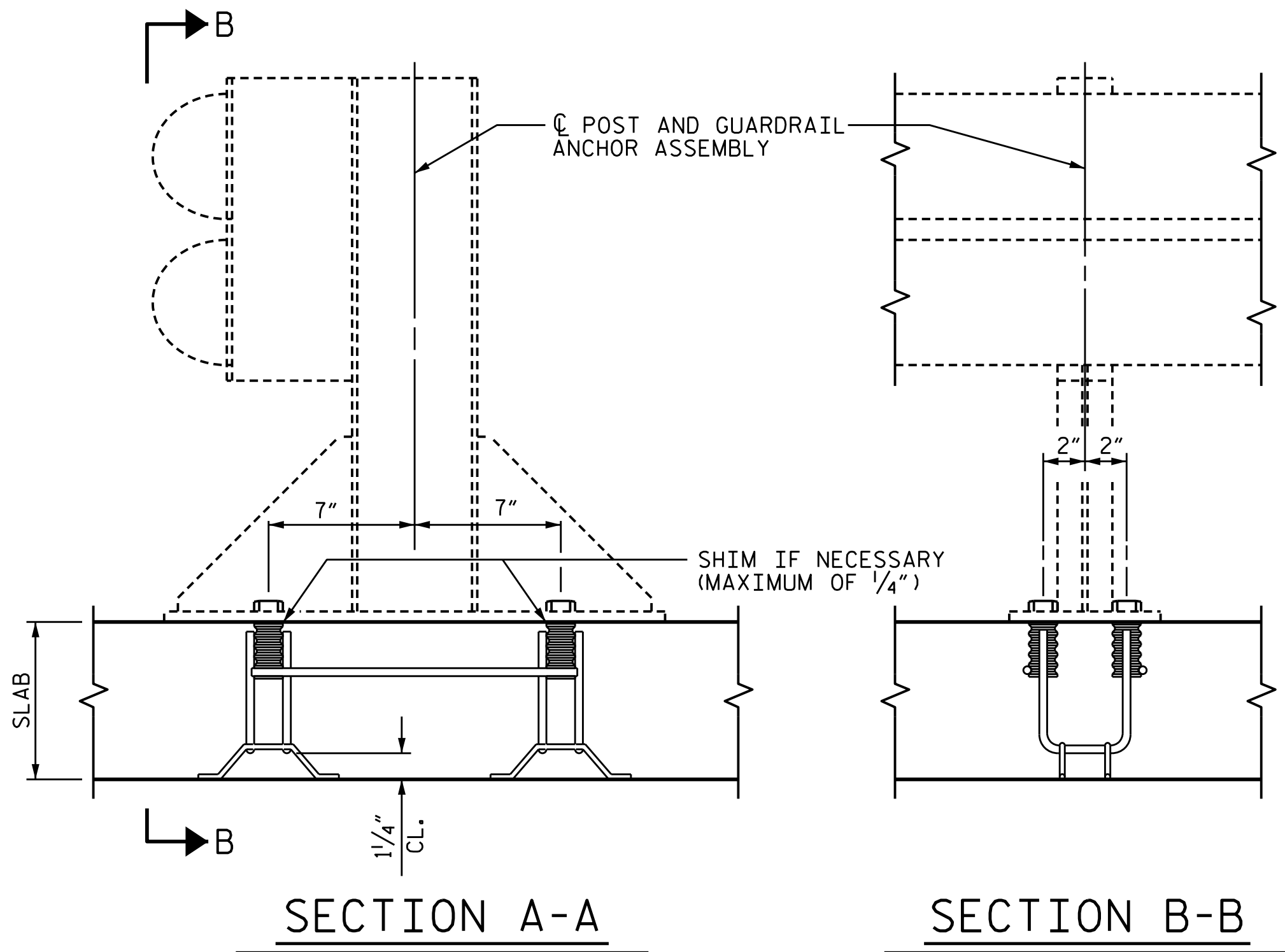
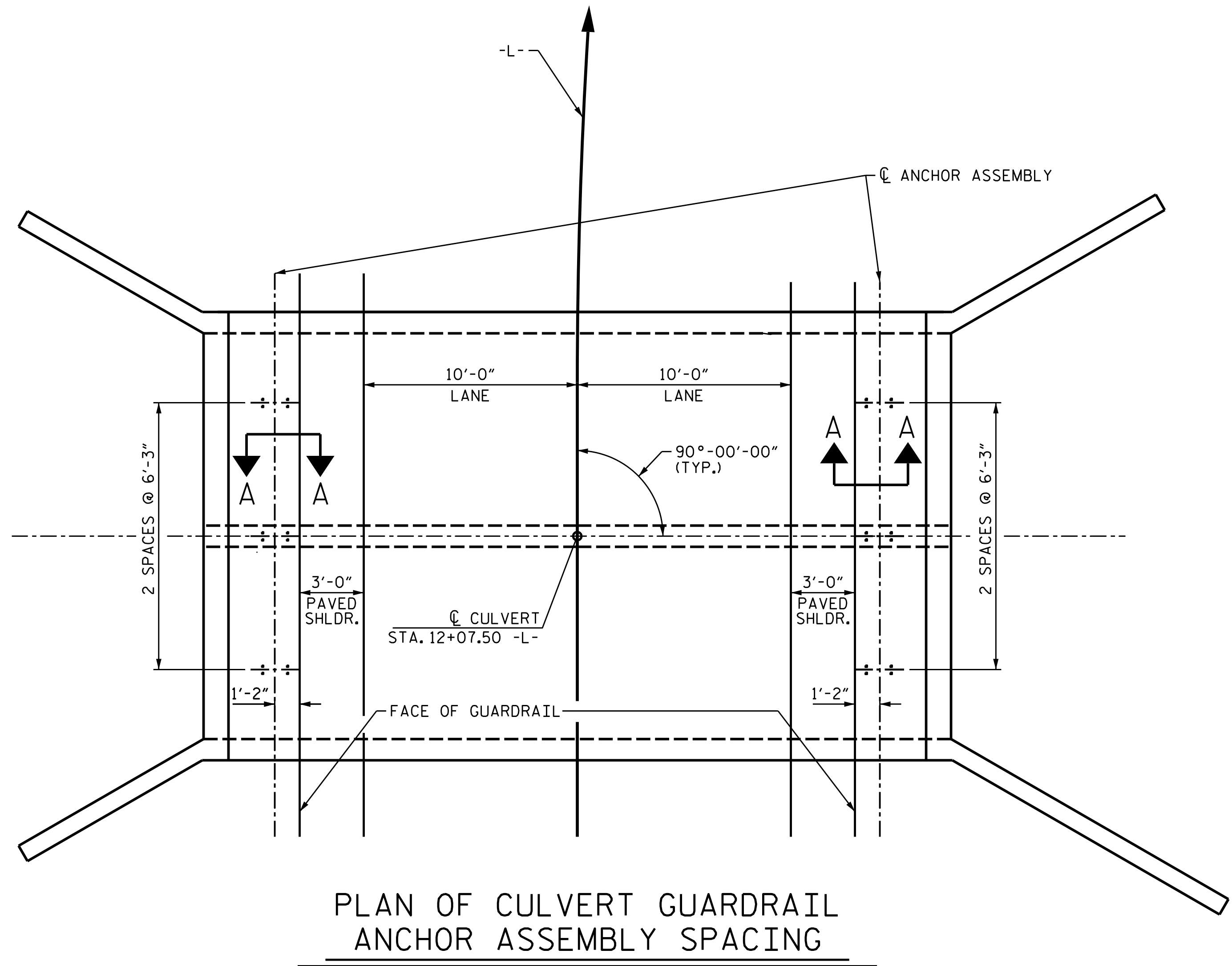
DEPARTMENT OF TRANSPORTATION					
WING W4 FOR					
CONCRETE BOX CULVERT					
H = 6'-0" SLOPE = 4:1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					C-8
TOTAL SHEETS					10

