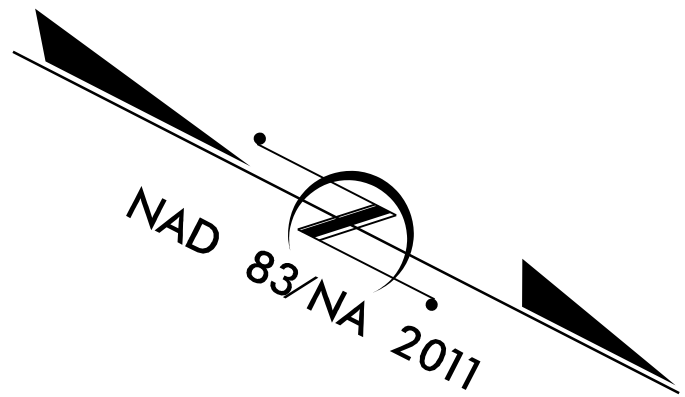
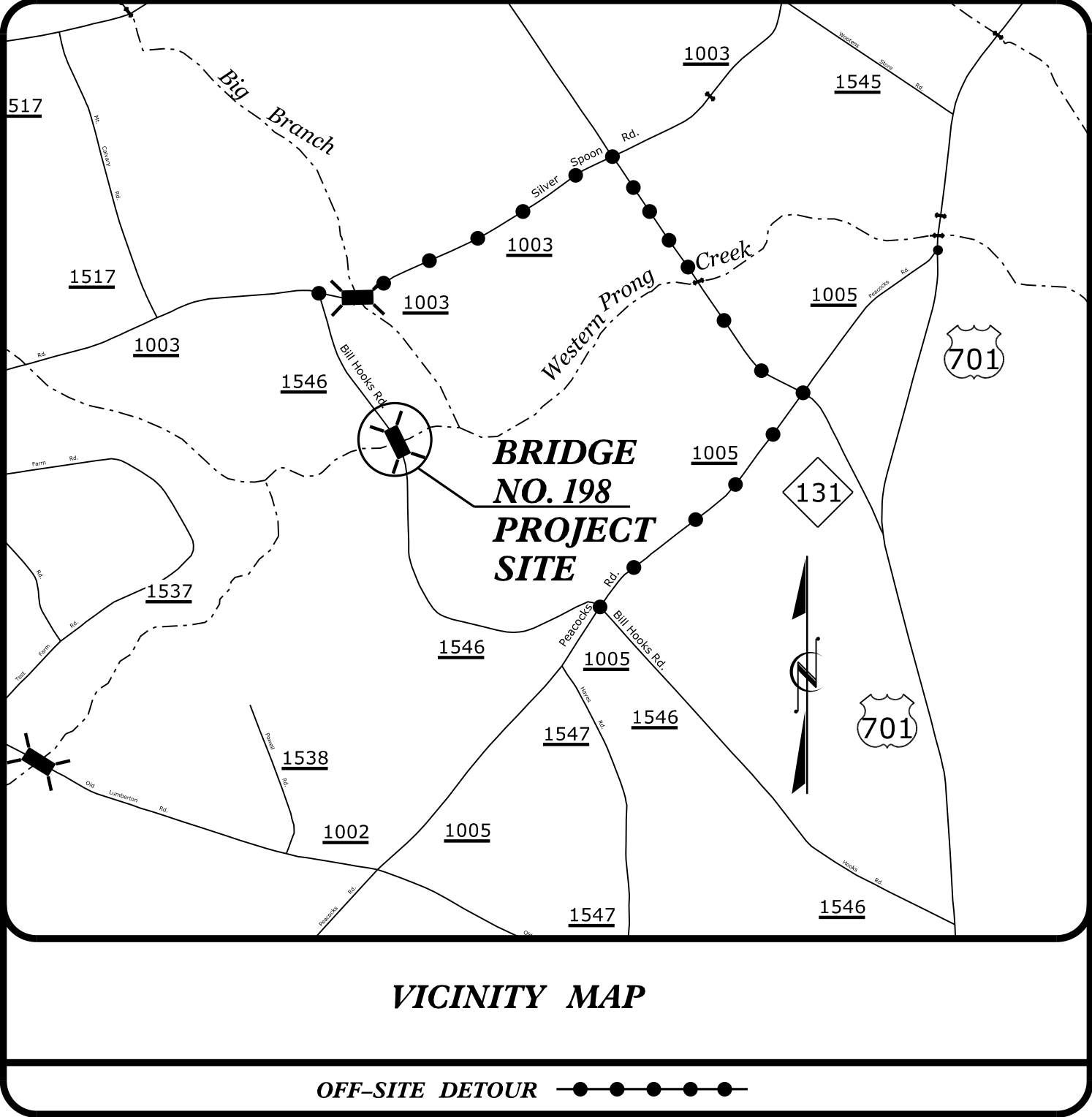


09/08/2017

PROJECT: 17BP.6.R.70

CONTRACT: DF00169

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



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

COLUMBUS COUNTY

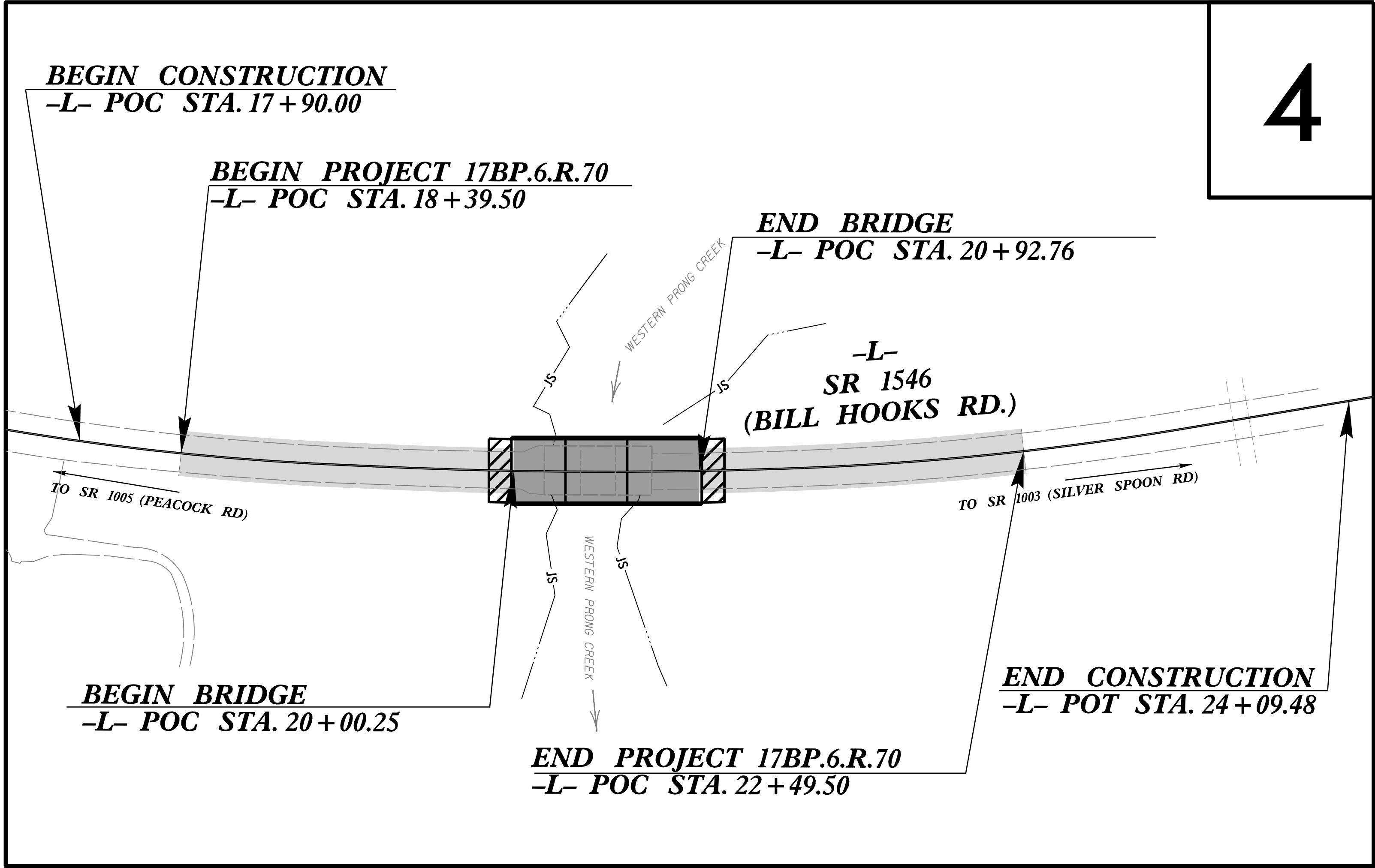
LOCATION: BRIDGE NO. 230198 OVER WESTERN PRONG CREEK ON
SR 1546 (BILL HOOKS RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.6.R.70	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
17BP.6.R.70	N/A	PE	
17BP.6.R.70	N/A	RW /UTIL.	
17BP.6.R.70	N/A	R/W/STIL.	

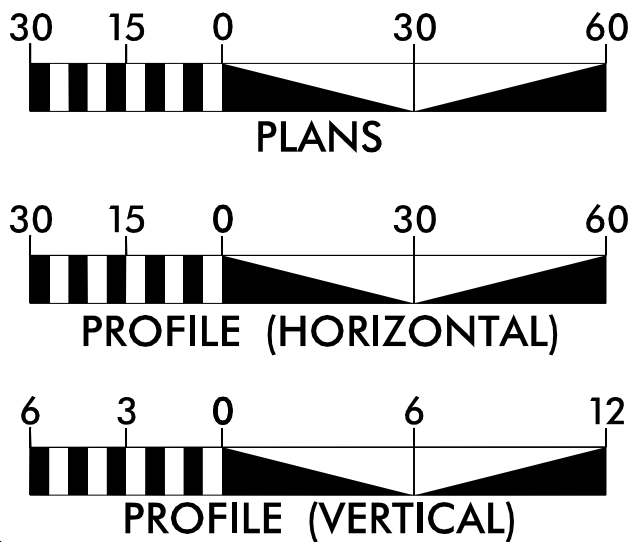
BRIDGE #230198

FINAL PLANS



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2016 = 270
T = 6 % *
V = 55 MPH
* TTST = 3% DUAL = 3%
FUNC. CLASS =
RURAL LOCAL
(SUBREGIONAL)

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.6.R.70 = 0.060 MILES
LENGTH STRUCTURE PROJECT 17BP.6.R.70 = 0.017 MILES
TOTAL LENGTH PROJECT 17BP.6.R.70 = 0.077 MILES

Prepared in the Office of:
WETHERILL ENGINEERING
1223 Jones Franklin Rd. Raleigh, N.C. 27606
License No. F-0377
Bus: 919.851.8077 Fax: 919.851.8107

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:
JUNE 21, 2017

NCDOT CONTACT:

Prepared for:
**DIVISION OF HIGHWAYS
DIVISION 6**
558 Gillespie Street
Fayetteville NC, 28301

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

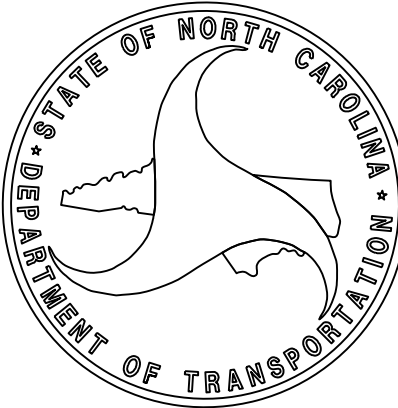
CHRISTY W. HUFF, PE
DIVISION 6 BRIDGE PROGRAM MANAGER

HYDRAULICS ENGINEER

DocuSigned by:
Dustin D. Creech
SIGNATURE

**ROADWAY DESIGN
ENGINEER**

DocuSigned by:
Greg S. Purvis
SIGNATURE



8/17/99

5/23/2017
I:\Roadway\Proj\230198_psh_1a.dgn
11:44:00 AM

GENERAL NOTES

GENERAL NOTES:

2012 SPECIFICATIONS

EFFECTIVE: 01–17–12
REVISED: 07–30–2012

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. 560.01.

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.

SUBSURFACE PLANS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE
POWER – BRUNSWICK EMC
PHONE – CENTURYLINK
WATER – COLUMBUS COUNTY PUBLIC UTILITIES
CATV – TIME WARNER CABLE

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS

RIGHT OF WAY MARKERS:

ALL RIGHT OF WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS

END BENTS:

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

LIST OF ROADWAY STANDARD DRAWINGS

2012 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01–17–12
REV. 02–29–2016

The following Roadway Standards as appear in “Roadway Standard Drawings” Highway Design Branch – N. C. Department of Transportation – Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO. TITLE

DIVISION 2 – EARTHWORK

200.02 Method of Clearing – Method II
225.02 Guide for Grading Subgrade – Secondary and Local
225.04 Method of Obtaining Superelevation – Two Lane Pavement

DIVISION 3 – PIPE CULVERTS

300.01 Method of Pipe Installation

DIVISION 4 – MAJOR STRUCTURES

422.10 Reinforced Bridge Approach Fills

DIVISION 5 – SUBGRADE, BASES AND SHOULDERS

560.01 Method of Shoulder Construction – High Side of Superelevated Curve – Method I

DIVISION 8 – INCIDENTALS

840.00 Concrete Base Pad for Drainage Structures

840.29 Frames and Narrow Slot Grates

840.35 Traffic Bearing Grated Drop Inlet

846.01 Concrete Curb, Gutter and Curb & Gutter
862.01 Guardrail Placement
862.02 Guardrail Installation
862.03 Structure Anchor Units
876.02 Guide for Rip Rap at Pipe Outlets

INDEX OF SHEETS

SHEET NUMBER

SHEET

1
1–A
1–B
2
2–A
3

TITLE SHEET
INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
CONVENTIONAL SYMBOLS
TYPICAL SECTIONS, PAVEMENT SCHEDULE, & MISCELLANEOUS DETAILS
STRUCTURE ANCHOR UNIT DETAIL SHEETS 2 & 3 OF 7
SUMMARY OF DRAINAGE QUANTITIES, GUARDRAIL SUMMARY, EARTHWORK
SUMMARY, PAVEMENT REMOVAL SUMMARY , AND SHOULDER BERM GUTTER SUMMARY

4
TMP–1 THRU TMP–2A
PMP–1 THRU PMP–2
EC–1 THRU EC–05
RF–1
UO–1 THRU UO–2
X–1
X–2 THRU X–4
S–1 THRU S–22
S–N

PLAN & PROFILE SHEET
TRAFFIC CONTROL PLANS
PAVEMENT MARKING PLANS
EROSION CONTROL PLANS
REFORESTATION
UTILITIES BY OTHERS PLANS
CROSS-SECTION SUMMARY SHEET
CROSS-SECTIONS
STRUCTURE PLANS
STRUCTURE NOTES



BRIDGE #230198

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 R/W Marker	
New Control of Access Line with Concrete C/A 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	

6/2/99

SURVEY CONTROL SHEET 230198

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.70	1C-1
Location and Surveys	

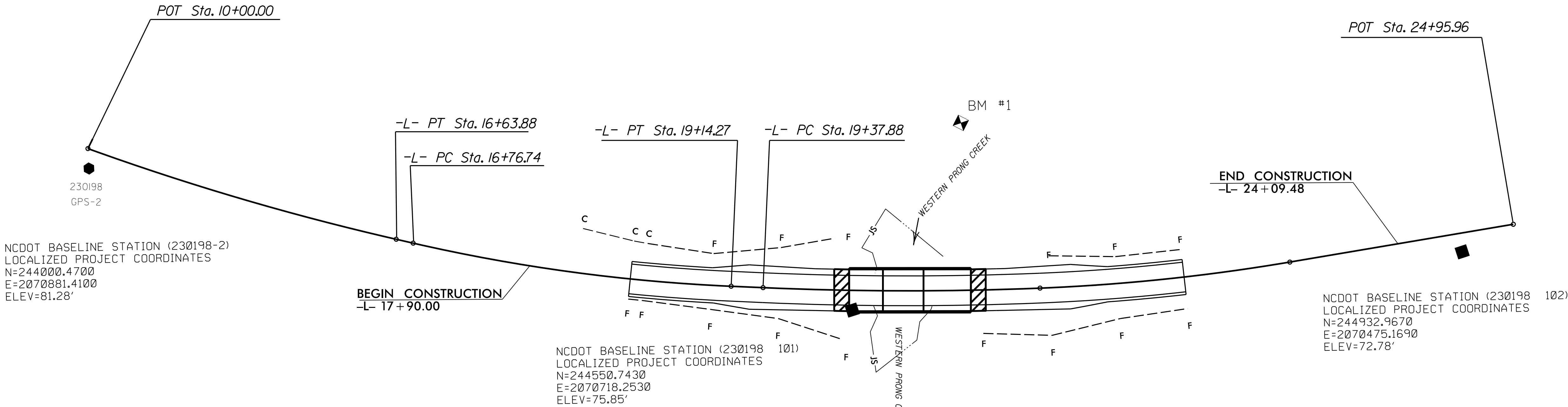
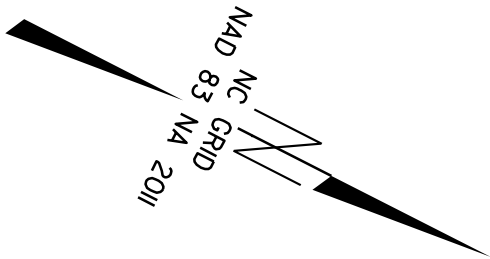
PRELIMINARY ROW MARKER IRON PIN AND CAP-E				
ALIGN	STATION	OFFSET	NORTH	EAST
L	19+37.88	-45.00	244465.82724	2070692.49611
L	18+39.50	-30.00	244383.24922	2070744.30101
L	21+42.64	-45.00	244644.99372	2070601.58202
L	22+49.50	-30.00	244741.64414	2070560.12263
L	22+49.50	30.00	244774.76482	2070610.15283
L	21+42.64	45.00	244689.06413	2070680.05367
L	19+37.88	45.00	244503.13542	2070774.39910
L	18+39.50	30.00	244404.96119	2070800.23482

PRELIMINARY ROW MARKER EASEMENT-E				
ALIGN	STATION	OFFSET	NORTH	EAST
L	21+68.98	66.86	244723.65686	2070685.41888
L	21+78.43	65.31	244731.37763	2070679.06359
L	21+76.85	54.70	244724.55123	2070670.77048
L	21+67.34	56.26	244716.83046	2070677.12578
L	22+40.32	30.96	244767.46276	2070616.10867
L	18+98.13	57.48	244471.44452	2070802.43524
L	18+62.23	32.84	244427.63651	2070794.26754
L	17+64.59	-30.00	244314.29801	2070768.81830
L	17+64.95	-64.52	244303.99558	2070735.86913
L	17+75.47	-64.38	244313.53990	2070732.88485
L	17+75.00	-30.00	244323.96118	2070765.64844
L	23+37.99	-30.00	244812.59774	2070510.03097
L	23+98.46	-46.51	244851.30704	2070460.72207
L	23+97.81	-57.21	244844.40541	2070452.51868
L	24+07.79	-57.82	244852.05750	2070446.08086
L	24+09.48	-30.00	244869.99830	2070467.40558

L			
TYPE	STATION	NORTH	EAST
POT	10+00.00	243567.9460	2070892.6287
PC	11+51.22	243719.1323	2070889.5683
PT	14+01.76	243968.9036	2070871.4697
PC	14+26.22	243993.1781	2070868.4336
PT	16+63.88	244226.6374	2070824.7133
PC	16+76.74	244239.1063	2070821.5849
PT	19+14.27	244462.9924	2070743.2362
PC	19+37.88	244484.4813	2070733.4476
PCC	21+42.64	244667.0289	2070640.8178
PT	23+28.43	244822.8158	2070539.8102
POT	24+95.96	244957.3105	2070439.9351

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1		230198 GPS-1	243529.4200	2070905.8900	88.53		OUTSIDE PROJECT LIMITS
2		230198 GPS-2	244000.4700	2070881.4100	81.28	14+31.81	13.79 RT
101		BL-101	244550.7430	2070718.2530	75.85	20+04.89	14.56 RT
102		BL-102	244932.9670	2070475.1690	72.78	24+55.41	13.77 RT

.....
1422 ELEVATION = 70.98
N 244559 E 2070559
L STATION 20+86.00 124 LEFT
BENCH TIE NAIL SET IN 20' CYPRESS TREE
.....



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "230198-2" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 244000.47(±) EASTING: 2070881.4100(±) ELEVATION: 81.28(±) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999978504 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "230198-2" TO -L- STATION 10+00.00 IS N18°59'39.58"W 40.74' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

○ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL AND VERTICAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT. PROJECT CONTROL ESTABLISHED USING GNSS (GLOBAL NAVIGATION SATELLITE SYSTEM).

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

THE FILES TO BE FOUND ARE AS FOLLOWS: 230198_LS_CONTROL.TXT

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

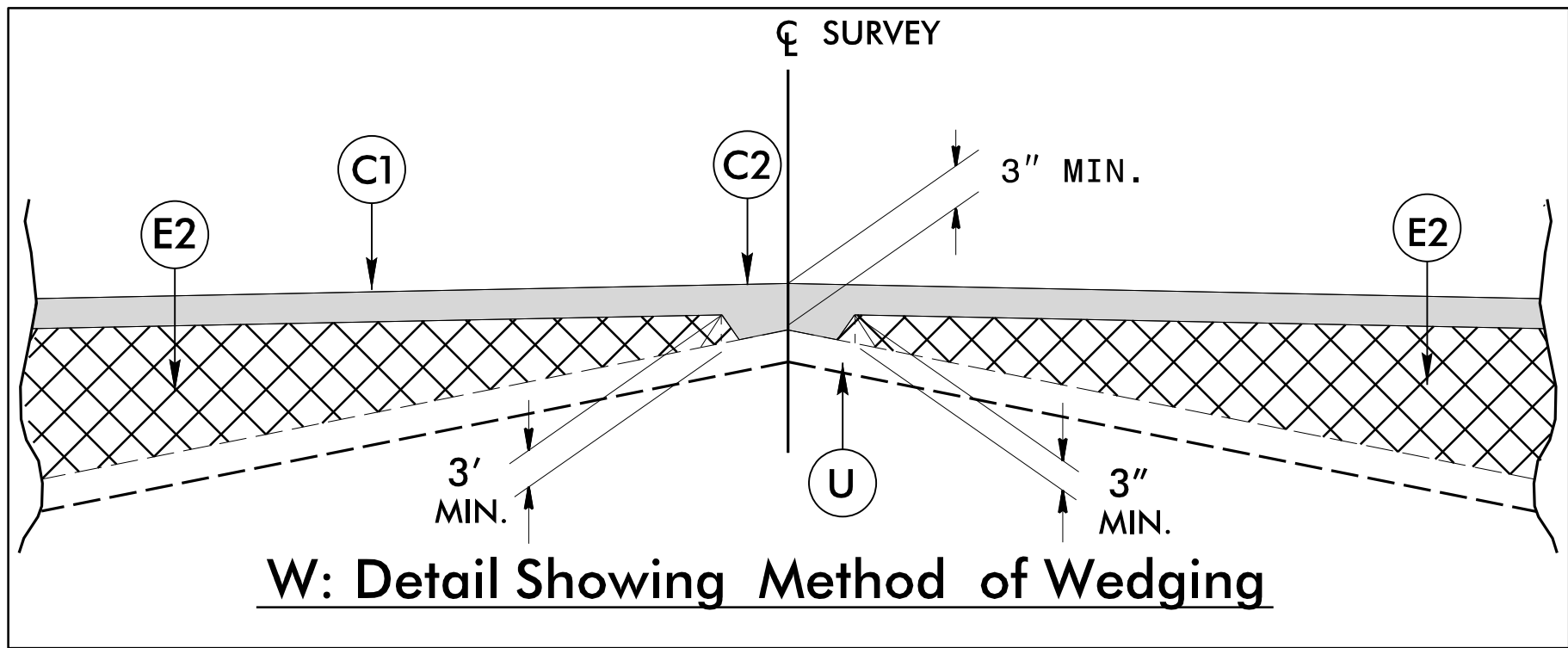
NOTE: DRAWING NOT TO SCALE

5/19/2017 230198_1s_1c-1.dgn

6/2/2017

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT. (SEE MILLING DETAIL)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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



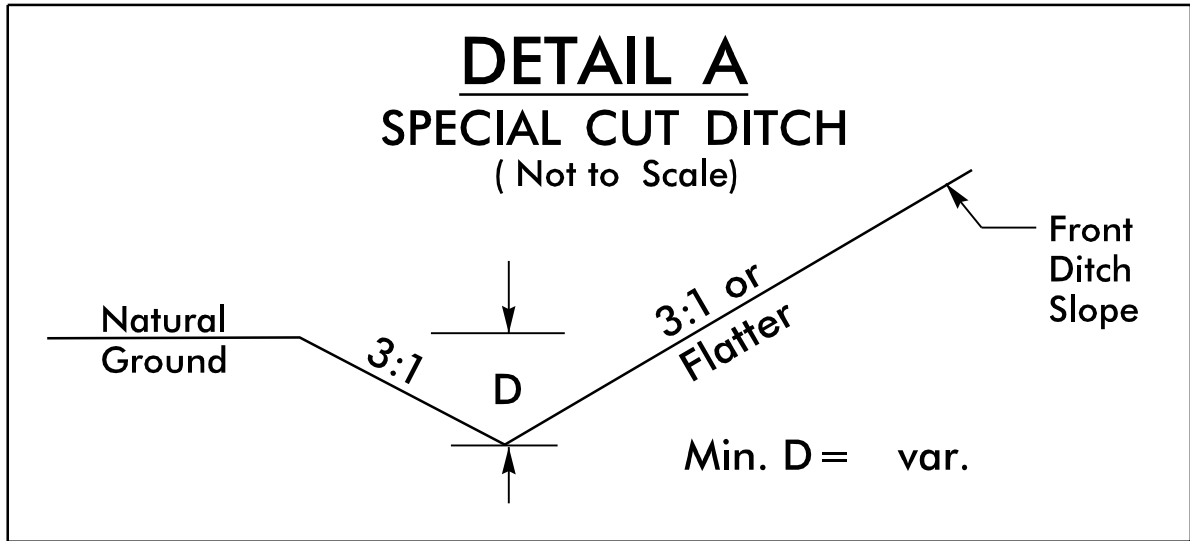
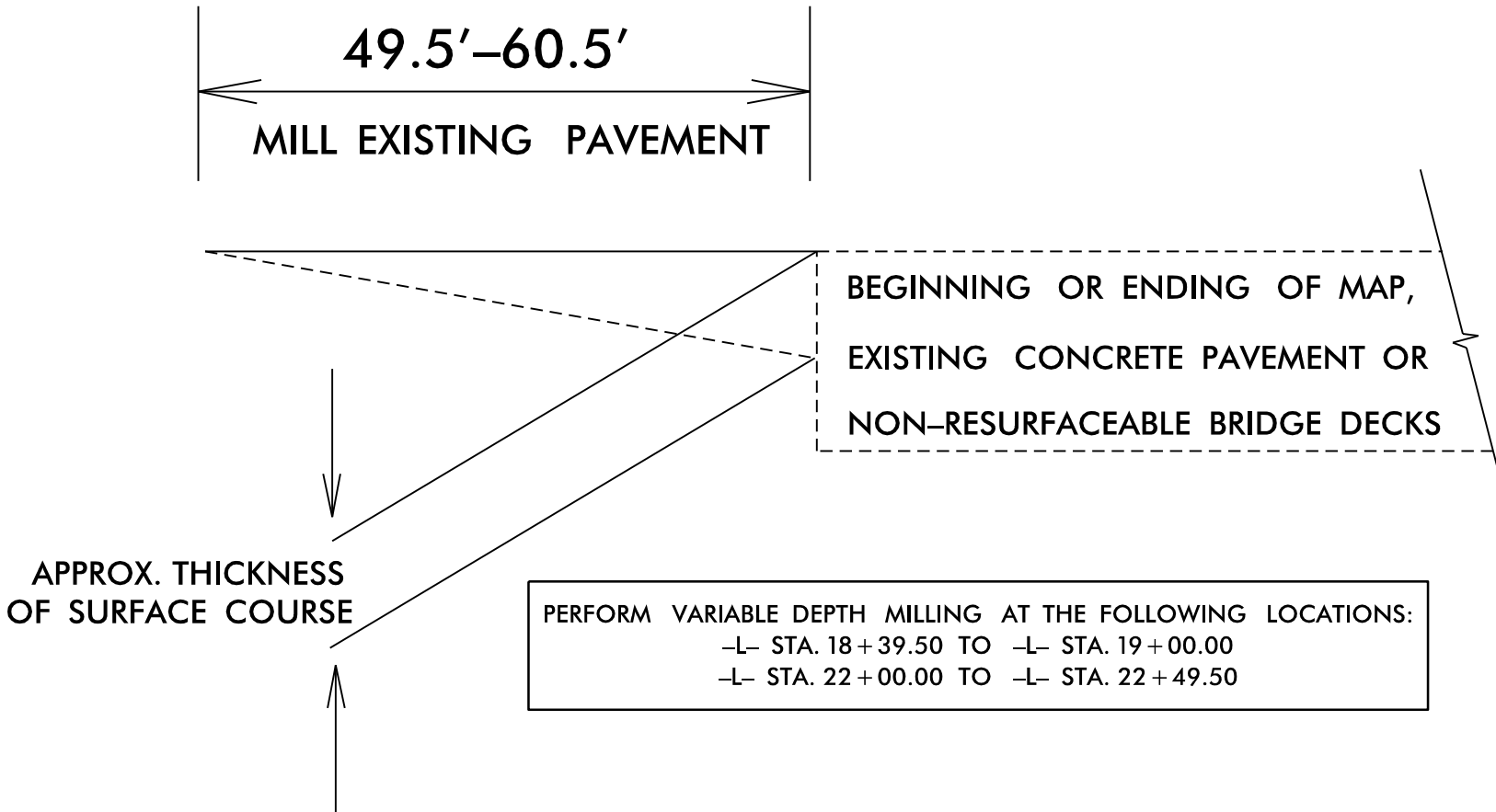
MILLING AT PAVEMENT TIE-INS

NOTES TO CONTRACTOR

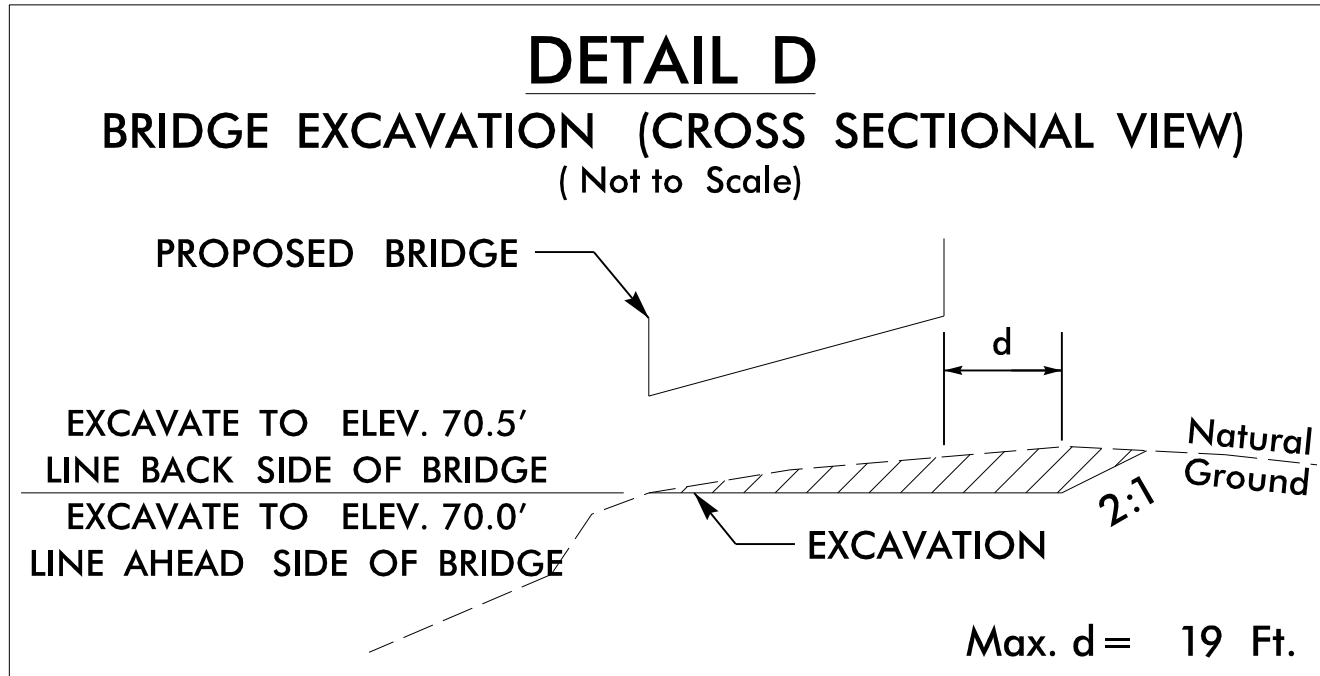
For surface mixes over 1" in thickness, mill the existing pavement in accordance with the following sketch as directed by the Engineer.

Locations shall include ties into existing concrete pavement, at bridge approaches where the bridge will not be resurfaced, and at the beginning and ending point of each resurfacing map.

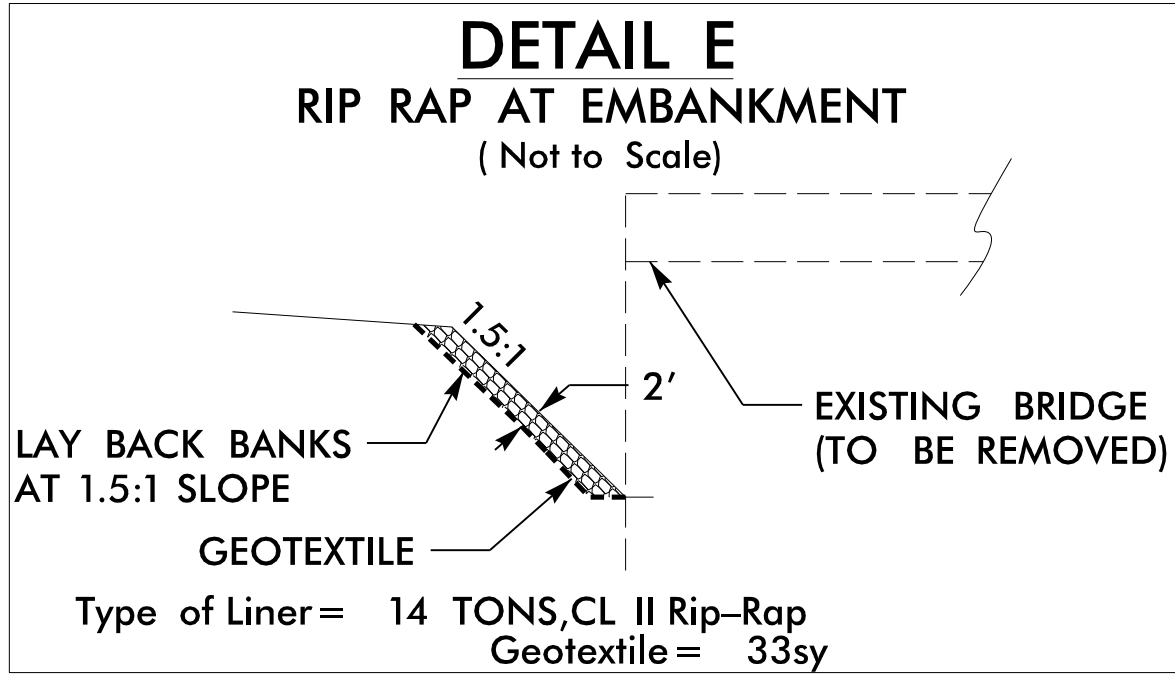
Perform the work in accordance with Section 607 of the January 2012 North Carolina Department of Transportation Standard Specifications for Roads and Structures. Resurfacing will be accomplished at the same time as the milling operation.



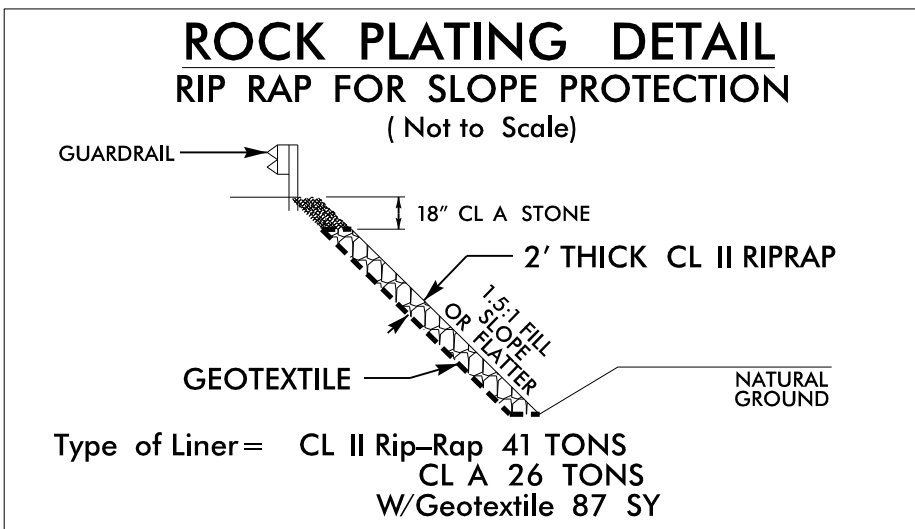
-L- STA. 17+90 TO STA. 19+00 (LT)



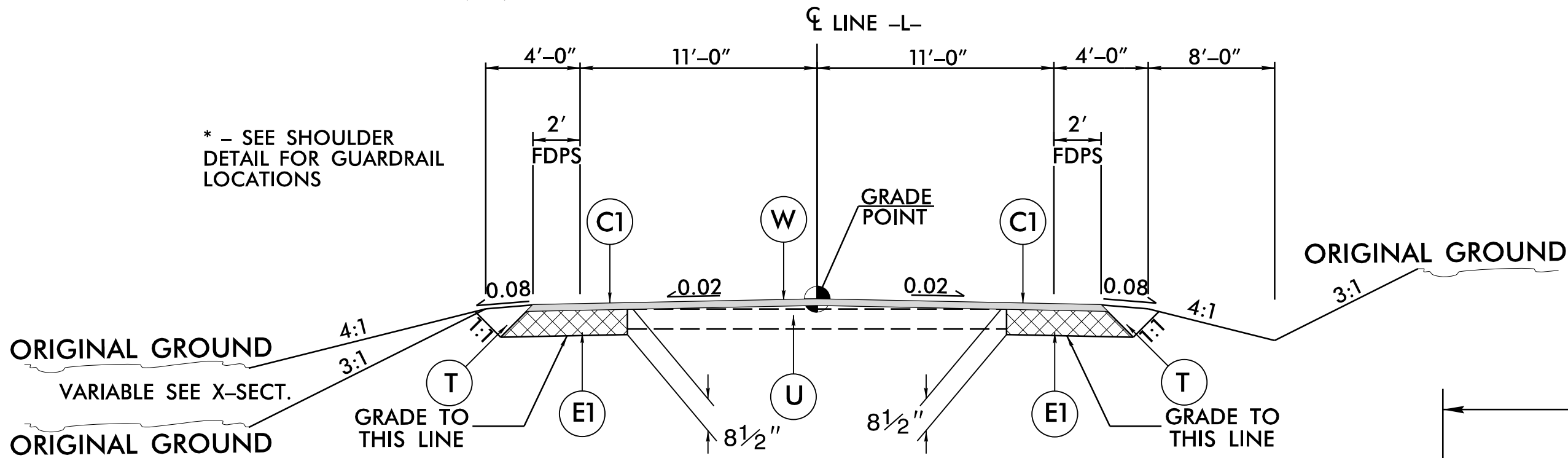
-L- STA. 19+98 TO STA. 20+14 (RT)
-L- STA. 20+62 TO STA. 20+95.5 (RT)



-L- STA. 20+16
-L- STA. 20+68.5

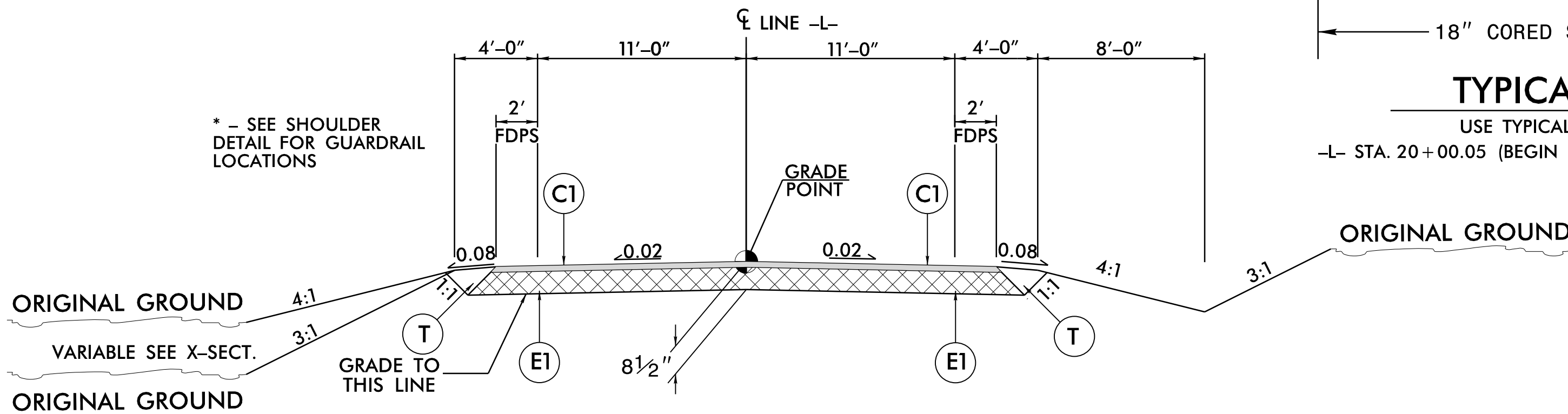


FROM -L- STA. 20+91.51 LT. TO STA. 21+50.00 LT.
FROM -L- STA. 20+91.51 RT. TO STA. 21+00.00 RT.



