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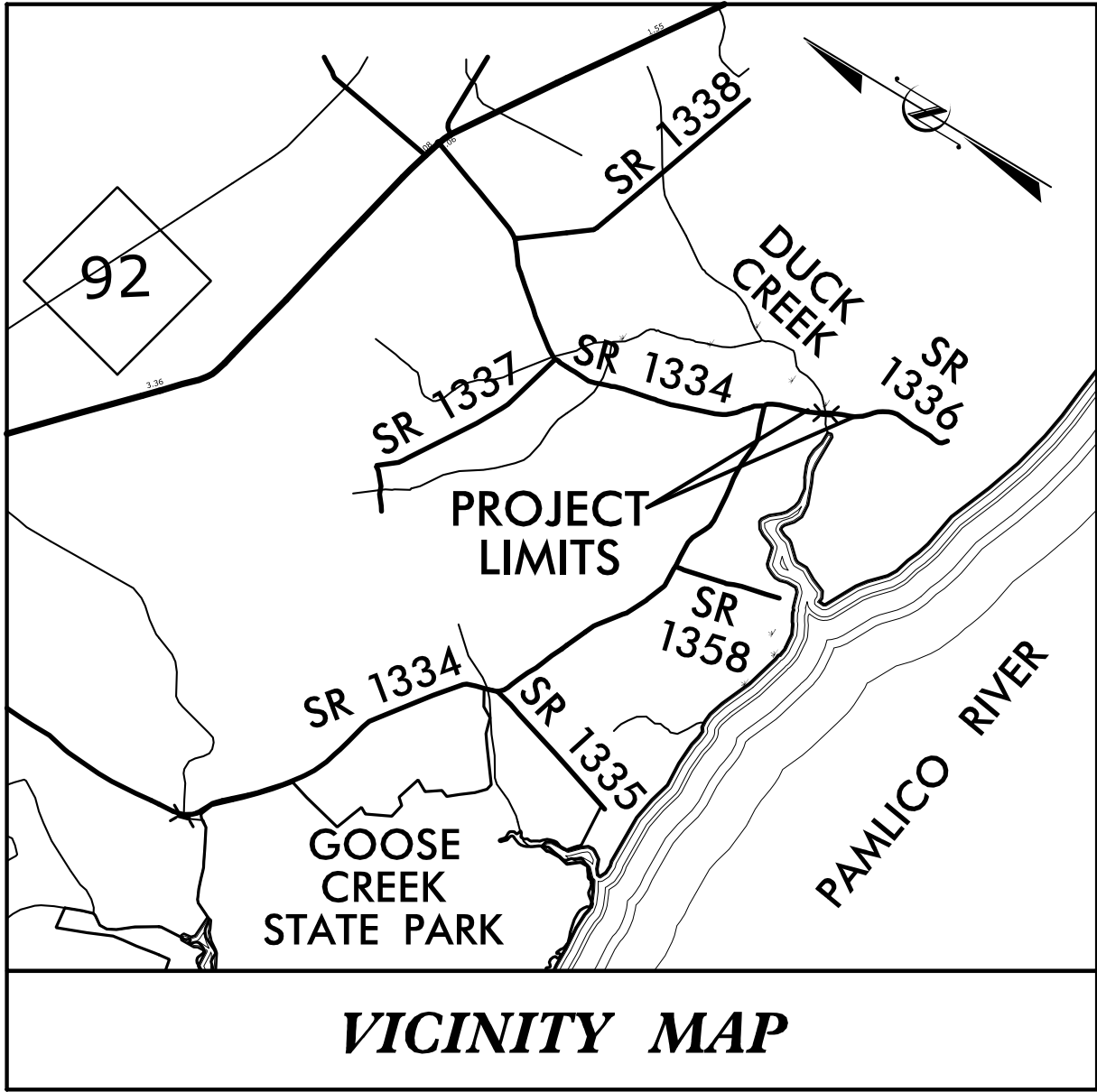
09/08/99

11-JUL-2018 16:11
\\Roadway\Proj\17BP.2.R.85_BP249_r.dwg - tsh.dgn
HNTB

TIP PROJECT: 17BP.2.R.85

CONTRACT: DB00441

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



VICINITY MAP

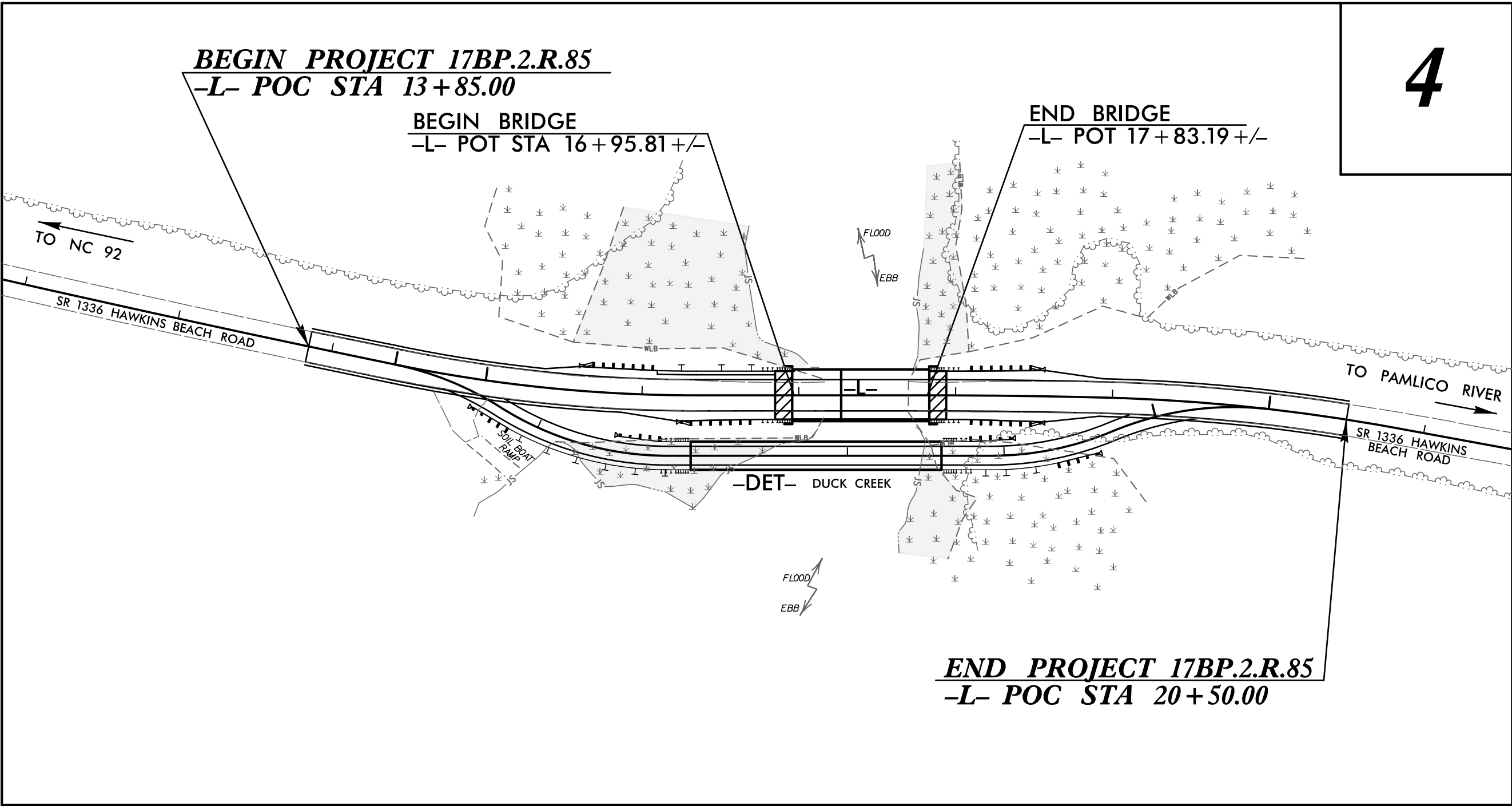
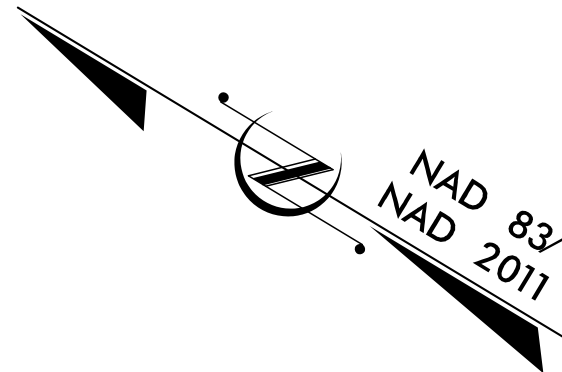
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BEAUFORT COUNTY

LOCATION: REPLACE BRIDGE NO. 249 OVER DUCK CREEK
ON SR 1336 (HAWKINS BEACH ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.2.R.85	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.2.R.85		PE	
17BP.2.R.85		ROW/UTIL	
17BP.2.R.85		CONST	

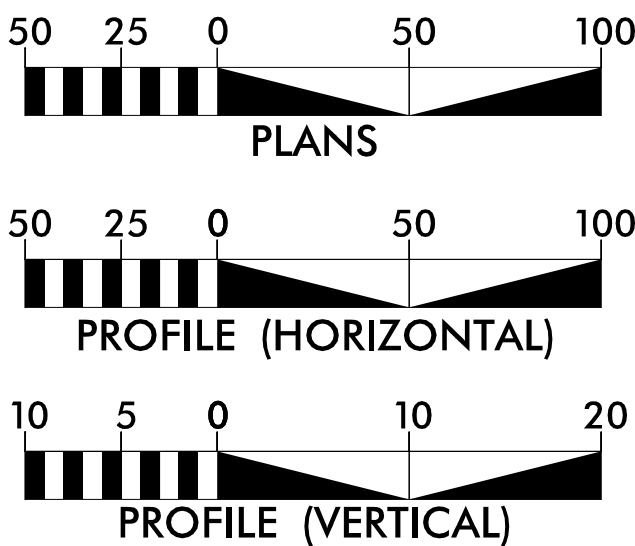


NOTES:

1. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
2. THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
3. SEE SHEET 2B-1 FOR TEMPORARY DETOUR.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2011 = 530
ADT 2031 = 1060
K = 10 %
D = 60 %
T = 6 % *
V = 60 MPH
* TTST = 2% DUAL 4%
FUNC CLASS =
LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 17BP.2.R.85 = 0.109 MILES
LENGTH OF STRUCTURE PROJECT 17BP.2.R.85 = 0.017 MILES
TOTAL LENGTH OF PROJECT 17BP.2.R.85 = 0.126 MILES

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

2018 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: JANUARY 31, 2018	DOUGLAS WHEATLEY, PE PROJECT ENGINEER
LETTING DATE: AUGUST 22, 2018	ROY H. TELLIER, PE PROJECT DESIGN ENGINEER
	HEATHER C. LANE, PE NCDOT CONTACT

HYDRAULICS ENGINEER

DocuSigned by:
James A. Byrd
23592959E54F47C...
7/11/2018

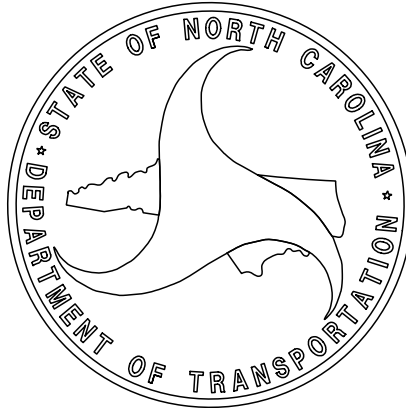
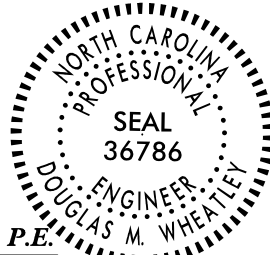
SIGNATURE:



ROADWAY DESIGN ENGINEER

DocuSigned by:
Douglas M. Wheatley
AB7893E90B124DA...
7/11/2018

SIGNATURE:



8/17/99

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES & LIST OF STANDARDS
1B	SYMBOLGY SHEET
1C-1	SURVEY CONTROL SHEETS
2A-1 THRU 2A-2	TYPICAL SECTIONS
2B-1	DETOUR DETAIL
2G-1	GEOTEXTILE FOR EMBANKMENT STABILIZATION DETAIL
2G-2	ROCK EMBANKMENT AND ROCK PLATING DETAILS
3B-1 THRU 3B-2	ROADWAY SUMMARY SHEETS
3G-1	GEOTECHNICAL SUMMARY SHEET
4	PLAN & PROFILE SHEET
TMP-1 THRU TMP-4	TRAFFIC CONTROL PLANS
EC-1 THRU EC-4	EROSION CONTROL PLANS
RF-1 THRU RF-2	REFORESTATION PLANS
UC-1 THRU UC-4	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHER PLANS
X-1 THRU X-11	CROSS SECTION SHEETS
S-1 THRU S-17	STRUCTURE PLANS

EFF. 01-16-2018
REV.

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
225.04	Method of Obtaining Superelevation – Two Lane Pavement

DIVISION 3 – PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 – MAJOR STRUCTURES	
422.02	Bridge Approach Fills – Type II Modified Approach Fill

DIVISION 5 – SUBGRADE, BASES AND SHOULDERS	
560.02	Method of Shoulder Construction – High Side of Superelevated Curve – Method II

DIVISION 8 – INCIDENTALS	
815.02	Subsurface Drain
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet – for Cast Iron Double Frame and Grates
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation (Special Detail for Sheet 6 of 8)
862.03	Structure Anchor Units (Special Detail for Type III Anchor Units Sheets 1 of 7 and 2 of 7)
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

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

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 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. 560.02

SUBSURFACE DRAINS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

POWER – CITY OF WASHINGTON
PHONE – CENTURYLINK
FIBER OPTIC – TRI COUNTY COMMUNICATIONS
WATER – BEAUFORT COUNTY WATER AND SEWER

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

RIGHT-OF-WAY MARKERS:

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.2.R.85	1A

ROADWAY DESIGN
ENGINEER

NORTH CAROLINA
PROFESSIONAL
SEAL
36786

























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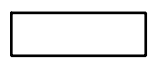
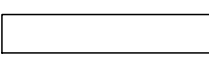



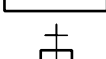

DOCUMENT NOT CONSIDERED FINAL
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STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS
CONVENTIONAL PLAN SHEET SYMBOLS






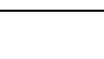



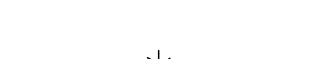

BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin	
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	








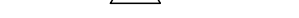














HYDROLOGY:

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	









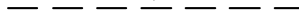


RAILROADS:

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	




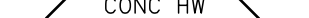





VEGETATION:

Single Tree	
Single Shrub	













*S.U.E. = Subsurface Utility Engineering

Hedge	
Woods Line	
Orchard	
Vineyard	








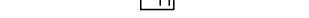







EXISTING STRUCTURES:

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	






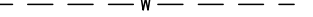

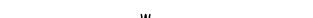
UTILITIES:

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.*)	







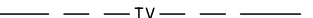


TELEPHONE:

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.*)	




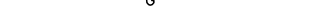

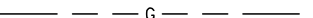
WATER:

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	






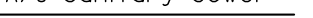

TV:

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.*)	






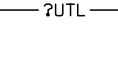

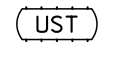




GAS:

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:

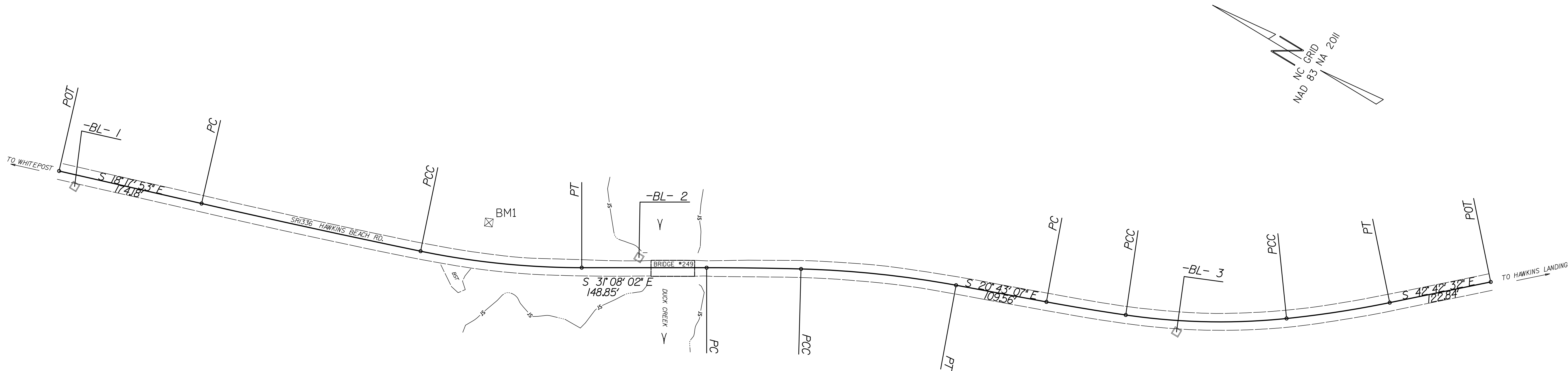
Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line LOS B (S.U.E.*)	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
A/G Tank; Water, Gas, Oil	
Geoenvironmental Boring	
U/G Test Hole LOS A (S.U.E.*)	
Abandoned According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

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REVISIONS

SURVEY CONTROL SHEET 06-0249
W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
06-0249	1C-1
Location and Surveys	



BASELINE

BL POINT	N	E	BEARING	DIST
POT	630874.487	2638607.927		
LINE			S 23°57'48.4" E	677.92
POT	630255.000	2638883.267		
LINE			S 23°16'36.4" E	646.76
POT	629660.885	2639138.848		
LINE			S 36°26'09.0" E	904.46
POT	628933.228	2639676.026		

BENCHMARK

BM1 ELEVATION - 3.73
N 630430 E 2638827
RR SPIKE SET IN 24" PINE

EXISTING ALIGNMENT

EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	630899.832	2638614.115							
LINE			S 18°17'53.3" E	174.18					
PC	630734.463	2638668.800							
CURVE			S 18°53'01.4" E	267.09	01°10'16.3"(LT)	00°26'18.6"	267.09	133.55	13066.29
PCC	630481.750	2638755.242							
CURVE			S 25°18'06.2" E	193.08	11°39'53.3"(LT)	06°01'52.1"	193.41	97.04	950.00
PT	630307.196	2638837.760							
LINE			S 31°08'02.9" E	148.85					
PC	630179.789	2638914.720							
CURVE			S 30°21'56.6" E	112.54	01°32'12.5"(RT)	01°21'56.1"	112.54	56.27	4195.71
PCC	630082.692	2638971.609							
CURVE			S 25°09'29.1" E	185.76	08°52'42.6"(RT)	04°46'28.7"	185.95	93.16	1200.00
PT	629914.549	2639050.581							
LINE			S 20°43'07.8" E	109.56					
PC	629812.078	2639089.340							
CURVE			S 21°45'38.7" E	95.79	02°05'01.9"(LT)	02°10'31.0"	95.80	47.90	2633.96
PCC	629723.112	2639124.853							
CURVE			S 29°54'25.2" E	191.70	14°12'30.9"(LT)	07°23'34.8"	192.19	96.59	775.00
PCC	629556.941	2639220.432							
CURVE			S 39°51'36.4" E	124.41	05°41'51.5"(LT)	04°34'40.8"	124.46	62.28	1251.54
PT	629461.446	2639300.166							
LINE			S 42°42'32.1" E	122.84					
POT	629371.180	2639383.487							

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-4"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 628933.228(±) EASTING: 2639676.026(±)
ELEVATION: 21.148(±)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988391
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-4" TO -L- STATION IS
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

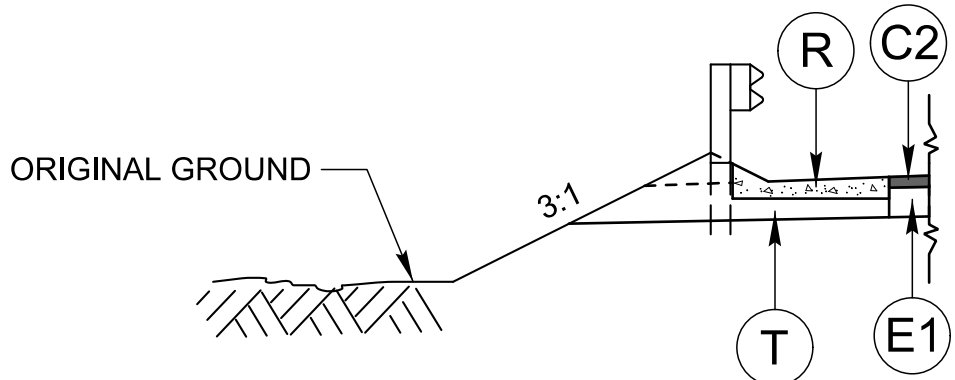
- PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
- THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

6/2/2019

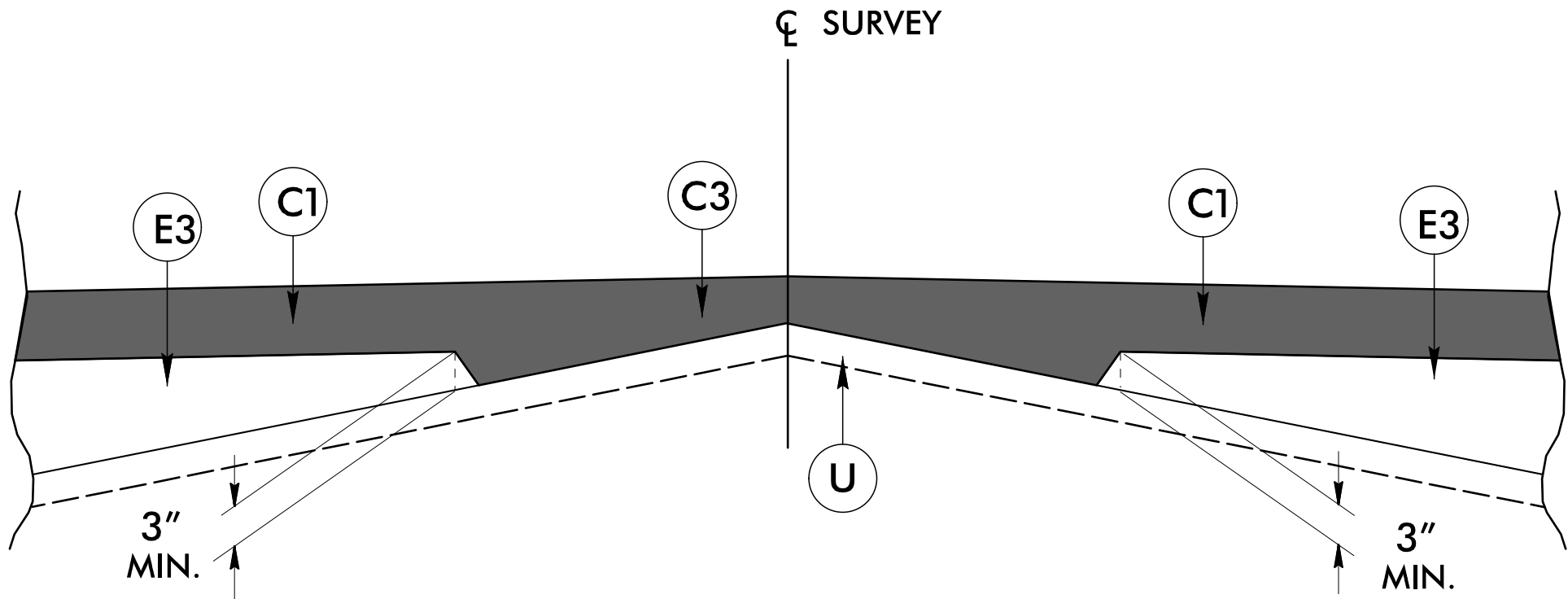
\\JUL-2018-085317BP-2.R.85_BR249_rdy_tup.dgn
HNTB

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.
C3	PROP. VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 112 LBS. PER SQ. YARD PER INCH. DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YARD.
E2	PROP. APPROX. 6" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.
E3	PROP. VARIABLE DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD PER INCH. DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING (SEE DETAIL)

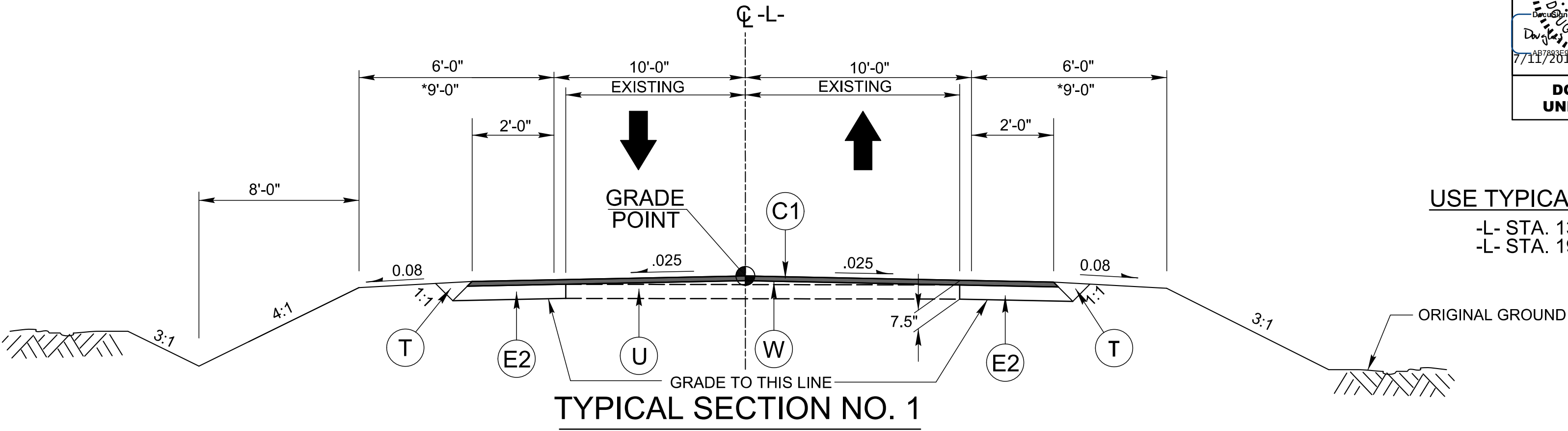
ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



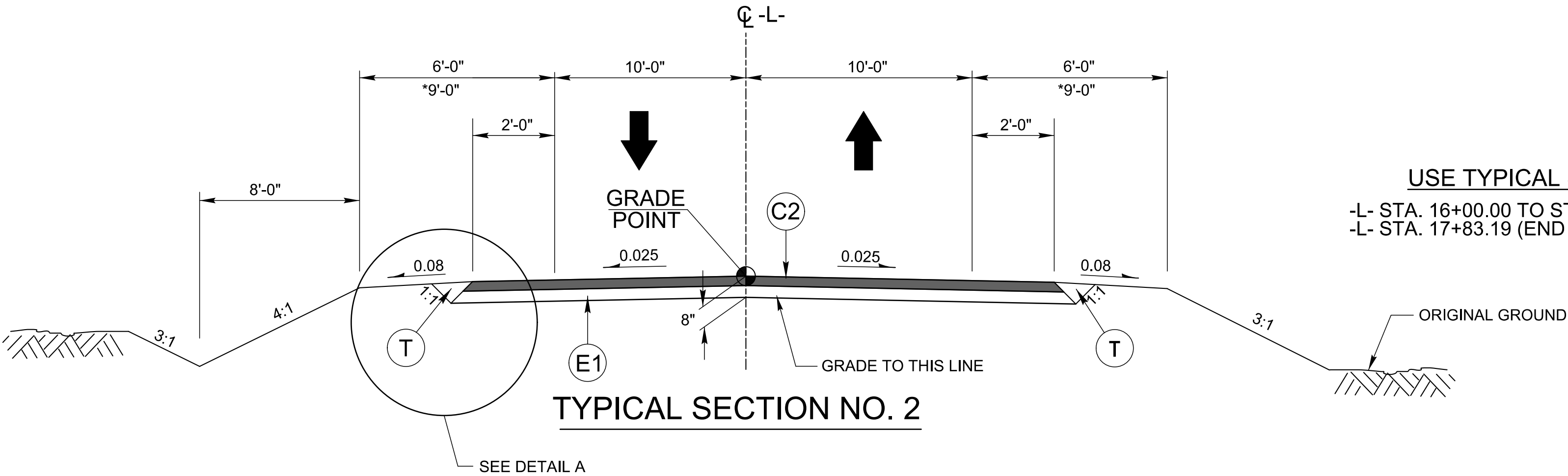
DETAIL A
SHOULDER BERM GUTTER LOCATIONS
-L- STA 16+09.50 TO STA 16+84.94 (LT)



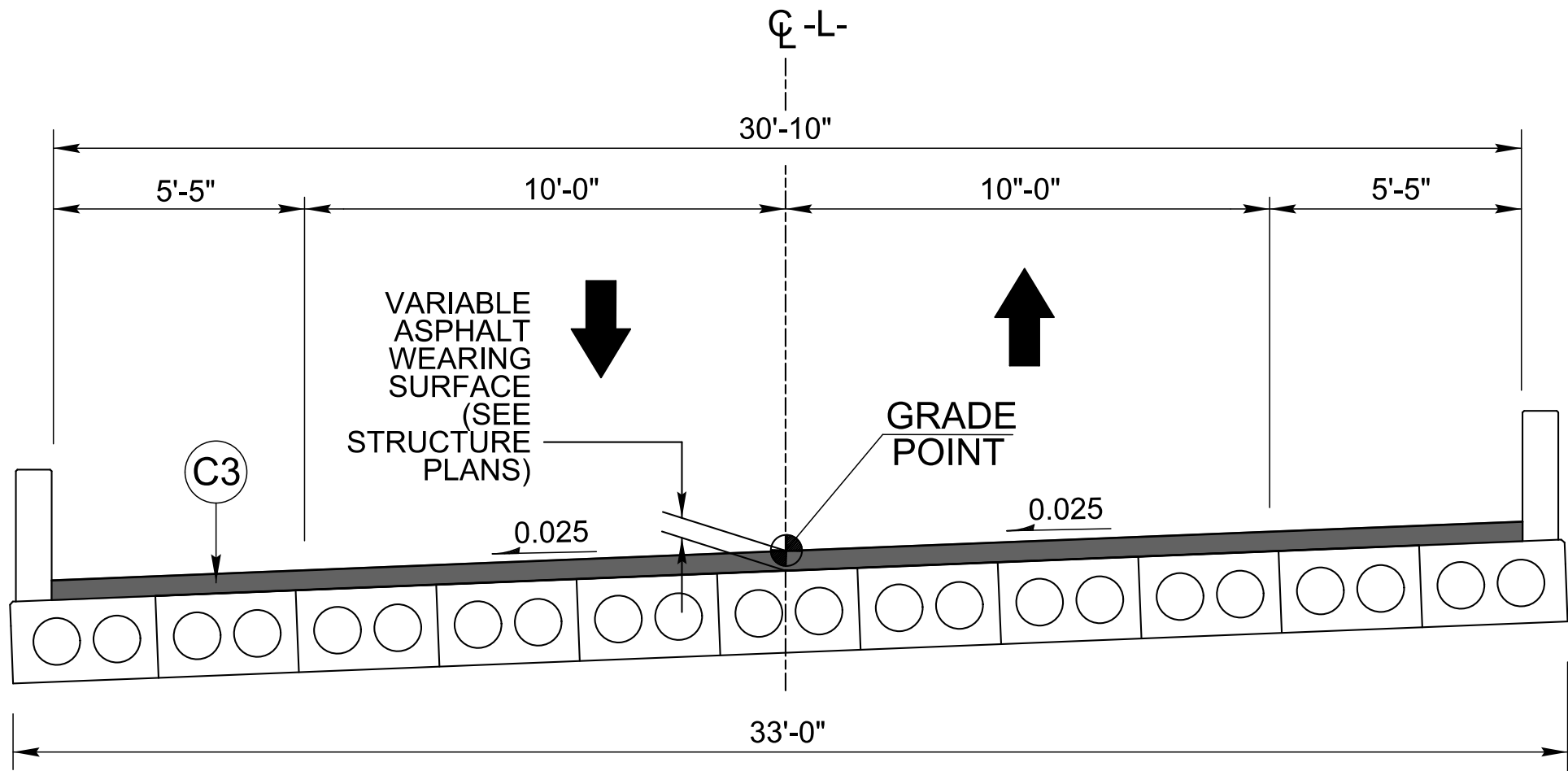
Detail Showing Method of Wedging



USE TYPICAL SECTION NO. 1 FROM:
-L- STA. 13+35.00 TO STA. 16+00.00
-L- STA. 19+00.00 TO STA. 20+50.00



USE TYPICAL SECTION NO. 2 FROM:
-L- STA. 16+00.00 TO STA. 16+95.81 (BEGIN BRIDGE)
-L- STA. 17+83.19 (END BRIDGE) TO STA. 19+00.00

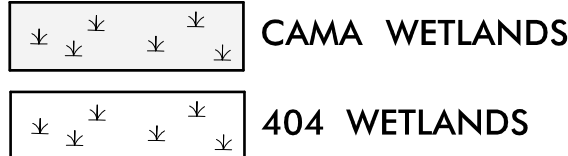


USE TYPICAL SECTION NO. 3 FROM:
-L- STA. 16+95.81 TO STA. 17+83.19

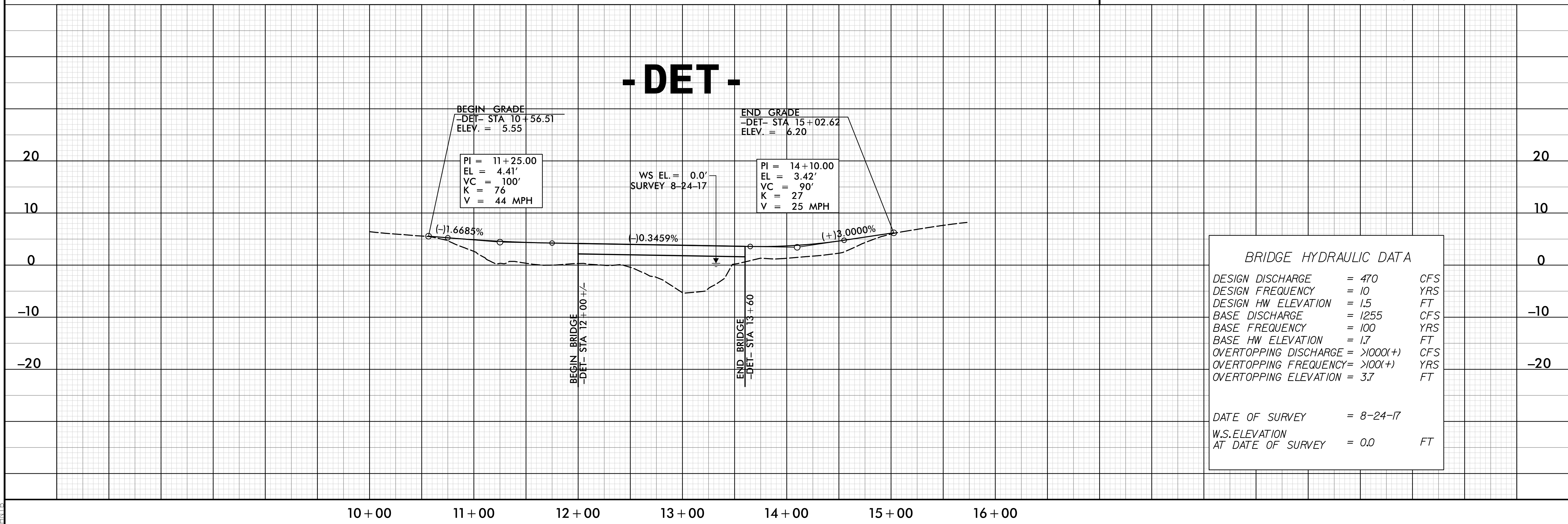
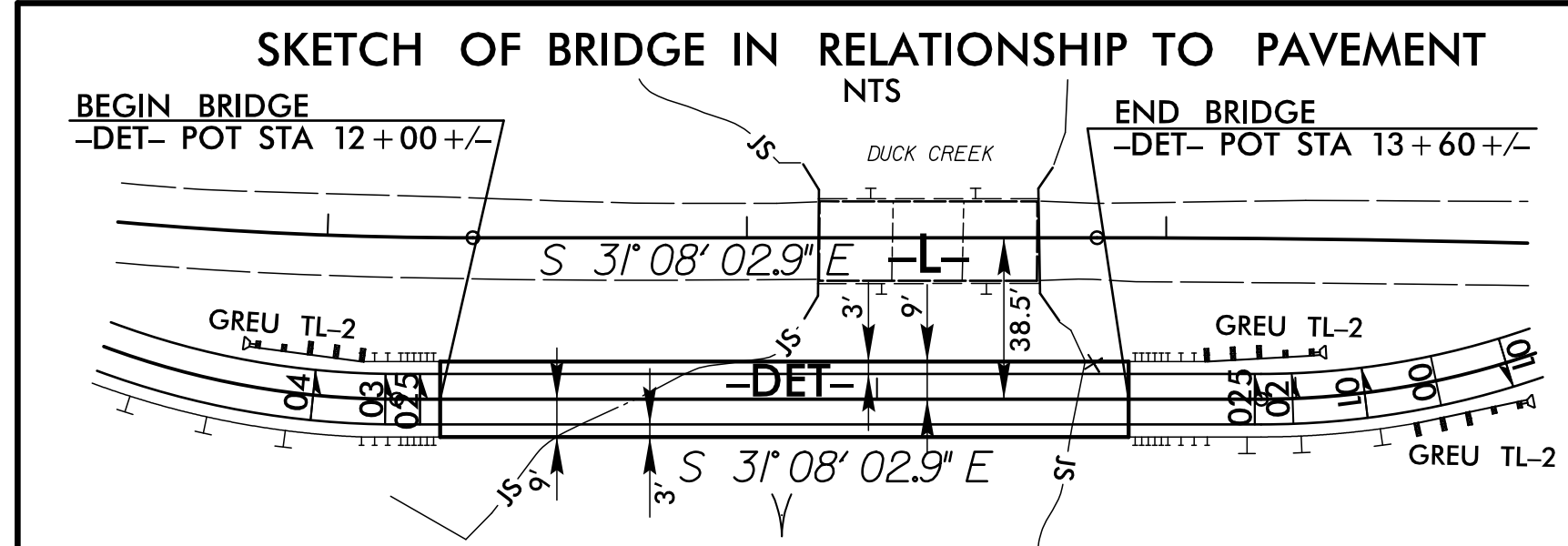
TYPICAL SECTION NO. 3
CORED SLAB BRIDGE OVERLAY

NOTES: * SHOULDER WIDTH INCREASED 3' WITH THE USE OF GUARDRAIL

15



FOR -L- ALIGNMENT AND PROFILE, SEE SHEET 4





DocuSigned by:
J. Young Park

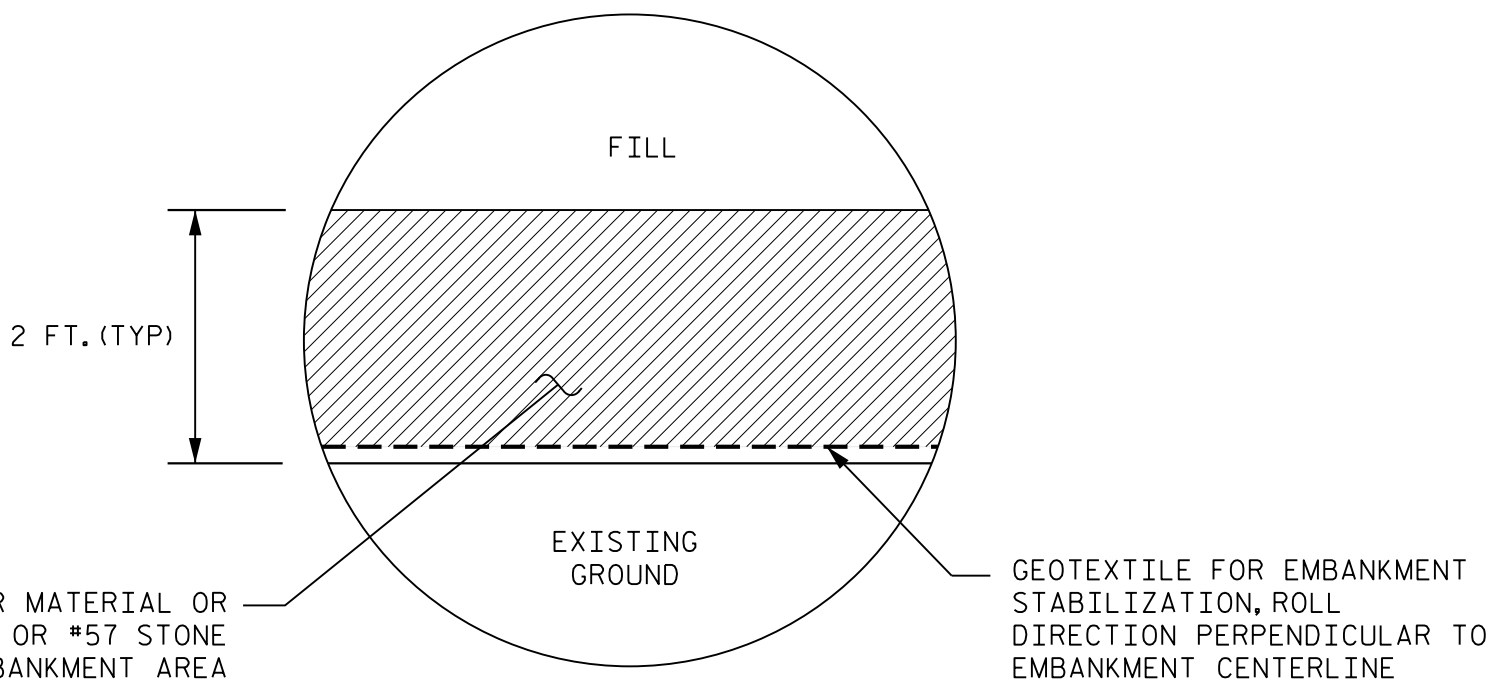
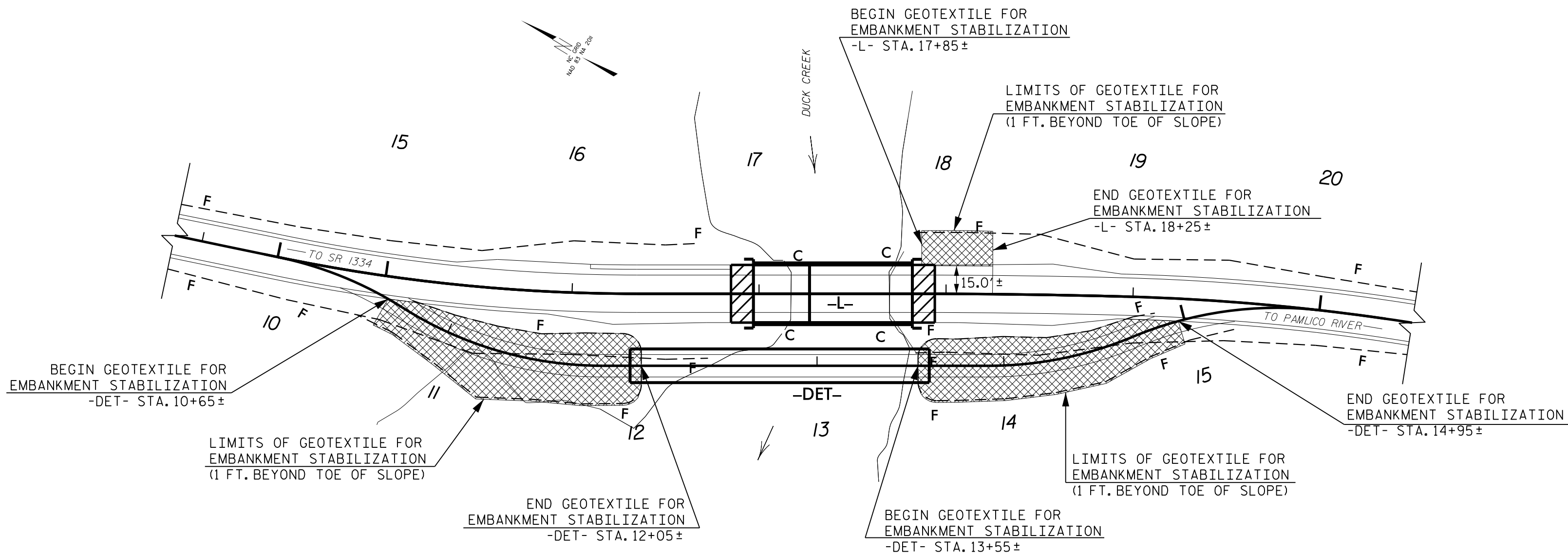
4/26/2018

DATE

SIGNATURE

DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



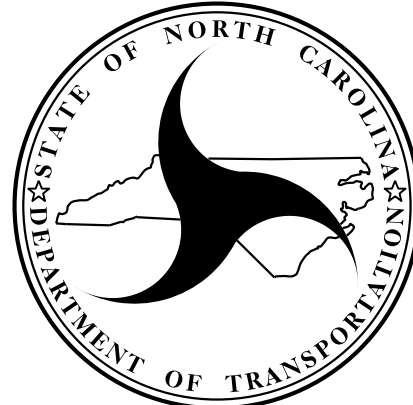
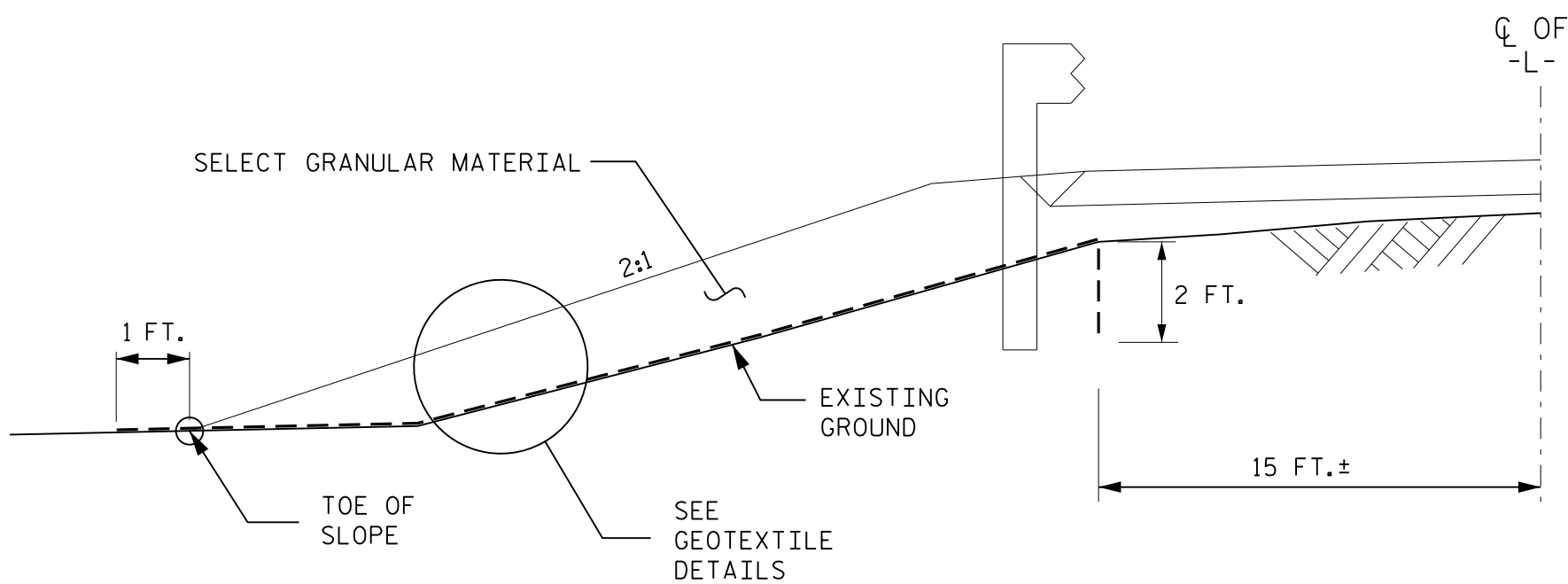
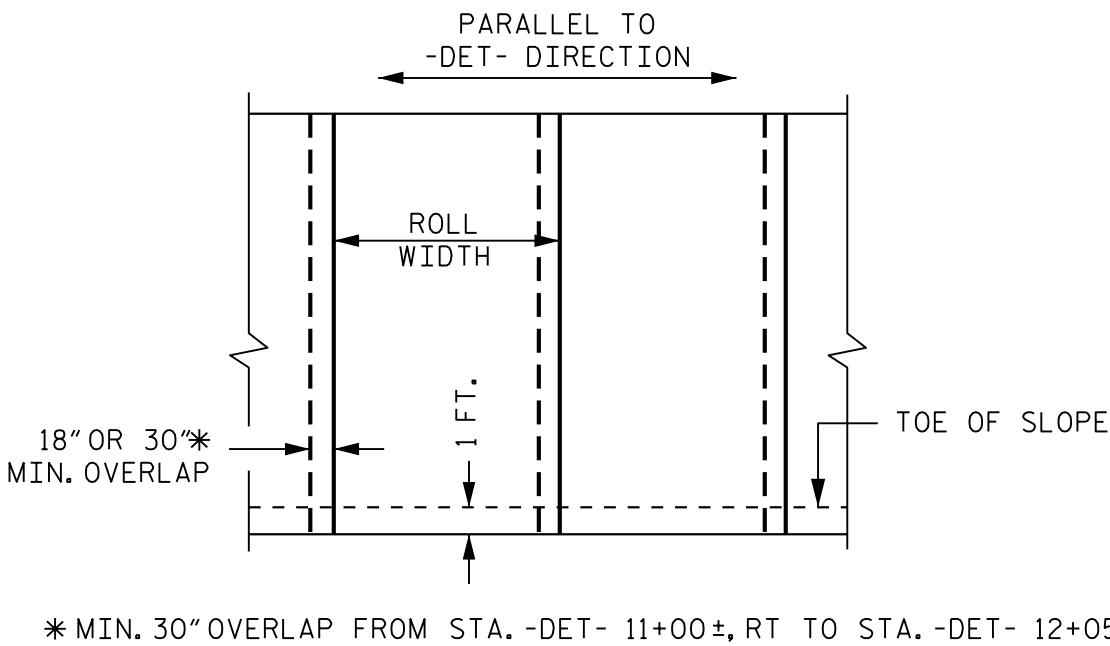
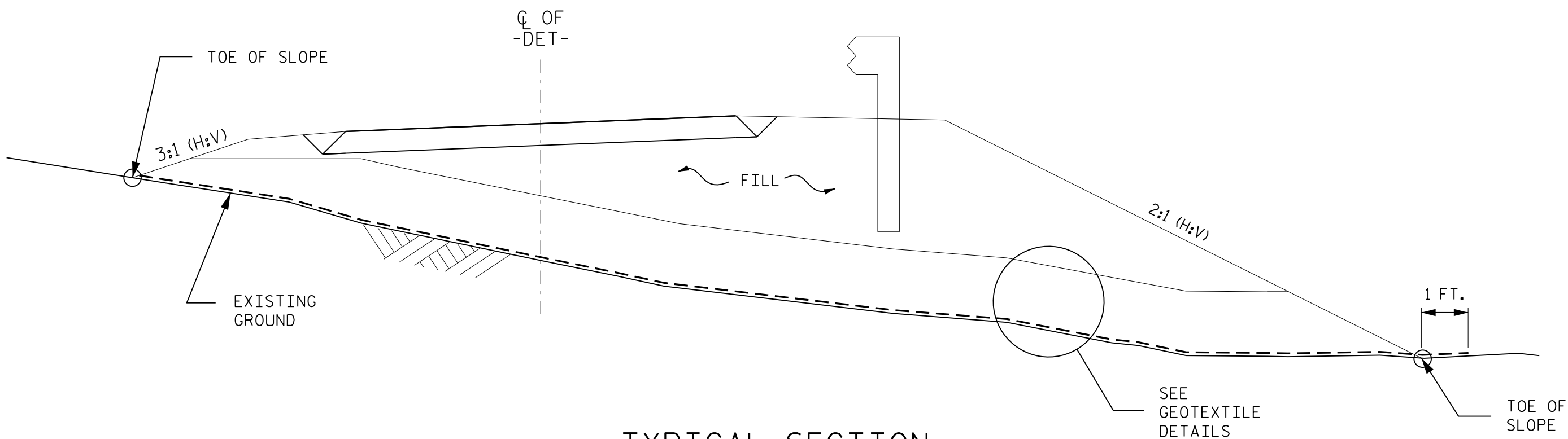
NOTES

- DO NOT GRUB, ONLY CLEAR THE AREA WITHIN THE LIMITS OF THE GEOTEXTILE FOR EMBANKMENT STABILIZATION.
- PLACE GEOTEXTILE FOR EMBANKMENT STABILIZATION PERPENDICULAR TO EMBANKMENT CENTERLINE ON THE EXISTING GROUND AS SHOWN IN THE PLAN OR AS DIRECTED BY THE ENGINEER.
- PLACE THE GEOTEXTILE WITHOUT ANY WRINKLES OR CREASES.
- PLACE 2 FT. OF SELECT GRANULAR MATERIAL, RIP RAP, CLASS 2 OR #57 STONE ON THE GEOTEXTILE FOR EMBANKMENT STABILIZATION.
- IN ROCK EMBANKMENT AREAS, RIP RAP, CLASS 2 OR #57 STONE SHALL BE PLACED ON THE GEOTEXTILE FOR EMBANKMENT STABILIZATION. SEE ROCK EMBANKMENT DETAILS.
- THE TERMS ROLL AND MACHINE DIRECTION ARE USED INTERCHANGEABLY.
- NO SEAMS OR JOINTS ARE ALLOWED IN THE MACHINE DIRECTION OF GEOTEXTILE.
- ALL JOINTS IN THE CROSS MACHINE DIRECTION MUST BE OVERLAPPED A MINIMUM OF 30 INCHES FROM STA. -DET- 11+00±, RT TO STA. -DET- 12+05±, RT OR 18 INCHES ELSEWHERE.
- FOR GEOTEXTILE FOR EMBANKMENT STABILIZATION, SEE GEOTEXTILE FOR EMBANKMENT STABILIZATION (SPECIAL) PROVISION.

