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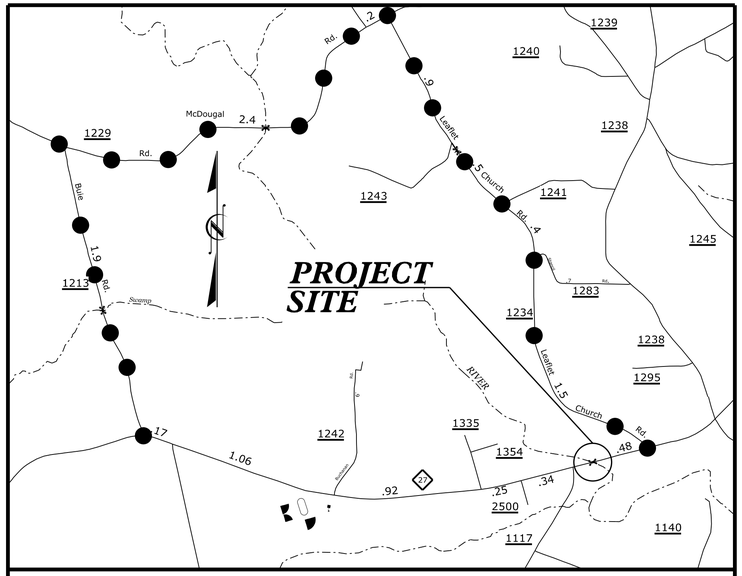
09/08/99

PROJECT: BR-0082

CONTRACT:

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheet RW01 TO RW04 For Survey Control Sheets



VICINITY MAP

OFF-SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HARNETT COUNTY

LOCATION: STRUCTURE NO. 420056 OVER UPPER LITTLE RIVER ON NC 27

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0082	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
67082.1.1		PE
67082.2.1		UTIL., R/W
67082.3.1		CONST.

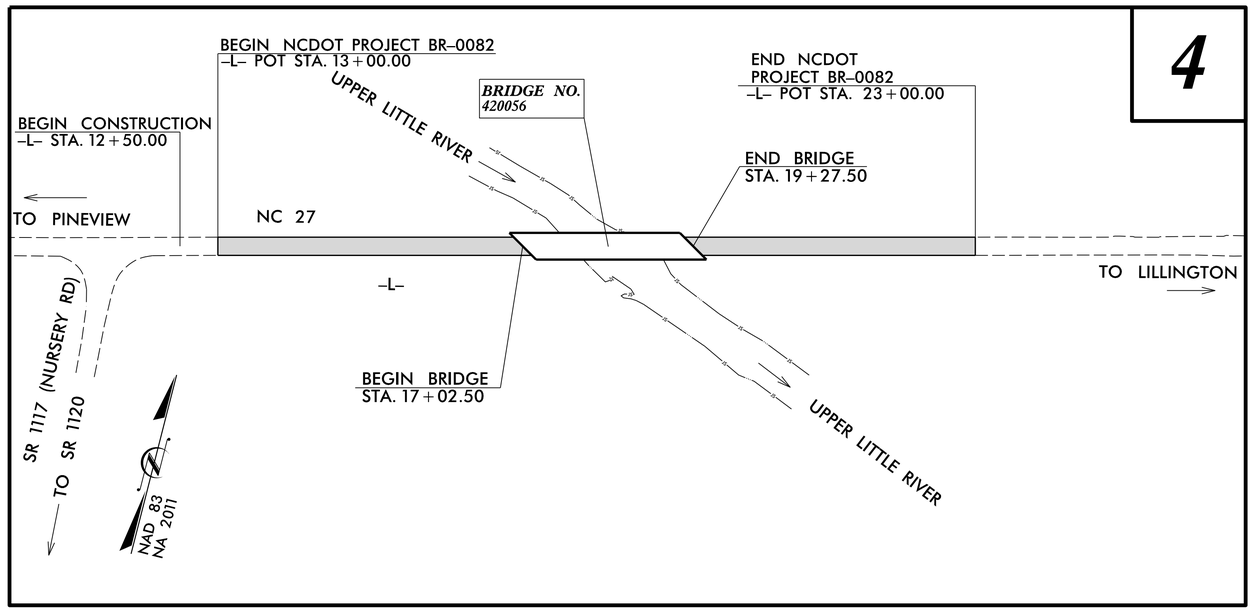
WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

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

STRUCTURE #420056

FINAL PLANS

4



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS 50 25 0 50 100
PROFILE (HORIZONTAL) 50 25 0 50 100
PROFILE (VERTICAL) 10 5 0 10 20

DESIGN DATA

ADT 2021 = 5740
ADT 2041 = 10370

T = 7 % *
V = 60 MPH
* (TTST = 3% + DUAL = 4%)
FUNC CLASS = MAJOR COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT BR-0082 =	0.146 MILES
LENGTH STRUCTURE PROJECT BR-0082 =	0.043 MILES
TOTAL LENGTH PROJECT BR-0082 =	0.189 MILES

NCDOT CONTACT: ADAM T. BRITT
DIVISION 6 BRIDGE PROGRAM MANAGER

Prepared for:
DIVISION OF HIGHWAYS
DIVISION SIX
558 GILLESPIE STREET, FAYETTEVILLE NC, 28301

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MARCH 2, 2020

LETTING DATE: FEBRUARY 15, 2023

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B ALFERD
HYDRAULICS ENGINEER 1/4/2023
SIGNATURE: DocuSigned by: P.E.

NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS
ROADWAY DESIGN ENGINEER 1/4/2023
SIGNATURE: DocuSigned by: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

11/3/2022
...\Proj\BR-0082_RDY_TSH.dgn
USER:JRosado

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	1A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

1/4/2023

NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS

Greg S. Purvis

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GENERAL NOTES

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

SIDE ROADS:

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

GUARDRAIL:

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

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

COMMUNICATION - CENTURYLINK
COMMUNICATION - CONTERRA

POWER - SOUTH RIVER EMC

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

RIGHT-OF-WAY MARKERS:

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

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills - Type I Standard Approach Fill
422.03	Reinforced Bridge Approach Fills - Type A Alternate Approach Fill for Integral Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
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
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-2	TYPICAL SECTIONS, PAVEMENT SCHEDULE, & MISCELLANEOUS DETAILS
2B-1	DETAIL FOR OFFSITE DETOUR IMPROVEMENTS
2C-1	DETAIL FOR GUARDRAIL INSTALLATION
3B-1	SUMMARY OF DRAINAGE QUANTITIES, GUARDRAIL SUMMARY, EARTHWORK SUMMARY, PAVEMENT REMOVAL SUMMARY, AND SHOULDER BERM GUTTER SUMMARY
4	PLAN AND PROFILE SHEET
RW01 THRU RW04	RIGHT OF WAY SHEETS, SURVEY CONTROL SHEETS, PROPOSED ALIGNMENT CONTROL SHEET AND PROPOSED EASEMENT CONTROL SHEET
TMP-1 THRU TMP-3	TRANSPORTATION MANAGEMENT PLAN
PMP-1 THRU PMP-2	PAVEMENT MARKING PLAN
EC-1 THRU EC-5	EROSION CONTROL PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS SECTION SUMMARY SHEET
X-1 THRU X-6	CROSS SECTIONS
S-1 THRU S-36	STRUCTURE PLANS
SN	STRUCTURE NOTES

5/14/99

12/21/2022 ...BR-0082_RDY_PSH_1A.dgn

9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

- Standard Gauge — 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
- Existing Control of Access Line
- Proposed Control of Access Line
- Proposed ROW and CA Line
- Existing Easement Line
- Proposed Temporary Construction Easement
- Proposed Temporary Drainage Easement
- Proposed Permanent Drainage Easement
- Proposed Permanent Drainage/Utility Easement
- Proposed Permanent Utility Easement
- Proposed Temporary Utility Easement
- Proposed Aerial Utility Easement

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

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
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H–Frame Pole
- U/G Power Line Test Hole (SUE – LOS A)*
- U/G Power Line (SUE – LOS B)*
- U/G Power Line (SUE – LOS C)*
- U/G Power Line (SUE – LOS D)*

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box
- Utility Unknown U/G Line (SUE – LOS B)*
- 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.

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	2A-1

ROADWAY DESIGN ENGINEER 1/4/2023 — SEAL 022999 — GREG S. PURVIS

PAVEMENT DESIGN ENGINEER 1/4/2023 — SEAL 038176 — SHIHAI ZHANG

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

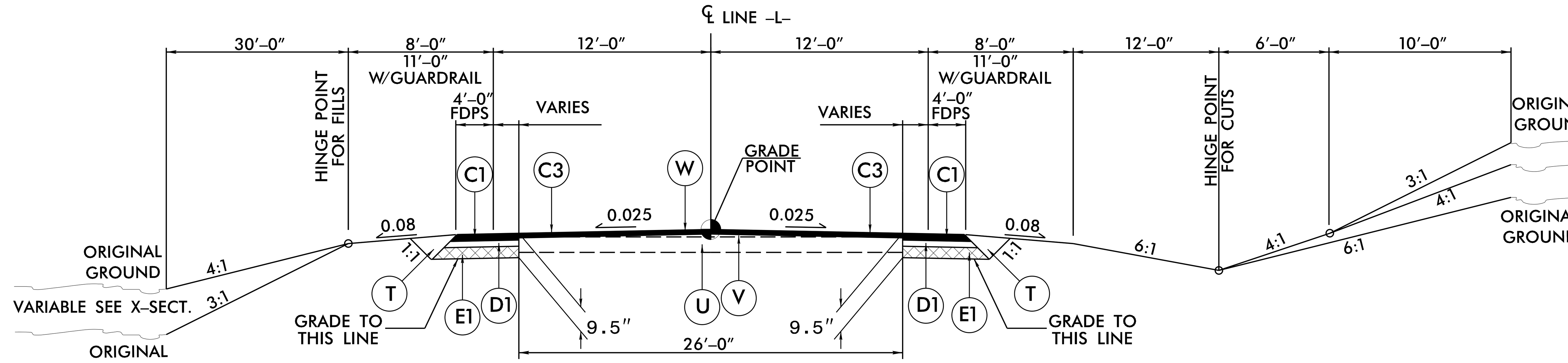
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

BRIDGE #420056

FINAL PAVEMENT SCHEDULE

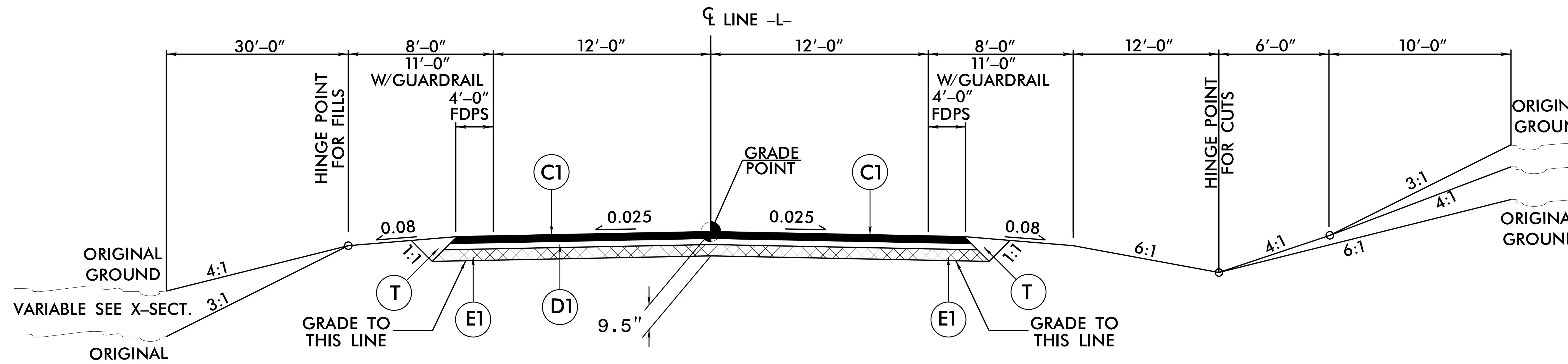
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
C3	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.
D3	PROP. APPROX. 5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
E3	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT. (SEE MILLING DETAIL)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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



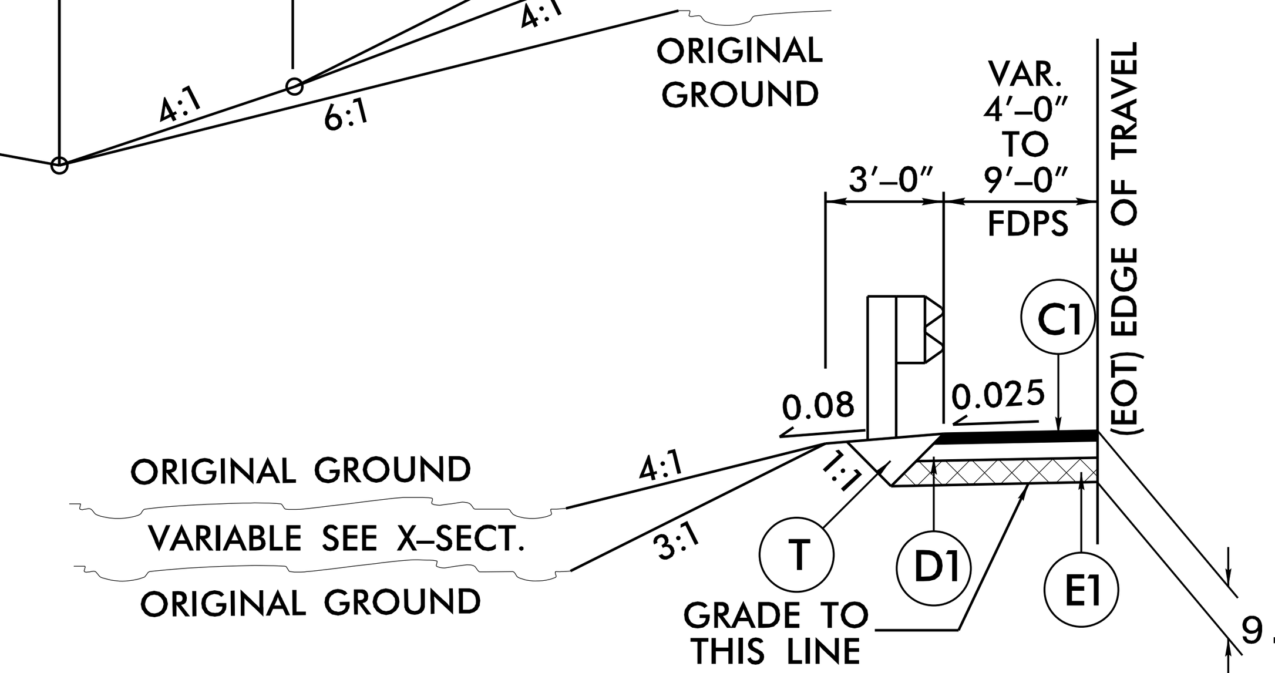
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:
-L- STA. 13+00.00 TO -L- STA. 16+52.50
-L- STA. 19+77.50 TO -L- STA. 23+00.00



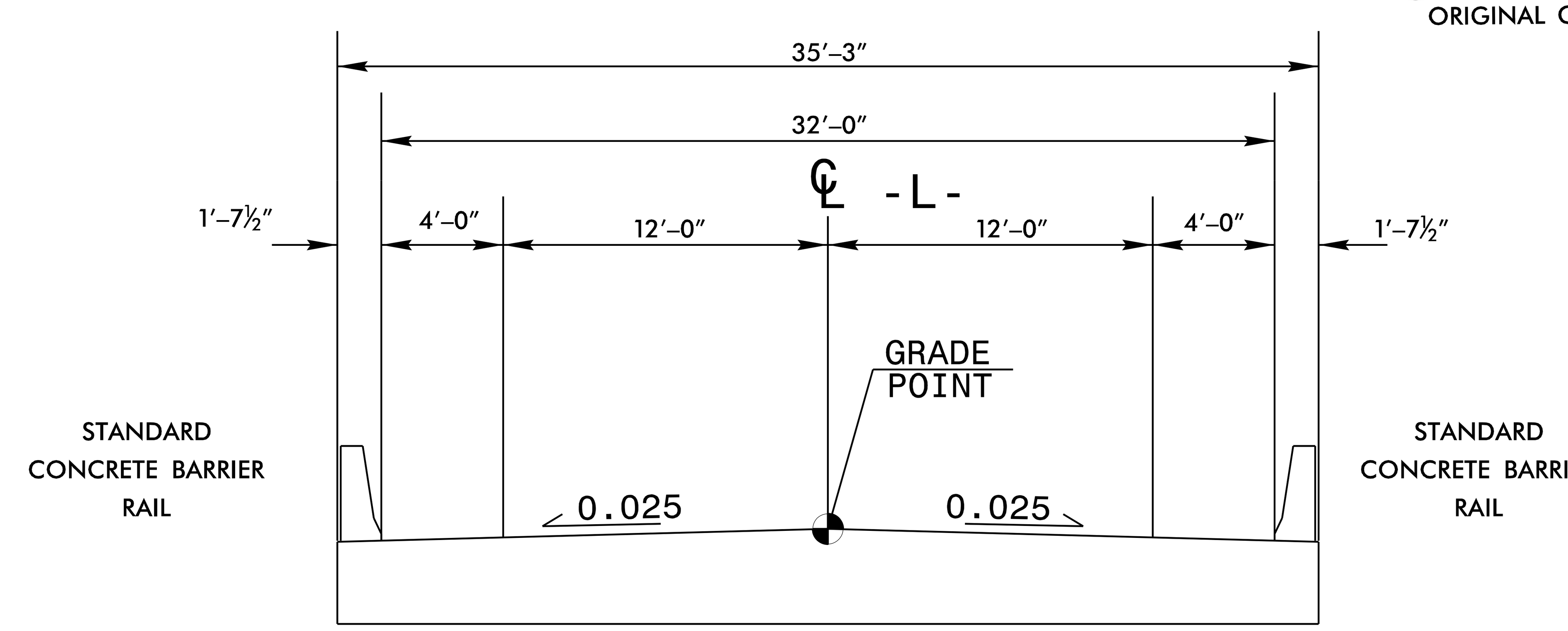
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS:
-L- STA. 16+52.50 TO -L- STA. 17+02.50 (BEGIN BRIDGE)
-L- STA. 19+27.50 (END BRIDGE) TO -L- STA. 19+77.50



SHOULDER DETAIL

USE SHOULDER DETAIL IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1 & 2:
-L- STA. 15+49.00 TO -L- STA. 16+86.50 LT.
-L- STA. 14+18.50 TO -L- STA. 17+18.50 RT.
-L- STA. 19+11.50 TO -L- STA. 22+11.50 LT.
-L- STA. 19+43.50 TO -L- STA. 20+81.00 RT.



TYPICAL SECTION NO. 3 (BRIDGE)

USE TYPICAL SECTION NO. 3 AS FOLLOWS:
-L- STA. 17+02.50 (BEGIN BRIDGE) TO -L- STA. 19+27.50 (END BRIDGE)

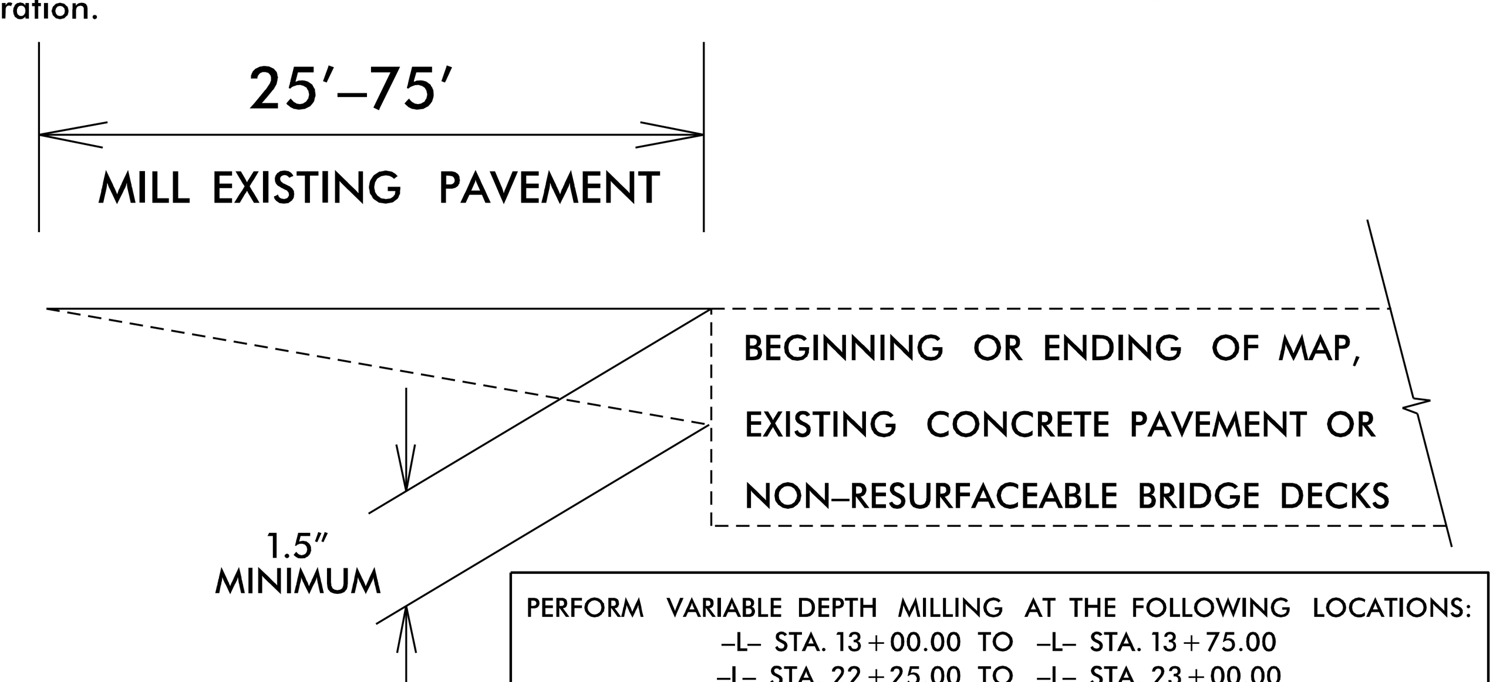
MILLING AT PAVEMENT TIE-INS

NOTES TO CONTRACTOR

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

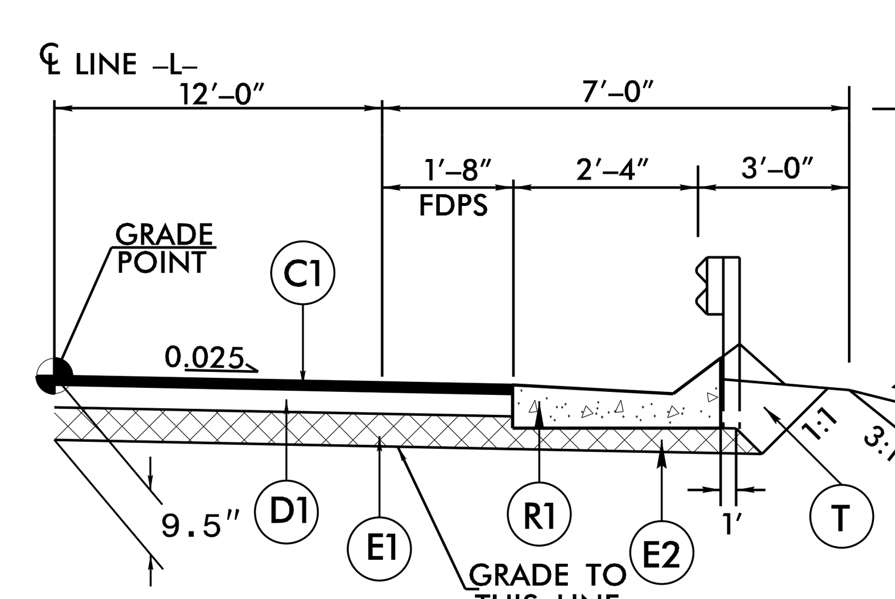
Locations shall include ties into existing concrete pavement, at bridge approaches where the bridge will not be resurfaced, and at the beginning and ending point of each resurfacing map.

Perform the work in accordance with Section 607 of the January 2018 North Carolina Department of Transportation Standard Specifications for Roads and Structures. Resurfacing will be accomplished at the same time as the milling operation.



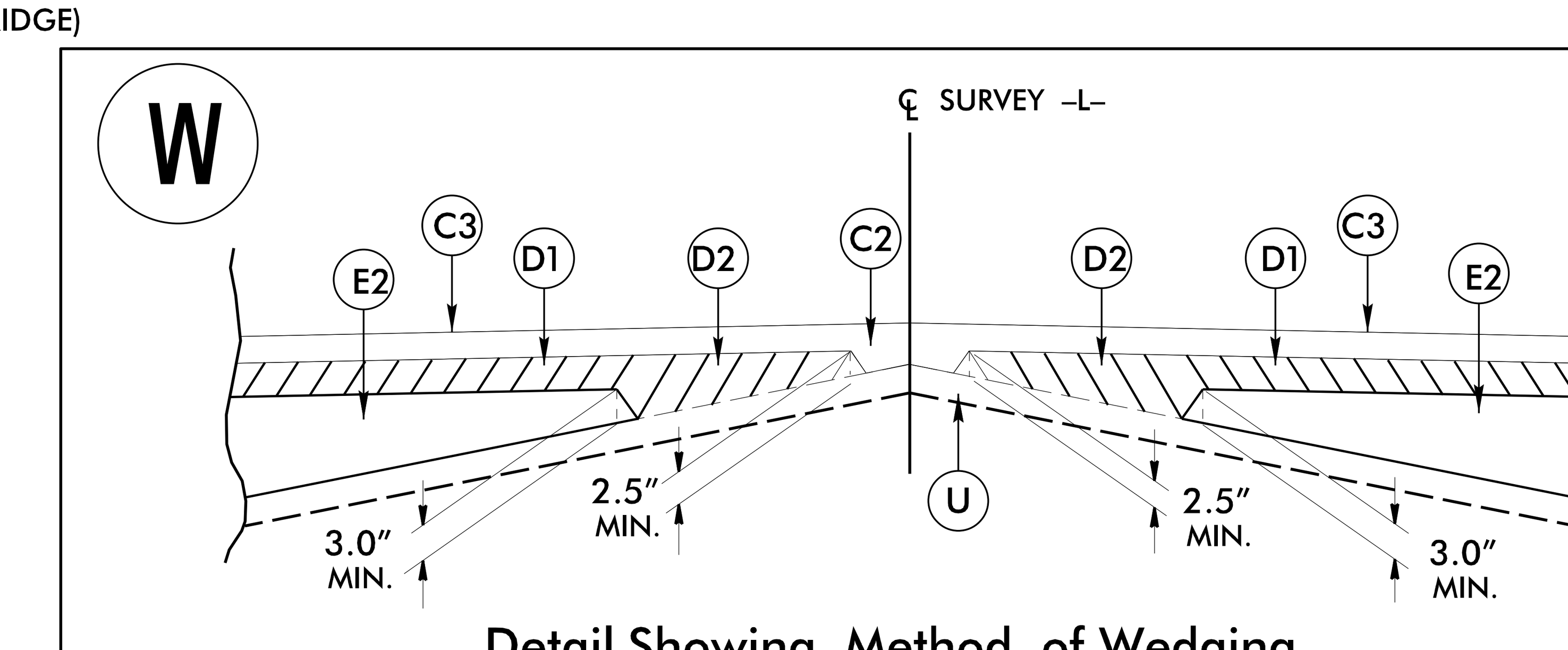
PERFORM VARIABLE DEPTH MILLING AT THE FOLLOWING LOCATIONS:
-L- STA. 13+00.00 TO -L- STA. 13+75.00
-L- STA. 22+25.00 TO -L- STA. 23+00.00

STATION RANGES ARE APPROXIMATE ONLY. GRADE MAY BE ADJUSTED BY ENGINEER TO ENSURE A PROPER TIE-IN



SHOULDER BERM GUTTER DETAIL

USE SHOULDER BERM GUTTER DETAIL IN CONJUNCTION WITH TYPICAL SECTION NO. 1 & 2:
16+54.00 TO 16+62.24 LT.
16+80.00 TO 16+95.58 RT.
19+34.42 TO 20+11.00 LT.
19+67.76 TO 19+76.00 RT.



Detail Showing Method of Wedging

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	2A-2

HYDRAULIC DESIGN ENGINEER 1/4/2023 — NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD

ROADWAY DESIGN ENGINEER 1/4/2023 — NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS

PAVEMENT DESIGN ENGINEER 1/4/2023 — NORTH CAROLINA PROFESSIONAL SEAL 038176 ENGINEER SHIHAI ZHANG

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

BRIDGE #420056

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
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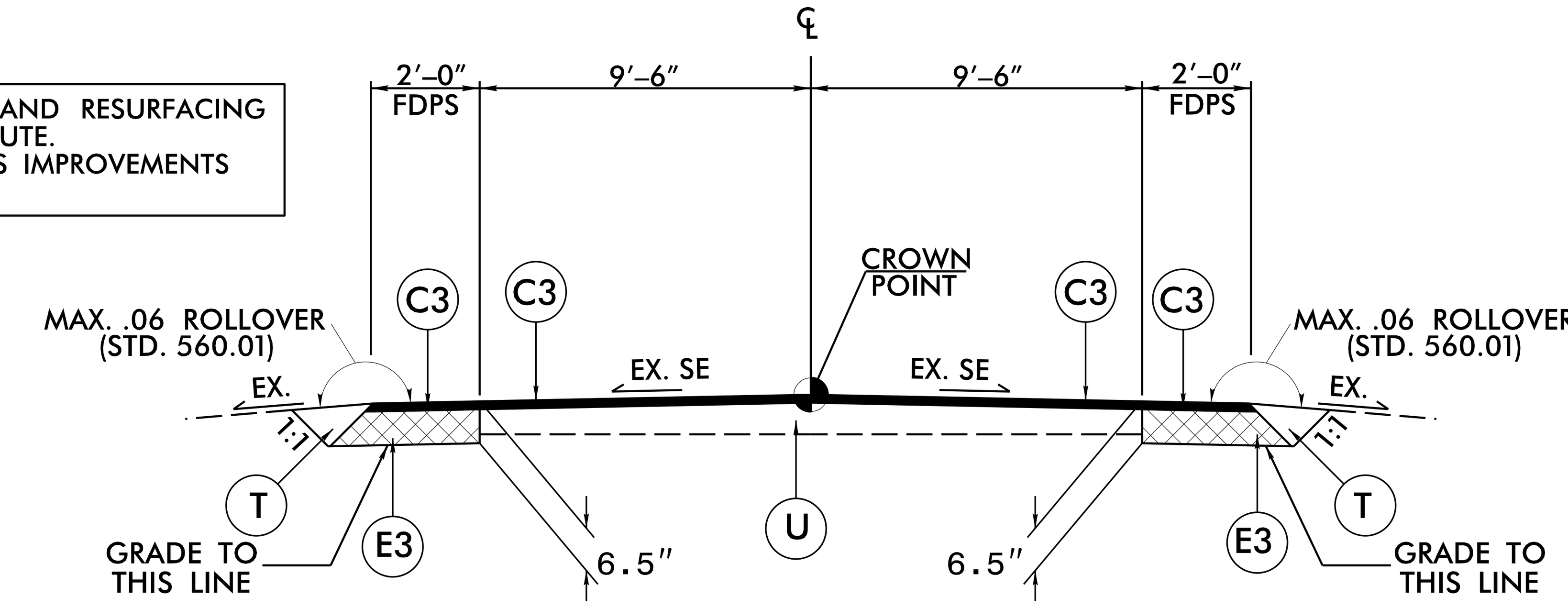
D3	PROP. APPROX. 5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
E3	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT. (SEE MILLING DETAIL)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

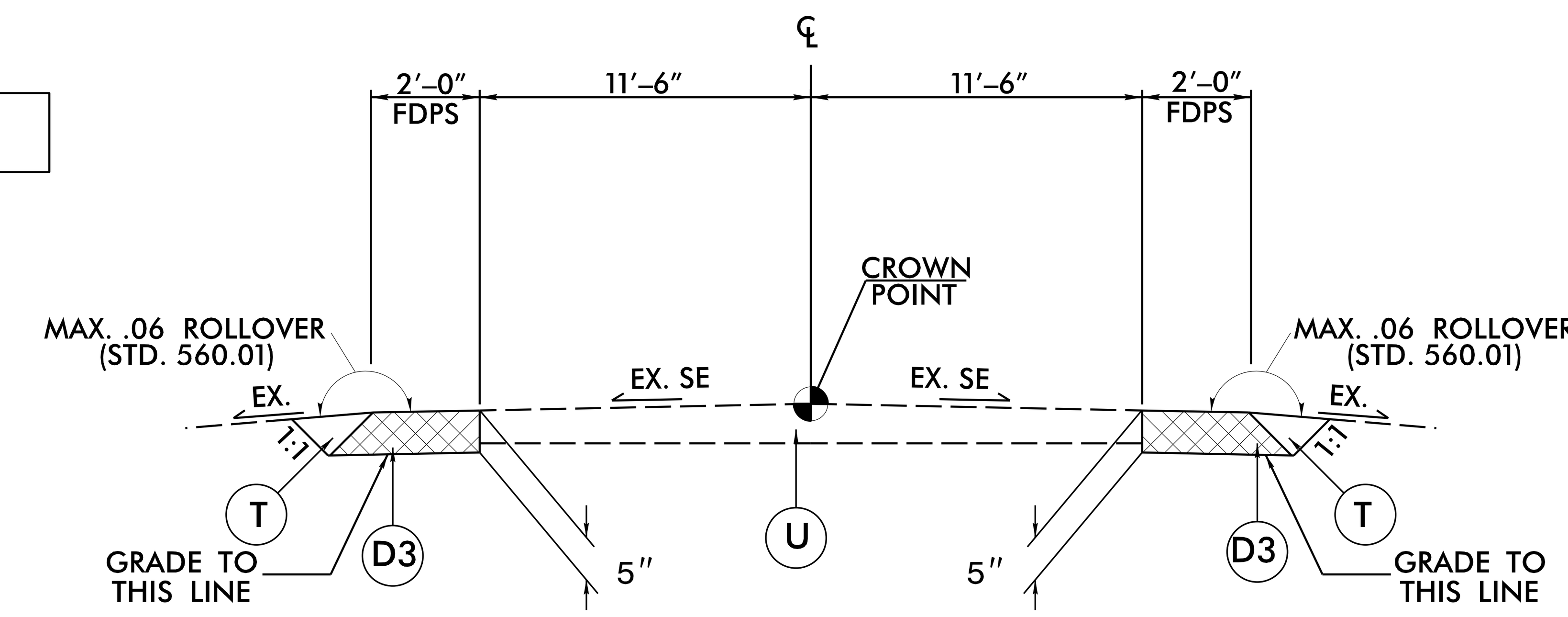
NOTE: FOR WIDENING OF AND RESURFACING OF PROPOSED DETOUR ROUTE. SEE SHEET 2B-1 FOR RADIUS IMPROVEMENTS ON SR 1213 (BUIE RD.)



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AS FOLLOWS:
SR 1213 (BUIE RD.) FROM SR 1229 (MCDOUGAL RD.) TO NC 27 (APPROX. 1.9 MILES)

NOTE: FOR WIDENING OF PROPOSED DETOUR ROUTE

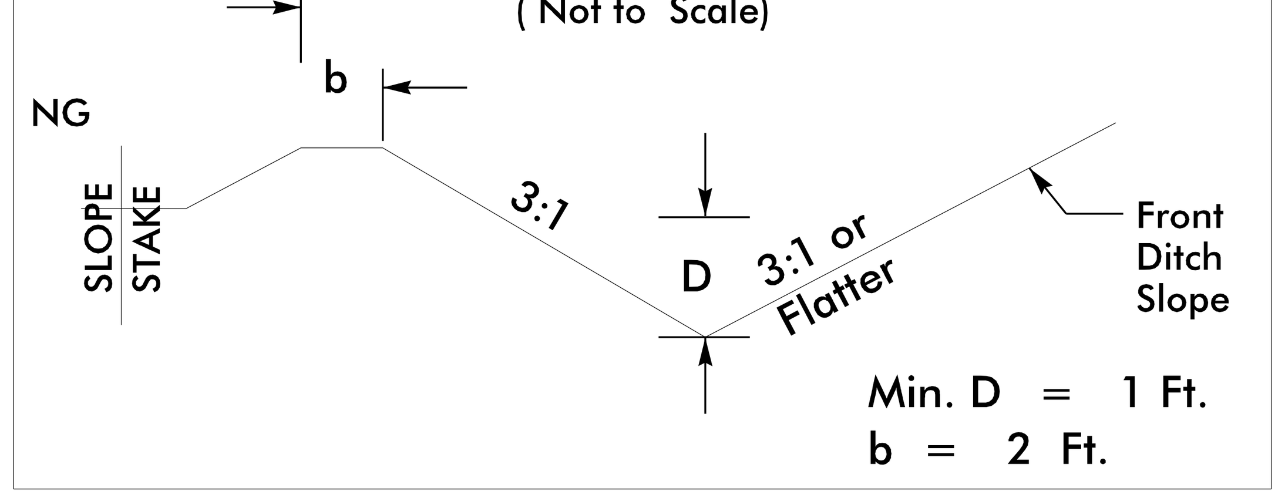


TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 AS FOLLOWS:
SR 1234 (LEAFLET CHURCH RD.) FROM NC 27 TO SR 1229 (MCDOUGAL RD.) (APPROX. 3.3 MILES)

DETAIL A

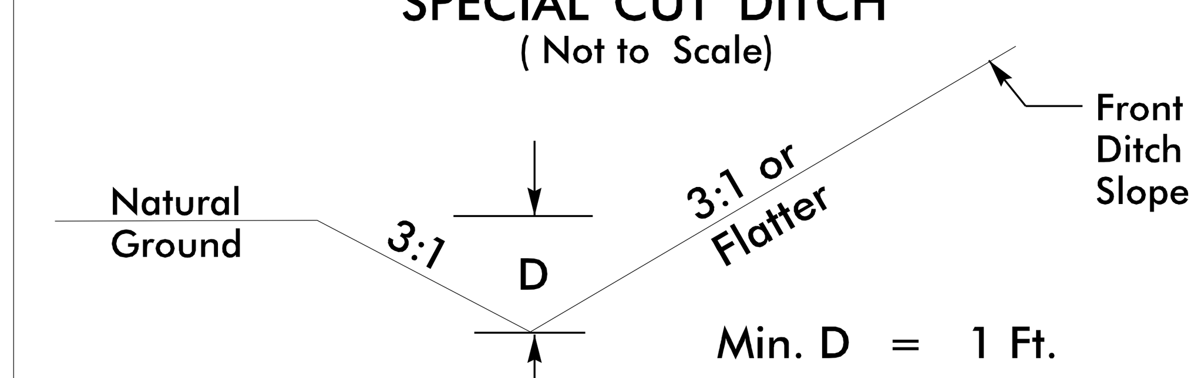
SPECIAL CUT DITCH W/EARTH BERM
(Not to Scale)



FROM -L- STA. 12+50 TO STA. 14+00 LT

DETAIL B

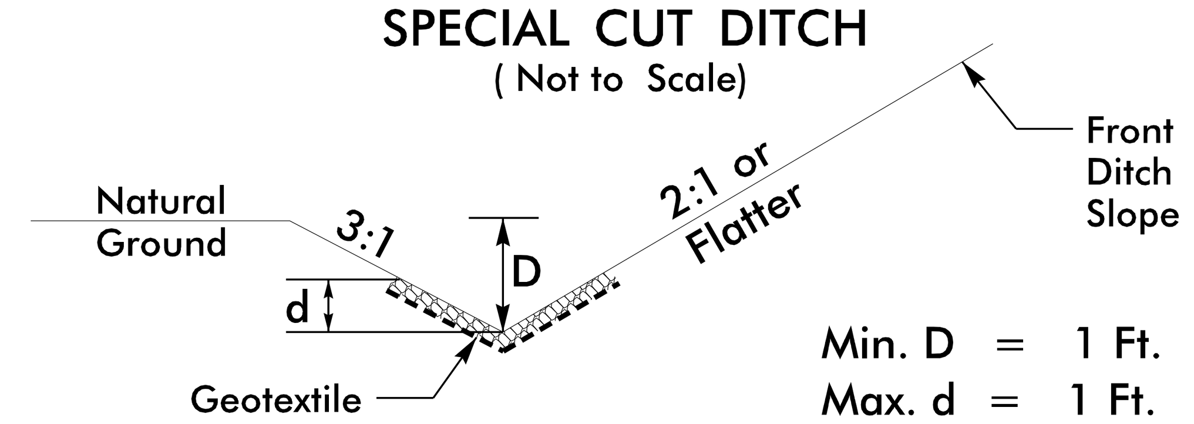
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 15+25 TO STA. 16+00 LT

DETAIL C

SPECIAL CUT DITCH
(Not to Scale)

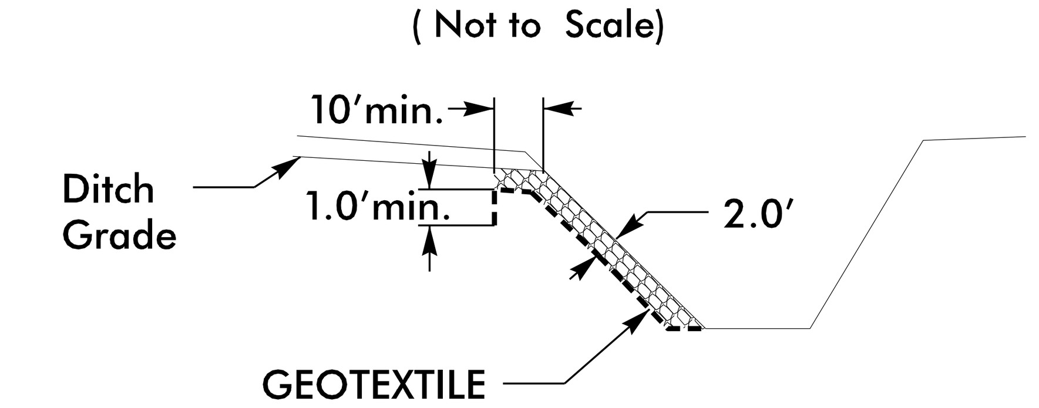


Type of Liner: 25 Tons Class B Rip-Rap,
50 SY Geotextile

FROM -L- STA. 16+00 TO STA. 16+90 LT

DETAIL D

RIP RAP AT EMBANKMENT
(Not to Scale)

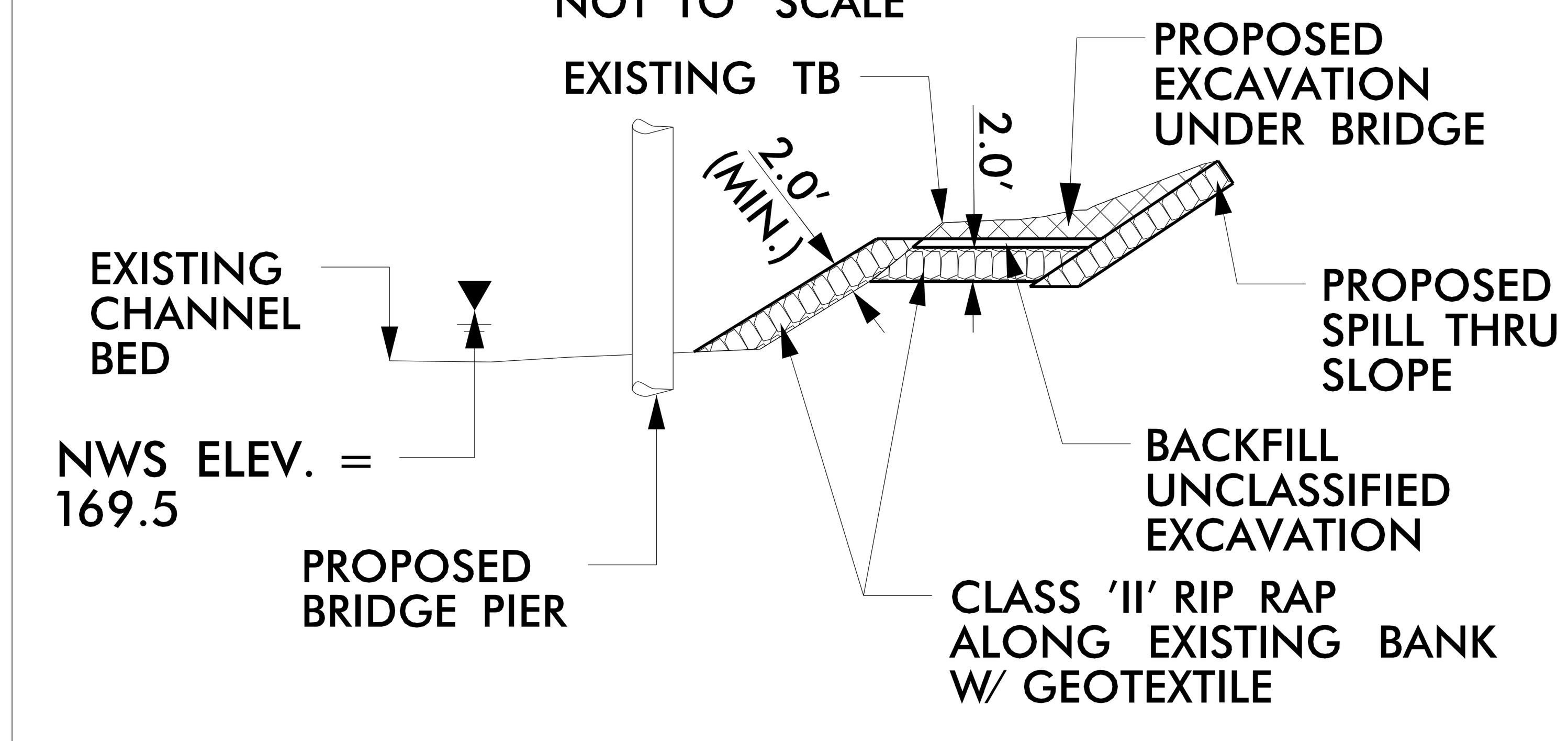


Type of Liner: 5 TONS CL II Rip-Rap
6 SY Geotextile

FROM -L- STA. 16+90 TO STA. 17+01 LT

DETAIL E

BANK STABILIZATION
NOT TO SCALE

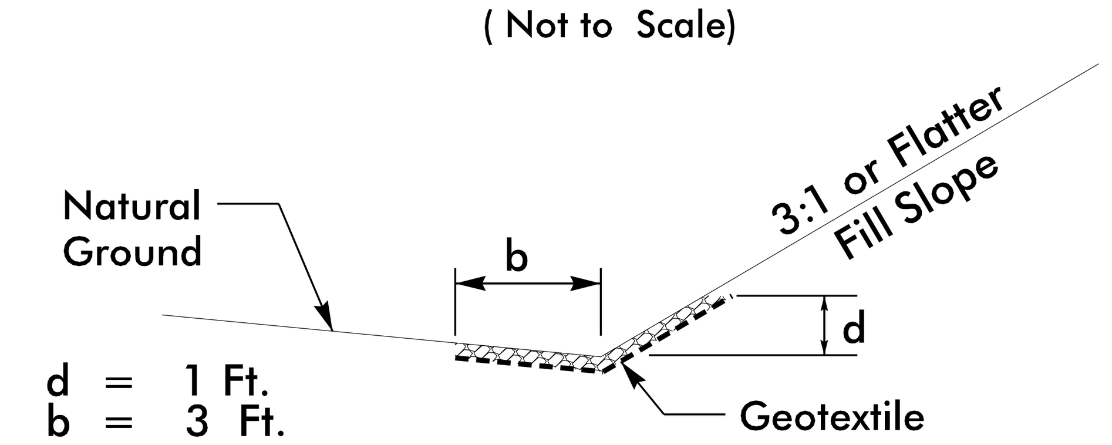


TYPE OF LINER: CLASS II RIP RAP WITH GEOTEXTILE
NOTE: SEE STRUCTURE PLANS FOR PAY ITEM QUANTITIES

FROM -L- STA. 16+87 TO 17+99
FROM -L- STA. 18+19 TO 19+50

DETAIL F

TOE PROTECTION
(Not to Scale)



Type of Liner: Class B Rip-Rap

FROM -L- STA. 19+40 TO STA. 20+50 LT 37 TONS CL B; 74 SY GEO
FROM -L- STA. 20+04 TO STA. 21+14 RT 37 TONS CL B; 74 SY GEO
FROM -L- STA. 21+19 TO STA. 21+78 LT 20 TONS; 40 SY GEO

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	2B-1

ROADWAY DESIGN ENGINEER

1/4/2023

NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

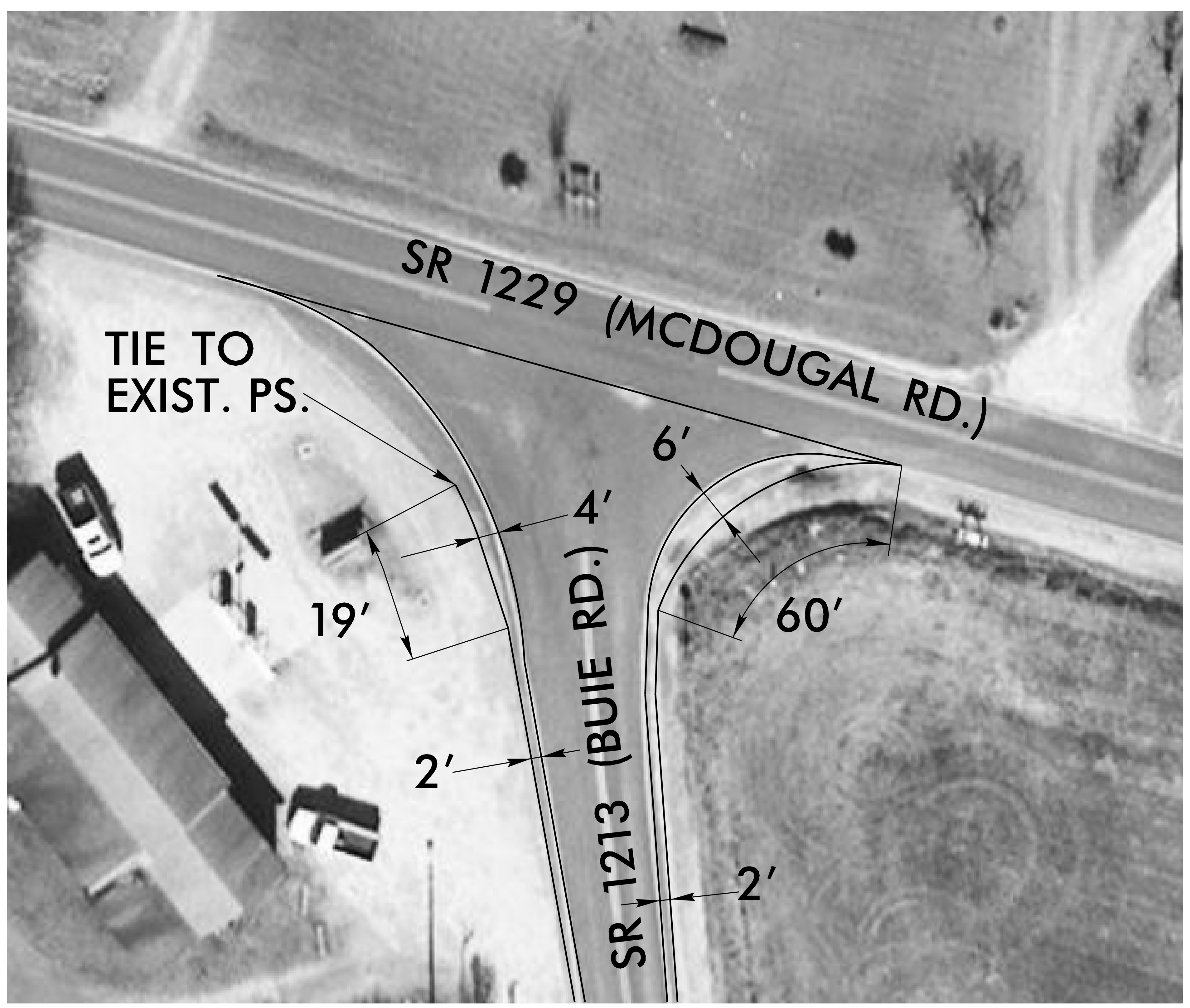
WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