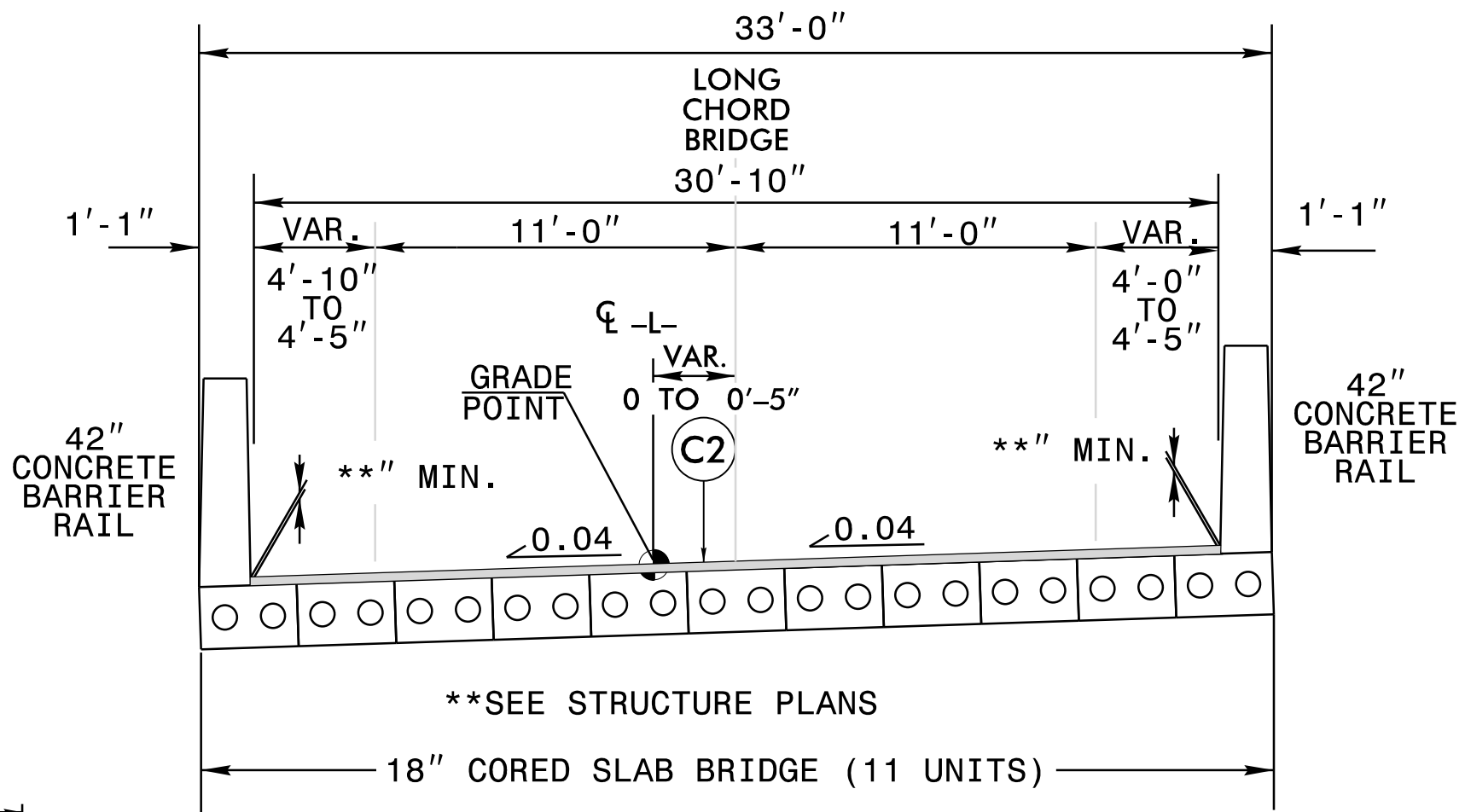
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:
-L- STA. 18+39.50 TO -L- STA. 19+50.00
-L- STA. 21+00.00 TO -L- STA. 22+49.50



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS:
-L- STA. 19+50.00 TO -L- STA. 20+00.25 (BEGIN BRIDGE)
-L- STA. 20+92.76 (END BRIDGE) TO -L- STA. 21+00.00



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS:
-L- STA. 20+00.05 (BEGIN BRIDGE) TO -L- STA. 20+92.76 (END BRIDGE)

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.70	2A-1
ROADWAY DESIGN ENGINEER 5/30/2017 NORTH CAROLINA PROFESSIONAL SEAL 22999 GREGORY S. PUNIS	HYDRAULICS ENGINEER 5/30/2017 NORTH CAROLINA PROFESSIONAL SEAL 34959 DUSTIN D. CRECH
1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-6377 Bus: 919 851 8077 Fax: 919 851 8107	
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION	

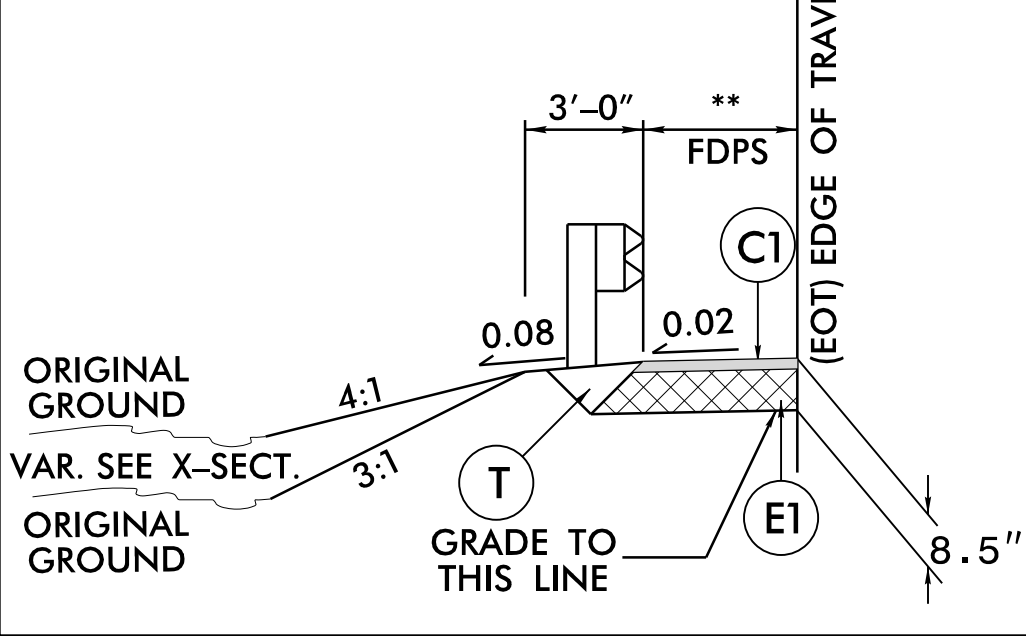
BRIDGE #230198

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SHOULDER DETAIL

-L- STA. 19+24.96 TO -L- STA. 19+99.96 LT.
-L- STA. 20+93.05 TO -L- STA. 21+68.08 LT.
-L- STA. 19+25.47 TO -L- STA. 20+00.54 RT.
-L- STA. 20+92.47 TO -L- STA. 21+67.47 RT.

USE SHOULDER DETAIL IN
CONJUNCTION WITH TYPICAL SECTIONS NO. 1 & 2:
** SEE PLANS



5/30/2017 230198_RdJ_tup.dgn
11:56:00 AM

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L- LT.	20 + 91.79	21 + 17.00	25.2
	TOTAL:		25.2
	SAY:		26.0 FT.

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD
-L-	19 + 50.00	19 + 38.00	CL	136.67
-L-	20 + 68.00	21 + 00.00	CL	60.78
			TOTAL:	197.44
			SAY:	200.00

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, SHOULDER BORROW, FINE GRADING, CLEARING AND GRUBBING, REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

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

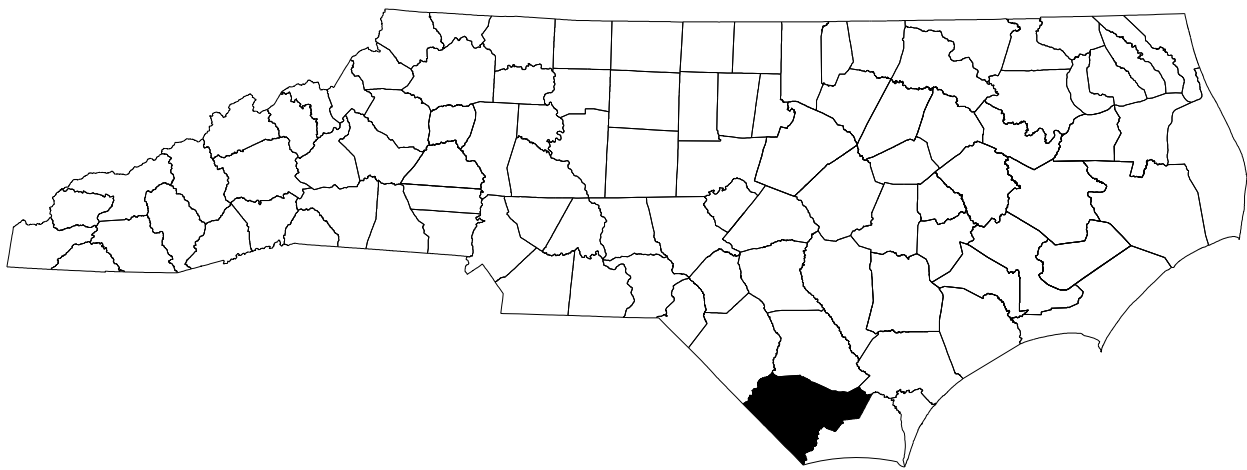
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GUARDRAIL SUMMARY

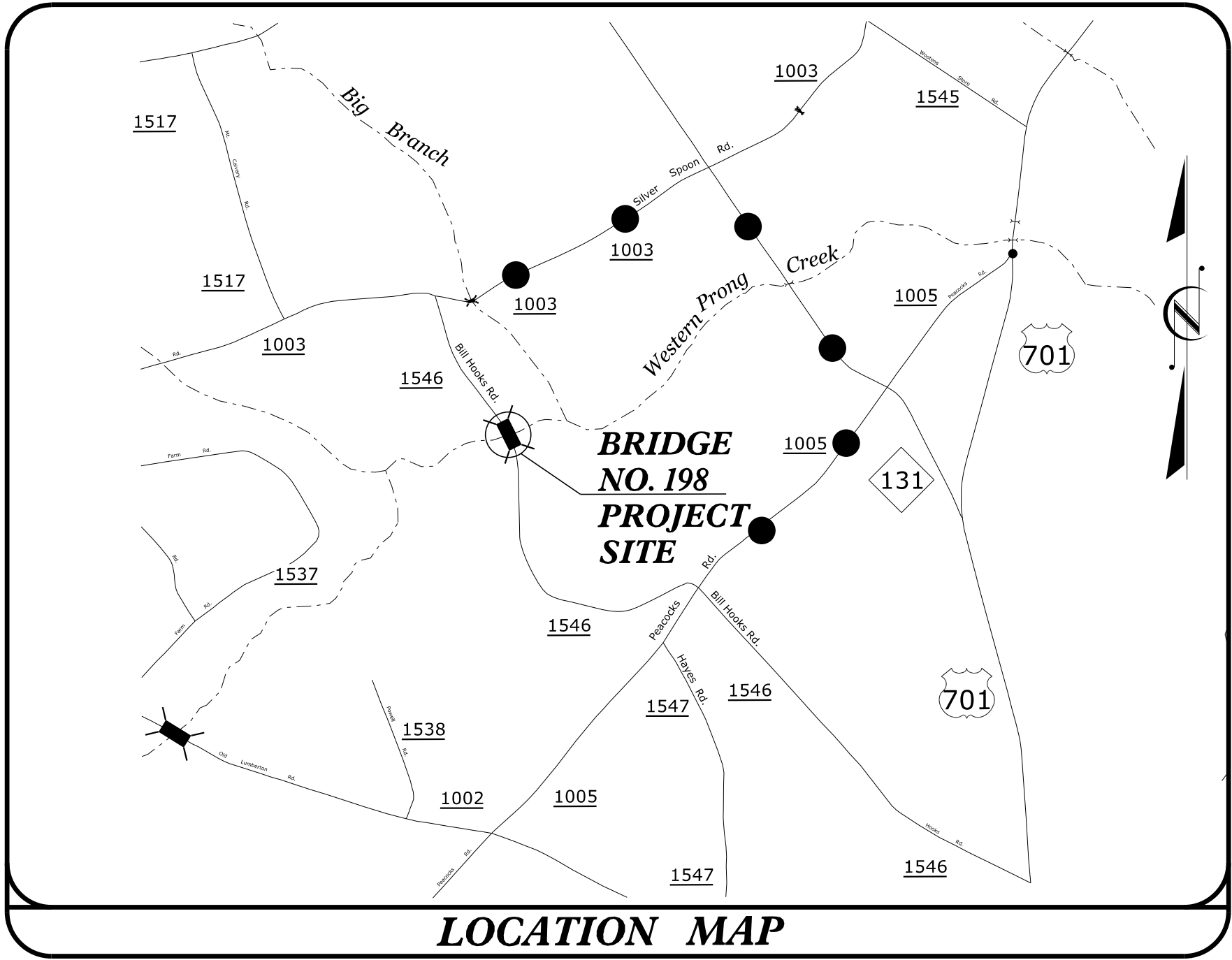
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN
COLUMBUS COUNTY



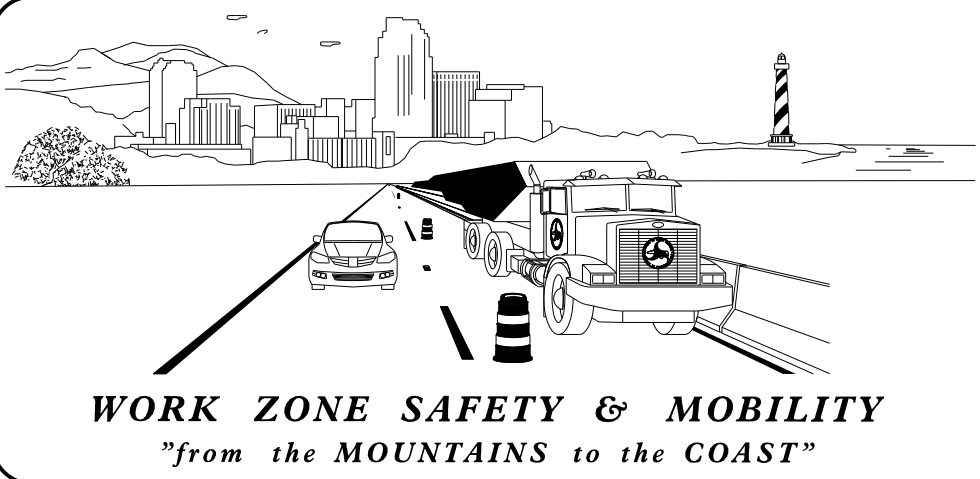
17BP.6.R.70



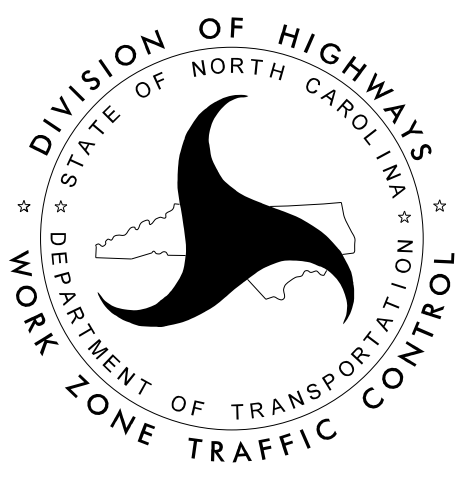
DETOUR ROUTE

LOCATION: REPLACEMENT OF BRIDGE NO. 230198 OVER WEST PRONG CREEK ON SR 1546 (BILL HOOKS ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



N.C.D.O.T. WORK ZONE TRAFFIC CONTROL 1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561 750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY) PHONE: (919) 773-2800 FAX: (919) 771-2745	
STATE TRAFFIC MANAGEMENT ENGINEER	
J. S. KITE, P.E.	TRAFFIC CONTROL PROJECT ENGINEER
M. SPRINGER, P.E.	TRAFFIC CONTROL PROJECT DESIGN ENGINEER
S. B. JENNINGS	TRAFFIC CONTROL DESIGN ENGINEER



INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, LEGEND AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, GENERAL NOTES AND PHASING
TMP-2	SPECIAL SIGN DESIGN(S)
TMP-2A	DETOUR BILL HOOKS RD. (SR 1546)

LEGEND

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PLAN PREPARED FOR NCDOT BY: GREG S. PURVIS, P.E. JESSE W. GILSTRAP SCOTT L. KENNEDY	PROJECT ENGINEER TRAFFIC CONTROL ENGINEER TRAFFIC CONTROL ENGINEER	APPROVED: _____ DATE: _____ SEAL DocuSigned by: Greg S. Purvis 01F0F7C206E3403
--	--	---



ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES

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.

TRAFFIC PATTERN ALTERATIONS

- A) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

- B) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

- C) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

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

TRAFFIC CONTROL DEVICES

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

PROJ. REFERENCE NO.	SHEET NO.
17BP.6.R.70	TMP-1A

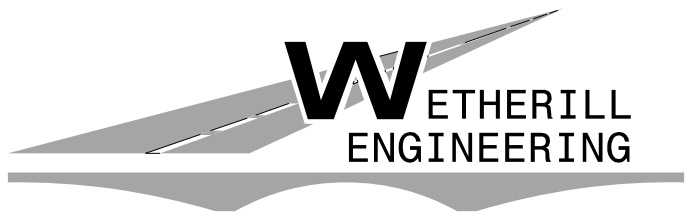
PHASING

NOTE: CONSTRUCT BRIDGE NO.230198 BEFORE BRIDGE NO. 2030196.

PHASE I

- STEP 1: - USING ROADWAY STANDARD DRAWING NO. 1101.03, SHEET 1 OF 9 AND SHEET TMP-2A CLOSE BILL HOOKS ROAD (SR 1546) TO TRAFFIC.
- STEP 2: - REMOVE EXISTING BRIDGE AND CONSTRUCT PROPOSED BRIDGE & APPROACHES, UP TO THE & INCLUDING THE FINAL LAYER OF SURFACE COURSE, AND PLACE FINAL PAVEMENT MARKINGS (SEE ROADWAY PLANS AND FINAL PAVEMENT MARKING PLANS).
- STEP 3: - OPEN BILL HOOKS ROAD (SR 1546) TO THE FINAL TRAFFIC PATTERN AND REMOVE ALL TRAFFIC CONTROL DEVICES FROM THE PROJECT.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



WETHERILL
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

APPROVED:DATE:

SEAL



DocuSigned by:
Greg S. Purvis



DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

ROADWAY STANDARD
DRAWINGS, LEGEND,
GENERAL NOTES AND
PHASING

PROJ. REFERENCE NO.	SHEET NO.
17BP.6.R.70	TMP-2

SIGN NUMBER: name		BACKG COLOR: Fluorescent Orange		DESIGN BY: SLK		CHECKED BY: JWG		Sep 26, 2016	
TYPE: STATIONARY		COPY COLOR: Black		PROJECT ID: 17BP.6.R.70		DIV: 6			
QUANTITY: SEE PLANS		SYMBOL		X		Y		WID	
SIGN WIDTH: 3'-6"									
HEIGHT: 2'-0"									
TOTAL AREA: 7.0 Sq-Ft.									
BORDER TYPE: INSET									
RECESS: 0.38"									
WIDTH: 0.5"									
RADII: 1.5"									
NO. Z BARS:		MAT'L: 0.080" (2.0 mm) ALUMINUM							
LENGTH:									
USE NOTES: 1,2									
1. Legend and border shall be direct applied black non-reflective sheeting.									
2. Background shall be NC GRADE B fluorescent orange retroreflective sheeting.									
Letter spacings are to start of next letter									
B i l l H o o k s R o a d									
5.7" 31.2" 5.1"									
2'-0" 5.1" 5"D 3.8" 5"D 5.1"									
BORDER R=1.5" TH=0.5" IN=0.38"									
Spacing Factor is 1 unless specified otherwise									
LETTER POSITIONS									
Letter spacings are to start of next letter									
B i l l H o o k s R o a d									
5.7 4.1 1.8 1.8 0.8 5 4.3 3.7 3.8 3.5 2.3 5.1									
R o a d									
14.3 4 3.6 3.6 3 13.6									
NORTH CAROLINA D.O.T. SIGN DETAIL									
FILENAME: Guidesign6_091316									

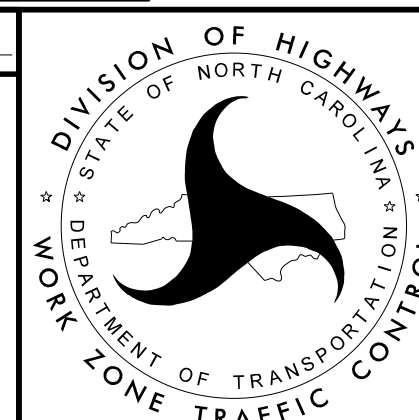


TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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Raleigh, N.C. 27606
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Bus: 919 851 8077
Fax: 919 851 8107

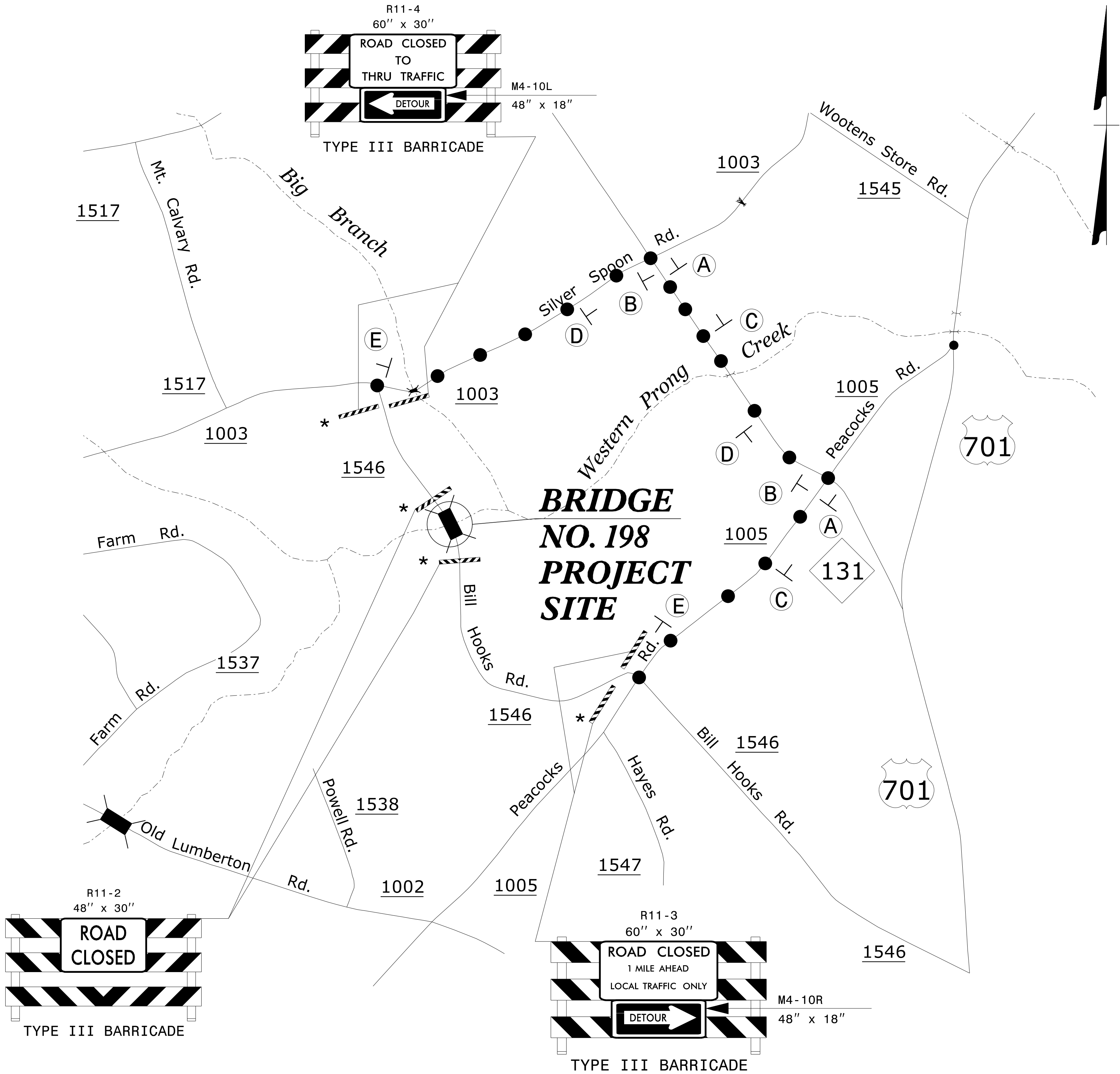
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

APPROVED: _____ DATE _____

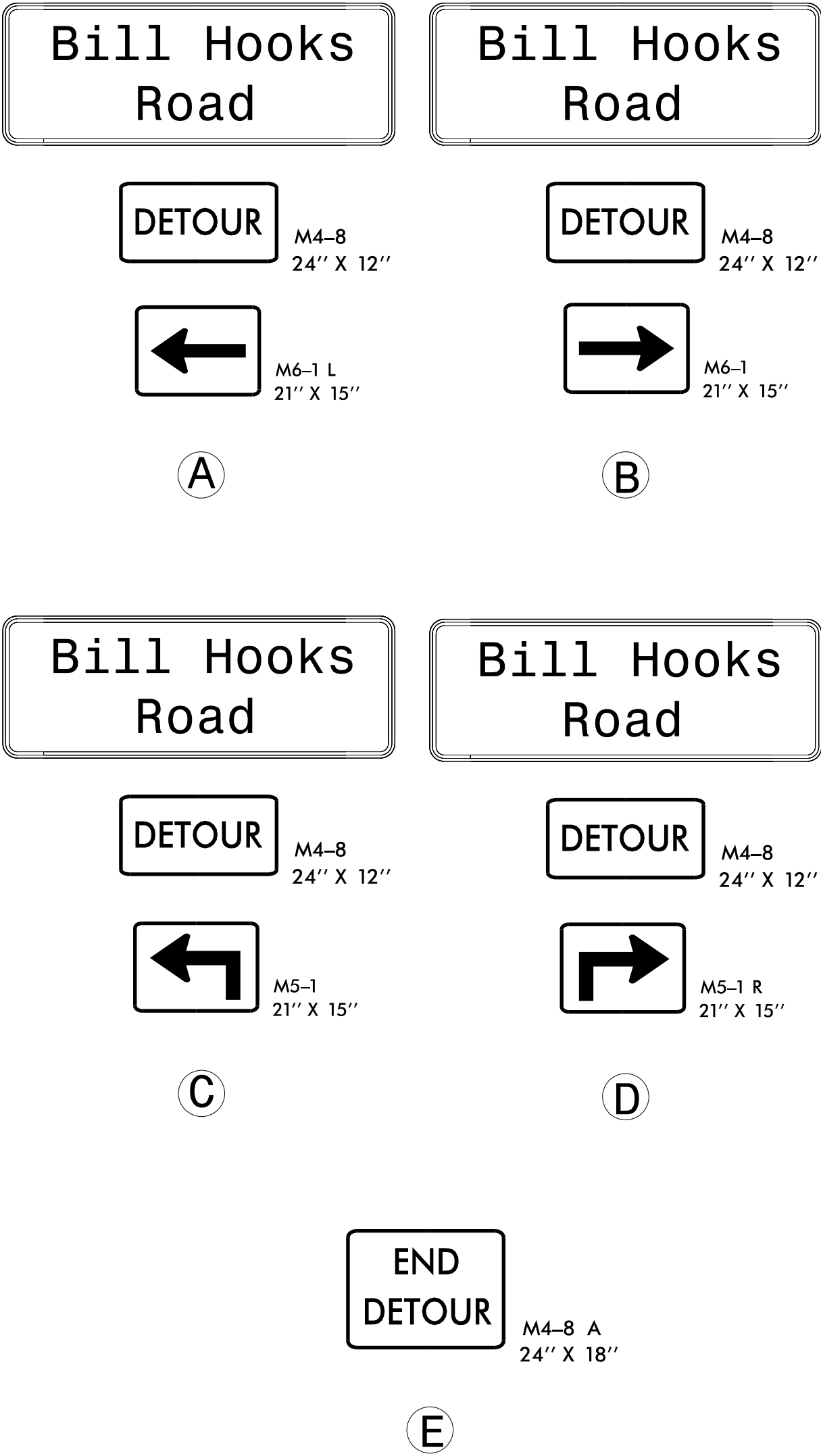


SPECIAL
SIGN
DESIGN(S)

PROJ. REFERENCE NO.	SHEET NO.
17BP.6.R.70	TMP-2A



DETOUR SIGNING



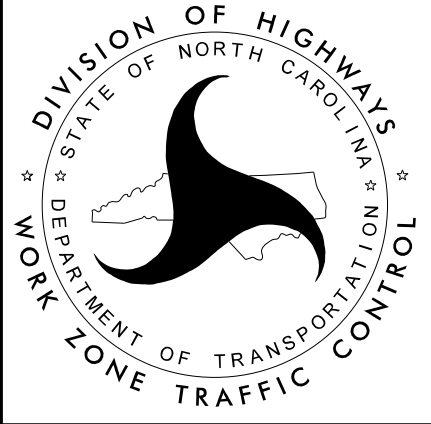
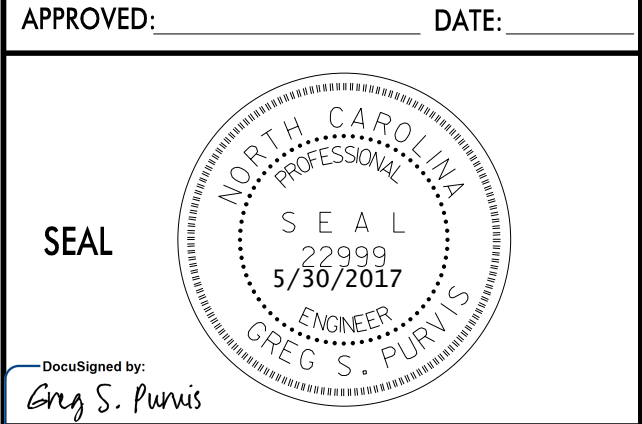
NOTES: SEE TMP-2 FOR "BILL HOOKS ROAD" SPECIAL SIGN DESIGN.
ALL DETOUR SIGN LOCATIONS ARE APPROXIMATE.
* SEE RSD 1101.03, SHEET 1 OF 9, FOR TYPE III BARRICADE LOCATION WITH ATTACHED SIGNING & ADDITIONAL SIGNING FOR ROAD CLOSURE.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

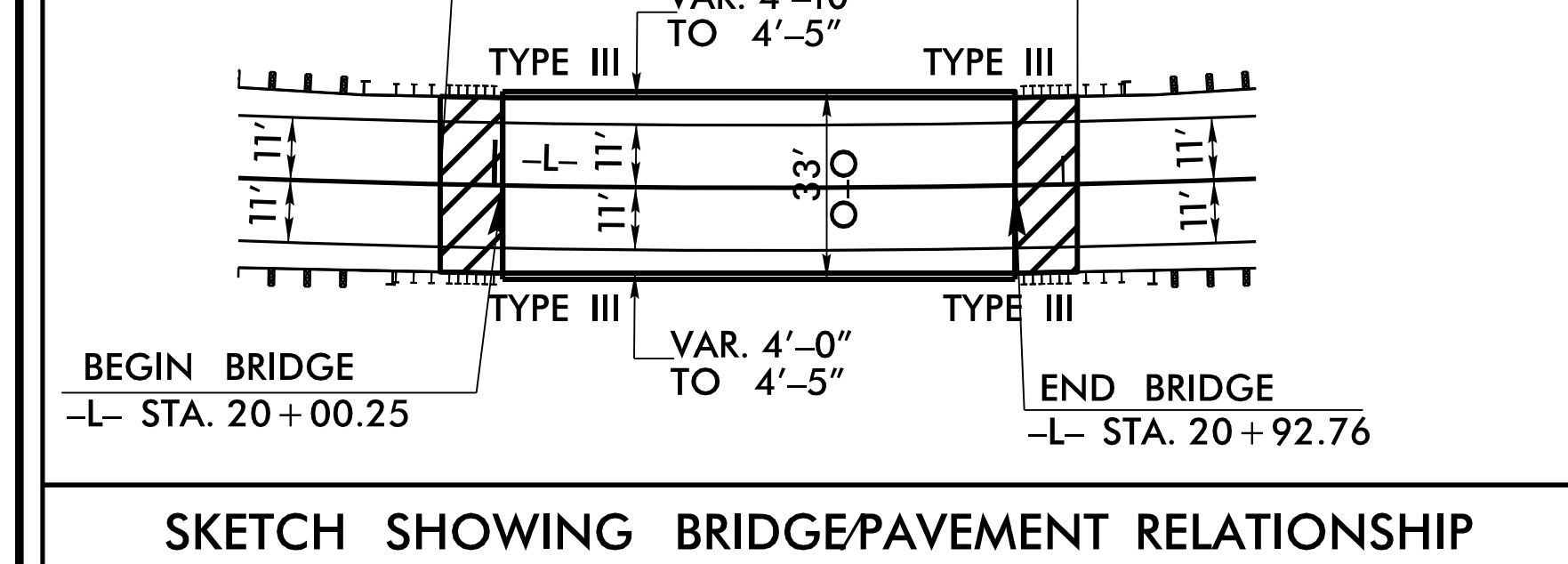
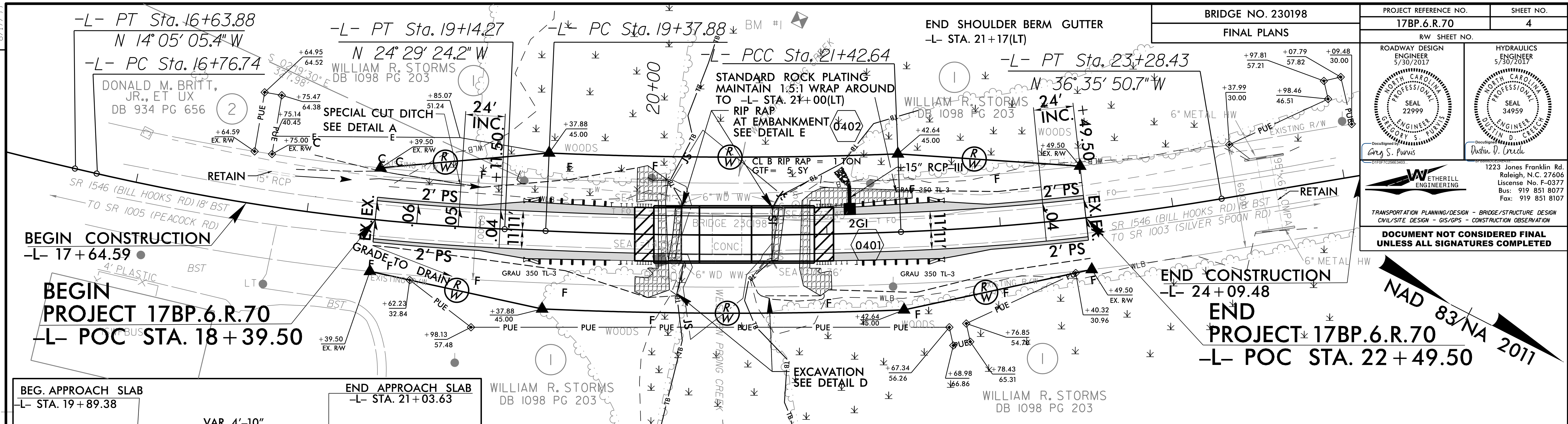


TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
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Bus: 919 851 8077
Fax: 919 851 8107



DETOUR
BILL HOOKS
ROAD
(SR 1546)



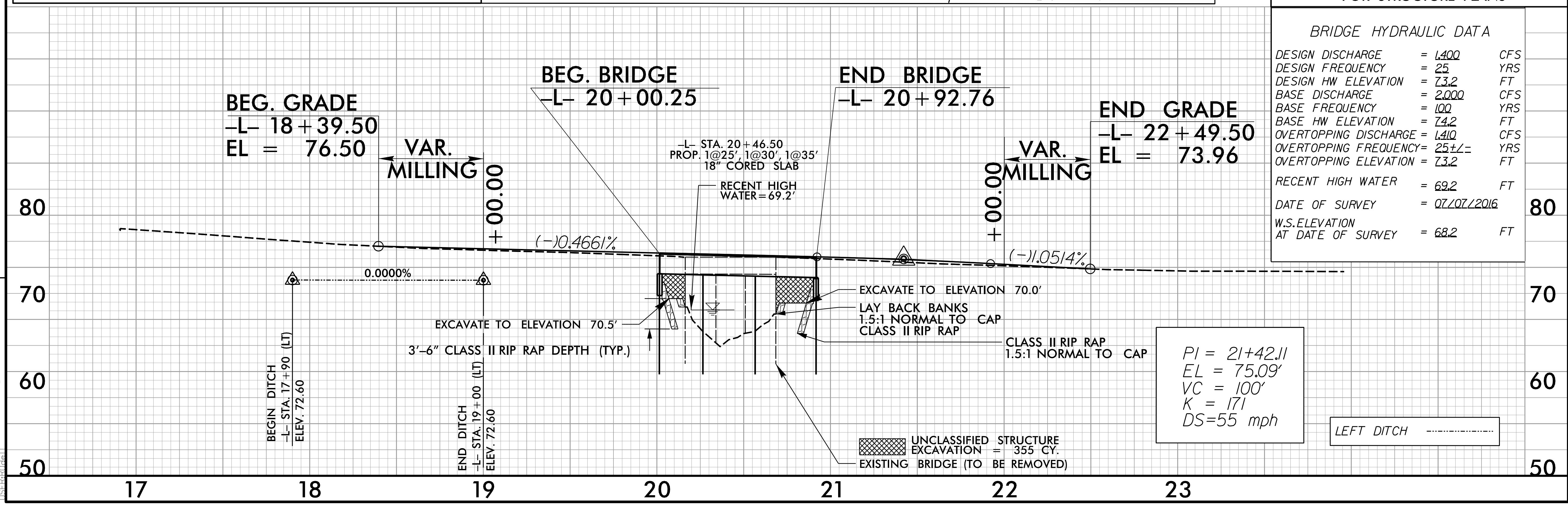
<i>PI Sta 15+45.20</i> $\Delta = 6^{\circ} 57' 20.2''$ (LT) $D = 2^{\circ} 55' 36.0''$ $L = 237.66'$ $T = 118.98'$ $R = 1,957.72'$ $SE = EXIST.$ $DS = N/A$	<i>PI Sta 17+95.83</i> $\Delta = 10^{\circ} 24' 18.8''$ (LT) $D = 4^{\circ} 22' 50.4''$ $L = 237.53'$ $T = 119.09'$ $R = 1,307.92'$ $SE = EXIST.$ $DS = N/A$	<i>PI Sta 20+40.32</i> $\Delta = 4^{\circ} 49' 44.1''$ (LT) $D = 2^{\circ} 21' 29.8''$ $L = 204.77'$ $T = 102.44'$ $R = 2,429.57'$ $SE = .04$ $DS = 55mph$	<i>PI Sta 22+35.66</i> $\Delta = 7^{\circ} 16' 42.4''$ (LT) $D = 3^{\circ} 55' 03.1''$ $L = 185.79'$ $T = 93.02'$ $R = 1,462.55'$ $SE = EXIST.$ $DS = N/A$
--	---	---	---

BM1 ELEVATION = 70.98
N 244559 E 2070559
BL STATION 16+39.00 130 LEFT
BENCH TIE NAIL SET IN 20" CYPRESS TREE

SEE SHEET 2A-1 FOR DRAINAGE DETAILS

SEE SHEETS S-1 THRU S-22 FOR STRUCTURE PLANS

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 1,400	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 73.2	FT
BASE DISCHARGE	= 2,000	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 74.2	FT
OVERTOPPING DISCHARGE	= 1,410	CFS
OVERTOPPING FREQUENCY	= 25+/-	YRS
OVERTOPPING ELEVATION	= 73.2	FT
RECENT HIGH WATER	= 69.2	FT
DATE OF SURVEY	= 07/07/2016	
W.S.ELEVATION AT DATE OF SURVEY	= 68.2	FT



$PI = 21+42.11$
 $EL = 75.09'$
 $VC = 100'$
 $K = 171$
 $DS = 55 mph$

LEFT DITCH

5/30/2017 2:30:19 PM rdy_PSH.dgn

REVISIONS

5/24/2017
P:\2016\16150.01.COL\UMBUS.198\Traffic\TrafficControl\TCP\230198_TC_PMP_PSH_01.dgn
User:skennedy

17BP.6.R.70

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
COLUMBUS COUNTY

LOCATION: REPLACEMENT OF BRIDGE NO. 230198 OVER WEST PRONG CREEK
ON SR 1546 (BILL HOOKS ROAD)

ROADWAY STANDARD DRAWING

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

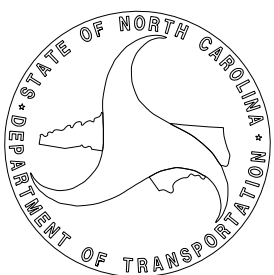
STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE
PMP-2	PAVEMENT MARKING DETAIL (SR 1546) BRIDGE NO. 230198

PLAN PREPARED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT

A.I. ALQUDWAH, PE SIGNING & DELINEATION REGIONAL ENGINEER
MITCH EATON SIGNING & DELINEATION PROJECT DESIGN ENGINEER/TECHNICIAN



TIP NO.	SHEET NO.
17BP.6.R.70	PMP - 1
APPROVED: _____	
DATE: _____	
SEAL	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PLAN PREPARED FOR NCDOT BY:		 1023 Jones Road Raleigh, N.C. 27604 Phone: 919.850.8077 Fax: 919.850.8077
GREG S. PURVIS, P.E.		PROJECT ENGINEER
JESSE W. GILSTRAP		TRAFFIC CONTROL ENGINEER
SCOTT L. KENNEDY		TRAFFIC CONTROL ENGINEER

GENERAL NOTES

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.

- A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE
AS FOLLOWS:

ROAD NAME	MARKING	MARKER
BRIDGE NO. 230198 SR 1546 (BILL HOOKS RD.)	PAINT	PERMANENT RAISED
BRIGE, SR 1546 (BILL HOOKS RD.)	PAINT	PERMANENT RAISED

- B) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING
SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING
TIME OF THE FIRST.
- C) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- D) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- E) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY
THE ENGINEER.

PROJ. REFERENCE NO.	SHEET NO.
17BP.6.R.70	PMP-2

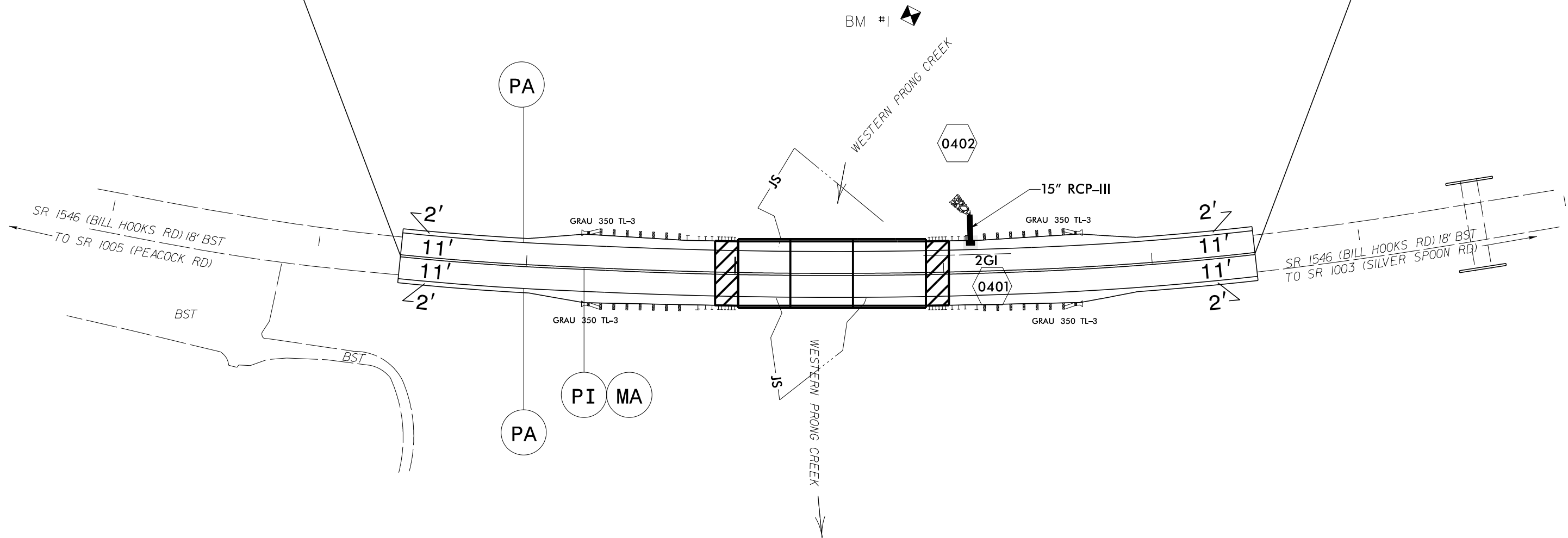
15+00

20+00

BEGIN MARKING
CONSTRUCTION PROJECT 17BP.6.R.70
-L- STA. 18+39.50
TIE TO EXISTING
PAVEMENT MARKINGS

END MARKING
CONSTRUCTION PROJECT 17BP.6.R.70
-L- STA. 22+49.50
TIE TO EXISTING
PAVEMENT MARKINGS

BRIDGE NO 230198
SR 1546
(BILL HOOKS RD)



PAVEMENT MARKING SCHEDULE

SYBOL	DESCRIPTION	PAY ITEM
		FINAL PAVEMENT MARKINGS
		<u>PAINT (4")</u>
PA	WHITE EDGELINE	
PI	YELLOW DOUBLE CENTER	
		<u>MARKERS</u>
MA	YELLOW/YELLOW	

5/24/2017
P:\2016\16150.01.COLUMBUS_198\Traffic\TrafficControl\TCP\230198_TC_PMP_PSH_02.dgn
User:skennedy



TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

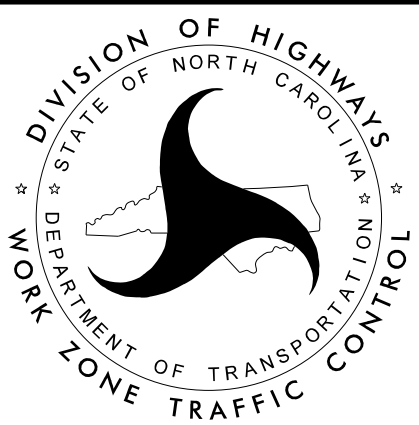
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

APPROVED: _____
DATE: _____

SEAL

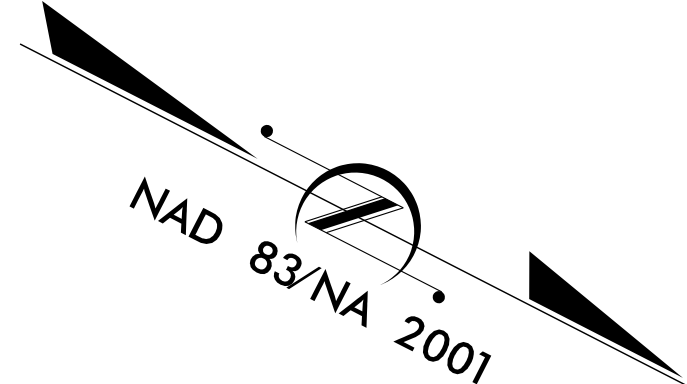
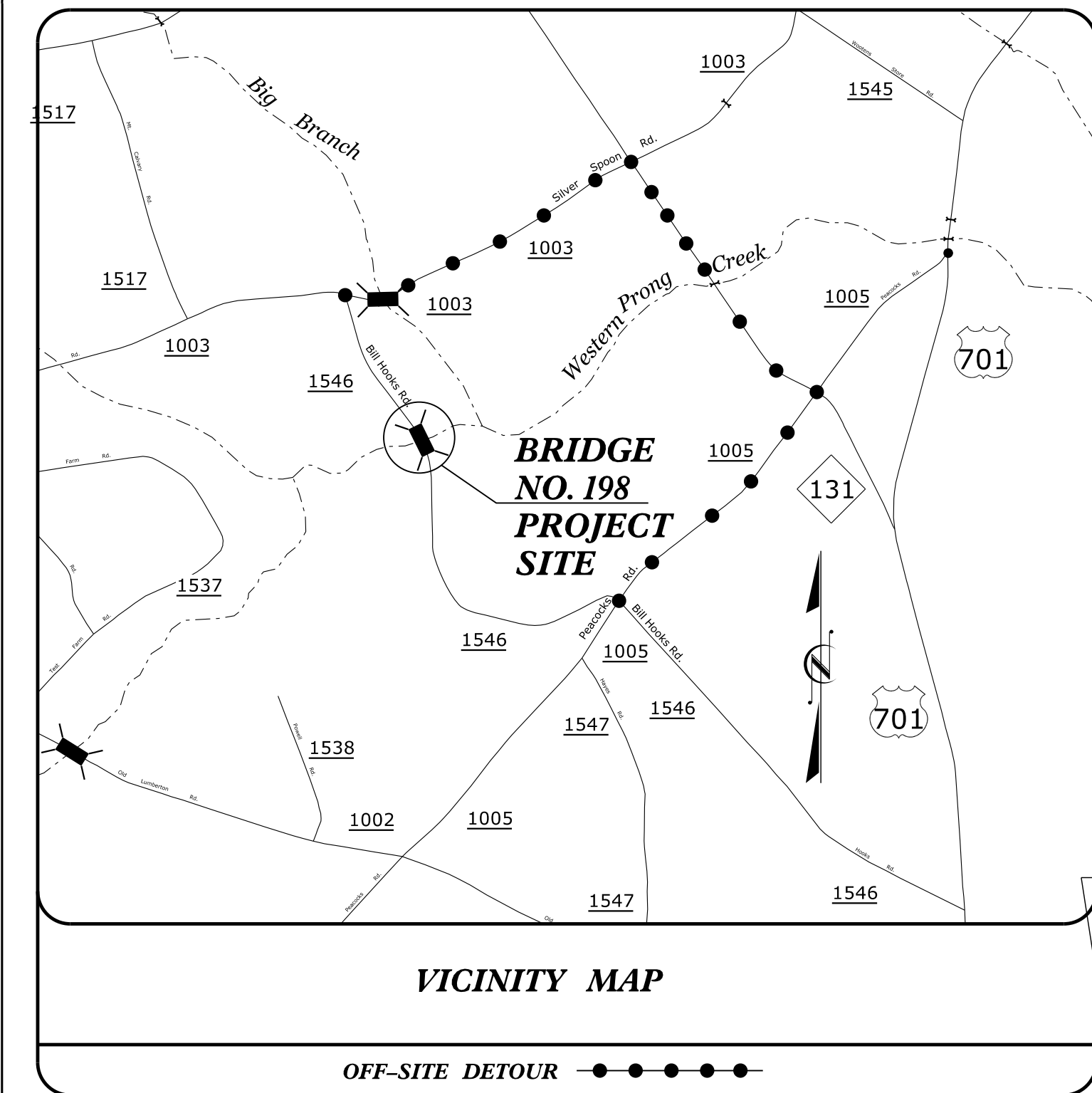
DocuSigned by:
Eng S. Purvis
DWP OF NC 25663403



FINAL PAVEMENT
MARKING PLAN
AND SCHEDULE

5/30/2017 11:20:52 AM
BUS_198 Erosion Control EC-TSH & DETAILS.dgn

TIP PROJECT: SF-230198



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

BRIDGE #230198

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

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

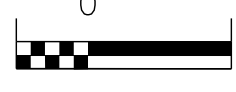
GRAPHIC SCALE



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 3, 2011
ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND
NATURAL RESOURCES DIVISION OF WATER QUALITY.