DESIGNED BY: J. WHEATLEY DATE: MAR 2021
DRAWN BY: J. WHEATLEY DATE: MAR 2021
CHECKED BY: T. KIRSCHBAUM DATE: MAR 2021
DESIGN ENGINEER: T.M. HARRIS DATE: MAY 2021
OF RECORD:

WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
THOMAS M. HARRIS
ENGINEER
SEAL 19299
F508C05TAC1A6E...

5/3/2021 4:17:34 PM NCDOT Operations On Call\734181 - 17 BP Projects\17BP.9.R.33\Structures\RCBC\Drafting\DCN\410-017-17BP.9.R.33.SML GRA.dgn



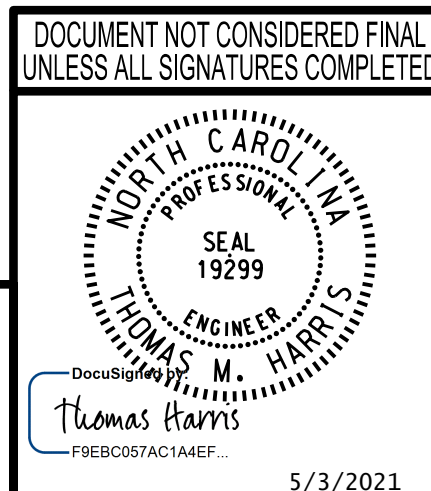
ELEVATION

SIDE VIEW

GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS



WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165



PROJECT NO. 17BP.9.R.33
DAVIDSON COUNTY
STATION: 12+07.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
ANCHORAGE DETAILS FOR
GUARDRAIL ANCHOR ASSEMBLY
FOR CULVERTS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			C-9
2			4			
TOTAL SHEETS						10

STD. NO. GRA1

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS SHALL CONSIST OF THE FOLLOWING COMPONENTS :

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2 1/2".
- 4 - 1" Ø X 2 1/4" BOLTS WITH WASHERS, BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1" Ø X 2 1/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- WIRE STRUTS SHOWN IN THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASS "A" CONCRETE.

FERRULES TO BE PLUGGED DURING POURING OF SLAB AS RECOMMENDED BY THE MANUFACTURER.

AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

PAYMENT FOR GUARDRAIL, POSTS, AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

SLAB REINFORCING STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR GUARDRAIL ANCHOR ASSEMBLY. CARE SHOULD BE TAKEN TO KEEP THE SHIFTING OF REINFORCING STEEL TO A MINIMUM.

