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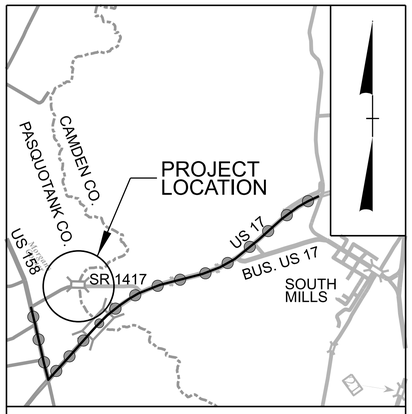
This file or an individual page shall not be considered a certified document.

09/08/99

PROJECT: BP1.R008.1

CONTRACT: DA00562

See Sheet 1A For Index of Sheets



VICINITY MAP (NTS)

Offsite Detour

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PASQUOTANK COUNTY

LOCATION: *BRIDGE NO. 690015 ON SR 1417 (MORGANS CORNER RD) OVER PASQUOTANK RIVER*

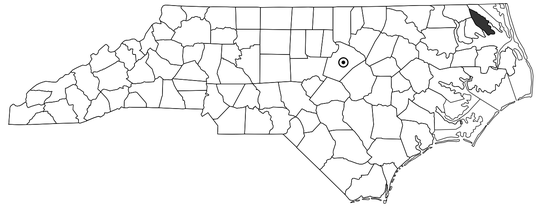
TYPE OF WORK: *GRADING, DRAINAGE, PAVING, AND STRUCTURE*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP1.R008.1	1	

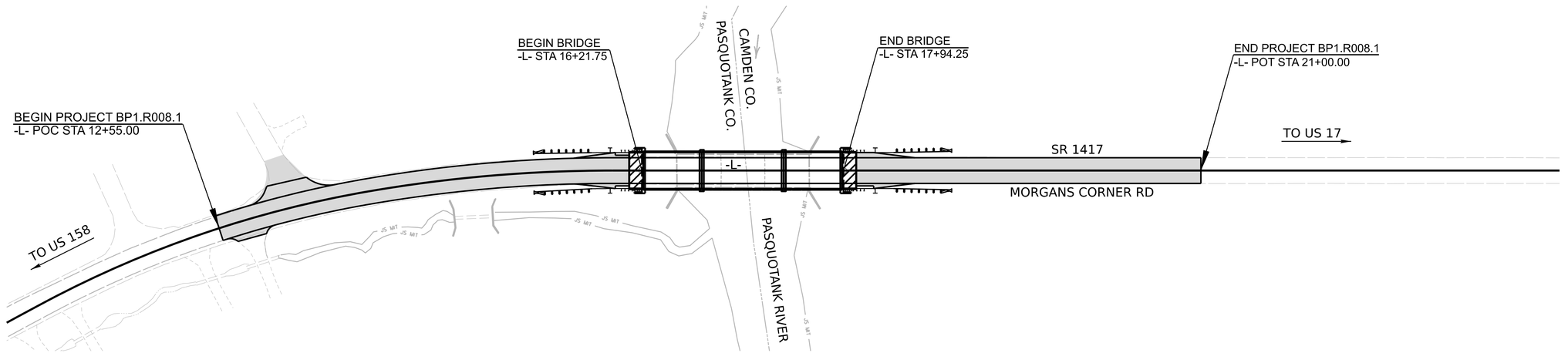
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP1.R008.1		PE
BP1.R008.2		RW, UTILITIES
BP1.R008.3		CONSTRUCTION

Stage 4 Plans (4RD1)

Plans Developed with OpenRoads (ORD)



NAD 83/2011



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2022 = 2,100
ADT 2042 = 2,350
K = N/A %
D = N/A %
T = 6 % *
V = 50 MPH
* TTST =3% DUAL 3%
FUNC CLASS =
LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT BP1.R008.1	=	0.127 MILES
LENGTH STRUCTURES PROJECT BP1.R008.1	=	0.033 MILES
TOTAL LENGTH PROJECT BP1.R008.1	=	0.160 MILES

NCDOT Contact: RYAN L. SHOOK

Prepared in the Office of: KCA KISINGER CAMPO & ASSOCIATES

NC FIRM LICENSE No: C-1506
301 Fayetteville St.,
Suite 1500
Raleigh, NC 27601
(919)882-7839

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: 03/22/2022

LETTING DATE:

JOHN P. MAZERES, P.E.
PROJECT ENGINEER

JASON M. DEBONE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

9/26/2022

NORTH CAROLINA PROFESSIONAL SEAL 049338 ENGINEER ERIK P AADLAND

DocuSigned by: Erik P. Radland P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

9/26/2022

NORTH CAROLINA PROFESSIONAL SEAL 043935 ENGINEER JOHN P MAZERES

DocuSigned by: John P. Mazeres P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

BP1.R008.1

4RD1 | 1A

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION PASQUOTANK COUNTY

HIGHWAY DIVISION 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ROADWAY DESIGN ENGINEER

9/26/2022

SEAL 043935

HYDRAULICS ENGINEER

9/26/2022

SEAL 049338

PREPARED BY

KCA KISINGER CAMPO & ASSOCIATES

NC FIRM LICENSE No: C-1506
301 Fayetteville Street, Suite 1500
Raleigh, NC 27601
(919)882-7839

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL PLAN SHEET SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1 THRU 2C-3	SPECIAL DETIALS
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4	PLAN AND PROFILE SHEET
RW01 THRU RW04	RIGHT OF WAY PLANS
TMP-1 THRU TMP-3	TRAFFIC MANAGEMENT PLANS
PMP-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-1 THRU X- 5	CROSS-SECTIONS
S-1 THRU S-21	STRUCTURE PLANS

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

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

SUBSURFACE DRAINS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

Century Link

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 OTHERS AND BY CONTRACT IN ACCORDANCE WITH DESIGNATED SYMBOLS.

EFF. 01-16-2018
REV.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.02	Parallel Pipe End Section - Precast Concrete Section for 15" to 24" Pipe
DIVISION 4 - MAJOR STRUCTURES	
422.02	Bridge Approach Fills - Type II Modified Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

REVISIONS

5/26/20

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

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

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP) — EIP
- Computed Property Corner
- Existing Concrete Monument (ECM) — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:

- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Secondary Horiz and Vert Control Point
- Vertical Benchmark
- Existing Right of Way Monument
- Proposed Right of Way Monument (Rebar and Cap)
- Proposed Right of Way Monument (Concrete)
- Existing Permanent Easement Monument
- Proposed Permanent Easement Monument (Rebar and Cap)
- Existing C/A Monument
- Proposed C/A Monument (Rebar and Cap)
- Proposed C/A Monument (Concrete)
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Existing Control of Access Line — CA
- Proposed Control of Access Line — CA
- Proposed ROW and CA Line — RW CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage/Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

** SUE – Subsurface Utility Engineering*
LOS – Level of Service – A,B,C or D (Accuracy)

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H–Frame Pole
- U/G Power Line Test Hole (SUE – LOS A)*
- U/G Power Line (SUE – LOS B)* — P
- U/G Power Line (SUE – LOS C)* — P
- U/G Power Line (SUE – LOS D)* — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Test Hole (SUE – LOS A)*
- U/G Telephone Cable (SUE – LOS B)* — T
- U/G Telephone Cable (SUE – LOS C)* — T
- U/G Telephone Cable (SUE – LOS D)* — T
- U/G Telephone Conduit (SUE – LOS B)* — TC
- U/G Telephone Conduit (SUE – LOS C)* — TC
- U/G Telephone Conduit (SUE – LOS D)* — TC
- U/G Fiber Optics Cable (SUE – LOS B)* — T FO
- U/G Fiber Optics Cable (SUE – LOS C)* — T FO
- U/G Fiber Optics Cable (SUE – LOS D)* — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line Test Hole (SUE – LOS A)*
- U/G Water Line (SUE – LOS B)* — W
- U/G Water Line (SUE – LOS C)* — W
- U/G Water Line (SUE – LOS D)* — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Test Hole (SUE – LOS A)*
- U/G TV Cable (SUE – LOS B)* — TV
- U/G TV Cable (SUE – LOS C)* — TV
- U/G TV Cable (SUE – LOS D)* — TV
- U/G Fiber Optic Cable (SUE – LOS B)* — TV FO
- U/G Fiber Optic Cable (SUE – LOS C)* — TV FO
- U/G Fiber Optic Cable (SUE – LOS D)* — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line Test Hole (SUE – LOS A)*
- U/G Gas Line (SUE – LOS B)* — G
- U/G Gas Line (SUE – LOS C)* — G
- U/G Gas Line (SUE – LOS D)* — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Force Main Line Test Hole (SUE – LOS A)*
- SS Force Main Line (SUE – LOS B)* — FSS
- SS Force Main Line (SUE – LOS C)* — FSS
- SS Force Main Line (SUE – LOS D)* — FSS

MISCELLANEOUS:

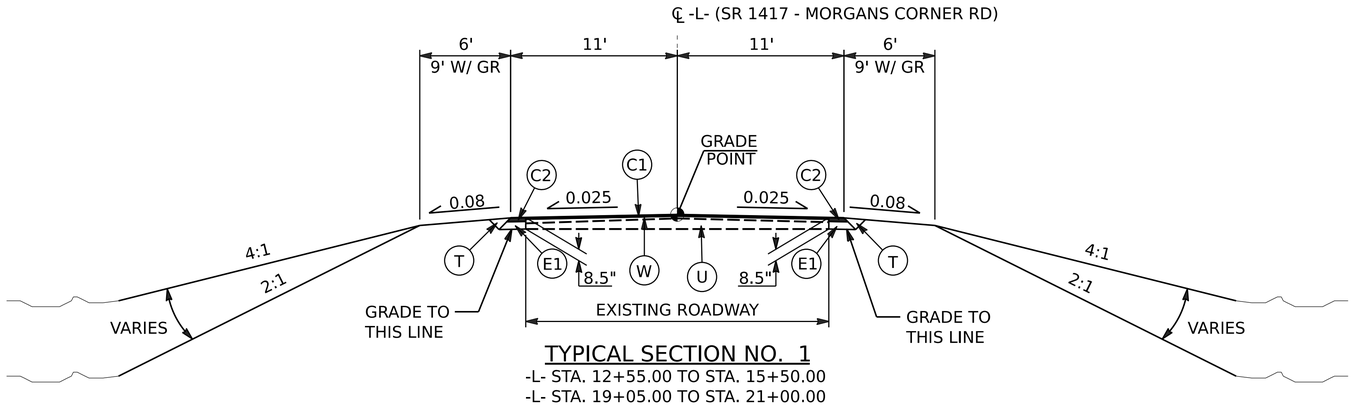
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line (SUE – LOS B)* — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

5/26/20

PAVEMENT SCHEDULE

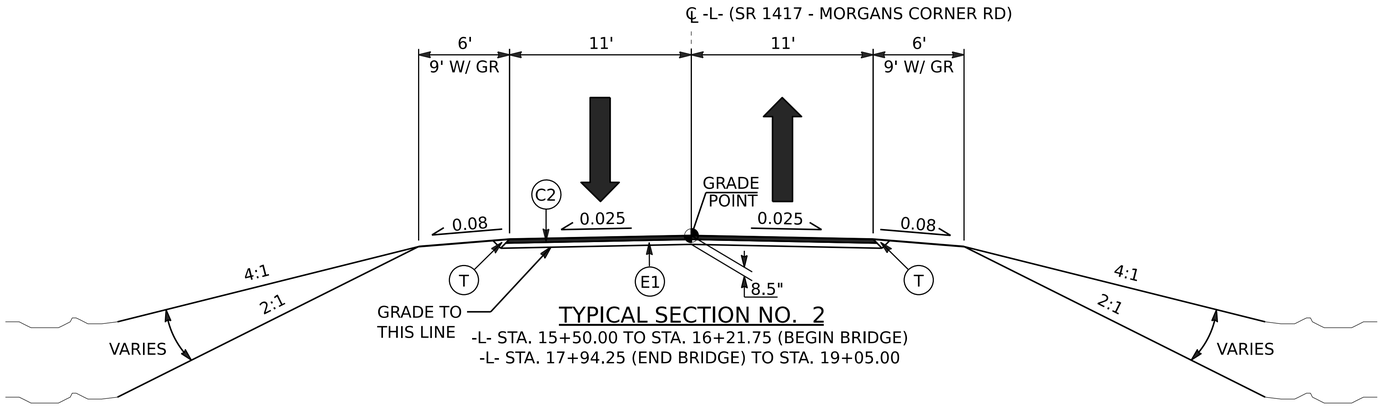
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165.0 LBS. PER SQ. YD.
C2	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165.0 LBS. PER SQ. YD. IN EACH OF THE TWO LAYERS.
C3	PROP. VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110.0 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" OR TO EXCEED 2.0" IN DEPTH.
E1	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS PER SQ. YD.
E2	PROP. VARIABLE DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114.0 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5.5" IN DEPTH.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	INCIDENTAL MILLING
W	WEDGING (SEE WEDGING DETAIL)

NOTE: PAVEMENT EDGE SLOPES AND TRENCH SECTIONS ARE 1:1 UNLESS SHOWN OTHERWISE



TYPICAL SECTION NO. 1

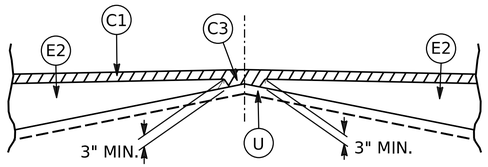
-L- STA. 12+55.00 TO STA. 15+50.00
-L- STA. 19+05.00 TO STA. 21+00.00



TYPICAL SECTION NO. 2

-L- STA. 15+50.00 TO STA. 16+21.75 (BEGIN BRIDGE)
-L- STA. 17+94.25 (END BRIDGE) TO STA. 19+05.00

INSET A

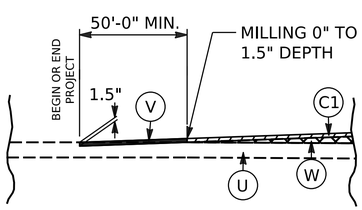


DETAIL SHOWING METHOD OF WEDGING

USE INSET A

USE INSET A IN CONJUNCTION WITH TYPICAL SECTION NO. 1

INSET B

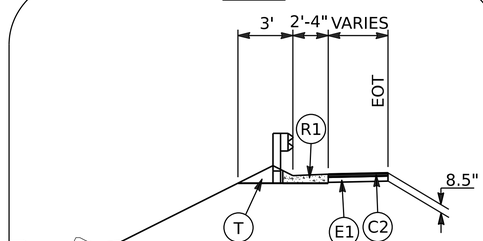


INCIDENTAL MILLING & RESURFACING DETAIL

USE INSET B

-L- STA. 12+55.00 TO 13+05.00
-L- STA. 20+50.00 TO 21+00.00

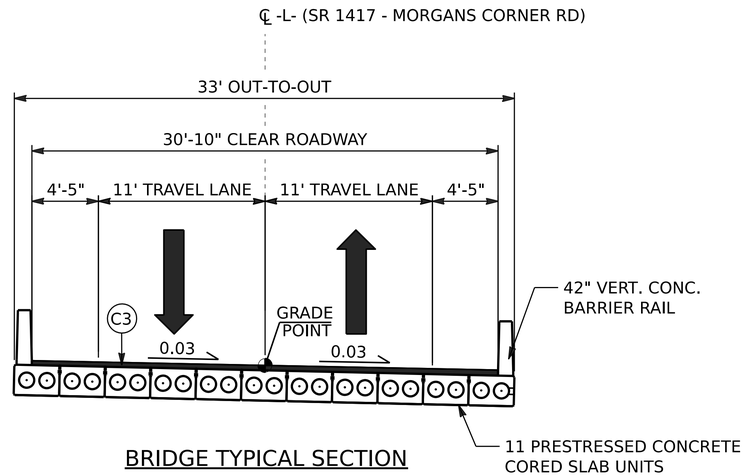
INSET C



SHOULDER BERM GUTTER DETAIL

USE INSET C

-L- STA. 15+99.00 TO 16+10.87 (LT & RT)
-L- STA. 18+05.12 TO 18+20.00 (RT)



BRIDGE TYPICAL SECTION

-L- STA. 16+21.75 TO STA. 17+94.25

BPI.R008.1
4RDI | 2A-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PASQUOTANK COUNTY

HIGHWAY DIVISION 1

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ROADWAY DESIGN ENGINEER

9/26/2022

NORTH CAROLINA PROFESSIONAL SEAL 043935 ENGINEER JOHN P MAYERS

DocuSigned by: John P. Mayers
EF1CAEEFD724EE

PREPARED BY

KCA
KISINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville Street, Suite 1500
Raleigh, NC 27601
(919)882-7839

REVISIONS

5/26/20

PROJECT REFERENCE NO.	SHEET NO.

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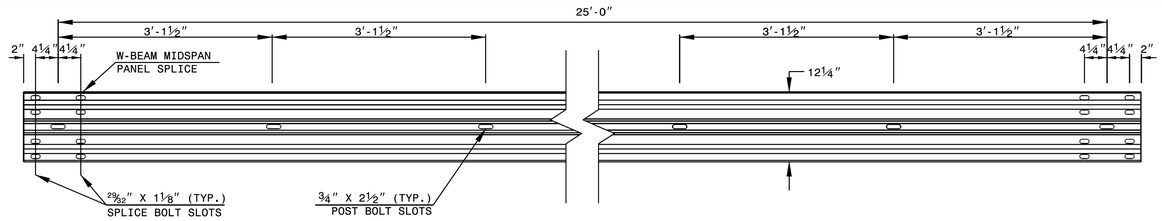
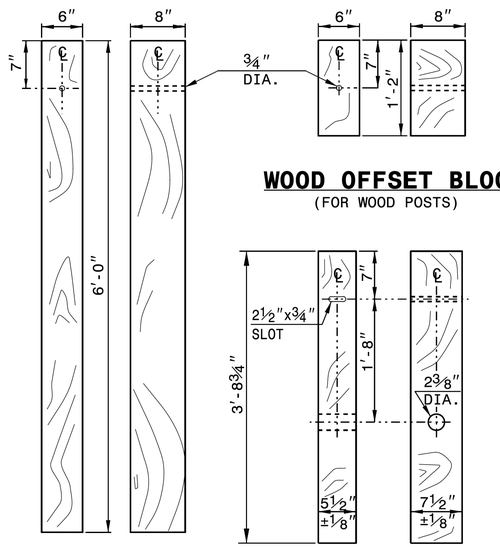
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



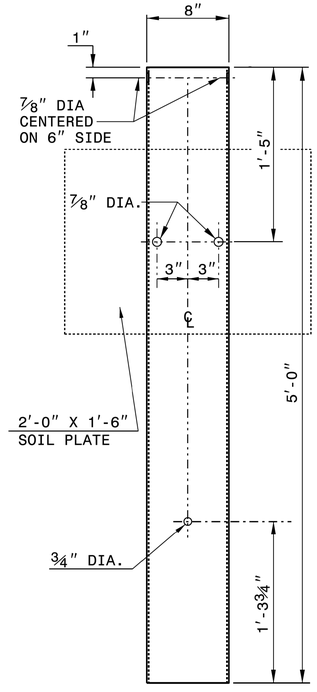
STANDARD W-BEAM GUARDRAIL



WOOD OFFSET BLOCK
(FOR WOOD POSTS)

STANDARD LINE POST

SHORT WOOD BREAKAWAY POST



STEEL TUBE
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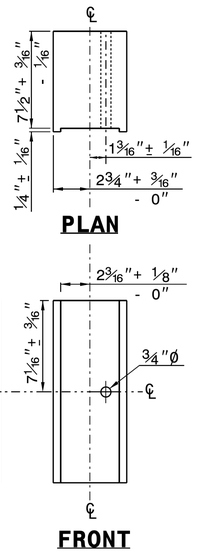
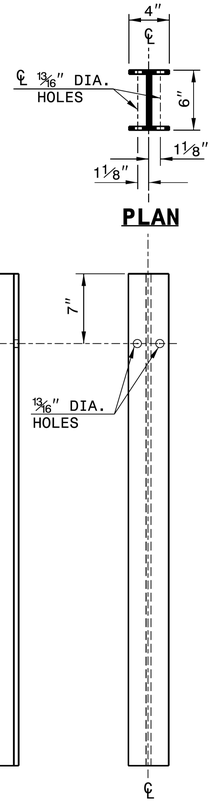


ROUTED OFFSET BLOCK



"W6" STEEL POST

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

SYSTEM PARTS

9/26/2022

NORTH CAROLINA PROFESSIONAL SEAL 022071 ENGINEER

DocuSigned by: Ron Davenport
F81B6038A47A442...

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

SEE TITLE BLOCK

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

REVISIONS

BP1.R008.1
4RD1 | 2C-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PASQUOTANK COUNTY

HIGHWAY DIVISION 1

PREPARED BY
KCA
KSINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville Street,
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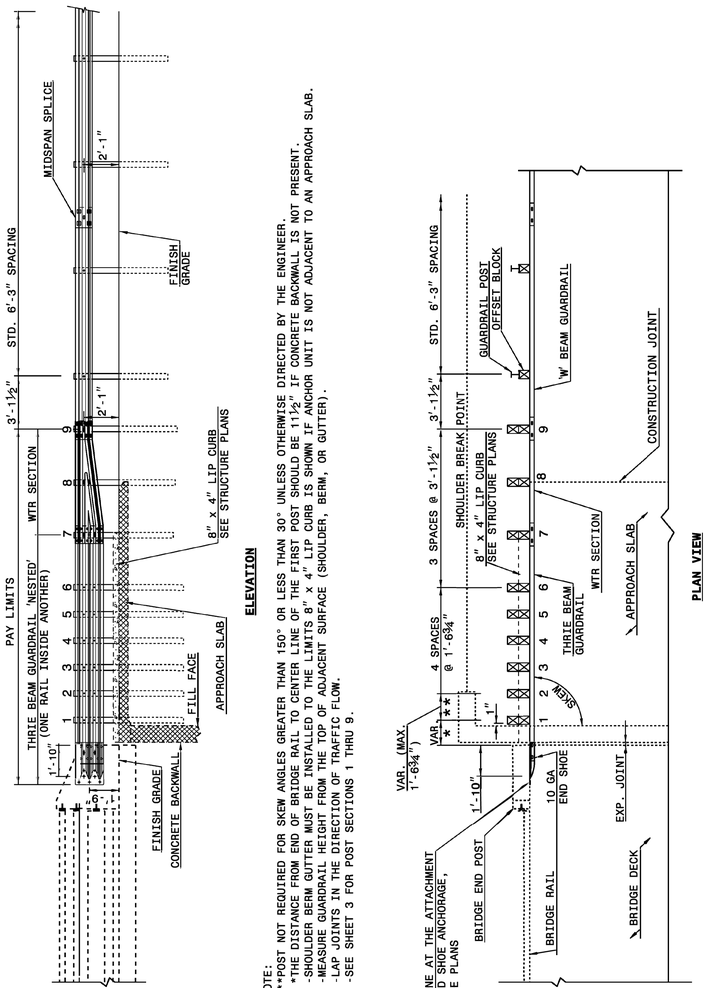
PROJECT REFERENCE NO.	SHEET NO.



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 1½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE

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

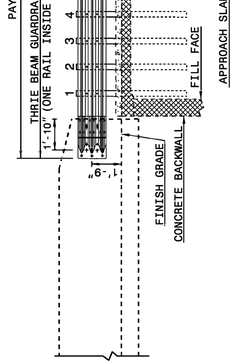
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03

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

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

SHEET 2 OF 7
862D03



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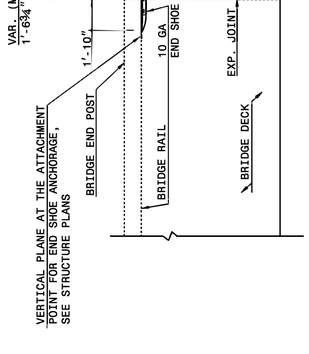

PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

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

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

SHEET 2 OF 7
862D03

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jhowerton AT CSD-212898

BP1.R008.1
4RD1 | 2C-2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PASQUOTANK COUNTY

HIGHWAY DIVISION 1

PREPARED BY
KCA
KSINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville Street, Suite 1500
Raleigh, NC 27601
(919)882-7839

9/26/2022

REVISIONS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

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

5/26/20

PROJECT REFERENCE NO.	SHEET NO.

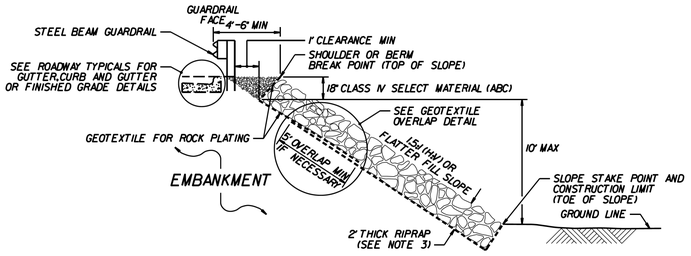
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

ROCK PLATING

SHEET 1 OF 1

275D01



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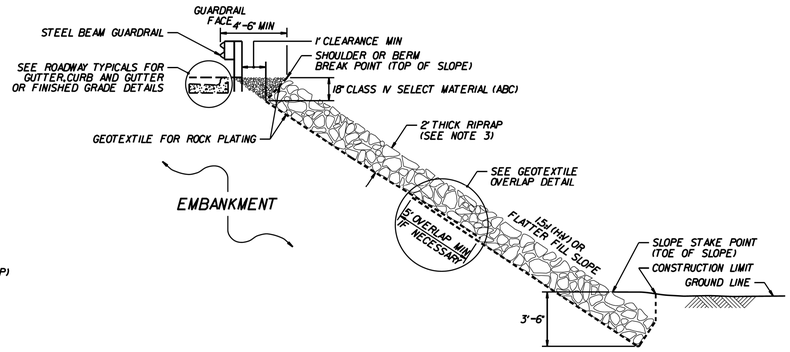

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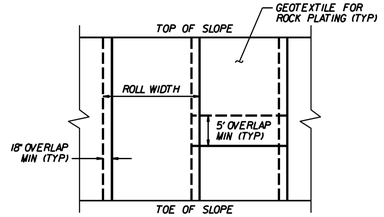
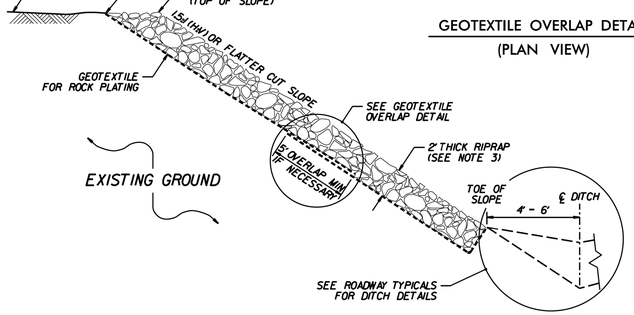
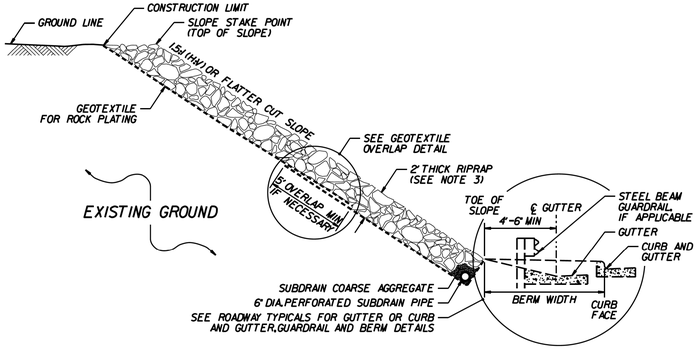


GEOTEXTILE OVERLAP DETAIL
(PLAN VIEW)



ROCK PLATING DETAIL NO. 3 – TYPICAL SECTION



ROCK PLATING DETAIL NO. 4 – TYPICAL SECTION

NOTES:

1. SEE ROADWAY PLANS AND SUMMARY SHEETS FOR ROCK PLATING LOCATIONS.
2. FOR ROCK PLATING,SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.
3. USE CLASS I,2 OR B RIPRAP UNLESS REQUIRED OTHERWISE IN THE ROADWAY SUMMARY SHEETS.

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

ROADWAY DETAIL DRAWING FOR

ROCK PLATING

SHEET 1 OF 1

275D01

BP1.R008.1
4RDI | 2C-3

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PASQUOTANK COUNTY

HIGHWAY DIVISION 1

PREPARED BY
KCA
KSINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville Street,
Suite 1500
Raleigh, NC 27601
(919)882-7839

REVISIONS

9/26/2022

NORTH CAROLINA PROFESSIONAL SEAL 022071 ENGINEER TRANSPORTATION DEPARTMENT

DocuSigned by:
Ron Davenport
F818603BAA7A442...

CONTRACT STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6900 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: S. HIDDEN DATE: 03-11-22
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

$$$$SYSTIME$$$$
$$$$SHEETNUM$$$$
$$$$USERNAME$$$$

COMPUTED BY: JMD DATE: 3/22
CHECKED BY: JPM DATE: 3/22

5/26/20

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BPI.R008.1
4RDI | 3B-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PASQUOTANK COUNTY

HIGHWAY DIVISION 1

PREPARED BY
KCA
KSINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville Street,
Suite 1500
Raleigh, NC 27601
(919)882-7839

RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNER NAMES	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING	CONST. EASE.	PERM. DRAIN. EASE.	TEMP. DRAIN. EASE
1	D & D MOBILE HOME REPAIRS	7.84					0.0127

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L-	15+50.00	16+51.65	CL	248.48			
-L-	17+64.93	19+05.00	CL	342.39			
		TOTAL:		590.87			
		SAY:		600			

SUMMARY OF EARTHWORK

IN CUBIC YARDS

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- 12+55.00	-L- 16+21.75 (Bridge)	34	307	273	
-L- 17+94.25 (Bridge)	-L- 21+00.00	48	243	195	
PROJECT TOTALS:		82	550	468	
Replace Topsoil on Borrow Pitt (5%)				23	
GRAND TOTALS:		82	550	491	
SAY:		90		500	

* PER GEOTECH RECOMMENDATION, ESTIMATED 300 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

NOTE:

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

ALL EARTHWORK QUANTITIES WERE DERIVED FROM ORD QUANTITIES BY NAMED BOUNDARY REPORT(S) AS DESCRIBED IN THE ORD QUICKSTART TRAINING.