Prepared in the Office of:



1223 Jones Franklin Rd. Raleigh, N.C. 27606

License No. F-0377

Bus: 919.851.8077 Fax: 919.851.8107

2012 STANDARD SPECIFICATIONS

Designed by:

DUSTIN D. CREECH

NAME

3019

LEVEL III CERTIFICATION NO.

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 2012 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		

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

BRIDGE NO. 230198 OVER WEST PRONG CREEK ON
SR 1005 (BILL HOOKS RD.)
BEGIN CONSTRUCTION
-L- POC STA. 17 + 90.00
GRADING, DRAINAGE, PAVING & STRUCTURE

BEGIN PROJECT 17BP.6.R.70

-L- POC STA. 18 + 39.50

END BRIDGE

-L- POC STA. 20 + 92.76

-L-
SR 1546
(BILL HOOKS RD.)

BEGIN BRIDGE

-L- POC STA. 20 + 00.25

END PROJECT 17BP.6.R.70

-L- POC STA. 22 + 49.50

END CONSTRUCTION

-L- POT STA. 24 + 09.48

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	△ △ △
1622.01	Temporary Berms and Slope Drains	— — —
1630.02	Silt Basin Type B	□
1633.01	Temporary Rock Silt Check Type-A	□
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	□
1633.02	Temporary Rock Silt Check Type-B	□
	Wattle/ Coir Fiber Wattle	— — —
	Wattle/ Coir Fiber Wattle with Polyacrylamide (PAM)	— — —
1634.01	Temporary Rock Sediment Dam Type-A	□
1634.02	Temporary Rock Sediment Dam Type-B	□
1635.01	Rock Pipe Inlet Sediment Trap Type-A	□
1635.02	Rock Pipe Inlet Sediment Trap Type-B	□
1630.04	Stilling Basin	□
1630.06	Special Stilling Basin	□
	Rock Inlet Sediment Trap:	
1632.01	Type A	A □
1632.02	Type B	B □
1632.03	Type C	C □
	Skimmer Basin	□
	Tiered Skimmer Basin	□
	Infiltration Basin	□

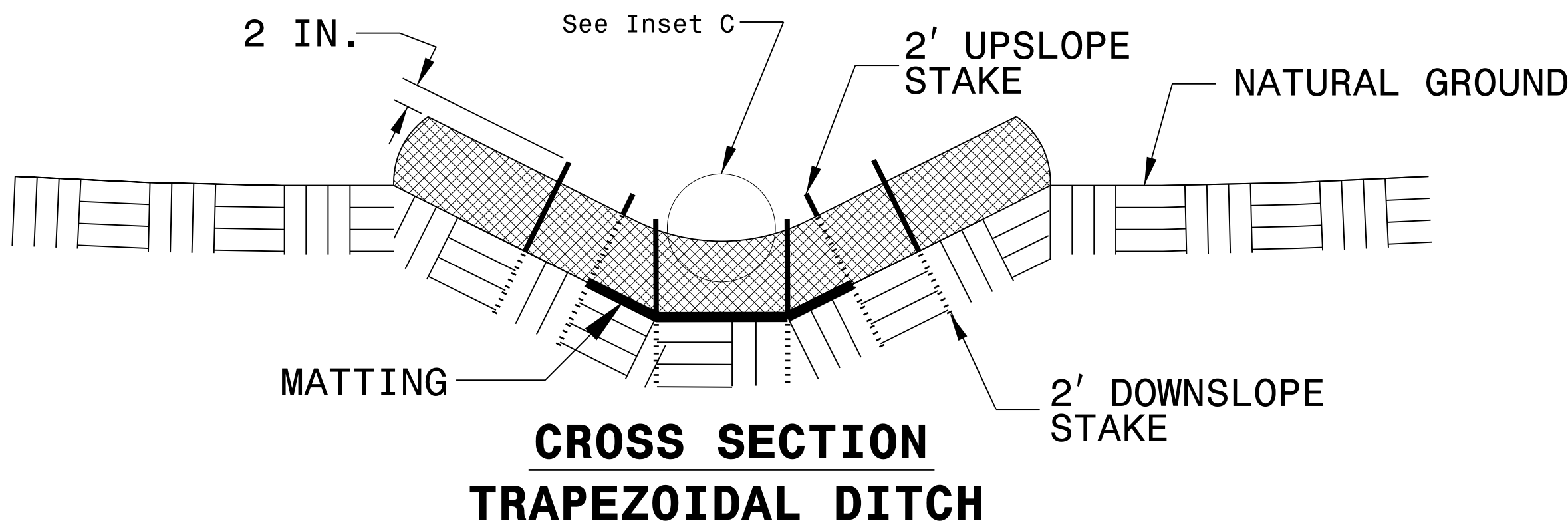
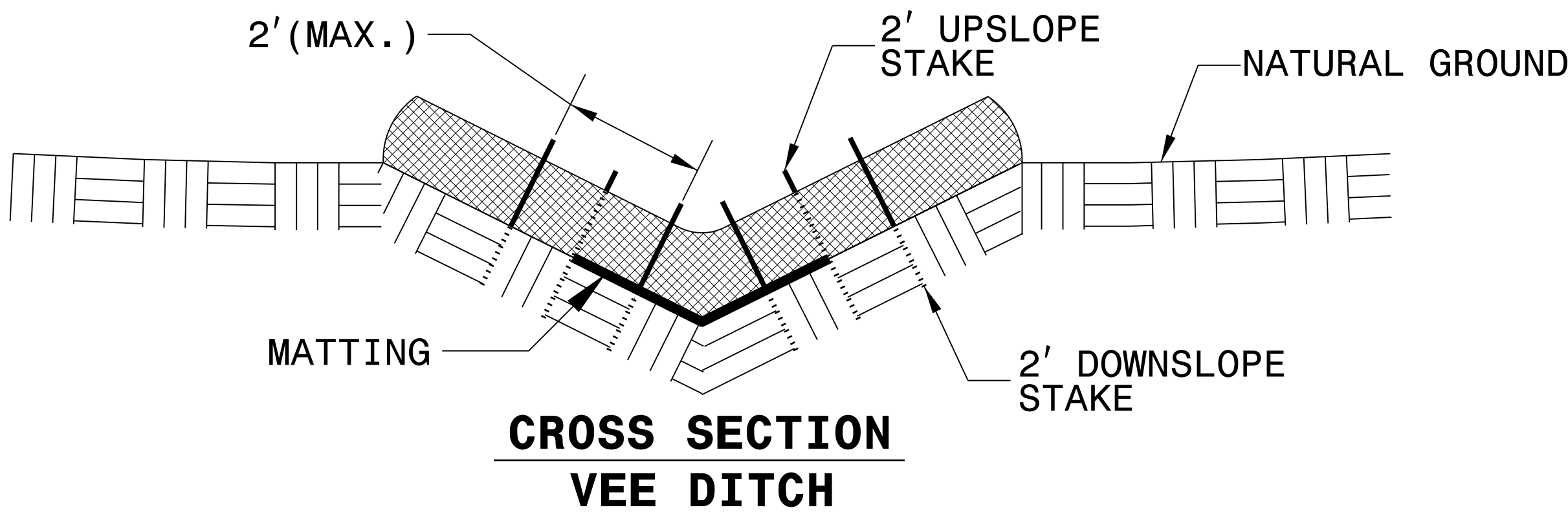
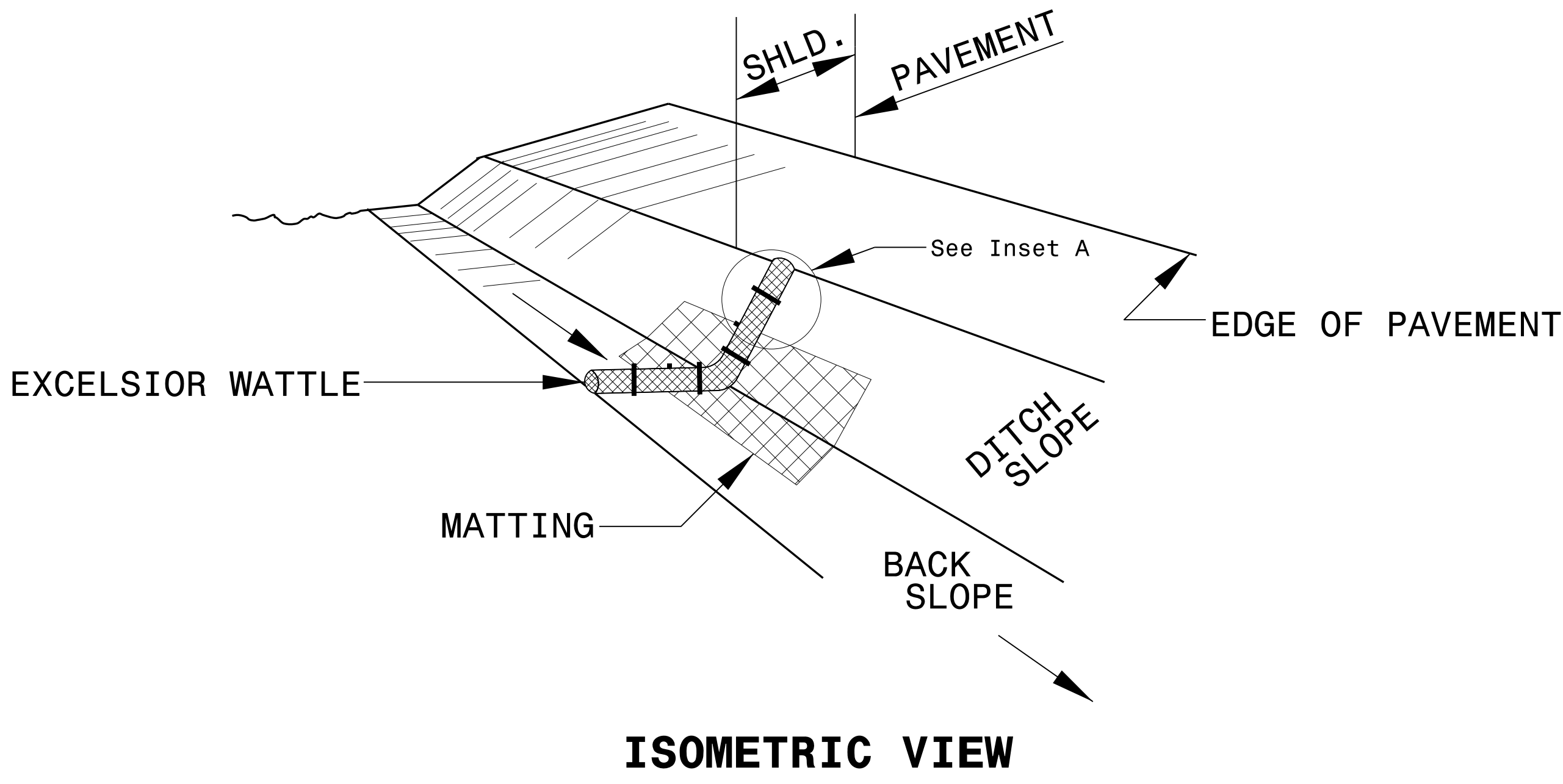
THIS PROJECT CONTAINS
EROSION CONTROL PLANS
FOR CLEARING AND
GRUBBING PHASE OF
CONSTRUCTION.

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL
REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY
NEED TO BE INSTALLED AS DIRECTED BY THE
ENGINEER.

WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL

PROJECT REFERENCE NO.		SHEET NO.	
17BP.6.R.70		EC-2A	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	



NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

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

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

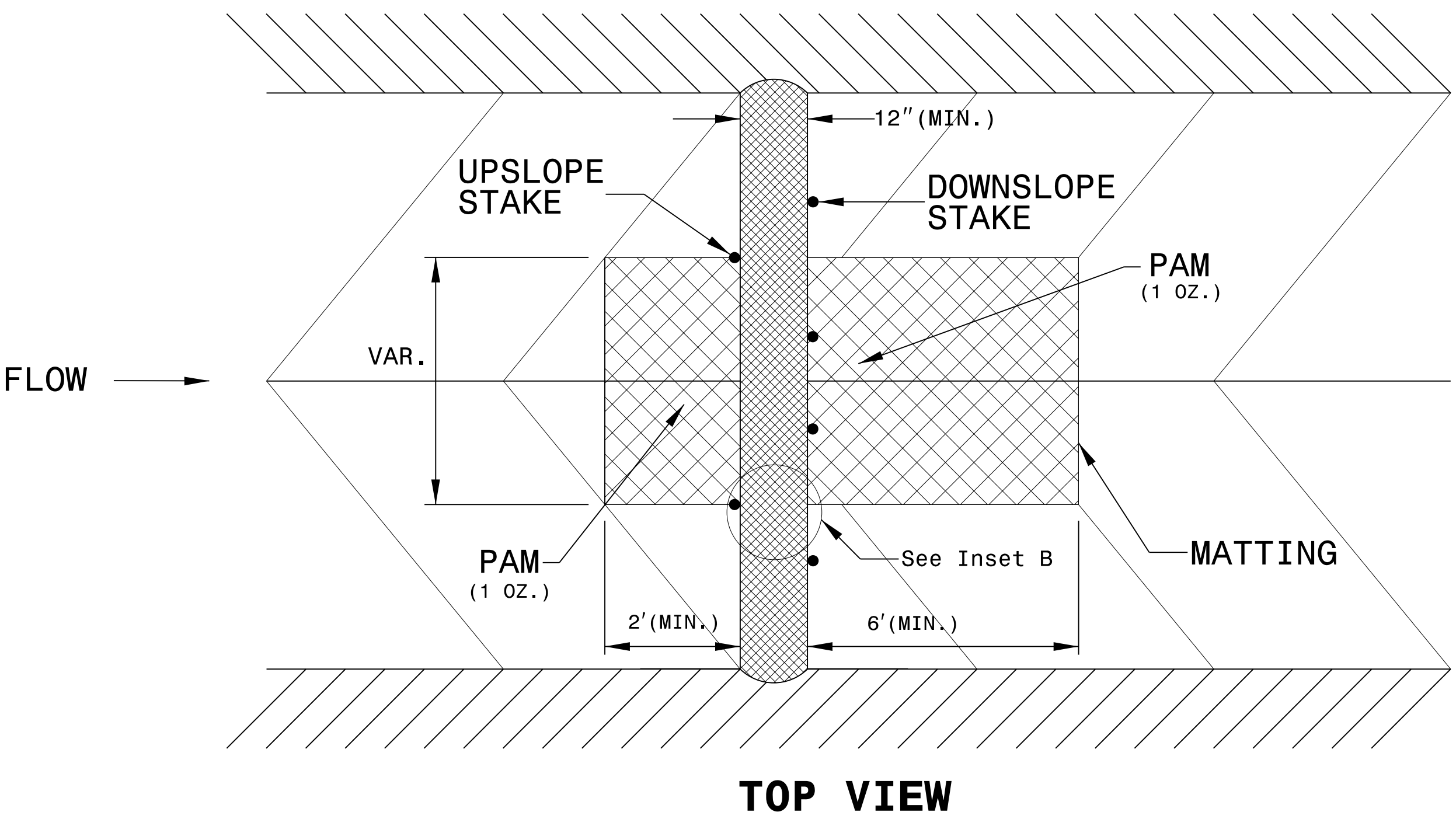
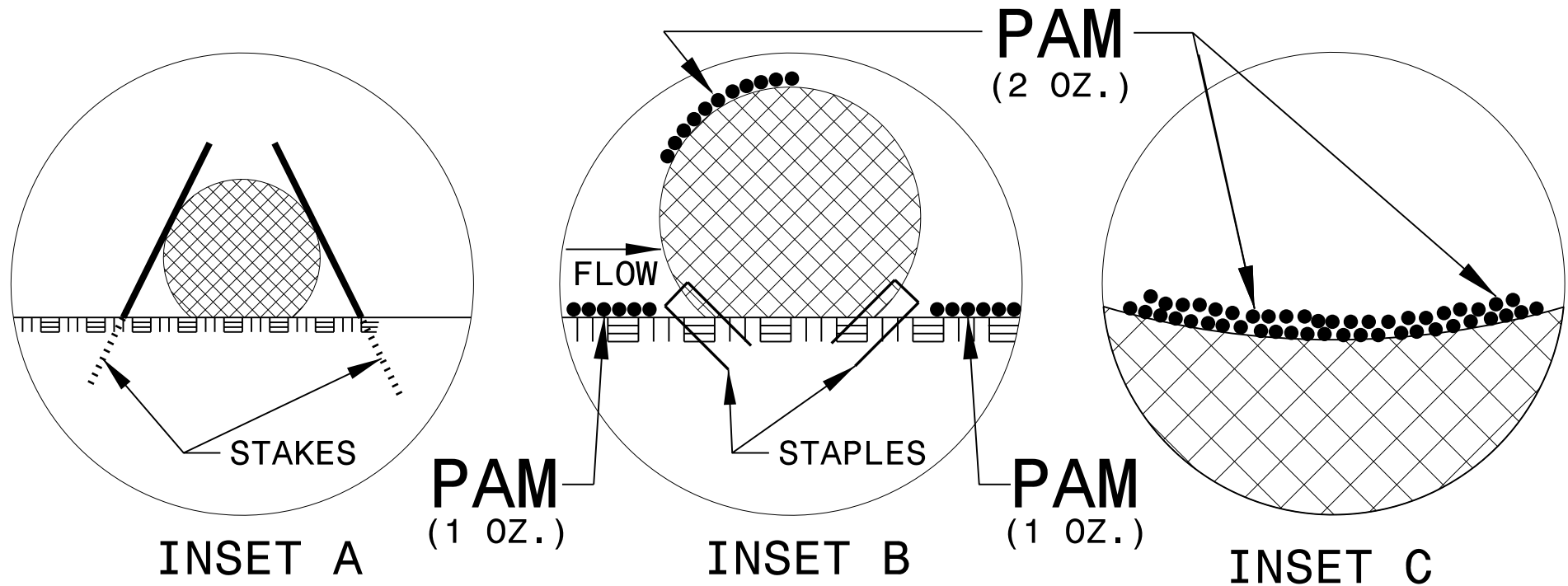
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

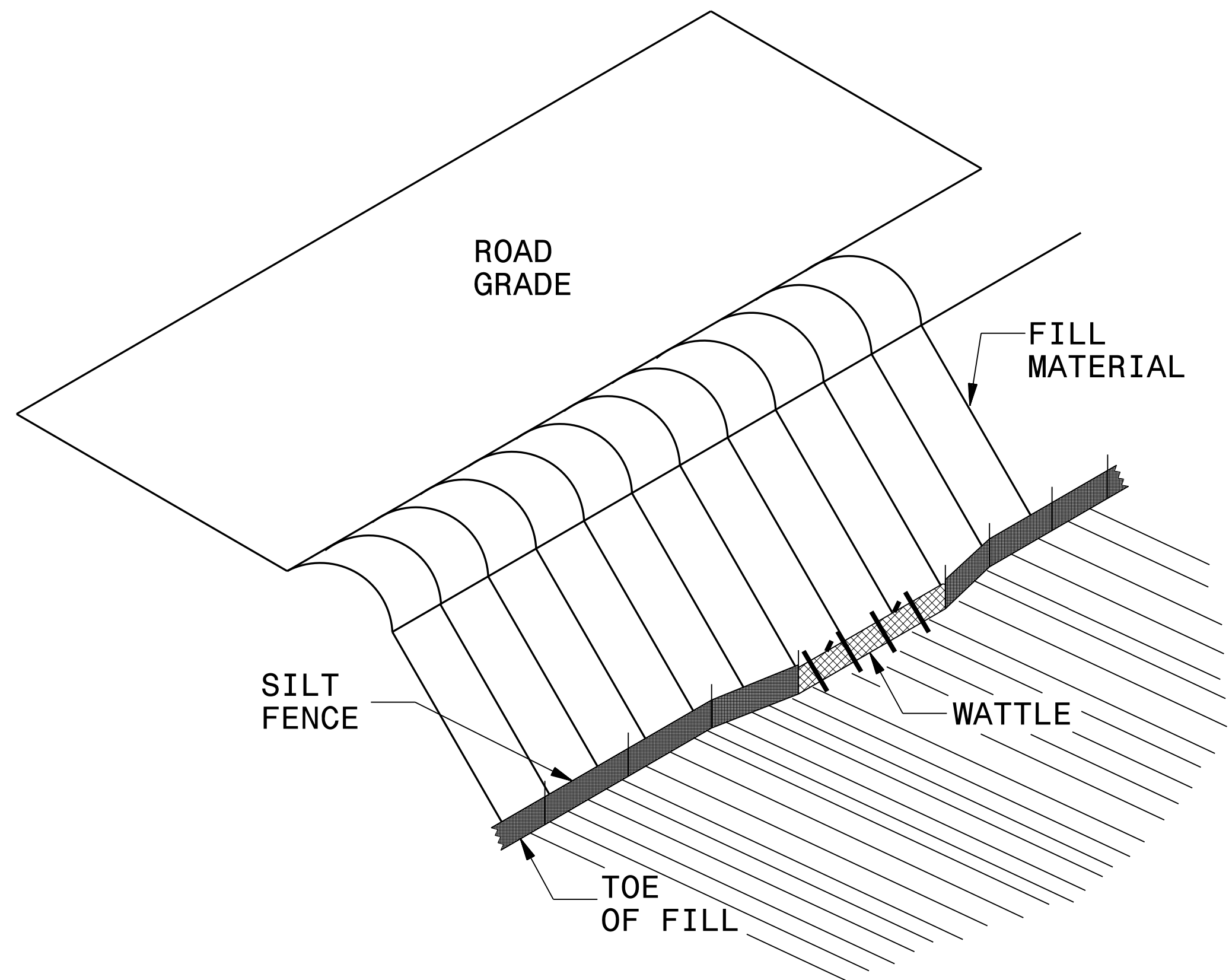
PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.

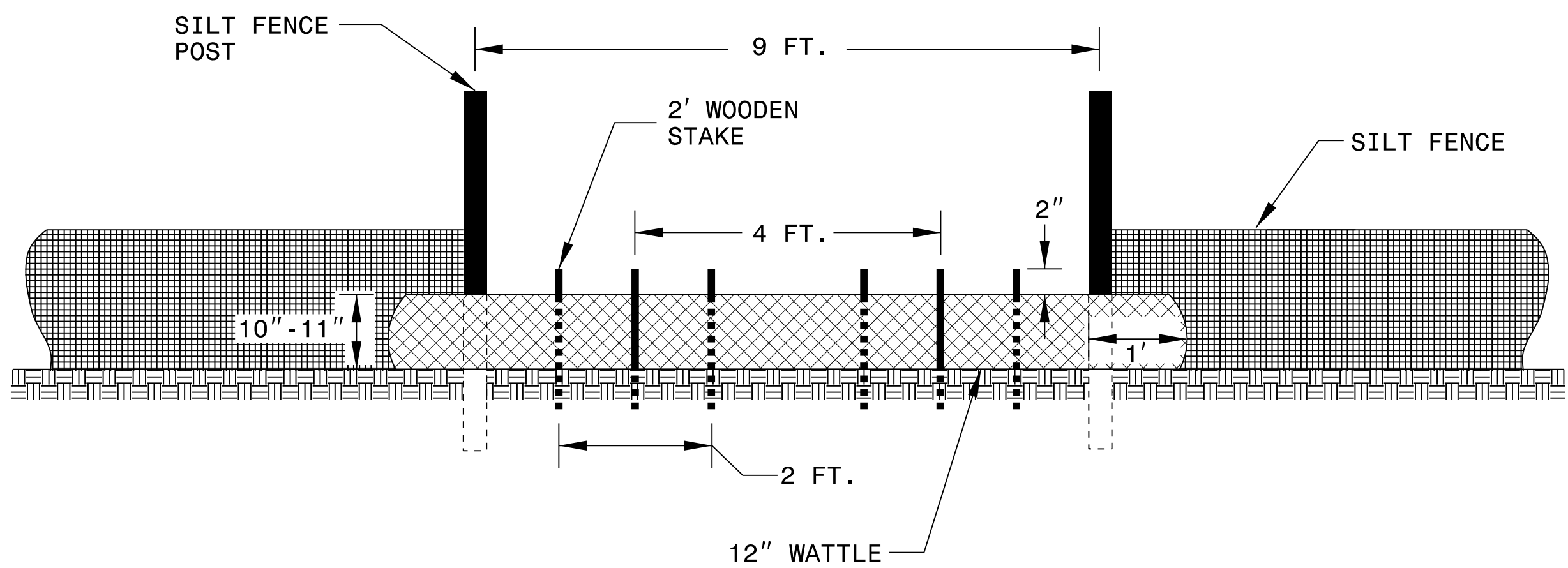


SILT FENCE WATTLE BREAK DETAIL

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.70	EC-2B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



ISOMETRIC VIEW

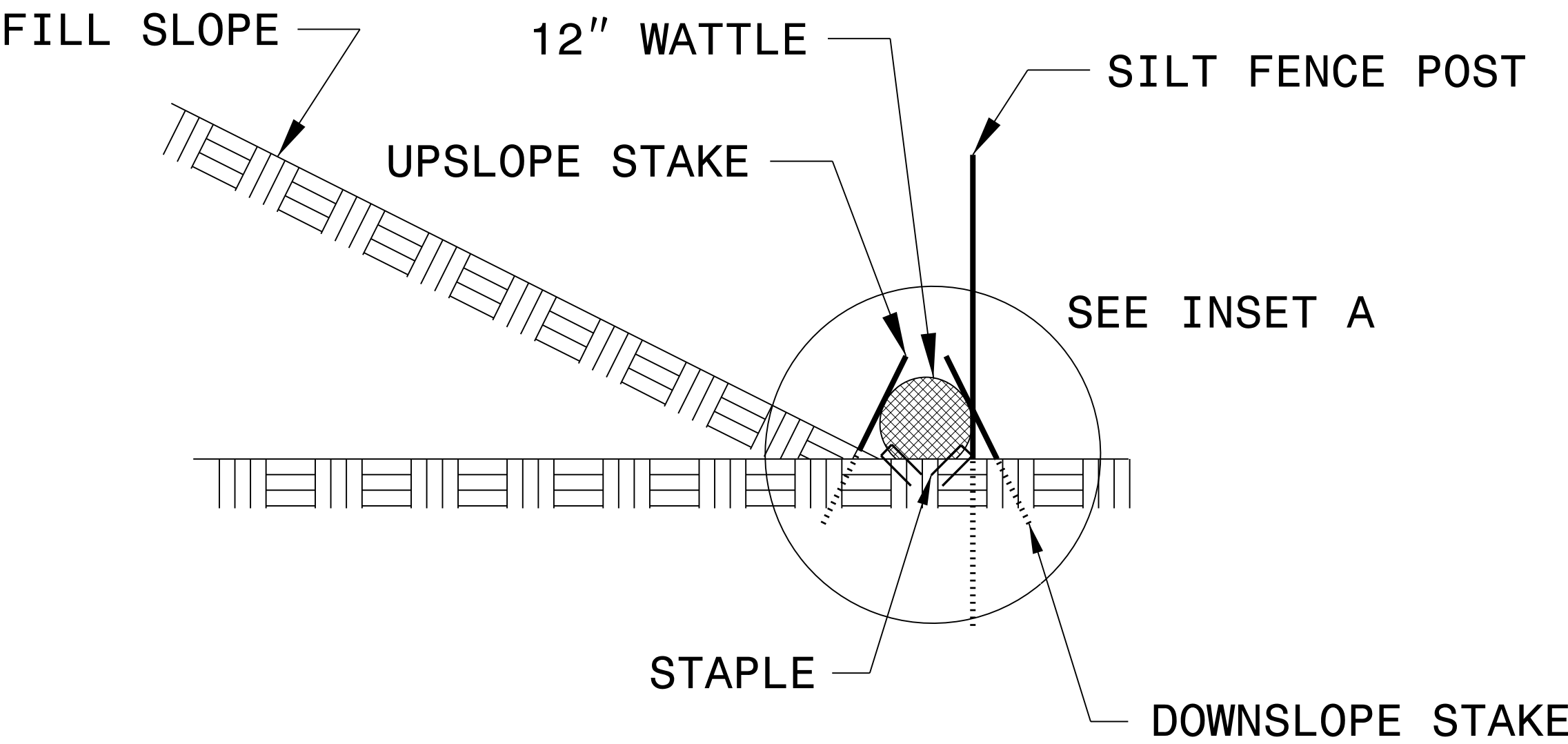
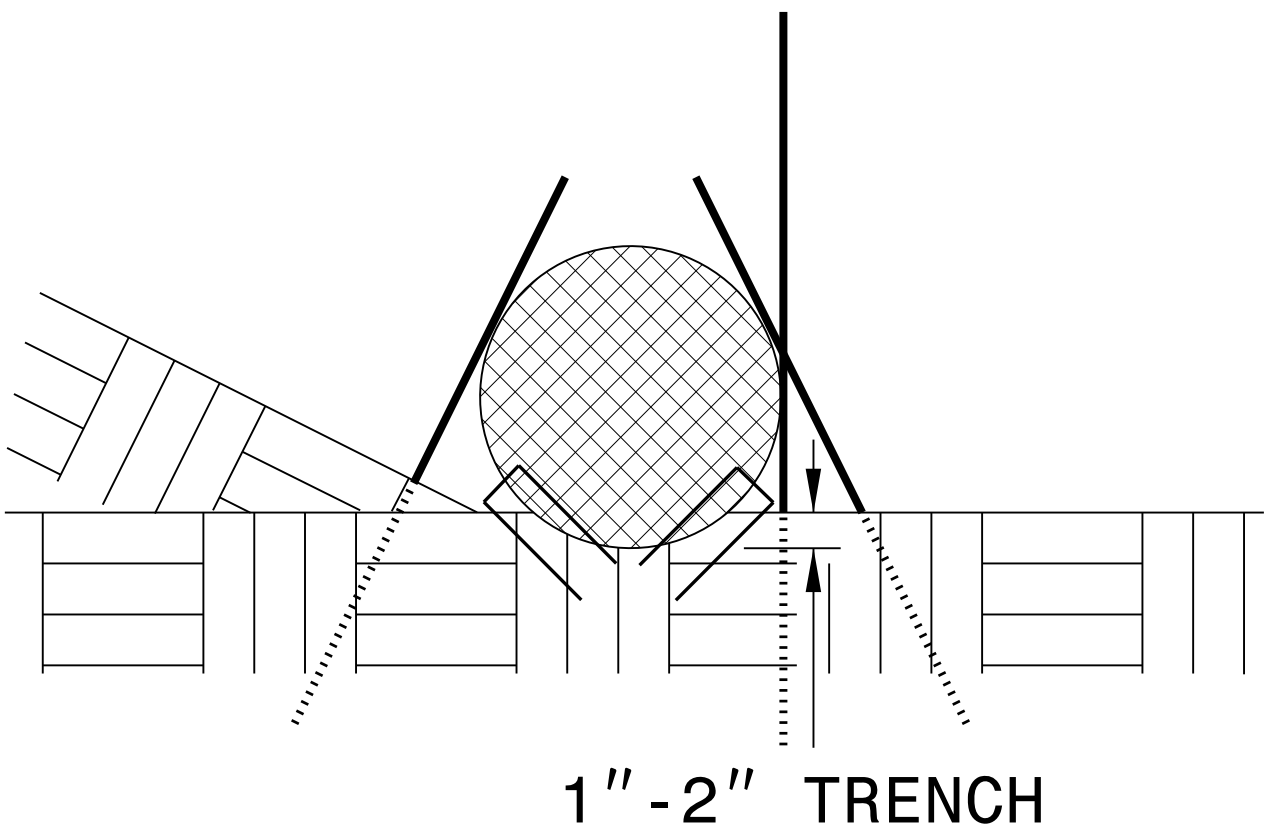


VIEW FROM SLOPE

NOTES:

- USE MINIMUM 12 IN. DIAMETER EXCELSIOR 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



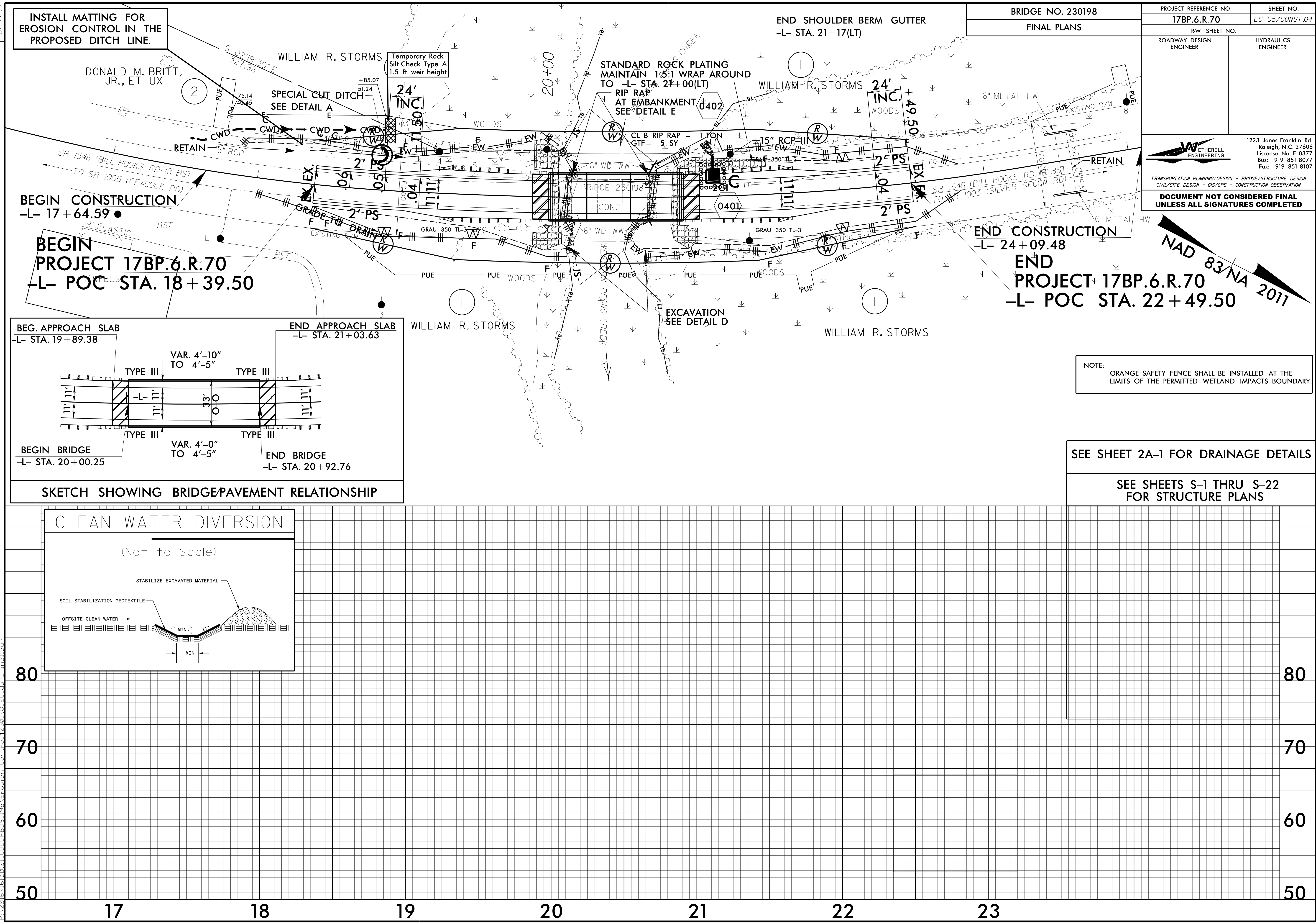
SIDE VIEW

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.70	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.



INSTALL MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.

DONALD M. BRITT, JR., ET UX

WILLIAM R. STORMS

Temporary Rock Silt Check Type A 1.5 ft. weir height

SPECIAL CUT DITCH SEE DETAIL A

STANDARD ROCK PLATING MAINTAIN 1.5:1 WRAP AROUND TO -L- STA. 21+00(LT) RIP RAP AT EMBANKMENT SEE DETAIL E

END SHOULDER BERM GUTTER -L- STA. 21+17(LT)

BRIDGE NO. 230198
FINAL PLANS

PROJECT REFERENCE NO. 17BP.6.R.70
SHEET NO. EC-05/CONST.04

ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

WETHERILL ENGINEERING
1223 Jones Franklin Rd. Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

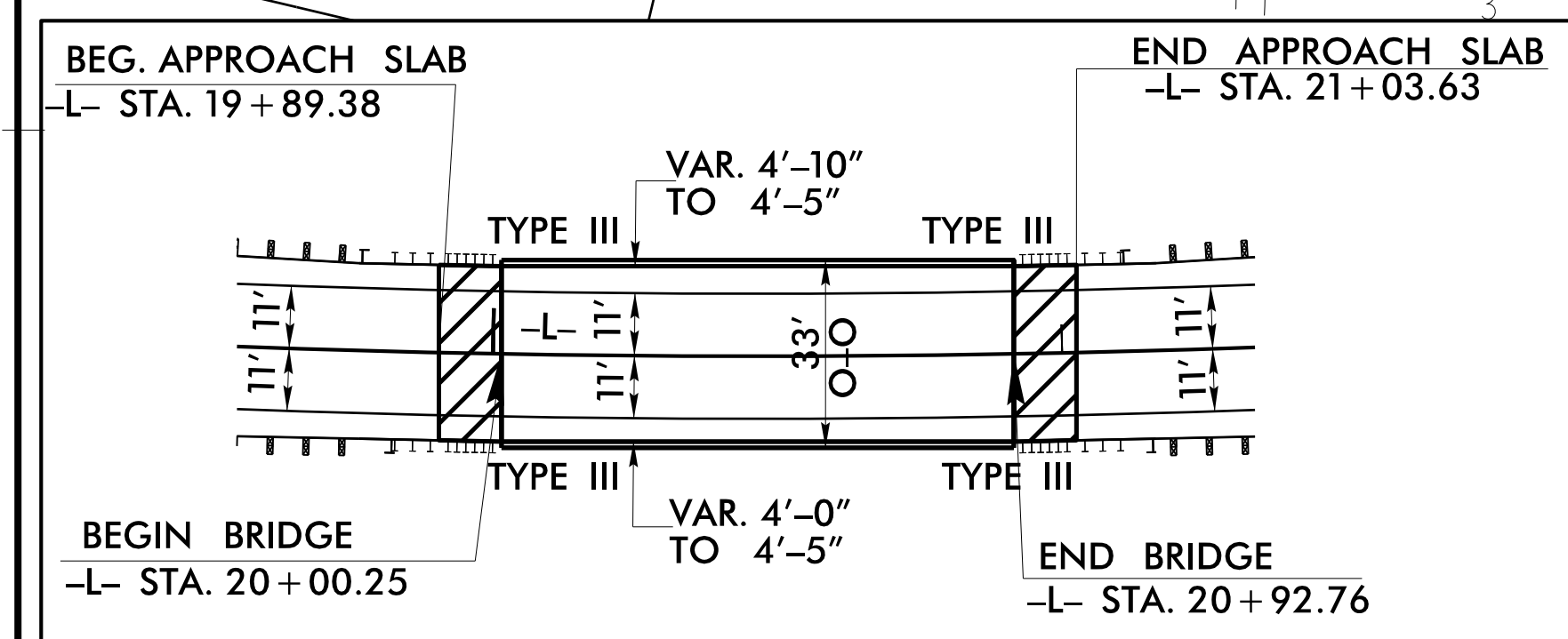
BEGIN CONSTRUCTION -L- 17+64.59

BEGIN PROJECT 17BP.6.R.70 -L- POC STA. 18+39.50

END CONSTRUCTION -L- 24+09.48

END PROJECT 17BP.6.R.70 -L- POC STA. 22+49.50

NAD 83 NA 2011

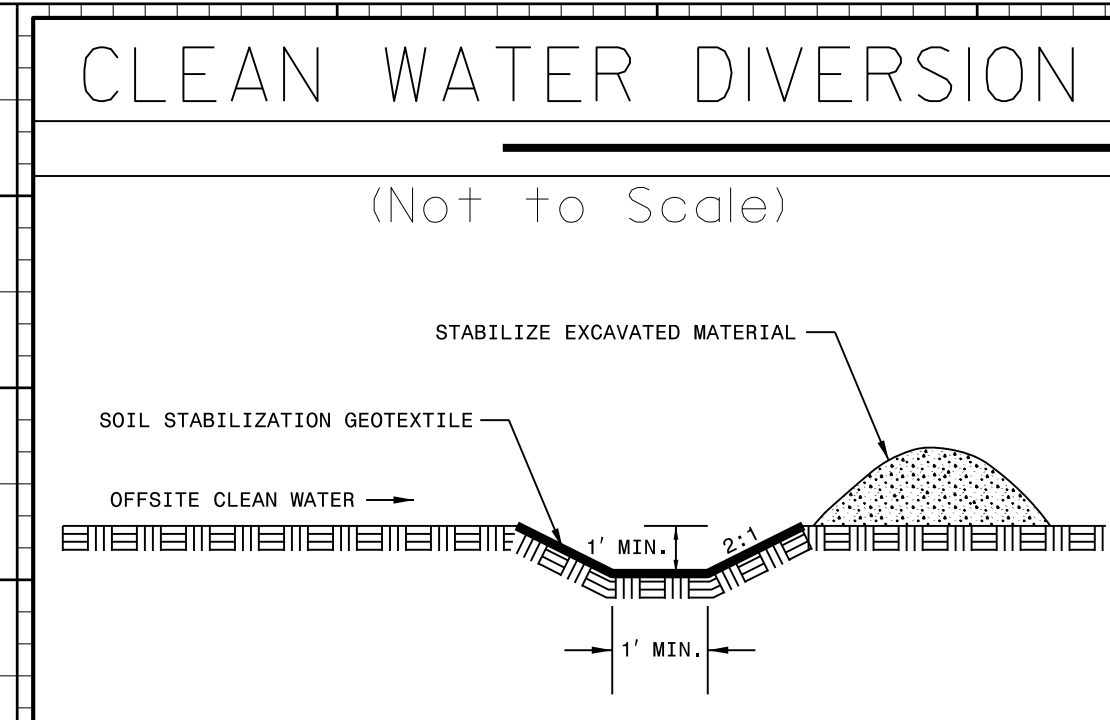


SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

NOTE: ORANGE SAFETY FENCE SHALL BE INSTALLED AT THE LIMITS OF THE PERMITTED WETLAND IMPACTS BOUNDARY.