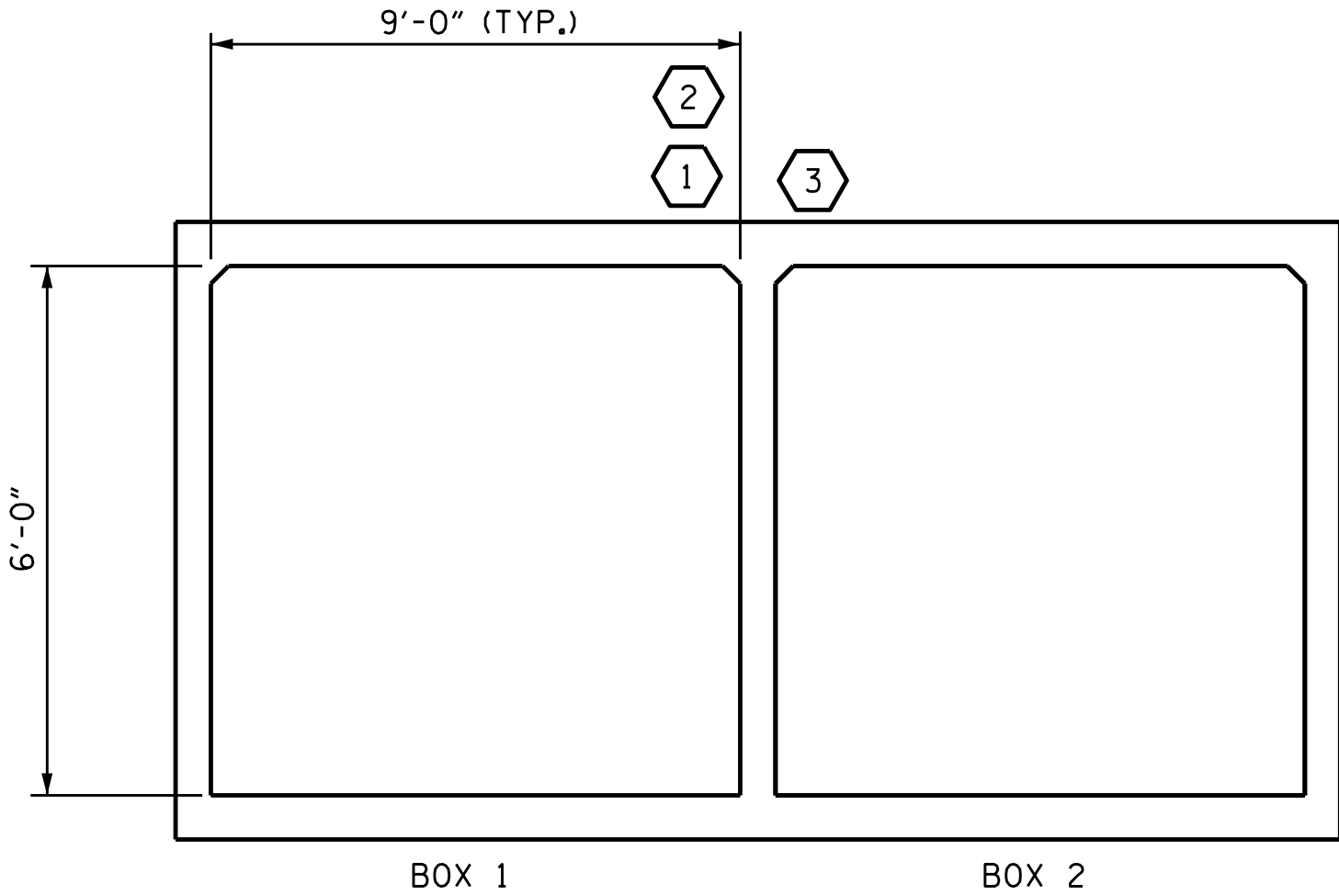
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF GUARDRAIL ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 1" Ø BOLT IS 21.8 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

+

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5/3/2021 4:17:3418 MCDOT Operations On CalN734181 - 17 BP Projects\17BP.9.R.33\17BP.9.R.33\Structures\RCBC\Drafting\DCN\410_019_17BP.9.R.33_SML_LRFR.dgn