SHOULDER BERM GUTTER SUMMARY

IN LINEAR FEET

LINE	Station	Station	LENGTH
-L- LT	15+99.00	16+10.87	11.87
-L- RT	15+99.00	16+10.87	11.87
-L- RT	18+05.12	18+20.00	14.88
		TOTAL:	38.62
		SAY:	40

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL

GUARDRAIL SUMMARY

G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS								ADDITIONAL GUARDRAIL POSTS	IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GREU TL-3	M-350	TYPE-III	CAT-1	VI MOD	BIC		G	NG				
-L-	15+28.00	16+21.75	LT	93.75				16+21.75	4.5	7.5		50		1			1		1										
-L-	15+28.00	16+21.75	RT	93.75			16+21.75		4.5	7.5	50		1				1		1										
-L-	17+94.25	18+88.00	LT	93.75			17+94.25		4.5	7.5	50		1				1		1										
-L-	17+94.25	18+88.00	RT	93.75				17+94.25	4.5	7.5		50		1			1		1										
			SUBTOTAL	375													4		4				5						
		Less GREU TL-3 @ 50' Each		200																									
		Less Type III @ 18.75' Each		75																									
			PROJECT TOTALS	100													4		4				5						
			SAY	100													4		4				5						

REVISIONS

5/26/20

COMPUTED BY: WNK DATE: 3/22
CHECKED BY: EPA DATE: 3/22

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
16+04 -L-	14 RT	400		10.0															
		400	401A		5.9	5.8													
16+04 -L-	14 LT	401A		10.9															
	52 LT	401A	401		5.8	3.0			36										
18+15 -L-	14 RT	402		9.9															
	35 RT	402	403		6.7	3.8			20										
SHEET TOTALS									56										

STATION	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
16+04 -L-																								
																		28						
16+04 -L-																								
18+15 -L-																								
SHEET TOTALS																		28						

STATION	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	T.B.D.I STD 840.35	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD 840.29													DRAINAGE PIPE ELBOWS 15"	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
16+04 -L-								1									1	1																	
16+04 -L-								1	0.1								1	1																	
18+15 -L-								1									1	1													2				
SHEET TOTALS								3	0.1								3	3													2				

ABBREVIATIONS

C.B. CATCH BASIN
N.D.I. NARROW DROP INLET
D.I. DROP INLET
G.D.I. GRATED DROP INLET
G.D.I.(N.S.) (NARROW SLOT)
J.B. JUNCTION BOX
M.H. MANHOLE
T.B.D.I. TRAFFIC BEARING DROP INLET
T.B.J.B. TRAFFIC BEARING JUNCTION BOX

BP1.R008.1
4RD1 | 3D-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PASQUOTANK COUNTY

HIGHWAY DIVISION 1

PREPARED BY

KISINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville Street, Suite 1500
Raleigh, NC 27601
(919)882-7839

REVISIONS

COMPUTED BY: Tyler C. Bottoms DATE: 3/31/22
CHECKED BY: Thein Tun Zan DATE: 5/11/22

5/26/20

BP1.R008.1
4RD1 | 3G-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PASQUOTANK COUNTY

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

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

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

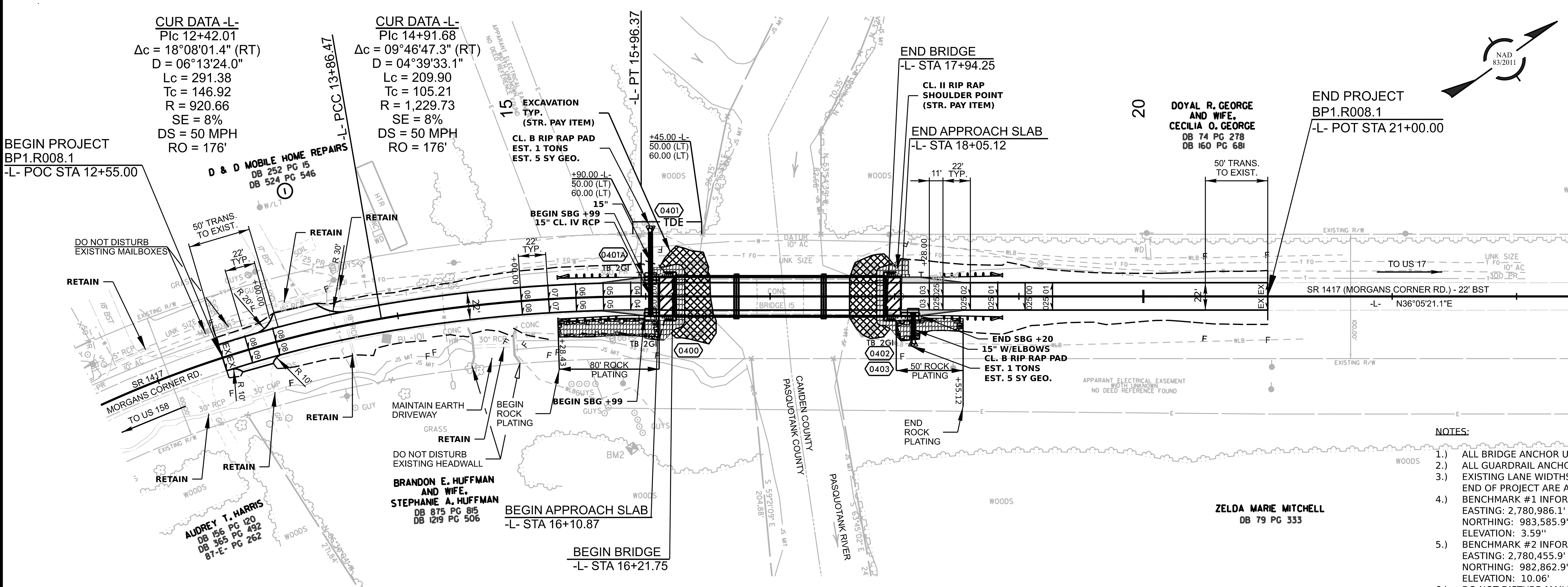
SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
L	2.75:1	14+25	2:1	16+10.87	RT	1	*	230
L	2:1	17+94.25	2.75:1	19+25	RT	1	*	120
							TOTAL SY:	350

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

PLAN VIEW STATIONS OF ROCK PLATING DIFFER FROM GEOTECH RECOMMENDATIONS BASED ON DIVISION REQUEST.
QUANTITIES IN ESTIMATE REFLECT PLAN VIEW LIMITS.

REVISIONS



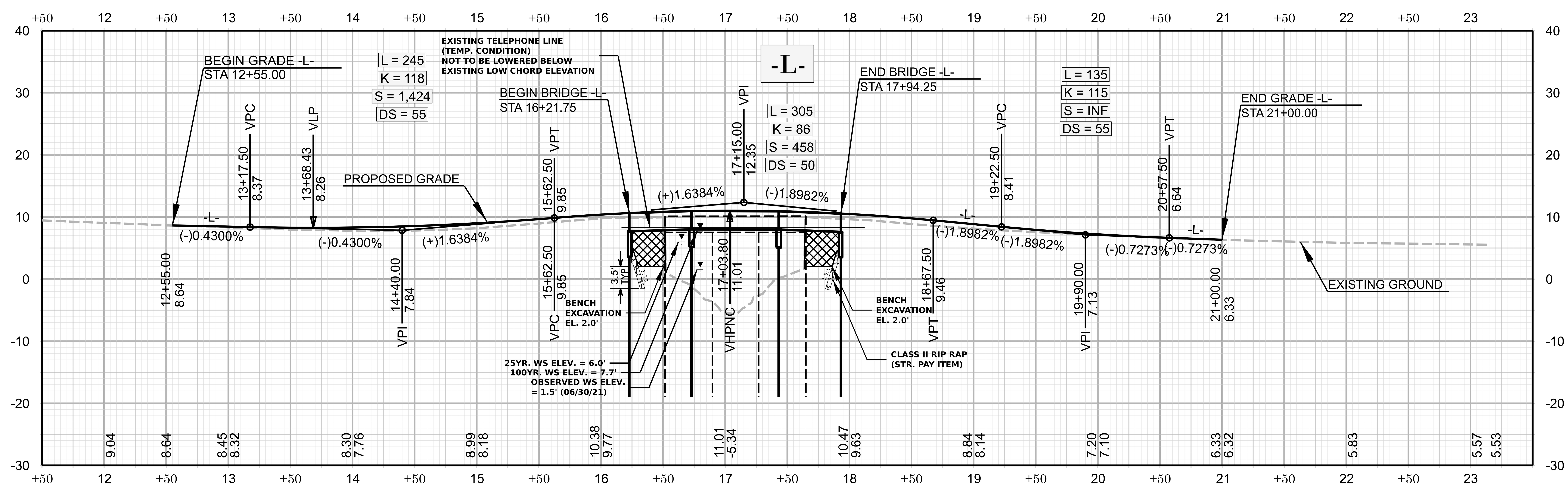
NOTES:

1.) ALL BRIDGE ANCHOR UNITS ARE TYPE III.
2.) ALL GUARDRAIL ANCHOR UNITS ARE GREU TL-3
3.) EXISTING LANE WIDTHS AT THE BEGINNING AND END OF PROJECT ARE APPROXIMATELY 11.0 FT.
4.) BENCHMARK #1 INFORMATION: RAILROAD SPIKE IN 12" MAPLE
EASTING: 2,780,986.1'
NORTHING: 983,585.9'
ELEVATION: 3.59'
5.) BENCHMARK #2 INFORMATION: RAILROAD SPIKE IN 9" MAGNOLIA
EASTING: 2,780,455.9'
NORTHING: 982,862.9'
ELEVATION: 10.06'
6.) DO NOT DISTURB MAILBOXES LEFT OF BEGIN PROJECT.
7.) DO NOT DISTURB EXISTING HEADWALL.
8.) RE-GRADE DRIVEWAYS AS NECESSARY.
9.) FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-21.
10.) ALL SHOULDER TAPERS ARE 8:1 BACK TO PROPOSED EDGE OF PAVEMENT.

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE = 4000 CFS	BASE DISCHARGE = 6354 CFS	OVERTOPPING DISCHARGE = 2750 CFS
DESIGN FREQUENCY = 25 YRS	BASE FREQUENCY = 100 YRS	OVERTOPPING FREQUENCY = <10 YRS
DESIGN HW ELEVATION = 6.0 FT	BASE HW ELEVATION = 7.7 FT	OVERTOPPING HW ELEVATION = 4.7 FT

-L- SR 1417 (MORGANS CORNER RD)



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4RD1 | 4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PASQUOTANK COUNTY

HIGHWAY DIVISION 1

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ROADWAY DESIGN ENGINEER
9/26/2022
NORTH CAROLINA PROFESSIONAL SEAL 043935 ENGINEER JOHN P. MAZERES

HYDRAULICS ENGINEER
9/26/2022
NORTH CAROLINA PROFESSIONAL SEAL 049338 ENGINEER ERIK P. AADLAND

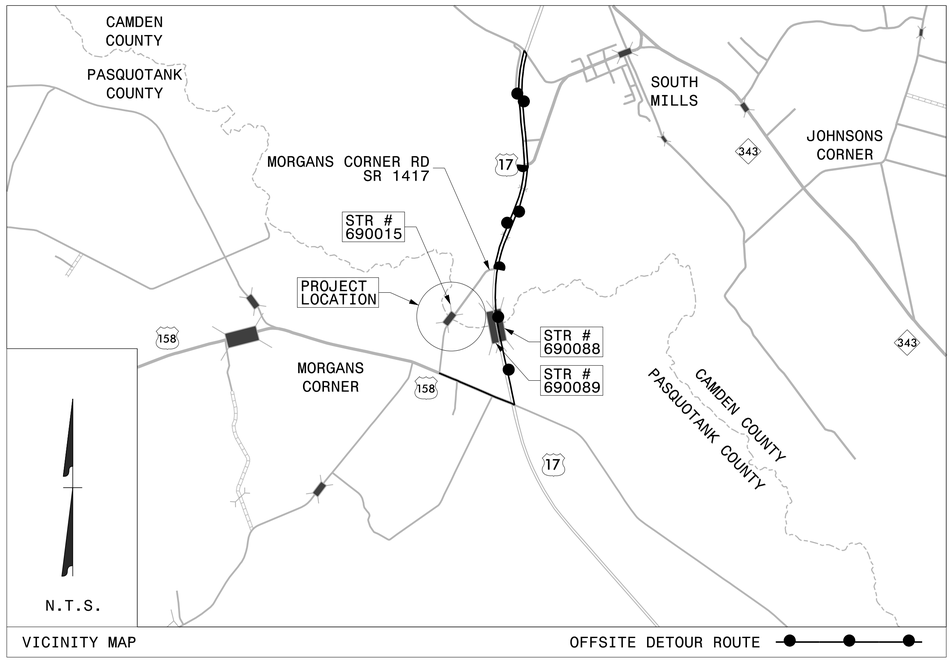
PREPARED BY
KCA
KISINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville Street, Suite 1500
Raleigh, NC 27601
(919)882-7839

REVISIONS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

PASQUOTANK COUNTY



VICINITY MAP

OFFSITE DETOUR ROUTE

INDEX OF SHEETS

SHEET NO.
TMP-1

BP1.R008.1

TIP PROJECT:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

PLANS PREPARED BY:

Jacob H. Duke, P.E.
WZTC PROJECT ENGINEER

Jason M. DeBone
WZTC PROJECT DESIGN ENGINEER

NCDOT CONTACTS:

Kenneth C. Thornewell, P.E.
PROJECT ENGINEER

Spencer B. Jennings
PROJECT DESIGN ENGINEER

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

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
(919) 882-7839
NC FIRM LICENSE: C-1506

APPROVED: DocuSigned by: Jacob H. Duke 29530CB054E94D9...

DATE: 12/8/2022

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H. DUKE

12/7/2022
BP1.R008_TIC_TMP_01.dgn
User:jdebone

PROJ. REFERENCE NO.	SHEET NO.
BP1.R008.1	TMP-1A

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
(919) 882-7839
NC FIRM LICENSE: C-1506

LEGEND

GENERAL

NORTH ARROW

TRAFFIC CONTROL DEVICES

BARRICADE (TYPE III)

TEMPORARY SIGNING

STATIONARY SIGN

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULT-ILANE 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

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

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

PROVIDE SIGNING REQUIRED FOR THE OFFSITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

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

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

TRAFFIC CONTROL DEVICES

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

PHASING NOTES

PHASE 1

STEP 1: PRIOR TO ANY CONSTRUCTION OPERATIONS, PLACE AND COVER ROAD CLOSURE SIGNS AND DEVICES FOR MORGANS CORNER RD (SR 1417) AS SHOWN ON TMP-2. PLACE ADVANCE WARNING SIGNS PER RSD 1101.01 (SHEET 3 OF 3).

STEP 2: USING THE ROAD CLOSURE DETAIL, AS SHOWN ON TMP-2, UNCOVER SIGNS, CLOSE -L- (MORGANS CORNER RD/SR 1417) TO TRAFFIC AND CONSTRUCT PROPOSED BRIDGE AND ROADWAY UP TO AND INCLUDING THE FINAL LAYER OF SURFACE COURSE PER ROADWAY AND STRUCTURE PLANS.

STEP 3: UPON COMPLETION OF BRIDGE AND ROADWAY CONSTRUCTION, PLACE FINAL PAVEMENT MARKINGS AND MARKERS PER PAVEMENT MARKING PLANS. REMOVE ALL SIGNS AND DEVICES AND OPEN -L- (MORGANS CORNER RD/SR 1417) TO TRAFFIC.

APPROVED: DocuSigned by: Jacob H Duke 29530C8054E94D9...

DATE: 12/8/2022

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

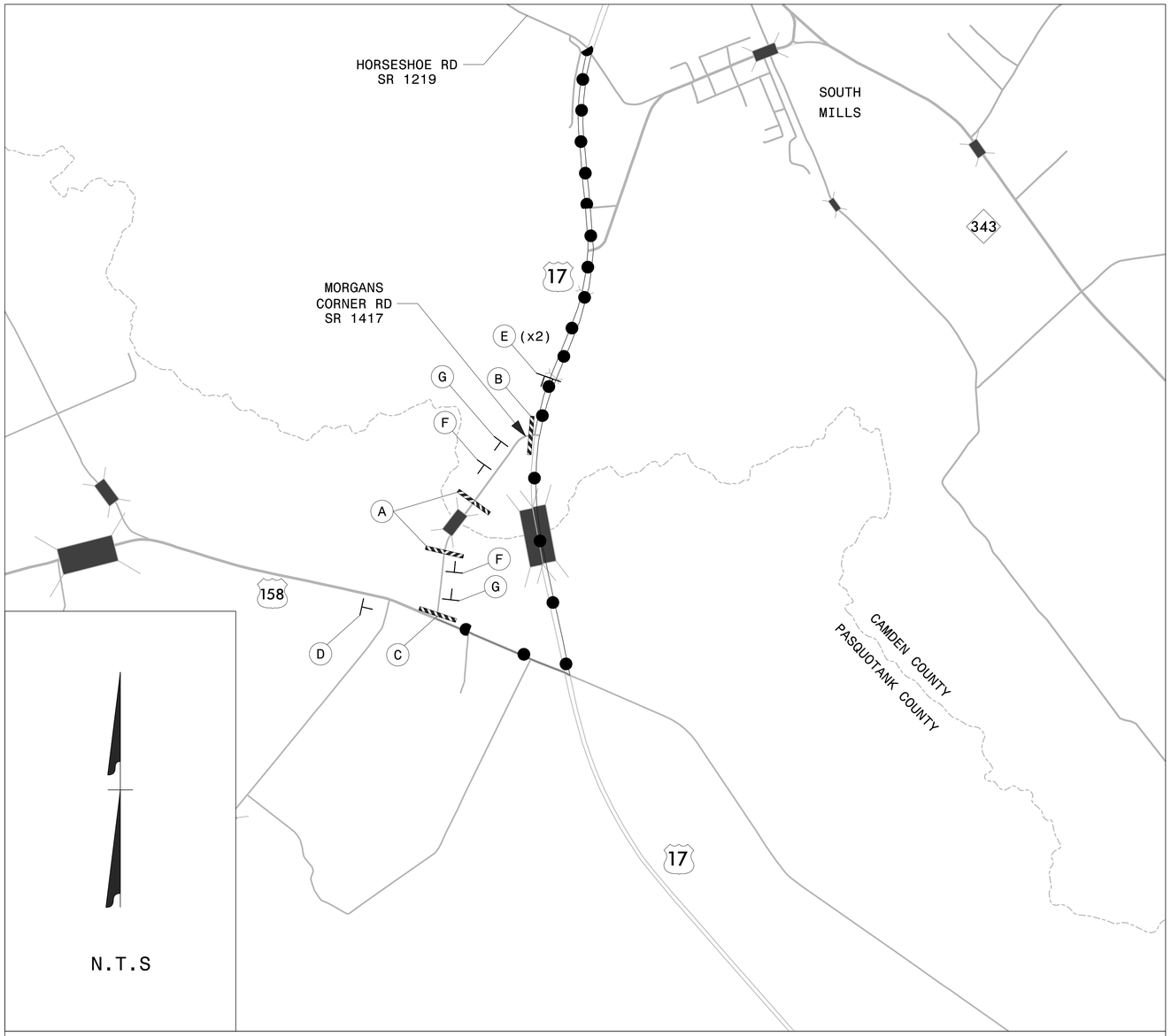
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

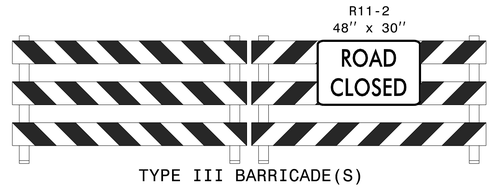
LEGEND, ROADWAY STANDARD DRAWINGS, GENERAL NOTES, AND PHASING NOTES

12/8/2022
BP1.R008.1_TC_TMP_01A.dgn
User:jdebone

PROJ. REFERENCE NO.	SHEET NO.
BP1.R008.1	TMP-2

KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
(919) 882-7839
NC FIRM LICENSE: C-1506





TYPE III BARRICADE(S)

A

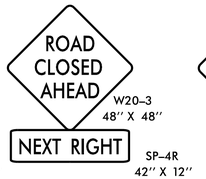
TYPE III BARRICADE

B

TYPE III BARRICADE

C

D



E

F

G

NOTES:

1. TRAFFIC CONTROL DEVICES (A) THRU (G) SHALL BE INSTALLED PER ENGINEER'S INSTRUCTIONS.
2. ALL SIGNAGE IS SPACED PER RSD 1101.11 SHEET 4 OF 4 UNLESS OTHERWISE NOTED.
3. USE THIS SHEET IN CONJUNCTION WITH RSD 1101.01 SHEET 3 OF 3.

APPROVED: DocuSigned by: Jacob H Duke 29530C8054E94D9...

DATE: 12/8/2022

SEAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ROAD CLOSURE DETAIL

12/8/2022
BP1.R008.1_TC_TMP_03.dgn
User:rfaelone

T.I.P.: BP1.R008.1

TIP NO.	SHEET NO.
BP1.R008.1	PMP-1

APPROVED: DocuSigned by: Jacob H Duke 29530C8054E94D9...

DATE: 7/22/2022

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 043777 ENGINEER JACOB H DUKE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
PASQUOTANK COUNTY

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 2018 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
1253.01	RAISED PAVEMENT MARKERS - SNOWPLOWABLE
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

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:

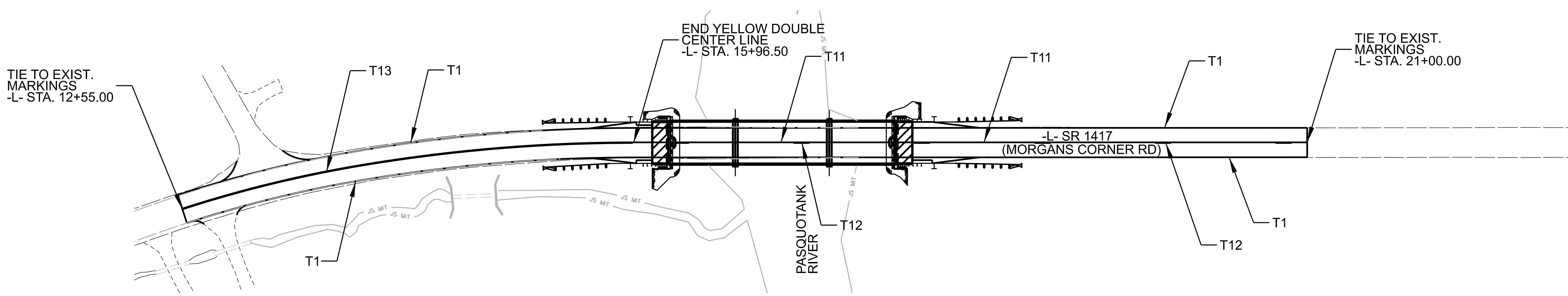
ROAD NAME	MARKING	MARKER
SR 1417 (MORGANS CORNER RD)	THERMOPLASTIC	NONE

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	QUANTITY
THERMOPLASTIC		
T1	WHITE EDGELINE (4", 90 MIL)	1690 LF
T11	YELLOW SINGLE CENTER (4", 90 MIL)	504 LF
T12	10FT. YELLOW SKIP (4", 90 MIL)	126 LF
T13	YELLOW DOUBLE CENTER (4", 90 MIL)	683 LF



PLAN SUBMITTED TO:

AYMAN I. ALQUDWAH, P.E. – SIGNING AND DELINEATION REGIONAL ENGINEER

PLAN PREPARED BY: KISINGER CAMPO & ASSOCIATES

JACOB H. DUKE, PE — PROJECT ENGINEER

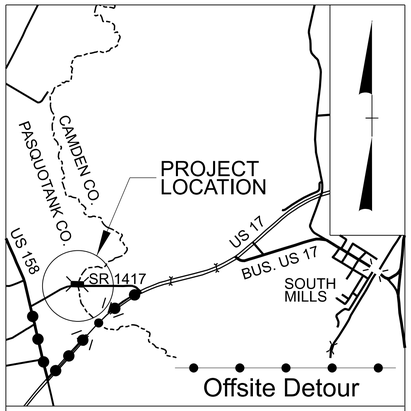
JASON M. DEBONE — PROJECT DESIGNER

KISINGER CAMPO & ASSOCIATES

NC FIRM LICENSE No: C-1506
301 Fayetteville St.,
Suite 1500
Raleigh, NC 27601
(919)882-7839

$$$$$$SYSTIME$$$$$ $$$$$$$$DGN$$$$$$$$$$$$$$$$ $$$$USERNAME$$$$

TIP PROJECT: BP1.R008.1



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

PASQUOTANK COUNTY

LOCATION: *BRIDGE NO. 690015 ON SR 1417 (MORGANS CORNER RD) OVER PASQUOTANK RIVER*

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

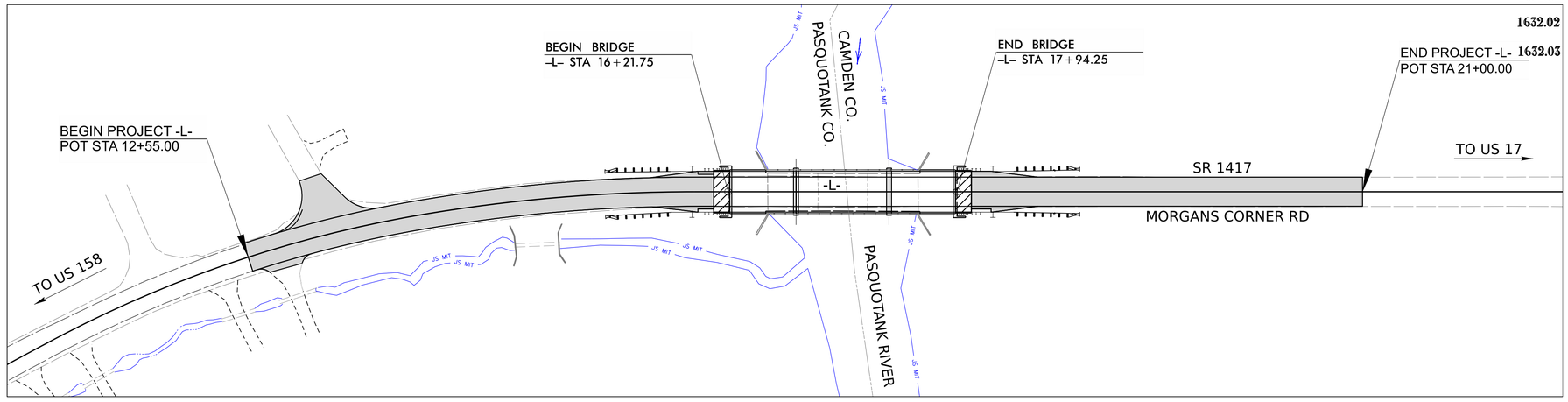
NC GRID NAD 83 NA 2011

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP1.R008.1	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP1.R008.1		PE
BP1.R008.1		R/W, UTILITIES
BP1.R008.1		CONSTRUCTION

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	EW CFW
	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.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

GRAPHIC SCALE

50 25 0 50 100

PLANS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

Prepared in the Office of:

KCA KISINGER CAMPO & ASSOCIATES

NC FIRM LICENSE No: C-1506
301 Fayettville St.,
Suite 1500
Raleigh, NC 27601
(919)882-7839

Designed by:

JOHN MCNULTY — *NAME*

4263 — *LEVEL III CERTIFICATION NO.*

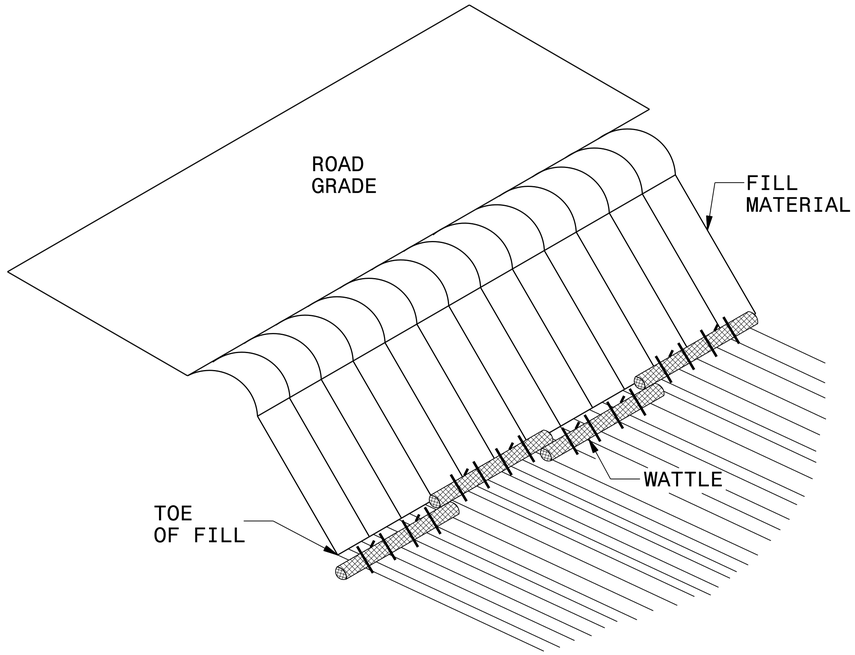
Roadway Standard Drawings

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 revison 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		

PROJECT REFERENCE NO.	SHEET NO.
BPI.R008.I	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

COIR FIBER WATTLE BARRIER DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 18 IN. NOMINAL DIAMETER COIR FIBER (COCONUT) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLES ON TOE OF SLOPE.

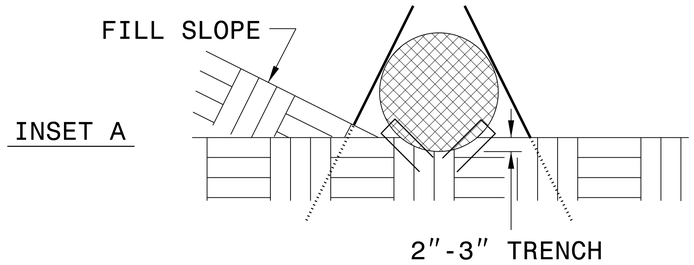
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

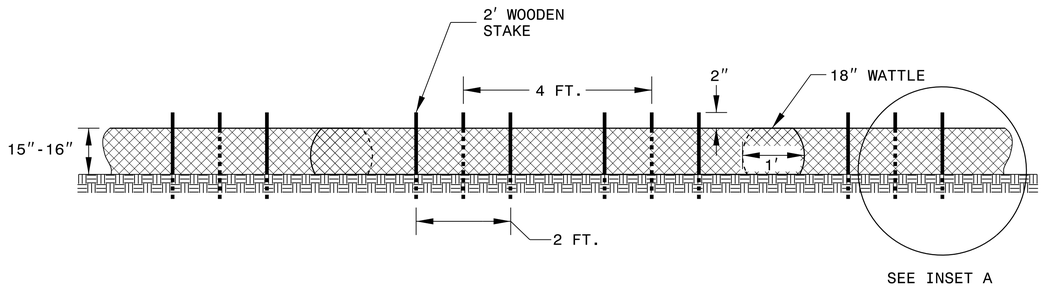
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

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

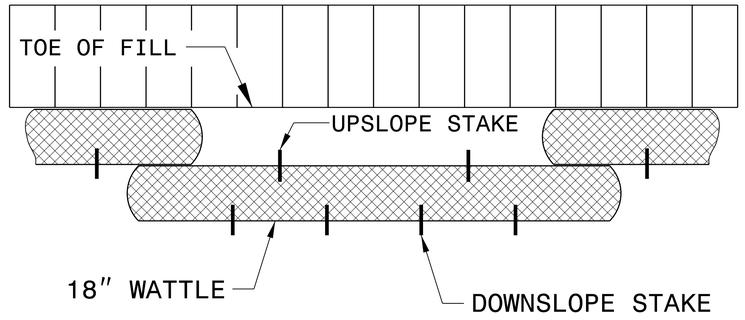
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.