SEE SHEET 2A-1 FOR DRAINAGE DETAILS

SEE SHEETS S-1 THRU S-22 FOR STRUCTURE PLANS



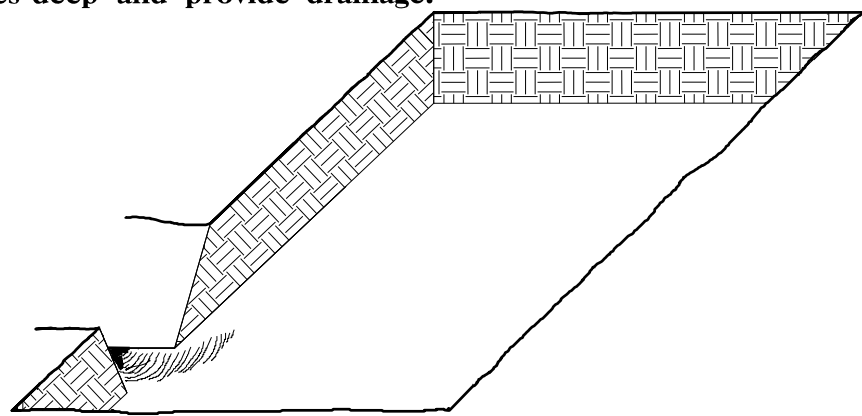
REVISIONS

5/30/2017 10:06:47 AM
17BP.6.R.70 EC-05/CONST.04
17BP.6.R.70 EC-05/CONST.04

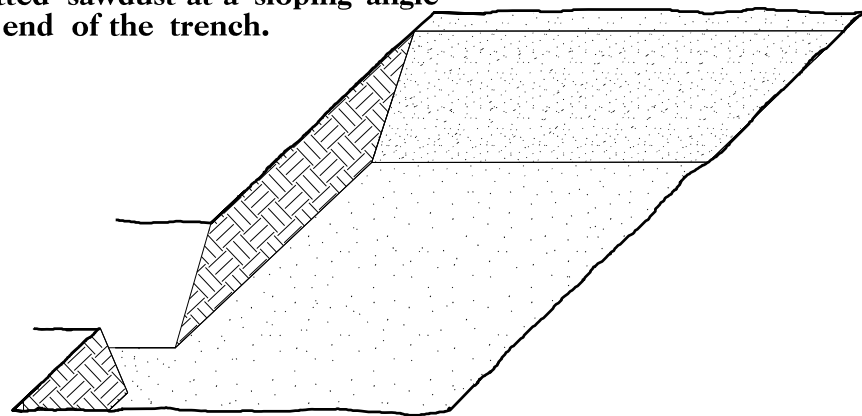
PLANTING DETAILS
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

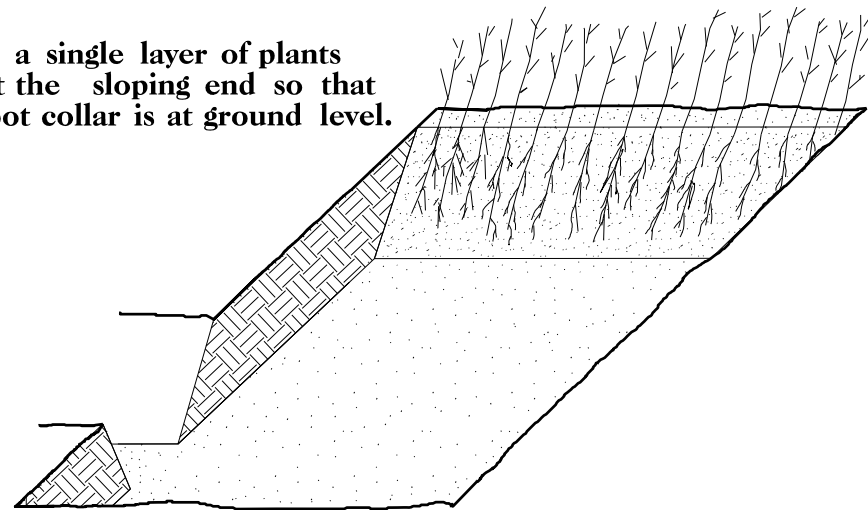
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



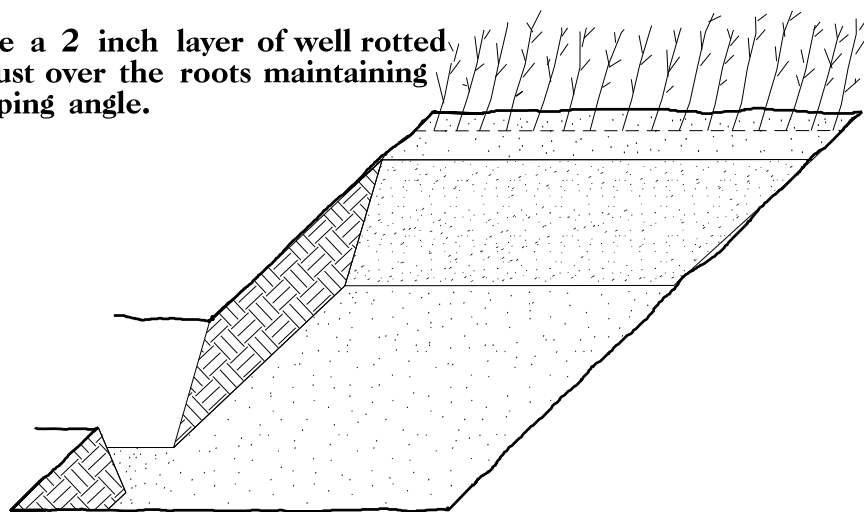
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

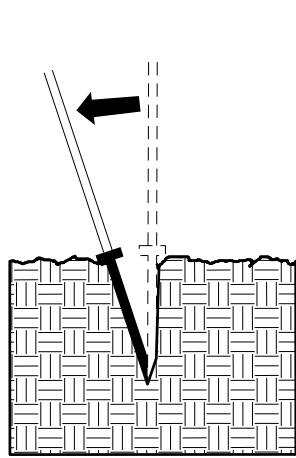


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

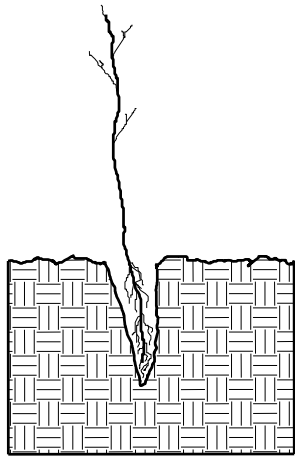


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

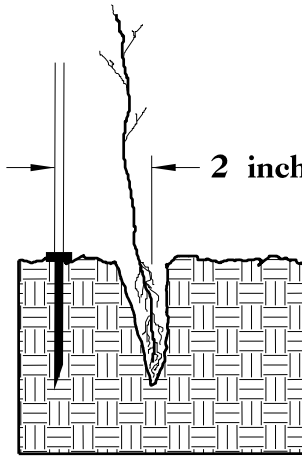
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



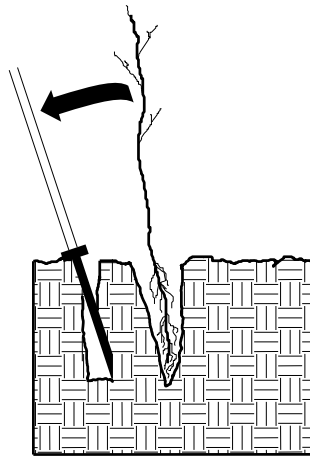
1. Insert planting bar as shown and pull handle toward planter.



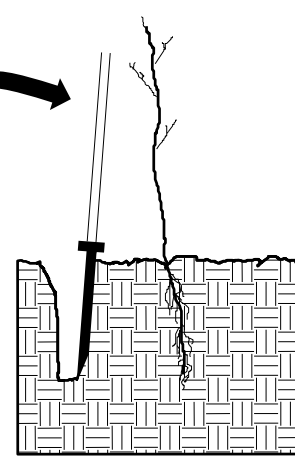
2. Remove planting bar and place seedling at correct depth.



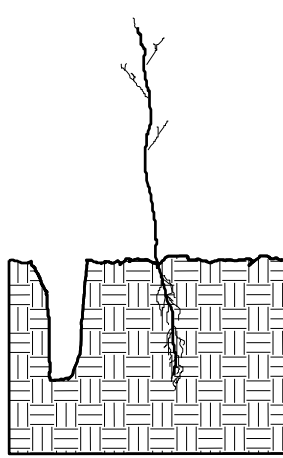
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



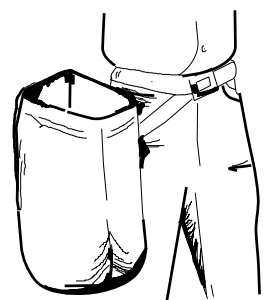
5. Push handle forward firming soil at top.



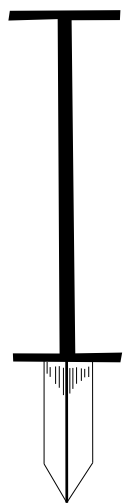
6. Leave compaction hole open. Water thoroughly.

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.

REFORESTATION

- ☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

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

25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
25% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
25% FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

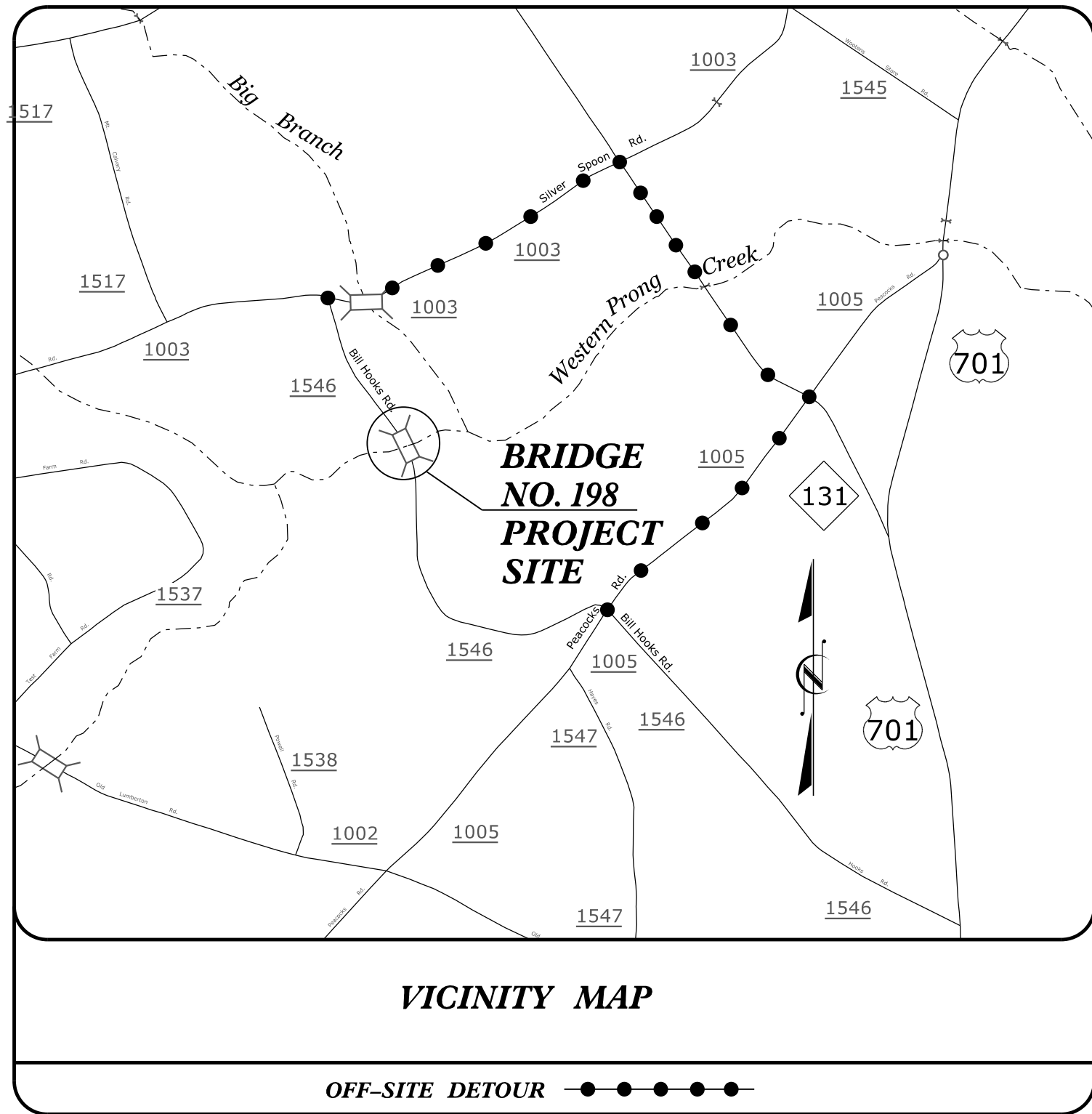
REFORESTATION DETAIL SHEET

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

09.08/95

TIP PROJECT: 17BP.6.R.70

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

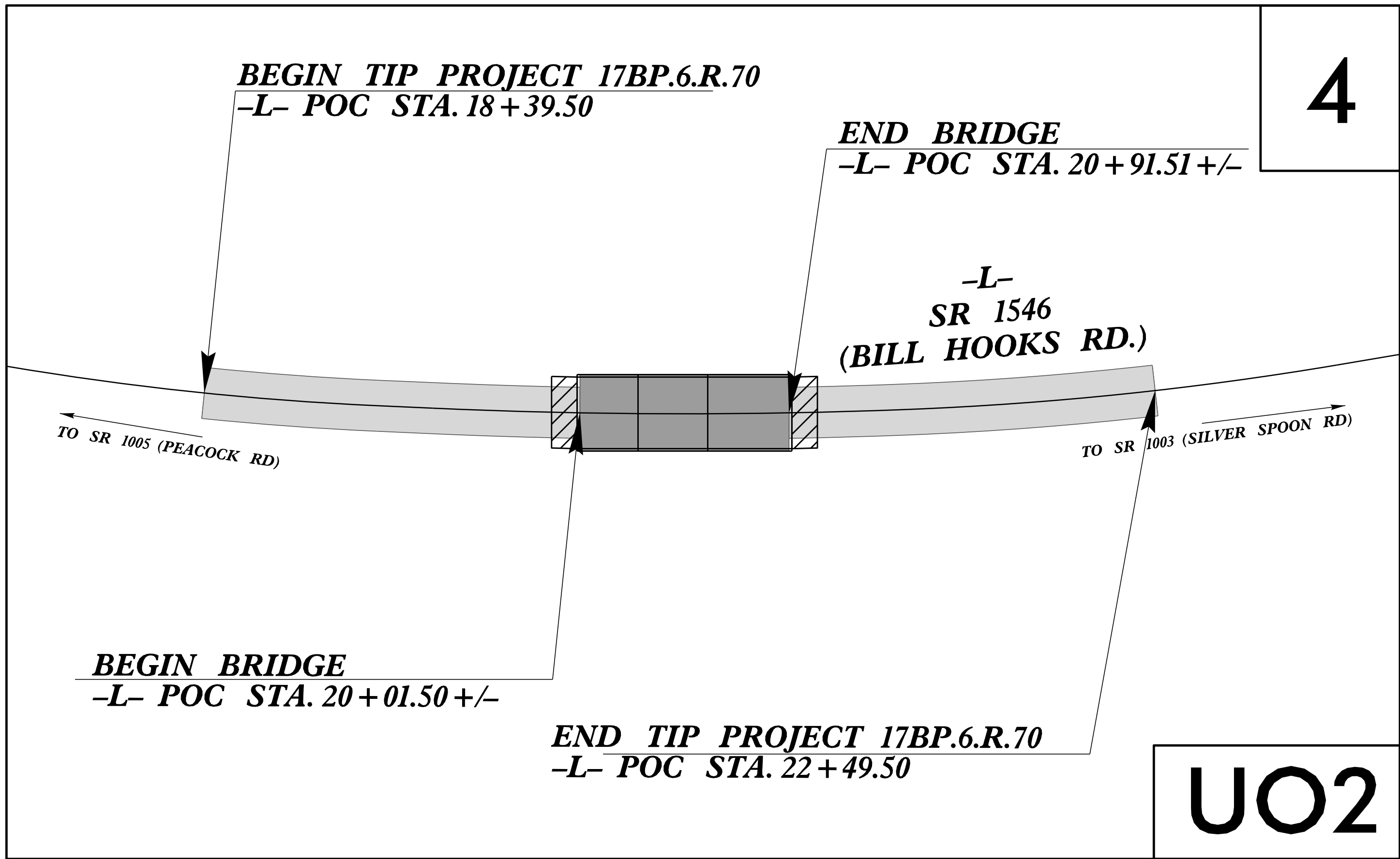


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
COLUMBUS COUNTY

LOCATION: BRIDGE NO. 230198 OVER WEST PRONG CREEK ON
SR 1546 (BILL HOOKS RD.)

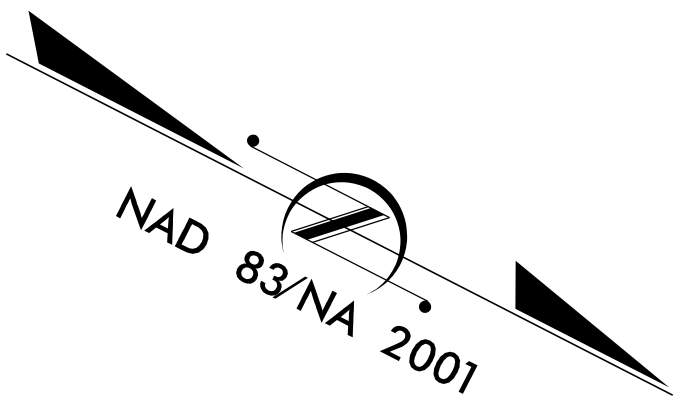
TYPE OF WORK: POWER, WATER, AND TELEPHONE RELOCATION



T.I.P. NO.	SHEET NO.
17BP.6.R.70	UO-1

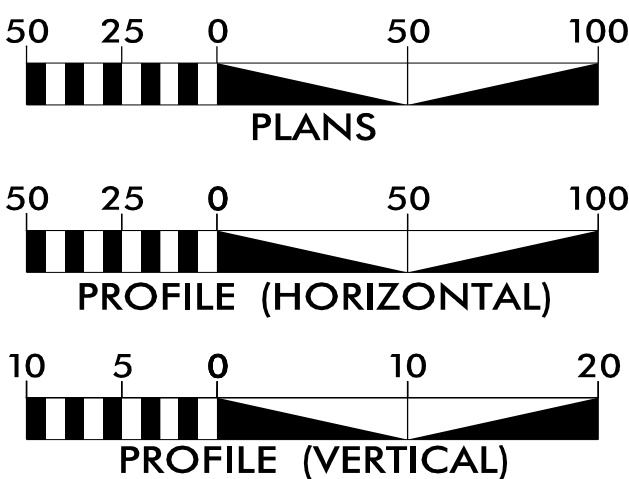
NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET IS DONE BY OTHERS.
NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.

BRIDGE #230198



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

GRAPHIC SCALES



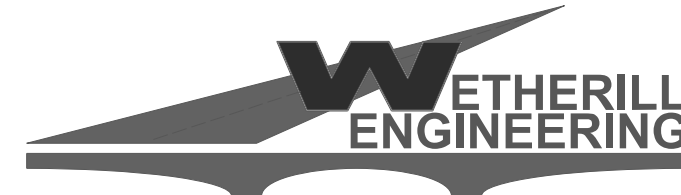
INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO-1	TITLE SHEET
UO-2	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

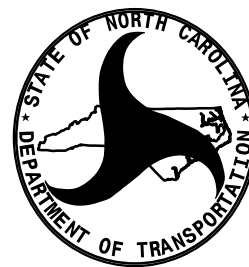
- (A) POWER - BRUNSWICK EMC
(B) TELEPHONE - CENTURYLINK

Prepared in the Office of:



1223 Jones Franklin Rd. Raleigh, N.C. 27606
License No. F-0377
Bus: 919.851.8077 Fax: 919.851.8107

John D. Schriener, PLS UTILITY PROJECT MANAGER
Sonny Upole, PE PROJECT UTILITY COORDINATOR



DIVISION OF HIGHWAYS
DIVISION 6

558 Gillespie Street
Fayetteville, NC, 28301

Christy W. Huff, PE DIVISION 6 BRIDGE PROGRAM MANAGER

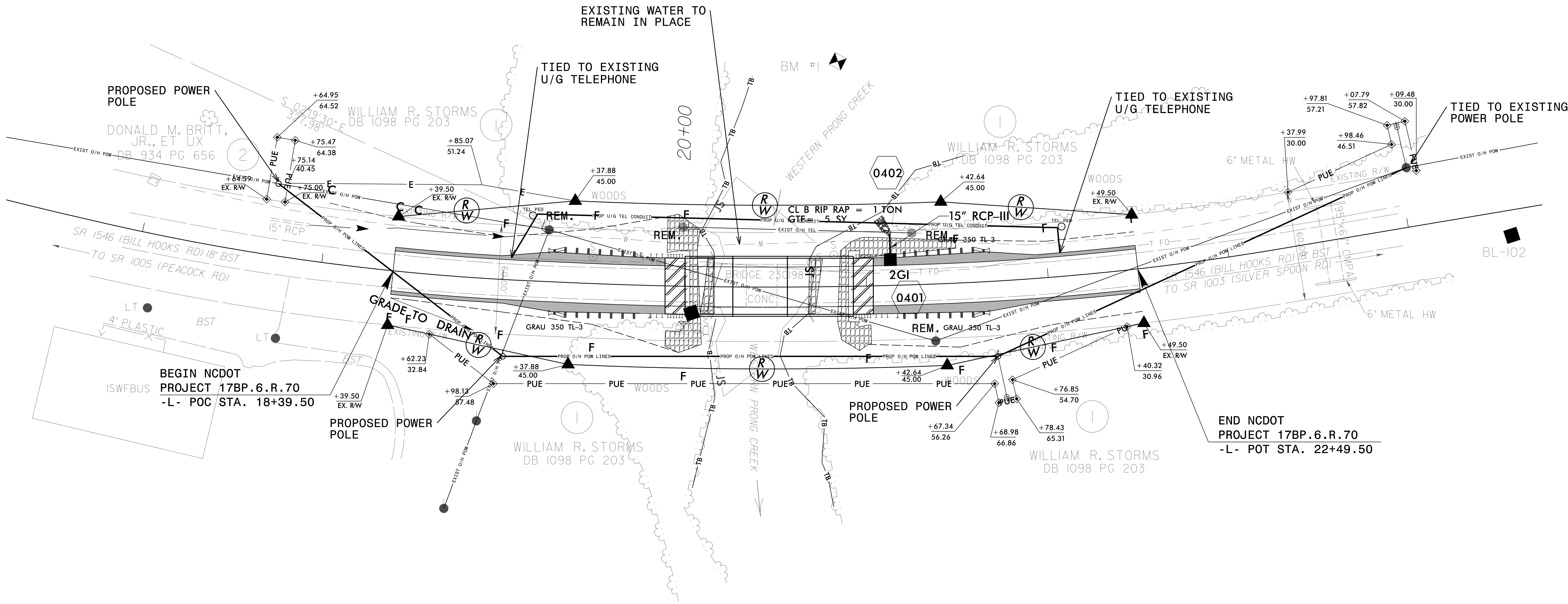
UTILITIES BY OTHERS

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.



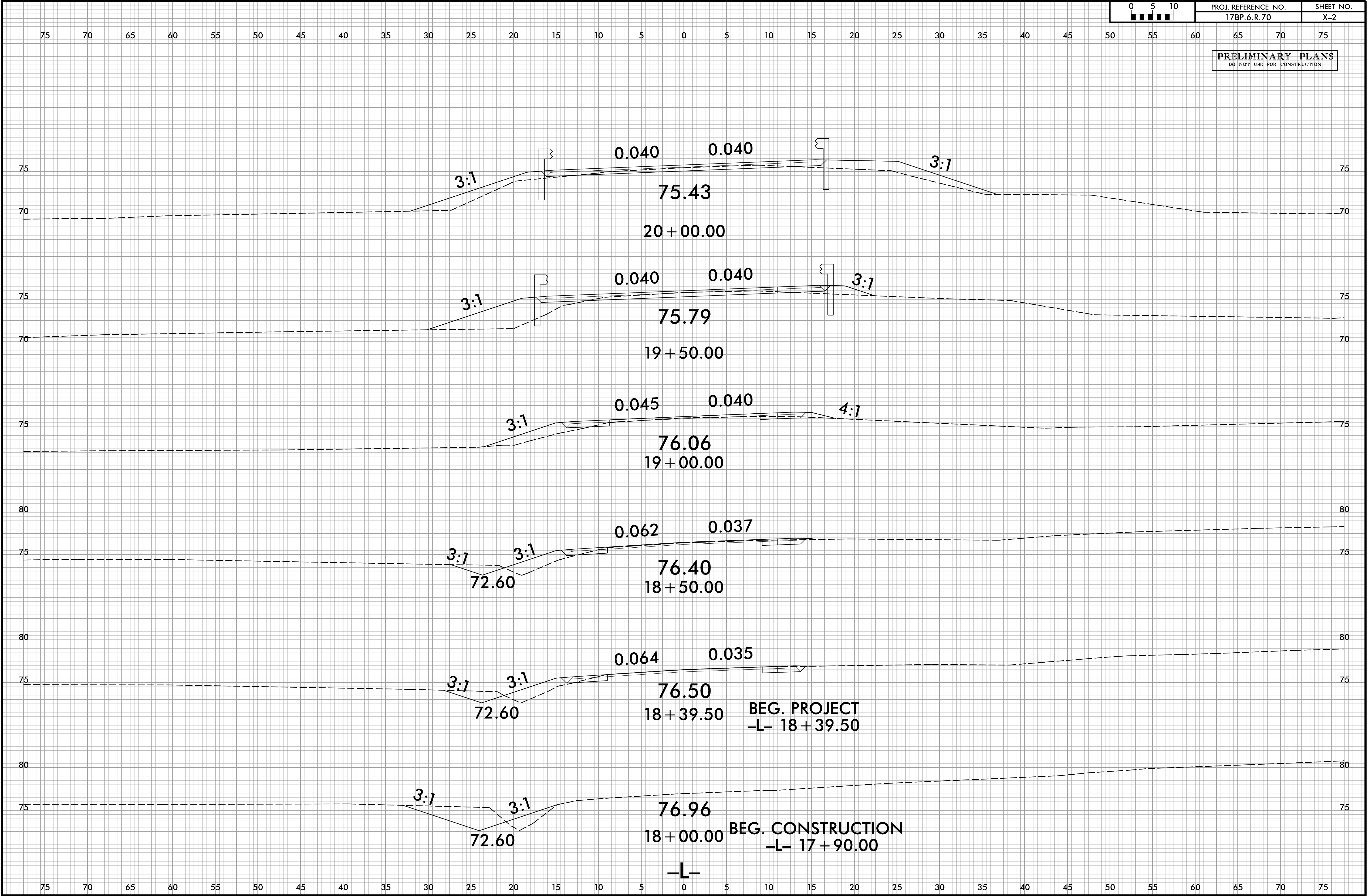
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

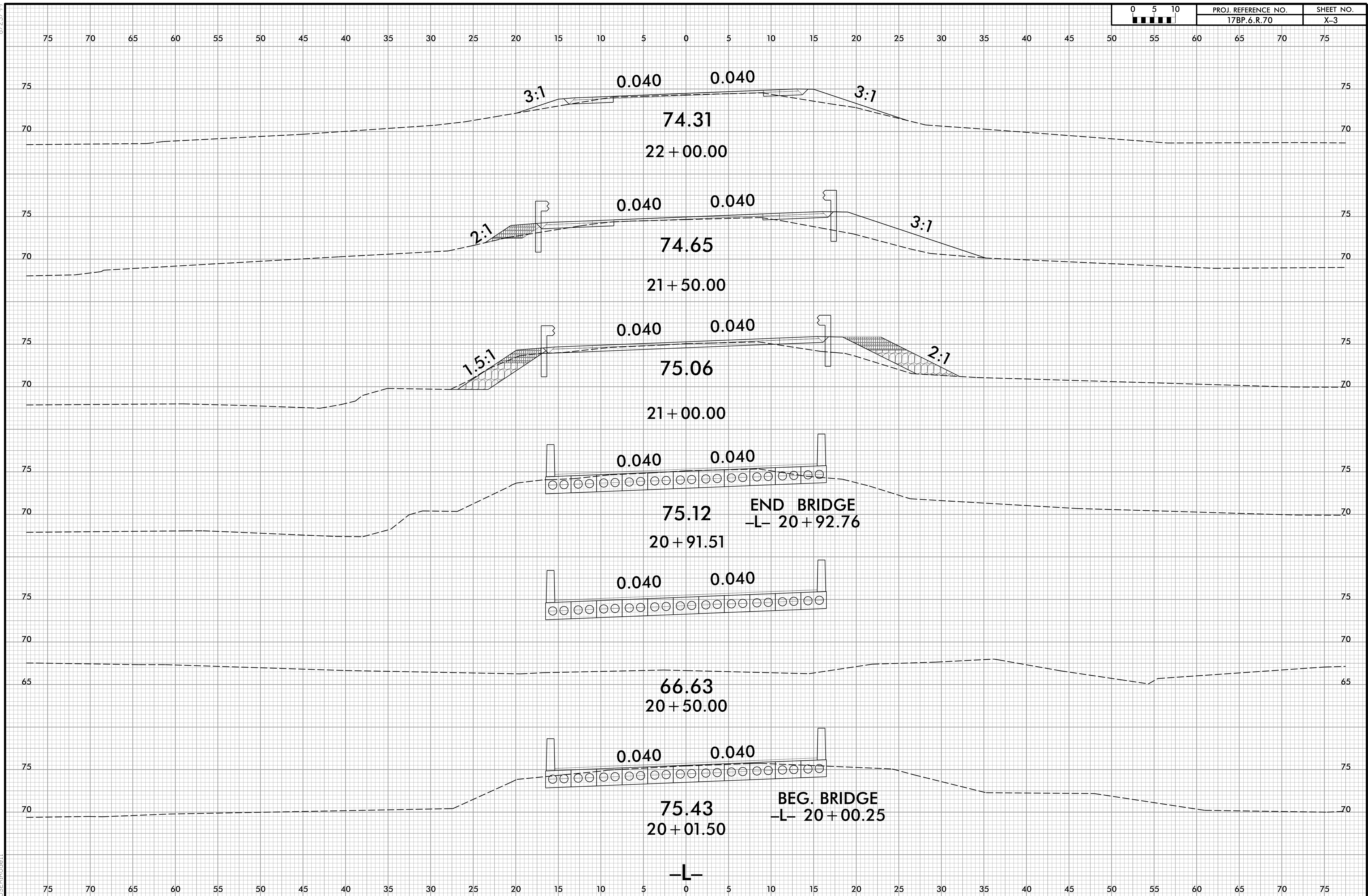
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

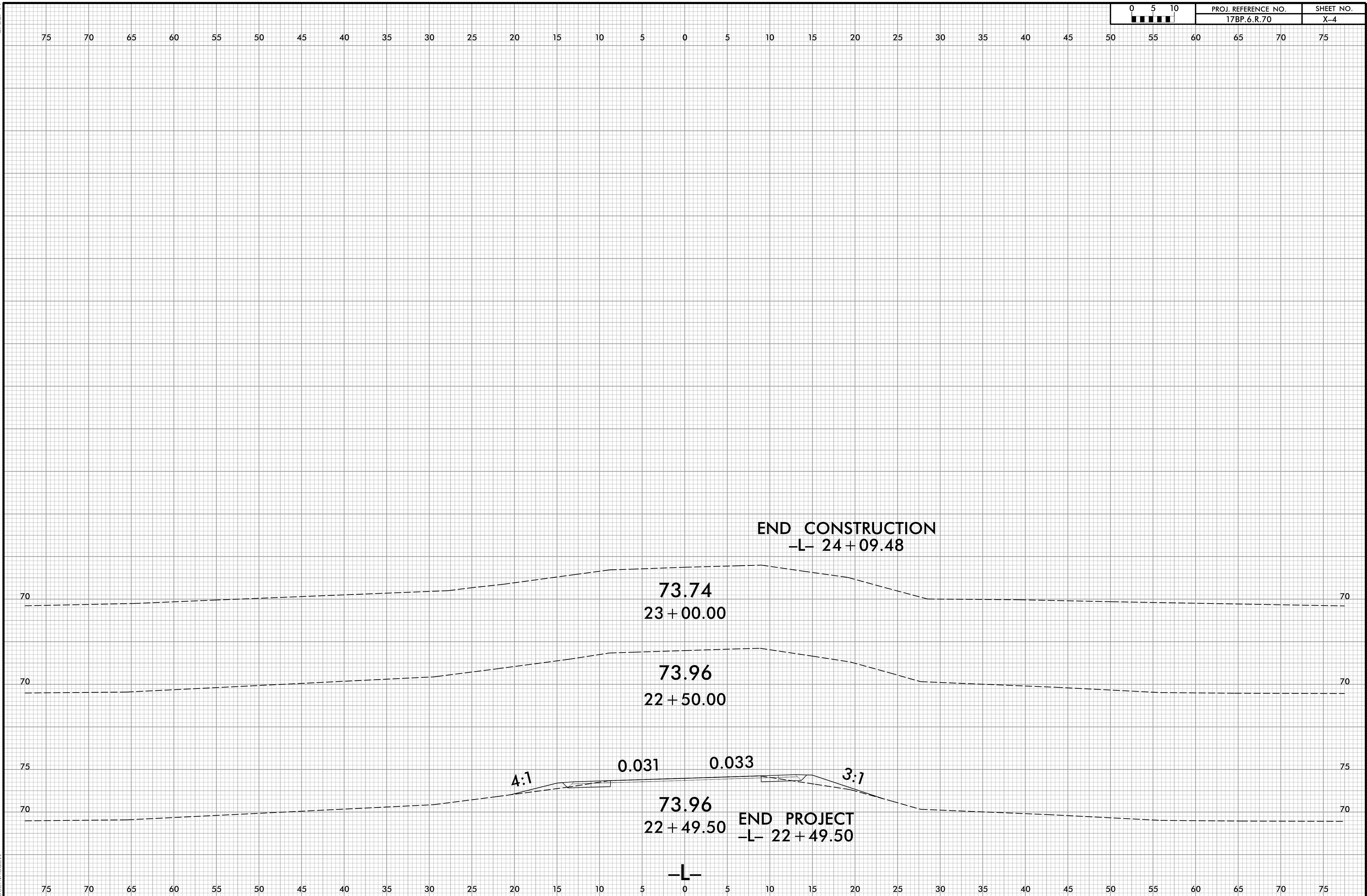


8/23/99

5/19/2017
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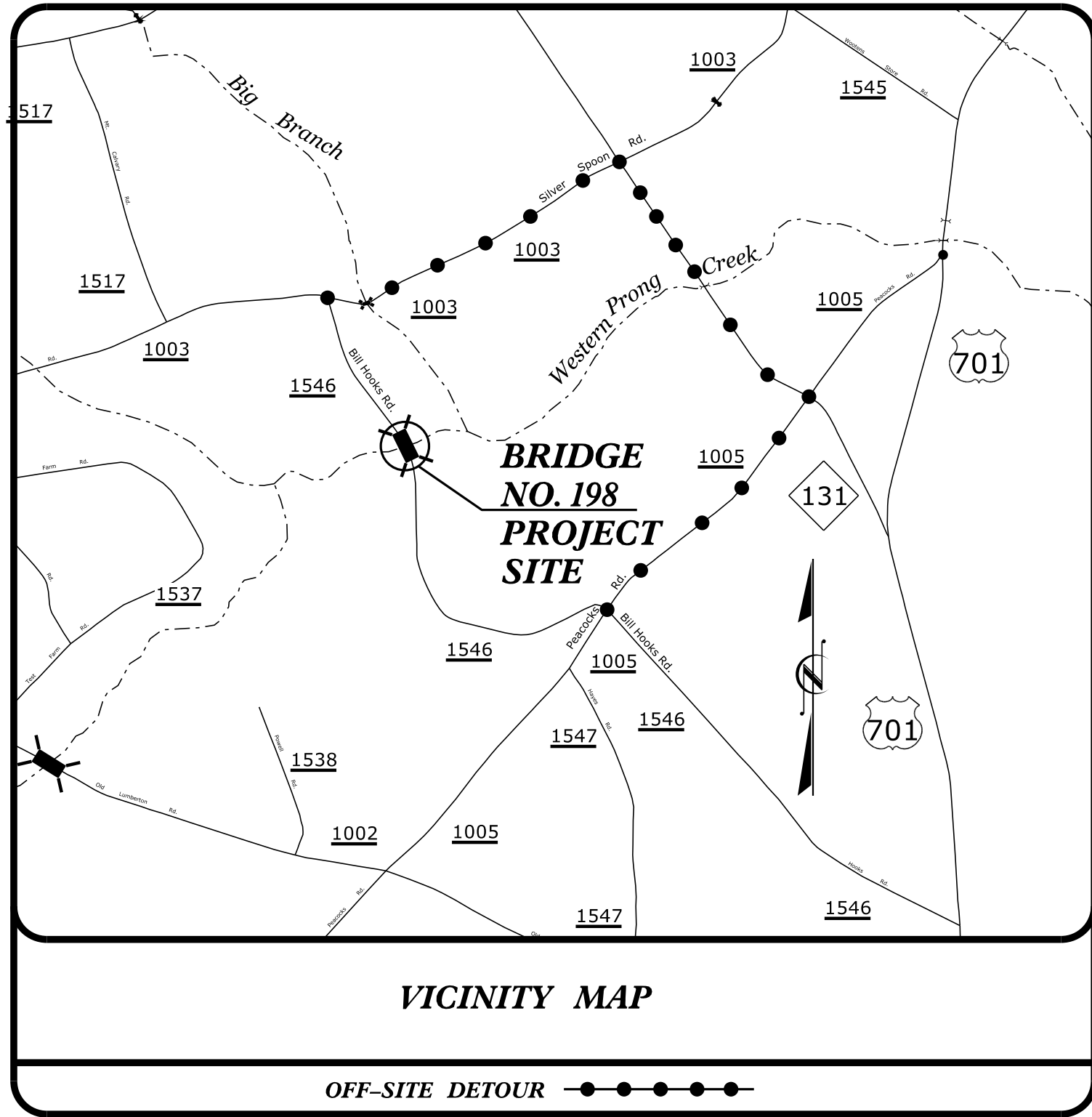


09.08/99

5/17/2017 2:48:50 PM
P:\2016\16150.01-COLUMBUS_198\Structures\DGN\COLUMBUS_198_TSH.dgn

TIP PROJECT: 17BP.6.R.70

CONTRACT: DF00169



STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

COLUMBUS COUNTY

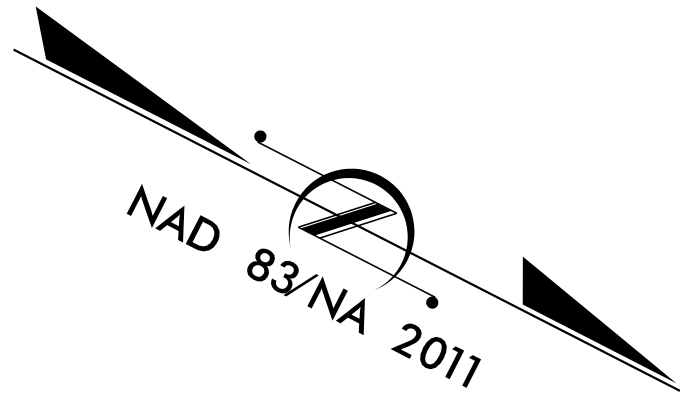
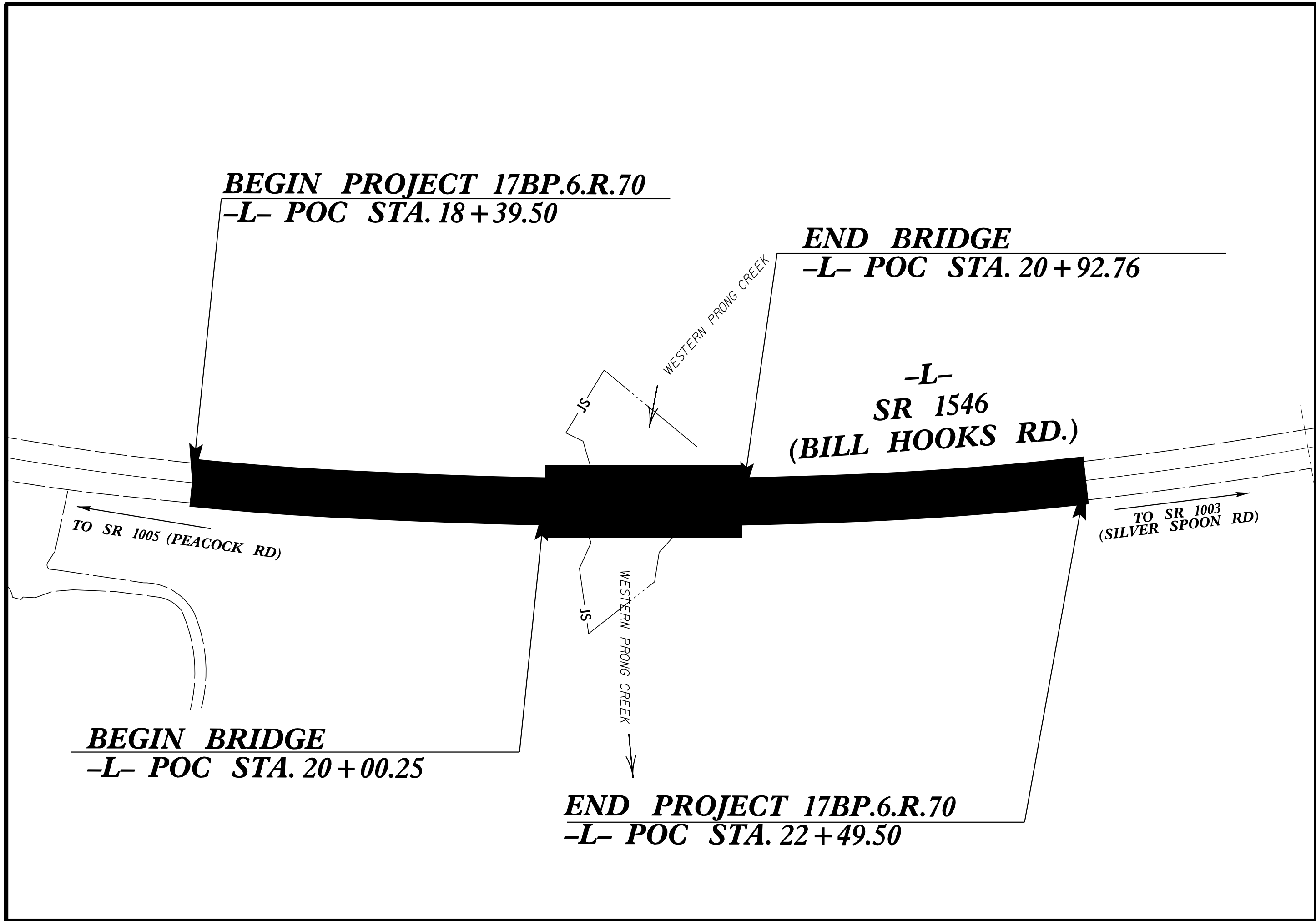
LOCATION: BRIDGE NO. 230198 OVER WESTERN PRONG CREEK ON
SR 1546 (BILL HOOKS RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STRUCTURE PLANS

STATE	STATE PROJECT REFERENCE NO.		SHEET NO.	TOTAL SHEETS
N.C.	17BP.6.R.70			
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION		
17BP.6.R.70	N/A	PE		
17BP.6.R.70	N/A	RW /UTIL.		
17BP.6.R.70		CONST.		