QUANTITIES

GEOTEXTILE FOR EMBANKMENT STABILIZATION	1,100 SY*
SELECT GRANULAR MATERIAL	600 CY

* GEOTEXTILE FOR EMBANKMENT STABILIZATION ESTIMATED QUANTITY DOES NOT INCLUDE OVERLAPS OR WASTE AND NO MEASUREMENT WILL BE MADE FOR OVERLAPPING GEOTEXTILE



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

GEOTEXTILE FOR
EMBANKMENT STABILIZATION
DETAILS

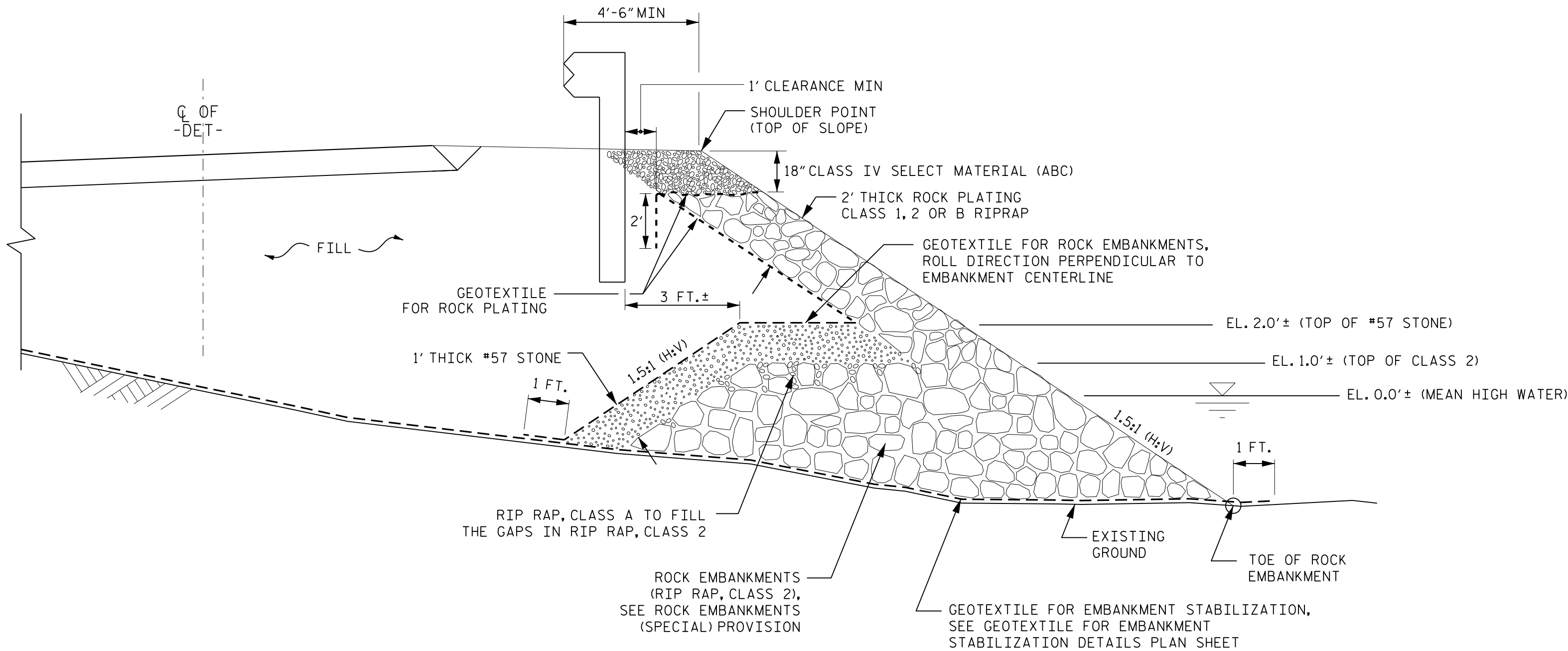
REVISIONS

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

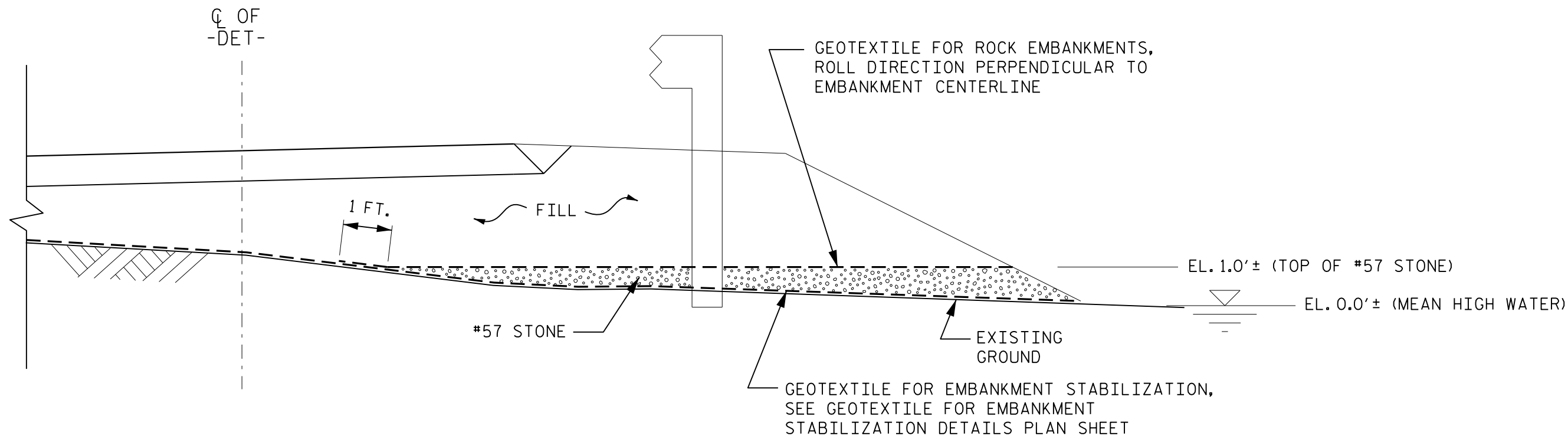


DocuSigned by:
4/26/2018

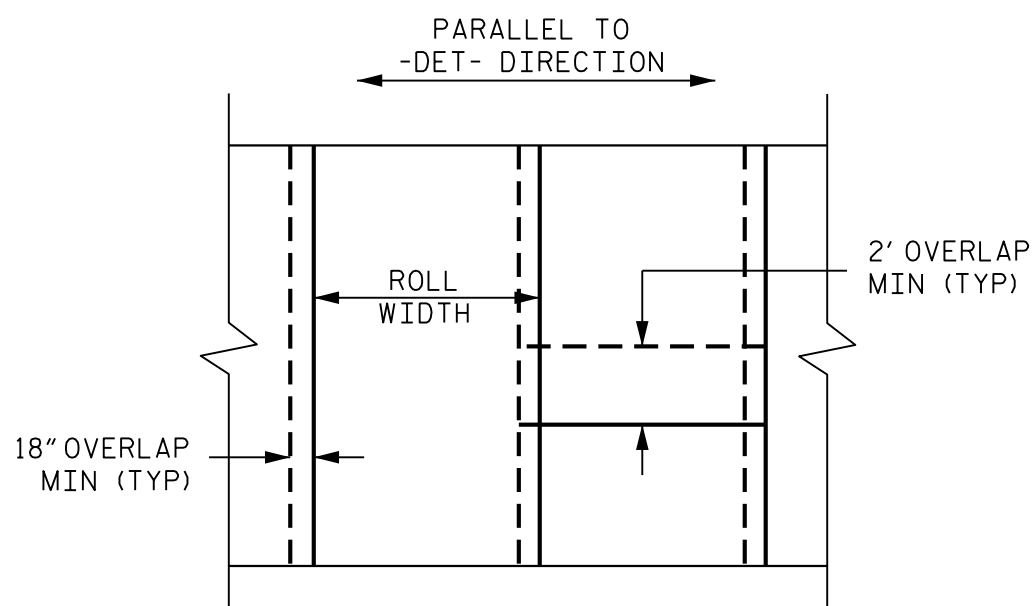
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION
(FROM -DET- 11+00±, RT TO -DET- 12+05±, RT)
NOT TO SCALE



TYPICAL SECTION
(FROM -DET- 13+55±, RT TO -DET- 14+20±, RT)
NOT TO SCALE



GEOTEXTILE FOR ROCK EMBANKMENT AND
GEOTEXTILE FOR ROCK PLATING OVERLAP DETAILS
(PLAN VIEW, NOT TO SCALE)

ESTIMATED QUANTITIES

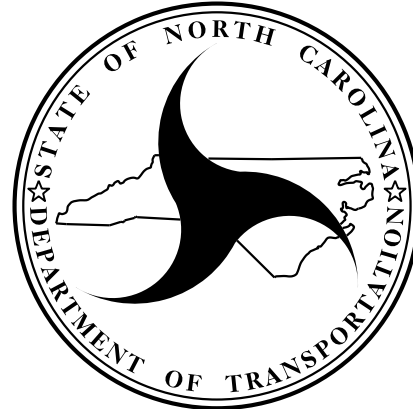
RIP RAP, CLASS 2	250 TONS*
RIP RAP, CLASS A	50 TONS
#57 STONE (SELECT MATERIAL, CLASS VI)	150 TONS*
GEOTEXTILE FOR ROCK EMBANKMENTS	200 SY**
ROCK PLATING	80 SY

* ESTIMATED QUANTITIES FOR RIP RAP, CLASS 2 AND #57 STONE INCLUDE ADDITIONAL QUANTITIES FOR SETTLEMENTS.

** GEOTEXTILE FOR EMBANKMENT STABILIZATION ESTIMATED QUANTITY DOES NOT INCLUDE OVERLAPS OR WASTE AND NO MEASUREMENT WILL BE MADE FOR OVERLAPPING GEOTEXTILE

NOTES

- FOR ROCK EMBANKMENTS, SEE ROCK EMBANKMENTS (SPECIAL) PROVISIONS.
- INSTALL ROCK EMBANKMENTS USING CLASS 2 RIP RAP AS SHOWN IN THE PLAN AND TO 1.0 FT ABOVE THE MEAN SEA LEVEL.
- FILL VOIDS IN THE TOP OF ROCK EMBANKMENTS WITH RIP RAP, CLASS A.
- PLACE #57 STONE (SELECT MATERIAL, CLASS VI) 1 FT. (TYP.) ABOVE RIP RAP, CLASS 2 AS SHOWN IN THE PLAN.
- INSTALL GEOTEXTILE FOR ROCK EMBANKMENT ON TOP OF #57 STONE.
- CONSTRUCT ROCK PLATING ABOVE ROCK EMBANKMENTS. FOR ROCK PLATING, SEE SECTION 275 OF STANDARD SPECIFICATIONS.



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

ROCK EMBANKMENTS
AND ROCK PLATING
DETAILS

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1	J. PARK	03 / 2018	3		
2			4		

PREPARED BY: J. PARK	DATE: 04 / 2018
REVIEWED BY: J. BATTS	DATE: 04 / 2018

ROW AREA DATA SUMMARY

[illegible]

EST. 300 CY UNDERCUT EXCAVATION (FROM NCDOT GEOTECH)
EST. 900 CY SELECT GRANULAR MATERIAL, CLASS III (FROM NCDOT GEOTECH)

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

STATION	SIZE	THICKNESS OR GAUGE	LOCATION (L,T,R,T, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CAAP	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE)	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS		QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL 'A' + (1.3 X COL.'B')	FRAME, GRATES AND HOOD STANDARD 840.03	TYPE OF GRATE			D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B. GRATED D.I. TYPE "B" STD. 840.35	T.B.D.I. (N.S.) FRAME AND TWO GRATES STD. 840.29	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	ABBREVIATIONS		REMARKS																																																																																																																																																																																																																																																																																																																																																															
				R.C.P.	C.S.P.											CU. YDS.	PER EACH (0' THRU 5.0')																						5.0' THRU 10.0'	10.0' AND ABOVE		E.I. *FT.	A	B	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	JJ	JK	JL	JM	JN	JO	JP	JQ	JR	JS	JT	JU	JV	JW	JX	JY	JZ	KA	KB	KC	KD	KE	KF	KG	KH	KI	KJ	KK	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LL	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML		
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D.I.	DROP INLET																																																																																																																																																																																																																																																																																																																																																																																																							
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G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)																																																																																																																																																																																																																																																																																																																																																																																																							
J.B.	JUNCTION BOX																																																																																																																																																																																																																																																																																																																																																																																																							
M.H.	MANHOLE																																																																																																																																																																																																																																																																																																																																																																																																							
T.B.D.I.	TRAFFIC BEARING DROP INLET																																																																																																																																																																																																																																																																																																																																																																																																							
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX																																																																																																																																																																																																																																																																																																																																																																																																							

12/06/07

COMPUTED BY: MONICA DUVAL	DATE: 01/24/18
CHECKED BY: DOUGLAS M. WHEATLEY, PE	DATE: 01/24/18

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.2.R.85	3B-2

"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 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	TEMP. GREU TL-2	TYPE III	GREU TL-3	TEMP. TYPE III																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

COMPUTED BY: Tyler C. Bottoms DATE: 3/12/18
CHECKED BY: _____ DATE: _____

(1-16-18)

PROJECT NO.
17BP.2.R.85

SHEET NO.
3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

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

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

SUMMARY OF GEOTEXTILE
FOR PAVEMENT STABILIZATION

LINE	Station	Station	Geotextile for Pavement Stabilization SY	Class IV Subgrade Stabilization TONS
CONTINGENCY				
	TOTAL SY/TONS:		0	0*

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

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY									
			TOTAL CY/TONS/SY:		0	0**	0**	0	0

*ASU = Aggregate Subgrade
*AST = Aggregate Stabilization
**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
-DET-	1.75:1	11+00±	2:1	12+05±	RT			80
							TOTAL SY:	80

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

SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL

LINE	Beginning Slope/ RSS (H:V)	Approx. Station	Ending Slope/ RSS (H:V)	Approx. Station	Location LT/RT	Reinforced Soil Slope (RSS) SY	Geocells SY	Coir Fiber Mat SY	Matting for Erosion Control SY
					TOTAL SY:	0	0	0*	0**

*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.
**Total square yards of "Matting for Erosion Control" is only the estimated quantity for RSS and may only represent a portion of the matting quantity shown in the Item Sheets of the Proposal.

SUMMARY OF PRE-SPLITTING OF ROCK

LINE	Beginning Rock Cut Slope (H:V)	Approx. Station	Ending Rock Cut Slope (H:V)	Approx. Station	Location LT/RT	Pre-splitting of Rock SY
					TOTAL SY:	0

SUMMARY OF SURCHARGES
AND SURCHARGE WAITING PERIODS

LINE	Station	Station	Surcharge Height FT	MONTHS

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE and Station	Offset	
		Distance FT	Direction LT/RT
TOTAL GAUGES (EACH):			

SUMMARY OF EMBANKMENT
WAITING PERIODS

LINE	Station	Station	MONTHS
-DET-	10+65±	12+05±	1
-DET-	13+55±	14+95±	1

SUMMARY OF BRIDGE WAITING PERIODS

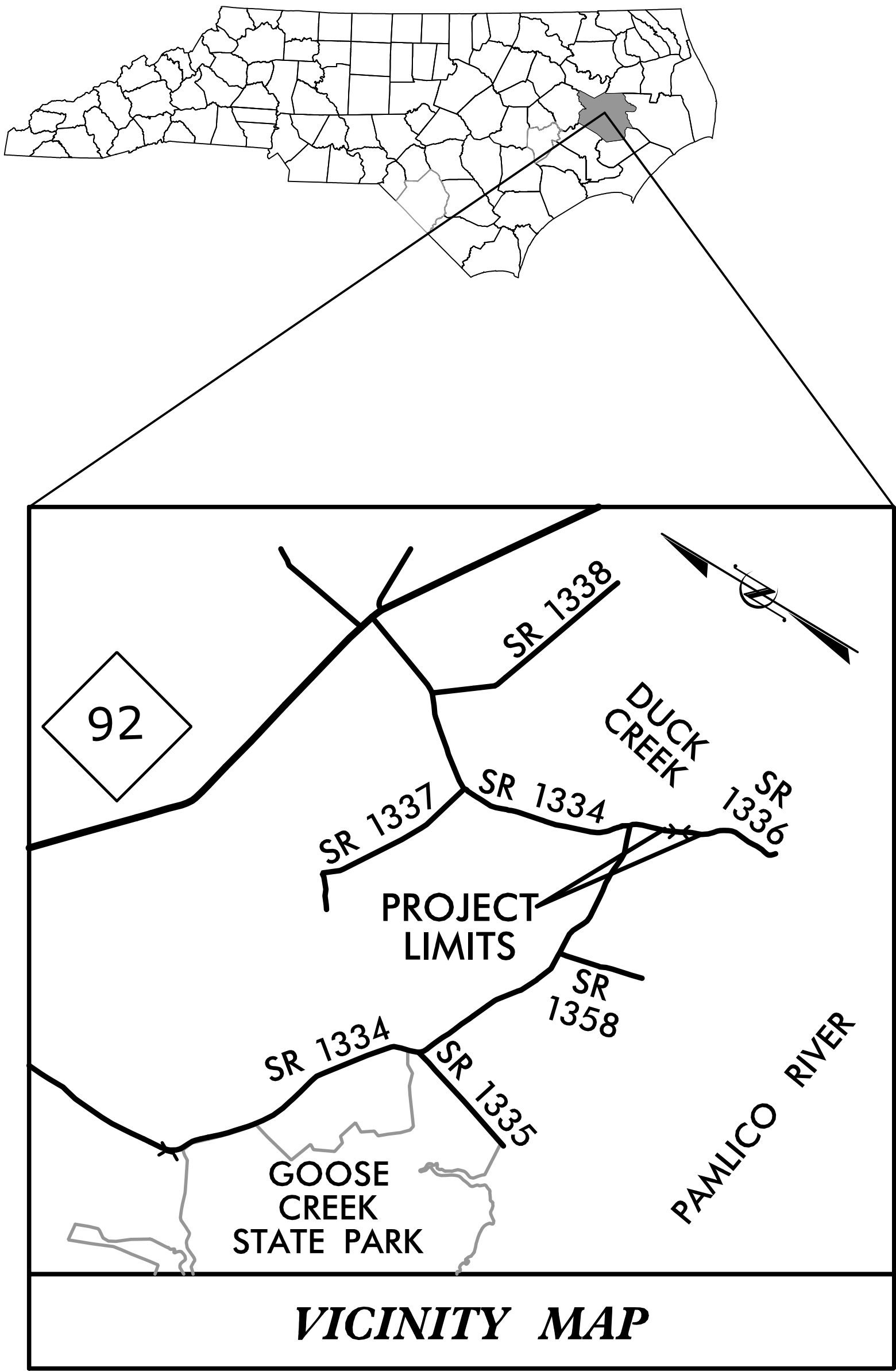
Bridge Description	End Bent/ Bent No.	MONTHS

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

BEAUFORT COUNTY



LOCATION: REPLACE BRIDGE NO. 249 OVER DUCK CREEK
ON SR 1336 (HAWKINS BEACH ROAD)

PLANS PREPARED BY: HNTB

R. B. EARLY, P. E.

PROJECT ENGINEER

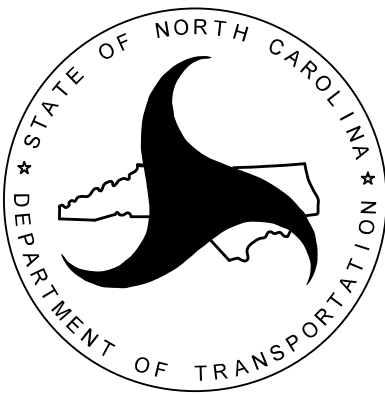
J. A. PHILLIPS

PROJECT DESIGN TECHNICIAN

NCDOT CONTACTS:

S. J. HAMILTON, PE, CPM

DIVISION TRAFFIC ENGINEER



INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP AND INDEX OF SHEETS
TMP-1A	ROADWAY STANDARD DRAWINGS, LEGEND & TEMPORARY PAVEMENT MARKING SCHEDULE
TMP-2	GENERAL NOTES AND PHASING
TMP-3	PHASE I STEP 2 DETAIL
TMP-4	PHASE I STEPS 3 AND 4 DETAIL

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

HNTB

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NC License No: C-1554

APPROVED:

Rhonda B. Early

DATE:

6/18/2018

SEAL



SHEET NO.

TMP-1

17BP.2.R.85

TIP PROJECT:




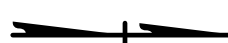


ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
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
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
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY

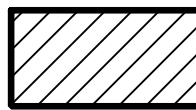
LEGEND

GENERAL

-  DIRECTION OF TRAFFIC FLOW
-  DIRECTION OF PEDESTRIAN TRAFFIC FLOW
-  EXIST. PVMT.
-  NORTH ARROW
-  PROPOSED PVMT.
-  TEMP. SHORING (LOCATION PURPOSES ONLY)

 WORK AREA

 REMOVAL

 WEDGE







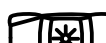
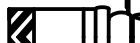
SIGNALS

-  EXISTING
-  PROPOSED
-  TEMPORARY



PAVEMENT MARKINGS

-  EXISTING LINES
-  TEMPORARY LINES




TRAFFIC CONTROL DEVICES

-  BARRICADE (TYPE III)
-  CONE
-  DRUM
-  SKINNY DRUM
-  TEMPORARY CRASH CUSHION
-  FLAGGER
-  LAW ENFORCEMENT
-  TRUCK MOUNTED ATTENUATOR (TMA)

TEMPORARY SIGNING

-  PORTABLE SIGN
-  STATIONARY SIGN

PAVEMENT MARKERS

-  CRYSTAL/CRYSTAL
-  CRYSTAL/RED
-  YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

-    PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

SYMBOL	DESCRIPTION	PAY ITEM
--------	-------------	----------

PAVEMENT MARKING LINES

PA	WHITE EDGELINE	PAINT (4")
PI	DOUBLE YELLOW	
P2	WHITE STOP BAR	PAINT (24")

PAVEMENT MARKERS

MM	CRYSTAL/CRYSTAL	TEMPORARY RAISED
----	-----------------	------------------

NOTE: FOR EACH PAINT PAVEMENT MARKING ITEM, REFER TO GENERAL NOTES FOR NUMBER OF APPLICATIONS.

MANAGEMENT STRATEGIES

MAINTENANCE OF TRAFFIC FOR THIS PROJECT HAS BEEN DIVIDED INTO TWO PHASES USING TEMPORARY SIGNALS AND ONE-LANE, TWO-WAY TRAFFIC PATTERNS.

DURING PHASE I, USING FLAGGERS AS NEEDED, CONSTRUCT TEMPORARY BRIDGE PROVIDING SMOOTH TIE FROM EXISTING TO PROPOSED. SHIFT TRAFFIC TO TEMPORARY PATTERN. TRAFFIC WILL BE IN A ONE-LANE, TWO-WAY PATTERN ON THE ONSITE DETOUR WITH THE USE OF TEMPORARY PORTABLE SIGNALS WHILE THE PROPOSED BRIDGE AND ROADWAY IS CONSTRUCTED.

DURING PHASE II, USING FLAGGERS, TRAFFIC IS RETURNED TO ORIGINAL PATTERN WHILE TEMPORARY DETOUR IS REMOVED AND COMPLETED BY PLACING FINAL LAYER OF SURFACE COURSE, FINAL PAVEMENT MARKINGS & MARKERS AND PLACE TRAFFIC IN FINAL PATTERN.

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 UNDESIRED 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.
- 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.

PAVEMENT EDGE DROP OFF REQUIREMENTS

- E) 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.

GENERAL NOTES

- F) 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) 350 IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

- G) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.
- H) NOTIFY THE OVERSIZE/OVERWEIGHT PERMIT GROUP FOURTEEN (14) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

- I) 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.

- J) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

- K) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

- L) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

- M) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
1. SR 1336	PAINT	TEMPORARY RAISED

- 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.

- Q) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

MISCELLANEOUS

- R) ENSURE THE OVERSIZE/OVERWEIGHT PERMIT UNIT (919) 733-4740 HAS BEEN ADVISED OF THE ONGOING TRAFFIC OPERATIONS THROUGH THE DIVISION OFFICE. SEE ALSO GENERAL NOTE "H".

PROJ. REFERENCE NO.	SHEET NO.
17BP.2.R.85	TMP-2

PHASING

NOTES:
COMPLETE ANY PROPOSED WIDENING IN SUCH A MANNER THAT PONDING OF WATER WILL NOT OCCUR IN THE TRAVEL LANE. THIS MAY REQUIRE TEMPORARY DITCHES.

THE TERM "RSD" REFERS TO ROADWAY STANDARD DRAWINGS.

ALL REFERENCES TO CONSTRUCTION INCLUDE PAVING UP TO BUT NOT INCLUDING FINAL LAYER OF SURFACE COURSE UNLESS SPECIFICALLY CALLED FOR.

PHASE I

STEP 1:
INSTALL ADVANCED WORK ZONE WARNING SIGNS. USING INSET "TYPICAL FOR SIGN PLACEMENT" ON SHEET TMP-4, INSTALL ALL SIGNS AND COVER ALL EXCEPT THE ADVANCED WORK ZONE WARNING SIGNS.

STEP 2:
USING RSD 1101.02, (SHEET 1 OF 14) AND FLAGGERS AS NEEDED, CONSTRUCT DETOUR FROM -DET- STA 10+33+/- TO STA 15+25+/- . (SEE SHEET TMP-3.)

STEP 3:
INSTALL TEMPORARY SIGNALS, PAVEMENT MARKING, MARKERS, DEVICES, UNCOVER SIGNS AS SHOWN ON TMP-4 AND SHIFT TRAFFIC TO ONE LANE-TWO WAY TRAFFIC PATTERN. (SEE SPECIAL PROVISION FOR TEMPORARY PORTABLE SIGNAL.)

STEP 4:
AWAY FROM TRAFFIC, REMOVE EXISTING STRUCTURE (REFER TO STRUCTURE PLANS) AND CONSTRUCT PROPOSED BRIDGE. (SEE TMP-4)

AWAY FROM TRAFFIC CONSTRUCT THE FOLLOWING:
* -L- FROM STA 15+50+/- TO BRIDGE
* -L- FROM BRIDGE TO STA 19+00+/-

PHASE II (NOT SHOWN)

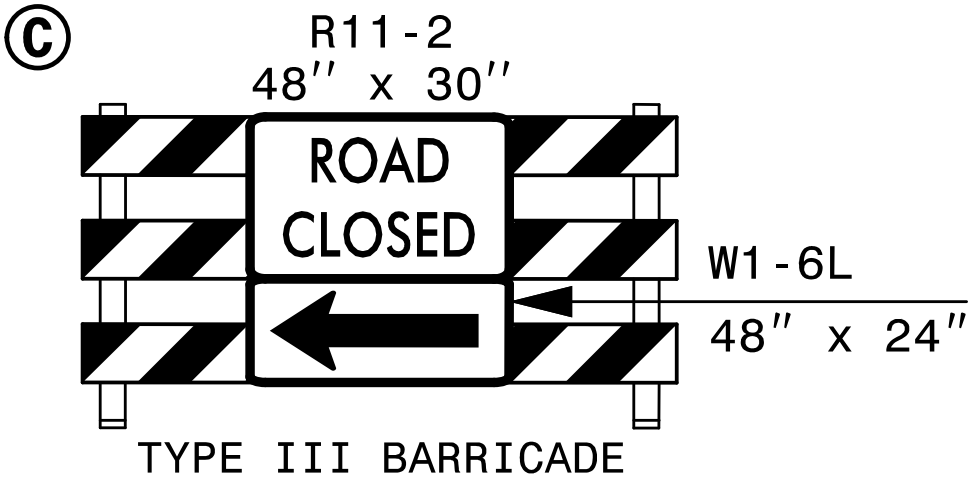
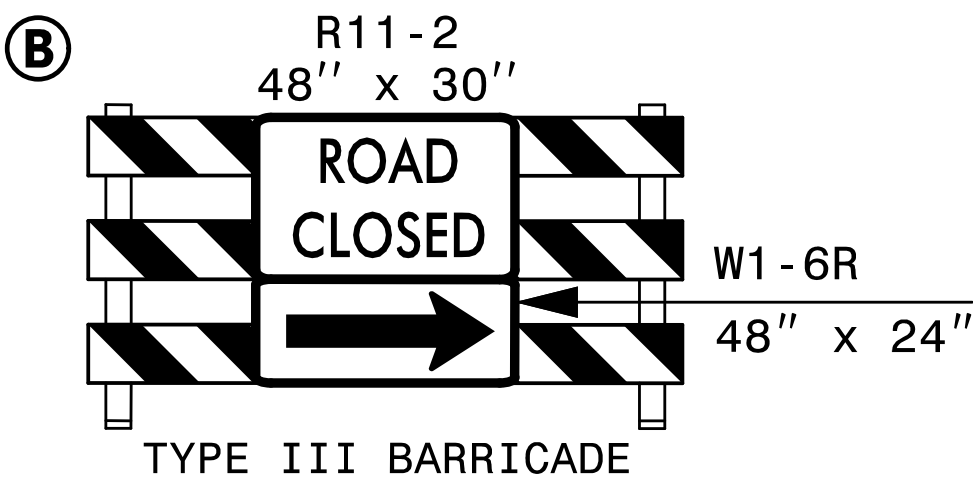
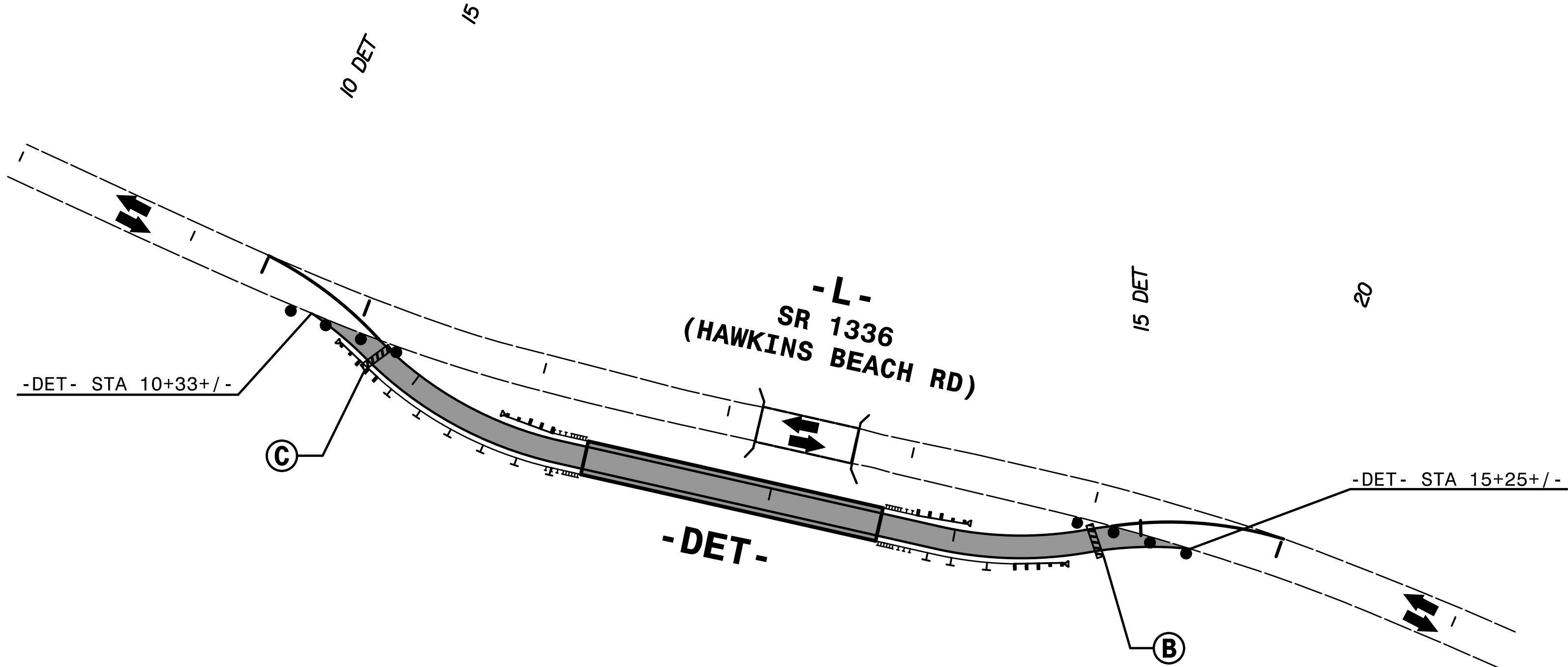
STEP 1:
USING RSD 1101.02 (SHEET 1 OF 14) AND FLAGGERS AS NEEDED, MAINTAINING TRAFFIC ON TEMPORARY DETOUR, CONSTRUCT NB SIDE OF -L- FROM STA 13+85+/- TO STA 15+50+/- AND FROM STA 19+00+/- TO STA 20+50+/- UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.

STEP 2:
USING RSD 1101.02 (SHEET 1 OF 14) AND FLAGGERS AS NEEDED, SHIFT TRAFFIC TO -L- NB IN A ONE LANE, TWO WAY PATTERN, WORK IN A CONTINUOUS MANNER TO CONSTRUCT SB SIDE OF -L- FROM STA 13+85+/- TO STA 15+50+/- AND FROM STA 19+00+/- TO STA 20+50+/- UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE. PLACE PAINT PAVEMENT MARKING IN PROPOSED PATTERN, REMOVE STOP BARS AND OPEN -L- TO TWO-LANE, TWO WAY PATTERN.

STEP 3:
USING RSD 1101.02 (SHEET 1 OF 14) AND FLAGGERS AS NEEDED, REMOVE TEMPORARY SIGNAL, REMOVE DETOUR BRIDGE AND TEMPORARY PAVEMENT.

STEP 4:
USING RSD 1101.02 (SHEET 1 OF 14), PLACE FINAL LAYER OF SURFACE COURSE ON -L- FROM STA 13+85+/- TO STA 20+50+/- . PLACE PAVEMENT MARKING (PAINT) IN FINAL PATTERN.

NC GRID
NAD 83 MAY 2011



6/18/2018
\\TCP\BR249_tc_TCP_03_phase1.dgn
HNTB

HNTB

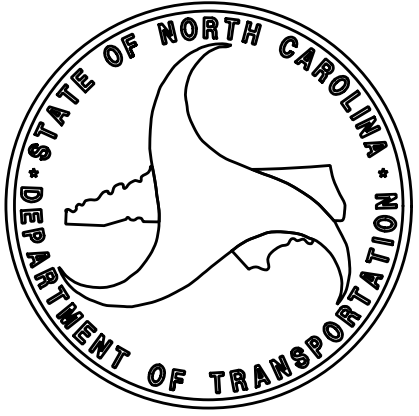
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UNLESS ALL SIGNATURES COMPLETED

APPROVED by:
Rhonda B. Early
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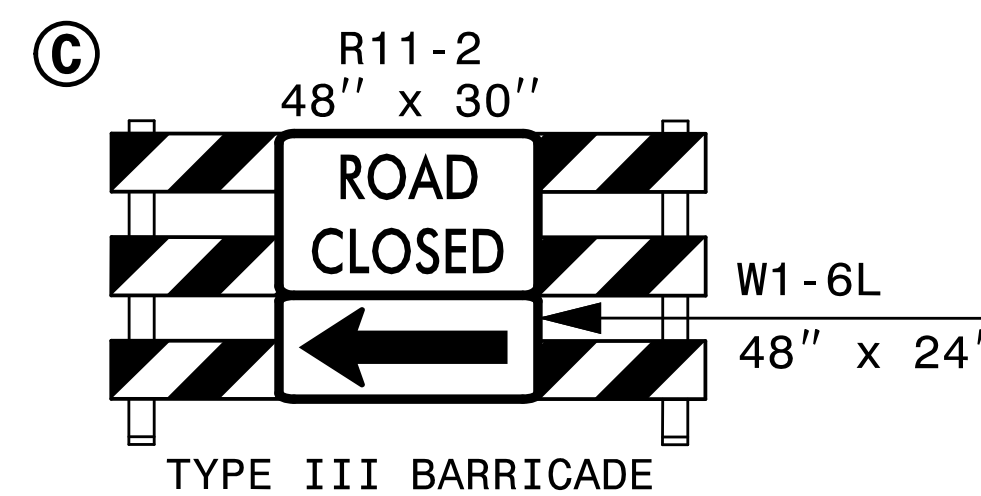
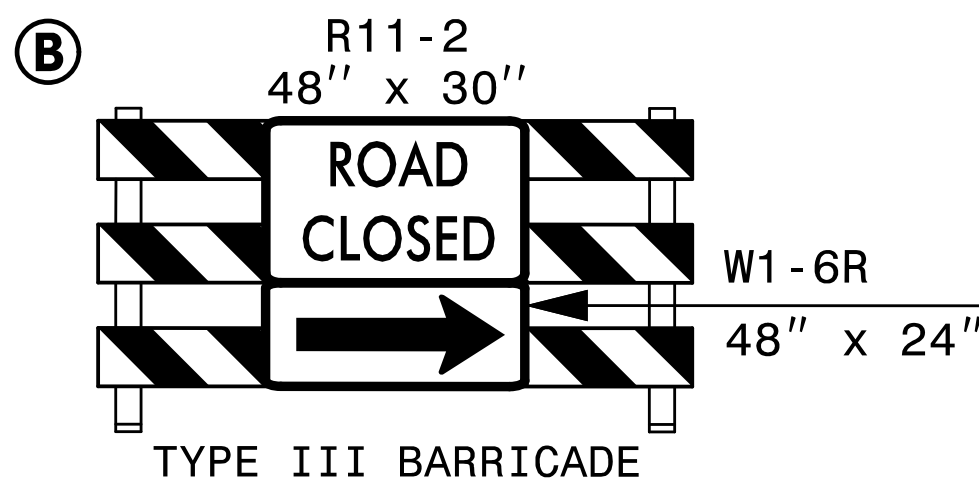
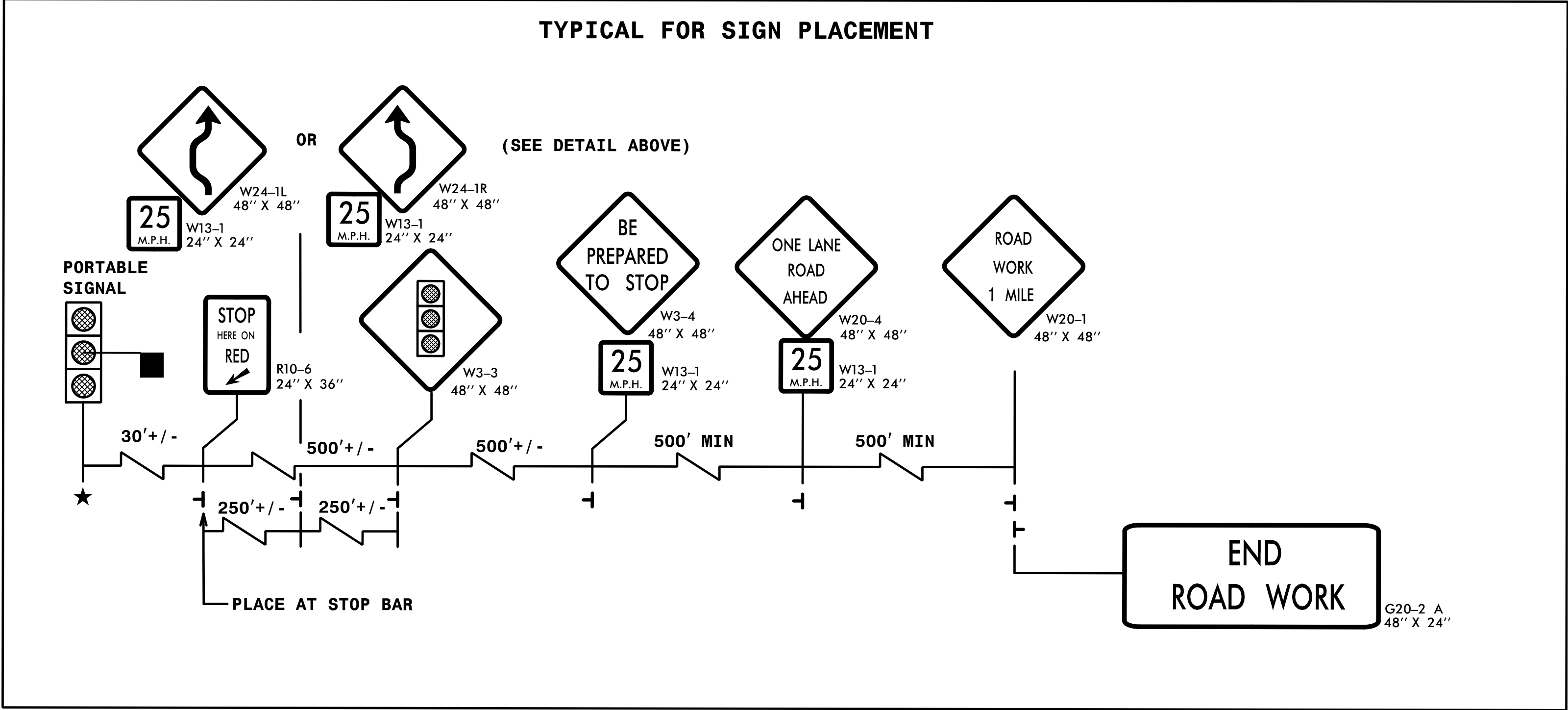
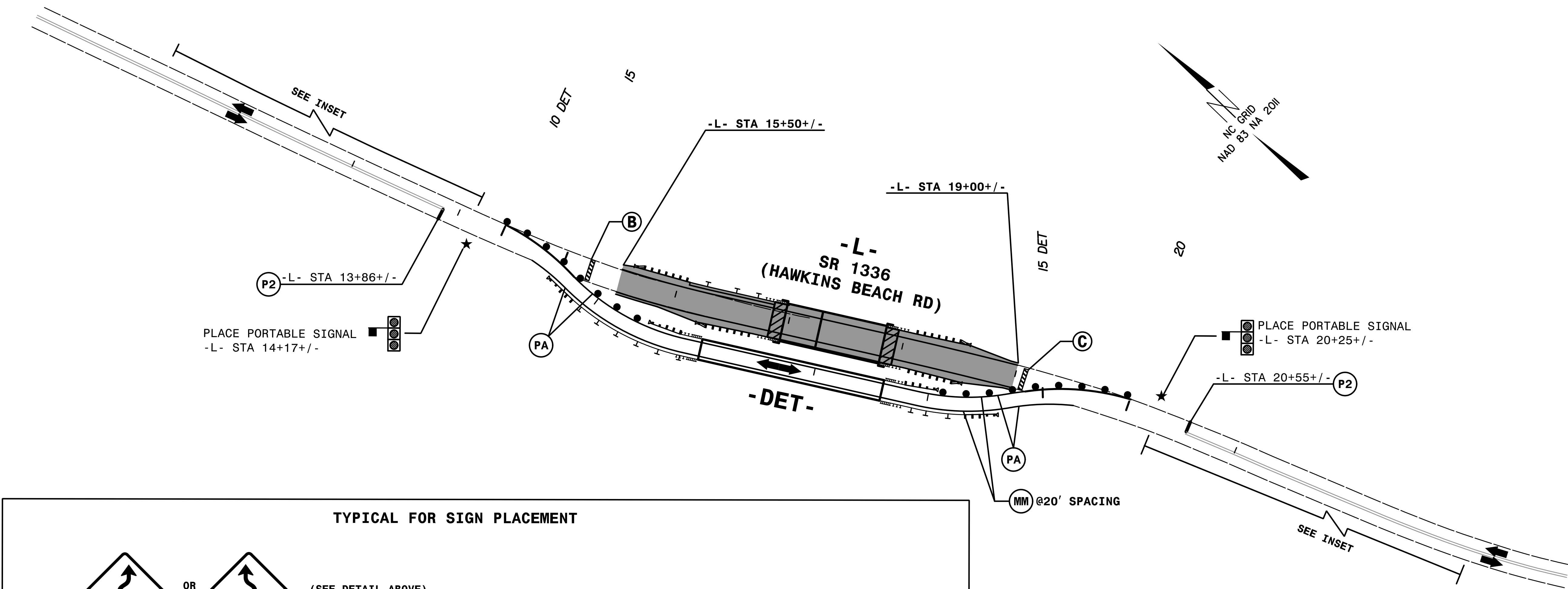
DATE:
6/18/2018

SEAL
023521
ENGINEER
RHONDA B. EARLY



TRANSPORTATION
MANAGEMENT PLAN

PHASE I
STEP 2



6/18/2018
\\TCP\BR249_tc_TCP_04_phase2.dgn
HNTB

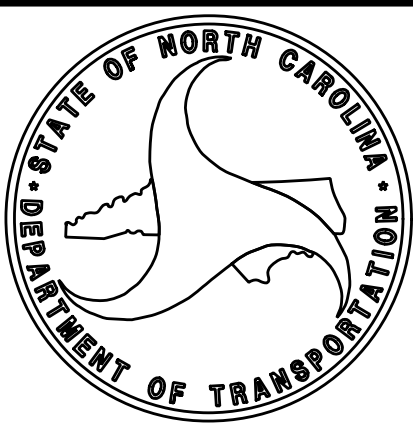
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343 E. SIX FORKS ROAD, SUITE 200
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO: C-1554

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

APPROVED by:
Rhonda B. Early
F34CFA5AC8BF48A

DATE:
6/18/2018

NORTH CAROLINA
PROFESSIONAL
SEAL
023521
ENGINEER
RHONDA B. EARLY

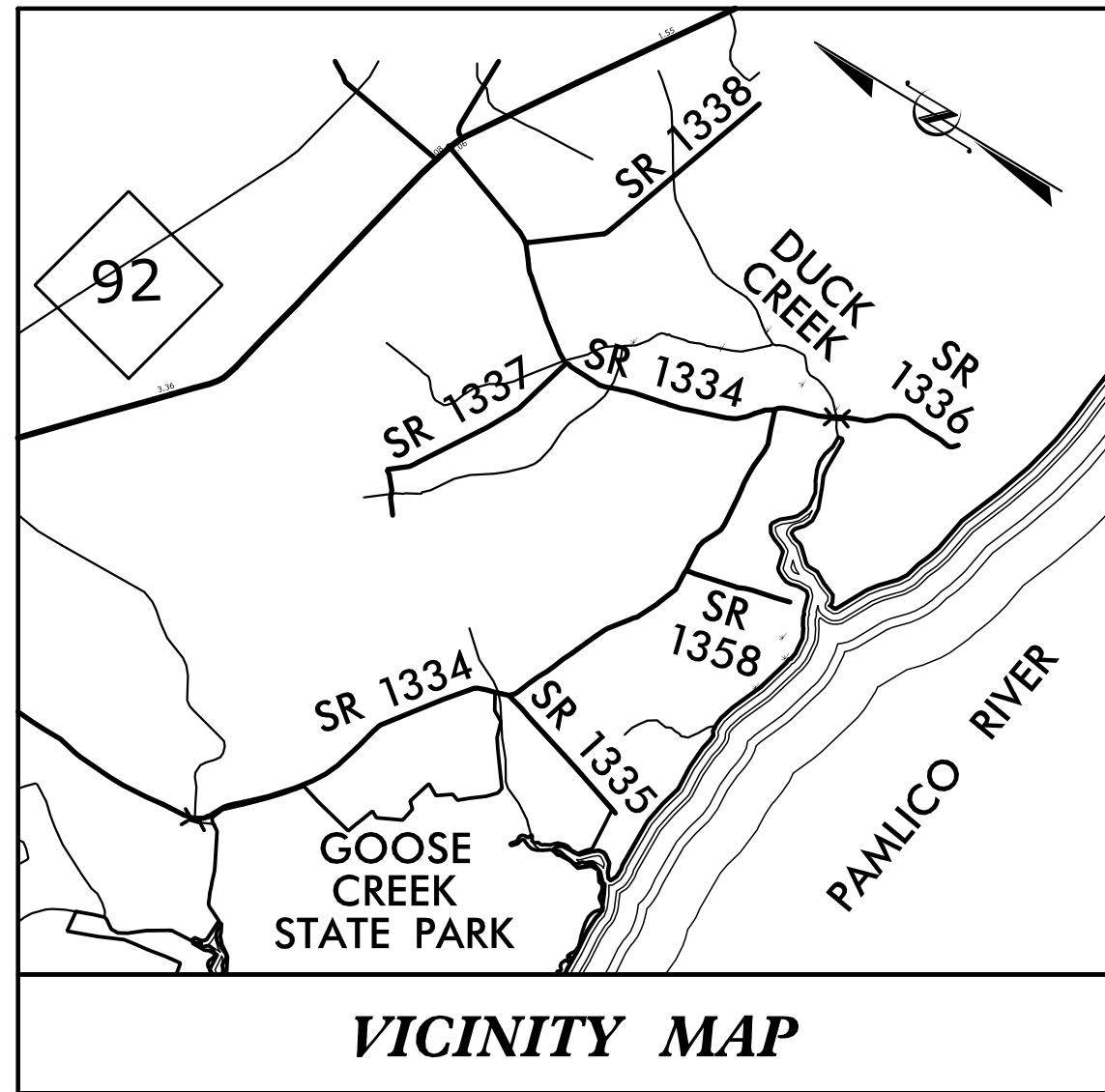


TRANSPORTATION
MANAGEMENT PLAN

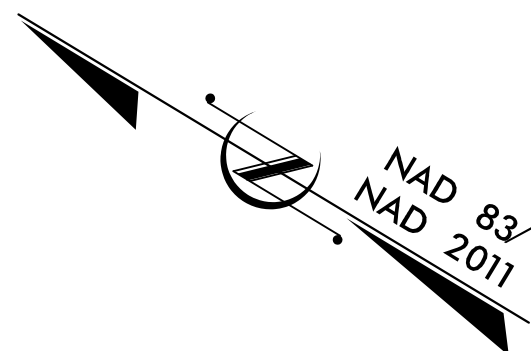
PHASE I
STEPS 3 AND 4

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TIP PROJECT: 17BP.2.R.85



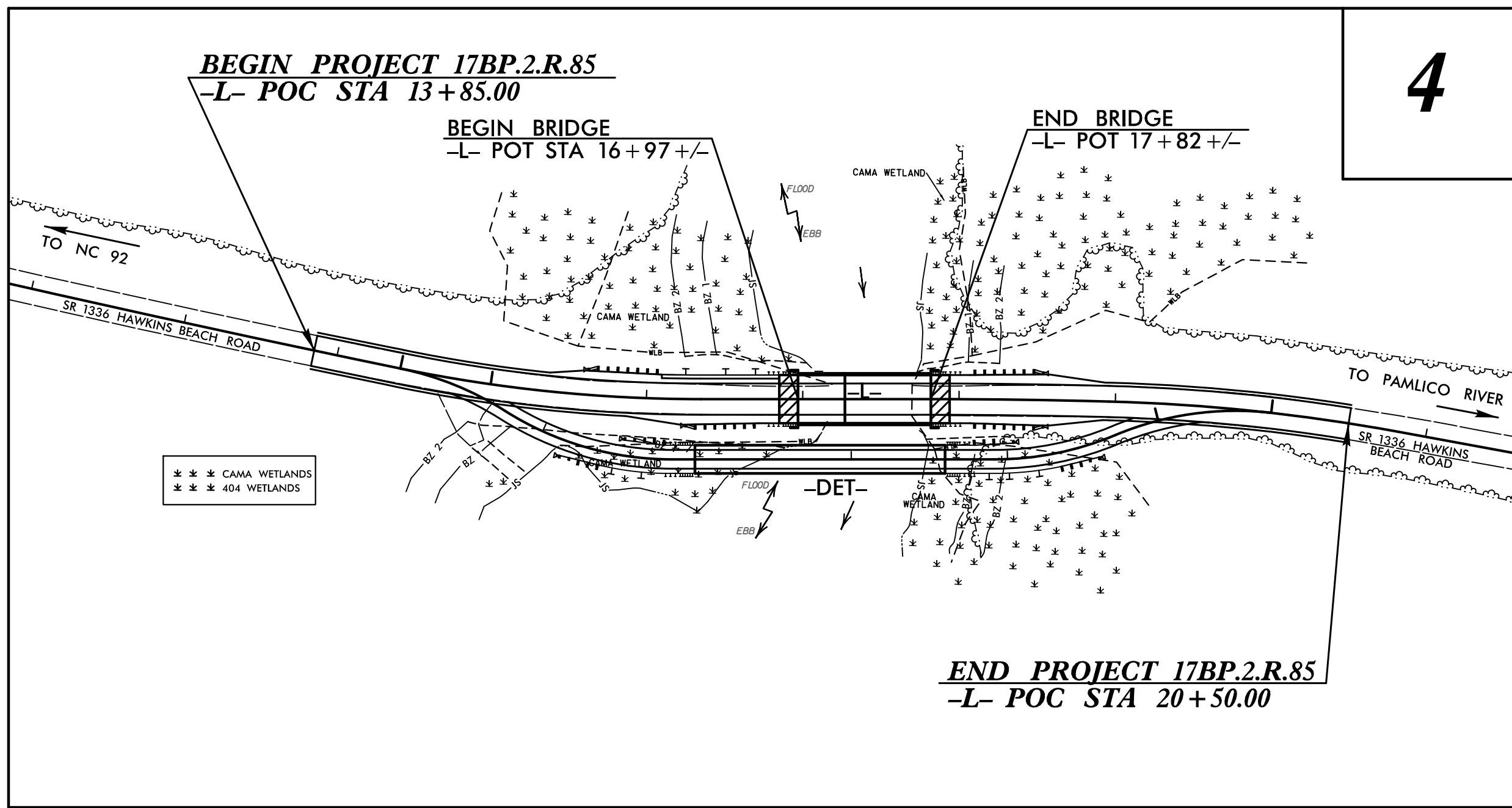
VICINITY MAP



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL
BEAUFORT COUNTY

LOCATION: REPLACE BRIDGE NO. 249 OVER DUCK CREEK
ON SR 1336 (HAWKINS BEACH ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



4

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.2.R.85	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	TSF
1606.01	Special Sediment Control Fence	SSF
1622.01	Temporary Berms and Slope Drains	TBSD
1630.02	Silt Basin Type B	SB
1633.01	Temporary Rock Silt Check Type-A	TRSCA
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	TRSCA-PAM
1633.02	Temporary Rock Silt Check Type-B	TRSCB
	Wattle/Coir Fiber Wattle	W/CFW
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	W/CFW-PAM
1634.01	Temporary Rock Sediment Dam Type-A	TRSDA
1634.02	Temporary Rock Sediment Dam Type-B	TRSDB
1635.01	Rock Pipe Inlet Sediment Trap Type-A	RPIST-A
1635.02	Rock Pipe Inlet Sediment Trap Type-B	RPIST-B
1630.04	Stilling Basin	SB
1630.06	Special Stilling Basin	SSB
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	SKB
	Tiered Skimmer Basin	TSKB
	Infiltration Basin	IB

ENVIRONMENTALLY
SENSITIVE AREA(S) EXIST
ON THIS PROJECT

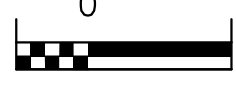
Refer To E. C. Special Provisions
for Special Considerations.