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

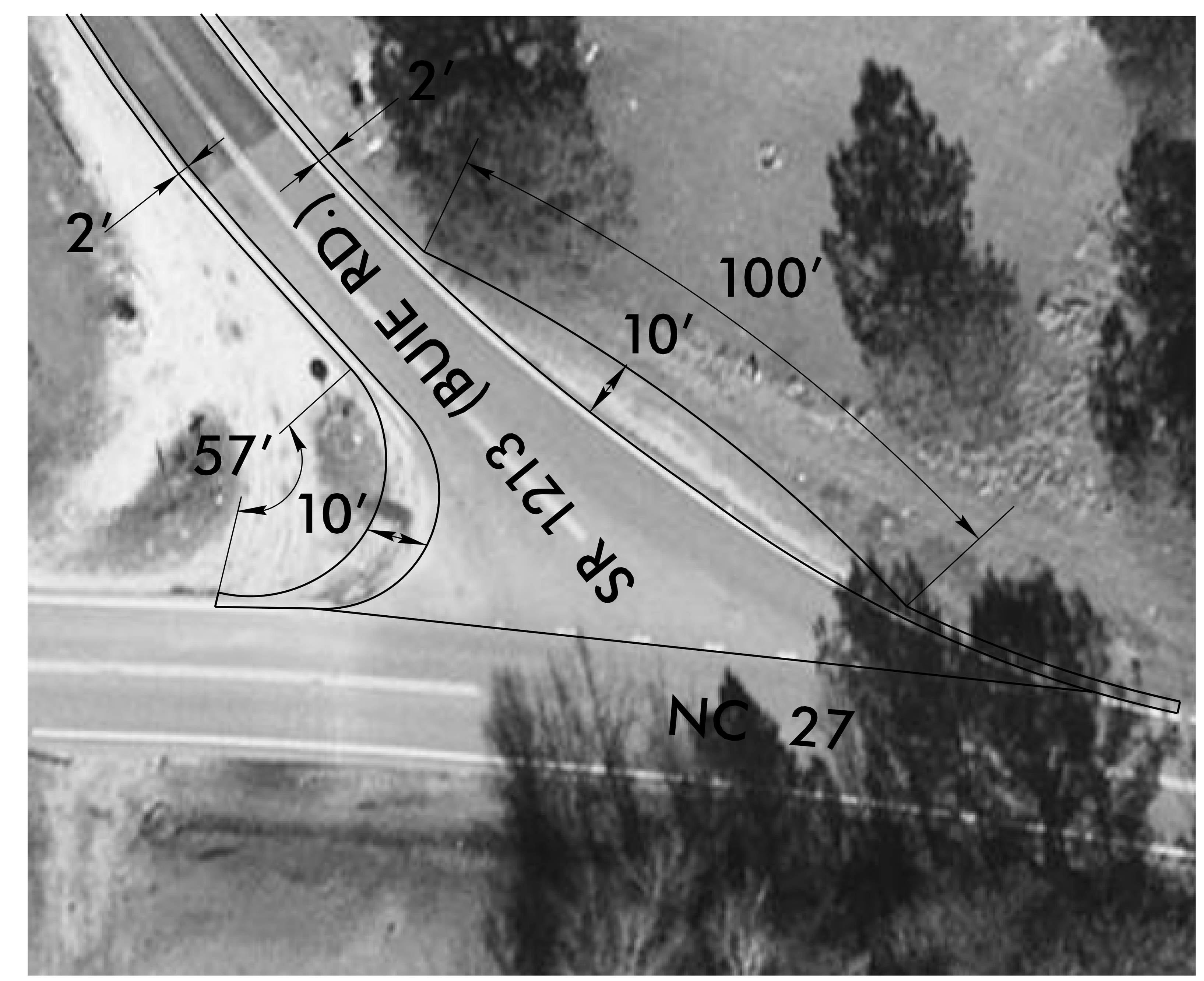
BRIDGE #420056

OFFSITE DETOUR IMPROVEMENTS

RADIUS IMPROVEMENTS
SEE ALSO TYPICAL SECTION NO. 4 SHEET 2A-2



RADIUS IMPROVEMENTS
SEE ALSO TYPICAL SECTION NO. 4 SHEET 2A-2

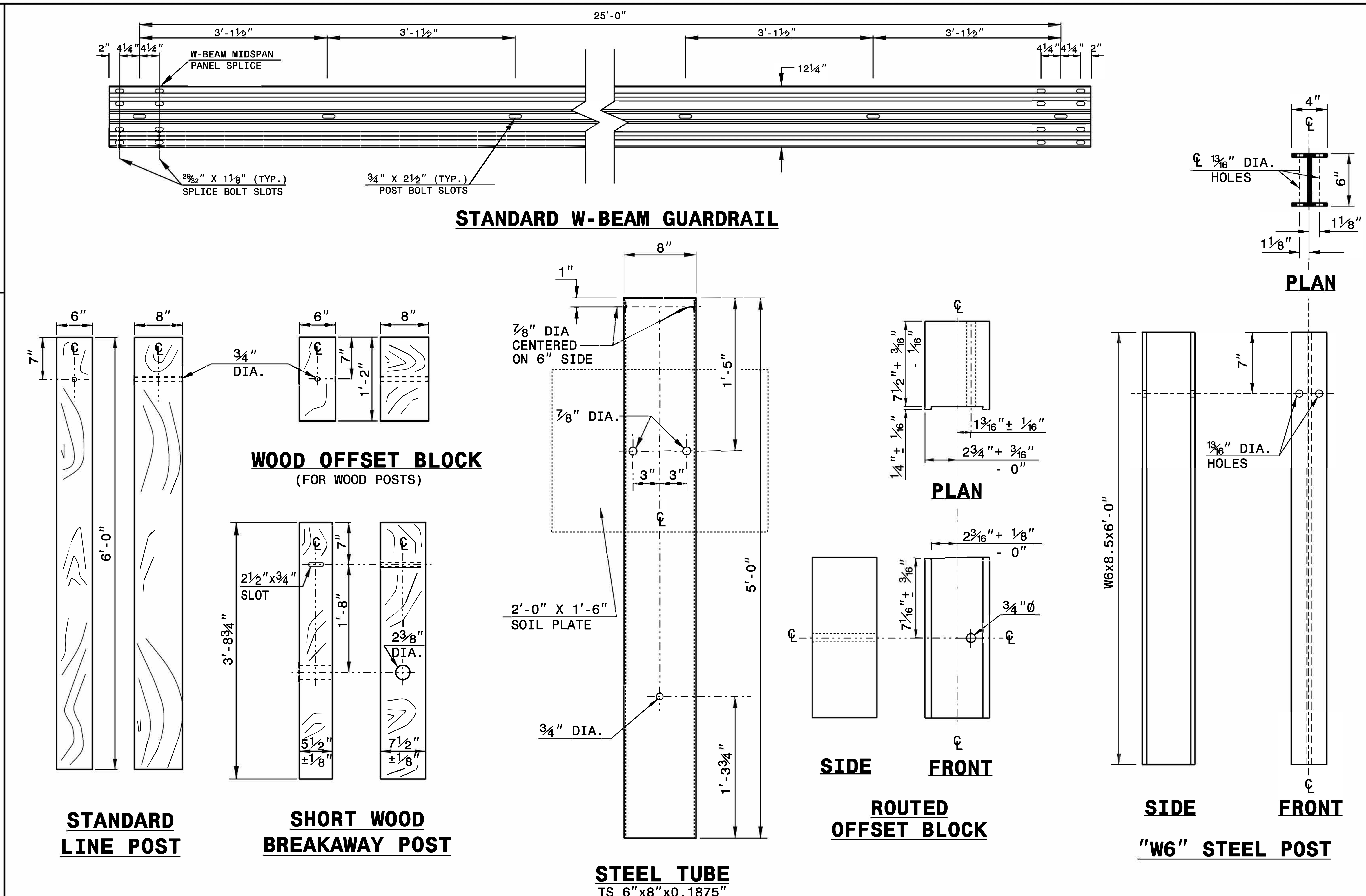


PROJECT REFERENCE NO.	SHEET NO.
BR-0082	2C-1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION



SYSTEM PARTS

SHEET 6 OF 8
862D02

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

1/4/2023
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144 NICOLE M. HACKLER
DocuSigned by: Nicole M. Hackler

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.:

12/06/07

COMPUTED BY: SLK & JAR DATE: 11/03/2022
CHECKED BY: GSP DATE: 11/03/2022

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BRIDGE #420056

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	3B-1

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WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
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Fax: 919 851 8107
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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV. (CY)	EMBANK. +% (CY)	BORROW (CY)	WASTE (CY)
–L– STA. 13+00.00	–L– STA. 17+02.50 (BEGIN BRIDGE)	36	945	909	
SUBTOTALS:		36	945	909	
–L– STA. 19+27.50 (END BRIDGE)	–L– STA. 23+00.00	13	2055	2042	
SUBTOTALS:		13	2055	2042	
PROJECT SUBTOTALS:		49	3000	2951	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				148	
GRAND TOTALS:		49	3000	3099	
SAY:		75		3150	

NOTE: Earthwork quantities are calculated by the Roadway Engineer. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

ASPHALT PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
–L–	16+52.50	17+02.50	CL	178.78
–L–	19+27.50	19+77.50	CL	178.78
			TOTAL:	357.56
			SAY:	360

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
–L– LT.	16+54.00	16+62.24	8.24'
–L– RT.	16+80.00	16+95.58	15.58'
–L– LT.	19+34.42	20+11.00	76.58'
–L– RT.	19+67.76	19+76.00	8.24'
		TOTAL:	108.64'
		SAY:	109'

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

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

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)												C.S. PIPE							R.C. PIPE (CLASS III)							R.C. PIPE (CLASS IV)							
SIZE								12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	12"	15"	18"	24"	36"	42"	48"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE		FROM	TO																	.064	.064	.064	.064	.079	.109	.109															
–L– 16+57	LT.	401		187.5	184.7																																				
–L– 16+57	LT.	401	402		184.7	176.9			36'							☒																									
–L– 16+83	RT.	403		187.6	184.9																																				
–L– 16+83	RT.	403	404		184.9	181.8			24'							☒																									
–L– 19+73	RT.	408		187.4	184.6																																				
–L– 19+73	RT.	408	409		184.6	175.8			40'							☒																									
–L– 19+49	LT.	405		187.5	184.8																																				
–L– 19+78	LT.	405	406		184.8	184.4																													60'						
–L– 20+08	LT.	406		187.1	184.4																																				
–L– 20+08	LT.	406	407		184.4	177.8			36'							☒																									
–L– 21+22	CL	410			175.4	173.6																								256'											
TOTAL									136'																					256'					60'						

STATION	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS.		QUANTITIES FOR DRAINAGE STRUCTURES	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT.		C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE				CONCRETE TRANSITIONAL SECTION		G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	T.B.D.I. STD. 840.35	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	M.H. FRAME & COVER STD. 840.54	T.B.J.B. STD. 840.34	ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
						R.C.P.	C.S.P.	PER EACH (0' THRU 5.0')	A 5.0' THRU 10.0'	B 10.0' AND ABOVE		E	F	G		CATCH BASIN	DROP INLET											
–L– 16+57								1												1	1							
–L– 16+57																								2@15"				
–L– 16+83								1												1	1							
–L– 16+83																								2@15"				
–L– 19+73								1												1	1							
–L– 19+73																								2@15"				
–L– 19+49								1												1	1							
–L– 19+78																												
–L– 20+08								1												1	1							
–L– 20+08																								2@15"				
–L– 21+22						3.1																						REMOVE 70' OF 30" RCP
TOTAL						3.1		5												5	5			8@15"				

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.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	TYPE B-77	GREU TL-3	AT-1		CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
–L–	15+49.00	16+86.50	LT.	137.50'				16+86.50	4'-0" TO 5'-11.7"	7'-0" TO 8'-11.7"		114.625'		1'-11.7"		1	1													
–L–	14+18.50	17+18.50	RT.	300.00'			17+18.50		4'-0" TO 9'-0"	7'-0" TO 12'-0"	277.125'		5'-0"			1	1													
–L–	19+11.50	22+11.50	LT.	300.00'			19+11.50		4'-0" TO 9'-0"	7'-0" TO 12'-0"	277.125'		5'-0"			1	1													
–L–	19+43.50	20+81.00	RT.	137.50'				19+43.50	4'-0" TO 5'-11.7"	7'-0" TO 8'-11.7"		114.625'		1'-11.7"		1	1													
			PROJECT SUBTOTAL	875.00'												4	4													
		LESS ANCHOR DEDUCTIONS		(–)291.50'																										
		GR PROJECT TOTAL		583.50'																										
		PERMANENT GR SAY		587.50'			ADDITIONAL GUARDRAIL POSTS = 5 EACH																							

GUARDRAIL ANCHOR DEDUCTIONS
TYPE B-77 = 4 @ 22.875' = 91.50'
GREU TL-3 = 4 @ 50' = 200'
TOTAL DEDUCTIONS = 291.50'

1/11/2023
\Proj\BR-0082_RDY_SUM_3B-1.dgn
USER:JRosado

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	4
R/W SHEET NO.	

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Liscense No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

ROADWAY DESIGN ENGINEER — 1/11/2023 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022999 GREG S. PURVIS — Greg S. Purvis

HYDRAULICS ENGINEER — 1/11/2023 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 31977 KEVIN B. ALFORD

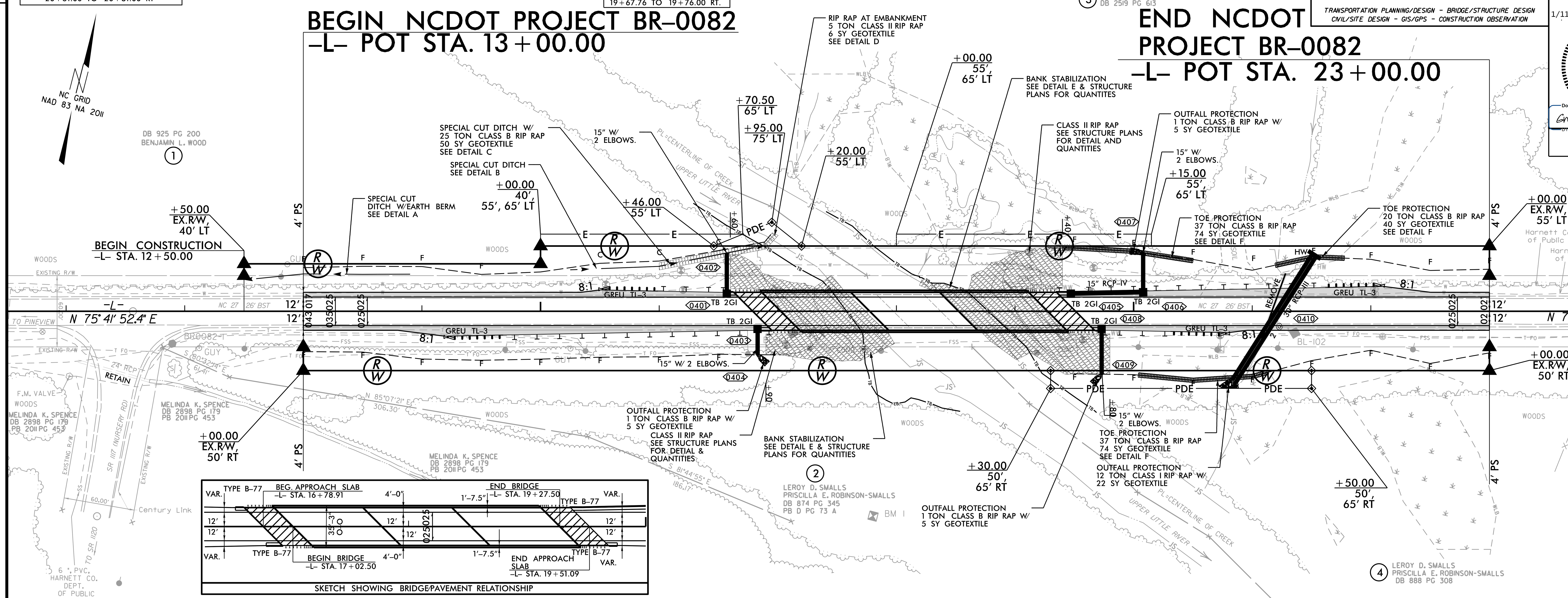
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTE: CONTRACTOR SHALL HAND DIG GUARDRAIL POSTS BETWEEN STATIONS
15+49.00 TO 16+63.00 LT
19+35.00 TO 20+25.00 LT
20+31.00 TO 20+81.00 RT

SHOULDER BERM GUTTER STATION
16+54.00 TO 16+62.24 LT.
16+80.00 TO 16+95.58 RT.
19+34.42 TO 20+11.00 LT.
19+67.76 TO 19+76.00 RT.

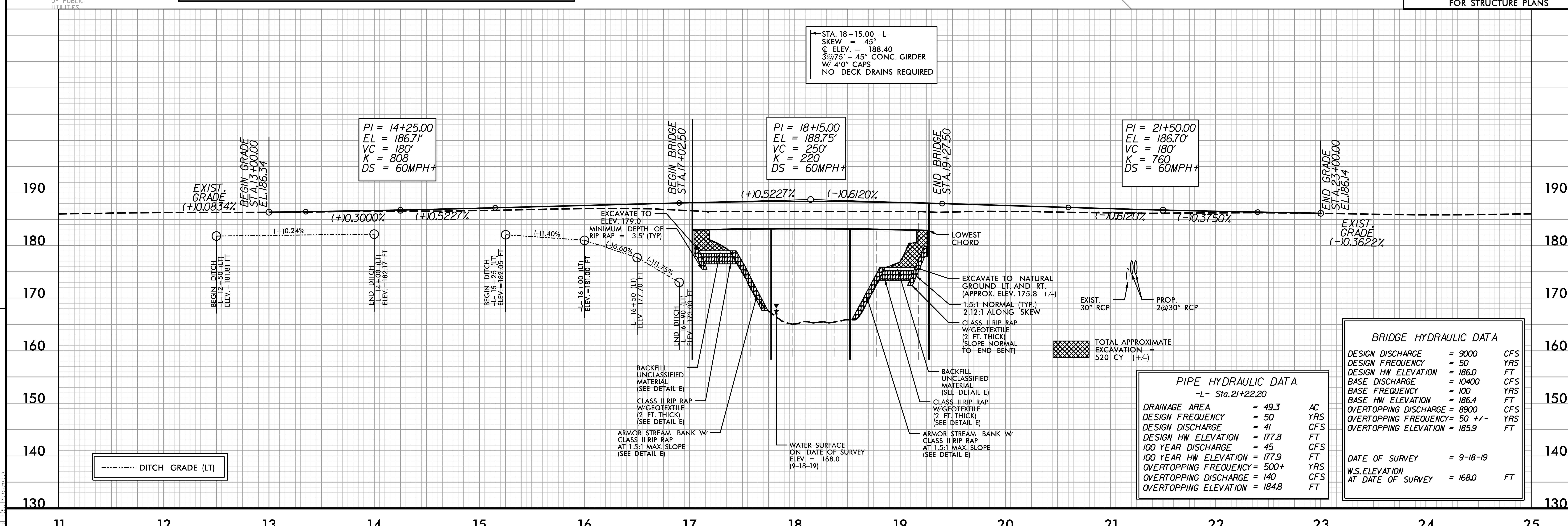
BEGIN NCDOT PROJECT BR-0082 -L- POT STA. 13+00.00

END NCDOT PROJECT BR-0082 -L- POT STA. 23+00.00


NC GRID NAD 83 NA 2011
BEGIN CONSTRUCTION -L- STA. 12+50.00
+50.00 EX.R/W, 40' LT
+00.00 EX.R/W, 50' RT
SPECIAL CUT DITCH W/EARTH BERM SEE DETAIL A
SPECIAL CUT DITCH SEE DETAIL B
SPECIAL CUT DITCH W/ 25 TON CLASS B RIP RAP 50 SY GEOTEXTILE SEE DETAIL C
RIP RAP AT EMBANKMENT 5 TON CLASS II RIP RAP 6 SY GEOTEXTILE SEE DETAIL D
BANK STABILIZATION SEE DETAIL E & STRUCTURE PLANS FOR QUANTITIES
CLASS II RIP RAP SEE STRUCTURE PLANS FOR DETAIL AND QUANTITIES
OUTFALL PROTECTION 1 TON CLASS B RIP RAP W/ 5 SY GEOTEXTILE
TOE PROTECTION 37 TON CLASS B RIP RAP 74 SY GEOTEXTILE SEE DETAIL F
TOE PROTECTION 20 TON CLASS B RIP RAP 40 SY GEOTEXTILE SEE DETAIL F
OUTFALL PROTECTION 12 TON CLASS I RIP RAP W/ 22 SY GEOTEXTILE
OUTFALL PROTECTION 1 TON CLASS B RIP RAP W/ 5 SY GEOTEXTILE
15" W/ 2 ELBOWS.
N 75° 41' 52.4" E
+00.00 EX.R/W, 55' LT
+00.00 EX.R/W, 50' RT
DB 925 PG 200 BENJAMIN L. WOOD
JENNIE P. STANCIL DB 2519 PG 613
LEROY D. SMALLS PRISCILLA E. ROBINSON-SMALLS DB 874 PG 345 PB D PG 73 A
LEROY D. SMALLS PRISCILLA E. ROBINSON-SMALLS DB 888 PG 308
MELINDA K. SPENCE DB 2898 PG 179 PB 2011 PG 453
MARC C. GETTLEMAN DARLENE R. GETTLEMAN DB 1233 PG 888
HARNETT COUNTY & SOUTHWEST WATER AND SEWER DIST DB 1278 PG 499 PB 88 PG 164
UPPER LITTLE RIVER
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
BEG. APPROACH SLAB -L- STA. 16+78.91
END BRIDGE -L- STA. 19+27.50
BEGIN BRIDGE -L- STA. 17+02.50
END APPROACH SLAB -L- STA. 19+51.09

SEE SHEET 2A-2 FOR DRAINAGE DETAILS

SEE SHEETS S-1 THRU S-36 FOR STRUCTURE PLANS


STA. 18+15.00 -L-
SKEW = 45°
℄ ELEV. = 188.40
3@75' - 45" CONC. GIRDER W/ 4'0" CAPS
NO DECK DRAINS REQUIRED
PI = 14+25.00 EL = 186.71' VC = 180' K = 808 DS = 60MPH+
PI = 18+15.00 EL = 188.75' VC = 250' K = 220 DS = 60MPH+
PI = 21+50.00 EL = 186.70' VC = 180' K = 760 DS = 60MPH+
BEGIN GRADE STA.13+00.00 EL.186.34
END GRADE STA.23+00.00 EL.186.14
BEGIN BRIDGE STA.17+02.50
END BRIDGE STA.19+27.50
EXIST. GRADE (+)0.0834%
EXIST. GRADE (-)0.3622%
LOWEST CHORD
EXCAVATE TO ELEV. 179.0 MINIMUM DEPTH OF RIP RAP = 3.5' (TYP)
EXCAVATE TO NATURAL GROUND LT. AND RT. (APPROX. ELEV. 175.8 +/-)
1.5:1 NORMAL (TYP.) 2.12:1 ALONG SKEW
WATER SURFACE ON DATE OF SURVEY ELEV. = 168.0 (9-18-19)
TOTAL APPROXIMATE EXCAVATION = 520 CY (+/-)
EXIST. 30" RCP
PROP. 2@30" RCP
DITCH GRADE (LT)

PIPE HYDRAULIC DATA
-L- Sta.21+22.20

DRAINAGE AREA	= 49.3	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 41	CFS
DESIGN HW ELEVATION	= 177.8	FT
100 YEAR DISCHARGE	= 45	CFS
100 YEAR HW ELEVATION	= 177.9	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 140	CFS
OVERTOPPING ELEVATION	= 184.8	FT

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 9000	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 186.0	FT
BASE DISCHARGE	= 10400	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 186.4	FT
OVERTOPPING DISCHARGE	= 8900	CFS
OVERTOPPING FREQUENCY	= 50 +/-	YRS
OVERTOPPING ELEVATION	= 185.9	FT
DATE OF SURVEY	= 9-18-19	
W.S.ELEVATION AT DATE OF SURVEY	= 168.0	FT

REVISIONS

12/10/21 - ROW REVISION NO. 1 - DRIVEWAY FOR PARCEL 4 ELIMINATED

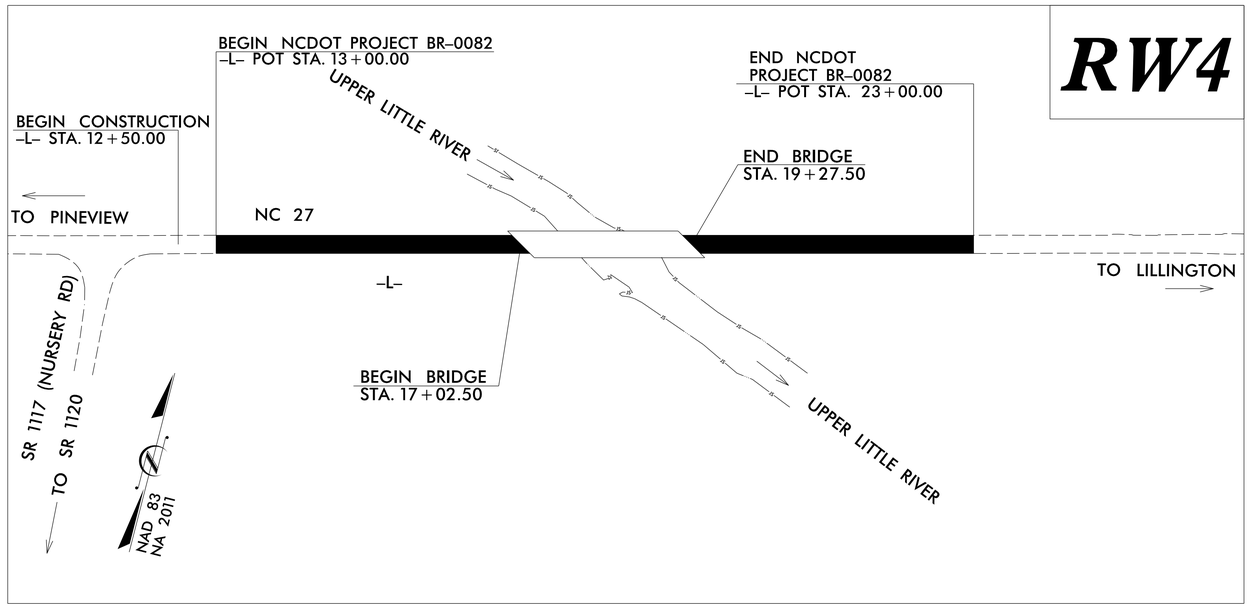
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0082	RW01	07

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

HARNETT COUNTY

TIP PROJECT: BR-0082



GRAPHIC SCALE

50 25 0 50 100

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCDOT FOR MONUMENT "PANEL 5"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 578597.7970(ft) EASTING: 2013807.8435(ft)
ELEVATION: 185.103(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.999870020 (1/X=1.00012999600)
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"PANEL 5" TO -L- STATION 10+00.00 IS
S 86° 43' 42.19" W 154.47(ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared In the Office of:

NCDOT
LOCATION AND SURVEYS
DIVISION 6 FIELD OFFICE
4834 US HWY 301 S
HOPE MILLS, NC 28348

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	*LETTING DATE:*
03/02/2020	*02/15/2023*

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4169 LAND SURVEYOR KEITH E. HONEYCUTT

DocuSigned by: Keith E. Honeycutt 10/26/2022

SIGNATURE: *Date:*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

09/08/99

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wiwilson At DIV06-31442

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	RW02C-1

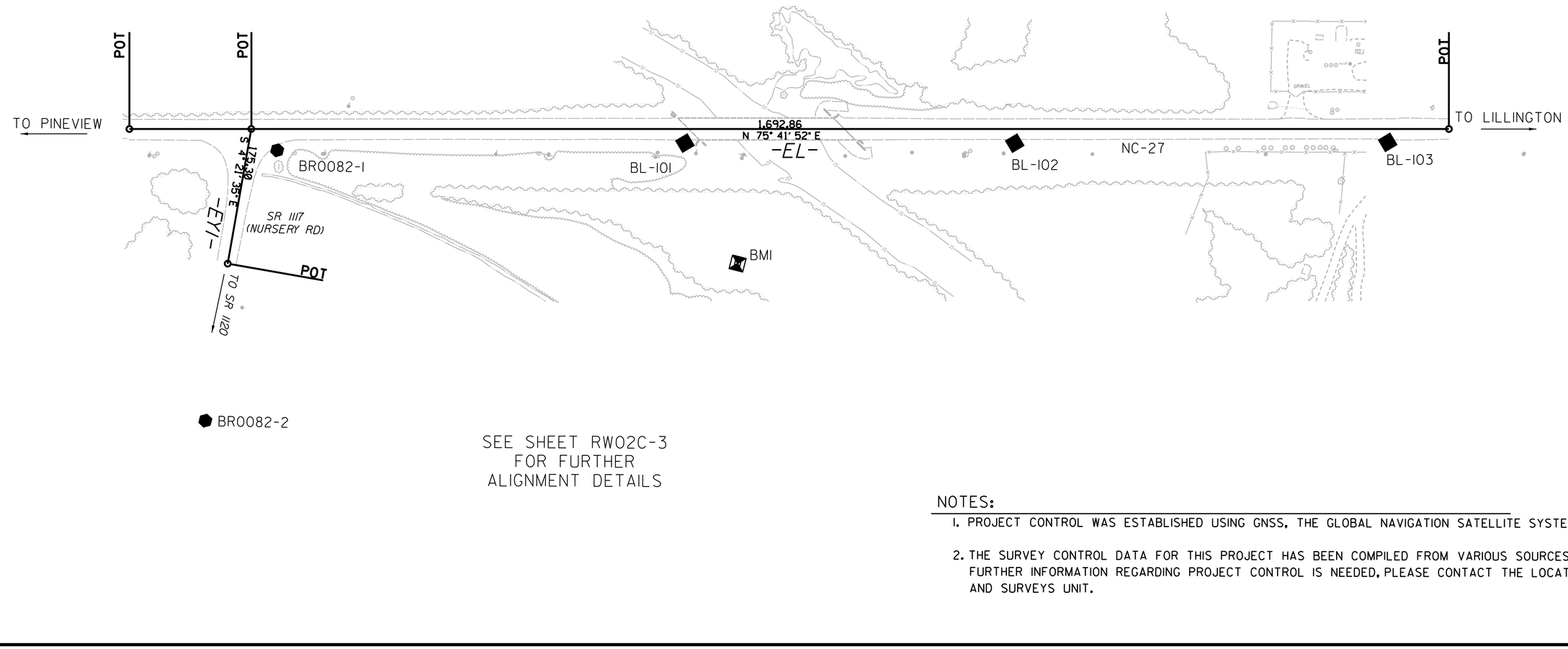
Location and Surveys

WETHERILL ENGINEERING

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

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - SURVEYING - CONSTRUCTION OBSERVATION

NC GRID
NAD 83 NA 2011



SEE SHEET RW02C-3
FOR FURTHER
ALIGNMENT DETAILS

NOTES:

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

6/2/99

REVISIONS

10-JUN-2019 13:44
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BTurner AT RAL-WS083

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	RW02C-2
Location and Surveys	

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

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - SURVEYING - CONSTRUCTION OBSERVATION

PRIMARY CONTROL

POINT	DESC.	NORTH	EAST	ELEVATION
1	BR0082-1	578609.3700	2013844.0800	184.64
2	BR0082-2	578250.5200	2013840.4300	183.00

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	BR0082-1	578609.3700	2013844.0800	184.64
101	BL-101	578747.4590	2014348.6300	185.91
102	BL-102	578851.9110	2014758.6880	184.72
103	BL-103	578971.1520	2015222.0570	184.79

BY

POINT	DESC.	NORTH	EAST	ELEVATION
1	BR0082-1	578609.3700	2013844.0800	184.64
2	BR0082-2	578250.5200	2013840.4300	183.00

****
BM1 ELEVATION = 182.48
N 578615 E 2014452
BL STATION 10+91.00 154 RIGHT
BENCHTIE NAIL SET IN 24" HARDWOOD
****
****
BM2 ELEVATION = 186.05
N 579216 E 2015353
BL STATION 19+25.00
N 28°12'33.3" E DIST 277.98
BENCHTIE NAIL SET IN 20" PINE
****

NOTES:

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

REVISIONS

6/2/99

10-JUN-2019 13:17
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BTurner AT RAL-WS083

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	RW02C-3

Location and Surveys

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

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - SURVEYING - CONSTRUCTION OBSERVATION

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

EL

POINT	N	E	BEARING	DIST
POT	578588.981	2013653.624		
LINE			N 75°41'52.4" E	1692.86
POT	579007.177	2015294.018		

EY1

POINT	N	E	BEARING	DIST
POT	578627.607	2013805.135		
LINE			S 04°21'35.0" E	175.30
POT	578452.814	2013818.461		

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

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REVISIONS

6/2/99

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BTurner AT RAL-WS083

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	RW02D-1

Location and Surveys

NCDOT
LOCATION AND SURVEYS
DIVISION 6 FIELD OFFICE
4834 US HWY 301 S
HOPE MILLS, NC 28348

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL LAND SURVEYOR SEAL L-4169 KEITH E. HONEYCUTT

10/26/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

This 25th day of October, 2022.

Professional Land Surveyor L-4169

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	578588.9814	2013653.6239
POT	26+92.86	579007.1770	2015294.0177

DET

TYPE	STATION	NORTH	EAST
PC	10+00.00	578654.5649	2013910.8787
PRC	11+90.58	578725.5576	2014087.1386
PT	13+81.17	578796.5502	2014263.3984
PC	16+31.17	578858.3089	2014505.6501
PRC	18+21.75	578880.3667	2014694.3852
PT	20+12.33	578902.4244	2014883.1204

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

REVISIONS

6/2/99

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wlwilson AT DIV06-314142

6/2/99

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	RW03E-1

Location and Surveys

NCDOT
LOCATION AND SURVEYS
DIVISION 6 FIELD OFFICE
4834 US HWY 301 S
HOPE MILLS, NC 28348

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL LAND SURVEYOR
SEAL
L-4169
KEITH E. HONEYCUTT

DocuSigned by:
Keith E. Honeycutt

10/26/2022

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+50.00	-30.00	578679.8103	2013888.4645
L	12+50.00	-40.00	578689.5004	2013885.9941
L	13+00.00	50.00	578614.6415	2013956.6776
L	13+00.00	30.00	578634.0216	2013951.7369
L	15+00.00	-40.00	578751.2591	2014128.2458
L	15+00.00	-55.00	578765.7942	2014124.5403
L	23+00.00	50.00	578861.6763	2014925.6842
L	23+00.00	30.00	578881.0564	2014920.7435
L	23+00.00	-55.00	578963.4220	2014899.7456
L	23+00.00	-30.00	578939.1968	2014905.9214

I, Keith E. Honeycutt, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from October 18, 2022 to October 19, 2022, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 25th day of October, 2022.

DocuSigned by:
Keith E. Honeycutt
Professional Land Surveyor L-4169

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L	16+46.00	-55.00	578801.8612	2014266.0152	
L	16+95.00	-75.00	578833.3461	2014308.5559	UNABLE TO SET. LOCATION FELL IN THE CREEK
L	17+20.00	-55.00	578820.1418	2014337.7217	UNABLE TO SET. LOCATION FELL IN THE CREEK
L	19+30.00	65.00	578755.7383	2014570.8573	UNABLE TO SET. LOCATION FELL IN THE CREEK
L	19+30.00	50.00	578770.2734	2014567.1518	
L	21+50.00	65.00	578810.0860	2014784.0387	
L	21+50.00	50.00	578824.6211	2014780.3332	

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED OCTOBER 18, 2022 TO OCTOBER 19, 2022 .

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klwilson AT DIV06-31412

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	RW04

Location and Surveys

NCDOT
LOCATION AND SURVEYS
DIVISION 6 FIELD OFFICE
4834 US HWY 301 S
HOPE MILLS, NC 28348

PROJECT SURVEYOR

SEAL L-4169 NORTH CAROLINA PROFESSIONAL LAND SURVEYOR KEITH E. HONEYCUTT

10/26/2022

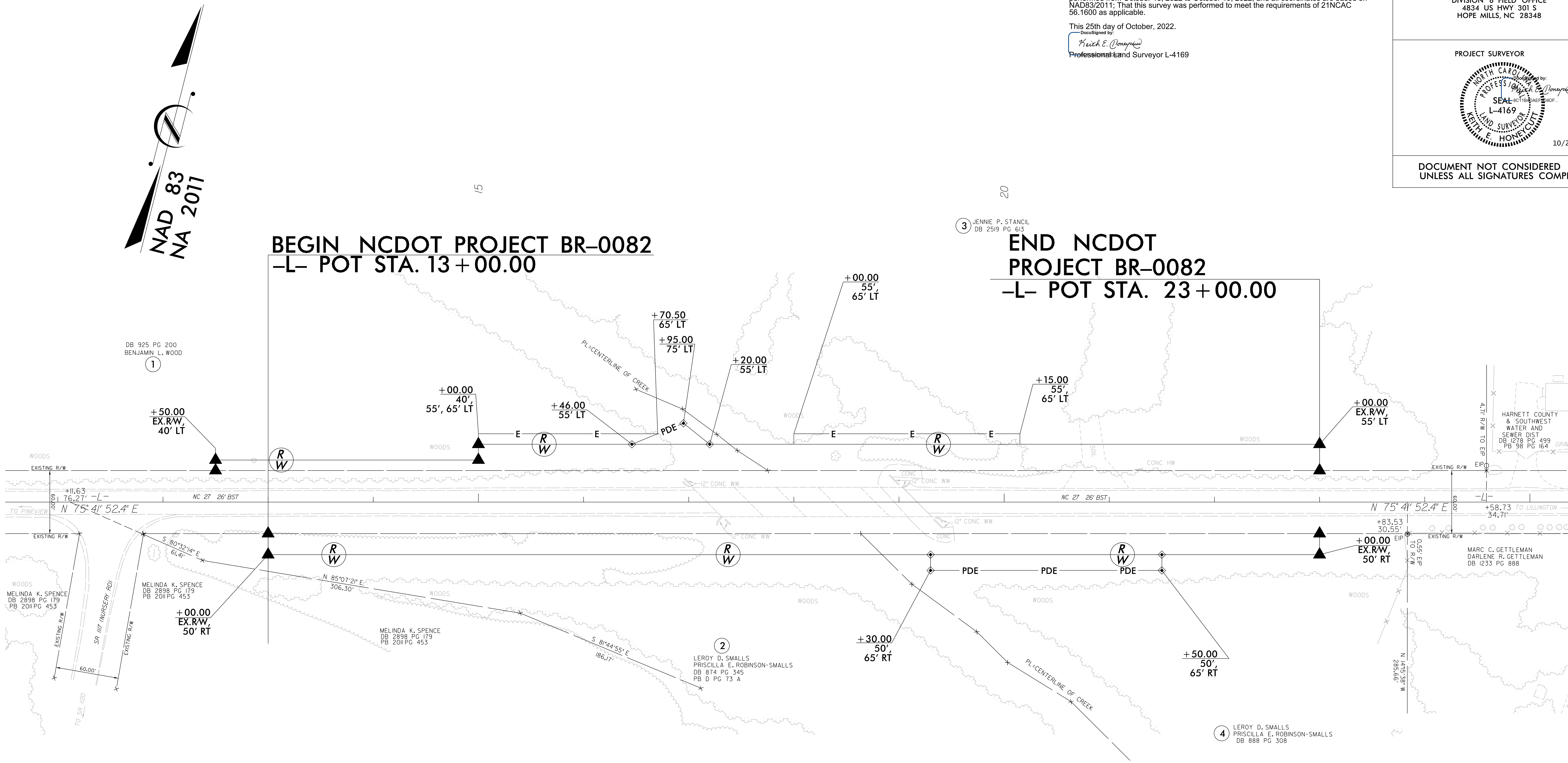
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Keith E. Honeycutt, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from October 18, 2022 to October 19, 2022, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 25th day of October, 2022.

DocuSigned by:
Keith E. Honeycutt
Professional Land Surveyor L-4169

REVISIONS



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6/2/99

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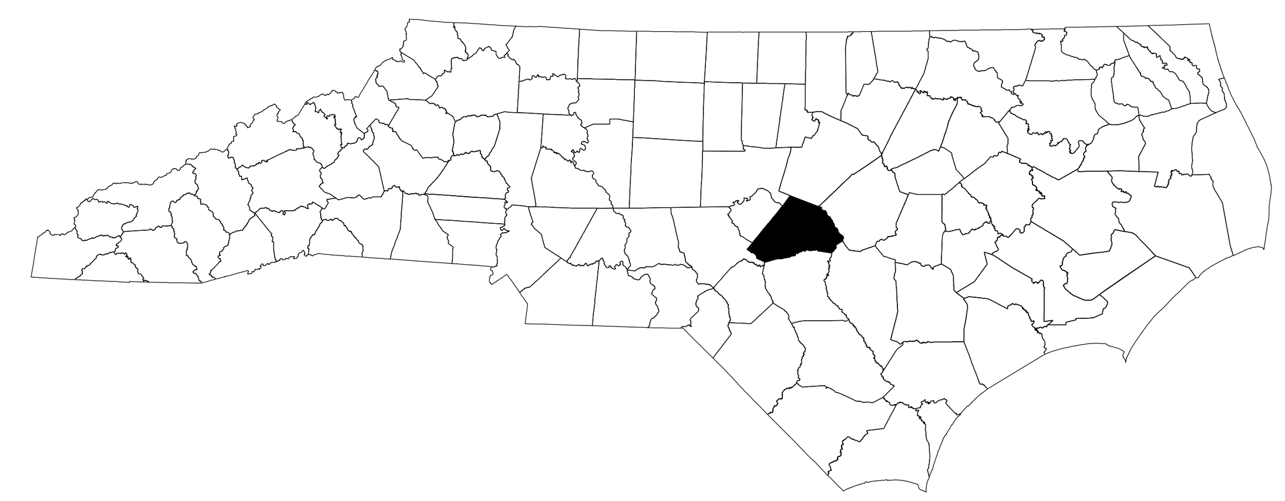
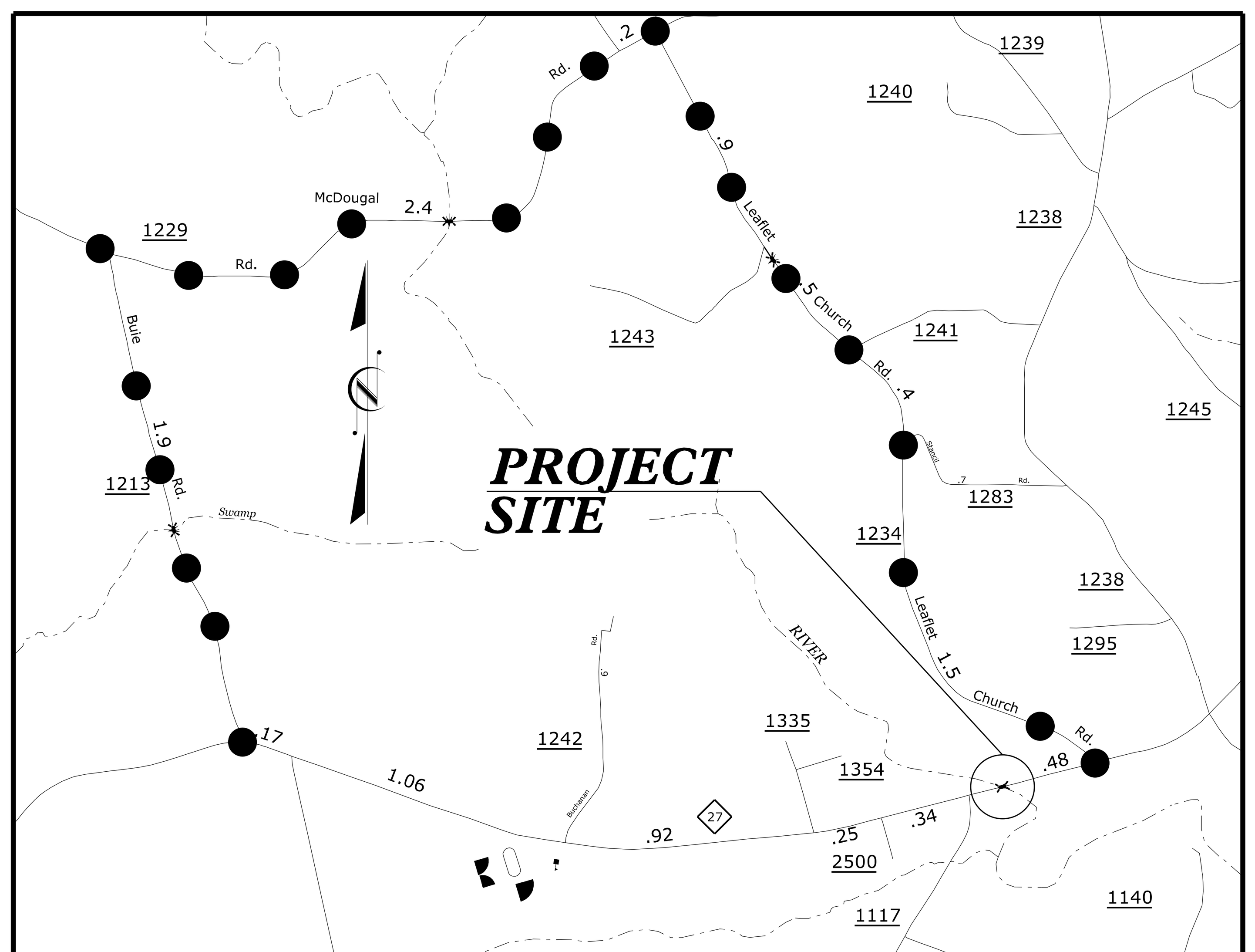
klwilson AT DIV06-314142

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

HARNETT COUNTY



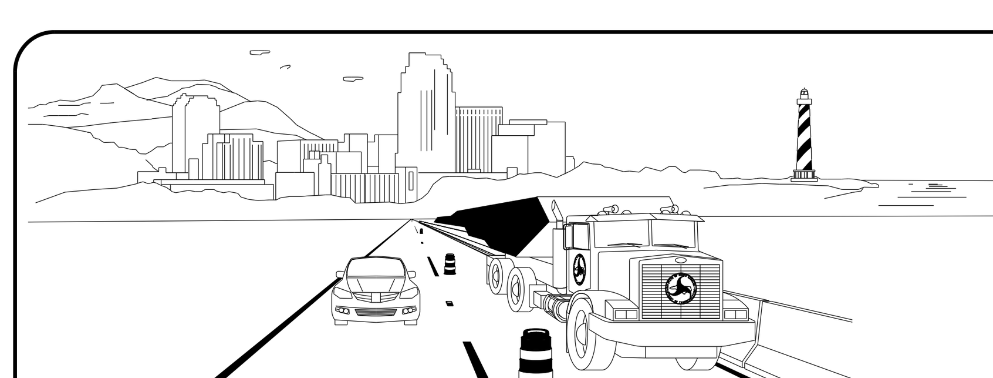


VICINITY MAP

OFF-SITE DETOUR

LOCATION: STRUCTURE NO. 420056 OVER UPPER LITTLE RIVER ON NC 27

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE



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

PLANS PREPARED BY:

GREG PURVIS, P.E.

D. ALLEN HAYES, E.I.

NCDOT CONTACTS:

DON PARKER, P.E.
PROJECT ENGINEER

SPENCER JENNINGS
PROJECT DESIGN ENGINEER

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

SHEET NO. TMP-01

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-01	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-01A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-01B	SIGN AND DEVICE LEGEND
TMP-02	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES) AND PHASING
TMP-03	OFFSITE DETOUR

STRUCTURE #420056

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: Greg S. Purvis

DATE: 9/28/2022

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS

TIP PROJECT: BR-0082

BRIDGE #420056	PROJ. REFERENCE NO.	SHEET NO.
	BR-0082	TMP-01A

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 WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1180.01	SKINNY - DRUMS

LEGEND

GENERAL

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

SIGNALS

- EXISTING
- PROPOSED
- TEMP — TEMPORARY
- PORT — PORTABLE

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

APPROVED: DocuSigned by: Greg S. Purvis D1F0F7C256E3403...