FRONT VIEW

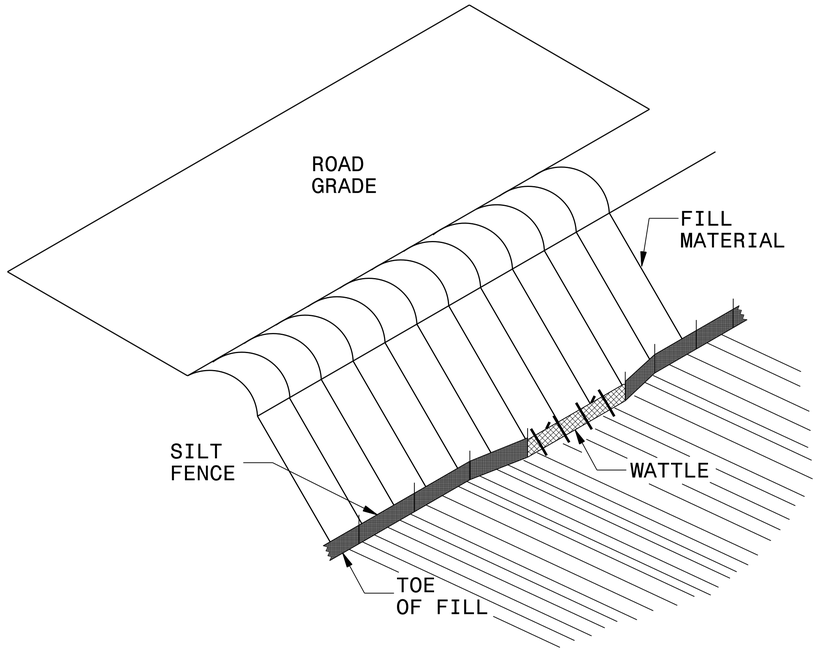


TOP VIEW

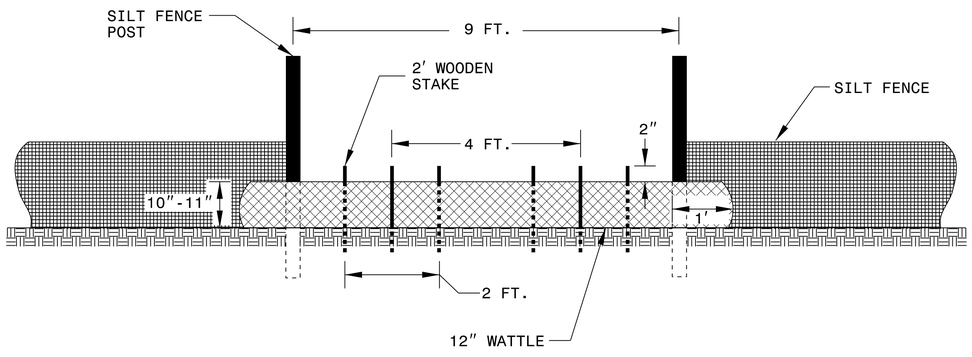
5/26/20

PROJECT REFERENCE NO.	SHEET NO.
BPI.R008.I	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

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

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

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

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

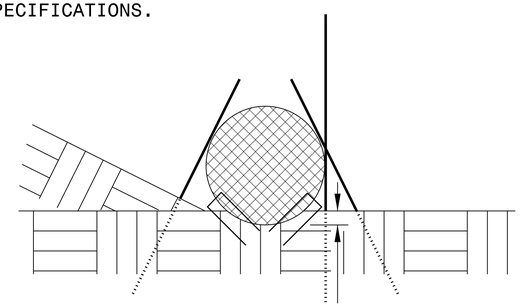
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

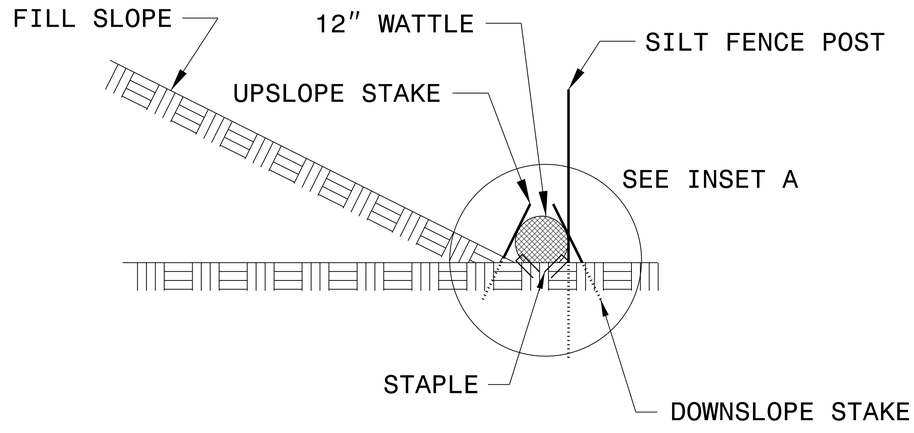
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

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

INSET A

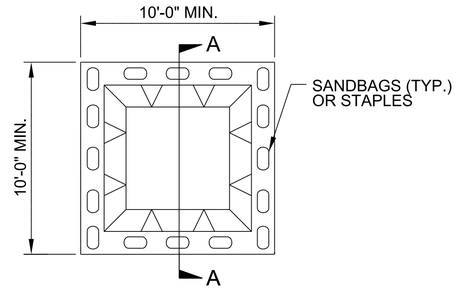


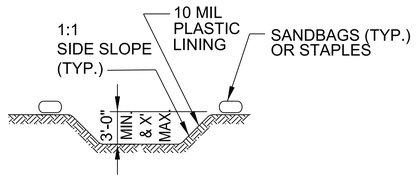


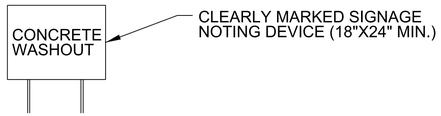
SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
BP1.R008.1	EC-2C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER







PLAN

SECTION A-A

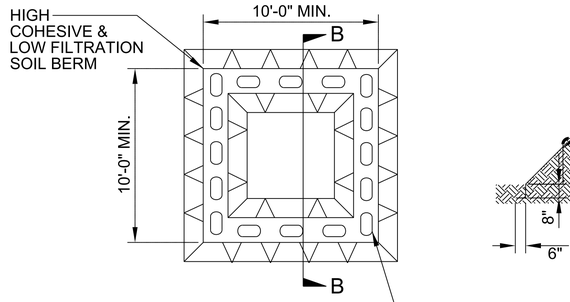
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

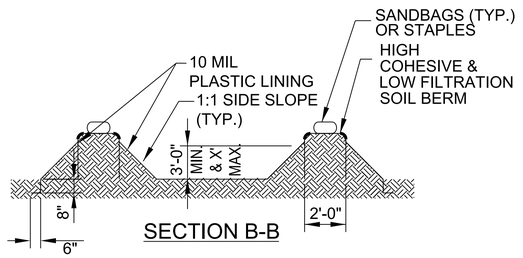
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE





SECTION B-B

PLAN

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

5/26/20

PROJECT REFERENCE NO.	SHEET NO.
BPI.R008.1	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4					
				SUBTOTAL	0
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					1250
				TOTAL	1250
				SAY	1250

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

PROJECT REFERENCE NO.	SHEET NO.
BPI.R008.1	EC-3B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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.

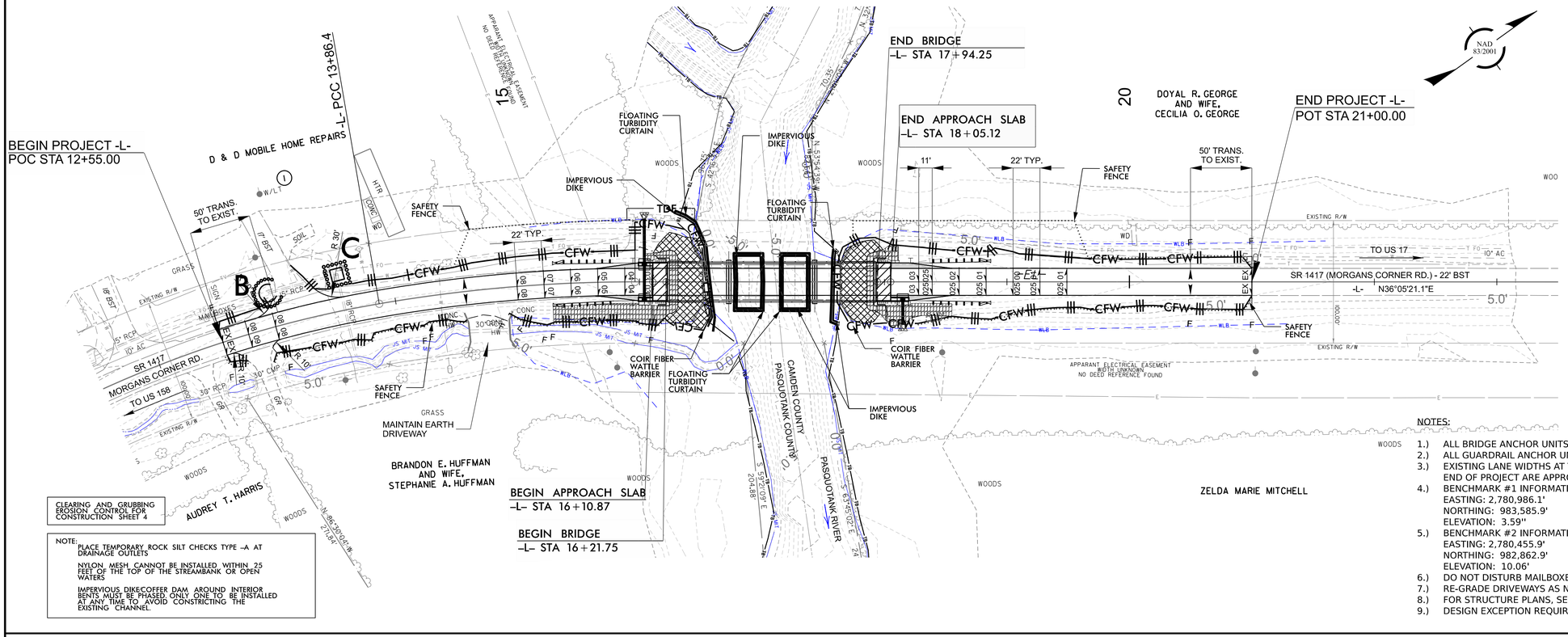
5/26/20

PROJECT REFERENCE NO.	
BPI.R008.1	EC-4/CONST.4

JOHN MCNULTY EROSION CONTROL LEVEL III CERTIFICATION #4263

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED IN THE OFFICE OF:
KCA KISINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville St., Suite 1500
Raleigh, NC 27601
(919)882-7839



CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

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

NYLON MESH CANNOT BE INSTALLED WITHIN 25 FEET OF THE TOP OF THE STREAMBANK OR OPEN WATERS

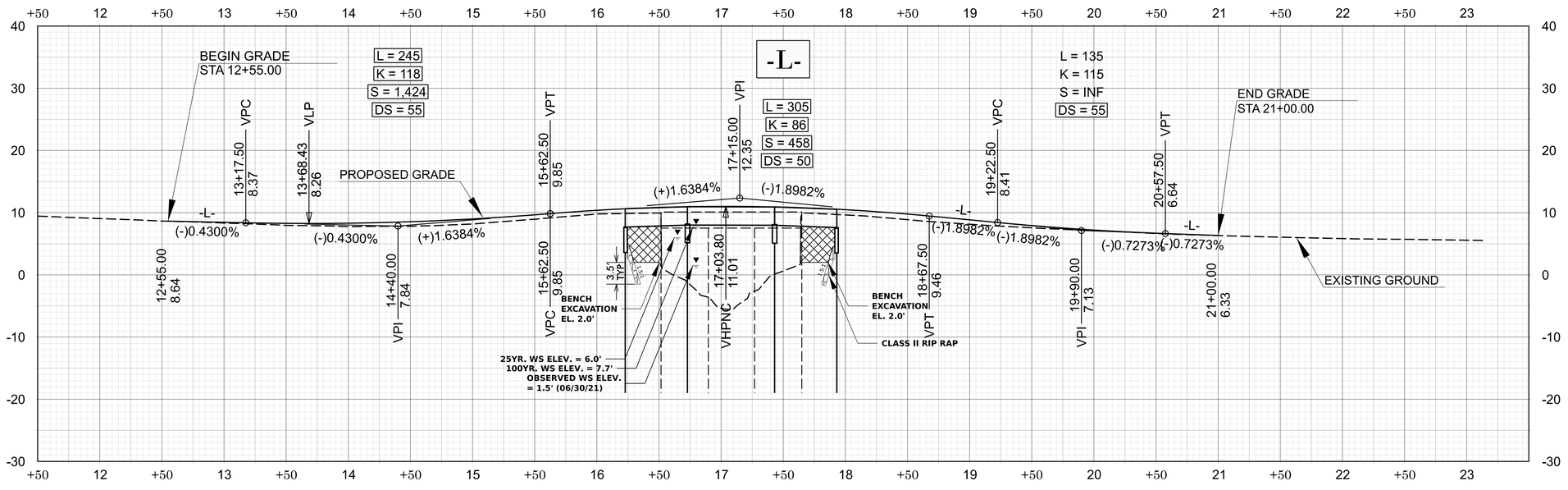
IMPERVIOUS DIKE/COFFER DAM AROUND INTERIOR BENTS MUST BE PHASED, ONLY ONE TO BE INSTALLED AT ANY TIME TO AVOID CONSTRICTING THE EXISTING CHANNEL.

NOTES:
1.) ALL BRIDGE ANCHOR UNITS ARE TYPE III.
2.) ALL GUARDRAIL ANCHOR UNITS ARE GREU TL-3
3.) EXISTING LANE WIDTHS AT THE BEGINNING AND END OF PROJECT ARE APPROXIMATELY 11.0 FT.
4.) BENCHMARK #1 INFORMATION: RAILROAD SPIKE IN 12" MAPLE
EASTING: 2,780,986.1'
NORTHING: 983,585.9'
ELEVATION: 3.59''
5.) BENCHMARK #2 INFORMATION: RAILROAD SPIKE IN 9" MAGNOLIA
EASTING: 2,780,455.9'
NORTHING: 982,862.9'
ELEVATION: 10.06'
6.) DO NOT DISTURB MAILBOXES LEFT OF BEGIN PROJECT.
7.) RE-GRADE DRIVEWAYS AS NECESSARY.
8.) FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-??.
9.) DESIGN EXCEPTION REQUIRED FOR SHOULDER WIDTH.

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE = 4000 CFS	BASE DISCHARGE = 6354 CFS	OVERTOPPING DISCHARGE = 2750 CFS
DESIGN FREQUENCY = 25 YRS	BASE FREQUENCY = 100 YRS	OVERTOPPING FREQUENCY = <10 YRS
DESIGN HW ELEVATION = 6.0 FT	BASE HW ELEVATION = 7.7 FT	OVERTOPPING HW ELEVATION = 4.7 FT

-L- SR 1417 (MORGANS CORNER RD)



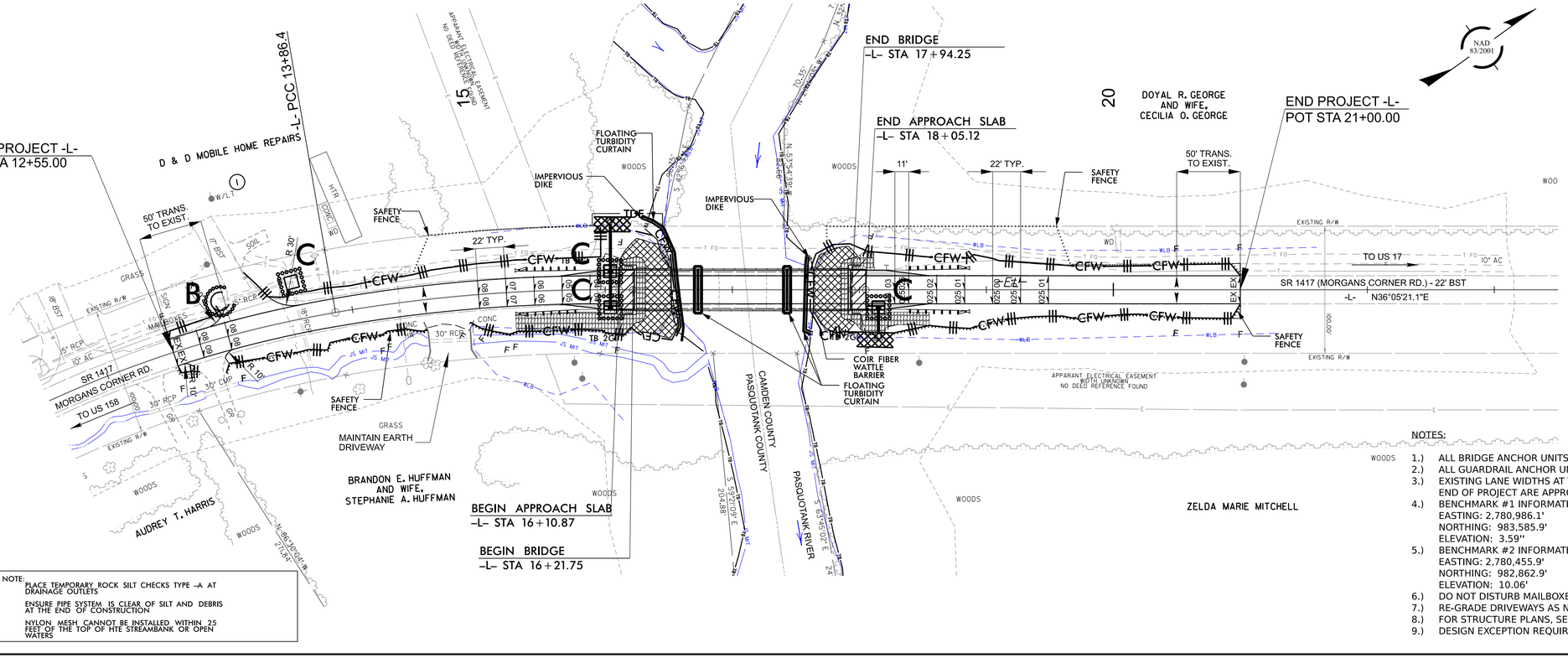
5/26/20

PROJECT REFERENCE NO.	
BPI.R008.1	EC-5/CONST.4

JOHN MCNULTY EROSION CONTROL LEVEL III CERTIFICATION #4263

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED IN THE OFFICE OF:
KCA KISINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville St., Suite 1500
Raleigh, NC 27601
(919)882-7839



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

ENSURE PIPE SYSTEM IS CLEAR OF SILT AND DEBRIS AT THE END OF CONSTRUCTION

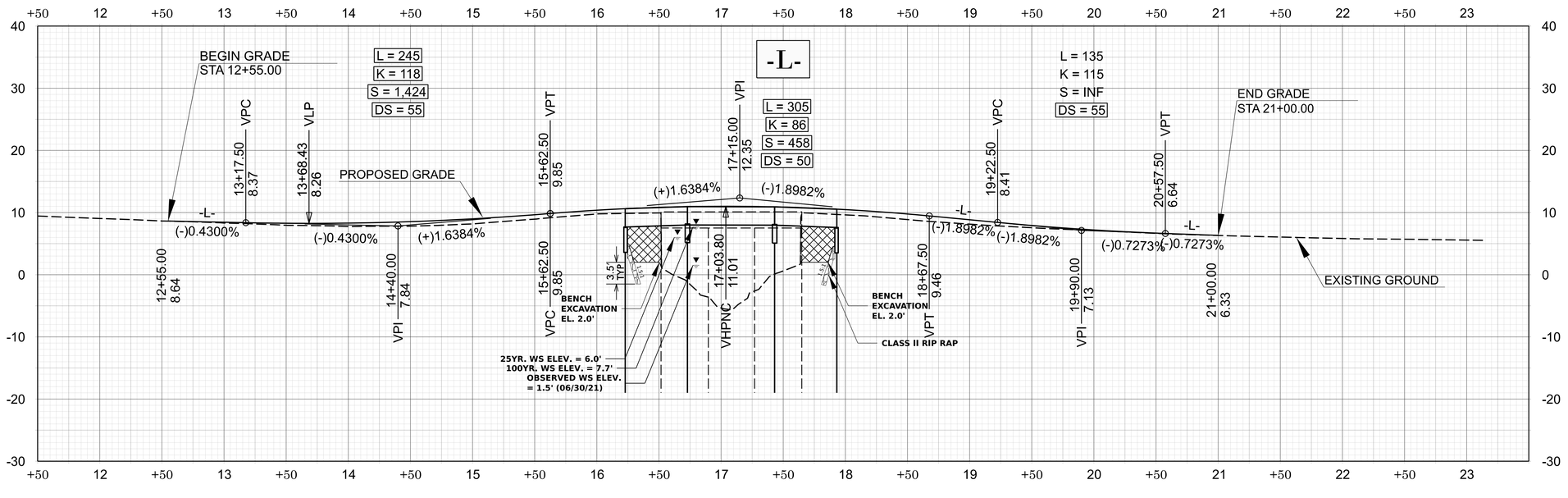
NYLON MESH CANNOT BE INSTALLED WITHIN 25 FEET OF THE TOP OF HTE STREAMBANK OR OPEN WATERS

NOTES:
1.) ALL BRIDGE ANCHOR UNITS ARE TYPE III.
2.) ALL GUARDRAIL ANCHOR UNITS ARE GREU TL-3
3.) EXISTING LANE WIDTHS AT THE BEGINNING AND END OF PROJECT ARE APPROXIMATELY 11.0 FT.
4.) BENCHMARK #1 INFORMATION: RAILROAD SPIKE IN 12" MAPLE
EASTING: 2,780,986.1'
NORTHING: 983,585.9'
ELEVATION: 3.59''
5.) BENCHMARK #2 INFORMATION: RAILROAD SPIKE IN 9" MAGNOLIA
EASTING: 2,780,455.9'
NORTHING: 982,862.9'
ELEVATION: 10.06'
6.) DO NOT DISTURB MAILBOXES LEFT OF BEGIN PROJECT.
7.) RE-GRADE DRIVEWAYS AS NECESSARY.
8.) FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-??.
9.) DESIGN EXCEPTION REQUIRED FOR SHOULDER WIDTH.

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE = 4000 CFS	BASE DISCHARGE = 6354 CFS	OVERTOPPING DISCHARGE = 2750 CFS
DESIGN FREQUENCY = 25 YRS	BASE FREQUENCY = 100 YRS	OVERTOPPING FREQUENCY = <10 YRS
DESIGN HW ELEVATION = 6.0 FT	BASE HW ELEVATION = 7.7 FT	OVERTOPPING HW ELEVATION = 4.7 FT

-L- SR 1417 (MORGANS CORNER RD)



TIP PROJECT: BP1.R008.1

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

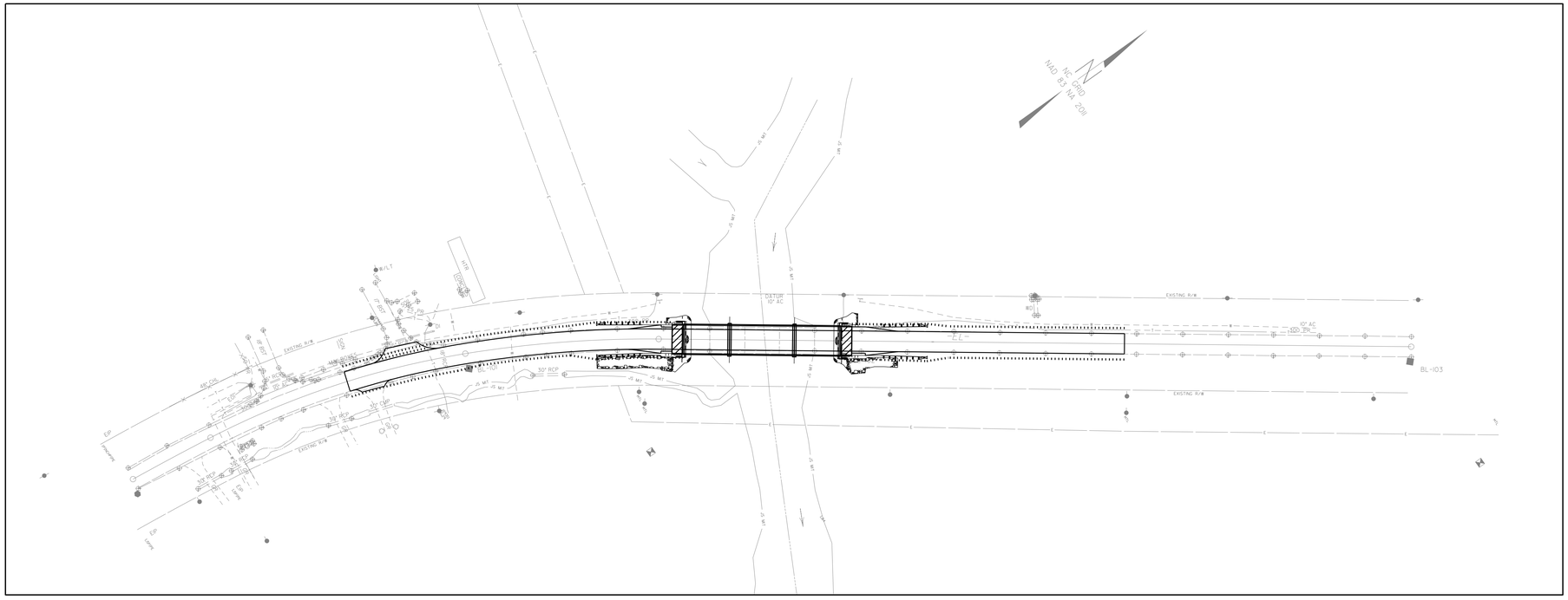
T.I.P. NO.	SHEET NO.
BP1.R008.1	UO–1

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.

UTILITIES BY OTHERS PLANS
PASQUOTANK COUNTY

LOCATION: BRIDGE NO. 690015 ON SR 1417 (MORGANS CORNER RD) OVER PASQUOTANK RIVER

TYPE OF WORK: UTILITIES BY OTHERS



GRAPHIC SCALES

0
PLANS

0
PROFILE (HORIZONTAL)

0
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.:	*DESCRIPTION:*
UO–1	*TITLE SHEET*
UO–2 THRU UO–3	*UBO PLAN SHEETS*

UTILITY OWNERS WITH CONFLICTS

(A) COMMUNICATIONS – CENTURYLINK

PREPARED IN THE OFFICE OF

KCA KISINGER CAMPO & ASSOCIATES

NC FIRM LICENSE No: C-1506
301 Fayettville St.,
Suite 1500
Raleigh, NC 27601
(919)882-7839

SAMUEL CULLUM, PE *UTILITY PROJECT MANAGER*
STEPHEN CHAMBERS *PROJECT UTILITY COORDINATOR*
– *PROJECT UTILITY ENGINEER*

DIVISION OF HIGHWAYS
DIVISION ONE
113 AIRPORT DRIVE
SUITE 100
EDENTON, NC 27932
PHONE (252) 482-1850
FAX

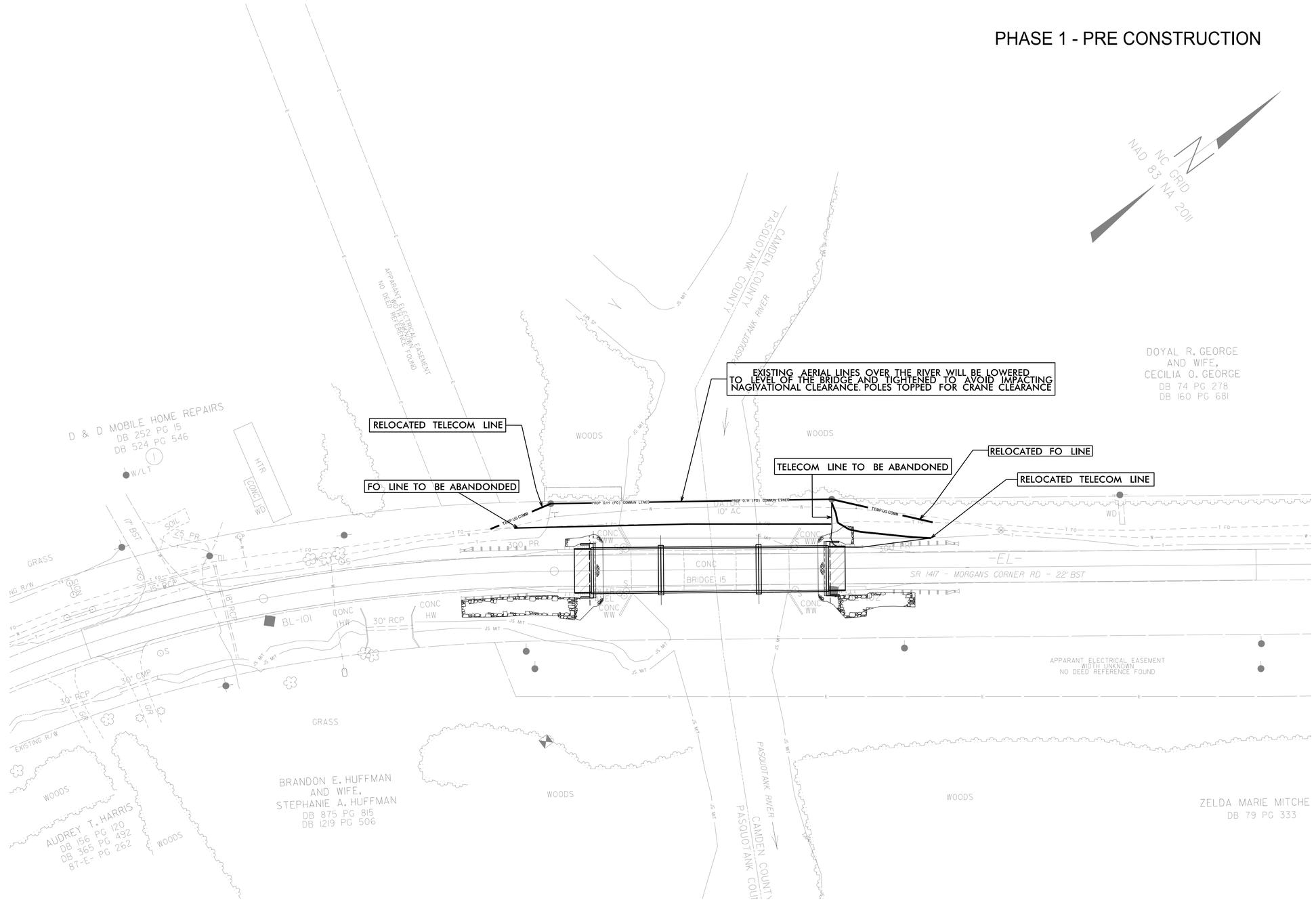
DANIEL MERRITT *UTILITIES REGIONAL ENGINEER*
– *UTILITIES ENGINEER*
– *UTILITIES AREA COORDINATOR*
– *UTILITIES COORDINATOR*

5/26/20

UTILITES BY OTHER

THIS SHEET CORRESPONDS TO RDY-04

PHASE 1 - PRE CONSTRUCTION



BPI.R008.1

2UTI | U02

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PASQUOTANK COUNTY

HIGHWAY DIVISION 1

UTILITY CONSTRUCUTION PLANS ONLY

ALL PROPOSED 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.