BRIDGE #230198



DESIGN DATA

ADT 2016 = 270

T = 6 % *

V = 55 MPH

* TTST = 3% DUAL = 3%

FUNC. CLASS = MINOR
COLLECTOR, RURAL
(SUBREGIONAL)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT 17BP.6.R.70 = 0.060 MILES

LENGTH STRUCTURE PROJECT 17BP.6.R.70 = 0.017 MILES

TOTAL LENGTH TIP PROJECT 17BP.6.R.70 = 0.077 MILES

Prepared in the Office of:

WETHERILL
ENGINEERING

1223 Jones Franklin Rd., Raleigh, N.C. 27606
License No. F-0377
Bus: 919.851.8077 Fax: 919.851.8107

Prepared for:

DIVISION OF HIGHWAYS
DIVISION 6

558 Gillespie Street
Fayetteville NC, 28301

2012 STANDARD SPECIFICATIONS

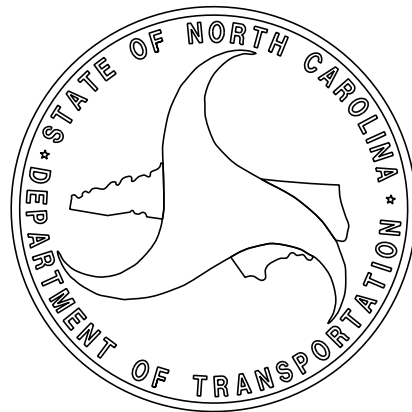
LETTING DATE:
JUNE 20, 2017

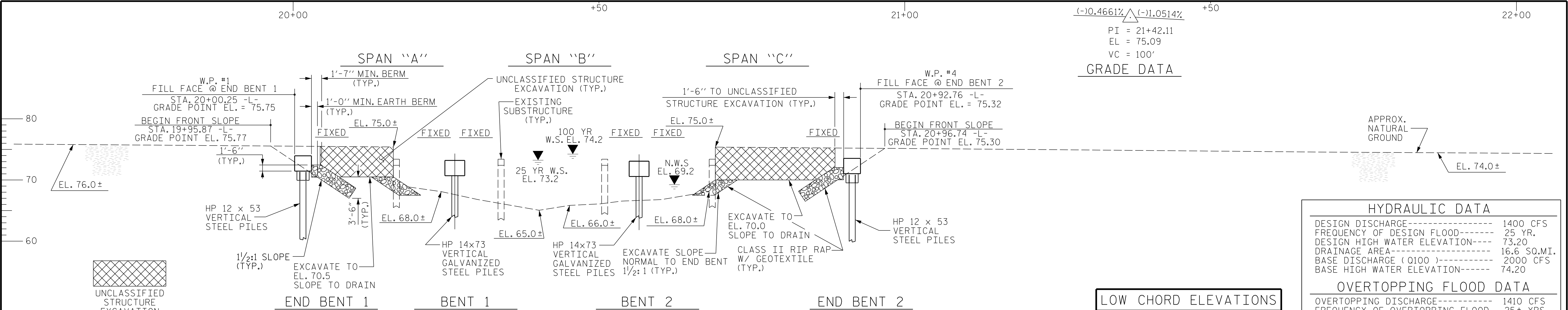
NCDOT CONTACT:

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

B.C. HUNT, P.E.
PROJECT DESIGN ENGINEER

BRICE BELL, PE
DIVISION 6 BRIDGE PROGRAM MANAGER



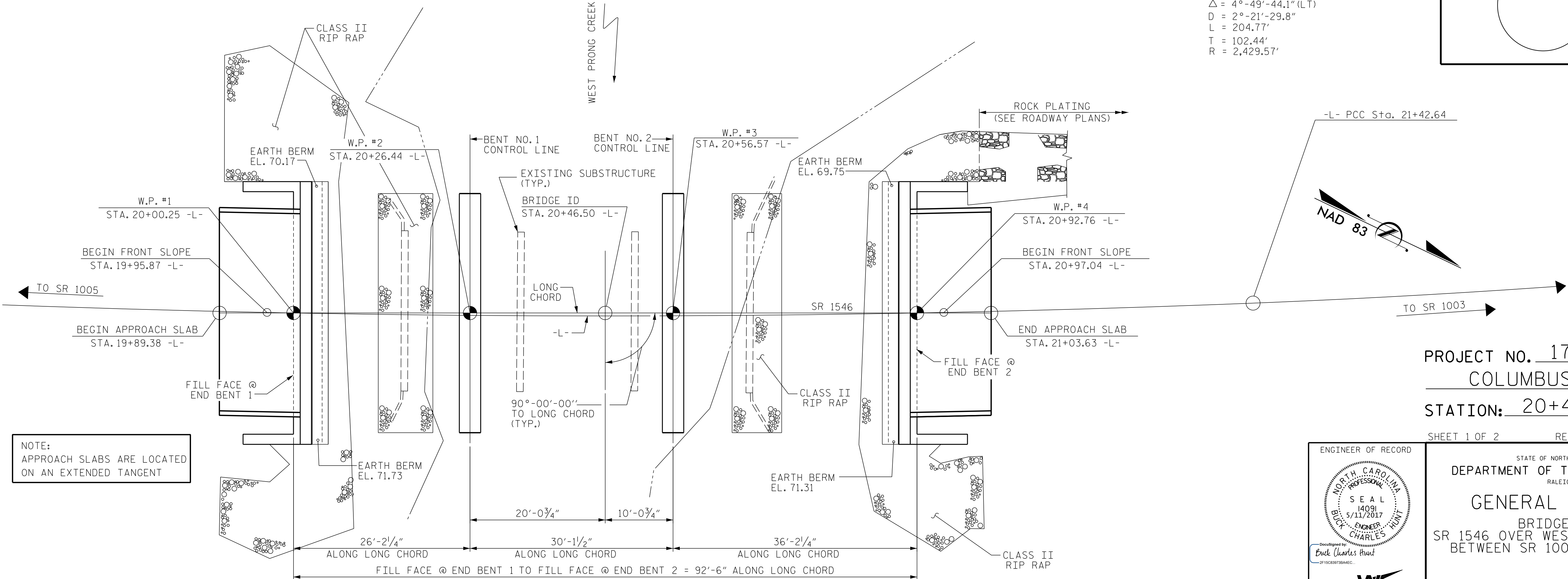


LOW CHORD ELEVATIONS	
	ELEVATION @ C BRG. LEFT END
END BENT 1	73.37
END BENT 2	72.95

HYDRAULIC DATA	
DESIGN DISCHARGE-----	1400 CFS
FREQUENCY OF DESIGN FLOOD-----	25 YR.
DESIGN HIGH WATER ELEVATION----	73.20
DRAINAGE AREA-----	16.6 SQ.MI.
BASE DISCHARGE (0100)-----	2000 CFS
BASE HIGH WATER ELEVATION-----	74.20
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE-----	1410 CFS
FREQUENCY OF OVERTOPPING FLOOD----	25± YRS
OVERTOPPING FLOOD ELEVATION----	73.20*
*OVERTOPPING OCCURS @ CENTER STA. 25+00.00 -L- EL. 73.20	

I HEREBY CERTIFY THESE PLANS
ARE THE AS-BUILT PLANS

HORIZONTAL CURVE DATA
PI Sta. 20+40.32 -L-
Δ = 4°-49'-44.1" (LT)
D = 2°-21'-29.8"
L = 204.77'
T = 102.44'
R = 2,429.57'



PROJECT NO. 17BP.6.R.70
COLUMBUS COUNTY
STATION: 20+46.50 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 198

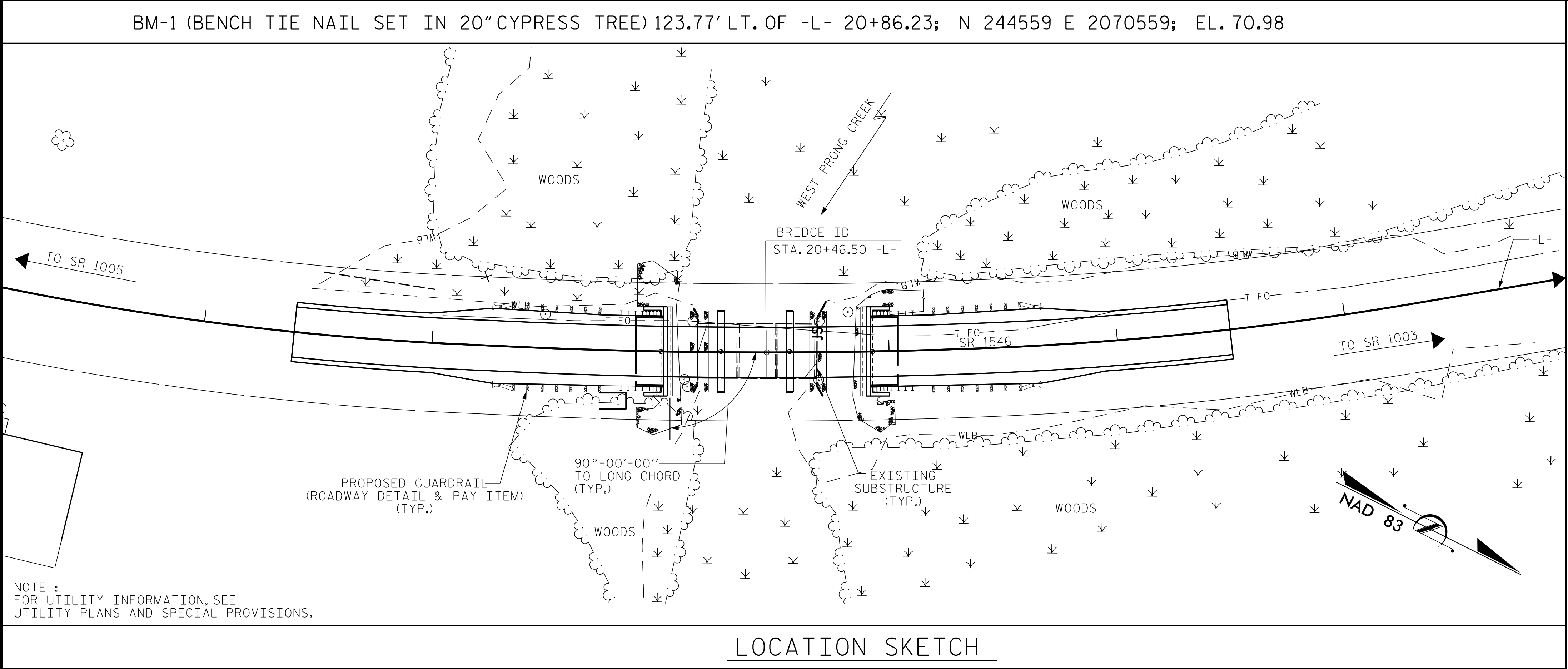
ENGINEER OF RECORD
NORTH CAROLINA PROFESSIONAL SEAL
5/11/2017
ENGINEER CHARLES HUNT
DocuSigned by: Buck Charles Hunt
2F15C8073BA4EC
WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-4377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
BRIDGE ON
SR 1546 OVER WEST PRONG CREEK
BETWEEN SR 1005 & SR 1003

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : J. PENDERCRAFT DATE : 4-17
CHECKED BY : J. DILWORTH DATE : 4-17

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



LOCATION SKETCH

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 2.

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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. EACH SIDE OF CENTERLINE ROADWAY 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 EXISTING STRUCTURE CONSISTING OF 1 SPAN @ 17'-10", 1 SPAN @ 17'-0" AND 1 SPAN @ 17'-8" WITH A REINFORCED CONCRETE FLOOR ON AN TIMBER JOIST SUPERSTRUCTURE AND A CLEAR ROADWAY WIDTH OF 24.0' ON A SUBSTRUCTURE CONSISTING OF TIMBER CAPS ON TIMBER PILES AND LOCATED AT THE PROPOSED STRUCTURE LOCATION SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT.

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 DIFFERENCE 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 HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES".

FOR INTERIOR BENTS 1 AND 2, ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEET FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTILLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.

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.

AT THE CONTRACTOR'S OPTION, PRESTRESSED CONCRETE END BENT AND BENT CAPS MAY BE SUBSTITUTED IN PLACE OF THE CAST-IN-PLACE CAPS. THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER TO RECEIVE REVISED PLANS AND DETAILS FROM THE STRUCTURES MANAGEMENT UNIT. THE REDESIGN AND ANY ADDITIONAL MATERIALS NEEDED WILL BE AT NO ADDITIONAL COST TO THE CONTRACTOR.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 14 x 73 GALVANIZED STEEL PILES	HP 12 x 53 STEEL PILES		HP 14 x 73 GALVANIZED STEEL PILES		PILE REDRIVING	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLABS		ASBESTOS ASSESSMENT
	LUMP SUM	EA.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EA.	EA.	NO.	LIN. FT.	NO.	LIN. FT.	EA.	LIN. FT.	TONS	SQ. YD.	LUMP SUM	NO.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE														180.75			LUMP SUM	33	990.00	
END BENT 1				14.2		2107	7		7	287			3		90	100				
BENT 1				10.7		2136		8			8	448	4							
BENT 2				10.7		2136		8			8	448	4							
END BENT 2				14.2		2107	7		7	287			4		95	105				
TOTAL	LUMP SUM	2	LUMP SUM	49.8	LUMP SUM	8486	14	16	14	574	16	896	15	180.75	185	205	LUMP SUM	33	990.00	LUMP SUM

FOUNDATION NOTES:

FOR PILES, SEE SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 50 TONS PER PILE.

DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 85 TONS PER PILE.

PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 55 TONS PER PILE.

DRIVE PILES AT END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 95 TONS PER PILE.

PILES AT BENT 1 AND BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.

DRIVE PILES AT BENT 1 AND BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS.

INSTALL PILES AT BENT 1 AND BENT 2 TO A TIP ELEVATION NO HIGHER THAN 40.0.

THE SCOUR CRITICAL ELEVATION FOR BENT 1 AND BENT 2 IS ELEVATION 59.0. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAYBE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDF TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. 17BP.6.R.70

COLUMBUS COUNTY

STATION: 20+46.50 -L-

SHEET 2 OF 2

DRAWN BY : J. PENDERGRAFT DATE : 4-17
CHECKED BY : J. DILWORTH DATE : 4-17

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ENGINEER OF RECORD

DocuSigned by:
Buck Charles Hunt
915C8973BA4EC

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LICENSE NO. F-4377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON
SR 1546 OVER WEST PRONG CREEK
BETWEEN SR 1005 & SR 1003

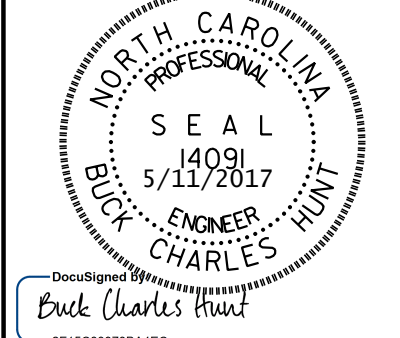
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-2 TOTAL SHEETS 22
2			4			

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DRAWN BY : B.C. HUNT DATE : 12-22-16
CHECKED BY : J.A. DILWORTH DATE : 12-2016

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ENGINEER OF RECORD



DocuSigned By
Erick Charles Hunt
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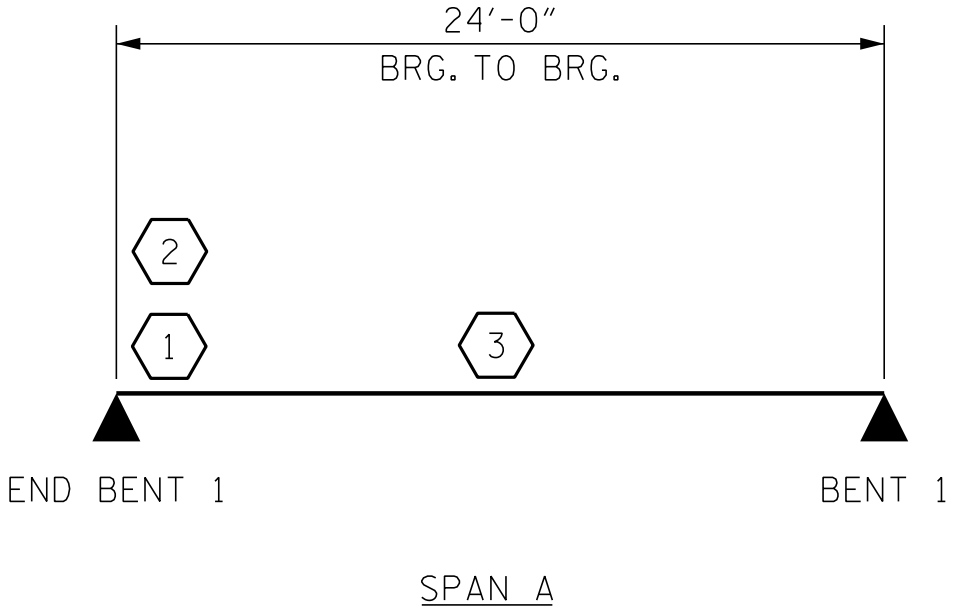
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS
SPAN A

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO. S-3
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 22
2			4			



LRFR SUMMARY

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																							
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING ⬡	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER	
						LIVE-LOAD FACTORS (γ _{LL})	MOMENT				SHEAR					LIVE-LOAD FACTORS (γ _{LL})	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	⬡1	1.44	--	1.75	0.280	2.560	A	EL	12.000	0.590	1.440	A	EL	22.000	0.80	0.280	2.290	A	EL	12.000	
	HL-93 (OPERATING)	N/A		2.67	--	1.35	0.280	3.320	A	EL	12.000	0.590	2.670	A	EL	22.000	N/A	--	--	--	--	--	
	HS-20 (INVENTORY)	36.000	⬡2	2.29	82.440	1.75	0.280	3.790	A	EL	12.000	0.590	2.290	A	EL	22.000	0.80	0.280	3.400	A	EL	12.000	
	HS-20 (OPERATING)	36.000		3.15	113.400	1.35	0.280	4.920	A	EL	12.000	0.590	3.150	A	EL	22.000	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		4.94	66.690	1.40	0.280	6.900	A	EL	12.000	0.590	5.610	A	EL	22.000	0.80	0.280	4.940	A	EL	12.000	
		SNGARBS2		4.53	90.600	1.40	0.280	6.460	A	EL	12.000	0.590	4.530	A	EL	22.000	0.80	0.280	4.630	A	EL	12.000	
		SNAGRIS2		4.46	98.120	1.40	0.280	6.900	A	EL	12.000	0.590	4.460	A	EL	22.000	0.80	0.280	4.940	A	EL	12.000	
		SNCOTTS3		2.59	70.578	1.40	0.280	3.610	A	EL	12.000	0.590	2.800	A	EL	22.000	0.80	0.280	2.590	A	EL	12.000	
		SNAGGRS4		2.58	90.107	1.40	0.280	3.590	A	EL	12.000	0.590	2.690	A	EL	22.000	0.80	0.280	2.580	A	EL	12.000	
		SNS5A		2.50	88.875	1.40	0.280	3.490	A	EL	12.000	0.590	2.800	A	EL	22.000	0.80	0.280	2.500	A	EL	12.000	
		SNS6A	⬡3	2.34	93.483	1.40	0.280	3.270	A	EL	12.000	0.590	2.740	A	EL	22.000	0.80	0.280	2.340	A	EL	12.000	
		SNS7B		2.34	98.280	1.40	0.280	3.270	A	EL	12.000	0.590	2.750	A	EL	22.000	0.80	0.280	2.340	A	EL	12.000	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3		3.30	108.900	1.40	0.280	4.600	A	EL	12.000	0.590	3.420	A	EL	22.000	0.80	0.280	3.300	A	EL	12.000	
		TNT4A		2.86	94.595	1.40	0.280	3.990	A	EL	12.000	0.590	2.980	A	EL	22.000	0.80	0.280	2.860	A	EL	12.000	
		TNT6A		2.69	111.904	1.40	0.280	3.750	A	EL	12.000	0.590	2.820	A	EL	22.000	0.80	0.280	2.690	A	EL	12.000	
		TNT7A		2.78	116.760	1.40	0.280	3.880	A	EL	12.000	0.590	2.840	A	EL	22.000	0.80	0.280	2.780	A	EL	12.000	
		TNT7B		2.50	105.000	1.40	0.280	3.490	A	EL	12.000	0.590	2.750	A	EL	22.000	0.80	0.280	2.500	A	EL	12.000	
		TNAGRIT4		2.69	115.670	1.40	0.280	3.750	A	EL	12.000	0.590	2.720	A	EL	22.000	0.80	0.280	2.690	A	EL	12.000	
		TNAGT5A		2.69	121.050	1.40	0.280	3.750	A	EL	12.000	0.590	2.790	A	EL	22.000	0.80	0.280	2.690	A	EL	12.000	
		TNAGT5B		2.52	113.400	1.40	0.280	3.710	A	EL	14.500	0.590	2.520	A	EL	22.000	0.80	0.280	2.670	A	EL	14.500	

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:

-
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-
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⬡ 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.6.R.70
COLUMBUS COUNTY
STATION: 20+46.50 -L-

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DRAWN BY : B.C. HUNT DATE : 12-22-16
CHECKED BY : J.A. DILWORTH DATE : 12-2016

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ENGINEER OF RECORD

SEAL

14091

5/11/2017

ENGINEER

CHARLES HUNT

DocuSigned by

Buck Charles Hunt

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WETHERILL

ENGINEERING

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS
SPAN B
(NON-INTERSTATE TRAFFIC)

REVISIONS

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

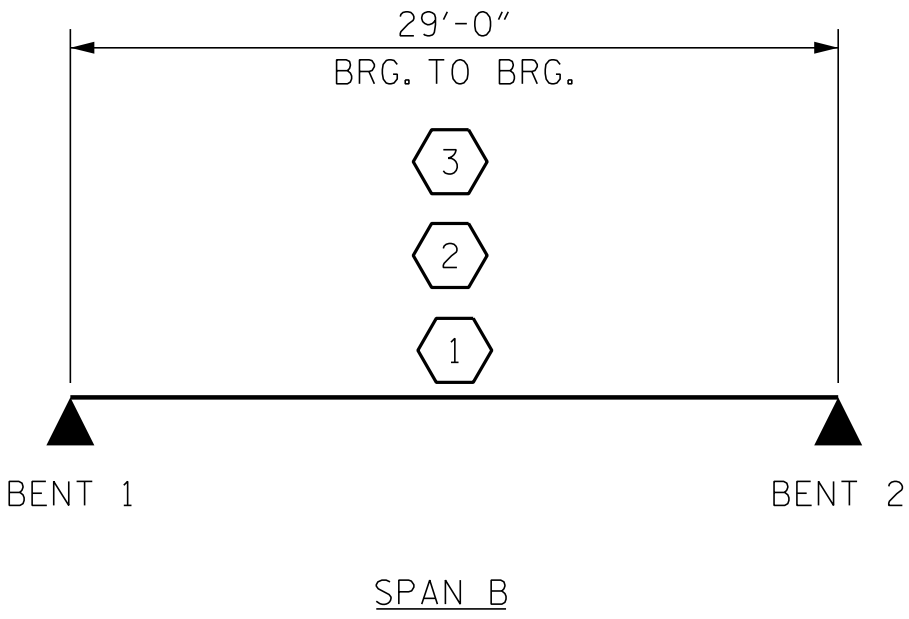
SHEET NO.

S-4

TOTAL SHEETS

22

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						LIVE-LOAD FACTORS (γ _{LL})	MOMENT					SHEAR					LIVE-LOAD FACTORS (γ _{LL})	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	1	1.58	--	1.75	0.280	1.870	B	EL	14.500	0.570	1.960	B	EL	26.500	0.80	0.280	1.580	B	EL	14.500		
	HL-93 (OPERATING)	N/A		2.43	--	1.35	0.280	2.430	B	EL	14.500	0.570	2.580	B	EL	26.500	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	2	2.22	79.920	1.75	0.280	2.600	B	EL	17.500	0.570	2.250	B	EL	26.500	0.80	0.280	2.220	B	EL	17.500		
	HS-20 (OPERATING)	36.000		2.95	106.200	1.35	0.280	3.370	B	EL	17.500	0.570	2.950	B	EL	26.500	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		3.58	48.330	1.40	0.280	5.280	B	EL	14.500	0.570	5.580	B	EL	26.500	0.80	0.280	3.580	B	EL	14.500		
		SNGARBS2		3.18	63.600	1.40	0.280	4.650	B	EL	17.500	0.570	4.330	B	EL	26.500	0.80	0.280	3.180	B	EL	17.500		
		SNAGRIS2		3.23	71.060	1.40	0.280	4.730	B	EL	17.500	0.570	4.190	B	EL	26.500	0.80	0.280	3.230	B	EL	17.500		
		SNCOTTS3		1.79	48.778	1.40	0.280	2.650	B	EL	14.500	0.570	2.760	B	EL	26.500	0.80	0.280	1.790	B	EL	14.500		
		SNAGGRS4		1.73	60.420	1.40	0.280	2.550	B	EL	14.500	0.570	2.560	B	EL	26.500	0.80	0.280	1.730	B	EL	14.500		
		SNS5A		1.67	59.369	1.40	0.280	2.470	B	EL	14.500	0.570	2.710	B	EL	26.500	0.80	0.280	1.670	B	EL	14.500		
		SNS6A		1.58	63.121	1.40	0.280	2.340	B	EL	14.500	0.570	2.500	B	EL	26.500	0.80	0.280	1.580	B	EL	14.500		
		SNS7B	3	1.54	64.680	1.40	0.280	2.270	B	EL	14.500	0.570	2.550	B	EL	26.500	0.80	0.280	1.540	B	EL	14.500		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3			2.05	67.650	1.40	0.280	3.030	B	EL	14.500	0.570	3.030	B	EL	26.500	0.80	0.280	2.050	B	EL	14.500	
		TNT4A			1.94	64.166	1.40	0.280	2.870	B	EL	14.500	0.570	2.840	B	EL	26.500	0.80	0.280	1.940	B	EL	14.500	
		TNT6A			1.76	73.216	1.40	0.280	2.610	B	EL	14.500	0.570	2.720	B	EL	26.500	0.80	0.280	1.760	B	EL	14.500	
		TNT7A			1.82	76.440	1.40	0.280	2.700	B	EL	14.500	0.570	2.620	B	EL	26.500	0.80	0.280	1.820	B	EL	14.500	
		TNT7B			1.72	72.240	1.40	0.280	2.540	B	EL	14.500	0.570	2.500	B	EL	26.500	0.80	0.280	1.720	B	EL	14.500	
		TNAGRIT4			1.78	76.540	1.40	0.280	2.630	B	EL	14.500	0.570	2.480	B	EL	26.500	0.80	0.280	1.780	B	EL	14.500	
TNAGT5A				1.73	77.850	1.40	0.280	2.550	B	EL	14.500	0.570	2.660	B	EL	26.500	0.80	0.280	1.730	B	EL	14.500		
TNAGT5B				1.68	75.600	1.40	0.280	2.470	B	EL	17.500	0.570	2.320	B	EL	26.500	0.80	0.280	1.680	B	EL	17.500		



LRFR SUMMARY

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:

-
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-
-

⬡ 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

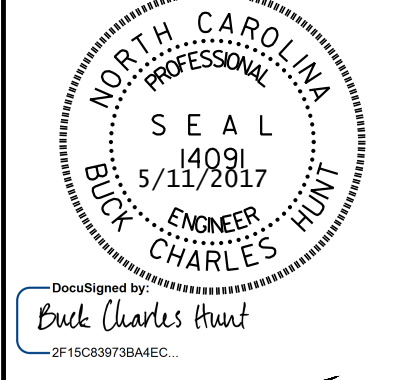
PROJECT NO. 17BP.6.R.70
COLUMBUS COUNTY
STATION: 20+46.50 -L-

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DRAWN BY : B.C. HUNT DATE : 12-22-16
CHECKED BY : J.A. DILWORTH DATE : 12-2016

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ENGINEER OF RECORD



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Buck Charles Hunt
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS
SPAN C
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			22

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																							
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER	
						LIVE-LOAD FACTORS (γ _{LL})	MOMENT				SHEAR					LIVE-LOAD FACTORS (γ _{LL})	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	1	1.32	--	1.75	0.280	1.600	C	EL	17.000	0.560	1.840	C	EL	32.740	0.80	0.280	1.320	C	EL	17.000	
	HL-93 (OPERATING)	N/A		2.08	--	1.35	0.280	2.080	C	EL	17.000	0.560	2.420	C	EL	32.740	N/A	--	--	--	--	--	
	HS-20 (INVENTORY)	36.000	2	1.76	63.360	1.75	0.280	2.110	C	EL	20.500	0.560	2.140	C	EL	32.740	0.80	0.280	1.760	C	EL	20.500	
	HS-20 (OPERATING)	36.000		2.74	98.640	1.35	0.280	2.740	C	EL	20.500	0.560	2.820	C	EL	32.740	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		3.01	40.635	1.40	0.280	4.570	C	EL	17.000	0.560	5.780	C	EL	32.740	0.80	0.280	3.010	C	EL	17.000	
		SNGARBS2		2.59	51.800	1.40	0.280	3.880	C	EL	20.500	0.560	4.320	C	EL	32.740	0.80	0.280	2.590	C	EL	20.500	
		SNAGRIS2		2.56	56.320	1.40	0.280	3.840	C	EL	20.500	0.560	4.110	C	EL	32.740	0.80	0.280	2.560	C	EL	20.500	
		SNCOTTS3		1.51	41.148	1.40	0.280	2.290	C	EL	17.000	0.560	2.850	C	EL	27.500	0.80	0.280	1.510	C	EL	17.000	
		SNAGGRS4		1.40	48.895	1.40	0.280	2.120	C	EL	17.000	0.560	2.530	C	EL	32.740	0.80	0.280	1.400	C	EL	17.000	
		SNS5A		1.35	47.993	1.40	0.280	2.060	C	EL	17.000	0.560	2.670	C	EL	32.740	0.80	0.280	1.350	C	EL	17.000	
		SNS6A		1.31	52.335	1.40	0.280	1.980	C	EL	17.000	0.560	2.500	C	EL	32.740	0.80	0.280	1.310	C	EL	17.000	
		SNS7B	3	1.25	52.500	1.40	0.280	1.890	C	EL	17.000	0.560	2.570	C	EL	32.740	0.80	0.280	1.250	C	EL	17.000	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3		1.61	53.130	1.40	0.280	2.450	C	EL	17.000	0.560	2.950	C	EL	32.740	0.80	0.280	1.610	C	EL	17.000	
		TNT4A		1.61	53.251	1.40	0.280	2.450	C	EL	17.000	0.560	2.780	C	EL	32.740	0.80	0.280	1.610	C	EL	17.000	
		TNT6A		1.41	58.656	1.40	0.280	2.150	C	EL	17.000	0.560	2.730	C	EL	32.740	0.80	0.280	1.410	C	EL	17.000	
		TNT7A		1.46	61.320	1.40	0.280	2.220	C	EL	17.000	0.560	2.510	C	EL	32.740	0.80	0.280	1.460	C	EL	17.000	
		TNT7B		1.44	60.480	1.40	0.280	2.180	C	EL	17.000	0.560	2.430	C	EL	32.740	0.80	0.280	1.440	C	EL	17.000	
		TNAGRIT4		1.45	62.350	1.40	0.280	2.190	C	EL	20.500	0.560	2.330	C	EL	32.740	0.80	0.280	1.450	C	EL	17.000	
TNAGT5A			1.34	60.300	1.40	0.280	2.040	C	EL	17.000	0.560	2.460	C	EL	32.740	0.80	0.280	1.340	C	EL	17.000		
TNAGT5B			1.29	58.050	1.40	0.280	1.960	C	EL	17.000	0.560	2.190	C	EL	32.740	0.80	0.280	1.290	C	EL	17.000		

34'-0"

BRG. TO BRG.

⬡3

⬡2

⬡1

BENT 2

END BENT 2

SPAN C

LRFR SUMMARY

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:

-
-
-
-

⬡ 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

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COLUMBUS COUNTY
STATION: 20+46.50 -L-

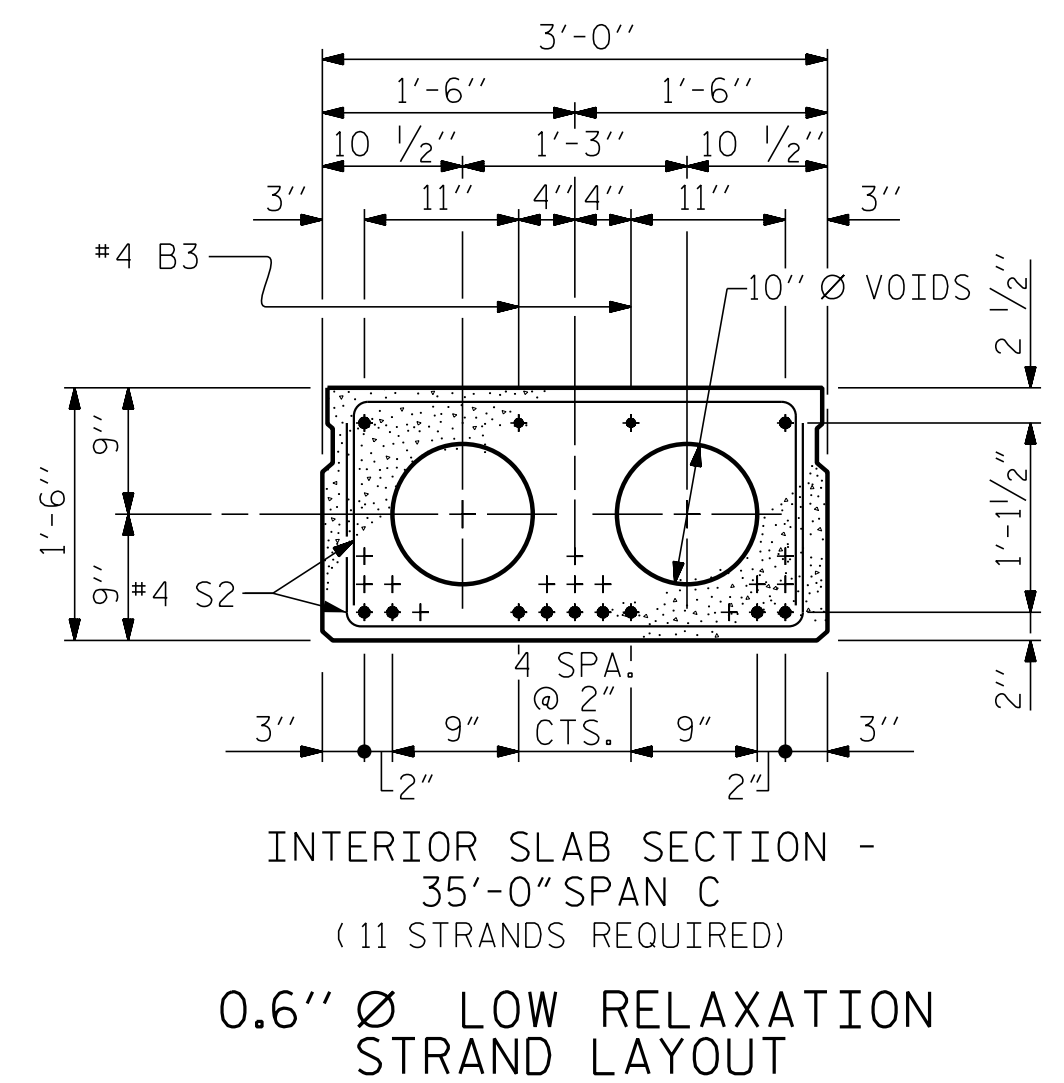


Diagram illustrating the exterior slab section with dimensions and reinforcement details:

- Overall width: 3'-0"
- Overall height: 1'-6"
- Reinforcement bars: #5 S3, #4 "B", #4 S2
- Dimensions and offsets:
 - Top edge offsets: 10 1/2" (left), 1'-3" (center), 10 1/2" (right)
 - Left edge offsets: 1'-4 1/2" (top), 9" (middle), 9" (bottom)
 - Right edge offsets: 2 1/2" (top), 2" (bottom)
 - Internal offsets: 3 3/8" CL. (left), 3" (center), 3" (right)
 - Bottom edge offsets: 3" (left), 10" Ø VOIDS (center), 3" (right)

END ELEVATION

3'-0"

1'-6"

8 1/2"

9/2"

9/2"

8 1/2"

1'-2"

4"

4"

1'-2"

3"

3"

2 1/2" Ø DOWEL HOLES

#5 S1

#5 S1

1" CL

1" CL

#4 "B"

#5 S1

#5 S1

2"

PROJECT NO. 17BP.6.R.70
COLUMBUS COUNTY
 STATION: 20+46.50 -L-

ENGINEER OF RECORD

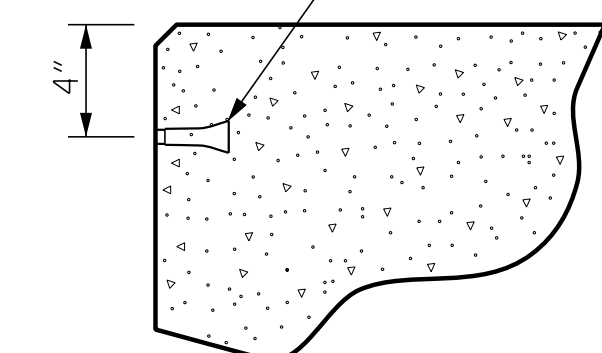
NORTH CAROLINA
PROFESSIONAL
SEAL
14091
5/11/2017
ENGINEER
BUCK CHARLES HUNT

DocuSignified by
Buck Charles Hunt
eScriber

3'-0" X 1'-6"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

DRAWN BY : J. PENDERGRAFT DATE : 11-16
CHECKED BY : B.C. HUNT DATE : 12-16

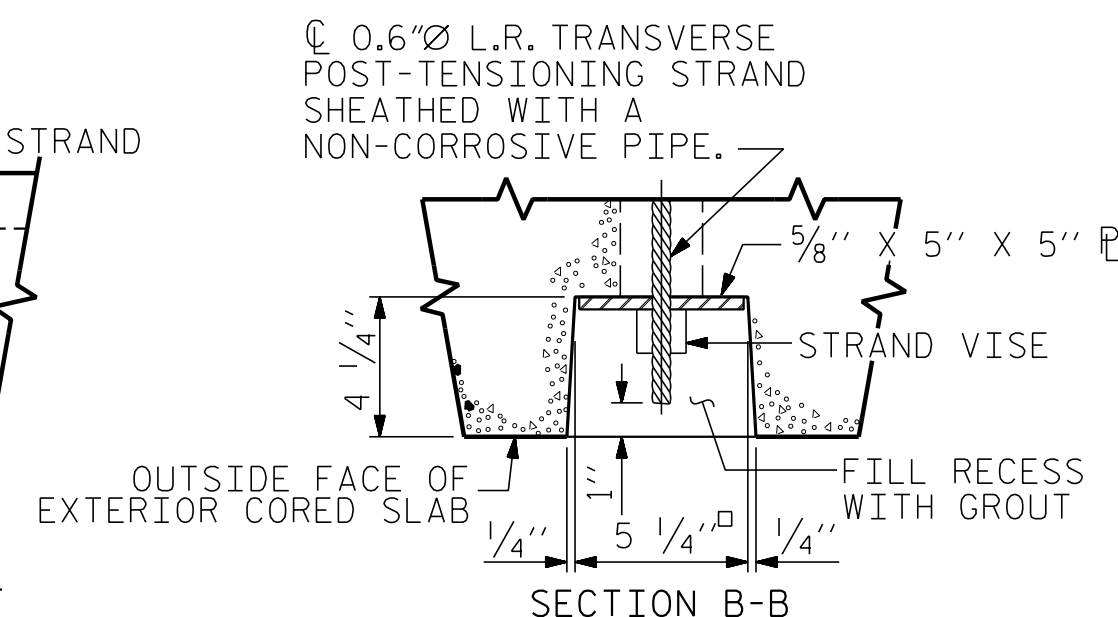
STD. NO. 21" PCS2_33_90S



THREADED INSERT DETAIL



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



④ 0.6"Ø L.R. TRANSVERSE
POST-TENSIONING STRAND
SHEATHED WITH A
NON-CORROSIVE PIPE. →

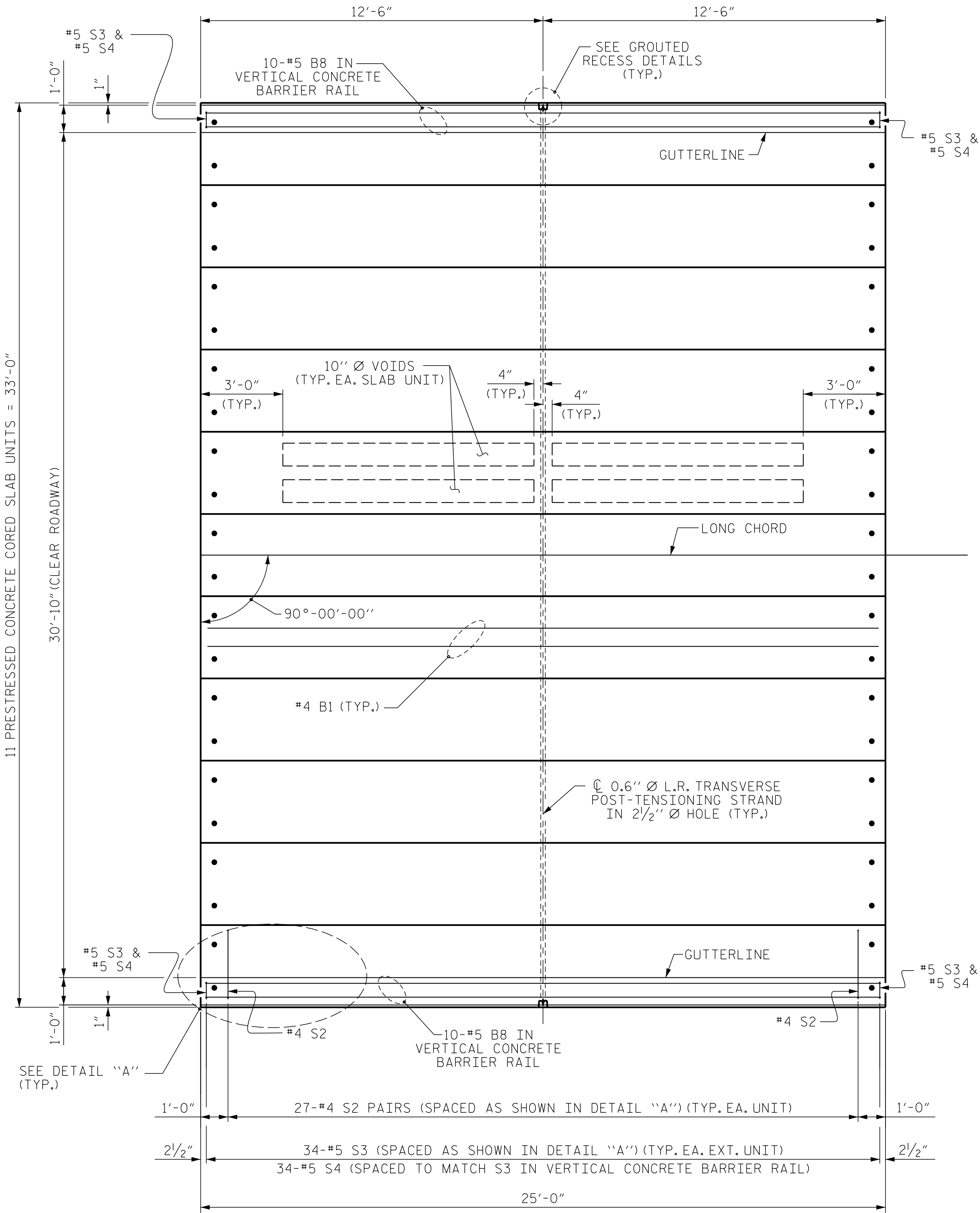
OUTSIDE FACE OF EXTERIOR CORED SLAB

FILL RECESS WITH GROUT

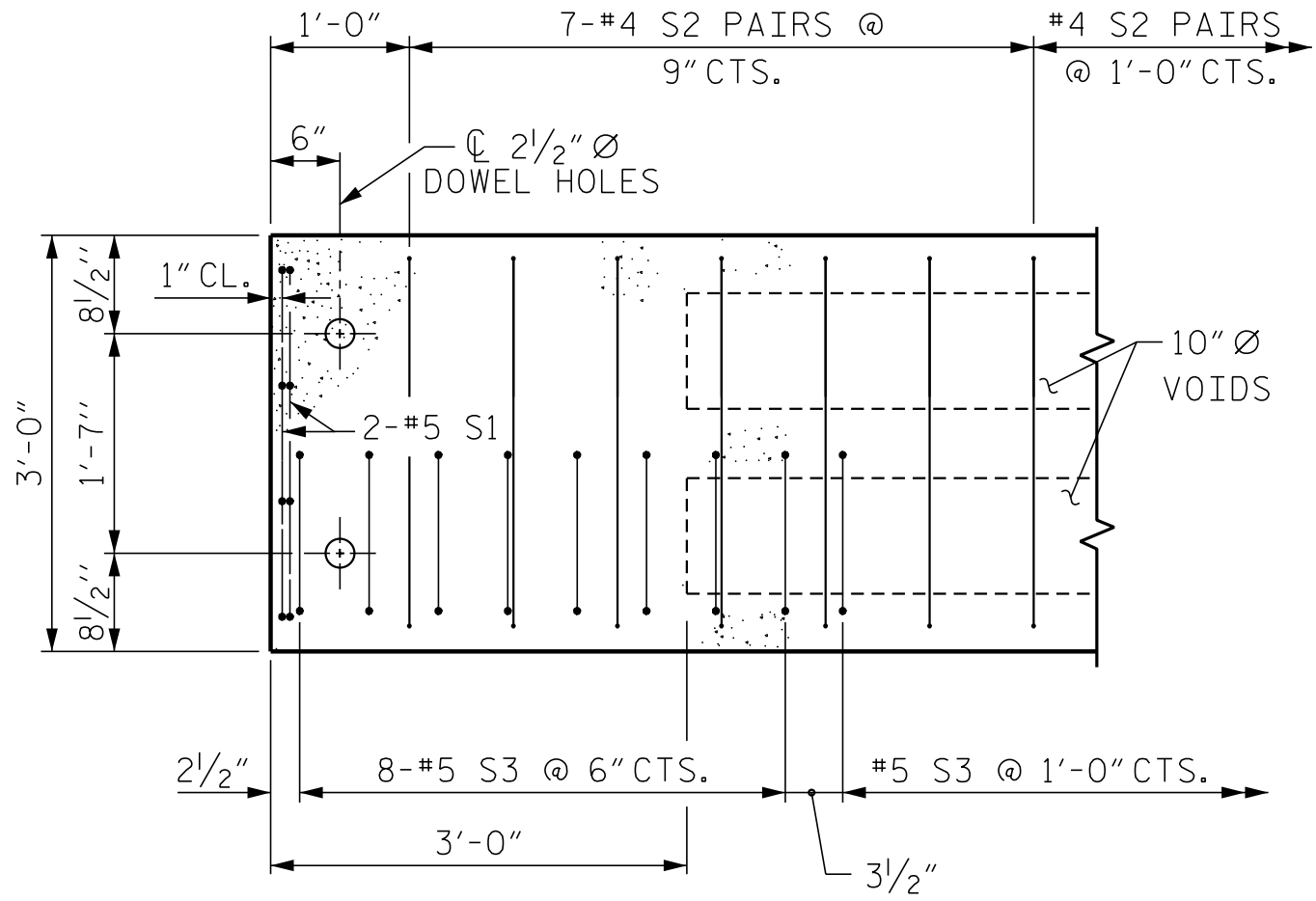
1/4" 5 1/4"

P:\2016\16150.01_COLUMBUS_198 Structures\DWG\COLUMBUS_198_PS.dgn
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CHECKED BY : B.C.HUNT DATE : 12-16



PLAN OF UNIT



DETAIL "A"

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

PROJECT NO. 17BP.6.R.70
COLUMBUS COUNTY
STATION: 20+46.50 -L-

SHEET 2 OF 6

ENGINEER OF RECORD

SEAL

5/11/2017

ENGINEER

CHARLES HUNT

DocuSigned By
Erick Charles Hunt
2F10C8973BA4EC...