DATE: 9/28/2022

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

ROADWAY STANDARD DRAWINGS & LEGEND

PROJ. REFERENCE NO.	SHEET NO.
BR-0082	TMP-01B

R11-2 48" X 30"
ROAD CLOSED
TYPE III BARRICADE
A

R11-2 48" X 30"
ROAD CLOSED
W1-6R 48" X 24"
TYPE III BARRICADE
B

R11-3 60" X 30"
ROAD CLOSED
2 MILES AHEAD
LOCAL TRAFFIC ONLY
DETOUR
M4-10L 48" X 18"
TYPE III BARRICADE
C

R11-4 60" X 30"
ROAD CLOSED
TO
THRU TRAFFIC
DETOUR
M4-10R 48" X 18"
TYPE III BARRICADE
D

ROAD CLOSED 500 FT
W20-3
48" X 48"
A

ROAD CLOSED 1000 FT
W20-3
48" X 48"
B

ROAD CLOSED AHEAD
W20-3
48" X 48"
NEXT LEFT
SP-4L
42" X 12"
C

ROAD CLOSED AHEAD
W20-3
48" X 48"
D

ROAD CLOSED AHEAD
W20-3
48" X 48"
NEXT RIGHT
SP-4R
42" X 12"
E

DETOUR AHEAD
W20-2
48" X 48"
F

W3-1A
48" X 48"
G

STOP
R1-1
H

DETOUR
M4-8
24" X 12"
27
M1-5
M6-1 L
21" X 15"
I

DETOUR
M4-8
24" X 12"
27
M1-5
M6-3
21" X 15"
J

DETOUR
M4-8
24" X 12"
27
M1-5
M6-1
21" X 15"
K

END DETOUR
M4-8 A
24" X 18"
L

☒ BARRICADES
-WITH MOUNTED SIGNING

☒ SIGNING
-STATIONARY MOUNTED

STRUCTURE #420056

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: DocuSigned by: Greg S. Purvis D1FDF7C250E3403...
DATE: 9/28/2022
NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SIGN AND DEVICE LEGEND

PROJ. REFERENCE NO.	SHEET NO.
BR-0082	TMP-02

GENERAL NOTES

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

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 (SHOULDER CLOSURES ON DIVIDED FACILITIES) UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

F) DO NOT INSTALL MORE THAN ONE LANE CLOSURE IN ANY ONE DIRECTION ON SR 1213, SR 1229, OR SR 1234.

PAVEMENT EDGE DROP OFF REQUIREMENTS

G) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

H) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500 FT/MI IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

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

AND

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

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

AND

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

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

N) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 500 FT/MI IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES

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

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

Q) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 500 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

PHASING

STEP 1) USING ROADWAY STANDARD DRAWING (RSD) 1101.01, SHEET 3 OF 3, INSTALL ADVANCE WARNING SIGNING ON ONE OF THE FOLLOWING ROADS TO BE CONSTRUCTED:
- SR 1213 (BUIE RD)
- SR 1229 (McDOUGAL RD)
- SR 1234 (LEAFLET CHURCH RD)

WHEN READY TO BEGIN CONSTRUCTION, UNCOVER THE SIGNING.

STEP 2) USING RSD 1101.02, SHEET 1 OF 14, COMPLETE THE FOLLOWING INSTRUCTIONS FOR THE ROADWAY ON WHICH THE ADVANCE WARNING SIGNING WAS PLACED IN STEP 1 [REFER TO THE ROADWAY PLANS]:
- RESURFACE AND WIDEN SR 1213 AND INSTALL FINAL PAVEMENT MARKINGS AND MARKERS
- WIDEN SR 1234 AND INSTALL FINAL PAVEMENT MARKINGS AND MARKERS
- INSTALL FINAL PAVEMENT MARKINGS AND MARKERS ON SR 1229

UPON COMPLETION OF THE OF THE WORK PERFORMED ON AN SR ROUTE, REMOVE THE ADVANCE WARNING SIGNING AND REPEAT STEPS 1 AND 2 FOR THE NEXT ROUTE. WHEN WORK ON ALL ROADS LISTED IN STEP 1 HAS BEEN COMPLETED, REMOVE ALL ADVANCE WARNING SIGNING AND PROCEED TO STEP 3.

STEP 3) INSTALL ALL OFFSITE DETOUR SIGNING AND ROAD CLOSURE SIGNING. COVER SIGNS USING AN APPROVED METHOD PER THE DISCRETION OF THE ENGINEER. INSTALL SIGN ASSEMBLY "J" EVERY 0.9 MILES, STARTING FROM THE BEGINNING OF EACH DIRECTION OF EACH LEG OF THE OFF-SITE DETOUR. [SEE SHEETS TMP-01B & 03]

STEP 4) WHEN READY TO CLOSE THE ROADWAY, UNCOVER THE DETOUR AND ROAD CLOSURE SIGNING, CLOSE -L- (NC 27), AND DETOUR TRAFFIC. [SEE SHEETS TMP-01B & 03]

STEP 5) AWAY FROM TRAFFIC, REMOVE EXISTING BRIDGE, AND CONSTRUCT PROPOSED -L- STRUCTURE AND APPROACHES FROM THE BEGIN PROJECT LIMITS TO THE END PROJECT LIMITS UP TO AND INCLUDING THE FINAL LIFT OF SURFACE COURSE, FINAL PAVEMENT MARKINGS, AND FINAL PAVEMENT MARKERS.
[SEE ROADWAY PLANS AND FINAL PAVEMENT MARKING PLAN]

STEP 6) OPEN -L- TO THE FINAL TRAFFIC PATTERN, AND REMOVE ALL ROAD CLOSURE SIGNING, OFFSITE DETOUR SIGNING, TEMPORARY TRANSPORATION MANAGEMENT DEVICES.
[SEE SHEET TMP-03 FOR SIGN LOCATIONS]

MANAGEMENT STRATEGIES

THE FOLLOWING LISTED WORK ZONE STRATEGIES ARE RECOMMENDED FOR INCLUSION WITHIN THIS TRANSPORTATION MANAGEMENT PLAN (TMP).

RECOMMENDED STRATEGIES:

TRAFFIC MANAGEMENT STRATEGIES:
ONE-LANE, TWO WAY OPERATION (FLAGGING)
OFF-SITE DETOURS

CORRIDOR/NETWORK MANAGEMENT STRATEGIES:
STREET/INTERSECTION IMPROVEMENTS

LOCAL NOTES

1) IN ORDER TO HAVE TIME TO ADEQUATELY REROUTE SCHOOL BUSSES, HARNETT COUNTY SCHOOLS WILL BE CONTACTED AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE. CONTACT PERSON IS URIAH PARKER- DIRECTOR OF TRANSPORTATION AT (910)-893-3270.

2) HARNETT COUNTY EMERGENCY SERVICES WILL BE CONTACTED AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE TO MAKE THE NECESSARY TEMPORARY REASSIGNMENTS TO PRIMARY RESPONSE UNITS. CONTACT PERSON IS ALEX BELANOVICH - EMERGENCY SERVICES DIRECTOR AT (910)-893-0720.

STRUCTURE #420056

ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: DocuSigned by: Greg S. Purvis D1F0F7C256E3403...
DATE: 9/28/2022

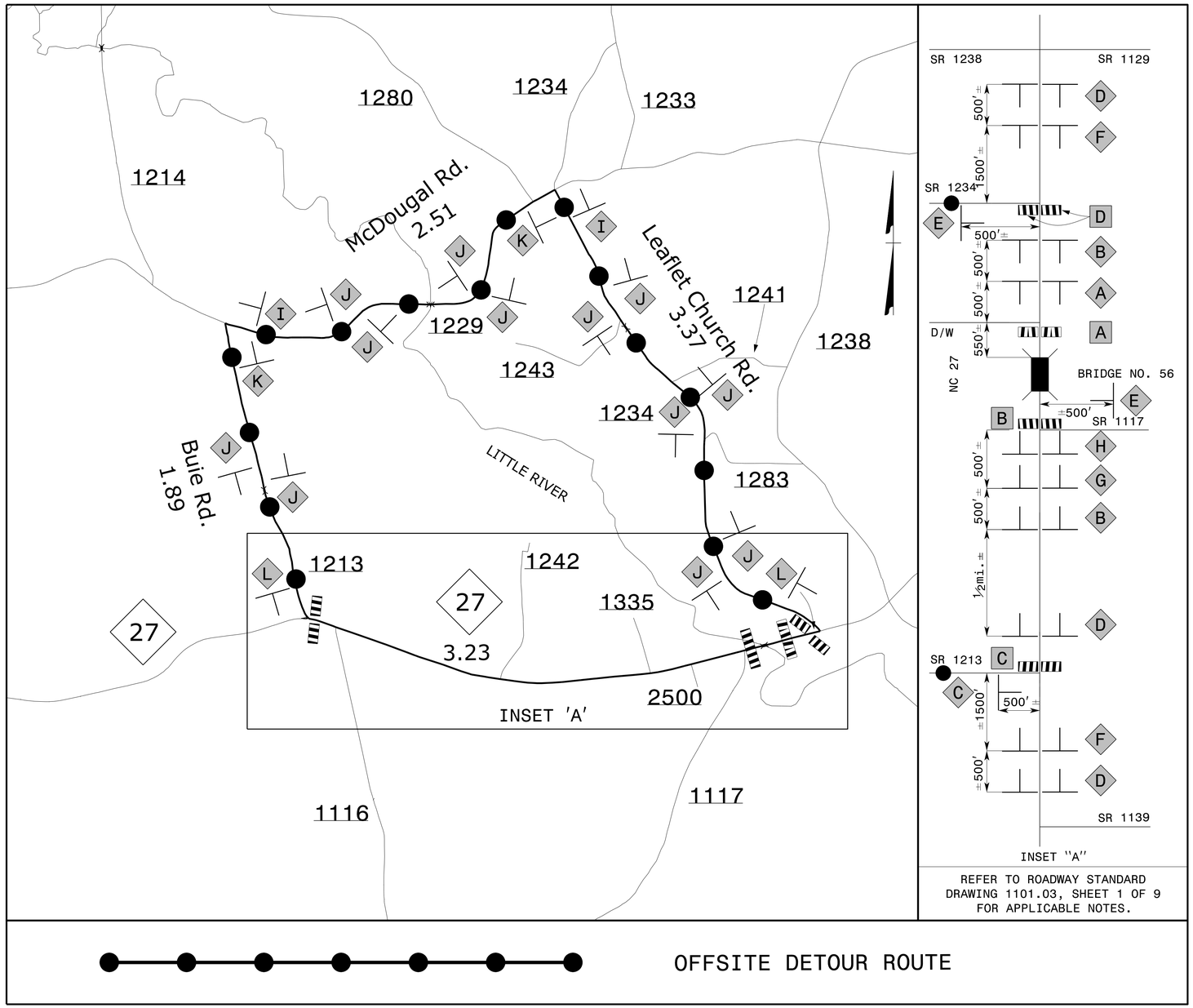
NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

PROJECT NOTES AND PHASING

PROJ. REFERENCE NO.	SHEET NO.
BR-0082	TMP-03



REFER TO ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9 FOR APPLICABLE NOTES.

NOTE: REFER TO SHEET TMP-01B FOR SIGN AND DEVICE LEGEND.

STRUCTURE #420056

ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
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DATE: 9/28/2022

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS

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

OFFSITE DETOUR

T.I.P.: BR-0082

CONTRACT: N/A

TIP NO.	SHEET NO.
BR-0082	PMP-01

APPROVED: Greg S. Purvis

DATE: 9/28/2022

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS

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BRIDGE #420056

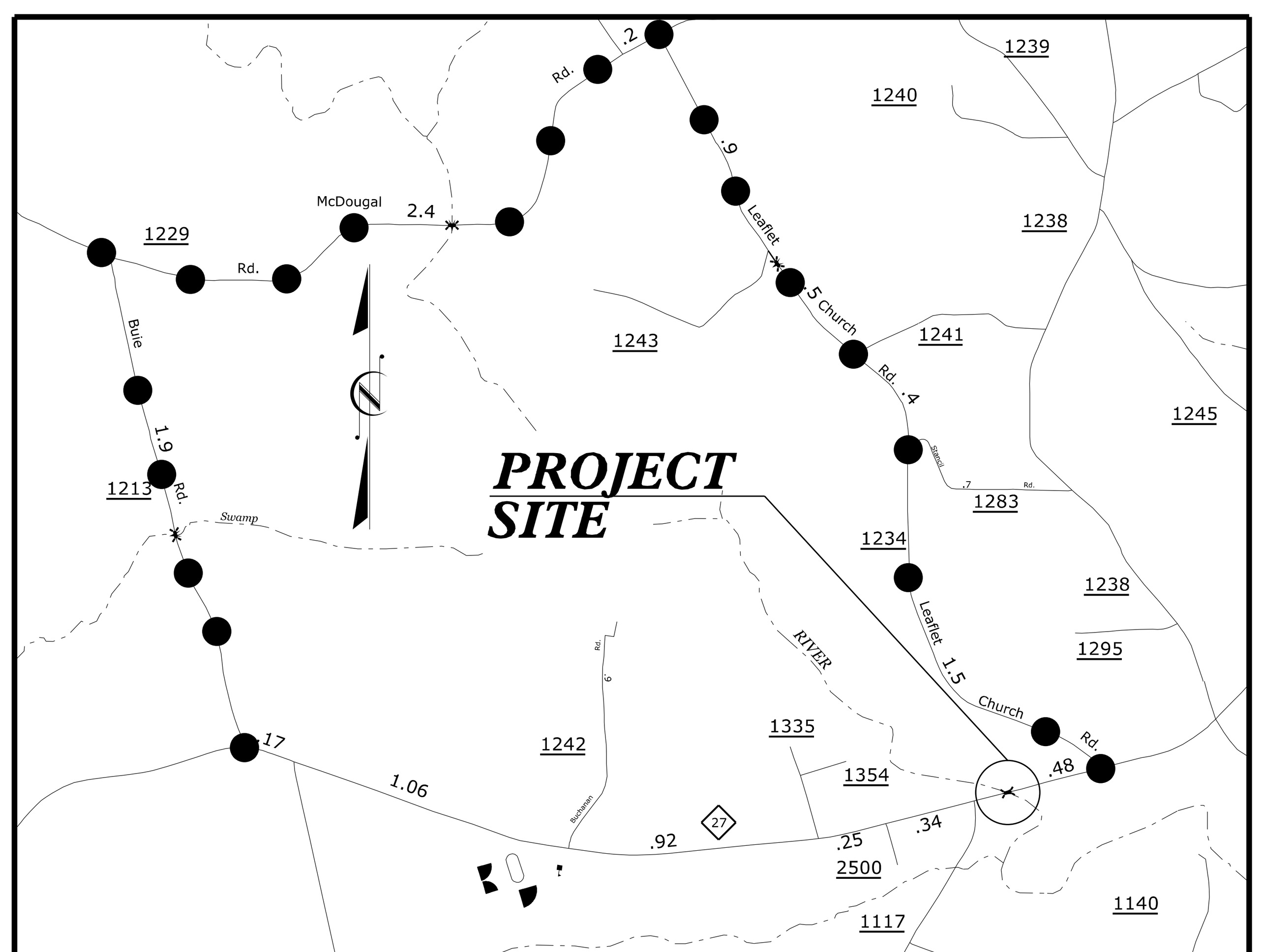
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN

HARNETT COUNTY

INDEX

SHEET NO.	DESCRIPTION
PMP-01	PAVEMENT MARKING PLAN TITLE AND SCHEDULE SHEET
PMP-02	PAVEMENT MARKING DETAIL



VICINITY MAP

OFF–SITE DETOUR ●—●—●—●—●

LOCATION: STRUCTURE NO. 420056 OVER UPPER LITTLE RIVER ON NC 27

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

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
1)	NC 27	THERMOPLASTIC	RAISED
2)	SR 1229	PAINT	NONE
3)	SR 1234	PAINT	NONE
4)	SR 1213	PAINT	NONE

B) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.

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

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

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

F) REMOVE ALL RESIDUE AND SURFACE LAITANCE BY ACCEPTABLE METHODS ON CONCRETE BRIDGE DECKS PRIOR TO PLACING POLYUREA PAVEMENT MARKING MATERIAL.

G) ALL STATIONS ARE CONSIDERED PLUS/MINUS (+/-).

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	PAY ITEM
P1	WHITE SOLID EDGE LINE	PAINT (4″)
P13	YELLOW DOUBLE CENTER	PAINT (4″)
T1	WHITE SOLID EDGE LINE	THERMOPLASTIC (4″, 90 MILS)
T13	YELLOW DOUBLE CENTER	THERMOPLASTIC (4″, 90 MILS)
V1	WHITE SOLID EDGE LINE	POLYUREA (4″, 20 MILS)
V13	YELLOW DOUBLE CENTER	POLYUREA (4″, 20 MILS)
MA	YELLOW/YELLOW	PERMANENT RAISED MARKER

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
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

PLAN SUBMITTED TO:

Ayman I. Alqudwah, PE, Signing and Delineation Regional Engineer

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PLAN PREPARED BY: Wetherill Engineering, Inc.

GREG PURVIS, P.E. — PROJECT MANAGER

D. ALLEN HAYES, E.I. — TRANSPORTATION ENGINEER

WETHERILL ENGINEERING

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

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

BRIDGE #420056

TIP NO.	SHEET NO.
BR-0082	PMP-02

APPROVED: Greg S. Purvis (DocuSigned by: 21F6F7C29EE3403...)

DATE: 9/28/2022

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS

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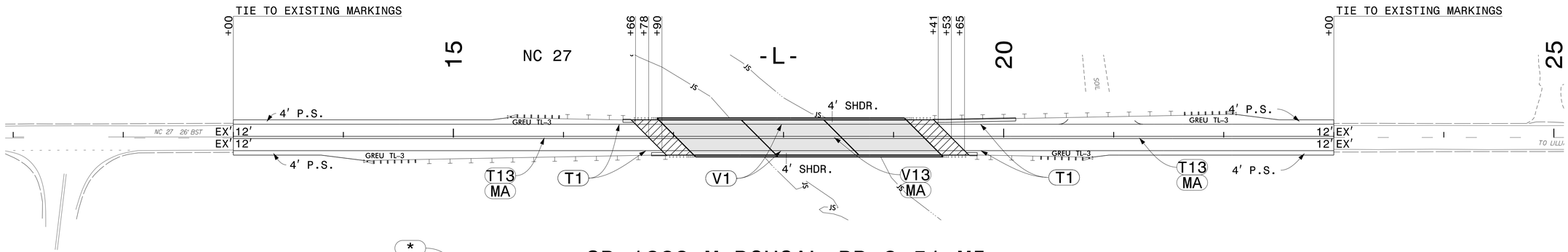
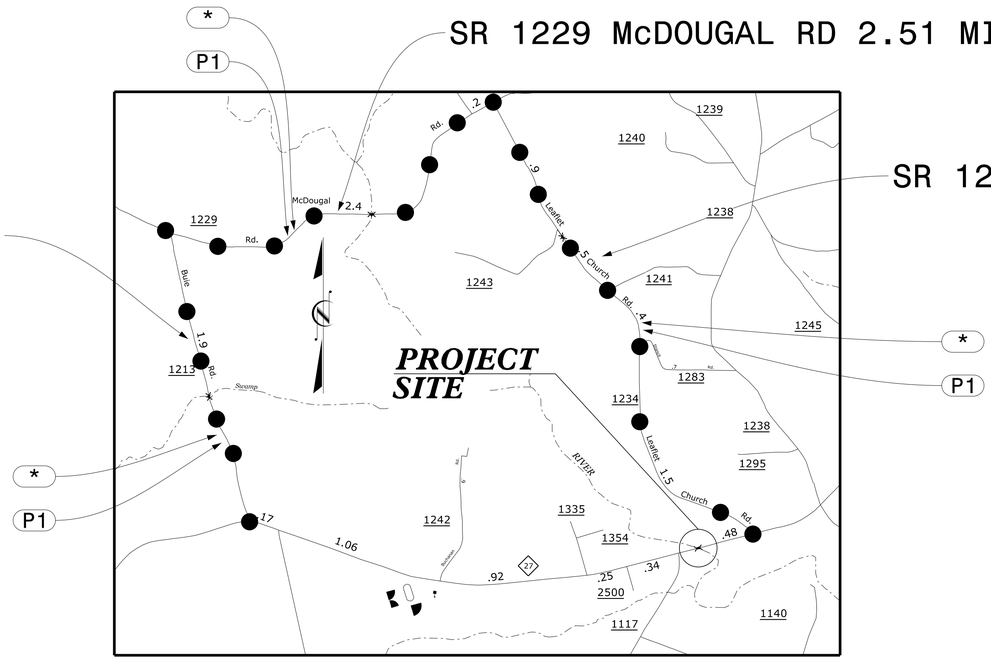
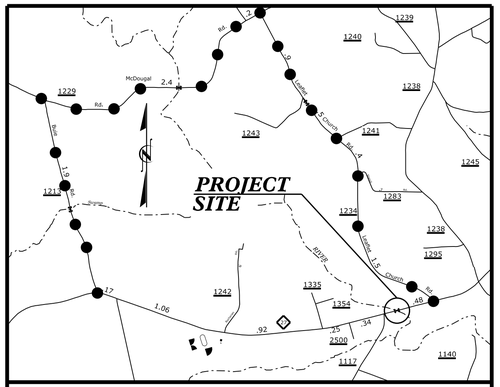




OFFSITE DETOUR ROADWAY IMPROVEMENTS

* NOTE: REPLACE ALL EXISTING CENTERLINE MARKINGS WITH THE SAME ON THE DETOUR ROUTE. REFER TO SHEET PMP-01, GENERAL NOTE 'E'.

PAVEMENT MARKING DETAIL



TIP PROJECT: BR-0082

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0082	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheet RW02C-1 TO RW02C-3 For Survey Control Sheets

VICINITY MAP

OFF-SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

HARNETT COUNTY

LOCATION:* *STRUCTURE NO. 420056 OVER UPPER LITTLE RIVER ON NC 27

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

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.

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.

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

Prepared in the Office of:

WETHERILL ENGINEERING, INC.
1223 JONES FRANKLIN ROAD
RALEIGH, NC 27606

Designed by:

KEVIN B. ALFORD, PE	***3531***
NAME	***LEVEL III CERTIFICATION NO.***

Roadway Standard Drawings

The following roadway <u>english</u> standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2018 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
1605.01	Temporary Silt Fence
1606.01	Special Sediment Control Fence
1607.01	Gravel Construction Entrance
1622.01	Temporary Berms and Slope Drains
1630.01	Riser Basin
1630.02	Silt Basin Type B
1630.03	Temporary Silt Ditch
1630.04	Stilling Basin
1630.05	Temporary Diversion
1630.06	Special Stilling Basin
1631.01	Matting Installation
1632.01	Rock Inlet Sediment Trap Type A
1632.02	Rock Inlet Sediment Trap Type B
1632.03	Rock Inlet Sediment Trap Type C
1633.01	Temporary Rock Silt Check Type A
1633.02	Temporary Rock Silt Check Type B
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
1640.01	Coir Fiber Baffle
1645.01	Temporary Stream Crossing

10/28/2022
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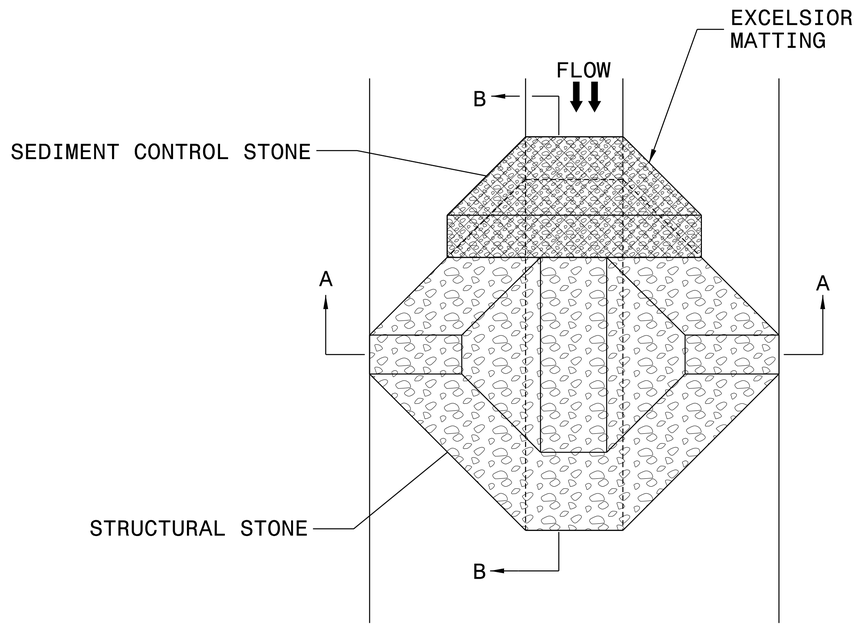
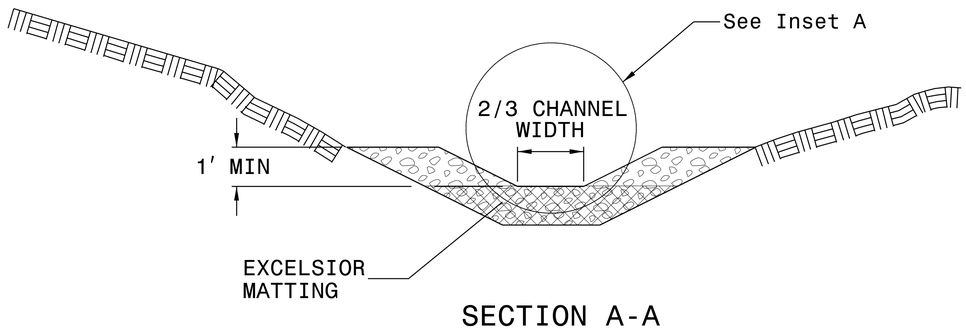
USER:KAlford

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



PLAN



SECTION A-A

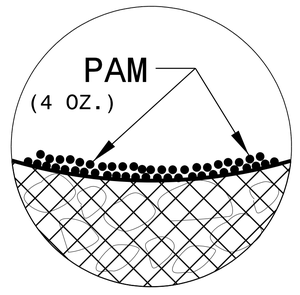
NOTES:

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

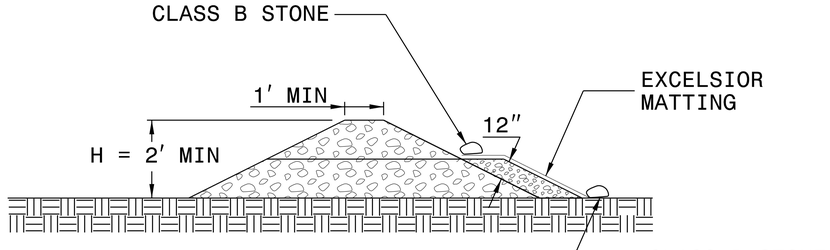
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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

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



INSET A

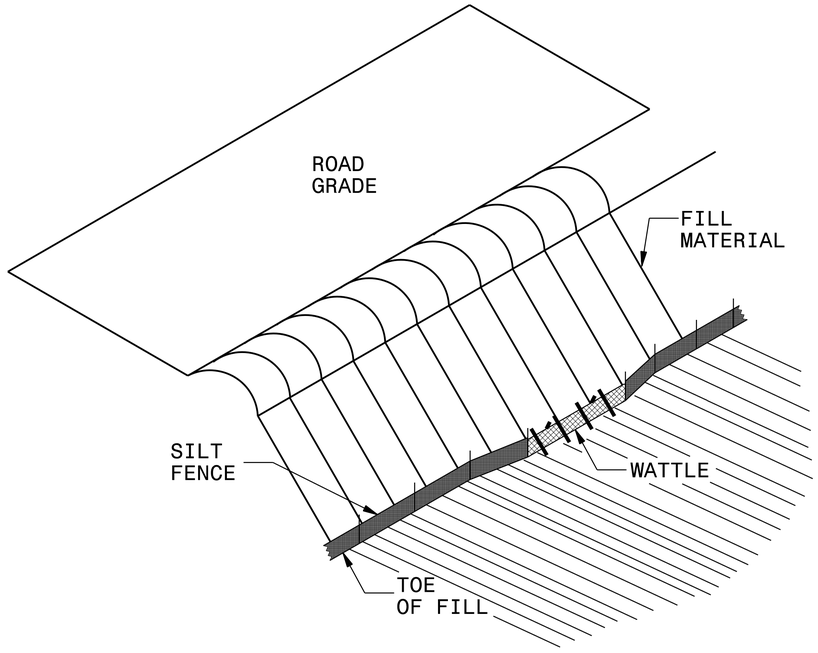


SECTION B-B

NOT TO SCALE

SILT FENCE COIR FIBER WATTLE BREAK DETAIL

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



ISOMETRIC VIEW

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.

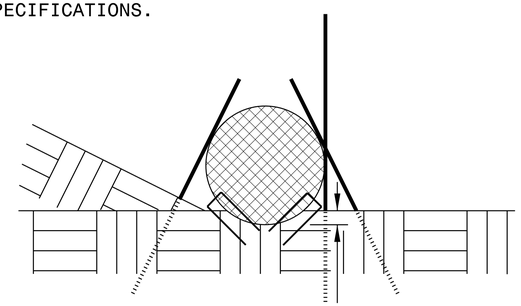
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

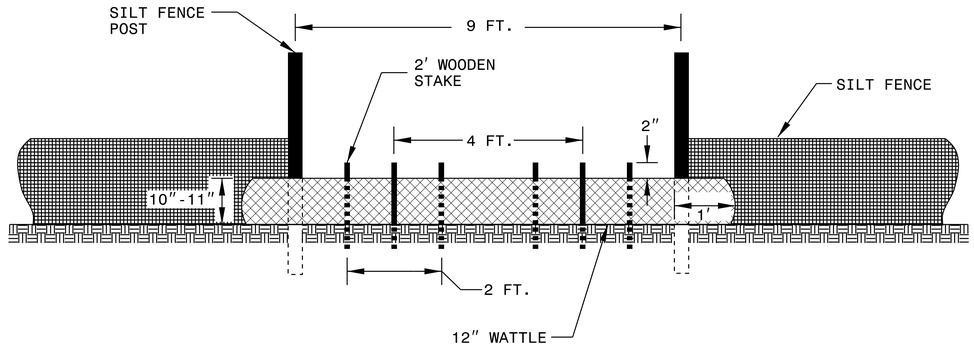
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

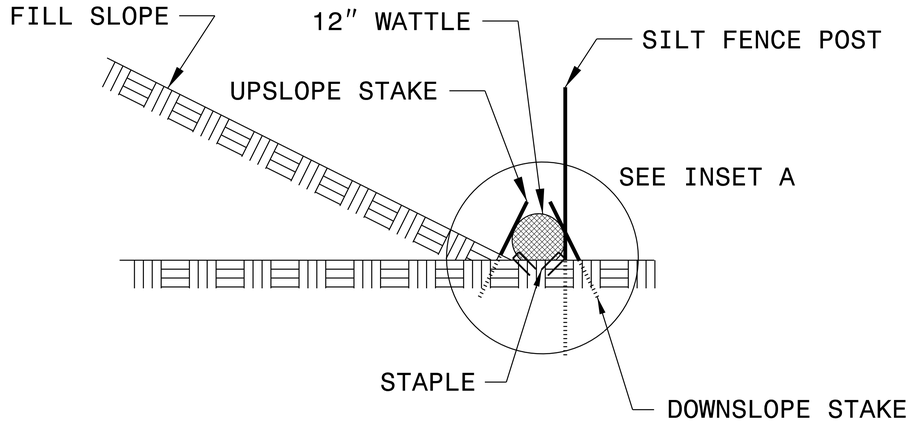
INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





VIEW FROM SLOPE



SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	EC-3
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.

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	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	L	15+50	16+50	LT	70
				SUBTOTAL	70
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					7585
				TOTAL	7655
				SAY	7655

MATTING FOR EROSION CONTROL

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

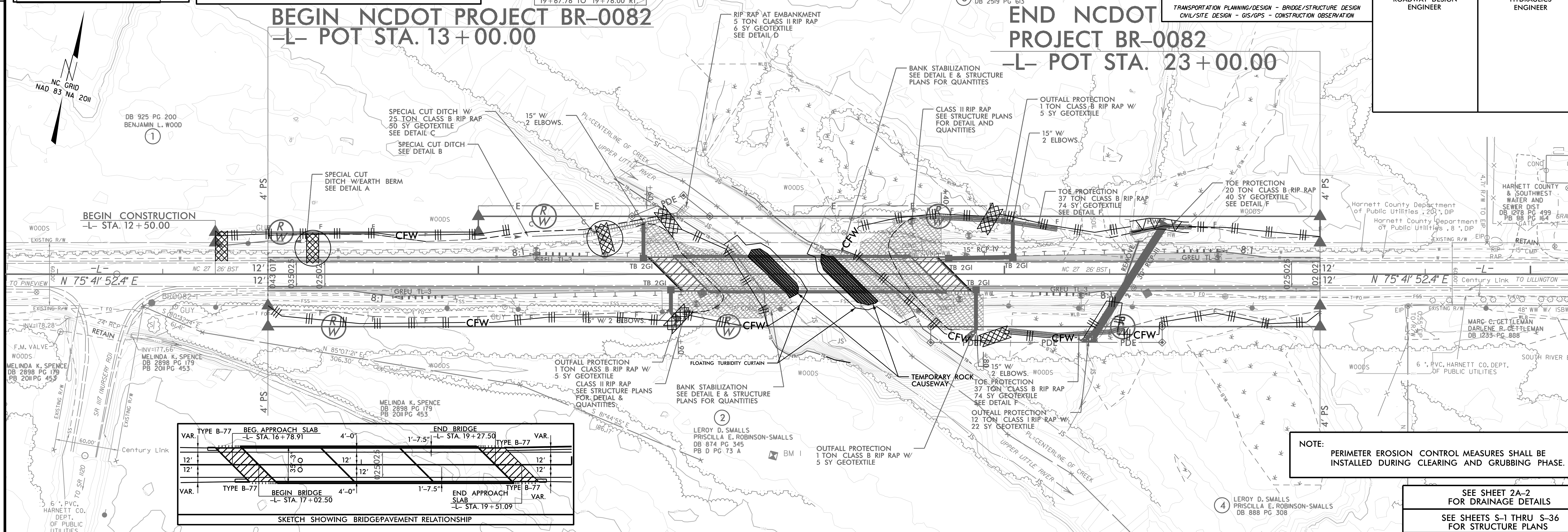
PROJECT REFERENCE NO.	SHEET NO.
BR-0082	EC-4/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Liscense No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

NOTE: CONTRACTOR SHALL HAND DIG GUARDRAIL POSTS BETWEEN STATIONS 19+34.00 TO 19+84.00 RT. 20+31.00 TO 20+81.00 RT

NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

SHOULDER BERM GUTTER STATION	
16+54.00 TO 16+62.24	LT.
16+80.00 TO 16+95.58	RT.
19+34.42 TO 20+11.00	LT.
19+67.76 TO 19+76.00	RT.


BEGIN NCDOT PROJECT BR-0082
-L- POT STA. 13+00.00
END NCDOT PROJECT BR-0082
-L- POT STA. 23+00.00
BEGIN CONSTRUCTION
-L- STA. 12+50.00
NC GRID NAD 83 NA 2011
DB 925 PG 200
BENJAMIN L. WOOD
JENNIE P. STANCIL
DB 2519 PG 613
SPECIAL CUT DITCH W/ 25 TON CLASS B RIP RAP 50 SY GEOTEXTILE SEE DETAIL C
SPECIAL CUT DITCH SEE DETAIL B
SPECIAL CUT DITCH W/EARTH BERM SEE DETAIL A
15" W/ 2 ELBOWS.
RIP RAP AT EMBANKMENT 5 TON CLASS II RIP RAP 6 SY GEOTEXTILE SEE DETAIL D
BANK STABILIZATION SEE DETAIL E & STRUCTURE PLANS FOR QUANTITIES
CLASS II RIP RAP SEE STRUCTURE PLANS FOR DETAIL AND QUANTITIES
OUTFALL PROTECTION 1 TON CLASS B RIP RAP W/ 5 SY GEOTEXTILE
TOE PROTECTION 37 TON CLASS B RIP RAP 74 SY GEOTEXTILE SEE DETAIL F
TOE PROTECTION 20 TON CLASS B RIP RAP 40 SY GEOTEXTILE SEE DETAIL F
N 75° 41' 52.4" E
CFW
OUTFALL PROTECTION 1 TON CLASS B RIP RAP W/ 5 SY GEOTEXTILE
CLASS II RIP RAP SEE STRUCTURE PLANS FOR DETAIL & QUANTITIES
FLOATING TURBIDITY CURTAIN
TEMPORARY ROCK CAUSEWAY
BANK STABILIZATION SEE DETAIL E & STRUCTURE PLANS FOR QUANTITIES
OUTFALL PROTECTION 12 TON CLASS I RIP RAP W/ 22 SY GEOTEXTILE
OUTFALL PROTECTION 1 TON CLASS B RIP RAP W/ 5 SY GEOTEXTILE
MELINDA K. SPENCE DB 2898 PG 179 PB 2011 PG 453
LEROY D. SMALLS PRISCILLA E. ROBINSON-SMALLS DB 874 PG 345 PB D PG 73 A
LEROY D. SMALLS PRISCILLA E. ROBINSON-SMALLS DB 888 PG 308
MARC C. GETTLEMAN DARLENE R. GETTLEMAN DB 1235 PG 888
HARNETT COUNTY & SOUTHWEST WATER AND SEWER DIST DB 1278 PG 499 PB 88 PG 164
UPPER LITTLE RIVER
SR 1117 NURSERY RD
TO PINEVIEW
TO LILLINGTON
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
BEG. APPROACH SLAB -L- STA. 16+78.91
END BRIDGE -L- STA. 19+27.50
BEGIN BRIDGE -L- STA. 17+02.50
END APPROACH SLAB -L- STA. 19+51.09
TYPE B-77

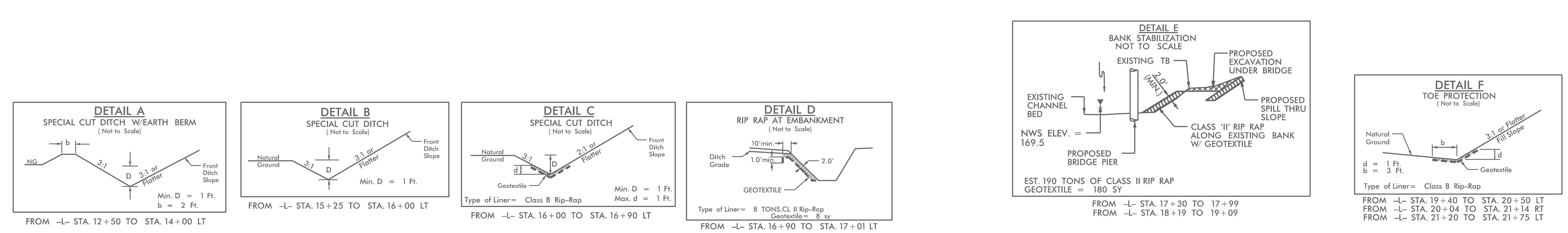
NOTE: PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

SEE SHEET 2A-2 FOR DRAINAGE DETAILS

SEE SHEETS S-1 THRU S-36 FOR STRUCTURE PLANS

NOTE: UTILIZE TEMPORARY SEDIMENT BASIN OR SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.


DETAIL A
SPECIAL CUT DITCH W/EARTH BERM
FROM -L- STA. 12+50 TO STA. 14+00 LT
DETAIL B
SPECIAL CUT DITCH
FROM -L- STA. 15+25 TO STA. 16+00 LT
DETAIL C
SPECIAL CUT DITCH
FROM -L- STA. 16+00 TO STA. 16+90 LT
DETAIL D
RIP RAP AT EMBANKMENT
FROM -L- STA. 16+90 TO STA. 17+01 LT
DETAIL E
BANK STABILIZATION
NOT TO SCALE
EST. 190 TONS OF CLASS II RIP RAP
GEOTEXTILE = 180 SY
FROM -L- STA. 17+30 TO 17+99
FROM -L- STA. 18+19 TO 19+09
DETAIL F
TOE PROTECTION
FROM -L- STA. 19+40 TO STA. 20+50 LT
FROM -L- STA. 20+04 TO STA. 21+14 RT
FROM -L- STA. 21+20 TO STA. 21+75 LT

REVISIONS

12/10/21 – ROW REVISION NO. 1 – DRIVEWAY FOR PARCEL 4 ELIMINATED

NOTE: CONTRACTOR SHALL HAND DIG GUARDRAIL POSTS BETWEEN STATIONS
15+49.00 TO 16+63.00 LT
19+35.00 TO 20+25.00 LT
20+31.00 TO 20+81.00 RT

SHOULDER BERM GUTTER STATION
16+54.00 TO 16+62.24 LT.
16+80.00 TO 16+95.58 RT.
19+34.42 TO 20+11.00 LT.
19+67.76 TO 19+76.00 RT.

Place Matting for Erosion Control on Slopes Adjacent to Permitted Wetlands as Work Allows.

WETHERILL ENGINEERING
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Liscense No. F-0377
Bus: 919 851 8077
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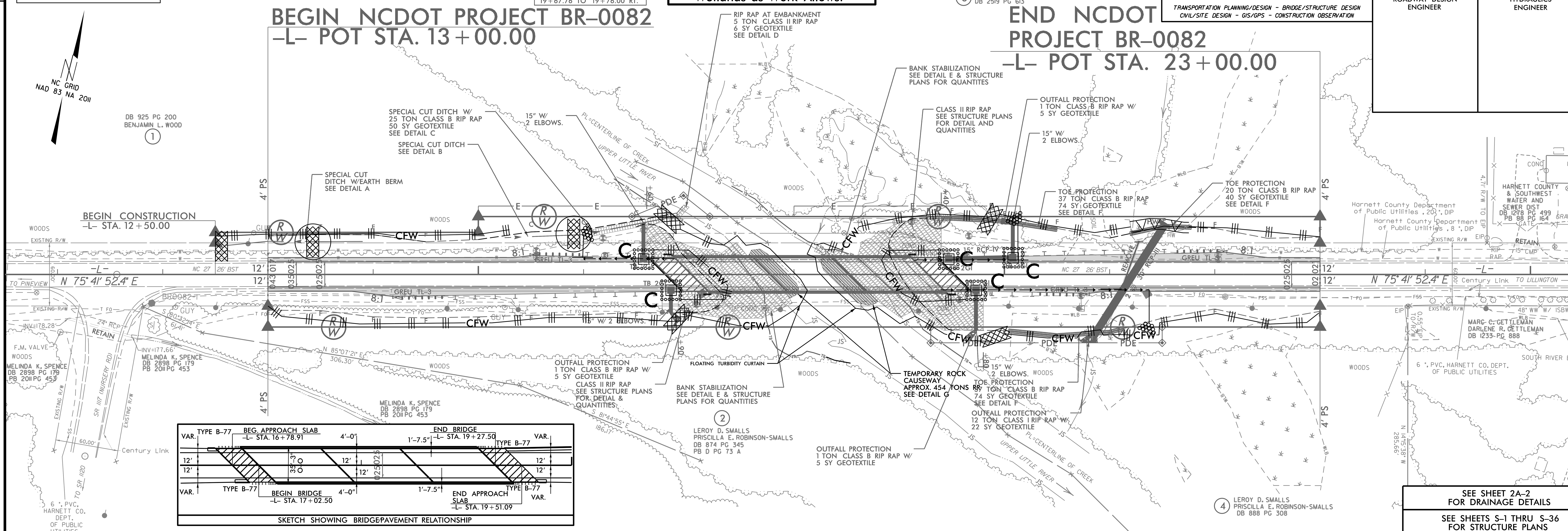
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	EC-5/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BEGIN NCDOT PROJECT BR-0082
-L- POT STA. 13+00.00

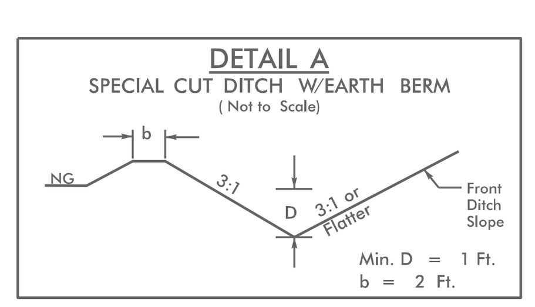
END NCDOT PROJECT BR-0082
-L- POT STA. 23+00.00



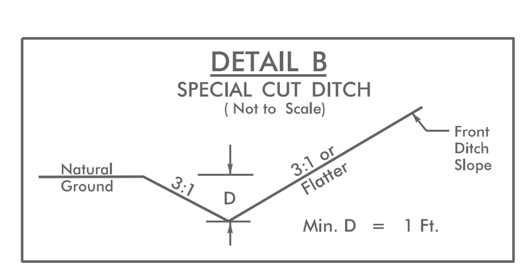
NC GRID NAD 83 NA 2011
DB 925 PG 200
BENJAMIN L. WOOD
BEGIN CONSTRUCTION
-L- STA. 12+50.00
SPECIAL CUT DITCH W/EARTH BERM SEE DETAIL A
SPECIAL CUT DITCH SEE DETAIL B
SPECIAL CUT DITCH W/ 25 TON CLASS B RIP RAP 50 SY GEOTEXTILE SEE DETAIL C
15" W/ 2 ELBOWS.
RIP RAP AT EMBANKMENT 5 TON CLASS II RIP RAP 6 SY GEOTEXTILE SEE DETAIL D
JENNIE P. STANCIL DB 2519 PG 613
BANK STABILIZATION SEE DETAIL E & STRUCTURE PLANS FOR QUANTITIES
CLASS II RIP RAP SEE STRUCTURE PLANS FOR DETAIL AND QUANTITIES
OUTFALL PROTECTION 1 TON CLASS B RIP RAP W/ 5 SY GEOTEXTILE
TOE PROTECTION 37 TON CLASS B RIP RAP 74 SY GEOTEXTILE SEE DETAIL F
TOE PROTECTION 20 TON CLASS B RIP RAP 40 SY GEOTEXTILE SEE DETAIL F
Harnett County Department of Public Utilities, 20", DIP
HARNETT COUNTY & SOUTHWEST WATER AND SEWER DIST DB 1278 PG 499 PB 98 PG 164
N 75° 41' 52.4" E
TO PINEVIEW
TO LILLINGTON
CFW
FLOATING TURBIDITY CURTAIN
OUTFALL PROTECTION 1 TON CLASS B RIP RAP W/ 5 SY GEOTEXTILE
CLASS II RIP RAP SEE STRUCTURE PLANS FOR DETAIL & QUANTITIES
BANK STABILIZATION SEE DETAIL E & STRUCTURE PLANS FOR QUANTITIES
TEMPORARY ROCK CAUSEWAY APPROX. 454 TONS RR SEE DETAIL G
TOE PROTECTION 37 TON CLASS B RIP RAP 74 SY GEOTEXTILE SEE DETAIL F
OUTFALL PROTECTION 12 TON CLASS I RIP RAP W/ 22 SY GEOTEXTILE
OUTFALL PROTECTION 1 TON CLASS B RIP RAP W/ 5 SY GEOTEXTILE
MELINDA K. SPENCE DB 2898 PG 179 PB 2011 PG 453
LEROY D. SMALLS PRISCILLA E. ROBINSON-SMALLS DB 874 PG 345 PB 0 PG 73 A
LEROY D. SMALLS PRISCILLA E. ROBINSON-SMALLS DB 888 PG 308
MARC C. GETTLEMAN DARLENE R. GETTLEMAN DB 1233 PG 888
6", PVC, HARNETT CO. DEPT. OF PUBLIC UTILITIES
UPPER LITTLE RIVER
SR 1117 (NURSERY RD)
TYPE B-77
BEG. APPROACH SLAB -L- STA. 16+78.91
END BRIDGE -L- STA. 19+27.50
BEGIN BRIDGE -L- STA. 17+02.50
END APPROACH SLAB -L- STA. 19+51.09
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

SEE SHEET 2A-2 FOR DRAINAGE DETAILS
SEE SHEETS S-1 THRU S-36 FOR STRUCTURE PLANS

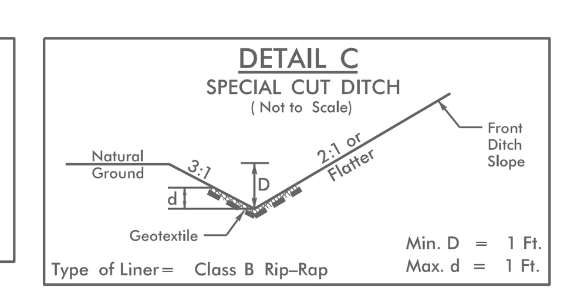
For Slopes Excavated Greater Than 10 feet Install Matting for Erosion Control on Entire Slope as Work Allows.