DESIGNED BY:	SLCh
DRAWN BY:	SLCh
CHECKED BY:	SLCu
APPROVED BY:	
REVISED	

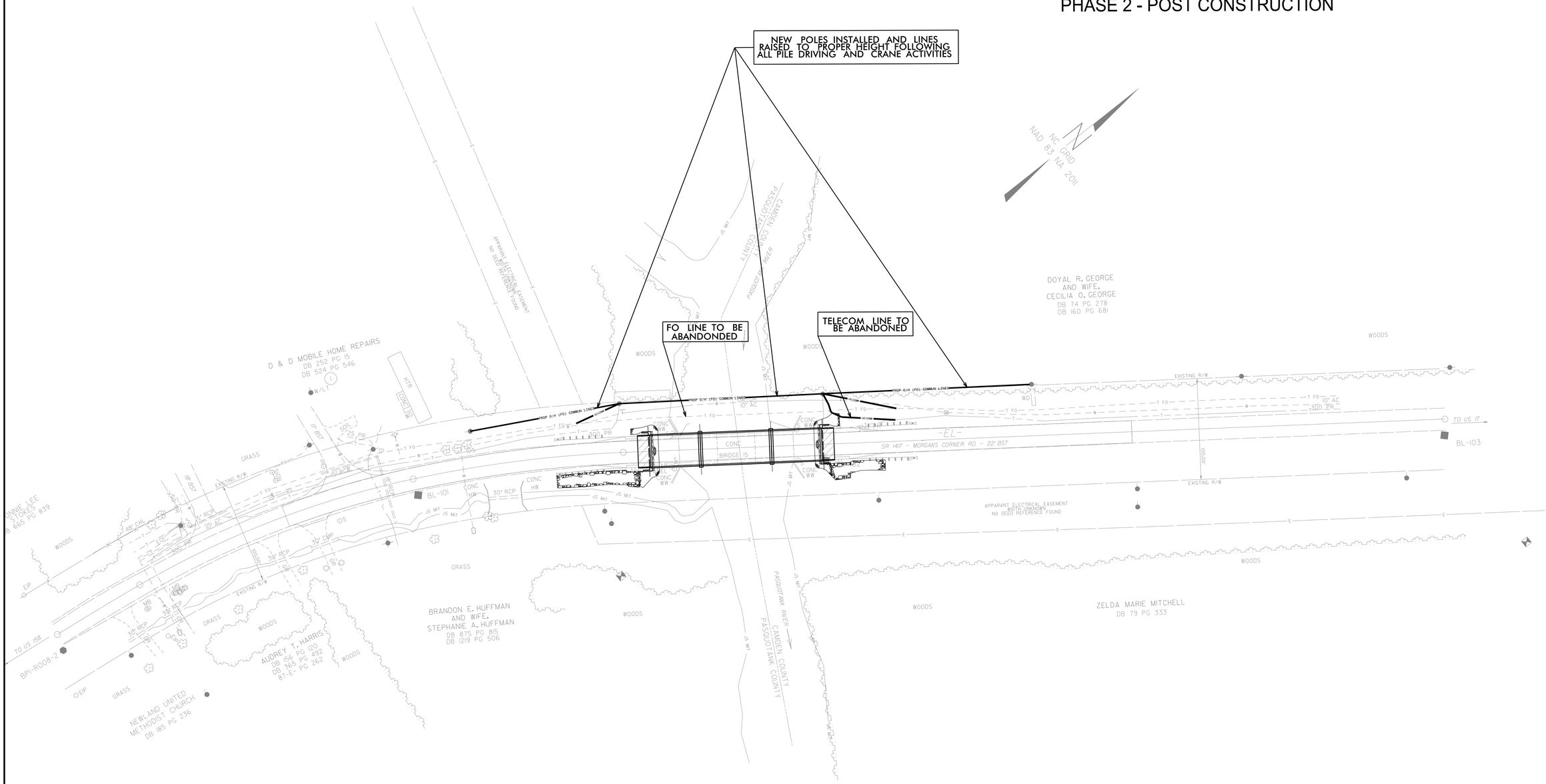
UTILITES ENGINEERING SEC.
PHONE: (919)707-6690
FAX: (919)250-4151

10/06/21

UTILITIES BY OTHERS

THIS SHEET CORRESPONDS TO RDY-04

PHASE 2 - POST CONSTRUCTION



BPI.R008.1	
2UT2	U03

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PASQUOTANK COUNTY

UTILITY DESIGN UNIT

UTILITY CONSTRUCTION PLANS ONLY

ALL PROPOSED 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.

DESIGNED BY:	SLCh
DRAWN BY:	SLCh
CHECKED BY:	SLCu
APPROVED BY:	
REVISED:	

UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

REVISIONS

5/26/20

KCA KISINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville Street,
Suite 1500
Raleigh, NC 27601
(919)882-7839

0 5 10

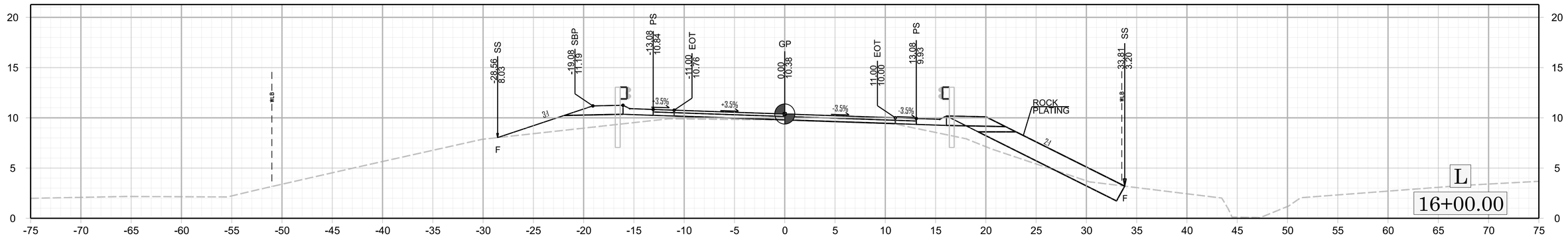
BPI.R008.1
X | 1

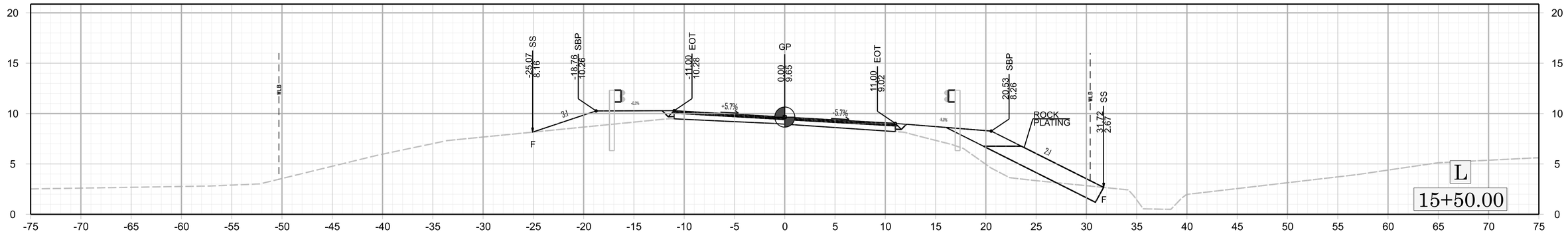
BEGIN PROJECT -L- STA. 12+55.00

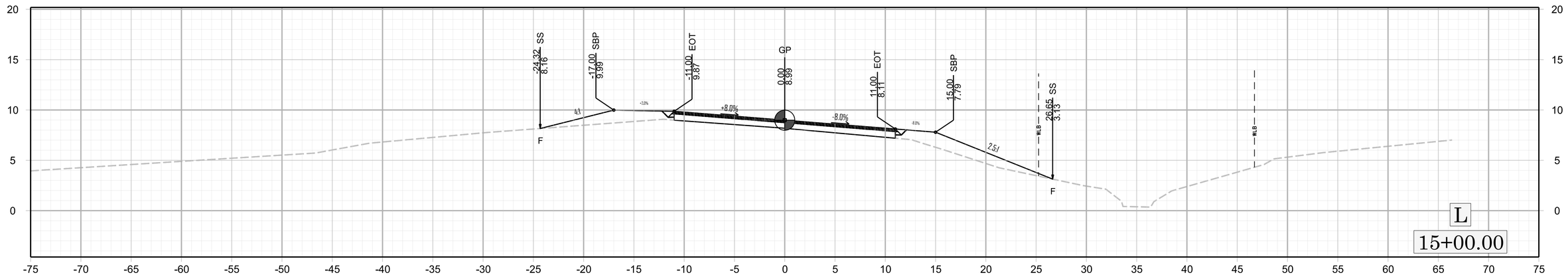
5/26/20

KCA KISINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville Street,
Suite 1500
Raleigh, NC 27601
(919)882-7839

0 5 10







5/26/20

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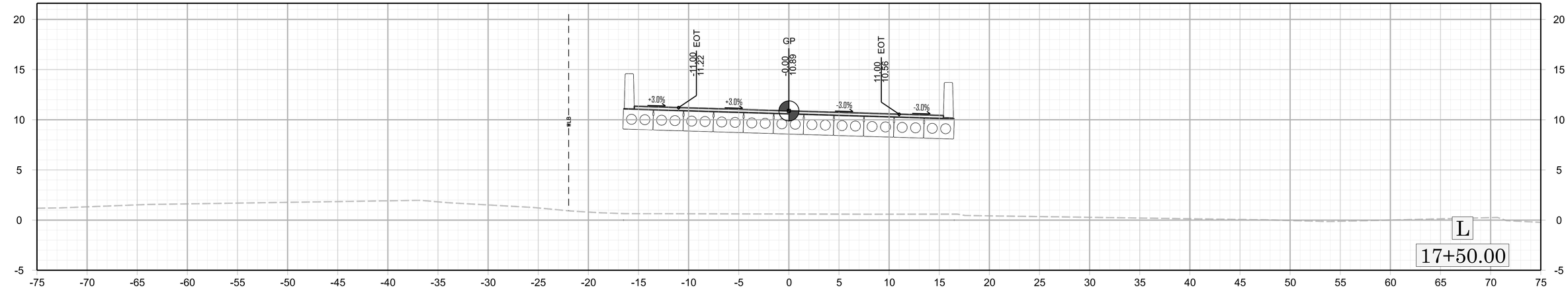
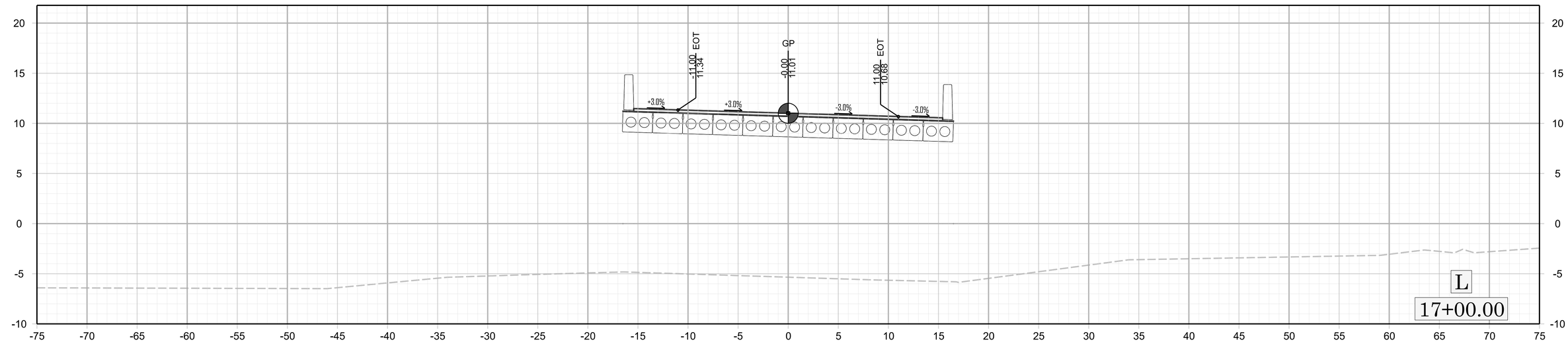
301 Fayetteville Street,
Suite 1500
Raleigh, NC 27601
(919)882-7839

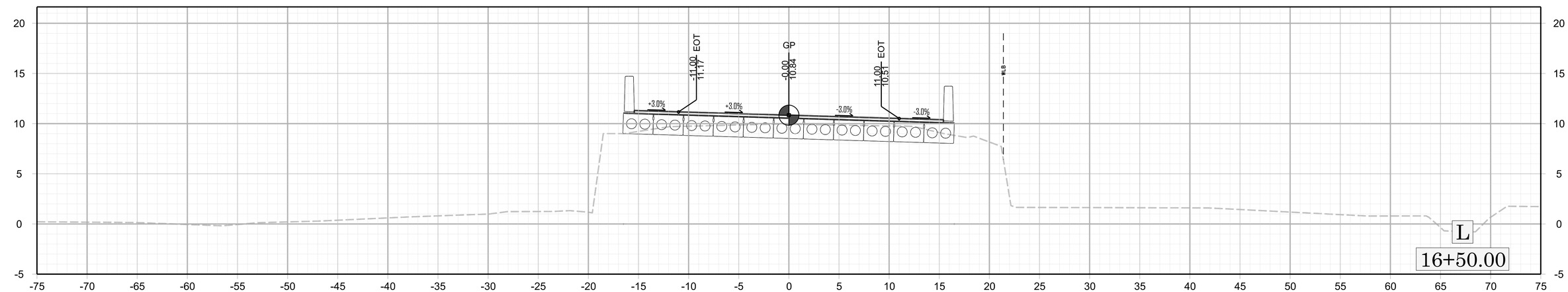
0 5 10

BPI.R008.1
X 3

END BRIDGE -L- STA. 17+94.25







BEGIN BRIDGE -L- STA. 16+21.75

5/26/20

KCA KISINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville Street,
Suite 1500
Raleigh, NC 27601
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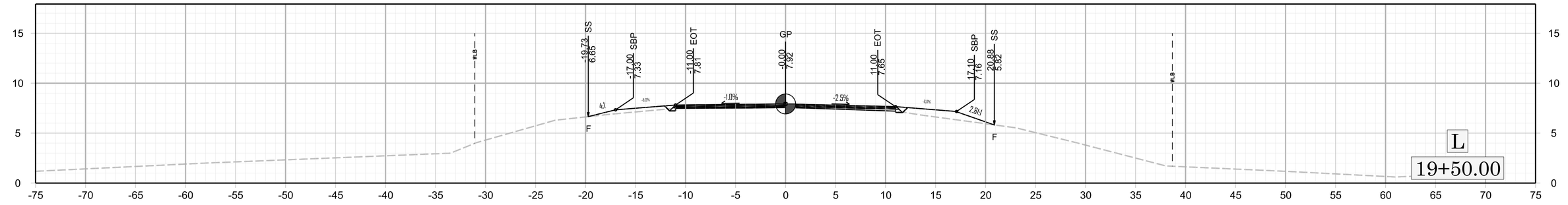
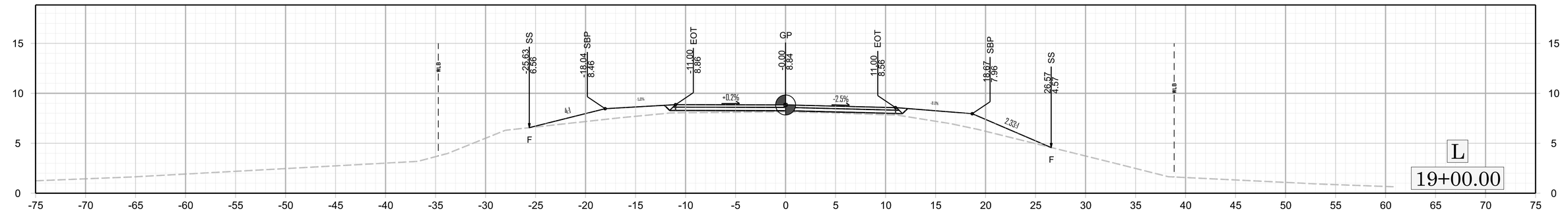
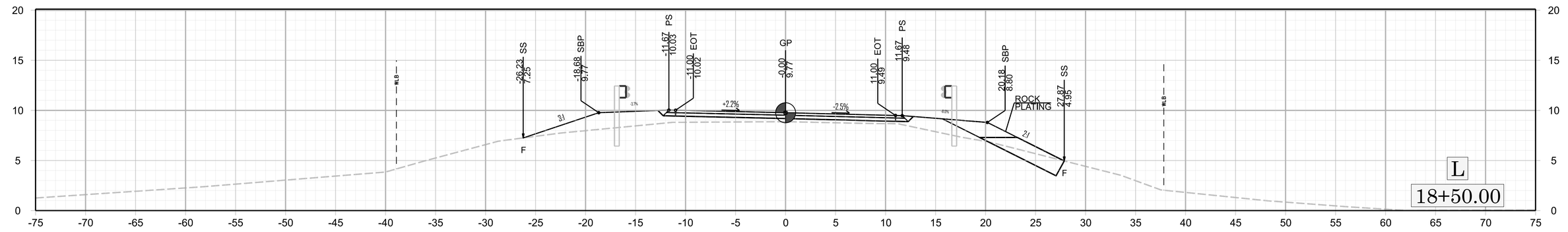
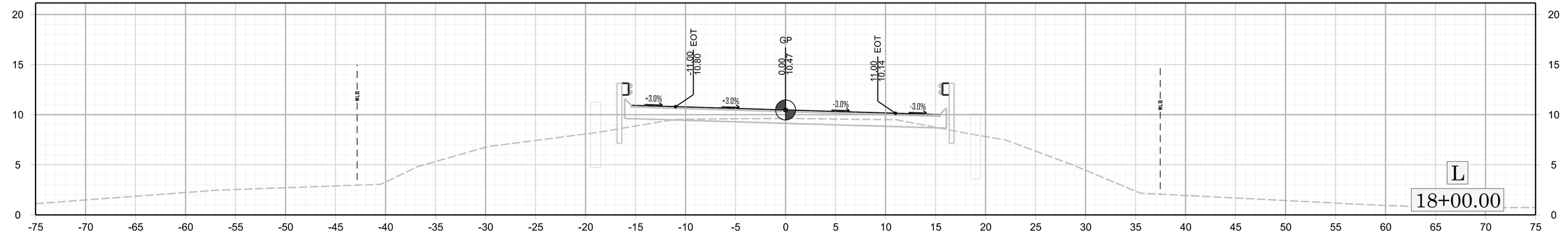
0 5 10

BP1.R008.1
X 4









5/26/20

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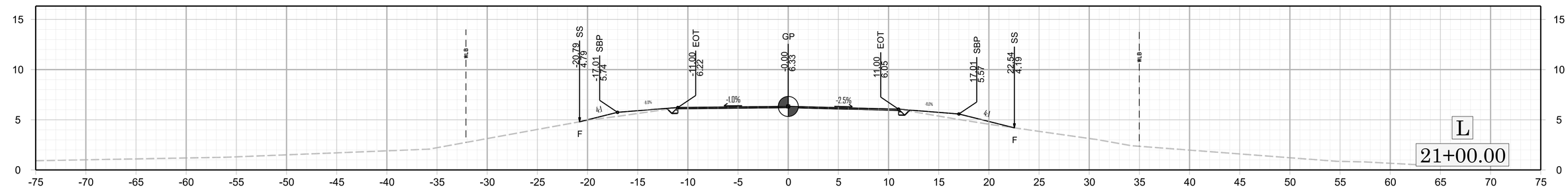
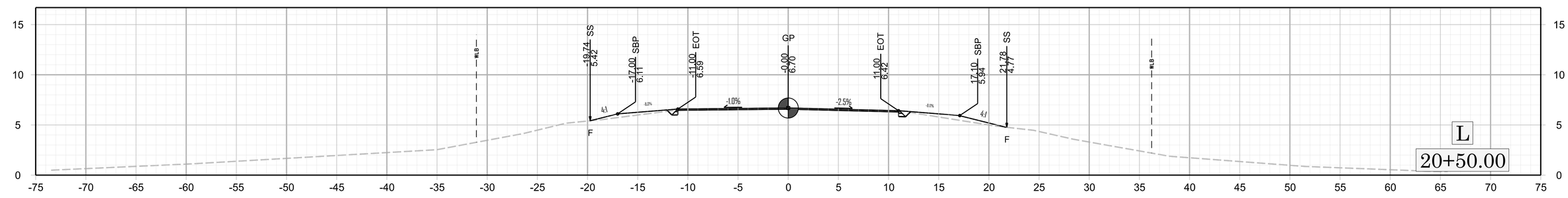
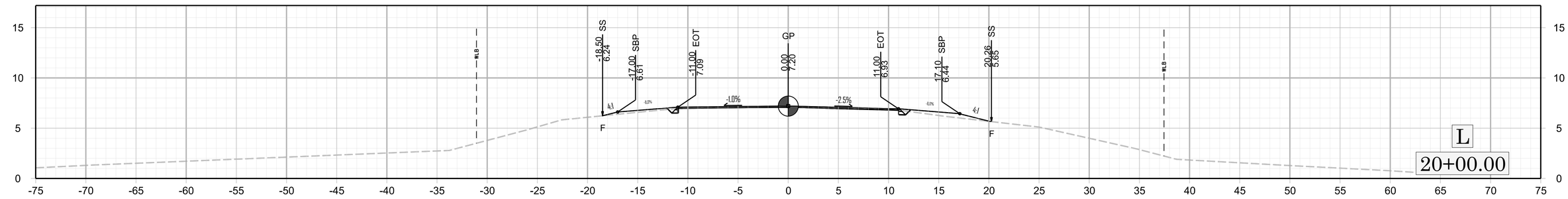
NC FIRM LICENSE No: C-1506
301 Fayetteville Street,
Suite 1500
Raleigh, NC 27601
(919)882-7839

0 5 10

END PROJECT -L- STA. 21+00.00







TIP PROJECT: BP1.R008.1

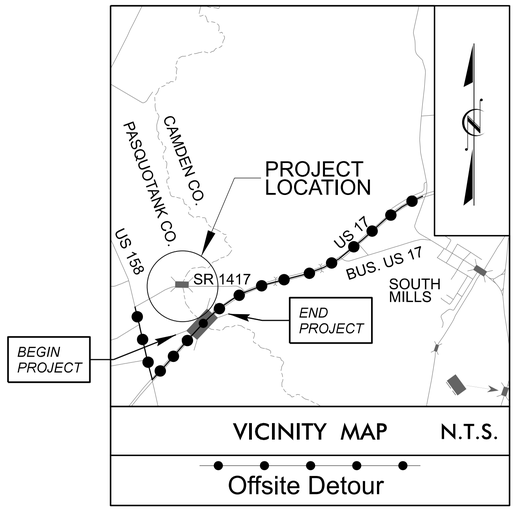
STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

PASQUOTANK COUNTY

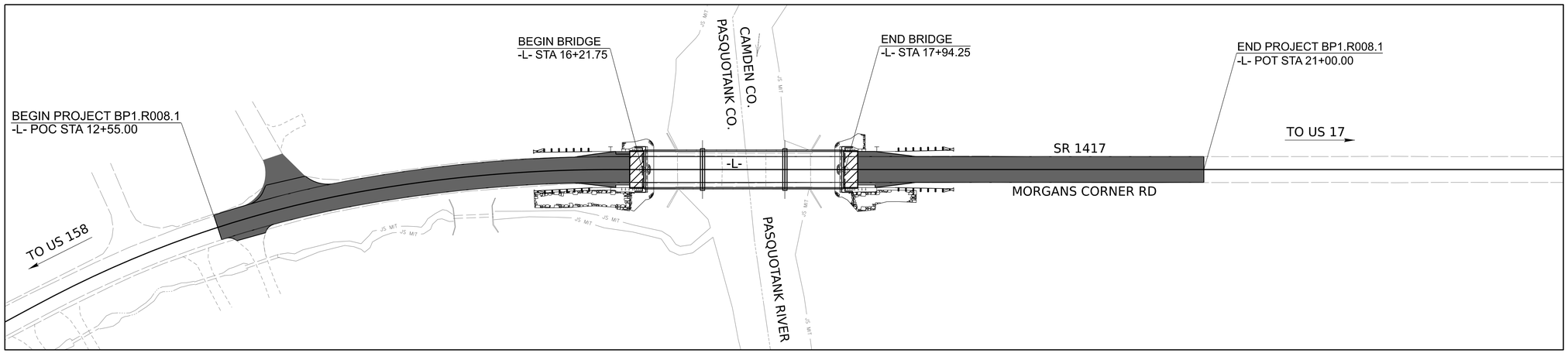
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP1.R008.1	1	22

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP1.R008.1	–	P.E.
BP1.R008.3	–	CONST.



LOCATION: BRIDGE NO. 690015 ON SR 1417 (MORGANS CORNER RD) OVER PASQUOTANK RIVER

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



STRUCTURES

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

ADT (2022) = 2,100
ADT (2042) = 2,350
K = N/A %
D = N/A %
T = 6 % **
V = 50 MPH
** (TTST 3 %, DUAL 3 %)

FUNC CLASS = LOCAL

SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BP1.R008.1 = 0.127 MILES
LENGTH STRUCTURE TIP PROJECT BP1.R008.1 = 0.033 MILES

TOTAL LENGTH TIP PROJECT BP1.R008.1 = 0.160 MILES

Prepared in the Office of:
KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

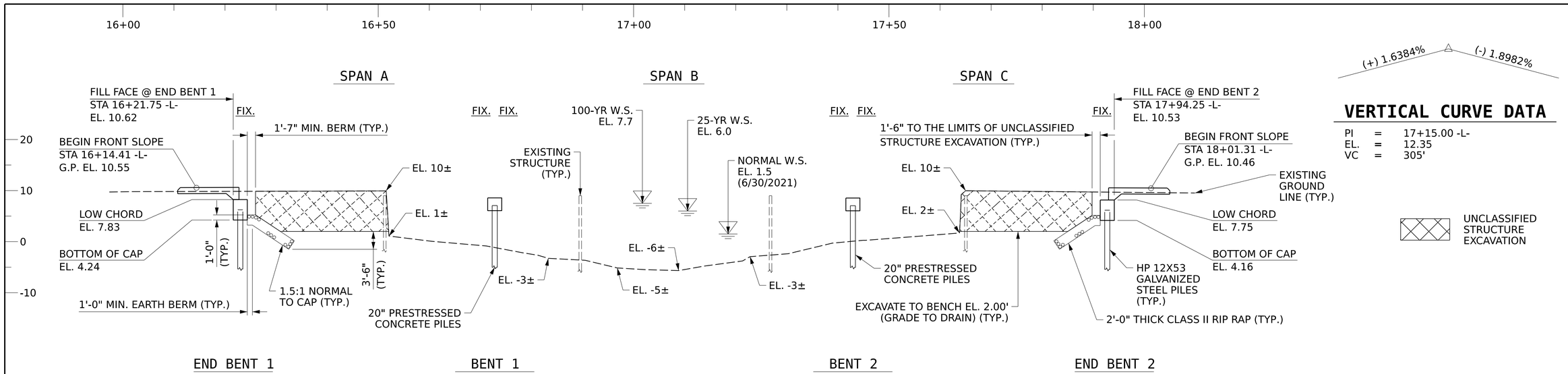
2018 STANDARD SPECIFICATIONS

LETTING DATE :

SEE ROADWAY PLANS

DIEGO A. AGUIRRE, PhD, PE
PROJECT ENGINEER

FIDEL L. FLORES, EI
PROJECT DESIGN ENGINEER



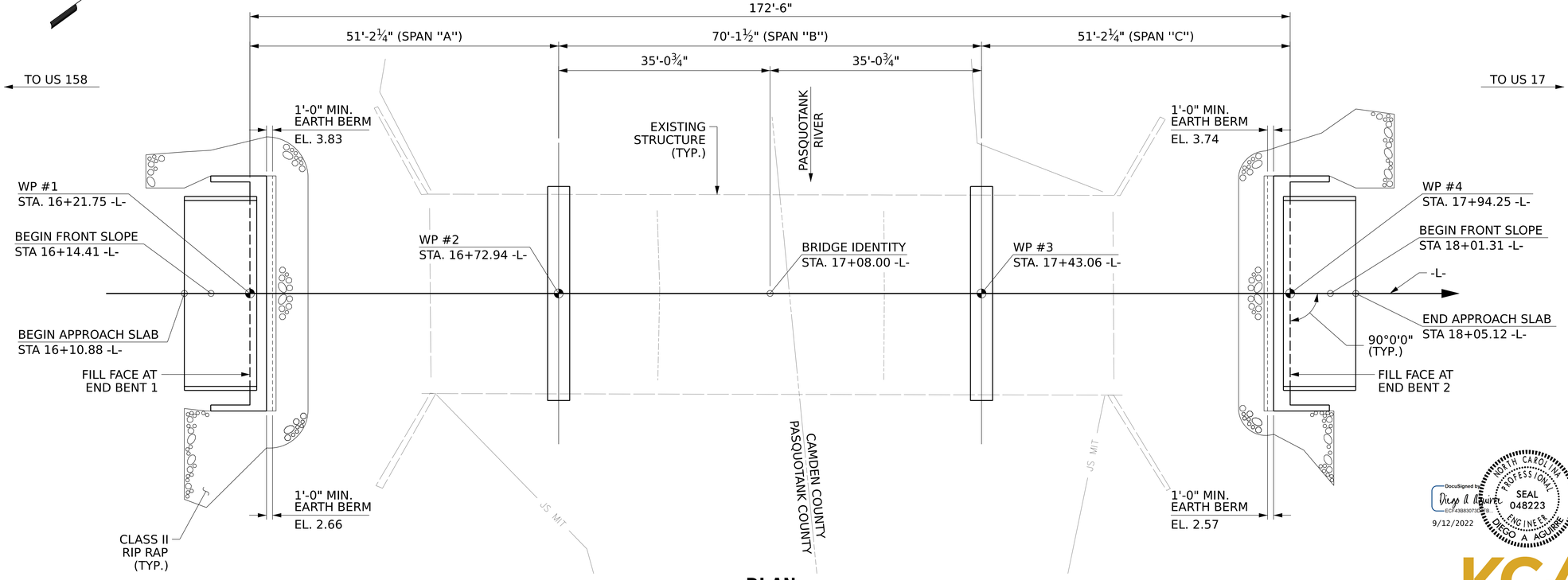
SECTION ALONG -L-

(+) 1.6384% (-) 1.8982%

VERTICAL CURVE DATA

PI = 17+15.00 -L-
EL. = 12.35
VC = 305'

UNCLASSIFIED STRUCTURE EXCAVATION



PLAN

(PILES NOT SHOWN FOR CLARITY)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. BP1.R008.1

PASQUOTANK COUNTY

STATION: STA. 17+08.00 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 690015

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1417 (MORGANS CORNER RD.) OVER PASQUOTANK RIVER BETWEEN US 158 AND US 17

DocuSigned by: Diego A. Aguirre ECF43B830736...
9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

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

DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

9/12/2022
BP1.R008.1_SMU_GD01.dgn
daguirre

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Lenth per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent 1 (Piles 1-7)	70	See Substructure Plans	70			120	14						
Bent 1 (Piles 1-7)	135		70	-21	-50.0	200							
Bent 2 (Piles 1-7)	135		70	-21	-50.0	210							
End Bent 2 (Piles 1-7)	70		60			120							

*Predrilling for Piles is required for end bents/bents with a predrilling length and at the Contractor's option for end bents/bents with predrilling information but no predrilling length.

$$^{**}RDR = \frac{Factored\ Resistance + Factored\ Downdrag\ Load + Factored\ Dead\ Load}{Dynamic\ Resistance\ Factor} + Nominal\ Downdrag\ Resistance + \frac{Nominal\ Scour\ Resistance}{Scour\ Resistance\ Factor}$$

SUMMARY OF PDA/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (PDA)				Pile Order Lengths	
End Bent/ Bent No	PDA Testing Required? YES or MAYBE	PDA Test Pile Length FT	Total PDA Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or PDA
End Bent 1	MAYBE	75	3		
Bent 1	YES	75		Bent 1	PDA
Bent 2	YES	75		Bent 2	PDA
End Bent 2	MAYBE	65			

*EST = Pile order lengths from estimated pile lengths; PDA = Pile order lengths based on PDA testing. For groups of end bents/bents with pile order lengths based on PDA testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the PDA.