THIS PROJECT HAS
BEEN DESIGNED TO
SENSITIVE WATERSHED
STANDARDS.

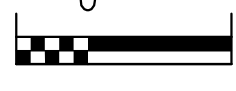
GRAPHIC SCALE



PLANS



PROFILE (HORIZONTAL)



PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY
WITH THE REGULATIONS SET FORTH BY THE
NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2016
ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND
NATURAL RESOURCES DIVISION OF WATER QUALITY.

Prepared In the Office of:

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

2018 STANDARD SPECIFICATIONS

KASE SCHALOIS
EROSION CONTROL
LEVEL III
CERTIFICATION #4079

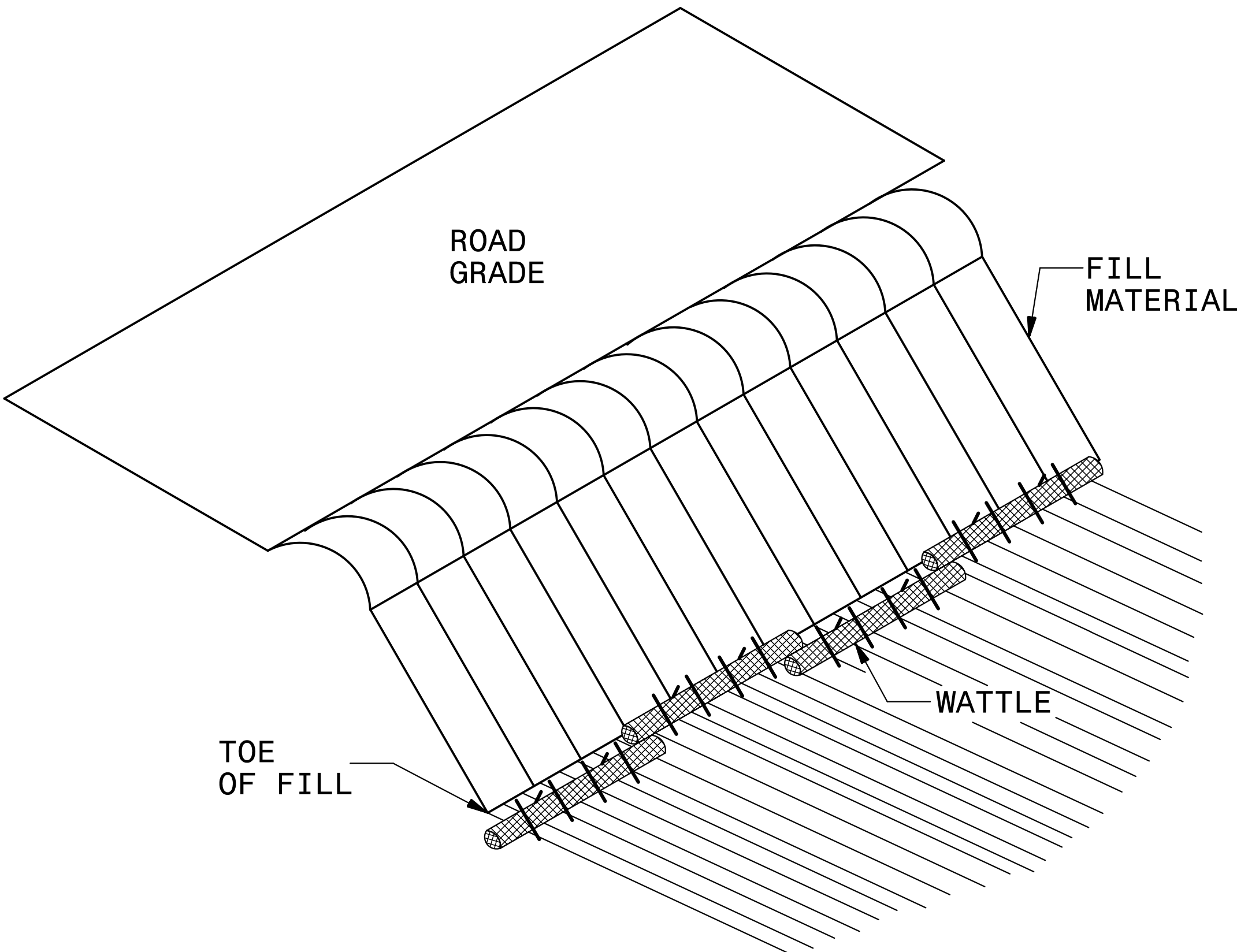
Roadway Standard Drawings

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.

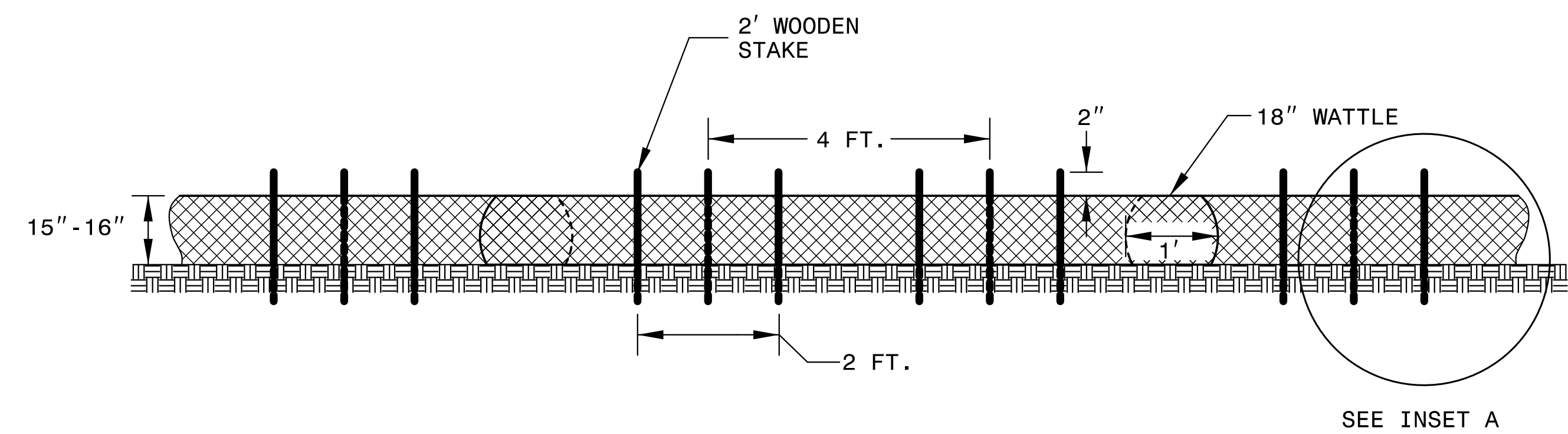
1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type B
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type 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	

COIR FIBER WATTLE BARRIER DETAIL

PROJECT REFERENCE NO.	SHEET NO.
17BP.2.R.85	EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

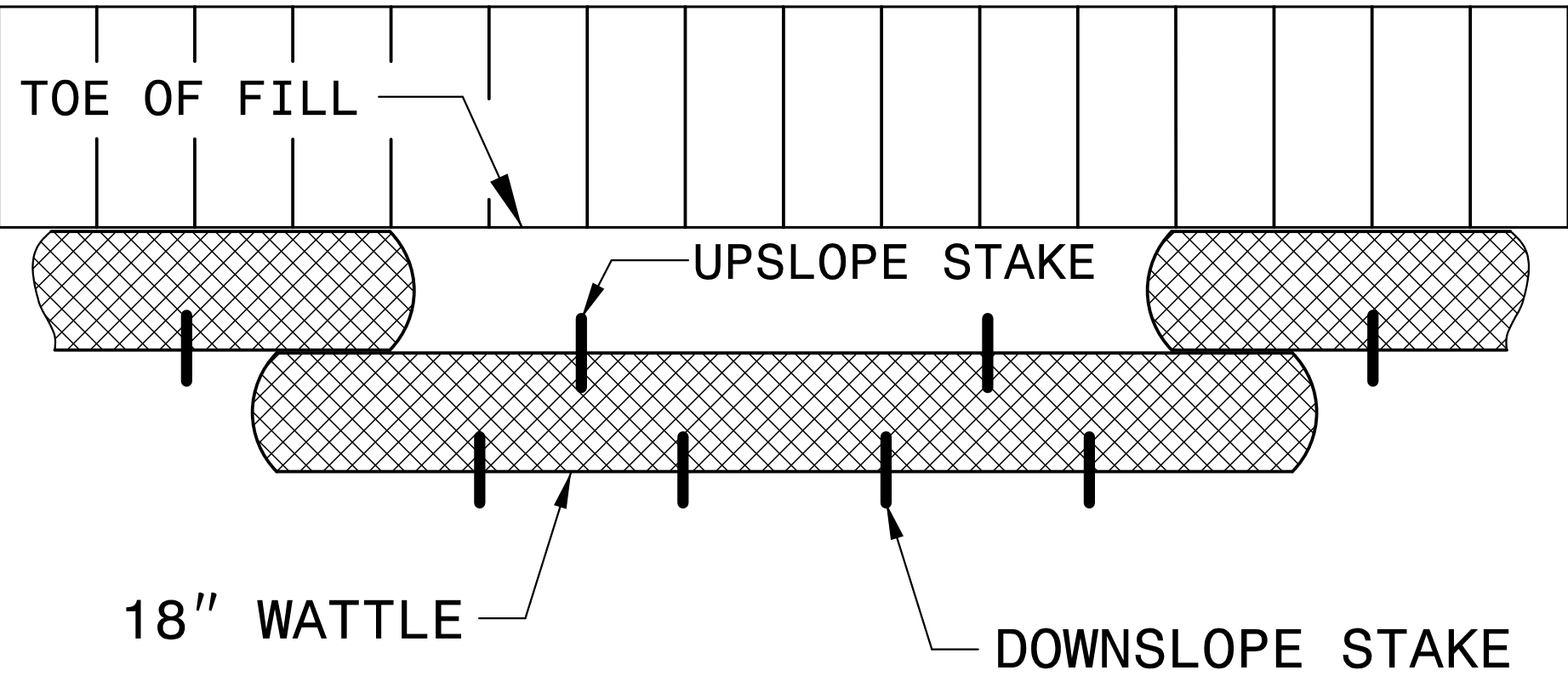
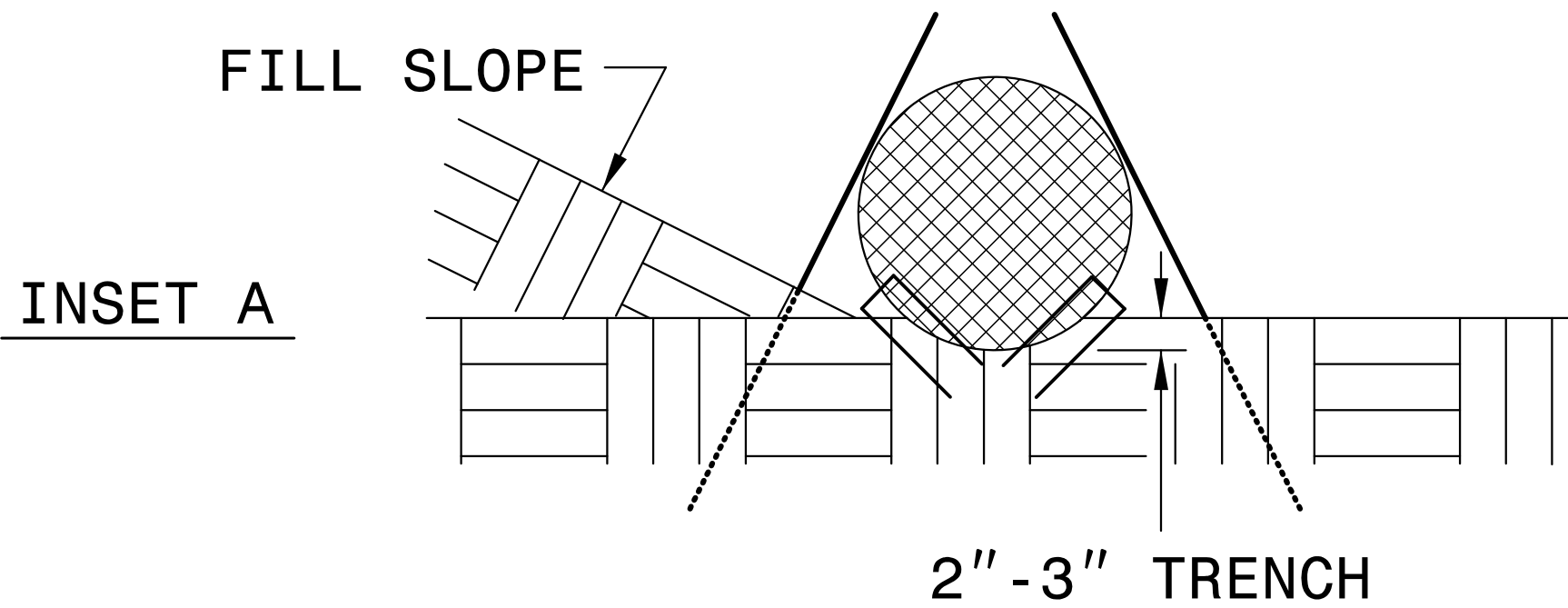


ISOMETRIC VIEW



FRONT VIEW

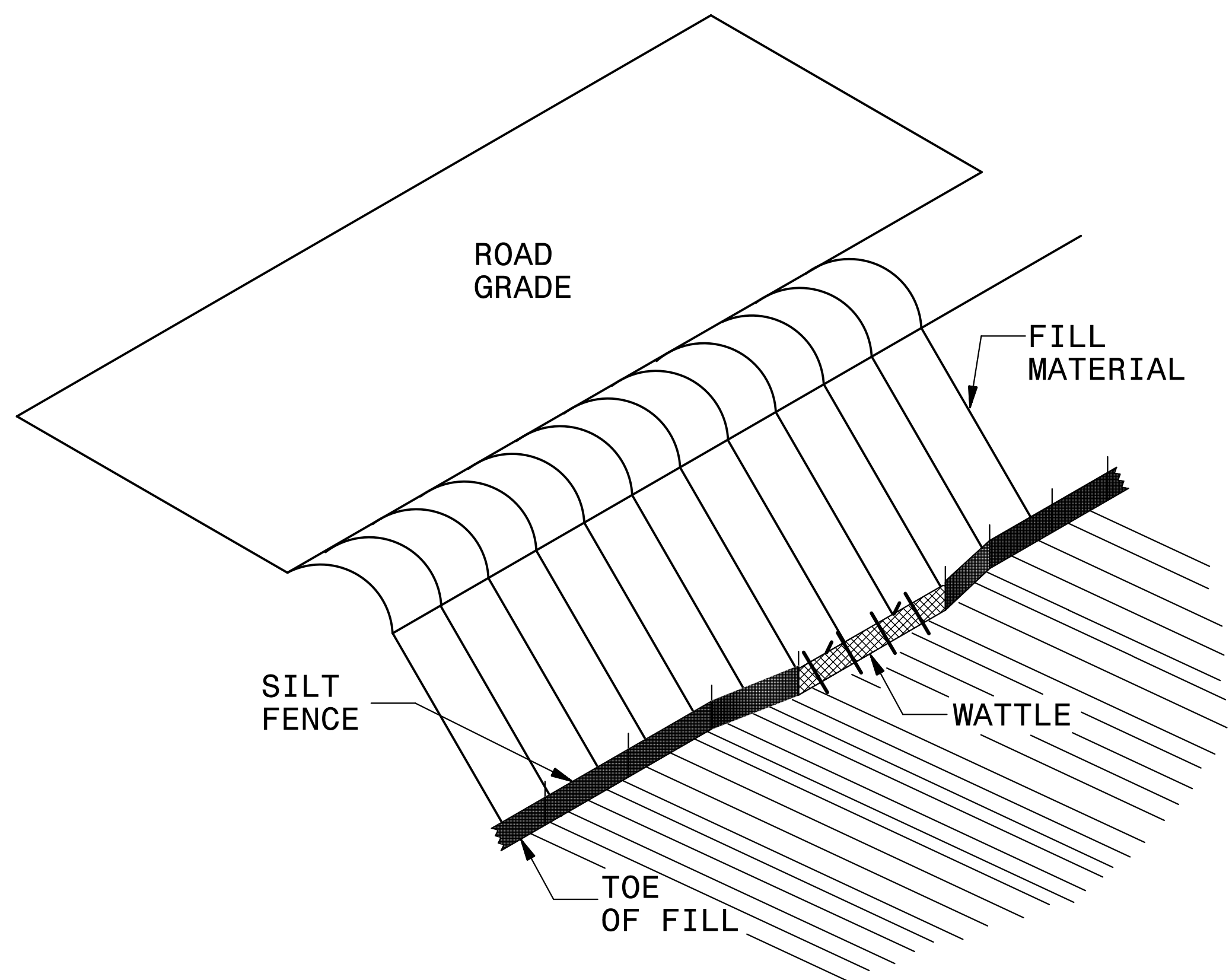
- NOTES:
- USE MINIMUM 18 IN. NOMINAL DIAMETER COIR FIBER (COCONUT) WATTLE AND LENGTH OF 10 FT.
 - EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.
 - DO NOT PLACE WATTLES ON TOE OF SLOPE.
 - USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
 - INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.
 - PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
 - INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
 - FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.



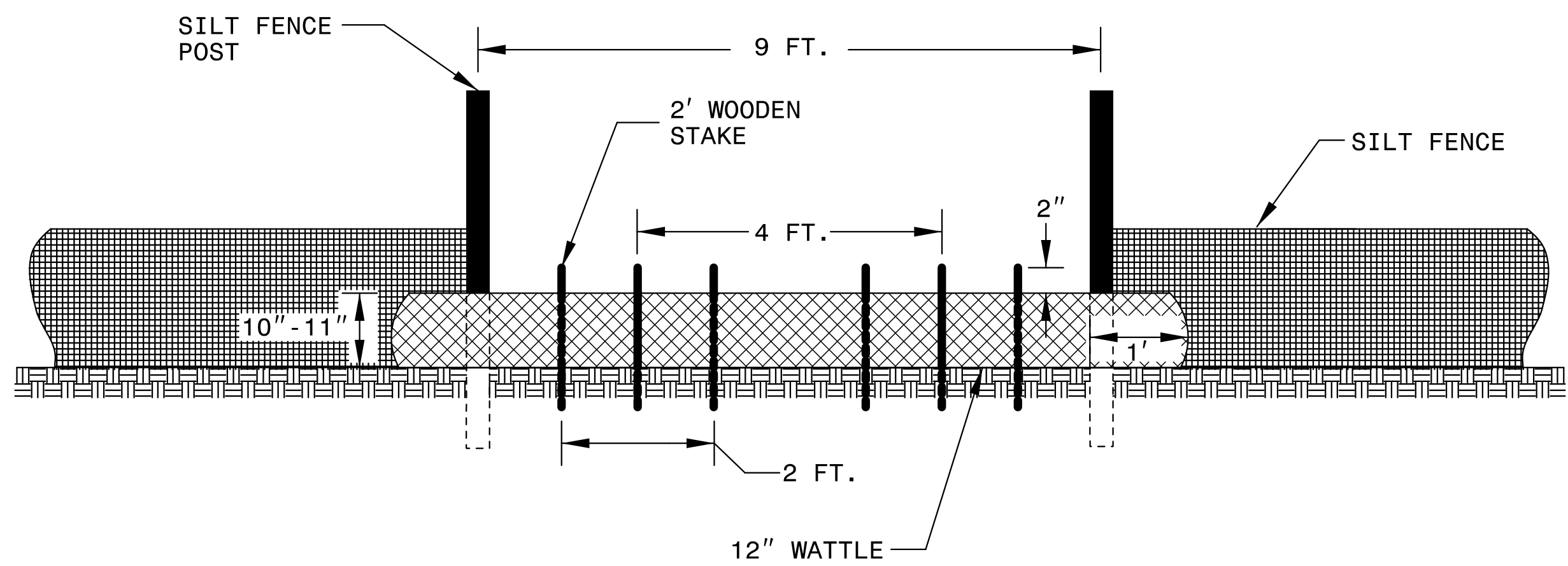
TOP VIEW

SILT FENCE COIR FIBER WATTLE BREAK DETAIL

PROJECT REFERENCE NO.		SHEET NO.
17BP.2.R.85		EC-2A
RW SHEET NO.		
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLE ON TOE OF SLOPE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

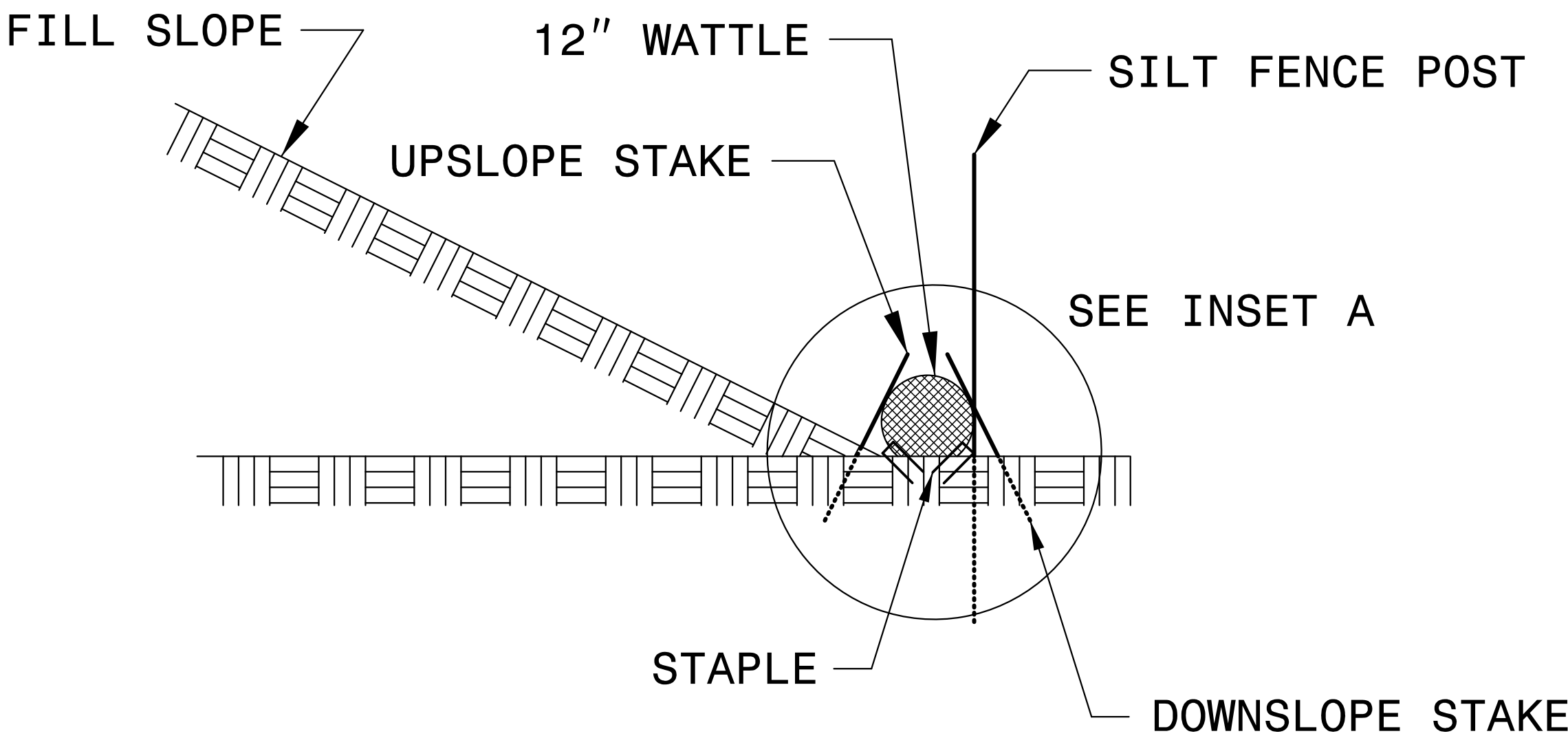
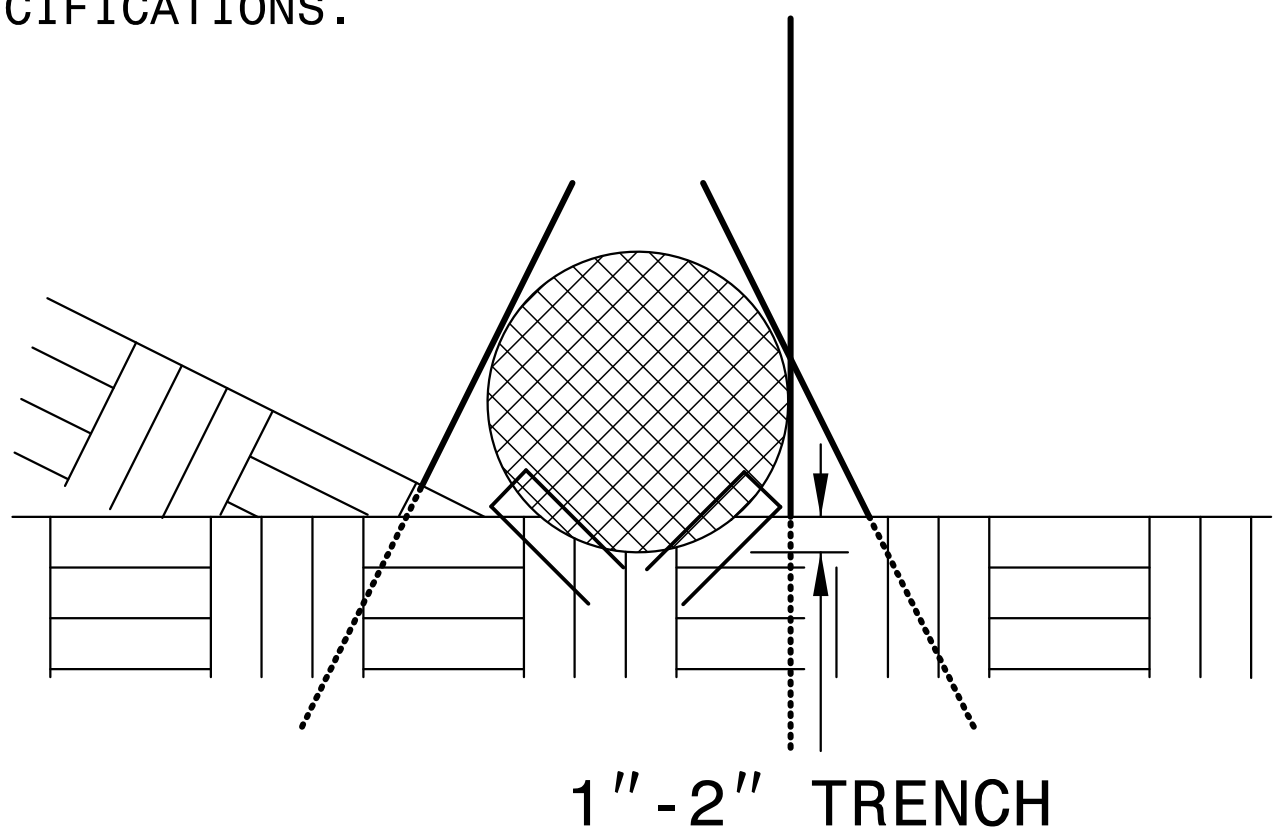
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A



SIDE VIEW

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
17BP.2.R.85	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.

8/17/99

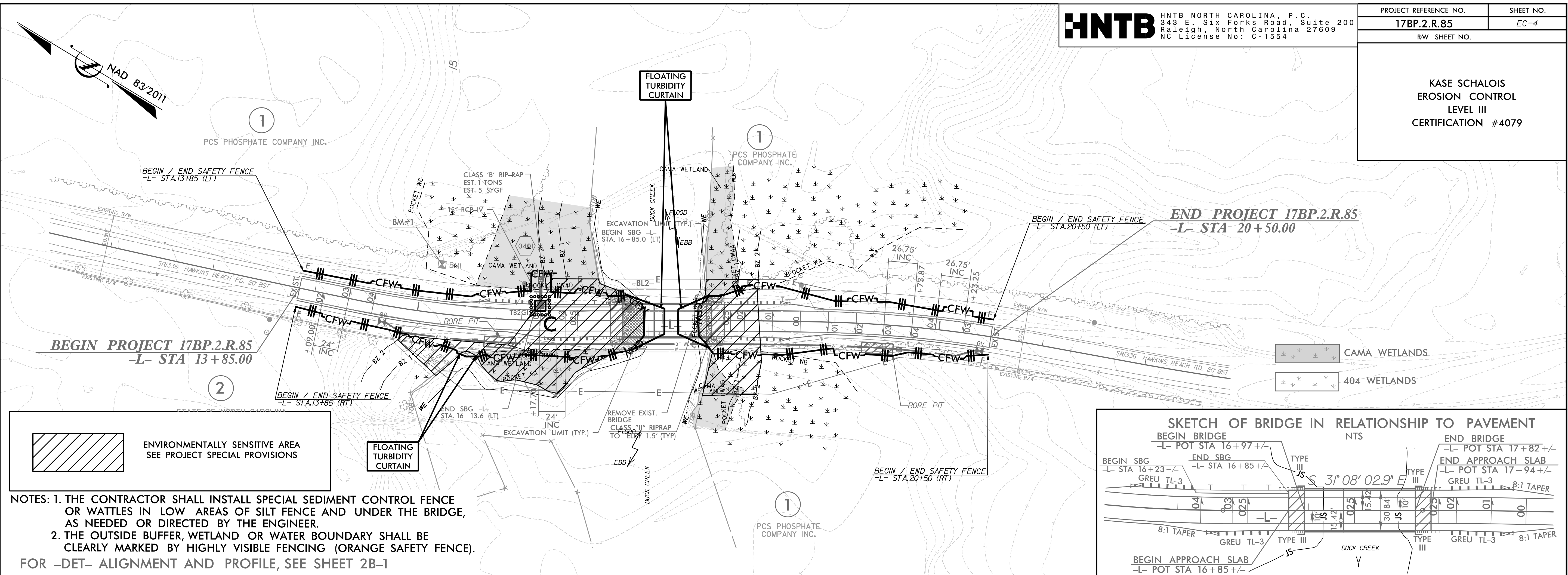
2/9/2008
17BP.2.R.85_BR249_EC_psh4.dgn
HNTB

HNTB

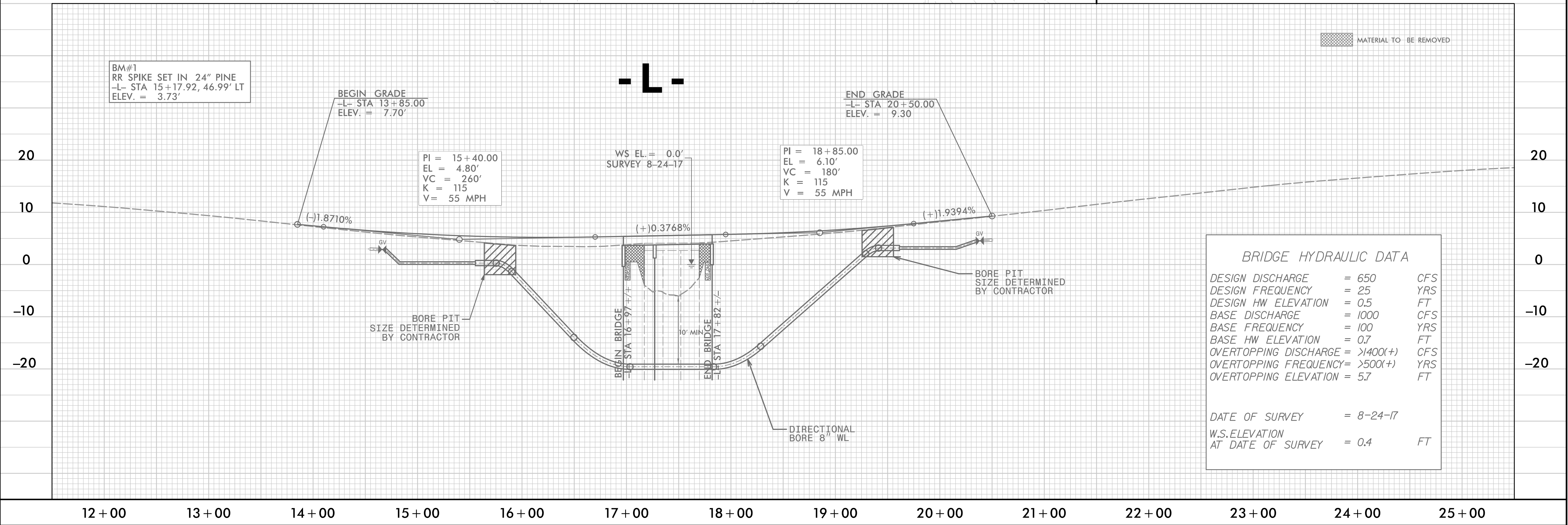
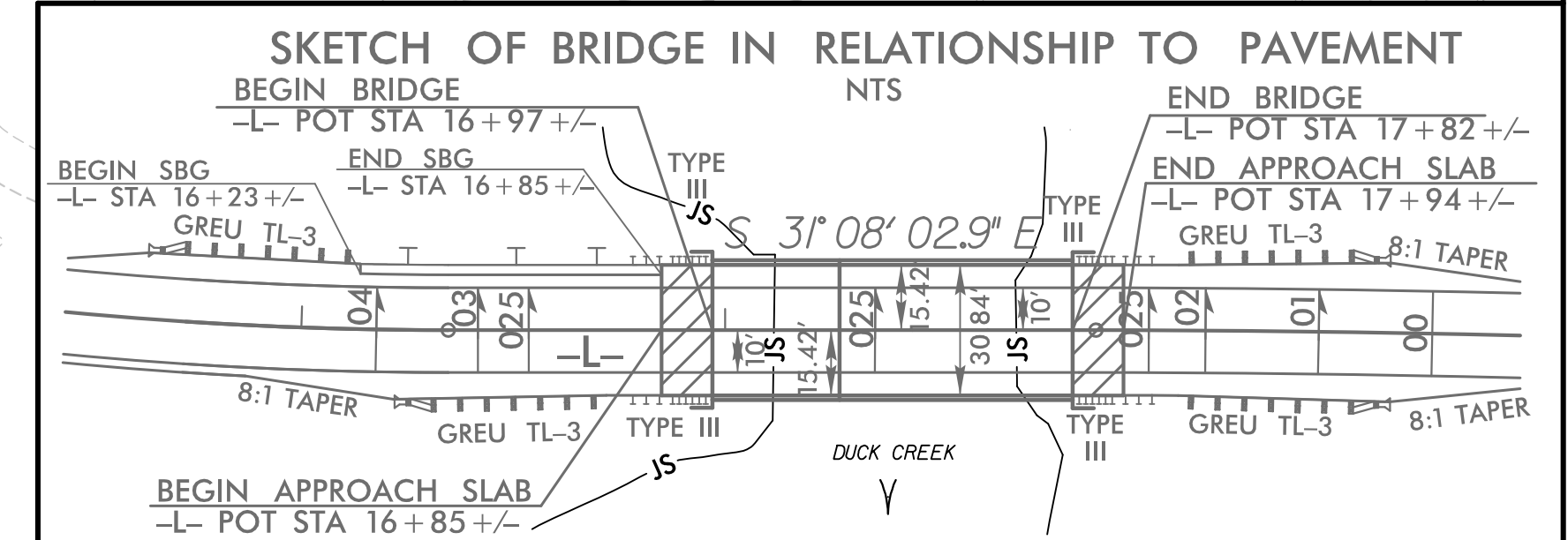
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
17BP.2.R.85	EC-4
RW SHEET NO.	

KASE SCHALOIS
EROSION CONTROL
LEVEL III
CERTIFICATION #4079

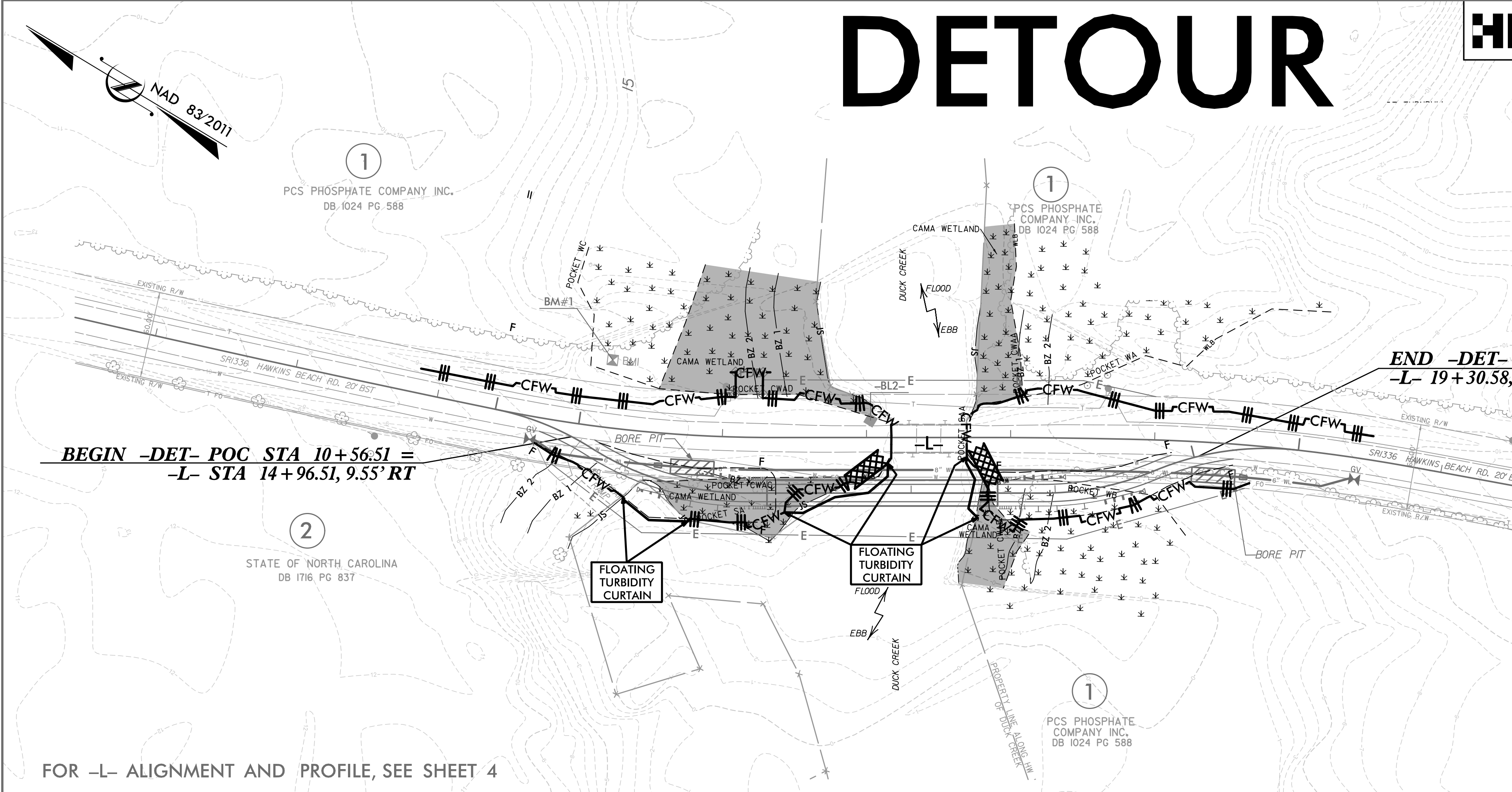


NOTES: 1. THE CONTRACTOR SHALL INSTALL SPECIAL SEDIMENT CONTROL FENCE OR WATTLES IN LOW AREAS OF SILT FENCE AND UNDER THE BRIDGE, AS NEEDED OR DIRECTED BY THE ENGINEER.
2. THE OUTSIDE BUFFER, WETLAND OR WATER BOUNDARY SHALL BE CLEARLY MARKED BY HIGHLY VISIBLE FENCING (ORANGE SAFETY FENCE).
FOR -DET- ALIGNMENT AND PROFILE, SEE SHEET 2B-1



8/17/99

4/23/2018
17BP.2.R.85_BR249_hyd_EC_2b-1.dgn
HNTB



FOR -L- ALIGNMENT AND PROFILE, SEE SHEET 4

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

PROJECT REFERENCE NO.

17BP.2.R.85

SHEET NO.

EC-2B-1

RW SHEET NO.

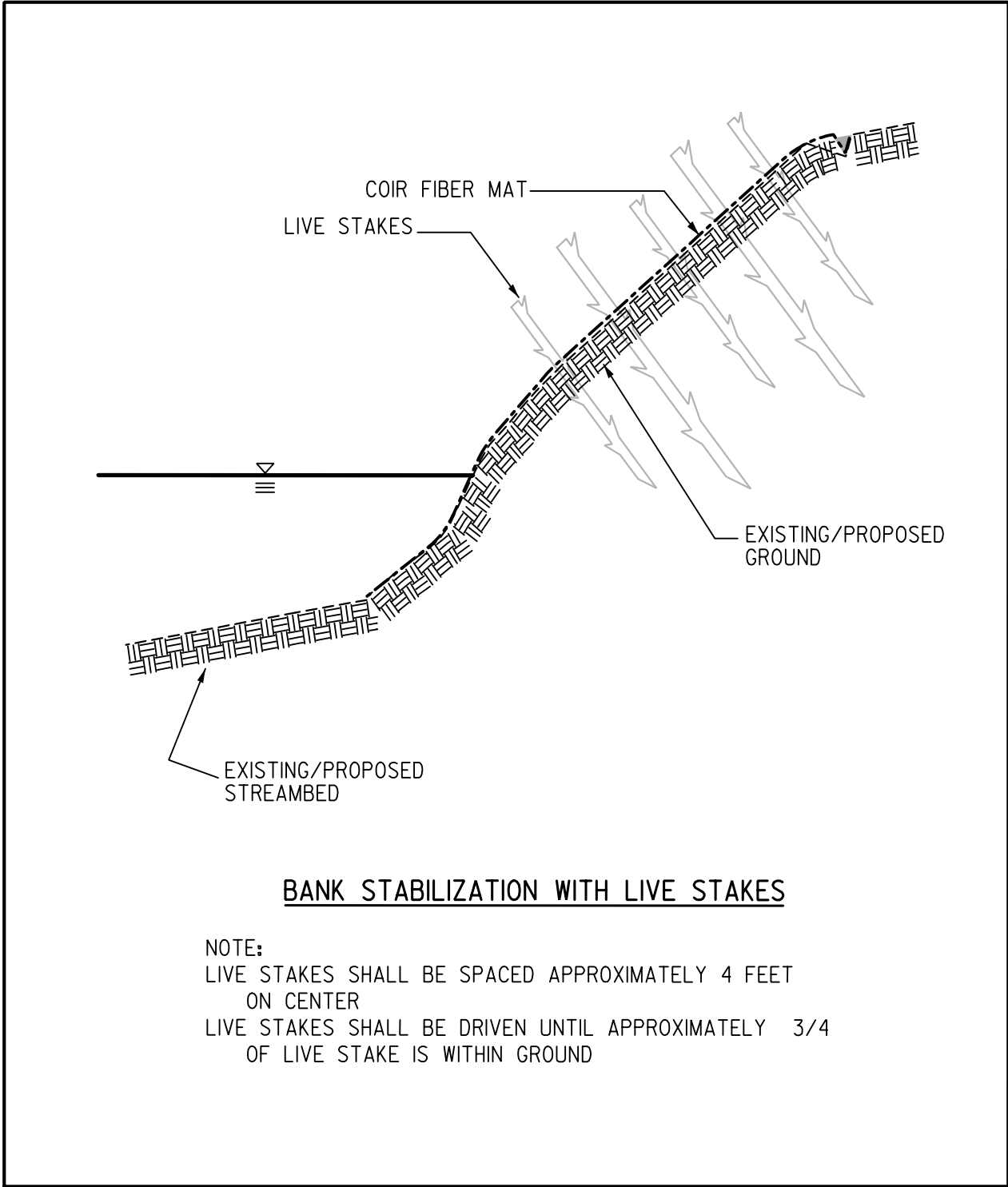
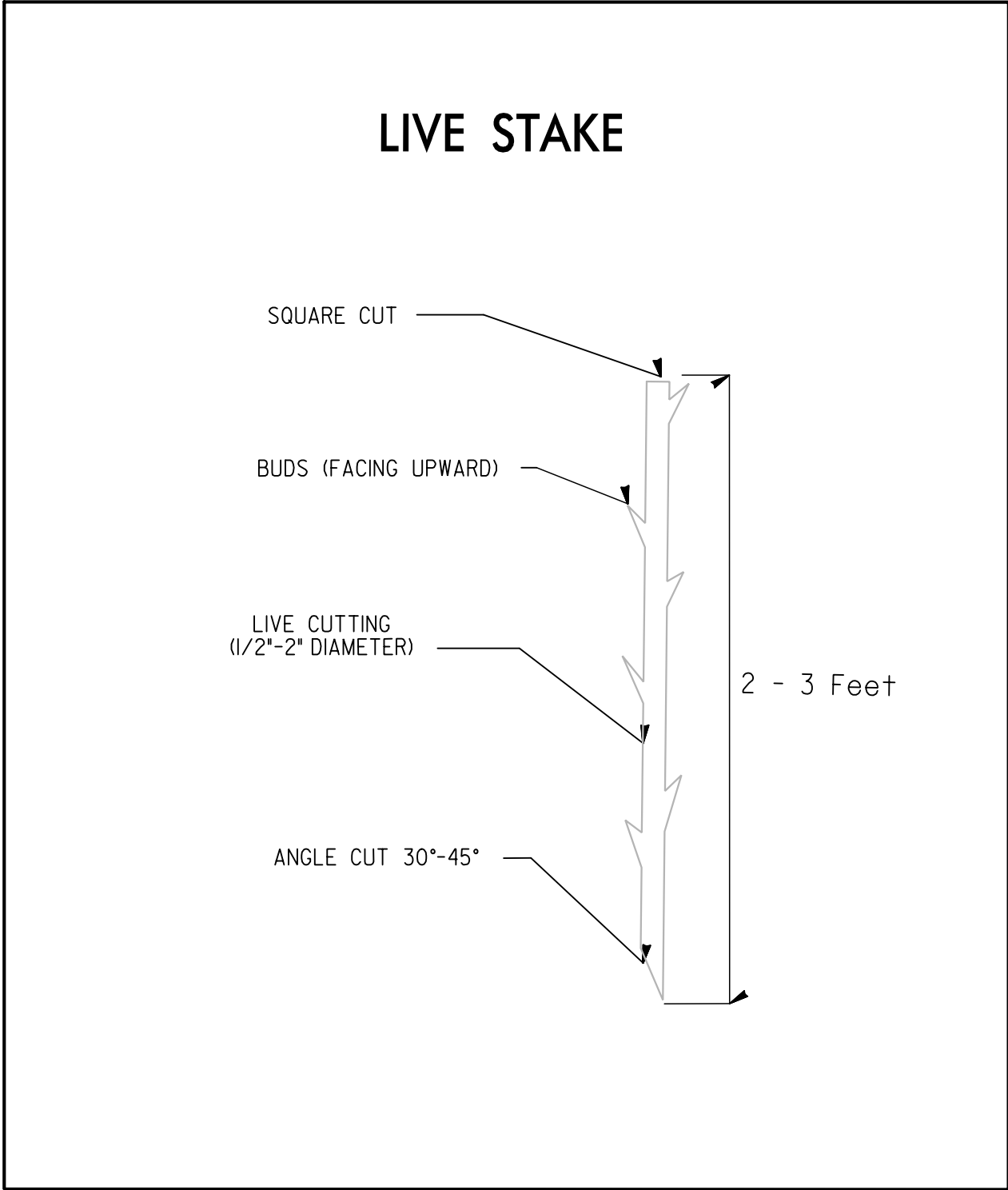
KASE SCHALOIS
EROSION CONTROL
LEVEL III
CERTIFICATION #4079

DESIGN DISCHARGE	= 470	CFS
DESIGN FREQUENCY	= 10	YRS
DESIGN HW ELEVATION	= 1.5	FT
BASE DISCHARGE	= 1255	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 1.7	FT
OVERTOPPING DISCHARGE	= >1000(+)	CFS
OVERTOPPING FREQUENCY	= >100(+)	YRS
OVERTOPPING ELEVATION	= 3.7	FT
DATE OF SURVEY	= 8-24-17	
W.S.ELEVATION AT DATE OF SURVEY	= 0.0	FT

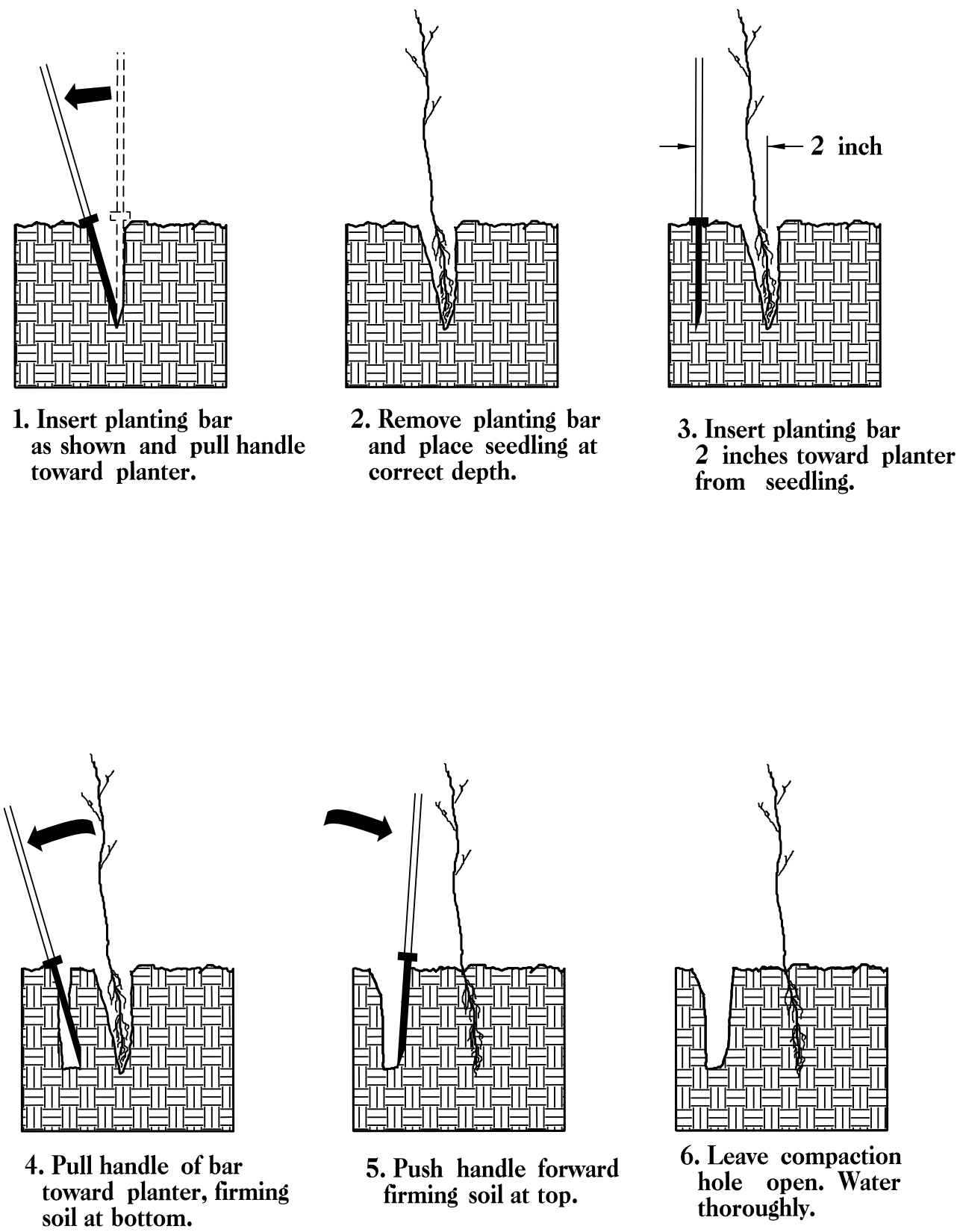
HNTB

PLANTING DETAILS

LIVE STAKES PLANTING DETAIL



BAREROOT PLANTING DETAIL
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR

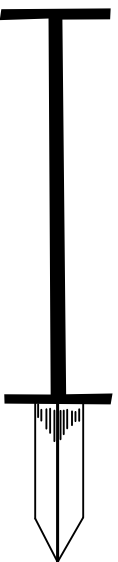


PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

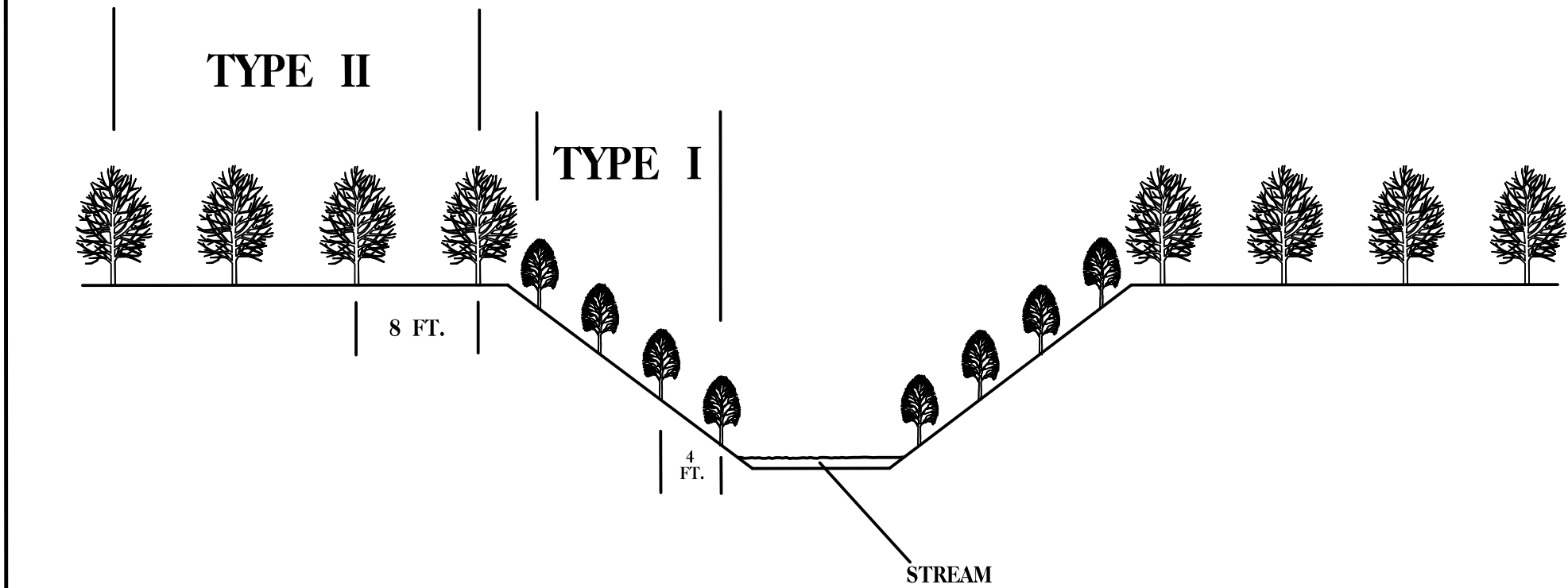
KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.