WETHERILL

ENGINEERING

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Raleigh, N.C. 27606
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Fax: 919 851 8107
LICENSE NO. F-4377

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

PLAN OF 25' UNIT

30'-10" CLEAR ROADWAY

90° SKEW

SPAN A

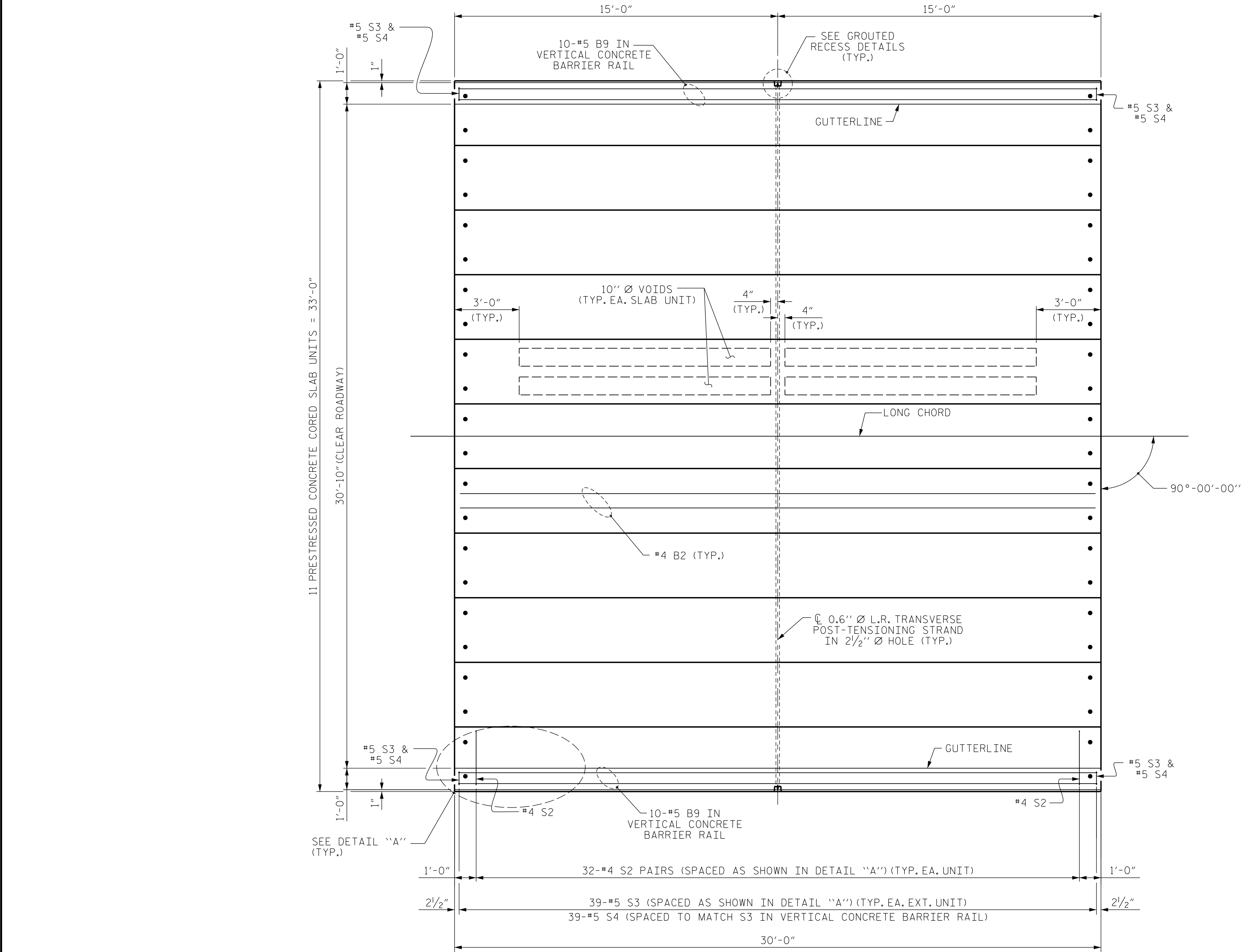
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

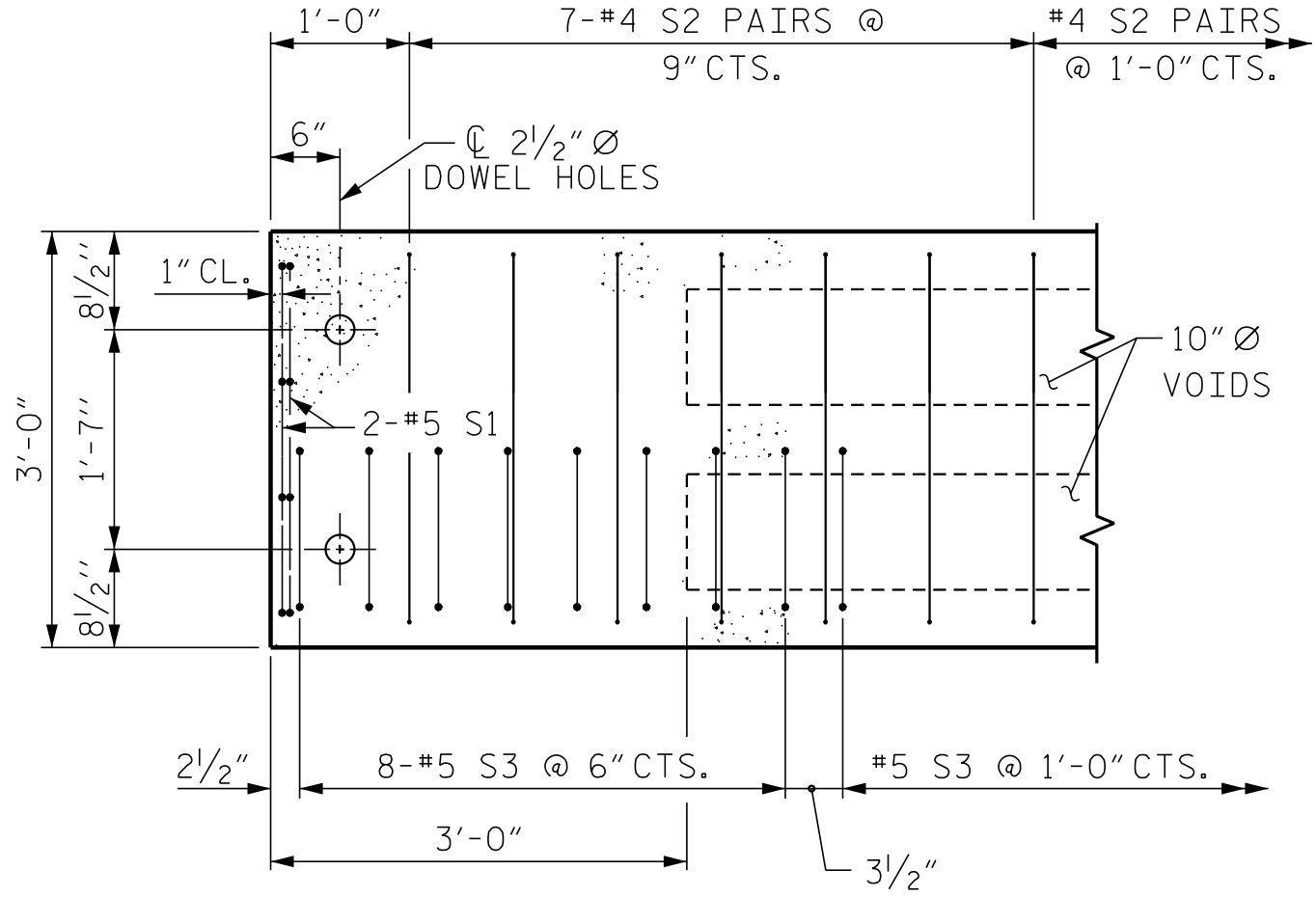
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PLAN OF UNIT



DETAIL "A"

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

PROJECT NO. 17BP.6.R.70

COLUMBUS COUNTY

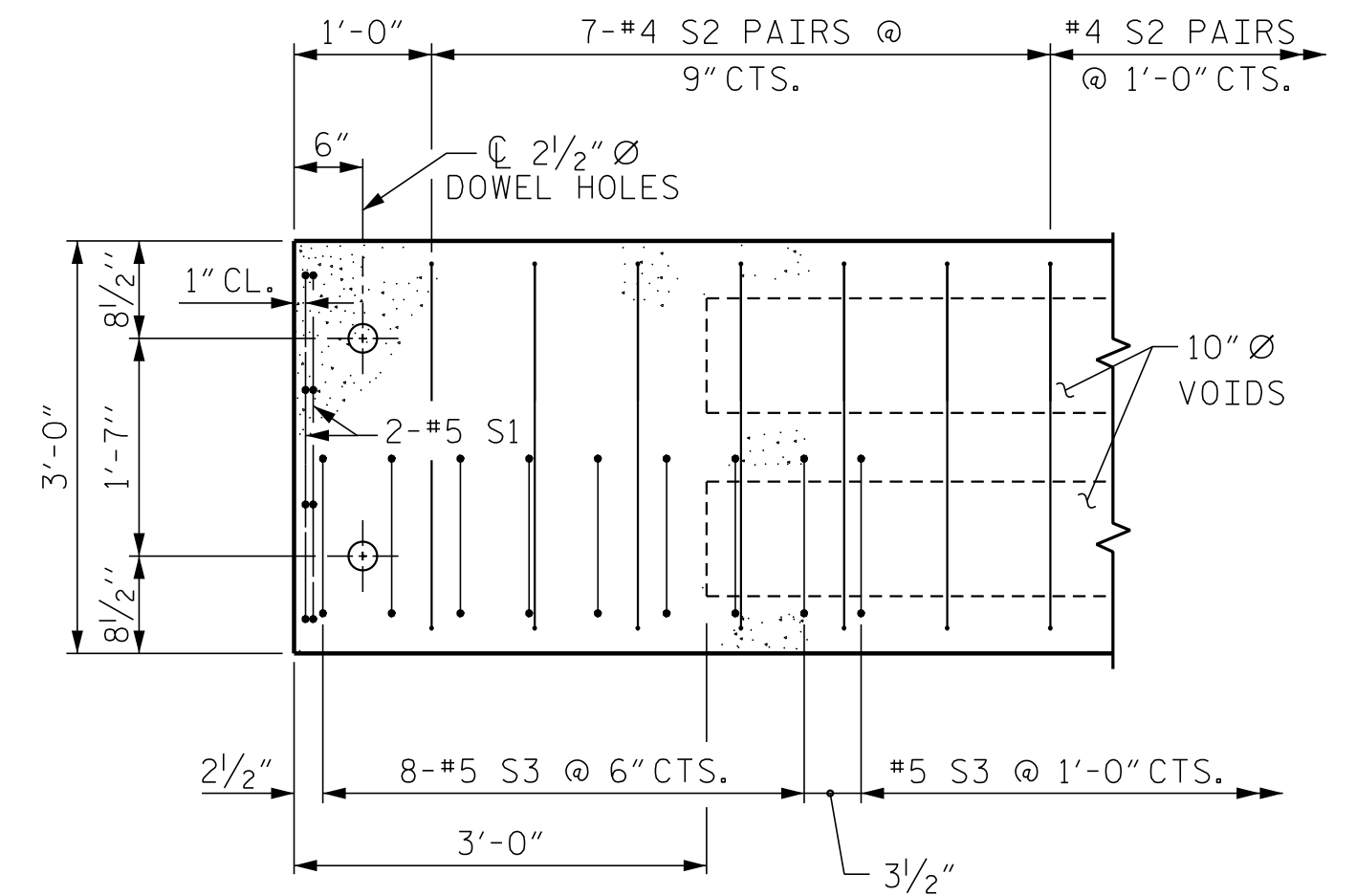
STATION: 20+46.50 -L-

SHEET 3 OF 6

ENGINEER OF RECORD		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH			
		PLAN OF 30' UNIT 30'-10" CLEAR ROADWAY 90° SKEW SPAN B			
1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-4377		REVISIONS			
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-8
TOTAL SHEETS					22

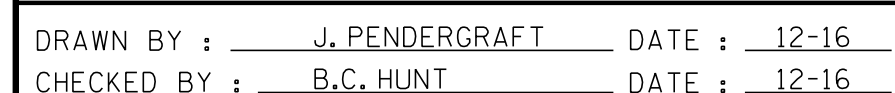
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CHECKED BY : B.C. HUNT DATE : 12-16

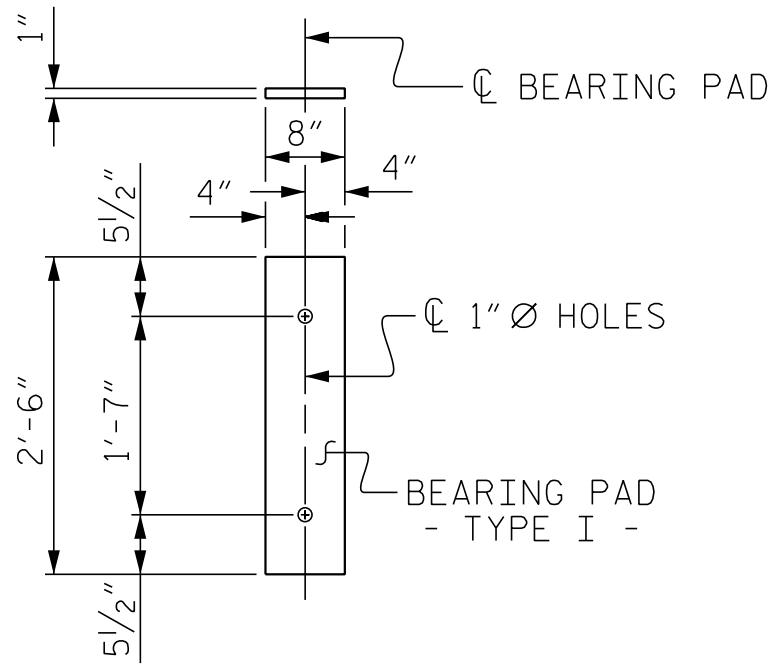


(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR
UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

SHEET 4 OF 6



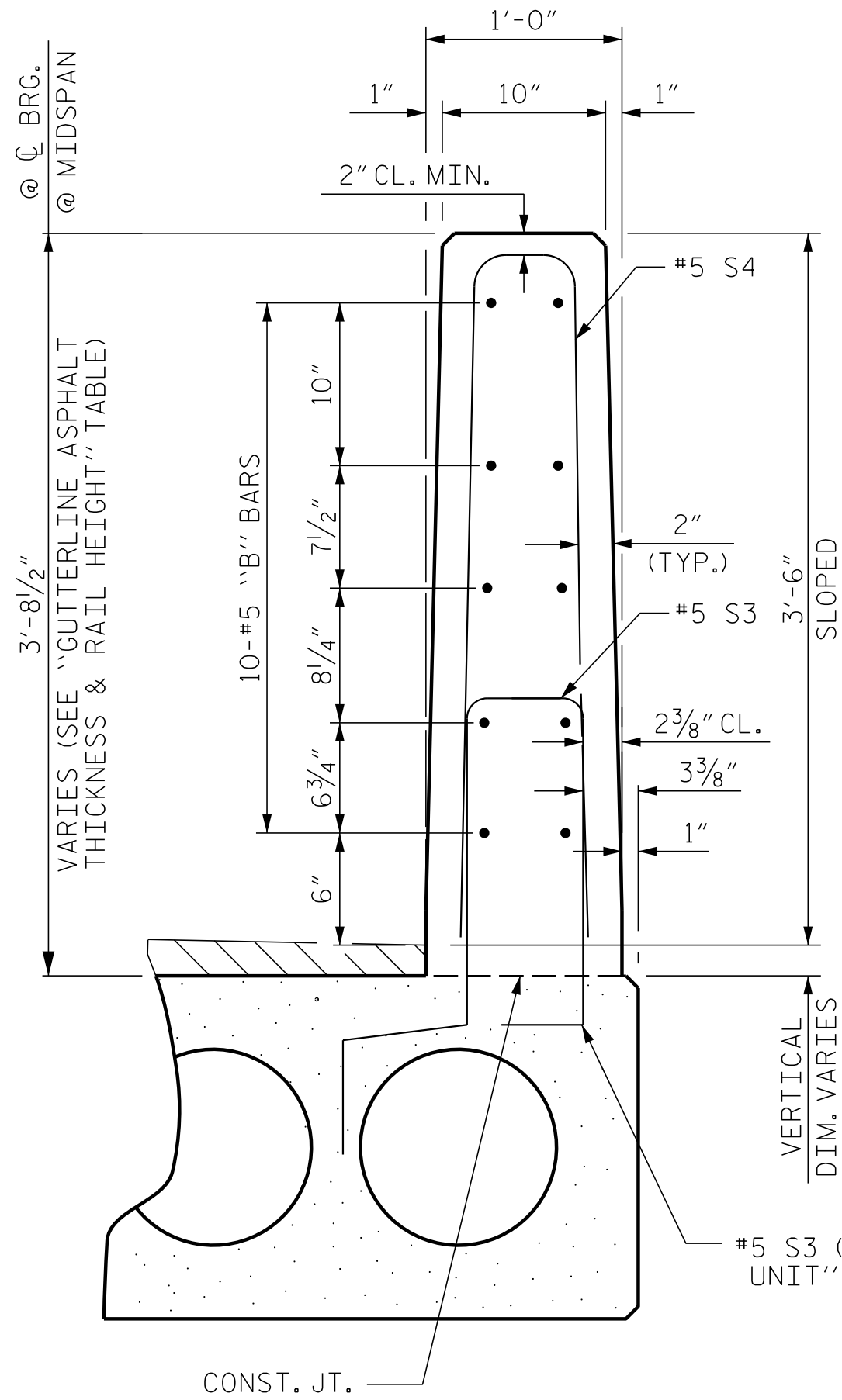
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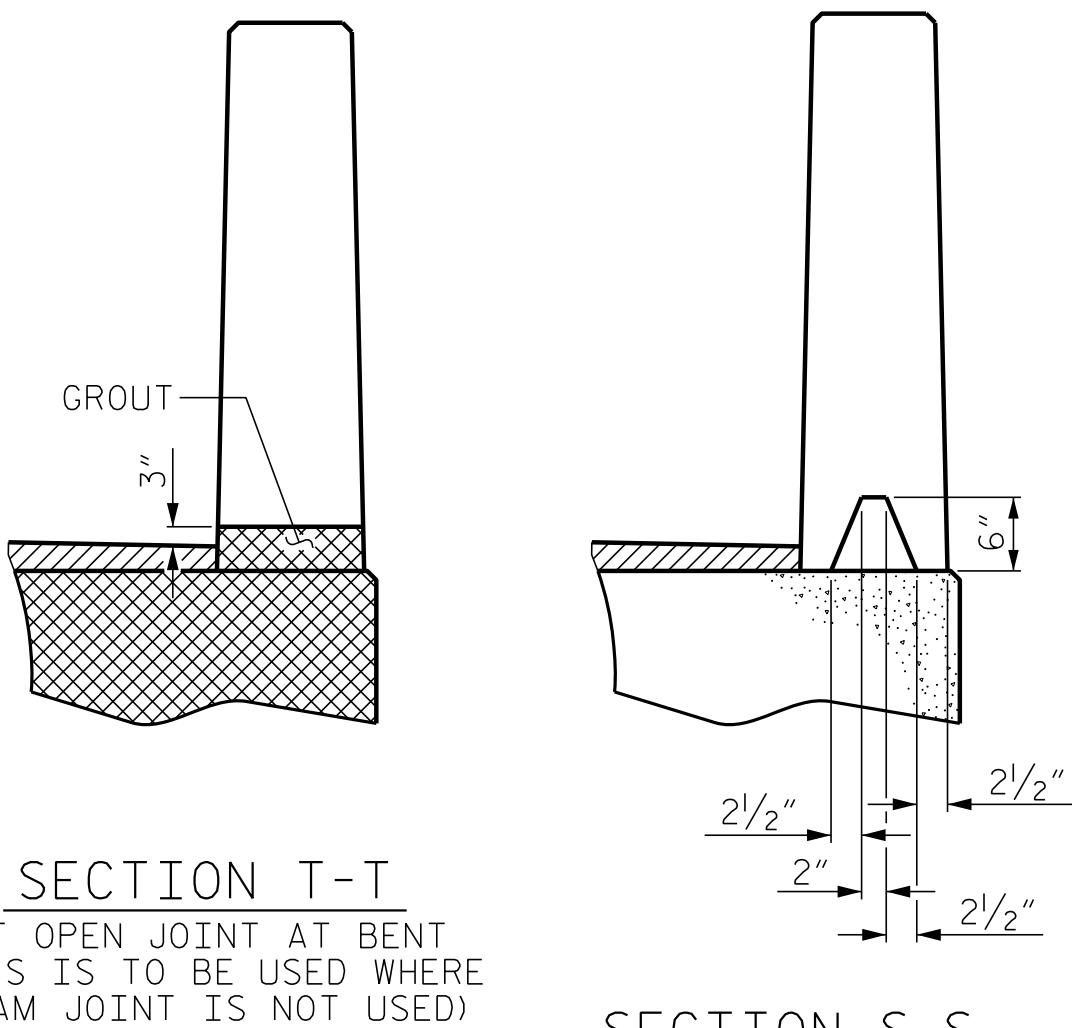
FIXED END
(TYPE I - 66 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

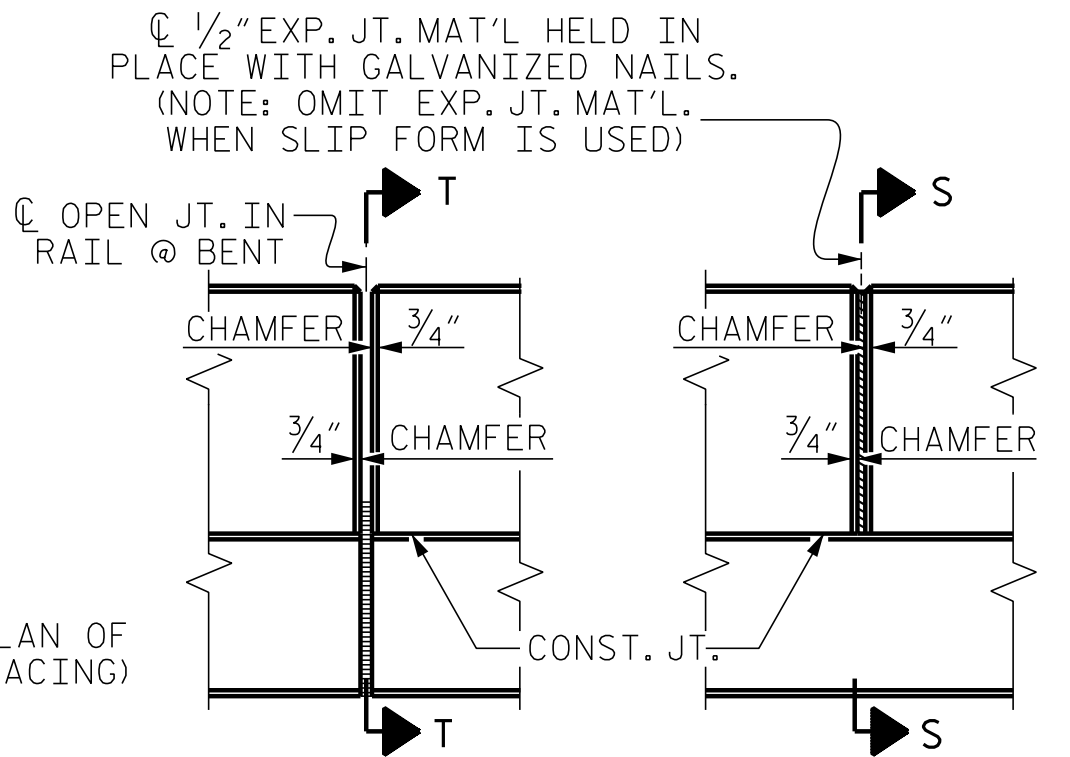


VERTICAL CONCRETE BARRIER RAIL SECTION

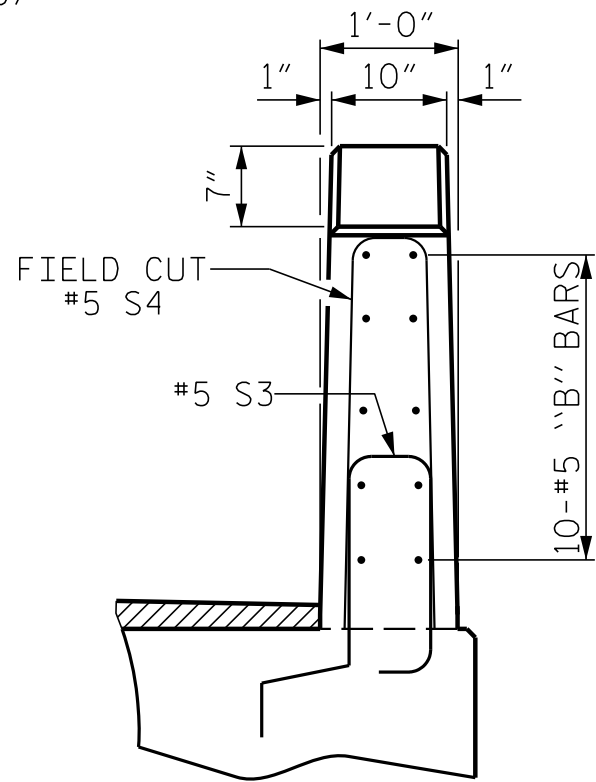


SECTION T-T
AT OPEN JOINT AT BENT
(THIS IS TO BE USED WHERE
FOAM JOINT IS NOT USED)

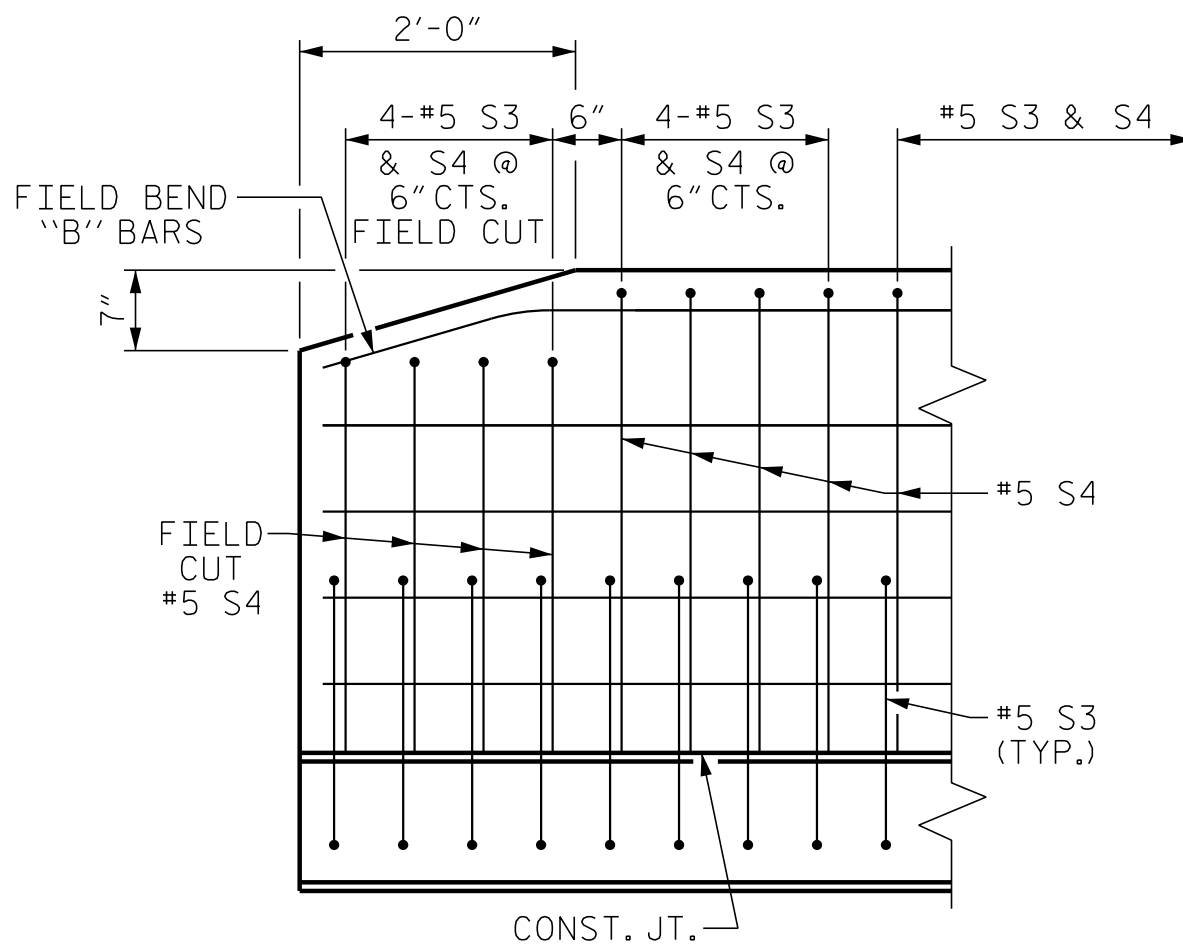
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS



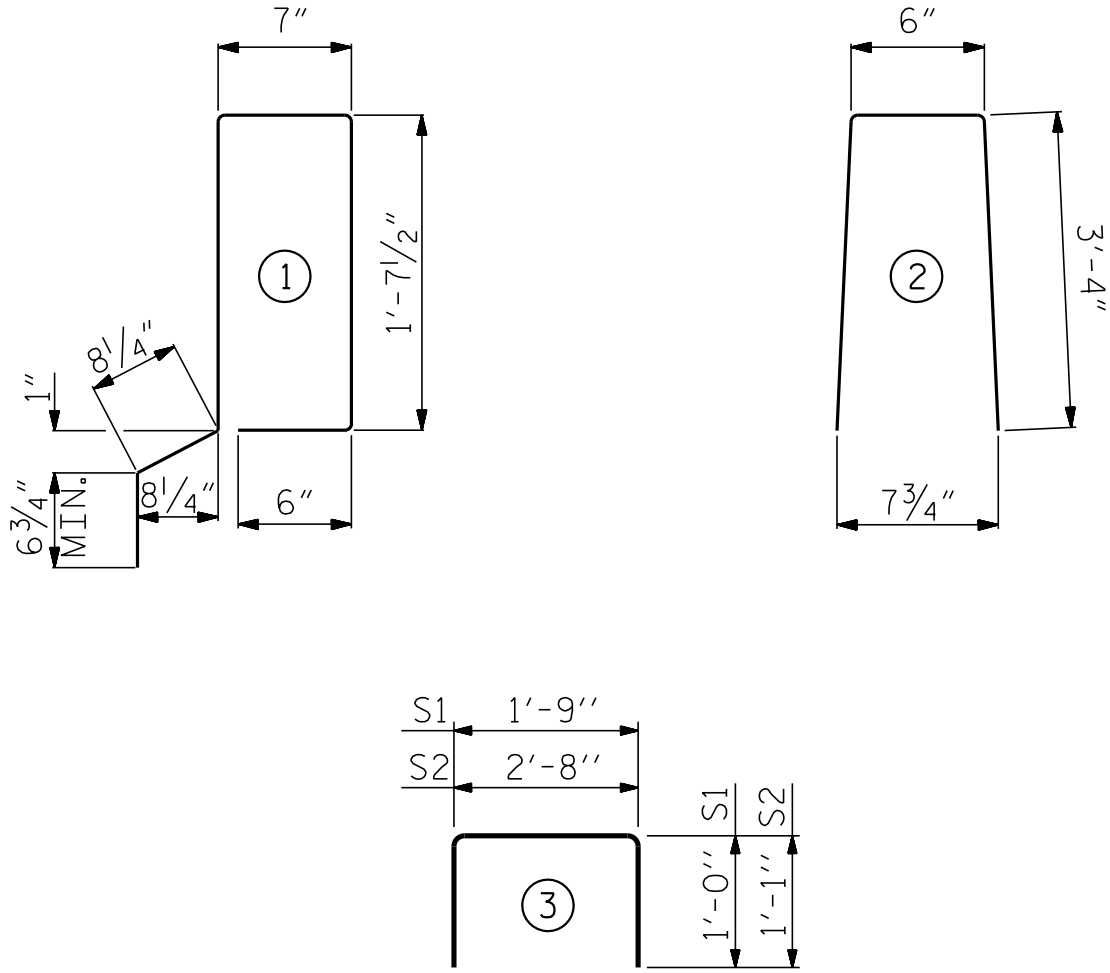
END VIEW



SIDE VIEW

END OF RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

GRADE 270 STRANDS

AREA (SQUARE INCHES)	0.6" Ø L.R.
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

CONCRETE RELEASE STRENGTH

UNIT	PSI
25', 30' & 35' UNITS	4000

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

PROJECT NO. 17BP.6.R.70
COLUMBUS COUNTY
STATION: 20+46.50 -L-

SHEET 5 OF 6

ENGINEER OF RECORD

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-6"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

REVISIONS

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

SHEET NO. S-10
TOTAL SHEETS 22

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DRAWN BY : J PENDERGRAFT DATE : 12-16
CHECKED BY : B.C. HUNT DATE : 12-16

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
25' UNIT			
EXTERIOR C.S.	2	25'-0"	50'-0"
INTERIOR C.S.	9	25'-0"	225'-0"
TOTAL	11		275'-0"

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
30' UNIT			
EXTERIOR C.S.	2	30'-0"	60'-0"
INTERIOR C.S.	9	30'-0"	270'-0"
TOTAL	11		330'-0"

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
35' UNIT			
EXTERIOR C.S.	2	35'-0"	70'-0"
INTERIOR C.S.	9	35'-0"	315'-0"
TOTAL	11		385'-0"

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	25' UNIT					
* B8	20	20	#5	STR	24'-7"	513
* S4	68	68	#5	2	7'-2"	508
*EPOXY COATED REINFORCING STEEL				LBS.		1021
CLASS AA CONCRETE				CU.YDS.		6.4
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		50.25

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	30' UNIT					
* B9	20	20	#5	STR	29'-7"	617
* S4	78	78	#5	2	7'-2"	583
*EPOXY COATED REINFORCING STEEL				LBS.		1200
CLASS AA CONCRETE				CU.YDS.		7.7
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		60.25

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	35' UNIT					
*B10	40	40	#5	STR	17'-1"	713
* S4	88	88	#5	2	7'-2"	658
*EPOXY COATED REINFORCING STEEL				LBS.		1371
CLASS AA CONCRETE				CU.YDS.		9.0
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		70.25

BILL OF MATERIAL FOR ONE 25' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B1	2	#4	STR	24'-8"	33	24'-8"	33
S1	8	#5	3	3'-9"	31	3'-9"	31
S2	54	#4	3	4'-10"	174	4'-10"	174
* S3	34	#5	1	5'-7"	198		
REINFORCING STEEL				LBS.		238	
* EPOXY COATED REINFORCING STEEL				LBS.		198	
5000 P.S.I. CONCRETE				CU. YDS.		3.4	
0.6" Ø L.R. STRANDS				No.		10	

BILL OF MATERIAL FOR ONE 30' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B2	2	#4	STR	29'-8"	40	29'-8"	40
S1	8	#5	3	3'-9"	31	3'-9"	31
S2	64	#4	3	4'-10"	207	4'-10"	207
* S3	39	#5	1	5'-7"	227		
REINFORCING STEEL				LBS.		278	
* EPOXY COATED REINFORCING STEEL				LBS.		227	
5000 P.S.I. CONCRETE				CU. YDS.		4.0	
0.6" Ø L.R. STRANDS				No.		10	

BILL OF MATERIAL FOR ONE 35' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B3	4	#4	STR	18'-3"	49	18'-3"	49
S1	8	#5	3	3'-9"	31	3'-9"	31
S2	74	#4	3	4'-10"	239	4'-10"	239
* S3	44	#5	1	5'-7"	256		
REINFORCING STEEL				LBS.		319	
* EPOXY COATED REINFORCING STEEL				LBS.		256	
5000 P.S.I. CONCRETE				CU. YDS.		4.6	
0.6" Ø L.R. STRANDS				No.		11	

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 1'-9"
25', 30' & 35' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/8" ↓
FINAL CAMBER	1/8" ↑

** INCLUDES FUTURE WEARING SURFACE

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
25', 30' & 35' UNITS	2 5/8"	3'-8 5/8"

PROJECT NO. 17BP.6.R.70
COLUMBUS COUNTY
STATION: 20+46.50 -L-

SHEET 6 OF 6

ENGINEER OF RECORD

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Erick Charles Hunt
2F19C8973BAEC...

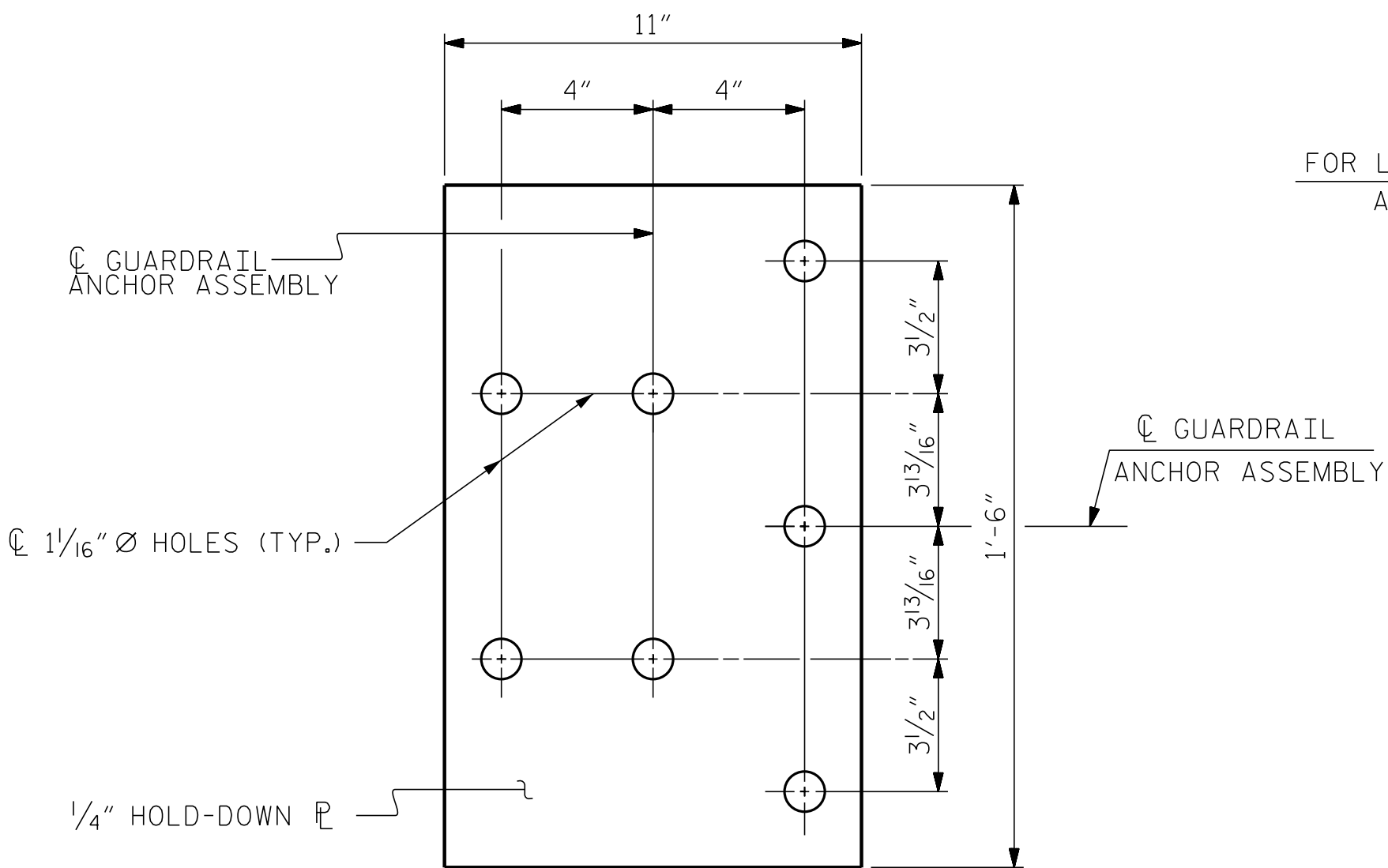
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Fax: 919 851 8107
LICENSE NO. F-4377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0'' X 1'-6''
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

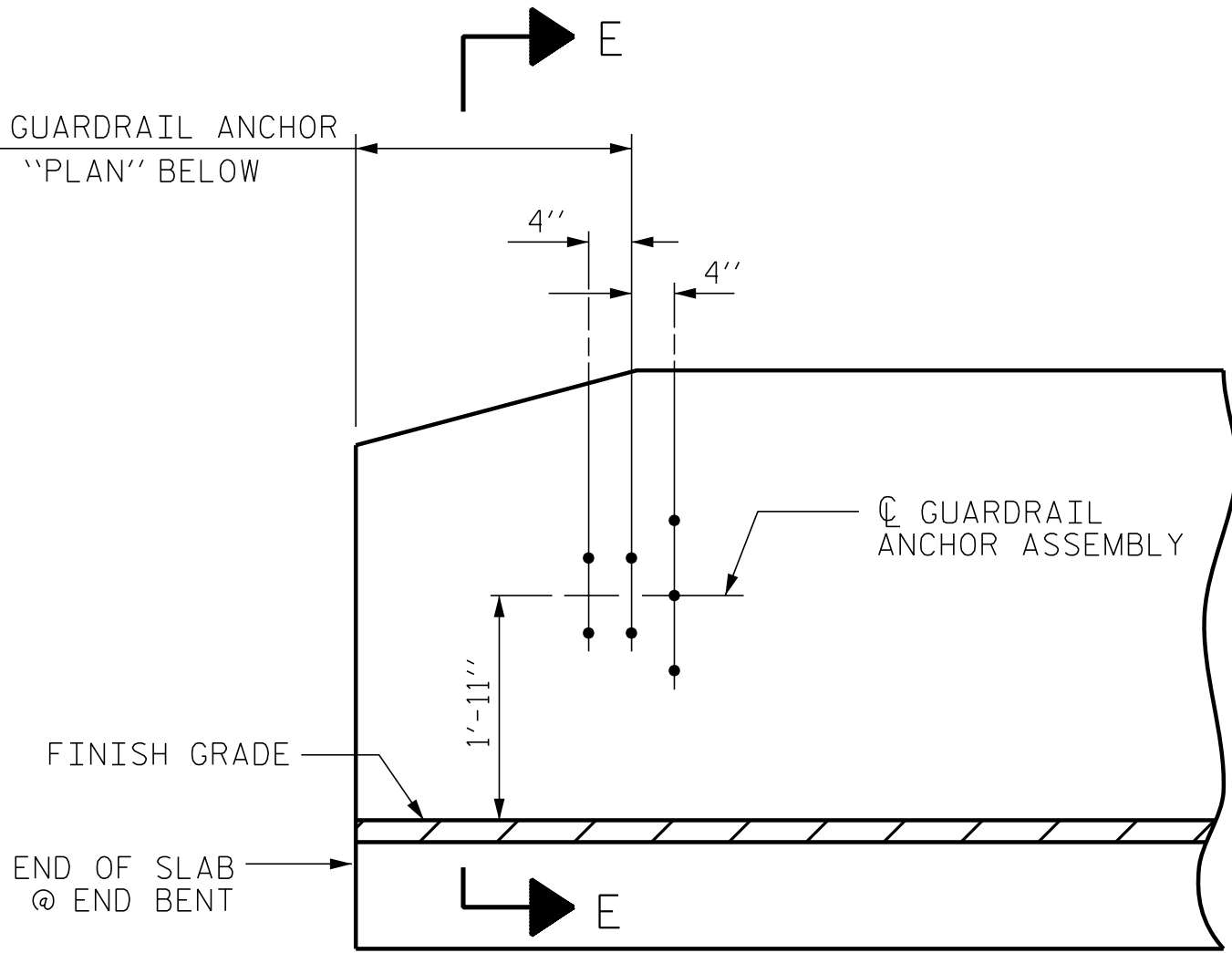
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			22