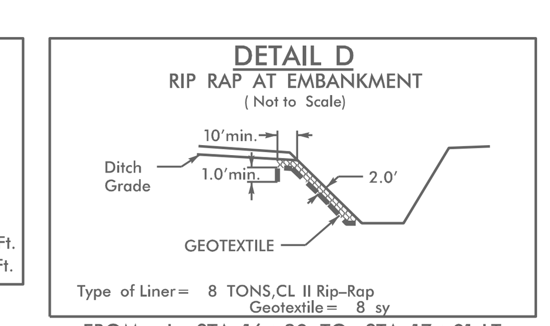
FROM -L- STA. 12+50 TO STA. 14+00 LT



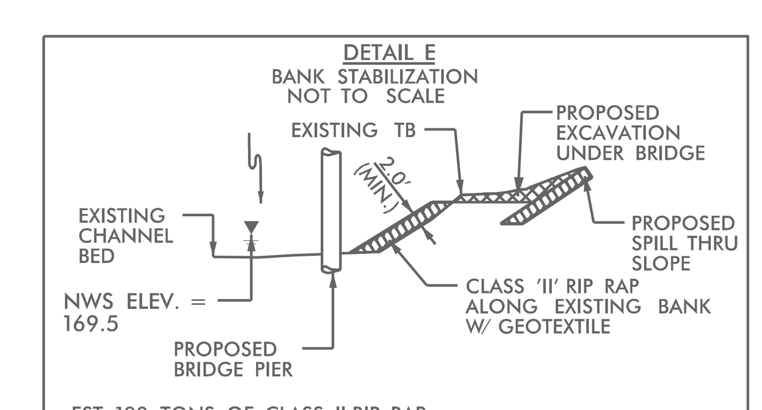
FROM -L- STA. 15+25 TO STA. 16+00 LT



FROM -L- STA. 16+00 TO STA. 16+90 LT

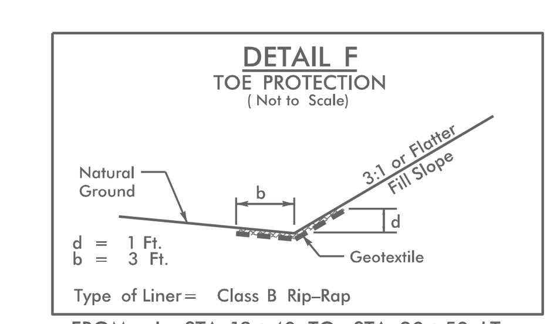


FROM -L- STA. 16+90 TO STA. 17+01 LT



DETAIL E
BANK STABILIZATION
NOT TO SCALE
EXISTING TB
PROPOSED EXCAVATION UNDER BRIDGE
PROPOSED SPILL THRU SLOPE
EXISTING CHANNEL BED
NWS ELEV. = 169.5
CLASS 'II' RIP RAP ALONG EXISTING BANK W/ GEOTEXTILE
PROPOSED BRIDGE PIER
EST. 190 TONS OF CLASS II RIP RAP
GEOTEXTILE = 180 SY

FROM -L- STA. 17+30 TO 17+99
FROM -L- STA. 18+19 TO 19+09



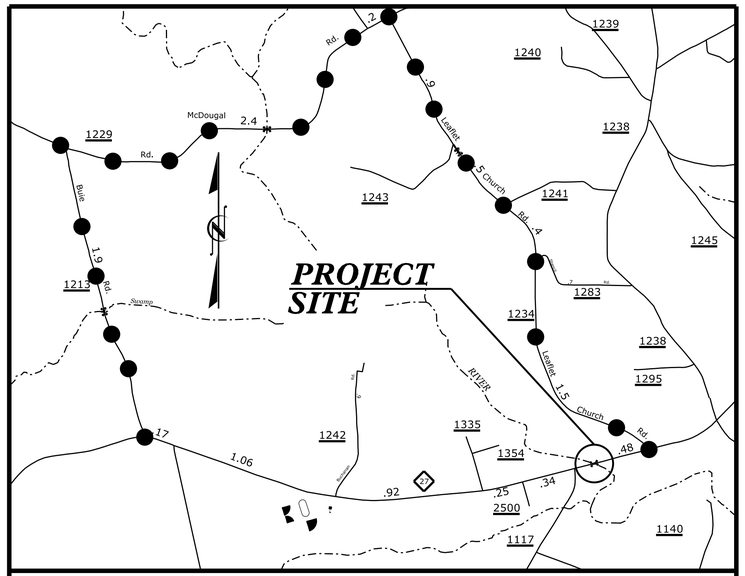
FROM -L- STA. 19+40 TO STA. 20+50 LT
FROM -L- STA. 20+04 TO STA. 21+14 RT
FROM -L- STA. 21+20 TO STA. 21+75 LT

REVISIONS
12/10/21 - ROW REVISION NO. 1 - DRIVEWAY FOR PARCEL 4 ELIMINATED

09/08/99

PROJECT: BR–0082

CONTRACT:



VICINITY MAP

OFF–SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

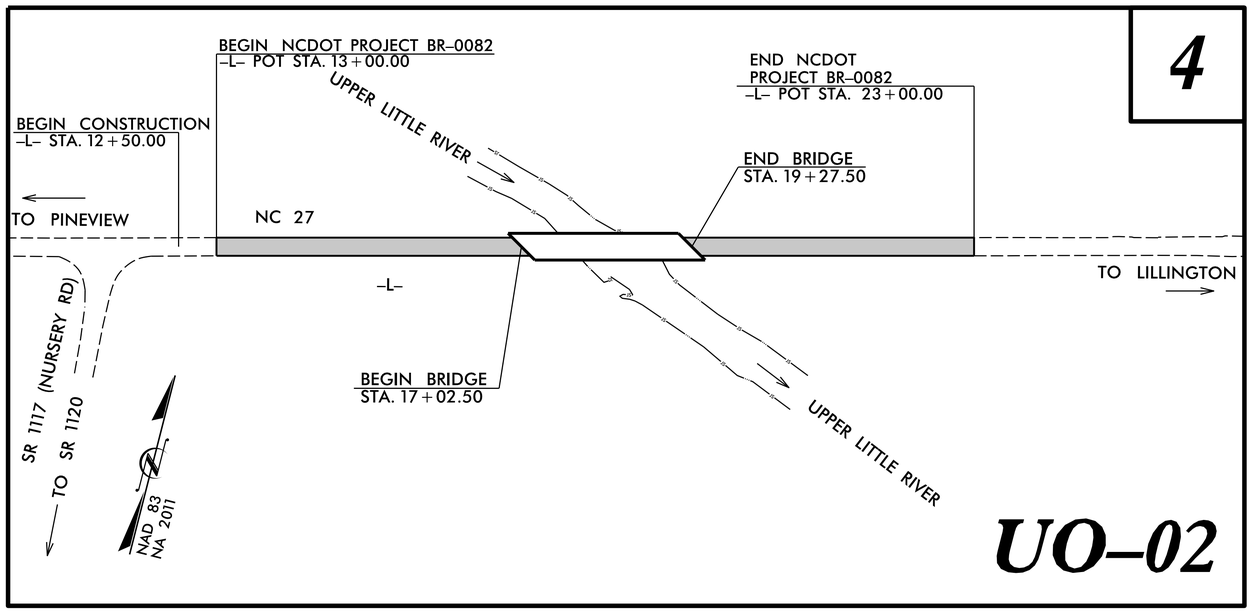
T.I.P. NO.	SHEET NO.
BR–0082	UO–1

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
HARNETT COUNTY

LOCATION: STRUCTURE NO. 420056 OVER UPPER LITTLE RIVER ON NC 27

TYPE OF WORK: POWER AND COMMUNICATIONS



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO–1	TITLE SHEET
UO–02	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

(A) POWER – SOUTH RIVER EMC
(B) COMMUNICATIONS – CENTURYLINK
(C) COMMUNICATIONS – CONTERRA
(D) COMMUNICATIONS – SPECTRUM

PREPARED IN THE OFFICE OF:

SAM™
2641 Sumner Boulevard
Suite 116
Raleigh, NC 27616
(919) 878–7466

Freddie Bunn — UTILITY PROJECT MANAGER
Brian Long — PROJECT UTILITY COORDINATOR

DIVISION OF HIGHWAYS
DIVISION 6
DIV ADDRESS
558 GILLESPIE STREET
FAYETVILLE 28301

Rick Handlin — DIVISION UTILITY ENGINEER
John Walters — UTILITY COORDINATOR

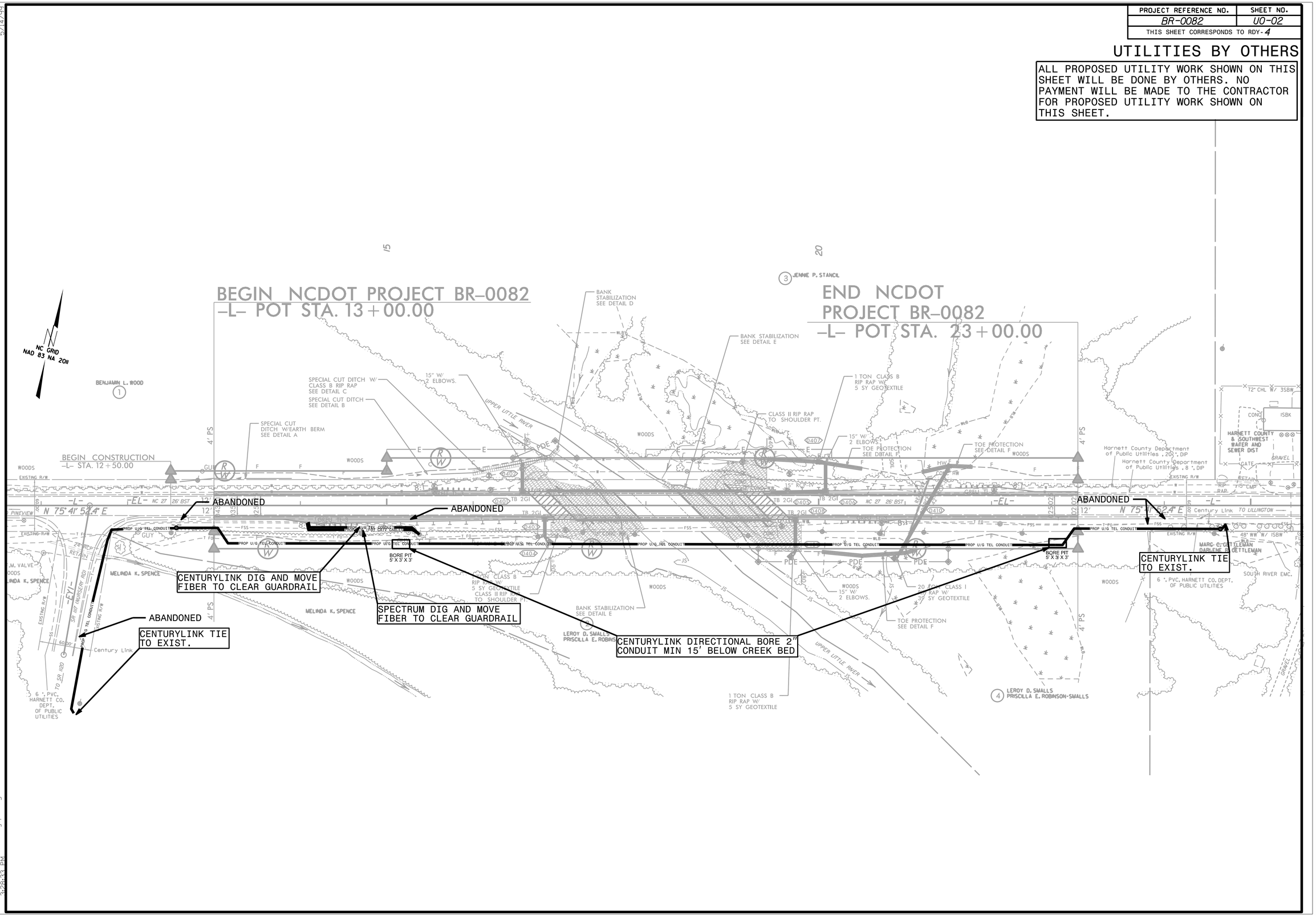
1/10/2023
...\BR-0082_Rdy_tsh.dgn
10:53:01 AM

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
BR-0082	U0-02
THIS SHEET CORRESPONDS TO RDY- 4	

UTILITIES BY OTHERS

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



1/6/2023
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PROJ. REFERENCE NO.	SHEET NO.
BR-0082	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
13+00.00	0	0
13+50.00	7	71
14+00.00	6	92
14+50.00	4	115
15+00.00	2	114
15+50.00	5	110
16+00.00	6	120
16+50.00	6	134

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
19+50.00	0	0
20+00.00	0	344
20+50.00	0	343
21+00.00	0	297
21+50.00	0	267
22+00.00	2	196
22+50.00	5	109
23+00.00	6	88

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

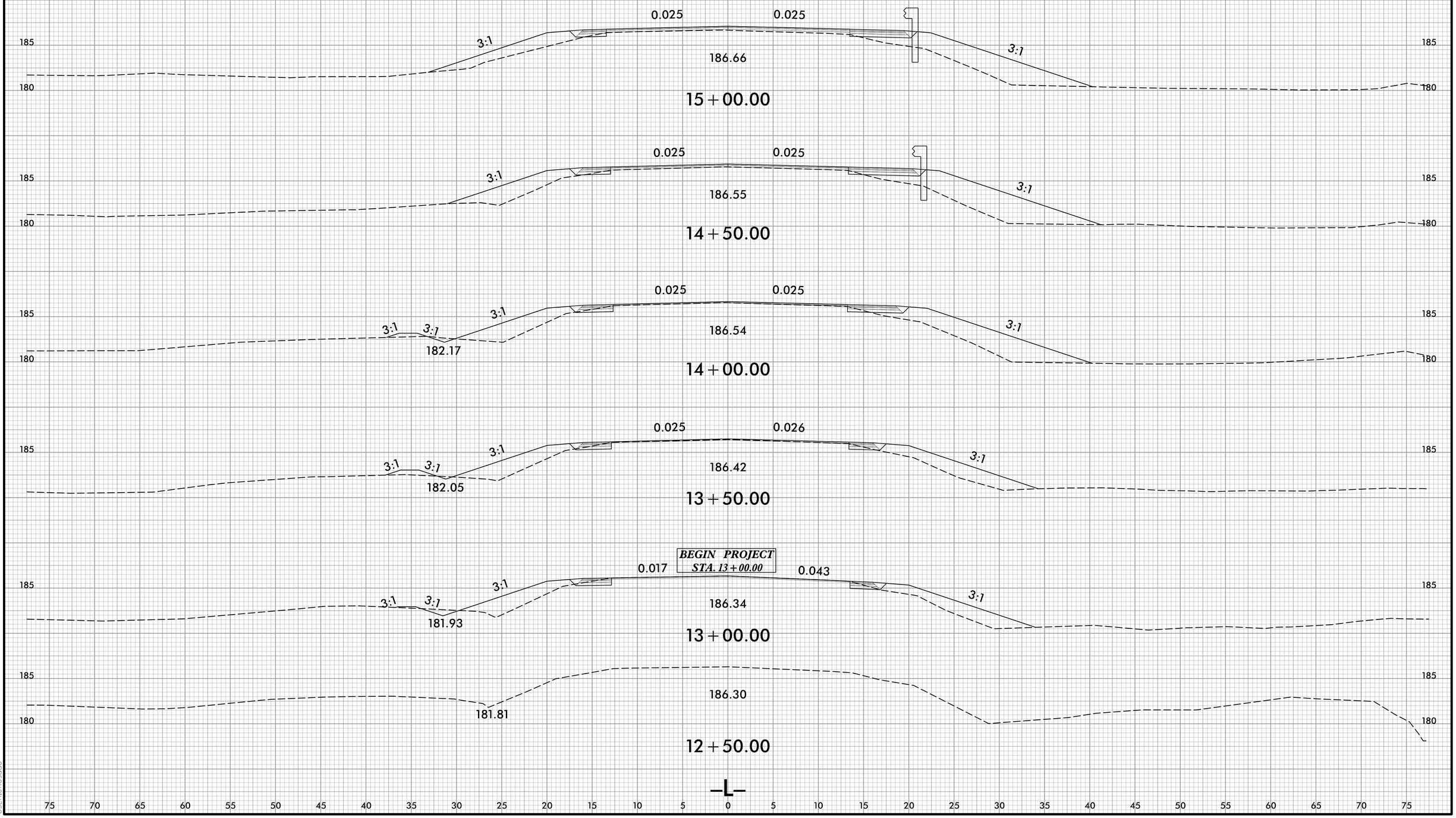
CROSS SECTION INDEX

SHEET	LINE	BEGIN STATION	END STATION
X-1	-L-	12+50.00	15+00.00
X-2	-L-	15+50.00	17+02.50
X-3	-L-	17+50.00	18+00.00
X-4	-L-	18+50.00	19+27.50
X-5	-L-	19+50.00	21+00.00
X-6	-L-	21+50.00	23+50.00

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
B-0082	X-1

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75



0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
B-0082	X-2

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

190 185 180 175 170

BEGIN BRIDGE
STA. 17+02.50

0.025 0.025

186.62

17+02.50

0.025 0.025

3:1 3:1

187.01

16+50.00

3:1 3:1

177.70

0.025 0.025

3:1 3:1

187.02

16+00.00

3:1 3:1

181.00

0.025 0.025

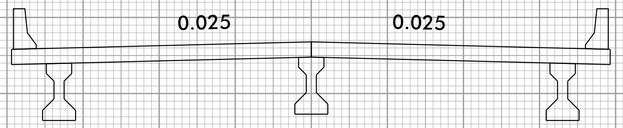
3:1 3:1

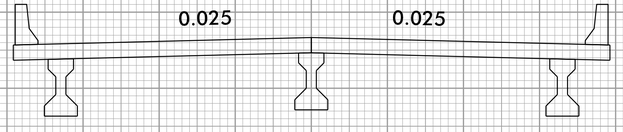
186.86

15+50.00

181.70

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-0082	X-3





167.37

18+00.00

175.38

17+50.00

–L–

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
B-0082	X-4

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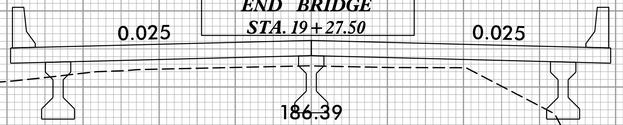
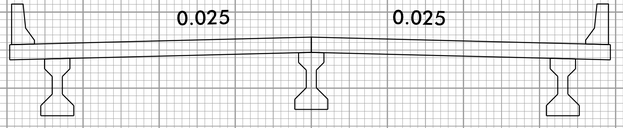
190 185 180 175 170

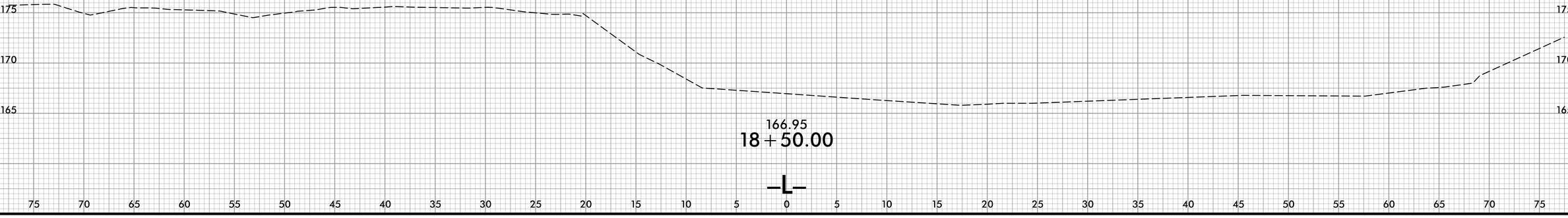
END BRIDGE
STA. 19+27.50



19+27.50

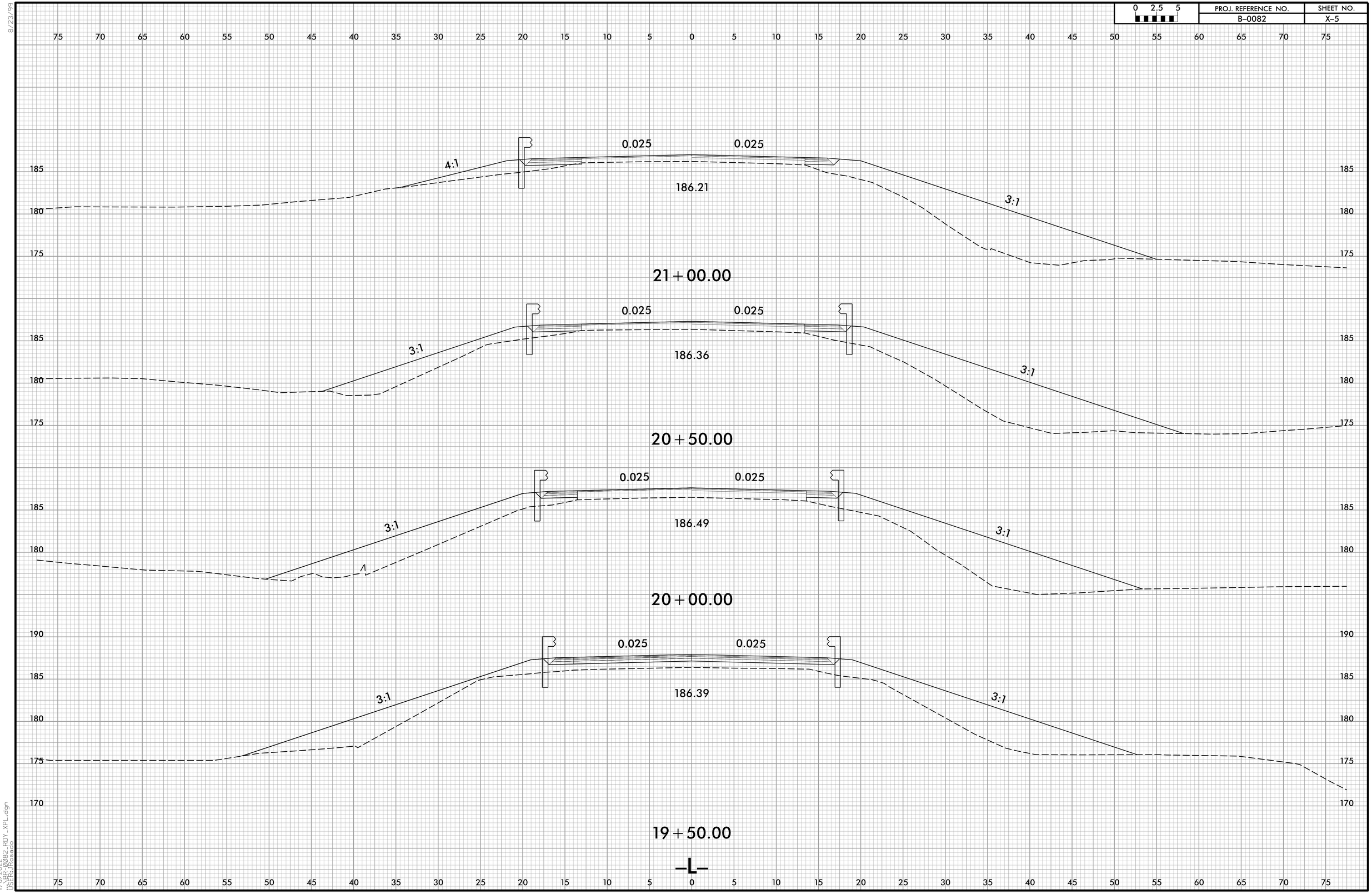
19+00.00





18+50.00

–L–



0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
B-0082	X-6

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

185
180

185.96

23+50.00

END PROJECT
STA. 23+00.00

0.021 0.020

3:1 3:1

186.14

23+00.00

0.025 0.025

3:1 3:1

186.23

22+50.00

0.025 0.025

3:1 3:1

186.21

22+00.00

0.025 0.025

3:1 3:1

HW

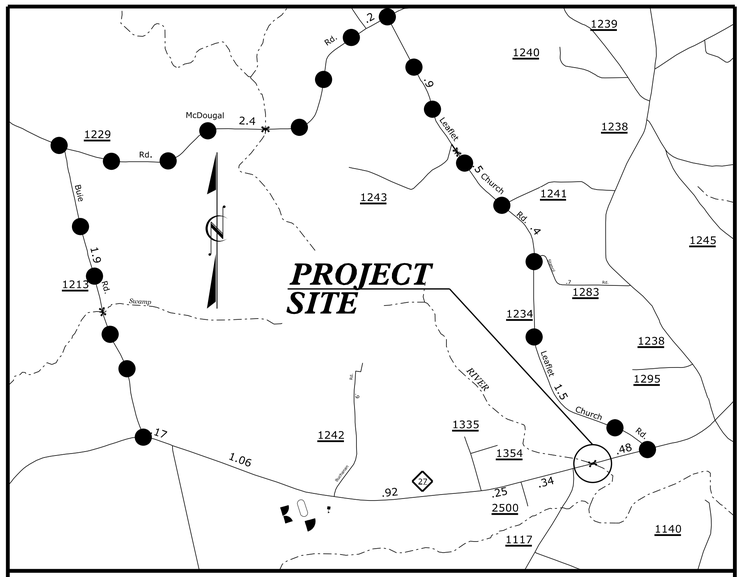
186.16

21+50.00
—L—

09/08/99

PROJECT: BR-0082

CONTRACT:



VICINITY MAP

OFF-SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HARNETT COUNTY

LOCATION: STRUCTURE NO. 420056 OVER UPPER LITTLE RIVER ON NC 27

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

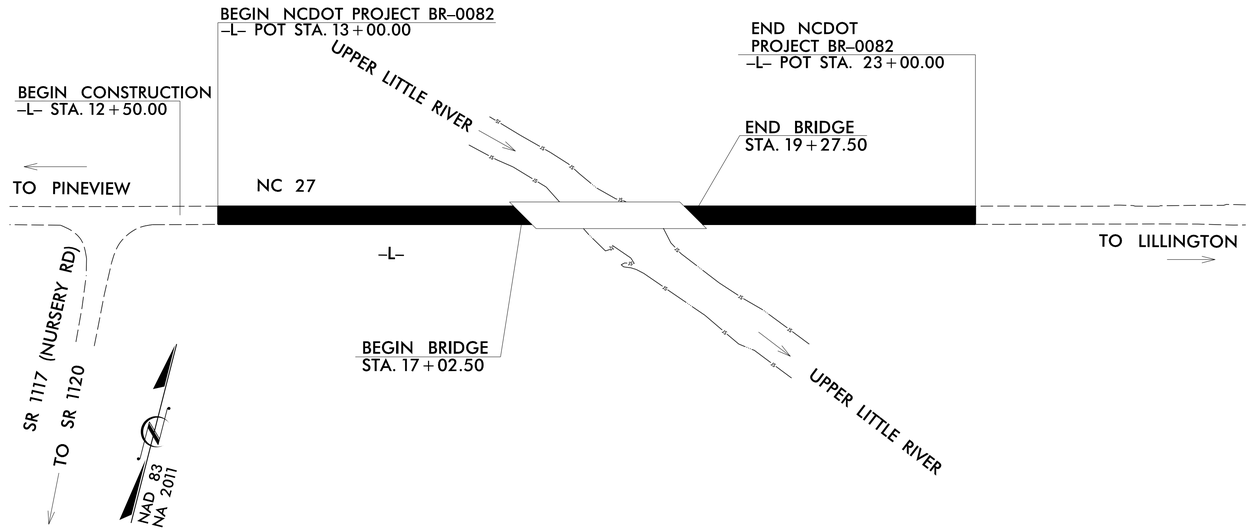
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0082	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
67082.1.1		PE
67082.2.1		UTIL., R/W
67082.3.1		CONST.

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

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

STRUCTURE #420056



DESIGN DATA

ADT 2021 = 5740
ADT 2041 = 10370

T = 7 % *
V = 60 MPH
* (TTST = 3% + DUAL = 4%)
FUNC CLASS =
MAJOR COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT BR-0082 =	0.146 MILES
LENGTH STRUCTURE PROJECT BR-0082 =	0.043 MILES
TOTAL LENGTH PROJECT BR-0082 =	0.189 MILES

NCDOT CONTACT: CHRISTY HUFF, PE
DIVISION 6 PROJECT MANAGER

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

Prepared for:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2018 STANDARD SPECIFICATIONS

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

LETTING DATE:
FEBRUARY 17, 2021

JOHN, A. DILWORTH, PE
PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

2/2/2021
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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

STD. NO. SN

REV. 6-16-95 EEM (/) RGW REV. 5-7-03 RWW (/) JTE REV. 10-1-11 MAA (/) GM
REV. 8-16-99 RWW (/) LES REV. 5-1-06 TLA (/) GM REV. 12-17 MAA (/) THC

12/13/2021
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16+50 16+75 17+00 17+25 17+50 17+75 18+00 18+25 18+50

190 180 170 160

1'-7" MIN. BERM
NORMAL TO CAP

1'-0" MIN. EARTH BERM
NORMAL TO CAP

1'-6" TO UNCLASSIFIED
STRUCTURE EXCAVATION

FILL FACE @ END BENT No. 1
STA. 17+02.50 -L-
GRADE POINT EL. 188.16

BEGIN FRONT SLOPE
STA. 16+87.58 -L-
GRADE POINT EL. 188.08

EL. 187±

APPROX.
GROUND LINE

1'-0" (MIN.)

EL. 186±
EXP.
EL. 183±
EL. 183±
EL. 181±
EL. 179±

BACKFILL WITH
UNCLASSIFIED
EXCAVATION

EXCAVATE TO
EL. 179.0
(SLOPE TO DRAIN)

3'-6"
(MIN.)

UNCLASSIFIED
STRUCTURE
EXCAVATION

HP 12x53
STEEL PILES

CLASS II RIP RAP
W/GEOTEXTILE
(2'-0" THICK) &
CLASS B RIP RAP

1.5:1 SLOPE
NORMAL TO CAP

SPAN A

END BENT 1

PI = 18+15.00 -L-
EL = 188.75
VC = 250'
(+)0.5227% (-)0.6120%

GRADE DATA

SPAN B

FIX. FIX.

BASE DISCHARGE
Q100
EL. 186.4

TOP OF
DRILLED PIER
EL. 170.59

TEMPORARY
ROCK
CAUSEWAY

EL. 165±

N.W.S.
EL. 169.5

W.S.
EL. 168.0
(9/18/19)

EL. 165±

EL. 165±

CLASS II RIP RAP
W/GEOTEXTILE
(2'-0" THICK)

EL. 167±

3'-0" Ø
DRILLED PIER

EXISTING
SUBSTRUCTURE
(TYP.)

BENT 1

LOW CHORD ELEVATIONS		
	GIRDER	ELEVATION
END BENT 1	1	183.11
END BENT 2	4	183.00

SECTION ALONG -L-

SECTIONS AT END BENT AND BENT ARE TAKEN AT RIGHT ANGLES

HYDRAULIC DATA	
DESIGN DISCHARGE	9000 CFS
FREQUENCY OF DESIGN FLOOD	50 YR.
DESIGN HIGH WATER ELEVATION	186.00
DRAINAGE AREA	145 SQ.MI.
BASE DISCHARGE (Q100)	10400 CFS
BASE HIGH WATER ELEVATION	186.40

OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	8900 CFS
FREQUENCY OF OVERTOPPING FLOOD	50 YRS ±
OVERTOPPING FLOOD ELEVATION	185.90 *

*OVERTOPPING OCCURS @ ROADWAY CENTERLINE
STA. 11+00.00 -L- ±

NC GRID
NAD 83 NA 2011

UPPER LITTLE RIVER

CLASS II RIP RAP
W/GEOTEXTILE
(2'-0" THICK)

TEMPORARY
ROCK
CAUSEWAY

EXISTING
SUBSTRUCTURE
(TYP.)

TO SR 1117

FILL FACE @
END BENT 1

BEGIN FRONT SLOPE
STA. 16+87.58 -L-

BRIDGE ID
STA. 18+15.00 -L-

-L-

(NC 27)

BEGIN APPROACH SLAB
STA. 16+78.91 -L-

W.P. #1
STA. 17+02.50 -L-

W.P. #2
STA. 17+78.46 -L-

45°-00'-00"
(TYP.)

BENT 1
CONTROL LINE

1'-0"
EARTH BERM
EL. 177.72
(LEVEL)

CLASS II RIP RAP
W/GEOTEXTILE
(2'-0" THICK)

CLASS II RIP RAP
W/GEOTEXTILE
(2'-0" THICK) &
CLASS B RIP RAP

36'-6½" 36'-6½"

75'-11⁹⁄₁₆" 73'-1"

225'-0⅛"

(FILL FACE @ END BENT 1 TO FILL FACE @ END BENT 2)

PLAN

(PILES AND DRILLED PIERS NOT SHOWN FOR CLARITY)

I HEREBY CERTIFY THESE PLANS
ARE THE AS-BUILT PLANS

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 1 OF 4 REPLACES BRIDGE #56

DRAWN BY : D. HODGE DATE : 1/21
CHECKED BY : G. GILLAND DATE : 1/21

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
10/24/2022
NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND
DocuSigned by: Gregory M. Gilland
A996A0C...

ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON NC 27
OVER UPPER LITTLE RIVER
BETWEEN SR 1117 AND SR 1234

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			36

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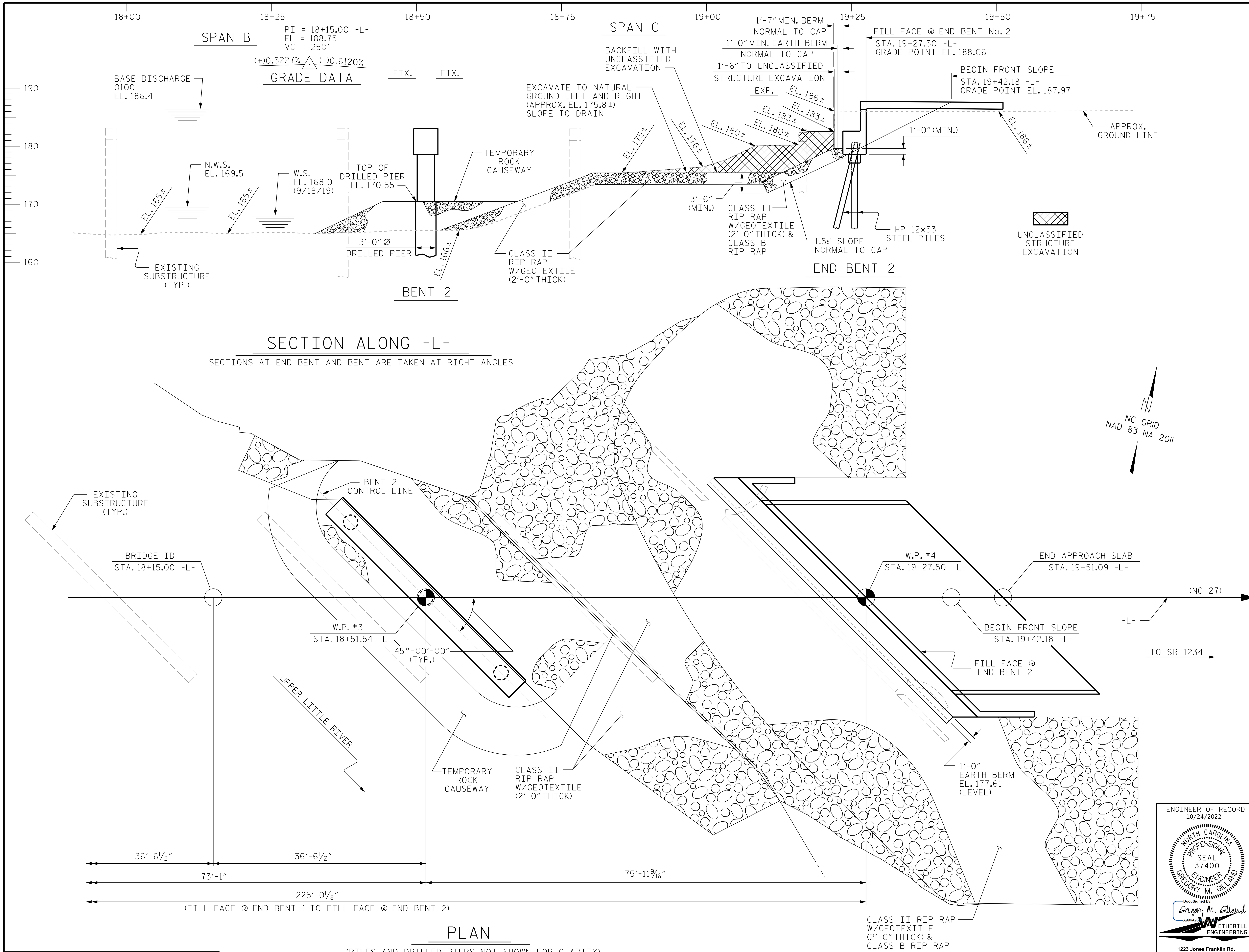

18+00
18+25
18+50
18+75
19+00
19+25
19+50
19+75
SPAN B
PI = 18+15.00 -L-
EL = 188.75
VC = 250'
(+)0.5227% (-)0.6120%
GRADE DATA
FIX.
FIX.
SPAN C
BASE DISCHARGE
Q100
EL. 186.4
190
180
170
160
N.W.S.
EL. 169.5
W.S.
EL. 168.0
(9/18/19)
EL. 165±
EL. 165±
TOP OF
DRILLED PIER
EL. 170.55
3'-0" Ø
DRILLED PIER
EL. 166±
EXISTING
SUBSTRUCTURE
(TYP.)
BENT 2
TEMPORARY
ROCK
CAUSEWAY
CLASS II
RIP RAP
W/GEOTEXTILE
(2'-0" THICK)
EXCAVATE TO NATURAL
GROUND LEFT AND RIGHT
(APPROX. EL. 175.8±)
SLOPE TO DRAIN
BACKFILL WITH
UNCLASSIFIED
EXCAVATION
EL. 175±
EL. 176±
EL. 180±
EL. 180±
EL. 183±
EL. 183±
EL. 186±
EXP.
1'-7" MIN. BERM
NORMAL TO CAP
1'-0" MIN. EARTH BERM
NORMAL TO CAP
1'-6" TO UNCLASSIFIED
STRUCTURE EXCAVATION
FILL FACE @ END BENT No. 2
STA. 19+27.50 -L-
GRADE POINT EL. 188.06
BEGIN FRONT SLOPE
STA. 19+42.18 -L-
GRADE POINT EL. 187.97
EL. 186±
APPROX.
GROUND LINE
1'-0" (MIN.)
3'-6"
(MIN.)
CLASS II
RIP RAP
W/GEOTEXTILE
(2'-0" THICK) &
CLASS B
RIP RAP
1.5:1 SLOPE
NORMAL TO CAP
HP 12x53
STEEL PILES
END BENT 2
UNCLASSIFIED
STRUCTURE
EXCAVATION
SECTION ALONG -L-
SECTIONS AT END BENT AND BENT ARE TAKEN AT RIGHT ANGLES
NC GRID
NAD 83 NA 2011
EXISTING
SUBSTRUCTURE
(TYP.)
BENT 2
CONTROL LINE
BRIDGE ID
STA. 18+15.00 -L-
W.P. #3
STA. 18+51.54 -L-
45°-00'-00"
(TYP.)
W.P. #4
STA. 19+27.50 -L-
END APPROACH SLAB
STA. 19+51.09 -L-
(NC 27)
-L-
BEGIN FRONT SLOPE
STA. 19+42.18 -L-
TO SR 1234
FILL FACE @
END BENT 2
UPPER LITTLE RIVER
TEMPORARY
ROCK
CAUSEWAY
CLASS II
RIP RAP
W/GEOTEXTILE
(2'-0" THICK)
1'-0"
EARTH BERM
EL. 177.61
(LEVEL)
36'-6½"
36'-6½"
73'-1"
75'-11⁹⁄₁₆"
225'-0⅛"
(FILL FACE @ END BENT 1 TO FILL FACE @ END BENT 2)
CLASS II RIP RAP
W/GEOTEXTILE
(2'-0" THICK) &
CLASS B RIP RAP
PLAN
(PILES AND DRILLED PIERS NOT SHOWN FOR CLARITY)

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 2 OF 4

ENGINEER OF RECORD
10/24/2022

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

DocuSigned by: Gregory M. Gilland

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON NC 27 OVER UPPER LITTLE RIVER BETWEEN SR 1117 AND SR 1234

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			S-2
1			3					TOTAL SHEETS
2			4					36

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : D. HODGE DATE : 1/21
CHECKED BY : G. GILLAND DATE : 1/21

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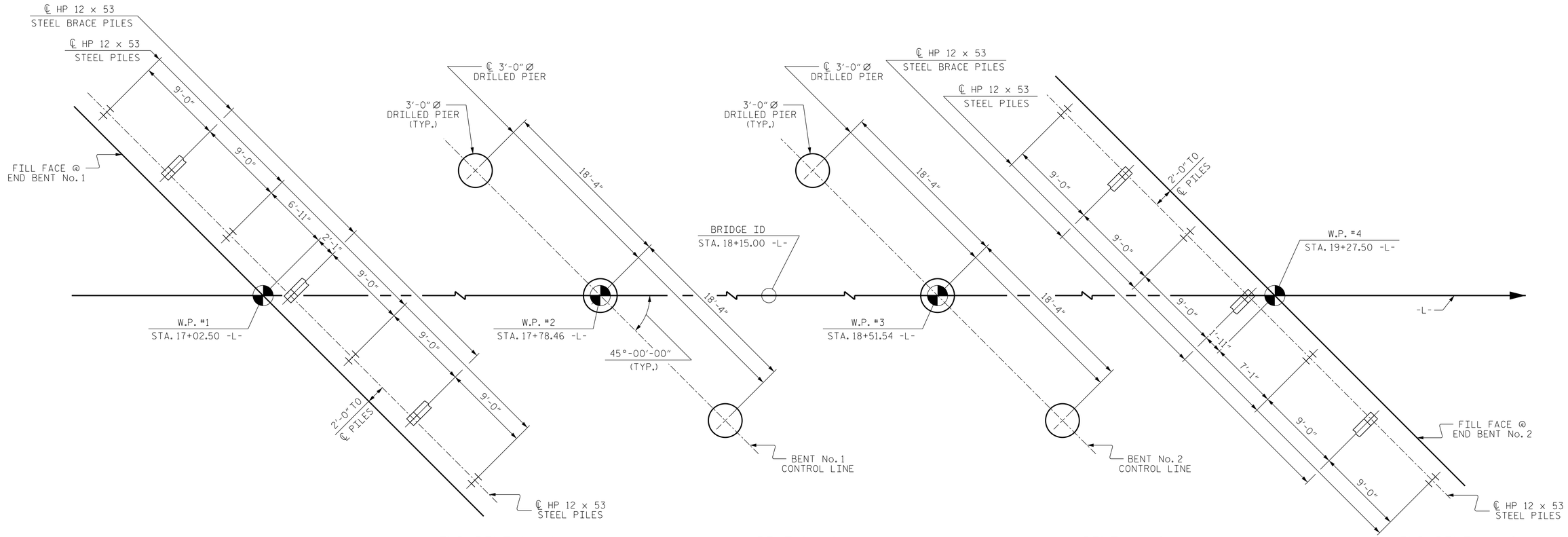

FOUNDATION LAYOUT

ALL END BENT BRACE PILES ARE BATTERED AT 3:12

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE AT THE BOTTOM OF THE CAP.

FOUNDATION NOTES:

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

PILES AT END BENTS NO. 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.

DRIVE PILES AT END BENTS NO. 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT No. 1 AND END BENT No. 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED AT THE END BENTS. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 13,000 TO 34,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENTS NO. 1 & 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

FOR DRILLED PIERS, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT No. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 350 TONS PER PIER, CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 5 TSF.

DRILLED PIERS AT BENT No. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 345 TONS PER PIER, CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 5 TSF.

PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT No. 1. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 160.0 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

INSTALL PERMANENT CASINGS AT BENT No. 1 BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 160.0 FT.

PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT No. 2, LEFT. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 158.0 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

INSTALL PERMANENT CASINGS AT BENT No. 2, LEFT BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 158.0 FT.

PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT No. 2, CENTER AND RIGHT. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 159.0 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

INSTALL PERMANENT CASINGS AT BENT No. 2, CENTER AND RIGHT BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 159.0 FT.

INSTALL DRILLED PIERS AT BENT No. 1, LEFT, TO A TIP ELEVATION NO HIGHER THAN 148.0 FT, WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 5 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS AT BENT No. 1, CENTER AND RIGHT, TO A TIP ELEVATION NO HIGHER THAN 143.0 FT, WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 5 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS AT BENT No. 2, LEFT, TO A TIP ELEVATION NO HIGHER THAN 151.0 FT, WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 5 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS AT BENT No. 2, CENTER AND RIGHT, TO A TIP ELEVATION NO HIGHER THAN 150.0 FT, WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 5 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

SPT MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SPT. FOR SPT TESTING, SEE 411 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT No. 1 IS ELEVATION 157 FEET. THE SCOUR CRITICAL ELEVATION FOR BENT No. 2 IS ELEVATION 158 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRAWN BY : D. HODGE DATE : 1/21
CHECKED BY : T. KOCH DATE : 1/21

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

WETHERILL ENGINEERING

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

PROJECT NO. BR-0082
HARNETT COUNTY
STATION: 18+15.00 -L-
SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON NC 27
OVER UPPER LITTLE RIVER
BETWEEN SR 1117 AND SR 1234

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			36

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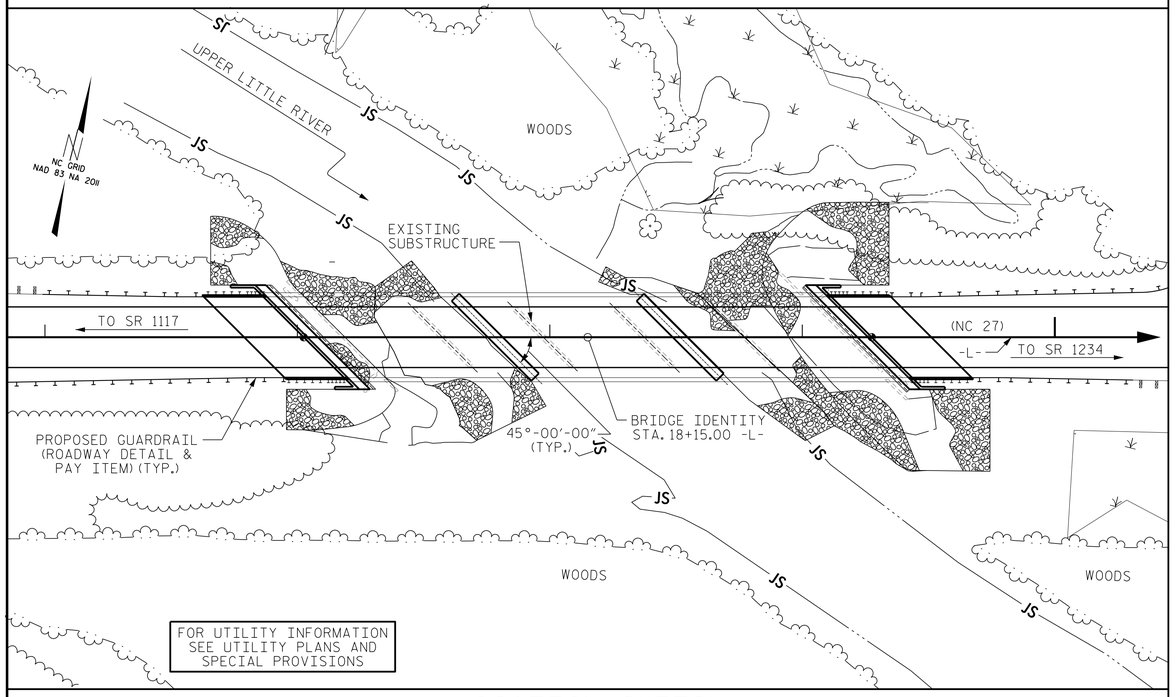
BM #1: BENCHLITE NAIL SET IN 24"Ø HARDWOOD 172.54' RIGHT OF STA. 17+80.32 -L-, ELEV. 182.48; N 578615, E 2014452



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 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.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

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".

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 & SHEET S-2 SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 5 SPANS @ 40'-0" WITH A REINFORCED CONCRETE FLOOR ON A STEEL I BEAM SUPERSTRUCTURE AND A CLEAR ROADWAY WIDTH OF 28.08' ON A SUBSTRUCTURE CONSISTING OF END BENTS ON REINFORCED CONCRETE CAPS AND 2 INTERIOR BENTS WITH REINFORCED CONCRETE CAPS ON PRESTRESSED CONCRETE PILES AND 2 REINFORCED CONCRETE POST AND BEAM INTERIOR BENTS AND LOCATED AT THE PROPOSED STRUCTURE LOCATION SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT.

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

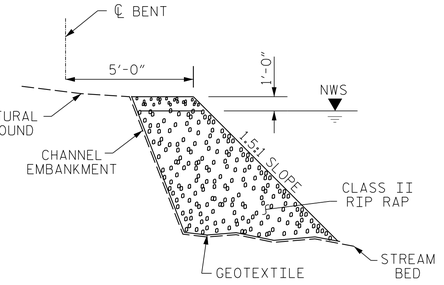
REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

ONLY ONE TEMPORARY ROCK CAUSEWAY MAY BE IN PLACE AT ANY TIME AND MUST BE COMPLETELY REMOVED BEFORE BEGINNING CONSTRUCTION OF THE ADJACENT CAUSEWAY.