- ☐ TYPE 1 STREAMBANK REFORESTATION SHALL BE PLANTED 3 FT. TO 5 FT. ON CENTER, RANDOM SPACING, AVERAGING 4 FT. ON CENTER, APPROXIMATELY 2724 PLANTS PER ACRE.
- ☐ TYPE 2 STREAMBANK REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.
- ☐ NOTE: TYPE 1 AND TYPE 2 STREAMBANK REFORESTATION SHALL BE PAID FOR AS "STREAMBANK REFORESTATION"

STREAMBANK REFORESTATION TYPICAL



STREAMBANK REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

TYPE 1

25%	<i>SALIX NIGRA</i>	<i>BLACK WILLOW</i>	2 ft – 3 ft LIVE STAKES
25%	<i>CORNUS AMOMUM</i>	<i>SILKY DOGWOOD</i>	2 ft – 3 ft LIVE STAKES
25%	<i>SPARTINA CYNOSUROIDES</i>	<i>BIG CORDGRASS</i>	12 in – 18 in BR
25%	<i>JUNCUS ROEMERIANUS</i>	<i>BLACK NEEDLE RUSH</i>	12 in – 18 in BR

TYPE 2

25%	<i>LIRIODENDRON TULIPIFERA</i>	<i>YELLOW POPLAR</i>	12 in – 18 in BR
25%	<i>PLATANUS OCCIDENTALIS</i>	<i>SYCAMORE</i>	12 in – 18 in BR
25%	<i>QUERCUS LAURIFOLIA</i>	<i>LAUREL OAK</i>	12 in – 18 in BR
25%	<i>BETULA NIGRA</i>	<i>RIVER BIRCH</i>	12 in – 18 in BR

- ☐ SEE PLAN SHEETS FOR AREAS TO BE PLANTED

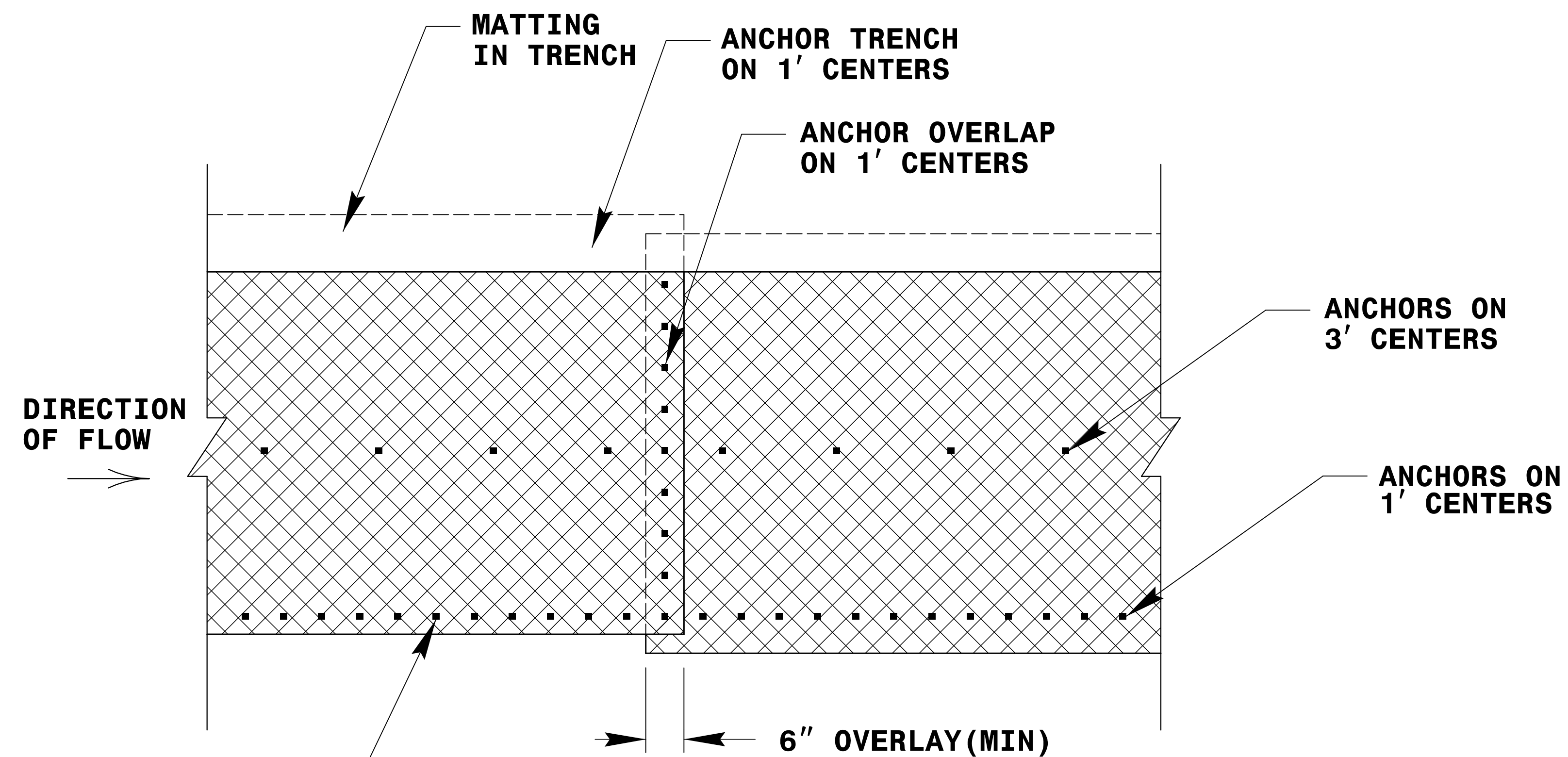
STREAMBANK REFORESTATION

DETAIL SHEET 1 OF 2

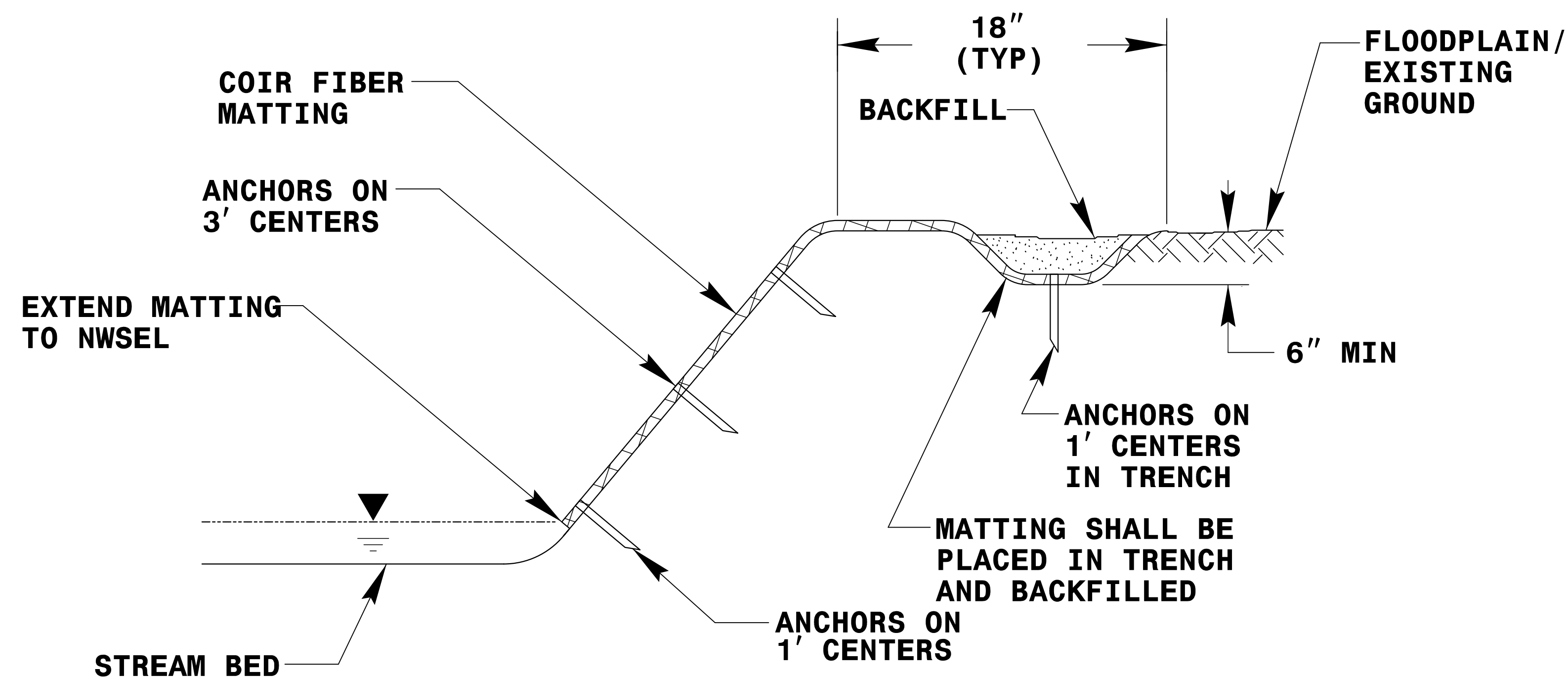
N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

PROJECT REFERENCE NO.	SHEET NO.
17BP.2R.85	RF-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
17BP.2R.85	RF-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



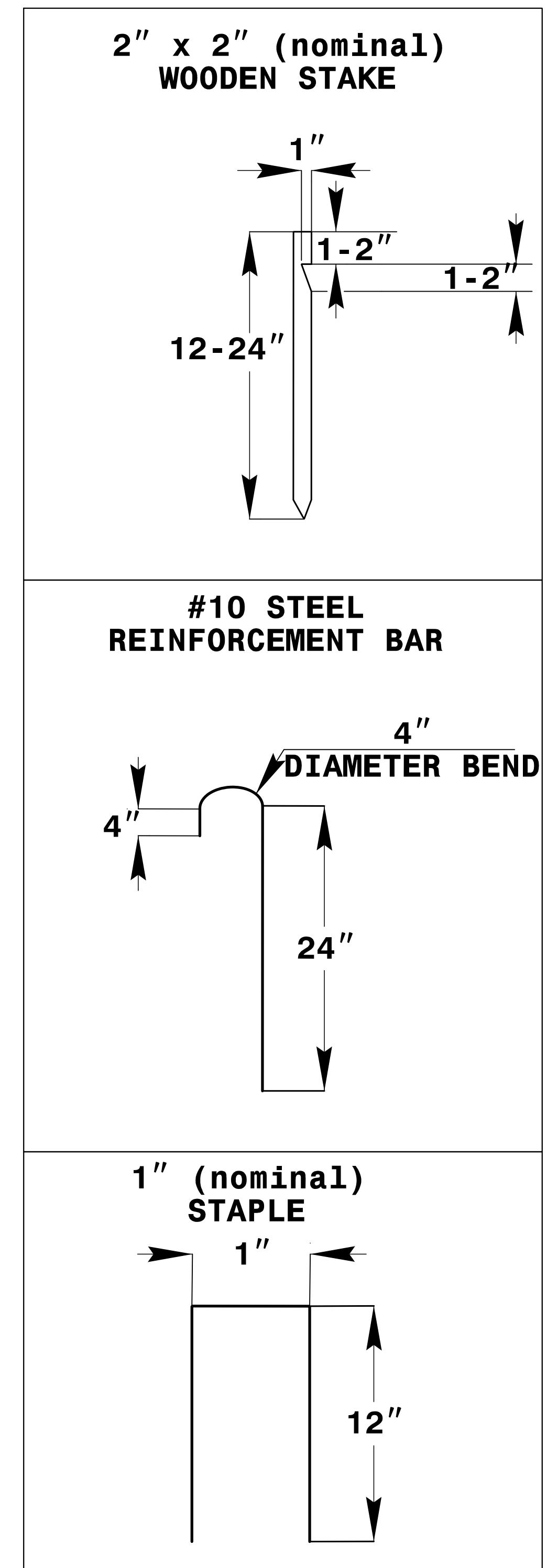
PLAN VIEW



TYPICAL CROSS SECTION

COIR FIBER MATTING DETAIL

NOT TO SCALE



ANCHOR OPTIONS

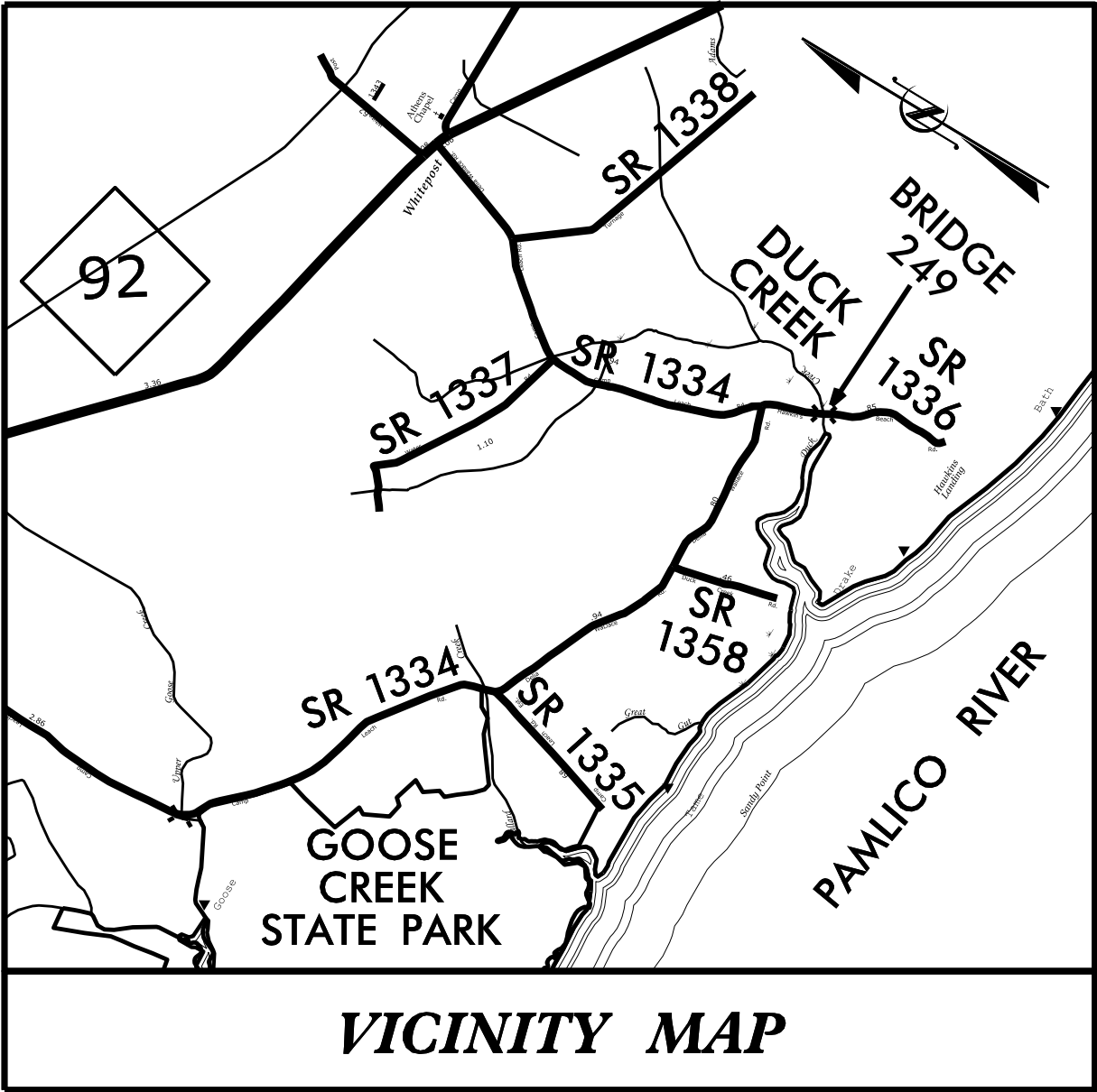
STREAMBANK REFORESTATION

DETAIL SHEET 2 OF 2

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

09.08/99

TIP PROJECT: 17BP.2.R.85

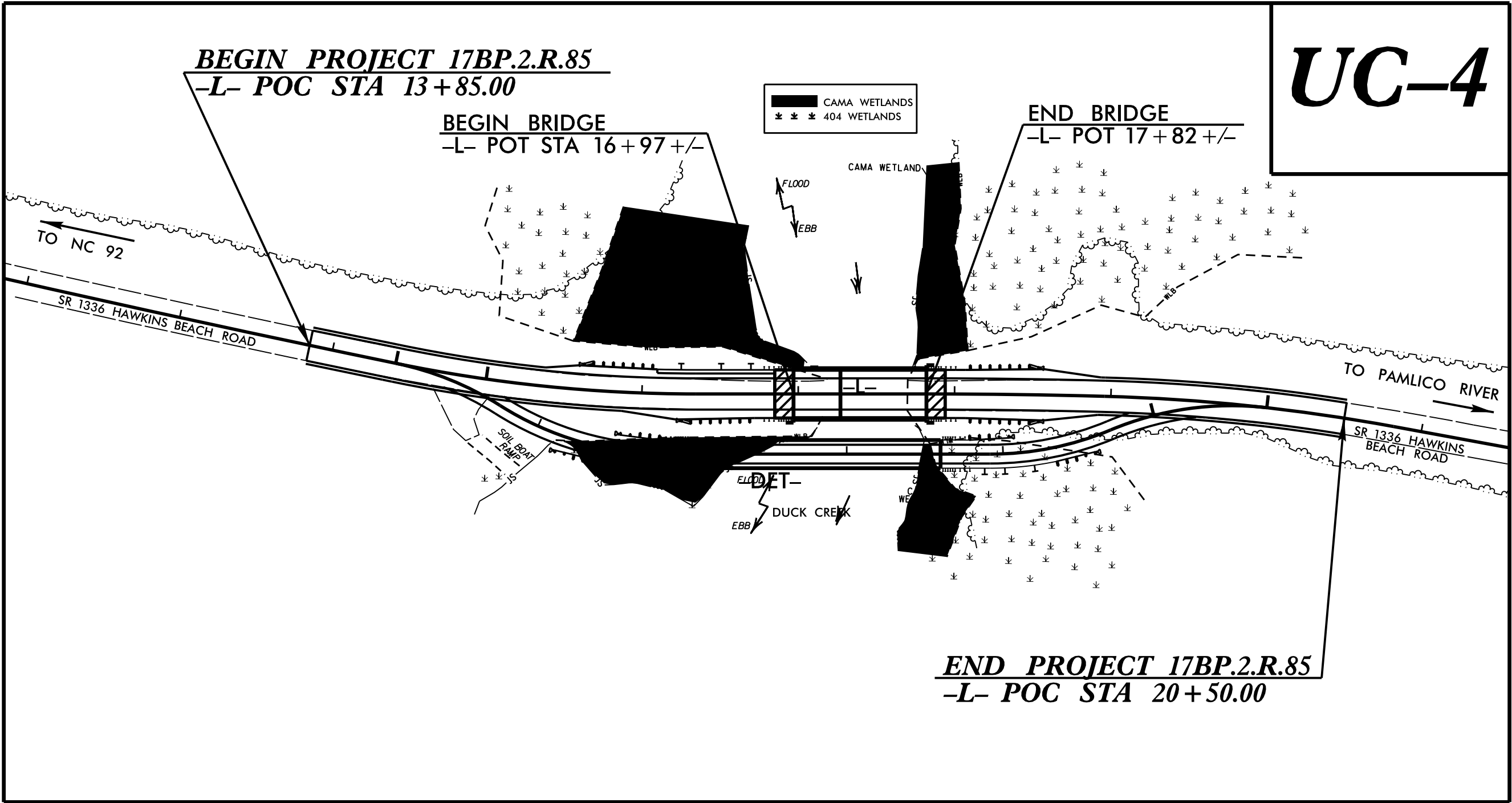
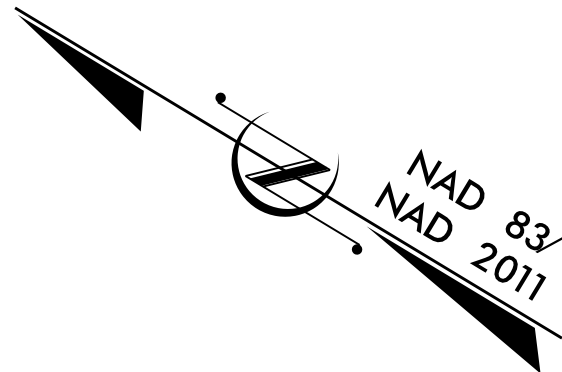


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS
BEAUFORT COUNTY

LOCATION: BRIDGE 249 OVER DUCK CREEK
ON SR 1336 (HAWKINS BEACH ROAD)

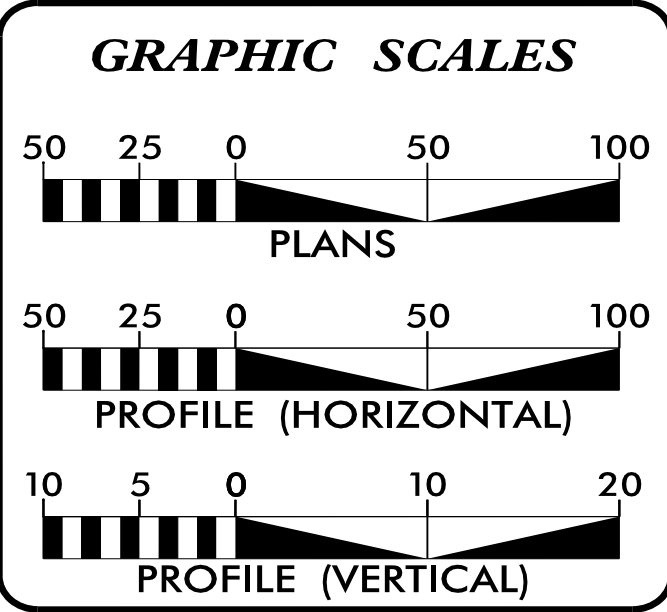
TYPE OF WORK: WATER LINE RELOCATION



NOTE:

1. THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

DOCUMENT NOT CONSIDERED FINAL
UNTIL ALL SIGNATURES ARE COMPLETED




INDEX OF SHEETS	
SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A - 3B	DETAILS
UC-4	UTILITY PLAN / PROFILE SHEET

WATER AND SEWER
OWNERS ON PROJECT

(A) WATER - BEAUFORT COUNTY
WATER DEPT

PREPARED IN THE OFFICE OF

 M A Engineering Consultants, Inc.

FOR

 HNTB

KEVIN ZDEB, PE PROJECT ENGINEER

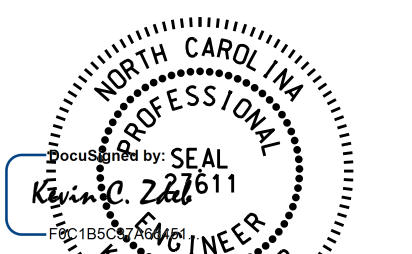
WEBB WHITE UTILITY COORDINATOR

SAM FORSTER PROJECT DESIGN ENGINEER

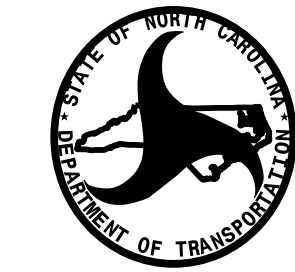
598 East Chatham Street - Suite 137
Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221
NC License: F-0160

HNTB NORTH CAROLINA, P.C.
3443 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

SEAL



6/18/2018



**DIVISION OF HIGHWAYS
HIGHWAY DIVISION 2**

105 PACTOLUS HIGHWAY (NC 33)
PO BOX 1587
GREENVILLE NC 27835
PHONE (252) 439-2800
FAX (252) 830-3352

JEFF CABANISS, PE DIVISION PROJECT
DEVELOPMENT ENGINEER

HEATHER LANE, PE DIVISION BRIDGE
PROGRAM MANAGER

DWAYNE SMITH DIV. UTILITY COORDINATOR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS









PROPOSED WATER SYMBOLS



Water Line (Sized as Shown)	
11¼ Degree Bend	
22½ Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	
Water Meter	
Relocate Water Meter	
Remove Water Meter	
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

PROPOSED SEWER SYMBOLS






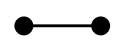












Gravity Sewer Line 12" SS
(Sized as Shown)
Force Main Sewer Line 12" FSS
(Sized as Shown)
Manhole ●
(Sized per Note)
Sewer Pump Station [PS(SS)]

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	
Utility Line by Others (Type as Shown)	 PROP O/H POW LINES
Trenchless Installation	 12" TL INSTALL
Encasement by Open Cut	 24" ENCAS BY OC
Encasement	 24" ENCASEMENT

Thrust Block			
Air Release Valve			
Utility Vault			
Concrete Pier			
Steel Pier			
Plan Note		NOTE	
Pay Item Note		<table><tr><td>PAY ITEM</td></tr></table>	PAY ITEM
PAY ITEM			

EXISTING UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
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	?UL
SUE Test Hole	⊗
Water Meter	Ⓜ
Water Valve	⊗
Fire Hydrant	⦿
Sanitary Sewer Cleanout	Ⓢ

*For Existing Utilities

Utility Line Drawn from Record
(Type as Shown)
Designated Utility Line
(Type as Shown)

4/13/2018 5:05:28 PM P:\065\06596\026\12000 Beaufort_249\Utilities\Proj\17BP_2.R.85.ut_UC-03_not.dgn

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 2018.

2. THE EXISTING WATER LINE UTILITIES BELONG TO BEAUFORT COUNTY.

CONTACT: ERICK JENNINGS
PHONE: 252-975-0720

3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES, DIVISION OF ENVIRONMENTAL HEALTH.

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 OPPROTUNITY 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 THE EXISTING FACILITIES AS NECESSARY FOR THE 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 ADDITONAL 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.

10. CONTRACTOR SHALL NOT OPERATE ANY VALVES ON THE EXISTING UTILITY SYSTEMS. CONTRACTOR SHALL CONTACT THE UTILITY OWNER TO CONDUCT STRATEGIC OPERATION OF VALVES FOR SERVICE INTERRUPTION IN ORDER TO PERFORM SPECIFIC WORK.

UTILITY CONSTRUCTION

PROJECT SPECIFIC NOTES:

1. PROPOSED OPEN TRENCH WATER LINE SHALL BE 6" DUCTILE IRON PIPE, CLASS 350, WITH GRIP RINGS.

2. PROPOSED WATER LINE FOR DIRECTIONAL DRILLING SHALL BE 200 PSI PRESSURE PIPE D.I.P.S. 8" HDPE SDR-9 WITH MATERIAL DESIGNATION PE 3408 / 3608 THAT CONFORMS TO NSF-61.

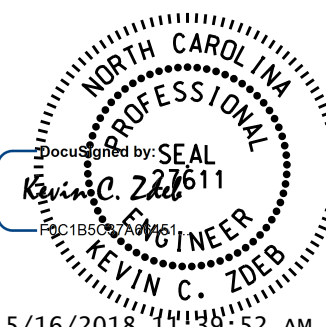

3. ALL WATER LINE FITTINGS, 4-INCHES THROUGH 12-INCHES IN DIAMETER, SHALL BE DUCTILE IRON.

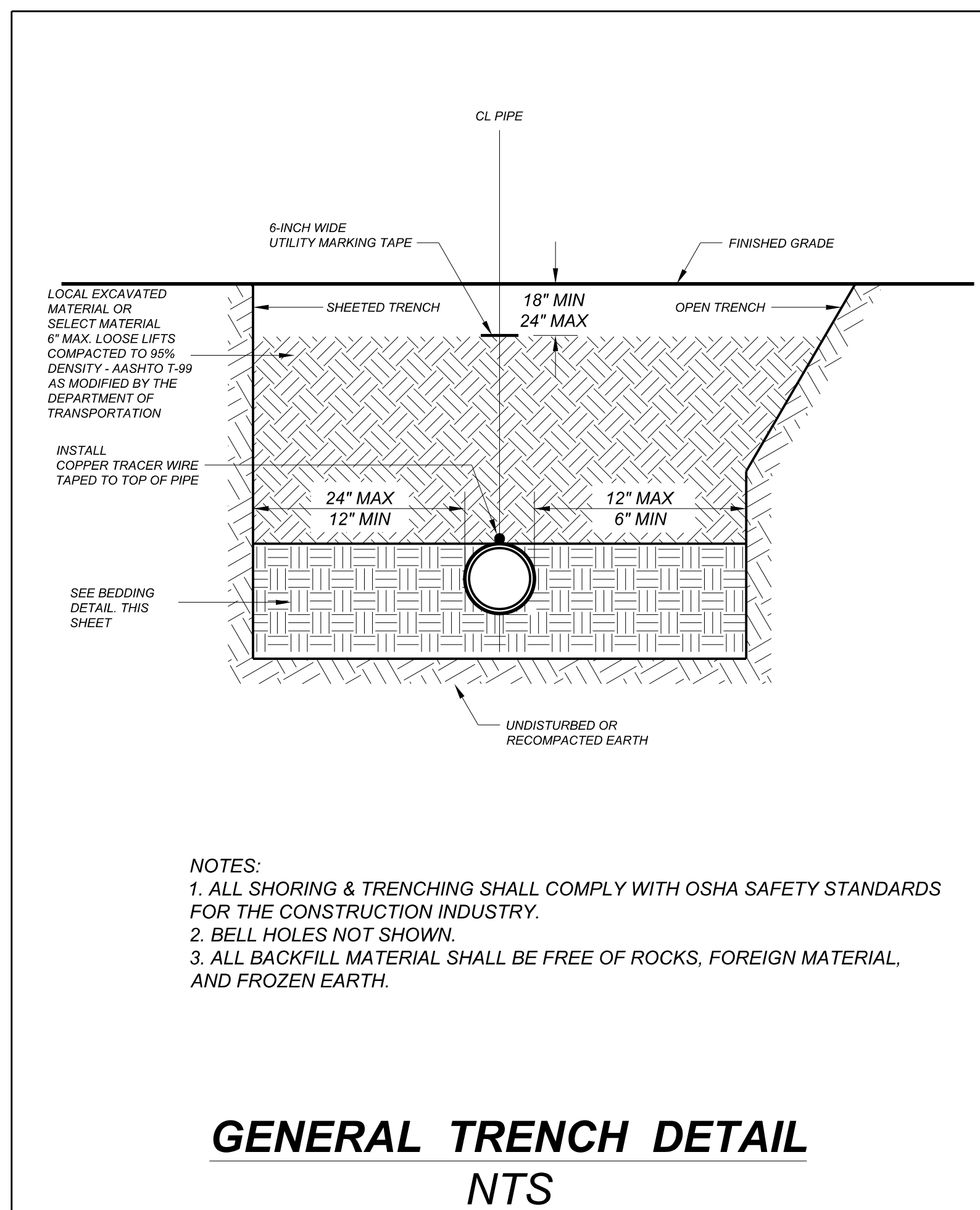
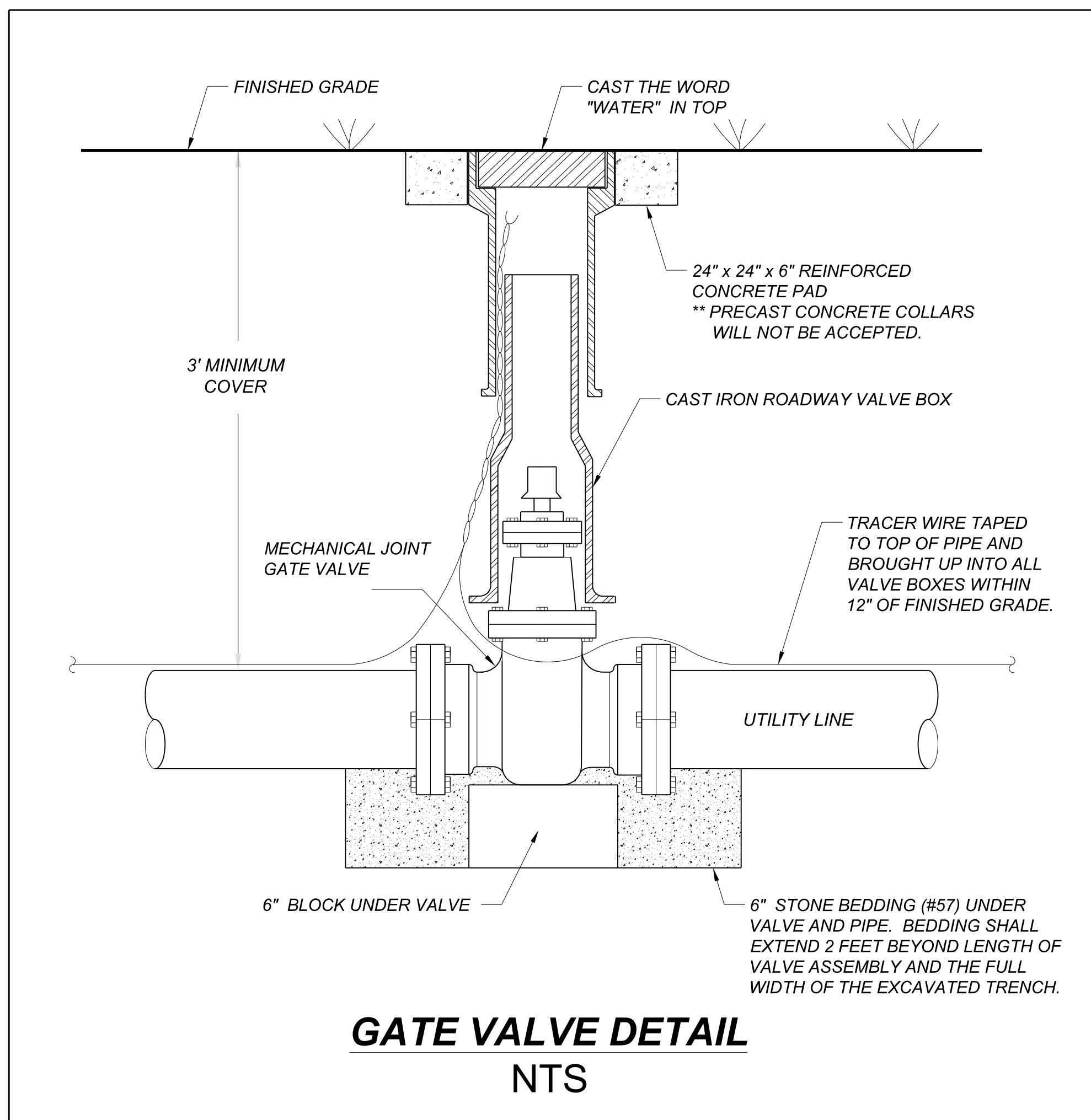
4. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, STREAM, CREEK, WETLANDS, OR BUFFER ZONES.

5. ALL PROPOSED FITTINGS (BENDS, TEES, CROSSES, REDUCERS, PLUGS, ETC.) SHALL BE ADEQUATELY RESTRAINED BY THE USE OF RESTRAINED JOINT CONSTRUCTION AND/OR CAST IN PLACE CONCRETE THRUST RESTRAINTS AS DETAILED ON THESE DRAWINGS, OR AS DIRECTED BY THE RESIDENT ENGINEER.

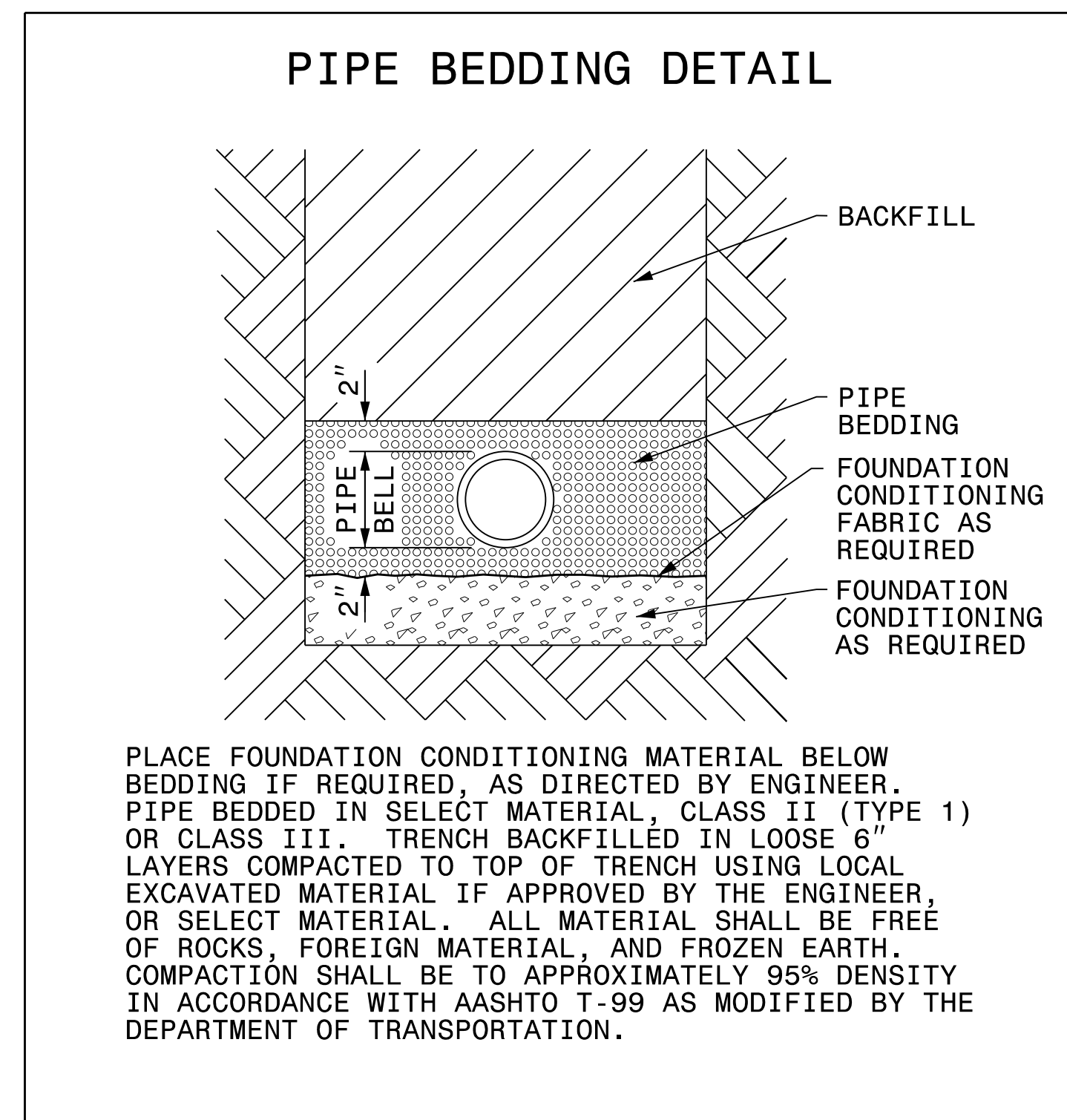
PROJECT QUANTITIES

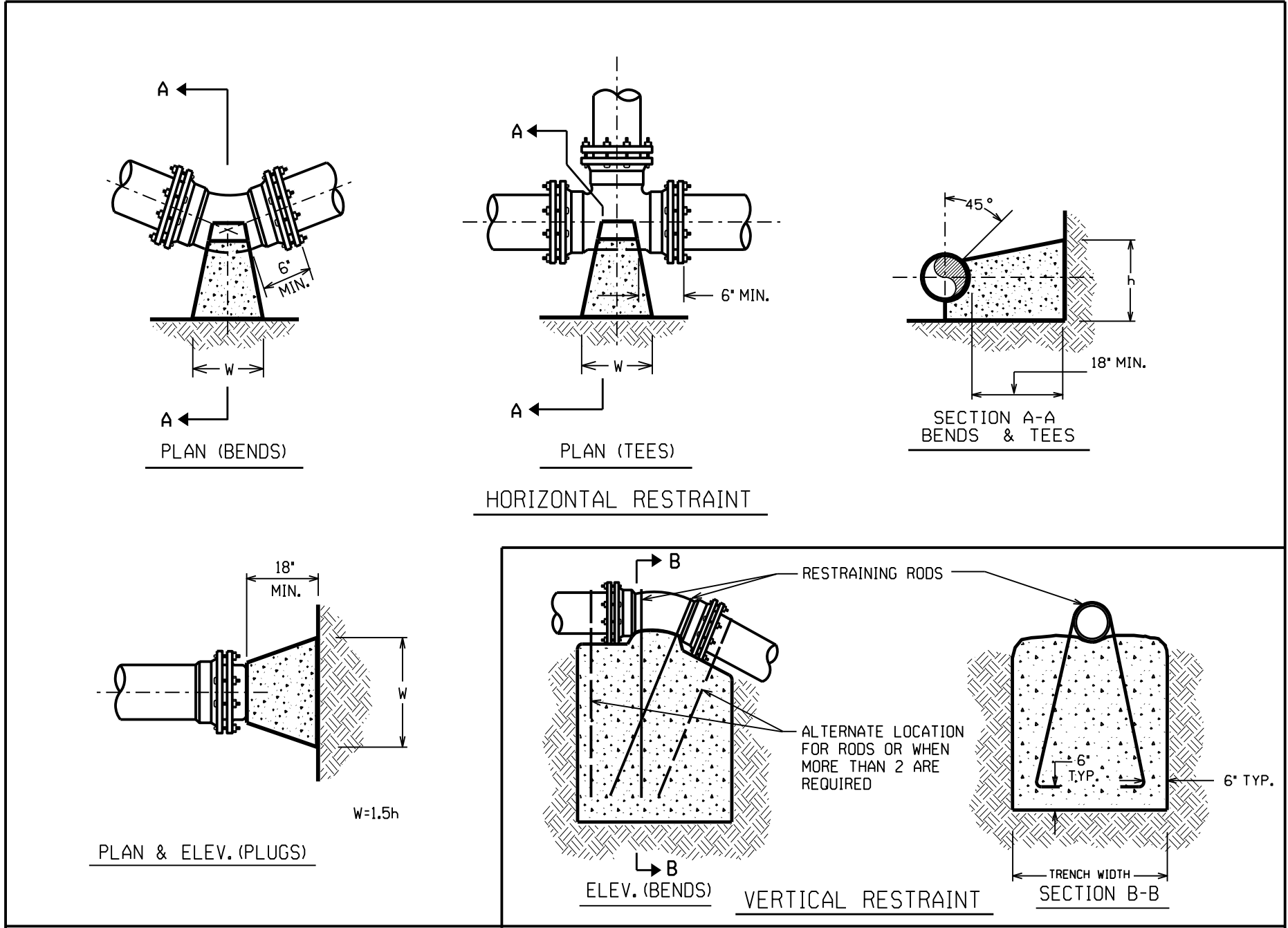
ITEM NUMBER	DESCRIPTION	QUANTITY	
5325600000-E	6" WATER LINE	184	LF
5325800000-E	8" WATER LINE	392	LF
5329000000-E	DUCTILE IRON WATER PIPE FITTINGS	490	POUNDS
5540000000-E	6" VALVE	2	EA
5800000000-E	ABANDON 6" UTILITY PIPE	584	LF
5871500000-E	DIRECTIONAL DRILLING OF 8"	392	LF

PROJECT REFERENCE NO.		SHEET NO.	
17BP-2.R.85		UC-3	
DESIGNED BY: SHF			
DRAWN BY: SHF			
CHECKED BY: KCZ			
APPROVED BY: KCZ			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		5/16/2018 11:52 AM EDT	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		UTILITY CONSTRUCTION PLANS ONLY	
UTILITY CONSTRUCTION			
 M A Engineering Consultants, Inc.		598 East Chatham Street - Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221 NC License: F-0160	
DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED			



MAXIMUM OPEN TRENCH WIDTH AT TOP OF PIPE			
NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		





THRUST RESTRAINT FOR PIPE LINES

BASED ON TEST PRESSURE OF 200 P.S.I.																		
HORIZONTAL RESTRAINT (ALL AREAS GIVEN ARE IN SQUARE FEET)								VERTICAL RESTRAINT (ALL VOLUMES GIVEN ARE IN CUBIC YARDS)**										
PIPE SIZE	DEGREE OF BEND	LBS. STATIC THRUST *	ALLOWABLE SOIL BEARING (PSF)								PIPE SIZE	RESTRAINING RODS		DEGREE OF BEND				
			1000	2000	3000	4000	5000	6000	7000	8000		NO.REO'D	DIA.	11/4"	22 1/2"	45°		
4"	11/4"	616	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	22 1/2"	1,226	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	45°	2,405	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	90°	4,444	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	TEE/PLUG	5,143	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
6"	11/4"	1,385	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	22 1/2"	2,758	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	45°	5,409	5	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1
	90°	9,999	10	5	3	3	2	2	2	2	2	2	2	2	2	2	2	2
	TEE/PLUG	12,568	7	4	3	3	2	2	2	2	2	2	2	2	2	2	2	2
8"	11/4"	2,424	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	22 1/2"	4,804	5	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1
	45°	9,609	10	5	3	2	2	2	2	2	2	2	2	2	2	2	2	2
	90°	17,773	18	9	6	4	4	4	4	4	4	4	4	4	4	4	4	4
	TEE/PLUG	22,568	13	6	4	3	3	3	3	3	3	3	3	3	3	3	3	3
10"	11/4"	3,846	4	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
	22 1/2"	7,692	8	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	45°	15,384	15	8	5	4	3	3	3	3	3	3	3	3	3	3	3	3
	90°	27,768	28	14	9	7	6	5	4	4	4	4	4	4	4	4	4	4
	TEE/PLUG	35,435	20	10	7	5	4	3	3	3	3	3	3	3	3	3	3	3
12"	11/4"	5,543	6	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1
	22 1/2"	11,087	11	6	4	3	2	2	2	2	2	2	2	2	2	2	2	2
	45°	22,174	22	12	8	5	4	4	4	4	4	4	4	4	4	4	4	4
	90°	39,987	40	20	13	10	8	7	6	5	5	5	5	5	5	5	5	5
	TEE/PLUG	49,747	28	14	9	7	6	5	4	4	4	4	4	4	4	4	4	4
14"	11/4"	7,544	8	4	3	2	2	2	2	2	2	2	2	2	2	2	2	2
	22 1/2"	15,088	16	8	5	4	3	3	3	3	3	3	3	3	3	3	3	3
	45°	29,455	29	15	10	7	6	5	4	4	4	4	4	4	4	4	4	4
	90°	54,426	54	27	18	14	11	9	8	7	6	6	6	6	6	6	6	6
	TEE/PLUG	68,485	38	19	13	10	8	7	6	5	5	5	5	5	5	5	5	5
16"	11/4"	9,854	10	5	3	3	2	2	2	2	2	2	2	2	2	2	2	2
	22 1/2"	19,708	20	10	7	5	4	4	4	4	4	4	4	4	4	4	4	4
	45°	38,471	38	17	13	10	8	6	5	5	5	5	5	5	5	5	5	5
	90°	71,085	71	36	24	18	14	12	10	9	9	9	9	9	9	9	9	9
	TEE/PLUG	89,255	40	20	13	10	8	7	6	5	5	5	5	5	5	5	5	5
* INCLUDES 1.25 SAFETY FACTOR																		
GENERAL NOTES: 1. CONCRETE SHALL BE CLASS "B". 2. CONCRETE SHALL NOT CONTACT BOLTS ENDS OF MECHANICAL JOINT FITTINGS. 3. CONSULT WITH ENGINEER FOR CONCRETE REQUIREMENTS ON MAINS LARGER THAN 16 INCHES. (FOR VERTICAL & HORIZONTAL BENDS) 4. ALLOWABLE SOIL BEARING SHALL BE DETERMINED BY THE ENGINEER.																		
REVISIONS																		
NO.	DATE	DESCRIPTION																
SHEET 2 OF 2																		
THRUST RESTRAINT FOR WATER MAINS																		