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS																
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING ⬡	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE									COMMENT NUMBER	
						LIVE-LOAD FACTORS (γ _{LL})	MOMENT				SHEAR					
							RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)		
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	⬡1	1.94	--	1.75	1.94	1	TOP SLAB	8.55	2.22	2	TOP SLAB	1.08	--	
	HL-93 (OPERATING)	N/A		2.51	--	1.35	2.51	1	TOP SLAB	8.55	2.88	2	TOP SLAB	1.08	--	
	HS-20 (INVENTORY)	36.000	⬡2	1.94	69.84	1.75	1.94	1	TOP SLAB	8.55	2.22	2	TOP SLAB	1.08	--	
	HS-20 (OPERATING)	36.000		2.51	90.36	1.35	2.51	1	TOP SLAB	8.55	2.88	2	TOP SLAB	1.08	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.88	52.38	1.40	3.88	1	INT. WALL	5.58	3.89	1	TOP SLAB	7.92	--
		SNGARBS2	20.000		3.41	68.20	1.40	3.41	2	TOP SLAB	0.45	3.57	2	TOP SLAB	1.08	--
		SNAGRIS2	22.000		3.20	70.40	1.40	3.20	1	TOP SLAB	8.55	3.68	1	TOP SLAB	7.92	--
		SNCOTTS3	27.250		2.22	60.50	1.40	2.22	1	INT. WALL	5.58	2.37	1	TOP SLAB	7.92	--
		SNAGGRS4	34.925		2.31	80.68	1.40	2.31	2	BOTT. SLAB	0.45	2.61	1	BOTT. SLAB	8.01	--
		SNS5A	35.550		2.25	79.99	1.40	2.25	1	BOTT. SLAB	8.55	2.52	2	BOTT. SLAB	0.99	--
		SNS6A	39.950		2.27	90.69	1.40	2.27	2	BOTT. SLAB	0.45	2.48	2	BOTT. SLAB	0.99	--
		SNS7B	42.000		2.36	99.12	1.40	2.36	2	BOTT. SLAB	0.45	2.48	2	BOTT. SLAB	0.99	--
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		3.61	119.13	1.40	3.88	2	INT. WALL	5.58	3.61	1	BOTT. SLAB	8.01	--
		TNT4A	33.075		2.54	84.01	1.40	2.54	1	INT. WALL	5.58	2.68	2	TOP SLAB	1.08	--
		TNT6A	41.600		2.37	98.59	1.40	2.37	1	BOTT. SLAB	8.55	2.50	2	TOP SLAB	1.08	--
		TNT7A	42.000		2.48	104.16	1.40	2.51	2	BOTT. SLAB	0.45	2.48	2	TOP SLAB	1.08	--
		TNT7B	42.000		2.36	99.12	1.40	2.36	1	BOTT. SLAB	8.55	2.58	2	BOTT. SLAB	0.99	--
		TNAGRIT4	43.000		2.54	109.22	1.40	2.54	1	INT. WALL	5.58	2.59	2	TOP SLAB	1.08	--
		TNAGT5A	45.000		2.51	112.95	1.40	2.51	2	TOP SLAB	0.45	2.55	2	TOP SLAB	1.08	--
		TNAGT5B	45.000	⬡3	2.16	97.20	1.40	2.16	2	TOP SLAB	0.45	2.39	2	TOP SLAB	1.08	--



LRFR SUMMARY
(LOOKING DOWNSTREAM)

LOAD FACTORS:

DESIGN LOAD RATING FACTORS

LOAD TYPE	MAX FACTOR	MIN FACTOR
DC	1.25	0.90
DW	1.50	0.65
EV	1.30	0.90
EH	1.35	0.90
ES	1.50	0.75
LS	1.75	--
WA	1.00	--

NOTE:
RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

⬡ CONTROLLING LOAD RATING

⬡1 DESIGN LOAD RATING (HL-93)

⬡2 DESIGN LOAD RATING (HS-20)

⬡3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

PROJECT NO. 17BP.9.R.33
DAVIDSON COUNTY
STATION: 12+07.50 -L-

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Seal of Thomas M. Harris, Professional Engineer, State of North Carolina, Seal 19299

5/3/2021

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LRFR SUMMARY FOR
REINFORCED CONCRETE
BOX CULVERTS
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO. C-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 10
2			4			

WSP

WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

ASSEMBLED BY: GSA/RMD DATE: APR 2019
CHECKED BY: JW DATE: MAR 2021
DESIGN ENGINEER OF RECORD: T.M. HARRIS DATE: MAY 2021

DRAWN BY: WMC 7/II
CHECKED BY: GM 7/II

REV. 10/1/II MAA/GM
REV. 12/1/II MAA/THG

5/3/2021
*****DCN*****
USJW674778

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	- - - - -	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	- - - - -	SEE PLANS
IMPACT ALLOWANCE	- - - - -	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	- -	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	- -	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	- -	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	- - -	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	- - - - -	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	- - - - -	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	- - -	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	- - - - -	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	- - - - -	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1 1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 3/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

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