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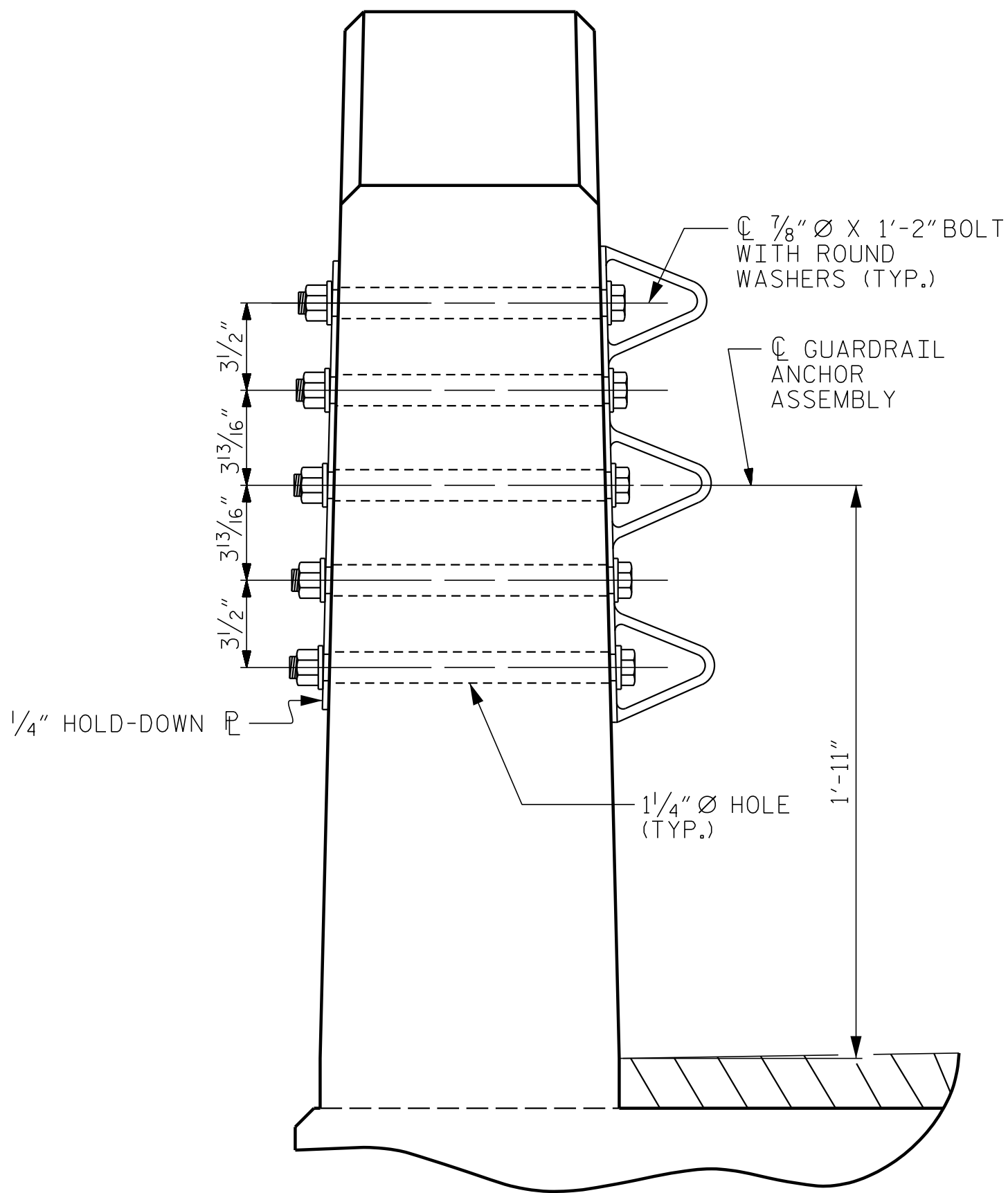


PLAN

FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW

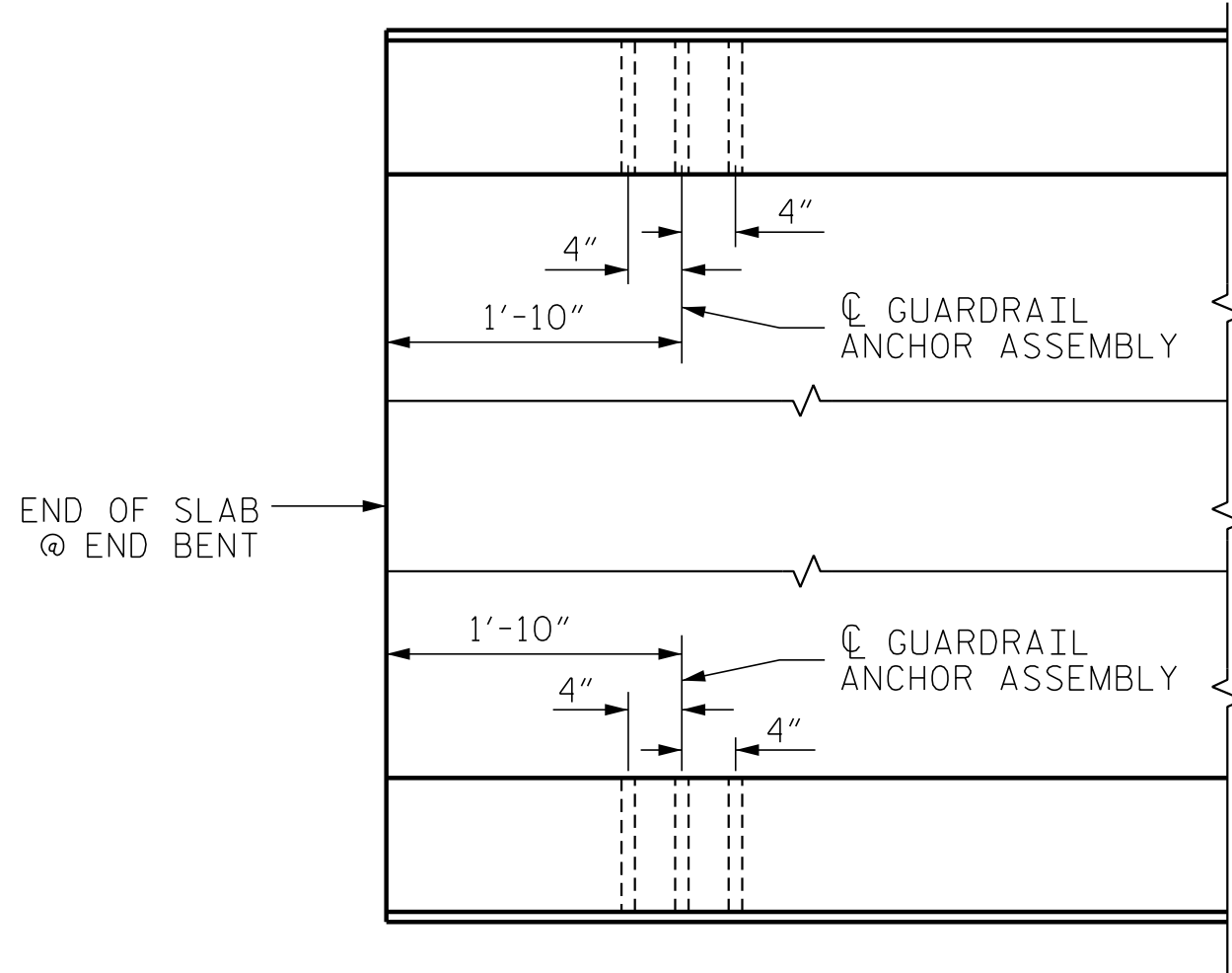


ELEVATION



SECTION E-E

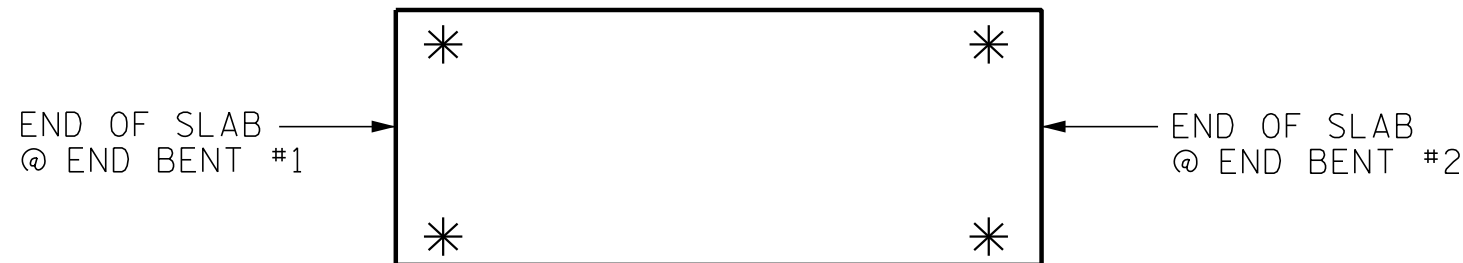
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 17BP.6.R.70

COLUMBUS COUNTY

STATION: 20+46.50 -L-

DRAWN BY : J. PENDERGRAFT DATE : 12-16
CHECKED BY : B.C. HUNT DATE : 12-16

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH			
		STANDARD GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL			
1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-4377		REVISIONS			
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-12
TOTAL SHEETS					22

(SHT 1) STD. NO. GRA3

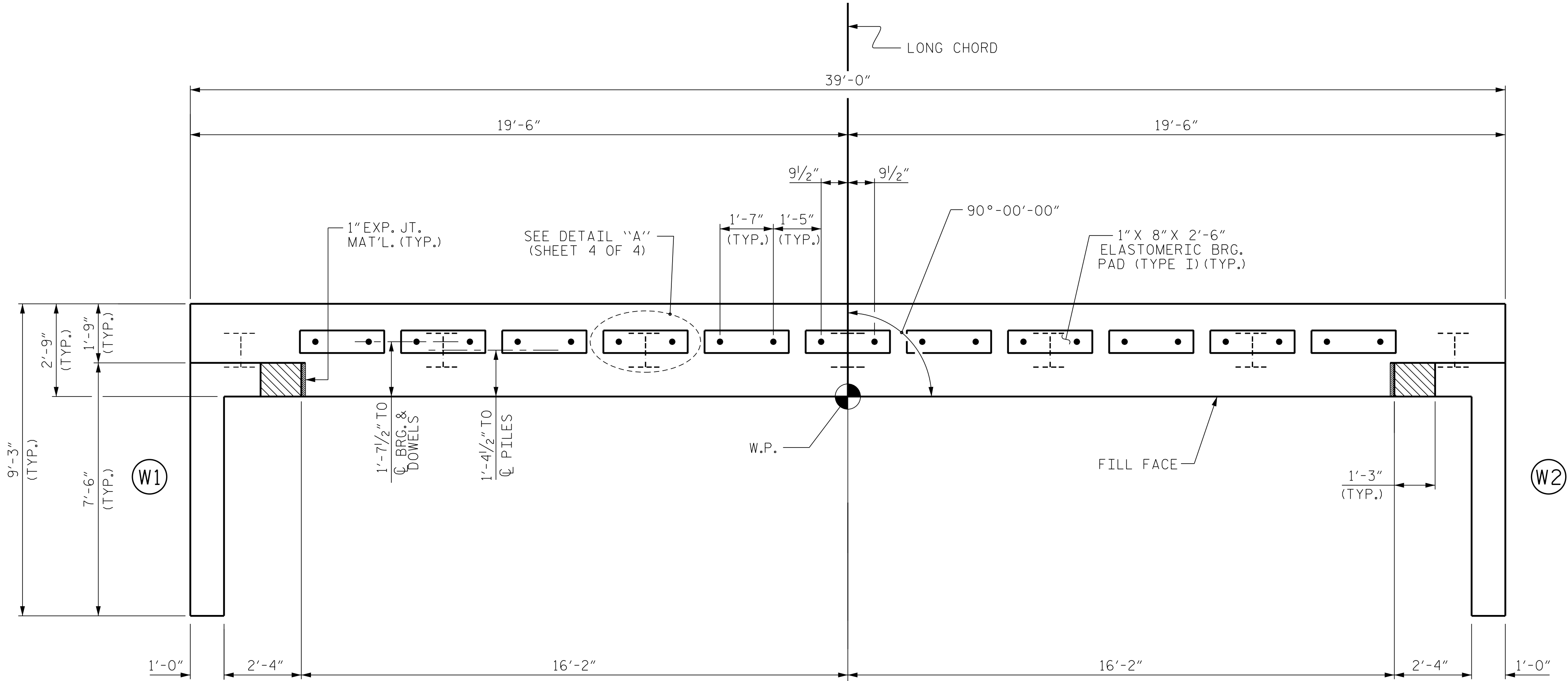
NOTES

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

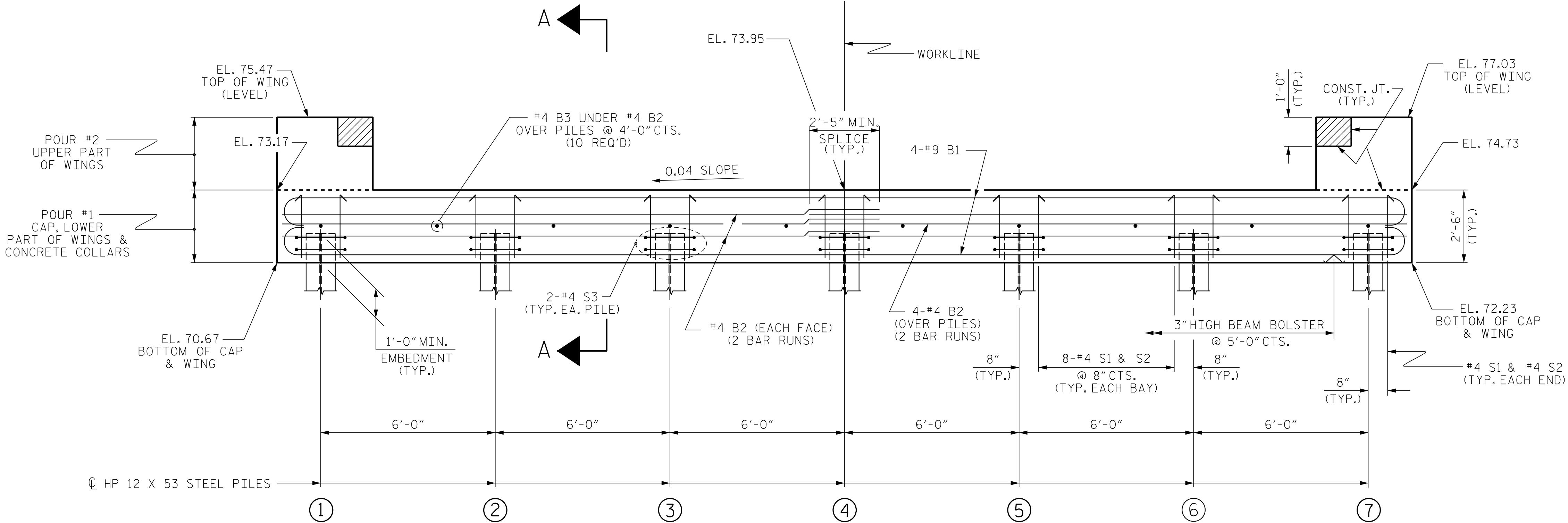
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPlice DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

TOP OF PILE ELEVATIONS	
①	71.73
②	71.97
③	72.21
④	72.45
⑤	72.69
⑥	72.93
⑦	73.17

PROJECT NO. 17BP.6.R.70
COLUMBUS COUNTY
STATION: 20+46.50 -L-

SHEET 1 OF 4

ENGINEER OF RECORD

SEAL

14091

5/11/2017

ENGINEER

CHARLES HUNT

DocuSign Envelope ID: 2F16C8B77BA6EC

Buck Charles Hunt

1223 Jones Franklin Rd.

Raleigh, N.C. 27606

Bus: 919 851 8077

Fax: 919 851 8107

LICENSE NO. F-6377

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

SUBSTRUCTURE

END BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-13
2			4			
TOTAL SHEETS						22

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ASSEMBLED BY : J. PENDERGRAFT	DATE : 12-16
CHECKED BY : B.C. HUNT	DATE : 1-17
DRAWN BY : DGE	01/10
CHECKED BY : MKT	01/10
REV. 4/15	MAA/MTG

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.

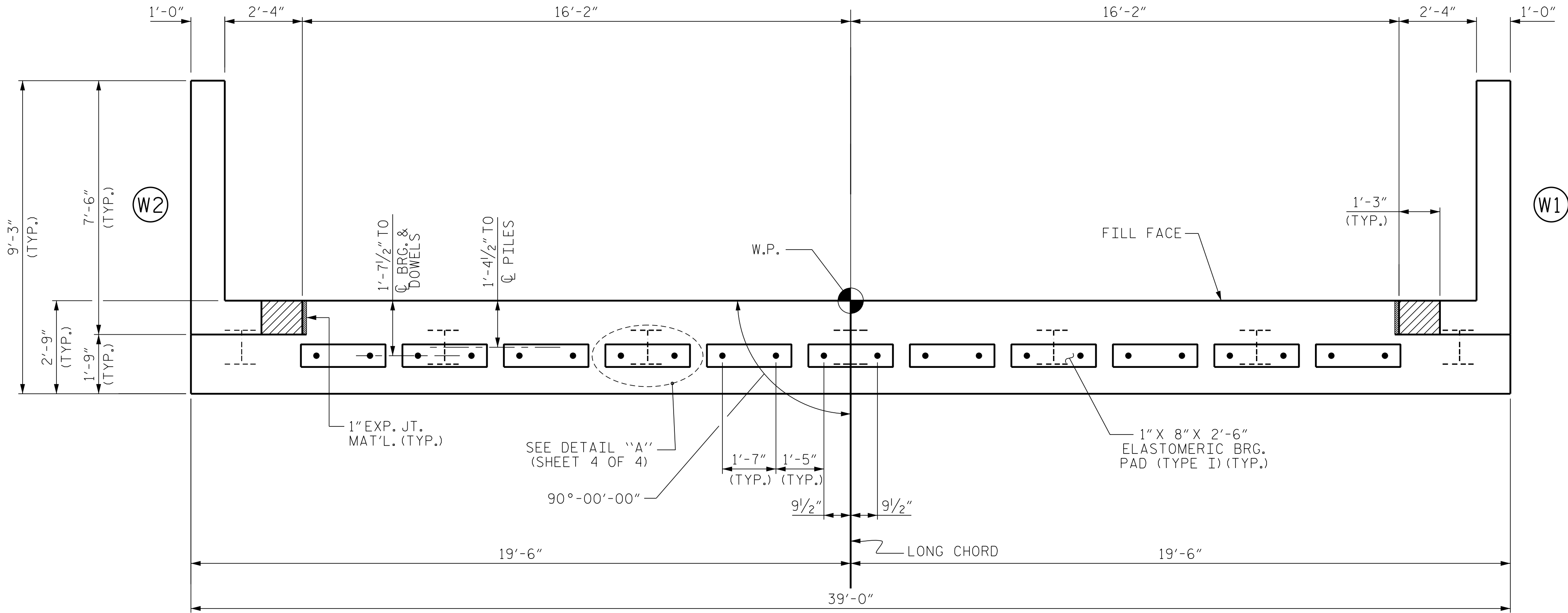
NOTES

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.

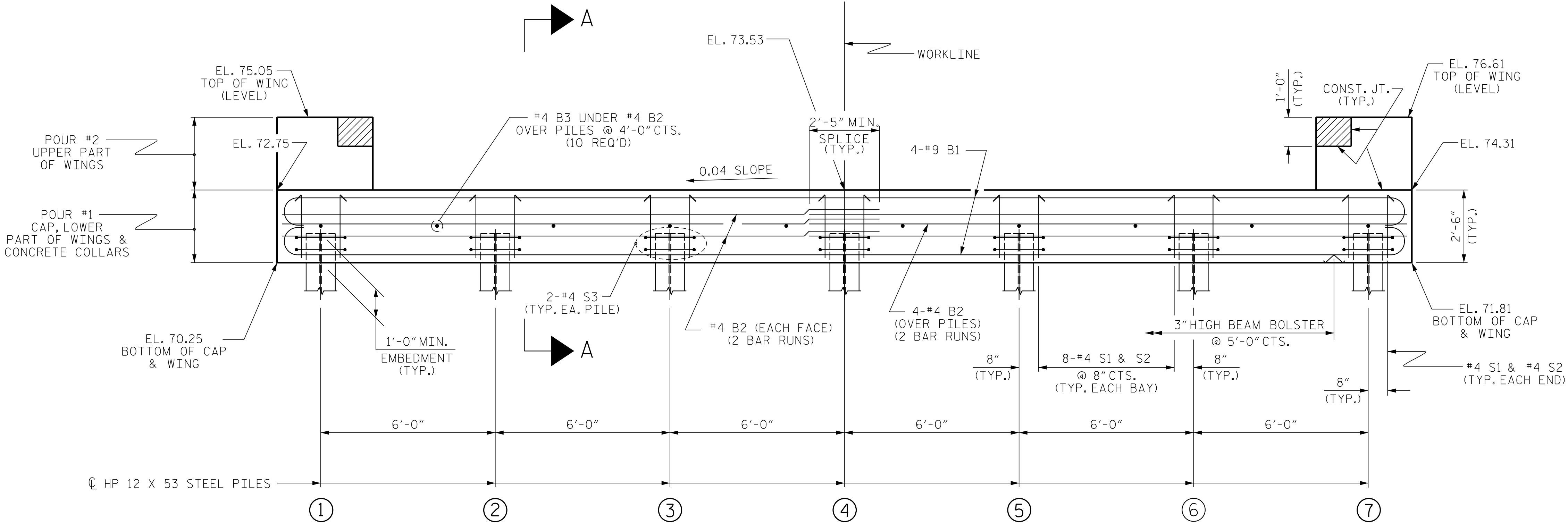
FOR PILE SPlice DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

TOP OF PILE ELEVATIONS	
①	71.31
②	71.55
③	71.79
④	72.03
⑤	72.27
⑥	72.51
⑦	72.75

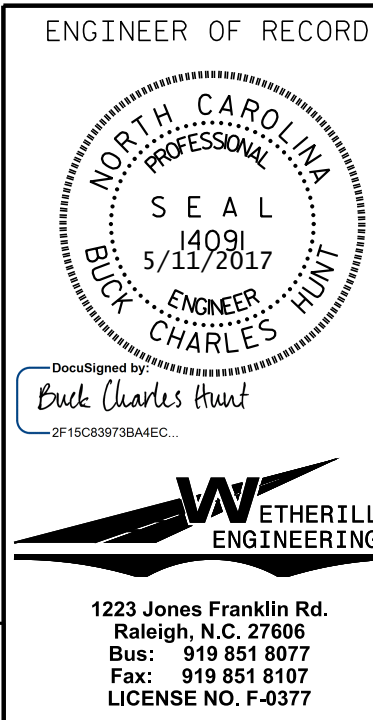


ELEVATION

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.

PROJECT NO. 17BP.6.R.70
COLUMBUS COUNTY
STATION: 20+46.50 -L-

SHEET 2 OF 4

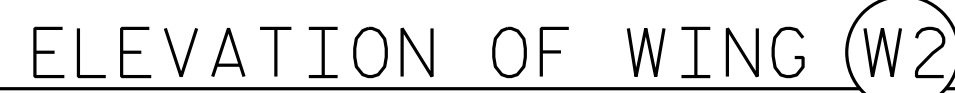
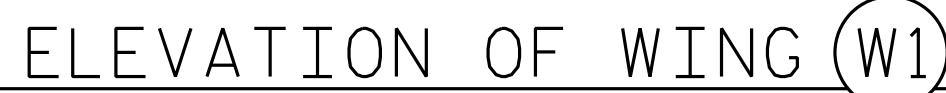


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-14
2			4			
TOTAL SHEETS						22

ASSEMBLED BY : J. PENDERGRAFT	DATE : 12-16
CHECKED BY : B.C. HUNT	DATE : 1-17
DRAWN BY : DGE	01/10
CHECKED BY : MKT	01/10
REV. 4/15	MAA/MTG

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WING DETAILS

DOCUMENT NOT CONSIDERED FINAL
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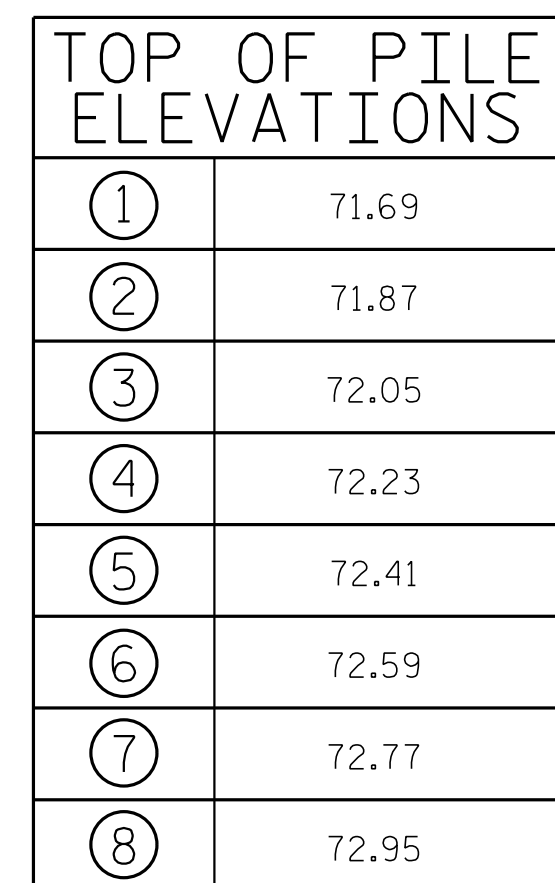
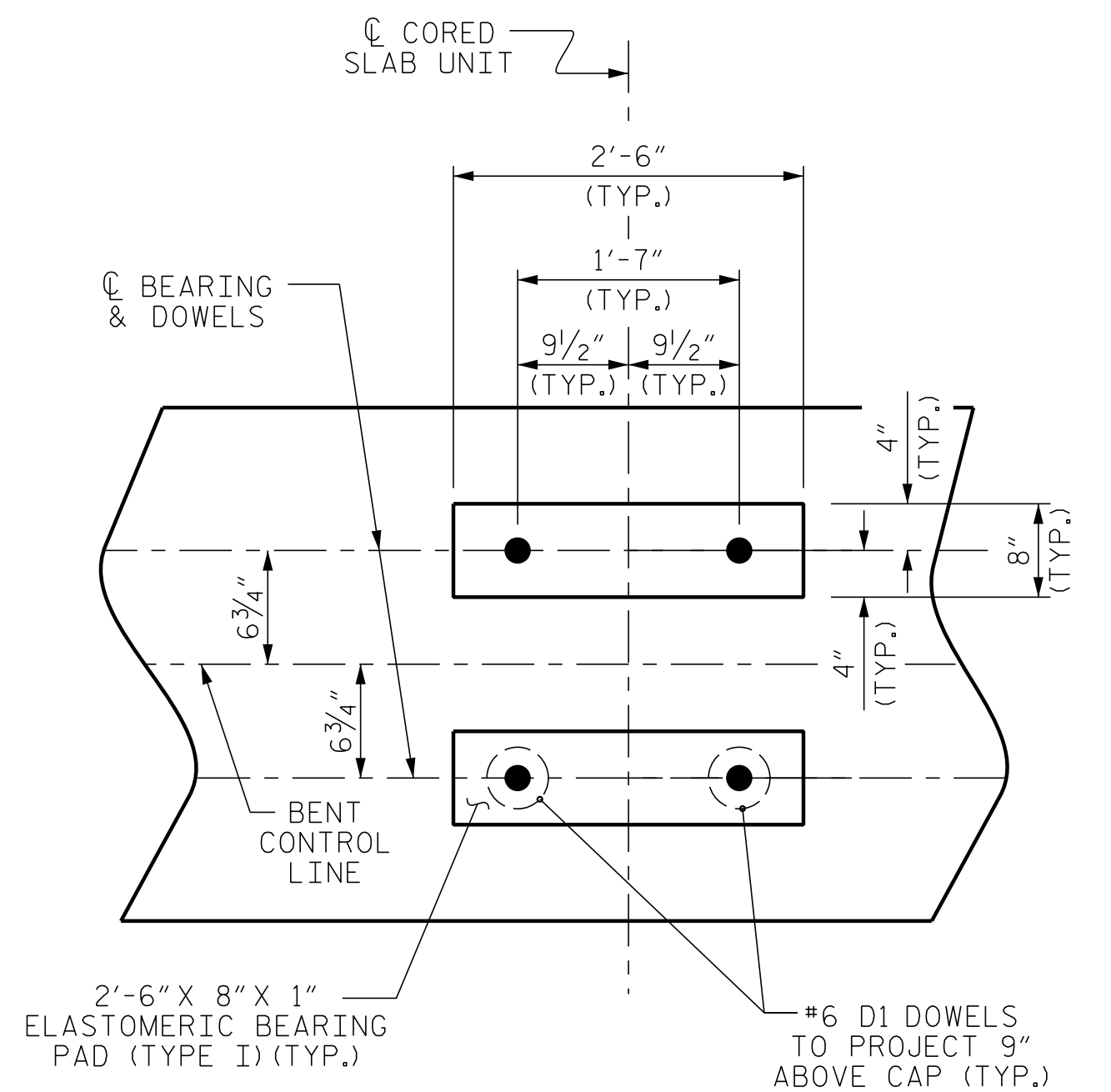
**WETHERILL
ENGINEERING**

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Raleigh, N.C. 27606
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LICENSE NO. F-0377

SHEET 3 OF 4

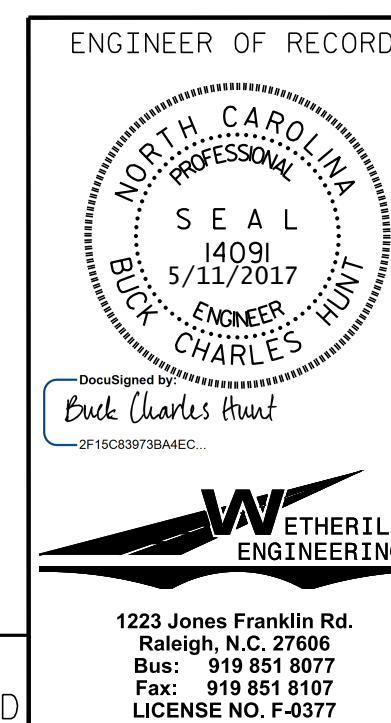
SUBSTRUCTURE END BENT ING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15 TOTAL SHEETS 22
1			3			
2			4			



PROJECT NO. 17BP.6.R.70
COLUMBUS COUNTY
 STATION: 20+46.50 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			22

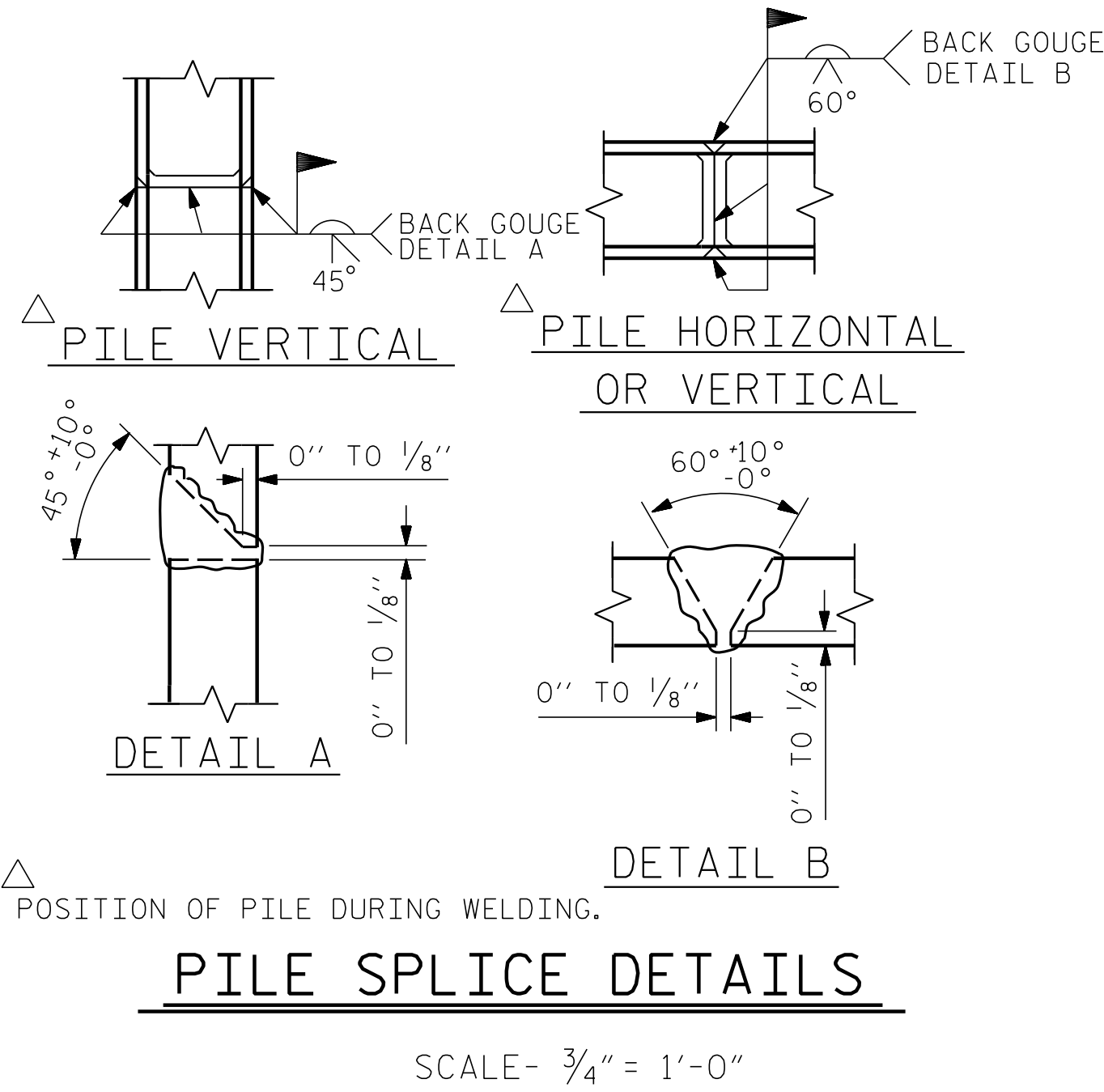
ASSEMBLED BY : J. PENDERGRAFT DATE : 9-16			
CHECKED BY : B.C. HUNT DATE : 1-17			
DRAWN BY : DGE 05/10		REV. 11/14	
CHECKED BY : MKT 05/10		MAA/TMG	

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UNLESS ALL SIGNATURES COMPLETED

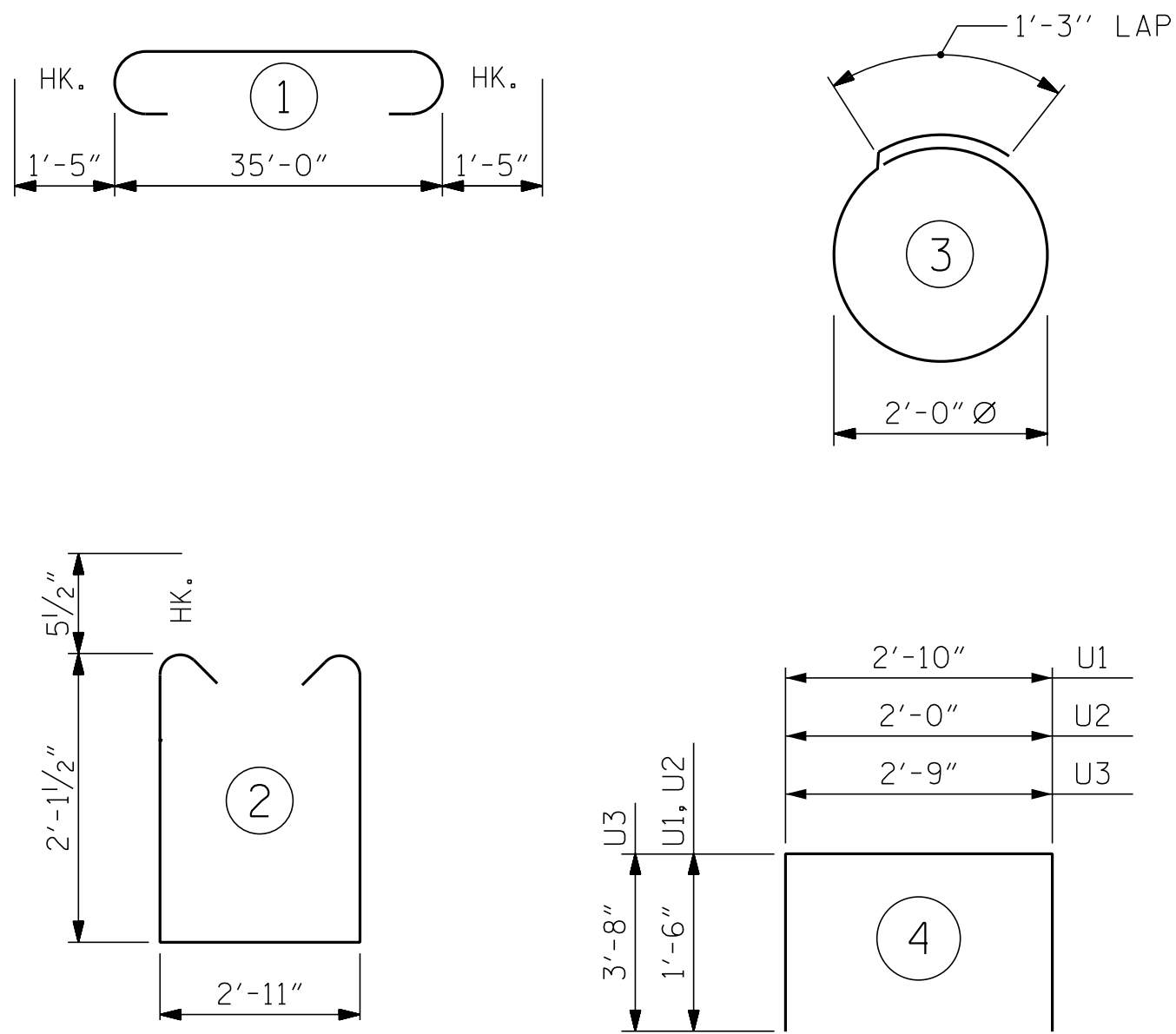
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BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

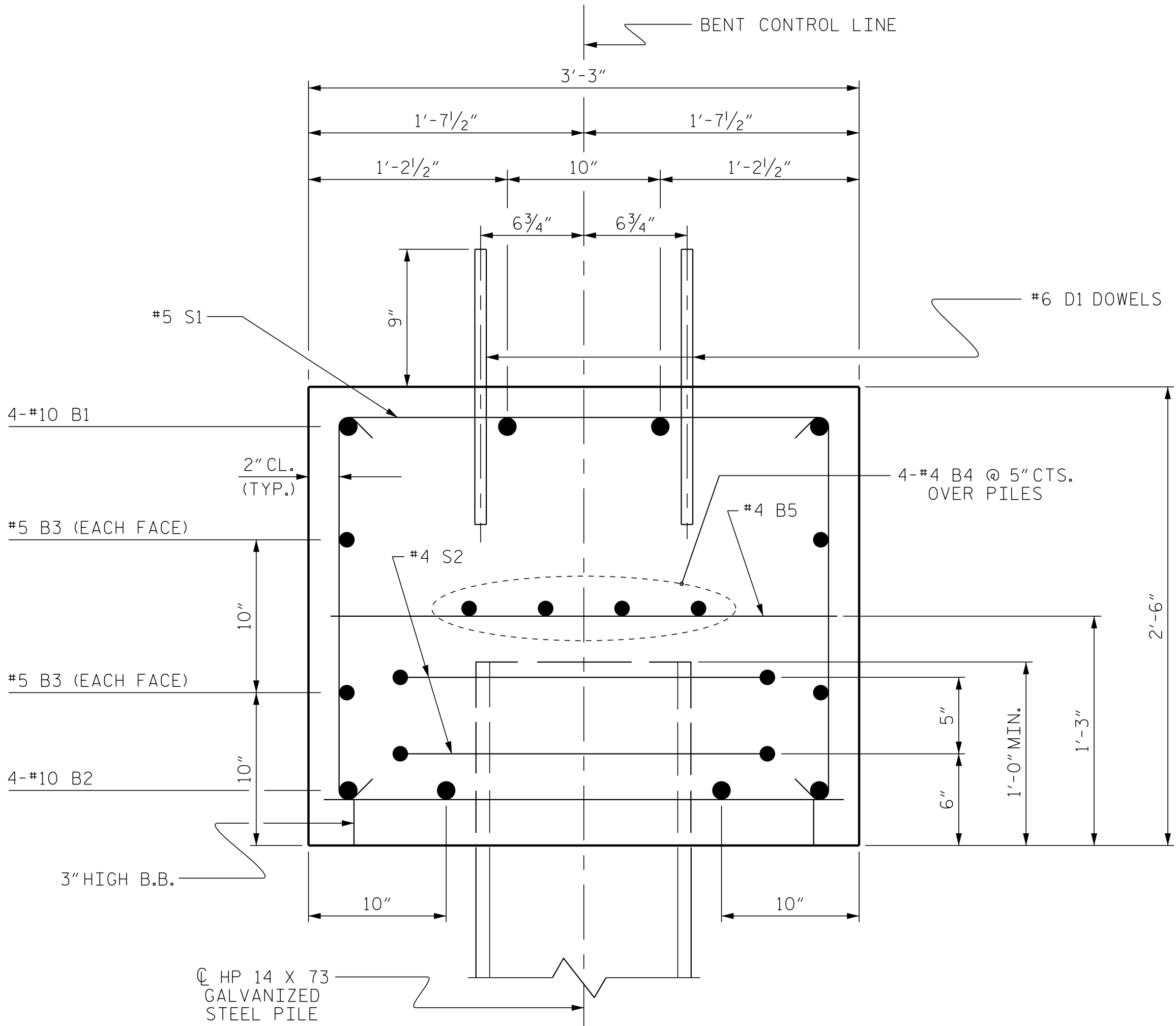
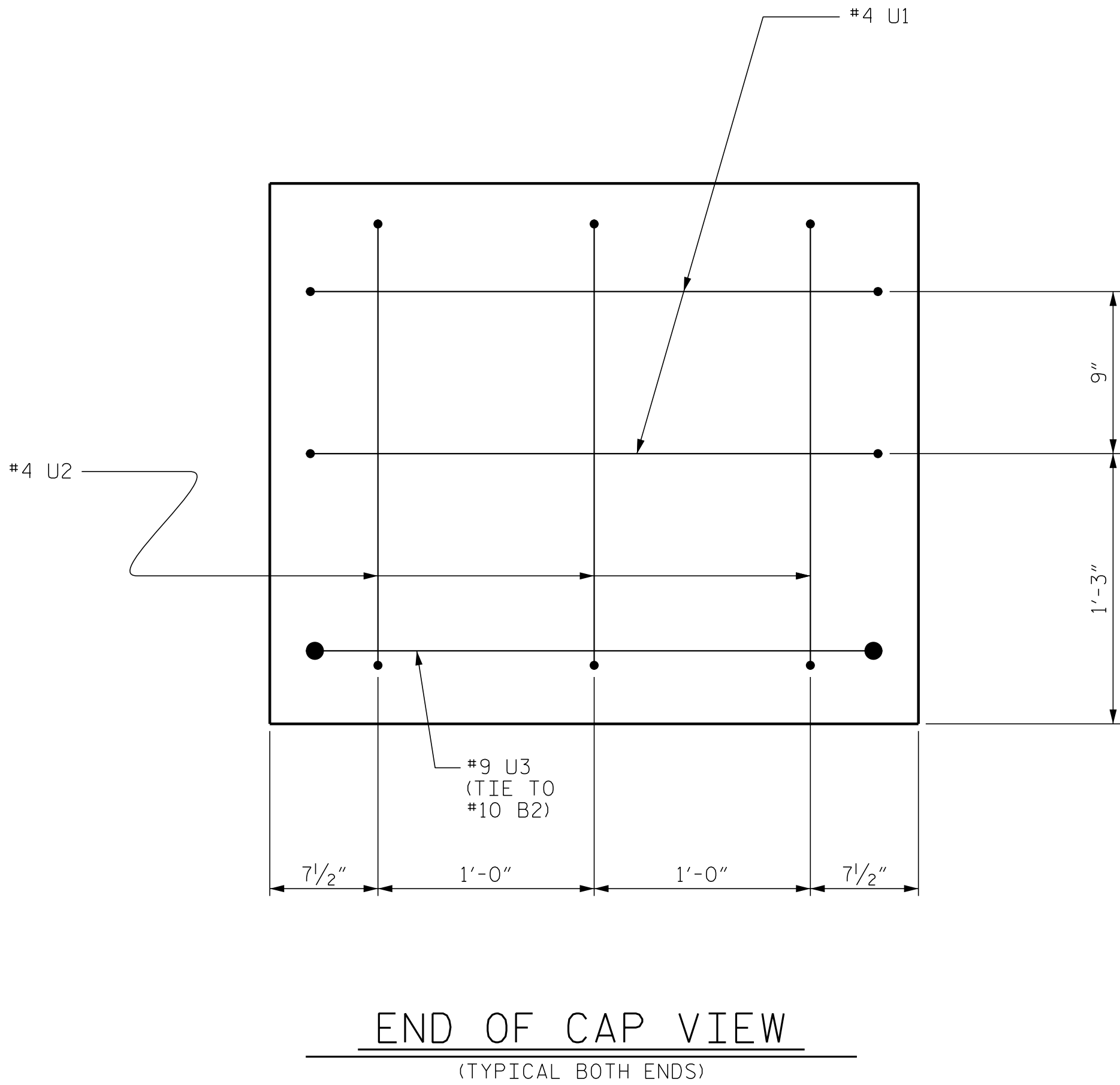
BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	37'-10"	651
B2	4	#10	STR	35'-2"	605
B3	4	#5	STR	35'-2"	147
B4	8	#4	STR	18'-10"	101
B5	9	#4	STR	2'-11"	18

D1	44	#6	STR	1'-6"	99
S1	39	#5	2	8'-1"	329
S2	16	#4	3	7'-7"	81
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69

REINFORCING STEEL (FOR ONE BENT)		2136 LBS
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)		
TOTAL CLASS A CONCRETE		10.7 C.Y.
HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)		
No. 8	LIN. FT.	448
PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 GALVANIZED STEEL PILES		8 EA.
PILE REDRIVES		4 EA.