DUCTILE IRON PIPE RESTRAINED JOINT DESIGN TABLE

FITTING	REQUIRED RESTRAINED LENGTH (FT) OF BARE D.I. PIPE BY DEPTH OF COVER							
	3 FT	4 FT	5 FT	6 FT	7 FT	8 FT	9 FT	10 FT
HORIZONTAL BENDS								
6 INCH DIA - 11.25 DEG	3	2	2	2	2	1	1	1
6 INCH DIA - 22.5 DEG	5	4	4	3	3	3	3	2
6 INCH DIA - 45 DEG	11	9	8	7	7	6	5	5
6 INCH DIA - 90 DEG	26	22	19	17	16	14	13	12
VERTICAL DOWN BENDS	3 FT	4 FT	5 FT	6 FT	7 FT	8 FT	9 FT	10 FT
6 INCH DIA - 11.25 DEG	7	6	6	5	4	4	4	3
6 INCH DIA - 22.5 DEG	15	13	11	10	9	8	8	7
6 INCH DIA - 45 DEG	31	27	23	21	19	17	16	15
VERTICAL UP BENDS	3 FT	4 FT	5 FT	6 FT	7 FT	8 FT	9 FT	10 FT
6 INCH DIA - 11.25 DEG	3	2	2	2	2	1	1	1
6 INCH DIA - 22.5 DEG	5	4	4	3	3	3	3	2
6 INCH DIA - 45 DEG	11	9	8	7	7	6	5	5

ASSUMPTIONS

LAYING CONDITION = TYPE 4

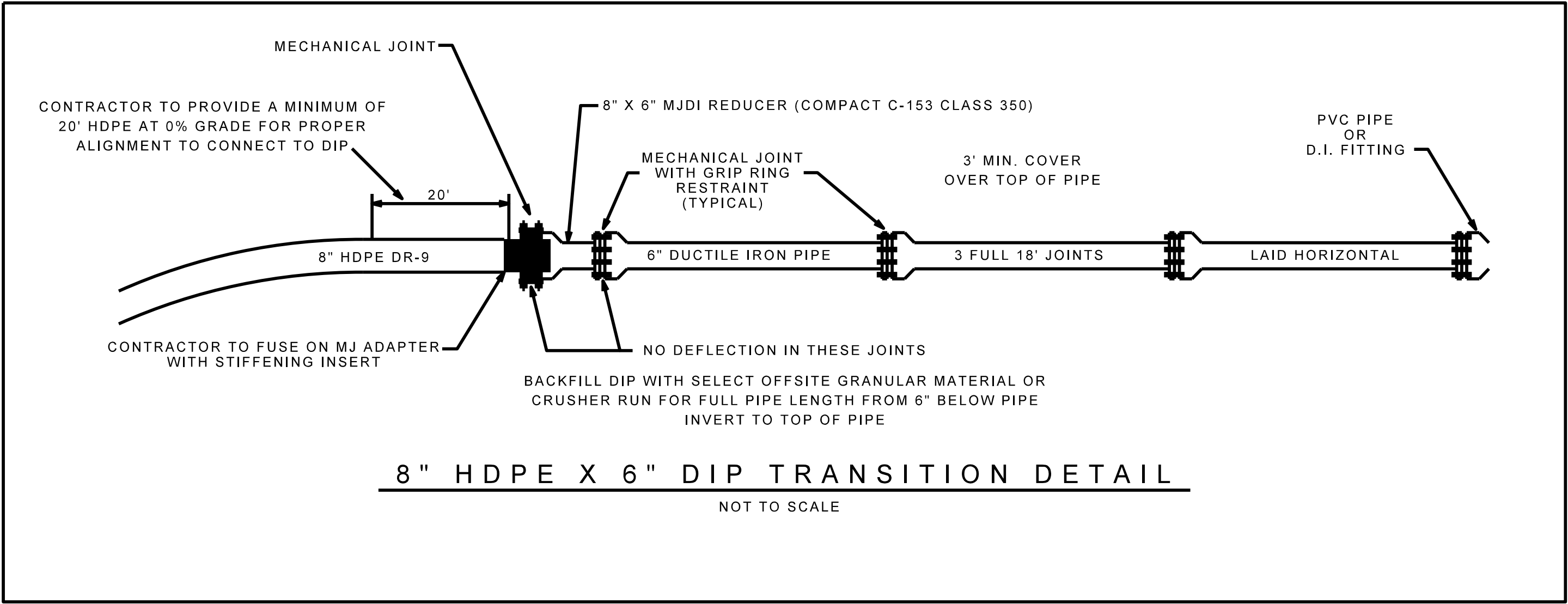
DESIGN PRESSURE = 200 PSI (TEST PRESSURE)

SOIL DESIGNATION = GC = COHESIVE-GRANULAR

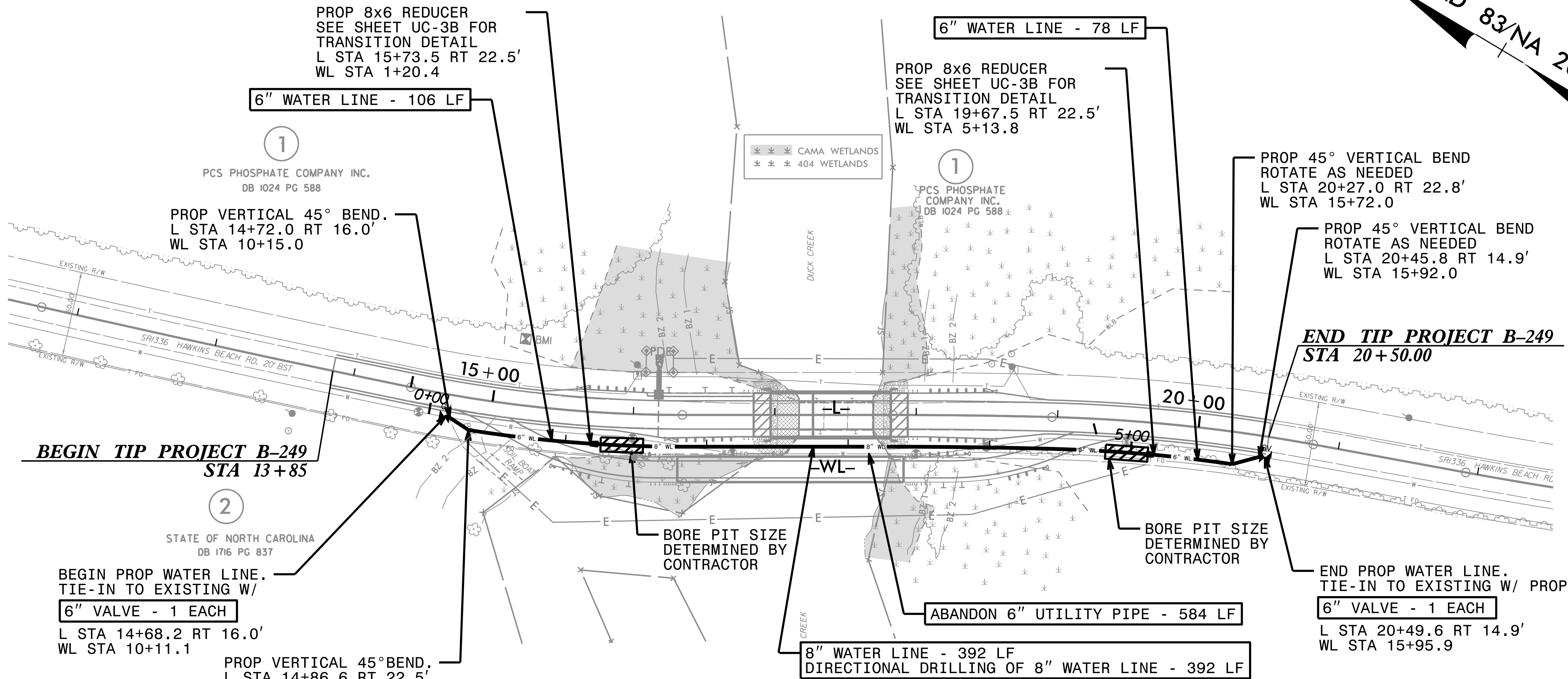
SAFETY FACTOR = 1.5

NOTES

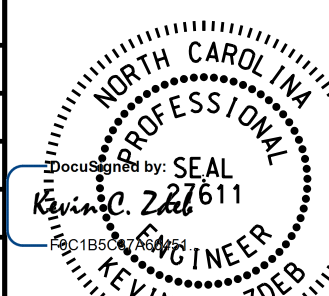

- RESTRAINED LENGTH IS MEASURED FROM THE CENTER OF THE BEND AS FOLLOWS:
 - HORIZONTAL AND VERTICAL BENDS: ALONG EACH SIDE OF BEND.
 - HORIZONTAL AND VERTICAL BENDS - OFFSET OR COMBINED: ALONG THE OUTER SIDE OF EACH BEND.ALL PIPE BETWEEN THE TWO BENDS SHALL BE RESTRAINED JOINT WHEN THE DISTANCE BETWEEN THEM IS EQUAL TO OR LESS THAN THE REQUIRED RESTRAINED LENGTH. WHEN THE DISTANCE BETWEEN BENDS IS LESS THAN REQUIRED, THE BALANCE OF THE REQUIRED RESTRAINED LENGTH SHALL BE ADDED ON TO THE LENGTH ALONG THE OUTSIDE OF EACH BEND RESPECTIVELY TO MAKE UP FOR THE DEFICIENCY IN THAT DIRECTION.**HORIZONTAL BEND EXAMPLE...**INSTALL A 8 INCH 45 DEG BEND AND A 22.5 DEG BEND WITH 10 FEET BETWEEN BENDS AND 4 FEET OF COVER. THE CONTRACTOR SHALL PROVIDE AN ADDITIONAL 1 FOOT OF RESTRAINED LENGTH BEYOND THE 45 DEGREE BEND (FOR A TOTAL OF 13 FEET) AND AN ADDITIONAL 7 FEET OF RESTRAINED LENGTH BEYOND THE 22.5 DEGREE BEND (FOR A TOTAL OF 13 FEET).
- WHEN IT IS NOT POSSIBLE TO INSTALL THE RESTRAINED LENGTHS AS NOTED BY THIS TABLE, THE CONTRACTOR SHALL INSTALL THE APPROPRIATE CONCRETE THRUST RESTRAINTS AS PER THE DETAILS HEREIN.



1/31/18



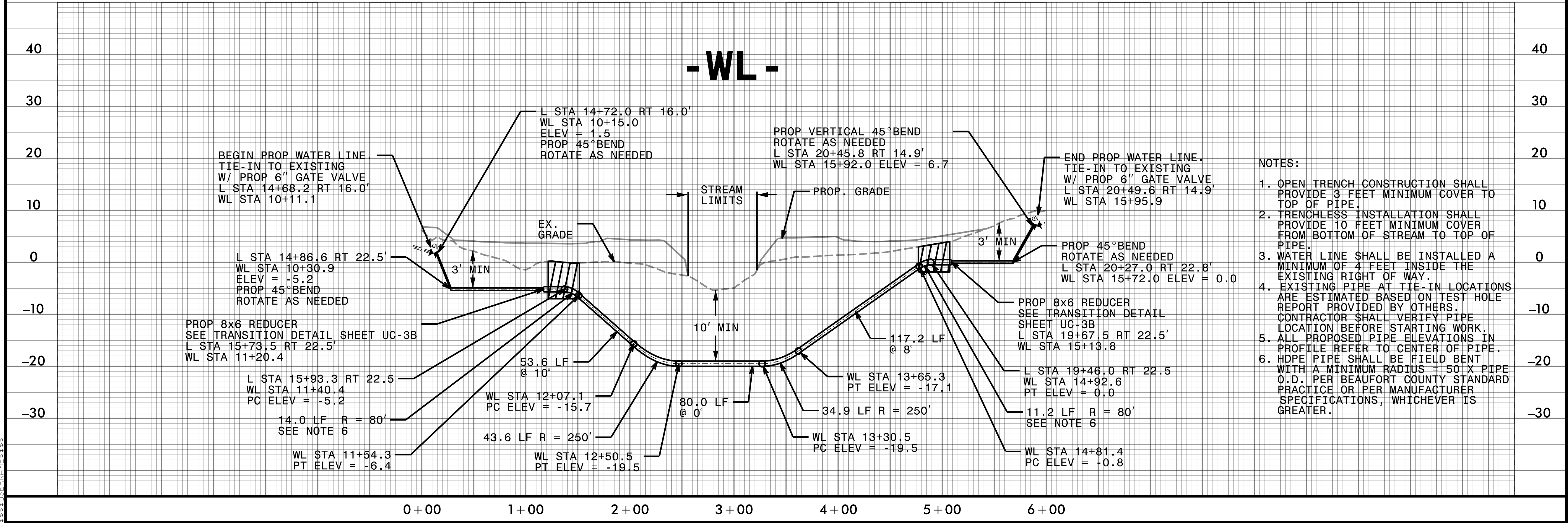
NAD 83/NA 2011

PROJECT REFERENCE NO. 17BP-2-R.85		SHEET NO. UC-4	
DESIGNED BY: SHF			
DRAWN BY: SHF			
CHECKED BY: KCZ			
APPROVED BY: KCZ			
REVISED:		NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		5/16/2018 10:44:11 AM EDT UTILITY CONSTRUCTION PLANS ONLY	
UTILITY CONSTRUCTION			
 M A Engineering Consultants, Inc. 598 East Chatham Street - Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221 NC License: F-0160			
DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED			

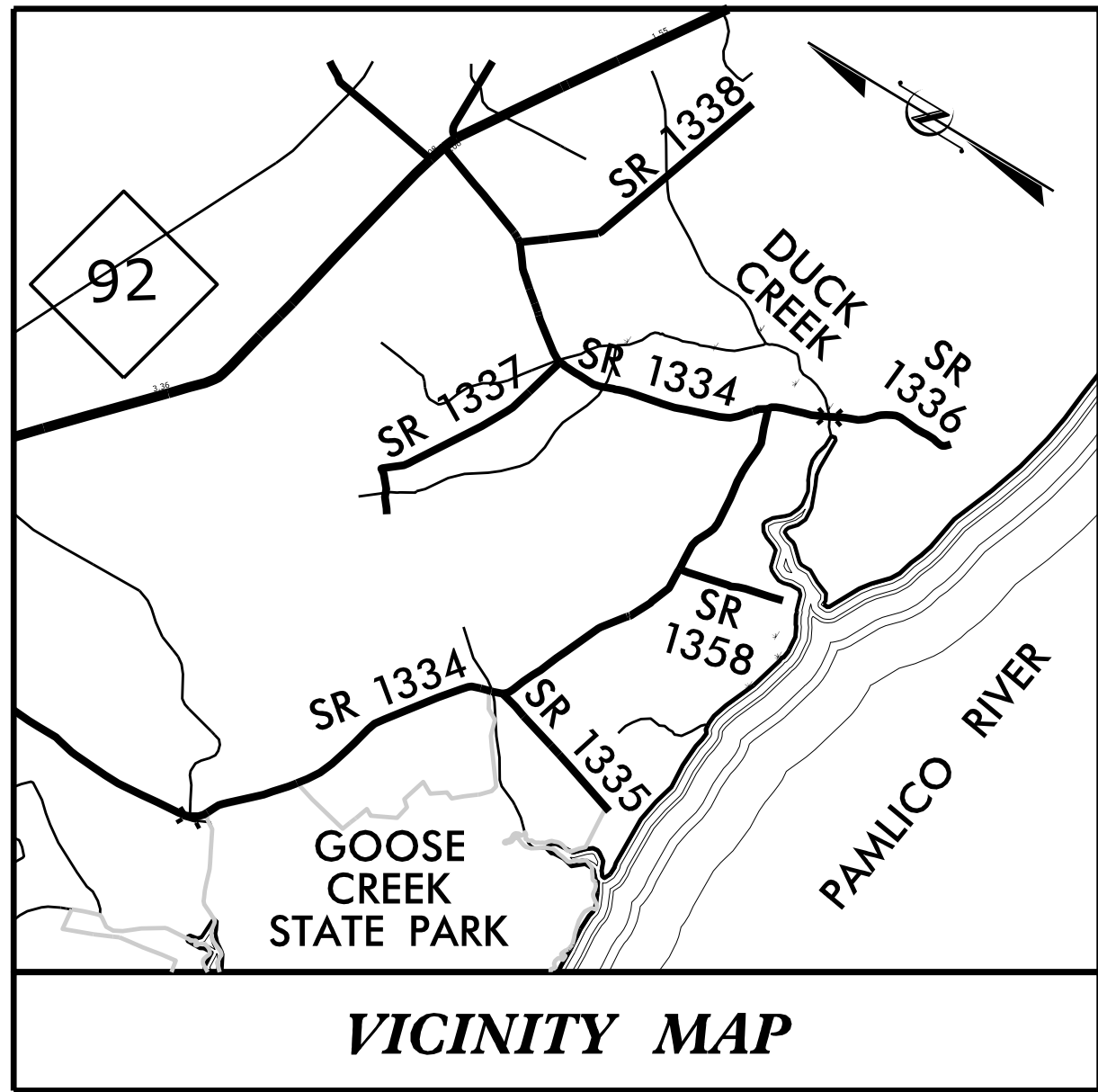
UTILITY OWNERS ON THIS PROJECT:

BEAUFORT COUNTY UTILITIES
UTILITY: 6" WATER LINE
CONTACT: ERICK JENNINGS
PHONE: 252-402-6547

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 490 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



TIP PROJECT: 17BP.2.R.85



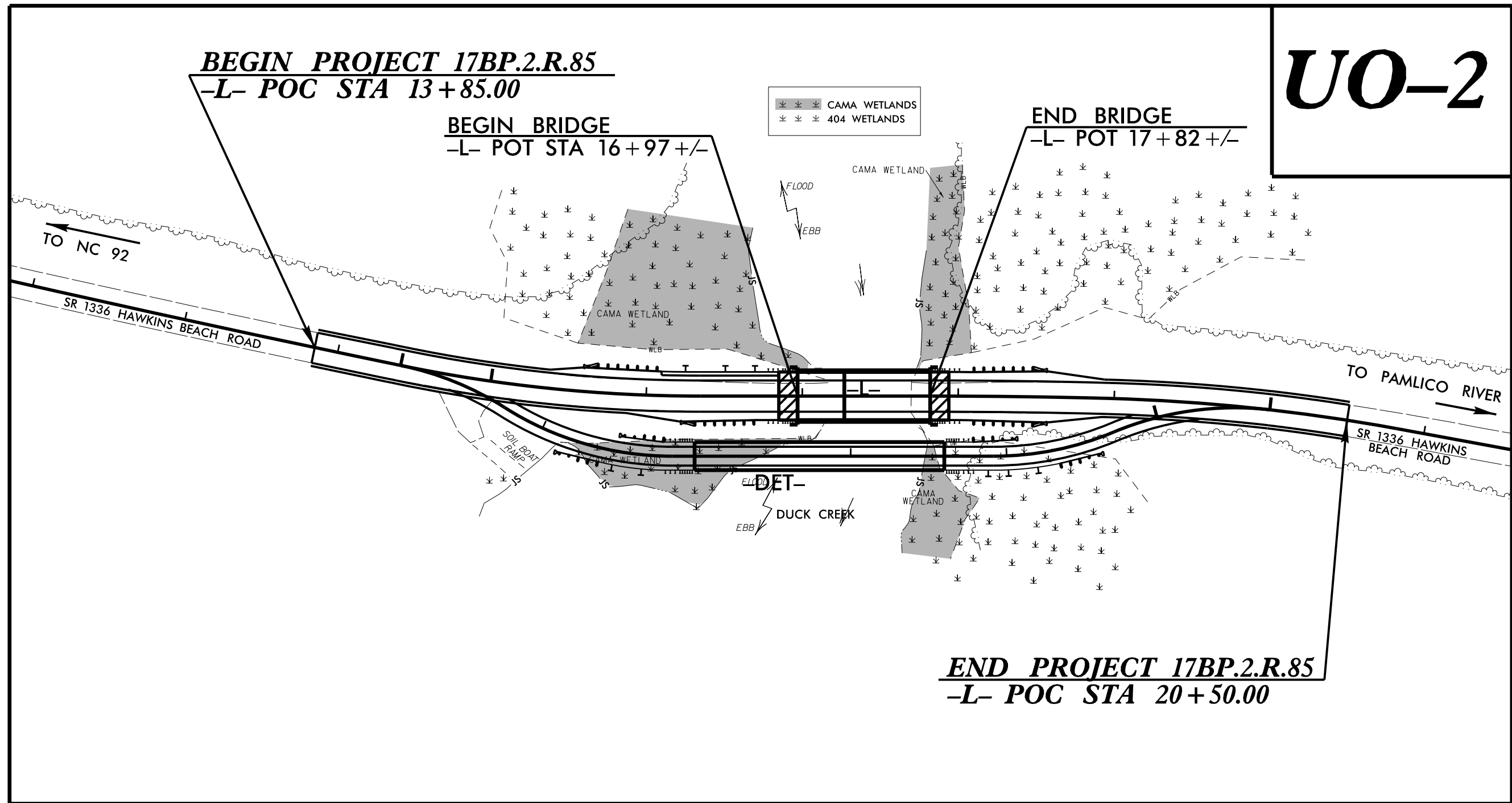
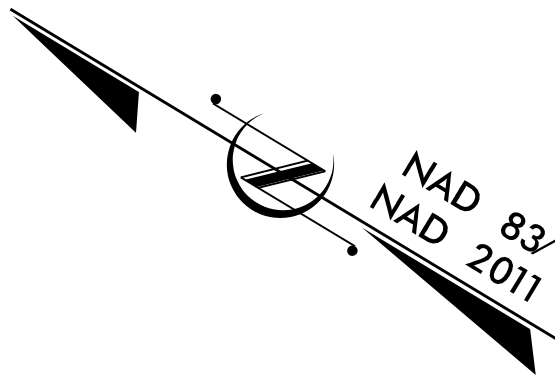
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
BEAUFORT COUNTY

LOCATION: REPLACE BRIDGE NO 249 OVER DUCK CREEK
ON SR 1336 (HAWKINS BEACH RD)

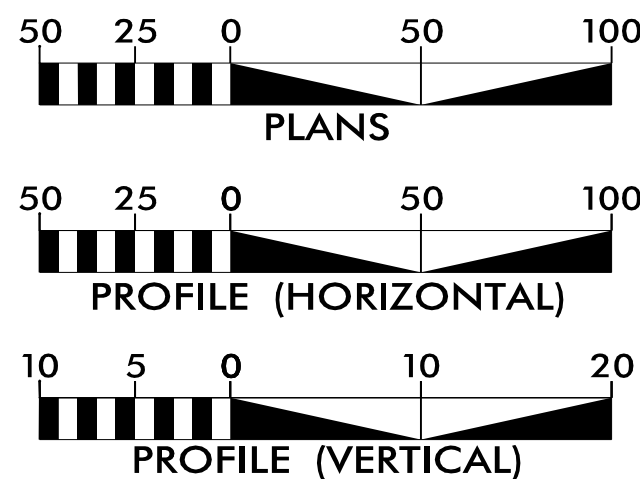
TYPE OF WORK: RELOCATE COMMUNICATION LINES

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



UO-2

GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:

UO-1

UO-2

DESCRIPTION:

TITLE SHEET

UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

(A) TELEPHONE - TRI COUNTY BROADBAND
(B) TELEPHONE - CENTURYLINK

PREPARED IN THE OFFICE OF:



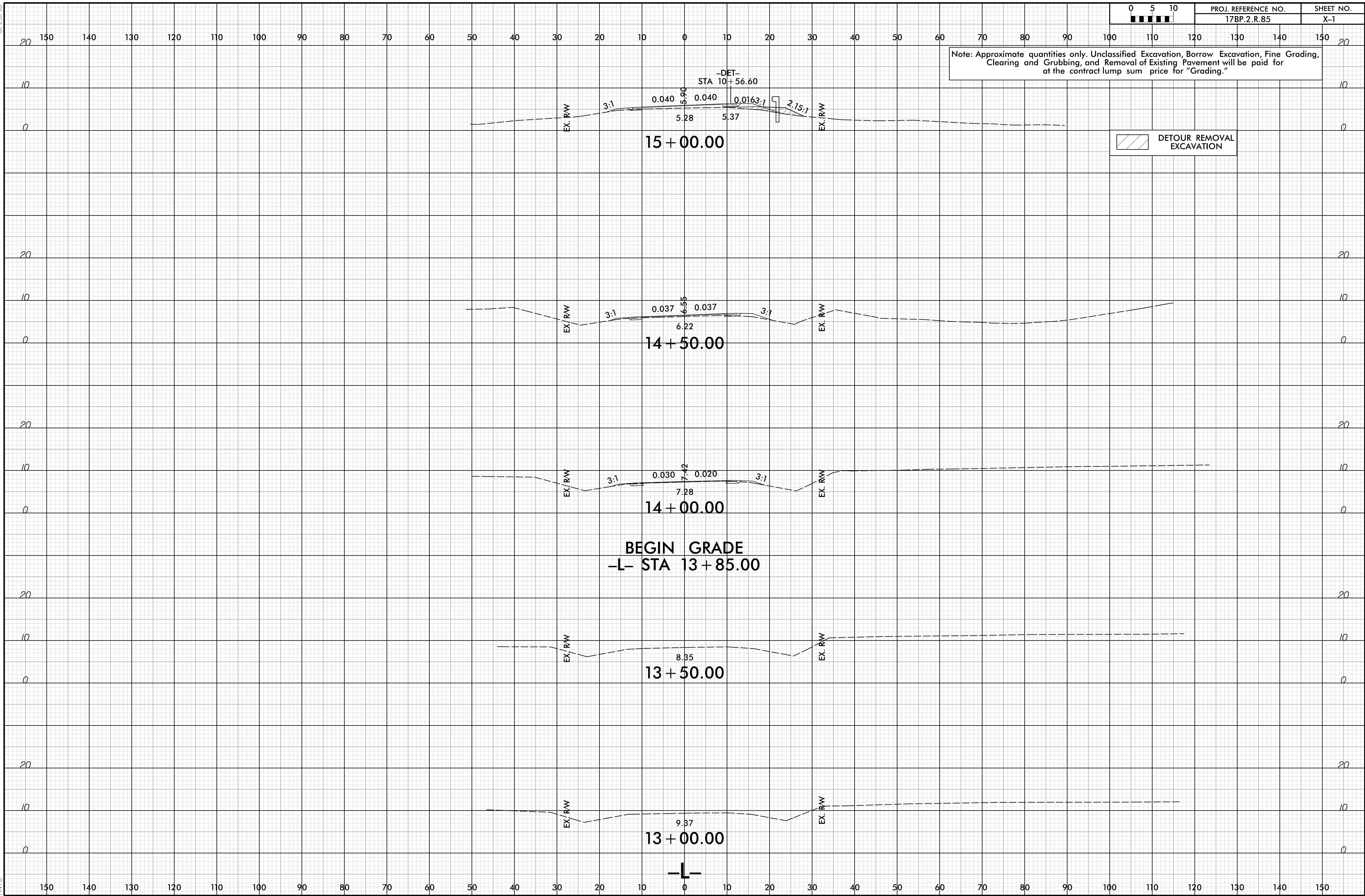
598 East Chatham Street - Suite 137
Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221
NC License: F-0160

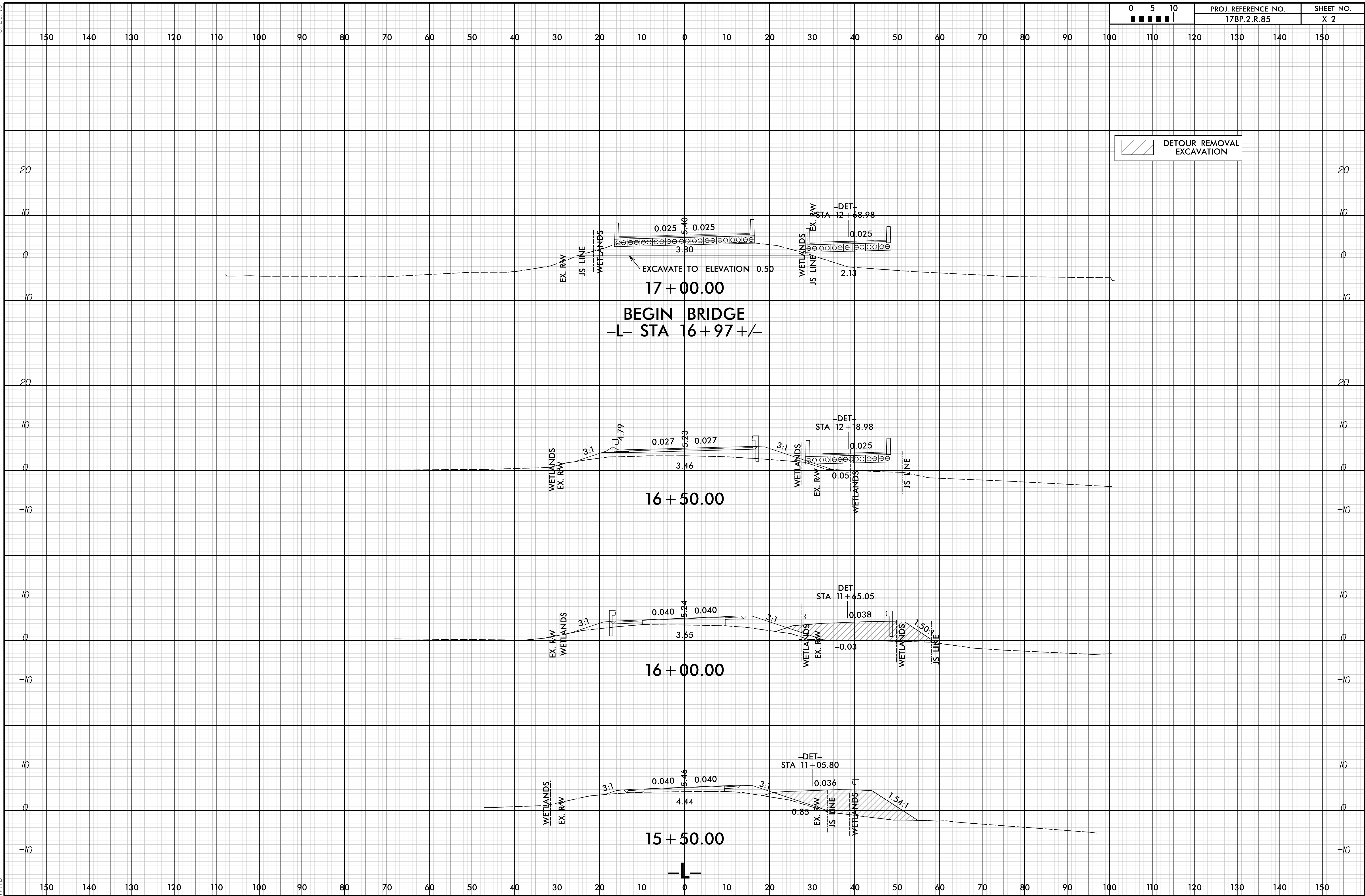
WEBB WHITE UTILITY PROJECT MANAGER
DWAYNE SMITH PROJECT UTILITY COORDINATOR

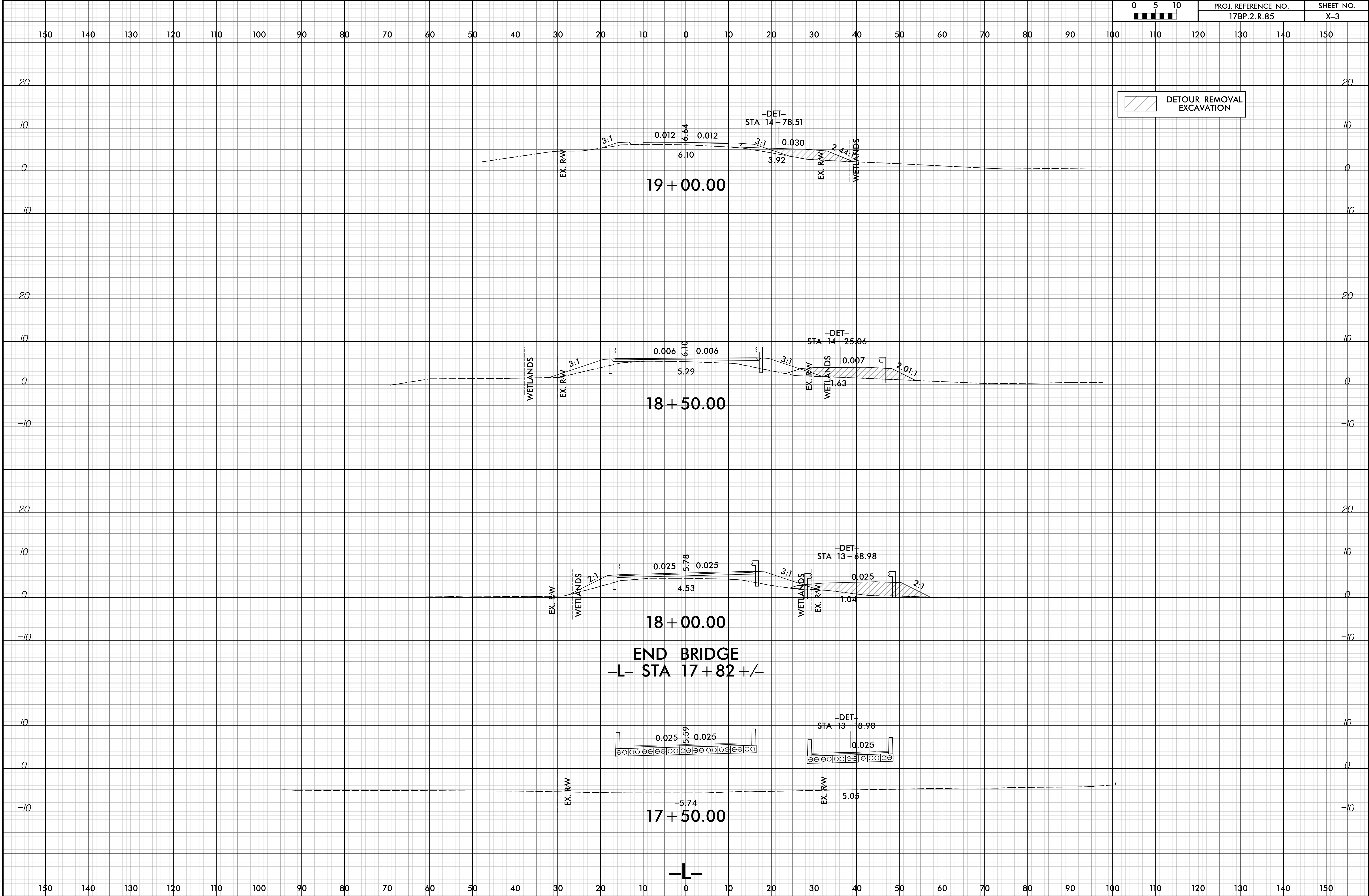


DIVISION OF HIGHWAYS
DIVISION 2
DIV ADDRESS
1037 W.H. SMITH BLVD
PO BOX 1587
GREENVILLE NC 27835

HEATHER LANE, P.E.
DIVISION 2
PROJECT DEVELOPMENT UNIT
DIVISION BRIDGE PROGRAM MANAGER

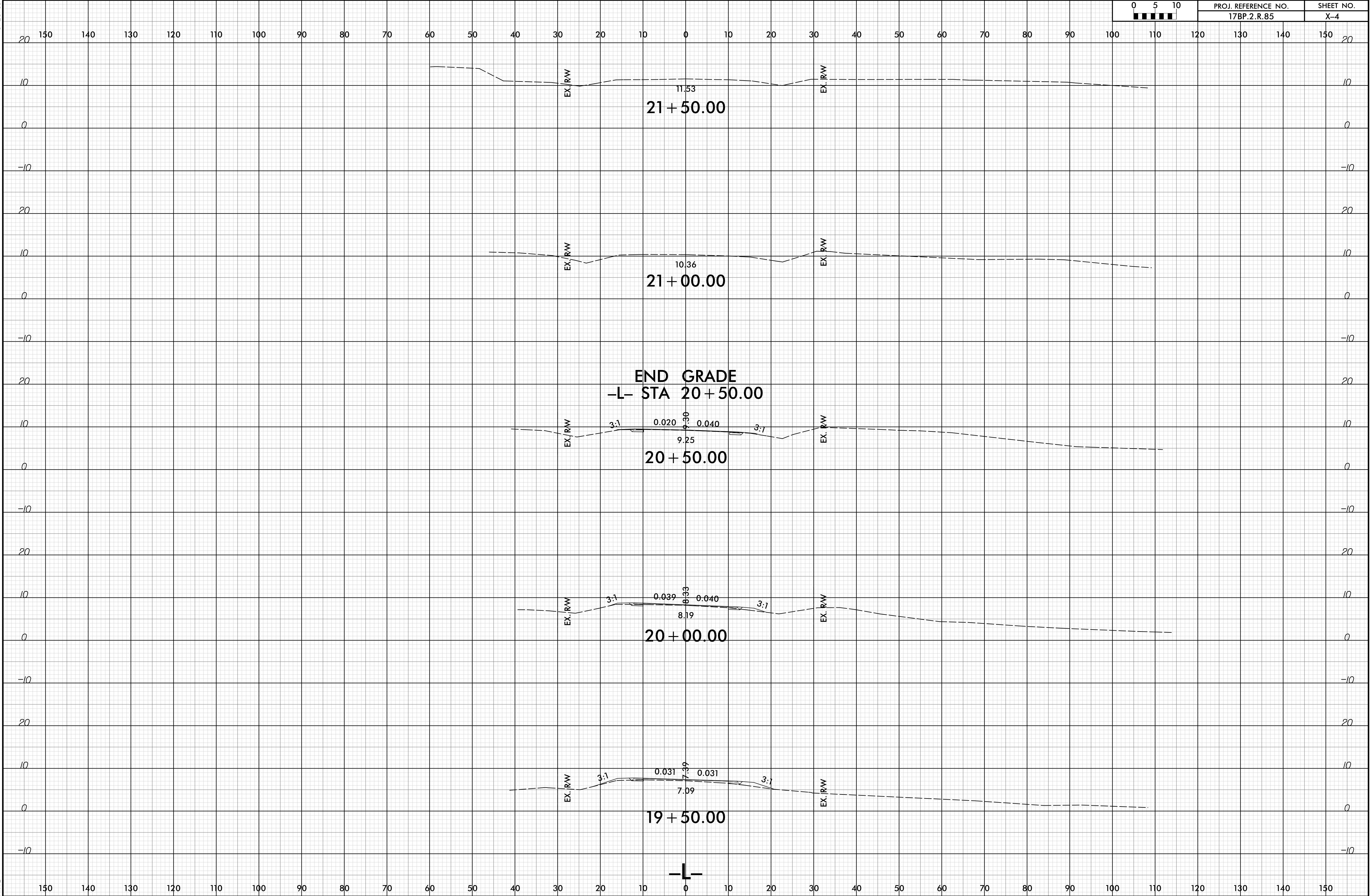






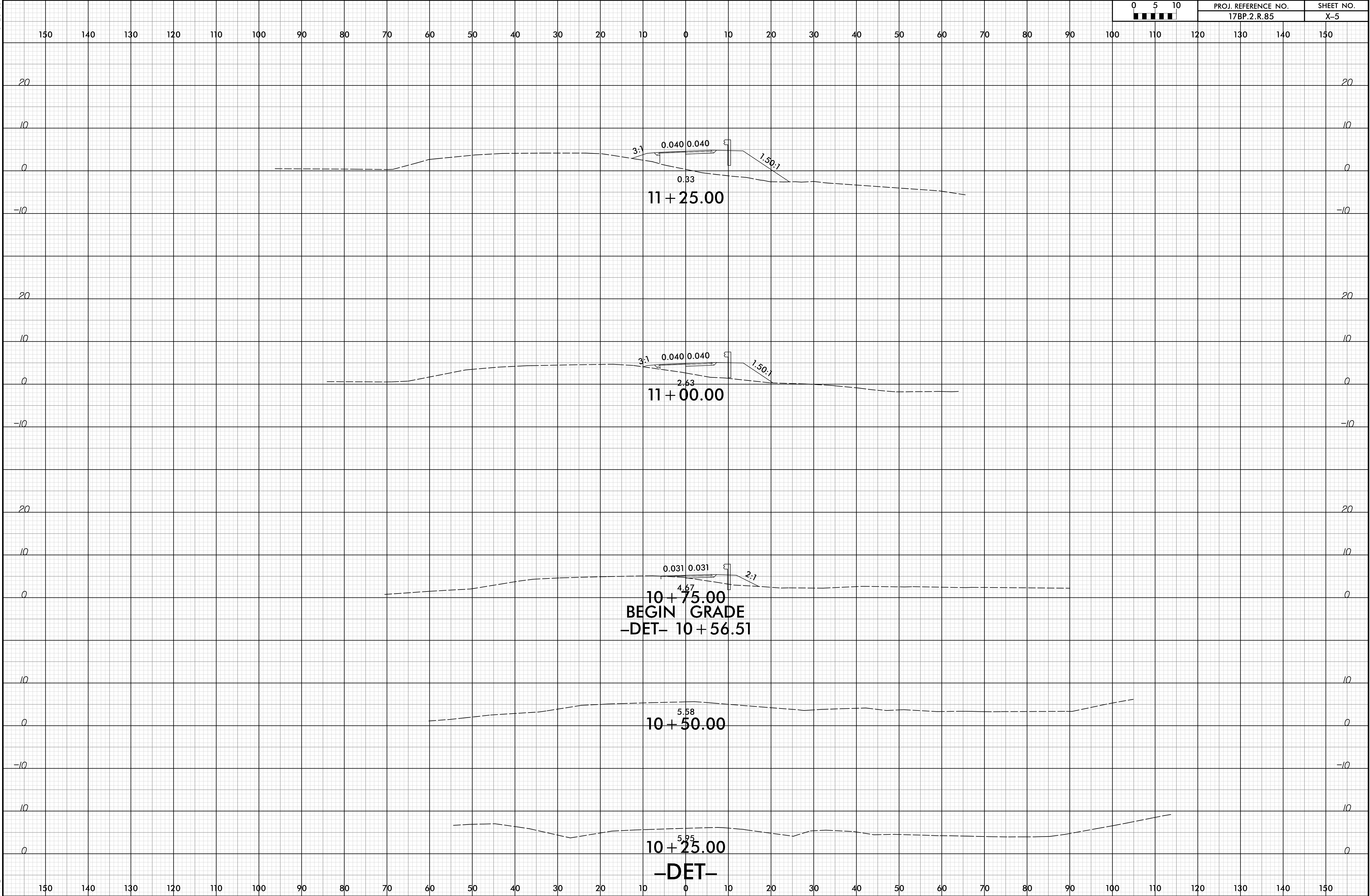
6/23/16

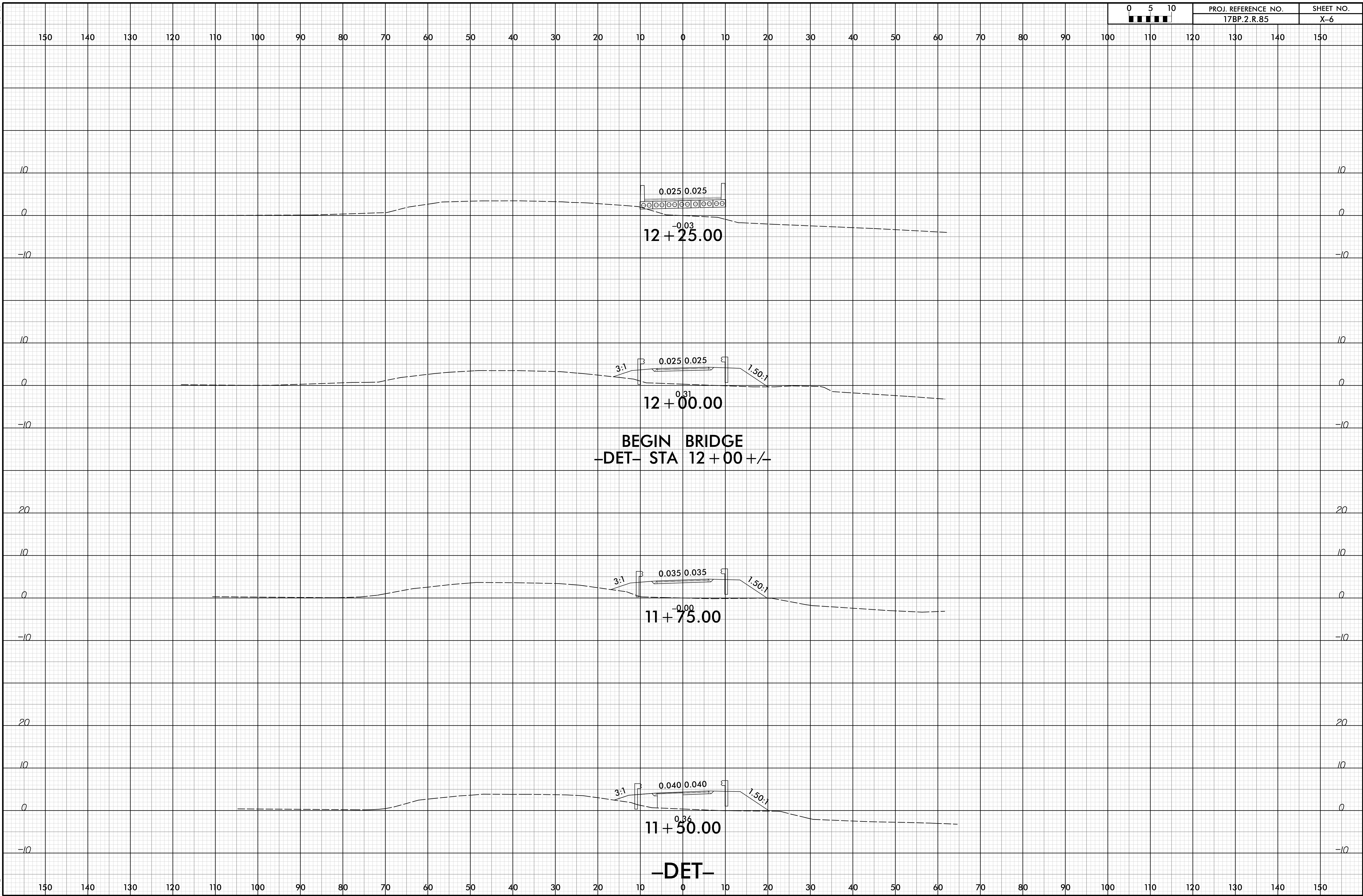
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PNTB



6/23/16

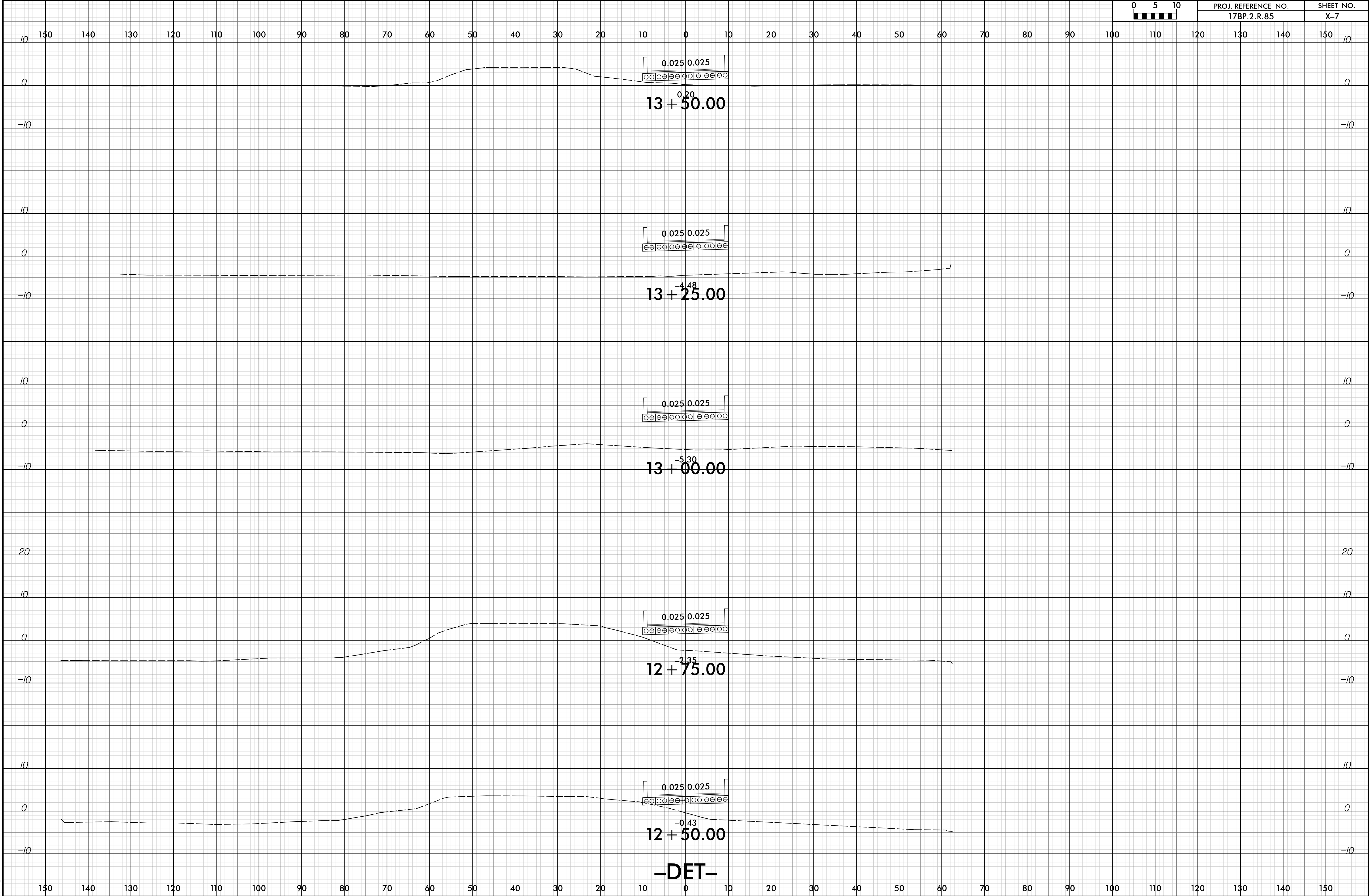
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FNTB





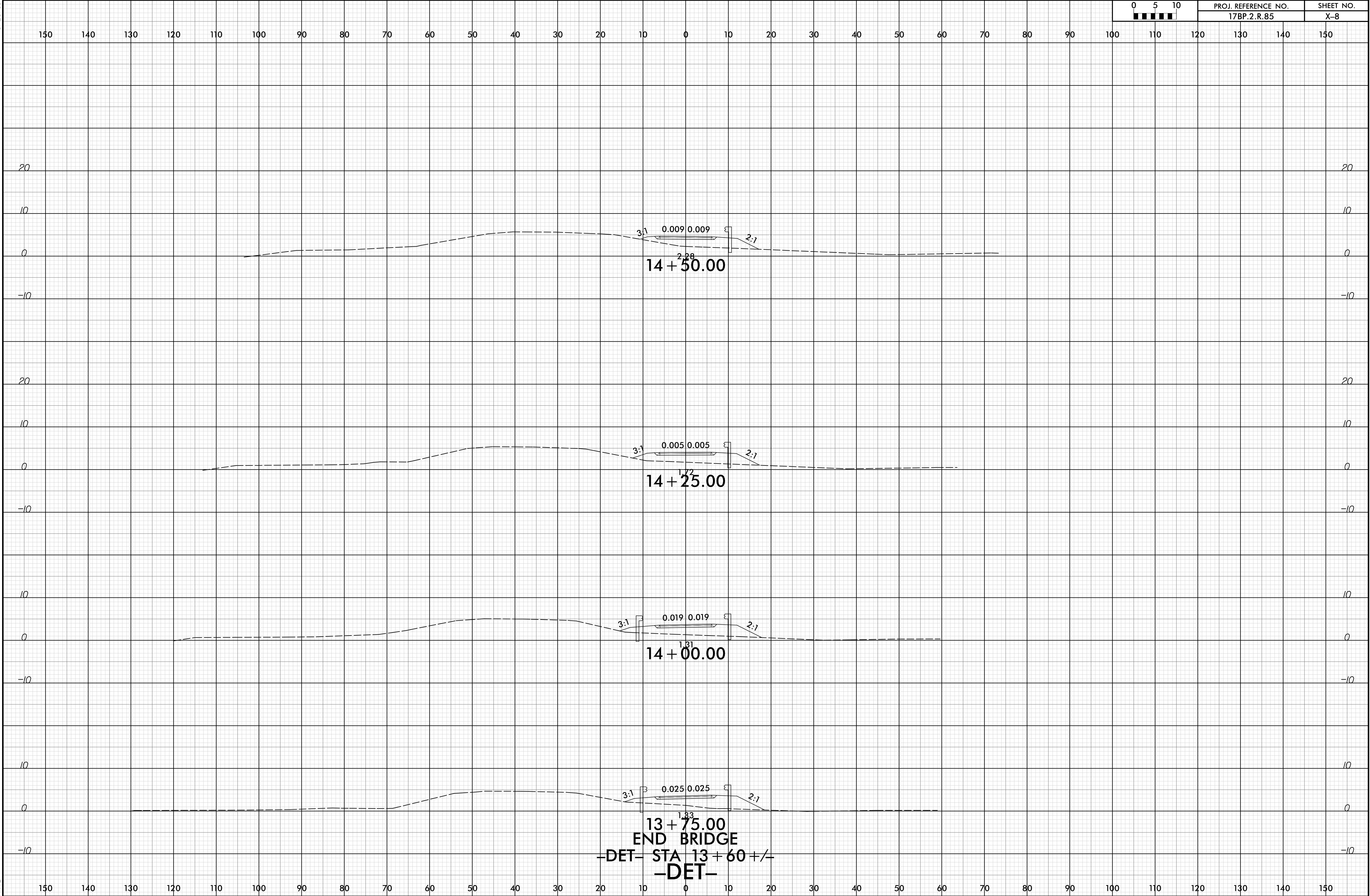
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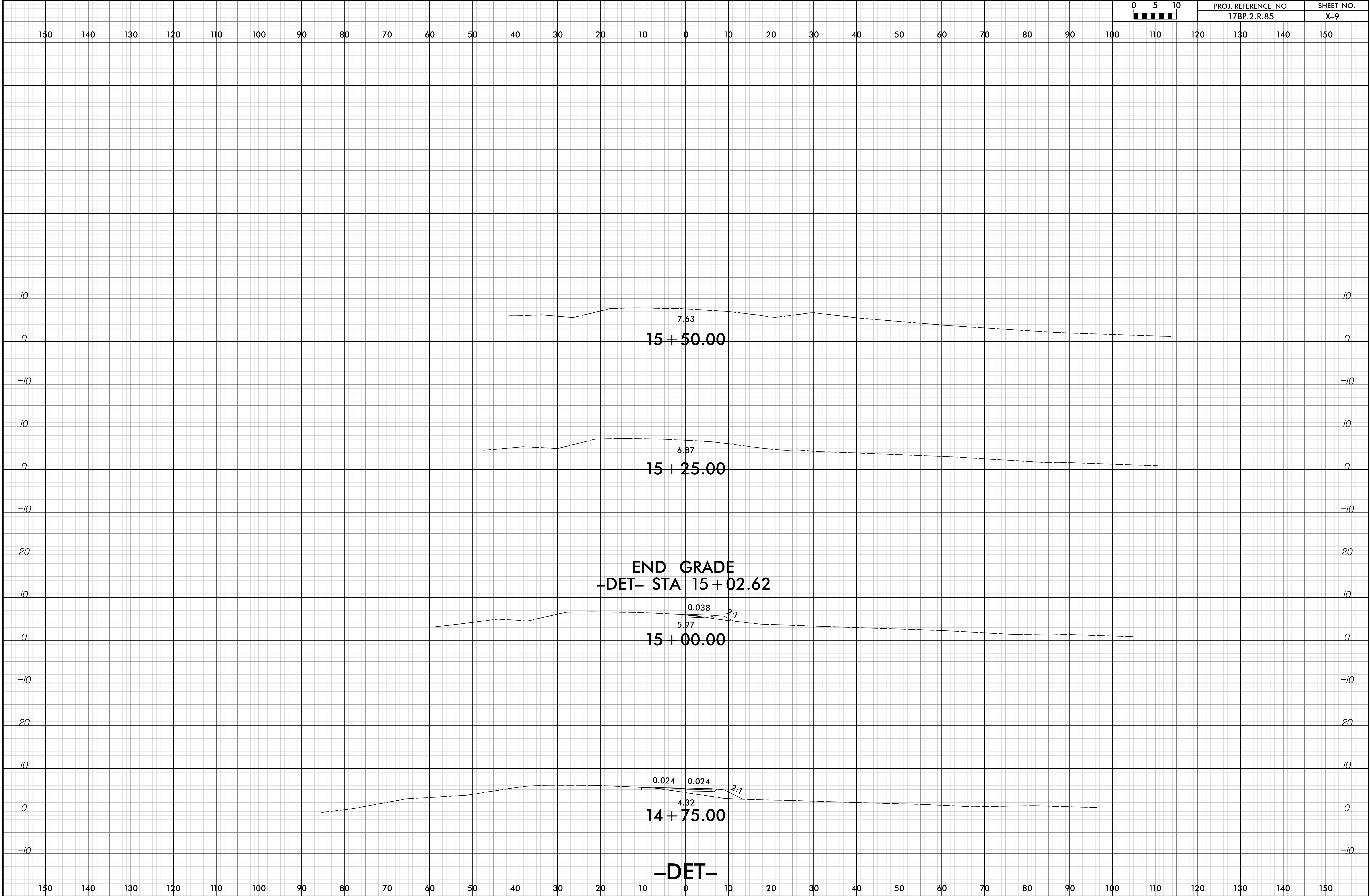
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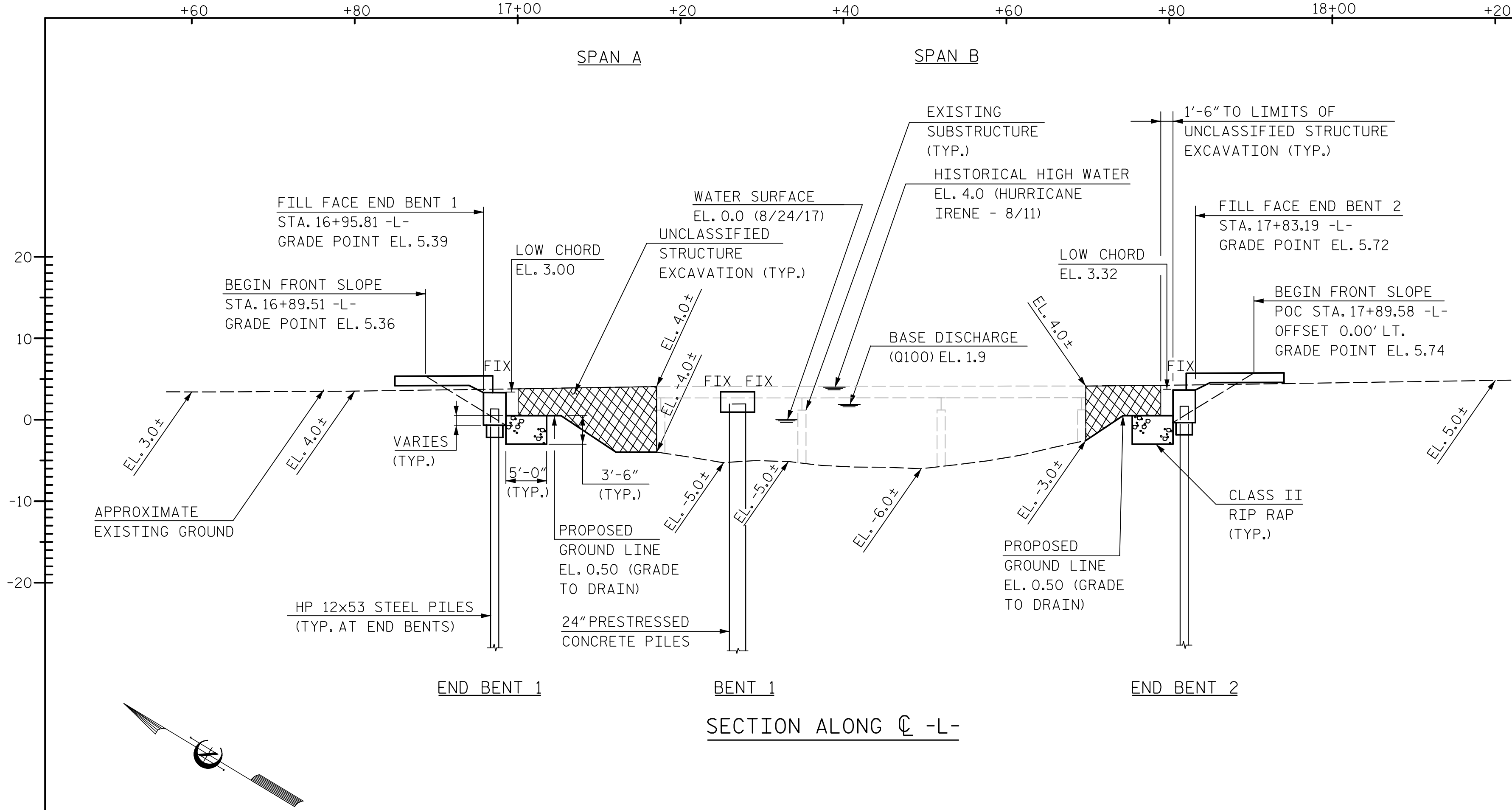


6/23/16

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FNTB







FOR GENERAL NOTES, SEE SHEET 2.