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent 1 (Piles 1-7)	67			0.60			1.00
Bent 1 (Piles 1-7)	133		2.5	0.75		15	1.00
Bent 2 (Piles 1-7)	133		2.0	0.75		28	1.00
End Bent 2 (Piles 1-7)	67			0.60			1.00
							1.00

*Factored Dead Load is factored weight of pile above the ground line.

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer Thein Tun Zan (PE Seal #030943) on July 5, 2022.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer will determine the need for PDA Testing when PDAs may be required.
4. For piles, see pile provision and section 450 of the standard specifications.

DocuSigned by: Diego A Aguirre ECF43B83073E4E1... 9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. BP1.R008.1

PASQUOTANK COUNTY

STATION: STA. 17+08.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

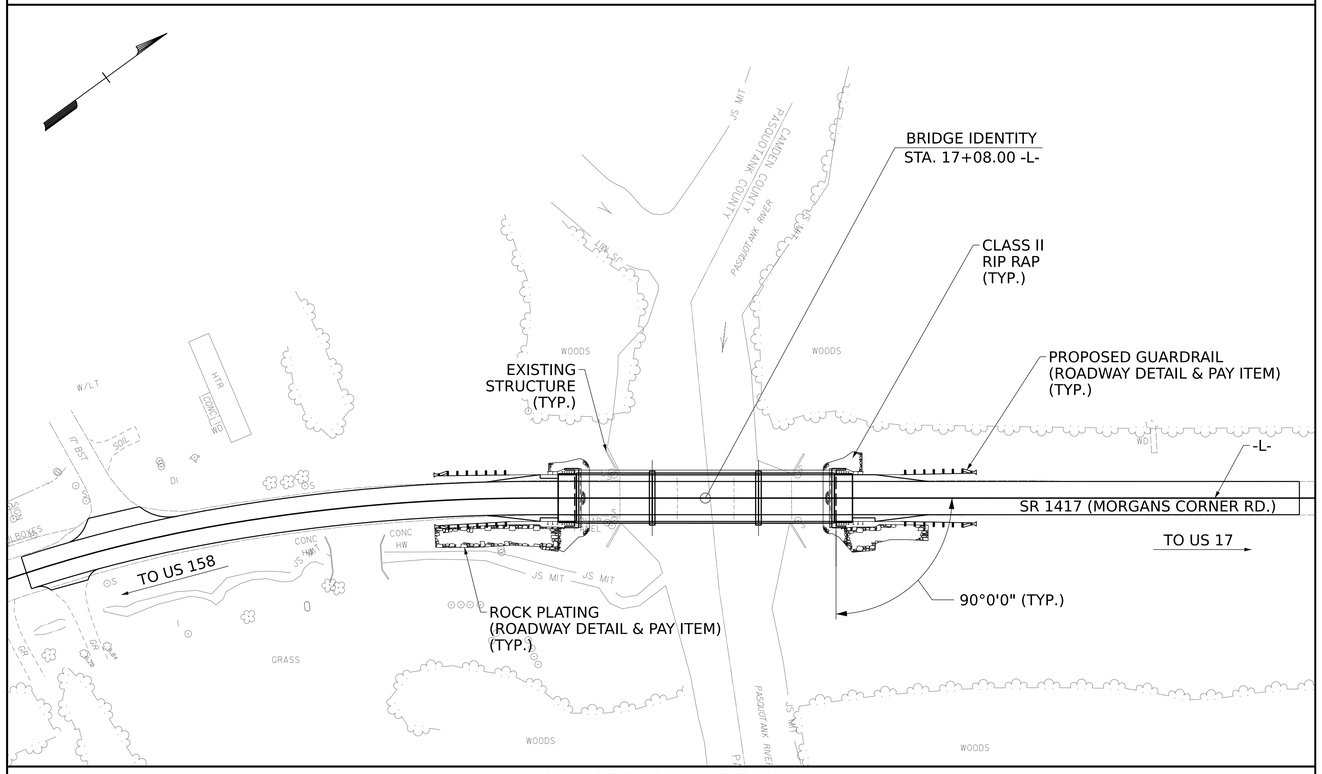
PILE FOUNDATION TABLES

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

DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

9/12/2022
BP1.R008.1_SMU_PFT.dgn
daguirre

BM#1 @ STA. 24+85.84 -L- 124.82' RT.; RR SPIKE IN 12" MAPLE



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS

GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING

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

THIS BRIDGE IS IN SEISMIC ZONE 1.

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.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF APPROXIMATELY 30FT EACH SIDE OF THE 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 THREE APPROXIMATELY 38FT SPANS CONSISTING OF A CONCRETE DECK ON STEEL BEAMS WITH A CLEAR ROADWAY WIDTH OF 28'-0" SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT No. 1 AND BENT No. 2 IS ELEVATION -21.0'. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 17+08.00 -L-"

FOR DEWATERING, SEE SPECIAL PROVISIONS.

THIS BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.

THE CAPACITY OF THE EXISTING BRIDGE HAS BEEN VERIFIED FOR TOP-DOWN CONSTRUCTION BY USING AN 80-TON CRANE ALONG WITH A MAXIMUM PICK LOAD OF 15 KIPS AND A RIGGING RADIUS OF 65FT. THE CAPACITY CHECK ASSUMED THAT CRANE MATTING IS USED, AND THAT CRANE OUTRIGGERS ARE CENTERED AT MIDSPAN OF EXISTING SPANS "A" AND "C".

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

SUBSTRUCTURE REBAR TO BE EPOXY COATED.

HYDRAULIC DATA

DESIGN DISCHARGE	4000 CFS
FREQUENCY OF DESIGN FLOOD	25 YRS.
DESIGN HIGH WATER ELEVATION	6.0'
DRAINAGE AREA	99.8 SQ. MI.
BASE DISCHARGE (Q100)	6354 CFS
BASE HIGH WATER ELEVATION	7.7'

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	2750 CFS
FREQUENCY OF OVERTOPPING FLOOD	<10 YRS.
OVERTOPPING FLOOD ELEVATION	4.7'

@ STA. 24+10.00 -L-

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE (BRIDGE)	BRIDGE APPROACH SLABS	EPOXY COATED REINFORCING STEEL (BRIDGE)	PILE DRIVING EQUIPMENT SETUP FOR 20" PRESTRESSED CONCRETE PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 GALVANIZED STEEL PILES
	LUMP SUM	LUMP SUM	EA.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EA.	EA.
SUPERSTRUCTURE									
END BENT No. 1			*		21.8		2636		7
BENT No. 1			*		11.3		2129	7	
BENT No. 2			*		11.3		2129	7	
END BENT No. 2			*		21.8		2636		7
TOTAL	LUMP SUM	LUMP SUM	3	LUMP SUM	66.2	LUMP SUM	9530	14	14

* SEE "PILE FOUNDATION TABLES" SHEET FOR QUANTITIES.

TOTAL BILL OF MATERIAL CONT'D

	20" PRESTRESSED CONCRETE PILES		HP 12X53 GALVANIZED STEEL PILES		PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0") THICK	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2-0" PRESTRESSED CONCRETE CORED SLAB		DEWATERING
	No.	LIN. FT.	No.	LIN. FT.	EA.	LIN. FT.	TONS.	SQ. YDS.	LUMP SUM	No.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE						340.75			LUMP SUM	33	1870	
END BENT No. 1			7	490	*		130.1	129.8				
BENT No. 1	7	490			*							LUMP SUM
BENT No. 2	7	490			*							LUMP SUM
END BENT No. 2			7	420	*		119.6	129.0				
TOTAL	14	980	14	910	14	340.75	249.7	258.8	LUMP SUM	33	1870	LUMP SUM

* SEE "PILE FOUNDATION TABLES" SHEET FOR QUANTITIES.

PROJECT NO. BP1.R008.1

PASQUOTANK COUNTY

STATION: STA. 17+08.00 -L-

SHEET 2 OF 2

DocuSigned by: Diego A Aguirre ECF43B8307304...
12/8/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1417 (MORGANS CORNER RD.) OVER PASQUOTANK RIVER BETWEEN US 158 AND US 17

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

DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

12/7/2022
BP1.R008.1_SMU_GD02.dgn
daguirre

LOAD AND RESISTANCE FACTOR RATING (LRFD) 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
								MOMENT					SHEAR						MOMENT						
							LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	2.053	--	1.75	0.276	2.26	50′	EL	29.5	0.52	**2.05**	50′	EL	**5.9**	0.80	0.276	2.22	50′	EL	29.5	
		HL-93(Opr)	N/A	--	2.661	--	1.35	0.276	2.93	50′	EL	29.5	0.52	2.66	50′	EL	5.9	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	2.47	88.93	1.75	0.276	2.86	50′	EL	29.5	0.52	**2.47**	50′	EL	**5.9**	0.80	0.276	2.81	50′	EL	29.5	
		HS-20(Opr)	36.000	--	3.202	115.279	1.35	0.276	3.71	50′	EL	29.5	0.52	3.2	50′	EL	5.9	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	6.053	81.711	1.4	0.276	7.7	50′	EL	29.5	0.52	7.14	50′	EL	5.9	0.80	0.276	6.05	50′	EL	29.5	
		SNGARBS2	20.000	--	4.634	92.672	1.4	0.276	5.89	50′	EL	29.5	0.52	5.14	50′	EL	5.9	0.80	0.276	4.63	50′	EL	29.5	
		SNAGRIS2	22.000	--	4.43	97.466	1.4	0.276	5.65	50′	EL	29.5	0.52	4.8	50′	EL	5.9	0.80	0.276	4.43	50′	EL	29.5	
		SNCOTTS3	27.250	--	3.015	82.171	1.4	0.276	3.84	50′	EL	29.5	0.52	3.57	50′	EL	5.9	0.80	0.276	3.02	50′	EL	29.5	
		SNAGGRS4	34.925	--	2.567	89.643	1.4	0.276	3.27	50′	EL	29.5	0.52	3.01	50′	EL	5.9	0.80	0.276	2.57	50′	EL	29.5	
		SNS5A	35.550	--	2.507	89.116	1.4	0.276	3.19	50′	EL	29.5	0.52	3.07	50′	EL	5.9	0.80	0.276	2.51	50′	EL	29.5	
		SNS6A	39.950	--	2.32	92.685	1.4	0.276	2.95	50′	EL	29.5	0.52	2.82	50′	EL	5.9	0.80	0.276	2.32	50′	EL	29.5	
		SNS7B	42.000	--	2.21	92.825	1.4	0.276	2.81	50′	EL	29.5	0.52	2.8	50′	EL	5.9	0.80	0.276	2.21	50′	EL	29.5	
	TTST	TNAGRIT3	33.000	--	2.835	93.559	1.4	0.276	3.61	50′	EL	29.5	0.52	3.34	50′	EL	5.9	0.80	0.276	2.84	50′	EL	29.5	
		TNT4A	33.075	--	2.853	94.369	1.4	0.276	3.63	50′	EL	29.5	0.52	3.24	50′	EL	5.9	0.80	0.276	2.85	50′	EL	29.5	
		TNT6A	41.600	--	2.352	97.863	1.4	0.276	2.99	50′	EL	29.5	0.52	3.03	50′	EL	5.9	0.80	0.276	2.35	50′	EL	29.5	
		TNT7A	42.000	--	2.375	99.744	1.4	0.276	3.02	50′	EL	29.5	0.52	2.89	50′	EL	5.9	0.80	0.276	2.37	50′	EL	29.5	
		TNT7B	42.000	--	2.475	103.971	1.4	0.276	3.16	50′	EL	29.5	0.52	2.71	50′	EL	5.9	0.80	0.276	2.48	50′	EL	29.5	
		TNAGRIT4	43.000	--	2.343	100.737	1.4	0.276	2.98	50′	EL	29.5	0.52	2.62	50′	EL	5.9	0.80	0.276	2.34	50′	EL	29.5	
		TNAGT5A	45.000	--	2.2	98.988	1.4	0.276	2.8	50′	EL	29.5	0.52	2.63	50′	EL	5.9	0.80	0.276	2.20	50′	EL	29.5	
		TNAGT5B	45.000	3	**2.165**	97.428	1.4	0.276	2.75	50′	EL	29.5	0.52	2.49	50′	EL	5.9	0.80	0.276	**2.17**	50′	EL	**29.5**	

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.

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

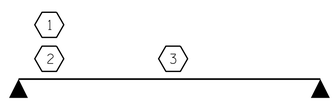
⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

FOR SPANS 'A' & 'C'

DocuSigned by: Diego A. Aguirre EC743B830736...
9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A. AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. BP1.R008.1
PASQUOTANK COUNTY
STATION: STA. 17+08.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
50′ CORED SLAB UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)
SPAN 'A' & SPAN 'C'

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

DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10

DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

9/12/2022
BP1.R008.1_SMU_LRFR01.dgn
dagulrre

STD. NO. 24LRFR1_90S_50L (TOP DOWN)

LOAD AND RESISTANCE FACTOR RATING (LRFD) 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
								MOMENT					SHEAR						MOMENT						
							LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.006	--	1.75	0.273	1.03	70′	EL	34.5	0.507	1.32	70′	EL	6.9	0.80	0.273	1.01	70′	EL	34.5	
		HL-93(Opr)	N/A	--	1.341	--	1.35	0.273	1.34	70′	EL	34.5	0.507	1.72	70′	EL	6.9	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.306	47.02	1.75	0.273	1.34	70′	EL	34.5	0.507	1.65	70′	EL	6.9	0.80	0.273	1.31	70′	EL	34.5	
		HS-20(Opr)	36.000	--	1.74	62.64	1.35	0.273	1.74	70′	EL	34.5	0.507	2.14	70′	EL	6.9	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.917	39.379	1.4	0.273	3.75	70′	EL	34.5	0.507	4.87	70′	EL	6.9	0.80	0.273	2.92	70′	EL	34.5	
		SNGARBS2	20.000	--	2.187	43.741	1.4	0.273	2.81	70′	EL	34.5	0.507	3.47	70′	EL	6.9	0.80	0.273	2.19	70′	EL	34.5	
		SNAGRIS2	22.000	--	2.077	45.69	1.4	0.273	2.67	70′	EL	34.5	0.507	3.23	70′	EL	6.9	0.80	0.273	2.08	70′	EL	34.5	
		SNCOTTS3	27.250	--	1.452	39.565	1.4	0.273	1.87	70′	EL	34.5	0.507	2.43	70′	EL	6.9	0.80	0.273	1.45	70′	EL	34.5	
		SNAGGRS4	34.925	--	1.218	42.554	1.4	0.273	1.57	70′	EL	34.5	0.507	2.03	70′	EL	6.9	0.80	0.273	1.22	70′	EL	34.5	
		SNS5A	35.550	--	1.191	42.346	1.4	0.273	1.53	70′	EL	34.5	0.507	2.06	70′	EL	6.9	0.80	0.273	1.19	70′	EL	34.5	
		SNS6A	39.950	--	1.095	43.747	1.4	0.273	1.41	70′	EL	34.5	0.507	1.88	70′	EL	6.9	0.80	0.273	1.10	70′	EL	34.5	
		SNS7B	42.000	--	1.043	43.801	1.4	0.273	1.34	70′	EL	34.5	0.507	1.85	70′	EL	6.9	0.80	0.273	1.04	70′	EL	34.5	
	TTST	TNAGRIT3	33.000	--	1.336	44.087	1.4	0.273	1.72	70′	EL	34.5	0.507	2.23	70′	EL	6.9	0.80	0.273	1.34	70′	EL	34.5	
		TNT4A	33.075	--	1.342	44.401	1.4	0.273	1.72	70′	EL	34.5	0.507	2.17	70′	EL	6.9	0.80	0.273	1.34	70′	EL	34.5	
		TNT6A	41.600	--	1.1	45.746	1.4	0.273	1.41	70′	EL	34.5	0.507	1.98	70′	EL	6.9	0.80	0.273	1.10	70′	EL	34.5	
		TNT7A	42.000	--	1.106	46.462	1.4	0.273	1.42	70′	EL	34.5	0.507	1.94	70′	EL	6.9	0.80	0.273	1.11	70′	EL	34.5	
		TNT7B	42.000	--	1.147	48.18	1.4	0.273	1.47	70′	EL	34.5	0.507	1.8	70′	EL	6.9	0.80	0.273	1.15	70′	EL	34.5	
		TNAGRIT4	43.000	--	1.089	46.838	1.4	0.273	1.4	70′	EL	34.5	0.507	1.74	70′	EL	6.9	0.80	0.273	1.09	70′	EL	34.5	
		TNAGT5A	45.000	--	1.026	46.175	1.4	0.273	1.32	70′	EL	34.5	0.507	1.74	70′	EL	6.9	0.80	0.273	1.03	70′	EL	34.5	
		TNAGT5B	45.000	3	1.013	45.579	1.4	0.273	1.3	70′	EL	34.5	0.507	1.66	70′	EL	6.9	0.80	0.273	1.01	70′	EL	34.5	

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.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

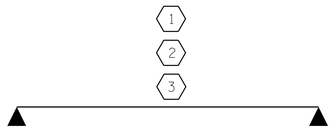
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

FOR SPAN 'B'

PROJECT NO. BP1.R008.1

PASQUOTANK COUNTY

STATION: STA. 17+08.00 -L-

SHEET 2 OF 2

DocuSigned by: Diego A Aguirre ECF43B8307304...
9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR 70′ CORED SLAB UNIT 90° SKEW
(NON-INTERSTATE TRAFFIC)
SPAN 'B'

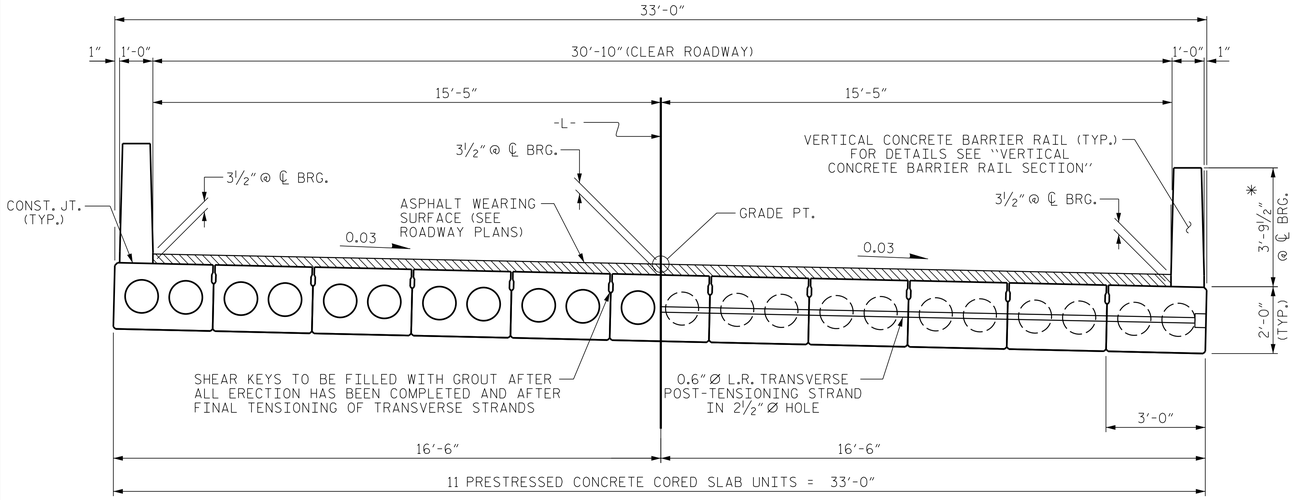
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10

DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

9/12/2022
BP1.R008.1_SMU_LRFR02.dgn
daguirre

STD. NO. 24LRFR1_90S_70L

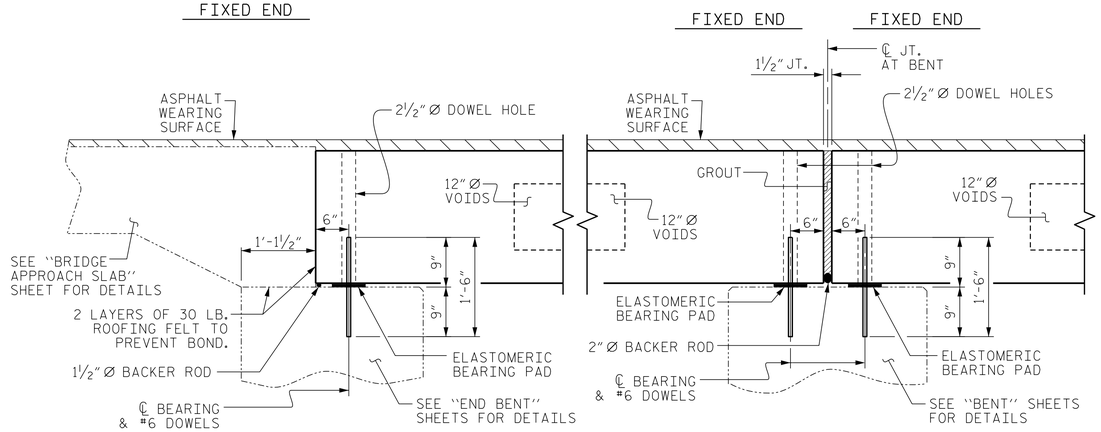


HALF SECTION
THROUGH VOIDS

HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

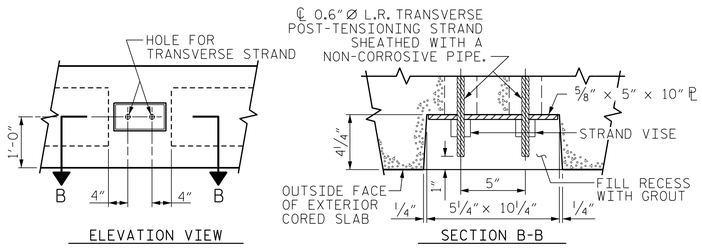
TYPICAL SECTION

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

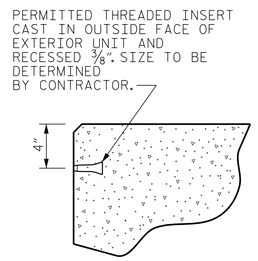


SECTION AT END BENT

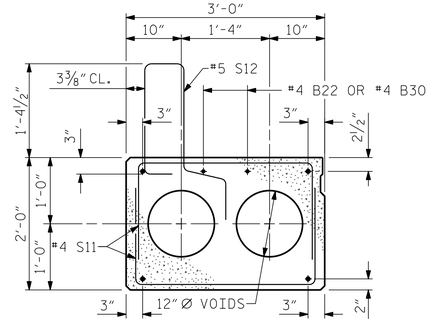
SECTION AT BENT



GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS

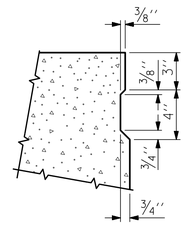


THREADED INSERT DETAIL



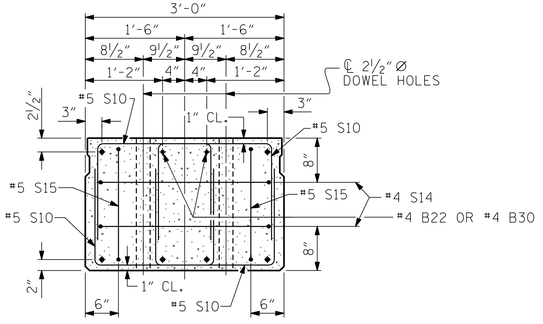
EXTERIOR SLAB SECTION

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



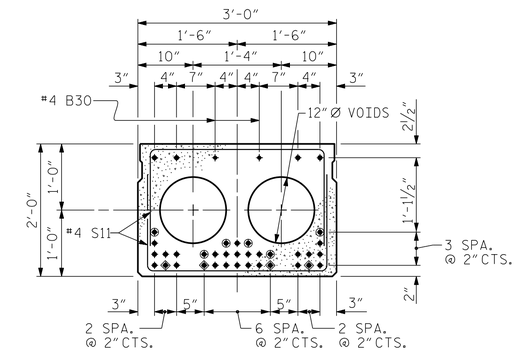
SHEAR KEY DETAIL

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



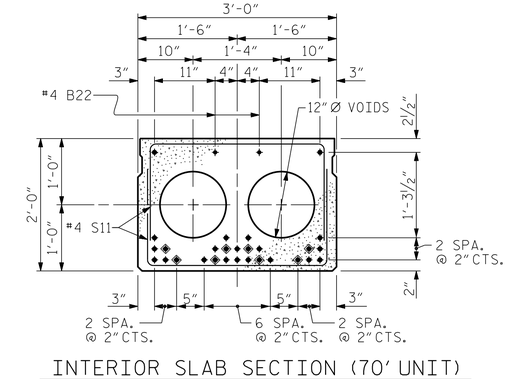
END ELEVATION

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



INTERIOR SLAB SECTION (50′ UNIT)

(31 STRANDS REQUIRED)



INTERIOR SLAB SECTION (70′ UNIT)

(28 STRANDS REQUIRED)

0.6″ Ø LOW RELAXATION STRAND LAYOUT

◈ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12′-0″ FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

◉ OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

PROJECT NO. BP1.R008.1

PASQUOTANK COUNTY

STATION: STA. 17+08.00 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

3′-0″ X 2′-0″ PRESTRESSED CONCRETE CORED SLAB UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			22

DocuSigned by: Diego A. Aguirre ECF43B830736...
9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A. AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

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DRAWN BY : MAA 6/10	REV. 9/14 MAA/TMG		
CHECKED BY : MKT 7/10			
DRAWN BY : DIEGO A. AGUIRRE	DATE : 01/2022		
CHECKED BY : JACOB H. DUKE	DATE : 01/2022		
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE	DATE : 01/2022		

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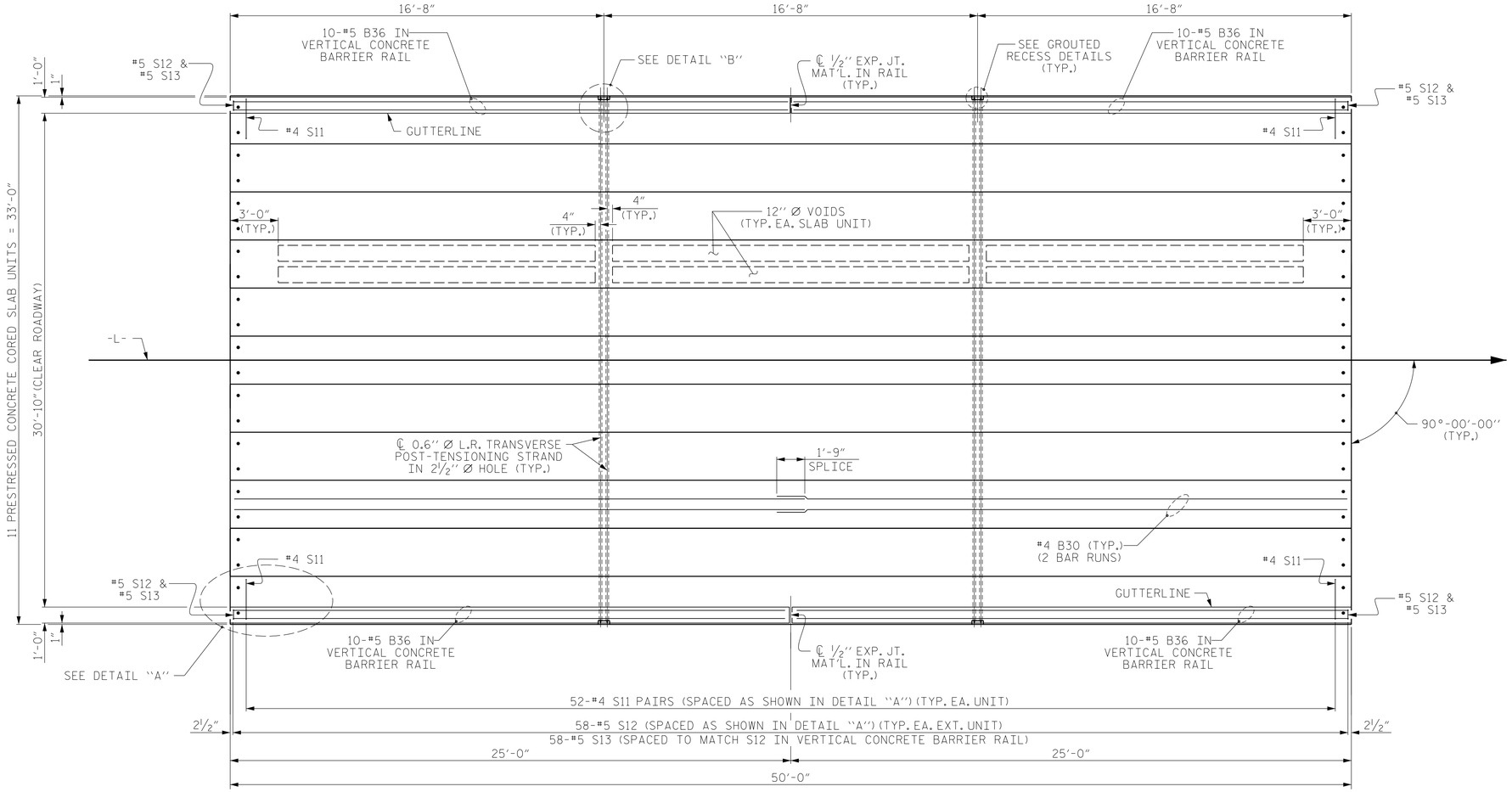
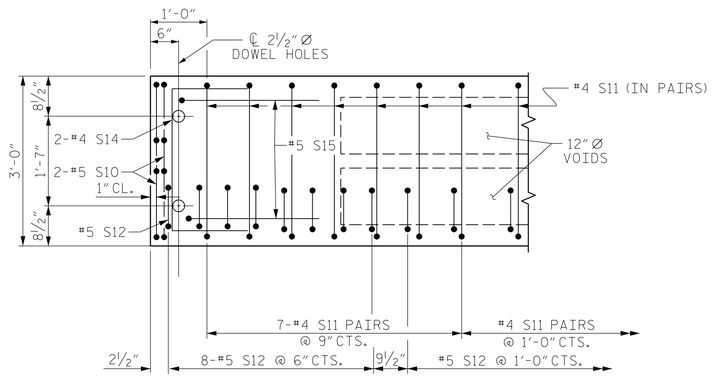
STD. NO. 24PCS4_33_90S