SECTION A-A

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PROJECT NO. 17BP.6.R.70
COLUMBUS COUNTY
STATION: 20+46.50 -L-

SHEET 2 OF 2

ENGINEER OF RECORD

SEAL

14091

5/11/2017

ENGINEER CHARLES HUNT

Digitized by Buck Charles Hunt

2015CB30730A4E.C...

WETHERILL ENGINEERING

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Raleigh, N.C. 27606
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LICENSE NO. F-4377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1

REVISIONS

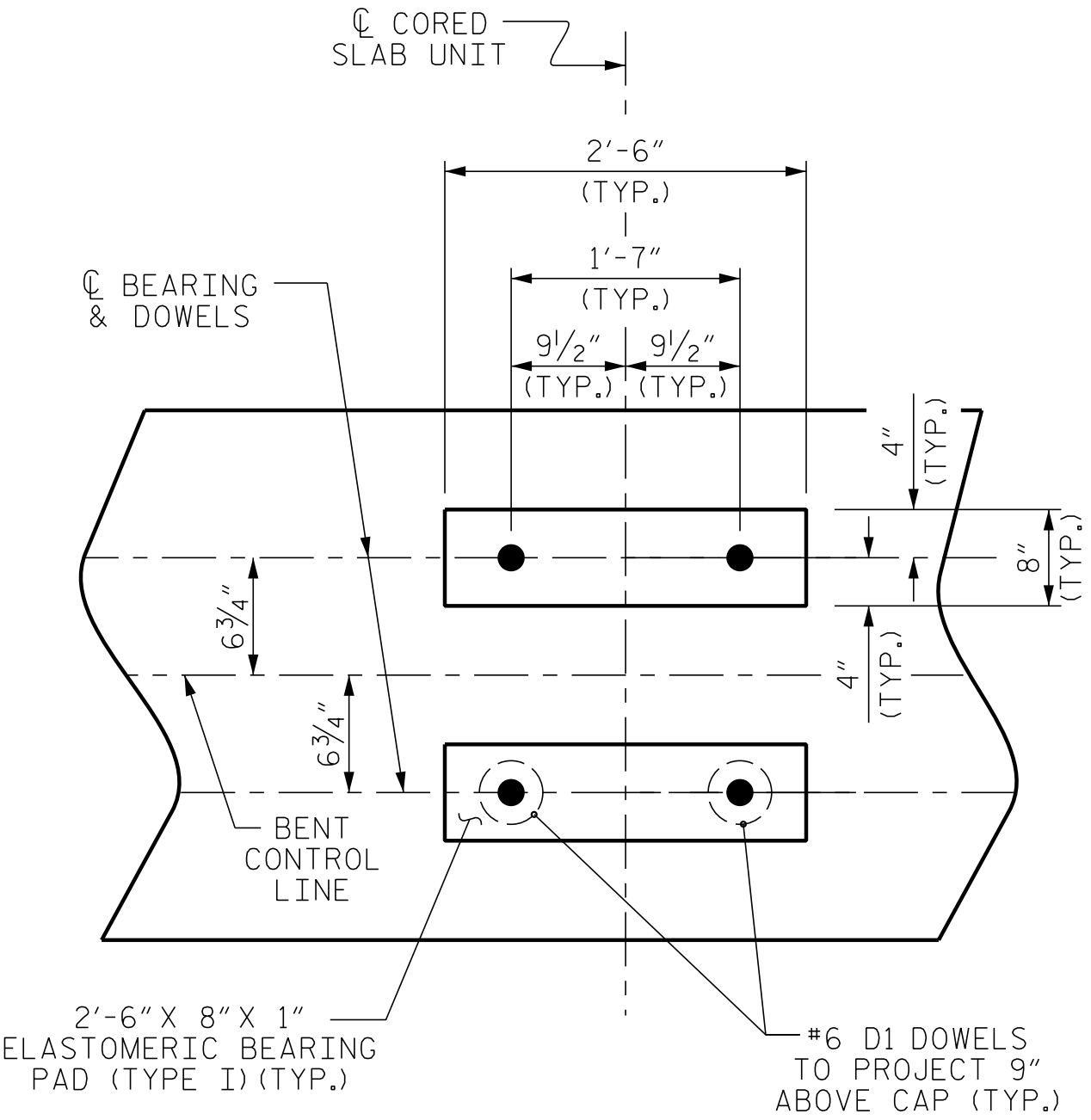
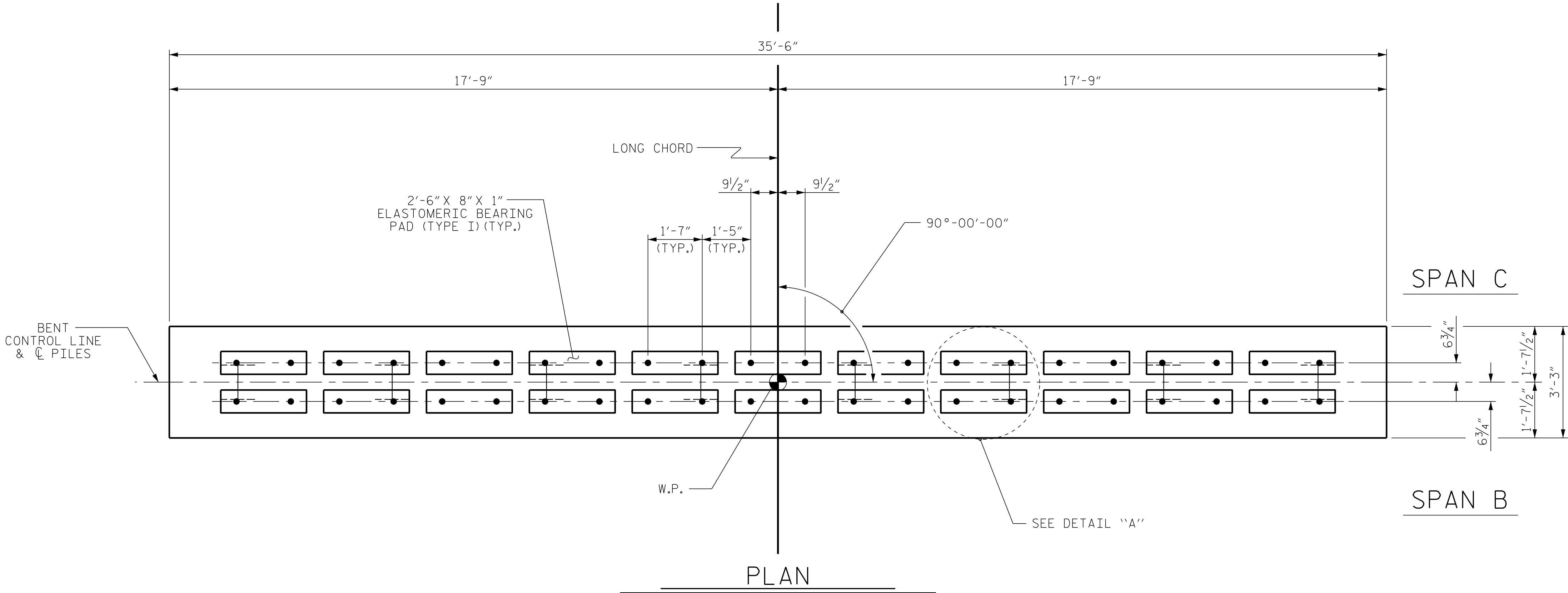
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-18
2			4			TOTAL SHEETS 22

NOTES

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

★ INVERT ALTERNATE STIRRUPS.

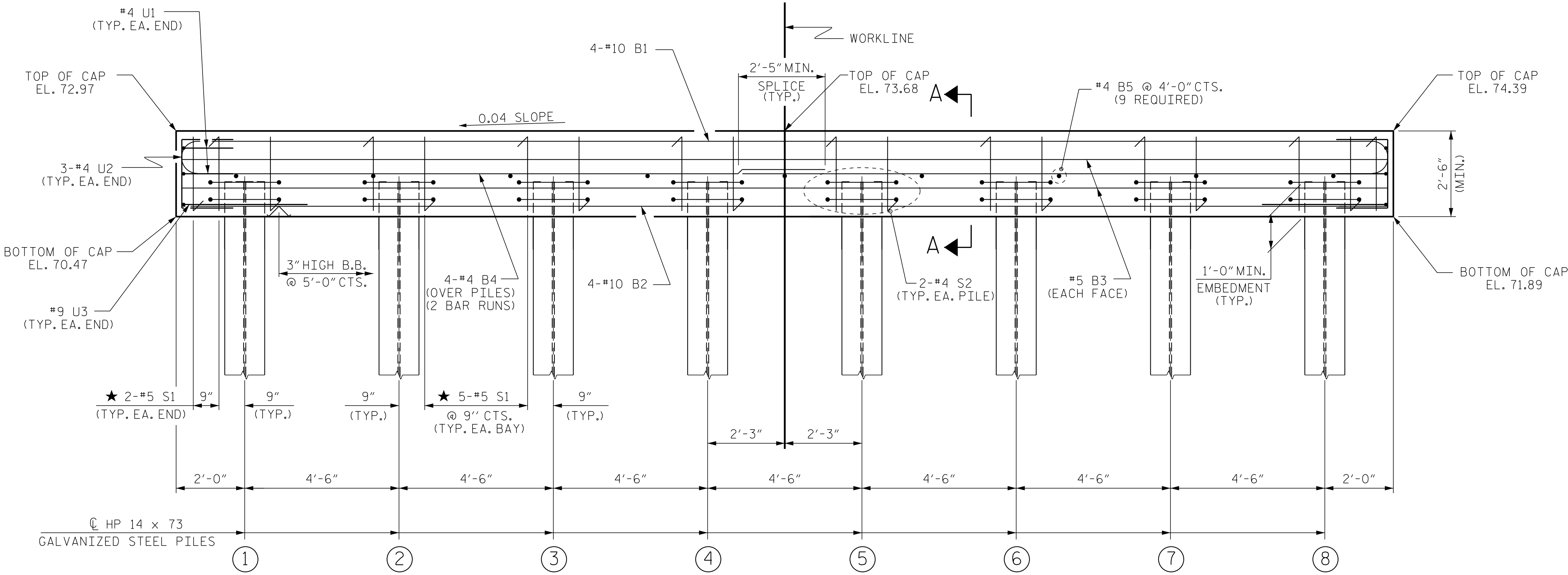
GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 27.0 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

TOP OF PILE ELEVATIONS	
①	71.55
②	71.73
③	71.91
④	72.09
⑤	72.27
⑥	72.45
⑦	72.63
⑧	72.81

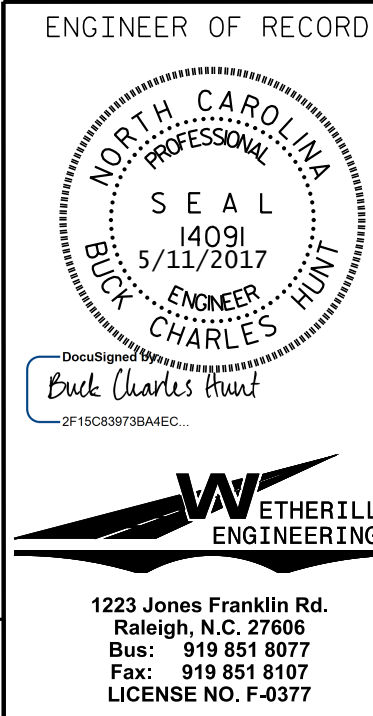


ELEVATION

FOR SECTION A-A, SEE SHEET 2 OF 2

PROJECT NO. 17BP.6.R.70
COLUMBUS COUNTY
STATION: 20+46.50 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 2

REVISIONS

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

SHEET NO.

S-19
TOTAL SHEETS
22

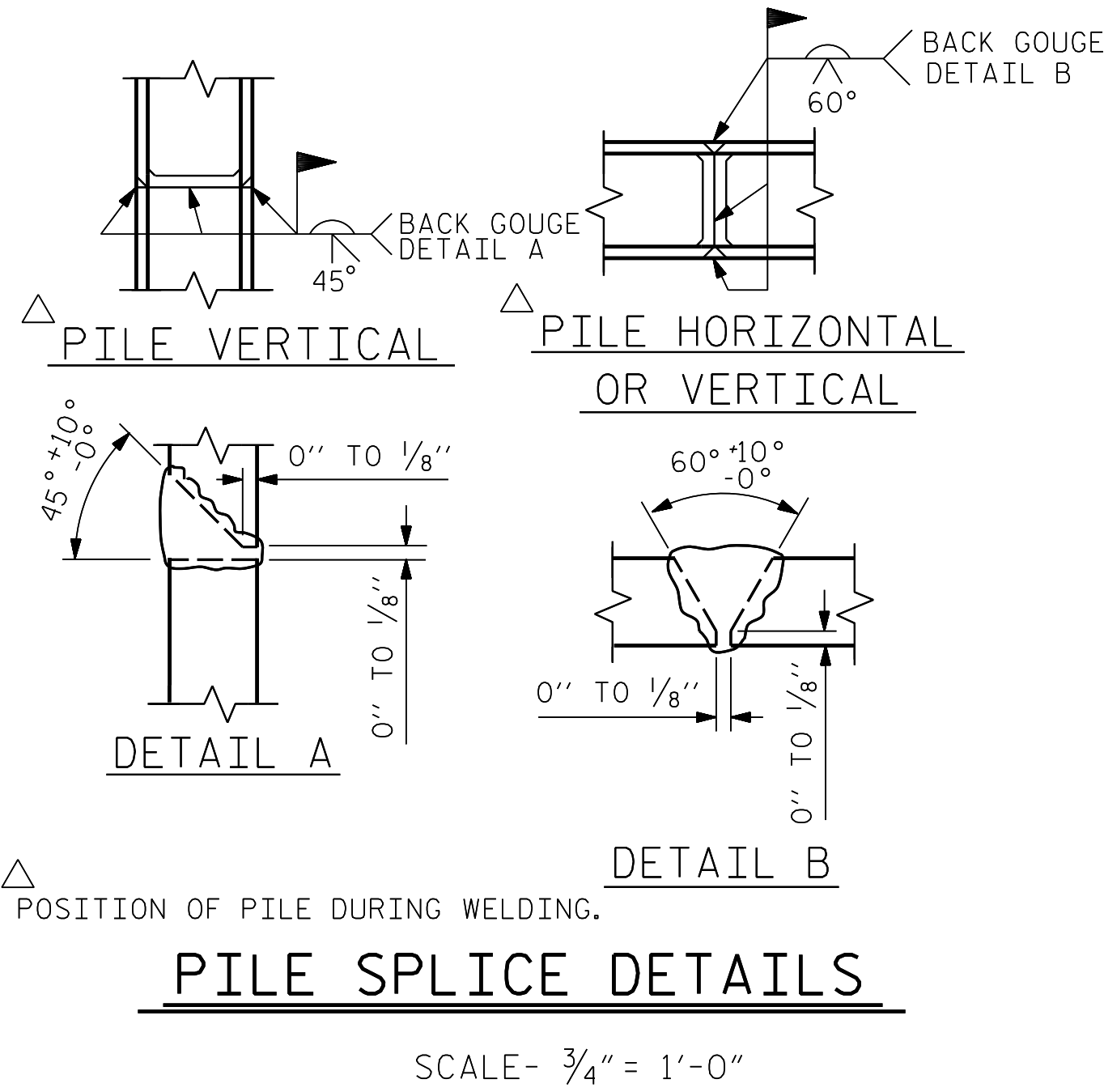
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : J. PENDERGRAFT	DATE : 9-16
CHECKED BY : B.C. HUNT	DATE : 1-17
DRAWN BY : DGE	05/10
CHECKED BY : MKT	05/10
REV. II/14	MAA/TMG

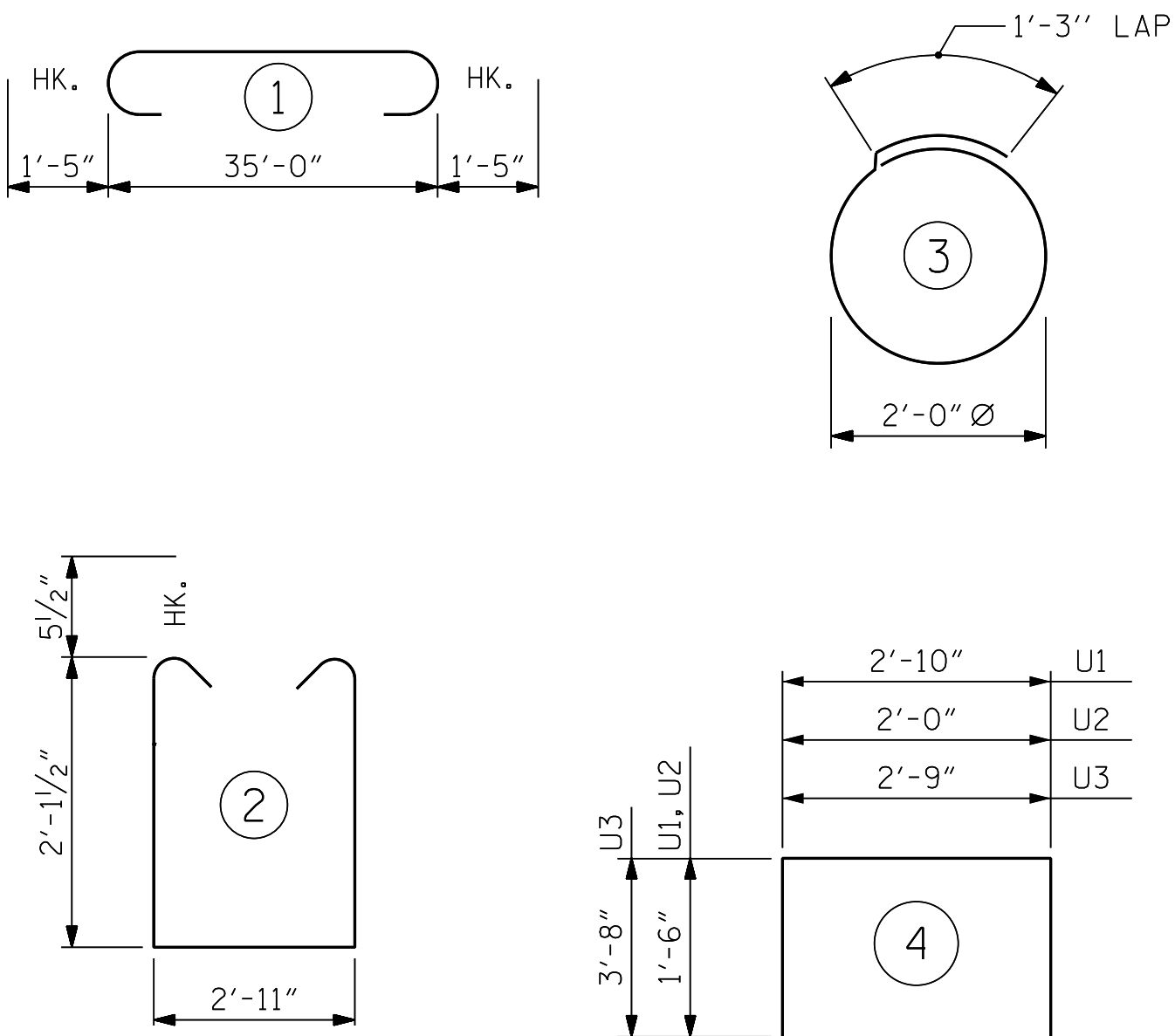
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BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

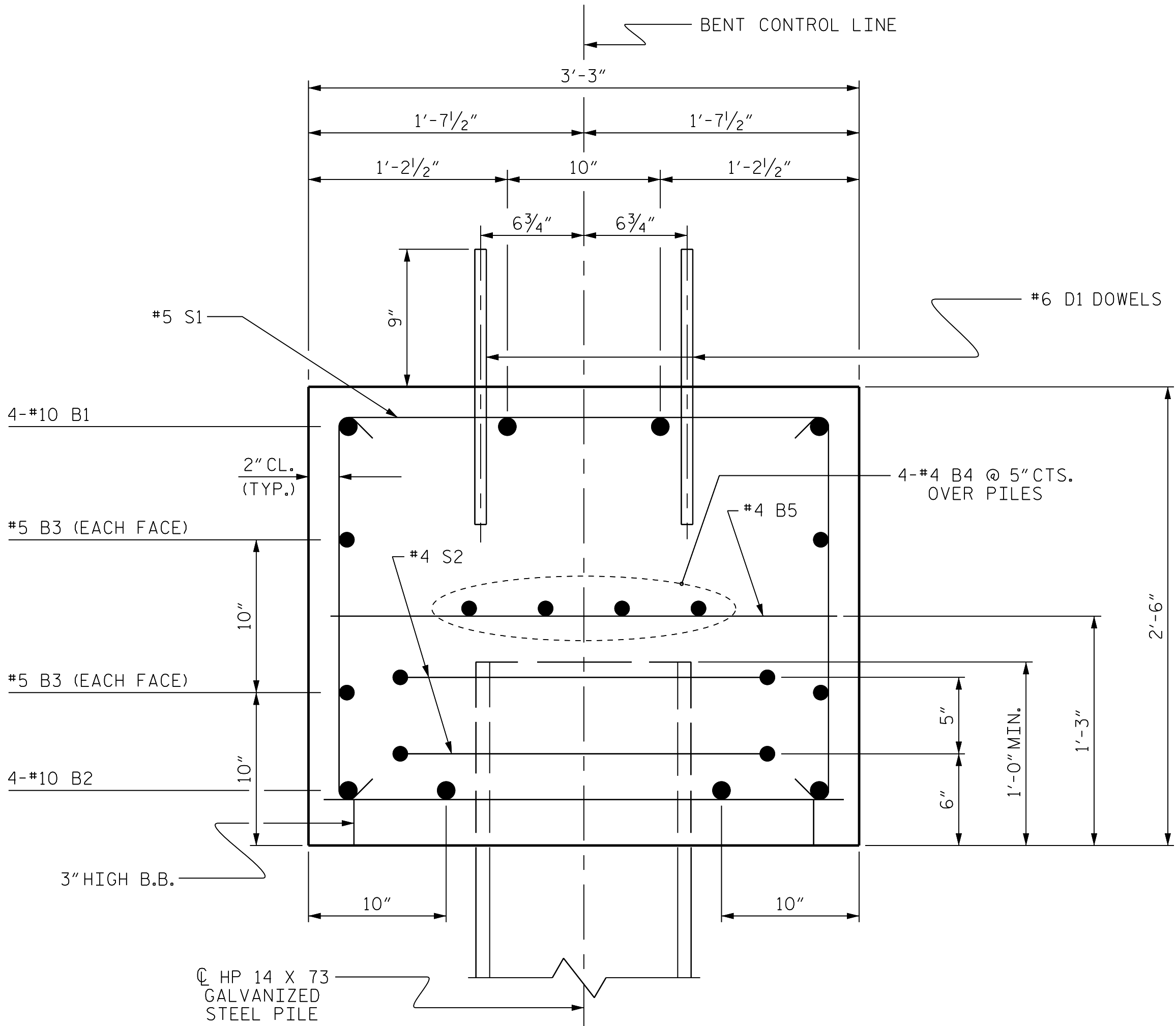
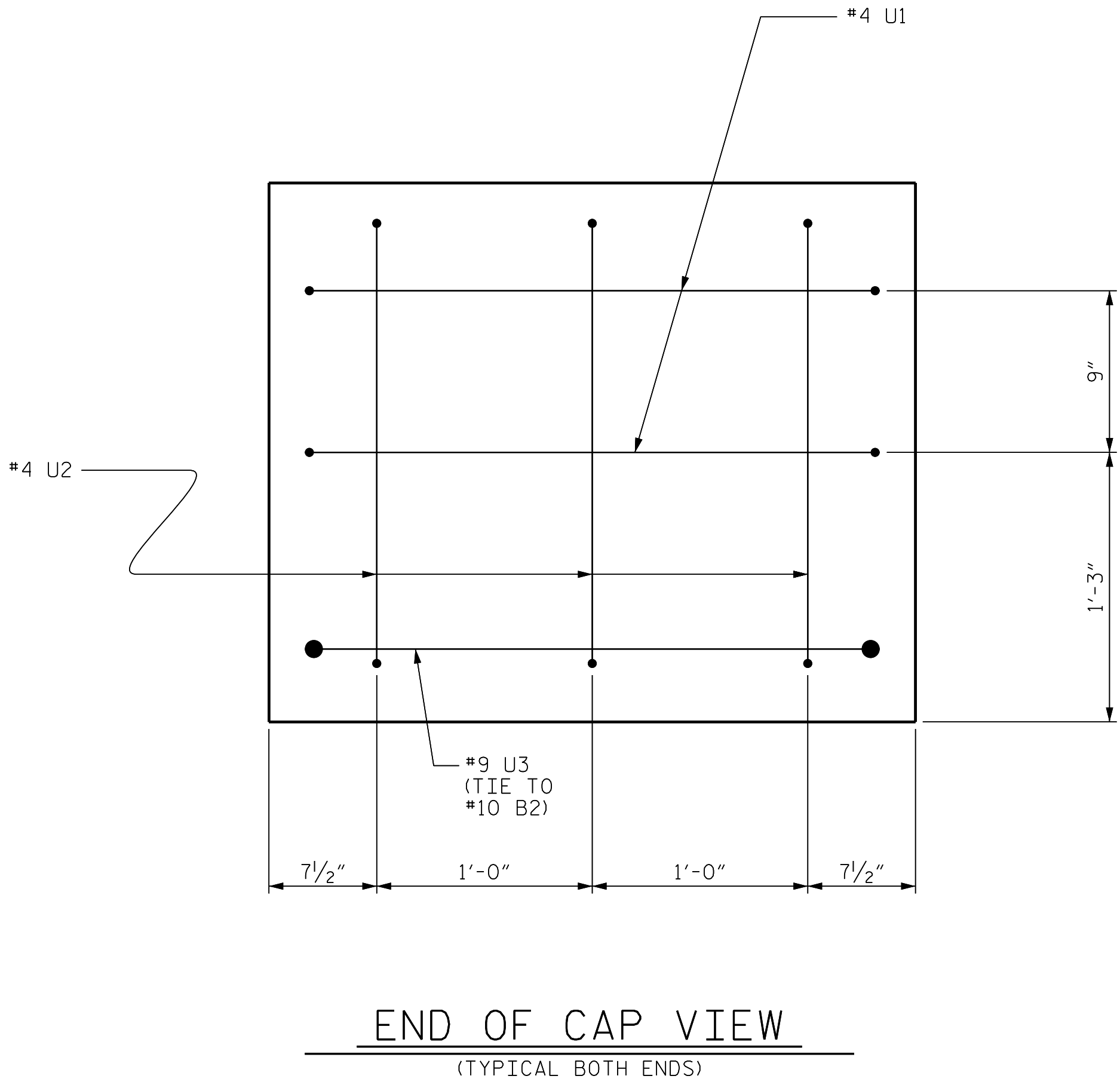
BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	37'-10"	651
B2	4	#10	STR	35'-2"	605
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B4	8	#4	STR	18'-10"	101
B5	9	#4	STR	2'-11"	18

D1	44	#6	STR	1'-6"	99
S1	39	#5	2	8'-1"	329
S2	16	#4	3	7'-7"	81
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69

REINFORCING STEEL (FOR ONE BENT)				2136 LBS
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)				
TOTAL CLASS A CONCRETE				10.7 C.Y.
HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)				
No. 8		LIN. FT.	448	
PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 GALVANIZED STEEL PILES				8 EA.
PILE REDRIVES				4 EA.



SECTION A-A

DOCUMENT NOT CONSIDERED FINAL
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PROJECT NO. 17BP.6.R.70
COLUMBUS COUNTY
STATION: 20+46.50 -L-

SHEET 2 OF 2

ENGINEER OF RECORD

SEAL
14091
5/11/2017
ENGINEER
CHARLES HUNT

WETHERILL
ENGINEERING

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Raleigh, N.C. 27606
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LICENSE NO. F-4377

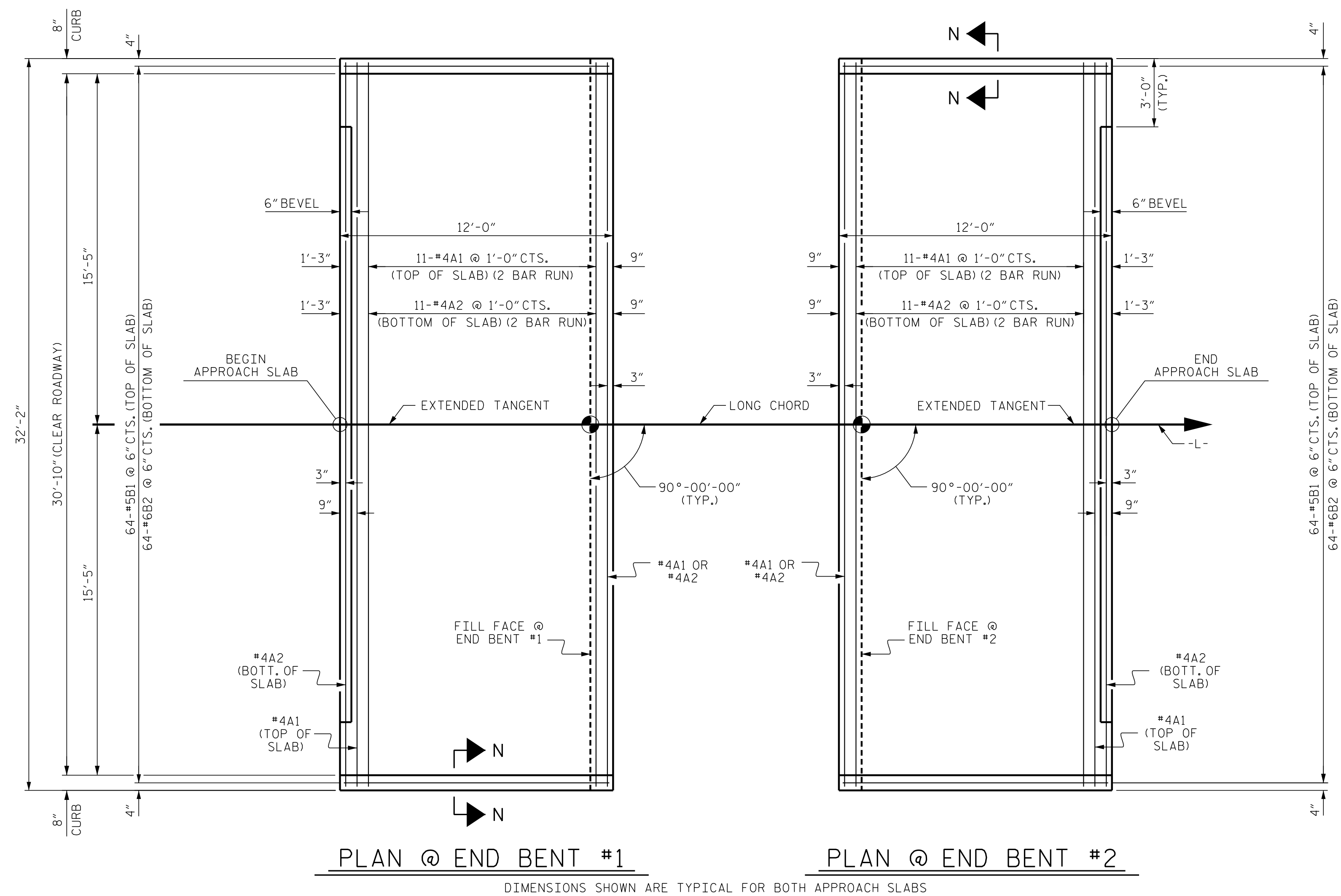
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 2

REVISIONS

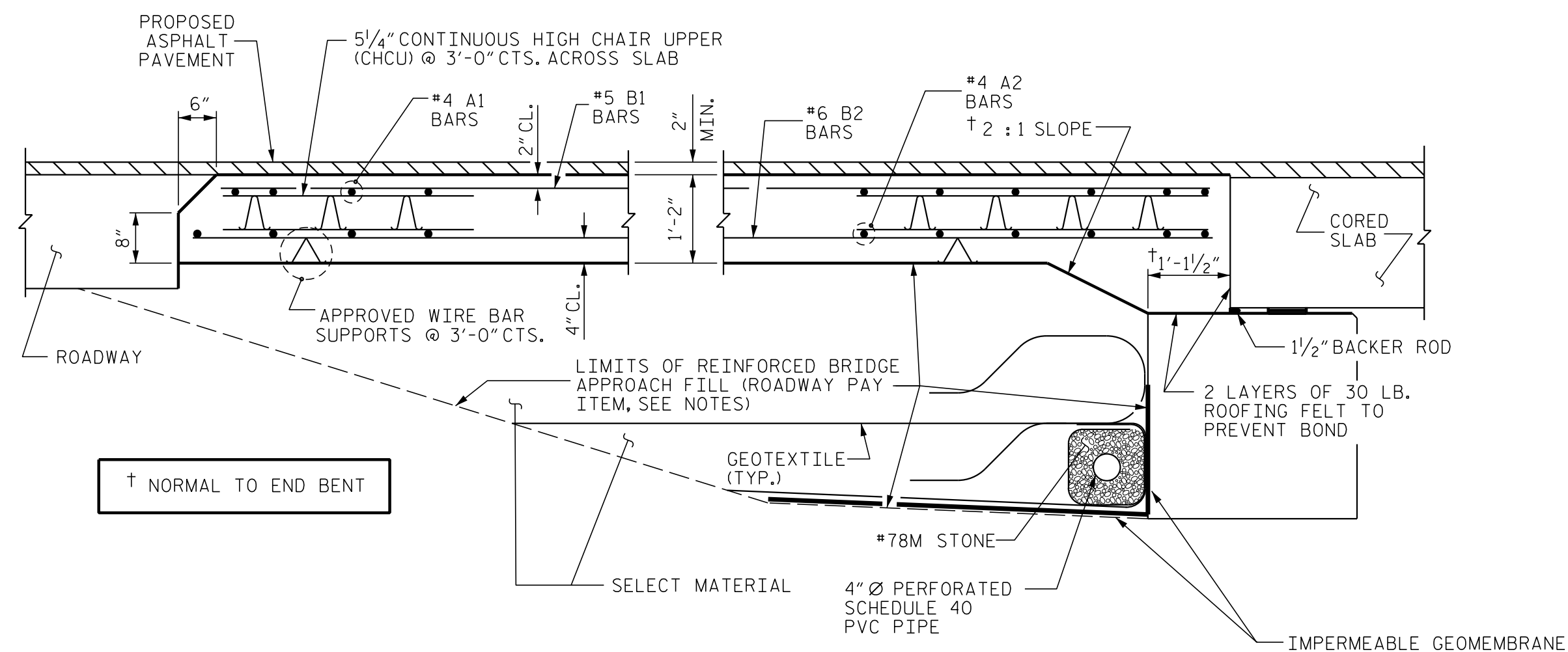
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-20
TOTAL SHEETS
22



DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTE:
THE BEGIN AND END APPROACH SLAB
POINTS ARE LOCATED ON AN EXTENDED
TANGENT OF THE BRIDGE LONG CHORD



SECTION THRU SLAB

ASSEMBLED BY : J PENDERGRAFT DATE : 9-16	
CHECKED BY : B.C. HUNT DATE : 1-17	
DRAWN BY : SHS/MAA 5-09	REV. 9-15 MAA/TMG
CHECKED BY : BCH 5-09	

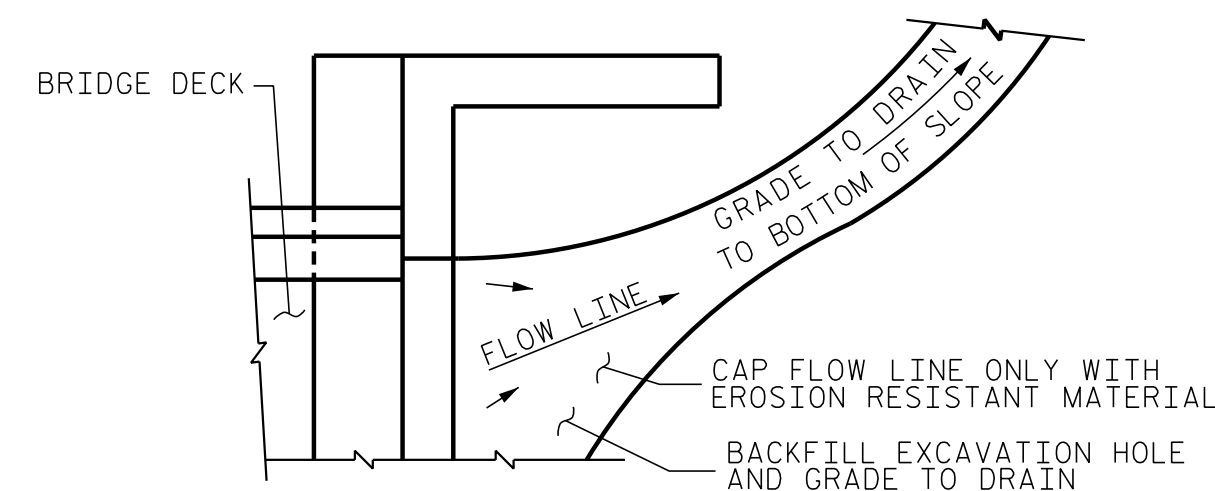
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NOTES

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, IMPERMEABLE
GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE
ROADWAY PLANS.

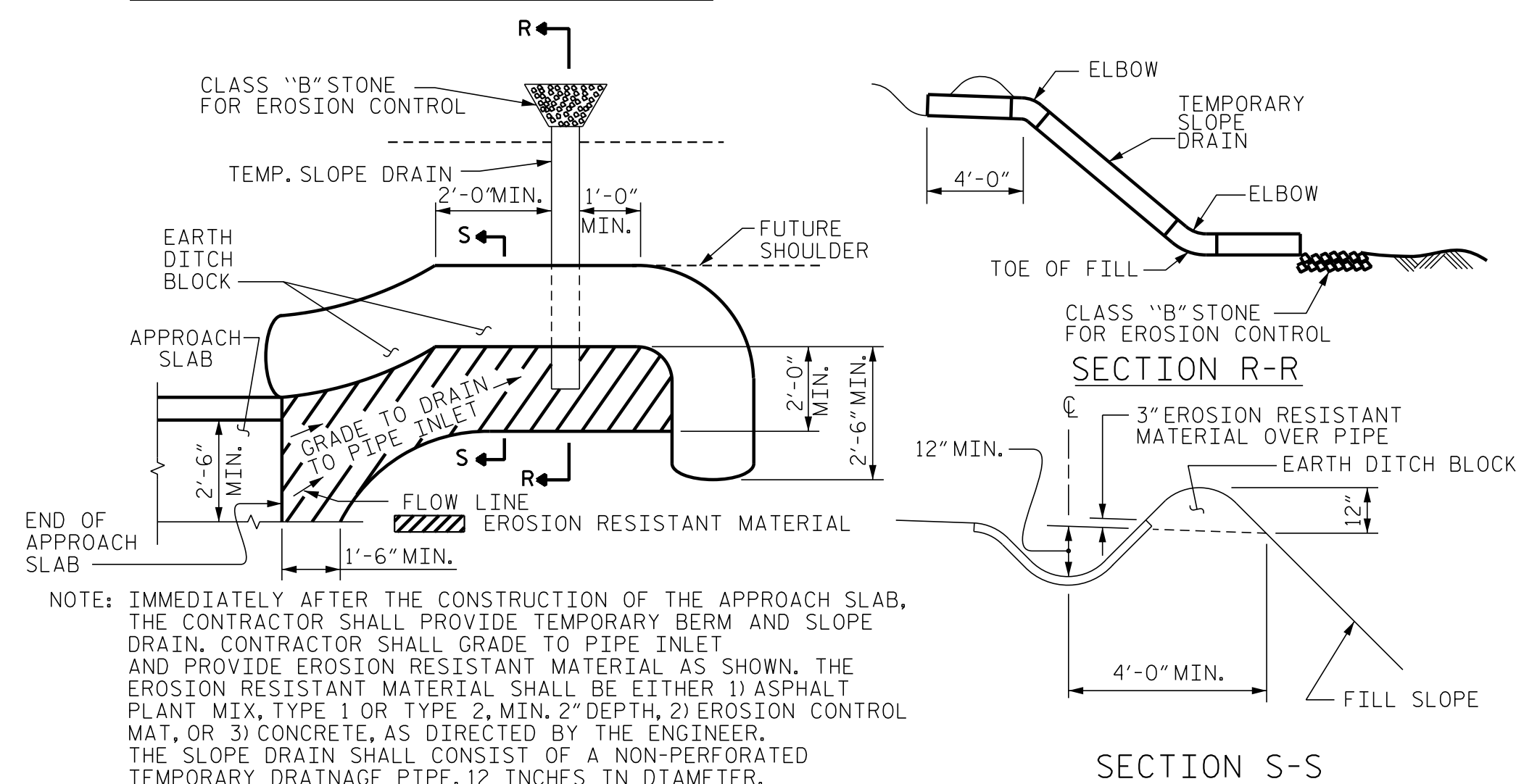
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END OF 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.

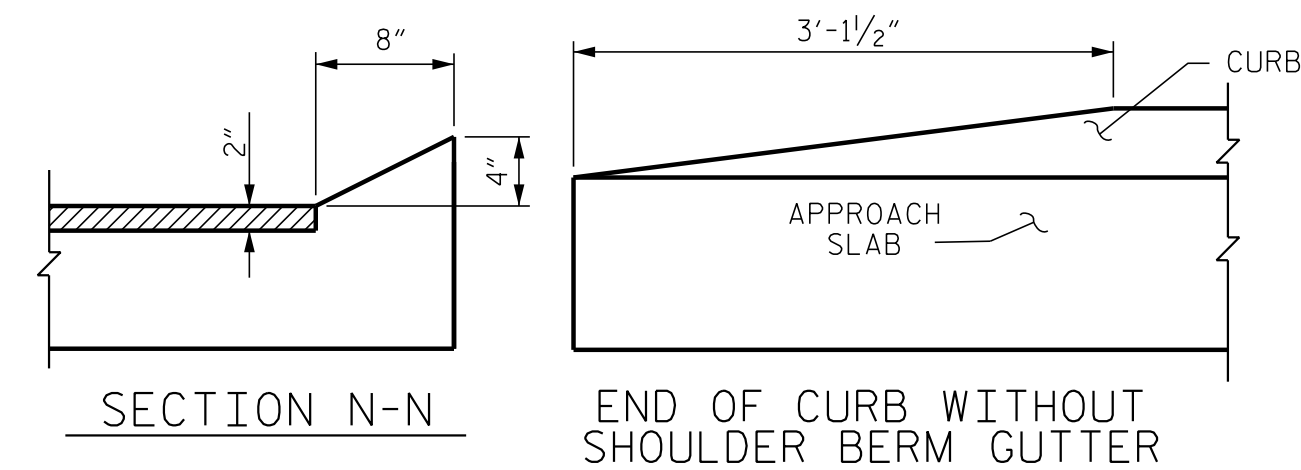
TEMPORARY DRAINAGE DETAIL



PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

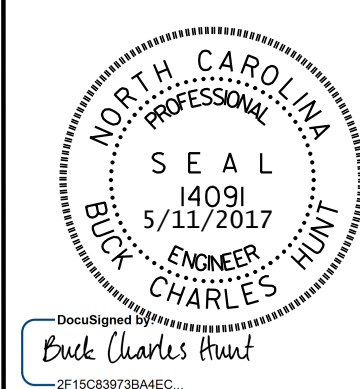


CURB DETAILS

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

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ENGINEER OF RECORD



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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:	DATE:	
1			3			TOTAL SHEETS
2			4			22

STD. NO. BAS_33_90S

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 2012 "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.

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