BRIDGE HYDRAULIC DATA

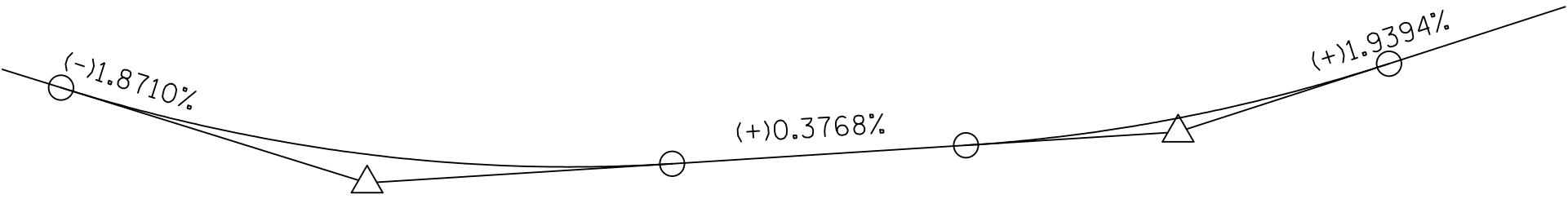
DESIGN DISCHARGE	=	650 CFS
FREQUENCY OF DESIGN FLOOD	=	25 YR
DESIGN HIGH WATER ELEVATION	=	1.6 FT.
DRAINAGE AREA	=	5.0 SQ. MI. (TIDAL)
BASE DISCHARGE (Q100)	=	1255 CFS
BASE HIGH WATER ELEVATION	=	1.9 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	=	> 1400 (+) CFS
FREQUENCY OF OVERTOPPING FLOOD	=	> 500-YR (+)
OVERTOPPING FLOOD ELEVATION	=	5.7 FT.

NOTE: OVERTOPPING OCCURS AT ROADWAY STA. 16+50.00

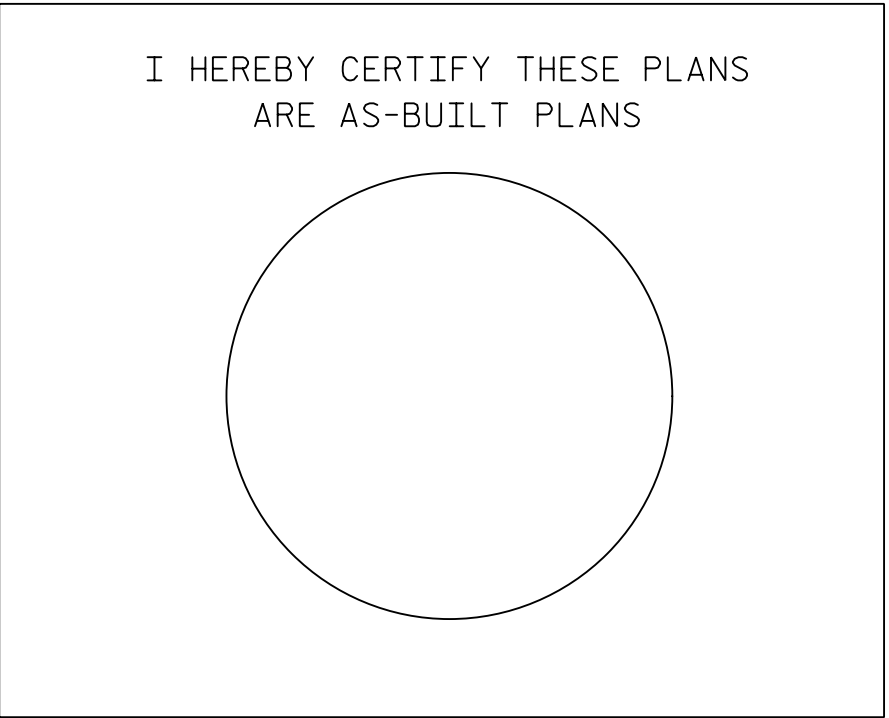
PI STA. = 15+40.00	PI STA. = 18+85.00
EL. = 4.80	EL. = 6.10
V.C. = 260'	V.C. = 180'



GRADE DATA -L-

CURVE DATA -L-

PI STA. = 18+39.80
$\Delta = 1^{\circ}-32'-12.5''$ (RT.)
D = 1^{\circ}-21'-56.1''
L = 112.54'
T = 56.27'
R = 4,195.71'



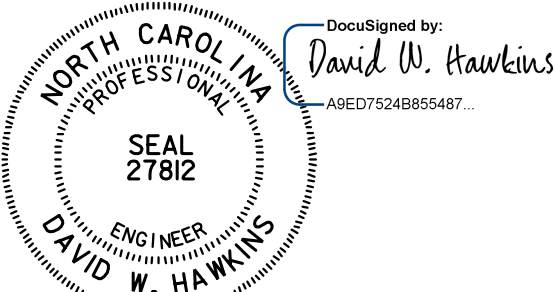
PROJECT NO. 17BP.2.R.85
BEAUFORT COUNTY
STATION: 17+39.50 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 249

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1336
OVER DUCK CREEK
BETWEEN SR 1334
AND PAMLICO RIVER

REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	
1			3		TOTAL SHEETS
2			4		18



7/11/2018

HNTB		HNTB NORTH CAROLINA, P.C. NC License No. C-1654 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY	J. BAYNE	DATE	1/18
CHECKED BY	D. HAWKINS	DATE	4/18
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE	4/18

DWG. NO. 1

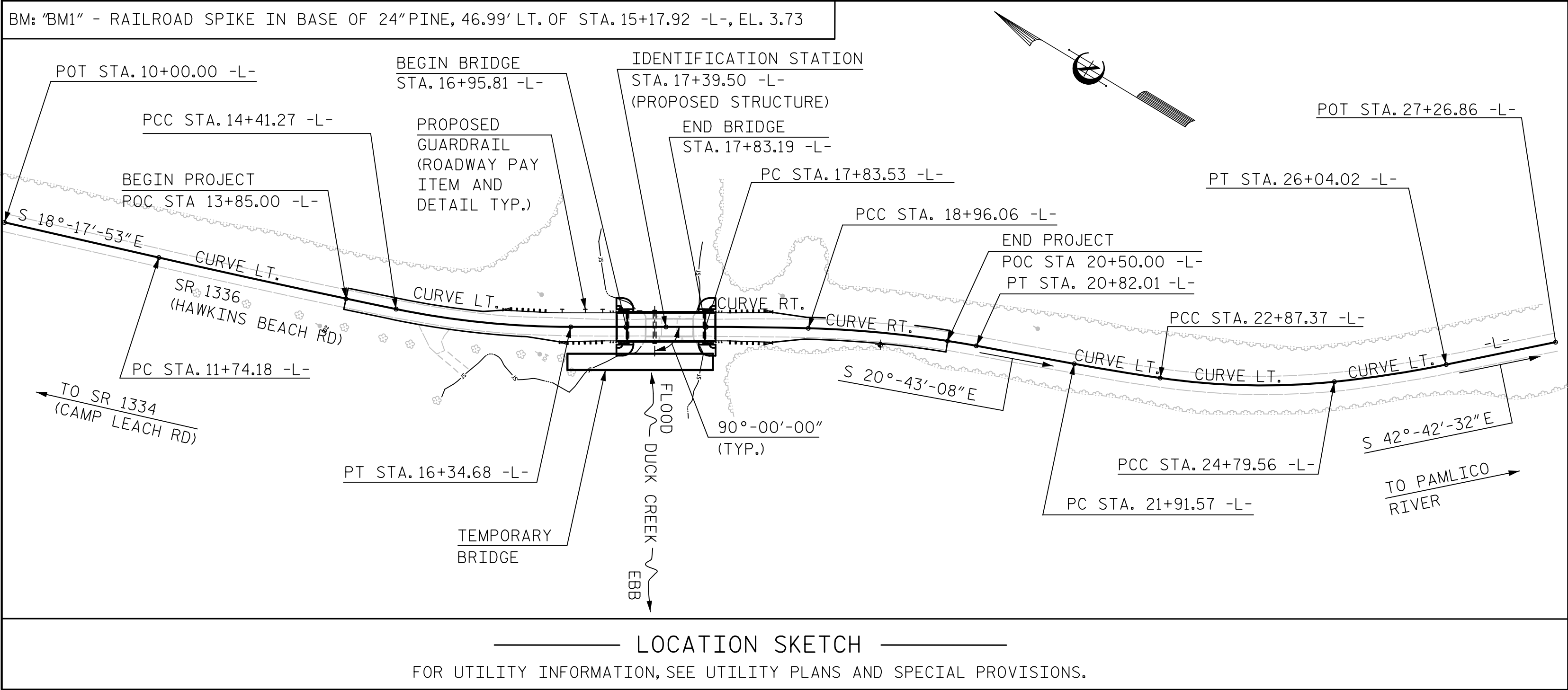
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PLAN

PILES NOT SHOWN FOR CLARITY.

BRIDGE IS IN FULL SUPER OF .025 DOWN TO LEFT.

WORKLINE FOR BRIDGE SHALL BE THE ROADWAY TANGENT AND ITS EXTENSION. CURVE OFFSET AT END APPROACH SLAB IS NEGLIGIBLE.



FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.1 AND END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 51 TONS PER PILE AND 71 TONS PER PILE, RESPECTIVELY.

DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 85 TONS PER PILE AND 120 TONS PER PILE, RESPECTIVELY.

PILES AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.

DRIVE PILES AT BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 185 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

INSTALL PILES AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN -40.0 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION -12.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENT NO.1. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP. STRUCTURE AT STATION 17+39.50	REMOVAL OF EXISTING STRUCTURE AT STATION 17+39.50 -L-	ASBESTOS ASSESSMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION 17+39.50 -L-	CLASS AA CONCRETE	BRIDGE APPROACH SLABS AT STATION 17+39.50 -L-	EPOXY COATED REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR 24" PRESTRESSED CONCRETE PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	24" PRESTRESSED CONCRETE PILES		HP 12x53 STEEL PILES		PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0"x1'-9" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LUMP SUM	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EACH	EACH	NO.	LIN. FT.	NO.	LIN. FT.	EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE	=====	LUMP SUM	=====	=====	=====	=====	LUMP SUM	=====	=====	=====	—	=====	—	=====	=====	170.50	=====	=====	LUMP SUM	22	935
END BENT 1	=====	=====	=====	=====	LUMP SUM	21.6	=====	2,594	=====	7	—	=====	7	420	4	=====	105	100	=====	=====	=====
BENT 1	=====	=====	=====	=====	=====	12.7	=====	2,415	7	=====	7	595	—	=====	4	=====	=====	=====	=====	=====	=====
END BENT 2	=====	=====	=====	=====	LUMP SUM	21.6	=====	2,594	=====	7	—	=====	7	455	4	=====	105	105	=====	=====	=====
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	1	LUMP SUM	55.9	LUMP SUM	7,603	7	14	7	595	14	875	12	170.50	210	205	LUMP SUM	22	935

GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

THIS BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED. CONTRACTOR SHALL NOT PLACE A CRANE ON SPAN B.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR 'REMOVAL OF EXISTING STRUCTURE AT STATION 17+39.50 -L-.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 19.5 FT. ON EACH SIDE OF CENTERLINE BRIDGE AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 17+39.50 -L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

THE EXISTING THREE SPAN STRUCTURE WITH SPAN LENGTHS OF 17'-10", 17'-1" AND 17'-9" WITH TIMBER FLOOR AND 19 LINES OF 6x12 TIMBER JOISTS AT SPANS 1 AND 3 AND 20 LINES OF 6x12 TIMBER JOISTS AT SPAN 2 WITH A 20.1' OUT TO OUT DECK WIDTH ON STEEL CAP AND TIMBER PILE END BENTS WITH ONE STEEL CAP AND TIMBER PILE INTERIOR BENT AND ONE STEEL CAP AND REINFORCED CONCRETE SUB CAP ON TIMBER PILE INTERIOR BENT SHALL BE REMOVED. IN ADDITION, ANY PILES REMAINING FROM PREVIOUS BRIDGE CONSTRUCTION OR MAINTENANCE OPERATIONS SHALL BE REMOVED AND INCLUDED IN THE LUMP SUM PAY ITEM FOR 'REMOVAL OF EXISTING STRUCTURE AT STATION 17+39.50 -L-"

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION REQUIRED FOR A CORROSIVE SITE.

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE BENT CAPS, AND END BENT CAPS AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL BAR SUPPORTS USED IN THE BARRIER RAIL, BENT CAPS, AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONCRETE IN THE BENT CAPS AND PILES IN END BENT NO.1, BENT NO.1 AND END BENT NO.2 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

ALL METALLIZED SURFACES SHALL RECEIVE A SEAL COATING AS SPECIFIED IN TABLE 2 OF THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM. FOR THERMAL SPRAYED COATINGS, SEE SPECIAL PROVISIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH 'HEC 18 - EVALUATING SCOUR AT BRIDGES."

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

PROJECT NO. 17BP.2.R.85
BEAUFORT COUNTY
STATION: 17+39.50 -L-

SHEET 2 OF 2

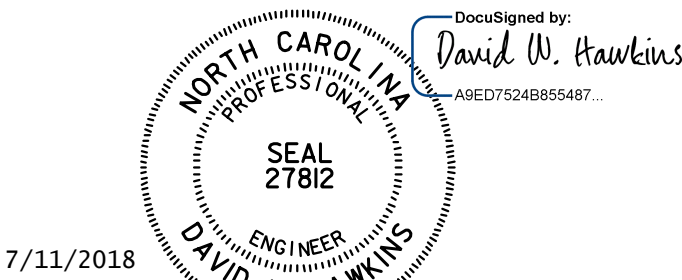
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1336
OVER DUCK CREEK
BETWEEN SR 1334
AND PAMLICO RIVER

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-2
1			3			TOTAL SHEETS
2			4			18

HNTB		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY	J. BAYNE	DATE	1/18
CHECKED BY	D. HAWKINS	DATE	4/18
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE	4/18
DWG. NO. 2			

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1.
2.
3.
4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

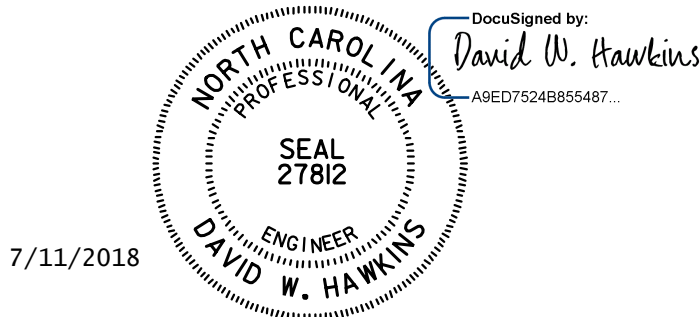
GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER

PROJECT NO. 17BP.2.R.85

BEAUFORT COUNTY

STATION: 17+39.50 -L-



ASSEMBLED BY : M. WRIGHT	DATE : 3/18
CHECKED BY : D. HAWKINS	DATE : 4/18
DRAWN BY : CVC 6/10	
CHECKED BY : DNS 6/10	

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DRAWN BY : M. WRIGHT	DATE : 3/18	DWG. NO. 3	
CHECKED BY : D. HAWKINS	DATE : 4/18		
DESIGN ENGINEER OF RECORD : D. HAWKINS	DATE : 4/18		

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

STANDARD

LRFR SUMMARY FOR

30' CORED SLAB UNIT

90° SKEW

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-3
1			3			TOTAL SHEETS 18
2			4			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{bc}	γ_{dw}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1.
2.
3.
4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER

PROJECT NO. 17BP.2.R.85

BEAUFORT COUNTY

STATION: 17+39.50 -L-

DocuSigned by:
David W. Hawkins
AGE27524B805487

SEAL
27812

ENGINEER
DAVID W. HAWKINS

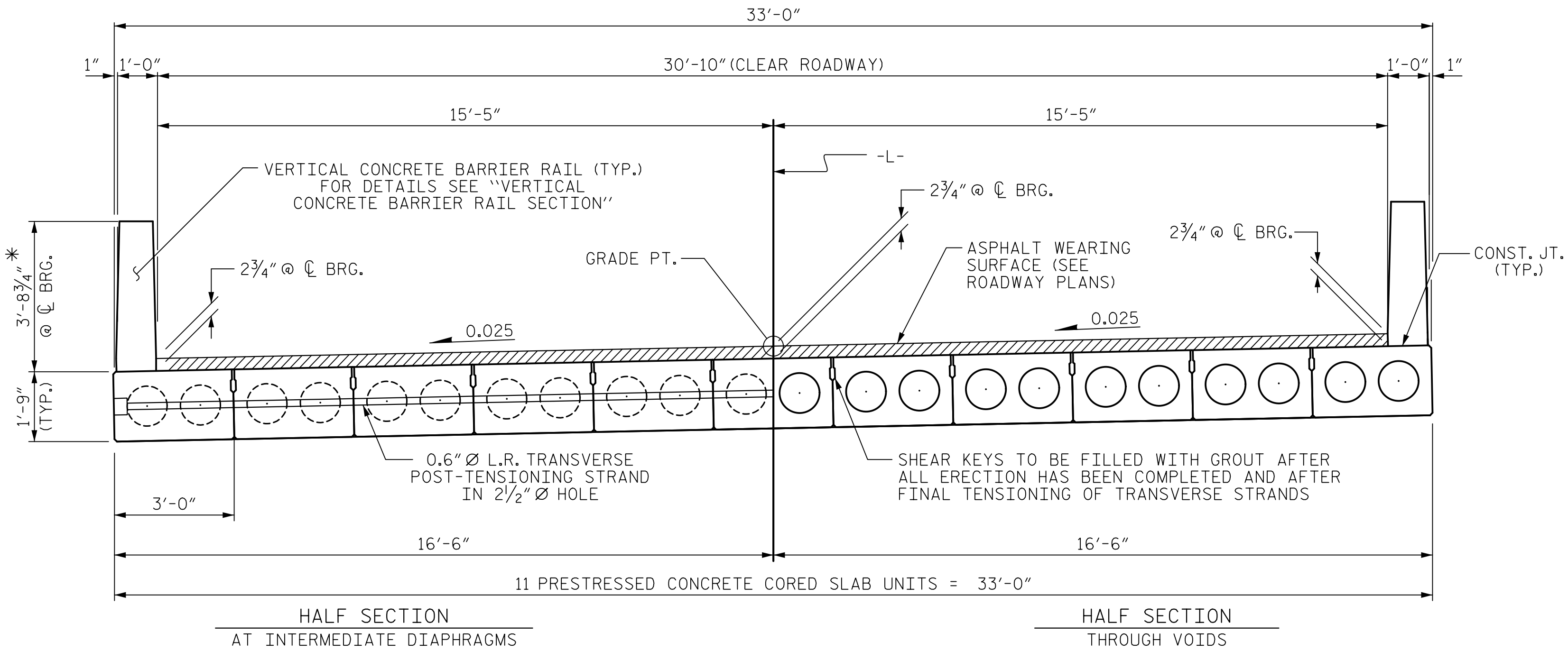
7/11/2018

ASSEMBLED BY : M. WRIGHT	DATE : 3/18
CHECKED BY : D. HAWKINS	DATE : 4/18
DRAWN BY : CVC 6/10	
CHECKED BY : DNS 6/10	

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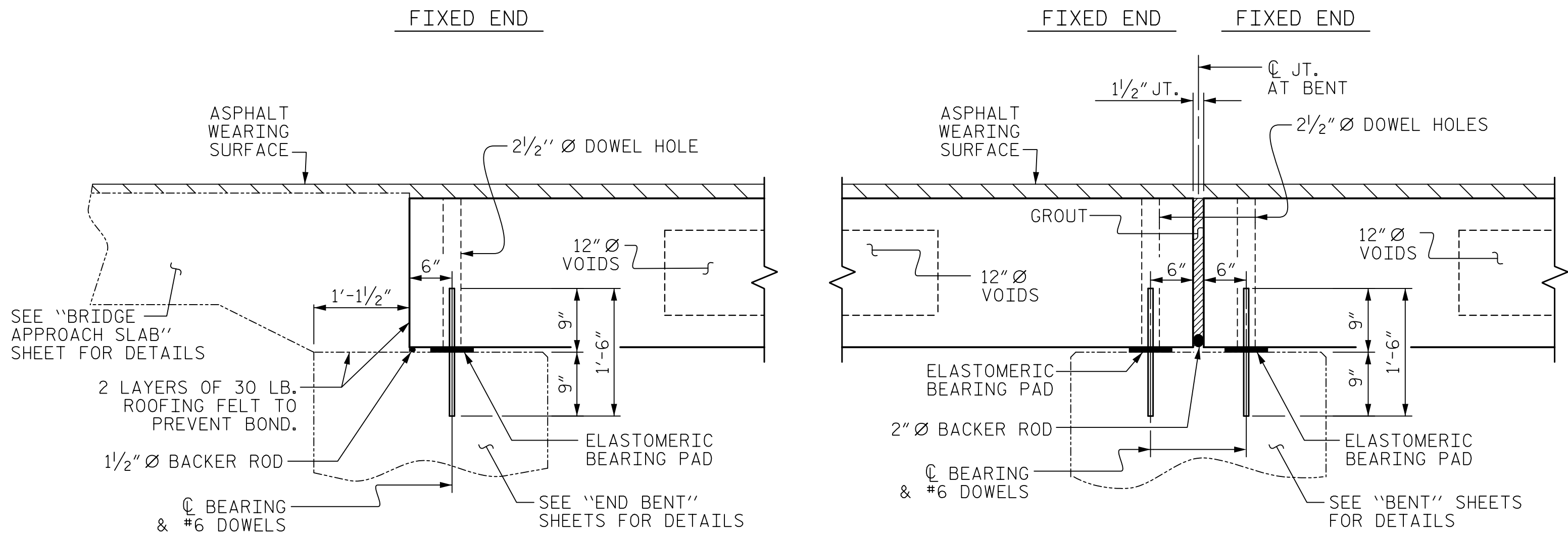
HNTB		HNTB NORTH CAROLINA, P.C. NC License No. C-1654 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY : M. WRIGHT	DATE : 3/18	DWG. NO. 4	
CHECKED BY : D. HAWKINS	DATE : 4/18		
DESIGN ENGINEER OF RECORD : D. HAWKINS	DATE : 4/18		

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH				STANDARD LRFR SUMMARY FOR 55' CORED SLAB UNIT 90° SKEW (NON-INTERSTATE TRAFFIC)			
REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	S-4	
1			3			TOTAL SHEETS	
2			4			18	



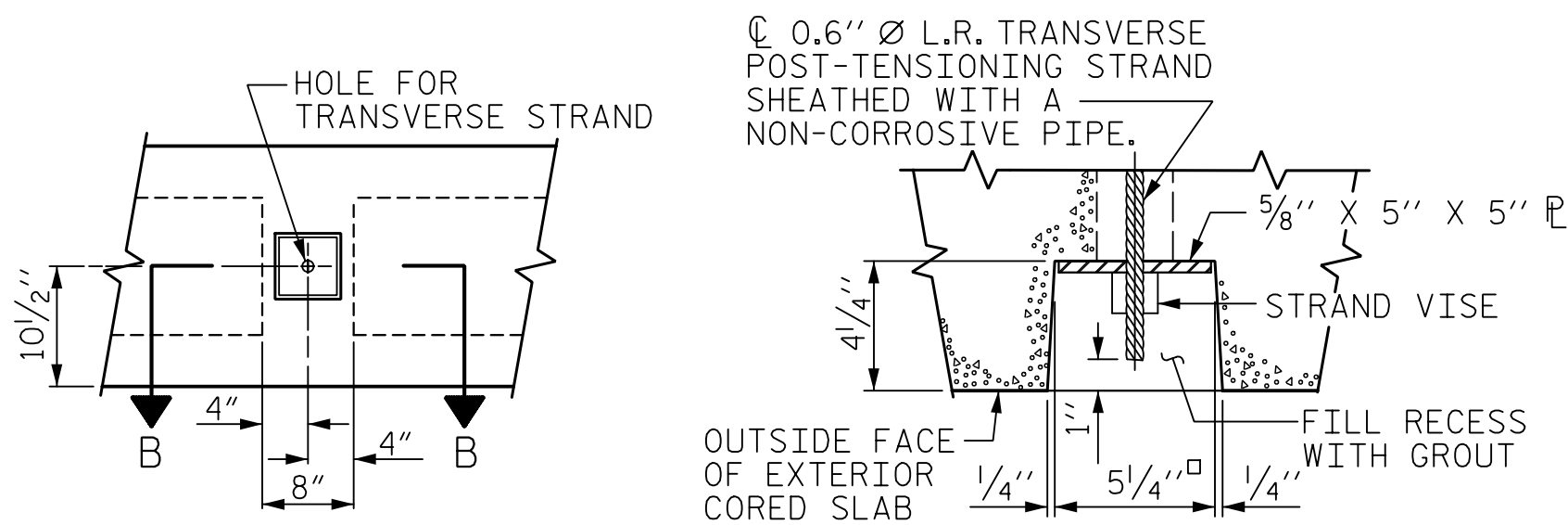
TYPICAL SECTION

* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



SECTION AT END BENT

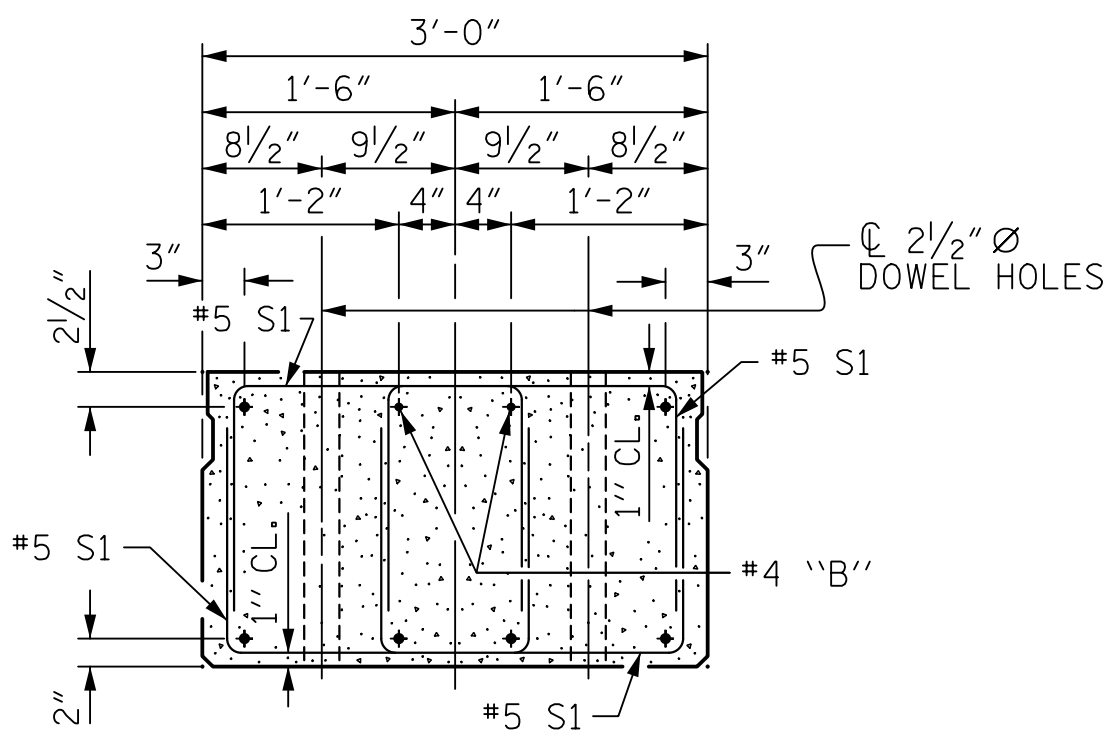
SECTION AT BENT



ELEVATION VIEW

SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



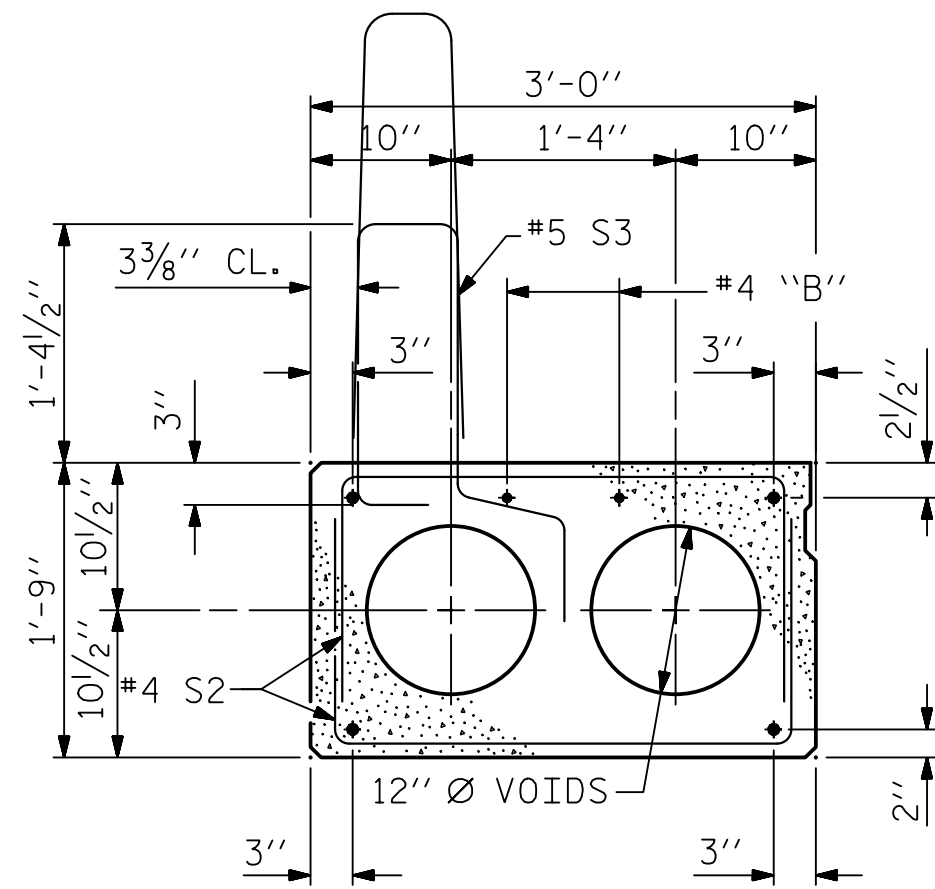
END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

NOTES:

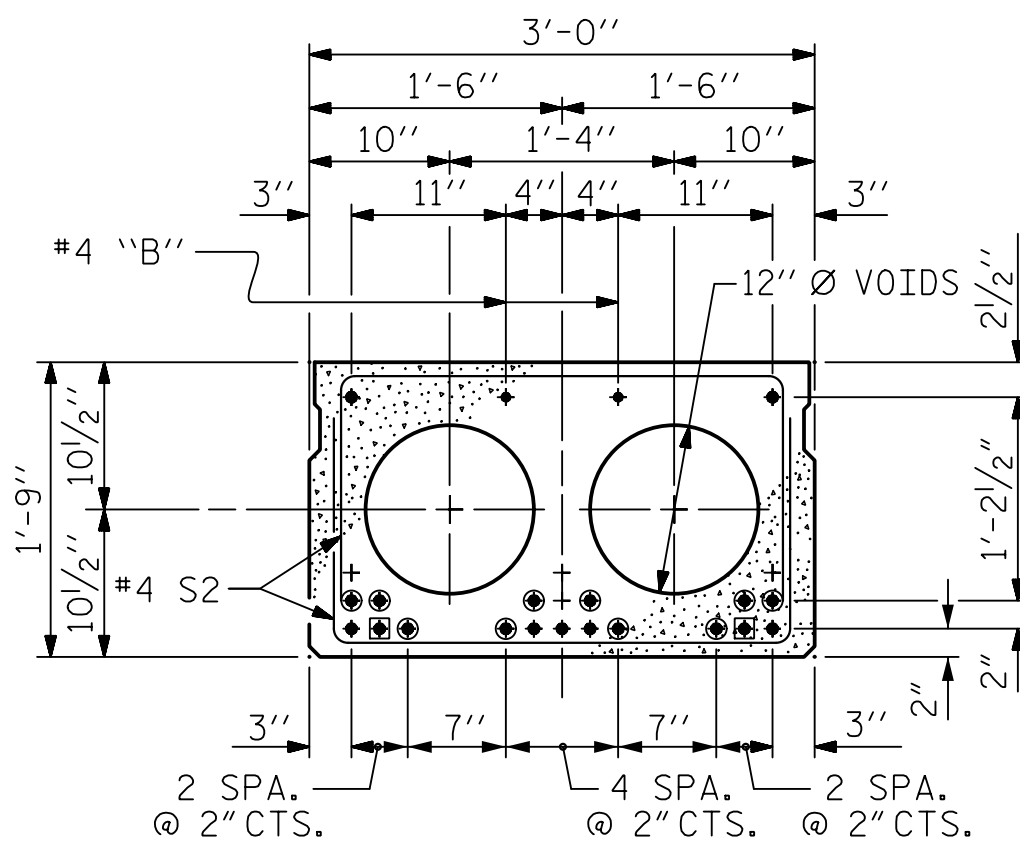
PRESTRESSED CONCRETE CORED SLAB UNITS ARE DESIGNED FOR 0 PSI TENSION IN THE PRECOMPRESSED TENSILE ZONE UNDER ALL LOADING CONDITIONS.

PRESTRESSED CONCRETE CORED SLAB UNITS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.



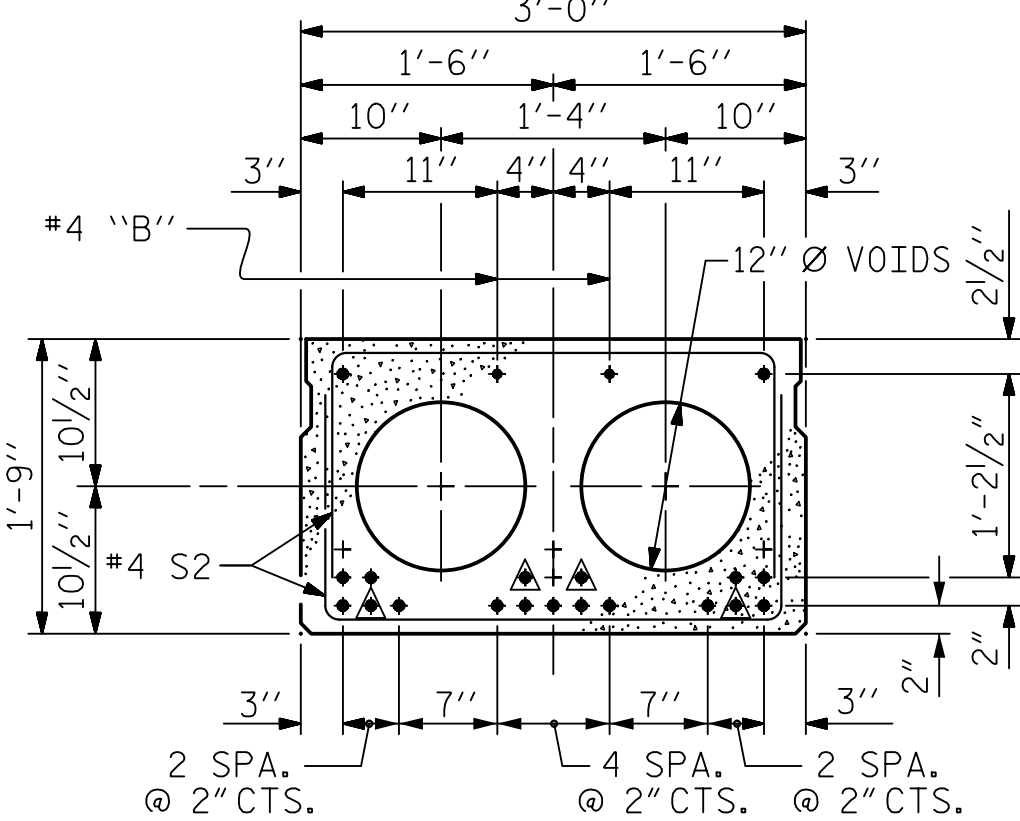
EXT. SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



INTERIOR SLAB SECTION (30' UNIT)

(9 STRANDS REQUIRED)



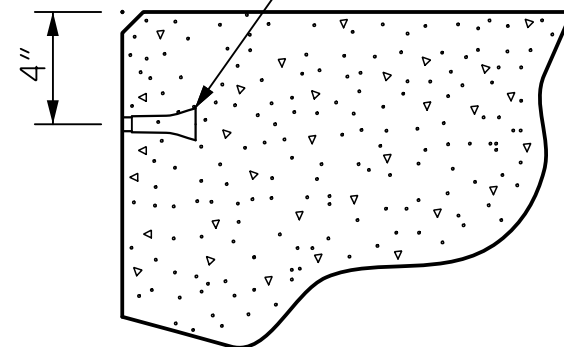
INTERIOR SLAB SECTION (55' UNIT)

(19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL

PROJECT NO. 17BP.2.R.85
BEAUFORT COUNTY
STATION: 17+39.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	
1			3		TOTAL SHEETS
2			4		18

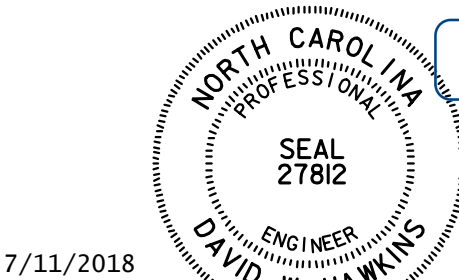
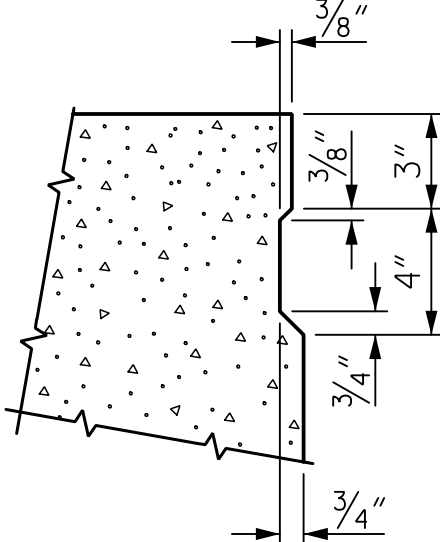
ASSEMBLED BY : M. WRIGHT	DATE : 3/18
CHECKED BY : D. HAWKINS	DATE : 4/18
DRAWN BY : DGE 5/09	REV. 9/14
CHECKED BY : BCH 6/09	MAA/TMG

HNTB		HNTB NORTH CAROLINA, P.C. NC License No. C-1654 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY : M. WRIGHT	DATE : 3/18	DWG. NO. 5	
CHECKED BY : D. HAWKINS	DATE : 4/18		
DESIGN ENGINEER OF RECORD : D. HAWKINS	DATE : 4/18		

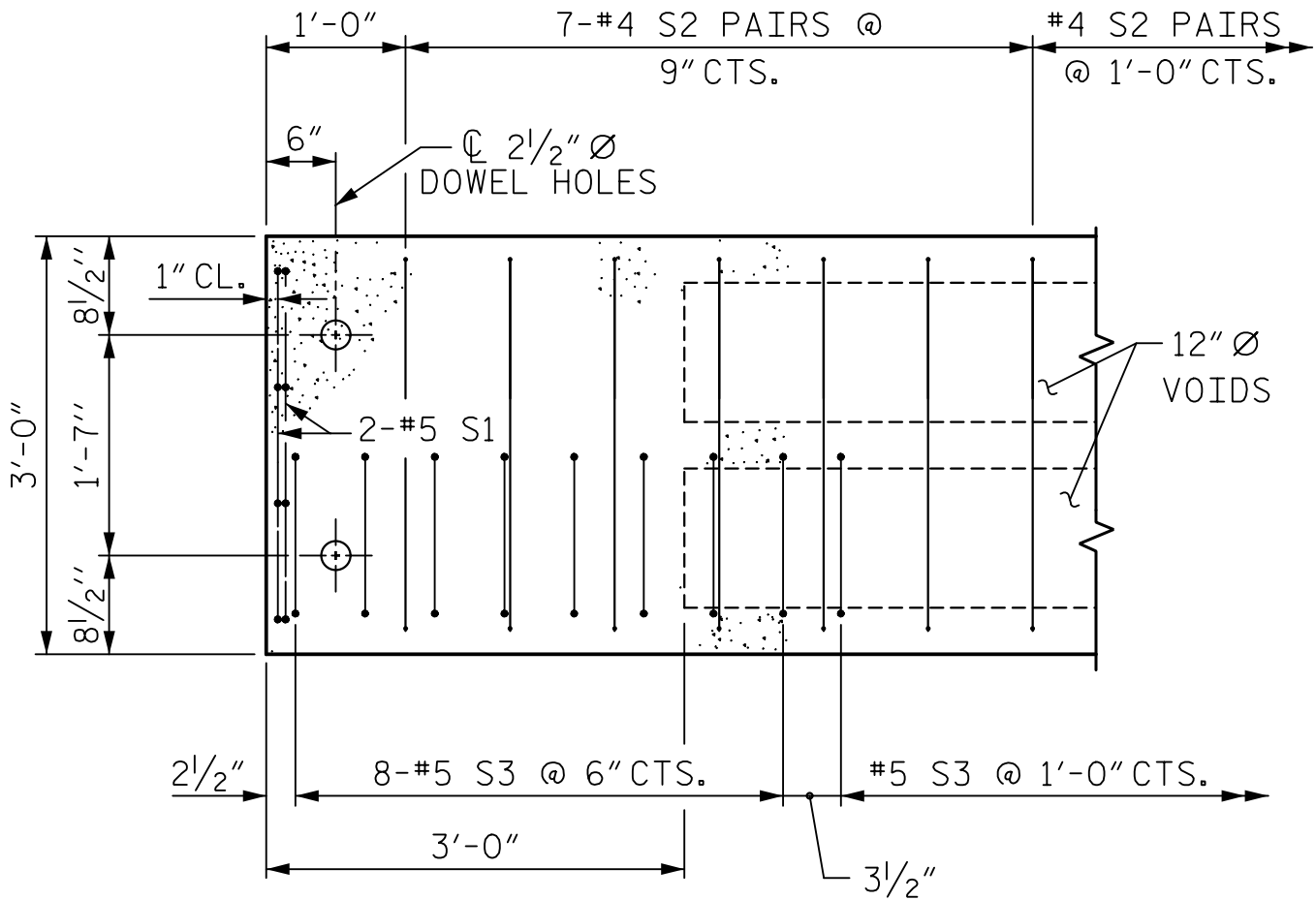
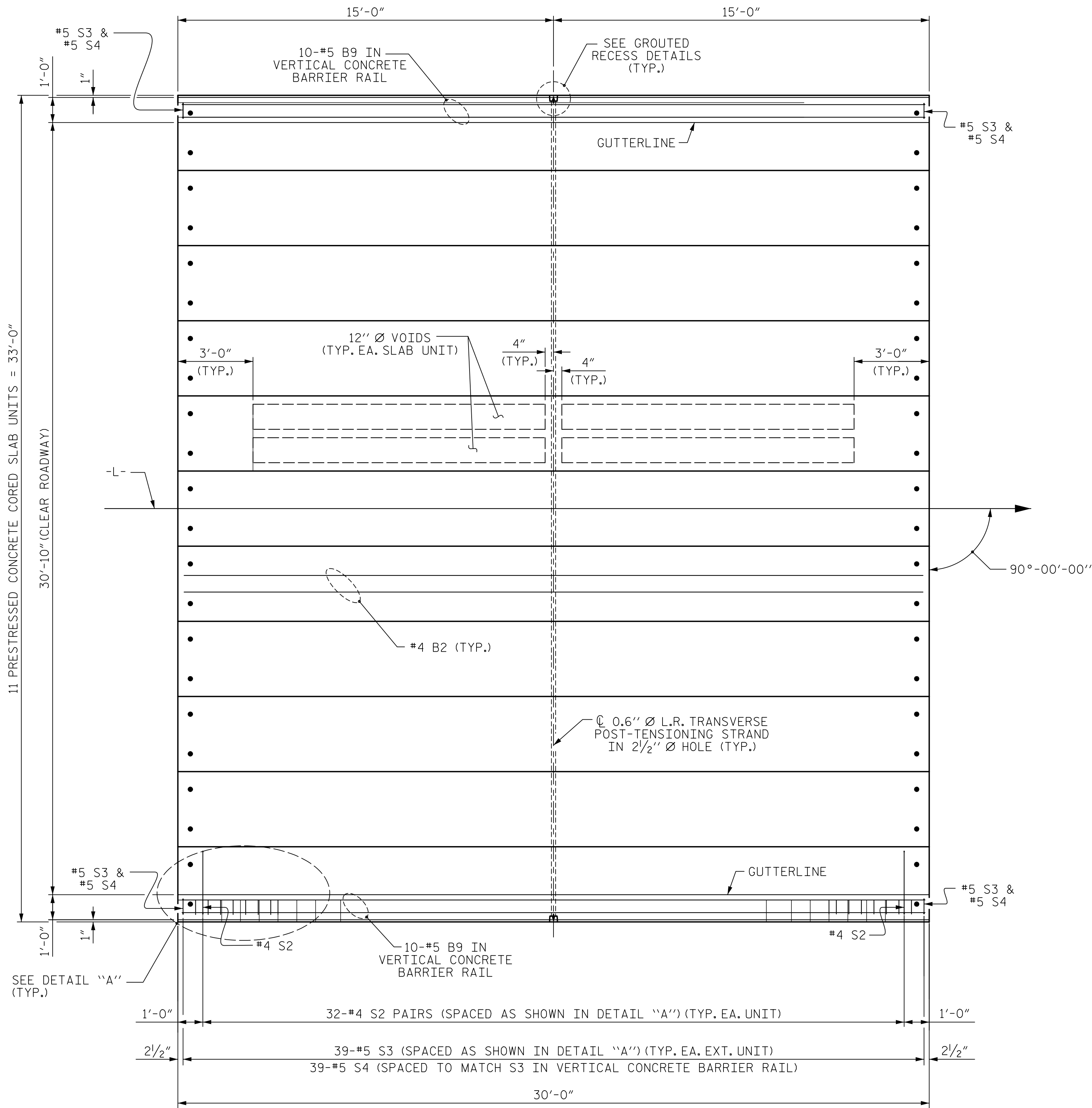
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UNLESS ALL SIGNATURES COMPLETED

SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



7/11/2018



DETAIL "A"
(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR
UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

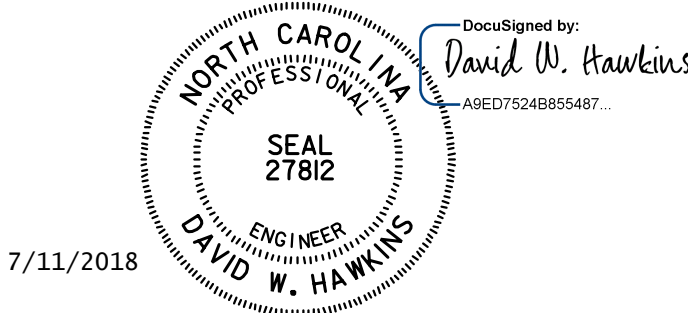
PLAN OF UNIT

PROJECT NO. 17BP.2.R.85
BEAUFORT COUNTY
STATION: 17+39.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 30' UNIT
30'-10" CLEAR ROADWAY
90° SKEW

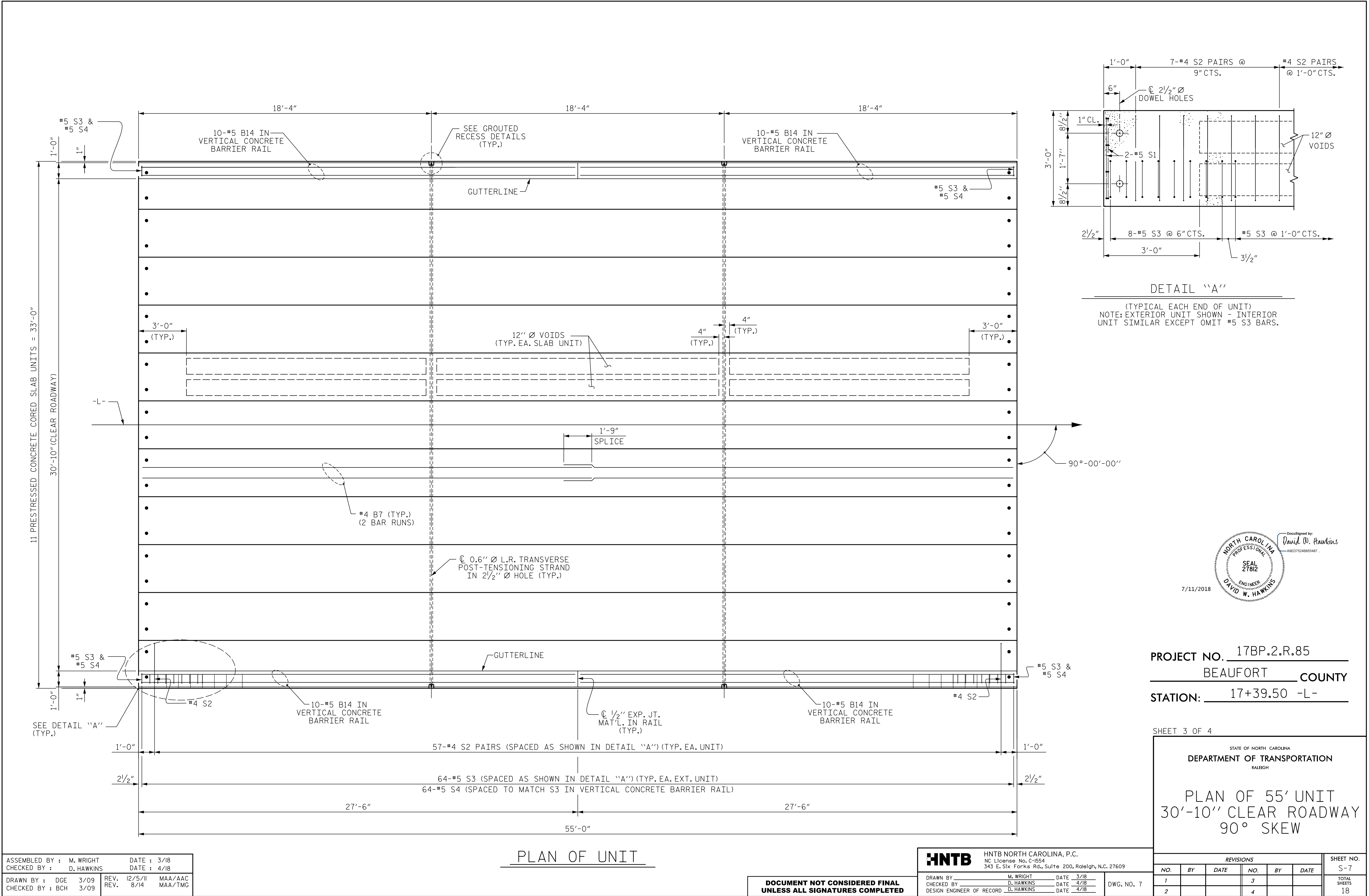


ASSEMBLED BY : M. WRIGHT	DATE : 3/18
CHECKED BY : D. HAWKINS	DATE : 4/18
DRAWN BY : DGE 3/09	REV. 12/5/11 MAA/AAC
CHECKED BY : BCH 3/09	REV. 8/14 MAA/TMG

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DRAWN BY : M. WRIGHT	DATE : 3/18	DWG. NO. 6	
CHECKED BY : D. HAWKINS	DATE : 4/18		
DESIGN ENGINEER OF RECORD : D. HAWKINS	DATE : 4/18		

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			S-6
2			4			
						TOTAL SHEETS
						18



DocuSigned by:
David W. Hawkins
A0ED7524B8B5487

NORTH CAROLINA
PROFESSIONAL
SEAL
27812
ENGINEER
DAVID W. HAWKINS

7/11/2018

PROJECT NO. 17BP.2.R.85

BEAUFORT COUNTY

STATION: 17+39.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 55' UNIT
30'-10" CLEAR ROADWAY
90° SKEW

ASSEMBLED BY : M. WRIGHT	DATE : 3/18
CHECKED BY : D. HAWKINS	DATE : 4/18
DRAWN BY : DGE 3/09	REV. 12/5/11 MAA/AAC
CHECKED BY : BCH 3/09	REV. 8/14 MAA/TMG

PLAN OF UNIT

DOCUMENT NOT CONSIDERED FINAL
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DRAWN BY : M. WRIGHT	DATE : 3/18	DWG. NO. 7	
CHECKED BY : D. HAWKINS	DATE : 4/18		
DESIGN ENGINEER OF RECORD : D. HAWKINS	DATE : 4/18		

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			S-7
2			4			TOTAL SHEETS 18

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE END BENT CAPS AND SHALL CONTAIN CALCIUM NITRITE COROSSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL BAR SUPPORTS USED IN THE END BENT CAPS AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONCRETE IN END BENT NO.1 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

FOR PILE SPlice DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

TOP OF PILE ELEVATIONS	
①	0.88
②	1.03
③	1.18
④	1.33
⑤	1.48
⑥	1.63
⑦	1.78

PROJECT NO. 17BP.2.R.85
BEAUFORT COUNTY
STATION: 17+39.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1

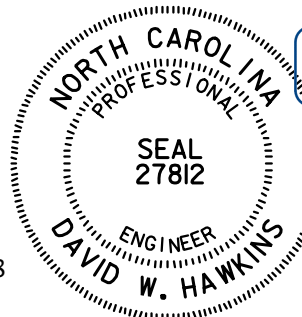
REVISIONS						SHEET NO. S-10
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 18
2			4			

ASSEMBLED BY : M. WRIGHT		DATE : 3/18	
CHECKED BY : D. HAWKINS		DATE : 4/18	
DRAWN BY : WJH	12/11	REV. 4/15	MAA/TMG
CHECKED BY : AAC	12/11		

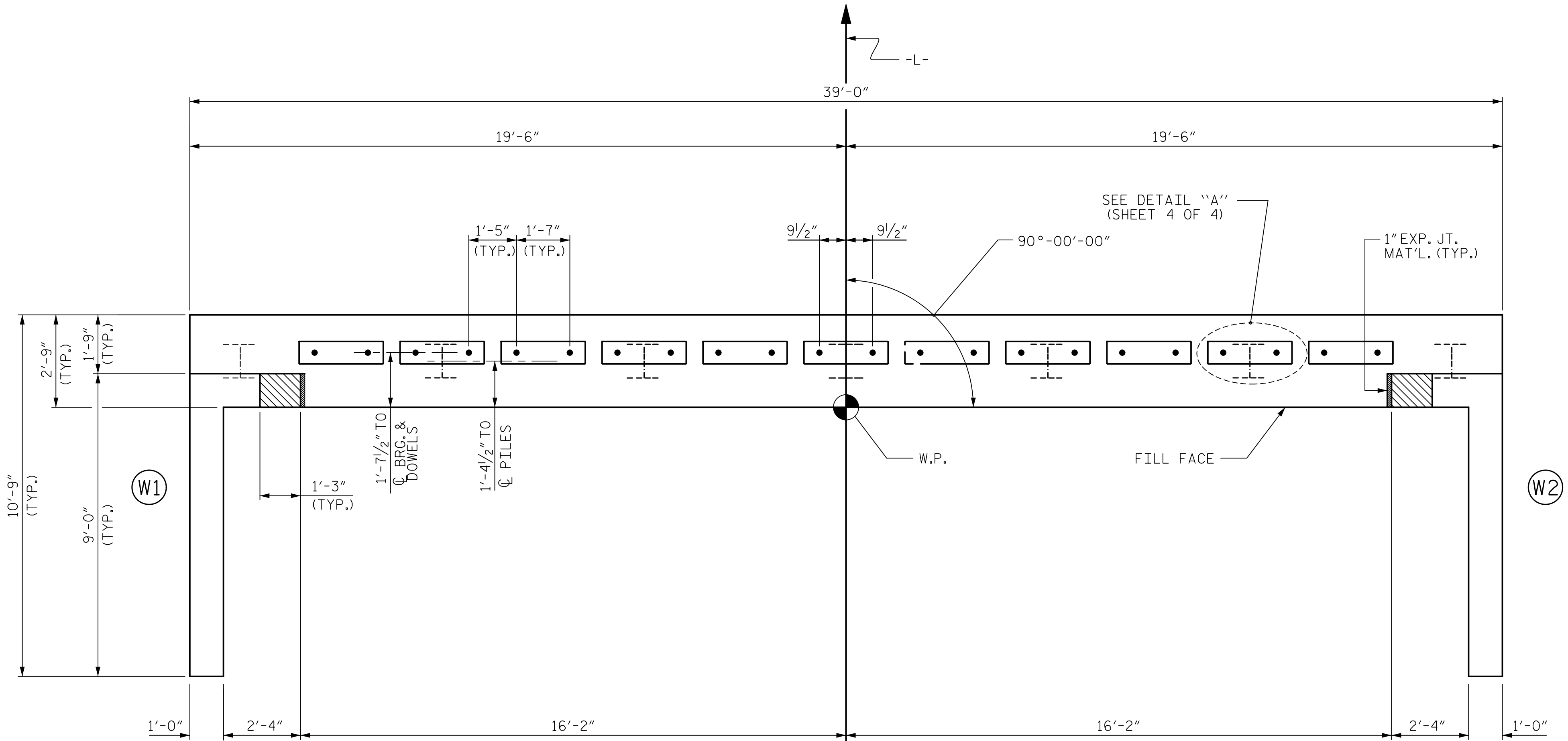
WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

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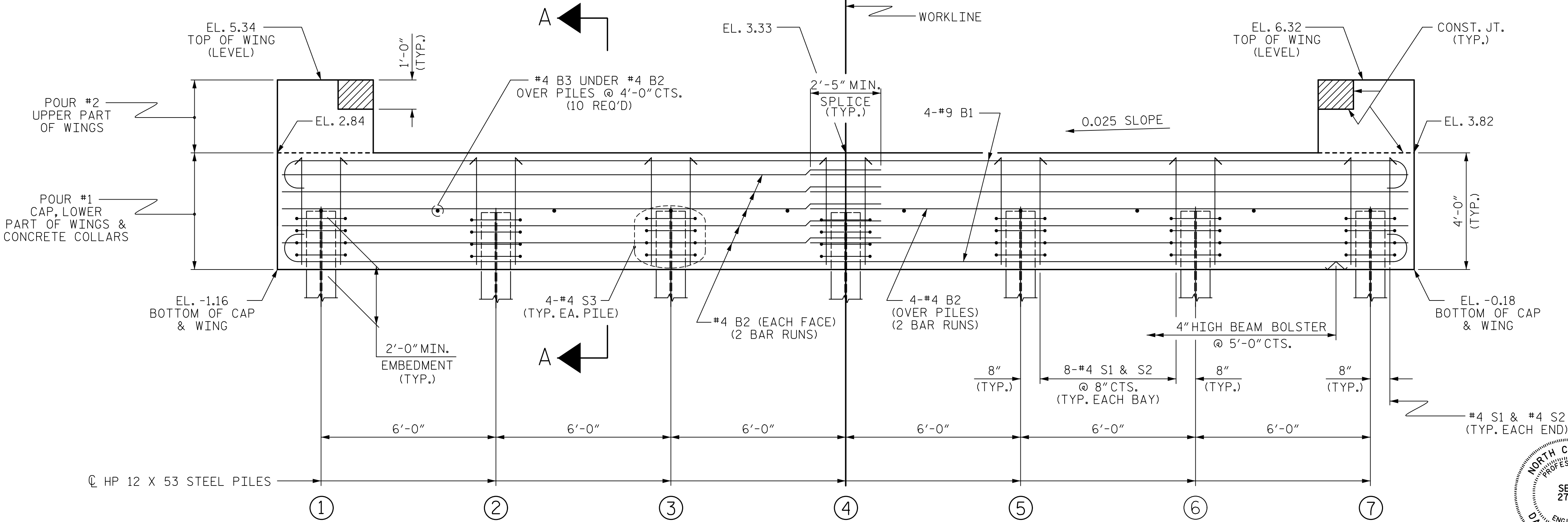
HNTB		HNTB NORTH CAROLINA, P.C. NC License No. C-1654 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY	<u>M. WRIGHT</u>	DATE	<u>3/18</u>
CHECKED BY	<u>D. HAWKINS</u>	DATE	<u>4/18</u>
DESIGN ENGINEER OF RECORD	<u>D. HAWKINS</u>	DATE	<u>4/18</u>
DWG. NO. 10			



DocuSigned by:
David W. Hawkins
A0ED7524B855487...

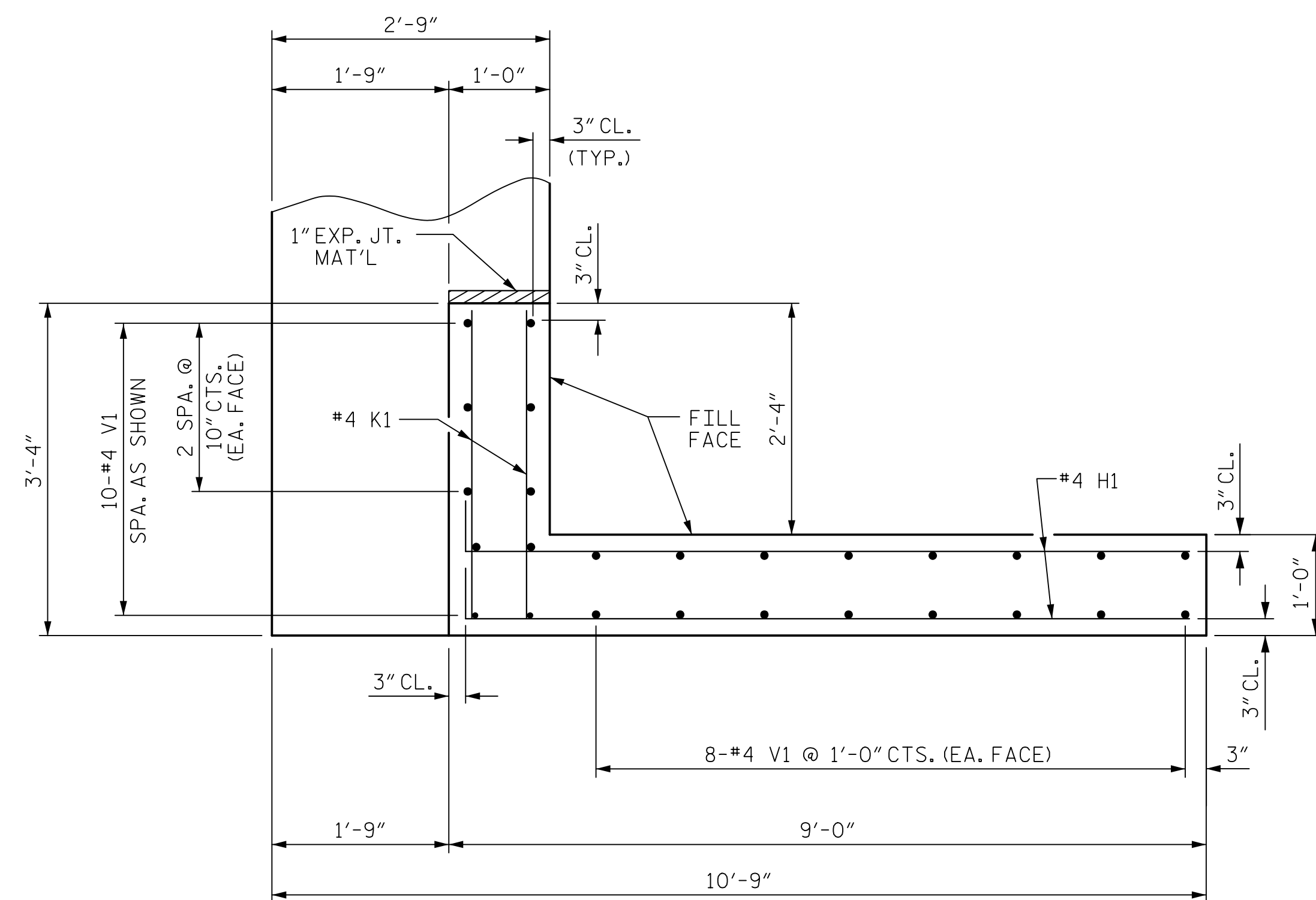


PLAN

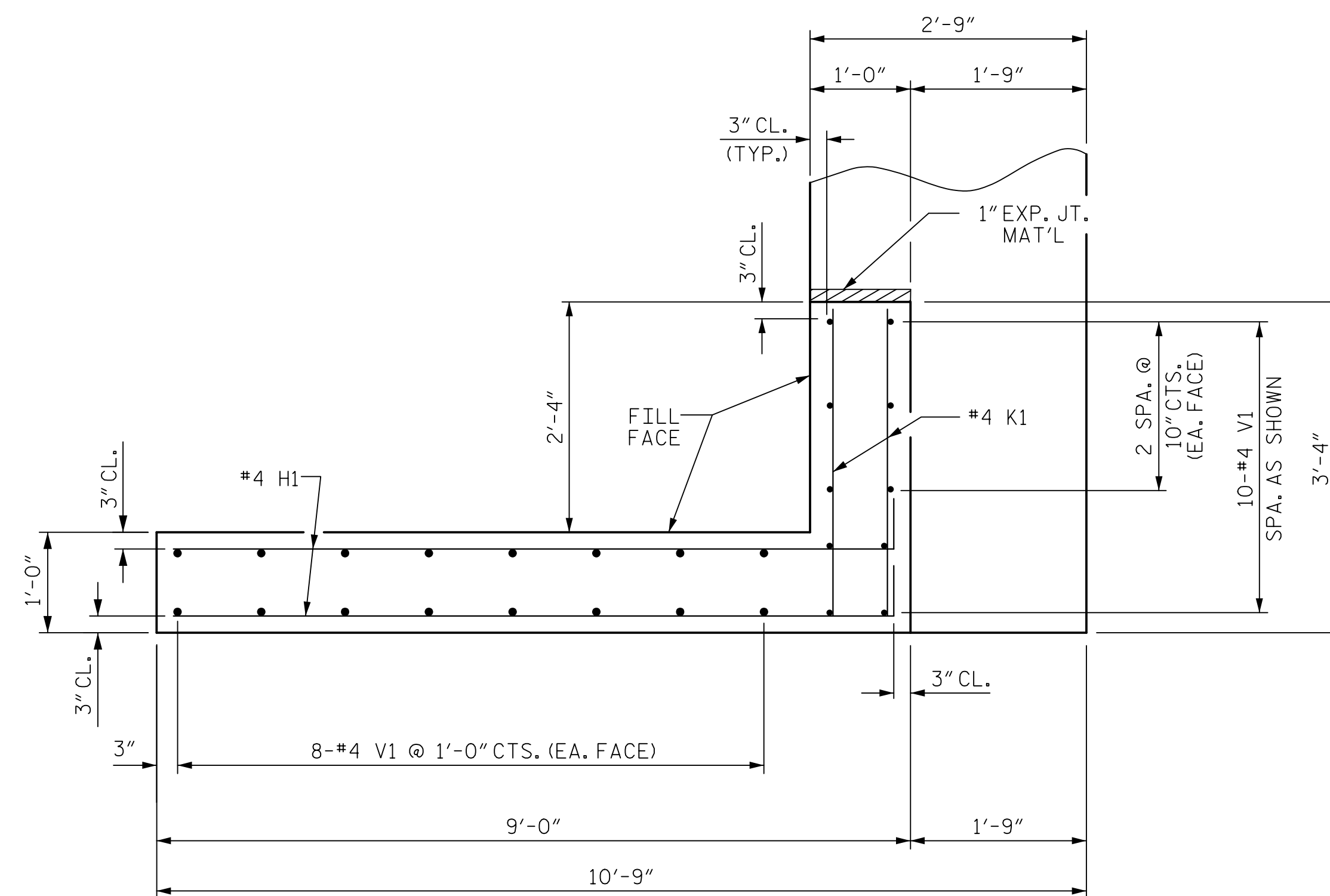


ELEVATION

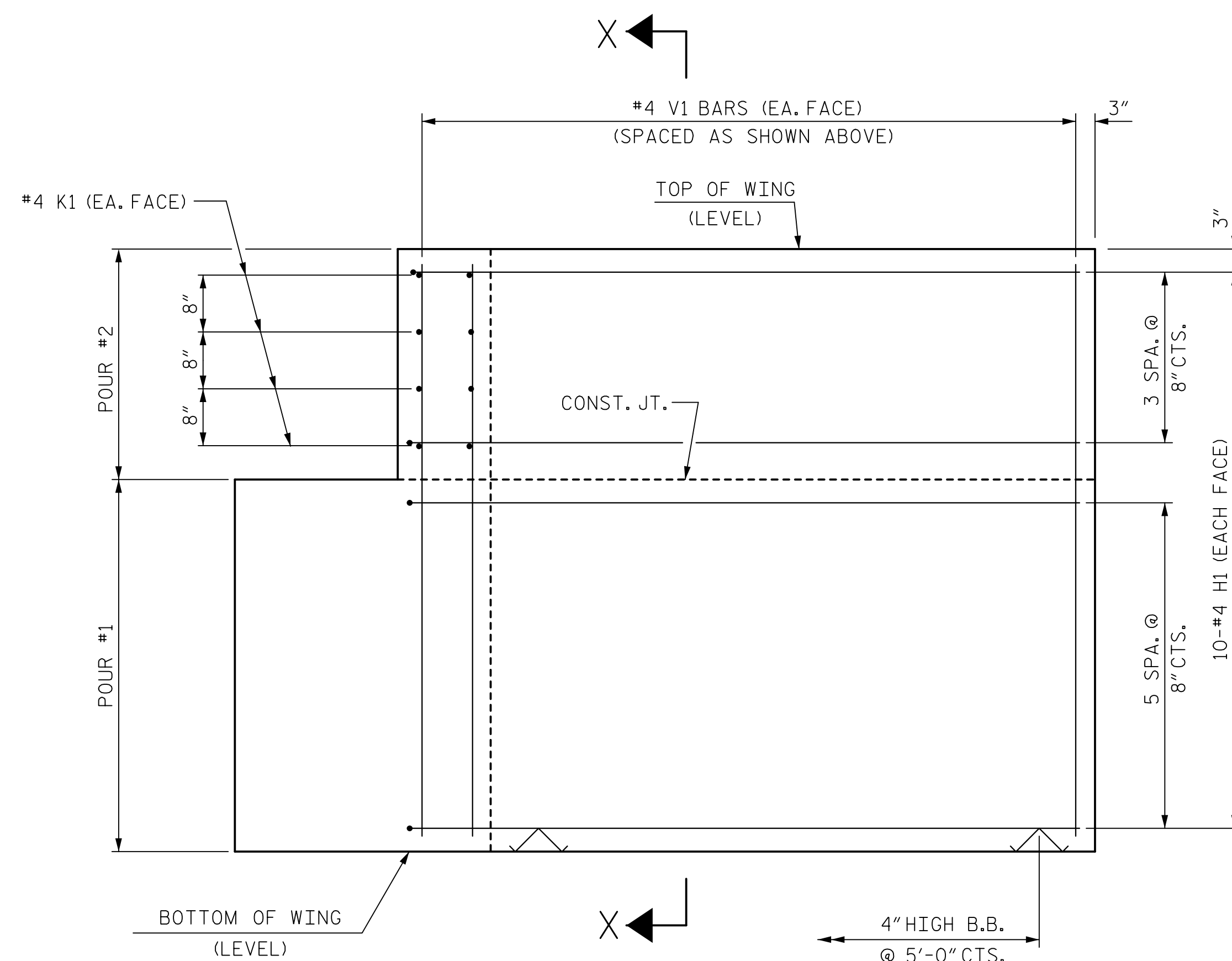
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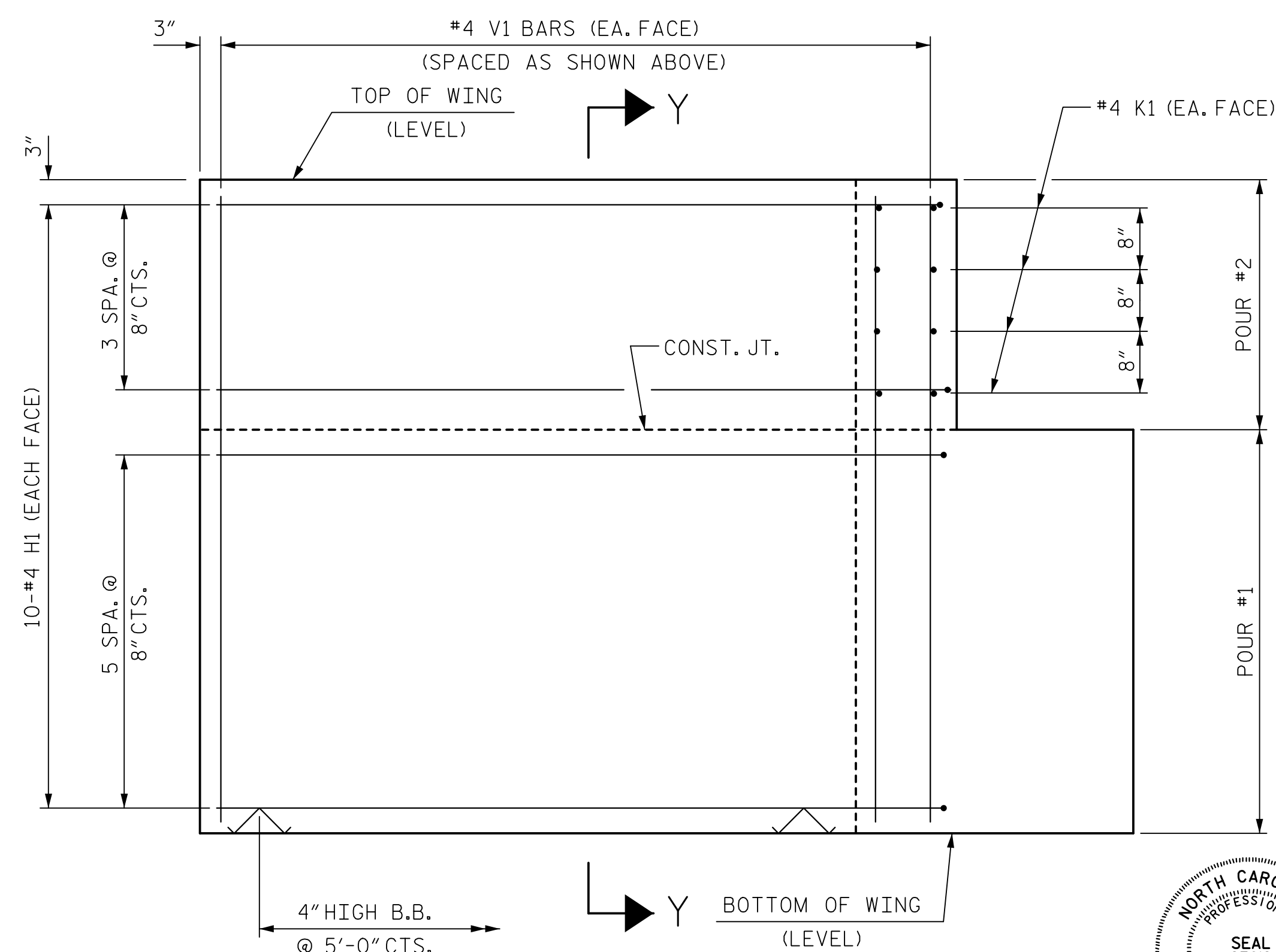
PLAN OF WING (W1)



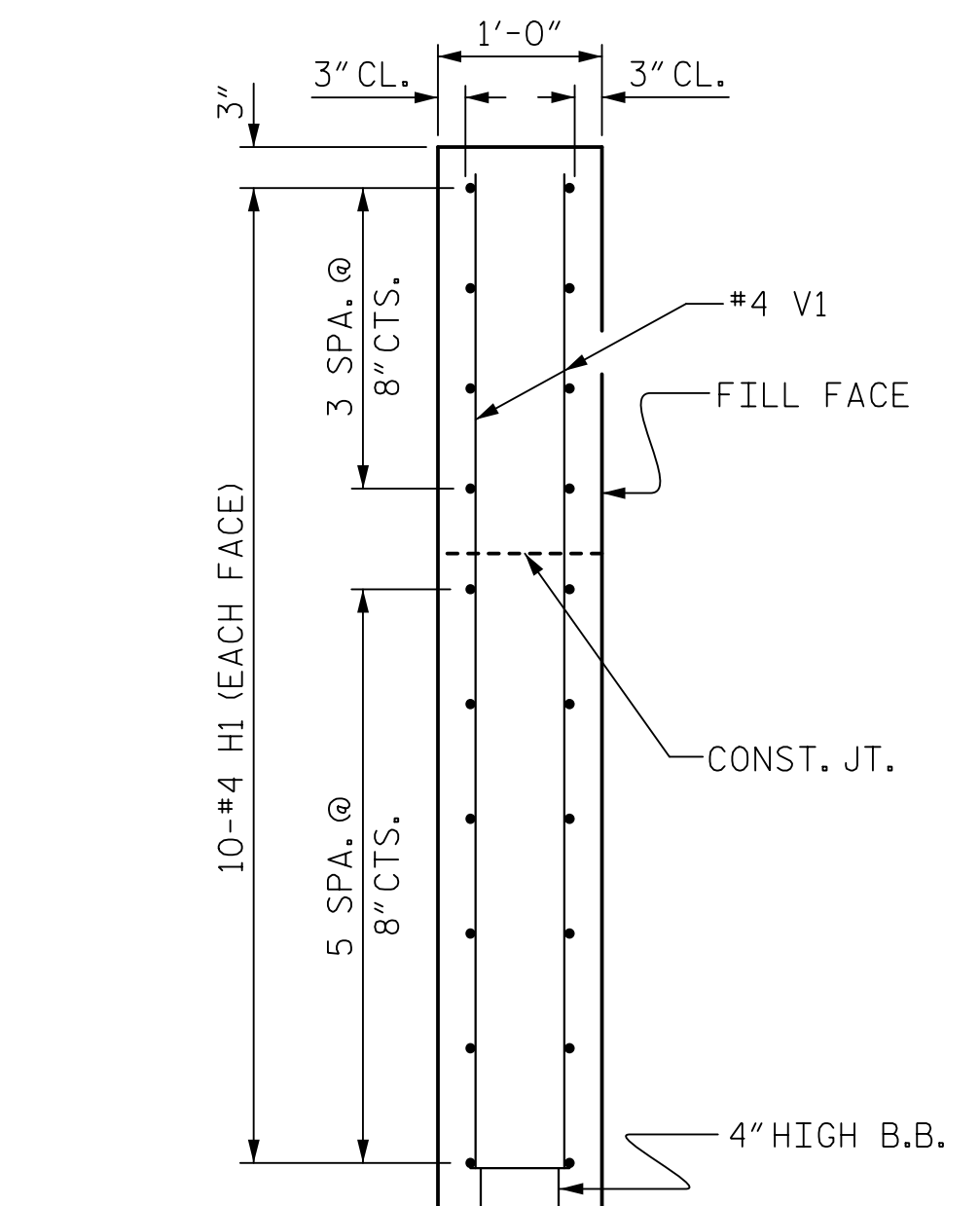
PLAN OF WING (W2)



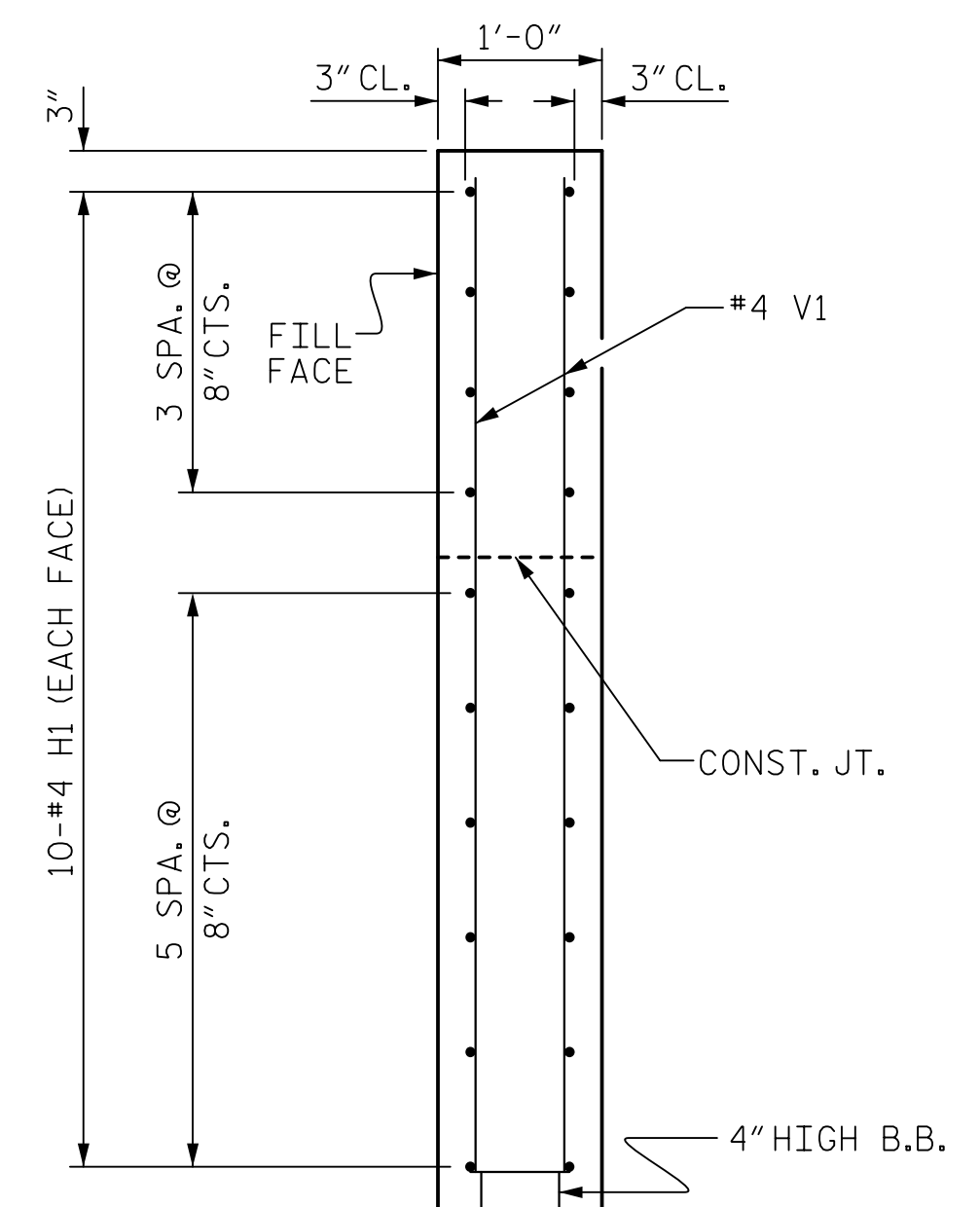
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X



SECTION Y-Y

PROJECT NO. 17BP.2.R.85
BEAUFORT COUNTY
 STATION: 17+39.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT
WING DETAILS

							SHEET NO. S-12
REVISIONS							
NO.	BY	DATE		NO.	BY	DATE	
1				3			
2				4			
							TOTAL SHEETS 18

STD. NO. EB_33_90S4

ASSEMBLED BY : M. WRIGHT		DATE : 3/18	
CHECKED BY : D. HAWKINS		DATE : 4/18	
DRAWN BY : WJH 12/11		REV. 4/15	MAA/TMG
CHECKED BY : AAC 12/11			

WING DETAILS

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UNLESS ALL SIGNATURES COMPLETED**

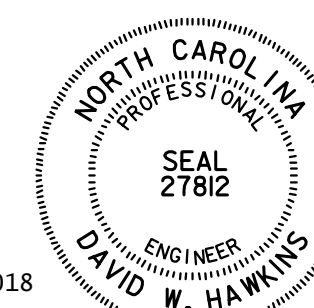


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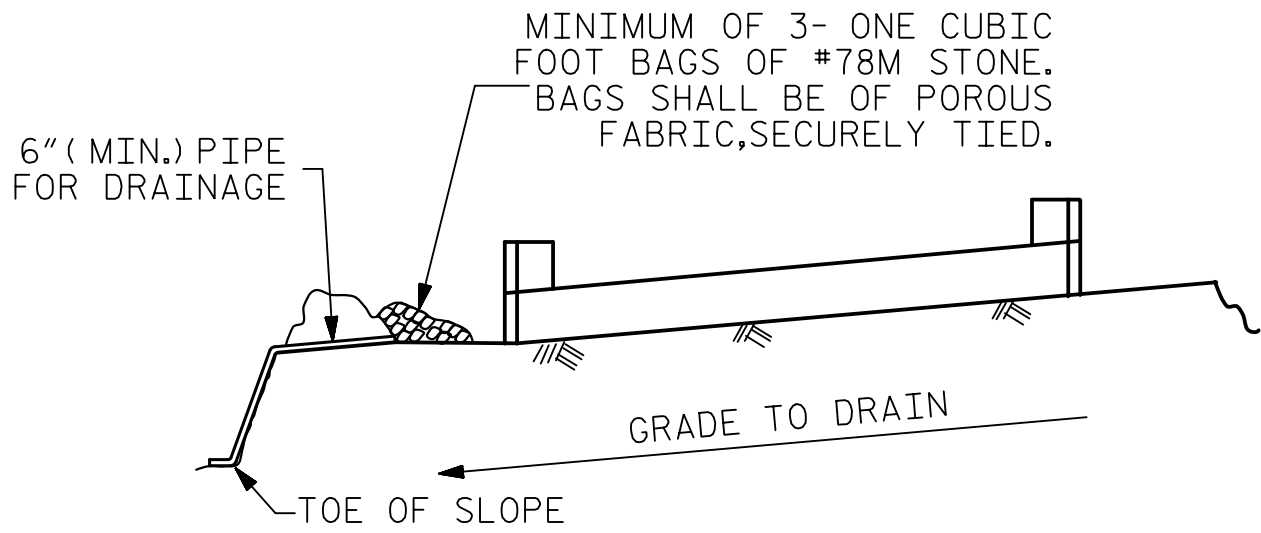
DRAWN BY _____	M. WRIGHT	DATE	3/18
CHECKED BY _____	D. HAWKINS	DATE	4/18
DESIGN ENGINEER OF RECORD _____	D. HAWKINS	DATE	4/18

DWG. NO. 12

7/11/2018



DocuSigned by:
David W. Hawkins
A8ED7524B85548Z

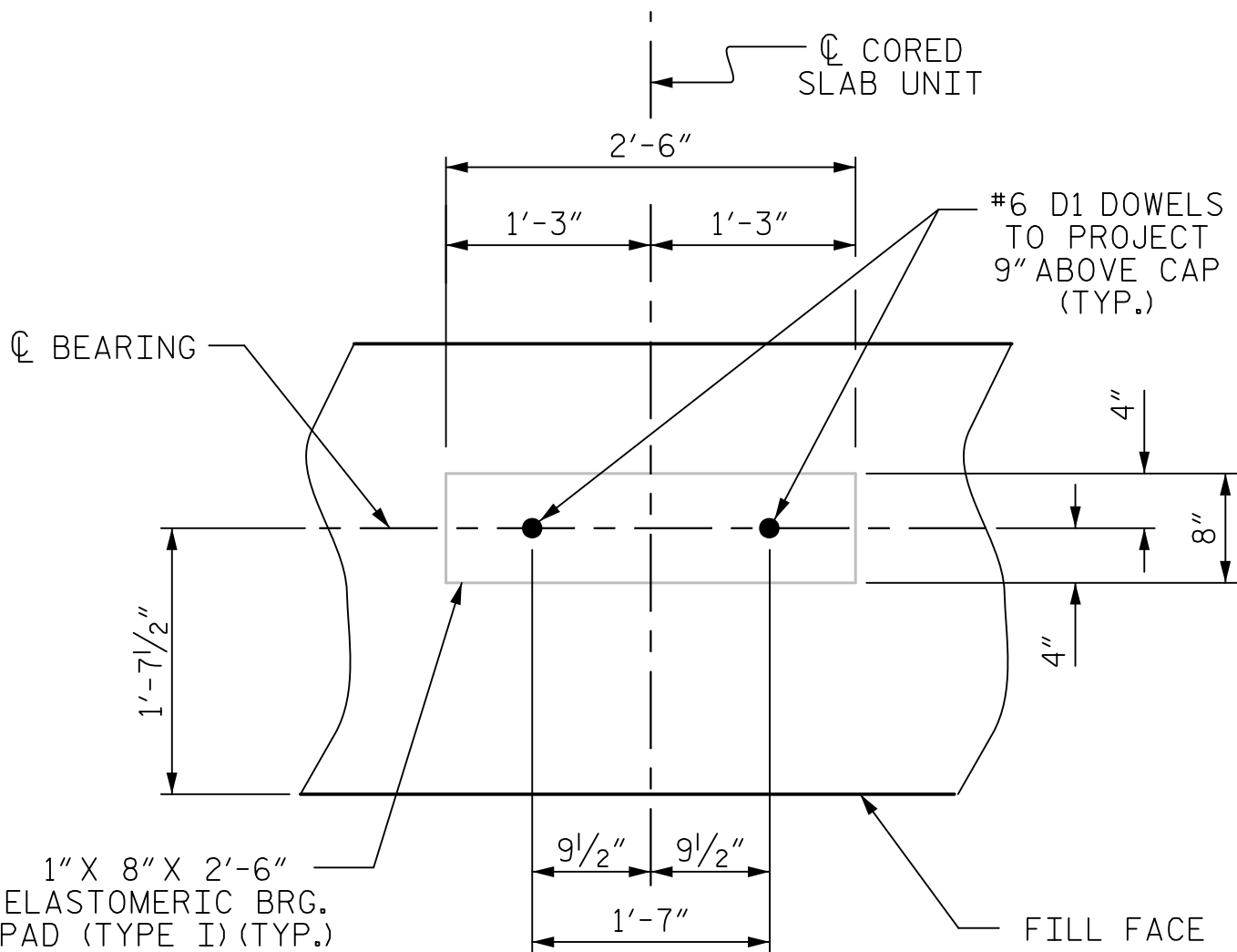


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

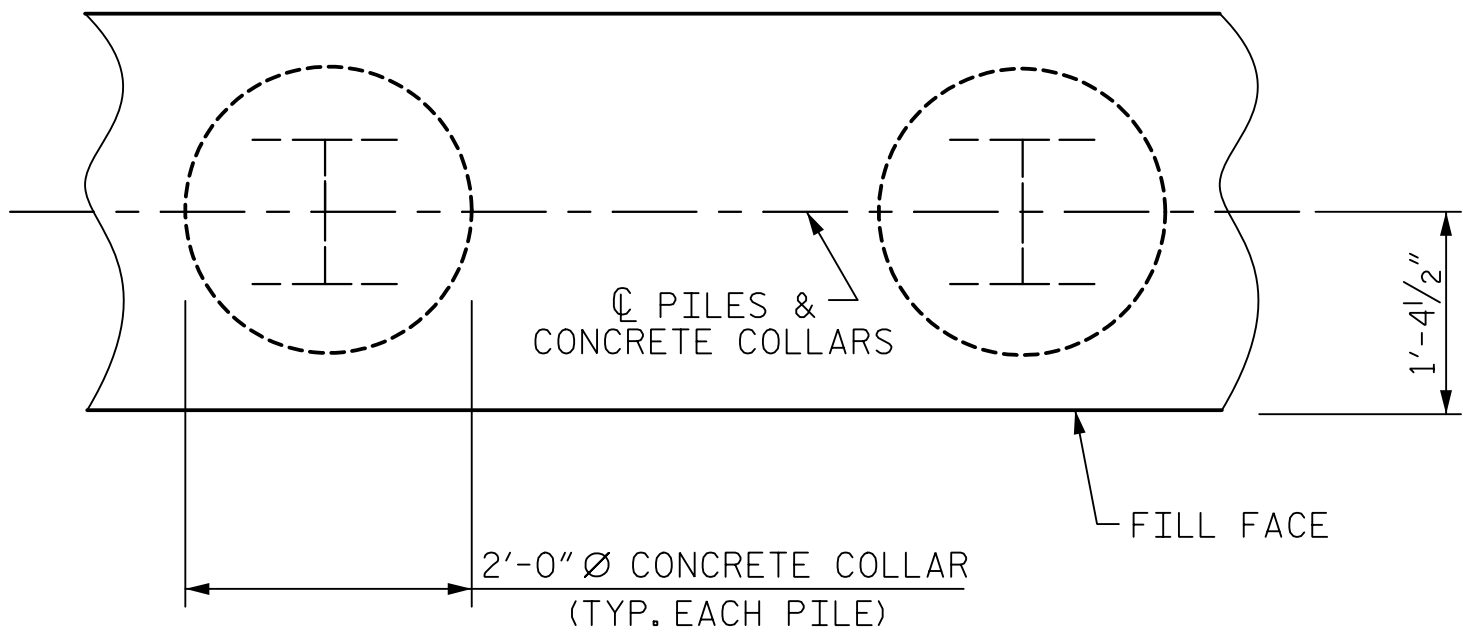
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

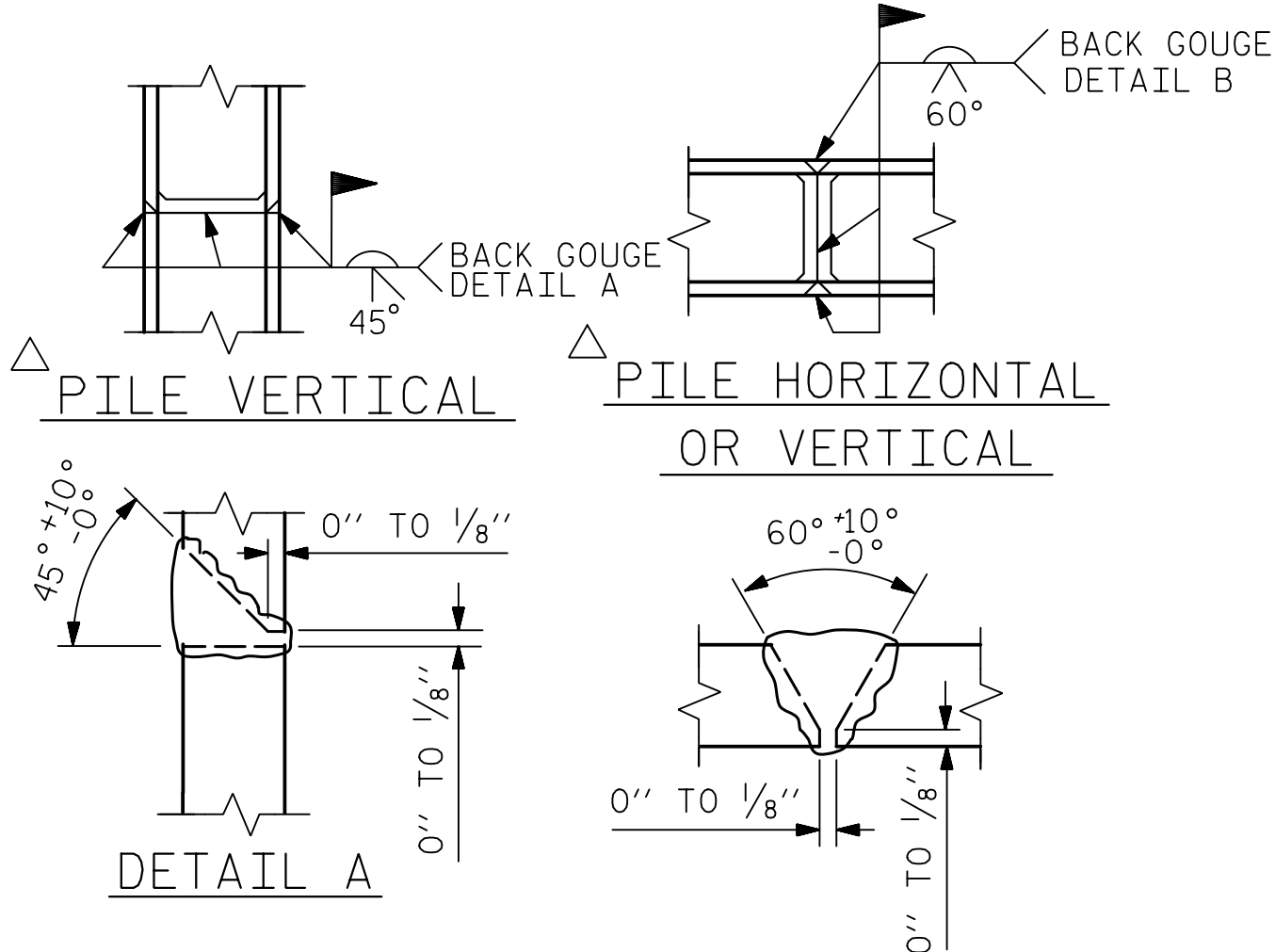
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



PLAN

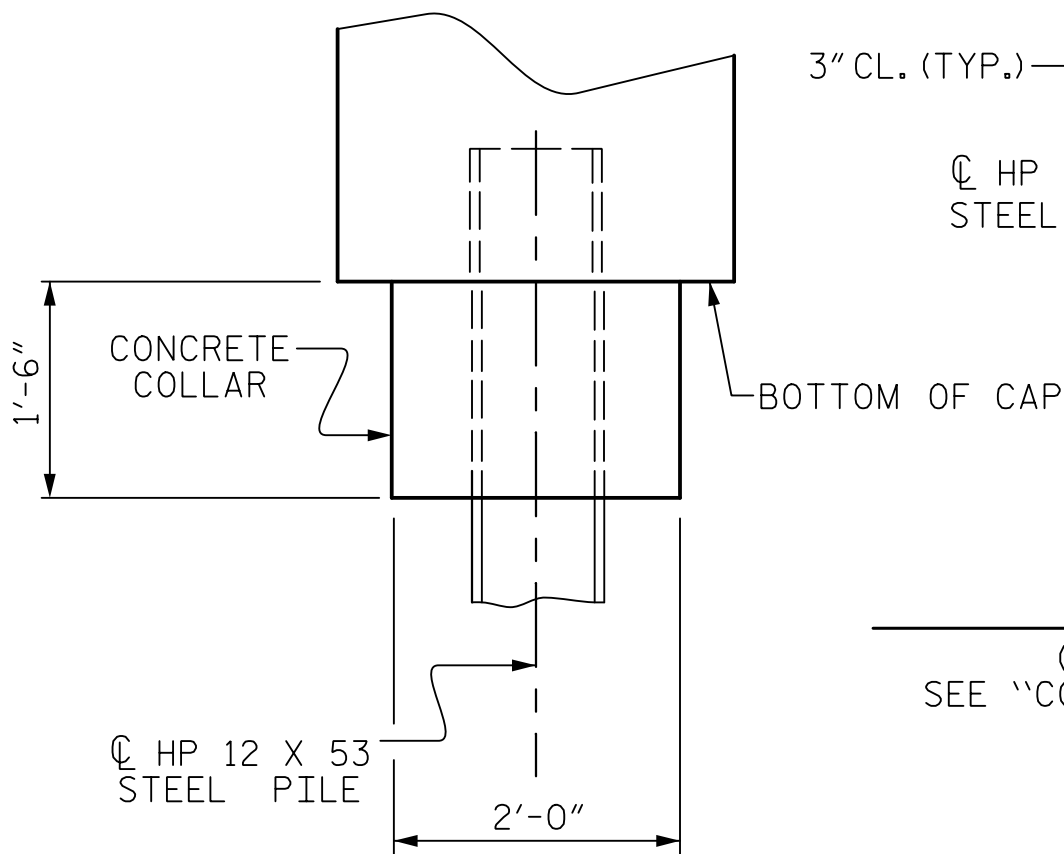
CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