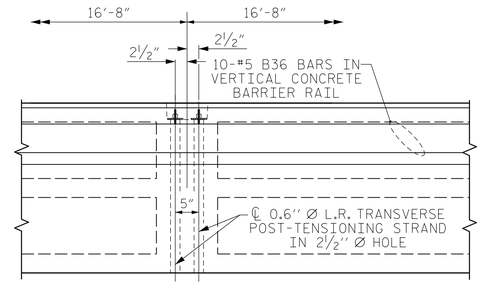


PLAN OF UNIT



DETAIL "A"

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



DETAIL "B"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUTED RECESS AND 2½" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

DRAWN BY : MAA 7/10	REV. 12/5/11 MAA/AAC	DRAWN BY : DIEGO A. AGUIRRE	DATE : 01/2022
CHECKED BY : MKT 8/10	REV. 8/14 MAA/TMG	CHECKED BY : JACOB H. DUKE	DATE : 01/2022
		DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE	DATE : 01/2022

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NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES

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301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

PROJECT NO. BP1.R008.1
PASQUOTANK COUNTY
STATION: STA. 17+08.00 -L-

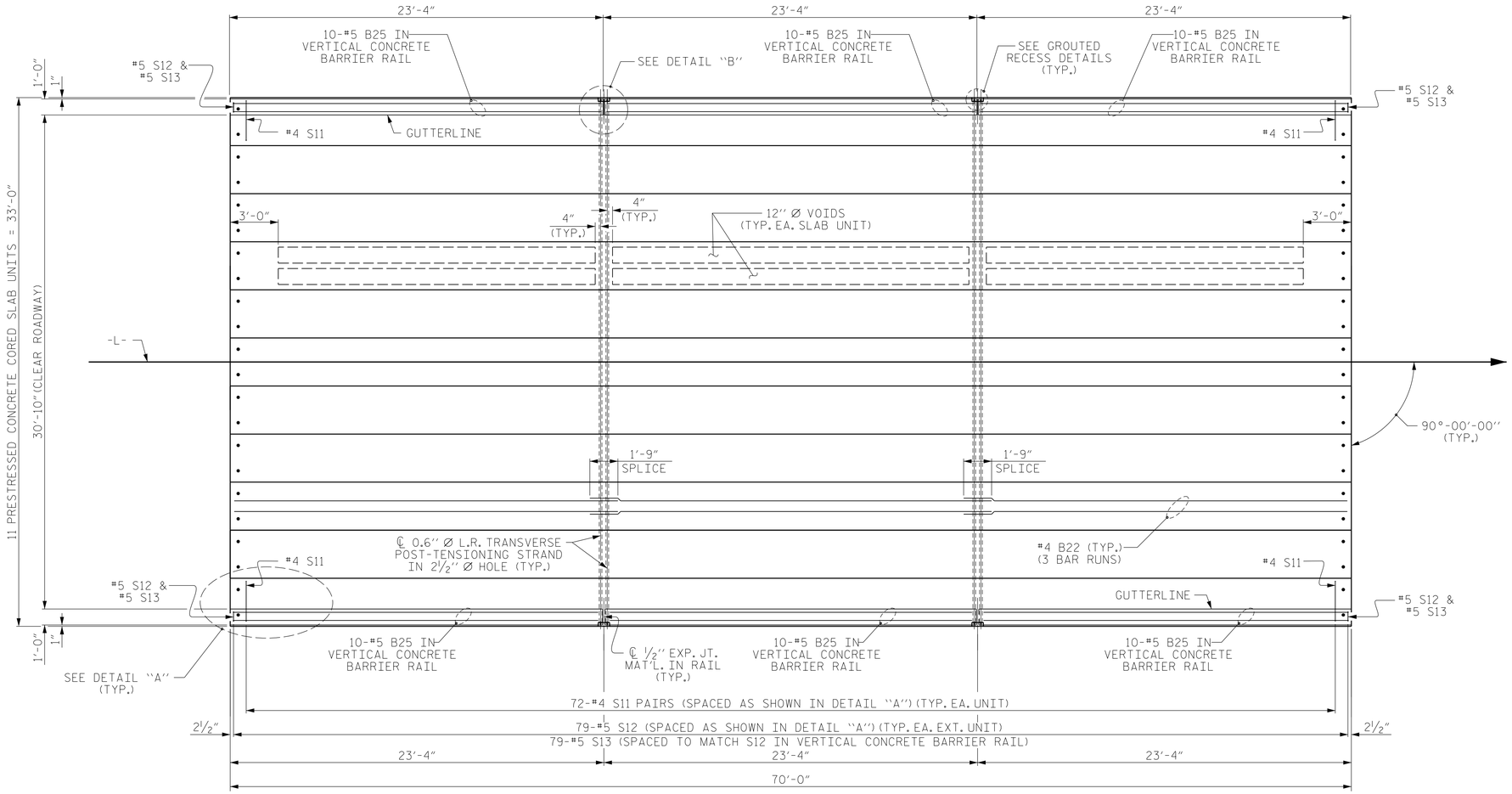
SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 50' UNIT 30'-10" CLEAR ROADWAY 90° SKEW SPANS 'A' & 'C'

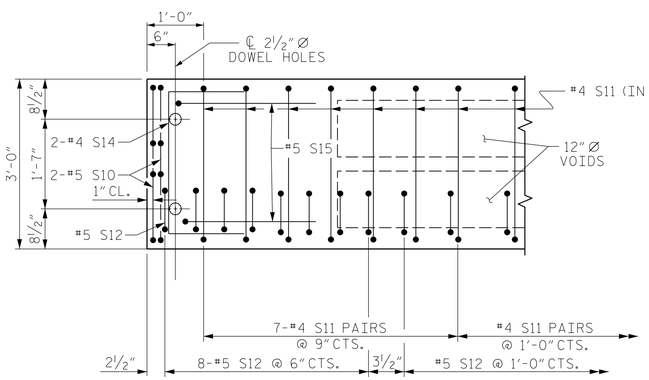
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			22

STD. NO. 24PCS_33_90S_50L (TOP DOWN)



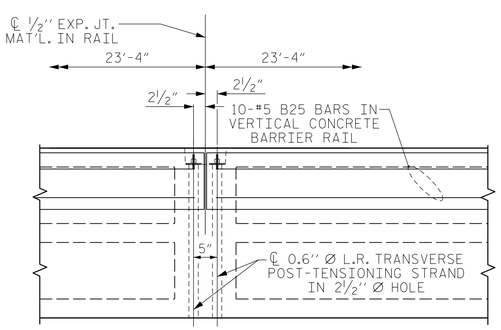
PLAN OF UNIT

SPANS 'B'



DETAIL "A"

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



DETAIL "B"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUTED RECESS AND 2½" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

DRAWN BY :	MAA	6/10	
CHECKED BY :	MKT	7/10	
REV.	12/5/11	MAA/AAC	
REV.	8/14	MAA/TMG	

DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

9/12/2022
BP1.R008.1_SMU_CS03.dgn
daguirre

DocuSigned by: Diego A. Aguirre E0F43B83073E4...
9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

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PROJECT NO. BP1.R008.1
PASQUOTANK COUNTY
STATION: STA. 17+08.00 -L-

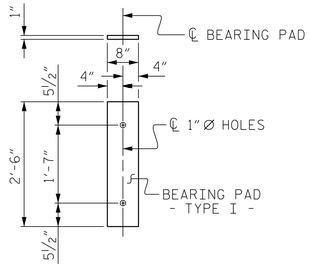
SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 70' UNIT 30'-10" CLEAR ROADWAY 90° SKEW SPAN 'B'

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			22

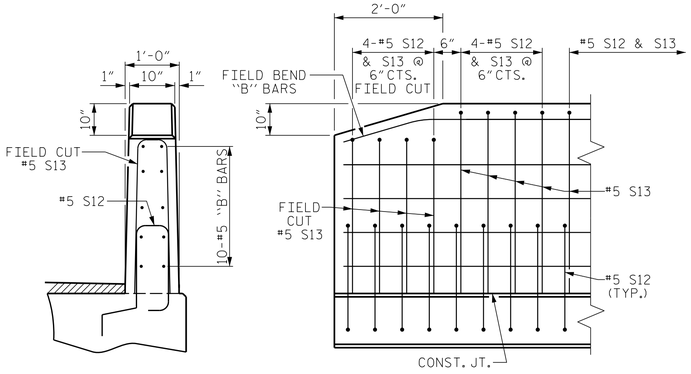
STD. NO. 24PCS_33_90S_70L



FIXED END
(TYPE I - 66 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

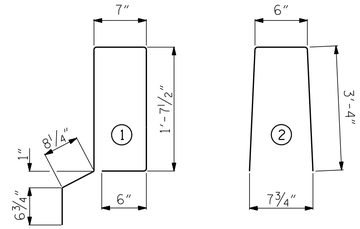


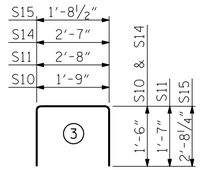
END VIEW

SIDE VIEW

END OF RAIL DETAILS

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT

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 2½" 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.

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.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS 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, ½" 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.

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

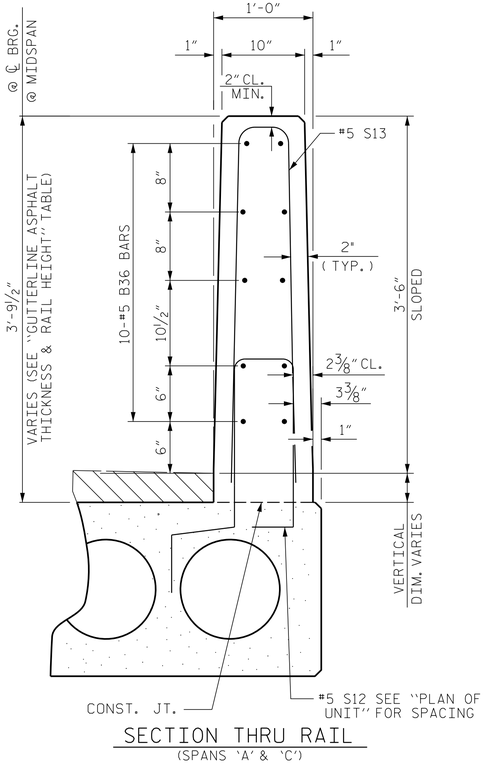
THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

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.

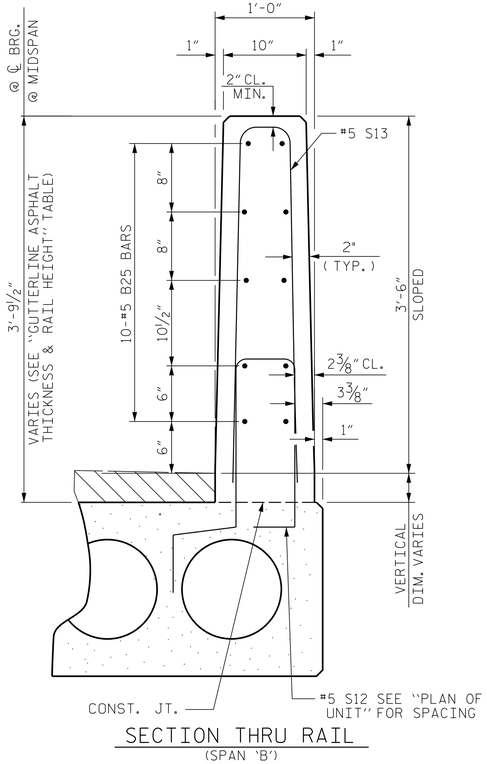
THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

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

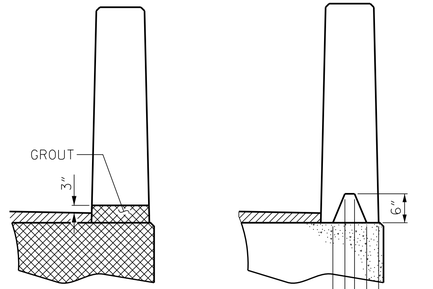
FOR TABLES, SEE SHEET 5 OF 5.



SECTION THRU RAIL
(SPANS 'A' & 'C')

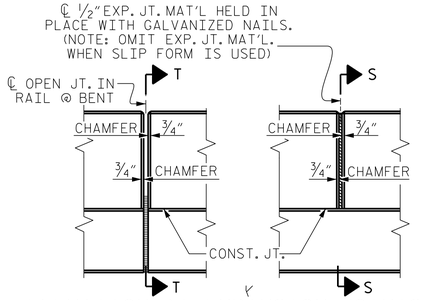


SECTION THRU RAIL
(SPAN 'B')



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

VERTICAL CONCRETE BARRIER RAIL DETAILS

DRAWN BY : MAA 6/10	REV. 5/18	MAA/THC
CHECKED BY : MKT 7/10		

DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

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9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

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PROJECT NO. BP1.R008.1
PASQUOTANK COUNTY
STATION: STA. 17+08.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-0"
PRESTRESSED CONCRETE CORED SLAB UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			22

MODIFIED STD. NO. 24PCS3_33_90S

CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
50' UNITS			
EXTERIOR C.S.	4	50'-0"	200'-0"
INTERIOR C.S.	18	50'-0"	900'-0"
TOTAL	22		1100'-0"

CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
70' UNIT			
EXTERIOR C.S.	2	70'-0"	140'-0"
INTERIOR C.S.	9	70'-0"	630'-0"
TOTAL	11		770'-0"

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	50' UNIT					
✳B23	40	80	#5	STR	24'-7"	2052
✳S13	116	232	#5	2	7'-2"	1735
✳EPOXY COATED REINFORCING STEEL				LBS.		3787
CLASS AA CONCRETE				CU.YDS.		12.8
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN.FT.		200.50

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	70' UNIT					
✳B25	60	60	#5	STR	22'-11"	1434
✳S13	158	158	#5	2	7'-2"	1181
✳EPOXY COATED REINFORCING STEEL				LBS.		2615
CLASS AA CONCRETE				CU.YDS.		18.1
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN.FT.		140.25

CONCRETE RELEASE STRENGTH

UNIT	PSI
50' UNITS	6200
70' UNITS	5500

DEAD LOAD DEFLECTION AND CAMBER

50' CORED SLAB UNIT	3'-0" x 2'-0" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1½" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	⅛" ↓
FINAL CAMBER	1⅜" ↑

** INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER

70' CORED SLAB UNIT	3'-0" x 2'-0" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2¼" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	¾" ↓
FINAL CAMBER	1½" ↑

** INCLUDES FUTURE WEARING SURFACE

GRADE 270 STRANDS

	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B30	4	#4	STR	25'-9"	69	25'-9"	69
S10	8	#5	3	4'-9"	40	4'-9"	40
S11	104	#4	3	5'-10"	405	5'-10"	405
✳S12	58	#5	1	5'-7"	338		
S14	4	#4	3	5'-7"	15	5'-7"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL		LBS.			559		559
✳EPOXY COATED REINFORCING STEEL		LBS.			338		
8500 P.S.I. CONCRETE		CU. YDS.			8.6		8.6
0.6" Ø L.R. STRANDS		No.			31		31

BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B22	6	#4	STR	24'-6"	98	24'-6"	98
S10	8	#5	3	4'-9"	40	4'-9"	40
S11	144	#4	3	5'-10"	561	5'-10"	561
✳S12	79	#5	1	5'-7"	460		
S14	4	#4	3	5'-7"	15	5'-7"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL		LBS.			744		744
✳EPOXY COATED REINFORCING STEEL		LBS.			460		
7000 P.S.I. CONCRETE		CU. YDS.			11.8		11.8
0.6" Ø L.R. STRANDS		No.			28		28

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
50' UNITS	2⅛"	3'-8⅛"
70' UNITS	2"	3'-8"

TABLES FOR 50' UNITS

TABLES FOR 70' UNITS

PROJECT NO. BP1.R008.1

PASQUOTANK COUNTY

STATION: STA. 17+08.00 -L-

SHEET 5 OF 5

DocuSigned by: Diego A Aguirre ECF43B830738...

9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

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DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT

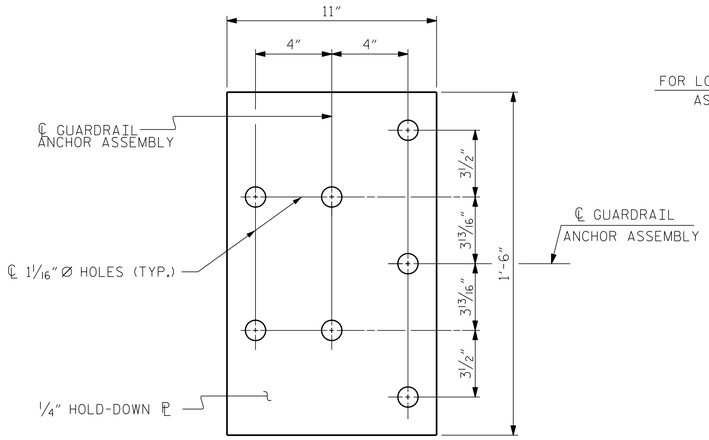
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : MAA 6/10
CHECKED BY : MKT 7/10
REV. 5/18 MAA/THC

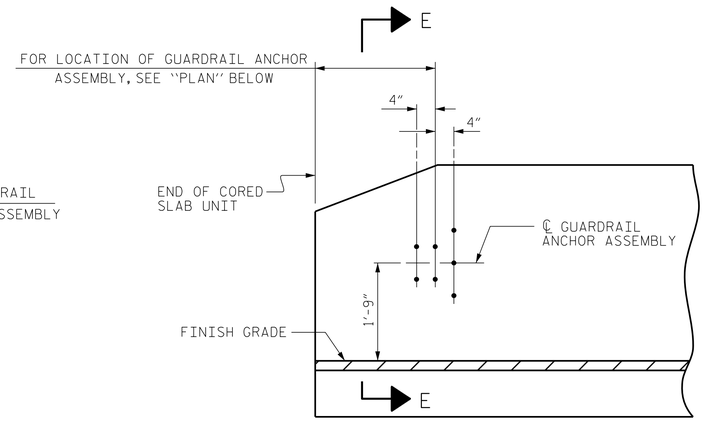
DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

9/12/2022
BP1.R008.1_SMU_CS05.dgn
daguirre

STD. NO. 24PCS3_33_90S



PLAN



ELEVATION

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8″ Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

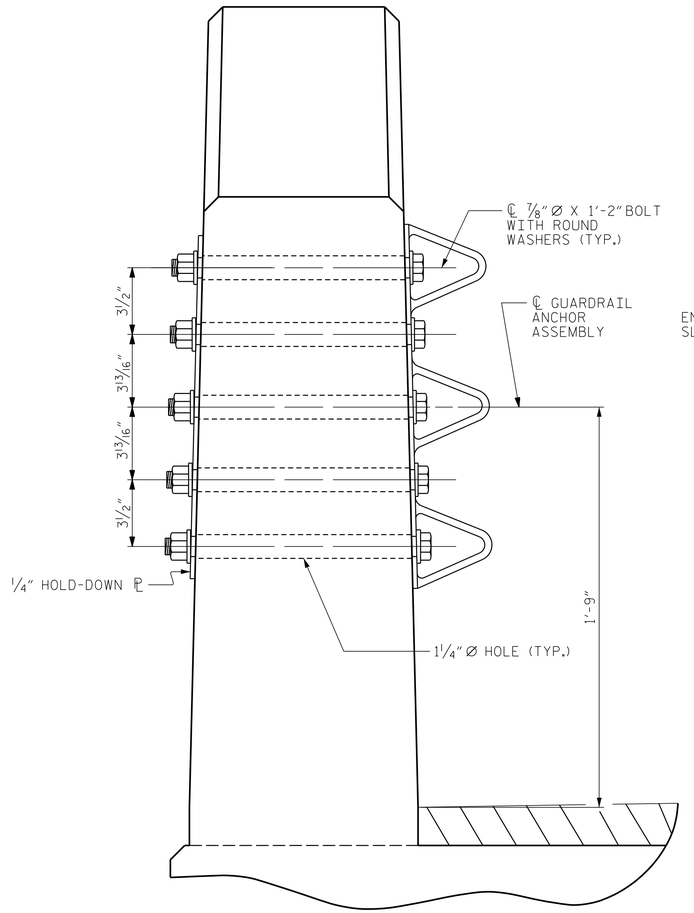
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

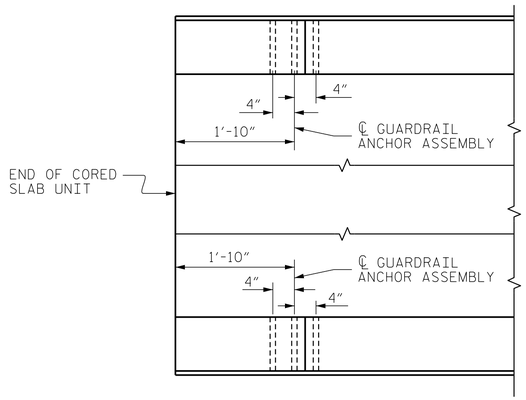
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 1/4″ Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



SECTION E-E

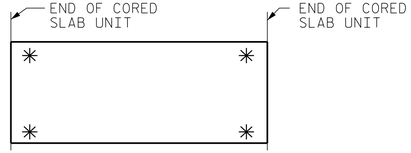
GUARDRAIL ANCHOR ASSEMBLY DETAILS



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. BP1.R008.1

PASQUOTANK COUNTY

STATION: STA. 17+08.00 -L-

DocuSigned by: Diego A Aguirre E0F43B83073... 9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

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

(SHT 1) STD. NO. GRA3

DRAWN BY : MAA 5/10	REV. 1/15	MAA/TMG
CHECKED BY : GM 5/10	REV. 12/17	MAA/THC
	REV. 5/18	MAA/THC

DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

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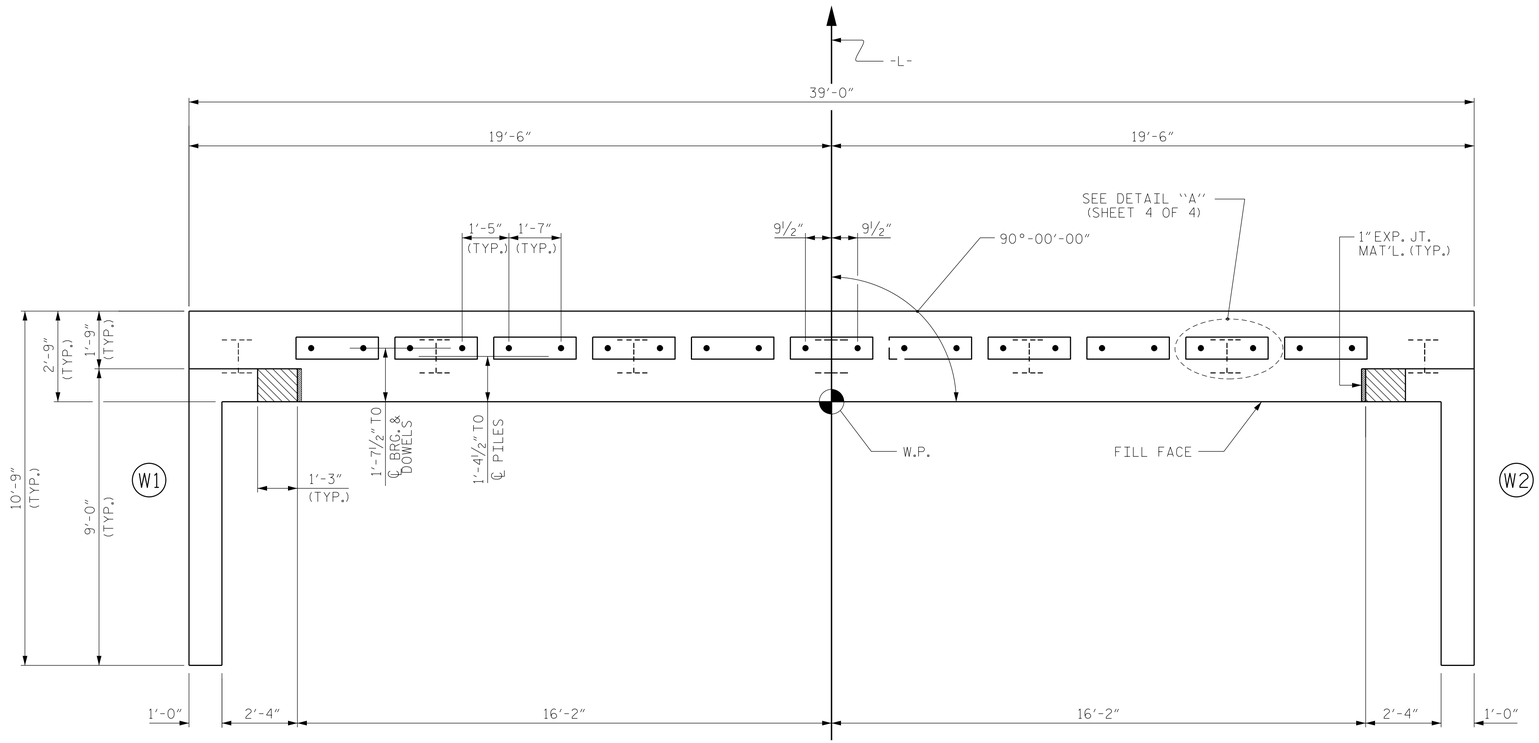
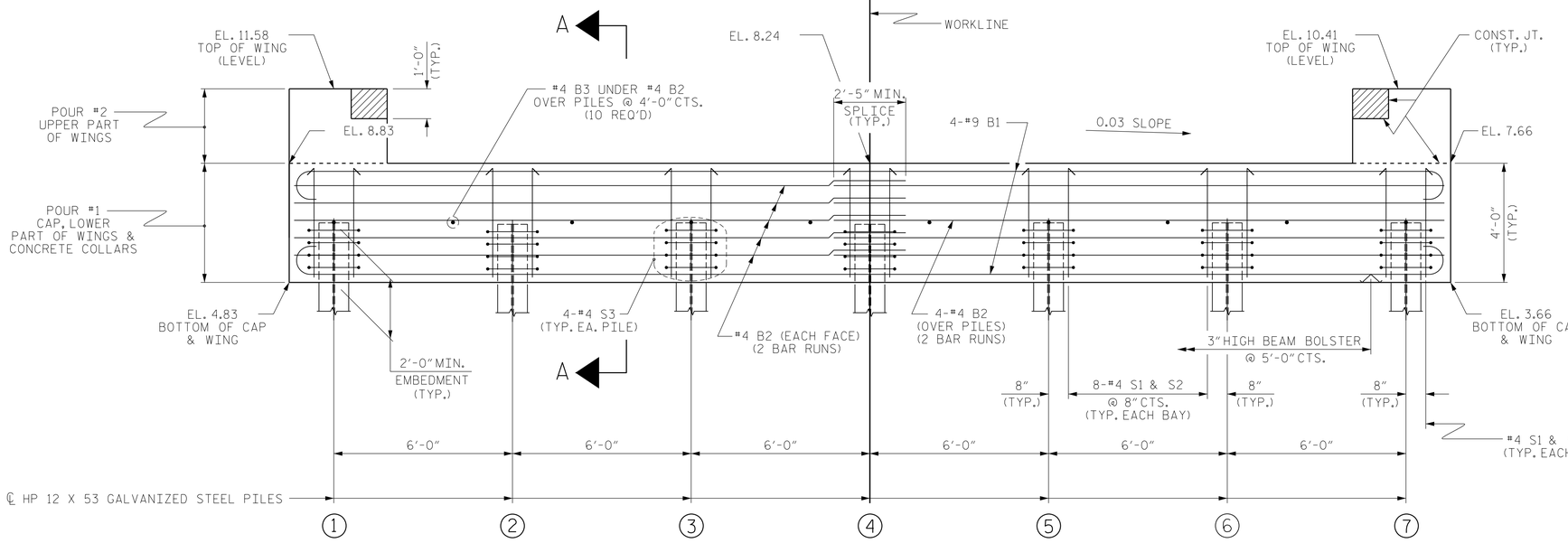
daguirre



PLAN



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.

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.