TYP. SECTION
RIP RAP WORK PAD

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTANCE & REMOVAL OF TEMP. STRUCTURE	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	3'-0" Ø DRILLED PIERS IN SOIL	3'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	PDA TESTING	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM
SUPERSTRUCTURE	LUMP SUM	LUMP SUM	LUMP SUM								LUMP SUM	7,828	7,797		LUMP SUM
END BENT 1														53.2	
BENT 1				48.75	29.00	31.77		1	1	1				32.8	
BENT 2				34.75	26.00	35.65		1	1	1				32.8	
END BENT 2														53.2	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	83.50	55.00	67.42	1	2	2	2	LUMP SUM	7,828	7,797	172.0	LUMP SUM

TOTAL BILL OF MATERIAL

	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 x 53 STEEL PILES		STEEL PILE POINTS	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	STRIP SEAL EXPANSION JOINTS
	LBS.	LBS.	No.	LIN.FT.	EA.	NO.	LIN.FT.	EA.	LIN.FT.	TON	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			12	873.00					444.13			LUMP SUM	LUMP SUM
END BENT 1	7,093				7	7	104	7		610	675		
BENT 1	7,863	1,763											
BENT 2	7,285	1,483											
END BENT 2	7,093				7	7	139	7		800	880		
TOTAL	29,334	3,246	12	873.00	14	14	243	14	444.13	1,410	1,555	LUMP SUM	LUMP SUM

PROJECT NO. BR-0082
HARNETT COUNTY
STATION: 18+15.00 -L-

SHEET 4 OF 4

DRAWN BY : D. HODGE DATE : 1/21
CHECKED BY : G. GILLAND DATE : 1/21

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
10/24/2022
NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND
DocuSigned by: Gregory M. Gilland
WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON NC 27
OVER UPPER LITTLE RIVER
BETWEEN SR 1117 AND SR 1234

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			36

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LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVE-LOAD FACTORS (γ_{LL})	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)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.08	---	1.75	0.820	1.330	A	EL	35.710	0.930	1.260	A	I	64.810	0.80	0.760	1.080	A	I	35.710	1
		HL-93 (OPERATING)	N/A		1.66	---	1.35	0.820	1.720	A	EL	35.710	0.930	1.660	A	I	64.810	N/A	--	--	--	--	--	1
		HS-20 (INVENTORY)	36.000	2	1.41	50.760	1.75	0.820	1.730	A	EL	35.710	0.930	1.600	A	I	64.810	0.80	0.760	1.410	A	I	35.710	1
		HS-20 (OPERATING)	36.000		2.10	75.600	1.35	0.820	2.240	A	EL	35.710	0.930	2.100	A	I	64.810	N/A	--	--	--	--	--	1
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.17	42.795	1.40	0.820	4.860	A	EL	35.710	0.930	4.920	A	I	64.810	0.80	0.760	3.170	A	I	35.710	1
		SNGARBS2	20.000		2.37	47.400	1.40	0.820	3.630	A	EL	35.710	0.930	3.480	A	I	64.810	0.80	0.760	2.370	A	I	35.710	1
		SNAGRIS2	22.000		2.25	49.500	1.40	0.820	3.440	A	EL	35.710	0.930	3.220	A	I	64.810	0.80	0.760	2.250	A	I	35.710	1
		SNCOTTS3	27.250		1.58	43.055	1.40	0.820	2.420	A	EL	35.710	0.930	2.410	A	I	64.810	0.80	0.760	1.580	A	I	35.710	1
		SNAGGRS4	34.925		1.32	46.101	1.40	0.820	2.030	A	EL	35.710	0.930	1.990	A	I	64.810	0.80	0.760	1.320	A	I	35.710	1
		SNS5A	35.550		1.29	45.860	1.40	0.820	1.980	A	EL	35.710	0.930	2.020	A	I	64.810	0.80	0.760	1.290	A	I	35.710	1
		SNS6A	39.950		1.19	47.541	1.40	0.820	1.820	A	EL	35.710	0.930	1.840	A	I	64.810	0.80	0.760	1.190	A	I	35.710	1
		SNS7B	42.000		1.13	47.460	1.40	0.820	1.730	A	EL	35.710	0.930	1.800	A	I	64.810	0.80	0.760	1.130	A	I	35.710	1
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.45	47.850	1.40	0.820	2.220	A	EL	35.710	0.930	2.200	A	I	64.810	0.80	0.760	1.450	A	I	35.710	1
		TNT4A	33.075		1.45	47.959	1.40	0.820	2.230	A	EL	35.710	0.930	2.140	A	I	64.810	0.80	0.760	1.450	A	I	35.710	1
		TNT6A	41.600		1.19	49.504	1.40	0.820	1.820	A	EL	35.710	0.930	1.930	A	I	64.810	0.80	0.760	1.190	A	I	35.710	1
		TNT7A	42.000		1.20	50.400	1.40	0.820	1.830	A	EL	35.710	0.930	1.890	A	I	64.810	0.80	0.760	1.200	A	I	35.710	1
		TNT7B	42.000		1.24	52.080	1.40	0.820	1.900	A	EL	35.710	0.930	1.760	A	I	64.810	0.80	0.760	1.240	A	I	35.710	1
		TNAGRIT4	43.000		1.18	50.740	1.40	0.820	1.800	A	EL	35.710	0.930	1.700	A	I	64.810	0.80	0.760	1.180	A	I	35.710	1
		TNAGT5A	45.000		1.11	49.950	1.40	0.820	1.700	A	EL	35.710	0.930	1.690	A	I	64.810	0.80	0.760	1.110	A	I	35.710	1
		TNAGT5B	45.000	3	1.10	49.500	1.40	0.820	1.680	A	EL	35.710	0.930	1.610	A	I	64.810	0.80	0.760	1.100	A	I	35.710	1

LOAD FACTORS:

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

NOTES:

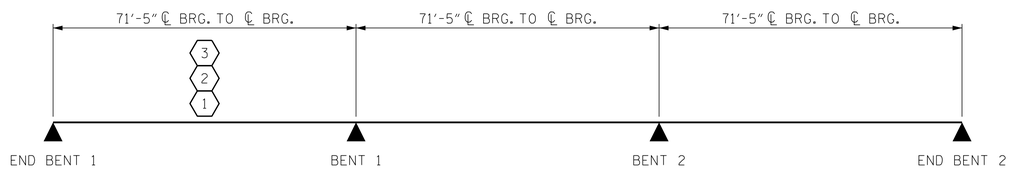
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

1. SPANS B AND C ARE IDENTICAL TO SPAN A
2.
3.
4.

(#) CONTROLLING LOAD RATING
(1) DESIGN LOAD RATING (HL-93)
(2) DESIGN LOAD RATING (HS-20)
(3) LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE
GIRDER LOCATION
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

WETHERILL ENGINEERING

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

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			36

STD. NO. LRFR1

ASSEMBLED BY : B.C. HUNT	DATE : 1-20	
CHECKED BY : G.M. GILLAND	DATE : 1-20	
DRAWN BY : MAA 1/08	REV. 11/12/08RR	MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11	MAA/GM
	REV. 12/17	MAA/THC

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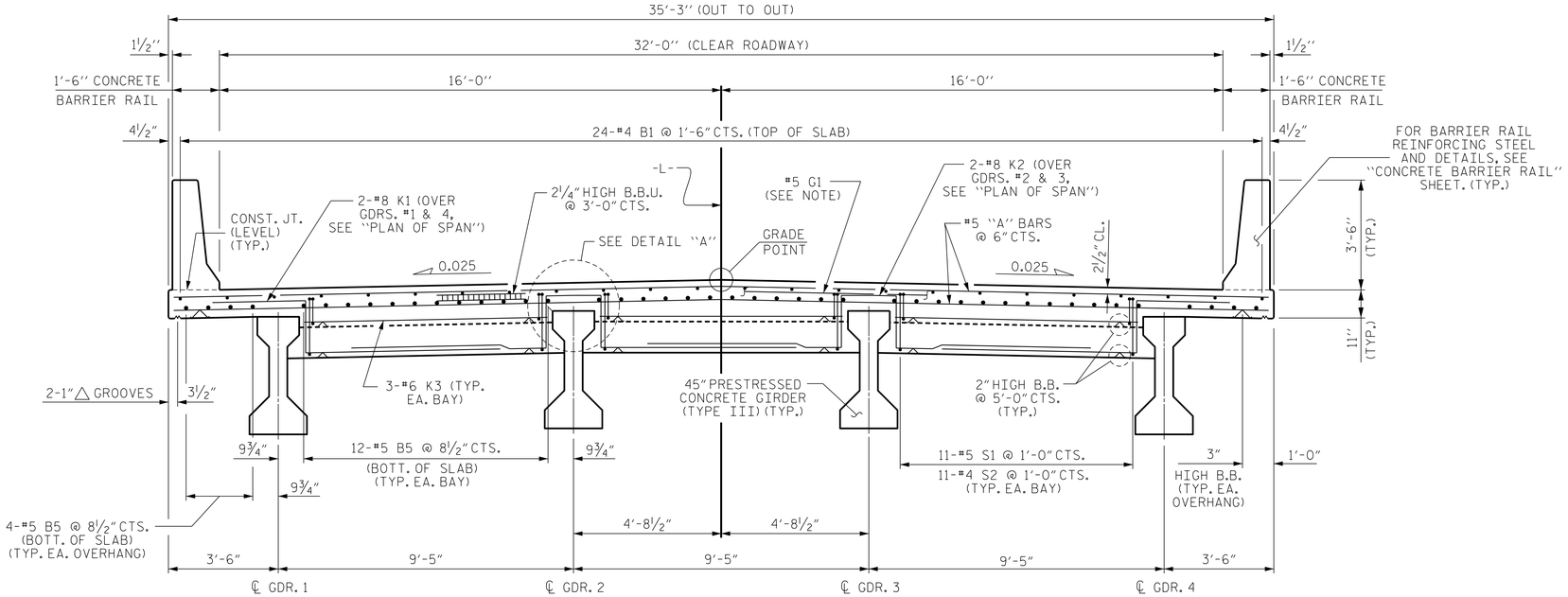


TYPICAL SECTION AT END BENT DIAPHRAGM

NOTES

PROVIDE 1¼"HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2½" ABOVE THE TOP OF THE REMOVABLE FORM.

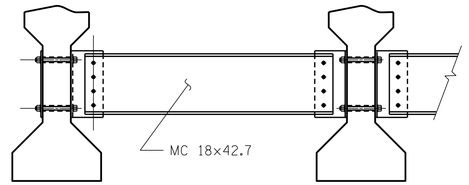
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

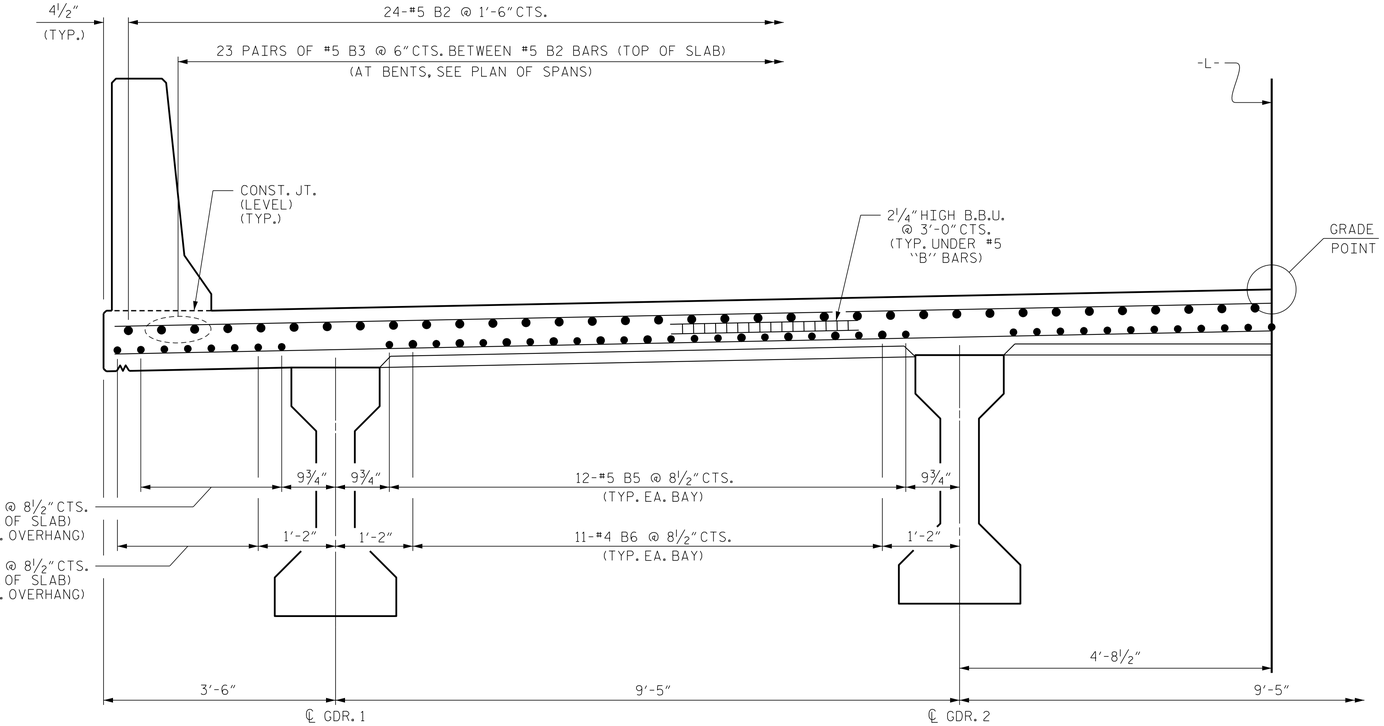
#5 G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

NO WELDING OF FORMS OR FALSEWORK TO THE TOP OF THE GIRDER WILL BE PERMITTED IN THE LINK SLAB AREA.

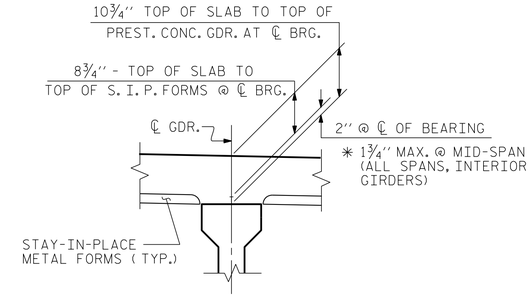


TYPICAL INTERMEDIATE DIAPHRAGM

SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE III PRESTRESSED CONCRETE GIRDERS" SHEET FOR DETAILS



TYPICAL HALF SECTION THRU LINK SLAB @ BENT



DETAIL "A"

* BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 1 OF 2

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Designed by Gregory M. Gilland

ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			36

DRAWN BY : D. HODGE DATE : 11/21
CHECKED BY : G. GILLAND DATE : 11/21

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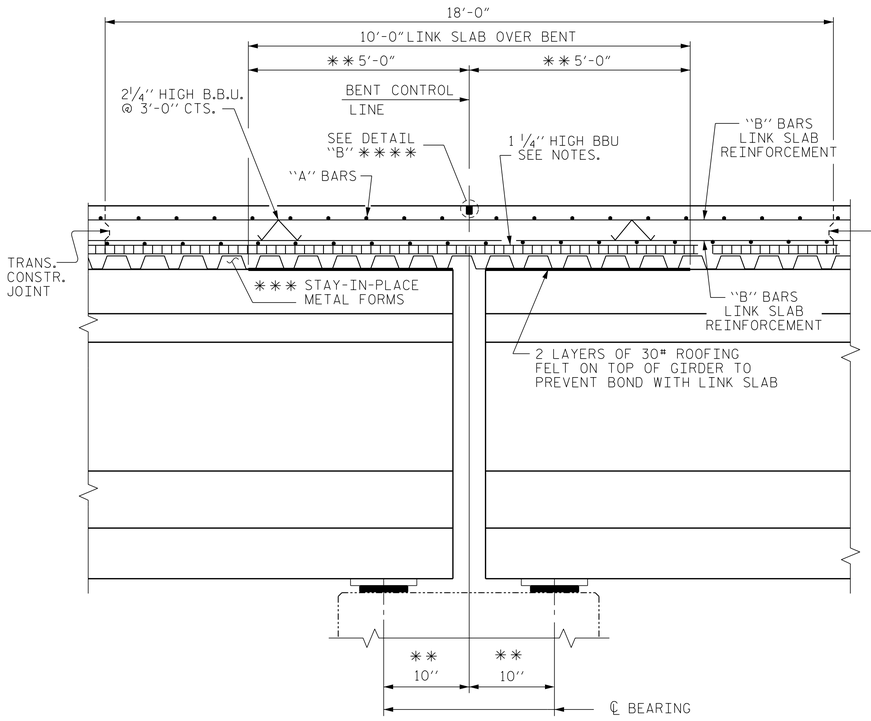


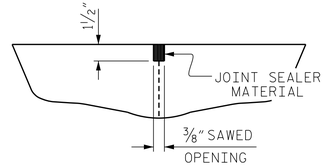
SECTION THRU LINK SLAB @ BENT

(SHOWN PERPENDICULAR TO BENT CONTROL LINE)

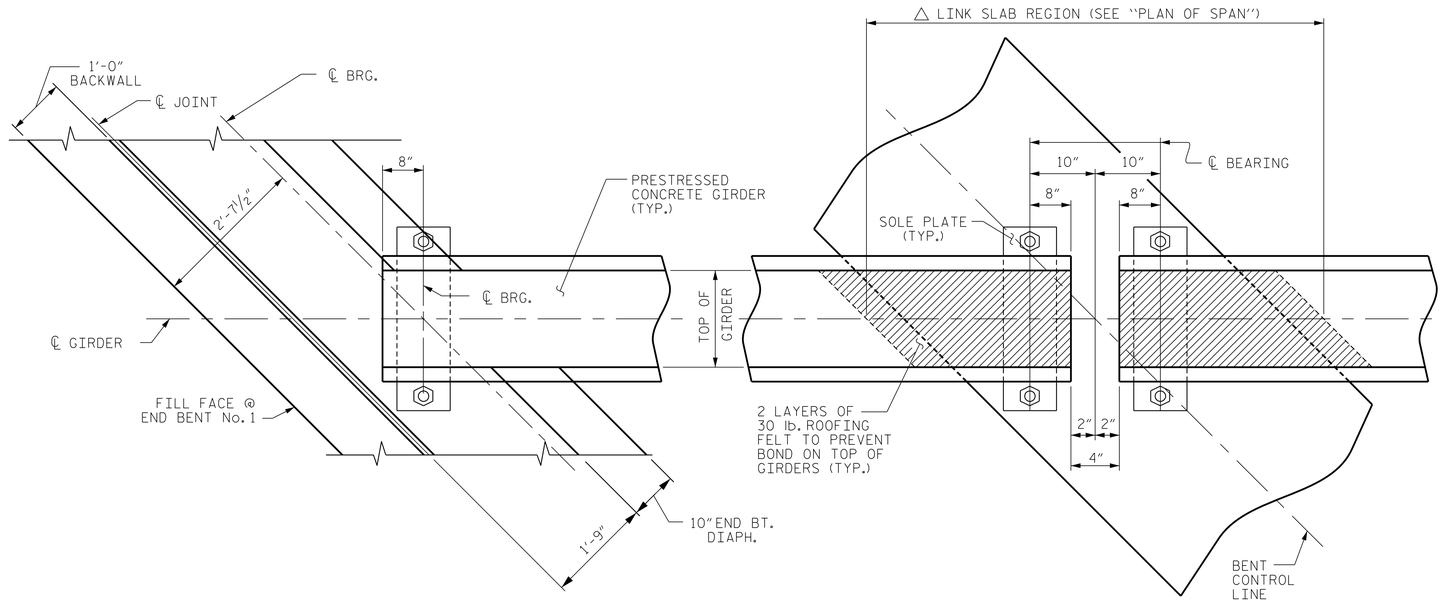
∗∗ DIMENSION IS MEASURED ALONG THE ℄ GIRDER

∗∗∗ METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE GIRDER FLANGES IN THE REGION OF THE LINK SLAB.

∗∗∗∗ A 1½″ DEEP, ⅜″ WIDE CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATION.



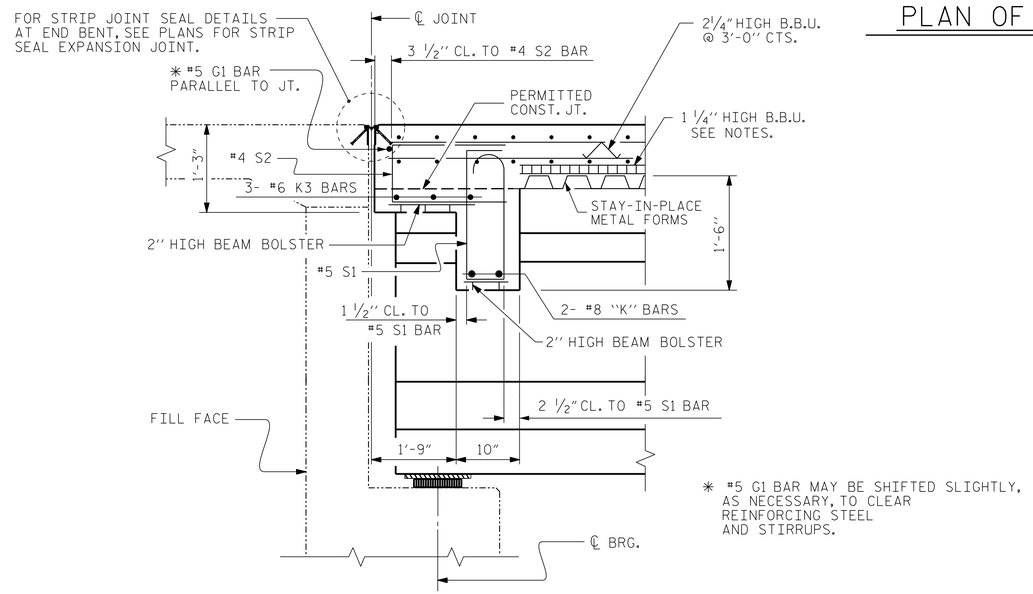
DETAIL ″B″



PLAN OF GIRDER @ END BENT

PLAN OF LINK SLAB @ BENT

△ THE TOP OF THE GIRDER IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH (NOT RAKED) AND FREE OF STIRRUPS, ANCHOR STUDS, DECK FORMWORK ATTACHMENTS AND OVERHANG FALSEWORK/FORMWORK ATTACHMENTS.



∗ #5 G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

SECTION THRU END BENT DIAPHRAGM

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 2 OF 2

ENGINEER OF RECORD
1/6/2022

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

WETHERILL ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			36

DRAWN BY : D. HODGE DATE : 11/21

CHECKED BY : G. GILLAND DATE : 11/21

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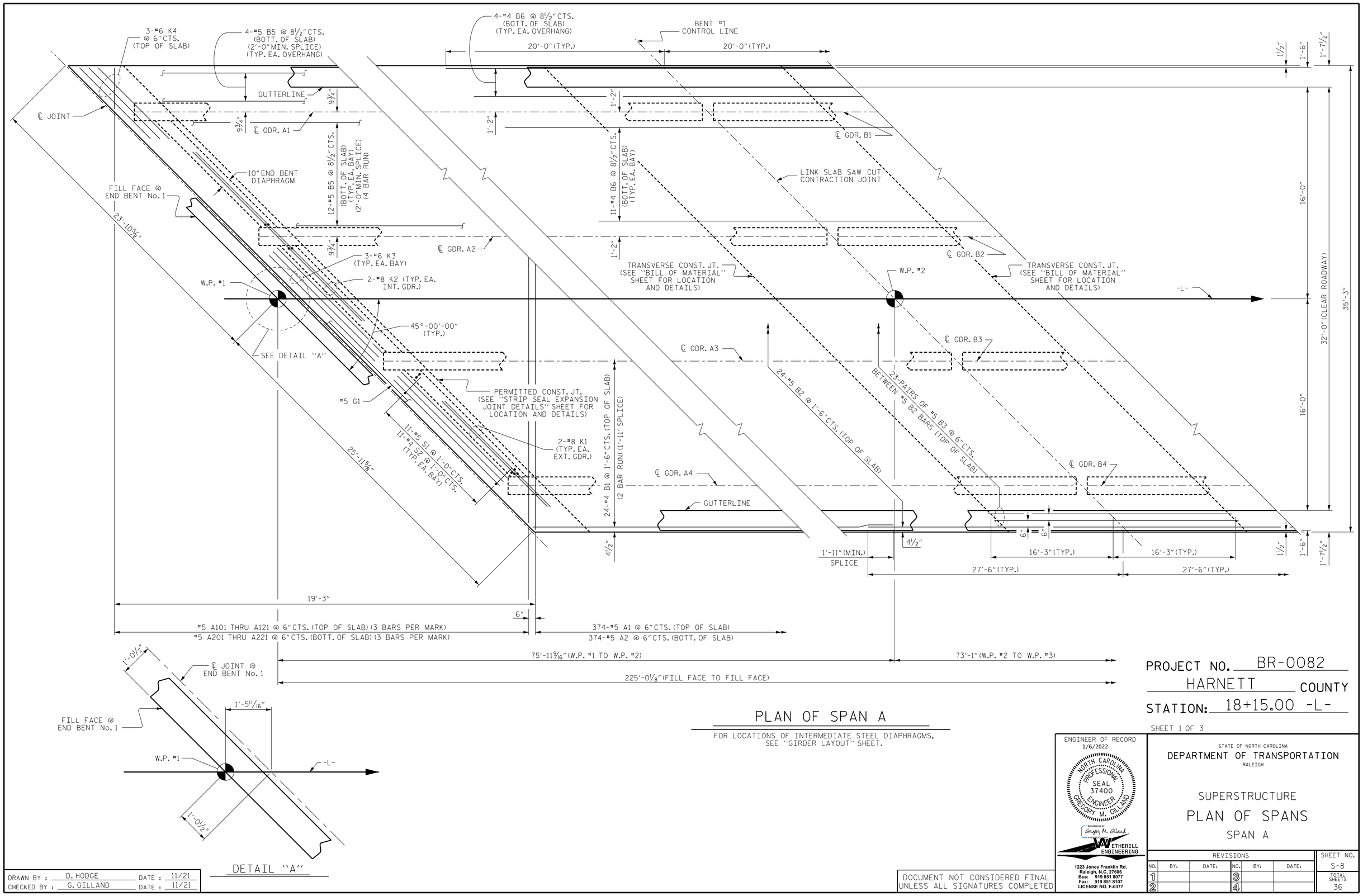

PLAN OF SPAN A

FOR LOCATIONS OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "GIRDER LAYOUT" SHEET.

DETAIL "A"

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 1 OF 3

ENGINEER OF RECORD
1/6/2022

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

WETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

SPAN A

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			36

DRAWN BY : D. HODGE DATE : 11/21
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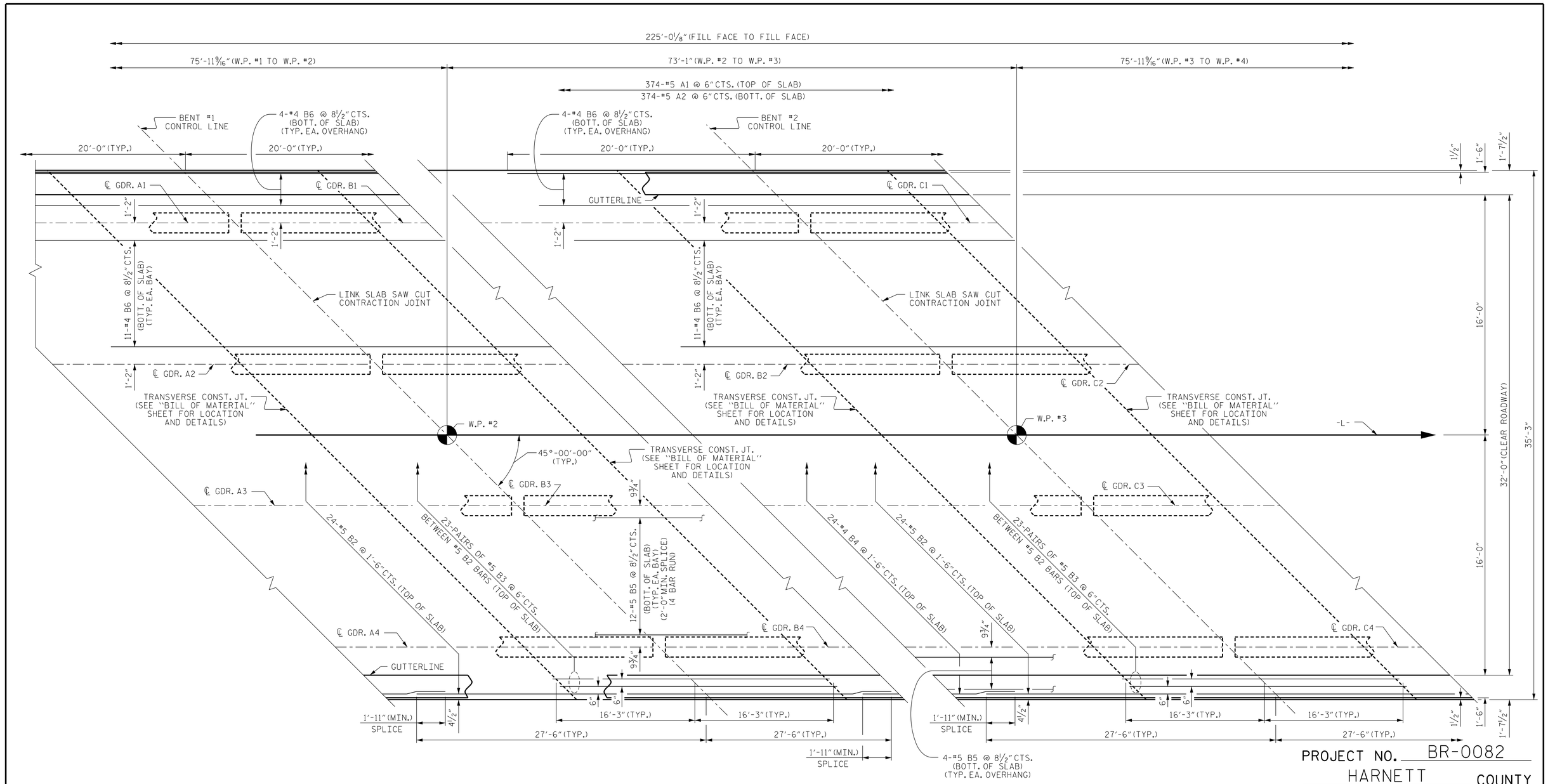

PLAN OF SPAN B

FOR LOCATIONS OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "GIRDER LAYOUT" SHEET.

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 2 OF 3

ENGINEER OF RECORD
1/6/2022

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

WETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

SPAN B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			36

DRAWN BY : D. HODGE DATE : 11/21
CHECKED BY : G. GILLAND DATE : 11/21

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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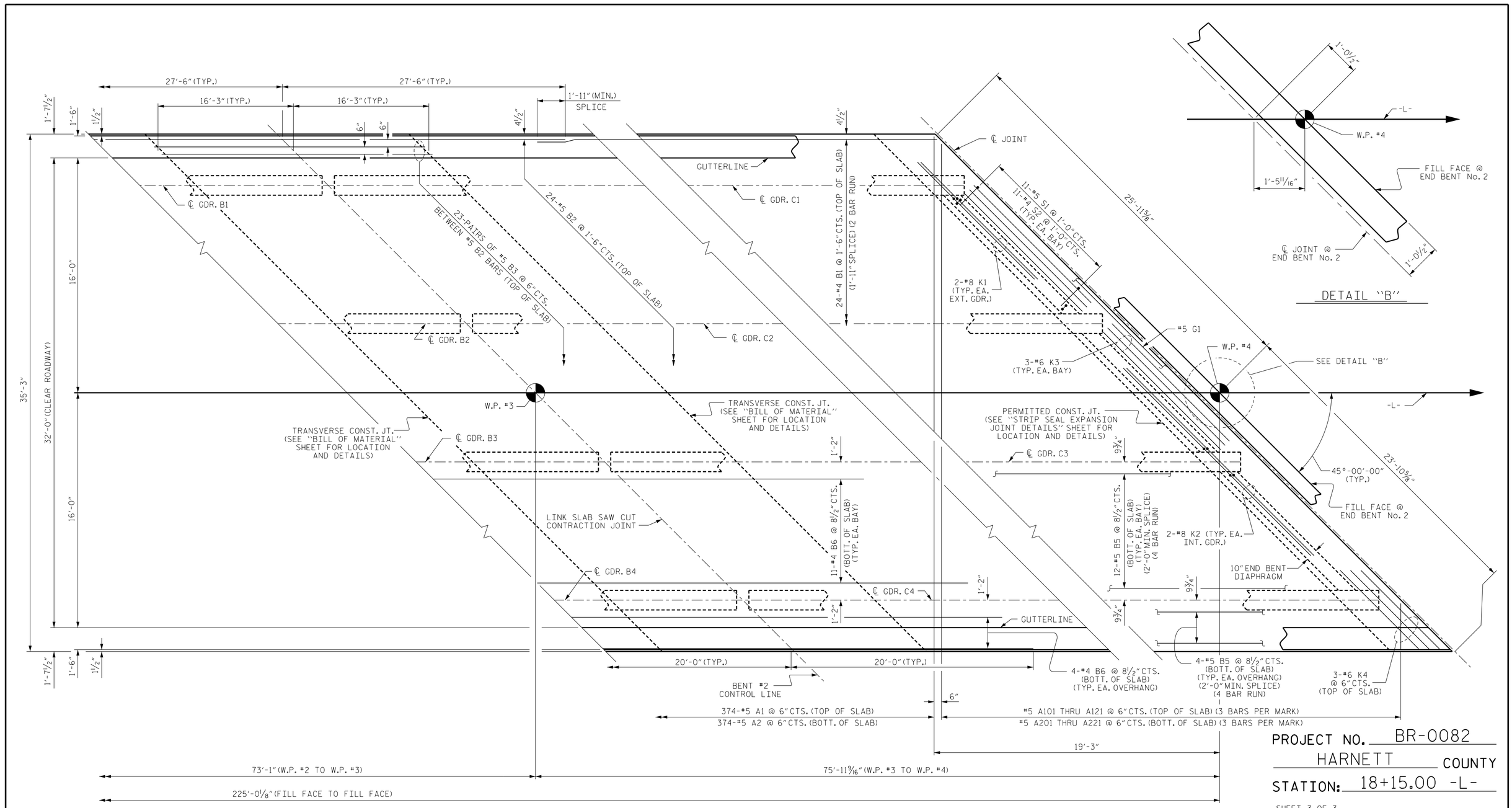

DETAIL "B"

PLAN OF SPAN C

FOR LOCATIONS OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "GIRDER LAYOUT" SHEET.

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 3 OF 3

ENGINEER OF RECORD
1/6/2022

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

WETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

SPAN C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			36

DRAWN BY : D. HODGE DATE : 11/21

CHECKED BY : G. GILLAND DATE : 11/21

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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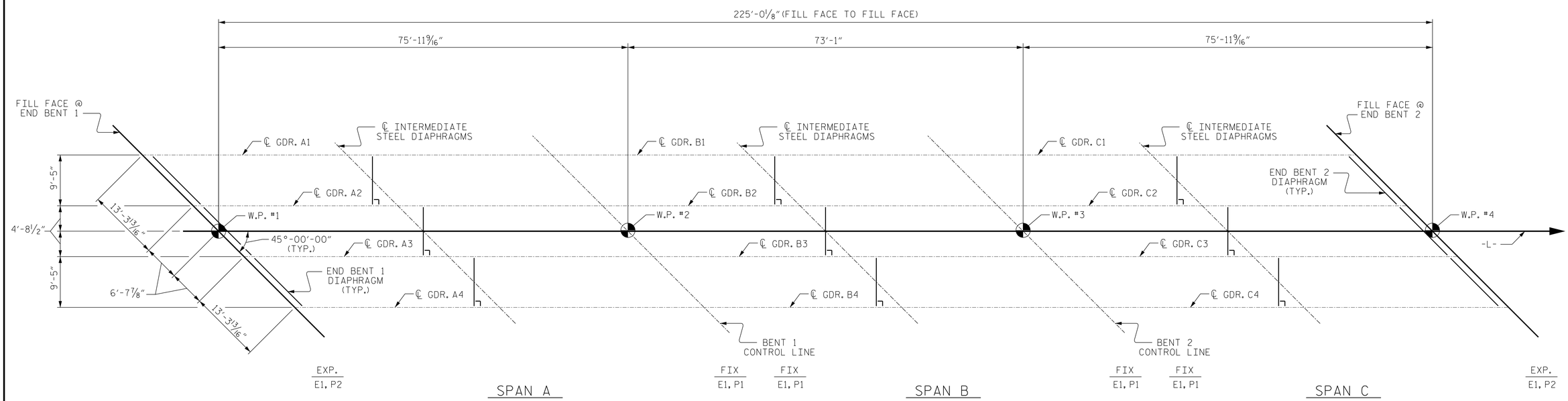

GIRDER LAYOUT

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

ETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

GIRDER LAYOUT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			36

DRAWN BY : D. HODGE DATE : 11/21

CHECKED BY : G. GILLAND DATE : 11/21

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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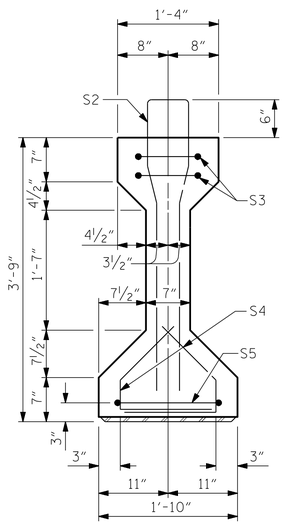
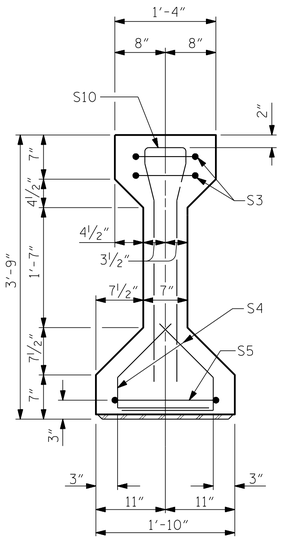
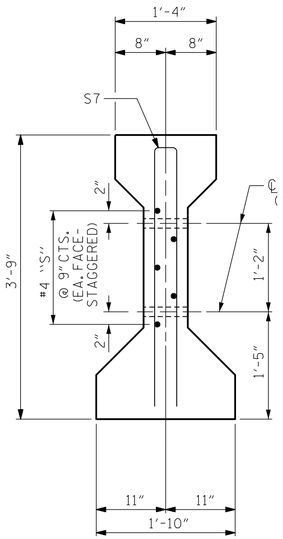


SECTION A-A



SECTION B-B



SECTION C-C

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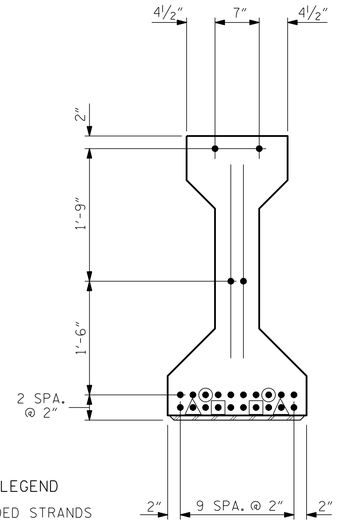
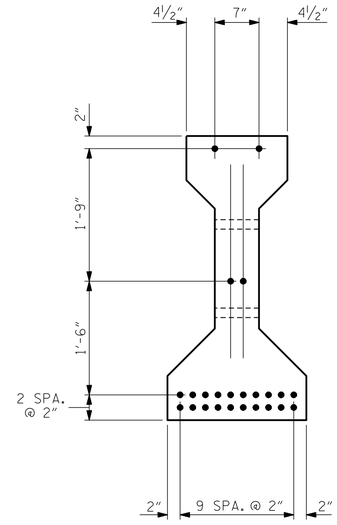


AT END OF GIRDER

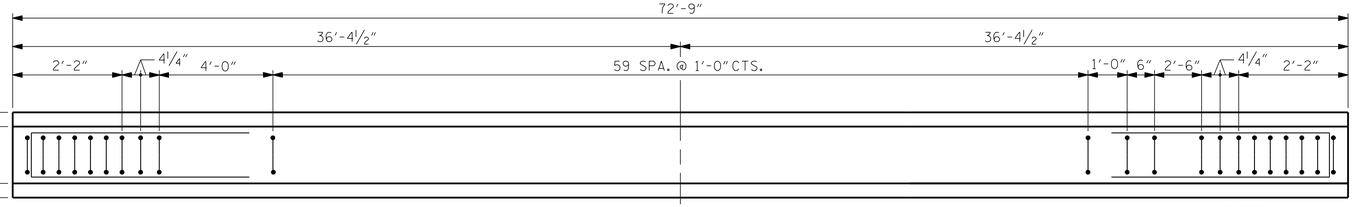


AT ℄ OF GIRDER

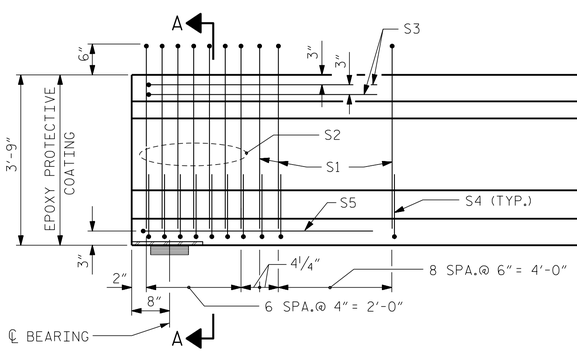
DEBONDING LEGEND

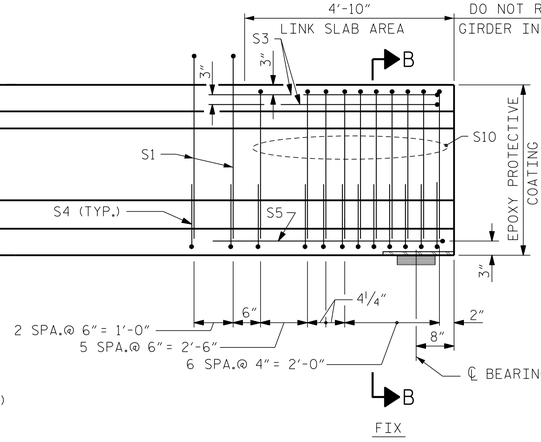
- ● FULLY BONDED STRANDS
- △● STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◎ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- ▣ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER

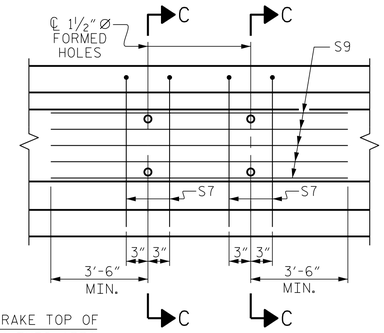




ELEVATION OF GIRDER

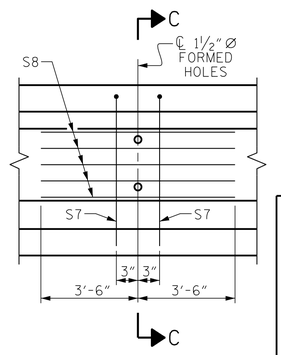
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

(SPAN A SHOWN, SPAN C SIMILAR BY ROTATION)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. 2 & 3



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR
GIRDER Nos. 1 & 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0.6" Ø L. R. GRADE 270 STRANDS

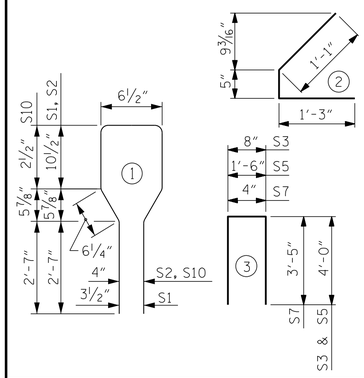
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
	S1	71	#4	1	8'-6"	403
	S2	7	#6	1	8'-6"	89
	S3	4	#4	3	8'-8"	23
	S4	68	#4	2	2'-9"	125
	S5	2	#4	3	9'-6"	13
EXTERIOR GDR.	S7	2	#5	3	7'-2"	15
INTERIOR GDR.	S7	4	#5	3	7'-2"	30
EXTERIOR GDR.	S8	5	#4	STR	7'-0"	23
INTERIOR GDR.	S9	5	#4	STR	16'-5"	55
	S10	14	#6	1	7'-2"	151

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	6500 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GIRDER	842	10.5	24
INTERIOR GIRDER	889	10.5	24

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
8	72'-9"	582.00

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 1 OF 4

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

WETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE III PRESTRESSED CONCRETE GIRDER LINK SLAB (SPANS A & C)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			36

ASSEMBLED BY : D. HODGE	DATE : 11/21		
CHECKED BY : G. GILLAND	DATE : 12/21		
DRAWN BY : BNB 09/21			
CHECKED BY : AAI 09/21			

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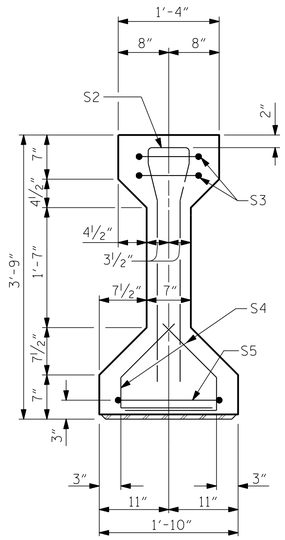
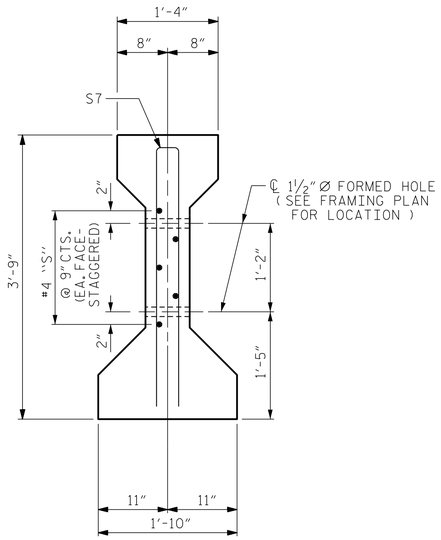
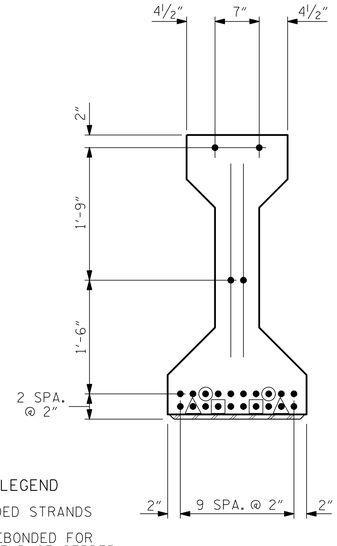


SECTION B-B

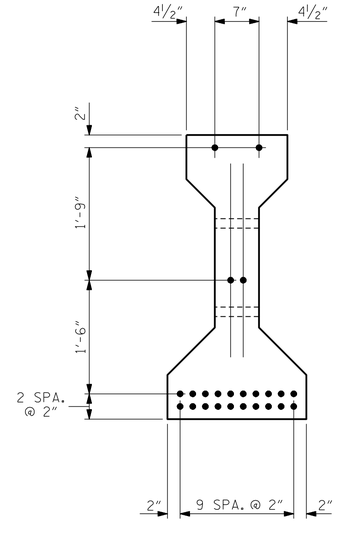


SECTION C-C

(S1 BARS NOT SHOWN)



AT END OF GIRDER

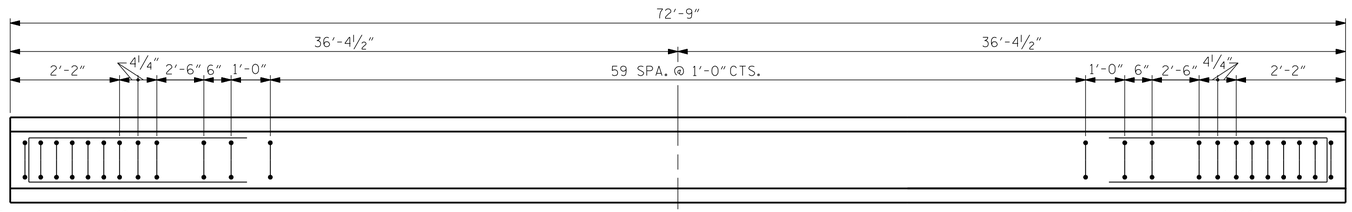


AT ℄ OF GIRDER

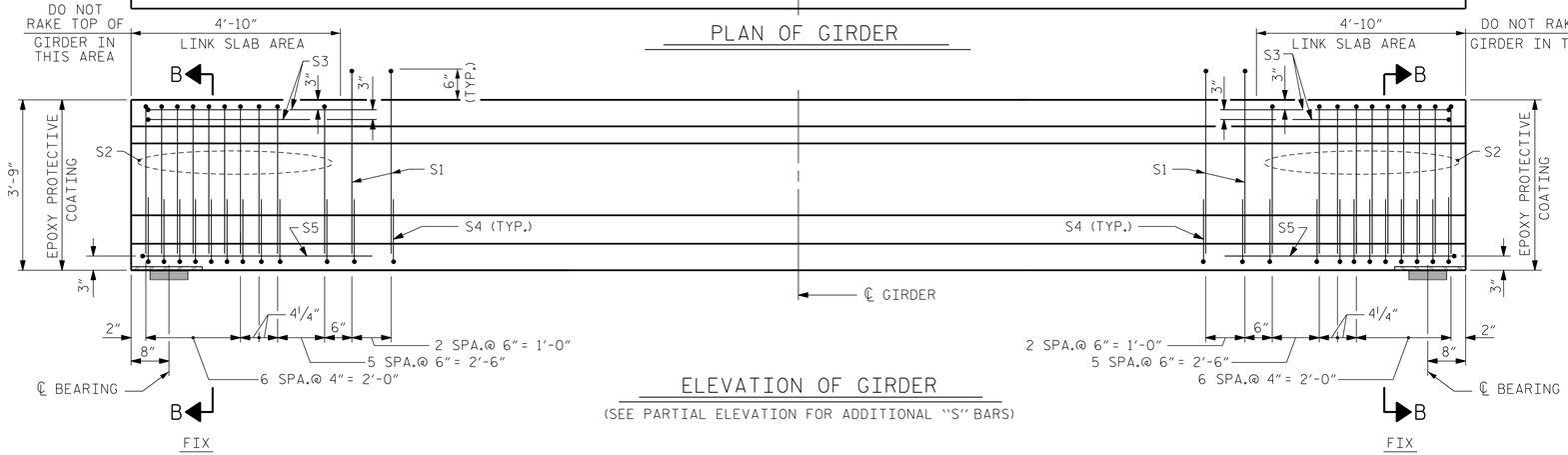
DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- △ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ⊙ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- ⊡ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

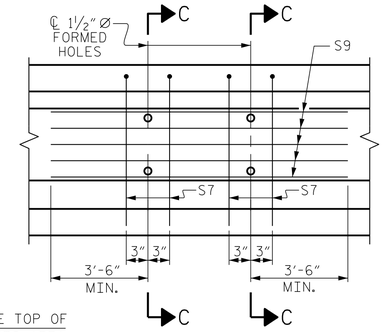


PLAN OF GIRDER



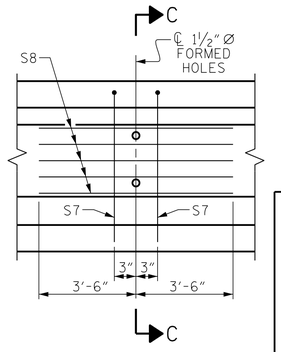
ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 2 & 3



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 & 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0.6" Ø L. R. GRADE 270 STRANDS

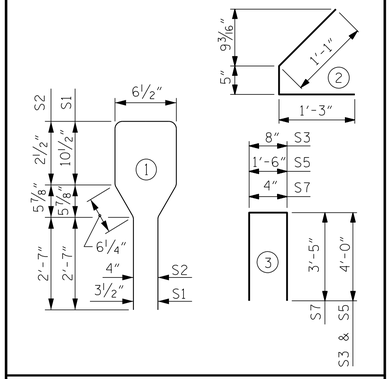
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
	S1	64	#4	1	8'-6"	363
	S2	28	#6	1	7'-2"	301
	S3	4	#4	3	8'-8"	23
	S4	68	#4	2	2'-9"	125
	S5	2	#4	3	9'-6"	13
EXTERIOR GDR.	S7	2	#5	3	7'-2"	15
INTERIOR GDR.	S7	4	#5	3	7'-2"	30
EXTERIOR GDR.	S8	5	#4	STR	7'-0"	23
INTERIOR GDR.	S9	5	#4	STR	16'-5"	55

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	6500 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GIRDER	863	10.5	24
INTERIOR GIRDER	910	10.5	24

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	72'-9"	291.00

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 2 OF 4

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Digitally Signed by Gregory M. Gillard

WETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
LINK SLAB
(SPAN B)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			36

ASSEMBLED BY : D. HODGE	DATE :	11/21
CHECKED BY : G. GILLAND	DATE :	12/21
DRAWN BY : BNB		09/21
CHECKED BY : AAI		09/21

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STD. NO. PCG5 (Sht. 1)

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

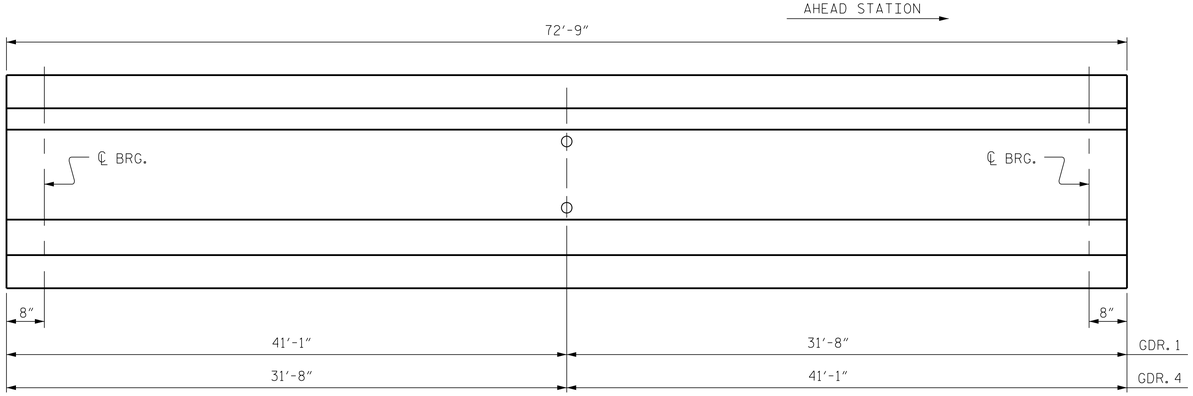
0.6" Ø LOW RELAXATION	SPANS A, B & C GIRDERS 1 & 4																				
TWENTIETH POINTS	0	.050	.100	.150	.200	.250	.300	.350	.400	.450	.500	.550	.600	.650	.700	.750	.800	.850	.900	.950	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.025	0.050	0.073	0.094	0.113	0.128	0.141	0.150	0.156	0.158	0.156	0.150	0.141	0.128	0.113	0.094	0.073	0.050	0.025	0
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.014	0.028	0.042	0.056	0.067	0.077	0.084	0.091	0.094	0.096	0.094	0.091	0.084	0.077	0.067	0.056	0.042	0.028	0.014	0
FINAL CAMBER ↑	0	1/8"	1/4"	3/8"	7/16"	9/16"	5/8"	11/16"	11/16"	3/4"	3/4"	3/4"	11/16"	11/16"	5/8"	9/16"	7/16"	3/8"	1/4"	1/8"	0

✳ INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT " FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).