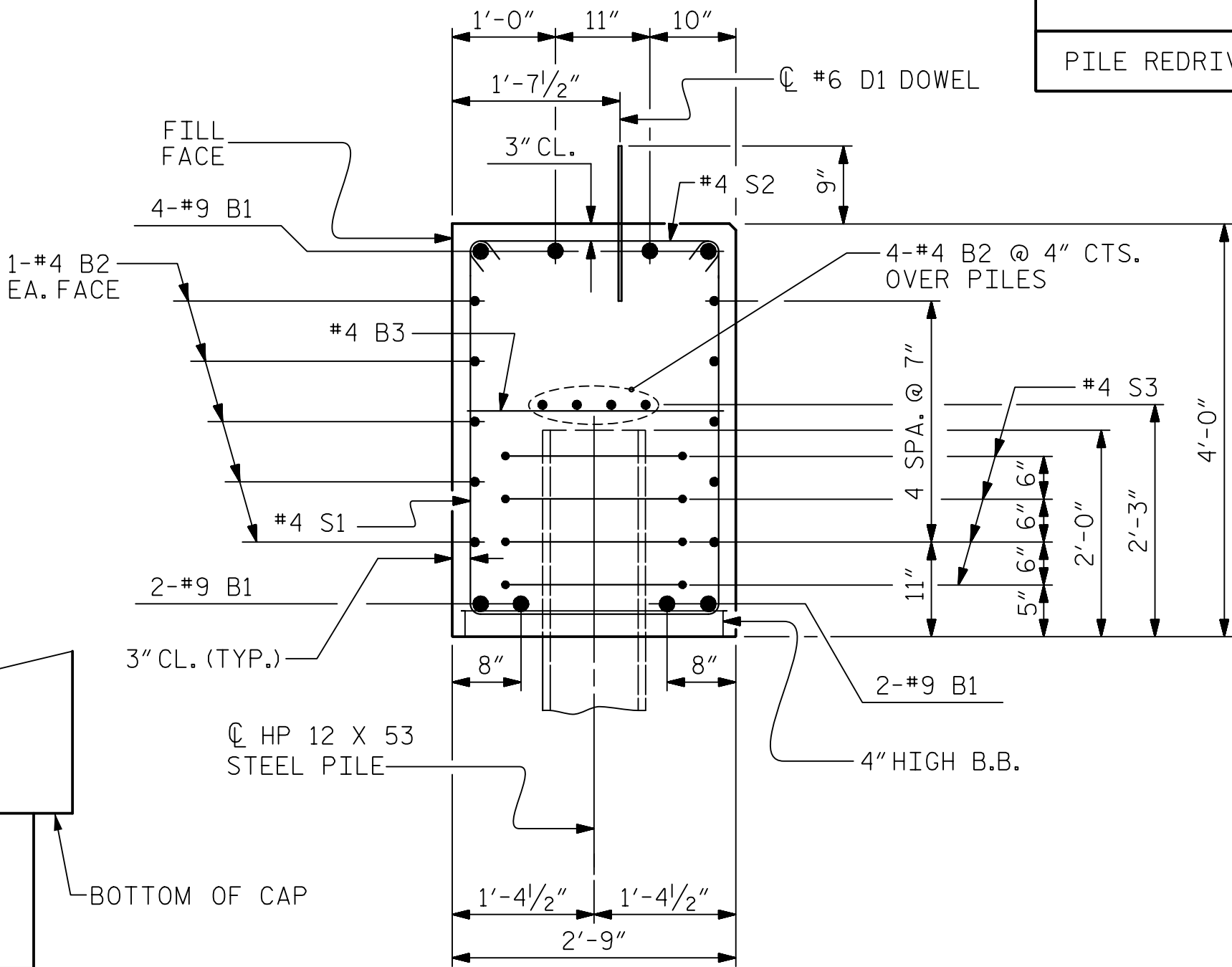


POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

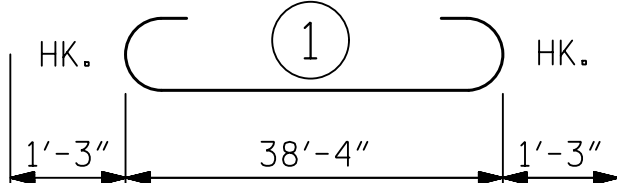
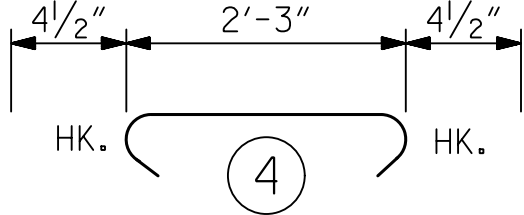
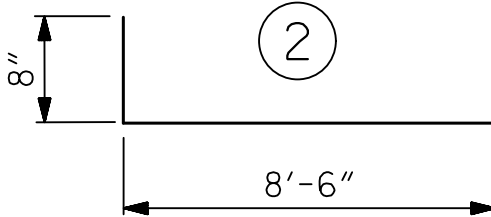
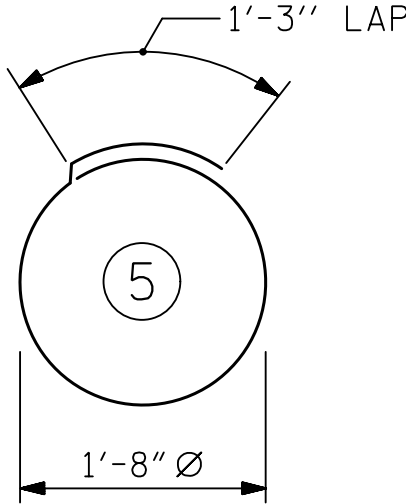
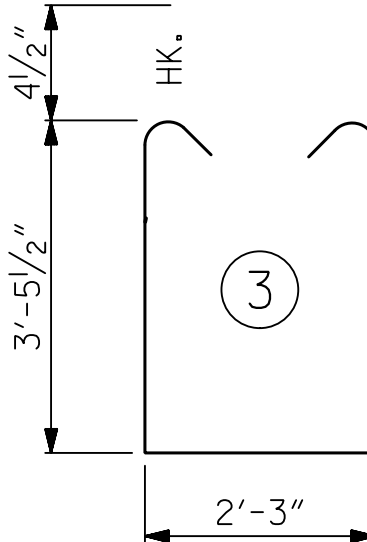


ELEVATION



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

BAR TYPES	
	
	
	
ALL BAR DIMENSIONS ARE OUT TO OUT.	
END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 420	HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 455
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7
PILE REDRIVES NO: 4	PILE REDRIVES NO: 4

ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. 17BP.2.R.85
BEAUFORT COUNTY
STATION: 17+39.50 -L-

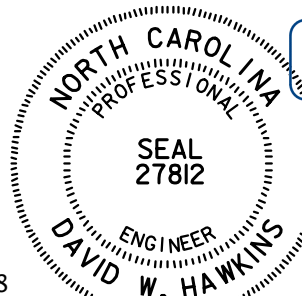
SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2
DETAILS

REVISIONS						SHEET NO. S-13
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 18
2			4			

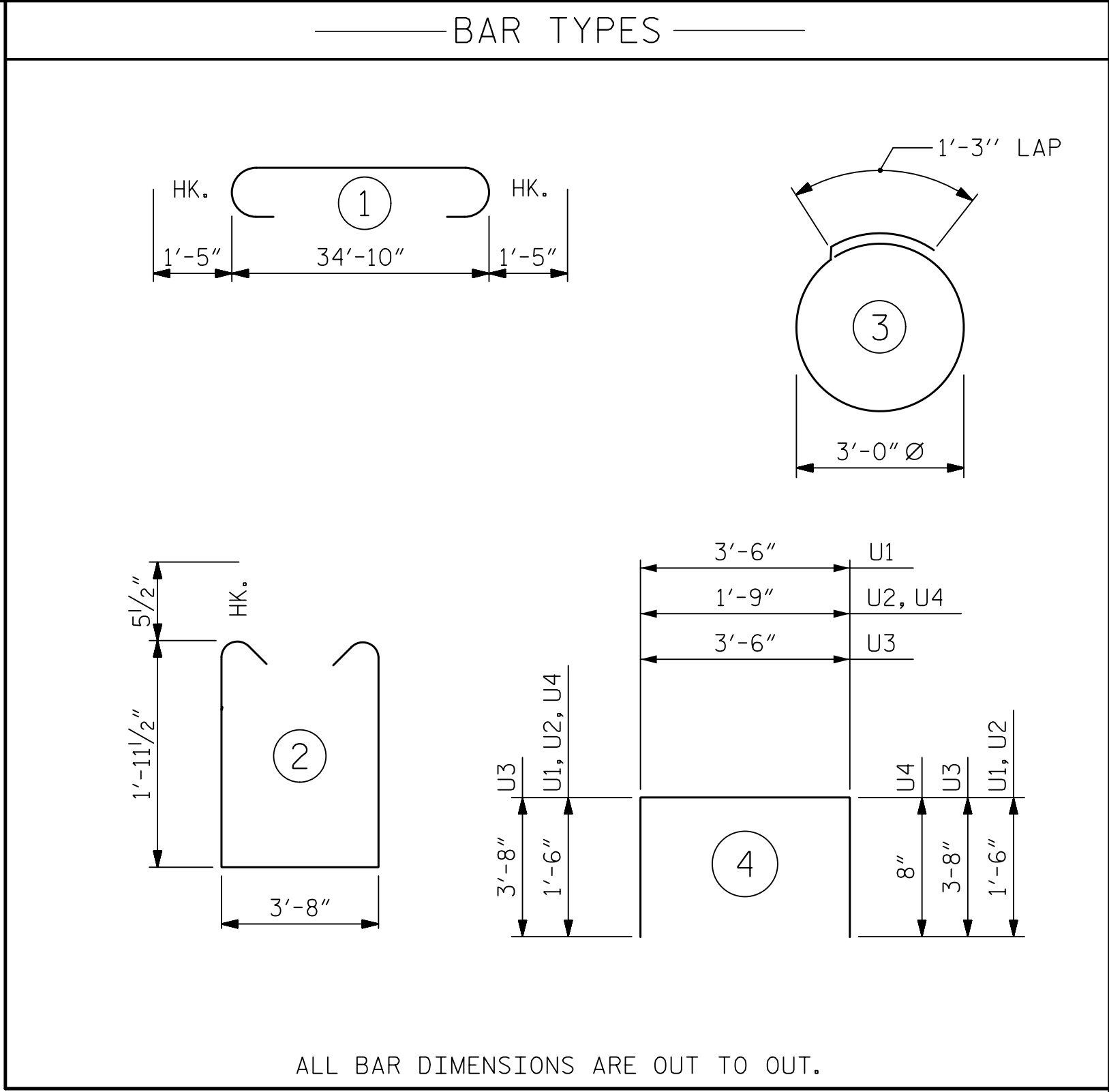
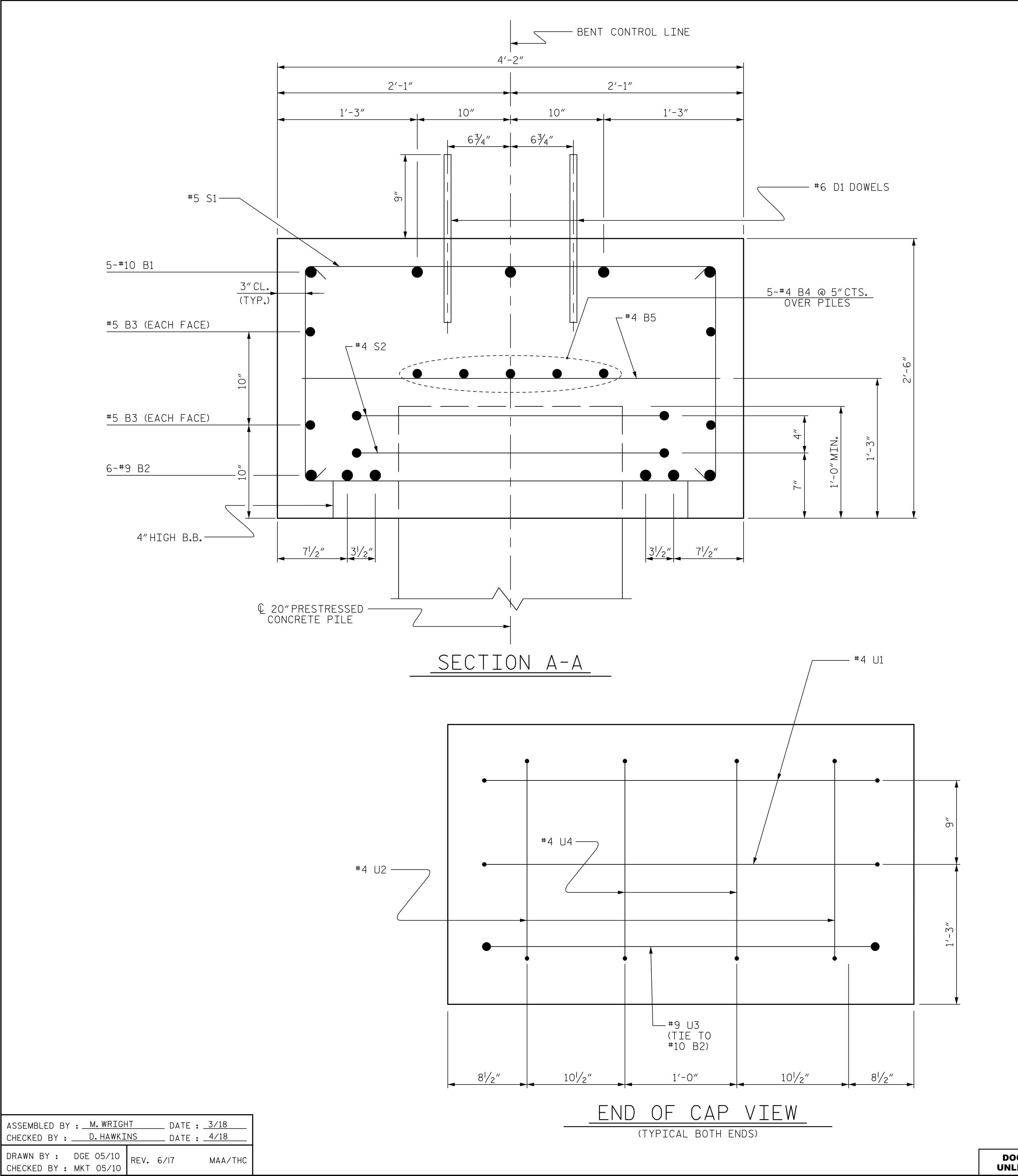


7/11/2018

HNTB		HNTB NORTH CAROLINA, P.C. NC License No. C-1654 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY	M. WRIGHT	DATE	3/18
CHECKED BY	D. HAWKINS	DATE	4/18
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE	4/18
DWG. NO. 13			

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : M. WRIGHT	DATE : 3/18
CHECKED BY : D. HAWKINS	DATE : 4/18
DRAWN BY : WJH 12/11	REV. 4/17
CHECKED BY : AAC 12/11	MAA/THC

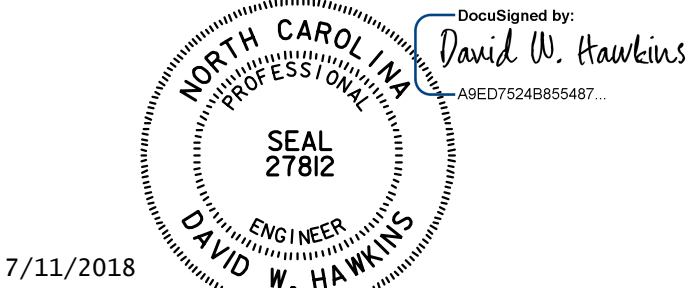


BILL OF MATERIAL					
FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	5	#10	1	37'-8"	810
* B2	6	#9	STR	35'-0"	714
* B3	4	#5	STR	35'-0"	146
* B4	10	#4	STR	18'-9"	125
* B5	9	#4	STR	3'-8"	22
* D1	44	#6	STR	1'-6"	99
* S1	32	#5	2	8'-6"	284
* S2	14	#4	3	10'-9"	101
* U1	4	#4	4	6'-6"	17
* U2	4	#4	4	4'-9"	13
* U3	2	#9	4	10'-10"	74
* U4	4	#4	4	3'-11"	10
* EPOXY COATED REINFORCING STEEL (FOR ONE BENT)					2,415 LBS
CLASS AA CONCRETE BREAKDOWN (FOR ONE BENT)					
TOTAL CLASS AA CONCRETE					▲ 12.7 C.Y.
24"PRESTRESSED CONCRETE PILES (FOR ONE BENT)					
NO. 7					LIN. FT. 595
PILE DRIVING EQUIPMENT SETUP FOR 24"PRESTRESSED CONCRETE PILES (FOR ONE BENT)					
					NO. 7
PILE REDRIVES					NO. 4

▲ CONCRETE DISPLACED BY THE 24"PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.

PROJECT NO. 17BP.2.R.85
BEAUFORT COUNTY
STATION: 17+39.50 -L-

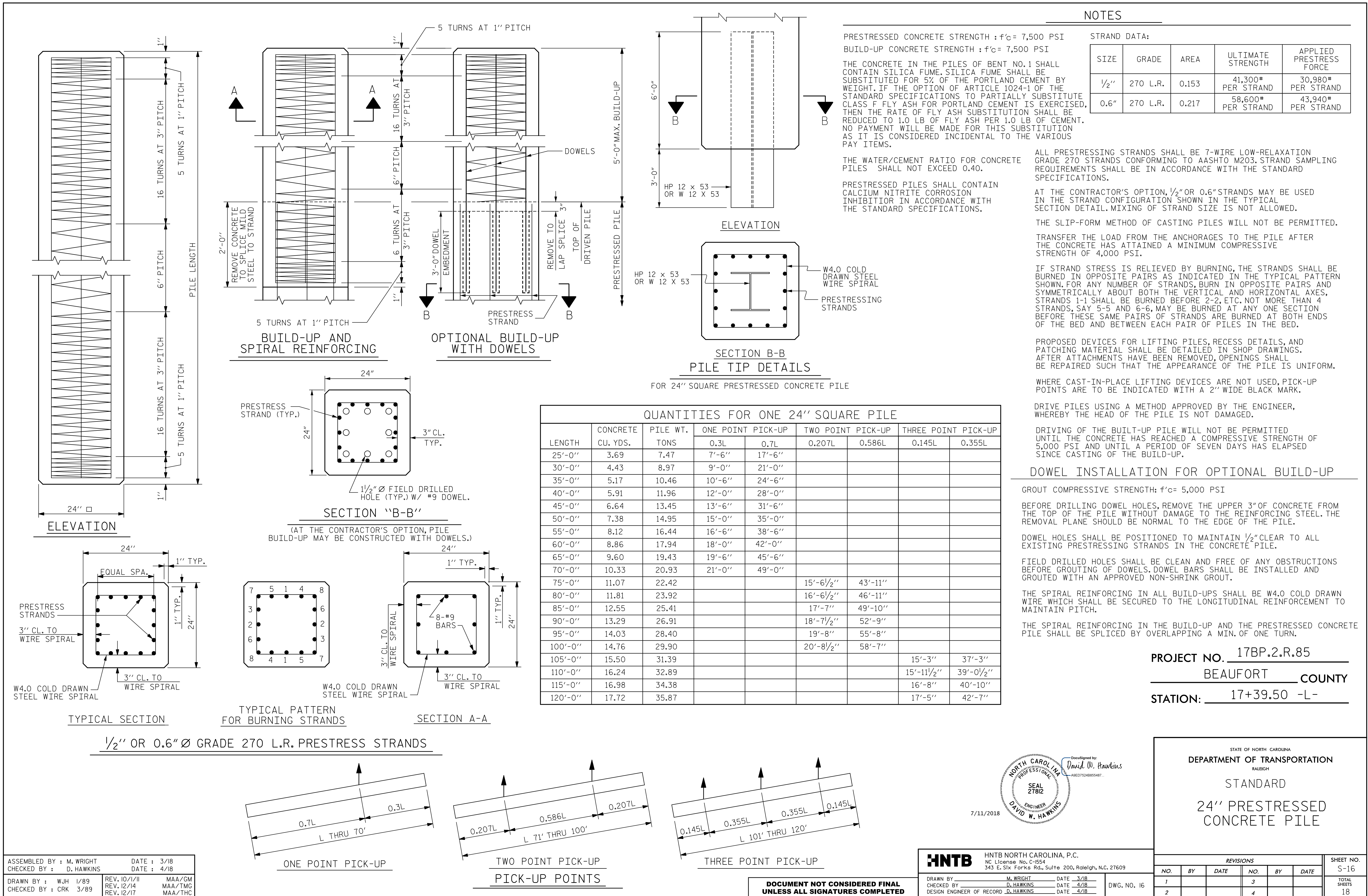
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 1					
REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					TOTAL SHEETS
					18

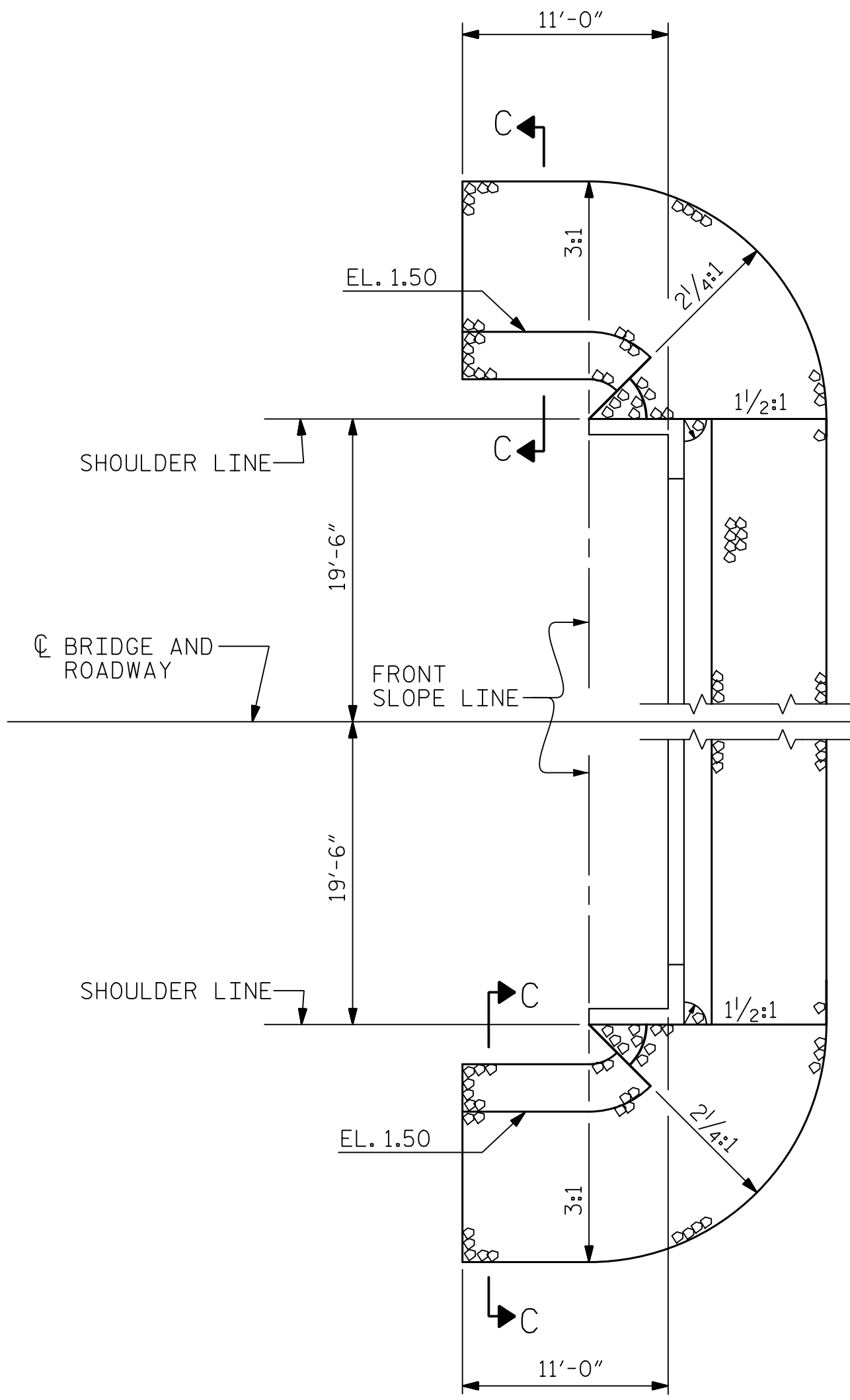


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DRAWN BY	M. WRIGHT	DATE	3/18
CHECKED BY	D. HAWKINS	DATE	4/18
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE	4/18
		DWG. NO.	I5

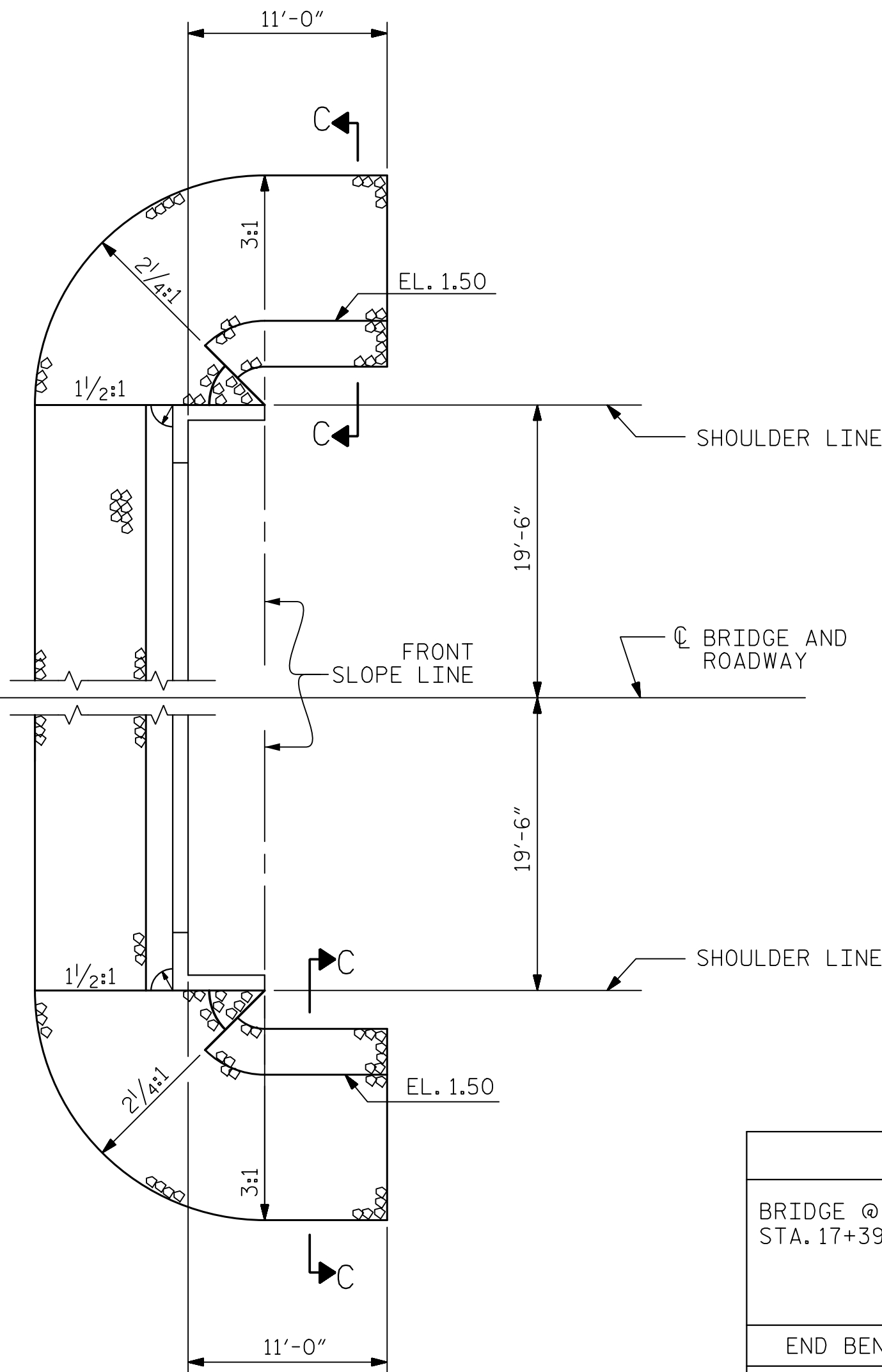
ASSEMBLED BY : M. WRIGHT	DATE : 3/18
CHECKED BY : D. HAWKINS	DATE : 4/18
DRAWN BY : DGE 05/10	REV. 6/17
CHECKED BY : MKT 05/10	MAA/THC

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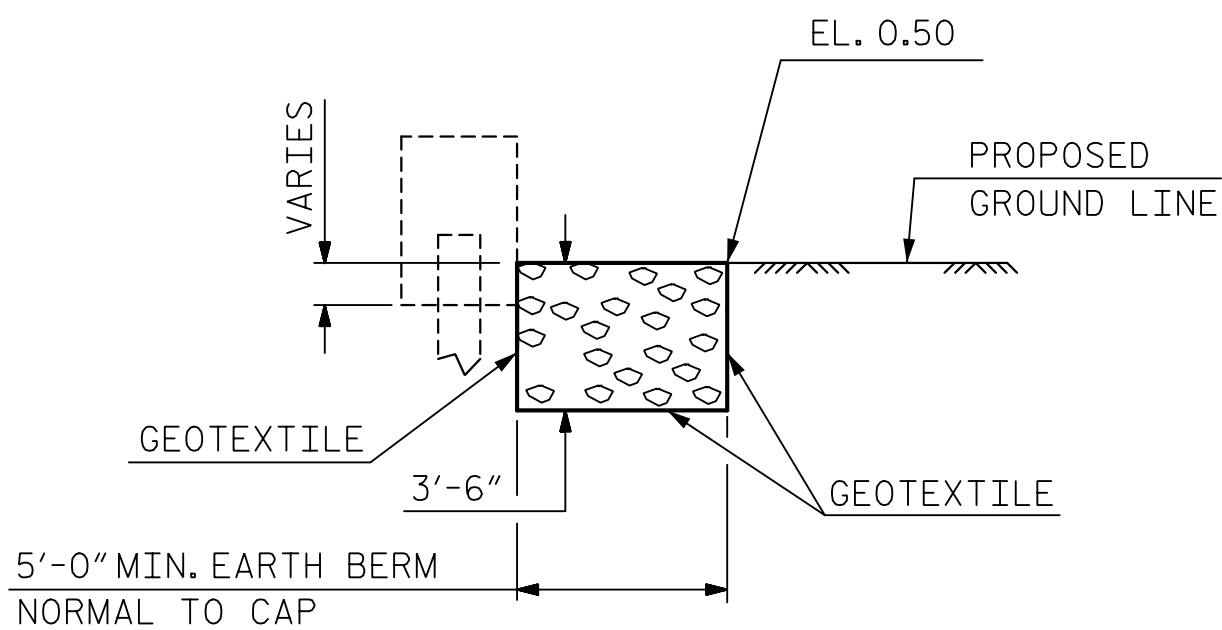
END BENT 1



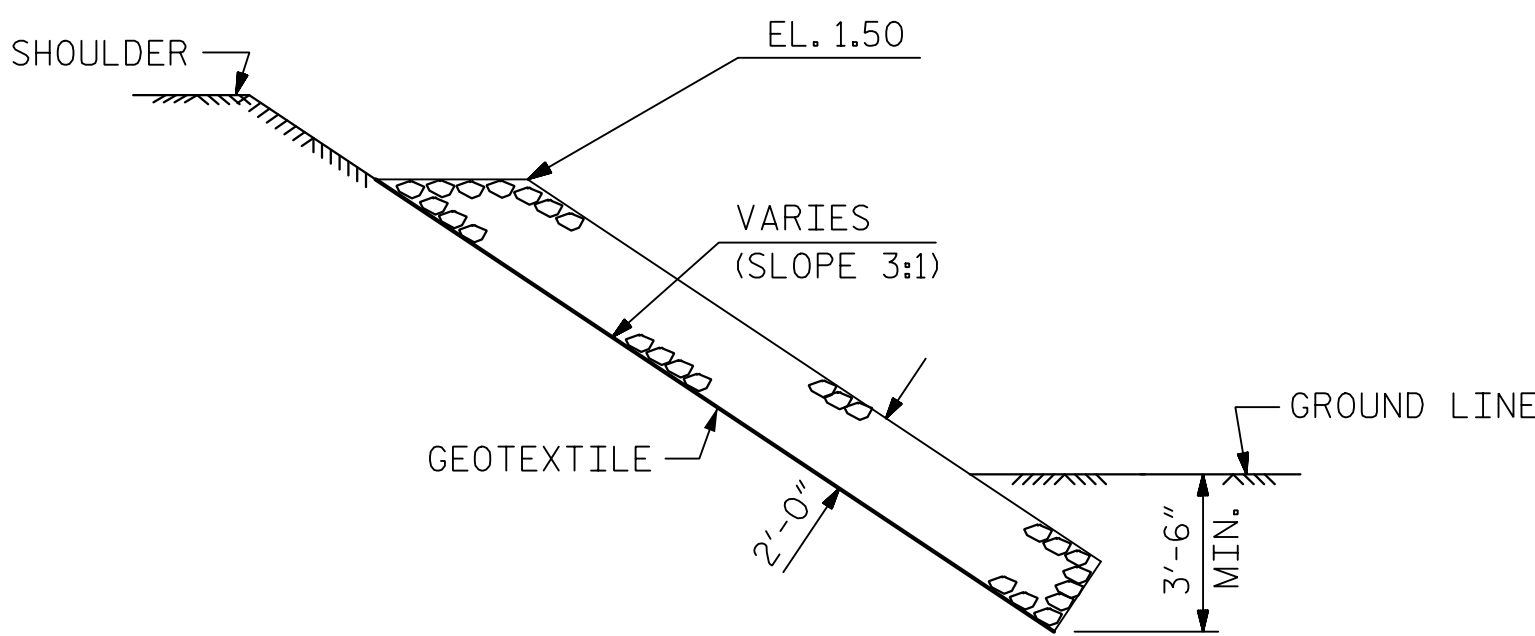
END BENT 2

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

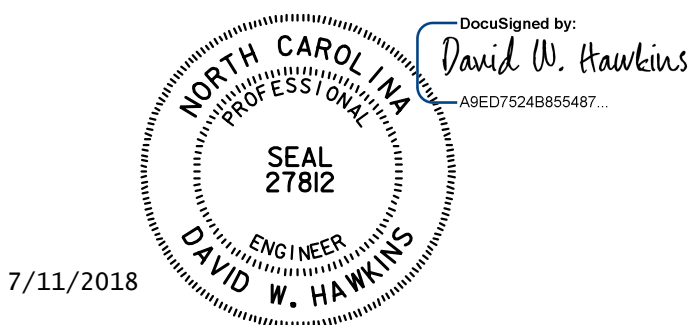
ESTIMATED QUANTITIES		
BRIDGE @ STA. 17+39.50 -L-	RIP RAP CLASS II	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	105	100
END BENT 2	105	105



SECTION
BERM RIP RAPPED



SECTION C-C



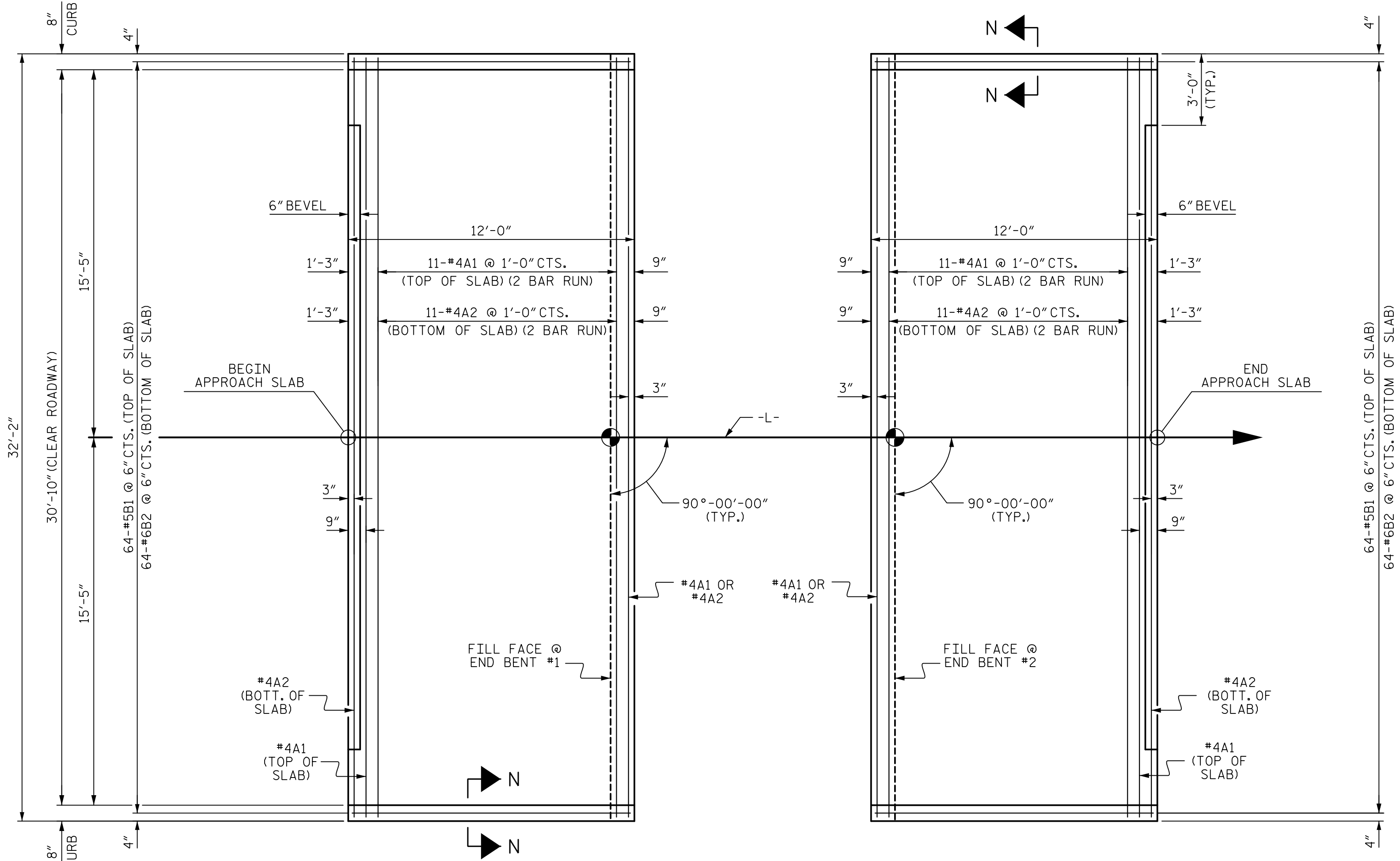
PROJECT NO. 17BP.2.R.85
BEAUFORT COUNTY
STATION: 17+39.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RIP RAP DETAILS

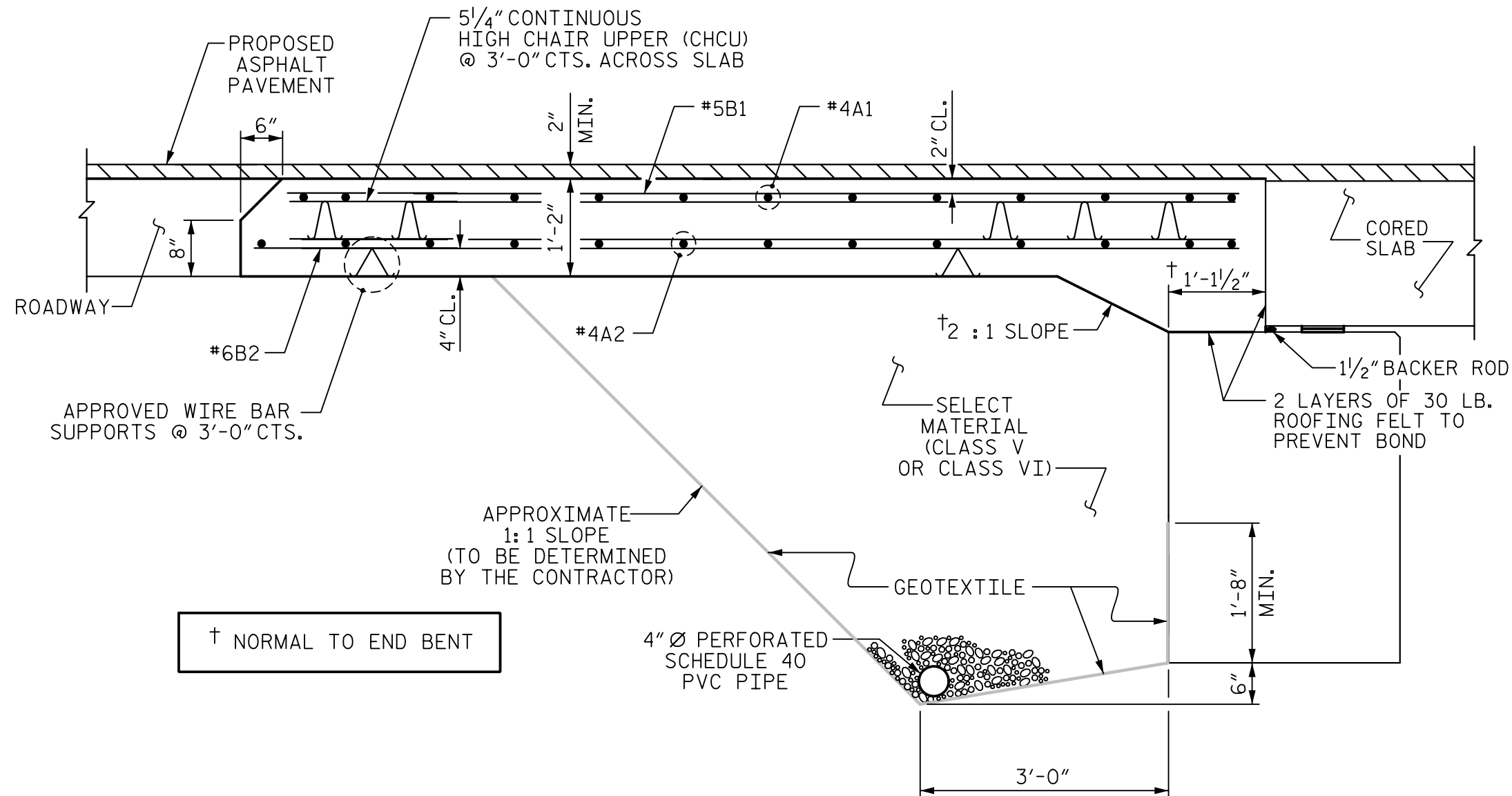
ASSEMBLED BY : M. WRIGHT	DATE : 3/18
CHECKED BY : D. HAWKINS	DATE : 4/18
DRAWN BY : REK 1/84	REV. 10/1/II MAA/GM
CHECKED BY : RDU 1/84	REV. 12/21/II MAA/GM
	REV. 12/17 MAA/THC

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DRAWN BY : M. WRIGHT	DATE : 3/18	DWG. NO. 17	
CHECKED BY : D. HAWKINS	DATE : 4/18		
DESIGN ENGINEER OF RECORD : D. HAWKINS	DATE : 4/18		

REVISIONS						SHEET NO. S-17
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 18
2			4			

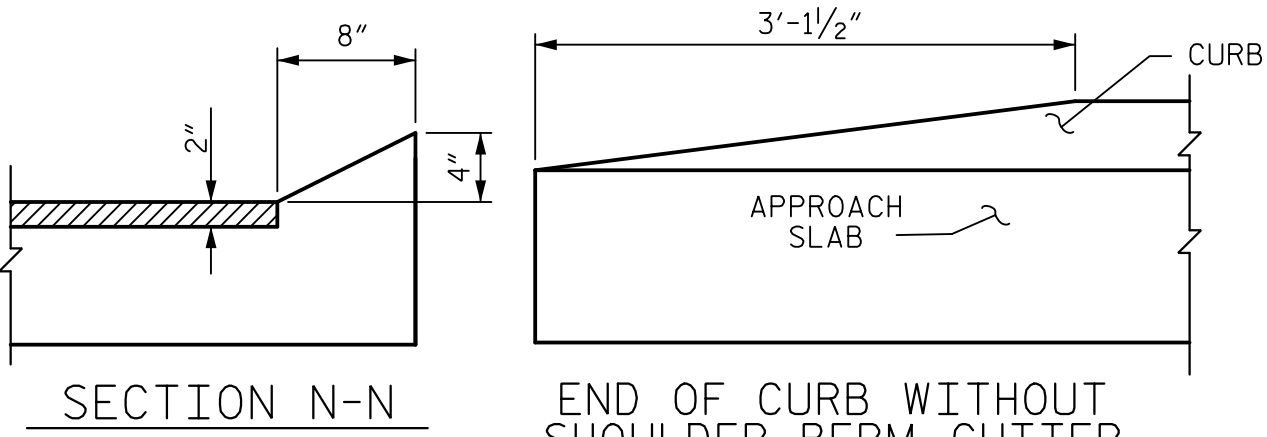


PLAN @ END BENT #1
PLAN @ END BENT #2
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB
(TYPE II - MODIFIED APPROACH FILL)

ASSEMBLED BY : M. WRIGHT
CHECKED BY : D. HAWKINS
DATE : 3/18
DATE : 4/18
DRAWN BY : SHS/MAA 5-09
CHECKED BY : BCH 5-09
REV. 12-17
MAA/THC



SECTION N-N
END OF CURB WITHOUT
SHOULDER BERM GUTTER
CURB DETAILS

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4"Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

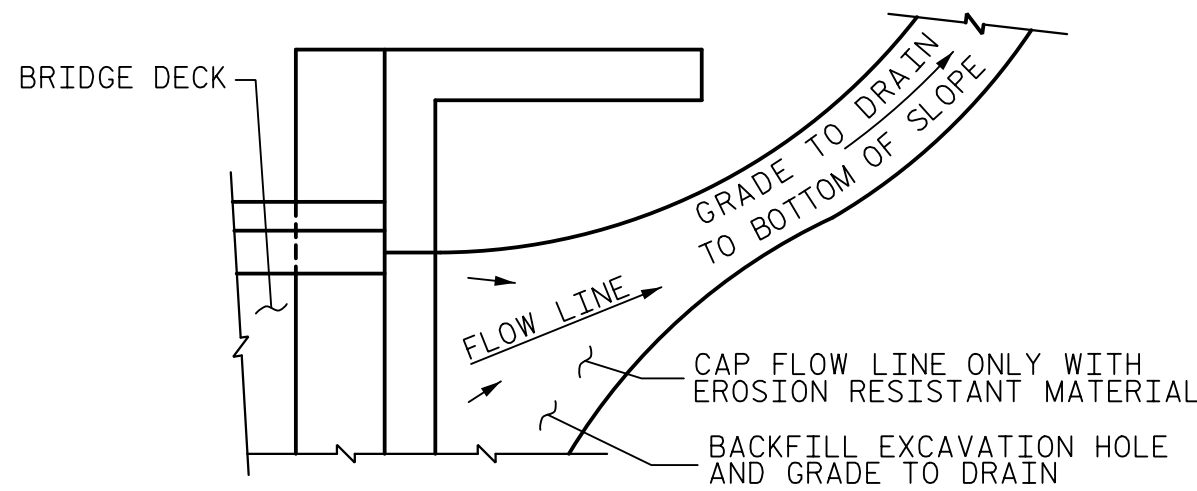
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

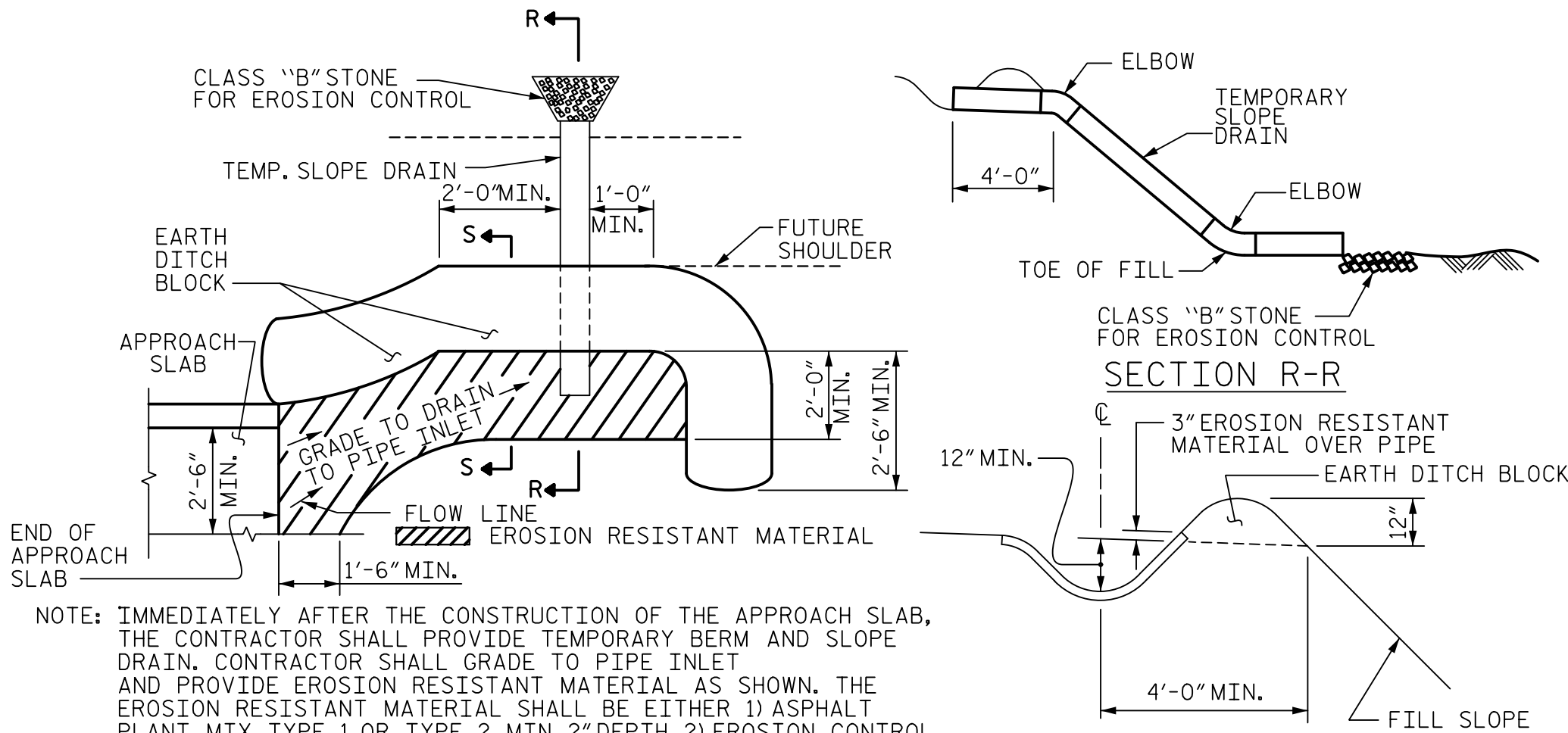
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL



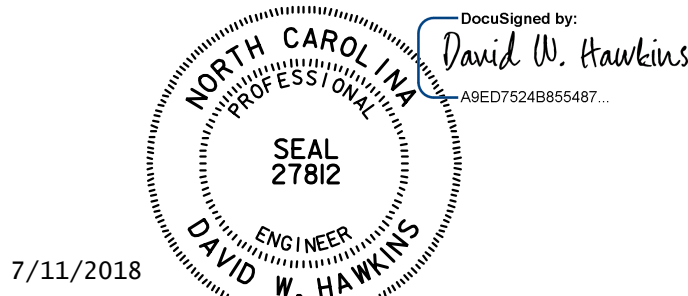
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. 17BP.2.R.85
BEAUFORT COUNTY
STATION: 17+39.50 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
90° SKEW

REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	
1			3		TOTAL SHEETS
2			4		18

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 5/16" 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.