GALVANIZE THE FULL LENGTH OF EACH END BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

TOP OF PILE ELEVATIONS

1	6.78
2	6.60
3	6.42
4	6.24
5	6.06
6	5.88
7	5.70

PROJECT NO. BP1.R008.1
PASQUOTANK COUNTY
STATION: STA. 17+08.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

DocuSigned by: Diego A Aguirre ECF43B830736...
9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

DRAWN BY : WJH 12/11
CHECKED BY : AAC 12/11
REV. 4/15 MAA/TMG

DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

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KCA KISINGER CAMPO & ASSOCIATES
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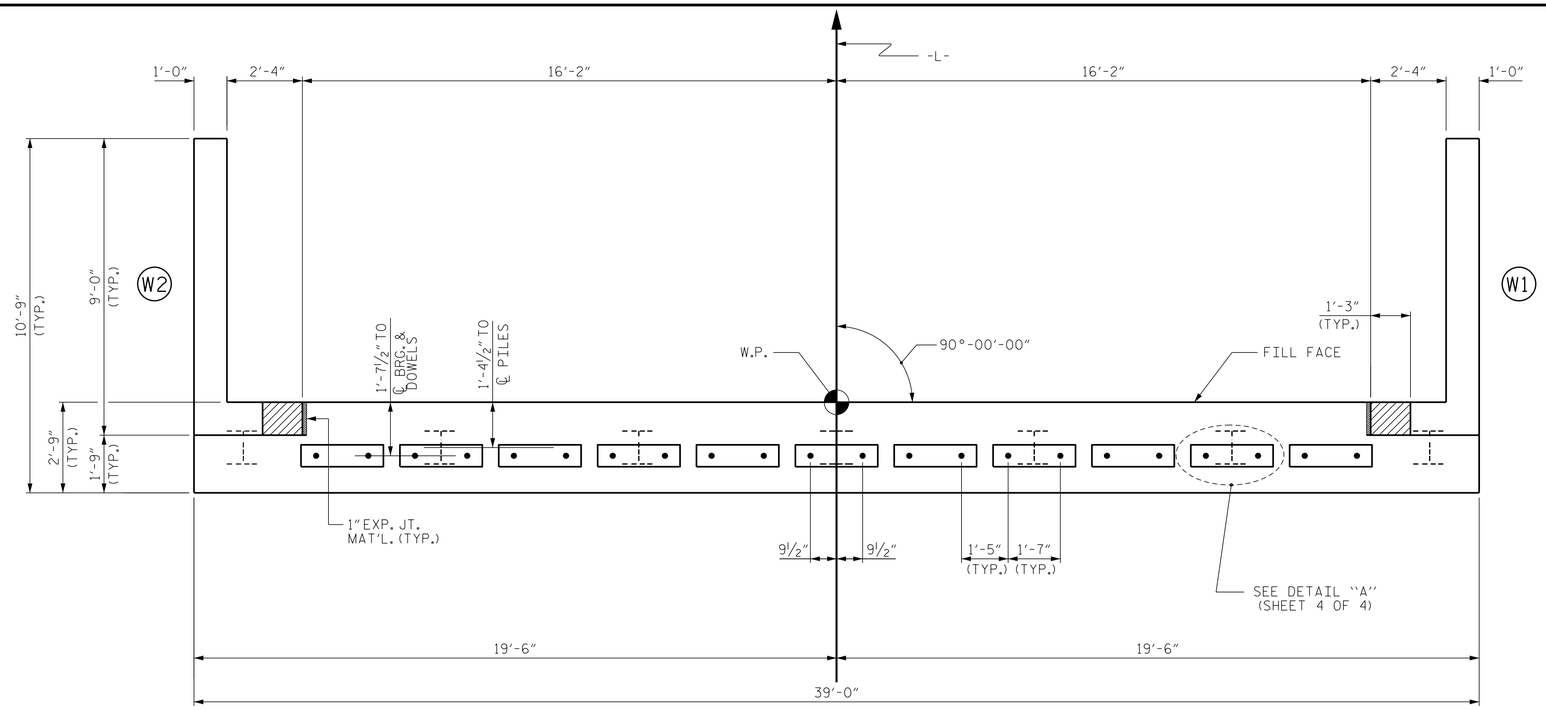
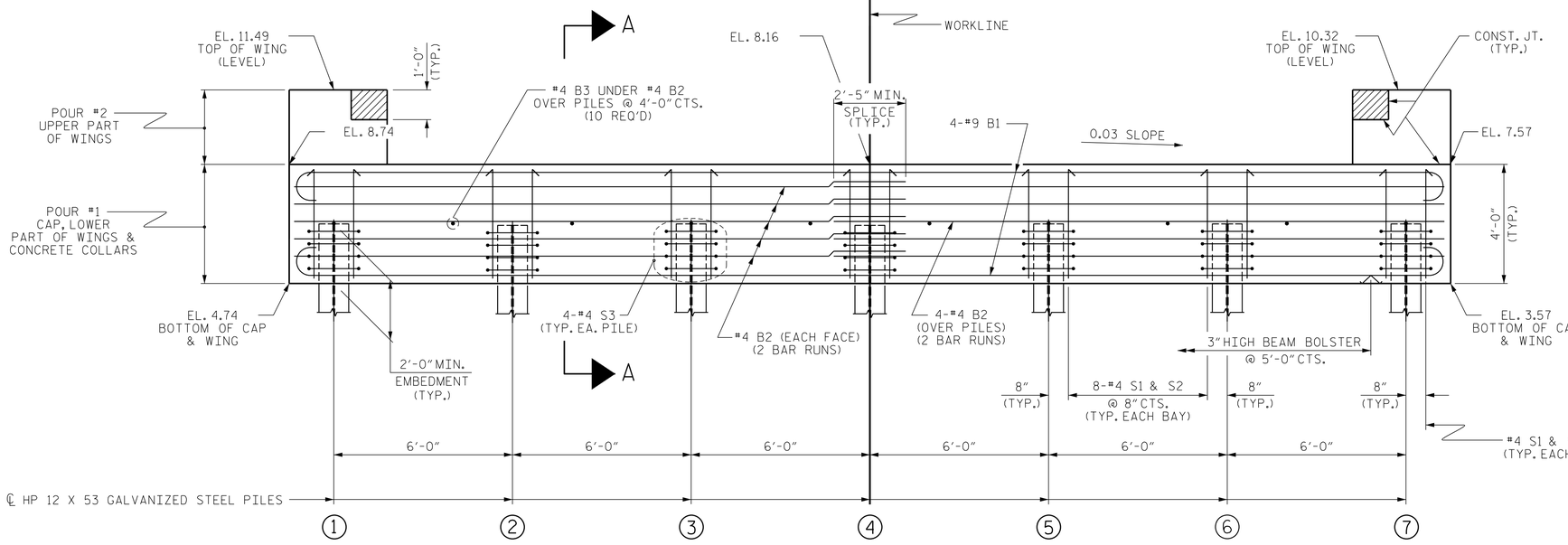
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			22

STD. NO. EB_33_90S4



PLAN



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.

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.

GALVANIZE THE FULL LENGTH OF EACH END BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

TOP OF PILE ELEVATIONS	
①	6.70
②	6.52
③	6.34
④	6.16
⑤	5.98
⑥	5.80
⑦	5.62

PROJECT NO. BP1.R008.1
PASQUOTANK COUNTY
STATION: STA. 17+08.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

DocuSigned by: Diego A Aguirre E0F43B830738...
9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

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1			3			TOTAL SHEETS
2			4			22

DRAWN BY : WJH 12/11
CHECKED BY : AAC 12/11
REV. 4/15 MAA/TMG

DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

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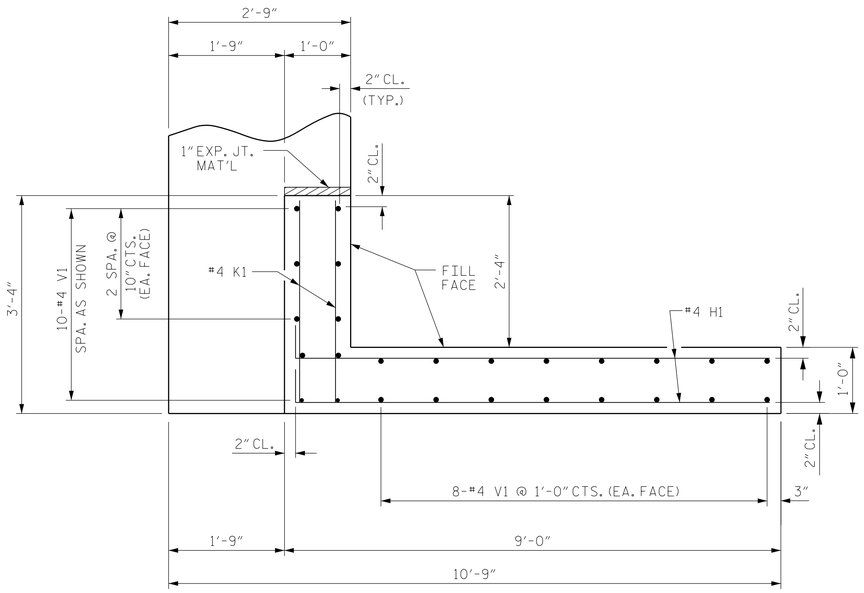
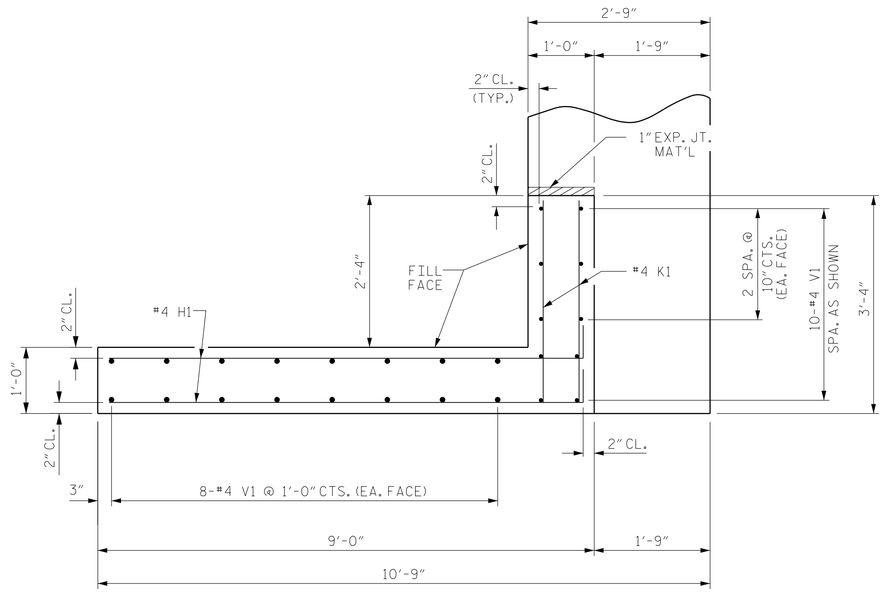
daguirre

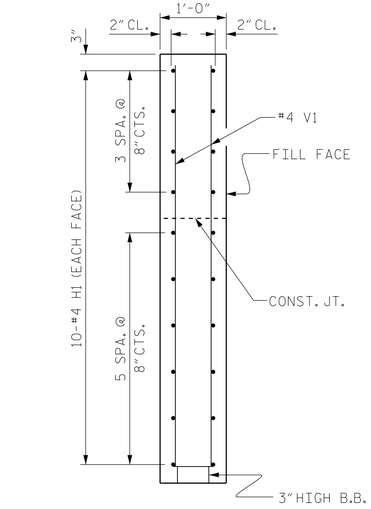
STD. NO. EB_33_90S4



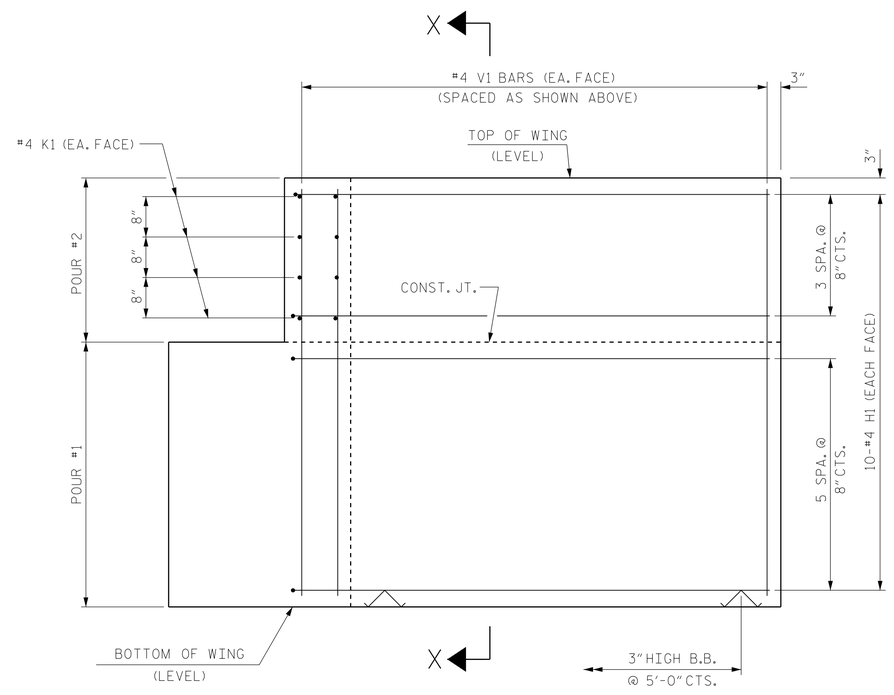
PLAN OF WING (W1)



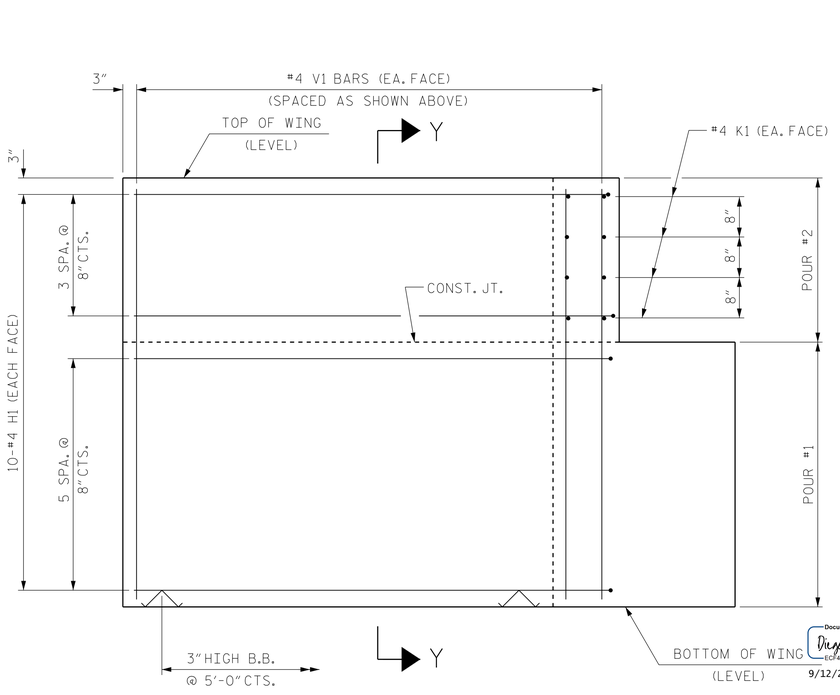
PLAN OF WING (W2)



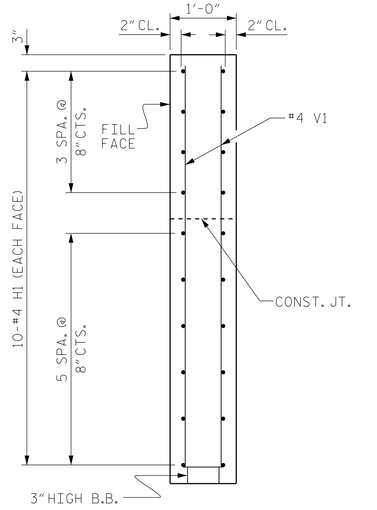
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

WING DETAILS

DRAWN BY : WJH 12/11	REV. 4/15 MAA/TMG		
CHECKED BY : AAC 12/11			
DRAWN BY : DIEGO A. AGUIRRE	DATE : 01/2022		
CHECKED BY : JACOB H. DUKE	DATE : 01/2022		
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE	DATE : 01/2022		

9/12/2022
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dagulrre

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301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DocuSigned by: Diego A Aguirre ECF43B830730...
9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

PROJECT NO. BP1.R008.1
PASQUOTANK COUNTY
STATION: STA. 17+08.00 -L-

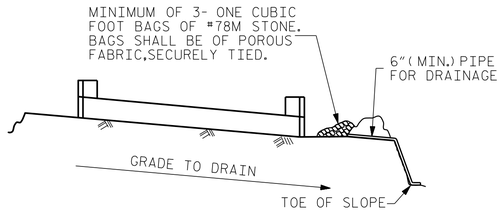
SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT
WING DETAILS

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

STD. NO. EB_33_90S4

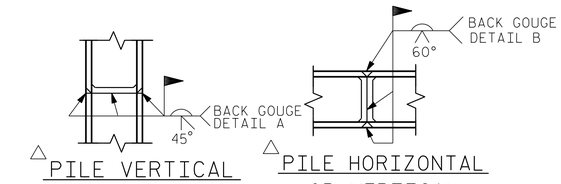


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

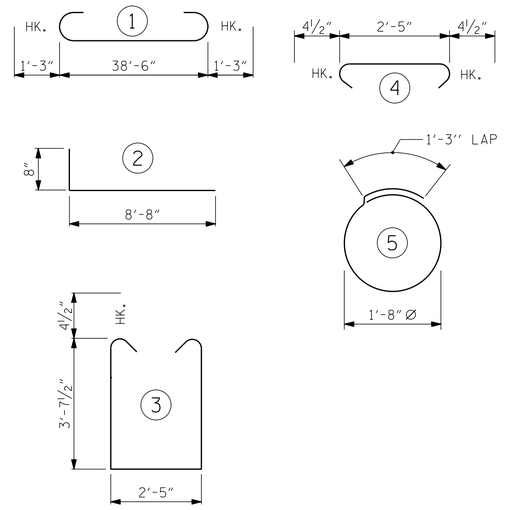
TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	41'-0"	1115
B2	28	#4	STR	20'-7"	385
B3	10	#4	STR	2'-5"	16
D1	22	#6	STR	1'-6"	50
H1	40	#4	2	9'-4"	249
K1	16	#4	STR	2'-11"	31
S1	50	#4	3	10'-5"	348
S2	50	#4	4	3'-2"	106
S3	28	#4	5	6'-6"	122
V1	52	#4	STR	6'-2"	214

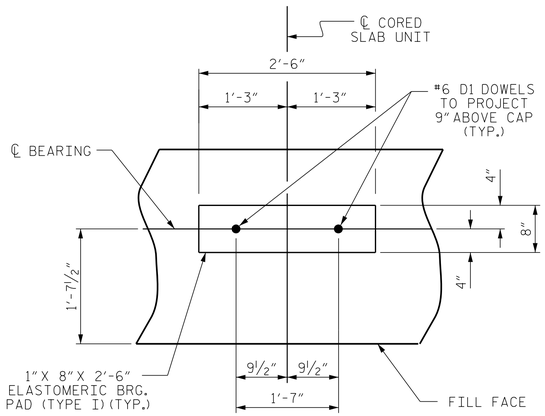
EPOXY COATED REINFORCING STEEL (FOR ONE END BENT) 2636 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 19.5 C.Y.

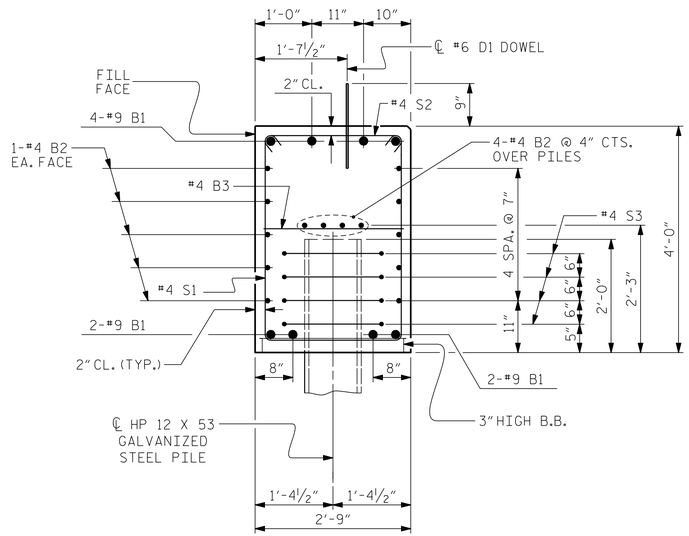
POUR #2 UPPER PART OF WINGS 2.3 C.Y.

TOTAL CLASS A CONCRETE 21.8 C.Y.



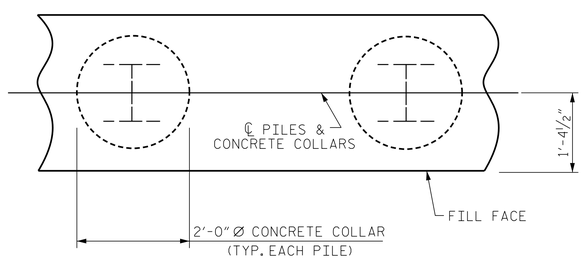
DETAIL ''A''

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

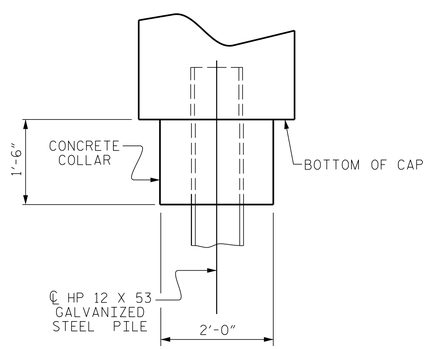


SECTION A-A

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



PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

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

DocuSigned by: Diego A Aguirre ECF43B83073D4E...
12/8/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

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PROJECT NO. BP1.R008.1

PASQUOTANK COUNTY

STATION: STA. 17+08.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

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

DRAWN BY : WJH 12/11
CHECKED BY : AAC 12/11
REV. 4/17 MAA/THC

DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

12/7/2022
BP1.R008.1_SMU_EB04.dgn
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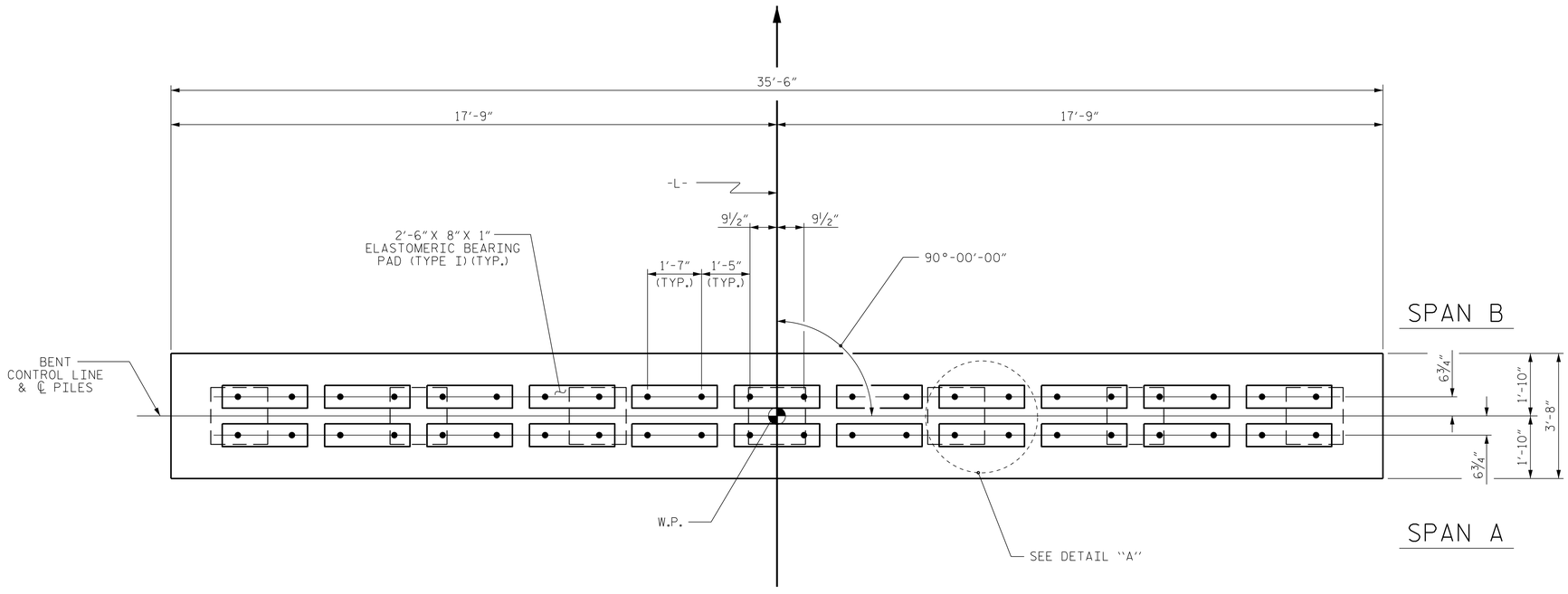
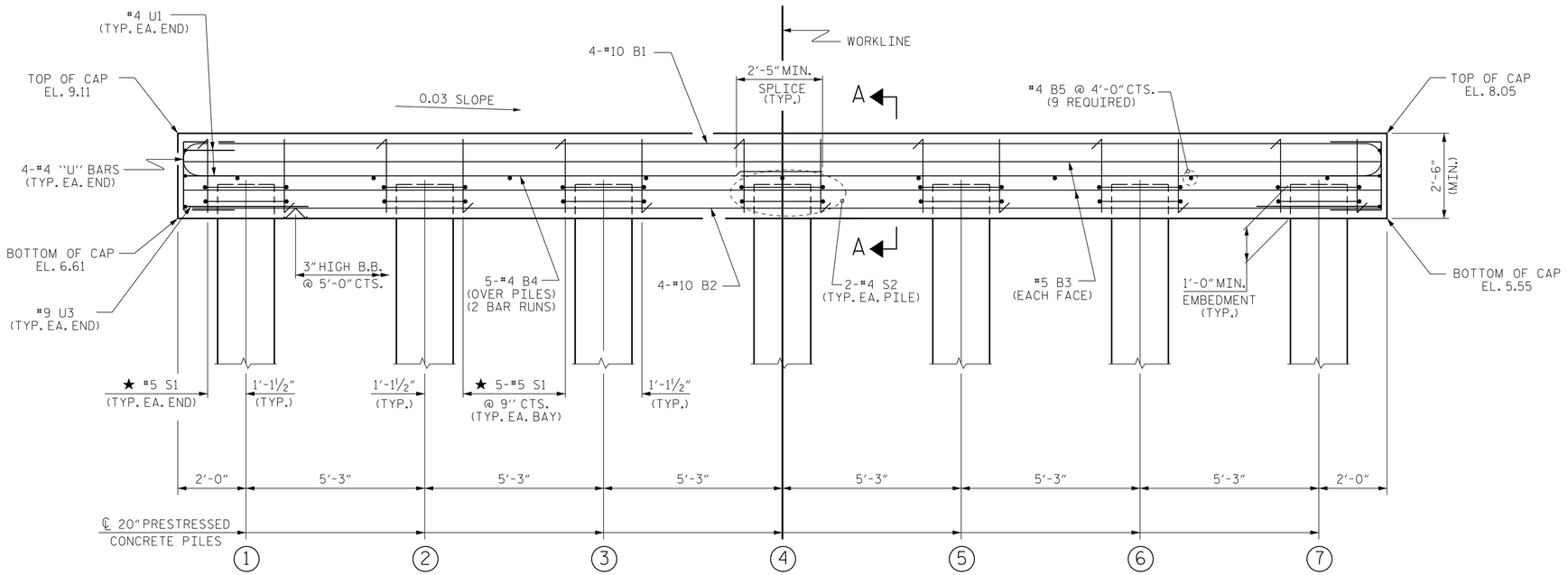
STD. NO. EB_33_90S4



PLAN



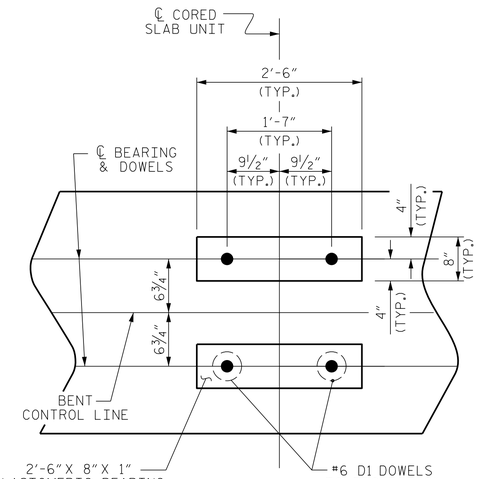
ELEVATION

FOR SECTION A-A, SEE SHEET 3 OF 3

NOTES

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

★ INVERT ALTERNATE STIRRUPS.



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

TOP OF PILE ELEVATIONS	
①	7.55
②	7.39
③	7.24
④	7.08
⑤	6.92
⑥	6.76
⑦	6.61

PROJECT NO. BP1.R008.1

PASQUOTANK COUNTY

STATION: STA. 17+08.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT No. 1

DocuSigned by: Diego A. Aguirre 9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
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NC FIRM LICENSE: C-1506

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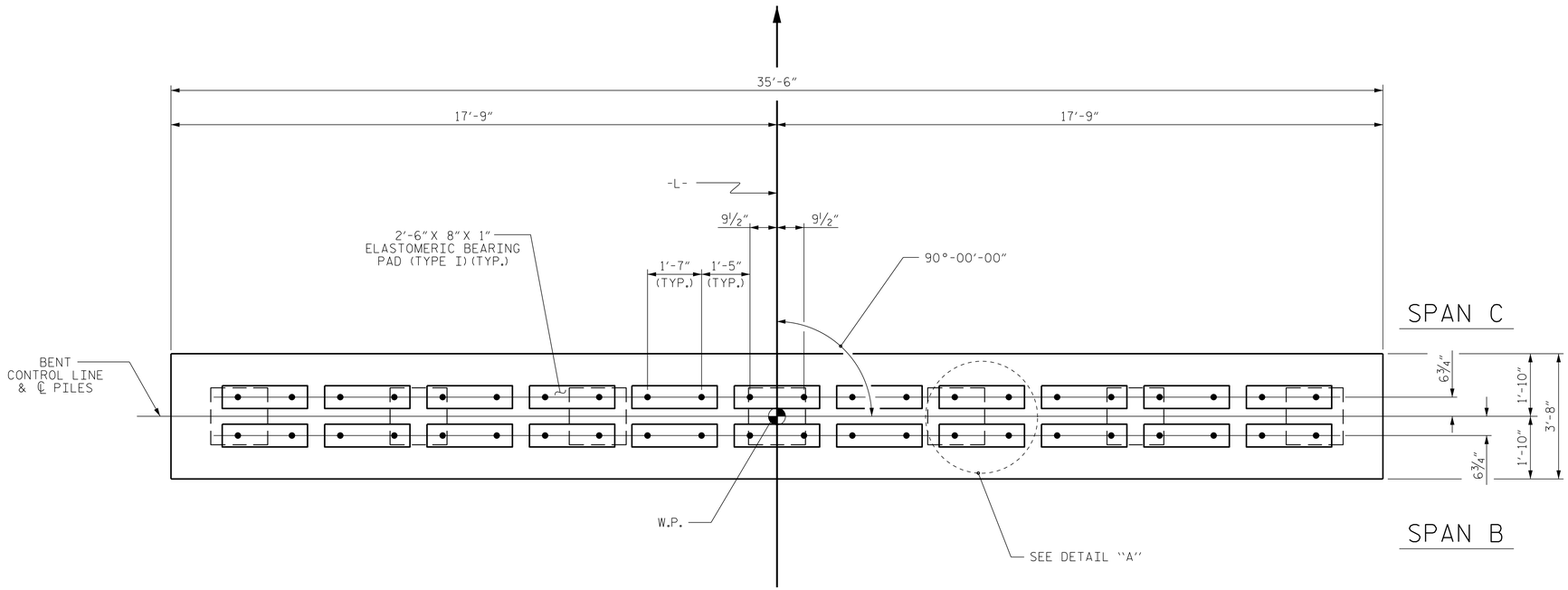
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			22

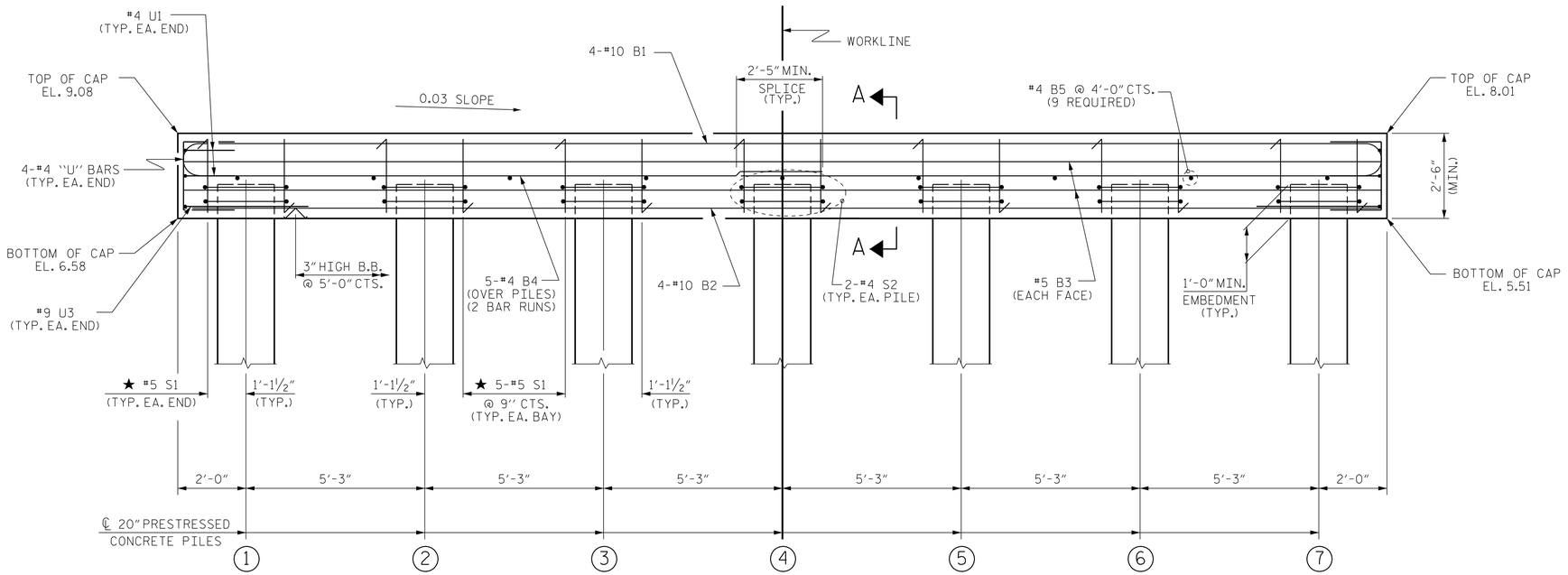
DRAWN BY : DGE 06/10	REV. 6/17 MAA/THC	
CHECKED BY : MKT 06/10		
DRAWN BY : DIEGO A. AGUIRRE		DATE : 01/2022
CHECKED BY : JACOB H. DUKE		DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE		DATE : 01/2022

9/12/2022
BP1.R008.1_SMU_B01.dgn
daguirre

STD.NO. 20"PS_BT_33_90S_<60'



PLAN



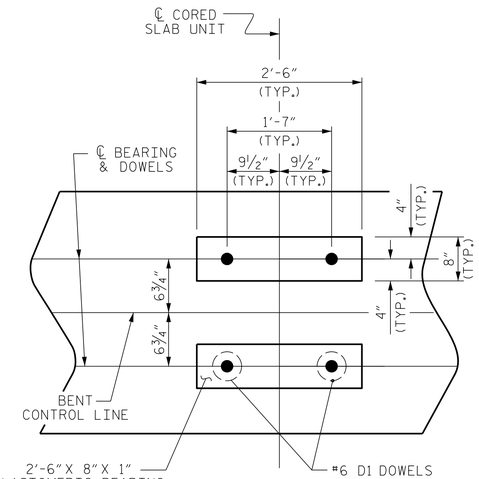
ELEVATION

FOR SECTION A-A, SEE SHEET 3 OF 3

NOTES

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

★ INVERT ALTERNATE STIRRUPS.