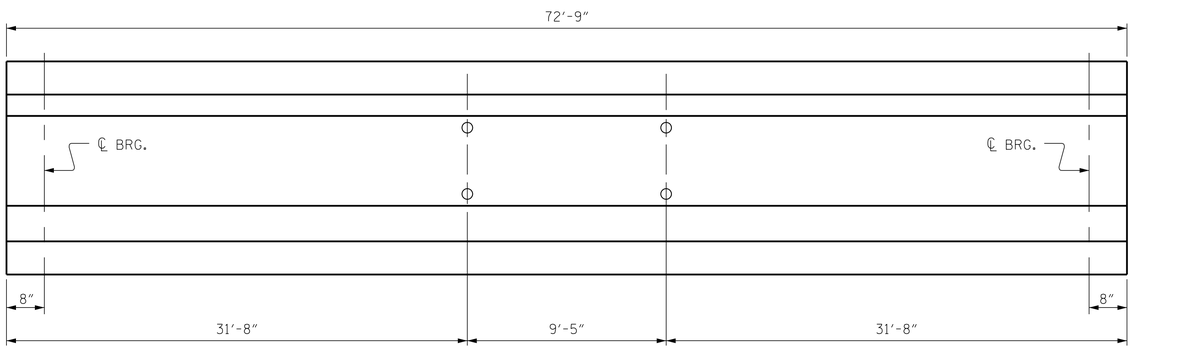
DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION	SPANS A, B & C GIRDERS 2 & 3																				
TWENTIETH POINTS	0	.050	.100	.150	.200	.250	.300	.350	.400	.450	.500	.550	.600	.650	.700	.750	.800	.850	.900	.950	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.025	0.050	0.073	0.094	0.113	0.128	0.141	0.150	0.156	0.158	0.156	0.150	0.141	0.128	0.113	0.094	0.073	0.050	0.025	0
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.016	0.031	0.047	0.062	0.075	0.087	0.095	0.102	0.105	0.108	0.105	0.102	0.095	0.087	0.075	0.062	0.047	0.031	0.016	0
FINAL CAMBER ↑	0	1/8"	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	9/16"	5/8"	5/8"	5/8"	9/16"	9/16"	1/2"	7/16"	3/8"	5/16"	1/4"	1/8"	0

✳ INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT " FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).



LOCATION OF BOLT HOLES IN GIRDERS 1 & 4



LOCATION OF BOLT HOLES IN GIRDERS 2 & 3

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 SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

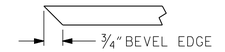
THE PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5000 PSI.

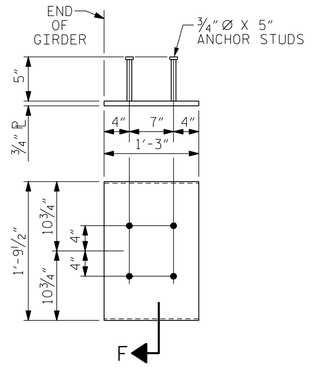
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4" AND THE AREA OF THE LINK SLAB, SHALL BE RAKED TO A DEPTH OF 1/4".

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.



SECTION "F"
(SEE NOTES)



EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE III GIRDER
(2 REQ'D PER GIRDER)

PROJECT NO. BR-0082
HARNETT COUNTY
STATION: 18+15.00 -L-

SHEET 3 OF 4

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

WETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			36

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ASSEMBLED BY :	D. HODGE	DATE :	11/21
CHECKED BY :	G. GILLAND	DATE :	12/21
DRAWN BY :	ELR 11/91	REV. 1/15	MAA/TMG
CHECKED BY :	GRP 11/91	REV. 2/15	MAA/TMG
		REV. 12/17	MAA/THC

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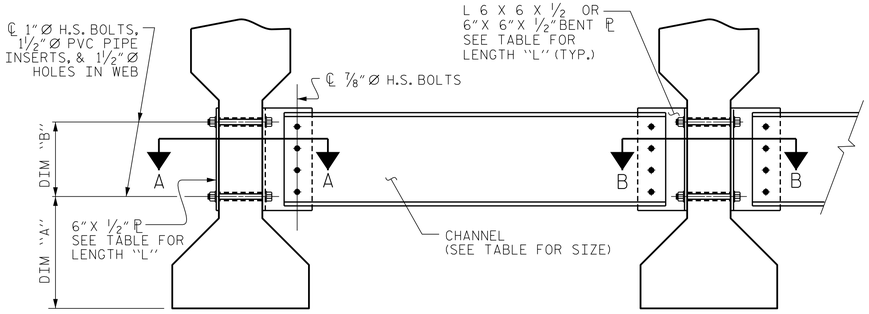
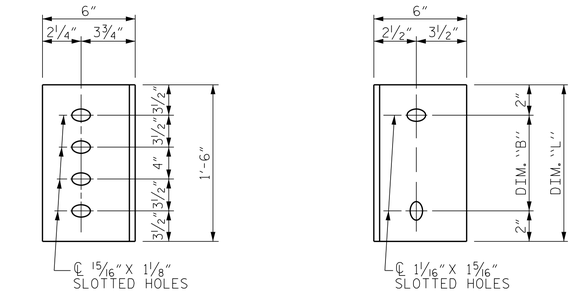
STD. NO. PCG9 (Sht. 2)



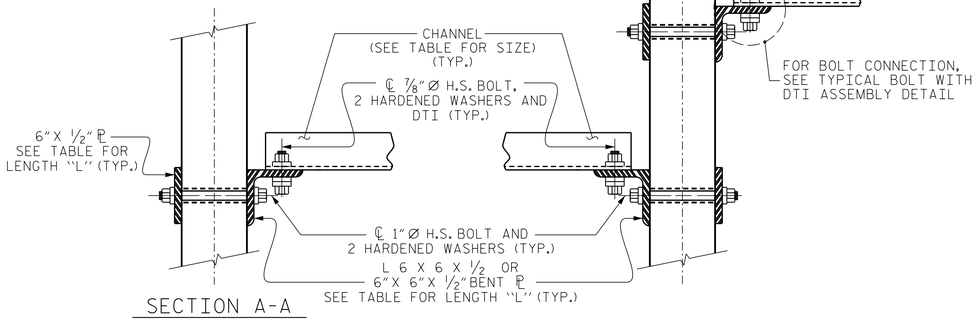
EXTERIOR GIRDER INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE WEB FACE

CONNECTOR PLATE DETAILS



SECTION A-A SECTION B-B

CONNECTION DETAILS

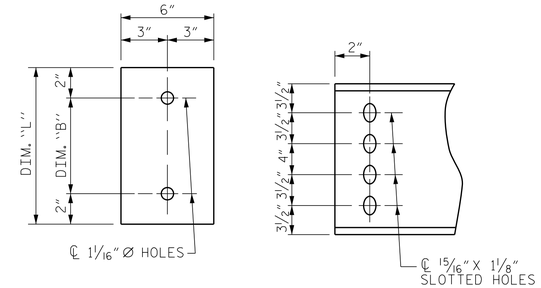
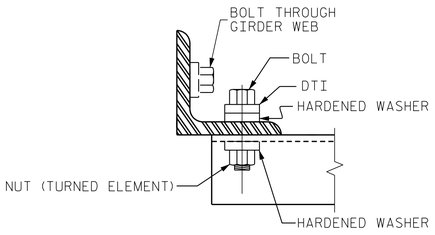


PLATE DETAILS CHANNEL END



BOLT WITH DTI ASSEMBLY DETAIL

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL ¼ TURN.

THE PLATES, BENT PLATES, CHANNELS, AND ANGLES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM, THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST ¼"PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
III	MC 18 x 42.7	1'-5"	1'-2"	1'-6"

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 4 OF 4

ENGINEER OF RECORD 12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

ETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE III PRESTRESSED CONCRETE GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			36

STD. NO. PCG10 (SHT 1)

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ASSEMBLED BY :	D. HODGE	DATE :	12/19
CHECKED BY :	G. GILLAND	DATE :	12/19
DRAWN BY : TLA 6/05	REV. 5/1/06RRR		KMM/GM
CHECKED BY : VC 6/05	REV. 10/1/11		MAA/GM
	REV. 12/17		MAA/THC

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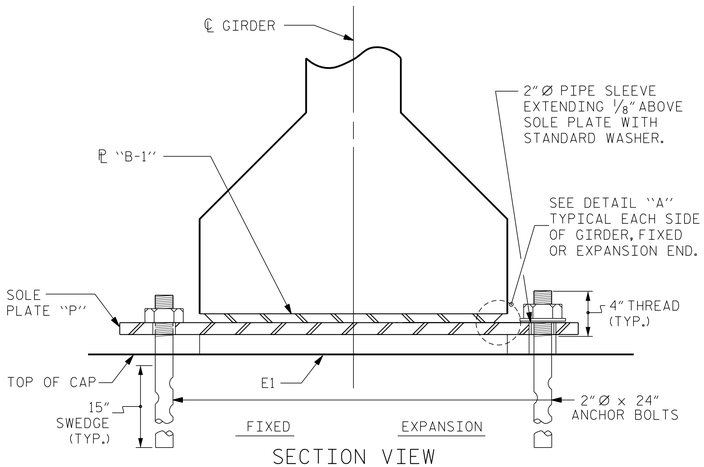
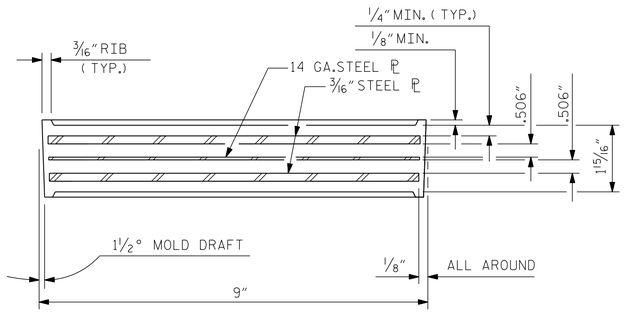
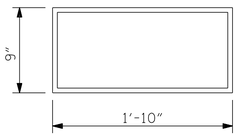


SECTION VIEW



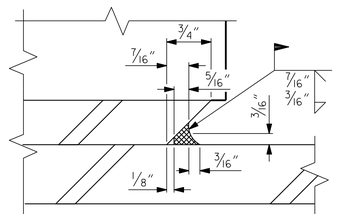
TYPICAL SECTION OF ELASTOMERIC BEARINGS



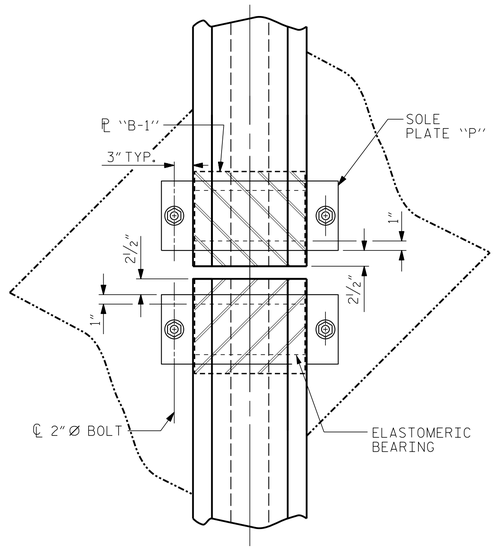
E1 (24 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV

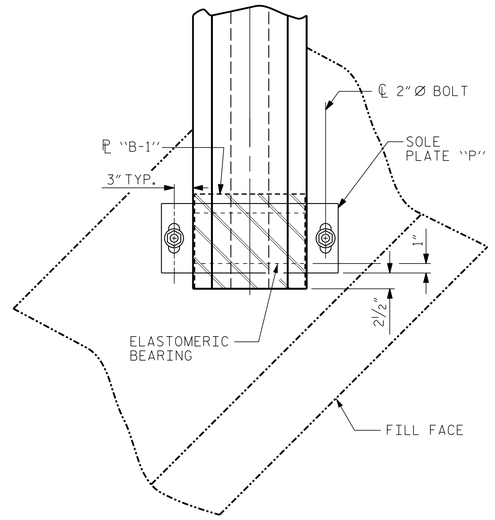


DETAIL "A"



TYPICAL PLAN

(SHOWING BENT)



TYPICAL PLAN

(SHOWING END BENT)

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2"Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

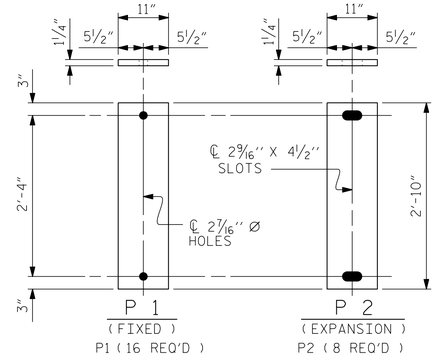
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



SOLE PLATE DETAILS ("P")

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

WETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			36

ASSEMBLED BY : D. HODGE	DATE : 12/19		
CHECKED BY : G. GILLAND	DATE : 12/19		
DRAWN BY : WJH 8/89	REV. 6/13	AAC/MAA	
CHECKED BY : CRK 8/89	REV. 1/15	MAA/TMG	
	REV. 12/17	MAA/THC	

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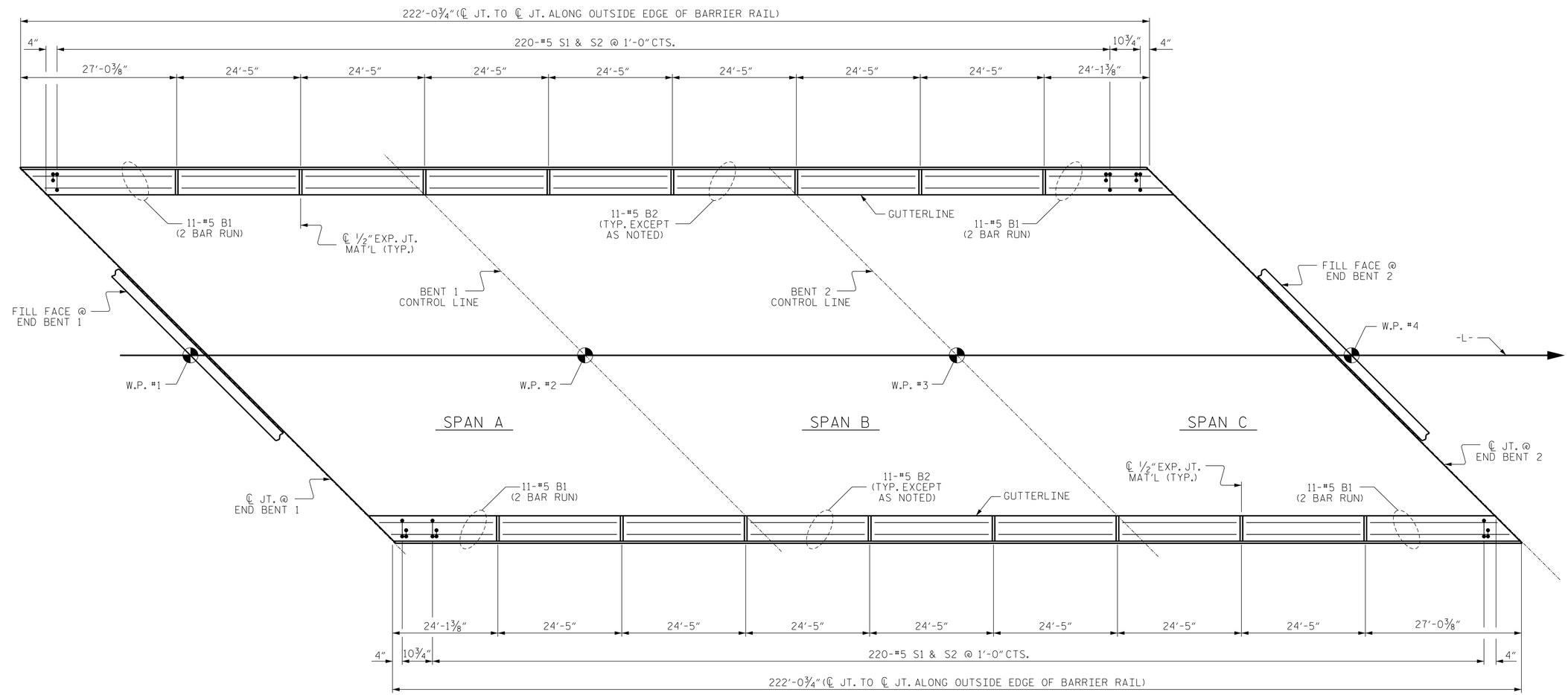

PLAN OF CONCRETE BARRIER RAIL

NOTES

THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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. THE 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.

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

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Gregory M. Gilland

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

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RALEIGH

CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			36

DRAWN BY : D. HODGE DATE : 1/21
CHECKED BY : G. GILLAND DATE : 1/21

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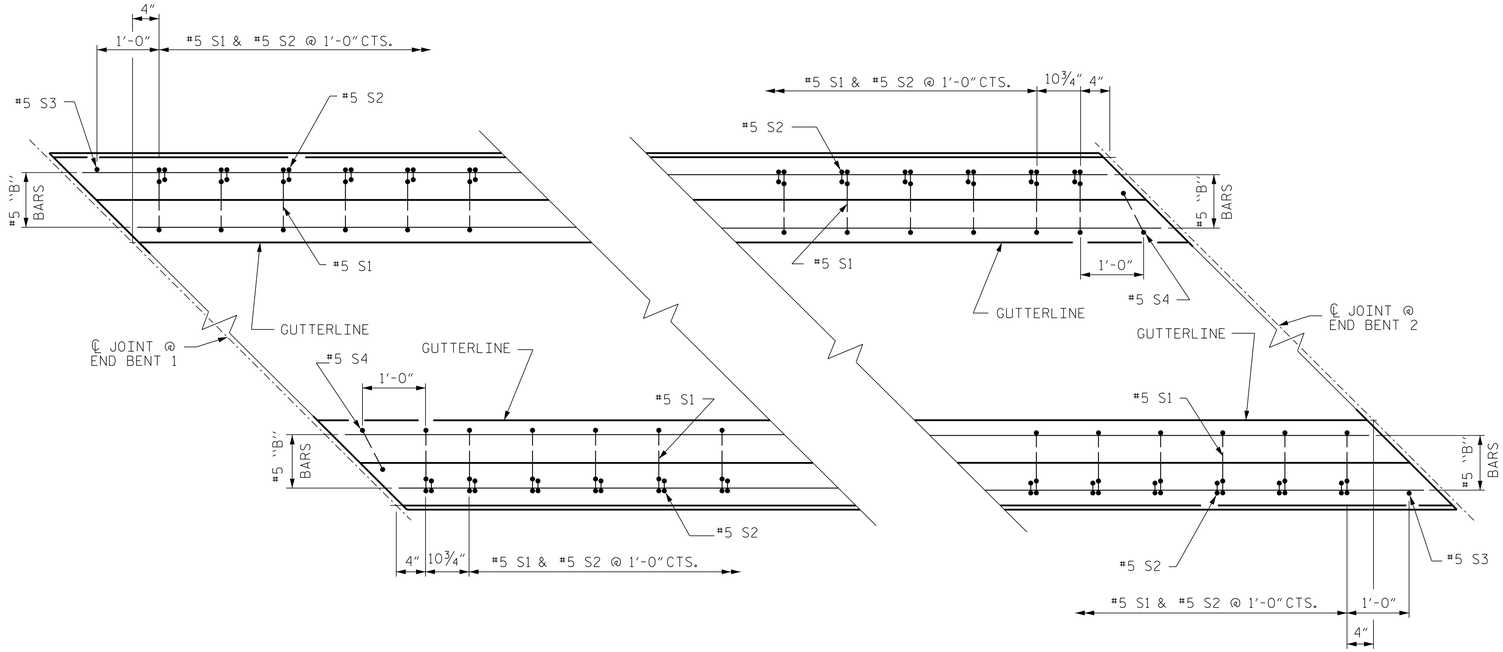
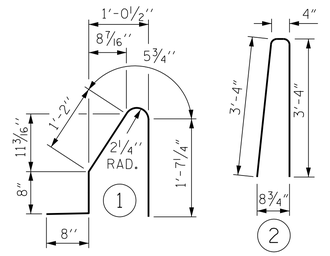
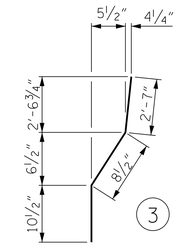


PLAN

BAR TYPES





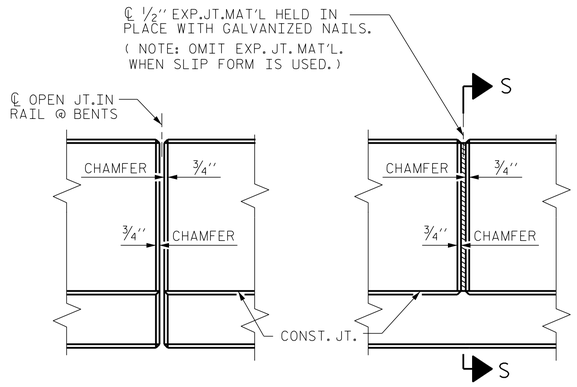
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

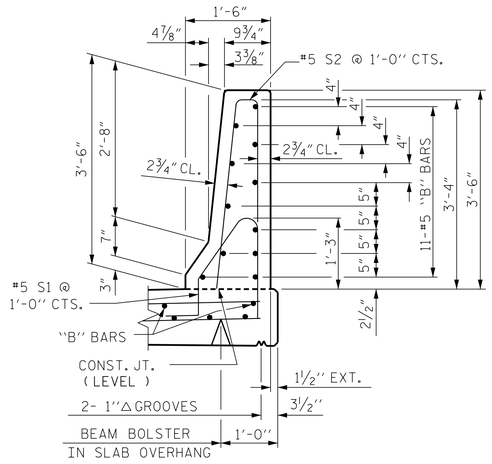
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ S1	442	#5	1	4'-7"	2113
✳ S2	442	#5	2	7'-0"	3227
✳ S3	2	#5	STR	4'-0"	8
✳ S4	2	#5	3	4'-2"	9
✳ B1	88	#5	STR	14'-9"	1354
✳ B2	154	#5	STR	24'-0"	3855

✳ EPOXY COATED REINFORCING STEEL	10,566 LBS.
CLASS AA CONCRETE	60.4 CU. YDS.
CONCRETE BARRIER RAIL	444.13 LIN. FT.

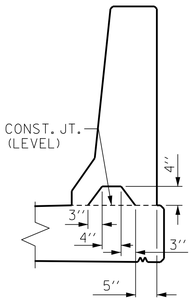


ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS



SECTION THRU RAIL



SECTION S-S

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

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 2 OF 2

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

DocuSigned by: Gregory M. Gilland

WETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
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CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			36

DRAWN BY : D. HODGE DATE : 1/21
CHECKED BY : G. GILLAND DATE : 1/21

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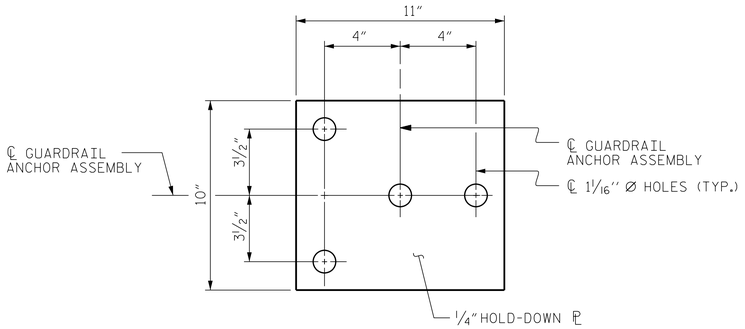
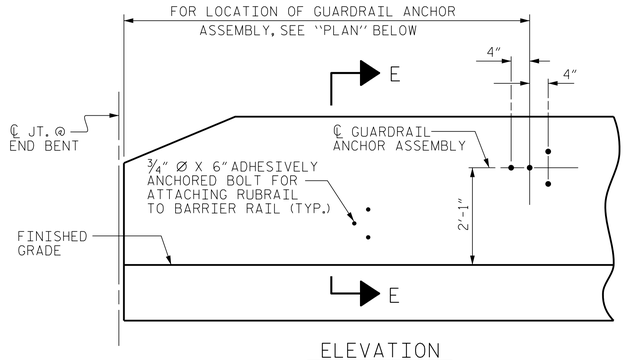
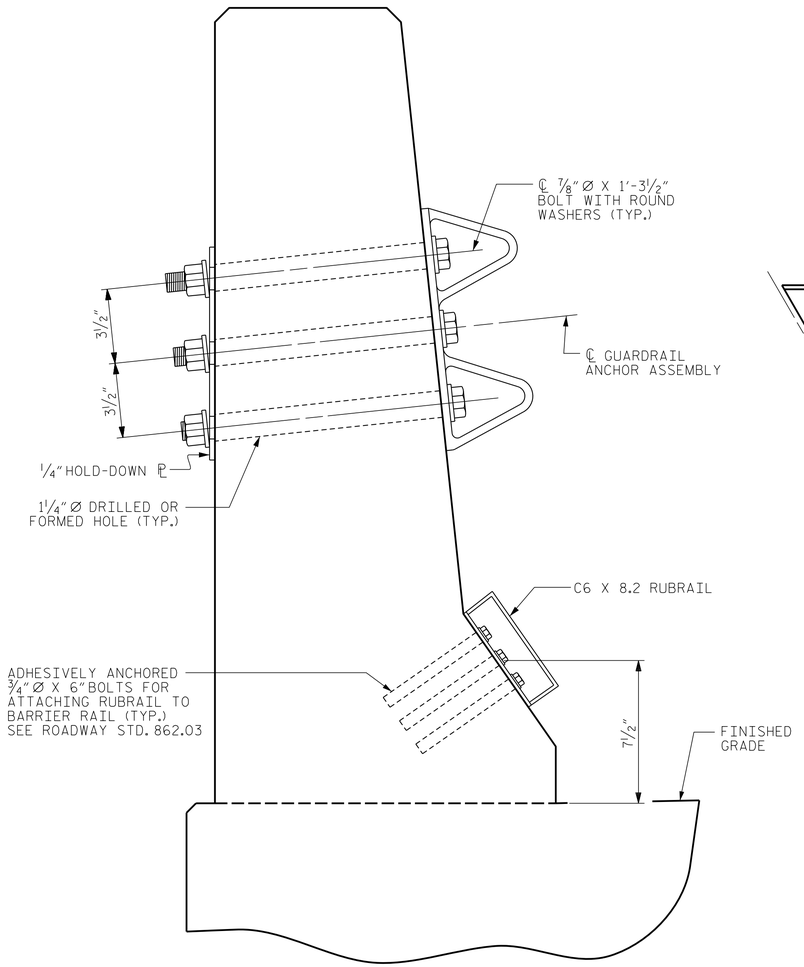


PLAN

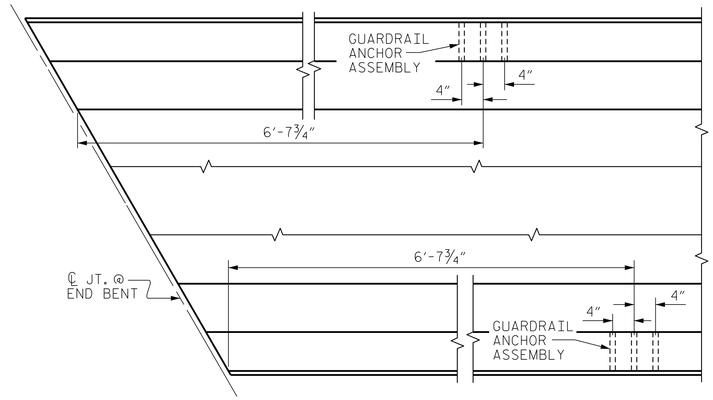


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES

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

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.)

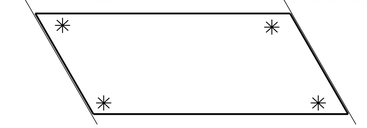
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 CONCRETE BARRIER RAIL.

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.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

WETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			36

ASSEMBLED BY :	D. HODGE	DATE :	12/19
CHECKED BY :	G. GILLAND	DATE :	12/19
DRAWN BY :	TLA 5/06	REV. 7/12	MAA/GM
CHECKED BY :	GM 5/06	REV. 6/13	MAA/GM
		REV. 12/17	MAA/THC

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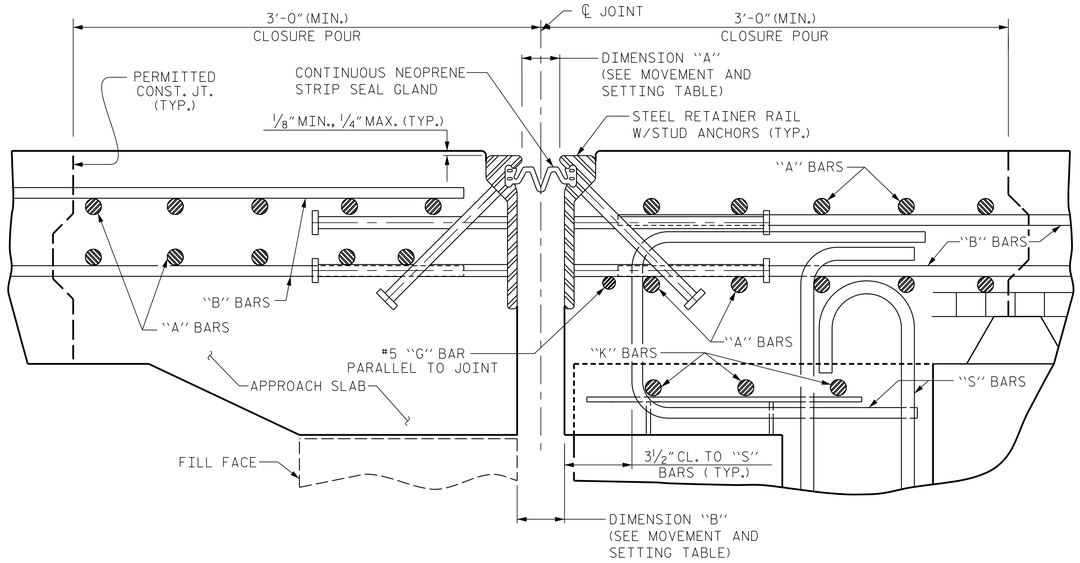


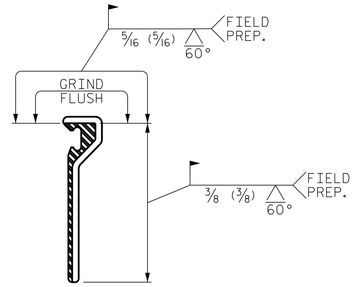
STRIP SEAL EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

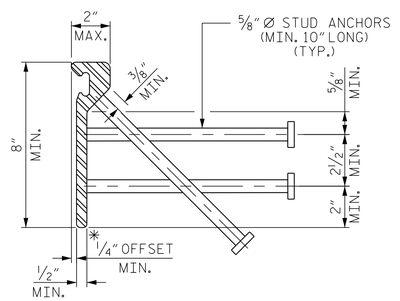
MOVEMENT AND SETTING AT JOINT								
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG ℄ RDWY)	DIMENSION "A"			DIMENSION "B"		
			PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
END BENT 1	45°-00'-00"	1/16"	2 1/16"	2"	1 3/16"	2 9/16"	2 1/2"	2 5/16"
END BENT 2	45°-00'-00"	1/16"	2 1/16"	2"	1 3/16"	2 9/16"	2 1/2"	2 5/16"

JOINT INSTALLATION PROCEDURE:

1. INSTALL THE STRIP SEAL EXPANSION JOINT AS RECOMMENDED BY THE MANUFACTURER.
2. A MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT DURING INSTALLATION OF THE JOINT.
3. PLACE STEEL RETAINER RAILS IN JOINT OPENING. PROPERLY ALIGN THE RAILS BOTH HORIZONTALLY AND VERTICALLY. DO NOT WELD SUPPORT SYSTEM TO THE METALLIZED SURFACES OF THE STEEL RETAINER RAILS.
4. CONFLICTING REINFORCING STEEL MAY BE SHIFTED SLIGHTLY WHEN NECESSARY.
5. DECK SLAB CONCRETE PLACEMENT OPERATIONS SHALL COMMENCE PER THE POURING SEQUENCE AFTER FINAL JOINT ALIGNMENT IS SET.
6. PROTECT THE STEEL RETAINER RAILS FROM BEING FOULED BY CONCRETE SPILLOVER DURING THE DECK POUR.
7. LOOSEN THE STEEL RETAINER RAIL SUPPORT SYSTEM TO ALLOW MOVEMENT WHILE CONCRETE CURES.
8. RE-LEVEL AND RE-ALIGN STEEL RETAINER RAIL AS REQUIRED ON OPPOSITE SIDE OF JOINT.
9. PLACE APPROACH SLAB CONCRETE.
10. ONCE THE CONCRETE HAS HARDENED SUFFICIENTLY ON BOTH SIDES OF JOINT, STEEL RETAINER RAILS SHALL BE CLEANED THOROUGHLY AND SEAL CHANNELS SHALL BE INSPECTED TO ASCERTAIN THE ABSENCE OF CONCRETE AND DEBRIS.
11. COAT THE STRIP SEAL LUGS WITH LUBRICANT-ADHESIVE AND INSTALL THE NEOPRENE STRIP SEAL GLAND AS RECOMMENDED BY THE STRIP SEAL EXPANSION JOINT MANUFACTURER.



STEEL RETAINER RAIL (FIELD SPLICE DETAIL)



TYPICAL SECTION STEEL RETAINER RAIL

*DIMENSION "B" BASED ON STEEL RETAINER RAIL TOP OFFSET TO FACE OF RAIL OF 1/4" MINIMUM. IF ACTUAL OFFSET IS GREATER ADJUST DIMENSION "B" AS REQUIRED.

GENERAL NOTES

FOR STRIP SEAL EXPANSION JOINTS, SEE SPECIAL PROVISIONS.

STEEL RETAINER RAILS AND COVER PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR GRADE 50 STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MIN.

ONLY STEEL RETAINER RAILS OF ONE-PIECE CONSTRUCTION ARE PERMITTED. STEEL RETAINER RAILS CONSISTING OF TWO OR MORE COMPONENTS WELDED TOGETHER TO OBTAIN THEIR FINAL CROSS-SECTIONAL SHAPE ARE NOT PERMITTED.

STUD ANCHORS SHALL BE SHOP WELDED AND SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.

SURFACES COMING IN CONTACT WITH STRIP SEAL GLAND SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.

UPON COMPLETION OF SHOP FABRICATION, THE STEEL RETAINER RAILS SHALL BE METALLIZED AS SHOWN IN THE "METALLIZING DETAIL". SEE SPECIAL PROVISIONS FOR THERMAL SPRAYED COATINGS (METALLIZATION).

INSTALLED STEEL RETAINER RAILS SHALL FOLLOW THE ROADWAY SLOPE.

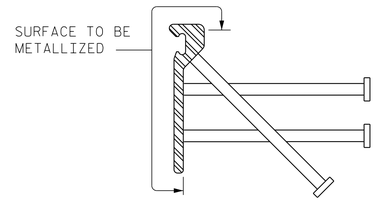
FIELD SPLICES OF THE RETAINER RAILS SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. FINISHED WELDS SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).

NEOPRENE STRIP SEAL GLAND SHALL BE CONTINUOUS THROUGHOUT THE JOINT AND SHALL BE COMPATIBLE WITH THE STEEL RETAINER RAILS. FIELD SPLICING THE GLAND IS NOT PERMITTED.

NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.

THE COVER PLATES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



METALLIZING DETAIL

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 1 OF 2

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gillard

ETHERILL ENGINEERING

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

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

STRIP SEAL EXPANSION JOINT DETAILS

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			36

ASSEMBLED BY :	D. HODGE	DATE :	1/21
CHECKED BY :	G. GILLAND	DATE :	1/21
DRAWN BY : MAA			6/20
CHECKED BY : BNB			6/20

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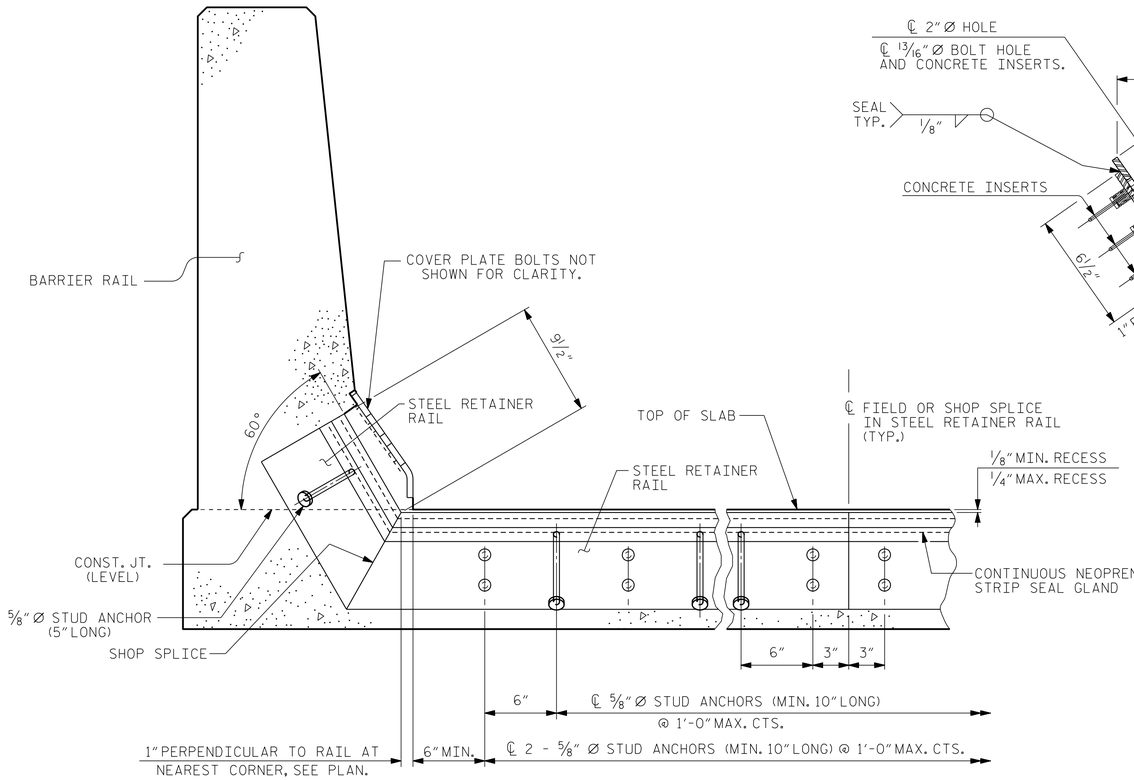
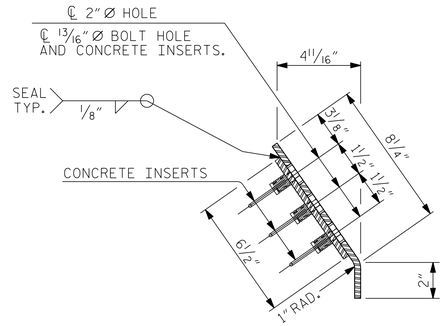
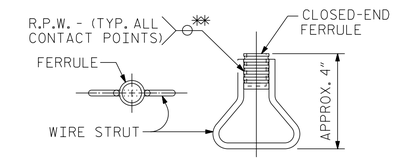


SECTION THRU RAIL NORMAL TO JOINT



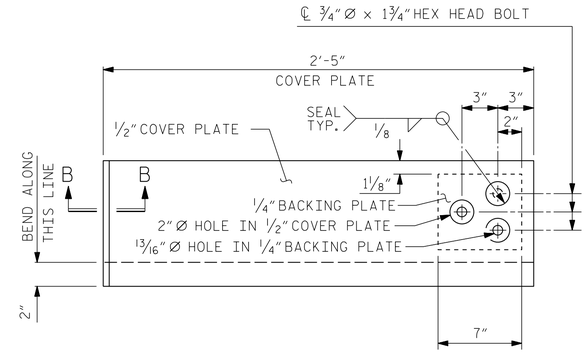
END VIEW



PLAN ELEVATION

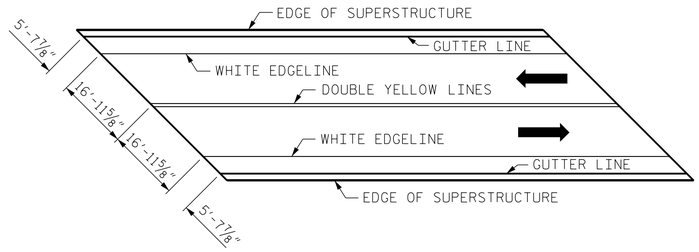
CONCRETE INSERT

** EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

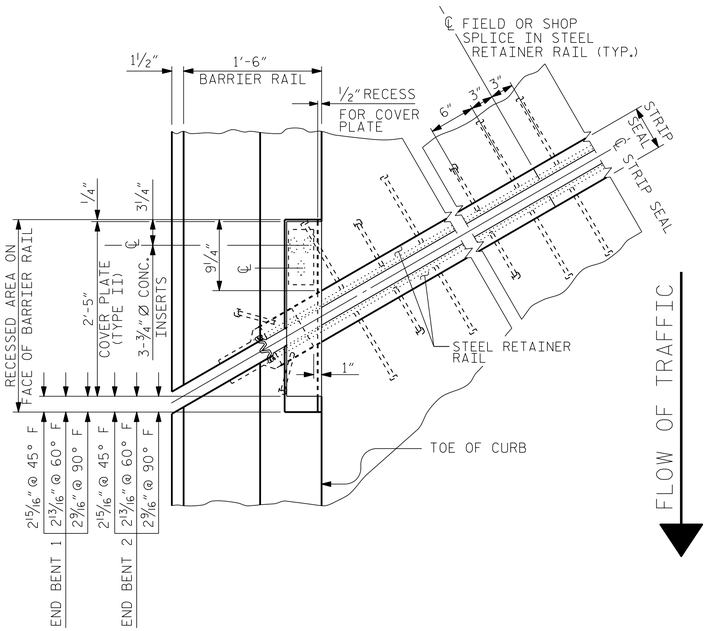


TYPE II - ELEVATION VIEW

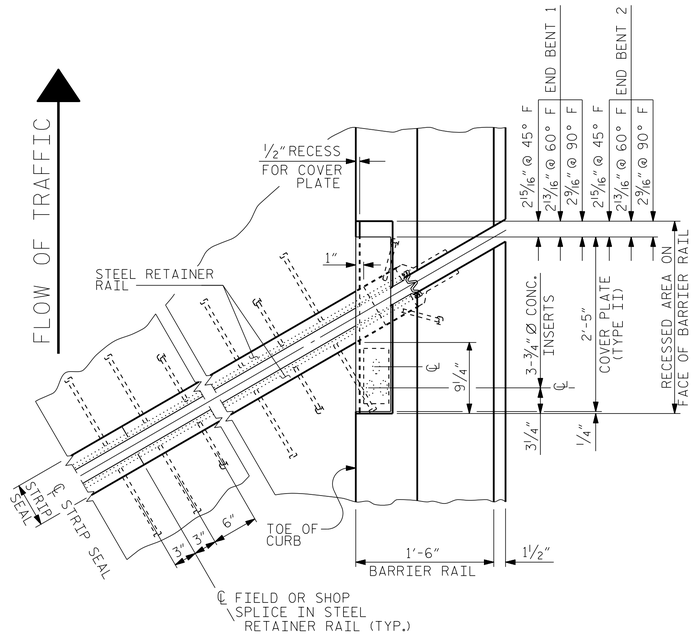
COVER PLATE DETAILS



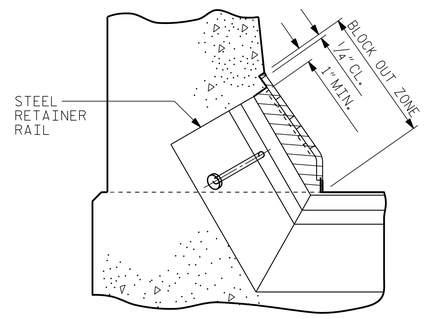
PAVEMENT MARKING ALIGNMENT



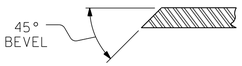
SECTION THRU RAIL NORMAL TO JOINT



PLAN OF STRIP SEAL EXPANSION JOINT



BLOCK OUT DETAIL



SECTION B - B

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 2 OF 2

ASSEMBLED BY :	D. HODGE	DATE :	1/21
CHECKED BY :	G. GILLAND	DATE :	1/21
DRAWN BY : MAA	6/20		
CHECKED BY : BNB	6/20		

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

ETHERILL ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

STRIP SEAL EXPANSION JOINT DETAILS FOR BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			36

STD. NO. SSEJ2 SHT 3

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SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	✳EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
TOTALS✳✳	251.8	28,679	25,670

✳✳QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

CONCRETE BREAKDOWN

	CLASS AA CONCRETE (CU. YDS.)
POUR #1A	75.3
POUR #1B	61.2
POUR #1C	75.3
POUR #2A	20.0
POUR #2B	20.0
TOTALS ✳✳✳	251.8

✳✳✳ QUANTITIES FOR BARRIER RAILS ARE NOT INCLUDED

BILL OF MATERIAL

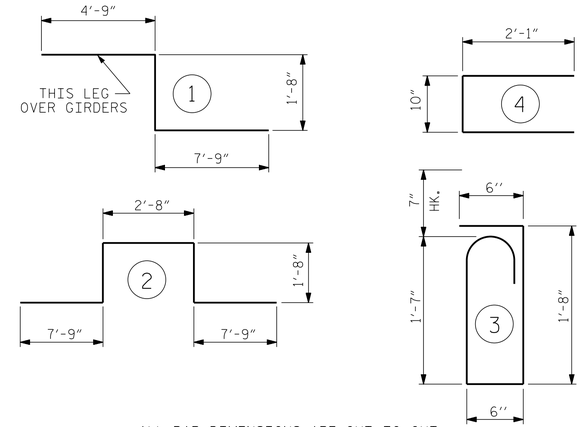
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	374	#5	STR	34′-11″	13620
A2	374	#5	STR	34′-11″	13620
✳ A101	6	#5	STR	33′-5″	209
✳ A102	6	#5	STR	31′-11″	200
✳ A103	6	#5	STR	30′-5″	190
✳ A104	6	#5	STR	28′-11″	181
✳ A105	6	#5	STR	27′-5″	172
✳ A106	6	#5	STR	25′-11″	162
✳ A107	6	#5	STR	24′-5″	153
✳ A108	6	#5	STR	22′-11″	143
✳ A109	6	#5	STR	21′-5″	134
✳ A110	6	#5	STR	19′-11″	125
✳ A111	6	#5	STR	18′-5″	115
✳ A112	6	#5	STR	16′-11″	106
✳ A113	6	#5	STR	15′-5″	96
✳ A114	6	#5	STR	13′-11″	87
✳ A115	6	#5	STR	12′-5″	78
✳ A116	6	#5	STR	10′-11″	68
✳ A117	6	#5	STR	9′-5″	59
✳ A118	6	#5	STR	7′-11″	50
✳ A119	6	#5	STR	6′-5″	40
✳ A120	6	#5	STR	4′-11″	31
✳ A121	6	#5	STR	3′-5″	21
A201	6	#5	STR	33′-5″	209
A202	6	#5	STR	31′-11″	200
A203	6	#5	STR	30′-5″	190
A204	6	#5	STR	28′-11″	181
A205	6	#5	STR	27′-5″	172
A206	6	#5	STR	25′-11″	162
A207	6	#5	STR	24′-5″	153
A208	6	#5	STR	22′-11″	143
A209	6	#5	STR	21′-5″	134
A210	6	#5	STR	19′-11″	125
A211	6	#5	STR	18′-5″	115
A212	6	#5	STR	16′-11″	106
A213	6	#5	STR	15′-5″	96
A214	6	#5	STR	13′-11″	87
A215	6	#5	STR	12′-5″	78
A216	6	#5	STR	10′-11″	68
A217	6	#5	STR	9′-5″	59
A218	6	#5	STR	7′-11″	50
A219	6	#5	STR	6′-5″	40
A220	6	#5	STR	4′-11″	31
A221	6	#5	STR	3′-5″	21

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	96	#4	STR	25′-4″	1,625
✳ B2	48	#5	STR	55′-0″	2,754
✳ B3	92	#5	STR	32′-6″	3,119
✳ B4	24	#4	STR	21′-11″	351
B5	176	#5	STR	56′-11″	10,448
B6	82	#4	STR	40′-0″	2,191
✳ G1	2	#5	STR	49′-4″	103
✳ K1	8	#8	1	14′-2″	303
✳ K2	8	#8	2	21′-6″	459
✳ K3	18	#6	STR	10′-11″	295
✳ K4	6	#6	STR	7′-7″	68
✳ S1	66	#5	3	4′-10″	333
✳ S2	66	#4	4	5′-0″	220

REINFORCING STEEL	LBS.	28,679
✳EPOXY COATED REINFORCING STEEL	LBS.	25,670

✳ THESE BARS ARE EPOXY COATED.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,378 SQ.FT.
BRIDGE DECK	6,419 SQ.FT.
TOTAL	7,797 SQ.FT.