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

TOP OF PILE ELEVATIONS	
①	7.52
②	7.36
③	7.20
④	7.04
⑤	6.89
⑥	6.73
⑦	6.57

PROJECT NO. BP1.R008.1

PASQUOTANK COUNTY

STATION: STA. 17+08.00 -L-

SHEET 2 OF 3

DocuSigned by: Diego A Aguirre E0F43B8307384...

9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT No. 2

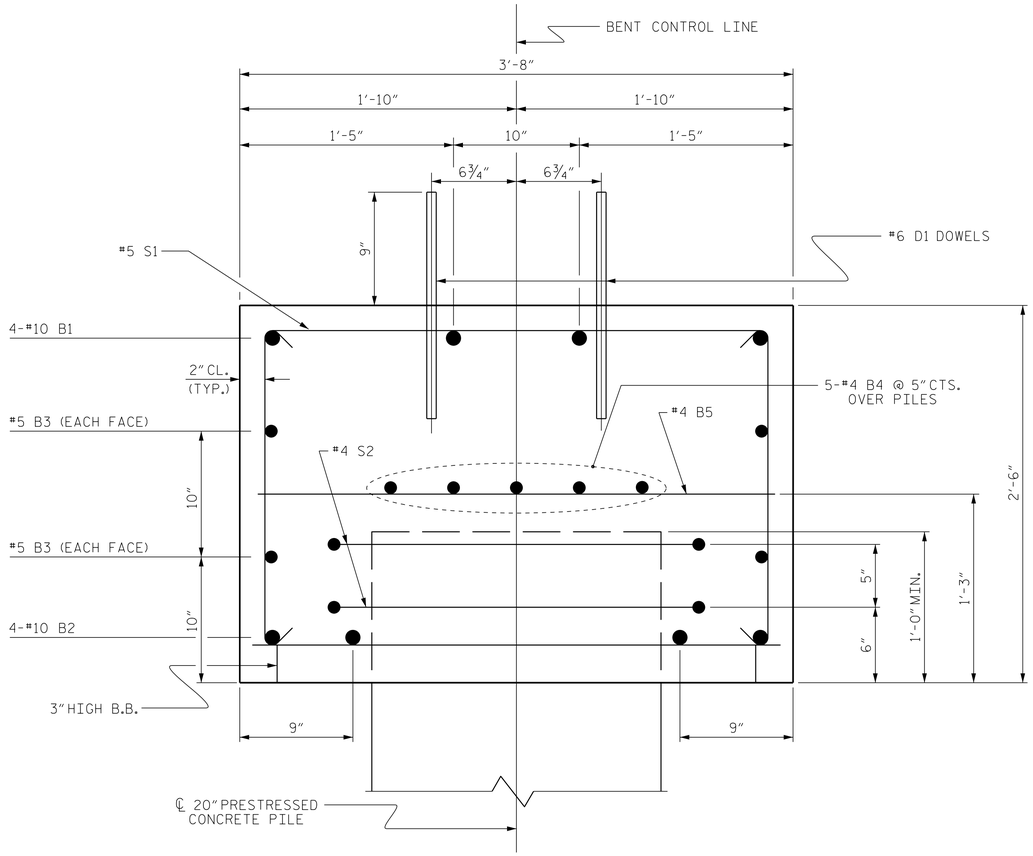
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : DGE 06/10
CHECKED BY : MKT 06/10
REV. 6/17 MAA/THC

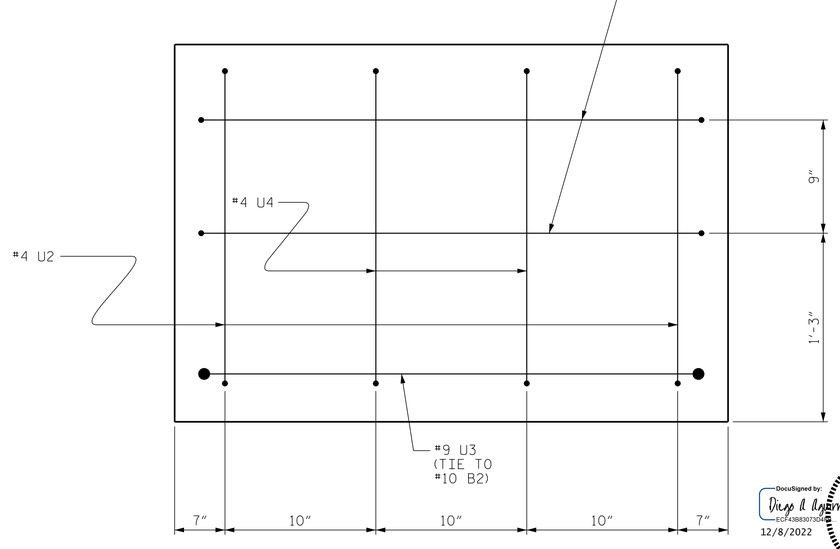
DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

9/12/2022
BP1.R008.1_SMU_B02.dgn
dagulrre

STD.NO. 20"PS_BT_33_90S_<60'



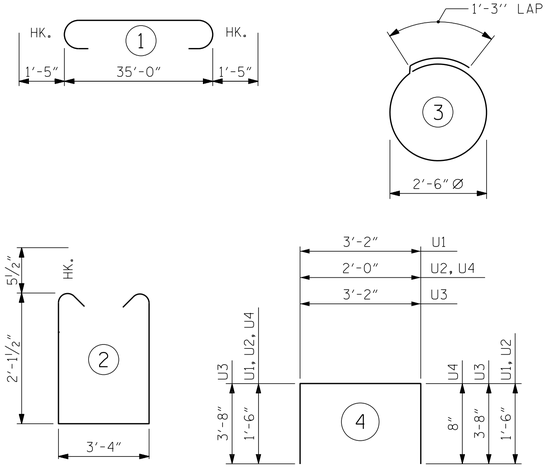
SECTION A-A



END OF CAP VIEW

(TYPICAL BOTH ENDS)

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	10	#4	STR	18'-10"	126
B5	9	#4	STR	3'-4"	20
D1	44	#6	STR	1'-6"	99
S1	32	#5	2	8'-6"	284
S2	14	#4	3	9'-2"	86
U1	4	#4	4	6'-2"	16
U2	4	#4	4	5'-0"	13
U3	2	#9	4	10'-6"	71
U4	4	#4	4	4'-2"	11

EPOXY COATED REINFORCING STEEL (FOR ONE BENT) 2129 LBS

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

TOTAL CLASS A CONCRETE ▲ 11.3 C.Y.

▲ CONCRETE DISPLACED BY THE 20" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.

DocuSigned by: Diego A Aguirre ECF43B83073D4...
12/8/2022

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048223 DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES

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NC FIRM LICENSE: C-1506

PROJECT NO. BP1.R008.1

PASQUOTANK COUNTY

STATION: STA. 17+08.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT No. 1 & No. 2 DETAILS

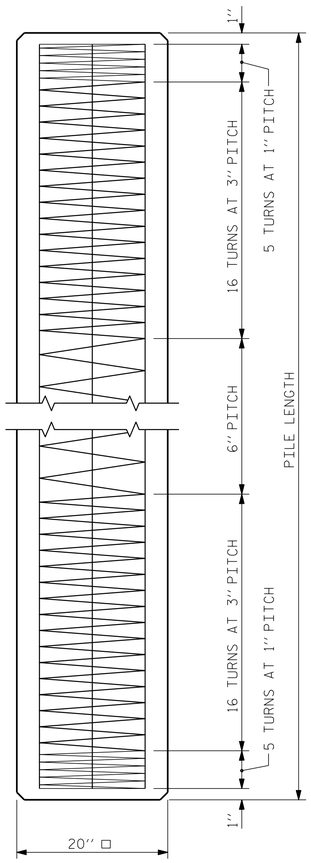
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : DGE 05/10
CHECKED BY : MKT 05/10
REV. 6/17 MAA/THC

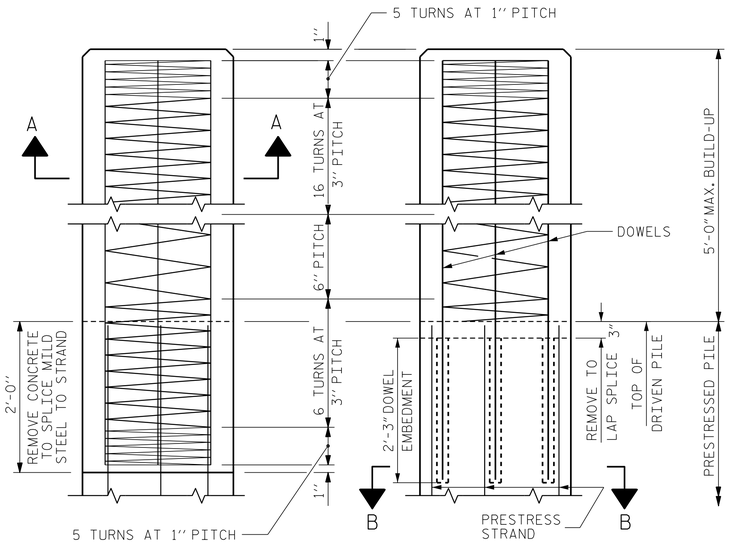
DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

12/7/2022
BP1.R008.1_SMU_B03.dgn
daguirre

STD. NO. 20"PS_BT_33_90S_<60'

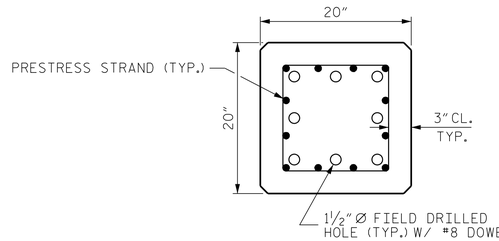


ELEVATION



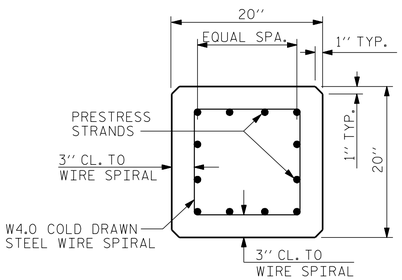
BUILD-UP AND SPIRAL REINFORCING

OPTIONAL BUILD-UP WITH DOWELS

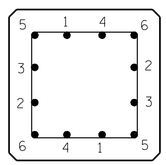


SECTION ''B-B''

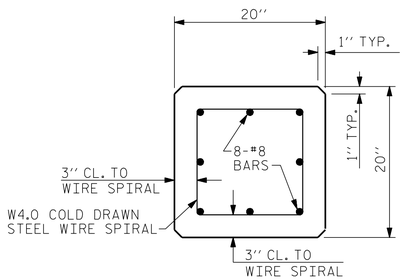
(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)



TYPICAL SECTION

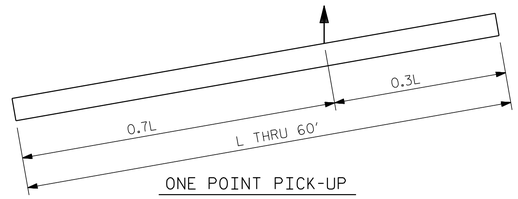


TYPICAL PATTERN FOR BURNING STRANDS

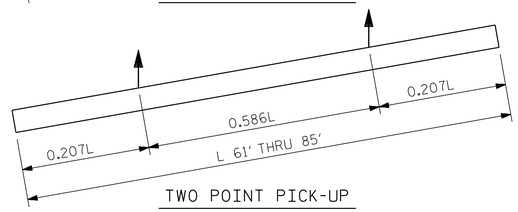


SECTION A-A

0.6'' Ø GRADE 270 L.R. PRESTRESS STRANDS



ONE POINT PICK-UP



TWO POINT PICK-UP

PICK-UP POINTS

QUANTITIES FOR ONE 20'' SQUARE PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP 0.3L	ONE POINT PICK-UP 0.7L	TWO POINT PICK-UP 0.207L	TWO POINT PICK-UP 0.586L
25'-0''	2.56	5.18	7'-6''	17'-6''		
30'-0''	3.07	6.22	9'-0''	21'-0''		
35'-0''	3.58	7.26	10'-6''	24'-6''		
40'-0''	4.09	8.29	12'-0''	28'-0''		
45'-0''	4.61	9.33	13'-6''	31'-6''		
50'-0''	5.12	10.36	15'-0''	35'-0''		
55'-0''	5.63	11.40	16'-6''	38'-6''		
60'-0''	6.14	12.44	18'-0''	42'-0''		
65'-0''	6.65	13.47			13'-5½''	38'-1''
70'-0''	7.17	14.51			14'-6''	41'-0''
75'-0''	7.68	15.55			15'-6½''	43'-11''
80'-0''	8.19	16.58			16'-6½''	46'-11''
85'-0''	8.70	17.62			17'-7''	49'-10''

NOTES

PRESTRESSED CONCRETE STRENGTH : f'c= 7,500 PSI

BUILD-UP CONCRETE STRENGTH : f'c= 7,500 PSI

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
0.6''	270 L.R.	0.217	58,600# PER STRAND	43,940# PER STRAND

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS, BURN IN OPPOSITE PAIRS AND SYMMETRICALLY ABOUT BOTH THE VERTICAL AND HORIZONTAL AXES, STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 5-5 AND 6-6, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2'' WIDE BLACK MARK.

DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 5,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: f'c= 5,000 PSI

BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3'' OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN ½'' CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE W4.0 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.

PROJECT NO. BP1.R008.1

PASQUOTANK COUNTY

STATION: STA. 17+08.00 -L-

DocuSigned by: Diego A Aguirre ECF43B8307304...

9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

20'' PRESTRESSED CONCRETE PILE

REVISIONS NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-19
2			4			TOTAL SHEETS 22

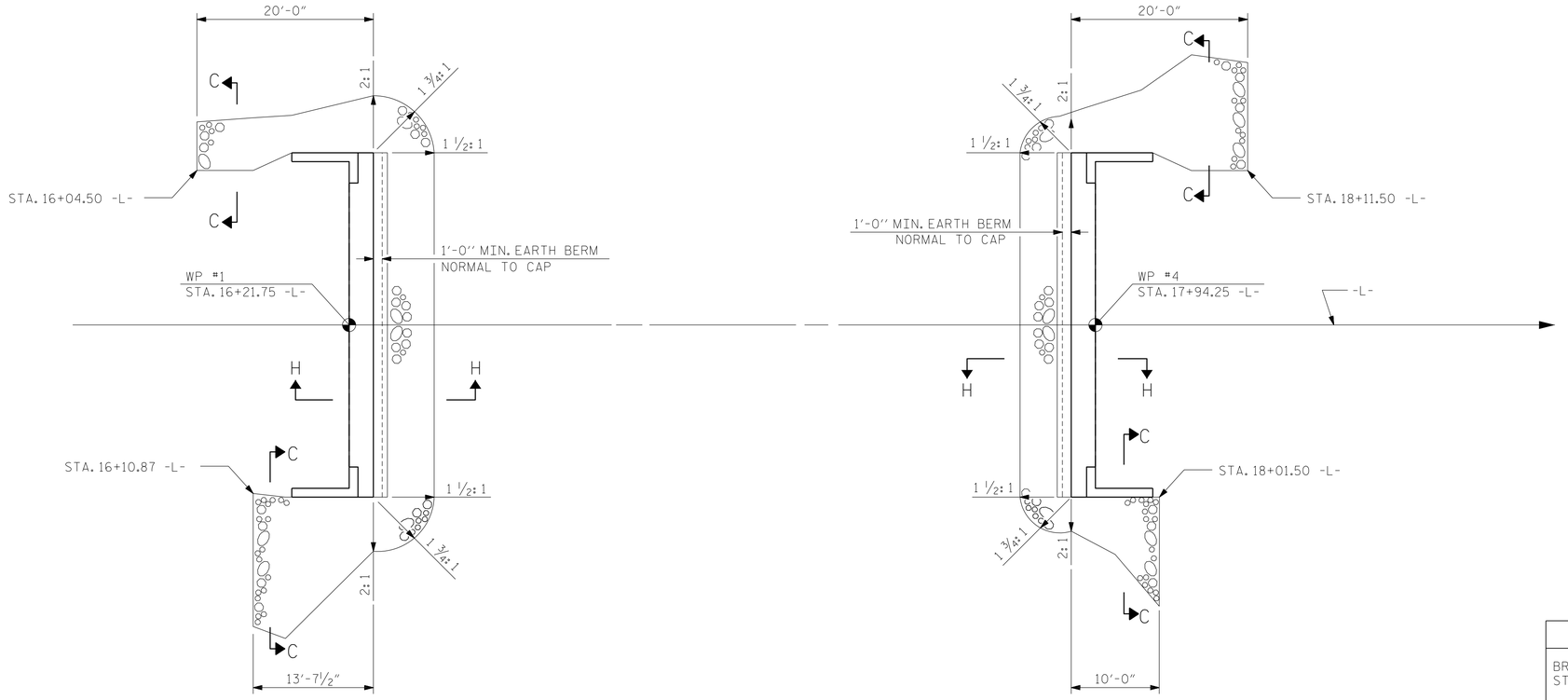
DRAWN BY : WJH 1/89
CHECKED BY : CRK 3/89

REV. 12/14 MAA/TMG
REV. 12/17 MAA/THC
REV. 12/20 BNB/THC

DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

9/12/2022
BP1.R008.1_SMU_PCP01.dgn
daguirre

STD. NO. PCP3 (SHT 1)



NOTES :

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

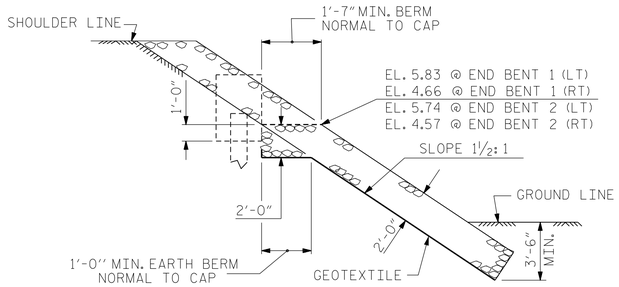
ESTIMATED QUANTITIES

BRIDGE @ STA. 17+08.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	130.1	129.8
END BENT 2	119.6	129.0

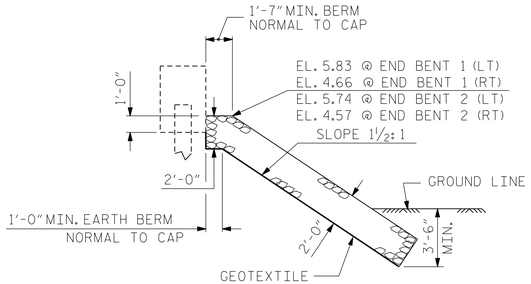
END BENT 1

END BENT 2

PLAN

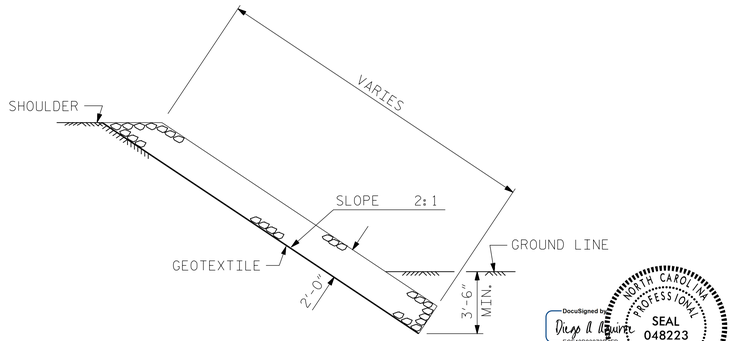


SECTION H-H



℄ SECTION

BERM RIP RAPPED



SECTION C-C

DocuSigned by: Diego A Aguirre ECF43B83073C...
9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

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PROJECT NO. BP1.R008.1

PASQUOTANK COUNTY

STATION: STA. 17+08.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			22

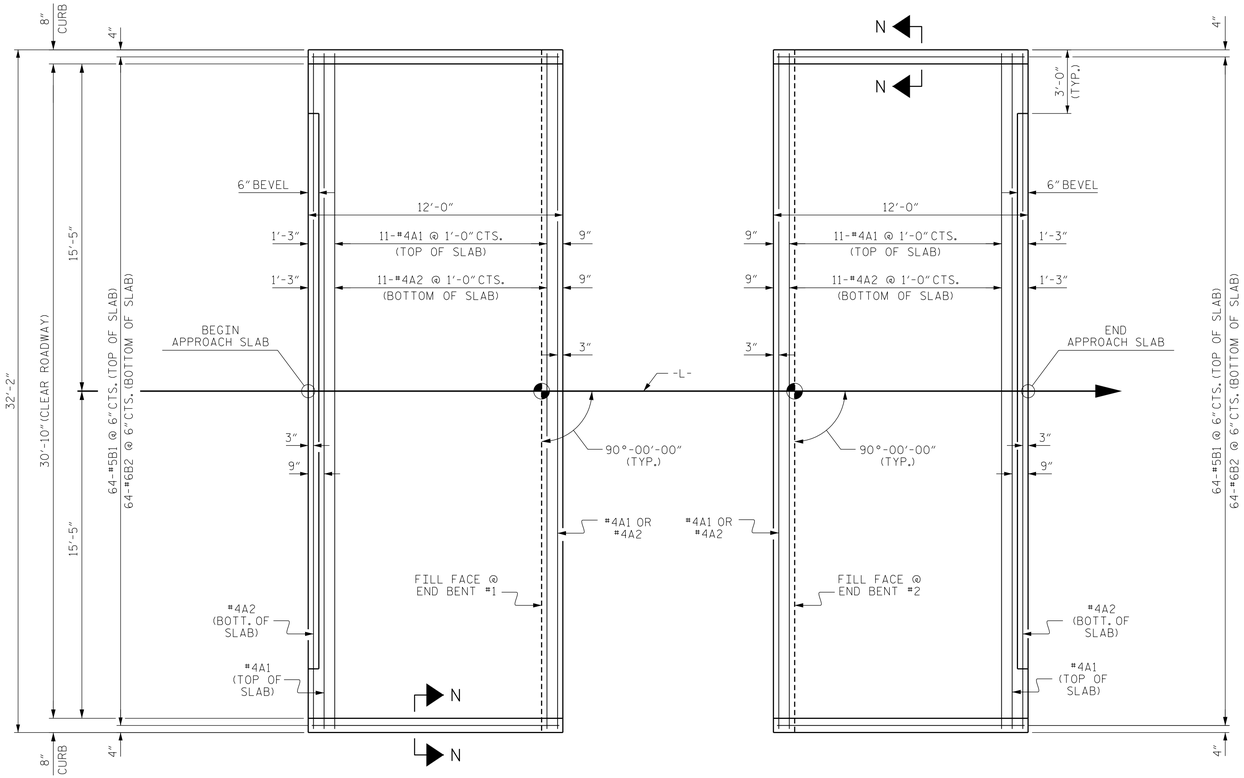
DRAWN BY : REK 1/84
CHECKED BY : RDU 1/84

REV. 10/1/11 MAA/GM
REV. 12/21/11 MAA/GM
REV. 12/17 MAA/THC

DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

9/12/2022
BP1.R008.1_SMU_RR.dgn
daguirre

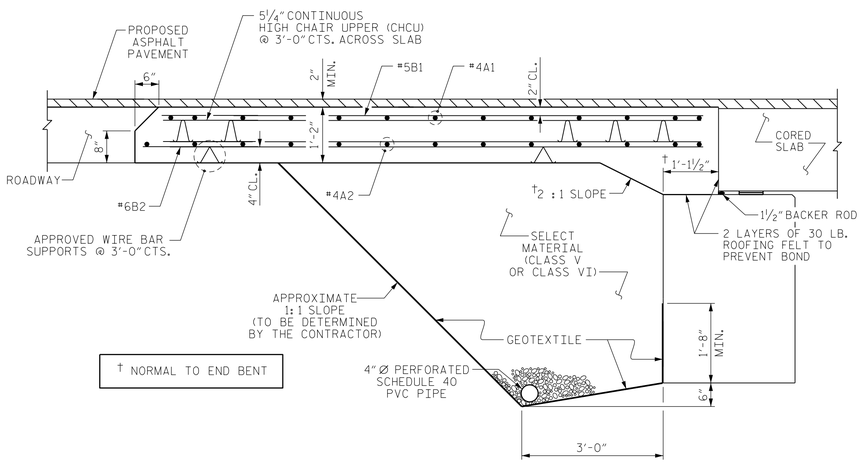
STD. NO. RR1 (Sht 2)



PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



† NORMAL TO END BENT

SECTION THRU SLAB

(TYPE II - MODIFIED APPROACH FILL)

NOTES

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

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

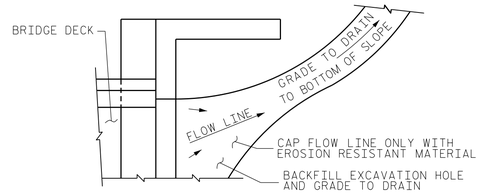
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

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

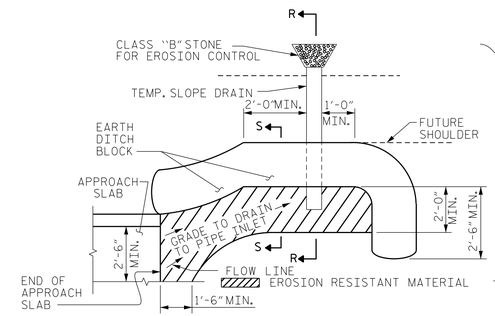
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



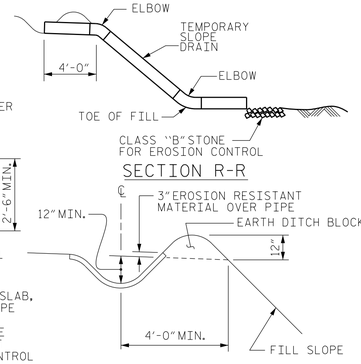
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



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

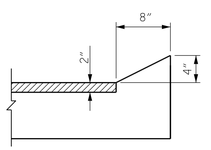
PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION N-N

CURB DETAILS

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	13	#4	STR	31'-10"	276
A2	13	#4	STR	31'-10"	276
✳ B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1397
✳ EPOXY COATED REINFORCING STEEL				LBS.	1021
CLASS AA CONCRETE				C.Y.	19.5
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	13	#4	STR	31'-10"	276
A2	13	#4	STR	31'-10"	276
✳ B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1397
✳ EPOXY COATED REINFORCING STEEL				LBS.	1021
CLASS AA CONCRETE				C.Y.	19.5

PROJECT NO. BP1.R008.1

PASQUOTANK COUNTY

STATION: STA. 17+08.00 -L-

DocuSigned by: Diego A. Aguirre ECF43B83073E4...

9/12/2022

NORTH CAROLINA PROFESSIONAL SEAL 048223 ENGINEER DIEGO A. AGUIRRE

KCA KISINGER CAMPO & ASSOCIATES

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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:	S-21
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : SHS/MAA 5-09
CHECKED BY : BCH 5-09
REV. 12-17 MAA/THC
REV. 08-19 BNB/THC

DRAWN BY : DIEGO A. AGUIRRE DATE : 01/2022
CHECKED BY : JACOB H. DUKE DATE : 01/2022
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 01/2022

9/12/2022
BP1.R008.1_SMU_AS.dgn
daguirre

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 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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 ⅞"Ø SHEAR STUDS FOR THE ¾"Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞"Ø STUDS FOR 4 - ¾"Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞"Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾"Ø STUDS BASED ON THE RATIO OF 3 - ⅞"Ø STUDS FOR 4 - ¾"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. FINS 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.

ENGLISH

JANUARY, 1990