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 1 OF 2

ENGINEER OF RECORD
12/15/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
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DRAWN BY : D. HODGE DATE : 11/21
CHECKED BY : G. GILLAND DATE : 12/21

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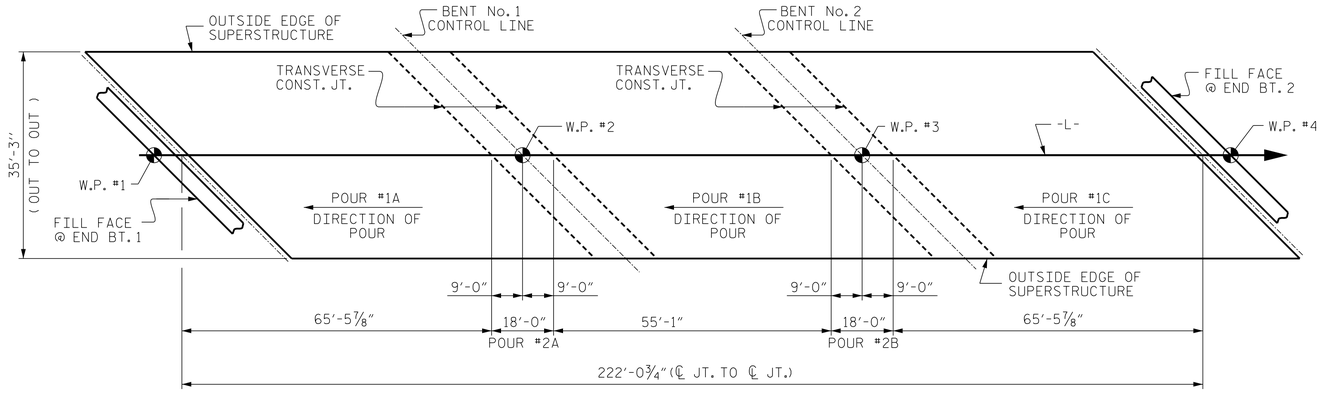
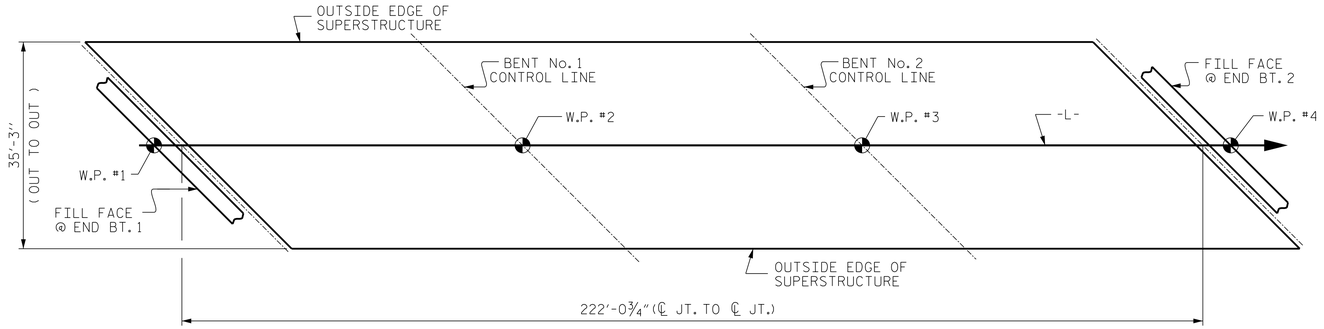


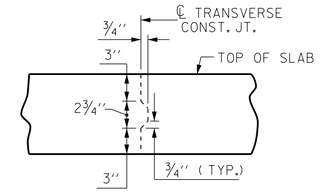
POUR SEQUENCE SKETCH

POUR #2 CAN NOT BE STARTED UNTIL BOTH ADJACENT #1 POURS REACH A MNIMUM OF 3000 PSI.

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS					
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPETS, AND BARRIER RAILS		APPROACH SLABS		PARAPETS AND BARRIER RAILS
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	1'-11"	1'-7"	1'-11"	1'-7"	2'-6"
#5	2'-5"	2'-0"	2'-5"	2'-0"	3'-1"
#6	2'-10"	2'-5"	3'-7"	2'-5"	3'-8"
#7	4'-2"	2'-9"			
#8	4'-9"	3'-2"			



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 7,828)



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN.
LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

PROJECT NO. BR-0082
HARNETT COUNTY
STATION: 18+15.00 -L-

SHEET 2 OF 2

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Digitally Signed by: Gregory M. Gilland

ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
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DRAWN BY : D. HODGE DATE : 11/21
CHECKED BY : G. GILLAND DATE : 12/21

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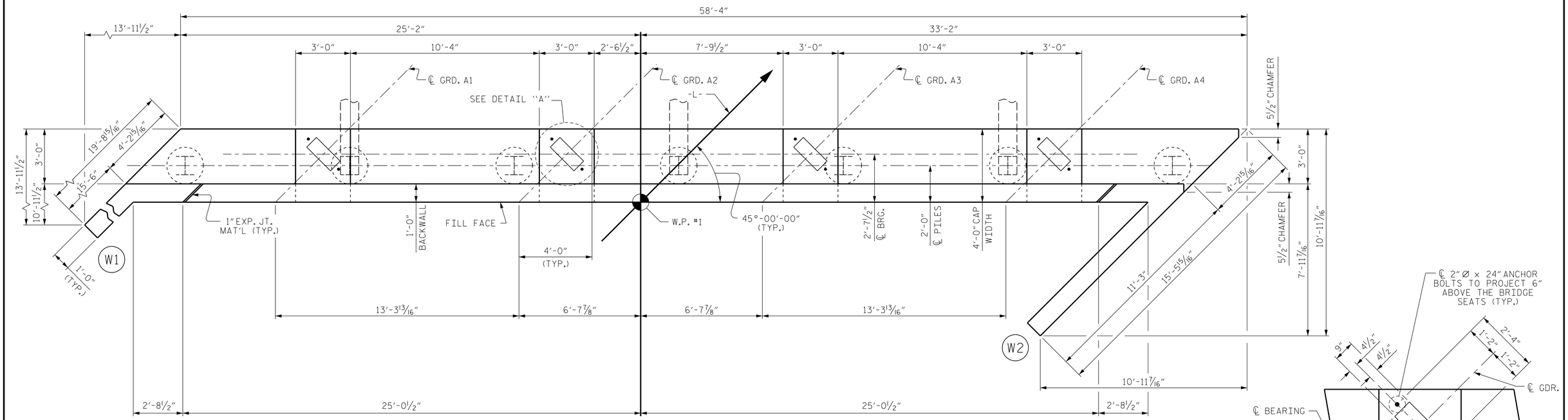
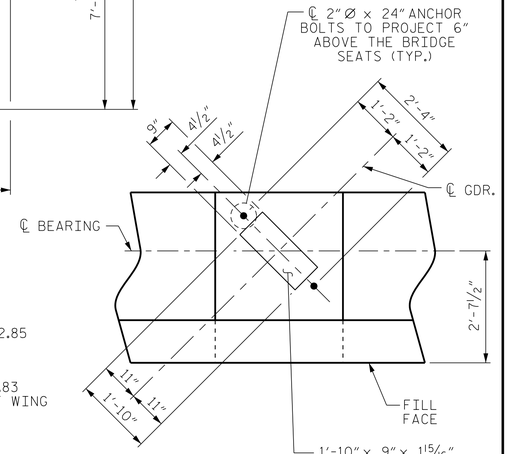
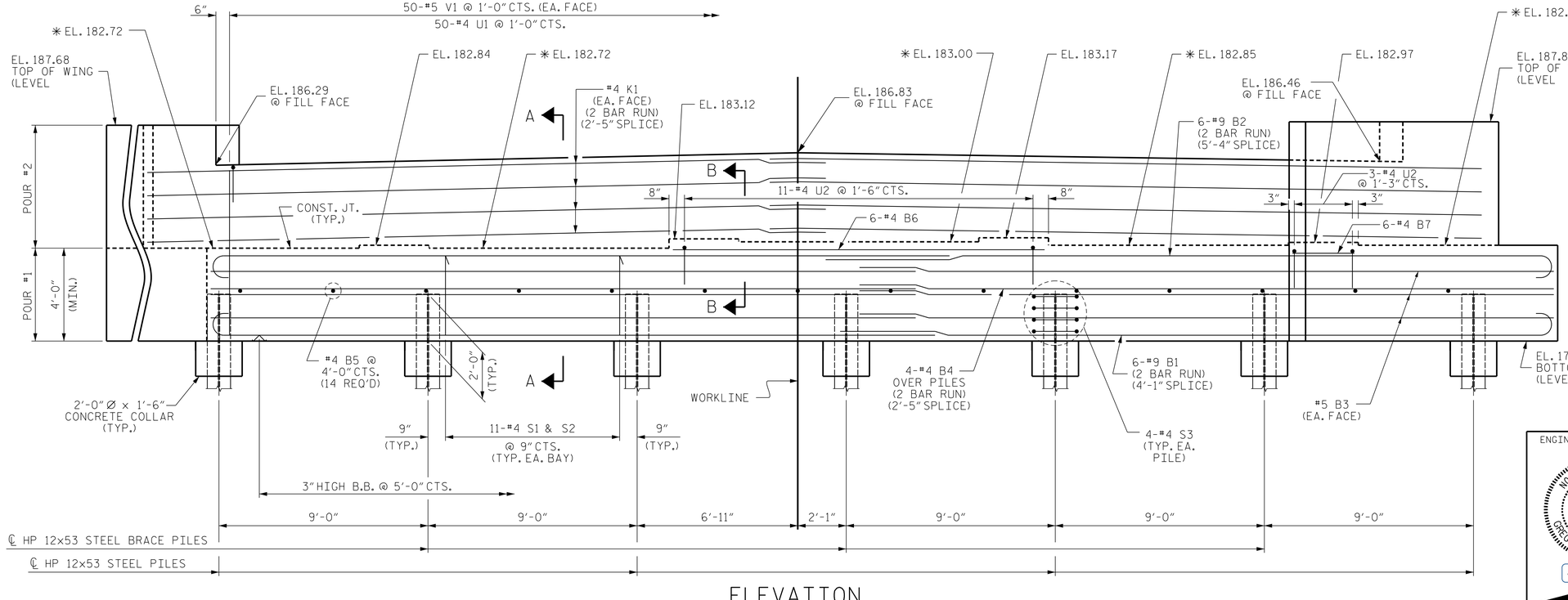


PLAN



DETAIL "A"
(TYP. EA. GIRDER)



ELEVATION

✳ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS. SEE SECTION A-A & B-B, SHEET 3 OF 3.

DRAWN BY : D. HODGE DATE : 12/19
CHECKED BY : G. GILLAND DATE : 12/19

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ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

WETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

PROJECT NO. BR-0082
HARNETT COUNTY
STATION: 18+15.00 -L-

SHEET 1 OF 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			36

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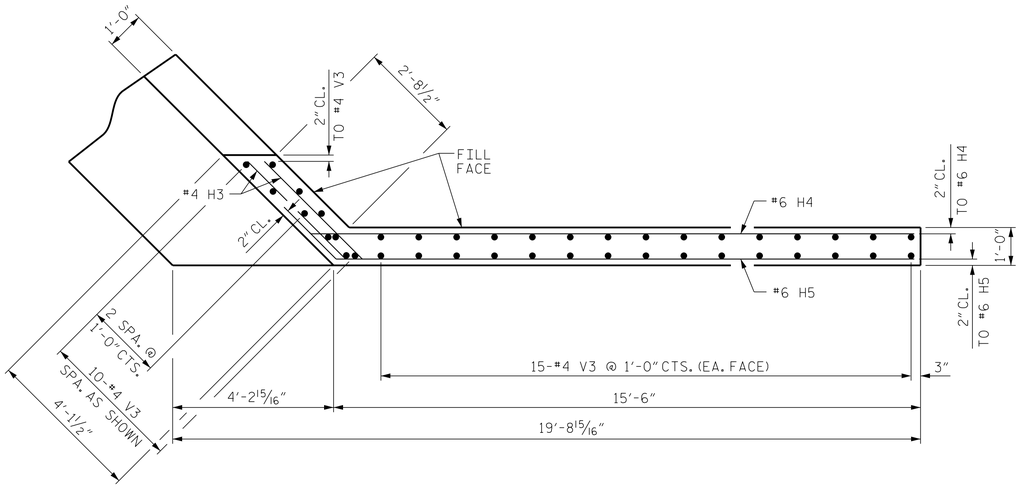
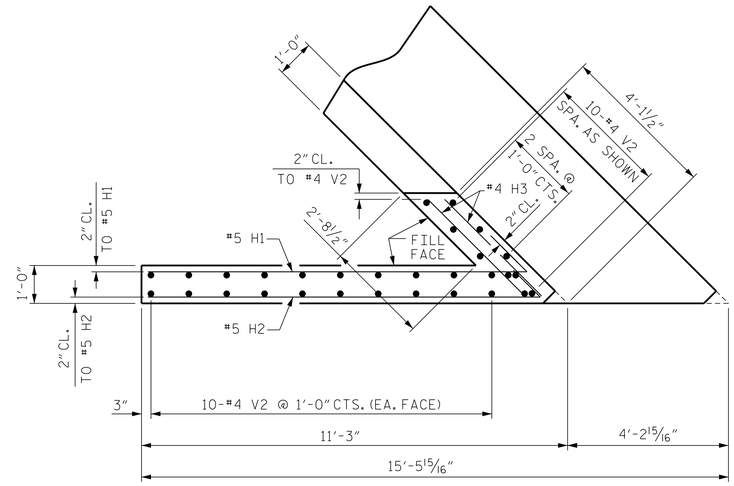
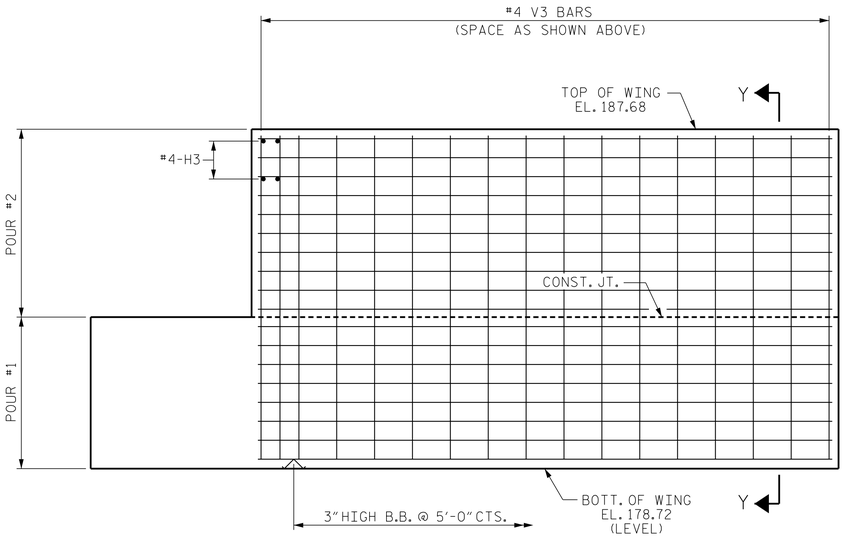


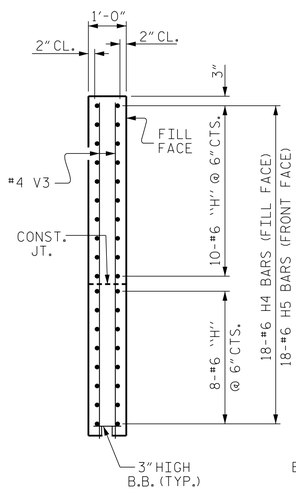
PLAN OF WING - W1



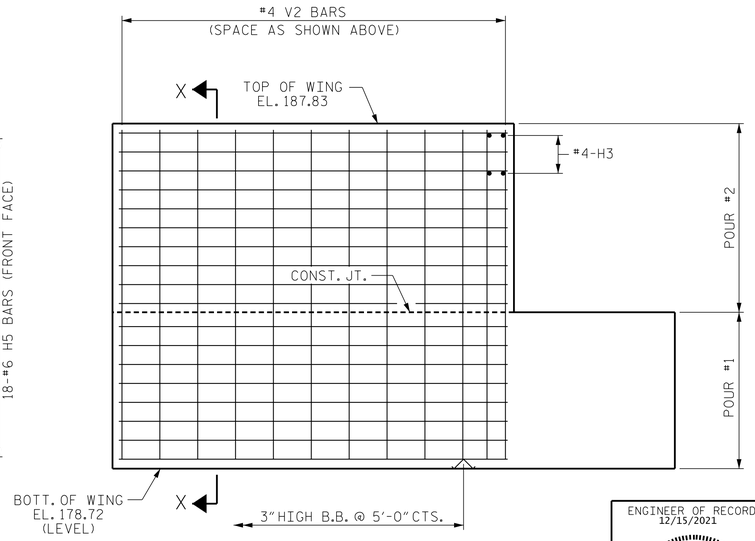
PLAN OF WING - W2



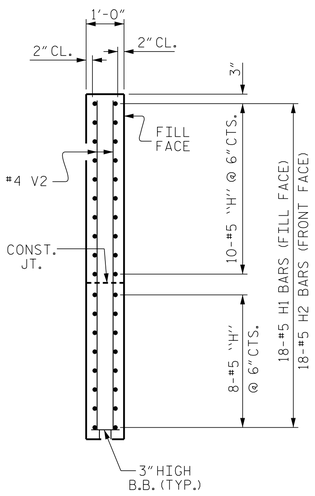
ELEVATION OF WING - W1



SECTION Y-Y



ELEVATION OF WING - W2



SECTION X-X

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 2 OF 3

DRAWN BY : D. HODGE DATE : 12/19

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ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Docusigned by: Gregory M. Gilland

WETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

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1			3			TOTAL SHEETS
2			4			36

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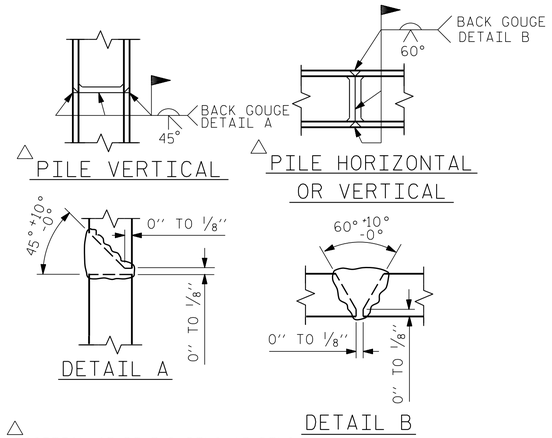
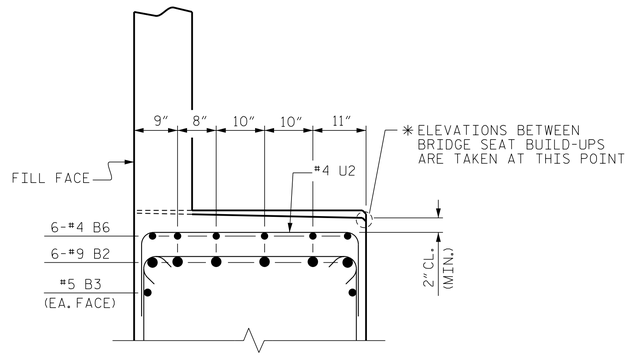
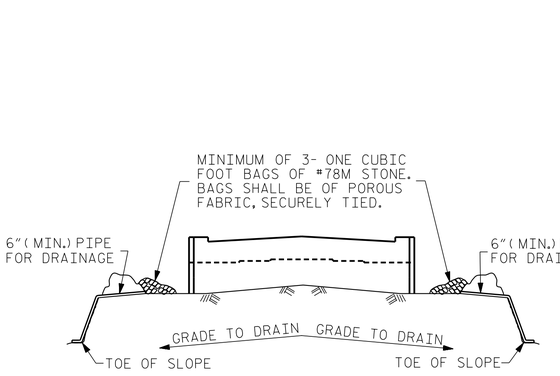


PILE SPLICE DETAILS



SECTION B-B

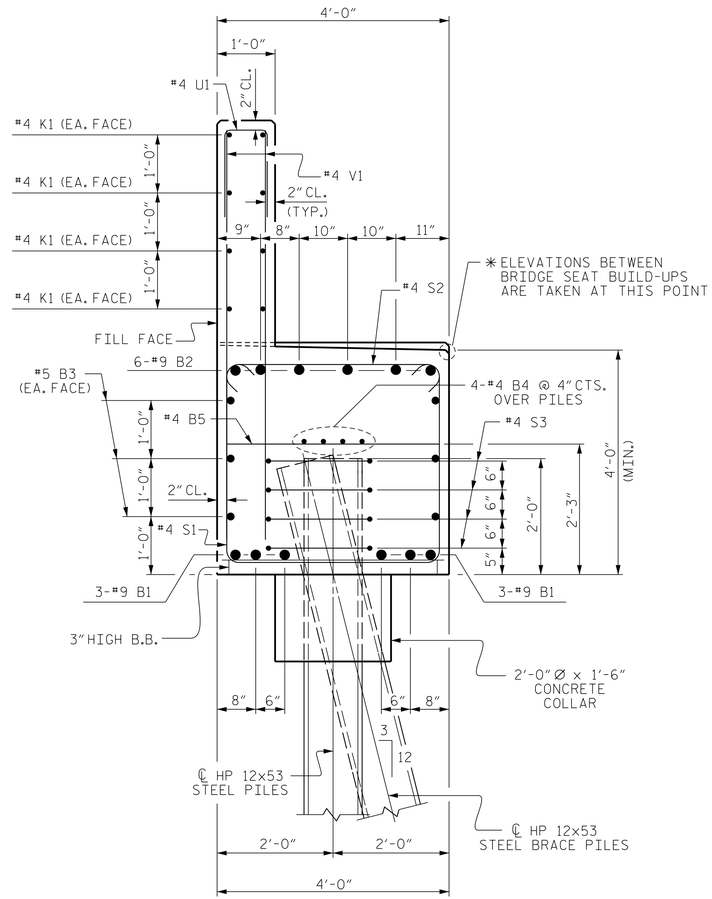


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

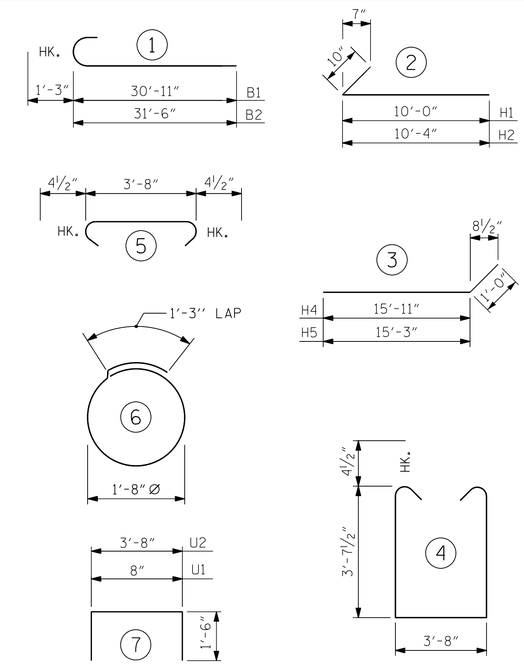
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9	1	32'-2"	1312
B2	12	#9	1	32'-9"	1336
B3	6	#5	STR	57'-10"	362
B4	8	#4	STR	30'-2"	161
B5	14	#4	STR	3'-8"	34
B6	6	#4	STR	16'-0"	64
B7	6	#4	STR	2'-8"	11
H1	18	#5	2	10'-10"	203
H2	18	#5	2	11'-2"	210
H3	8	#4	STR	3'-7"	19
H4	18	#6	3	16'-11"	457
H5	18	#6	3	16'-3"	439
K1	16	#4	STR	30'-2"	322
S1	66	#4	4	11'-8"	514
S2	66	#4	5	4'-5"	195
S3	28	#4	6	6'-6"	122
U1	50	#4	7	3'-8"	122
U2	14	#4	7	6'-8"	62
V1	100	#5	STR	7'-2"	747
V2	30	#4	STR	8'-8"	174
V3	40	#4	STR	8'-6"	227

REINFORCING STEEL 7,093 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1	CAP, CONC. COLLARS & LOWER PART OF WINGS	40.4 C.Y.
POUR #2	BACKWALL AND UPPER PART OF WINGS	12.8 C.Y.
TOTAL CLASS A CONCRETE		53.2 C.Y.

HP 12 X 53 STEEL PILES
NO: 7 104 L.F.

STEEL PILE POINTS
7 EA.

PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES
7 EA.

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

PROJECT NO. BR-0082
HARNETT COUNTY
STATION: 18+15.00 -L-

SHEET 3 OF 3

DRAWN BY : D. HODGE DATE : 12/19
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ENGINEER OF RECORD
12/15/2021
NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND
Gregory M. Gilland
WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			36

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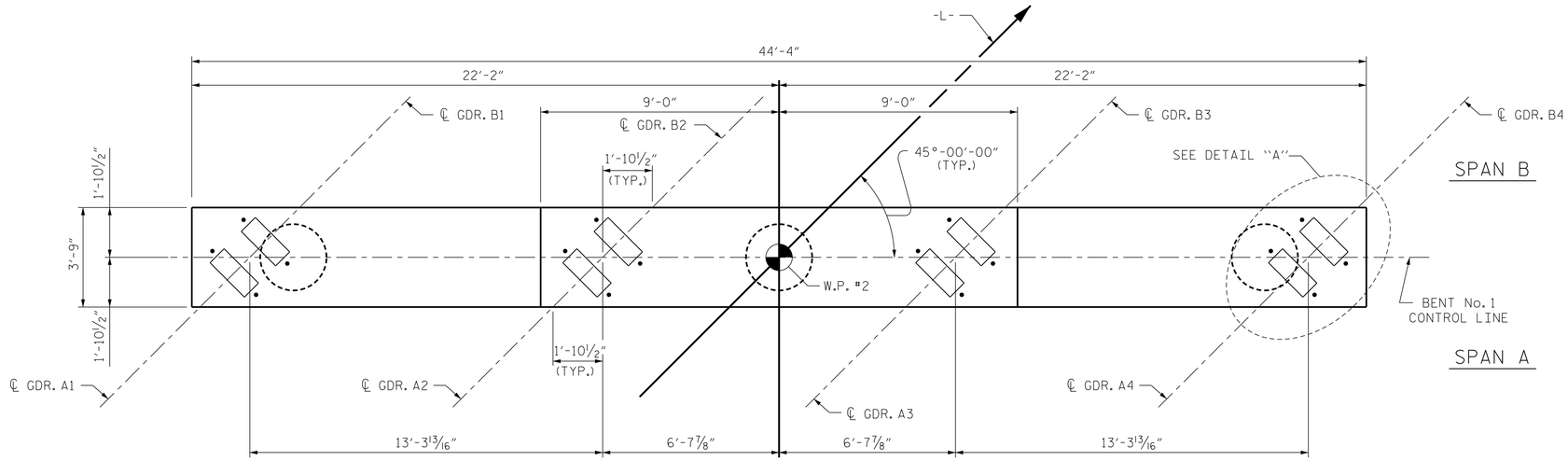
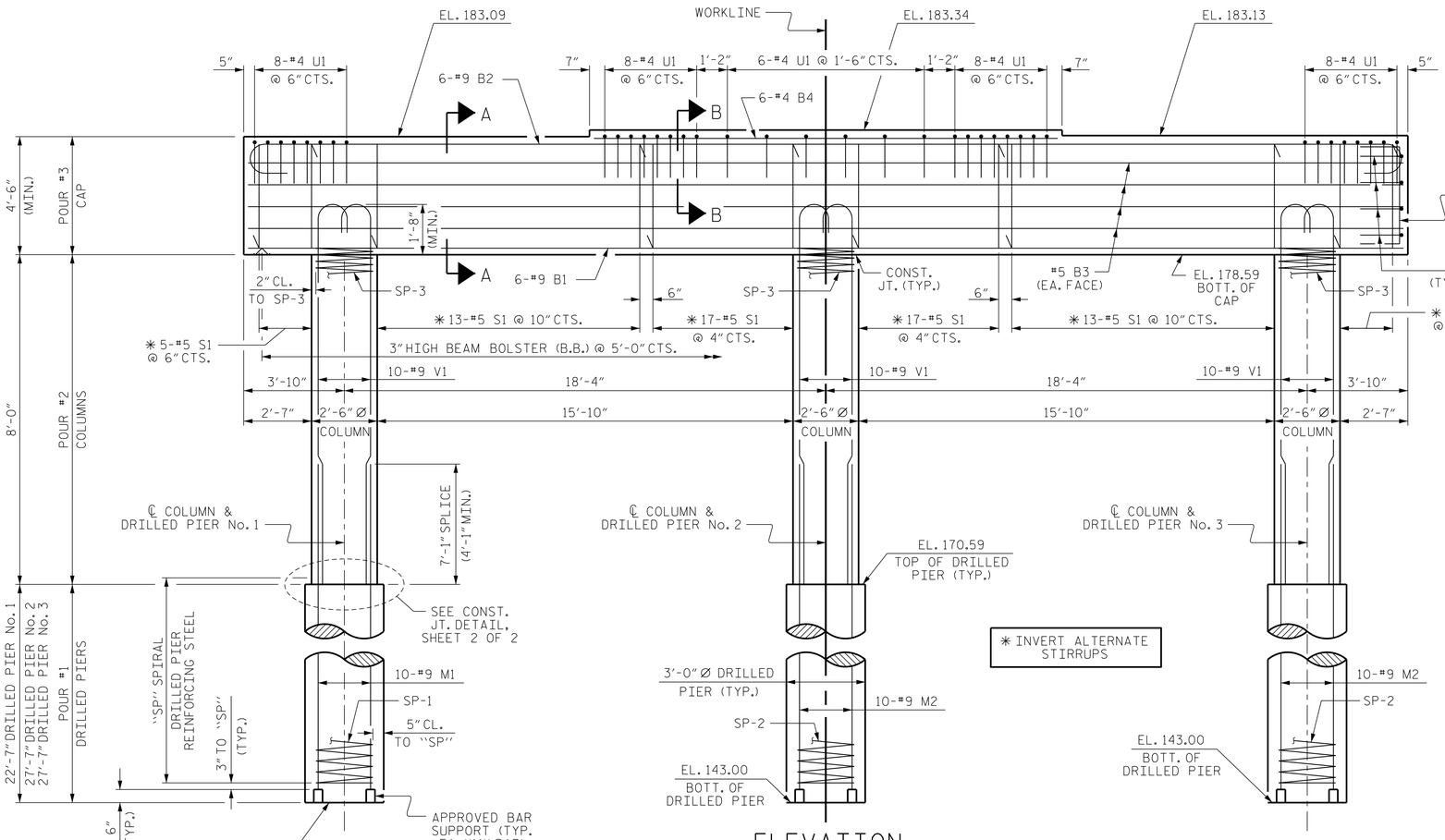


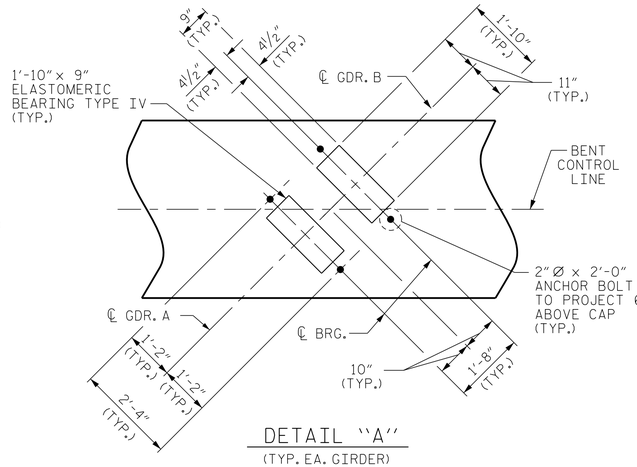
PLAN



✳ INVERT ALTERNATE STIRRUPS

ELEVATION

(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER EXCEPT AS MARKED)



DETAIL "A"

(TYP. EA. GIRDER)

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 1 OF 2

DRAWN BY : D. HODGE DATE : 1/21

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ENGINEER OF RECORD 12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

WETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			36

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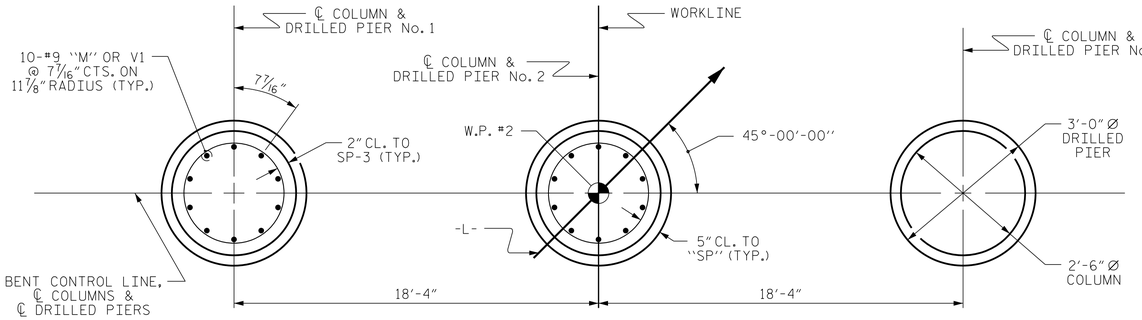
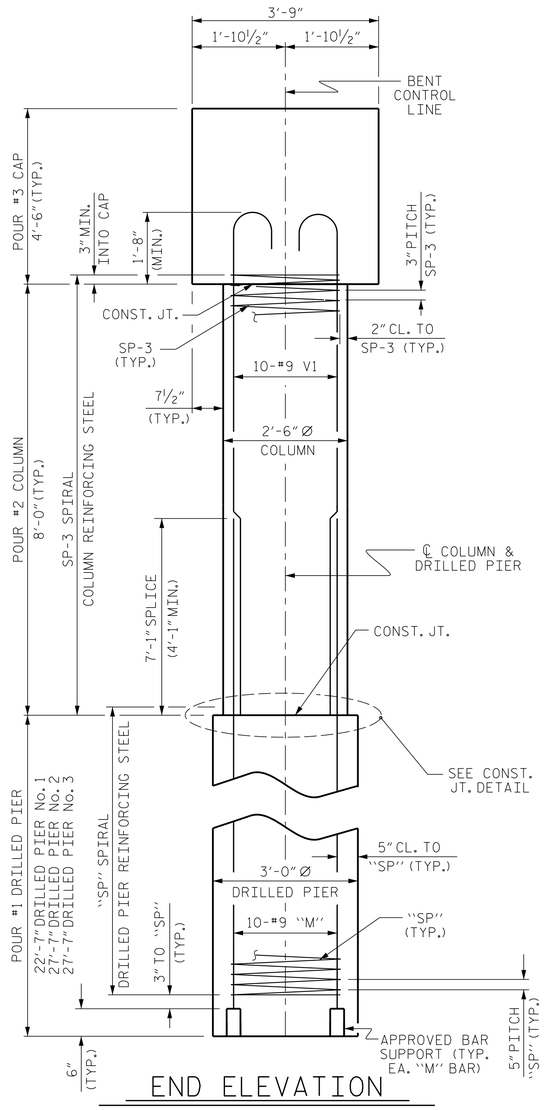
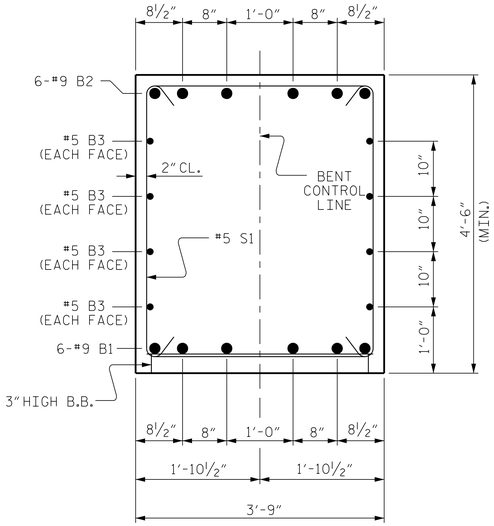


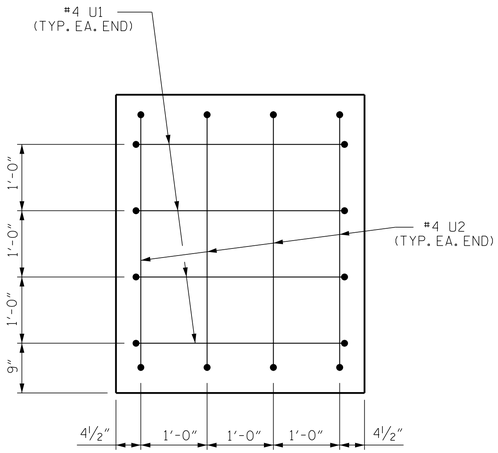
PLAN OF DRILLED PIERS & COLUMNS



END ELEVATION



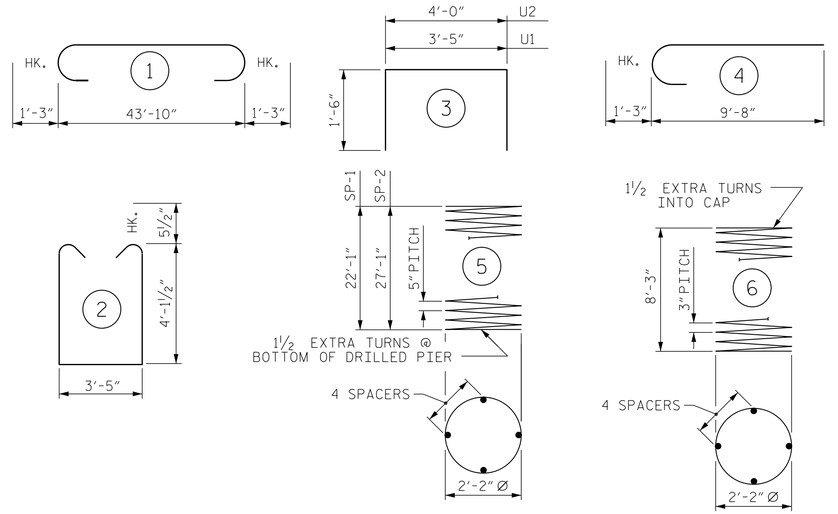
SECTION A-A



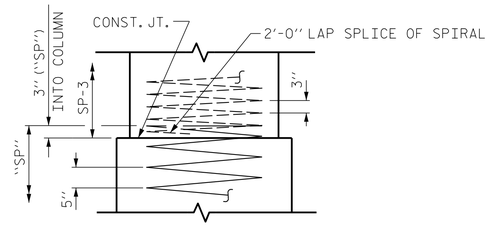
END OF CAP VIEW

(TYPICAL BOTH ENDS)

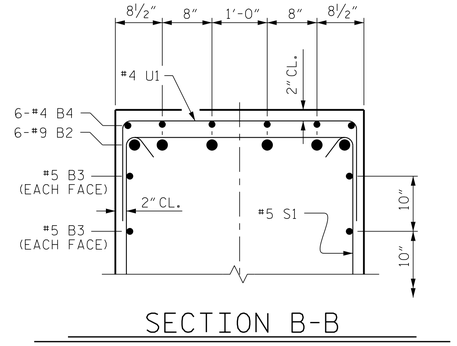
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT



CONSTRUCTION JOINT DETAIL



SECTION B-B

BILL OF MATERIAL

BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	STR	44'-0"	898
B2	6	#9	1	46'-4"	945
B3	8	#5	STR	44'-0"	367
B4	6	#4	STR	17'-8"	71
M1	10	#9	STR	29'-2"	992
M2	20	#9	STR	34'-2"	2,323
S1	70	#5	2	12'-7"	919
U1	46	#4	3	6'-5"	197
U2	8	#4	3	7'-0"	37
V1	30	#9	4	10'-11"	1,114

REINFORCING STEEL 7,863 LBS.

SP-1	1	*	5	362'-10"	378
SP-2	2	*	5	442'-8"	923
SP-3	3	**	6	230'-6"	462

SPIRAL COLUMN REINFORCING STEEL 1,763 LBS.

* THE SP-1 & SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

** THE SP-3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	4.4 C.Y.
POUR #3 (CAP)	28.4 C.Y.
TOTAL CLASS A CONCRETE	32.8 C.Y.

DRILLED PIERS:

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	20.4 C.Y.
3'-0"Ø DRILLED PIER IN SOIL	48.75 LIN. FT.
3'-0"Ø DRILLED PIER NOT IN SOIL	29.00 LIN. FT.
3'-0"Ø PERMANENT STEEL CASING	31.77 LIN. FT.
CSL TUBES	329.00 LIN. FT.

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 2 OF 2

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ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

DocuSigned by: Gregory M. Gilland

WETHERILL ENGINEERING

1223 Jones Franklin Rd.
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DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
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2			4			36

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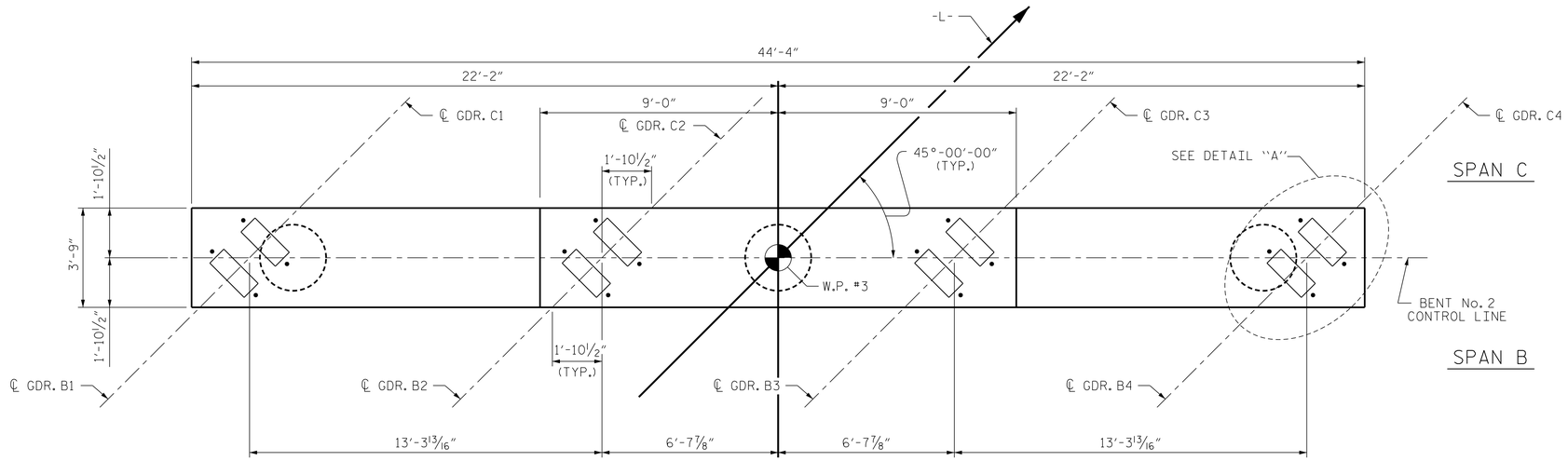
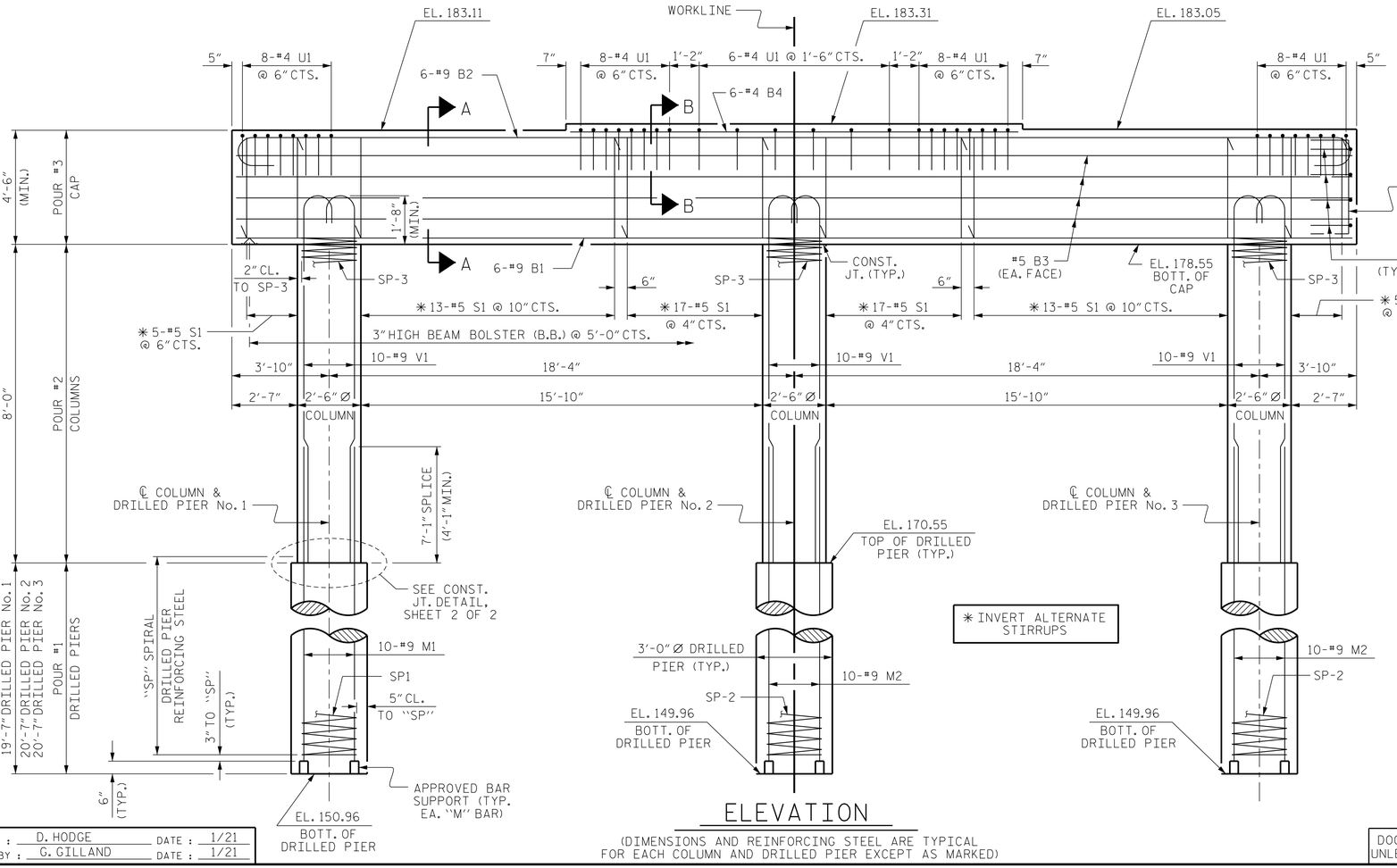


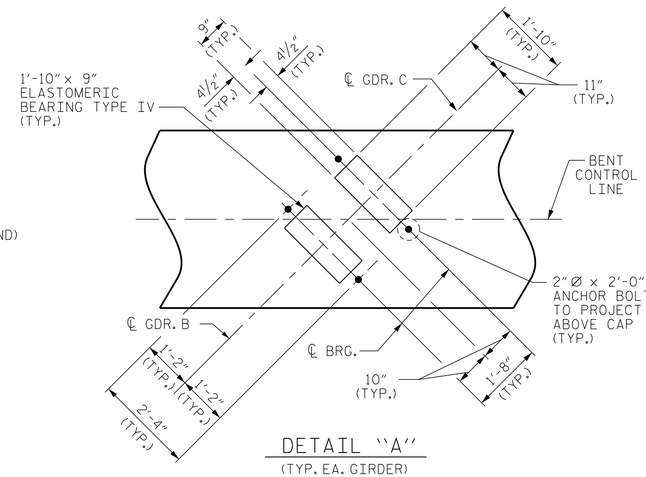
PLAN



ELEVATION

(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER EXCEPT AS MARKED)

∗ INVERT ALTERNATE STIRRUPS



DETAIL "A"

(TYP. EA. GIRDER)

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 1 OF 2

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RALEIGH

SUBSTRUCTURE

BENT No. 2

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1			3			TOTAL SHEETS
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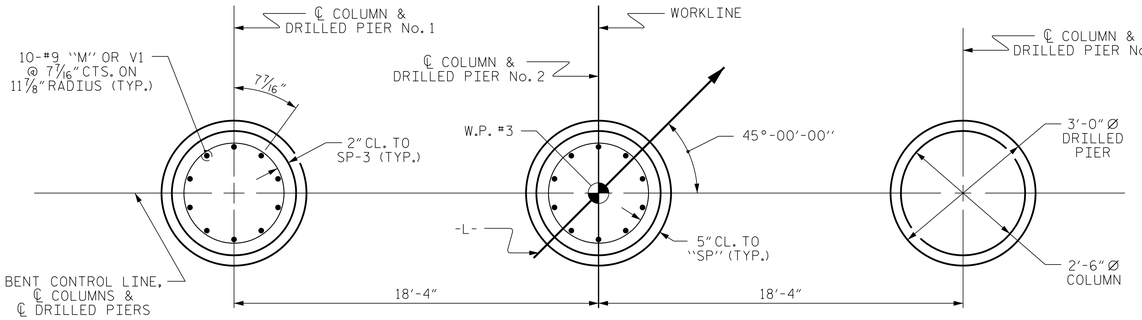
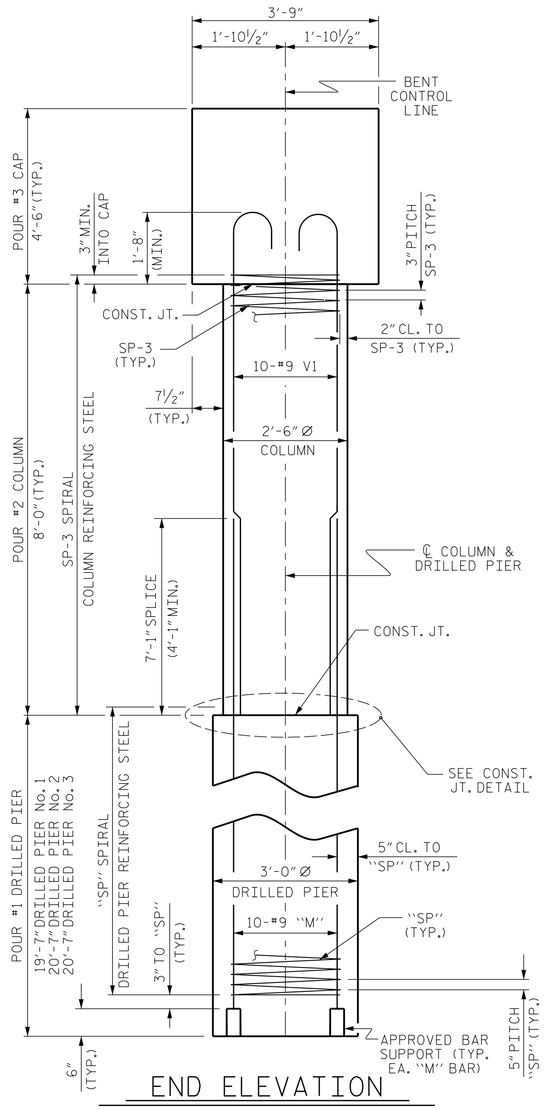
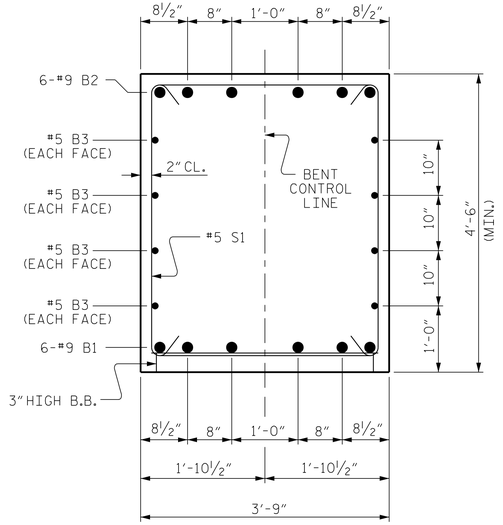


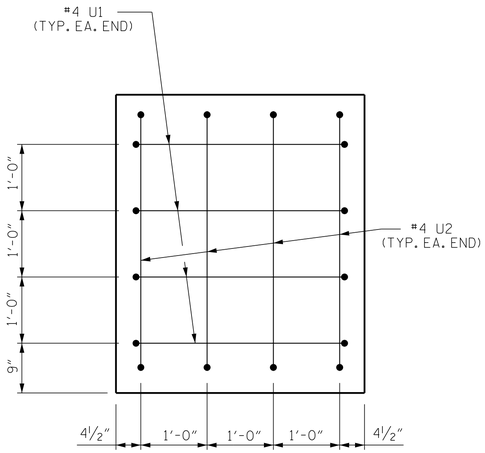
PLAN OF DRILLED PIERS & COLUMNS



END ELEVATION



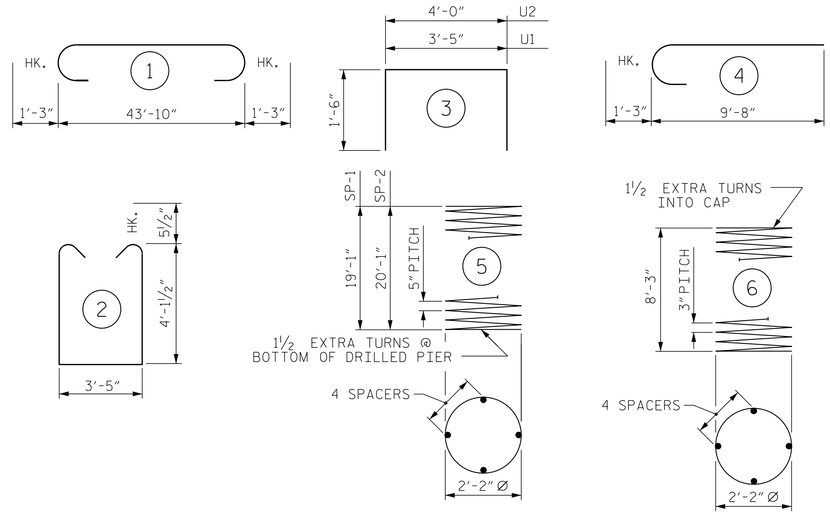
SECTION A-A



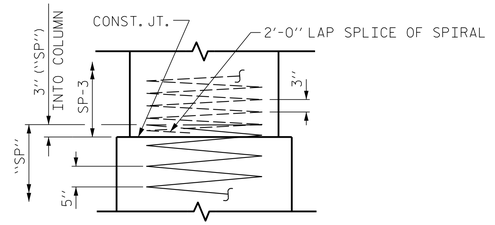
END OF CAP VIEW

(TYPICAL BOTH ENDS)

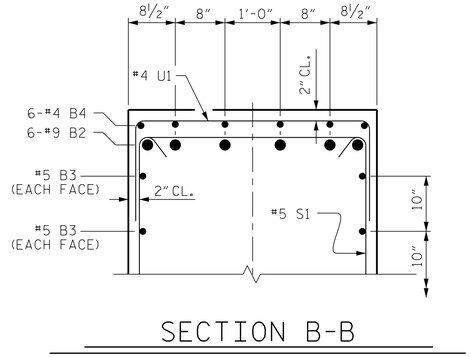
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT



CONSTRUCTION JOINT DETAIL



SECTION B-B

BILL OF MATERIAL

BENT No. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	STR	44'-0"	898
B2	6	#9	1	46'-4"	945
B3	8	#5	STR	44'-0"	367
B4	6	#4	STR	17'-8"	71
M1	10	#9	STR	26'-2"	890
M2	20	#9	STR	27'-2"	1,847
S1	70	#5	2	12'-7"	919
U1	46	#4	3	6'-5"	197
U2	8	#4	3	7'-0"	37
V1	30	#9	4	10'-11"	1,114
REINFORCING STEEL					7,285 LBS.
SP-1	1	✳	5	316'-3"	330
SP-2	2	✳	5	331'-2"	691
SP-3	3	✳✳	6	230'-6"	462
SPIRAL COLUMN REINFORCING STEEL					1,483 LBS.

✳ THE SP-1 & SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

✳✳ THE SP-3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	4.4 C.Y.
POUR #3 (CAP)	28.4 C.Y.
TOTAL CLASS A CONCRETE	32.8 C.Y.

DRILLED PIERS:

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	15.9 C.Y.
3'-0" Ø DRILLED PIER IN SOIL	34.75 LIN. FT.
3'-0" Ø DRILLED PIER NOT IN SOIL	26.00 LIN. FT.
3'-0" Ø PERMANENT STEEL CASING	35.65 LIN. FT.
CSL TUBES	261.00 LIN. FT.

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 2 OF 2

DRAWN BY : D. HODGE DATE : 1/21

CHECKED BY : G. GILLAND DATE : 1/21

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ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

WETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			36

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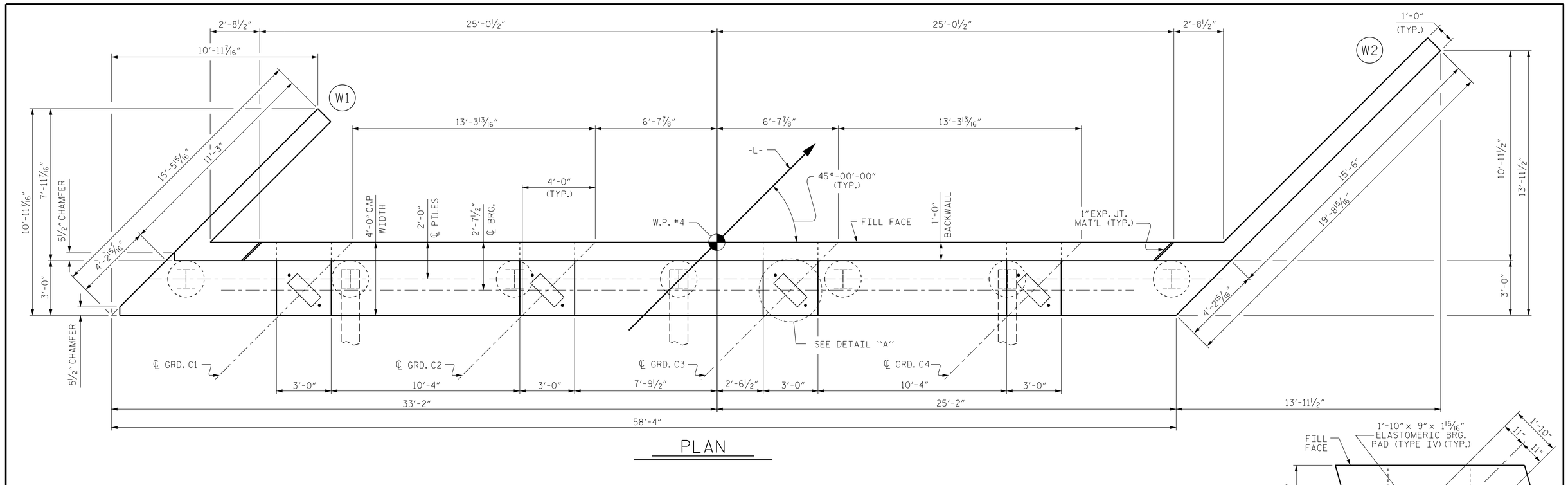
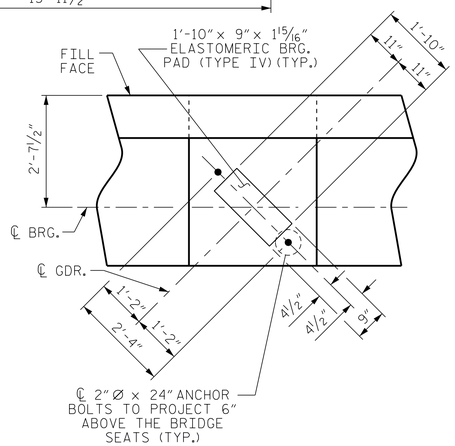
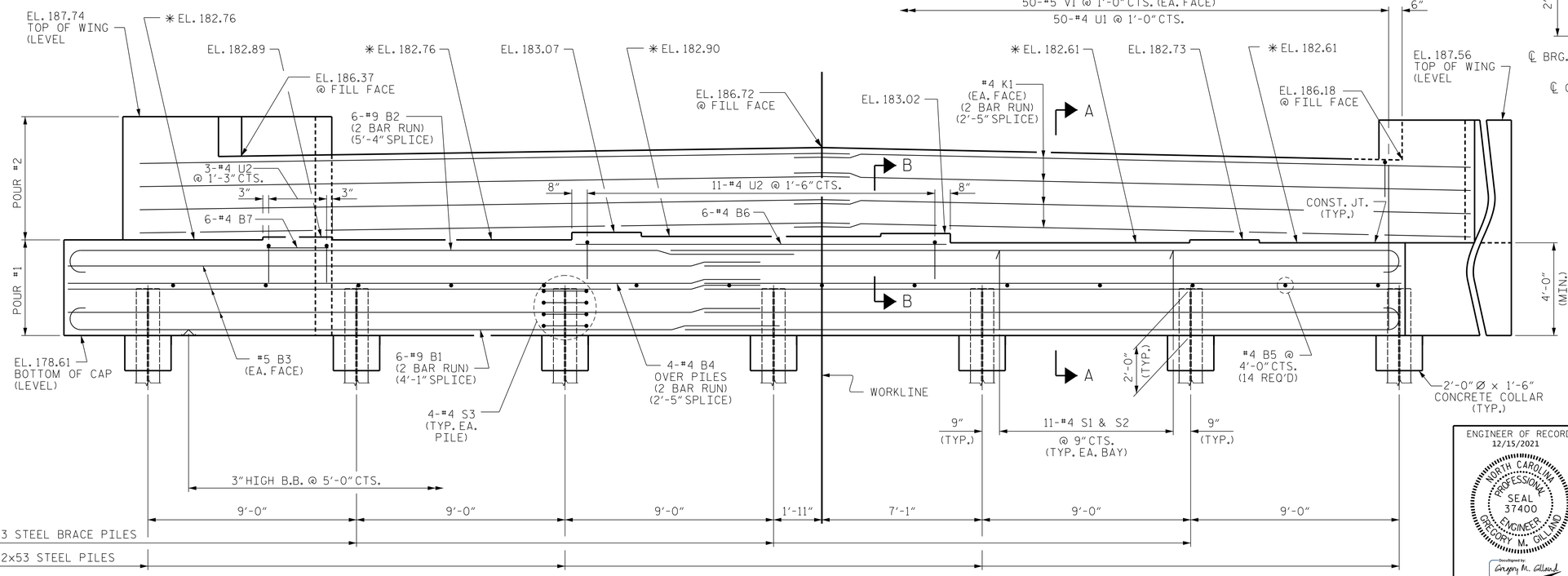


PLAN



DETAIL "A"
(TYP. EA. GIRDER)



ELEVATION

✳ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS. SEE SECTION A-A & B-B, SHEET 3 OF 3.

PROJECT NO. BR-0082
HARNETT COUNTY
STATION: 18+15.00 -L-

SHEET 1 OF 3

ENGINEER OF RECORD
12/15/2021
NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND
Gregory M. Gilland
WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			36

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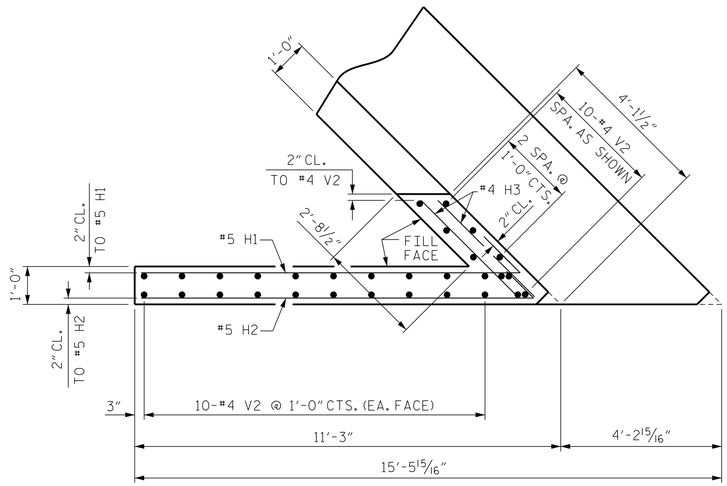
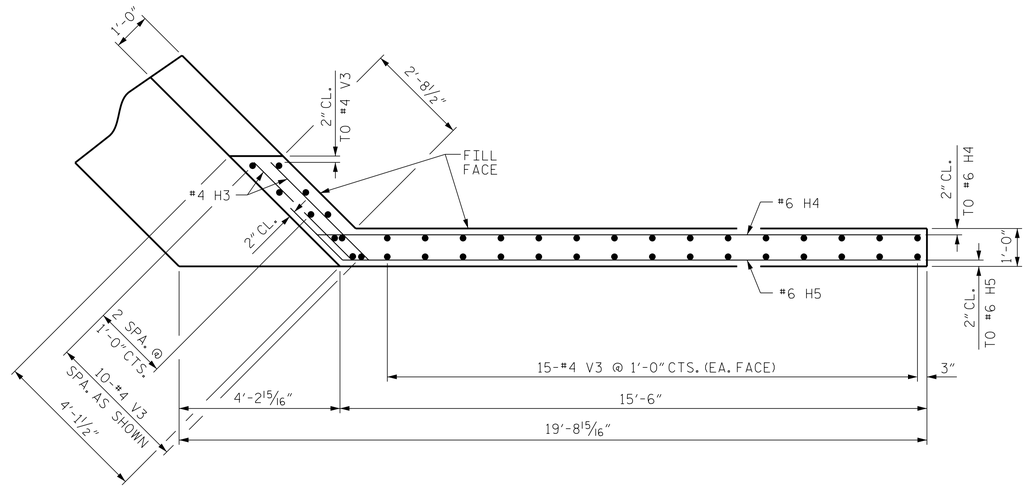
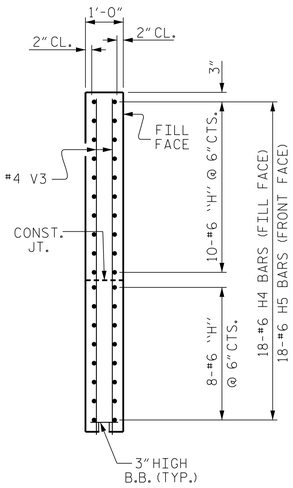


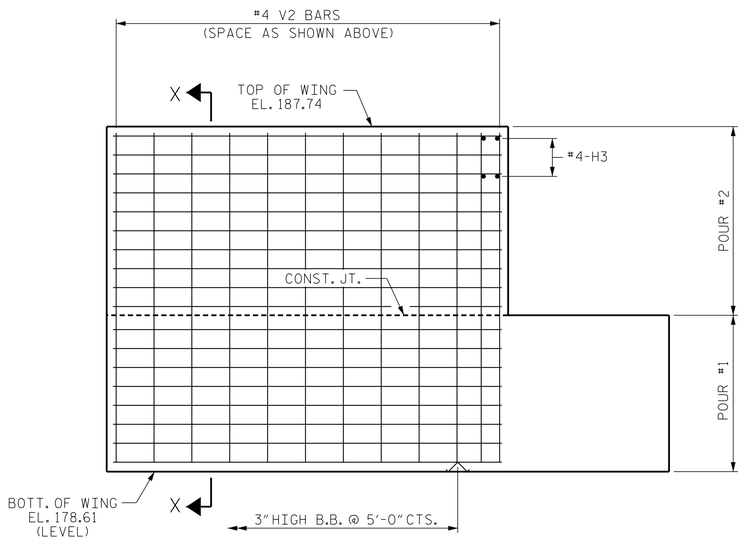
PLAN OF WING - W1



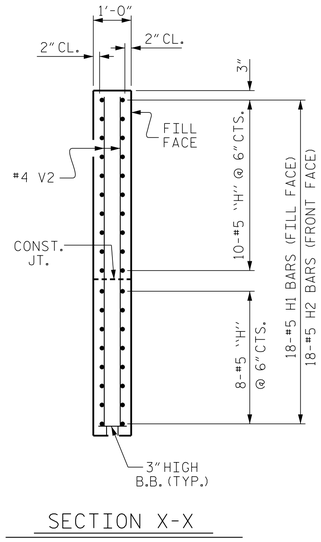
PLAN OF WING - W2



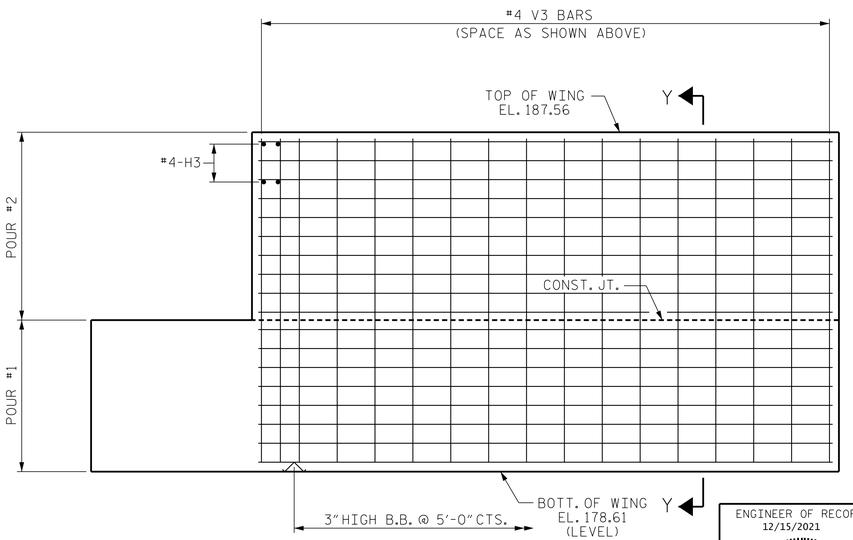
SECTION Y-Y



ELEVATION OF WING - W1



SECTION X-X



ELEVATION OF WING - W2

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 2 OF 3

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

ETHERRILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			36

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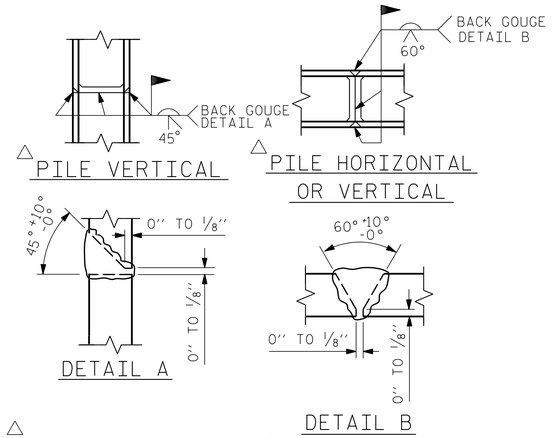
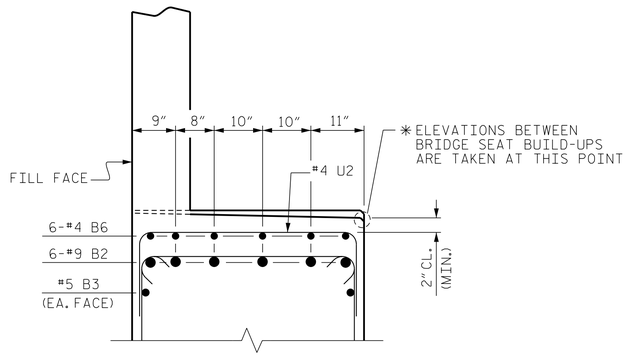
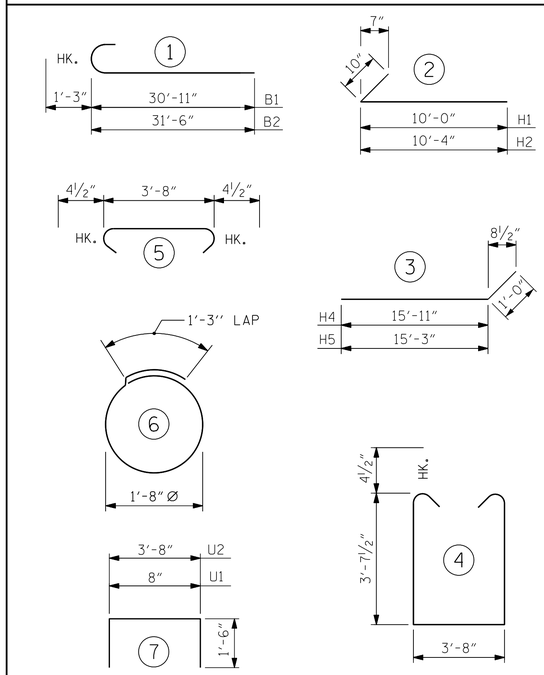


PILE SPLICE DETAILS



SECTION B-B



BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT No. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9	1	32'-2"	1312
B2	12	#9	1	32'-9"	1336
B3	6	#5	STR	57'-10"	362
B4	8	#4	STR	30'-2"	161
B5	14	#4	STR	3'-8"	34
B6	6	#4	STR	16'-0"	64
B7	6	#4	STR	2'-8"	11
H1	18	#5	2	10'-10"	203
H2	18	#5	2	11'-2"	210
H3	8	#4	STR	3'-7"	19
H4	18	#6	3	16'-11"	457
H5	18	#6	3	16'-3"	439
K1	16	#4	STR	30'-2"	322
S1	66	#4	4	11'-8"	514
S2	66	#4	5	4'-5"	195
S3	28	#4	6	6'-6"	122
U1	50	#4	7	3'-8"	122
U2	14	#4	7	6'-8"	62
V1	100	#5	STR	7'-2"	747
V2	30	#4	STR	8'-8"	174
V3	40	#4	STR	8'-6"	227

REINFORCING STEEL 7,093 LBS.

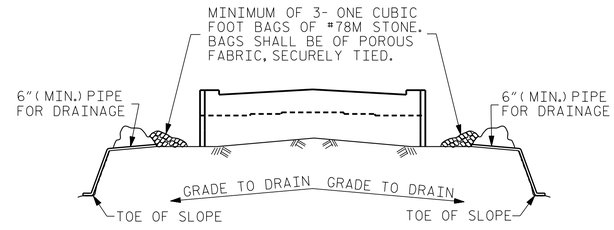
CLASS A CONCRETE BREAKDOWN

POUR #1	CAP, CONC. COLLARS & LOWER PART OF WINGS	40.4 C.Y.
POUR #2	BACKWALL AND UPPER PART OF WINGS	12.8 C.Y.
TOTAL CLASS A CONCRETE		53.2 C.Y.

HP 12 X 53 STEEL PILES
NO: 7 139 L.F.

STEEL PILE POINTS
7 EA.

PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES
7 EA.

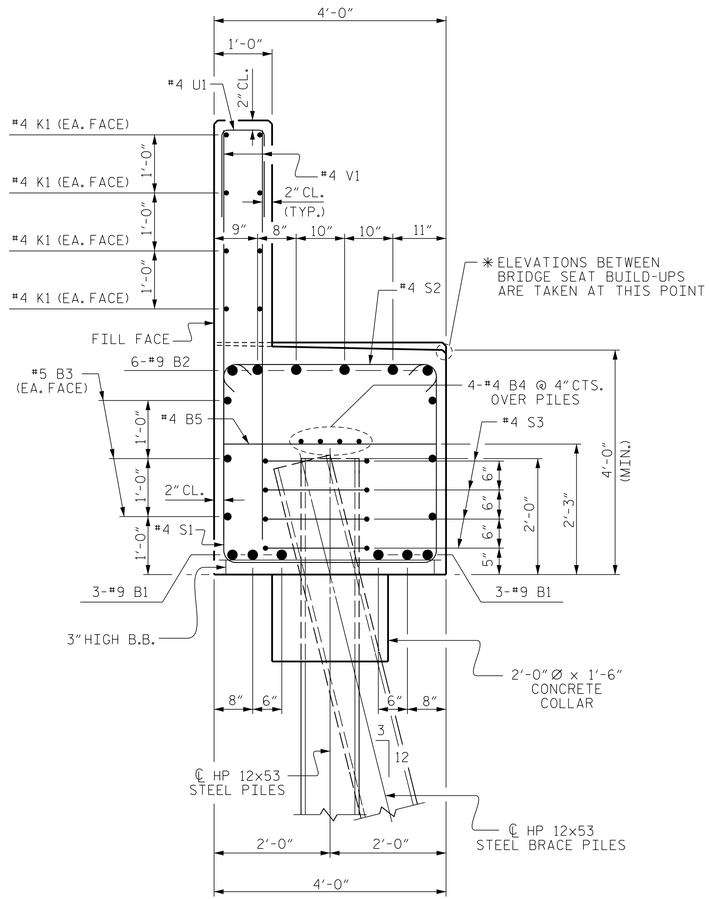


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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



SECTION A-A

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 3 OF 3

DRAWN BY : D. HODGE DATE : 12/19

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ENGINEER OF RECORD
12/13/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			36

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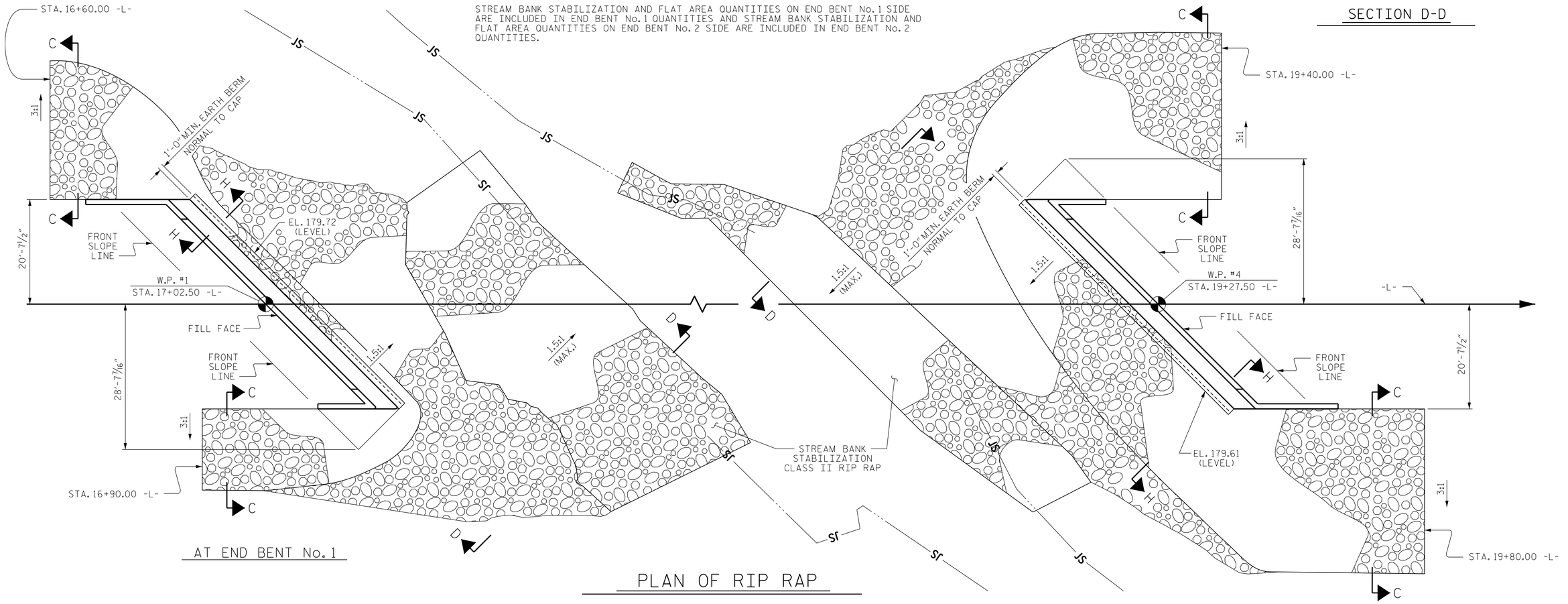
ESTIMATED QUANTITIES

BRIDGE @ STA. 18+15.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	RIP RAP CLASS B (1'-0" THICK)
	TONS	SQUARE YARDS	TONS
END BENT 1	610	675	25
END BENT 2	800	880	120

NOTE: CLASS B RIP RAP IS TO BE PLACED DIRECTLY ON TOP OF THE CLASS II RIP RAP IN THE AREA IN FRONT OF END BENTS BENEATH THE SUPERSTRUCTURE AS DIRECTED BY THE ENGINEER.

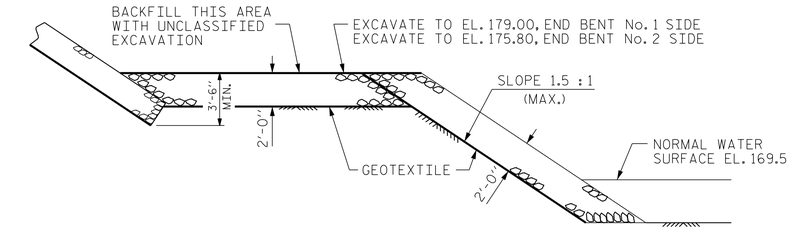
STREAM BANK STABILIZATION AND FLAT AREA QUANTITIES ON END BENT No. 1 SIDE ARE INCLUDED IN END BENT No. 1 QUANTITIES AND STREAM BANK STABILIZATION AND FLAT AREA QUANTITIES ON END BENT No. 2 SIDE ARE INCLUDED IN END BENT No. 2 QUANTITIES.



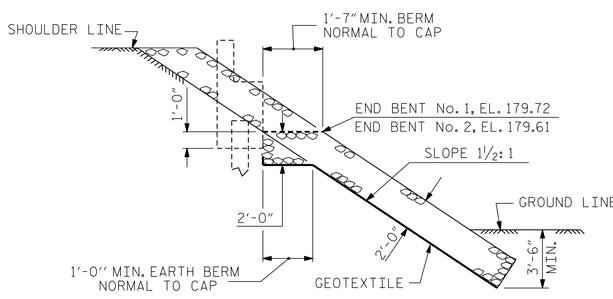
AT END BENT No. 1

AT END BENT No. 2

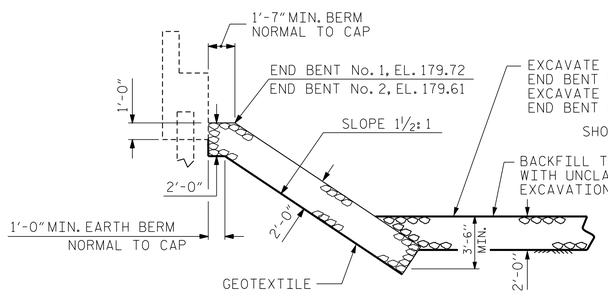
PLAN OF RIP RAP



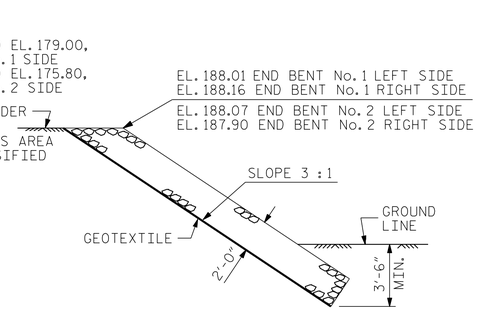
SECTION D-D



SECTION H-H



℄ SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. BR-0082
HARNETT COUNTY
STATION: 18+15.00 -L-

ENGINEER OF RECORD
10/24/2022
NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND
DocuSigned by: Gregory M. Gilland A0964...
ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			36

DRAWN BY : D. HODGE DATE : 1/20
CHECKED BY : G. GILLAND DATE : 1/20

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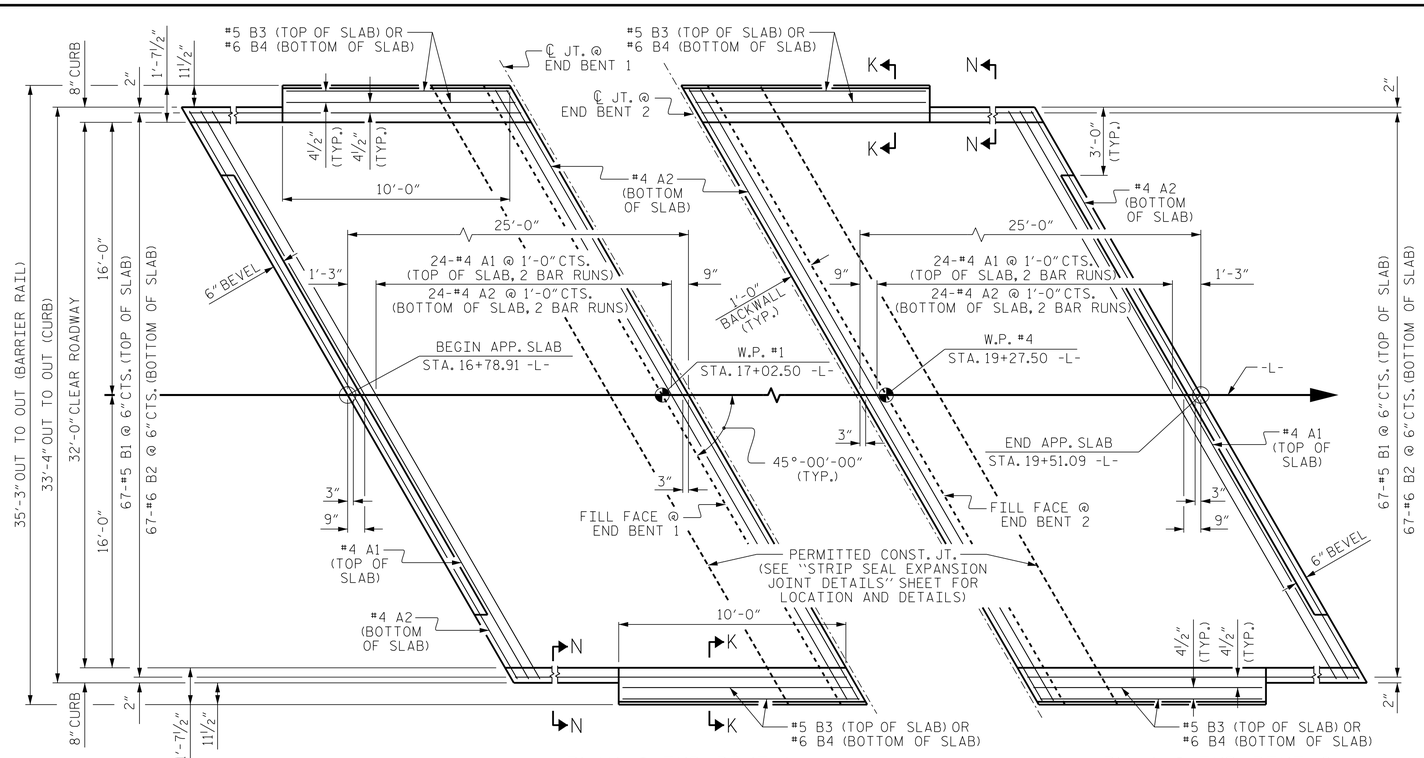
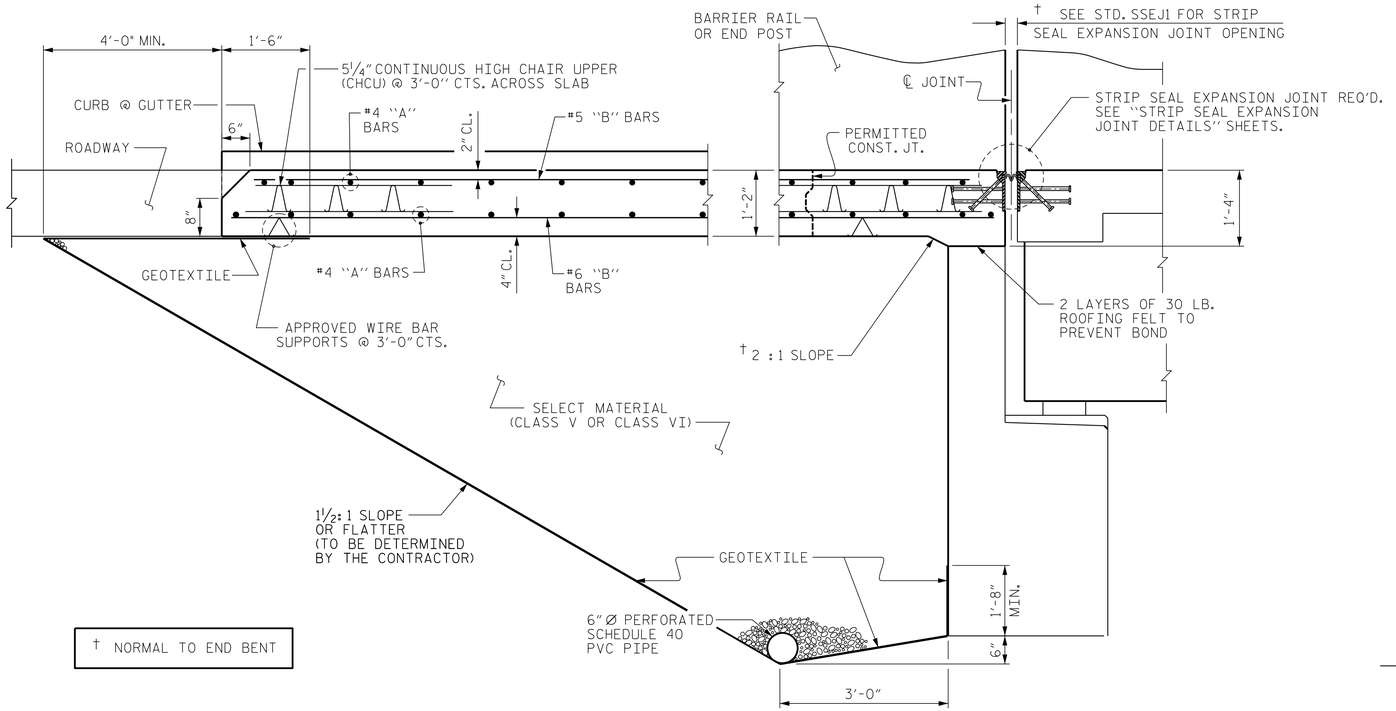


PLAN @ END BENT 1

PLAN @ END BENT 2

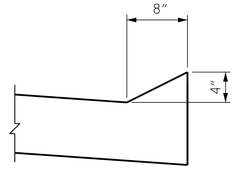
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



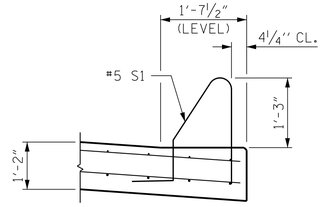
† NORMAL TO END BENT

SECTION THRU SLAB

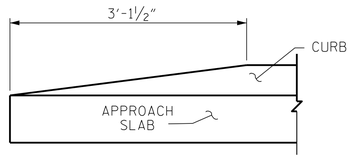
(TYPE I - STANDARD APPROACH FILL)



SECTION N-N



SECTION K-K



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" 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.

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FOR THE 6" 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.

FOR STRIP SEAL EXPANSION JOINTS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

APPROACH SLAB AT END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ A1	50	#4	STR	25'-8"	857
A2	52	#4	STR	25'-6"	886
✱ B1	67	#5	STR	23'-7"	1,648
B2	67	#6	STR	24'-6"	2,466
✱ B3	4	#5	STR	9'-10"	41
B4	4	#6	STR	9'-10"	59
REINFORCING STEEL ✱✱				LBS.	3,411
✱ EPOXY COATED REINFORCING STEEL ✱✱				LBS.	2,546
CLASS AA CONCRETE ✱✱				C. Y.	37.1

APPROACH SLAB AT END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ A1	50	#4	STR	25'-8"	857
A2	52	#4	STR	25'-6"	886
✱ B1	67	#5	STR	23'-7"	1,648
B2	67	#6	STR	24'-6"	2,466
✱ B3	4	#5	STR	9'-10"	41
B4	4	#6	STR	9'-10"	59
REINFORCING STEEL ✱✱				LBS.	3,411
✱ EPOXY COATED REINFORCING STEEL ✱✱				LBS.	2,546
CLASS AA CONCRETE ✱✱				C. Y.	37.1

✱✱ QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED. SEE SHEET 2 OF 2.

SPLICE LENGTHS

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

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 1 OF 2

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Gregory M. Gilland

WETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS
2			4			36

DRAWN BY : D. HODGE DATE : 1/21

CHECKED BY : G. GILLAND DATE : 1/21

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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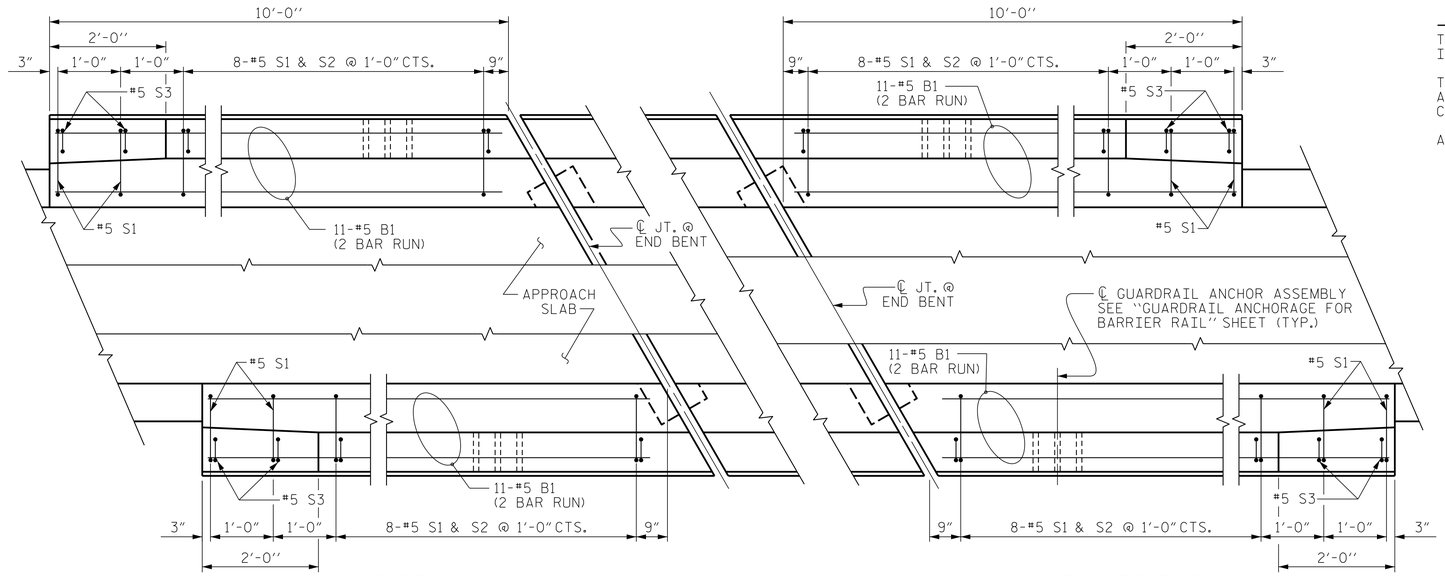


PLAN OF BARRIER RAIL

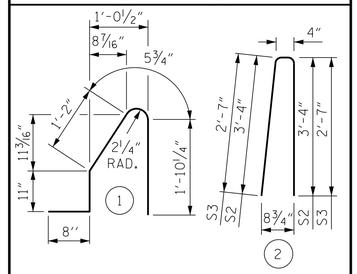
NOTES

THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR ''CONCRETE BARRIER RAIL''.

THE BARRIER RAIL ON EACH APPROACH SLAB SHALL NOT BE CAST UNTIL ALL APPROACH SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

BAR TYPES

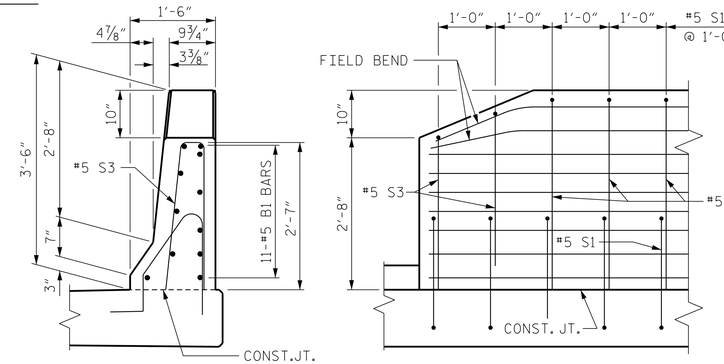


ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BARRIER RAIL ONLY

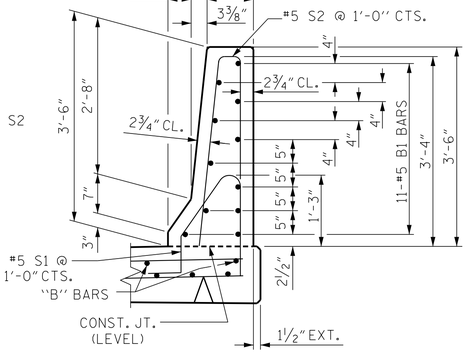
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B1	88	#5	STR	7'-0"	642
✳S1	40	#5	1	5'-1"	212
✳S2	32	#5	2	7'-0"	234
✳S3	8	#5	2	5'-6"	46
✳EPOXY COATED REINFORCING STEEL				LBS.	1,134
CLASS AA CONCRETE				C.Y.	5.7
CONCRETE BARRIER RAIL				43.00	LIN.FT.



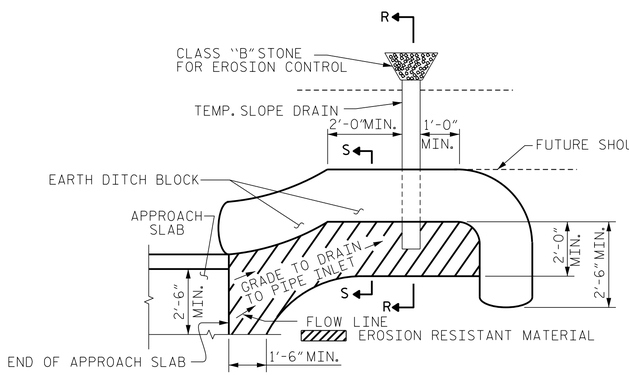
END VIEW

SIDE VIEW

END OF RAIL DETAILS

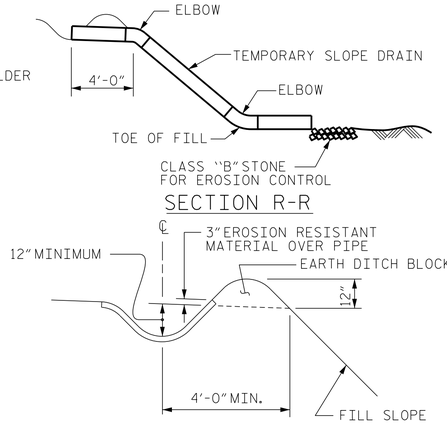


SECTION THRU RAIL

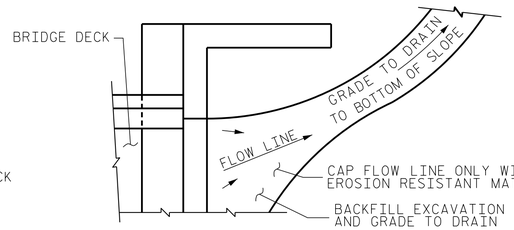


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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



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

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. BR-0082

HARNETT COUNTY

STATION: 18+15.00 -L-

SHEET 2 OF 2

ENGINEER OF RECORD
12/15/2021

NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND

Docusigned by: Gregory M. Gilland

WETHERILL ENGINEERING

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			36

ASSEMBLED BY : D. HODGE		DATE :	1/21
CHECKED BY : G. GILLAND		DATE :	1/21
DRAWN BY : FCJ	11/88	REV. 6/13	MAA/GM
CHECKED BY : ARB	11/88	REV. 12/17	MAA/THC
		REV. 5/18	MAA/THC

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STD. NO. BAS4 (SHT 3a)

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